Section IV

CLUTCH

DATA AND SPECIFICATIONS

MODEL	1376 (Borg-Beck)
TYPE	Single Plate, Dry Disc
FACINGS	Two
Material	Molded Woven Asbestos
Inside Diameter	6 inches
Outside Diameter	10 inches
Thickness	1/8 inch
Total Effective Area (Sq. In.)	100.5
Engagement Cushioning Method	Springs, Flat, Crimped
Torsional Damping	Coil Spring
Release Bearing	Ball (Sealed)
PRESSURE SPRINGS	9
Color	Brown
Total Plate Pressure (Lbs.)	1962
Individual Pressure (Lbs.)	218 ± @1.723 inches
PEDAL FREE PLAY	1 inch
CRANKSHAFT FLANGE DIAMETER RUNOUT	.002 inch

SPECIAL TOOLS

Tool Number	Tool Name
C-3005	Wrench—100 Foot-Pound Sensory Type Torque
C-3044	Wrench—Clutch Fork Pivot Lock Installing
C-3181	Installer and Burnisher—Clutch Shaft Pilot Bushing
C-3185	Remover—Clutch Shaft Pilot Bushing
C-3309	Set—Dial Indicator
C-360	Arbor—Clutch Shaft Aligning
C-585-A (with Spacer No. 45)	Fixture—Clutch Rebuilding and Adjusting
C-647	Tester—Clutch Spring
C-860	Reamer—Clutch Housing Oversize Dowel
C-869	Bar—Clutch Housing Alignment Checking

TIGHTENING REFERENCES

Part Name	Foot-Pounds
Rear Engine Support Bolts	85
Clutch Cover Bolts	20
Transmission to Clutch Housing Bolts	50
Housing to Cylinder Block Bolts	50
Flywheel Stud Nuts	60

Section IV
CLUTCH

1. CLUTCH PEDAL ADJUSTMENT (FREE PLAY)

Clutch pedal free play is the movement of the clutch pedal before the clutch starts to engage or disengage. To compensate for normal clutch wear, adjust the clutch release fork rod, as shown in Figure 1, to obtain $\frac{3}{16}$ inch free play of the clutch release fork outer end. This will provide the one inch free pedal movement at the pedal, with a total of seven inch full pedal travel.

2. OVER-CENTER SPRING ADJUSTMENT (FIGS. 1 AND 2)

Remove the spring washer that holds the clutch pedal release rod to the clutch pedal and back off the over-center spring adjusting nut until it is free of the "C" link.

With the clutch pedal depressed to the full seven inch travel, turn the adjusting nut until

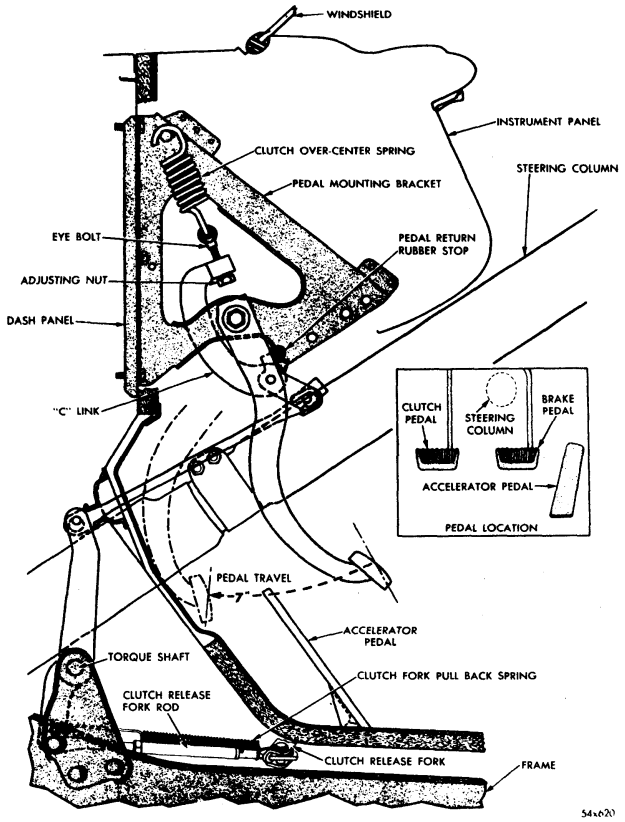


Fig. 1—Suspended Clutch Pedal and Linkage

the nut just contacts the "C" link. Tighten seven full turns from the finger tight position.

Install the clutch pedal release rod and secure in position with the spring washer. **This adjustment should give a maximum pedal effort of 30-32 pounds and a minimum pedal return effort (at one inch from full pedal return) of 3-6 pounds.**

3. CLUTCH RELEASE FORK (FIGS. 1, 2 AND 3)

a. Removal

Unhook the clutch release fork pull-back spring (Fig. 1). Disconnect the rear end of the clutch release fork rod from the fork by removing the retaining spring and flat washer. Lift out the clevis pin and separate the clutch release fork rod from fork.

Pry the dust seal out and away from clutch release fork and clutch release bearing. Pivot the clutch fork outer end toward front of engine. Apply pressure, and disengage the clutch fork spring clip from pivot ball. Slide the fork forward, disengage at the clutch throw-out bearing spring, and remove fork from clutch housing. **The clutch fork pivot can be removed after the transmission has been removed.**

b. Installation

NOTE

The clutch release fork can be installed with the clutch housing pan removed or in position. To insure proper positioning of the fork in the release bearing sleeve, and to facilitate installation of the dust seal, it is recommended that the pan be removed.

Slide the clutch release bearing forward and add MOPAR Lubriplate to the fork fingers and pivot indent.

NOTE

Slide the clutch fork into housing engaging the springs on the release bearing and allowing the release fork retaining spring to pass around pivot stud.

Slide dust seal over shank of clutch release fork and down against clutch housing, forcing retaining tangs of boot into housing opening to hold seal in position. Install clutch fork release rod, clevis pin and flat washer. Secure with spring retainer and attach release fork pull-back spring.

4. CLUTCH TORQUE SHAFT AND PIVOT BUSHINGS (FIGS. 2 AND 3)

a. Removal

Unhook the clutch release fork pull-back spring from anchor bracket and fork. Disconnect the clutch release fork rod. Remove spring washer

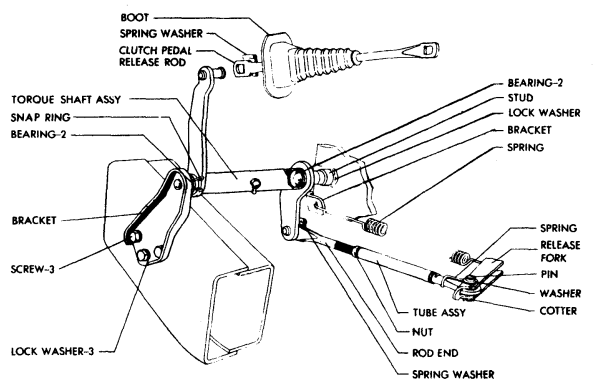
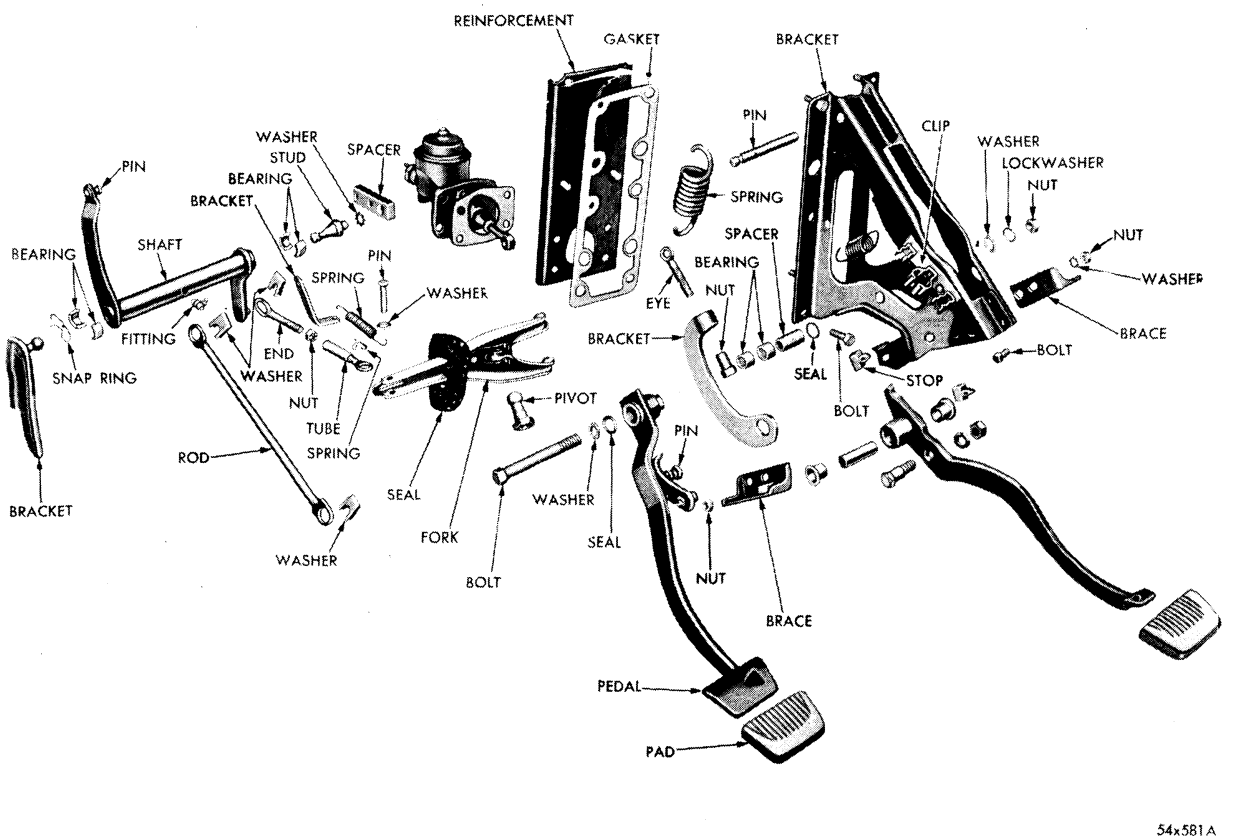


Fig. 2—Clutch Linkage (Showing Relationship of Parts)



54x581A

Fig. 3—Typical Clutch Linkage (Disassembled View)

and disconnect the clutch pedal release rod from the torque shaft lever pin. Remove the screws and lockwashers holding the torque shaft bracket to frame side rail.

Remove the snap ring that retains the pivot, bracket and bearings to the torque shaft. Pull the torque shaft in a straight line away from pivot and clutch housing.

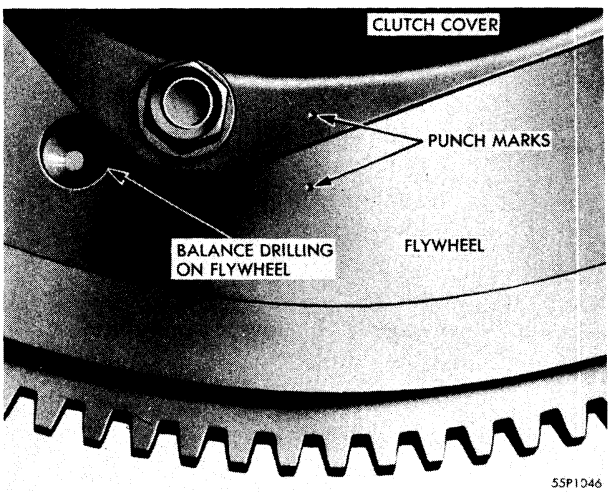
b. Installation

After cleaning all parts thoroughly and inspecting for wear, lubricate the pivots and pivot bearings with chassis lubricant. Install pivot bearings over the pivot ball at clutch housing and slide end of torque shaft over the bearings and down into position. Place the two remaining bearings on the bracket pivot ball and slide the bearings and pivot into the free end of the torque shaft. Install the snap ring.

Position pivot bracket to frame side rail, install bolts and lockwashers, and tighten securely. Attach clutch pedal release rod to torque shaft lever pin and install spring washer. Attach clutch release fork rod to torque shaft install spring washer, and hook up the clutch release fork pull-back spring. Check clutch pedal for free play. (Refer to Paragraph 1.)

5. CLUTCH REMOVAL

Remove the transmission and the clutch housing pan. Remove the clutch release bearing by piv-



55P1046

Fig. 4—Punch Marks on Clutch Cover and Flywheel

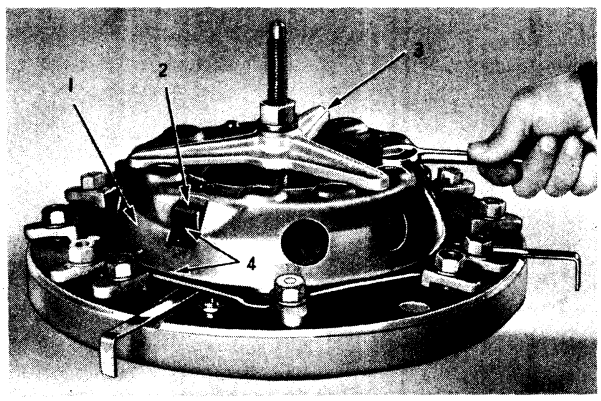


Fig. 5—Clutch Cover and Pressure Plate Assembled in Fixture

1—Clutch Cover
2—Clutch pressure plate (showing lug)
3—Fixture (C-585-A)
4—Punch marks on pressure plate and cover

oting and sliding the bearing assembly off the fork.

CAUTION

Do not force the bearings and pull-back springs off of the fork prongs.

Punch mark the clutch cover and flywheel, as shown in Figure 4, for correct positioning at installation. Remove the clutch pressure plate and disc assemblies. Loosen each bolt only a few turns at a time until the spring tension

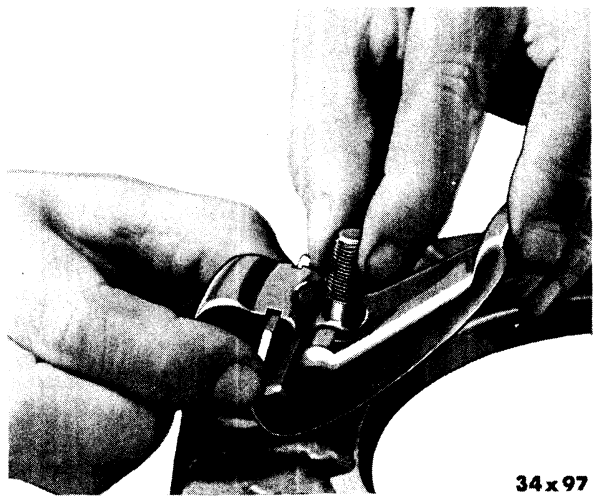


Fig. 6—Removing or Installing Clutch Release Lever

is relieved; otherwise, the clutch cover may become warped, resulting in clutch chatter.

6. CLUTCH DISASSEMBLY (FIG. 5)

Mount the clutch assembly in compressing fixture, Tool C-585-A. Mark the cover and pressure plate with a punch so that they may be reassembled in their original positions to maintain balance.

With clutch assembly under pressure, remove the clutch release lever eyebolt nuts, and back off the compressor tool nut slowly until spring tension is relieved. Remove compressor nut and

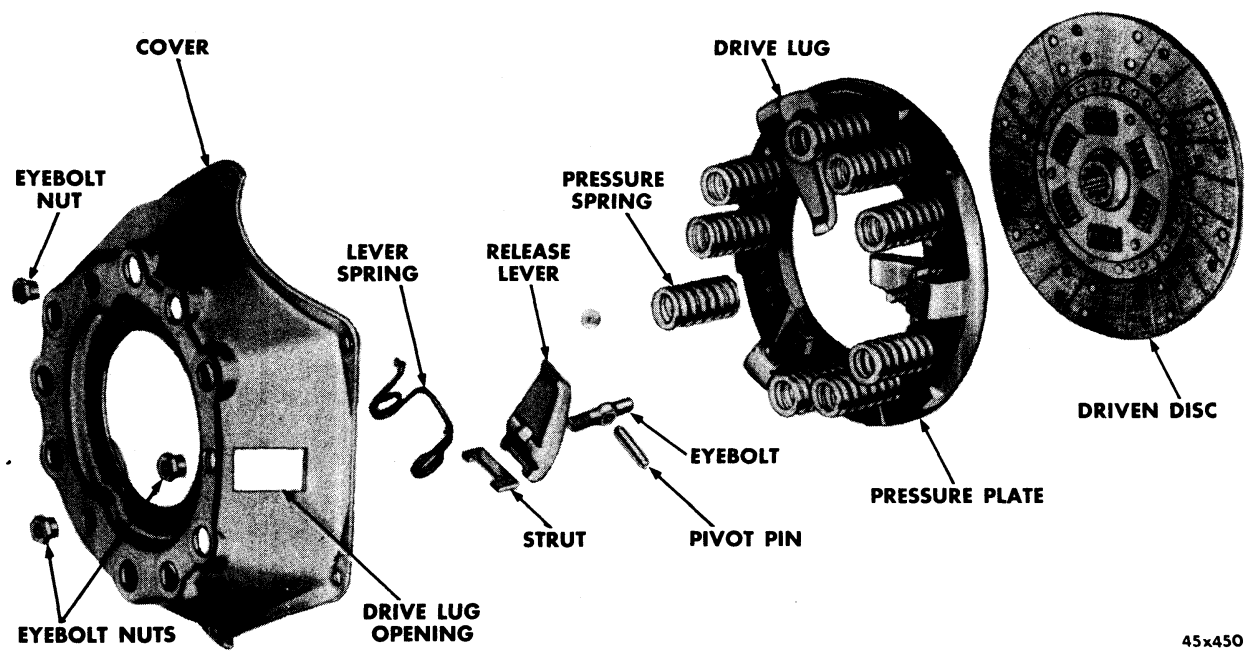


Fig. 7—Typical Clutch Assembly (Disassembled View)

spider, and lift off clutch cover. Make a notation of spring arrangement to insure proper assembly.

Hold the clutch release lever and eyebolt, as shown in Figure 6, and remove levers, struts and eyebolts.

7. INSPECTION

Clean all parts thoroughly and inspect them carefully for excessive wear or distortion. (Refer to Fig. 7).

a. Clutch Disc Assembly

Check for wear in the splines of the disc hub, loose rivets, or dampener springs.

b. Pressure Plate

Check the pressure plate for signs of scoring, excessive wear or heat checking. Also check for warpage. If it is warped more than .005 inch, install a new pressure plate. Inspect the pressure plate lugs for excessive wear at the fulcrum strut contacts.

c. Pressure Springs

Test pressure of springs using testing fixture Tool C-647. Individual spring pressure should be as recommended in Specifications.

d. Clutch Cover

Place clutch cover on a surface plate or on a new flywheel to check for damage or distortion.

e. Release Levers

Release levers that are badly worn on the release bearing contact face is an indication that they are operating with insufficient free play and/or a damaged clutch release bearing. Replace eyebolts and adjusting nuts if threads are damaged. Replace struts if they are worn on contact edges.

f. Flywheel

Check flywheel to clutch disc contact and clutch cover to flywheel attaching surfaces for scoring or roughness. Check tightness of flywheel stud nuts. The tightening torque for these nuts is 60 foot-pounds.

g. Transmission Drive Pinion Pilot Bushing

Check the pilot bushing for looseness in the crankshaft bore and for scoring or excessive wear in the inside diameter of the bushing. To remove the bushing, screw the tapered pilot of Tool C-3185 into the bushing, allowing the pilot to cut its own threads until a solid grip is obtained. Insert the puller screw and turn clockwise to remove bushing.

To install the pilot bushing, slide a new bushing over the pilot of Tool C-3281 and drive the bushing into the crankshaft with a soft hammer. This will cause the bushing to tighten on the pilot. Install cup and puller nut of Tool C-3281. Tightening the puller nut will pull the tool from the bushing and, at the same time, burnish the bushing to exact size. Place one-half teaspoon of short fiber grease in radius at back of bushing.

8. CLUTCH ASSEMBLY

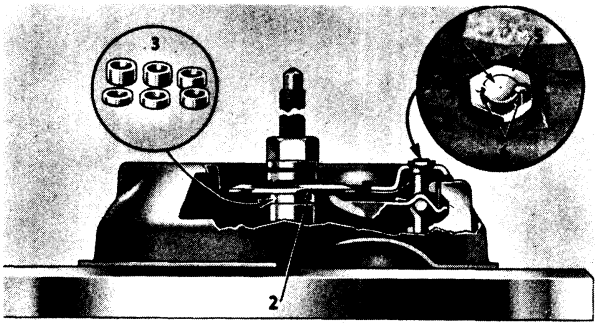
Coat driving lug sides (Fig. 5) with a thin coating of MOPAR Lubriplate. Assemble the lever pin and eyebolt to the release lever. Hold end of lever and eyebolt in one hand, as close together as possible. Enter the lower end of the eyebolt in the pressure plate opening and, with the free hand, insert strut in the slot of the pressure plate lug. Assemble the other two levers in the same manner.

Install pressure plate springs over the small bosses on the pressure plate in the same order as removed to retain the original balance. Install clutch cover, lining up the punch marks. Also, make sure that the eyebolts and drive lugs are guided through the holes in the cover while compressing the assembly.

With the clutch compressed in fixture Tool C-585-A, screw the adjusting nuts on the protruding eyebolts until the nuts are flush with the tops of the eyebolts, as shown in Figure 8. Slowly release pressure by unscrewing the fixture compression nut. Depress the release levers several times (to properly seat the parts) by using fixture Tool C-585.

9. CLUTCH RELEASE LEVER ADJUSTMENT (FIG. 8)

With the pressure plate in fixture Tool C-585-A, place the spacer over the center screw of the fixture. Install the compression plate on the center screw, resting it directly against the



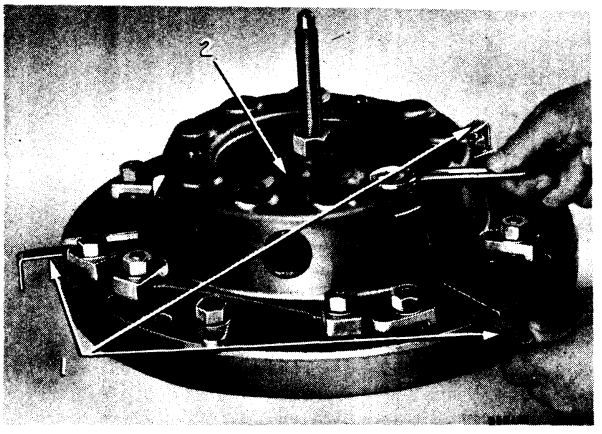


Fig. 8—Adjusting Clutch Release Levers

1—Feeler blades (part of Tool C-585-A)
2—Compression plate (part of Tool C-585-A)
3—Spacers (part of Tool C-585-A)
4—Clutch release lever eyebolt
5—Clutch release lever eyebolt nut
6—Stake here to lock

clutch release levers. Install the self-aligning washer, flat washer, and compression nut.

NOTE

Tighten the nut until the compression plate comes into snug contact with the spacers for setting lever height.

Adjust the clutch release levers until the three feeler blades have the same slight drag or feel when they are moved in or out. Tighten the adjusting nuts to decrease drag, and loosen the nuts to increase drag. Recheck release lever adjustment to verify proper adjustment and stake the eyebolt nuts to hold them in position. Remove clutch from fixture.

10. CLUTCH HOUSING ALIGNMENT

Inspect clutch housing to cylinder block face for dirt or burrs. Remove burrs with a file and clean both faces thoroughly. Install clutch housing and tighten attaching bolts just snug enough so that the housing can be shifted by tapping with a mallet.

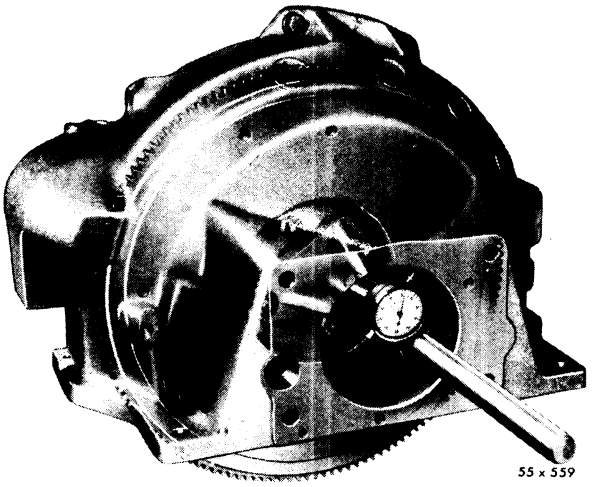


Fig. 9—Fixture C-869 Installed to Check Clutch Housing Bore (Typical View)

Install arbor Tool C-869 to the flywheel attaching studs, as shown in Figure 9.

Install indicator Tool C-3390 so that the point of the indicator contacts bore of housing. The bore of the clutch housing should not vary more than .005 inch. Check the rear face of the housing, as shown in Figure 10. The tolerance must be within .003 inch. Rear face misalignment can be corrected by placing shims of proper thickness between the clutch housing and cylinder block, as shown in Figure 11. If alignment is necessary, remove the dowel pins and top the housing until it comes within the specified tolerance. Ream new dowel pin holes with Tool C-860 and install oversize dowels. Tighten the housing bolts to 50 foot-pounds torque. Failure to align clutch housing may result in hard shifting and jumping out of gear.

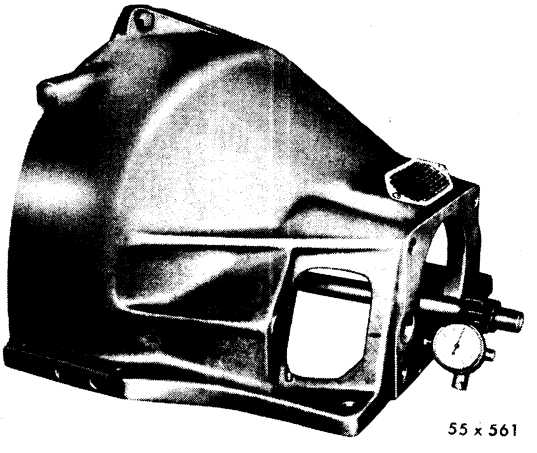


Fig. 10—Typical Method of Checking Rear Face of Clutch Housing

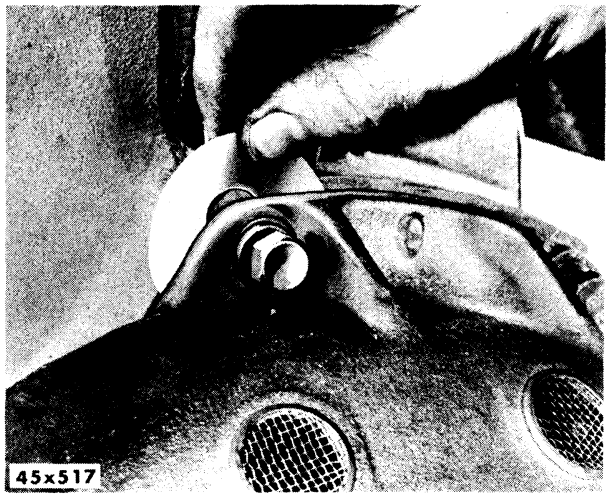


Fig. 11—Installing Shim Between Engine Block and Clutch Housing

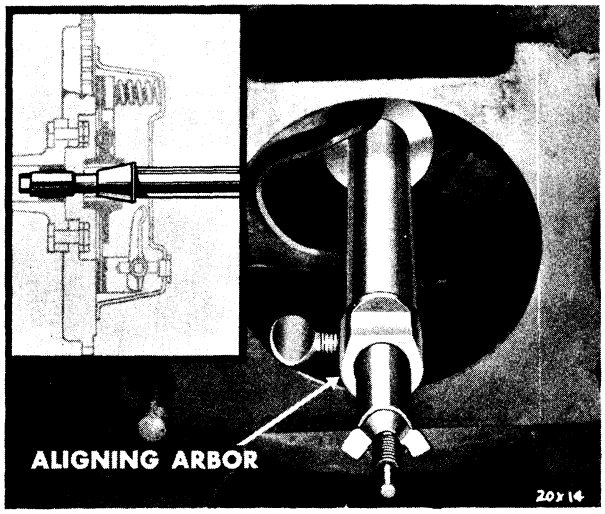


Fig. 12—Clutch Disc Aligning Arbor (Tool C-360) Installed

11. PRECAUTIONS TO FOLLOW WHEN STEAM CLEANING ENGINE

CAUTION

Immediately after the steam cleaning operation, start the engine and slip the clutch to dry off the disc assembly, pressure plate, and/or flywheel.

Since the clutch housing is ventilated, steam vapor condenses and moisture settles on the internal moving parts of the clutch mechanism. The clutch facings will absorb moisture and under the force exerted by the pressure plate, the facings will be bonded to the flywheel and/or pressure plate, if car is allowed to stand for some time before using. **If this condition occurs, it will necessitate complete replacement of clutch disc, pressure plate, and flywheel.**

12. CLUTCH INSTALLATION

Coat the transmission drive pinion pilot bushing (in end of crankshaft) with medium short fiber grease. (Place one-half teaspoon of grease in radius at back of bushing). Clean the flywheel and pressure plate surfaces, making certain that all oil or grease has been removed. Hold the clutch disc in the mounting position with the springs on the disc damper away from the flywheel. Do not touch the disc facing as clutch chatter will likely result after installation.

Insert the clutch disc aligning arbor, Tool C-360 thrugh the disc hub and into the pilot bushing, as shown in Figure 12.

Install clutch pressure plate over aligning arbor and into position on the flywheel, aligning the punch marks. Insert cover attaching bolts but do not tighten.

CAUTION

To avoid clutch pressure plate distortion, the bolts should be tightened a few turns at a time, alternately, until they are all tight.

Tighten the bolts 15 to 20 foot-pounds torque. Remove aligning arbor, Tool C-360. Install clutch release bearing and collar, carefully engaging springs over the clutch fork fingers.

Install the transmission. Do not allow transmission to hang or damage to the clutch will result. Support the transmission with a suitable jack, slide it into place, and bolt securely. Install the clutch housing cover. Check and adjust clutch pedal free play.

SERVICE DIAGNOSIS

13. SLIPPING CLUTCH

To test for a slipping clutch, start the engine, set the hand brake and shift into high gear. Release the clutch pedal and accelerate the engine slowly. The engine should stall immediately if the clutch is not slipping.

a. Inspect for insufficient pedal free play, which may prevent the clutch from engaging completely.

b. Inspect for burned, worn or oil soaked clutch disc facings.

c. Inspect for weak or broken pressure plate springs. Test each spring for weakness. If the paint on a spring is burnt or coils are too close together, the spring is probably weak.

14. CHATTERING CLUTCH

This condition can be determined by vibration that may occur during clutch engagement.

a. Inspect for oil or grease on facings. Before replacing disc, determine the source of the leak. Oil may come from a leaky rear main bearing, the transmission or from use of excessive lubricant in the pilot bushing.

b. Inspect for a cocked pressure plate. If the clutch release levers are not adjusted properly, the pressure plate will not meet the disc evenly.

15. DRAGGING CLUTCH

This cndition exists when the clutch is slow in disengaging, or will not completely release. When this occurs, the gears may be difficult to shift without clashing.

a. Inspect for excessive pedal free play which might prevent the clutch from releasing completely.

b. Inspect for a bent clutch disc. If the disc is bent, it will not be parallel with flywheel and pressure plate, and disengagement will not be complete.

c. Inspect adjustment of clutch release levers. Disengagement may be uneven and cause the clutch to drag if release levers are improperly adjusted.

d. Make sure clutch disc hub does not bind on the drive pinion shaft. If it does bind, a dragging condition may be created.

16. PEDAL STIFF OR BINDING

a. Inspect clutch linkage for rust or corrosion. Inspect for bent or misaligned linkage or a bent torque shaft arm.

b. Check adjustment of free play and overcenter spring if clutch pedal is hard to operate, or the pedal will not return properly.

17. NOISES

a. A high-pitched or grinding noise, occurring only with the engine running, the transmission in NEUTRAL, and the clutch pedal down, usually indicates that the release bearing should be replaced.

b. A rattling noise may develop when an uneven lever causes the release bearing to shuffle on its sleeve.

c. A high-pitched noise, occurring only with the engine running, the transmission in GEAR, and the clutch pedal down, may indicate that the pilot bushing is tight, worn or dry. The noise is usually more evident in low or second gear than it is in high gear, while coasting.

d. If a metallic rattle or buzz is heard, it may be caused by improper functioning of the clutch damper unit and the disc should be replaced. This noise is usually evident when the car is accelerated from 18 to 30 mph or when coasting in gear with clutch engaged from 50 to 35 mph. This noise may appear at lower speeds if the transmission is in 1st or 2nd gear.

e. If a rapping noise is heard when the engine is accelerated and the clutch disengaged (pedal down) it may be due to excessive clearance between the pressure plate lugs and the openings in the stamped cover.

f. If a squeaky noise is heard while the clutch pedal is being operated, it may be due to the pressure plate release levers, or the drive lugs rubbing on the cover. Work Lubriplate between the clutch cover and the drive lugs, using feeler stock.

Section V
COOLING SYSTEM
CONTENTS

DATA AND SPECIFICATIONS

	C-71	C-72 and C-73	C-70
COOLING SYSTEM			
Type	Pressure Vent	Pressure Vent	Pressure Vent
Capacity:			
With Hot Water Heater	25 qts.	26 qts.	26 qts.
Without Heater	24 qts.	25 qts.	25 qts.
Radiator Cap Relief:			
Valve Pressure—psi	7	7	7
With Air Conditioning	14	14	14
WATER PUMP			
Type	Centrifugal	Centrifugal	Centrifugal
Bearing Type	Ball Bearing	Ball Bearing	Ball Bearing
THERMOSTAT			
Type	Choke	Choke	Choke
Starts to Open	160° to 165° F.	160° to 165° F.	160° to 165° F.
Fully Open	189° F.	189° F.	189° F.
FAN BELT			
No. Used	one	one	two ****
Type	V	V	V
Tension	½ in. Slack	½ in. Slack	½ in. Slack

DATA AND SPECIFICATIONS (Cont'd)

FAN			
No. of Blades	six	four ***	four ***
Diameter	18 in.	18 in.	18 in.
Radiator-to-Blade Clearance	Top—4 13/16 in. Bottom—3 31/32 in.	Top—4 13/16 in. Bottom—3 31/32 in.	Top—4 13/16 in. Bottom—3 31/32 in.
RADIATOR			
Type	Cellular*	Fin and Tube	Fin and Tube
Thickness	2 3/4 in.	3 in.	3 in.
FAN SHROUD			
Type	Ring**	Ring**	Ring**

*C-71 Models with Air Conditioning use Fin and Tube type radiator with 3 in. core.
**All Air Conditioning Models have box type fan shroud.
***C-72, C-73, C-70 Models use 6-blade fan with Air Conditioning.
****C-70 Models use one fan belt with Air Conditioning.

SPECIAL TOOLS

Tool Number	
C-311	Flushing Gun
C-412	Fan Hub Puller
C-3468	Water Pump Bearing and Shaft Installing Sleeve
C-3476	Plastic Water Pump Impeller Insert Puller

TIGHTENING REFERENCE

	(Foot-Pounds)
Water Pump Bolts	30
Water Pump Cover Bolts	10
Fan Attaching Bolts	20