

True Start Performance Starter Installation Instructions

Note: TST406H was originally designed to fit BB Mopar applications where the ring gear will be a 10 pitch, 130, 136 or 139 tooth design. It has proven to be a life-saver for anyone who needs a mid-plate mounted starter.

Caution:

Starter replacement often requires working under a vehicle handling heavy components. Always be sure to use proper safety precautions and safety jack stands on a level surface to support the vehicle. Failure to follow these precautions could result in serious personal injury!

Recommended Tools To Do the Job:

- Appropriate hand tools to remove and replace fasteners
- Metal fabricating and cutting tools (ex: drill bits, drill, mill)
- Electrical supplies and terminating tools
- Voltmeter (if diagnosing the starting system)

Removing the Old Starter - Looking for Problems:

If you are replacing an existing starter which has failed, pay careful attention to the mode of failure and look for any mechanical / electrical problems somewhere else in your assembly which could be corrected to avoid the problem happening again. Common problems are mechanical misalignments, starter system problems, engine tune-up problems, fastener problems, and problems with interferences. Examine the flexplate. Make sure there is no damage that could cause problems with your new starter.

While removing your old starter, pay attention for fasteners which may have been damaged or loose. Also look for any cracks, metal transfer, or abnormal ring gear wear which may suggest other problems. Special care to remedy problems at this point can avoid repeat failures. When you install the new starter, be sure to use high quality ARP fasteners.

Installing the True Start Starter / Checking for Fit:

Thoroughly clean the mounting surface of any rust, dirt or paint. This is important. The Meziere True Start nose block has special features to provide additional starter rigidity, but mating surface cleanliness is important. Make a test fit with the True Start Starter. There must be some clearance to the engine oil pan, chassis, exhaust, etc. Many times the nose support on the TST406H will be larger than the previous unit and require the starter pocket to be opened up. The starter assembly may be rotated in relation to the starter nose in very fine increments to achieve clearance. When reinstalling the nose block onto the starter torque bolts to 70 inch pounds. Use lock washers and thread locking compound. For special clearance problems, contact the Meziere tech department for assistance.

Installing a TST406H when not replacing a previously installed unit:

Once a location is determined for best engine and chassis clearance, drill or mill a hole for the starter nose in the mid-plate. Calculate the hole placement by locating the starter drive on the flexplate. It may help to remove the solenoid so the starter drive can be moved easily so it can be aligned with the flexplate while you locate the pivot hole. When locating the second mounting hole use an alignment washer that will be considered "mid position". Look for etching indicating "6" or "7".



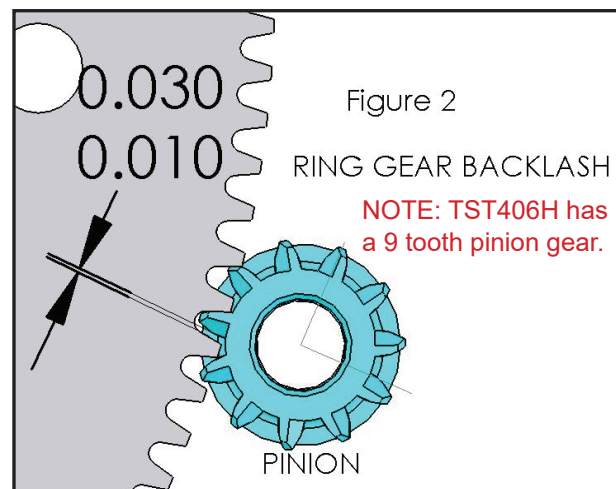
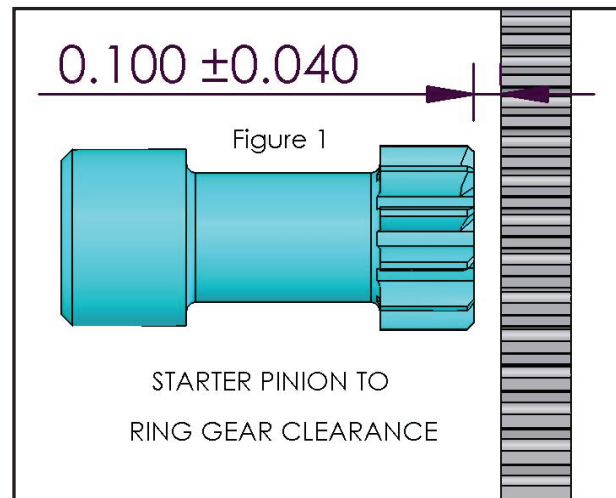
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True Start Performance Starter Installation Instructions (continued)

Checking Ring Gear to Pinion Clearance / Fit:

This is vital to starter operation and starter / ring gear life. Once the starter is mounted in position, check to make sure that the starter pinion has adequate clearance from the ring gear. Our recommended distance is .100 \pm .04 (see Figure 1). *A shim (supplied) may be placed between the starter nose and the main housing if necessary. (Check this).* Next, engage the starter pinion by jogging the starter or manually pulling the pinion gear out. The drive gear has 3/8-16 internal threads to aid in engaging the drive gear to the ring gear. You may screw a bolt in and use pliers to pull the drive gear out. Check to make sure there is some backlash clearance (.010"-.030" recommended, see Figure 2) between the gears when engaged. Double check that the drive gear is not bottomed out into flexplate ring gear. Also, be sure there is not excessive clearance. A tight or loose condition can be adjusted by changing the supplied alignment washers. **In all cases, make sure all vehicle electrical power is disconnected whenever your body parts are in and around the pinion / ring gear area!**



True Start Performance Starter Electrical and Engine Tune Troubleshooting

Proper performance of your new starter will be enhanced if you take the time to inspect some of the systems around the starter. The following is a good list of things to check:

Starter Electrical Circuit:

The main battery cable for the starter power needs to be attached to the largest solenoid terminal (10MM Dia.). This terminal is larger than most performance starters for better cable anchoring and current switching capability. The starter switch hot wire attaches to the spade terminal on the solenoid. These are the only two connections necessary. Note: Your starter switch should be capable of switching 50A of 12VDC power. The solenoid wire should be at least 10AWG. The solenoid can require as much as 40 amps of current to function properly during an average starting cycle. Sizing your switch/ solenoid wire properly at this time can avoid a hot starting problem! **See page 4 for recommended start circuit wiring.**

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True Start Performance Starter Electrical and Engine Tune Troubleshooting

Battery Power:

Your starter cannot perform to its potential if it does not get proper voltage and current. A quick check can make sure your starter wiring is correct. For this test disable the engine from possibility to start.

Measure voltage at the vehicle battery while cranking. Next measure voltage at the starter terminal while cranking. The voltage at the starter should be within 1 volt of the reading at the battery. At any time the voltage at the starter should not be less than 10.0VDC. If an excessive voltage drop exists, measure voltages at each connection in the system and repair the system as necessary. An under-voltage starter can cause excessive load on the starter as well as overload to the starter gear and ring gear.

Fuel System / Engine Tune Up:

An improperly functioning fuel or ignition system, and/or a bad starting sequence by the driver can cause extreme overloads to the starter gear and ring gear. This problem is amplified as displacement and compression ratios are increased. Here are a few simple things to look for and think about:

Make sure your fuel system is not leaking raw fuel down into cylinders prior to starting. Always allow the engine to complete a few rotations **without** ignition prior to starting. A cylinder loaded with fuel is almost sure to kick back and severely overload your starting system components if ignition is applied. Make sure also that your ignition system has a start retard function to back timing down as far as possible for starting. This will greatly decrease the starter gear/ ring gear load.

Maintenance: Periodically check electrical connection for loosening or corrosion. Avoid getting the starter wet as with any electrical component! Long periods of cranking will damage the starter. Increased voltages will also increase starter wear.

Note: Starter drive may stay engaged if the engine does not start. This is normal. When the engine RPM is above starter rpm the starter will disengage. Do not manually turn the engine backwards during this condition. Damage may occur.

No Warranty: No warranty is expressed or implied. Because of the nature of this application Meziere limits responsibility to quality and workmanship **before** installation. We are not liable for any consequential damage during use or installation.

Congratulations on choosing the Meziere Enterprises TST406H True Start Starter. Meziere has again raised the bar in high performance starters. Here are some of the features about this product you should know:

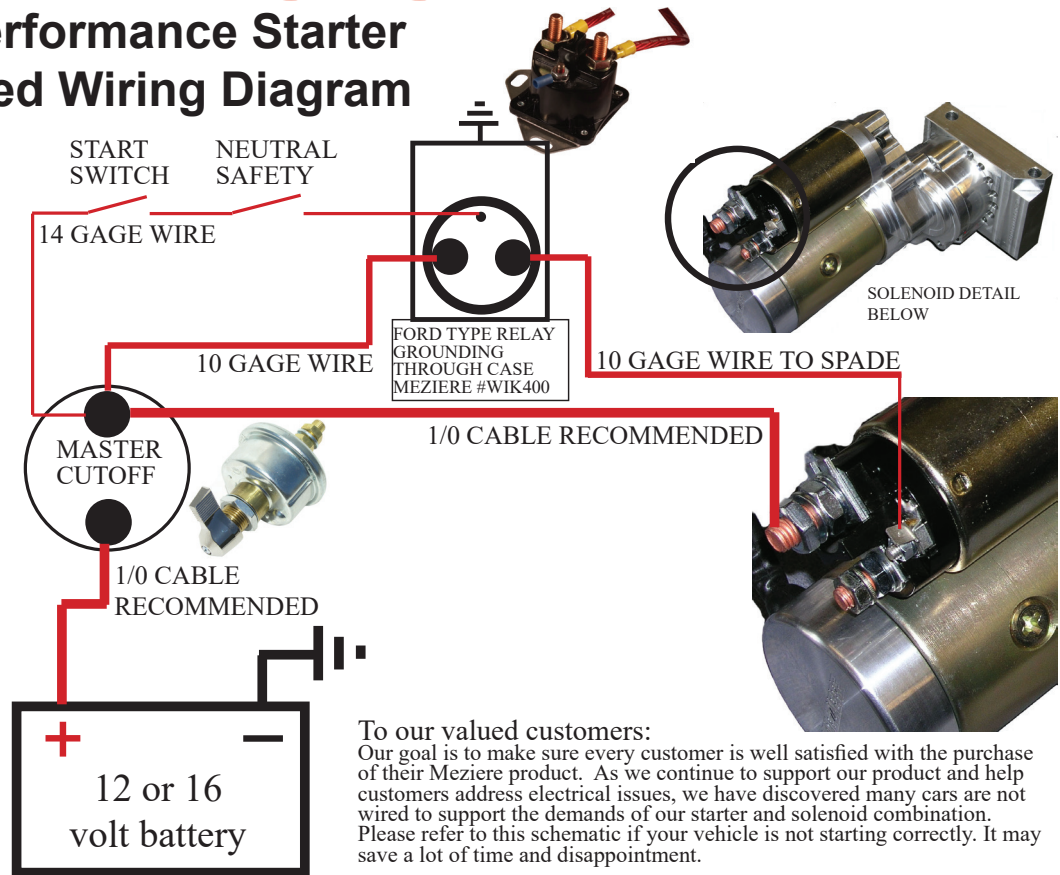
- Maximum off set design provides 3 HP with a killer 3.1 to 1 gear reduction.
- A Clean Sheet – Every component constructed with performance in mind.
- High strength alloys incorporated throughout for uncompromised strength.
- Ball and needle bearings used throughout for long-lasting, reduced friction and precision operation.
- Oversized solenoid for powerful bendix engagement and incomparable electrical operation.
- Specially modified, balanced, and potted armature for dependable smooth operation, even at increased voltages.
- Precision – CNC machining incorporated throughout for product exactness and repeatability.
- Quality – Each unit tested to guarantee the highest performance standards before our name goes on it.
- Meziere tech support – Competent sales/product support to answer your questions and make our product a success for you!

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True Start Performance Starter Recommended Wiring Diagram



California Proposition 65 Warning

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

WARNING: Motor vehicles contain fuel, oils and fluids, battery posts, terminals and related accessories which contain lead and lead compounds and other chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. These chemicals are found in vehicles, vehicle parts and accessories, both new and as replacements. When being serviced, these vehicles generate used oil, waste fluids, grease, fumes and particulates, all known to the State of California to cause cancer, birth defects, and reproductive harm.

For background on the new Proposition 65 warnings, see:
<https://www.p65warnings.ca.gov/new-proposition-65-warnings>

Proposition 65 and its regulations are posted at:
<https://oehha.ca.gov/proposition-65/law/proposition-65-law-and-regulations>

To give Meziere notice of an alleged violation of California Health and Safety Code Section 25249.5 or 25249.6, you must send notice to:
meziere@meziere.com

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On this page you will find some information for typical installations. Your exact position may vary but the center to center distance should remain the same for a given ring gear diameter.

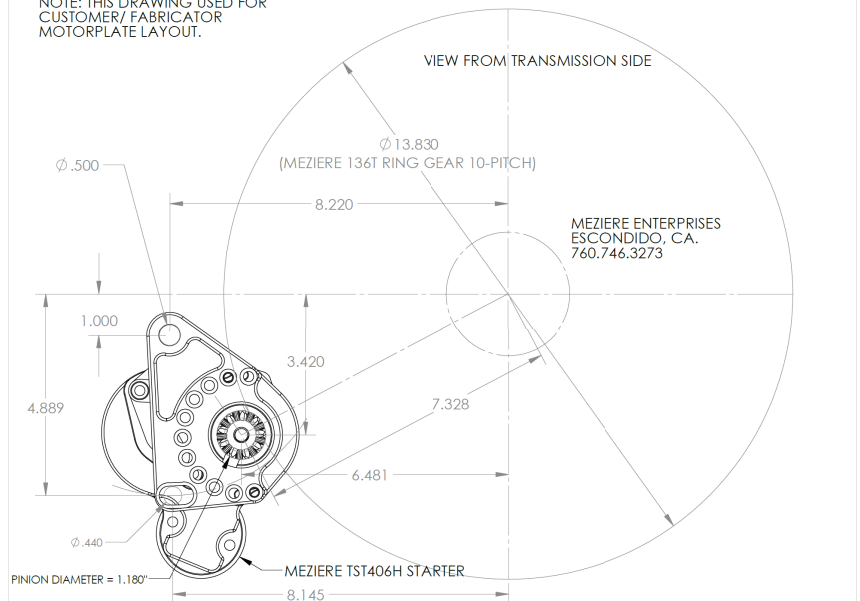
NOTE: This layout applies *only* to Meziere True Start with 9 tooth pinion gear and specific to the rig gear diameter.

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DIMENSIONS ARE IN INCHES		CHECKED			TITLE:
TOLERANCES:		ENG APPR.			TST406H WITH 130T
FRACTIONAL ±		MFG APPR.			
ANGULAR: EACH ±					
BEND ±					
TWO PLACE DECIMAL ±					
THREE PLACE DECIMAL ±					
INTERPRET GEOMETRIC TOLERANCING PER:					
MATERIAL					
FINISH					
NEXT ASSY					
USED ON					
APPLICATION					
DO NOT SCALE DRAWING					

TST406H ASSEMBLY WITH 136T RING GEAR

NOTE: THIS DRAWING USED FOR CUSTOMER/ FABRICATOR MOTORPLATE LAYOUT.



TST406H ASSEMBLY WITH 139T RING GEAR

TYPICAL LAYOUT PATTERN FOR CUSTOMER REFERENCE

MEZIERE ENTERPRISES
TS SERIES STARTERS
03/24/15

