

# OAKLAND SERVICE SHOP MANUAL

## *Section Ten*

## **SPRINGS**

## SPRINGS

All springs on Oakland and Pontiac cars are semi-elliptic and are assembled to the frame with Self-Adjusting Shackles.

The spring leaves are thoroughly covered with graphite before being assembled and then a coating of grease is applied over the outside of the entire spring. Composition fabric covers are installed over all springs, giving complete protection from water and dirt and practically eliminating spring squeaks. This form of protection makes it possible to retain the original riding qualities of the car permanently.

### Inspection

Every 5,000 miles, remove spring covers and thoroughly clean and inspect the spring leaves. If any are cracked or broken, replace entire spring. Paint leaves with 600-W and then pack spring covers with petrolatum and carefully replace. See that center bolt is drawn tight, and tighten spring clips. (Redraw U bolts after a short drive.)

### Spring Shackles

Adjustable spring shackles are used on all Oakland and Pontiac cars. These are a marked improvement over the old conven-

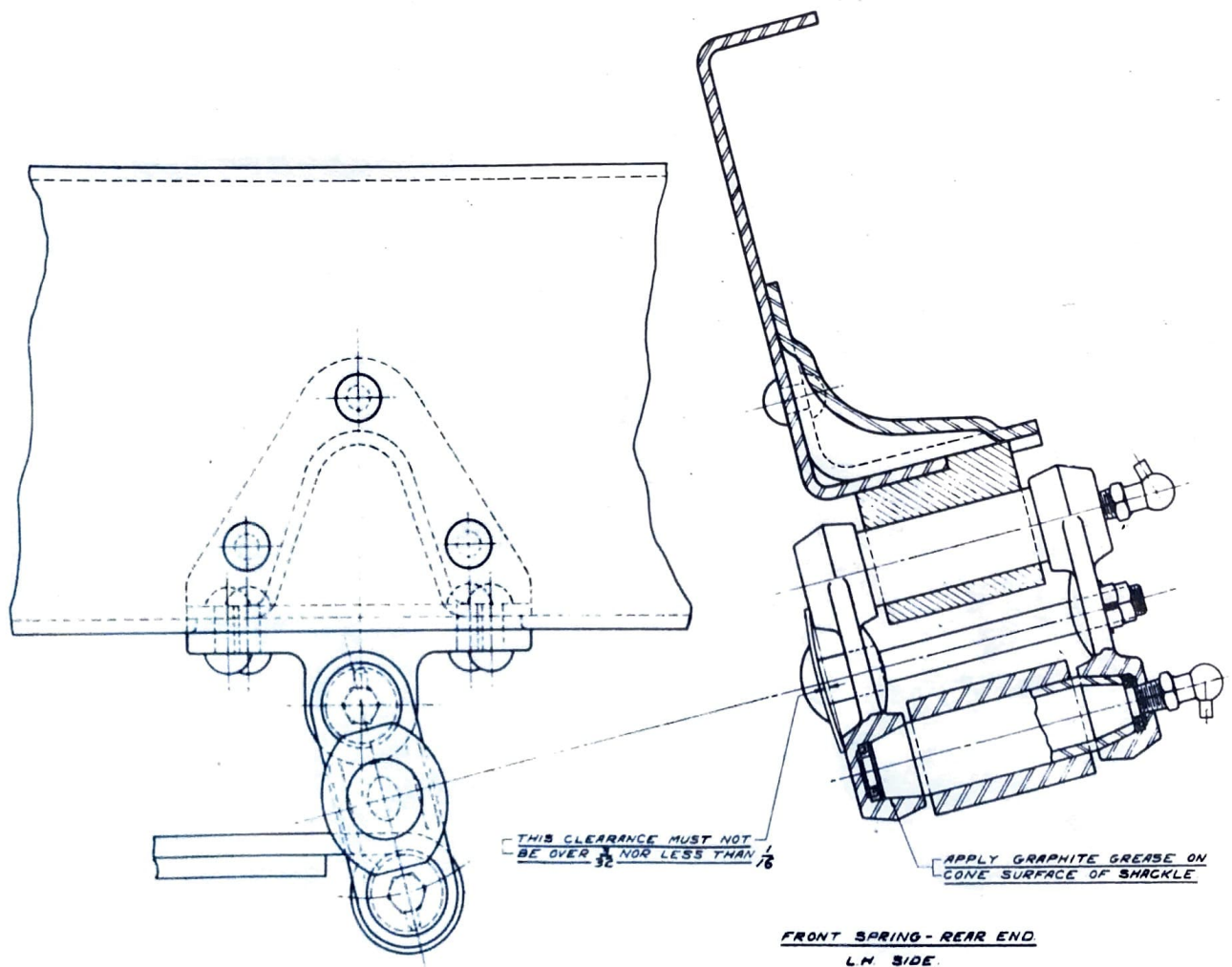


Illustration 10-1

tional type of shackles using plain shackle bolts. In these shackles the springs are fitted with tubular pins, conical on each end, which fit into conical bearings in the side links. The two links are held together by a long bolt and nut tightened against spring pressure. Any wear which takes place in the cone shaped bearings is taken up by the spring tension which pulls the two shackle side links together. Lubrication is provided through a grease gun fitting on one end of the spring shackle. The pin holds enough lubricant for at least 1,000 miles. A small felt washer inside the shackle side link fits against the end of the shackle pins in order to hold the grease inside the pin from leaking.

### Inspection

Check the shackle cross bolt for tightness. They should have a clearance of not more than  $3/32$ " nor less than  $1/16$ " between the tension spring and shackle side link. The pin through the frame eye should be in direct line with the pin through the spring eye. Variation in this alignment must not exceed  $1/16$ ". Front spring shackles should have one flat spring under the bolt head. Rear springs should have two flat springs under the bolt head. In cases where shackles have been disassembled, put a light coat of graphite grease on the bearing surfaces before reassembling. Be sure that small felt washers in shackle side links are in good condition.

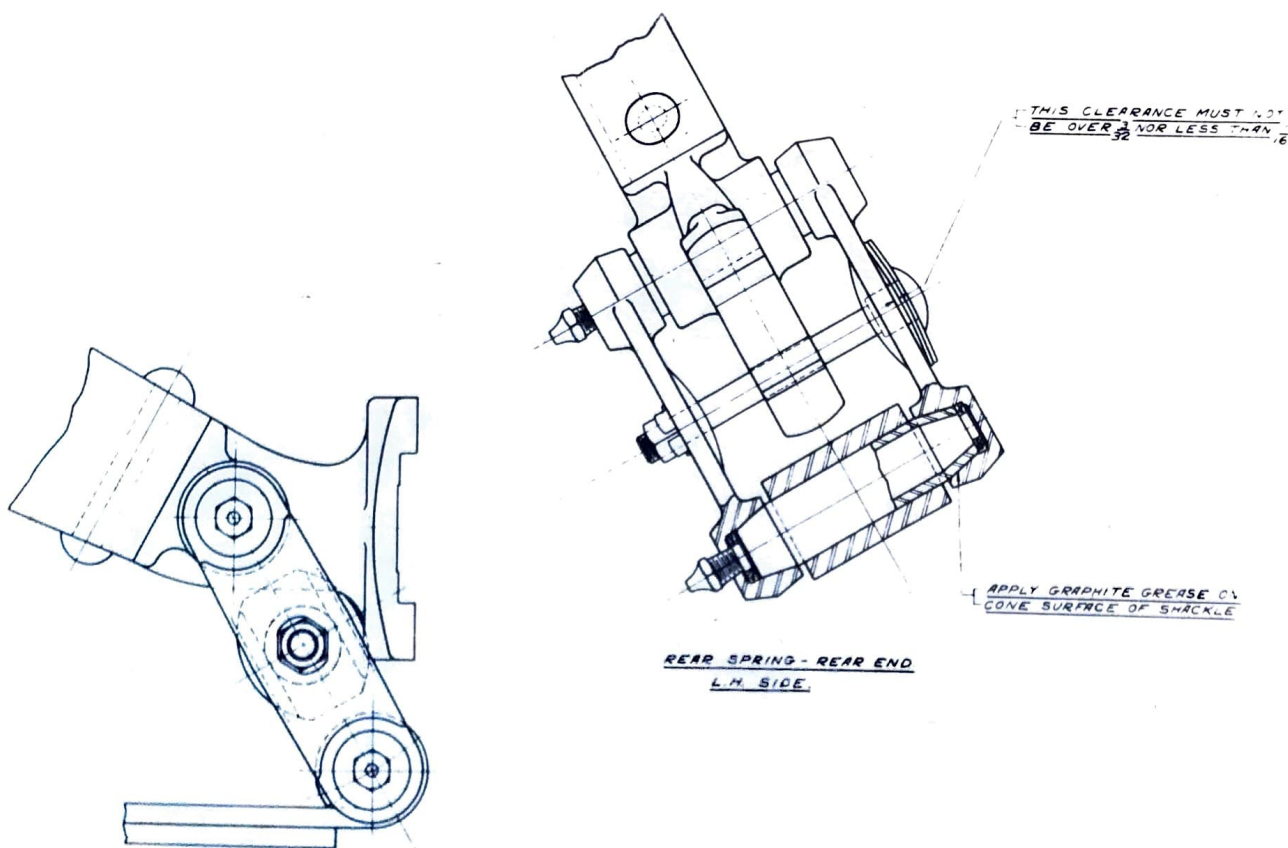


Illustration 10 2



**SPECIFICATIONS SPRINGS 1930 PONTIAC SIX****FRONT SPRINGS**

Type .....	Semi-elliptic
Length .....	36"
Width .....	2"
Spring bolts .....	Front 5/8"—rear 7/8" pin
Eye bushing material .....	Bronze—front only
Spring clips .....	2 clinch clips and 1-3/4" x 3/16" clip on 6th leaf
Eye bolt lubrication .....	Zerk—Oil
Number of leaves .....	7

**REAR SPRINGS**

Type .....	Semi-elliptic
Length .....	54"
Width .....	2"
Spring bolts .....	Front 5/8"—rear 7/8" pin
Spring clips .....	2 clinch clips and 2 bolt clips 5/16"
Eye bushing .....	Front only—bronze
Eye bolt lubrication .....	Zerk—oil
Number of leaves .....	7 on 5 pass. 6 on 2-4 pass. (rd. cpe. spt cpe.)

**SPECIFICATIONS SPRINGS OAKLAND EIGHT****FRONT SPRINGS**

Type .....	Semi-elliptic
Length .....	36"
Width .....	2"
Spring bolts .....	Front 5/8"—rear 7/8" pin
Spring clips .....	2 clinch clips and 1-3/4" x 3/36" clip on 6th leaf
Eye bushing material .....	Bronze—front only
Eye bolt lubrication .....	Zerk—oil
Number of leaves .....	7

**REAR SPRINGS**

Type .....	Semi-elliptic
Length .....	52-1/2"
Width .....	2"
Spring bolts .....	Front 3/4"—rear 7/8" pin
Spring clips .....	2 clinch clips and 2 bolt clips— 5/16"
Eye bushing .....	Bronze—front only
Eye bolt lubrication .....	Zerk—oil
Number of leaves .....	8 on coupes and roadster 9 on other models

**SPECIFICATIONS SPRING SHACKLES 1930 PONTIAC SIX  
AND OAKLAND EIGHT**

Front shackles CL to CL .....	2-1/2"
Rear shackles CL to CL .....	3-1/2"
Shackle pin .....	7/8 x 3-3/16" conical each end
Cross bolt—rear .....	3/8" x 3-7/8"—24 thd.
Cross bolt—front .....	3/8" x 4-1/16"—24 thread.



## Oakland Spring Bolt and Shackle Pin and Bushing Tools

Spring bolts are installed in the spring hangers on the frame and spring bushings and shackle pins are installed in the springs under heavy pressure.

The special tools shown below provide the quickest way of removing and replacing these parts without hammering and resultant damage.

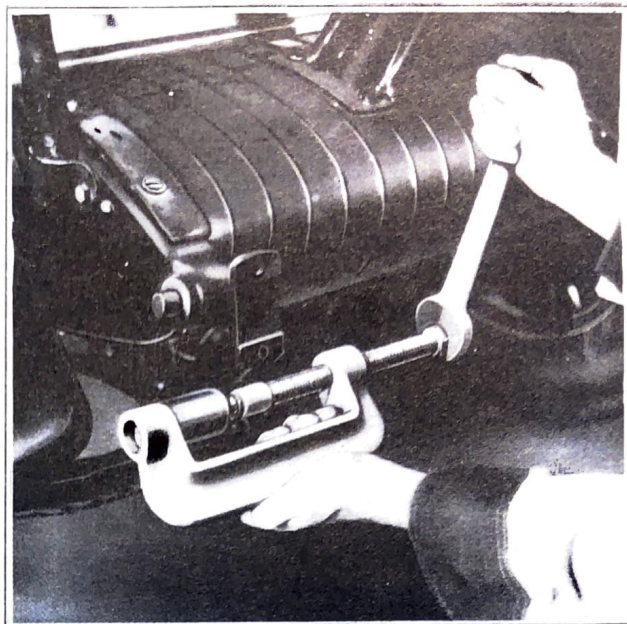


**Illustration 10-3—HM-490 Tool for Removing Shackle Bolts in Front End of Front and Rear Springs**

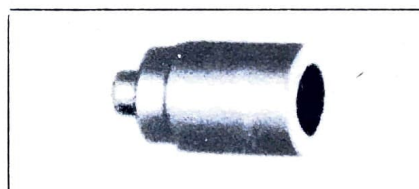
## Oakland-Pontiac Hydraulic Shock Absorbers

Oakland-Pontiac single acting hydraulic shock absorbers dissipate the energy of the car springs in excess of that necessary to return them to their normal position—after they have been compressed. The resistance of the absorber is controlled by the piston forcing oil through a variable orifice or valve. The oil used is a special low viscosity oil that will retain its fluid characteristics as low as 40° F. The same oil is used for both summer and winter and will have similar operating characteristics the year around.

Illustration 10-6 shows the normal, at rest, position of the parts of the absorber. The relief and intake valves are both closed. A



**Illustration 10-4—HM-534 Tool for Removing and Replacing Shackle Pins and Bushing from Springs**



**Illustration 10-5—HM-534-A Special Swivel Adapter for Use on Old Style HM-534. This Swivel Pilot Makes it Possible to Use the Old Tool for Removing and Replacing Self Adjusting Pins as well as Spring Bushing.**

strong Piston Spring operating beneath the piston eliminates all chances for "clicking" and "lost motion" by keeping the piston against the cam at all times. The rigid Link Rod provides a positive transmission of all car spring rebound and compression movements to the absorber. This insures an active shock absorber at all times and under all conditions.

Illustration 10-7 shows the position of the shock absorber parts during a small or slow rebound movement of the car springs. The shock absorber moves slowly upward which allows the absorber arm to move downward in relation to the absorber. The movement of the arm is transmitted through the arm to the piston. A resulting oil pressure creat-



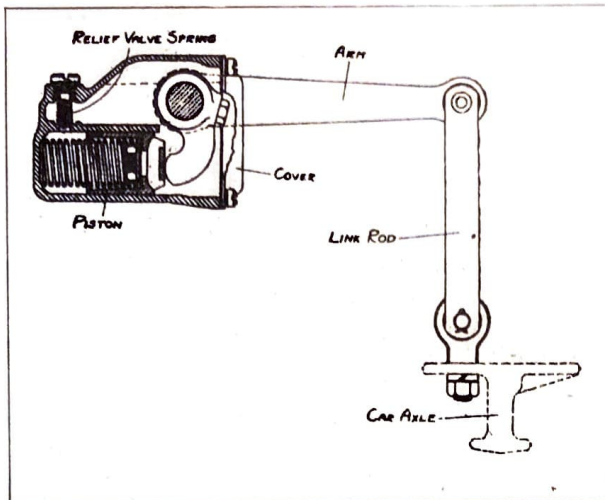


Illustration 10-6

ed below the piston forces oil through the Relief Valve Orifice to the oil reservoir. This insures an easy and smooth ride that is not affected by pavement irregularities.

An exhaustive research is made to determine the exact size of Orifice necessary to give the best possible ride to the automobile.

Illustration 10-8 shows the position of the shock absorber valves and parts during a quick or severe rebound movement of the car springs. The absorber, which is fastened to the car frame, moves quickly upward which transmits an equally quick motion to the arm, cam and piston. The high oil pressure created beneath the piston cannot be dissipated through the Relief Valve Orifice quickly enough so the Relief Valve raises

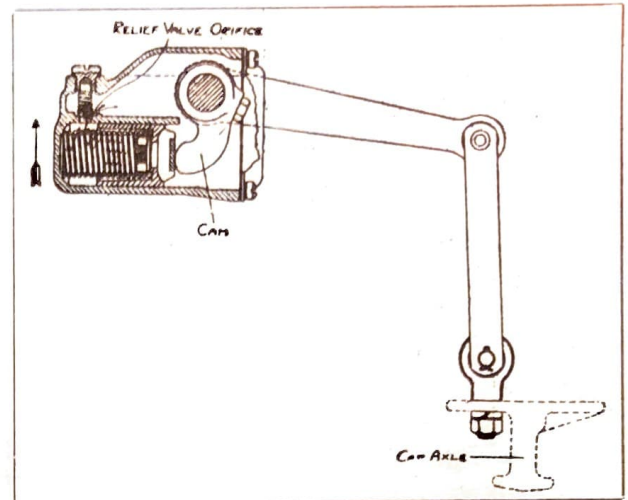


Illustration 10-7

from its seat by compressing the Relief Valve Spring. The oil then passes through the opening to the oil reservoir.

The maximum resistance of the absorber is controlled by the strength of the Relief Valve Spring. The strength of this spring is predetermined for each automobile only after exhaustive research by shock absorber engineers and car manufacturers. In cold weather when the oil is heavier the maximum oil pressure is naturally built up sooner and the Relief Valve opens earlier and wider—automatically taking care of any changes in oil viscosity due to a drop in temperature, without any change in valve adjustment.

Illustration 10-9 shows the operation of the absorber parts after a car spring rebound

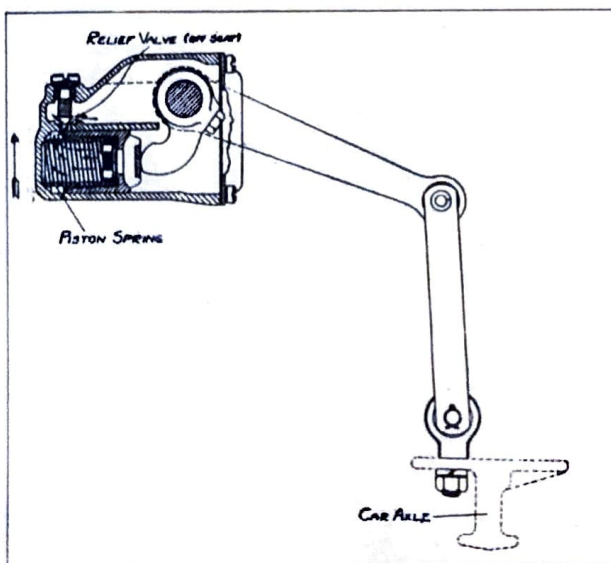


Illustration 10-8

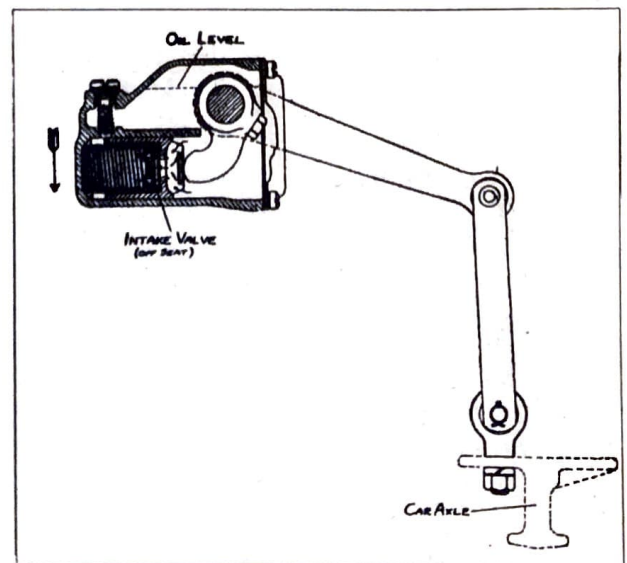


Illustration 10-9



movement. The absorber and car body move downward causing the absorber arm to move upward in relation to the shock absorber. The cam then follows the piston spring to force the piston upward thus creating a partial vacuum below. The pressure in the oil reservoir then opens the Intake Valve which allows another charge of oil to flow below the piston in preparation for another rebound movement.

### General Service Instructions

A common complaint is that the car rides hard. Before touching the absorbers, the car springs should be well lubricated and the spring shackle bolts well lubricated. The spring shackles must act freely. The tire pressure should not exceed that recommended by car manufacturers in their specifications.

A complaint of noise may occur from a loose installation or within the absorber itself. When checking for noise, make certain that the absorber is bolted tightly to the frame. See that the arm is not striking the fender brace nor rubbing on the steering apparatus, or striking floor boards or gas lines, etc. Also make sure that Link Rod anchor brackets are tight on the axle. Check the spring shackles for side play as recommended by the car manufacturer.

After these points have been checked and it has been determined that absorbers are noisy, they should then be taken to the nearest Authorized Shock Absorber Service Station, where they can be properly serviced. A service directory giving the names and locations of all the Authorized Shock Absorber Service Stations may be obtained from United Motors Service, Inc., General Motors Bldg., Detroit, Michigan.

All Oakland-Pontiac Shock Absorbers are filled with oil and sealed before they are shipped. The oil used has a very low viscosity and temperature changes will have little effect on the fluidity of the oil. This oil should only be used and it can be obtained from any Authorized Lovejoy Shock Absorber Service Station or United Motors Service Branch. The oil is sold in half gallon cans, part No. 822537, which is slightly in excess of the quantity required to fill a set of four shock absorbers.

All the cork arm packing washers used on Oakland-Pontiac shock absorbers are soaked in soft soap before being used in order to counteract oil leaks and packing washer noise. Any actual oil leak will cause a shortage of oil in the absorber which can be determined by disconnecting the Link Rod from the car axle and pulling down the absorber arm. If the arm goes down easily a part of the stroke, then comes to a stop and goes down slowly the rest of the way, there is not enough oil in the absorber and should be replenished by removing the entire relief valve and filling with the recommended shock absorber oil. If, after wiping the oil off and driving the car a few days the absorber continues to leak, take the car to an Authorized Lovejoy Shock Absorber Service Station where the absorbers can be properly repaired.

Any time the absorbers are replenished with oil, extreme care should be exercised in order not to allow any foreign matter or grit to get into the absorber.

### Link Rods

The Link Rods used on Oakland Pontiac Hydraulic Shock Absorbers provide a positive transmission of all car spring and car axle movements to the shock absorber. All Link joints are fitted with special bearings and high grade rubber bushings. Service parts or COMPLETE replacements can be obtained from the nearest Authorized Lovejoy Service Station. The car name, model and serial number together with the position (front or rear) must be given. The Link Rod Anchoring Bracket varies in detail on various installations, but must in all cases be tightly clamped to the axle to prevent slipping and possible interference with the steering or brake mechanism.

### Valves

**WE DO NOT RECOMMEND CHANGING RELIEF VALVES AND SPRINGS.**

The proper combination of relief valves and springs for the best ride is determined after extensive tests by engineers driving the various makes and models of cars over all kinds of roads. The relief valve and spring combination in the absorber, when shipped from the factory is the best combination for general use and should not be changed.