

SELWOOD SPATE PD75

Operating & Service Manual

The products of Selwood Limited, are designed, developed and produced in the company's Chandler's Ford factory. Many features are covered by world-wide patents. Product names such as Spate, Simplite and Seltorque, are registered trademarks.

As all products are subject to continuous development, the company reserves the right to alter the specifications and information given in this manual without prior notice.

Whilst every care has been taken in the preparation of this publication the information it contains must not be regarded as binding.

Amendments to this publication will only be issued to cover those design changes which fundamentally alter the build or operation and servicing procedures. They will be distributed through the company's dealers and agencies.

Your attention is drawn to the following symbols used throughout this manual:-



CAUTION

This caution symbol draws attention to special instructions or procedures that, if not correctly followed, may result in damage to, or destruction of equipment.



WARNING

This warning symbol draws attention to special instructions or procedures that, if not strictly observed, may result in personal injury.



WARNING

A WARNING SYMBOL WITH THIS TYPE OF TEXT DRAWS ATTENTION TO SPECIAL INSTRUCTIONS OR PROCEDURES WHICH, IF NOT STRICTLY OBSERVED MAY RESULT IN SEVERE PERSONAL INJURY, OR LOSS OF LIFE.

Additional copies of this manual are available from Selwood Pt. No 0308023000

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Additional copies of this manual may be ordered from Selwood Limited, Pump Division, by quoting the publication number shown on the outside back cover.

REPLACEMENT PARTS

Instructions for Ordering

1. Always quote the pump serial number located on the plate fastened to the pump.
2. Always quote the ten digit part number for the component, not the item reference number.
3. Always quote the description of the component.

Items usually supplied together as sub-assemblies, will have the sub-assembly part number printed at the bottom of the relevant page.

HEALTH AND SAFETY AT WORK

April 1975

As manufacturers of pumps and associated equipment we wish to inform you that, in compliance with Section 6 of the Act, safety precautions should be taken with certain of our products.

We take every care to ensure as is reasonably practicable that our products are safe and without risk to health when properly used. Nevertheless, appropriate health and safety precautions must be taken, and in particular you are requested to have special regard to the operational and safety requirements leaflet P769 which accompanies each pump on despatch from our premises.



Our products also conform to the E.E.C. machinery Safety Directive and carry the C.E. mark.

CALIFORNIA USA PROPOSITION 65 WARNING



Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

WARNING



Pumps and engines may be fitted with seals or 'O' rings manufactured from **VITON** or similar material.

When temperatures reach 400°C (720°F) a corrosive acid is produced, which cannot be removed from the skin.

If signs of material decomposition are evident, or if in doubt, **always wear disposable heavy-duty gloves.**

SAFETY PRECAUTIONS



WARNING

ALL ITEMS IN THIS SECTION, IF NOT STRICTLY OBSERVED, COULD RESULT IN SEVERE PERSONAL INJURY OR LOSS OF LIFE.

1. Use only lifting equipment of suitable capacity for the size and weight of the equipment being lifted
2. The equipment must always be lifted using safe working practices and in accordance with any local and national guidelines or statutes. If in doubt, consult Selwood Pumps or a local lifting expert.
3. Whilst lifting the unit keep personnel well away and **never** allow people underneath.
4. Personnel working on the pump must always wear clean, correctly fitting clothing and safety footwear. Clothing impregnated with oil or fuel can constitute a health hazard through prolonged contact with the skin and may also constitute a fire hazard.
5. Check the type of liquid that the pump has been employed on before working on them. Residues could be hazardous to your health. If in doubt, flush thoroughly with clean water before commencing work.
6. Rotating equipment presents a hazard in itself. Alert surrounding personnel before starting and post notifications whilst in operation.
7. Moving parts are guarded to protect you. Guards removed for maintenance must be replaced before starting the pump.
8. Never insert anything into the pump body whilst the pump is running and the suction or delivery hoses are disconnected.
9. Use all flange bolt holes and ensure the correct bolt size and quality is utilised when connecting suction and delivery hoses.
10. Collapsible hoses must never be used on the suction side of the pump.
11. Keep the hose end suction area free from debris. Although the pump can handle solids up to the size indicated in the Technical Data section of this manual, larger or irregular solids may cause blockage with damage to pump components.
12. Always allow adequate ventilation for the pump driver. Diesel engines require air for both combustion and cooling. This air must never be allowed to re-circulate.
13. Be aware of burn and fire risks from items such as exhaust pipes and silencers. Never place flammable items around the unit.
14. Liquid pressure may still be present even after shutdown of the pump. Particular attention should be paid to delivery lines that are long, or rise through any height, as these can contain large volumes of liquid. These lines must be isolated

and drained down before commencing work. Sudden release of this liquid can cause serious injury to an operator either directly or indirectly through the rotational motion it can induce.



WARNING! Delivery hose and any associated pipe work should be capable of withstanding the maximum system operating pressure. Selwood recommend the minimum pressure rating of 6Bar hose. Suction hose should be of the non-collapsible variety.



WARNING! The pump should only be operated within the speed and pressure limits detailed in Section 2.1 of this manual.

1. If there is a danger of freezing, the fluid, normally retained within the pump between operating cycles, should be drained off through the drain taps provided.



2. **WARNING!** Never start or run the pump against a closed delivery valve. Failure to comply may result in damage to the unit or personal injury.



3. **WARNING!** Noise level at operator position (Start Panel) may exceed 80dB(A). Hearing protection must be worn at all times when the unit is running. Failure to comply may result in hearing damage or loss.

SELWOOD SPATE PD75

CONTENTS

Title	Page
Safety Precautions.....	2
1 GENERAL INFORMATION.....	4
1.1 Installation	4
1.2 Operation	4
1.3 Maintenance	4
1.4 I.C. Engines	4
1.5 Electric Motors.....	4
1.6 Pneumatic Motors.....	5
2 Pump specification.....	5
2.1 Performance	5
3 ROUTINE MAINTENANCE	5
4 LUBRICATION AND FASTENING TORQUES..	6
Pump Lubrication.....	6
Engine Sump	6
5 INSTALLATION, COMMISSIONING AND OPERATION	6
5.1 Self Priming	6
5.2 The Suction Strainer	6
5.3 Securing and Joining Hoses	6
5.4 Oil Handling	6
5.5 Oil Tolerant Regulators.....	7
5.6 Regulator Blanks	7
5.7 Full Flow Relief Valve	7
5.8 Use of the Spate High Pressure Nozzle	8
5.9 Use of Air Inflator Attachment.....	8
5.10 Frost and Ice.....	8
6 CONDITIONS OF WARRANTY	8
7 FIELD SERVICING.....	9
7.1 To Dismantle a Pump Cylinder	9
7.2 Examination and Replacement of Flexible Components	9
7.2.1 Priming Annulus and Actuator Valve	9
7.2.2 Connecting Rod Cylinder Seal	10
7.2.3 Actuator Seal.....	10
7.2.4 Pressure Regulator Assembly	10
8 WORKSHOP SERVICING	11
8.1 Dismantle Pump Drive Mechanism.....	11
8.2 PUMP DRIVE MECHANISM MAINTENANCE TOOLS	11
8.3 Assemble Pump Drive Mechanism	12
9 TROUBLE SHOOTING GUIDE.....	13
10 PARTS LISTS	17
10.1 Pump Parts.....	17
10.2 Oil Tolerant Regulator.....	19
10.3 PD75 / Yanmar L48 Site unit - non EPA	21
10.4 PD75 / Yanmar L48 electric start Site unit - non EPA	23
10.5 PD75 / RM210 GLOBE AIR MOTOR 2 WHEEL PUMP UNIT	27
10.6 PD75 ELECTRIC STATIC ASSEMBLY - 2.2kW & 3.0kW	29
10.7 PD75 – HYDRAULIC MOTOR MOUNTING.....	31
10.8 PD75 – HYDRAULIC MOTOR CONNECTION KIT BREAKDOWN	33
10.9 PD75 / HONDA GX160 PORTABLE - 0310002000	35
10.10 Stone catcher MK2.....	37
10.11 PD75 2.2Kw with Stone catcher Threaded Inlet/Outlet.....	38
10.12 PD75 3Kw with Stone catcher Threaded Inlet/Outlet - 0316177000.....	42
10.13 PD75/Yanmar L48 Diesel Static with s/catcher.....	44
11 NOTES.....	46

1 GENERAL INFORMATION

1.1 Installation

1. The pump unit and its associated baseplate or trolley mounting should be positioned on a firm horizontal platform, and in the case of portable units restrained from accidental movement.
2. If the pump is fitted with push-on type suction and delivery spigots the hoses must be firmly secured on these spigots with heavy duty clamps or clips capable of withstanding the system operating pressure. The integrity of the hose clamping arrangements should be checked at regular daily intervals in the case of static installations or whenever the pump is repositioned in the case of portable units. Similar precautions should be taken with clamps securing multiple lengths of hose on installation where long delivery and suction lines are involved.
3. Delivery hose and any associated pipework should be capable of withstanding the maximum system operating pressure. Suction hose should be of non-collapsible variety.

1.2 Operation

1.  **CAUTION** The pump should only be operated within the speed and pressure limits detailed in the operating handbook for the model in question.
2. If there is a danger of freezing, the fluid normally retained within the pump between operating cycles should be drained off through the drain taps provided.
3.  **WARNING** Positive displacement pumps of the PD75 type should not be run against a closed valve on the delivery side. If there is a danger of high system pressures developing because of closed delivery valves or some other reasons the pump should be fitted with a full flow relief valve adjusted to a lift at a safe working pressure for the pump and pipework system.
4. Where protective caps are used to prevent damage to the suction and delivery spigots during storage or in transit they must be removed before the pump is started up.

1.3 Maintenance

1. Inspection and maintenance. Regular flushing after use and periodic stripping and inspection of the cylinders will help maintain the PD75 in best condition. All bearings are sealed for life so lubrication is only necessary when re assembly of the pistons to the connecting rods occurs. See lubrication section for advice on products and brands. Appropriate flushing with clean water after use will further aid long service life. The engine or

driver should be maintained in accordance with the manufacturer's instructions.

2. Replacement parts. Only the manufacturers or factory approved components should be used as replacement parts and where necessary they should be fitted with the assistance of the special purpose tools indicated in the operating and servicing manual.
3. All maintenance work must be carried out with the pump and engine/motor stationary.

1.4 I.C. Engines

1. Where I.C. engines are used to power the pump they have been mounted in accordance with the engine manufacturers recommendations and adequate guarding provided between the pump and engine.

2. **Exhaust and Exhaust Pipes.** If there is a risk of accidental contact by operators, the exhaust system should be lagged or screened and the outlet directed away from operators or other persons likely to be nearby. Direct contact with flammable materials of all types must be avoided.

The importance of adequate ventilation to ensure removal of exhaust fumes when engines are operated in enclosed or covered accommodation cannot be overstressed. Engines should not be run in hazardous explosive atmospheres.

3. **Access and Operation.** Ensure that the operator can start, control and stop the engine easily by making all controls readily accessible. Fit remote controls if access is difficult. Follow the instructions laid down in the engine manufacturer's Operators Handbook for starting, operating and stopping procedures.
4. **Fuel.** In addition to the fire hazard associated with fuel and lubricating oils, preventative action is necessary with respect to leakage, contamination and bodily contact.

5.  **WARNING Electrical Connections.** It is essential that earth terminals are connected with an absolutely sound earth point and care should be taken to ensure that the correct sized conductors are selected to suit the current and distance it is to be carried.

1.5 Electric Motors

1. All electrical connections should be made with adequately rated conductors and starters. Isolators and other associated switchgear should be of adequate capacity for the imposed power loadings. All electrical equipment should be adequately earthed. All connections to be made by a qualified electrician to BS7671 latest revision.

2.  **WARNING** Isolate the power supply before carrying out any commissioning, servicing or maintenance work on the pump or electric motor.

1.6 Pneumatic Motors

1. All Pneumatic connections should be made with adequately rated fittings and other associated devices should be of a sufficient rating for the pressures involved.

All connections and/or maintenance of pneumatic equipment should be made following the Pressure, Equipment, Regulations, 1999 and the Pressure Systems, Safety, Regulations 2000.



2. **WARNING** Isolate the air supply before carrying out any commissioning, servicing or maintenance work on the pump or pneumatic motor.

3. LUBRICATING OIL CAPACITIES

Horizontal 330ml

Use good quality hydraulic oil with a viscosity Of around 100cSt (460SSU) at 40°C (104°F)

AIRLINE FILTRATION AND LUBRICATION

Use 64 micron filtration or better. Choose a lubricator

Suitable for the flow required. Prior to initial start-up,

Inject oil into the inlet port.

Lubricator drop rate 4-5 drops/minute continuous operation

Lubricator drop rate 8-10 drops/minute intermittent operation

GENERAL DATA

Motor rpm 1500MAX

Input pressure 6 BAR Max

Flow rate 67 litres/minute max

MASS (motor only) 26kgs (57.3 lbs)

MOMENT OF INERTIA of rotating parts 0.56 gm² (motor only)

MAX OVERHUNG FORCE on motor shaft 890 N (200lbf)

TEMPERATURE RANGE -20°C to +80°C (-4°F to +176°F)

You are requested to take such steps as are necessary to ensure that this information is made available to all those involved with the use of our products. This information must be made available not only to your own employees at their workplace, but also to anyone who may purchase or otherwise acquire (hire) such products for use in his own workplace.

It is our intention constantly to review our obligations under the Act and we will be issuing from time to time further information with regard to the safe application, use, inspection, and service associated with our products.

2 PUMP SPECIFICATION

2.1 Performance

Capacity	31.8m ³ /h, 7000gal/h
Total Head	40m, 130ft
Delivery Head	30.5m, 100ft
Self-Priming Lift	8.8m H ₂ O, 29ft H ₂ O
Suction Lift	9.1m, 30ft
Solids Size	6mm, 0.25in
Air Handling	3.77l/s, 8ft ³ /min
Pump Speed	1500 strokes per min
Port Size Spigot	75mm, 3in

3 ROUTINE MAINTENANCE

Lack of routine maintenance is the most frequent reason for the breakdown of pumps. We earnestly advise users to ensure that at least the following actions are taken.

1. Check these oil levels daily:
 - a) Engine oil.
2. In cold weather, when there is a possibility of frost, always drain water from the pump particularly where the pump may experience long periods of inactivity. During these conditions, drain the following areas:
 - a) Pump body.
 - b) Delivery pipework.



CAUTION

Failure to drain the pump body and delivery line in these conditions could result in the pumped product residue freezing and cracking the casing.

3. Do NOT run the pump if significant quantities of water escape through the bearing frame drain hole. This indicates failure of the inner neck seal and must be repaired before running can continue. Refer to servicing instructions for further advice.
4. Do NOT run the pump if malfunction is suspected in any of its parts.
5. A hose strainer should always be fitted to the free end of the suction line if there is a possibility of oversized solids entering the pump. The dimensions of rocks, pebbles, etc. must not exceed 6mm Refer to Selwood Ltd if in need of advice in this connection.
6. As loss of prime and indeed loss of on-stream performance can easily arise as the result of leaking pipework joints, we recommend that all line fittings associated with the pump should be checked periodically for air-tightness.
7. It is most Important to use the correct fuel oil in the engine. Make sure that it is appropriate for the weather conditions (summer or winter) and that it is clean and free from water and foreign matter. Unsatisfactory running performance, excessive wear and damage can all result from the use of Incorrect or contaminated fuel.

8. Periodically check the tension of all nuts and bolts, especially those securing the engine and pump to the chassis.
9. Pump servicing must always be carried out in accordance with the instructions given in this manual. Only components supplied and approved by Selwood Ltd should be used. It is advisable to hold a small stock of spare parts to cover breakdown circumstances. The Company will be pleased to give advice in this connection.
10. Engine servicing must always be carried out in accordance with the instructions given in the manufacturer's manual. Do not hesitate to contact Selwood Ltd if the need for further advice arises.
11. Please contact Selwood Ltd in the event of experiencing difficulty when servicing. The company will also be very pleased to give advice in connection with the machine's installation, operation and maintenance.
12. All practical work must be carried out in compliance with the Health and Safety at Work Act, 1975. Always start the engine in accordance with the manufacturer's instructions.

NOTE: If the above advice is followed, the likelihood of an expensive break down will be greatly diminished. The pump should give a long and trouble free life if these measures are put into effect.

4 LUBRICATION AND FASTENING TORQUES

Pump Lubrication

It is most important to maintain the correct levels of oil in the engine or driver ensure that the oil is of the recommended quality and is free from contamination. Selwood recommend the use of the following Shell products, which should be applied as per the following table. In some territories, the following grades may be known under differing trade names, please contact Selwood if problems occur in identifying the correct product.

COMPONENT	SHELL GRADE	BP grade
Engine - Yanmar L48	Rimula X 15W-40	Vanellus C5 Global
Wheel hubs	Alvania - EP LF2	Energrease LS-EP2
Actuator bores	Ensis SDB	Castrol Rustilo 431
COMPARTMENT	SERVICE INTERVAL	
	HOURS	MONTHS
Engine Sump	Refer to engine manual	200hr
Wheel hubs	ON ASSEMBLY	12
Actuator bores	ON ASSEMBLY	6-12

5 INSTALLATION, COMMISSIONING AND OPERATION

5.1 Self Priming

In normal practice, the SPATE PD75 pump remains primed after initial use, even when the hoses are removed and it is out of service. When priming a new pump, or after draining for any reason, maximum self-prime lift of 8.8/9.1m (29/30ft) will only be obtained if the flood prime manifold is filled with water through the delivery connection.

5.2 The Suction Strainer

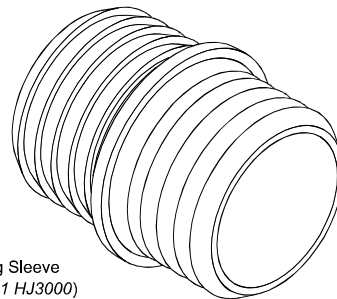
Always use the 75mm SPATE hose strainer supplied with the pump. Make sure that it is firmly secured to the suction hose by using heavy duty clamps or clips illustrated. Failure to secure the strainer firmly may result in its loss and consequential blockage of the hose and pump by excessive solids.

5.3 Securing and Joining Hoses

The pump is fitted with push-on type suction and delivery spigots and the hoses must be firmly secured to these spigots with heavy duty clamps or clips.

When pumping at high pressure, to high heads or compressing air, the SELCLAMP (Patented) heavy duty hose clamp which is designed to withstand pressures up to 6.9bar (100lbf/in²) is recommended. The clamp can be hand tightened and does not require tools.

Hoses of various lengths can be joined together by the push-on method using hose joint sleeves which should be firmly clamped to avoid leakages, particularly in the suction hose.



Hose Joining Sleeve
(Pt. No. 00 01 HJ3000)

5.4 Oil Handling

The standard synthetic rubber seals (Items 3 and 7) and valves (Items 5 and 11) of the Spate PD75 pump are suitable for handling most lubricating oils and greases without undue chemical deterioration.

The standard pressure regulator inner sleeve is made from natural rubber as there is no available synthetic with the necessary characteristics for this duty. Oils and hydrocarbons will damage this regulator sleeve. If

the pump is to be used for handling products of this type then the complete pressure regulator assembly must be changed, on each pump cylinder, to either oil tolerant regulators or oil blanks. This choice depends on existing pump speed and viscosity of product to be handled.

5.5 Oil Tolerant Regulators

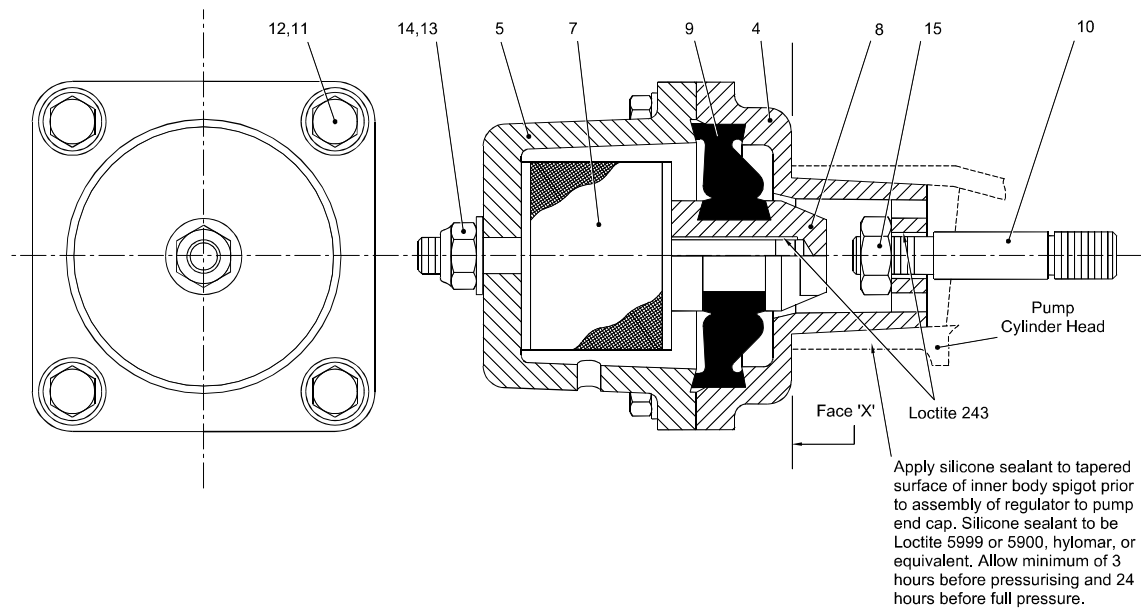
Oil tolerant regulators, as their name suggests, are suitable for handling most oil and water mixes at pump speeds up to the max 1500rpm.

For high viscosity oils or greases the pump speed should be reduced to allow the internal valves (Items 5 and 11) time to respond to the thicker material. Oil

tolerant regulators are directly interchangeable with the standard items, and can be retro fitted if required. Regulators are available as individual assemblies (Part No. 0393040000). These pressure regulators allow the pump to operate at maximum speed and output on oil applications; viscosity effects permitting.

The vent hole may be orientated to point downwards thus minimizing the spread of pumped products in the event of a failure.

The Oil Resistant Pressure Regulator consists of an aluminium LM6 body and a Spate PD75 neck seal (Part No. 0003316000) backed by a natural rubber anti-vibration mount. Replacement neck seals must be fitted using assembly tool (Part No. 0393038000).



The regulators may be fitted to existing pumps as follows:

1. Remove standard regulators.
2. Remove pump cylinder heads.
3. Ensure the two components abut at face 'X'. It may be necessary to dress the locating taper of Item 4 to achieve this.
4. Fit special studs (Item 10) into cylinder heads.
5. Secure inner bodies to special studs (using nut Item 15) and seal into cylinder head spigots in accordance with above sketch instructions.
6. Secure outer body (Items 5, 7, 8, 9, 13 and 14) assembly to inner body flange with four M8 screws and nuts (Items 11 and 12) orientating the vent hole downwards.

5.6 Regulator Blanks

Regulator blanks were introduced before the development of oil tolerant regulators, and are a non pressure damping plug that allows pumps to transfer oil/water slurries and other hydrocarbons which were not suitable for standard regulator sleeves. Their use requires the pump speed to be reduced, to below 1250rpm due to the lack of pressure damping.

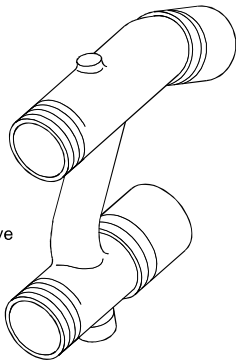
Damage and loss of performance can occur if run faster when they are fitted.

Regulator blanks may still be fitted for some applications although their use has declined with the advent of the more versatile oil tolerant regulator. In order to fit regulator blanks the regulator assembly on each cylinder must be removed and a blanking plate (Part No. 0003528000) with a connecting rubber (Part No. 0003236200) and clip (Part No. 9505007004) must be fitted in its place.

5.7 Full Flow Relief Valve

The full flow relief valve (Part No. 0003353000) should be fitted if it is likely that the pump will operate against a closed delivery line or heads greater than the maximum operating pressure of the pump. The valve is simple in operation but is factory set and it is not recommended that adjustments be made in the field unless instructed to do so.

3" Full Flow
Relief Valve
c/w
Rubber Connector Sleeve
(Pt. No.0003 353000)



5.8 Use of the Spate High Pressure Nozzle

For pressure washing or jetting the SPATE high pressure nozzle (optional extra) will not over-pressurise the pump, but for all other high-pressure operations the manufacturers should be consulted. Maximum recommended working pressure of the pump is 30.5m (100ft) head, or 3bar (43lb/in²).

5.9 Use of Air Inflator Attachment

The pump is capable of compressing air to a maximum pressure of 4.8bar (70bf/in²). An air adaptor is available for tyre inflation, etc. The adaptor should be attached to the pump delivery spigot and secured very firmly with heavy duty clips or clamps. The priming manifold must be filled with water to obtain maximum air pressure. When operating dry, the pump air pressure will be considerably reduced. Make sure that the suction hose has been disconnected before starting the pump to compress air.



WARNING

Compressed Air is Dangerous.

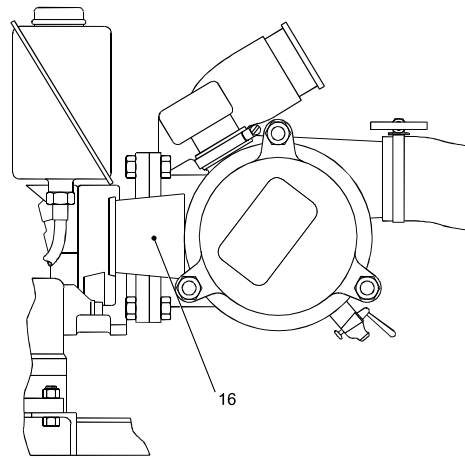
5.10 Frost and Ice

To prevent ice damage in cold weather remove the suction and delivery hoses, open the drain taps in the pump cylinders and continue to run the pump until all water has been expelled.

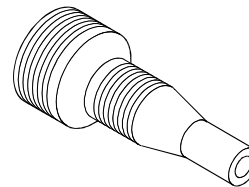
6 CONDITIONS OF WARRANTY

For a period of twelve months from delivery of any Selwood pump to the first user thereof, or eighteen months from the despatch of any such pump by Selwood, whichever period is the shorter, Selwood will repair or, at its option, replace any component, which in the opinion of Selwood has failed due to defective workmanship or materials.

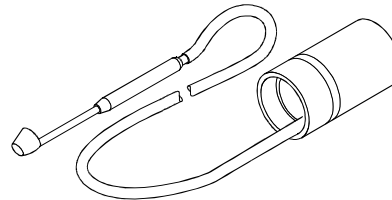
For full terms and conditions please contact Selwood Ltd.



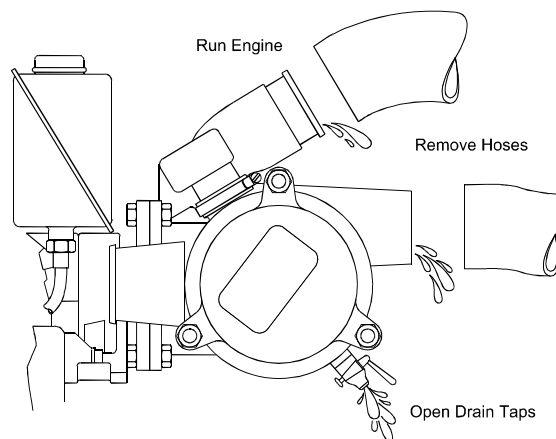
Pressure Regulator Assembly



High Pressure Nozzle
(Pt. No. 00 03 277000)



High Pressure Nozzle
(Pt. No. 00 03 342000)



7 FIELD SERVICING

7.1 To Dismantle a Pump Cylinder

1. Slacken the induction manifold connector clip (18).
2. Remove the pump cylinder head nuts (15) and cylinder head (14).
3. Remove the priming annulus (5) and delivery port plate (12).
4. Remove the split pin (10a) and release the actuator nut (10) with the actuator valve (11) attached.
5. Remove the actuator washer (9) from the connecting rod (25).
6. Remove the cylinder body ring (6) complete with actuator (8) and seal (7) assembly.
7. Remove the priming annulus (5) and suction port plate (4).
8. If the pump drive mechanism is to be dismantled, remove the connecting rod cylinder seal (3).

NOTE: This should not be removed when only cleaning or inspecting the cylinder parts.

Before re-assembly:

1. Wash all components and assemble wet.
2. Check that the 4.8mm (3/16") diameter flood prime hole in the delivery port plate (12) is clear and that the drain tap is not blocked.
3. Ensure that the actuator washer (9) is in place and the actuator nut (10) is completely tightened. Recommended torque 5.5kg m (40lb/ft.).



Caution

Tighten cylinder head nuts evenly. Do not overtighten the cylinder head nuts (15). 18 lb ft MAX (2.48Kgf-m)

7.2 Examination and Replacement of Flexible Components

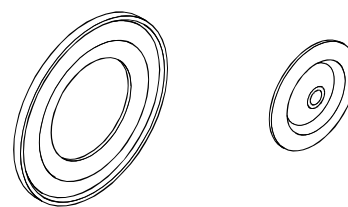
7.2.1 Priming Annulus and Actuator Valve

These flexible mouldings of synthetic rubber are oil resisting and are not expected to fail in normal use.

Look for splits due to excess pressure or distortion due to petrol contamination. Each priming annulus must be a free fit in the cylinder ring and cylinder head recess.

Replacement

Re-assemble these parts wet if possible, and turn each priming annulus over to improve its seating.



Priming Annulus (Pt. No. 00 03 220200) and Actuator Valve (Pt. No. 00 03 221200)

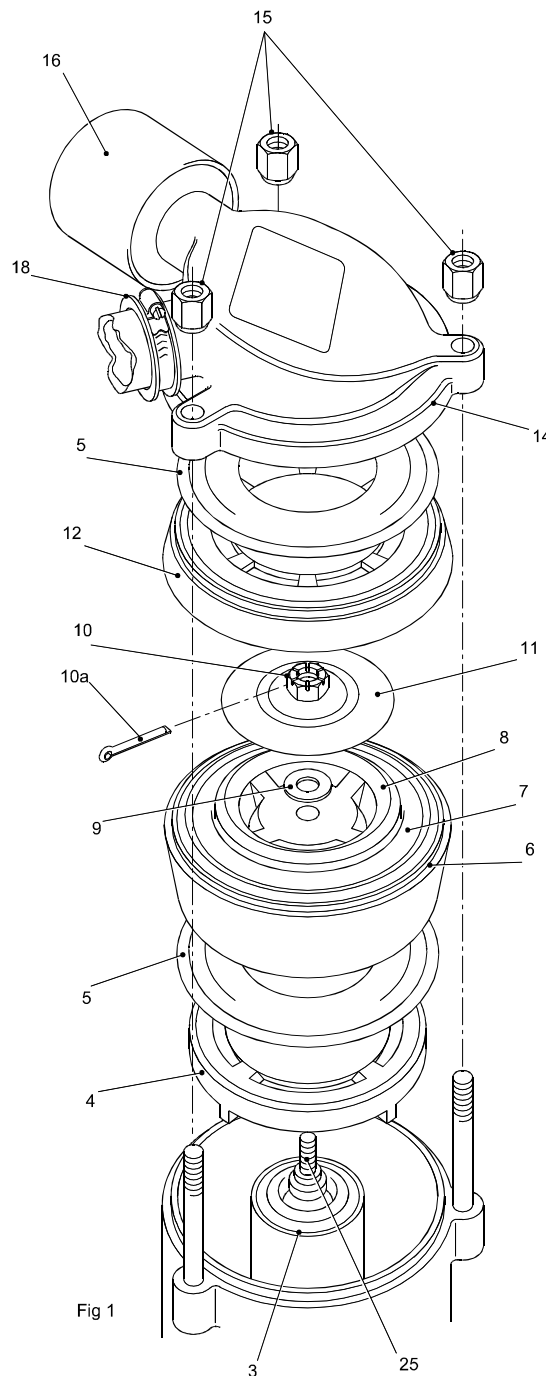


Fig 1

7.2.2 Connecting Rod Cylinder Seal

These seals are synthetic rubber mouldings, oil resisting, and with long use may develop cracks around the inner neck diameter. When these have grown to half to three-quarters of the original thickness the seals should be replaced. The pump should not be operated for any long period with failed seals. Radial crack in the seals can be ignored. It is advisable to replace both connecting rod cylinder seals and both actuator seals at the same overhaul period.

Replacement

1. Prise the old seals out of their housings and position the pump connecting rod out as far as it will go, by rotating the engine flywheel. (This is very important).
2. Wet the end of the connecting rod and push the seal on with the palm of the hand.
3. Press the seal centre completely into the recess of the connecting rod and its outer flange into the body housing.

7.2.3 Actuator Seal

These seals are oil resisting synthetic rubber mouldings. Over a long wear life cracks develop around the inside neck recess, but the seals need replacement only when half to three-quarters of the original moulded thickness is separated. It is advisable to replace both actuator seals and both connecting rod cylinder seals at the same overhaul period.

Replacement

1. Press the inner flange of the seal completely into the actuator.
2. Wet the outer flange and press it into the cylinder ring, making sure that all mating surfaces are clean and free from grit.
3. Replace the actuator washer, tighten the actuator nut completely and replace the split pin.

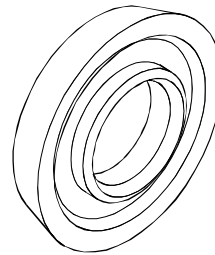
It is very important that this joint should be completely re-tightened to the recommended torque of 5.5kg m (40lb. ft.). Failure to tighten sufficiently may result in wear of the connecting rod end and the actuator centre. If this wear takes place the connecting rod and Actuator must be replaced.

7.2.4 Pressure Regulator Assembly

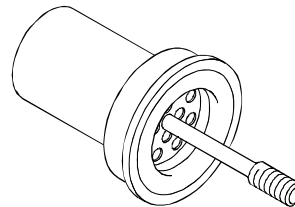
Natural rubber moulding. (See Oil Handling, Section 2.4).



Connecting Rod Cylinder Seal
(Pt. No. 00 03 316000)



Actuator Seal
(Pt. No. 00 03 337000)



Pressure Regulator Assembly
(Pt. No. 00 03 230200)

8 WORKSHOP SERVICING

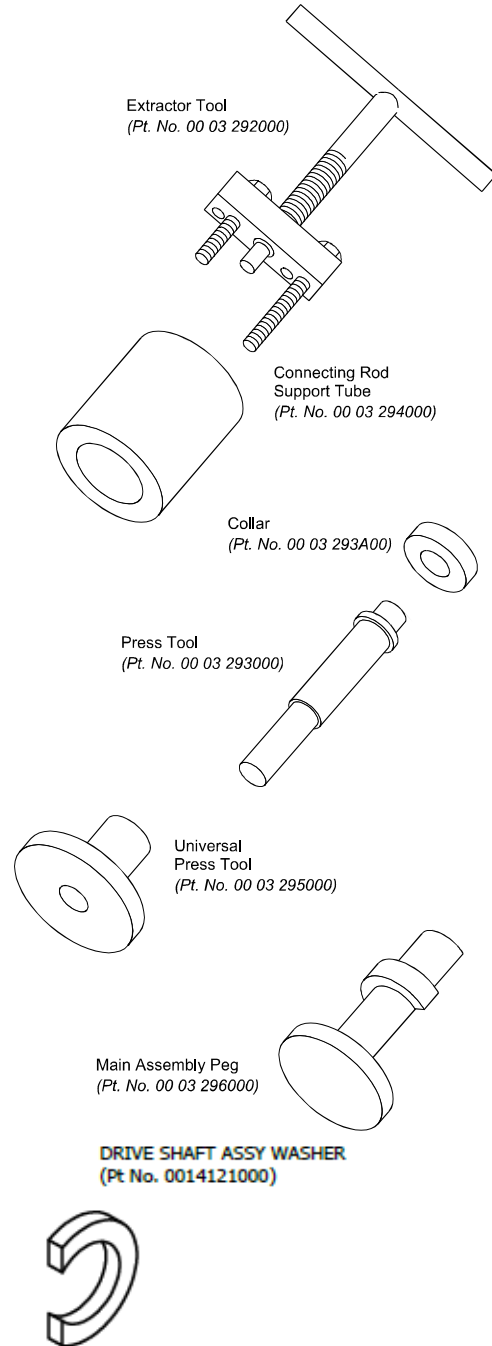
8.1 Dismantle Pump Drive Mechanism

1. Dismantle the pump cylinders as described in Field Servicing, refer to pump dismantling page 7.
2. Remove the pump register nuts (41).
3. Withdraw pump unit to separate the drive coupling.
4. Slacken the coupling grub screw (40), and remove the pump half coupling (31 or 47) using the extractor tool (Part No. 0003292000) with its two 3/8" whitworth bolts.
5. Remove the main bearing housing (28) using the extractor tool (Part No. 0003292000) with its two 1/2" whitworth bolts. The main bearing (22) will usually be left behind on the eccentric drive shaft.
6. Place the pump body assembly on the press table, supporting the connecting rods with the connecting rod support tube (Part No. 0003294000) using press tool (Part No. 0003293000) to press out the eccentric drive shaft.
7. Remove the connecting rods complete with bearings and spacers.
8. Press out the rear main bearing, if required, with press tool (Part No. 0003293000). Removal of the rear main bearing in most cases results in its damage because it can only be pressed out from the centre race and this should only be carried out when it is necessary to replace the bearing.

NOTES:

1. Figures shown thus (23) denote Parts List Drawing Numbers.
2. All particulars subject to alteration without notice, Illustrations not binding in detail.
3. Extractor tool (Part No. 0003292000) is also utilised to remove the centrifugal clutch drum when fitted.

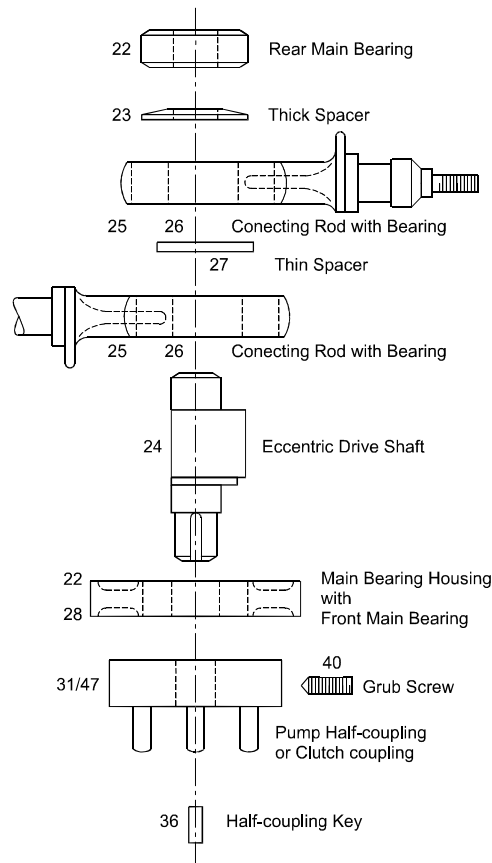
8.2 PUMP DRIVE MECHANISM MAINTENANCE TOOLS



8.3 Assemble Pump Drive Mechanism

1. Place the drive shaft assembly washer (Part No. 0014121000) on the Main Assembly Peg (Part No. 0003296000) now place the pump body casting vertically on the main assembly peg, through the hole below the suction hose spigot, with the pump hose spigot facing the operator.
2. Place the rear main bearing (22) into position in the pump body casting and over it 60mm (2 3/8") collar (Part No. 0003293A00). Insert press tool (Part No. 0003293000) into the collar, and over it fit universal press tool (Part No. 0003295000) flange downwards, to provide correct centring of the pump. Press the main bearing into its housing until it meets the main assembly peg (Part No. 0003296000).
3. Place the Thick Spacer (23) centrally on the rear main bearing with the chamfer facing towards the bearing.
4. Assemble the connecting rod bearings (26) into the connecting rods (25) with the use of the universal press tool (Part No. 0003295000). Then insert the left side connecting rod into its operating position First. It will be found that the flat part of the flange on the connecting rod has to face the operator in order to insert it. When in position, rotate the connecting rod so that this flat surface faces downwards.
5. Place the thin spacer (27) centrally on the bearing in the connecting rod.
6. Insert the right side connecting rod into its operating position with the flat surface on the flange of the connecting rod facing upwards, but do not turn it over, i.e. the two flat surfaces should now face outwards from the centre.
7. Offset the centre of the connecting rod bearings and thin spacer 3.8mm (0.15") from the centre line of the Rear Main Bearing and then insert the eccentric drive shaft (24).
8. Press in the eccentric drive shaft, until the shaft end is firmly seated against the main assembly peg (Part No. 0003296000).
9. Assemble the front main bearing (22) into the main bearing housing (28) with the use of the universal press tool (Part No. 0003295000). Then press this assembly on to the eccentric shaft until the bearing housing is firmly seated on the machined surface in the pump body casting, by use of the universal press tool (Part No. 0003295000).
10. Press the pump half-coupling (31 or 47) on to the eccentric drive shaft with the stock end of the rear bearing press tool (Part No. 0003293000) until it is flush with the end of the eccentric drive shaft. Insert the key (36) and tighten the grub screw (40) using the body drain hole for access.

NOTE: The connecting rods should be within 0.8mm (0.030") of centre in the connecting rod seal housings in the pump body casting.



9 TROUBLE SHOOTING GUIDE

Proceed in the sequence in which the actions are given.

PUMP WILL NOT PRIME, OR LOSES PRIME HAVING PUMPED PRODUCT FOR A BRIEF PERIOD OF TIME

ACTION	COMMENT
1 Check that pumping chambers contain liquid.	The pump's priming ability will be greatly increased if the chambers are filled.
2 Check that duty lift does not exceed pump's standard capability.	This pump is capable of priming to a maximum vertical height of 8.8m (29ft) H ₂ O.
3 (a) Check all suction-side hoses, fittings and joints for air leaks.	Priming problems are VERY often caused by faults in supply pipework. Air must NOT be allowed to pass into the system across couplings, etc.
(b) Check strainer and suction hose for blockages.	Do not use un-reinforced hose. Always fit a strainer of correct size and type either to the submerged end of the hose, or into the pump's suction spigot. Selwood Pumps provide special strainers for this purpose - they are easy to clean but difficult to remove.
4 Check product viscosity.	As viscosity rises, pump speed must be reduced. Refer to Selwood Pumps for advice in connection with specific fluid and duty requirements.
5 Check for solids trapped beneath valves and also for damaged valve seats.	Occasionally, solids become trapped and so prevent the valves sealing. Fluids containing a high proportion of abrasive solids can cause seat erosion which likewise impairs valve efficiency.
6 Check condition of annular valves.	Contact with non-permitted chemicals can sometimes cause the rubber to swell. When at rest, the valves should contact their seats.
7 Check condition of actuator and connecting rod seals.	These components guide the actuator, and also seal the pumping chambers. It is essential that they should not be split or perforated in any way.
8 Check pump castings for holes, splits or porosity.	Fluids containing a high percentage of abrasive solids can lead to severe erosion of the passageways.
9 Check for air leaks across cylinder rings.	The actuator seal and priming annuli have sections of rubber that seal the cylinder rings. Damage to a ring's sealing surfaces during fitting, for example, can lead to leakage of air into the pump's chambers.
10 Check that actuators reciprocate freely when pump shaft is turned.	Bearing failure might result in inadequate displacement. However, as the bearings are generously-sized this situation is unlikely to arise.
11 Check that drain tap is not open.	Drain taps are sometimes left open overnight.

OUTPUT AND HEAD ARE LESS THAN PUBLISHED FIGURES**ACTION**

- 1 Check strainer and suction pipework for blockages. Also check that air is not being pulled through a vortex created in the supply reservoir.
- 2 Check sizes of suction and delivery hoses.
- 3 Check condition of annular valves and flexing seal.
- 4 Check for solids trapped in pump body and manifold.
- 5 Check pump speed.

COMMENT

Choking of the supply system by solids will increase the flow resistance, thus increasing the head against which the pump has to operate, and reducing output. Entry of air through faulty pipe joints will have a similar effect. Reduction also occurs if air is entrained through a vortex - to eliminate, increase strainer's submergence.

Use wire-reinforced hose for suction system. Length should be minimised and pump sited as close to supply reservoir as possible. Unnecessary bends and fittings should not be incorporated in either the suction or delivery pipework systems. Stop valves downstream of the pump must never be closed when pump is running.

When at rest, the priming annuli should touch their seats. Flexing seals should be free from cracks and perforations.

Blockages are most unlikely to occur if the correct strainer is fitted.

Normal operating pump speeds are:

- Up to 1500rpm driven by I.C. engine.
- Up to 1450 or 1000rpm if driven by electric motor.

FLUID ESCAPING FROM PUMP UNIT**ACTION**

- 1 If fluid is leaking from drain hole in body, check condition of connecting rod seal.
- 2 If fluid is leaking from pressure regulator, check condition of rubber sleeve.
- 3 If fluid is leaking from manifold connectors, tighten clips and check delivery pressure.

COMMENT

The pump should not be run in this condition. Immediately replace seal if examination reveals a split component.

As natural rubber is used for these components, the regulator assembly must not be fitted if the pump has to handle hydrocarbon products, for example.

Delivery pressure must not exceed 30.5m (100ft).

PUMP IS UNEXPECTEDLY NOISY**ACTION**

- 1 Check that noise does not emanate from engine, chassis or tank.
- 2 Check that there is at least 2m of flexible hose connected to the suction and discharge spigots.
- 3 Check that maximum fluid pressures are not being exceeded.
- 4 Check that duty suction lift is not excessive.
- 5 Check that pump speed is not too high.
- 6 If running at normal maximum speed, check that pressure regulators are fitted.
- 7 Check that negative delivery head is not occurring.
- 8 Check condition of rubber bushes in flexible coupling.

COMMENT

Loose fasteners, particularly those associated with the tow bar, can give rise to unexpected noises.

Pump can be used for rigid-pipework installations provided that they incorporate these two lengths of hose.

Refer to Fluid Escaping from Pump Unit, Action 3 for maximum delivery heads.

In some circumstances, lifts over 5.5m (18ft) H₂O, can cause water-hammer problems in manifold.

Refer to Output and Head are Less than Published Figures, Action 5 for maximum delivery heads.

Speed must be reduced if regulators are not used.

Negative delivery heads are only permissible if the pump is fitted with a snifter valve. Refer to Selwood Pumps for advice.

The pump is coupled to its driver by means of a pin and bush coupling. It is important that the rubber bushes should be in good condition.

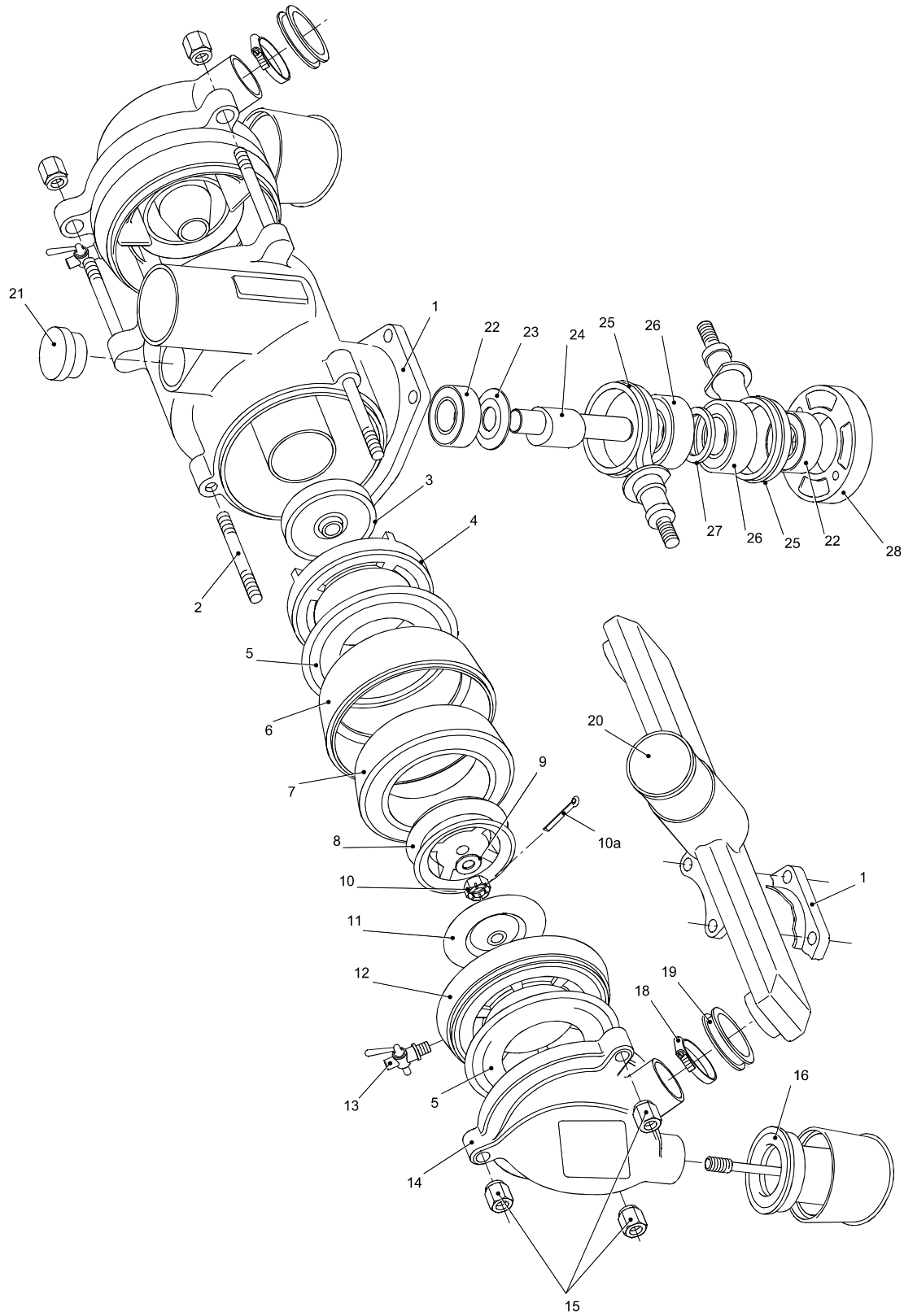
PUMP IS UNEXPECTEDLY NOISY (continued)**ACTION****COMMENT**

- | | | |
|----|---|---|
| 9 | Check that pump is not handling solids of excessive size. | If a strainer is not fitted, over-sized solids can pass into the pump. Maximum permitted size 6mm (0.25in). |
| 10 | Check condition of reciprocating and rotating parts. | The problem could be due to a loose actuator nut, or to failure of the drive shaft or eccentric bearings. |

PUMP MECHANISM IS SEIZED AND CANNOT BE ROTATED BY HAND**ACTION****COMMENT**

- | | | |
|---|--|--|
| 1 | Check that ice has not formed in pump body. | This condition can easily arise in cold weather if the pump is stationary and has not been drained. |
| 2 | Check for over-size solids in pump body. | Absence of a strainer can lead to unacceptably large solids entering the pump and obstructing the actuators. |
| 3 | Check that drive-shaft bearings have not seized. | Bearing seizure can arise if the pump has been operated for long time periods with a failed connecting rod seal. |

Refer to Selwood Pumps if the above advice does not solve your problem.



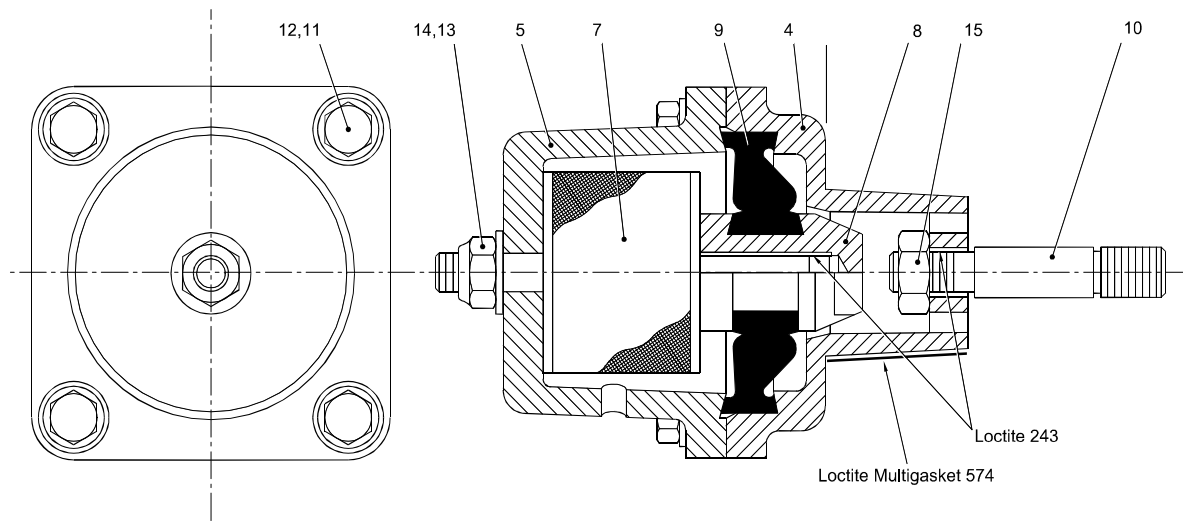
10 PARTS LISTS

10.1 Pump Parts

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Pump Body Casting	0003302000	1
	Pump Body 2.5" BSP Male Threads (optional)	0003509640	1
2	Cylinder Studs	0003240000	6
3	Con. Rod Cyl. Seal	0003316000	2
	Con Rod Seal - Viton (optional)	0003316094	2
4	Suction Port Plate	0003215000	2
5	Priming Annulus	0003220200	4
	Priming Annulus - Viton (optional)	0003220294	4
6	Cylinder Body Ring	0003223000	2
7	Actuator Seal	0003337000	2
	Actuator Seal - Viton (optional)	0003337094	2
8	Actuator	0003219000	2
9	Actuator Washer	9030510359	2
10	Actuator Nut	0003248000	2
10A	Split Pin	0003249000	2
11	Actuator Valve	0003221200	2
	Actuator Valve - Viton (optional)	0003221294	2
12	Delivery Port Plate	0003324000	2
13	Cylinder Drain Tap	0003350000	2
14	Cylinder Head	0003225000	2
15	Cylinder Nuts	0003212000	6
16	Pressure Regulator Assy - Natural Rubber	0003230200	2
	Oil Resistant Pressure Regulator Nitrile (optional)	0393040000	2
	(Not Illustrated)		
	Oil tolerant Pressure Regulator Viton (optional)	039304000B	2
	(Not Illustrated)		
18	Clip	9505007004	2
19	Cylinder Induction Manifold Connector.	0003236200	2
20	Induction Manifold	0003314000	1
	Manifold 2.5" BSP Male Thread (optional)	0003509630	1
21	Rubber Plug	0003243000	1
22	Main Bearing	0003202A00	2
23	Main Bearing Spacer (Thick)	0003398000	1
24	Eccentric Drive Shaft (Standard)	0003304000	1
	Eccentric Shaft 0.15" Stroke (optional)	0003509480	1
25	Connecting Rod	0003205200	2
26	Connecting Rod Bearing	0003204000	2
27	Connecting Rod Spacer (Thin)	0003399000	1
28	Main Bearing Housing	0003217000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART



Oil tolerant regulators, as their name suggests, are suitable for handling most oil and water mixes at pump speeds up to the max 1500rpm.

For high viscosity oils or greases the pump speed should be reduced to allow the internal valves (Items 5 and 11) time to respond to the thicker material. Oil tolerant regulators are directly interchangeable with the standard items, and can be retro fitted if required. Regulators are available as individual assemblies (Part No. 0393040000). These pressure regulators allow the pump to operate at maximum speed and output on oil applications; viscosity effects permitting. They will also enable the use of the Lister/Petter AD1 and clutch at 1500rpm.

The vent hole may be orientated to point downwards thus minimizing the spread of pumped products in the event of a failure.

The Oil Resistant Pressure Regulator consists of an aluminium LM6 body and a Spate PD75 neck seal (Part No. 0003316000) backed by a natural rubber anti-vibration mount. Replacement neck seals must be fitted using assembly tool (Part No. 0393038000)

10.2 Oil Tolerant Regulator

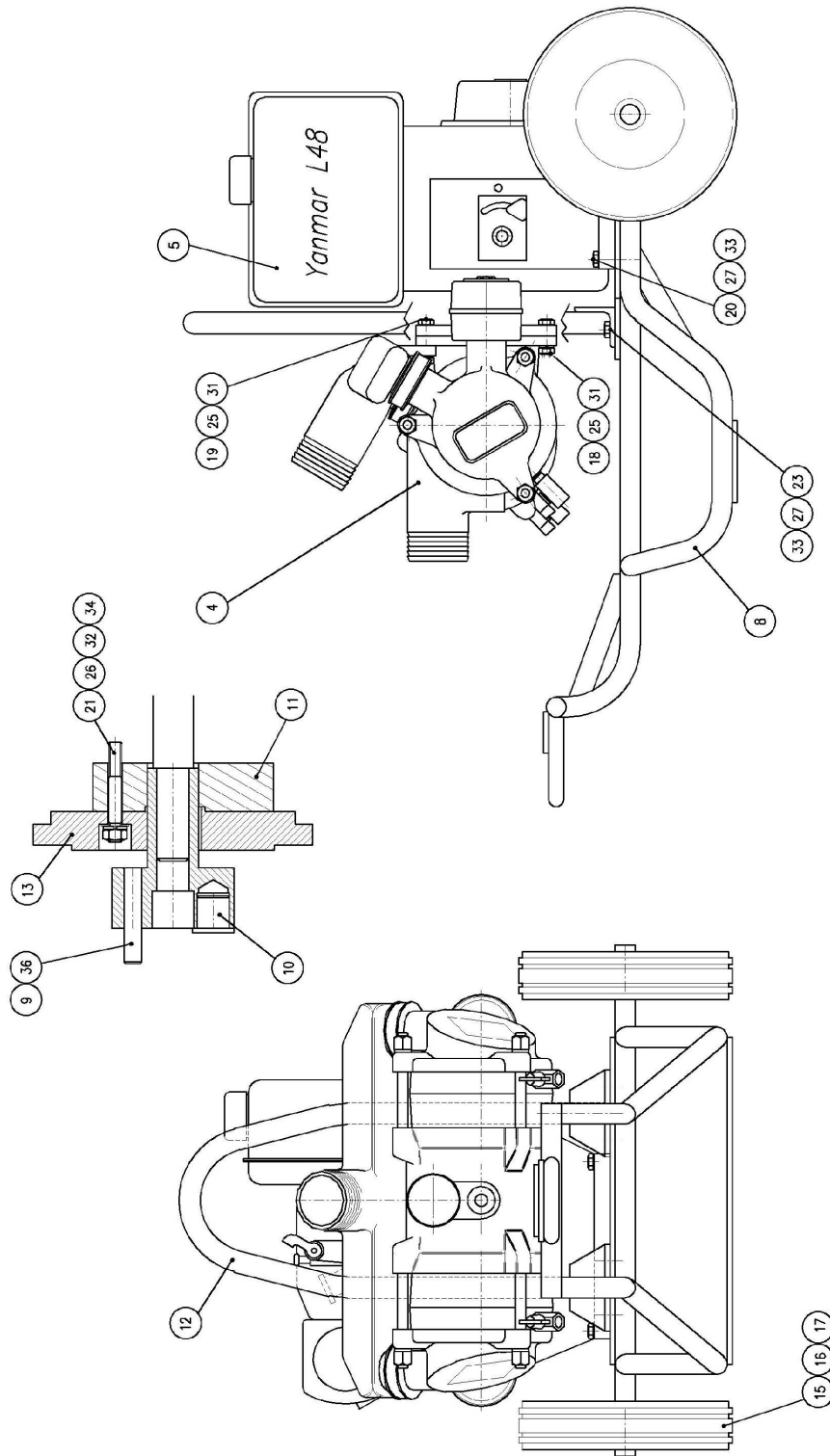
ITEM	DESCRIPTION	PART NUMBER	QTY
4	Inner Body	0393036000	1
5	Outer Body	0393035000	1
7	AV Mount	9680M00004	1
8	Seal Guide	0393037000	1
9	Neck Seal	0003316000	1
9	Neck Seal -Viton- (Optional)	0003316094	1
10	Stud	0393039000	1
11	Rect. Sect Spring Washer M8	9030080229	4
12	Hex Hd. Setscrew M8x25	9000080251	4
13	Plain Washer M10	9030100024	1
14	Hex Self Locking Nut	9025100344	1
15	Full Nut	9025100004	1

Assy Part No for Standard Seal 0393040000

Assy Part No for Viton Seal 039304000B

When ordering spares, please state:

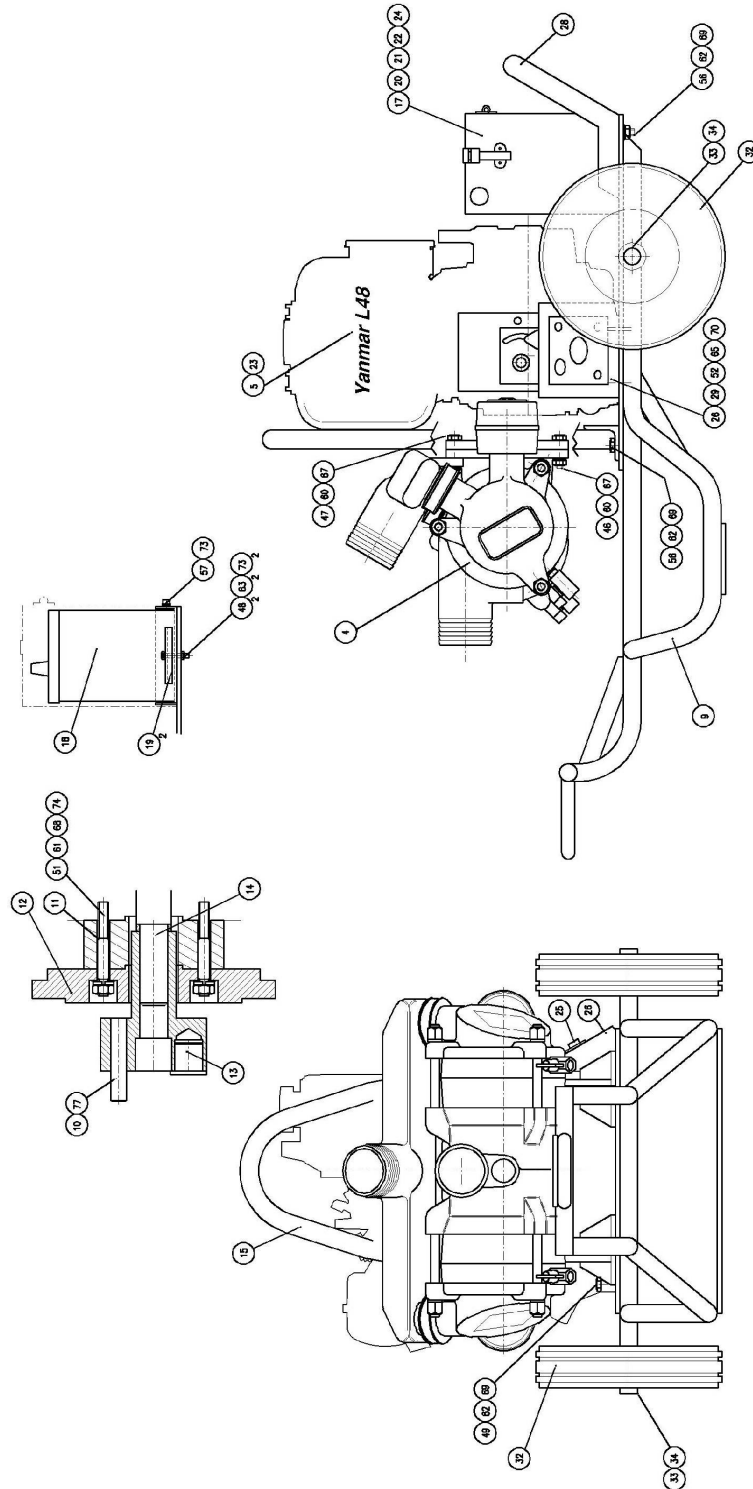
PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART



10.3 PD75 / Yanmar L48 Site unit - non EPA

ITEM	DESCRIPTION	PART NUMBER	QTY
4	PD 75 std Pump	Build dependant	1
5	Yanmar L48 Diesel engine	9203101020	1
8	Tubular site chassis	0003880010	1
9	Engine Half Coupling	0393009000	1
10	Coupling Rubbers	0003211000	6
11	Pump Spacer – Recoil start	0393008000	1
12	Lifting eye	0393006000	1
13	Engine adaptor plate	0393010000	1
15	Wheel	0003381000	2
16	Split pin	0003383000	2
17	Wheel washer	0003382000	2
18	3/8" BSF Hex. Hd. Bolts (Lower) x 1½"	0003391000	2
19	3/8" BSF Hex. Hd. Bolts (Upper) x 2"	0003392000	2
20	Bolt M10 x 45	9001100451	4
21	M8x50 Stud - Recoil start	9000850-01	4
23	Hex setscrew M10 x 30	9000100301	4
25	3/8" BSF Self Lock Nut	0003233B00	4
26	M8 Hex. Full Nut	9025080004	4
27	Hex self locking nut M10	9025100344	8
31	3/8" Plain Washer	0003393000	4
32	M8 Plain Washer (form B- thick)	9030080004	4
33	M10 Plain Washer	9030100024	8
34	M8 Spring Washer	9030080229	4
36	¼" BSF Hex. Socket Setscrew	0002033000	2
	Pump Half Coupling (not illustrated)	0003309000	1
	Key pump side coupling (not illustrated)	0003207000	1
	Drive Key Supplied with Engine 5 x 30		1

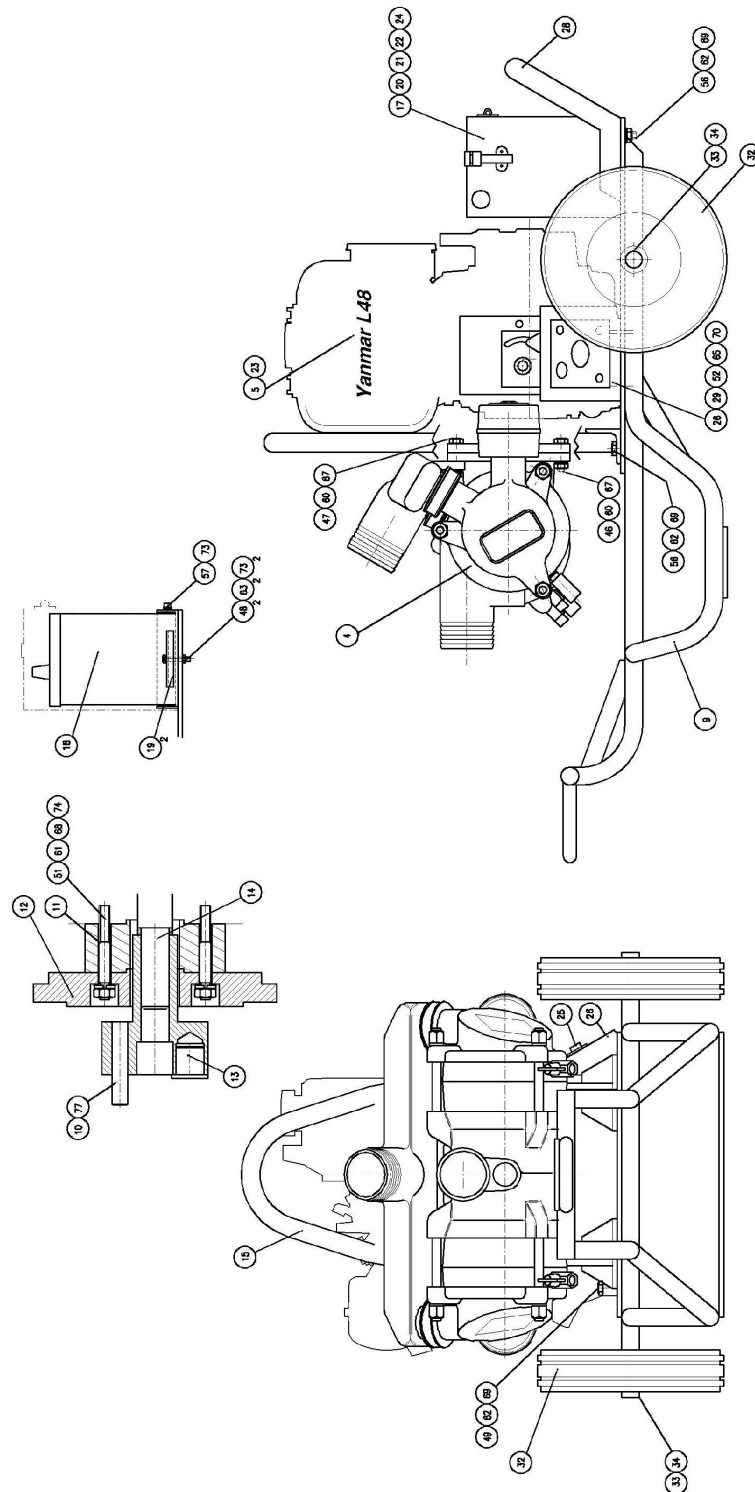
When ordering spares, please state: PUMP NUMBER PART NUMBER DESCRIPTION OF PART



10.4 PD75 / Yanmar L48 electric start Site unit - non EPA

ITEM	DESCRIPTION	PART NUMBER	QTY
4	PD 75 std Pump	Build dependant	1
5	Yanmar L48 Diesel engine	0302001000	1
9	Tubular site chassis	0003880010	1
10	Engine Half Coupling	0301397000	1
11	Pump spacer	0393008000	1
12	Engine adaptor plate	0393010000	1
13	Coupling Rubbers	0003211000	6
14	Coupling Spacer	0301398000	1
15	Lifting eye	0393006000	1
17	Battery cover assembly	0008509520	1
18	Battery 12v 40AH	9296121900	1
19	Clamp bracket	0008509550	2
20	Grommet	9705005000	1
21	Battery Lead Positive	0301146000	1
22	Battery Lead Negative	0302030000	1
23	Boot - Terminal	0006712000	1
24	Blanking grommet	9700-00001	1
25	Keyswitch & Loom assy	92800-0033	1
26	Keyswitch Panel	0301145000	1
28	Rear Grab rail	0393023000	1
32	Wheel	0003381000	2
33	Split pin	0003383000	2
34	Wheel washer	0003382000	2
46	3/8" BSF Hex. Hd. Bolts (Lower) x 1½"	0003391000	2
47	3/8" BSF Hex. Hd. Bolts (Upper) x 2"	0003392000	2
48	Bolt M6 x 35	9000620-02	2
49	Bolt M10 x 45	9001100451	4
51	M8x55 Stud - Electric start	9000850-03	4
52	Hex setscrew M6 x 16	9000060161	2
53	Hex setscrew M6 x 20	9000060201	4
56	Hex setscrew M10 x 30	9000100301	4
57	Hex skt Capscrew M6 x 8	9005060080	6
60	3/8" BSF Self Lock Nut	0003233B00	4
61	M8 Hex. Full Nut	9025080004	4
62	Hex self locking nut M10	9025100344	10
63	M6 Hex. Full Nut	9025060004	2
65	Hex self locking nut M6	9025060344	4
67	3/8" Plain Washer	0003393000	4
68	M8 Plain Washer (form B- thick)	9030080004	4

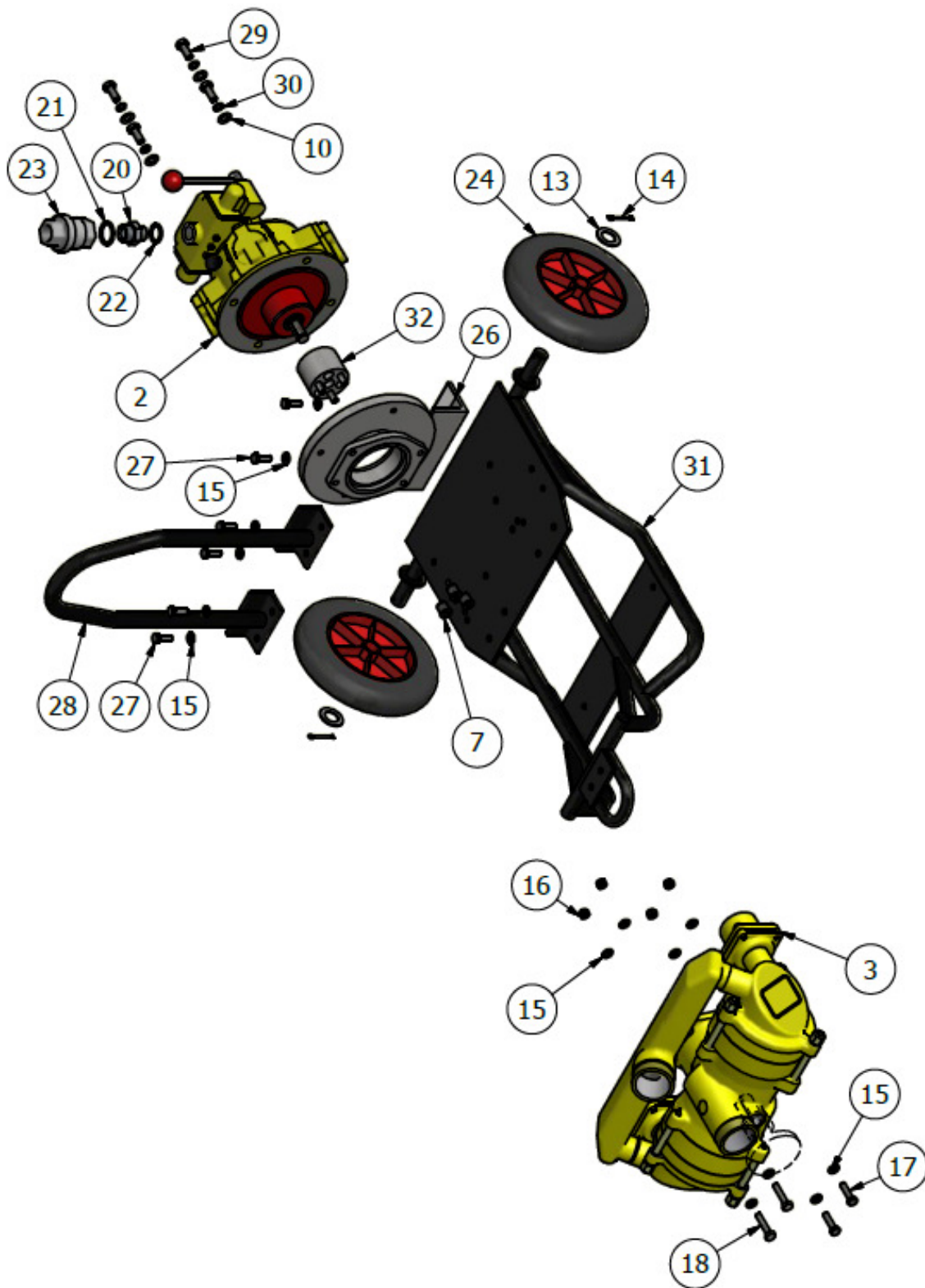
When ordering spares, please state: PUMP NUMBER PART NUMBER DESCRIPTION OF PART



CONT... **PD75 / Yanmar L48 electric start Site unit - non EPA**

69	M10 Plain Washer	9030100024	10
70	M6 Plain Washer	9030060024	4
73	M6 Spring Washer	9030060299	8
74	M8 Spring Washer	9030080229	4
77	1/4" BSF Hex. Socket Setscrew	0002033000	2
	Pump Half Coupling (not illustrated)	0003309000	1
	Key pump side coupling (not illustrated)	0003207000	1
	Drive Key Supplied with Engine 5 x 30		1

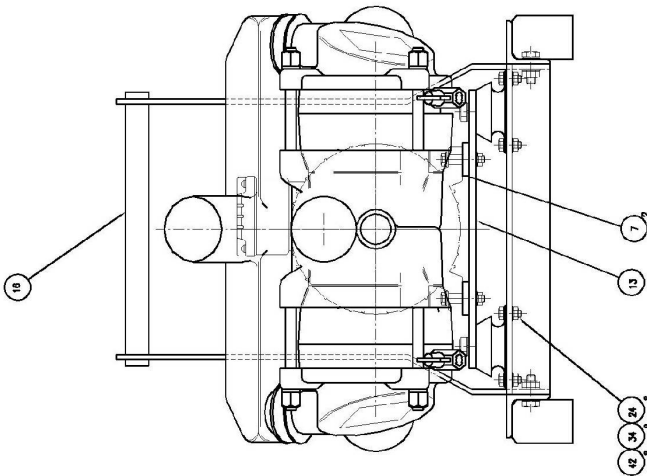
When ordering spares, please state: PUMP NUMBER PART NUMBER DESCRIPTION OF PART



10.5 PD75 / RM210 GLOBE AIR MOTOR 2 WHEEL PUMP UNIT

ITEM	DESCRIPTION	PART NUMBER	QTY
2	RM210 HCV	9290200000	1
3	PD75 PUMP UNIT	000393030J	1
4	COUPLING SPACER	0003505680	1
5	3" HOSE STRAINER	0003335200	1
7	COUPLING RUBBER	0003211000	3
8	HEX. NIPPLE MALE. EQUAL. 3_4 BSPT	9515500280	2
9	KEY 1_4" X 1-7_16"	0003218B00	1
10	PLAIN WASHER M12	9030120024	4
13	PLAIN WASHER 1" DIA	0003382000	2
14	SPLIT PIN 3_16 X 1 1_2	0003383000	2
15	M10 Plain Washers	9001067-01	20
16	M10 Hex Self Lock Nut	9025100344	10
17	M10 X 40 HEX Hd. SET SCREW	9000100401	2
18	HEX HD SETSCREW M10x50	9000100501	2
19	HEX SOCKET SETSCREW	0003209000	1
20	1 bsp male to 3_4 bsp male adaptor	9532P00803	1
21	1" BSP BONDED SEAL	9031670-01	1
22	3/4" BSP BONDED SEAL	9532P00603	1
23	CONSTAFLO VALVE	9530P00411	1
24	WHEEL 275 25 4 51	0003381000	2
26	ADAPTOR PLATE_FOR GLOBE AIR MOTOR RM210	0003505660	1
27	M10 X 30 LG Hex Head Set screw	9000100301	6
28	LIFTING EYE	0393006000	1
29	M12X30 LG Hex Head Setscrew	9000120301	4
30	SPRING WASHER M12	9001279-01	4
31	AIR MOTOR CHASSIS	0314115000	1
32	AIR MOTOR SIDE DRIVE COUPLING 3_4 INCH BORE_6mm SQUARE KEY	0014112000	1

When ordering spares, please state: PUMP NUMBER, PART NUMBER, & the DESCRIPTION OF PART

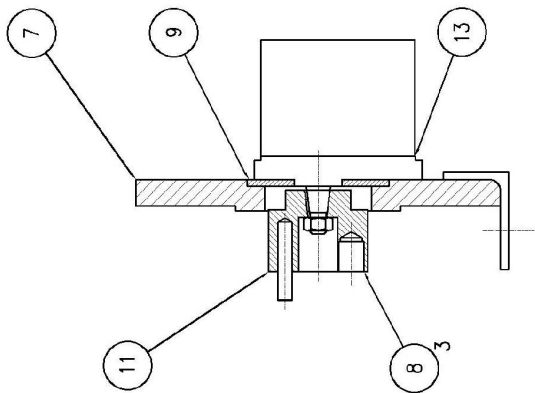
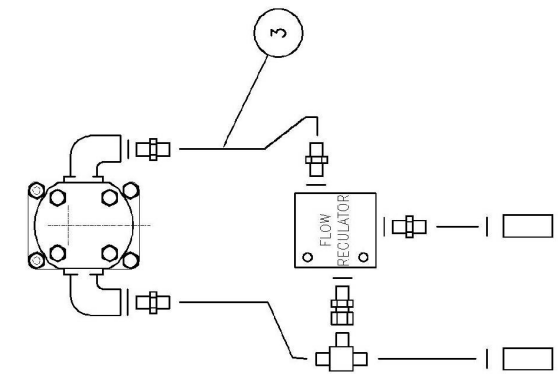


10.6 PD75 ELECTRIC STATIC ASSEMBLY - 2.2kW & 3.0kW

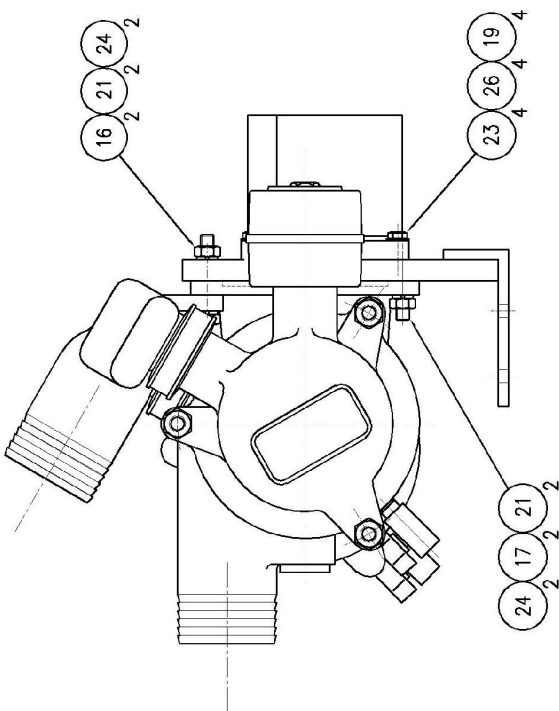
ITEM	DESCRIPTION	PART NUMBER	QTY
4	PD75 body Unit	Build dependant	1
5	2.2kW motor 400v / 3ph / 50Hz 6 pole 1000rpm	92202-0007	1
	3kW motor 400v / 3ph / 50Hz 4 pole 1450rpm	92203-0002	1
7	Motor Spacer	0003880019	2
8	Motor Half Coupling 2.2kW & 3kW	0395237000	1
9	Distance Collar	0396015000	1
10	Coupling Rubbers	0003211000	3
11	Adaptor Plate Electric Motor	0395238000	1
13	Support Plate 2.2 kW	0003509720	1
	Support Plate 3kW	0388020000	1
14	Static Chassis 2.2 kW & 3kW unit	0003509710	1
16	Lifting Eye	0394023000	1
17	Anti vibration mount	9680006000	4
22	3/8" BSF Hex. Hd. Bolts (Upper) x 2" lg	0003392000	2
23	3/8" BSF Hex. Hd. Bolts (Lower) x 1¾" lg	0006719000	2
24	Setscrew M8x20	9000080201	8
25	Hex Socket Capscrew M8 x 20	9005080201	4
26	Hex Setscrew M10 x 30	9000100301	4
27	Hex Bolt M10 x 40	9001100401	4
28	Hex Setscrew M12 x 30	9000120301	4
29	1/4"x 3/8" BSF Hex. Socket Setscrew	0003209000	2
33	3/8" Plain Washer	0003393000	4
34	M8 Plain Washer (form A- thin)	9030080024	4
35	M10 plain Washer	9030100024	4
38	Spring washer M12	9030120229	4
41	3/8" BSF Self Lock Nut	0003233B00	4
42	Hex Self locking nut M8	9025080344	8
43	Hex self locking nut M10	9025100344	8
	Drive Key (Supplied with Motor)		
	Pump Half Coupling (not illustrated)	0003309000	1
	Key - pump side coupling (not illustrated)	0003207000	1

When ordering spares, please state:

PUMP NUMBER PART NUMBER – DESCRIPTION OF PART



SCRAP SECTION ON COUPLING CENTRE LINE SHOWING
HYDRAULIC MOTOR PLATE, MOUNTING FLANGE, TAPERED
SHAFT AND COUPLING CONNECTION



10.7 PD75 – HYDRAULIC MOTOR MOUNTING

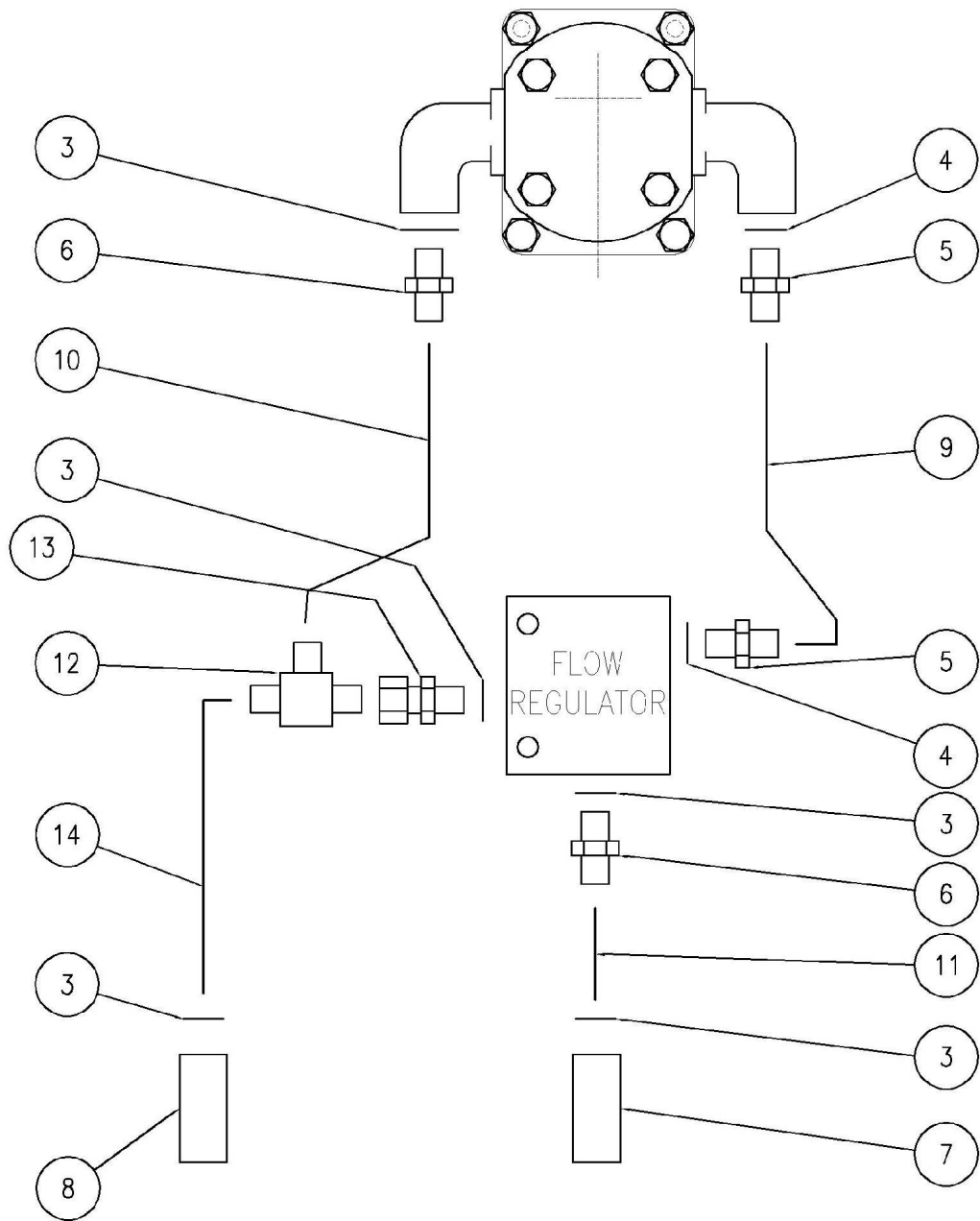
ITEM	DESCRIPTION	PART NUMBER	QTY
3	Hydraulic connection kit	0302326000	1
4	PD75 body Unit	Build dependant	1
7	Hydraulic motor plate	0391050000	1
8	Coupling Rubbers	0003211000	3
9	Locating Plate	0003508890	1
11	Hydraulic motor coupling	0003508910	1
13	Hydraulic motor c/w Flow regulator	9292160030	1
14	Lifting eye (not illustrated)	0303048000	1
16	3/8" BSF Hex. Hd. Bolts (Upper) x 21/2" lg	0002880000	2
17	Stud 3/8" BSF	9036121584	2
19	Setscrew M8x40	9000080401	4
21	3/8" BSF Self Lock Nut	0003233B00	4
23	M8 Plain Washer (form A- thin)	9030080024	4
24	3/8" Plain Washer	0003393000	4
26	Spring washer M8	9030080229	4
	Drive Key (Supplied with Motor)		
	Pump Half Coupling (not illustrated)	0003309000	1
	Key - pump side coupling (not illustrated)	0003207000	1

PD75 – HYDRAULIC site chassis Parts

ITEM	DESCRIPTION	PART NUMBER	QTY
	Tubular site chassis - hydraulic	0391049000	1
	Wheel	0003381000	2
	Split pin	0003383000	2
	Wheel washer	0003382000	2
	Regulator (flow control valve) mounting bracket	0302327000	1

When ordering spares, please state:

PUMP NUMBER PART NUMBER – DESCRIPTION OF PART

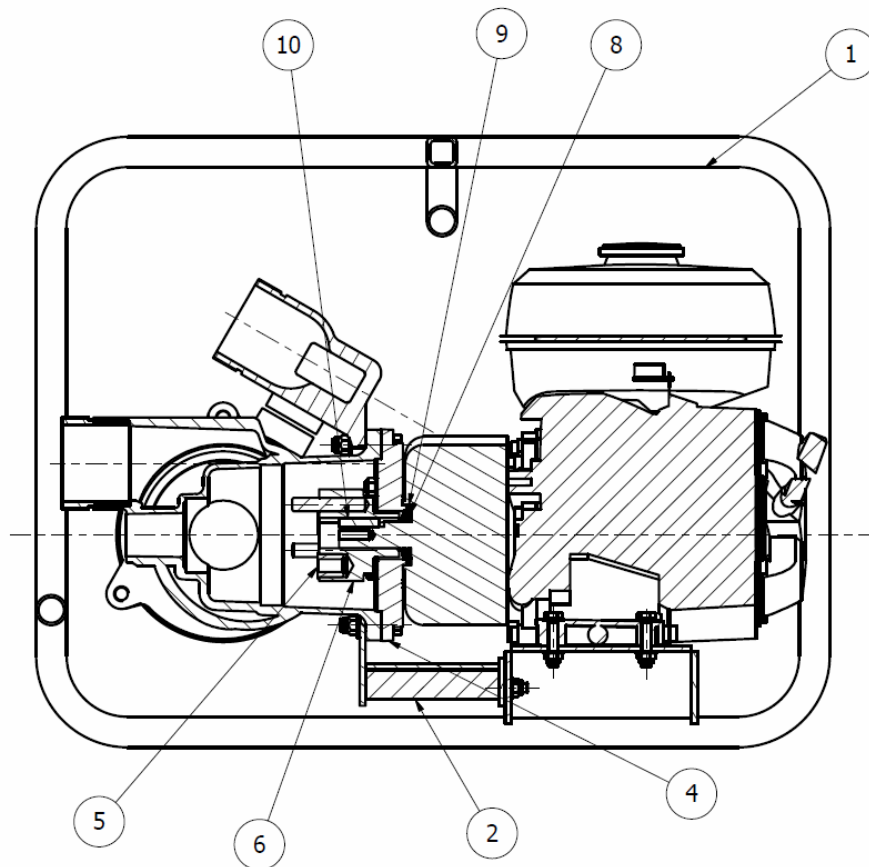
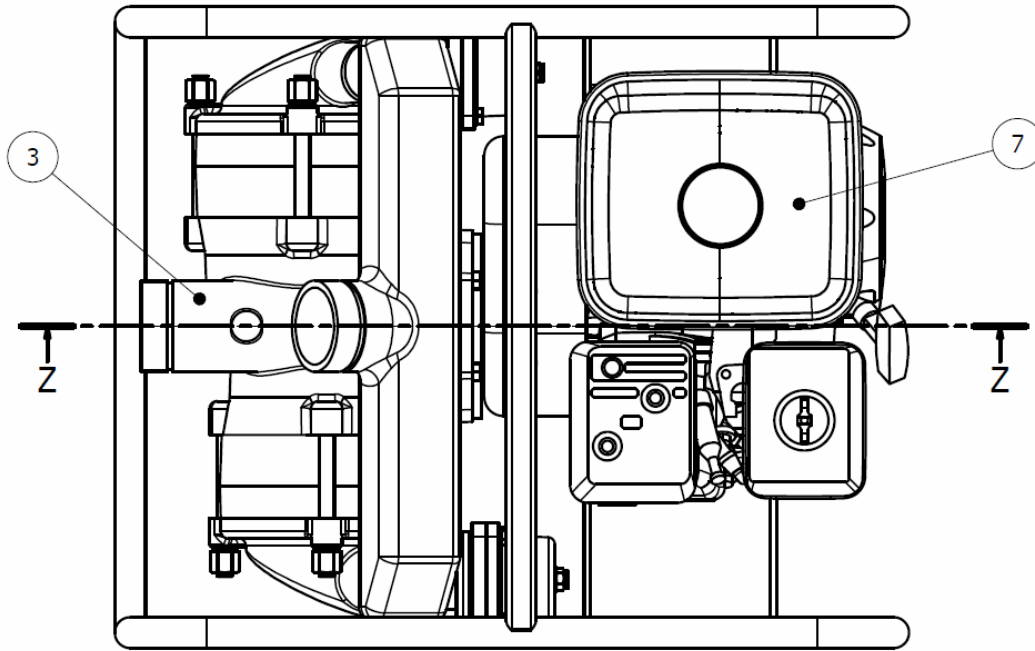


10.8 PD75 – HYDRAULIC MOTOR CONNECTION KIT BREAKDOWN

ITEM	DESCRIPTION	QTY
3	¾" Dowty washer	5
4	½" Dowty Washer	2
5	½" Male /Male connector	2
6	¾" Male / Male connector	2
7	¾" flat face Female quick release connector	1
8	¾" flat face Male quick release connector	1
9	½" Bore SAE100RT2 HOSE 455mm long	1
10	¾" Bore SAE100RT2 HOSE 402mm long	1
11	¾" Bore SAE100RT2 HOSE 300mm long	1
12	¾" Branch Tee	1
13	¾" Female/ Male swivel	1
14	¾" Bore SAE100RT2 HOSE 300mm long	1

When ordering spares, please state:

PUMP NUMBER PART NUMBER – DESCRIPTION OF PART



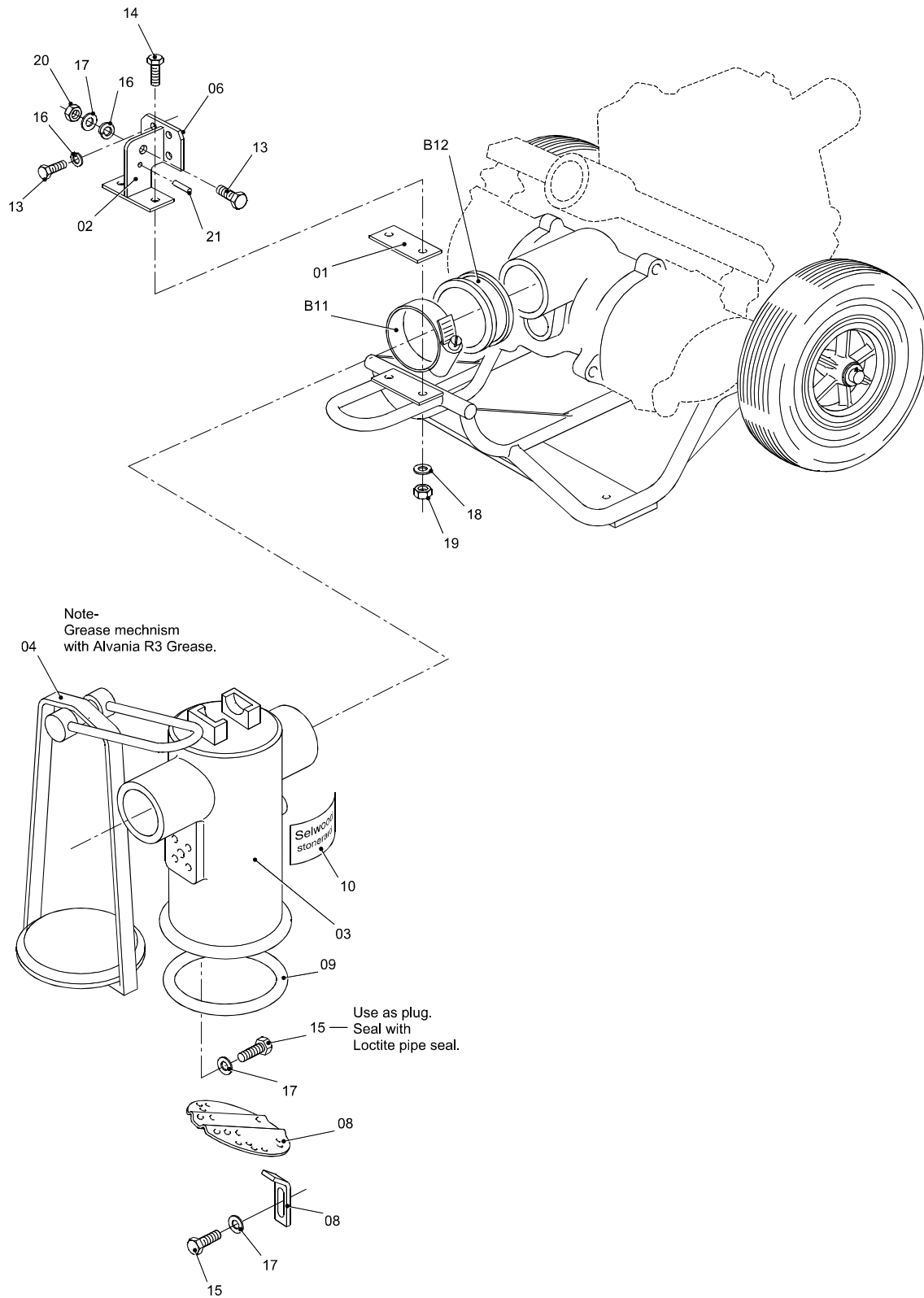
SECTION Z-Z

10.9 PD75 / HONDA GX160 PORTABLE - 0310002000

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Portable Chassis	0310003000	1
2	Pump Support Bracket	0310004000	1
3	PD75 Oil Thread Body Unit	000393030D	1
4	Adaptor Plate Honda	0003507380	1
5	Coupling Rubber	0003211000	5
6	Coupling – Honda	0003206L00	1
7	Honda GX160 RX	9226101020	1
8	Oil Seal Honda 3B	9127030070	1
9	'O'-ring Honda	9100240450	1
10	Key Honda 3B	9040073324	1

When ordering spares, please state:

PUMP NUMBER PART NUMBER – DESCRIPTION OF PART



10.10 Stone catcher MK2

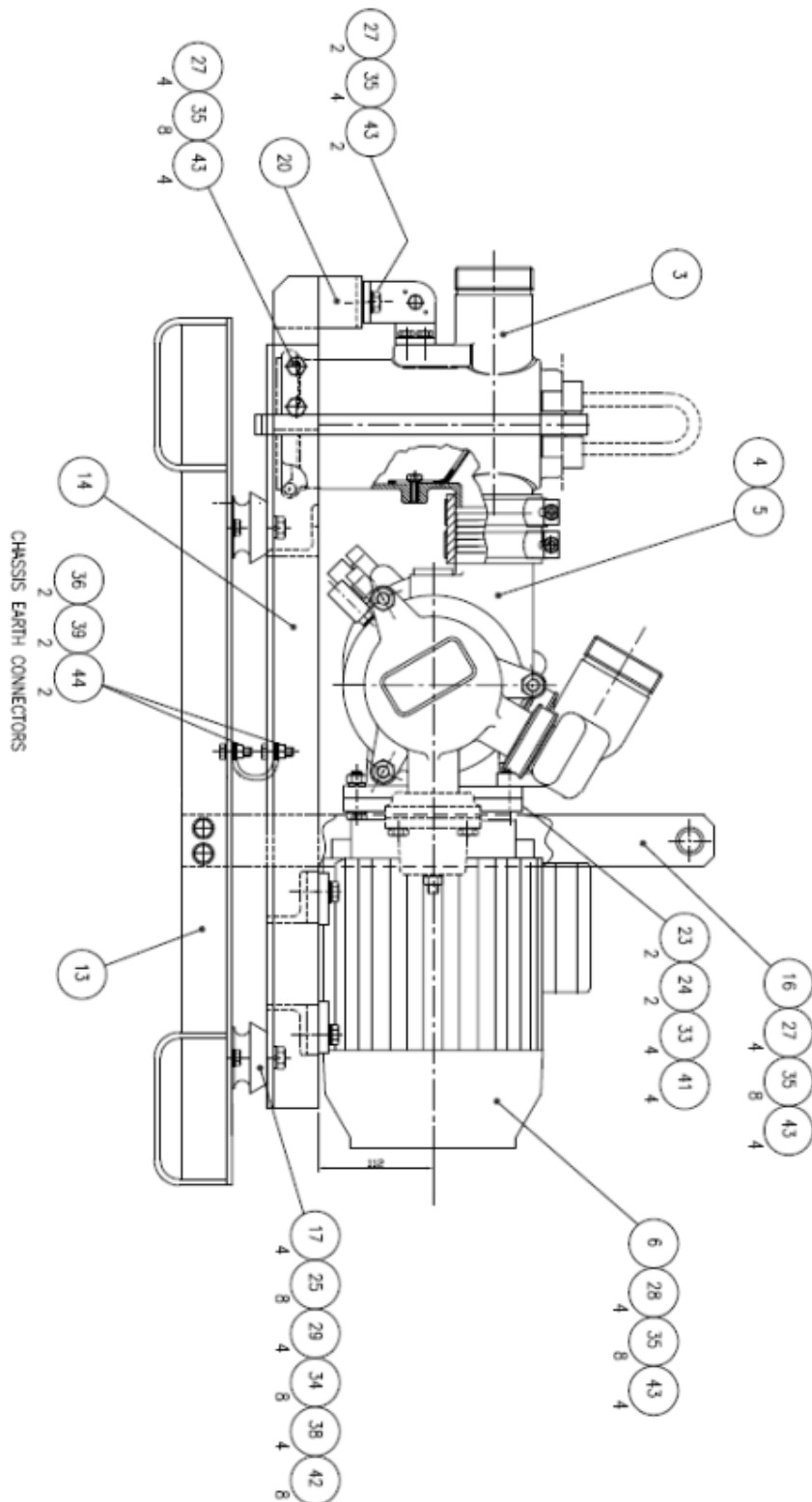
ITEM	DESCRIPTION	PART NUMBER	QTY
01	Shim	0388002000	1
02	Mounting Bracket Lower	0396141000	1
03	Body MK2	0003509780	1
04	Closure Mechanism	0003508140	1
06	Mounting Bracket Upper	0396140000	1
07	Strainer	0003508060	1
08	Strainer Clip	0003508070	1
09	3" Bauer Sealing Ring	9560003030	1
10	Stonecatcher Label	0003508150	1
11*	Hose Clip	9505M09701	2
12*	Connector	9501M07601	1
13	Hex. Hd. Set Screw M8 x 25	9000080251	5
14	Hex. Hd. Set Screw M10 x 50	9000100501	2
15	Hex. Hd. Set Screw M8 x 20 S.S.	9000080207	2
16	Spring Washer M8	9030080229	5
17	Plain Washer M8	9030080024	5
18	Plain Washer M10	9030100024	2
19	Hex. Lock Nut M10	9025100344	2
20	Hex Full Nut M8	9025080004	2
21	Spring Roll Pin	9000497-01	2

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

- Items 11 & 12 are available as Connector Kit - 0300413000

10.11 PD75 2.2Kw with Stone catcher Threaded Inlet/Outlet

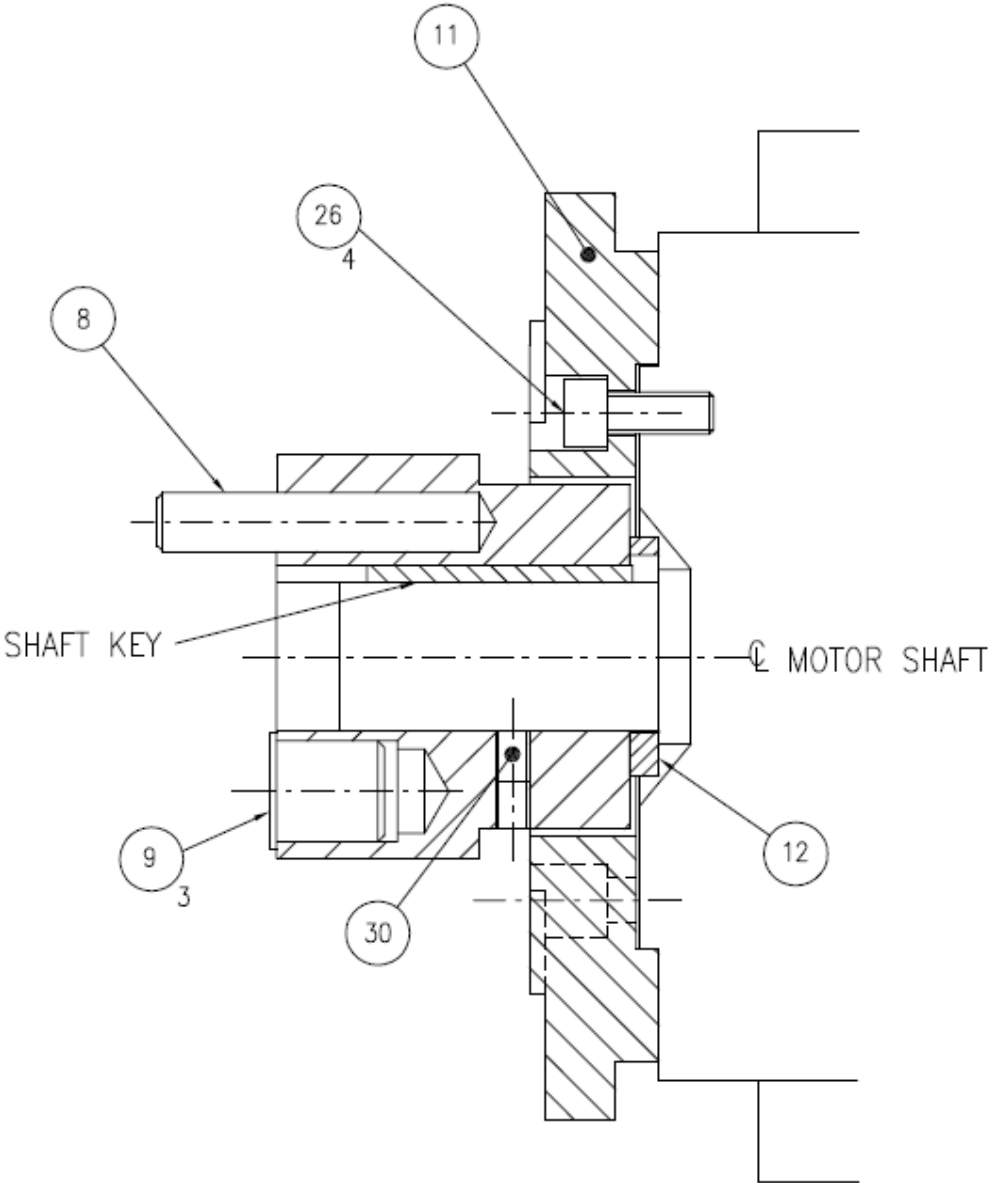


PD75 2.2Kw with Stone catcher Threaded Inlet/Outlet

ITEM	DESCRIPTION	PART NUMBER	QTY
03	S/CATCHER ASSY. Mk2 THREADED	0395234000	1
04	SPATE PD75 PUMP UNIT	000393030D	1
06	MOTOR 2.2KW,6 POLE,960RPM 400/600V/3PH-ALUM 112M FRAME	92202-0005	1
13	STATIC BASE CHASSIS	0396030000	1
14	STATIC CHASSIS	0313205000	1
15	3" SUCTION STRAINER	0003335200	1
16	LIFTING EYE	0394023000	1
17	ANTI VIBRATION MOUNT	9680006000	4
18	ID PLATE	0015071000	1
19	RATING PLATE	1594154000	1
20	SUPPORT BRACKET	0307290000	1
23	HEX HD BOLT 3/8" BSF x 2" LONG	0003392000	2
24	HEX HD BOLT 3/8" BSP x 1 1/2" LONG	0003391000	2
25	HEX HD SETSCREW M8x20	9000080201	8
27	HEX HD SETSCREW M10x30	9000100301	10
28	HEX HD BOLT M10x60	9001020-011	4
29	HEX HD SETSCREW M12X30	9000120301	4
33	PLAIN WASHER 3/8"/I/D x 3/4"/O/D x 18swg	0003393000	4
34	PLAIN WASHER M8	9030080024	8
35	PLAIN WASHER M10	9030100024	28
36	PLAIN WASHER M10	9000878-01	2
38	RECT SECT SPRING WASHER M12	9030120229	4
39	RECT SECT SPRING WASHER M8	9000879-02	2
41	HEX SELF LOCKING NUT 3/8" BSF	0003233B00	4
42	HEX SELF LOCKING NUT M8	9025080344	8
43	HEX SELF LOCKING NUT M10 x 1.5	9025100344	14
44	HEX NUT BRASS M8	9000808-01	2
45	HAMMER DRIVE SCREW	9045002259	4

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART



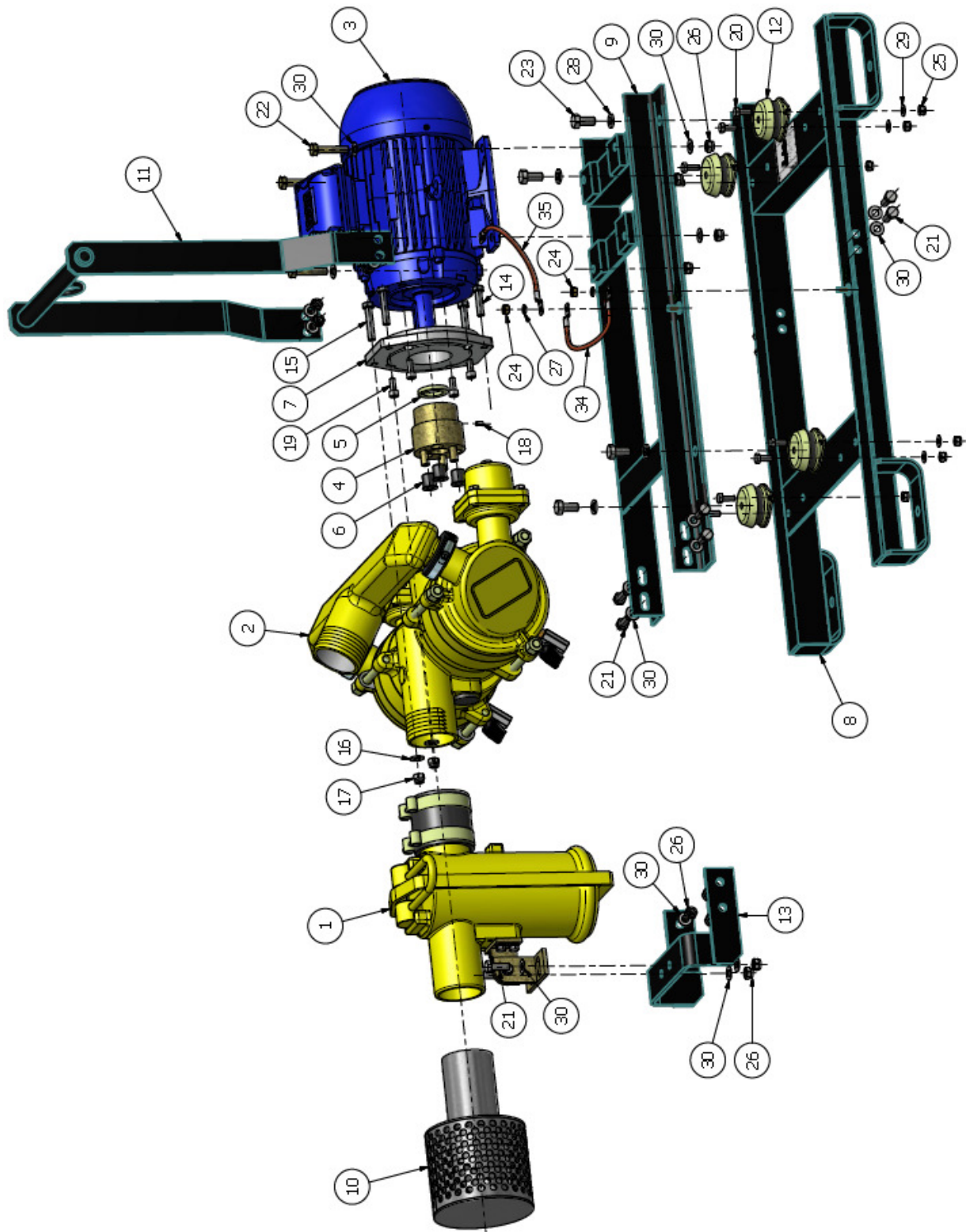
PD75 2.2Kw with Stone catcher Threaded Inlet/Outlet

ITEM	DESCRIPTION	PART NUMBER	QTY
08	COUPLING D112M	0395237000	1
09	COUPLING RUBBER	0003211000	3
11	ADAPTOR PLATE D112M	0395238000	1
12	DISTANCE COLLAR	0396015000	1
26	SOCKET CAP SCREW M8 x 1.25 x 20 LONG	9005080200	4
30	HEX SKT SETSCREW 1/4"BSF x 3/8"	0003209000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

10.12 PD75 3Kw with Stone catcher Threaded Inlet/Outlet - 0316177000



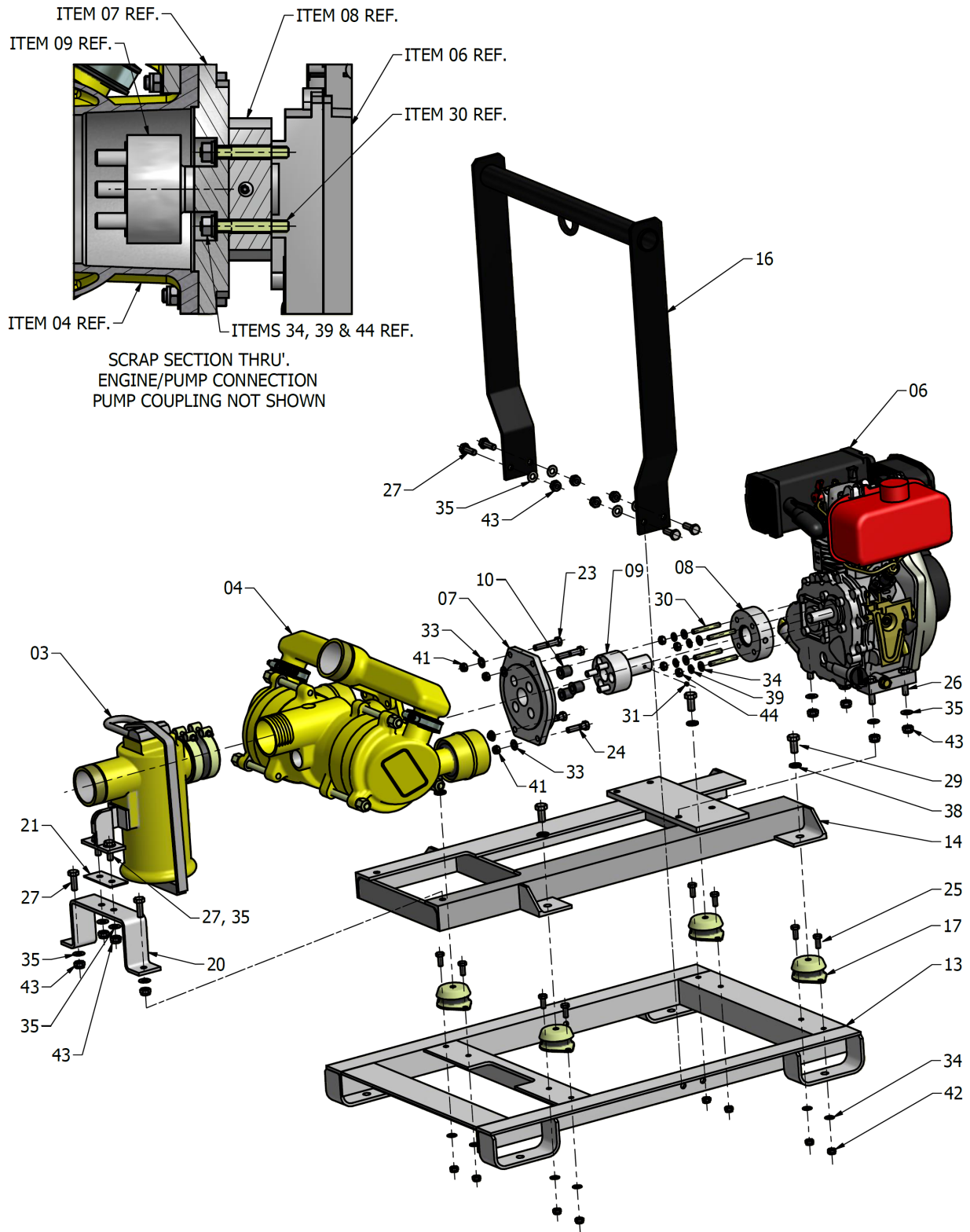
PD75 3Kw with Stone catcher 3" Inlet/Outlet Spigots - 0316177000

ITEM	DESCRIPTION	PART NUMBER	QTY
01	S/CATCHER ASSY. Mk2	0388026000	1
02	SPATE PD75 PUMP UNIT	0395196000P	1
03	MOTOR 3KW,4 POLE,1450RPM 415V/50/3PH	92203-0002	1
04	COUPLING	0395237000	1
05	DISTANCE COLLAR	0396015000	1
06	COUPLING RUBBER	0003211000	3
07	ADAPTOR PLATE	0395238000	1
08	STATIC BASE CHASSIS	0396030000	1
09	STATIC CHASSIS	0308158000	1
10	3" SUCTION STRAINER	0003335200	1
11	LIFTING EYE	0394023000	1
12	ANTI VIBRATION MOUNT	9680006000	4
13	SUPPORT BRACKET	0307290000	1
14	HEX HD BOLT 3/8" BSP x 1 1/2" LONG	0003391000	2
15	HEX HD BOLT 3/8" BSF x 2" LONG	0003392000	2
16	PLAIN WASHER 3/8" I/D x 3/4" O/D x 18swg	0003393000	4
17	HEX SELF LOCKING NUT 3/8" BSF	0003233B00	4
18	HEX SKT SETSCREW 1/4"BSF x 3/8"	0003209000	1
19	SOCKET CAP SCREW M8 x 1.25 x 20 LONG	9005080200	4
20	HEX HD SETSCREW M8x20	9000080201	8
21	HEX HD SETSCREW M10x30	9000100301	10
22	HEX HD BOLT M10x50	9001100501	4
23	HEX HD SETSCREW M12X25	9000120251	4
24	HEX NUT BRASS M8	9000808-01	2
25	HEX SELF LOCKING NUT M8	9025080344	8
26	HEX SELF LOCKING NUT M10 x 1.5	9025100344	14
27	RECT SECT SPRING WASHER M8	9000879-02	2
28	RECT SECT SPRING WASHER M12	9030120229	4
29	PLAIN WASHER M8	9030080024	8
30	PLAIN WASHER M10	9030100024	28
34	EARTH BONDING LEAD 1		1
35	EARTH BONDING LEAD 2		1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

10.13



PD75/Yanmar L48 Diesel Static with s/catcher

ITEM	DESCRIPTION	PART NUMBER	QTY
03	S/CATCHER ASSY. Mk2 THREADED	0395234000	1
04	SPATE PD75 PUMP UNIT THR'D'D. OUTLET	000393030R	1
06	YANMAR L48 DIESEL ENGINE RECOIL START	9203101020	1
07	ENGINE ADAPTOR PLATE	0393010000	1
08	SPACER	0393008000	1
09	ENGINE COUPLING	0393009000	1
10	COUPLING RUBBER	0003211000	3
13	BASE SKID	0314004000	1
14	STATIC CHASSIS	0314005000	1
15	3" SUCTION STRAINER (NOT SHOWN)	0003335200	1
16	LIFTING EYE	0314006000	1
17	ANTI VIBRATION MOUNT	9680006000	4
20	SUPPORT BRACKET	0314007000	1
23	HEX HD BOLT 3/8" BSF x 2" LONG	0003392000	2
24	HEX HD BOLT 3/8" BSP x 1 1/2" LONG	0003391000	2
25	HEX HD SETSCREW M8x20	9000080201	8
26	HEX HD BOLT M10x45	9001100451	4
27	HEX HD BOLT M10x30	9001100301	8
29	HEX HD SETSCREW M12X25	9000120251	4
30	STUD M8	9000850-01	4
31	HEX SOC SETSCREW 1/4"BSFx1/4" LG	0002033000	1
33	PLAIN WASHER 3/8" I/D x 3/4" O/D x 18swg	0003393000	4
34	PLAIN WASHER M8	9030080024	12
35	PLAIN WASHER M10	9030100024	14
38	RECT SECT SPRING WASHER M12	9030120229	4
39	RECT SECT SPRING WASHER M8	9030080229	4
41	HEX SELF LOCKING NUT 3/8" BSF	0003233B00	4
42	HEX SELF LOCKING NUT M8	9025080344	8
43	HEX SELF LOCKING NUT M10 x 1.5	9025100344	12
44	HEX FULL NUT M8	9025080004	4

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

11 NOTES