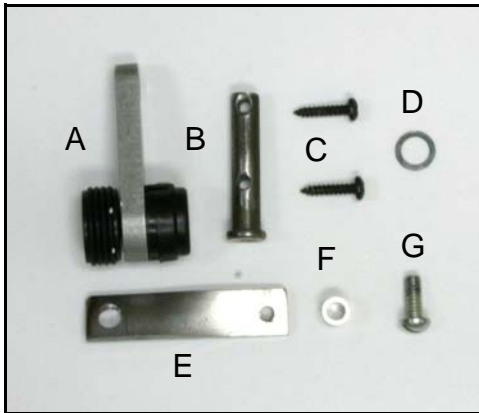


# Installation of optical encoders for Hinterberg Frames

STOP! Read all instructions and study pictures carefully before proceeding.

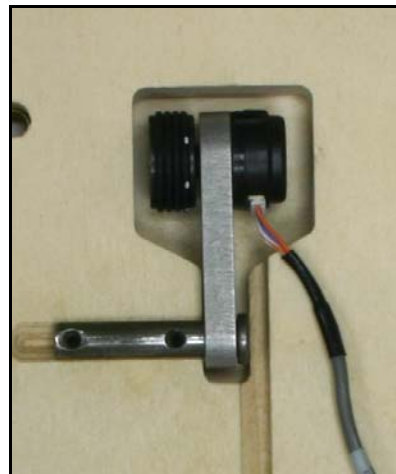
## HARDWARE:



	<u>Part Name</u>	<u>Quantity</u>
A.	Optical Encoder	2
B.	Axle	1
C.	Black wood screws	2
D.	Spacer	1
E.	Metal Arm	1
F.	Standoff	1
G.	Machine Screw	1

### Step 1:

Attach the wiring harness. With the orange wire on the top, plug the wire into the encoder.



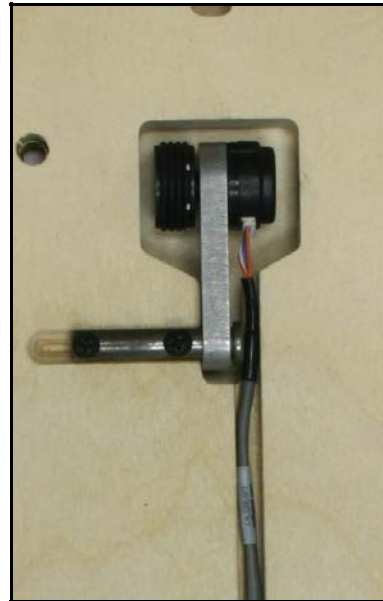
### Step 2:

Lay the upper carriage upside down on a tabletop. Insert the axle through the hole in the optical encoder arm and lay both in the pocket of the upper carriage as shown.



**Step 3:**

Fasten the axle securely to the carriage using the two wood screws. Using a hand screwdriver, turn the screws into the wood until snug. Don't overtighten or you will strip the holes and the screws won't be able to grip the wood. Tuck the wire harness into the groove that runs to the back of the carriage. Attach the strain relief pads to the carriage at the end of the groove to prevent the cable from falling out of the groove. Make sure that the encoder can swing easily on the axle.



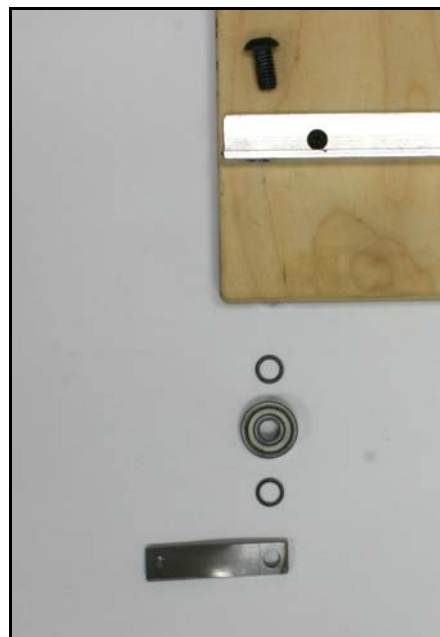
**Step 4:**

Lay the lower carriage upside down and remove the left wheel as shown. Separate the bolt, bearing and existing spacer as shown.



**Step 5:**

Using the additional spacer and metal arm, re-assemble the left wheel in the order shown. Insert the bolt through the hole in the carriage bracket. Next add a spacer, the bearing, another spacer, then thread the bolt into the large hole in the metal arm. The direction of the twist is important, see the next picture for correct orientation



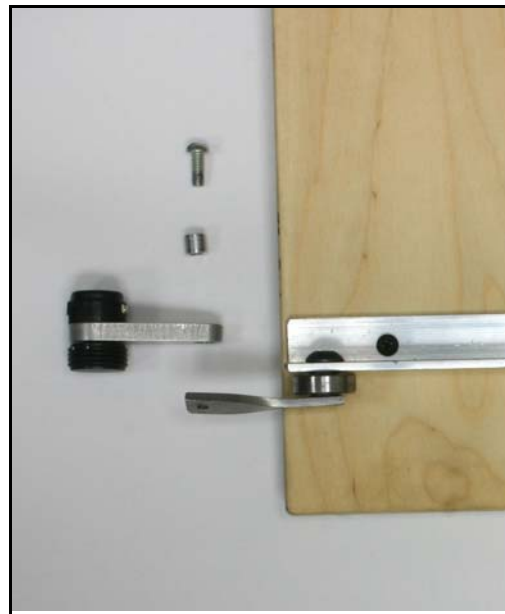
**Step 6:**

Metal arm attached to lower carriage. Use a 3/16" Allen wrench to tighten the screw into the threaded hole on the metal arm.



**Step 7:**

Attach the optical encoder to the metal arm. Insert the machine screw through the standoff, then through the hole in the optical encoder, then into the threaded hole in the metal arm. Use a flat-headed screwdriver to tighten the machine screw.



**Step 8:**

The standoff will prevent you from tightening the screw so tightly that the optical encoder will not swing on the metal arm. It should move easily.

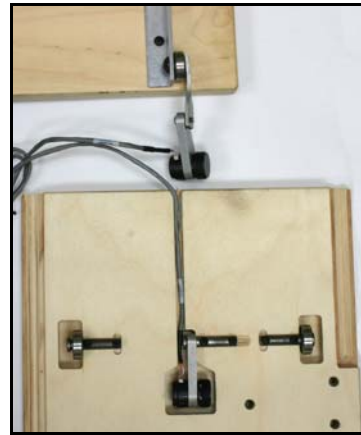


**Step 9:**

Attach the wiring harness to the lower carriage optical encoder in the same manner as in step 1.

**Step 10:**

Wiring harness connected to both carriages.



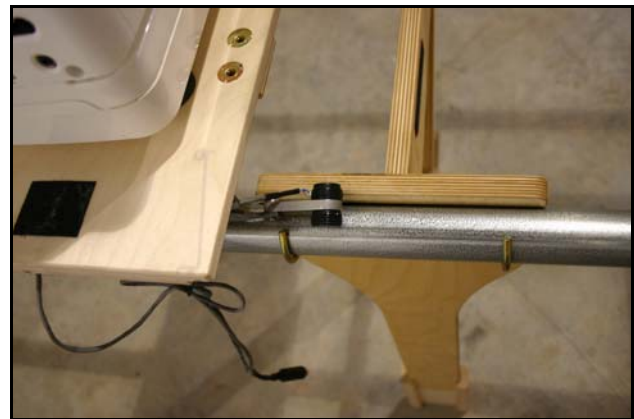
**Step 11:**

Set the carriages on the frame as you normally would. The encoder attached to the upper carriage should ride along the lower carriage. The encoder attached to the lower carriage should ride along the rear carriage support roller.



**Step 12:**

The encoder is mounted on the metal arm at an angle to avoid rubbing against the center support and angle braces. You can adjust this assembly to clear the center support by raising or lowering the metal arm. This will adjust the position of the encoder on the roller.



**Step 13:**

Complete the installation of the Quilters Cruise Control System. A convenient place to mount the control box is behind the sewing machine. You can use tape or velcro to mount it to the carriage. Keep your wires tidy with electrical tape and plastic wire ties.

