

# NorthWest Short Line

## REPOWERING the: MINITRIX-ATLAS-Model Power N GAUGE 4-6-2

This motor replacement using NWSL #10203 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, or #55-4)  
Professional Press Tool Set #4542-4.  
Hand motor tool (Dremel, etc.), cut-off disk and grinding bit
- 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 achieving quick, satisfactory completion.
- Time required:** About 60 minutes (plus cure time for bonding agent).
- Parts required:** NWSL 10x20mm flatcan motor - #10203-9 (1.2mm shaft)  
Gap filling super glue such as Crazy glue, etc.  
Insulator material (small sheet of paper, cellophane tape, etc.)  
Wire 28 or 29 gauge, two approx. 1.5" pieces

*A magazine article some years ago described installing the old 12x20mm round can motor to upgrade this locomotive. It turns out that the new 10 x 20mm flatcan motor fits even easier and the 15% increase in power is a nice bonus – the completed unit runs great.*

1. Remove original motor. Salvage the worm carefully for re-use (NWSL does not manufacture a suitable replacement). This can be accomplished with the NWSL #45-4 (or #55-4) PULLER using great care to avoid damaging the worm – make sure that the worm (shaft) is as far into the 'V' plate as possible and stays there (if it slips out, the worm threads may become compressed and unusable). The (original) motor shaft size is 1.2mm (same as the #10203-9 motor). This small shaft diameter requires use of the new PROFESSIONAL PRESS TOOL #4542-4 for pressing the shaft out of the worm – this is a VERY tight fit (possibly was bonded in place) – proceed carefully and slowly to assure keeping everything pressing straight, be sure to use the short press pin.
2. Installation requires grinding (thinning) the motor mount plate and the cab backhead plate slightly to fit this slightly longer motor and insulator (a sheet of thin material – writing paper or cellophane tape or plastic) to insulate the motor terminals from the rear (cab backhead) plate. I used a cut-off disk to grind them thinner.
3. Determine from the original motor the shaft length required and removed excess shaft (we used a cut-off disk in a hand motor tool). Remove rear shaft completely unless you are installing a flywheel such as #420-6 – this would require modification of rear plate (cab backhead) as appropriate.
4. If the worm does not press easily onto the motor shaft – clean the bore with a 1.2mm drill, then bond the worm on the motor shaft (at proper location so it is over the gear) with a gap-filling super glue. Do a test fitting of the motor assembly in the locomotive and check gear mesh – if mesh is too loose, you will need to grind the lower edge to the motor boss holding plate so the motor can be lowered to proper gear mesh. Bond the motor in place or drill a hole in the motor mount plate for a screw to secure the motor.
5. Hook up the wiring to the motor terminals, test polarity (direction of travel – reverse wires if necessary).
6. Lubricate (lightly) motor bearings with light oil such as LaBelle #108 and worm teeth with gear oil #102 or similar
7. Have (more) fun!

*Installations 8-2001 by Mike Sabatino, F R Martin*

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