

TECHNICAL ARTICLE

Number 29

From Octagon Heaven

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Resource: John Kidder's
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REBUILDING VINTAGE SHOCKS

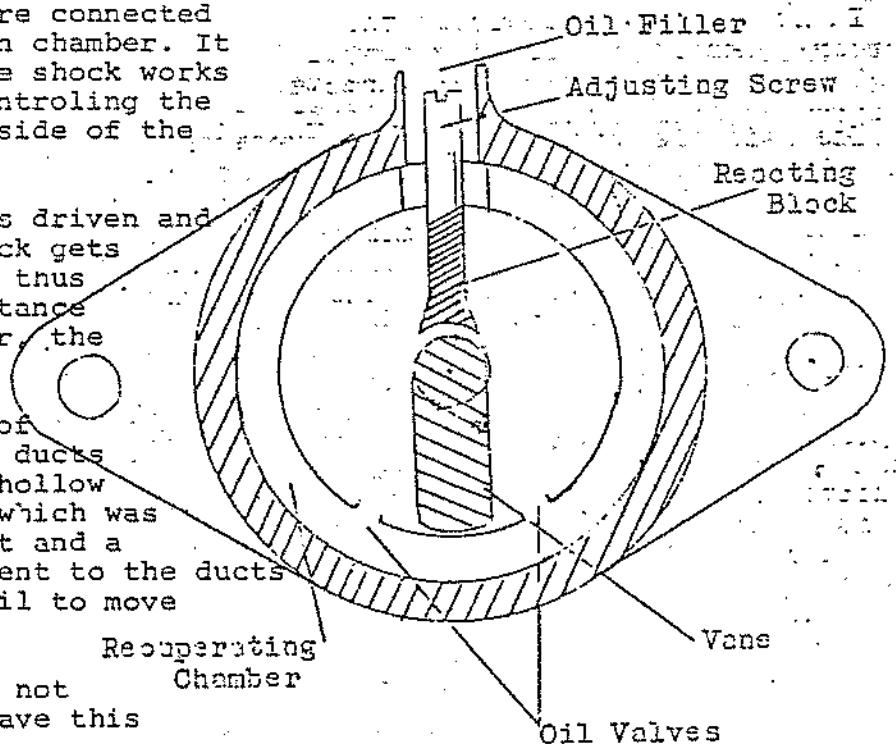
Some vintage cars (particularly P & N) were fitted on the rear axle with Luvax shock-absorbers. When they are worn out there are three alternatives as follows:

1. Convert to Hartford type. (problem of designing brackets and linkages to fit the non-standard units.)
2. Convert to other modern hydraulic type. (same problem as #1.)
3. Rebuild the originals.

The Luvax shock-absorber consists of a drum through the center of which passes a spindle on which is formed the vane. The edge of the vane is a close fit against the cylinder wall. The cylinder is fitted with oil and provided with a fixed partition directly opposite the vane. This means that when the spindle is in a central position, the vane and the partition effectively divide the cylinder into two equal parts. The partition is also known as the reaction block and to that an adjusting screw is attached.

On each side of the vane, are the oil valves which are connected by the recuperation chamber. It is evident that the shock works restricting and controlling the oil flow from one side of the vane to the other.

Since as the car is driven and the oil in the shock gets warmer and thinner thus changing the resistance it was designed for, the engineers provided ducts in the rotor (one on each side of the cylinder). The ducts register with the hollow center spindle in which was placed a thermostat and a taper needle adjacent to the ducts. This allows cold oil to move easier and closes as the oil gets warmer. Note that not all Luvax shocks have this thermo-device.



When removing the shocks, use a puller to free the arm from the spindle. Before removing, mark the arm and spindle to ensure correct reassembly. The cover plate on the back must also be marked. A few blows with a hide hammer or mallet may be needed to free the back plate.

Having gotten the shock in pieces, clean everything and note where all the pieces came from. Then look for scoring on the vane and cylinder. If they are badly scored you will need to fill the score marks. DO NOT emery the vane and cylinder as that would increase the clearance and decrease the shock action. One product used successfully was Araldite.

In the end of the cylinder you will find a gland nut and packing. The packing should be replaced. Greased asbestos string was used and result was no leaks.

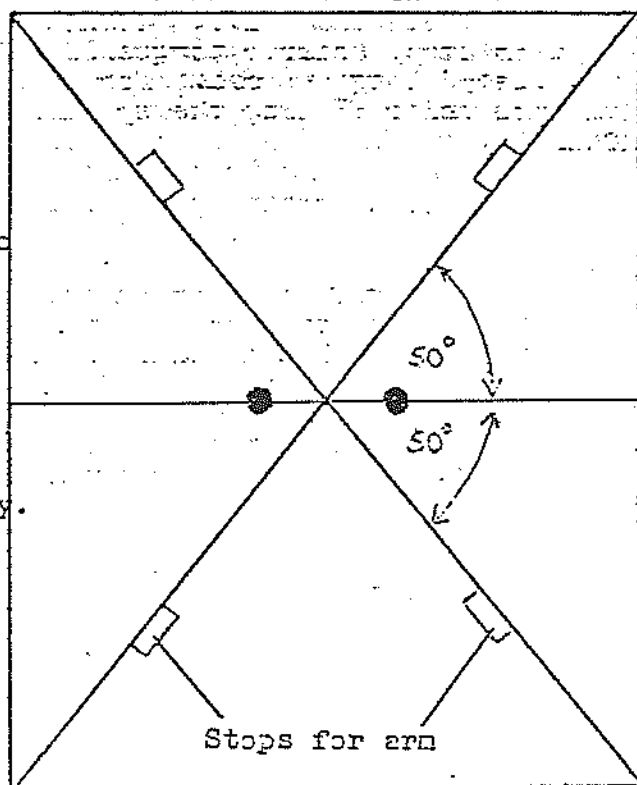
The spindle will probably be found to be worn where it has had considerable contact with the gland nut but repacking seemed to overcome that.

Reassembly is basically the reverse of stripping. Points to watch are to make sure there is sufficient packing in the gland to allow for adjustment in case of leaks. Also make sure that the arm is fitted to the spindle in the correct position. If you forgot to mark it, fit the arm at right angles to the vane. Thirdly, make sure that the cover is in the same position as when removed, otherwise you will have trouble putting the shock on the car. Last of all leave the adjustment screw, under the filler cap, left quite slack at this point.

Now make a mounting board. The diagonals should be about 100" for testing. Mount the shock in a horizontal position and clamp the mounting board in a vice.

Now fill with oil. "Genuine Luvax shock-absorber fluid" is no longer available. Castor oil is permissible but this is a little thinner than the original and will be necessary to screw up the regulating screws to compensate. DO NOT USE modern shock fluid for it is too thin. If you have trouble finding the correct adjustment using castor oil, particularly if the vane/cylinder clearance is too great, you may have to use an oil of thicker viscosity. EP80 oil has been used with success.

When filling, work the arm slowly to remove the air. This is done until all trace of springiness is gone. Now you are ready to set and test.



17"

For the initial setting, screw the adjusting screw fully home and then slack off $1\frac{1}{2}$ turns and lock the nut. This is done by having a screwdriver down the center of a box end wrench to hold the screwscrew while the wrench, using an open end wrench on the outside hexagon at the top. Later types of shocks have no lock nut and the screw is self locking.

Now to use the board, On the back side of the shock you should find a number, usually between 12 and 15. This number is the number of seconds (time) that it should take the arm to traverse 100" under a torque of 200 inch/pounds. If the arm is 5" the weight of 40 pounds is used. ($5 \times 40 = 200$) Push the arm to the top and time how long it takes to reach the bottom. If the time is less then the stamped number tighten the adjusting screw $\frac{1}{4}$ turn at each try until it is correct. If the time is greater loosen the adjusting screw $\frac{1}{4}$ turn at each test until correct.

When testing have the filler plug tight. Finally check the oil level and reassemble to the car.