VARLEY

Motorised Pumps
Models 001 to 225

Operating, Installation
& Maintenance Manual

Certificate of Incorporation (Typical)

Declaration	
We Varley Pump Limited hereby declare that the following machinery has been designed to be safely incorporated into other machinery and must not be put into service until the relevant machinery into which it has been incorporated has been declared in conformance with the essential health and safety requirements of the Machinery Directive 2006/42/EC	
Machine Description	Gear Pump (Motorised Unit)
Model Number	
Serial Number	
Date of Manufacture	
Manufactured by	Varley Pumps Limited 1 Kimpton Road Luton LU1 3LD

Harmonised Standards & Other Directives	
BS EN 12100-1:2003	Safety of Machinery – Basic concepts, general principals of design – Part 1: Basic Terminology, methodology
BS EN 12100-2:2003	Safety of Machinery – Basic concepts, general principals of design – Part 2: Technical principles
BS EN 294:1992	Safety of Machinery – Safe distances to prevent danger zones being reached by the upper limbs.
BS EN 294:1992	Safety of Machinery – Minimum gaps to avoid crushing parts of the human body.
BS EN 60204-1:1998	Safety of Machinery – Electrical Equipment of machines – Part 1: General requirements
97/23/EC	Pressure Equipment Directive

Additional information
To comply with the directive the unit must be installed, used and maintained in accordance with the operating instructions supplied with the unit. If requested by the national authorities, we will transmit the relevant information on the partly completed machinery.

Technical Construction File
A Technical Construction file for this machinery is retained at the following address: Varley Pumps Limited 1 Kimpton Road Luton LU1 3LD

Signatory			
Signed		Date	
Name	John Inglis	Position	Technical Manager
Being the responsible person appointed by the manufacturer established in the EC and employed by Varley Pumps Limited.			

1. Introduction

These instructions must be followed to ensure safe and proper installation, operation and maintenance of the unit. They should be brought to the attention of anyone who installs, operates or maintains the unit or associated equipment. Ignoring these instructions may invalidate all applicable warranties.

1.1 Declaration of Incorporation.

All motorised units are supplied with a Declaration of Incorporation with respect to the Machinery Directive 2006/42/EC

1.2 Validity

This manual is for all Varley Pumps Bareshaft Units Size 001 to 225 mounted to a standard B5 D071 to D200 motor.

1.3 Warranty

All Varley Pumps are covered by a one year warranty against defects in manufacture. The commencement date of the warranty is the date on the Certificate of Incorporation unless otherwise agreed.

2. Safety

The Varley Motorised Pump is constructed to the latest technological standards and is a safe piece of equipment when it is used for its intended purpose and the instructions for installation, operation and maintenance are followed.

A motorised unit is intended to be installed and used by qualified personnel, familiar with health and safety requirements and legislation.

The use of replacement parts not furnished by Varley Pumps will void all guarantees on safety and performance.

Do not use units that are known to be damaged or are known to be working outside of the specified parameters.

Do not step on any part of a motorised unit

All parts of a motorised unit may become hot to the touch. When maintenance operations are required sufficient time should be allowed for components to cool to a level that will not cause injury.

Nameplates attached to the unit providing information on direction of rotation must be observed. Nameplates should be maintained in a condition that enables personnel to read the information on the nameplates. Missing nameplates must be replaced.

The area in which the unit is installed should be kept in a safe and tidy condition.

3. Handling

3.1 Incoming Goods

On receipt of the pump unit the following inspection operations should be carried out:

If the packing crate has been damaged it should be assumed that the pump may be damaged. Packing cases that are received in a damaged condition should be opened in the presence of the shipping agent. The receipt of damaged packing cases should be reported to Varley Pumps as soon as possible.

Inspect the pump for indications of damage during shipment, special attention should be taken to shaft ends, flanges and painted surfaces. Damage to the pump should be reported to Varley Pumps to allow an inspection to be carried out.

Do not install and use a pump that has been damaged during shipment.

A packing list is supplied with each pump. Check the goods received against the packing list. This is particularly important when more than one pump or spare parts have been ordered. Any shortages should be reported to Varley Pumps as soon as possible.

The pump is shipped with plugs in the suction and discharge branches. If any of the two closure plugs are missing it should be assumed that there is a possibility that foreign bodies may have entered the pump. The pump covers and rotors should be removed from the unit and checked for the presence of foreign bodies.

Do not install and use a pump that has been received with the plugs missing.

The details on the pump nameplate should be checked against the pump specification. If any of the nameplate details differ from the pump specification Varley Pumps should be consulted before installing and using the pump.

3.2 Lifting

All units over 25kg should not be lifted by hand. The unit must be lifted using the lifting point of the bracket. Not by any part of the motor or pump. These must not be used once the unit is attached to other equipment.

The pump unit should be lifted using suitable lifting equipment capable of lifting the pump weight.

Failure to lift the pump correctly could result in serious injury or death and/or the unit being damaged.

3.3 Unit Weights (kgs)

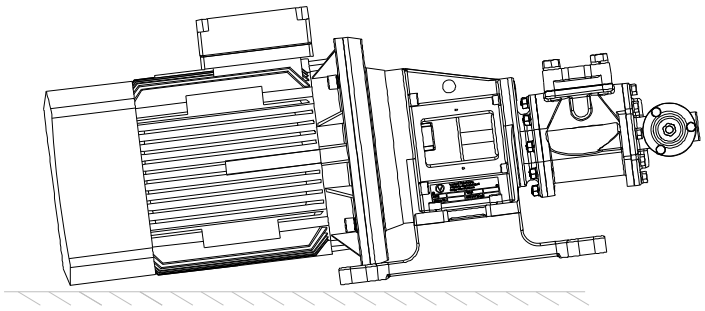
There are many different configurations of pump and motor which in turn require different brackets. Therefore to calculate the total unit weight, the pump head and bracket kit weights in the following tables have to be added to the weight of the motor. The weight of the motor should be printed on its label and/or manual.

Size	With Relief Valve	No Relief Valve
1	5.6	5
2	6.2	5.6
5	10	8.5
7	10	8.5
10	12.8	10.8
20	16.4	14.4
30	19	17.5
35	41.6	33.8
50	41.6	33.8
75	51.6	43.8
100	51.6	43.8
125	120	105
150	120	105
175	120	105
200	120	105
225	120	105

Bracket + Coupling Weights		Pump Size				
		001-002	005-020	30	035-100	125-225
Motor Frame Size	71	9.1				
	80	10.5	10.5			
	90	12.3	12.3	14.1		
	100		26.8	26.8	37.8	
	112		26.8	26.8	37.8	
	132		32.1	32.1	46.8	x
	160				x	x
	180					x
	200					x

3.4 Natural Resting Positions

In some cases motorised units will not rest on the brackets feet. On some units with a large motor, the unit will rest against the motor casing.



Motorised units may be unstable when free standing. It is recommended to leave the unit in its packaging until it is required for installation.

3.5 Storage

If the unit has to be stored for a period of time, the following precautions should be taken:

The pump should be stored with the body filled with a corrosion inhibiting oil. Plugs should be installed in the suction and discharge ports.

The shaft should be coated with protective oil.

Every 30 days the mainshaft should be rotated a few turns to prevent any standing corrosion effects.

Packed gland pumps should have the gland retainer setscrews loosened.

The storage area should remain at a constant temperature (minimum temp 5 degrees Celsius).

The storage area should remain at a constant humidity (maximum value 90%).

The pump should be stored in a stable position.

The storage area should not be subject to vibration.

Do not stack pumps on top of each other.

The pumps should be stored raised off the ground.

The pump should be covered to prevent the accumulation of dust and debris.

The storage area should be dry.

Check the motor handbook for details regarding storage of the motor.

4. Installation

4.1 Mounting

The pump should always be installed first and the pipe work built away for the unit. This should ensure there are no unnecessary risks from poorly aligned pipe work.

Care should be taken on threaded ports to ensure the pipe does not bottom into the port. This could damage the thread and/or port.

All pipes should be supported to ensure against unnecessary stress on the ports.

Ensure the suction port is identified. The rotation is indicated on the front cover of the pump head.

Ensure that on the suction side pipe work, there is no possibility of leakage, which could result in air being drawn into the pump.

No foreign material is to enter the unit. A full flow filter or micron mesh should be used on the suction side of the pump if there is no guarantee of foreign material not being in the system.

It is recommended to install a mesh or gauze between the port and flanges when installing the pipe work. This should be removed once the system has been cleaned.

Foreign material can block and/or damage the pump.

4.2 Start-up

The following things should be checked before the unit is started:

If possible the shaft should be turned. If the unit is jammed it is possible foreign material has entered the pump.

Note- The pump should not spin freely; there should be some resistance. If the unit has a packed gland, the setscrews can be loosened to free up some movement. This may require a small tap from a soft face mallet.

Ensure that the coupling guards are in their closed position and are secure before the unit is run.

Although a Varley Pump will self-prime, it is easier and safer to hand-prime the unit on initial start up. This should be done with thin lubricating oil and will ensure that all internals are wetted. This will cause the unit to pick up faster.

A packed gland pump may leak along the shaft on initial start-up, this should be left to allow the unit to bed in. If this continues to leak the gland may be adjusted a small amount at a time. This should be done carefully over a period of hours until this is only an occasional drip.

Due to heat expansion, a hot oil unit may slightly leak from the covers when it is up to running temperature. If this occurs the fixings must be checked they are at the recommended torque value.

4.3 Setting the Relief Valve

Units that have been supplied with a relief valve have had it set in respect to the discharge pressure. This can be adjusted using the setting screw on the rear cover.

To increase the pressure the screw should be turned clockwise. To decrease the pressure the screw should be turned anti-clockwise.

The relief valve should never be adjusted while the pump is running.

If the required pressure cannot be obtained alternative springs can be supplied.

The relief valve is for the pump only and should not be used as a pressure regulator for the whole system.

4.4 Operation

The unit should not be adjusted during operation.

If any adjustment is required, the unit should be disconnected from its prime mover or power supply before any work is carried out.

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4.5 Motor

Refer to the motor handbook for information regarding the installation and wiring of the electric motor. The motor should only be wired up once the pump have been successful installed.

5. Maintenance

Varley Pumps have an integrated Service and Spares Department which can carry out any maintenance work.

Only genuine parts from Varley Pumps can be used.

Those who choose to carry out their own maintenance can so, but this must be carried out by qualified personnel using only suitable tools and methods.

Please contact Varley Pumps for assembly instructions if you wish to carry out your own maintenance.

5.1 Spares

Spares can be ordered from Varley Pump Spares Department.

Maintenance and Overhaul kits are also available fore bareshaft units.

5.2 Maintenance Parts

5.2.1 Seals and Gaskets

Any mechanical seals, packing glands, gaskets and o'rings should be replaced whenever the pump is opened.

The working life of most seals are dependent on the application, it is recommended to closely monitor all seals for leakage.

5.2.2 Bearings

In normal operating conditions, bearings have a design life (L10) of 10,000 or 2 years. We recommend bearings be replaced at which ever of these times comes sooner.

5.3 Motor

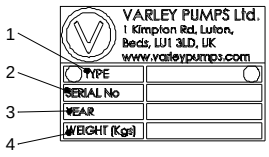
Refer to the motor handbook for maintenance regarding recommend spares. Only spares ordered through Varley Pumps should be used in the motor.

6. Maximum Operating Conditions

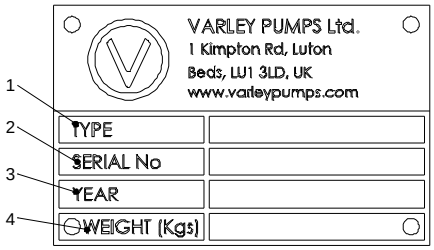
SIZE	MAX DISCHARGE PRESSURE PSI GAUGE	MIN SUCTION PRESSURE PSI ABSOLUTE	MAX VISCOSITY CENTISTOKES	MAX SPEED RPM
1	600	9.82	3750	3600
2	400	9.82	3750	3600
5	300	9.82	3750	3000
7	200	9.82	3750	3000
10	200	9.82	3750	3000
20	200	9.82	3750	3000
30	200	9.82	3750	1700
35	200	9.82	3750	1700
50	175	9.82	3750	1700
75	145	9.82	3750	1700
100	140	9.82	3750	1700
125	140	9.82	3750	1700
150	140	9.82	3750	1700
175	140	9.82	3750	1700
200	70	9.82	3750	1700
225	70	9.82	3750	1700

7. Labels

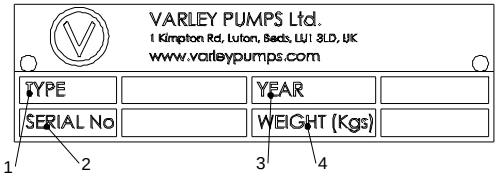
NAME PLATE- PUMP HEAD
SIZE 001 TO 030



NAME PLATE- PUMP HEAD
SIZE 035 TO 200



NAME PLATE- MOTORISED UNIT



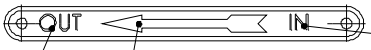
1. TYPE
TYP
TYPE
TIPO
TIPO

2. SERIAL NUMBER
SERIENNUMMER
NUMERO DE SERIE
NUMERO DE SERIE
NUMERO DI MATRICOLA

3. YEAR
JAHR
AN
AÑO
ANNO

4. WEIGHT
GEWICHT
POIDS
PESO
PESO

ROTATION PLATE



SUCTION
SAUGWIRKUNG
SUCCION
SUCCION
ASPIRAZIONE

DISCHARGE
ENTLADUNG
DECHARGE
DESCARGA
SCARICO

ROTATION OF MAINSHAFT
DREHUNG DES HAUPTSCHAFTS
LA ROTATION D'ARBRE PRINCIPAL
ROTACION DE PRINCIPAL TUNEL
LA ROTAZIONE DI ALBERO PRINCIPALE

NOTES

On receiving the pump please fill in this table and keep it for your records. This will help in the future if there is ever a problem or you want to order spares.

Serial Number	
Model Number	
PO Number	
Varley SO Number	
Speed	
Rotation	
Relief Valve Pressure	
Fluid and Viscosity	
Initial Pressure	
Initial Temperature	
Initial Flow Rate	

Any Modification Notes

For Manuals in other EU languages, please contact Varley Pumps.

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Varley Pumps Ltd is part of the Hayward Tyler Group