SPRINGS

The specially designed springs used on this vehicle are constructed of chromium alloy to stand the severe service to which they may be subjected.

Front Springs

The front springs Fig. 1 are the semi-elliptic type, 36¼" long and 1¾" wide. There are eight leaves in each spring, seven leaves being of the parabolic shape with No. 2 leaf military wrapped over the eye of No. 1 leaf. The ends of the leaves are turned down to eliminate squeaks. Each spring is equipped with four rebound clips 1¼" wide.

The front springs appear to be identical in construction, nevertheless, they are different in load carrying ability.

The left spring requires a load of 525 lbs. for a 5/16" camber. The right front spring requires a load of 390 lbs. for a 5/16" camber. This difference is required due to the extra weight on left side of vehicle. The left spring can be identified by letter "L" painted on lower side at front on second leaf.

The front end of the front springs are shackled, using the "U" type shackle with threaded core bushing. The rear end of the spring is bronze bushed and is pivoted by a pivot bolt in the bracket on the frame. A torque reaction spring stabilizes the torque of the front axle.

The spring saddles on axle are welded in place to the underside of axle housing and springs are held in that position through "U" bolts, using the center spring bolt inserted in spring saddle to prevent the shifting of the axle.

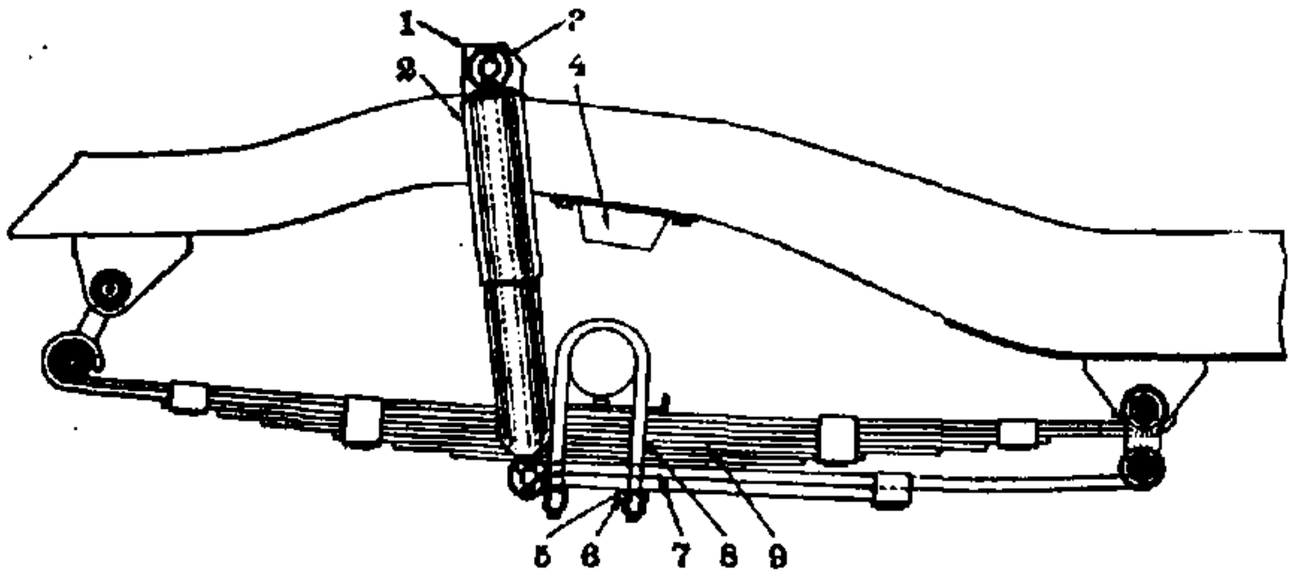


FIG. 1—LEFT FRONT SPRING AND SHOCK ABSORBER

No.	Willys Part No.	Ford Part No.	Name
1	A-1204		Front Shock Absorber Bracket and Shaft Assembly Left (A-1205 Right)
2	A-169	GPW-18045	Shock Absorber Assembly
3	637936	GPW-18060	Shock Absorber Mounting Pin Bushing (Rubber)
4	A-481	GPW-5783	Axle Bumper
5	5938	34848-S	Spring Clip Nut Lockwasher
6	339372	GPW-5456	Front Spring Clip Nut
7	A-6066	GPW-5588	Torque Reaction Spring Assembly
8	A-575	GPW-5705	Front Axle to Spring Clip, Left
9	A-612	GPW-5311	Front Spring—Left (Ford GPW-5310; Willys A-613 Right)

Rear Springs

The rear springs Fig. 2 are semi-elliptic, 42" long, 1¾" wide, 9 leaves with 4 rebound clips 1¼" wide. The spring leaves are the parabolic type with No. 2 leaf military wrapped around eye ends of No. 1 leaf. The ends of each leaf being turned down to eliminate squeaking.

The front end of the rear spring is bronze bushed and is pivoted by a pivot bolt at frame bracket, flexible "U" shackles are used at the rear.

The spring saddles are welded to the underside of rear axle housing and the center spring bolt is used to prevent shifting of the axle. The spring is held in position by two "U" bolts over the axle.

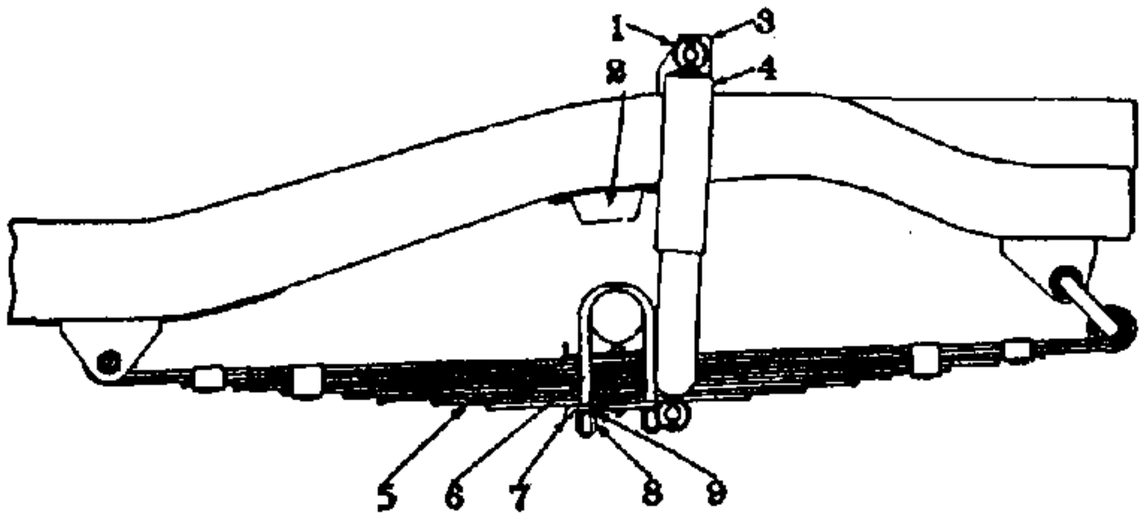


FIG. 2—REAR SPRING AND SHOCK ABSORBER

No.	Willys Part No.	Ford Part No.	Name
1	637936	GPW-18060	Shock Absorber Mounting Pin Bushing (Rubber)
2	A-481	GPW-5783	Axle Bumper
3	A-484		Rear Shock Absorber Bracket and Shaft Assembly (A-485—Right)
4	A-170	GPW-18080	Shock Absorber Assembly—Rear
5	A-614	GPW-5560	Rear Spring
6	A-575	GPW-5705	Rear Axle to Spring Clip
7	A-571	GPW-5460	Rear Spring Clip Plate and Shaft Assembly (Ford GPW-5459; Willys A-572 Right)
8	339372	GPW-5456	Rear Spring Clip Nut
9	5938	34848-S	Rear Spring Clip Nut Lockwasher

Spring Shackles and Pivot Bolts

The spring shackles are of the "U" type, Fig. 3 with threaded core bushings using right and left hand threads, depending at which position they are to be used in the chassis.

The bushings are anchored solidly in frame bracket and spring eyes and the oscillation taken between the threads of the "U" shackle and the inner threads of the bushing. The lubrication of the shackle bushings is very important, and should not be neglected, or excessive wear of the bushings and "U" shackles will occur.

There are six bushings used with right hand threads and two with left hand threads. The right hand threaded type bushings have plain hexagon head. The left hand threaded bushings have a groove around the head, Fig. 4.

The two left hand threaded "U" shackles can be identified by a forged boss on the lower shank of the shackle identifying the left hand thread Fig. 4. These two left hand threaded "U" shackles are used at the left front spring and the right rear spring, with the left hand threaded end at the spring eyes.

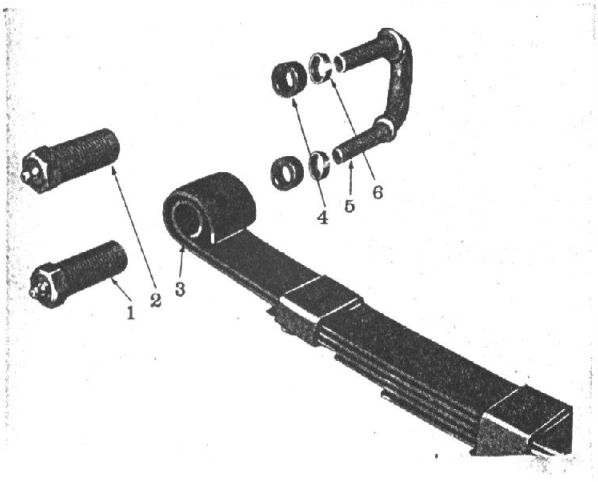


FIG. 3—SPRING SHACKLE—Left Front Spring

No.	Willys Part No.	Ford Part No.	Name
1	635532	GPW-5463	Spring Shackle Bushing Assembly (Left hand Thread)
2	634432	GPW-5464	Spring Shackle Bushing Assembly (Right hand Thread)
3	A-612	GPW-5311	Front Spring Assembly—Left
4	A-515	GPW-5481	Spring Shackle Grease Seal
5	A-513	GPW-5778	Spring Shackle U-Bolt (Left hand Thread)
6	A-1252	GPW-5482	Spring Shackle Grease Seal Retainer

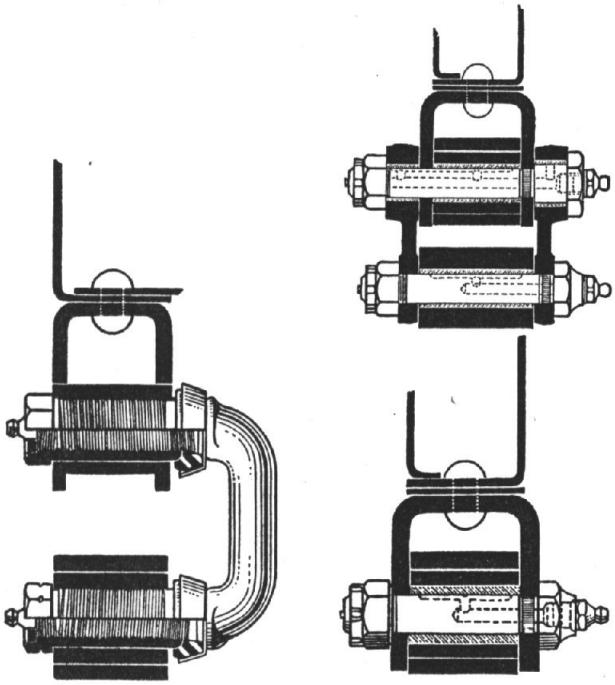


FIG. 4—SHACKLE & BOLT

The "U" shackles are installed so that the bushing hexagon heads are to the outside of the frame. When making installation of a new "U" shackle or shackle bushing the following procedure should be followed.

Install shackle grease seal and retainer over threaded end of shackle up to the shoulder. Insert new shackle through frame bracket and eye of spring. Holding "U" shackle tightly against frame, start upper bushing on shackle, care being taken when it enters the thread in the frame that it is not cross threaded. Screw bushing on shackle about halfway, and then start lower bushing holding shackle tightly against spring eye and thread bushing in approximately halfway, then alternating from top bushing to lower bushing turn them in until the head of the bushing is snugly against the frame bracket, and the bushing in spring eye is 1/32" away from spring measured from inside of hexagon head to spring.

Lubricate the bushings with high pressure lubricant and then try the flex of the shackle, which should be free. If shackle is tight it will be detrimental to the bushings as well as to the spring and it will be necessary to rethread the bushings on shackle.

Remove and Replace Spring

To remove a spring raise the vehicle, then place a stand jack under frame side rail, adjusted to a distance so that the load is relieved on the spring and yet the wheels still rest on the floor, remove the four "U" bolt nuts and lock washers. Remove spring plate or torque spring. Lower jack at side rail so that the spring is free from axle.

Remove pivot bolt nut and drive out pivot bolt from spring bracket and bushing Fig. 5.

Remove bushing from "U" shackle.

To install spring, replace pivot bolt first and then the "U" shackle bushing. Raise jack and place center bolt in spring saddle and install "U" bolts and nuts. "U" bolt nut, torque wrench reading, 50-55 ft. lbs., when torque reaction spring is used, 60-65 ft. lbs. Spring pivot bolt nut, 27-30 ft. lbs.

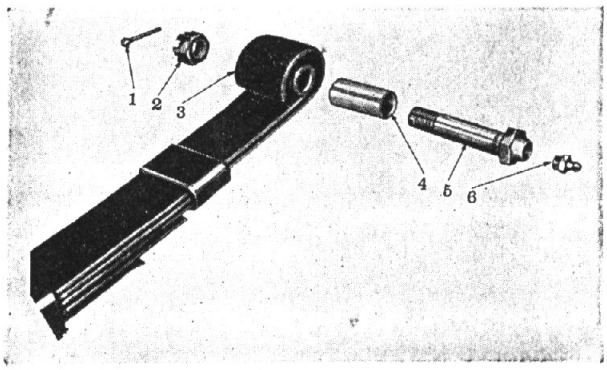


FIG. 5—SPRING BOLT—Right Rear Spring

No.	Willys Part No.	Ford Part No.	Name
1	5021	72034-S	Cotter Pin
2	6436	34033-S	Spring Bolt Nut
3	A-614	GPW-5560	Rear Spring Assembly—Right
4	359039	GPW-5781	Rear Spring Bolt Bushing
5	384228	GPW-5468	Spring Bolt
6	392909	353027-A1-S7-8	Grease Fittings

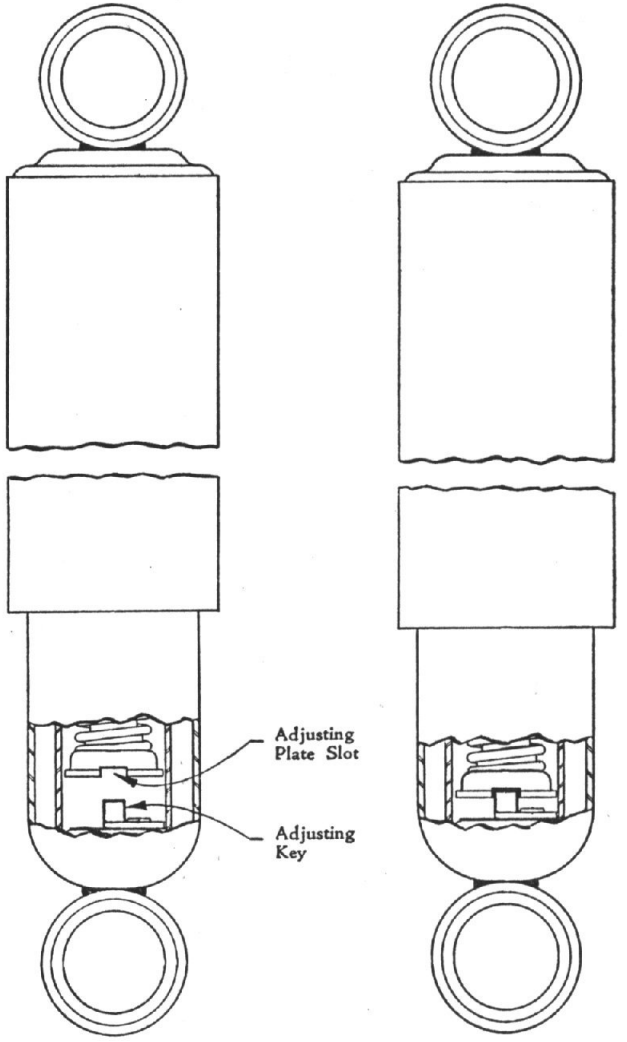
Shock Absorbers

The shock absorbers, Fig. 6 provide a much smoother ride by dampening the spring action as the vehicle passes over irregularities in the road.

The shock absorbers are the direct action type, two-way control and adjustable. The range of adjustment is four turns. To adjust the shock absorber, remove the lower end from the spring plate, push the unit together to engage the adjusting key and turn in a clockwise direction until the limit of the adjustment is reached. Holding adjusting key in slot, turn lower end anti-clockwise two turns. This is the average adjustment. Turning the adjustment to the right, or clockwise, gives a firmer control for rough roads, while turning in the opposite direction gives a softer control, allowing faster spring action. Should squeaks occur in the rubber mounting bushings, do not use mineral oil or rubber lubricant, but add a flat washer on the mounting pins to place the bushing under pressure and prevent movement between the rubber and the metal part.

To install shock absorbers, install inner mounting rubber bushing on both upper and lower bracket pins, install shock absorbers, install outer bushings, flat washer and then compress, inserting cotter key and spreading it to hold washer in proper position.

The shock absorber is sealed at the factory with the proper amount of fluid and is non-refillable.



Sketch showing shock absorber before engaging adjusting slot and key.

Sketch showing shock absorber completely collapsed with adjusting key engaged in adjusting plate slot.

FIG. 6—SHOCK ABSORBER

SPRING TROUBLES AND CAUSES

SYMPTOMS	PROBABLE CAUSES
Spring Breakage—At center Bolt	Loose Spring to Axle Clips
Main Leaf Breakage on Ends	Tight Shackle or Pivot Bolt Shock Absorber Control Weak Poor Lubrication Spring Rebound too Great
Excessive Wear on Shackle Bushings	Inside Spring Eye Opened Up Bushing Improperly Installed Lack of Lubrication Worn Bushings
Shock Absorber Noise	Lack of fluid Damaged Cylinder Loose Mounting Brackets Mounting rubber bushings worn out
Shock Absorber Control	Adjust Lack of Fluid—replace shocks

SPRING SPECIFICATIONS

Front Spring:

Make	Mather
Type Leaf	Parabolic
Length Center to Center of Eye	36¼"
Width	1¾"
Number of Leaves	8
Front Eye Center to Center Bolt	18⅛"
Rear Eye Center to Center Bolt	18⅛"
Left Camber under 525 lbs.	5/16"
Right Camber under 390 lbs.	5/16"
Rear Eye Bushed	
Bushing Size	1¾" long I.D., .5655"
Rebound Clips	4

Rear Spring:

Make	Mather
Type Leaf	Parabolic
Length	42"
Width	1¾"
Number of Leaves	9
Rebound Clips	4
Camber under 800 lbs.	¼"
Eye to Center Bolt	21"
Front Eye Bushed	1¾" long I.D., .5655"

Shock Absorber Specifications

	Front-Monroe	Rear-Monroe
Make	Front-Monroe	Rear-Monroe
Type	Hydraulic	Hydraulic
Action	Double	Double
Length Compressed	10 9/16"	11 9/16"
Length Extended	16⅛"	18⅛"
Adjustable	Yes	Yes
Mountings	Rubber	Rubber