

# Installation Guide

2017 TigerStop, LLC®



**TigerStop™**  
fast and accurate...every time

## HeavyDuty 2



Register warranty and enable HeavyDuty 2  
Optimizer BEFORE installation!

See Page 18!

February 2016 Mk12

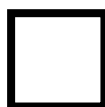
**Serial Number**



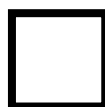
**Controller**



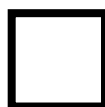
**Controller Stand**



**Universal Bracket**



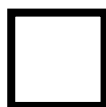
**Controller Cable**



**Power Cable**



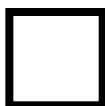
**Nut Pack**



**Quick Reference Cards**



**Standard Interconnect Kit**



**Gang Stop**

# Safety First!

IMPORTANT SAFETY INFORMATION. READ ALL WARNINGS BEFORE OPERATING THIS PRODUCT.



## GENERAL WARNINGS

WARNING: Installation of your TigerStop Product must be done by a person trained in the safe design and installation of automation products, and in the safe operation of power equipment. Ensure that such installation meets all legally required safety requirements and guidelines, and that proper guarding and safety devices are provided on all sides of the equipment to preclude unintended access during operation. Consult with and follow the recommendations of a qualified safety engineer.

WARNING: TigerStop Products are components intended for use in conjunction with potentially dangerous machinery. The use of TigerStop Products does not make other machinery safe. TigerStop Products are not intended to substitute, in any manner, for safe operating practices in general, or for safety features present in other machines designed to make those machines as safe as possible. **TIGERSTOP PRODUCTS, IF USED OR INSTALLED IMPROPERLY, MAY CAUSE PERSONAL INJURY OR DEATH AND SHOULD ONLY BE OPERATED BY PERSONS TRAINED IN THEIR SAFE OPERATING PROCEDURES.** Illustrations of TigerStop Products in use do not show, and are not intended to show, all safety features and practices necessary for their safe operation.



## INSTALLATION WARNINGS

WARNING: TigerStop Products must be installed in accordance with all local, state, and federal regulations. Only personnel properly trained in the safe design and installation of automation machinery and related power equipment should install TigerStop Products onto other equipment, to ensure a safe and proper work station. TigerStop Products should not be operated without proper training, both in the operation of TigerStop Products, and in the operation of related equipment.

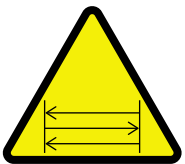
### IMPORTANT CAUTION:

The motor box (compartment) contains DC voltage with potentially FATAL amperage. NEVER attempt any unauthorized actions inside the motor box.



## INTERCONNECTS

WARNING: Using a TigerStop interconnect does not relieve you of the responsibility for making sure that your saw or other tool has all the necessary safety equipment in place. All installations must meet all legally required safety requirements and guidelines. Installation and training should be done following the recommendations of a qualified safety engineer.



## OPERATION

DANGER: This machine can start, move and stop automatically. Keep hands and loose clothing clear of moving parts while operating. Moving parts can crush and cut. When used with a saw or other cutting equipment, bodily injury and death may result if operated without safety guards on all machines. Do not operate with guards removed. Operators must wear adequate eye and ear protection.

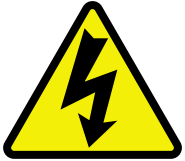


DANGER! Don't get pinched by the push feeder. Keep your hands away when in motion!

**IMPORTANT SAFETY INFORMATION. READ ALL WARNINGS BEFORE OPERATING THIS PRODUCT.**



Keep the work area clean and well lighted to avoid accidental injury.



Do not use TigerStop machines in a dangerous environment. Using power tools in damp or wet locations or in rain can cause shock or electrocution.



Do not operate near flammable liquids or in gaseous or explosive atmospheres!



Wear proper apparel, no loose clothes, long hair or jewelry which could get pulled into moving machinery or materials.  
Wear non slip footwear, safety glasses, ear protection and a dust mask.



Use only 3- wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tools plug for 120VAC. Use only 5-wire cords and plugs when using 3 phase.



Do not open motor compartment or controller keypad. DC Voltage with potentially FATAL amperage!  
Disconnect power before servicing. No user-serviceable parts inside.

DO NOT operate this or any machine under the influence of drugs or alcohol!



No one should operate this machine except for fully qualified personnel.  
Read the manual!

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# Installation Requirements

## HeavyDuty 2 Power Requirements

|         |         |
|---------|---------|
| 208 VAC | 20 Amps |
| 240 VAC | 20 Amps |

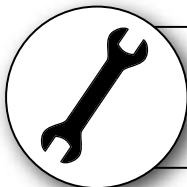
HeavyDuty 2 must have a dedicated circuit. No other equipment or devices should be on the same circuit.

**WARNING!** Do NOT use a high leg delta circuit to power HeavyDuty 2.  
If you are not sure what kind of circuit you are using, STOP! Have a qualified electrician confirm the main power circuit.



### Do **NOT** drill or tap into the HeavyDuty 2 beam!

Drilling holes into the HeavyDuty 2 beam may damage the drive system. All fastening or attachment to the fence beam must be made by inserting T-bolts or T-nuts with washers.



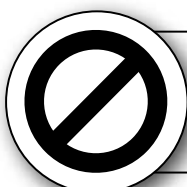
### Do **NOT** over tighten mounting hardware!

It is critical, especially if not using the TigerStop Universal Attachment brackets, that the bolts are prevented from over tightening and driving into the fence beam. Always use washers.



### **ALWAYS** evenly tighten mounting hardware!

Uneven tightening of mounting hardware can introduce a slight twist or other deformation in the beam. This will result in inaccurate measurement and premature failure of the drive or other components.



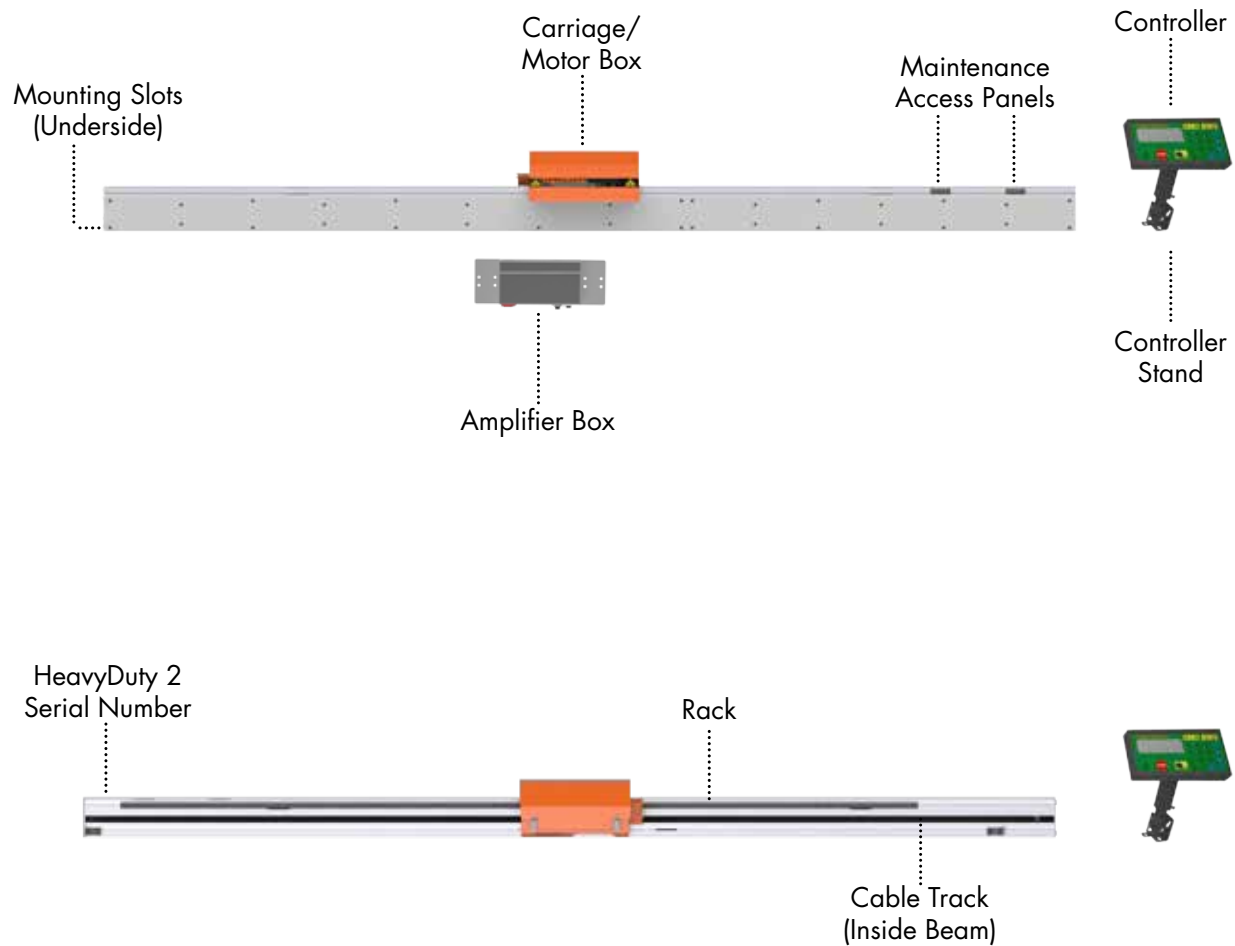
### **NEVER** open HeavyDuty 2 Amplifier Box!

The motor box compartment contains DC voltage with potentially FATAL amperage.  
**NEVER** attempt any unauthorized actions inside the amplifier box!



# HeavyDuty 2 Installation

## HeavyDuty 2 Anatomy

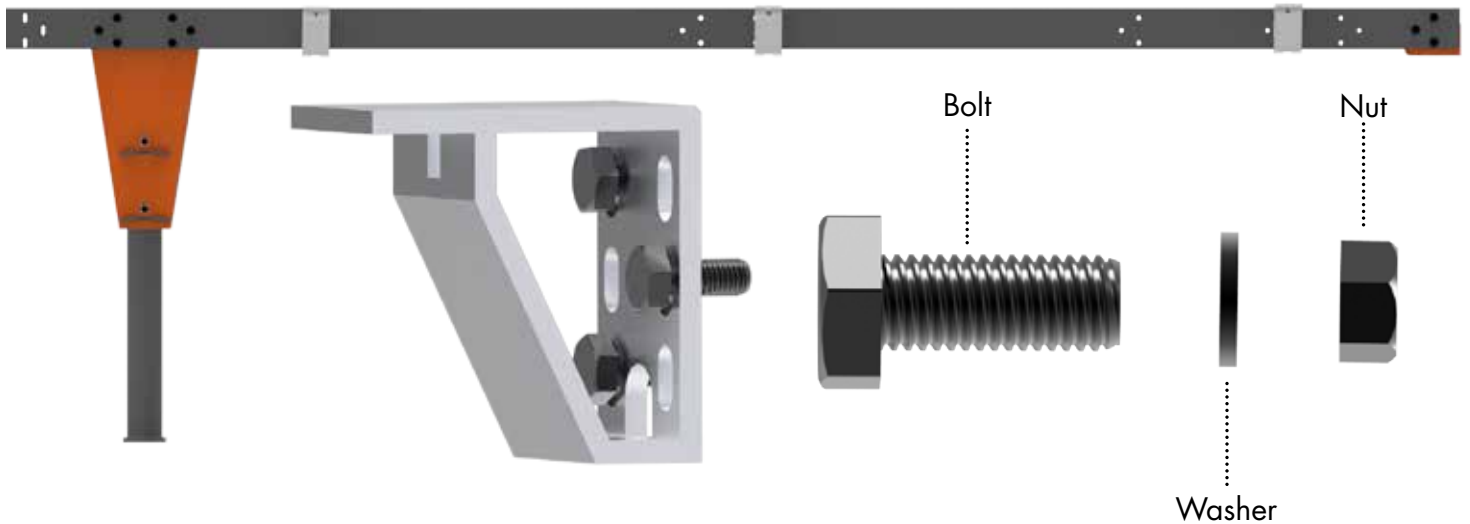


## Installation

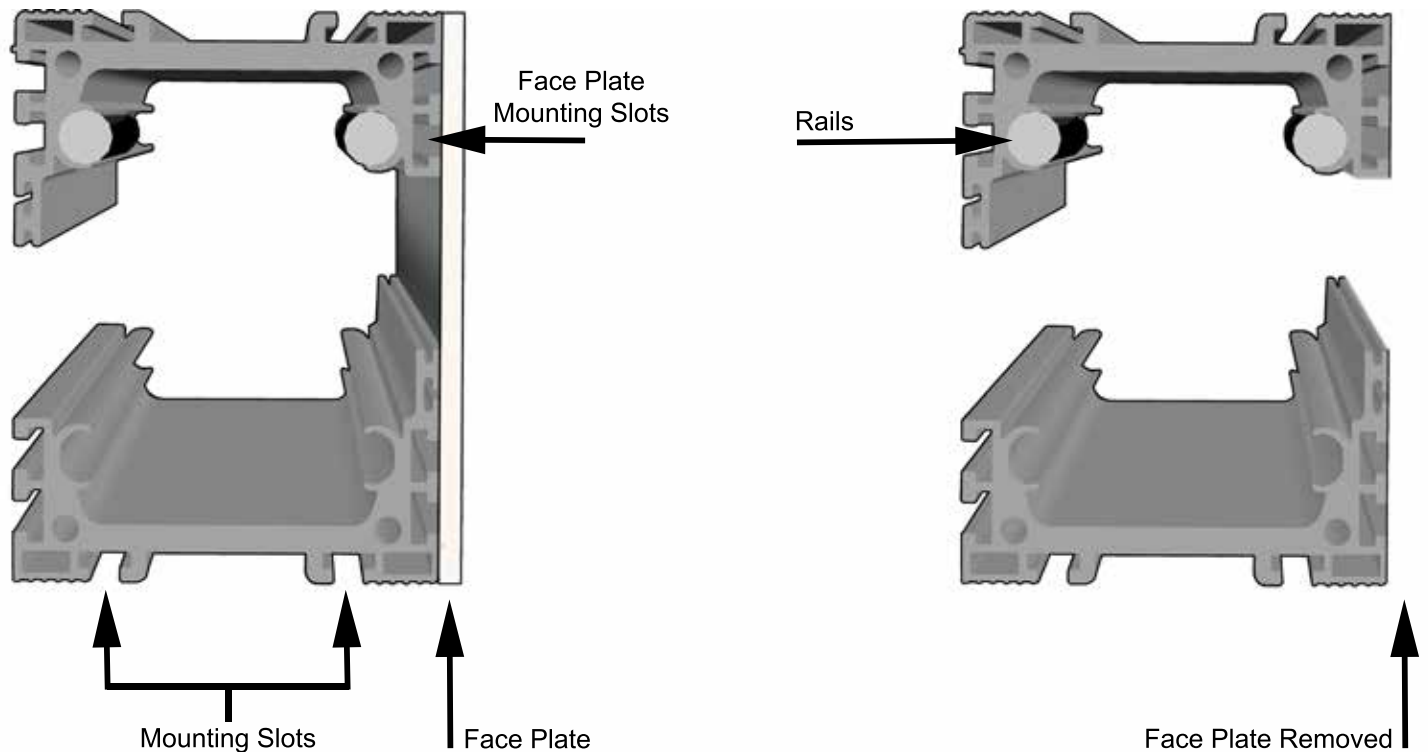
1. Each HeavyDuty 2 comes with an appropriate number of Universal Mounting Brackets (UBR). Mount these to the back of the mounting surface.

**Note:** Space mounting brackets approximately 3 feet apart.





If your HeavyDuty 2 is over 40 Feet (12.19 Meters) long, the main beam will come in sections.



2. Take all HeavyDuty 2 sections out of the crate.
3. Set the sections next to each other as if they were one piece.
4. Ensure the rails in each section are running tight in the channel.
5. Using the supplied joining plates and set screws, join each section in three places.

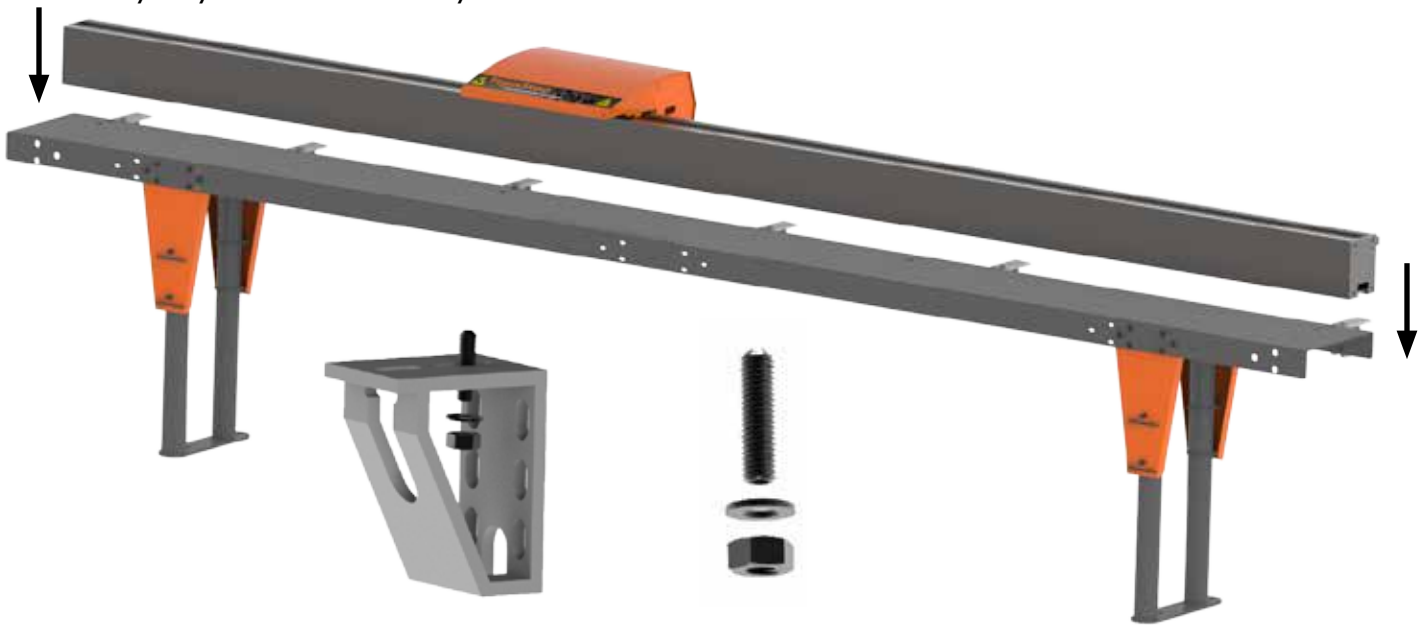




6. Lower HeavyDuty 2 into position over the Universal Mounting Brackets.

**Note:** Ensure the tables are lagged to the ground and are attached to your tool BEFORE installing HeavyDuty 2.

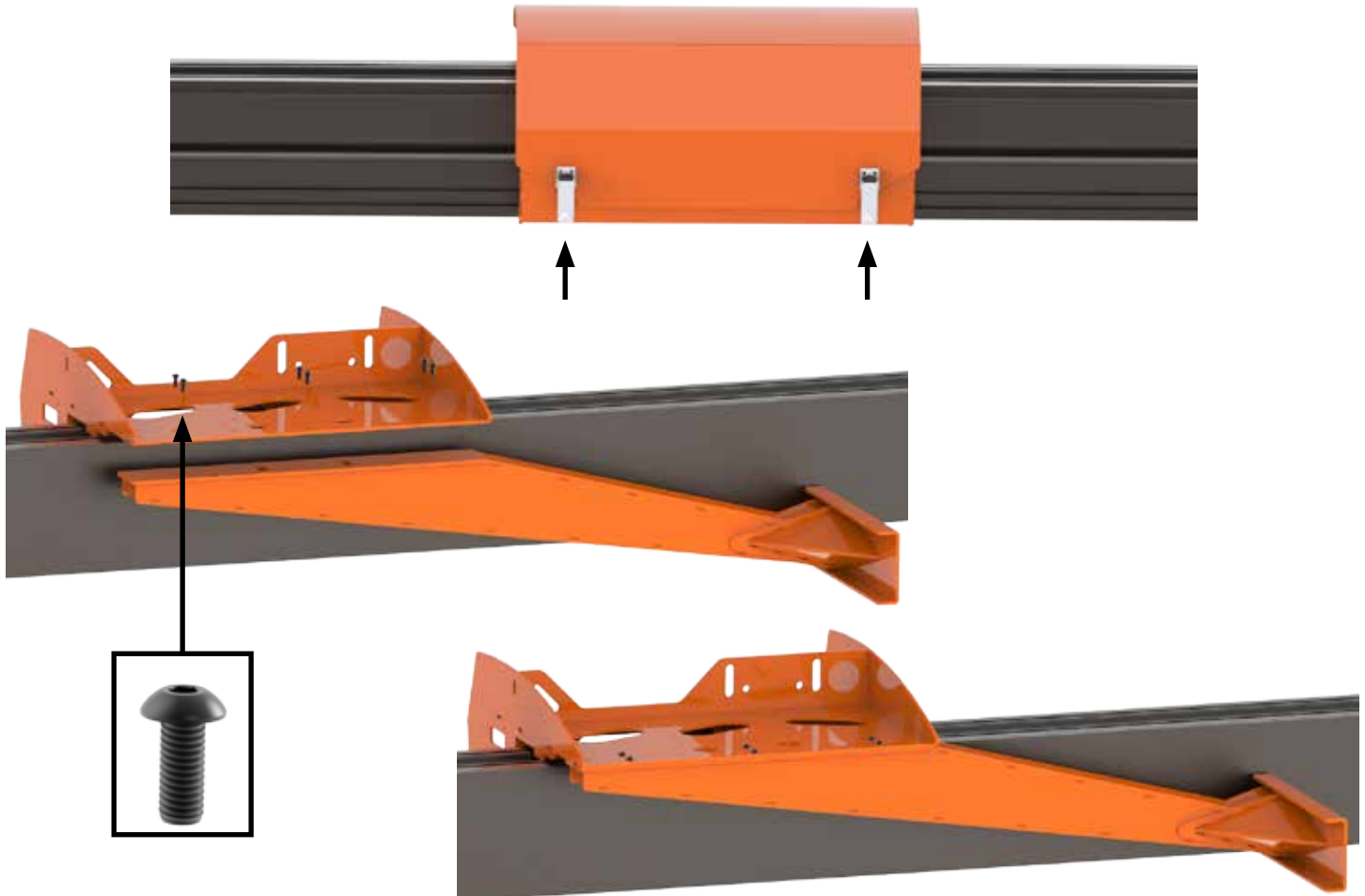
7. Attach using the supplied hardware. T-Nuts are inserted into mounting slots on the bottom of HeavyDuty 2 from the factory.



### Install Gang Stop

1. Remove the cover from the HeavyDuty 2 motor box.

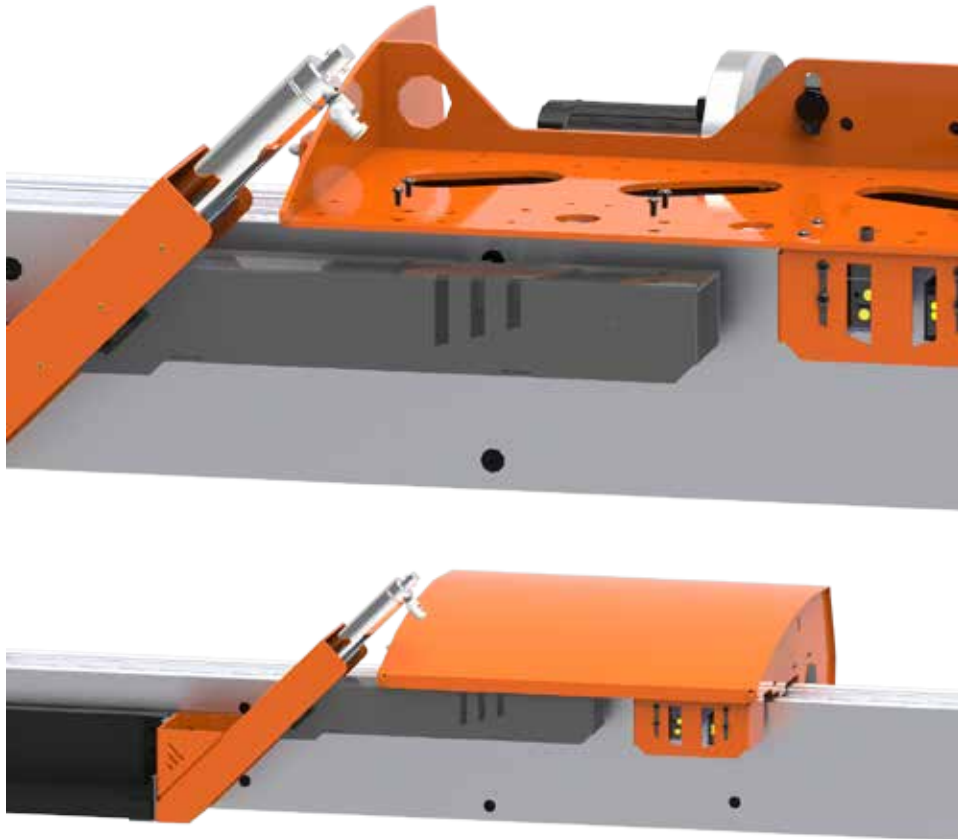
2. Install the Gang Stop to the carriage using the supplied hardware, as shown.



## Installing the Turbo Defecting Pusher Foot

If you purchased the Turbo Defecting Pusher Foot, you will install the Pusher Foot instead of the Gang Stop.

The Turbo Defecting Pusher Foot connects to the carriage using the same hardware as the Gang Stop.

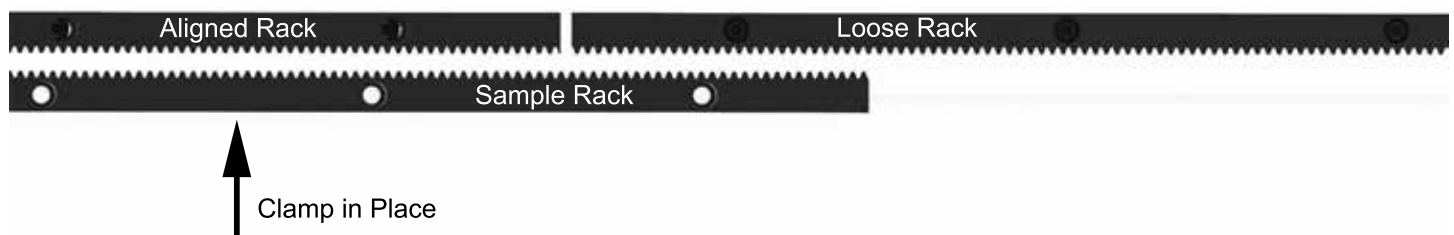


## Align the Rack

The rack is separated into sections on the back of HeavyDuty 2. The rack must remain properly aligned to maintain accuracy. It is important to adjust the rack during installation.

To align the rack...

1. Loosen the rack section to be aligned.
2. HeavyDuty 2 comes with a sample rack piece for alignment. Clamp the sample rack piece, upside down, to an adjacent aligned rack section.



3. Set the loose rack in place and tighten down to a torque specification of 380 in-lbs.

## Adjust the Pinion

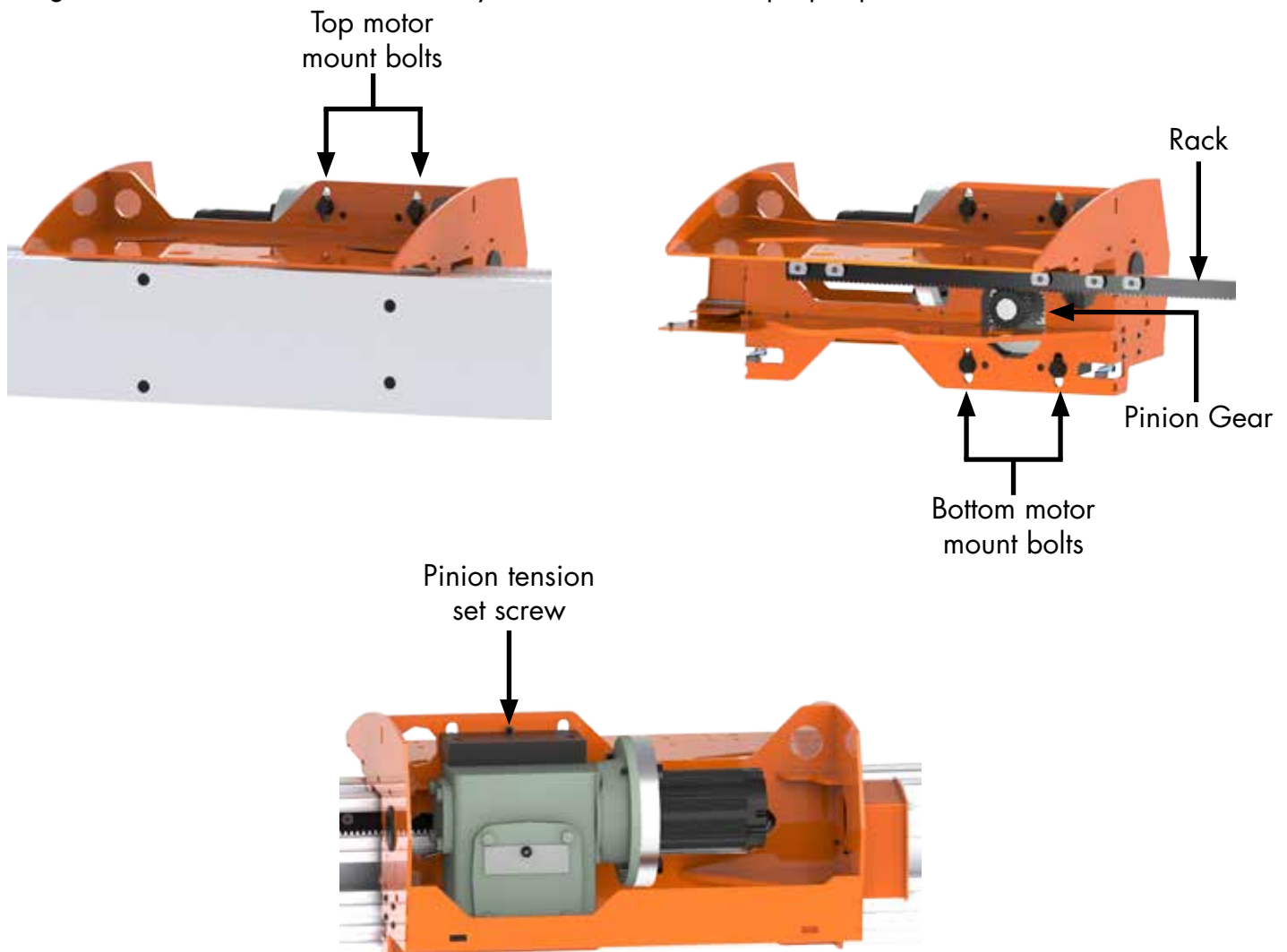
The pinion gear rides along the rack and moves the carriage. The pinion must be checked to ensure it is properly adjusted before putting HeavyDuty 2 into service.

To check pinion tension...

1. Ensure HeavyDuty 2 is powered down before adjusting the pinion gear.
2. Insert a piece of paper between the pinion and the rack, at the back of the HeavyDuty 2 carriage.
3. Pull the carriage by hand to move the pinion gear across the paper.
4. Remove the paper. The paper should be embossed by the rack, but not ripped or torn.
5. If the paper is not embossed, or if its torn you will need to adjust the pinion.

To adjust the pinion...

1. Remove the motor box cover
  2. Locate and loosen the 4 motor mount bolts.
  3. Tighten the pinion tension set screw. Move the carriage slightly after each turn of the screw. Stop when you can hear the pinion click against the rack.
- Note:** If you cannot move the carriage, loosen the set screw instead of tightening.
4. Slowly tighten the set screw until the pinion no longer clicks on the rack.
  5. Check the pinion tension again. If the paper is still not correct, adjust set screw tension as necessary.
  6. Tighten the motor mount bolts when you have achieved the proper pinion tension.



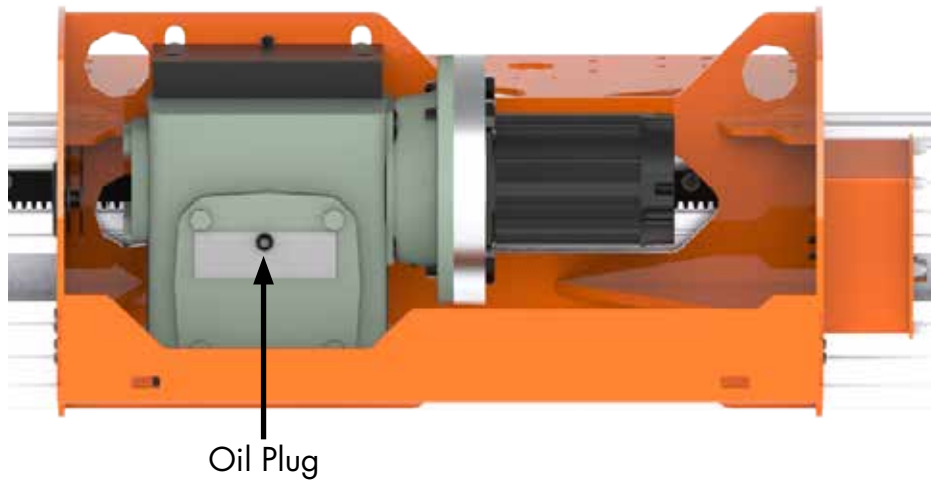
## Remove Shipping Oil Plug

HeavyDuty 2 ships with a plug in the gearbox to keep oil from leaking during shipping. This plug must be replaced with the breather plug that will remain in the gearbox for the tools life.

**Note:** Do NOT run HeavyDuty 2 with the shipping plug in place! Doing so will void your HeavyDuty 2 warranty!

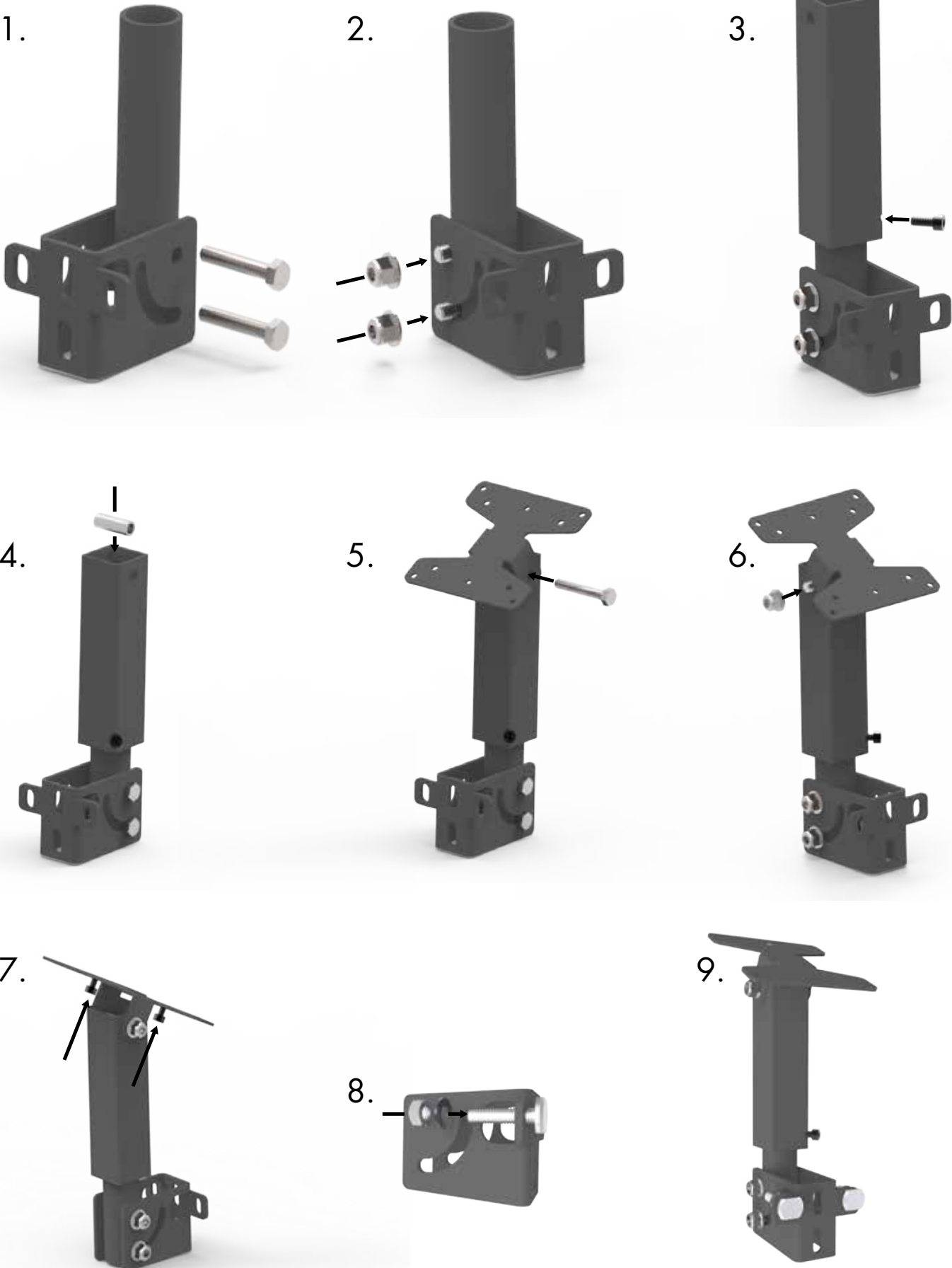
1. Unscrew the shipping oil plug.
2. Insert and screw in the breather plug.

**Note:** The breather plug will be in a bag attached to the gearbox. If you cannot find your breather plug, contact TigerStop Customer Service.



# Assemble Controller Stand

The TigerStop controller stand will hold the HeavyDuty 2 controller at a comfortable angle and height during Backboard Defecting & Optimizing. The stand can be adjusted for a straight base or any angle up to 90 degrees. Once assembled, install anywhere that is convient for the operator.



## Install Standard Interconnect Kit

The Standard Interconnect Kit integrates HeavyDuty 2 with your tool. Once installed, HeavyDuty 2 will know when the tool is cycling and when the cycle is completed. This has a number of benefits;

### Safety

When installed, HeavyDuty 2 will be able to prevent the tool from cycling while it is in motion. HeavyDuty 2 is also prevented from moving when the tool is in mid-cycle.

### Automation

An additional benefit is partial automation of the tool when using TigerStop's Dynamic Optimization. Once installed, HeavyDuty 2 will read when the saw cycle is complete and move to the next part size automatically, instead of waiting for the operator to signal for the next move. This dramatically speeds up part throughput and lowers material waste when performing Backboard Defecting & Optimizing using TigerStop's Dynamic Optimization upgrade.

**WARNING!** Using a TigerStop Standard Interconnect Kit does NOT relieve you of the responsibility for making sure your saw or other tool has all the necessary safety equipment in place.



The TigerStop Standard Interconnect Kit has two components that integrate into your tool;

### Mechanical Limit Switch

Mounted on the tool, this switch tells HeavyDuty 2 if the tool is cycling.

### Pneumatic Solenoid Valve

Plumbed into the air line that activates your tool, this solenoid valve will cut off air to the tool when HeavyDuty 2 is moving.

Mount the limit switch anywhere on the tool so that when the tool is at its resting position, the switch is pressed.

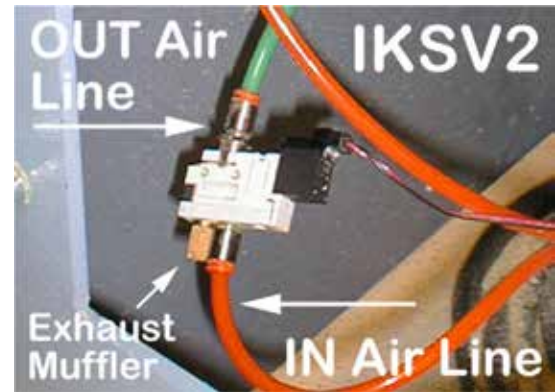
Note: When the tool is cycled, the switch should become unpressed. When the tool returns from the cycle, the switch should return to the pressed position.





The Standard Interconnect Kit pneumatic solenoid must be mounted inside your tool and integrated with the air supply. The function of the air valve is to cut off air and disable the tool while HeavyDuty 2 is moving.

1. Find the air line that directly cycles your tool.
2. Cut this air line.
3. Put one side of the cut air line to the air input on the solenoid valve.
4. Put the other side of the cut air line to the air output on the solenoid valve.
5. Connect the solenoid valve to the Standard Interconnect cable.



## Final Connections

Once HeavyDuty 2 and all HeavyDuty 2 accessories are installed, its time to make the final connections.

1. Connect the HeavyDuty 2 Controller Cable to the Controller and to the Amplifier Box.

**Note:** The HeavyDuty 2 Controller Cable is a proprietary cable. DO NOT use an "off the shelf" cable. Doing so can cause damage to HeavyDuty 2.

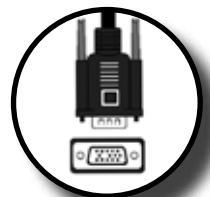


**Controller**



**Amplifier Box**

White End (Amplifier Box)  
Black End (Controller)



**15 Pin**

2. Connect the HeavyDuty 2 power cable from your power outlet to the HeavyDuty 2 incoming power plug.



**Incoming Power**



**Amplifier Box**

Black HeavyDuty 2  
Power Cable



**Power Cable**



**Standard Interconnect Kit**



**Amplifier Box**

Grey Cable



**6 Pin**

## Mounting the Amplifier Box

The HeavyDuty 2 amplifier box can be mounted anywhere that is within easy reach of the operator. This box houses the power switch for HeavyDuty 2.

**Note:** Keep box away from coolants, liquids and high vibration areas.



## Grounding HeavyDuty 2

HeavyDuty 2 is supplied with a ground wire. The wire is connected to the grounding lug on the motor.

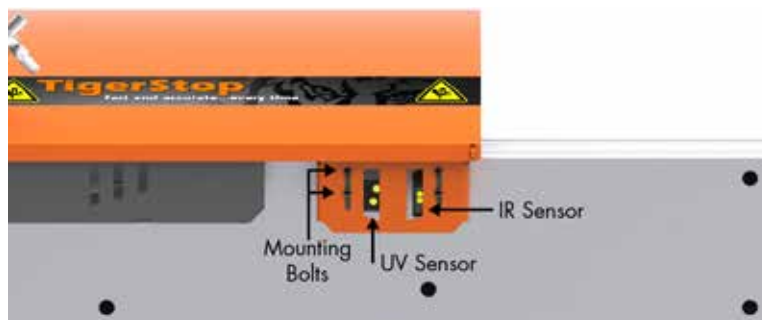
Ensure the ground is good before using HeavyDuty 2. Ensure the table HeavyDuty 2 is mounted to is also grounded. Ensure the ground is a bus ground and not a serpentine or other ground style.

**Note:** TigerStop recommends that a qualified electrician performs the grounding of the HeavyDuty 2 system.

## Turbo Defecting Pusher Foot Connections

If you purchased the Turbo Defecting Pusher Foot, you will connect the Pusher Foot sensors, amplifier box and the controller to the TigerStop I/O Panel.

## Defect Scanning Head Anatomy



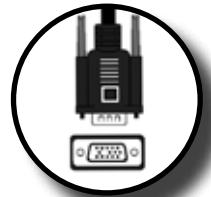


**Controller**

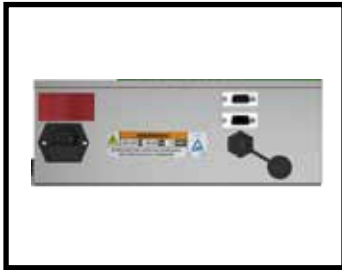


**I/O Panel  
(Controller Plug)**

White End (I/O Panel)  
Black End (Controller)



**15 Pin**

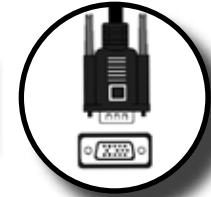


**Amplifier Box**



**I/O Panel  
(Amp Plug)**

White End (Amplifier Box)  
Black End (Controller)



**15 Pin**



**UV Sensor**



**I/O Panel  
(Tool at Rest plug)**

UV Det



**M12 Cable**



**IR Sensor**

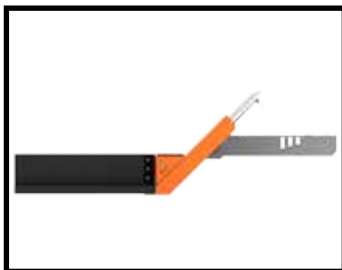


**I/O Panel  
(Cycle Start plug)**

Edge



**M12 Cable**



**Air Solenoid**



**I/O Panel  
(Tool Out Plug)**

Push Ft



**M12 Cable**

# Enable Code

Your new HeavyDuty 2 will not function until you enter the enable code, which is supplied by TigerStop Customer Service.

The enable code notifies TigerStop, LLC when your new HeavyDuty 2 is about to be put into service. This lets us start the warranty on the exact day you turn it on. The enable code also allows TigerStop to turn on your Dynamic Optimization upgrade.

## How to Enable HeavyDuty 2

1. Fill out the TigerStop Warranty Registration sheet that is shipped with your HeavyDuty 2 controller.

Fax or email the registration to;

(360) 260-0755  
service@tigerstop.com

You may also register your warranty by phone;

**TigerStop Customer Service**  
(360) 254-0661

TigerStop Customer Service will contact you by phone to give you the enable code, within the hour during regular business hours, Monday through Friday 6:00 am - 4:00 pm PST.

2. When you have received your enable code, power up HeavyDuty 2 using the power switch on the motor box.
3. HeavyDuty 2 will ask you to enter your enable code. Enter the code received and press [=].

Your HeavyDuty 2 has now been enabled.

| TigerStop Warranty Registration   |  |
|---|--|
| Please fill in your company information and fax this to TigerStop at (360) 260-0755.<br>Your machine warranty begins on the date that you receive your enable code. |  |
| <b>Serial Number:</b>   |  |
| <b>Company Information</b>  |  |
| Name of Company   | Email Address  |
| What is the street address of the TigerStop?  | PLEASE PRINT AND MAIL WITH YOUR REGISTRATION. Please provide your email address so we can send you important notices. Please do not list your home email address. <a href="mailto:info@tigerstop.com">info@tigerstop.com</a> or <a href="mailto:service@tigerstop.com">service@tigerstop.com</a> |
| Contact Name  | <input type="checkbox"/> Please call me with an enable code also.  |
| Tel   |  |
| Fax   |  |
| <b>1. Please select your industry</b>   |  |
| Furniture Manufacturing   | Wood Industry  |
| Kitchen & Bath Cabinetry  | Moldings & Millwork  |
| Commercial Features   | Wood Doors & Windows   |
| Doors & Windows   | Lumber & Panel Products  |
| Sheet Metal Fabrication   | Metal Industry   |
| Other   | Other  |
| Doors & Windows   | Plastic Industry   |
| Other   | Other  |
| <b>2. What problem(s) did you purchase the TigerStop to solve?</b>  |  |
| Eliminate Setup   | Improve Accuracy   |
| Increase Productivity   | Improve Material Costs / Optimization  |
| Reduce Labor Costs  | Eliminate Rework   |
| Reduce Scrap  | Increase Reliability   |
| <b>3. Where did you first hear about TigerStop?</b>   |  |
| Word of mouth   | Used in a different job  |
| Trade Show  | Dealer recommendation  |
| Internet Search   | Mobile Showroom  |
| Reading user  | E-mail   |
| <b>4. This TigerStop is being used with (check one)</b>   |  |
| Saw: Chop Saw   | Shrink Machine   |
| Saw: Double Miter   | Drill Press  |
| Saw: Miter  | Router   |
| Saw: Radial Arm   | Joint Workbench  |
| Saw: Straightline Rip   | Punch Press  |
| Saw: Table  | Shapers  |
| Saw: Up Cut   | Table Banding  |
| Saw: Custom Machinery   | Table Cutter   |
|   | Other  |

## Enabling Dynamic Optimization

The Dynamic Optimization enable code upgrade is necessary to use HeavyDuty 2 to its fullest potential. HeavyDuty 2 can run an optimizing algorithm that will find the mathematically perfect way to cut your material. This can decrease material waste by up to 25%+. Dynamic Optimization also enables you to defect your material using the Backboard Defecting & Optimization method, shown on page 31, allowing you to cut defects out of your material and optimize the yield of the good material.

**Ask TigerStop Customer Service about Dynamic Optimization!**

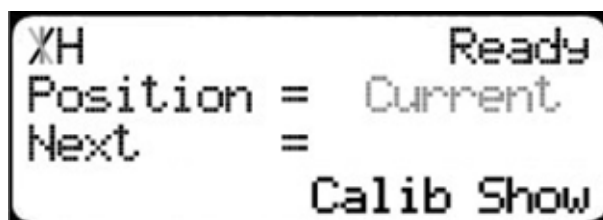
# First Power Up

After entering the enable code, HeavyDuty 2 will ask to run the 'Home Routine'.

## Home Routine Explained

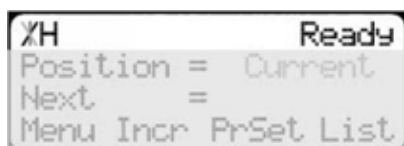
Every time HeavyDuty 2 is powered up, it performs the 'Home Routine'. The Home Routine is a 3 step process where HeavyDuty 2 will move to its farthest possible position.

1. Press [Start] to run the Home Routine.
2. When movement stops, HeavyDuty 2 will display the Ready Screen.



```
XH Ready
Position = Current
Next =
Calib Show
```

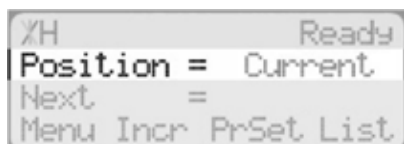
The Ready Screen is the starting point for all HeavyDuty 2 functions. Let's take a look at the screen, line by line.



```
XH Ready
Position = Current
Next =
Menu Incr PrSet List
```

Line 1 displays the "heartbeat". The heartbeat is a line that rotates and lets you know that HeavyDuty 2 is functioning normally. The letter next to the heartbeat is the drive indicator. This tells you what the motor is doing.

| Drive Indicator | Meaning                  |
|-----------------|--------------------------|
| H               | Holding Still            |
| A               | Accelerating             |
| C               | Moving at Constant Speed |
| D               | Decelerating             |
| W               | Waiting                  |
| S               | Stopping                 |
| T               | Waiting for Text Entry   |
| X               | E-stop Error             |
| N               | Communication Error      |



```
XH Ready
Position = Current
Next =
Menu Incr PrSet List
```

Line 2 shows the current position of HeavyDuty . The position will show with 'in' when in inches mode and 'mm' when in metric mode.

```

XH                      Ready
Position = Current
Next      =
Menu Incr PrSet List

```

Line 3 shows the next position. This is where user input is shown.

```

XH                      Ready
Position = Current
Next      =
Menu Incr PrSet List

```

Line 4 displays the soft key prompts. These prompts tell you what the soft key button below it does. These can change when you access different screens.

## Calibration Settings

Once homed, we will need to set a few settings to ensure HeavyDuty 2 is measuring properly for your application. Some of these settings are critical for the operation of TigerStop Dynamic Optimization and Backboard Defecting & Optimizing.

### Find the End Limits

```

XH                      Ready
Position = Current
Next      =
Calib Show

```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```

XH                      Ready
Position = Current
Next      =
Menu Incr PrSet List

```

2. Press the [Menu] soft key to display the Menu Select screen.

```

XH                      Menu
Password =

```

3. HeavyDuty 2 requires a password to access all menu options. Enter your password and press [=].

*Note: By default, the HeavyDuty 2 password is set to the serial number.*

```

XH  < Select > Menu
A-Setup  C-Options
B-Offset D-PartList
A      B      C      D

```

4. At the Menu Select screen, press the [Setup] soft key to access the Setup Menu.

```

XH  <FindLim> Setup
Find the end limits?
Press START to run

```

5. Press  to scroll through the settings. Stop when you see FindLim.

6. Press [Start] to run the Find End Limit routine.


*Note: Ensure HeavyDuty 2 can move its entire length without obstruction. HeavyDuty 2 will move once [Start] is pressed.*

When HeavyDuty 2 has stopped moving, continue to the next set of instructions.



## Calibrate

```
%H < Calib > Setup
Enter distance
from zero=  ##.###in
Done
```

1. Press  to scroll through the settings until you get to the Calib setting.

2. Measure how far HeavyDuty 2 is from your tool's zero point.
3. Enter this measurement and press the [Done] soft key.

Note: HeavyDuty 2 has been calibrated and you will be taken back to the Ready Screen.

## Set Kerf

If HeavyDuty 2 is installed on a cutting tool, you will need to set the kerf setting. The kerf is the measure of how much material is destroyed by the saw blade during a cut.

```
%H Ready
Position = Current
Next =
Calib Show
```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```
%H Ready
Position = Current
Next =
Menu Incr PrSet List
```

2. Press the [Menu] soft key to display the Menu Select screen.

```
%H Menu
Password =
```


3. HeavyDuty 2 requires a password to access all menu options. Enter your password and press [=].

Note: By default, the HeavyDuty 2 password is set to the serial number.

```
%H < Select > Menu
A-Setup C-Options
B-Offset D-PartList
A B C D
```

4. At the Menu Select screen, press the [Setup] soft key to access the Setup menu.

```
%H < Kerf > Setup
Kerf = 0.125in
New Value=
Done
```

5. Press  to scroll through the settings. Stop when you get to the Kerf setting.

To measure kerf...

1. Cut a sample piece and measure it with a caliper. Record your measurement.
2. Cut this piece in half.
3. Put the two pieces together as if they were one piece and re-measure with a caliper.
4. The difference between the measurement on step 1 and the measurement on step 3 will be your kerf value.
5. Enter your kerf value and press the [Done] soft key to save the parameter.

Note: It is important to check and reset the kerf every time the saw blade is changed.

## Set Units

HeavyDuty 2 can display its position in inches or metric. If you do not wish to change the units, skip this step.

```
%H          Ready
Position =   Current
Next       =
          Calib Show
```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```
%H          Ready
Position =   Current
Next       =
Menu Incr PrSet List
```

2. Press the [Menu] soft key to display the Menu Select screen.

```
%H          Menu
Password =
```

3. HeavyDuty 2 requires a password to access all menu options. Enter your password and press [=].

*Note: By default, the HeavyDuty 2 password is set to the serial number.*

```
%H < Select > Menu
A-Setup   C-Options
B-Offset  D-PartList
  A       B       C       D
```

4. At the Menu Select screen, press the [Options] soft key to access the Options menu.

```
%H < Units > Optns
Current units of
measure:   INCHES
          ↑   ↓   Done
```

5. Press  to scroll through the settings. Stop when you get to Units.

6. Press [B] to toggle between inches and metric.

7. Press the [Done] soft key when finished.

## Set Interconnect Type

```
%H          Ready
Position =   Current
Next       =
          Calib Show
```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```
%H          Ready
Position =   Current
Next       =
Menu Incr PrSet List
```

2. Press the [Menu] soft key to display the Menu Select screen.


```
%H          Menu
Password =
```

3. HeavyDuty 2 requires a password to access all menu options. Enter your password and press [=].

*Note: By default, the HeavyDuty 2 password is set to the serial number.*

4. At the Menu Select screen, press .

5. Press the [SysInfo] soft key to access the System Information menu.

6. Press  to scroll through the settings. Stop when you get to the Set TIK setting.

Set TIK has four settings:

**None** - No interconnect is installed.

**Standard** - The standard interconnect kit is installed.

**Advanced** - The advanced interconnect kit is installed, but working in semi-automatic.

**Full Auto** - The advanced interconnect kit is installed and working in full automatic mode.

To change Set TIK...

1. Press [C].
2. Enter your HeavyDuty 2 password and press [=].  
*Note: By default, the HeavyDuty 2 password is set to the serial number.*
3. Press [C] to toggle the setting.
4. Press the [Done] soft key to save the parameter.

## Set Optimizer Settings

TigerStops Dynamic Optimizer is tuned from the factory to give the best overall material yield. However, the optimizer can be configured differently if you have different requirements.

### Opt Score

1. From the Ready Screen, press the [Show] soft key to show the menu options.

2. Press the [Menu] soft key to display the Menu Select screen.

3. HeavyDuty 2 requires a password to access all menu options. Enter your password and press [=].  
*Note: By default, the HeavyDuty 2 password is set to the serial number.*

```

XH < Select > Menu
A-Setup    C-Options
B-Offset   D-PartList
  A      B      C      D


```

- At the Menu Select screen, press the [PartList] soft key to access the Part List menu.

```

XH <OptScore> PList
OptScore = 2.000
New Value=
Done

```

- Press  to scroll through the settings until you get to the Opt Score setting.

The Optimizer Score setting sets the score that the optimizer solution must reach to be considered a good solution.

A lower Opt Score setting will give you a better optimized solution, but will take longer to do so.

A higher Opt Score setting will give you a faster solution, but it may give you a lower material yield.

To change Opt Score...

Enter the new Opt Score setting.


Press [=] to save the parameter.

## Opt Time

```

XH <OptTime> PList
OptTime = 2000ms
New Value=
Done

```

- Press  to scroll through the settings until you get to the Opt Time setting.

The Optimizer Time setting sets the amount of time the TigerStop Optimizer has to find a solution. If it takes longer than this time, HeavyDuty 2 will use the best found optimized solution.

A lower Opt Time setting will give you a faster solution, but it may give you a lower material yield.

A higher Opt Time setting will give you better material yield, but it may take longer to do so.

To change Opt Time...

Enter the new Opt Time setting.


Press [=] to save the parameter.

## Opt Pen

```

XH < OptPen > PList
OptPen = 1.000
New Value=
Done

```

- Press  to scroll through the settings until you get to the Opt Pen setting.

The Optimizer Penalty setting sets a penalty for multiple board optimized solutions. This means that the higher this setting, the more HeavyDuty 2 will try to cut longer parts first.

A lower Opt Pen setting will give you faster optimization with more short parts processed first.

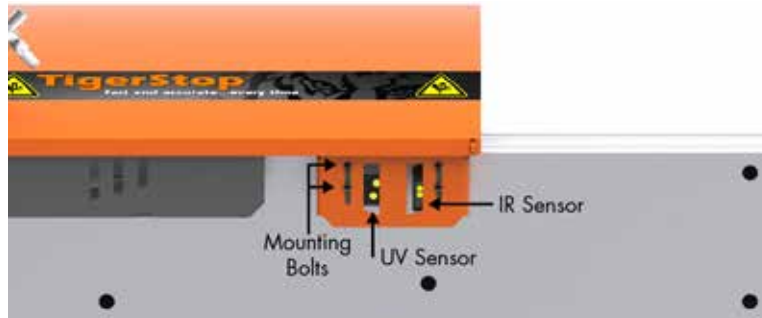
A higher Opt Pen setting will give you a slower optimization with more long parts processed first.

To change Opt Pen...  
Enter the new Opt Pen setting.  
Press [=] to save the parameter.

By adjusting these three optimizer settings, you can greatly influence how the TigerStop optimizer works to suit your exact application.

## Calibrating the Turbo Defecting Pusher Foot Sensors

If you purchased the Turbo Defecting Pusher Foot, you will need to calibrate the infrared (IR) length measuring sensor and the ultraviolet (UV) defect sensor that are inside the defect scanning head.



### UV Sensor Height Adjustment

1. Put a sample piece of material with a UV crayon mark under the UV sensor.  
*Note: A UV crayon mark will light up under the UV Sensor.*
2. Loosen the two bolts that hold the UV sensor.
3. Adjust the sensor up or down until you get 3 separate circles on the UV mark.
4. Tighten the bolts.

### UV Sensor Sensitivity Adjustment

1. Mark a piece of material with a UV crayon.  
*Note: The UV sensor has a yellow light that will light up when the sensor is detecting a UV crayon mark.*
2. Slide the material under the UV sensor and watch the light. It should only turn on when detecting your crayon marks from step 1. If it doesn't detect the mark or if it detects something other than a mark, continue to the next step.
3. Use the adjustment screw on the front of the sensor to adjust the sensitivity.
4. Once adjusted, test again as described in step 2.

### IR Sensor Sensitivity Adjustment

The IR sensor has an LED on the sensor body that will light up when it senses something under it. It also has a small screw that adjusts the sensitivity of the sensor.

To adjust sensitivity...

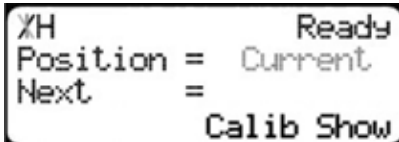
1. Ensure there is no material under the sensor.  
*Note: The IR sensor will make a small red dot on the table.*
2. Adjust the dial so that the LED is off.
3. Slide a sample piece of material under the IR sensor.
4. Adjust the dial so that the LED comes on when it sees the edge of the material.
5. Slide the entire length of the material under the IR sensor and ensure the LED is constantly on until it reaches the edge of the material.

# Basic HeavyDuty 2 Functions

## Manual Movement

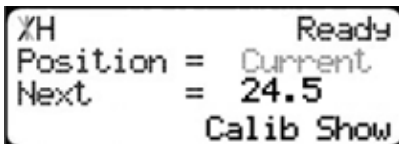
To manually move HeavyDuty 2 to a position, you must enter the length you want to go to. This length can be entered as a decimal or a fractional value.

### Entering Decimals



%H Ready  
Position = Current  
Next =  
Calib Show

1. Start at the Ready Screen.



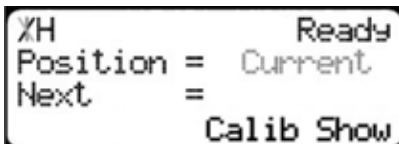
%H Ready  
Position = Current  
Next = 24.5  
Calib Show

2. Enter a length at the controller.

Example: To enter 24 1/2 as a decimal, enter [2] [4] [.] [5].

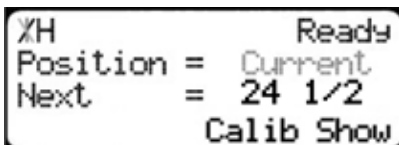
3. Press [Start] to move HeavyDuty 2.

### Entering Fractions



%H Ready  
Position = Current  
Next =  
Calib Show

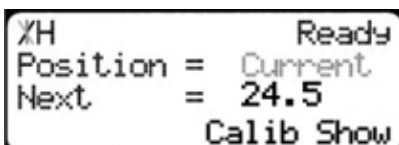
1. Start at the Ready Screen.



%H Ready  
Position = Current  
Next = 24 1/2  
Calib Show

2. Enter a length at the controller.

Example: To enter 24 1/2 as a fraction, enter [2] [4]  [1] [/] [2].



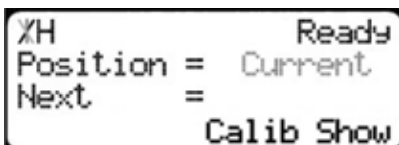
%H Ready  
Position = Current  
Next = 24.5  
Calib Show

3. Press [Start] to move HeavyDuty 2.

Notice that even though you entered a fraction, HeavyDuty 2 will display the position as a decimal once it has moved. HeavyDuty 2 cannot display fractions in the 'Position' field.

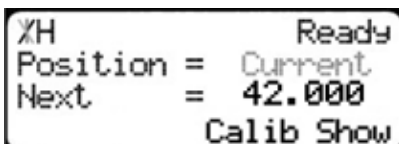
### Calculator Mode

HeavyDuty 2 has a calculator function that can be used to do simple math problems.



%H Ready  
Position = Current  
Next =  
Calib Show

1. Start at the Ready Screen.



%H Ready  
Position = Current  
Next = 42.000  
Calib Show

Just like a normal calculator, you can use the math function keys to enter math problems.

Example: I want to add 12 inches to 30 inches.



2. Press [1] [2] [+] [3] [0] [=].

The answer will appear in the 'Next' field.

3. Press [Start] and HeavyDuty 2 will move to the calculated position.

You can also do math functions on the current position.

Example: I want to subtract 1.5 inches from my current position of 42 inches.

```
%H          Ready
Position =  42.000
42.000 - 1.5
          Calib Show
```

1. Press [-] [1] [.] [5] [=].

```
%H          Ready
Position =  40.500
Next      =
          Calib Show
```

The answer will appear in the 'Next' field.



2. Press [Start] and HeavyDuty 2 will move.

## Jog

HeavyDuty 2 can be manually jogged in or out. When activated, HeavyDuty 2 will move until you let go of the jog button. It will then glide to a gentle stop.

```
%H          Ready
Position =  Current
Next      =
          Calib Show
```

1. Start at the Ready Screen.

2. At the top of the HeavyDuty 2 controller, you have a  and a . To jog, press and hold one of these buttons.

*Note: If the jog buttons move HeavyDuty 2 in the wrong direction, you can use the 'Jog Reverse' setting in the 'Setup' menu to reverse the movement.*

## Increment

The increment function is a push feed mode used to step HeavyDuty 2 through a series of movements. Increment...

- Can be a positive value that will move HeavyDuty 2 towards the tool.
- Can be a negative value that will move HeavyDuty 2 away from the tool.
- Will compensate for kerf automatically using the 'Kerf' setting in the 'Setup' menu.
- Can only store one increment value at a time.

```
%H          Ready
Position =  Current
Next      =
          Calib Show
```

1. Start at the Ready Screen.

2. Press the [Show] soft key to display more options.

```
%H          Ready
Position =  Current
Next      =
Menu Incr PrSet List
```

3. A new set of options have appeared. Press the [Incr] soft key to access the Increment menu.

```
TH      Enter  Incr
Position =  42.000
Incr Size=
```

4. Enter the size you want to increment and press [=].

For this example, I am going to use an increment of 2 inches.

```

\H  Incr Move Incr
Position = 42.000in
Next     = 38.875in
Incr Size= 2.000in

```

```

XH                      Ready
Position = Current
Next     =
Menu Incr PrSet List

```

5. The current position is 42. Press [Start] to begin incrementing. If you need to move HeavyDuty 2 to load your stock, enter the position and press [Start]. HeavyDuty 2 will move to position. Load your stock and press [Start] to begin incrementing.
6. When you are finished, press [Stop] to return to the Ready Screen.

## PreSet

The PreSet function is a set of 100 programmable hot keys used to quickly access common lengths. PreSets...

- Can be used in Set Point, Pusher or Increment mode.
- Can be programed in PreSet slots number 1 - 100.

*Note: PreSet functionality can be changed using the 'PreSet' setting in the Part List menu.*

## PreSet Programming

```

XH                      Ready
Position = Current
Next     =
Calib Show

```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```

XH                      Ready
Position = Current
Next     =
Menu Incr PrSet List

```

2. A new set of soft key options have appeared. Press the [PrSet] soft key to access the PreSet feature.

```

TH  Enter    PrSet
Pre-Set#
Press START to move.
View Edit Clear

```

3. Enter the number of the preset you want to program and press the [Edit] soft key.

For this example, I am going to program PreSet number 1.

```

TH  <Edit 1> PrSet
Pre-Set = Empty
New Value=15 15/16
View Clear

```

4. Enter the length you want the PreSet to move to, and press [=].

For this example, I want to move to 15 15/16 inches.

```

XH  <Edit 1> PrSet
Pre-Set = 15.937in
New Value=
View Clear

```

5. The PreSet value is now set.
6. Press [Stop] to go back to the Ready Screen.

## Using the PreSet

```

XH                      Ready
Position = Current
Next     =
Menu Incr PrSet List

```

1. Start at the Ready Screen.
2. Press the [PrSet] soft key to access the PreSet menu

```

TH   Enter   PrSet
Pre-Set#
Press START to move.
View Edit Clear

```

3. Enter the PreSet number you wish to use and press [Start].

```

XH           Ready
Position =   15.937
Next      =
Menu Incr PrSet List

```

4. HeavyDuty 2 will move to the PreSet position.

## Deleting PreSets

```

XH           Ready
Position =   Current
Next      =
Menu Incr PrSet List

```

1. Start at the Ready Screen.

2. Press the [PrSet] soft key to access the PreSet menu.

```

TH   Enter   PrSet
Pre-Set#
Press START to move.
View Edit Clear

```

3. Enter the PreSet number you wish to delete and press the [Clear] soft key.

```

XH  <Clear 1 > PrSet
Pre-Set = 15.937in
Press OK to clear.
View Edit

```

4. Press [OK] to clear.

5. HeavyDuty 2 has now deleted the PreSet.

## Quick Calibration

Quick calibration is a shortcut to the calibration setting. This allows more advanced HeavyDuty 2 users to quickly calibrate.

```

XH           Ready
Position =   Current
Next      =
Calib Show

```

1. Start at the Ready Screen.

*Note: If you are viewing the expanded options, press [Cancel].*

```

XH   Calib   Ready
Enter distance
from zero=
Done

```

2. Measure how far the HeavyDuty 2 is from your tool's zero point. Enter this measurement and press the [Done] soft key.

3. HeavyDuty 2 is now calibrated.

# Working with Part Lists

HeavyDuty 2 has a versatile part list feature that allows users to enter large lists of parts for use with the TigerStop Dynamic Optimization upgrade. This lets the user run, view, edit, clear and optimize lists of parts, then processes the parts quickly and accurately.

There are 4 types of lists that you can enter;

## Pusher

A pusher list will tell HeavyDuty 2 to push the stock material into the tool. You can enter as many parts as you like into a pusher list and HeavyDuty 2 will tell you when it needs another piece of stock. Pusher lists can be optimized if you have the TigerStop Dynamic Optimizing upgrade.

## Set Point

A set point list will tell HeavyDuty 2 to act as a stop. It will treat each length you enter as an absolute value from your zero point. Set point lists can be optimized if you have the TigerStop Dynamic Optimizing upgrade.

## Pattern

A pattern list will tell HeavyDuty 2 to process one stock lengths worth of parts in a push feed fashion. It will run the same pattern of parts over and over until its told to stop. Pattern lists cannot be optimized.

## Pull

A pull list works just like a pattern except it pulls away from the zero point instead of pushing towards it. Pull lists cannot be optimized.

## Programming a List

```
%H          Ready
Position =   Current
Next      =
          Calib Show
```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```
%H          Ready
Position =   Current
Next      =
Menu Incr PrSet List
```

2. A new set of soft key options have appeared. Press the [List] soft key to access the List interface.

```
TH  Enter    List
Partlist#=
Press START to run
View Edit Clear DnLd
```

3. At the List interface, enter the list number you wish to program and press the [Edit] soft key.

Note: The list number is a memory slot that houses the list. You can choose numbers 1 - 100.

```
%H  SelectType #1
A-Pusher  C-Pattern
B-Setpoint D-Pull
  A      B      C      D
```

4. Select the type of list you would like to program.

```

XH  Select Opt  #1
Optimize Part List?
A-Yes    C-No
A        C

```

- HeavyDuty 2 will ask you if you want to optimize the list for material yield. If you choose no, HeavyDuty 2 will process the list exactly as entered and will NOT optimize for material yield.

```

XH  Chnase H&T  #1
H&T Cuts = Global
A-Cont.    C-Chnase
A          C

```

- Select if you want to use a global or a local head and tail cut.  
*Note: Head and tail cuts are trim cuts at the ends of your material.*


**Global** - Uses the head and tail cut setting from the Part List menu

**Local** - Allows you to set a head and tail cut that is used for this list only.

```

XH  Line 1>    #1
Length = 0.000in
Quantity= 0
Done


```

- You will now be taken to the programming screen for line 1. Enter the length of the part you wish to process and press .  
In this example, I will tell HeavyDuty 2 I want to cut a 24 inch part.

```

XH  Line 1>    #1
Length = 24.000in
Quantity=5
Done

```

- The cursor will now drop to the quantity. Enter how many parts you want, followed by .  
In this example, I will tell HeavyDuty 2 that I want 5 parts.

```

XH  <Line 2>   #1
Length = 0.000in
Quantity= 0
Done

```

- You will now be taken to line 2. Repeat steps 7 and 8 until you have entered all the parts you want to process.

*Note: You can also download all the parts straight from your design file. Downloading is a faster way of importing parts for use with the TigerStop Optimizer.*

- Press the [Done] soft key when all parts are entered.

```

XH  Complete   #1
Part List saved!
Press START to run
Press CANCEL to exit

```

- The list has now been saved.

- Press [Start] to run the list.

## Creating a Backboard Defecting & Optimizing List

Backboard Defecting & Optimizing is a process that allows you to quickly and easily cut around material defects while optimizing the clear stock for better material yield. It is accomplished using a standard Set Point list, TigerStop's Dynamic Optimization upgrade and a back fence ruler.

### Program a Set Point List

```

XH                      Ready
Position = Current
Next     =
Calib Show

```

- From the Ready Screen, press the [Show] soft key to show the menu options.

```

XH                      Ready
Position = Current
Next     =
Menu Incr PrSet List

```

- A new set of soft key options have appeared. Press the [List] soft key to access the List interface.

```

TH  Enter      List
Partlist#=
Press START to run
View Edit Clear DnLd

```

- At the list interface, enter the list number you wish to program and press the [Edit] soft key.

*Note: The list number is a memory slot that houses the list. You can choose numbers 1 - 100.*

```

XH  SelectType  #1
A-Pusher      C-Pattern
B-Setpoint    D-Pull
  A      B      C      D

```

- Choose Set Point list.

```

XH  Select Opt  #1
Optimize Part List?
A-Yes      C-No
  A      C

```


- HeavyDuty 2 will ask if you want to optimize. Choose Yes.

*Note: If you do not see this option, contact TigerStop Customer Service.*

```

XH  Line 1>      #1
Length = 0.000in
Quantity= 0
                        Done


```

- You will now be taken to the programming screen for line 1. Enter the length of the part you wish to process and press . In this example, I will tell HeavyDuty 2 I want to cut a 24 inch part.

```

XH  Line 1>      #1
Length = 24.000in
Quantity=5
                        Done

```

- The cursor will now drop to the quantity. Enter how many parts you want, followed by .

In this example, I will tell HeavyDuty 2 that I want 5 parts.

```

XH  <Line 2>     #1
Length = 0.000in
Quantity= 0
                        Done

```

- You will now be taken to line 2. Repeat steps 6 and 7 until you have entered all the parts you want to process.

*Note: You can also download all the parts straight from a design file. Downloading is a faster way of importing parts for use with TigerStop Dynamic Optimization.*

```

XH  Complete     #1
Part List saved!
Press START to run
Press CANCEL to exit

```

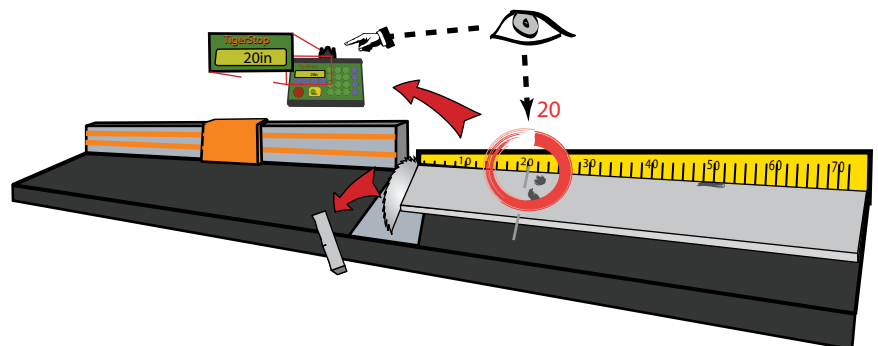
- Press the [Done] soft key once you have entered all parts.

- The list has now been saved. Press [Start] to run the list.

## Running the list

- First, make your trim cut. After the trim cut, measure up to your first defect.

*Note: If no defect is present, measure up to the end of the material.*





|        |       |         |
|--------|-------|---------|
| TH     | Enter | #1      |
| Enter  | Stock |         |
| Length | =     | 0.000in |

2. HeavyDuty 2 will ask you to enter the stock length. Enter what you measured and press [Start].

3. HeavyDuty 2 will optimize the material up to the defect and will use as much of the material as mathematically possible.

Note: If you are using the Standard Interconnect Kit, HeavyDuty 2 will move to the next part length when tool cycle is complete.

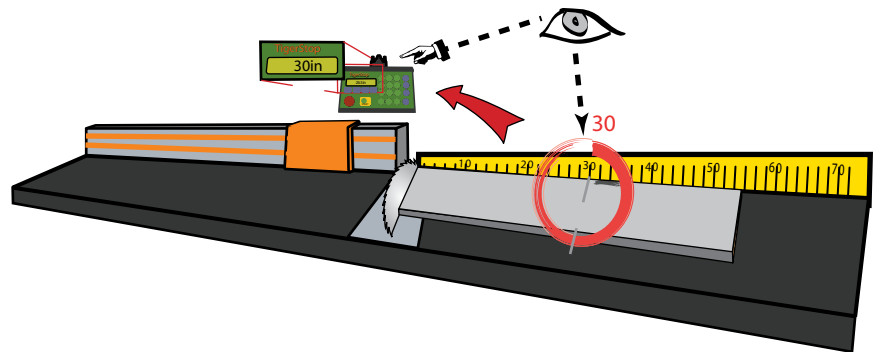
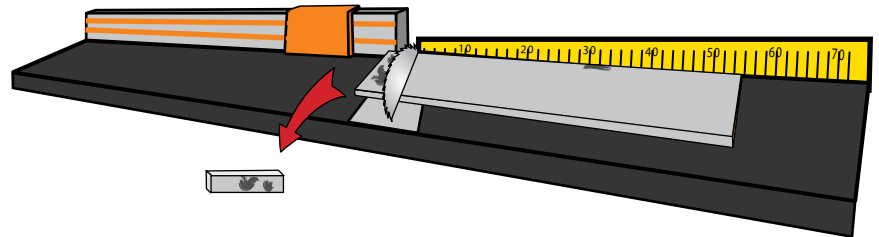
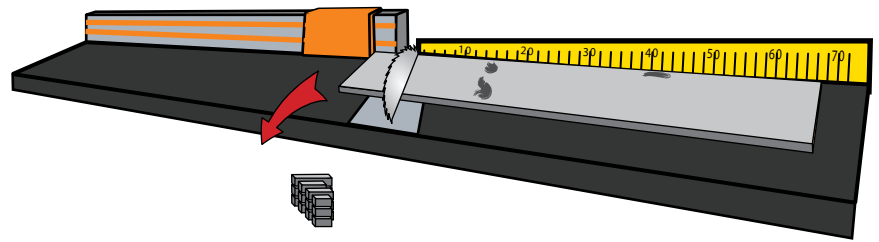
4. Cut out your defect.

5. HeavyDuty 2 will once again ask you to enter the stock length. Measure up to the next defect, enter this measure and press [Start].

Note: If no defect is present, measure up to the end of the material.

6. HeavyDuty 2 will optimize the material up to the defect and will use as much of the material as possible.

7. Continue in this fashion until the entire stock is used. If you have more parts to cut, start at step 1 with a new piece of material.



## Why Use BackBoard Defecting & Optimizing?

- Dynamic Optimization™ determines the best use of material, so the operator (unskilled worker or pro fabricator) only has to focus on feeding parts and cutting.
- HeavyDuty 2 moves to the correct position up to .008" so the operator never has to use a tape measure or set a manual stop ever again.
- HeavyDuty 2 reduces station setup time between different cut lengths and allows the operator to optimize for defects like forklift stabs, shipping damage, dents, or aesthetic blemishes, while getting optimal yield.
- HeavyDuty 2 increases accuracy. The operator doesn't have to worry about cutting errors or the associated costs of rework. Quality control concerns are no longer a bottleneck.
- Dynamic Optimization™ reduces scrap waste and shelving costs. Purchase less raw footage while

sending fewer pounds back to the recycler.

- A TigerStop® Dynamic Optimizing™ station can even be used by an unskilled worker. Top paid Fabricators and skilled workers can better use their time managing the shop or doing work requiring greater expertise.

**Contact TigerStop Customer Service to Enable Your Optimizing Upgrade!**  
**(360) 254-0661**  
**service@tigerstop.com**

# Using Crayon Defect Marking

If you purchased the Turbo Defecting Pusher Foot, the system will activate once you enter and run an optimized pusher list.

1. Enter and run an optimized pusher parts list.

*Note: HeavyDuty 2 will move forward to the load offset position.*

## Marking Defects

The defect scanning head uses the UV crayon marks to locate defects on the material. HeavyDuty 2 will then cut out these defects while it is processing parts from the parts list.

2. Put the stock you want to process on the table.
3. Using a UV crayon, put one line at the beginning and the end of each defect, as shown.

*Note: Everything in between these two lines is considered waste and will be cut.*



4. Do this for every defect on the stock.
5. Load the piece of marked material under the defect scanning head.
6. Press the [Start] button to begin the cycle.
7. HeavyDuty 2 will now move backwards and scan the stock. Once finished, HeavyDuty 2 will lower the pusher foot and will start to process the material.
8. Once the pusher foot has cleared the loading zone, you may place another piece of marked stock on the table and press [Start] to queue it. HeavyDuty 2 will automatically start cutting this stock when finished with the current stock.
9. Continue in this fashion until the part list is complete.

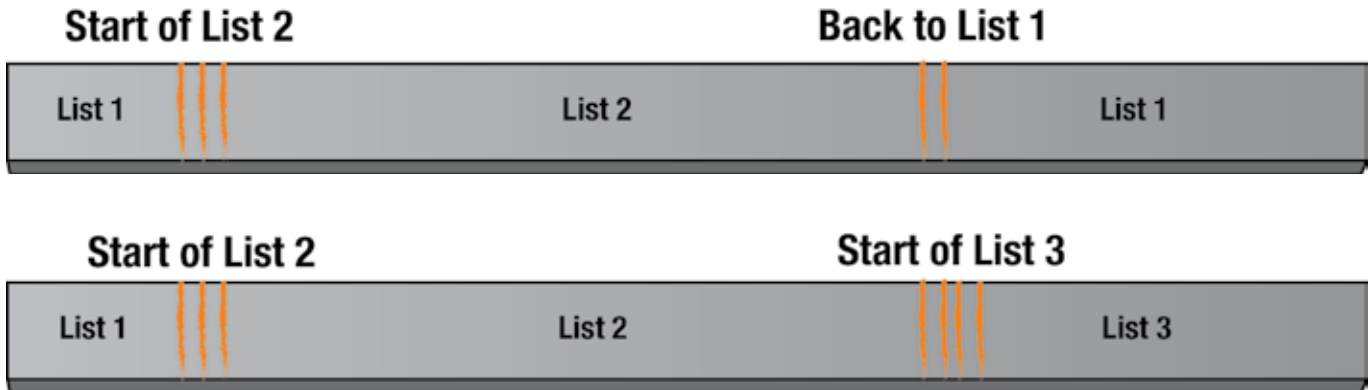
*Note: If your stock doesn't have defects, leave it unmarked and load it normally.*

## Using Multiple Lists

When using the Turbo Defecting Pusher Foot with TigerTouch touch screen software, you can use the UV crayon to mark sections of the stock to be cut from up to 2 other part lists.

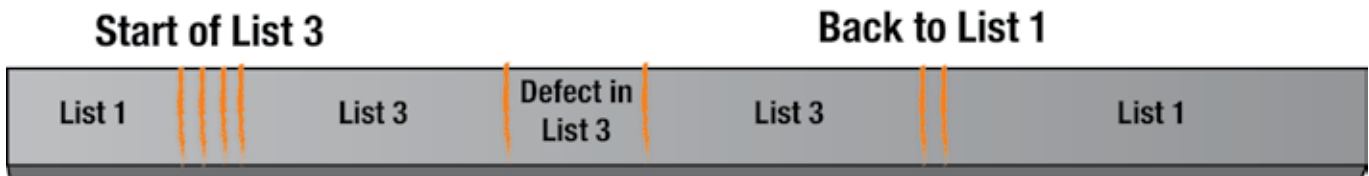
## Marking for Multiple Lists

The defect marking system uses 3 marks close together to tell the system that you want to cut out of List 2 and 4 marks close together to tell the system that you want to cut out of List 3. Use 2 marks to transition back to List 1.



## Marking Defects Inside of List 2 or 3

Once you have entered a different list, you mark defects inside that list just as you normally would.



## Using Defect Only Mode

Defect Only mode allows you to defect material, without cutting parts from a parts list.

```
%H Ready
Position = Current
Next =
Calib Show
```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```
%H Ready
Position = Current
Next =
Menu Incr PrSet List
```

2. Press the [Menu] soft key to display the Menu Select screen.

```
%H Menu
Password =
```

3. HeavyDuty 2 requires a password to access all menu options. Enter your password and press [=].

*Note: By default, the HeavyDuty 2 password is set to the serial number.*

```
%H < Select > Menu
A-Setup C-Options
B-Offset D-PartList
A B C D
```

4. At the Menu Select screen, press .

```

%H  < Select > Menu
A-Motion  C-SysInfo
B-Timer   D-Laser
  A      B      C      D


```

```

%H  < Defect > Lasr
Defect only:
          OFF
      ↑      ↓   Done

```

5. Press the [Laser] soft key to access the Laser menu.

6. Press  until you get to the Defect setting.

7. Press [C] to toggle the setting to ON.

8. Press the [Done] soft key to save the parameter.

## Making a Defect Only Part List

```

%H                               Ready
Position = Current
Next      =
          Calib Show

```

1. From the Ready Screen, press the [Show] soft key to show the menu options.

```

%H                               Ready
Position = Current
Next      =
Menu Incr PrSet List

```

2. A new set of soft key options have appeared. Press the [List] soft key to access the List interface.

```

TH  Enter      List
Partlist#=
Press START to run
View Edit Clear DnLd

```

3. At the List interface, enter the list number you wish to program and press the [Edit] soft key.

*Note: the list number is a memory slot that houses the list. You can choose numbers 1 - 100.*

```

%H  SelectType #1
A-Pusher      C-Pattern
B-Setpoint    D-Pull
  A      B      C      D

```

4. Press the [Pusher] soft key to program a pusher list.

```

%H  Select Opt #1
Optimize Part List?
A-Yes      C-No
  A      C

```

5. HeavyDuty 2 will ask you if you want to optimize the list for material yield. When using defecting mode you must choose Yes.

```

%H  Change H&T #1
H&T Cuts = Global
A-Cont.   C-Change
  A      C

```

6. Select if you want to use a global or a local head and tail cut.

*Note: Head and tail cuts are trim cuts at the ends of your material.*

**Global** - Uses the head and tail cut setting from the Part List menu

**Local** - Allows you to set a head and tail cut that is used for this list only.

```

%H  Line 1> #1
Length = 0.000in
Quantity= 0
          Done

```

7. You will now be taken to the programming screen for line 1. Enter the total amount of defected material you would like, then press



8. Enter a quantity of 1 and press [OK].

9. Press the [Done] soft key to run the list.

10. Use the UV crayon to mark defects and process stock as you normally would.

# Maintenance Schedule

Record the following settings for future reference.

| Serial Number: | Drive Test Results |
|----------------|--------------------|
| Min Limit:     | MxP =              |
| Max Limit:     | MxN =              |
| Scale:         | P+ =               |
| Kerf:          | P- =               |
| Lash           |                    |

## Daily

1. Clean all dirt and debris from drive areas.
2. Check all cables for damage.
3. Check calibration.

## Weekly

1. Remove the access panels at the end of HeavyDuty 2. Visually inspect way wipers and clean large particles from the wipers.

Note: Way wipers are attached to the HeavyDuty 2 carriage.



Way Wiper

2. Visually inspect the cable track for damage.
3. Visually inspect the rack and pinion for lubrication. Use only molybdenum disulfide lubricants.

## Quarterly (Every 3 Months)

1. Check the rack to ensure that the sections are tight and properly aligned.
2. Visually inspect the rail joints on the inside of HeavyDuty 2. Rail joints should be tight.
3. Lubricate way wipers using a 460 viscosity lubricant.
4. Run a motor drive test and record the data in the maintenance log. If drive numbers are above 12,000, contact TigerStop Customer Service.

## Yearly

1. Thoroughly inspect all cables and air lines running through the cable track.
2. Perform a data log to ensure system accuracy. A downloadable copy can be found at [www.tigerstop.com/support](http://www.tigerstop.com/support).

# Maintenance Log

[illegible]





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