WATSON

STABILATORS

THEY WORK

Service Manual

(Fifth Edition)

Type C-7

Sole Manufacturers

John Warren Watson Company

Philadelphia, U. S. A.

1927

Watson Stabilator Service Manual

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STABILATORS
THEY WORK

THIS is written to help the great army of Good Automobile Mechanics who like to do a good job and hate a poor one. We know that you men are constantly trying to increase your knowledge of proper Service methods and it is our hope that this Manual is clear. If not, please write us for explanation. We will also welcome your criticisms.

The Watson Stabilator is a quality product. It is made to an ideal of correct design and workmanship. It will give results that are truly wonderful if correctly installed and correctly adjusted but, like a good carburetor, it cannot do its work if put on upside down or if improperly adjusted.

Once properly installed and adjusted, Stabilators will do their work perfectly with no attention whatsoever. For the most part they will continue to do this for the life of a good automobile and then some, without repairs, if not abused. To obtain maximum riding comfort over an extended period, however, it is advisable to renew the brake shoe inserts about every twenty thousand miles. When anything does go wrong, as may happen occasionally with the finest mechanisms made, they can be repaired easily and quickly by the man who knows how. Therefore, read what follows carefully and give Stabilators a chance to do their best work for you and your customers.

John Warren Watson Company

Bridesburg Station, P. R. R.
(FRANKFORD P. O.)
Philadelphia

Sole Manufacturers of Watson Stabilators and controllers of all basic and structural patents covering the art in the United States and Canada

Printed in U. S. A.

How Stabilators Work

They Must Never Be Oiled or Greased

Stabilators are automatic friction brakes. Their braking action takes place only when the car frame and axle are being pushed apart by the recoil of the car spring. Stabilators offer no resistance when the axle and the frame are approaching each other.

When the wheel of an automobile strikes a bump the car spring is compressed. The spring acts as a shock absorber or cushion which prevents the shock from reaching the car frame, body and passengers. Now, however, the car spring will shoot back to its normal shape and hurl the car body and passengers upward. A car spring is just like an archer's bow—when it has been bent it immediately shoots back. Motoring comfort can only be secured by controlling this shoot-back! That is the purpose of Watson Stabilators—they slow down this recoil or shoot of the car springs so that passengers sit on the seat in comfort and so that the car body is not racked and injured.

Because a car spring is not compressed the same amount by every bump, its recoil force varies. The amount of recoil force in the spring is determined by the distance the spring has been compressed, as measured by the approach of car frame and axle. A spring is rated by the number of pounds required to compress it one inch. The average front spring has a rate of around 450 pounds to the inch. Therefore, if such a spring is compressed one inch the recoil force is only 450 pounds. But if this spring is compressed two inches the recoil force is twice as much or 900 pounds, etc. In order to successfully control these varying recoil forces a recoil check must vary its resistance in proportion to the force of recoil. This is the action of the Watson Stabilator and is the basis of the Stabilator patents and is what distinguishes it from all other recoil checks.

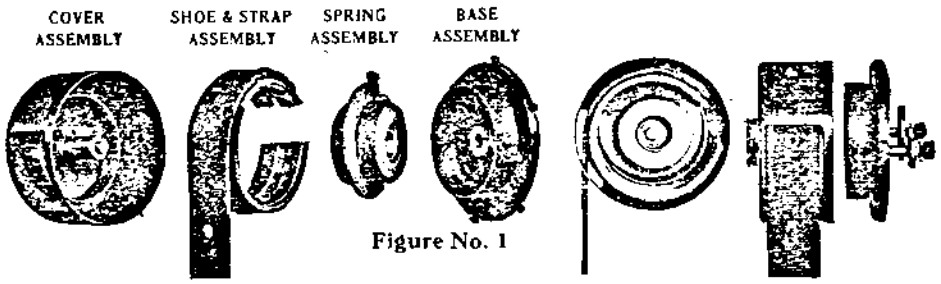


Figure No. 1

The above illustration shows the parts of a Stabilator. Notice that there is a stationary brake drum in two halves, one attached to the cover and the other to the base. There is a gap of 3/8" between these two halves when assembled. The hook ring around the spring works through this gap. This hook ring trans-

mits the tension of the Stabilator spring to the end of the brake shoe and strap, and draws the brake shoe around the drum according to the amount of approach of car frame and axle, and thus sets the proper amount of brake resistance to control the recoil or separation. Only that portion of the brake shoe is effective which is drawn in between the strap and drum—the rest of the shoe is not being pressed against the drum.

The spring is wound up by the central mandrel. The inner end of the spring fits in a slot in this mandrel. The large hexagonal nut on the outside of the Stabilator cover is part of the mandrel and by turning this in the direction of the arrow stamped on the nut the spring is wound. When the car spring is compressed the brake shoe and strap are revolved around the drum by the Stabilator spring and an increasing amount of the brake shoe is drawn in between the strap and drum. The recoil movement pulls on the strap and causes it to clamp this part of the brake shoe against the drum, and this produces the required proportional resistance. A greater or less clamping pressure and hence Stabilator resistance may be produced by adjusting the tension of the Stabilator spring.

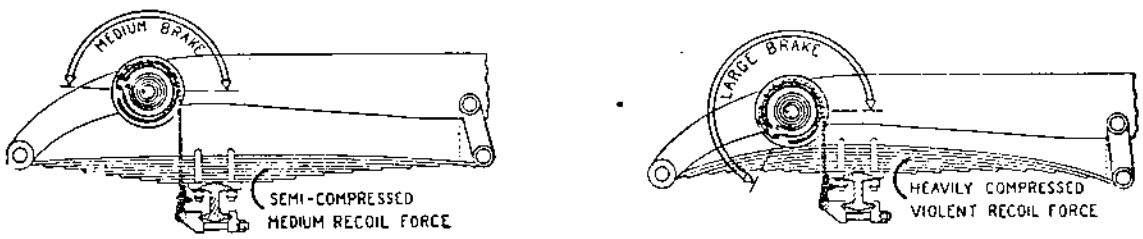


Figure No. 2

Correct Stabilator Installation

In order to work with maximum efficiency the Stabilator straps should pull in a vertical or plumb line because the force of recoil acts in a vertical line. Some devices are installed with their straps on a considerable angle to a plumb line, which results in decreased efficiency. In order to secure a nearly vertical strap pull it is necessary to design a great many different fittings for the car frame and axles. The problem is further complicated by the necessity for avoiding interference with the axles, brakes and steering mechanism in service. Watson Engineers have therefore made a complete study of each car model and have designed fittings so that Stabilators can be installed for efficient re-

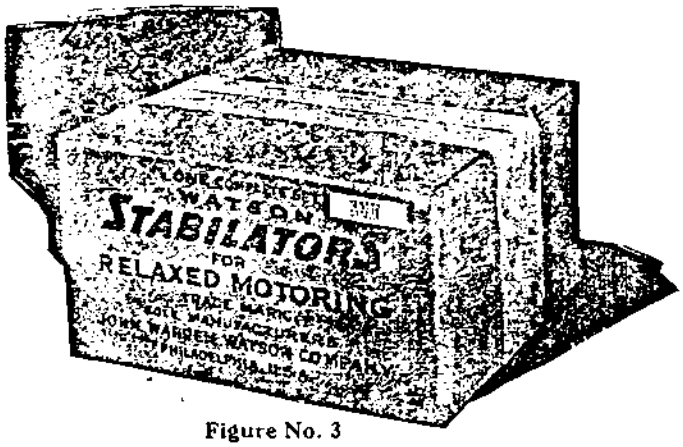


Figure No. 3

sults without danger of interference. Each set of Stabilators is thus designed for a particular car make and model, and you must not attempt to install a set on a car for which the set was not designed.

Each set of Stabilators is packed complete in a carton as shown. The label on the carton tells for what car and model the set is intended.

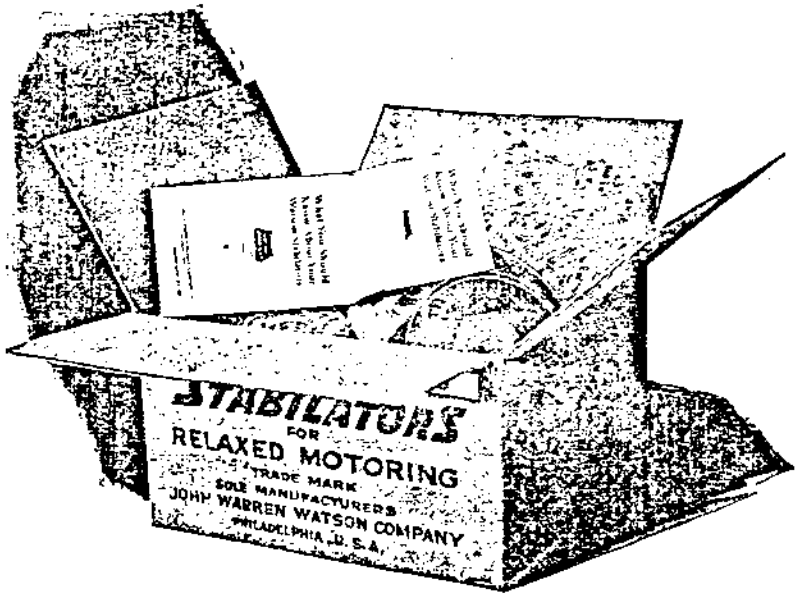


Figure No. 4

In each carton you will find an envelope containing a drawing. This shows exactly how to install that particular set. Study the drawing carefully before you start work. Where holes are called for, locate them exactly as instructed. Wherever possible existing holes are used. Do not try to use holes already in the frame if the drawing calls for a different location. Our Engineers have made a study of each frame and would have used existing holes if this had been advisable. If you follow our directions you will have no trouble and will get complete results from Stabilators.

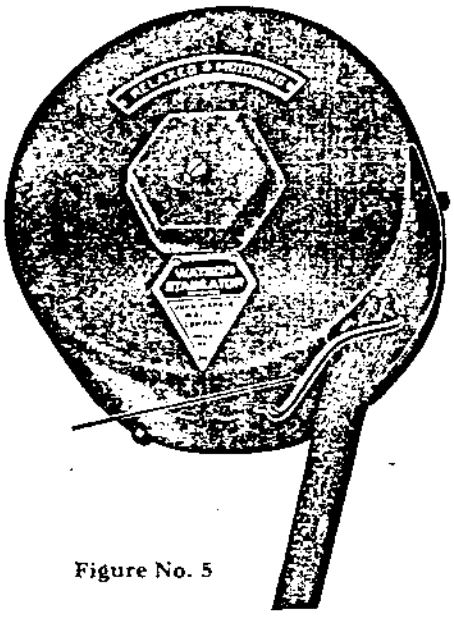


Figure No. 5

Every Stabilator is correctly adjusted before leaving the factory. The strap is temporarily held by the locking wire shown in the illustration. The locking wire should be left in place until the installation is entirely completed.

The Two Types of Front Stabilator Installations

It has long been customary to attach recoil checks parallel to the car frame in front and ahead of the axle so as to avoid interference with the drag link. This often causes trouble with bumper installations and to secure a vertical strap requires a long axle bracket. Watson Engineers, therefore, originated the 90-degree type of installation by mounting the Stabilator on an auxiliary frame bracket with the Stabilator at right angles to the car frame (patent pending). This makes it possible to install the Stabilator near the axle and away from all interference with bumpers, while at the same time avoiding interference with the steering mechanism or tires. The strap pull comes close to the car frame, avoiding severe twisting strain on the car frame. This type of installation is now used by us on all cars where it is possible, but on some models it is still necessary to use the parallel installation because there is no room for the Stabilator under the fender.

Below we show two typical layouts, one of the parallel type and the other the 90-degree type. Remember that each layout drawing is different in the location of holes, and many different types of bases and brackets are used for different cars.

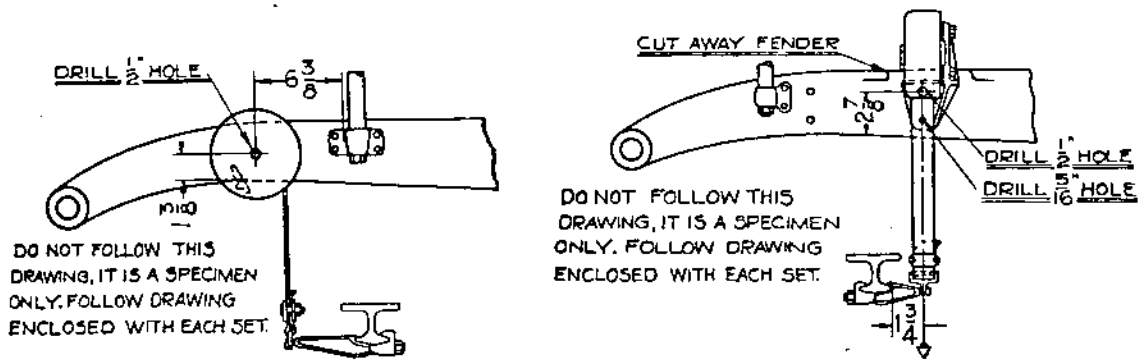


Figure No. 6

How to Read the Stabilator Installation Drawings

Stabilator Installation Drawings show only a short piece of the car frame at each end of the car where Stabilators are attached. The left side of the car is always shown. The drawings are made with the front of the car toward the left side of the sheet and the rear of the car toward the right side.

At the top right-hand corner is the make and model of car to which that particular drawing applies. Make sure that this is the make and model of car on which you are going to install this set of Stabilators.

At the bottom of the sheet is a table giving the Assembly Data for that set. Check up the base numbers with the numbers in the bases of the Stabilators to

be sure you know which are the fronts and which the rears. In re-ordering any parts you should use these numbers and the Assembly Specification number denoted by "A. S." at the top of the table.

General Rules for Installation Work

1. Read instruction sheets enclosed in each carton through completely before starting installation of Stabilators.

2. Car must have full equipment but no passenger or other load.

3. When hole locations on the frame are shown measured from a point on the axle, use a plumb-bob to locate them accurately. The car must be level and if it has been jacked up to remove tires or wheels it must be lowered to its normal position before using plumb-bob.

4. Use sharpened chalk or talc or a soft pencil to mark locations on car frame. Never use a steel scriber—it starts rust and may start a crack.

5. In measuring distance up from bottom of frame for hole locations, hold a straight-edge or square underneath frame to measure from.

6. Never install front Stabilators on bumper arms or other parts attached to car frame except as a last resort. The base of the Stabilator frame brackets must seat against car frame. Relocate bumpers if possible by sliding forward on frame and cutting off end of bumper arm. It is often possible to drill out a rivet in the horn of the frame to provide another hole for the bumper attachment.

7. It is easier to attach 90-degree type Stabilators if you first detach the frame brackets from the Stabilators (as received in carton) by removing the two cap screws or nuts. After laying out holes in chalk, and before drilling the holes, hold bracket in place and mark around it with chalk if it covers fender lip. This will show you where to cut away fender to make a good seat for the bracket against frame. Drive a thin piece of steel under fender lip before cutting with cold chisel, to prevent cutting or even nicking frame.

8. Drill the top hole first. If drawing calls for $\frac{1}{2}''$ hole start with a $\frac{5}{16}''$ drill, then enlarge to $\frac{1}{2}''$. Use high-speed drills. 18" drill extensions, which will take $\frac{5}{16}''$ to $\frac{1}{2}''$ taper shank drills, can be purchased from John Warren Watson Company, Philadelphia, for $2.00. With these you can drill holes without removing wheels in most cases.

Before drilling lower hole, bolt the Stabilator bracket in place with top bolt, and before tightening nut hold a plumb-line on the face of bracket where Stabilator attaches. See that this face is plumb and then tighten nut. Check up again with plumb-bob after tightening the nut, as this may cause the bracket to move. Now drill the lower hole using the bracket as a template. It is well to mark around the bracket in chalk after plumbing it so you can see if it moves while drilling. This will insure correct alignment of the Stabilator strap and prevent cutting by rubbing on one side of the opening in the Stabilator. Some frame brackets have a projecting lip which fits over the top of the frame to prevent twisting and only one bolt is used. Be sure there is no dirt where this lip fits over frame.

9. The large washers which you will find on the bolts or cap screws attaching the Stabilator to the car frame must be placed against the frame with the lock washer next and then the head of the cap screw or the nut of the bolt. These washers distribute the strain over a large section to avoid damage to car frame. Our Engineers carefully study each installation to make sure that no weakening of the car frame will result from drilling holes, and you need have no fear if you follow our directions. We make doubly sure by using these load washers. Stabilator engineering is good engineering and based on sound engineering practice.

10. When making rear installations using the pressed steel base with the cup spacer, which requires two bolts to fasten it to the frame, lay out the first hole according to the instruction sheet enclosed with each set. Then bolt the load distributing plate to the frame in a horizontal position as directed on instruction sheet. Drill the second hole using this plate as a drill jig. The base can then be bolted securely to the frame.

11. Be very careful before drilling holes to move electric lines or gas lines out of the way of the drill so as not to cut them. In some cases it is necessary to relocate these. Be sure they are fastened securely and are not underneath Stabilator base where they will be crushed.

12. Make sure there is nothing underneath Stabilator bracket or base to prevent a good seat. The Stabilator must line up with the strap the same as a belt is lined up with its pulley or it will run off and cut at the sides. Make sure that the straps clear on all sides of the opening in the Stabilator. This is the only way a Stabilator strap can be damaged, as it is not a wearing member, and cut straps are wholly due to faulty installation and are, therefore, not covered by our Warranty.

13. When Stabilator straps are attached to the axle bracket they must be taut but must not be pulled out farther. Simply see that there is no slack in the strap or in the loop of the strap around the axle bracket and that strap clamps are set up tightly to prevent slipping. Set clamps as close to axle bracket as possible unless otherwise specified. (See paragraph 5, page 10.)

Final Inspection after Installation Is Completed

14. Turn the steering wheel as far as it will go each way and inspect to see whether there is any interference with drag link, cross tie rod or tires. Also check to see whether there is any interference with front wheel brakes. If our directions are followed exactly this will not occur unless there is some variation in the car chassis, but it is well to check this every time and if necessary change position of frame bracket slightly by filing out holes or by sliding axle bracket slightly one way or the other.

ADJUSTMENT OF WATSON STABILATORS

NOTE: Do not change the adjustment of Stabilators as received from the factory. This adjustment should not be altered at the startoff and is not necessary at any later time to compensate for wear. Remember that Stabilators do not grow weaker from use and therefore it is not necessary to periodically tighten them up. In fact, this is the worst thing you can do. There is a slight change during the first 500 to 1000 miles due to the stretch in the Stabilator strap and the consequent increase in contact between the brake shoe and drum at every position in the working range. However, the strap locking wire is purposely designed to hold the strap in a wrong position at the start in order that the setting will be just right when the stretch has taken place. Therefore, this stretch never needs attention. If, after 1000 miles of riding, results are not just exactly as you want them, proceed as follows:

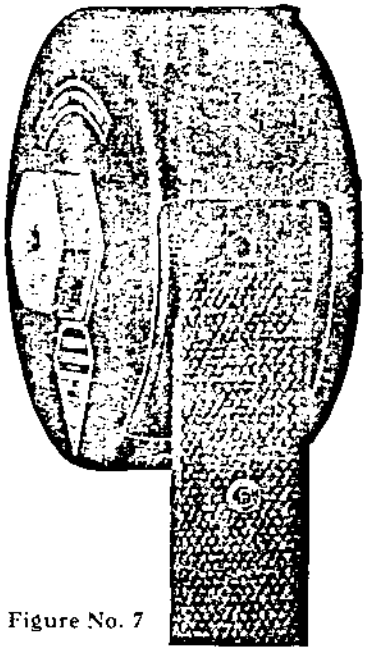


Figure No. 7

Before Changing Stabilator Adjustment

1. Place car on level floor. Remove any jacks. Car must have full equipment but no passengers or extra load.

2. Inspect eyelet position. Do not confuse this brass eyelet with the brass tag on new type straps and which has a number stamped on it to denote the lap in inches. The eyelet should be on a level line through center of Stabilator or about one-half (½) inch below the top of the window opening as shown here. If the eyelet is above this position the Stabilator brake is too great and may be causing stiff riding.

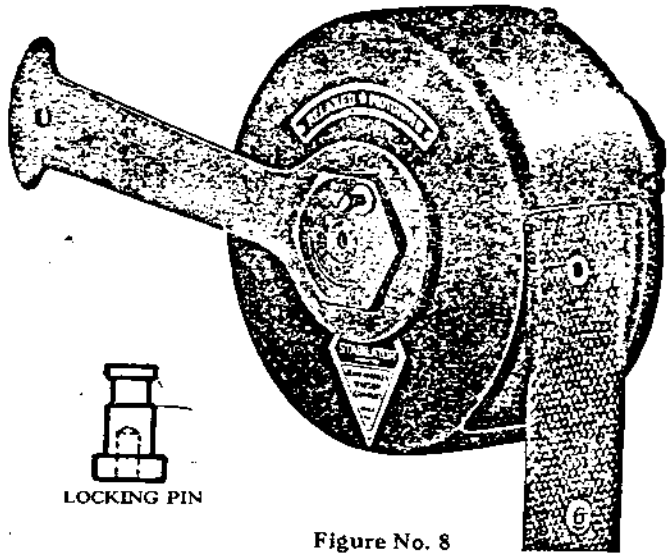
If eyelet is below this position the Stabilator brake is too small and may not be controlling the recoil of the car spring properly, and may result in damage to the Stabilator.

The positioning of the eyelet is governed entirely by the way the strap is attached to the axle bracket—the winding of the spring has nothing to do with it.

CAUTION: However, it is necessary to unwind Stabilator spring before attempting to unclamp the strap to change the eyelet position (see paragraph 3, below and paragraph 4, page 10).

C 7 type Stabilators have a steel cap over adjusting nut which must be removed first by taking out small screw in center. Take the rubber gasket off also so that it will not be injured. *Always replace gasket and cap after adjusting.*

How to Unwind Stabilator Spring



LOCKING PIN

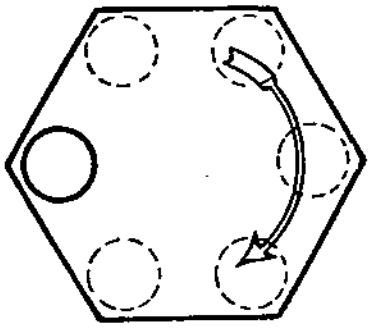
Figure No. 8

3. CAUTION: Always use the Special Stabilator Wrench shown here. This is made to fit in the slots in each corner of the hexagonal adjusting nut so wrench cannot slip off. **It is dangerous to you and may cause damage to the Stabilator if wrench slips off nut or out of the hand after locking pin is removed.**

Therefore, never use any other wrench for Stabilator adjustment.

To Remove Locking Pins

take out one of the screws holding cover of Stabilator or use screw that held cap, and screw this into hole in locking pin so you can get hold of pin to pull it out. The pin is locked in place by the shoulder on inner end. When nut is turned slightly in direction of arrow the pin is released. There are six holes in the cover for this locking pin so the spring winding can be varied by ⅙ of a turn. Keep the end of the pin in the hole in the nut and allow nut to turn backwards—opposite to direction of arrow—⅙ of a turn until you can push pin way in to next hole. Now get a new hold with wrench and back off another ⅙ turn and so on until there is no more tension on the Stabilator spring. *Do not turn nut backward beyond point where it stops or you will break the spring.*



SIX POSITIONS OF LOCKING PIN

Figure No. 9

Strap Adjustment

4. When the spring is completely unwound correct the eyelet position if needed by unclamping the straps at axle, and reclamp so eyelets are ½" below top of opening when the strap is taut. Put a little tension on the strap by winding the spring ⅓ turn with the wrench before tightening clamp to see if eyelet is correct. Set strap clamps up tight and as close to the axle brackets as possible. (See also page 9, paragraph 2.)

Attaching Strap Clamp

5. Strap clamp must be attached with bolt heads on the side to which the loose end of strap is turned, otherwise the part of strap which is under tension may be cut by sharp edge of strap clamp plate. (See illustration.)

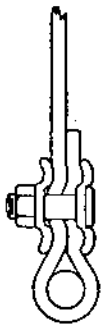


Figure No. 10

How to Re-wind Springs for Correct Adjustment

5. NOTE: When spring is unwound be careful not to turn the adjusting nut opposite to the direction of the arrow. This will break the spring and violates our Warranty. Notice that arrow points clockwise on some Stabilators and counter-clockwise on others. The arrow indicates that the nut should be turned in the direction that would wind up the strap if the strap were free to move.

The old method of adjusting Stabilators was to wind up the spring to a certain number of notches (there are 6 notches in one complete revolution of the adjusting nut). The average satisfactory adjustment for Front Stabilators is around 5 or 6 notches. The average satisfactory adjustment for Rear Stabilators is around 7, 8 or 9 notches.

The new method of adjusting Stabilators is by weighing instead of by notches. It is impossible to manufacture hundreds of thousands of springs and have them

all exactly uniform as to strength, and this method of adjusting by weight compensates for variations and hence will give better and more uniform results than the old notch-counting method.

Stabilator Wrenches are provided with a ¼" hole with its center ¾" from the handle end of the Wrench. By hooking a spring balance into this hole and weighing the adjustment you will be able to make your two front instruments almost exactly uniform with each other and your two rear instruments almost exactly uniform with each other.

By means of this weight method of adjustment, the adjustment of any Stabilator may be checked without removing the locking pin. There is a certain amount of free motion in the locking pin and by pulling on the spring balance until this free spot is reached the spring weight may be accurately measured. Be sure you pull the spring balance at right angles to the Wrench as shown in the accompanying illustration.

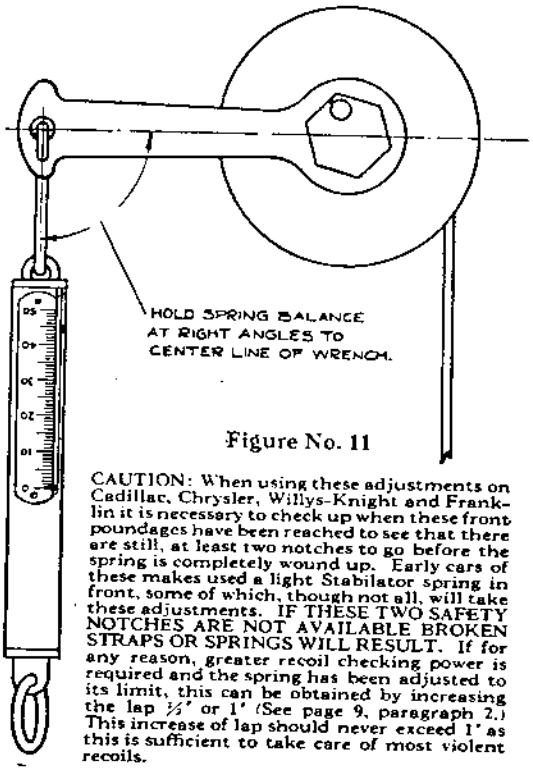


Figure No. 11

CAUTION: When using these adjustments on Cadillac, Chrysler, Willys-Knight and Franklin it is necessary to check up when these front poundages have been reached to see that there are still, at least two notches to go before the spring is completely wound up. Early cars of these makes used a light Stabilator spring in front, some of which, though not all, will take these adjustments. IF THESE TWO SAFETY NOTCHES ARE NOT AVAILABLE BROKEN STRAPS OR SPRINGS WILL RESULT. If for any reason, greater recoil checking power is required and the spring has been adjusted to its limit, this can be obtained by increasing the lap ½" or 1" (See page 9, paragraph 2.) This increase of lap should never exceed 1" as this is sufficient to take care of most violent recoils.

Standard Spring Tensions and Laps**

Front Stabilators	32 to 33 lbs.	6" lap
Rear Stabilators	26 to 27 lbs.	4" lap

Exceptions

Cadillac 65	Front 33 lbs.	5½" lap
	Rear 27 lbs.	4" lap
Chrysler 80	Front 34 lbs.	7" lap
	Rear 29 lbs.	5" lap
Chrysler 70	Front 33 lbs.	5½" lap
	Rear 27 lbs.	4" lap
Dodge Senior 6	Front 28 lbs.	6" lap
	Rear 18 lbs.	4" lap
Franklin	Front 28 lbs.	5" lap
	Rear 25 lbs.	4" lap
Gardner Model 90	Front 28 lbs.	6" lap
	Rear 24 lbs.	4" lap
Hupmobile 8	Front 34 lbs.	6" lap
	Rear 24 lbs.	4" lap
La Salle	Front 32 lbs.	6" lap
	Rear 28 lbs.	4" lap
Locomobile Junior 8	Front 30 lbs.	6" lap
	Rear 25 lbs.	4" lap
Jordan 8 Mod. A	Front 36 lbs.	6" lap
	Rear 28 lbs.	4" lap
McFarlan	Front 34 lbs.	6" lap
	Rear 27 lbs.	4" lap
Nash Adv. 6	Front 32 lbs.	6½" lap
Packard 1-36, 1-43	Front 37 lbs.	6½" lap
	Rear 28 lbs.	4" lap
Packard 3-36, 3-43, 4-26, 4-23	Front 26 lbs.	6" lap
	Rear 21 lbs.	4" lap
Peerless 6-90, 8-69 all bodies	Front 34 lbs.	6" lap
All bodies except Coupe & Roadster	Rear 28 lbs.	4" lap
Coupe & Roadster only	Rear 20 lbs.	4" lap
Stearns Knight	Front 34 lbs.	7" lap
	Rear 24 lbs.	4" lap
Studebaker Big 6	Front 34 lbs.	6" lap
	Rear 25 lbs.	4" lap
Stutz 8	Front 34 lbs.	5½" lap
	Rear 28 lbs.	4" lap

**See page 17 for explanation.

Never adjust Front Springs over ..... 37 lbs.
Never adjust Rear Springs over ..... 30 lbs.

Repairing Watson Stabilators

The following Warranty is issued by the Manufacturers of Watson Stabilators:

Warranty of Watson Stabilators

We warrant each new set of Watson Stabilators to be free from defects of Manufacture and Workmanship. Our obligation under this Warranty is limited to making good at our factory any Stabilator parts which shall fail or break in normal use and service within three months after set is installed on the car. Stabilator springs are warranted for six months.

This Warranty does not cover the cost of labor for making replacement of parts, adjustments, repairs or any other work done on Stabilators, or transportation charges to or from our factory.

This Warranty does not cover damages due to accident or abuse, or neglect to follow our instructions in making the installation or adjustment.

CAUTION: Never oil or grease Stabilators. Be sure straps line up with openings so they do not chafe. Never attempt to adjust Stabilator springs, let an expert Stabilator service man do it if necessary. Never put a jack under Stabilator axle brackets when lifting car.

To obtain maximum riding comfort over an extended period it is advisable to renew the brake shoe inserts about every twenty thousand miles. (*See page 18 paragraph 4.*)

Broken Stabilator Spring

1. This is shown by loose strap and no tension when adjusting nut is turned in direction of arrow. Remove Stabilator from the car and take out the six screws holding cover to base. Pull cover off base. Turn shoe in cover until the end where it joins strap is opposite cover window. Hold cover with open side down and shake or tap gently on bench until shoe and spring slide out together.

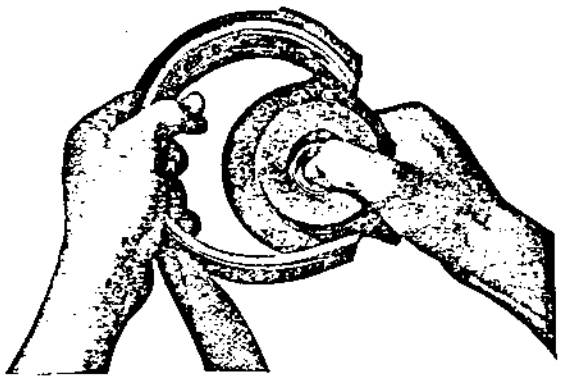


Figure No. 12

Removing Spring Assembly from Shoe Assembly

Hold the shoe in one hand and grasp the spring with the other hand as shown above. Pull the spring out through the gap in the brake shoe while turning spring so as to unhook the spring assembly from the shoe assembly.

Removing Spring Assembly from Shoe Assembly with Weather-proof Seal

Pull the spring to the outside of the shoe assembly as in Figure No. 13 and rotate the spring slightly so that the back edge of the spring hook pulls out of the slot in the coupler plate first. Sometimes this requires quite a hard pull to unhook it, but with a little practice, it can be done quite easily.

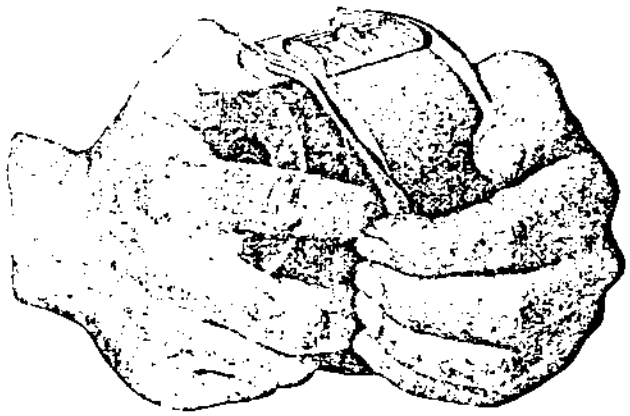


Figure No. 13

Replacing Broken Spring

(For assembling in new type shoes with weather-proof seal see below)

There are two different Stabilator Springs. Use springs stamped "D", or "Front", or "Fronts only, all cars", in Front Stabilators and springs stamped "B", or "Rear", or "Rears only, all cars", in Rear Stabilators. See Figure No. 15. In replacing a spring be sure therefore that the new spring you use carries the correct marking for its location.

Assembling Spring in Shoe Assembly with Weather-proof Seal

Before assembling spring in shoe assembly, bend the tail end of the shoe to conform with the radius of the shoe backing. This will facilitate matters when placing shoe assembly over the brake drum in final assembling. Enter the spring hook in the coupler plate and centre the spring in the shoe assembly. Place the shoe on the bench with the coupler plate uppermost. With both thumbs on the coupler plate, the two forefingers on the coupler pin, the remaining fingers arranged around the spring housing as in Figure No. 14, press down on the coupler plate at the same time pulling the hook into coupler plate with the forefingers. With very little practice it is a simple operation. Inspect to see that the hook is properly hooked in the coupler plate, the spring hanging freely in the shoe assembly.

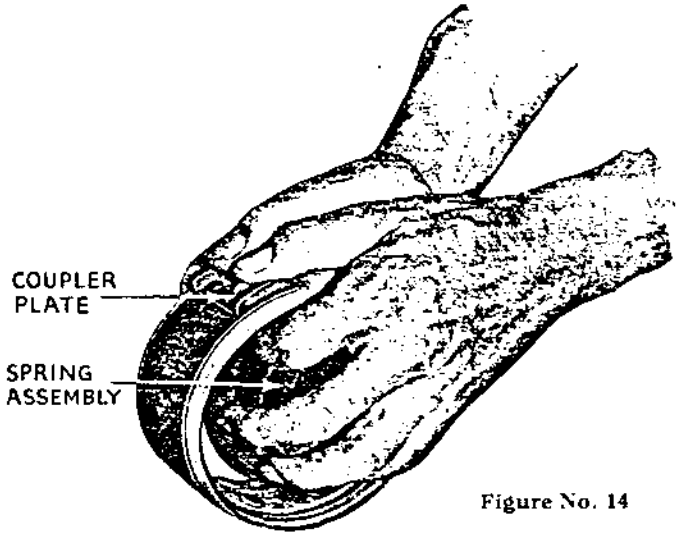
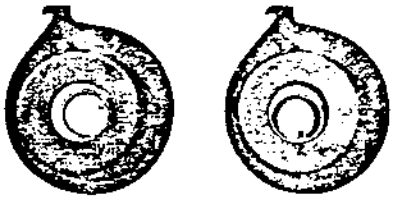


Figure No. 14



FRONTS ONLY ALL CARS — REARS ONLY ALL CARS

Figure No. 15

The rings around the springs shown here which are used in C 7 Stabilators are wider on one side than old style rings but will interchange with them. This wide section is designed to bear on the shoe and keep the spring central to prevent binding of spring convolutions.

Successive Positions of Hook in Assembling

Assemble the new Spring with Shoe Assembly by simply reversing the method of taking out the old Spring. Don't try to force the spring hook into place. It cannot be done by force and furthermore it hooks in easily if you do it right. Put

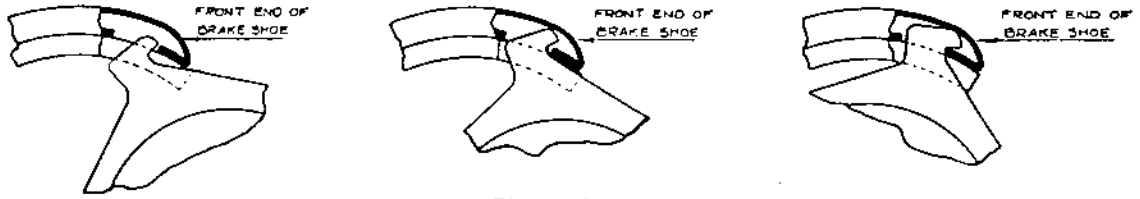


Figure No. 16

the spring in the gap (between the two ends of the shoe) with the point of the hook in the slot in the steel plate as shown above. Now push the spring toward the center of the shoe while pulling the nose of the hook toward the front end of the brake shoe. If done correctly the spring will now dangle freely and hook will not bind in slot. If it binds you have not done the job right.

Proper Method of Assembling Shoe and Spring Assembly in Stabilator Cover

(For assembling of shoes with weather-proof seal see page 15)

Now replace shoe and spring assemblies in cover. Hold the cover in the left hand with the three drain holes down and put end of strap through window opening as shown. Strap must point down toward drain holes. Center spring on the mandrel and shove into place. Then see if strap will be wound up when turning nut in direction of arrow. If not you have reversed in assembling and must turn the shoe and spring assembly around.

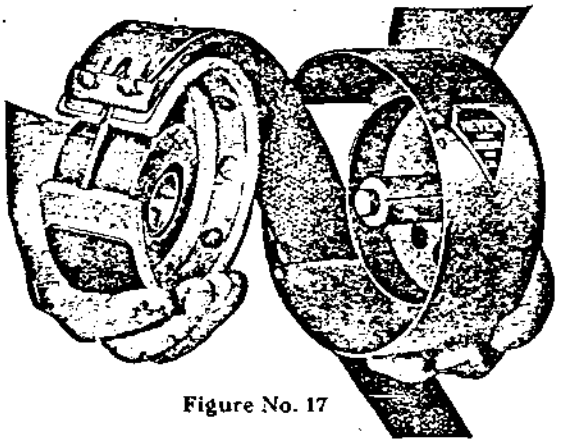


Figure No. 17

The new detachable straps in C 7 type Stabilators can be hooked onto shoe through the window after base is in place.

Next replace the base in cover so that all of the screw holes line up. They are equally spaced except the two holes by the window opening which have a longer space. Never take apart more than one Stabilator at a time as the bases are drilled right and left and may be mixed when re-assembled.

Assembling Shoe With Weather-proof Seal and Spring Assembly in Stabilator

First see that the spring is correctly hooked in coupler plate. Turn the edges of the weather-proof seal outwards from the shoe and hold in place by snapping on the shoe assembling clips.* (See Figure No. 18.) Seven clips are necessary. Two are used close together at the coupler plate and attached as in illustration with one end of each clip over the coupler plate, and the other end gripping the double thickness of the weather proof seal. The remainder placed equidistant around the shoe.

Place the shoe and spring assembly in the cover so that when the strap is hooked up the loose end will point towards the drain holes. (See Figure No. 19.) This is done by starting the spring on the mandrel and holding the shoe assembly at a slight angle so that the part of the shoe containing the inserts is the first to pass over the brake drum. This is necessary to prevent disturbing of the inserts as the brake shoe passes over the brake drum. It is sometimes necessary to stretch the shoe slightly during this operation to get it to pass over the drum, by placing the fingers on the inside of the tail end of the shoe and pulling outwards. The spring

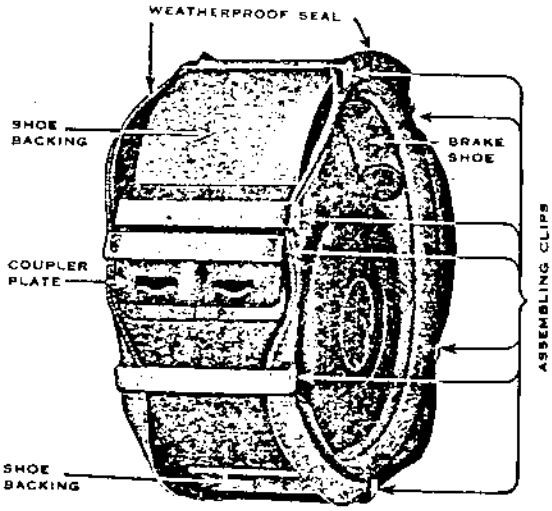


Figure No. 18

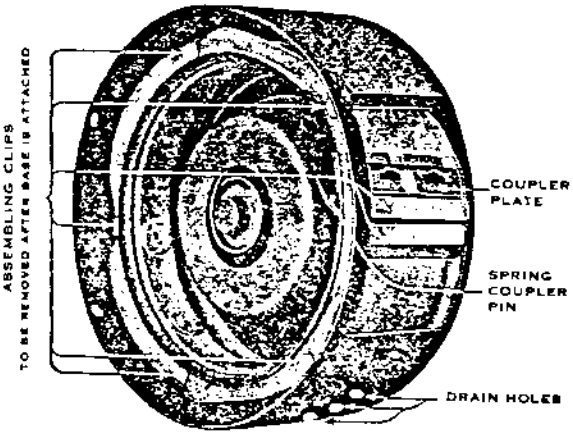


Figure No. 19

can then be pushed all the way down on the mandrel. Inspect to see that no inserts were disturbed before proceeding, and that the strap will be wound up when turning adjusting nut in the direction of arrow. If you have reversed the shoe in assembling, the shoe and spring must be removed, turned over and reassembled again in the cover. Inspect inserts again before proceeding. (Remember that the drain holes, if the Stabilator is correctly assembled, are always on the bottom when Stabilator is attached to car.) The base is then inserted in the cover in the usual way and the cover screws tightened.

Now, hold the Stabilator in a vice and turn the mandrel in the direction of the arrow, removing the shoe assembling clips as they come to view at the window, at the same time seeing that the weather-proof seal presses out evenly, without

*These can be purchased in packages of fourteen clips for fifteen cents from any Stabilator Distributor or Dealer.

buckling, against the base and cover. If the sealing flap edge is turned under, it can be turned out by inserting a knife blade between it and the cover or base. If this does not suffice to correct it, the Stabilators should be dissembled and reassembled again correctly. It is absolutely necessary that the weather-proof seal be installed properly to accomplish its purpose. CAUTION: See that the same number of clips are removed as were used on the shoe assembly. The strap can then be attached and the adjustment made in the usual way.

Shoe assembling clips should not be placed on the weather-proof seal until the spring has been hooked in the shoe assembly and the shoe ready for assembly in Stabilator, otherwise the seal may assume a permanent set, thereby decreasing its pressure against the base and cover, permitting water and dirt to get in on the friction surfaces. Brake shoes with weather-proof seals should never be laid on their sides but carried in stock standing on the shoe backing to prevent buckling and creasing of the seal. *THIS IS VERY IMPORTANT.* It is good practice to use always the same number of assembling clips, seven being necessary, and to count them when removing them. This will eliminate all possibilities of leaving any in the Stabilator should they slip off when placing shoe in cover or when turning the shoe around to remove them.

You will find on rotating the brake shoe around the drum that there is a binding feeling somewhat similar to that brought about by a wide shoe and that the suck-up of the strap appears sluggish. This is caused by the new inserts sticking above the shoe surface, thereby really reducing the inside diameter of the contact surface of the brake shoe which cannot expand due to both ends of the weather-proof seal being riveted together. A few minutes on the road will suffice to wear down the inserts permitting the shoe to work freely around the drum.

Only straps riveted with the flat headed split type rivet can be used with the weather-proofed shoe assembly. The round headed type rivet does not permit the strap plate to conform to the radius of the shoe backing and *MUST NOT BE USED.*

The new type shoe assembly can be installed in old sets using cast iron bases without any other changes except the straps, which must have the split type rivets.

To use the new type shoe in old Stabilators with pressed steel bases it is necessary to change the pressed steel base for one using the sealing disc, a piece of thin metal welded between the brake drum and the base plate. This sealing disc covers the indentations on the base plate providing a smooth surface for the seal to work against, thereby preventing water and dirt from getting in on the friction surfaces of the brake shoes. The covers must also be changed and new ones, which have one round and five slightly elongated cover screw holes, installed. This is the only distinguishing feature of these covers which are deeper to allow for the thickness of the sealing disc. The holes are elongated, parallel with the edge of the cover and have nothing at all to do with the depth of the cover, but are punched in this way to allow for any variance between the holes in the cover and the tapped holes in the base. One of the holes is not elongated and the first cover screw should be started in this hole. Start all screws in base before tightening any of them. All covers with the elongated holes are of the deep type and can be used with all type of shoe assemblies.

Broken or Cut Strap

If the Stabilator straps are properly lined up they do not wear—hence straps that are cut or chafed are not covered by Warranty. If the old type strap which is riveted to shoe is damaged it is necessary to remove the entire shoe assembly and replace with new C 7 type shoe and strap assembly. The new C 7 type detachable strap can be replaced without removing Stabilator from car by hooking it on to shoe through window. In ordering specify whether front or rear strap is wanted and car make and model. The distance from the brass eyelet in strap to the nearest pair of rivets varies to suit different conditions. And on the new strap this measurement is stamped on a brass tag located about 3″ below the eyelet. (For correct position of this eyelet when the Stabilator is installed on car see page 9, paragraph 2.) Be sure you replace with strap having same eyelet distance and same length. This is given on bottom of each instruction sheet in assembly data table. Or you can measure strap in the other Stabilator at same end of car; the two fronts are the same and also the two rears.

Always correct faulty alignment of Stabilator or axle bracket which may cause chafing so new strap will not be damaged.

The distance from the brass eyelet to the nearest strap hook rivet is termed the **"lap."** The standard lap for front Stabilator is six inches and for rears four inches, unless otherwise given in the list of exceptions on page 11.

COUPLER PLATES

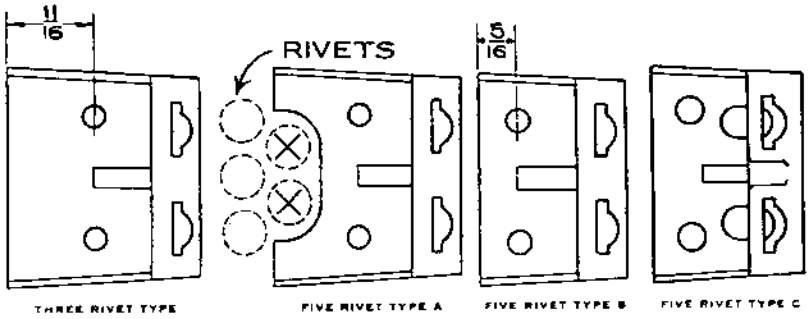


Figure No. 20

CAUTION

Straps using the five split rivets fit all type coupler plates.

To renew straps in shoe assembly using the three rivet type coupler plate, if only the round headed riveted straps are available it is necessary to remove the two rivets nearest the end of the strap to allow it to fit properly in the coupler plate.

Round headed riveted straps will not fit coupler plate type C. Only split riveted straps fit type C.

Broken Axle Bracket or Frame Bracket for 90 Degree Type Front Stabilator

3. These are always furnished by the car manufacturer of cars equipped at the factory with Stabilators. Therefore, claims for replacement or orders for brackets on factory-equipped cars should go to the car maker. In case of breakage of brackets when set has been installed as accessory, order from John Warren Watson Company or Stabilator Distributor or Dealer. Specify part number stamped on bracket or if this is not available give make and model of car and whether right or left, front or rear.

Noise from Stabilators

4. A few Stabilators become noisy in operation due to excessive friction between the brake shoe and brake drums. This noise can be cured easily and quickly if you follow directions, but if you use oil, grease or any other material in the Stabilators to cure noise you will ruin them and make costly repairs necessary which are not covered by Warranty.

We have discovered that most of this noise trouble was caused by water which entered the Stabilator around the adjusting nut. All C 7 Stabilators are fitted with a waterproof cap and gasket over this nut to prevent this. Older type Stabilators (C 3 and C 5) can be easily protected by installing these caps and gaskets. These will be supplied by Stabilator Distributors or Dealers at nominal cost. To do this, the face of the mandrel must be drilled with a No. 27 drill to a depth of one-half inch, then tapped with an 8-32 tap. The cap may be used as a jig to locate this hole accurately and quickly. Make certain that the gasket fits close against the cover and is not caught in adjusting wrench groove of mandrel.

First be sure that it is the Stabilator that is noisy by unwinding the spring and disconnecting the strap and see if the noise ceases. It may be in some other part of the car.

If the Stabilator is noisy, remove it from the car and take it apart. If the brake shoe is wet when removed, it must be thoroughly dried out before attempting to clean and replace inserts. If there is oil or grease on the brake shoe, clean with Carbona or gasoline. If shoe

Hint:—

Straighten out the brake shoe by pulling the tail end to one side outside of the steel backing. (Do not bend steel backing out of its curved shape.) This will make it easy to push out the inserts with the fingers and put in new ones. The four inserts in the riveted end can be pressed in with a small block of wood. If an insert breaks use another one.

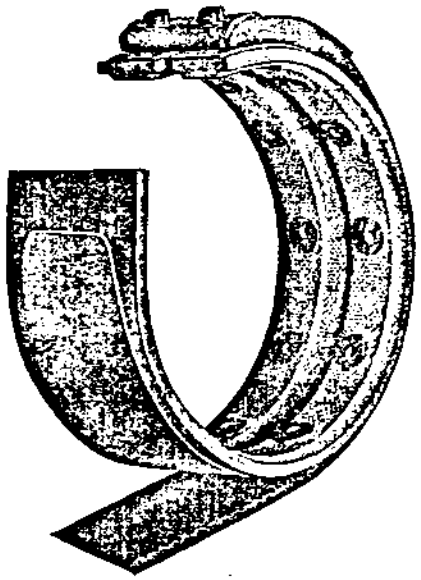


Figure No. 21

has been softened by oil, replace with a new shoe. If the brake shoe is not wet or oily take out the inserts in the brake shoe and thoroughly clean the working surface of the shoe with a piece of No. 2 sandpaper (NOT emery cloth), until the surface is clean, like new. Brush off thoroughly and put in new Watson Inserts.

These Watson Inserts can be purchased from John Warren Watson Company or from authorized Stabilator Distributors and Dealers in small boxes of 60 or in pound canisters. Rub the surface of the brake shoe with one of the inserts until it is thoroughly coated with this material; also the edges of the shoe. Don't use graphite or any other lubricant on Stabilator shoe or drums. This insert is a patented composition and the only substance that works correctly.

Thoroughly clean the cover and base with a cloth soaked in gasoline or Carbona and be sure the brake drums are clean. Be careful not to get oil or grease on the brake drums. Oil or grease attacks the rubber brake shoe and destroys it.

The Stabilator is now ready to be re-assembled and be put back on the car and will not cause further trouble if it has the cap over nut or flapper gasket.

A sharp metallic squeak is sometimes caused by the cover of the Stabilator spring rubbing on the base, which can be detected by a bright spot. This is caused by the spring cover having been bent out of shape and can easily be corrected. In some cases the covers become crushed in and catch on the convolutions of the spring, causing this noise. Run a screw-driver around inside the thin metal cover of the spring and straighten it so it will clear the convolutions.

If the spring squeaks when working the Stabilator by pulling on the strap, it should be replaced with a new spring and the old spring sent back to the Manufacturers, authorized Stabilator Distributor or Dealer for re-greasing. This only happens occasionally as the grease put in the spring is good for the life of the car in general. Don't attempt to put grease into springs as this cannot be done without a special tool to hold the spring partly wound, and the grease you put in will be likely to cause trouble with the brake shoe.

Make sure the brake shoe is not binding at the sides.

Caution Owners Never to Oil or Grease Stabilators

See that the car springs are thoroughly lubricated between the leaves and if possible provided with spring boots. Oil should be used for lubricating spring leaves as it is far more efficient than grease. See that shackles are not tight and binding.

Educate owners to inflate balloon tires to full pressure. Excessive tire compression and recoil cannot be controlled by any recoil check.

Keep pressure down in cord tires to 35 or 40 pounds for softness.

Following this simple practice will insure maximum riding comfort.