02/2020

360975/360976/360977/360978 Starter Installation

CHECK MOUNTING DEPTH BEFORE INSTALLATION! 360975/360976 are designed for vehicles with specific depths from the starter mounting surface to the ring gear. (360975 is 3/4" and 360976 is 3/8")

Ford Solenoid Wiring. If you are using the OE Ford solenoid, you will need to install a jumper wire (min 12ga.) between the battery (large terminal) and ignition (small terminal) on the starter. The starter cable from your OE Ford solenoid will connect to the battery (large terminal) as normal. (**DO NOT OVERTIGHTEN THE SMALL TERMINAL**)

It is important to mount the starter correctly as it determines the proper engagement between the pinion of the starter and the ring gear of the flexplate or flywheel. When positioned correctly, the starter pinion will engage smoothly, without binding and there will be no chance of starter or ring gear damage.

Installation:

1) Mount Starter. Check clocking screws to make sure they are torqued to 50 in/lbs. (NOT FT/LBS!) Make sure the mounting surface of the engine block is smooth, and free of paint or debris buildup. Torque starter to engine manufacturers specifications.

2) Check Pinion Clearance. There should be 1/16" minimum from the back side of the ring gear to the front edge of the teeth on the starter pinion. See figure 1. Check in at least three locations on the ring gear to ensure the ring gear is mounted correctly and/or not warped/damaged. If a shim is required, please contact your Performance World dealer. Instructions on installing the internal shim are on the next page.

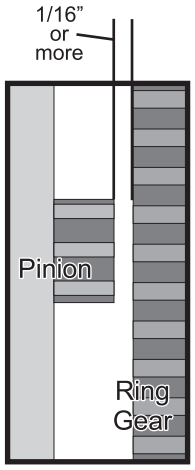

Figure 1.

3) Attach Battery Cable and Switch Wire. The switch wire should be capable of handling 50A (12AWG). If the starter is only using the one connection (Remote Ford Solenoid), the small "switch" terminal must be connected to the "main" terminal (large). A jumper wire is not included but can be made with 12AWG wire and 2 ring terminals. The main battery cable must be the proper size for the length of the cable. See figure 2. All connections should be clean and tight and terminals should be soldered if possible. The ground cable to the frame should be the same size as the starter cable. Also, a ground strap should be installed from the frame to the motor.

Figure 2.

Distance	
3' use 4 AWG	10' use 0 AWG
5' use 2 AWG	10'+ use 00 AWG
7' use 1 AWG	

4) Operate Starter. It should operate quietly. Any loud grinding noises must be corrected. The cables and connectors should be checked for voltage drop with a voltmeter. To check any wire or cable for voltage drop, connect one side of the voltmeter to one end of the cable and the other side of the voltmeter to the other end. Operate the circuit and simultaneously measure the voltage drop. It should be 0.5VDC or less. High voltage drop indicates a bad connector or undersized cable. The ground circuit can be checked in the same manner. Measure input voltage by connecting the positive probe of a voltmeter to the "MOTOR" terminal of the solenoid and connecting the negative to the starter housing (should be 9.0V minimum while cranking)

NOTE: Never operate a starter for more than 30 seconds at a time without allowing time to cool. (at least 2 minutes) Overheating will damage the starter and void the warranty.

Questions? Please contact your Performance World Dealer or e-mail us at tech@performance-world.com

(360° Clocking) Instructions (PLEASE READ!!)

These Performance World starters have a 360° clocking feature. This allows the starter body to be rotated to a position that best suits your application. Generally for most applications, your starter will be fine in the supplied position. If clocking (or shimming) is required, it is **CRITICAL** that the ring plate and bolts be reinstalled and tightened **CORRECTLY** (using blue threadlocker) after any adjustments are made.

1. Loosen (or remove if shimming) the 2 bolts on the retaining ring plate.

2. Check the starter position against the block and rotate as required. Make a reference mark on the starter body and aluminum drive end block at the preferred position.

3. Install shim if required.

4. Using a medium strength (blue) threadlocker (**REQUIRED**), tighten the 2 ring plate bolts **EVENLY**! Do this **SLOWLY** using an alternating pattern until a torque of 50 in/lbs is reached. (**NOT FT/LBS.!**) Inspect to ensure the ring plate is seated correctly and parallel with the drive end housing.

5. Reinstall starter and check pinion clearance as in step 2.

Additional Installation Notes:

Ford Solenoid Wiring. If you are using the OE Ford solenoid, you will need to install a jumper wire (min 12ga.) between the battery (large terminal) and ignition (small terminal) on the starter. The starter cable from your OE Ford solenoid will connect to the battery (large terminal) as normal. (**DO NOT OVERTIGHTEN THE SMALL TERMINAL**)

Worn Starter Pinion Teeth. Caused by excessive starter pinion to ring gear clearance. Remove, alter or change shims as necessary and re-check measurements as shown in step 3.

Slow Cranking. Can be several reasons. Most common is excessively low input voltage, which can be caused by undersized cables, high resistance, defective battery or poor connections. If the input voltage to the starter is satisfactory (9V or higher), then another possible cause could be an underpowered starter. It is important that the starter have the torque characteristics to handle the load of the engine. If the engine turns too slow, it may require a higher torque starter.

Flexplate and Flywheel Ring Gears. Since there is so many variances in quality of aftermarket ring gears, it is important to check to ensure the ring gear is round and true. This will ensure long life from your new starter. Check in the clearance to the starter in multiple locations around the ring gear to ensure it is the same as shown in step 2.

Heat Shields. Heat is the enemy of any electrical device, therefore heat shields between the headers and starter, or velcro wraps are recommended to prolong the life of your starter.

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