

OPERATING AND MAINTENANCE

Close coupled gear pumps

G: N style

G: N style duplex set

G: V style

**THIS MANUAL SHOULD BE USED ALONGSIDE THE ALBANY STANDARD
INSTALLATION, OPERATION AND MAINTENANCE MANUAL**

Albany's 24-page brochure is
available as a download at
www.albany-pumps.co.uk



www.albany-pumps.co.uk +44 (0) 1594 842 275

Head Office and Manufacturing Centre

Albany Engineering Company Ltd
Church Road, Lydney
Gloucestershire, GL15 5EQ
United Kingdom

t: +44 (0) 1594 842 275
Head Office Option 1

e: salesdept@albany-pumps.co.uk

Service and Repair Centre

Albany Engineering Company Ltd
Richter Works, Garnett Street
Bradford BD3 9HB
United Kingdom

t: +44 (0) 1594 842 275
Service and Repair (Option 2).

e: servicedept@albany-pumps.co.uk

INTRODUCTION	3
HEALTH & SAFETY	4
LIMITS OF USE	4
NOISE	4
PUMP INSTALLATION / MAINTENANCE	5
WORK ON ELECTRICAL EQUIPMENT	6
WORKING ON PRESSURISED SYSTEMS	6
COSHH	6
INFORMATION ON ALBANY PUMPS	7
TECHNICAL / DESCRIPTION	7
OPERATING PRINCIPLE	7
RECEIVING THE PUMP	8
LIFTING OF GEAR PUMPS	9
INSTALLATION	10
DIRECTION OF ROTATION	10
BUILD CONFIGURATION	10
REVERSING YOUR PUMP ROTATION	10
DUPLEX PUMPS	11
DUPLEX PUMP SET OPERATING INSRUCTIONS	11
VP PUMP SEAL REPLACEMENT	12
25 & 40 SERIES SEAL REPLACEMENT	13
SPARES	14
VP PUMPS	14
25 & 40 SERIES PUMPS	15
56 SERIES PUMPS	16
CONTACTS	17

This manual is a supplement to the standard Albany operating and maintenance manual and contains general instructions for the storage, installation, operation and maintenance of the following Albany gear pumps.

- GN Style 25 Series – close coupled
- GN Style 40 Series – close coupled
- GN Style 56 Series – close coupled
- GN Style Duplex Pump Set
- GV Style

To get the best from the pump, carefully read and understand the Albany operating & maintenance manuals before installation and start-up. Albany cannot anticipate all of the situations a user may encounter while installing and using Albany products. Therefore, the user of an Albany product **MUST** know and follow all applicable industry specifications on the safe installation and use of these products.

Albany Engineering Company Limited will not be held responsible for any consequence due to the improper use of the pump.

USING THIS MANUAL

- Read and understand the manual. Contact us if anything is not clear.
- Keep the manual for the life of the pump
- If pump maintenance is necessary use this manual for safety and technical information.
- For safe working observe the operating and maintenance instructions for associated motors, engines, couplings and relief valves.

The following are general safety precautions not related to any specific procedure, however, the United Kingdom Health and Safety At Work Act 1974 Section 6(a) requires manufacturers to advise their customers on the safety and the handling precautions to be observed when installing, operating, maintaining and servicing their products.

Personnel must understand and apply these precautions during both operating and maintenance of the pump. The user's attention is therefore drawn to the following:

1. The appropriate sections of this manual must be read before working on the equipment.
2. Installation and servicing must only be carried out by suitably trained or qualified personnel.
3. Normal safety precautions must be taken and appropriate procedures observed to avoid accidents

The following symbols are used throughout this manual to draw attention



Warning – non compliance with this point could result in injury/harm



Refers to electrical safety points which can cause injury/harm



Cautions, Safe operation of pump

LIMITS OF USE



The pump/pump sets must not be subjected to pressures and temperatures in excess of those for which it was originally quoted and supplied. It must not be subjected to extremes of temperature and/or humidity for which it was not designed.

- Never use heat to disassemble the pumps due to risk of explosion from trapped liquid.
- Never operate the pump without all guards correctly installed.
- Never operate the pump beyond the rated conditions for which the pump was originally sold.
- Never run the pump when dry.
- Always lock out and post a permit on the power to the driver before performing any pump maintenance.
- Never operate the pump with discharge valve closed.
- Never operate the pump with suction valve closed.

NOISE

On certain installations, pump models and at certain operation points shown on the pump curves a noise level of 80 dB, can be exceeded.

When working in a pump house check the noise.

Above 70 dBA, wear ear defenders.

Above 85 dBA, wear ear defenders and limit your time working in this area.

Remove the pump to somewhere quieter to carry out any maintenance.

PUMP INSTALLATION / MAINTENANCE

Please install your pump in accordance with the latest National Safety Regulations.

Before working on an installed pump:

- 1) Hazardous liquid – drain and clean the system
- 2) Depressurise the pump and all lines
- 3) Disconnect the power supply. Lock it off, post a permit
- 4) Disconnect the shaft coupling

It is hazardous to:

- 1) Run the pump without the coupling guard fitted
- 2) Change the use of the pump or modify it without Albany approval
- 3) Fail to maintain the pump, as this can cause injury or fire

The pump user is responsible for the safe use of the pump.

Alterations to your pump are not allowed.



Pumps can be dangerous if they are:

- *incorrectly installed*
- *incorrectly used*
- *not serviced*



Restrict access to the pump to competent people.



Use the correct tools for maintenance.



*Lock off the electric starter; post a permit to prevent unauthorised starting.
Switch off and isolate any electrical heating system.*



Do not touch rotating parts.



Wear your PPE and goggles.



Assume that the pump is hot, check; allow to cool before starting work.



In the case of pumps for hot liquids allow to cool. Shut off all oil or steam heating systems, vent them when cool.



Consider whether the pump or its parts may topple over. Take care to avoid injury from falling parts, especially if the pump is large or heavy.

WORK ON ELECTRICAL EQUIPMENT

Take extra care when working with any electrical equipment associated with the operation of the pump; check that the motor terminals are not live even after switching off the supply. Earthing - ensure the pump has a proper ground connection.



Do not attempt any inspection or repair before disconnecting the pump set from the electric supply.

Where possible lock off the switch gear and post a permit on it, yourself. Test that the motor terminals are not live before starting work.



Do not work on wet equipment



Only use a qualified electrician

Refer to original manufacturer of motor / engine for maker's installation manual.

WORKING ON PRESSURISED SYSTEMS

Check and observe the system pressure regularly.



Liquids under pressure can cause injury, wear goggles and PPE



Vent all pressure containing parts to atmosphere, taking care in case the system is under pressure.

First close all valves.

Bleed the pump and system; this includes any thermal oil heating system.

Take great care with toxic/hazardous liquids.

COSHH



Control Of Substances Hazardous To Health

As far as we are aware there are no hazardous substances present in this Albany pump when it leaves our works. However, we cannot confirm that product to be handled by the pump, or any reaction of those products that are pumped and any adjacent materials are not hazardous.

TECHNICAL / DESCRIPTION

The Albany gear pump is an external gear positive displacement pump which consists of two counter-rotating shafts. The gears (rotors) which are attached to these shafts mesh together retaining a limited clearance and rotating freely inside the pump casing bores.

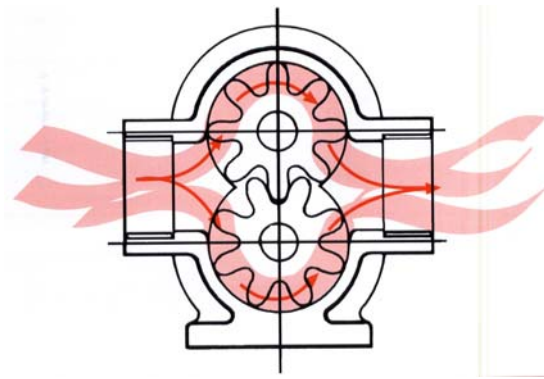
The pumping rotors are contained within a rigid housing which is securely fixed together with mating faces being sealed by the use of a gasket or O-ring to prevent leakage of fluid under pressure.

The driving shaft of the pump (VP pumps the shaft protrudes from the motor into the pump casing) is sealed to prevent leakage of the pumped fluid by means of mechanical seal or lipseal.

Note: Drive to the pump is achieved via the motor shaft entering the pump casing.



OPERATING PRINCIPLE



Liquid flows into the pump through the inlet (suction) branch (screwed or flanged connection); is carried round by the rotating rotors and pumped out of the outlet (delivery) port (screwed or flanged connection). Contact between the gear teeth separates and seals the suction side from the delivery side of the pump. This creates the vacuum which allows atmospheric pressure or a positive suction head to get the liquid into the pump. All the time the pump is rotating, liquid will be moved from the suction side to the discharge side.

BEFORE STARTING UP. Make sure the pump rotates freely. To check this, the fan cowl can be removed and the shaft rotated by turning the fan. Replace the fan cowl before switching on.

Before commencing on any work on the pump, ensure that the motor is isolated and any pressure is relieved from the pump casing.

RECEIVING THE PUMP



Read this manual before installing, operating or working on the pump.

Before reaching you, Albany will have run in, tested and recorded the pump performance in accordance with your enquiry and order.

This means that the design, materials, and workmanship incorporated in the construction of Albany pumps make them capable of giving, trouble-free service. The life and reliability of any pump, however, is enhanced by:

- correct application
- proper installation
- periodic inspection, condition monitoring
- careful maintenance/servicing

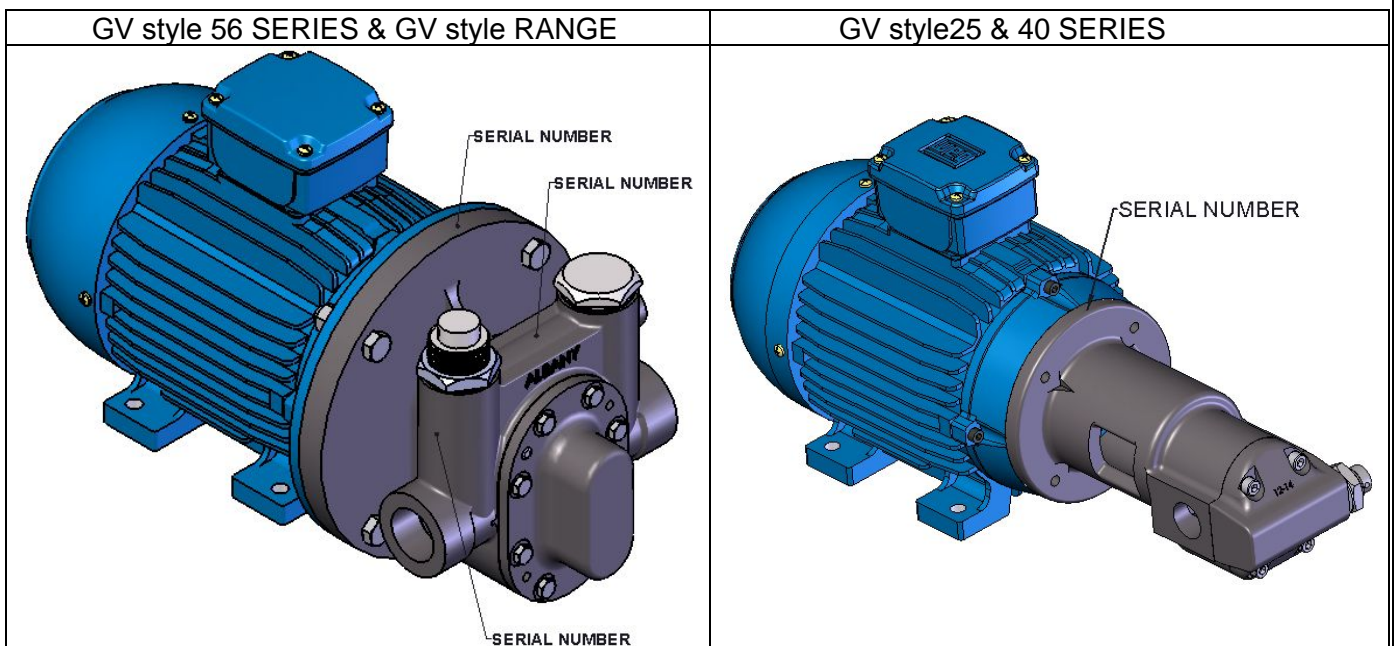
These pumps can transfer a wide range of light, medium and heavy viscosity liquids, depending on design and components, however **they are not intended for use with water.**

Inspect the pump as soon as it is received. Carefully check that everything is in good order. Make notes of damage or missing items on the receipt and freight bill.

Should any problems occur with the pump in its lifetime we have a spares and repair service. The use of genuine Albany parts will provide the safest and most reliable operation of your pump. ISO certification and quality control procedures ensure the parts are manufactured to the highest quality and safety levels. Please contact Albany for details on genuine pump parts.

Please e-mail: sales@albany-pumps.co.uk (GV style pumps)
asp@albany-pumps.co.uk (GN style 25,40,56 Series Duplex pumps)

To help us identify the pump Albany will need to know the pump serial N^o which is stamped into the pump casing. Typical positions for serial number are shown below.



LIFTING OF GEAR PUMPS

Take care when moving the pump. Rough treatment or lifting in an unsuitable way may cause permanent damage.



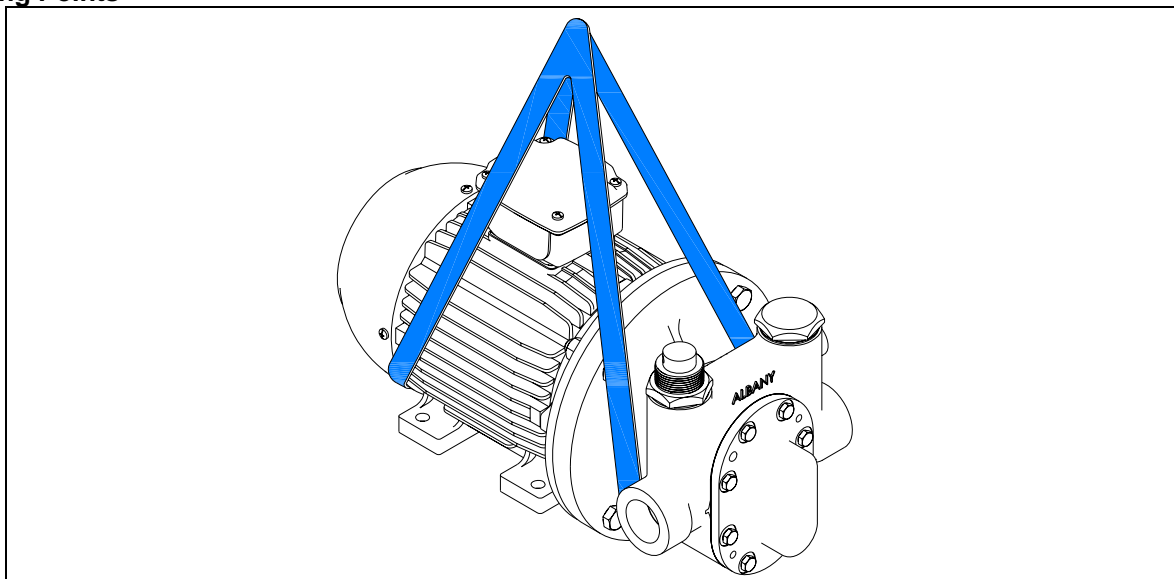
All operations must be carried out by properly trained personnel

Use the lifting points provided. Do not lift pump sets using the motor lifting lug. Recommended hand lift is 21 kg (44 lbs) below shoulder, but above ground level. The pump should never be lifted by the shaft end.

Before lifting the pump set, check the weight of the delivery from the delivery note.

Be careful when moving pumps. Lifting equipment must be able to adequately support the entire assembly.

Lifting Points



Most pumps below size VP5 are under the safe hand lift weight of 21kg.

Weights approximate (kg):

VP5	23	25-375 / 71 motor	9.5	40-1300 / 90 motor	24
VP6	31	25-750 / 71 motor	10	40-1750 / 90 motor	24.5
VP7	35	25-1500 / 71 motor	10.5	40-2750 / 90 motor	26
VP8	46	25-2000 / 71 motor	11	40-1300 / 100 motor	33
VP9	57	25-375 / 80 motor	12	40-1750 / 100 motor	34
56-2250 / 90 motor	38	25-750 / 80 motor	12.5	40-2750 / 100 motor	35.5
56-2250 / 132 motor	94	25-1500 / 80 motor	13	40-1300 / 112 motor	41
56-3250 / 90 motor	44	25-2000 / 80 motor	13.5	40-1750 / 112 motor	42
56-3250 / 132 motor	98	25-1500 / 90 motor	18.5	40-2750 / 112 motor	43.5
56-4500 / 90 motor	61	25-2000 / 90 motor	19		
56-4500 / 132 motor	161				



*Lifting motors: check that the eyebolt is fully screwed in.
Do not use this eyebolt to lift the complete pump set.*

DIRECTION OF ROTATION

Pumps can be run in either direction and when reversed the direction of flow is reversed. It is advisable to keep the original rotation as a pressure relief system is provided in the covers to prevent hydraulic noise. Some pumps have internal relief passages between suction areas and the gland or seal. These are used to reduce gland pressures and become inoperative in reverse rotation. The Relief Valve becomes inoperative in reverse. In most pumps the valve can be moved to operate with the new rotation (see drawing of Build Configurations)

BUILD CONFIGURATION

The handing of a pump indicates the direction of flow through the pump looking on the motor drive shaft.

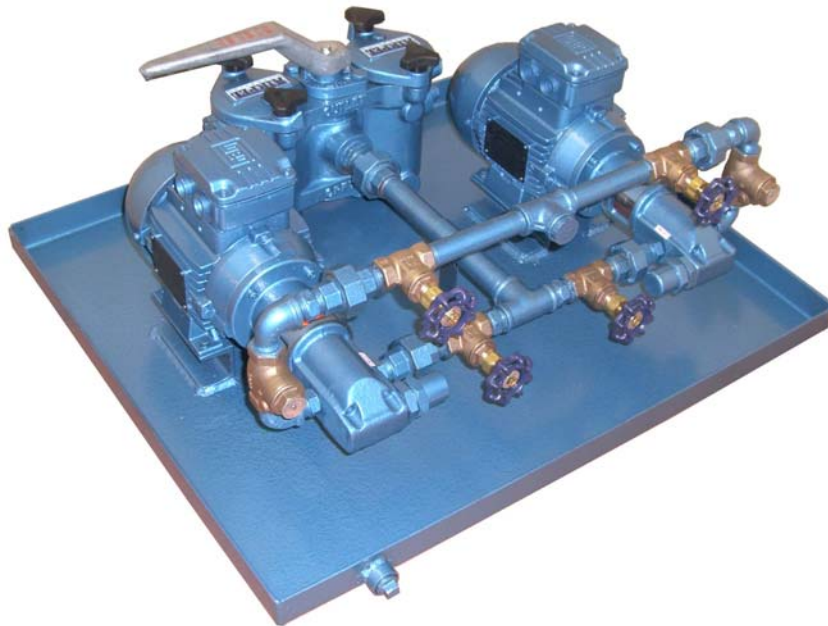
All views below are looking on the pump back cover and show a relief valve pump (these views will apply equally to a non relief valve pump).

	VP RANGE & 56 SERIES	25 & 40 SERIES
<p>Top Drive/ Anti Clockwise Rotation (Left hand pump – Flow from right to left)</p>		
<p>Top Drive/ Clockwise Rotation (Right hand pump – Flow from left to right)</p>		

REVERSING YOUR PUMP ROTATION

To preserve your warranty, please phone us first before making any changes, have the serial number to hand.
 It maybe that to reverse the direction of rotation on your build of pump could create a hazardous situation.
 If you have a pump fitted with a pressure relieved seal / gland this will not work in reverse rotation.

Duplex Pump sets are based on the 25, 40, 56 or VP series of pumps. For spares follow the relevant pages in this manual.



DUPLEX PUMP SET OPERATING INSTRUCTIONS

Ensure motors are wired for correct rotation, the left hand pump runs clockwise and the right hand pumps runs anti-clockwise (viewed from pump end of the set).

See motor manufactures instructions inside terminal box for wiring instructions.

Open **every** gate valve fully, on suction and delivery pipe work to both pumps.

Select filter basket to be used by moving the lever on top of the filter unit.

Start the motor on the left hand pump check for flow and stop the motor.

Start the motor on the right hand pump check for flow and stop the motor.

The pump set is now ready for operation.

Run the left hand pump for three months.

Stop the motor and start the right hand pump run for three months.

Repeat the above cycle ever three months.

After six months move the lever on top of the filter unit through 180 degrees. The filter basket not covered by the handle should be removed and cleaned.

Replace the filter basket and repeat this cycle every six months.

Should a problem be experienced with either pump, stop the motor, start the motor of the other pump. Close the suction and delivery gate valves on the pumps giving problems. Loosen the swivel union joint next the pump and remove for examination.

Rectify the problem replace the pump and open the gate valves.

VP PUMP SEAL REPLACEMENT

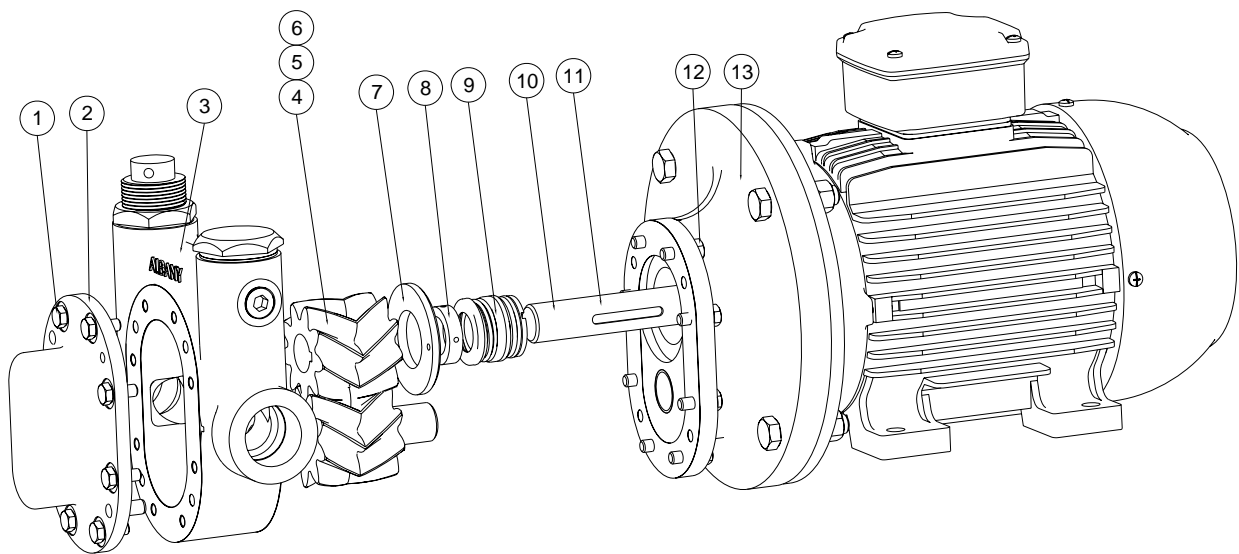
The shaft seal is often the most sensitive component in a pump as it must seal between a rotating shaft and the stationary pump housing on VP pumps Albany use a mechanical seal.

The Mechanical seals consist of two parts.

- 1) Rotary face assembly with spring(s) fixed to drive shaft
- 2) Stationary face mounted to the clamp plate

Seal faces are lapped to high standards of flatness. Mating materials are chosen for long life operation in the pumped liquid by Albany's seal supplier.

A bleed hole has been drilled in the bottom of the pump front cover (item 13), so that if the mechanical seal fails oil will be seen to come from this hole. The pump should be disconnected from the main supply and the mechanical seal replaced or returned to Albany for repairs.



To replace the mechanical seal it is necessary to dismantle the pump.

First unscrew the setscrews (item 1) from the back cover (item 2).

With the smaller size of pump the screws pass through the body (item 3) and engage in the front cover so that the body, following shaft and rotors (items 4,5,6) can be removed along with the back cover.

With the larger size of pump the setscrews between the body and front cover must be unscrewed. The driving rotor (item 4) is a sliding fit on the motor shaft key (item 11) and when this and the seal cover plate (item 7) are removed the grub screw locating the seal collar (item 8) can be unscrewed and the seal rotating member (item 9) withdrawn. To replace the seal seat it is necessary to remove the front cover (item 11) from the motor by removing the holding screws (item 12). It is advisable to renew gaskets when re-assembling the pump. Alternative methods may be used to retain the seal. If in doubt check details with Albany.

Sizes VP5 & under are re-assembled with gasket cement. This material must be used very sparingly. After assembly hand rotate the unit adding oil to clean any traces of cement from the gear teeth.

Remove the pump head from the motor, and remove coupling hub from the drive shaft.

Gland Packing

Remove gland follower and extract old packing rings (4 off). Check gland area of shaft for wear. Refit new packing pieces around shaft and press into chamber ensuring the joints of each piece are staggered at 90° angles. Refit gland follower and tighten screws until resistance is felt. Ensure shaft rotates and further tighten each screw by 1/6th of a turn.

Lip Seals

Remove old lip seals (1 or 2 fitted). Tape over keyway in drive shaft and push seal down shaft, ensuring it is the right way round, to locate in the seal chamber. Tap 'squarely' into chamber to shoulder stop with clean-ended dolly. If pump was fitted with 2 seals fit the second in the same way.

Note! Pumps fitted with lip seals must not be subjected to a static pressure exceeding 0.3 Bar.

Mechanical Seals

Remove 4 screws securing the collar containing the seal face and remove the static face from the collar. Remove the rotating element of the seal. Tape over keyway in drive shaft and apply a light coating of silicone grease. Slide the rotating section down the shaft and position against step on shaft. Fit new static face to collar and fit collar back in pump using a new gasket (ensure all faces the gasket mates with are thoroughly cleaned).

For pedestal pumps follow the above instructions.

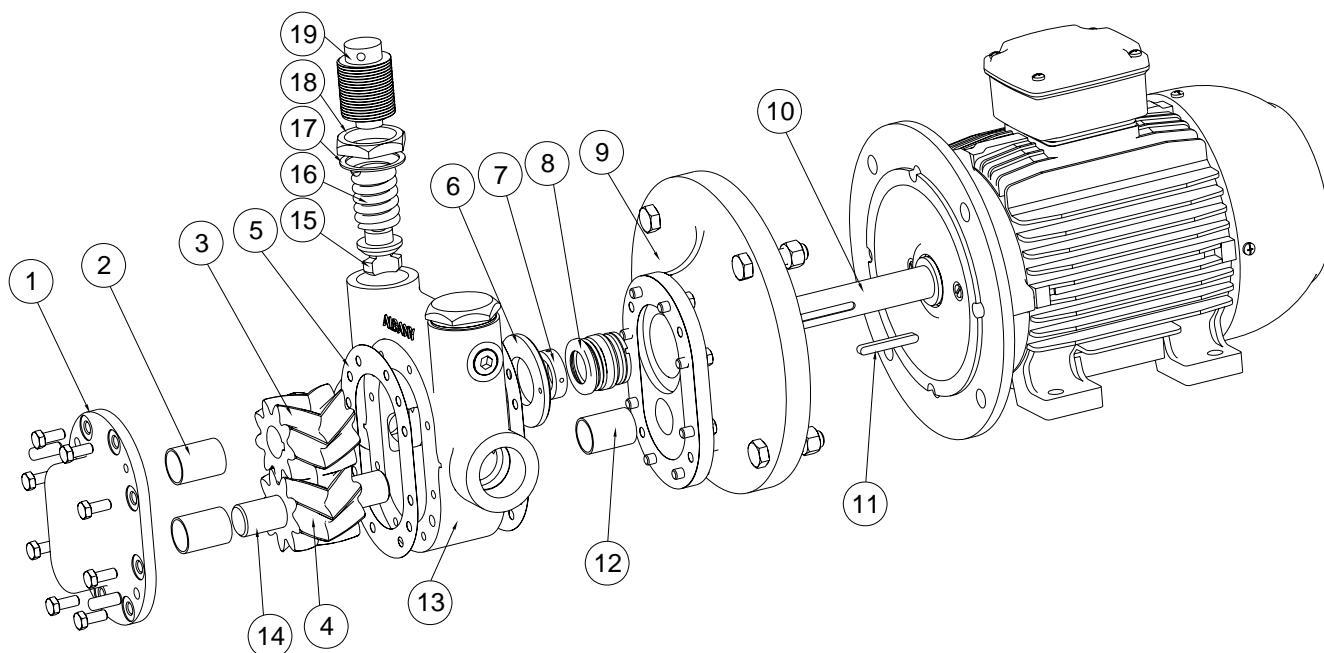
To ensure the correct spares are supplied we need to know the pump serial number which is stamped into the metal of the pump body, or cover, in a prominent position on the top area of the pump (not motor).

Make sure that the correct spares are to hand before starting work on the pump.
Contact our works if you need assistance before starting the job.

VP PUMPS

Recommended spares (*)

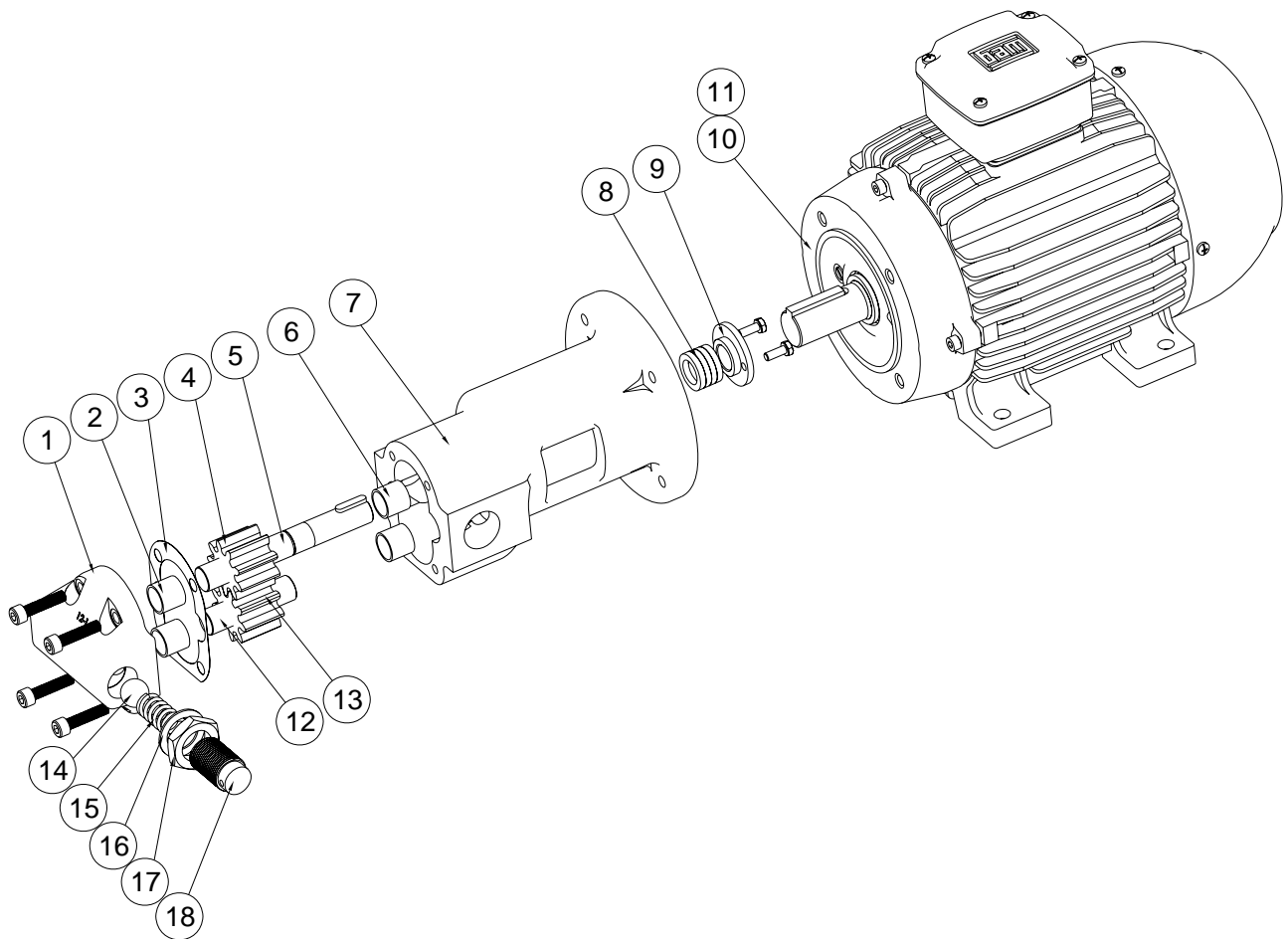
- | | | | |
|----|---------------------|----|---------------------|
| 1 | Back Cover | 11 | Rotor key |
| 2 | Bush – Back Cover * | 12 | Bush – Front Cover* |
| 3 | Drive Rotor * | 13 | Body |
| 4 | Driven Rotor * | 14 | Driven Shaft * |
| 5 | Gasket – Body * | 15 | Relief Valve |
| 6 | Seal Cover Plate | 16 | Spring |
| 7 | Seal Collar | 17 | Sealing Washer |
| 8 | Mechanical Seal * | 18 | Locknut |
| 9 | Front Cover | 19 | Adjusting Screw |
| 10 | Motor | | |



25 & 40 SERIES PUMPS

Recommended spares (*)

- | | | | |
|---|-----------------------|----|----------------------|
| 1 | Back Cover | 10 | Motor |
| 2 | Bush – Back Cover * | 11 | Coupling (not shown) |
| 3 | Gasket – Body * | 12 | Driven Shaft * |
| 4 | Drive Rotor * | 13 | Driven Rotor * |
| 5 | Drive Shaft * | 14 | Relief Valve |
| 6 | Bush – Front Cover* | 15 | Spring |
| 7 | Body | 16 | Sealing Washer |
| 8 | Shaft Sealing* | 17 | Locknut |
| 9 | Gland / Seal Housing* | 18 | Adjusting Screw |



56 SERIES PUMPS

Recommended spares (*)

- | | | | |
|----|---------------------|----|-----------------|
| 1 | Back Cover | 11 | Mounting Skirt |
| 2 | Bush – Back Cover * | 12 | Motor |
| 3 | Drive Shaft * | 13 | Driven Shaft * |
| 4 | Drive Rotor * | 14 | Driven Rotor * |
| 5 | Gasket – Body * | 15 | Body |
| 6 | Gasket – Body * | 16 | Adjusting Screw |
| 7 | Bush – Front Cover* | 17 | Locknut |
| 8 | Front Cover | 18 | Sealing Washer |
| 9 | Shaft Sealing* | 19 | Spring |
| 10 | Coupling | 20 | Relief Valve |

