Vehicle Engineering Series

MORRIS·MINI·MOKE

1966 – 1973

Excluding Californian Moke

Look Inside

Tony Cripps

Contents

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The short bolts have a length L = 3.30 – 3.46” and the long bolts 4.94 – 5.00”.

Within the block there are oilway plugs 2K1345 which is a steel tapered plug 1/4” diameter tapering out 1 in 8 fitted to the front face and bottom face of the block (oil release valve passage). These solid plugs may be replaced by brass oilway plugs 12G3503.

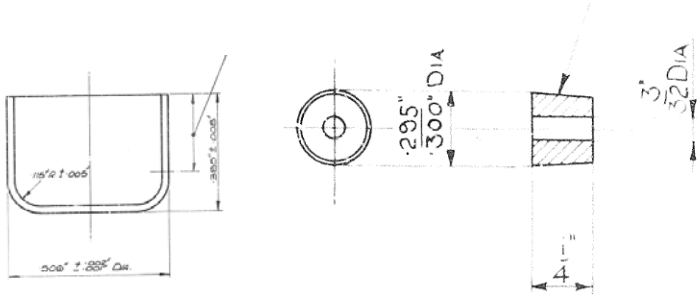

Fig. 2.2.8 *Oilway plug 12G3503 and restrictor 1A1964.*

12H1734 is 27/64” tapering in at 1 in 24 and is fitted to the oil pump face of the block. A brass restrictor 1A1964 is fitted for the camshaft bearing oil feed.

Four welch plugs 2K8169 are positioned in the 1 5/8” diameter 5/32” deep core hole recesses in the front face, and end, of the block and are made from 14SWG EN2A steel. The welch plugs have a radius of 2 3/8”.

2.3 Connecting Rods and Bearings

The connecting rods for cylinders 1 and 3 (left-hand) 12G126 (12G127) are mirror opposites from 2 and 4 (right-hand) 12G123 (12G124). The connecting rods are positioned so that the oil holes face away from the camshaft.

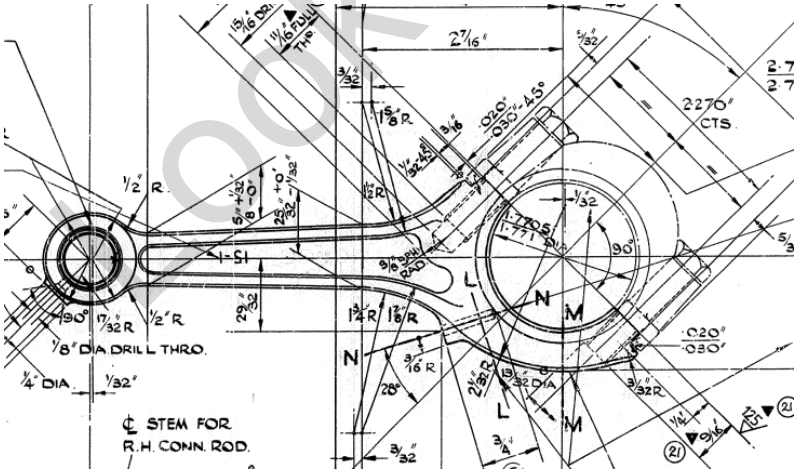

Fig. 2.3.1 *Connecting rod 12G126, 12G123.*

The big end bearings 8G2198/2A802 (998cc) and 8G2399 (1098cc) are split at 45°. The connecting rod bearings are lead-bronze, steel backed bearing surface with lead indium plating on other surfaces.

Look Inside

There is a double coil spring 2A18, plain washer 6K555 (1”x37/64”x0.080”) and split pin at the end of the rocker shaft. The plain washer has an outside diameter of 59/64” and an inside diameter of 23/32”.

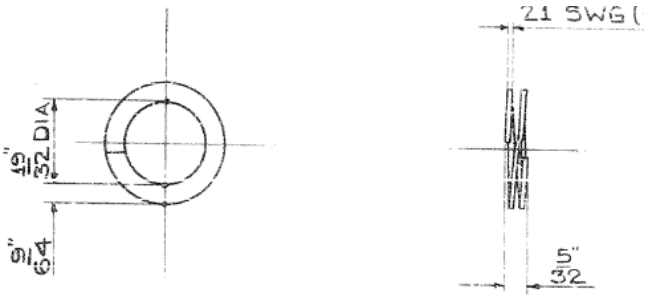

Fig. 2.8.6 *Double coil spring for rocker shaft 2A18*.

There are two types of rocker arms. 2A533 is EN12 forged steel with induction hardened faces where they bear against the valve stems. The plug 5C2436 in the oil way is welded into position. The split bush 2A21 is reamed to 0.555” – 0.5585” after pressing into the arm. The joint is positioned at the top of the bore. The 9/32” BSF thread for the tappet clearance adjustment is required to be a close fit thread.

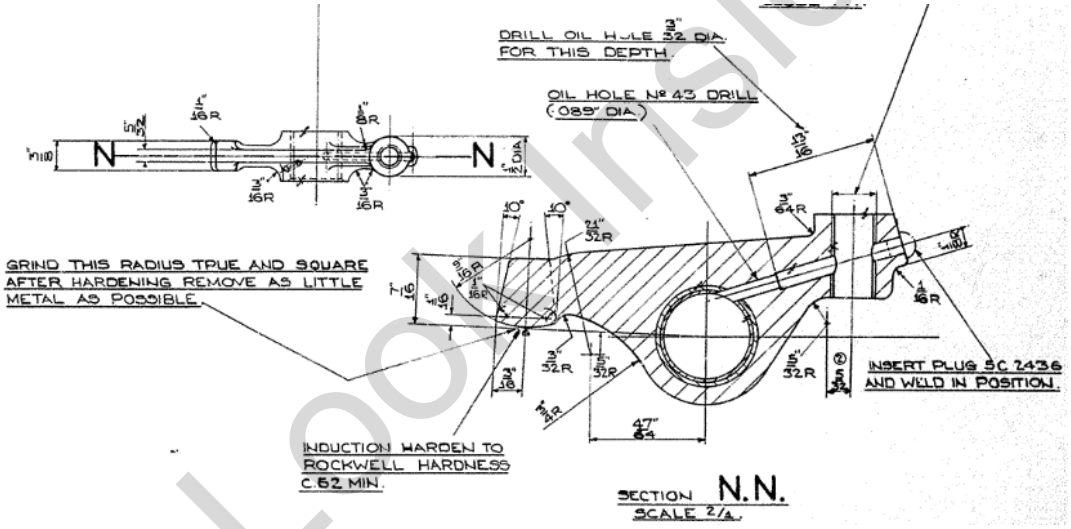

Fig. 2.8.7 *Forged steel rocker arm 2A533.*

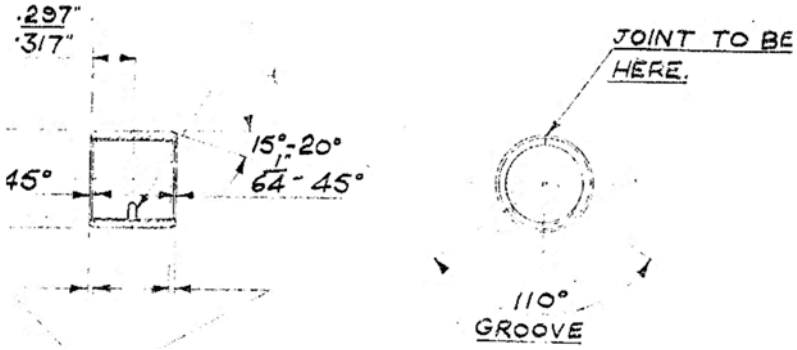

Fig. 2.8.8 *Bush for forged steel rocker arm 2A21*.

Look Inside

The exhaust system is supported by a bracket at the gear change lever casing with clamp bolt HZS609, washer 21A1148 and packing strips 21A1147. A rectangular rubber mounting AYA2071 supports the exhaust system at the rear sub-frame, and a bobbin type mounting AYA2070 at the very rear with support GEX7084.

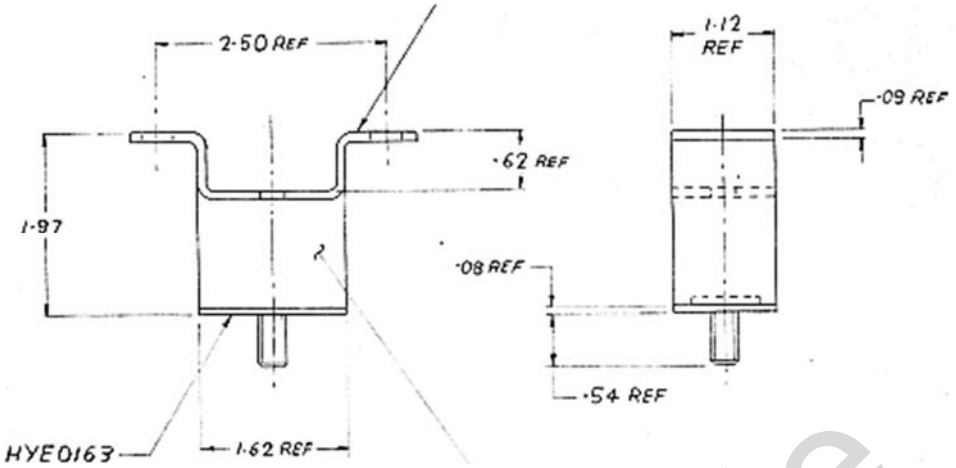

Fig. 2.19.6 *Exhaust mounting AYA2071/2A2200.*

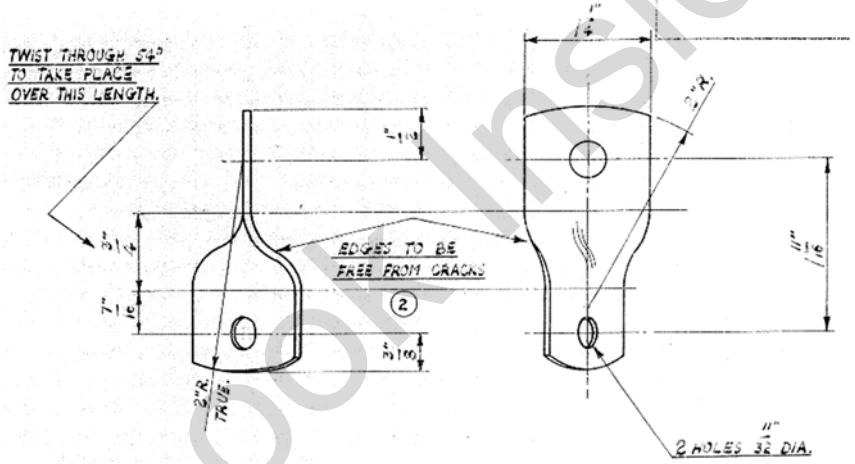

Fig. 2.19.7 *Exhaust pipe mounting 2A2200 and strap 2A2203.*

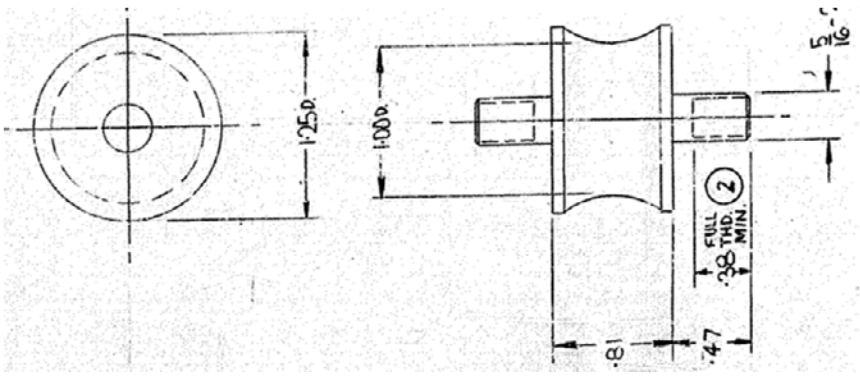

Fig. 2.19.8 *Exhaust mounting AYA2070.*

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Chapter 4. Cooling System

The pressurised thermo-syphon cooling system utilises a belt driven impeller type water pump which also drives the cooling fan. The radiator is supported by a two-piece shroud which itself is rubber mounted to brackets at the top and bottom that attach to the engine. Air enters through the front grille, is pushed through the radiator, and exits in the left-hand wheel well through slots in the flitch panel.

There are two types of radiator arrangements, the first being the older style open system, the second being a sealed system with an expansion recovery tank.

For the first type (998cc), the deep-type 0.836” Morris Motors radiator cap AYA2078 (AYH2092) is rated at 13 psi relief pressure and suits radiator filler neck 1.017” deep and has narrow lugs 0.47” on each side.

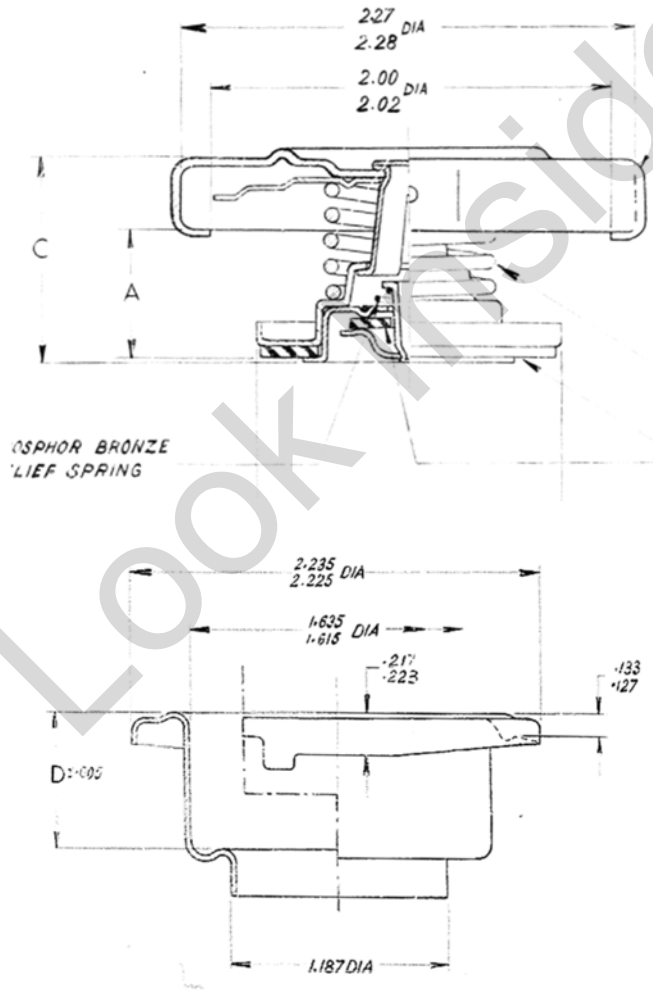


Fig. 4.1 *Radiator cap* ARH1542 and neck AYH2092.

The radiator AYA2077 has fins spaced as 16 fins per inch finished in radiator black. It should be noted that radiator AYA2030 fitted to ADO15 Morris 850 has 13 fins per inch and the top hose connection is positioned 4.84” from the centre line compared to 3.38” of AYA2077. Radiator AYG2244 may also be fitted and this is similar to AYA2077 but has different inlet and outlet pipes and the upper mounting bracket has an extra screw and speed nut.

5.3.2 Carburetter AUC976

AUC976 is identical to AUD86 with the exception of the float assembly (now AUD9202).

5.3.3 Carburetter AUD13

The 1098cc engine is fitted with 1 ¼" HS2 AUD13 carburetter which is similar AUD86 with the exception of the main body AUC8210 (AUC8250), float chamber AUC1390, and float AUD9904.

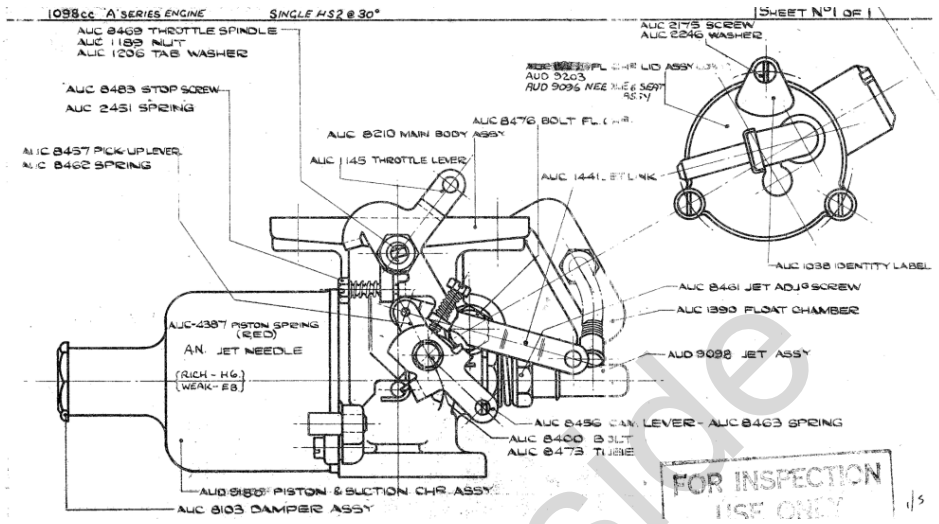


Fig. 5.3.3.1 *Carburetter AUD13.*

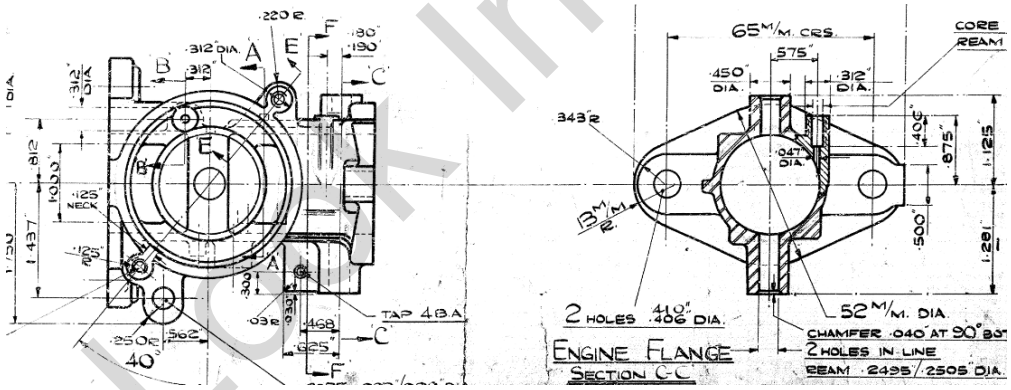


Fig. 5.3.3.2 *Carburetter body AUC8210 (AUC8450*).

5.3.4 Carburetter AUD368

Carburetter AUD368 is identical to ADU13 with the exception of the throttle shaft, tab washer, throttle lever cam and float (now AUD9904).

5.4 Air Cleaner

The Coopers Mechanical Joints brand air cleaner/silencer is fitted with a dry treated pleated paper element AYA2127. The effective filtered area is 335 sq ins. The aluminium cast adaptor housing is a Coopers part and not supplied by SU.

Look Inside

securing bolts AYA122 (MYH4065) are pressed over into their nuts at three locations for locking. ¼" holes are drilled near the periphery of the flywheel for balancing where necessary.

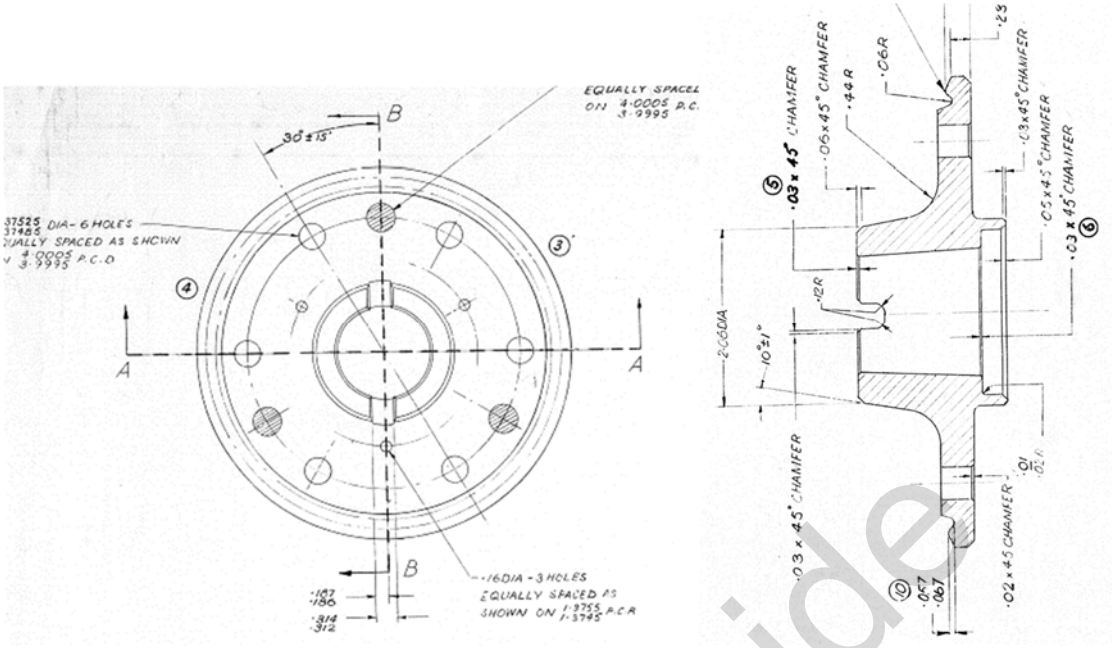


Fig. 6.1.2 *Flywheel hub AYA84.*

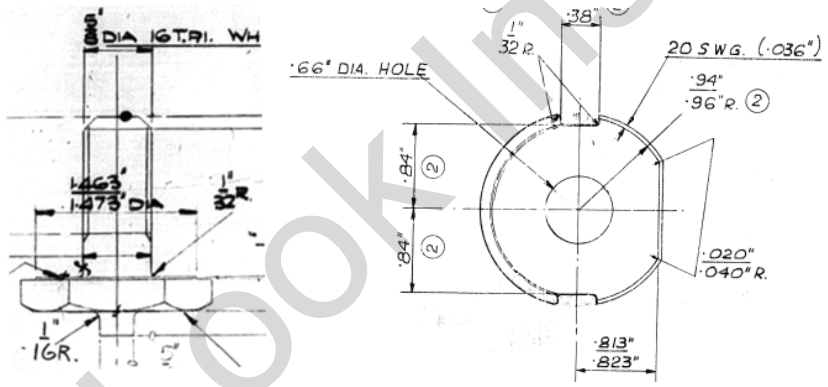


Fig. 6.1.3 *Flywheel bolt 22A747 and locktab 22A1155.*

The flywheel is fitted with a carbon manganese steel hardened ring gear AYA83 which has 107 teeth with a diametral pitch of 10/12 and a pressure angle of 20°. When supplied as a service part, the ring gear is painted with a strip of Thermindex colour paint which changes from scarlet to grey brown at a temperature of between 300°C and 400°C. The inner diameter of the ring gear is 9.551-9.554", and outer diameter of the ring gear is 10.841- 10.846" with thickness 0.5". There is a 45° chamfer to lead in the starter pinion gear.

Ring gear 12G2445 is identical to the above except the thickness is 0.350" with dimensions 9.556-9.563" ID.

Look Inside

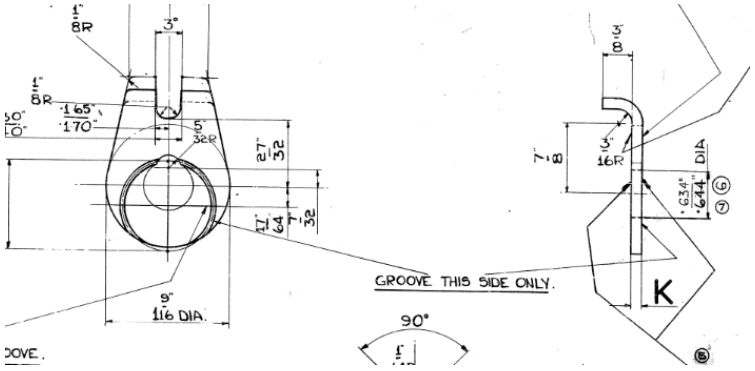


Fig. 7.2.7 *Laygear thrust washers 88G324 and 88G325*.

The layshaft 22A1371 is 0.6315 – 0.6320" diameter.

For the 3-speed synchromesh transmission, the gears and hubs are carried on the 3rd motion shaft 22G392 of nominal 1" diameter which is case-hardened all over except for the speedometer drive end. The diameter of the spigot end which enters the 1st motion shaft roller bearing 13H1516 is shown as 0.5506 – 0.5511" (approx. 14mm).

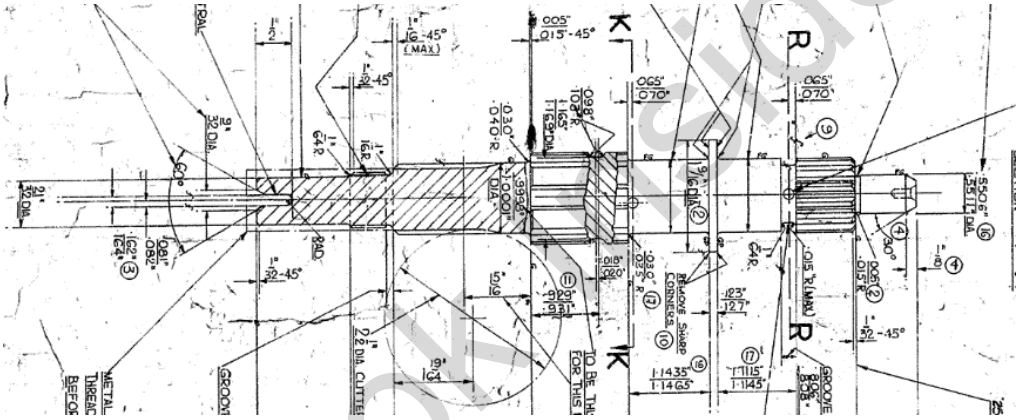


Fig. 7.2.8 *3rd motion shaft 22G392 (22G193)*.

The 3rd motion shaft gears run on needle rollers 22G149 for the 3-speed synchromesh transmission.

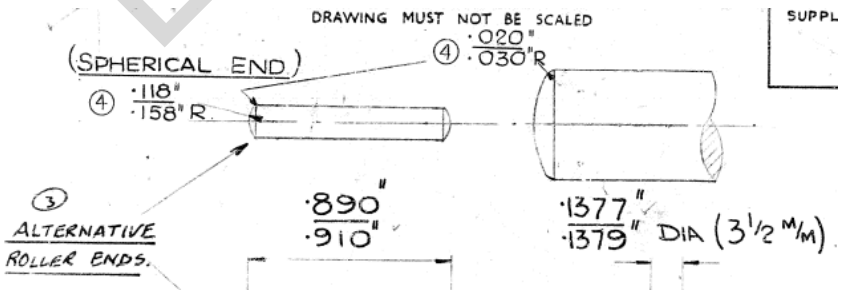


Fig. 7.2.9 *Needle rollers for main shaft gears 3-speed synchromesh transmission 22G149*.

Look inside

A grease cap AYB4012 is used on the outside of the hub.

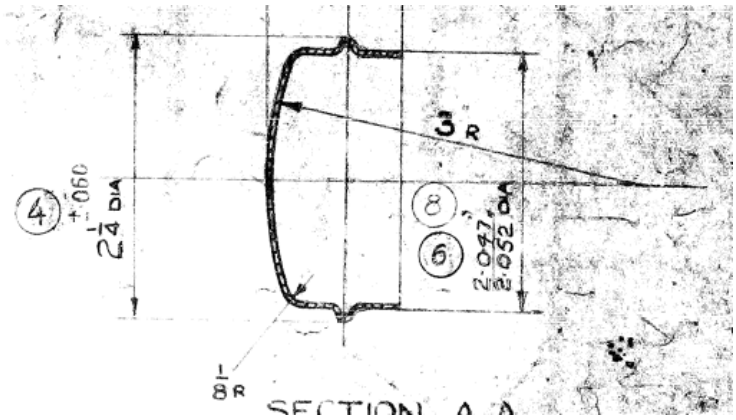


Fig. 8.19 *Grease cap AYB4012.*

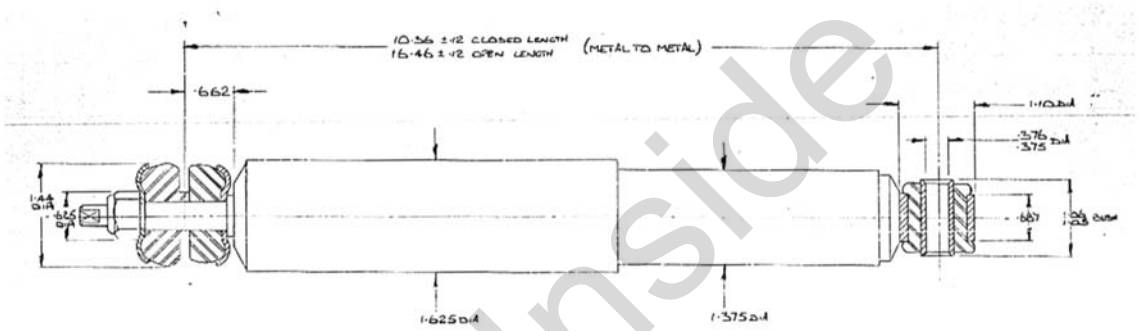


Fig.8.20 *Rear telescopic damper AYK7146.*

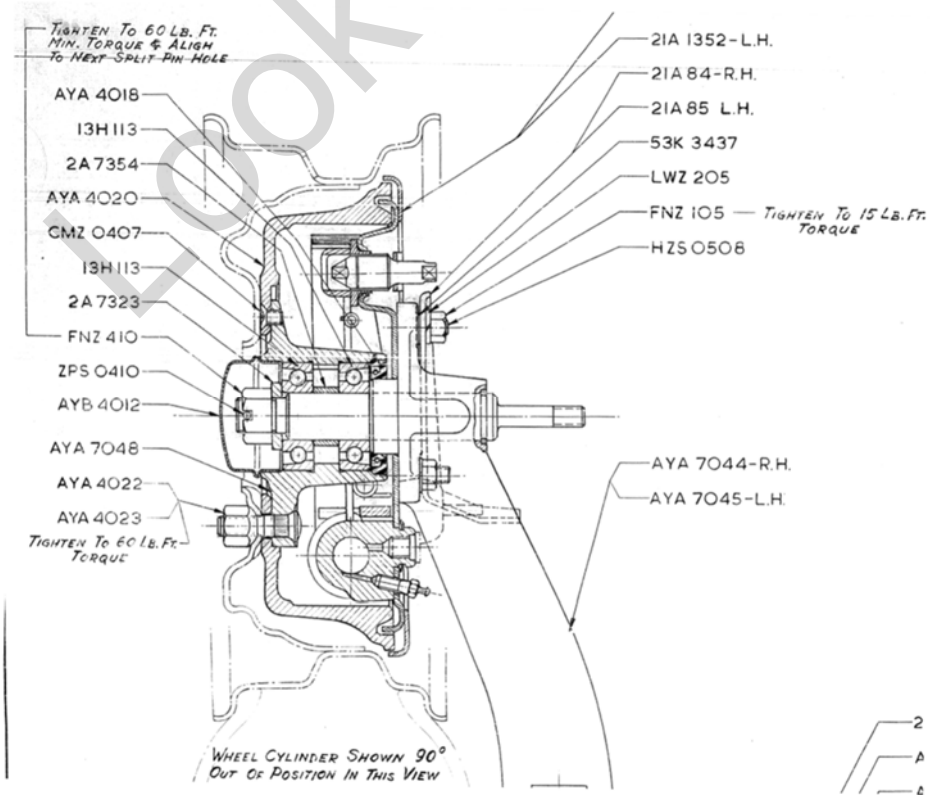


Fig. 8.21 *Rear hub assembly AYA7040.*

Look Inside

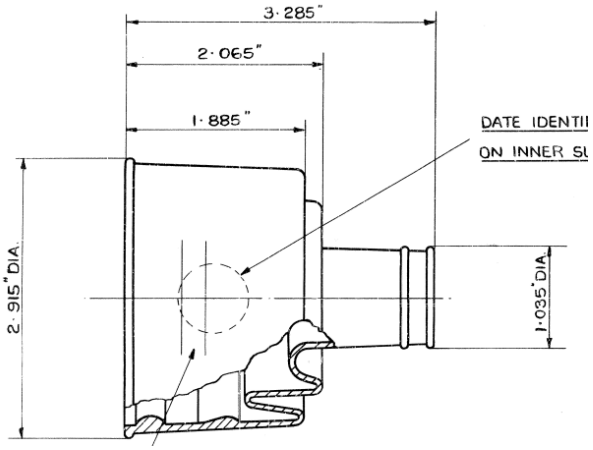


Fig. 10.5.5 *Rubber boot, constant velocity joint 21A265.*

The flexible boots 21A963 for the inner sliding joints are secured with steel straps but 2 turns of soft iron wire twisted at the ends and folded against the direction of rotation may be used.

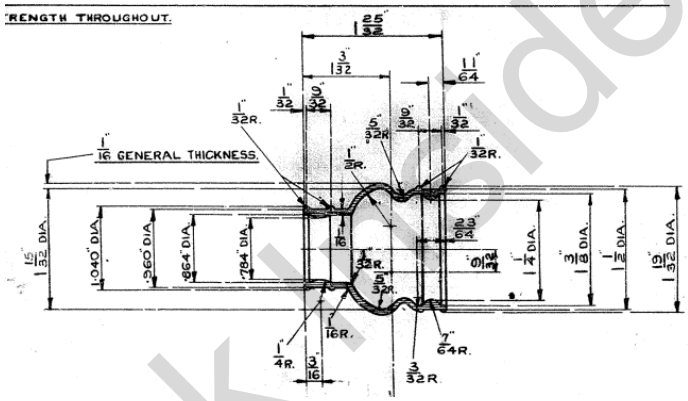


Fig. 10.5.6 *Rubber boot, sliding joint 21A452*.

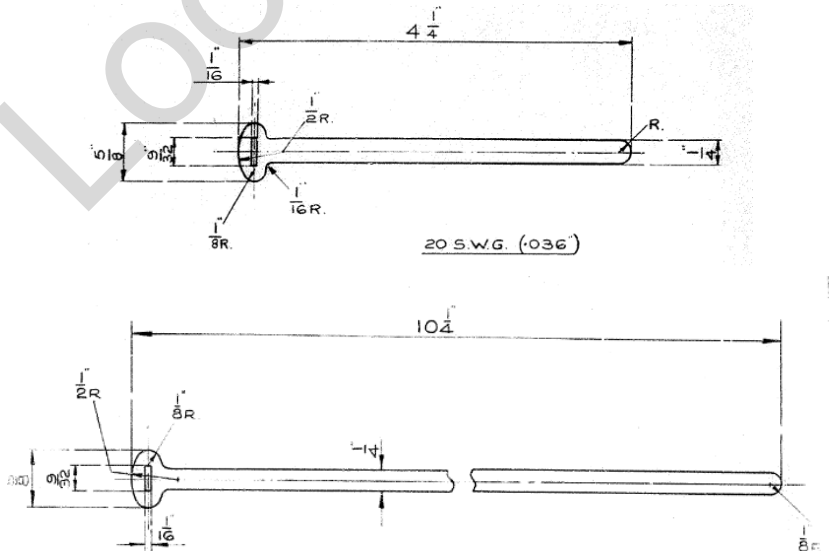


Fig. 10.5.7 *Straps for rubber boot 444 445.*

Look Inside

The stop lights are operated by a Lucas hydraulic switch screwed into an adaptor 85578 which passes through a banjo 29592 at the front right of the sub-frame. The switch has two male Lucar terminals and has a 1" AF body. It should be noted that the copper washer on the top side of the banjo fitting is different to the one on the bottom side.

The brake line that passes from the banjo fitting to the left hand side of the sub-frame is secured to the sub-frame by clips HYB1709.

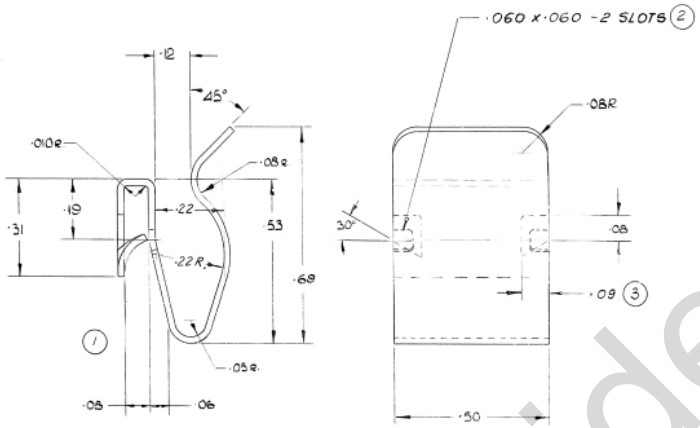


Fig. 11.4.4 *Pipe securing clip HYB1709*.

Metal shields AYK5594/AYK5595 are fitted to protect the rear brake lines.

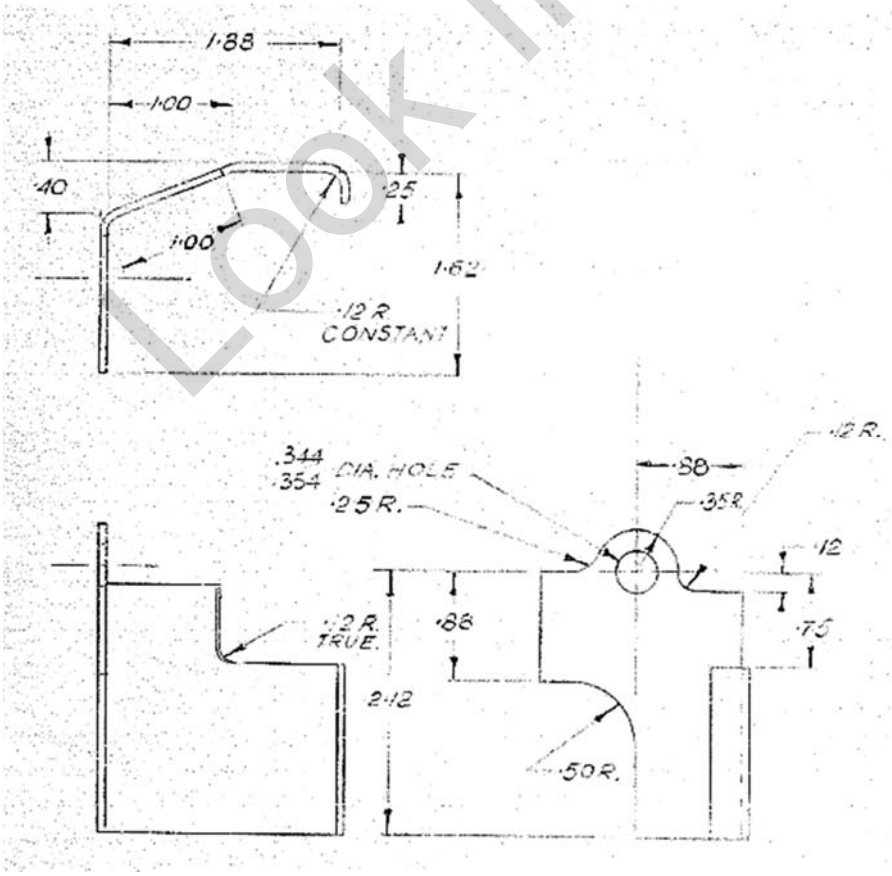


Fig. 11.4.5 *Brake pipe shield AYK5595*.

Look Inside

The red ignition warning light in the instrument housing is fed with battery voltage on one side of the filament and generator output voltage (terminal D) on the other side. When the generator voltage drops below the battery voltage, current flows from the light through the generator armature windings to earth and the light glows indicating reduced charging from the generator.

For the generator to produce an output, the armature output D terminal must be connected to the field F terminal. This happens via the action of the relay contacts at the current and voltage regulator coils, the contacts being connected in series. When either contact opens, the connection is lost, the connection between the output and the field coils is broken, thus interrupting the generator output. In practice, this happens at about 60 times per second. From a discharged state, the voltage regulator contact points remain closed, and the current regulator coil contacts oscillate. When the battery voltage rises, the current regulator contacts remain closed and oscillation of the voltage regulator coil regulates the output.

The voltage output of the generator is thus controlled by the rapidly opening and closing of the regulator contacts. The spring adjustment on the contacts controls the charging voltage which is rated at 15.4 – 16.4V at an engine speed of 1500 rpm.

12.3 Alternator

12.3.1 Alternator 15AC

A Lucas 15AC with an 8TR regulator is fitted for vehicles with negative earth up to YJBAB8R6708.

Unlike a generator, the rotating armature acts as the field, and the current is generated in the static windings. This permits a smaller design of brush gear, and the inclusion of solid state diode rectifiers eliminates the need for a segmented commutator.

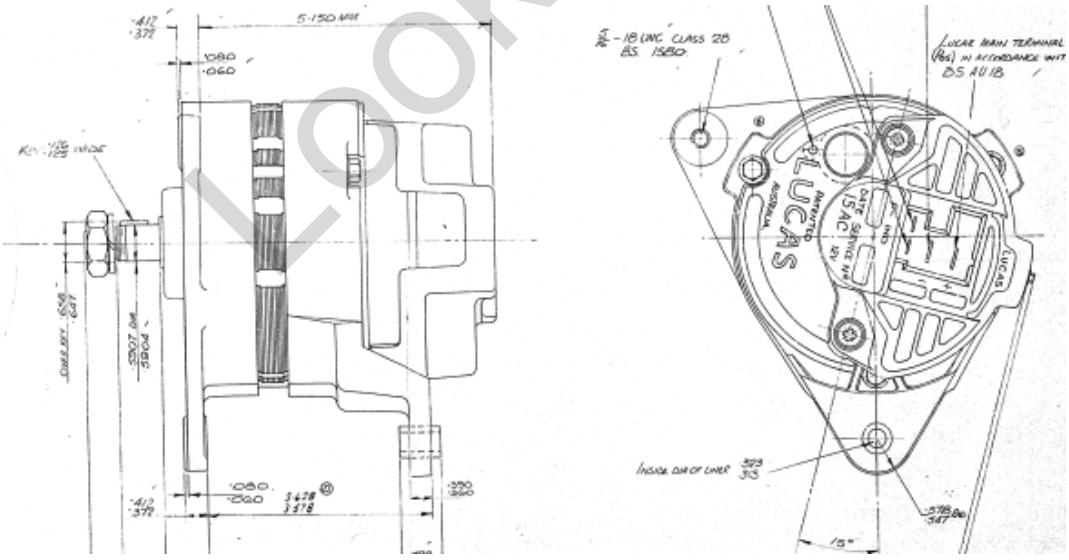


Fig. 12.3.1.1 *Lucas 15AC Alternator 62210815*.

The external 4TR or 8TR regulator controls the alternator output.

Look Inside

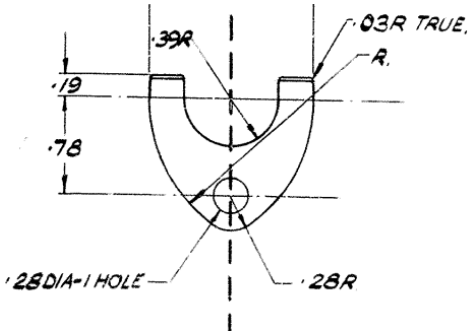


Fig. 13.5 *Spring plate AYA3052*.

The speedometer cable is attached to the front crossmember by a spring clip 5L90 which has an inside diameter of 0.3” and width 0.375” (similar in appearance, but smaller and narrower than the 13/32” inside diameter and 0.5” wide radiator overflow support clips).

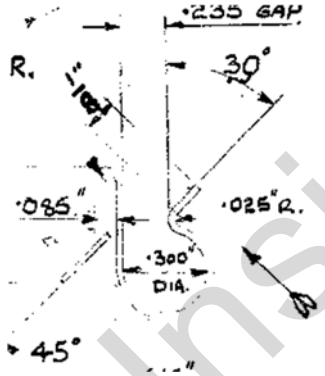


Fig. 13.6 *Speedometer cable support clip 5L90*.

The Smiths fuel gauge 13H2133 is of the bi-metallic strip deflection type and is powered by a voltage stabiliser mounted on the rear of the speedometer housing.

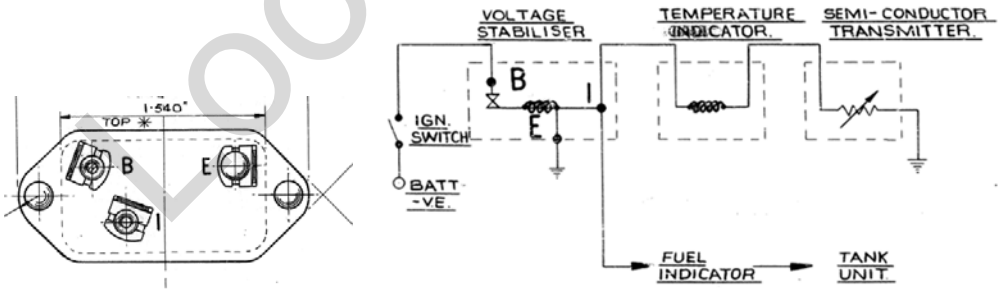
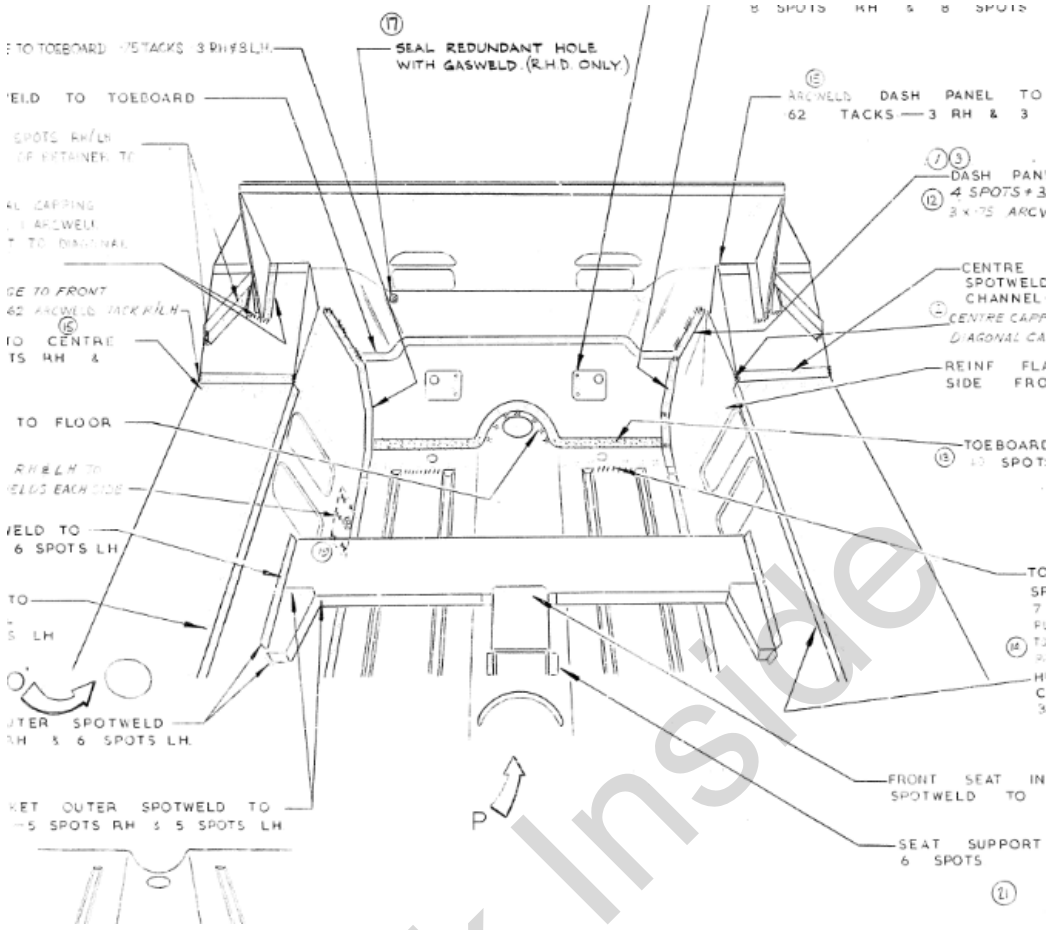
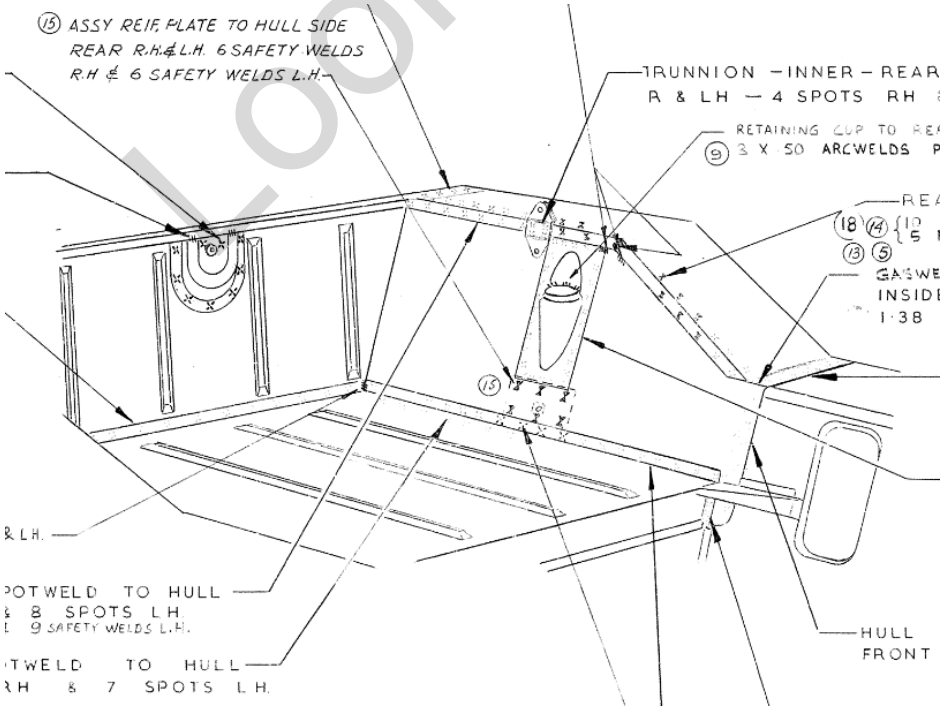


Fig. 13.7 *Voltage Stabiliser 13H1943*

The Smiths voltage stabiliser produces an average 10V output which provides a stable supply to the fuel gauge (and temperature gauge on Cooper models) regardless of variations in battery voltage during charging and discharging. The stabiliser is mounted with the terminals B and E at the top and no more than 20° from the vertical.

Look Inside


SEAL REDUNDANT HOLE WITH GASWELD (R.H.D. ONLY)
TO TOEBOARD
TO FLOOR
SEAT SUPPORT 6 SPOTS
FRONT SEAT IN SPOTWELD TO


ASSY REIF. PLATE TO HULL SIDE REAR R.H.& L.H. 6 SAFETY WELDS R.H & 6 SAFETY WELDS L.H.
TRUNNION – INNER – REAR R & LH – 4 SPOTS RH
3 X 50 ARCWELDS
HULL FRONT

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