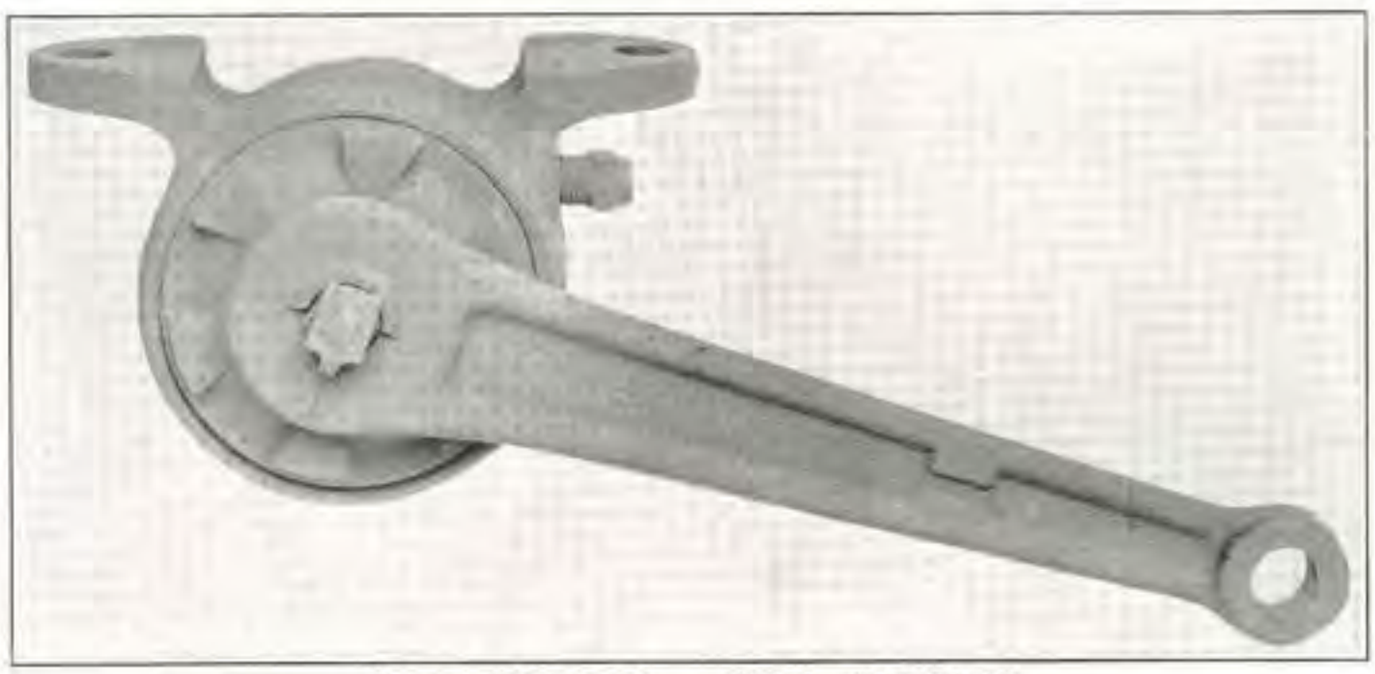
EXPORT SHOCK ABSORBER GUIDE SHEET
USE FOR PURCHASING NEW SHOCK ABSORBERS
1928-1940 MODELS INCLUSIVE



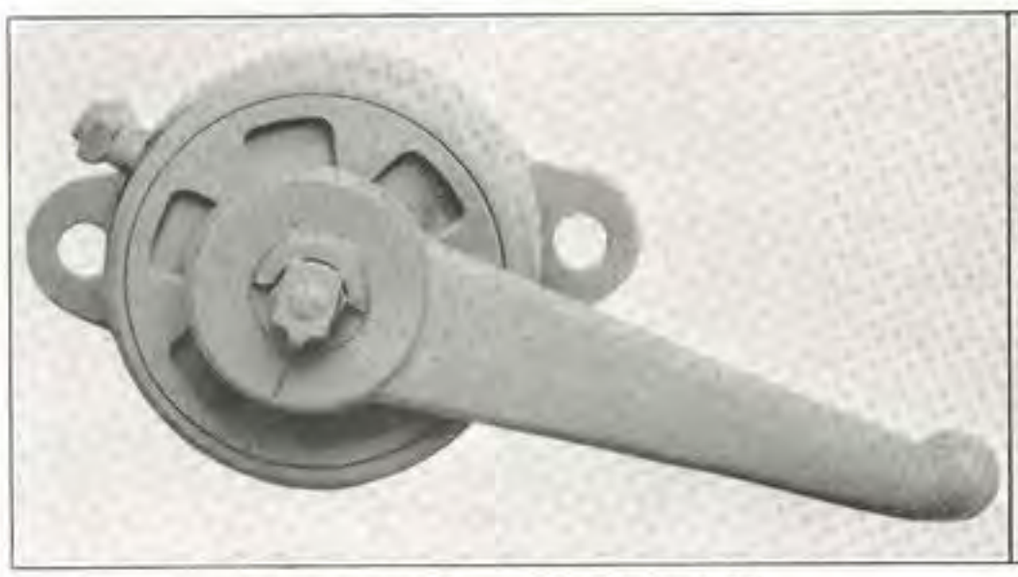
B-18015-B B-18016-B



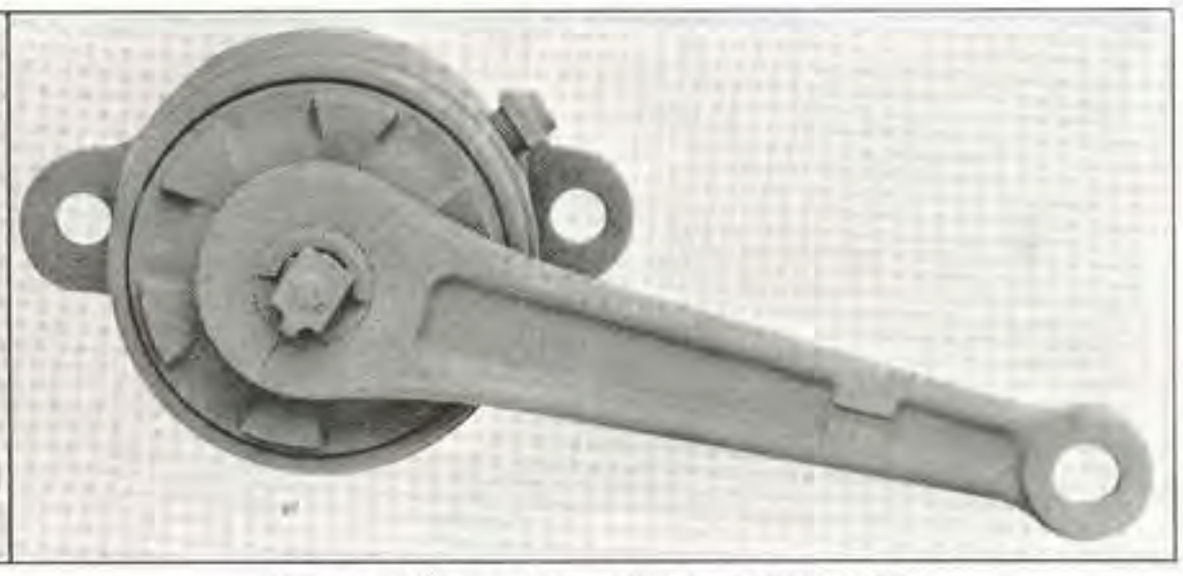
48-18015-C 48-18016-C



O1A-18080-B O1A-18081-B



40-18045-B 40-18046-B

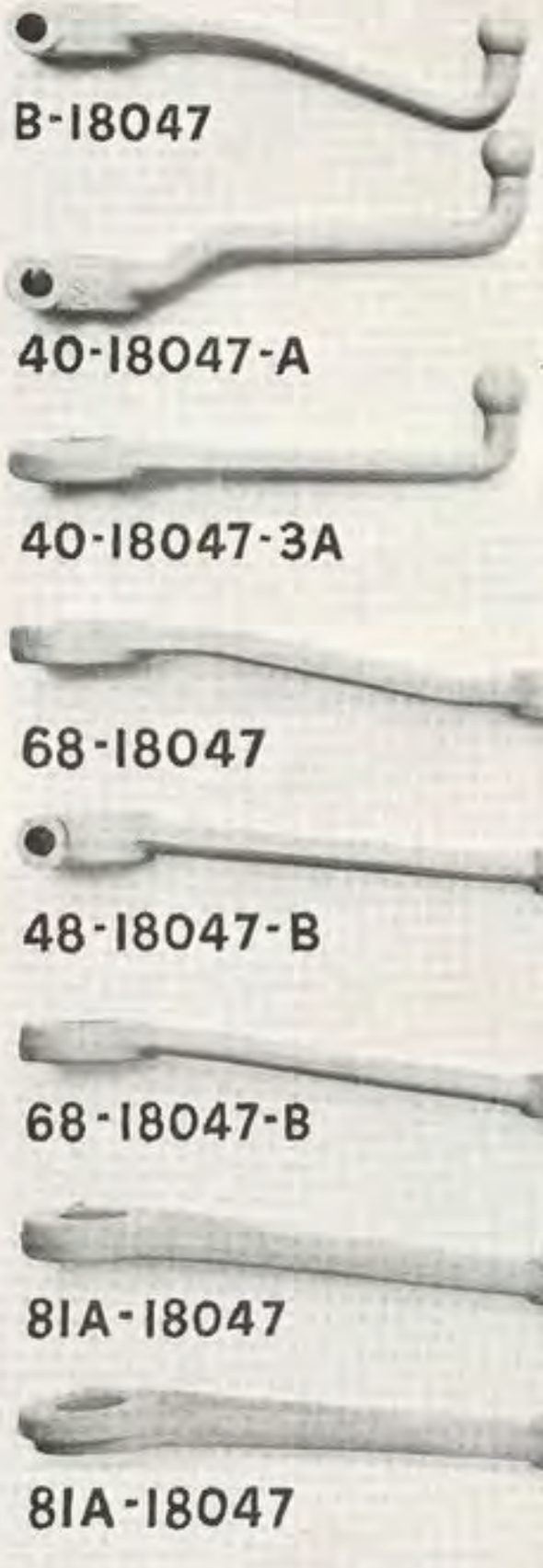


O1A-18045-D O1A-18046-D

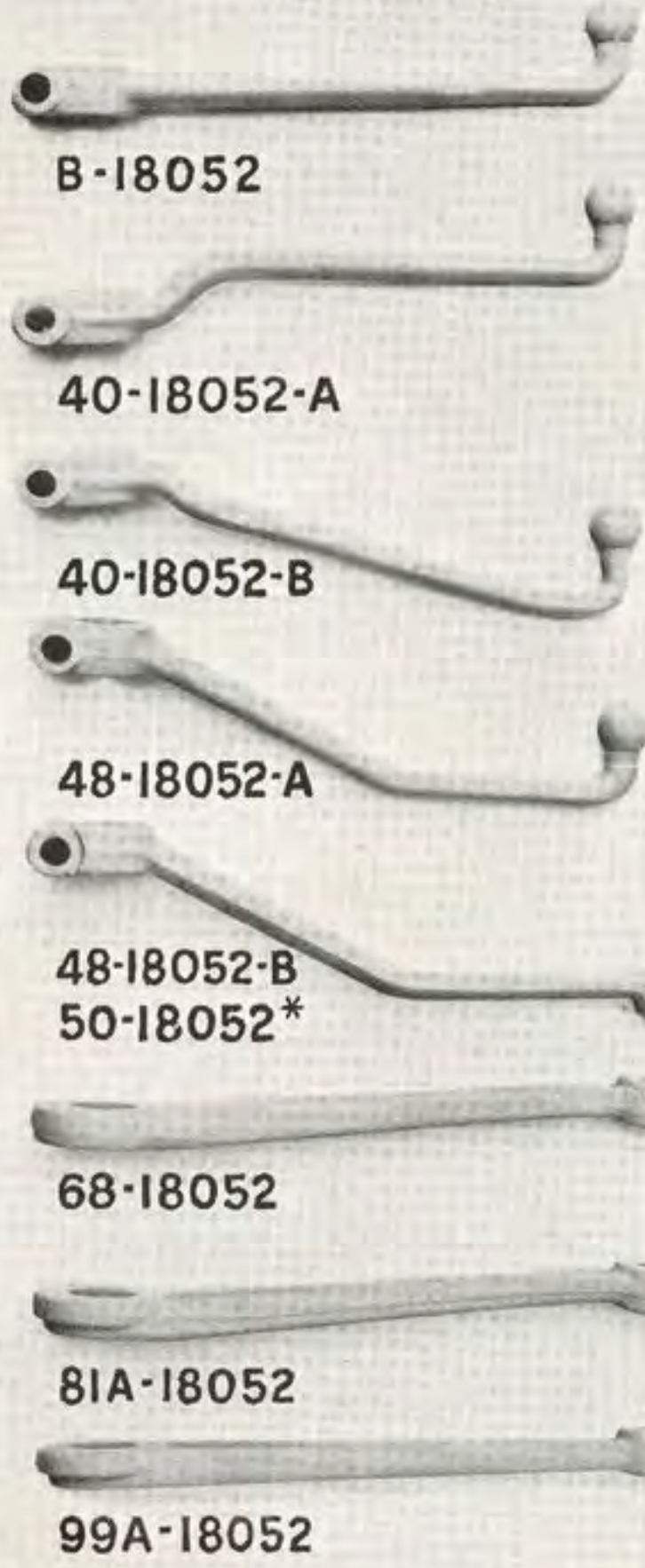
Year	Car Model	Domestic or Export	RIGHT FRONT		LEFT FRONT		RIGHT REAR		LEFT REAR	
			Ford No.	Houde No.	Ford No.	Houde No.	Ford No.	Houde No.	Ford No.	Houde No.
1928–31	"A"	Both	B-18015-B	A-6406	B-18016-B	A-6407	B-18016-B	A-6407	B-18015-B	A-6406
1932	"B" "18"	Both	B-18015-B	A-6406	B-18016-B	A-6407	B-18015-B	A-6406	B-18016-B	A-6407
1933–34	"40"	Both	40-18045-B	A-6071	40-18046-B	A-6070	48-18015-C	A-5885	48-18016-C	A-5886
1935	"48"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	48-18015-C	A-5885	48-18016-C	A-5886
1936	"68"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	48-18015-C	A-5885	48-18016-C	A-5886
1937	"74" "78"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	O1A-18080-B	A-6515	O1A-18081-B	A-6516
1938	"81A" "82A"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	O1A-18080-B	A-6515	O1A-18081-B	A-6516
1939	"91A"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	O1A-18080-B	A-6515	O1A-18081-B	A-6516
1940	"O1A"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	O1A-18080-B	A-6515	O1A-18081-B	A-6516
1939	Mercury "99A"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	O1A-18080-B	A-6515	O1A-18081-B	A-6516
1940	Mercury "09A"	Export	O1A-18045-D	A-6036	O1A-18046-D	A-6035	O1A-18080-B	A-6515	O1A-18081-B	A-6516

LEVER—LINK—GUIDE SHEET 1928-39 MODELS INCLUSIVE

FRONT LEVERS



REAR LEVERS



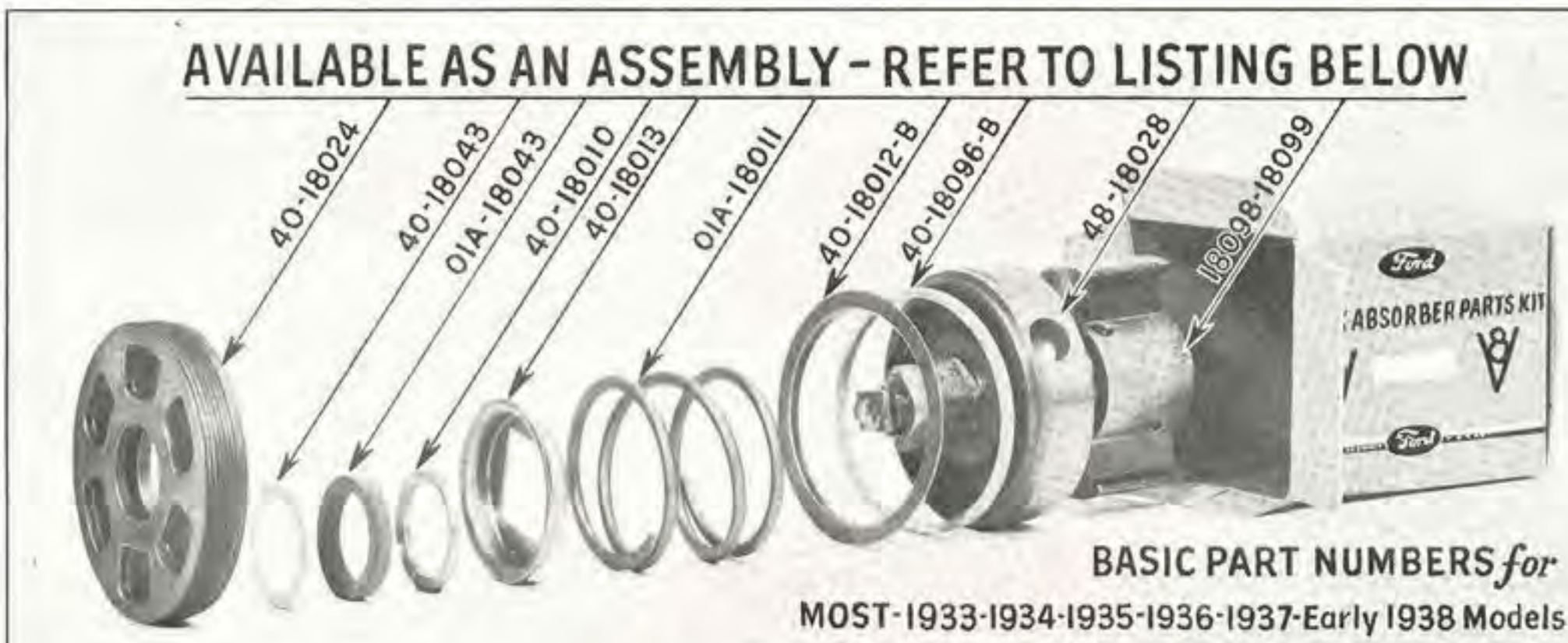
LINKS



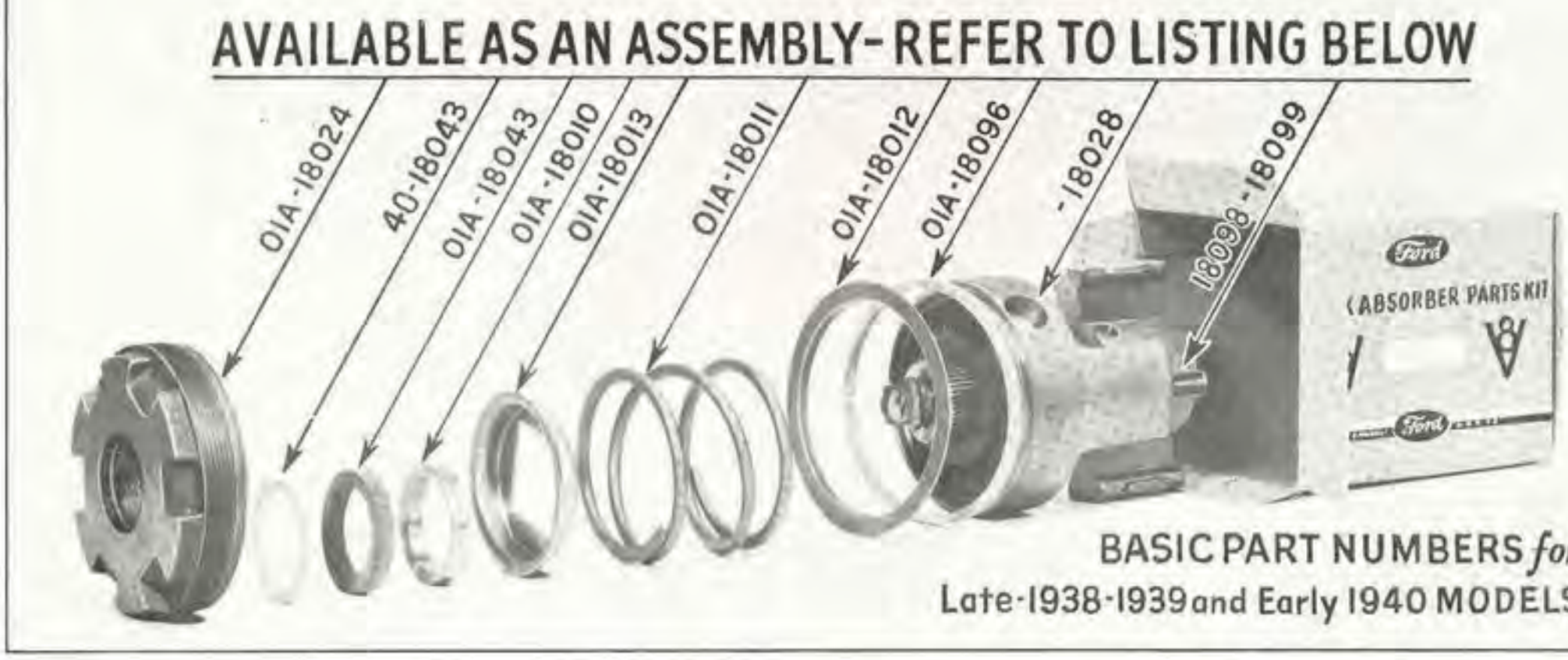
*LENGTH CENTER TO CENTER 7½"

Year	Car Model	Domestic or Export	FRONT LEVER		FRONT LINK		REAR LEVER		REAR LINK	
			Ford No.	Houde No.	Ford No.	Houde No.	Ford No.	Houde No.	Ford No.	Houde No.
1928-32	"A" "B" "18"	Both	B-18047	I-1130	B-18064 B-18065	A-1592	B-18052	I-1131	B-18064 B-18065	A-1592
1933	"40"	Both	40-18047-A	I-1582	B-18064 B-18065	A-1592	40-18052-A	I-1583	B-18064 B-18065	A-1592
1934	"40"	Both	40-18047-3A	I-1922	40-18064 40-18064	A-1985	40-18052-B	I-1921	40-18064 40-18064	A-1985
1935	"48"	Domestic	68-18047	I-2687	48-18055-A3	A-5962	48-18052-A	I-2226	48-18055-A3	A-5962
1935	"48"	Export	48-18047-B	I-2420	48-18055-A3	A-5962	48-18052-B	I-2227	48-18055-A3	A-5962
1936	"68"	Domestic	68-18047	I-2687	48-18055-A3	A-5962	48-18052-B	I-2227	48-18055-A3	A-5962
1936	"68" Pickup	Domestic	68-18047	I-2687	48-18055-A3	A-5962	50-18052	I-2382	48-18055-A3	A-5962
1936	"68"	Export	48-18047-B	I-2420	48-18055-A3	A-5962	48-18052-B	I-2227	48-18055-A3	A-5962
1937	"74" "78"	Both	68-18047-B	I-3201	48-18055-A3	A-5962	68-18052	I-3202	48-18055-A3	A-5962
1938	"81A" "82A"	Both	81A-18047	I-3754	78-18055-A1	A-5961	81A-18052	I-3755	48-18055-A3	A-5962
1939	"91A"	Both	81A-18047	I-3754	48-18055-A3	A-5962	81A-18052	I-3755	48-18055-A3	A-5962
1939	Mercury "99A"	Both	81A-18047	I-3754	78-18055-A1	A-5961	99A-18052	I-4884	78-18055-A1	A-5961

PARTS KITS—GUIDE SHEET
TO REBUILD OBSOLETE SHOCK ABSORBERS
INTO AUTOMATIC SEAL—ADJUSTABLE VALVE TYPES
1933-1939 MODELS INCLUSIVE



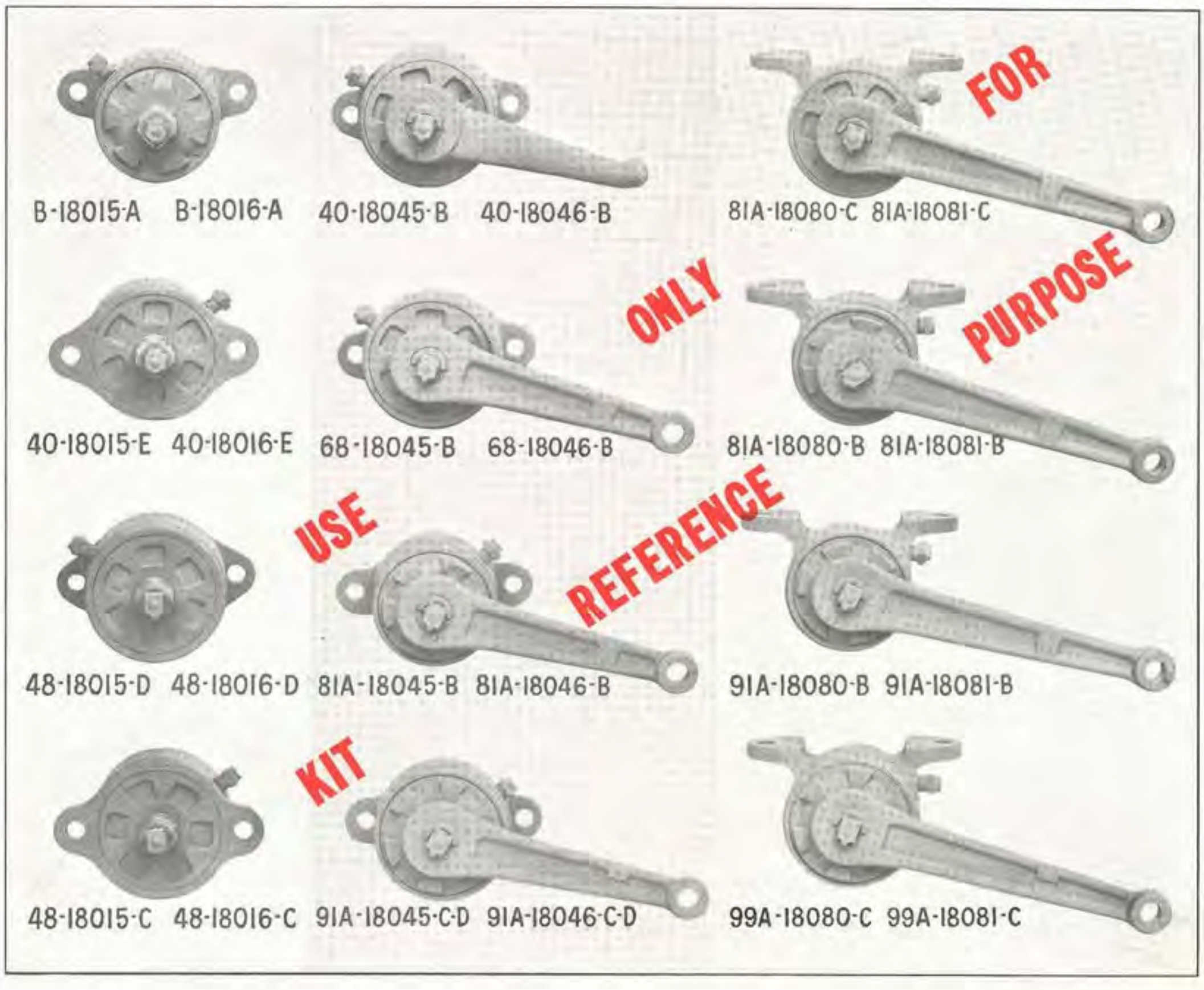
BASIC PART NUMBERS *for*
MOST-1933-1934-1935-1936-1937-Early 1938 Models



BASIC PART NUMBERS *for*
Late-1938-1939 and Early 1940 MODELS

Year & Model of Car	Position on Car	USE PARTS KIT Ford No.	USE PARTS KIT Houde No.	To Rebuild Obsolete Shock Absorbers	Into Automatic Seal Adjustable Valve Types
1933 All "40" Models	Right Front	40-18145	A-6565	40-18015-A-B-C-D	40-18015-E
	Left Front	40-18146	A-6566	40-18016-A-B-C-D	40-18016-E
	Right Rear	40-18145	A-6565	40-18015-A-B-C-D	40-18015-E
	Left Rear	40-18146	A-6566	40-18016-A-B-C-D	40-18016-E
1934 All "40" Models	Right Front	Not	Available	40-18045-3AC-2AR-4A	Buy 40-18045-B
	Left Front	Not	Available	40-18046-3AC-2AR-4A	Buy 40-18046-B
	Right Rear	40-18145	A-6565	40-18015-A-B-C-D	40-18015-E
	Left Rear	40-18146	A-6566	40-18016-A-B-C-D	40-18016-E
1935-36 Export "48"-"68" Models	Right Front	48-18146-B	A-6570	48-18016-3A 48-18016-4A	48-18016-D
	Left Front	48-18145-B	A-6569	48-18015-3A 48-18015-4A	48-18015-D
	Right Rear	48-18145-A	A-6567	40-18015-2B 48-18015-3B-4B	48-18015-C
	Left Rear	48-18146-A	A-6568	40-18016-2B 48-18016-3B-4B	48-18016-C
1935-36 Domestic "48"-"68" Models	Right Front	Not	Available	68-18045-2A	Buy O1A-18045-D
	Left Front	Not	Available	68-18046-2A	Buy O1A-18046-D
	Right Rear	48-18145-A	A-6567	40-18015-2B 48-18015-3B-4B	48-18015-C
	Left Rear	48-18146-A	A-6568	40-18016-2B 48-18016-3B-4B	48-18016-C

Year & Model of Car	Position on Car	USE PARTS KIT Ford No.	USE PARTS KIT Houde No.	To Rebuild Obsolete Shock Absorbers	Into Automatic Seal Adjustable Valve Types
1937 All "74" "78" Models	Right Front	68-18145	A-6572	68-18045-3A	68-18045-B
	Left Front	68-18146	A-6571	68-18046-3A	68-18046-B
	Right Rear	81A-18180-A	A-6573	68-18080	81A-18080-C
	Left Rear	81A-18181-A	A-6574	68-18081	81A-18081-C
1938 Early "81A" "82A" Models	Right Front	68-18145	A-6572	81A-18045-A1	68-18045-B
	Left Front	68-18146	A-6571	81A-18046-A1	68-18046-B
	Right Rear	81A-18180-A	A-6573	81A-18080-A1	81A-18080-C
	Left Rear	81A-18181-A	A-6574	81A-18081-A1	81A-18081-C
1938 Late "81A" "82A" Models	Right Front	81A-18145	A-6576	81A-18045-A2	81A-18045-B
	Left Front	81A-18146	A-6575	81A-18046-A2	81A-18046-B
	Right Rear	81A-18180-B	A-6577	81A-18080-A2	81A-18080-B
	Left Rear	81A-18181-B	A-6578	81A-18081-A2	81A-18081-B
1939 Early "91A" Models	Right Front	81A-18145	A-6576	91A-18045	91A-18045-C
	Left Front	81A-18146	A-6575	91A-18046	91A-18046-C
	Right Rear	81A-18180-B	A-6577	81A-18080-A2	81A-18080-B
	Left Rear	81A-18181-B	A-6578	81A-18081-A2	81A-18081-B
1939 Late "91A" Models	Right Front	91A-18145	A-6580	91A-18045	91A-18045-D
	Left Front	91A-18146	A-6579	91A-18046	91A-18046-D
	Right Rear	91A-18180	A-6581	81A-18080-A2	91A-18080-B
	Left Rear	91A-18181	A-6582	81A-18081-A2	91A-18081-B
1939 Mercury "99A" Models	Right Front	91A-18145	A-6580	91A-18045	91A-18045-D
	Left Front	91A-18146	A-6579	91A-18046	91A-18046-D
	Right Rear	99A-18180	A-6583	99A-18080-B	99A-18080-C
	Left Rear	99A-18181	A-6584	99A-18081-B	99A-18081-C



INSTRUCTIONS FOR REBUILDING

48-18015-4A INTO 48-18015-D 48-18016-4A INTO 48-18016-D
40-18015-2B—48-18015-3B—48-18015-4B INTO 48-18015-C
40-18016-2B—48-18016-3B—48-18016-4B INTO 48-18016-C

1. Remove filler plug located on outside of reservoir. Drain fluid from replenishing chamber. See Fig. 1.

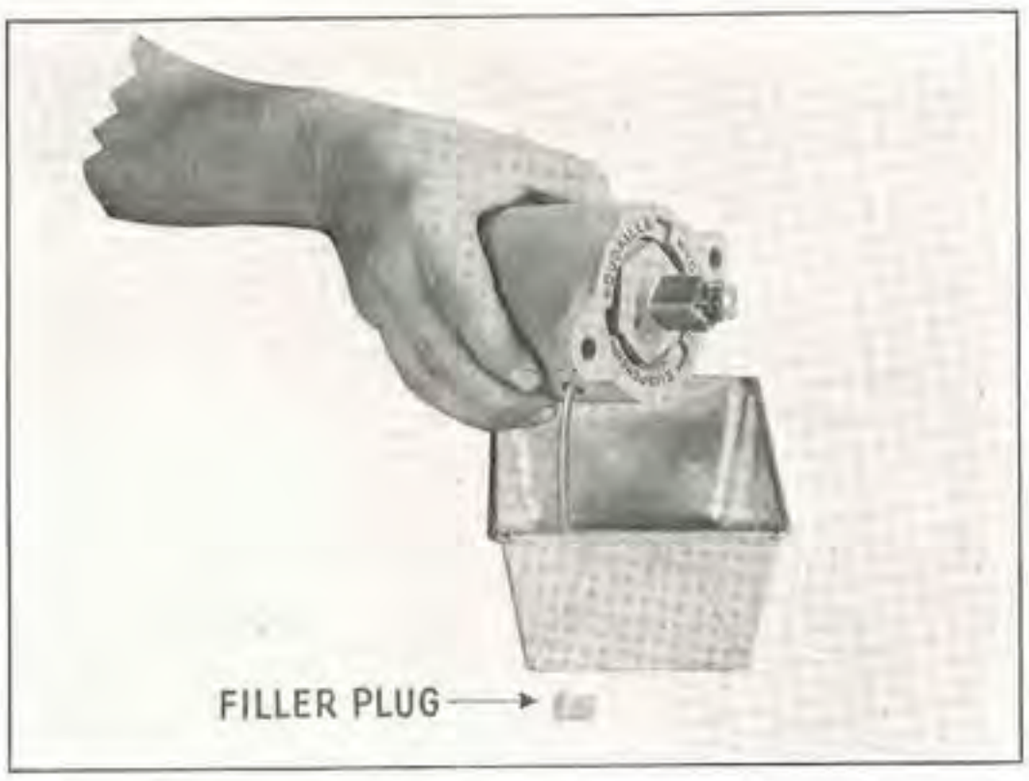


Fig. 1

2. Determine whether the travel of the shock absorber is clockwise or anti-clockwise. With the filler plug hole at the top, if the notch on the shaft is on the left, the shock absorber is clockwise (CW). If the notch on the shaft is on the right, the shock absorber is anti-clockwise (AC). With a piece of chalk or crayon, mark the side of the clockwise shock absorber—"CW". Mark the side of the anti-clockwise shock absorber—"AC". See Fig. 2.



Fig. 2

3. Mount assembly fixture HEC-3223 on the corner of a sturdy work bench. See Fig. 3.

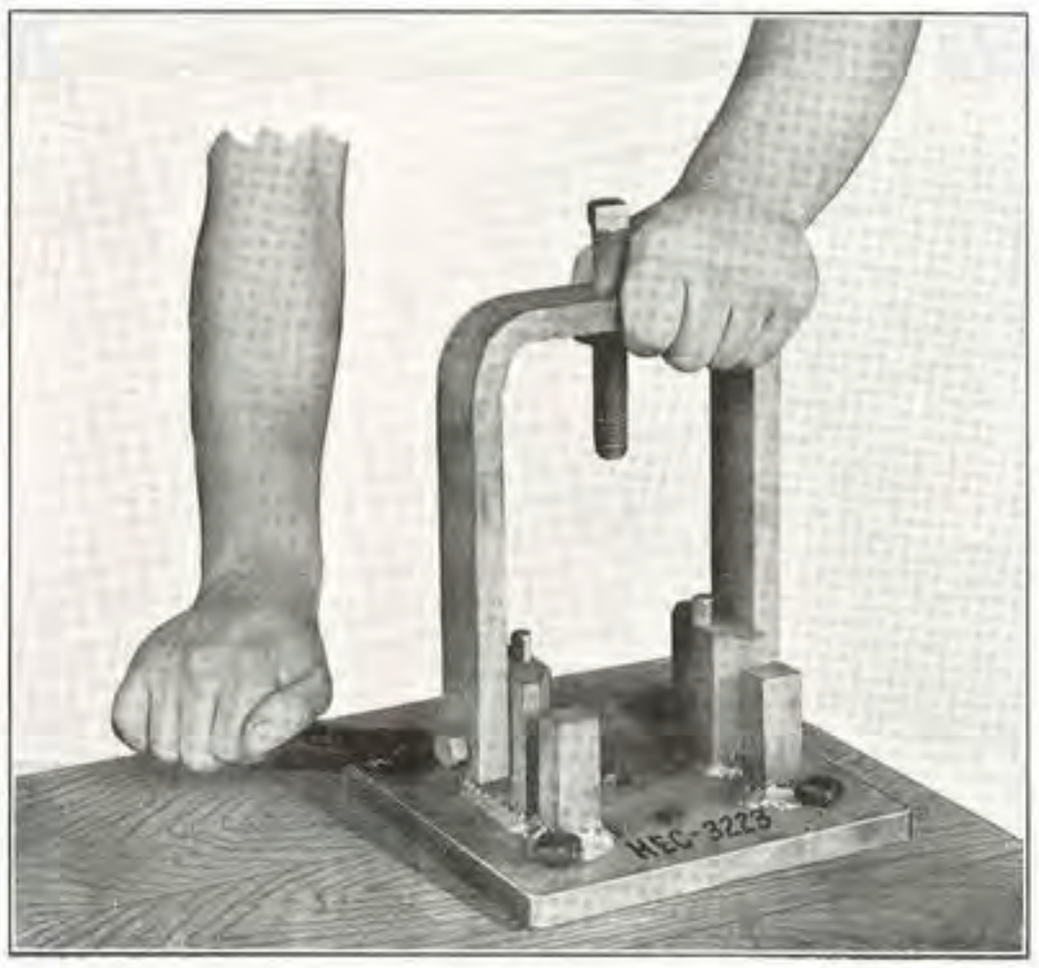


Fig. 3

4. If a front shock absorber is being repaired, place block HEC-3223-B in the bed of the assembly fixture between the two columns. Then set the shock absorber on top of the block so that the two pins will fit into the shock absorber mounting holes. Insert cotter pins.

   If a rear shock absorber is being repaired, place shock absorber into bed of assembly fixture HEC-3223 so that the two pins will fit into the shock absorber mounting holes. See Fig. 4.

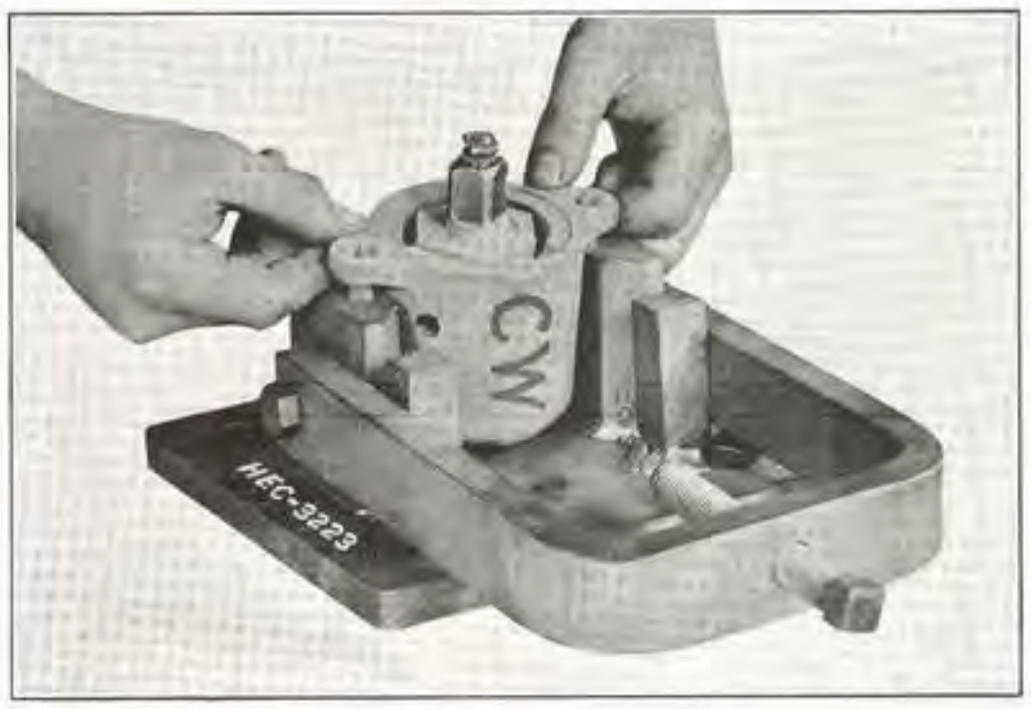


Fig. 4

5. Fit clamp ring tool HEC-3221 into the three notches of clamp ring. If the lugs on the tool don't fit the three notches, back out the holding screw and reverse the three lugs. See Fig. 5.

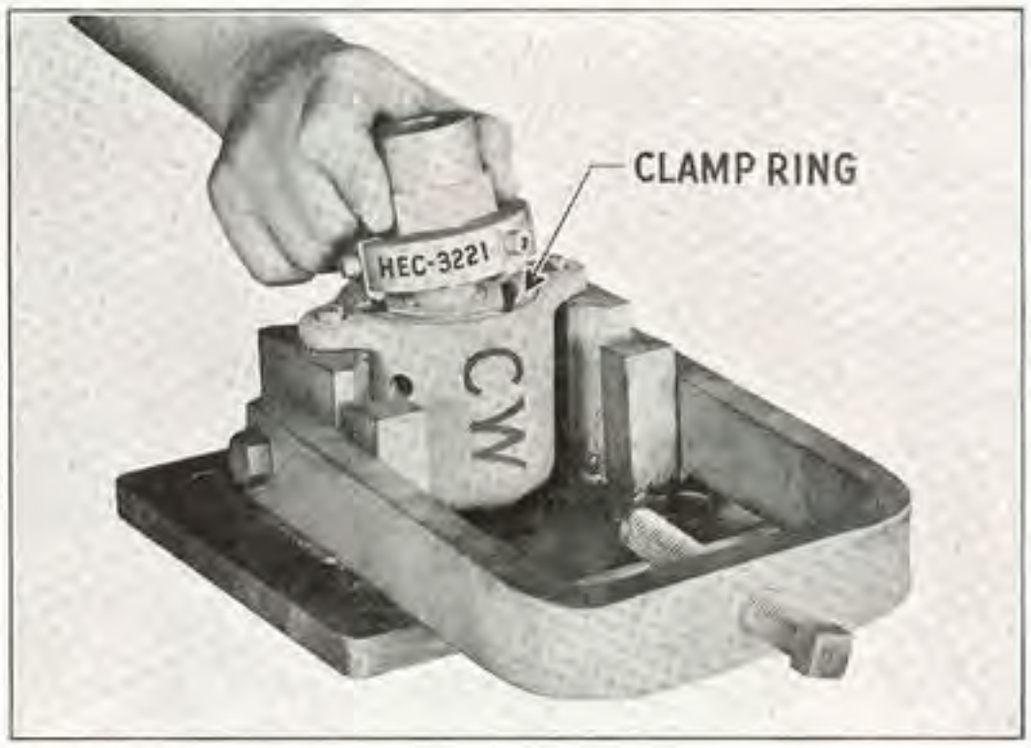


Fig. 5

6. Place wrench HEC-3226 over hex hub of clamp ring tool HEC-3221. Bring bracket with holding screw to the top so that the screw will be directly over the clamp ring tool. Tighten holding screw by hand enough to prevent the clamp ring tool from climbing out of the three notches. Unscrew clamp ring, at the same time, back out the holding screw. See Fig. 6.

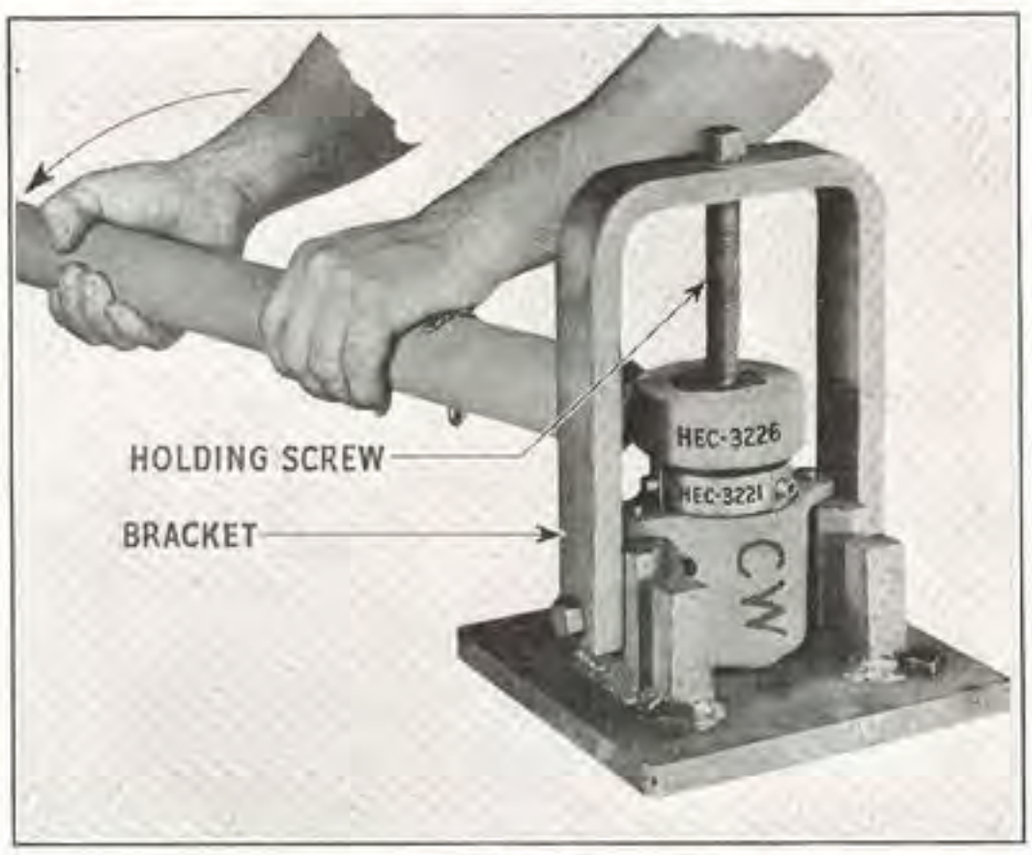


Fig. 6

7. Slip HEC-3227 drift over end of shaft so that it will rest on the packing gland. Strike the drift several sharp blows with a light hammer. Squirt a little penetrating oil around the outside of the packing gland and allow it to seep in around the threads. This will loosen the rust or corrosion and make it easier to remove the old gland nut. See Fig. 7.

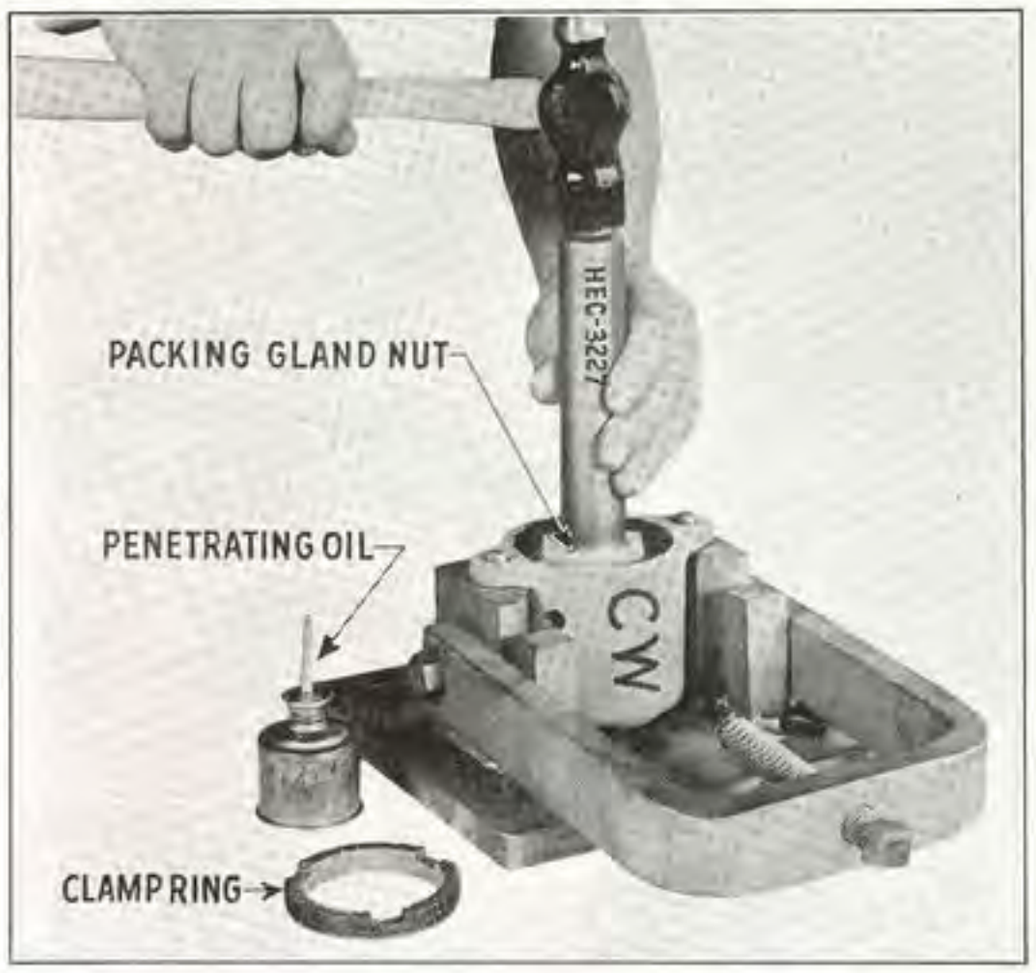


Fig 7

8. Unscrew packing gland nut by using wrench HEC-4940. This wrench will fit the two notches in the gland nut. If the retainer doesn't have two notches, it is the pressed-in type and need not be removed. See Fig. 8.



Fig. 8

9. If a front shock absorber is being repaired, set ring HEC-4901-C over edge of reservoir. Make certain you have the proper size ring. If a rear shock absorber is being repaired, no ring is needed.

10. Open flange pulling tool HEC-4939 so that the block will slip over the square end of shaft. To do this, back out "CLAMP" screw and then turn screw marked "OPEN" to the right. See Fig. 9.

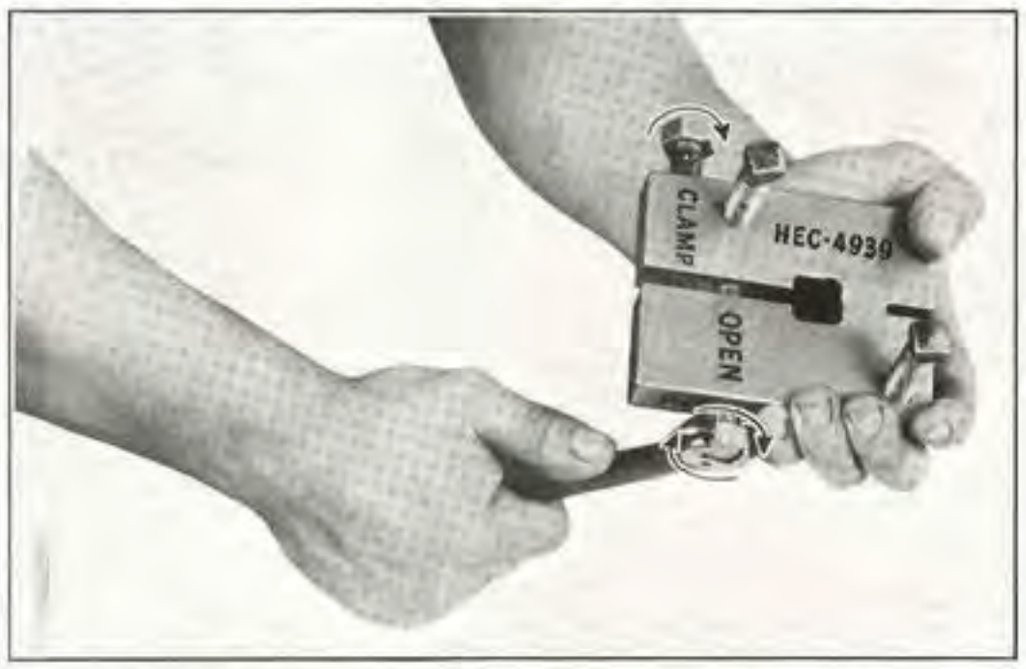


Fig. 9

11. Tighten tool HEC-4939 to shaft by backing out screw marked "OPEN" and tightening screw marked "CLAMP". See Fig. 10.

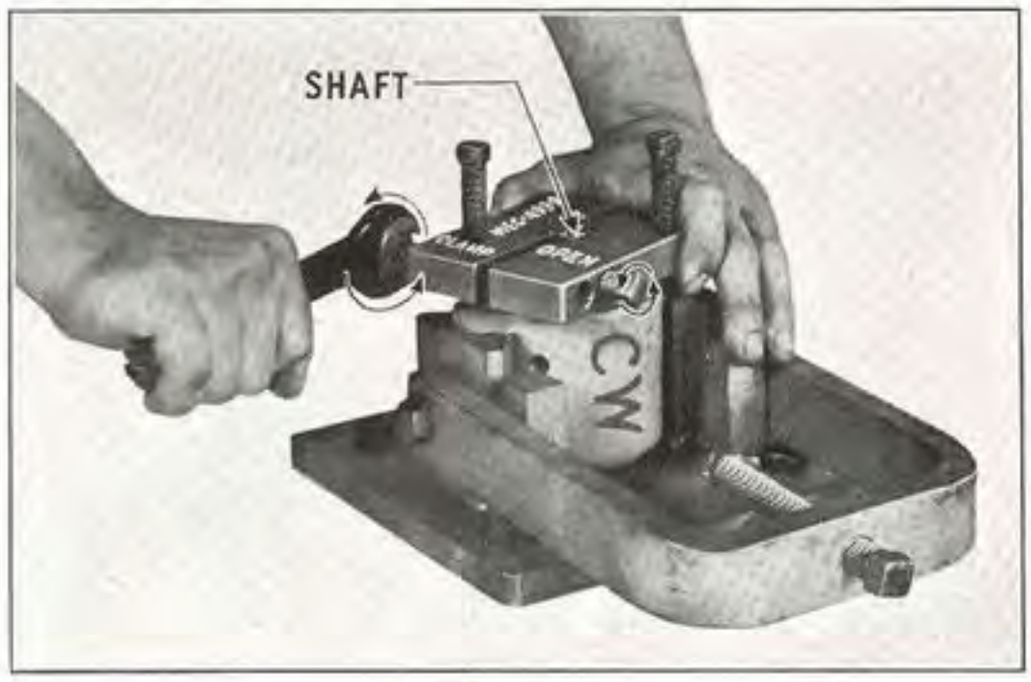


Fig. 10

12. Move the shaft so that the vertical screws will be near the mounting lugs. The additional stock around the lugs will make it easier to pull the flange. Start pulling flange by uniformly turning the vertical screws into HEC-4939 block. Stop when screws are ⅔ way into block. See Fig. 11.



Fig. 11

13. When the set screws have been turned ⅔ way into block, remove HEC-4939 from shaft. To do this, back out "CLAMP" screw and turn in "OPEN" screw. Do this before the shaft and flange have been pulled all the way out of the reservoir—otherwise it will be difficult to remove the block. Finish removing shaft and flange by hand. See Fig. 12.

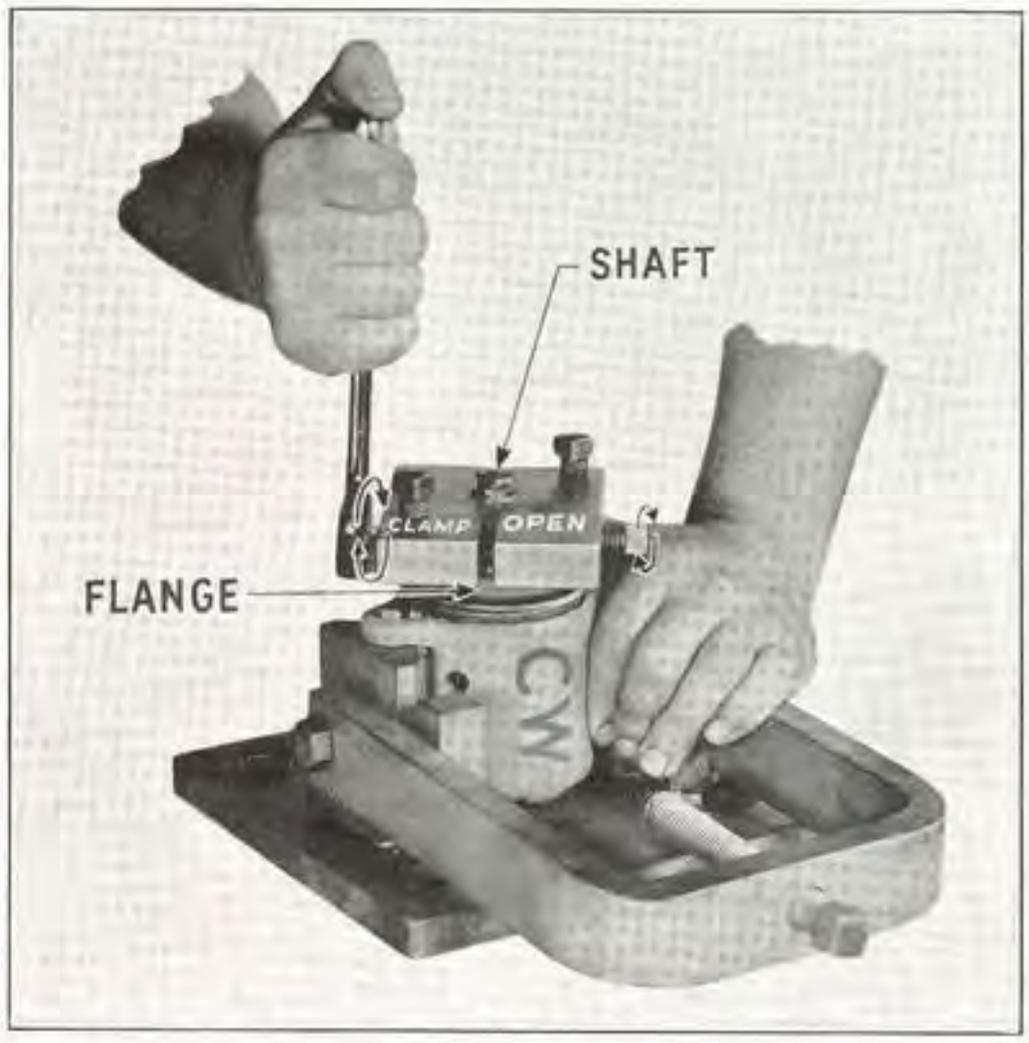


Fig. 12

14. Examine outer end of shaft. If the shaft has no adjusting valve, it is the earlier type and should be replaced with the latest externally adjustable type. Scrap both shaft and flange. If the end of the shaft has an externally adjustable valve, it is possible that it can be re-used. See Fig. 13. Proceed as follows:

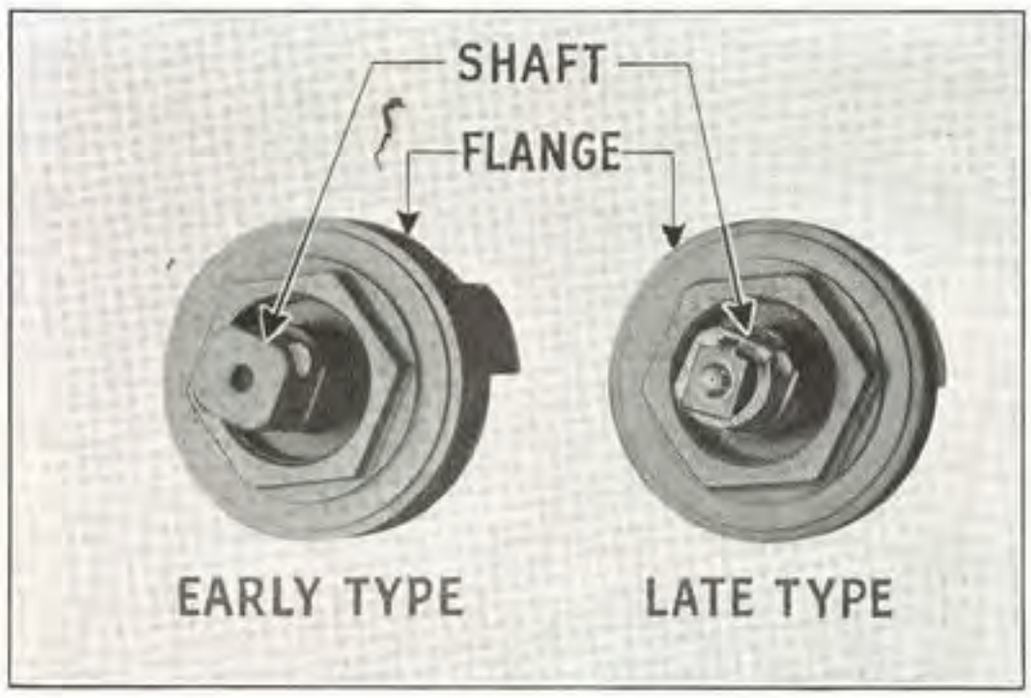


Fig. 13

15. Separate shaft from flange by inverting and thumping on soft wood block. Scrap the flange; a new type is required with the new automatic seal. See Fig. 14.



Fig. 14

16. Inspect the shaft. Place a straight edge along the shank of the shaft. If there are visible signs of wear, do not attempt to save. If there are no visible signs of wear, the shaft can be re-used. See Fig. 15.

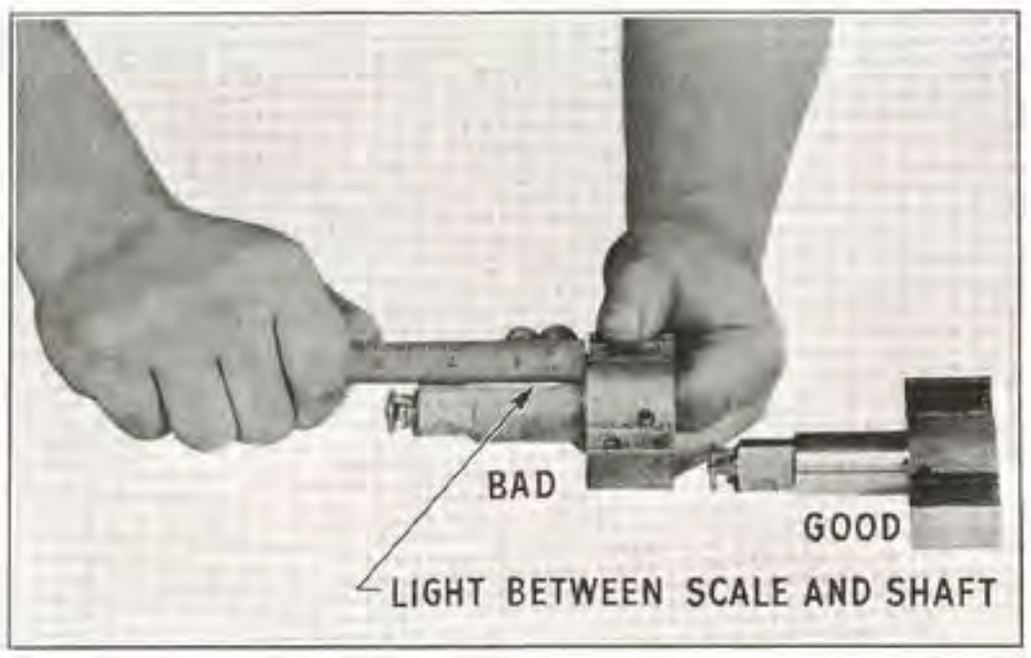


Fig. 15

17. Determine the part number of the shock absorber you are rebuilding. If you are not certain, refer to—"PARTS KITS—GUIDE SHEET" on page 10. Opposite the column "YEAR & MODEL" is a column showing part numbers of obsolete models. To the left of this column is the part number of the complete kit containing all new parts to rebuild one shock absorber. Select the proper kit from your stock.

If kits aren't available, to select the new shaft, determine the correct part as follows: Look at the chalk marks you placed on the reservoir before disassembling—"CW" means clockwise and "AC" means anti-clockwise. See Figs. 16 & 17.

For Front Shock Absorbers

For clockwise (CW) shock absorber use shaft, Ford 48-18098-E, Houde A-6112. For anti-clockwise (AC) shock absorber use shaft, Ford 48-18099-E, Houde A-6113. See Fig. 16. Note position of port holes with relation to valve pointer.

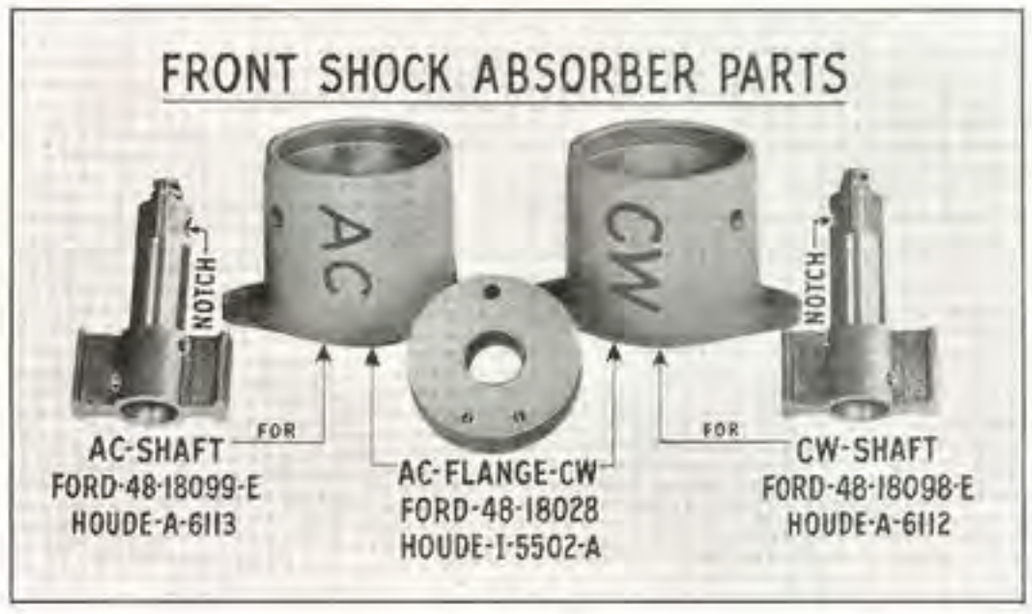


Fig. 16

For Rear Shock Absorbers

For clockwise (CW) shock absorber use shaft, Ford 48-18098-D, Houde A-6110. For anti-clockwise (AC) shock absorber use shaft, Ford 48-18099-D, Houde A-6111. See Fig. 17. Note position of port holes with relation to valve pointer.



Fig. 17

Whether new or old shaft is used, a new flange is required. Flange, Ford 48-18028, Houde I-5502-A, will fit either (CW) or (AC) front and rear shock absorbers. See Figs. 16 and 17.

18. If the old shaft can be re-used, it should be thoroughly washed to remove the old fluid. The reservoir should also be cleaned. Remove reservoir from assembly block and proceed as follows:

19. Three types of fluid have been used by the manufacturer. Smell is the best way to detect the different types.

    If the fluid has an alcoholic odor, the fluid is of glycerine base. If the fluid has an oily odor, the fluid is of petroleum base. If the fluid has a vegetable oil odor, the fluid is of castor oil base. For shock absorbers having a glycerine base fluid, wash reservoir in water. For shock absorbers having a petroleum base fluid, wash reservoir in kerosene. For shock absorbers having a castor oil base fluid, wash reservoir in kerosene. See Fig. 18.



Fig 18

20. If the old shaft is to be re-used, the spool should be checked. See "INSTRUCTIONS FOR PEENING VALVE SPOOL" on page 40.

INSTRUCTIONS FOR REASSEMBLY

21. Make certain that all parts are thoroughly cleaned, dried, and free from rust. Use compressed air or clean, dry cloth to remove moisture. Use fine emery cloth to remove rust. Follow by using compressed air to remove small particles. See Fig. 19.



Fig. 19

22. Place reservoir back on assembly fixture HEC-3223. If a front shock absorber is being repaired, place block HEC-3223-B beneath the reservoir. If a rear shock absorber is being repaired, place reservoir back in bed of assembly fixture HEC-3223 so that the two pins will fit into the shock absorber mounting holes.

23. Look at the filler plug hole in the top of the reservoir. Insert the shaft so that the valve pointer is pointing to the bottom of the reservoir, away from the filler plug hole. See Fig. 20.

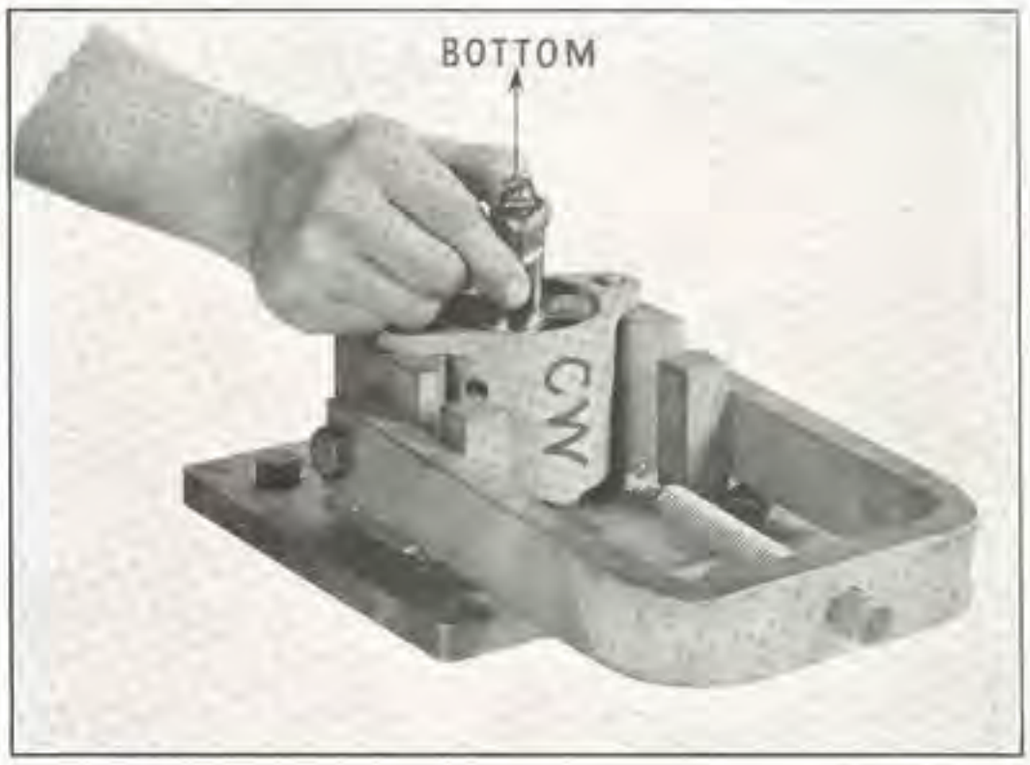


Fig. 20

24. Place test lever HEC-3229 on end of shaft. Rotate shaft through its full range of travel. The shaft should fit snugly but should not bind. If it binds, remove shaft and with fine emery cloth, remove any high spots on inside of reservoir or outside of shaft. Do not break sharp corners. See Fig. 21.

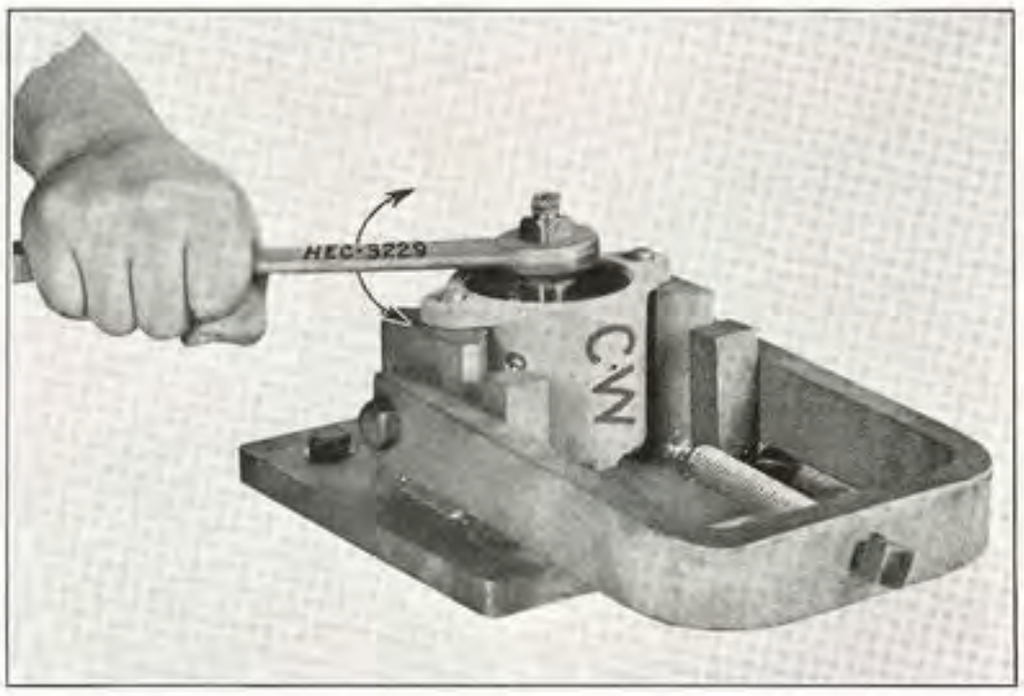


Fig. 21

25. Use fluid gun HEC-4902 or a clean, small funnel to fill four compartments in the reservoir to within $\frac{1}{8}''$ of top of wings on shaft. Use only Ford fluid M-4633-B or genuine Houdaille fluid 1404. See Fig. 22.

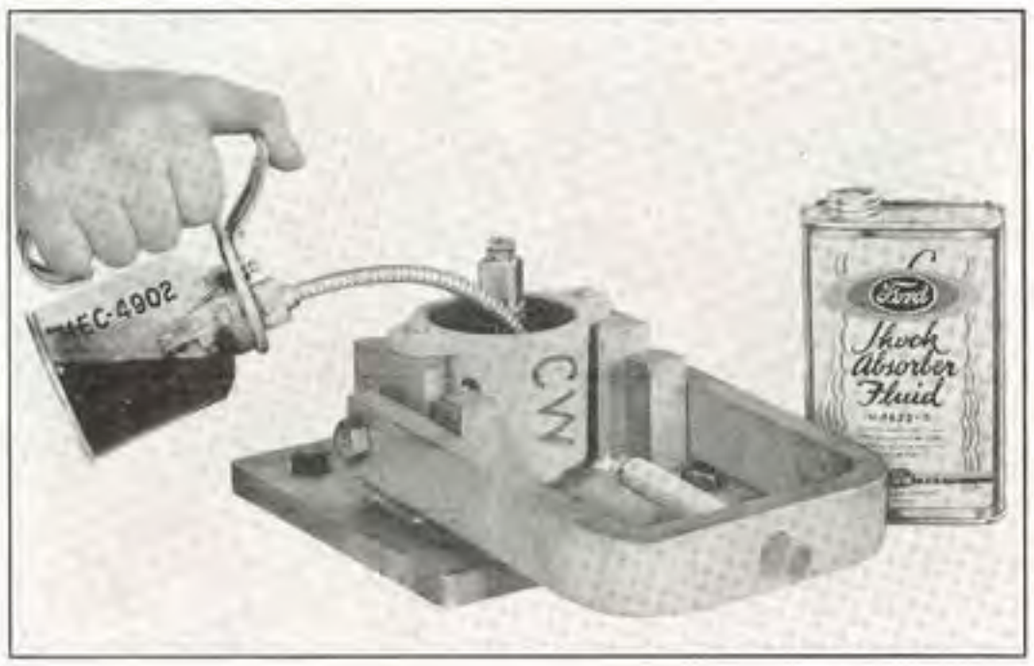


Fig. 22

26. Assemble new flange, Ford 48-18028, Houde I-5502-A, in reservoir so that the tall dowel pin enters the deep hole in the flange. See Fig. 23.

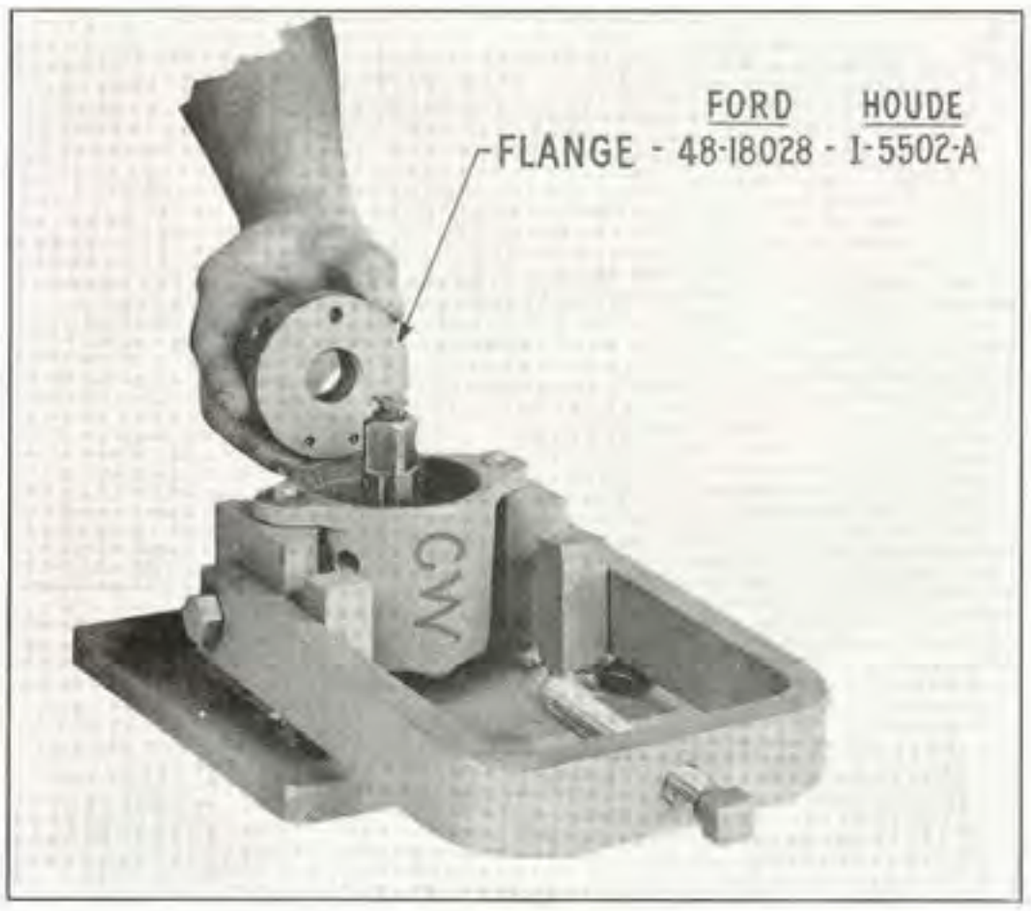


Fig. 23

27. Use drift HEC-3227 to force flange down on stationary abutments. Do not strike too hard; you may crack the flange. See Fig. 24.

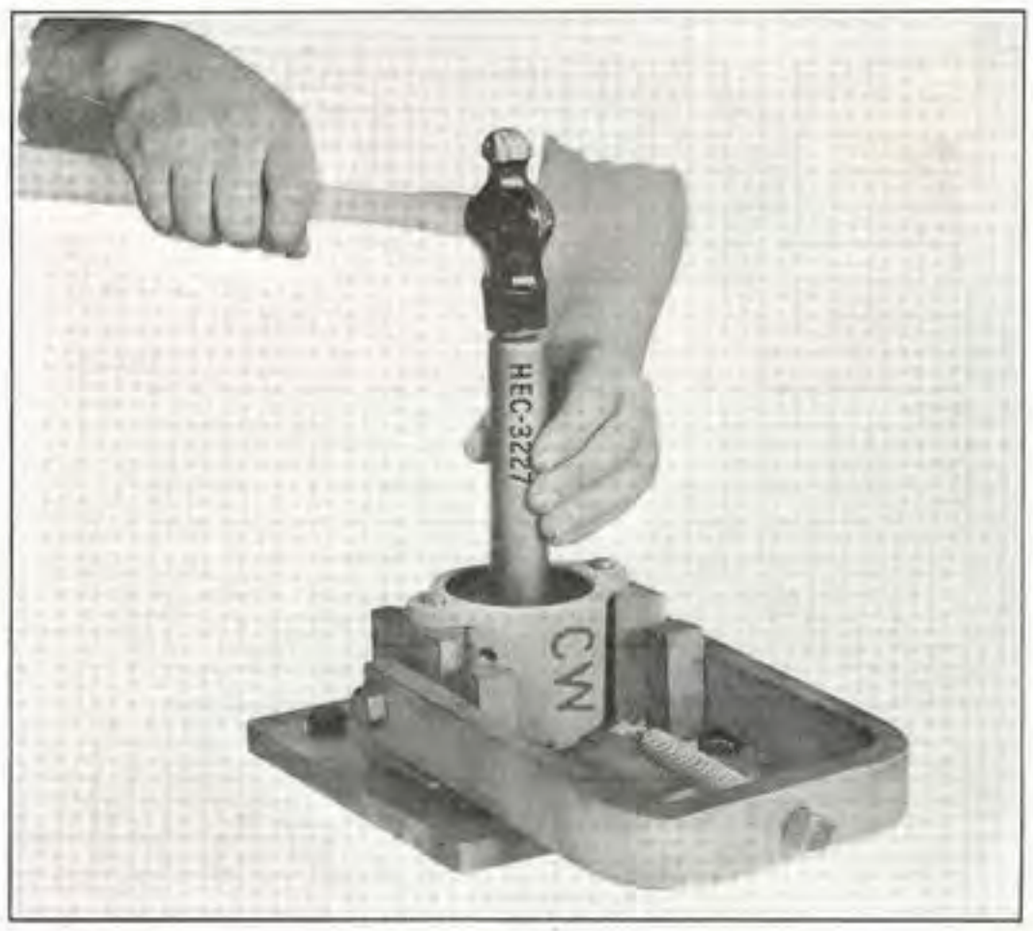


Fig. 24

NOTE—The following parts and procedure apply to both front and rear shock absorbers.

28. Place new rubber flange gasket, Ford 40-18096-B, Houde I-5430, on outside rim of flange. Use a small blunt tool to stretch the rubber so that it will rest evenly on the edge of the flange. See Fig. 25.
29. Place new friction washer, Ford 40-18012-B, Houde I-5429, over the rubber gasket. See Fig. 25.

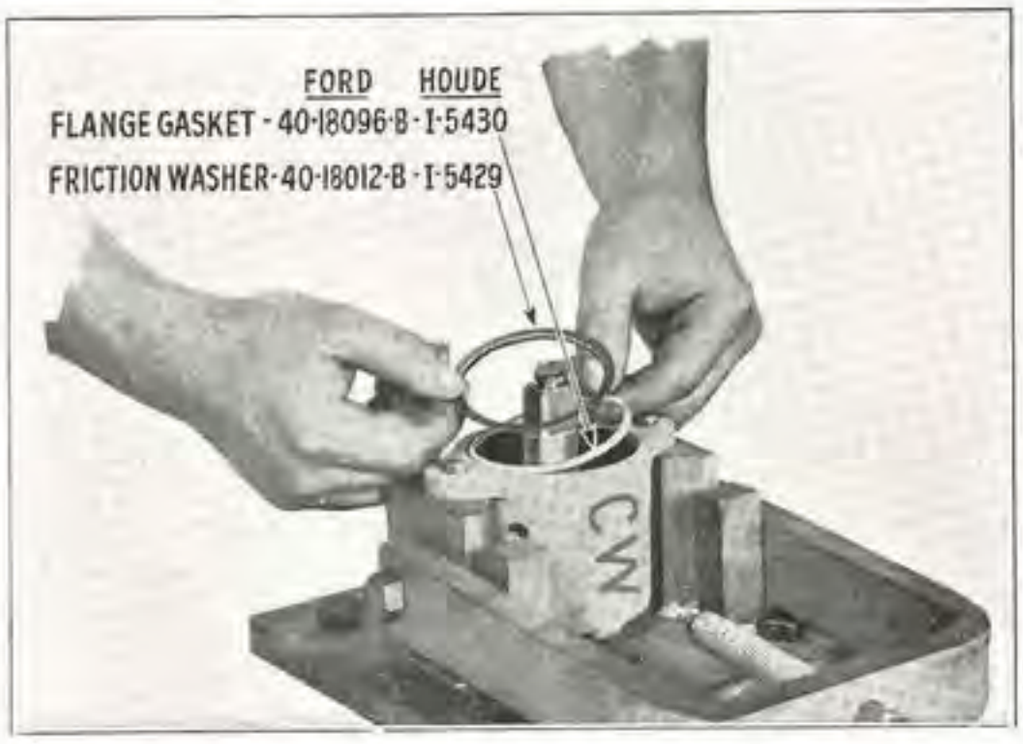


Fig. 25

30. Place spring, Ford O1A-18011, Houde I-4876, over hub of flange. See Fig. 26.
31. Place spring seat, Ford 40-18013, Houde I-5200, over spring. See Fig. 26.
32. Place packing seat, Ford 40-18010, Houde I-5202, over spring seat. **The tapered side should be up.** See Fig. 26.
33. Grease holes of new packings sparingly, preferably with graphite grease to facilitate sliding packings onto shaft. Place packings over shaft in the following order: See Fig. 26.

1st 1 Ford O1A-18043—Houde I-4800—
Green Packing

2nd 1 Ford 40-18043—Houde I-2215—
White Packing

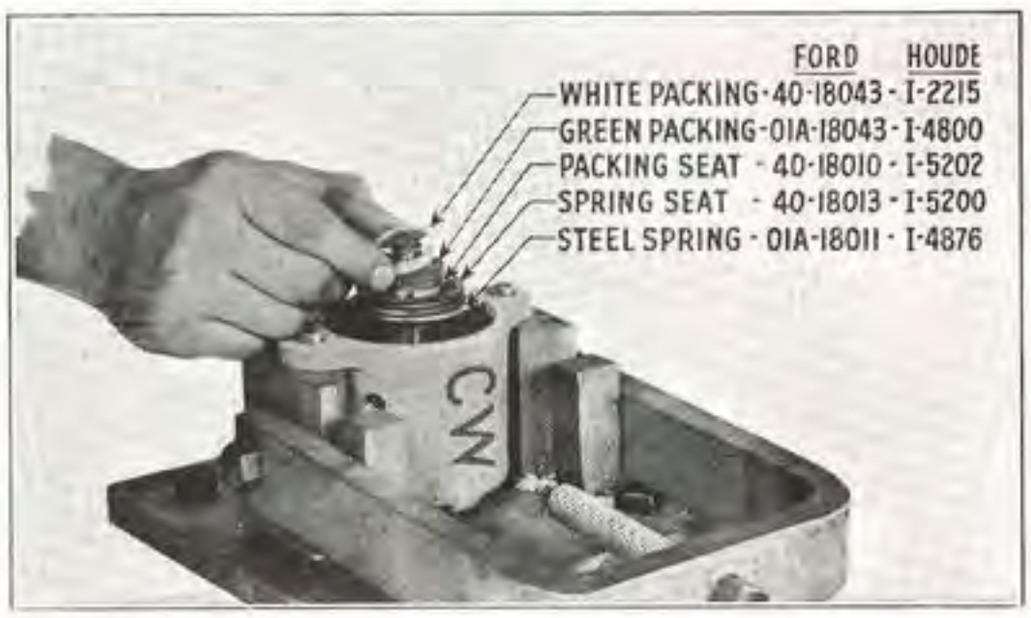


Fig. 26

34. Place new cover, Ford 40-18024, Houde I-5197, over end of shaft. Fit cover tool HEC-3221 into three of the cover recesses. This may necessitate reversing the lugs on the tool. Fit HEC-3226 over hex hub of HEC-3221. Bring bracket of assembly fixture to top so the holding screw will be directly over the cover tool. Compress spring by turning holding screw down on HEC-3221. Be careful not to cross threads. Screw cover into reservoir and tighten. See Fig. 27.

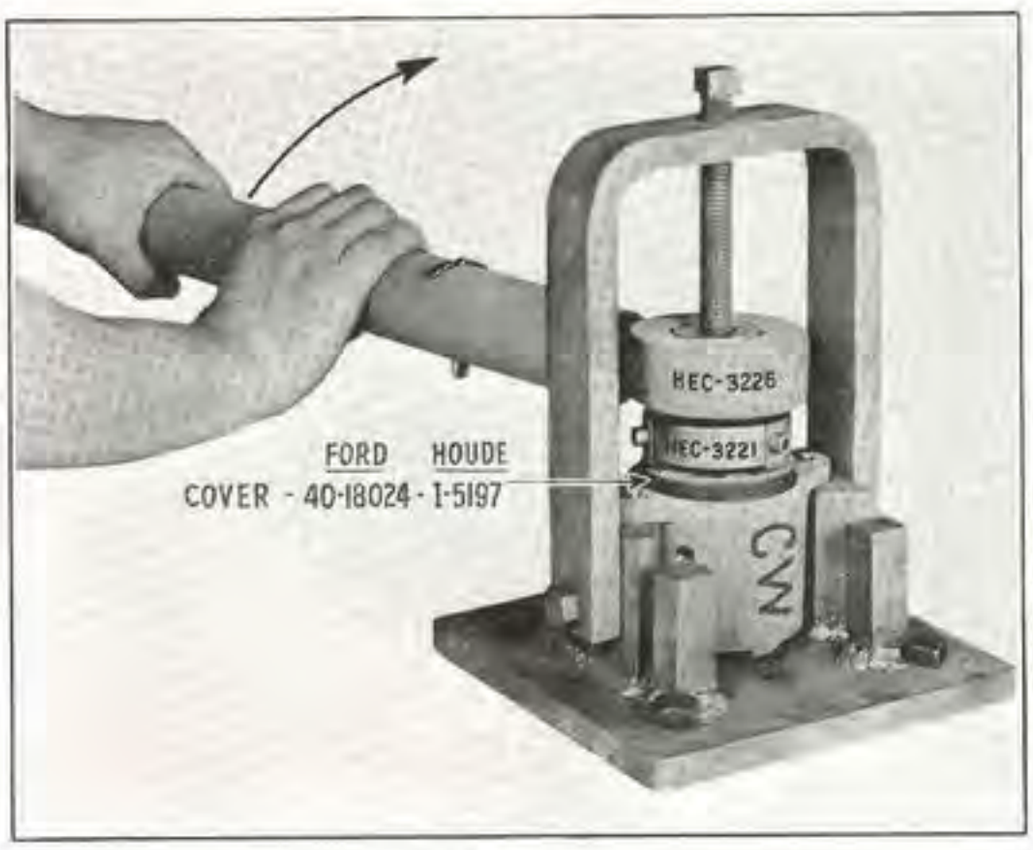


Fig. 27

35. Hook scale HEC-4996 into ring of HEC-3226. Tighten cover until scale reads 79 lb. See Fig. 28.

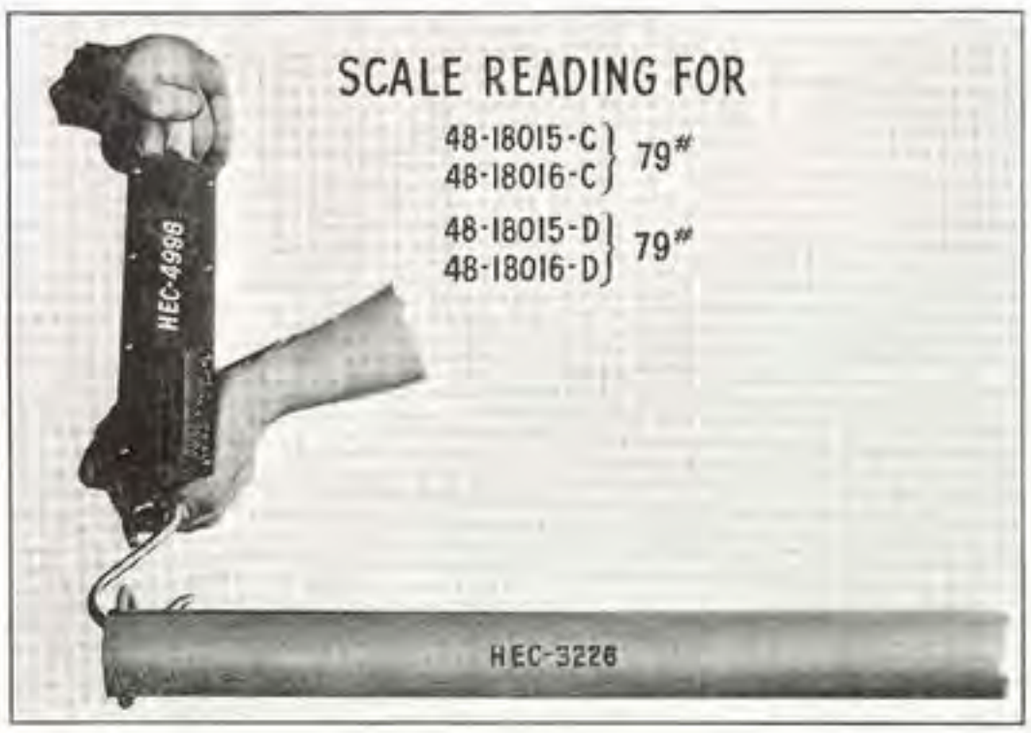


Fig. 28

36. Remove shock absorber from assembly fixture.

37. Bolt or in some other manner, fasten test plate HEC-4941 to edge of work bench in vertical position. Mount shock absorber to plate so that filler plug hole will be at the top, off-center, the same as when on the car. See Fig. 29.

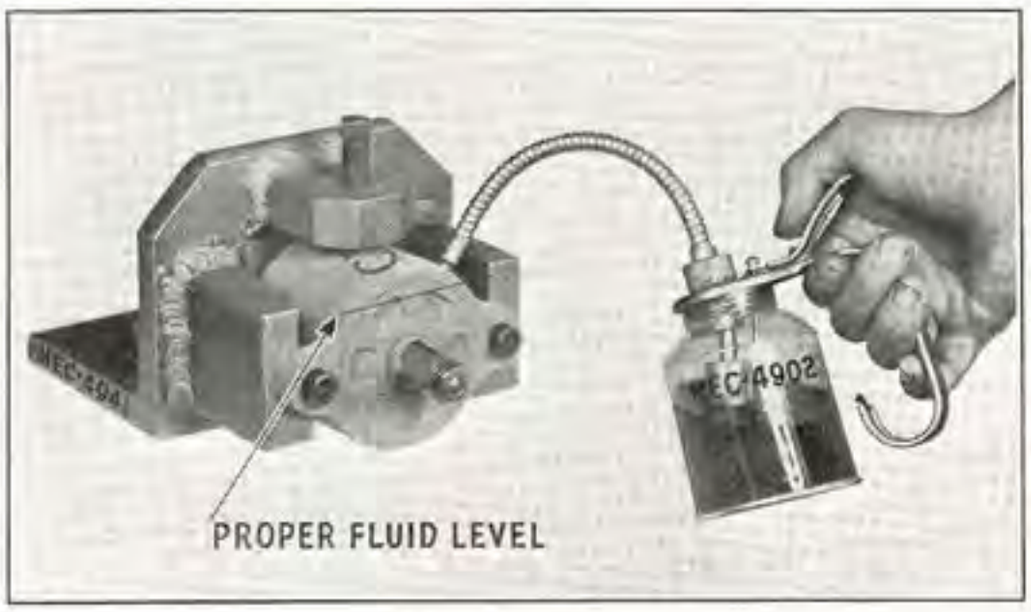


Fig. 29

38. Use fluid gun HEC-4902 or clean, small funnel and fill cover up to bottom of filler plug hole with Ford fluid M-4633-B or genuine Houdaille fluid 1404. See Fig. 29.

39. Turn valve pointer clockwise ⅔ way toward right-hand shoulder stop. This is necessary so that sufficient pressure is developed inside the shock absorber to expel the air and draw additional fluid into the working chamber. See Fig. 30.

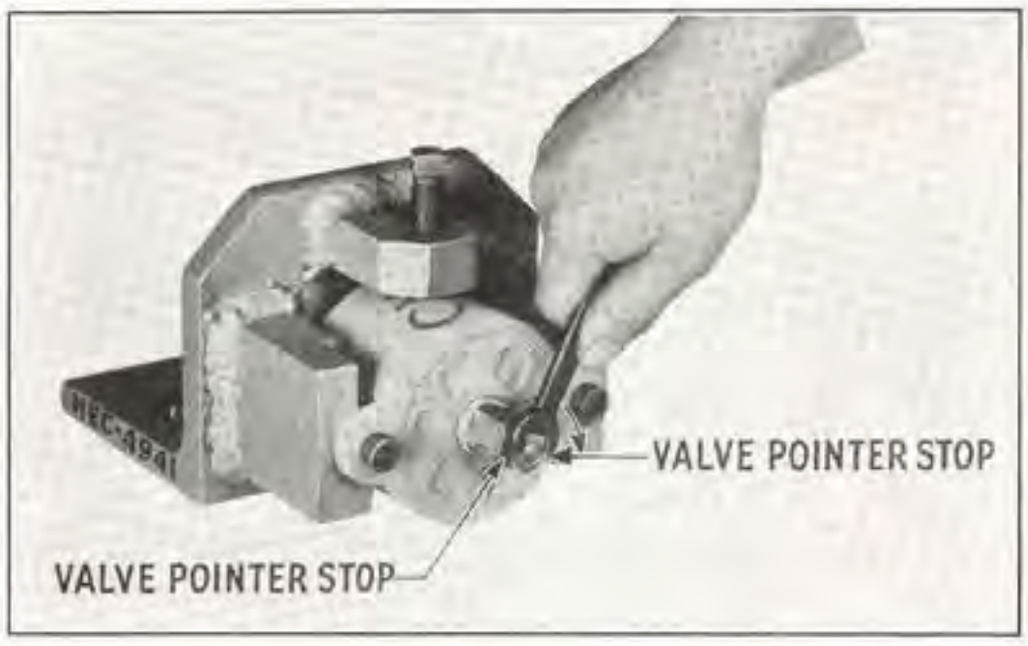


Fig. 30

40. Mount test lever HEC-3229 on end of shaft. Pump lever through its full range of travel several times. This action completely fills working chamber with fluid and expels any air. Continue pumping until any "rubbery" feeling or lost motion has left the shock absorber. See Fig. 31.

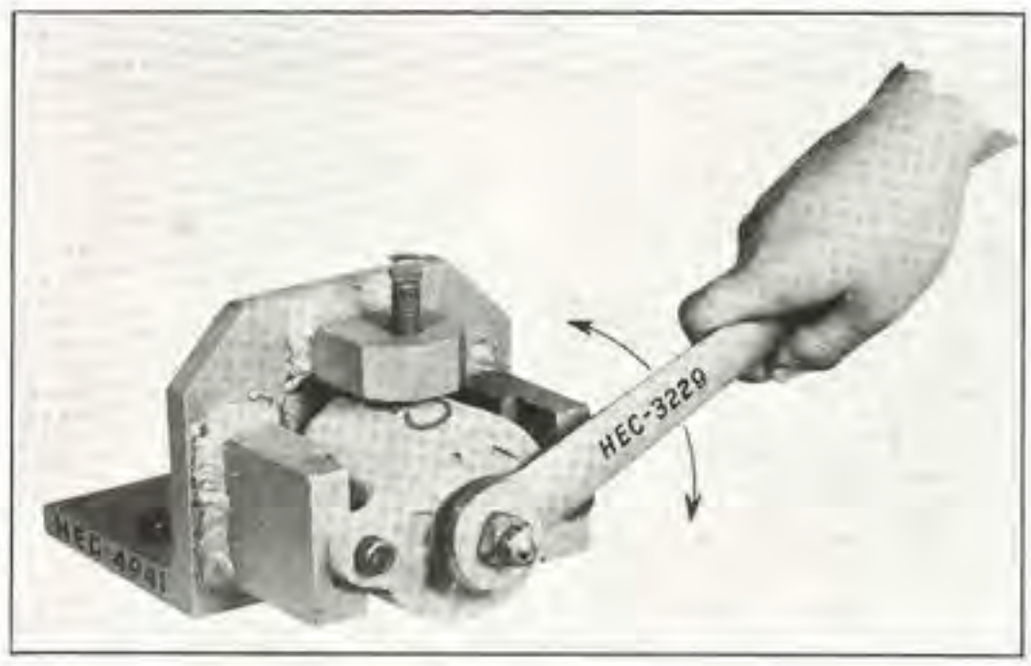


Fig. 31

41. Remove filler plug and inspect the fluid level. The fluid level should not be above bottom of filler plug hole. If the fluid is up to this level, replace filler plug and tighten. If the fluid is low, refill to this level.

    CAUTION—A shock absorber filled above this level may leak, therefore, **do not fill above this level or turn shock absorber on its side to admit more fluid. The space between this fluid level and the top of the cover is air space required for expansion.** See Fig. 29.

42. Paint the shock absorber with M-1713 Air Dry Black Enamel or equal.