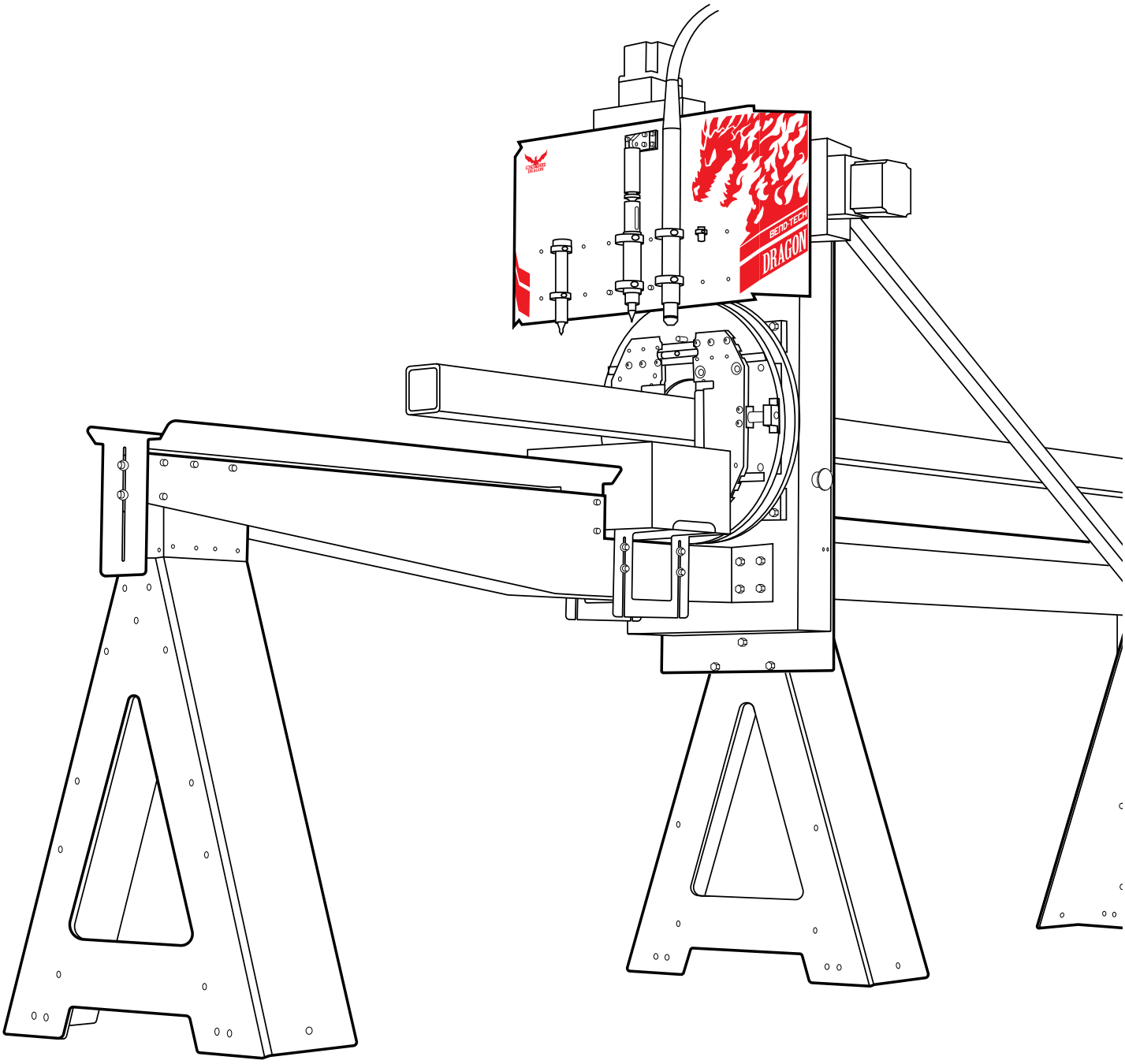
Part 1 of 1

BEND-TECH

DRAGON A400

Assembly Manual



Version 2.3 | English

Dragon A400

Assembly Manual
Version 2.3

English
Original Instructions

March 2020

Bend-Tech, LLC
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Limited Warranty

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 warrantied 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.

Software

Dragon software is covered by a 2-year maintenance plan from the purchase date of the Dragon A400 machine. After the 2-year maintenance plan is expired, the Customer can purchase a maintenance plan. A maintenance plan 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.

Customer Service

Any questions or concerns regarding this manual can be directed to Bend-Tech, LLC representatives via the Dragon website, www.bend-tech.com. Click Contact in the menu bar for communication options and send your comments to the Dragon Customer Service department.

Online Resources

- https://www.youtube.com/user/bendtech2020
- http://www.bend-tech.com/wiki7
- http://www.bend-tech.com
- https://www.facebook.com/2020ssi
- https://www.instagram.com/bend_tech

Customer Satisfaction Commitment

Congratulations on your purchase of the world's best CNC plasma tube and pipe cutting machine, the Dragon A400. Bend-Tech, LLC places great pride in customer satisfaction and it is our promise to offer you the best support available for your Dragon A400. We recognize that our support is a key factor in your success.

Contact Us

You can contact Bend-Tech, LLC customer service at 651-257-8715. Our support hours are Monday-Friday, 8:30-5:00 CST. E-mail Bend-Tech, LLC sales at: support@bend-tech.com. Our mailing address is: Bend-Tech LLC, 729 Prospect Ave., Osceola, WI 54020, U.S.A..

Warnings

This manual contains important statements that are called out from the regular text with an associated signal word: “Danger,” “Warning,” “Caution,” or “Note.” Each of these signal words is accompanied by its own icon. These signal words and icons indicate the severity of the condition and the warning. The machine operator should familiarize themselves with these warnings and read the statements before operating the machine.

Definitions & Examples

Danger

Danger indicates a serious condition that could cause severe injury or death to the operator or bystanders if the instructions are not followed.

Example

! Danger !

Exceeding the material weight limit of the Dragon A400 can result in serious injury to the operator and/or bystanders.

Warning

A Warning indicates there is a possibility for minor injury if the instructions are not followed correctly.

Example

! Warning !

Due to the extreme temperatures that result from the plasma cutting process, parts cooled in water in the parts catcher can still be extremely hot. Always use caution when handling newly-cut parts.

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.

Example

! Caution !

Exceeding the material weight limit can affect performance and possibly damage the Dragon A400.

Note

A Note gives clarification or focuses on information that is critical or unique to an operation.

Example

Water Cooling system greatly reduces smoke and vapor emitted by the machine. Bend-Tech recommends use of the Water Cooling system whenever possible.

Glossary

A400

Indicates machine with 400-lb weight limit.

Axis

A fixed reference line used by the Dragon A400.

Bend-Tech 7X

Machine design software - CAD.

BOB

Breakout Board.

Material Support Lifter

The Material Support Lifter supports material to reduce sag.

Chuck

Located on the Trolley, the Chuck holds the material so it can be moved forward, backward and rotated.

Control Box

Connects Dragon Software Suite to the Dragon A400.

Coolant Tray

Cools cut parts as they are produced.

Drive Belt

The X Motor uses the Drive Belt to power the Trolley along the Rail. The Drive Belt is mounted stationary along the length of the machine.

Drive Belt Pulley

Located on the X Motor, it works in conjunction with the Drive Belt to power the Trolley along the Rail.

E-Stop

Emergency stop.

ESS

Ethernet Smooth Stepper (Control Board).

Ethernet

System for connecting multiple computers via a Local Area Network.

Front Gate

The Gate supports the material at the front of the machine. It consists of two sets of self-centering roller jaws.

Gate Lead Screw

Controls operation and adjustment of the Gate.

Interface

Any particular screen display generated by Bend-Tech software.

Mach3

Machine driver software.

Parts Catcher

The parts catcher is placed at the front of the machine to catch parts as they are cut.

Rail

The Rail is the main structure of the Dragon A400. The Trolley rides on the Rail.

Tail

The Tail is located at the opposite end of the Head of the machine. The Tail arrives pre-assembled. The X Axis homing sensor, Drive Belt Adjustment Block and E-Stop are located at the Tail of the machine.

Toolhead

Operates the Marker, Engraver and Torch.

Trolley

The Trolley rides on the Rail, and carries the Chuck forward and backward along the length of the Rail Support Beam.

Contents

01 Safety

1.1 Introduction

Before beginning assembly of the Dragon A400, read this manual and assure 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.

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 set up the Dragon A400 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, assure 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 assembly leader or crew 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 uncrate the Dragon A400 and perform the complete assembly procedure.

- Forklift
- Cordless drill/driver
- T25 bit
- Side cutters
- Tin snips
- Utility knife
- 3⁄16 in. Allen wrench
- 1⁄8 in. Allen wrench
- 5⁄32 in. Allen wrench
- Level (laser, digital or bubble)
- String or laser level (for checking straightness)
- Ratchet
- 9⁄16 in. socket
- 9⁄16 in. wrench
- 3⁄4 in. socket
- 3⁄4 in. wrench
- 3⁄4 in. deep well socket
- Rubber mallet or Dead Blow plastic hammer
- Tape measure
- Zip ties
- 3⁄8 in. x 3 in. Concrete Sleeve Anchors
- 7⁄16 in. Concrete drill bit

2.2 Crate Parts List

Dragon A400 Assembly

- Head
- Tail
- Rail/Rail Support Section (4-5)
- Rail/Rail Support Section (3-4)
- Rail Support Leg (4)
- Rail Support Leg (0)
- Beak
- Cable Track Support (4-5)
- Cable Track Support (3-4)
- Trolley Housing
- Chuck
- Computer
- Monitor
- Powered Gate Driver

Miscellaneous Box

- Cutoff Drop Tank (1)
- Swivel Levelers (14)
- Wrench (1)
- Magnetic Tool (1)
- Belt Tension Tester (1)
- ¼ T-Handle Allen Wrench (1)
- Engraver (1)
- Ethernet Cable (1)
- Power Cable (1)
- Torch Cable (1)
- Coiled Wire Harness Tubing (1)
- Hardware Bags (5)

2.3 Optional Parts

Technology Package

- Computer Cabinet
- Battery Backup

Technology Package Box

- ⅛ T-handle Allen wrench (1)
- 3⁄16 T-handle Allen wrench (1)
- Feeler Gauge Measurement Tool (1)
- Sick Sensor (1)
- Radius Gauge Set (1)
- Torpedo Level (1)
- Vernier Caliper (1)
- Thomson Sensor (1)
- Drive Belt (1)

Hypertherm

03 Beginning Assembly

3.1 Shipping Crate

The Dragon A400 is shipped from the Bend-Tech manufacturing facility in a custom-fabricated shipping container. This container 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 shipping crate for shipping purposes. Components may be bolted to the crate, shrink wrapped or secured with plastic or metal banding. The order in which components are uncrated is important in executing proper assembly of the machine. For best results in assembling the Dragon A400, follow the steps outlined in this Assembly Manual.

3.1.1 Dragon A400 Shop Position

Before beginning assembly of the Dragon A400, ensure there is adequate space to accommodate the machine on the shop floor. Dimensions of the machine can be found on the Bend-Tech website, www.bend-tech.com, or dimensions can be obtained by contacting Bend-Tech sales and support: sales@bend-tech.com.

3.2 Crate Disassembly

Tools Needed

- Cordless Driver
- T25 Bit

! Caution !

Enlist the help of additional personnel when uncrating the machine. A dropped crate component could cause injury to the Installer or other personnel. A dropped crate component could damage the machine. Crate sides are large and heavy and should not be lifted without help.

Begin the assembly process by disassembling the crate. The Installer should remove the top of 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. Remove the screws fastening one of the two larger crate sides, then remove the two smaller crate sides. Remove the remaining large crate side.

3.3 Getting Started

Tools Needed

- ½ in. wrench or ½ in. socket and ratchet

Uncrating the Dragon A400 components properly, and in the proper order, is critical to achieving the quickest, most seamless installation possible. As shipped, the components of the machine will be bolted to the floor of the crate, strapped to the floor of the crate, strapped together or shrink-wrapped together.

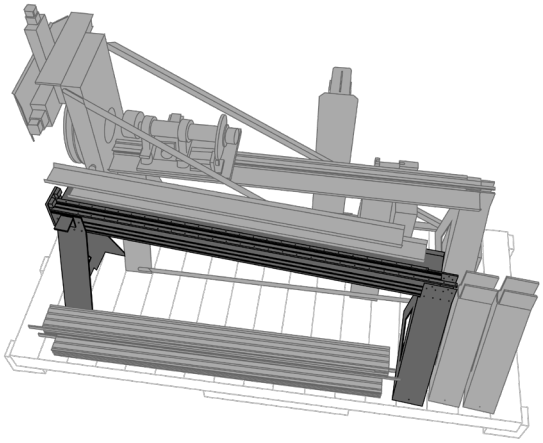
Do not remove any strapping or shrink wrap from the head of the Dragon A400. The Head will be removed last, and it is important to keep its components secure while it is being removed from the crate.

3.3.1 Component Boxes

Remove the various component boxes packed around the Dragon A400 machine. The Component Boxes will be labeled for reference during the assembly process.

3.3.2 Rear Tail Section

The Rear Tail Section arrives pre-assembled. The Rear Tail Section will be placed into position first. Using a ½ in. socket and ratchet, or ½ in. wrench, remove the lag bolts securing the Rear Tail Section to the crate floor.



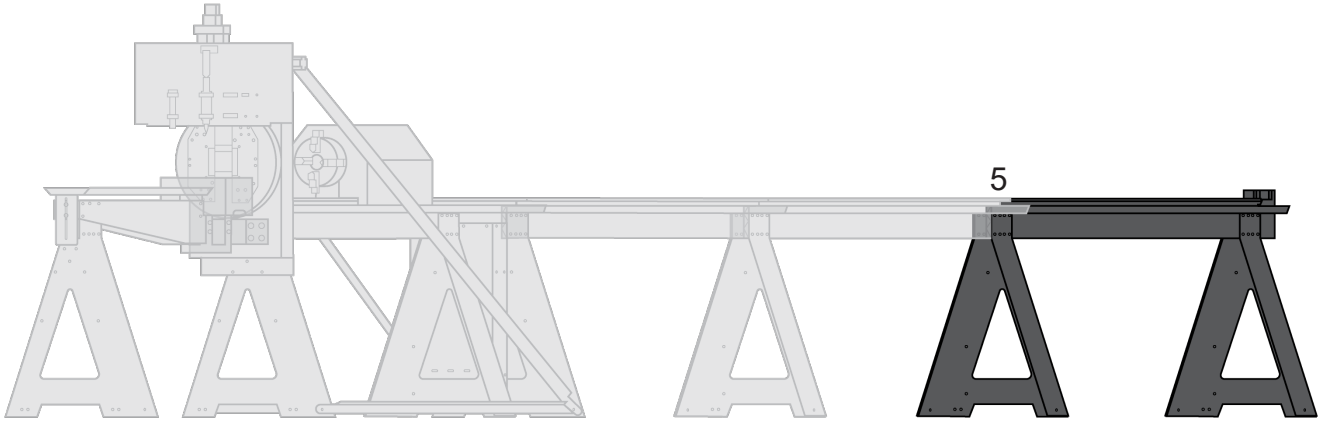
The Rear Tail Section can be lifted by hand, by two or more installation personnel.

The Rail Beam sections and Rail Support legs are numbered to assist in the installation process.

3.3.3 Place Rear Tail Section

The Installer should enlist a helper to lift the Rear Tail Section from the crate and carry it into position.

The Rear Tail Section makes up the far end of the machine and should be placed in the shop accordingly. The Customer should have plotted a position prior to receiving the machine. Place the Rear Tail Section with the numbered leg (5) closest to where the Head of the machine will be installed. The other end of the Rear Tail Section will not have a number.



3.4 Miscellaneous Box

Locate the Miscellaneous Box. Locate the 14 Swivel Levelers and 13 10 -24 ⅜ in. Locking Button Cap Screws. These will be needed to assemble the Rail and Rail Beam in preparation for installing the Head of the machine.

3.5 Swivel Levelers

Tools Needed

- ½ in. Wrench

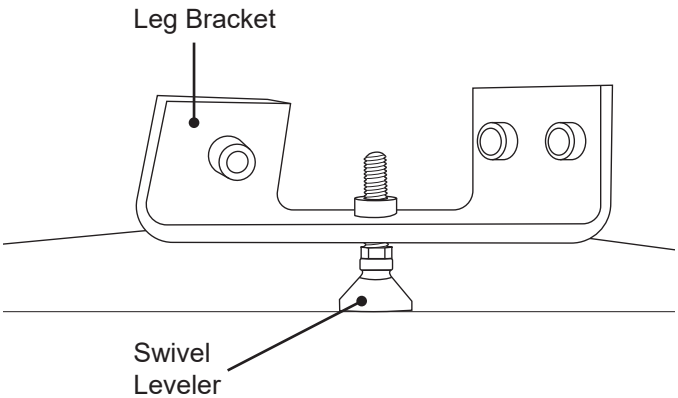
Hardware Needed

- Swivel Levelers

The Dragon A400 Rail 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 then bolt it to the floor using the Floor Brackets.

Remove six of the Swivel Levelers from their packaging. Thread the jam nut to the bottom of the Leveler near the adjustment hex just above the swiveling foot. Enlisting help to lift the Rear Tail Section off the floor, thread a Swivel Leveler into the threaded hole at the bottom of each leg on the Rear Tail Section Rail Supports. Leave about an inch of thread between the leg and the adjustment hex.

Using a ½ in. socket and ratchet or ½ in. wrench, remove the Rail Support from the crate that was nearest the Rear Tail Section. Install a Swivel Leveler into the threaded hole in the bottom of each leg. Leave about an inch of thread between the leg and the adjustment hex.



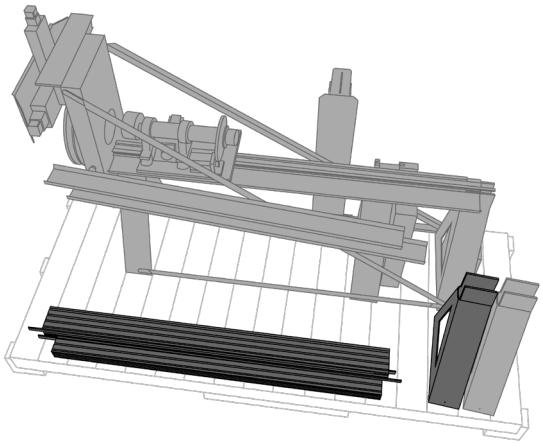
A wrench may be needed to thread the Swivel Levelers into the bottom of the Rail Support Legs.

Customers who ordered the 12-foot model will not receive an additional Rail Support Leg.

Installing the Swivel Levelers may require a helper to lift the Tail assembly to access the threaded inserts on the bottom of the support legs.

3.6 Rail and Rail Beam Sections

Cut the metal strapping and remove the Rail Beam sections. Locate the Rail Beam section with a “5” sticker and a “4” sticker. Locate the No. 4 Rail Support Leg and remove it from the crate.



With the Swivel Levelers attached to the No. 4 Rail Support Leg it will be necessary to enlist a helper to install the No. 4/5 Rail section.

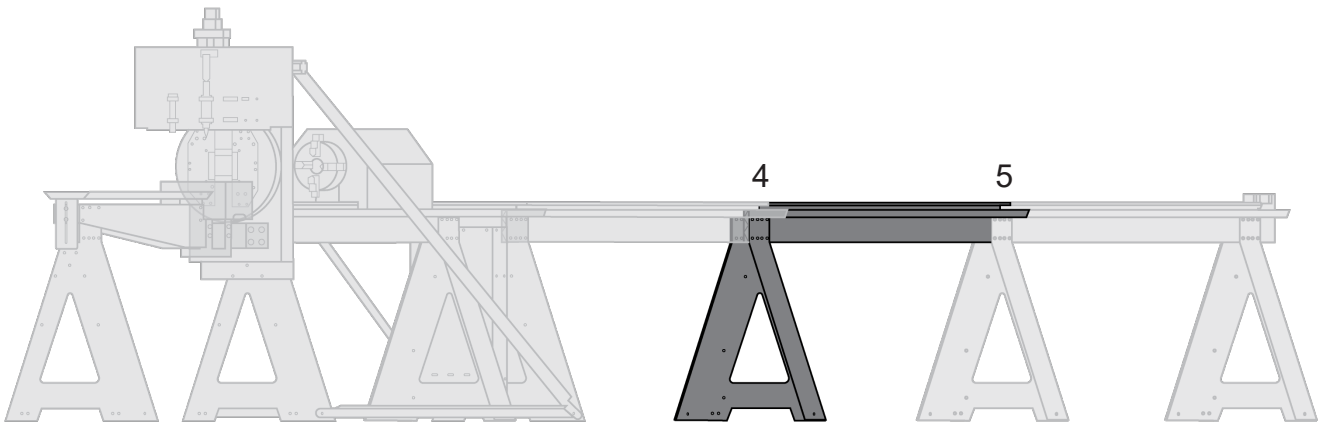
3.6.1 Installing Rail Beam Sections

Rail Beam sections are fitted with stainless steel alignment pins. Using the pins to align the Rail Beams, slide the No.5 end of the 4/5 Rail Beam into the No. 5 end of the Rear Tail section. Set the No. 4 end of the 4/5 Rail Beam on the No. 4 Rail Support Leg.

Tools Needed

- Rubber mallet or plastic dead blow hammer

If necessary, use a rubber mallet or a plastic dead blow hammer to tap the rails into place.



3.6.2 Fastening the Rail Beam to the Support Leg

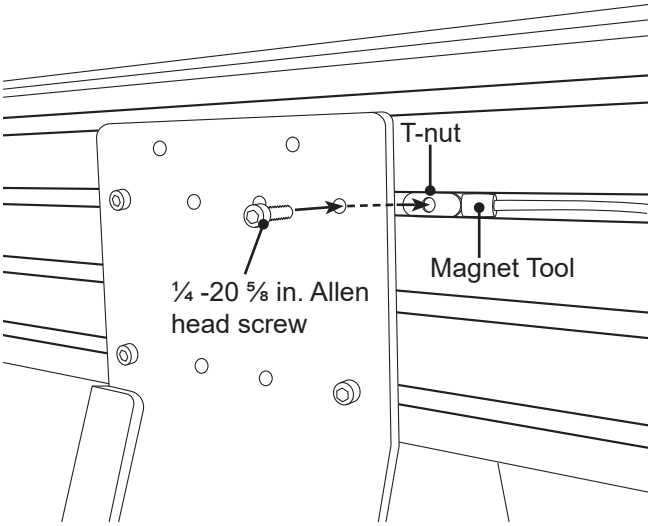
Tools Needed

- 3⁄16 in. Allen wrench
- Magnet tool

Hardware Needed

- Hardware Bag No. 1

The Rail Support Legs are secured to the Rail Beam using ¼ -20 ⅝ in. Allen head screws and T-nuts. These can be found in hardware Bag No. 1. Beginning in the No. 5 position, place the T-nut in the slot on the Rail Beam and, using the magnetic tool provided, slide the T-nut until it aligns with the mounting hole in the Support Leg. Insert the Allen head screw and thread into the T-nut. Repeat this process for each Allen head screw in the No. 5 and No. 4 positions. Do not tighten these yet.



3.7 Installing the Head

The Head of the machine is extremely heavy. As shipped, the Head of the machine contains all the working mechanics of the machine as well as the Control Box. Great care should be taken not to damage any components on the Head of the machine.

! Danger !

The Head of the machine is heavy. If the Head falls or tips over it could cause severe injury or death.

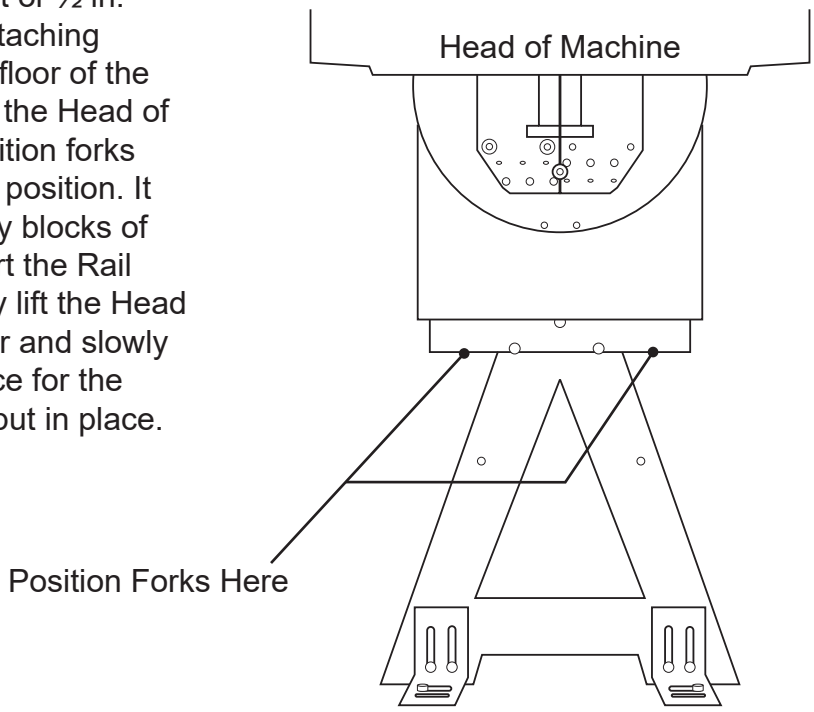
3.7.1 Placing the Head Using a Forklift

Tools Needed

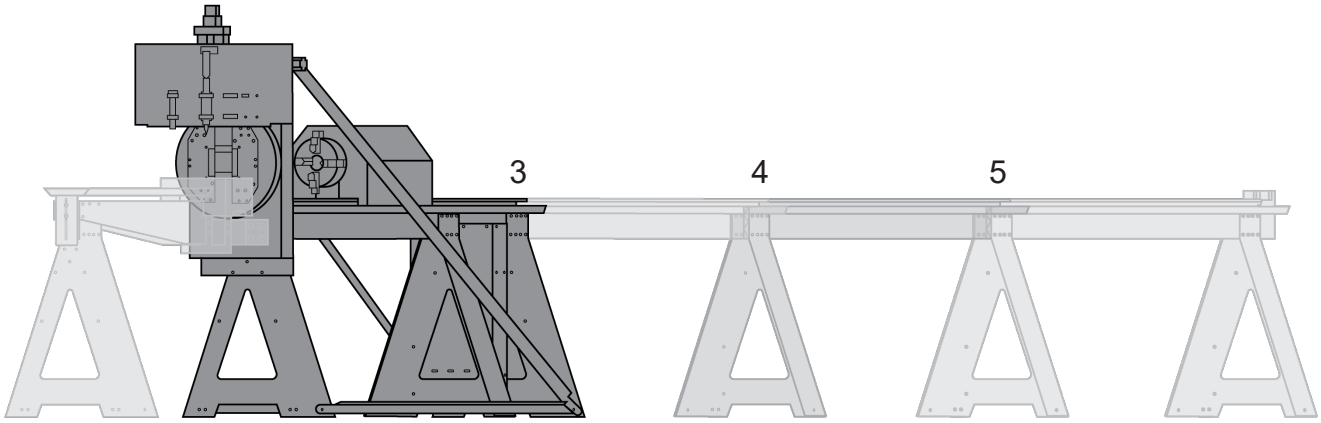
- Forklift
- Wood Blocks
- ½ in. wrench or ½ in. socket and ratchet

Before attempting to move the Head of the machine, remove all other contents of the crate and set aside.

Using a ½ in. socket and ratchet or ½ in. wrench, remove the lag bolts attaching the Head of the machine to the floor of the crate. Using a forklift, approach the Head of the machine from the front. Position forks under the Head in the indicated position. It is recommended the Installer lay blocks of wood across the forks to support the Rail Beam on the machine. Carefully lift the Head of the machine off the crate floor and slowly move into position, leaving space for the remaining section of Rail to be put in place.



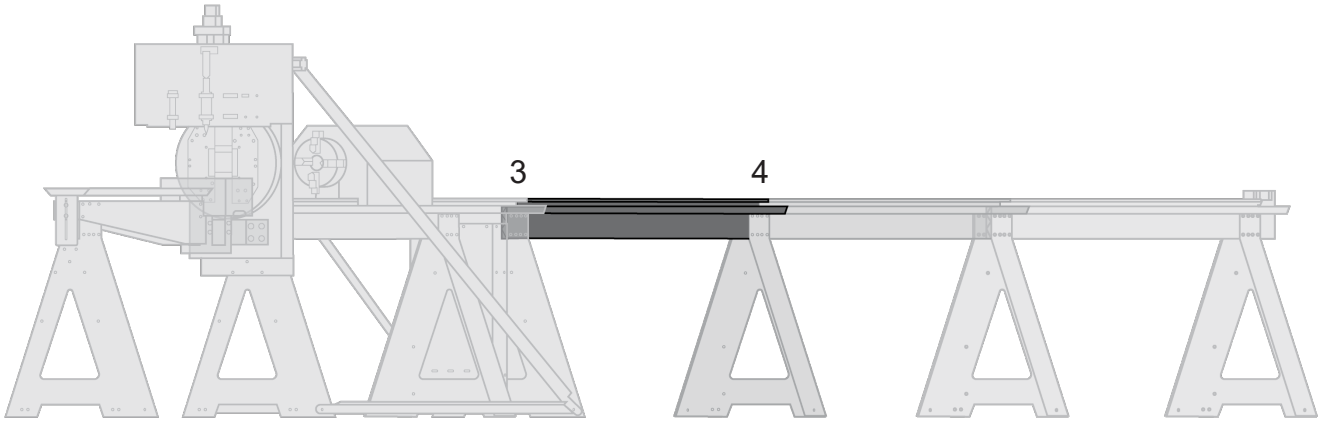
Before placing the machine ensure the Swivel Levelers are installed in each of the Rail Support Legs as outlined in Section 3.5.



3.8 Complete the Rail Beam

Using the stainless steel locating pins on the Rail Beams, position the No.3 end of the remaining section of Rail Beam so it can be inserted into the Head section of the Rail Beam. If necessary, use a rubber mallet or dead blow plastic hammer to seat the Rail Beam sections together.

Enlist help to position the Rear Tail and No. 4/5 Rail Beam and No. 4 Support Leg assembly so it can be connected to the No. 4 end of the 3/4 Rail Beam. This may require lifting the Tail and No. 4/5 Rail Beam as an assembly. Avoid sliding the assembled Rail Beam sections as this could damage the Swivel Levelers.



Sliding the machine on the floor could damage the Swivel Levelers.

3.9 Secure the Rail Support Legs

Finish securing the Rail to the Rail Support Legs in positions 3 and 4 using the ¼ -20 ⅝ in. Allen head screws and T-nuts as outlined in section 3.6.2. Ensure the Swivel Levelers are installed on the bottom of each leg as outlined in section 3.5.

3.10 Secure the Rail Sections

Tools Needed

- ⅛ in. Allen wrench

Hardware Needed

- Hardware Bag No. 3

The Rail sections should be attached to the Rail Beam sections using the 10 -24 ⅜ in. Allen fasteners from Hardware Bag No. 3. Ensure the Rail sections are aligned with each other with no gaps or edges protruding.

3.11 Tighten the Rail Beam Fasteners

With the Rails tightened to the Rail Beams, the Rail Beams can now be tightened to the Rail Support Legs. Tighten these securely by hand.

3.12 Belt Track Guide

Tools Needed

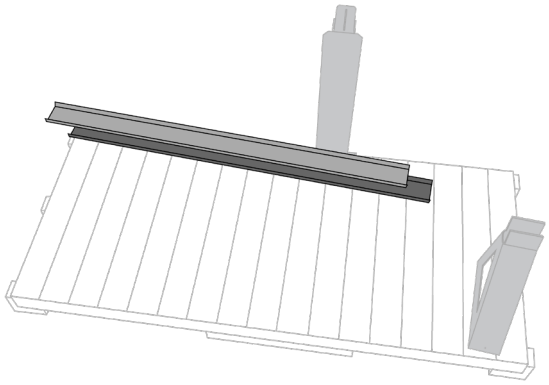
- 5⁄32 in. Allen wrench

Hardware Needed

- Hardware Bag No. 3

The Belt Track Guide is numbered to coincide with the Rail sections and Rail Support Legs. There is one Belt Track Guide section that features a large hole with a rubber grommet.

The hole and Grommet should be placed nearest the Control Box, nearest the Head section of the machine, between positions 3 and 4. Install the second Belt Track Guide section matching the No. 4 and No. 5 stickers to the No. 4 and No. 5 positions on the Rail and Rail Support Legs.



The Rail Beam at the Tail of the machine is pre-assembled at the Bend-Tech manufacturing facility and will arrive with the Belt Track Guide pre-installed.

3.13 Beak

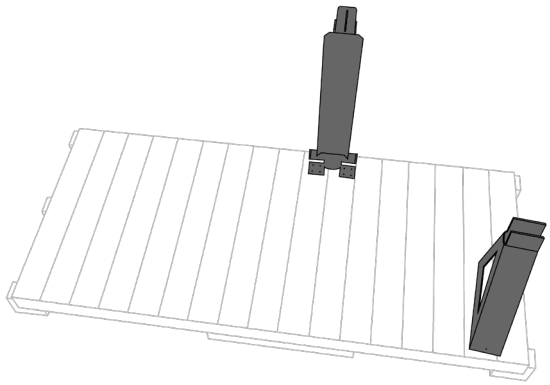
Tools Needed

- 9⁄16 in. wrench or 9⁄16 in. socket and ratchet
- 3⁄16 in. Allen wrench

Hardware Needed

- Hardware Bag No. 2

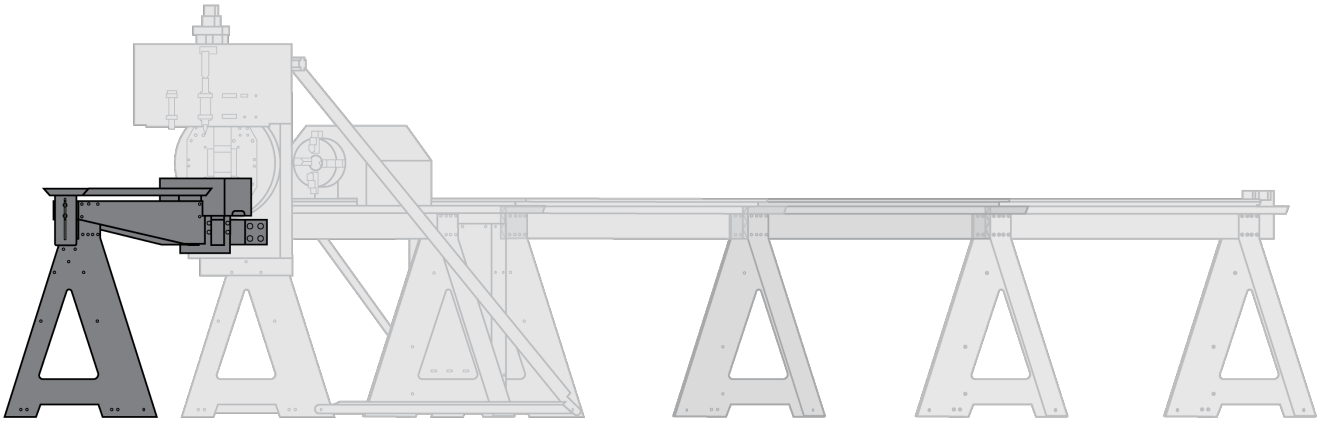
The Beak of the machine serves as a parts catcher. The Beak prevents parts that have been cut by the machine from falling to the ground and possibly being damaged or causing injury. The Beak allows the Operator to safely handle hot parts.



3.13.1 Installing the Beak

The Beak is placed on end inside the crate alongside the Head assembly. The Installer should have removed the Beak when removing the Head of the machine in section 3.7.1. Before installing the Beak, ensure the remaining Support Leg is fitted with Swivel Levelers and is ready to be placed under the Beak.

Place the Beak at the front of the machine and attach to the Head using the ⅜ -16 ⅝ in. bolts from Hardware Bag No. 2 in the Miscellaneous box. Once secure to the Head, slide the support leg under the other end of the Beak. Attach the Beak of the Support Leg using ¼ -20 ⅝ in. Allen head screws and spacers from Hardware Bag No. 2. The spacers shold be placed between the Support Legs and the Beak.



On machines without a Powered Gate the Beak will attach to the Head using eight bolts. If the machine is equipped with a Powered Gate the Beak will attach using four bolts.

04 Drive Belt Installation

4.1 Drive Belt Pre-Installation

The Dragon A400 is delivered with the Drive Belt mounted on the Head of the machine. The Drive Belt is pre-installed around the Drive Belt Pulley and the idler pulleys located on the Trolley. Since the machine is a modular design, the Drive Belt has been disconnected from the Tail of the machine after factory assembly and calibration. It has been rolled up and shrink-wrapped for shipping purposes.

Before installing the Drive Belt the Installer should remove any shrink wrap and/or plastic banding securing the Trolley.

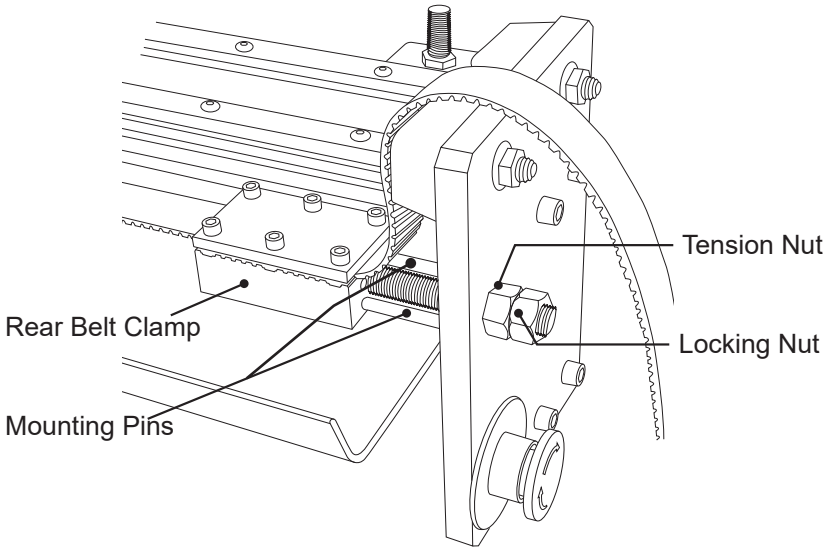
4.2 Installing the Drive Belt

Tools Needed

- ¾ in. wrench or ¾ in. socket and ratchet
- Belt tensioning tool (provided)

The Installer should remove the shrink wrap and unroll the Drive Belt while slowly walking toward the Tail of the machine. Avoid twisting the Drive Belt as it is unrolled. Once the Drive Belt is fully unrolled, ensure it is not twisted and that the Drive Belt is in proper position along the entire length of the machine.

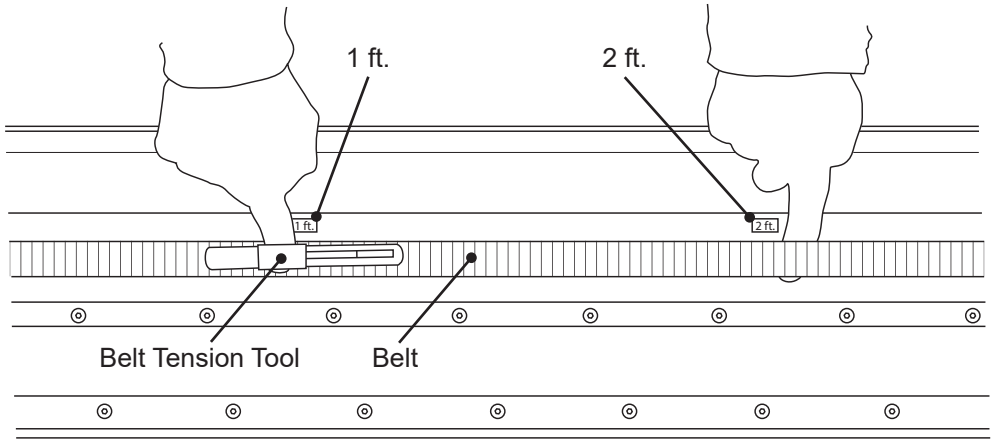
Insert the Drive Belt Clamp Block into the mounting pins at the Tail of the machine, feeding the Drive Belt adjustment threaded stud through the hole. Thread one of the nuts onto the adjustment stud and snug down to the machine finger tight.



4.3 Tensioning the Drive Belt

When checking the Drive Belt tension ensure the Trolley is positioned at the mid-way point on the Rail. Lay a tape measure on the cable track with 0 on the tape positioned where the Drive Belt enters the Drive Belt Clamp Block. Using the Belt Tension Tool from the Miscellaneous box, position the tool one foot from the Drive Belt Clamp Block.

Place a finger under the Drive Belt two feet from the end of the Drive Belt Clamp Block. Push straight down on the Belt Tension Tool with the right index finger while supporting the Drive Belt with the left hand.

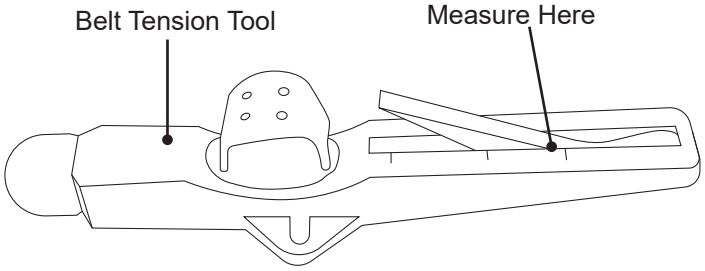


4.3.1 Reading the Drive Belt Tension Tool

When the Belt Tension Tool clicks, observe where the top face of the lever crosses the plane on the body of the tool. This position indicates belt tension.

4.3.2 Adjusting Belt Tension

Drive Belt Tension	**120 lbs**



To adjust Drive Belt tension, use a ¾ in. socket and ratchet or ¾ in. wrench to turn the adjustment nut that was installed in section 4.2. Turn the nut clockwise to add more tension.

4.3.3 Locking Drive Belt Tension

To lock in Drive Belt tension, thread the second ¾ in. nut onto the Drive Belt Tension adjuster. Tighten the locking nut with a ¾ in. socket and ratchet or ¾ in. wrench against the adjustment nut by turning it clockwise.

Cables and Control Box

5.1 Cable Pre-Installation

The Dragon A400 is delivered with the Cable Track rolled up and shrink wrapped at the front of the machine, just behind the Trolley. The cables are pre-connected to the various components on the Head of the Dragon A400.

The Installer will be required to unroll the Cable Track on the Cable Track Tray and route the ends of the cables to the Control Box.

Tools Needed

- Utility Knife
- 3⁄16 in. Allen Wrench

Hardware Needed

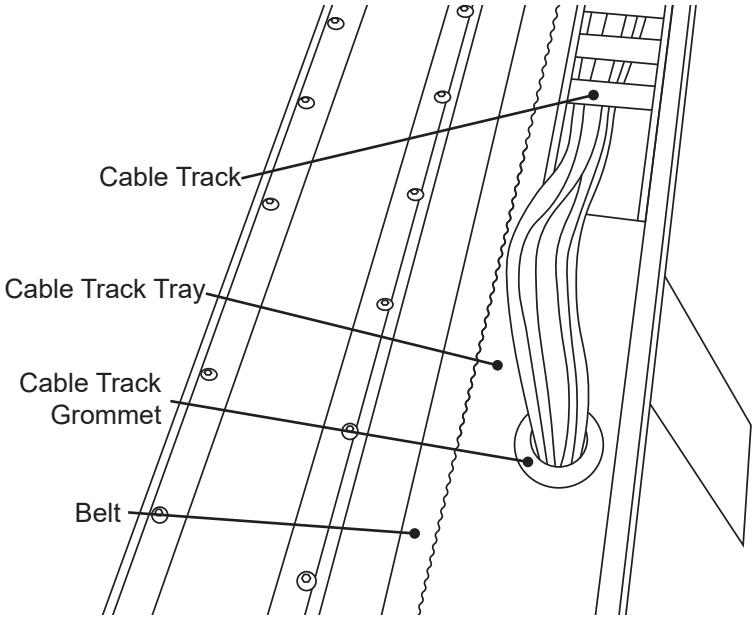
- Hardware Bag No. 4

5.2 Installing the Cable Track

Remove the shrink wrap and unroll the Cable Track into the Cable Track Tray.

Route the cable ends through the large grommet in the Cable Track Tray.

Once the cables are routed through the grommet click the end of the Cable Track into the Cable Track Guide mounted on the Cable Track Tray.



5.3 Routing Cables

With the cables fed through the grommet, place the three 1 ½ in. cable loops from Fastener Bag No. 4 around the cables at even intervals between the grommet and the area just above the Control Box.

Secure the cable loops along the center of the Rail Beam using the T-Nuts and screws in Fastener Bag No. 4. Tighten securely to the side of the Rail Beam.

5.4 Connect to Control Box

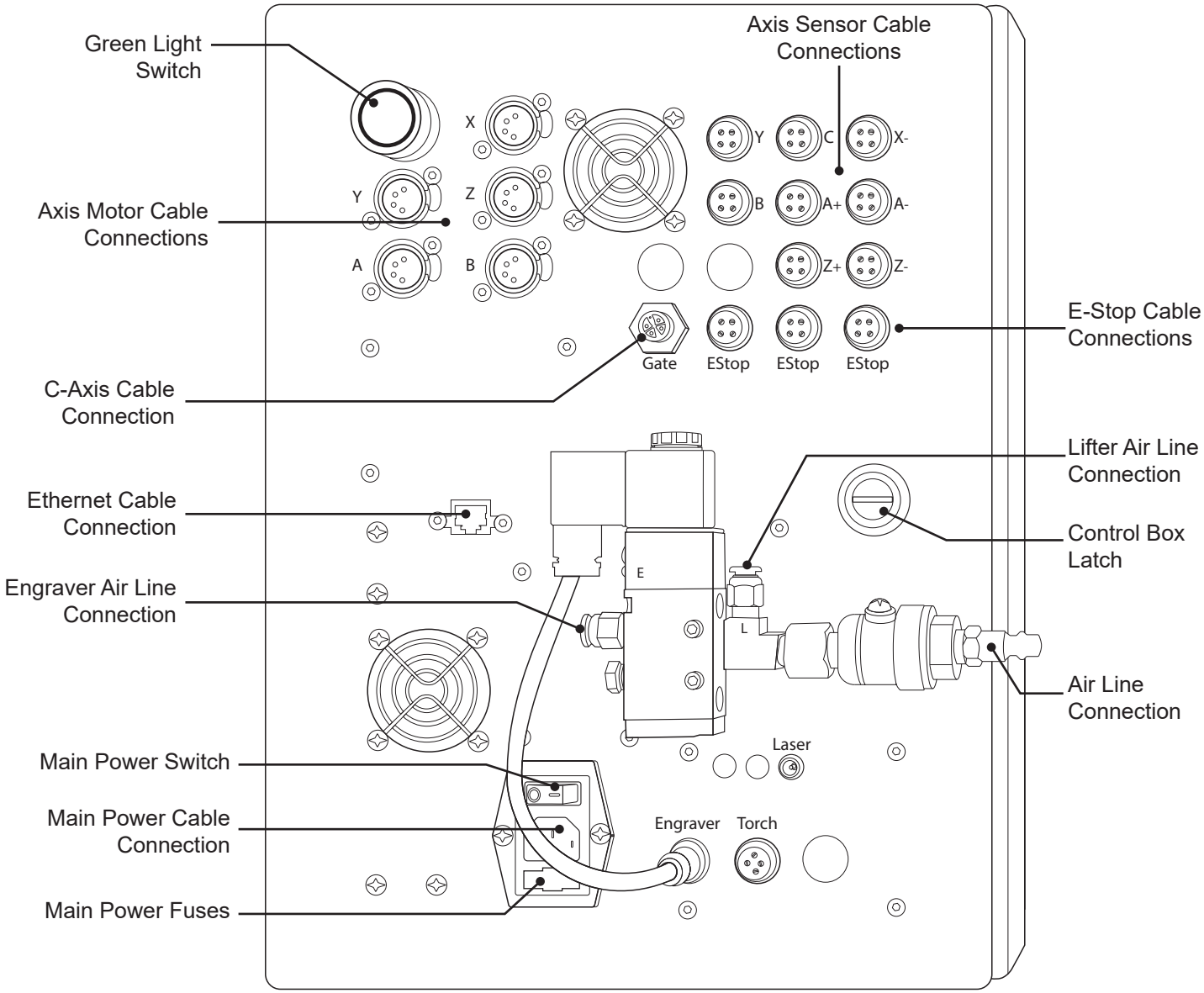
With the cables routed along the Rail Beam, insert the cables in their appropriate connections at the Control Box. Both the cables and the Control Box will be clearly labeled. Tighten securely by hand.

5.5 Control Box Connections

Locate the Ethernet cable, Power Cable and Torch Cable in the Miscellaneous box. Connect the Ethernet cable to the Ethernet port on the middle left hand side of the Control box, ensuring it clicks into place.

Connect the Power Cord to the main power connection at the bottom of the Control Box, ensuring it is seated in the plug.

Connect the Torch Cable to the Torch Cable Connection at the bottom of the Control Box. Tighten the Torch Cable securely by hand.



06 Trolley

6.1 Trolley Shipping

For shipping purposes, the Trolley will be shrink-wrapped and secured on the Rail with plastic banding straps. The Installer should have removed the shrink wrap and plastic banding before installing the Drive Belt as outlined in Chapter 4.

6.2 Trolley Cover

Tools Needed

- ⅛ in. Allen Wrench

Hardware Needed

- Hardware Bag No. 5

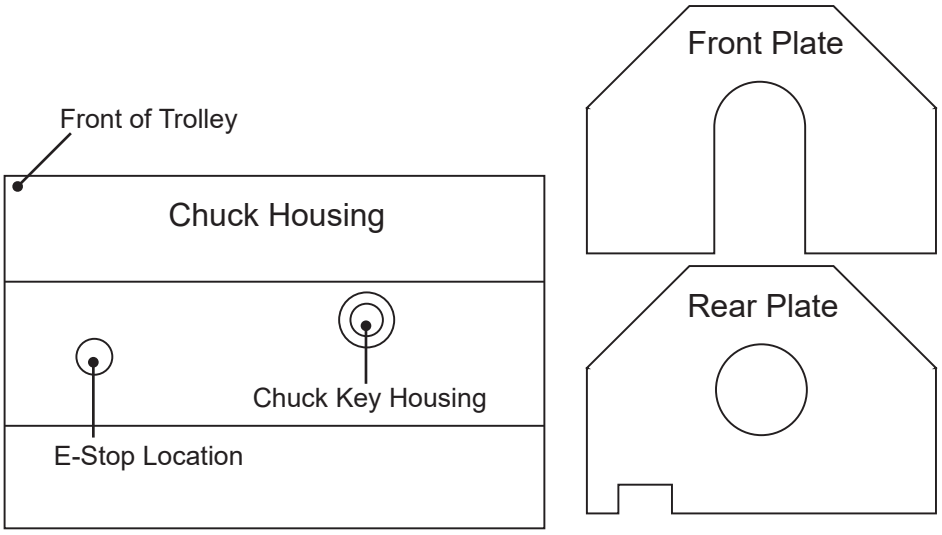
Locate the box containing the Trolley Cover. The Trolley Cover consists of three pieces:

- Chuck Housing
- Front Plate
- Rear Plate

The hardware to assemble and attach the Trolley Cover to the Trolley is found in Hardware Bag No. 5.

6.2.1 Front Plate

Begin assembling the Trolley Cover by attaching the Front Plate to the Chuck Housing. The Front Plate attaches to the Chuck Housing via 10 screws. Tighten the 10 screws securely using a ⅛ in. Allen wrench.



6.2.2 E-Stop

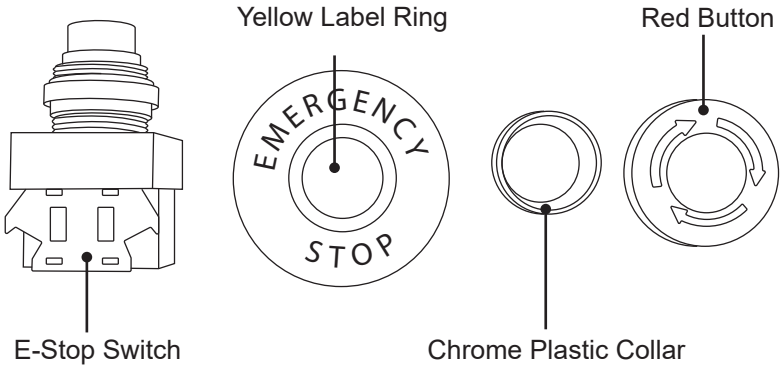
The Trolley is equipped with an E-Stop switch. Find the Switch on the Trolley. Remove the red button on the switch by unscrewing it counterclockwise. Remove the chrome plastic collar on the switch by unscrewing it counterclockwise. Remove the yellow label ring.

6.2.3 E-Stop Mounting

Feed the threaded E-Stop switch mount through the top of the Chuck Housing from the inside.

Place the yellow plastic label on the switch. Thread the chrome plastic collar onto the E-Stop button. Tighten Securely by hand.

Thread the red E-stop button clockwise onto the E-Stop switch. Tighten gently by hand.



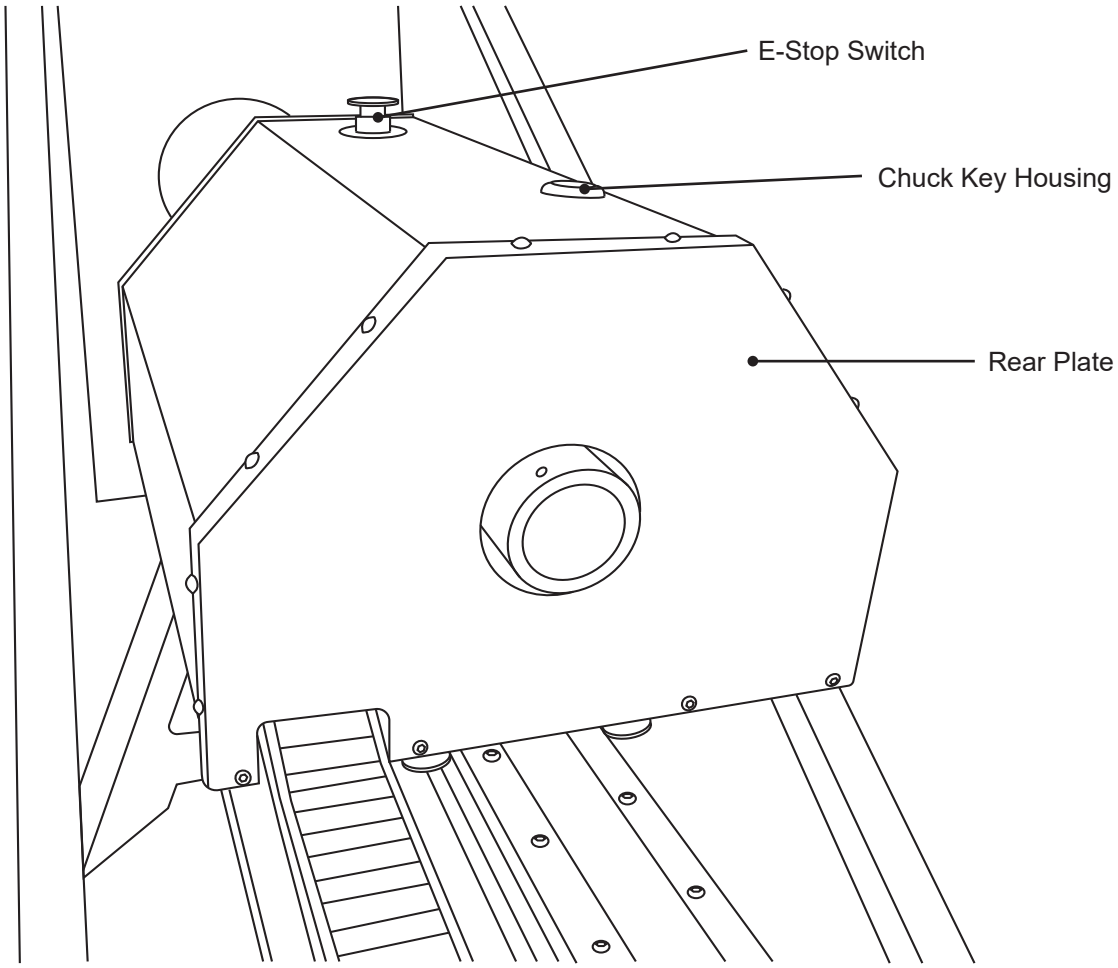
6.2.4 Attaching To The Trolley

Place the Chuck Cover with the Front Plate mounted onto the Trolley. Secure to the Trolley using screws from Hardware Bag No. 5. Tighten securely by hand.

Ensure the wires for the E-Stop switch are routed clear of any moving parts within the Trolley Cover.

6.2.5 Rear Plate

Place the Rear Plate on the Chuck Cover. The back of the Chuck assembly will protrude through the Rear Plate. Fasten the Rear Plate to the Chuck Cover using the hardware supplied in Hardware Bag No. 5. Tighten securely using a ⅛ in. Allen wrench.

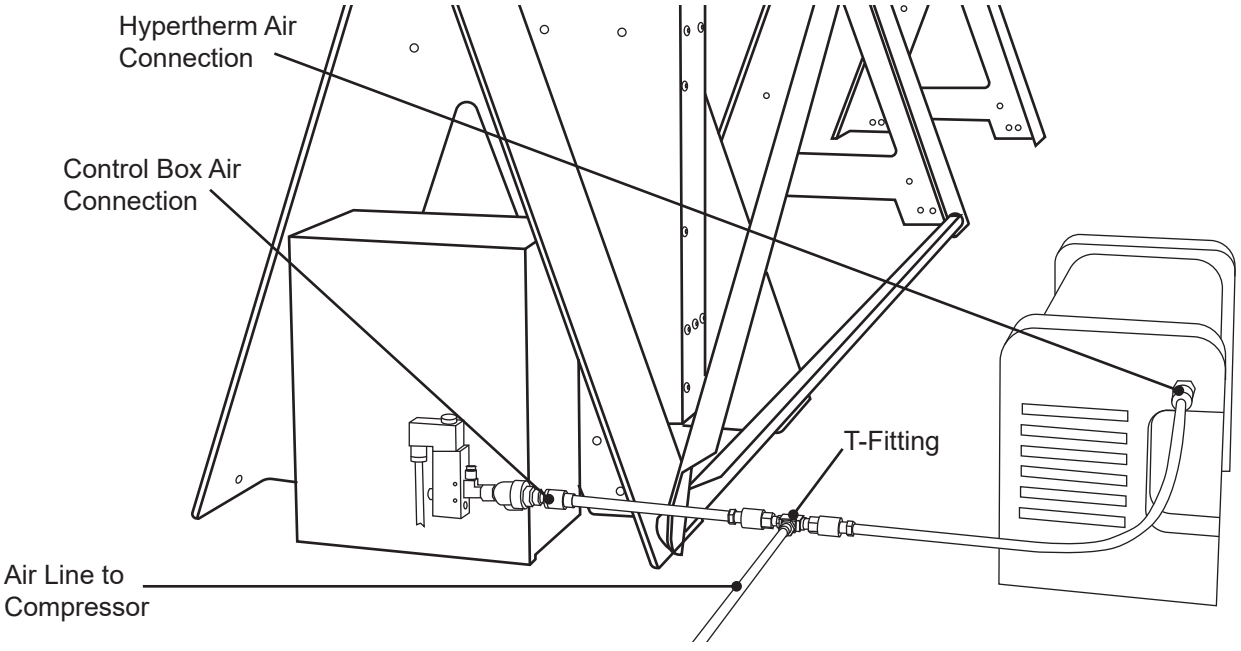


07 Air Line

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 Hypertherm.

It is recommended that the air supply to the Dragon A400 be equipped with an air water separator and filter.



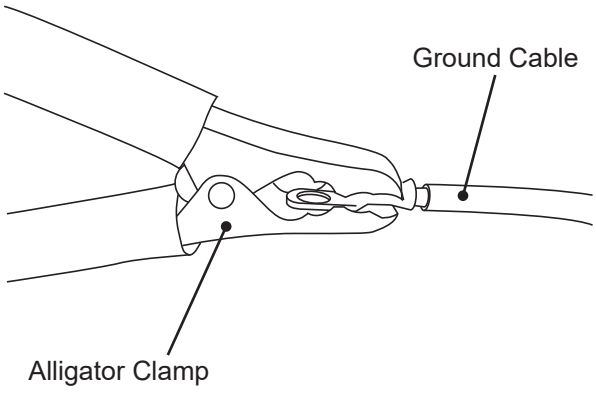
08 Torch

8.1 Torch Cable

Tools Needed

- 3⁄16 in. Allen wrench
- Phillips Screwdriver

The Installer should have attached the Torch cable to the Control Box as outlined in Chapter 5, section 5.5. Connect the loose end of the Torch Cable to the power cable connection at the back of the Hypertherm unit.



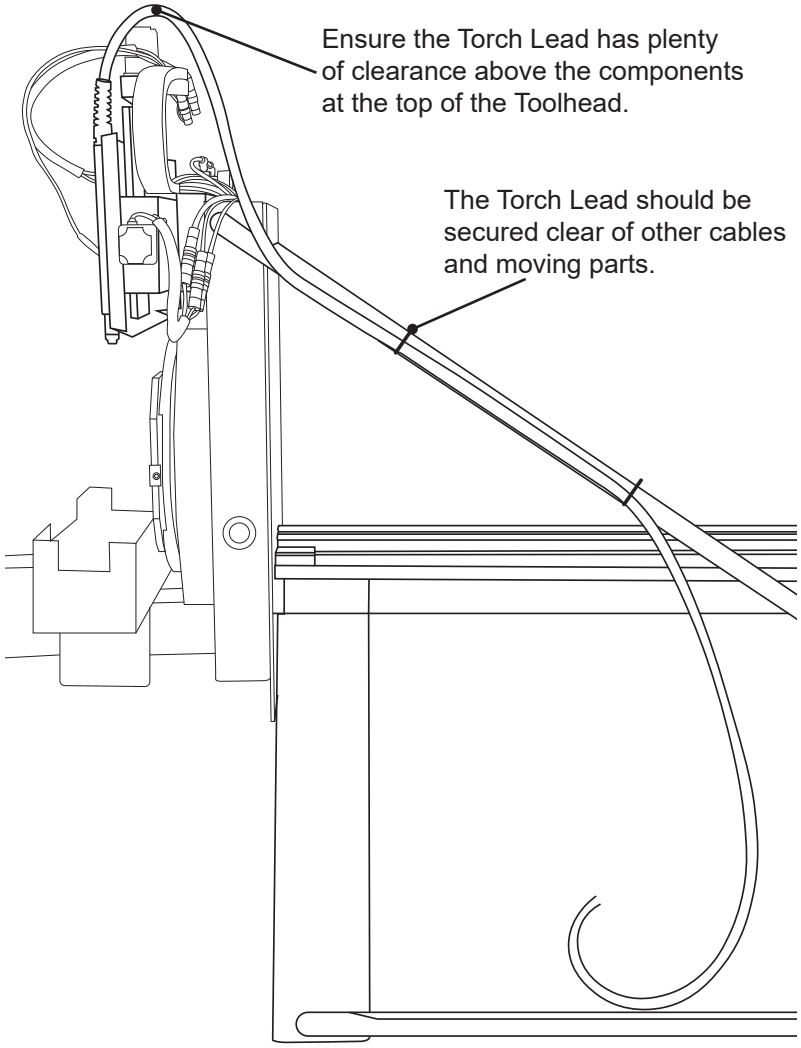
8.1.1 Torch Ground

Connect the alligator clamp from the Hypertherm unit to the ground cable on the Dragon A400.

8.1.2 Torch Lead

When mounting the Torch wand on the Toolhead, it is up to the Customer to determine best routing for the Torch lead. Refer to diagram for recommended routing.

Bend-Tech recommends securing the Torch lead to the Head Support Strut on the left side of the machine. Ensure the Torch cable is clear of other cables and moving parts. The Torch lead transmits high voltage current which can affect the performance of other electrical components if cables for those components are routed in close proximity to the Torch cable. This can create connectivity issues and possible machine malfunction.



The Customer should ensure the Torch lead is secured so it is clear of the cables at the top of the Toolhead. It is recommended that the Torch lead be secured so it loops up above the components at the top of the Toolhead.

The Hypertherm unit requires at least 85 psi at its air connection. Consult the Hypertherm Operator Manual for complete specifications.

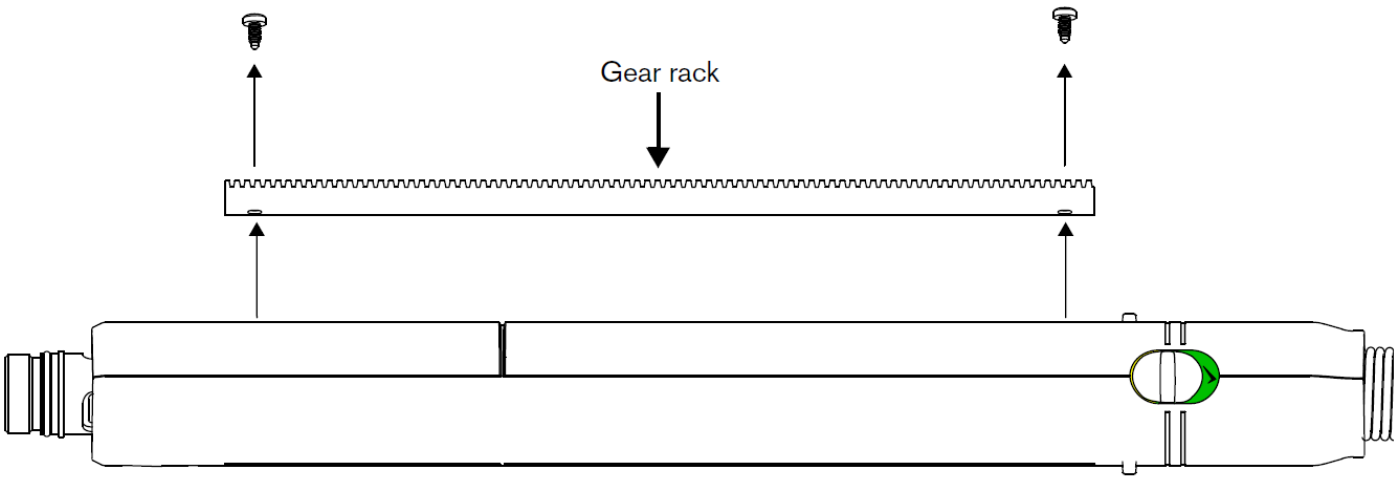
It is recommended that the air supply to the Hypertherm be equipped with a water and particulate filter, an oil filter and an oil vapor filter.

8.2 Preparing the Torch Wand

The Hypertherm Torch will need to be modified to fit the mount on the machine's Toolhead.

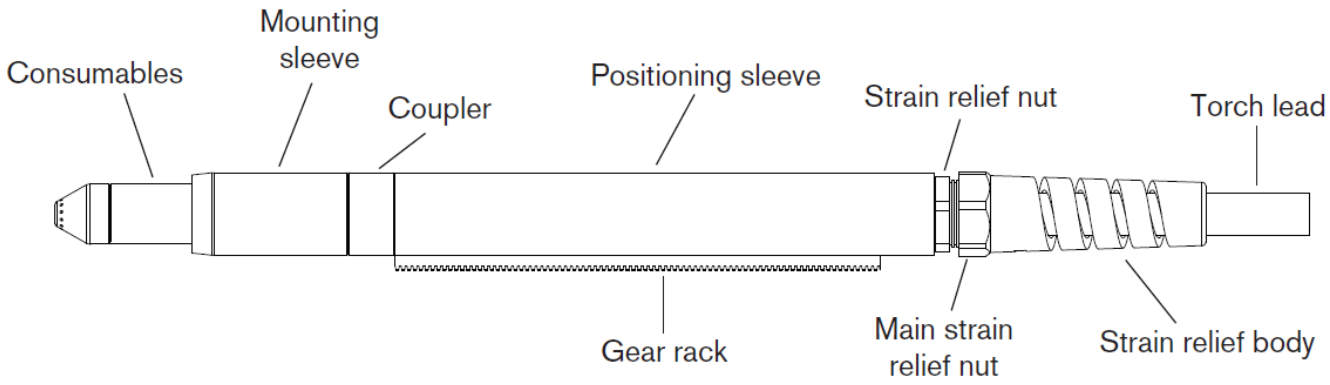
8.2.1 Brass Gear Rack Hypertherm Powermax45

Hypertherm supplies the Powermax45 Torch Wand equipped with a brass gear rack. The Customer will need to remove this gear rack in order to mount the Torch on the Toolhead. On the Hypertherm Powermax45 the gear rack is secured to the wand using two Phillips head screws. Remove these screws. Remove the gear rack. The Torch is now ready to be mounted on the Toolhead.



8.2.2 Brass Gear Rack Hypertherm Powermax65/85

The Hypertherm Powermax65 and Powermax85 Torch Wand is equipped with a brass gear rack. The Installer will need to remove the brass gear before installing the Torch Wand. First, remove the rubber cap from the Torch. Loosen the Mounting Sleeve and Coupler, just below the Torch rack gear, by twisting the Positioning Sleeve counterclockwise. Remove the Gear Rack. Reassemble the Torch in the order is was disassembled. The Torch is now ready to be mounted on the Toolhead.



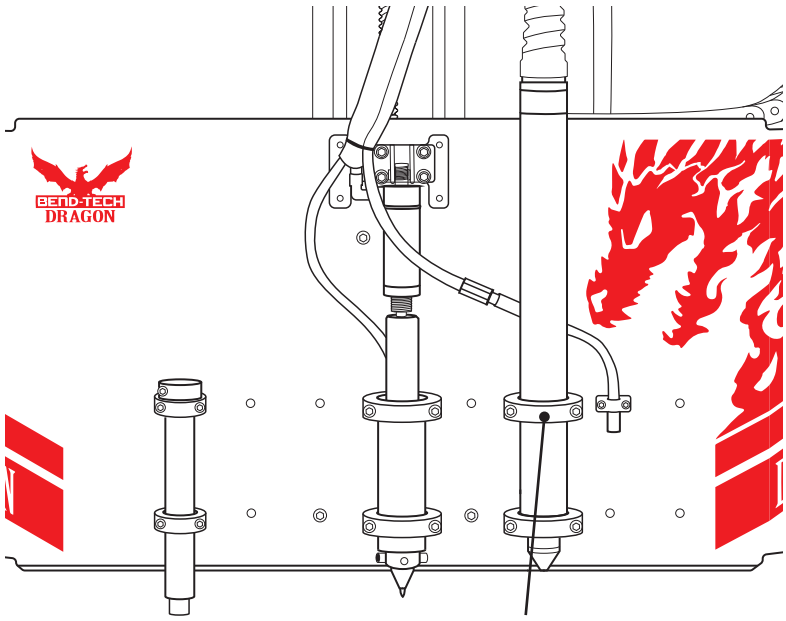
When reassembling the Torch, do not reinstall the rack gear.

8.3 Install the Torch Wand

The Torch is mounted to the Toolhead using two mounting collars. For initial install, the Torch should only be mounted in the top collar.

Loosen the adjustment screws in the top collar using a 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.



Only secure the Torch in the top collar

The Operator will perform the Torch Mount procedure to set Torch operating height as outlined in the Start-Up and Training Manual.

With the Powermax45 unit, ensure the Torch disable switch is in the ready to fire position.

Leveling and Alignment

9.1 Leveling and Alignment Overview

Ensuring the Dragon A400 is straight and level is the most critical part of the installation of the machine. Many operational difficulties can be traced back to improper machine installation, and the majority of installation issues center around the machine not being true.

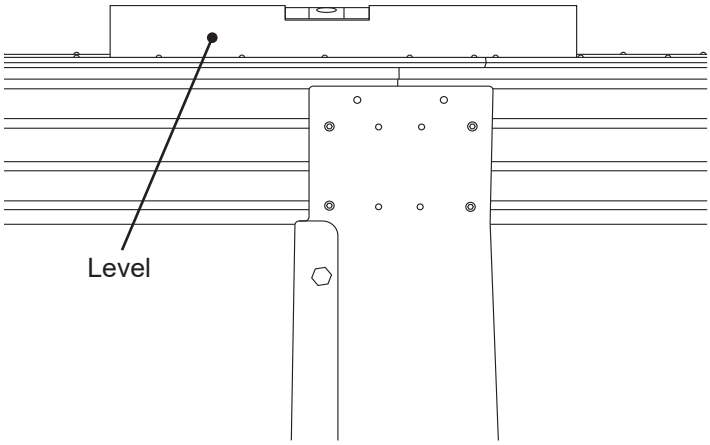
Tools Needed

- Level
- Laser or String
- 9⁄16 in. Wrench

This process is also covered in the Start-Up and Training Manual Part 2, Chapter 1, sections 1.2.2 through 1.2.4.

9.1.1 Checking Rail Level

Each Rail section should be checked for level side-to-side and lengthwise using a bubble level. If the Rail needs to be adjusted the Technician can use the Swivel Levelers provided with the Dragon A400. The Swivel Levelers should be installed upon assembly.



9.1.2 Adjusting Swivel Levelers

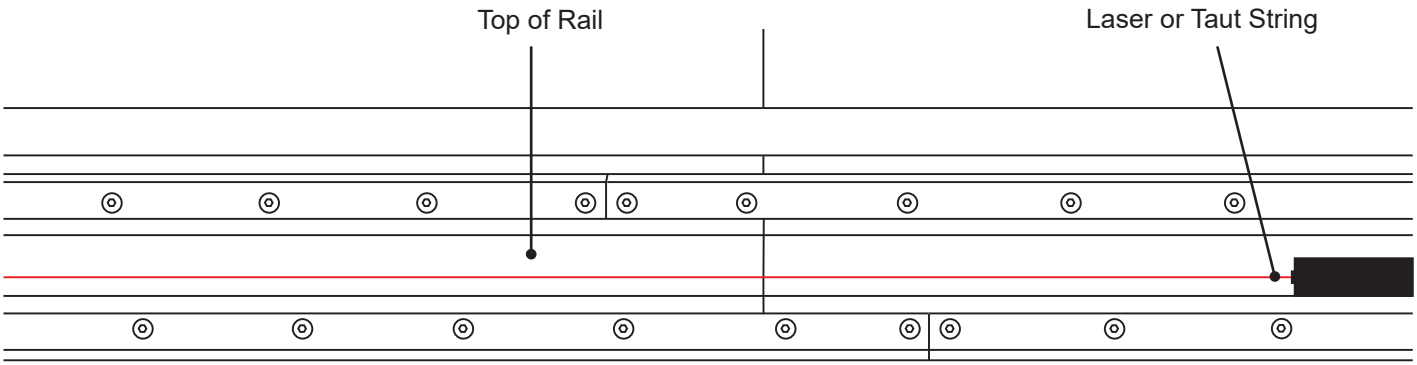
To adjust the Swivel Levelers, ensure the jam nut is loose and backed off to the base of the Swivel Leveler.

Place a 9⁄16 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.

9.1.2 Checking Rail Straightness

The Rail should be checked for straightness along its length. The most accurate way to check for Rail straightness is by using a laser tool. However, a taut string will also work to check straightness.

If the Rail is not straight the technician will need to straighten the Rail by aligning each individual Rail section beginning at the front of the machine, using the front Rail section as the benchmark.



9.1.3 Rail Splices

Ensure that each Rail splice intersects with the next as seamlessly as possible. Ensure that all of the Rail splices are fastened properly to the Rail.

Aligning the Rail Splices is one of the most difficult and time-consuming parts of the assembly process. Ensuring Rail Splices are straight and even is critical to the setup of the Dragon A400. Bend-Tech recommends experienced personnel perform the Rail Splice installation.

10 Mounting to the Floor

10.1 Mounting Overview

To maintain long-term precision of the Dragon A400, Bend-Tech requires the machine to be mounted to the floor of the shop. Daily operation can lead to the machine coming out of level or straightness. A machine not securely mounted to the floor can result in inconsistent operation.

Tools Needed

- 7/16 in Concrete Bit
- 3 in. long, 3/8 in. concrete anchor sleeves
- Hammer Drill
- Hammer
- 1/2 in. Socket
- Torque Wrench
- Shop Vac or Compressed Air

10.2 Concrete Sleeve Anchors

Bend-Tech requires using ⅜ in. diameter, 3 in. long concrete sleeve anchors to mount the Dragon A400. Installing the concrete sleeve anchors will require a 7⁄16 in. concrete drill bit. One concrete sleeve anchor per Floor Bracket is sufficient for anchoring the Dragon A400.

When placing concrete sleeve anchors ensure the machine will be able to move side to side in the mounting slots in case future alignment is required.

If mounting with more than one concrete sleeve anchor per Floor Bracket, typical concrete sleeve anchor spacing is 10 fastener diameters apart.

10.3 Preparing the Floor Brackets

With the machine level and true, loosen the Floor Brackets on the Rail Support Legs so they are resting on the surface of the floor.

Using a marker or pencil, mark the floor where the concrete sleeve anchor will be placed. 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 and re-install the Floor Brackets. Do not tighten the Floor Brackets onto the Rail Beam Support Legs at this time.

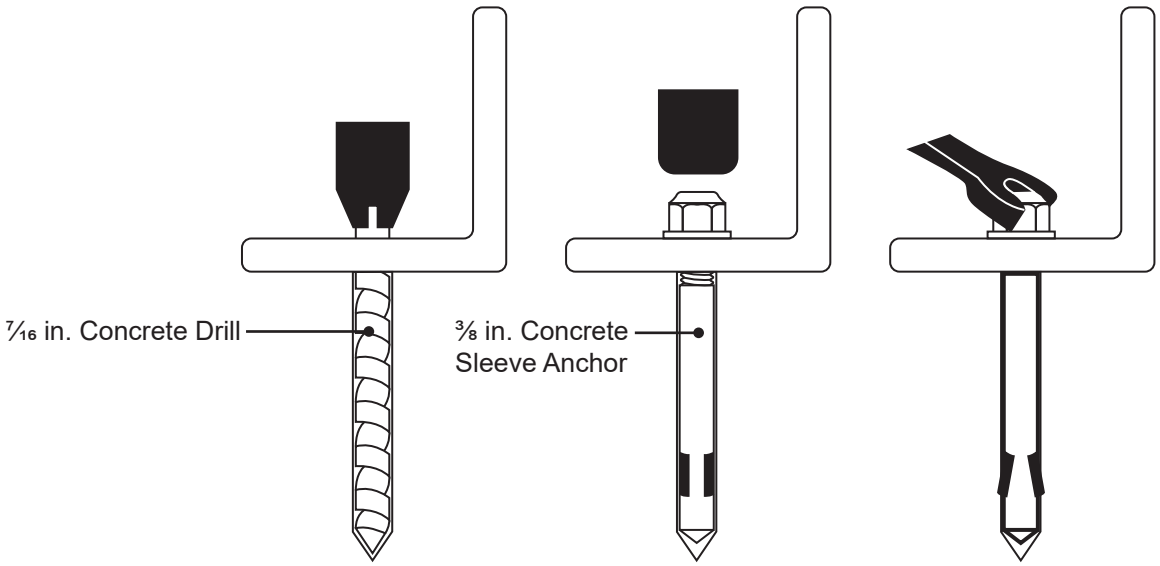
10.4 Install Concrete Sleeve Anchors

Ensure the Floor Brackets have been re-installed on the Rail Support Legs. Do not tighten. With the Floor Brackets loose, insert a concrete anchor sleeve into the drilled holes.

Tap into place with a hammer until the Floor Bracket is flush with the floor and the concrete sleeve anchor is snug to the Floor Bracket.

Snug the concrete sleeve anchor nut finger tight. Using a ½ in. socket and torque wrench, torque to manufacturer specs (typically 8 lb ft. for ⅜ in. concrete sleeve anchor). Tighten the Floor Bracket to the Rail Beam Support Leg.

Installing concrete sleeve anchors requires the use of a hammer drill.



Attention

Upon completion of Dragon A400 assembly, please proceed to Start-up and Training Manual Part 1.

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