10885 May Chapel Rd. Lawrenceville, IL
62439 618-943-4856
www.bowlertransmissions.com

T-56 Magnum Dial Indicator plate

This dial indicator plate is designed for use with all bellhousings made to accept the T-56 6 speed transmissions. You will notice that there are 2 dowel pins pressed into the plate. These dowel pins are to be inserted into the bellhousing dowel pin location that the transmission uses to align itself into the bellhousing. Once you have the dial indicator plate installed onto the bellhousing utilize the hardware that you will be using to install the transmission to secure the dial indicator plate to the bellhousing. Bolting the plate down will ensure that you get a uniform surface to indicate from. Once you have the dial indicator plate secured and bolted in place you are ready to mount your indicator and magnetic base to begin the measuring process. See the instructions below for the proper procedure to dial indicate your bellhousing.

The T56 alignment plate eliminates the need to remove the front cover of the transmission. The procedure for dial indicating the alignment plate is exactly the same of any 4/5 speed bellhousing.

Measurement Quick Reference

Standard Automotive Bellhousing Alignment Specifications:
Concentric: +/-.005" or .010" TIR Parallel: +/-.001" or .002" TIR

Hi-Performance 7,500+ RPM Bellhousing Alignment Specifications:
Concentric: +/-.0025" or .005" TIR Parallel: +/-.0005" or .001" TIR

Flywheel runout .001" to .005" Max (less is always better)
Before you get started it is always helpful to go ahead and ensure a smooth, clean mating surface for all the components. This means metal to metal contact may be the only way to get the measurements you need. Normally you will be able to get by with making sure the block surface and crank flange is rust/paint free and the dowel pins are clean of any debris. There shouldn't be any nicks or burrs either. In some rare cases, it may be necessary to clear the paint from the bellhousing if there is significant build up. A bellhousing that is quite a bit out of parallel will need to be shimmed regardless.

Flywheel Runout

The first part of a successful install will be to ensure that your flywheel is parallel with the crank shaft flange. This will give you a good foundation to work from when checking the bell housing alignment.

1. First be sure the crank flange is clean/rust free. Bolt up the flywheel and torque the bolts to spec.
2. Set up your dial indicator perpendicular to the flywheel clutch surface. This can be done by attaching the magnetic base to the oil pan or engine block.
3. Be sure to zero out your indicator and mark your starting point. Then slowly crank the engine by hand for one full revolution (360*) to be sure you come back to a zero reading at your starting point. Do this one more revolution to ensure repeatability and that your dial indicator is mounted securely.
4. Once you have your starting point established make another rotation and note for any low (negative) readings. If you have any negative readings, mark that spot and that will be your new zero starting point. If you have no negative readings move on to the next step.
5. Now that you have verified your zero-starting point make a couple revolutions and note any high spots. You should end up with no more than .005" TIR. As always, the lower number the better.
6. If you end up with more than .005" TIR there is a possibility that your flywheel is warped, damaged, or needs to be resurfaced. At this point it may also be necessary to check the crank flange for run out as well to be sure it does not have any damage.
7. Once you have your flywheel runout within spec you are ready to move onto checking the bell housing alignment.

** NOTE: If you are working with an aluminum flywheel you may need to remove it for the bellhousing alignment. This will allow you to mount the magnetic dial indicator base to the crankshaft flange for a more solid connection.

Checking Bellhousing Concentric Alignment

1. After ensuring you have a clean/rust free mating surface. Secure the bellhousing to the engine block and torque all bellhousing to engine bolts to specification. If using a scattershield, make sure the block plate is installed***.*** Then go ahead and install the dial indicator plate.

Note: The stock dowel pins must protrude out past the block plate/scattershield and locate on the cylindrical part of the dowel pins, not the tapered end. If the scattershield is resting on the tapered end, it will cause an inaccurate alignment reading. If necessary, tap the stock dowel pins rearward, just enough for the tapered end to protrude through the scattershield

2. With the engine on TDC (Top Dead Center), install the dial indicator base on the flywheel. Adjusting the plunger to contact the inside edge of the dial indicator plate as seen in the above photo.

   Note: The magnetic based indicator does not need to be on the exact center of the flywheel. TDC/12:00 dial indicator setup will allow better communication with your helper to stop at TDC/12:00 for the repeatability checks. ***Aluminum Flywheel Users:*** you will need to remove your flywheel for the alignment check. The magnetic base indicator will not attach to an aluminum flywheel.

3. With the dial indicator on (0) zero and mounted securely at 12:00, your helper can rotate the crankshaft 360* slowly. Your job is to note the dial indicator reading, you are looking for the most (-) negative number on the dial indicator as it rotates the 360*. When your helper rotating the crankshaft stops on TDC, your dial indicator should read (0) zero at 12:00. If you read (0) zero, then you have verified your dial indicator is mounted securely. Do another crankshaft rotation to double check your dial indicator still reads (0) zero at 12:00.

4. With the dial indicator still secured at 12:00; note the most (-) negative number of the dial indicator during your next 360* rotations. Once you are certain where the most (-) negative number is, mark the bellhousing. This most (-) negative number will be your new dial indicator (0) zero location.

   Note: The most (-) negative number dial indicator reading can be at any location within your 360* rotation.

Bellhousing Mis-Alignment Exercise Example:

5. If you have determined your most (-) negative number is at 8:00; rotate the crankshaft until the dial indicator is at 8:00 and (0) zero the dial indicator. As your helper rotates the crankshaft from the new 8:00 (0) zero location, your most (+) positive number should be roughly at 2:00 or 180* from the new 8:00 (0) zero location. The TIR (Total Indicator Reading) of the dial indicator needle from 8:00 to 2:00 is your bellhousing register hole to crankshaft centerline misalignment. If the TIR was +.028” on the dial indicator, you divide .028” / 2 = .014”. and
   .014” would be the needed offset dowel pin to correct your bellhousing concentric misalignment.
   The .014” offset dowel pins would also point towards 2:00 to correct the bellhousing mis-alignment.

Checking Bellhousing Parallel Alignment

1. With the engine on TDC and the dial indicator base still mounted on the flywheel, adjust the plunger to contact the front face of the dial indicator plate at 12:00.

2. With the dial indicator on (0) zero and mounted securely at 12:00, your helper can rotate the crankshaft 360* slowly. As before, your job is to note the dial indicator reading, you are looking for the most (-) negative number on the dial indicator as it rotates the 360*. When your helper rotating the crankshaft stops on TDC, your dial indicator should read (0) zero at 12:00. If you read (0) zero, then you have verified your dial indicator is mounted securely. Do another crankshaft rotation to double check your dial indicator still reads (0) zero at 12:00.

3. Your most (-) negative number will require shims between the engine block and bellhousing to correct the parallel alignment.

Bellhousing Alignment Helpful Hints

1. Do the concentric bellhousing alignment check, but do not make any offset dowel pin corrections at this time.

2. Do a parallel alignment check and if needed, shim the bellhousing to achieve parallel alignment specs.
   Note: Aligning a bellhousing to within parallel specs will change the bellhousing concentric reading.

3. Do another concentric alignment check and use the correct offset alignment dowel pins to achieve your concentric alignment specifications.

4. TIR = "Total Indicator Reading". The needed "Offset Dowels" to achieve the concentric alignment specs will always be ½ of your TIR. TIR of .028" will use a .014" offset dowel pin to correct the concentric misalignment.

5.

Total Indicator Reading	½ of TIR	Use Offset Dowels
.012" to .020"	.006" to .010"	.007"
.022" to .034"	.011" to .017"	.014"
.036" to .052"	.018" to .026"	.021"

6. The better a bellhousing is indexed and dial indicated to the crankshaft, the smoother performance, higher RPM shifts, and transmission longevity you will experience.

7. If your bellhousing requires offset dowel pins (contact Summit Racing, Jegs, Speedway Motors, or your local speed shop and see if the dowel pins are available in the proper offset for your block). Before installing the offset pins we recommend to drill and tap a small hole into the side of each dowel pin hole (in the block) so that a small Allen-head set screw can be used to lock the offset pins in the proper orientation after alignment is completed. When installed, the offset dowel pins can be adjusted with a screw-driver to obtain the proper alignment. In some cases, the dowel pins must be polished with a strip of emery cloth to permit them to be rotated in the dowel pin holes with a screw-driver. Adjustment with these offset pins can be tedious and time consuming so be patient. After this is completed, tighten all bellhousing bolts and recheck the alignment one more time. If everything is okay, the bellhousing portion of the job is done.