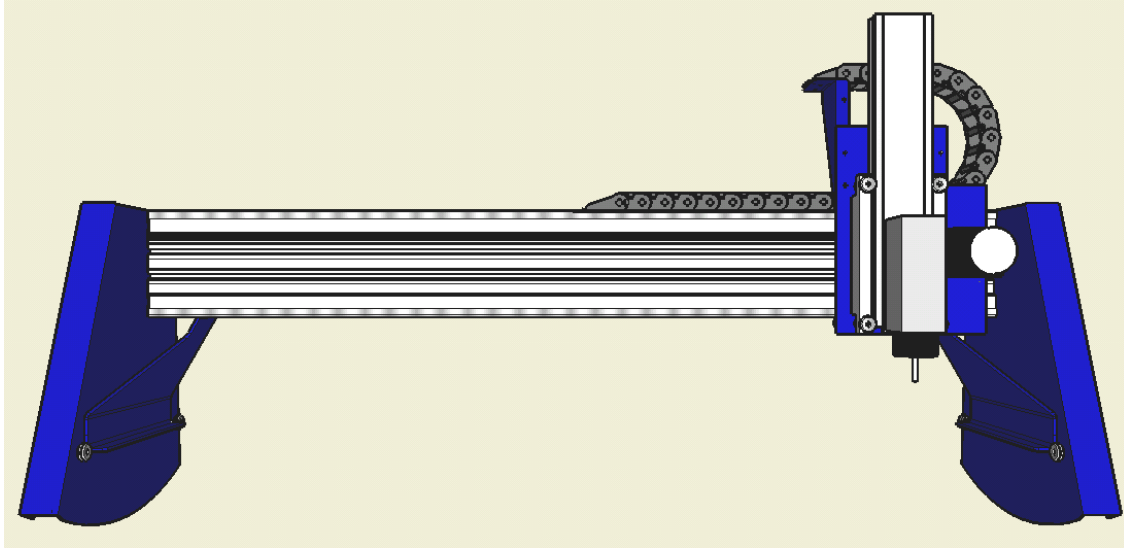


PRS Y-axis EChain Installation



This document shows how to install the Energy chain (Echain) on the Y-axis on ShopBot PRS and PRS BT models. Note that the dust collection hose from the ShopBot Dust Skirt must be routed **overhead** when an Echain is installed; the Y-upper Echain bracket has a fixed attachment point for the dust collection hose.

Applies to

- PRSalpha and PRSstandard ShopBots
- Upgrading early BT models – Current models ship with Echain installed at ShopBot

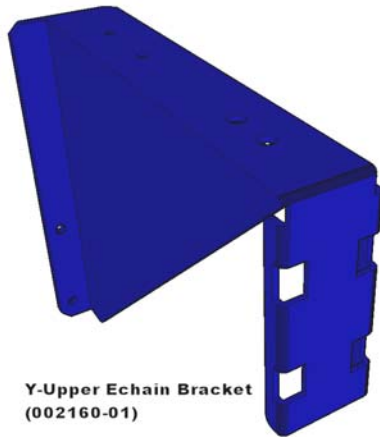
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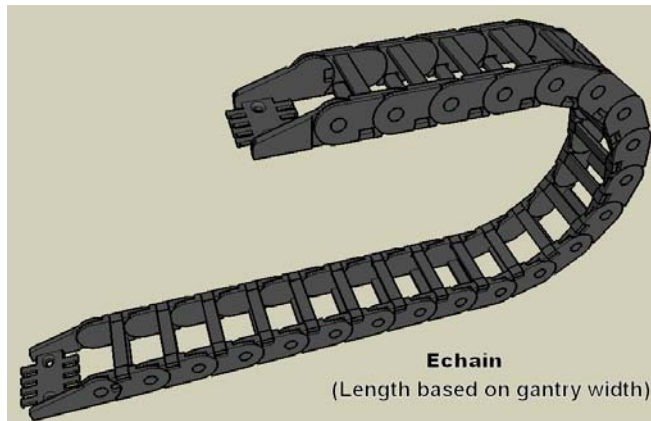
The Y-axis Echain Components

The Y-axis Echain has three main components and a few specialized pieces of hardware.



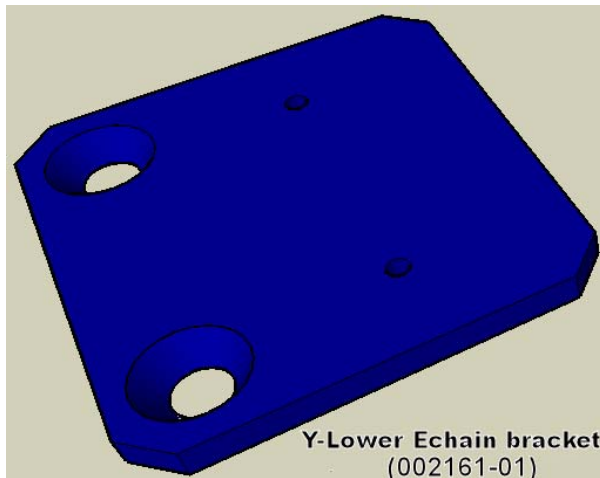
Y-Upper Echain Bracket
(002160-01)

The Y-upper Echain bracket (002160-01) mounts to the back of the YZ-car and carries the Echain. Hose clamps in the slots of the tab support the dust hose. This bracket is mounted on either the left (PRS) or the right (PRS BT) of the YZ-car if you are looking at the spindle head on.

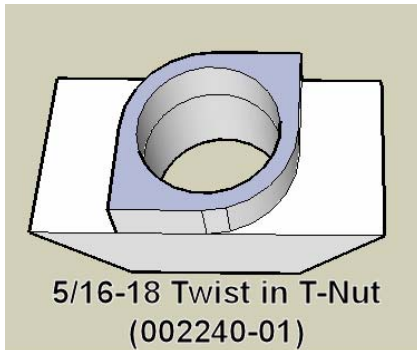


Echain
(Length based on gantry width)

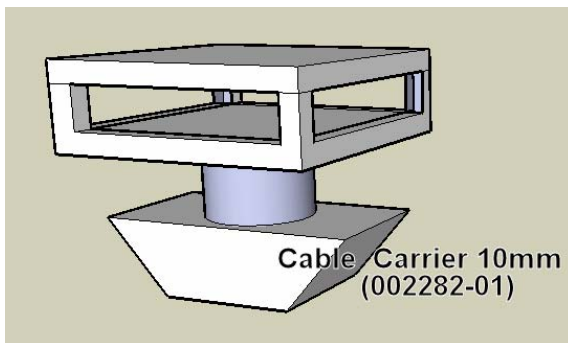
The Echain comes in the length to match the width of the Y-axis of the ShopBot ordered. These Echains are center mounted so the Echain itself will not physically extend from the end plate to the Y-upper Echain bracket.



The Y-lower Echain bracket (002161-01) mounts to the top of the Y-beam extrusion and holds the Echain at a fixed location near the center of the gantry. Location of this bracket differs on various width ShopBots. A chart is included later in the instructions..



One of the specialized pieces of mounting hardware is the 5/16-18 Twist in T-Nut (002240-01). Two of these are used to mount the Y-lower Echain bracket to the Y-beam extrusion. They slide into the slot of the extrusion and turn 90° when tightened.



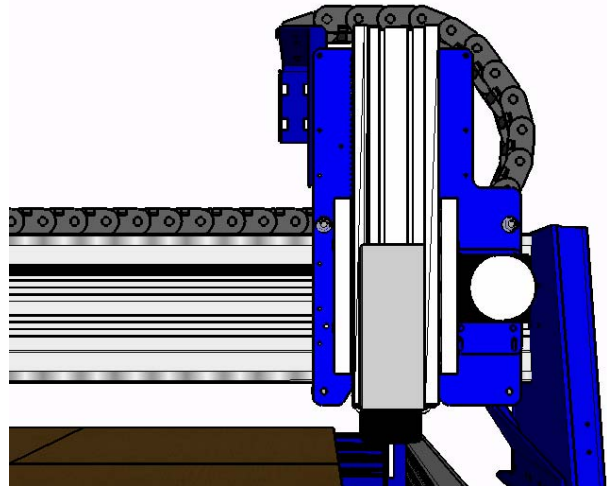
The last piece of specialized hardware is the cable carrier (002282-01). These slip inside the slot of the Y-beam extrusion and turn 90° to help with wire management for cables going through the Echain. Zip ties are used in combination with these to achieve this.

Other hardware used to mount these will be called out through out this document when needed.

Mounting the Y-axis Echain on the PRS

If you have or are upgrading an early PRS BT model with Echain, use Steps 1 and 2 in Mounting PRS BT Y-axis Echain at the end this document. Then return to Step 3.

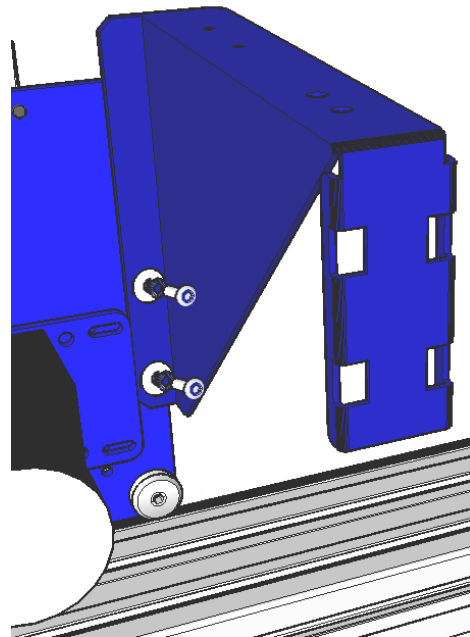
Remove any previously-installed wire guide and wire guide brackets from the gantry and YZ-car if necessary. When the YZ-car is viewed head on, the Y-upper Echain bracket will be located on the back left side of the YZ car and the Echain will loop to send the cables toward the back of the ShopBot.



Step 1: Installing the Y-upper Echain bracket.

- (1) Y-upper Echain bracket (002160-01)
- (2) ¼-20 x 1/2 socket head screws
- (2) ¼" lock washers
- (2) ¼" flat washers

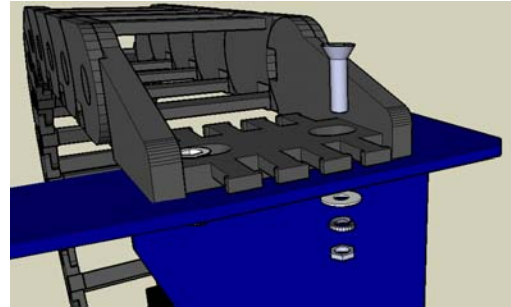
On the back left side edge of the YZ-car there are 2 ¼-20 holes. Align the holes in the longest tab of the Y-upper Echain bracket with the tapped holes of the YZ car. Using the ¼-20 screws, lock washers, and flat washers, secure the bracket tightly to the YZ car.



Step 2: Mounting the Echain to Y-upper bracket

- (1) Echain
- (2) 10-32 flat head screws
- (2) #10 flat washers
- (2) #10 lock washers
- (2) 10-32 hex nuts

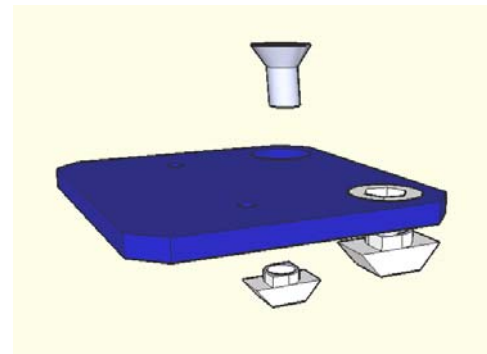
Position the Echain so that it loops towards the right when you are facing the front of the YZ car. Align the counter sunk holes in the Echain with the holes in the top tab of the Y-upper bracket. Use the screws, flat washers, lock washers, and hex nut to tighten the Echain to the Y-upper bracket.



Step 3: Mounting the Y-lower Echain bracket

- (1) Y-lower Echain bracket (002161-01)
- (2) 5/16-18 Twist in T-Nut (002240-01)
- (2) 5/16-18 x 5/8 flat head screws
- (2) 10-32 x 3/4 flat head screws

Place the 5/16 flat head screws into the Y-lower Echain bracket. Start a few of the threads of the twist in T-nut onto the screws.



Align the counter sunk holes in the Echain with the holes in the top of the Y-lower bracket. Loosely start the 10-32 x 3/4 screws into the Y-lower Echain bracket. Position the Y-lower bracket the correct distance from the back side end plate on the PRS ShopBot from the chart below.

Note: Distances are measured from the edge closest to the counter sunk holes of the Y-lower bracket to the inside edge of the back side end plate.

Tighten the 5/16-18 flat heads and Twist in T-nuts into the slots of the gantry extrusion and then tighten the 10-32 screws fully.

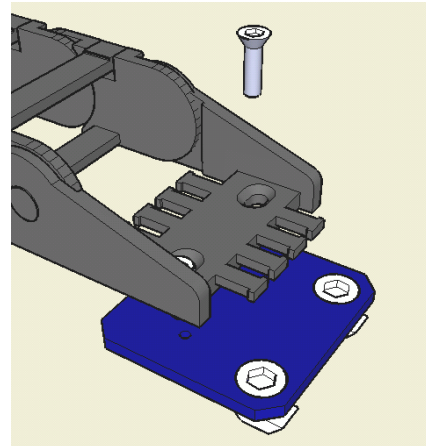
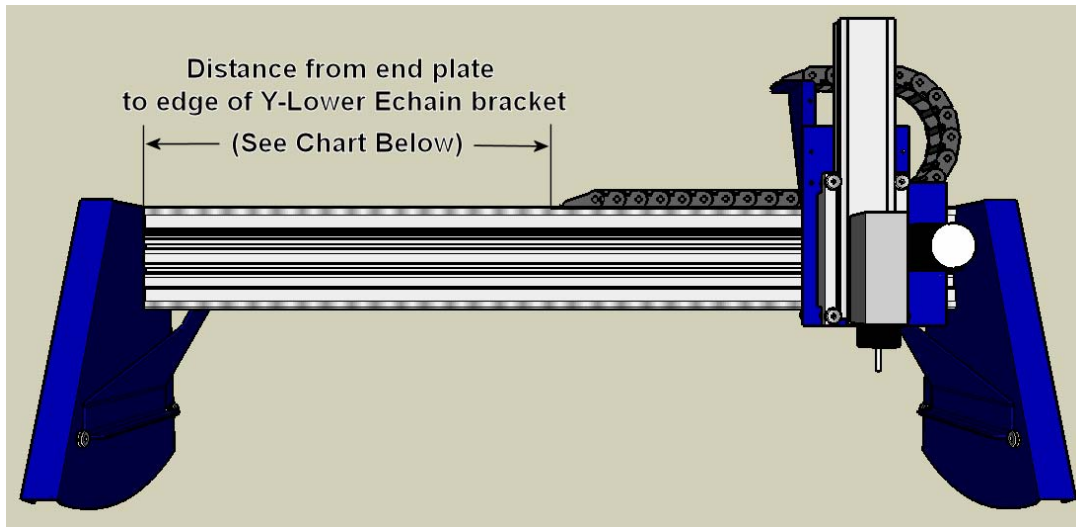


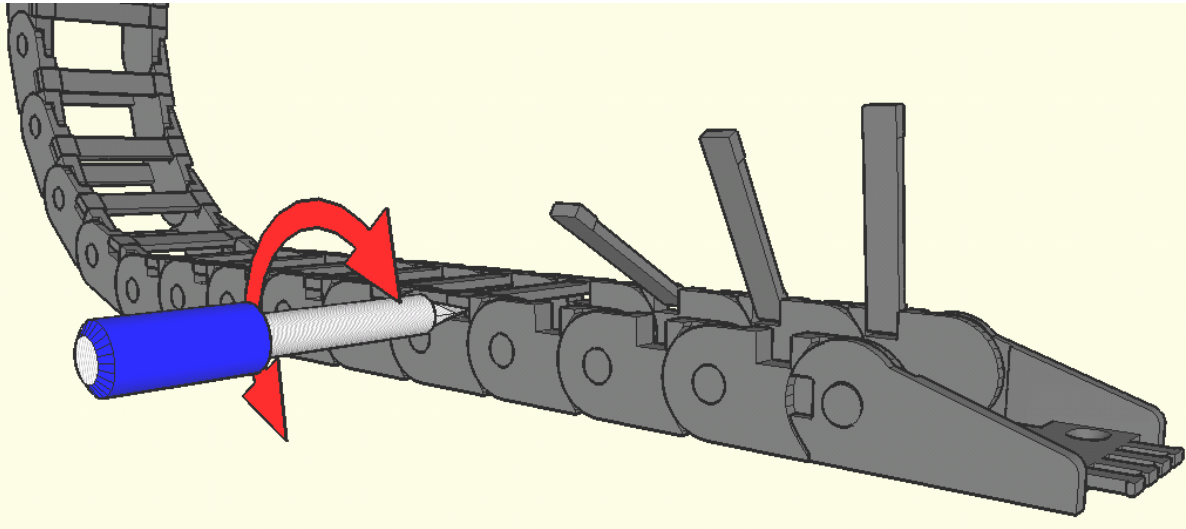
Chart showing distance from End Plate to edge of Y-Lower Bracket



Cutting width in Y-axis (Beam length)		Distance between end plate and Y-lower bracket
32in	(47.992in or 1219mm)	22.50in (572mm)
48in	(66.338in or 1685mm)	31.50in (800mm)
60in	(78.346in or 1990mm)	37.50in (953mm)
72in	(90.354in or 2295mm)	43.50in (1105mm)
108in	(126.456 or 3212mm)	61.50in (1562mm)

After the Echain is installed, move the Y-axis back and forth the full extent of travel. The Echain should at no time feel as though it is binding or under tension. If this appears to be the case, loosen the 5/16-18 flat heads and adjust the Y-lower bracket slightly.

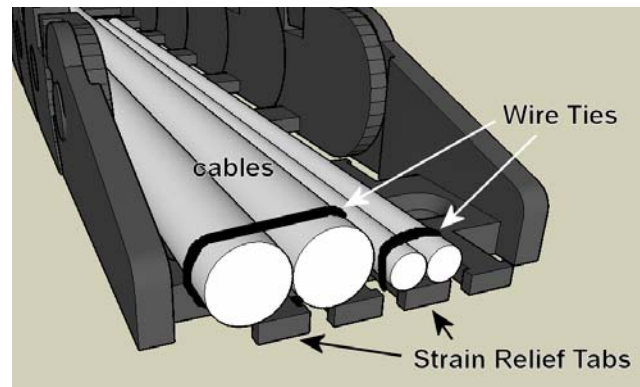
Opening the Echain



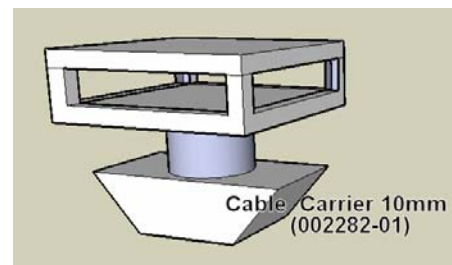
Move the YZ-car to the far end of the Y-axis so that the motor is not over the Echain. This keeps the motor from interfering with the hinged access bars. With a flat head screw driver, insert the tip into either side of the hinged access bar. Turn the screw driver approximately $\frac{1}{4}$ turn clockwise and then $\frac{1}{4}$ counterclockwise or until the sides of the access bars release. Open the access bars to run all wiring that is common to the YZ-car, spindles, or air drills.

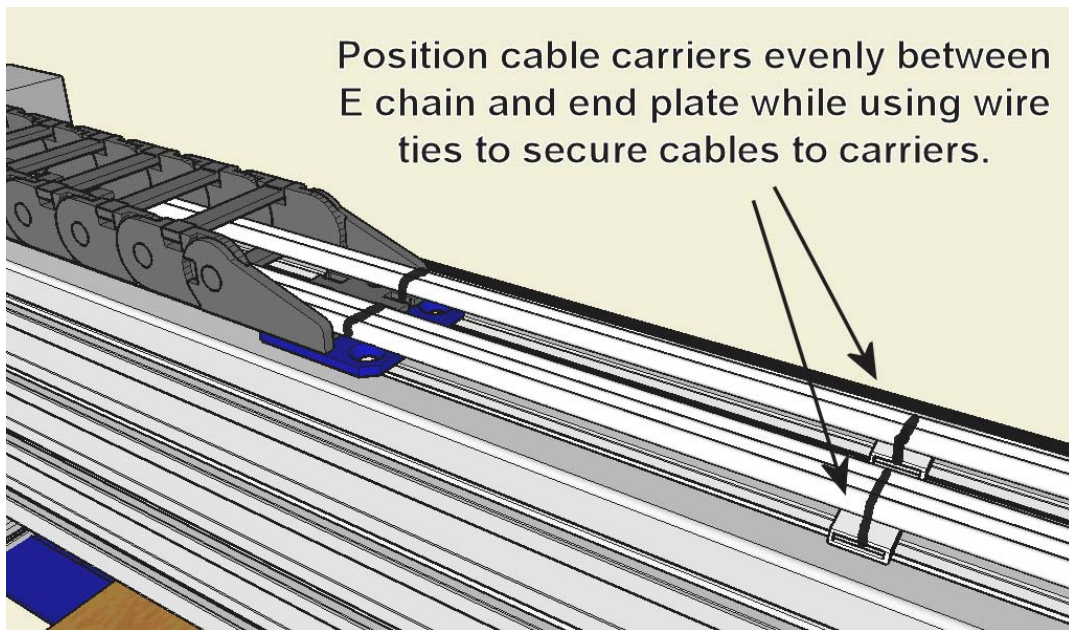
Caution: Do to the low clearance of the Z motor in relation to the Echain. DO NOT attempt to move the YZ-car while the hinged access bars are in the open position. Doing so will result in the snapping off of these access bars.

Use wire ties in addition with the strain relief tabs on the ends of the Echain to help with the strain relief of the cables. **DO NOT use wire ties inside the Echain. This could result in added strain on the cables.**

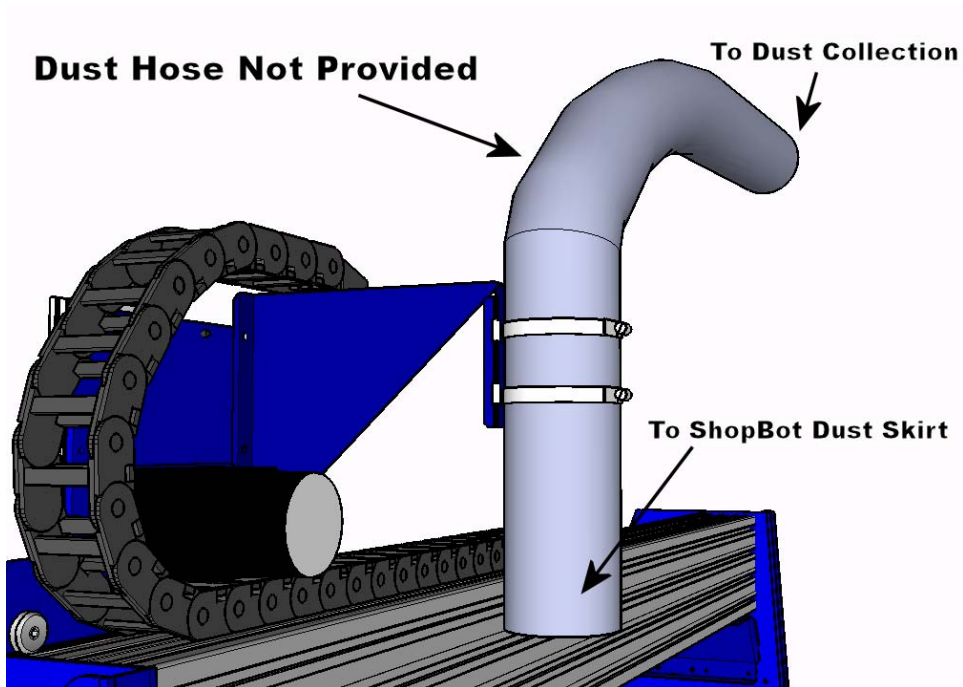


Place the cable carriers on the top side of the gantry extrusion. Evenly space these between the Y-lower bracket and the end plate inside the 2 slots in the extrusion. Place the lower end into the slot and turn 90° to lock the cable carrier in place. Use wire ties to secure cables along the length of the gantry and off the back of the machine.





Connecting Overhead Dust Collection



The Y-upper Echain bracket has a tab that comes with two hose clamps to hold a 4" overhead dust collection hose. Neither the hose nor the dust collection system is provided by ShopBot. Extend the length of the overhead dust hose to the ShopBot dust skirt and connect the dust skirt. For more information about the installation and use of the dust skirt, please see **Installing the PRS Dust Skirt** (SBG00326DustSkirtPRS). Make sure that there is enough hose to accommodate the lowest position of the Z axis, then secure the hose to the Y-upper Echain bracket with the provided hose clamps.

Mounting the Y-axis Echain on the PRS BT

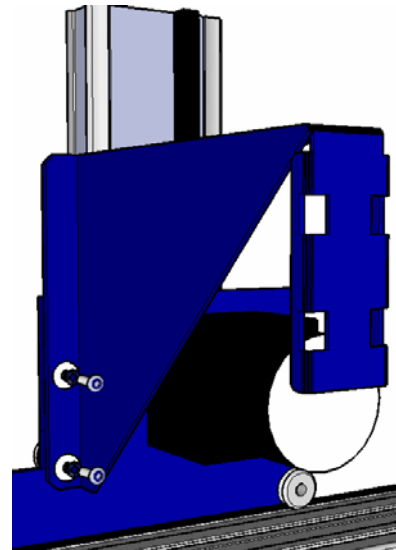
Note: PRS BTs currently ship with the Echain installed at ShopBot. This part is for use by those retrofitting an early model BT with an Echain.

Remove any previously-installed wire guide and wire guide brackets from the gantry and YZ-car if necessary. When the YZ-car is viewed head on, the Y-upper Echain bracket will be located on the back right side of the YZ car and the Echain will loop to send the cables toward the back of the ShopBot. **The only difference between the PRS BT and the PRS models is that the bracket is located on the right of the PRS BT and on the back left of the PRS.**

Step 1: Installing Y-upper Echain bracket.

- (1) Y-upper Echain bracket (002160-01)
- (2) ¼-20 x 1/2 screws
- (2) ¼" lock washers
- (2) ¼" flat washers

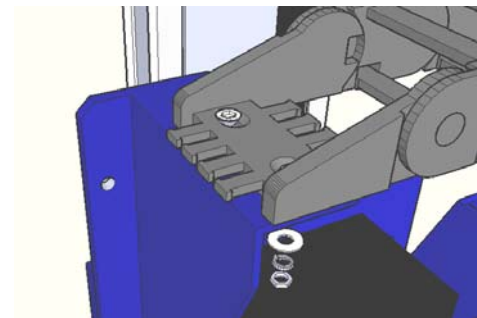
On the back right side edge of the YZ-car there are (2) ¼-20 holes. Align holes in the longest tab of the Y-upper Echain bracket with the tapped holes of the YZ car. Using the ¼-20 screws, lock washers, and flat washers tighten the bracket securely to the YZ car.



Step 2: Mounting Echain to Y-upper bracket

- (1) Echain length
(length based on gantry width)
- (2) 10-32 flat head screws
- (2) #10 flat washers
- (2) #10 lock washers
- (2) 10-32 hex nuts

Position the Echain so that it loops towards the left when facing the front of the YZ car. Align the counter sunk holes in the Echain with the holes in the top tab of the Y-upper bracket. Use the screws, flat washers, lock washers, and hex nut to tighten the Echain to the Y-upper bracket.



Dust hose tab not shown to illustrate hardware

Continue the rest of the installation with Step 3. Mounting the Y-lower Echain Bracket.