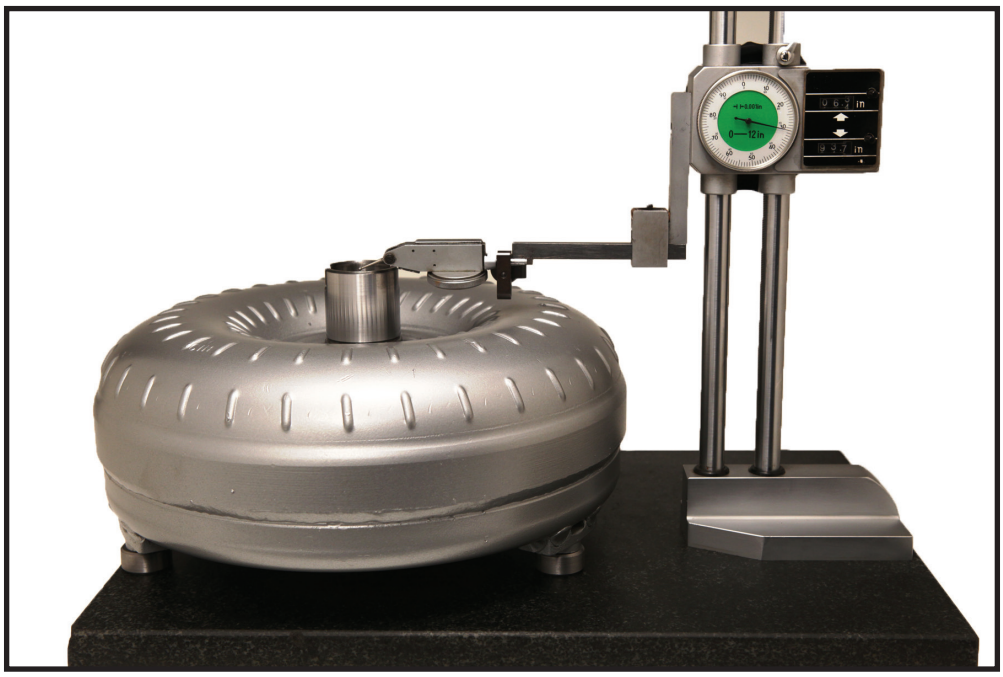
Overall Height

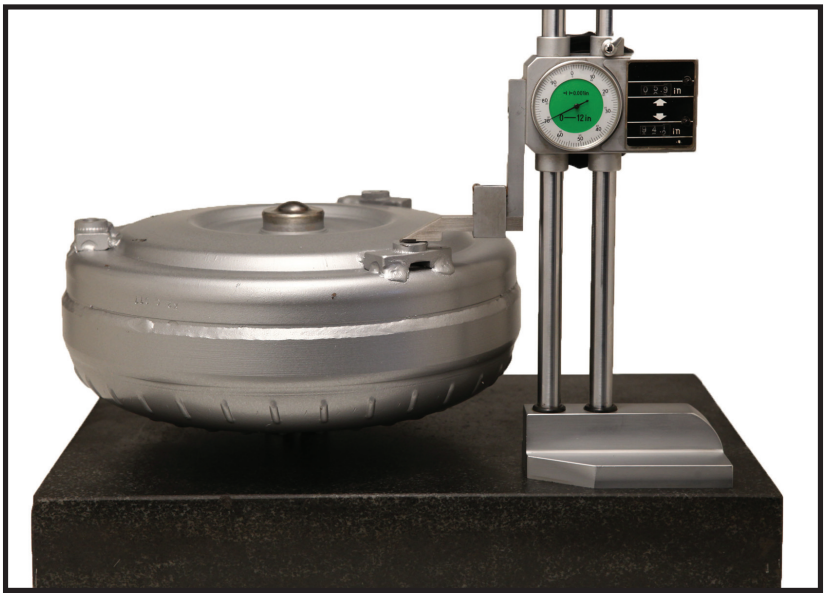
Graphically; it is the distance between the end of the impeller hub and the area of the mounting pad that contacts the flex plate ±0.025" (0.635 mm).

Recommended procedure for measuring:

- Rest the cover on a surface, allowing the area of the mounting pad that contacts the flex plate to sit flat without any interference with the pilot or any other area.
- Using a height gauge, measure and record the distance to the top of the impeller hub.
- Subtract the thickness of any spacers used to raise the converter so the pilot or cover does not contact the measuring base.
- For hubs with drive tangs, such as the BW T-35, measure to the top of the tang.



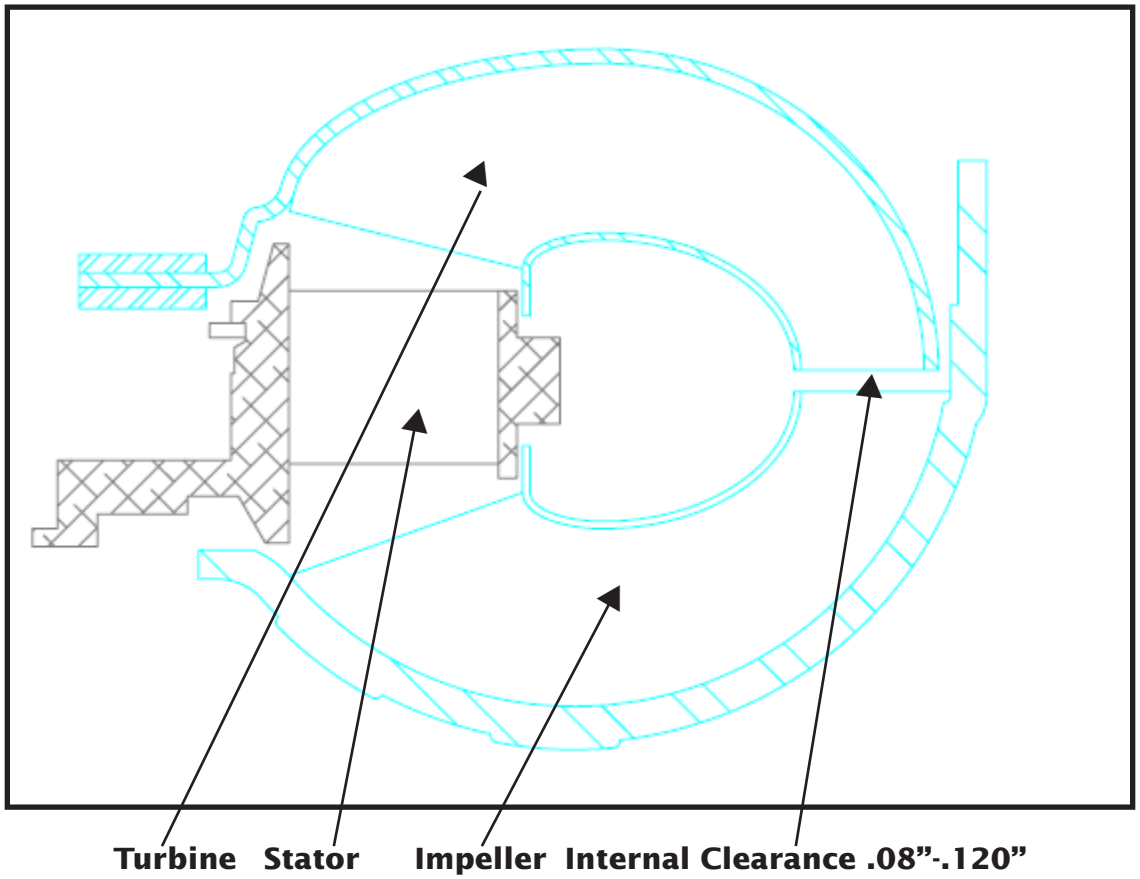
- Rest the impeller hub on a flat surface.
- Using a height gauge, measure to the area of each mounting pad that contacts the flex plate. Add the measurement together, and divide that sum by the number of mounting pads. (Pad 1+ Pad 2 + Pad 3)/3 Pads. This is only an average over all height and not as accurate as the recommended procedure.



Alternate procedure – Not Recommended:

Internal Clearance

Graphically; it is the space between the impeller and turbine in an assembled torque converter.
Functionally; it is the distance the oil travels from where it exits the vanes of the impeller to where it enters the vanes of the turbine.



Functionally; it is the distance that the oil travels from where it exits the vanes of the impeller to the vanes of the turbine.

Checking Internal Clearance

Recommended procedure for measuring:

- Place the impeller on a flat surface and then place the turbine (with the turbine hub) right on top of the impeller, so that the vanes are in contact (Fig 1). In this position, there is no clearance between the impeller and turbine.
- Record the measurement from the top of the turbine hub down to the flat surface.
- With the turbine removed from the impeller, the stator and all thrust components are placed into the impeller, followed by the turbine. The impeller and turbine are now separated by the stator and thrust washer.
- Once again, a measurement is taken from the top of the turbine hub down to the flat surface (Fig 2).
- The difference between the two measurements is the internal clearance.

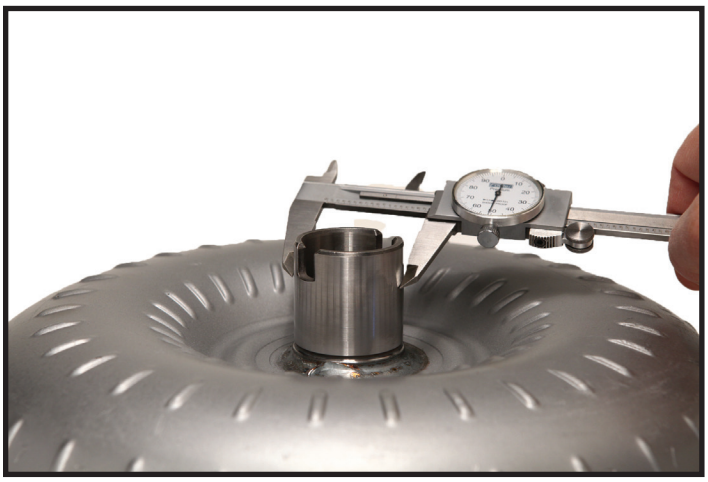
Hub Length

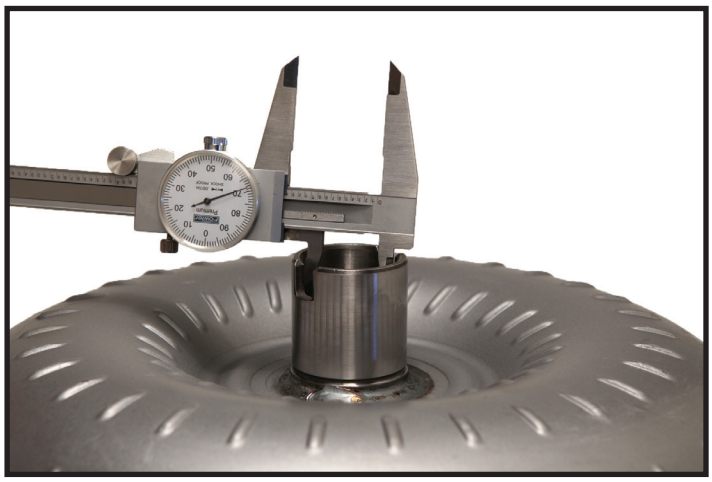
Defined as the distance from top of hub to the body of impeller, not including weld.

Through Hub Length

Measure from the top of the hub to the thrust surface of impeller.

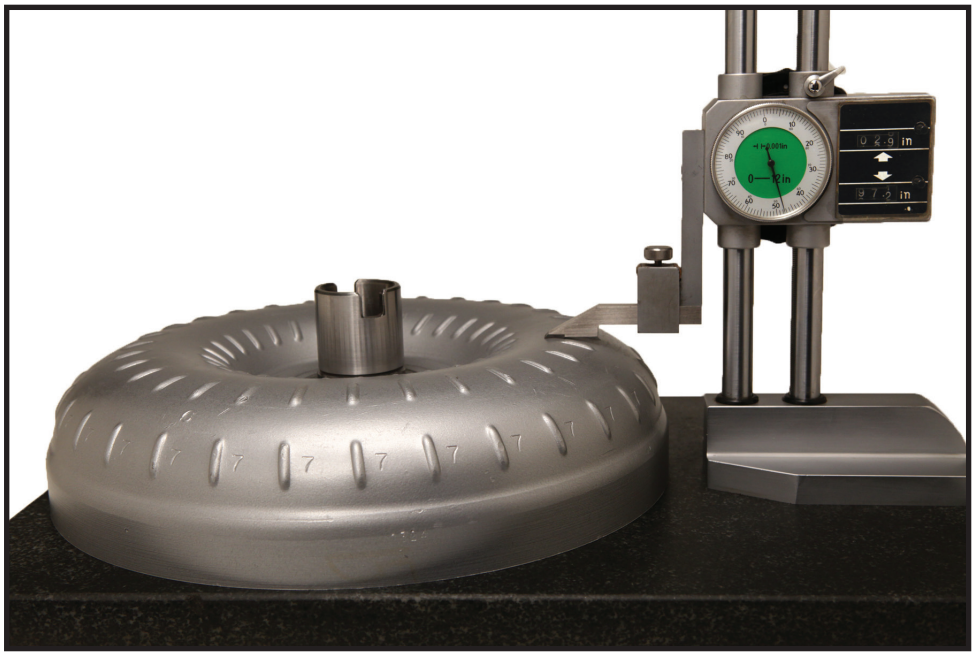
Hub Diameters





- For Outside Diameter (O.D.), all diameters should be posted if it is a stepped hub.
- The Inside Diameter (I.D.) is measured at the drive end of hub.
- Steps on the inside diameter (I.D.) of a hub should be posted under Hub Style.

Impeller Height



- Measure from the edge of the converter to the crown of the impeller.
- On impeller over cover converters, the measurement will vary depending on parting procedures.
- The minimum height may be posted before an impeller build up is necessary. For example, 2.750” (69.85 mm) Minimum.

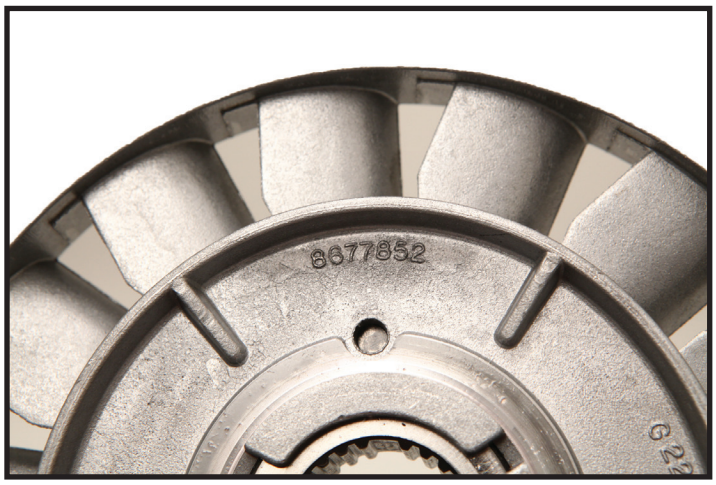
Impeller ID

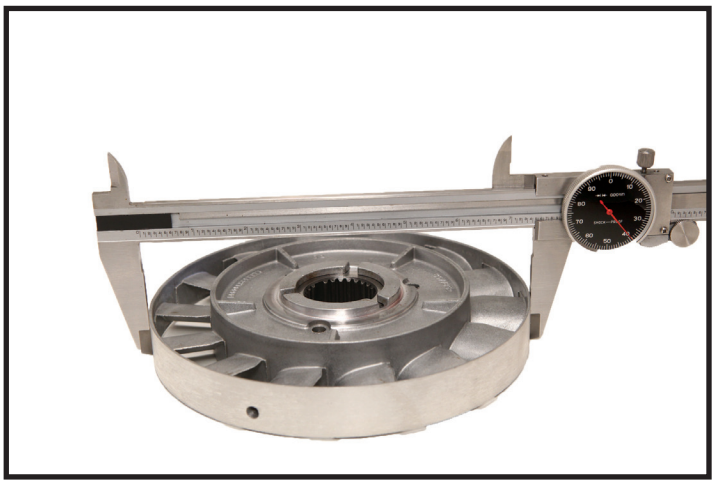
- Measure at the inside diameter of the counter bore.
- This dimension may vary due to parting procedures or multiple rebuilds.
- Maximum diameter may be posted before a build up is necessary.
- On cover over impeller converters, such as Chrysler 518, post the I.D. measurement at the edge of the impeller.

Impeller OD

- Measured where the impeller overlaps the cover.
- On impeller over cover converters, this measurement is also the diameter of the converter.
- On cover over converters, such as Chrysler 518, measure the area where the cover overlaps the impeller.

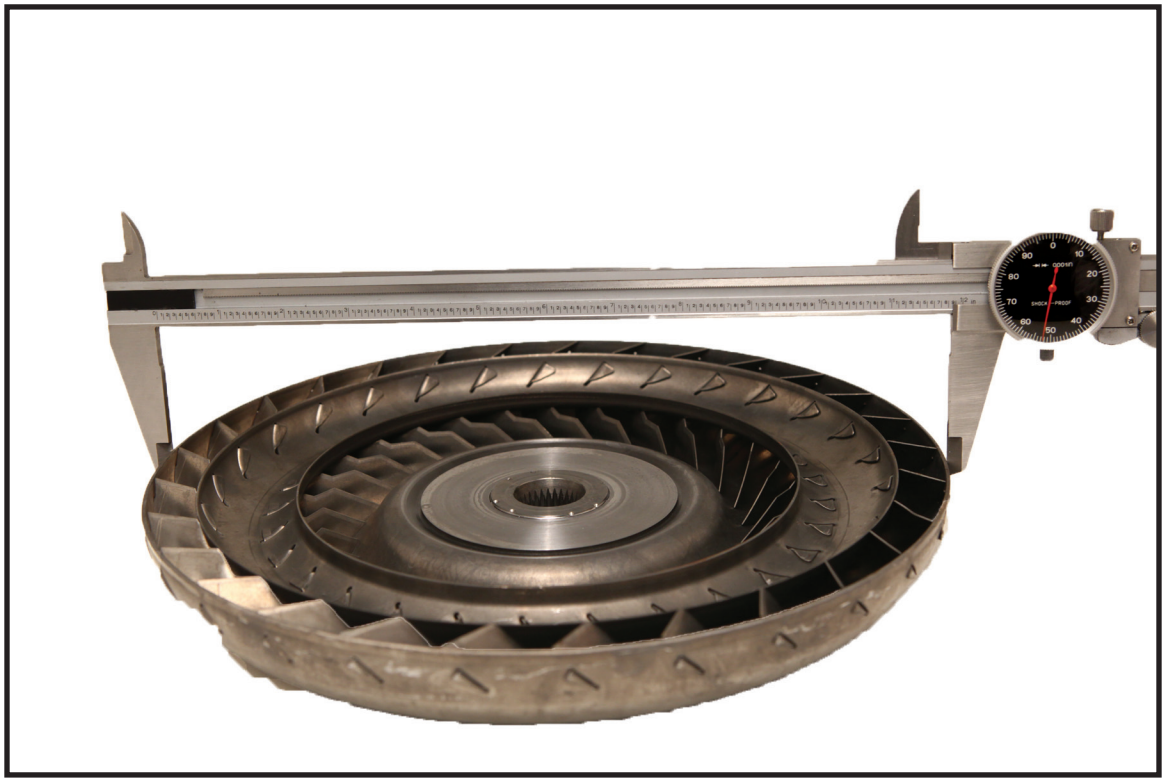
Stator Info





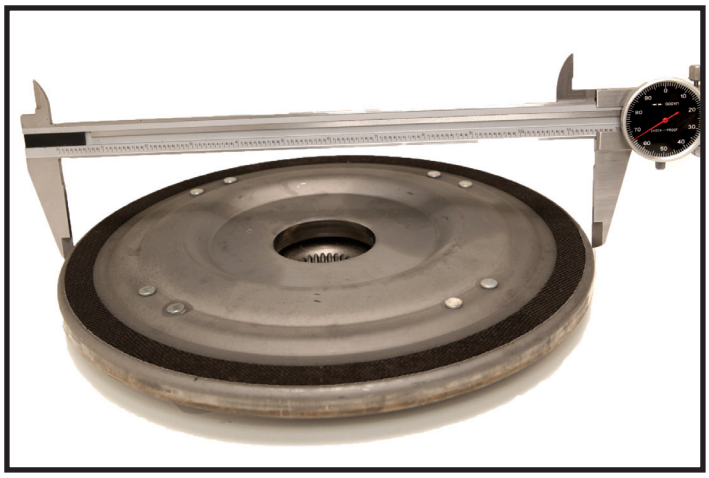
- Measure at widest point for stator diameter.
- Codes are normally cast into the stator.
- For Number or Blades, you may also post the angle of the blades and blade design.
- For the Inner Race, post the number of possible splines and note any missing splines. For example, a GM 298 MM converter would be 27 splines with 3 missing.

Turbine Diameter



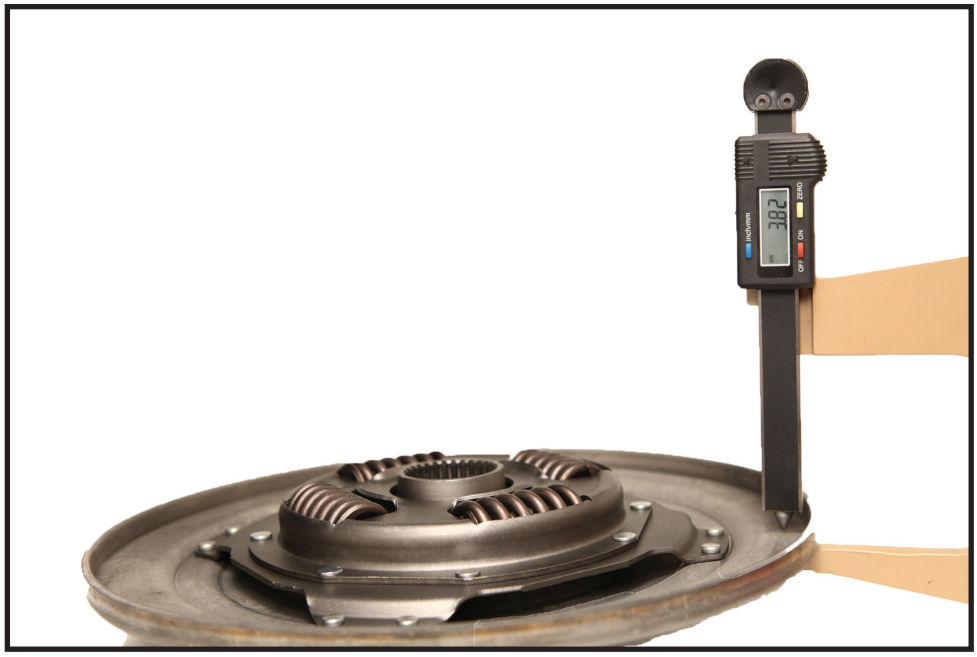
Outside diameter of turbine.

Piston OD & ID



- O.D. is measured at the widest point of the piston.
- I.D. is measured at the turbine sealing surface of the piston.
- There is no need to count the splines because this information is listed with turbine specifications.

Piston Thickness



- Measure thickness of the material (metal) where the friction material is bonded to the piston or where the piston contacts the friction material if it is bonded to the cover.
- If measured with friction material, please make note when posting.

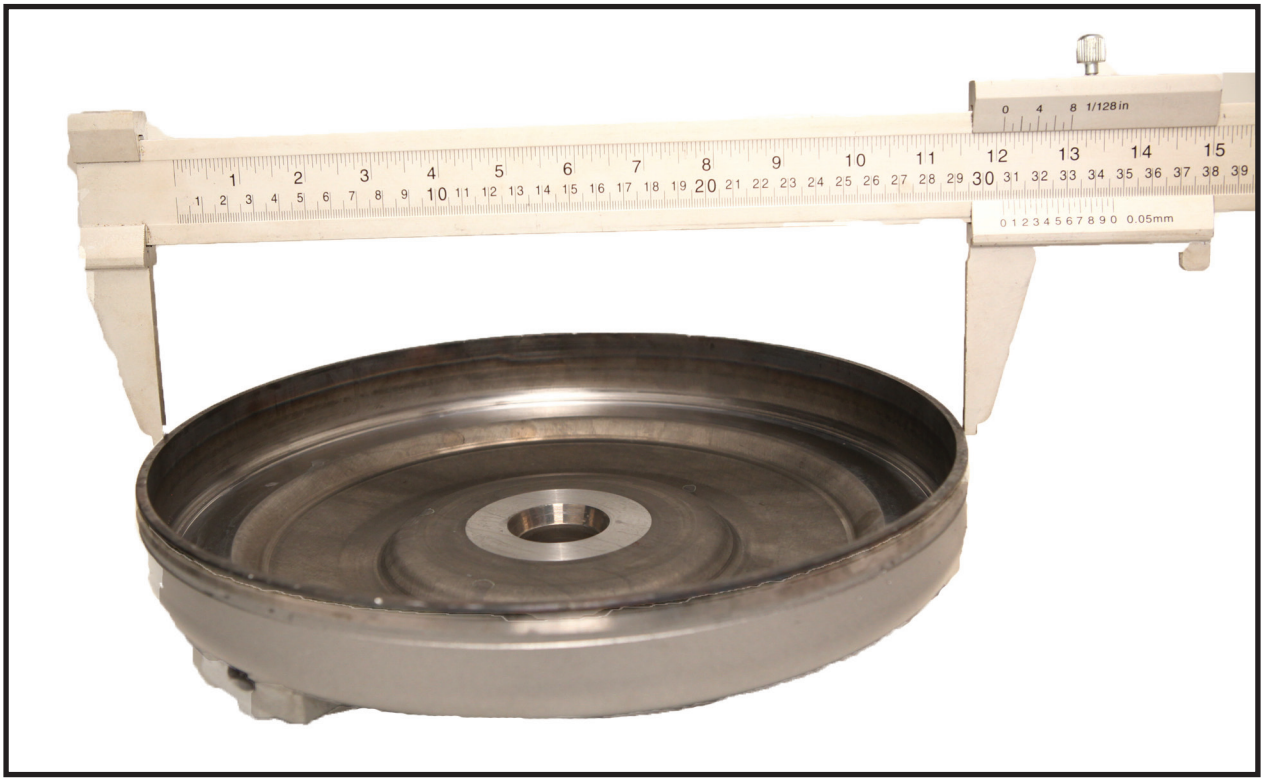
Cover Height

- Measure from the flex plate mounting surface to the edge of cover.
- For cover over impeller styles, such as the Chrysler 727 or 518, this will vary depending on how many times the converter has been cut.
- Use the minimum height before a build up is necessary in this case.

Cover ID

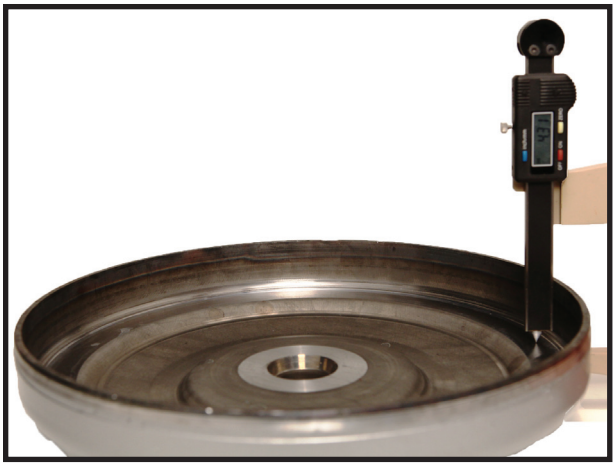
- Measure the I.D. of cover.
- On cover over impeller converters, such as the Chrysler 518, measure the diameter of the countersink where the cover overlaps the impeller.

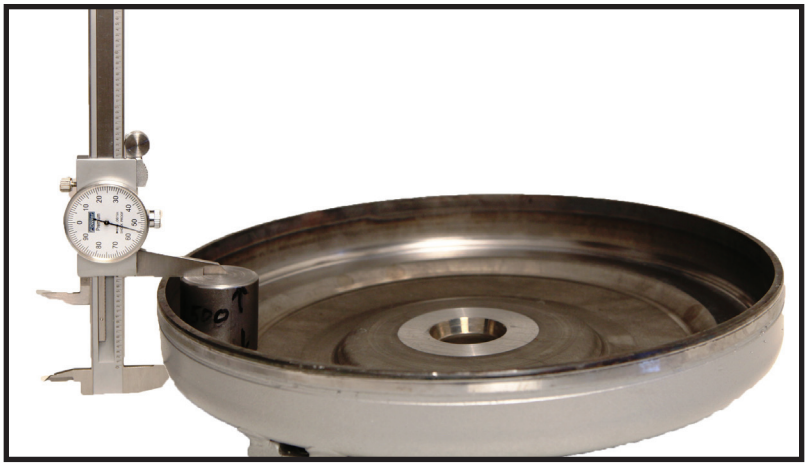
Cover OD



- Measure at the point where the impeller overlaps the cover and post the minimum O.D. This may vary depending on parting procedures.
- On converters with cover over impeller design, such as the Chrysler 518, post the O.D.

Cover Thickness





- Defined as the thickness of the cover at the clutch interface.
- If friction material is bonded to cover, include it in the measurement and note that it is with friction material.
- A 2.0” (50.8 mm)space block is being used in the image.
- The 2.0” (50.8 mm)space block is subtracted from the total measurement.

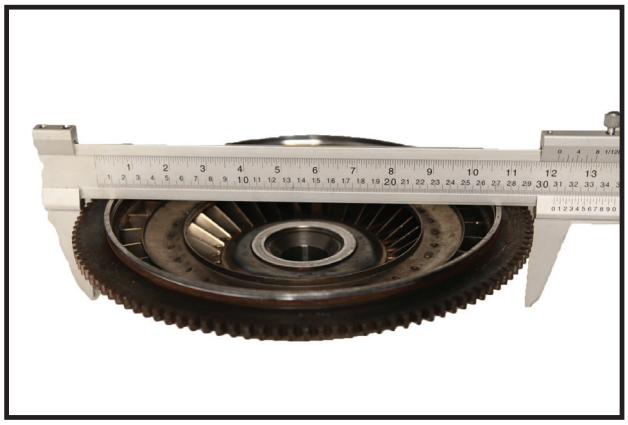
Pilot Diameter

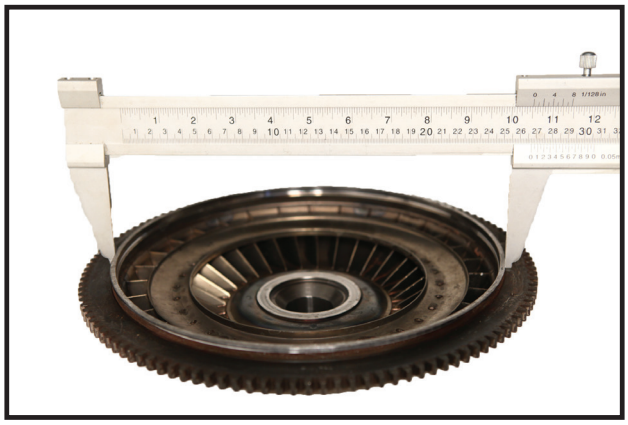
- Defined as the diameter of pilot.
- Post both diameters on stepped pilots. A Pilot Style may be noted.

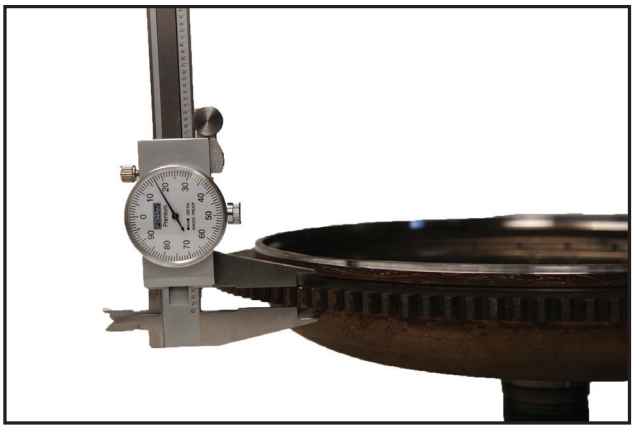
Pilot Height

- Measure from a flat area adjacent to pilot to the top of the working part of the pilot.
- When measuring stepped pilots, such as on a Toyota converter, the height of both steps should be posted.

Ring Gear Information

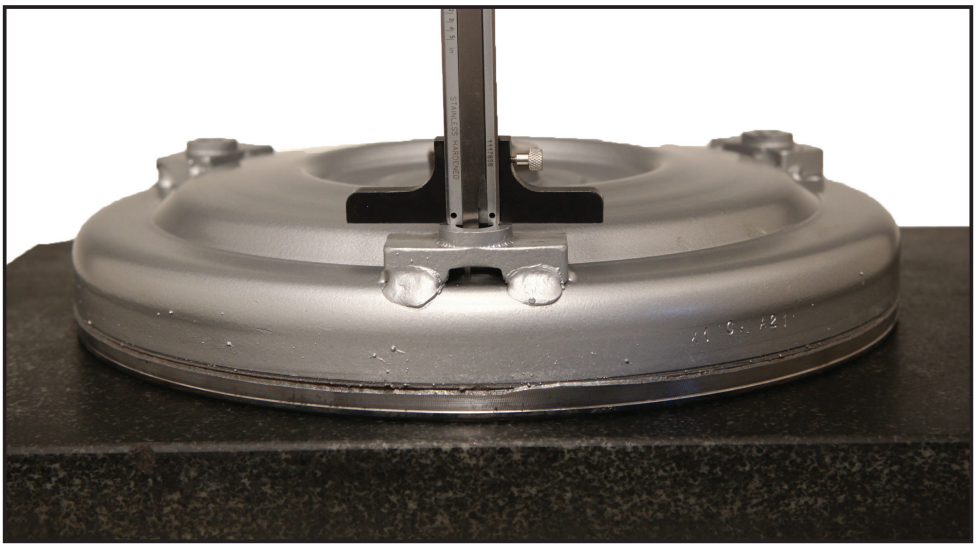






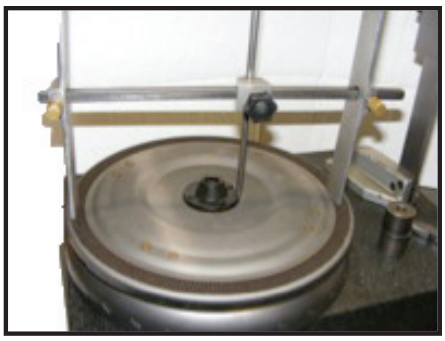
- Thickness of the ring gear at the teeth of the ring gear.
- Pitch of ring gear may also be posted, along with the number of teeth.

Mounting Pad Specifications



- Measured from the cover body the top of mounting pad.
- Studs are measured from the body of the cover to the area on the stud base where the base contacts the flex plate.
- On converters with studs that have no base, such as the V.W. 01M (095-096), measurement should reflect 0.00” (0.00 mm)
- The number of pads or studs should also be indicated, as well as thread size, pitch, and bolt circle diameter.
- For converters with mounting rings, the ring O.D. , I.D., and thickness should be posted in the Notes Section of the converter ID document.

Clutch Release Clearance



-Clutch clearance can be defined as the amount of travel the piston moves from full release to full clutch apply.
-Measurements will vary depending on the type of lock up system used.

- For a single clutch plate, where the turbine hub contacts the cover, such as Ford 4R100 or GM 298MM, this can be identified by measuring from where the piston bottoms out on the turbine hub to the thrust surface of the top of the turbine hub. (Fig IV) Record this measurement.
- Place piston in the cover and measure from where the piston banks on the turbine hub to the thrust surface of the cover. (Fig. III)
- Subtract the two measurements. This will give you the clutch clearance.

-Figures I and II show measuring with an H beam trammel, which is commonly used in transmissions to select the selective washer on pump.

- The clutch clearance for single clutch plate converters, where the turbine hub DOES NOT Contact the cover, such as GM 300MM, is the converter end play.
- Multi-Clutch or Clutch Pack lockup systems use a clutch retainer and piston similar to clutch packs found in automatic transmissions. The clearance can be measured with a feeler gage between the snap ring and pressure plate.
- Captive Clutch type lock up systems vary in how to measure the release clearance. For more detailed information please refer to the article, Clutch Release Clearance 101 by Ed Lee; # TIP-01-08 on the TCRA website or the Sonnax website.

End Play

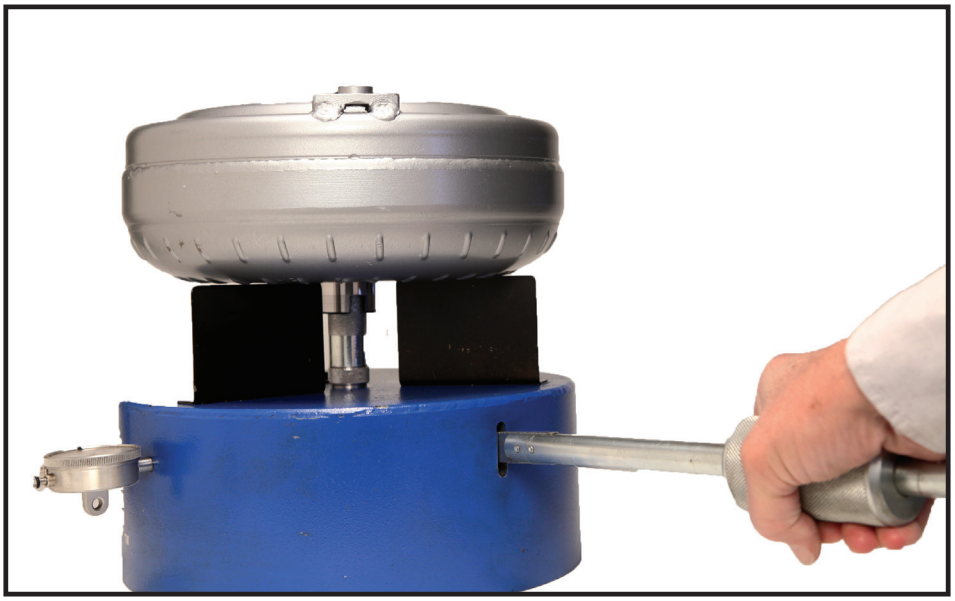
Graphically; it is the total space between the stacked members of an assembled torque converter.

- In a torque converter that has no contact between the turbine hub and cover, the converter end play is also the clutch release clearance.
- This clearance is typically .030" to .035", but may be more.
- In a torque converter that has contact between the turbine hub and cover, the end play will range from 0.00" to 0.010" (0.00 mm – 0.254 mm). Most rebuilders try to be in the 0.050" - 0.010" (1.27 - 0.254 mm) range. In this type of converter the clutch release must be adjusted separately.

Checking End Play - Invert the converter

-If you are using the End Plate Checking Tool:

- Insert the tool.
- Zero the gauge (typically a dial indicator).
- Push up on the tool until the travel stops and record the reading on the gauge.



-If you are using a conventional Dial Indicator:

- Measure the distance from the end of the impeller hub to the turbine hub.
- Turn the converter upside down and re-measure. The difference in the two measurements is the end play.