JANUARY 1, 1940

Table of Contents

ADJUSTABLE PACKING GLAND 6
ADJUSTABLE VALVE 4-7
AUTOMATIC SEAL 4
FLUID—REPLENISHING 5
FUNCTIONING DIAGRAM—1940 SHOCK ABSORBERS 43
LEAKING SHOCK ABSORBERS 5
LEVER—GUIDE SHEET 9
LINK—GUIDE SHEET 9
LUBRICATION—FLUID 4
NEEDLE VALVE 7
OPERATING PRINCIPLE 4
PACKING GLAND—TOOLS 6
PARTS KIT—GUIDE SHEET 10-11
REBUILDING—INSTRUCTIONS 12-39
REPLENISHING—INSTRUCTIONS 5
ROTARY VALVE 7
SERVICE RECOMMENDATIONS 3
SHOCK ABSORBER—GUIDE SHEET 8
TOOLS—PACKING GLAND 6
VALVE—INSTRUCTIONS FOR ADJUSTING 7
VALVE SPOOL—INSTRUCTIONS FOR PEENING 40-41

IMPORTANT—In the preparation of this instruction bulletin, we have by means of illustrations and diagrams, endeavored to cover every service emergency.

The fact that Houdaille Shock Absorbers are of a mechanical character is sufficient reason to expect certain definite results in performance, depending upon the care and periodical inspection which these instruments receive.

SERVICE RECOMMENDATIONS—QUALITY OF RIDE

The Ford Houdaille Shock Absorbers furnished as standard equipment on today's Ford cars are the finest and most valuable of any offered by automobile manufacturers in the same price field.

Several features are offered Ford owners, not available on other makes equipped with competitive shock absorbers. For example—through the means of an adjustable valve, it is possible to provide a ride to exactly suit each individual owner's desire.

The following method is recommended for assuring that the nature of the ride suits each owner's desire and also provides a means for re-establishing the quality of the ride where due to improper adjustment or neglect, the control is not satisfactory.

1. Check the inflation of the tires and either add or let out air so as to bring the pressure to exactly twenty-eight pounds. (Higher tire pressures alone might be responsible for poor riding qualities.)

2. Place the car on a hoist.

3. Examine springs for evidence of lack of lubrication and lubricate with M-4628 Spring Lubricant. Explain to the owner that this is a special material often not available at gas stations. Point out that this material is made up of light oil, asbestos and talcum powder and that actually this material acts as a polishing agent on the springs rather than as a lubricant. Its use is an extremely important factor in the quality of the ride.

4. Check level of fluid in the shock absorbers. For complete instructions see—"REPLENISHING FLUID — " found on page 5.

5. Examine the shock absorber for indication of leakage where the shaft comes out of the shock absorber body. To correct leakage at this point, see instructions under—"ADJUSTABLE PACKING GLAND — " found on page 6.

6. Observe the position of the valve pointer on all four shock absorbers with relation to the scribed mark on the arm designating the factory setting. If in some cases, the pointer is to the right of the setting mark and others to the left of the mark, it is a good plan to reset all four shock absorbers to the factory setting. Proceed from that point by following—"INSTRUCTIONS FOR ADJUSTING VALVE" found on page 7.

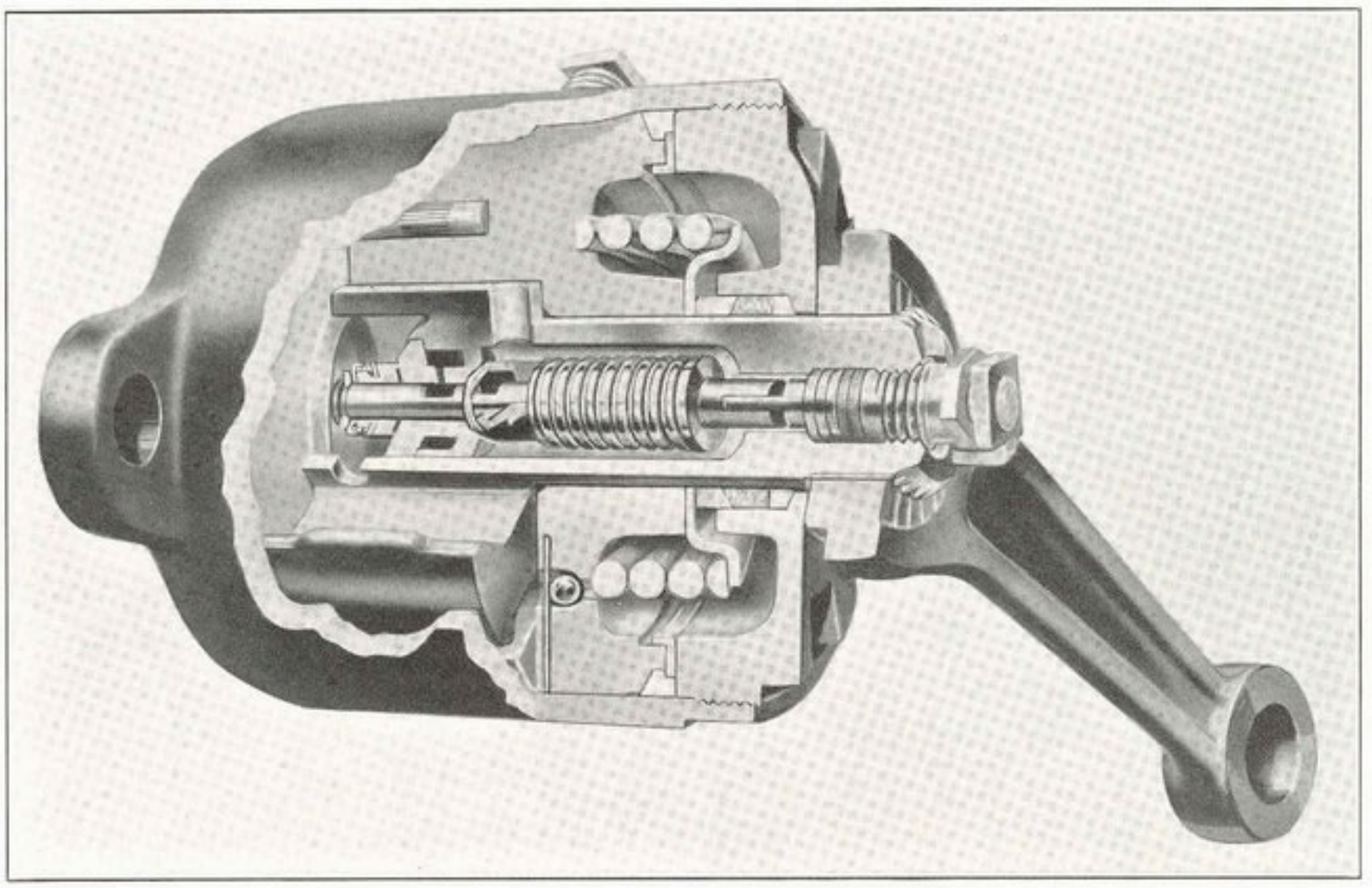
If the above procedure fails to restore the riding qualities of the car and there are visible signs of neglect, the shock absorbers should be removed and either exchanged for new or factory rebuilt units or be dismantled and rebuilt according to the procedures outlined in subsequent pages of this bulletin.

OPERATING PRINCIPLE

Ford Houdaille Double Acting Shock Absorbers operate entirely on the principle of hydraulic resistance. Special shock absorber fluid is forced from one chamber to another by the movement of the lever arm.

LUBRICATION—FLUID

The operating parts of the shock absorber are automatically lubricated by the fluid. The working chamber is automatically kept full by an auxiliary supply of fluid which enters the working chamber when needed. (Instructions for regular inspection of this fluid is shown under heading—"REPLENISHING FLUID—5,000 MILES INSPECTION".)



SECTION VIEW — 1940 SHOCK ABSORBER

ADJUSTABLE VALVE

All Ford Houdaille Shock Absorbers sold today for the 1928 to 1940 models incorporate an externally adjustable valve. By adjusting the valve, it is possible to provide shock absorber control to meet any individual owner's preference on ride. If the instructions shown on page 7 are carefully followed, a softer ride is possible or more control can be obtained, whichever the owner prefers.

AUTOMATIC SEAL

The 1940 model shock absorbers are fitted with a new design self-adjusting packing gland which has been road tested for more than 100,000 miles on rail cars and automobiles. There is nothing to tighten or take up by hand. All this is accomplished automatically by the continuous take-up spring. The spring exerts a steady pressure against the packing seat, which in turn presses a flexible packing tightly into the recess, maintaining a fluid tight joint between the shaft and the casing. (Old types can be rebuilt to incorporate this feature. See "INSTRUCTIONS FOR REBUILDING" and "PARTS KIT" on page 10.)

REPLENISHING FLUID—5000 MILES INSPECTION

Normally, the only care shock absorbers require is replenishing the shock absorber fluid. The filler plug in the reservoir should be removed each spring and fall or at intervals of 5,000 miles, whichever occurs first, and the reservoir filled to bottom of filler plug hole. Use only **Genuine Ford or Houdaille Shock Absorber Fluid**—substitute fluids, grease or oil should never be used—failure and complete replacement of the shock absorber usually follows the use of a substitute fluid.

REPLENISHING INSTRUCTIONS

Because even small particles of dirt can ruin the action of the shock absorber, part of the shock absorber around the filler plug should be thoroughly cleaned before removing the plug. It is well to brush loose dirt from frame or other parts from which dirt might fall into filler hole. An ordinary paint brush dipped in gasoline will remove most of the dirt. Then use compressed air or a clean cloth to remove small particles of dirt from threads of filler plug. See Fig. 1.

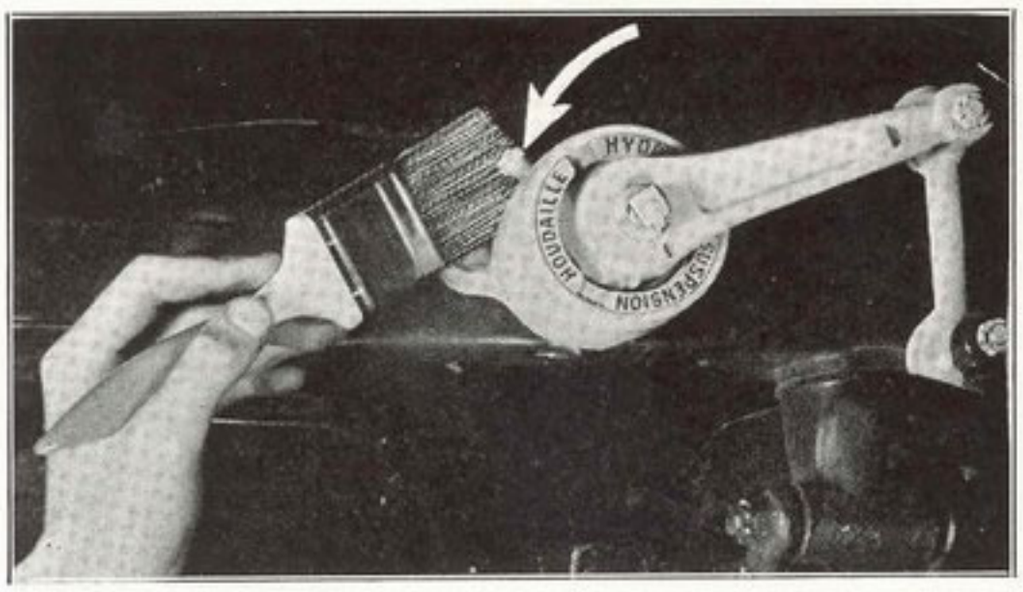


Fig. 1.

Use Houdaille Fluid Gun HEC-4902 to fill shock absorber with Genuine Ford or Houdaille Shock Absorber Fluid. See Fig. 2.

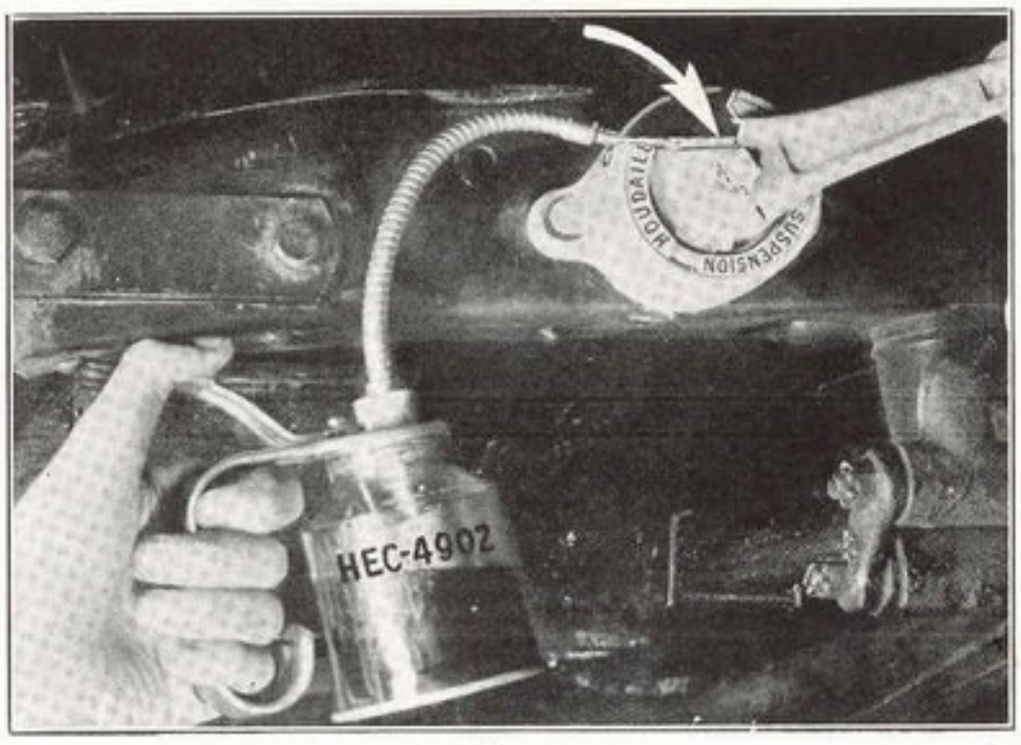


Fig. 2.

In order to remove any air that may be trapped in the working chamber, disconnect link and pump lever several times through its full range of travel. This will draw the fluid from the auxiliary reservoir into the working chamber. Add more fluid and repeat pumping. When working chamber is properly filled, there will be uniform resistance and no "rubbery" feeling or lost motion. Refill reservoir to bottom of filler plug hole. See Fig. 3.

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 reservoir is air space required for expansion. See Fig. 2.

When replenishing shock absorbers off the car, it is important that the shock absorber be held in the same position that it would be if mounted on the car, and the surplus fluid be permitted to run out.

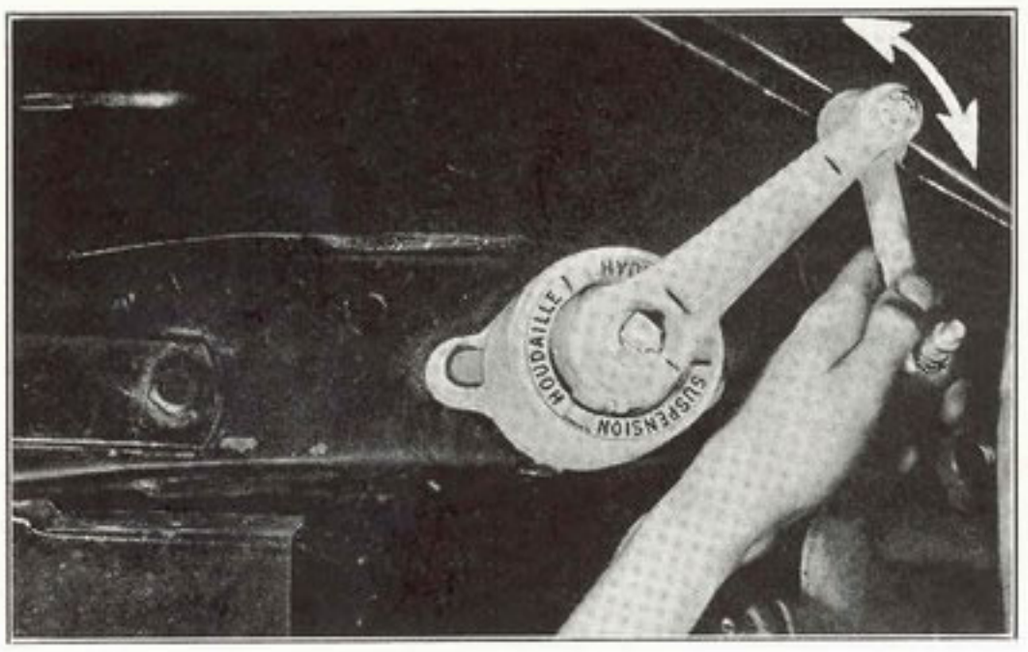


Fig. 3.

LEAKING SHOCK ABSORBERS

In some instances, it has been found that shock absorber leakage is due to the level of fluid being too high. Therefore, the procedure under—"REPLENISHING INSTRUCTIONS" should be carefully followed.

On most models prior to the 1940 types, an adjustable packing gland nut has been provided. Drawing up on this packing nut will eliminate leaks at the shaft packing. Beginning with the late 1939 models, this take-up is automatically accomplished by the spring gland. For drawing up the adjustable gland type, see instructions under—"ADJUSTABLE PACKING GLANDS—SERVICE TOOLS".

ADJUSTABLE PACKING GLANDS—SERVICE TOOLS

On all new cars having shock absorbers with the adjustable packing gland nut (models prior to 1940), the gland nut should be tightened ⅛ to ¼ turn after the **first 300 miles of driving.** The gland nut should be again tightened ⅛ to ¼ turn after the **first 1,000 miles of driving,** and followed by **regular inspection every 5,000 miles.**

This procedure is important in the prevention of fluid leaking from the shock absorber at the point where the shaft extends from the casing.

It will usually be found when the shock absorber is leaking at the packing gland nut, the leak can be eliminated by tightening the nut ¼ to ½ turn.

Several wrenches are available for this purpose.

For shock absorbers used on the front of 1933 and the rear of 1933, 1934, 1935 and 1936 models having recessed type packing gland nut, use wrench HEC-4940. See Fig. 1.

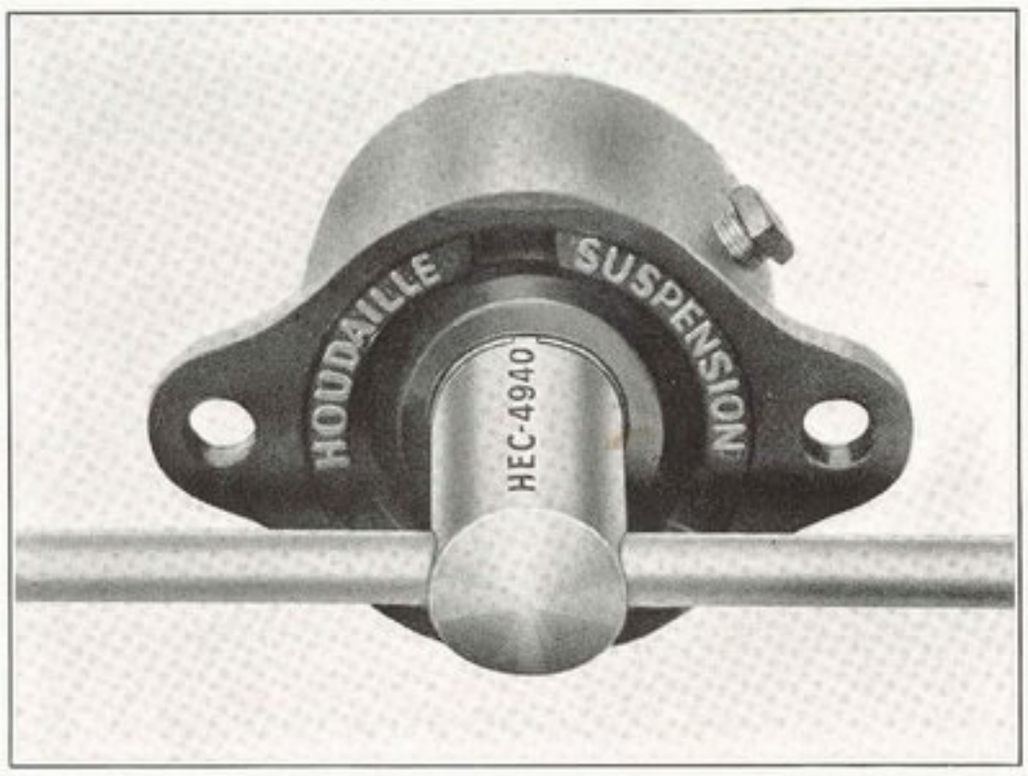


Fig. 1

For shock absorbers used on the front of 1935 and 1936, also the front and rear of early 1937 models having recessed type packing gland nut, use wrench HEC-3804. See Fig. 2.

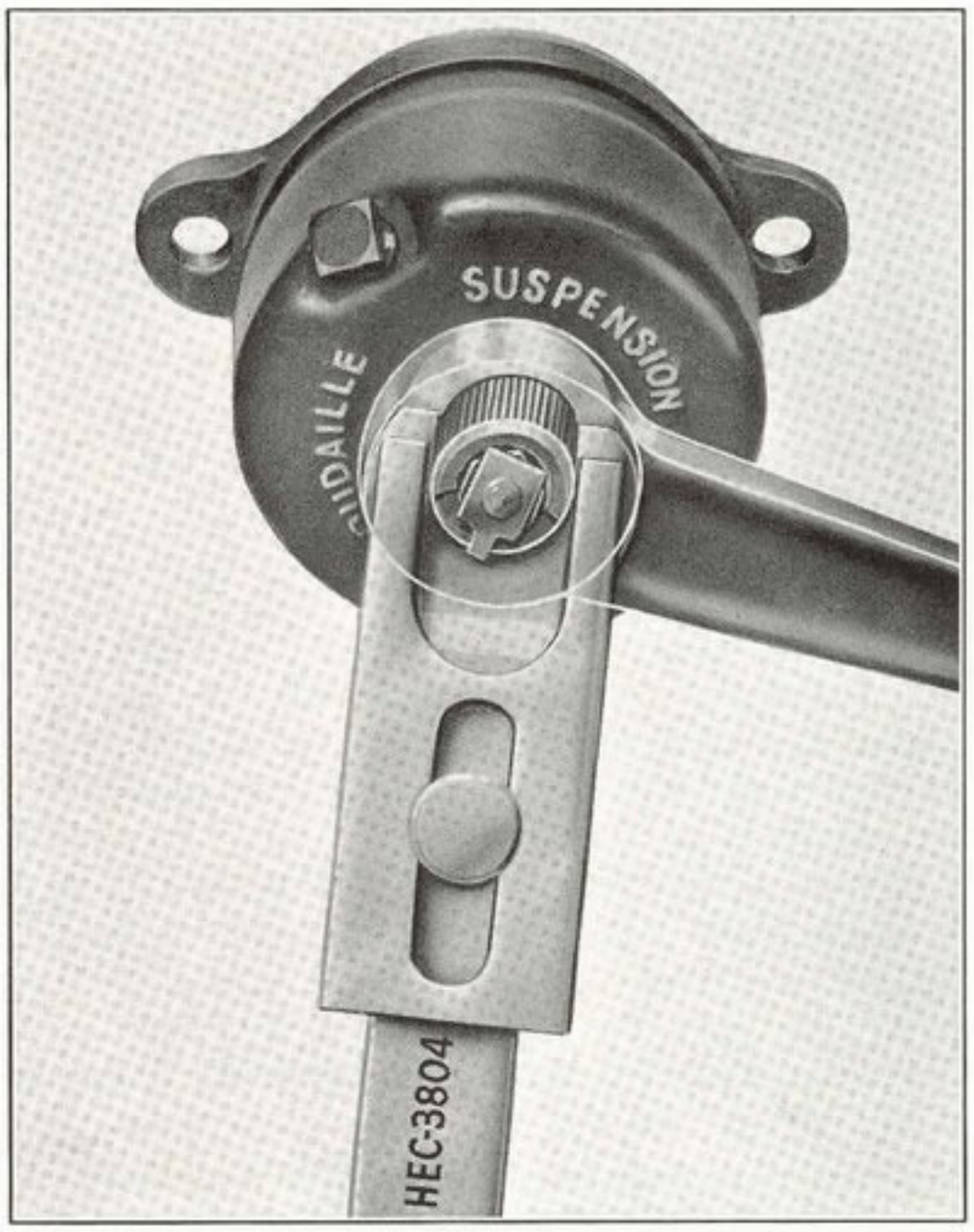


Fig. 2

For shock absorbers used on the late 1937, 1938 and early 1939 models having extended type packing gland nut, use wrench HEC-3485. See Fig. 3.

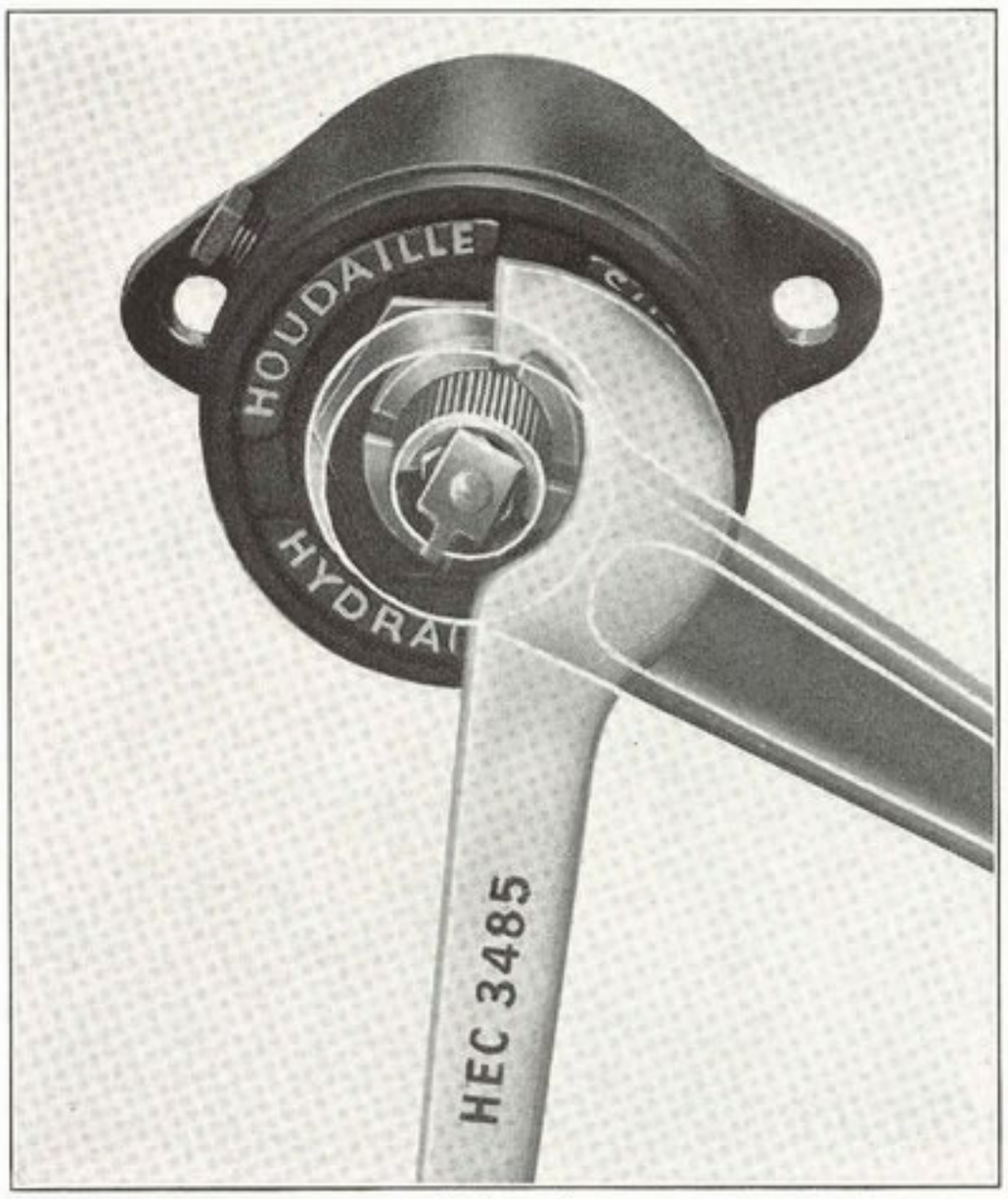


Fig. 3

INSTRUCTIONS FOR ADJUSTING VALVE

All new shock absorbers or factory rebuilt units supplied for 1928 to 1940 models are now equipped with an externally adjustable valve. Thus provision has been made for regulating the resistance of the shock absorber to meet any road, load or temperature condition. However, before making any change in the valve setting, determine whether the owner wants a **stiffer** ride or desires a **softer** ride. Then decide whether the valve is the "Needle Type" or the "Rotary Type" and follow the procedure outlined.

NEEDLE TYPE

This type shock absorber is set at the factory to its full closed position. Turning the hex head changes this valve adjustment.

Warm Weather

The average setting for rear shock absorbers during warm weather is made by screwing the needle valve in until it seats, then back valve off ¼ turn. For front shock absorbers—back valve off ⅜ turn. (CW to increase damping)

Cold Weather

The average setting for rear shock absorbers during cold weather is made by screwing the needle valve in until it seats, then back valve off ½ to ⅝ turn. For front shock absorbers —back valve off ⅝ to ¾ turn.

A slight movement of the needle valve either way makes a big difference in the action of the instrument. These settings are, of course, only approximate and can be easily changed to suit the individual preference of the owner and the conditions under which the car is operated. For example—the owner who drives at high speed over rough roads would require greater shock absorber control than the owner who drives at moderate speed over paved highways.

ROTARY TYPE

This type shock absorber is adjusted by the manufacturer to meet average driving conditions and it is recommended that the setting in most instances be maintained. This setting is adequate to take care of normal temperature. Provision has been made however, for further adjustment. Turning the valve pointer changes the valve setting.

Unless the valve has been previously adjusted, the pointer will be in line with the factory setting mark scribed on the end of the shaft between the two shoulder stops.

Early types had two marks scribed on the end of the shaft. Where there are two marks, the valve should be adjusted so that the center of the pointer will be mid-way between these marks.

Later types have one mark scribed on the end of the shaft. Where there is one mark, the valve should be adjusted so that the center of the pointer lines up with the factory setting mark.

CAUTION—The full range of adjustment lies between the two valve stops and the pointer should never be turned beyond these stops.

To obtain a **stiffer ride or when temperatures are above 100°, increase the resistance** by turning pointer clockwise from the factory setting mark. Do this in small steps of 1/16″ at a time, if possible riding the car between each adjustment.

To obtain a **softer ride or when temperatures drop well below freezing, decrease the resistance** by turning the pointer counter-clockwise from the factory setting mark to give the desired control.

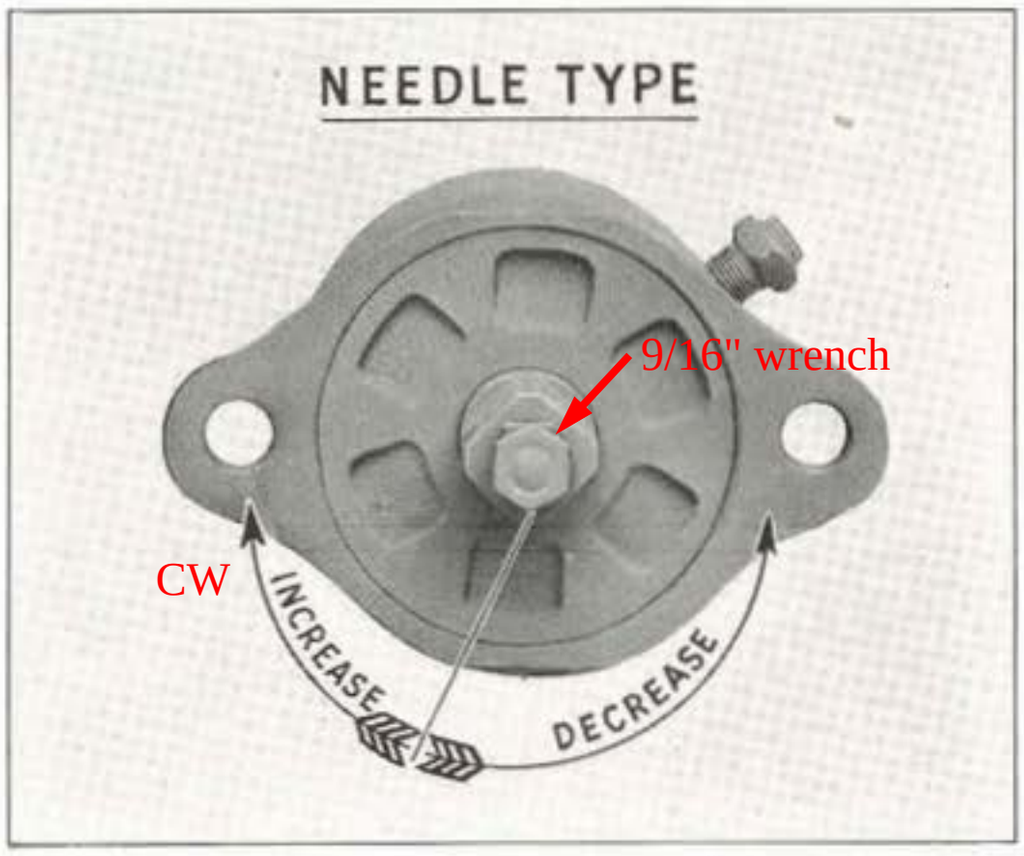


Fig. 1

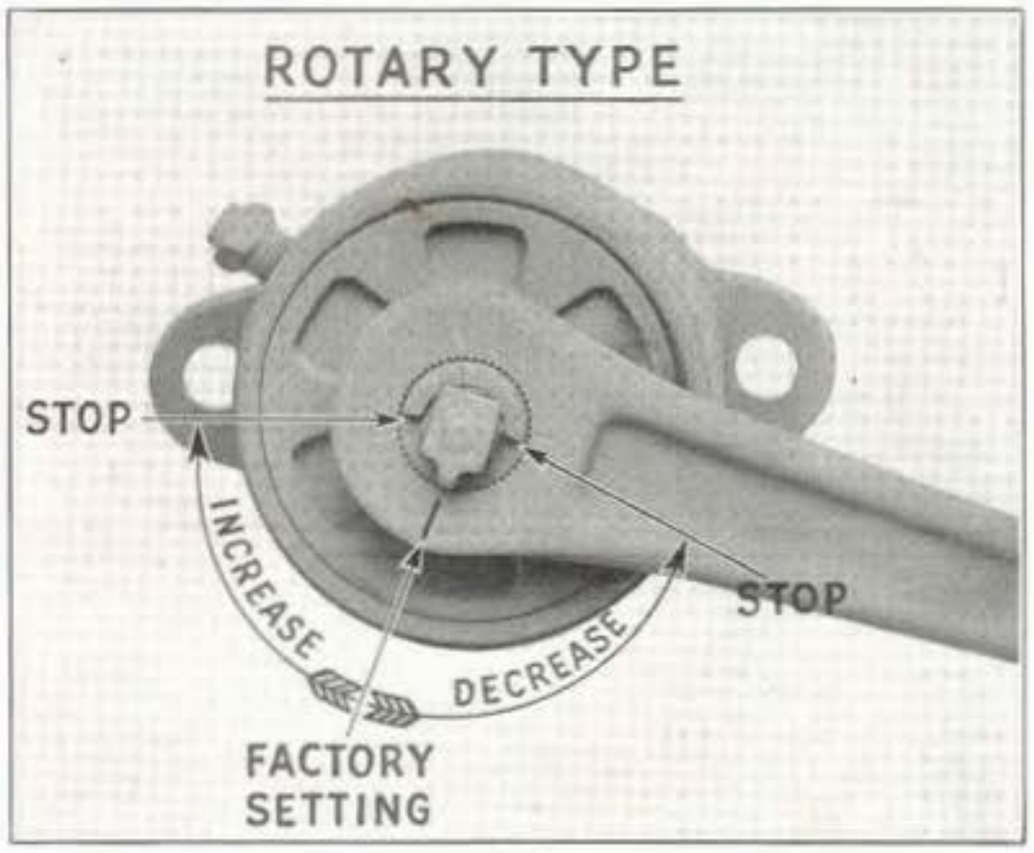


Fig. 2