

NorthWest Short Line

REPOWERING the: RIVAROSSO 'O' GAUGE SHARK DIESEL power truck

This motor replacement using NWSL 2032 size motor provides performance improvement for this fine model - smoother, quieter, slower operation with improved power. We here describe the general method we used which can be accomplished in about 60 minutes (plus overnight bond set time) if proper materials and tools are on hand.

- Tools required:** Miniature screwdrivers
Gear puller (such as NWSL's THE PULLER #45-4)
Hand motor tool (Dremel, etc.) and grinding bit
Precision method to accurately re-bore worms and bearings (lathe, etc.)
- Skill required:** This job assumes you have reasonable proficiency in soldering and disassembly/assembly of mechanical devices. If not, your learning experience here will be valuable despite problems you may encounter in achieving quick and satisfactory completion.
- Time required:** About 60 minutes (plus cure time for bonding agent and sealant)
- Parts required:** Sagami 20x32mm can motor - #20323-9(2.4mm shaft) or #20325-6 (2.0 shaft)
Silicon sealant (sold at hardware stores as bathtub caulk, window caulk, etc.)
NWSL spherical bearing 3006.005 if using #20323-9 and you don't re-bore original spherical bearings
Super glue bonding material such as Crazy glue, etc.
Wire 28 or 29 gauge , two approx. 1.5" pieces

1. Remove power truck from locomotive chassis.
2. Remove 4 screws, lift off truck top (truck bolster) with kingpin.
3. Lift motor assembly out of truck motor well, unsolder wiring connections. Bend wiring to sides of truck out of way so new motor can be dropped in between wires.
4. Carve or grind bosses from bottom ends of motor well so motor can sit all the way down in well.
5. Remove worms from motor shaft carefully to avoid damage. If using #20323-9 motor, accurately re-bore worms to 2.4mm (re-boring is prone to result in eccentricity - minimize this possibility by using sharp, new drill and doing job in a lathe to better assure accurate alignment.
6. Test mount motor in motor well (must bend wiring terminals flat to motor end to provide clearance) with bearings and worms in place but not fastened. Assure motor bearings sit all the way down to achieve gear mesh - if not you may need to remove more of the boss(es). Determine worm location (center over axle gear). Remove motor assembly and bond worms (KEEP BONDING AGENT AWAY FROM BEARINGS - apply it on opposite side of worm!) in place. Set motor assembly in place again and check alignments. Make any corrections necessary.
7. Solder motor terminal wires to motor terminals.
8. Insert motor assembly for final fit and operation check. When satisfied, remove and place bead of silicon sealant or "hot glue" (make SURE that silicon sealant does NOT get inside motor mounting holes - side or end holes) along bottom of motor cavity. Insert motor assembly into cavity seating in silicon sealant bead. Solder terminal wires to wiper wires.
9. Install Kingpin/truck bolster making sure bolster holds spherical bearings in place but does NOT press against motor - may have to shim or tweak (bend) bolster. Test operate (if drawing high amp - over 0.25 amp - or overheating, bolster is probably pressing against motor causing binding), adjust as necessary.
10. Reassemble model and test operate the model on powered track. Check operating direction (polarity) against another locomotive; if wrong, reverse the terminal wiring connections at wiper wires.
11. Lubricate motor and wormshaft bearings with light lubricant such as LaBelle #108. If you have interior lighting to hook up - connect the wiring to the terminal wire/wiper wire connections on each side of the motor (seen in the opening above the sideframes and under the truck bolster). Enjoy!

Installation 12-95 by F R Martin

NOTES on what I learned on this project that will be helpful on future projects: