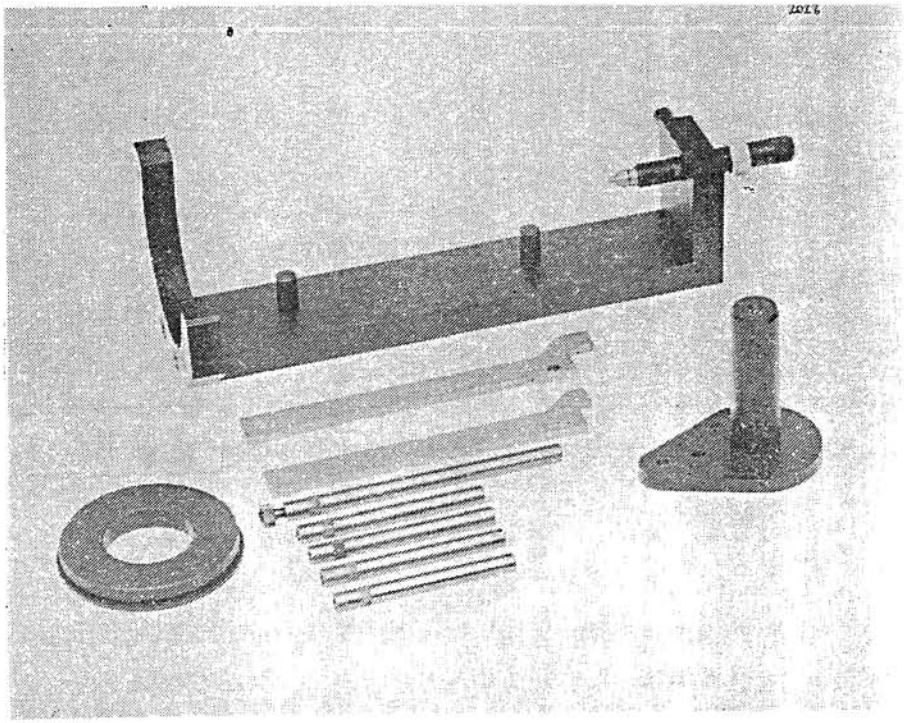
DSS02579I REVC 10/04

Shim Gauge Kit
P/N 984329



Preface

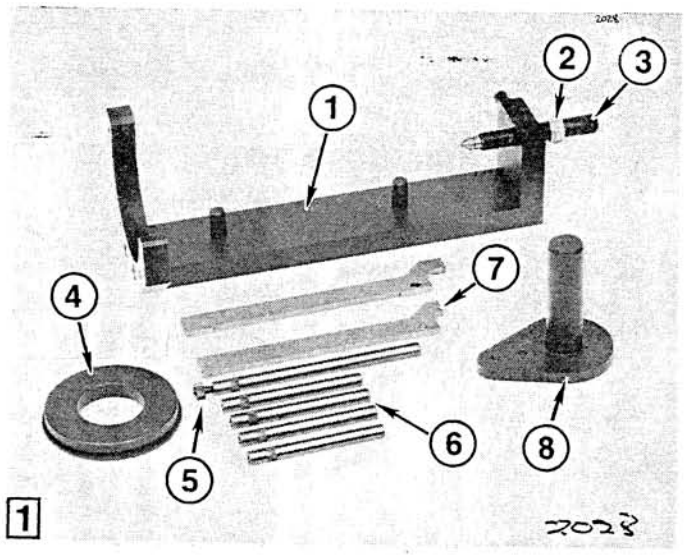
The Shim Gauge Kit, P/N 984329, will make it easy to accurately shim the U-joint shaft in the upper gearcase and the driveshaft in the lower gearcase on all OMC Cobra® stern drive models.

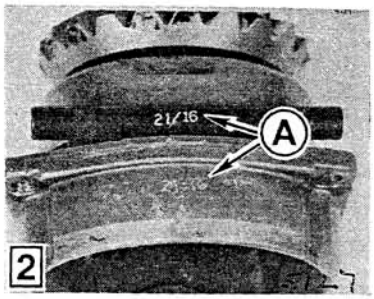
These instructions contain two parts. Part one describes the procedure for determining the shims required when assembling the U-joint shaft in the upper gearcase. Part two describes the procedure for determining the shims required when assembling the driveshaft in the lower gearcase.

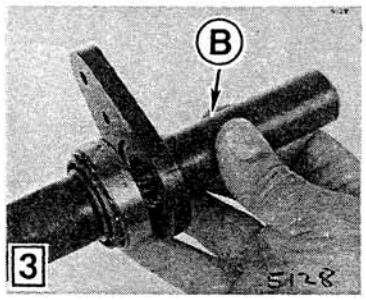
Part one - Determining shims, upper gearcase U-joint shaft.

Actions to be Performed

Step 1. Prepare to Determine U-joint Shaft Shims
Step 2. Secure U-joint Shaft into Frame
Step 3. Apply Preload
Step 4. Determine the Shims Required to Position Drive Gear
Step 5. Determine the Shims Required to Preload the U-joint Shaft Bearing







Step 1. Prepare to Determine U-joint Shaft Shims

1. Read instructions (part one) completely prior to starting work.

1 2. Review components of shim gauge kit.

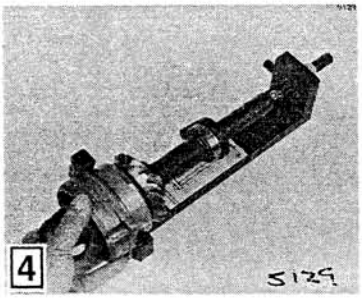
Ref.	Name of Part	Qty.
1	Frame	1
2	Jam Nut	1
3	Preload Screw	1
4	Frame Adaptor	1
5	Thumb Screw	1
6	Gauge Rod	4
7	Gauge Bar	2
8	Center Adaptor & Gauge Holder	1

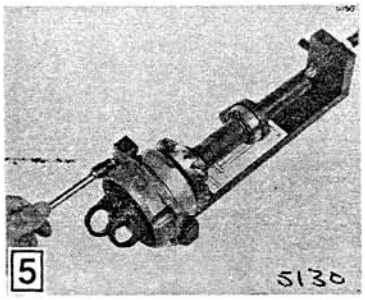
Note All shim gauge components are precision made and must be handled carefully.

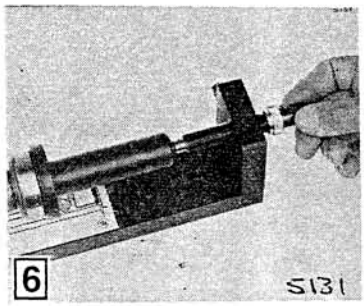
2 3. Determine gear ratio and select gauge rod marked A with that ratio.

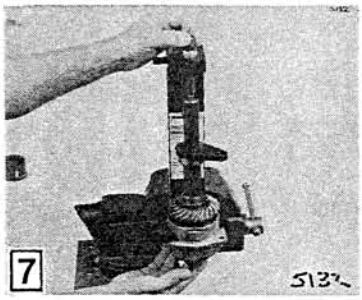
Step 2. Secure U-joint Shaft into Frame

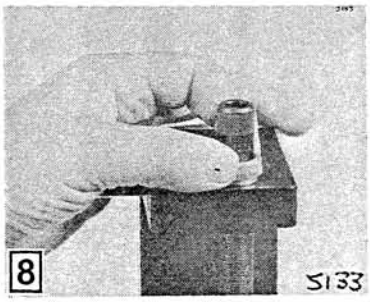
3 1. Place bearing cup on the rear roller bearing assembly, then slide center adaptor and gauge rod holder B onto water pump shaft. Do not install any shims.

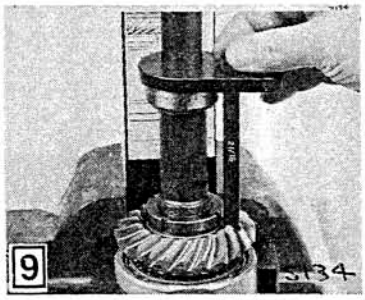












4 2. Place U-joint shaft assembly into fixture frame; rotate the bearing carrier until the side marked with gear ratio faces up.

5 3. Secure carrier to frame with three of its mounting screws and tighten securely.

6 4. Turn in preload screw until center adaptor is engaged.

Note Do not tighten for preload at this time.

Step 3. Apply Preload

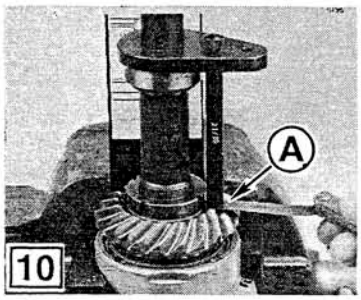
7 1. Clamp frame vertically into vise. Rotate shaft and simultaneously tighten preload screw until screw end reaches the reference groove. This will properly preload bearings.

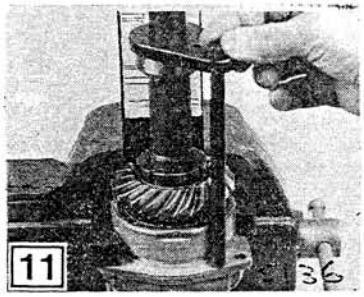
Note To properly align bearing, shaft must be vertical and rotated simultaneously when the preload screw is tightened.

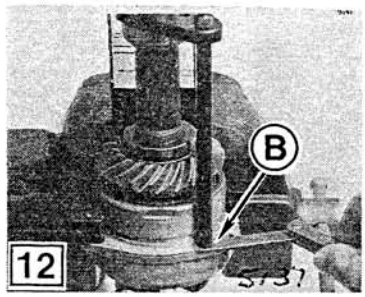
8 2. Finger tighten jam nut.

Step 4. Determine the Shims Required to Position Drive Gear

9 1. Attach the correct gauge rod to the inner hole in the center adaptor and gauge rod holder. Tighten thumb screw securely.







10 2. Using a feeler gauge, measure the clearance A between the gauge rod end and the flat on top of the gear tooth at three locations. All three figures should be the same.

3. To determine the shims required to position the drive gear, subtract the feeler gauge measurement figure from .020 inches.

Example:

	.020 in.
Feeler gauge measurement figure	-.008 in.
Shims required to position gear.	=.012 in.

These shims are to be placed under the rear bearing cup during assembly.

Note This shim requirement figure will be used in the next step to determine shims required for bearing procedure.

Step 5. Determine the Shims Required to Preload the U-joint Shaft Bearing

11 1. Remove the gauge rod used to position drive gear. Using thumb screw, secure the long gauge rod in the outside hole in the center adaptor and gauge rod holder.

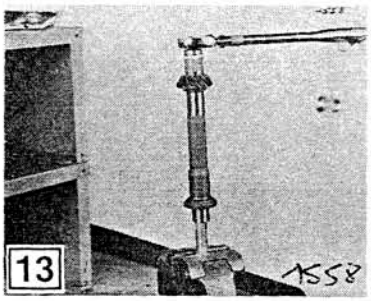
12 2. With a feeler gauge, measure the clearance B between the gauge rod end and the bearing carrier flange. Check measurement in second location.

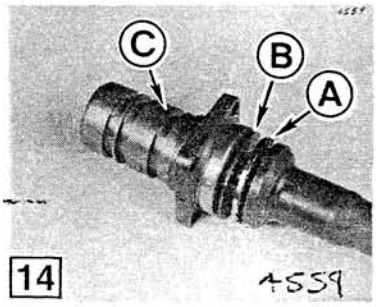
3. To determine the amount of shims to place onto bearing carrier for bearing preload, add the feeler gauge measurement figure to the amount of shims required to position drive gear (Step 4). From this total, substract .020 inches. The result is the required amount of shims needed to correctly preload U-joint shaft bearings.

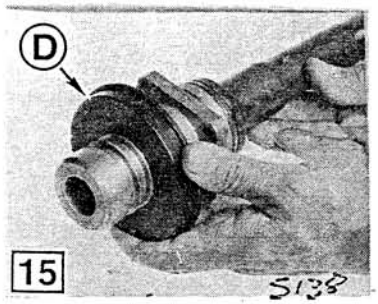
Example:

Feeler gauge measurement figure	.022 in.
Shims required to position drive gear	+.012 in.
	=.034 in.
	-.020 in.
Shims required to preload U-joint shaft bearing	=.014 in.

With the shim requirements to position drive gear determined (Step 4) and U-joint shaft bearing preload requirements determined (Step 5), the U-joint shaft can be assembled into the upper gearcase. Follow procedure in Service Manual.







Part two - Determining shims, lower gearcase drive shaft.

Actions to be Performed

The pinion must be precisely positioned with the forward and reverse gears for maximum gear life. This position is controlled by shims between the driveshaft bearing housing and thrust washer. Before the driveshaft and pinion are assembled into the gearcase, you must determine the proper amount of shims to position the pinion.

Step 1. Prepare to Determine Driveshaft Shims
Step 2. Assemble Driveshaft Components
Step 3. Place Driveshaft Assembly into Fixture Frame
Step 4. Apply Preload
Step 5. Determine the Shims Required to Position Pinion

Step 1. Prepare to Determine Driveshaft Shims

1. Read instructions (part two) completely prior to starting work.

2. Review components of shim fixture (page 2).

3. Determine the correct gauge bar to use.

- 2.5 and 3.0 Litre - Use Gauge Bar, P/N 328366
- 4.3, 5.0 and 5.7 Litre - Use Gauge Bar, P/N 328367

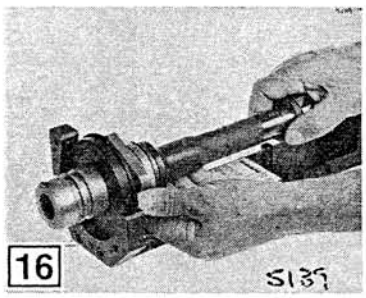
Step 2. Assemble Driveshaft Components

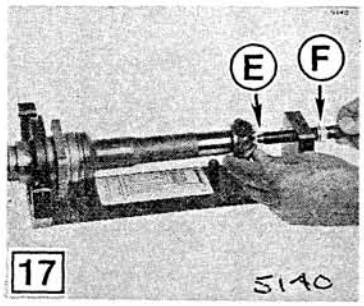
13 1. With the driveshaft supported by Driveshaft Socket, P/N 314428, and clamped in a vise, tighten pinion nut to a torque of 60-65 ft. lbs. (81-88 N.m).

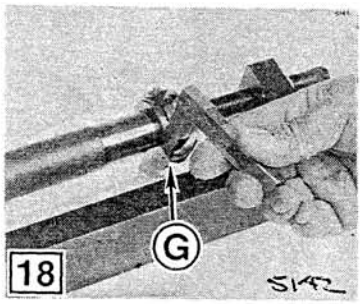
14 2. Assemble thrust bearing A, thrust washer B, and driveshaft bearing housing C, in that order, onto the driveshaft. Do not install any shims.

Step 3. Place Driveshaft Assembly into Fixture Frame

15 16 1. Place the frame adaptor collar D (component of Shim Fixture, P/N 984329) onto the bearing housing with the step facing away from housing. Then place assembly into fixture frame.







17 2. Turn in preload screw until center adaptor is engaged. Rotate shaft and simultaneously tighten preload screw until point compresses to the reference groove E. Then finger tighten jam nut F.

3. Tip frame backward until it rests on support leg.

4. Select the correct gauge bar:

- **2.5 and 3.0 Litre** - Use Gauge Bar, P/N 328366
- **4.3, 5.0 and 5.7 Litre** - Use Gauge Bar, P/N 328367

5. Place the selected gauge bar on the support posts in the frame between the bearing housing and the pinion so it rests squarely on the frame with its curved end toward pinion.

18 6. Hold gauge bar against the bearing housing flange, frame and support posts. With a feeler gauge, measure the clearance G between the pinion and the gauge bar. Rotate shaft and take a couple of readings at different locations to verify measurement.

7. To determine the shims required to position the pinion, subtract the feeler gauge measurement figure from .020 inches.

Example:

	.020 in.
Feeler gauge measurement figure	-.014 in.
Shims required to position pinion	=.006 in.

The required shims are to be placed between the thrust washer and the bearing housing.

Remove driveshaft assembly from frame and assemble into lower gearcase following the procedure in the Service Manual.