GODIVA

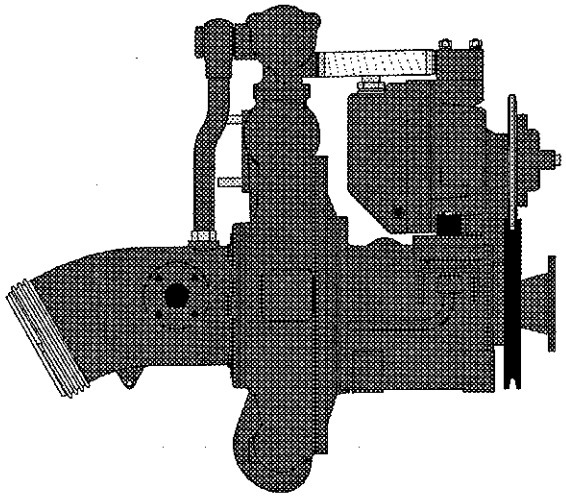
IDEX CORPORATION

GV RANGE

UNIVERSAL FIRE PUMPS

WORKSHOP AND SPARE PARTS MANUAL

1994 - ONWARDS



GODIVA

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ISSUED 1995

GP/091/94

THE GV RANGE

Model GVA2700 - Aluminium Model GVB2700 - Bronze	Nominal output 2700 l/min at 3m lift.
Model GVA3600 - Aluminium Model GVB3600 - Bronze	Nominal output 3600 l/min at 3m lift
Model GVA5300 - Aluminium Model GVB5300 - Bronze	Nominal output 5300 l/min at 3m lift

RECOMMENDED SPARES

Thank you for choosing the GODIVA Fire Pump - designed and built to provide many years of trouble-free service.

Whilst we consider that it is the best fire pump available today, we also recognise that any 'rotating machinery' is subject to wear and therefore feel it necessary to bring to your attention our 2-years' Recommended Spares listing at the end of the Spare Parts Section of this manual.

This stock holding will enable you to maintain the pump in cases where minor defects occur and minimise any possibility of your pump being 'off-the-run' for extended periods.

The company reserves the right to change details of equipment and product specification without prior notice as part of its policy of continuous development.

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VEHICLE-MOUNTED PUMPS

GODIVA

VEHICLE BUILDER/INSTALLER SAFETY-RELEVANT DATA

Thank you for purchasing a Godiva Pump.

For Vehicle Manufacturers an OEM Manual is available giving technical details of the pump.

A risk-assessment of the Vehicle Pump Range has been conducted, in line with the Machinery Directive 89/392/EEC, with the following results:

INSTALLATION
The pump MUST BE SECURELY INSTALLED to the vehicle chassis.

PUMP-DRIVE AND PRIMING SYSTEMS
A guard is available to enclose the priming system drive if this is deemed necessary. The vehicle-mounted pump is NOT a machine (See Declaration of Incorporation) and the guarding of this area together with the drive system of the pump MUST BE CONSIDERED by the Vehicle Builder when incorporating the pump into HIS machine.

NOISE
Sound-level data has been prepared for various duty points and presented in the OEM Manual. This information is provided FOR GUIDANCE ONLY and the manufacturer of the machine into which the pump is incorporated MUST INDICATE any protective equipment that may be required.

THERMAL
The multi-pressure (GM Range) pump incorporates, as standard, a device to bypass water from the high-pressure stage automatically to prevent overheating (Bypass and Unloading Valve). There is a Thermal Relief Valve available for ALL pumps in the Vehicle Pump Range (GV Range) to prevent overheating which could occur through incorrect operation i.e. running the pump with all the discharge valves closed.

OPERATION

When installed into a fire-fighting appliance, these pumps must be operated by TRAINED PERSONNEL ONLY.

IDEX CORPORATION

F.W.Mason
Engineering Manager
1st January 1995

CONTENTS

WORKSHOP MANUAL

GENERAL DESCRIPTION

The GODIVA GV single-stage, centrifugal pump is driven in a clockwise direction viewed from the drive end. The pump drive shaft, which runs on taper roller bearings in an oil bath, is of stainless steel. Shaft sealing of the pump is by a special Godiva mechanical seal face, which ensures efficiency and long life without adjustment. The rev. counter drive gears provide a 1:4 reduction ratio.

Priming of the pump is achieved automatically by means of either a water ring primer or positive piston primer. With the water ring primer when the pump is started, the primer shaft is driven by its fibre driving wheel, which is in contact with a pulley on the pump drive shaft. The water ring primer impeller is thus turned, causing a depression in the priming pipe. The depression acts on the under-side of a diaphragm in the priming valve, allowing atmospheric pressure acting on the other side of the diaphragm to open the valve. Air is then extracted from the suction pipe, allowing water to flow into the pump. When the pump is primed and pressure is built up in the pump, the water pressure is felt at the disengaging cylinder, which extends to lift the water ring primer and its driving wheel upwards and out of engagement with the drive shaft pulley. The priming valve then closes under the influence of its spring, thus preventing water from flowing through the priming system when the pump is operating. A non-return valve is fitted to the water ring primer which prevents air from flowing back through the primer to the pump suction tube and so "breaking the prime".

With the positive piston primer the pulley wheel on the primer is driven by a rubber belt from the pulley mounted on the end of the pump drive shaft. The primer pulley rotates a camshaft within the primer itself which is in contact with the two piston shafts. The camshaft action moves the pistons which causes a depression in the priming inlet pipe. Air in the pipe is extracted which allows water from the suction side of the pump to flow into the volute. As soon as the pump has become primed, and a pressure built up in the pump, the piston shaft is disengaged from the camshaft by pressure of the water building up in the chamber behind the pistons. This pressure holds the piston shafts clear of the camshaft. When the pump is idling, the piston primer will act as a pump and discharge water. This is not harmful to the primer but to avoid the inconvenience caused increase the idling speed until the water pressure is sufficient to disengage the primer.

The pumps can be provided with various suction and delivery arrangements and the most generally used suction arrangement is of the standard round thread type. Alternatively, suction ball valves can be fitted or, a branched suction tube is available for amidships mounted pumps.

The pumps can be supplied with or without delivery valves, which can be of either ball or screw-down type. Two, three or four can be fitted. A branched delivery manifold is available for amidships installations. Ball and screw-down delivery valves are normally supplied with British Standard instantaneous connectors, but any standard couplings are available to order.

An instrument panel containing; pressure gauge, compound gauge and rev. counter is fitted to some models but this panel can only be fitted to pumps having two ball type valves - although these valves may have fittings other than the normal British Standard.

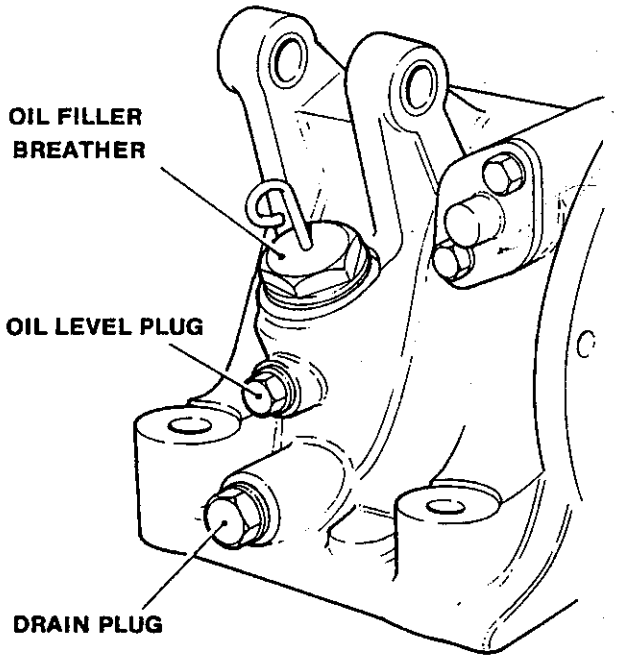
The GVA2700, 3600 and 5300 pumps, which have a low pressure capacity of 2270, 3400 and 4540 L/min (500, 750 and 1000 gal/min) respectively, are constructed of aluminium, while GVB2700, 3600 and 5300 of similar capacities, are constructed of phosphor-bronze.

LUBRICATION

The oil bath provided for the pump drive shaft ball bearings has a capacity of 0.75 litres (1.3 pints) and should be topped up when necessary with EP80 automotive gear oil. It is recommended that the oil bath is drained and refilled with fresh oil about every twelve months.

To check the oil level remove the small oil level plug which is situated immediately below the oil filler and breather. Add fresh oil through the oil filler aperture until it flows through the oil level hole. Refit the oil level plug and oil filler plug securely. Run the pump for a short period and then re-check the oil level.

The oil drain plug is situated near the base of the bearing housing below the oil level plug as shown on the diagram below.



Location of bearing housing oil filler, level and drain plugs.

PROTECTION AGAINST FROST

As a precautionary measure when frost is anticipated, drain all water from the pump and its ancillaries.

The pump itself is drained by removing the drain plugs from the underside of the volute, and from under the pump body (or by opening the tap if fitted). The cross-over pipe and 'by-pass' valve upper body are also drained by these plugs.

The water ring primer is drained by removing the drain plug at the base of the water trap housing.

IMPORTANT: It is essential to carry out the pump tests detailed in Section 16 whenever any part of the pump or priming system is dismantled. This will ensure that reassembly has been carried out correctly and that there are no leaks.

SECTION 1

SUCTION TUBE AND WEARING RING

To Remove

To remove the suction tube, first unscrew the union nut and banjo bolt at the ends of the priming suction pipe and take off pipe. Remove the M10 x 1.5mm nuts, spring washers and plain washers and remove the suction tube.

The suction tube wearing ring will now be revealed. To facilitate removal of this ring, two holes tapped to M10 x 1.5mm are provided to permit extraction by the use of two M10 x 1.5mm flat-ended bolts.

Maintenance

Check the internal diameter of the suction tube wearing ring in several palces (see Fig. 1-1). If it exceeds Dimension 'A' 140.60mm (5.535 in) for GV2700 and 3600 model pumps or 181.86mm (7.025 in) for GV5300 model pumps, at any point, the wearing ring must be renewed.

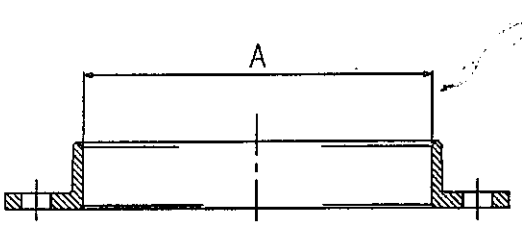


Fig. 1-1 Checking the internal diameter of the Wearing Ring.

To Refit

There are joint washers between the suction tube and wearing ring, and between the wearing ring and the volute body. "Wellseal" jointing compound is used on both sides of these joint washers.

When refitting the suction tube and wearing ring, clean all the flanges and use NEW joint washers. Fit the wearing ring with its sleeve towards the volute body.

SECTION 2

VOLUTE BODY

To Remove

If direct access to the impeller, pump body, carbon seal assembly or bearing housing is required, Section 1 may be ignored and the volute body, suction tube and wearing ring, together with the suction, delivery valves and priming valve, removed as a complete sub-assembly.

Remove the volute body or the complete sub-assembly in the following manner:-
Disconnect the plastic hose from the priming valve. Drain the water from the volute housing by removing the drain plug at the bottom of the housing. Refit the plug securely when drained.
Remove the sixteen bolts fitted with Dowty washers securing the volute body to the pump head. The volute body may then be seperated from the pump body.

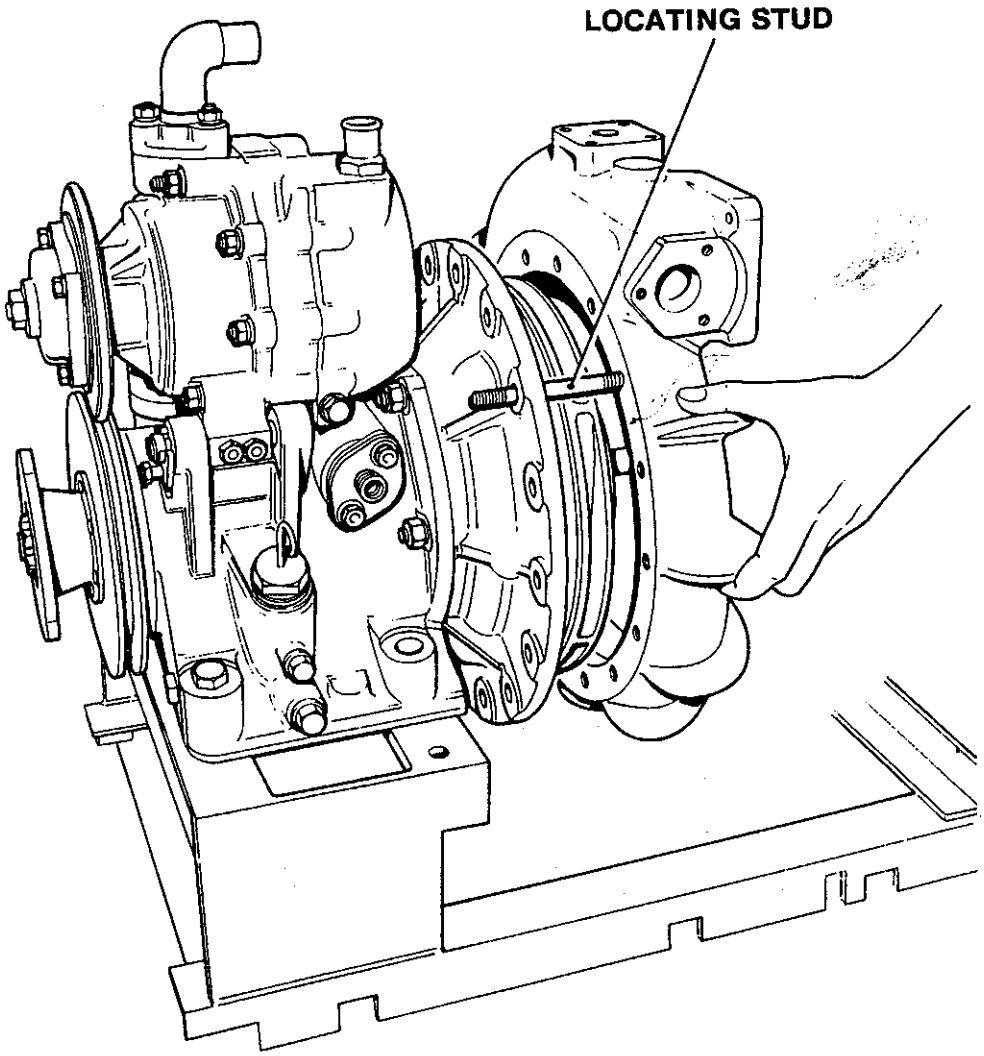


Fig. 2-1 Refitting the volute body to the pump body

To Refit
Re-assemble in the reverse order of removal. Clean all mating faces and ensure that they are undamaged. Use new joint washers and use jointing compound ('Wellseal' or similar) on both sides.
A stud M12 x 1.75mm, fitted temporarily into one of the upper tapped holes in the volute body, will be found useful in guiding the volute body into position when refitting it to the pump body on models which are bolted at this position.

SECTION 4

IMPELLER

To Remove

In order to remove the impeller, first take off the volute body as described in Section 2. Remove the split pin from the nut on the pump shaft and remove the nut, holding the drive coupling against rotation. The impeller may then be pulled off the splined shaft, or carefully levered between the impeller and pump body at diametrically opposite positions, to free it.

Maintenance

Check the wearing diameter on the impeller in several places (see Fig. 4-1). If the diameter is less than stated in the table below, a new impeller must be fitted.

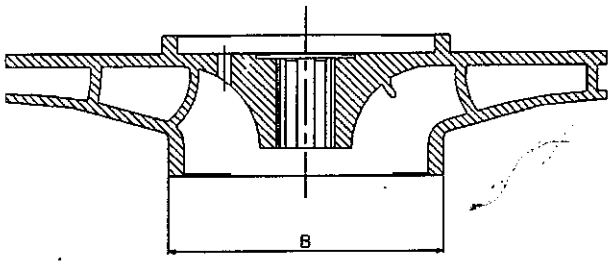


Fig. 4-1 Checking the impeller boss diameter

Pump Type	Front Diameter (B)
GV2700 and GV3600	139,319mm (5.485 in.)
GV5300	177,165mm (6.975 in.)

To Refit

Fit the impeller to the pump shaft ensuring that the drive dowel locates in the dowel hole in the seating ring. Refit the stainless steel washer and nut, then fully tighten this nut. Fit a NEW split-pin and bend the legs over TOWARDS the impeller.

SECTION 5

CARBON SEAL AND SEATING ASSEMBLY

When the impeller is removed,the mechanical carbon face seal is accessible for examination. In the event of excessive leakage past the carbon seal and out of the drain hole in the pump head first examine the three 'O' ring seals and, if necessary, fit new ones. To examine these 'O' rings, withdraw the carbon seal seating ring assembly, the sleeve and the six springs from the shaft.

Examine the carbon seal and the 'O' ring behind it. If the face of the seal which contacts the spring-loaded seating ring is scored, a new carbon seal must be fitted. In this case it is essential to fit a new seating ring.

SECTION 3

PRIMING VALVE

To Remove

The priming valve may be left in position on the volute body for examination of its internal components, but should it be necessary to remove the valve, remove the priming suction pipe and rubber hose from the valve and unscrew the nuts, spring washers and plain washers securing the valve to the volute body. Lift off the valve.

Maintenance

To dismantle the valve, unscrew the three nuts, spring washers, plain washers and bolts which retain the end plates and ease off the end plates. The diaphragm is then exposed and may be examined for deterioration, cracks etc. To examine the valve sealing washers, support the diaphragm spring and unscrew the self-locking nut from the other end. Look for foreign matter lodged in the valve seat.

To Refit

Re-assemble in the reverse order of removal, cleaning the inlet cover mating surfaces and using a new gasket, with jointing compound on both sides, under the inlet cover. Do not forget to fit the diaphragm pressure plate under the spring if the valve assembly has been disturbed.

Note: Torque setting for the priming pipe banjo bolt is 60Nm (50 lbf.ft.) maximum. Do not overtighten, if necessary clean the surface and fit new washers.

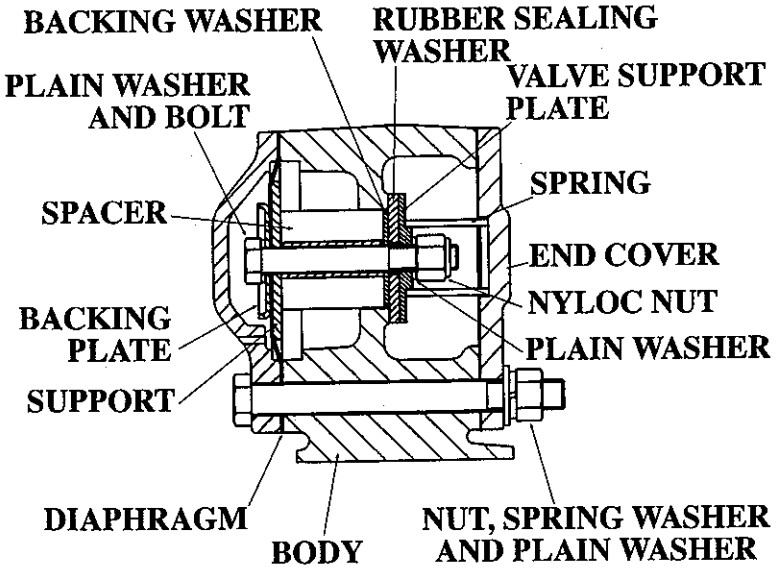


Fig. 3-1 Section through the priming valve.

It is unlikely that the six compression springs will require renewal. Should it be necessary to renew the 'O' ring beneath the carbon seal seating ring, remove the circlip and the seating ring, from the sleeve, taking care not to scratch the face of the seating ring. Examine and, if necessary, renew the third 'O' ring located inside the sleeve bore.

Refit the carbon seal element and 'O' ring inside the pump head. Reassemble the carbon seal seating ring onto the sleeve complete with circlip and the six springs. Slide the assembly onto the pump shaft, aligning the dowel hole in the seating ring relative to the spline, so that the engagement of the dowel in the impeller will locate in the seating ring when the impeller is fitted.

SECTION 6

PUMP HEAD

To Remove

Remove the volute body and impeller (SECTIONS 2 and 4) and remove the carbon seal seating assembly (SECTION 5). Unscrew the six nuts and spring washers securing the pump body to the bearing housing using a hide faced hammer progressively tap round the pump head until it is seperated from the bearing housing, and remove the pump head. Remove the disengaging plunger pipe.

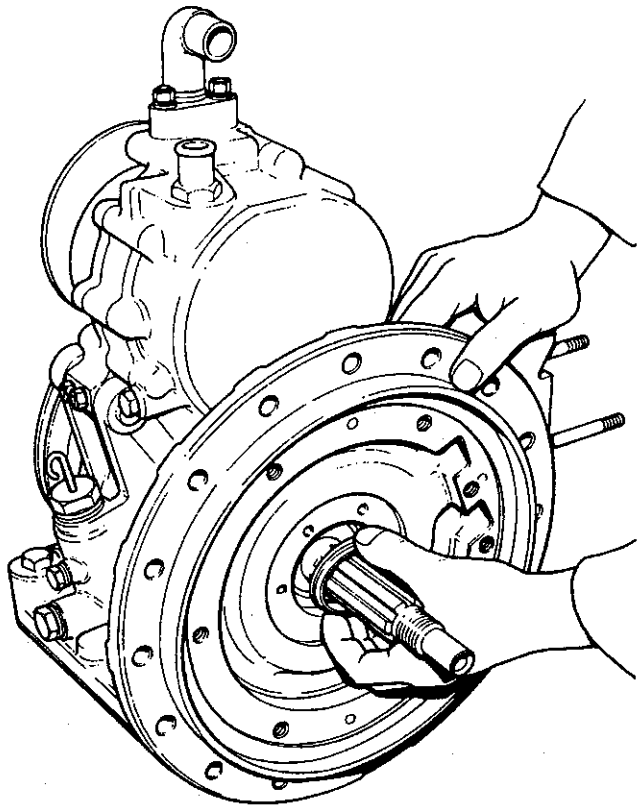


Fig. 6-1 Fitting the carbon seal and 'O' ring

To Refit

When refitting clean the mating faces of the volute body and bearing housing and ensure that they are not damaged. Fit a new small 'O' ring seal into the disengaging plunger pressure pipe socket, followed by its backing washer. Ensure that these two sealing items remain inplace when refitting the pump body to the bearing housing.

SECTION 7

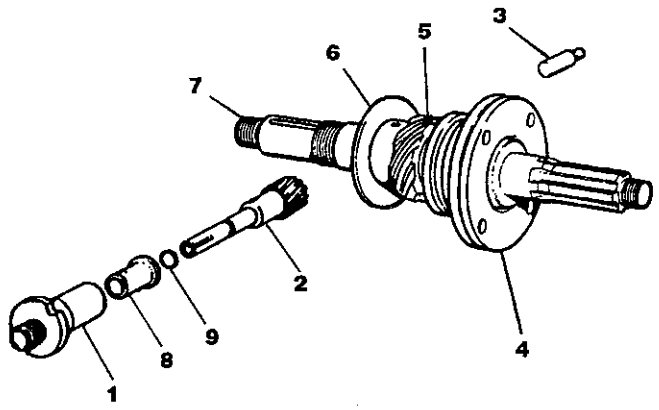
REVOLUTION-COUNTER DRIVE

To Remove

To remove the revolution-counter drive, unscrew the two bolts and spring washers securing the revolution -counter drive housing to the bearing housing. Take out the housing pinion - this pinion is located in the bearing housing and held 'in-mesh' by a pin, which is pressed into the inner wall of the bearing housing.

Maintenance.

Should oil leak excessively into the tacho. -drive cable, renew the 'O' ring. If the bush is worn - which will allow it to leak past the 'O' ring - this may be renewed. It is unlikely that a fault will develop on the rev. counter drive, but should a new drive-belt be fitted for any reason, fit a new thrust button into the pinion recess.



1. Rev.-counter drive housing
2. Rev.-counter drive pinion
3. Support pin
4. Front bearing and seal housing
5. Spiral gear
6. Oil slinger
7. Pump shaft
8. Bush
9. 'O' ring

Fig. 7-1 Pump Drive Shaft and Tacho. Drive

SECTION 8

PUMP DRIVE SHAFT

To Remove

Note: In order to remove and refit the drive shaft, respectively from and to, the bearing housing, it is necessary to use five special tools to carry out this operation (See SECTION 17).

To remove the pump drive shaft, take off the volute body (SECTION 2) and also the water ring primer (SECTION 10). Remove the impeller (SECTION 4) followed by the pump head (SECTION 6) and the revolution-counter drive (SECTION 7). Drain the oil from the bearing housing by removing the drain plug on the side of the housing.

Carefully remove the shims and water thrower, noting the order in which they are removed, and keep in a safe place.

Remove the lift-off pipe by unscrewing the coupling union nut from the disengaging cylinder and pull the pipe from its location in the pump head. Recover the 'O' ring and stainless steel washer.

Remove the split pin securing the retaining nut on the drive flange end of the pump shaft. Using splined tool no. PSK 1969 place the tool over the impeller shaft splines and with a 36mm ring spanner on the pulley nut remove the nut and washer, whilst holding the tool to prevent shaft rotation. Pull off the pulley and flange assembly and recover the key from drive shaft.

Remove the four screws and spring washers which secure the seal housing at the pulley end of the bearing housing. Using two of the screws removed, insert them into the two threaded extractor holes provided, and screw them in evenly in a clockwise direction until the seal housing moves forward.

The seal housing at the pump end of the bearing housing must also be removed. Release the tabwashers which lock the four bolts securing the sealing housing to the bearing housing and remove the bolts.

Bend back the locking tab from the bearing adjusting ring on the shaft, using the same special tool no. PSK 1969 on the splines of the shaft. Using a suitable 'C' spanner, place over the shaft and onto the adjusting ring and turn it anti-clockwise to undo it. Remove the tool, the lock ring and tab washer from the shaft.

Removing the shaft from the bearing housing

Place the special Godiva tool no. PSK 1970 over the threaded section at the drive flange end of the shaft. This will protect the threads on the shaft during dismantling operations. Fit the Godiva special extractor tool no. PSK 1971 over the shaft and bolt securely to the bearing housing using four bolts. Screw inwards the large bolt on the end of the extractor slowly until the shaft moves clear of the bearing in the housing. Remove the extractor and thread protector tools from the shaft.

Carefully pull the shaft assembly complete with front bearing mount squarely from the bearing housing at the same time removing the tapered roller bearing from the opposite end of the shaft. Take care to avoid damaging the oil thrower disc and gear assembly when withdrawing the shaft assembly.

Place the special Godiva tool no. PSK 1969 firmly in a vice by its handle horizontally and carefully lower the shaft assembly until the splines on the shaft are fully engaged with the splines on the tool.

Removing the front bearing from the shaft

Knock back the tab washer clear of the locknut situated on the centre of the shaft, using a suitable 'C' spanner, undo the locking ring nut and remove. Remove the tab washer and oil thrower from the shaft.

Using a suitable metric socket key, slacken the grub screw in the side of the revolution drive gear and slide the gear off the shaft. Seperate the front seal housing from the front bearing mount by inserting a thin bladded tool between the two units at the gasket joint, and progressively tapping round the edges of the housing until they part. Avoid causing any burrs or scratches to either face. If a burr should occur, it must be removed before re-assembly. Lift off the front bearing mount from the shaft.

Remove the shaft from the special tool in the vice, and refitting the thread protector tool no. PSK 1970 to the end of the shaft, stand the shaft on end on a firm and flat surface. Fit over the shaft Godiva special tool no. PSK 1972 so that it rests on the rim of the inner track of the bearing.

Important: It is imperative that at no time must the seal diameter on the shaft be marked or scratched. Damage to the seal diameter will mean a replacement drive shaft.

With the special tool in this position, tap firmly but carefully on the top of the tool using a hide-faced hammer until the bearing moves clear of its fitted location. Remove the bearing from the shaft. At this stage wash all components in clean paraffin and examine for damage or burrs.

To Refit

Bearing housing assembly

The impeller end bearing and the revolution counter drive gear are assembled to the shaft before the shaft is fitted into the bearing housing. Stand the impeller shaft splined end vertically downwards on a wooden surface and smear the bearing surface with a light coating of grease or tallow.

Slide the bearing down the shaft with its narrow face upmost. It is very important the bearing and the bearing abutment are free from any particles of foreign matter; otherwise the bearing may not fit squarely on the shaft. Place a suitable tube over the shaft so that its end face locates on the clamping face of the inner track only of the bearings, ensuring that the roller cage is not fouled by the tube.

Tap the top of the tube with a hammer progressively until the bearing is fully located against the abutment on the shaft. Remove the tube. With a new bearing outer track fitted to the front bearing mount, fit the bearing mount over the shaft complete with new gaskets to either side. Ensure that the gaskets do not cover the oil drain area on the facing of the bearing mount; cut away a small area of the gasket if necessary.

Fit the revolution counter gear on to the shaft with the socket screw at the upper end. Rotate the gear on the shaft until the socket screw locates in the groove provided on the shaft. At this stage do not fully tighten the socket screw.

Fit the tab washer with the tabs facing outwards ensuring that the single tab on its inside diameter fully locates with the groove on the shaft. Fit the oil thrower on the shaft, up to the revolution gear. Ensure that the tab is fully located in the groove. Fit the locking ring on to the shaft with its chamfered side towards the tab washer, and screw in by hand as far as possible.

With the special tool no. PSK 1969 held firmly in a vice lower the shaft assembly so that the splines on the shaft are engaged with the spline on the tool.

Use a 'C' spanner to tighten the locking ring securely. Tap one of the locking tabs on the tab washer in to an adjacent groove on the locking ring. Remove the socket headed screw from the revolution gear and apply Loctite grade 221. Refit and tighten securely, wiping off any surplus sealant with a clean lint-free cloth.

Before fitting the shaft assembly into the bearing housing, lightly coat both sides of the gasket on the bearing mount with 'Wellseal' or a suitable jointing compound.

Fit the assembly carefully into the bearing housing, ensuring that the oil drain cut away on the front bearing mount lines up with the three oil drain holes situated at the bottom of the bearing housing so that all bolt holes in the mounting line up with the holes in the bearing housing. Smear a thin coat of EP80 automotive gear oil on the oil seal face on the shaft. Fit a new oil seal into the oil seal housing with its lip facing towards the spigot in the housing. Locate the oil seal housing over the shaft, again ensuring that the four bolt holes are aligned.

Using new tab washers, first slightly bend over either end of the tab washer to suit its locking position. Fit the oil seal housing to the bearing housing with four bolts and firmly bend over the tab washers so that they locate the rim of the seal housing and a flat on the bolt heads. To fit the second bearing of the shaft, first smear a thin coating of grease or tallow around the inside diameter of the inner race and on that part of the shaft onto which the bearing fits.

Fit the bearing on to a special tool no. PSK 1956 and slide this on to the shaft. Using the large shaft nut and washer, tighten the nut with a 36mm ring spanner until the bearing and special tool have moved in as far as they will go. It may be necessary to use the spline tool on the other end of the shaft to prevent rotation during the operation. Remove special tool. With the bearing squarely mounted on the shaft, final adjustment is now necessary.

Accurate adjustment of the axial clearance in the bearings is essential for reliable operation of the pump. It is not possible to achieve the accuracy of adjustment needed with the pump shaft horizontal, therefore it is necessary to fix the bearing housing in a position with the shaft vertical. Axial movement of the shaft can be checked by using a dial indicator on the upper end of the shaft while levering upward on the lower end with a piece of wood. The bearing housing must, of course, be fixed to withstand the levering force. The axial clearance will be adjusted as follows to 0,05mm (0.002 in.).

Fit the tabwasher and locknut to the shaft. Tighten the locknut with a suitable 'C' spanner until the correct clearance is achieved. Bend the locking tab into one of the slots. Fit a new seal in the seal housing with the lip of the seal facing inwards. Place a gasket on to the sealing housing, coating both sides with 'Wellseal'. Fit the seal housing to the bearing housing using the four screws and spring washers and tighten evenly and securely. Tap the key squarely into the keyway on the shaft.

Smear a little tallow on the sealing face of the flange-pulley assembly and slide the assembly on to the shaft. Fit the washer and slotted nut and tighten securely, holding the other end of the shaft with a splined tool to prevent rotation. Fit a new split-pin through the slotted nut and bend the legs over.

If the unit is in a jig, invert the bearing housing and fit the water thrower disc with its chamfered facing inwards on the shaft towards the bearing housing.

Pump head assembly

Fit the lift-off cylinder 'O' ring followed by the stainless steel washer into the pump head assembly.

Offer up the pump head to the bearing housing and secure finger tight at this stage with six nuts and spring washers to the studs in the pump head. With the nuts loose, turn the pump head left or right until the 'O' ring and washer are centralised with the hole in the bearing housing. Insert the lift-off cylinder pipe, screw the lift-off cylinder into the recess on the bearing housing, at the same time engaging the threads of the lift-off pipe union nut.

Tighten the six nuts holding the pump head to the bearing housing evenly and securely.

Check the tightness of the lift-off cylinder by inserting a small bar between two of the nuts on top of the assembly and turning clockwise gently. Tighten the union nut on the lift-off cylinder pipe. Do not over-tighten. Moisten the carbon seal 'O' ring with water and fit evenly over the carbon seal lip. Ensure that the carbon seal seating ring in the pump head is free from foreign matter. Check that there is no oil contamination of the carbon ring and insert it into the recess pushing it fully home.

Carbon seal assembly
Should it be necessary to renew the 'O' ring beneath the carbon seal seating ring remove the circlip retaining the seating ring and lift off, taking care not to stratch the facing of the seating ring.

Remove the two 'O' rings, one internal and one external, which are located on the impeller hub, and discard. Renew both 'O' rings.

Examine the seating ring and the six springs for damage and renew if necessary. Refit the springs into the holes provided in the seating ring and moisten the inner side of the ring with water. Offer up the seating ring to the impeller hub and locate on the peg provided on the hub. Compress the ring springs until the circlip groove is visable and fit the circlip securely. Check that the seating ring is free to move on the springs.

Fit the carbon seal seating ring (SECTION 5).

Fit the impeller (SECTION 4).

Fit the volute body (SECTION 2).

Radial Clearance
Check the radial clearance between the wearing ring and the impeller. This must be 0.1525 mm (0.006 in.).

SECTION 9

PUMP DRIVE SHAFT BEARINGS AND OIL SEALS

Maintenance

It is unlikely that any fault will develop on the pump drive shaft bearings and oil seals, but in the event of renewal being necessary, remove the shaft as detailed in Section 12 and fit the new components. The oil seal lips should face inwards, into the bearing housing.

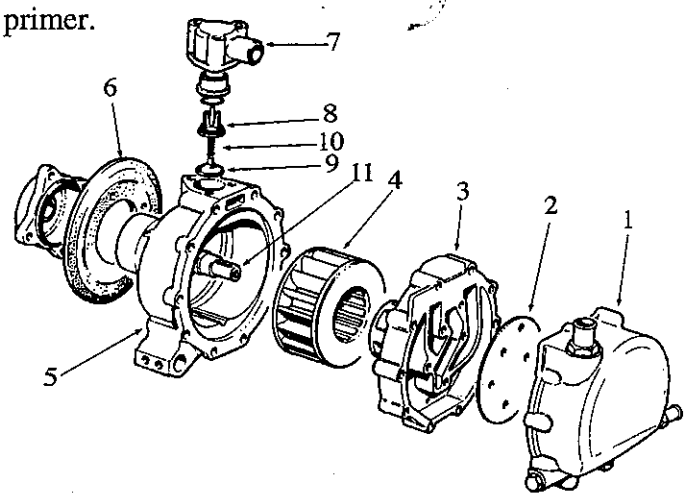
SECTION 10

WATER RING PRIMER

To Remove

To remove the water ring primer, slacken the hose clips on the rubber hose and disconnect the primer return springs. Remove the bolt and spring washer and take off the fulcrum shaft keep plate. Remove the air outlet connection from the top and the water inlet connection from the bottom of the primer.

Slacken the locknuts on the two socket screws and slacken the screws. Tap out the fulcrum shaft and remove the water ring primer.



1. Primer body
2. Cover plate
3. Suction and delivery cover
4. Impeller
5. Bearing housing
6. Friction pulley
7. Primer elbow
8. Non-return valve
9. Disc and pin unit
10. Valve spring
11. Primer shaft

Fig. 10-1 Water ring primer paritally dismantled

Maintenance

To dismantle the primer, remove the nuts and washers from the studs in the primer body. Remove the bearing housing complete with shaft, bearings, impeller and pulley. Examine the inner diameter of the impeller and the corresponding surface of the suction and delivery cover for excessive scoring, renewing these parts if necessary.

To fit a new suction and delivery cover, remove the self locking screws which secure the cover plate to the suction and delivery cover. Fit this cover plate to the new part, noting that no gasket is used but jointing compound should be used on the contacting faces.

To fit a new impeller, undo the impeller retaining screw and pull off the impeller.

Note: If the impeller binds on the shaft it will be necessary to remove the primer shaft as below.

To remove the primer shaft, take off the impeller as detailed previously. If the impeller binds on the shaft, then remove the impeller retaining screw.

At the other end of the shaft, knock back the tabwasher and remove the nut securing the pulley to the shaft. Remove the pulley and extract the woodruff key and the circlip. Tap out the shaft from the impeller end. The shaft will bring the bearing with it and these can now be replaced if necessary. The shaft seal will remain inposition and if this requires renewing it should be drifted out, together with its backing washer, towards the impeller end.

When fitting a new seal ensure that the lip on the backing washer and the open end of the seal face is towards the impeller.

To fit a new friction drive pulley, remove the pulley from the shaft as detailed above, undo the four nuts, bolts and washers securing the pulley to the centre piece. Fit the new pulley. Refitting of the pulley assembly is a reversal of the dismantling instructions. Ensure that a new tab washer is always used on re-assembly.

To examine the non-return valve, remove the three nuts and washers securing the primer elbow to the primer body. If the non-return valve 'O' ring is faulty a new one must be fitted.

To Refit

When refitting the water ring primer, rotate the fulcrum shaft from its original position so that the grub screws will bear on a different part of the shaft. Move the water ring primer forwards or backwards until both sides of the primer fibre wheel bear equally on the sides of the pump driving pulley groove. Tighten the grub screws and their locknuts. Reposition the hose clips on the hose and tighten securely. Refit the primer return spring (s).

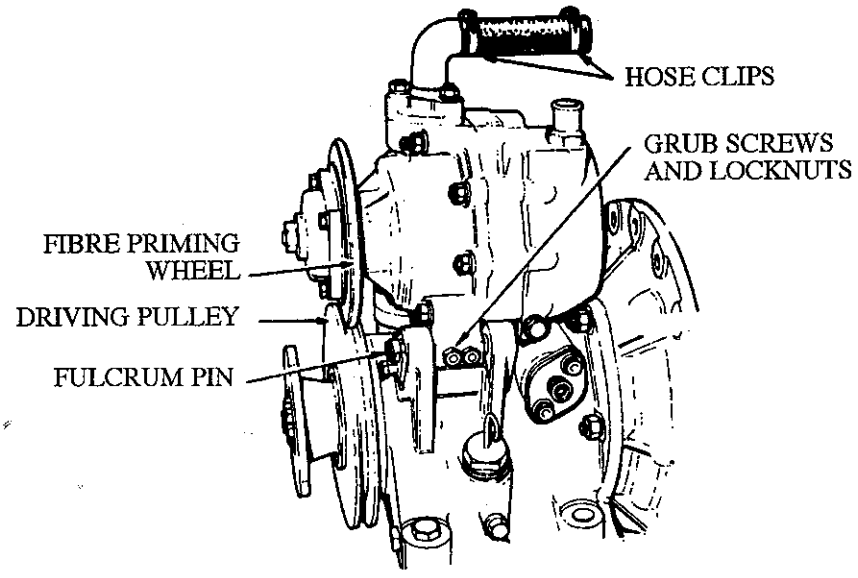


Fig. 10-2 Primer drive arrangement

SECTION 11

DISENGAGING UNIT

To Remove

To remove the disengaging unit, slacken the hose clips on the rubber priming hose and disconnect the hose. Take off the water ring primer springs and swing the primer upwards and clear of the disengaging unit. Disconnect the union nut on the underside of the cylinder and unscrew the cylinder assembly from the bracket. The lift-off pipe may be pulled out of the pump body, if necessary.

Maintenance

The cylinder may be dismantled by removing the circlip from the plunger, taking off the washer and removing the cap, then unscrew the six nuts, spring washers and plain washers from the studs in the housing.

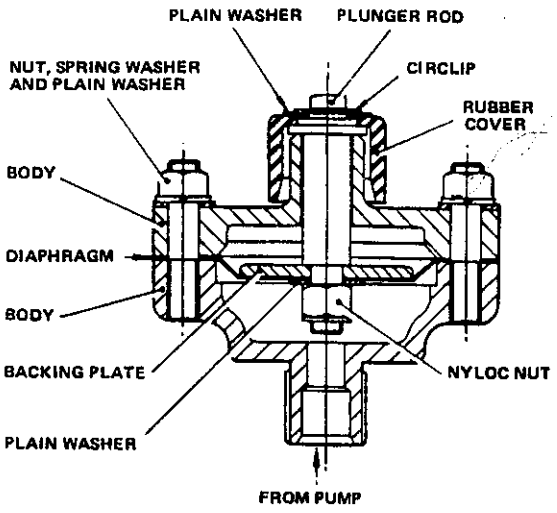


Fig. 11-1 Section through the disengaging unit

The diaphragm may then be examined for deterioration, cracks, foreign matter etc. Should a new diaphragm be required, the diaphragm is released by unscrewing the self-locking nut and plain washer from the bottom of the plunger. Take care to place the backing plate on to the plunger before refitting the diaphragm. Smear a thin coating of jointing paste on the lower threaded section of the plunger before fitting the self-locking nut.

Should there be a leak at the pump body end of the pipe connecting the disengaging unit to the pressure side of the pump, it will be necessary to fit a new small 'O' ring into the pump body. The procedure for this is detailed in SECTION 6. Do not overtighten the pipe coupling at the base of the cylinder.

To Refit

Refitting is the reversal of the removal intructions. An adjustable pad is fitted to the primer, and this should be adjusted as follows:-

Disengaging plunger adjustment

After extensive use, the primer pulley wheel tends to wear, causing it to lower itself into the 'V' of the driving pulley. This action causes the pulley wheel to slip on the driving pulley. If this condition is present the following procedure must be carried out.

Looking from the suction tube end, the pulley adjusting screw is on the right hand side of the primer itself, located above the lift-off cylinder. With the pump stationary and, using a 13mm ring spanner (1/2" AF), slacken the adjusting nut, turn the adjusting screw anti-clockwise until a clearance of 3,18mm (0.125 in.) is obtained between the primer adjusting pad and the lift-off cylinder. Relock the adjusting nut in this position.

Note: When a new pulley wheel is fitted, the above instructions must always be carried out.

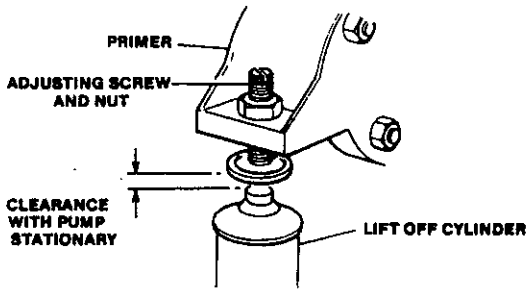


Fig. 11-2 Disengaging plunger adjustment

SECTION 12

POSITIVE PISTON PRIMER
(Used in place of the Water Ring Primer & Disengaging Unit)

Maintenance

Check the tension on the drive belt between the primer pulley and the pulley on the bearing housing. The belt has approximately 5/8" (17mm) free side movement checked at the middle of the belt run. The belt can be adjusted by slackening the nut and bolt on the left hand side of the mounting bracket as viewed from the pump rear. The bracket is hinged which allows it to be adjusted for belt tensioning. Retighten the nut and bolt securely. Avoid over-tightening the belt, as this will put unnecessary loading on the primer pulley.

The oil in the primer unit should be changed every twelve months. It is necessary to use a suitable syringe in order to empty the oil sump. When replacing the oil use EP80 grade gear oil.

The correct oil level must be maintained. Check the oil level using the dipstick provided which is located on the top of the primer body. If necessary, top up with the correct grade of oil. The oil level should be up to the mark shown on the lower section of the dipstick. Do not overfill. The amount required is approximately 1/2 pint (284 ml).

It is normal for a small amount of water to be discharged when priming. However, a leak once priming is complete, would indicate that the piston sealing ring requires replacement. Any water found to be leaking from the tell tale holes beneath the cylinders would indicate the piston stem seals are worn and need replacing.

Removal

First, remove the priming unit from the pump. Remove the drive belt by lowering the adjustable bracket and slipping the belt from the pulley. Disconnect the suction hoses by undoing the two banjo bolts on the end covers.

Undo the two exhaust hoses on the bottom of the primer and undo the flexible hose to the disengaging manifold. Undo the four bolts securing the primer bearing assembly to the supporting bracket and lift off the unit.

To gain access to the primer valve assembly, pistons and camshaft, first remove the disengaging manifold and copper pipe by undoing the banjo bolts beneath each cylinder. Remove the four bolts retaining the end cover and slide the cover off the protruding studs. The primer valve assembly will also slide of the studs.

With the primer valve assembly inspect the small and large exhaust valve plates for fretting and wear. If the valve plates are not seating correctly replace with new ones. Inspect the inlet valve for wear. A simple test of the inlet valve is to hold the valve plate assembly horizontal, with retaining ring upwards, place a little water into the well around the spring of the valve, if water passes the valve, the seal is imperfect and requires reseating with lapping paste or replacing with new.

To remove the piston and cylinder assembly from the housing assembly undo the two bolts on the flange of the housing and slide the cylinder off the protruding studs. To remove the piston from the cylinder for inspection and replacement of rings and seals it is necessary to use the special tool PSK2173. The two protruding dowels of the tool locate in corresponding holes on the piston top. With the special tool, PSK2173, firmly held by a vice the two dowels hold the piston stationary in the cylinder while the piston spring can be slowly released by undoing the button at the end of the piston stem. When the spring is released the piston will push out of the cylinder. To replace the piston ring it is necessary to heat the ring in hot water to give the material flexibility for removal and fitting. The piston stem seals are housed in the cylinder piston guide and must be carefully located in the first and third grooves. The centre groove must be left clear.

The camshaft is removed from the housing by undoing the drive pulley bolt and sliding away the pulley. At the other end undo the four bolts securing the housing cover. When this cover is removed the camshaft can be withdrawn through this aperture for inspection of the bearings and oilseal. The bearings are a push on fit and retained by circlips. Note the distance piece between the centre bearing and the bearing at the cover end.

Refit

Refitting is the reversal of the removal. When refitting the cylinders apply joint sealant to the faces of the cylinder and bearing housing. Refitting the piston in the cylinder is a reversal of the removal. Fit the piston in the cylinder using a little soap as lubricant. Position the spring on the cylinder, use the special tool, PSK2173, to hold the piston in the cylinder. Tighten the button at the end of the piston stem and compress the spring into position. Refit the primer to the pump and ensure all hoses and clips are secure. Refit the drive belt and ensure it is correctly tensioned.

Important: Refill the primer bearing housing with engine multigrade oil to the mark on the dipstick, approximately 1/2 pint (284 ml).

SECTION 13

DELIVERY BALL VALVES

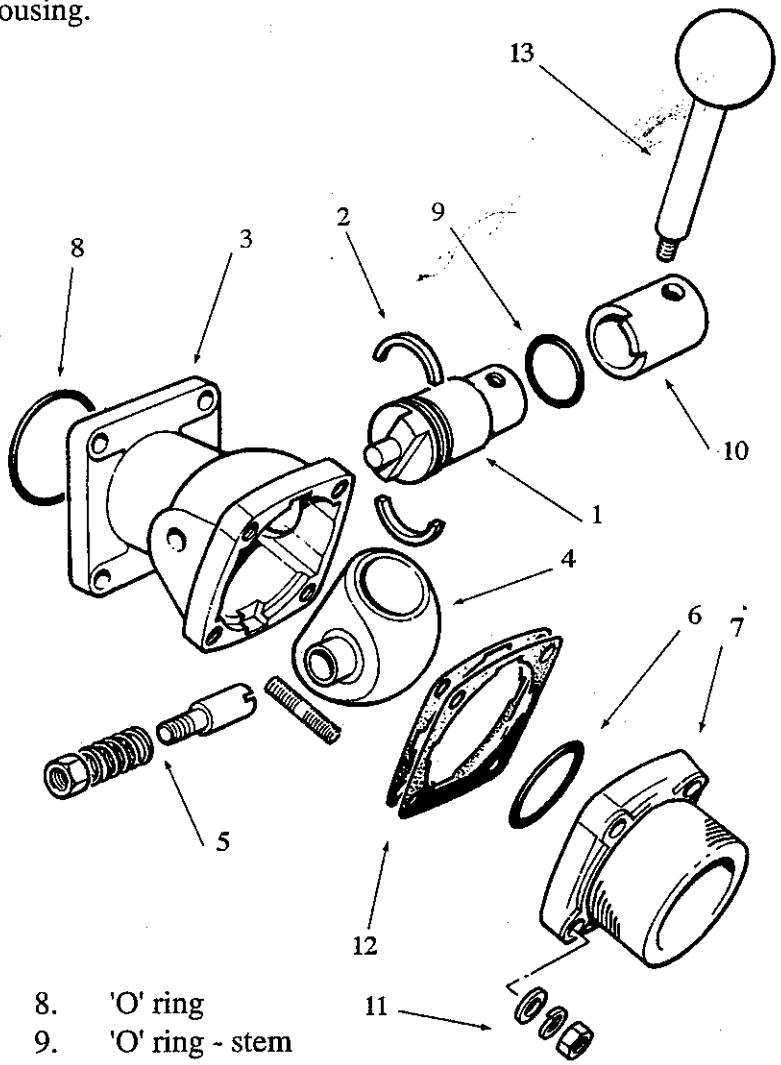
To Remove

Unscrew the four nuts, spring washers and plain washers and withdraw the valve from the manifold studs.

Maintenance

The ball valve should not be dismantled unless it is functioning unsatisfactorily. There are two possible faults and the methods of correcting them are as follows:-

(i) **Water leaking around the ball** - This is due to the 'O' ring not pressing tightly enough against the ball. Remove the bolts and spring washers and seperate the coupling end tube from the ball valve housing.



1. Valve stem
2. Valve stem seal
3. Valve housing
4. Ball valve
5. Ball pivot & spring
6. 'O' ring
7. Valve end tube
8. 'O' ring
9. 'O' ring - stem
10. Boss
11. Nut & washers
12. Joint washers
13. Operating handle

Fig. 13-1 Delivery ball valve components

(ii) **Water leaking up valve stem**
If this occurs, remove the handle and stem as in (i), on previous page, and fit a new valve stem 'O' ring, rubbing a little molybdenum di-sulphide powder into the bore of the valve stem cap.

Turn the 'O' ring over so that it presents a new face to the ball valve, or fit a new 'O' ring. Rub a very little molybdenum di-sulphide powder into the surface of the ball where it contacts the 'O' ring. Leave the original washers or the same thickness of new washers, between the faces of the coupling end tube and valve housing.

In the case of old valves which have seen extremely arduous service, it may be necessary to fit a new ball, pivot or valve stem. To do this, remove the screw securing the valve stem cap to the ball valve housing and lift off the handle assembly.

Remove the nut on the underside of the valve housing and push the ball pivot pin towards the centre of the ball. Remove the spring and take out the two half-rings securing the valve stem. Push out the valve stem and withdraw the ball.

Fit the new part required and re-assemble, reversing the above procedure. Use a right angled screwdriver to hold the pivot pin when tightening the pivot pin nut. Ensure that the handle is fitted in the correct position. Fit the stem 'O' ring and ensure that the two half-rings are correctly positioned.

To Refit
Ensure the joint faces of the valve and delivery manifold are clean and fit a new 'O' ring. Refit the ball valve, four plain washers, spring washers and nuts to the manifold studs and tighten diametrically. Check the ball valve and instantaneous connector, if fitted, for correct operation.

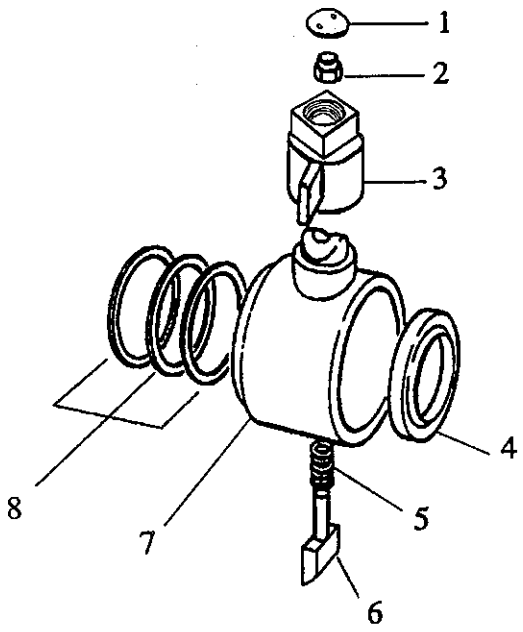
SECTION 14

INSTANTANEOUS COUPLING RELEASE

Operation
The instantaneous connector provides an extremely fast method of connecting and disconnecting delivery hoses. To connect a hose, simply push the hose coupling into the instantaneous connector as far as it will go. When correctly located, the release bolt will engage with the coupling under the influence of the spring. To release a hose, twist the release cap in either direction. This will raise the release bolt against the spring pressure due to the action of the cam incorporated in the connector and relase cap.

To Remove
If it is necessary to remove the connector body, unscrew it in a counter-clockwise direction. Recover the shims from the continental type or the 'O' ring from the U.K. type valve.

Maintenance (Fig. 14-1).
Examine the release bolt (6) for excessive wear. If worn on the vertical face (the one nearest the valve) it must be renewed. To remove it, proceed as follows:
Unscrew the release closure disc (1) from the release cap (3) in a counter-clockwise direction. Unscrew the 5/16in UNC self-locking nut (2). This will allow the release bolt (6) and spring (5) to be withdrawn from inside the connector body (7). Check the condition of the spring (5), it should have good tension, be unworn and clean. If the tension is weak or it is badly corroded or damaged, fit a new spring. Check the contour of the cam for wear in the release cap (3) and on the connector itself. Renew worn components.



1. Closure Disc
2. Self-locking Nut
3. Release Cap
4. Seal
5. Spring
6. Release Bolt
7. Body
8. Shims or 'O' ring

Fig. 14-1 Instantaneous coupling

If after fitting a new release bolt (6) into the connector body (7) there is still excessive movement, renew the connector.
Examine the connector seal (4) for wear or damage renew if necessary.
Reassembly is a reversal of the dismantling instructions noting the following:

Apply Molybdenum Disulphide grease (Lithium Grease) to the spring (5) and release bolt (6). Ensure that the vertical face of the release bolt (6) is nearest the valve body and always fit a new self-locking nut

Tighten the new self-locking nut (2) until the leading edge of the curved face of the release bolt (6) is level with the edge of the bolt hole in the connector body (7). This setting will also ensure that the tension of the spring (5) is correct. Do not forget to refit and tighten the closure disc (1).

To Refit

When refitting the connector assembly to the U.K. type valve always use a new 'O' ring (8). If refitting it to the continental type valve use appropriate shims (8) to ensure that the release cap (3) is in a vertical position when fully tightened. (A shim pack is available - see SPARE PARTS SECTION).

SECTION 15

SCREW-DOWN DELIVERY VALVES

Part A: Continental Type

Operation

To CLOSE the valve (non-operational position) turn the handwheel clockwise until resistance is felt. The valve plate is then firmly in contact with the seating and no water can flow in either direction (Fig. 15-1).

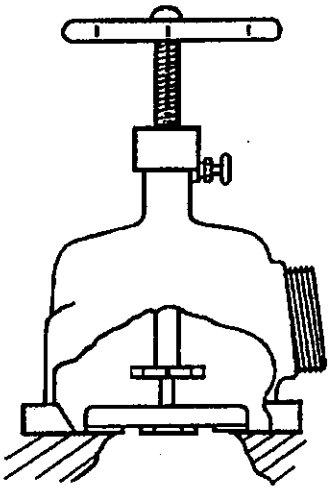
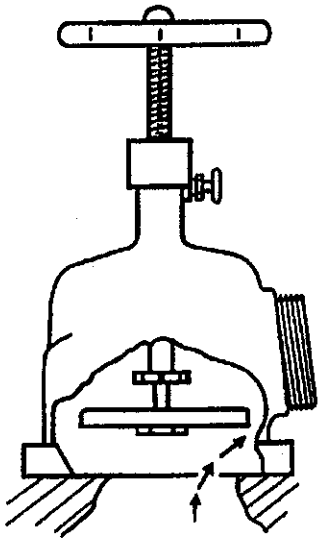


Fig. 15-1 Valve closed.



Fig, 15-2 Valve open.

To OPEN the valve (operational position) turn the handwheel counter-clockwise until it stops. The valve plate is then only held onto its seating by the spring fitted in the centre of the valve spindle. With the pump operational, water pressure lifts the valve plate off its seating against the spring pressure. Water will then be discharged (Fig. 15-2).

If operations temporarily cease, the water flow stops and the valve plate returns to its seating under influence of the spring. This maintains a head of water on the discharge side of the valve and therefore prevents the prime being 'lost'.

To drain hoses or high-risers (operations terminated), pull out the release knob and turn the handwheel counter-clockwise until it stops. The valve plate is then raised clear of the seating and is not under any spring pressure. This then allows water to drain back from the discharge-side of the valve, through the pump volute and out of the suction tube (Fig 15-3).

Note: This operation must only be performed with the pump stopped.

Ensure that the valves are CLOSED upon completion of this operation.

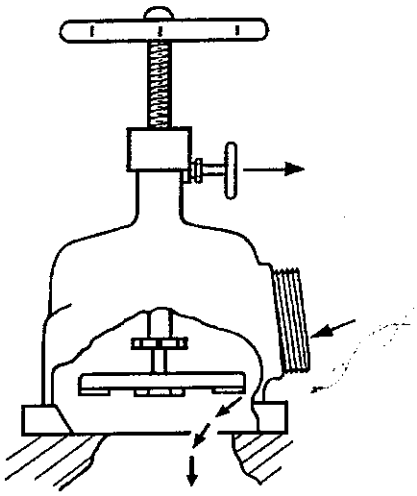


Fig. 15-3 Valve open .

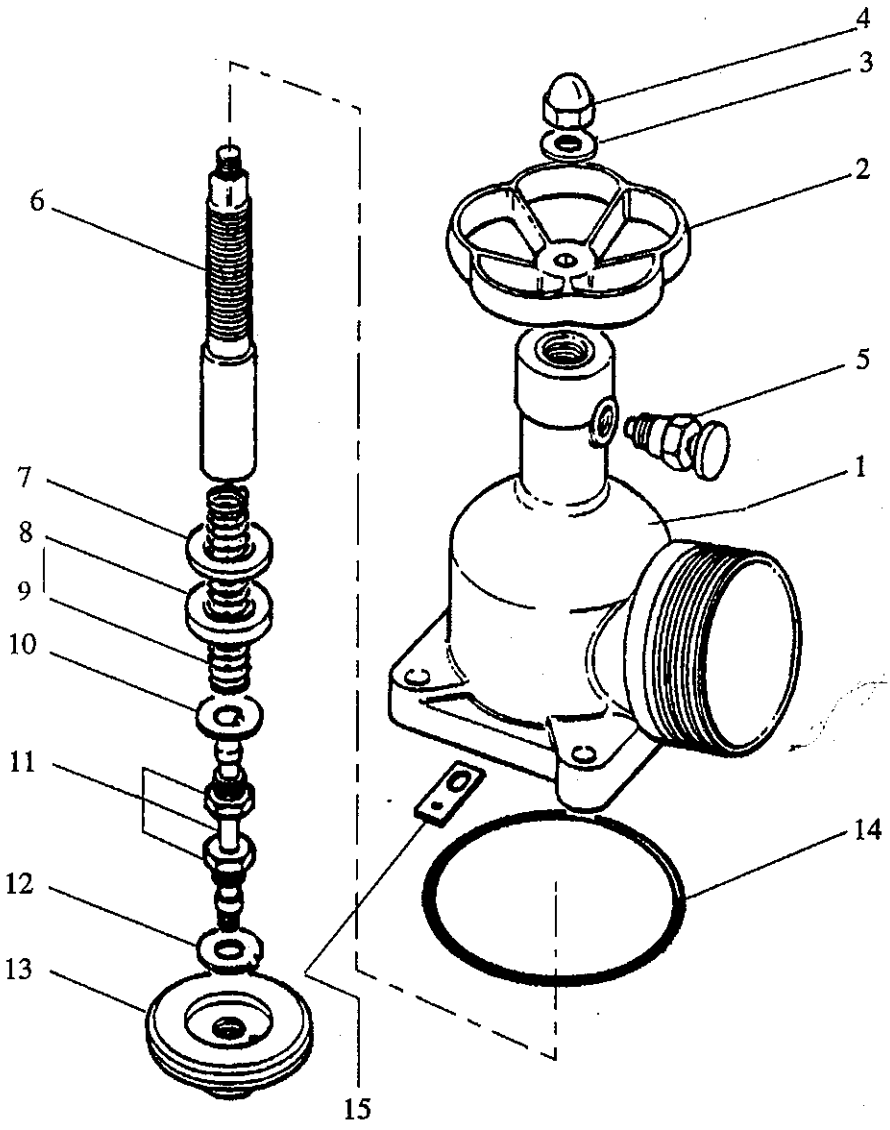
To Remove
Unscrew and remove the four M10 nuts and washers securing each valve to the delivery manifold and remove the valve. Recover the 'O' ring from the valve-mounting flange and the chain anchor.

Maintenance (Fig. 15-4)
Remove the valve-spindle release knob (5). Temporarily refit the handwheel (2) or use an open-ended spanner to turn the valve spindle (6) clockwise as far as it will go. Continue unscrewing the spindle (6) counter-clockwise (viewed from the bottom) until it is released from the body (1).

Release the locking plate (12) and hold the plate (13) while unscrewing the lower nut of the stem assembly (11). Then release the locking plate (10) at the other end of the stem assembly (11) and unscrew the nut.

Note: There is a spring (9) in the spindle, therefore some spring tension will be present when the nut is unscrewed from the internal thread of the spindle (6).

If it is necessary to fit a new spindle seal (indicated by water leaking from the threaded portion of the spindle below the handwheel) carefully drift the seal (8) and the support ring (7) from the body (1).



1. Valve Body
2. Handwheel
3. Washer
4. Domed Nut
5. Spindle Release Knob
6. Spindle
7. Support Ring
8. Seal
9. Spring
10. Locking plate
11. Stem assembly
12. Locking plate
13. Plate
14. 'O' ring
15. Anchor (for chain)

Fig. 15-4 Delivery valve components (Continental Type)

Reassembly is a reversal of the dismantling instructions.

Ensure that the spindle-seal support ring (7) is refitted and that the seal (8) is pressed into position with its lip towards the base of the valve body (1).

Do not forget to correctly-locate the 'tag' of each locking plate before bending the edge of the plate to lock the nut.

Apply a little molybdenum listate grease to the thread of the spindle.

To Refit

Refitting is a reversal of the removal instructions. Fit a new 'O' ring.

Part B: UK Type

Operation

To close the valve (non-operational position) turn the handwheel clockwise until resistance to turning is felt. The non-return flap and washer are then firmly in contact with the seating and no water can flow (Fig 15-5).

To open the valve (operational position) turn the handwheel counter-clockwise until it stops. With the pump operating, water pressure lifts the non-return flap from its seating. Water will than be discharged (Fig. 15-6).

If operations temporarily cease, the water flow stops and the non-return flap returns to its seating under the influence of the head of water on the discharge side of the valve (Fig. 15-7). This prevents immediate loss of 'prime'.

To drain hoses or high risers it will be necessary to release the hose(s) from the instantaneous coupling by twisting the release knob in either direction. Before performing this operation, ensure that the pump has stopped and supprt the hose to prevent it dropping onto the pump or ground, or causing personal injury.

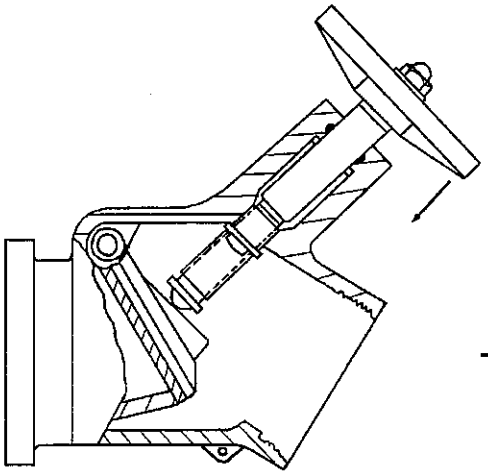


Fig. 15-5 Valve closed

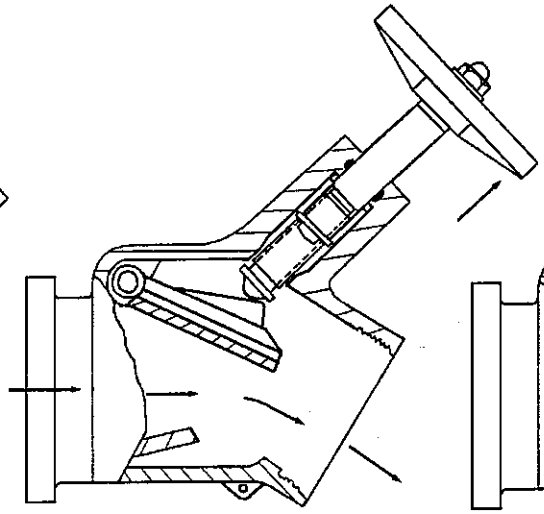


Fig. 15-6 Valve open

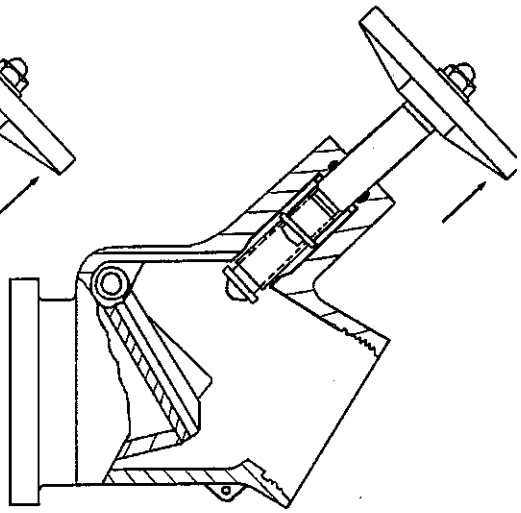


Fig. 15-7 Flap closed

To Remove

Unscrew the four M10 nuts, spring washers and washers securing each valve to the delivery manifold studs and remove the valve.

Maintenance (Fig. 15-8)

To renew the non-return flap rubber seal (12) first remove the instantaneous connector assembly by unscrewing it in counter-clockwise direction. Recover the large 'O' ring (6). This will allow easier access to the flap assembly.

Unscrew the valve spindle (4) as far as it will go by turning the handwheel (3) counter-clock-wise. Remove the two circlips (16) from the pivot pin (14) and withdraw the pin from the body. Recover the non-return flap (13) from inside the body and remove the 'O' rings (15) from the pivot pin (14).

Unscrew the two 1/4in UNC counter-sunk screws (10) securing the retaining washer (9), two nylon inserts (11) and the rubber flap washer (12) to the non-return flap (13).

Position the new rubber flap washer (12) on the non-return flap (13) and fit the two nylon inserts (11) in the flap washer holes and locate the retaining washer (9) over the flap assembly. Apply 'Screwlock' to the threads of the two new 1/4in UNC counter-sunk screws (10), insert into the assembly and fully tighten.

Fit two new 'O' rings (15) into the two innermost grooves of the pivot pin (14) and fit one of the new circlips (16) into one of the remaining grooves. Locate the non-return flap assembly inside the valve body and carefully insert the pivot pin (14). When fully fitted, fit the remaining circlip (16) to the exposed groove of the pivot pin. Refit the instantaneous connector assembly using a new 'O' ring (6).

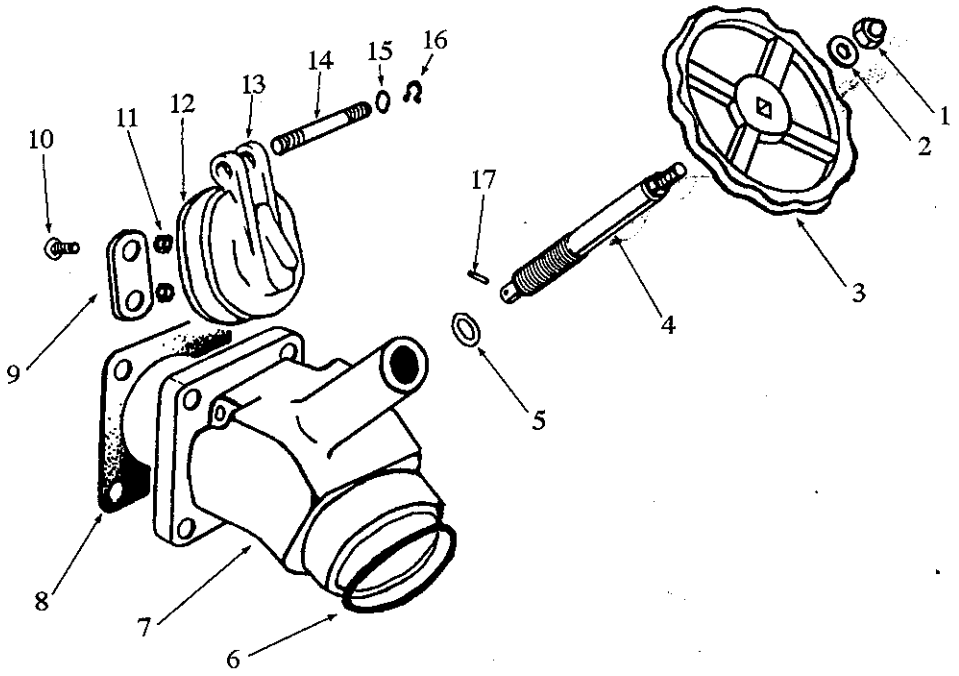


Fig. 15-8 Delivery valve components (U.K. type)

To fit a new 'O' ring (5) to the screw-down spindle (4), unscrew the spindle in a counter-clockwise direction until it is approximately half way through its travel. Use a pair of long-nose pliers to extract the 1/8 x 3/4in roll pin (17) from the screw-down spindle. If difficult to remove, it may be carefully drifted from its position. Unscrew the spindle until it is free from the valve body (7). Use a suitable pointed tool to extricate the 'O' ring (5) from the valve body and fit a new 'O' ring. Fit the screw-down spindle (4) and screw it in approximately half way through its travel, in a clockwise direction. Fit the roll pin (17) to the cross drilled hole near the end of the spindle. Threr is no need to use excessive force to fit the roll pin. Refit the instantaneous connector assembly or adaptor if fitted using a new 'O' ring (6).

To Refit

Ensure the joint faces of the valve and delivery manifold are clean and fit a new gasket. Refit the valve, four M10 plain washers, spring washers and nuts to the manifold studs and tighten diametrically. Check the valve and instantaneous connector, if fitted, for correct operation.

SECTION 16

PUMP TESTS

Vacuum Test

Place the blanking cap(s) in position on the inlet(s) of the pump and close the delivery valves. Run the pump at 2300 rev/min approximately and watch the compound gauge needle. When a vacuum of 0,80 bar (24in.) is obtained stop the pump. This vacuum should be maintained for at least 15 seconds.

If the pump will not hold the vacuum with the blanking cap(s) in position, a leak is present in the pump, and the pressure test detailed below must be carried out to trace it.

Should the pump not reach a vacuum of 0,80bar (24in.), but will hold a lower pressure, a fault in the priming system is indicated.
Check as follows:-

(i) See that the primer drive is engaged with the pump pulley and runs without slip.
(ii) Check that the primer is filled with water.
(iii) Check the primer seal drain hole for leakage. If leakage is found, fit a new seal to the primer as detailed in SECTION 10.

If the pump will not achieve 0,80bar (24in.) vacuum and will not hold what it does achieve, there is a leak and possibly a fault in the system.

Pressure Test

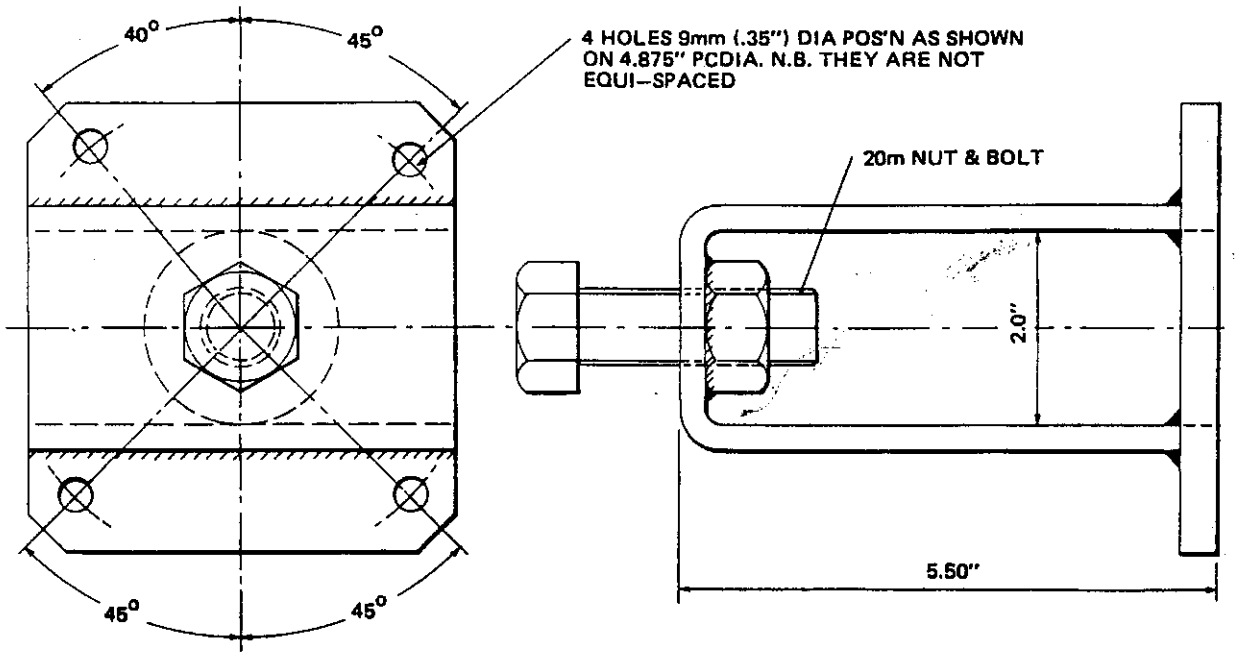
This test need only be carried out if the pump will not hold vacuum with the blanking cap(s) in position, and it is intended to trace the leaks responsible for the loss of vacuum.

Apply a water pressure of 3,5 - 7,0 bar (50 to 100 lbf/in.^{2}) to the pump and check for leaks. The joints causing a defective seal must be dismantled and the leaks rectified. If no leaks are apparent, the leakage must be in the line from the priming valve to the water ring primer, points to be checked are the priming valve sealing washer, the water ring primer non-return valve, and the rubber hose and clips.

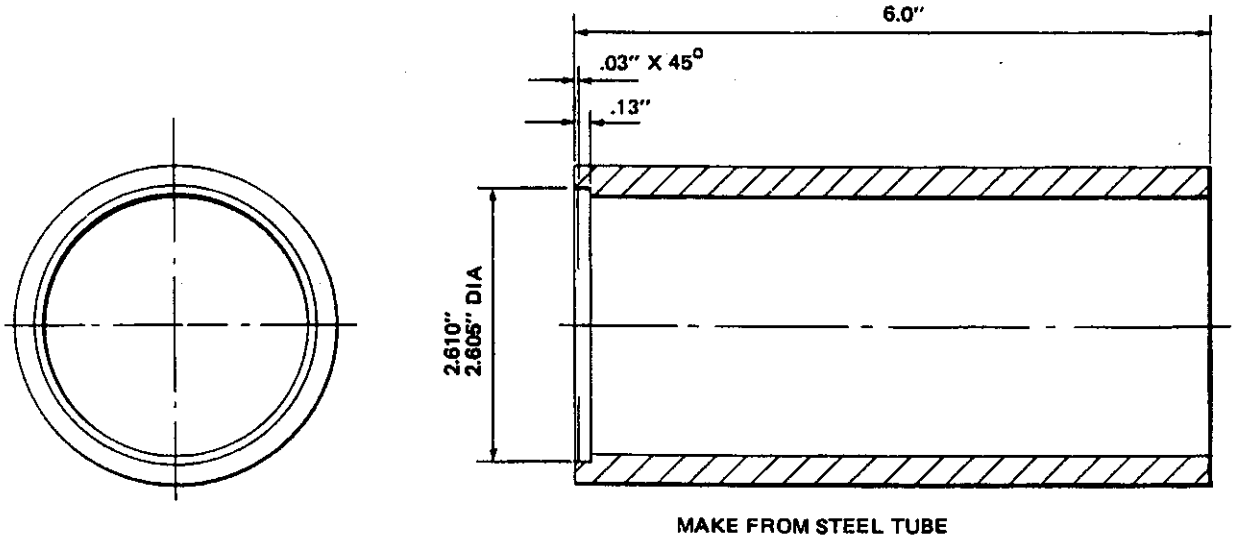
SECTION 17

SPECIAL TOOLS

These special tools can be purchased direct from Godiva Limited, or if necessary made up to the dimensions shown in the illustrations below.

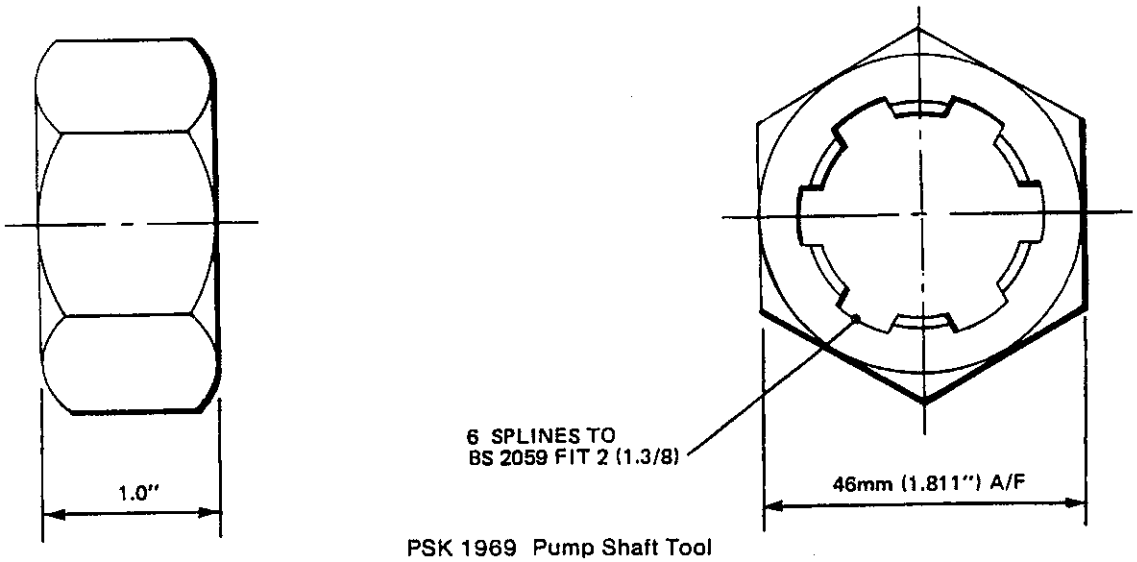


PSK 1971 Pump Shaft Extractor

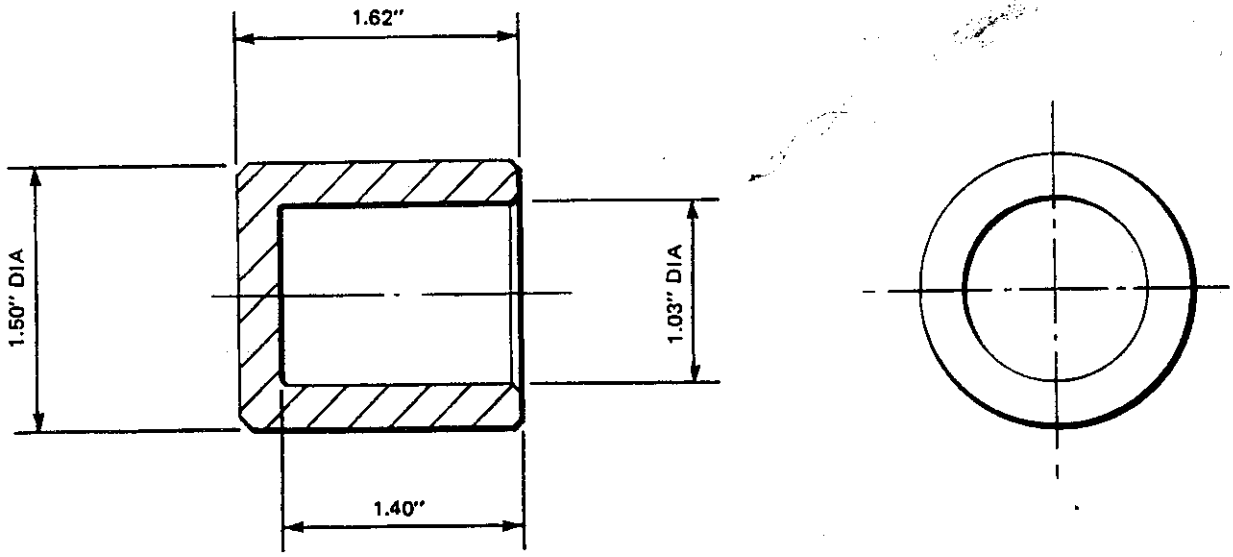


MAKE FROM STEEL TUBE

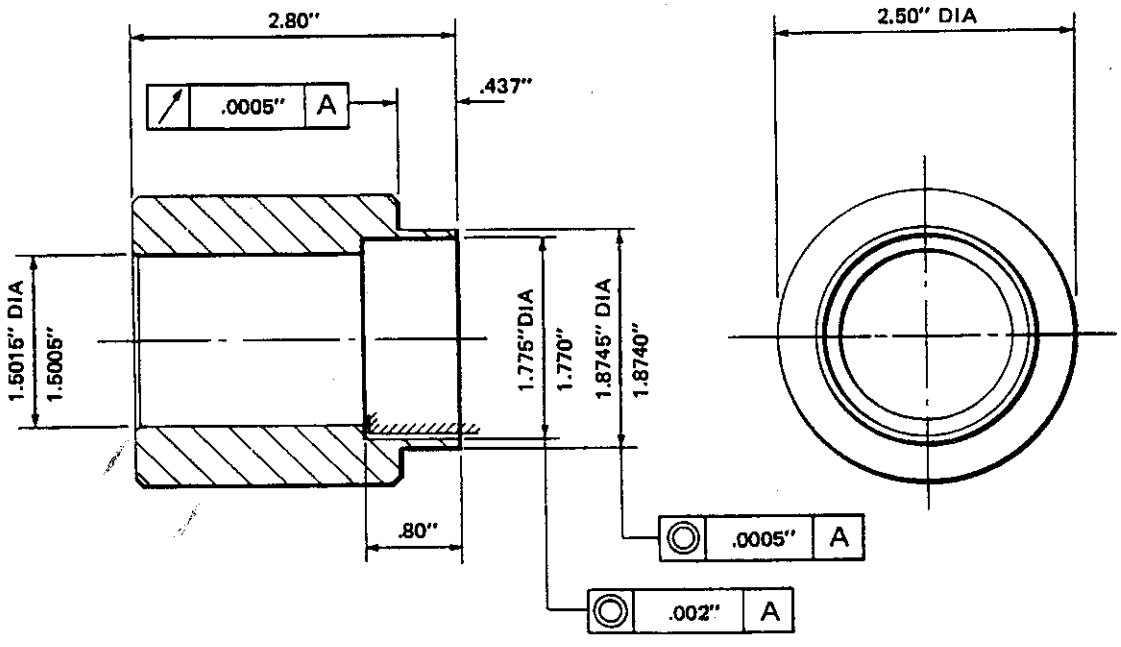
PSK 1972 Bearing Removal Tool



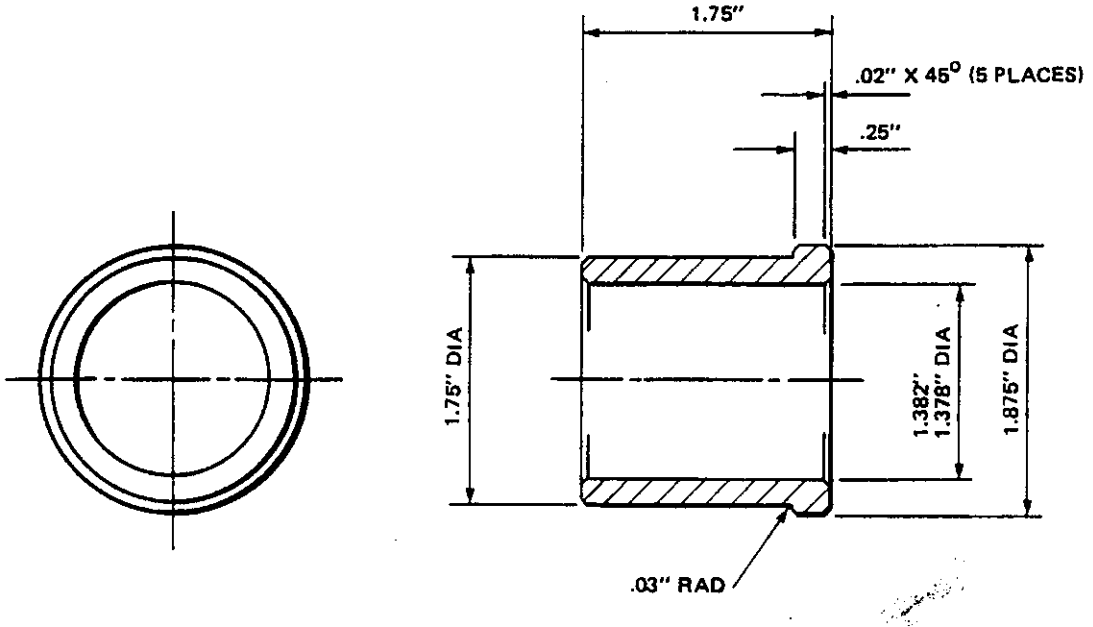
PSK 1969 Pump Shaft Tool



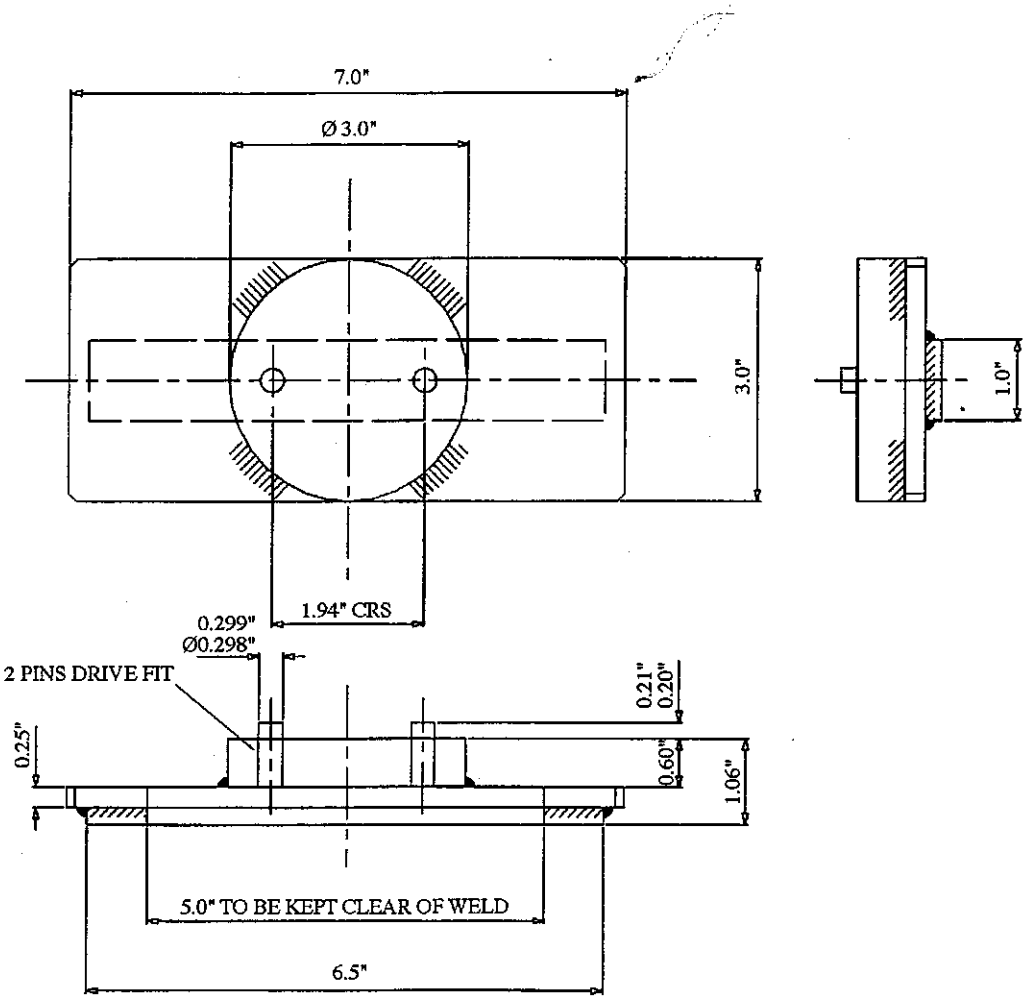
PSK 1970 Shaft End Protector



PSK 1956 Installation Tool



PSK 1965 Spacer Tool



PSK 2173 Piston Assembly Tool

GV RANGE

UNIVERSAL FIRE PUMP

SPARE PARTS SECTION

INTRODUCTION

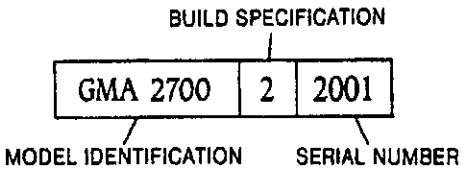
This Spares List covers the following in the GV Universal Fire Pump Range:

Model	Rating
GVA 2700 -- Aluminium **GVB 2700** -- Bronze	Nominal Output 2700 litres/min at 3m lift.
GVA 3600 -- Aluminium **GVB 3600** -- Bronze	Nominal Output 3600 litres/min at 3m lift.
GVA 5300 -- Aluminium **GVB 5300** -- Bronze	Nominal Output 5300 litres/min at 3m lift.

TO ORDER SPARES

ALWAYS QUOTE

(1) **Pump Serial Number**, as stamped on the L.H.-side of the volute body (looking towards the suction tube).
An example of the identification of numbers is shown here:



(2) **Item Number, Part Number and Description** as given in this Spare Parts List.

IMPORTANT: The Company will not accept responsibility for parts not ordered in accordance with these instructions.

GENERAL

(1) **PAYMENT:**
In the absence of an approved account, goods will be invoiced "Pro-Forma" or sent C.O.D.

(2) **DELIVERY:**
Delivery is Ex-Works, carriage and packing being extra.

(3) **DAMAGE:**
The Company does not hold itself responsible for goods lost or damaged in-transit. All packages should be signed-for on receipt as "Unexamined". In the event of loss or damage, a claim should be made on the carrier without delay.

(4) **PARTS CLAIMED TO BE DEFECTIVE AND REPLACEABLE UNDER GUARANTEE:**
Such parts must be returned to the Works, carriage-paid for examination.
The DATE-OF-DELIVERY and the PUMP SERIAL NUMBER must ALWAYS be given.
The COST of the CARRIAGE and ANY WORK entailed in fitting re-placement parts is CHARGEABLE to the claimant.

(5) **PATTERNS:**
If there is any doubt, send the old parts as patterns; such patterns must be LABELLED CLEARLY, INDICATING THE SENDER'S NAME AND ADDRESS.
Note: If the patterns are to be returned, they must be MARKED accordingly, or they will be scrapped.

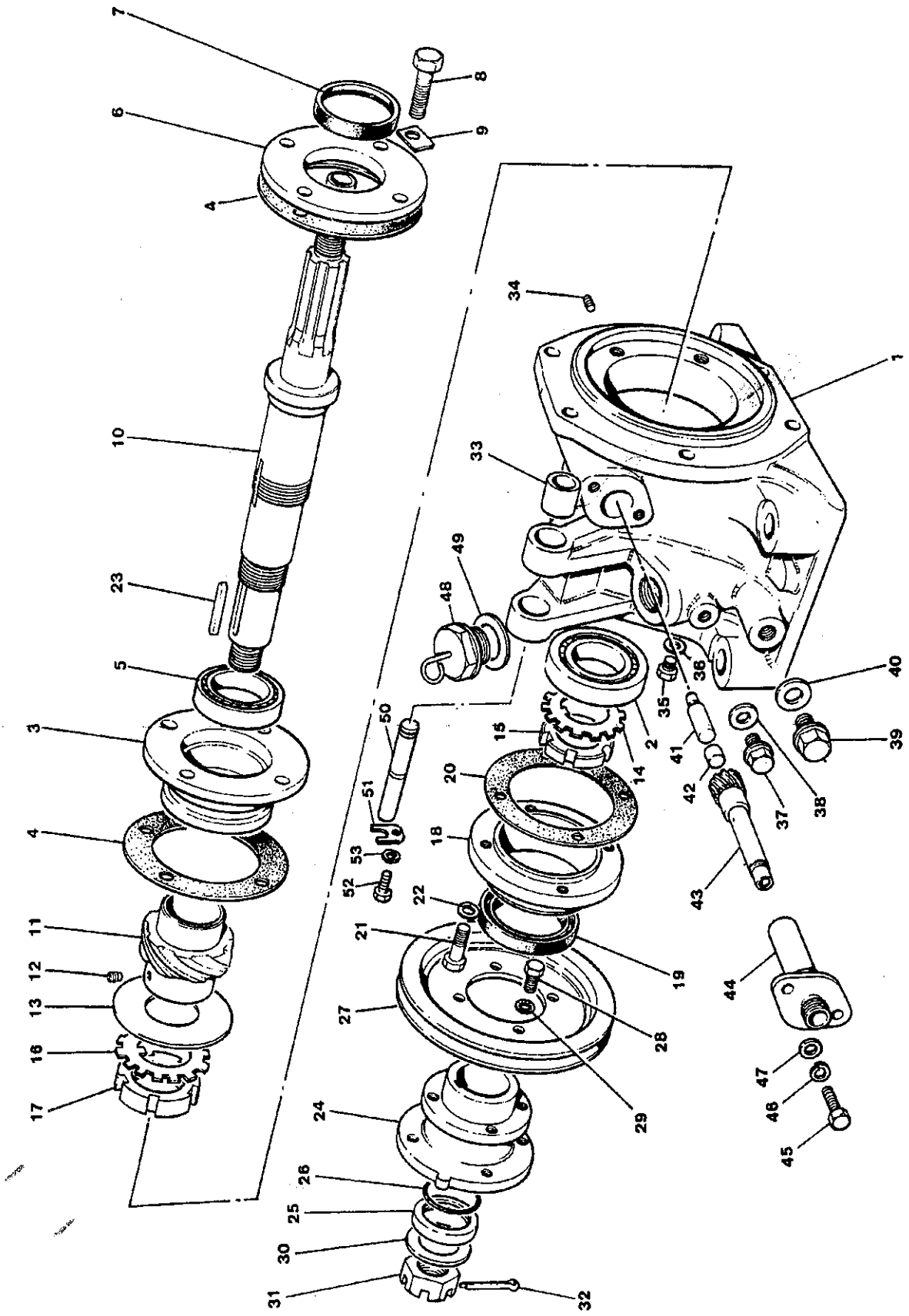
(6) **WARNING:**
It is of the UTMOST IMPORTANCE that ONLY GENUINE PARTS SUPPLIED BY GODIVA are used, otherwise the Guarantee will be null and void.

(7) **SALES:**
All sales are made subject to the Company's Standard Conditions of Sale in force at the time of sale.

CONTENTS

SPARE PARTS LIST

BEARING HOUSING ASSEMBLY



BEARING HOUSING ASSEMBLY

Item No.	Description	Part No.	Qty. (Per Unit)
1	Bearing housing	UMP9388	1
2	Taper roller bearing (rear)	UMP9389	1
3	Front bearing mount	UMP9390	1
4	Joint	UMP9392	2
5	Taper roller bearing (front)	UMP9393	1
6	Oil seal mounting (front)	UMP9394	1
7	Oil seal (front)	UMP9395	1
8	Screw M8	MS05/30	4
9	Tabwasher 5/16 in.	UFP2609	4
10	Pumpshaft	UFP10432	1
11	Rev.-counter drive gear	UMP9397	1
12	Grubscrew M8	MS59/8/12	1
13	Oil flinger	UMP9398	1
14	Tabwasher	UMP9399	1
15	Locknut	UMP9402	1
16	Tabwasher	UMP9401	1
17	Locknut	UMP9400	1
18	Oil seal mounting (rear)	UMP9403	1
19	Oil seal - rear	UMP9404	1
20	Joint	UMP9392	1
21	Screw M8	MS05/20	4
22	Spring washer	MS29/6	4
23	Key	MS80/15	1
24	Drive flange	UMP9406	1
25	Seal mount ing	UMP9699	1
26	'O' ring	UMP9700	1
27	Pump pulley	2042	1
28	Screw M8	MS05/16	6
29	Shakeproof washer	MS31/5	6
30	Washer	MS27/12	1
31	Nut M24, slotted	UMP9703	1
32	Split pin	MS178/69	1
33	Bush (primer fulcrum)	UFP2277	2
34	Set-screw M8, hollow	MS56/8/12	2
35	Plug 1/8 in.BSP	S64/1	1
36	Dowty seal 1/8 in. BSP	UFP2303/3	1
37	Plug 1/4 in. BSP	S64/2	1
38	Dowty seal 1/4 in. BSP	UFP2303/5	1
39	Plug 3/8 in. BSP	S64/3	2
40	Dowty Seal 3/8 in. BSP	UFP2303/7	2
41	Pin locating	UFP2273	1
42	Rev.-counter assembly	55268	1
43	Housing	1290/2	1
44	Bush	52138/05	1
45	'O' ring	FWMP5150/1	1
46	Pinion, rev.-counter drive	1842/3	1

BEARING HOUSING ASSEMBLY (Continued)

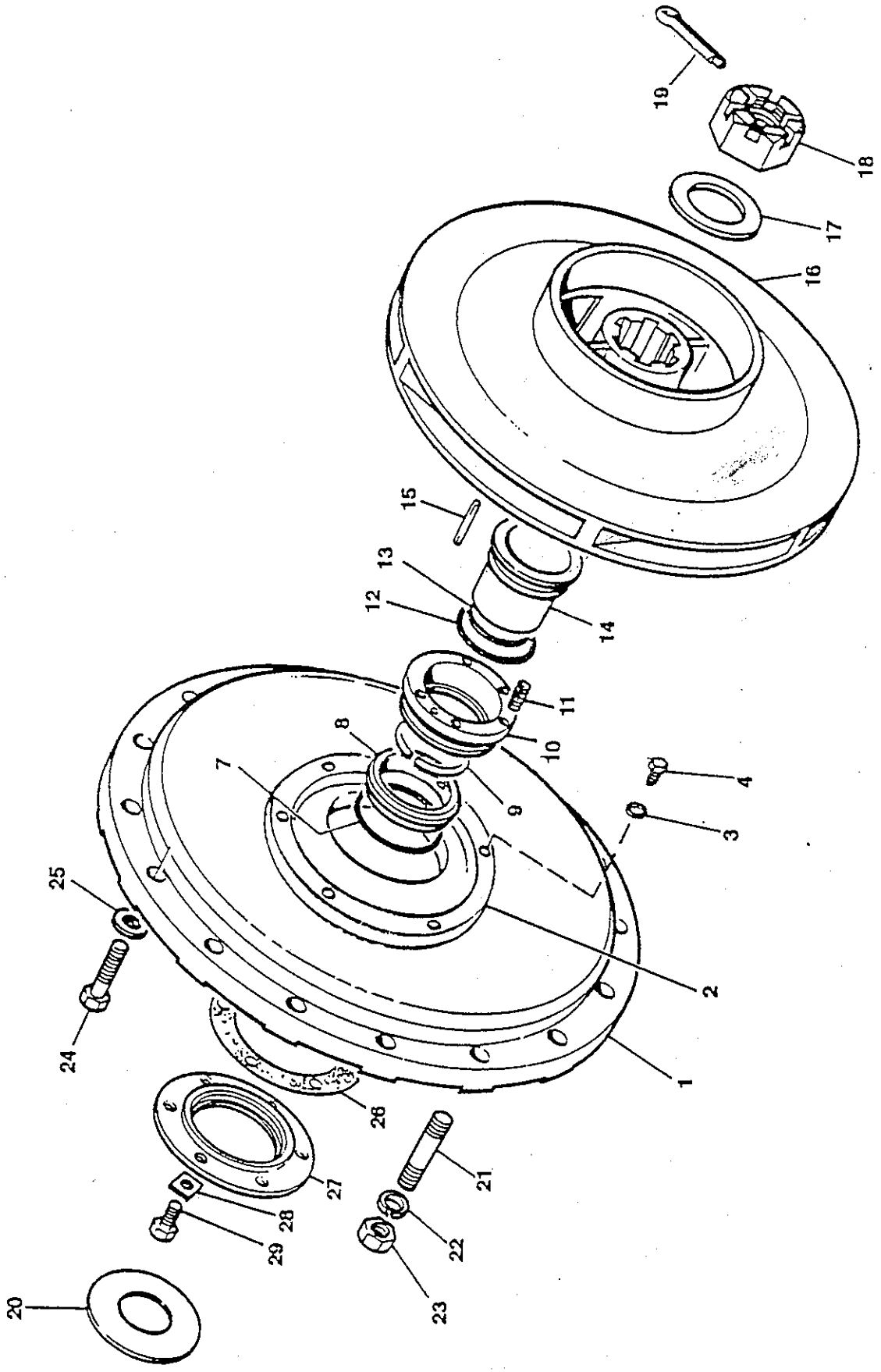
Item No.	Description	Part No.	Qty. (Per Unit)
47	Screw M8	MS05/20	2
48	Spring washer M8	MS29/6	2
49	Washer M8	MS25/9	2
50	Breather plug	UFP9551	1
51	Dowty seal	UFP2303/13	1
52	Primer fulcrum pin	UFP2275	1
53	Locating plate	UFP2274	1
54	Screw M8	MS05/16	1
55	Spring washer M8	MS29/6	1

This assembly is used on all models with 1410 drive flange
(For all other variations please contact your nearest Customer Service Department)

ALSO AVAILABLE
(ALL MODELS):

Tachometer	UFP2568
Tachometer cables:	
- Length 24 in.	UFP2569
- Length 30 in.	UFP2569/5
- Length 36 in.	UFP2569/7
- Length 48 in.	UFP2569/4
- Length 72 in.	UFP2569/8
- Length 84 in.	UFP2569/9
- Length 120 in.	UFP2569/10

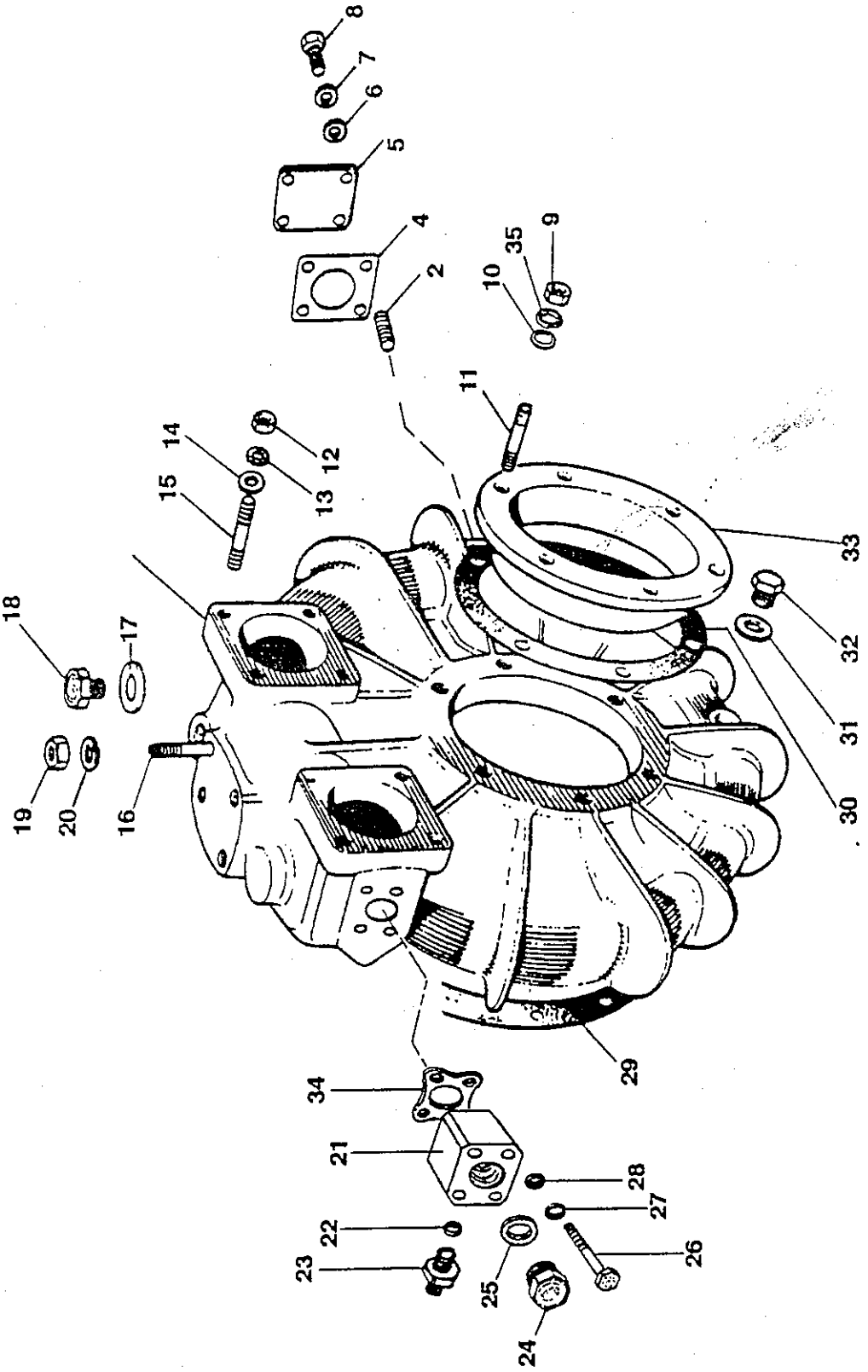
PUMP HEAD GROUP



PUMP HEAD GROUP

Item No.	Description	Part No.	Qty (per unit)
1	Pump head (Alum)	UFP10591/1	1 (GVA units)
-	Pump head (Bronze)	UFP10599/1	1 (GVB units)
2	Wearing ring	50759	1
3	Washer M6	MS125/7	6
4	Screw M6, socket head	MS163/16	6
5	Helicoil insert M6	MS182/9	6 (GVA units)
6	Helicoil insert M6	MS182/10	6 (GVA units)
7	'O' ring	UFP2301	1
8	Carbon seal element	UFP2300	1
9	Circlip	UFP2288	1
10	Seating ring, carbon seal	UMP9367/1	1
11	Compression spring	UMP9369	6
12	'O' ring	UMP9370	1
13	'O' ring	UMP9413	1
14	Sleeve, carbon seal	UFP10433	1
15	Spring pin	UMP9368/1	2
16	Impeller (Alum)	UFP4202/22	1 (GVA2700/3600)
-	Impeller (Bronze)	UFP4216/5	1 (GVB2700/3600)
-	Impeller (Alum)	UFP7664/20	1 (GVA5300)
-	Impeller (Bronze)	UFP7664/16	1 (GVB5300)
17	Washer M24	UMP6136/1	1
18	Nut M24, slotted	UMP9703	1
19	Split pin	MS178/69	1
20	Water flinger	UMP9409	1
21	Stud M10 (to bearing housing)	MS49/30	6
22	Spring washer M10	MS29/7	6
23	Nut M10	MS35/9	6
24	Bolt M12	MS107/35	16
25	Bonded seal M12	MS33/12	16
26	Joint, carbon seal housing	UMP6538	1
27	Carbon seal housing	UMP6518	1
28	Washer M6	MS125/7	6
29	Screw M6	MS104/16	6

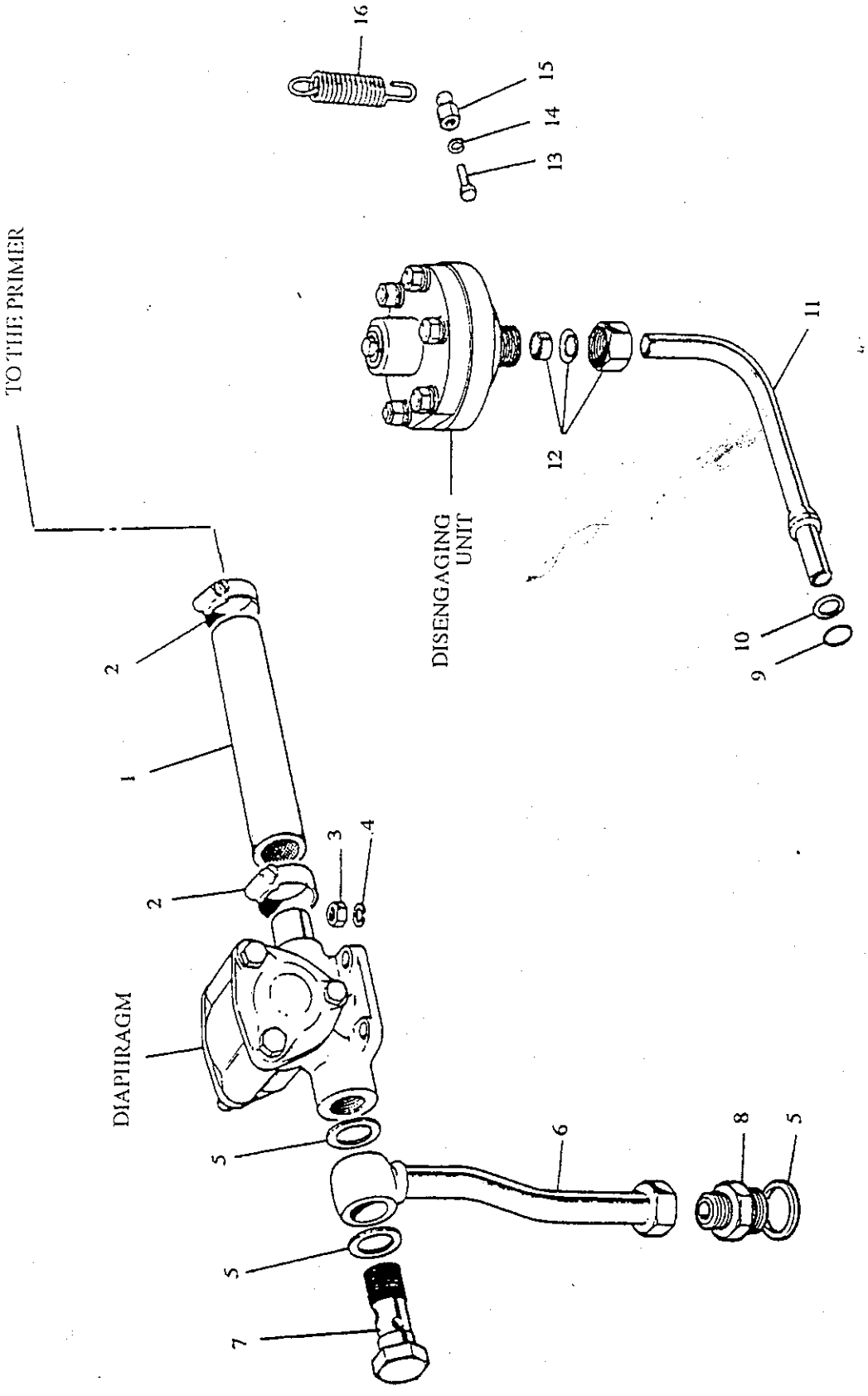
VOLUTE GROUP



VOLUTE GROUP

Item No.	Description	Part No.	Qty (per unit)
1	Volute body (Alum)	UFP8817/11	1 (GVA2700/3600)
-	Volute body (Bronze)	UFP8817/14	1 (GVB2700/3600)
-	Volute body (Alum)	UMP7666/8	1 (GVA5300)
-	Volute body (Bronze)	UFP7666/10	1 (GVB5300)
2	Helicoil insert M18	MS182/11	4
3	Helicoil M12	MS182/15	16
4	Gasket, blanking plate	50734	1
5	Blanking plate (Alum)	UFP2842/2	1 (GVA units)
-	Blanking plate (Bronze)	UFP2842/3	1 (GVB units)
6	Washer M8	MS25/9	4
7	Spring washer M8	MS29/6	4
8	Screw M8	MS05/30	4
9	Nut M10	MS35/9	6
10	Washer M10	MS25/10	6
11	Stud M10, suction tube	MS149/35	6
12	Nut M10	MS35/9	8
13	Spring washer M10	MS29/7	8
14	Washer M10	MS25/10	8
15	Stud M10, delivery manifolds	MS49/30	8
16	Stud M8, priming valve	MS48/20	4
17	Sealing washer 1/2 in. BSP	UFP2303/8	1
18	Plug 1/2 in. BSP	S64/4	1
19	Nut M8	MS35/8	4
20	Spring washer M8	MS29/6	4
21	Adaptor (Alum)	54162/02	1 (GVA units)
-	Adaptor (Bronze)	54162/01	1 (GVB units)
22	Sealing washer 1/4 in.BSP	UFP2303/5	1
23	Union 1/4 in. BSP	56403	1
24	Plug 1 in.BSP	S64/8	1
25	Sealing washer 1 in. BSP	UFP2303/13	1
26	Bolt M6	MS105/45	4
27	Spring washer M8	MS29/6	4
28	Washer M8	MS25/9	4
29	Gasket, volute body	UFP2295/1	1
30	Gasket, sealing ring	FP301	1 (GV2700/3600)
-	Gasket, sealing ring	UFP3840	1 (GV5300)
31	Sealing washer 3/8 in. BSP	UFP2303/7	1
32	Drain plug 3/8 in. BSP	S64/3	1
33	Sealing ring, suction tube	UFP2545/2	1 (GV2700/3600)
-	Sealing ring, suction tube	UFP3837/2	1 (GV5300)
34	Gasket, adaptor	UMP6543	1
35	Spring washer M10	MS29/7	6

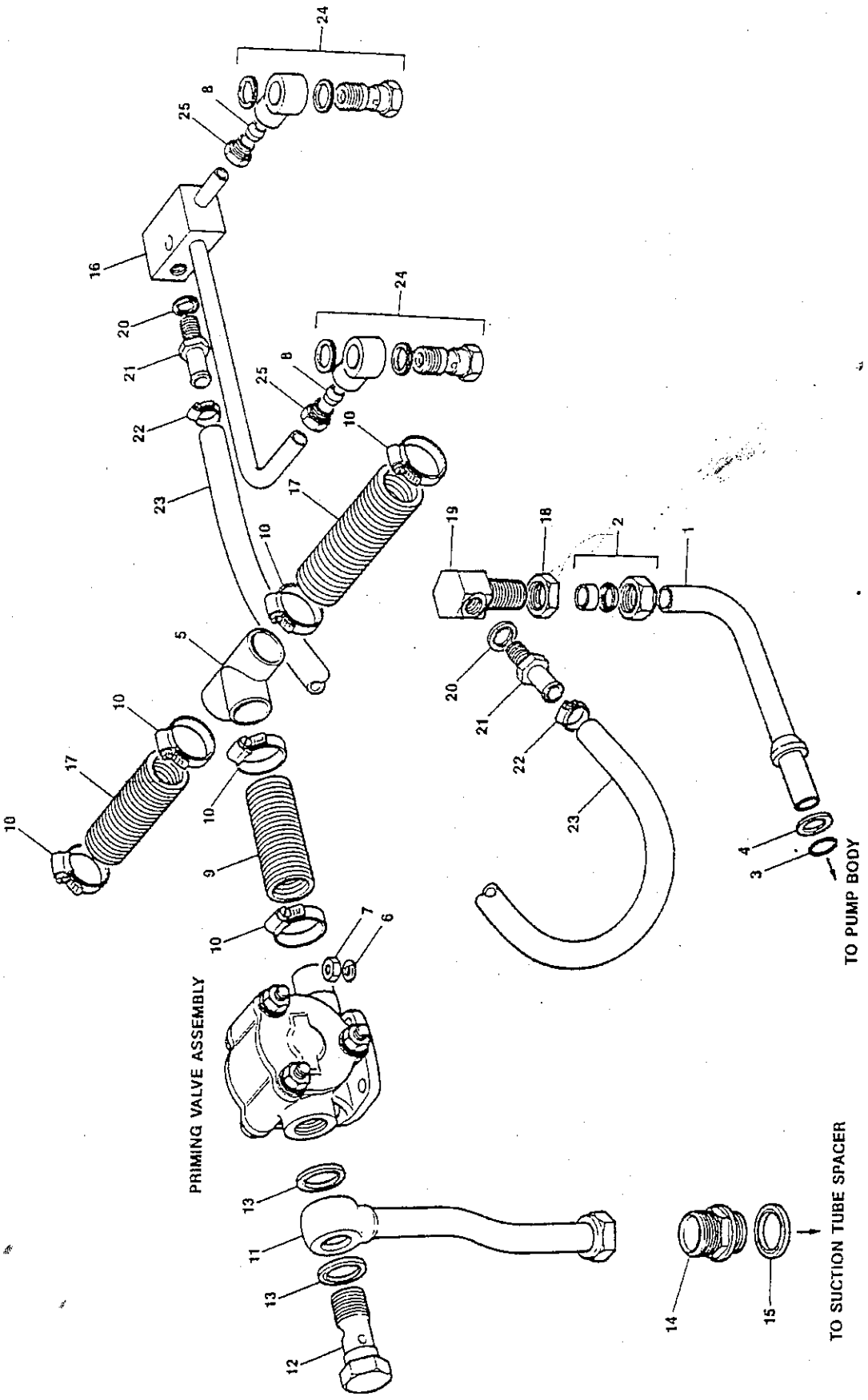
PRIMING SYSTEM (Water Ring Primer)



PRIMING SYSTEM (Water Ring Primer)

Item No.	Description	Part No.	Qty (per unit)
1	Priming hose	UMP2314	1
2	Hose clip	MS82/3	2
3	Spring washer M8	MS29/6	4
4	Nut M8	MS35/8	4
5	Sealing washer 3/4 in. BSP	UFP2303/10	3
6	Priming pipe assembly - (Aluminium)	55304/03	1 (GVA2700/3600)
-	Priming pipe assembly - (Bronze)	55304	1 (GVB2700/3600)
-	Priming pipe assembly - (Aluminium)	55304/08	1 (GVA5300)
-	Priming pipe assembly - (Bronze)	55304/09	1 (GVB5300)
7	Banjo bolt	UFP6496	1
8	Stud coupling 22 mm - 3/4 in.BSP	55308	1
9	'O' ring, pressure pipe	UFP2290	1
10	Washer, pressure pipe	UFP2291	1
11	Pressure pipe, primer release- (Aluminim)	UFP2276	1 (GVA units)
-	Pressure pipe, primer release- (Bronze)	UFP2608	1 (GVB units)
12	Coupling set	UFP2602	1
13	Screw M6	MS04/20	1
14	Spring washer M6	MS29/5	1
15	Spring anchor	UFP5963/1	1
16	Spring	UFP5962/1	1

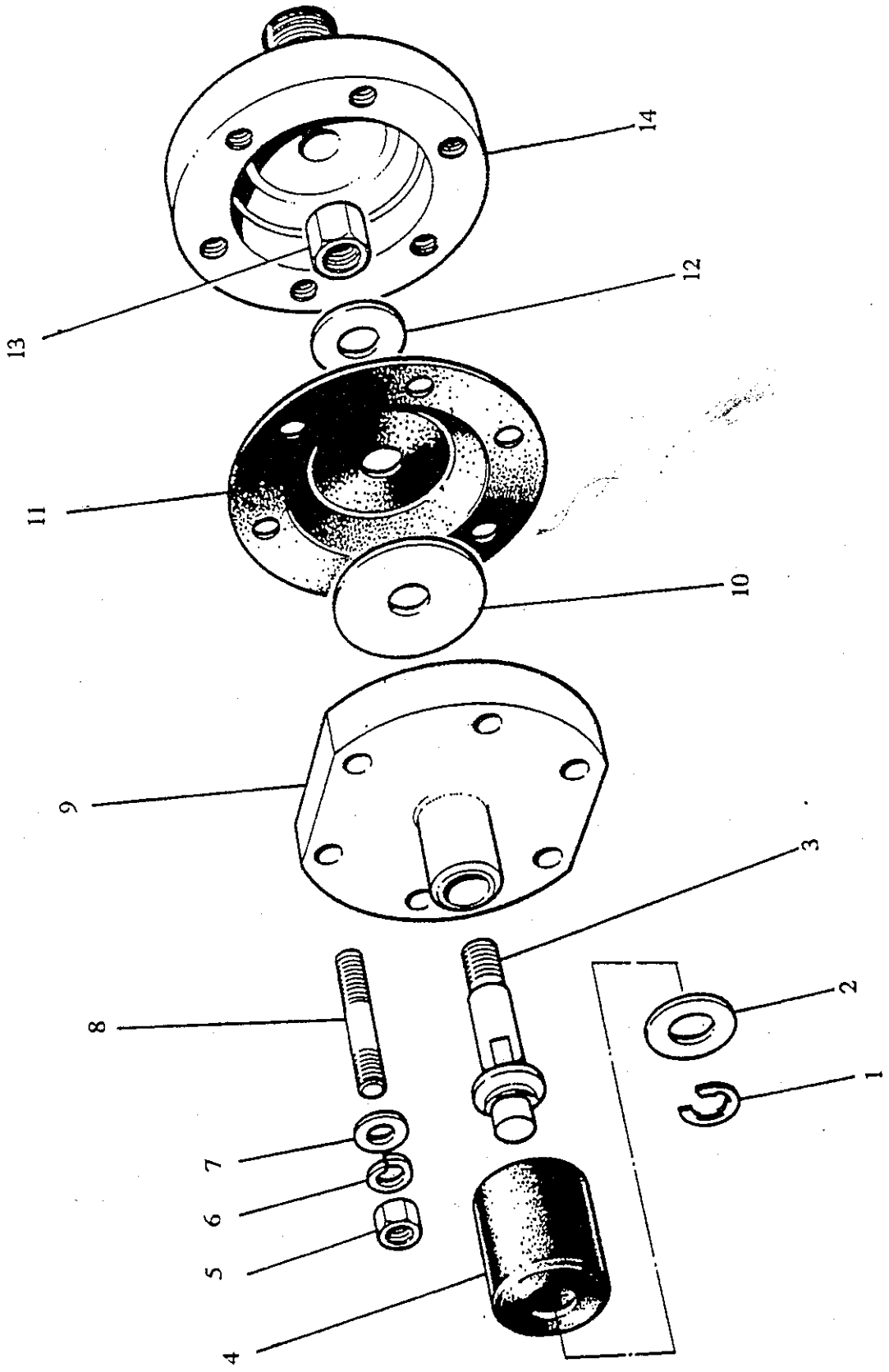
PRIMING SYSTEM (Piston Primer)



PRIMING SYSTEM (Piston Primer)

Item No.	Description	Part No.	Qty (per unit)
1	Pressure pipe, primer release (Aluminium)	UFP2276	1 (GVA units)
2	Coupling set	UFP2602	1
3	'O' ring, pressure pipe	UFP2290	1
4	Washer, pressure pipe	UFP2291	1
5	Tee connector	PDP12446/2	1
6	Spring washer M8	MS29/6	4
7	Nut M8	MS35/8	4
8	Tubing sleeve	PDP12428	2
9	Priming hose	UMP2314/6	1
10	Hose clip	MS82/3	6
11	Priming pipe assembly (Aluminium)	55304/01	1 (GVA2700/3600)
	Priming pipe assembly (Aluminium)	55304/07	1 (GVA5300)
12	Banjo bolt	UFP6496	1
13	Sealing washer 3/4 in. BSP	UFP2303/10	2
14	Stud coupling 22mm - 3/4 in. BSP	55308	1
15	Sealing washer 3/4 in. BSP	UFP2303/10	1
16	Manifold assembly	PDP12423	1
17	Priming hose	UMP2314/5	2
18	Locknut	PDP12422	1
19	Adaptor	PDP12421	1
20	Sealing washer 1/4 in. BSP	UFP2303/5	2
21	Connector, hose	FWMP5268	2
22	Hose clip	MS82/7	2
23	Hose, flexible	PFP7988/8	1
24	Banjo & Bolt	PDP12427	2
25	Tubing nut	PDP12429	2

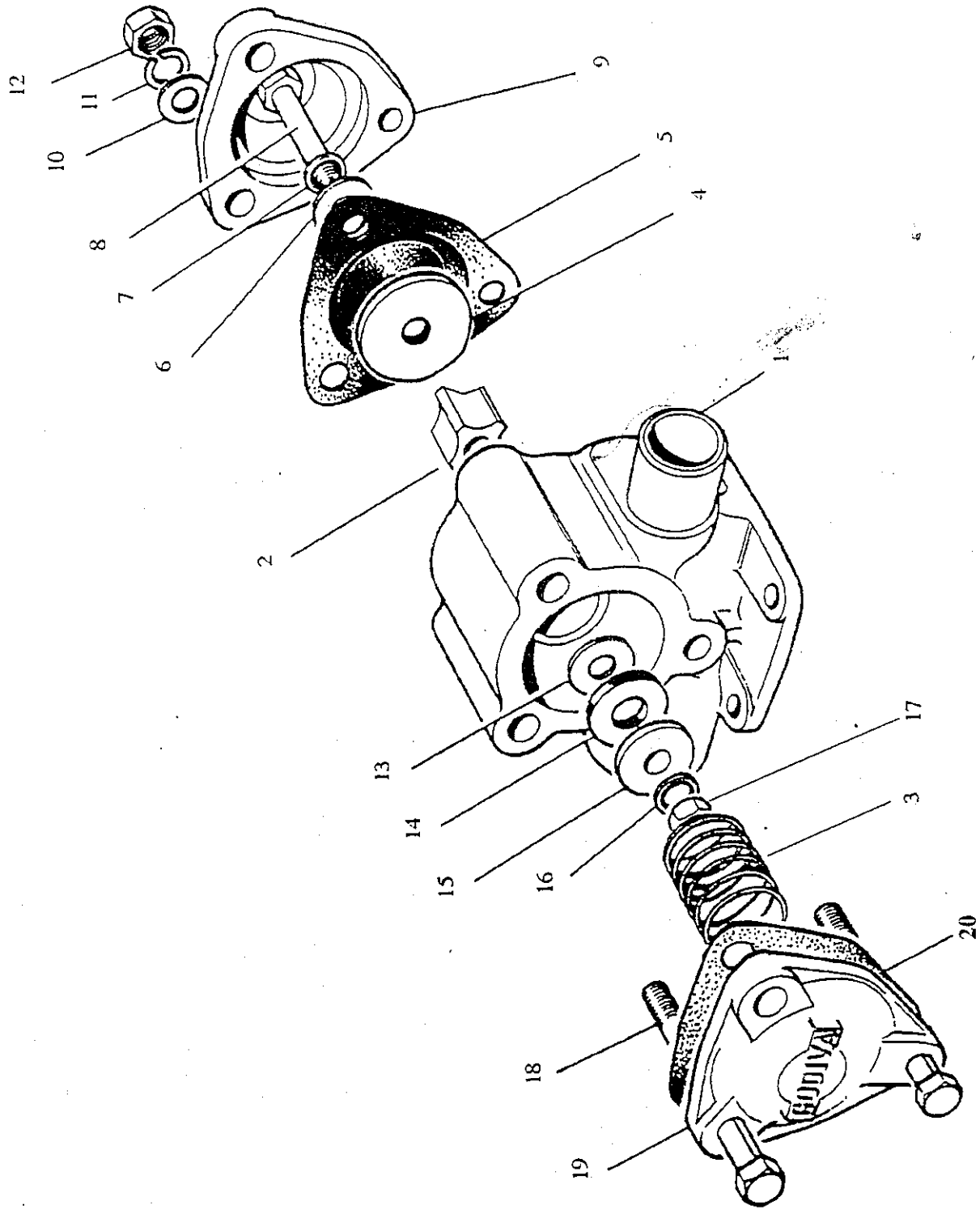
PRIMER LIFT-OFF CYLINDER



PRIMER LIFT-OFF CYLINDER

Item No.	Description	Part No.	Qty (per unit)
-	Lift-off cylinder assembly	UFP6005/2	1 (GVA units)
-	Lift-off cylinder assembly	UFP6005/3	1 (GVB units)
1	Circlip	FWMP5012/2	1
2	Washer	UFP5956	1
3	Plunger	UFP5957/2	1
4	P.V.C. Cap	UFP5958	1
5	Nut M8	MS35/8	6
6	Spring washer M8	MS29/6	6
7	Washer M8	MS25/9	6
8	Stud M8	MS48/25	6
9	Diaphragm housing cover	UFP5953	1
10	Diaphragm plate	UFP5955	1
11	Diaphragm	UFP5954	1
12	Special washer	MS126/9	1
13	Nut M8, self-locking	MS141/5	1
14	Diaphragm housing base - (Aluminium)	UFP5952/2	1 (GVA units)
-	Diaphragm housing base - (Bronze)	UFP5952/3	1 (GVB units)

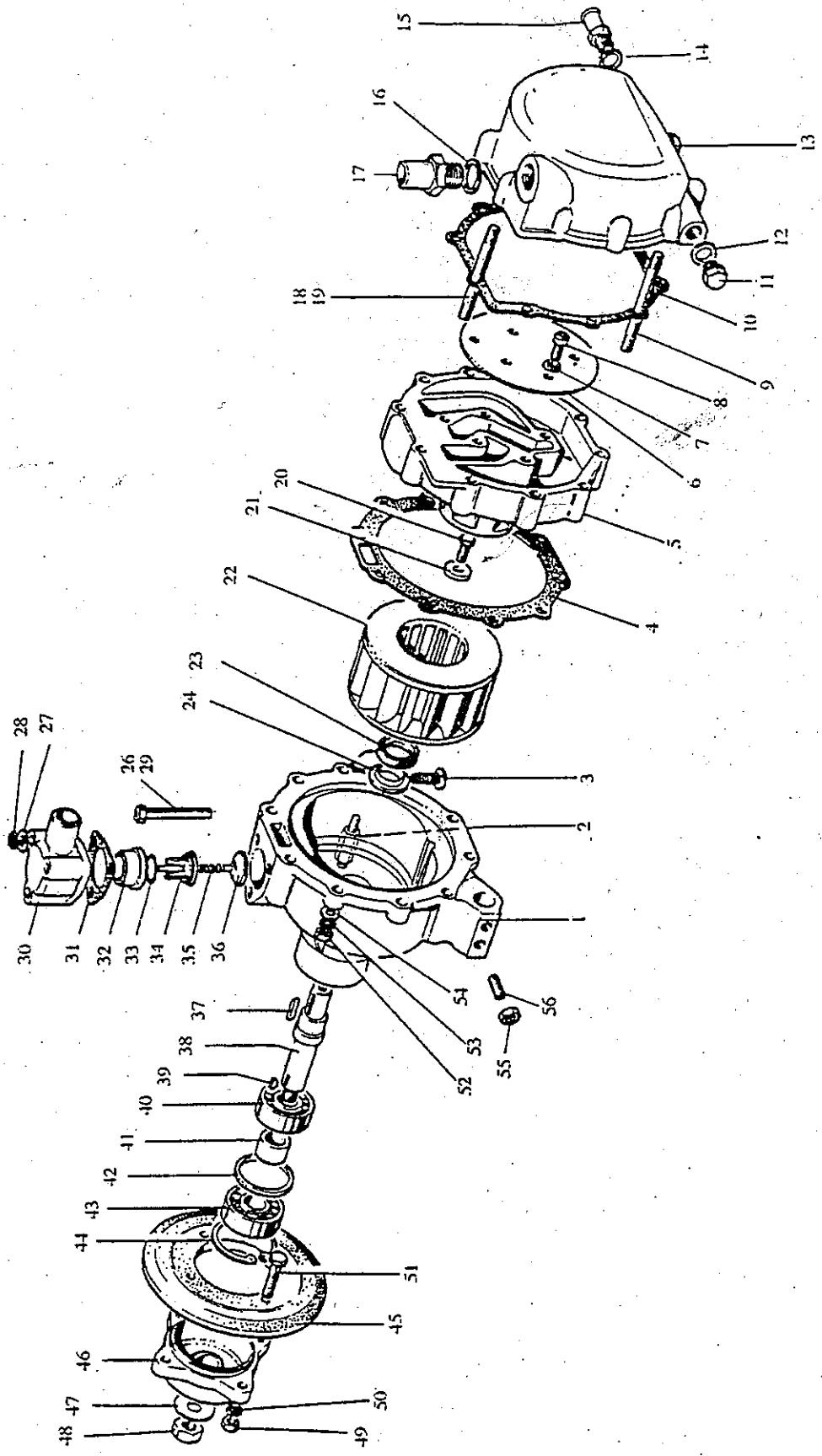
DIAPHRAGM PRIMING VALVE



DIAPHRAGM PRIMING VALVE

Item No.	Description	Part No.	Qty (per unit)
-	Diaphragm priming valve	UFP6498/2	1 (GVA units)
-	Diaphragm priming valve	UFP6498/3	1 (GVB units)
1	Priming valve housing - (Aluminium)	UFP6493/1	1 (GVA units)
-	Priming valve housing - (Bronze)	UFP6493	1 (GVB units)
2	Spacer	UFP6482/1	1 (GVA units)
-	Spacer	UFP6482	1 (GVB units)
3	Spring	UFP6488	1
4	Diaphragm plate	UFP6486/1	1 (GVA units)
-	Diaphragm plate	UFP6486	1 (GVB units)
5	Diaphragm	UFP6489	1
6	Support disc	UMP9803	1
7	Bonded seal	MS133/8	1
8	Bolt M8	MS117/65	1
9	End cap (vented)	UFP6492/1	1
10	Washer M10	MS25/10	3
11	Spring washer M10	MS29/7	3
12	Nut M10	MS35/9	3
13	Washer	UFP6485/1	1 (GVA units)
-	Washer	UFP6485	1 (GVB units)
14	Seal	UFP6484	1
15	Washer	UFP6483/1	1 (GVA units)
-	Washer	UFP6483	1 (GVB units)
16	Bonded seal	MS133/8	1
17	Nut M8, self-locking	MS141/5	1
18	Bolt M10	MS18/100	3
19	End cap (Aluminium)	UFP6491/1	1 (GVA units)
-	End cap (Bronze)	UFP6491	1 (GVB units)
20	Gasket	UFP6490	1

WATER RING PRIMER



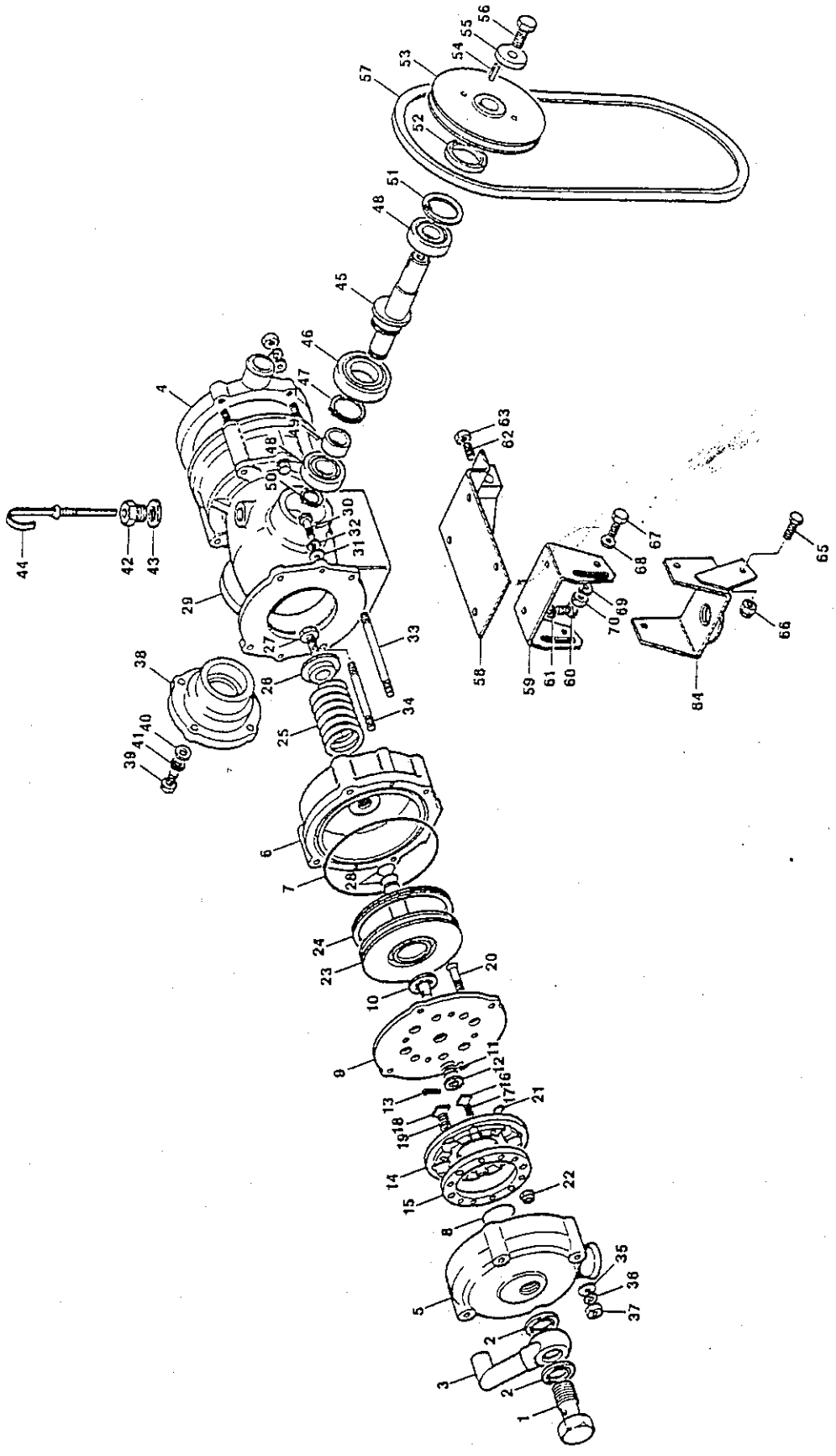
WATER RING PRIMER

Item No.	Description	Part No.	Qty (per unit)
-	Water ring primer assembly - (Aluminium)	WRP7994/9	1 (GVA2700/3600)
-	Water ring primer assembly - (Bronze)	CORE698	1 (GVB2700/3600)
-	Water ring primer assembly - (Aluminium)	WRP7994/10	1 (GVA5300)
-	Water ring primer assembly - (Bronze)	WRP7995/9	1 (GVB5300)
1	Primer bearing housing - (Aluminium)	WRP7941/2	1 (GVA units)
-	Primer bearing housing - (Bronze)	WRP7941/3	1 (GVB units)
2	Spring anchor	WRP7947/1	1
3	Lift-off pad	WRP7978/1	1
4	Gasket, housing-to-cover	WRP7954	
5	Suction/delivery cover - (Aluminium)	WRP7952/2	1 (GVA units)
-	Suction/ delivery cover - (Bronze)	WRP7952/3	1 (GVB units)
6	Cover plate	WRP7936	1
7	Washer M6	MS125/7	5
8	Screw M6, socket-head	MS163/16	5
9	Stud, water trap	MS48/90	1
10	Gasket, primer/water trap	WRP7953	1
11	Plug 1/4 in. BSP	S64/2	1
12	Sealing washer 1/4 in. BSP	UFP2303/5	2
13	Water trap housing - (Aluminium)	WRP7934/2	1 (GVA units)
-	Water trap housing - (Bronze)	WRP7934/3	1 (GVB units)
14	Sealing washer 5/8 in. BSP	UFP2303/9	1
15	Water pipe connector - (Aluminium) 1/2 in. BSP	WRP7945	1 (GVA units)
-	Water pipe connector - (Bronze) 1/2 in. BSP	WRP7945/1	1 (GVB units)
16	Sealing washer 5/8 in. BSP	UFP2303/9	1
17	Water pipe connector - (Aluminium) 1 in. BSP	WRP7977/3	1 (GVA units)
-	Water pipe connector - (Bronze) 1 in. BSP	WRP7977/2	1 (GVB units)
18	Bolt M8, water trap	MS17/60	6
19	Bolt M8, water trap	MS17/85	4
20	Bolt M6, self-locking	10021	1

WATER RING PRIMER (Continued)

Item No.	Description	Part No.	Qty (per unit)
21	Washer	WRP7971	1
22	Impeller (Aluminium)	WRP7931/2	1 (GVA units)
-	Impeller (Bronze)	WRP7931/3	1 (GVB units)
23	Seal 32 x 22 x 7 mm, primer	WRP7985	1
24	Washer, seal backing	WRP7982	1
25	Nut M8, lift-off pad	MS35/8	1
26	Bolt M8, suction elbow	MS17/55	3 (GVB units)
27	Washer M8	MS25/9	3
28	Spring washer	MS29/6	3
29	Bolt M8, suction elbow	MS17/35	3 (GVA units)
30	Suction elbow (Aluminium)	WRP7956	1 (GVA2700/3600)
-	Suction elbow (Bronze)	WRP7956/1	1 (GVB2700/3600)
-	Suction elbow (Aluminium)	WRP7955	1 (GVA5300)
-	Suction elbow (Bronze)	WRP7955/1	1 (GVB5300)
31	Gasket, suction elbow	WRP7973	1
32	Valve sleeve	WRP7974	1
33	'O' ring, non-return valve	WRP7993	1
34	Non-return valve	WRP7948	1
35	Spring	WRP7972	1
36	Spring retainer	WRP7949/2	1
37	Key, impeller-to-shaft	MS179/35	1
38	Primer shaft	WRP7940/1	1
39	Key, woodruff	WRP9707	1
40	Ball bearing, small	WRP7986	1
41	Bearing spacer	WRP7943	1
42	Bearing, locating ring	WRP7944	1
43	Ball bearing, large	WRP7987	1
44	Circlip, internal	S79/28	1
45	Pulley wheel	UMP7915	1
46	Pulley centre	WRP7937/1	1
47	Tab washer	WRP7938/1	1
48	Special nut M10	WRP7939/1	1
49	Nut M6	MS35/7	4
50	Spring washer M6	MS29/5	4
51	Bolt M6, pulley-to-pulley centre	MS16/30	4
52	Nut M8	MS35/8	10
53	Spring washer M8	MS29/6	10
54	Washer M8	MS25/9	10
55	Nut M8	MS35/8	2
56	Set-screw M8, hollow	MS57/8/25	2

POSITIVE PISTON PRIMER



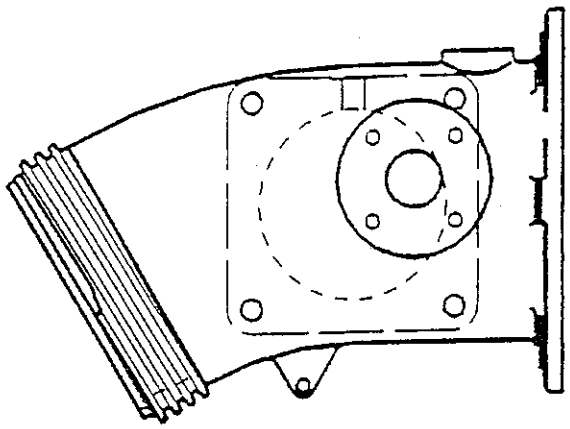
POSITIVE PISTON PRIMER

Item No.	Description	Part No.	Qty (per unit)
1	Banjo	UMP2564/1	2
2	Sealing washer 3/4 in. BSP	UFP2303/10	2
3	Hose connector	PDP12444	2
4	End cover RH	50104	1
5	End cover LH	50104/01	1
6	Piston primer cylinder	PDP12346	2
7	'O' ring	PDP12411	2
8	'O' ring	PDP12416	2
9	Valve plate	PDP12368	2
10	Inlet valve	PDP12369	2
11	Spring	PDP12370	2
12	Washer	PDP12371/1	2
13	Split pin	MS178/14	2
14	Housing - exhaust valve	PDP12372	2
15	Retaining ring assembly	PDP12373	2
16	Plate - exhaust valve	PDP12376	8
17	Spring	PDP12378	8
18	Plate - exhaust valve	PDP12377	8
19	Spring	PDP12379	8
20	Screw	PDP12441	8
21	'O' ring	PDP12415	8
22	Nut M6, nyloc	MS141/4	8
23	Piston - primer	PDP12347	2
24	Piston ring	PDP12413	2
25	Spring	PDP12414	2
26	Spring cup	PDP12382	2
27	Button	PDP12381	2
28	Seal	PDP12412	4
29	Housing - camshaft	PDP12338	1
30	Bolt M6	MS16/30	4
31	Spring washer M6	MS29/5	4
32	Washer M6	MS25/7	4
33	Stud, end cover to housing	PDP12436	6
34	Stud	50105	2
35	Washer M8	MS25/9	8
36	Spring washer M8	MS29/6	8
37	Nut M8	MS35/8	8
38	Housing - cover	PDP12380	1
39	Screw M8	MS05/30	4
40	Washer M8	MS25/9	4
41	Spring washer M8	MS29/6	4
42	Filler plug	PDP12406	1
43	Sealing washer 3/8 in. BSP	UFP2303/7	1
44	Dipstick	PDP12407	1
45	Eccentric shaft	PDP12403	1

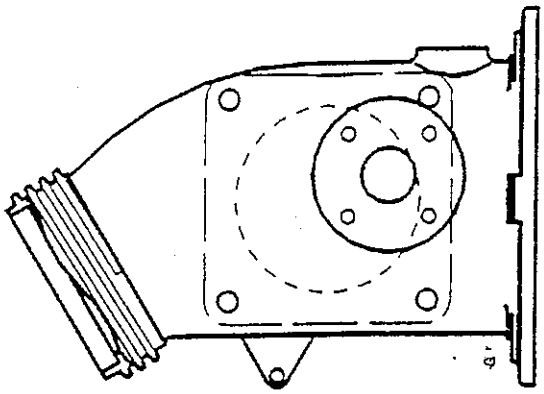
POSITIVE PISTON PRIMER

Item No.	Description	Part No.	Qty (per unit)
46	Ball bearing	PDP12404	1
47	Circlip, external	S80/24	1
48	Bearing - shaft end	S50/32	2
49	Distance piece	PDP12405	1
50	Circlip, external	S80/9	1
51	Circlip, internal	S79/25B	1
52	Oil seal, pulley	PDP12408	1
53	Pulley	PP12409	1
54	Shaft key	MS79/35	1
55	Washer	PDP12410	1
56	Screw M10	MS06/25	1
57	Vee belt	PDP12417	1
58	Pivot bracket	PDP12418	1
59	Ajustment stirrup	PDP12419	1
60	Screw M8	MS05/25	4
61	Washer spring M8	MS29/6	4
62	Socket setscrew	MS57/8/25	2
63	Nut M8	MS35/8	2
64	Mounting bracket	PDP12420	1
65	Screw M6	MS04/20	1
66	Nut M6, nyloc	MS41/4	1
67	Screw M8	MS05/20	2
68	Washer M8, large	MS27/4	2
69	Spring washer M8	MS29/6	2
70	Nut M8	MS35/8	2

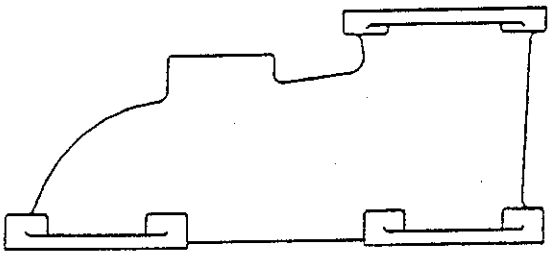
SUCTION TUBE AND MANIFOLD
(Typical illustrations)



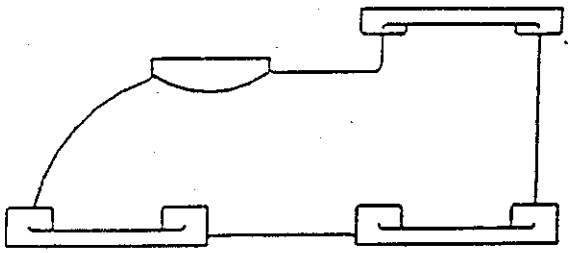
Typical 5.5" RT Suction Tube



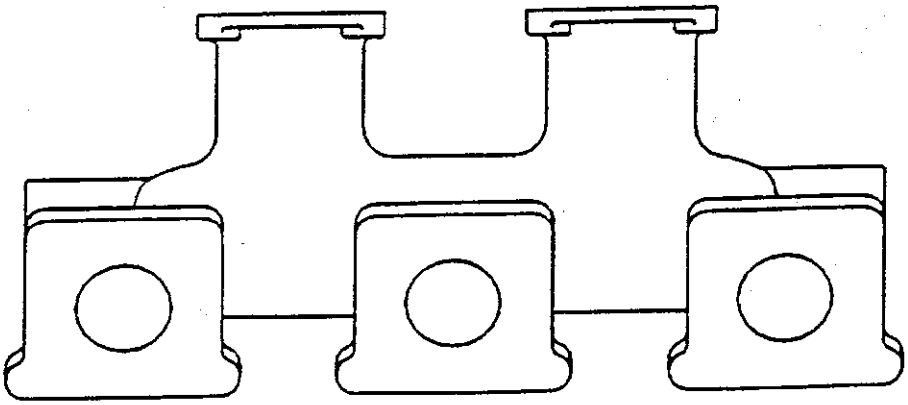
Typical 4.0" RT Suction Tube



GV5300 2 UK Valve Manifold



GV2700/3600 2 UK Valve Manifold



GV2700/3600 3 Cont'l Valve Manifold

SUCTION TUBE AND MANIFOLD

Description	Part No.	Qty (per unit)
Suction tube 4 in. RT (Aluminium)	51838/05	1 (GVA2700)
Suction tube 4 in. RT (Bronze)	51838/01	1 (GVB2700)
Suction tube 5 1/2 in. RT (Aluminium)	51837/01	1 (GVA3600)
Suction tube 5 1/2 in. RT (Bronze)	51837/07	1 (GVB3600)
Suction tube 5 1/2 in RT (Aluminium)	51839/02	1 (GVA5300)
Suction tube 5 1/2 in. (Bronze)	51839/03	1 (GVB5300)

Note: Suction tubes with alternative threads are available, please contact your local Customer Services Department.

Sealing washer 3/4 in BSP	UFP2303/10	1	
Shouldered plug 3/4 in. BSP	S64/6	1	
Shouldered plug 1/4 in BSP	S64/2	1	
Sealing washer 1/4 in. BSP	UFP2303/5	1	
Joint washer - tube to spacer	FP301	1 (GV2700/3600)	
Joint washer - tube to spacer	UFP3840	1 (GV5300)	
Stud M12	MS50/35	4	4 in. flange
Washer M12	MS25/11	4	
Spring washer M12	MS29/8	4	
Nut M12	MS35/10	4	
Strainer, suction tube 4 in. RT	52125/01	1	
Strainer, suction tube 5 1/2 in.RT	52125/02	1	
Seal, suction tube cap 4 in.RT	FP318	1	
Seal, suction tube cap 5 1/2in. RT	LP550	1	
Suction tube cap 4 in. RT (Aluminium)	FWP 2004	1	
Suction tube cap 4 in. RT (Bronze)	UFP7362	1	
Suction tube cap 5 1/2 in. RT (Aluminium)	2112	1	
Suction tube cap 5 1/2 in. RT (Bronze)	2112/1	1	
Chain, suction tube cap	FWP 1062/1	1	
Blanking plate RTP (Aluminium)	UFP2842/2	1 (GVA units)	
Blanking plate RTP (Bronze)	UFP2842/3	1 (GVB units)	
Gasket, blanking plate	50734	1	
Screw M8	MS05/30	4	Blanking plate
Spring washer M8	MS29/6	4	
Washer M8	MS25/9	4	

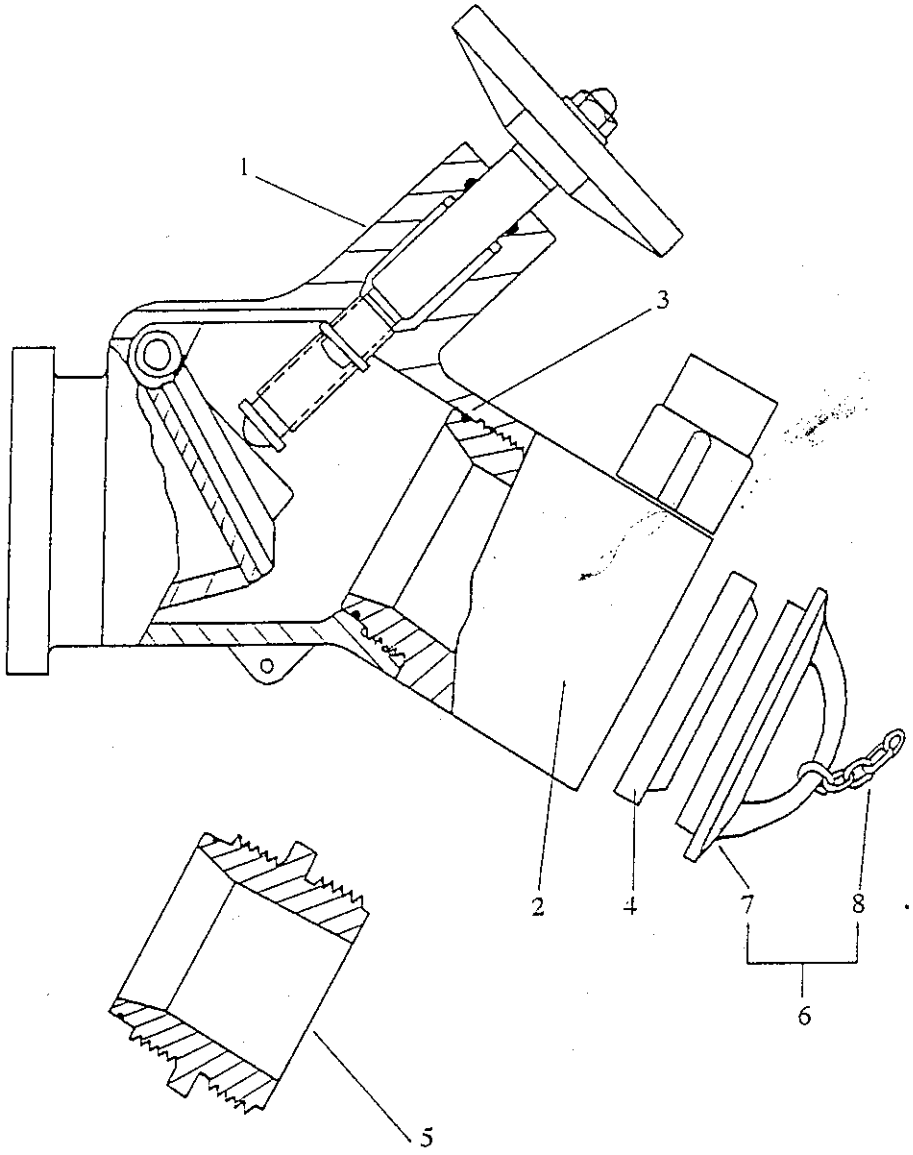
SUCTION TUBE AND MANIFOLD (Continued)

Description	Part No.	Qty (per unit)
Delivery manifold, UK & Ball valves (Aluminium)	52500	2 (GVA2700/3600) (Total 2 Valves)
Delivery manifold, UK & Ball valves (Bronze)	52500/01	2 (GVB2700/3600) (Total 2 Valves)
Delivery manifold, Cont'l valves (Aluminium)	9594	2 (GVA2700/3600) (Total 2 Valves)
Delivery manifold, Cont'l valves (Bronze)	9594/1	2 (GVB2700/3600) (Total 2 Valves)
Delivery manifold, UK & Ball valves (Aluminium)	UMP3436/4	2 (GVA2700/3600) (Total 4 Valves)
Delivery manifold, UK & Ball valves (Bronze)	UMP3436/3	2 (GVB2700/3600) (Total 4 Valves)
Delivery manifold, UK & Ball valves (Aluminium)	UMP4362/2	2 (GVA5300) (Total 4 Valves)
Delivery manifold, UK & Ball valves (Bronze)	UMP4362/3	2 (GVB5300) (Total 4 Valves)
Delivery manifold, Cont'l valves (Aluminium)	11832	1 (GVA2700/3600) (Total 3 Valves)
Delivery manifold, Cont'l valves (Bronze)	11832/1	1 (GVB2700/3600) (Total 3 Valves)

Note: Alternative delivery manifolds are available, please contact your local Customer Services Department.

Gasket, manifold to volute	UFP2688	2	
Gasket, valve to manifold	UFP2688	1 (per valve - UK & Ball)	
'O' ring, valve to manifold	54051	1 (per valve - Cont'l)	
Stud M10,	MS49/30	4	Valve to manifold (per valve)
Washer M10	MS25/10	4	
Spring washer M10	MS29/7	4	
Nut M10	MS35/9	4	

SCREW-DOWN DELIVERY VALVE
(UK Type)



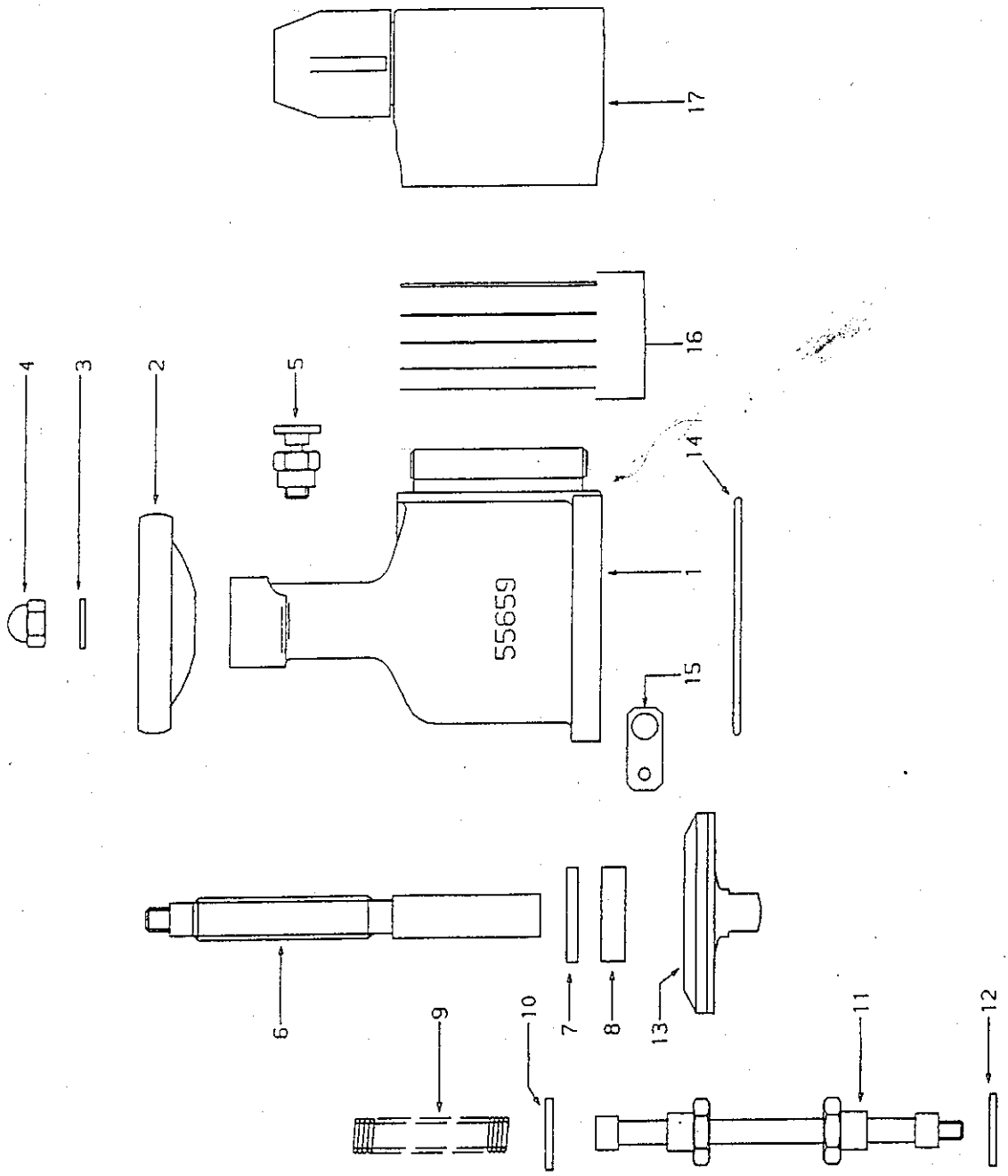
SCREW-DOWN DELIVERY VALVE
(UK Type)

Item No.	Description	Part No.	Qty (per valve)
1	Delivery valve body	-	-
2	Delivery valve assembly 2 1/2 in. IC (Aluminium)	56544/01	1 (GVA units)
-	Delivery valve assembly 2 1/2 in. IC (Bronze)	56545/01	1 (GVB units)
3	'O' ring	56979/15 *	1
4	Seal	FWP1003/A *	1
5	Delivery valve assembly 2 1/2 in. BSP (Aluminium)	56544	1 (GVA units)
-	Delivery valve assembly 2 1/2 in. BSP (Bronze)	56545	1 (GVB units)
6	Blank cap assembly	THL119/6	1 (Consists of 7 & 8)
7	Blank cap - rubber	2415	1
8	Chain - 9" long	TH4749	1

* These are available in a seal kit

56940/04 Seal kit - UK Screw-down valves & IC

SCREW-DOWN DELIVERY VALVE
(Continental type)



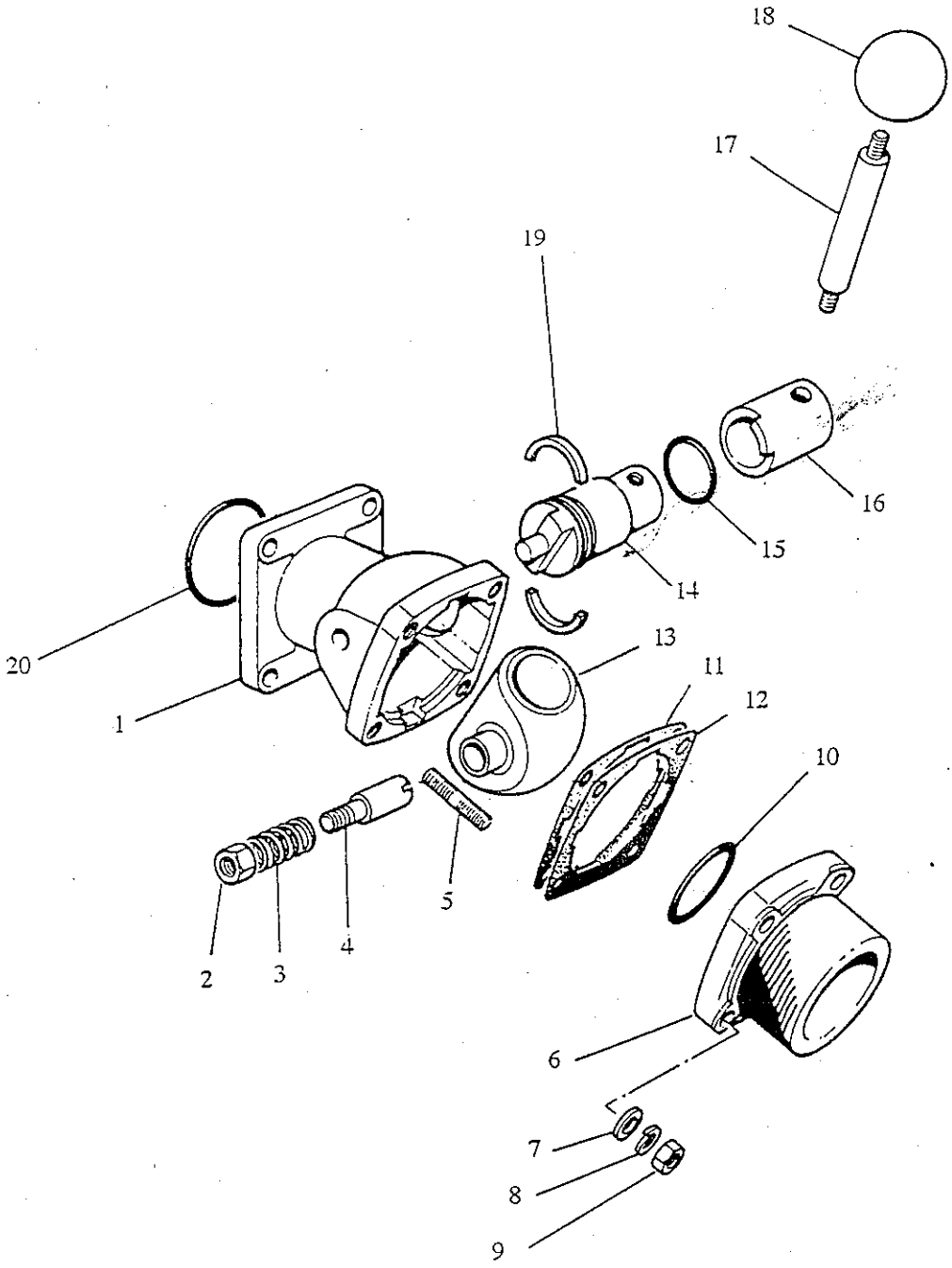
SCREW-DOWN DELIVERY VALVE
(Continental type)

Item No.	Description	Part No.	Qty (per valve)
-	Delivery valve assembly 2 1/2 in. (Aluminium)	55659	1 (GVA units)
-	Delivery valve assembly 2 1/2 in. (Bronze)	55659/01	1 (GVB units)
1	Valve body (Aluminium)	56469/01	1
-	Valve body (Bronze)	56469/14	1
2	Hand wheel	56469/11	1
3	Washer M10	56469/12 *	1
4	Nut, domed M10	56469/13 *	1
5	Lock	56469/10 *	1 For hose-draining
6	Spindle	56469/02	1
7	Support ring	56469/03	1
8	Seal	56469/04 *	1
9	Spring	56469/09 *	1
10	Safety lock	56469/06	1
11	Stem assembly	56469/05	1
12	Safety lock	56469/08	1
13	Plate	56469/07 *	1
14	'O' ring, valve-to-volute	54051 *	1
15	Anchor, blank-cap chain	GPR11759/1	1
16	Shim pack	SATHM10722 *	1
17	Instantaneous connector 2 1/2" (Aluminium)	56559	1 (GVA units)
-	Instantaneous connector 2 1/2" (Bronze)	56559/01	1 (GVB units)

* These are available in delivery valve seal kit

56940/01	Seal kit - Continental delivery valve (Alum)
56940/02	Seal kit - Continental delivery valve (GM)
56940/03	Seal kit - Instantaneous connector (Cont'l & BV)

BALL DELIVERY VALVE



BALL DELIVERY VALVE

Item No.	Description	Part No.	Qty (per valve)
-	Ball valve 2 1/2 in. BSP L.H. (Aluminium)	TH577/2	- (GVA units)
-	Ball valve 2 1/2 in. BSP R.H. (Aluminium)	TH578/2	- (GVA units)
-	Ball valve 2 1/2 in. BSP L.H. (Bronze)	TH577/1	- (GVB units)
-	Ball valve 2 1/2 in. BSP R.H. (Bronze)	TH578/1	- (GVB units)
1	Body, delivery valve L.H. (Aluminium)	TH4200/A	1 (GVA units)
-	Body, delivery valve R.H. (Aluminium)	TH4201/A	1 (GVA units)
-	Body, delivery valve L.H. (Bronze)	TH4200/B	1 (GVB units)
-	Body, delivery valve R.H. (Bronze)	TH4201/B	1 (GVB units)
2	Nut 5/16 in. UNF	S214/4	1
3	Spring, ball valve	TH11205 *	1
4	Pivot, ball	TH11194	1
5	Stud 3/8 in, valve cap-to-body	S165/8	4
6	Valve cap (Aluminium)	TH3331/1A	1 (GVA units)
-	Valve cap (Bronze)	TH3331/1B	1 (GVB units)
7	Washer 3/8 in.	S21/5	4
8	Spring washer 3/8 in.	S20/5	4
9	Nut 3/8 in. UNF	S214/5	4
10	'O' ring, valve seating	THG3419 *	1
11	Gasket, 0.010 in. thick	TH11197 *	1
12	Gasket, 0.003 in. thick	TH11197/1 *	1
13	Ball valve (Aluminium)	TH2258	1 (GVA units)
-	Ball valve (Bronze)	TH2255	1 (GVB units)
14	Valve stem	THG3469/1	1
15	'O' ring, valve stem	THG4086 *	1
16	Handle boss (Aluminium) L.H.	TH5372/3A	1 (GVA units)
-	Handle boss (Aluminium) R.H.	TH5372/1A	1 (GVA units)
-	Handle boss (Bronze) L.H.	TH5372/3B	1 (GVB units)
-	Handle boss (Bronze) R.H.	TH5372/1B	1 (GVB units)
17	Handle	TH5370/2	1
18	Knob, handle	TH1835/1A	1
19	Collar, valve-to-stem (pair half-collars)	TH11190 *	1
20	'O' ring, body-to-delivery manifold	TH1511/A *	1

* Available in seal kit.
56940/05 Seal kit - Ball valve
For information on Instantaneous connectors refer to Delivery valves - continental type.

RECOMMENDED SPARES

GV2700 & 3600 MODELS

Part No.	Description	Qty
UFP2300	Carbon seal	1
UFP9367/1	Seating ring	1
UMP9370	'O' ring	1
UMP9413	'O' ring	1
UMP6538	Gasket	1
MS178/69	Split pin	1
UFP2301	'O' ring	1
FP301	Gasket	2
UMP6543	Gasket, adaptor	1
UFP2303/7	Sealing washer	1
UFP2290	'O' ring	2
UFP2291	Washer	2
UFP2303/10	Sealing washer	3
UFP5954	Diaphragm	1
UFP6489	Diaphragm	1
UFP6490	Gasket	1
UFP2303/5	Sealing washer	2
UFP2303/9	Sealing washer	4
WRP7953	Gasket	1
WRP7954	Gasket	1
WRP7985	Seal	1
WRP7982	Backing washer	1
MS179/35	Key, impeller	1
WRP9707	Key, pulley	1
WRP7986	Bearing, small	1
WRP7987	Bearing, large	1
S79/28	Circlip, internal	1
WRP7938/1	Tabwasher	2
UMP7915	Pulley wheel	1

GV5300 MODEL

Part No.	Description	Qty
UMP2300	Carbon seal	1
UFP9367/1	Seating ring	1
UMP9370	'O' ring	1
UMP9413	'O' ring	1
UMP6538	Gasket	1
MS178/69	Split pin	1
UFP2301	'O' ring	1
UFP3840	Gasket	2
UMP6543	Gasket, adaptor	1
UFP2303/7	Sealing washer	1
UFP2290	'O' ring	2
UFP2291	Washer	2
UFP2303/10	Sealing washer	3
UFP5954	Diaphragm	1
UFP6498	Diaphragm	1
UFP6490	Gasket	1
UFP2303/5	Sealing washer	2
UFP2303/9	Sealing washer	4
WRP7953	Gasket	1
WRP7954	Gasket	1
WRP7985	Seal	1
WRP7982	Backing washer	1
MS179/35	Key, impeller	1
WRP9707	Key, pulley	1
WRP7986	Bearing, small	1
WRP7987	Bearing, large	1
S79/28	Circlip, internal	1
WRP7938/1	Tabwasher	2
UMP7915	Pulley wheel	1

PIGGY BACK PISTON PRIMERS

VEHICLE PUMP	PRIMER	FLEXI TUBING	BRACKET	DRIVE BELT
GVA2500 GVA2700/129/130 /131 /132 GVA3600/117/121	55550/01	GPA 8142/21	NIL	56912/01
GVA5300/106 /107 /108 GVA6500/09	55550/03	GPA 8142/21	NIL	56912/01
GVB2500 GVB2700 GVB3600	55550/05	GPA8142/21	NIL	56912/01
GVB5300 GVB6500/08	55550/07	GPA 8142/21	NIL	56912/01
GMA2500/39 /41 /42 /44 /47 GMA2700/154 /156 GMA3600/129/130/131/132/133	55550/04	GPA 8142/9	56909	56912
GMA5300/117 /118 /119 /121	55550/04	GPA 8142/10	56909/01	56912/02
GMB2500/06 GMB2700 GMB3600	55550/06	GPA 8142/9	56909	56912
GMB5300	55550/06	GPA8142/10	56909/01	56912/02
GLA2900/07	55550/08	GPA 8142/21	NIL	56912/01
GLB2900 (UNALLOCATED)		GPA 8142/21	NIL	56912/01

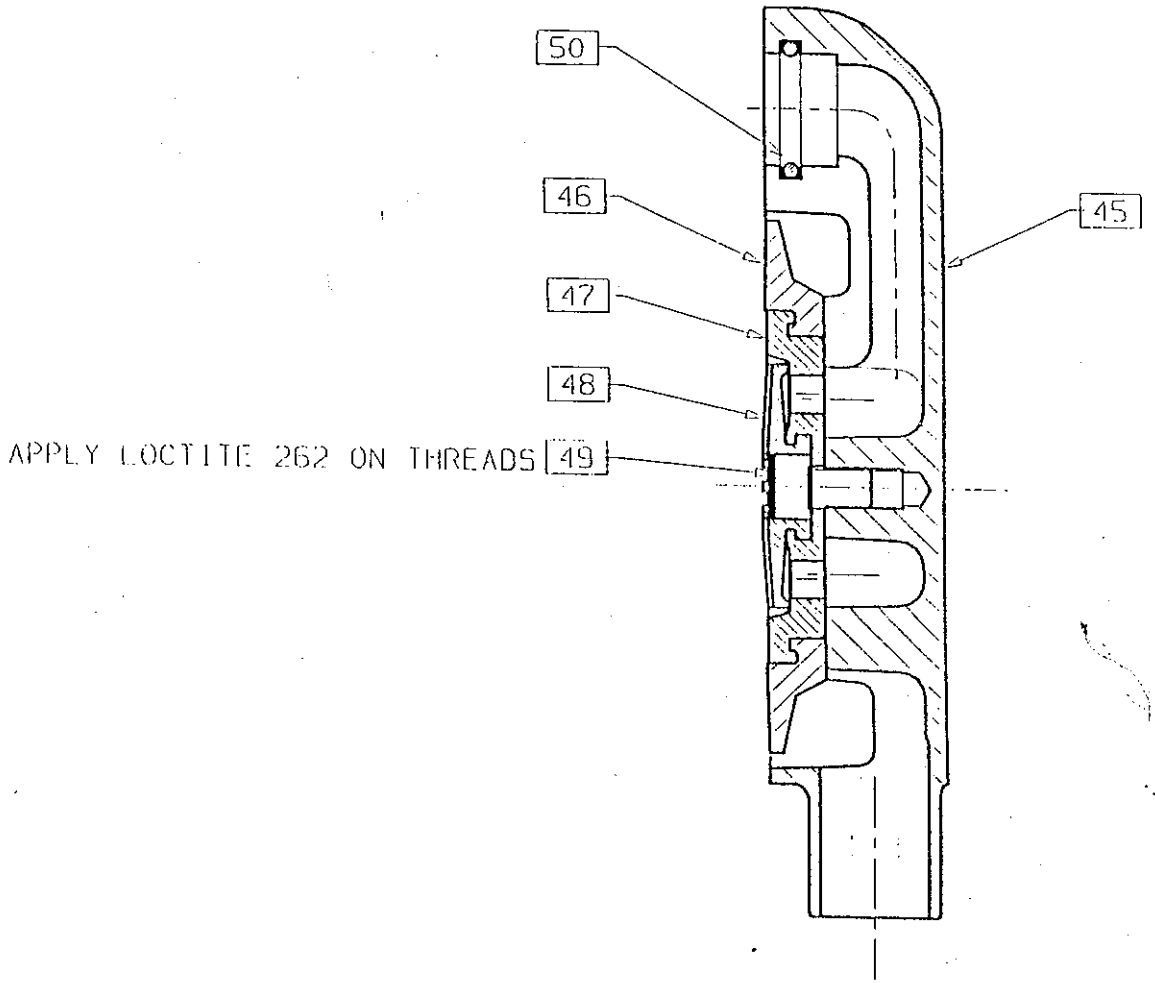
SEE NEXT PAGE FOR PRIMER COMPONENT PARTS

PISTON PRIMER ASSEMBLY

	DESCRIPTION	No.OFF	55550/01	55550/03	55550/04	55550/05	55550/06	55550/07	55550/08
A	**General Assembly**								
1	Housing	1	55548/01	55548/01	55548/01	55548/01	55548/01	55548/01	55548/01
2	Setscrew M8	1	MS57/8/20	MS57/8/20	MS57/8/20	MS57/8/20	MS57/8/20	MS57/8/20	MS57/8/20
3	Full Nut M8	1	MS35/8	MS35/8	MS35/8	MS35/8	MS35/8	MS35/8	MS35/8
4	Stud M10	8	56944	56944	56944	56944	56944	56944	56944
5	Washer	8	MS125/10	MS125/10	MS125/10	MS125/10	MS125/10	MS125/10	MS125/10
6	Domed Nut M10	8	MS42/5	MS42/5	MS42/5	MS42/5	MS42/5	MS42/5	MS42/5
7	Circlip	1	53416/02	53416/02	53416/02	53416/02	53416/02	53416/02	53416/02
8	Spiroseal 32mmDia	1	54018	54018	54018	54018	54018	54018	54018
9	Tee Piece Assembly	1	56956	56956/01	56956/02	56956	56956/02	56956/01	56956
10	Filler Plug	1	PDP12406	PDP12406	PDP12406	PDP12406	PDP12406	PDP12406	PDP12406
11	Washer Sealing 3/8 BSP	3	UFP2303/7	UFP2303/7	UFP2303/7	UFP2303/7	UFP2303/7	UFP2303/7	UFP2303/7
12	Dipstick	1	PDP12407	PDP12407	PDP12407	PDP12407	PDP12407	PDP12407	PDP12407
13	Shoulder Plug 3/8 BSP	1	S64/3	S64/3	S64/3	S64/3	S64/3	S64/3	S64/3
14	Reducer	1	GPR12363	GPR12363	GPR12363	GPR12363	GPR12363	GPR12363	GPR12363
15	Pulley	1	56911	56911	56911	56911	56911	56911	56911
16	Washer	1	55579	55579	55579	55579	55579	55579	55579
17	Screw Hex. Hd. M8	1	MS05/25	MS05/25	MS05/25	MS05/25	MS05/25	MS05/25	MS05/25
18	Screw Hex. Hd. M12	1	MS07/40	MS07/40	MS07/40	MS07/40	MS07/40	MS07/40	MS07/40
19	Full Nut M12	1	MS35/10	MS35/10	MS35/10	MS35/10	MS35/10	MS35/10	MS35/10
20	O Ring	2	53384	53384	53384	53384	53384	53384	53384
21	Special Nut M10	4	57414	57414	57414	57414	57414	57414	57414
B	**Camshaft Assembly**								
22	Camshaft	1	55566/01	55566/01	55566/01	55566/01	55566/01	55566/01	55566/01
23	Needle Bearing	1	55567	55567	55567	55567	55567	55567	55567
24	Thrust Washer	1	55568	55568	55568	55568	55568	55568	55568
25	Circlip	1	52100/09	52100/09	52100/09	52100/09	52100/09	52100/09	52100/09
26	Bearing - Inner	1	S50/81	S50/81	S50/81	S50/81	S50/81	S50/81	S50/81
27	Bearing - Outer	1	S50/83	S50/83	S50/83	S50/83	S50/83	S50/83	S50/83
28	Sleeve - Seal	1	55572	55572	55572	55572	55572	55572	55572
29	Key	1	MS79/35	MS79/35	MS79/35	MS79/35	MS79/35	MS79/35	MS79/35

PISTON PRIMER ASSEMBLY Continued

	DESCRIPTION (Cont)	No.OFF	55550/01	55550/03	55550/04	55550/05	55550/06	55550/07	55550/08
C	**Piston & Cylinder Assy**	2 per set	**56960/05**	**56960/05**	**56960/05**	**56960/02**	**56960/02**	**56960/02**	**56960/05**
30	Cylinder	1	56957/02	56957/02	56957/02	56957/02	56957/02	56957/02	56957/02
31	Bearing	2	56949	56949	56949	56949	56949	56949	56949
32	Seal	1	56954	56954	56954	56954	56954	56954	56954
33	Sleeve	1	56958	56958	56958	56958	56958	56958	56958
34	Glydring	1	56955	56955	56955	56955	56955	56955	56955
35	O Ring	1	52816	52816	52816	52816	52816	52816	52816
36	Clamp washer	1	56959	56959	56959	56959	56959	56959	56959
37	Screw Skt. Hd. M4	4	MS161/10	MS161/10	MS161/10	MS161/10	MS161/10	MS161/10	MS161/10
38	Piston Ring	1	52650	52650	52650	52650	52650	52650	52650
39	Spring	1	57117/02	57117/02	57117/02	57117/02	57117/02	57117/02	57117/02
40	Spring Seat	1	PDP12382/1	PDP12382/1	PDP12382/1	PDP12382/1	PDP12382/1	PDP12382/1	PDP12382/1
41	Piston Rod (Service Assy)	1	57532/01	57532/01	57532/01	57532/01	57532/01	57532/01	57532/01
42	Piston	1	57435	57435	57435	57435/01	57435/01	57435/01	57435
43	O Ring	1	52634	52634	52634	52634	52634	52634	52634
44	Screw Skt. Hd. M8	1	MS164L/20	MS164L/20	MS164L/20	MS164L/20	MS164L/20	MS164L/20	MS164L/20
D	**End Cap Assembly**	2 per set	**55556/02**	**55556/02**	**55556/02**	**55556/11**	**55556/11**	**55556/11**	**55556/02**
45	End Cap	1	55551/02	55551/02	55551/02	55551/09	55551/09	55551/09	55551/02
46	Seal - Discharge	1	56961	56961	56961	56961	56961	56961	56961
47	Orifice Plate	1	56963	56963	56963	56963/01	56963/01	56963/01	56963
48	Seal - Inlet	1	56962	56962	56962	56962	56962	56962	56962
49	Screw Skt. Hd. M8	1	MS164/16	MS164/16	MS164/16	MS164/16	MS164/16	MS164/16	MS164/16
50	O Ring	1	55562	55562	55562	55562	55562	55562	55562



D – ENDCAP ASSY

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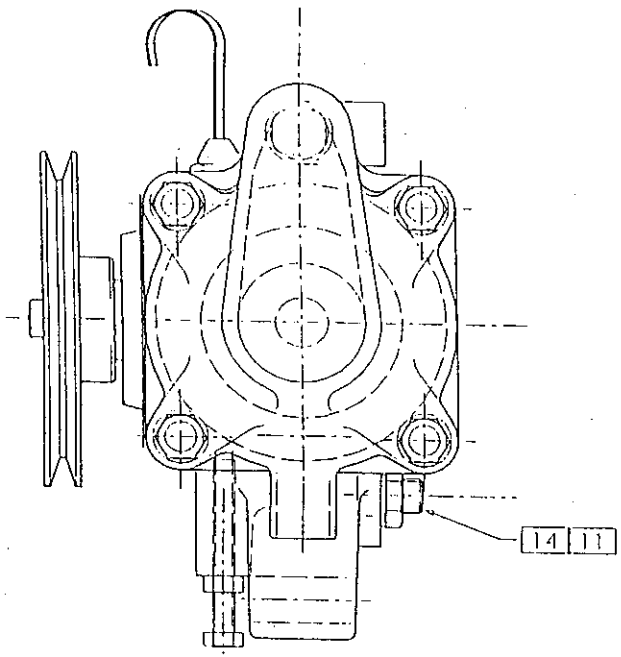

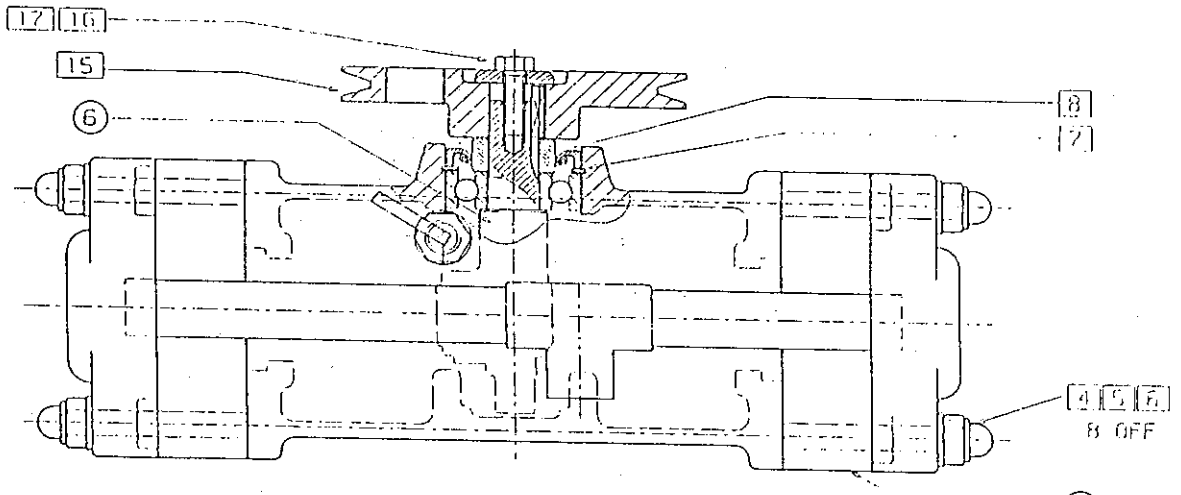

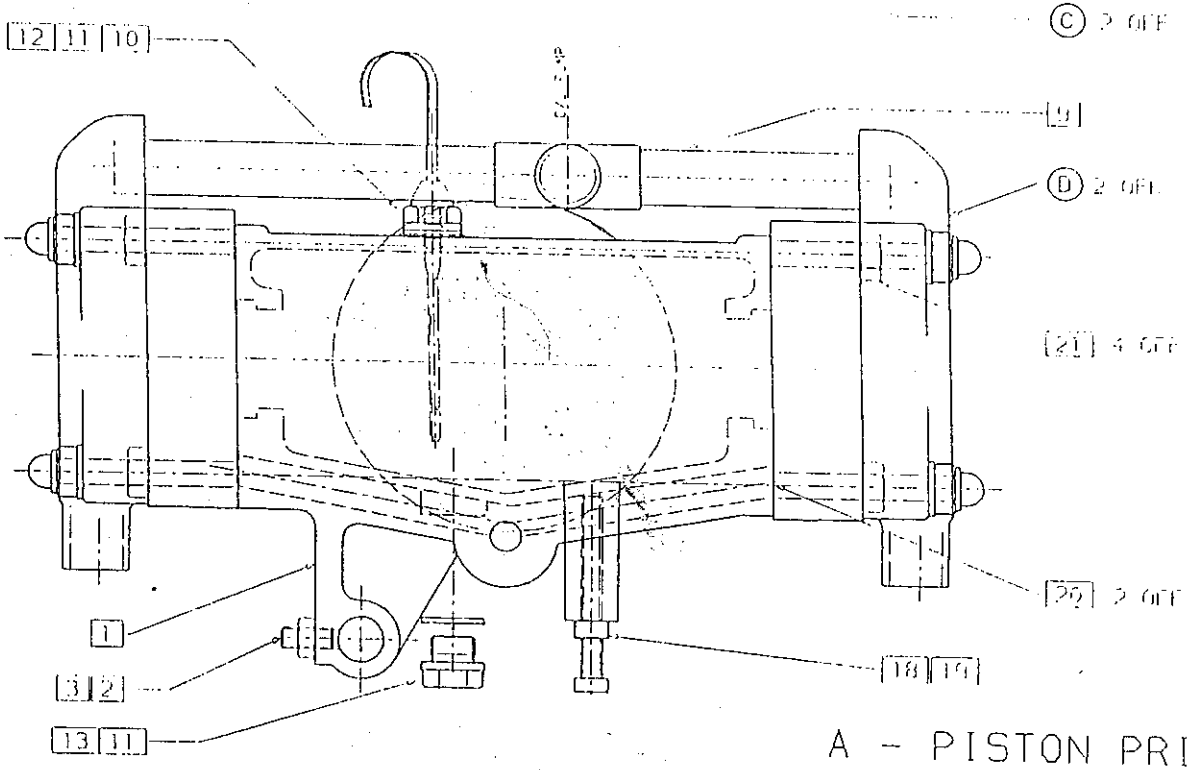

A - PISTON PRIMER ASSEMBLY

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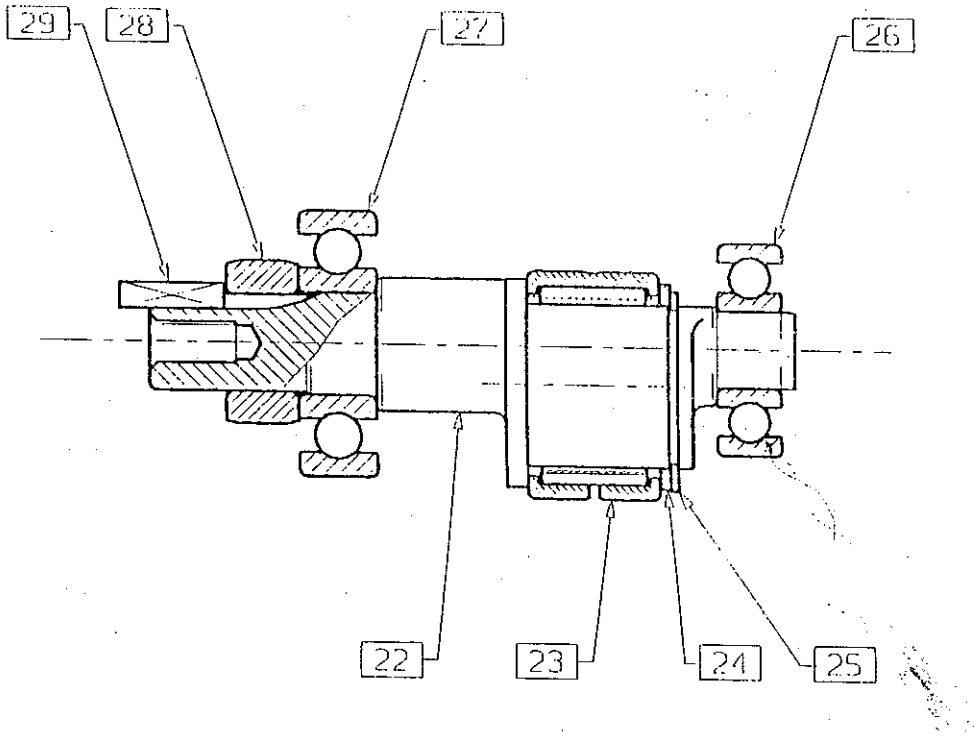

B - CAMSHAFT ASSEMBLY

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