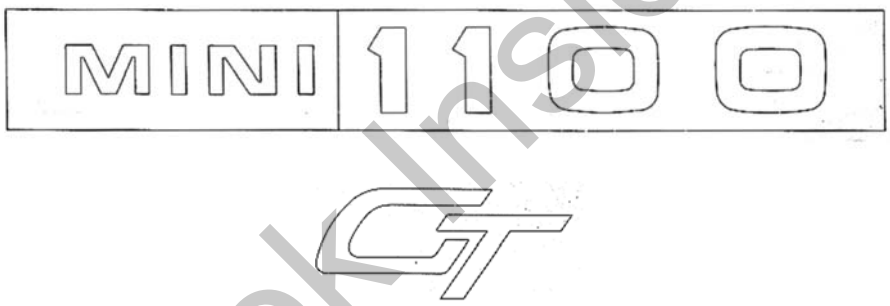
Vehicle Engineering Series

MINI CLUBMAN



GT

1971 - 1973

Tony Cripps

Contents

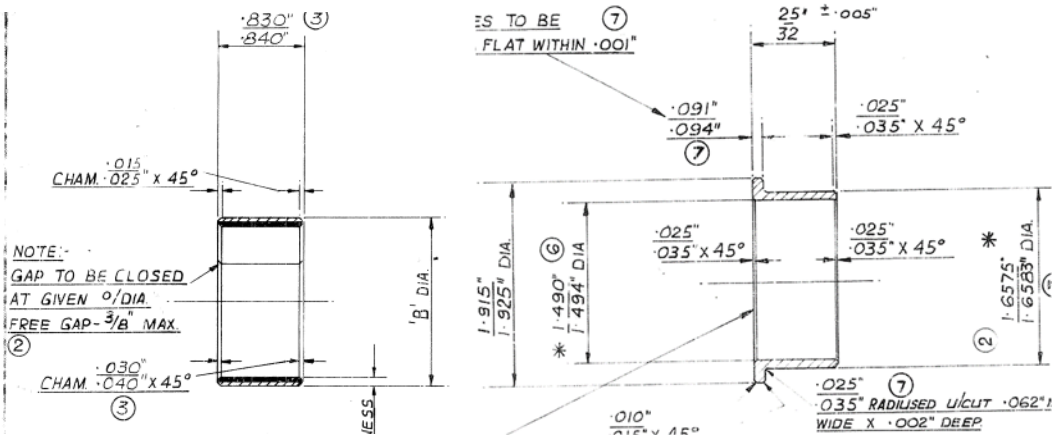


Fig. 2.4.1.3 *Primary gear bushes (inner) 22G401 and (outer) 22G109.*

The primary gear thrust washer 22A321 has eight grooves and is available in a variety of thicknesses to provide correct lateral running clearance for the primary gear.

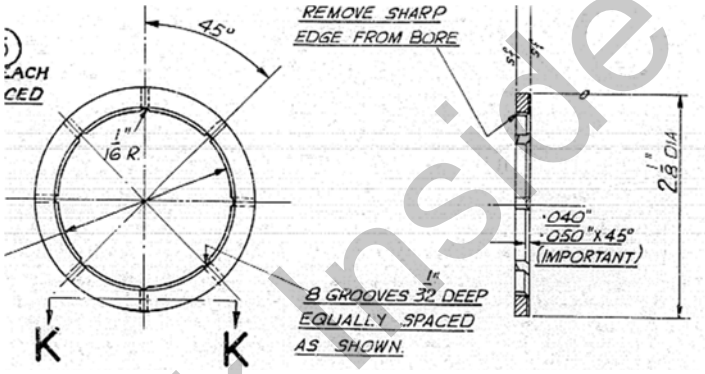


Fig. 2.4.1.4 *Primary gear thrust washer 22A321*.

The primary gear oil seal 13H150 (13H2934) has an outside diameter of 70 mm to fit the recess in the housing 2.756" diameter. The inside diameter is 2.166".

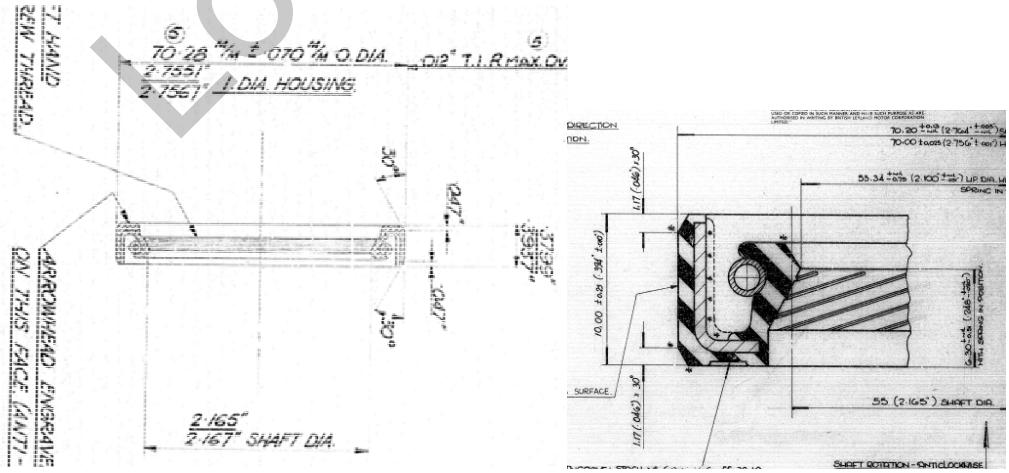


Fig. 2.4.1.5 *Primary gear oil seal 13H150 (13H2934)*.

This important seal and has changed in material specification over the years. The inner face of the seal has a left-hand thread moulded into it, and the flat face of the seal has an arrow which indicates the direction of rotation of the primary gear sealing surface. The lip of the seal faces inwards towards the primary gear teeth.

The cast iron valve guides 12A186 have a nominal outside diameter of 0.4695” – 0.470” and inside diameter of 0.2813” – 0.2818” with length 1.687”. Alternate valve guides 12G1111 have grooves for umbrella type oil seals.

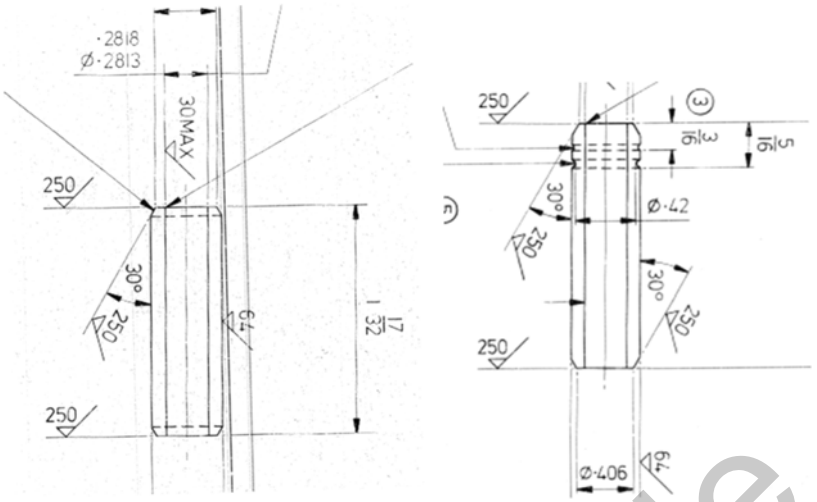


Fig. 2.8.1.9 *Inlet and exhaust valve guide 12A186 and 12G1111*.

Valve springs AEA311 have a free length 1.75” and fitted length 1.258” made from 9 ½ SWG dia spring steel with 4.5 working coils.

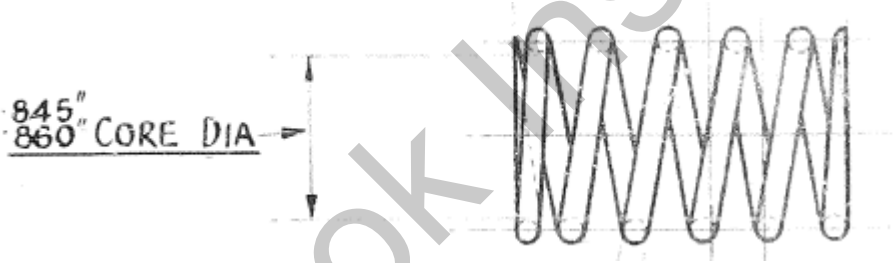


Fig.2.8.1.10 *AEA311 Valve spring AEA311*.

A packing ring 2A879 is fitted under the cup AEA402.

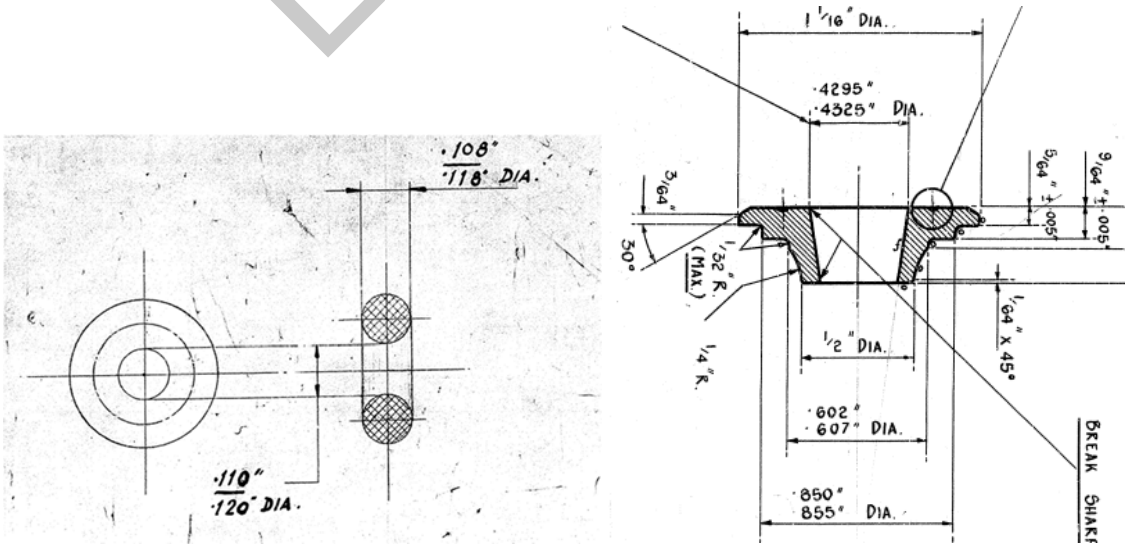


Fig. 2.8.1.11 *Packing ring 2A879 and stem cup AEA402*.

Each valve is fitted with an umbrella type oil seal AEG327.

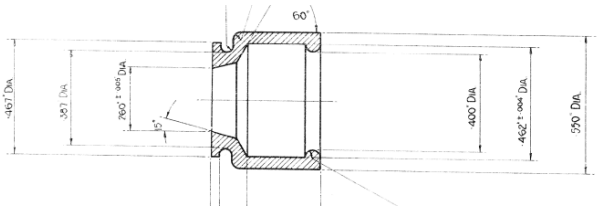


Fig. 2.8.2.9 *Valve stem oil seal AEG327*.

The valve rocker cover AYG241 with no oil breather is specified for YDO23. The filler cap 13H2296 is vented.

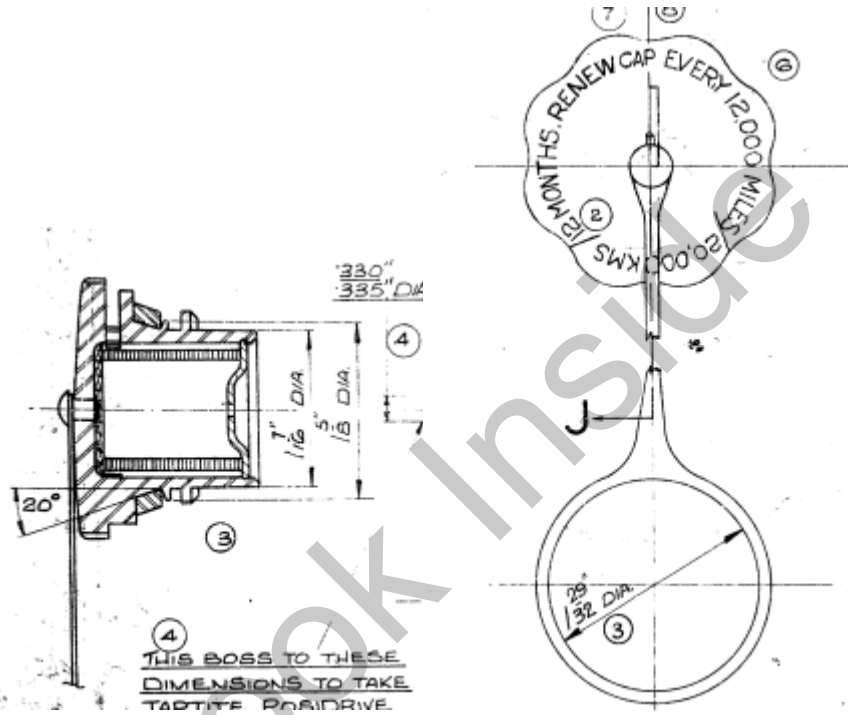


Fig. 2.8.2.10 *Oil filler cap 13H2296*.

The cover is fitted with retainers 12A474 and 12A480 for the joint washer.

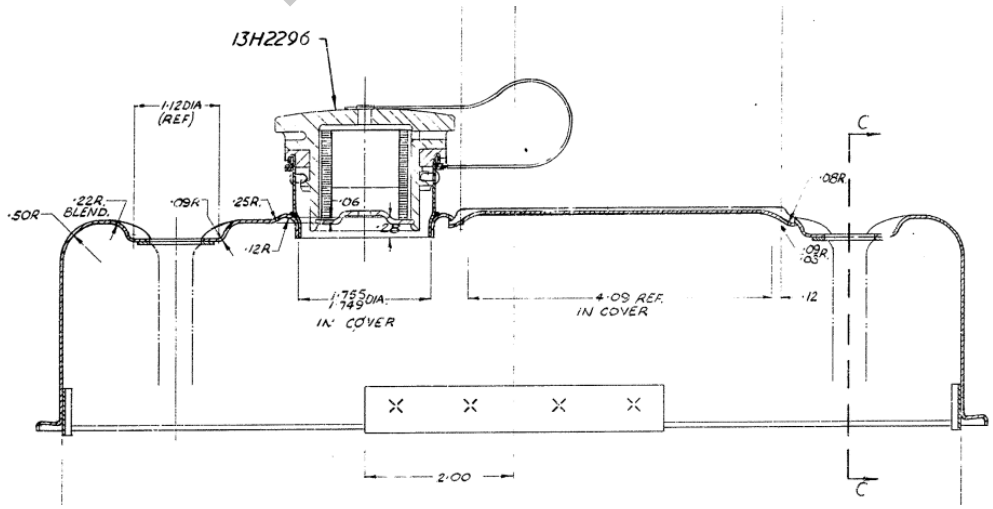


Fig. 2.8.2.11 *Valve rocker cover AYG241 (AYG162)*.

2.17 Inlet and Exhaust Manifold

2.17.1 1098cc

The inlet and exhaust manifold 12A1097 is of one-piece design. A boss is used for the PCV valve 13H1591 and associated bracket AEG351.

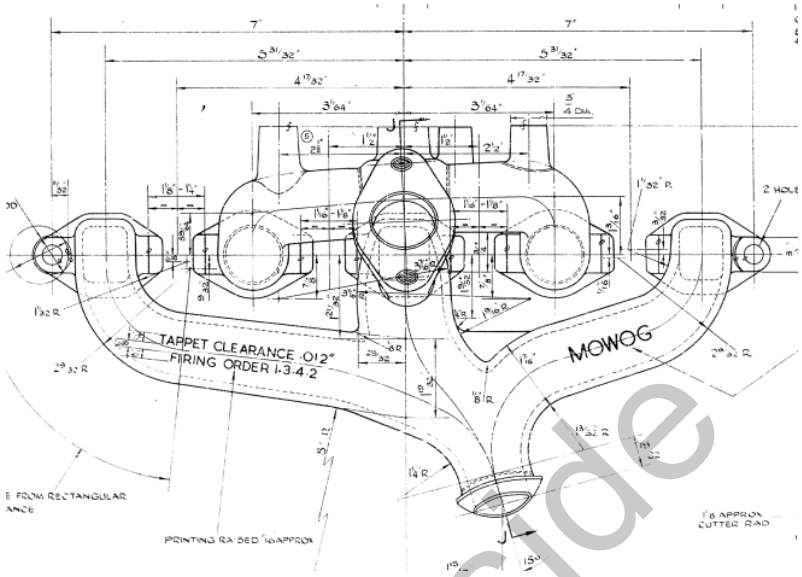


Fig. 2.17.1.1 *Inlet and exhaust manifold 12A1097*

The washers PWZ105 for the manifold nut at the two extreme ends of the manifold are plain washers different to the clamping washers 12A1211.

Washers PWZ105 are zinc plated 5/16” inside diameter and 0.625” outside diameter, 0.072” thickness. The clamping washers 12A211 are 1” external diameter 0.192” thickness with 11/32” diameter holes.

Securing nuts BNN105 are 5/16” 24 TPI UNF brass nuts of thickness 0.38”.

Studs 53K487 are 5/16” 24 TPI UNF. The nut goes on the long side of the stud. The short side screws into the cylinder head casting. These studs are rated at 55 Tons and do not have a groove in the plain portion.

The 0.06” thick manifold gasket AYG142 is specified as being “Cemjo” double.

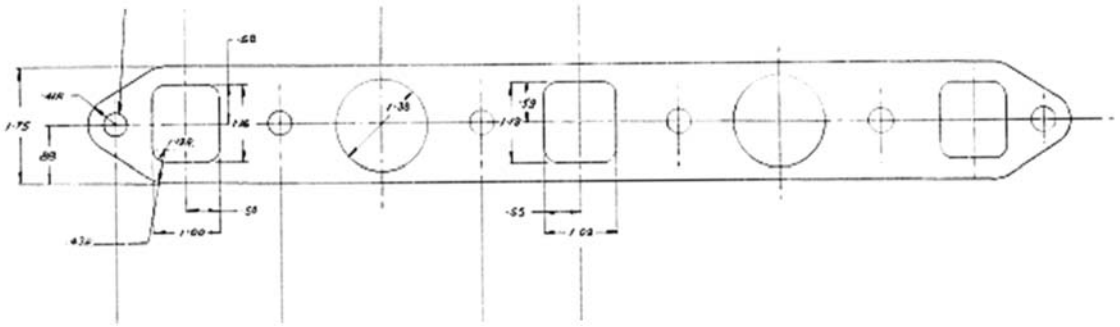


Fig. 2.17.1.2 *Manifold gasket AYG142*.

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.

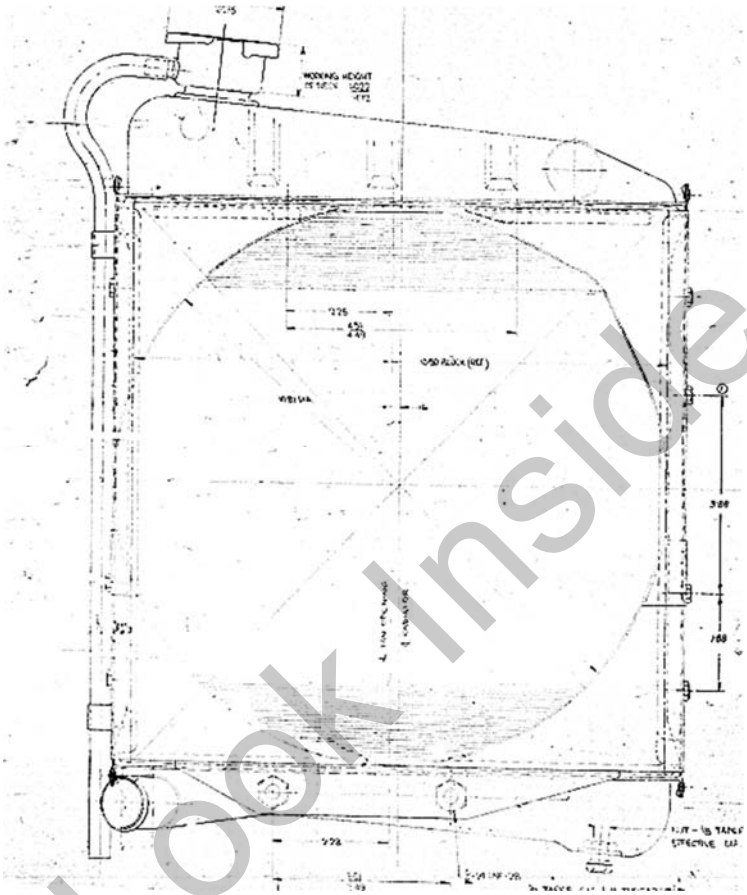


Fig. 4.1 *Radiator AYG2244*.

The deep-type 0.836” radiator cap AYA2078 is rated at 13 psi relief pressure and suits radiator filler neck 1.017” deep and has narrow lugs 0.47” on each side.

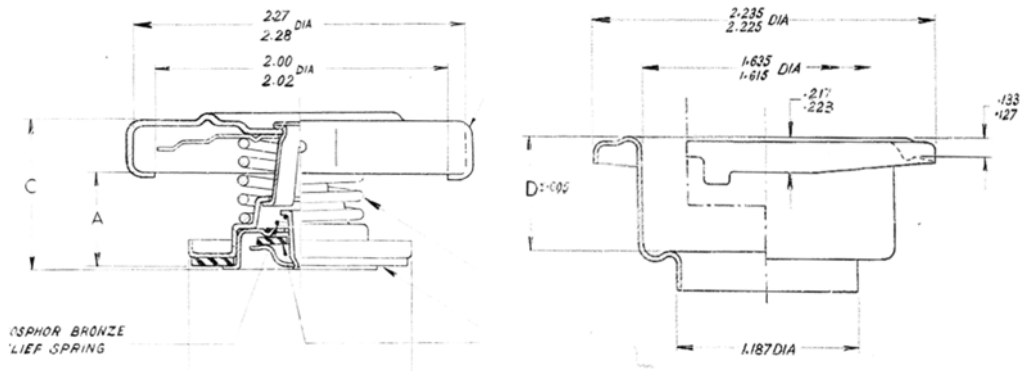


Fig. 4.2 *Radiator cap* ARH1542 (AYH2092) and neck AYH2092.

5.2 Fuel Pump

5.2.1 Mechanical Fuel Pump

YDO21 YDO22 is fitted with a GOSS G195 YD mechanical fuel pump AYG174/AYG292. The normal working pressure is 1 ½ to 2 ½ psi.

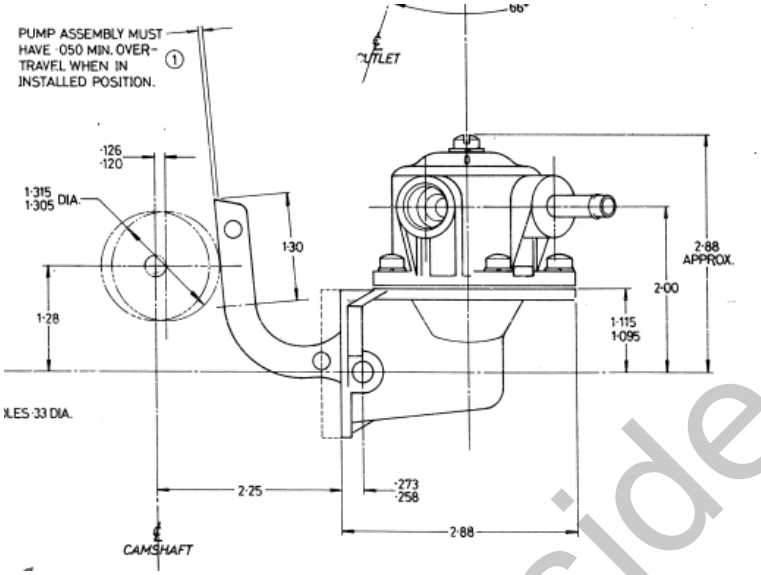


Fig. 5.2.1.1 *Mechanical fuel pump AYG174/AYG292*.

The screw threads for the pipe fittings are ½ 20 UNF.

The earlier pump AYG174 inlet is fitted with a union AYA2051 over which a rubber fuel hose is fitted to connect to the fuel supply pipe. The pump outlet AYA2053 is bundy tube leading up to the carburetter area.

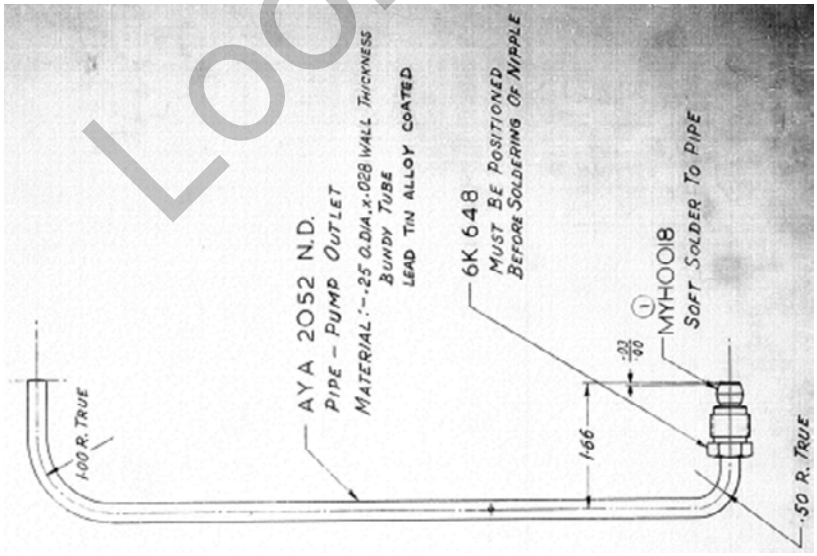


Fig. 5.2.1.2 *Fuel supply pipe AYA2053*.

There is a replaceable filter gauze HYL1396 accessible under the top cover.

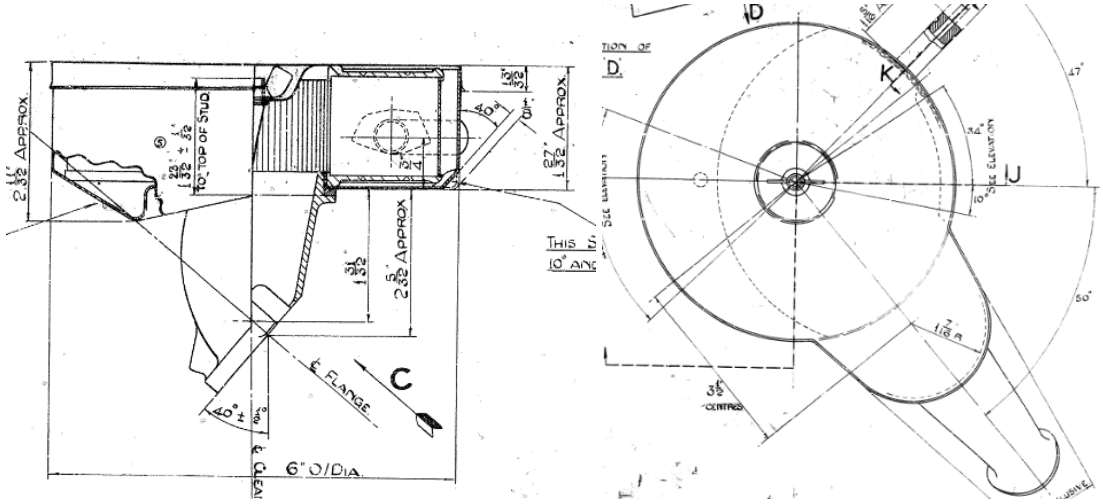


Fig. 5.4.1.1 *Air cleaner/Silencer 12A51.*

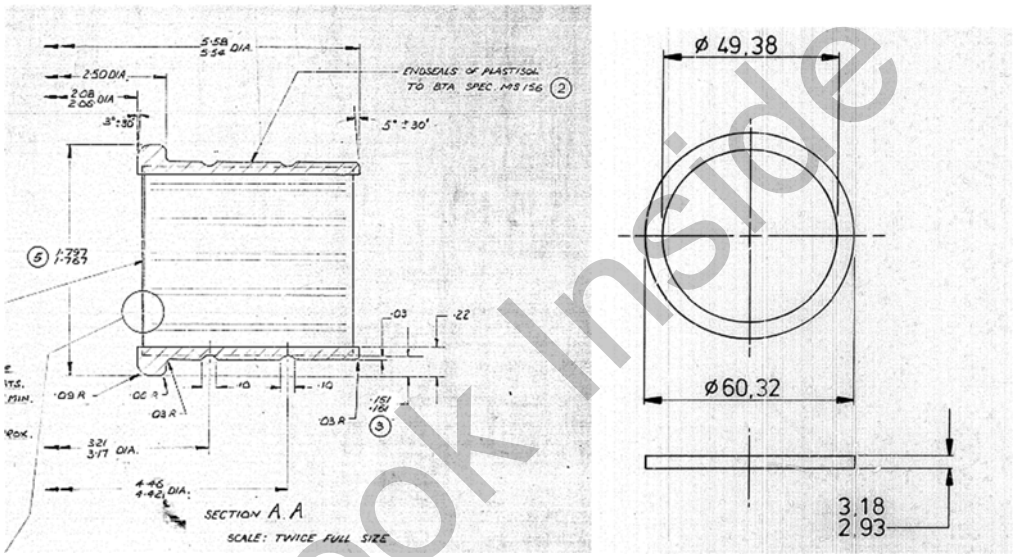


Fig. 5.4.1.2 *Air cleaner element AYA2127 and sealing ring 12A1433.*

Sealing washer 12A1433 fits below the air cleaner housing to the inlet flange.

The wing nut 53K2852 on the top of the air cleaner assembly has a ¼" 20 TPI UNC thread. There is a hard, red fibre washer 27H1284 (ND) under the wing nut.

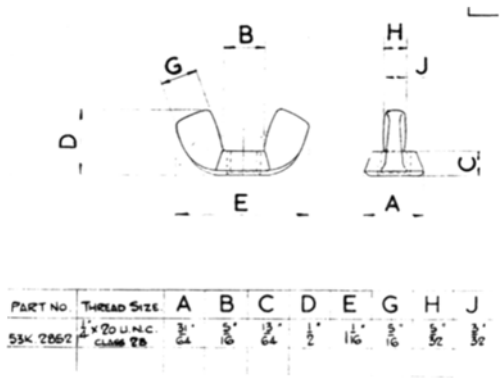


Fig. 5.4.1.3 *Wing nut 53K2852.*

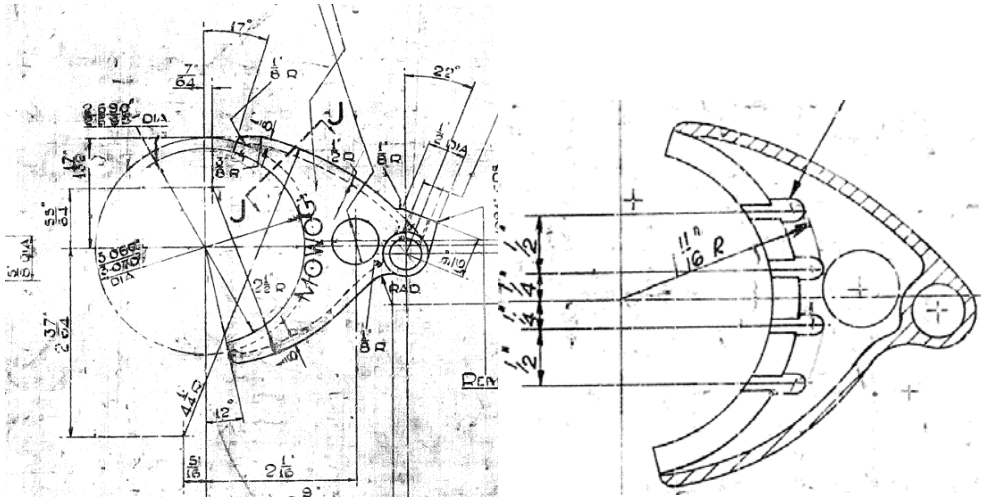


Fig. 7.1.3.3 *Selector fork 3rd/4th speed 22A610*.

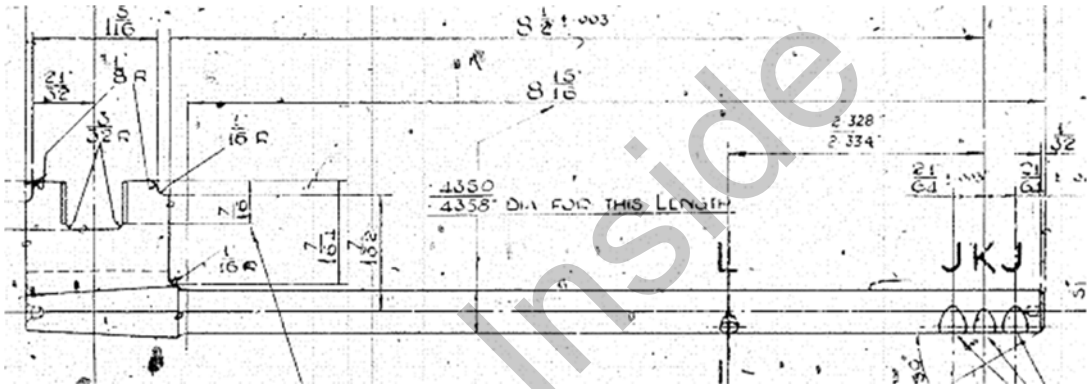


Fig. 7.1.3.4 *Selector rod 3rd/4th speed 22G822*.

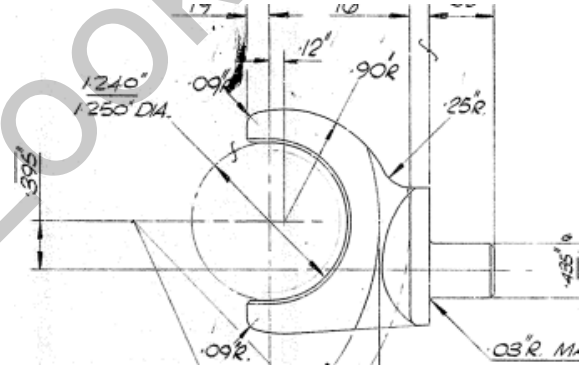


Fig. 7.1.3.5 *Reverse ford 22G827*.

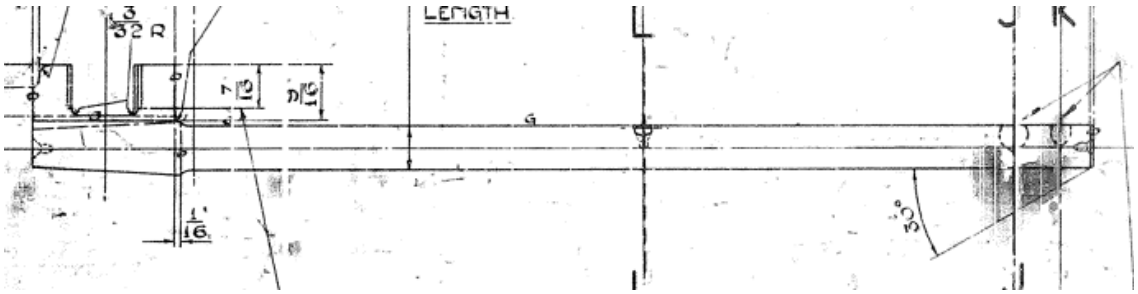


Fig. 7.1.3.6 *Reverse rod 22A169*.

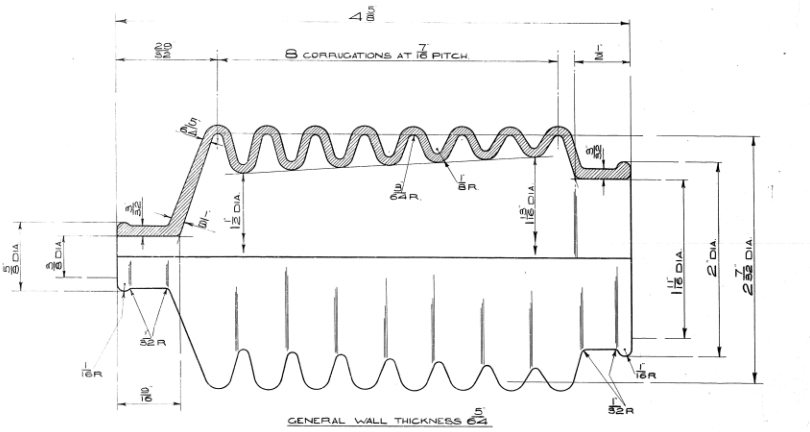


Fig. 9.4 *Bellows 17H6298*.

The inner ends of the outer bellows are secured with 1 15/16" diameter banded 20 SWG steel clips ACH5854 ¼" wide. The outer ends are secured with 5/8" diameter clips of the same cross section and width. The No. 6 UNC Phillips screws on both ends designed to be tightened so that the gap between the clamp flat faces is ¼".

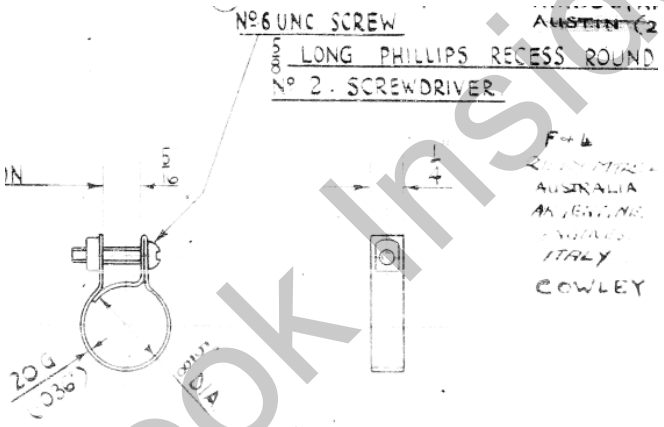


Fig. 9.5 *Clip ACH5854*.

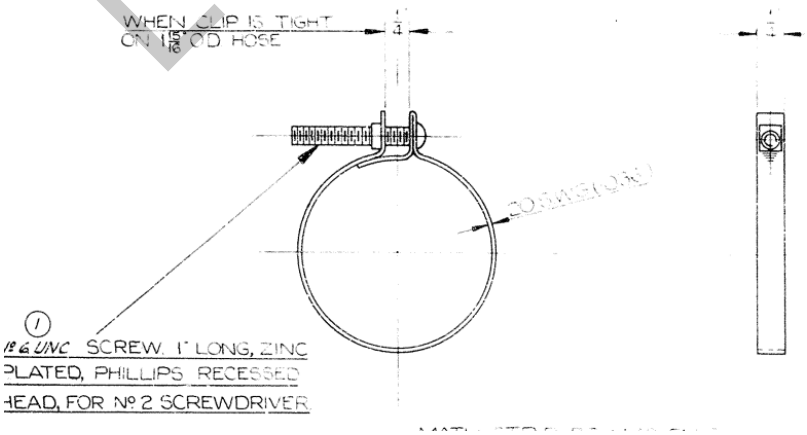


Fig. 9.6 *Clip CCA35.*

10.4 Drive Shafts

For YDO21 and YDO22, the drive shafts 21A261 and 21A262 are the same as those of YDO5 and are splined (19 splines, pressure angle 30°) for the hub which is secured by a 1 1/8" AF, 5/8"18 TPI UNF castellated nut. Two perpendicular 9/64" diameter holes are provided for a split pin. The maximum working angle for the constant velocity joint is 40°. The left-hand drive shaft has a length 12 3/16" while the right-hand drive shaft is of length 15 3/16". The inboard splines (16) are designed to have an axial sliding movement of approximately 1".

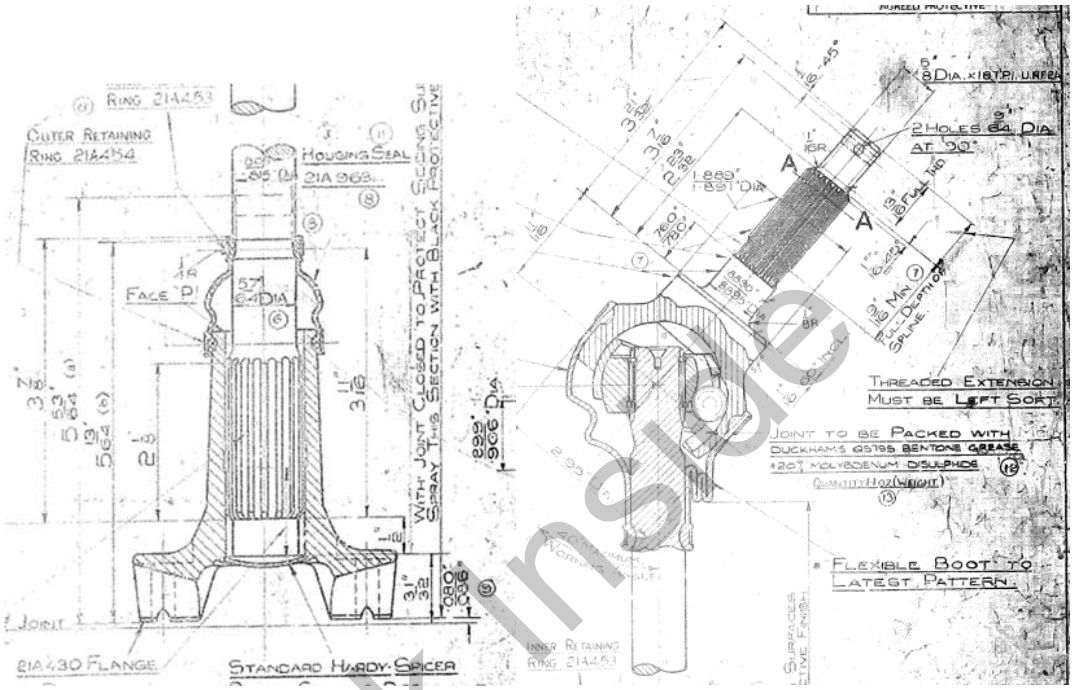


Fig. 10.4.1 *Drive shaft detail 21A261.*

The inner drive couplings are of rubber and steel construction and are secured with U bolts 22A132.

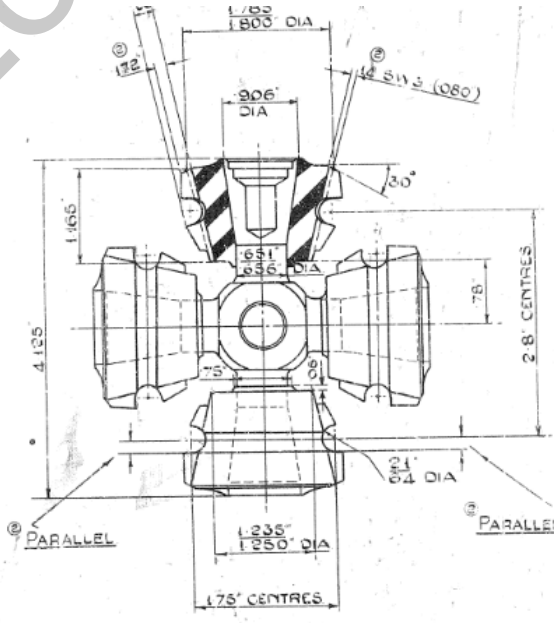


Fig. 10.4.2 *Drive coupling 2A3718.*

12.3 Alternator

A Lucas 15ACR negative earth alternator with internal regulation is fitted. Early production models have Lucas 15AC with external regulator 8TR.

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.

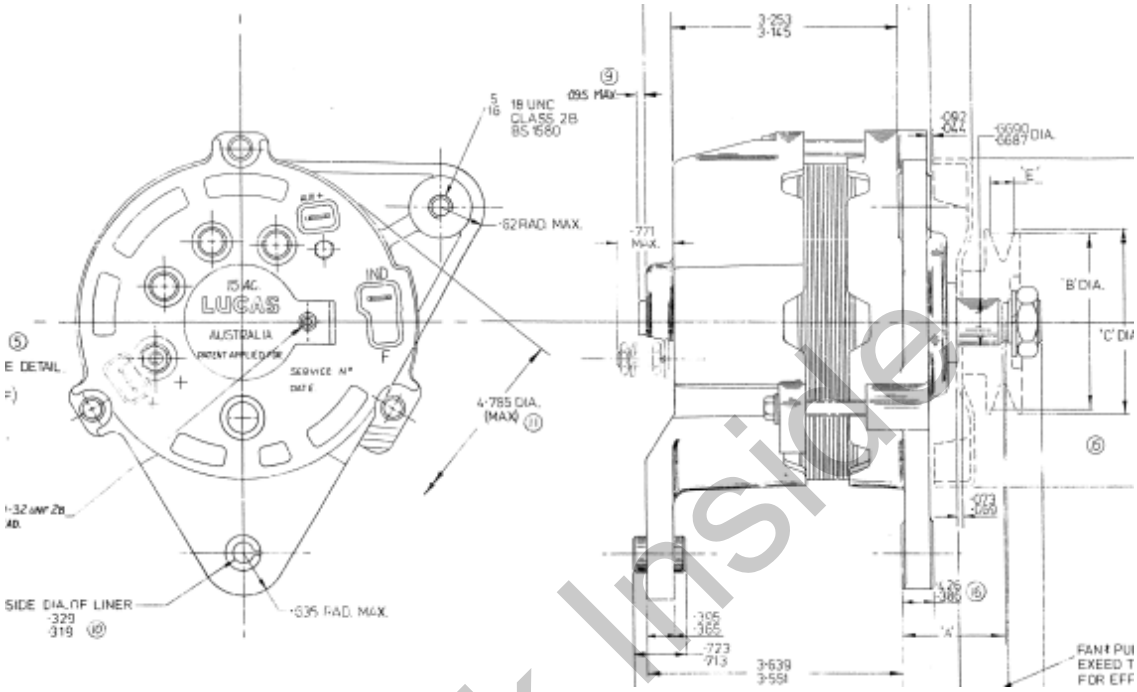


Fig. 12.3.1 *Lucas 15ACR Alternator MYH4285*.

The 15ACR is internally regulated and is rated at 28A. The pulley has a pitch circle of 2.5".

The alternator is attached to the front of the cylinder block via bracket AYA9189 at the rear, and pillar AYG2212 at the front. Adjusting link AYH2623 provides for fan belt tension.

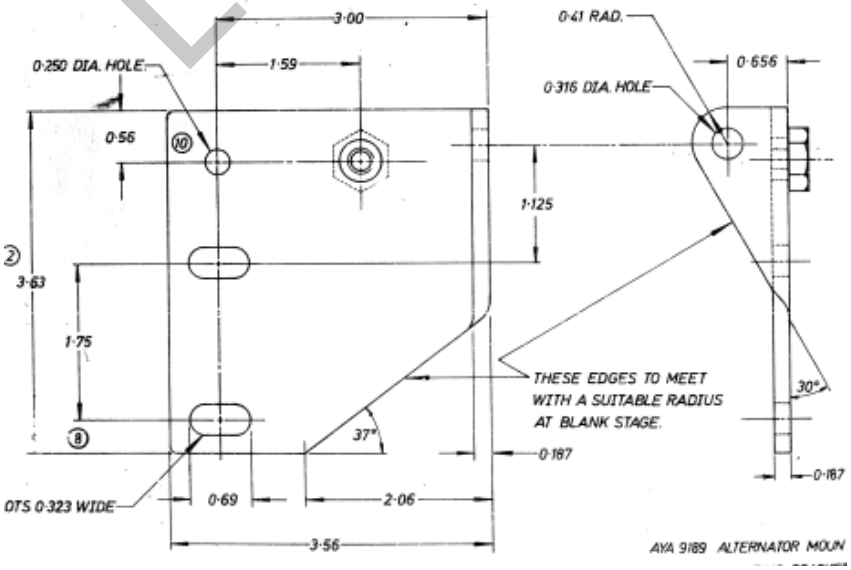


Fig. 12.3.2 *Alternator bracket AYA9189*.

	Service	Colour	Size
1	Supply to LH Stop Lamp	Green/Purple	9/0.012
2	LH Stop Lamp to RH Stop Lamp	Green/Purple	9/0.012
3	Tank Unit Earth	Black	9/0.012
4	Supply to LH Tail Lamp	Red	9/0.012
5	LH Tail lamp to Number Plate Lamp	Red	9/0.012
6	RH tail lamp to No. Plate Lamp	Red	9/0.012
7	Interior Lamp to Door Switch Connector	Purple/White	9/0.012
8	LH Flasher Lamp Supply	Green/Red	9/0.012
9	RH Flasher Lamp Supply	Green/White	9/0.012
10	Fuel gauge to Tank Unit	Green/Black	9/0.012
11	No. Plate Lamp Earth	Black	9/0.012
12	Interior Lamp Supply	Purple	9/0.012
13	Petrol Pump Supply	White	9/0.012
14	Petrol Pump Earth	Black	9/0.012
15	Supply to Left-hand Reversing Light	Green/Brown	9/0.012
16	LH Reversing Light to RH Reversing Light	Green/Brown	9/0.012

Table 12.8.8 *Body harness YDO23 AYA9198*

A heavy cable 12.75” long AYA9096 connects the starter solenoid to the starter motor.

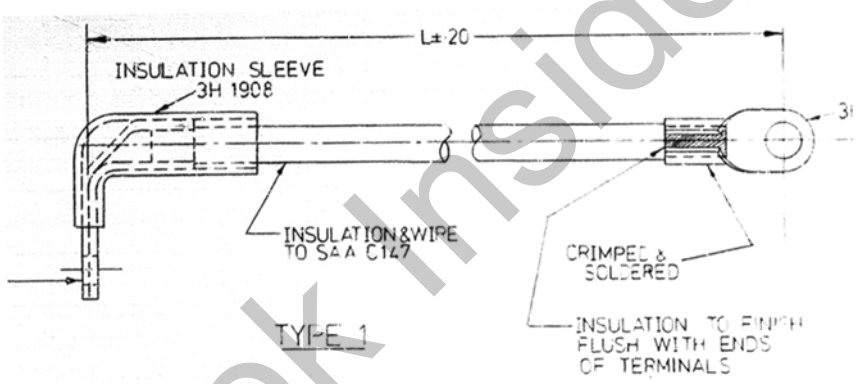


Fig. 12.8.8 *Starter solenoid to starter motor AYA 9096*.

At the battery, 7.5” long cable AYG9389 (Saloon) and 10” long AYH9138 (Van) connects the negative terminal to earth.

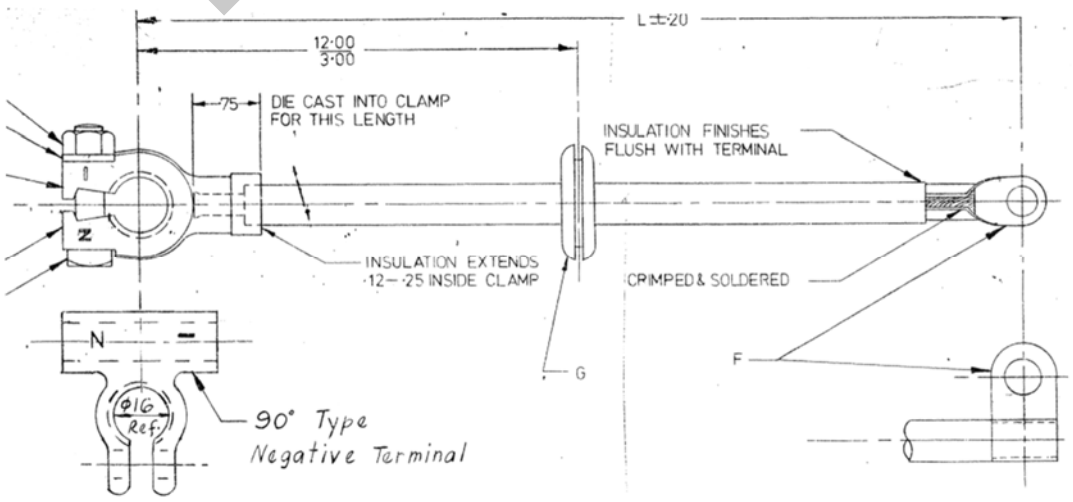


Fig. 12.8.9 *Battery to earth, AYG9389 (MYH4265).*

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.

13.2 YDO22 YDO23

YDO22 and YDO23 feature the new printed circuit style of instruments placed in front of the driver. YDO22 has “twin pack” instruments AYG9302/AYG9448 comprising a speedometer in the left-hand binnacle and fuel and temperature gauges and warning lights in the right-hand side. YDO23 has triple pack instrumentation AYG9453 with a tachometer in the far right position.

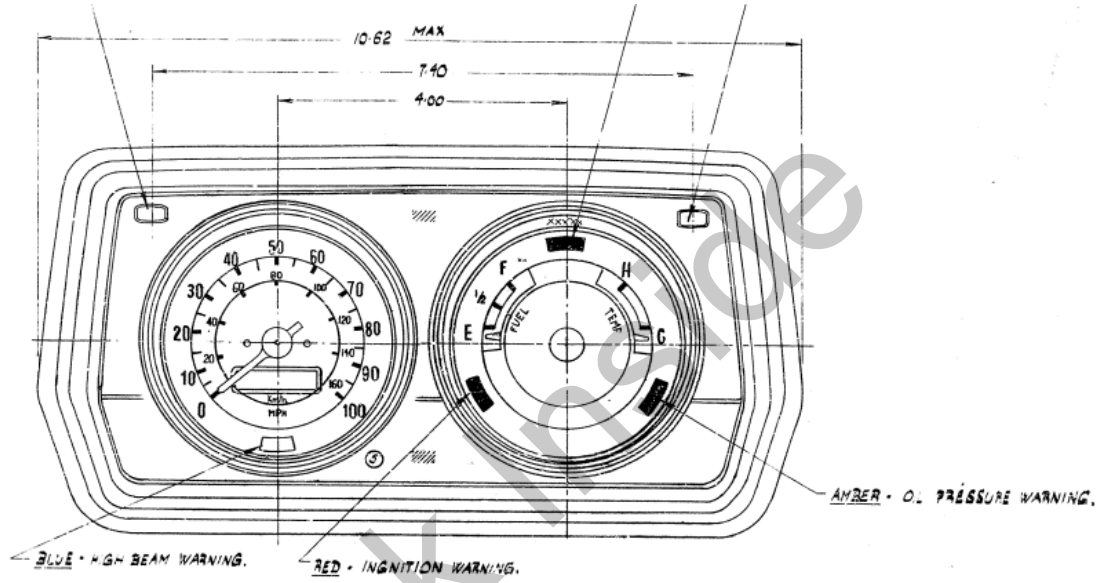


Fig. 13.2.1 *Twin pack instruments YDO22 AYG9302*.

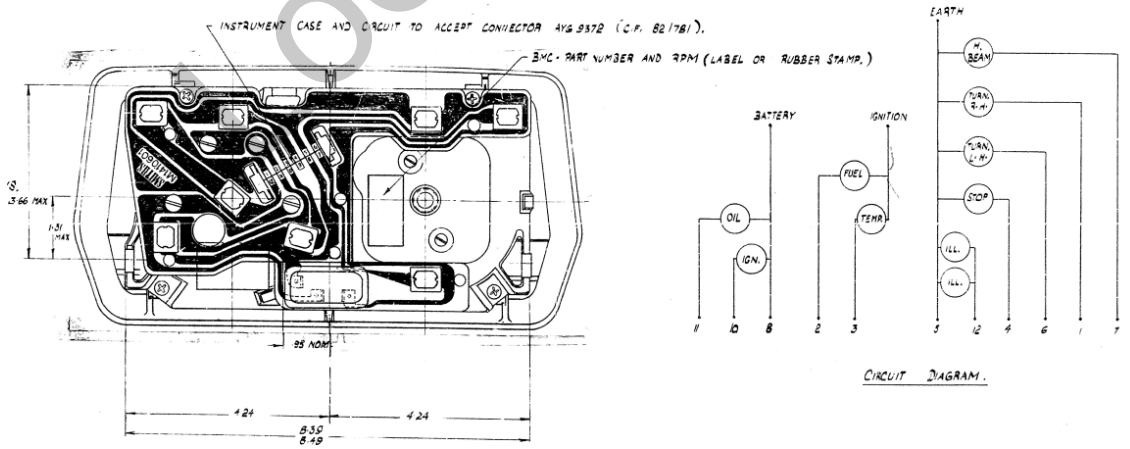


Fig. 13.2.2 *Twin pack instruments YDO22 wiring diagram AYG9302*.

Early models have a dayglo orange pointer, later models a white pointer. In late 1972, twin pack AYG9452 offers a choice between miles and kilometres for both speedometer and odometer.

Additional sealing to the doors arises from inclusion of an inner panel for the wind-down window door design.

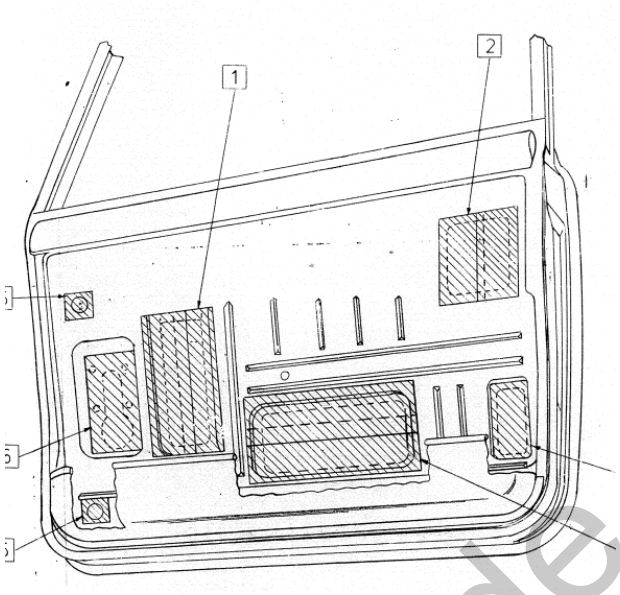


Fig. 16.1.14 *Door sealing HYB8181*.

Various miscellaneous body parts are listed for YDO21, YDO22 and YDO23, some of which are listed below.

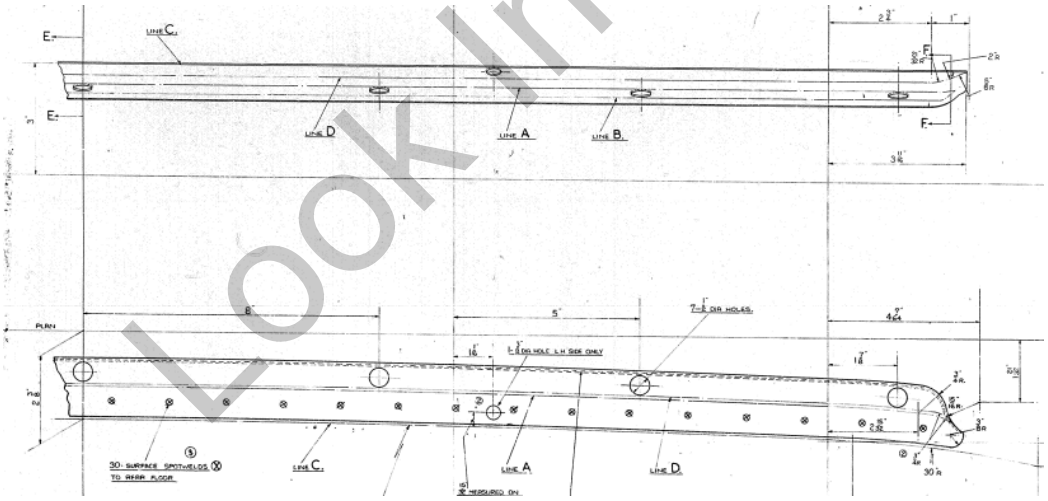


Fig. 16.1.15 *Finisher body rear 14A7750.*

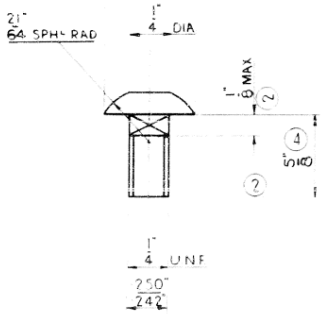


Fig. 16.1.16 *Bolt for finisher 14A7304*.