CHRYSLER CORPORATION
CHRYSLER DIVISION
12200 E. JEFFERSON AVE.
DETROIT 31, MICHIGAN

SERVICE BULLETIN

☐ Service Mgr. ☐ Shop Foreman ☐ Parts Mgr. ☐ Mechanics

No. 939-CH

Nov. 28, 1955

PROPELLER SHAFT AND UNIVERSAL JOINTS

DRIVE LINE SHUDDER

IMPERIAL

ALL 1956 MODELS

TO ALL CHRYSLER DIRECT DEALERS:

A two piece propeller shaft with center bearing is being used on the C-73 Imperial, and in order to control the rise of the nose of the rear axle carrier under high torque loads, a control strut is used on the rear axle assembly. With this type of drive train, it is very important that the proper relationship is maintained between the universal joints.

Under certain passenger loading, conditions may arise which may create propeller shaft shudder or vibration at speeds of 15 to 20 MPH. If this shudder is encountered, the following procedure should be used:

1. Determine under what load and operating conditions shudder is present. As stated, this shudder will occur at speeds ranging from 15 to 20 MPH.
2. Determine whether shudder is severe, moderate, or light.
3. Check engine to make sure it is properly tuned and operating satisfactorily. A good engine idle and no hesitation or stumble on acceleration is necessary. This shudder is produced by torque variation and therefore, a rough engine can produce or aggravate the condition.
4. If shudder or vibration was not due to poor engine performance, attempt to eliminate the condition by changing the height of the center bearing by removing or adding shims as follows:
   a) Have fuel tank at least 1/2 full.
   b) If shudder is present at one passenger load, lower center bearing by removing shims. If condition is heavy, remove 1/8'' of shims. If condition is light or moderate, the removal of 1/16'' shim may be sufficient. Evaluate improvement by road test and remove or add shims until condition is corrected.

(Over)

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c) If shudder is present at one passenger load and no shims are under the center bearing, it will be necessary to install 1 two degree shim under each rear spring. These should be installed between the axle pad and the spring, pointing to the rear of the car. That is, with the thick part of the shim to the front of the car, which will raise the nose of the differential carrier.

CAUTION: When installing shims, care should be taken to insure that the spring center bolt is properly installed in the hole in the axle pad.

Then apply sufficient load in the luggage compartment to bring the inner side rail of the frame to within exactly 5'' of the axle housing. Remove the rear axle control strut bracket attaching bolts and also the control strut mounting bolt. Check to insure the correct strut bracket or hanger is installed. (See Figure 1) Remove existing shims and replace with sufficient number in order that the control strut mounting bolt will enter the bracket holes freely, with no tension on the strut, under this loaded condition.

Then add two 1/16'' shims beneath the center bearing. Road test and evaluate condition and if necessary, proceed to shim center bearing. (See 4-b above)

d) If shudder is present at 5 to 6 passenger loading, raise the center bearing by installing shims -- 1/16'' at a time. Road test and evaluate.

ALL CORRECTIONS SHOULD BE MADE WITH THE CAR WEIGHT ON THE WHEELS. The most satisfactory method is to back the vehicle into a front end alignment pit.

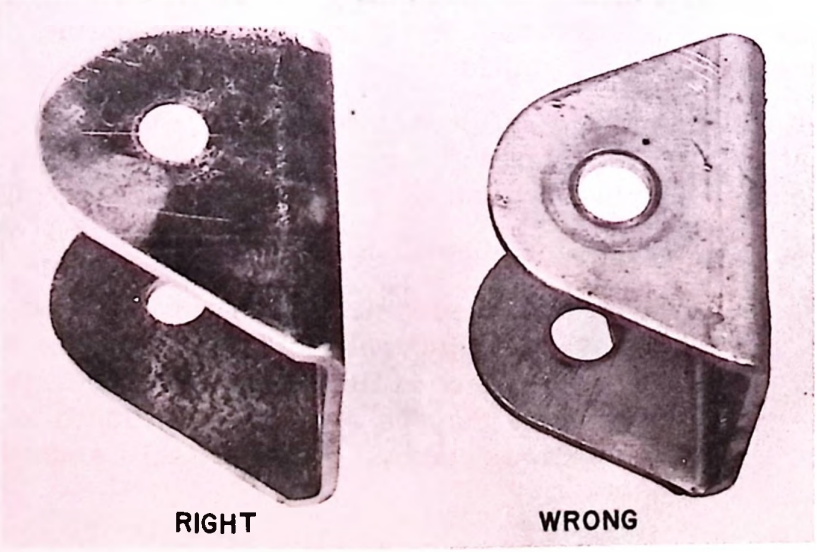

Figure 1

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5. If condition cannot be eliminated by this procedure, check for the proper phasing of the universal joints. The letter "O" is stamped on the front face of the spline stub on the rear propeller shaft. This should be lined up with the key slot at the rear of the front propeller shaft. The seal retainer must be removed to see the key slot in the rear of the front shaft. With the drive line properly assembled, there will be 23.5 degrees difference (counter clockwise) from the center joint when viewed from the front of the car. This is one spline counter clockwise from a normal 90 degree phasing.

PARTS

Strut shim, 1635685 - 1/16"
Center Bearing Shim, 1672391 - 1/16"
Rear Axle Tapered Shims, 1673458 - 2°

R. B. TEIPER
Director of Service
CHRYSLER DIVISION

No. 939-CH

Nov. 28, 1955

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☐ Service Mgr. ☐ Shop Foreman ☐ Parts Mgr. ☐ Mechanics

Sept. 10, 1956

No. 979-CH

PROPELLER SHAFT AND UNIVERSAL JOINTS

DRIVE LINE SHUDDER

IMPERIAL ALL 1956 MODELS

TO ALL CHRYSLER DIRECT DEALERS:

This bulletin cancels and supersedes Chrysler Service Bulletin No. 939-CH issued November 28, 1955.

A two piece propeller shaft with center bearing is being used on the C-73 Imperial, and in order to control the rise of the nose of the rear axle carrier under high torque loads, a control strut is used on the rear axle assembly. With this type of drive train, it is very important that the proper relationship is maintained between the universal joints.

Under certain passenger loading, conditions may arise which may create propeller shaft shudder or vibration at speeds of 15-20 M.P.H. With a properly assembled rear suspension and all parts in satisfactory condition drive line shudder, for all load conditions, can in all cases be either eliminated or at least brought into limits well above those considered commercial.

The following is a procedure which has been found successful for accomplishing this correction:

1. Place car with either all four wheels on supports or front wheels raised off ground and the rear wheels supported on platforms. (This can be done on a platform hoist, pit, front end alignment rack, frame straightening rack or front wheel alignment platforms used with a twin post hoist.)

2. Load rear suspension by placing weight in trunk or rear passenger compartment so that the distance from the top of axle to frame subside member is 5".

3. Check shimming of rear axle struts. (This can be done by loosening one strut pivot bolt in each assembly. If the bolt is free to turn or turns with very little effort strut shimming is satisfactory.)

(Over)

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PROPELLER SHAFT AND UNIVERSAL JOINTS

DRIVE LINE SHUDDER

IMPERIAL ALL 1956 MODELS

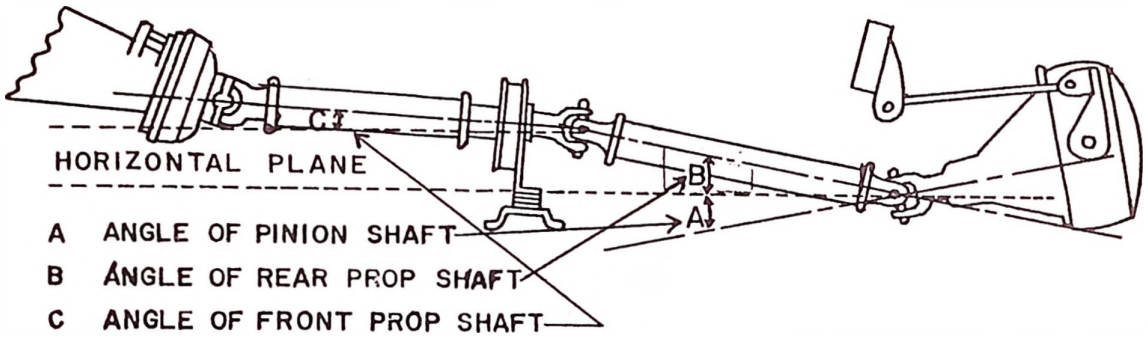

FIG 1

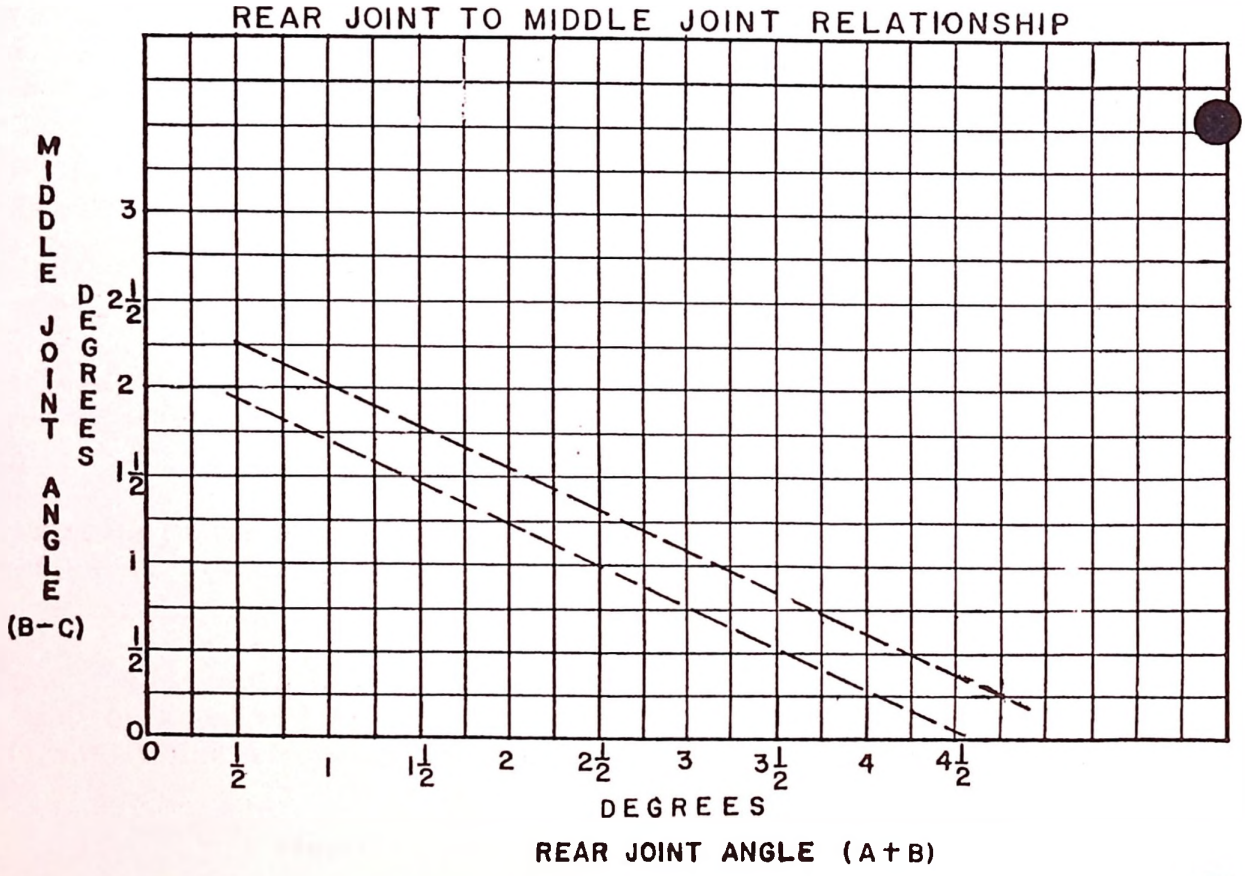

FIG 2

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4. If strut shimming is incorrect loosen axle bracket mounting bolts and install or remove shims as necessary to have no load in strut with suspension compressed to 5" height. (This is often simpler to do by removing all shims and filling gap with the suspension compressed to 5".)

5. Measure working angle of center and rear joints. Use an accurate bubble protractor.

   a) With a bubble protractor measure the angle of the rear shaft with respect to horizontal. Disconnect the rear shaft and using the face of the rear axle pinion shaft flange (this flange should be positioned with its long dimension vertical) measure the angle of the pinion shaft with respect to horizontal. The pinion shaft should be sloping downward toward the front of the car and the rear shaft should be sloping downward toward the rear of the car. The sum of the angles is the working angle and should be approximately 3^{o}. (See Figure 1)

   b) Measure the angle of the front shaft with respect to horizontal. The front shaft should be sloping downward toward the rear of the car but less than the rear shaft. The difference (subtract) of the front and rear shaft angles with respect to horizontal is the working angle of the middle joint. With a 3^{o} rear joint working angle the middle joint working angle should be approximately 1^{o}, one 1/16" shim changes the middle joint working angle approximately $1/4^{o}$. (For relationship of rear joint working angle to middle joint working angle see Figure 2.) The area between the lines represents the range of acceptability. (Example - With a rear joint working angle of 2-3/4 degrees a satisfactory middle joint angle would be 1 degree. This is found by going up the 2-3/4 degree line into the range of acceptability and then horizontally to the left hand edge where the middle joint angle of 1 degree is read. For other rear joint angles comparable middle joint angles are found).

Since the front and rear shafts slope in the same direction the middle joint working angle is the difference between the two. Subtract the front from the rear. (Note that a theoretical line from the center of the front joint to the center of the rear joint passes below the center of the middle joint. This condition must always exist.)

Since the pinion shaft and rear shaft slope in opposite directions the rear joint working angle is the sum of the two angles.

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6. Road test car. If shudder is present at one passenger but not at heavier loadings, the center bearing must be lowered by removing shims. If shudder is present at heavy loading but not at one passenger, shims must be added under center bearing.

7. If shudder can be eliminated at either light or heavy loading but not at both conditions, the height of the center bearing is too low, with middle joint center below the line joining the front and rear joint centers. Recheck middle joint working angle.

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