

NorthWest Short Line

REPOWERING the: HO Varney Dockside 0-4-0t



1. The most difficult step – Read all directions and understand the procedure before you start.

2. Disassemble the model - remove the large screw that holds the frame to the boiler.

3. Two screws in the bottom plate hold the open pole motor to the frame.

4. Clip the motor lead to the wiper tower mounted on the Fireman's side.

5. Remove crank pins on the geared axle to release side rods. Remove the bottom plate to free the geared axle.

6. Scribe two crossing lines on the end of the axle and driver hub. Place the driver in a quartering tool to “learn” the feel of its quartering. Note the amount of play by a rocking motion in both directions. Familiarity with this play will aid in reassembly of the drive later.

7. Use a gear puller to remove the driver. **Caution:** some older driver sets were made of Zamac. Zamac tends to crumble with age. Inspect drivers carefully before taking them apart. If in doubt do not press them. Use a Press Tool in the Puller to prevent the end of the pin from rotating against the index marks on the end of the axle. Hold the puller firmly on a flat surface. This will prevent the press tool from rotating.

8. **CAREFULLY** pressing the axle into the new worm gear provided in kit. The axle gear **MUST** be perpendicular to the axle! If it is crooked the engine won't be any better off than before you started. Even if the gear has a slight wobble it will cause the mechanism to rock, emitted unwanted noise and cause the engine to lode down the track. Press the axle gear slowly and carefully. Stop often and turn the axle 90 degrees and carefully press again. Keep the pressing pin and axle straight up and down. Press the axle until the gear is completely engaged but still at the start of the “friction fit” of the axle.

9. Place the axle in a cradle (such as the axle templates of the Quarterer II) so that you can spin it and observe any wobble in the gear. If the gear wobbles you can attempt to correct it with the Aligner tool but if the gear is badly aligned, start with a new gear. (The hole will remember the previous press and tend to follow it.)

10. Continue to press and check the squareness in this manner until it is centered evenly on the axle. If you press too far use the puller to press it back to centered. Digital calipers can aid in proper positioning of the gear.

11. Finish putting the axle together. The two index marks you made on the end of the axle and wheel hub are used as a reliable reference to set the driver back to its original position. It is more important to match the other drivers than to set the quarter at exactly 90 degrees. Place the axle in the quartering device and press the driver enough to firmly start it onto the axle. Rock the axle as in step 6 to gauge the feel of the play. It should be the same as before you removed the driver.

12. When the quartering is correct press the driver home. Check the wheel gauge with a NMRA gauge.

13. Check for wobble once more then reassemble the axle back into the frame.

14. The worm should already be pressed onto the shaft of the motor provided in the kit. Use the Quick Mount provided to position and hold the motor on the frame so that the worm and worm gear mesh tightly. The clearance of the gears will be set later. Make sure the motor shaft and worm are parallel with the worm gear and that the mesh of the worm and worm gear is centered on both gears. Centered and square! *Everything Centered and Square.*

15. Carefully remove the motor from the Quick Mount to preserve its memory of the position of the motor. Apply a permanent attaching material such as silicon caulk or we prefer Permatex Ultra Black Gasket Sealer #81280 around the Quick Mount.

16. Carefully replace the motor and recheck all centering and squareness as before. Then set the assembly aside until it fully cures (over night). Once the Permatex sets you can cut the motor loose and reposition it with more compound if needed.



17. Insert the motor adjustment screw (forward screw removed in step 3) and snug it up. Apply power to the motor leads and advance this screw until you hear the motor rpm increase (mechanism seems to relax).

Use an ammeter to note the current being drawn; the motor and gears should run freely and quiet at less than 100ma at about 7-8 volts.

18. Lube the gears with good grease or heavy oil – not too much. Lightly lube the axles, crank pins and place a tiny drop on each of the motor bearings. Let the motor run a bit to work the lubricants into the bearings.

19. Solder wire leads to the motor terminals. The positive lead will connect to the frame or Engineer's side. Use the wire tab in the kit and find a place to attach it to the frame with a screw. We suggest the screw that holds the Fireman's side wiper tower. Attach the negative lead to the wiper tower itself.

20. Place the frame on the track and check that everything works properly. Insure your switcher goes the same direction as another engine. If it doesn't you have the motor leads reversed. Once you are satisfied with how the engine runs put it back together and enjoy.

By Derrell Poole, 2011

#1170-4 HO Varney Dockside Repower KIT, \$42.95

Kit contains:

(1) 16x30 motor (#1630D-9)	(1pc) Quick-Mount (#199-6)
(1) Worm (#30402-6)	(1) Wire, 12 in. (#10007-9)
(1) Gear (#2279-6)	(4) Wire Tab, bronze (#120-4)

Instructions

Recommended NWSL tools:

#50-4 Sensipress+ #33-4 Aligner
#45-4 Puller I #4546-4 1.0mm Press tool
#44-4 Quarterer NMRA HO Gauge

Recommended Resource:

www.nwsl.com

<http://www.hoseeker.net/>□