

# **Air Quality Assessment**

**Sonne Steel, Inc.  
AI # 177435**

Prepared with the assistance of



## **Process Description and Emission Calculations**

### **Sonne Steel, Inc. (AI 177435)**

#### Process Description

Sonne Steel, Incorporated is a residential steel business located at 48 Regina Lane in Smithfield, KY. The facility fabricates steel products such as beams, stair towers, and railings for commercial, industrial, and residential applications. The facility was previously located at 3617 Mattingly Way in Buckner, Kentucky and has been at current location since March 1, 2021.

The facility receives raw materials that are delivered to a 36,000 square foot manufacturing facility. The raw materials enter the building through a designated bay door at the rear of the facility where they are fed through an access door onto a conveyor roller. The materials are carried by the conveyor roller through a Python X automated fabrication line that uses a Fineline 300 high-definition plasma torch to cut the metal to pre-determined lengths and drill to specifications. The automated fabrication system is equipped with a Prism Compact dust collector, which contains a Merv 16 PTFE filter. The facility also utilizes a Dragon A400 plasma cutter for tube and pipe fabrications.

Once the steel has been cut by the automated equipment it is then taken to a designated assembly area where welding is conducted using Miller Matic 252 Metal Inert Gas (MIG) welding units. The facility uses ESAB Denton welding wire and uses approximately 4,960 pounds of welding wire per year.

The final welded assemblies are then taken to a Col-Met spray paint booth for priming. Universal Primer is mixed with Xylene at a 95% to 5% ratio and is applied with a Graco 695 HVLP airless spray gun. The coating process occurs in front of a filtration system which exits through two stacks on the side of the building. The facility changes the filters out approximately every two months and three bay doors are opened for added ventilation. Finished goods are stored in a designated area to dry before being loaded onto a truck and shipped out for delivery.

The facility performs a small amount of metalwork using a Hyd-Mech S20 P Series III bandsaw and a Baileigh CS-250EU cold saw, with each one using Lenox Band Ade metalworking fluid as coolant. The facility operates five days a week, eight and a half hours a day Monday through Friday, with sixteen full time and sixteen part-time employees. The facility operates year-round with exceptions being made for six holidays.

#### Emission Calculations

Based on historic usage and operational data provided by the facility, actual rates were determined and then modified to represent potential usage rates for all emission point sources. For each of the following processes, 8,760 hours per year was used as the potential operating time.

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#### EP01-1 - Spray Coating Booth - Shop Coat Primer

- Throughput: 14.25 gal/hr.
- Emission Factor Source: SDS
- Control: Fabric Filter
  - Assume 96.00% Control Efficiency for PM
  - 60% Transfer Efficiency assumed for HVLP Airless Spray Gun

#### EP01-2 - Spray Coating Booth - Thinner

- Throughput: 7.50E-01 gal/hr.
- Emission Factor Source: SDS
- Control: Fabric Filter
  - Assume 96.00% Control Efficiency for PM
  - 60% Transfer Efficiency assumed for HVLP Airless Spray Gun

#### EP02 – GMAW – Metal Inert Gas (MIG)

- Throughput: 1.12E-03 tons/hr.
- Emission Factor Source: AP-42 Chapter 12 (Tables 12.19) E70S for PM / SDS for HAPs
- Control: Building Enclosure
  - Assume 70.00% Control Efficiency for Particulates

#### Insignificant Activities

##### IA01 – Spray Gun Cleanout – Xylene Usage

- Throughput: 9.05E-02 gal/hr.
- Emission Factor Source: SDS
- Control: None Known

##### IA02 – Python X Robotic Steel Fabrication System

- Throughput: 8.05E-02 tons/hr.
- Emission Factor Source: PM Assume 100% metal removed / HAP% based on SDS
- Control: Building Enclosure/Dust Collector (Merv 16 PTFE Filter)
  - Assume 70% Control Efficiency for Particulates for Bldg Enclosure
  - Assume 90% Control Efficiency for Particulates for Dust Collector/Filter
  - Total Control Efficiency of 97.00% for Particulates

##### IA03 - Steel Metalworking (Hyd-Mech Band Saw)

- Throughput: 8.22E-02 tons/hr.
- Emission Factor Source: PM Assume 100% metal removed; HAP% based on SDS
- Control: Building Enclosure
  - Assume 70.00% Control Efficiency for Particulates

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#### IA04 - Steel Metalworking (Cold Saw)

- Throughput: 7.25E-02 tons/hr.
- Emission Factor Source: PM Assume 100% metal removed; HAP% based on SDS
- Control: Building Enclosure
  - Assume 70.00% Control Efficiency for Particulates

#### IA05 – Bend-Tech Dragon A400 Plasma Cutter

- Throughput: 2.39E-02 tons/hr.
- Emission Factor Source: PM Assume 100% metal removed; HAP% based on SDS
- Control: Building Enclosure
  - Assume 70% Control Efficiency for Particulates for Bldg Enclosure

#### IA06 – Metalworking Fluid (Lennox Band Ade)

- Throughput: 4.52E-03 gal/hr.
- Emission Factor Source: SDS
- Control: None Known

#### IA07 – Haul Road (Unpaved)

- Throughput: 6.00E-01 tons/hr.
- Emission Factor Source: DAQ Minerals Section
- Control: None Known

#### Applicable Regulations

- 401 KAR 52:030 Federally Enforceable Permits for Nonmajor Sources
- 401 KAR 59:010 New Process Operations
- 401 KAR 63:010 Fugitive Emissions
- 401 KAR 63:020 Potentially Hazardous Matter or Toxic Substances
- 40 CFR 63, Subpart XXXXXX – NESHAP: Area Source Standards for Nine Metal Fabrication and Finishing Source Categories
  - 6X Initial Notification included with this permit application package

#### Non-Applicable Regulations

- 40 CFR 63, Subpart HHHHHH - NESHAP: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources
  - Spray application coatings do not contain any of the target HAPs

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### Recommendation

Based on potential emission calculations and applicable requirements, the Kentucky Division of Compliance Assistance is recommending that ***Sonne Steel, Incorporated*** apply for a ***Conditional Major with limitations of 90 tons per year for PM, PM10 and VOC, 9 tons per year for Xylene and 22.50 tons per year for Total HAPs.*** Facility-wide emissions are included below.

### Facility Wide Emissions

<b>Pollutant</b>	<b>Uncontrolled TPY</b>	<b>Controlled TPY</b>	<b>Requested Limit</b>
PM	241.93	9.82	90.00
PM <sub>10</sub>	241.85	9.74	90.00
VOC	203.36	203.36	90.00
Toluene	4.69	4.69	9.00
Xylene	31.41	31.41	
Cumene	2.67E-01	2.67E-01	
Ethylbenzene	9.35	9.35	
Chromium	6.76E-04	1.87E-04	
Manganese	1.85E-03	4.82E-04	
Nickel	8.35E-05	1.74E-05	
Total HAPs	45.73	45.73	

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Division for Air Quality

300 Sower Boulevard  
Frankfort, KY 40601  
(502) 564-3999

**DEP7007AI**

**Administrative Information**

- Section AI.1: Source Information
- Section AI.2: Applicant Information
- Section AI.3: Owner Information
- Section AI.4: Type of Application
- Section AI.5: Other Required Information
- Section AI.6: Signature Block
- Section AI.7: Notes, Comments, and Explanations

**Additional Documentation**

Additional Documentation attached

**Source Name:** Sonne Steel, Incorporated

**KY EIS (AFS) #:** 21-

**Permit #:** \_\_\_\_\_

**Agency Interest (AI) ID:** 177435

**Date:** 8/25/2023

**Section AI.1: Source Information**

<b>Physical Location</b>	<b>Street:</b>	<u>48 Regina Lane</u>		
<b>Address:</b>	<b>City:</b>	<u>Smithfield</u>	<b>County:</b>	<u>Henry</u>
			<b>Zip Code:</b>	<u>40068</u>
<b>Mailing Address:</b>	<b>Street or P.O. Box:</b>	<u>Same as above</u>		
	<b>City:</b>	<b>State:</b>	<b>Zip Code:</b>	_____

**Standard Coordinates for Source Physical Location**

**Longitude:** -85.28946 (decimal degrees)      **Latitude:** 38.424722 (decimal degrees)

**Primary (NAICS) Category:** Fabricated Structural Metal Manufacturing      **Primary NAICS #:** 332312

<b>Classification (SIC) Category:</b>	Fabricated Structural Manufacturing	<b>Primary SIC #:</b>	3441
<b>Briefly discuss the type of business conducted at this site:</b>	Facility fabricates and paints steel material used for various types of construction.		
<b>Description of Area Surrounding Source:</b>	<input checked="" type="checkbox"/> Rural Area <input type="checkbox"/> Industrial Park <input checked="" type="checkbox"/> Residential Area <input type="checkbox"/> Urban Area <input type="checkbox"/> Industrial Area <input type="checkbox"/> Commercial Area	<b>Is any part of the source located on federal land?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Approximate distance to nearest residence or commercial property:</b>	<u>74 feet</u>	<b>Property Area:</b>	<u>8 acres</u>
		<b>Is this source portable?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?</b>			
<b>NPDES/KPDES:</b>	<input type="checkbox"/> Currently Hold	<input checked="" type="checkbox"/> Need	<input type="checkbox"/> N/A
<b>Solid Waste:</b>	<input type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input checked="" type="checkbox"/> N/A
<b>RCRA:</b>	<input type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input checked="" type="checkbox"/> N/A
<b>UST:</b>	<input type="checkbox"/> Currently Hold	<input type="checkbox"/> Need	<input checked="" type="checkbox"/> N/A
<b>Type of Regulated Waste Activity:</b>	<input type="checkbox"/> Mixed Waste Generator <input type="checkbox"/> U.S. Importer of Hazardous Waste	<input type="checkbox"/> Generator <input type="checkbox"/> Transporter	<input type="checkbox"/> Recycler <input type="checkbox"/> Treatment/Storage/Disposal Facility <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Other: _____			

## Section AI.2: Applicant Information

**Applicant Name:** Sonne Steel, Incorporated

**Title:** (if individual) \_\_\_\_\_

**Mailing Address:** **Street or P.O. Box:** 48 Regina Lane  
**City:** Smithfield **State:** KY **Zip Code:** 40068

**Email:** (if individual) \_\_\_\_\_

**Phone:** 502-222-0099

### Technical Contact

**Name:** Erich Cleaver - Environmental Compliance Assistance Program

**Title:** Environmental Scientist Advisor

**Mailing Address:** **Street or P.O. Box:** 300 Sower Blvd.  
**City:** Frankfort **State:** KY **Zip Code:** 40601

**Email:** erich.cleaver@ky.gov

**Phone:** 502-782-6920

### Air Permit Contact for Source

**Name:** Eric Sonne

**Title:** Owner

**Mailing Address:** **Street or P.O. Box:** 48 Regina Lane  
**City:** Smithfield **State:** KY **Zip Code:** 40068

**Email:** eric@sonnesteel.com

**Phone:** 502-222-0099



**Section AI.3: Owner Information**

**Owner same as applicant**

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Mailing Address:** **Street or P.O. Box:** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip Code:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**List names of owners and officers of the company who have an interest in the company of 5% or more.**

Name	Position
Eric Sonne	Owner - President
Ben Tribble	Owner - Vice President

**Section AI.4: Type of Application**

**Current Status:**       Title V    Conditional Major       State-Origin                       General Permit                       Registration                       None

**Requested Action:**       Name Change       Initial Registration       Significant Revision                       Administrative Permit Amendment  
*(check all that apply)*       Renewal Permit       Revised Registration       Minor Revision                       Initial Source-wide Operating Permit  
                                   502(b)(10)Change       Extension Request       Addition of New Facility                       Portable Plant Relocation Notice  
                                   Revision                       Off Permit Change       Landfill Alternate Compliance Submittal       Modification of Existing Facilities  
                                   Ownership Change       Closure

**Requested Status:**       Title V       Conditional Major       State-Origin       PSD       NSR                       Other: \_\_\_\_\_

**Is the source requesting a limitation of potential emissions?**                       Yes       No

<b>Pollutant:</b>	<b>Requested Limit:</b>	<b>Pollutant:</b>	<b>Requested Limit:</b>
<input checked="" type="checkbox"/> Particulate Matter	<u>90.00 TPY</u>	<input checked="" type="checkbox"/> Single HAP	<u>Xylene = 9.00 TPY</u>
<input checked="" type="checkbox"/> Volatile Organic Compounds (VOC)	<u>90.00 TPY</u>	<input checked="" type="checkbox"/> Combined HAPs	<u>22.50 TPY</u>
<input type="checkbox"/> Carbon Monoxide	_____	<input type="checkbox"/> Air Toxics (40 CFR 68, Subpart F)	_____
<input type="checkbox"/> Nitrogen Oxides	_____	<input type="checkbox"/> Carbon Dioxide	_____
<input type="checkbox"/> Sulfur Dioxide	_____	<input type="checkbox"/> Greenhouse Gases (GHG)	_____
<input type="checkbox"/> Lead	_____	<input type="checkbox"/> Other	_____

**For New Construction:**

**Proposed Start Date of Construction:**                      Existing                      **Proposed Operation Start-Up Date:** *(MM/YYYY)*                      Existing  
*(MM/YYYY)*

**For Modifications:**

**Proposed Start Date of Modification:**                      N/A                      **Proposed Operation Start-Up Date:** *(MM/YYYY)*                      N/A  
*(MM/YYYY)*

**Applicant is seeking coverage under a permit shield.**                       Yes       No                      **Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.**

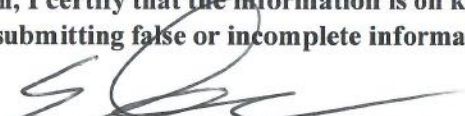
## Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- |  |  |
|--|--|
| <input type="checkbox"/> DEP7007A Indirect Heat Exchangers and Turbines                        | <input type="checkbox"/> DEP7007CC Compliance Certification                        |
| <input checked="" type="checkbox"/> DEP7007B Manufacturing or Processing Operations            | <input checked="" type="checkbox"/> DEP7007DD Insignificant Activities             |
| <input type="checkbox"/> DEP7007C Incinerators and Waste Burners                               | <input type="checkbox"/> DEP7007EE Internal Combustion Engines                     |
| <input type="checkbox"/> DEP7007F Episode Standby Plan   | <input type="checkbox"/> DEP7007FF Secondary Aluminum Processing                   |
| <input type="checkbox"/> DEP7007J Volatile Liquid Storage                                      | <input checked="" type="checkbox"/> DEP7007GG Control Equipment                    |
| <input checked="" type="checkbox"/> DEP7007K Surface Coating or Printing Operations            | <input checked="" type="checkbox"/> DEP7007HH Haul Roads                           |
| <input type="checkbox"/> DEP7007L Mineral Processes  | <input type="checkbox"/> Confidentiality Claim                                     |
| <input type="checkbox"/> DEP7007M Metal Cleaning Degreasers                                    | <input type="checkbox"/> Ownership Change Form                                     |
| <input checked="" type="checkbox"/> DEP7007N Source Emissions Profile                          | <input checked="" type="checkbox"/> Secretary of State Certificate                 |
| <input type="checkbox"/> DEP7007P Perchloroethylene Dry Cleaning Systems                       | <input checked="" type="checkbox"/> Flowcharts or diagrams depicting process       |
| <input type="checkbox"/> DEP7007R Emission Offset Credit                                       | <input type="checkbox"/> Digital Line Graphs (DLG) files of buildings, roads, etc. |
| <input type="checkbox"/> DEP7007S Service Stations   | <input checked="" type="checkbox"/> Site Map                                       |
| <input type="checkbox"/> DEP7007T Metal Plating and Surface Treatment Operations               | <input type="checkbox"/> Map or drawing depicting location of facility             |
| <input checked="" type="checkbox"/> DEP7007V Applicable Requirements and Compliance Activities | <input checked="" type="checkbox"/> Safety Data Sheet (SDS)                        |
| <input type="checkbox"/> DEP7007Y Good Engineering Practice and Stack Height Determination     | <input type="checkbox"/> Emergency Response Plan                                   |
| <input type="checkbox"/> DEP7007AA Compliance Schedule for Non-complying Emission Units        | <input checked="" type="checkbox"/> Other: Equipment Specs                         |
| <input type="checkbox"/> DEP7007BB Certified Progress Report                                   |  |

## Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official\*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

  
 \_\_\_\_\_  
 Authorized Signature

ERIC SOANE  
 \_\_\_\_\_  
 Type or Printed Name of Signatory

8/31/2023  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Title of Signatory

\*Responsible official as defined by 401 KAR 52:001.

**Section AI.7: Notes, Comments, and Explanations**

Facility should inquire with Division of Water (DOW) in regard to the need for an industrial stormwater permit.

Facility SIC code is listed as an industrial activity in the link on the KYR00 permit factsheet page.

Division for Air Quality

300 Sower Boulevard  
 Frankfort, KY 40601  
 (502) 564-3999

**DEP7007N**

Source Emissions Profile

- Section N.1: Emission Summary
- Section N.2: Stack Information
- Section N.3: Fugitive Information
- Section N.4: Notes, Comments, and Explanations

Additional Documentation

Complete DEP7007AI

Source Name: [Sonne Steel, Inc.](#)

KY EIS (AFS) #: 21-

Permit #:

Agency Interest (AI) ID: [177435](#)

Date: [8/25/2023](#)

**N.1: Emission Summary**

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EP01-1	Spray Coating Booth	1	Shopcoat Primer	Fabric Filter	1	1 & 2	14.25 gal/hr	PM	3.87 lb/gal	SDS	100.00%	96.00%	55.18	2.21	241.67	9.67
								PM <sub>10</sub>	3.87 lb/gal	SDS	100.00%	96.00%	55.18	2.21	241.67	9.67
								VOC	2.83 lb/gal	SDS	0.00%	0.00%	40.33	40.33	176.63	176.63
								Toluene	7.51E-02 lb/gal	SDS	0.00%	0.00%	1.07	1.07	4.68	4.68
								Xylene	7.51E-02 lb/gal	SDS	0.00%	0.00%	1.07	1.07	4.68	4.68

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EP01-2	Spray Coating Booth	2	Thinner (Xylene)	Fabric Filter	1	1 & 2	7.50E-01 gal/hr	VOC	7.26 lb/gal	SDS	0.00%	0.00%	5.45	5.45	23.85	23.85
								Xylene	7.26 lb/gal	SDS	0.00%	0.00%	5.45	5.45	23.85	23.85
								Cumene	7.26E-02 lb/gal	SDS	0.00%	0.00%	5.45E-02	5.45E-02	2.38E-01	2.38E-01
								Ethylbenzene	2.54 lb/gal	SDS	0.00%	0.00%	1.91	1.91	8.35	8.35
EP02	GMAW - Metal Inert Gas (MIG)	N/A	N/A	Bldg Enclosure	2	N/A	1.12E-03 tons/hr	PM	10.80 lb/ton	AP-42 Chapter 12 Tables 12.19 (E70S)	100.00%	70.00%	1.21E-02	3.64E-03	5.31E-02	1.59E-02
								PM <sub>10</sub>	10.80 lb/ton	AP-42 Chapter 12 Tables 12.19 (E70S)	100.00%	70.00%	1.21E-02	3.64E-03	5.31E-02	1.59E-02
								Chromium	1.08E-01 lb/ton	SDS	100.00%	70.00%	1.21E-04	3.64E-05	5.31E-04	1.59E-04
								Manganese	2.16E-01 lb/ton	SDS	100.00%	70.00%	2.42E-04	7.27E-05	1.06E-03	3.18E-04
IA01	Spray Gun Cleanout (Xylene)	N/A	N/A	N/A	N/A	N/A	9.05E-02	VOC	7.26 lb/gal	SDS	0.00%	0.00%	6.57E-01	6.57E-01	2.88	2.88
								Xylene	7.26 lb/gal	SDS	0.00%	0.00%	6.57E-01	6.57E-01	2.88	2.88
								Cumene	7.26E-02 lb/gal	SDS	0.00%	0.00%	6.57E-03	6.57E-03	2.88E-02	2.88E-02
								Ethylbenzene	2.54 lb/gal	SDS	0.00%	0.00%	2.30E-01	2.30E-01	1.01	1.01
IA02	Python X Robotic Steel Fabrication System	N/A	N/A	Bldg Enclosure & Dust Collector	2 & 3	N/A	8.05E-02 tons/hr	PM	8.05E-02 lb/ton	100% Metal Removed	100.00%	97.00%	6.48E-03	1.94E-04	2.84E-02	8.52E-04
								PM <sub>10</sub>	8.05E-02 lb/ton	100% Metal Removed	100.00%	97.00%	6.48E-03	1.94E-04	2.84E-02	8.52E-04
								Chromium	1.61E-04 lb/ton	SDS	100.00%	97.00%	1.30E-05	3.89E-07	5.68E-05	1.70E-06
								Manganese	7.57E-04 lb/ton	SDS	100.00%	97.00%	6.09E-05	1.83E-06	2.67E-04	8.01E-06
								Nickel	8.05E-05 lb/ton	SDS	100.00%	97.00%	6.48E-06	1.94E-07	2.84E-05	8.52E-07

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
IA03	Steel Metalworking Hyd-Mech Band Saw	N/A	N/A	Bldg Enclosure	2	N/A	8.22E-02 tons/hr	PM	8.22E-02 lb/ton	100% Metal Removed	100.00%	70.00%	6.75E-03	2.03E-03	2.96E-02	8.87E-03
								PM <sub>10</sub>	8.22E-02 lb/ton	100% Metal Removed	100.00%	70.00%	6.75E-03	2.03E-03	2.96E-02	8.87E-03
								Chromium	1.31E-04 lb/ton	SDS	100.00%	70.00%	1.08E-05	3.24E-06	4.73E-05	1.42E-05
								Manganese	7.73E-04 lb/ton	SDS	100.00%	70.00%	6.35E-05	1.90E-05	2.78E-04	8.34E-05
								Nickel	8.22E-05 lb/ton	SDS	100.00%	70.00%	6.75E-06	2.03E-06	2.96E-05	8.87E-06
IA04	Steel Metalworking Cold Saw	N/A	N/A	Bldg Enclosure	2	N/A	7.25E-02 tons/hr	PM	7.25E-02 lb/ton	100% Metal Removed	100.00%	70.00%	5.25E-03	1.58E-03	2.30E-02	6.90E-03
								PM <sub>10</sub>	7.52E-02 lb/ton	100% Metal Removed	100.00%	70.00%	5.25E-03	1.58E-03	2.30E-02	6.90E-03
								Chromium	1.16E-04 lb/ton	SDS	100.00%	70.00%	8.40E-06	2.52E-06	3.68E-05	1.10E-05
								Manganese	6.81E-04 lb/ton	SDS	100.00%	70.00%	4.94E-05	1.48E-05	2.16E-04	6.49E-05
								Nickel	7.25E-05 lb/ton	SDS	100.00%	70.00%	5.25E-06	1.58E-06	2.30E-05	6.90E-06
IA05	Bend-Tech Dragon A400 Plasma Cutter	N/A	N/A	Bldg Enclosure	2	N/A	2.39E-02 tons/hr	PM	2.39E-02 lb/ton	100% Metal Removed	100.00%	70.00%	5.69E-04	1.71E-04	2.49E-03	7.48E-04
								PM <sub>10</sub>	2.39E-02 lb/ton	100% Metal Removed	100.00%	70.00%	5.69E-04	1.71E-04	2.49E-03	7.48E-04
								Chromium	3.82E-05 lb/ton	SDS	100.00%	70.00%	9.11E-07	2.73E-07	3.99E-06	1.20E-06
								Manganese	2.24E-04 lb/ton	SDS	100.00%	70.00%	5.35E-06	1.60E-06	2.34E-05	7.03E-06
								Nickel	2.39E-05 lb/ton	SDS	100.00%	70.00%	5.69E-07	1.71E-07	2.49E-06	7.48E-07
IA06	Metalworking Fluid	N/A	N/A	None Known	N/A	N/A	4.52E-03 gal/hr	Toluene	4.21E-01 lb/gal	SDS	0.00%	0.00%	1.91E-03	1.91E-03	8.35E-03	8.35E-03
IA07	Haul Road (Unpaved)	N/A	N/A	None Known	N/A	N/A	6.00E-01	PM	4.68E-02 lb/ton	DAQ Minerals Section	0.00%	0.00%	2.81E-02	2.81E-02	1.23E-01	1.23E-01
								PM <sub>10</sub>	1.68E-02 lb/ton	DAQ Minerals Section	0.00%	0.00%	1.01E-02	1.01E-02	4.43E-02	4.43E-02

**Section N.2: Stack Information**

**UTM Zone:**

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter <i>(ft)</i>	Height <i>(ft)</i>	Base Elevation <i>(ft)</i>	Northing <i>(m)</i>	Easting <i>(m)</i>	Flowrate <i>(acfm)</i>	Temperature <i>(°F)</i>	Exit Velocity <i>(ft/sec)</i>
1 & 2	EP01-1 = Spray Booth Primer EP01-2 = Spray Booth Thinner	3.50	25.60	879	4254326	649317	40,000 cfm	Ambient	69.28



**Section N.3: Fugitive Information**

**UTM Zone:**

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side <i>(ft)</i>	Length of the Y Side <i>(ft)</i>	Northing <i>(m)</i>	Easting <i>(m)</i>	Release Temperature <i>(°F)</i>	Release Height <i>(ft)</i>
IA07	Haul Road Unpaved	N/A	35	468	4254266	649391	Ambient	20

<b>Section N.4: Notes, Comments, and Explanations</b>

# DEP7007K

## Surface Coating or Printing Operations

### Additional Documentation

Division for Air Quality

300 Sower Boulevard  
Frankfort, KY 40601  
(502) 564-3999

- Section K.1: Process Information
- Section K.2: Coating Operations
- Section K.3: Other Operations
- Section K.4: Coatings/Printing Materials as Applied
- Section K.5: HAP-containing Coatings/Printing Materials
- Section K.6: Notes, Comments, and Explanations

- Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.
- Attach SDS or Technical Sheets for all Coating/Printing Materials
- Attach a flow diagram

**Source Name:** Sonne Steel, Inc.

**KY EIS (AFS) #:** 21-

**Permit #:** \_\_\_\_\_

**Agency Interest (AI) ID:** 177435

**Date:** 8/23/2023

### Section K.1: Process Information

**Emission Unit #:** EP01-1 & EP01-2

**Emission Unit Name:** Spray Coating

**Coating/Printing Line Name:** Mixture of 95% Shopcoat Primer & 5% Xylene (Thinner)

**Proposed/Actual Date of Construction: (MM/YYYY)** Existing

**List Applicable Regulations:**

401 KAR 59:010; 401 KAR 63:020

**Describe Overall Process:**

Facility receives raw materials (steel), cuts and drills them to specifications (automated system) and paints them with primer using a Graco 695 HVLP Airless Sprayer.

**Describe Coatings/Printing Materials:**

Primer = Shopcoat Primer from Sherwin Williams / Thinner (Xylene) from Univar Solutions - /SDS provided for both.

**Identify the Material that is Coated/Printed:**

- Metal
- Vinyl
- Plastics
- Wood
- Foil
- Paper
- Other Substrate

**Provide detailed description of material coated/printed:**

Raw materials (steel) used for various construction projects.

**Provide approximate dimensions and range of sizes of parts being coated or printed:**

Various sizes fabricated to customer specifications.

**Identify the Type of Operation:**

- Continuous
- Batch
- Other:

**Describe Surface Preparation/Pretreatment Steps:**

Steel Metalworking (cutting, sawing and drilling) to reach pre-determined lengths - automated fabrication)

**For Coating Operations:**

- Spray
- Flow
- Dip tank
- Electrodeposition
- Brush
- Powder
- Roller Coat
- Other:

Graco 695 HVLP Airless Spray Gun

**For Printing Operations:**

*(Select all that apply)*

- Web
- Rotogravure
- Heatset
- Lithographic
- Other:
- Sheetfed
- Letterpress
- Non-heatset
- Flexographic

N/A

**Describe Final Product:**

Steel products painted with primer used for various construction products.

**Check the category that most closely describes this unit:**

- Large Appliance Coating
- Beverage Can Coating
- Fabric, Vinyl, or Paper Coating
- Publication Rotogravure Printing
- Graphic Arts using Rotogravure and Flexographic Printing
- Auto or Light-Duty Truck Coating
- Miscellaneous Metal Parts Coating
- Boat Manufacturing/ Ship Repair
- Coating of Plastic Parts for Business Machines
- Metal Furniture Coating
- Magnet Wire Insulation Coating
- Pressure Sensitive Tape and Label Coating
- Flexible Vinyl and Urethane Coating and Printing
- Metal Coil Coating
- Flat Wood Panel Coating
- Magnet Tape Coating
- Other: \_\_\_\_\_

**Section K.2: Coating Operations**

**K.2A: For Spray Coating**

Gun/Booth ID	Describe Function	Type	Mode	Maximum Design Application Rate <i>(gal/hr or lb/hr)</i>	Describe how maximum rate was determined
EP01	Spray Coating fabricated steel products with Primer/Thinner Mixture	<input type="checkbox"/> Conventional Air Gun <input checked="" type="checkbox"/> Airless <input type="checkbox"/> Electrostatic <input type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> HVLP <input type="checkbox"/> LVLV <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic	15.00 gal/hr	<input checked="" type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
		<input type="checkbox"/> Conventional Air Gun <input type="checkbox"/> Airless <input type="checkbox"/> Electrostatic <input type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> HVLP <input type="checkbox"/> LVLV <input type="checkbox"/> Other	<input type="checkbox"/> Manual <input type="checkbox"/> Automatic		<input type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
		<input type="checkbox"/> Conventional Air Gun <input type="checkbox"/> Airless <input type="checkbox"/> Electrostatic <input type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> HVLP <input type="checkbox"/> LVLV <input type="checkbox"/> Other	<input type="checkbox"/> Manual <input type="checkbox"/> Automatic		<input type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation

If spray guns are used simultaneously, describe:

N/A

**K.2B: For Brush Coating**

Describe Function:

N/A

Maximum Coating Application Rate:  
*(gal/hr)*

N/A

**K.2C: For Roller Coating**

Roller Coat ID	Describe Function	Maximum Coating Application Rate <i>(gal/hr)</i>	Describe how maximum rate was determined
N/A	N/A	N/A	<input type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
			<input type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
			<input type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation

**K.2D: For Powder Coating**

<b>Powder Coat ID</b>	<b>Describe Function</b>	<b>Maximum Coating Application Rate</b> <i>(gal/hr or lb/hr)</i>	<b>Describe how maximum rate was determined</b>
N/A	N/A	N/A	<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

**If powder coating material is recycled, describe:**

N/A

**K.2E: For Flow Coating**

<b>Flow Coat ID</b>	<b>Describe Function</b>	<b>Maximum Coating Application Rate</b> <i>(gal/hr or lb/hr)</i>	<b>Describe how maximum rate was determined</b>
N/A	N/A	N/A	<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

**K.2F: For Dip Tank/Electrodeposition Coating**

<b>Tank ID</b>	<b>Describe Function</b>	<b>Maximum Make-up Rate</b> <i>(gal/hr or lb/hr)</i>	<b>Describe how maximum rate was determined</b>
N/A	N/A	N/A	<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

**Section K.3: Other Operations**

**K.3A: For Finishing**

**Describe Finishing Processes:** \_\_\_\_\_  
*Complete Form DEP7007B as applicable* N/A

**K.3B: For Curing/Drying**

Describe Curing/Drying Processes:	Description	Rated Capacity (MMBtu/hr)	Fuel	Control Device/Stack ID
Air Dried	N/A	N/A	N/A	N/A

**K.3C: For Purge**

**Type:** \_\_\_\_\_ N/A  
**Daily Usage:** \_\_\_\_\_ N/A gal/day

**K.3D: For Clean-up**

**Type:**  Manual  Automatic  
**Daily Usage:** \_\_\_\_\_ 9.05E-02 gal/hr \_\_\_\_\_ hrs/day  
**Operating Hours:** \_\_\_\_\_ 8.5 hrs/day \_\_\_\_\_

**K.3E: For Other Equipment**

**Describe Processes:** \_\_\_\_\_ N/A

**Section K.4: Coatings/Printing Materials As Applied**

Include SDS or Technical Sheets for all coating/printing materials used.

<b>Trade Name of Material</b>	<b>Description</b> <i>(Identify as coating, ink, fountain solution, blanket wash, cleaning solvent, thinning solvent, auto wash, manual wash, etc.)</i>	<b>Emission Unit/Coating ID where material is used</b>	<b>SCC Code</b>	<b>SCC Code Units</b>	<b>Density</b> <i>(lb/gal)</i>	<b>Solid Content</b> <i>(lb/gal)</i>	<b>VOC Content</b> <i>(lb/gal)</i>	<b>Emission Factor for PM*</b> <i>(lb/SCC)</i>	<b>Transfer Efficiency</b> <i>(%)</i>	<b>Emission Factor for VOC</b> <i>(lb/SCC)</i>	<b>Capture Efficiency</b> <i>(%)</i>	<b>Control Device/ Stack ID</b>
Universal Shopcoat Primer	Coating	EP01-1	4-02-002-01	Tons Coating Mix Applied	12.51	9.68	2.83	9.68	60%	2.83	96% for PM 0% VOCs/HAPs	Fabric Filter/1 & 2
Xylene	Thinner	EP01-2	4-02-009-24	Tons Solvent Used	7.26	0	7.26	N/A	N/A	7.26	0%	Fabric Filter/1 & 2

\*Emission factor for particulate matter (PM) should not include transfer efficiency.



**Section K.5: Hazardous Air Pollutant-containing Coatings/Printing Materials**

List each individual hazardous air pollutant (HAP) contained in each material.

Trade Name of Material	HAP Name	HAP CAS #	Identify Solid (S) or Volatile (V)	HAP % by weight	HAP Emission Factor (lb/SCC)	Control Device/ Stack ID
Shopcoat Universal Primer	Toluene	108-88-3	V	0.60%	7.51E-02	Fabric Filter/Stack 1 & 2
	Xylene	1330-20-7	V	0.60%	7.51E-02	Fabric Filter/Stack 1 & 2
Xylene	Xylene	1330-20-7	V	100.00%	7.26	Fabric Filter/Stack 1 & 2
	Cumene	98-82-8	V	1.00%	7.26E-02	Fabric Filter/Stack 1 & 2
	Ethylbenzene	100-41-4	V	35.00%	2.54	Fabric Filter/Stack 1 & 2

<b>Section K.6: Notes, Comments, and Explanations</b>

Division for Air Quality

300 Sower Boulevard  
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**DEP7007B**

**Manufacturing or Processing  
Operations**

- Section B.1: Process Information
- Section B.2: Materials and Fuel Information
- Section B.3: Notes, Comments, and Explanations

**Additional Documentation**

- Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.
- Attach a flow diagram
- Attach SDS

**Source Name:** Sonne Steel, Inc.

**KY EIS (AFS) #:** 21-

**Permit #:** \_\_\_\_\_

**Agency Interest (AI) ID:** 177435

**Date:** 8/25/2023

**Section B.1: Process Information**

Emission Unit #	Emission Unit Name	Describe Emission Unit	Process ID	Process Name	Manufacturer	Model No.	Proposed/Actual Date of Construction Commencement (MM/YYYY)	Is the Process <u>Continuous</u> or <u>Batch</u> ?	Number of Batches per 24 Hours (if applicable)	Hours per Batch (if applicable)
EP02	GMAW - Metal Inert	Welding Wire Consumed	N/A	N/A	Miller	Millermatic 252	Existing	Batch	2.24 lb/hr	1

**Section B.2: Materials and Fuel Information**

*\*Maximum yearly fuel usage rate only applies if applicant request operating restrictions through federally enforceable limitations.*

Emission Unit #	Emission Unit Name	Name of Raw Materials Input	Maximum Quantity of Each Raw Material Input		Total Process Weight Rate for Emission Unit (tons/hr)	Name of Finished Materials	Maximum Quantity of Each Finished Material Output		Fuel Type	Maximum Hourly Fuel Usage Rate		Maximum Yearly Fuel Usage Rate		Sulfur Content (%)	Ash Content (%)
			(Specify Units/hr)				(Specify Units/hr)			(Specify Units)		(Specify Units)			
EP02	GMAW - Metal Inert Gas (MIG)	Welding wire	2.24	lb/hr.	1.12E-03	Consumed Wire	2.24	lb/hr.	N/A	N/A	N/A	N/A	N/A	N/A	N/A

<b>Section B.3: Notes, Comments, and Explanations</b>

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## DEP7007DD

### Insignificant Activities

- \_\_\_ Section DD.1: Table of Insignificant Activities
- \_\_\_ Section DD.2: Signature Block
- \_\_\_ Section DD.3: Notes, Comments, and Explanations

**Source Name:** Sonne Steel, Inc.

**KY EIS (AFS) #:** 21-

**Permit #:** \_\_\_\_\_

**Agency Interest (AI) ID:** 177435

**Date:** 8/25/2023

### Section DD.1: Table of Insignificant Activities

\*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3... etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
IA01	Spray Gun Cleanout	N/A	401 KAR 52:030	VOC = 2.88 Uncontrolled TPY
			401 KAR 63:020	Xylene = 2.88 Uncontrolled TPY Cumene = 2.88E-02 Uncontrolled TPY
				Ethylbenzene = 1.01 Uncontrolled TPY

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
IA02	Python X Robotic Steel Fabrication	N/A	401 KAR 59:010	PM = 2.84E-02 Uncontrolled TPY PM10 = 2.84E-02 Uncontrolled TPY
			401KAR 63:020	Chromium = 5.68E-05 Uncontrolled TPY Manganese = 2.67E-04 Uncontrolled TPY
				Nickel = 2.84E-05 Uncontrolled TPY
IA03	Steel Metalworking Band Saw	N/A	401 KAR 59:010	PM = 2.96E-02 Uncontrolled TPY PM10 = 2.96E-02 Uncontrolled TPY
			401 KAR 63:020	Chromium = 4.73E-05 Uncontrolled TPY Manganese = 2.78E-04 Uncontrolled TPY
				Nickel = 2.96E-05 Uncontrolled TPY
IA04	Steel Metalworking Cold Saw	N/A	401 KAR 59:010	PM = 2.30E-02 Uncontrolled TPY PM10 = 2.30E-02 Uncontrolled TPY
			401 KAR 63:020	Chromium = 3.68E-05 Uncontrolled TPY Manganese = 2.16E-04 Uncontrolled TPY
				Nickel = 2.30E-05 Uncontrolled TPY
IA05	Bend-Tech Dragon A400 Plasma Cutter	N/A	401 KAR 59:010	PM = 2.49E-03 Uncontrolled TPY PM10 = 2.49E-03 Uncontrolled TPY
			401 KAR 63:020	Chromium = 3.99E-06 Uncontrolled TPY Manganese = 2.34E-05 Uncontrolled TPY
				Nickel = 2.49E-06 Uncontrolled TPY


Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
IA06	Lennox Band Ade Metalworking Fluid	N/A	401 KAR 63:020	Toluene = 8.35E-03 Uncontrolled TPY
IA07	Haul Raod (Unpaved)	N/A	401 KAR 59:010	PM = 1.23E-01 Uncontrolled TPY PM10 =4.43E-02 Uncontrolled TPY



Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions

**Section DD.2: Signature Block**

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

By:  8/31/2023

**Authorized Signature** **Date**

Eric Soane President

**Type/Print Name of Signatory** **Title of Signatory**

**Section DD.3: Notes, Comments, and Explanations**


Division for Air Quality

300 Sower Boulevard  
Frankfort, KY 40601  
(502) 564-3999

**DEP7007HH**

Haul Roads

- \_\_\_\_\_ Section HH.1: Haul Roads
- \_\_\_\_\_ Section HH.2: Yard Area
- \_\_\_\_\_ Section HH.3: Notes, Comments, and Explanations

**Additional Documentation**

- \_\_\_ Complete DEP7007AI, DEP7007N and DEP7007V
- \_\_\_ SDS for dust suppressant

Source Name: Sonne Steel, Inc.

KY EIS (AFS) #: 21-

Permit #: \_\_\_\_\_

Agency Interest (AI) ID: 177435

Date: 8/25/2023

**Section HH.1: Haul Roads**

**HH.1A Unpaved Haul Roads:**

Average Number of Days in a Year with 0.01 inches of Precipitation (P): 126 Days

Mean Vehicle Weight (W): 4.25 Tons

Surface Material Silt Content (s): 8.5 %

Haul Road Length: 0.18 Miles

Maximum Vehicle Miles Traveled in a Year: 56.16 Miles

**Describe the dust control method for unpaved haul road(s):**  
(If dust control suppressants will be utilized, attach the approved Safety Data Sheet(s), as applicable.)

None Known

Emission factor: PM = 4.68E-02 lb/ton  
PM10 = 1.68E-02 lb/ton

**HH.1B Paved Haul Roads:**

DEP7007HH

Average Number of Days in a Year with 0.01 inches of Precipitation (P): \_\_\_\_\_ Days

Mean Vehicle Weight (W): \_\_\_\_\_ Tons

Road Surface Silt Loading (sL): \_\_\_\_\_ (G/M<sup>2</sup>)

Haul Road Length: \_\_\_\_\_ Miles

Maximum Vehicle Miles Traveled in a Year: \_\_\_\_\_ Miles

**Describe the dust control method for paved haul road(s):**  
(If dust control suppressants will be utilized, attach the approved Safety Data Sheet(s), as applicable.)

**Section HH.2: Yard Area (Aggregate Handling And Storage Piles):**

Average Number of Days in a Year with 0.01 inches of Precipitation (P): \_\_\_\_\_ 126 \_\_\_\_\_ Days

Mean Wind Speed (U): \_\_\_\_\_ 6.7 \_\_\_\_\_ MPH

Material Moisture Content (M): \_\_\_\_\_ Unknown \_\_\_\_\_ %

**Describe the dust control method for yard area:**  
(If dust control suppressants will be utilized, attach the approved Safety Data Sheet(s), as applicable.)

None Known

<b>Section HH.3: Notes, Comments, and Explanations</b>
Calculation of miles travelled based on 6 trucks a week coming into and leaving the facility.
Truck weight based on 8,500 lbs per truck.

Division for Air Quality  300 Sower Boulevard  Frankfort, KY 40601  (502) 564-3999	<h2 style="margin: 0;">DEP7007GG</h2> <h3 style="margin: 0;">Control Equipment</h3>	<b style="text-align: center;">Additional Documentation</b> ___ Complete Sections GG.1 through GG.12, as applicable ___ Attach manufacturer's specifications for each control device ___ Complete DEP7007AI
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**Source Name:** Sonne Steel, Inc.

**KY EIS (AFS) #:** 21-

**Permit #:** \_\_\_\_\_

**Agency Interest (AI) ID:** 177435

**Date:** 8/22/2023

**Section GG.1: General Information - Control Equipment**

Control Device ID #	Control Device Name	Cost	Manufacturer	Model Name/ Serial #	Date Installed	Inlet Gas Stream Data For <u>All</u> Control Devices					Inlet Gas Stream Data For Condensers, Adsorbers, Afterburners, Incinerators, Oxidizers <u>Only</u>			Equipment Operational Data For <u>All</u> Control Devices		
						Temperature ( <i>°F</i> )	Flowrate ( <i>scfm @ 68 °F</i> )	Average Particle Diameter ( <i>µm</i> )	Particle Density ( <i>lb/ft<sup>3</sup></i> ) or Specific Gravity	Gas Density ( <i>lb/ft<sup>3</sup></i> )	Gas Moisture Content (%)	Gas Composition	Fan Type	Pressure Drop Range ( <i>in. H<sub>2</sub>O</i> )	Pollutants Collected/Controlled	Pollutant Removal (%)
1	Fabric Filter	Unknown	Columbus Industries	Supra II	Unknown	Ambient	40,000 cfm	Unknown	Unknown	N/A	N/A	N/A	N/A	.50 w.g.	PM	96.00%
															PM <sub>10</sub>	96.00%
2	Bldg Enclosure	N/A	N/A	N/A	Unknown	Ambient	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PM	70.00%
															PM <sub>10</sub>	70.00%
															Chromium	70.00%
															Manganese	70.00%
															Nickel	70.00%

Control Device ID #	Control Device Name	Cost	Manufacturer	Model Name/ Serial #	Date Installed	Inlet Gas Stream Data For <u>All</u> Control Devices					Inlet Gas Stream Data For Condensers, Adsorbers, Afterburners, Incinerators, Oxidizers <u>Only</u>			Equipment Operational Data For <u>All</u> Control Devices		
						Temperature ( <i>°F</i> )	Flowrate ( <i>scfm @ 68 °F</i> )	Average Particle Diameter ( <i>µm</i> )	Particle Density ( <i>lb/ft<sup>3</sup></i> ) or Specific Gravity	Gas Density ( <i>lb/ft<sup>3</sup></i> )	Gas Moisture Content (%)	Gas Composition	Fan Type	Pressure Drop Range ( <i>in. H<sub>2</sub>O</i> )	Pollutants Collected/Controlled	Pollutant Removal (%)
3	Dust Collector	Unknown	Lincoln Electric	Prism Compact	Sep-23	Max Temp = 113	Unknown	Unknown	Unknown	Unknown	N/A	N/A	N/A	Unknown	PM	90.00%
															PM <sub>10</sub>	90.00%
															Chromium	90.00%
															Manganese	90.00%
															Nickel	90.00%

Section GG.6: Filter														
Control Device ID #	Identify all Emission Units and Control Devices that Feed to Filter	Identify Type of Filter Unit: Baghouse, Cartridge Collector, or Other (specify)	Identify Type of Filtering Material: Fabric, Paper, Synthetic, or Other (specify)	Total Filter Area (ft <sup>2</sup> )	Effective Air-to-Filter Ratio (acfm/ft <sup>2</sup> )	Continuous Monitoring Instrumentation (e.g. COMS, BLDS, none)	Additional Materials Introduced into the Control System (e.g. lime, carbon)		Identify Cleaning Method: Shaker, Pulse Air, Reverse Air, Pulse Jet, or Other (specify)	Identify Gas Cooling Method: Ductwork, Heat Exchanger, Bleed-in Air, Water Spray, or Other (specify)	For Ductwork:		For Bleed-in Air:	For Water Spray:
							Material	Injection Rate (lb/hr)			Length (ft)	Diameter (ft)	Flowrate (scfm @ 68°F)	Flowrate (gal/min)
1	EP01-1 Spray Booth - Primer & EP01-2 Spray Booth - Thinner	Paint Collector - Poly Paper Sewn	Fabric Filter High Capacity Mini Mesh	311	128.62	Unknown	N/A	N/A	Replace	N/A	N/A	N/A	N/A	N/A
3	IA02 Python X Robotic Steel Fabrication System	Collector	Fabric Filter Merv 16 PTFE	323	Unknown	Electronic monitors - CFM setting / Duct Pressure	N/A	N/A	Pulse Jet	N/A	10	1.17	N/A	N/A



<b>Section GG.11: Other Control Equipment</b>		
<b>Control Device ID #</b>	<b>Identify all Emission Units and Control Devices that Feed to Control Equipment</b>	<b>Type of Control Equipment (provide description and a diagram with dimensions)</b>
2	EP02 - GMAW Metal Inert Gas (MIG) IA02 - Python X Robotic Fab System IA03 - Steel Metalworking (Band Saw) IA04 - Steel Metalworking (Cold Saw)	Building Enclosure - detailed building layout provided as part of application package.
	IA05 Bend-Tech Dragon A400 Plasma Cutter	

<b>Section GG.12: Notes, Comments, and Explanations</b>
Manufacture spec sheets provided for all equipment, including dust collection system, paint booth and associated filters.

Division for Air Quality  300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	<b>DEP7007V</b> <b>Applicable Requirements and Compliance Activities</b> ___ Section V.1: Emission and Operati ___ Section V.2: Monitoring Requirem ___ Section V.3: Recordkeeping Requi ___ Section V.4: Reporting Requireme ___ Section V.5: Testing Requirements ___ Section V.6: Notes, Comments, and	<b>Additional Documentation</b>  ___ Complete DEP7007AI
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**Source Name:** Sonne Steel, Inc.

**KY EIS (AFS) #:** \_\_\_\_\_

**Permit #:** \_\_\_\_\_

**Agency Interest (AI) ID:** 177435

**Date:** 8/25/2023

**Section V.1: Emission and Operating Limitation(s)**

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
EP01-1	Spray Coating Booth - Shop Coat Primer	401 KAR 59:010	PM PM10	100 TPY	90 TPY	No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity	Visual determinations of fugitive emissions and opacity
		401 KAR 52:030	VOC	100 TPY	90 TPY	Operate in compliance with permit issued under this administrative regulation.	Demonstrate compliance with applicable requirement if requested by the cabinet.

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
		401 KAR 63:020	Toluene Xylene	Xylene = 10 TPY	Xylene = 9 TPY	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
EP01-2	Spray Coating Booth - Thinner	401 KAR 63:020	Xylene Cumene Ethylbenzene	Xylene = 10 TPY	Xylene = 9 TPY	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
		401 KAR 52:030	VOC	100 TPY	90 TPY	Operate in compliance with permit issued under this administrative regulation.	Demonstrate compliance with applicable requirement if requested by the cabinet.
EP02	GMAW - Metal Inert Gas (MIG)	401 KAR 59:010	PM PM <sub>10</sub>	100 TPY	90 TPY	No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity	Visual determinations of fugitive emissions and opacity

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
		401 KAR 63:020	Chromium Manganese	N/A	N/A	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
		40 CFR 63 Subpart 6X	Chromium Manganese	N/A	N/A	Facility must operate all equipment associated with welding operations according to manufacturer's instructions.  Facility must implement one or more management practices listed in § 63.11516 to minimize emissions of MFHAP as practicable.	Facility must demonstrate compliance by maintaining a record of the manufacturer's specifications for welding operations.  Facility must maintain required welding quality through the application of sound engineering
IA01	Spray Gun Cleanout	401 KAR 63:020	Xylene Cumene Ethylbenzene	Xylene = 10 TPY	Xylene = 9 TPY	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
		401 KAR 52:030	VOC	100 TPY	90 TPY	Operate in compliance with permit issued under this administrative regulation.	Demonstrate compliance with applicable requirement if requested by the cabinet.

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
IA02	Phython X Robotic Steel Fabrication System	401 KAR 59:010	PM PM10	100 TPY	90 TPY	No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity	Visual determinations of fugitive emissions and opacity
			Chromium Manganese Nickel	N/A	N/A	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
IA03	Steel Metalworking (Hyd Saw)	401 KAR 59:010	PM PM <sub>10</sub>	100 TPY	90 TPY	No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity	Visual determinations of fugitive emissions and opacity
		401 KAR 63:020	Chromium Manganese Nickel	N/A	N/A	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
IA04	Steel Metalworking (Cold Saw)	401 KAR 59:010	PM PM <sub>10</sub>	100 TPY	90 TPY	No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity	Visual determinations of fugitive emissions and opacity
		401 KAR 63:020	Chromium Manganese Nickel	N/A	N/A	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
IA05	Bend-Tech Dragon A400 Plasma Cutter	401 KAR 58:010	PM PM <sub>10</sub>	100 TPY	90 TPY	No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity	Visual determinations of fugitive emissions and opacity
		401 KAR 63:020	Chromium Manganese Nickel	N/A	N/A	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow an affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants.	Monthly record or rolling total of materials used

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
IA06	Metalworking Fluid	401 KAR 63:020	Toluene	N/A	N/A	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants	Monthly record or rolling total of materials used
IA07	Haul Road (Unpaved)	401 KAR 63:010	PM PM <sub>10</sub>	100 TPY	90 TPY	No person shall cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne.	Visual determinations of fugitive emissions and opacity



<b>Section V.2: Monitoring Requirements</b>					
<b>Emission Unit #</b>	<b>Emission Unit Description</b>	<b>Pollutant</b>	<b>Applicable Regulation or Requirement</b>	<b>Parameter Monitored</b>	<b>Description of Monitoring</b>
EP01-1	Spray Coating Booth - Stop Coat Primer	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
		Toluene Xylene	401 KAR 63:020	Toluene Xylene	Monthly record or rolling total of materials used
EP01-2	Spray Coating Booth - Thinner	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	Monthly record or rolling total of materials used
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
EP02	GMAW Metal Inert Gas (MIG)	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese	401 KAR 63:020	Chromium Manganese	Monthly record or rolling total of materials used
		Chromium Manganese	40 CFR 63 Subpart 6X	Chromium Manganese	Visual determination of fugitive emissions and opacity using methods specified in § 63.11519
IA01	Insignificant Activity - Spray Gun Cleanout	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	Monthly record or rolling total of materials used
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
IA02	Insignificant Activity - Python X Robotic Steel Fabrication System	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA03	Insignificant Activity - Steel Metalworking (Hyd Saw)	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA04	Insignificant Activity - Steel Metalworking (Cold Saw)	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA05	Insignificant Activity - Bend-Tech Dragon A400 Plasma Cutter	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA06	Insignificant Activity - Metalworking Fluid	Toluene	401 KAR 63:020	Toluene	Monthly record or rolling total of materials used
IA07	Insignificant Activity - Haul Road (Unpaved)	PM PM10	401 KAR 63:010	PM PM10	Visual determination of fugitive emissions and opacity

<b>Section V.3: Recordkeeping Requirements</b>					
<b>Emission Unit #</b>	<b>Emission Unit Description</b>	<b>Pollutant</b>	<b>Applicable Regulation or Requirement</b>	<b>Parameter Recorded</b>	<b>Description of Recordkeeping</b>
EP01-1	Spray Coating Booth - Shop Coat Primer	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
		Toluene Xylene	401 KAR 63:020	Toluene Xylene	Monthly record or rolling total of materials used
EP01-2	Spray Coating Booth - Thinner	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	Monthly record or rolling total of materials used
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
EP02	GMAW Metal Inert Gas Welding	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese	401 KAR 63:020	Chromium Manganese	Monthly record or rolling total of materials used
		Chromium Manganese	40 CFR 63 Subpart 6X	Chromium Manganese	Facility shall submit an Initial Notification required by 40 CFR 63.9 (b).  Record of visual determinations for fugitive emissions to include date and results, description of any corrective action taken, date and results of any follow up determination of fugitive emissions performed after corrective actions.  Record of opacity determinations to include date of determination, the average of six-minute opacities measure by the test and description of any corrective actions taken.
IA01	Insignificant Activity - Spray Gun Cleanout	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	Monthly record or rolling total of materials used
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
IA02	Insignificant Activity - Python X Robotic Steel Fabrication System	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA03	Insignificant Activity - Steel Metalworking (Hyd Saw)	PM PM10	401 KAR 59:010	PM	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA04	Insignificant Activity - Steel Metalworking (Cold Saw)	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA05	Insignificant Activity - Bend-Tech Dragon A400 Plasma Cutter	PM PM10	401 KAR 59:010	PM PM10	Visual determination of fugitive emissions and opacity
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Monthly record or rolling total of materials used
IA06	Insignificant Activity - Metalworking Fluid	Toluene	401 KAR 63:020	Toluene	Monthly record or rolling total of materials used
IA07	Insignificant Activity - Haul Road (Unpaved)	PM PM10	401 KAR 63:010	PM PM10	Visual determination of fugitive emissions and opacity

<b>Section V.4: Reporting Requirements</b>					
<b>Emission Unit #</b>	<b>Emission Unit Description</b>	<b>Pollutant</b>	<b>Applicable Regulation or Requirement</b>	<b>Parameter Reported</b>	<b>Description of Reporting</b>
EP01-1	Spray Coating Booth - Stop Coat Primer	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
		Toluene Xylene	401 KAR 63:020	Toluene Xylene	Annual Compliance Certifications & Semi-Annual Monitoring Reports
EP01-2	Spray Coating Booth - Thinner	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
EP02	GMAW Metal Inert Gas Welding	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese	401 KAR 63:020	Chromium Manganese	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese	40 CFR 63 Subpart 6X	Chromium Manganese	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA01	Insignificant Activity - Spray Gun Cleanout	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		VOC	401 KAR 52:030	VOC	As Required by the Cabinet
IA02	Insignificant Activity - Python X Robotic Steel Fabrication System	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA03	Insignificant Activity - Steel Metalworking (Hyd Saw)	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA04	Insignificant Activity - Steel Metalworking (Cold Saw)	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA05	Insignificant Activity - Bend Tech Dragon A400 Plasma Cutter	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA06	Insignificant Activity - Metalworking Fluid	Toluene	401 KAR 63:020	Toluene	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA07	Insignificant Activity - Haul Road (Unpaved)	PM PM10	401 KAR 63:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports

<b>Section V.5: Testing Requirements</b>					
<b>Emission Unit #</b>	<b>Emission Unit Description</b>	<b>Pollutant</b>	<b>Applicable Regulation or Requirement</b>	<b>Parameter Tested</b>	<b>Description of Testing</b>
EP01-1	Spray Coating	PM PM10	401 KAR 59:010	PM PM10	As Required by Cabinet
		VOC	401 KAR 52:030	VOC	As Required by Cabinet
		Toluene Xylene	401 KAR 63:020	Toluene Xylene	As Required by Cabinet
EP01-2	Spray Coating Booth - Thinner	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	As Required by Cabinet
		VOC	401 KAR 52:030	VOC	As Required by Cabinet
EP02	GMAW Metal Inert Gas Welding	PM PM10	401 KAR 59:010	PM PM10	As Required by Cabinet
		Chromium Manganese	401 KAR 63:020	Chromium Manganese	As Required by Cabinet
		Chromium Manganese	40 CFR 63 Subpart 6X	Chromium Manganese	As Required by Cabinet
IA01	Insignificant Activity - Spray Gun Cleanout	Xylene Cumene Ethylbenzene	401 KAR 63:020	Xylene Cumene Ethylbenzene	As Required by Cabinet
		VOC	401 KAR 52:030	VOC	As Required by Cabinet
IA02	Insignificant Activity - Python X Robotic Steel Fabrication System	PM PM10	401 KAR 59:010	PM PM10	As Required by Cabinet
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	As Required by Cabinet
IA03	Insignificant Activity - Steel Metalworking (Hyd Saw)	PM PM10	401 KAR 59:010	PM PM10	As Required by Cabinet
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	As Required by Cabinet
IA04	Insignificant Activity - Steel Metalworking (Cold Saw)	PM PM10	401 KAR 59:010	PM PM10	As Required by Cabinet
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	As Required by Cabinet
	Insignificant Activity - Bend Tech Dragon A400 Plasma Cutter	PM PM10	401 KAR 59:010	PM PM10	Annual Compliance Certifications & Semi-Annual Monitoring Reports
		Chromium Manganese Nickel	401 KAR 63:020	Chromium Manganese Nickel	Annual Compliance Certifications & Semi-Annual Monitoring Reports
IA06	Insignificant Activity - Metalworking Fluid	Toluene	401 KAR 63:020	Toluene	As Required by Cabinet
IA07	Insignificant Activity - Haul Road (Unpaved)	PM PM10	401 KAR 63:010	PM PM10	As Required by Cabinet

<b>Section V.6: Notes, Comments, and Explanations</b>

Name: Sonne Steel, Inc. AI # 177435													
Identification	Description	Material	Throughput	Units	Hours	Pollutant	Emission Factors EF	Units	Control	Uncontrolled lb/hr	Controlled TPY	Uncontrolled TPY	Controlled TPY
<b>Name: Spray Coating Booth - Shopcoat Primer</b>													
EIS Point	EP01-1	Steel Spec Waterbased Shop coat Primer	14.25	gal/hr	8760	PM <sub>10</sub>	3.87	lb/gal	96.00%	55.18	241.67	2.21	9.67
SCC	4-02-002-01					PM <sub>2.5</sub>	3.87	lb/gal	96.00%	55.18	241.67	2.21	9.67
Reg	401 KAR 59.010: 401 KAR 63.020	Spray Test	32.00	ounces/min		VOC	2.83	lb/gal	0.00%	40.33	176.63	40.33	176.63
Stack #	1 & 2		2,50E-01	gal/min		Toluene	7.51E-02	lb/gal	0.00%	1.07	4.68	1.07	4.68
Height	25.6 ft		15.00	gal/hr		Xylene	7.51E-02	lb/gal	0.00%	1.07	4.68	1.07	4.68
Diameter	3.50 ft	Graco 695 Airless Spray Gun	1	gun									
Flowrate	40,000 cfm												
Temp	Ambient												
Date	3/1/2021												
Control	Fabric Filter 96% - 60% TE (PM)												
EF Reference	SDS	Mixing Ratio	95.00%										
Notes:	Throughput identified through spray test conducted by facility												
<b>Name: Spray Coating Booth - Thinner</b>													
EIS Point	EP01-2	Thinner (Xylene)	7.50E-01	gal/hr	8760	VOC	7.26	lb/gal	0.00%	5.45	23.85	5.45	23.85
SCC	4-02-009-24					Xylene	7.26	lb/gal	0.00%	5.45	23.85	5.45	23.85
Reg	401 KAR 52.030: 401 KAR 63.020	Spray Test	32.00	ounces/min		Cumene	7.26E-02	lb/gal	0.00%	5.45E-02	2.38E-01	5.45E-02	2.38E-01
Stack #	1 & 2	Max. Throughput:	2,50E-01	gal/min		Ethylbenzene	2.54	lb/gal	0.00%	1.91	8.35	1.91	8.35
Height	25.6 ft		15.00	gal/hr									
Diameter	3.50 ft	Graco 695 Airless Spray Gun	1	gun									
Flowrate	40,000 cfm												
Temp	Ambient												
Date	3/1/2021												
Control	Fabric Filter 96% - 60% TE (PM)												
EF Reference	SDS	Mixing Ratio	5.00%										
Notes:	Throughput identified through spray test conducted by facility												
<b>Name: GMAW - Metal Inert Gas (MIG)</b>													
EIS Point	EP02	Welding Wire	1.12E-03	tons/hr	8760	PM	10.80	lb/ton	70.00%	1.21E-02	5.31E-02	3.64E-03	1.59E-02
SCC	3-09-052-54					PM <sub>2.5</sub>	10.80	lb/ton	70.00%	1.21E-02	5.31E-02	3.64E-03	1.59E-02
Reg	401 KAR 59.010: 401 KAR 63.020: 40 CFR 63 Subpart 6X	Actual Use	4960	lb/year		Chromium	1.08E-01	lb/ton	70.00%	1.21E-04	5.31E-04	3.64E-05	1.59E-04
Stack #	N/A	Actual Hours	2210.00	hrs/year		Manganese	2.16E-01	lb/ton	70.00%	2.42E-04	1.06E-03	7.27E-05	3.18E-04
Height	N/A	Actual Use	2.24	tons/hr									
Diameter	N/A	Actual Use	1.12E-03	tons/hr									
Flowrate	N/A	Actual Use											
Temp	Ambient												
Date	3/1/2021												
Control	Bldg Enclosure - assume 70% CE												
EF Reference	AP-42 Chapter 12 (Table 12.19) E70S for PM / SDS for HAPs												
Notes:	Use 4,960 pounds of year per year over 10 total welding units												
<b>Name: Spray Gun Cleanout - Insignificant Activity</b>													
EIS Point	IA01	Xylene	9.05E-02	gal/hr	8760	VOC	7.26	lb/gal	0.00%	6.57E-01	2.88	6.57E-01	2.88
SCC	4-02-009-24					Xylene	7.26	lb/gal	0.00%	6.57E-01	2.88	6.57E-01	2.88
Reg	401 KAR 52.030: 401 KAR 63.020	Actual Usage	200.00	gal/yr		Cumene	7.26E-02	lb/gal	0.00%	6.57E-03	2.88E-02	6.57E-03	2.88E-02
Stack #	N/A	Actual Hours	2210.00	hrs/yr		Ethylbenzene	2.54	lb/gal	0.00%	2.30E-01	1.01	2.30E-01	1.01
Height	N/A		9.05E-02	gal/hr									
Diameter	N/A												
Flowrate	N/A												
Temp	N/A												
Date	3/1/2021												
Control	None Known												
EF Reference	SDS												
Notes:	Throughput based on annual usage of Xylene as reported by the facility												
<b>Name: Python X Robotic Steel Fabrication System - Insignificant Activity</b>													
EIS Point	IA02	Weight of metal removed	8.05E-02	tons/hr	8760	PM	8.05E-02	lb/ton	97.00%	6.48E-03	2.84E-02	1.94E-04	8.52E-04
SCC	3-09-030-08					PM <sub>10</sub>	8.05E-02	lb/ton	97.00%	6.48E-03	2.84E-02	1.94E-04	8.52E-04
Reg	401 KAR 59.010: 40 KAR 63.020					Chromium	1.61E-04	lb/ton	97.00%	1.30E-05	5.68E-05	3.89E-07	1.70E-06
Stack #	N/A					Manganese	7.57E-04	lb/ton	97.00%	6.09E-05	2.67E-04	1.83E-06	8.01E-06
Height	N/A					Nickel	8.05E-05	lb/ton	97.00%	6.48E-06	2.84E-05	1.94E-07	8.52E-07
Diameter	N/A	Metal Removal Rate	135	in/min									
Flowrate	N/A	Cut Width	1.40E-01	inch									
Temp	N/A	Metal Thickness	0.5	inch									
Date	3/1/2021		9.45	in3/min									
Control	Bldg Enclosure/Dust Collector		2.68	lbs/min									
EF Reference	PM: Assumed 100% of material removed; HAPs SDS% by weight		161.03	lbs/hr									
Notes:	Assume 70% for Enclosure/90% for Dust Collector (Merv 16 PTFE)												
<b>Name: Steel Metalworking (Hyd-Mech Band Saw) - Insignificant Activity</b>													
EIS Point	IA03	Metal Processed	8.22E-02	tons/hr	8760	PM	8.22E-02	lb/ton	70.00%	6.75E-03	2.95E-02	2.03E-03	8.87E-03
SCC	3-09-030-05					PM <sub>10</sub>	8.22E-02	lb/ton	70.00%	6.75E-03	2.95E-02	2.03E-03	8.87E-03
Reg	401 KAR 59.010: 401 KAR 63.020					Chromium	1.31E-04	lb/ton	70.00%	1.08E-05	4.73E-05	3.24E-06	1.42E-05
Stack #	N/A					Manganese	7.73E-04	lb/ton	70.00%	6.35E-05	2.78E-04	1.90E-05	8.34E-05
Height	N/A	Metal Removal Rate	551.18	in/min		Nickel	8.22E-05	lb/ton	70.00%	6.75E-06	2.95E-05	2.03E-06	8.87E-06
Diameter	N/A	Cut Width	3.50E-02	inch									
Flowrate	N/A	Metal Thickness	0.5	inch									
Temp	ambient		9.65	in3/min									
Date	3/1/2021		2.74	lbs/min									
Control	Bldg Enclosure assumes 70% CE		164.36	lbs/hr									
EF Reference	PM: Assumed 100% of material removed; HAPs SDS% by weight												
Notes:	Facility uses 0.5 inch thick mild steel												
<b>Name: Steel Metalworking (Cold Saw) - Insignificant Activity</b>													
EIS Point	IA04	Weight of metal removed	7.25E-02	tons/hr	8760	PM	7.25E-02	lb/ton	70.00%	5.25E-03	2.30E-02	1.58E-03	6.90E-03
SCC	3-09-030-05					PM <sub>10</sub>	7.25E-02	lb/ton	70.00%	5.25E-03	2.30E-02	1.58E-03	6.90E-03
Reg	401 KAR 59.010: 40 KAR 63.020					Chromium	1.16E-04	lb/ton	70.00%	8.40E-06	3.68E-05	2.52E-06	1.10E-05
Stack #	N/A					Manganese	6.81E-04	lb/ton	70.00%	4.94E-05	2.16E-04	1.46E-05	6.49E-05
Height	N/A	Metal Removal Rate	135.00	inches/min		Nickel	7.25E-05	lb/ton	70.00%	5.25E-06	2.30E-05	1.58E-06	6.90E-06
Diameter	N/A	Cut Width	1.26E-01	inch									
Flowrate	N/A	Metal Thickness	0.50	inch									
Temp	N/A		8.51	in3/min									
Date	3/1/2021		2.42	lbs/min									
Control	Bldg Enclosure 70% CE		144.93	lbs/hr									
EF Reference	PM: Assumed 100% of material removed; HAPs SDS% by weight												
Notes:	Facility uses 0.5 inch thick mild steel												
<b>Name: Bend-Tech Dragon A400 Plasma Cutter - Insignificant Activity</b>													
EIS Point	IA05	Weight of metal removed	2.39E-02	tons/hr	8760	PM	2.39E-02	lb/ton	70.00%	5.69E-04	2.49E-03	1.71E-04	7.48E-04
SCC	3-09-030-08					PM <sub>10</sub>	2.39E-02	lb/ton	70.00%	5.69E-04	2.49E-03	1.71E-04	7.48E-04
Reg	401 KAR 59.010: 40 KAR 63.020					Chromium	3.82E-05	lb/ton	70.00%	9.11E-07	3.95E-06	2.73E-07	1.20E-06
Stack #	N/A					Manganese	2.24E-04	lb/ton	70.00%	5.35E-06	2.34E-05	1.60E-06	7.03E-06
Height	N/A	Metal Removal Rate	20	in/min		Nickel	2.39E-05	lb/ton	70.00%	5.69E-07	2.49E-06	1.71E-07	7.48E-07
Diameter	N/A	Cut Width	1.40E-01	inch									
Temp	N/A	Metal Thickness	1	inch									
Date	9/2023		2.80	in3/min									
Control	Bldg Enclosure 70% CE		0.80	lbs/min									
EF Reference	PM: Assumed 100% of material removed; HAPs SDS% by weight		47.71	lbs/hr									
Notes:	Used 1.0 thick inch steel as metal removal rate based on value in specs												
<b>Name: Metalworking Fluid - Insignificant Activity</b>													
EIS Point	IA06	Fluid Used	4.52E-03	gal/hr	8760	Toluene	4.21E-01	lb/gal	0.00%	1.91E-03	8.35E-03	1.91E-03	8.35E-03
SCC	3-09-030-07												
Reg	401 KAR 63.020												
Stack #	N/A		10.00	gal/yr									
Height	N/A		1.92E-01	gal/week									
Diameter	N/A	Actual Usage											
Flowrate	N/A												
Temp	N/A												
Date	3/1/2021												
Control	None Known												
EF Reference	SDS												
Notes:	Usage rate provided by facility												
<b>Name: Haul Road (Unpaved) - Insignificant Activity</b>													
EIS Point	IA07	Fugitive Dust	6.00E-01	tons/hr	8760	PM	4.68E-02	lb/ton	0.00%	2.81E-02	1.23E-01	2.81E-02	1.23E-01
SCC	4-02-888-01					PM <sub>10</sub>							

**Coating Worst Case Pollutants**

Coating Type	Coating Name	Manufacturer	Density (lb/gal)	VOC lb/gal	VOC%	PM%	PM lb/gal	Toluene %	Xylene %	Cumene %	Ethylbenzene %
Primer	Universal Primer	Sherwin-Williams	12.51	2.83	22.62%	77.38%	9.68	0.60%	7.51E-02	0.60%	7.51E-02
Cleaner - Spray gun	Xylene	Univar Solutions	7.26	7.26	100.00%	0.00%	0.00	100.00%	7.26	1.00%	7.26E-02
Metal Working Fluid	Lennox Band Ade	Lennox Tools	8.43	NE	NE			5.00%	4.21E-01		

**Welding Pollutants**

Type of Product	Manufacturer	Product Name	Manganese %	Chromium %
Welding Wire	ESAB Denton	OK AristoRod 12.50	2.00%	1.00%



**PLASMA ARC CUTTING TABLE EMISSION CALCULATIONS**

*Equipment Specifications*

Type of Metal Cut: **Steel**  
 Manufacturer/Model: Python X / Fineline 300 High Definition  
 Plasma Gas: Air/O2  
 Shielding Gas: Air  
 Cutting Type: Dry  
 Number of Cutters per Station: 1

Sheet Steel

Steel Sheet Density (lbs/in<sup>3</sup>): 0.284  
 Control Efficiency: 97%  
 Controlled Pollutants: PM and PM10 and Heavy Metals  
 Fume Generation Emission Factor <sup>(1)</sup>: 7%  
 Usage Factor <sup>(2)</sup>: 100%

**Maximum Potential Fume Generation** <sup>(3)</sup>

Maximum Metal Cut Speed (in/min): 135  
 Metal Thickness (in): 0.5  
 Maximum Cut Width (in): 0.14  
 Volume of metal removed (in<sup>3</sup>/hr) <sup>(5)</sup>: 567.00  
 Weight of metal removed (lbs/hr) <sup>(6)</sup>: 161.03

*Uncontrolled*

Fume Generation (lbs/hr) <sup>(7)</sup>: 11.272  
**Fume Generation (tons/yr): 49.37 Worst Case\***

*Controlled*

Fume Generation (lbs/hr) <sup>(8)</sup>: 0.338  
**Fume Generation (tons/yr): 1.481 Worst Case\***

Sheet Steel Chemical Composition <sup>(9)</sup>	Weight %	Speciated Potential Emissions			
		Uncontrolled		Controlled	
		(lbs/hr) <sup>(10)</sup>	(tons/yr) <sup>(11)</sup>	(lbs/hr)	(tons/yr)
<b>Chromium, Cr</b>	0.16%	0.0180	0.0790	0.0005	0.0024
<b>Manganese, Mn</b>	0.94%	0.1060	0.4641	0.0032	0.0139
<b>Nickel, Ni</b>	0.10%	0.0113	0.0494	0.0003	0.0015
<b>Totals:</b>	1.20%	0.1353	0.5925	0.0041	0.0178

**Notes:**

- <sup>(1)</sup> The emission factors used are based on plasma cutting fume production testing results provided by the Swedish Institute of Production Engineering Research. The fume generation factor is based on dry plasma cutting.
- <sup>(2)</sup> The usage factor represents the percentage of time the unit is in operation; therefore downtime is counted for in the calculations
- <sup>(3)</sup> The maximum potential fume generation is based on operation 24 hrs/day 365 days/yr
- <sup>(5)</sup> Volume of Material Removed (in<sup>3</sup>/hr) = Maximum Metal Cut Speed (in/min) x Metal Thickness (in) x Maximum Cut Width (in) x 60 min/hr
- <sup>(6)</sup> Weight of Material Removed (lbs/hr) = Volume of Material Removed (in<sup>3</sup>/hr) x Density of the Metal (lbs/in<sup>3</sup>)
- <sup>(7)</sup> Uncontrolled Fume Generation (lbs/hr) = Weight of Material Removed (lbs/hr) x Fume Generation Factor (%)
- <sup>(8)</sup> Controlled Fume Generation (lbs/hr) = Weight of Material Removed (lbs/hr) x Fume Generation Factor (%) x (1 - Control Efficiency/100)
- <sup>(9)</sup> The elemental chemistry for the metal was obtained from a heat analysis for a shipment received by Modern Welding of Kentucky
- <sup>(10)</sup> Speciated Emission Rate (lbs/hr) = Individual Metal Component Weight Percent (%) x Fume Generation (lbs/hr)
- <sup>(11)</sup> Speciated Emission Rate (tons/yr) = Individual Metal Component Weight Percent (%) x Fume Generation (tons/yr)

lbs = pounds  
 lbs/hr = pounds per hour  
 tons/yr = tons/yr  
 in = inches

**PLASMA ARC CUTTING TABLE EMISSION CALCULATIONS**

*Equipment Specifications*

Type of Metal Cut: **Steel**  
 Manufacturer/Model: Bend-Tech Dragon A400 Powermax 85  
 Plasma Gas: Air/O2  
 Shielding Gas: Air  
 Cutting Type: Dry  
 Number of Cutters per Station: 1

Sheet Steel

Steel Sheet Density (lbs/in<sup>3</sup>): 0.284  
 Control Efficiency: 70%  
 Controlled Pollutants: PM and PM10 and Heavy Metals  
 Fume Generation Emission Factor <sup>(1)</sup>: 7%  
 Usage Factor <sup>(2)</sup>: 100%

**Maximum Potential Fume Generation** <sup>(3)</sup>

Maximum Metal Cut Speed (in/min): 20  
 Metal Thickness (in): 1  
 Maximum Cut Width (in): 0.14  
 Volume of metal removed (in<sup>3</sup>/hr) <sup>(5)</sup>: 168.00  
 Weight of metal removed (lbs/hr) <sup>(6)</sup>: 47.71

*Uncontrolled*

Fume Generation (lbs/hr) <sup>(7)</sup>: 3.340  
**Fume Generation (tons/yr): 14.63 Worst Case\***

*Controlled*

Fume Generation (lbs/hr) <sup>(8)</sup>: 1.002  
**Fume Generation (tons/yr): 4.389 Worst Case\***

Sheet Steel Chemical Composition <sup>(9)</sup>	Weight %	Speciated Potential Emissions			
		Uncontrolled		Controlled	
		(lbs/hr) <sup>(10)</sup>	(tons/yr) <sup>(11)</sup>	(lbs/hr)	(tons/yr)
<b>Chromium, Cr</b>	0.16%	0.0053	0.0234	0.0016	0.0070
<b>Manganese, Mn</b>	0.94%	0.0314	0.1375	0.0094	0.0413
<b>Nickel, Ni</b>	0.10%	0.0033	0.0146	0.0010	0.0044
<b>Totals:</b>	1.20%	0.0401	0.1755	0.0120	0.0527

**Notes:**

- <sup>(1)</sup> The emission factors used are based on plasma cutting fume production testing results provided by the Swedish Institute of Production Engineering Research. The fume generation factor is based on dry plasma cutting.
- <sup>(2)</sup> The usage factor represents the percentage of time the unit is in operation; therefore downtime is counted for in the calculations
- <sup>(3)</sup> The maximum potential fume generation is based on operation 24 hrs/day 365 days/yr
- <sup>(5)</sup> Volume of Material Removed (in<sup>3</sup>/hr) = Maximum Metal Cut Speed (in/min) x Metal Thickness (in) x Maximum Cut Width (in) x 60 min/hr
- <sup>(6)</sup> Weight of Material Removed (lbs/hr) = Volume of Material Removed (in<sup>3</sup>/hr) x Density of the Metal (lbs/in<sup>3</sup>)
- <sup>(7)</sup> Uncontrolled Fume Generation (lbs/hr) = Weight of Material Removed (lbs/hr) x Fume Generation Factor (%)
- <sup>(8)</sup> Controlled Fume Generation (lbs/hr) = Weight of Material Removed (lbs/hr) x Fume Generation Factor (%) x (1 - Control Efficiency/100)
- <sup>(9)</sup> The elemental chemistry for the metal was obtained from a heat analysis for a shipment received by Modern Welding of Kentucky
- <sup>(10)</sup> Speciated Emission Rate (lbs/hr) = Individual Metal Component Weight Percent (%) x Fume Generation (lbs/hr)
- <sup>(11)</sup> Speciated Emission Rate (tons/yr) = Individual Metal Component Weight Percent (%) x Fume Generation (tons/yr)

lbs = pounds  
 lbs/hr = pounds per hour  
 tons/yr = tons/yr  
 in = inches

**Haul Road Emission Factors**

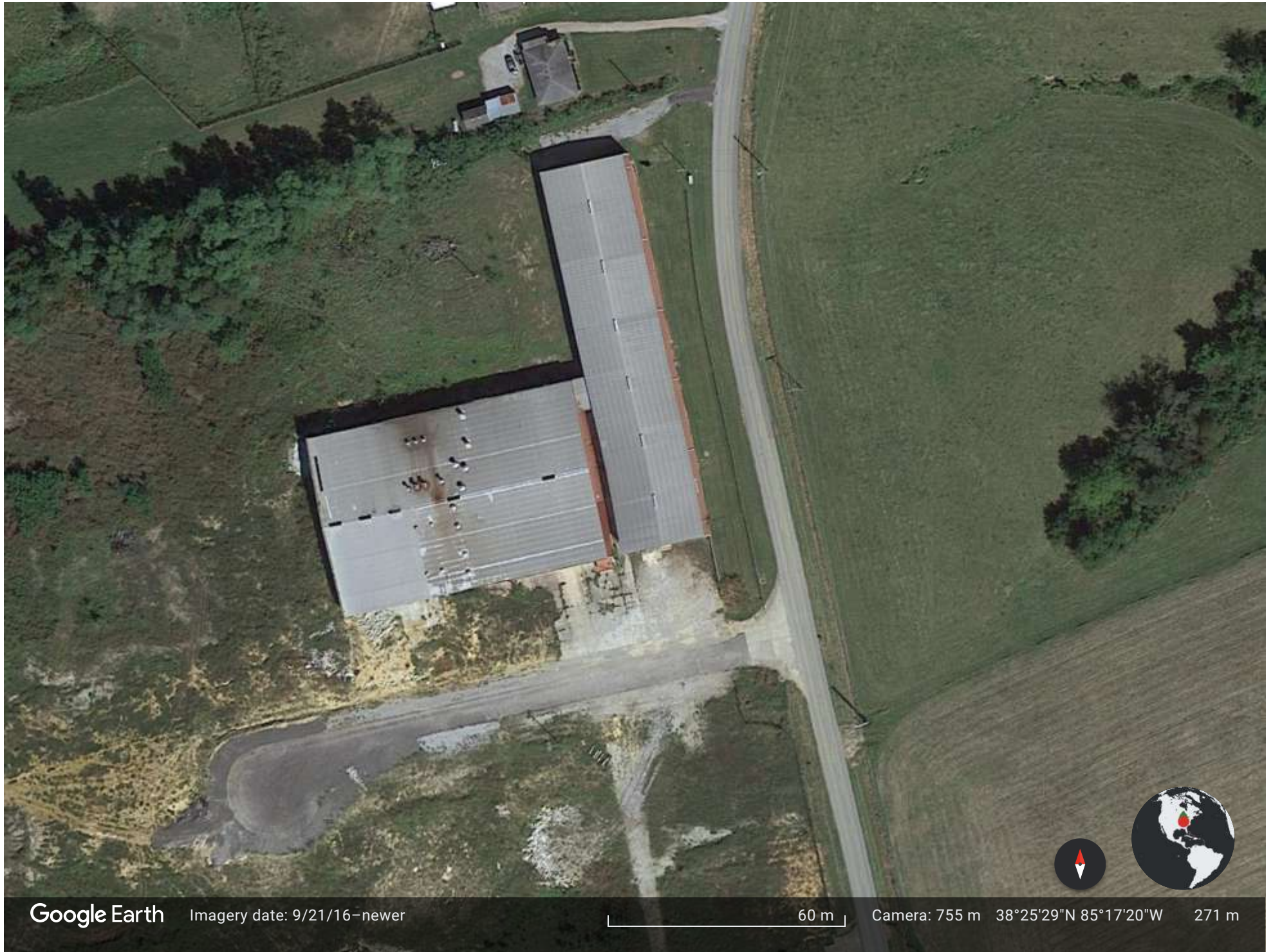
Emission Factor (lb/ton) = (2 x D x EF)/30

Surface	D Distance (miles)	EF Particulates		EF PM <sub>10</sub>	
		Emission Factor (lb/VMT)	Emission Factor (lb/ton)	Emission Factor (lb/VMT)	Emission Factor (lb/ton)
unpaved < 0.25 miles	0.18	3.90	0.04680	1.404	0.01685
unpaved > 0.25 miles		7.80	0.00000	2.808	0.00000
paved		0.78	0.00000	0.453	0.00000

VMT = Vehicle Miles Traveled

Facility-wide Emissions

<b>Pollutant</b>	<b>Uncontrolled TPY</b>	<b>Controlled TPY</b>	<b>Requested Limit</b>
PM	241.93	9.82	90.00
PM <sub>10</sub>	241.85	9.74	90.00
VOC	203.36	203.36	90.00
Toluene	4.69	4.69	9.00
Xylene	31.41	31.41	
Cumene	2.67E-01	2.67E-01	
Ethylbenzene	9.35	9.35	
Chromium	6.76E-04	1.87E-04	
Manganese	1.85E-03	4.82E-04	
Nickel	8.35E-05	1.74E-05	
Total HAPs	45.73	45.73	

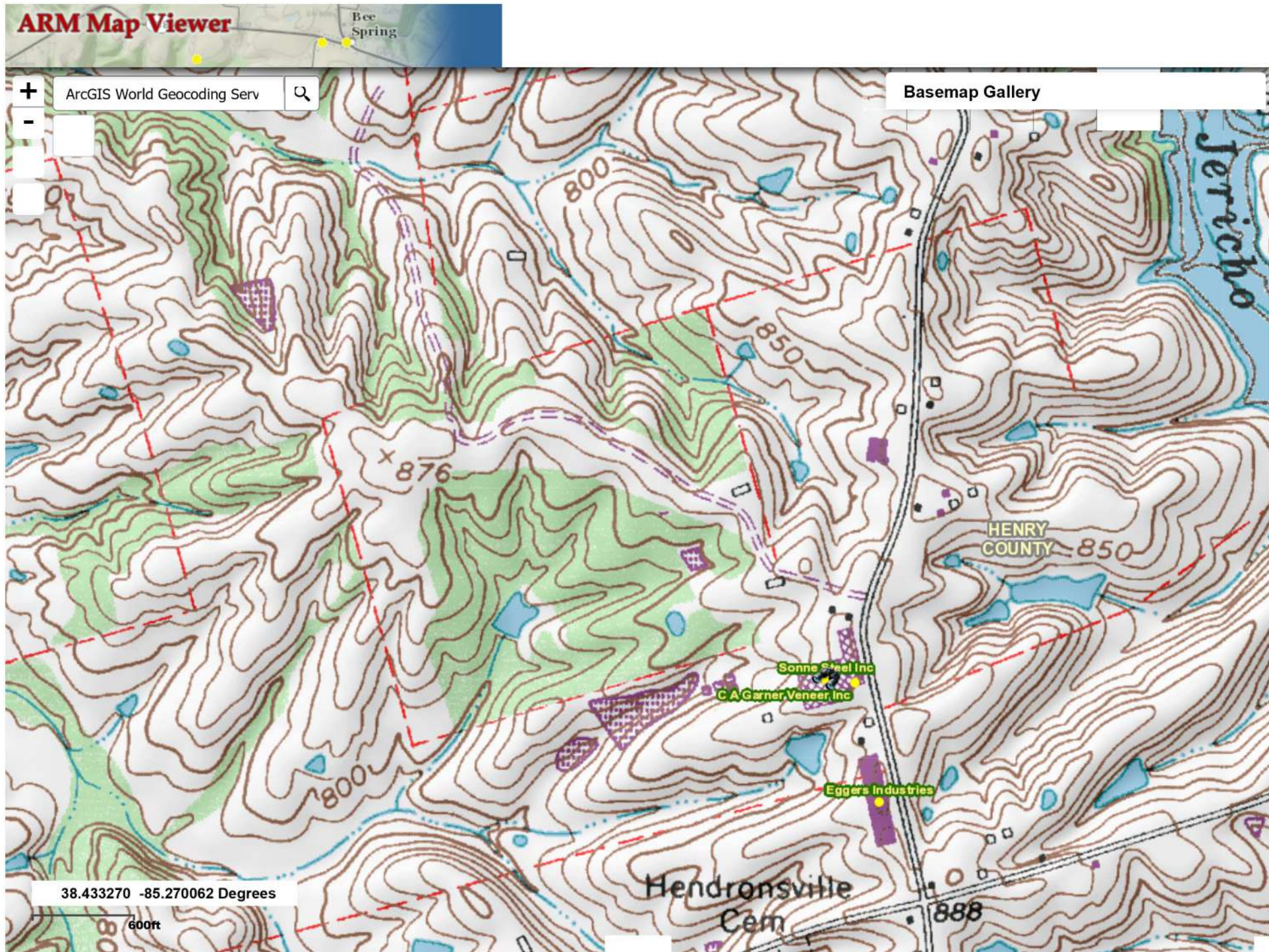


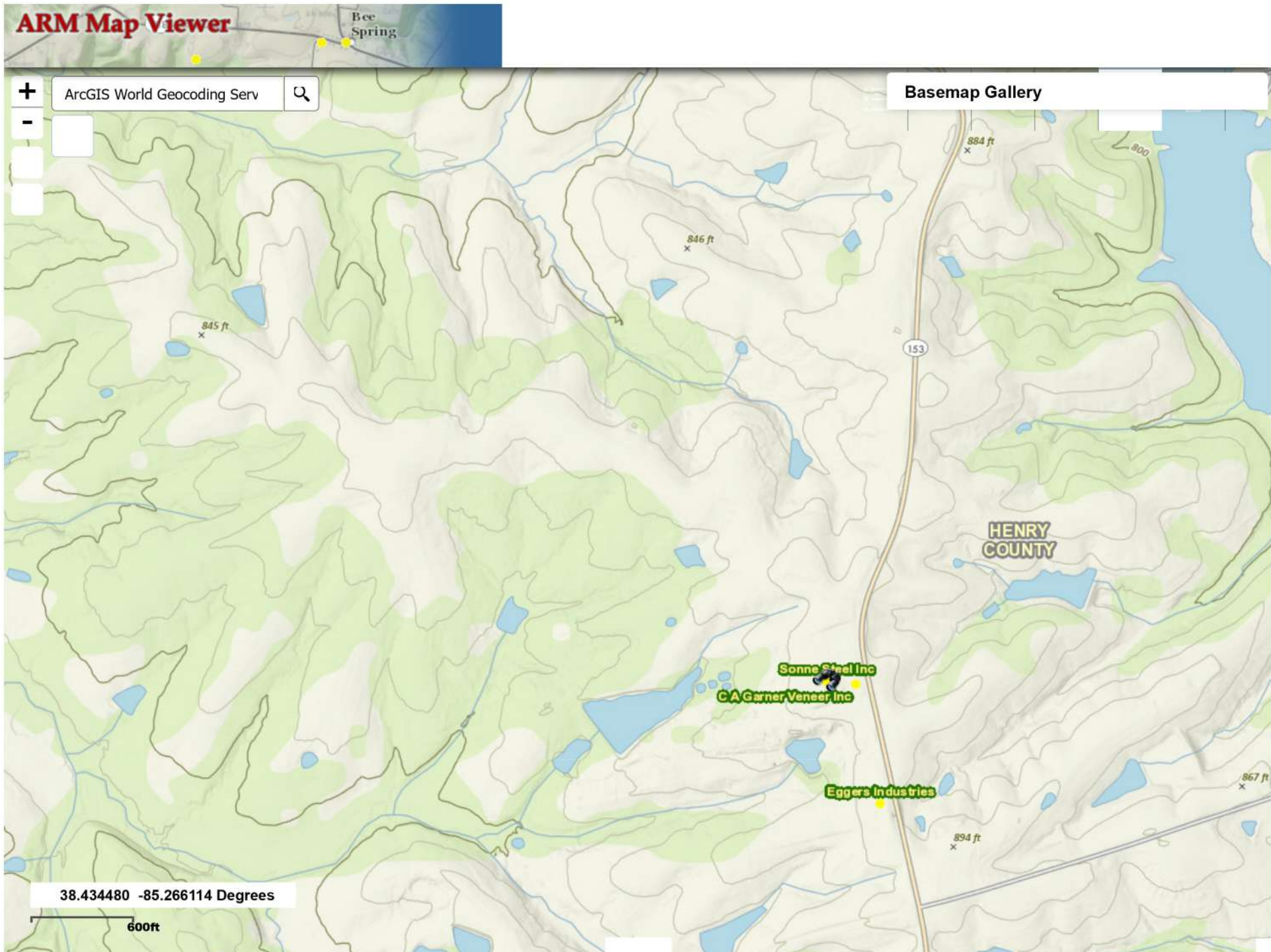
Google Earth

Imagery date: 9/21/16–newer

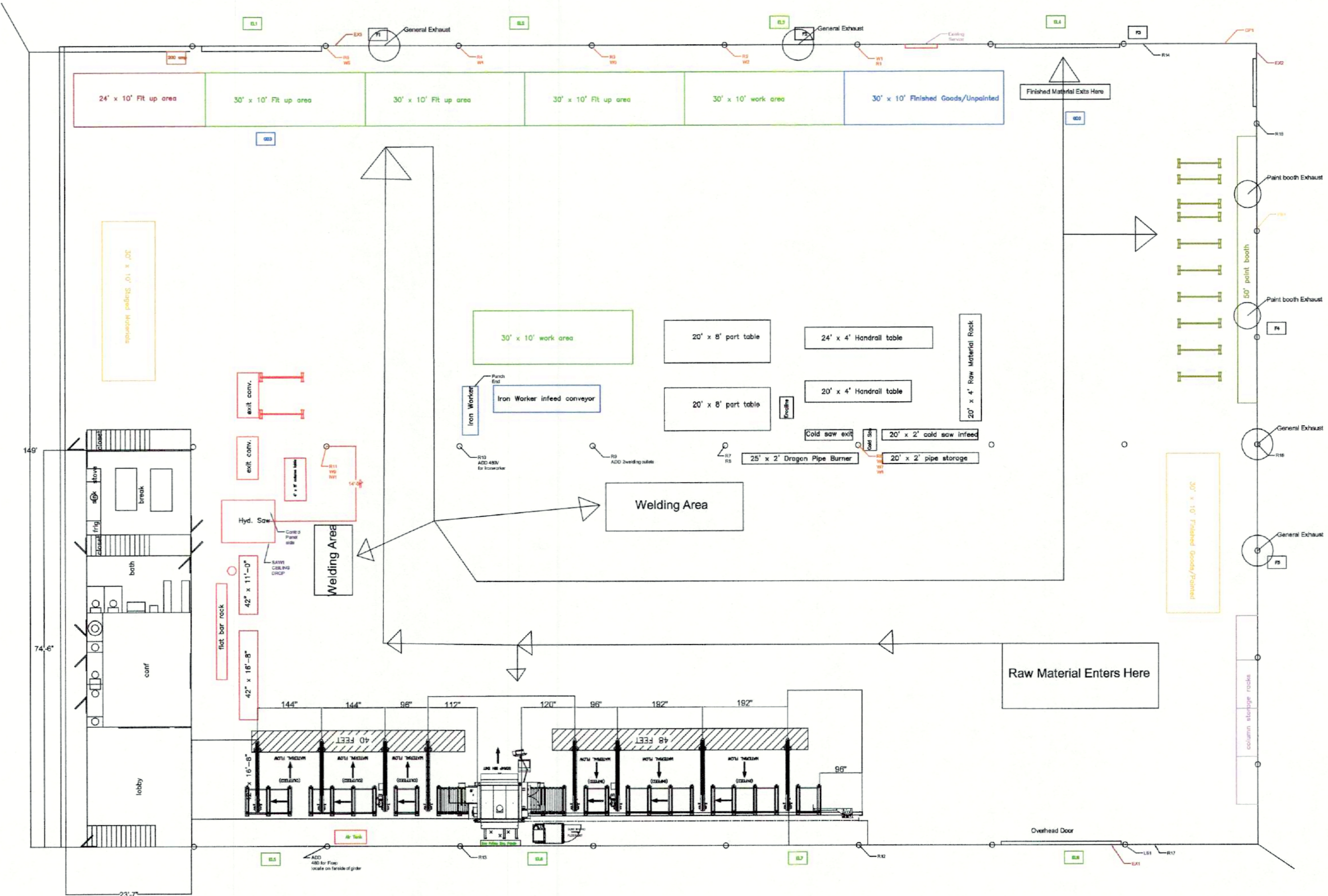
60 m

Camera: 755 m 38°25'29"N 85°17'20"W 271 m





Outside Laydown Area/Truck Loading





## SPRAY BOOTH INFORMATION FORM

**GENERAL INSTRUCTIONS:** The following information is required to estimate emissions from your facility. Please fill out all requirements for each spray booth at your facility and indicate "NA" for those that are not applicable and "UN" for those that are unknown at this time. Emission estimates and permit applications will only be as accurate as the information provided on the questionnaire. If additional assistance is needed, please contact KY Division of Compliance Assistance at (800) 926-8111.

### SPRAY PAINTING

1. What type of product is being coated? Structural Steel
2. Is your coating process **Continuous** or **Batch**? Batch
3. How many spray booths do you have at this facility? 1
4. For each spray booth at your facility, fill out the **Spray Booth Information Form**

#### A. Spray Booth

1. This sheet corresponds to spray booth number 1
2. Booth Description: Manufacturer Col-Met Model IBC-50-08-00-20
3. Pending Installation Date: NA Month NA Day NA Year

#### B. Schedule

1. Minutes of spraying done per hour of paint booth operation? 15
2. Hours per day the spray booth is in operation? 4
3. Days per week the paint booth is in operation? 5
4. Weeks per year the paint booth is in operation? 52

#### C. Spray Gun(s)

1. What is the **maximum** number of spray guns that can be used **at the same time** in this spray booth? 1
2. What is the **actual** number of spray guns used in this spray booth **at the same time**? 1

3. Please include manufacturer's specification sheets for each gun used in this spray booth.

	Spray Gun 1	Spray Gun 2	Spray Gun 3	Spray Gun 4
<b>Manufacturer of gun</b>	Graco			
<b>Model of gun</b>	695			
<b>Rated Capacity*</b>	0.95 gal./min			
<b>Type of Gun**</b>	airless			

\*Manufacturer rated capacity (e.g., gallons/hr or ounces/min) - please specify units

\*\* Type of gun used (e.g., HVLP, conventional, airless, electrostatic, etc.)

#### D. Coating/Paint Material

1. Complete the appropriate table for your facility and include a current **MSDS** for each product listed below as well as **annual usage rates** for each product listed below.

##### Unmixed Table

Coating Name (e.g., top, base, primer, clear, thinner, hardener, reducer, etc.)	Manufacturer	Manufacturer's Product Name	Annual Usage Rate (gallons)
Universal Primer	Lanning Chemical Co	Universal Primer	1,970
Xylene	Univar Solutions	Xylene	100

**Mixed Paint Table**

Mixture's Name	% Paint	% Thinner	% Hardener	% Reducer
shop primer	95	5	0	0

**E. Cleaning/Solvents**

1. Please describe the cleaning method used for all paint guns

a. How are the paint guns cleaned?

Gun taken apart + all parts placed in xylene overnight

b. Where are the paint guns cleaned?

paint area

c. When are the paint guns cleaned?

daily

i. Frequency per day: 1

2. Chemicals used for cleaning: Complete the following table for your facility and include a current **MSDS** for each product listed below as well as **annual usage rates** for each product listed below

Type of Cleaner (i.e. solvent)	Manufacturer	Manufacturer's Product Name	Annual Usage Rate (gallons)
Xylene	Univar Solutions	Xylene	200

## F. Control Equipment and Exhaust Information

Please fill in **ALL** un-shaded blocks and include manufacturer's data sheets for filter efficiency.

	Make and Model	Efficiency %	Air Flow (CFM)	Stack Height = feet above ground level Building = roof peak	Stack Diameter (inches)	Exhaust Filter Area (ft <sup>2</sup> or in <sup>2</sup> )
Exhaust Fan	Aeravent IM 115		40,000			
Spray Booth	Col-Met IBC 50-09			15'6"	42"	
Exhaust Filters	Columbus Industries Supra II	96-99.7				311 ft <sup>2</sup>
Building				25'6"		

## G. Combustion/Bake Oven Features

- Does this booth have a combustion source for drying, curing, baking, or heating air?

YES or NO

If YES, continue. If NO, you are done and return back to DCA

- Manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_
- Type of fuel used (natural gas, fuel oil, etc.)? \_\_\_\_\_
- Rated capacity of combustion source or oven? \_\_\_\_\_  
(thousand gallons/hour or million BTU/hour, please specify units)
- Is there a separate stack for combustion exhaust? YES or NO  
If YES, continue. If NO, go to question 7.
- Height of combustion stack/flue stack above ground? \_\_\_\_\_  
Combustion stack/flue stack diameter? \_\_\_\_\_  
CFM of the fan for the combustion stack/ flue stack? \_\_\_\_\_

7. Is there any control equipment associated with the combustion unit or oven? YES or NO  
**If YES, continue. If NO, go to next section.**

8. Give the type of control equipment, make and model number, and control efficiencies.  
Please provide manufacturer specifications for the control equipment.

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# SAFETY DATA SHEET

## LB SERIES FAST DRY PRIMERS

### Section 1. Identification

<b>Product name</b>	: UNIVERSAL PRIMER
<b>Product code</b>	:
<b>Other means of identification</b>	LB-87, LB-90, LB-92, LB-99, LB-261, LB-289
<b>Product type</b>	: Not available.
<b><u>Relevant identified uses of the substance or mixture and uses advised against</u></b>	
Not applicable.	: ALKYD PRIMER
<b>Manufacturer</b>	: Lanning Chemical Co. Inc. 3000 Griffiths Ave. Louisville, KY 40212
<b>Emergency telephone number of the company</b>	: (502)776-8330
<b>Regulatory Information Telephone Number</b>	: (502-777-0060)
<b>Transportation Emergency Telephone Number</b>	: (800) 424-9300 CHEMTREC

### Section 2. Hazards identification

<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Classification of the substance or mixture</b>	: FLAMMABLE LIQUIDS - Category 3 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A CARCINOGENICITY - Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 ASPIRATION HAZARD - Category 1 Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 53.8%
<b><u>GHS label elements</u></b>	
<b>Hazard pictograms</b>	: 
<b>Signal word</b>	: Danger
<b>Hazard statements</b>	: Highly flammable liquid and vapor. Causes serious eye irritation. Causes skin irritation. May cause cancer. May be fatal if swallowed and enters airways. May cause damage to organs through prolonged or repeated exposure.
<b><u>Precautionary statements</u></b>	

## Section 2. Hazards identification

- Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Do not breathe vapor. Wash hands thoroughly after handling.
- Response** : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- Storage** : Store locked up. Store in a well-ventilated place. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Supplemental label elements** : Adequate ventilation required when sanding or abrading the dried film. If Adequate ventilation cannot be provided wear an approved particulate respirator (NIOSH approved). Follow respirator manufacturer's directions for respirator use. DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Abrading or sanding of the dry film may release crystalline silica which has been shown to cause lung damage and cancer under long term exposure. DANGER: Rags, steel wool, other waste soaked with this product, and sanding residue may spontaneously catch fire if improperly discarded. Immediately place rags, steel wool, other waste soaked with this product, and sanding residue in a sealed, water-filled, metal container. Dispose of in accordance with local fire regulations. DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. FOR INDUSTRIAL USE ONLY. Please refer to the SDS for additional information. Do not transfer contents to other containers for storage.
- Hazards not otherwise classified** : None known.

## Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture
- Other means of identification** : Not available.

### CAS number/other identifiers

Ingredient name	% by weight	CAS number
Calcium Carbonate	48	1317-65-3
Titanium Dioxide	4-10	13463-67-7
Talc	9-10	14807-96-6
Lt. Aliphatic Hydrocarbon Solvent	18-20	64742-89-8
Carbon Black	.05-1.0	13333-86-4
Red Iron Oxide	4-5	1309-37-1
Quartz	0.2	14808-60-7

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## Section 3. Composition/information on ingredients

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation.
- Ingestion** : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : Adverse symptoms may include the following:  
nausea or vomiting

### Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.



## Section 4. First aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
halogenated compounds  
carbonyl halides  
metal oxide/oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

## Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

<b>Ingredient name</b>	<b>Exposure limits</b>
Calcium Carbonate	<b>OSHA PEL (United States, 2/2013).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction
Titanium Dioxide	TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>ACGIH TLV (United States, 4/2014).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. <b>OSHA PEL (United States, 2/2013).</b> TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust

<b>Section 8. Exposure controls/personal protection</b>	
Med. Aliphatic Hydrocarbon Solvent	<p><b>OSHA PEL (United States, 2/2013).</b> TWA: 100 ppm 8 hours. TWA: 400 mg/m<sup>3</sup> 8 hours.</p> <p><b>OSHA PEL Z3 (United States, 2/2013).</b> TWA: 250 MPPCF / (%SiO<sub>2</sub>+5) 8 hours. Form: Respirable TWA: 10 MG/M<sup>3</sup> / (%SiO<sub>2</sub>+2) 8 hours. Form: Respirable</p> <p><b>ACGIH TLV (United States, 4/2014).</b> TWA: 0.025 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction</p> <p><b>NIOSH REL (United States, 10/2013).</b> TWA: 0.05 mg/m<sup>3</sup> 10 hours. Form: respirable dust</p>
Quartz	

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Individual protection measures**
  - Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

## Section 8. Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## Section 9. Physical and chemical properties

### Appearance

- Physical state** : Liquid.
- Color** : Varies
- Odor** : Mild aliphatic
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : Not available.
- Boiling point** : 115°C (239°F)
- Flash point** : Closed cup: 10°C (50°F) [Pensky-Martens Closed Cup]
- Evaporation rate** : 1.5 (butyl acetate = 1)
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Lower: 0.9%  
Upper: 10.6%
- Vapor pressure** : 0.21 kPa (1.599 mm Hg) [at 20°C]
- Vapor density** : 3.66 [Air = 1]
- Relative density** : 1.5
- Solubility** : Not available.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : **65 -70 Krebs units**

## Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
- Incompatible materials** : Reactive or incompatible with the following materials:  
oxidizing materials
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Calcium Carbonate	LD50 Oral	Rat	6450 mg/kg	-
Calcium Carbonate	Eyes - Severe irritant	Rabbit	-	24 hours 750 Micrograms
	Skin - Moderate irritant	Rabbit	-	24 hours 500 milligrams

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Titanium Dioxide	Skin - Mild irritant	Human	-	72 hours 300 Micrograms Intermittent	- - -

# Section 11. Toxicological information

**Sensitization**

Not available.

**Mutagenicity**

Not available.

**Carcinogenicity**

Not available.

**Classification**

Product/ingredient name	OSHA	IARC	NTP
Titanium Dioxide	-	2B	-
Quartz	-	1	Known to be a human carcinogen.

**Reproductive toxicity**

Not available.

**Teratogenicity**

Not available.

**Specific target organ toxicity (single exposure)**

Name	Category	Route of exposure	Target organs
Xylene	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
Lt. Aliphatic Hydrocarbon Solvent	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects

**Specific target organ toxicity (repeated exposure)**

Name	Category	Route of exposure	Target organs
Lt. Aliphatic Hydrocarbon Solvent	Category 2	Not determined	Not determined

# Section 11. Toxicological information

## Aspiration hazard

Name	Result
Lt. Aliphatic Hydrocarbon Solvent	ASPIRATION HAZARD - Category 1

**Information on the likely routes of exposure** : Not available.

## Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation.
- Ingestion** : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

## Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : Adverse symptoms may include the following:  
nausea or vomiting

## Delayed and immediate effects and also chronic effects from short and long term exposure

### Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

### Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

### Potential chronic health effects

Not available.

- General** : May cause damage to organs through prolonged or repeated exposure.
- Carcinogenicity** : May cause cancer. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

## Numerical measures of toxicity

### Acute toxicity estimates

Route	ATE value
Oral	14688.5 mg/kg
Inhalation (gases)	35679.9 ppm

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
Calcium Carbonate	Acute LC50 >56000 ppm Fresh water Chronic NOEC 61 mg/g Fresh water	Fish - Gambusia affinis - Adult Fish - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 28 days
Titanium Dioxide Xylene	Acute LC50 >1000000 µg/l Marine water Acute LC50 8500 µg/l Marine water	Fish - Fundulus heteroclitus Crustaceans - Palaemonetes pugio	96 hours 48 hours
Lt. Aliphatic Hydrocarbon Solvent	Acute LC50 13400 µg/l Fresh water Acute LC50 >100000 ppm Fresh water	Fish - Pimephales promelas Fish - Oncorhynchus mykiss	96 hours 96 hours

### Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Titanium Dioxide	-	352	low
Lt. Aliphatic Hydrocarbon Solvent	-	10 to 2500	high

### Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : Not available.

Other adverse effects : No known significant effects or critical hazards.








## Section 13. Disposal considerations

### Disposal methods

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classificatio	IATA	IMDG
UN number	UN1263	UN1263	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT	PAINT	PAINT	PAINT
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.
Additional information	<u>Special provisions</u> Not Applicable	<u>Special provisions</u> Not Applicable	<u>Special provisions</u> (ERG#128)	<u>Special provisions</u> Not Applicable	<u>Emergency schedules (EmS)</u> F-E, S-E

**Special precautions for user** : Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** : Not available.

## Section 15. Regulatory information

[U.S. Federal regulations](#) :

[State regulations](#)

[California Prop. 65](#)

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

## Section 16. Other information

[Hazardous Material Information System \(U.S.A.\)](#)

Health	*	2
Flammability		3
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

### [Notice to reader](#)

It is recommended that each customer or recipient of this Safety Data Sheet (SDS) study it carefully and consult resources, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. This information is provided in good faith and believed to be accurate as of the effective date herein. However, no warranty, express or implied, is given. The information presented here applies only to the product as shipped. The addition of any material can change the composition, hazards and risks of the product. Regulatory requirements are subject to change and may differ between various locations and jurisdictions. The customer/buyer/user is responsible to ensure that his activities comply with all country, federal, state, provincial or local laws. The conditions for use of the product are not under the control of the manufacturer; the customer/buyer/user is responsible to determine the conditions necessary for the safe use of this product. The customer/buyer/user should not use the product for any purpose other than the purpose shown in the applicable section of this SDS without first referring to the supplier and obtaining written handling instructions. Due to the proliferation of sources for information such as manufacturer-specific SDS, the manufacturer cannot be responsible for SDSs obtained from any other source.

# Safety Data Sheet

## Xylene

Version 2.9

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### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name** : Xylene

#### Recommended use of the chemical and restrictions on use

Recommended use : Solvent.

#### Manufacturer or supplier's details

**Company** : Univar Solutions USA, Inc.  
**Address** : 3075 Highland Pkwy Suite 200  
Downers Grove, IL 60515  
United States of America (USA)

#### Emergency telephone number:

Transport North America: CHEMTREC (1-800-424-9300)  
CHEMTREC INTERNATIONAL Tel # 703-527-3887

**Additional Information:** : Responsible Party: Product Compliance Department  
E-mail: SDSNA@univarsolutions.com  
SDS Requests: 1-855-429-2661  
Website: www.univarsolutions.com

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable liquids : Category 3  
Acute toxicity (Inhalation) : Category 4  
Acute toxicity (Dermal) : Category 4  
Skin irritation : Category 2  
Eye irritation : Category 2A  
Specific target organ toxicity - single exposure : Category 3 (Respiratory system)  
Specific target organ toxicity - repeated exposure : Category 2 (Central nervous system, Kidney, Liver)  
Aspiration hazard : Category 1

#### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.

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H304 May be fatal if swallowed and enters airways.  
H312 + H332 Harmful in contact with skin or if inhaled.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H373 May cause damage to organs (Central nervous system, Kidney, Liver) through prolonged or repeated exposure.

#### Precautionary statements

##### : **Prevention:**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P233 Keep container tightly closed.  
P240 Ground/bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/ eye protection/ face protection.

##### **Response:**

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P314 Get medical advice/ attention if you feel unwell.  
P331 Do NOT induce vomiting.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

##### **Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

##### **Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

#### Other hazards

None known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance / Mixture : Substance

### Hazardous components

CAS-No.	Chemical name	Weight percent
1330-20-7	Mixed xylenes	65 - 100
100-41-4	**Ethylbenzene	10 - 35
98-82-8	**Cumene	0.1 - 1

Any Concentration shown as a range is due to batch variation.

**Special Notes:** : \*\* Other substances in the product which may present a health or environmental hazard.

## SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Symptoms of poisoning may appear several hours later.  
Do not leave the victim unattended.
- If inhaled : Consult a physician after significant exposure.  
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do not induce vomiting without medical advice.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.

## SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : High volume water jet

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Specific hazards during fire-fighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	: Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke). Aldehydes
Further information	: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.

#### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Environmental precautions	: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

#### SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	: Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.
Advice on safe handling	: Avoid formation of aerosol. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the ap-

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plication area.  
 Take precautionary measures against static discharges.  
 Provide sufficient air exchange and/or exhaust in work rooms.  
 Open drum carefully as content may be under pressure.  
 Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : No smoking.  
 Keep container tightly closed in a dry and well-ventilated place.  
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
 Observe label precautions.  
 Electrical installations / working materials must comply with the technological safety standards.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
1330-20-7	Mixed xylenes	TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH
		TWA	100 ppm 435 mg/m3	OSHA Z-1
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH
100-41-4	**Ethylbenzene	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m3	NIOSH REL
		ST	125 ppm 545 mg/m3	NIOSH REL
		TWA	100 ppm 435 mg/m3	OSHA Z-1
		TWA	100 ppm 435 mg/m3	OSHA P0
		STEL	125 ppm 545 mg/m3	OSHA P0
98-82-8	**Cumene	TWA	50 ppm	ACGIH
		TWA	50 ppm 245 mg/m3	NIOSH REL
		TWA	50 ppm 245 mg/m3	OSHA Z-1
		TWA	50 ppm 245 mg/m3	OSHA P0

#### Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn.

## Safety Data Sheet

### Xylene

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Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

#### Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : Clear, Colorless

Odour : aromatic, hydrocarbon-like, sweet

Odour Threshold : No data available

pH : No data available

Freezing Point (Melting point/freezing point) : -48 - -26.15 °C (-54 - -15.07 °F)

Boiling Point (Boiling point/boiling range) : 137 - 139 °C (279 - 282 °F)

Flash point : 27 °C (81 °F)  
Method: closed cup

Evaporation rate : 0.8  
(Butyl Acetate = 1)

Flammability (solid, gas) : No data available

Upper explosion limit : 7 %(V)



## Safety Data Sheet

### Xylene

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Lower explosion limit	: 1 %(V)
Vapour pressure	: 6 - 7 mmHg @ 20 - 25 °C (68 - 77 °F)
Relative vapour density	: 3.7 @ 20 - 25 °C (68 - 77 °F) (Air = 1.0)
Relative density	: 0.86 - 0.88 @ 20 - 25 °C (68 - 77 °F) Reference substance: (water = 1)
Density	: 0.87 g/cm <sup>3</sup> @ 20 - 25 °C (68 - 77 °F)
Solubility(ies) Water solubility	: slightly soluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: 432 - 530 °C
Thermal decomposition	: No data available
Viscosity Viscosity, kinematic	: 0.717 - 0.864 mm <sup>2</sup> /s @ 20 °C (68 °F)

#### SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Vapours may form explosive mixture with air.
Conditions to avoid	: Keep away from heat, flame, sparks and other ignition sources. Exposure to sunlight. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	: Strong oxidizing agents Strong acids Nitrogen oxides (NO <sub>x</sub> ) Alkalis Plastics Reducing agents
Hazardous decomposition products	: Carbon oxides Hydrocarbons

## Safety Data Sheet

### Xylene

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Aldehydes

#### SECTION 11. TOXICOLOGICAL INFORMATION

##### Acute toxicity

###### Components:

###### 1330-20-7:

Acute inhalation toxicity : LC50 (Rat, male): 6700 ppm  
Exposure time: 4 h  
Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit): 1,700 mg/kg  
Assessment: The component/mixture is moderately toxic after single contact with skin.

##### Skin corrosion/irritation

###### Components:

###### 1330-20-7:

Species: Rabbit  
Exposure time: 24 h  
Result: Irritating to skin.

##### Serious eye damage/eye irritation

###### Components:

###### 1330-20-7:

Species: Rabbit  
Result: Irritating to eyes.

##### Carcinogenicity

IARC Group 2B: Possibly carcinogenic to humans

100-41-4	**Ethylbenzene
98-82-8	**Cumene

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

##### STOT - single exposure

###### Components:

## Safety Data Sheet

### Xylene

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**1330-20-7:**

Assessment: May cause respiratory irritation.

**STOT - repeated exposure**

**Components:**

**1330-20-7:**

Target Organs: Central nervous system, Kidney, Liver

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

**Aspiration toxicity**

**Components:**

**1330-20-7:**

May be fatal if swallowed and enters airways.

**Further information**

**Product:**

Remarks: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Concentrations substantially above the TLV value may cause narcotic effects.

Solvents may degrease the skin.

---

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

**Components:**

**98-82-8:**

Partition coefficient: n-octanol/water : log Pow: 3.55 (23 °C)

**Mobility in soil**

No data available

**Other adverse effects**

**Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

# Safety Data Sheet

## Xylene

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Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

Waste from residues : Dispose of in accordance with all applicable local, state and federal regulations.  
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Univar Solutions ChemCare: 1-800-909-4897

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.  
Do not burn, or use a cutting torch on, the empty drum.

### SECTION 14. TRANSPORT INFORMATION

**DOT (Department of Transportation):**  
UN1307, XYLENES, (MIXED XYLENES), 3, III

**IATA (International Air Transport Association):**  
UN1307, XYLENES, (MIXED XYLENES) , 3, III

**IMDG (International Maritime Dangerous Goods):**  
UN1307, XYLENES, (MIXED XYLENES), 3, III, Flash Point:27 °C(81 °F)

### SECTION 15. REGULATORY INFORMATION

#### EPCRA - Emergency Planning and Community Right-to-Know Act

##### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Mixed xylenes	1330-20-7	100	102
**Ethylbenzene	100-41-4	1000	2857

##### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : Flammable (gases, aerosols, liquids, or solids)  
Acute toxicity (any route of exposure)

## Safety Data Sheet

### Xylene

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Skin corrosion or irritation  
 Serious eye damage or eye irritation  
 Specific target organ toxicity (single or repeated exposure)  
 Aspiration hazard

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

1330-20-7	Mixed xylenes
100-41-4	**Ethylbenzene

#### Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

100-41-4	**Ethylbenzene
----------	----------------

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCOMI Intermediate or Final VOC's (40 CFR 60.489):

1330-20-7	Mixed xylenes
100-41-4	**Ethylbenzene

#### Clean Water Act

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

100-41-4	**Ethylbenzene
----------	----------------

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

1330-20-7	Mixed xylenes
100-41-4	**Ethylbenzene
108-88-3	**Toluene
71-43-2	**Benzene
91-20-3	**Naphthalene

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

1330-20-7	Mixed xylenes
100-41-4	**Ethylbenzene
108-88-3	**Toluene
71-43-2	**Benzene
91-20-3	**Naphthalene


#### Massachusetts Right To Know

1330-20-7	Mixed xylenes
100-41-4	**Ethylbenzene
71-43-2	**Benzene

#### Pennsylvania Right To Know

1330-20-7	Mixed xylenes
100-41-4	**Ethylbenzene
98-82-8	**Cumene
108-88-3	**Toluene
71-43-2	**Benzene

#### California Prop 65

 **WARNING:** This product can expose you to chemicals including \*\*Ethylbenzene, \*\*Cumene,

# Safety Data Sheet

## Xylene

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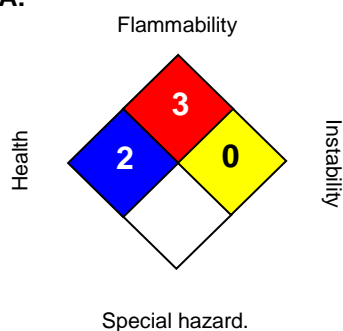
\*\*Benzene, \*\*Naphthalene, which is/are known to the State of California to cause cancer, and \*\*Toluene, \*\*Benzene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**The components of this product are reported in the following inventories:**

- TSCA : On TSCA Inventory
- DSL : All components of this product are on the Canadian DSL
- AICS : On the inventory, or in compliance with the inventory
- NZIoC : On the inventory, or in compliance with the inventory
- ENCS : On the inventory, or in compliance with the inventory
- KECI : On the inventory, or in compliance with the inventory
- PHIL : On the inventory, or in compliance with the inventory
- IECSC : On the inventory, or in compliance with the inventory

### SECTION 16. OTHER INFORMATION

**NFPA:**



**HMIS III:**

<b>HEALTH</b>	<b>2*</b>
<b>FLAMMABILITY</b>	<b>3</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>

0 = not significant, 1 = Slight,  
 2 = Moderate, 3 = High  
 4 = Extreme, \* = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Univar Solutions Product Compliance Department (1-855-429-2661) [SDSNA@univarsolutions.com](mailto:SDSNA@univarsolutions.com).

**Revision Date** : 09/01/2019

## Safety Data Sheet

### Xylene

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**Legacy SDS:** : 10000027727

**Material number:**

16143318, 16128469, 16127723, 16127029, 16118414, 16116444, 16116443, 16109065, 779350, 16063696, 102351, 776944, 763953, 710729, 710728, 708716, 707260, 706448, 638918, 568063, 554061, 554060, 554200, 508616, 508582, 508489, 70145, 70881, 70227, 70442, 53546, 70136, 87256, 53755, 103201, 85972, 103204, 86307, 102898, 69592, 70082, 85965, 54057, 70432, 86513, 102683, 102433, 86815, 103194, 508229, 508294, 508230, 39908, 22253, 22252, 22033, 22034, 20526, 20524, 16066675, 16061583, 16066710, 16084135, 16075696, 16056826, 16056828, 16056827, 16056829, 16056825, 16041807, 16040131, 16036781, 16017302, 16005979, 781040, 102986, 102359, 86304, 53758, 102348, 69917, 502710, 20530, 20529, 20528, 20525, 20523, 20522

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		



**SPECIFICATION SHEET**

**PRODUCT: HIGH CAPACITY SUPRA II MINI-MESH (NON-UL)**

**I. PERFORMANCE DATA \***

**APPROXIMATE CLEAN RESISTANCE TO AIRFLOWS:**

<u>Velocity (fpm)</u>	<u>Resistance ("w.g.)</u>
100	0.015
150	0.035
200	0.060

<u>COATING</u>	<u>TYPICAL EFFICIENCY RANGE</u>	<u>HOLDING CAPACITY ( lbs. @ " w.g. )</u>
High-Solids Bake Enamel	98.5% - 99.9%	9.40 lb.. @ .20" w.g.
Waterborne Bake Enamel	97.5% - 99.9%	7.80 lb.. @ .50" w.g.
Water Reducible Air Dry	96% - 99.70%	1.70 lb.. @ .50" w.g.
2K Epoxy Primer	97.53% - 99.53%	6.75 lb.. @ .50" w.g.
2K H.S. Polyurethane	99.24% - 99.95%	9.85 lb.. @ .38" w.g.
Waterborne CARC	99.10% - 99.79%	2.07 lb.. @ .50" w.g.

**II. CONSTRUCTION \*\***

<b><u>"High Capacity" Paper:</u></b>	<b>3 Layers</b>
<b><u>"Large Diamond" Paper:</u></b>	<b>2 Layers</b>
<b><u>"Small Diamond" Paper:</u></b>	<b>1 Layer</b>
<b><u>"Mini-Mesh" Paper:</u></b>	<b>1 Layer</b>
<b><u>Polyester:</u></b>	<b>1 Layer</b>

This filter meets GACT for sources subject to SUBPART HHHHHH  
(Paint Stripping and Miscellaneous Surface Coating at Area Sources) and SUBPART XXXXXX  
(Area Source Standards for Nine Metal Fabrication and Finishing Source Categories)  
(≥98% EFFICIENT when tested by ASHRAE Method 52.1 in accordance with the 40 CFR PART 63 NESHAP)

\* Note: Tests were conducted using modified ASHRAE STANDARD 52-76 test apparatus and procedures (0.5" H<sub>2</sub>O test endpoint). Test filter consisted of 20" x 20" pads or pockets, held in a frame/grid module, as used in the field. Overspray was generated by an air atomizing gun with an initial air velocity of 150 fpm. Actual resistances, arrestances and holding capacities may differ due to the variations in paint make-up, mixing ratios, viscosities, booth conditions, etc.

\*\* See Columbus Industries sales literature for nominal sizes ( length, width, and depth) available



## SAFETY DATA SHEET



(740) 983-2552  
Performance Engineered Air Filter Products

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Paint Collectors – Poly/Paper Sewn, Supra (A,1,2,V,EPG,EPG2), High Capacity, Mini Mesh

Product Use: Filtration  
Columbus Industries, Inc.  
2938 State Route 752  
P.O. Box 257  
Ashville, OH 43103

Phone: 740-983-2552

Fax: 740-983-3147

Date SDS prepared: 8/31/2017  
Emergency Phone No. 740-983-2552 ext. 5265  
All Medical Emergencies: Contact Local Emergency Service Provider

### SECTION 2 — HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

GHS Label elements, including precautionary statements

Pictogram None  
Signal word Warning  
Hazard statement(s) May be harmful if ingested.  
Precautionary statement(s) Avoid breathing dusts when changing filters.  
Hazards not otherwise classified (HNOC) or not covered by GHS  
None

### SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS #	Weight Percent %
Cellulose Pulp	65996-61-4	65-78
Polyethylene Terephthalate (PET)	25038-59-9	5-12
Water	7732-18-5	3-4
Sodium Pyrophosphate	7722-88-5	<2

### 4-FIRST AID MEASURES

Skin Contact: In case of irritation, wash contacted area with soap and water.  
Eye Contact: Flush eyes with water.  
Inhalation: If inhaled, move person to fresh air.  
Ingestion: Never give anything by mouth to unconscious person, rinse mouth with water.

### 5 – FIRE FIGHTING MEASURES

Means of Extinction:	Use suitable extinguishing media; water spray, alcohol resistant foam, or dry chemical.
Special hazards arising from the substance or mixture:	Carbon oxides
Advice for firefighters	Wear self-contained breathing apparatus for firefighting if necessary.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	When changing or replacing filters avoid dust formation. Avoid breathing vapours, mist or gas.
Environmental precautions	No special environmental precautions required.
Methods and materials for containment and cleaning up	Sweep up and shovel. Keep in suitable, closed containers for disposal.

## 7. HANDLING AND STORAGE

Precautions for safe handling	Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into account. Observe handling and PPE requirements for sprays, paints, or solvents used.
Conditions for safe storage, including any incompatibilities	Keep in a dry place.
Specific end use(s)	Wear proper protective equipment when handling used filters.

## SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

### Control parameters

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

#### Exposure controls

Airborne Exposure Limits:

Ingredient	CAS #	PEL
Cellulosic Dust	65996-61-4	15 mg/mg (total dust), 5 mg/m <sup>3</sup> (respirable dust)
Polyethylene Terephthalate (PET)	25038-59-9	NA
Water	7732-18-5	NA
Sodium Pyrophosphate	7722-88-5	5mg/m <sup>3</sup> (ACGIH TLV)

#### Appropriate engineering controls

General industrial hygiene practice.

#### Personal protective equipment

No Personal protective equipment needed for handling clean filters. However protective equipment may be required when handling used filters. This may include:

##### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as

NIOSH (US) or EN 166(EU).

**Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body Protection**

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**

No special environmental precautions required.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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**Information on basic physical and chemical properties**

Odor	No data available
Odor Threshold	No data available
pH	No data available
Melting point/ freezing point	No data available
Initial boiling point and boiling range	No data available
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	May form combustible dust concentrations in air.
Upper/lower flammability or explosive limits	No data available

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**10. STABILITY AND REACTIVITY**

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**Reactivity**

No data available

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

No data available

**Conditions to avoid**

Extreme heat / flame

**Incompatible materials**

Strong oxidizing agents, strong acids and high temperatures above 200° C

**Hazardous decomposition products**

Other decomposition products - No data available

In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

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### Information on toxicological effects

**Acute toxicity**

No data available

Inhalation: No data available

Dermal: No data available

**Skin corrosion/irritation**

No data available

**Serious eye damage/eye irritation**

No data available

**Respiratory or skin sensitisation**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

---

## 12. ECOLOGICAL INFORMATION

**Toxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

No data available

### 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

Unused filters are not RCRA hazardous.

**Product**

Offer surplus and non-recyclable solutions to a licensed disposal company.

**Contaminated packaging**

Dispose of used filters with all applicable local and federal regulations.

### 14. TRANSPORT INFORMATION

**DOT (US)**

Not dangerous goods

**IMDG**

Not dangerous goods

**IATA**

Not dangerous goods

### 15. REGULATORY INFORMATION

**SARA 302 Components**

NA

**Massachusetts Right To Know Components**

NA

**Pennsylvania Right To Know Components**

CAS-No.

NA

**New Jersey Right To Know Components**

CAS-No.

NA

**California Prop. 65 Components**

CAS-No.

NA

### 16. OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3.**

May form combustible dust concentrations in air

**HMIS Rating**

Health hazard:	1	Slight health hazard if ingested.
Chronic Health Hazard:	0	
Flammability:	0	
Physical Hazard:	0	

**NFPA Rating**

Health hazard:	1	Slight health hazard if ingested.
Fire Hazard:	0	

## WELDING INFORMATION FORM

**GENERAL INSTRUCTIONS:** The following information is required to estimate emissions from your facility. Please fill out all requirements for each preparation function performed at your facility and indicate "NA" for those that are not applicable and "UN" for those that are unknown at this time. Emission estimates and permit applications will only be as accurate as the information provided on the questionnaire. If additional assistance is needed, please contact KY Division of Compliance Assistance at (800) 926-8111.

### A. Welding Unit

1. This sheet corresponds to welder number 174
2. Welder Description: Manufacturer Miller Model Millermatic 252
3. (Pending) Installation Date: NA Month NA Day NA Year

### B. Schedule

1. Minutes of welding done per hour of operation? 20
2. Hours per day the welder is in operation? 7.5
3. Days per week the welder is in operation? 5
4. Weeks per year the welder is in operation? 52

### C. Welder(s)

1. What is the **maximum** number of welders that can be used at the same time? 10
2. What is the **actual** number of welders used at the same time? 2
3. Please include manufacturer's specification sheets for each welder used at the facility.

### D. Welding Material

1. Include a current **MSDS** for each product listed below as well as **annual usage rates** for each product listed below.

Welding Material	Manufacturer	Manufacturer's Product Name	Annual Usage Rate (pounds)
Welding Wire	ESAB Denton	OK Aristo Rod 12-50	4,960 lbs
Shielding Gas	Halston Gases	Star Gold	28,500 CF



## SAFETY DATA SHEET

This Safety Data Sheet complies with Regulation (EC) No 1907/2006, 1272/2008, ISO 11014-1 and ANSI Z400.1

### OK AristoRod 12.50

Issued: 2017-09-14

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

**Trade name** OK AristoRod 12.50

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Use** Arc Welding

### 1.3. Details of the supplier of the safety data sheet

**Supplier** ESAB DENTON

Street address 2800 Airport Road  
Denton, TX 76207

Telephone 1-800-372-2123

Email sds.esab@esab.se

Web site www.esab.com

### 1.4. Emergency telephone number

**Emergency phone number** 1-800-372-2123

**Available outside office hours** No

### Other

Classification(s): EN ISO 14341-A: G 3Si1 SFA/AWS A5.18: ER70S-6

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

The product is not classified

### 2.2. Label elements

The product do not require labeling

### 2.3. Other hazards

Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions.

Persons with a pacemaker should not go near welding or cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device.

When this product is used in a welding process, the most important hazards are welding fumes, heat, radiation and electric shock. Fumes: Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, disturbances and spastic gait.

Heat: Spatter and melting metal can cause burn injuries and start fires.



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Radiation: Arc rays can severely damage eyes or skin.  
Electricity: Electric shock can kill.

### Other

Emergency Overview: Metal wire or rods in varying colours. This product is normally not considered hazardous as shipped. Gloves should be worn when handling to prevent cuts and abrasions.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

Chemical name	CAS No. EC No. REACH No.	Concentration	Classification	R-phrase H-phrase
Iron	7439-89-6 231-096-4 01-2119462838 - 24	96 - 98%	- -	- -
Manganese	7439-96-5 231-105-1 01-2119449803 - 34	1 - 2%	- -	- -
Chromium	7440-47-3 231-157-5 -	<1%	- -	- -
Silicon	7440-21-3 231-130-8 -	<1%	- -	- -

**Product based on** This product is a continuous solid metal wire.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

Electric shock: Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). call emergency physician to the scene of the accident. Call a physician immediately.

**Inhalation** If breathing has stopped, perform artificial respiration and obtain medical assistance immediately! If breathing is difficult, provide fresh air and call physician.

**Skin contact** For skin burns from arc radiation, promptly flush with cold water. Get medical attention for burns or irritations that persist. To remove dust or particles wash with mild soap and water.

**Eye contact** For radiation burns due to arc flash, see physician. To remove dusts or fumes flush with water for at least fifteen minutes. If irritation persists, obtain medical assistance.

### 4.2. Most important symptoms and effects, both acute and delayed

Not applicable

### 4.3. Indication of any immediate medical attention and special treatment needed

Not applicable





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## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

No specific recommendations for welding consumables. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation.

### 5.2. Special hazards arising from the substance or mixture

Not applicable

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

Wear self-contained breathing apparatus as fumes or vapors may be harmful.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Refer to section 8.

### 6.2. Environmental precautions

Refer to section 13.

### 6.3. Methods and material for containment and cleaning up

Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

### 6.4. Reference to other sections

Refer to section 8/13

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Preventive handling precautions

Handle with care to avoid stings and cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

### 7.3. Specific end use(s)

Arc Welding

## SECTION 8: Exposure controls/personal protection



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### 8.1. Control parameters

#### Exposure limits

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits. The following limits can be used as guidance. Unless noted, all values are for 8 hour time weighted averages (TWA). For information about welding fume analysis refer to Section 10.

UK, Workplace Exposure Limits, mg/m3

#### National occupational exposure limits

Ingredient	CAS no.	EC No.	Exposure limit mg/m3-ppm	Short-term exposure limit mg/m3-ppm	Ceiling exposure limit mg/m3-ppm	Remark	Source	Year
Chromium	7440-47-3	231-157-5	1	-	-	Metal	OSHA	2016
Chromium	7440-47-3	231-157-5	0,5	-	-	as Cr(Cr(II) and Cr(III) inorganic compounds)	OSHA	2016
Chromium	7440-47-3	231-157-5	0,005	-	-	as Cr(VI)(water sol. and in sol. inorganic compounds)	OSHA	2016
Iron	7439-89-6	231-096-4	-	-	-	No PEL	OSHA	2016
Manganese	7439-96-5	231-105-1	-	-	5	as Mn (metal and fume)	OSHA	2016
Silicon	7440-21-3	231-130-8	15	-	-	Total dust	OSHA	2016
Silicon	7440-21-3	231-130-8	5	-	-	Respirable fraction	OSHA	2016

### 8.2. Exposure controls

Not applicable

#### Other

Avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust. Train welders to avoid contact with live electrical parts and insulate conductive parts.

#### Ventilation

Use respirator or air supplied respirator when welding or brazing in a confined space, or where local exhaust or ventilation is not sufficient to keep exposure values within safe limits. Use special care when welding painted or coated steels since hazardous substances from the coating may be emitted. Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area.

#### Personal protective equipment

Wear hand, head, eyes, ear and body protection like welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.  
The product as supplied should be handled in gloves to minimize the potential for abrasions or superficial injury to skin arising from the characteristics of the solid product. Suitable gloves for physical hazard protection would include leather gloves, cut-resistant gloves and coated fabric gloves. Anyone with an existing or suspected sensitivity to one of the ingredients, such as nickel when present, should use an impermeable glove such as nitrile, butyl rubber or other barrier



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material. We do not recommend latex gloves due to their potential to elicit sensitivity or allergic response in some individuals. Barrier gloves can be worn under durable gloves to protect the barrier gloves from potential damage. Gloves specifically designed for welding protection must be used when the product is used in a welding, cutting or gouging activity.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	Solid, non-volatile with varying color.
<b>Appearance, colour</b>	Not applicable
<b>Appearance, physical state</b>	Not applicable
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	Not applicable
<b>Evaporation rate</b>	Not applicable
<b>Explosive properties</b>	Not applicable
<b>Flammability (solid, gas)</b>	Not applicable
<b>Flash point</b>	Not applicable
<b>Initial boiling point and boiling range</b>	Not applicable
<b>Melting point</b>	>1000°C / >1800°F
<b>Melting point / freezing point</b>	Not applicable
<b>Odour</b>	Not applicable
<b>Odour treshold</b>	Not applicable
<b>Oxidising properties</b>	Not applicable
<b>Partition coefficient: n-octanol / water</b>	Not applicable
<b>pH value</b>	Not applicable
<b>Relative density</b>	Not applicable
<b>Solubility</b>	Not applicable
<b>Upper / lower flammability or explosive limits</b>	Not applicable
<b>Vapour density</b>	Not applicable
<b>Vapour pressure</b>	Not applicable
<b>Viscosity</b>	Not applicable

### 9.2. Other information



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Not applicable

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

**Reactivity** Contact with chemical substances like acids or strong bases could cause generation of gas.

### 10.2. Chemical stability

**Chemical stability** Stable at normal conditions

### 10.3. Possibility of hazardous reactions

Not applicable

### 10.4. Conditions to avoid

**Conditions to avoid** This product is only intended for normal welding purposes.

### 10.5. Incompatible materials

Not applicable

### 10.6. Hazardous decomposition products

**Hazardous decomposition products** When this product is used in a welding process, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in section 3 and those from the base metal and coating.  
The amount of fumes generated from this product varies with welding parameters and dimensions, but is generally no more than 5 to 10 g/kg consumable.  
Fumes from this product contain compounds of the following chemical elements. The rest is not analysed, according to available standards.  
Fume analysis in weight %:  
Fe <65  
Mn <5  
Cr <0.1  
Pb <0.1  
Cu <0.5  
Ni <0.1  
Si <5

### Other

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8.

A significant amount of the chromium in the fumes can be hexavalent chromium, which has a very low exposure limit in some countries. Manganese has a low exposure limit, in some countries, that may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quantity of fumes and gases produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects



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<b>Information on toxicological effects</b>	Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contamination and processes. The International Agency for Research on Cancer has classified welding fumes as possibly carcinogenic to humans (Group 2B).
<b>acute toxicity</b>	Acute toxicity: Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes.
<b>skin corrosion/irritation</b>	Not applicable
<b>serious eye damage/irritation</b>	Not applicable
<b>Respiratory/skin sensitization</b>	Not applicable
<b>germ cell mutagenicity</b>	Not applicable
<b>Genotoxicity</b>	Not applicable
<b>carcinogenicity</b>	Not applicable
<b>reproductive toxicity</b>	Not applicable
<b>STOT-single exposure</b>	Not applicable
<b>STOT-repeated exposure</b>	Not applicable
<b>Aspiration hazard</b>	Not applicable

#### Other

<b>Long term effect</b>	Chronic toxicity: Overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, disturbances and spastic gait.
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## SECTION 12: Ecological information

### 12.1. Toxicity

Not applicable

### 12.2. Persistence and degradability

Not applicable

### 12.3. Bioaccumulative potential

Not applicable

### 12.4. Mobility in soil

Not applicable

### 12.5. Results of PBT and vPvB assessment

Not applicable

### 12.6. Other adverse effects



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Not applicable

#### Other

Welding consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Disposal considerations

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available. USA RCRA: Unused products or product residue containing chromium is considered hazardous waste if discarded, RCRA ID Characteristic Toxic Hazardous Waste D007. Residues from welding consumables and processes could degrade and accumulate in soils and groundwater.

## SECTION 14: Transport information

### 14.1. UN number

Not applicable

### 14.2. UN proper shipping name

Not applicable

### 14.3. Transport hazard class(es)

Not applicable

### 14.4. Packing group

Not applicable

### 14.5. Environmental hazards

Not applicable

### 14.6. Special precautions for user

Not applicable

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### Other regulations, limitations and legal regulations

Canada: WHMIS classification: Class D; Division 2, Subdivision A Canadian Environmental Protection Act (CEPA): All constituents of this product are on the Domestic Substance List (DSL). USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous.



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USA: This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.)

United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.

CERCLA/SARA Title III Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs): : Product is a solid solution in the form of a solid article.

- Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

Section 311 Hazard Class

As shipped: Immediate; In use: Immediate delayed

The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA 313 reporting. See Section 3 for weight percent. Chromium 1.0% de minimis concentration Manganese 1.0% de minimis concentration

#### 15.2. Chemical safety assessment

**Chemical safety assessment** No

#### Other

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

WARNING: Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation.

ELECTRIC SHOCK can kill. ARC RAYS and SPARKS can injure eyes and burn skin.

Wear correct hand, head, eye and body protection.

## SECTION 16: Other information

**Changes to previous revision** This Safety Data Sheet has been revised due to modifications to Sections 1-16.

**References to key literature and data sources** Refer to ESAB "Welding & Cutting - Risks and Measures", F52-529 "Precautions and Safe Practices for Electric Welding and Cutting" and F2035 "Precautions and Safe Practices for Gas Welding, Cutting and Heating" available from ESAB, and to:

USA: Contact ESAB at [www.esabna.com](http://www.esabna.com) or 1-800 ESAB-123 if you have any questions about this SDS.

American National Standard Z49.1 "Safety in Welding and Cutting", ANSI/AWS F1.5 "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", AWSF3.2M/F3.2 "Ventilation Guide for Weld Fume", American Welding Society, 550 North Le Jeune Road, Miami Florida 33135. Safety and Health Fact Sheets available from AWS at [www.aws.org](http://www.aws.org).

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954

American Conference of Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B "Standard for Fire Prevention During Welding, Cutting, and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

UK: WMA Publication 236 and 237, "Hazards from Welding Fume", "The arc welder at work, some



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general aspects of health and safety".

Germany: Unfallverhütungsvorschrift BGV D1, "Schweißen, Schneiden und verwandte Verfahren".

Canada: CSA Standard CAN/CSA-W117.2-01 "Safety in Welding, Cutting, and Allied Processes". This product has been classified according to the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

#### Other

##### Additional information

ESAB requests the users of this product to study this Safety Data Sheet (SDS) and become aware of product hazards and safety information. To promote safe use of this product a user should:

- notify its employees, agents and contractors of the information on this SDS and any product hazards/safety information.
- furnish this same information to each of its customers for this product.
- request such customers to notify employees and customers for the same product hazards and safety information.

The information herein is given in good faith and based on technical data that ESAB believes to be reliable. Since the conditions of use is outside our control, we assume no liability in connection with any use of this information and no warranty, expressed or implied is given. Contact ESAB for more information.



## SECTION 3 - INSTALLATION

### 3-1. Specifications

Rated Output		Max. Open Circuit Voltage	60 Hz	Amps Input at Rated Output					
				200 V	230 V	460 V	575V	KVA	KW
300 A at 32 VDC, 60% Duty Cycle	350 A at 32 VDC, 40% Duty Cycle	90	Single-Phase	69 (1.7*)	61 (1.5*)	30 (0.75*)	24 (0.5*)	13.1	11.2
			Three-Phase	34 (1.7*)	30 (1.5*)	15 (0.75*)	12 (0.5*)	11.6	11.5

\* While idling

Wire Type and Diameter			Wire Feed Speed 50-700 IPM (1.3-17.8 m/min)	Dimensions H: 34 in (864 mm) W: 19 in (483 mm) D: 41 in (1041 mm)	Net Weight 181 lb (82 kg)
Solid Steel	Stainless Steel	Aluminum			
.023 - .045 in (0.8 - 1.1 mm)	.030 - .045 in (0.8 - 1.1 mm)	.035 - .047 in (0.9 - 1.2 mm)			

Operating Temperature Range: -20C to +40C      Storage Temperature Range: -30C to + 50C

### 3-2. Duty Cycle And Overheating

**WELDING AMPERES**

**% DUTY CYCLE**

Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

If unit overheats, thermistors open, output stops, and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

**▲ Exceeding duty cycle can damage unit and void warranty.**

60% Duty Cycle At 300 Amperes

6 Minutes Welding      4 Minutes Resting

40% Duty Cycle At 350 Amperes

4 Minutes Welding      6 Minutes Resting

**Overheating**

Minutes      OR      Reduce Duty Cycle

sduty1 5/95 / 217 442-A

## SECTION 4 – SPECIFICATIONS

### 4-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on the back of unit. Use rating label to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

### 4-2. Software Licensing Agreement

The End User License Agreement and any third-party notices and terms and conditions pertaining to third-party software can be found at <https://www.millerwelds.com/eula> and are incorporated by reference herein.

### 4-3. Information About Default Weld Parameters And Settings

**NOTICE** – Each welding application is unique. Although certain Miller Electric products are designed to determine and default to certain typical welding parameters and settings based upon specific and relatively limited application variables input by the end user, such default settings are for reference purposes only; and final weld results can be affected by other variables and application-specific circumstances. The appropriateness of all parameters and settings should be evaluated and modified by the end user as necessary based upon application-specific requirements. The end user is solely responsible for selection and coordination of appropriate equipment, adoption or adjustment of default weld parameters and settings, and ultimate quality and durability of all resultant welds. Miller Electric expressly disclaims any and all implied warranties including any implied warranty of fitness for a particular purpose.

### 4-4. Welding Power Source Specifications (230/460/575 Volt Model)

Rated Welding Output	Amperage Range	Maximum Open-Circuit Voltage DC	Amperes Input At Rated Load Output, 60 Hz, Single Phase				
			230 VAC	460 VAC	575 VAC	KVA	KW
250 A, 26.5 volts DC, 40% Duty Cycle	30–300 A	38	61.5 2*	30.8 1*	24.5 0.8*	14.3 0.46*	10.0 0.13*
200 A, 28.0 volts DC, 60% Duty Cycle	30–300 A	38	52.0 2*	26.0 1*	20.0 0.8*	11.9 0.46*	8.0 0.13*

\*While idling

Wire Type and Diameter			Wire Feed Speed	Dimensions	Net Weight Without Gun
<b>Solid Steel</b>	<b>Stainless Steel</b>	<b>Flux Cored</b>	50–700 IPM (1.3–17.8 m/min)	H: 30 in. (762 mm) W: 19 in. (483 mm) D: 40 in. (1016 mm)	205 lb (93 kg)
.023 – .045 in. (0.6 – 1.2 mm)	.023 – .045 in. (0.6 – 1.2 mm)	.030 – .045 in. (0.8 – 1.2 mm)			

### 4-5. Welding Power Source Specifications (208/240 Volt Model)

Rated Welding Output	Amperage Range	Maximum Open-Circuit Voltage DC	Amperes Input At Rated Load Output, 60 Hz, Single Phase			
			208 VAC	240 VAC	KVA	KW
300 A, 29.0 volts DC, 25% Duty Cycle	30–300 A	38	68.0	60.0	14.2	12.3
250 A, 26.5 volts DC, 40% Duty Cycle	30–300 A	38	62.1	54.7	13.2	9.8
200 A, 24.0 volts DC, 60% Duty Cycle	30–300 A	38	55.7	49.5	11.7	7.4
150 A, 21.5 volts DC, 100% Duty Cycle	30–300 A	38	48.8	45.0	10.5	5.0

Wire Type and Diameter			Wire Feed Speed	Dimensions	Net Weight Without Gun
<b>Solid Steel</b>	<b>Stainless Steel</b>	<b>Flux Cored</b>	50–700 IPM (1.3–17.8 m/min)	H: 30 in. (762 mm) W: 19 in. (483 mm) D: 40 in. (1016 mm)	205 lb (93 kg)
.023 – .045 in. (0.6 – 1.2 mm)	.023 – .045 in. (0.6 – 1.2 mm)	.030 – .045 in. (0.8 – 1.2 mm)			

### 4-6. Environmental Specifications

#### A. IP Rating

IP Rating
IP21
This equipment is designed for indoor use and is not intended to be used or stored outside.

## SECTION 2 – INSTALLATION

### 2-1. Specifications

Rated Output		Max. Open-Circuit Voltage	Amps Input at Rated Output (60% Duty Cycle), 50 or 60 Hz, Single-Phase						
			200 (208) V	230 V	400 V	460 V	575 V	KVA	KW
250 A at 28 VDC, 40% Duty Cycle	200 A at 28 VDC, 60% Duty Cycle	38	48 2.3*	42 2*	24 1.2*	21 1*	17 0.8*	9.8 0.46*	7.5 0.13*

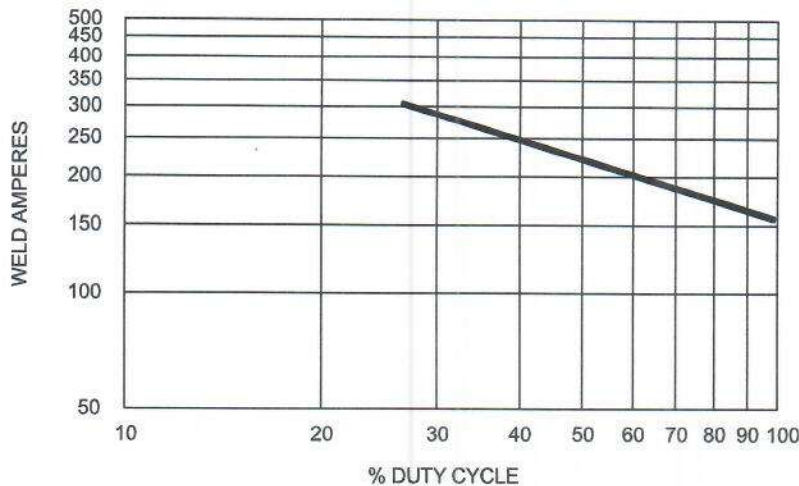
Wire Type and Diameter			Wire Feed Speed	Dimensions	Net Weight
<b>Solid Steel</b>	<b>Stainless Steel</b>	<b>Flux Cored</b>	25-700 IPM (.65-17.8 m/min)	H: 32 in (813 mm) W: 19 in (483 mm) D: 39 in (991 mm)	215 lb (98 kg)
.023 – .045 in (0.6 – 1.2 mm)	.023 – .045 in (0.6 – 0.9 mm)	.030 – .045 in (0.8 – 1.2 mm)			

\* While idling

Operating Temperature Range -- -20C to +40C

Storage Temperature Range -- -30C to + 50C

### 2-2. Welding Power Source Duty Cycle And Overheating

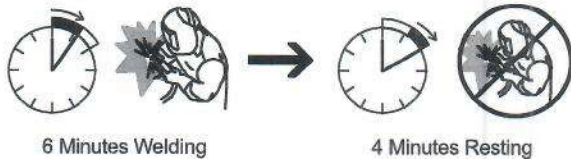


Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

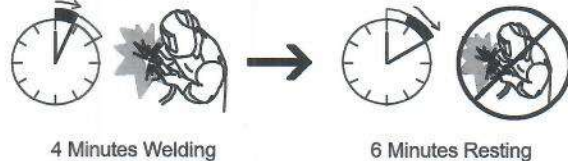
If unit overheats, Thermistor (T) opens, output stops, and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

▲ Exceeding duty cycle can damage unit and void warranty.

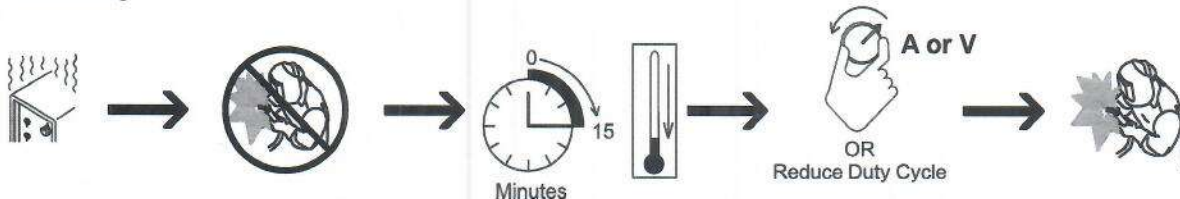
60% Duty Cycle At 200 Amperes



40% Duty Cycle At 250 Amperes



#### Overheating



## Technical Specifications

<b>695 Sprayers</b>		
	<b>U.S.</b>	<b>Metric</b>
<b>Sprayer</b>		
Maximum Delivery	0.95 gpm	3.6 lpm
Maximum Tip Size	0.031	0.031
Fluid Outlet npsm	1/4 in.	1/4 in.
Cycles	226 per gallon	60 per liter
Generator Minimum	5000 W	5000 W
120V, A, Hz	15, 50/60	
230V, A, Hz	10, 50/60	
<b>Dimensions</b>		
<b>Weight:</b>		
Standard Series Lo-Boy	94 lb	43 kg
Standard Series Hi-Boy	93 lb	42 kg
ProContractor Series	103 lb	47 kg
<b>Height:</b>		
Standard Series Lo-Boy	27.5 in.	69.9 cm
Standard Series Hi-Boy	28.5 in. (Handle down) 38.75 in. (Handle up)	72.4 cm (Handle down) 98.4 cm (Handle up)
ProContractor Series	39 in.	99 cm
<b>Length:</b>		
Standard Series Lo-Boy	37 in.	94 cm
Standard Series Hi-Boy	26 in.	66 cm
ProContractor Series	29.5 in.	75 cm
<b>Width:</b>	22.5 in.	57.2 cm
Wetted parts	zinc- and nickel-plated carbon steel, nylon, stainless steel, PTFE, Acetal, leather, UHMWPE, aluminum, tungsten carbide, PEEK, brass	
<b>Noise Level:</b>		
Sound Power	91 dBa*	91 dBa*
Sound Pressure	82 dBa*	82 dBa*
	*per ISO 3744; measured at 3.1 ft	*per ISO 3744; measured at 1 m

# Initial Notification

## National Emission Standards for Hazardous Air Pollutants:

### Area Source Standards for Nine Metal Fabrication and Finishing Source Categories

40 CFR 63 subpart XXXXXX

#### Section 1. Facility Information

Yes, I am subject to 40 CFR Part 63 subpart XXXXXX, National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Nine Metal Fabrication and Finishing Source Categories

Source category and NAICS code(s) Fabricated structural metal  
manufacturing 332312

Compliance Date:  Existing source: July 25, 2011  New source: 1/1/2020  
(Date of startup)

No, I am NOT subject to 40 CFR Part 63 subpart XXXXXX. Reason not applicable:

*If you checked the "No" box above, please complete only Section 1 of this form and then proceed directly to Section 3 of this form (skip Section 2).*

Company name Soone Steel Inc.

Facility name (if different): \_\_\_\_\_

Facility (physical location) address: 48 Regha Ln. Springfield Va  
40068

Owner name/title: Eric Soone / President

Owner/company address: \_\_\_\_\_

Owner telephone number 502-222-0099

Owner email address (if available): \_\_\_\_\_

Is the Operator the same person as the Owner? Yes  No

If the Operator information is different from the Owner, please provide the following:

<sup>a</sup> This is an example of the type of information that must be submitted to fulfill the Initial Notification requirement of 40 CFR 63, subpart XXXXXX. You may submit the information in another form or format, or you may use this form.

Operator name/title: \_\_\_\_\_

Operator telephone number: \_\_\_\_\_

Operator email address (if available): \_\_\_\_\_

**Section 2. Identification of Affected Operations**

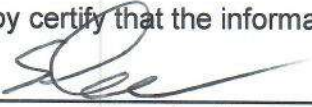
The following are the operations at this facility subject<sup>b</sup> to subpart XXXXXX (check all that apply):

<b>Dry Abrasive Blasting</b>	
(1) Totally enclosed and unvented blast chambers	<input type="checkbox"/>
(2) Vented enclosures with a filtration control device	<input type="checkbox"/>
(3) Objects over 8 feet in any dimension without a filtration control device (includes outdoor blasting of objects over 8 ft in any dimension)	<input type="checkbox"/>
<b>Dry Machining</b>	<input type="checkbox"/>
<b>Dry Grinding or Dry Polishing with Stationary Machines</b>	<input type="checkbox"/>
<b>Spray Painting</b>	
(1) In a spray booth	<input checked="" type="checkbox"/>
(2) Without a spray booth (for Fabricated Structural Metal facilities or any objects over 15 feet)	<input type="checkbox"/>
<b>Welding</b>	
(1) Use less than 2,000 pounds of MFHAP-containing <sup>b</sup> welding rod or wire annually	<input type="checkbox"/>
(2) Use 2,000 pounds or more of MFHAP-containing <sup>b</sup> welding rod or welding wire annually	<input checked="" type="checkbox"/>

<sup>b</sup> **Important Note:** These operations are affected sources under subpart XXXXXX only if/when they use materials that contain or have the potential to emit metal fabrication or finishing metal HAP (MFHAP). **MFHAP containing/potential** is defined to be when the compounds of cadmium, chromium, lead, manganese, and nickel, or any of these metals in the elemental form with the exception of lead, are used or have the potential to be emitted in quantities of 0.1 percent or more, or 1.0 percent or more for elemental or compounds of manganese.

**Section 3. Certification**

I hereby certify that the information presented herein is correct to the best of my knowledge.



(Signature)

8/24/23

(Date)

EAI Stone / President

(Name/title)

(502) 222-0099

(Telephone No.)



## Section 4. Submittal

### Submit the Initial Notification to one of the following offices, as appropriate:

- a. If your State has been delegated the authority for this regulation under section 112(l) of the Clean Air Act<sup>c</sup>, submit the notification to your State agency found at the following link:  
<http://www.4cleanair.org/agencies>
- b. If your EPA Region has assumed the authority for this rule, submit the notification to your Regional Office of the EPA, from list below:

EPA Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)  
5 Post Office Square, Suite 100, Mail code: OES04-2,  
Boston MA 02109-3912 Attention: Air Clerk

EPA Region II (New Jersey, New York, Puerto Rico, Virgin Islands),  
Director, Division of Enforcement and Compliance Assistance  
290 Broadway, New York, NY 10007-1866

EPA Region III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia)  
Director, Air Protection Division, 1650 Arch Street, Philadelphia, PA 19103

EPA Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)  
Director, Air, Pesticides and Toxics Management Division  
Atlanta Federal Center, 61 Forsyth Street, Atlanta, GA 30303-3104

EPA Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)  
Director, Air and Radiation Division, 77 West Jackson Blvd., Chicago, IL 60604-3507

EPA Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)  
Director, Air, Pesticides and Toxics, 1445 Ross Avenue, Dallas, TX 75202-2733

EPA Region VII (Iowa, Kansas, Missouri, Nebraska)  
Director, Air and Waste Management Division, U.S. Environmental Protection Agency  
901 N. 5th Street, Kansas City, KS 66101

EPA Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming)  
Director, Air and Toxics Technical Enforcement Program, Office of Enforcement, Compliance and  
Environmental Justice, 1595 Wynkoop Street, Denver, CO 80202-1129

EPA Region IX (Arizona, California, Hawaii, Nevada, American Samoa, Guam)  
Director, Air and Toxics Division, 75 Hawthorne Street, San Francisco, CA 94105

EPA Region X (Alaska, Idaho, Oregon, Washington)  
Director, Office of Air, Waste and Toxics, 1200 6th Ave., Suite 900, AWT-107, Seattle, WA 98101

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<sup>c</sup> To determine whether your State has been delegated the authority for this regulation under section 112(l) of the Clean Air Act, contact your EPA Regional Office, listed above.



US-ML-MIDLOTHIAN  
300 WARD ROAD  
MIDLOTHIAN, TX 76065  
USA

**CERTIFIED MATERIAL TEST REPORT**

CUSTOMER SHIP TO FREDERICK STEEL COMPANY 630 GLENDALE MILFORD RD CINCINNATI, OH 45215-1105 USA		CUSTOMER BILL TO FREDERICK STEEL LLC WHOLLY 777 BENJAMIN DRIVE SPRINGFIELD, OH 45502 USA		GRADE A992/A572-50	SHAPE / SIZE Wide Flange Beam / 8 X 31# / 200 X 46.1	DOCUMENT ID: 0000980334	
SALES ORDER 13232105/000010		CUSTOMER MATERIAL N°		LENGTH 40'00"	PCS 6	WEIGHT 7,440 LB	HEAT / BATCH 58057517/04
CUSTOMER PURCHASE ORDER NUMBER 43792		BILL OF LADING 1327-0000540491		DATE 08/07/2023		SPECIFICATION / DATE or REVISION ASTM A6-17 ASTM A709-21 GR50 ASTM A992-20, A572-21 CSA G40.21-13 345WM, 50W	


CHEMICAL COMPOSITION												
C (%)	Mn (%)	P (%)	S (%)	Si (%)	Cu (%)	Ni (%)	Cr (%)	Mo (%)	Sn (%)	V (%)	Nb (%)	CEqvA6 (%)
0.07	0.94	0.024	0.038	0.19	0.31	0.10	0.16	0.026	0.006	0.002	0.022	0.30


MECHANICAL PROPERTIES							
YS 0.2% (PSI)	UTS (PSI)	YS (MPa)	UTS (MPa)	Y/T rati (%)	G/L (Inches)	G/L (mm)	Elong. (%)
58711	73920	405	510	0.790	8.000	200.0	28.10
61588	79227	425	546	0.780	8.000	200.0	23.40

COMMENTS / NOTES

Gerdau's steel is 100% recyclable. Support the circular economy through our Metals Recycling Partnership. For details, visit [www2.gerdau.com/metals-recycling](http://www2.gerdau.com/metals-recycling), or contact [metalsrecycling@gerdau.com](mailto:metalsrecycling@gerdau.com).

The above figures are certified chemical and physical test records as contained in the permanent records of the company. We certify that these data are correct and in compliance with specified requirements. No weld repair was performed on this material. The material has not been in contact with mercury while in Gerdau possession. For all products other than billets or beam blanks, this material was produced (Electric Arc Furnace, Melted, Continuously Cast, Hot Rolled and, if applicable, Cold-Drawn) in the USA. For billets or beam blanks, this material was produced (Electric Arc Furnace, Melted and Continuously Cast) in the USA. CMTR complies with EN 10204 3.1.

  
BHASKAR YALAMANCHILI  
QUALITY DIRECTOR  
Phone: (409) 267-1071 Email: [Bhaskar.Yalamanchili@gerdau.com](mailto:Bhaskar.Yalamanchili@gerdau.com)

  
WADE LUMPKINS  
QUALITY ASSURANCE MGR.  
Phone: 972-779-3118 Email: [Wade.Lumpkins@gerdau.com](mailto:Wade.Lumpkins@gerdau.com)

Heat Number 58057517/04  
Shipper No 176721  
Customer PO# 23-1646 PUTLAK  
Customer Name SONNE STEEL

## Customer Documents

# PythonX



PythonX Technical Support  
Worldwide Support Available 24/7, 365

+1.519.571.4445  
North America Toll Free: 1.833.PYTHONX  
(798.4669)  
Support@PythonX.com

**PythonX Headquarters:**  
Burlington Automation  
63 Innovation Drive  
Hamilton, ON  
Canada L9H 7L8

Version 4.0 | Issue Date 03/22

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**The Lincoln Electric Company**  
22801 Saint Claire Avenue  
Cleveland, OH 44117-1199 USA

# PythonX Customer Documents

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Last update: 2022/03/09

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## SHIPPING

Once a shipment date has been established no changes can be made to the expected shipping dates without incurring storage and handling charges. Additional, changes to the shipping schedule will result in an assignment of new a shipping and installation date based on availability, which may be much later than the original assigned shipping date.

Payment for all prior to shipment invoices will need to be received by wire transfer prior to shipping. We recommend the wire transfer take place at least five days prior to your shipping date to avoid any delays.

## NOTES

- Operating temperatures within the work area **MUST** be maintained above 50° F (10° C). Temperatures falling below will cause condensation in cylinders and gearboxes thus having a negative impact on your equipment.
- Burlington Automation is NOT RESPONSIBLE for any damage occurred during installation. The customer must locate and CLEARLY MARK any power sources, electrical lines, pneumatic lines, hydraulic lines, water lines and radiant floor heating systems.
- Please wait for Burlington Automation representatives to arrive prior to beginning installation.
- Burlington Automation recommends a fusible disconnect NOT BREAKERS as shown your electrical layout.

### PLEASE NOTE:

ALTHOUGH PARTS ARE ORDERED WHEN YOUR ORDER IS PLACED  
YOUR MACHINE FABRICATION DOES NOT BEGIN UNTIL SIGNED LAYOUTS ARE RECEIVED  
THIS WILL HAVE AN EFFECT ON YOUR DELIVERY DATE

I, \_\_\_\_\_ have read and fully understand the customers documents.

(Print Name)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

# CUSTOMER RESPONSIBILITIES

## INSPECT THE MACHINE

The customer assumes responsibility for inspection of all PythonX components before unloading. Make certain that none of the components have been subject to inclement weather conditions or other damages, as this will void the warranty. If weather conditions are serious you may refuse to unload, or use an alternative method of protecting the equipment. If you identify any damage, take photographs before unloading and make notes on the delivery paperwork. Please make certain that you notify Burlington Automation immediately if any damage is evident.

## UNLOADING

All lifting equipment used shall be rated for a minimum of 12,000 lbs. (5443 kg.).

Method 1 requires the use of lifting straps. Place the straps as shown in Figure A.1 to ensure no wiring or cables are damaged during the process.

Figure A.1 – Lifting method 1



Method 2 requires the use of a forklift rated for a minimum of 12,000 lbs. (5443 kg.) with 6 ft. (1.83 m) long forks centered under the cutting table keeping the robot structure as low to the ground as possible. See Figure A.2.

Figure A.2 – Lifting method 2



## SELECT SUITABLE LOCATION

Position the PythonX in a dry location where there is free circulation of clean air. Dirt, dust or any foreign material that can be drawn into the machine must be kept to a minimum. Failure to observe these precautions can result in excessive operating temperatures and nuisance trips.

- Clear an area of at least 10 ft. (3 m) around the perimeter of the machine location.
- Supply the appropriate input power.
- Floor level must be within +/- 1" (25.4 mm) over the entire area where anchors are to be installed.
- Supply Ethernet connection between machine and office network with a high-speed internet connection (this is a requirement for technical support).

- Ensure that all electrical cabinets and disconnects have the correct clearances for all equipment being installed (check your local code requirements for minimum clearances).

## ENVIRONMENTAL AREA

Keep the machine inside and dry at all times. Do not position the PythonX on wet ground or in puddles. Never place liquids on top of the machine.

## STACKING

The PythonX cannot be stacked.

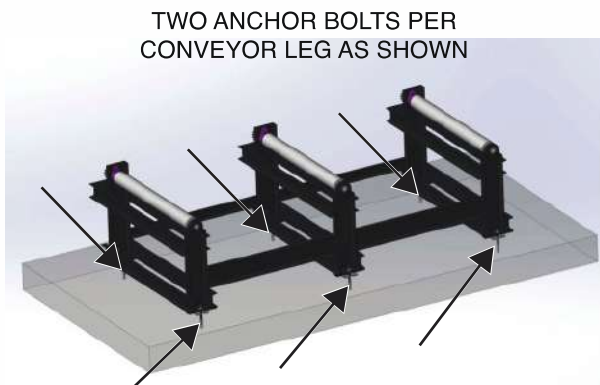
## TILTING

Place the PythonX directly on a secure, level surface at all times.

## TOOL AND PARTS LIST

- Hammer drill and ram set.

Figure A.3 – Anchor point locations



- Metric and SAE Allen keys up to 7/16".
- 3/8" to 1 5/16" wrench set (2 X 15/16" wrenches).
- 15/16" Deep well nut driver.
- 3/4" 12 point socket.
- 1 1/8" wrench.
- Two 1 1/2" wrenches.
- Nut driver with M6 and M8 Allen drivers.
- A minimum of six 8" C-clamps or Bessey clamps.
- 6 ft. (1.8 m) level.
- Chalk line.
- Laser (swivel head), accurate to +/- 1/16<sup>th</sup>" per 100' or 1.5 mm per 30 m.
- Three 1/2" hand drills (keyed chucks).
- Masonry drill bits up to 1/2".
- M10 x 1.5 tap
- Center locating punch for M10
- 8.4mm (Q) drill for M10 x 1.5 tap
- Extension cords with surge protectors.
- Tape measure.
- Combination square.
- 4 ft. (1.2 m) pry bar.
- Pneumatic impact gun/wrench with sockets up to 7/8".
- Hammer.
- 10ft. (3 m) straight edge.
- Hydraulic jack.
- 15 - 20 lb. (6.8 - 9 kg.) sledgehammer.
- Caulk gun with two tubes of high temperature rated silicon (clear).
- 250 ft. (76 m) of string line (aviation cable recommended for outdoor installations).
- Disk grinder.

# ELECTRICAL

## HIGH FREQUENCY INTERFERENCE PROTECTION

### CAUTION

- Large equipment, such as cranes, may interfere with the operation of this machine.
- This machine may interfere with the operation of other equipment in work area.

## SAFETY PRECAUTIONS

- Electric connections should be made in accordance with local requirements. Ensure compliance with the EMC regulatory arrangements.
- During installation, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Use sufficient climbing gear and safety guards when working higher than 6 ft. (1.8 m) (local restrictions may apply).
- Never install any product in front of entrances and exits which must be used for emergency services.
- Do not move, puncture, cut or otherwise disturb any gas, water pipes and/or electric cables.
- Ensure the workspace is well illuminated.
- Use common sense. Stay alert and keep your attention to your work. Do not install the product when you are under the influence of drugs, alcohol or medication.
- Make sure that the installation location contains sufficient approved fire extinguishers.
- Install according to the National Fire Protection Association (NFPA) requirements and the state and local authorities having jurisdiction.

## ELECTRICAL INSTALLATION NOTES

- OUR PYTHONX TECHNICIANS ARE NOT LICENSED TO RUN OR HOOK UP YOUR FACILITY POWER OR MACHINE WIRING WITHIN YOUR BUILDING. YOU'LL NEED TO HAVE ELECTRICAL CONTRACTORS PRESENT FROM THE TUESDAY TO SATURDAY OF THE INSTALLATION WEEK.
- Machine cabling supplied by Burlington Automation
- Provide power to the PythonX.
- Burlington Automation technicians are onsite to **supervise and lead** the installation of your PythonX.
- Make sure you have the proper gauge electrical feeds to the machine for when we arrive onsite, as per your total amperage on your electrical requirements document.
- Ensure that all electrical cabinets and disconnects have the correct clearances to all equipment to be installed. Check your local building code for accepted clearances.
- **DO NOT WELD** to PythonX as this could result in damage to electrical components.



## MAIN POWER FEED CONNECTION

Figure A.4 – Main power feed connection



All components of the PythonX Structural are powered by the main feed. This includes Robot, Plasma system, conveyors and cross transfers. Compressors and air dryers are not included, they are to be provided by the customer.

## PLASMA UNIT

All switches, slow-burn fuses and power cables are customer-supplied and must be chosen as outlined by applicable national and local electrical codes. Installation must be performed by a licensed electrician.

The main feed protection device (Circuit Breaker or Fuse) must be sized to handle all branch-feed loads for both inrush and steady-state current. The power supply must be wired into one of the branch-feed circuits.

Use a motor-start circuit breaker or time delay fuses.

# MECHANICAL

## CUSTOMER TO SUPPLY

- Customer to provide a minimum of three (3) qualified mechanical technicians to assist with installation.
- Floor must be a maximum of +/- 1" (25.4 mm) out of level over entire area where anchors are to be installed.
- Burlington Automation mechanical technicians are onsite to supervise and lead the installation of your PythonX.
- Burlington Automation mechanical technicians will assist with alignment and leveling prior to fastening to the floor.
- Customer is to secure all equipment to the floor when final placement is achieved.
- When installing drag transfers, placement of the operator station is the responsibility of the customer.
- When installation is complete, Burlington Automation recommends mortaring/grouting of all equipment.

## MECHANICAL INSTALLATION STEPS

- Rough place the conveyors as your layout drawing dictates (should be within 3 feet of final install location).
- Make sure all tools and equipment are on site when Burlington Automation technicians arrive.
- Please wait for Burlington Automation to arrive before continuing with the installation of your PythonX.

NOTE: If you continue to install without Burlington Automation present and this results in incorrect installation you will be responsible for additional costs requiring time, personnel and travel to correct any issues.

DO NOT FASTEN OR SECURE ANY COMPONENTS WITHOUT BURLINGTON AUTOMATION APPROVAL.

(FINAL ALIGNMENT AND LEVELING OF THE MACHINE IS CRITICAL).

## DUST COLLECTOR

- Assembly of dust collection unit (if applicable).
- Supply clean dry air to dust collector (90-105 psi) (6.21 - 7.24 Bar).

Figure A.5– Dust collector ducting  
14" DUCTING

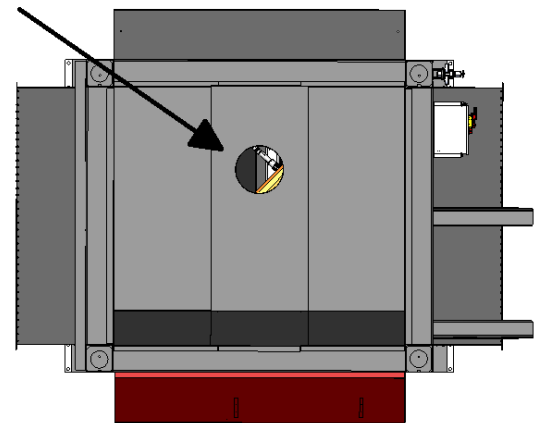


Figure A.6 – Typical ducting

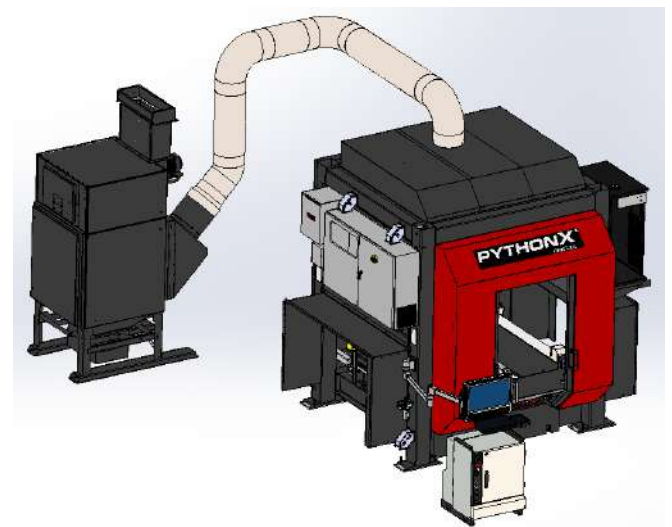

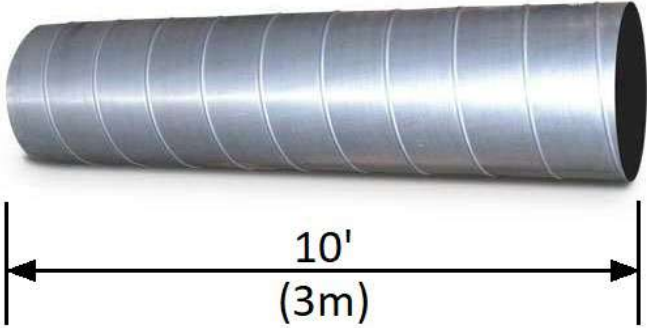


Table A.1 – Supplied Ducting

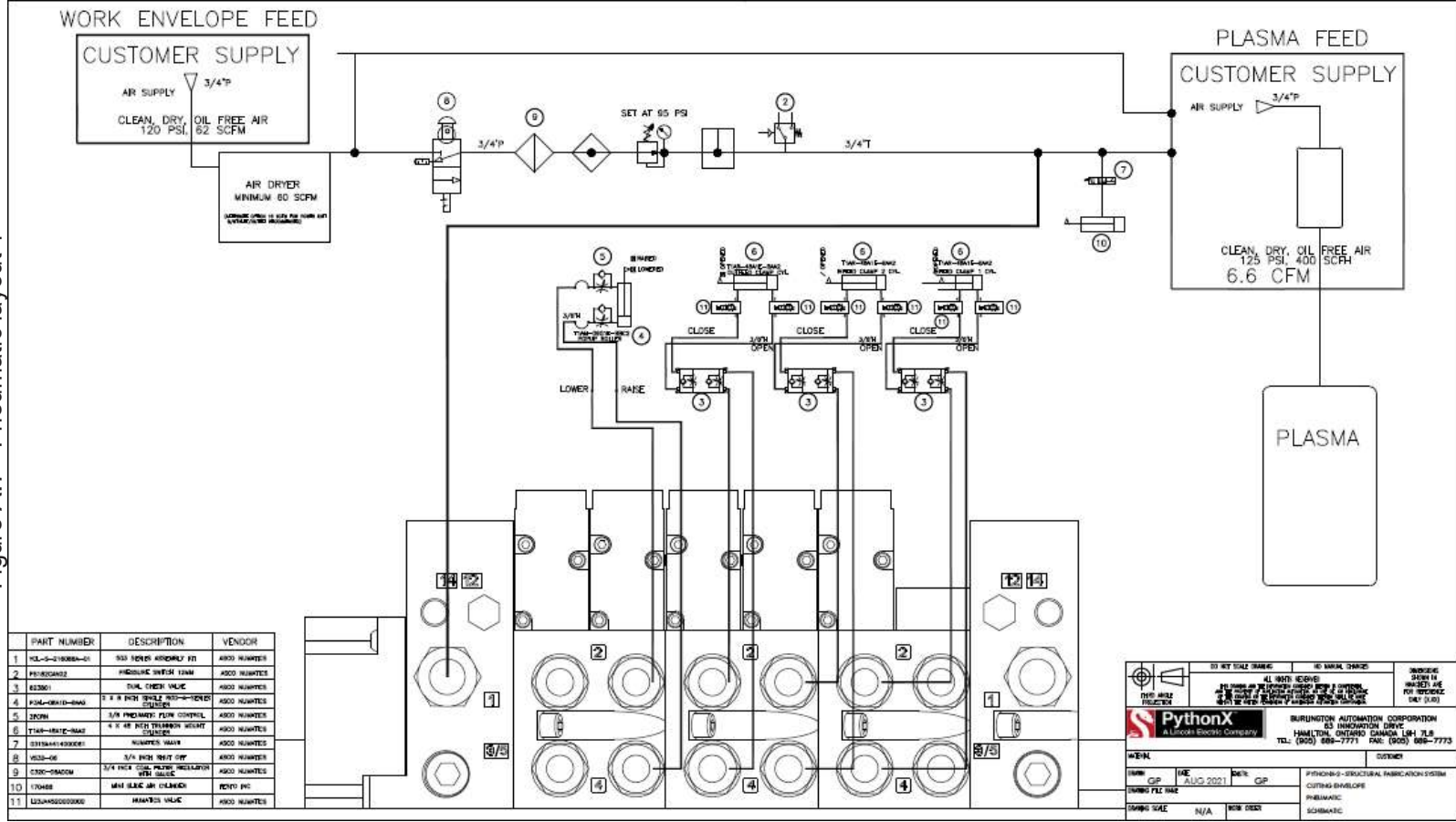
Some ducting is (as noted below) supplied by Burlington Automation: 3 Pieces Swivel elbows. 2 Pieces of 10' length ** CUSTOMER IS RESPONSIBLE FOR SUPPLYING ALL DUCTING BEYOND WHAT IS SUPPLIED WITH THE MACHINE.	
	
3 Pieces	2 Pieces

\*\* CUSTOMER IS RESPONSIBLE FOR SUPPLYING ALL DUCTING BEYOND WHAT IS SUPPLIED WITH THE MACHINE.

### PNEUMATIC REQUIREMENTS

- Supply clean dry air. PythonX requires a total of 62 SCFM 125 psi (8.61 Bar) (Air dryer is required for Hypertherm unit and Dust Collector) air dryer distance to Hypertherm and dust collector recommended at no more than 15 ft. (4.6 m).
- All air feeds with clean and dry air to all equipment (3/4" pipe is required).
- Air to plasma must maintain clean dry air at 125 psi (8.27 Bar) to get proper cut results (bottled air can be used) 400 SCFH (cubic feet hour) = 6.6 SCFM (cubic feet minute).
- Dust collector requires between 90 – 105 psi (6.21 - 7.24 Bar).
- Supply and install air line piping for lift and carry system (if applicable).

Figure A.7 – Pneumatic layout 1



PythonX  
A Local Parts Company

BURLINGTON AUTOMATION CORPORATION  
63 INNOVATION DRIVE  
HAMILTON, ONTARIO CANADA L8M 1L8  
TEL: (905) 688-7771 FAX: (905) 688-7773

DATE: AUG 2021  
REV: GP  
CUTTING ENVELOPE  
PNEUMATIC  
SCHEMATIC

## GAS REQUIREMENTS

**Air, Oxygen and Nitrogen are required for mild steel cutting and scribing. Argon can be used for scribing, but is not required.**

Table A.2 – System gas requirements

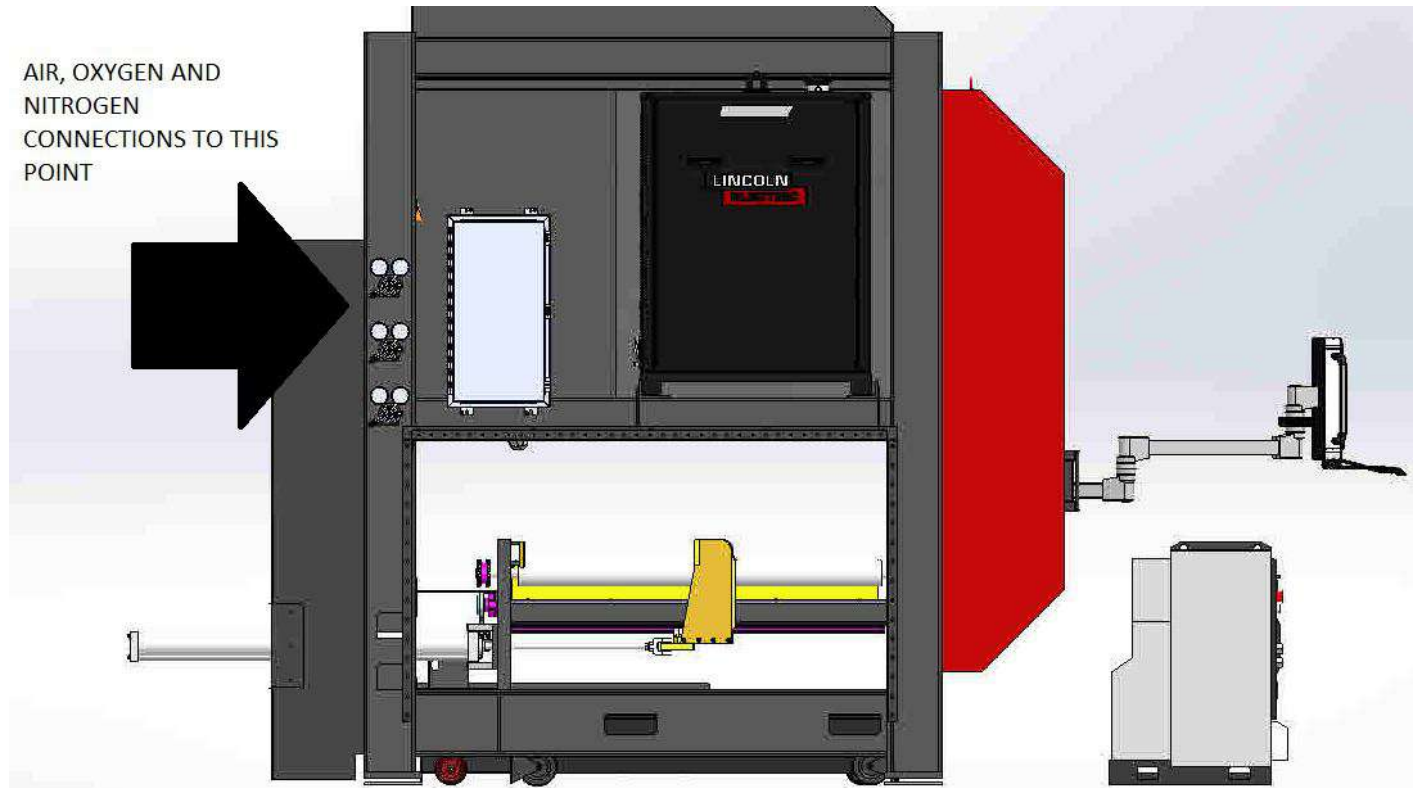
<b>GAS QUALITY AND PRESSURE REQUIREMENTS</b>			
<b>GAS TYPE</b>	<b>QUALITY</b>	<b>PRESSURE +/- 10%</b>	<b>FLOW RATE</b>
<b>O<sub>2</sub> OXYGEN*</b>	<b>99.5% PURE CLEAN, DRY, OIL-FREE</b>	<b>927 kPa / 115 psi (115 PSI) (7.93 Bar)</b>	<b>4250 L/H 150 SCFH</b>
<b>N<sub>2</sub> NITROGEN*</b>	<b>99.99% PURE CLEAN, DRY, OIL-FREE</b>	<b>927 kPa / 115 psi (115 PSI) (7.93 Bar)</b>	<b>11610 L/H 410 SCFH</b>
<b>AIR*</b>	<b>** CLEAN, DRY, OIL-FREE PER ISO 8573-1 CLASS 1.4.2</b>	<b>927 kPa / 115 psi (115 PSI) (7.93 Bar)</b>	<b>11330 L/H 400 SCFH</b>
<b>Ar ARGON</b>	<b>99.99% PURE CLEAN, DRY, OIL-FREE</b>	<b>927 kPa / 115 psi (115 PSI) (7.93 Bar)</b>	<b>4250 L/H 150 SCFH</b>

\*Required

- Particulates – No more than 100 particles per cubic meter of air at a size of 0.1 to 0.5 microns in the largest dimension and 1 particle per cubic meter of air at a size of 0.5 to 5.0 microns in the largest dimension.
- Water – The pressure dew point of the humidity must be less than or equal to 37.4° F (3° C).
- Oil – The concentration of oil can be no more than 0.1 mg per cubic meter of air.

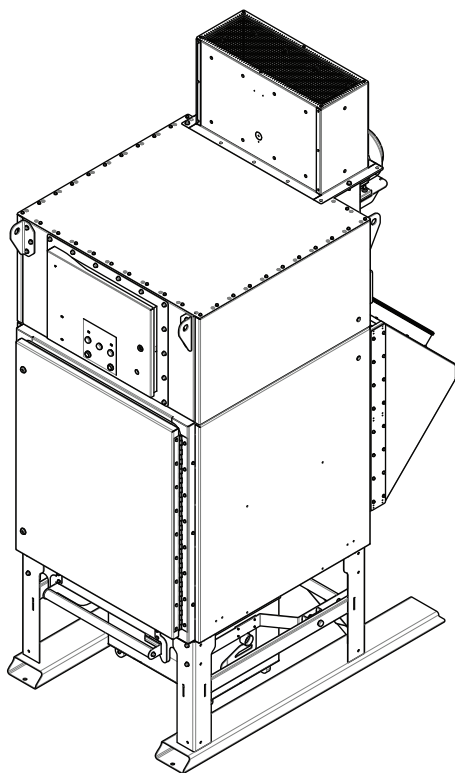
CUT GAS FEEDS

Figure A.8 – Gas Feeds



## Operator's Manual

# PRISM<sup>®</sup> COMPACT



For use with machines having Code Numbers:

**13218, 13219, 13220, 13221,  
13222, 13223, 13224, 13225,  
13226, 13422**



**Register your machine:**

[www.lincolnelectric.com/register](http://www.lincolnelectric.com/register)

**Authorized Service and Distributor Locator:**

[www.lincolnelectric.com/locator](http://www.lincolnelectric.com/locator)

### Save for future reference

Date Purchased

Code: (ex: 10859)

Serial: (ex: U1060512345)

**Need Help? Call 1.888.935.3877**

to talk to a Service Representative

**Hours of Operation:**

8:00 AM to 6:00 PM (ET) Mon. thru Fri.

**After hours?**

Use "Ask the Experts" at [lincolnelectric.com](http://lincolnelectric.com)  
A Lincoln Service Representative will contact you  
no later than the following business day.

**For Service outside the USA:**

Email: [globalservice@lincolnelectric.com](mailto:globalservice@lincolnelectric.com)

# THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

## PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

## SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

### **WARNING**

This statement appears where the information must be followed exactly to avoid serious personal injury or loss of life.

### **CAUTION**

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.



## KEEP YOUR HEAD OUT OF THE FUMES.

**DON'T** get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

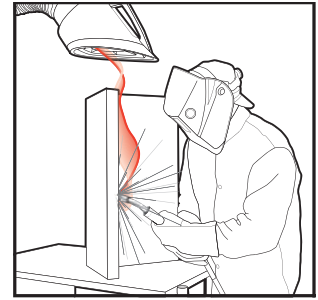
**READ** and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

**USE ENOUGH VENTILATION** or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

**IN A LARGE ROOM OR OUTDOORS**, natural ventilation may be adequate if you keep your head out of the fumes (See below).

**USE NATURAL DRAFTS** or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.



## WEAR CORRECT EYE, EAR & BODY PROTECTION

**PROTECT** your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

**PROTECT** your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

**PROTECT** others from splatter, flash, and glare with protective screens or barriers.

**IN SOME AREAS**, protection from noise may be appropriate.

**BE SURE** protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**



## SPECIAL SITUATIONS

**DO NOT WELD OR CUT** containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

**DO NOT WELD OR CUT** painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

## Additional precautionary measures

**PROTECT** compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

**BE SURE** cylinders are never grounded or part of an electrical circuit.

**REMOVE** all potential fire hazards from welding area.

**ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.**





## SECTION A: WARNINGS



### CALIFORNIA PROPOSITION 65 WARNINGS



**WARNING:** Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects, or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to [www.P65warnings.ca.gov/diesel](http://www.P65warnings.ca.gov/diesel)

**WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code § 25249.5 *et seq.*)



**WARNING:** Cancer and Reproductive Harm  
[www.P65warnings.ca.gov](http://www.P65warnings.ca.gov)

**ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.**

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

**BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.**



### FOR ENGINE POWERED EQUIPMENT.

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact



with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.
- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.
- Using a generator indoors CAN KILL YOU IN MINUTES.
- Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.
- NEVER use inside a home or garage, EVEN IF doors and windows are open.
- Only use OUTSIDE and far away from windows, doors and vents.
- Avoid other generator hazards. READ MANUAL BEFORE USE.



### ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
  - Route the electrode and work cables together - Secure them with tape when possible.
  - Never coil the electrode lead around your body.
  - Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
  - Connect the work cable to the workpiece as close as possible to the area being welded.
  - Do not work next to welding power source.



## ELECTRIC SHOCK CAN KILL.



- 3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

**In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:**

- Semiautomatic DC Constant Voltage (Wire) Welder.
  - DC Manual (Stick) Welder.
  - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
  - 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
  - 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
  - 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
  - 3.g. Never dip the electrode in water for cooling.
  - 3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
  - 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
  - 3.j. Also see Items 6.c. and 8.



## ARC RAYS CAN BURN.



- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



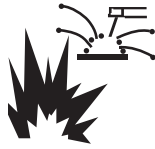
## FUMES AND GASES CAN BE DANGEROUS.



- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also be required. Additional precautions are also required when welding on galvanized steel.**
- 5.b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer’s safety practices. SDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.



## WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- 6.i. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 022690-9101.
- 6.j. Do not use a welding power source for pipe thawing.



## CYLINDER MAY EXPLODE IF DAMAGED.



- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
  - Away from areas where they may be struck or subjected to physical damage.
  - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.



## FOR ELECTRICALLY POWERED EQUIPMENT.



- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

**Refer to**  
**<http://www.lincolnelectric.com/safety>**  
**for additional safety information.**

As a rule of thumb, for many mild steel electrode, if the air is visibly clear and you are comfortable, then the ventilation is generally adequate for your work. The most accurate way to determine if the worker exposure does not exceed the applicable exposure limit for compounds in the fumes and gases is to have an industrial hygienist take and analyze a sample of the air you are breathing. This is particularly important if you are welding with stainless, hardfacing or Special Ventilation products. All Lincoln MSDS have a maximum fume guideline number. If exposure to total fume is kept below that number, exposure to all fume from the electrode (not coatings or plating on the work) will be below the TLV.

There are steps that you can take to identify hazardous substances in your welding environment. Read the product label and material safety data sheet for the electrode posted in the work place or in the electrode or flux container to see what fumes can be reasonably expected from use of the product and to determine if special ventilation is needed. Secondly, know what the base metal is and determine if there is any paint, plating, or coating that could expose you to toxic fumes and/or gases. Remove it from the metal being welded, if possible. If you start to feel uncomfortable, dizzy or nauseous, there is a possibility that you are being overexposed to fumes and gases, or suffering from oxygen deficiency. Stop welding and get some fresh air immediately. Notify your supervisor and co-workers so the situation can be corrected and other workers can avoid the hazard. Be sure you are following these safe practices, the consumable labeling and MSDS to improve the ventilation in your area. Do not continue welding until the situation has been corrected.

NOTE: The MSDS for all Lincoln consumables is available on Lincoln's website: [www.lincolnelectric.com](http://www.lincolnelectric.com)

Before we turn to the methods available to control welding fume exposure, you should understand a few basic terms:

**Natural Ventilation** is the movement of air through the workplace caused by natural forces. Outside, this is usually the wind. Inside, this may be the flow of air through open windows and doors.

**Mechanical Ventilation** is the movement of air through the workplace caused by an electrical device such as a portable fan or permanently mounted fan in the ceiling or wall.

**Source Extraction** (Local Exhaust) is a mechanical device used to capture welding fume at or near the arc and filter contaminants out of the air.

The ventilation or exhaust needed for your application depends upon many factors such as:

- Workspace volume
- Workspace configuration
- Number of welders
- Welding process and current
- Consumables used (mild steel, hardfacing, stainless, etc.)
- Allowable levels (TLV, PEL, etc.)
- Material welded (including paint or plating)
- Natural airflow

Your work area has adequate ventilation when there is enough ventilation and/or exhaust to control worker exposure to hazardous materials in the welding fumes and gases so the applicable limits for those materials is not exceeded. See chart of TLV and PEL for Typical Electrode Ingredients, the OSHA PEL

(Permissible Exposure Limit), and the recommended guideline, the ACGIH TLV (Threshold Limit Value), for many compounds found in welding fume.

### Ventilation

There are many methods which can be selected by the user to provide adequate ventilation for the specific application. The following section provides general information which may be helpful in evaluating what type of ventilation equipment may be suitable for your application. When ventilation equipment is installed, you should confirm worker exposure is controlled within applicable OSHA PEL and/or ACGIH TLV. According to OSHA regulations, when welding and cutting (mild steels), natural ventilation is usually considered sufficient to meet requirements, provided that:

1. The room or welding area contains at least 10,000 cubic feet (about 22' x 22' x 22') for each welder.
2. The ceiling height is not less than 16 feet.
3. Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
4. Welding is not done in a confined space.

Spaces that do not meet these requirements should be equipped with mechanical ventilating equipment that exhausts at least 2000 CFM of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

### Important Safety Note:

**When welding with electrodes which require special ventilation such as stainless or hardfacing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce hazardous fumes, keep exposure as low as possible and below exposure limit values (PEL and TLV) for materials in the fume using local exhaust or mechanical ventilation. In coned spaces or in some circumstances, for example outdoors, a respirator may be required if exposure cannot be controlled to the PEL or TLV. (See MSDS and chart of TLV and PEL for Typical Electrode Ingredients.) Additional precautions are also required when welding on galvanized steel.**

**BIBLIOGRAPHY AND SUGGESTED READING**

ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection, American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

Arc Welding and Your Health: A Handbook of Health Information for Welding. Published by The American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031-4319.

NFPA Standard 51B, Cutting and Welding Processes, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9146, Quincy, MA 02269-9959.

OSHA General Industry Standard 29 CFR 1910 Subpart Q. OSHA Hazard Communication Standard 29 CFR 1910.1200. Available from the Occupational Safety and Health Administration at <http://www.osha.org> or contact your local OSHA office.

The following publications are published by The American Welding Society, P.O. Box 351040, Miami, Florida 33135. AWS publications may be purchased from the American Welding Society at <http://www.aws.org> or by contacting the AWS at 800-443-9353.

ANSI, Standard Z49.1, Safety in Welding, Cutting and Allied Processes. Z49.1 is now available for download at no charge at <http://www.lincolnelectric.com/community/safety/> or at the AWS website <http://www.aws.org>.

AWS F1.1, Method for Sampling Airborne Particulates Generated by Welding and Allied Processes.

AWS F1.2, Laboratory Method for Measuring Fume Generation Rates and Total Fume Emission of Welding and Allied Processes.

AWS F1.3, Evaluating Contaminants in the Welding Environment: A Strategic Sampling Guide.

AWS F1.5, Methods for Sampling and Analyzing Gases from Welding and Allied Processes.

AWS F3.2, Ventilation Guide for Welding Fume Control

AWS F4.1, Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances.

AWS SHF, Safety and Health Facts Sheets. Available free of charge from the AWS website at <http://www.aws.org>.

**LISTED BELOW ARE SOME TYPICAL INGREDIENTS IN WELDING ELECTRODES AND THEIR TLV (ACGIH) GUIDELINES AND PEL (OSHA) EXPOSURE LIMITS**

INGREDIENTS	CAS No.	TLV mg/m <sup>3</sup>	PEL mg/m <sup>3</sup>
Aluminum and/or aluminum alloys (as Al)*****	7429-90-5	1.0	15
Aluminum oxide and/or Bauxite*****	1344-28-1	1.0	5**
Barium compounds (as Ba)*****	513-77-9	0.5	0.5
Chromium and chromium alloys or compounds (as Cr)*****	7440-47-3	0.5(b)	0.5(b)
Hexavalent Chromium (Cr VI)	18540-29-9	0.05(b)	.005(b)
Copper Fume	7440-50-8	0.2	0.1
Cobalt Compounds	7440-48-4	0.02	0.1
Fluorides (as F)	7789-75-5	2.5	2.5
Iron	7439-89-6	10*	10*
Limestone and/or calcium carbonate	1317-65-3	10*	15
Lithium compounds (as Li)	554-13-2	15	10*
Magnesite	1309-48-4	10	15
Magnesium and/or magnesium alloys and compounds (as Mg)	7439-95-4	10*	10*
Manganese and/or manganese alloys and compounds (as Mn)*****	7439-96-5	0.02	5.0(c)
Mineral silicates	1332-58-7	5**	5**
Molybdenum alloys (as Mo)	7439-98-7	10	10
Nickel*****	7440-02-0	0.1	1
Silicates and other binders	1344-09-8	10*	10*
Silicon and/or silicon alloys and compounds (as Si)	7440-21-3	10*	10*
Strontium compounds (as Sr)	1633-05-2	10*	10*
Zirconium alloys and compounds (as Zr)	12004-83-0	5	5

**Supplemental Information:**

(\*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(\*\*) As respirable dust.

(\*\*\*\*) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

(b) The PEL for chromium (VI) is .005 milligrams per cubic meter as an 8 hour time weighted average. The TLV for water-soluble chromium (VI) is 0.05 milligrams per cubic meter. The TLV for insoluble chromium (VI) is 0.01 milligrams per cubic meter.

(c) Values are for manganese fume. STEL (Short Term Exposure Limit) is 3.0 milligrams per cubic meter. OSHA PEL is a ceiling value.

(\*\*\*\*) The TLV for soluble barium compounds is 0.5 mg/m<sup>3</sup>.

TLV and PEL values are as of October 2013. Always check Safety Data Sheet (SDS) with product or on the Lincoln Electric website at <http://www.lincolnelectric.com>

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<b>PARTS LIST .....</b>	<b>PARTS.LINCOLNELECTRIC.COM</b>
CONTENT/DETAILS MAY BE CHANGED OR UPDATED WITHOUT NOTICE. FOR MOST CURRENT INSTRUCTION MANUALS, GO TO PARTS.LINCOLNELECTRIC.COM.	

**TECHNICAL SPECIFICATIONS**

GENERAL	
TYPE OF CLEANING	Pulse jet
DUTY CYCLE	100%
COMPRESSED AIR PRESSURE AND QUALITY	72 - 87 psi (5 - 6 bar) clean, dry and oil free

**FILTER CLEANING COMPRESSED AIR CONSUMPTION**

<b>Compressed Air pressure:</b> 6 bar (87 psi) *5 bar (72 psi) approx 20% less* volume		
<b>PAUSE TIME:</b> 15 SEC (factory default "bold") <b>PULSE LENGTH:</b> 250ms (factory default)		
<b>Air Consumption CFM, (L/MIN)</b>		
<b>Cleaning Cycle</b>		
Pause Time (Sec)	5	51.6 (1464)
	10	25.8 (732)
	<b>15</b>	<b>17.2 (488)</b>
	20	12.9 (366)
	25	10.3 (293)
	30	8.6 (244)
	35	7.4 (209)
	40	6.5 (183)
	45	5.7 (163)
	50	5.2 (146)
	55	4.7 (133)
	60	4.3 (122)

NOTE: Compressed air must be clean and dry, and have a dew point of -40°F (-40°C).

**FILTER CLASS (ACCORDING TO ASHRAE 52.2)**

KP4519-1	MERV 11
KP4519-2	MERV 16 NANO
KP4519-3	MERV 16 PTFE
KP4519-4	MERV 11 OIL RESISTANT
KP4519-5	MERV 16 OIL RESISTANT NANO

**AMBIENT CONDITIONS**

MINIMUM TEMPERATURE	-4°F (-20°C) 37°F (3°C) *Normal operation with thermal suppression
MAXIMUM TEMPERATURE	113°F (45°C)
MAXIMUM RELATIVE HUMIDITY	75%

**PRISM® COMPACT: AD2455-1, AD2455-3, AD2455-5  
AD2455-7 & AD2455-9**

INPUT VOLTAGE NOMINAL +/- 10%	380-480V/3~/50-60Hz
MAXIMUM CURRENT	7.5 A
MOTOR POWER	5HP
INSULATION CLASS FAN MOTOR	F
PROTECTION CLASS FAN MOTOR	IP54
DIMENSIONS	See Section F
SUPPLY FUSE	CLASS J OR CC 30A/600V
ALARM LEVEL	1500Pa (factory default)"

**PRISM® COMPACT: AD2455-2, AD2455-4,  
AD2455-6, AD2455-8, AD2455-10**

INPUT VOLTAGE NOMINAL +/- 10%	380-480V/3~/50-60Hz
MAXIMUM CURRENT	14.5 A
MOTOR POWER	10 HP
INSULATION CLASS FAN MOTOR	F
PROTECTION CLASS FAN MOTOR	IP54
DIMENSIONS	See Section F
SUPPLY FUSE	Class J OR CC 30A/600V
ALARM LEVEL	1500Pa (factory default)

# INSTALLATION

## GENERAL DESCRIPTION

Prism® Compact is a reduced-footprint fan/filtration unit combination designed with robotic welding and plasma cutting system in mind. The 4-filter configurations can provide extraction capacity for just about any automated system equipped with a hood.

Pre-assembly allows for easy and quick installation.

The fan pulls the air with particulate through the filters. When the pressure over the filter reaches a preset point, the internal self cleaning mechanism begins to clean the filter cartridges by means of compressed air shots, resulting in the particulate dropping into a dustbin at the bottom of the unit.

## THE INTENDED PURPOSE

Extraction of fumes that are released in the course of using welding equipment for cutting and joining non-alloy and alloy steels, including highalloy chromium/nickel steels with a nickel and chromium content of  $\geq 30\%$

## TRANSPORT AND ERECTION

### ATTENTION

Instruct all persons whose presence is not required to stay out of the hazard area



Do not stand under or next to the load when it is being lifted up or set down

Transport the unit or erection components on the pallets provided, and secure them against falling over or slipping.

Transport them with a suitable pallet truck or forklift truck

Taller units should be built up on site

Filter units must be secured to the foundations

The foundations must have adequate load-bearing strength and be free of vibration

### ATTENTION

- The installer is responsible for following federal, state and local safety codes and regulations.
- Before drilling, verify locations of existing gas, water or electrical conduits.



### WARNING

#### Excluded Uses!

- Welding fumes containing oil
- Aluminium dust
- Burning or incandescent materials
- Cigarettes
- Aggressive media
- Water and moisture
- Explosive gases and/or dust mixtures
- Dusts with toxic characteristics other than welding fumes
- The installation of this product is exclusively reserved to authorized, well-trained and qualified professional electrical and mechanical contractors. A goal of the Smartwire is quick installation, possibly without any LE involvement.
- Inspect the product and check it for damage. Verify the functioning of the safety features.
- Electrical connection to be executed in accordance with local requirements. Ensure compliance with the EMC regulatory arrangements.
- Check the working environment. Do not allow unauthorized persons to enter the working environment.
- Protect the product against water and humidity.
- Use common sense. Stay alert and keep your attention to your work. Do not use the product when you are under the influence of drugs, alcohol or medicine.
- Ensure the workspace is well-illuminated.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.
- Never install the product in front of entrances and exits which must be used for emergency services.
- Make sure that the workshop, in the vicinity of the product, contains sufficient approved fire extinguishers.
- Make sure the wall, ceiling or support system are strong enough to carry the product.
- Air containing particles such as chromium, nickel, beryllium, cadmium, lead etc., which is a health hazard, should never be recycled. This air must always be brought outside the working area.

#### SELECT SUITABLE LOCATION

- Do not place equipment near radiant heat sources.
- Do not place in a confined space. Allow a minimum of 3 feet of clearance around machine at all times for maintenance requirements.

#### ENVIRONMENTAL AREA

Keep the machine inside and dry at all times. Do not place on wet ground or in puddles. Never place liquids on top of the machine.



**INSTALLATION OF PRISM® COMPACT (AD2455-1, AD2455-2, AD2455-5, AD2455-6, & AD2455-9 ONLY)**

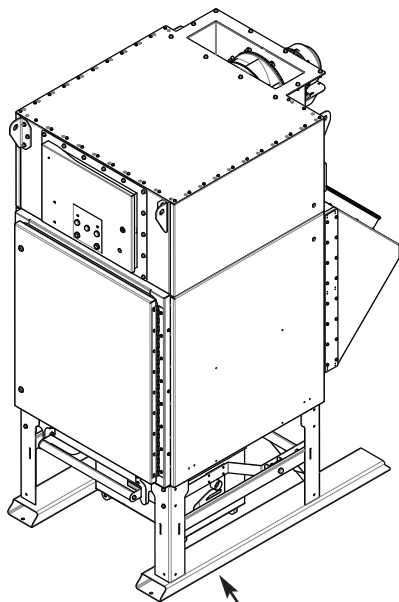
**TOOLS NEEDED**

- 5/16" Nutdriver
- 9/16" Nutdriver
- Ladder/Lift
- Drill + 1/4" Drill Bit

**Step 1 – Remove The Wood Frame**

Remove lag bolts and discard wood frame and pallet.

**FIGURE A.1**



Wood pallet bolted at bottom of machine frame (not pictured).

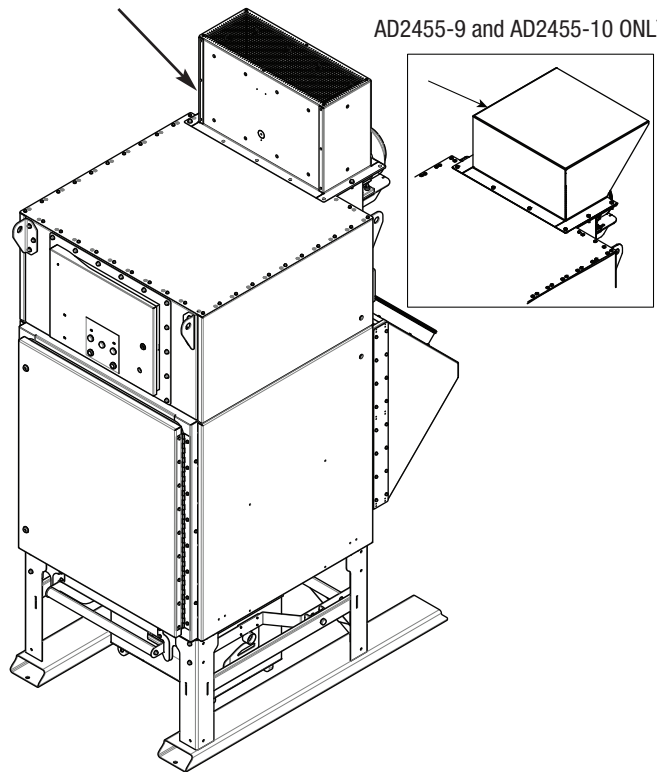
**Step 2 – Install Fan Silencer**

Remove the fan silencer from the pallet (or discharge grill and rain guard for AD2455-9). Remove it from the packaging. Install fan silencer using 3/8 inch bolts (See Figure A.2). For AD2455-9 only, place the discharge grill on the fan outlet, then place the rain guard on the discharge grill. Fasten them using 3/8 inch bolts.

- AD2455-1: 10 bolts
- AD2455-2: 12 bolts
- AD2455-5: 10 bolts
- AD2455-6: 12 bolts
- AD2455-9: 10 bolts
- AD2455-10: 12 bolts

**FIGURE A.2**

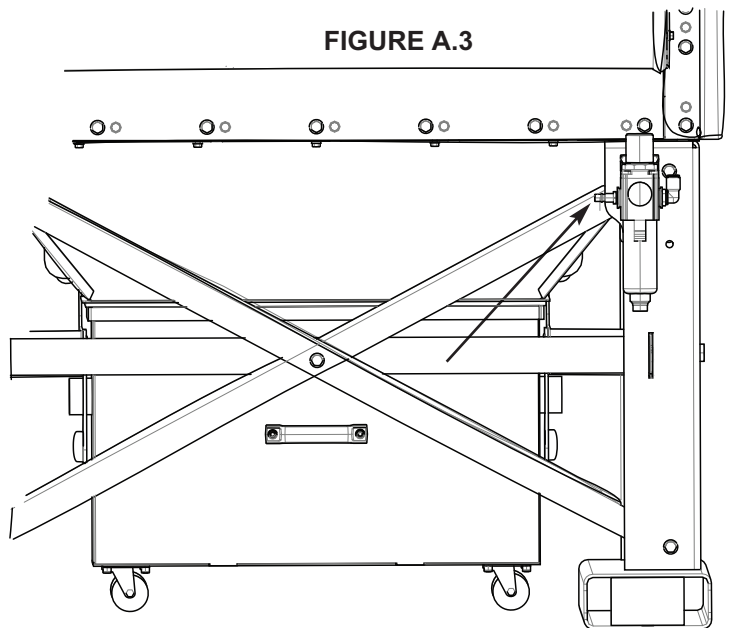
AD2455-9 and AD2455-10 ONLY



**Step 3 – Compressed Air Connection**

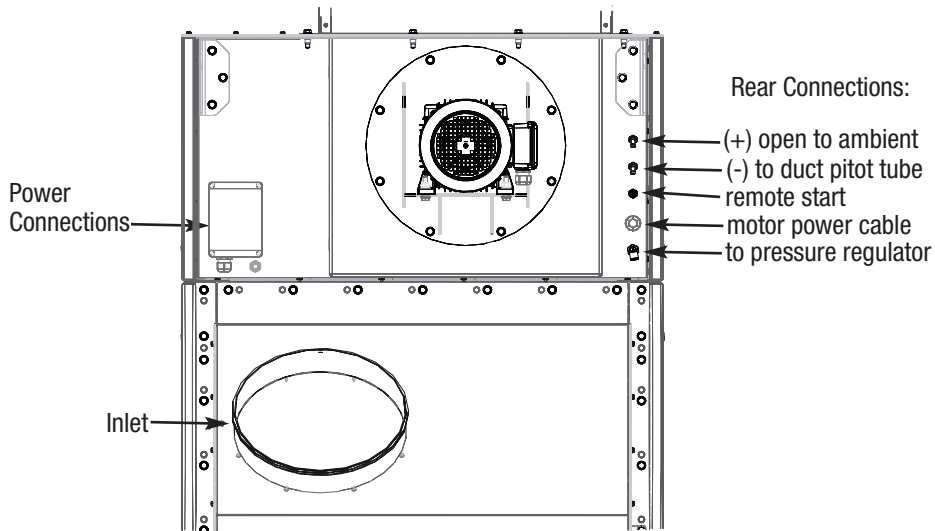
Connect Compressed air source to fitting (ISO 6150 B profile - 1/4"). Adjust regulator pressure to 6 bar (87 psi) max.

**FIGURE A.3**



**Step 4 – Install Pitot Tube**

- a. Drill 1/4" hole into the 16" straight duct pipe 40-50" away from the inlet of the unit.
- b. Insert pitot tube and secure it with 2 sheet metal screws (screws included).
- c. Connect the clear tube from the pitot tube to the negative (-) pressure connection mounted on the back side of the unit.

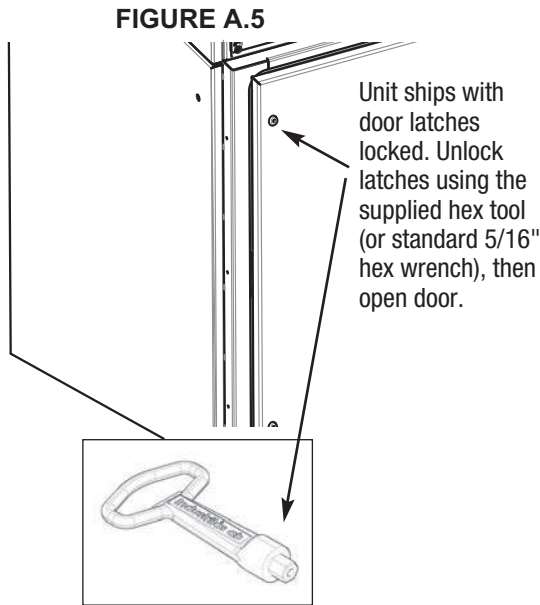
**FIGURE A.4**

**Step 5 - Install Filters (See section D for filter replacement instructions)**

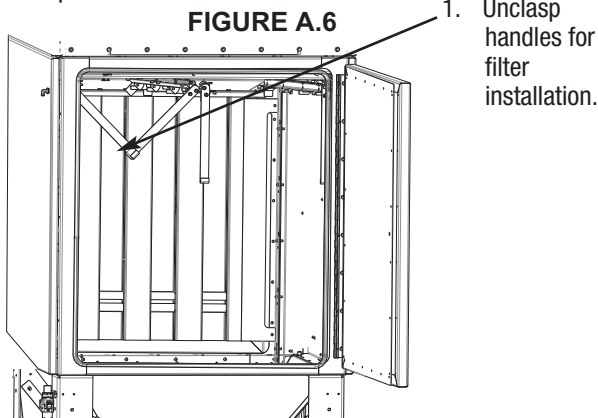
**WARNING**

Before opening door, unit must be off and the power switch on the side of the control panel turned to the off position.

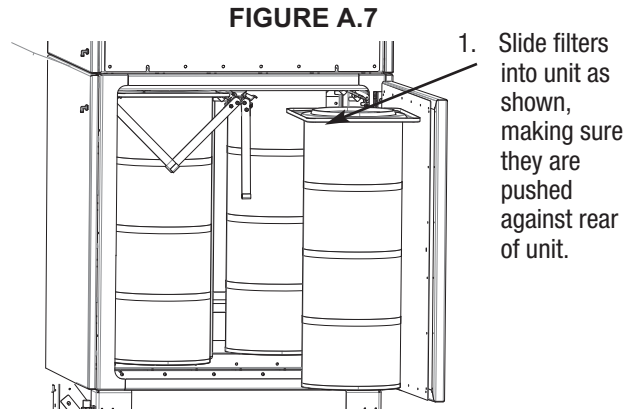
a. Unlock door latches



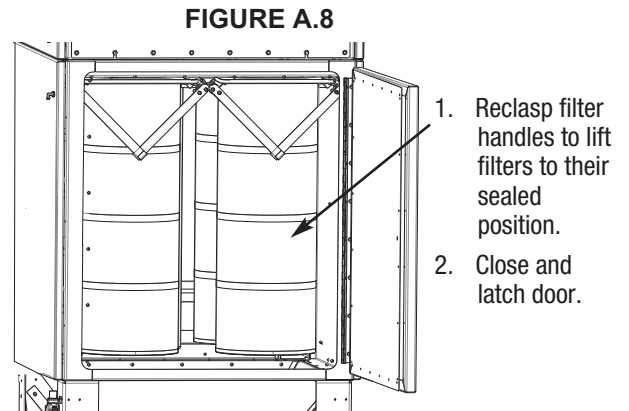
b. Unclamp filter handles



c. Install new filters.

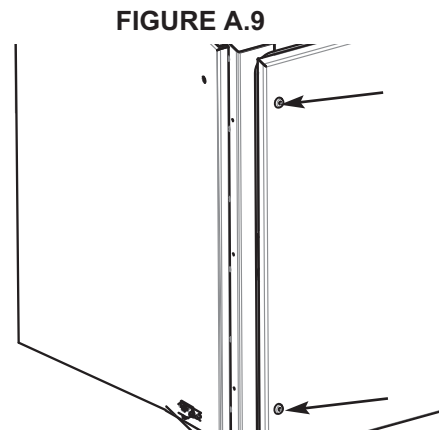


d. Reclasp filter handles



**Step 6 - lock door**

To prevent accidental door opening during unit operation, lock door latches using the supplied hex tool (or standard 5/16" hex wrench).



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## ELECTRICAL CONNECTIONS

Make all electrical connections compatible to your local city / state code.

### **WARNING**

#### **ELECTRIC SHOCK can kill.**

- Only qualified personnel should perform this installation.
- Turn the input power OFF and unplug the machine from the receptacle before working on this equipment.
- Insulate yourself from the work and ground.
- Always connect the Prism® Compact to a power supply grounded according to the National Electrical Code and local codes.



### **WARNING**

All electrical wiring which includes primary, secondary and control wiring must be done by certified/licensed electrician.

---

#### **ELECTROCUTION HAZARD.**

Disconnect mains before servicing. Failure to do so could result in serious personal injury or death.

Do not attempt installation of this unit unless you are familiar with the necessary tools, equipment, utility connections and potential hazards. Installation should be performed only by a qualified service provider. Failure to do so could result in reduced performance of the unit, serious personal injury or death.

---

# OPERATION

## Safety Precautions

### WARNING

Only use the product for the welding processes described in the General Description. Avoid using the product for extracting and/or filtering fumes and gases which are released during the following (welding) processes:



Never use the product for:

- oxy-fuel cutting
- aluminium laser cutting
- oil mist
- paint mist
- extraction of hot gases (more than 80°C/176°F continuously)
- grinding aluminium and magnesium
- flame spraying
- extraction of cement, saw dust, wood dust, grit etc.
- explosive environments or explosive substances/gases

(This list is not comprehensive.)

If the product is used in above situations it could result in potential fire hazard, non-compliance with local regulations and reduction in product performance and life.

## USERS

The use of this product is exclusively reserved to authorized, well-trained and qualified users. Temporary personnel and personnel in training can only use the product under supervision and responsibility of skilled engineers.

### WARNING

Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable federal, state and/or local regulations and guidelines (i.e. OSHA PEL and ACGIH TLV limits in the U.S.).

## INTENDED USE

The product has been designed as a filtration unit for dry dust and fumes. Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damages or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognized safety regulations.

Only use this product when in technical perfect condition in accordance with its intended use and the instructions explained in the user manual.

## MODIFICATIONS

Modifications of (parts of) the product is not allowed.

## RESTRICTIONS

The Lincoln Electric "BANK" system may only be used for filtration of fumes and dust generated by some dry processing industries. Max 80°C (176°F) gas temperature.

### WARNING

- During use, always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Check the working environment. Do not allow unauthorized persons to enter the working environment.
- Protect the product against water and humidity.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.

### WARNING

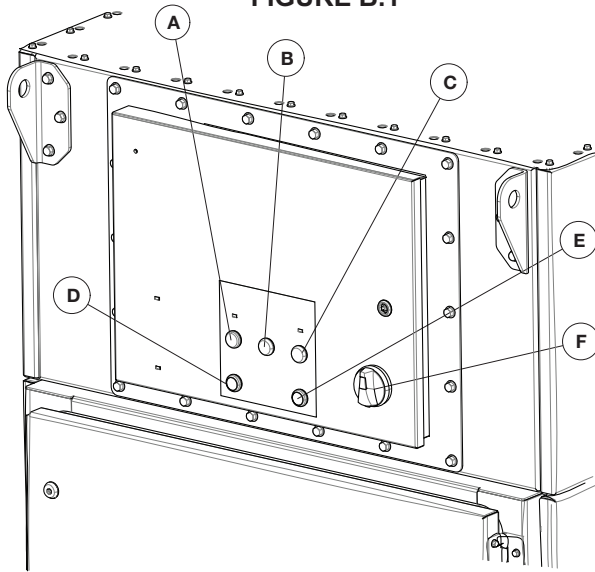
Saturation or clogging of the filter cartridge results in a decrease of the extraction capacity which could result in a higher localized concentration of welding fumes.

The controls will automatically maintain airflow via a PID loop controlling the Danfoss FC 101 Variable Speed Drive (VFD) motor speed so that it keeps the duct pressure consistent. The VRD has a parameter setting to maintain the required pressure and therefore airflow is set during installation of the unit. For changes to this setting contact Lincoln Electric Service.

## CONTROL

The PLC Controls produce both an input and an output when connected to a robotic welding cell. When the unit is powered on and operating, the remote output will produce a 24VDC “running” signal. If dry contact is made between the input and 24V source line the Fan Running Light will illuminate green. Starting remotely prevents the local panel button from stopping the unit, as a maintained start signal will take precedence. For further details refer the “Connections Diagram” in section “F” of this manual.

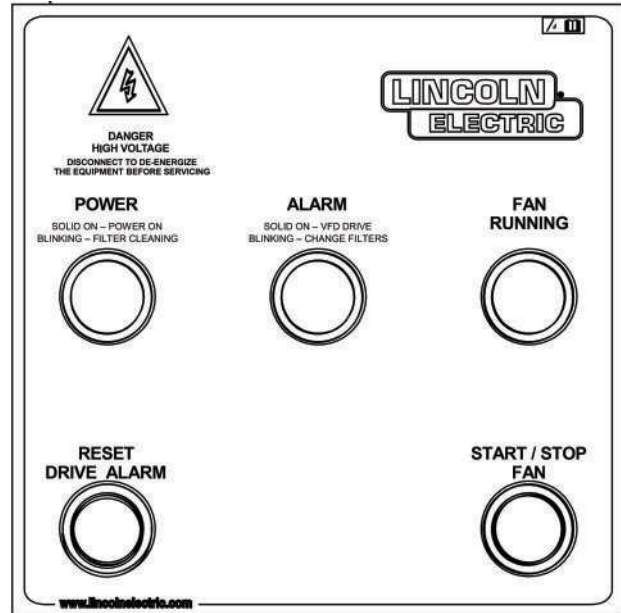
FIGURE B.1



- A. Power On (Light)
- B. Alarm (Light)
- C. Fan Running (Light)
- D. Reset Drive Alarm (Switch)
- E. Start/Stop fan (Switch)
- F. Main Switch - Input Power

## Display System Control Panel

FIGURE B.2



### Functions

- A. **POWER** Light (white): indicates the unit has power, is online, and available for operation. Blinking light indicates that filter cleaning is in progress.
- B. **ALARM** Light (red): indicates one of two potential issues with the unit. Blinking light indicates the filter differential pressure has surged above the maximum DP Alarm set point for two hours continuously and the filter should be changed. Solid light indicates that the fan's VFD Drive has faulted or Thermal suppression alarms such as SERVICE, SMOKE, DISCHARGE or DAMPER faults.
- C. **FAN RUNNING** Light (green): indicates the unit is operational and fan is running.
- D. **RESET DRIVE ALARM BUTTON**  
Resets the VFD fault. You may have to manually reset the drive on it's front panel display-- Refer this activity to qualified maintenance service personnel who are allowed inside a powered control cabinet. Pressing this button for 5 seconds will start manual cleaning process.
- E. **START/STOP FAN** Button: starts the fan operation when the unit is in Stand-by mode with no active thermal suppression or VFD alarms, and also stops the fans if already operational.

NOTE - Fans will NOT stop if the unit has been remotely started.

NOTE - Refer control panel label for wiring specifications.

**PRODUCT FUNCTIONAL DESCRIPTION**

The Prism® Compact is controlled by PLC with the following functions:

- 1) Start/Stop Fan feature activated by push button on the cabinet front.
- 2) Remote Start/Stop Fan feature activated by an external switch or remote control.
- 3) Automatic main filter cleaning function triggered in the following cases:
  - a) Filter bank online cleaning activated once the differential pressure across filter exceeds filter set point.
  - b) Offline filter pressure cleaning active at three levels of filter pressure drop (low, medium, high). Each level gradually increases filter cleaning.

Pressure level	Default set pressure limit	# Cleaning Cycles
Below low	<400	No cleaning
Low	400	2
Medium	600	4
High	800	6

- c) When the fan is running the filter pressure is monitored. Once a level is reached, the system will wait for the fan to shut down before offline cleaning begins. Aside from hearing air blasts cycling to each filter, the Power On Indicator will flash as a visual indication that the unit is cleaning. The default pulse time is 250ms. After the first valve is pulsed, the next one is delayed. This delay is the valve pulse timer at work, and the default delay time is 15 seconds. The delay allows the air accumulators within the filter bank to charge.
  - d) Online cleaning is activated with the Delta P pressure drop settings. Default level is 800Pa with a range of 100Pa-2500Pa. When the fan is running, and the Delta P level has been reached, the Power On white light will flash and filter cleaning will start from the top. The same pulse and pause times from the offline cleaning are used. Online cleaning will not stop until the filter pressure falls below the Delta P level.
- 4) The Delta P Alarm default is set at 1500Pa. When the alarm is active, the red Alarm light will blink on the main control cabinet. At this time filters should be ordered from Lincoln Electric.
- 5) The PLC will trigger an Alarm in case of:
  - a) Motor speed control (VFD) Faults with a solid red alarm light.
  - b) The filter is clogged due to passing the \*Differential Filter (DP) Alarm setting, giving you a flashing on/off red Alarm light.

\* The VFD alarm can be reset by pushing the reset alarm button.  
 \* The DP alarm only stops once your DP pressure across the filter is below the alarm set point.

**FUNCTIONS OF THE PRISM® COMPACT FILTER UNIT:**

- 1) Manual start/stop ventilator.
- 2) Remote start/stop of unit along with a "running" signal available that the remote Robotic Welding Cell can monitor.
- 3) Adjustable ventilator speed via a duct mounted pressure sensor and a PID loop that controls the motor speed with a Variable Frequency Drive (VFD).
- 4) Automated on line filter cleaning.
- 5) Automated off line filter cleaning.
- 6) Manual filter cleaning.
- 7) Alarm signal (optical) for:
  - a. Faulted VFD (Variable Speed Drive).
  - b. Clogged filter
- 8) Reset Alarm

**OPERATION**

**Start/Stop Fan** - ventilator operation is activated with the Start/Stop Fan push button or with the remote Start/Stop.

NOTE: remote input takes precedence in operation. If the remote signal starts the unit, pushing the Start/Stop Fan button on the control panel will not stop the fans. The remote signal has to be removed (opened) This will allow the Start/Stop Fan button to operate normally again.

**Reset Alarm** - Reset Alarm push button is used to reset the alarm if the VFD faults, and some thermal suppression system alarms. Use the black button above the key switch on the side of the unit for thermal suppression alarms for service, discharge, smoke and damper alarms. There are fault codes that can be read off the VFD LCD. Pressing this button for 5 seconds will start manual cleaning process.

CAUTION: only qualified persons with proper protections in place should open control cabinets under power.

**Ventilation Fan Speed and Operation** - Ventilator fan is set for proper airflow during installation by setting a parameter in the VFD. The fan uses a duct mounted pressure sensor which gives a 0-10 VDC reading back to the controls, which allows a constant airflow to be maintained up to the limits of the fan motor operation during filter loading. The speed of the fan will be automatically adjusted between the minimum (35Hz) and maximum (60Hz) speeds. Contact Lincoln Electric service department for guidance with adjustment of the fan parameters.

A solid red alarm light indicates a problem was detected by the VFD and it signaled the controls, the controls will try to reset the VFD when you press the VFD Fault Reset button. If the alarm will not clear or returns you will need help from your qualified maintenance personal to review the VFD for possible fault conditions and address it.

---

## STARTUP

The following points are to be checked and implemented before the filter unit is put into operation:

**Electricity** - Check for connection to a proper three phase line voltage connection for optimal performance. The VFD and motor will be rated for the applied line voltage to the unit. Ensure supply lines to the unit are properly fused and all local electrical codes are followed.

**Pneumatics** - Check that the compressed air is connected. Compressed air should be clean, dry and oil free and at a minimum pressure of 87 psi (6 bar).

---

## SET POINTS

Default values enable basic unit operation. Each value should be given consideration for optimized operation, and can be adjusted with continued use and experience using the equipment. Consult Lincoln Electric Field Service to shorten the learning curve. Of vital importance is the initial PID value setting for the airflow. This setting determines the unit's air flow cubic feet per minute (cfm) the fan maintains as it monitors the duct pressure, and this ramps up fan speed as the filter loads and creates a higher differential pressure across it but maintaining system airflow cfm up to the limit of the fans maximum speed.

The Lincoln Electric standard control cabinet comes with automatic controlled frequency converter. After the airflow is set with the PID setting the system will automatically adjust itself.



**PLC DISPLAY FOR CODES 13220 & 13224:**

1. Following screens in PLC will display the system status  
Home screen

```

I .....7.   ECN
RE  I       DC P
FR 15 03
Q ....      RUN
AUTOIP active...

```

By pressing the left arrow <- the following screen will be visible.

```

STANDBY
FiltrPr      0 pa
DuctPr       0 pa
PauseT       15 S
PULSES 0 SOL# 0
FiltrHr       0Hr

```

**FiltrPr** : This is the differential pressure measured across the filter, indicates the amount of filter clogging.

**DuctPr** : This is the pressure measured in the Duct which is proportional to the air flow. The fan speed is regulated using Duct pressure to maintain even air flow.

**PauseT** : This is the time delay between solenoid pulses.

**FilterHr** : This is the time count for the filter used hours and normally reset to '0' when filter is changed.

**PULSES**: It is a count of number of pulses in a cleaning cycle.

**SOL#** : It is the indication of which solenoid is pulsed recently.

**Software Version.**

```

PRISM COMPACT
S35366
Software Version
12/08/2022 14 34

```

This display indicates the software version.

**Following parameters can be adjusted**

<b>Set Parameters</b>	
LowPr	400pa
MediumPr	600pa
HighPr	800pa
FiterHr	0Hr
FiterHrmin	0
LowPr#CY	2
MediumCY	4
HighCY	6
DLen	<input checked="" type="checkbox"/> DLint 30s
FanMinRnTme	0s
InsertSD	

Offline cleaning will not initiate if the pressure is below 400.

If the filter pressure is in between 400-600 offline cleaning will initiate for 2 cycles.

If the filter pressure is in between 600-800 offline cleaning will initiate for 4 cycles. If the filter pressure is above 800 offline cleaning will initiate for 6 cycles.

DLen: Data log enable

Dint: Data log interval.

## Fan Running:

```
FAN RUNNING
FiLtrPr    0 pa
DuctPr     0 pa
PauseT     15 S
PULSES    0 SOL# 0
FiLtrHr    0Hr
```

## Manual cleaning.

```
MANUAL CLEANING
FiLtrPr    0 pa
DuctPr     0 pa
PauseT     15 S
PULSES    1 SOL# 1
FiLtrHr    0Hr
```

Alarm reset button pressed long for more than 5 seconds, the system triggers MANUAL CLEANING.

## Standby Mode:

```
STANDBY
FiLtrPr    0 pa
DuctPr     0 pa
PauseT     15 S
PULSES    0 SOL# 0
FiLtrHr    0Hr
```

Standby mode is active when there is no cleaning or fan running.

**PRISM® COMPACT THERMAL SUPPRESSION**

(AD2455-3, AD2455-4, AD2455-7, AD2455-8 ONLY)

**OVERVIEW**

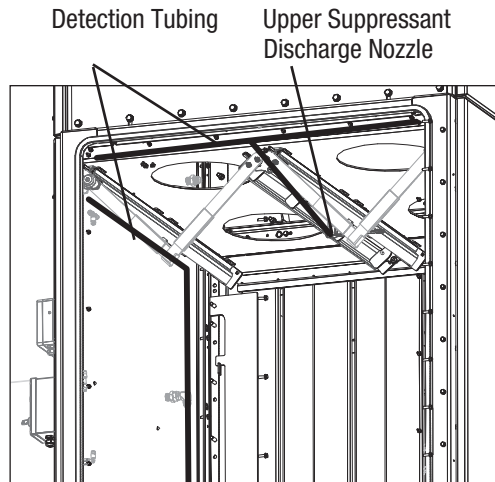
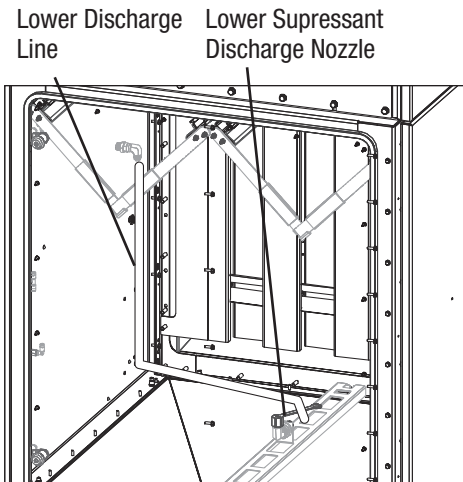
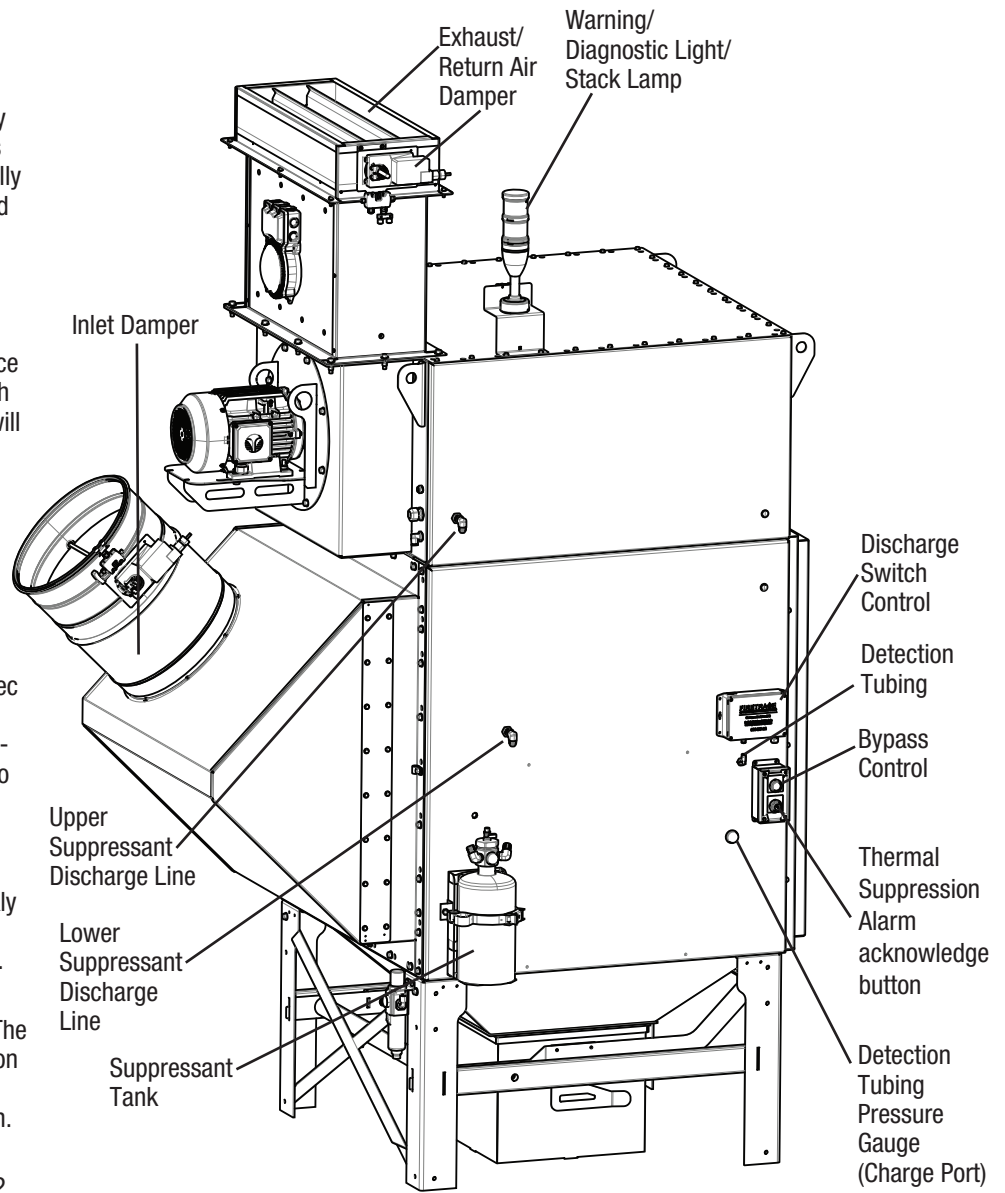
The Prism® Compact indirect low pressure thermal suppression system uses an extinguishing agent commonly known as Novec 1230. It is a colorless low odor fluid, low in toxicity, electrically non-conductive, leaves no residue, and is an extremely effective fire suppression agent.

The unit utilizes a UL recognized component (per UL standard 521), a Linear Heat Detector known as Firetrace Automatic Fire Detection Tubing, which when pressurized with Dry Nitrogen, will allow the fire suppression valve to remain in the closed position. This tubing acts as a continuous linear thermal detector that ruptures upon direct flame impingement or at temperatures above 212°F when pressurized to 195 psi. Once the detection tubing is ruptured, the valve automatically opens, allowing the Novec 1230 agent to flow through the discharge piping, distributing the extinguishing agent through the nozzles into the protected volume.

When the system's smoke detector is activated or the detection tubing is ruptured, the integrated controls quickly shut down the fan and close the two dampers to create a protected volume.

A LED strobe light provides visual notification of any system discharge. The stack light also gives visual feedback on any system malfunction as detailed in the Operations and Diagnostics section.

The thermal suppression system components are identified on page C-2.



**INSTALLATION OF PRISM® COMPACT WITH THERMAL SUPPRESSION**

**TOOLS NEEDED**

- 5/16" Nut Driver
- 3/8" Nut Driver
- 9/16" Nut Driver
- Ladder/Lift
- Drill + 1/4" Drill Bit

STEP 1 – Remove pallet. Remove lag bolts from unit and fan silencer/damper. Lift off pallet and discard pallet. See **Figure C.1** below.

STEP 2 - Install Fan Silencer/Damper. Install fan silencer/damper using 3/8 bolts. See **Figure C.2**.

**AD2455-3:** 10 bolts

**AD2455-4:** 12 bolts

**AD2455-7:** 10 bolts

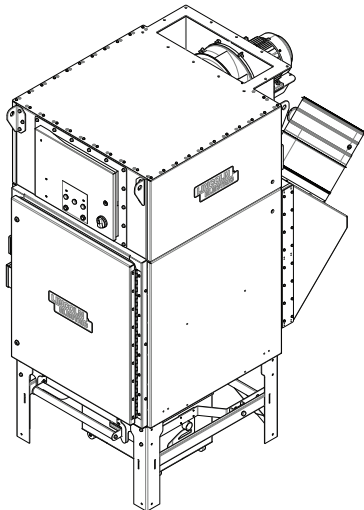
**AD2455-8:** 12 bolts

STEP 3 – Connect Compressed air source to fitting. Adjust regulator pressure to 6 bar (87 psi) max. See **Figure C.3**.

STEP 4 - Drill 1/4" hole into the 16" straight duct pipe 40-50" away from the inlet of the unit. Insert pitot tube and secure it with 2 sheet metal screws (screws included). Connect the clear tube from the pitot tube to the negative (-) pressure connection on the back side of the unit. See **Figure C.4**.

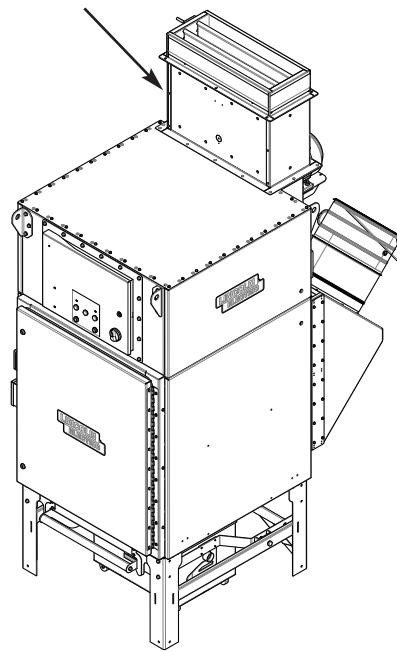
STEP 5 - Open main door of unit and remove stack light assembly. Remove stack light assembly from package. Remove 2 - 1/4" bolts where shown. Install stack light assembly as shown and secure with 2 - 1/4" bolts. Do not cross thread bolts. Hand start bolts only.

**FIGURE C.1**

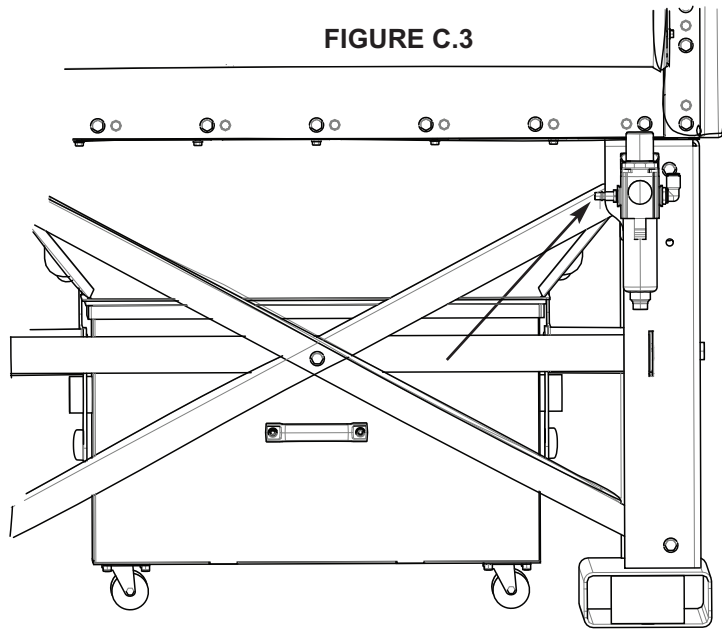


Pallet frame bolted at bottom of machine frame (pallet not pictured).

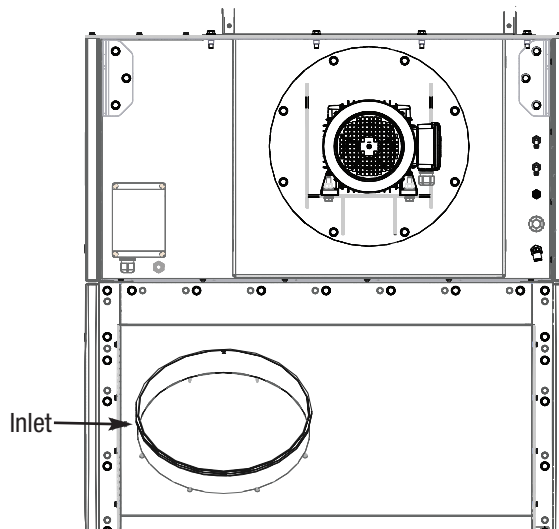
**FIGURE C.2**



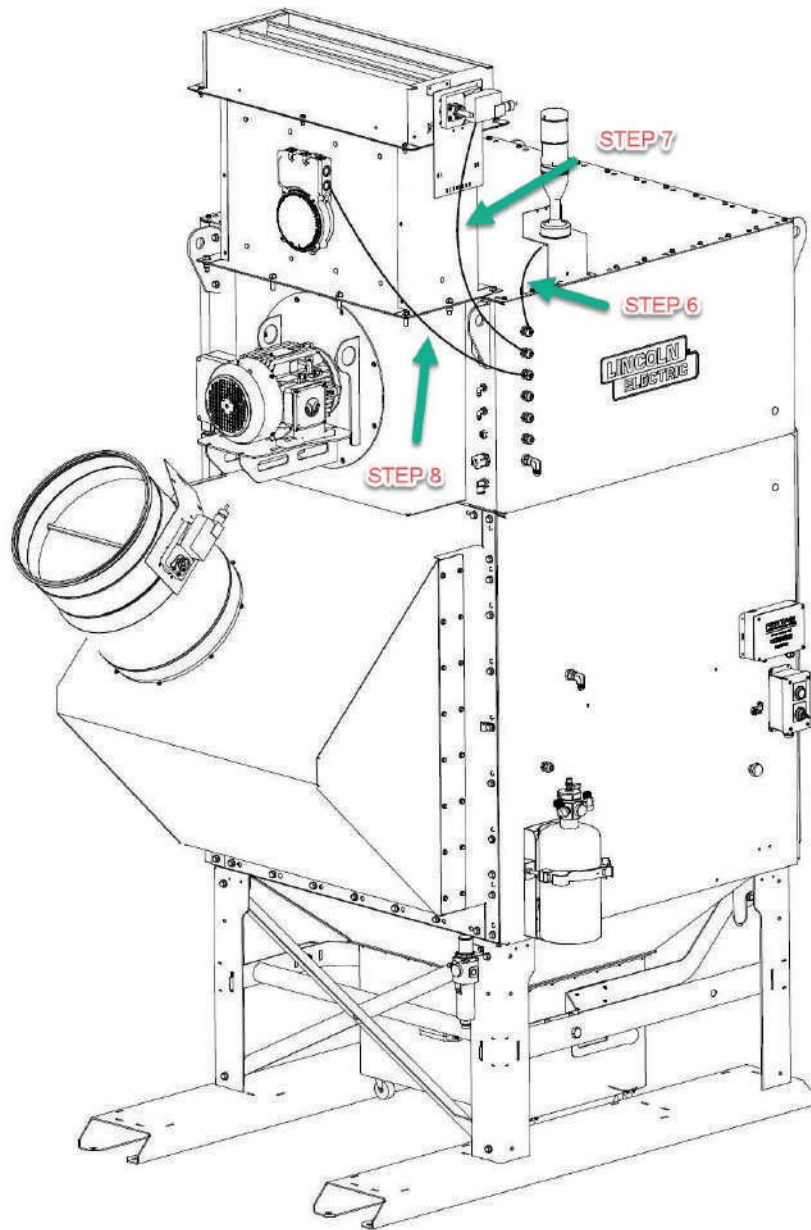
**FIGURE C.3**



**FIGURE C.4**



- STEP 6 – Connect the cable to the Warning/Diagnostic Light stack.  
STEP 7 - Connect the cable to the outlet damper.  
STEP 8 - Connect the cable to the smoke detector mounted to the back of the outlet silencer.



\*\*See filter installatoin instructions on page A-5.

## ACTIVATION

STEP 1 – With the ball valve on the suppressant tank still closed, remove the detection tubing pressure gauge and replace with the filling adapter included in the Nitrogen charge kit. Nitrogen charge kits are available through your Lincoln sales representative.

STEP 2 – Using a regulated nitrogen supply, pressurize the detection tubing through the filling adapter to 195 psig (10.3 bar).

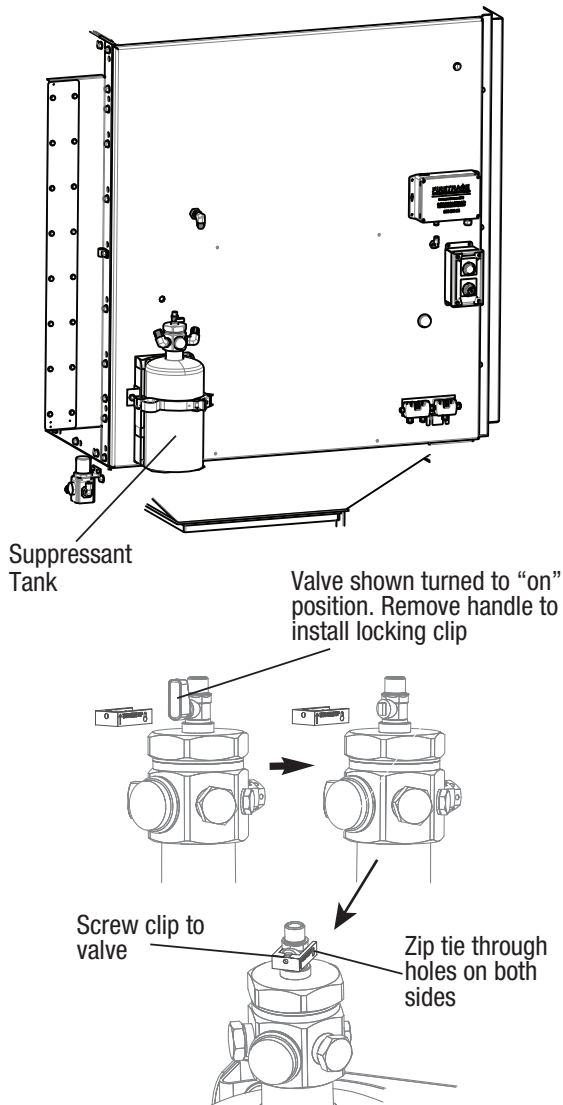
STEP 3 – Remove the filling adapter and thread the pressure gauge & o-ring into its place to verify that the tubing is pressurized to at least 195 psig. This is the normal pressure at 70°F. Pressure will drop at lower temperatures.

STEP 4 – Wait 30 minutes and then observe the pressure gauge. Any decrease in pressure is an indication of a leak. Locate the leak using a soapy water solution at each of the red detection tubing connection points. Fix the leak, then recharge the system.

STEP 5 – After confirming there is no leakage in the detection tubing, SLOWLY rotate the tank's ball valve lever counter clockwise to the "ON" position.

CAUTION: If the ball valve lever is opened abruptly, activation of the cylinder valve may occur, causing the unit to discharge.

STEP 6 – Tamper proof the unit by removing the ball valve lever, then screwing the tamper-proof clip to the valve. Complete installation of clip by using zip tie through clip's backside holes. The unit is now fully armed and ready for use.



## OPERATION & DIAGNOSTICS

### NORMAL OPERATION DESCRIPTION

A Prism® Compact with thermal suppression has active protection even during a power outage since a discharge of suppressant is exclusively dependent on heat induced rupture of the detection tubing. The detection tubing is routed through the filter (dirty air) side of the filter bank. Intake and exhaust dampers are used to contain an event and maximize the effectiveness of a suppressant discharge. A smoke detector shuts down the fan motor and closes the dampers if smoke or particulate due to bypass of a damaged filter is detected in the fan exhaust but this will not trigger a discharge since that can only be caused by heat from a thermal event.

### B. FAN/DAMPER SHUTDOWN

There are three alarm conditions that will cause the fan to shut down and the dampers to close. The first cause is a smoke detector alarm, the second is heat induced rupture of the detection tube, i.e. Discharge. and if damper fails to close or open.

The lower of the two stack lights (on top of the Prism®) will activate on any thermal event alarm and give a pulsed code of the type of alarm condition that the unit saw to cause it to shut down. A set of pulses followed by a 3 second off time can be decoded according to the alarm codes chart. If there are no system malfunctions, the dampers close when the fan is turned off. Offline cleaning initiated when the fan is shut down will delay damper closing until the cleaning is complete.

### C. DISCHARGE NOTIFICATION

Flashing of the Stack Light's upper high intensity light indicates there has been a suppressant discharge. A set of pressure switches are contained in a Firetrace dual pressure switch box. The 195psi normal charge on the detection tubing keeps the discharge switch open. A significant loss of pressure caused by detection tubing rupture, closes the switch which triggers system shutdown and stack light visual notification.

### D. SYSTEM MALFUNCTION ALARMS

The Prism® thermal suppression system monitors important functional conditions and provides visual display of any fault by flashing a pulsed code on the LED stack light's lower light. There are four coded alarms.

Inlet and exhaust damper alarm. Dampers are closed when the fan is off but are triggered to open when the fan is started. After opening, the damper's actuator switch sends a verification signal that they are opened. If a signal is not received within 10 seconds, the fan is shut down and a coded flash of pulses identifies which damper failed to open.

The dual pressure switch box monitors pressure in the red detection tubing. If the pressure drops too low due to a slow leak, it trips a pressure switch and flashes a coded pulse on the lower stack light.

The smoke detector alarm triggered by smoke or particulate bypassing the filters triggers a coded pulse on the lower stack light

**E. ALARM ACKNOWLEDGE/BYPASS CONTROL**

To allow continued system operation, two of the alarms can be temporarily bypassed using the key switch box - the smoke detector alarm and low pressure in the detection tubing circuit. (SERVICE) Note the important caution statements listed in the troubleshooting section. Damper alarms can not be bypassed since both dampers must be open for the fan to move air through the unit. The discharge alarm can not be bypassed either since the cause of this alarm must be resolved and the system reconditioned prior to additional use. Bypass mode is identified when the lower light on the stack light is solid red.

**F. RESOLVING ALARMS**

Identify the alarm using the “Prism® Stack Light Alarm Codes” table, then use the troubleshooting section to resolve alarm codes. When you have any alarm with a coded pulse on the stack light’s lower light, there are some ways the controls are helpful to assist in troubleshooting. The signals for damper open switch, discharge switch input, service pressure switch input, smoke detector input are all digital IO inputs. Use the system wiring print to make sure cables are connected to the correct IO input. Damper feedback function can be verified by manually moving a damper (black button is a clutch on the damper actuator).

It is possible to have multiple alarm conditions, but only one code can flash at a time. Resolving one and clearing it will allow the flashing of any unresolved alarm conditions. Resolving all alarms must be completed before the controls will allow a normal startup.

The alarm status can be cleared by following steps

1. FAN RUN push button switch must be deactivated / Remote Fan run signal shall be deactivated
2. Clean the alarm condition
3. Press Alarm Reset key on the front panel and thermal suppression alarm acknowledge button on the side box above the key switch for bypass for thermal suppression alarms.

**DISCHARGE AND RECOVERY**

**INSPECTION**

In the event of a discharge of the thermal suppression system, all components of the system must be inspected and any damaged or compromised components replaced. Un-ruptured red detection tubing can be reused only if there is no evidence of heat damage. That also applies to interior detection tube fittings containing internal seals that can be compromised by exposure to high heat. The suppressant tank has a pressure gauge that should show zero after a discharge. It will need to be re-charged or replaced. If there is any evidence of high heat exposure on any system components they must be replaced.

**B. REPLACEMENT**

For quick repair, it is advisable to keep a stock of internal replacement parts along with a spare suppressant tank. Replacement parts can be ordered through Lincoln Electric. Detection tubing is the heart of system and special attention should be made to replace it with the same lengths/routing/locations. Altering from the factory installed method can affect the systems ability to properly react to any future thermal event. The suppressant tank can be re-charged by the manufacturer instead of discarding it. A local distributor can be located at the following website:  
<https://www.firetrace.com/find-a-firetrace-distributor>

**C. RECOMMISSION**

After the system has been repaired, it must be re-commissioned. This can be done by a Lincoln Electric Field Service Technician. A proper nitrogen charge kit can be used to recharge the detection tubing yourself and complete the steps to return the unit to full operation. Contact the Lincoln Electric Service department if you need help/guidance with any of the steps outlined here.

**ALARM IDENTIFICATION AND TROUBLESHOOTING**

**Prism Stack Light Alarm Codes**

<b>LIGHT CODE</b>	<b>ALARM/CONDITION</b>	<b>PRIMARY CAUSE</b> (See Alarm Troubleshooting and Resolutions)
<b>1 - Lower Light: One flash with 3 seconds delay</b>	Service Input Alarm	Detection tubing pressure too low
<b>2 - Lower Light: Two flashes with 3 seconds delay</b>	Smoke Alarm	Smoke/particulate detected in fan exhaust
<b>3 - Lower Light: Three flashes with 3 seconds delay</b>	Intake Damper Alarm	After fan is started, intake damper fails to open within 10 seconds
<b>4 - Lower Light: Four flashes with 3 seconds delay</b>	Exhaust Damper Alarm	After fan is started, exhaust damper fails to open within 10 seconds
<b>Upper High Intensity Light: Continuous Flashing</b>	Discharge Warning	Suppressant discharge detected
<b>Lower Light: Solid red</b>	Bypass Mode Engaged	Keyed switch turned to bypass

- NOTE 1: Multiple codes can be stored. In these instances, clearing first code will reveal remaining code(s). Highest (first) priority is code 1.
- NOTE 2: Both the upper discharge warning light and lower coded lights can flash at the same time
- NOTE 3: All alarm codes will also trigger a solid red alarm light on the main control panel

## ALARM TROUBLESHOOTING AND RESOLUTION

ALARM	POSSIBLE CAUSES	RECOMMENDED COURSE OF ACTION
Service Input Alarm	1. Detection tubing pressure too low (below 160psi)	<p>1. Verify system pressure on gauge to right of main control panel or gauge on suppressant tank. If it falls below green target proceed to step 2.</p> <p>2. Check the detection tubing circuit for leaks. Repair and then recharge the circuit with Nitrogen to 195psi as described in the activation section. Verify pressure holds for at least 30 min.</p> <p>3. Press reset on main control panel. The unit is now ready for operation.</p> <p>Enabling Temporarily Bypass (until cause of leak resolved)</p> <p>1. Deactivate the FAN RUN switch/ Remote fan run</p> <p>2. Turn keyed switch to "Bypass"</p> <p>3. Hit reset on main control panel</p> <p>CAUTION: Resolve low pressure as soon as possible. Further loss of pressure can lead to a discharge alarm (without an actual suppressant</p>
Smoke Alarm	1. Smoke detector senses smoke or particulate in fan exhaust	<p>1. Verify source of alarm and resolve. Both smoke and bypass of particulate due to filter damage can be sources for alarm.</p> <p>2. Press reset on smoke detector body.</p> <p>3. Press reset on main control panel. The unit is now ready for operation.</p> <p>Enabling Temporarily Bypass</p> <p>1. Deactivate the FAN RUN switch/ Remote fan run</p> <p>2. Turn keyed switch to "Bypass"</p> <p>3. Hit reset on main control panel</p> <p>CAUTION: Resolve cause of alarm as soon as possible to maintain early detection feature provided by the smoke alarm</p>
Intake Damper Alarm	1. After fan is started, intake damper fails to open in 10 seconds. Damper's actuator switch fails to signal damper is open.	<p>1. Deactivate the FAN RUN switch/ Remote fan run</p> <p>2. Repair damper. Possible causes include failed actuator, failed actuator switch, obstruction in damper, loose actuator connection to damper.</p> <p>3. Press Firetrace "thermal suppression alarm acknowledge button" button twice</p> <p>4. Press reset on main control panel. The unit is now ready for operation.</p> <p>Contact a Lincoln Electric technician for possible temporary resolutions</p>
Exhaust Damper Alarm	1. After fan is started, exhaust damper located under fan fails to open in 10 seconds. Damper's actuator switch fails to signal damper is open.	<p>1. Deactivate the FAN RUN switch/ Remote fan run</p> <p>2. Repair damper. Possible causes include failed actuator, failed actuator switch, obstruction in damper, loose actuator connection to damper.</p> <p>3. Press Firetrace "thermal suppression alarm acknowledge button" button twice</p> <p>4. Press reset on main control panel. The unit is now ready for operation.</p> <p>Contact a Lincoln Electric technician for temporary resolutions resolutions</p>
Discharge Warning	<p>1. Suppressant discharge triggered by heat induced rupture of detection tubing.</p> <p>2. Extremely low detection tubing pressure</p>	<p>1. Deactivate the FAN RUN switch/ Remote fan run</p> <p>2. Repair unit as required and recondition as described in the discharge recovery section.</p> <p>3. Press Firetrace "thermal suppression alarm acknowledge button" button twice</p> <p>4. Press reset on main control panel</p> <p>1. Repair detection tubing circuit as described in the "Service Input Alarm" section. The suppressant tank will need to be reconditioned or replaced.</p>



## THERMAL PROTECTION SYSTEM

### OPERATION

**Start/Stop Fan** - ventilator operation is activated with the Start/Stop Fan push button or with the remote Start/Stop.

NOTE: remote input takes precedence in operation. If the remote signal starts the unit, pushing the Start/Stop Fan button on the control panel will not stop the fans. The remote signal has to be removed (opened). This will allow the Start/Stop Fan button to operate normally again.

**Reset Alarm** - Reset Alarm push button is used to reset the alarm if the VFD faults, and some thermal suppression system alarms. Use the black button above the key switch on the side of the unit for thermal suppression alarms for service, discharge, smoke and damper alarms. There are fault codes that can be read off the VFD LCD. Pressing this button for 5 seconds will start manual cleaning process. Should open control cabinets under power.

**Ventilation Fan Speed and Operation** - Ventilator fan is in the VFD. The fan uses a duct mounted pressure sensor which gives a 0-10 VDC reading back to the controls, which allows a automatically adjusted between the minimum (35Hz) and maximum (60Hz) speeds. Contact Lincoln Electric service department for guidance with adjustment of the fan parameters. A solid red alarm light indicates a problem was detected by the VFD and it signaled the controls, the controls will try to reset the VFD when you press the VFD Fault Reset button. If the alarm will maintenance personal to review the VFD for possible fault conditions and address them

### FUNCTIONALITIES:

#### FIRE TRACE SILENCE / RESET INPUT:

Two pushes within 5 sec will clear ALARM based on priority.

#### FIRETRACE BY PASS:

When fire trace BYPASS is enabled, the system ignores SERVICE AND SMOKE detector alarm input.

When it is disabled, smoke detector alarm is displayed using the alarm codes defined shown below BYPASS CODE will display.

**SMOKE DETECTOR INPUT:** Wherever smoke detector alarm is active (LOW), following action are followed,  
Shut down the fan (LOW) EM1 Q4  
Close Inlet and outlet dampers ( HIGH – close) EM2 Q3 Q4  
Display Alarm Code 2 using stack lamp  
Exit Smoke Alarm after Smoke detector Alarm deactivates, or Bypass enable.

**SERVICE ALARM INPUT:** Wherever service alarm is active (LOW), ALARM code 1 display's using stock lamp. Fan stops, however with Alarm reset and Bypass enabled will allow the fan to turn ON.

#### DISCHARGE INPUT

Active low (Alarm activated when it is low), following action are followed.

Shut down the fan (LOW) EM1 Q4.  
Close Inlet and outlet dampers (HIGH – close) EM2 Q3 Q4.  
Display Alarm Code 5 using stack lamp.  
Exit only after discharge input is deactivated.  
Once the alarm conditions are cleared push the ALARM RESET button to clear the alarm.

## 1. PLC DISPLAY:

1. Following screens in PLC will display the system status
  - a) PLC display for 10 seconds immediately after power on

```

PRISM COMPACT TS
DAMPER OL  SW 
DAMPER IL  SW 
DISCRG  SERVICE 
SMK DR  BYPASS 
ALRM  SL1  SL2 

```

The power on status of Damper Outlet / Inlet and corresponding switch positions are indicated above. If Damper o/p is active the corresponding switch will closed within 10 seconds. Also status of Discharge, Service, Smoke and Bypass status are indicated. During this time user cannot start the fan.

Standby mode

```

STANDBY      MANUL
FiltrPr      941 pa
DuctPr       0 pa
PauseT 15S   ----
PULSES 0/ 0  SL#↓
FiltrHr      0Hr

```

```

STANDBY      MANUL
FiltrPr      941 pa
DuctPr       0 pa
PauseT 15SBYPASS
PULSES 0/ 0  SL#0
FiltrHr      0Hr

```

STANDBY: Indicates the fan is not running, and the system is ready to start as there are no active alarms.

Manual: Indicates the system is function in Manual mode. User can turn ON the fan using front panel START push button or from remote START signal. If the system is in AUTO mode, ON OFF time shall be programmed user Weekly timer screens, which schedules FAN on of time.

```

STANDBY      AUTO
FiltrPr      0 pa
DuctPr       0 pa
PauseT 15S   ----
PULSES 0/ 0  SL#0
FiltrHr      0

```

Pause T: Time between two cleaning pulses.

BYPASS: If BYPASS switch is active, then it is indicated in this screen. When cleaning in process number of current cleaning pulse and total cleaning pulses along with solenoid number indicated.

Set Parameter:

By pressing < push button the following screen shown for setting the parameters.

```

Set Parameters
FiltPrTh  800pa
ALarmPrTh 1500pa
PauseT    15S
PulseT    250mS
16/06/2022 15 30
  
```

FiltPrTh: User can set the Pressure threshold for initiating online cleaning, when pressure across filter exceeds this set limit.

AlarmPrTh: Alarm threshold pressure, if pressure across filter exceeds this threshold for defined time (2Hr default) alarm lamp flashes to indicate filter change.

PauseT: Time between cleaning pluses can be adjusted.

Date and time can be set.

Offline cleaning settings:

```

OffLineCLg CYCL
LowPr  400pa  2
MedPr  600pa  4
Hi Pr  800pa  6
FiterHr  0
PreCoatHr  0
  
```

Offline cleaning cycles are based on maximum filter pressure recorded during previous fan running period. Low, medium and high pressure and corresponding number of cleaning cycles can be set. This display also allows to set Filter use hour. Also user can set Pre-coat cleaning prohibition hours. If pre-coat hour is set to 24Hr, the cleaning is inhibited from the filter change time.

Alarm status:

```

ACTIVE ALARM
DISCHARGE 
SMOKE      
SERVICE   
DAMPER  IN  OUT 
VFD ALARM  
    
```

Following screen help to see the status of active alarm when Discharge, Smoke, Service and VFD alarm is active low.

Minimum fan run time and Alarm delay time can be set in the following screen:

```

Set Parameters

MinFanRunTm 120s
ALarmDLy    120m
    
```

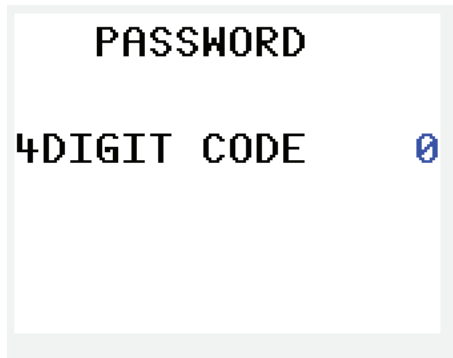
Following screen help to see the status of alarm bits for diagnostics

```

PRISM COMPACT TS          PRISM COMPACT TS
S35615 A ██████████
16/06/2022 17:42         DAMPER OL  SW 
                            DAMPER IL  SW 
                            DISCRG  SERVICE 
                            SMK DR  BYPASS 
                            ALRM  SL1  SL2 
    
```

Damper OL (out let) and corresponding switch.  
 Damper IL (in let) and corresponding switch.  
 DESCRG: Discharge alarm active low.  
 SERVICE: If service alarm active low.  
 SMK DR: Smoke Detector active low.  
 BYPASS: Bypass switch active high.  
 ALARM: Font panel alarm lamp status.  
 SL1 and SL2 indicates the status of stack lamp1 and stack lamp2.

Password:



User has to enter pass code 1234 for accessing AUTO MODE schedule setting.

Auto mode: By selecting the check box, the system enters to AUTO mode. During auto mode, fan turns on based on schedule set in the following screen for each week. Turning START push button is mandatory. If the START push button is deactivated the fan is turned off. Fan starts if START push button is active and turn on schedule has reached.

<b>AUTO MODE</b>	<input type="checkbox"/>	<b>HW1 ON</b>	<b>OFF</b>	<b>DAY</b>	<b>HH</b>	<b>MM</b>	<b>HH</b>	<b>MM</b>
<b>HW1 ON</b>	<b>OFF</b>	<b>DAY</b>	<b>HH</b>	<b>MM</b>	<b>HH</b>	<b>MM</b>	<b>HH</b>	<b>MM</b>
<b>SAT</b>	0: 0	0: 0	<b>TUE</b>	7: 0	12: 0	<b>WED</b>	7: 0	12: 0
<b>SUN</b>	0: 0	0: 0	<b>THR</b>	7: 0	12: 0	<b>FRI</b>	7: 0	12: 0
<b>MON</b>	7: 0	12: 0						

<b>HW2 ON</b>	<b>OFF</b>	<b>DAY</b>	<b>HH</b>	<b>MM</b>	<b>HH</b>	<b>MM</b>		
<b>HW2 ON</b>	<b>OFF</b>	<b>DAY</b>	<b>HH</b>	<b>MM</b>	<b>HH</b>	<b>MM</b>		
<b>SAT</b>	0: 0	0: 0	<b>TUE</b>	13: 0	17: 0	<b>WED</b>	13: 0	17: 0
<b>SUN</b>	0: 0	0: 0	<b>THR</b>	13: 0	17: 0	<b>FRI</b>	13: 0	17: 0
<b>MON</b>	13: 0	17: 0						

Datalog: Datalogger is enabled if the SD card is inserted in the system. Following data is set to recored when fan is turned ON.

1. Filter pressure
2. Duct pressure
3. Alarm status bits
4. Filter hour

# ACCESSORIES

---

## REPLACEMENT FILTER OPTIONS

- **KP4519-1** - MERV 11-rated filter cartridge featuring spun bond polyester media construction.
- **KP4519-2** - MERV 16-rated (high efficiency) filter cartridge featuring nano fibers.
- **KP4519-3** - MERV 16-rated (high efficiency) filter cartridge featuring a thermal bonded PTFE membrane.
- **KP4519-4** - MERV 11 OIL RESISTANT
- **KP4519-5** - MERV 16 OIL RESISTANT NANO
- **KP4680-1** - Pre-Filter

All filters should be replaced at the same time; all should be of the same type. Replacement filters include dust mask, gloves and plastic bag (for spent filter).

# MAINTENANCE

## ⚠ WARNING

Have qualified personnel do the maintenance work. Turn the power off before working inside the machine. In some cases, it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

If a problem cannot be corrected by following the instructions, contact your local Lincoln Electric representative for service options or contact Lincoln Electric Customer Service.

### ELECTRIC SHOCK can kill.

- Do not touch electrically live parts or electrode with skin or wet clothing.
- Insulate yourself from work and ground.
- Always wear dry insulating gloves



### FUMES and GASES can be dangerous.

- Use in open, well ventilated areas or vent exhaust outside.



### MOVING PARTS can injure.

- Do not operate with doors open or guards off.
- Stop before servicing.
- Keep away from moving parts.



## ⚠ WARNING

### Dismantling and disposal

- Only a qualified electrician may disconnect the machine or the electrical system
- Before dismantling it the machine must be disconnected from the power supply and from the external compressed air supply
- Before dismantling it, clean the equipment
- The dismantling area must be cleaned afterwards
- During dismantling work, the working area must be adequately ventilated; this can be achieved by provision of a mobile ventilation unit
- During dismantling work, wear appropriate personal protective equipment. We recommend half-face breathing masks to DIN EN 141/143, protection class P3
- The pollutants and dust, together with the dirty filter cartridges, must be properly disposed of in a professional manner in accordance with statutory instructions, using the plastic sack disposal system supplied

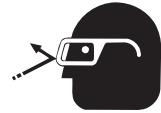
## ⚠ ATTENTION

Maintenance should only be performed by authorized, qualified and trained persons (skilled) using appropriate work practices.



## ⚠ WARNING

When cleaning equipment or replacing filter use personal protection equipment (PPE) such as gloves, respirators and protective clothing to protect against overexposure to particulate. It is recommended that a vacuum cleaner or wet methods be used to clean up any loose particulate that is present in the extraction arm. It is necessary to use a vacuum cleaner with HEPA rated filtration.



## ⚠ WARNING

- Observe the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- During service, maintenance and repair jobs, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Always use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Never use worn tools and do not leave any tools in or on the product.
- Safety features which have been removed for service, maintenance or repairs, must be put back immediately after finishing these jobs and it must be checked that they still function properly.
- Use sufficient climbing gear and safety guards when working on a higher level than 6 feet.
- Ensure the workspace is well illuminated.

### MALFUNCTIONS AND EMERGENCIES EFFECTING THE FILTER UNIT

#### Fire

- In the event of fire, an approved extinguisher for fire classes A, B and C should be used
- The manufacturer must be contacted.

### ESCAPE OF NOXIOUS SUBSTANCES OR RADIATION

- The Prism® Compact contains no noxious substances.
- If the filter ruptures, welding fumes can be released into the building; welding activities must be suspended and the Prism® Compact repaired.

**PERIODIC MAINTENANCE**

The product has been designed to function without problems for many hours with minimal maintenance. In order to ensure this, some simple, regular maintenance and cleaning activities are required which are described in this section. If you observe the necessary caution and carry out the maintenance at regular intervals, any problems that occur will be detected and corrected before they lead to a total breakdown.

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore it is recommended to thoroughly inspect the complete product once every year other than the indicated periodic maintenance.

The maintenance activities in Table D.1 indicated by [\*] can be carried out by the user; other activities are strictly reserved for well trained and authorized service engineers.

TABLE D.1 – PERIODIC MAINTENANCE				
COMPONENT	ACTION	EVERY MONTH	EVERY 3 MONTHS	EVERY 6 MONTHS
Control Panel	Check filters for damage. Take them out of the door of the control panel and clean them with compressed air.	X [*]		
	*Clean inside using an industrial vacuum cleaner.		X	
Drum	*Check levels of dust and dirt particulate. Empty if necessary.	X	X	X

\* Frequency depends on welding or cutting process.

**MAINTENANCE SCHEDULE**

NOTE: \* REQUIRES Lincoln Electric factory authorized service technician.

**AS NEEDED**

- Replace filters (See filter replacement instructions).
- Inspect and test functionality of the filter media cleaning system. \*
- Program and verify system performance. \*
- Clean spiral ducting. \*

**MONTHLY**

- Check particulate collection drum and dispose of particulate if necessary.
- Check and log filter pressure.
- Check incoming pressure

**EVERY 6 MONTHS**

- Ensure that the air flow Cubic Feet per Minute (CFM) is operating to the engineered specifications based on the individual system \*

**UNIT HOUSING**

- Clean housing with a non-aggressive detergent.
- Check the connections to the duct work, seal if necessary.
- Inspect and clean (with a non-aggressive detergent) the filter control box.

**YEARLY**

- Inspect unit for proper operation and function, address any issues found.
- Fan motor temperature is within normal ranges, a hand held IR temp meter is a good tool for this. High motor temps indicate bearing or winding issues and predict a failure. This can also apply to the electrical power connections to the unit- elevated temps on junction boxes and wire terminations are precursors to problems.

**MOTOR/FAN HOUSING**



Observe safety precautions when working on the inside of the fan box or control panel. Removing power and observing LOTO (Lockout-Tagout) procedures as required.

- Check the integrity of the fan housing and tighten all bolts and screws if necessary.
- Clean housing with a non-aggressive detergent.
- Check connection of silencer to fan housing and seal if necessary.
- Check connection of ductwork to silencer and seal if necessary.



- Check fan motor blades for encrusted particles and clean if necessary.
- Inspect and clean control panel with a non-aggressive detergent.
- Check inlets and outlets for tears or wear.

#### CONTROL PANEL

- Check for functionality of control panel fan.
- Inspect and clean any buildup or dirt on fan blade impellers in control panel.
- Inspect and replace control panel filters if necessary.

---

#### REPLACING FILTER CARTRIDGES OR EMPTYING DUSTBINS

Shut off the compressed air feed and empty the pressure tank(s) of air by opening the drain valve on the bottom of the tank.

NOTE: The power must always be switched off at the circuit-breaker or by the line fuses. Protective gloves and mask should always be worn.

#### WARNING

Take necessary precautions so that you and your fellow workers are not overexposed to particulate. Wear suitable personal protection equipment, such as gloves, respirator, eye glass and protective clothing when disposing of the filter and particulate.

Check with local waste management or local agency(ies) for assistance in the disposal of filter. If filter has collected certain types of particulate which local agencies define as hazardous waste, filter may be classified as hazardous waste and will need to be disposed in accordance with federal, state and local regulations - which could vary from state to state and between local municipalities within the state.

Use protective gloves. If not carried out with the necessary caution, may cause serious personal injury.

Use breathing protection. If not carried out with the necessary caution, may cause serious personal injury.

- Maintenance work and functional testing should be performed regularly to TRGS 560 section 5, paragraph 9 and to TRGS 528.
- During maintenance the machine must be deenergized and secured against switching on again.
- The maintenance area must be cleaned afterwards.
- During maintenance work the working area must be adequately ventilated; this can be achieved by provision of a mobile ventilation unit.
- During maintenance, appropriate personal protective equipment should be worn. We recommend half-face breathing masks to DIN EN 141/143, protection class P3.
- The dust and the dirty filter cartridges must be properly disposed of in accordance with statutory instructions, using the plastic sack disposal system supplied.

## REPLACING FILTER CARTRIDGES

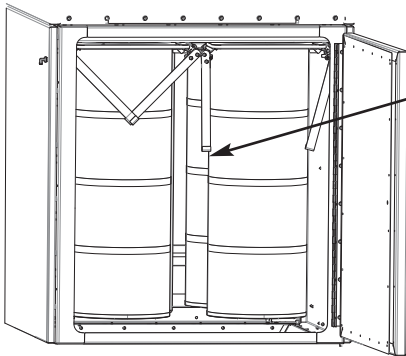
### WARNING

Before opening door, unit must be off and the power switch on the control panel turned to the off position.

Verify power has been switched off at the control panel, then unlock door latches using the supplied hex tool or any standard 5/16" hex wrench.

- a. Unclamp handles and lower filters.

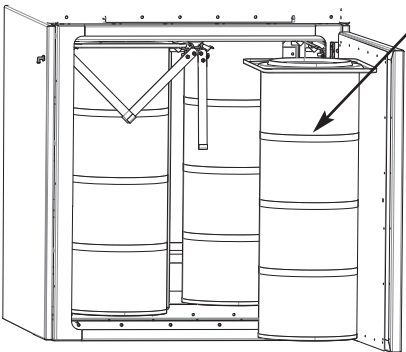
**FIGURE D.1**



1. Unlock door latches using the supplied hex tool or any 5/16" hex wrench, then open door.
2. Unclasp handles to lower filters for removal

- b. Remove filters.

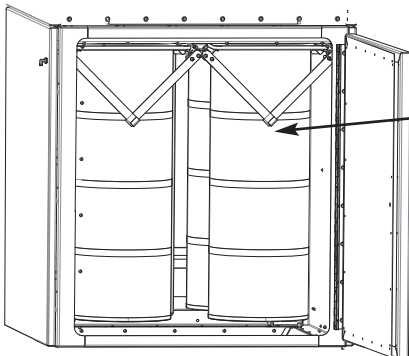
**FIGURE D.2**



1. Slide filters out of unit through the door opening as shown.
2. If required by federal, state and/or local regulations and guidelines, conceal filter cartridge in appropriate bag, e.g. plastic bag.
3. Dispose of the filter cartridge in accordance with all federal, state and/or local guidelines.
4. Clean the filter compartment with an industrial vacuum cleaner that meets OSHA guidelines for Cr6 house-keeping.

- c. Install new filters.

**FIGURE D.3**



1. Install new filters, making sure they are pushed against rear of unit.
2. Reclasp filter handles to lift filters to their sealed position.
3. Re-lock door latches using the supplied hex wrench or any standard 5/16" hex wrench.

## REPLACING PRE-FILTERS

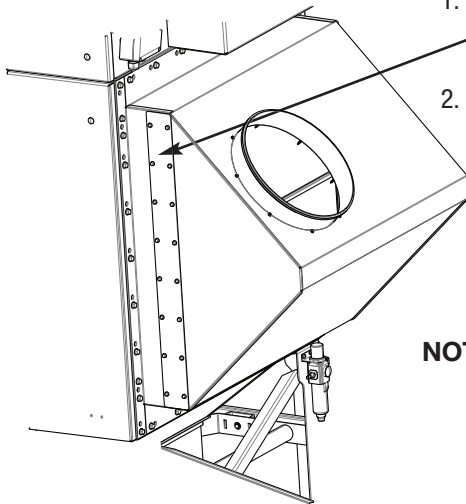
**! WARNING**

Before removing cover plates, unit must be off and the power switch on the control panel turned to the off position.

Verify power has been switched off at the control panel, then from either side of the unit, remove 16 - 1/4" bolts with a 5/16" nut driver.

- a. Pull off the cover plate.

FIGURE D.4

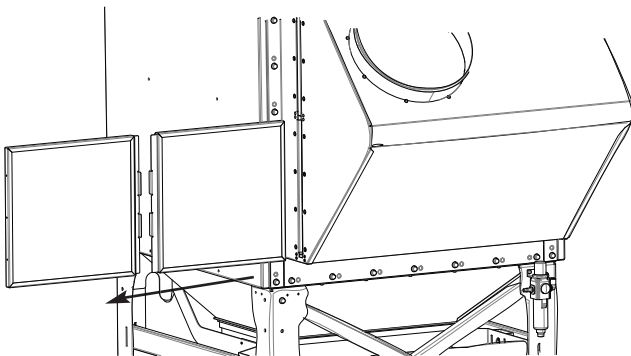


1. Remove the 16 - 1/4" bolts that attach cover plate using a 5/16" nut driver. Set bolts aside for reassembly.
2. Pull cover plate off of the machine frame. Set aside for reassembly.

**NOTE:** There are 2 pre-filters hooked together. When you pull on the first re-filter, you will also be removing the second pre-filter at the same time (See Illustration Below).

- b. Pull out pre-filter.

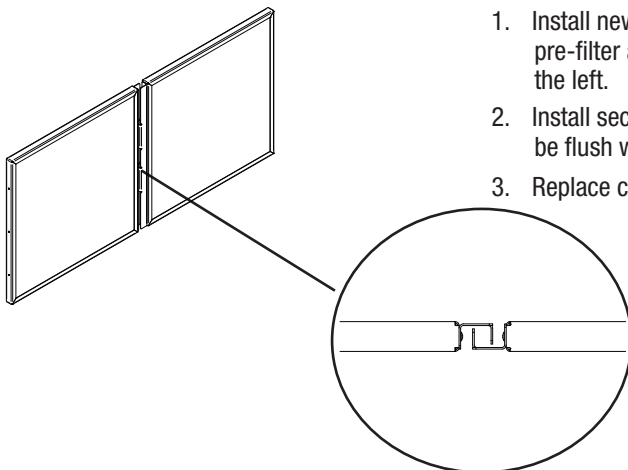
FIGURE D.5



1. Slide pre-filters out of unit through the opening as shown.
2. Once the first pre-filter is completely out of the unit, this will disengage from the second pre-filter.
3. Now finish removing the second pre-filter.
4. Dispose of the pre-filters in accordance with all federal, state and/or local guidelines.

- c. Install new filters.

FIGURE D.6

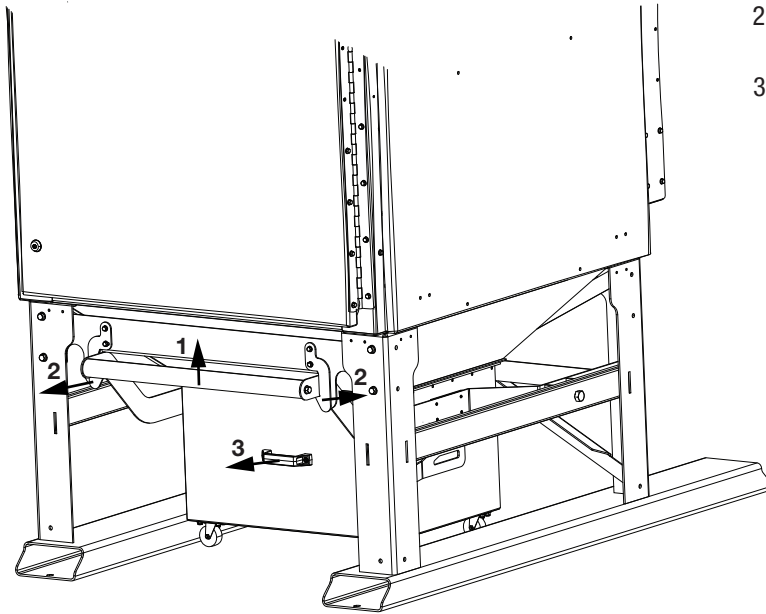


1. Install new pre-filter approximately three fourths into the unit. Take second pre-filter and interlock brackets. Make sure the interlock looks as shown to the left.
2. Install second pre-filter by pushing on both pre-filters. The pre-filter should be flush with unit when fully installed.
3. Replace cover panel with the 16 - 1/4" bolts.

## REMOVING AND INSTALLING THE DUST BIN

a. Removing the dust bin.

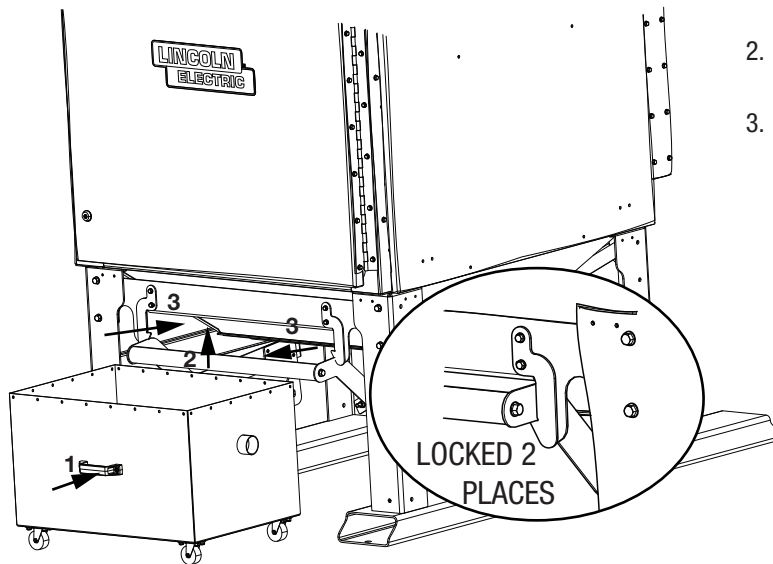
**FIGURE D.7**



1. Lift handle.
2. Rotate left and right latches outward and let handle drop down.
3. Pull dust bin out from under machine.

b. Installing the dust bin.

**FIGURE D.8**



1. Center the dust bin and push it into the machine until it stops.
2. Lift the handle and allow the left and right latches to rotate inward.
3. Release the handle and ensure both latches are engaged with the handle, and the handle is locked into place.

# TROUBLESHOOTING GUIDE



Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid ELECTRICAL SHOCK, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

## **Step 1. LOCATE PROBLEM (SYMPTOM).**

Look under the column labeled “PROBLEM (SYMPTOMS)”. This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

## **Step 2. POSSIBLE CAUSE(S).**

The second column labeled “POSSIBLE AREA(S) OF MISADJUSTMENTS” lists the obvious external possibilities that may contribute to the machine symptom.

## **Step 3. RECOMMENDED COURSE OF ACTION**

This column provides a course of action for the Possible Areas of Misadjustment(s).

### **Service and Technical Support**

For information about specific adjustments, maintenance or repair jobs which are not dealt with in this manual, please contact Lincoln Electric Automation Department 888-935-3878.

Make sure you have the following data on hand:

- product name
- serial number
- purchase order (number + date) for warranty verification



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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Observe all Safety Guidelines detailed throughout this manual

Observe all Safety Guidelines detailed throughout this manual		
PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
<b>FUNCTION PROBLEMS</b>		
White Power On light does not light up.	<ol style="list-style-type: none"> <li>1. Main Switch is in off position</li> <li>2. No power supply</li> <li>3. Fuse(s) defective</li> </ol>	Turn on main switch <ol style="list-style-type: none"> <li>1. Check power supply.</li> <li>2. Check for normal component operation.</li> <li>3. Are green power lights illuminated on PLCs and components? If not, replace.</li> </ol>
Cleaning cycle is not functioning.	<ol style="list-style-type: none"> <li>1. Possible bad connection between control box and junction box.</li> <li>2. Possible bad electrical connection.</li> <li>3. Possibly no or low compressed air.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the Fan running LED (Green) and the white power on light is illuminated.</li> <li>2. Verify the correct input voltage is being applied.</li> <li>3. Verify that all fuses and circuit breakers are not blown/tripped.</li> <li>4. Verify compressed air is present and with adequate pressure.</li> </ol>
Cleaning valve fails to open.	<ol style="list-style-type: none"> <li>1. The pulsation cycle may be faulty.</li> <li>2. Possible dirt in the housing of the valve.</li> <li>3. Possible incorrect flow direction on the cleaning valves.</li> <li>4. Possible incorrect control voltage for the magnetic valves.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the pulsation cycle is OK, that it's within the parameters recommended by Lincoln Electric.</li> <li>2. Clean the housing of the valve.</li> <li>3. Verify that the airflow directions on the cleaning valves are in accordance with the airflow.</li> <li>4. Verify that the cleaning system is working properly - 87 PSI (6 BAR)</li> <li>5. Verify that control voltage for the magnetic valve is 24V DC.</li> </ol>
Cleaning valve fails to close.	<ol style="list-style-type: none"> <li>1. The pulsation cycle may be faulty.</li> <li>2. Possible dirt in the housing of the valve.</li> <li>3. Possible incorrect control voltage for the magnetic valves.</li> </ol>	<ol style="list-style-type: none"> <li>1. Close the control valve to stop air loss and debug the system. Verify that the pulsation cycle is OK, that it's within the parameters recommended by Lincoln Electric.</li> <li>2. Clean the housing of the valve.</li> <li>3. Verify that the cleaning system is working properly, minimum - 87 PSI (6 BAR)</li> <li>4. Verify that control voltage for the magnetic valve is 0 Volts.</li> </ol>



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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Observe all Safety Guidelines detailed throughout this manual

Observe all Safety Guidelines detailed throughout this manual		
PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
<b>FUNCTION PROBLEMS</b>		
Filter replacement alarm does not function.	<ol style="list-style-type: none"> <li>1. Wrong DP reading reported by sensor.</li> <li>2. Incorrect duct air velocity.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Differential Pressure sensor PD1 is read by PLC1, after confirming solid electrical and tubing connections you can tap into the readings with a "T" fitting with a hand held manometer to confirm its readout matches the real DP. Calibrate or re-zero the sensor if needed, change it if it doesn't operate properly.</li> <li>2. Verify the duct air velocity is not too low. Measure and adjust as necessary.</li> </ol>
The air flow is diminished.	<ol style="list-style-type: none"> <li>1. Filter may be clogged.</li> <li>2. Faulty dampers.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace filter if necessary.</li> <li>2. Make sure your duct pressure sensor PD2 is giving a proper reading into the VFD. Fan speed is controlled via this input feeding into a PID control loop.</li> <li>3. If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility. 1-888-935-3878.</li> <li>4. Check damper operation.</li> </ol>
Particulate is emitting from the collection drum.	<ol style="list-style-type: none"> <li>1. Collection drum is full.</li> <li>2. Possible bad seal and clamp on the collection drum.</li> </ol>	<ol style="list-style-type: none"> <li>1. Empty the collection drum.</li> <li>2. If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility. 1-888-935-3878.</li> </ol>
There is an abnormal amount of weld fume in the work zone.	<ol style="list-style-type: none"> <li>1. Check to make sure the machine is powered on.</li> <li>2. Check nozzle position.</li> <li>3. Have an electrician check fan speed on VFD.</li> <li>4. Make sure your duct pressure sensor PD2 is giving a proper reading into the VFD. Fan speed is controlled via this input feeding into a PID control loop.</li> <li>5. Check for clogged / torn filter.</li> </ol>	<ol style="list-style-type: none"> <li>1. Machine may not be powered ON</li> <li>2. Nozzle blocked</li> <li>3. VFD is not running at proper speed</li> <li>4. Fault duct pressure sensor</li> <li>5. Clogged / damaged filters / If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility. 1-888-935-3878.</li> </ol>



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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Observe all Safety Guidelines detailed throughout this manual

Observe all Safety Guidelines detailed throughout this manual		
PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
<b>FUNCTION PROBLEMS</b>		
Poor suction.	<ol style="list-style-type: none"> <li>1. Outlet(s) are blocked.</li> <li>2. Filter cartridge is clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace filter if necessary.</li> <li>2. If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility. 1-888-935-3878.</li> </ol>
Dust or smoke coming out of the outlet opening(s). Pollution of the facility.	<ol style="list-style-type: none"> <li>1. Filter cartridge is damaged.</li> <li>2. Sealing on filter cartridge is damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the filter cartridge.</li> <li>2. Replace sealings.</li> </ol>
Dust or smoke coming out of the inlet opening(s). Pollution of the facility.	<ol style="list-style-type: none"> <li>1. Outlets blocked.</li> <li>2. Filter cartridge clogged.</li> <li>3. Non-return valve(s) installed incorrectly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove obstructions from the outlet opening(s) and/or connected ductwork.</li> <li>2. Replace filter cartridge.</li> <li>3. Install non-return valve(s) correctly.</li> </ol>
Alarm - Red Alarm LED lights.	<ol style="list-style-type: none"> <li>1. Red alarm light is on solid if controls know there is a fault with the VFD.</li> <li>2. Red alarm light is flashing if the DP alarm set point is reached.</li> </ol>	<ol style="list-style-type: none"> <li>1. Press alarm reset and investigate VFD fault issue. Note the VFD LCD will display a fault code to help determine reason for the fault.</li> <li>2. If the Differential Pressure read by the sensor is higher than your DP Alarm set point your alarm light will be on and flashing and the unit most likely has already passed your online cleaning set point (default of which is 1500 Pa). Filters need to be changed if this DP reading is correct and your set point is realistic.</li> </ol>
Fan does not start running	<p>No power</p> <p>VFD has red fault light on or shows no lights at all.</p> <p>Motor defective</p> <p>Controller defective</p>	<p>Check Fuse FU1, FU2, and FU3 for incoming power to the drive and FU4, FU5 and FU6 for the controls power and replace if necessary.</p> <p>Remove and re-apply AC line voltage to the unit after a 1 minute delay. VFD will reset for some faults. If this cycle repeats locate the source of fault- checking motor, wiring and each connection point to motor and the VFD. Replace VFD if determined to be faulty.</p> <p>After checking for proper 24VDC supply to devices. Replace suspected component(s).</p>



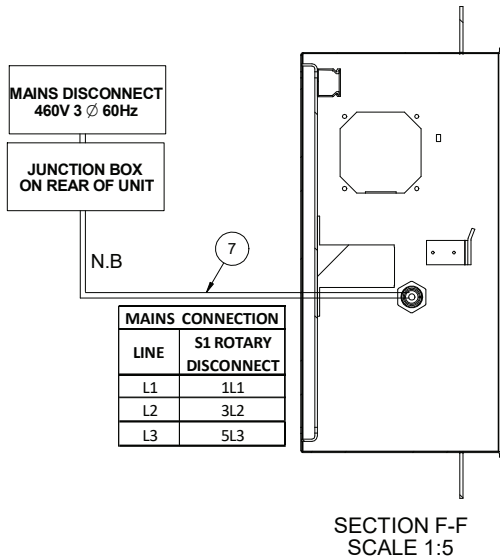
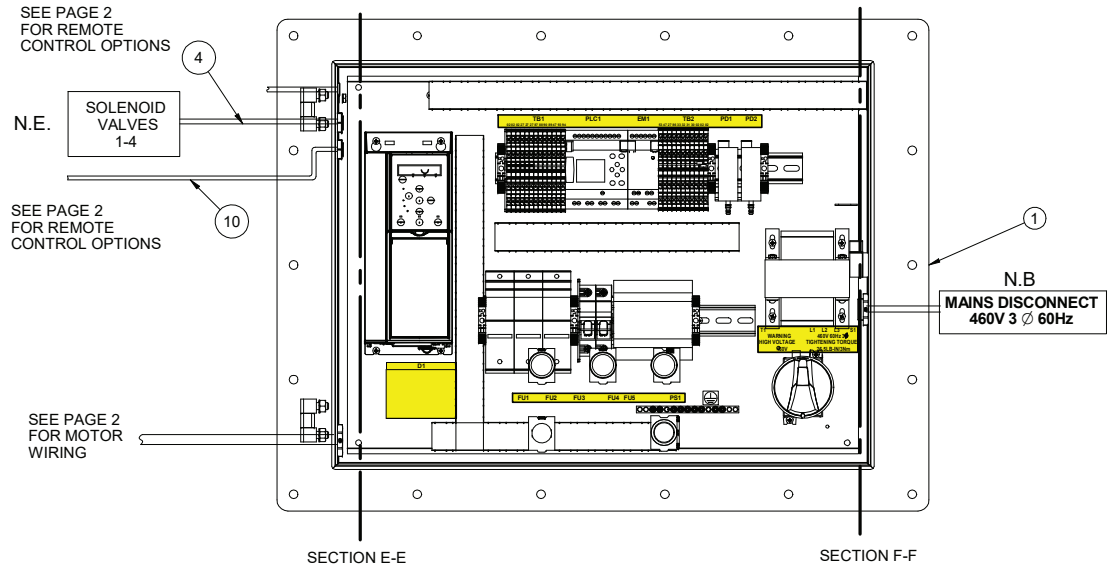
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### COMPACT PRISM SYSTEM WIRING DIAGRAM EASYE4 L18435 & L18501

ITEM	DESCRIPTION	QTY	#
1	CONTROL PANEL ASSEMBLY 5HP	1	#
	CONTROL PANEL ASSEMBLY 10HP		##
2	SOLENOID CABLE 1		
3	SOLENOID CABLE 2		N.A
4	SOLENOID CABLE 3		N.A
5	SOLENOID CABLE 4		N.A
6	24VDC SOLENOID	4	N.A
7	MOTOR CABLE 5HP	1	#
	MOTOR CABLE 10HP		## N.F
8	ROBOT INTERFACE ISOLATION RELAY KIT	1	
9	IF15	1	
10	CABLE ASSEMBLY	1	
11	ROBOTIC START/STOP SIMULATOR	1	



- NOTES:
- N.A. CABLES SUPPLIED WITH SOLENOID VALVE
  - N.B. DISCONNECTING MEANS AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY THE INSTALLER
  - N.C. DRY CONTACT BETWEEN 1 & 2 IS UNIT REMOTE START. UNIT WILL OUTPUT A HIGH (24VDC) ON 4 REFERENCED TO 3 IF UNIT IS ON AND READY FOR ACTIVE FUME EXTRACTION
  - N.D. ITEM 17 SHALL BE CUT AT FEMALE END AND CONNECT TO THE ROBOT I/O AS SHOWN.
  - N.E. CUT TO REQUIRED LENGTH.
  - N.F. BASED ON MOTOR POWER THE CABLE OPTION SHALL BE SELECTED



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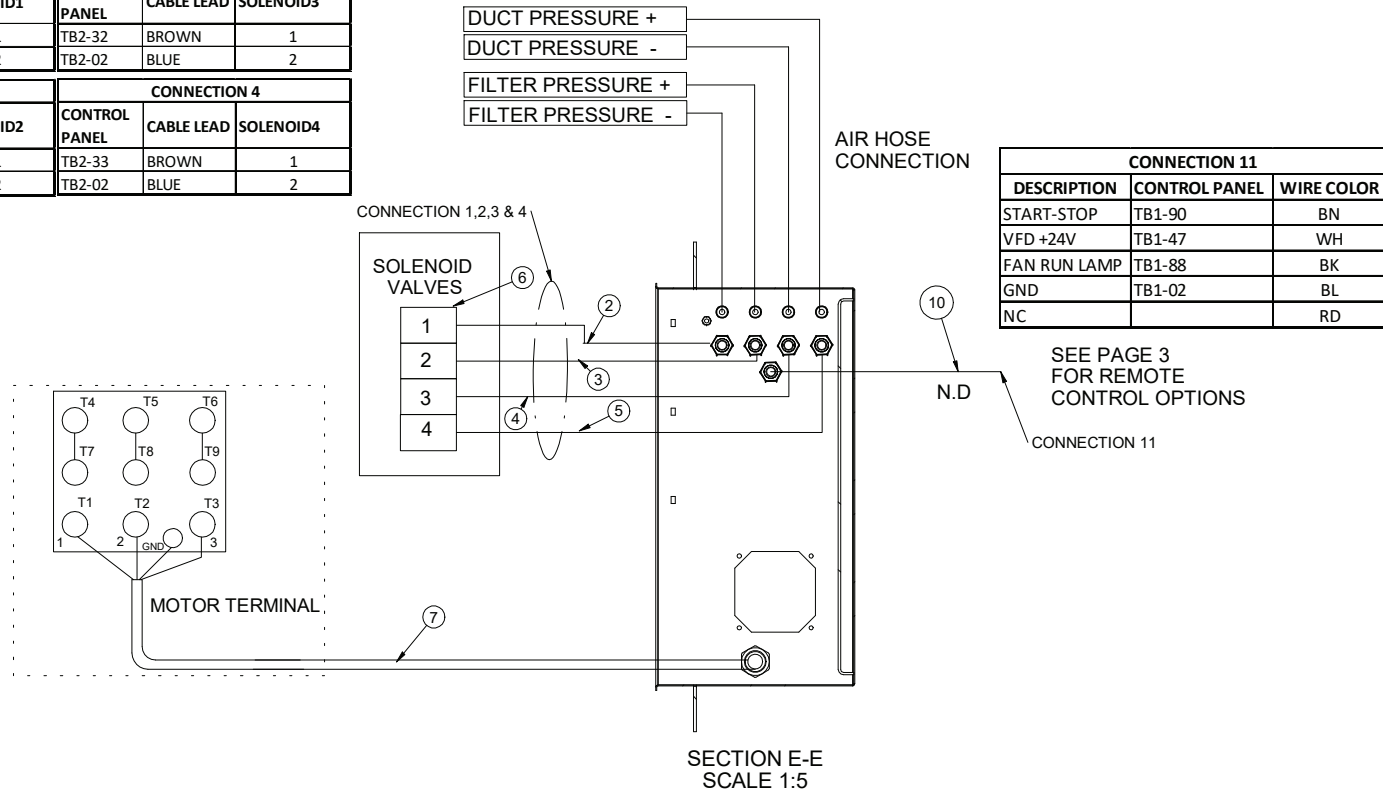
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Sheet 1 of 3

# COMPACT PRISM SYSTEM WIRING DIAGRAM EASYE4 L18435 & L18501

CONNECTION 1			CONNECTION 3		
CONTROL PANEL	CABLE LEAD	SOLENOID	CONTROL PANEL	CABLE LEAD	SOLENOID
TB2-30	BROWN	1	TB2-32	BROWN	1
TB2-02	BLUE	2	TB2-02	BLUE	2

CONNECTION 2			CONNECTION 4		
CONTROL PANEL	CABLE LEAD	SOLENOID	CONTROL PANEL	CABLE LEAD	SOLENOID
TB2-31	BROWN	1	TB2-33	BROWN	1
TB2-02	BLUE	2	TB2-02	BLUE	2



CONNECTION 11		
DESCRIPTION	CONTROL PANEL	WIRE COLOR
START-STOP	TB1-90	BN
VFD +24V	TB1-47	WH
FAN RUN LAMP	TB1-88	BK
GND	TB1-02	BL
NC		RD

WIRE COLOR	
BK	BLACK
WH	WHITE
BL	BLUE
PL	PURPLE
OR	ORANGE
RD	RED
GN	GREEN
BN	BROWN

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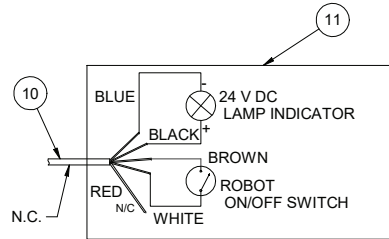
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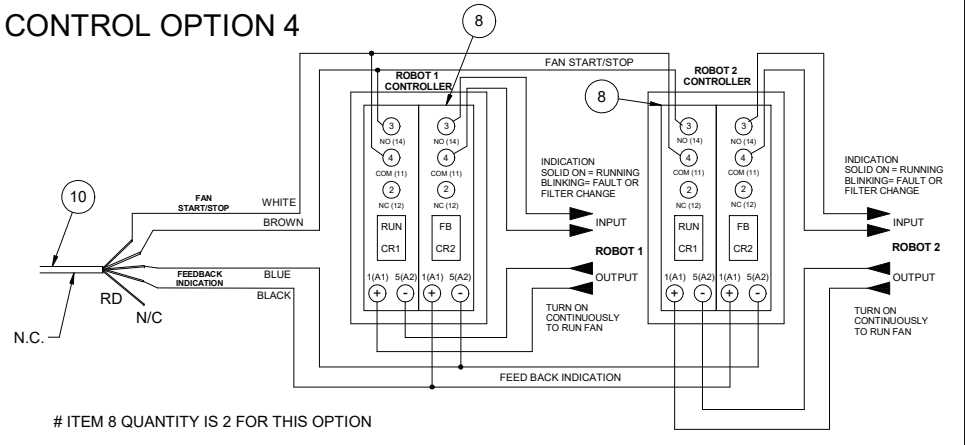
# COMPACT PRISM SYSTEM WIRING DIAGRAM EASYE4 L18435 & L18501

ITEM 17 CONNECTS TO ITEM 1 IN PAGE 1

## CONTROL OPTION 1

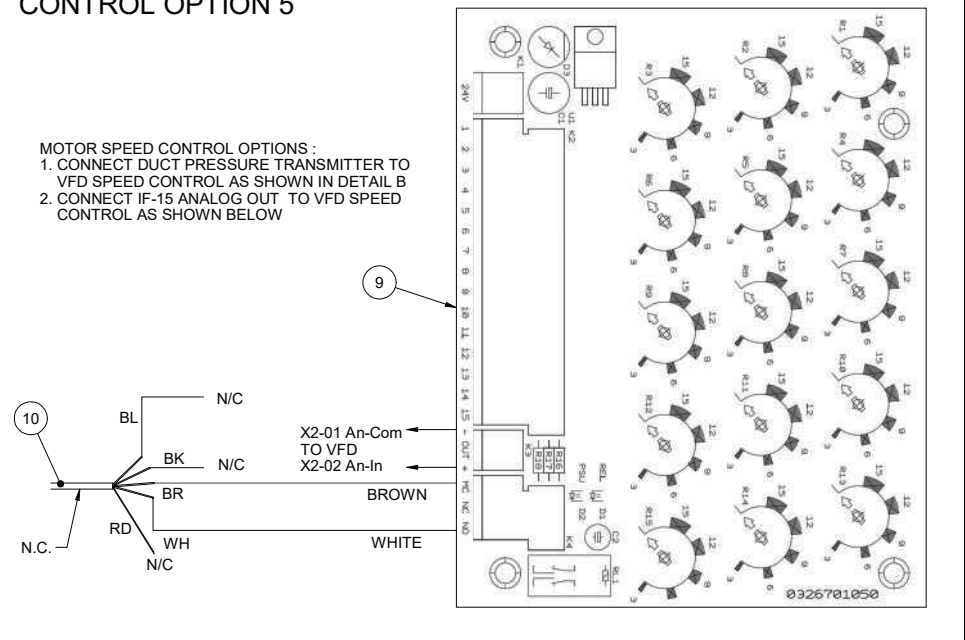


## CONTROL OPTION 4

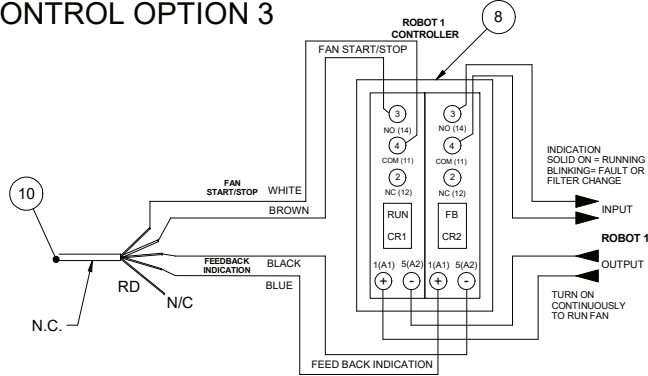


## CONTROL OPTION 5

- MOTOR SPEED CONTROL OPTIONS :
1. CONNECT DUCT PRESSURE TRANSMITTER TO VFD SPEED CONTROL AS SHOWN IN DETAIL B
  2. CONNECT IF-15 ANALOG OUT TO VFD SPEED CONTROL AS SHOWN BELOW



## CONTROL OPTION 3



# ITEM 15 QUANTITY IS 1 FOR THIS OPTION



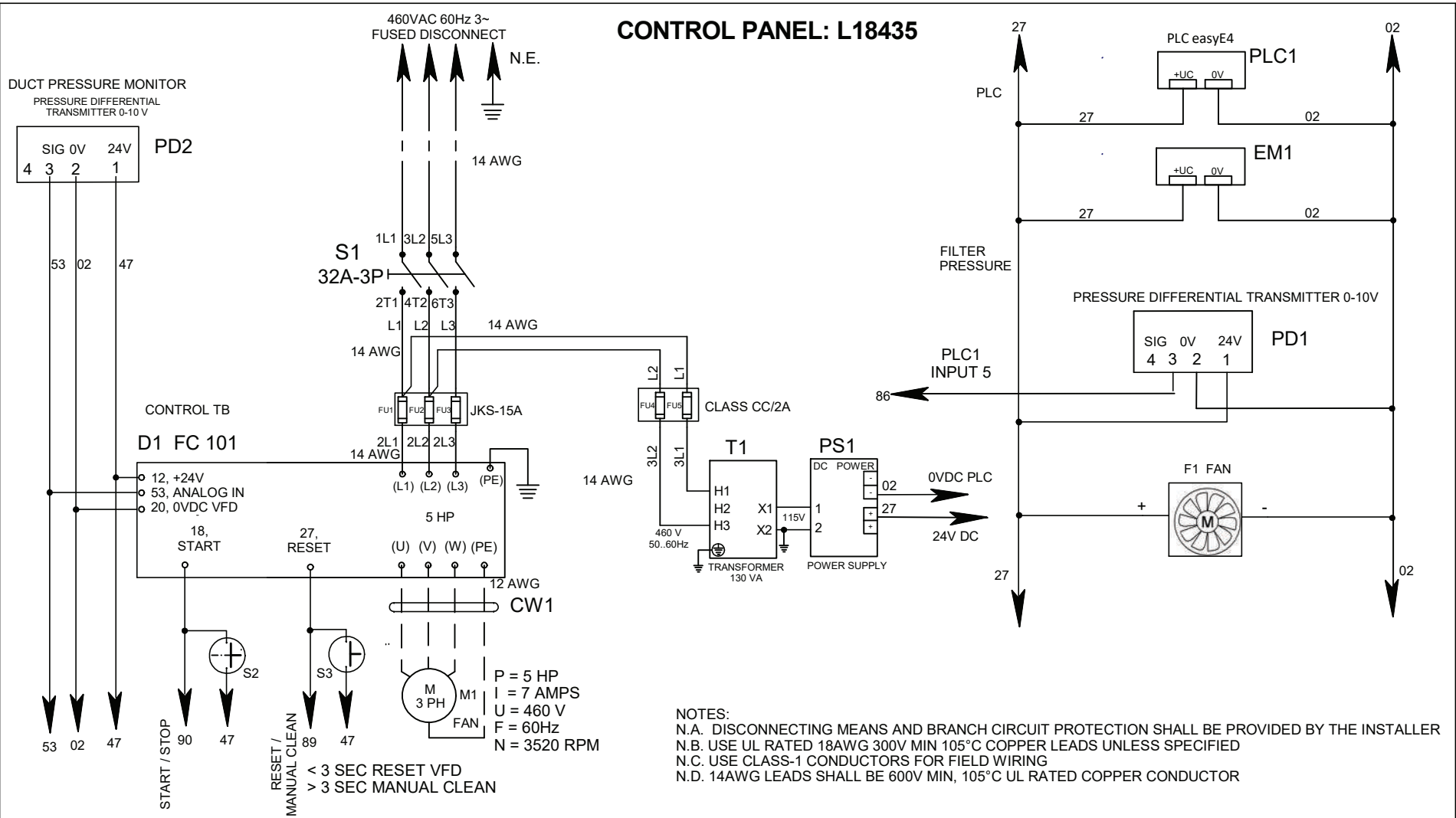
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# FOR USE WITH CODES 13218, 13222, 13226

## CONTROL PANEL: L18435



NOTES:  
 N.A. DISCONNECTING MEANS AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY THE INSTALLER  
 N.B. USE UL RATED 18AWG 300V MIN 105°C COPPER LEADS UNLESS SPECIFIED  
 N.C. USE CLASS-1 CONDUCTORS FOR FIELD WIRING  
 N.D. 14AWG LEADS SHALL BE 600V MIN, 105°C UL RATED COPPER CONDUCTOR

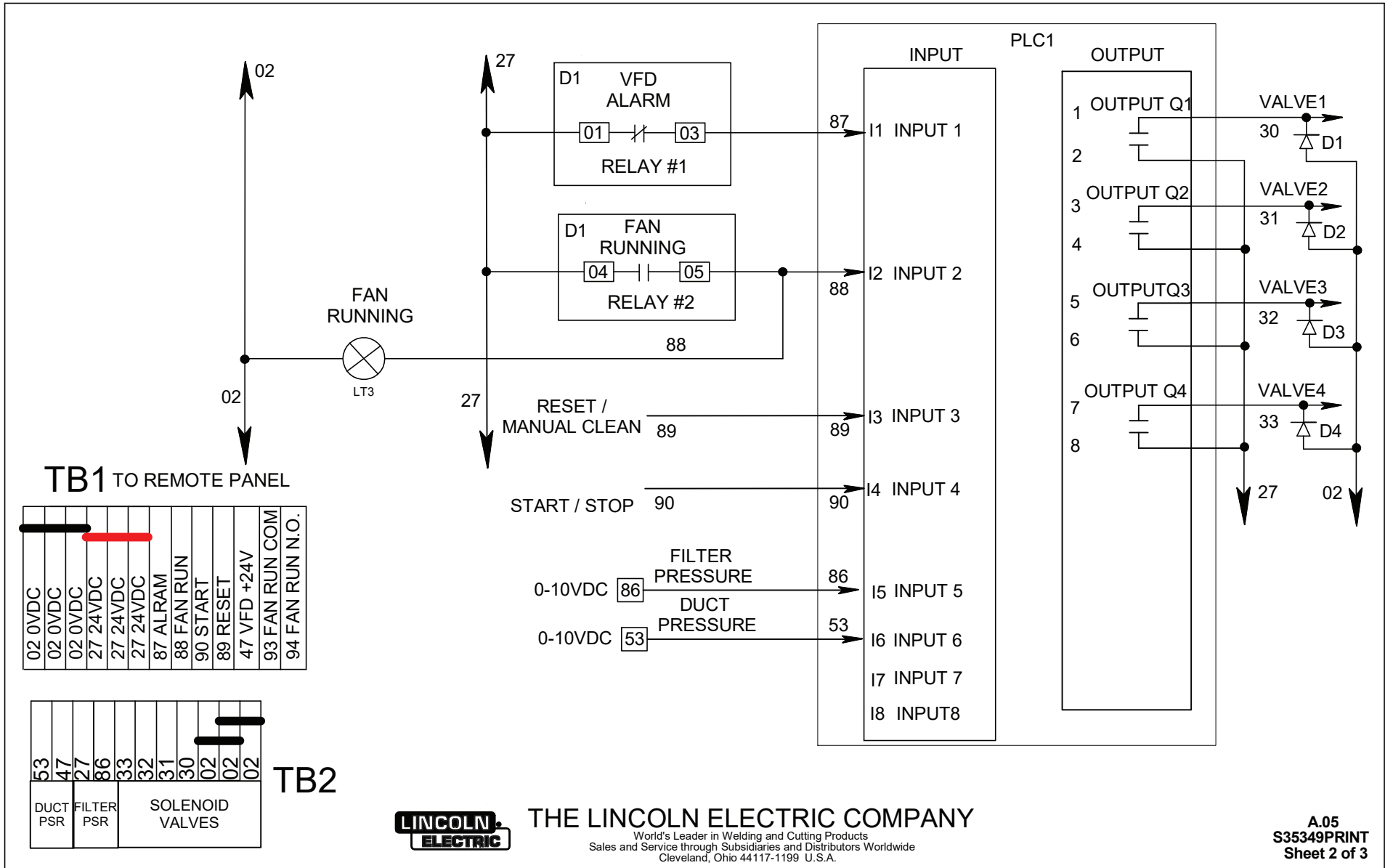


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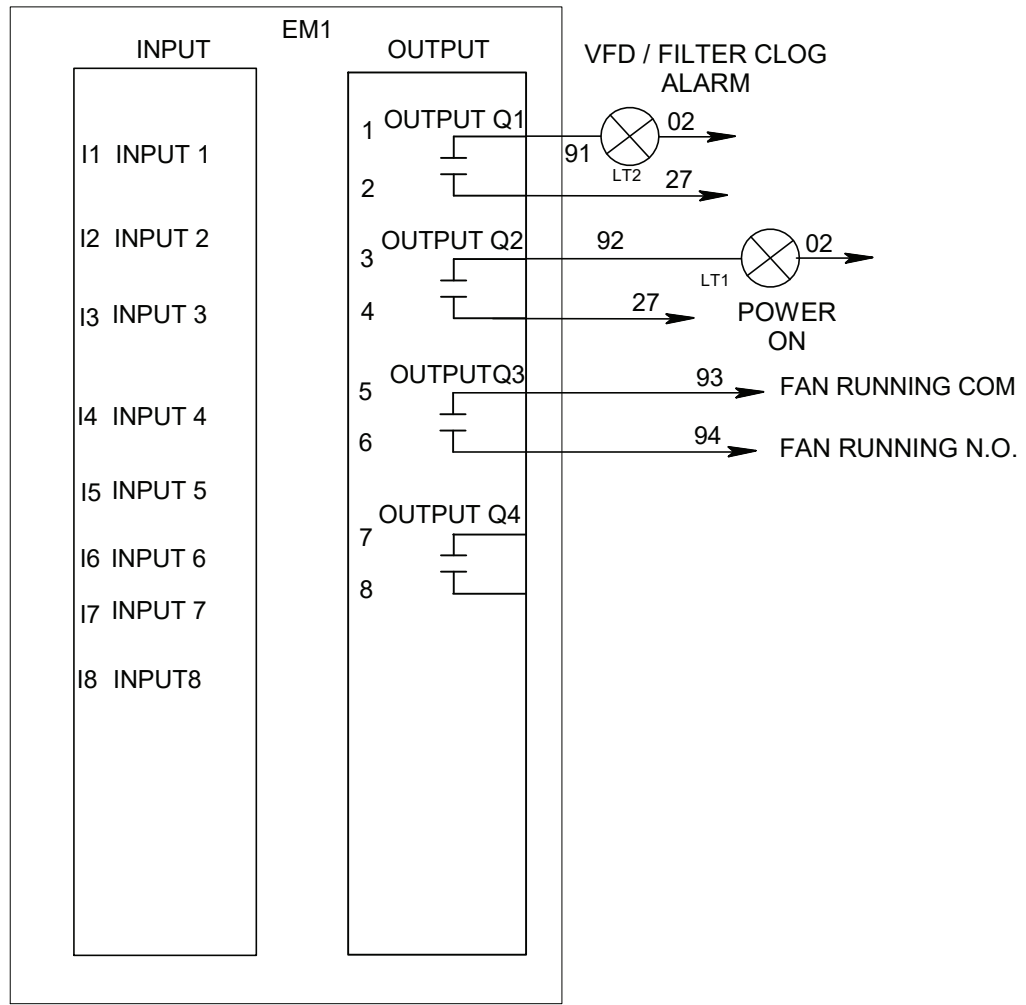
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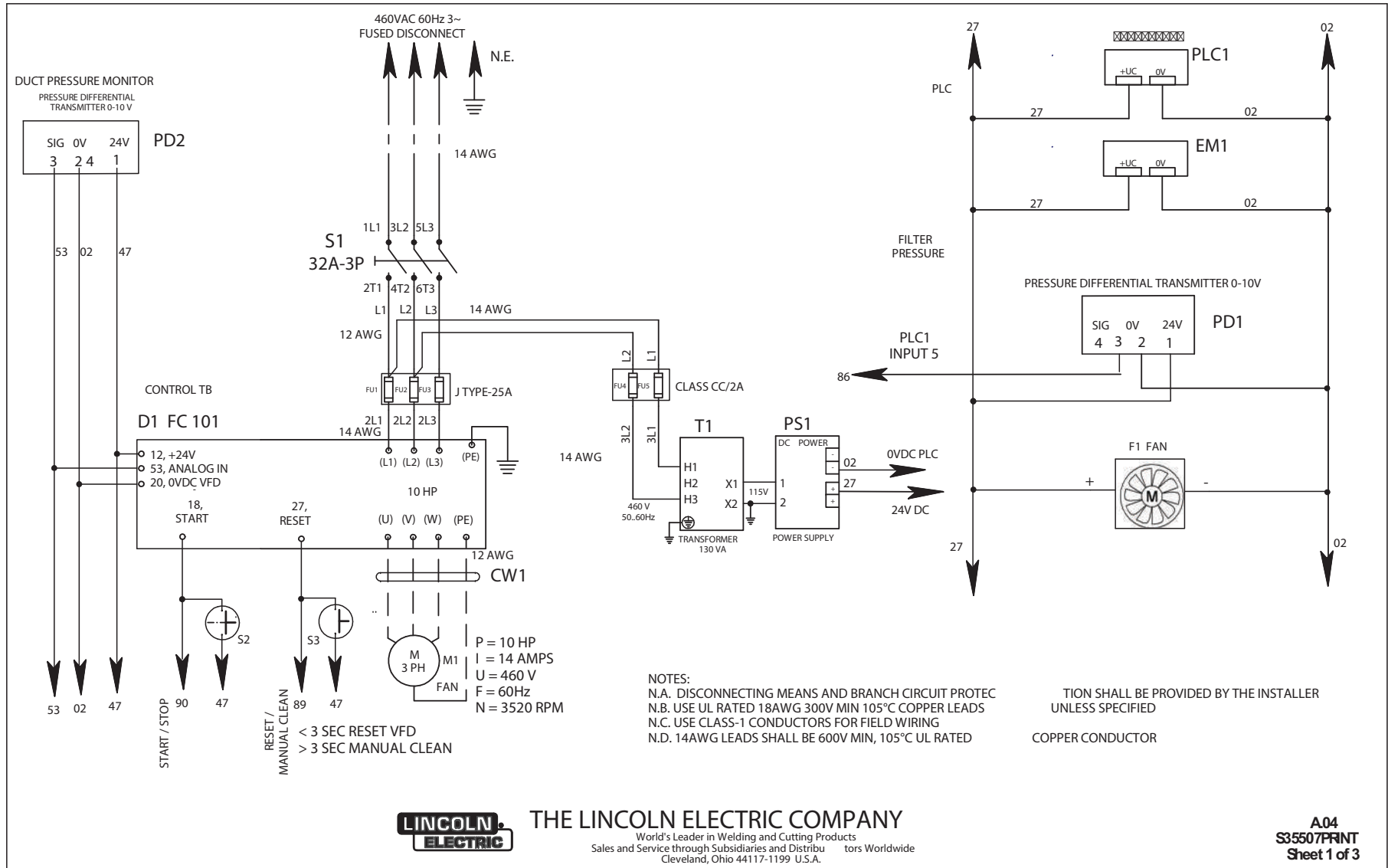


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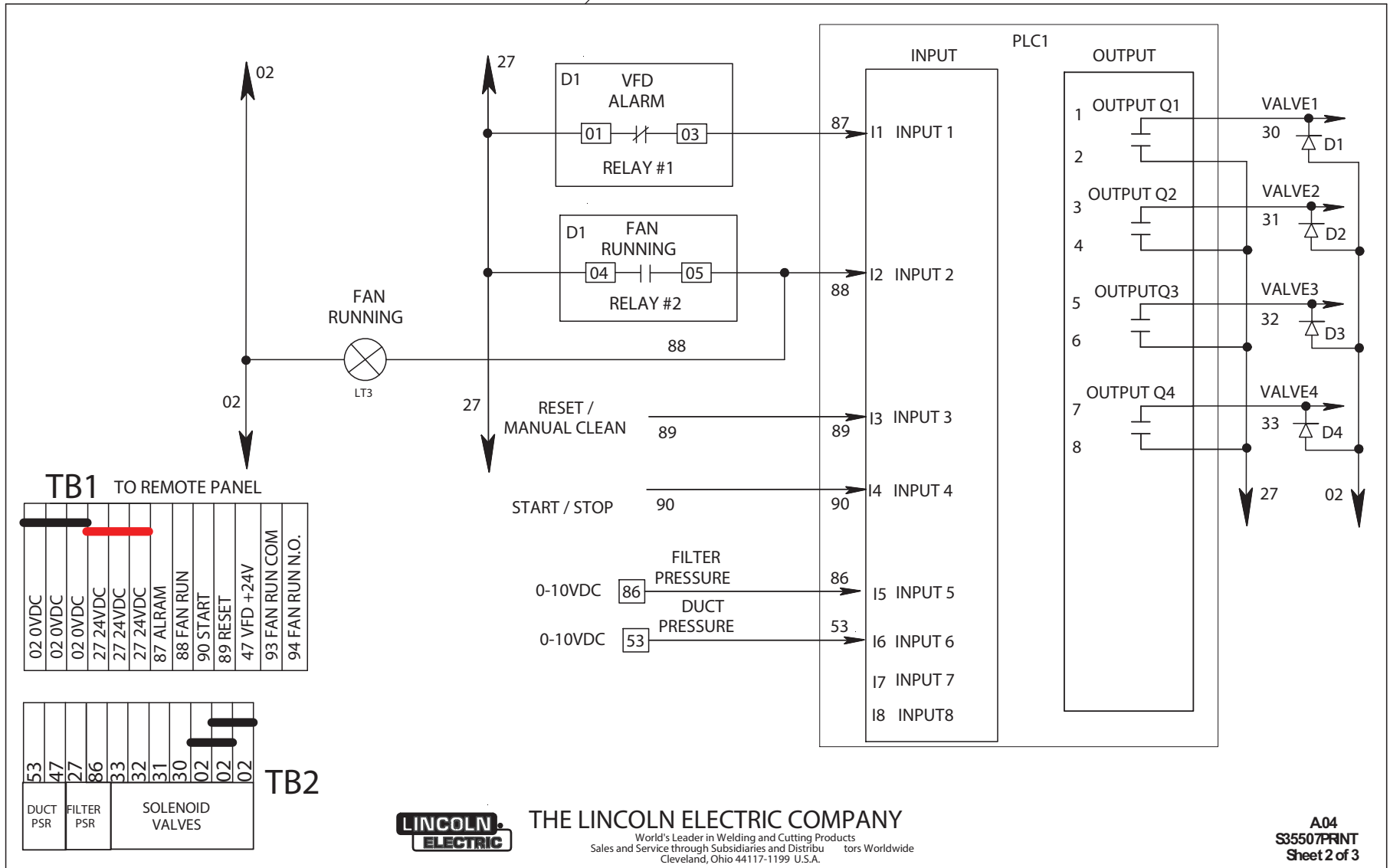
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# FOR USE WITH CODES 13219, 13223 & 13422



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# FOR USE WITH CODES 13219, 13223 & 13422



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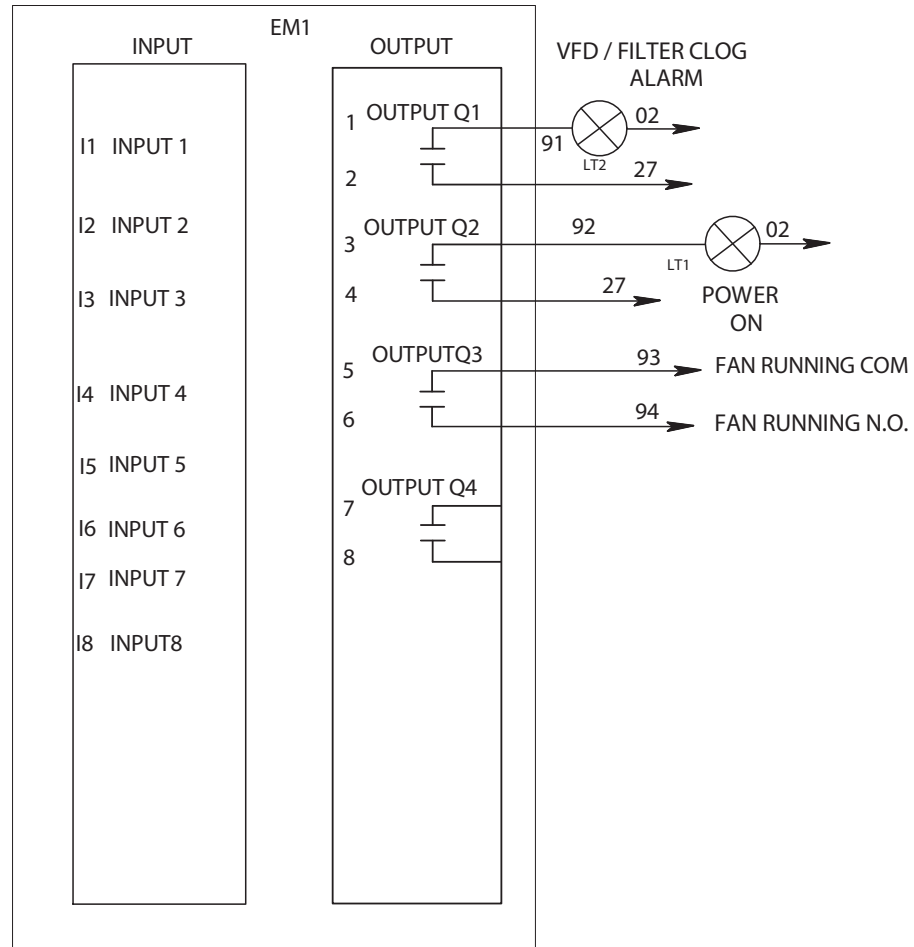
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# FOR USE WITH CODES 13219, 13223 & 13422



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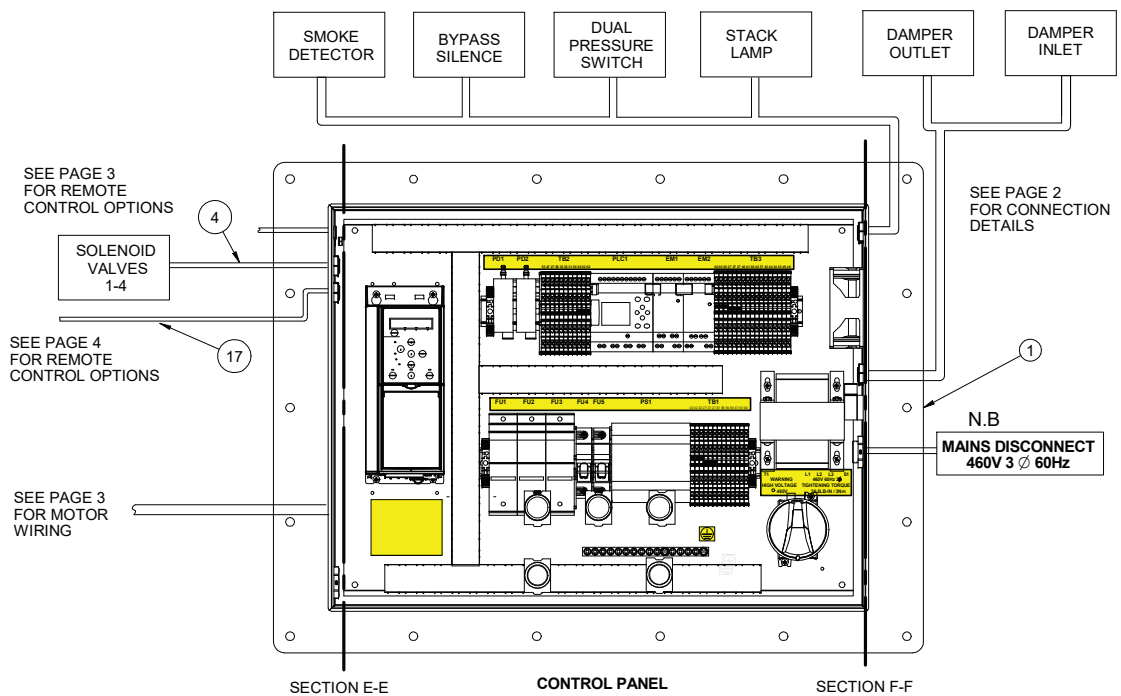
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 Sheet 3 of 3

# FOR USE WITH CODES 13220, 13221, 13224 & 13225

## COMPACT PRISM SYSTEM WIRING DIAGRAM L18625 & L18626

ITEM	DESCRIPTION	QTY	
1	CONTROL PANEL 5HP EASYE4 TS	1	#
	CONTROL PANEL 10HP EASYE4 TS		##
2	SOLENOID CABLE 1		N.A
3	SOLENOID CABLE 2		N.A
4	SOLENOID CABLE 3		N.A
5	SOLENOID CABLE 4		N.A
6	24VDC SOLENOID	4	#
7	MOTOR CABLE 5HP	1	## N.F
	MOTOR CABLE 10HP		
8	ROBOT INTERFACE ISOLATION RELAY KIT	1	
9	IF15	1	
10	CABLE FEMALE M12 5C SINGLE ENDED	6	N.E
11	SMOKE DETECTOR	1	
12	BYPASS RESET CONTROL	1	
13	DUAL PRESSURE SWITCH ASSEMBLY	1	
14	STACK LIGHT MOUNTING BASE	1	
15	DAMPER ACTUATOR ELECTRONIC	2	
16	AUXILIARY SWITCH SPDT	2	
17	CABLE ASSEMBLY	1	
18	ROBOTIC START/STOP SIMULATOR	1	
19	CONNECTOR MALE STRAIGHT 5PIN	4	
20	SMARTWIRE SPLIT DEVICE	2	

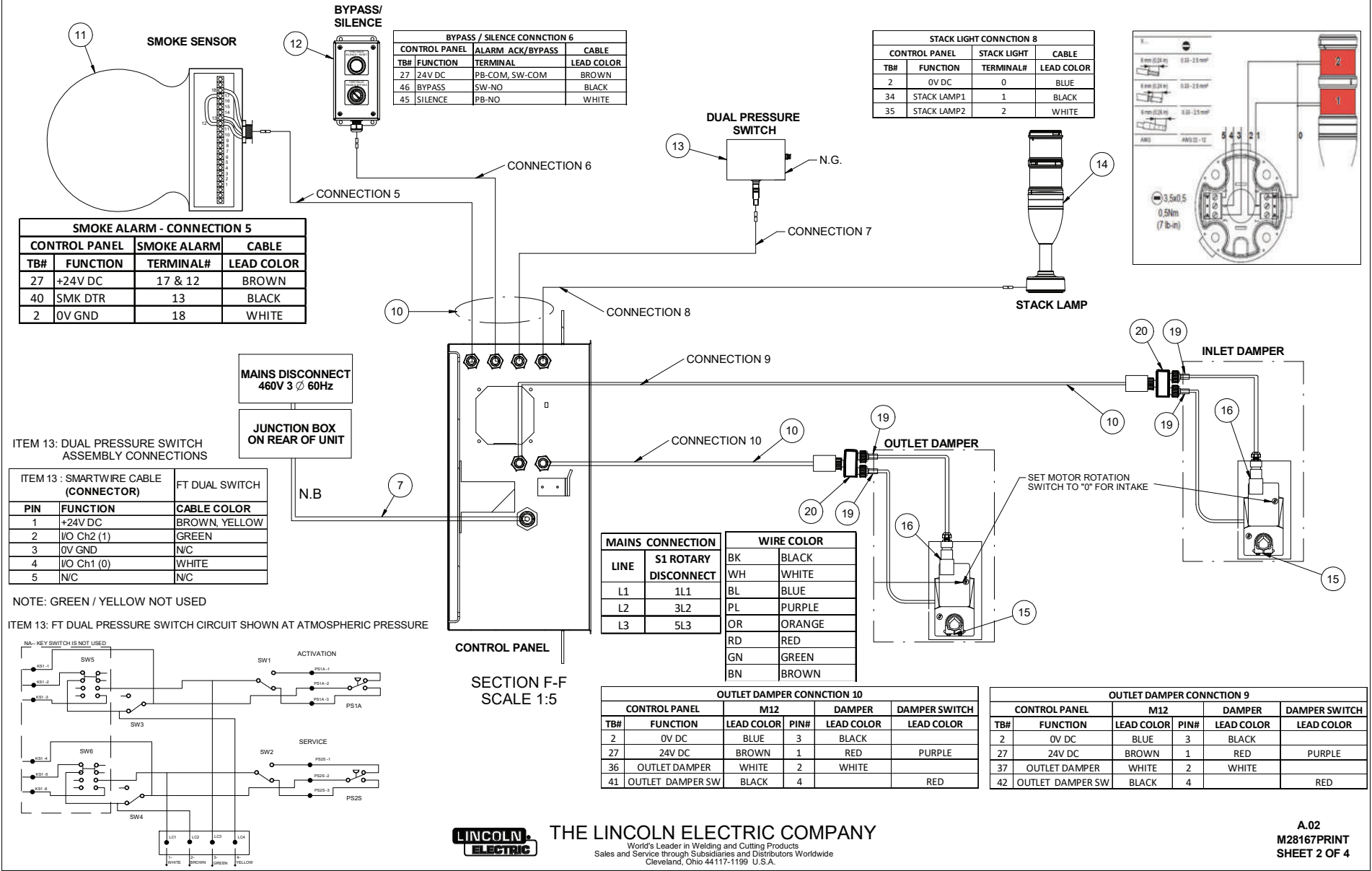


F-10

- NOTES:
- N.A. CABLES SUPPLIED WITH SOLENOID VALVE
  - N.B. DISCONNECTING MEANS AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY THE INSTALLER
  - N.C. DRY CONTACT BETWEEN 1 & 2 IS UNIT REMOTE START. UNIT WILL OUTPUT A HIGH (24VDC) ON 4 REFERENCED TO 3 IF UNIT IS ON AND READY FOR ACTIVE FUME EXTRACTION
  - N.D. ITEM 17 SHALL BE CUT AT FEMALE END AND CONNECT TO THE ROBOT I/O AS SHOWN.
  - N.E. CUT TO REQUIRED LENGTH.
  - N.F. BASED ON MOTOR POWER THE CABLE OPTION SHALL BE SELECTED
  - N.G. TO MATCH SWITCH CONFIGURATION SHOWN ON SYSTEM WIRING PRINT SET SLIDE SWITCHES SW1 UP, SW2 UP, SW3 DOWN, SW4 DOWN, SW5 AND SW6 ARE NOT USED.

# FOR USE WITH CODES 13220, 13221, 13224 & 13225

## COMPACT PRISM SYSTEM WIRING DIAGRAM L18625 & L18626



BYPASS / SILENCE CONNECTION 6			
CONTROL PANEL	ALARM ACK/BYPASS	TERMINAL	CABLE LEAD COLOR
27	24V DC	PB-COM, SW-COM	BROWN
46	BYPASS	SW-NO	BLACK
45	SILENCE	PB-NO	WHITE

STACK LIGHT CONNECTION 8			
CONTROL PANEL	STACK LIGHT	TERMINAL#	CABLE LEAD COLOR
2	0V DC	0	BLUE
34	STACK LAMP1	1	BLACK
35	STACK LAMP2	2	WHITE

SMOKE ALARM - CONNECTION 5			
CONTROL PANEL	SMOKE ALARM	TERMINAL#	CABLE LEAD COLOR
27	+24V DC	17 & 12	BROWN
40	SMK DTR	13	BLACK
2	0V GND	18	WHITE

MAINS DISCONNECT  
460V 3 Ø 60Hz

JUNCTION BOX  
ON REAR OF UNIT

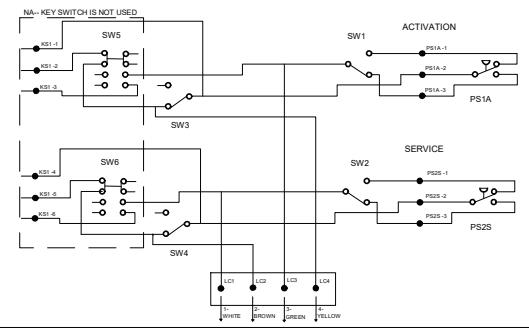
ITEM 13 : SMARTWIRE CABLE (CONNECTOR)			FT DUAL SWITCH
PIN	FUNCTION	CABLE COLOR	
1	+24V DC	BROWN, YELLOW	
2	I/O Ch2 (1)	GREEN	
3	0V GND	N/C	
4	I/O Ch1 (0)	WHITE	
5	N/C	N/C	

MAINS CONNECTION		WIRE COLOR	
LINE	S1 ROTARY DISCONNECT		
L1	1L1	BK	BLACK
L2	3L2	WH	WHITE
L3	5L3	BL	BLUE
		PL	PURPLE
		OR	ORANGE
		RD	RED
		GN	GREEN
		BN	BROWN

OUTLET DAMPER CONNECTION 10					
CONTROL PANEL	FUNCTION	LEAD COLOR	M12 PIN#	DAMPER LEAD COLOR	DAMPER SWITCH LEAD COLOR
2	0V DC	BLUE	3	BLACK	
27	24V DC	BROWN	1	RED	PURPLE
36	OUTLET DAMPER	WHITE	2	WHITE	
41	OUTLET DAMPER SW	BLACK	4		RED

OUTLET DAMPER CONNECTION 9					
CONTROL PANEL	FUNCTION	LEAD COLOR	M12 PIN#	DAMPER LEAD COLOR	DAMPER SWITCH LEAD COLOR
2	0V DC	BLUE	3	BLACK	
27	24V DC	BROWN	1	RED	PURPLE
37	OUTLET DAMPER	WHITE	2	WHITE	
42	OUTLET DAMPER SW	BLACK	4		RED

CONTROL PANEL  
SECTION F-F  
SCALE 1:5



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# FOR USE WITH CODES 13220, 13221, 13224 & 13225

## COMPACT PRISM SYSTEM WIRING DIAGRAM L18625 & L18626

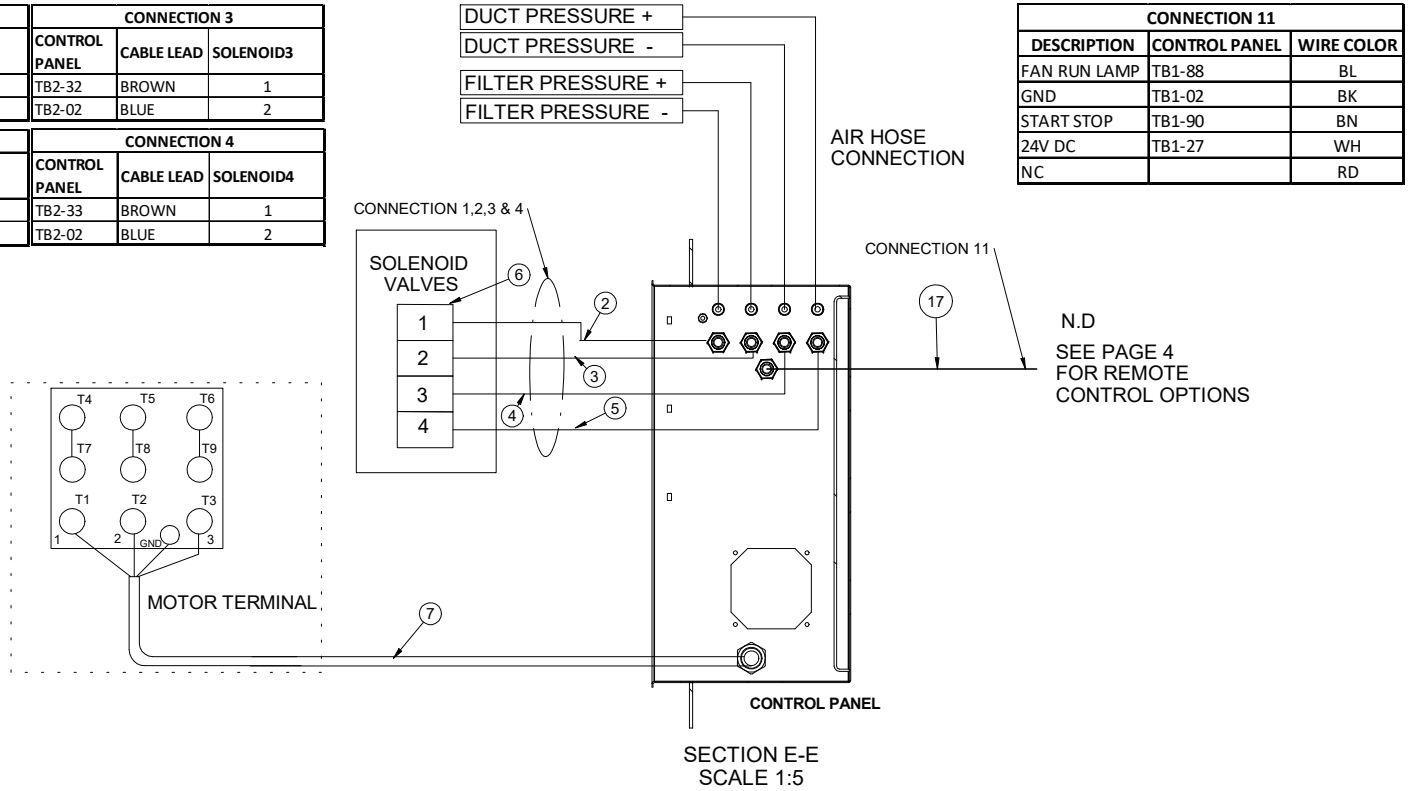
CONNECTION 1			CONNECTION 3		
CONTROL PANEL	CABLE LEAD	SOLENOID1	CONTROL PANEL	CABLE LEAD	SOLENOID3
TB2-30	BROWN	1	TB2-32	BROWN	1
TB2-02	BLUE	2	TB2-02	BLUE	2

CONNECTION 2			CONNECTION 4		
CONTROL PANEL	CABLE LEAD	SOLENOID2	CONTROL PANEL	CABLE LEAD	SOLENOID4
TB2-31	BROWN	1	TB2-33	BROWN	1
TB2-02	BLUE	2	TB2-02	BLUE	2

DUCT PRESSURE +
DUCT PRESSURE -
FILTER PRESSURE +
FILTER PRESSURE -

CONNECTION 11		
DESCRIPTION	CONTROL PANEL	WIRE COLOR
FAN RUN LAMP	TB1-88	BL
GND	TB1-02	BK
START STOP	TB1-90	BN
24V DC	TB1-27	WH
NC		RD



F-12



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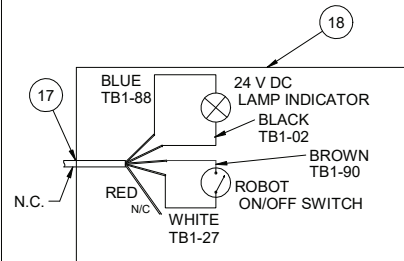
DIAGRAMS

# FOR USE WITH CODES 13220, 13221, 13224 & 13225

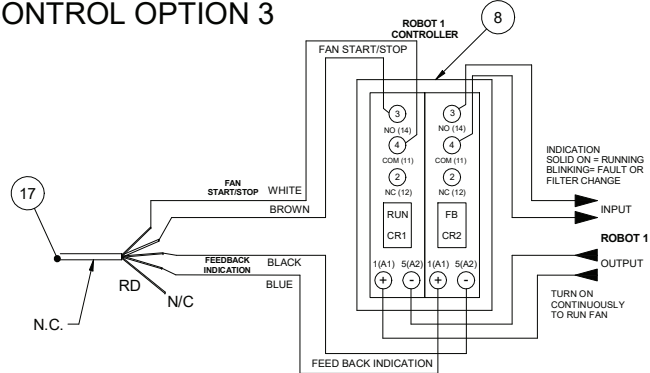
## COMPACT PRISM SYSTEM WIRING DIAGRAM L18625 & L18626

ITEM 17 CONNECTS TO ITEM 1 IN PAGE 3

### CONTROL OPTION 1

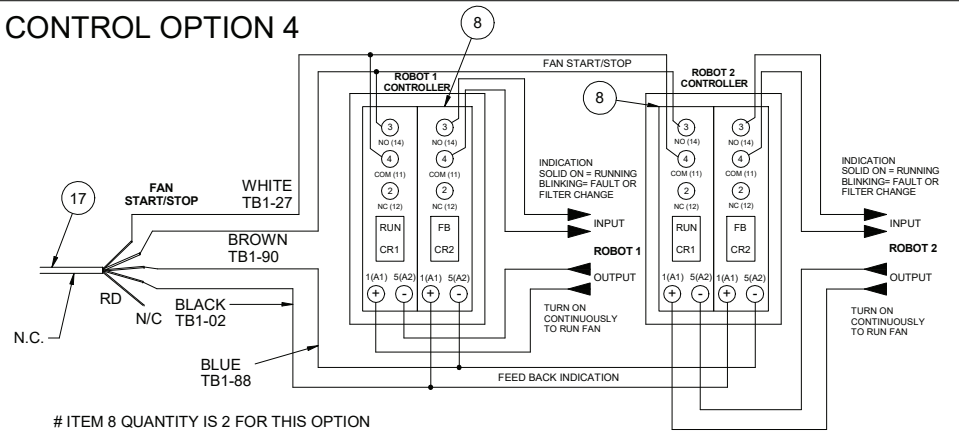


### CONTROL OPTION 3



# ITEM 15 QUANTITY IS 1 FOR THIS OPTION

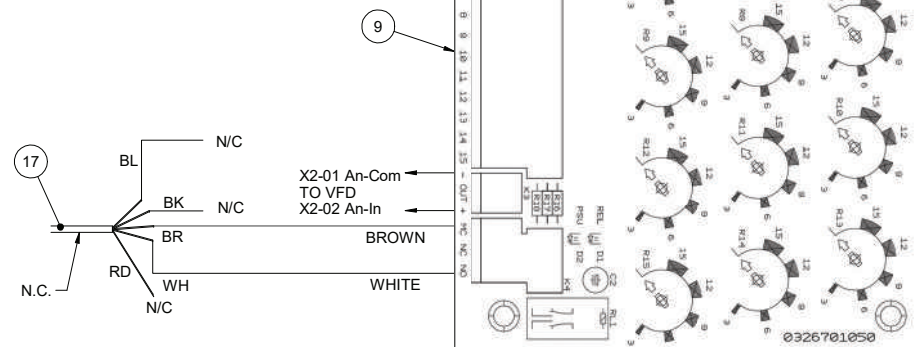
### CONTROL OPTION 4



# ITEM 8 QUANTITY IS 2 FOR THIS OPTION

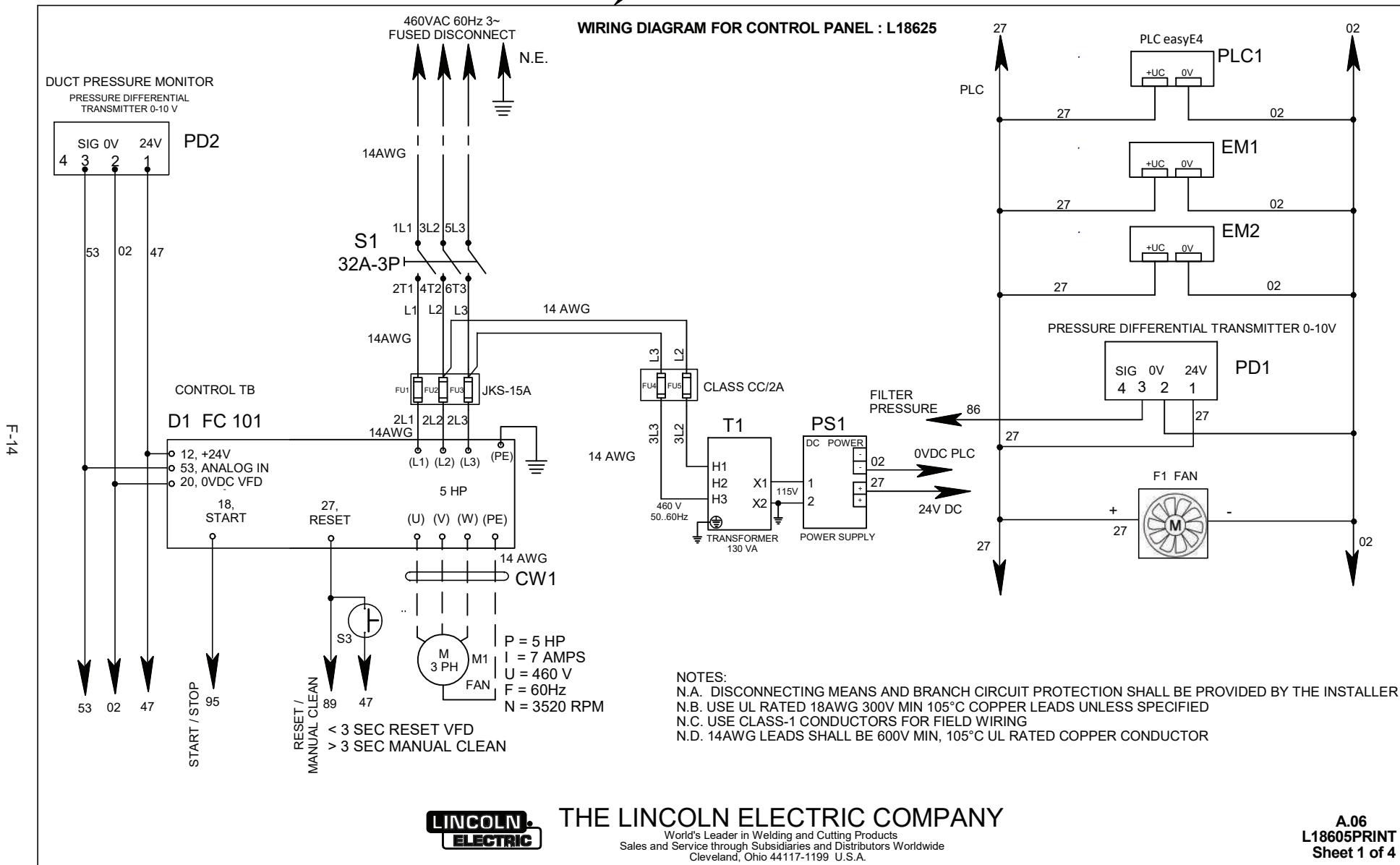
### CONTROL OPTION 5

- MOTOR SPEED CONTROL OPTIONS :
1. CONNECT DUCT PRESSURE TRANSMITTER TO VFD SPEED CONTROL AS SHOWN IN DETAIL B
  2. CONNECT IF-15 ANALOG OUT TO VFD SPEED CONTROL AS SHOWN BELOW



# FOR USE WITH CODES 13220 & 13224

## WIRING DIAGRAM FOR CONTROL PANEL : L18625



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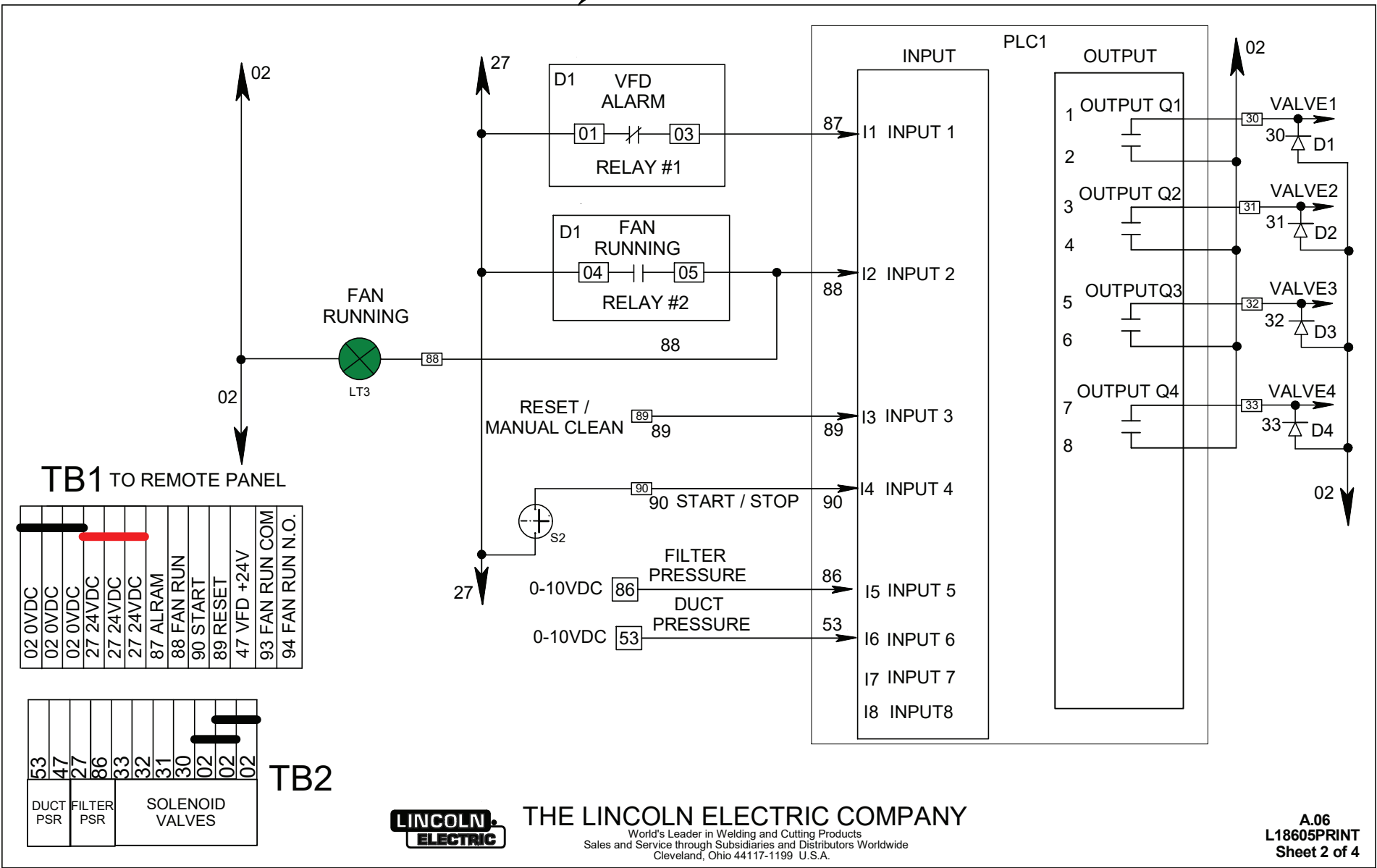
F-14

PRISM® COMPACT

DIAGRAMS

# FOR USE WITH CODES 13220 & 13224

F-15



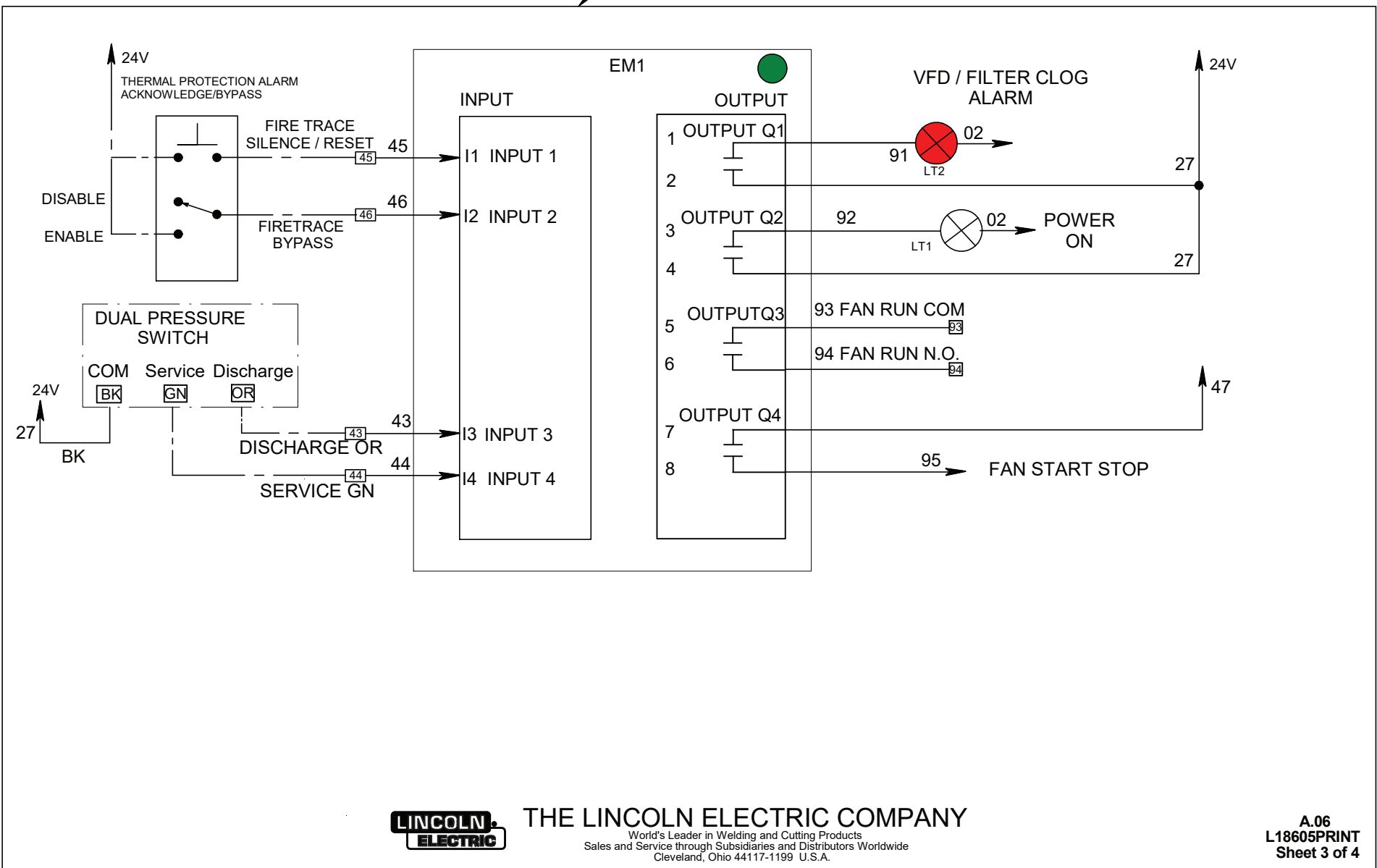
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A.06  
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Sheet 2 of 4

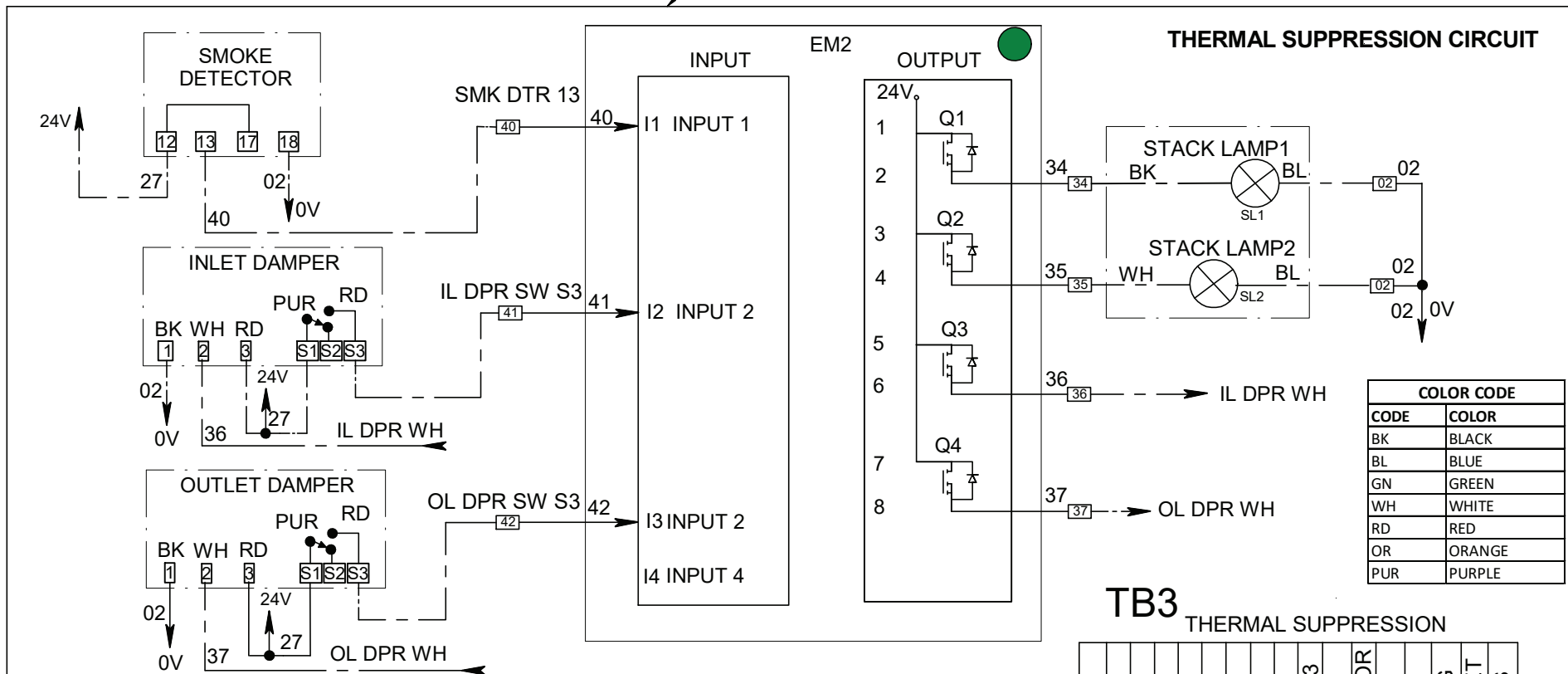
# FOR USE WITH CODES 13220 & 13224

F-16



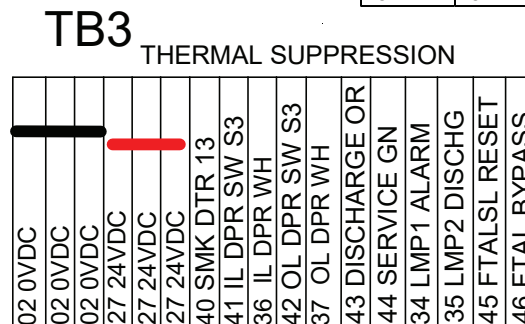


# FOR USE WITH CODES 13220 & 13224



F-17

NOTES:  
N.A. DOTTED LINES INDICATE CONNECTION IS OUTSIDE THE CONTROL PANEL

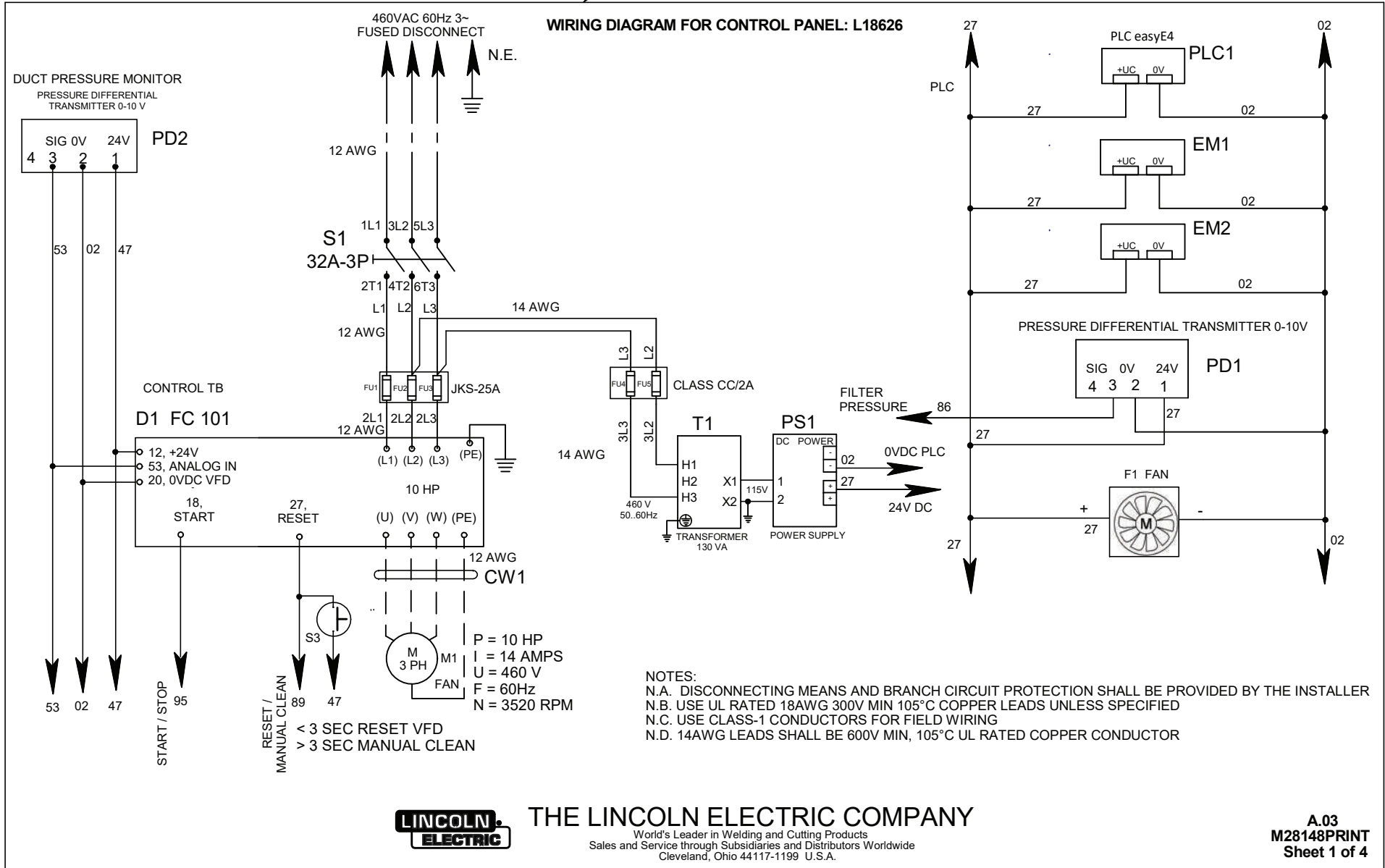


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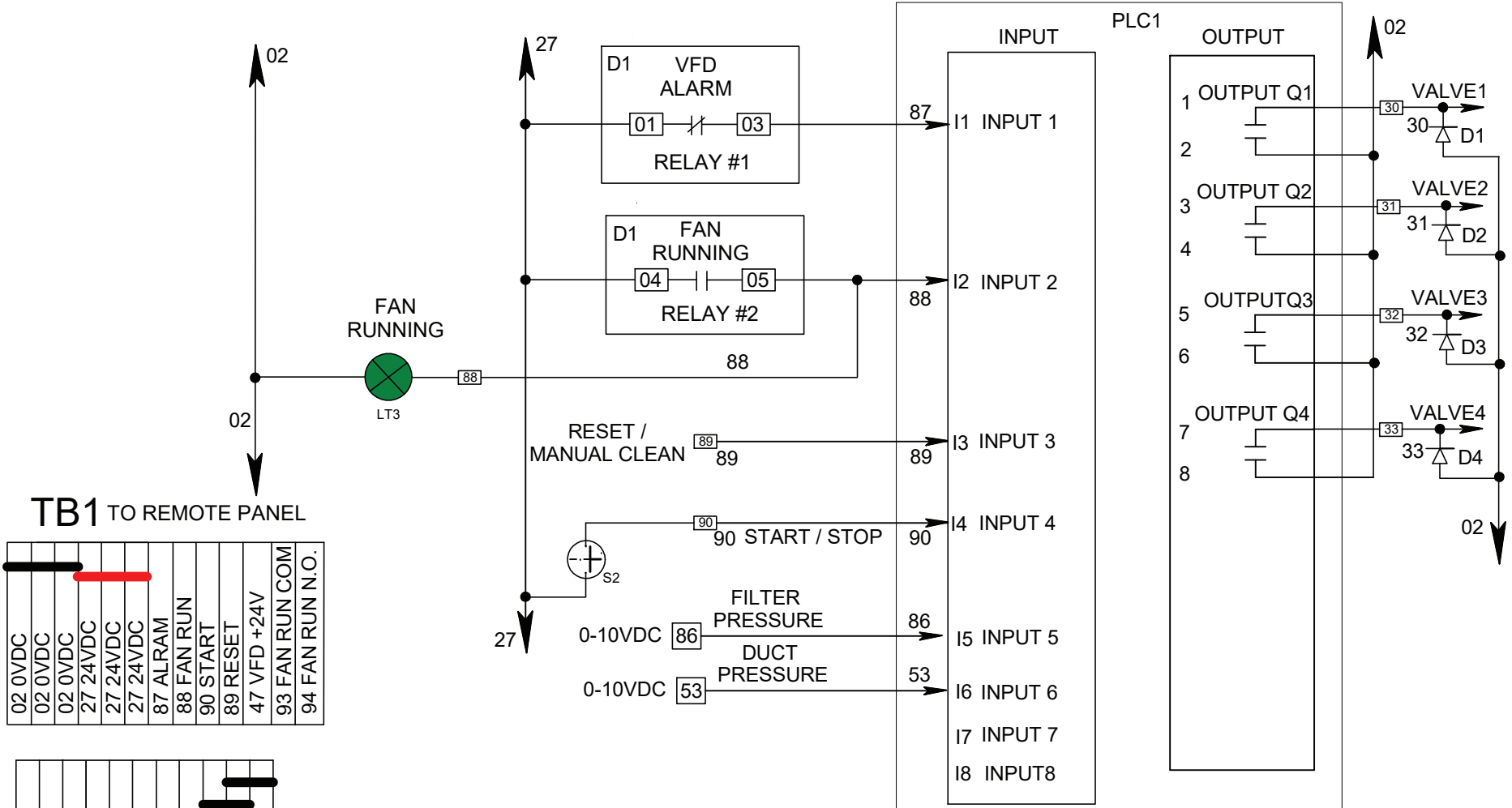
# FOR USE WITH CODES 13221 & 13225



F-118

# FOR USE WITH CODES 13221 & 13225

F-19



TB1 TO REMOTE PANEL

02	0VDC
02	0VDC
02	0VDC
27	24VDC
27	24VDC
27	24VDC
87	ALARM
88	FAN RUN
90	START
89	RESET
47	VFD +24V
93	FAN RUN COM
94	FAN RUN N.O.

53	DUCT PSR
47	FILTER PSR
27	
86	
33	
32	
31	
30	
02	
02	
02	

TB2



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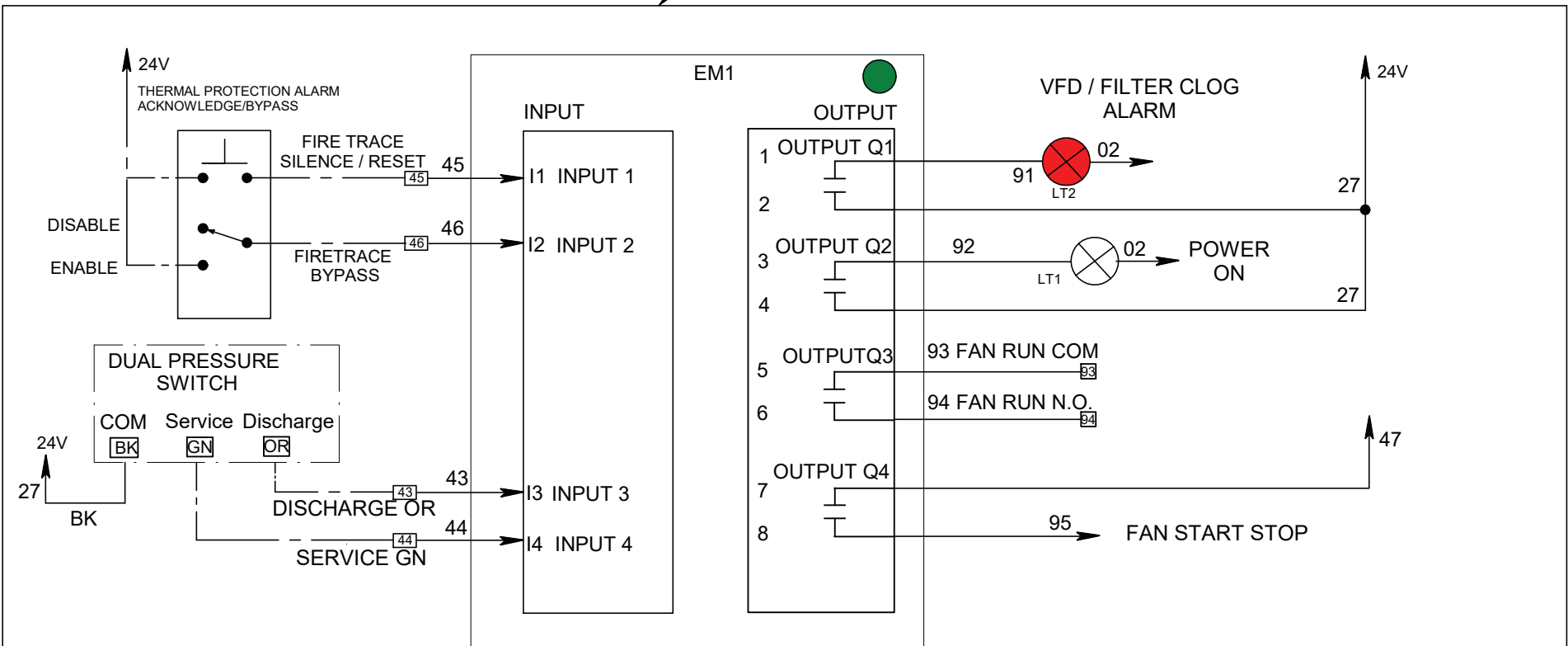
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# FOR USE WITH CODES 13221 & 13225



F-20



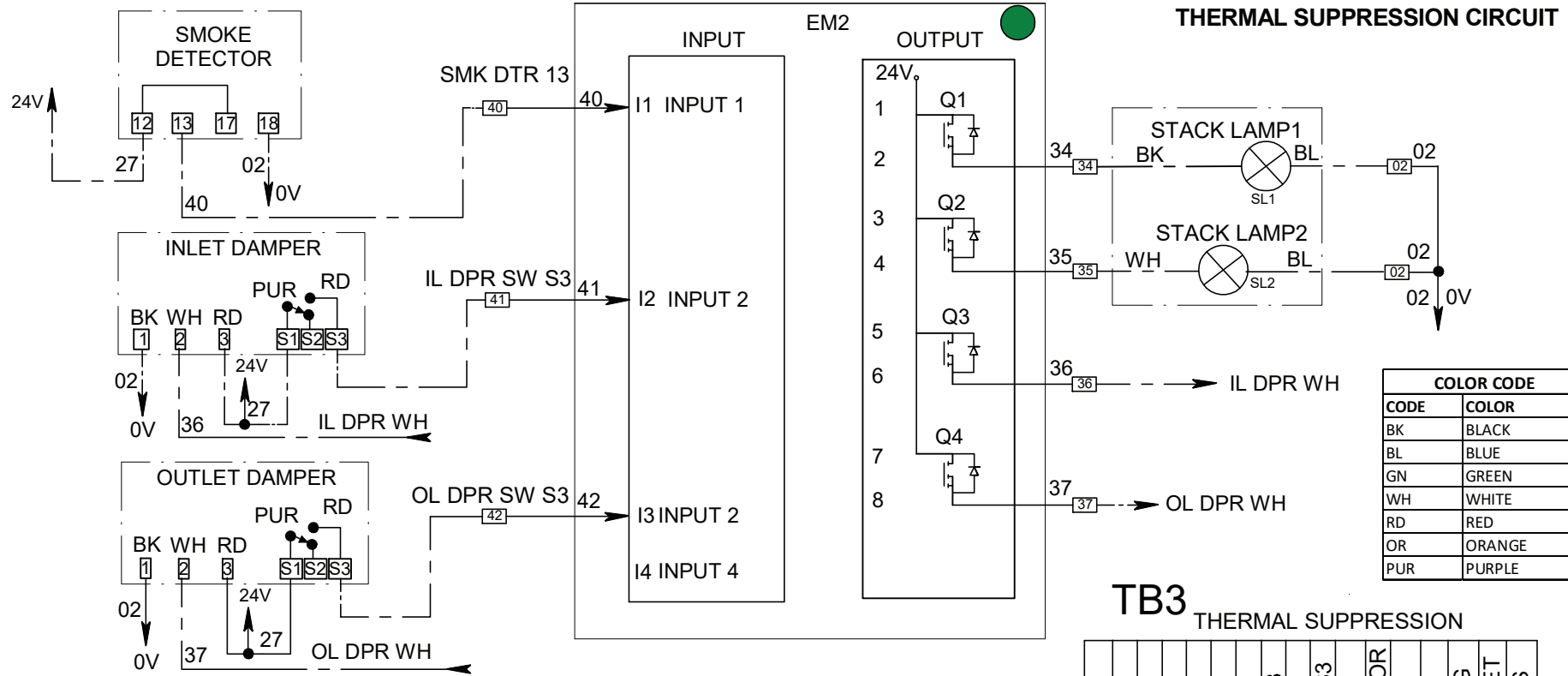
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DIAGRAMS

# FOR USE WITH CODES 13221 & 13225



**TB3** THERMAL SUPPRESSION

02 0VDC	40 SMK DTR 13
02 0VDC	41 IL DPR SW S3
02 0VDC	36 IL DPR WH
27 24VDC	42 OL DPR SW S3
27 24VDC	37 OL DPR WH
27 24VDC	43 DISCHARGE OR
27 24VDC	44 SERVICE GN
34	34 LMP1 ALARM
35	35 LMP2 DISCHG
36	45 FTALSL RESET
37	46 FTAL BYPASS

NOTES:  
N.A. DOTTED LINES INDICATE CONNECTION IS OUTSIDE THE CONTROL PANEL

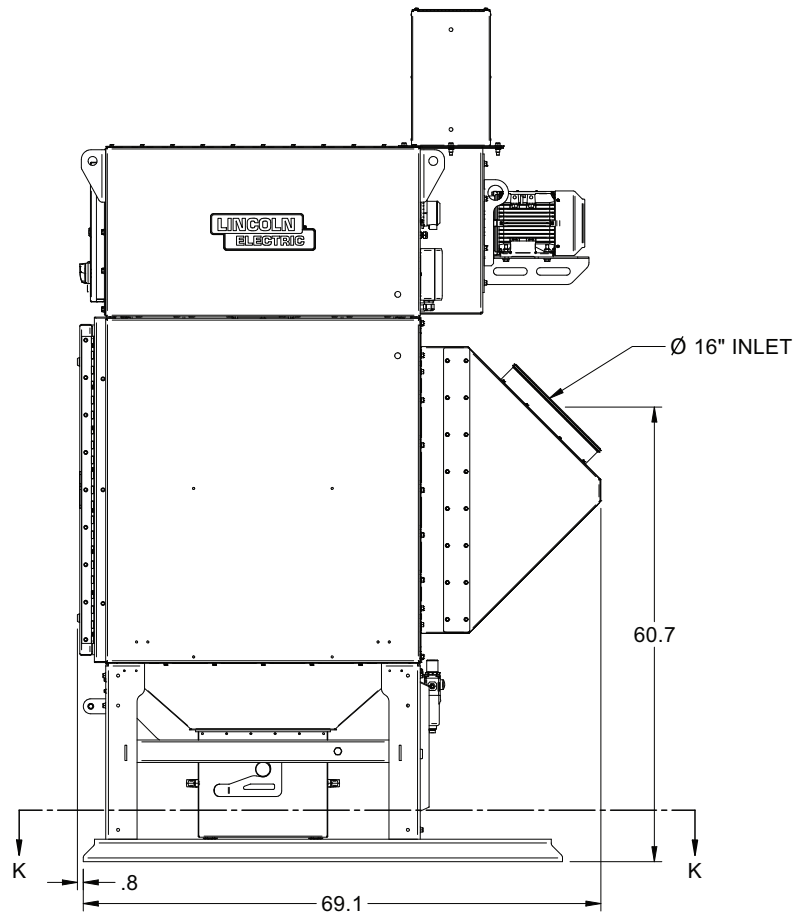
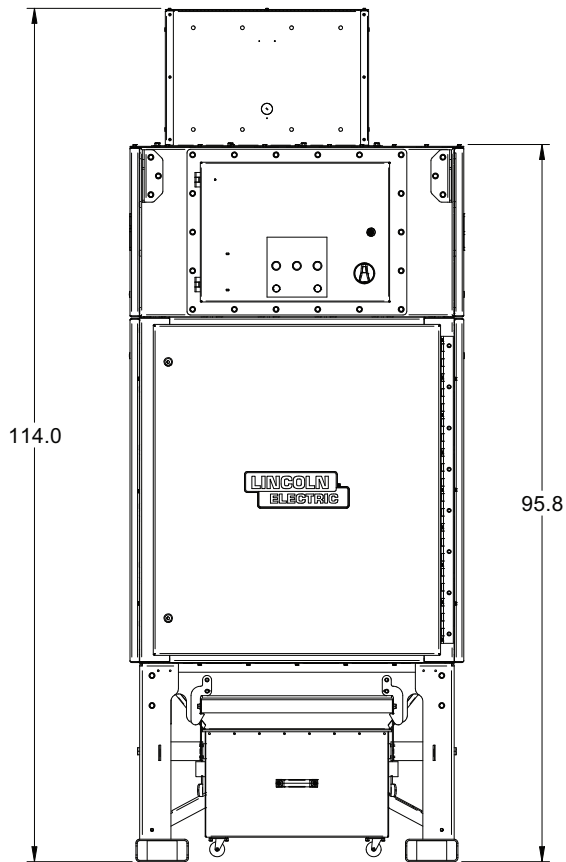
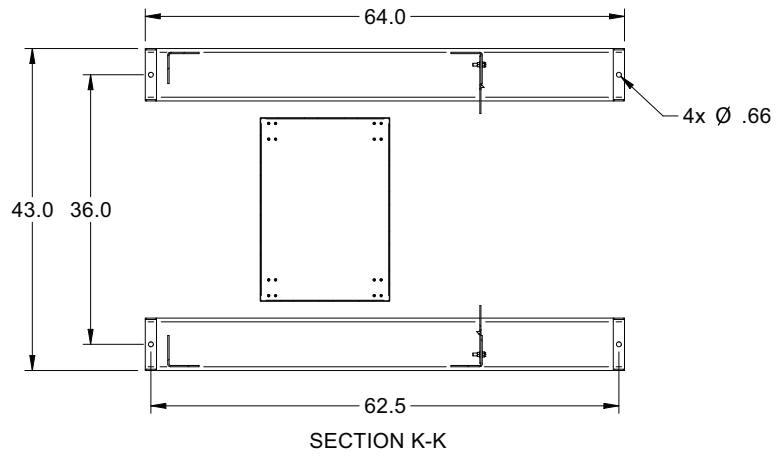
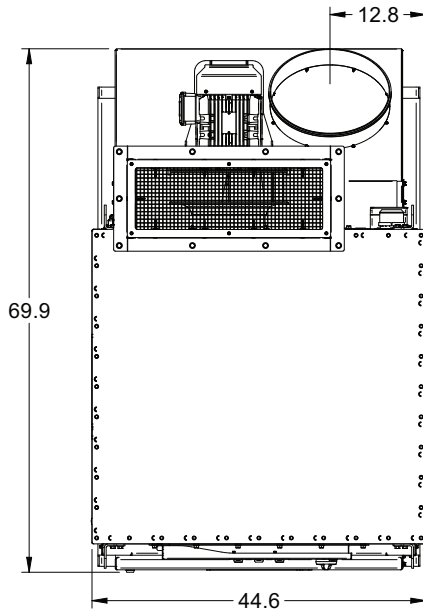


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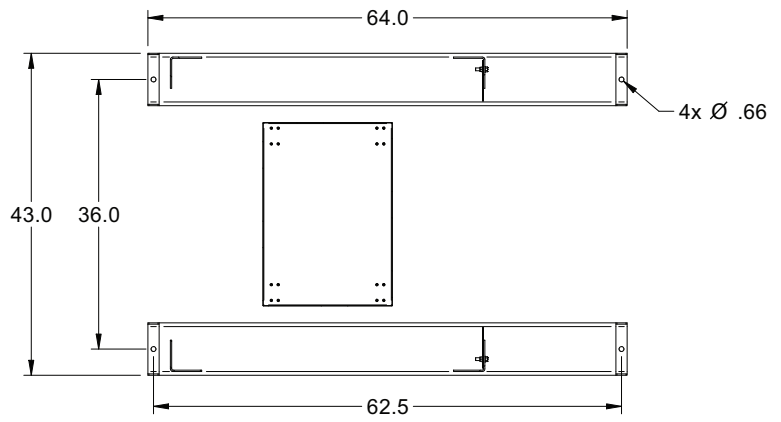
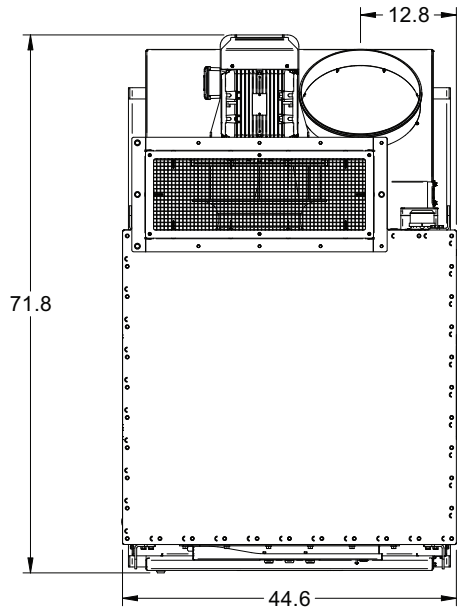
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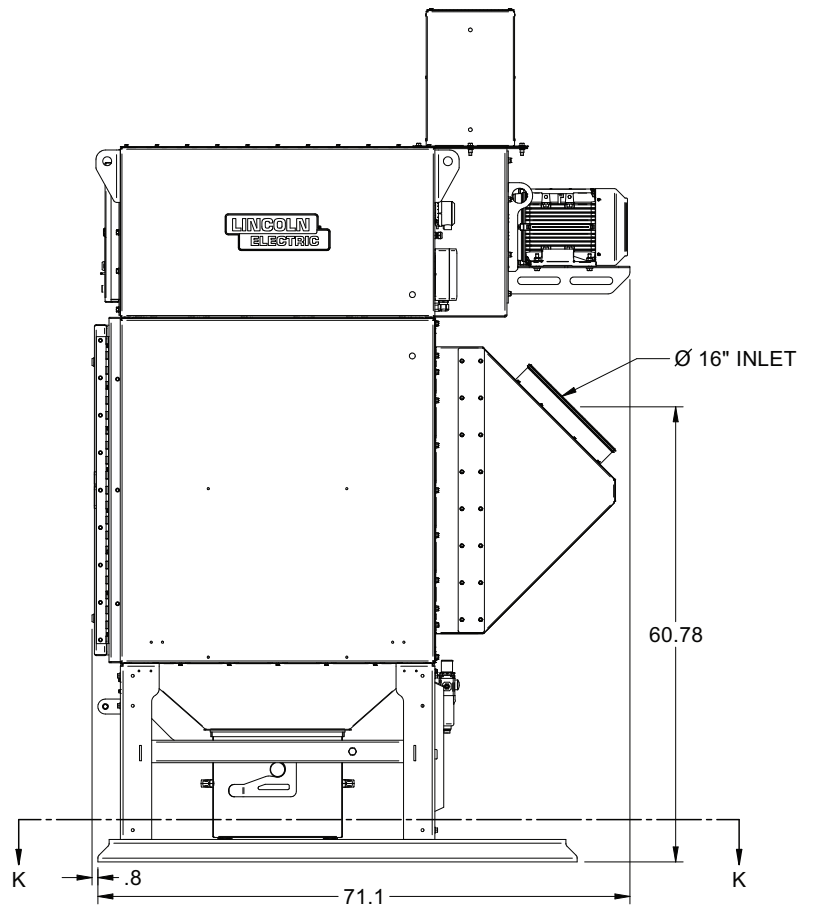
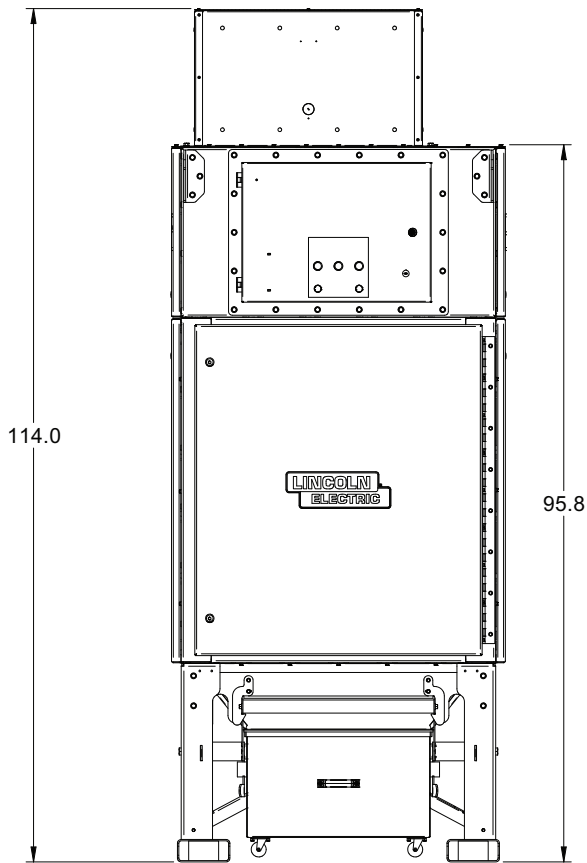
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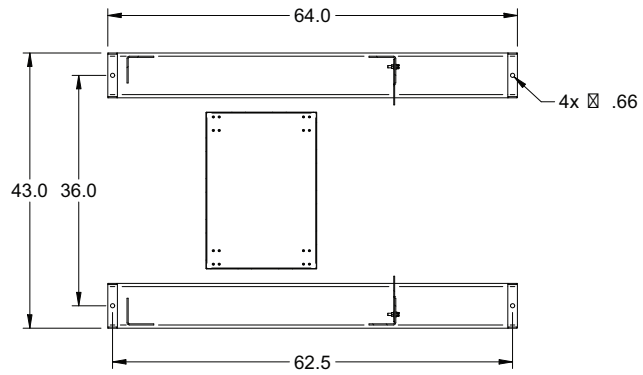
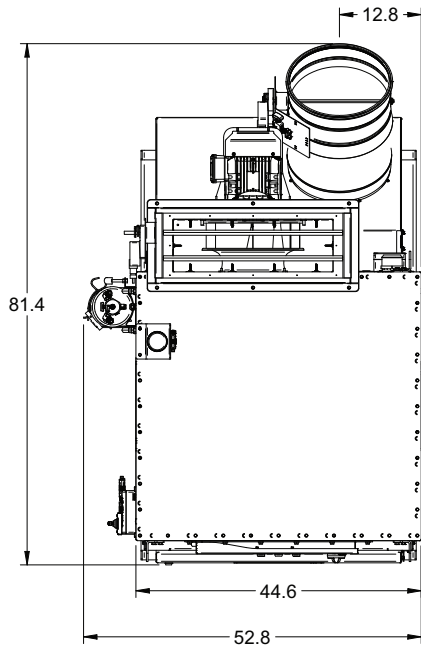
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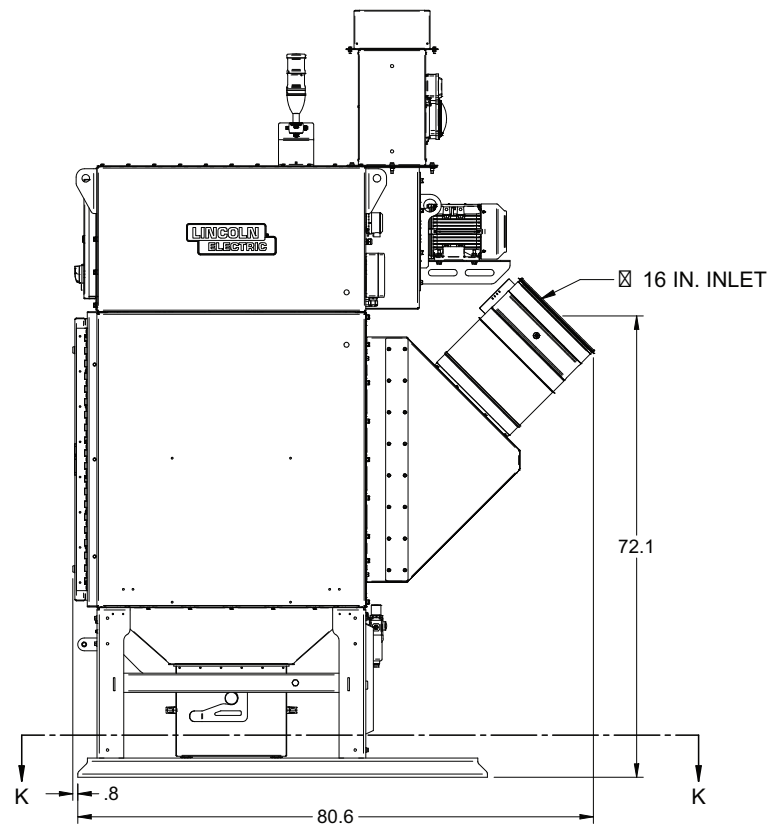
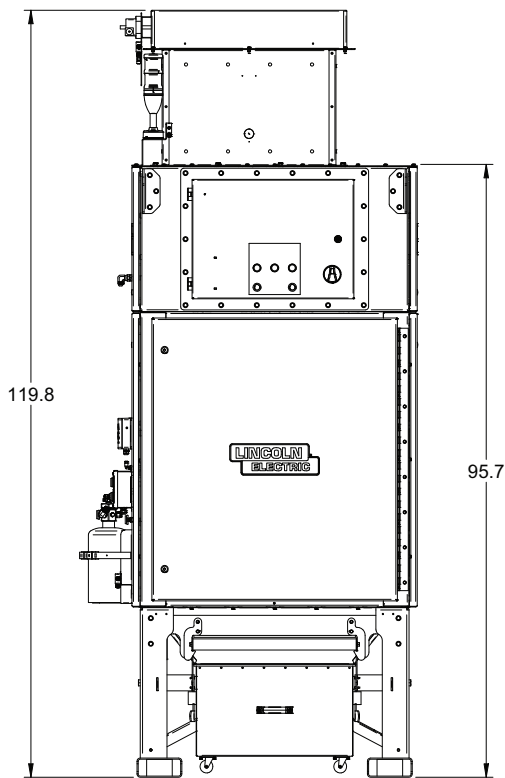
SECTION K-K



AD2455-3

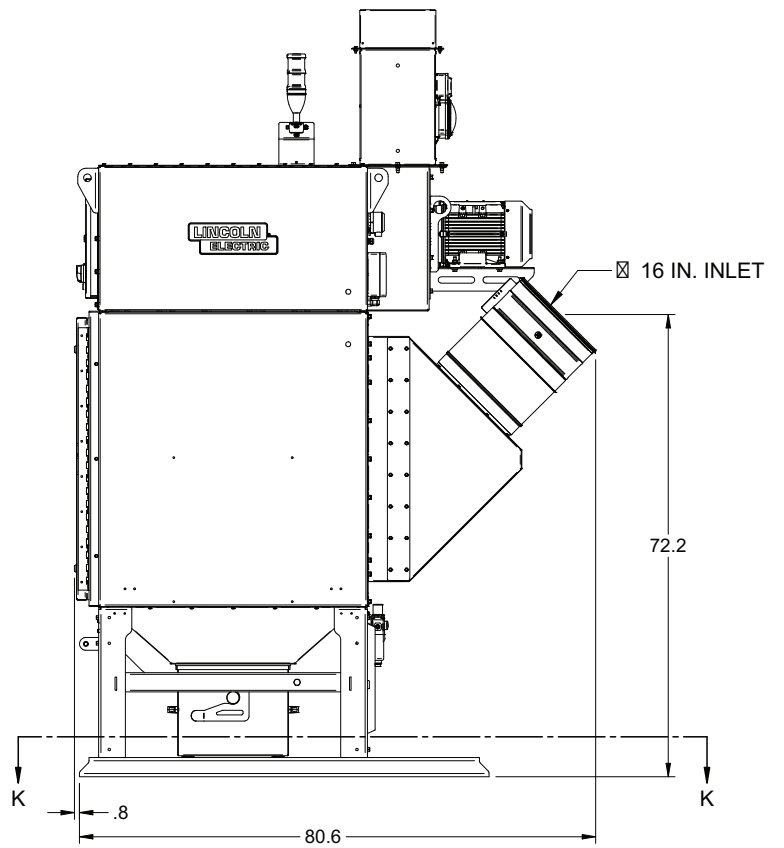
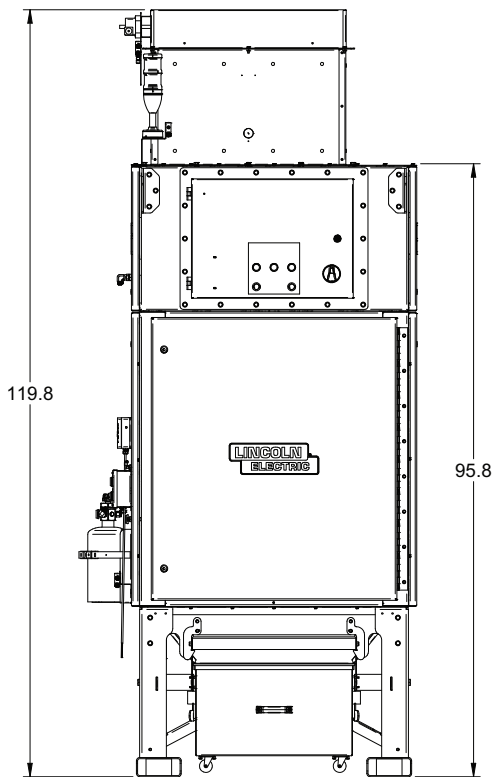
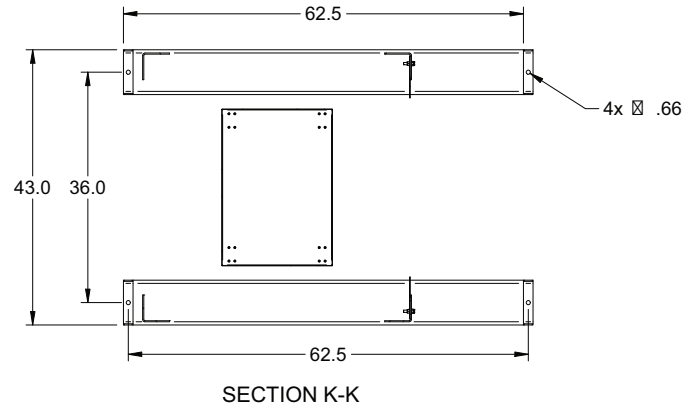
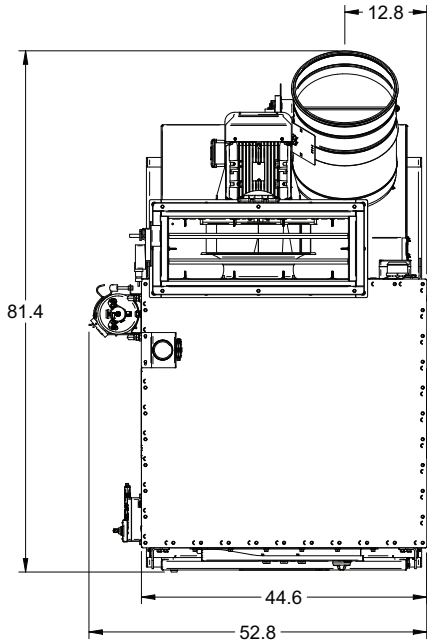


SECTION K-K

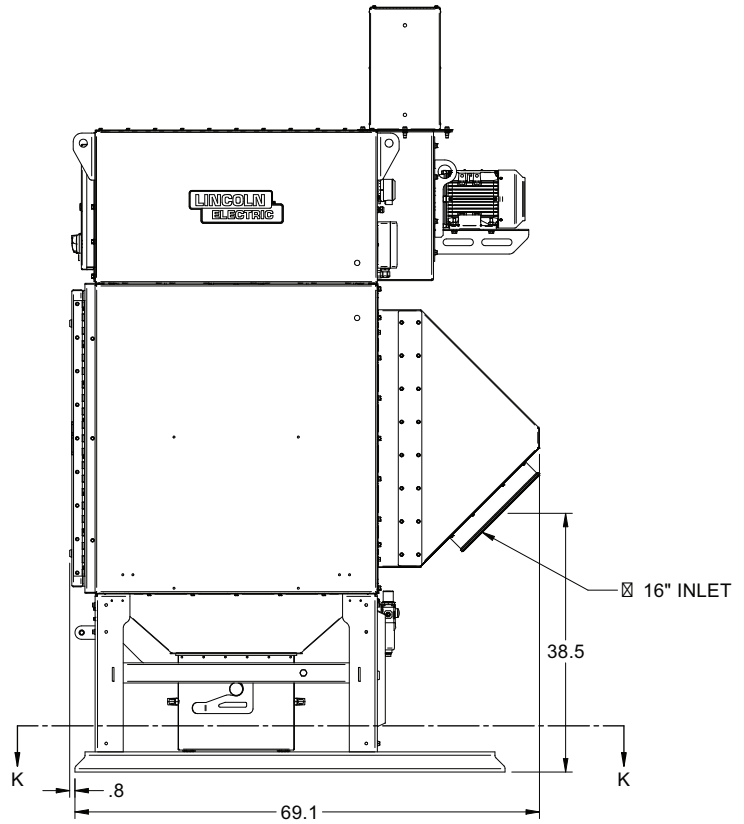
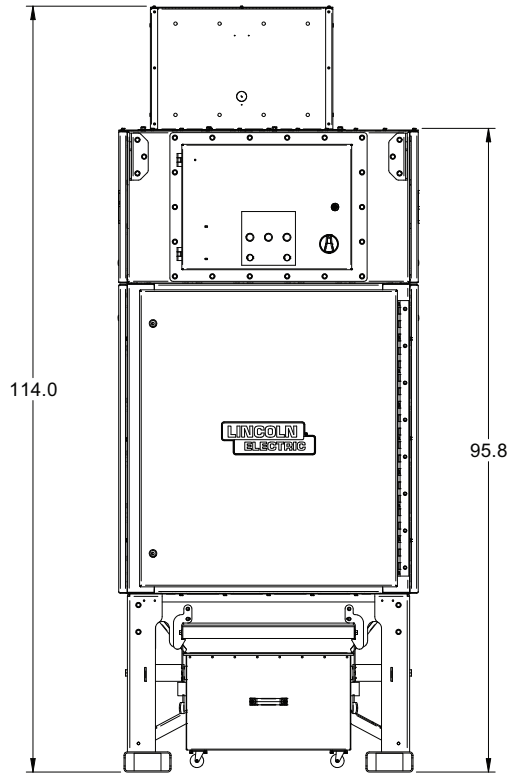
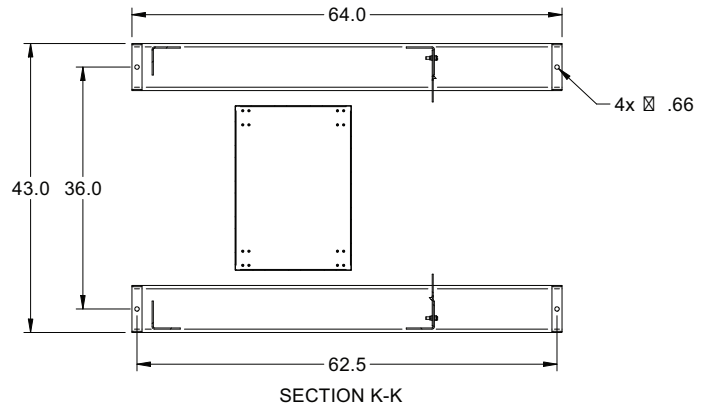
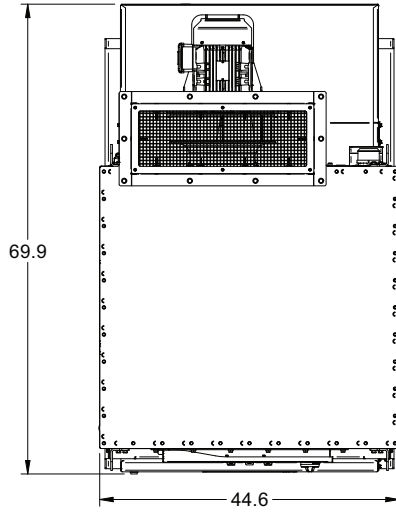




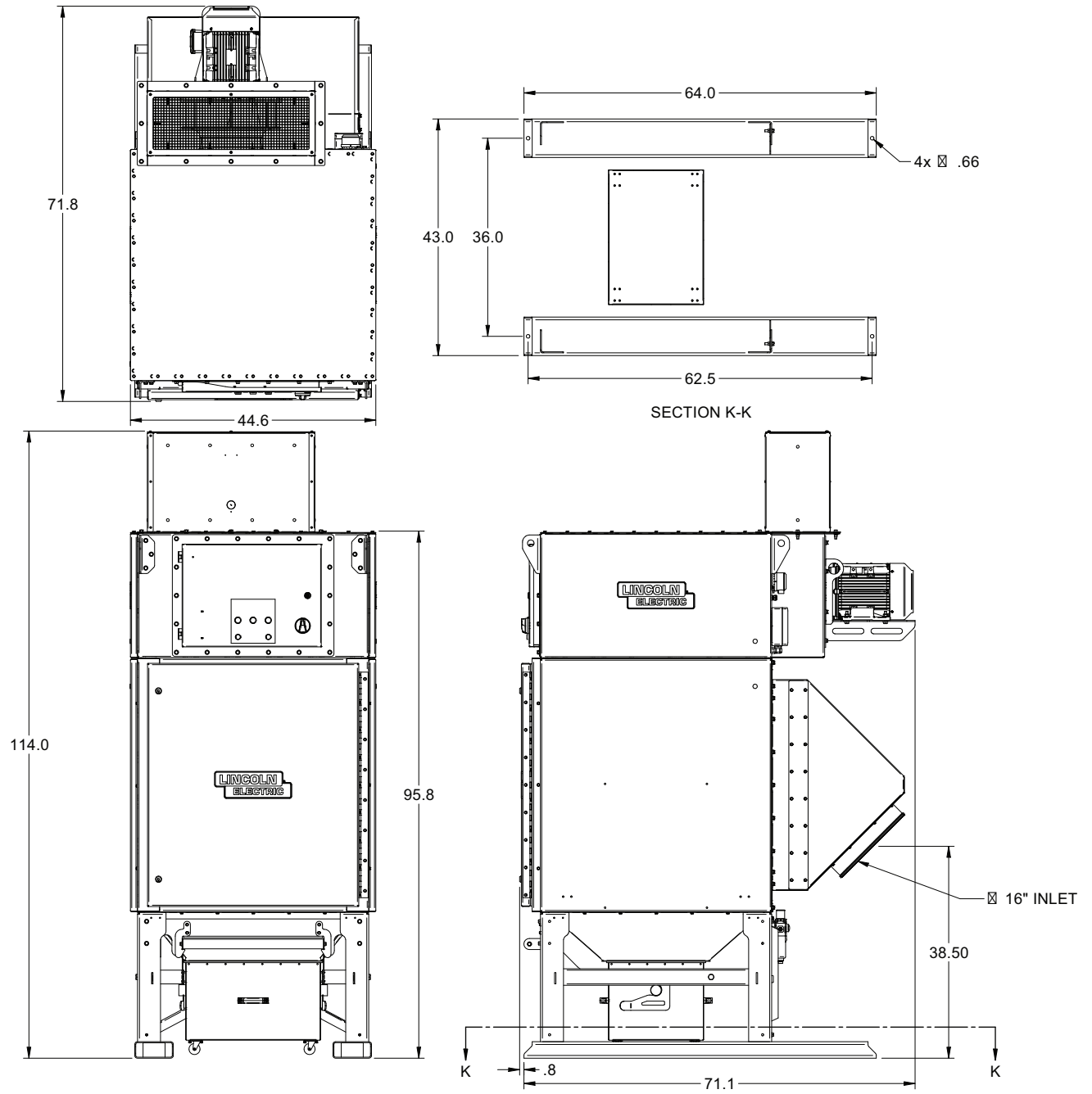
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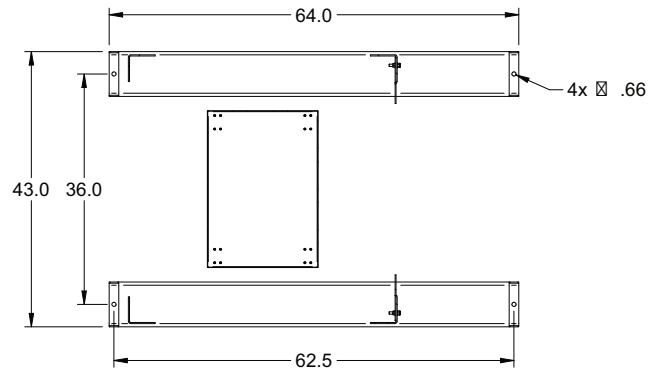
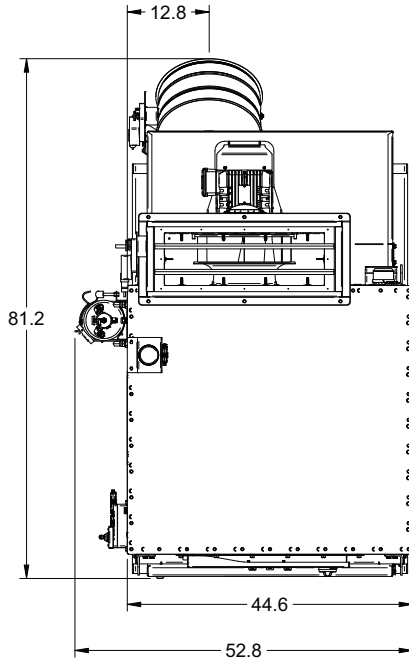
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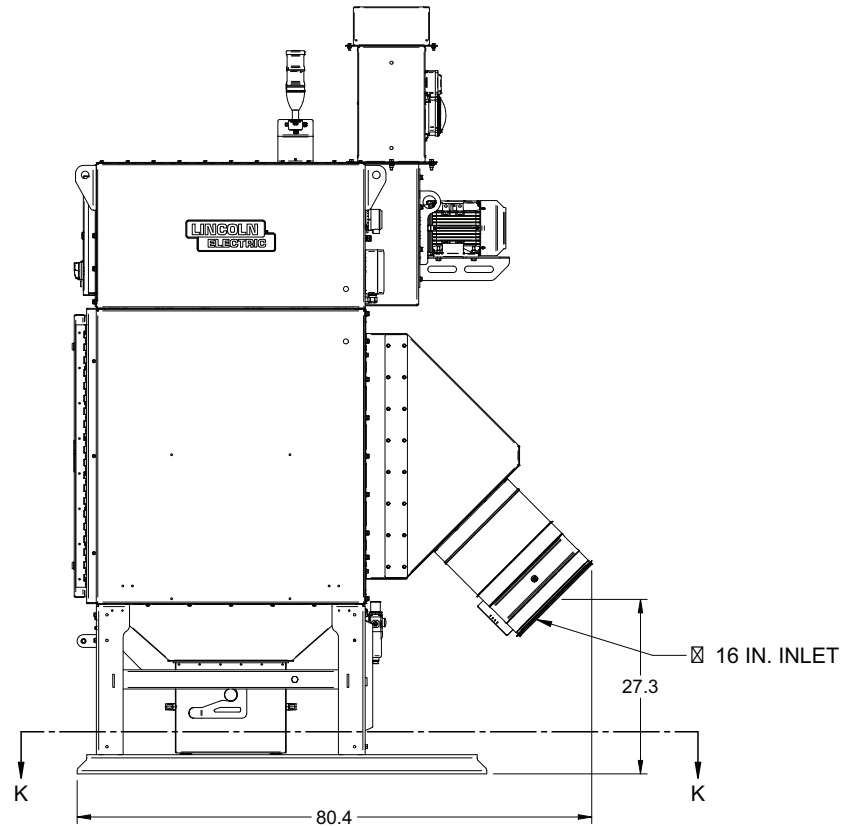
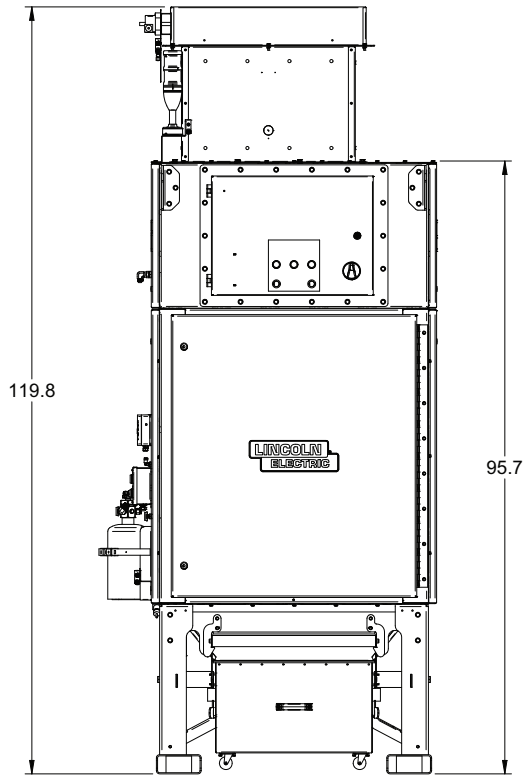
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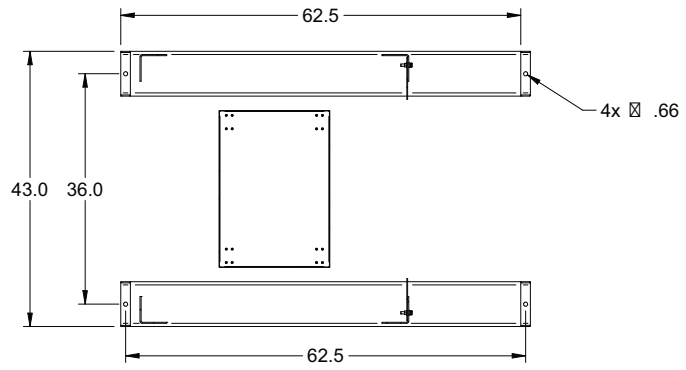
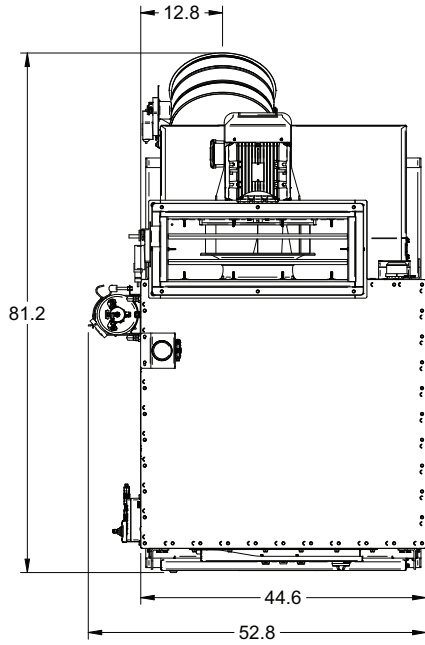
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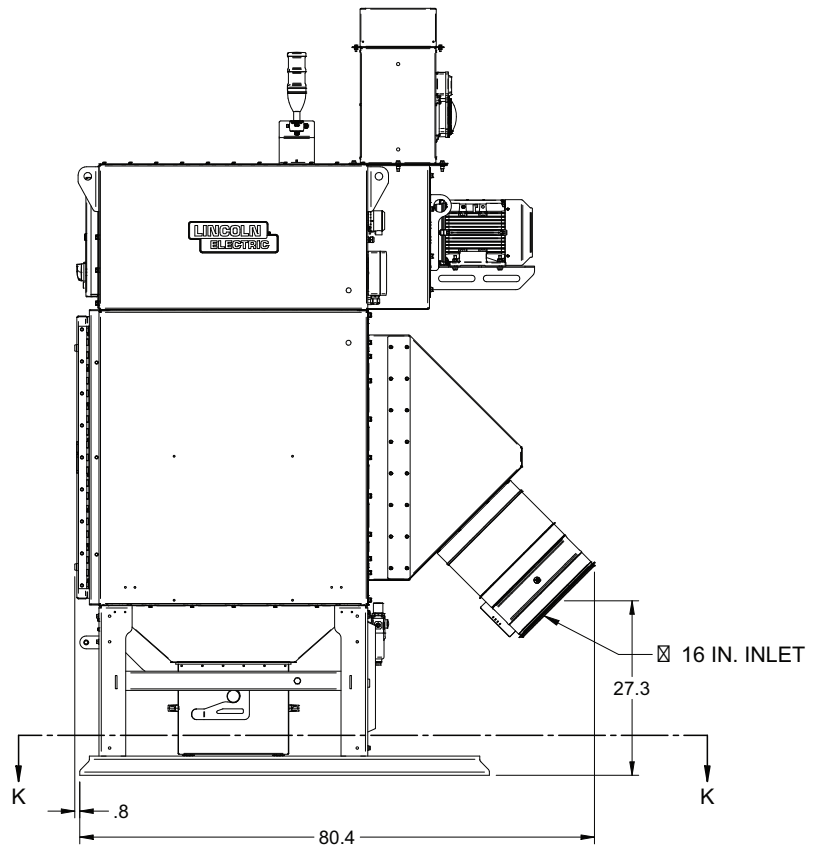
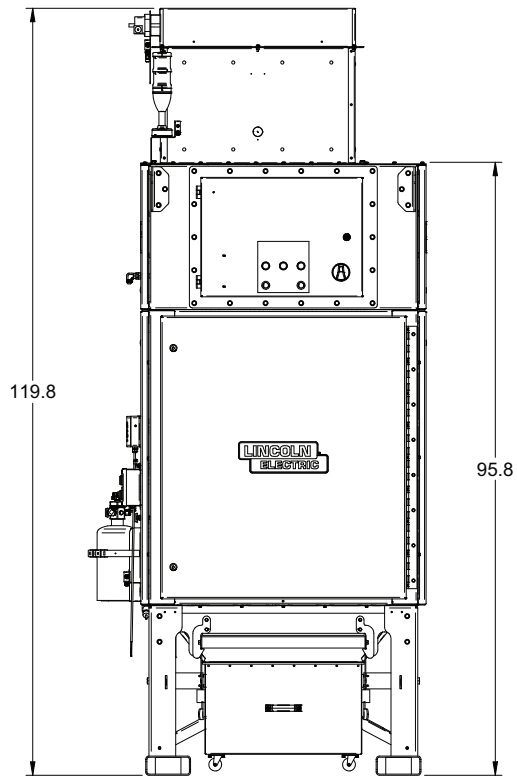
SECTION K-K



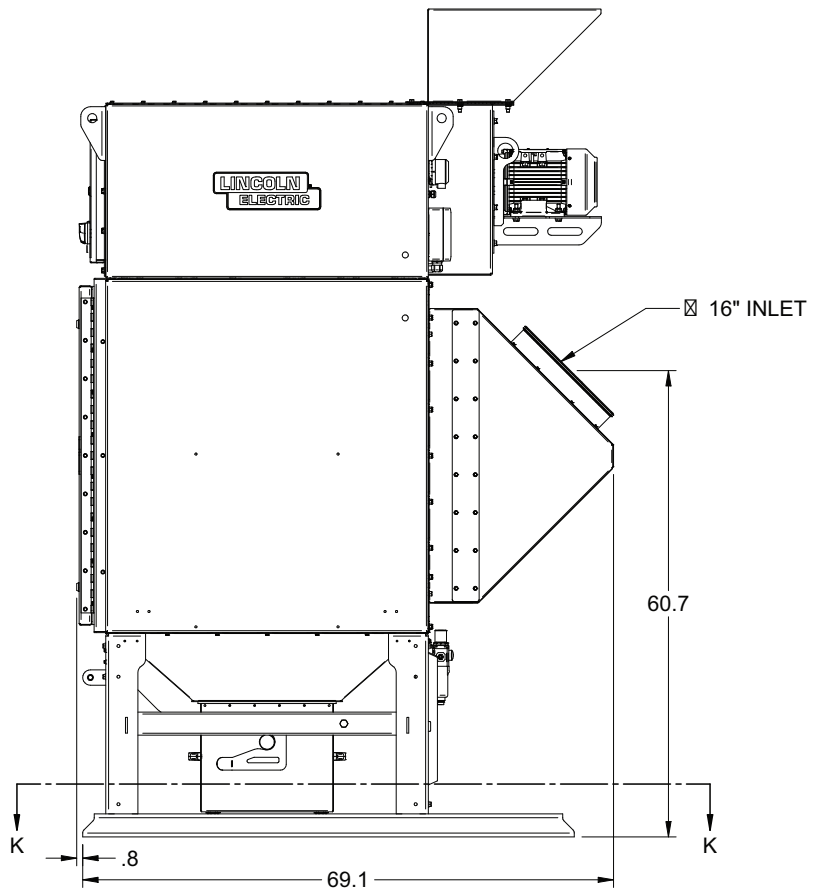
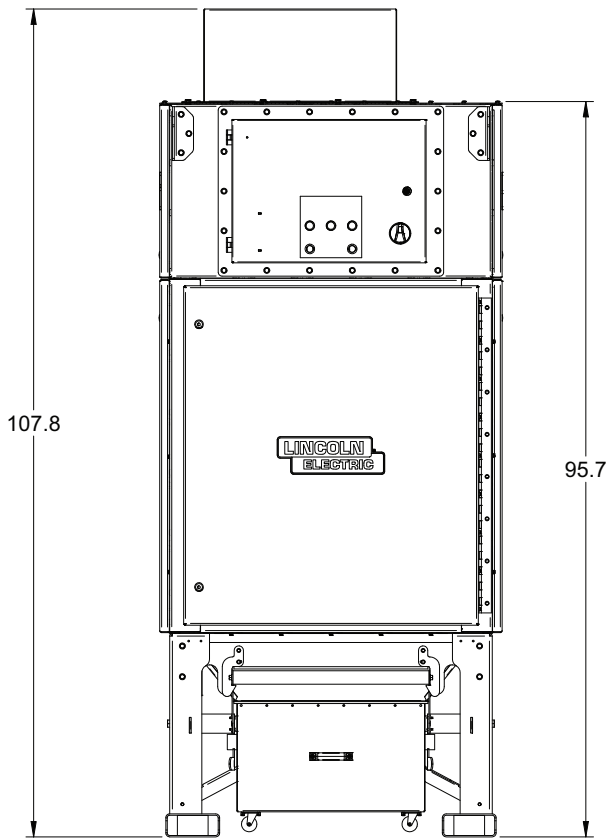
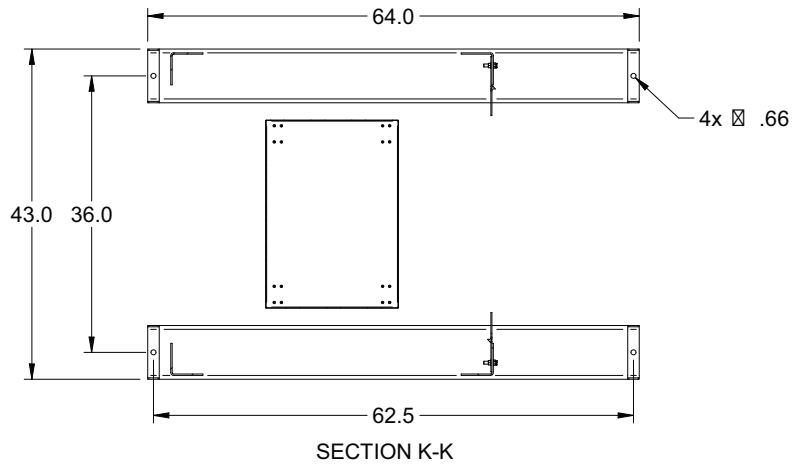
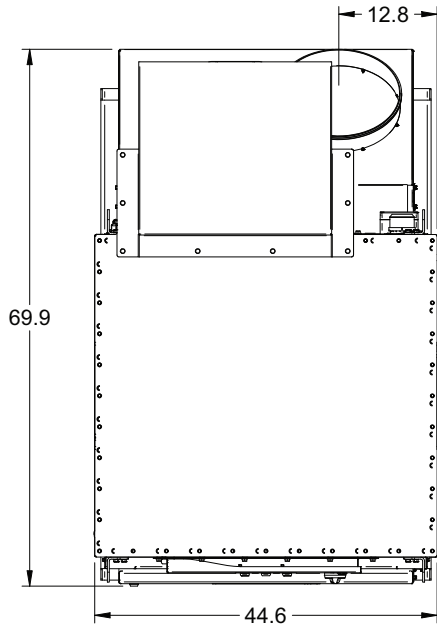
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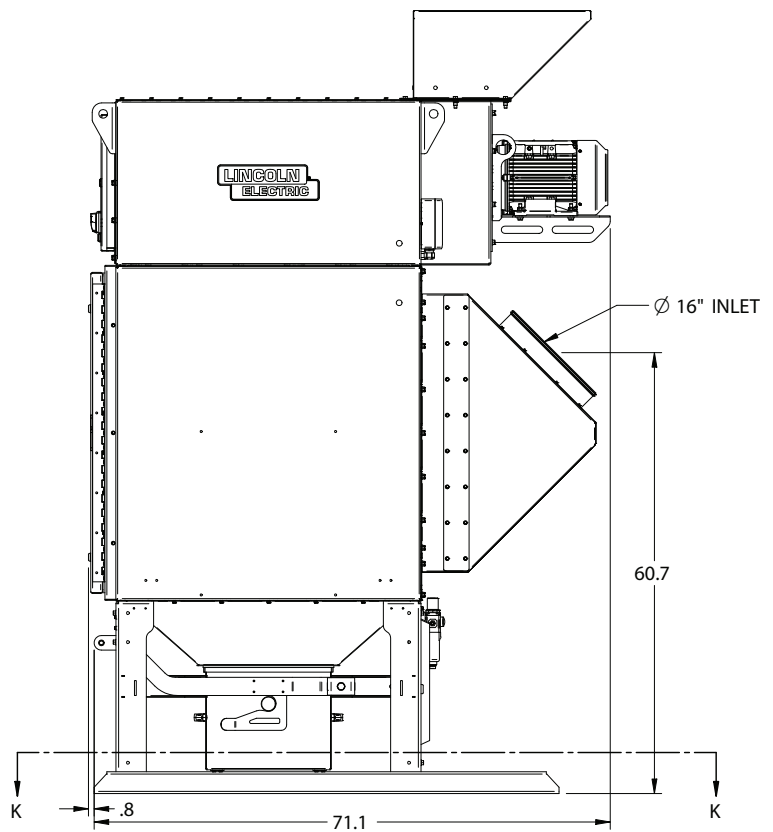
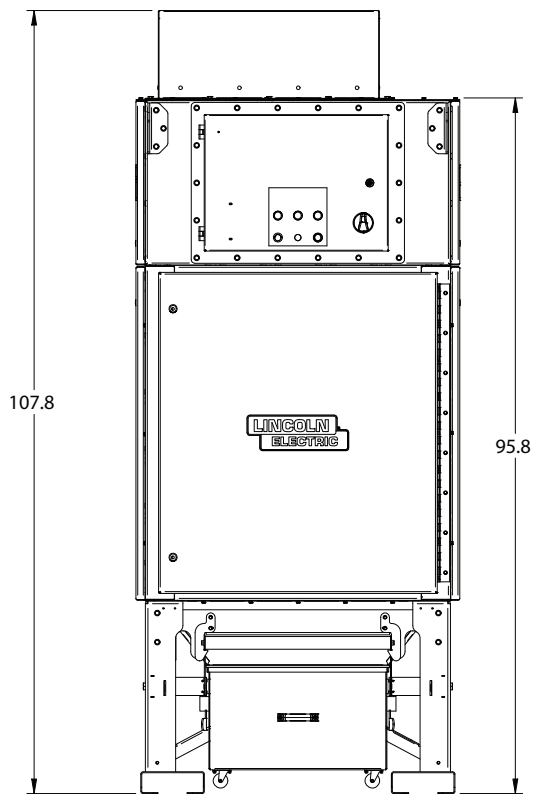
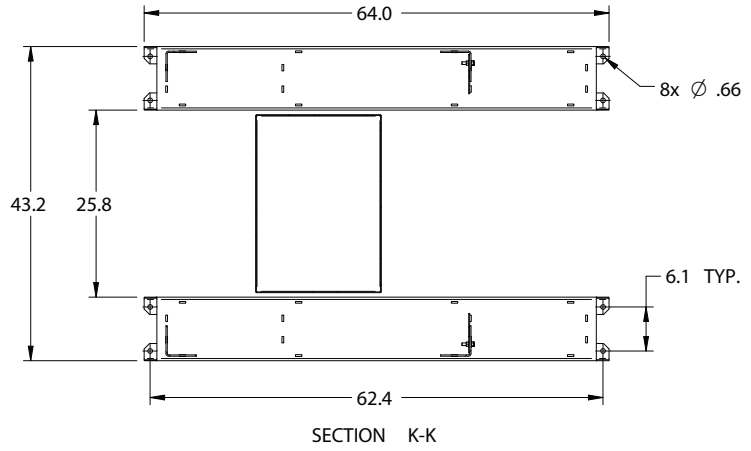
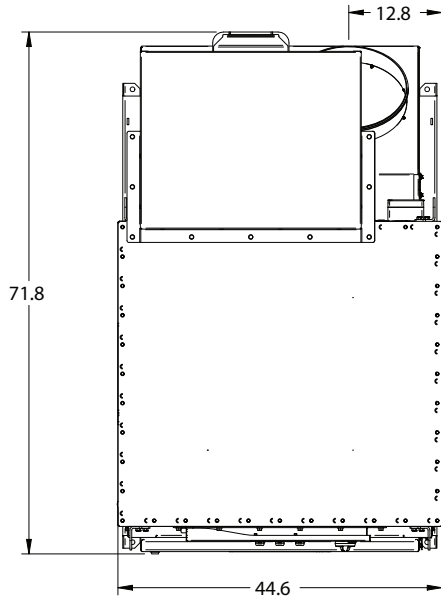
SECTION K-K



AD2455-9



AD2455-10



			
<b>WARNING</b>	<ul style="list-style-type: none"> <li>Do not touch electrically live parts or electrode with skin or wet clothing.</li> <li>Insulate yourself from work and ground.</li> </ul>	<ul style="list-style-type: none"> <li>Keep flammable materials away.</li> </ul>	<ul style="list-style-type: none"> <li>Wear eye, ear and body protection.</li> </ul>
Spanish <b>AVISO DE PRECAUCION</b>	<ul style="list-style-type: none"> <li>No toque las partes o los electrodos bajo carga con la piel o ropa mojada.</li> <li>Aíslese del trabajo y de la tierra.</li> </ul>	<ul style="list-style-type: none"> <li>Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul style="list-style-type: none"> <li>Protéjase los ojos, los oídos y el cuerpo.</li> </ul>
French <b>ATTENTION</b>	<ul style="list-style-type: none"> <li>Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension.</li> <li>Isolez-vous du travail et de la terre.</li> </ul>	<ul style="list-style-type: none"> <li>Gardez à l'écart de tout matériel inflammable.</li> </ul>	<ul style="list-style-type: none"> <li>Protégez vos yeux, vos oreilles et votre corps.</li> </ul>
German <b>WARNUNG</b>	<ul style="list-style-type: none"> <li>Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!</li> <li>Isolieren Sie sich von den Elektroden und dem Erdboden!</li> </ul>	<ul style="list-style-type: none"> <li>Entfernen Sie brennbares Material!</li> </ul>	<ul style="list-style-type: none"> <li>Tragen Sie Augen-, Ohren- und Körperschutz!</li> </ul>
Portuguese <b>ATENÇÃO</b>	<ul style="list-style-type: none"> <li>Não toque partes elétricas e electrodos com a pele ou roupa molhada.</li> <li>Isole-se da peça e terra.</li> </ul>	<ul style="list-style-type: none"> <li>Mantenha inflamáveis bem guardados.</li> </ul>	<ul style="list-style-type: none"> <li>Use proteção para a vista, ouvido e corpo.</li> </ul>
Japanese <b>注意事項</b>	<ul style="list-style-type: none"> <li>通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。</li> <li>施工物やアースから身体が絶縁されている様にして下さい。</li> </ul>	<ul style="list-style-type: none"> <li>燃えやすいものの側での溶接作業は絶対にしてはなりません。</li> </ul>	<ul style="list-style-type: none"> <li>目、耳及び身体に保護具をして下さい。</li> </ul>
Chinese <b>警告</b>	<ul style="list-style-type: none"> <li>皮肤或湿衣物切勿接触带电部件及焊条。</li> <li>使你自已与地面和工作件绝缘。</li> </ul>	<ul style="list-style-type: none"> <li>把一切易燃物品移离工作场所。</li> </ul>	<ul style="list-style-type: none"> <li>佩戴眼、耳及身体劳动保护用具。</li> </ul>
Korean <b>위험</b>	<ul style="list-style-type: none"> <li>전도체나 용접봉을 젖은 형갑 또는 피부로 절대 접촉치 마십시오.</li> <li>모재와 접지를 접촉치 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>인화성 물질을 접근시키지 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>눈, 귀와 몸에 보호장구를 착용하십시오.</li> </ul>
Arabic <b>تحذير</b>	<ul style="list-style-type: none"> <li>لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجسدك أو بالملابس المبللة بالماء.</li> <li>ضع عازلا على جسمك خلال العمل.</li> </ul>	<ul style="list-style-type: none"> <li>ضع المواد القابلة للاشتعال في مكان بعيد.</li> </ul>	<ul style="list-style-type: none"> <li>ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.</li> </ul>

**READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.**

**SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.**

**LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.**

**LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.**



			
<ul style="list-style-type: none"> <li>● Keep your head out of fumes.</li> <li>● Use ventilation or exhaust to remove fumes from breathing zone.</li> </ul>	<ul style="list-style-type: none"> <li>● Turn power off before servicing.</li> </ul>	<ul style="list-style-type: none"> <li>● Do not operate with panel open or guards off.</li> </ul>	<b>WARNING</b>
<ul style="list-style-type: none"> <li>● Los humos fuera de la zona de respiración.</li> <li>● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.</li> </ul>	<ul style="list-style-type: none"> <li>● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.</li> </ul>	<ul style="list-style-type: none"> <li>● No operar con panel abierto o guardas quitadas.</li> </ul>	Spanish <b>AVISO DE PRECAUCION</b>
<ul style="list-style-type: none"> <li>● Gardez la tête à l'écart des fumées.</li> <li>● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.</li> </ul>	<ul style="list-style-type: none"> <li>● Débranchez le courant avant l'entretien.</li> </ul>	<ul style="list-style-type: none"> <li>● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.</li> </ul>	French <b>ATTENTION</b>
<ul style="list-style-type: none"> <li>● Vermeiden Sie das Einatmen von Schweißrauch!</li> <li>● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!</li> </ul>	<ul style="list-style-type: none"> <li>● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)</li> </ul>	<ul style="list-style-type: none"> <li>● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!</li> </ul>	German <b>WARNUNG</b>
<ul style="list-style-type: none"> <li>● Mantenha seu rosto da fumaça.</li> <li>● Use ventilação e exaustão para remover fumo da zona respiratória.</li> </ul>	<ul style="list-style-type: none"> <li>● Não opere com as tampas removidas.</li> <li>● Desligue a corrente antes de fazer serviço.</li> <li>● Não toque as partes elétricas nuas.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha-se afastado das partes moventes.</li> <li>● Não opere com os painéis abertos ou guardas removidas.</li> </ul>	Portuguese <b>ATENÇÃO</b>
<ul style="list-style-type: none"> <li>● ヒュームから頭を離すようにして下さい。</li> <li>● 換気や排煙に十分留意して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● パネルやカバーを取り外したまま機械操作をしないで下さい。</li> </ul>	Japanese <b>注意事項</b>
<ul style="list-style-type: none"> <li>● 頭部遠離煙霧。</li> <li>● 在呼吸區使用通風或排風器除煙。</li> </ul>	<ul style="list-style-type: none"> <li>● 維修前切斷電源。</li> </ul>	<ul style="list-style-type: none"> <li>● 儀表板打開或沒有安全罩時不準作業。</li> </ul>	Chinese <b>警告</b>
<ul style="list-style-type: none"> <li>● 얼굴로부터 용접가스를 멀리하십시오.</li> <li>● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 보수전에 전원을 차단하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 판넬이 열린 상태로 작동치 마십시오.</li> </ul>	Korean <b>위험</b>
<ul style="list-style-type: none"> <li>● ابعء رأسك بعيداً عن الدخان.</li> <li>● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.</li> </ul>	<ul style="list-style-type: none"> <li>● اقطع التيار الكهربائي قبل القيام بأية صيانة.</li> </ul>	<ul style="list-style-type: none"> <li>● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.</li> </ul>	Arabic <b>تحذير</b>

**LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.**

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有閣勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

## **CUSTOMER ASSISTANCE POLICY**

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

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## **WELD FUME CONTROL EQUIPMENT**

The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.



### **THE LINCOLN ELECTRIC COMPANY**

22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.  
Phone: +1.216.481.8100 • [www.lincolnelectric.com](http://www.lincolnelectric.com)

# FINELINE® 300HD

## HIGH DEFINITION PLASMA CUTTING SYSTEM



Shown:  
 FineLine 300HD Power Source  
 FineLine Arc Start Console  
 FineLine Gas Controller  
 Magnum® PRO LC300M Plasma Straight Torch w/ handle and torch leads

### DESIGNED TO MAXIMIZE CUT QUALITY

When it comes to maintaining a competitive automated plasma cutting operation, maximizing output and productivity is essential. Whether the material is a flat plate, structural beam, or pipe, the FineLine High Definition Plasma Cutting System delivers excellent cut quality. If you're planning to stay ahead of the game, you need quality cuts, a fast production rate, and a low cost the first time, every time. You need a FineLine Plasma Cutting System from Lincoln Electric.

**Processes »**  
 Plasma Cutting & Marking

**Cutting Type »**  
 Mechanized Cutting

- Applications »**
- Steel Fabrication
  - Pipe Cutting
  - Structural Steel Fabrication
  - Automotive/Transportation
  - Maintenance and Repair
  - Shipbuilding
  - Steel Service Center

**Output »**



**Input »**



FineLine Gas  
Controller



FineLine Arc  
Start Console



## FineLine 300HD

<b>CUT CAPACITY inches [mm]</b>	
<b>Mild Steel-</b>	Production Capacity <sup>[1]</sup> Maximum Cutting Capacity <sup>[2]</sup>
<b>Stainless Steel-</b>	Production Capacity <sup>[1]</sup> Maximum Cutting Capacity <sup>[2]</sup>
<b>Aluminum-</b>	Production Capacity <sup>[1]</sup> Maximum Cutting Capacity <sup>[2]</sup>
<b>INPUT POWER: VOLTAGE/PHASE/HERTZ</b>	
FineLine Power Supply	380-415/460/575v/3Ph/50/60Hz
FineLine CE Power Supply	380-415/3Ph/50/60Hz
<b>RATED OUTPUT: CURRENT/VOLTAGE/DUTY CYCLE</b>	300/210/100%
<b>INPUT CURRENT @ RATED OUTPUT</b>	
FineLine Power Supply	3PH/100%/123/108/95
FineLine CE Power Supply	3PH/100%/123
<b>OUTPUT RANGE</b>	20-300A
<b>INLET GAS PRESSURE</b>	105-145 PSI (7.6-10 Bar)
<b>CUTTING GAS</b>	
<b>Mild Steel-</b>	Oxygen/Air, Oxygen/Oxygen
<b>Stainless Steel-</b>	Air/Air, Air/Nitrogen, H17/Nitrogen
<b>Aluminum-</b>	Air/Nitrogen
<b>MARKING GAS</b>	Argon/Air, Nitrogen/Nitrogen
<b>WEIGHT lb [kg]</b>	
<b>FineLine Power Supply</b>	750 (340.2)
<b>FineLine Gas Controller</b>	15.7 (7.12)
<b>FineLine Arc Start Console</b>	43 (19.5)
<b>DIMENSIONS inches [mm]</b>	
<b>FineLine Power Supply</b>	50.40x33x36.93 (1280x838x938)
<b>FineLine Gas Controller</b>	6.51x11.08x7.30 (165x281x185)
<b>FineLine Arc Start Console</b>	10.98x5.29x13.52

[1] Material type and composition can influence dross free performance, [2] Maximum capacity pierce requires the use of precision torch height control

CUSTOMER ASSISTANCE POLICY

The business of Lincoln Electric is manufacturing and selling high quality welding equipment, automated welding systems, consumables, and cutting equipment. Our challenge is to meet the needs of our customers, who are experts in their fields, and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or technical information about their use of our products. Our employees respond to inquiries to the best of their ability based on information and specifications provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment, or to provide engineering advice in relation to a specific situation. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the definition of specifications, and the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

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[www.lincolnelectric.com](http://www.lincolnelectric.com)



## **S20P SERIES III**

**REV A  
393297**

Thank you,

On behalf of everyone at HYD-MECH Group Limited, I would like to thank and congratulate you on your decision to purchase a HYD-MECH bandsaw.

Your new machine is now ready to play a key role in increasing the efficiency of your operation, helping you to reduce cost while boosting quality and productivity.

To ensure you are maximizing the power and versatility of your new HYD-MECH bandsaw, please take the time to familiarize yourself and your employees with the correct operation and maintenance procedures as outlined in this manual.

We sincerely appreciate the confidence you have demonstrated in purchasing our product and look forward to building a long and mutually beneficial relationship.

Thank you

Hyd-Mech Group Limited  
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Woodstock, Ontario, N4S 8A4  
Phone : (519) 539-6341  
Service : 1-877-237-0914  
Sales : 1-877-276-SAWS (7297)  
Fax : (519) 539-5126  
e-mail : [info@hydmech.com](mailto:info@hydmech.com)

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# SECTION 0 - SAFETY INSTRUCTIONS

## SUMMARY

All persons operating this machine must have read and understood all of the following sections of this Manual:

Section 0	SAFETY
Section 2	OPERATING INSTRUCTIONS

However, as a memory aid, the following is a summary of the Safety Section.

### Put Safety First

**Mandatory Information** – What operators and maintenance people must have read and understood.

**Signatures** – Everyone involved with this machine must sign to confirm they have read and understood mandatory information.

**Basic Rules** – only use this machine when

- it is in good working order
- all safety equipment is in place and functional
- operations are in compliance with this manual
- materials are within designed specifications and are non-hazardous

**Owner is responsible to**

- keep Manual accessible at the machine
- ensure only reliable, fully trained personnel work with the machine
- clearly define responsibilities of all personnel working with the machine
- keep the machine in good working order

**Operator and Maintenance Personnel are responsible to:**

- keep all safety equipment in order, check its function at the beginning of each shift, and report any shortcomings
- shut-down machine and report any faults or malfunctions which could impair safety
- understand and obey safety hazard labels
- not to wear un-restrained long hair, loose clothing or jewelry
- wear all required personal protective equipment
- not to wear gloves within 24 inches of moving blade
- maintain a clean working area and machine
- always use Lock-out when performing maintenance or repairs.



---

## **FOREWORD**

### **Put Safety First!**

This Safety Section contains important information to help you work safely with your machine and describes the dangers inherent in our machines. Some of these dangers are obvious, while others are less evident.

It really is important to PUT SAFETY FIRST. Make it a habit to consider the hazards associated with any action BEFORE you do it. If you feel any uncertainty, stop and find a safer approach to the action. If you're still uncertain, ask for advice from your supervisor.

The SAFETY FIRST approach is particularly necessary when you do something new, or different, and most people instinctively recognize this, although impatience may still cause them to take unnecessary risks.

Danger also lurks in the routine task that we have done over and over. Here, familiarity, boredom, or tiredness may lull us into unthinking, automatic repetition. Be alert for this, and when you feel it happening, stop and take stock of your situation. Review the safety hazards associated with what you are doing. That should get your brain working again.

Certainly production is important, but if you think you're too busy to put safety first, think how much production you'll lose if you get hurt.

You owe it to yourself, your family, and your co-workers to PUT SAFETY FIRST.

### **Mandatory Information**

All persons operating this machine must have read and understood all of the following sections of this Manual:

Section 0      SAFETY

Section 2      OPERATING INSTRUCTIONS

Personnel involved in installation and maintenance of the machine must have read and understood all sections of the manual

Persons who have difficulty reading, or for whom English is not their first language, must receive particularly thorough instruction.

---

**Signatures**

Everyone involved in operation of this machine must sign below to confirm that:

I have read and understood all parts of Section 0 – Safety, and Section 2 – Operating Instructions.

Name	Date	Signature

Everyone involved in the installation, inspection, maintenance, and repair of this machine must sign below to confirm that:

I have read and understood all parts of this Operation and Maintenance Manual.

Name	Date	Signature

---

## BASIC RULES

### Intended Use

Our machines are designed and built in line with the state of the art, and specifically in accordance with American National Standards Institute Standard B11.10 *Safety Requirements for Metal Sawing Machines*. However, all machines may endanger the safety of their users and/or third parties, and be damaged, or damage other property, if they are operated incorrectly, used beyond their specified capacity, or for purposes other than those specified in this Manual.

### Exclusion of Misuse

Misuse includes, for example:

Sawing hazardous materials such as magnesium or lead

Sawing work pieces which exceed the maximum workload appearing in the Specifications

Operating the machine without all original safety equipment and guards

### Liability

The machine may only be operated:

When it is in good working order, and

When the operator has read and understood the Safety and Operating Instructions Sections of the Manual, and

When all operations and procedures are in compliance with this Manual.

Hyd-Mech Group cannot accept any liability for personal injury or property damage due to operator errors or non-compliance with the Safety and Operating Instructions contained in this Manual.

---

## Responsibilities of the owner

### Organization of work

This Operation and Maintenance Manual must always be kept near the machine so that it is accessible to all concerned.

The general, statutory and other legal regulations on accident prevention and environmental protection must also be observed, in addition to the Manual material. The operators and maintenance personnel must be instructed accordingly. This obligation also includes the handling of dangerous substances and the provision and use of personal protective equipment.

### Choice and qualification of personnel

Ensure that work on the machine is only carried out by reliable persons who have been appropriately trained for such work.

### Training

Everyone working on or with the machine must be duly trained with regard to the correct use of the machine, the correct use of safety equipment, the foreseeable dangers that may arise during operation of the machine, and the safety precautions to be taken.

In addition, the personnel must be instructed to check all safety devices at regular intervals.

### Define responsibilities

Clearly define exactly who is responsible for operating, setting-up, servicing and repairing the machine.

Define the responsibilities of the machine operator and authorize him to refuse any instructions by third parties if they run contrary to the machine's safety.

Persons being trained on the machine may only work on or with the machine under the constant supervision of an experienced operator. Observe the minimum age limits required by law.

### Condition of Machine and Workplace

Ensure that the machine and its safety equipment is kept in good working order.

Ensure that the work area is well lit, and protected from the elements, such as rain, snow, abrasive dust, and extremes of temperature.

Ensure that the machine is installed with sufficient clearance around it for the safe loading and unloading of work pieces.

---

## Responsibilities of the operator and maintenance personnel

### Safety equipment

All machines are delivered with safety equipment that must not be removed or bypassed during operation.

The correct functioning of safety equipment on the machine must be checked:

- at the start of every shift.
- after maintenance and repair work
- when starting for the first time, and after prolonged shutdowns

### Emergency Stop Button ( E-Stops)

Always be aware of the location of the Emergency Stop Buttons). Do not allow material or objects to block your access to an Emergency Stop.

### Damage

If any changes capable of impairing safety are observed in the machine or its operation, such as damage, malfunctions, or irregularities, then appropriate steps must be taken immediately, the machine switched off, locked-out, and the fault reported to the responsible person.

### Safe operation

The machine may only be operated when in good working order and when all protective equipment is in place and operational.

Keep a safe distance from all moving parts – especially the blade and vises

Stock should not be loaded onto the saw if the blade is running

Long and heavy stock should always be properly supported in front of and behind the saw.

### Faults

The machine must be switched off and locked-out before starting to remedy any faults.

### Safety hazard labels

Safety hazard labels, and other instructional labels on the machine must be observed. They must be clearly visible and legible at all times. If they become damaged they must be replaced.

### Clothing, jewelry, protective equipment

Personnel operating or working on the machine must not wear un-restrained long hair, loose-fitting clothes and dangling jewelry.

When operating or working on the machine, always wear suitable, officially tested personal protective equipment such as safety glasses and safety boots and any other equipment required by plant regulations.

---

## Gloves

Experience has shown that careless use of gloves around machinery is a major factor in serious hand injuries.

Gloves should not be worn when operating or adjusting the machine, except:

Wear protective gloves when handling bandsaw blades at blade changes.

Gloves may be worn when handling work pieces, only if the machine is in Manual Mode and the bandsaw blade is not running.

If the machine is running in Auto Mode, and only if the cut parts are greater than 24 inches long, it may be possible to safely wear gloves for handling the cut parts, but the wearer of the gloves must never put his hands near the blade for any reason. If the cut parts are less than 24 inches long, it is required to arrange their automatic flow into a parts bucket or other suitable arrangement to avoid the necessity to pick them off the machine by hand.

## Hearing protection

Ear protection must be worn whenever necessary.

The level and duration of noise emission requiring hearing protection depends upon the national regulations in the country in which the machine is being used.

The actual level of noise emission by band sawing machines depends upon work piece size, shape and material, blade type, blade speed and feed rate.

The only practical course of action is to measure the actual noise emission levels for the type of work that is typically done. With reference to national standards, decide upon the necessary hearing protection required.

In the absence of such measurements, it is advisable for anyone exposed to long periods of moderate to loud noise to wear hearing protection. It is important to understand that hearing loss is gradual and easily goes unnoticed until it is serious and irreversible.

## Workplace

A clear working area without any obstructions is essential for safe operation of the machine. The floor must be level and clean, without any build-up of chips, off-cuts, coolant, or hydraulic oil.

The workplace must be well lit, and protected from the elements, such as rain, snow, abrasive dust, and extremes of temperature

Nothing may ever be placed on, or leaned against the machine, with the obvious exception of the work piece on the table and conveyor of the machine.

---

## Master Disconnect

Lock-out the machine before undertaking any maintenance or repair work on it. 'Lock-out' refers switching off the master electrical disconnect switch, and locking it out so that it cannot be switched on again without authorization.

On Hyd-Mech machines the Master Disconnect Switch will be of one of three types:

- Rotary switch mounted in electrical control cabinet door and inter-locked with door
- Lever switch mounted in separate box mounted on the machine
- Supply disconnect switch supplied by user at installation and usually wall-mounted within sight of the machine, depending upon local regulations.

In almost all jurisdictions, it is required that owners of industrial equipment establish and post lock-out procedures. Know and use the lock-out procedures of your company or organization.

## Residual Risks

The machine is still not completely de-energized if an electrical cabinet door type switch is locked-out.

The line side of the disconnect switch itself remains energized.

Variable speed blade drives store dangerous voltage in their capacitors, and this requires time to dissipate. After locking out power, wait 3 minutes before beginning to work on machine electrical circuits.

If compressed air is supplied to the machine to power a mist lubrication system or other devices, it should be disconnected, and any stored air pressure released before working on the machine.

The weight of individual machine components represents stored potential energy that can be released if they fall when disconnected. Secure these components with adequate hoisting gear before disassembly.

## SAFETY HAZARD LABELS

The safety hazard labels attached to your machine represent important safety information to help you avoid personal injury or death.

All supervisors, operators, and maintenance personnel must locate and understand the safety information associated with each hazard label prior to operating or servicing the machine.

The safety hazard labels shown below are located at various positions on the machine to indicate possible safety hazards. The location, and re-order part number of all the safety labels associated with this particular model of bandsaw are indicated at the end of this section of the manual. It is important to replace any safety hazard label that becomes damaged or illegible.

### HAZARDOUS VOLTAGE INSIDE



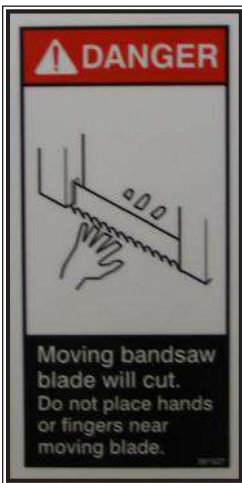
Contact with high voltage may cause death or serious injury. Never perform maintenance on, or near, electrical components until the machine's electrical power source has been disconnected. Lock-out power in accordance with your company's lock-out procedures before any such maintenance. The "Stop" or "Emergency Stop" push button does not disconnect the machine's power supply. Hazardous voltage is still present in the machine's electrical circuits.

The machine's Electrical Disconnect Switch does disconnect voltage from the machine's circuits, however hazardous voltage is still present inside the main electrical cabinet, on the infeed (line) side of the main fuses. Therefore keep hands and tools away from the infeed side of the control panel main fuses. If these fuses need to be replaced, use a fuse puller.

Allow three minutes after locking-out power before opening any electrical enclosures. Your machine may be equipped with a variable frequency drive that stores high voltage within its capacitors. Three minutes will allow sufficient time for this voltage to safely discharge.

Never spray coolant directly at electrical components or cabinets.

### MOVING BANDSAW BLADE WILL CUT



Do NOT operate with guard removed.

Do NOT place hands or fingers near moving bandsaw blade.

For blade changing, always follow the proper Blade Changing Procedure, as given in Section 3 of this manual.

### PINCH POINT

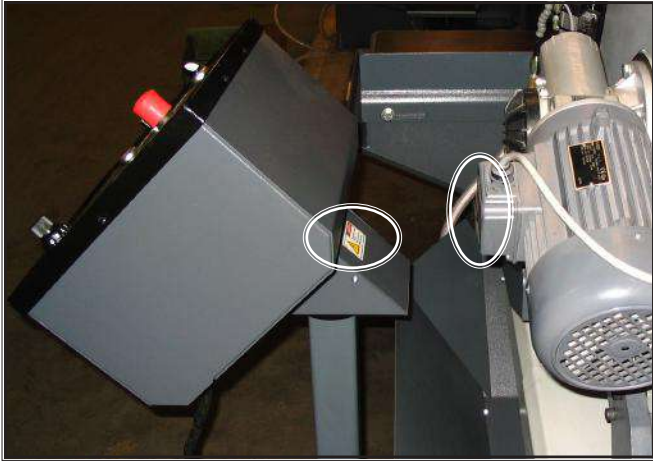
Machine parts may move without warning because of another person initiating the motion. Keep hands clear of all labeled pinch points, whenever the machine is running. Machine vises and bundling can exert great force and cause severe injury. Keep hands clear of vises and work piece when the vises and bundling are opened or closed. Be aware that vise and bundling

closing or opening may result in potentially dangerous work piece movement. Be aware also that the head swing either left or right, and the advancement or retraction of the head may create potential pinch points.





LOCATION AND PART NUMBERS OF SAFETY HAZARD LABELS ON S20MP



Danger  
Hazardous voltage inside  
Item NO. 391938



Warning  
Pinch Point  
Item NO. 392801



Danger  
Moving bandsaw blade will cut  
Item NO. 391937

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# SECTION 1 - INSTALLATION

## INSTALLATION

Upon delivery of your new S20P saw, it is imperative that a thorough inspection be undertaken to check for any damage that could have been sustained during shipping. Special attention should be paid to the electrical and hydraulic systems to check for damaged cords, hoses and fluid leaks. In the event of damage caused during shipping, contact your carrier to file a damage claim.

## SAFETY PRECAUTIONS

The S20P has been designed to give years of reliable service. It is essential that operators be alerted to the safe operation of this saw, and the practices to avoid that could lead to injury. The following safety rules are at the minimum necessary for the safe installation, operation, and maintenance of the saw. Take every precaution for the protection of operators and maintenance personnel.

- POWER HOOK-UPS AND REPAIRS SHOULD BE ATTEMPTED ONLY BY QUALIFIED TRADESMEN.
- THE SAW SHOULD BE LOCATED IN AN AREA WITH SUFFICIENT ROOM TO SAFELY LOAD STOCK INTO THE SAW. SECURE THE SAW TO THE FLOOR.
- THE AREA AROUND THE SAW SHOULD BE MAINTAINED IN A CLEAN AND TIDY CONDITION TO AVOID OBSTACLES OPERATORS COULD TRIP OVER.
- THE S20P SHOULD ONLY BE OPERATED ACCORDING TO THE SPECIFICATIONS OF THE SAW. AVOID UNSAFE USAGE PRACTICES.
- IF AT ANY TIME THE SAW DOES NOT APPEAR TO BE OPERATING PROPERLY IT SHOULD BE STOPPED IMMEDIATELY AND REPAIRED.

### OPERATOR:

- THE SAW SHOULD NEVER BE OPERATED UNLESS ALL GUARDS AND DOORS ARE IN PLACE AND CLOSED.
- KEEP A SAFE DISTANCE FROM ALL MOVING PARTS - ESPECIALLY THE BLADE AND VISES.
- LOOSE CLOTHING AND GLOVES SHOULD NEVER BE WORN WHILE OPERATING THE SAW. COVER LONG HAIR.
- STOCK SHOULD NOT BE LOADED ONTO THE SAW IF THE BLADE IS RUNNING.
- LONG AND HEAVY STOCK SHOULD ALWAYS BE PROPERLY SUPPORTED IN FRONT OF AND BEHIND THE SAW.
- NEVER ATTEMPT TO DISLODGE OR MOVE STOCK WHILE THE BLADE IS MOVING. TAKE THE TIME TO STOP THE SAW BLADE, REMOVE OBSTRUCTIONS, AND RESTART BLADE.
- MUST WEAR EYE PROTECTION
- MAINTAIN PROPER ADJUSTMENT OF BLADE TENSION, AND BLADE GUIDES
- HOLD WORK PIECE FIRMLY AGAINST TABLE
- DO NOT REMOVE JAMMED CUTOFF PIECES UNTIL BLADE HAS STOPPED

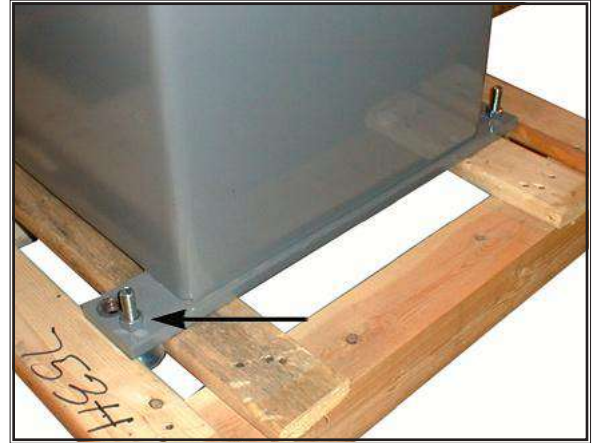
NO MODIFICATIONS TO THE MACHINE ARE PERMITTED WITHOUT PRIOR APPROVAL FROM HYD-MECH. ANY APPROVED MODIFICATIONS SHOULD ONLY BE UNDERTAKEN BY TRAINED PERSONNEL.

## LIFTING THE S20P WITH A FORK LIFT

The S20P is shipped with a shipping pallet attached to the saw. When lifting the pallet with a forklift truck make sure that the load is firmly balanced. Minimum fork length of 72" (1827 mm) is recommended to safely lift the pallet.

## WRAPPED FOR SHIPPING

The S20P is shrink-wrapped for shipping from our plant. Remove the wrapping from around the saw. Complete the inspection for signs of damage. Undo the bolts that hold the saw to the pallet. Retain these bolts to use for leveling. The following photo illustrates the floor mounting plates located at the corners of the saw.

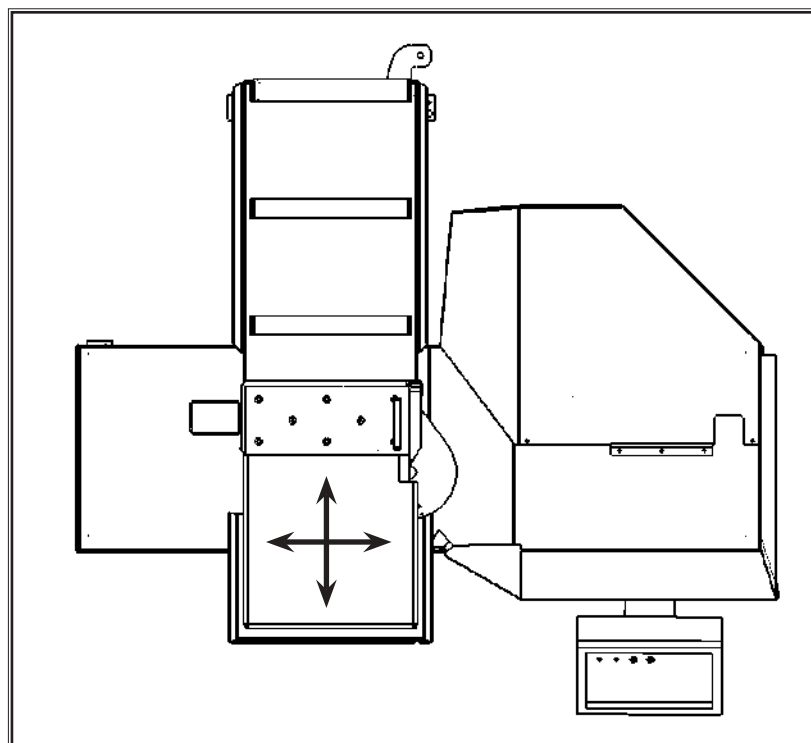


## FOUNDATION, LEVELLING AND ANCHORING

Machine location should be carefully selected. A flat concrete floor area should be chosen. It should have enough free space surrounding the machine to enable free access for safe operation and maintenance. The machine should be leveled in both directions (from side to side & from front to back). Six leveling screws used for securing the machine to the pallet during transport, should be installed, one in each corner of the machine base, as shown below. It might be required to place steel plates under leveling bolts to prevent their sinking into the concrete floor. In cases when the machine is to be anchored permanently, anchoring holes are provided. They are located next to the leveling screw holes. The larger diameter hole is used for retaining during shipping and for use with concrete floor anchors. The smaller diameter threaded hole at each corner, are used for leveling the saw.

Using a level on the machine out-feed table, level machine front to back and side to side.

**NOTE:** In some cases leveling the saw infeed with a slight slope towards the blade is recommended. This will prevent coolant from running down the raw stock. (This is especially true when cutting tubing or bundles).



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## CUTTING FLUID

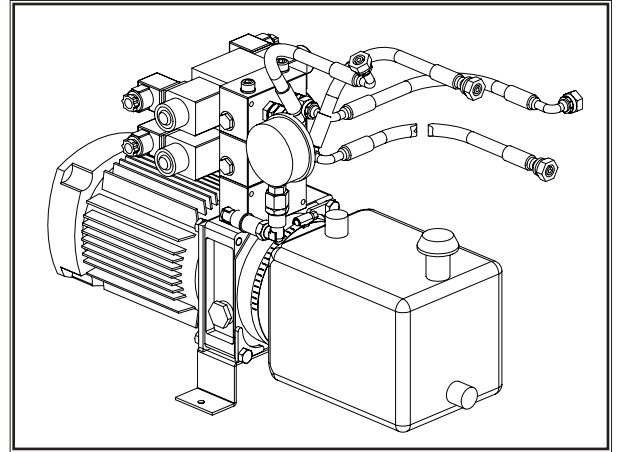
The S20P uses a pump and reservoir to circulate the necessary cutting fluid to the blade for maximum blade life. Your saw blade supplier will be able to provide information to the cutting fluid products that are available for your needs.

No cutting fluid (coolant) is supplied with the machine. There are two types of coolant available:

- Oil based; dilute 1:10 ratio (one part concentrated coolant to 10 parts water)
- Synthetic; dilute as recommended by manufacturer.

## HYDRAULIC OIL

The S20P is supplied with FOX YE 32 hydraulic oil. Substitutes should be of the same viscosity hydraulic oil.

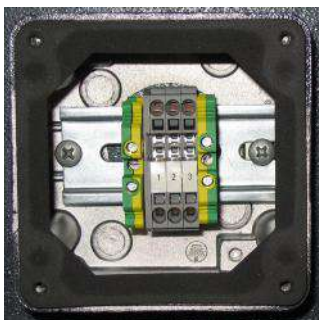


## WIRING CONNECTIONS

After the machine is leveled and anchored the necessary power hook-up needs to be performed. Check that there is no sign of shipping damage to the electrical conduits, cords or hydraulic hoses.

As supplied, the S20P is built to run on three phase AC Voltage, as indicated on the machine serial plate and voltage label. Machine voltage is customer specific and should be indicated while ordering the machine. If machine voltage does not match available power source contact factory.

Power connection to the machine is made in the junction box, located on the back side of the machine. The power cable can be routed through the supplied hole in the junction box, and connections made to L1, L2, L3, and ground terminals. Proper strain relief should be used on the incoming power cable.



240V & 480V Junction Box



208V & 600V Junction Box

# SECTION 2 – OPERATING INSTRUCTIONS

## OPERATOR CONTROL PANEL

The operator control panel provides the operator with all the controls necessary to operate the saw after the cutting angle has been set and the stock has been loaded and secured. All of the electrical functions and Feed Rate setting are operated from the control panel. **For all the functions to work machine has to be powered up.** The Main Disconnect switch, which is located on the side of control box, has to be in ON position. Emergency Switch has to be released (turn Emergency Knob clockwise to release). For the blade to operate the blade door has to be completely shut and blade tensioned to minimum tension of 600 kg.



Main Disconnect switch is located on the side on the machine control box.



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## Manual Mode Machine Operation

Manual mode allows for a manual operation of the saw. In this mode all functions are activated by selection of the respective function button on the user interface.

To enter the manual mode after the main power has been turned off, press the Machine Start button. Follow the instructions on the display, and select the Manual Mode. A lit LED adjacent to the Manual Mode or Semi-Automatic Mode button indicates machine mode.

### Cut in Manual Mode

- 1 Open vise
- 2 Raise head
- 3 Position material
- 4 Close vise
- 5 Start blade
- 6 Press Cycle Start. To pause the head feed press Cycle Pause. To resume head feed press Cycle Start.
- 7 Machine will shut off blade when head reaches downward most position.
- 8 Raise head
- 9 Open vise

### Semi-Automatic Mode Machine Operation

Upon initial power up, press MACHINE START. You will be prompted to press the reset button. Follow the onscreen instructions.

- 1 Set the HEAD UP and HEAD DOWN LIMITS. Refer to Setting Head Up and Head Down Limits.
- 2 Open vise by pressing the VISE OPEN button.
- 3 Position material.
- 4 Close the vise by pressing the VISE CLOSE button.
- 5 Start the blade by pressing the BLADE ON/OFF button.
- 6 Start the cycle by pressing the CYCLE START button.

The machine will automatically close the vise and proceed to advance the head. Upon reaching the head down limit, which under most operating conditions should be set to the bottom most travel of the head. The blade will turn off, the head will go up to the preset head up limit and the vise will open. Subsequent cuts from the same material may be made by repeating step 3 through 6.

## Setting Head Up and Head Down Limits

The machine can be setup to restrict the head movement in Semi-Auto mode between bottom and top limit settings. During normal operating conditions where a complete through cut is required, the head down limit should be set to the bottom most position of the head travel. Setting the head down limit at any other position will result in a partially cut piece. The head up limit should be set according to the material height. In cycle mode the head will respect these two preset limits.

### To Set Head Down Limit

- Position the head at the desired head down position by pressing the HEAD UP or HEAD DOWN buttons.
- Press the HEAD DOWN LIMIT button.

### To Set Head Up Limit

- Position the head at the desired head up position by pressing the HEAD UP or HEAD DOWN buttons.
- Press the HEAD UP LIMIT button.

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## Cycle Parameter Display

The machine is capable of displaying many parameters, not all of which can be shown on the screen at the same time. Pressing the CYCLE PARAMETERS button will toggle the display of the parameters. The following is a list of available parameters and the corresponding abbreviations as they are shown on the display.

Blade speed	BS
Cut time	CT
Blade tension	BT
Head position	HP
Amp draw of blade motor	IBM
Pieces cut	PC (To reset press COUNT RESET button)
Total run time of blade motor	TOTALIZ

### Machine Parameters

Machine parameters control the behavior of the machine, the type of optional equipment, which may be installed, and the language in which to communicate with the operator. Modifying machine parameters may adversely effect the behavior of the machine. Prior to making changes care should be taken to ensure a complete understanding of each parameter and its effect on the operation of the saw.

To enter machine parameters toggle the main power off and on. Press the MACHINE PARAMETERS AND MACHINE START buttons in that order.

To move from parameter to parameter press the HEAD DOWN or HEAD UP LIMIT button. Notice the horizontal arrows under the button depicting forward or backward scroll through the parameter list. To change the value of a parameter use the HEAD DOWN LIMIT button. Notice an up arrow under the button depicting an upward change in value. The button to the right of the HEAD DOWN LIMIT clears the parameter value.

PARAMETER	DESCRIPTION	FACTORY SET VALUE
LANGUAGE	Language which will be displayed on the interface	English
MACHINE TYPE	Machine type	S 20 P
MAN & SAD CYCLE	Manual and semi automatic	YES
PEDAL START	Pedal start option	NO
INVERTER	Inverted blade motor drive	YES
BLADE SPEED PROXY	Machine equipped with blade speed proximity switch	YES
MINIMAL LUBRIF	Machine equipped with low level lubricant sensor for mist coolant	NO
RHLS/FHLS OUTS	Head down / head up outputs enabled. Allows for control board to supply output signal for respective head position.	NO
STOP BLADE MOTOR NVR/RHLS/FHLS	Controls when the blade motor is to stop. Values of the parameter are 0 for when the head is in down limit, 1 for when the head is in up position and 2 for never.	0
HEAD VISE OPEN RHLS/FHLS	Controls when to open vise. Values of parameter are 0 for down limit and 1 for up limit.	0
VISE OPEN/CLOSE TIME =	Vise open dwell time.	2.0
MAX BLADE MOTOR I =	Full load amperage of the blade motor. (Depends on voltage of machine)	8.0
UNIT OF MEASURE FIPS/MKS	Controls which unit system to display. 1 for imperial, 0 for metric.	0
BLADE MIN TENS THRES =	Minimum blade tension required for the machine to start.	600 kg (1320 lbs)
LCD BACKLIGHT DURATION	Time duration of display backlight to stay on min.	0.5
TT =	Total time blade motor run. Software version.	Value depending on run time.
RHLS / FHLS LIMIT HEAD POS =	Head position - <b>SEE PROCEDURE (SETTING the HEAD LINEAR POTENTIOMETER (RHLS/ FHLS LIMIT))</b>	Value depending on head position.

## MACHINE ALARMS AND EMERGENCIES

The machine's controller notifies the operator if any alarm or emergency condition which may occur during operation by way of acoustic and visual signals. This section lists the message shown on the display.

PRESS RESET	This message is displayed during the initialization phase after pressing the MACHINE START key.
PRESS RESET FCTI-FCTA ERROR	This message is displayed when the cutting start position is lower than the previously set head down position. Save both the FCTI (head up) and FCTA (head down) positions again.
PRESS RESET HEAD NOT AT FCTI	This message is displayed if the head is not positioned at the FCTI, position when the cycle is STARTED. Return the head to the FCTI (head up) position before resuming the cycle.
PRESS RESET SELECT SPEED	This message is displayed if the cycle is STARTED without having first selected the cutting speed. Return the head to the FCTI (head up) position before resuming the cycle.



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## SETTING the HEAD LINEAR POTENTIOMETER (RHLS/FHLS LIMIT)

Cycle through the parameters until the following is on the display:

RHLS/FHLS LIMIT

HEAD POS = XXX

\* You must push the RESET button to energize the emergency relays \*

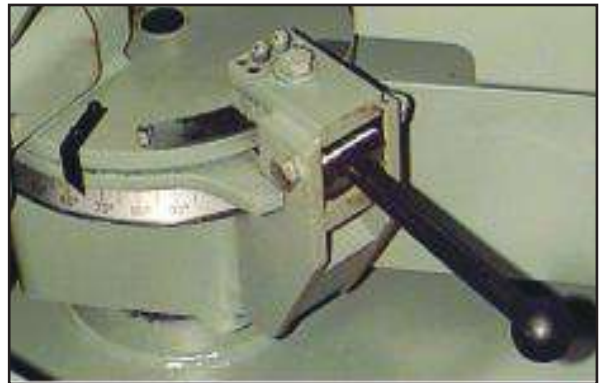
1. The head must be lowered until it reaches the mechanical bottom position. In order to execute this operation you must first push the shift button (CYCLE PARAMETERS) and while holding this button depressed then push the (HEAD DOWN) button until the head reaches its bottom limit. Increase the number value displayed by 1 unit ( Raise the Head) by holding the (CYCLE PARAMETERS) and while holding this button then press (HEAD UP).
2. The current value of the linear potentiometer must be stored. First push the shift button (CYCLE PARAMETERS) and while holding this button depressed then push the (HEAD DOWN LIMIT) button.
3. Once completed the display will read the following message: FHLS = XXX
4. The head must now be raised until it reaches the mechanical top position. Push the shift button (CYCLE PARAMETERS) and while holding this button depressed then push the (HEAD UP) button until the head reaches its upper limit.
5. Store the current value of the linear potentiometer by first pushing the shift button (CYCLE PARAMETERS) and while holding this button depressed push the (HEAD UP LIMIT) button.
6. Once completed the display will read the following message: RHLS = XXX

During machine operation the display will show a certain value at the head up limit position and "0" at the head down position.

## MECHANICAL CONTROLS

### HEAD SWING and BREAK

An integral function of the S20P is the ability to make mitered cuts at angles between 90 and 30 degrees. The Head swing of the S20P is easily changed to set a different cutting angle by first releasing the Angle Brake lever, and then manually moving the Head to the cutting angle desired. An angle scale with a pointer in clear view of the saw operator allows for accurate setting of the cutting angle. The Angle Brake lever is then locked in position by forcing it into the down position. It should be noted that the angle brake should be locked into position whenever cutting with the saw. The photo illustrates the Angle Brake in the locked position at 65 degrees. To set the saw to the 90 degree position, the Head (in the fully down position) is moved until the frame meets the 90 degree stop bolt.



Head swing scale and angle brake locked

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## COOLANT FLOW

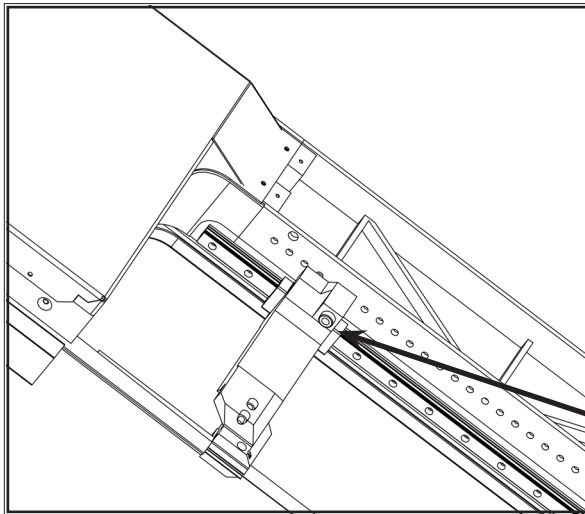
The S20P bandsaw is equipped with a coolant pump supplying coolant flow to four coolant outlets.

- The wash gun is provided for clearing chip accumulations.
- Guide arm coolant nozzles, one at each guide arm, are equipped with a flow control shut-off valve. The guide arm nozzles should be adjusted to apply an even covering of coolant to the blade.
- The flexible nozzle can be pointed directly where necessary. It should be used when cutting wide work pieces, bundles, or structurals. Set extra coolant into the saw kerf at about mid span of the cut. The flexible nozzle has a flow control shut-off valve.

**NOTE:** When cutting materials that do not need constant coolant, such as cast iron, some coolant flow is still required for blade lubrication to prevent blade scoring by carbide pads as the blade moves through them.

## GUIDE ARM POSITIONING

The S20P idler side guide arm is adjustable to accommodate varying material widths. The guide arm should be adjusted as close to the material as possible while still allowing it to pass. This process of matching the guide arm spacing to the material size is important to optimize blade life and ensure straightness of the cut.



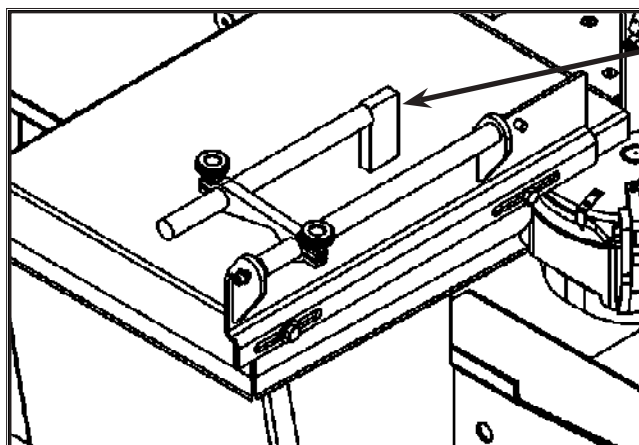
To adjust the guide arm location pull down the locking handle and slide the guide arm to the required position, and then release the locking handle. The locking handle is spring energized and will self return to the locking position.

Locking handle

## OPTIONAL EQUIPMENT/CONTROLS

### WORK STOP

The work stop is used to set a consistent cut length from 0 to 34 inches. The photo shows the stop at a short length, which is adjusted with one or both of the locking handles. The bar with the actual stop attached to it can be removed, turned 180 degrees end for end, and inserted for longer lengths. The work stop may also be swung out of the work area when it is not required.



Work stop assembly

## BLADE BASICS

Technology is rapidly changing all aspects of production machining. Metal cutoff is no exception. The advances made in the bandsaw industry have definitely brought down the cost per cut, despite the three-fold increase in the price of newer technology blades. Variable pitch (following pages), bi-metal blades (like the 3/4 or 4/6 bi-metal blade supplied with the Hyd-Mech machine) last much longer, cut faster and more accurately than the conventional carbon steel blades. In order to take advantage of the superiority of bi-metal blades, it is critical to properly “break in” a new blade. This is accomplished by taking two or three cuts through solid four or five-inch diameter mild steel at an extremely slow feed rate. These two or three slow cuts sufficiently lap (polish) the new blade so that it does not snag the material being cut. Proper break-in will alleviate blade vibration, improve surface finish and accuracy, and improve expected blade life.

- 1. A new blade must be properly “broken-in”.** Proper break-in will alleviate blade vibration, improve surface finish and accuracy, and improve expected blade life. The most convenient way to do this is to cut the intended work-piece, at the standard recommended blade speed for that material, but with the feed rate reduced to about 25% of normal. Near the end of the first cut, increase the feed rate again, and once again when the blade approaches the end of the second cut. Keep increasing feed rate in this fashion, so that normal feed rate is reached after 300 to 400 square centimeters of cutting.
- 2. Generous coolant application is essential with almost all materials.** A high quality and well-mixed coolant will dramatically extend blade life, and will increase cutting rate and surface finish. On those few materials where coolant is undesirable, a slight coolant flow or periodic oiling of the blade is necessary to prevent the blade from being scored by the carbide guides.
- 3. The Stock being cut must be securely clamped in the vises.** Stock movement during cutting will strip blade teeth. Noticeable stock vibration reduces cutting performance and blade life – consideration should be given to reorientation of the stock, or additional clamping measures (e.g. wood between vise jaws and work-piece).
- 4. The proper blade speed for the work-piece material must be selected.** Use the following chart as a starting point:  
Blade speeds higher than recommended will quickly dull the blade. Blue chips are evidence of excessive blade speed.  
Lower than recommended speeds will not prolong blade life, and will require reduced feed rate. However, reduced speeds may be helpful in reducing vibration, and therefore may increase blade life.

**BLADE BASICS - CUTTING SPEEDS FOR VARIOUS MATERIALS**

	Blade Speed (FPM)	Coolant Required	✓
Free Cutting Steels 1100 & 1200 Series	370	YES	✓
Low & Medium Carbon 1008 - 1045	220	YES	✓
High Carbon Steels 1046 - 1095	140,220	YES	✓
Alloy Steels	140,220	YES	✓
Tool Steels	90,140	YES	✓
Pipe & Structures	140,220	YES	✓
Nickel Base Alloys	90,140	YES	✓
Copper Base Alloys	140,220	YES	✓
Stainless Steels 430F, 416, 420F, 303	140,220	YES	✓
Cast Iron	140,220	NO	
		Oil Blade	

**Figure 2A:2 Blade Speed Selection Chart**

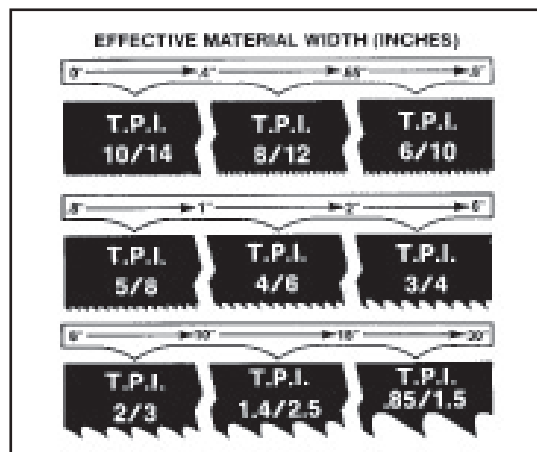
- 5. The proper feed rate must be applied.** Feed rate is the speed which the head “free-falls” and is set with the feed rate control knob. The head will descend more slowly when the blade encounters the work-piece. Verification of proper feed rate is provided by the appearance of the cut chips, which ideally form nicely curled “clock springs”. Note that cast irons and interrupted cuts result in short, broken chips even at ideal feed rates. Excessive feed rate will result in short blade life and/or crooked cuts.

---

## DETERMINE OPTIMUM BLADE PITCH – TEETH PER INCH (T.P.I.)

Selecting a blade with proper tooth pitch is important in order to achieve optimal cutting rates and good blade life. For cutting narrow or thin wall structural materials, a fine blade with many teeth per inch (T.P.I.) is recommended. For wide materials a blade with a coarse pitch should be used. See the sketch below for the blade pitch changes for differing effective material widths.

It is impractical to change the blade to the proper pitch every time a different width of material is cut and it is not necessary, but remember that the optimum blade will cut most efficiently. Too fine a blade must be fed slower on wide material because the small gullets between the teeth will get packed with chips before they get across and out of the cut. Too coarse a blade must be fed slower because it has fewer teeth cutting and there is a limit to the depth of a cut taken by each tooth.



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# SECTION 3 – MAINTENANCE AND TROUBLESHOOTING

## SAFETY DURING MAINTENANCE AND TROUBLESHOOTING

“Lock-out”, or “Lock-out Tag-out” are terms that refer to procedures taken to prevent the unexpected start-up, or other release of energy, by a machine, whenever anyone is required to remove or bypass safety guards or devices, or whenever anyone is required to place part of his body in a hazard area.

In almost all jurisdictions, it is required that owners of industrial equipment establish and post lock-out procedures. Know and use the lock-out procedures of your company or organization. In the absence, of such posted procedures, use the following procedure.

### LOCK OUT PROCEDURE

Whenever work is to be performed on a machine, which requires removal or bypassing of safety guards or devices, or the placement of part of anyone’s body in a hazard area, the following steps shall be taken:

1. Operator shuts down the machine. The head must be lowered fully, or onto suitable supports, before any hydraulic service is performed, to prevent the head from moving unexpectedly.
2. The supervisor in charge of the machine must be informed of the intention to Lock-out the machine.
3. The Main Power Disconnect Switch must be turned off, and locked in the off position by means of a padlock. The key for this padlock must be kept by the person performing the work on the machine. If more than one person is performing work on the machine, then a multiple lock hasp shall be used, and each person shall apply his or her own lock to the hasp.
4. Prior to starting any work on the locked-out machine, the supervisor shall attempt to start the machine to ensure that the lock-out device provides adequate protection. Operating controls must be reset to the “off” position after this test.
5. Work on the locked-out machine may now proceed.



**The main power disconnect switch used for safety lockout purposes.**

### RESTORING MACHINE TO USE

After completion of all repairs or maintenance to the locked-out machine, it shall be restored to use as follows:

The person(s) who performed the work shall verify that all areas around the machine are safe, before the machine is re-energized. No-one shall be permitted in un-safe areas around the machine. All guards and covers shall be properly installed.

Each lock-out padlock shall be removed by the person who applied it.

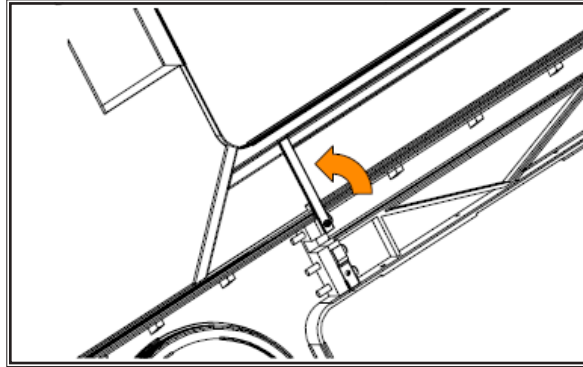
After the lock-out padlocks are removed, and before the machine is started, the supervisor and all other employees who use the machine, shall be informed that the lock-out has been removed. After notification is made, the machine may be re-started.

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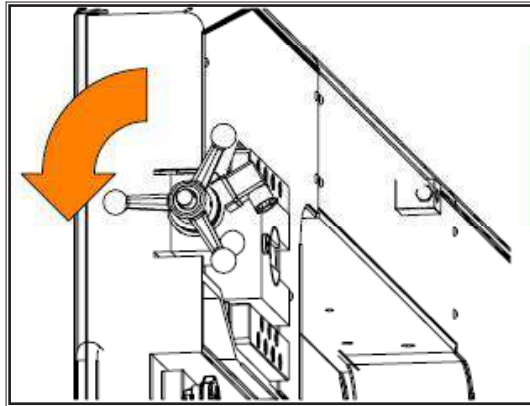
## BLADE CHANGING PROCEDURE

NOTE: Wear gloves for protection from the sharp blade.

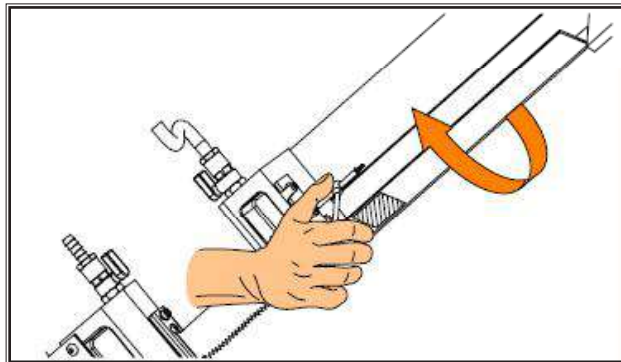
1. Open the Wheels door by unscrewing the two knobs.



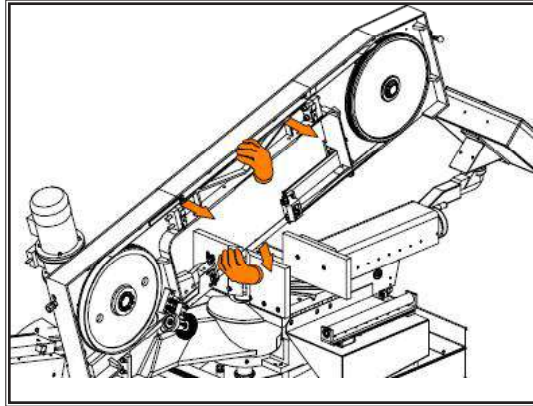
2. Loosen the Blade Tensioner by turning counter clockwise.



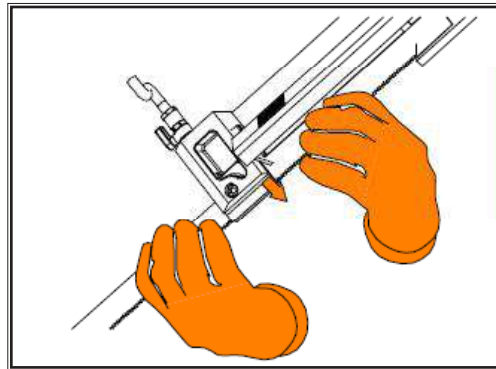
3. Open the blade guard at idler guide arm by undoing the mounting screws and removing it as illustrated below.



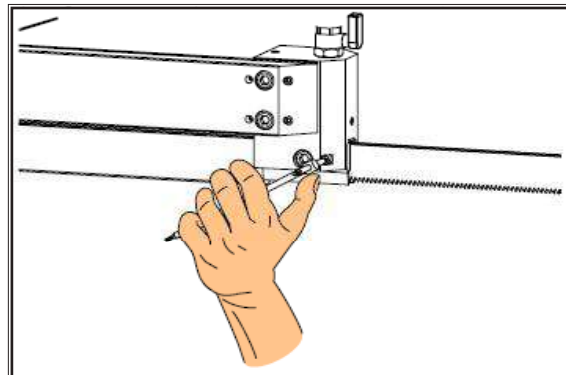
- 
- Remove the worn blade by sliding it off the wheels and out off both guide blocks



- Your new blade will be in a coil. While wearing gloves, hold the blade away from yourself; twist the blade to uncoil it. Do not let the blade teeth bounce on the concrete floor as some damage may be caused.
- Place the new blade in the carbide guides and then slide the blade over the wheels. The teeth should be pointing towards the drive side as they pass through the carbide guides.
- Make sure there is a small amount of play between the blade and guide carbides. The blade band should be snug but able to move freely up and down.



- If the amount of play is not sufficient for the blade to run smoothly, adjust the locking torque of the screws with an Allen key.



- 
9. With the blade in place, turn the tensioner handle clockwise until Blade Tension Display shows required value. Recommended blade tension is between 1250 - 1350 kg. If blade is under tensioned the blade motor will not start.
  10. Replace the blade cover and close wheels door.
  11. Jog the blade a few rotations to check that the blade is not moving in or out on the blade wheels. As the blade tracking will stay fairly constant, it should be checked occasionally by measuring the gap between the back of the blade and wheel flange. The gap should measure .040-.080". If the tracking requires adjustment, follow the instructions below.

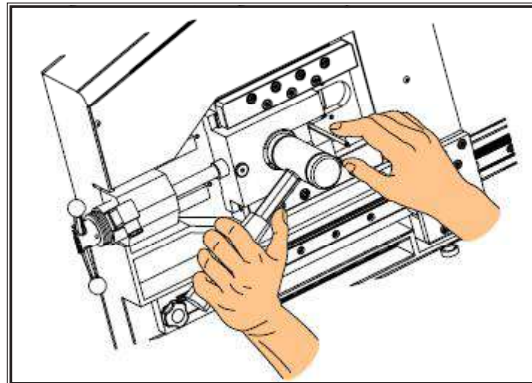
## BLADE TRACKING ADJUSTMENT

First, inspect the blade wheels for wear or damage and repair as required, Blade tracking adjustment should always begin at the wheel where the tracking is farthest out of specification. Using the instructions below, adjust the worst wheel, jog the blade and recheck both wheels. Repeat this process until both wheels are within specification.

### Idler Wheel Adjustment

The Idler Wheel must be adjusted so that it is aligned with the drive wheel. The purpose of the adjustment is to ensure that the back of the blade remains about .040-.080" away from the wheel flange during rotation.

1. Release blade tension.
2. Open wheel cover.
3. Loosen the screw and using a mallet tap the shaft in or out.



4. Restore the machine and run blade for few wheel rotations.
5. Check the distance between the blade and wheels flange.
6. If necessary repeat above steps until proper gap is achieved.

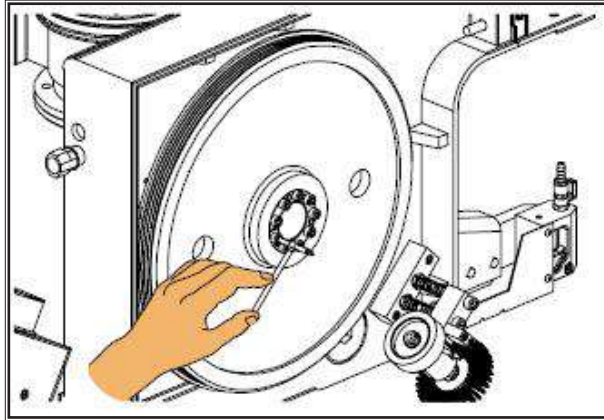


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## Drive Wheel Adjustment

The Drive Wheel adjustment is closely linked to adjustment of the Idler Wheel. The purpose of the adjustment is to ensure that the back of the blade remains about .040-.080" away from the wheel flange during rotation.

1. Open wheel cover.
2. Loosen all the screws on the wheel and manually move it in or out until the blade is correctly distanced from the wheel flange.

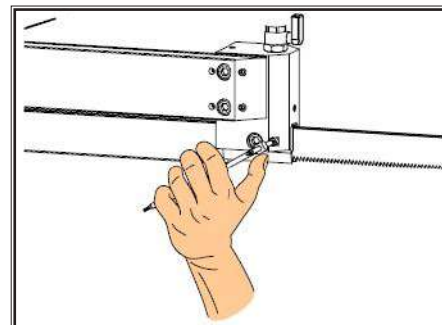
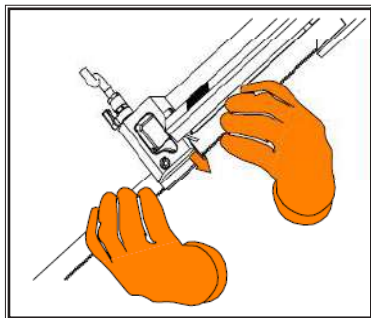


3. Restore the machine and run blade for few wheel rotations.
4. Check the distance between the blade and wheels flange.
5. If necessary repeat steps until proper gap is achieved.

## BLADE GUIDE ADJUSTMENT

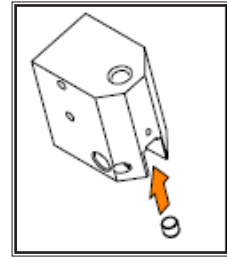
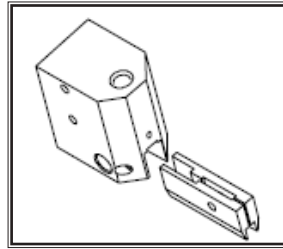
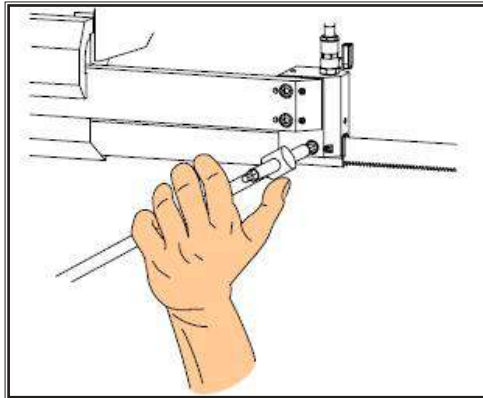
At the bottom of the guide arms are the blade guide block assemblies with carbide pads. These assemblies will need to be adjusted occasionally as the carbide pads become worn, or if a blade with different thickness is used. To adjust properly, follow this simple procedure.

1. Make sure there is a small amount of play between the blade and guide carbides. The blade band should be snug but able to move freely up and down.
2. If the amount of play is not sufficient for the blade to run smoothly, adjust the locking torque of the screws with an Allen key.



## CARBIDE REPLACEMENT

The blade guide blocks are equipped with one top carbide and two side carbide inserts each. The working life of carbide guides is practically the same as that of the machine itself. However, if required they can be replaced by removing the plate fixing screw as shown.

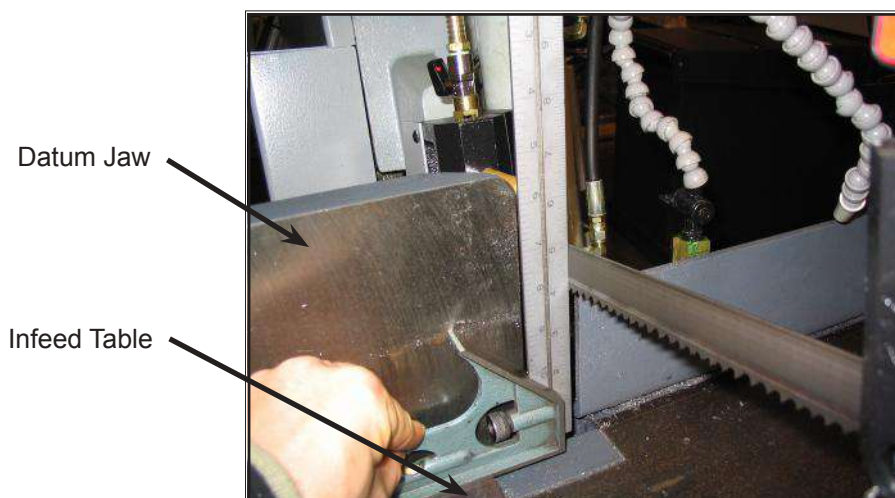


The top carbide is press fit into the guide block. If the top carbide needs replacement the whole guide block has to be changed.

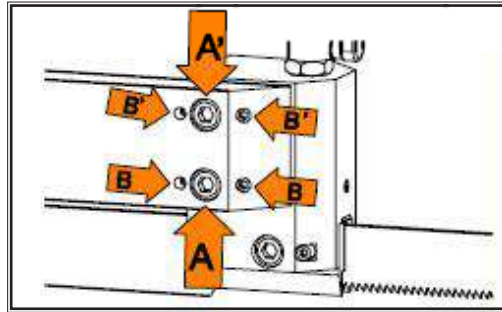
## BLADE PERPENDICULARITY

The perpendicularity of the blade to the work table and proper blade tension are vital for achieving a straight cut. This adjustment is carried out using a workshop square, which should be placed against the side of the blade while resting on the work table in the middle of the guide arm span. The square edge should contact the blade uniformly along the whole blade width. Follow the procedure below if the guides need to be adjusted to achieve the proper blade perpendicularity.

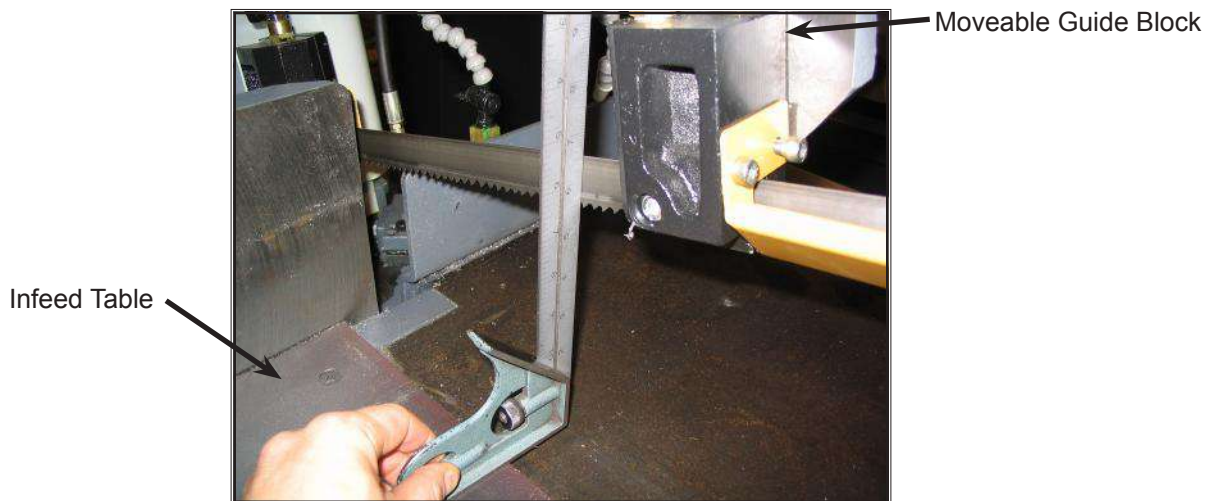
1. Disconnect machine from power.
2. Open the vise.
3. Position the square on the clean work surface of the infeed table against the blade close to the datum jaw at a point where the blade teeth do not prevent contact.



- If the blade touches the square at the bottom loosen the top fixing screw “A” and tighten screws “B” the same amount until the square edge contacts the blade uniformly along the whole blade width. If contact is at the top of the square, loosen the bottom fixing screw “A” and tighten screws “B” the same amount until the square edge contacts the blade uniformly along the whole blade width.



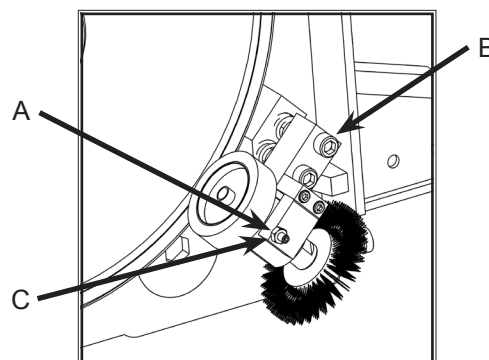
- Position the square on the clean work surface of the infeed table against the blade close to the movable guide block at a point where the blade teeth do not prevent contact.



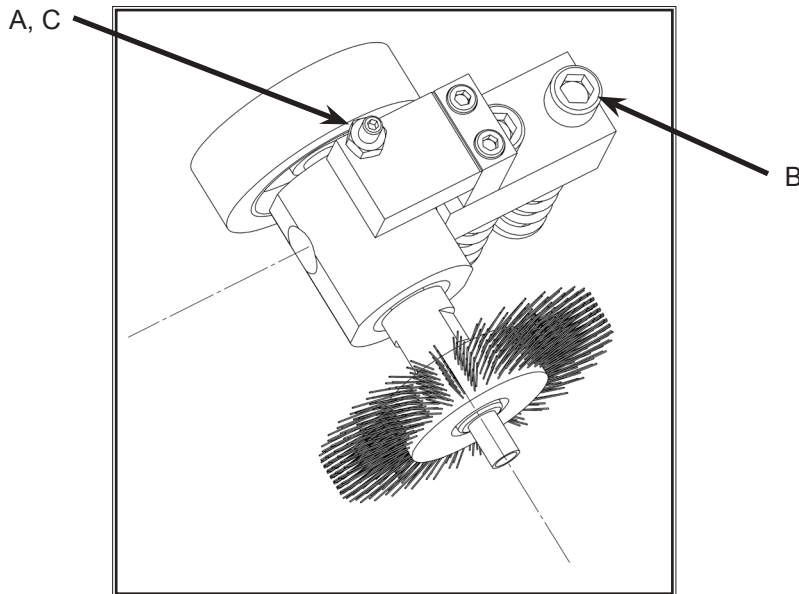
- Repeat step 4 to adjust the movable guide block.

### BLADE BRUSH ADJUSTMENT

The machine leaves the factory with the blade brush adjusted for maximum life of the brush. This setting places the ends of the blade brush wires so as to contact the blade at the bottom of the blade gullets. The plastic drive wheel that is driven by the drive wheel face should be held against the wheel face with the minimum force that is necessary to ensure brush rotation. As the blade brush wears it is necessary to periodically adjust it closer to the blade or if a new brush is installed, further away from the blade.



As shown, there are two springs on socket head screws holding the brush assembly against the blade. There is also an adjusting stop socket set screw **A** with a hex nut **C** on it. This adjusting set screw works as a stop determining the brush position in respect to the blade. To move the brush closer to the blade loosen the hex nut and turn the setscrew **A** counter clockwise with an Allen key. Then rotate the brush stem towards the blade and turn the spring loaded socket head bolts **B** in to maintain proper spring preload. To move the brush away from the blade loosen the spring loaded socket bolts **B** respectively. Then rotate the brush stem away from the blade and turn setscrew **A** clockwise to lock the brush in position. Lock the hex nut to prevent the set screw from loosening.



## ANGLE BRAKE ADJUSTMENT

The clamping force on the swivel brake can be adjusted to ensure that the Head is held securely and does not move during cutting. The brake handle should be adjusted so that it does not “bottom out” or hit its movement limit, yet holds the head securely.

### ANGLE BRAKE ADJUSTMENT PROCEDURE

STEP 1 Loosen locking cap screws “B” with a 6mm Allen key.

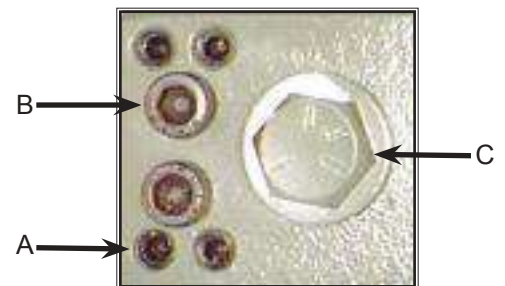
STEP 2 Tighten all 4 set screws “A” until snug with a 4mm Allen key

STEP 3 Back out the “A” screws ¼ of a turn

STEP 4 Tighten the locking cap screws “B”

STEP 5 Swing the head to 45° and back to ensure that the head moves freely and does not bind on the pivot surfaces. Continue to step 6 if necessary.

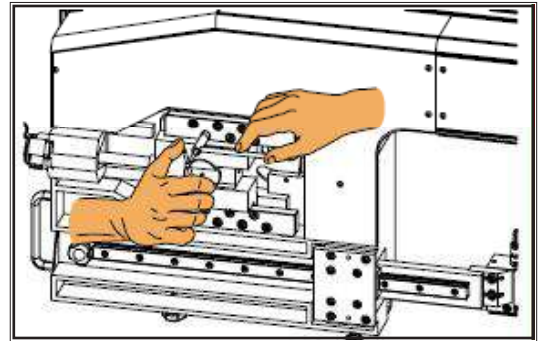
STEP 6 Adjust the clamping force bolt “C” with a 19mm wrench. If not tightened enough, the locking handle will “bottom out” and not hold the head firmly



## BLADE TENSION SLIDE ADJUSTMENT

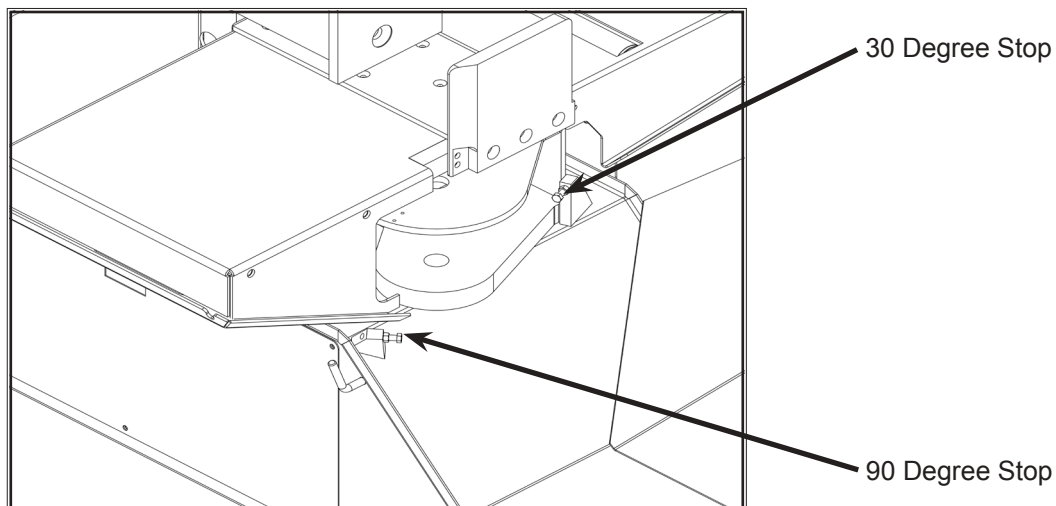
To reduce the play, which may develop over time between the blade tensioner slide and slide gibs, adjust the screws between the gibs and slide as follows:

1. Remove the head front cover.
2. Undo blade tension.
3. Remove blade from wheels.
4. Remove the pin connecting tensioner actuator with slider.
5. Move the slider by hand back and forth to locate any friction or excessive play.
6. Loosen the nuts, using tubular nut driver while holding the set screws firm with Allen key.
7. Tighten the set screws to take up any play or loosen them up in case of excessive friction.
8. Retighten the nuts with tubular nut drive.



## 90 AND 30 DEGREE STOP ADJUSTMENT

There are two adjustable mechanical stops for 90 degree and 30 degree head swing position that can be recalibrated if required.



## GEARBOX LUBRICATION

The machine is equipped with a worm gear which is permanently lubricated and therefore maintenance free. The box has no filler cap, level checker and drain, as it already contains the correct quantity of synthetic oil, guaranteeing perpetual lubrication of the crown and worm gear. Below is a short list of synthetic oils for permanent lubrication:

BP Energol SG XP220  
KLUBER Syntheso D220EP  
ESSO Glycolube Range 220  
IP CT614  
SHELL Tivela Oil SC 320

Gearbox Capacity - 0.084 Gallons (0.320 Litres)

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## LUBRICATION

The S20P was designed to minimize the maintenance requirements. Moving assemblies and contact faces need lubrication on a regular schedule whether they are in heavy use or not. The lubrication requirements of the S20P are primarily the saw pivot points which are equipped with grease fittings, and metal to metal surfaces that require lubrication to prevent wear and seizure.

It is recommended to use LPS ThermoPex Hi-Load bearing Grease manufactured by LPS Laboratories or equivalent, for lubrication of the shuttle assembly. For other points of lubrication general purpose grease is sufficient.

The lubricant should be applied as frequently as required. Main lubrication points are indicated on the following pictures.



Swivel Pivot



Runner Block  
Movable Guide Arm



Vise/Bundling



Head Cylinder Rod End

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## **SECTION 4 - ELECTRICAL**

**FOR ELECTRICAL SCHEMATICS AND COMPONENTS PARTS LISTS  
SEE PDF ON ATTACHED CD**

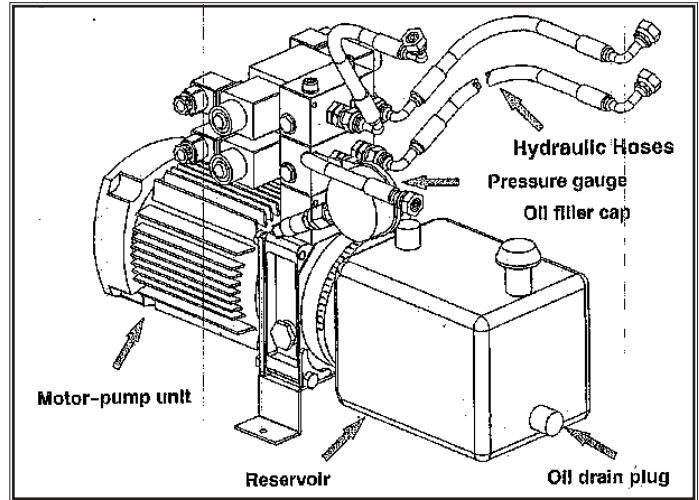
## SECTION 5 - HYDRAULIC

The S20P hydraulic system does not require any special work on a new machine before its start up. The hydraulic tank is filled with FOX YE 32 hydraulic oil and all machine functions have been tested at the factory to ensure proper operation upon initial start up.

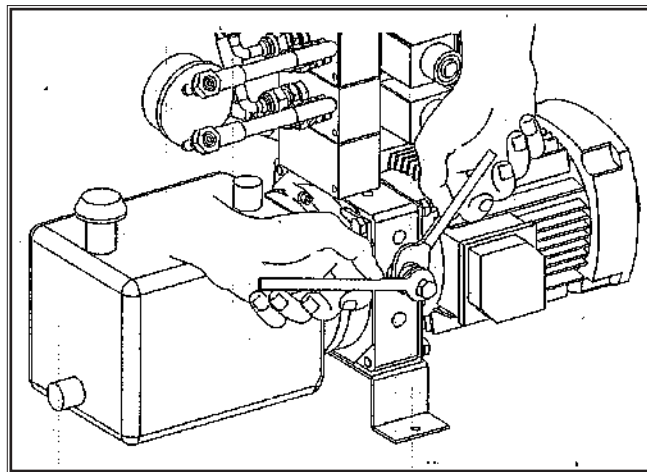
In case of changing the brand of oil, the hydraulic system should be drained and thoroughly flushed. Following is a list of recommended replacement oils:

- ESSO SPINESSO 22
- TOTAL AZOLLA ZS 22
- VALVOLINE ETC 22
- MOBILE DTE 22
- SHELL TELLUS OIL 22

The oil level in the hydraulic power pack should be maintained, and if necessary, topped up. The usable volume of the oil reservoir is 0.66 US gallons (2.5 litres).



The operating pressure can be adjusted by the adjusting valve shown below. Release the hex nut on the relief valve, and using an allen key, increase (clockwise) or reduce (counter clockwise) the pressure reading on the pressure gauge. Tighten the hex nut once adjustment is complete.



### CYLINDER LIST

PART NUMBER	DESCRIPTION	QTY
800047	Head Cylinder	1
800048	Vise Cylinder	1
800001	Bundling Cylinder (Option)	0 (1)

**FOR HYDRAULIC SCHEMATICS AND PLUMBING DIAGRAMS  
SEE PDF ON ATTACHED CD.**



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## **SECTION 6 - MECHANICAL ASSEMBLIES**

**FOR MECHANICAL ASSEMBLY DRAWINGS SEE PDF ON  
ATTACHED CD**

## SECTION 7 - OPTIONAL EQUIPMENT

FOR OPTIONAL ASSEMBLIES SEE PDF ON ATTACHED CD

### MIST COOLANT SYSTEM

Mist Coolant – the air powered pump delivers a regulated number of pulses of lubricant to a single applicator nozzle.

The unit has two control screws.

Pulse / Minute – adjusts rate of lubricant use. About 8 to 12 pulse per minute is optimum – more is not better.

Air Screw – regulates the jet of air that projects the lubricant from the nozzle onto the blade. Adjustment should be such that lubricant covers the blade without blowing the mist beyond the back edge of the blade.

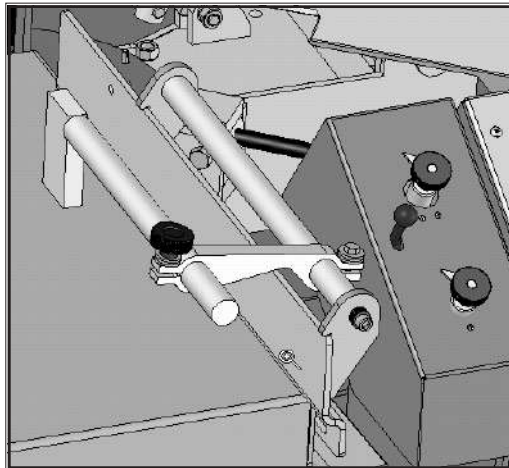
Note: New blade may require initial lubrication with a small quantity of mist coolant applied to the blade at the idler guide arm to prevent squealing.



PULSE / MINUTE

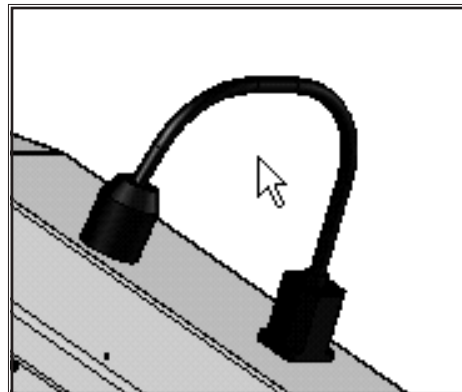
AIR SCREW

### WORK STOP ASSEMBLY



Work Stop Assembly S20M-G17-00

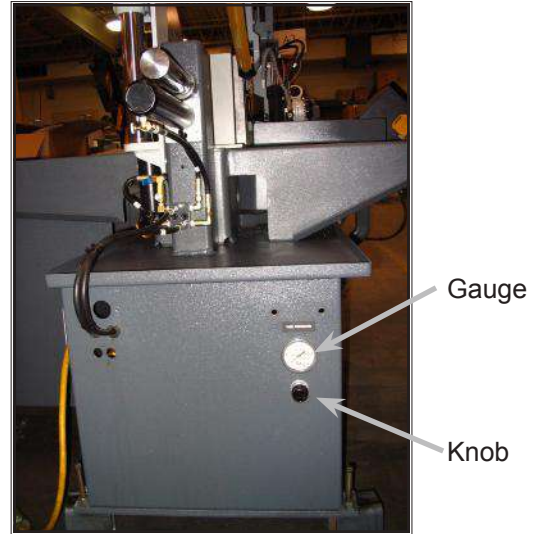
### WORK LAMP ASSEMBLY



Lamp 24VDC 20W #371789

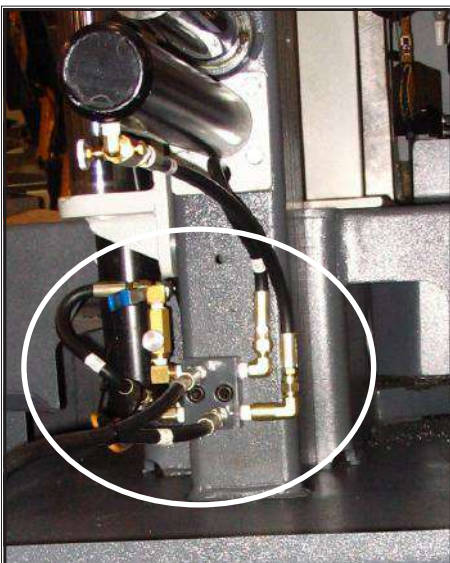
## VARIABLE VISE PRESSURE OPTION

Vise clamping pressure adjustment is located on the idler side of the machine base. Clamping pressure is indicated by the pressure gauge above the pressure control knob. Turning the knob clockwise increases clamping pressure. The clamping pressure can be changed infinitely from 50PSI to 600PSI (full pump pressure). It has to be taken under consideration that clamp pressure setting will affect the clamp speed. The actual usable low clamp pressure setting may be higher than achievable by controls and is limited by mechanical friction of the vise assemblies.



## OVERHEAD BUNDLING

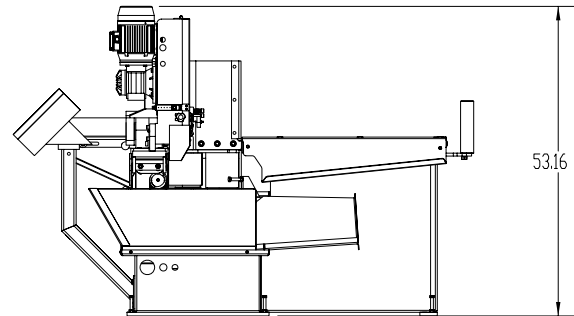
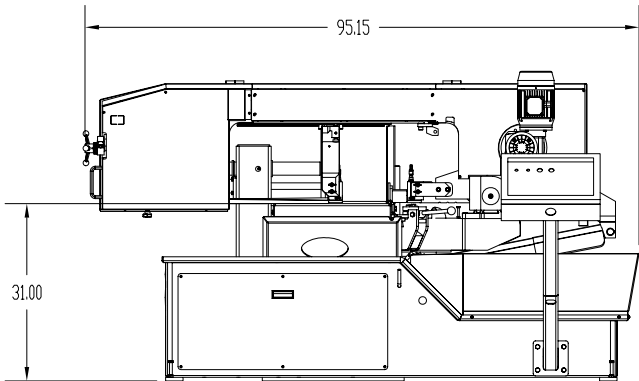
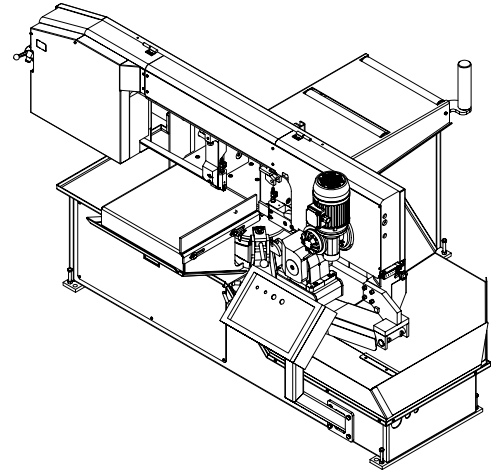
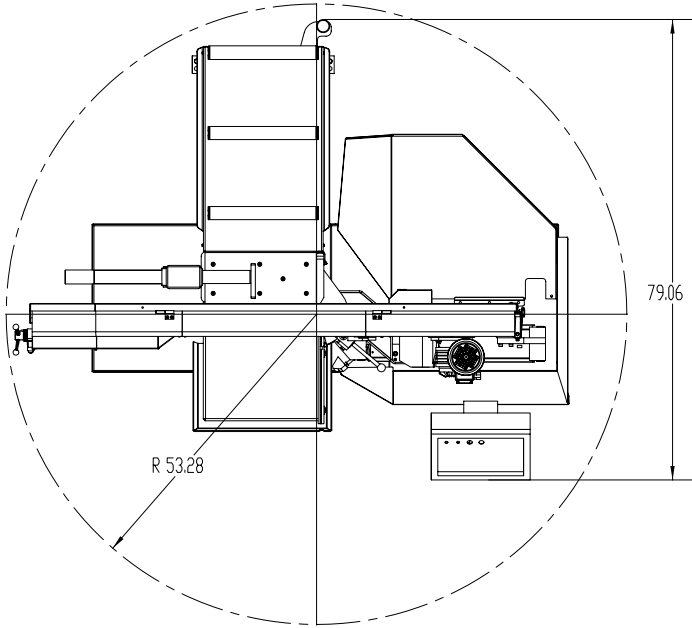
1. The relative speed of the bundling jaw and vise jaw can be adjusted with the needle valve at the cylinder.
2. The following steps will ensure the efficient operation of the Overhead Bundling:
  - a) The material should be loaded into the machines vise and advanced to a position where a trim can be performed.
  - b) Close the Fixed Vise until the Overhead Bundling Arm is slightly ( $1/32''$  to  $1/64''$ ) above the material to be cut.
  - c) Close the ball valve located on the Fixed Overhead Bundling cylinder to lock the position of the Overhead Bundling Arm and then operate as normal.



# SECTION 8 - SPECIFICATIONS

## S20P Bandsaw Specification List

<b>S-20P SERIES III BANDSAW SPECIFICATIONS</b>		
Capacity - 90°	rectangular	13" (355mm) high x 18" (457mm) wide
	round	13" (330mm) dia
Capacity - 45°	rectangular	13" (355mm) high x 10.9" (277mm) wide
	round	12" (305mm) dia
Capacity - 60°	rectangular	13" (355mm) high x 7.3" (185mm) wide
	round	8" (203mm) dia
Blade	Length	14'-10" (4521mm)
	Width	1" (25.4mm)
	thickness	.035" (.89mm)
Blade Tension	Manual	
Blade Speed	VFD	46 - 328 sf/min (14 - 100 m/min)
Blade Guides	Pre Set carbide inserts	
Blade Wheel Dia.	17 3/4" (451mm)	
Drive	blade drive	3 hp (2.2kW)
	hydraulic pump drive	1/2 hp (0.37 kW)
Hydraulic System	400 PSI (2758 kPa)	
Hydraulic Tank Capacity	0.66 U.S. Gallons (2.5 Liters)	
Coolant Tank Capacity	6 U.S. Gallons (23 Liters)	
Coolant Pump	2.4 U.S. Gal. / min (9.2 Liters/min)	
Table Height	31" (787mm)	
Machine Weight	1800 lbs (817 Kg)	
Machine Workload	5000 lbs (2268 Kg)	
Overall Dimensions	97" (2464mm) Wide, 84" (2134mm) Long, 55" (1397mm) High	
Options	Full capacity bundling	
	Work light	
	Variable vise pressure	
	Out of stock switch	
	Material stop	



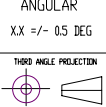
REVISIONS				STANDARD TOLERANCES UNLESS OTHERWISE SPECIFIED		HYD - MECH GROUP LIMITED					
REV	ECN NUMBER	DATE	BY	DIMENSIONS ARE IN INCHES		TITLE					
-	-	-	-	LINEAR		S20P BAND SAW					
				X +/- .015 IN		ASSEMBLY					
				XX +/- .010 IN		MATERIAL CODE:					
				XXX +/- .005 IN		MAT'L:					
				= 125 MICRONS		SAW CUT LENGTH					
						THK/OD					
						WTH/ID					
						WALL/WT					
						LENGTH					
						PART WEIGHT					
						DRAWING NUMBER:		S20MP-0-00			

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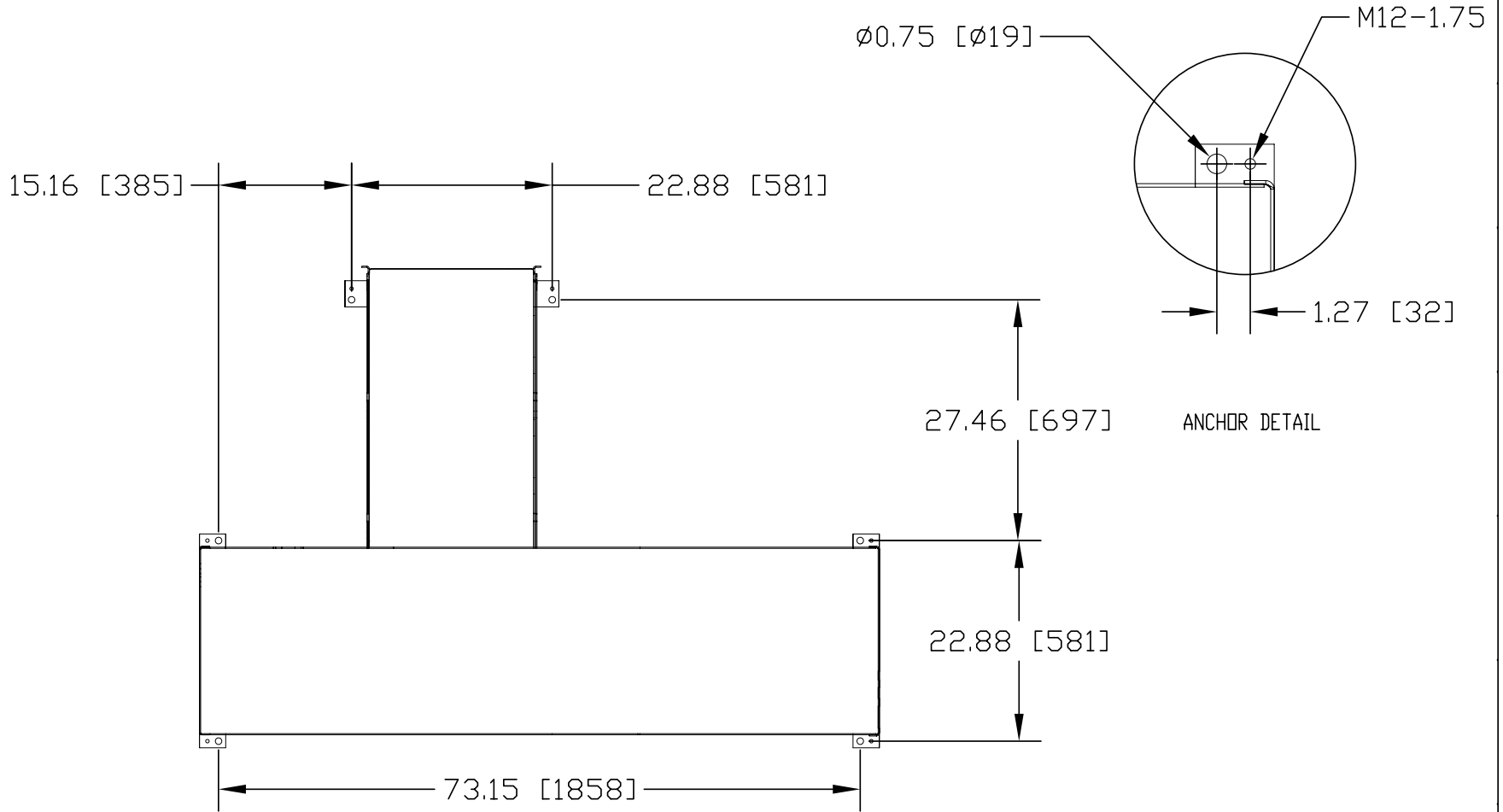
HYD - MECH  
The Rock Solid Solution

HYD - MECH GROUP LIMITED  
WOODSTOCK, ONTARIO, CANADA N4S 0M4

THIRD ANGLE PROJECTION



DATE:	CHKD BY:	SCALE	SHEET	REV
	DATE:	1:30	1 OF 1	-
COATING				



REVISIONS				STANDARD TOLERANCES UNLESS OTHERWISE SPECIFIED		HYD - MECH <small>The Rock Solid Solution</small>		HYD - MECH GROUP LIMITED <small>WOODSTOCK, ONTARIO, CANADA M4S 0M4</small>					
REV	ECN NUMBER	DATE	BY	DIMENSIONS ARE IN INCHES		TITLE S20 BAND SAW FOUNDATION PLAN							
				LINEAR	ANGULAR	MATERIAL CODE:	MAT'L:	SAW CUT LENGTH	DRWN BY: <input checked="" type="checkbox"/>	CHKD BY: <input checked="" type="checkbox"/>	SCALE	SHEET	REV
				X +/- .015 IN	X.X +/- 0.5 DEG	<input checked="" type="checkbox"/>			DATE: <input checked="" type="checkbox"/>	DATE: <input checked="" type="checkbox"/>	-	1 OF 1	-
				XX +/- .010 IN									
				XXX +/- .005 IN									
				= 125 MICRONS		THK/OD	OVERALL DIMENSIONS	LENGTH	PART WEIGHT <input checked="" type="checkbox"/>	COATING	DRAWING NUMBER: S20M-0-00_2		
						X	VOTH/ID	X					
							WALL/WT	X					

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## SECTION 9 - WARRANTY

### Warranty

Hyd-Mech Group Limited warrants parts/components on each new S20P bandsaw to be free from failure resulting from defective material and workmanship under proper use and service for a period of two years on following the date of shipment from the factory. Hyd-Mech's sole obligation under this warranty is limited to the repair or replacement without charge, at Hyd-Mech's factory, warehouse, or approved repair shop any part or parts which Hyd-Mech's inspection shall disclose to be defective. Return freight must be prepaid by the user.

This warranty, in its entirety, does not cover maintenance items, including but not limited to lubricating grease and oils, filters, V-belts, saw blades, etc., nor any items therein which show signs of neglect, overloading, abuse, accident, inadequate maintenance, or unauthorized altering.

MOTOR, GEARBOX, PUMP, ELECTRIC COMPONENTS, VALVES, HOSES, FITTINGS, and any other items used in the manufacture of the S20P, but not originally manufactured by Hyd-Mech are subject to the original manufacturer's warranty. Hyd-Mech will provide such assistance and information as is necessary and available to facilitate the user's claim to such other manufacturer.

Liability or obligation on the part of Hyd-Mech for damages, whether general, special or for negligence and expressly including any incidental and consequential damages is hereby disclaimed. Hyd-Mech's obligation to repair or replace shall be the limit of its liability under this warranty and the sole and exclusive right and remedy of the user.

**THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WRITTEN OR ORAL, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

This warranty may not be changed, altered, or modified in any way except in writing by Hyd-Mech Group Limited

**HYD-MECH GROUP LIMITED**  
1079 Parkinson Road  
P.O. BOX 1030  
Woodstock, Ontario  
N4S 8P6  
Phone: (519) 539-6341  
Fax: (519) 539-5126  
Toll Free: (877) 276-SAWS (7297)  
E-mail: [info@hydmech.com](mailto:info@hydmech.com)



# Manual Cold Saw | CS-250EU

## Product Images

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## Short Description

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Manual Cold Saw - CS-250EU



## Additional Information

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Stock Number	BA9-1002426
Model Number	CS-250EU
Motor (HP)	1
Prop 65	Cancer and Reproductive Harm
Solid Round at 45 Degrees (In.)	1.2"
Solid Round at 90 Degrees (In.)	1.2"
Style (Type)	Single Action with Cam Lock
Tubing Rectangle at 45 Degrees (In.)	2.4" x 2"
Tubing Rectangle at 90 Degrees (In.)	2.5" x 2"
Tubing Round at 45 Degrees (In.)	2.5"
Tubing Square at 45 Degrees (In.)	2.1" x 2.1"
Tubing Square at 90 Degrees (In.)	2.5"
Weight (Lbs.)	390



**Section 1. Identification**

**Product name** : Lenox® Band Ade®

**Material uses** : Metalworking fluid

**Manufacturer** : Lenox Tools  
301 Chestnut Street  
East Longmeadow, MA 01028

**Emergency telephone number (with hours of operation)** : CHEMTREC (U.S. and Canada) 1800-424-9300  
CHEMTREC (Outside the U.S.) 1-703-527-0585

**Section 2. Hazards identification**

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the substance or mixture** : SKIN CORROSION/IRRITATION - Category 2  
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2  
SKIN SENSITIZATION - Category 1  
Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 17.8%

**GHS label elements**

**Hazard pictograms** :



**Signal word** : Warning

**Hazard statements** : Causes serious eye irritation.  
Causes skin irritation.  
May cause an allergic skin reaction.

**Precautionary statements**

**Prevention** : Wear protective gloves. Wear eye or face protection. Avoid breathing vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

**Response** : IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

**Storage** : Not applicable.

**Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Hazards not otherwise classified** : None known.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

Ingredient name	%	CAS number
Propane-1,2-diol, propoxylated	10 - 20	25322-69-4
Distillates (petroleum), hydrotreated light	2 - 5	64742-47-8
2,2',2"-nitrilotriethanol	2 - 5	102-71-6
2-butylaminoethanol	0.1 - 2	111-75-1
2-aminoethanol	0.1 - 2	141-43-5
2,2',2"-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	0.1 - 2	4719-04-4

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness

## Section 4. First aid measures

- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : No specific data.

### Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

- Suitable extinguishing media** : CO<sub>2</sub>, water, water spray, Foam
- Unsuitable extinguishing media** : None known.

**Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides

**Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

## Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
Propane-1,2-diol, propoxylated	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Aerosol
Distillates (petroleum), hydrotreated light	<b>ACGIH TLV (United States, 6/2013).</b> <b>Absorbed through skin.</b> TWA: 200 mg/m <sup>3</sup> , (as total hydrocarbon vapor) 8 hours.
2,2',2''-nitrilotriethanol	<b>ACGIH TLV (United States, 6/2013).</b> TWA: 5 mg/m <sup>3</sup> 8 hours.
2-aminoethanol	<b>ACGIH TLV (United States, 6/2013).</b> TWA: 3 ppm 8 hours. TWA: 7.5 mg/m <sup>3</sup> 8 hours. STEL: 6 ppm 15 minutes. STEL: 15 mg/m <sup>3</sup> 15 minutes. <b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 3 ppm 8 hours. TWA: 8 mg/m <sup>3</sup> 8 hours. STEL: 6 ppm 15 minutes. STEL: 15 mg/m <sup>3</sup> 15 minutes. <b>NIOSH REL (United States, 10/2013).</b> TWA: 3 ppm 10 hours. TWA: 8 mg/m <sup>3</sup> 10 hours.

## Section 8. Exposure controls/personal protection

STEL: 6 ppm 15 minutes.  
 STEL: 15 mg/m<sup>3</sup> 15 minutes.  
**OSHA PEL (United States, 2/2013).**  
 TWA: 3 ppm 8 hours.  
 TWA: 6 mg/m<sup>3</sup> 8 hours.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## Section 9. Physical and chemical properties

### Appearance

- Physical state** : Liquid.
- Color** : Yellow.
- Odor** : Characteristic.
- Odor threshold** : Not available.
- pH** : 9.65
- Melting point** : Not available.
- Boiling point** : 100°C (212°F)
- Flash point** : Not available.
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : Not available.

## Section 9. Physical and chemical properties

<b>Flammability (solid, gas)</b>	: Not available.
<b>Lower and upper explosive (flammable) limits</b>	: Not available.
<b>Vapor pressure</b>	: Not available.
<b>Vapor density</b>	: Not available.
<b>Relative density</b>	: 1.0104
<b>Solubility</b>	: Easily soluble in the following materials: cold water and hot water.
<b>Solubility in water</b>	: Not available.
<b>Partition coefficient: n-octanol/water</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>SADT</b>	: Not available.
<b>Viscosity</b>	: Not available.

## Section 10. Stability and reactivity

<b>Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: The product is stable.
<b>Possibility of hazardous reactions</b>	: No specific data.
<b>Conditions to avoid</b>	: No specific data.
<b>Incompatible materials</b>	: strong acids, oxidizing substances, nitrates, nitrites
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2,2',2"-nitrilotriethanol	LD50 Oral	Rat	7.39 g/kg	-
2-butylaminoethanol	LD50 Oral	Rat	1150 mg/kg	-
2-aminoethanol	LD50 Oral	Rat	1720 mg/kg	-
2,2',2"-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	LD50 Oral	Rat	763 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Propane-1,2-diol, propoxylated	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	500 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
2,2',2"-nitrilotriethanol	Eyes - Mild irritant	Rabbit	-	10 milligrams	-
	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Human	-	72 hours 15 milligrams	-

## Section 11. Toxicological information

2-aminoethanol	Skin - Severe irritant	Mouse	-	Intermittent 50 Percent 24 hours 560 milligrams 250 Micrograms 505 milligrams	-
	Skin - Mild irritant	Rabbit	-		-
	Eyes - Severe irritant	Rabbit	-		-
	Skin - Moderate irritant	Rabbit	-		-

### Sensitization

No known significant effects or critical hazards.

### Mutagenicity

No known significant effects or critical hazards.

### Carcinogenicity

#### Classification

Product/ingredient name	OSHA	IARC	NTP
2,2',2"-nitrioltriethanol	-	3	-

### Reproductive toxicity

No known significant effects or critical hazards.

### Teratogenicity

No known significant effects or critical hazards.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
2-aminoethanol	Category 3	Not applicable.	Respiratory tract irritation

### Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

### Aspiration hazard

Name	Result
Distillates (petroleum), hydrotreated light	ASPIRATION HAZARD - Category 1

**Information on the likely routes of exposure** : Not available.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : Causes serious eye irritation. Causes skin irritation.

**Potential delayed effects** : May cause an allergic skin reaction.

#### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Potential chronic health effects

**General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.



## Section 11. Toxicological information

- Teratogenicity** : No known significant effects or critical hazards.  
**Developmental effects** : No known significant effects or critical hazards.  
**Fertility effects** : No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

No known significant effects or critical hazards.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
Propane-1,2-diol, propoxylated Distillates (petroleum), hydrotreated light 2,2',2"-nitrilotriethanol	Acute LC50 650000 µg/l Marine water	Fish - Menidia beryllina	96 hours
	Acute LC50 2200 µg/l Fresh water	Fish - Lepomis macrochirus	4 days
	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
2-aminoethanol	Acute LC50 11800000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 16000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Acute EC50 8.42 mg/l Fresh water	Algae - Desmodesmus subspicatus	72 hours
2,2',2"-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 170000 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Acute EC50 26.1 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 39 ppm Fresh water	Fish - Lepomis macrochirus	96 hours

### Persistence and degradability

No known significant effects or critical hazards.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Propane-1,2-diol, propoxylated	-0.68 to 0.01	-	low
2,2',2"-nitrilotriethanol	-1	<3.9	low
2-butylaminoethanol	-	3.16	low
2-aminoethanol	-1.31	-	low
2,2',2"-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	-2	-	low

- Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

- Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a

## Section 13. Disposal considerations

safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	<b>DOT Classification</b>	<b>TDG Classification</b>	<b>Mexico Classification</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN number</b>	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
<b>UN proper shipping name</b>	-	-	-	-	-
<b>Transport hazard class(es)</b>	-	-	-	-	-
<b>Packing group</b>	-	-	-	-	-
<b>Environmental hazards</b>	No.	No.	No.	No.	No.
<b>Additional information</b>	-	-	-	-	-

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

## Section 15. Regulatory information

**U.S. Federal regulations** : **United States inventory (TSCA 8b):** All components are listed or exempted.

### SARA 311/312

**Classification** : Immediate (acute) health hazard  
Delayed (chronic) health hazard

### Composition/information on ingredients

<b>Name</b>	<b>%</b>	<b>Fire hazard</b>	<b>Sudden release of pressure</b>	<b>Reactive</b>	<b>Immediate (acute) health hazard</b>	<b>Delayed (chronic) health hazard</b>
Propane-1,2-diol, propoxylated	10 - 20	No.	No.	No.	Yes.	No.
Distillates (petroleum), hydrotreated light	2 - 5	Yes.	No.	No.	No.	No.
2,2',2"-nitrilotriethanol	2 - 5	No.	No.	No.	Yes.	No.
2-butylaminoethanol	0.1 - 2	No.	No.	No.	Yes.	No.
2-aminoethanol	0.1 - 2	Yes.	No.	No.	Yes.	No.
2,2',2"-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	0.1 - 2	No.	No.	No.	Yes.	No.

### California Prop. 65

**WARNING:** This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

**WARNING:** This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

## Section 15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
ethylene oxide	Yes.	Yes.	Yes.	Yes.
1,4-dioxane	Yes.	No.	Yes.	No.
ethyl acrylate	Yes.	No.	No.	No.

### Canada

**WHMIS (Canada)** : Class D-2B: Material causing other toxic effects (Toxic).

#### Canadian lists

**Canadian NPRI** : The following components are listed: Hydrotreated light distillate

**CEPA Toxic substances** : None of the components are listed.

**Canada inventory** : At least one component is not listed in DSL but all such components are listed in NDSL.

## Section 16. Other information

### History

**Date of issue/Date of revision** : 3/12/2015.

**Date of previous issue** : 1/23/2015.

**Version** : 3

**Prepared by** : Product Safety.

#### Key to abbreviations

: ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 IATA = International Air Transport Association  
 IMDG = International Maritime Dangerous Goods  
 LogPow = logarithm of the octanol/water partition coefficient  
 UN = United Nations

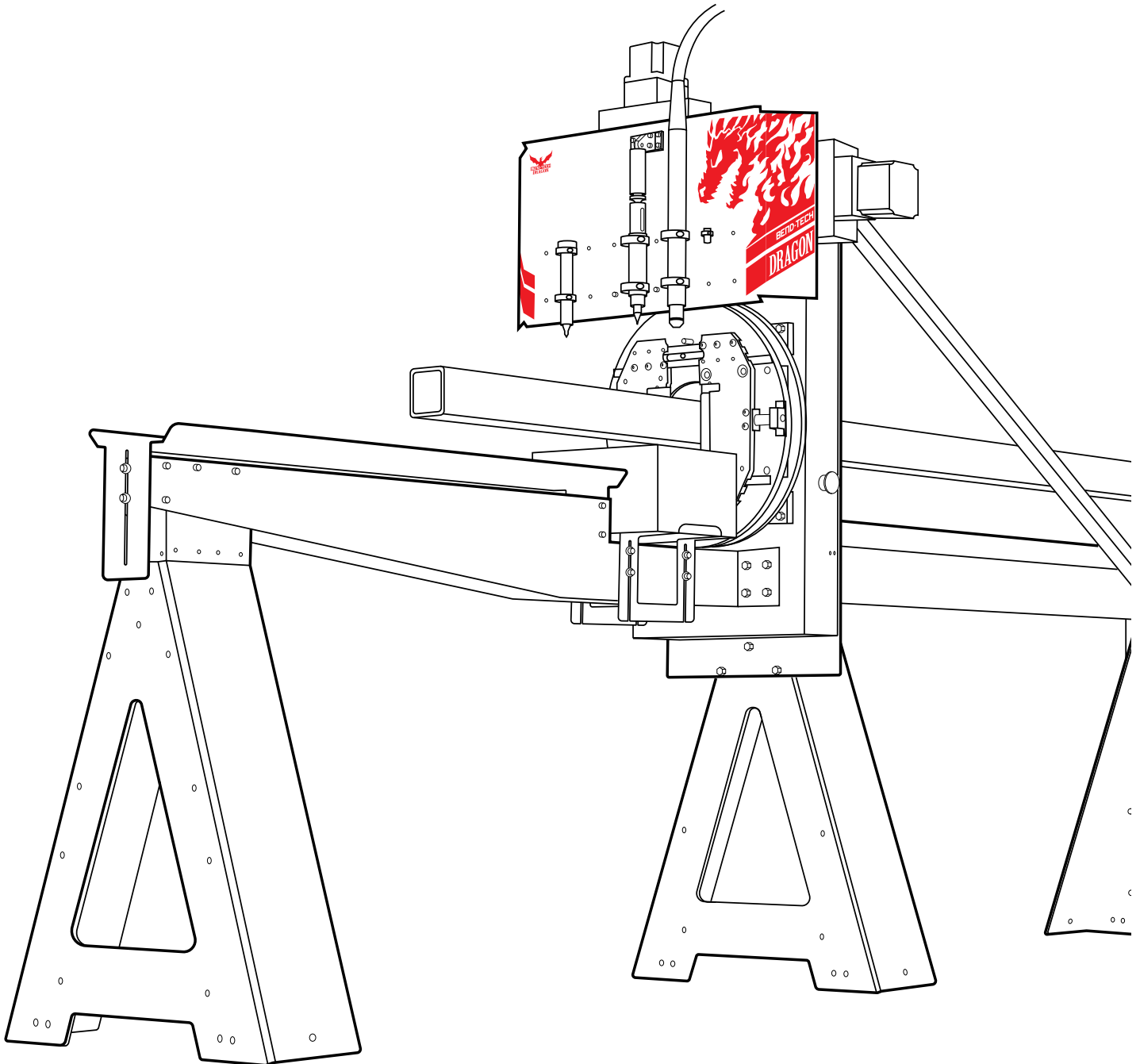
▣ Indicates information that has changed from previously issued version.

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations. The mixture must not be used for other uses than those specified in section 1 without having first obtained written handling instructions. It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations. The information in this safety data sheet must be regarded as a description of the safety requirements relating to the mixture and not as a guarantee of the properties thereof.

Part 1 of 1

# BEND-TECH DRAGON A400

## Assembly Manual



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# Dragon A400

**Assembly Manual**  
Version 11003 01

English  
Original Instructions

June 2023

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## Limited Warranty

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### Covering Bend-Tech Dragon

Bend-Tech LLC provides a limited warranty on all new Dragon machines that are manufactured directly or under license by Bend-Tech LLC, and sold by Bend-Tech LLC or its approved distributors.

### Warranty Coverage

Each Bend-Tech Dragon machine is warranted by the manufacturer against defects in material workmanship for 12-months. The warranty period commences upon delivery of the Dragon machine to the customer's facility.

### Repair or Replacement Only

The Manufacturer's sole liability, and the Customer's exclusive remedy under this warranty shall be limited to repairing or replacing the defective part. Repair or replacement of parts is at the sole discretion of the manufacturer. The Customer is responsible for warranty parts installation. Bend-Tech does not provide warranty service labor.

### Limits

This warranty does not cover components subject to wear due to normal use of the machine such as belts, lights, tooling etc. This warranty is void if Bend-Tech LLC has determined any failure is the result of mishandling, abuse, misuse, improper installation, improper storage, improper maintenance or unauthorized modification of the machine. The warranty does not cover damage due to natural disasters, fire, flood or other external factors. The warranty may become void or limited in the event that hardware changes or adaptations are made to the machine.

### Software

The standard 2-year software maintenance plan is included with the purchase of a Dragon. Before the 2-year maintenance plan has expired, the customer may purchase an extended maintenance plan. The maintenance plan and extended maintenance plans will ensure the customer always has the newest version of Dragon Software. The maintenance plan is critical to keeping Dragon software updated with the newest capabilities possible, and is critical to the servicing of the machine. Bend-Tech LLC will contact the Customer regarding updates to the maintenance plan within 1-month of expiration. Contact Bend-Tech Support to ensure software is up to date: [support@bend-tech.com](mailto:support@bend-tech.com).

## Customer Satisfaction Commitment

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Congratulations on your purchase of the world's best CNC plasma tube and pipe cutting machine, the Bend-Tech Dragon. Bend-Tech LLC places great pride in customer satisfaction and it is our promise to offer you the best support available for your Dragon. We recognize that our support is a key factor in your success.

### Contact Us

Bend-Tech's hours of operation are Monday - Friday, 8:00 am - 5:00 pm EST. The Bend-Tech support team and sales team are always available during our hours of operation.

**Phone:** 651-257-8715

**Email:** Sales team: [sales@bend-tech.com](mailto:sales@bend-tech.com)  
Support team: [support@bend-tech.com](mailto:support@bend-tech.com)

**Address:** Bend-Tech, 729 Prospect Ave., Osceola, WI 54020, U.S.A..

## Customer Service

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Comments, questions, or concerns regarding the Dragon Machine, this manual, or the Bend-Tech Software can be directed to Bend-Tech sales and service representatives at the above contact information. Check out the following links for more information regarding Dragon Machines and Bend-Tech Software.

### Website, Socials, and Online Resources

- <http://www.bend-tech.com>
- <https://www.facebook.com/2020ssi>
- [https://www.instagram.com/bend\\_tech](https://www.instagram.com/bend_tech)
- <https://www.youtube.com/bendtech2020>
- <http://www.bend-tech.com/wiki7>

## Alerts

---

Bend-Tech manuals use specific callouts to highlight important information. Each style of callout pertains to specific types of information being given. The machine operator should familiarize themselves with the following definitions and examples of each type.

### Definitions & Examples

#### Danger

## ! Danger !



Danger indicates a serious condition that could cause severe injury or death to the operator or bystanders if the instructions are not followed.

#### Warning

## ! Warning !



A Warning indicates there is a possibility for minor injury if the instructions are not followed correctly.

#### Caution

## ! Caution !



Caution warns the operator that minor injury or machine damage could occur if instructions are not followed. It could also mean that not following directions could affect the overall procedure being performed.

## Important Alerts

### Important

Important notes give clarification or focuses on information that is critical or unique to an operation.

## Notes and Tips

### Note or Tip

*Notes and tips give additional helpful information for operating the Dragon machine or Dragon software. They are meant for supplemental information and not information that is critical for operating procedures.*

# Glossary

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### **Axis**

A fixed reference line.

### **Beak**

The front assembly that includes the Parts Catcher and Parts Bin/Bucket. The Material Coolant System replaces most of the Beak when installed.

### **CAD**

Computer Aided Design. Modeling or design software for creating parts, components, or whole assemblies. Used for manufacturing or similar industries. Can be 2D or 3D design.

### **CAM**

Computer Aided Manufacturing or Machining. Uses the computer to assist in operating machines by converting CAD models into G-Code that the machine recognizes.

### **Chuck**

Secures and rotates the material. Part of the Trolley. Also referred to as the Y-Axis.

### **Control Box**

Contains the motor drivers and other electrical components that allows the Dragon CAM software to control the Dragon machines.

### **Deadzone**

The space between the Chuck and the Laser Light position when the Chuck is all the way forward.

### **Emergency Stop**

Abbreviated E-STOP. A button which shuts down machine operations. Four are located on the machine and one is part of Machine Control.

### **Gate**

The adjustable mechanism that holds the material in place at the Head of the Machine.

### **Head**

The machine assembly that makes up the front end of the machine.

### **Limit Switch**

The switch that operates as an automatic control to prevent a mechanism or process from going beyond a prescribed limit.

### **Load Position**

The position the machine enters after clicking START on machine control the first time after starting a cutting project. This allows the operator to easily load the designated material into the machine.

### **Mach3**

The driving software behind Machine Control. Required for the machine to operate.

### **Machine Control**

The computer interface that controls the machine operations. Used by the operator when running projects.

### **Material Coolant System**

The system that transports coolant through the material during cutting operations.

### **Material Support Lift**

The mechanism that supports the material during cutting. Sometimes referred to as the Lifter.

### **Parts Catcher**

The Parts Catcher is placed at the front of the machine to catch parts as they are cut.

### **Support Beam**

Forms the backbone of the machine. Comprised of Aluminum Beams and Steel Rails.

### **Tail**

The machine assembly that makes up the far end of the machine.

## Task Menu

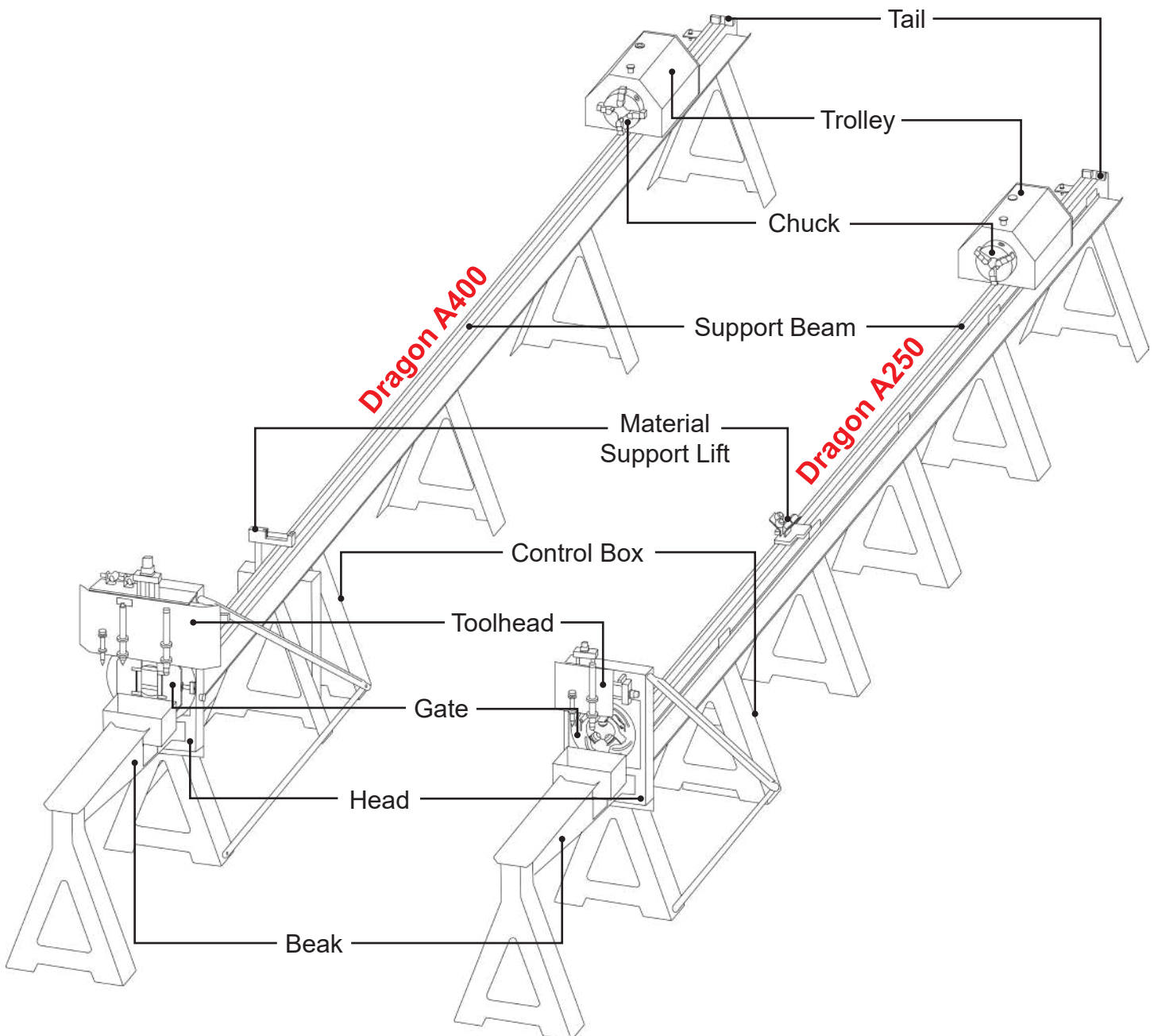
The first menu that opens upon starting the Dragon Software or the Bend-Tech software. From this menu various tasks can be started, such as part designing, importing, library access, etc.

## Toolhead

The machine component that the tools are attached too. Maneuvers the tools into position with the A and Z axes.

## Trolley

The machine component that includes the Chuck. Travels along the Support Beam on the X-Axis.



# 01 Safety

## 1.1 Introduction

---

Before assembling the Dragon A400, read this manual and ensure that all personnel involved in assembling the machine are properly trained in lifting procedures and tool operation. Ensure all personnel are aware of the dangers and hazards involved in assembling the machine.

### Important

Assembling the Dragon A400 requires a moderate level of mechanical skill and experience. Assembly should not be undertaken by personnel without experience in assembling machinery or experience in industrial or machine maintenance.

## 1.2 Assembly Safety

---

### ! Danger !



Certain Dragon A400 parts are heavy. Handling them incorrectly could result in severe injury or possibly death. Always use caution and follow safety procedures for moving heavy equipment when assembling the Dragon A400.

## Safety Precautions

- Do not attempt to assemble the Dragon without reading this manual first.
- Have the correct tools listed in the Tool List on hand.
- Enlist help of 1-3 additional personnel trained to install industrial machinery.
- Follow the methods and procedures outlined in this manual.
- Do not attempt to lift heavy materials without assistance.
- Before beginning, ensure the workspace is clean and of appropriate size for Dragon A400 assembly.

## ! Warning !



Altering the installation methods and procedures outlined in this manual could result in improper installation, machine damage or personal injury.

### 1.2.1 Safety Equipment

Bend-Tech recommends using the proper safety equipment when installing the Dragon A400. Safety equipment standards for each shop should be outlined in Occupational Safety and Health Administration (OSHA) standards. Also, individual shops may have their own standards. Always consult safety regulations before beginning work. Basic safety equipment may include:



Safety Glasses



Safety Shoes



Work Gloves



Hearing Protection



# Tools and Equipment

## 2.1 Tools

---

The Installer(s) should ensure the proper complement of tools are on hand to assemble the Dragon A400. Bend-Tech does not recommend attempting to assemble the machine without the tools listed in this chapter.

### 2.1.1 Tool List

The following are the recommended tools needed to perform the complete assembly procedure.

- Forklift
- Cordless drill/driver
- T25 bit
- Support Blocks
- Side cutters
- Tin snips
- $\frac{3}{16}$  in. Allen wrench
- $\frac{1}{8}$  in. Allen wrench
- $\frac{5}{16}$  in. Allen wrench
- $\frac{5}{32}$  in. Allen wrench
- Level (laser, digital or bubble)
- Ratchet
- $\frac{9}{16}$  in. socket
- $\frac{1}{2}$  in. socket
- $\frac{9}{16}$  in. wrench
- $\frac{1}{2}$  in. wrench
- $\frac{5}{8}$  in. wrench
- Rubber mallet or Dead Blow plastic hammer
- Tape measure
- Zip ties
- Clamp
- Magnet Tool (Provided)
- Bridge Rack (Provided)

## 2.2 Crate Parts List

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### Standard Length Dragon A400 Assembly

- Machine Head
- Machine Tail
- Support Beam Section (2)
- Rail Support Leg (2)
- Rack (2)
- Beak
- Cable Track Trays (4)
- Cable Track Tray Brackets (10)
- Trolley Housing
- Chuck
- Computer
- Monitor

### Miscellaneous Box

- Startup Manual (1)
- Cutoff Drop Tank (1)
- Swivel Levelers (14)
- Wrench (1)
- Magnetic Tool (1)
- ¼ T-Handle Allen Wrench (1)
- Ethernet Cable (1)
- Power Cable (1)
- Torch Cable (1)
- Coiled Wire Harness Tubing (1)
- Hardware Bags (5)
- String (1)
- Bridge Rack (1)

## 2.3 Optional Parts

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### Technology Package

- Computer Cabinet
- Battery Backup
  
- ⅛ T-handle Allen wrench (1)
- ⅜ T-handle Allen wrench (1)
- Feeler Gauge Set (1)
- Vernier Caliper (1)
- Torpedo Level (1)
- 26 Piece Radius Gauge Set (1)
- WD40 Gel Lube (1)
- Main Drive Belt 260 XL (1)
- Thomson Sensor (1)

### Plasma Unit

## **2.4 Electrical Requirements**

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- 220-240v Outlet (for plasma system - see owner's manual for more information)
- 1x - 110-120v 20Amp Outlet (A250 & A400 machine)
- Misc 110-120v Outlets (computer, monitor, etc.)

# Assembling the Dragon

## 3.1 Getting Started

The Dragon A400 is shipped from the Bend-Tech manufacturing facility in a custom-fabricated shipping crate. This crate features a steel reinforced floor and is fully-enclosed to ensure the protection of the Dragon A400 during shipping. The Dragon A400 machine is completely secured within the crate. The order in which components are removed from the crate is important in executing proper assembly of the machine. For best results in assembling the Dragon A400, carefully follow the steps outlined in this Assembly Manual.

### 3.1.1 Dragon A400 Shop Position

Before beginning assembly, ensure there is adequate space to accommodate the machine on the shop floor. Plan on reserving a minimum of 32-feet for the standard length machine, more room will be needed if the material cooling system is installed or a longer machine has been purchased.

### 3.1.2 Crate Disassembly

## ! Caution !



Enlist the help of additional personnel when removing components from the crate and assembling the machine. A dropped crate component could cause injury to bystanders or damage the machine. Crate sides are large and heavy and should not be lifted without help.

### REQUIRED TOOLS & EQUIPMENT

- Drill
- T25 Bit

Disassemble the crate first. Use a cordless driver and T25 bit to remove the screws that fasten the top of the crate to the sides of the crate. Lift the top off and set it aside. Unfasten the first of the larger crate sides, including the fasteners that secure the 2x4 braces, and set it aside.

## ! Caution !



When removing the 2x4 braces, ensure someone is holding them to prevent the 2x4s from falling onto the machine or other personnel.

Unfasten and remove the 2x4 braces at the top of the crate. Next, unfasten and remove the crate ends. Set these aside. Remove the remaining large crate side last, and set it aside.

## 3.2 Unpacking the Crate

---

Removing the Dragon A400 components from the crate properly, and keeping them in order, is critical to achieving the quickest and most seamless installation possible. As shipped, the components of the machine will be secured to each other and the floor of the crate.

### 3.2.1 Component Boxes

Remove the component boxes that are packed around the Dragon A400 machine. The Component Boxes are labeled for reference during the assembly process.

### 3.2.2 Swivel Levelers

Locate the Miscellaneous Box, and remove the 14 Swivel Levelers. These need to be installed on each Support Leg during assembly.

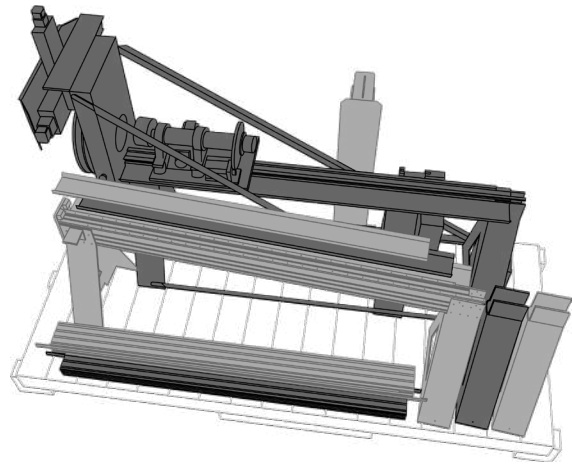
## Important

The Dragon A400 Support Legs are mounted to the floor of the shipping crate using the Floor Brackets. When assembling the machine, the Floor Brackets should be left in place. The Installer will use the Swivel Levelers to true the machine, and then bolt it to the shop floor using the Floor Brackets.

### 3.2.3 Machine Components

#### REQUIRED TOOLS & EQUIPMENT

- 1/2" socket and ratchet
- Tin Snips
- 3/16" Allen Wrench
- Forklift
- Support Blocks



Take care to keep components of the machine organized when unpacking the crate, so they can be located easily. After removing all of the boxes from around the machine components, use a 1/2" socket and drill to remove the machine components. Tin snips will be required to remove the Support Beams. The middle three racks are secured to the beams, use a 3/16" Allen wrench to remove the racks. Only loosen the racks enough to slide them out. Take care not to damage the racks or lose the T-nuts when moving them.

Leave the head of the machine for last. The head of the Dragon A400 will need to be removed and set in place using a forklift.

## Important

Do not remove any strapping or shrink wrap from the head of the Dragon A400. It is important to keep components secure while the head is being removed from the crate.

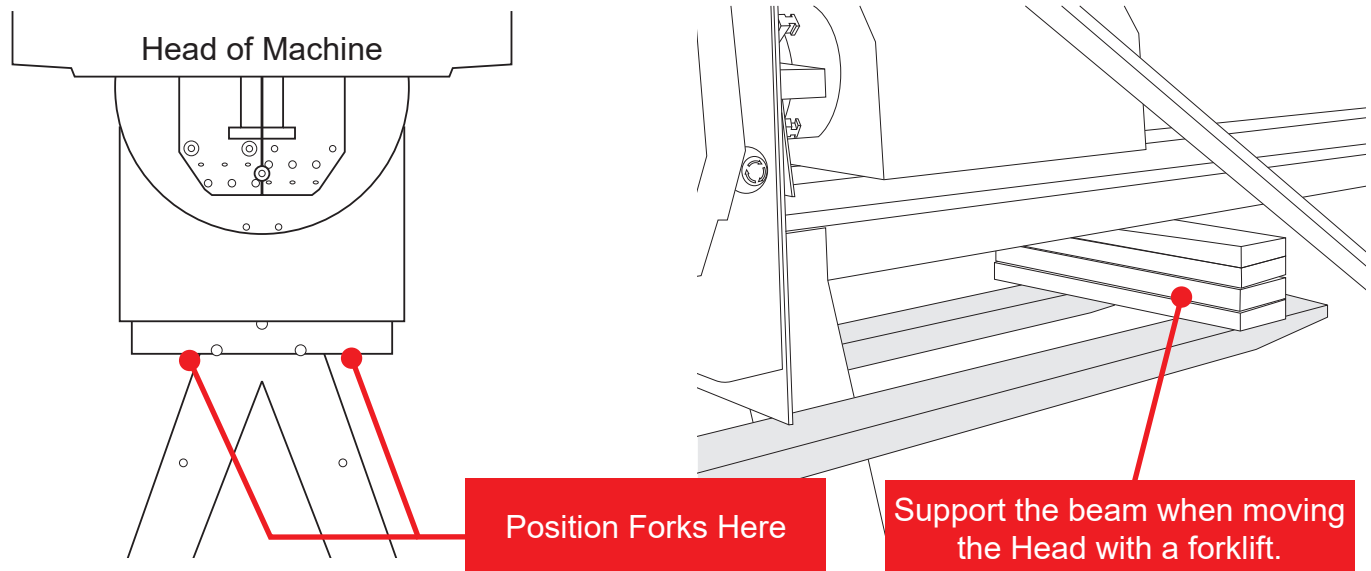
### 3.3 Moving the Head into Position

The head of the machine is extremely heavy. Great care should be taken not to damage any machine's components during moving and installation.

## Important

Remove all other contents of the crate before attempting to move the Head of the machine.

Use a ½ in. socket and drill to remove the lag bolts securing the head of the machine to the floor of the crate.



Approach the head of the machine from the front with the forklift. Position the forks under the head in the indicated position. It is recommended that the installer use fork extensions and lay blocks of wood across the forks to support the beam of the machine.

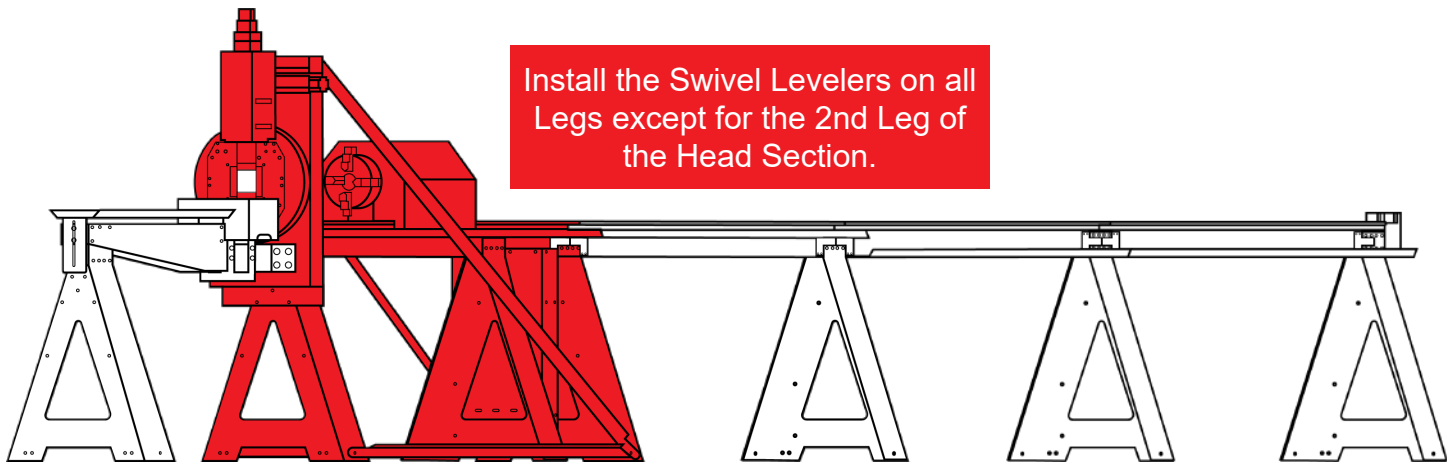
## ! Danger !



The head of the machine is heavy. Bend-Tech does not recommend moving the head of the machine manually. If the head falls or tips over it could cause severe injury or death.

Carefully lift the head of the machine off the crate floor and slowly move it into position. Do not set the head onto the floor at this time. The swivel levelers need to be installed first.

Before placing the head onto the floor, retrieve the Swivel Levelers from the Miscellaneous Box. Install these, as shown in INSTALLING SWIVEL LEVELERS, on the first and third set of legs on the head. Once the Swivel Levelers are installed, set the head of the machine into position. Ensure there is adequate space for the remaining sections of the machine to be put into place. The standard length Dragon A400 requires a minimum of 32 feet of space.



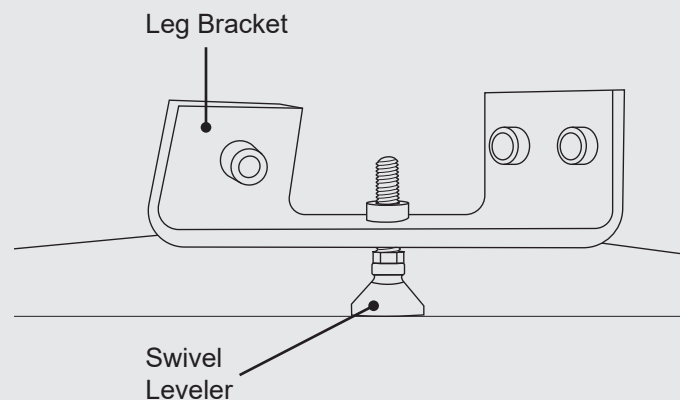
Install the remaining Swivel Levelers on leg #4, the un-numbered leg, and the two legs that make up the tail section of the machine.

## Installing Swivel Levelers

### TOOLS NEEDED

- 9/16" wrench
- 5/8" wrench

Two Swivel Levelers need to be installed in each Support Leg. Each base of the Support Leg will have a bracket with a threaded hole. Prepare the Swivel Leveler for installation by positioning the jam nut approximately one inch above the adjustment hex at the bottom of the Swivel Leveler.



Thread the Swivel Leveler into the threaded hole in the base of the Support Leg until it bottoms out on the jam nut. This method will place all of the Swivel Levelers at approximately the same distance, providing a baseline for leveling the machine.

Install Swivel Levelers on each Support Leg as the installation progresses. A 5/8" wrench may be needed to thread the Swivel Levelers into the bottom of the Rail Support Legs. A 9/16" wrench is required to adjust the jam nut.

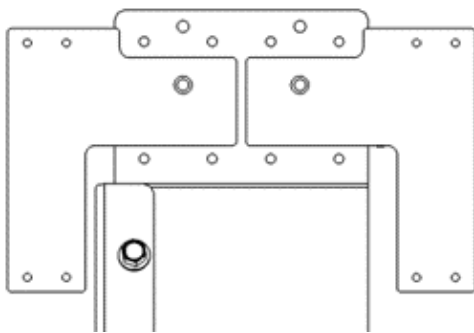


## Important

Do not assemble the Dragon machine alone. Get help for moving and supporting the machine components during assembly.

### 3.4 Assembling the Machine

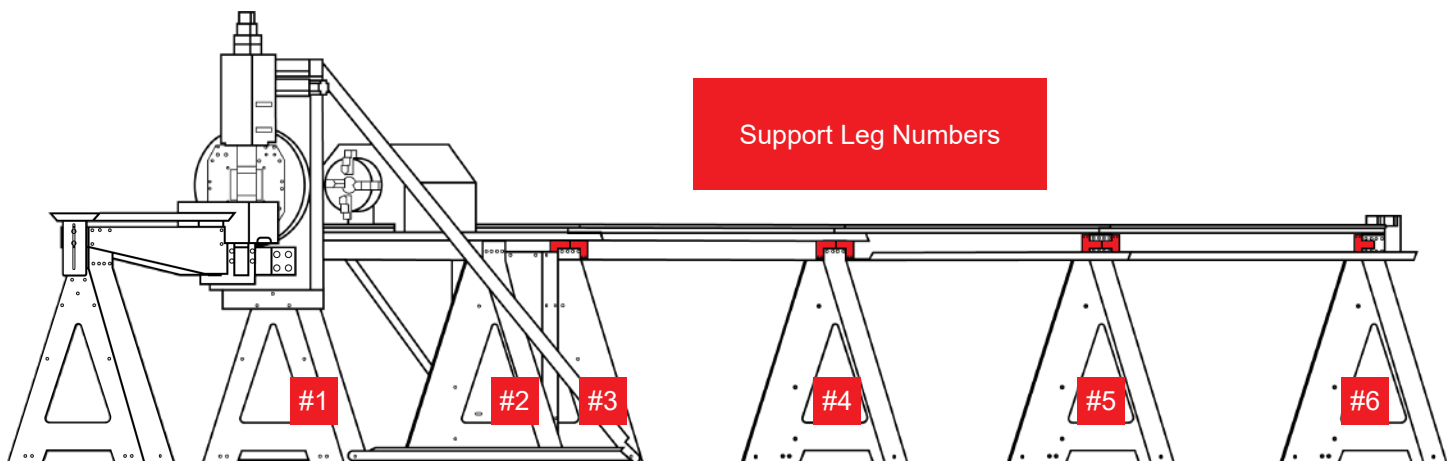
#### 3.4.1 Install the Cable Track Tray Brackets



#### REQUIRED TOOLS & EQUIPMENT

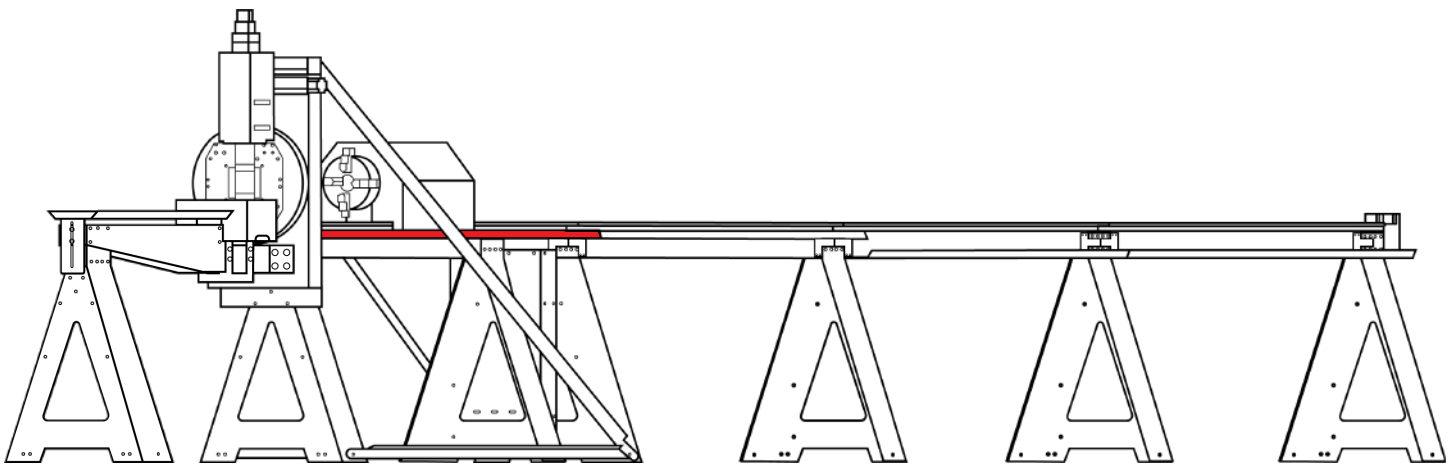
- Rubber mallet
- Magnet tool
- 3/16" Allen wrench
- 5/32" Allen wrench

After the head is placed into position, locate and install two cable track brackets on each of the middle legs except for #2. The first and last leg will only need one bracket each. Install a right bracket on leg #1 and a left bracket on leg #6. Insert two 3/8-16 x 0.375" button head screws in the middle mounting holes of each bracket and use a 5/32" Allen wrench to tighten them. Keep the brackets oriented roughly parallel to the length of the machine.



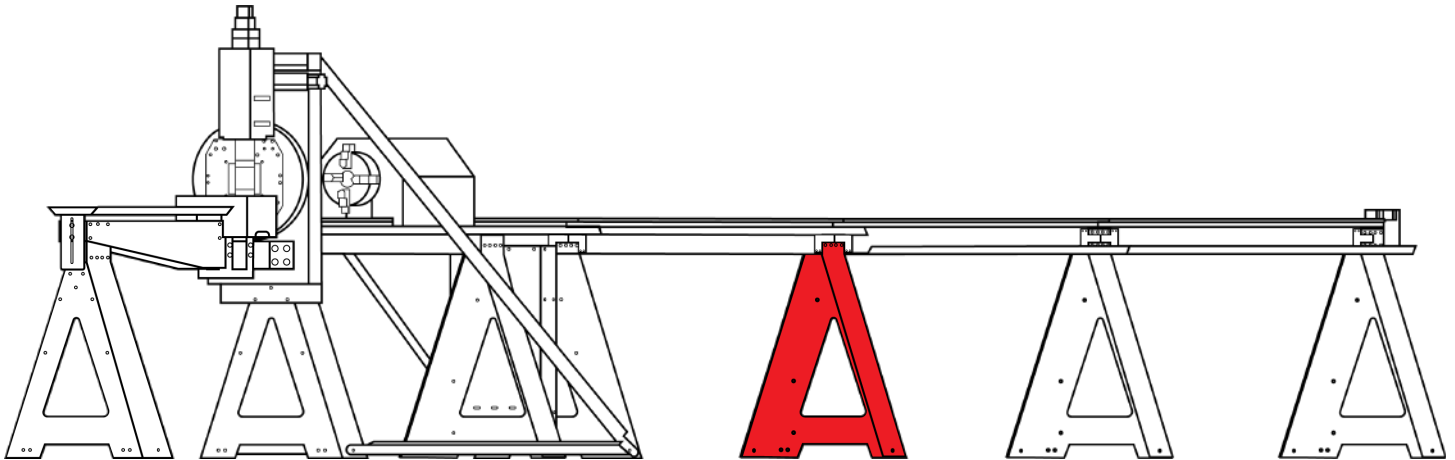
#### 3.4.2 Install Cable Track Tray #1

Locate the Cable Track Tray labeled #1. Align the Cable Track Tray #1 with the top mounting holes in the cable track tray brackets. Insert four 1/4-20 x 0.5" button head screws. Use a 5/32" Allen wrench to tighten. Tray #1 acts as a cover, so the 45-degree flange should be pointed down.



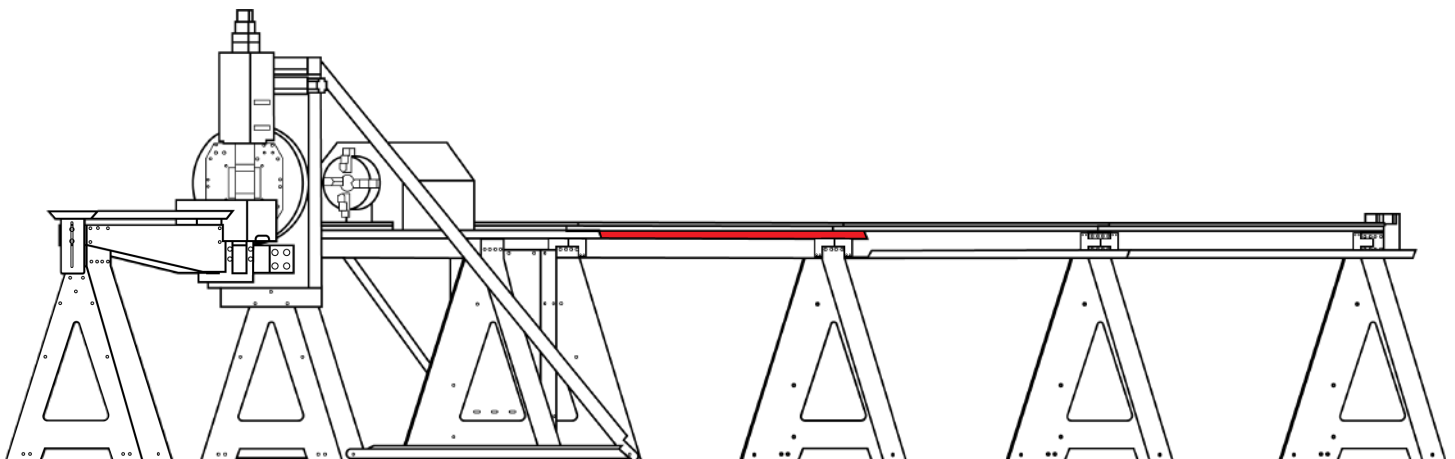
### 3.4.3 Position Leg #4

Ensure the Swivel Levelers are installed onto Support Leg #4. Place it in the approximate position in relation to the Head and Tail of the machine. Leg #4 will not stand freely; make sure it is supported until cable track tray #2 is installed.



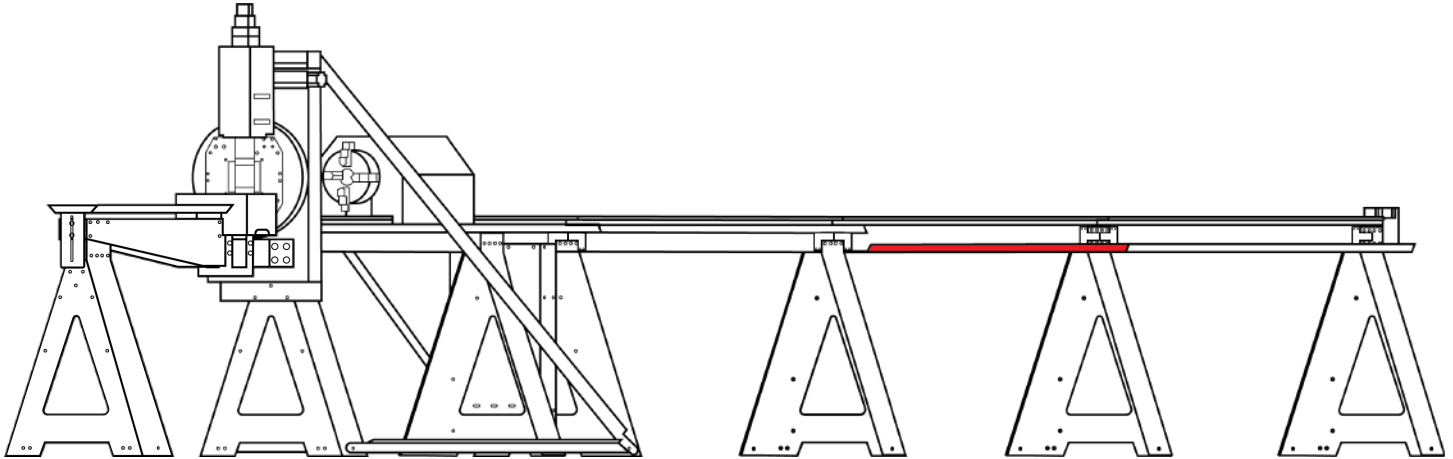
### 3.4.4 Install Cable Track #2

Locate the Cable Track Tray labeled #2. Align Cable Track Tray #2 with the top mounting holes in the cable track tray brackets. Insert four 1/4-20 x 0.5" button head screws. Use a 5/32" Allen wrench to tighten. Tray #2 acts as a cover, so the 45-degree flange should be pointed down.



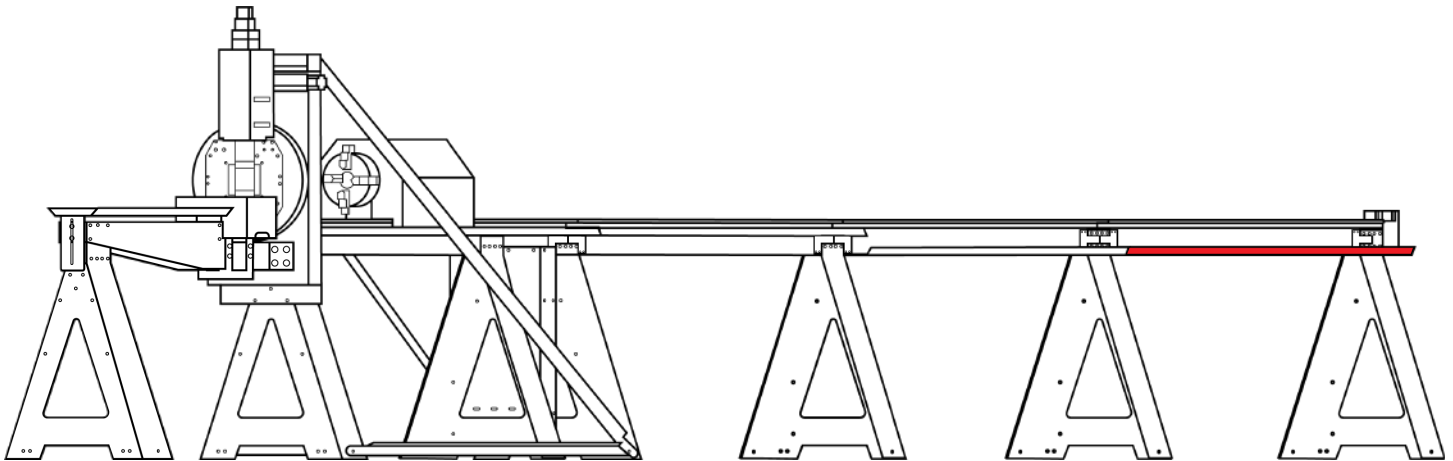
### 3.4.5 Install Cable Track Tray #3

Set the Tail section of the machine into position. Locate the Cable Track Tray labeled #3 and align it with the bottom mounting holes in the brackets. Install the tray so that the 45-degree flange is pointing up. Insert four 1/4-20 x 0.5" button head screws. Use a 5/32" Allen wrench to tighten.



### 3.4.6 Install Cable Track Tray #4

Locate the Cable Track Tray labeled #4 and align it with the bottom mounting holes in the brackets. Install the tray so that the 45-degree flange is pointing up. Insert four 1/4-20 x 0.5" button head screws. Use a 5/32" Allen wrench to tighten.

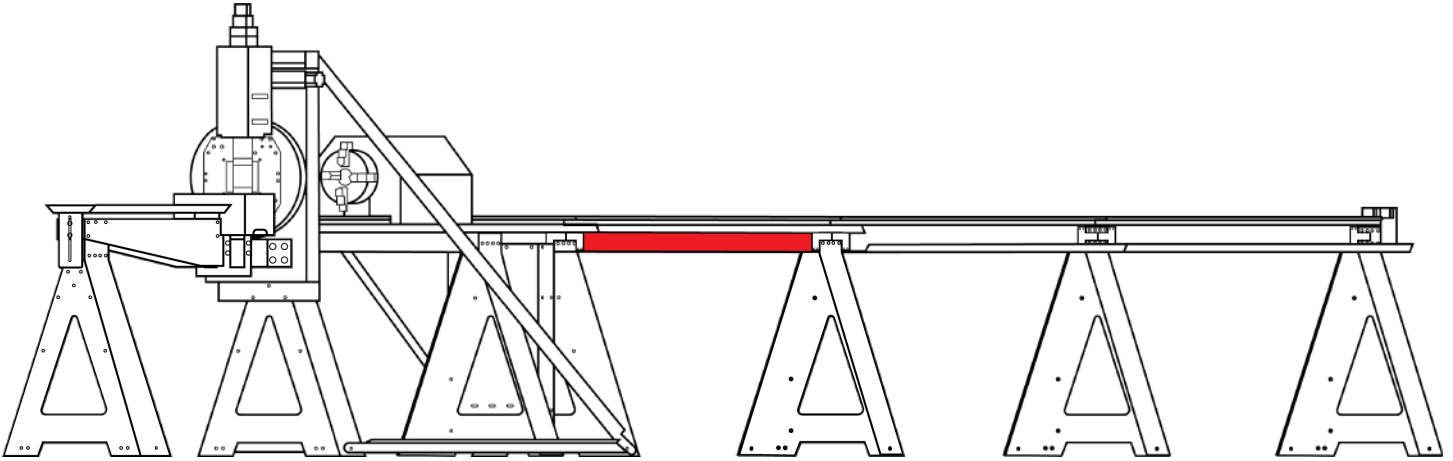


### 3.4.7 Unfasten the Tail Support Beam

Unfasten the bolts securing the Tail Support Beam to Legs #5 and #6 using a 3/16" Allen wrench. Slide the Support beam back and support it or set it aside. Do not lose the T-Nuts. They will be needed later to resecure the beam.

### 3.4.8 Install the Support Beams and Racks

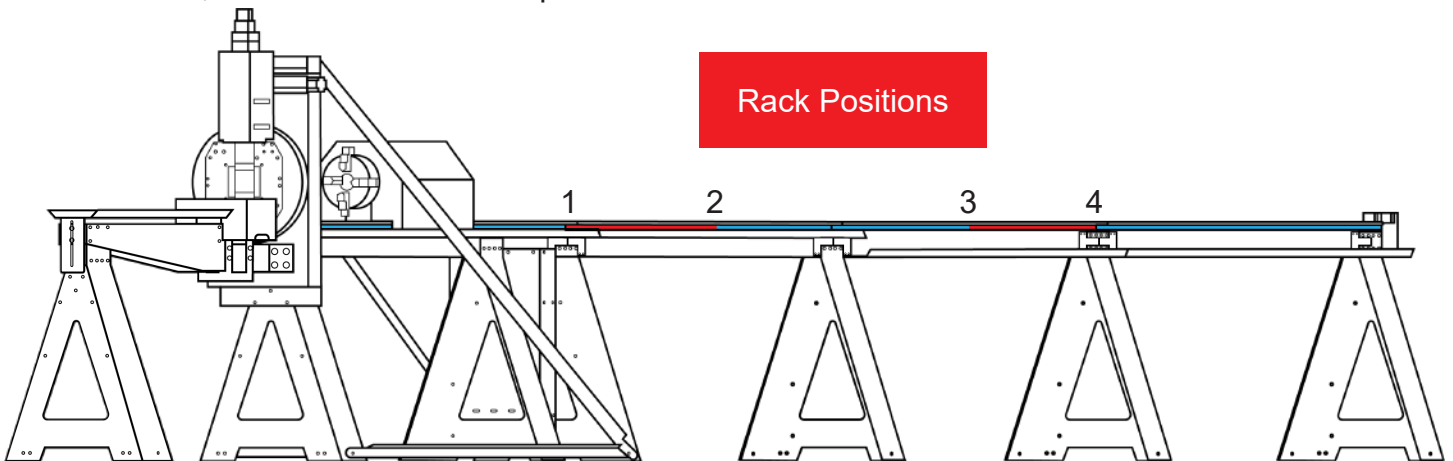
Set Support Beam #2 (labeled 3 on one end and 4 on the other end) into place. Align the end labeled 3 with the support beam section at the head of the machine. This should also align with leg #3.



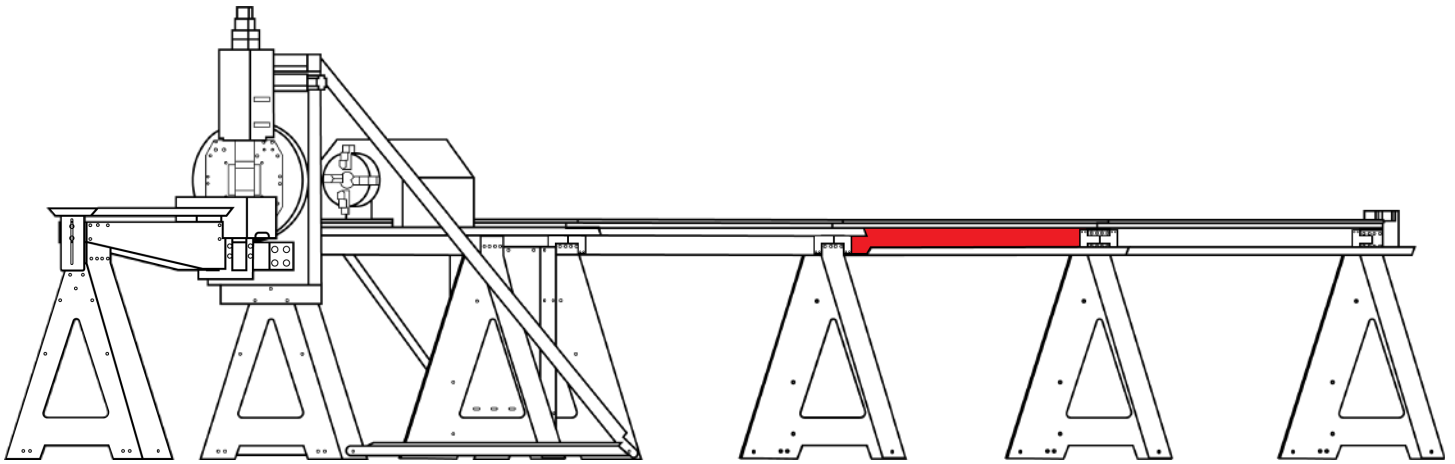
#### Note

*The support beams have alignment pins that need to be aligned correctly. A rubber mallet may be needed to set the beams flush against the previous beam.*

Next, slide Rack #2 into place. Butt the end labeled 1 against the rack installed in the head section, with the end labeled 2 positioned towards the tail of the machine.



Locate and set Support Beam #3 (labeled 4 on one end and 5 on the other) into place. Align the end labeled 4 against Support Beam #2.



Slide Rack #3 into position. Ensure the end labeled 2 matches up with the end of Rack #2. Next, slide Rack #4 into position. Ensure the end labeled 3 matches up with the end of Rack #3. Refer to the Rack Position image previously for reference.

Re-install the Tail Support Beam.

The 5th rack comes pre-installed on the Tail of the machine. Loosen the bolts fastening it to the support beam. Position it so that the rack butts up against the previous rack. Do not tighten the rack fasteners yet.

### Note

*During this process ensure that everything remains aligned and that all joints butt up as seamless as possible.*

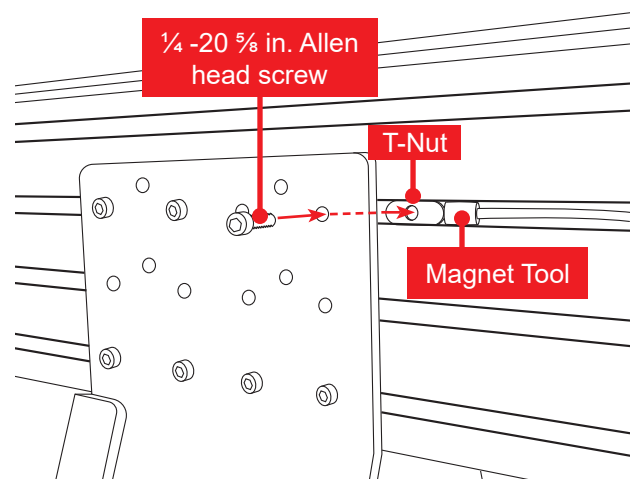
## 3.5 Securing the Support Beam

### 3.5.1 Secure the Support Legs

#### REQUIRED TOOLS & EQUIPMENT

- 3/16" Allen Wrench
- Magnetic Tool

Secure and tighten the Support Legs fasteners. The 1/4 - 20 x 5/8 in Allen head screws and T-nuts are located in Hardware Bag No. 1. Use the magnetic tool provided.



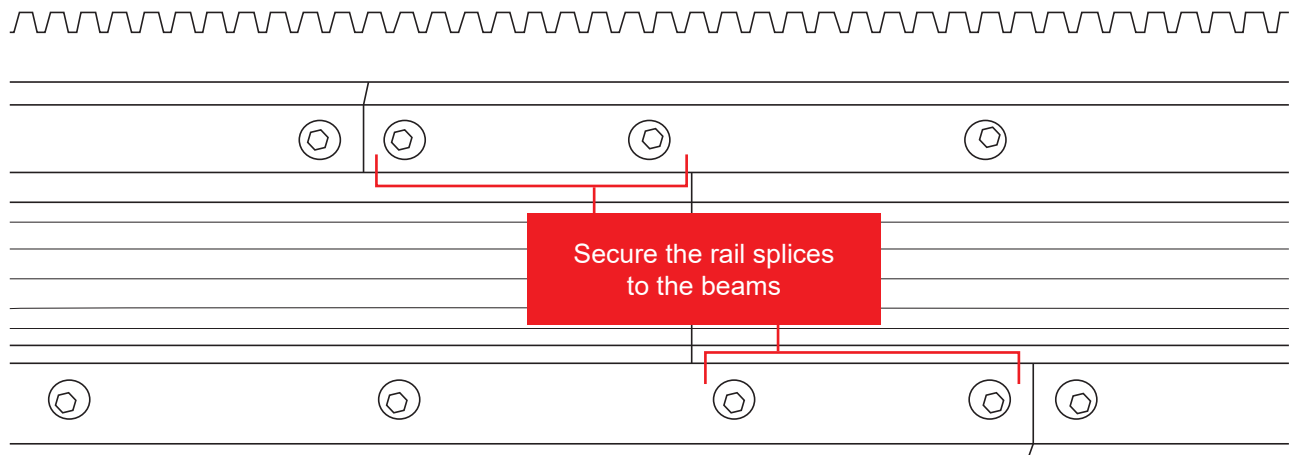
Slide the T-nut behind the Support Leg brace until it aligns with the mounting hole in the Support Leg. Insert the Allen head screw and thread it into the T-nut, using a 3/16" Allen wrench. Repeat this process for all eight fasteners on each side of the Support Legs. Eight screws per side per leg are required. Only use the top and bottom rows of holes. Leave the middle row empty as shown.

### 3.5.2 Secure the Rails

#### REQUIRED TOOLS & EQUIPMENT

- 1/8" Allen Wrench

The rail splices should be secured to the beams using the 1/8" Allen fasteners from Hardware Bag No. 3. They only need to be secured at the rail joints. There are four screws needed for each joint.



## Important

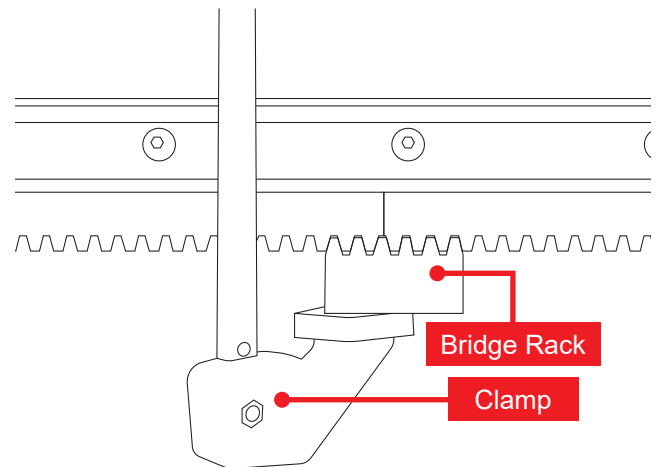
Aligning the Rail Splices and ensuring they are straight is critical to the Dragon A400 setup. Bend-Tech recommends experienced personnel perform the Rail Splice installation.

## 3.6 Setting the Rack Spacing

### REQUIRED TOOLS & EQUIPMENT

- 3/16" Allen Wrench
- Bridge Rack
- Clamp

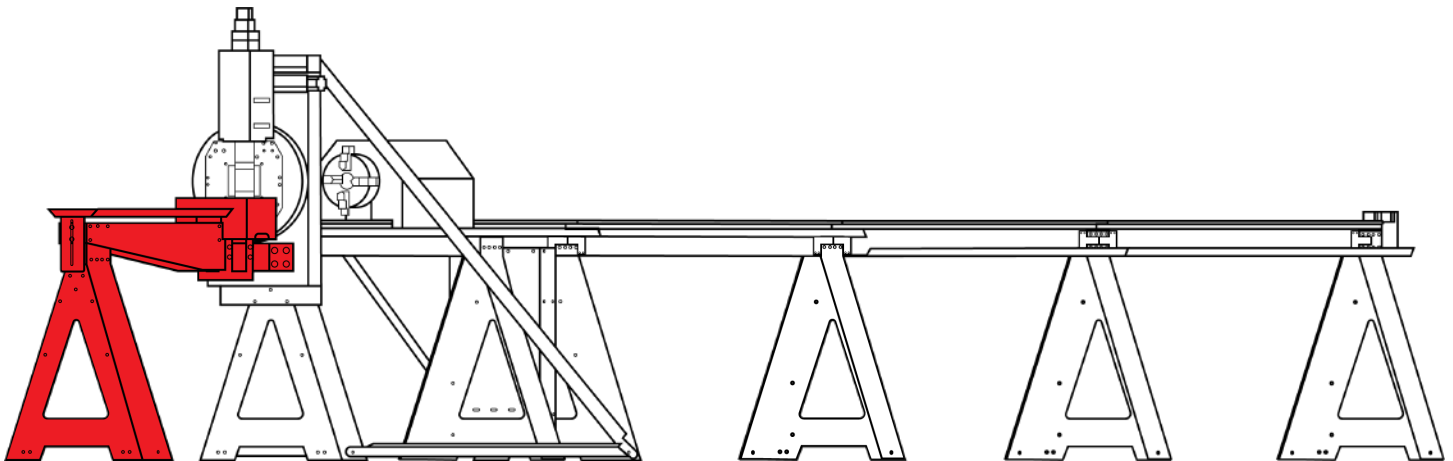
Use the bridge rack, which is located in the miscellaneous box, to set the spacing between the racks. Hold the bridge rack in place with a clamp to ensure proper spacing between racks while tightening the 3/16" Allen bolts. Additional clamps may need to be used to hold the rack in place when aligning it.



## 3.7 Installing the Parts Catcher

### REQUIRED TOOLS & EQUIPMENT

- Drill with 9/16" Socket
- 5/16" Allen Wrench



The Parts Catcher, also called the Beak, prevents parts that have been cut by the machine from falling to the ground, and possibly being damaged or causing injury. It is assembled from three sections, the catcher, leg, and parts bin.

The catcher is placed on end, inside the crate, alongside the head of the machine. This part of the assembly should have been removed from the crate prior to moving the head of the machine. Before installing the catcher ensure the last remaining Support Leg is fitted with Swivel Levelers.

Place the catcher at the front of the machine and attach it to the head using the 1 ½ in. bolts from Hardware Bag No. 2 and tighten with a 9/16" socket. Machines equipped with a standard gate require 4 bolts per side, while machines equipped with a powered gate only require 3 bolts per side. The top bolts nearest the gate are not installed. Once secured to the head, slide the Support Leg under the other end of the catcher. Secure the Support Leg with the 5/8" long Allen head screws from Hardware Bag No. 2, and tighten with a 5/16" Allen wrench.

Place the parts bin just in front of the gate in the provided space. The parts bin can be found in the Miscellaneous Box.

### Note

*Water can be added to the Parts Bin to help cool drop parts during production.*

## Important

Shorter machines will have a different configuration of beams and racks. Use the numbers on the beams, racks, and other components to assemble the machine in the correct order.



# Leveling and Alignment

## 4.1 Leveling and Alignment Overview

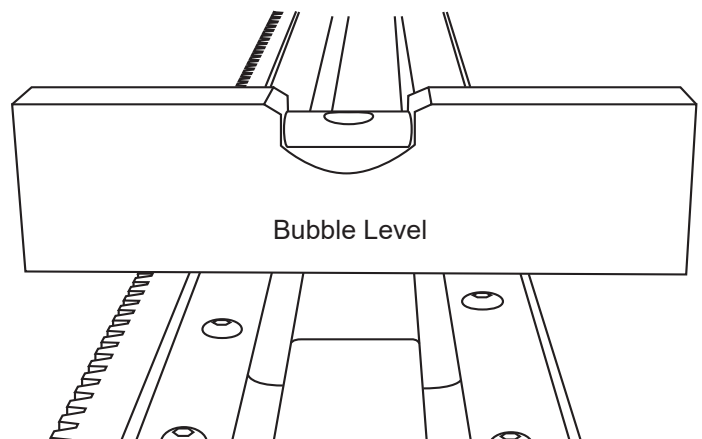
Ensuring the Dragon A400 is straight and level is the most critical part of machine assembly. Many operational difficulties can be traced back to improper machine installation, and the majority of installation issues center around the machine not being true. This process is also covered in the A400 Startup Manual.

### Tools Needed

- Level
- 9/16" wrench
- 5/8" wrench

### 4.1.1 Checking Support Beam Level

Each Support Beam section should be checked for level side-to-side and lengthwise using a bubble level. If the Support Beam needs to be adjusted, use the Swivel Levelers to adjust machine level. The Swivel Levelers should be installed upon assembly.



### 4.1.2 Adjusting Swivel Levelers

To adjust the Swivel Levelers, use a  $\frac{9}{16}$  in. wrench to loosen the jam nut and ensure it is backed off to the base of the Swivel Leveler. Place a  $\frac{5}{8}$  in. wrench on the hex adjustment at the base of the Swivel Leveler. When viewing from above, turn clockwise to raise the leg, turn counterclockwise to lower the leg.

## 4.2 Straightening the Dragon A400

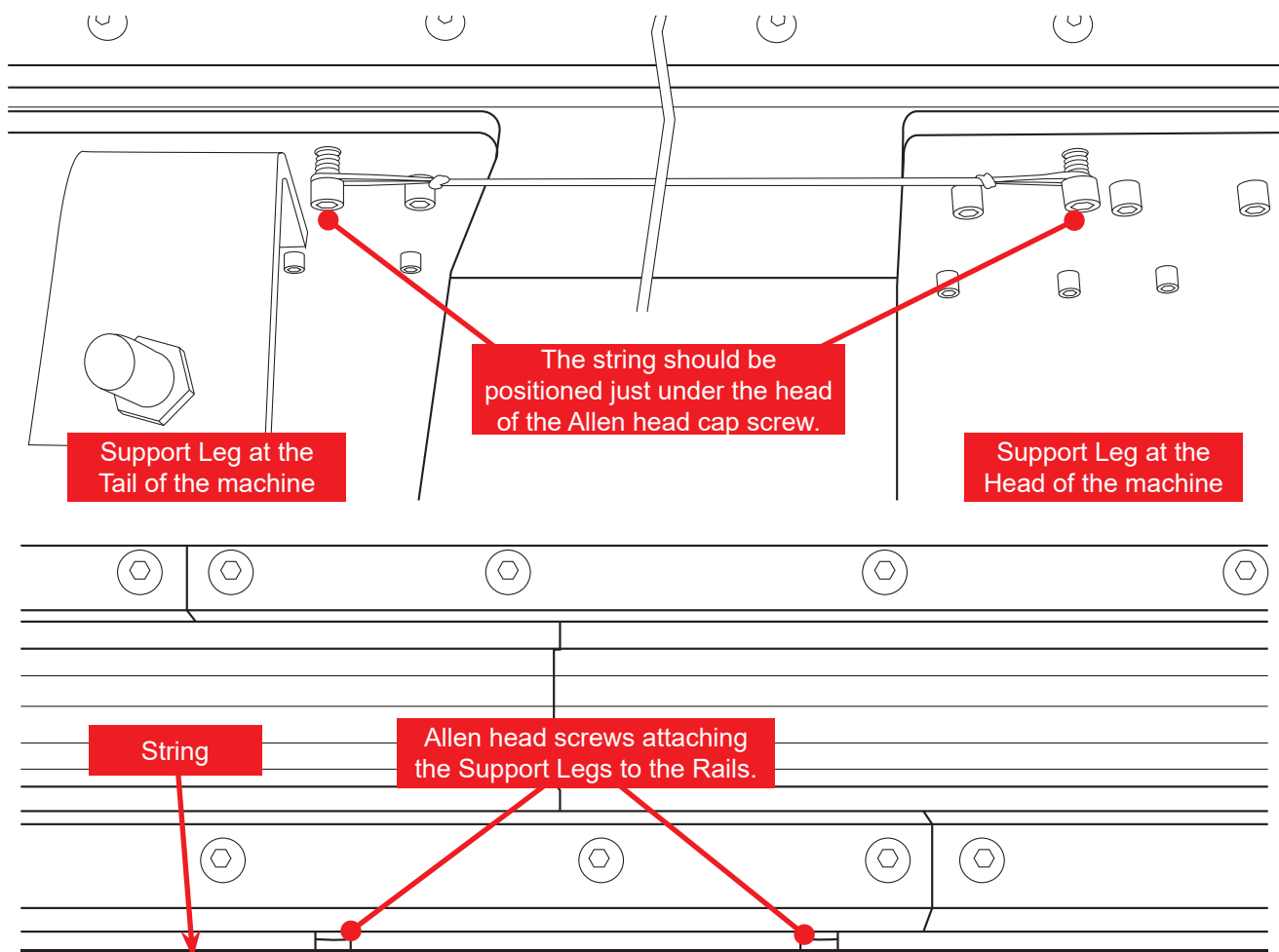
Ensuring the Dragon A400 is straight is one of the most important steps in preparing the machine for operation. Bend-Tech has found the simplest way to determine if the machine is straight, is to use a length of string. The string used during assembly at the Bend-Tech facility has been provided with the machine. Follow the instructions regarding its use to ensure the machine is straight.

The machine will come with an Allen head cap screw pre-installed on the Support Leg at the Head of the machine and on the rearmost Support Leg at the Tail of the machine. The string has been provided in the Misc. Box.

### 4.2.1 Checking the Straightness

Hook the loops of the string around the Allen head cap screws at the front and rear of the machine. Ensure the string is positioned just under the head of the Allen head cap screw.

With the string installed, verify it is even with the tops of the Allen head cap screws installed in each of the Support Legs. The string should be flush with the top of each fastener along the length of the machine, as pictured.



# 05

## *Mounting to the Floor*

### 5.1 Mounting Overview

---

To maintain long-term precision of the Dragon A400, Bend-Tech recommends mounting the machine to the floor of the shop. A machine not securely mounted to the floor can result in inconsistent operation.

#### **Tools Needed**

- 7/16" Concrete Bit
- 3 in. long, 3/8" concrete anchor sleeves (14)
- Hammer Drill
- Hammer
- 1/2" Socket
- Torque Wrench
- Shop Vac or Compressed Air

#### 5.1.1 Concrete Sleeve Anchors

Bend-Tech requires  $\frac{3}{8}$  in. diameter, 3 in. long concrete sleeve anchors to mount the Dragon A400 to the floor. Installing the concrete sleeve anchors will require a  $\frac{7}{16}$  in. concrete drill bit. One concrete sleeve anchor per Floor Bracket is sufficient for anchoring the Dragon A400. Installing concrete sleeve anchors requires the use of a hammer drill.

## 5.3 Preparing the Floor Brackets

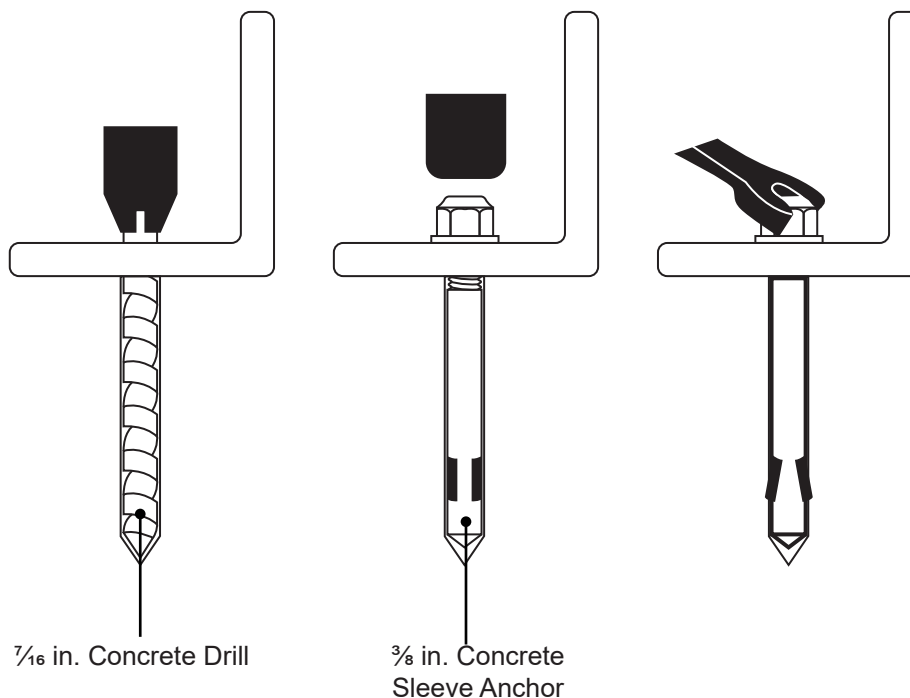
With the machine level and true, loosen the Floor Brackets on the Support Legs so they are snug, but can be lowered to the surface of the floor. Use a marker or pencil to mark the floor where the concrete sleeve anchor will be placed.

Remove the Floor Brackets from the machine. Removing the Floor Brackets makes it easier to drill the holes for the concrete sleeve anchors.

Drill the holes to the depth specified by the concrete sleeve anchor manufacturer. Once holes are drilled, clean the holes out with a vacuum or compressed air. Re-install the Floor Brackets on the machine. Do not tighten the Floor Brackets onto the Support Legs at this time. Ensure the Floor Brackets are snug to the Support Leg, but that they are still able to be adjusted.

## 5.4 Installing Concrete Sleeve Anchors

With the Floor Bracket snug on the Support Legs but still adjustable, line up the hole in the Floor Bracket with the hole drilled in the concrete. Insert a concrete anchor into the hole. Tap the concrete anchor into place lightly with a hammer, ensuring the Floor Bracket is flush with the floor and the concrete sleeve anchor is snug to the Floor Bracket. Tighten the concrete sleeve anchor nut with fingers. Using a  $\frac{1}{2}$  in. socket and torque wrench, torque to manufacturer specs (typically 8 ft. lbs. for  $\frac{3}{8}$  in. concrete sleeve anchor). Tighten the Floor Bracket to the Support Leg.



# Cables and Control Box

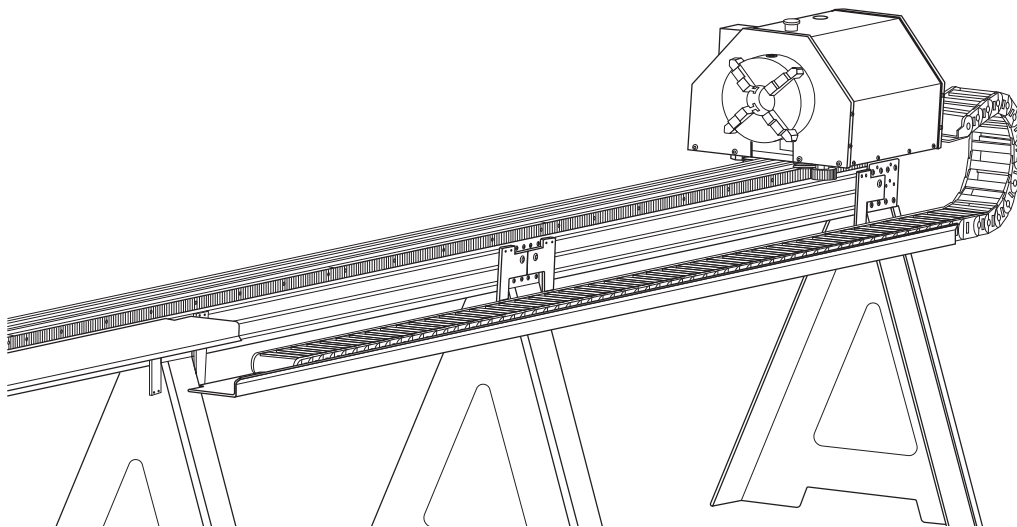
## 6.1 Preparing Cable Track

---

### Note

*Only after the Dragon is assembled, leveled, and secured to the floor should the shrink wrap be carefully removed from the Head of the machine and Cable Track.*

Remove the shrink wrap and unroll the Cable Track onto the Cable Track Tray.

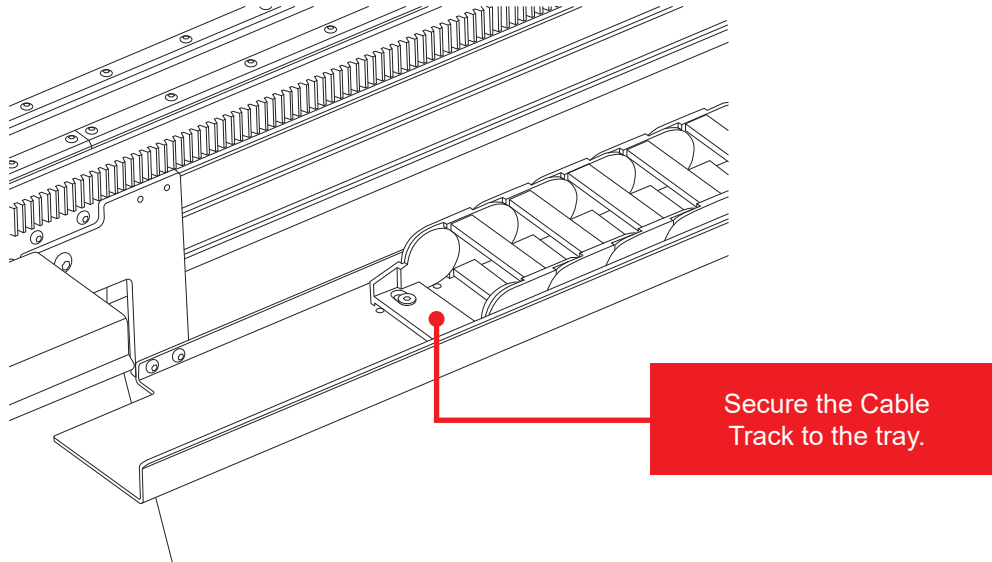


## 6.2 Installing the Cable Track

### Tools Needed

- 5/32" Allen wrench

Align the Cable Track over the slotted holes and secure using two 1/4-20 x 7/8" FHCS and two 1/4-20 Lock Nuts.



### Note

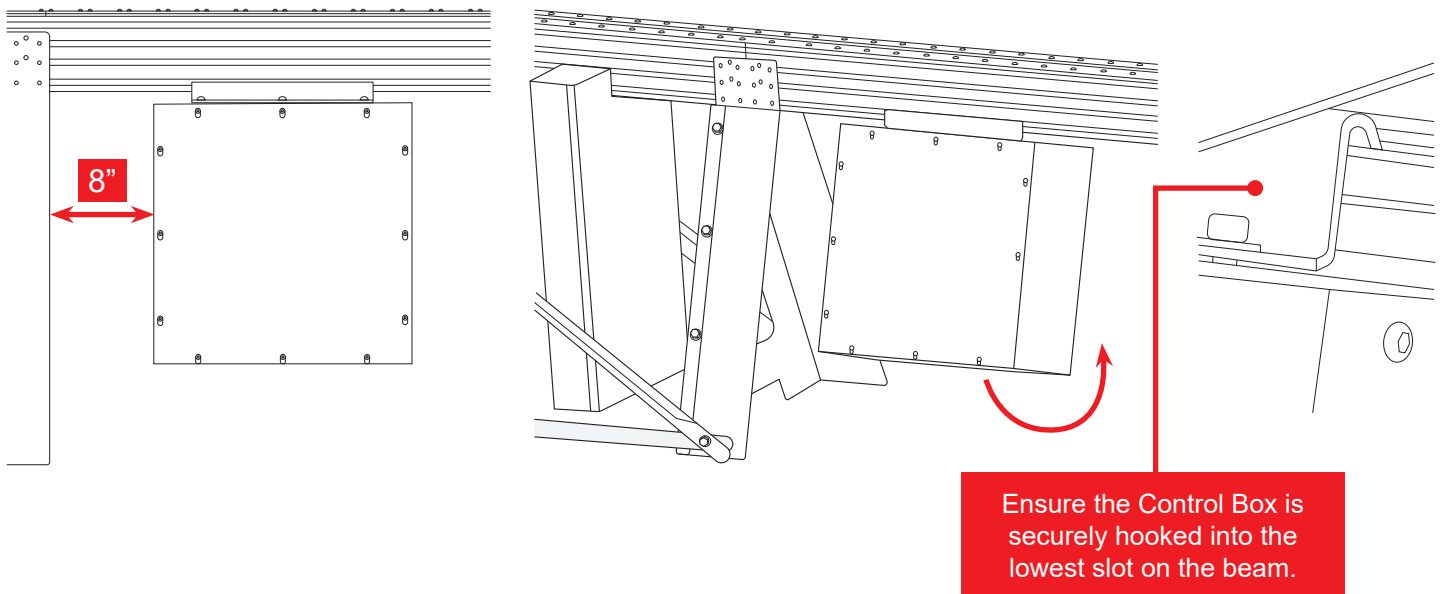
*You may need to run the track back and forth a few times and adjust the mounting position for it to track properly.*

## 6.4 Installing the Control Box

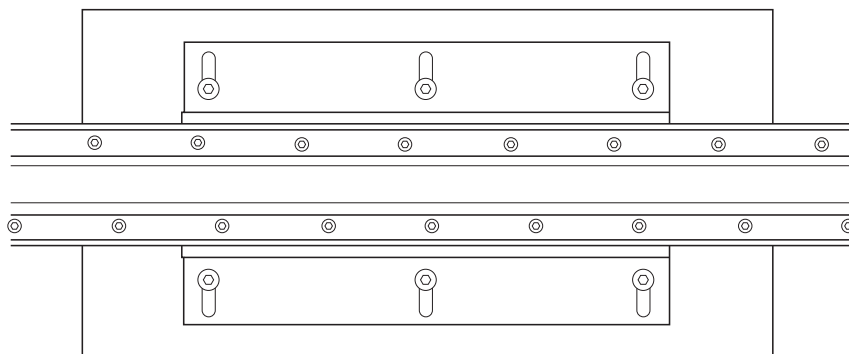
### Tools Needed

- 3/16" Allen wrench

Position the Control Box in place by inserting one side of the bracket into the bottom beam slot and then the other side. The Control Box should be positioned 8-inches behind Support Leg #3. Ensure the FRONT of the Control Box is facing the head of the machine.



Push the bracket sides into the beam so they are secure in the lowest slot on the beam. Tighten the six bolts with a 3/16" Allen wrench.



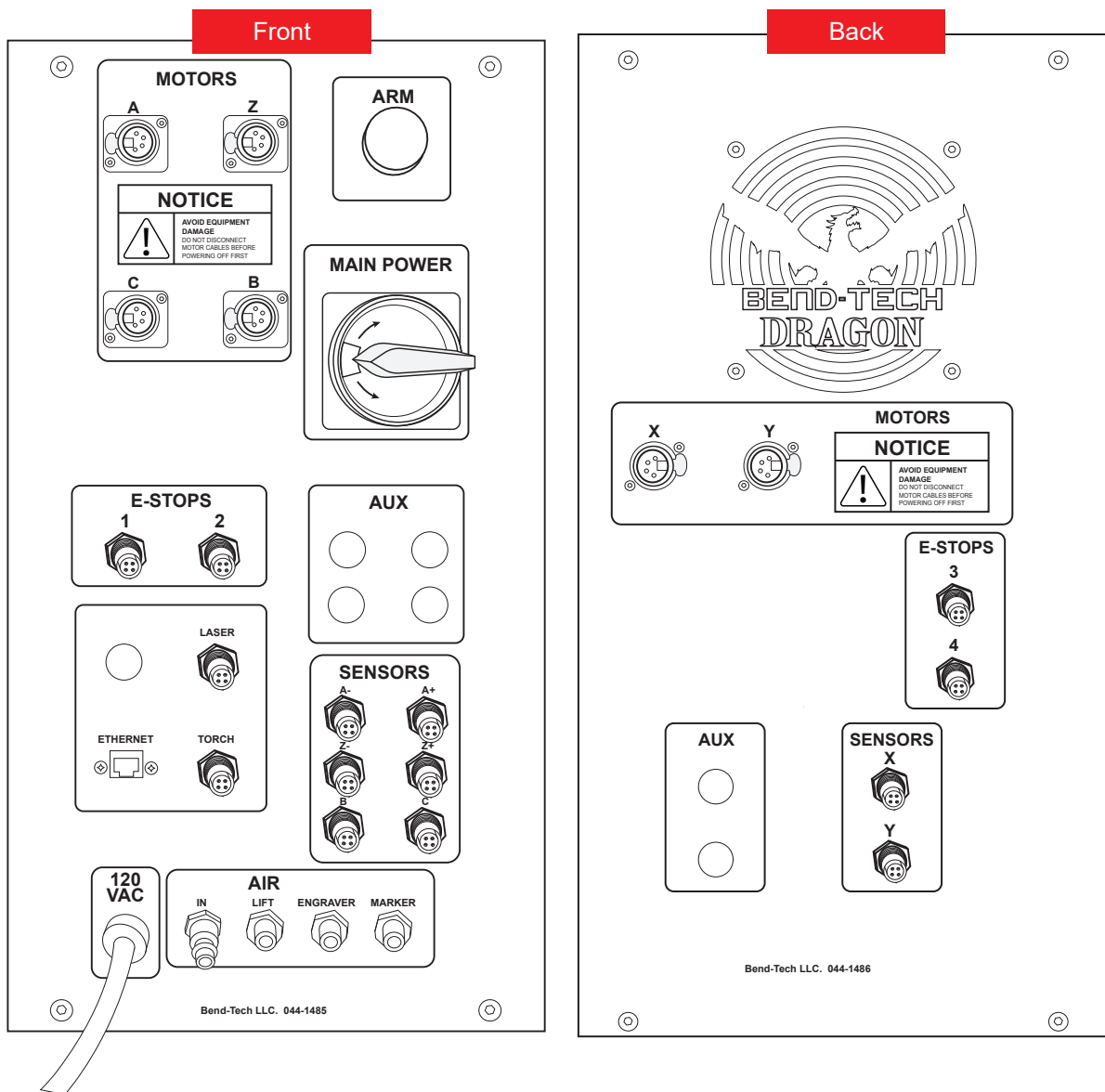
## 6.5 Connecting the Cables

# ! Warning !



Ensure the machine is disconnected from power and the Main Power Switch is off before connecting the cables to the Control Box.

Connect all the cables to the Control Box. The cables are labeled. Ensure that they are connected to the matching label on the Control Box.



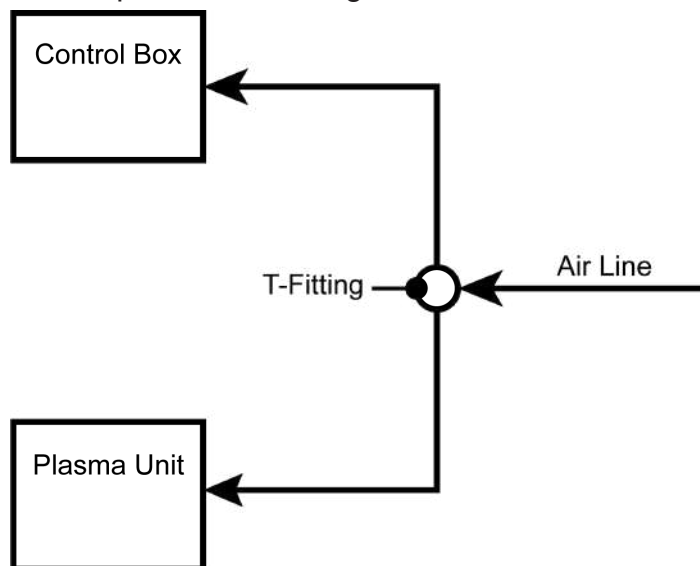


# 07

## Air Line

### 7.1 Air Line Connection Overview

The Dragon A400 requires two air line feeds. One air line is connected to the air inlet on the Control Box. A second air line is connected to the Plasma Unit. It is recommended that the air supply to the Dragon A400 be equipped with an air water separator and filter. If compressed air is used, a single air line split with a T-fitting can be utilized instead of two separate air lines.



### Important

A direct air line connection to the Plasma Unit is needed when Nitrogen is used as the operating gas.

# 08

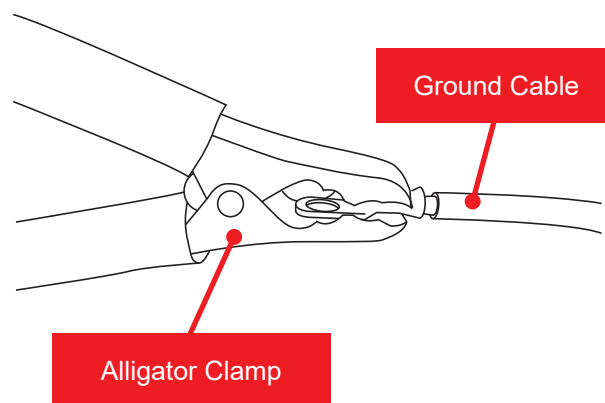
## Torch

### 8.1 Torch Cable

The Installer should have attached the Torch Cable to the Control Box as outlined in Chapter 6. Connect the loose end of the Torch Cable to the power cable connection on the Plasma Unit.

#### 8.1.1 Torch Ground

Connect the alligator clamp from the Plasma Unit to the ground cable on the Dragon A400.



#### Note

*Bend-Tech recommends attaching the ground cables together with a bolt.*

## 8.2 Installing the Torch Wand

The Torch is mounted to the Toolhead using two mounting collars. For the initial install, the Torch should only be secured in the top collar until the Torch Mount Procedure can be completed. The Torch Mount Instructions are located in the Dragon A400 Startup Manual.

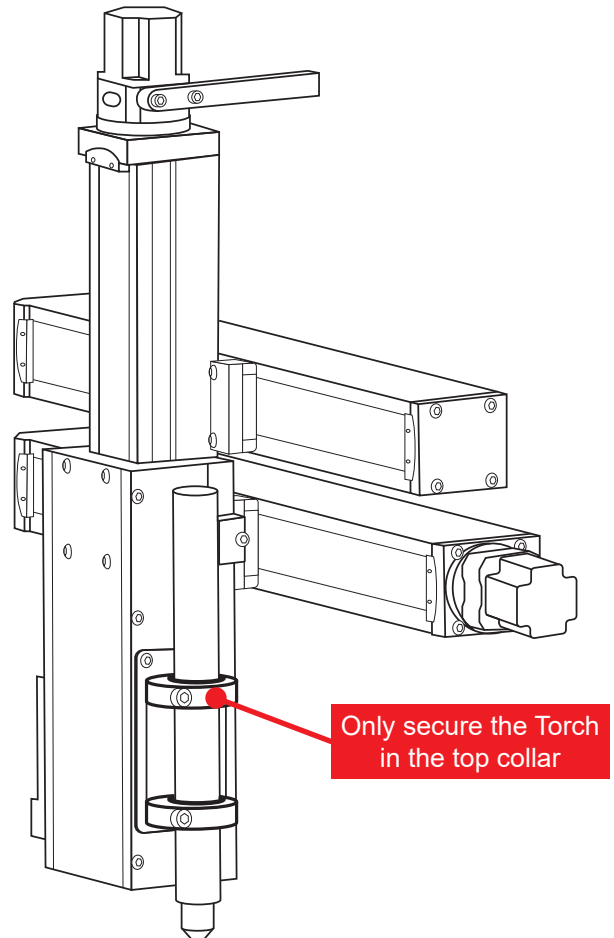
Loosen the adjustment screws in the top collar using a  $\frac{3}{16}$  in. Allen wrench. Slide the Torch into the collar from above, with the tip of the Torch pointing down.

When the ceramic body of the Torch is nearly touching the bottom collar, hold the Torch in place and tighten the top collar securely by hand. Do not install the Torch in the bottom collar at this time.

This is in reference to the Hypertherm Torch Wand, if a different Plasma Unit and Torch are used, this setup may differ. Refer to any documentation provided for the specific plasma unit and torch that came with the machine.

### Tools Needed

- 3/16" Allen wrench
- Flathead screwdriver

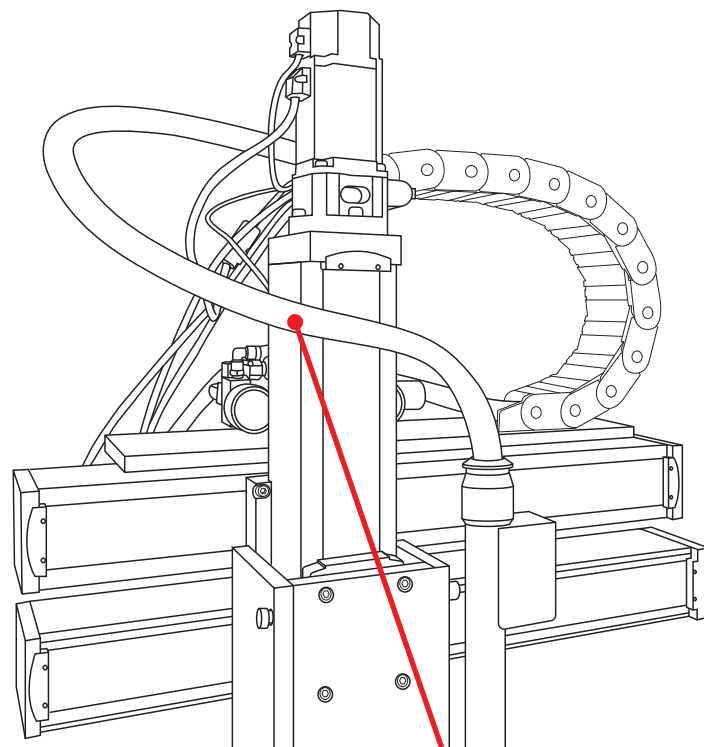


## 8.3 Routing the Torch Lead

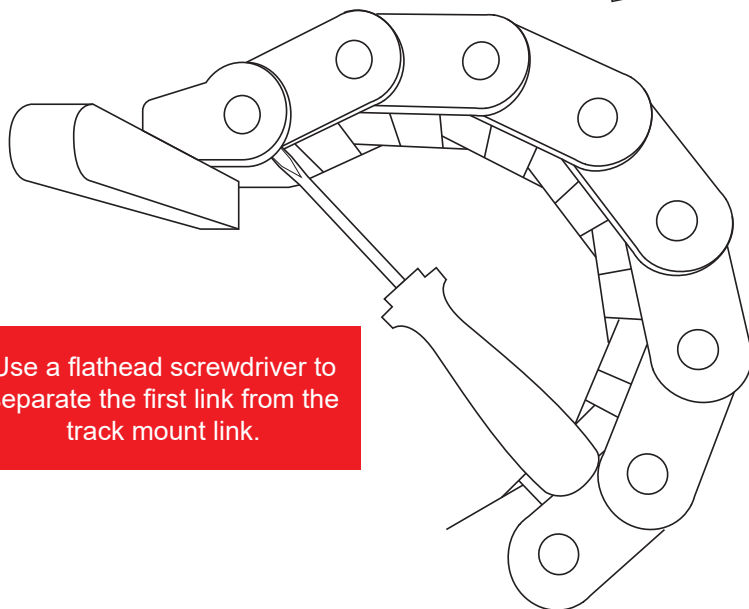
When mounting the Torch Wand on the Toolhead, Bend-Tech recommends routing the Torch Lead through the toolhead cable track. Routing it into the top opening and out the lower opening as shown.

To do this, find the gap between the mounting piece and the first link of the cable track chain. Insert a flathead screwdriver and carefully twist to separate the links.

Do this on both sides and pull back to fully separate and create enough clearance to route the plasma cable through.



Ensure the Torch Lead is routed into the top of the toolhead cable track and out the bottom section.



Use a flathead screwdriver to separate the first link from the track mount link.

### ! Caution !

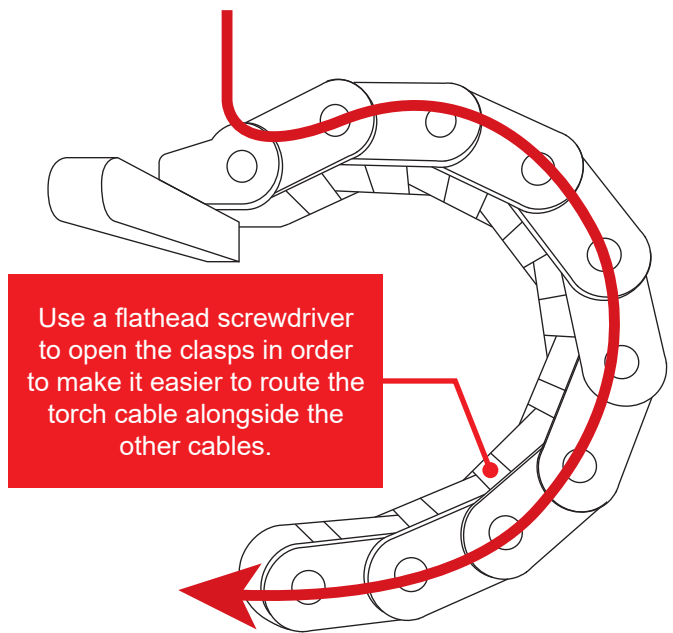


Separating the links can cause damage to the cable track if not done carefully. Take care to separate the links so the cable track is not damaged.

Follow the curve as shown when inserting the cable through the cable track.

Insert the end of the flathead screwdriver into the tab at one end of the clasp. Push down on the handle of the screw driver to free the clasp. This provides access and makes it easier to route the torch cable along side the other cables.

Once the torch cable is routes through the cable track, resecure the clasps and reconnect the upper links that were loosened. Route and secure the torch cable and the remaining cables out of the way of any moving parts.



## Important

Running the Torch Mount utility is required before the Dragon Machine is ready for operation. This utility is used to set the torch operating height. The Torch Mount procedure is outlined in the A400 Startup Manual Part 3.

## Important

For any questions or concerns regarding the assembly of the Dragon machine or installation of any of the Dragon components, contact Bend-Tech support at 1-651-257-8715 or [support@Bend-Tech.com](mailto:support@Bend-Tech.com).



Video gallery

## Powermax85 SYNC plasma cutter

The Powermax85 SYNC<sup>®</sup> is a next-generation professional grade air plasma cutter that dramatically simplifies system operation for gouging and recommended cutting up to 25 mm (1"). Features automated system process set-up via advanced RFID-enabled SmartSYNC<sup>®</sup> torches and a revolutionary single-piece cartridge consumable that provides trackable utilization data. The Powermax85 SYNC maximizes productivity through reductions in downtime, optimized cut quality performance and streamlined consumable inventory management.

**WHERE TO BUY**

**REQUEST A QUOTE (/EN-US/CONTACT-US/?FORM=REQUEST-A-QUOTE&PRODUCT=POWERMAX85+SYNC)**

(/en-  
US/solutions/about-  
our-  
MENU



**WHERE TO BUY**

products/powermax-  
plasma-cutting-  
and-gouging-  
systems/powermax-  
system-  
comparison/)

# System information

Applications

Benefits

Specifications

Cut capacity

Capacity	Thickness	Cut speed
Recommended	25 mm (1")	500 mm/min (20 ipm)
	32 mm (1-1/4")	250 mm/min (10 ipm)
Severance (hand cutting)	38 mm (1-1/2")	125 mm/min (5 ipm)
Pierce*	20 mm (3/4")	

*\*Pierce rating for handheld cutting, or mechanized cutting with programmable torch height control.*

Maximum removal gouging

Capacity	Metal removal rate	Gouge profile
Typical gouge	8.2 kg (18.2 lbs.) per hour	3.5 mm D x 6.6 mm W (0.14" D x 0.26" W)

General specifications  
MENU



WHERE TO BUY

<b>Input voltages</b>	200–480 V, 1-PH, 50/60 Hz 200–600 V, 3-PH, 50/60 Hz
<b>Kilowatt output</b>	12.2 kW
<b>Input current</b>	200/208/240/480, 1-PH 70/68/58/29 A @ 12.2 kW 200/208/240/480/600 V, 3-PH 42/40/35/18/17 A @ 12.2 KW
<b>Output current</b>	25–85 A
<b>Rated output voltage</b>	143 VDC
<b>Duty cycle @ 104° F</b>	60% @ 85 A, 230–600 V, 3-PH 60% @ 85 A, 480 V, 1-PH 50% @ 85 A 240 V, 1-PH 50% @ 85 A, 200–208 V, 3-PH 40% @ 85 A, 200–208 V, 1-PH 100% @ 66 A, 230–600 V, 1/3-PH
<b>Open circuit voltage (OCV)</b>	305 VDC
<b>Dimensions with handles</b>	483 mm D; 233 mm W; 430 mm H (19" D; 9.2" W; 17" H)
<b>Weight w/7.6 m (25') torch</b>	32 kg (67 lbs.)
<b>Gas supply</b>	Clean, dry, oil-free air or nitrogen
<b>Optimum inlet gas pressure</b>	7.6–8.3 bar (110–120 psi)
<b>Minimum inlet gas pressure</b>	5.2 bar (75 psi)
<b>Recommended inlet gas flow rate</b>	Cutting: 210 l/min @ 5.9 bar (450 scfh, 7.5 scfm @ 85 psi) Gouging: 210 l/min @ 4.8 bar (450 scfh, 7.5 scfm @ 70 psi)
<b>Input power cable length</b>	3 m (10')
<b>Power supply type</b>	Inverter–IGBT
<b>Engine drive requirement</b>	20 kW for full 85 A output
<b>Certifications</b>	CSA-certified for use in the Americas and Asia, except China
<b>Warranty</b>	Power supplies have a 3-year warranty and torches a 1-year warranty





# Torches and consumables

## SmartSYNC torches



SmartSYNC torches (</en-US/hypertherm/powermax/smartsync/>) feature RFID capability that when coupled with a Hypertherm cartridge will communicate with a Powermax SYNC system to automatically set the amperage and process on the power supply. Available in handheld, mechanized and robotic torch configurations.

	Hand torches		Machine torches	Robotic/Mini		
	75°	15°	180°	180°	90°	45°
4.5 m (15')				059733		
7.6 m (25')	059726	059723	059719	059734	059731	059729
10.7 m (35')			059720			
15.2 m (50')	059727	059724	059721	059735	059732	059730
22.8 m (75')	059728	059725	059722		059767	059766

**MENU**



**WHERE TO BUY**

	Long torches			
	0.6 m (2'), 45°	0.6 m (2'), 90°	1.2 m (4'), 45°	1.2 m (4'), 90°
4.5 m (15')				
7.6 m (25')			528114	
10.7 m (35')				
15.2 m (50')	528116	528117	528118	528119
22.8 m (75')				

## Hypertherm cartridges

The Hypertherm cartridge consumable platform (</en-US/solutions/consumables-and-torches/for-powermax-and-max-systems/hypertherm-cartridges/>) is a revolutionary change to standard air plasma consumables. Each single-piece cartridge is optimized by process and amperage to ensure performance while dramatically simplifying the parts needed to cut or gouge with plasma.

Hypertherm cartridges for Powermax systems are manufactured to uphold our high standards for quality and reliability. As part of the manufacturing process, we test-fire each cartridge to ensure proper assembly and function. As a result, there may be burn marks on the tip of the cartridge. This is normal and not a sign of damage.

**Drag cutting and FineCut for hand torches**

**Mechanized and FineCut for machine torches**

**Max removal and max control gouging**

**FlushCut options**

---

**Related products**



**WHERE TO BUY**



(/en-US/hypertherm/powermax/powermax65-sync/)

### **Powermax65 SYNC plasma cutter (/en-US/hypertherm/powermax/powermax65-sync/)**

Professional-grade 20 mm (3/4") plasma cutter provides automated process set-up and a revolutionary cartridge consumable platform for ease of use and optimized performance. Featuring a wide variety of torches and application capabilities for handheld and mechanized cutting and gouging.



(/en-US/hypertherm/powermax/powermax105-sync/)

### **Powermax105 SYNC plasma cutter (/en-US/hypertherm/powermax/powermax105-sync/)**

Professional-grade 32 mm (1-1/4") plasma cutter provides automated process set-up and a revolutionary cartridge consumable platform for ease of use and optimized performance.



**Request a  
quote**

**(/en-US/contact-us/?form=request-a-  
quote&product=POWERMAX85+SYNC)**



**Contact  
sales**

**(/en-US/contact-us/?form=ask-a-product-  
question&product=POWERMAX85+SYNC)**



**Product  
support**

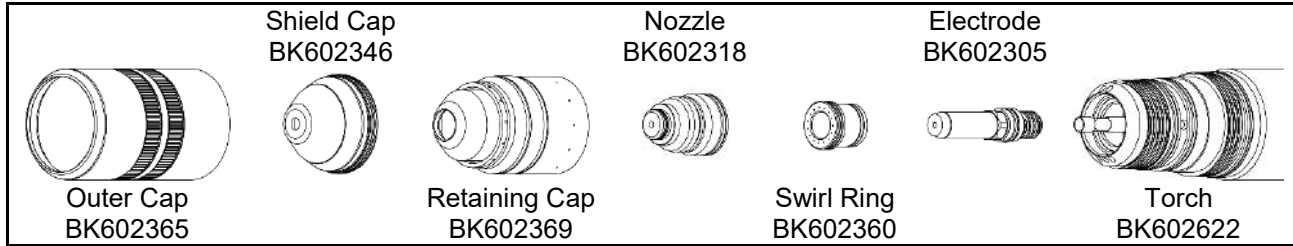
**(/en-US/resources/resources-by-product/?  
productcode=POWERMAX85+SYNC)**

**MENU**



**WHERE TO BUY**

**Mild Steel - 300 Amps - Oxygen Plasma / Air Shield**



**Imperial\***

Material Thickness (in)	Preflow (psi)	Plasma (psi)	Shield (psi)	Postflow (psi)	Arc Voltage (volts)	Travel Speed (ipm)	Cutting Height (in)	Pierce Height (in)	Pierce Time (msec)	Kerf Width (in)		
1/2	7	71	58	71	134	135	0.140	0.400	700	0.140		
5/8					130	115			900			
3/4					131	90			1000			
7/8		56	49	56	132	80	0.425	1200	1500	0.142		
1					133	70	0.450	1300				
1.25					140	50	0.175	0.650			1800	0.160
1.5					145	37	0.200	0.750			2500	0.170
1.75		56	44	56	150	30	0.250	0.850	3200	0.190		
2**					158	21	0.275	0.450	1500	0.205		
2.25**					163	16	0.300			0.217		
2.5**		168	12	0.325	0.240							
2.75**		174	8		0.245							
3**		180	6	0.325	0.450	1500	0.254					

**Metric\***

Material Thickness (mm)	Preflow (psi)	Plasma (psi)	Shield (psi)	Postflow (psi)	Arc Voltage (volts)	Travel Speed (mm/m)	Cutting Height (mm)	Pierce Height (mm)	Pierce Time (msec)	Kerf Width (mm)		
12	7	71	58	71	135	3541	3.6	10.2	656	3.6		
15					60	3061			845			
20					131	2210			1060			
25		56	55	56	133	1810	11.4	1287	1500	5.2		
30					138	1410	4.2	15.1			1662	3.9
35					143	1101	4.8	17.8			2158	4.2
40					146	887	5.5	19.8			2709	4.5
45		56	40	56	151	742	6.4	20.7	3053	4.9		
50**					157	562	6.9	11.4	1500	5.2		
60**					165	361	7.9			5.8		
70**		174	202	8.3	6.2							
75**		179	162		6.4							

\* Use an arc transfer height (ignition height) of .300" (7.6 mm) for cutting and .100" (2.5 mm) for marking.  
 \*\* Edge start recommended.

**APPROVAL DRAWING**

DATE ISSUED 5/17/23

THIS DRAWING HAS BEEN APPROVED AND ACCEPTED:

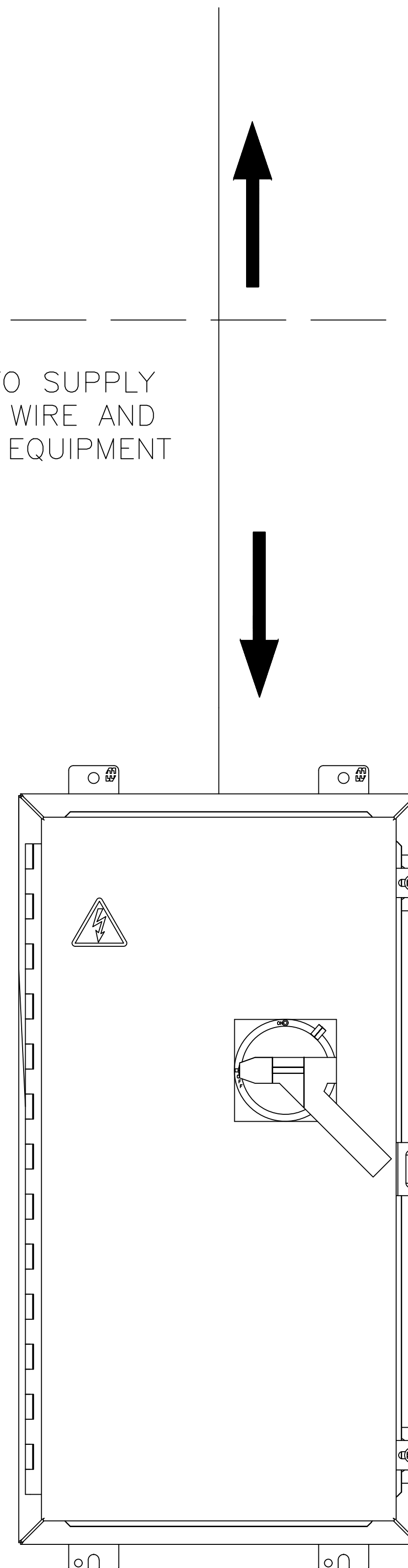
AS IS     AS NOTED

BY: ESume    DATE: 5/17/23

ADDITIONS OR CORRECTIONS AFTER APPROVAL  
WILL BE SUBJECT TO ADDITIONAL CHARGES.

SONNE STEEL INC  
TO SUPPLY 200 AMP MAIN POWER  
480V 60Hz 3 PHASE

BURLINGTON AUTOMATION TO SUPPLY  
MAIN DISTRIBUTION PANEL, WIRE AND  
CABLING TO ALL PYTHONX EQUIPMENT



REV.	DATE	DESCRIPTION	BY	IND
<p>DIMENSIONAL TOLERANCES, UNLESS OTHERWISE SPECIFIED</p> <p>X.Y = ± 1/16    X" = ± 1"    SURFACE 64    WELD ALL AROUND  X.XX = ± 0.01    X.X" = ± 0.1"    WELD SEE DIMS  X.XXX = ± 0.005    STD. TWIST DRILL # ± 0.005    THICKNESS OF  X.XXXX = ± 0.0005    REFERENCE DIMENSIONS CARRY IMPLIED TOLERANCE OF MATERIAL SPECIFIED    THINNESS OF  (X/Y) =    DO NOT SCALE DRAWING    NO MANUAL CHANGES    DIMENSIONS SHOWN IN</p> <p>ALL RIGHTS RESERVED. THIS DRAWING AND THE INFORMATION CONTAINED THEREIN IS CONFIDENTIAL AND THE PROPERTY OF BURLINGTON AUTOMATION. NO USE OR DISCLOSURE FOR REFERENCE OF THIS DRAWING OR THE INFORMATION CONTAINED THEREIN SHALL BE MADE WITHOUT THE WRITTEN PERMISSION OF BURLINGTON AUTOMATION CORPORATION.    BRACKETS ARE FOR REFERENCE ONLY (X.XX)</p> <p><b>PYTHONX</b>    BURLINGTON AUTOMATION CORPORATION    8 ENTERPRISE CRESCENT  WATERLOO, ONTARIO CANADA L8S 0Y2    TEL: (905) 689-7771    FAX: (905) 689-7773</p>				
MATERIAL			CUSTOMER: SONNE STEEL INC	
DRAWN TM	DATE 05/08/2023	ENGR: GP	PYTHONX-2 PLASMA SYSTEM ELECTRICAL REQUIREMENTS	
DRAWING FILE NAME				
DRAWING SCALE 1-1		WORK ORDER		
TOTAL QTY.	QUANTITY EACH	DRAWING NUMBER	REV.	
		C2311-569	0	



# Nitrogen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1980    Revision date: 07/13/2018    Supersedes: 10/21/2016

## SECTION 1: Product and company identification

### 1.1. Product identifier

Product form : Substance  
Trade name : Nitrogen, Medipure Nitrogen, Extendapak Nitrogen  
Chemical name : Nitrogen  
  
Formula : N<sub>2</sub>  
Other means of identification : Dinitrogen, Refrigerant R728, Nitrogen, Medipure Nitrogen, Extendapak Nitrogen, Nitrogen - Diving Grade

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Industrial use  
Medical applications.  
Food applications.  
Diving Gas (Underwater Breathing)

### 1.3. Details of the supplier of the safety data sheet

Holston Gases, Inc.  
545 W Baxter Ave.  
Knoxville, TN 37921 - USA  
T 1-865-573-1917 - F 1-865-573-0063  
[www.holstongases.com](http://www.holstongases.com)

### 1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week  
— Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887  
(collect calls accepted, Contract 17729)

## SECTION 2: Hazard identification

### 2.1. Classification of the substance or mixture

#### GHS-US classification

Press. Gas (Comp.) H280

### 2.2. Label elements

#### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS04

Signal word (GHS-US) :

Warning

Hazard statements (GHS-US) :

H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood.  
P271+P403 - Use and store only outdoors or in a well-ventilated place.  
CGA-PG05 - Use a back flow preventive device in the piping.  
CGA-PG10 - Use only with equipment rated for cylinder pressure.  
CGA-PG06 - Close valve after each use and when empty.  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).



# Nitrogen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1980    Revision date: 07/13/2018    Supersedes: 10/21/2016

## 2.3. Other hazards

No additional information available

## 2.4. Unknown acute toxicity (GHS US)

No data available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Name : Nitrogen, compressed

Name	Product identifier	%
Nitrogen		99.5 - 100

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

- First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.
- First-aid measures after skin contact : Adverse effects not expected from this product.
- First-aid measures after eye contact : Adverse effects not expected from this product. In case of eye irritation: Rinse immediately with plenty of water. Consult an ophthalmologist if irritation persists.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects, both acute and delayed

No additional information available

### 4.3. Indication of any immediate medical attention and special treatment needed

None.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

### 5.2. Special hazards arising from the substance or mixture

Reactivity : Under certain conditions, nitrogen can react violently with lithium, neodymium, titanium (above 1472°F/800°C), and magnesium to form nitrides. At high temperature, it can also combine with oxygen and hydrogen.

### 5.3. Advice for firefighters

- Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.
- Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.
- Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
- Stop flow of product if safe to do so.
- Use water spray or fog to knock down fire fumes if possible.





# Nitrogen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1980    Revision date: 07/13/2018    Supersedes: 10/21/2016

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

No additional information available

### 6.3. Methods and material for containment and cleaning up

No additional information available

### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

Safe use of the product : **The suitability of this product as a component in underwater breathing gas mixtures** is to be determined by or under the supervision of personnel experienced in the use of underwater breathing gas mixtures and familiar with the physiological effects, methods employed, frequency and duration of use, hazards, side effects, and precautions to be taken.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Nitrogen, compressed (7727-37-9)

ACGIH	Not established
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# Nitrogen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

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Nitrogen, compressed (7727-37-9)	
USA OSHA	Not established
Nitrogen (7727-37-9)	
ACGIH	Not established
USA OSHA	Not established

## 8.2. Exposure controls

Appropriate engineering controls	: Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.
Eye protection	: Wear safety glasses with side shields.
Skin and body protection	: Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138.
Respiratory protection	: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Colorless gas.
Molecular mass	: 28 g/mol
Color	: Colorless.
Odor	: No odor warning properties.
Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -210 °C
Freezing point	: No data available
Boiling point	: -195.8 °C
Flash point	: No data available
Critical temperature	: -149.9 °C
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not applicable.
Critical pressure	: 3390 kPa
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.16 kg/m <sup>3</sup>
Relative gas density	: 0.97
Solubility	: Water: 20 mg/l
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.



# Nitrogen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

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Explosive properties : Not applicable.  
 Oxidizing properties : None.  
 Explosion limits : No data available

## 9.2. Other information

Gas group : Compressed gas  
 Additional information : None.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Under certain conditions, nitrogen can react violently with lithium, neodymium, titanium (above 1472°F/800°C), and magnesium to form nitrides. At high temperature, it can also combine with oxygen and hydrogen.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

May occur.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

None.

### 10.6. Hazardous decomposition products

None.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

Skin corrosion/irritation : Not classified  
 pH: Not applicable.

Serious eye damage/irritation : Not classified  
 pH: Not applicable.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

#### Nitrogen, compressed (7727-37-9)

Persistence and degradability	No ecological damage caused by this product.
-------------------------------	--

#### Nitrogen (7727-37-9)

Persistence and degradability	No ecological damage caused by this product.
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# Nitrogen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

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## 12.3. Bioaccumulative potential

Nitrogen, compressed (7727-37-9)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Nitrogen (7727-37-9)	
Log Pow	Not applicable for inorganic gases.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

## 12.4. Mobility in soil

Nitrogen, compressed (7727-37-9)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
Nitrogen (7727-37-9)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

## 12.5. Other adverse effects

Effect on ozone layer : None.

Effect on the global warming : None.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

## SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1066 Nitrogen, compressed, 2.2

UN-No.(DOT) : UN1066

Proper Shipping Name (DOT) : Nitrogen, compressed

Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas



## Additional information

Emergency Response Guide (ERG) Number : 121 (UN1066);120 (UN1977)

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:

- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

### Transport by sea

UN-No. (IMDG) : 1066

Proper Shipping Name (IMDG) : NITROGEN, COMPRESSED



# Nitrogen, compressed

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Class (IMDG)	: 2 - Gases
Division (IMDG)	: 2.2 - Non-flammable, non-toxic gases
MFAG-No	: 121

### Air transport

UN-No. (IATA)	: 1066
Proper Shipping Name (IATA)	: NITROGEN, COMPRESSED
Class (IATA)	: 2.2 - Gases : Non-flammable, non-toxic
Civil Aeronautics Law	: Gases under pressure/Gases nonflammable nontoxic under pressure

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### Nitrogen, compressed (7727-37-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard
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### 15.2. International regulations

#### CANADA

#### Nitrogen, compressed (7727-37-9)

Listed on the Canadian DSL (Domestic Substances List)

#### Nitrogen (7727-37-9)

Listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations

#### Nitrogen, compressed (7727-37-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

### 15.2.2. National regulations

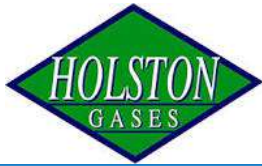
#### Nitrogen, compressed (7727-37-9)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
 Listed on INSQ (Mexican National Inventory of Chemical Substances)

### 15.3. US State regulations

#### Nitrogen, compressed(7727-37-9)

U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List



# Nitrogen, compressed

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Nitrogen (7727-37-9)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
Nitrogen (7727-37-9)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				

## SECTION 16: Other information

### Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Holston Gases asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information

The opinions expressed herein are those of qualified experts within Holston Gases, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Holston Gases, Inc, it is the user's obligation to determine the conditions of safe use of the product

Holston SDSs are furnished on sale or delivery by Holston Gases or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Holston Gases sales representative, local distributor, or supplier, or download from [www.holstongases.com](http://www.holstongases.com). If you have questions regarding Holston SDSs, would like the document number and date of the latest SDS, or would like the names of the Holston suppliers in your area, phone or write the Holston Gases Call Center (Phone: 1-865-573-1917; Address: Holston Gases Inc., 545 W Baxter Ave #6846, Knoxville, TN 37921 )Holston Gases Inc and the Flowing Airstream design are trademarks or registered trademarks of Holston Gases Inc. Technology, Inc. in the United States and/or other countries.

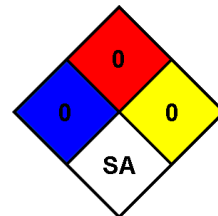
Revision date : 7/13/2018

NFPA health hazard : 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard : 0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.

NFPA specific hazard : SA - This denotes gases which are simple asphyxiants.



### Hazard Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard

Physical : 3 Serious Hazard

SDS US (GHS HazCom 2012) - Holston Gases Inc.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*



# Oxygen, compressed

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Date of issue: 01/01/1979    Revision date: 10/21/2016    Supersedes: 06/23/2015

## SECTION 1: Product and company identification

### 1.1. Product identifier

Product form : Substance  
Name : Oxygen, compressed  
  
Formula : O<sub>2</sub>  
Other means of identification : Oxygen, Compressed; MediPure Oxygen; Aviator's Breathing Oxygen; USP Oxygen; Oxygen - Diving Grade

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Medical applications  
Industrial use  
Diving Gas (Underwater Breathing)

### 1.3. Details of the supplier of the safety data sheet

Holston Gases, Inc.  
545 W Baxter Ave.  
Knoxville, TN 37921- USA  
T 1-865-573-1917 F 1-865-573-0063  
[www.holstongases.com](http://www.holstongases.com)

### 1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week  
— Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887  
(collect calls accepted, Contract 17729)

## SECTION 2: Hazard identification

### 2.1. Classification of the substance or mixture

#### GHS-US classification

Ox. Gas 1            H270  
Compressed gas    H280

### 2.2. Label elements

#### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS03

GHS04

Signal word (GHS-US) :

DANGER

Hazard statements (GHS-US) :

H270 - MAY CAUSE OR INTENSIFY FIRE; OXIDIZER  
H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood  
P220 - Keep/Store away from combustible materials, clothing  
P244 - Keep reduction valves/valves and fittings free from oil and grease  
P271+P403 - Use and store only outdoors or in a well-ventilated place  
P370+P376 - In case of fire: Stop leak if safe to do so  
CGA-PG05 - Use a back flow preventive device in the piping  
CGA-PG20+CGA-PG10 - Use only with equipment of compatible materials of construction and rated for cylinder pressure  
CGA-PG22 - Use only with equipment cleaned for oxygen service  
CGA-PG21 - Open valve slowly



# Oxygen, compressed

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CGA-PG06 - Close valve after each use and when empty  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

## 2.3. Other hazards

Other hazards not contributing to the classification : Breathing 80 percent or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain, and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and central nervous system (CNS) effects, resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness, and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

## 2.4. Unknown acute toxicity (GHS US)

No data available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substance

Name : Oxygen, compressed

Name	%
Oxygen	99.5 - 100

### 3.2. Mixture

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation : Move to fresh air. Get medical advice/attention.  
First-aid measures after skin contact : Adverse effects not expected from this product.  
First-aid measures after eye contact : Adverse effects not expected from this product. In case of eye irritation: Rinse immediately with plenty of water. Consult an ophthalmologist if irritation persists.  
First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects, both acute and delayed

No additional information available

### 4.3. Indication of any immediate medical attention and special treatment needed

None.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (e.g. safety shower) is the preferred extinguishing media for clothing fires.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.

### 5.3. Advice for firefighters

Firefighting instructions : High-pressure, oxidizing gas

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.





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- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems
- Stop flow of product if safe to do so
- Use water spray or fog to knock down fire fumes if possible.
- Other information : Heat of fire can build pressure in container and cause it to rupture. Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of the container should be subjected to a temperature higher than 125°F (52°C). Smoking, flames, and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Ensure adequate air ventilation. Eliminate ignition sources. Evacuate area. Try to stop release. Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Try to stop release.

### 6.3. Methods and material for containment and cleaning up

No additional information available

### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

#### Safe use of the product

- : **The suitability of this product as a component in underwater breathing gas mixtures** is to be determined by or under the supervision of personnel experienced in the use of underwater breathing gas mixtures and familiar with the physiological effects, methods employed, frequency and duration of use, hazards, side effects, and precautions to be taken.



# Oxygen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1979    Revision date: 10/21/2016    Supersedes: 06/23/2015

## 7.2. Conditions for safe storage

Storage conditions(including any incompatibilities)

: Store only where temperature will not exceed 125°F (52°C). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g, NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

## 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Oxygen, compressed (7782-44-7)	
ACGIH	Not established
USA OSHA	Not established
Oxygen (7782-44-7)	
ACGIH	Not established
USA OSHA	Not established

### 8.2. Exposure controls

Appropriate engineering controls : Avoid oxygen rich (>23.5%) atmospheres. Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

Eye protection : Wear safety glasses with side shields.

Skin and body protection : Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138. As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.

Respiratory protection : When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : Colorless gas.

Molecular mass : 32 g/mol

Color : Colorless.

Odor : No odor warning properties.



# Oxygen, compressed

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Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -219 °C (-362°F)
Freezing point	: No data available
Boiling point	: -183 °C (-297°F)
Flash point	: Not applicable.
Critical temperature	: -118.6 °C (-181.48°F)
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not applicable.
Critical pressure	: 50.4 bar (731.4 psia)
Relative vapor density at 20 °C	: 0.0827 lb/ft <sup>3</sup> (1.325 kg/m <sup>3</sup> ) absolute vapor density at 70°F/21.1°C, 1 atm
Relative density	: 1.1
Density	: 1.4289 kg/m <sup>3</sup> (at 21.1 °C)
Relative gas density	: 1.1
Solubility	: Water: 39 mg/l
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: Oxidizer.
Explosion limits	: No data available

## 9.2. Other information

Gas group	: Compressed gas
Additional information	: Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Violently oxidizes organic material.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Keep equipment free from oil and grease. Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion. May react violently with combustible materials. May react violently with reducing agents.

### 10.6. Hazardous decomposition products

None.



# Oxygen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1979    Revision date: 10/21/2016    Supersedes: 06/23/2015

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified pH: Not applicable.
Serious eye damage/irritation	: Not classified pH: Not applicable.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

<b>Oxygen, compressed (7782-44-7)</b>	
Persistence and degradability	No ecological damage caused by this product.
<b>Oxygen (7782-44-7)</b>	
Persistence and degradability	No ecological damage caused by this product.

### 12.3. Bioaccumulative potential

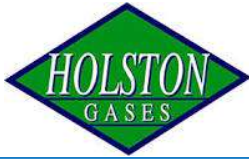
<b>Oxygen, compressed (7782-44-7)</b>	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
<b>Oxygen (7782-44-7)</b>	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

### 12.4. Mobility in soil

<b>Oxygen, compressed (7782-44-7)</b>	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
<b>Oxygen (7782-44-7)</b>	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

### 12.5. Other adverse effects

Effect on ozone layer	: None
Effect on the global warming	: No known effects from this product



# Oxygen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1979    Revision date: 10/21/2016    Supersedes: 06/23/2015

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

## SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1072 Oxygen, compressed, 2.2  
UN-No.(DOT) : UN1072  
Proper Shipping Name (DOT) : Oxygen, compressed  
Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115  
Hazard labels (DOT) : 2.2 - Non-flammable gas  
5.1 - Oxidizer



DOT Special Provisions (49 CFR 172.102) : 110 - Fire extinguishers transported under UN1044 may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit  
A14 - This material is not authorized to be transported as a limited quantity or consumer commodity in accordance with 173.306 of this subchapter when transported aboard an aircraft

### Additional information

Emergency Response Guide (ERG) Number : 122 (UN1072)

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:  
- Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

### Transport by sea

UN-No. (IMDG) : 1072  
Proper Shipping Name (IMDG) : OXYGEN, COMPRESSED  
Class (IMDG) : 2 - Gases  
MFAG-No : 122

### Air transport

UN-No. (IATA) : 1072  
Proper Shipping Name (IATA) : Oxygen, compressed  
Class (IATA) : 2  
Civil Aeronautics Law : Gases under pressure/Gases nonflammable nontoxic under pressure

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### Oxygen, compressed (7782-44-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard Fire hazard
-------------------------------------	--

All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory.



# Oxygen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1979    Revision date: 10/21/2016    Supersedes: 06/23/2015

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

## 15.2. International regulations

### CANADA

#### Oxygen, compressed (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

#### Oxygen (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

### EU-Regulations

#### Oxygen, compressed (7782-44-7)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

### 15.2.2. National regulations

#### Oxygen, compressed (7782-44-7)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
 Listed on INSQ (Mexican National Inventory of Chemical Substances)

## 15.3. US State regulations

### Oxygen, compressed(7782-44-7)

U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

### Oxygen (7782-44-7)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	No	No	No	

### Oxygen (7782-44-7)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List



# Oxygen, compressed

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1979    Revision date: 10/21/2016    Supersedes: 06/23/2015

## SECTION 16: Other info.

### Other information

When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product

Holston Gases asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Holston Gases, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Holston Gases, Inc, it is the user's obligation to determine the conditions of safe use of the product.

Holston SDSs are furnished on sale or delivery by Holston Gases or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Holston Gases sales representative, local distributor, or supplier, or download from [www.holstongases.com](http://www.holstongases.com). If you have questions regarding Holston SDSs, would like the document number and date of the latest SDS, or would like the names of the Holston suppliers in your area, phone or write the Holston Gases Call Center (Phone: 1-865-573-1917; Address: Holston Gases Inc., 545 W Baxter Ave #6846, Knoxville, TN 37921 )

Holston Gases Inc and the Flowing Airstream design are trademarks or registered trademarks of Holston Gases Inc. Technology, Inc. in the United States and/or other countries.

### NFPA health hazard

: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

### NFPA fire hazard

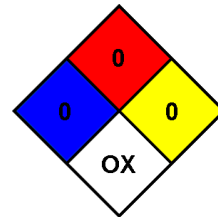
: 0 - Materials that will not burn.

### NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

### NFPA specific hazard

: OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



### HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard

Physical : 3 Serious Hazard

SDS US (GHS HazCom 2012) - Holston Gases Inc.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*



# Gas Mixture (Argon 50-90%, Carbon Dioxide 10- 50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/2000    Revision date: 09-28-2017    Supersedes: 10/24/2016

## SECTION: 1. Product and company identification

### 1.1. Product identifier

Product form : Mixture  
Trade name : StarGold C10, C12, C15, C17, C18, C20, C25, C40, C50 Shielding Gas Mixtures  
Formula : Mixtures of argon and 10-50 percent carbon dioxide

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Electric Arc Welding  
Industrial use

### 1.3. Details of the supplier of the safety data sheet

Holston Gases, Inc.  
545 W Baxter Ave.  
Knoxville, TN 37921 - USA  
T 1-865-573-1917 - F 1-865-573-0063  
[www.holstongases.com](http://www.holstongases.com)

### 1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week  
— Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887  
(collect calls accepted, Contract 17729)

## SECTION 2: Hazard identification

### 2.1. Classification of the substance or mixture

#### GHS-US classification

Press. Gas (Comp.) H280

### 2.2. Label elements

#### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS04

Signal word (GHS-US) :

Warning

Hazard statements (GHS-US) :

H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.  
CGA-HG01 - MAY CAUSE FROSTBITE.  
CGA-HG03 - MAY INCREASE RESPIRATION AND HEART RATE.

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood  
P261 - Avoid breathing gas, vapors  
P262 - Do not get in eyes, on skin, or on clothing.  
P271+P403 - Use and store only outdoors or in a well-ventilated place.  
CGA-PG05 - Use a back flow preventive device in the piping.  
CGA-PG10 - Use only with equipment rated for cylinder pressure.  
CGA-PG06 - Close valve after each use and when empty.  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

### 2.3. Other hazards

Other hazards not contributing to the : Asphyxiant in high concentrations.







# Gas Mixture (Argon 50-90%, Carbon Dioxide 10- 50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.  
Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : **Warning: High-pressure gas.** Evacuate personnel to a safe area. Appropriate self-contained breathing apparatus may be required. Approach suspected leak area with caution. Remove all sources of ignition, if safe to do so. Reduce gas with fog or fine water spray. Stop flow of product if safe to do so. Ventilate area or move container to a well-ventilated area. Before entering the area, especially a confined area, check the area with an appropriate device.

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Try to stop release.

### 6.3. Methods and material for containment and cleaning up

No additional information available

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Argon (7440-37-1)

ACGIH	Not established
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# Gas Mixture (Argon 50-90%, Carbon Dioxide 10- 50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

Argon (7440-37-1)		
USA OSHA	Not established	
Carbon dioxide (124-38-9)		
ACGIH	ACGIH TLV-TWA (ppm)	5000 ppm
ACGIH	ACGIH TLV-STEL (ppm)	30000 ppm
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	9000 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (ppm)	5000 ppm

## 8.2. Exposure controls

Appropriate engineering controls	: Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air. Ensure exposure is below occupational exposure limits (where available).
Hand protection	: Wear work gloves when handling containers; welding gloves for welding. Gloves must be free of oil and grease.
Eye protection	: Wear safety glasses with side shields.
Skin and body protection	: Wear work gloves and metatarsal shoes for cylinder handling. Protective equipment where needed. Select in accordance with OSHA 29 CFR 1910.132, 1910.136, and 1910.138. As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.
Respiratory protection	: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
Thermal hazard protection	: Wear cold insulating gloves when transfilling or breaking transfer connections.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Colorless gas.
Color	: Colorless
Odor	: Odorless.
Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not applicable.
Relative vapor density at 20 °C	: No data available
Relative density	: No data available



# Gas Mixture (Argon 50-90%, Carbon Dioxide 10- 50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

Density	: 1.166 - 1.275 kg/m <sup>3</sup> HeliStar SS: 1.166 kg/m <sup>3</sup> (0.0728 lb/ft <sup>3</sup> ) , HeliStarCS: 1.275 kg/m <sup>3</sup> (0.0796 lb/ft <sup>3</sup> )
Relative gas density	: 0.962 - 1.062 HeliStar SS: 0.972, HeliStar CS: 1.062
Solubility	: Water: No data available
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: None.
Explosion limits	: No data available

## 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

No additional information available

### 10.5. Incompatible materials

Alkali metals, Alkaline earth metals, Acetylide forming metals, Chromium, Titanium > 1022°F (550°C), Uranium (U) > 1382°F (750°C), Magnesium > 1427°F (775°C).

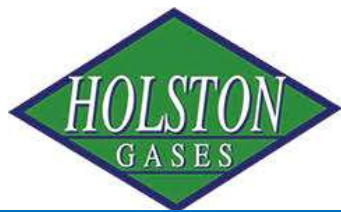
### 10.6. Hazardous decomposition products

Using this product in welding and cutting may create additional hazards. The arc from electric arc welding may form gaseous reaction products such as carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Other decomposition products of arc welding and cutting originate from the volatilization, reaction, and oxidization of the material being worked.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified pH: Not applicable.
Serious eye damage/irritation	: Not classified pH: Not applicable.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified



# Gas Mixture (Argon 50-90%, Carbon Dioxide 10- 50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

Aspiration hazard : Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

#### StarGold C10, C12, C15, C17, C18, C20, C25, C40, C50 Shielding Gas Mixtures

Persistence and degradability : No ecological damage caused by this product.

#### Argon (7440-37-1)

Persistence and degradability : No ecological damage caused by this product.

#### Carbon dioxide (124-38-9)

Persistence and degradability : No ecological damage caused by this product.

### 12.3. Bioaccumulative potential

#### StarGold C10, C12, C15, C17, C18, C20, C25, C40, C50 Shielding Gas Mixtures

Log Pow : Not applicable.

Log Kow : Not applicable.

Bioaccumulative potential : No ecological damage caused by this product.

#### Argon (7440-37-1)

Log Pow : Not applicable.

Log Kow : Not applicable.

Bioaccumulative potential : No ecological damage caused by this product.

#### Carbon dioxide (124-38-9)

BCF fish 1 : (no bioaccumulation)

Log Pow : 0.83

Log Kow : Not applicable.

Bioaccumulative potential : No ecological damage caused by this product.

### 12.4 Mobility in soil

#### StarGold C10, C12, C15, C17, C18, C20, C25, C40, C50 Shielding Gas Mixtures

Mobility in soil : No data available.

#### Argon (7440-37-1)

Mobility in soil : No data available.

Ecology - soil : No ecological damage caused by this product.

#### Carbon dioxide (124-38-9)

Mobility in soil : No data available.

Ecology - soil : No ecological damage caused by this product.

### 12.5 Other adverse effects

Effect on ozone layer : None.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

## SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s., 2.2

UN-No.(DOT) : UN1956



# Gas Mixture (Argon 50-90%, Carbon Dioxide 10- 50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

Proper Shipping Name (DOT) : Compressed gas, n.o.s.  
 Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115  
 Hazard labels (DOT) : 2.2 - Non-flammable gas



DOT Symbols : G - Identifies proper shipping name (PSN) requiring the addition of technical name(s) in parentheses following the PSN.

### Additional information

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:  
 - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

### Transport by sea

UN-No. (IMDG) : 1956  
 Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.  
 Class (IMDG) : 2 - Gases

### Air transport

UN-No. (IATA) : 1956  
 Proper Shipping Name (IATA) : Compressed gas, n.o.s.  
 Class (IATA) : 2

## SECTION 15: Regulatory information

### 15.1 US Federal regulations

#### StarGold C10, C12, C15, C17, C18, C20, C25, C40, C50 Shielding Gas Mixtures

SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard Immediate (acute) health hazard
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All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory.

### 15.2 International regulations

#### CANADA

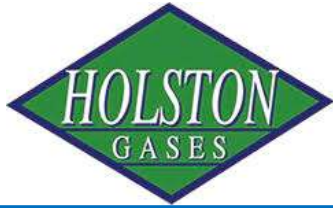
##### Argon (7440-37-1)

Listed on the Canadian DSL (Domestic Substances List)

##### Carbon dioxide (124-38-9)

Listed on the Canadian DSL (Domestic Substances List)

### EU-Regulations



# Gas Mixture (Argon 50-90%, Carbon Dioxide 10-50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.  
 Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

## 15.2.2. National regulations

No additional information available

## 15.3. US State regulations

StarGold C10, C12, C15, C17, C18, C20, C25, C40, C50 Shielding Gas Mixtures()	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Argon (7440-37-1)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	

Carbon dioxide (124-38-9)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	

Argon (7440-37-1)
U.S. - Massachusetts - Right to Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Carbon dioxide (124-38-9)
U.S. - Massachusetts - Right to Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List



# Gas Mixture (Argon 50-90%, Carbon Dioxide 10-50%)

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/2000    Revision date: 09/28/2017    Supersedes: 10/24/2016

## SECTION 16: Other info.

### Other information

When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Fumes and gases produced during welding and cutting processes can be dangerous to your health and may cause serious lung disease. KEEP YOUR HEAD OUT OF FUMES. DO NOT BREATHE FUMES AND GASES. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes; or may cause other similar discomfort. Contaminants in the air may add to the hazard of fumes and gases. One such contaminant, chlorinated hydrocarbon vapors from cleaning and degreasing activities, poses a special risk. DO NOT USE ELECTRIC ARCS IN THE PRESENCE OF CHLORINATED HYDROCARBON VAPORS—HIGHLY TOXIC PHOSGENE MAY BE PRODUCED. Metal coatings such as paint, plating, or galvanizing may generate harmful fumes when heated. Residues from cleaning materials may also be harmful. AVOID ARC OPERATIONS ON PARTS WITH PHOSPHATE RESIDUES (ANTI-RUST, CLEANING PREPARATIONS)—HIGHLY TOXIC PHOSPHINE MAY BE PRODUCED.

Holston Gases asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information

The opinions expressed herein are those of qualified experts within Holston Gases, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Holston Gases, Inc, it is the user's obligation to determine the conditions of safe use of the product

Holston SDSs are furnished on sale or delivery by Holston Gases or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Holston Gases sales representative, local distributor, or supplier, or download from [www.holstongases.com](http://www.holstongases.com). If you have questions regarding Holston SDSs, would like the document number and date of the latest SDS, or would like the names of the Holston suppliers in your area, phone or write the Holston Gases Call Center (Phone: 1-865-573-1917; Address: Holston Gases Inc., 545 W Baxter Ave #6846, Knoxville, TN 37921 )

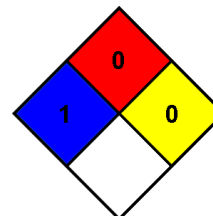
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Revision date : 09/28/2017

NFPA health hazard : 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard : 0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



### Hazard Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard

Physical : 3 Serious Hazard

SDS US (GHS HazCom 2012) - Holston Gases Inc.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*





# Kentucky Secretary of State

## Michael G. Adams



### SONNE STEEL, INC.

<a href="#">File Amended Annual Report</a>	<a href="#">Change Address or Registered Agent</a>	<a href="#">File Certificate of Assumed Name (DBA)</a>	<a href="#">File Dissolution</a>
<a href="#">Upload a filing</a>	<a href="#">File Registered Agent Resignation</a>		
<a href="#">Manage Assumed Name</a>	<a href="#">Printable Forms</a>	<a href="#">Subscribe to changes made to this entity</a>	<a href="#">Certificate of Good Standing</a>

### General Information

<b>Organization Number</b>	0616450
<b>Name</b>	SONNE STEEL, INC.
<b>Profit or Non-Profit</b>	P - Profit
<b>Company Type</b>	KCO - Kentucky Corporation
<b>Status</b>	A - Active
<b>Standing</b>	G - Good
<b>State</b>	KY
<b>File Date</b>	6/29/2005
<b>Organization Date</b>	6/29/2005
<b>Last Annual Report</b>	3/21/2023
<b>Principal Office</b>	48 REGINA LANE SMITHFIELD, KY 40068

**Registered Agent**

ERIC SONNE  
48 REGINA LANE  
SMITHFIELD, KY 40068  
1000

**Authorized Shares**

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Show Initial Officers

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Kentucky Unbridled Spirit