Armstrong lever arm shocks are available in a variety of damping grades. The variations are made primarily in the valving. The way these devices work is that there are two pistons pushing oil back and forth through an orifice. This orifice is small, so there is resistance to flow due to the viscosity of the oil in the piston chambers. If the size of the connecting hole was not allowed to vary, the damping would be VERY strong for sudden jolts. It would be so strongly damped that it would be rigid for all practical purposes. In order to accomodate sudden jolts, the oil is allowed to force its way past the small orifice through a larger spring-loaded valve. There are actually two separate valves in the valve assembly. One to control the upward jolts (bounce)(#13 in the diagram) and another to control the downward return of the suspension to its rest position (#15).

The springs (#17,18) adjust the damping. When these units were new, there were alternate compression springs available. Kastner said that certain shocks had as standard a steel (grey) colored compression spring, but other shocks had a bright copper colored spring as standard. Mine have the bright copper springs. The "competition" spring has a dull copper or bronze color. I have seen none of these competition springs available nor do I know the various spring strengths to try to get new ones. There are "heavy duty" valve assemblies for certain cars, but none that I know of for the TR's, and I doubt that they are completely interchangeable.

In order to adjust damping today, we can tighten the nut holding the rebound spring and insert spacers (washers)under the compression spring. I have two sources that pretty much agree on what modifications to make. First use 30wt oil for the hydraulic fluid (Kastner recommended 40wt). Next adjust the springs. I have been told to use Harley-Davidson fork oil because engine oil has detergents which will damage the rubber seals, and the fork oil has anti-foaming additives to cut down foam when stressed to the max. You have to use H-D oils because the others use stuff that is maximum 20wt.

My first source says to tighten the nut on the rebound spring "all the way down", and install a 0.070" spacer under the compression spring at the bottom of the bore.

My other source says to tighten the nut on the rebound spring 2 to 4 full turns, and a spacer of 0.040" to 0.080" under the compression spring. Select the amount of adjustment depending on how much damping you want. I decided to try settings near the maximum and ease off from there if they were too harsh or if there was some other problem.

My experience is limited, but successful. I tightened the rebound spring nut by 4 turns (which is almost all the way down). I used 2 brass washers under each compression spring. The washers were obtained from my local hardware store for about 15 cents each. They measured just over 1/2" diameter and 0.038" thickness. I used a file to smooth and slightly thin the washers. I had to ream the center holes large enough to easily pass the rebound spring. The four washers were matched in pairs and I got 0.073" combined thickness on each side. The outer diameter of the washers was 0.563", and the inner diameter was 0.322".

I have found that the damping is quite nice. I am using the TriumphTune 4212 rear springs (420 lbs/inch and about stock ride height). This combination seems very satisfactory. Good damping without being harsh. Total cost for the upgrade: $4.95 for a pint of "heavy duty" (about 30wt) fork oil and about $1.50 for the washers.

Let me know your experiences!

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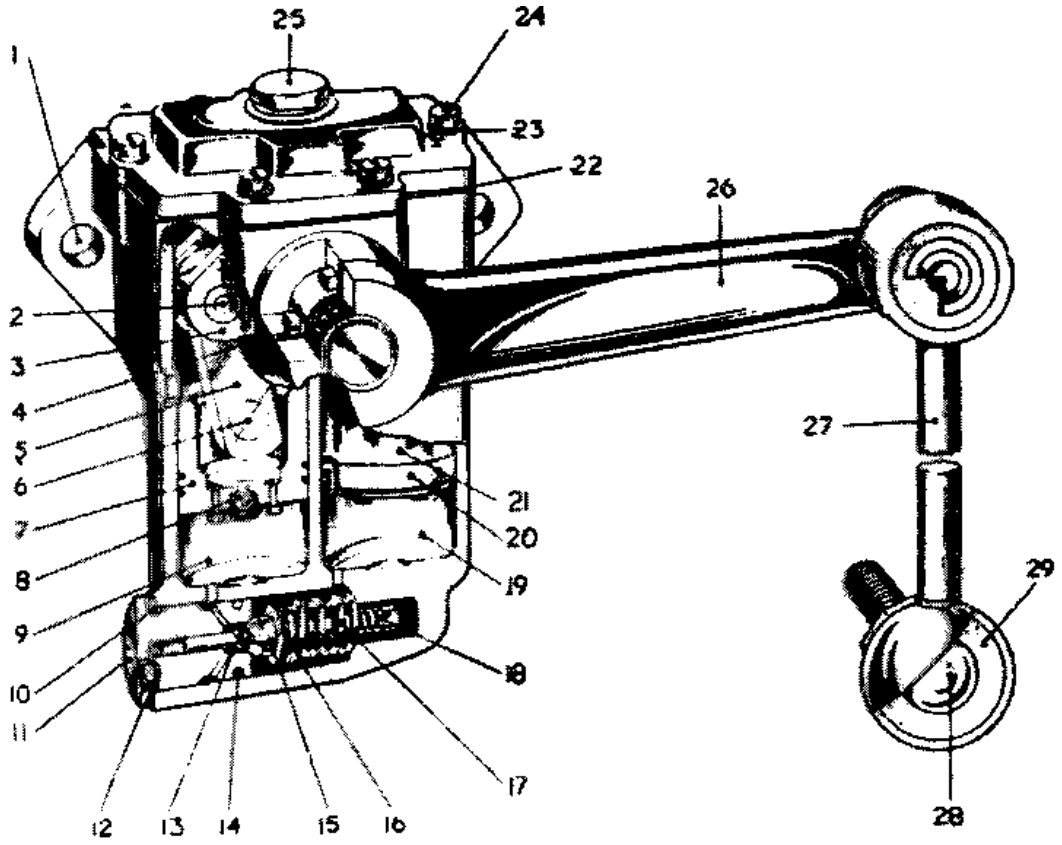

Fig. 11.15. REAR SHOCK ABSORBER COMPONENTS

1 Mounting holes
2 Crank pin
3 Crank plate
4 Oil seal
5 Connecting rod
6 Piston pin
7 Compression or bump piston
8 Recuperating valve
9 Compression or bump cylinder
10 Ring seal
11 Valve screw
12 Valve screw washer
13 Rebound valve
14 Ring seal
15 Compression valve
16 Compression washer
17 Compression spring
18 Rebound spring
19 Rebound cylinder
20 Rebound piston seal
21 Rebound piston
22 Gasket
23 Shakeproof washer
24 Lid screw
25 Filler plug
26 Arm
27 Connecting link
28 Ball end bolt
29 Rubber cushion