

## PART 3

## CONVERTER AND TRANSMISSION ALIGNMENT

The torque converter is supported at the front in engine crankshaft and at rear in a bushing in front oil pump housing. Drive plate connecting crankshaft to converter is flexible to accept a certain amount of mis-alignment of transmission case and crankshaft. Excessive mis-alignment can cause premature front pump bushing wear, converter impeller hub wear, oil seal leakage and/or damage to drive plate.

**To Check Transmission Alignment**

- (1) Drain transmission oil pan.
- (2) Remove transmission and converter assembly (see respective *para.*)
- (3) Remove flexible drive plate.
- (4) Check the two dowels in rear face of cylinder block, making sure they extend at least 5/16" out of block. Drive plate damage will result if one or both dowels are missing, or if they are not positioned correctly.
- (5) Slide converter assembly out of transmission and remove the oil pan.
- (6) Loosen the front (kickdown) band adjusting screw and remove the apply servo and strut (on Models C and D).
- (7) Remove front pump housing retaining bolts.
- (8) Attach Tool E21C35D to pump housing flange (A-904 Models). Thread screws of tool into flange holes at 11 and 4 o'clock positions.
- (9) Bump outward evenly on the two knocker weights to withdraw oil pump and reaction shaft support assembly from case.
- (10) Carefully remove the front and rear clutch retainer assemblies and the kickdown band (to obtain access).
- (11) Install dial indicator on crankshaft flange (see Fig. 1). An indicator post can be made by cutting a 7/16"-20 T.P.I. thread on end of a rod approximately 5½" long.
- (12) Clean all foreign material from cylinder block flange face, also from transmission case flange face.

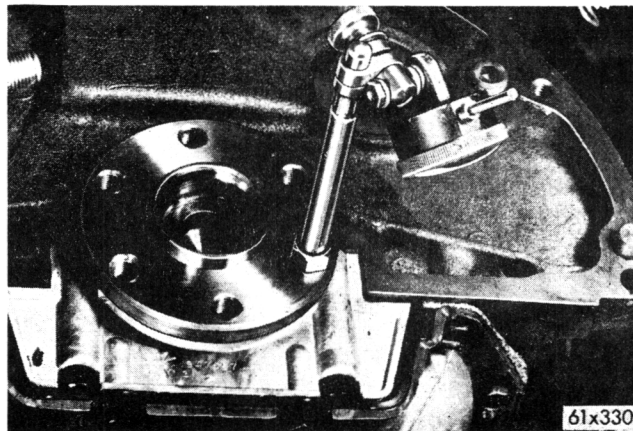


Fig. 1 – Dial indicator installation

(13) Position dial indicator plunger to the engine transmission mounting face and rotate the engine crankshaft to read any runout. (Runout should not exceed .010 inch T.L.R.).

(14) Bolt transmission case to engine, being careful not to strike indicator, when raising transmission into place. Tighten bolts to 25-30 lbs. ft. torque, adding shims, where required, between mounting surfaces to correct excess runout.

(15) Position dial plunger against bore diameter which pilots front pump assembly (see Fig. 2). Make sure plunger does not rest on chamfered edge of bore. To adjust dial and plunger, reach into case from front, below engine oil pan. Adjust dial and plunger to that plunger can travel in each direction.

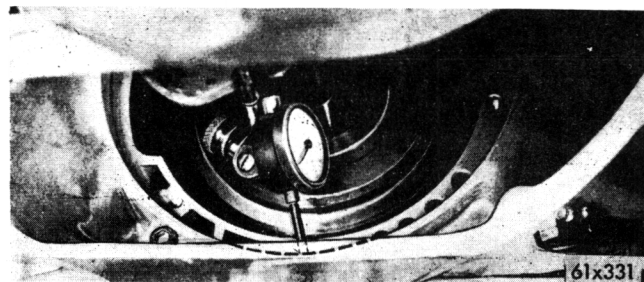


Fig. 2 – Checking transmission case (front pump bore) runout

(16) Rotate crankshaft with a wrench on a bolt in front end of crankshaft. Remove fan belt to prevent fan from interfering with wrench (where necessary).

(17) Measure bore runout by rotating crankshaft slowly, recording the readings every 45° of rotation. Also record the points of maximum and minimum readings. Use a mirror if necessary to see the dial as it is being rotated. Total runout of bore should not exceed .015".

### To Correct Transmission Alignment

If the total runout of transmission on case bore exceeds .015", it may be reduced to within limits by the use of offset dowels. Dowels must be used in pairs, and are available in the following sizes: .007", .014", and .021" offset.

(1) After determining the amount and direction of transmission case bore runout, select a pair of offset dowels with offset nearest to half the amount of runout.

(2) Drive old dowels from engine block flange and install the selected offset dowels with slots parallel and offset in the direction of runout. The upper dowel must be installed with the slotted end into block flange (toward the front of engine). Install lower dowel with slotted end toward rear, as shown in *Fig. 3*. Both dowels must be installed up the shoulder of offset.

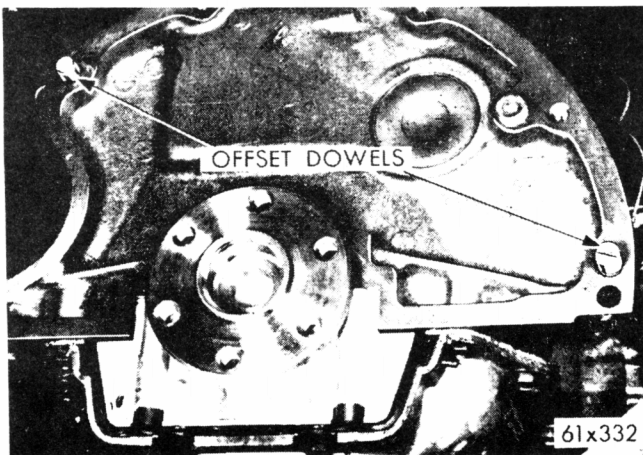


Fig. 3 – Offset dowel installation

(3) Re-install transmission case, carefully tighten attaching bolts to 25-30 lbs. ft. torque. Do not force bolts as the case might be binding on dowels. Re-check bore runout.

(4) Small corrections can be made by turning dowels with a screwdriver bit and wrench (*see Fig. 4*), support weight of transmission and loosen case

bolts slightly. Turn dowels to obtain as near zero runout as possible. The dowel slots must be kept approximately parallel to maintain correct centre distance between dowels.

(5) When transmission is correctly aligned, remove assembly without disturbing dowels.

(6) Install the rear and front clutch retainer assemblies and kickdown band components.

(7) Install pump and reaction shaft support assembly and check drive train end play.

(8) Adjust the kickdown band as outlined in *Para. 5* for 6 cylinder Models and *Para. 6 (part 2A)* for 8 cylinder Models.



Fig. 4 – Adjusting offset dowels

### To Check Converter Hub Runout

If flexible drive plate is cracked or broken, install a new plate. Do not use lockwashers on retaining bolts: tighten bolts to 55 lbs. ft. torque, then proceed as follows:

(1) Install converter and tighten bolts to 270 lbs. in. torque. Do not use lockwashers on drive plate to converter bolts.

(2) Attach dial indicator to engine block flange (*see Fig. 1*). Position dial indicator so dial plunger rests on converter hub (just ahead of pump drive slots).

(3) Rotate crankshaft with a wrench on bolt at front end of crankshaft, and check converter hub runout. Do not rotate converter by hand or with a

turning tool as flexing of drive plate will give a false reading.

(4) The total runout of converter hub should not exceed .015". Runout less than .050" may be corrected by the use of a large C clamp. Attach clamp in front of engine block flange and behind starter ring gear on converter. Draw ring gear adjacent to the low runout point of converter hub toward engine.

Release clamp and re-check runout. Do not pry converter away from engine and be careful to avoid over-correction. In some cases it may be necessary to check crankshaft flange for excessive runout.

Flange runout should not exceed .002". The clearance between converter pilot hub and bore in crankshaft should be .0005"-.010". A maximum of .003" is preferred.

(5) After correct alignment has been obtained, re-assemble, adjust and install transmission assembly.

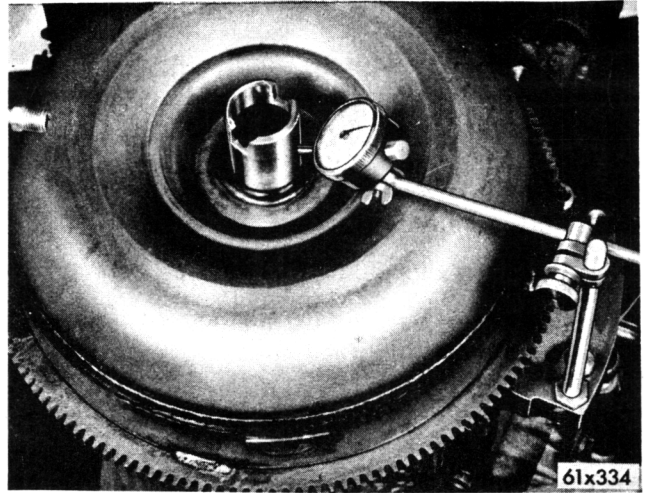


Fig. 5 – Checking converter hub runout