

QuarterMaster 5.5" Clutch Star Formula Car Maintenance



The clutch has five parts. From top to bottom the parts are:

- 1) Friction Disc
- 2) Friction Plate
- 3) Friction Disc
- 4) Floating Plate
- 5) Pressure Plate Housing

The complete clutch kit part #
Star Routine Clutch kit part #

Knowing what to verify with your clutch will help to deliver the maximum power through the drive line and avoid wasting a race weekend. You will require a steel straight-edge ruler, a micrometer, and a well-lit workspace. The clutch assembly will have to be removed from the button flywheel for proper inspection.

Remove both Friction Discs from the clutch assembly. (See Figure 1.) First, check the friction material for chunking, missing materials, or cracks. Regardless of the thickness, any defects in the friction materials will require the Friction Discs to be replaced. Next, using the micrometer, measure for the minimum thickness (0.090") of each Friction Disc.



Figure 1 Friction Disc

The Floating Plate and Friction Plate should now be inspected with a steel straight-edge ruler. Place the straight-edge on the surface of the plate and check for any gaps. Any at all, means the plates are warped and will be required to be replaced. In the examples below, Figure 2 Floating Plate shows a gap between the straight-edge. If this part wasn't replaced the clutch would fail to engage completely. In the case of Figure 3 Friction Plate, no gaps are present.



Figure 2 Floating Plate



Figure 3 Friction Plate

Although the Friction Plate (Figure 3) showed no gaps, it is still unusable. Upon inspecting it for excessive wear, you also need to check the coloration. As you can see, the Friction Plate is discolored brownish / gold. It is acceptable for an installed clutch to have some bluish / purple discoloration; but, brownish / gold is when the clutch has been heated excessively. These plates will need to be replaced.

The spotting on the Floating Plates is acceptable as long as none create a pit large enough to show up on the straight-edge.



Figure 3.1 Friction Plate Coloring

The final point is inspecting the Pressure Plate Housing. If any fingers are out of depth from the others the housing will have to be replaced. *The Pressure Plate Housing can NOT be rebuilt.* The Pressure Plate Housing is built using a special assembly tool at the factory to ensure that the fingers are given equal tension. That cannot be duplicated without this special assembly tool. In the case of worn or damaged Pressure Plate Housing, the entire unit will need to be replaced.

Setting Clutch Pedal Stop

An important point about the clutch assembly is properly setting the slave cylinder engagement depth. Setting this depth will ensure proper clutch engagement and disengagement. The clutch assembly was designed for a $\frac{3}{4}$ " master cylinder. That means for that proper disengagement of the clutch will require about two inches of clutch pedal travel. If you use a larger master cylinder, then the distance will be shorter. If the clutch pedal is depressed past the proper depth, the slave cylinder piston can become displaced and / or "pop" out and the clutch can become re-engaged. To ensure that this doesn't happen, the clutch pedal stop must be set properly.

Setting the clutch pedal stop is as simple as putting the car in gear, have the help of an assistant trying to roll the car, then depress the clutch pedal until the car rolls freely. Once the car rolls freely, set the clutch pedal stop about $\frac{1}{2}$ " farther. That should put your clutch disengagement within the proper operating range.

Clutch Installation

Installing a clutch requires a splined clutch installation tool or input shaft from the FTR201 gearbox, a torque wrench set to 15lbs, and red Locktite.

Begin by placing the clutch installation tool or input shaft into the clutch assembly. Then using the installation tool or input shaft, as a guide to insert the pieces into the button flywheel. Now you can begin putting the clutch bolts through the button flywheel. Next, put red Locktite each bolt end. Fastened the jet nuts to the bolt torqueing each to 15lb. Finally, remove the clutch installation tool or input shaft.