

VERDERMAG

Global Series



ORIGINAL INSTRUCTIONS

Installation and Operating Manual

- Style 1 pump sets



- MII pump sets

- High system pressure pump sets



TO BE READ IN CONJUNCTION WITH MAINTENACE MANUAL

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1.0 PREFACE

1.1 The VERDER Group

The VERDER Group is comprised of technical trading and production companies with offices in Austria, Belgium, England, France, Germany, Holland, Hungary, Romania, the Czech and Slovak Republics, South Africa and China. Group Headquarters are in Holland, with a staff of approximately 400 people worldwide, of which 50 are employed by production works in the UK, together with a network of distributors in the USA, Australia and the Far East, selling pumps and other supplies from more than thirty foreign suppliers as well as marketing VERDER Group Products.

Important market sectors for these divisions include the (petro) chemical, food, pharmaceutical and plastics industries, together with wastewater and environmental sectors.

Worldwide, the VERDER Group markets all products wherever possible under its own brand, and strives to maintain quality standards based upon current ISO standards, some of the VERDER companies already being accredited with ISO 9000 and ISO 14001 standards, and others proceeding towards this goal.

VERDER Group recognises its responsibilities to its worldwide customers, and will always seek to meet or exceed their expectations.

1.2 Product Information

VERDER Ltd, manufacturer of VERDERMAG Global Centrifugal pumps, magnetically coupled seal-less pumps for pumping and transportation of liquids and chemicals, both in metallic and non-metallic construction.

This manual refers in detail to the VERDERMAG Global metallic Centrifugal Pumps. The Global MII pumps are manufactured in accordance with EN.22858 (ISO2858) or ANSI B73.1 at the hydraulic end with close-coupled drive connection. The Global Style I pumps are for those applications which fall below ISO norms and are manufactured to Verder's own standard. The Global Range also comprises of the HSP, which is a high pressure range mainly used for high pressure and hot water forwarding systems as well as other applications.

All pump units can comply with ATEX when fitted with the correct form of electrical motor. For motor specification and safety instructions, please refer to motor manufacturers details.

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LS10 1AD
United Kingdom

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EMAIL: info@verderglobal.com

1.3 Guarantee

All VERDER pumps are warranted to the original user against defects in workmanship or materials under normal use (rental use excluded) for **two** years after purchase date. This warranty does not cover failure of parts or components due to normal wear, damage or failure that in the judgment of VERDER arises from misuse. Warranty will not be accepted on any unit where the unit has been disassembled prior to return without the express permission of VERDER.

Parts determined by VERDER to be defective in material or workmanship will be repaired or replaced.

Limitation of liability:

To the extent allowable under English law, Verder's liability for consequential damages is expressly disclaimed. Verder's liability in all events is limited and shall not exceed the purchase price of the pump.

Warranty disclaimer:

VERDER has made an effort to illustrate and describe the products accurately; however, such illustrations and descriptions are for the sole purpose of identification and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustration or descriptions.

Product suitability:

Many regions, states and localities have codes and regulations governing the sale, construction, installation and/or use of products for certain purposes, which may vary from those in neighbouring areas. While VERDER attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchasing and using a product, please review the product application as well as the national and local codes and regulations, and be sure that product, installation, and use complies with them.

1.4 EC Declaration of Conformity

EC Directives,

Machinery - 2006/42/EC 9th June 2006
ATEX - 94/9/EC : 23rd March 1994 Group II Category 2 G
EC Notified body number 1180

We,

Verder Ltd
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Hunslet
Leeds, LS10 1AD
ENGLAND

Part of the

European VERDER Group
Utrechtsweg 4a
P.O. Box 1,
NL-3450 AA Vleuten
THE NETHERLANDS

Hereby certify the following pump types:

VerderMag - Global Series

Style 1
MII
High System Pressure

Comply with the above directives:

Applied harmonised standards in particular: EN1127, EN13463 and EN12100-1



Anthony J. Beckwith
Global Product Manager
VerderMag - Global Series
Leeds
10th December 2009

1.5 Ignition Hazard Assessment – VerderMag – Global Series Pumps

Potential ignition source			Control Measures Applied to prevent source becoming active	Type of Protection Symbol
Normal Operation	Expected Malfunction	Rare Malfunction		
Exposed hot surface			Under normal operation the pumped liquid temperature will normally be the limiting factor. T rating will be 80% of maximum temperature.	EN13463-1 Clause 6.1 and liquid immersion 'k'
Electrostatic discharge			No electrostatic risk. Plastics are not used in outer enclosure or exposed surfaces.	EN13463-1 Clause 7.4 and const'l safety 'c'
Impact between light metal and rusty steel			No aluminium, magnesium or titanium is used in the outer enclosure, or any other surfaces that may come into contact with rusty iron.	EN13463-1 Clause 8.0 and const'l safety 'c'
Mechanical strength			External materials are heavy duty stainless steel casing and mild steel pedestal. Passes impact test in EN13463-1	EN13463-1 Clause 14.3 and const'l safety 'c'
	Bearing wear		Bearing wear is dependent on several factors e.g. number of starts, amount of solids. Guidance in the instructions will recommend maintenance periods and maximum permissible bearing wear.	EN13463-1 (User instructions)
		Pumping with no liquid in pump – Dry Running	Dry running will give rise to increased bearing surface temperatures outside temperature class and if prolonged will lead to early bearing failure. Prevent by User instructions, Power / Level / Flow / Temperature Monitoring.	EN13463-1 (User instructions) and control of ignition source 'b'
		Pumping against a closed valve	Running pump against closed valve will prevent adequate flow around the magnets and bearings leading to premature bearing failure. Prevent by User instructions, Power / Flow / Temperature Monitoring.	EN13463-1 (User instructions) and control of ignition source 'b',
		Operating below minimum safe flow	Operation at reduced flow rates may result in build up of eddy current heat , potentially exceeding temperature class. It may also cause excess vibration, leading to bearing failure. Prevent by User instructions, Power Monitoring.	EN13463-1 (User instructions) source 'b'
		Running 'off curve'	Increased flow rates, above the maximum safe flow will result in build up of eddy current heat and cause excess vibration, leading to bearing failure. Prevent by User instructions, Power Monitoring.	EN13463-1 (User instructions) source 'b'

Potential ignition source			Control Measures Applied to prevent source becoming active	Type of Protection Symbol
Normal Operation	Expected Malfunction	Rare Malfunction		
		Build up of explosive gas in un-vented cavities e.g. Pedestal	Leakage of (flammable / explosive) pumped liquid into the pedestal. Prevent by User instructions, Level monitoring, and installation of suitable drain.	EN13463-1 (User instructions)
		Excessive cavitation	Inadequate suction pressure can lead to cavitation, which if unchecked can result in internal vibration and breakdown of the hydrodynamic liquid film around the bearings. This will cause excessive wear and premature failure. Prevent by - selection procedure, User instructions.	EN13463-1 (User instructions)
		Chemical attack	Pumped liquid must be chemically compatible with the materials of construction. Chemical attack on the O-rings will affect the bearings support and can cause premature failure. Prevent by - selection procedure, User instructions.	EN13463-1 (User instructions)
		Use of incorrect maintenance materials	Use of greases on gasket surfaces etc. may be a possible source of ignition in certain circumstances. Follow instructions.	EN13463-1 (User instructions)
		Oversized solids passing through the pump	Maximum size for occasional particle is 0.5mm. This size of particle should not be the normal content of the liquid. Larger particles will lead to damage of other parts. Prevent by - Selection procedure, User instructions.	EN13463-1 (User instructions)
		Excessive volume of solids passing through the pump	Maximum slurry is of 250 micron sized particle at no more than 5% by volume. All solids will increase the wear rate of the bearings and the maintenance periods should be adjusted to suit. Prevent by - selection procedure, User instructions.	EN13463-1 (User instructions)
		Blockage of flow holes	Build up of material on the walls of the flow holes and bearings will eventually lead to blockage and poor flow circulation. If unchecked will cause bearing failure. Prevent by User instructions.	EN13463-1 (User instructions)

Potential ignition source			Control Measures Applied to prevent source becoming active	Type of Protection Symbol
Normal Operation	Expected Malfunction	Rare Malfunction		
		Excessive bearing wear and failure	Bearing wear guidance in the instructions recommends maintenance periods and maximum permissible wear. Operating beyond these limits may lead to contact of rotating parts and or bearing failure is a rare malfunction caused by, dry running, pumping against a closed valve, excessive cavitation, O-ring failure, over sized or volume of solids passing through the pump, excessive wear. The effects can be to generate severe localized heat (above the temperature class) or jamming of the internal rotating assembly leading to de-coupled operation. Prevent by User instructions.	EN13463-1 (User instructions)
		Running pump in reverse direction	Pump will not operate at expected performance. If condition is maintained for an extended duration this may lead to poor circulation and premature bearing failure.	EN13463-1 (User instructions)
		De-coupled operation	De-coupled operation occurs when the outer magnet breaks away from the internal magnet. The internal magnet remains stationary whilst the outer magnet continues to rotate. The internal magnet is then subjected to rapid changes from attraction to repulsion, causing vibration and build-up in eddy current heat. If unchecked this will cause severe damage and lead to the build up of temperatures above the temperature class.	EN13463-1 (User instructions)
		Metal contact of rotating assembly with casing / Containment tube	The clearances in the pump (even if the tolerances are in worst case) do not permit contact, providing the bearing wear does not exceed the permitted allowances. Excessive bearing wear or bearing failure will lead to metal contact with subsequent heat build up and wear of other parts.	EN13463-1 (User instructions)
		Motor bearing failure	Failure of motor bearings can lead to the outer rotor magnet catching on the pedestal, causing localized heat. If unchecked the rotor could cause contact with the containment tube. ATEX motor to be used. Maintenance and regular inspection checks. Non sparking materials to be used.	EN13463-1 (User instructions)

2.0 SAFETY INSTRUCTIONS

2.1 Basic Do's and Don'ts

The following are DO's and DONT'S related to magnetic drive pumps. Common rules such as no cavitation or no reverse rotation apply to this pump.

Caution

1. Reed switches - people who are assisted by electronic devices that may or may not contain reed switches should not handle magnetic pumps or their parts. Pacemaker and implantable defibrillators are examples of these devices. The magnets used in this pump are some of the strongest available in the world.
2. No hands or fingers should be placed between the magnets.
3. Do not put magnetic field sensitive items such as credit cards, floppy disks or magnetic tapes near magnets.
4. No steel or iron tools near the magnets. Steel tools such as wrenches and screwdrivers are easily attracted by the magnets and can break them on contact.
5. Liquid poured into the casing for initial priming must be compatible to incoming liquid.

2.2 General Instructions



Pumps must always be accessible for operation and maintenance; passageways should not be locked or blocked.



If dangerous or unknown substances have been used in the pump before maintenance and repair work, always empty and clean the pump. Read the safety instructions as mentioned in the chemical data booklet.



When pumping dangerous substances, ensure compatible materials of construction are used.

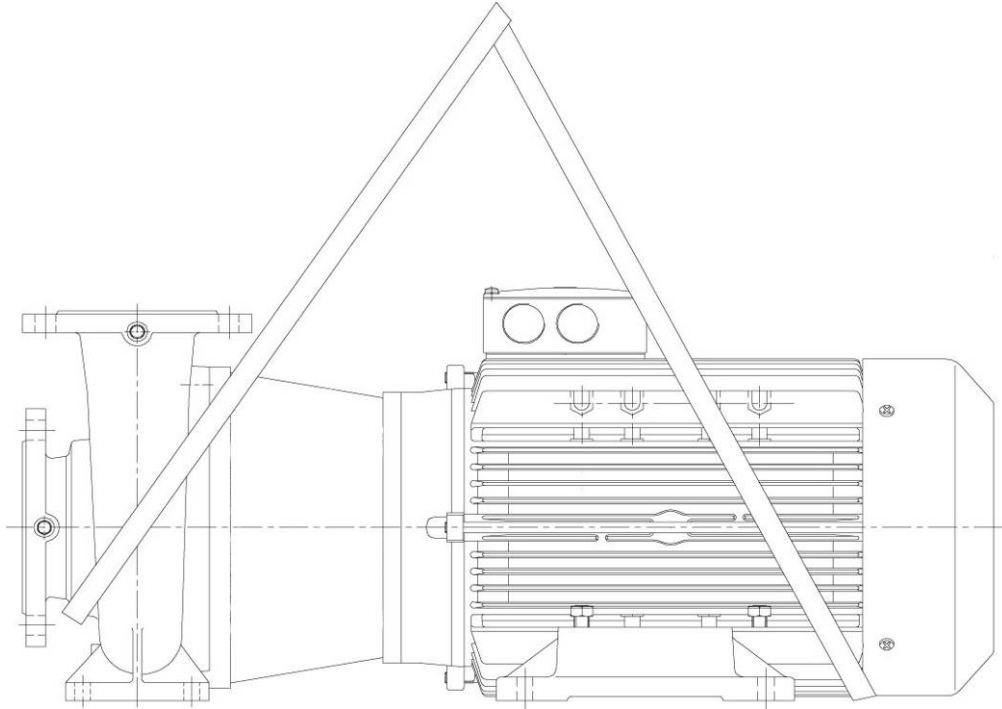


When returning used pump units they must be accompanied by the relevant COSHH data and completed copy of the returns documentation, enclosed in maintenance manual (original to be kept with the manual). Failure to supply information can lead to any pumps being delivered to be disposed of at the user's cost.

2.3 Instruction for Installation and Operation

Transport

When hoisting the complete pumpset, secure a sling of suitable load capacity round the suction flange and electric motor as indicated. For new installations, keep the pump on its original pallet while moving around site or on transport. If the original pallet is not available, the pump should be securely bolted to a pallet of generous size to ensure stability.



Storage

If not to be used immediately, the pumpset should be stored in a dry warm and vibration free environment. Do not remove flange covers until the pump is ready to be connected to its pipework. Rotate the pump by hand every month to prevent seizure.



When connecting the motor to the power supply, pay attention to the direction of rotation for the pump, as indicated. Check the power supply with the information on the tag-plate of the motor and set the thermal safety guards, in accordance with the instructions provided by the motor supplier.



The pump may, due to testing in the factory or workshop, still contain water. With substances that cannot come into contact with water, remove the water before operation. Where possible, flush the pump with the liquid to be pumped followed by air-drying. (A mag-drive centrifugal pump **must not** be allowed to run dry).



When pumping with a centrifugal pump, ensure that the valves in both the discharge and suction lines are open.



The pump must be installed in such a way to eliminate vibrations. Suction and discharge pipes always need to be constructed so that a stress-free connection is guaranteed.



Use the correct connections at the suction and discharge ends of the pump. Use the correct pipe diameter; reduction of the diameter is not recommended due to the high pressure created at the pump discharge.



When pumping extremely aggressive or dangerous liquids, it is recommended to have a vent to the storage tank. We would strongly advise that in these circumstances you install a discharge and suction valve.

2.4 Instructions for Maintenance and Repair Work



Suitably capable trained and authorised personnel only should carry out the maintenance and repair work of "VerderMag" centrifugal pumps.



If dangerous or unknown substances have been used in the pump prior to maintenance and repair work, always clean the pump first. This can be achieved by using a drain plug if present or the pumps can be flushed using a product which will not react with either the components inside the system or the fluids present.



Ensure when the pump has been operated at extremes of temperatures that it has reached safe limits before handling.



When pumping dangerous or unknown liquids, protective clothing (glasses, gloves, etc.) should always be worn.



Before working on the pump you must first release the pressure from the discharge pipe. Always empty and clean the pump. Always check the safety instructions referring to the pumped liquid.



Before commencing on any pump maintenance, ensure the power supply is disconnected from the motor (turn off the main power). Check the pump is free of pressure. During maintenance and repair work be sure that no unauthorized personnel can operate the pump.



Only return pumps when cleaned.



If you have any questions and/or remarks please contact Verder. (Please see page 3 of this manual for contact details)



Do not change or alter the pump, drive or pump connections without consulting Verder. Do not alter the mounting position. No obligations can be met when the aforementioned is not taken into account.

3.0 STORAGE

1. If the pump unit is not to be used immediately, it should be stored carefully in a horizontal position, in a sheltered, dry location.
2. Closure's fitted over suction and discharge openings must remain in position. Bearings and coupling if fitted must be carefully protected against dust, grit and other foreign matter.
3. A rust preventative should be applied to all unpainted carbon steel or cast iron parts, and should not be removed until final installation.
4. For long term storages pumps should be rotated by hand at least five revolutions every two months.
5. For extreme variants in atmospheric temperature/conditions we reserve the right to modify the aforementioned storage instructions.

4.0 INSTALLATION

The magnets used to drive the pump are very powerful. Care should be taken when handling both the outer and inner magnets during disassembly and assembly. Completely close both discharge and suction valves before assembly. Be very careful when pumping corrosive liquids. There may be a residue in the pump even after flushing.



Prior to installation, ensure you have knowledge of pumping principles.



Always wear protective clothing and facemasks when handling contaminated or corrosive liquids.

Descriptions:

1. Installation

No special tools are required for installation of the pump.

2. Foundation

The pumpset should ideally be mounted on a level horizontal steel base. The base should be of sufficient rigidity to prevent flexing. When bolting the pump down, insert shims as necessary under the pump feet to level the pump using a spirit level on the suction and discharge flanges of the pump. Use all available holes to mount the pump to the base.

3. Piping

The suction piping should be as short as possible and with a minimum number of long radius bends and other restrictions. Excessive length and sharp changes in the direction of flow may lead to flow instability and cavitation.

The available NPSH should exceed the required NPSH at least 0,5 m. See respective applicable performance curve for the required NPSH.

The suction piping should never be smaller than the pump inlet. When pumping viscous or hot liquids, lower flow velocities, and larger pipe diameters are recommended.

Mate the pump to the connecting pipework ensuring the pipework is supported independently eliminating any tremors, weight or vibration transmitted from connecting piping to the pump.

5.0 COMMISSIONING

5.1 Preparation before Operation

1. Fully clean the inside of the piping and the pump prior to priming.
2. Retighten the flange connecting bolts and base mounting bolts. If possible, pressure test your installation.
3. Use the motor fan to turn the motor and check whether or not it turns freely.
4. Completely close the discharge valve.
5. When the suction condition is under pressure, check the pressure within the suction pipe, and verify that the pump is filled with liquid. Then using the motor fan, rotate the pump to expel the remaining air in the impeller from the pump chamber.
6. Verder recommends the use of a power monitor to prevent pump damage and inefficiency if for example, a pipe is blocked, a valve is not fully open or the pump is running dry.

5.2 Commissioning Procedure

1. Close the cocks of the pressure and vacuum gauges. Open the cocks only when measuring and always keep closed after use.
2. Fully open the suction side gate valve and partly open the valve on the discharge line.
3. Before starting up, ensure that the piping and wiring are installed correctly.
4. Turn the motor fan by hand and ensure that the pump rotates smoothly. Operate for a few seconds to check that the motor is rotating in the correct direction. An arrow shown on the pump indicates the correct rotating direction. If rotation is incorrect, interchange power source leads of 2 phase terminals.
5. Start the pump. If the pump fails to start, check the wiring to determine the cause of the trouble.
6. Check the discharge pressure and then gradually open the gate valve until the pressure reaches the required level. When the valve is opened too quickly, it may cause overload and magnet de-coupling.

Check that the required flow rate is obtained. Ensure that minimum safe flow requirements are exceeded. Do not close the valve excessively. If a flow meter is not installed, obtain the required flow from the values of pressure gauges, ampere meter and friction head loss.



NEVER let the pump run dry.
NEVER let the pump run against a closed valve.

6.0 OPERATION NOTES

1. Dry Running

Dry running must be avoided. Before operating, make sure that the pump is primed and vented. Pumping temperature / pressure should ensure the pumped product remains in the liquid phase at all times.

2. Cavitation

Cavitation damages the internal pump parts, such as bearing and impeller, or can cause abnormal wear; therefore the pump should be stopped immediately under cavitation running. Do not close the suction gate valve while the pump is in operation.

3. Disassembly of Magnet Coupling

If the magnet coupling becomes disconnected due to overload, or another reason, stop the pump immediately. If the pump is operated for long periods under this condition, magnet and bearing damage will occur.

4. Variation in Liquid Temperature

If the temperature of the liquid varies over the limits of your pump, damage may occur. For specific data on your pump, please see maintenance manual.

5. Electrical Failure

When the electric power supply fails, cut the supply to the pump at once and close the discharge valve.

6. Maximum permissible system pressure

Ensure the system pressure does not exceed the pressure capabilities of the pump.

ATEX 01/03.

Failure to operate the pump unit within the specified parameters may result in a 'rare malfunction' / giving rise to the possibility of an effective source of ignition.

Reference should be made to the ATEX certificate of conformity and the ignition hazard assessment. This will be incorporated within the Certified Maintenance Manual. This ATEX certification only applies to the pump head and should be applied in conjunction with the motor certification (not applicable to pump units installed in non hazardous areas).

7.0 MAINTENANCE

7.1 Preventive Maintenance

Decommissioning Procedure

1. Gradually close the discharge gate valve. Never close the discharge piping suddenly (e.g. by use of a solenoid valve). It may create water hammer and subsequent pump and/or pipework damage.
2. Shut off the electrical supply monitor if the speed of rotation falls slowly and smoothly. If it is not smooth, check the inside of the pump and the drive magnet for any abnormal condition.
3. When stopping the pump for an extended period, remove all liquid from the pump or keep the pump warm to prevent freezing.
4. Where a standby pump is available, it is recommended that it is used from time to time.

An annual overhaul is recommended, however daily maintenance such as inspection of discharge and suction pressure, flow rate, vibration, voltage, noise and the electric motor current is recommended to detect pump failure before any major damage occurs. When any abnormal condition is found, contact your nearest agent.

Lubrication schedule for bearings (use on long coupled pump only). In those cases where the bearings are not greased for life, see manufacturers' recommendations.

7.2 Bearing Wear Chart

The bearing sets, material silicon carbide must be replaced when:

Part No	Nominal	Replacement
SCB.1 (E4)	20.0mm	Sleeve OD -0.1mm on Ø wear Bush ID +0.2mm on Ø wear
SCB.2 (E3)	25.0mm	
SCB.3 (E1)	38.0mm	
SCB.4 (E2)	50.0mm	

7.3 General Disassembly/Assembly



When dismantling and reassembling, take care not to trap your fingers between magnetic parts because of its high power. Also, do not bring any electronic equipment into the powerful magnetic field around the magnet because problems may occur. Close the suction and discharge valves before disassembly and re-assembly.

Ensure the pump is isolated from the power supply.

Remove the pump from the pipework installation.

The pump will hold a small amount of product and will drain on removal of the casing. Care must be taken if this product is hazardous to health.

The magnetized components, i.e. the pump shaft assembly and the outer rotor assembly must be clean and free of all debris.

All threaded components must be coated with anti-seize compound such as copper slip or pcb.

New sealing joints should be fitted.

The unit must be assembled in a clean area.

Note:

The inner and outer rotors are magnetic and will attract debris. They must be protected at all times.

7.4 Customer Services

If you require spare parts, please contact your local distributor, providing the following details:

- Pump Model
- Type
- Serial Number
- Date of First Order

7.5 Notification of Return of Goods

Copy of following must be returned with goods



Appendix: Eleven
Date: Oct 2006
Issue/Rev: Three/1

RETURN OF GOODS FORM

CUSTOMER ADDRESS		CONTACT PHONE NO	
			FAX NO
			MOBILE NO
		E-MAIL	

RETURNED FOR: Estimate of Repair Warranty Claim Credit Transit Damage Other

RETURNS METHOD: Customer to Deliver Collection Required Engineer to Collect

ITEM RETURNED: Pump Hose Spares Lab Equip't Other

Return of item agreed with: _____ ** at VERDER / RETSCH.

VERDER / RETSCH Sales Invoice Number (if applicable):

VERDER / RETSCH Part Number (if applicable):

Description: _____

If for Repair / Warranty, please provide a detailed fault description:

Has Product been used? Yes No

If Yes, please advise product / media: _____

Please supply relevant Health & Safety Data

Please tick the box to confirm unit has been decontaminated:

For repairs to proceed with stripping the unit for ESTIMATE of repair, please use the following Order Reference:

Signed _____ Date: _____

In the event of repairs not being actioned within 6 working weeks, the unit will be returned boxed in its stripped mode with costs being charged against the above order. Verder/Retsch reserve the right to dispose of any item that arrives in a contaminated or unsafe condition and a disposal cost will be charged.

Please return this form for the attention of the person marked (**) for confirmation of return

Fax Number 0113 222 0294

Please also include a copy of this document with the returned item.

VERDER Ltd / RETSCH UK Ltd
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Affiliated companies: A Wien • B Aartselaar • CN Shanghai • CZ Praha • D Haan • F Eragny s/Oise • GB Leeds • H Budapest • JPN Tokyo • NL Groningen/Vleuten
PL Katowice • RO Bucuresti • SA Kya Sand • SK Bratislava • USA Newtown

7.6 Type Designation

Style 1 pump units

Global Series
Style 1 Codes

CODE:- 324. 00000. 0 0 0 0. 000 0 0

Pump Type

Cast Pumps

PC 80L = N/A

PC 100L = N/A
PC 100M = 10020

PC 125L = N/A
PC125M = 12520
PC125H = N/A
PC 125HX = N/A

PC 160L = 16000
PC 160M = 16020
PC 160H = 16040

Fabricated Pumps

PC 80L = 08010

PC 100L = 10010
PC 100M = 10030

PC 125L = 12510
PC125M = 12530
PC125H = 12550
PC 125HX = 12570

PC 160L = 16010
PC 160M = 16030
PC 160H = 16050

Flange

Universal = 0
PN16 = 1
PN25 = 2
ANSI 150lb = 3
ANSI 300LB = 4
SPECIAL = X

Trim

Universal = 0
VITON = 1
EPDM = 2
PTFE = 3
NRG/KALREZ = 4
NRG/PERLAST = 6
NRG/316L = 7
NRG/C276 = 8
PTFE/316L = 9
PTFE/C276 = 0
SPECIAL = X

Magnet

PC80L A1 = 6
PC100 B1 = 7
PC125 B3 = 8
PC160 D1 = 9

Motor Frame

71 = 1
80 = 2
90 = 3
100/112 = 4
132 = 5

Motor Power (kW)

Free issue = 000
0.12 = 012
0.25 = 025
0.37 = 037
0.55 = 055
0.75 = 075
1.1 = 011
1.5 = 015
2.2 = 022
3.0 = 030
4.0 = 040

Speed

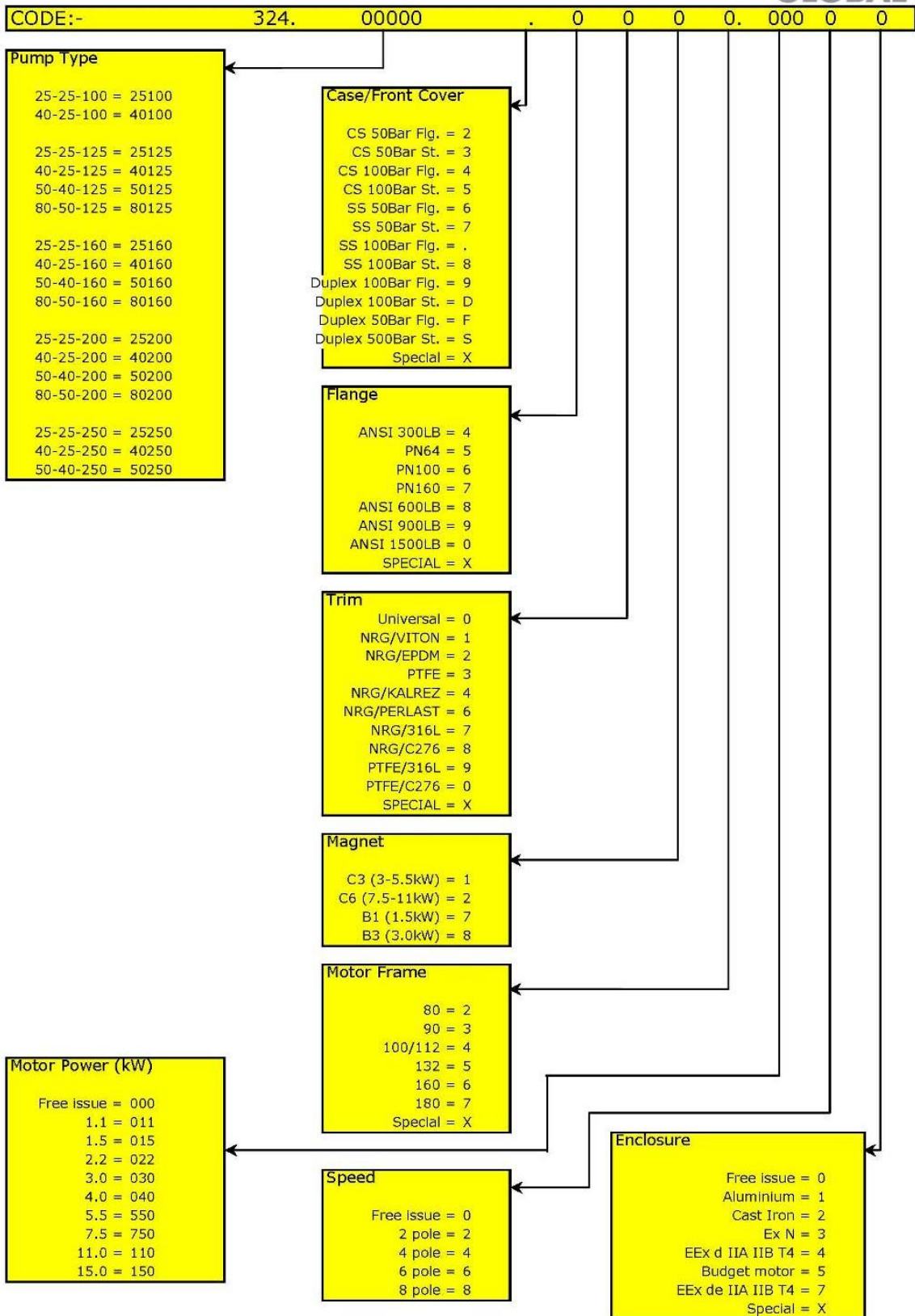
Free issue = 0
2 pole = 2
4 pole = 4
6 pole = 6
8 pole = 8

Enclosure

Free issue = 0
Aluminium = 1
Cast Iron = 2
Ex N = 3
EEx d IIA IIB T4 = 4
Budget motor = 5
EEx de IIA IIB T4 = 7
Special = X

High System Pressure pump units

Global Series
HSP Codes



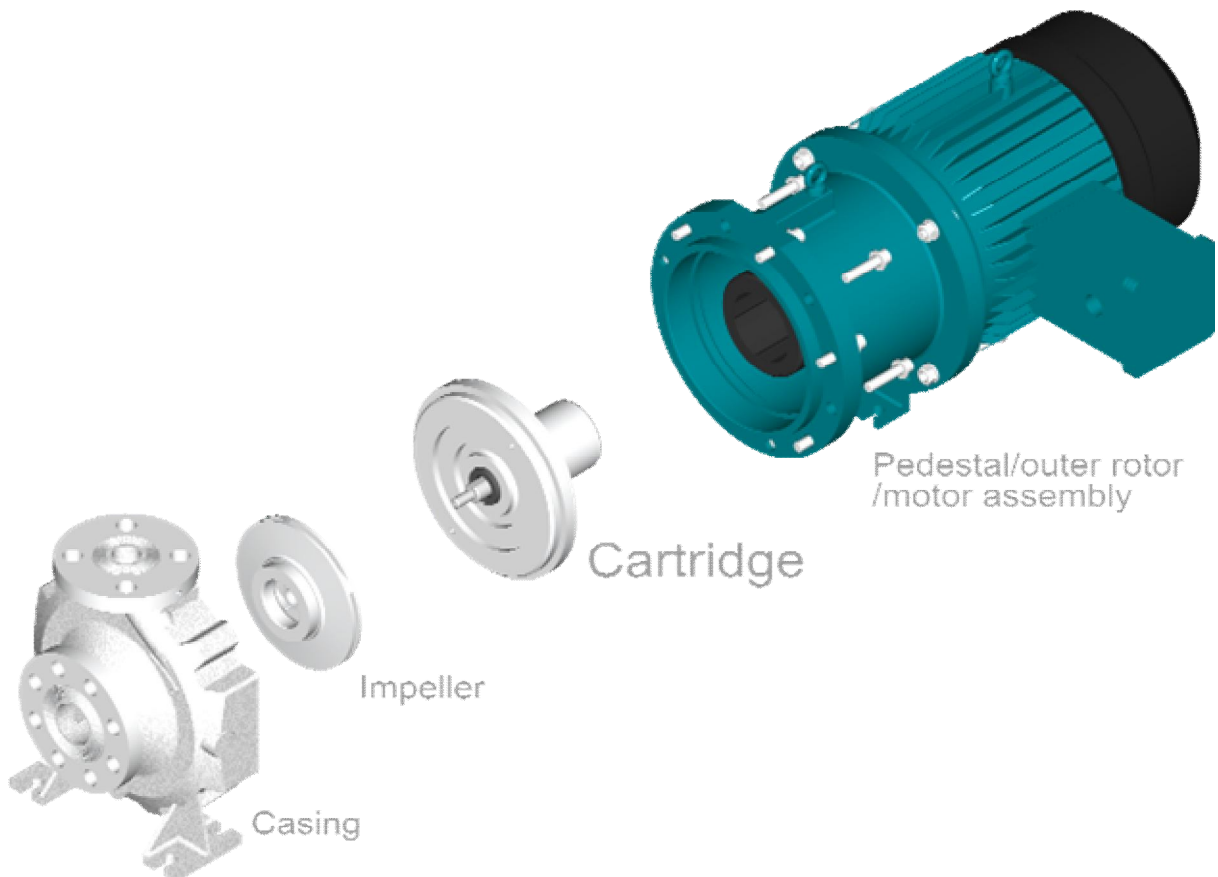
7.7 Recommended Spare Parts/Quick Fit Cartridge Assembly

Quick fit cartridge facility

The pump cartridge assembly, which forms the complete pressure vessel, allows the quick replacement of the pumping components without expensive downtime. The failed unit can then be examined in a workshop environment and repaired without the pressure of meeting production deadlines.

The cartridge is supplied under cover of a single assembly part number, the impeller must be ordered separately, except in the style 1 PC160 pumps as the impeller is part of the pumpshaft in these units.

The replaced cartridge can then be repaired at the site workshop, or alternatively returned to Verder for overhaul.



Features

- No need to disassemble the motor.
- Easy to install at pump operating location.
- No complicated fitting procedures.

Estimated time for fitting, once the unit has been drained, is 30 minutes for an average skilled engineer.

8.0 TROUBLESHOOTING

Problem	Reason	Action
<ul style="list-style-type: none"> • Pump Vibrates 	<ul style="list-style-type: none"> a) Incorrect mounting b) Drive Magnet broken c) Motor bearing worn d) Incomplete foundation e) Mounting bolts are loose f) Cavitation exists g) Pump bearing shaft magnet capsule broken down or worn h) Drive magnet broken i) Motor bearing worn 	<ul style="list-style-type: none"> a) Secure mounting b) Replace c) Replace d) Make proper foundation e) Retighten them f) Remove the cause of cavitation g) Replace with new one h) Replace with new one i) Replace with new one
<ul style="list-style-type: none"> • Insufficient Discharge 	<ul style="list-style-type: none"> a) Pump rotates in reverse b) Insufficient pump rotating speed c) Suction pipe is clogged with foreign particles 	<ul style="list-style-type: none"> a) Change the motor connections b) Inspect the motor and wiring c) Clean the suction pipe
<ul style="list-style-type: none"> • Motor is overheating 	<ul style="list-style-type: none"> a) Output is overpowered b) Ambient temperature is high 	<ul style="list-style-type: none"> a) Inspect whether or not the S. G. and viscosity of the liquid in use are correct as per datasheet Check whether the voltage and frequency of the motor are correct b) Improve ventilation
<ul style="list-style-type: none"> • When the Discharge value is lower than expected 	<ul style="list-style-type: none"> a) Magnet coupling is de-coupled b) Is the output overpowered? c) Air enters through the junction of suction pipe 	<ul style="list-style-type: none"> a) Manually rotate the pump to check whether or not it runs smoothly. b) Measure the current. Check whether the voltage is within the rating c) Inspect whether or not the junction of suction pipe is sealed Inspect the suction liquid level
<ul style="list-style-type: none"> • No pumping achieved 	<ul style="list-style-type: none"> a) Suction pipe is clogged with foreign particles 	<ul style="list-style-type: none"> a) Clean the suction pipe
<ul style="list-style-type: none"> • Liquid drops when discharge valve is opened after starting of pump 	<ul style="list-style-type: none"> a) Air is penetrating through suction pipe b) Disconnection of magnet coupling 	<ul style="list-style-type: none"> a) Check if flanges are sufficiently sealed b) Check if suction liquid level is abnormally low c) If motor fan does not rotate smoothly with a screwdriver, make sure that there is no foreign matter in pump and around pump bearing Check for overload and incorrect power voltage

Problem	Reason	Action
<ul style="list-style-type: none"> • Pointer of pressure gauge stays at low position and does not go up 	<ul style="list-style-type: none"> a) Rotation speed is low b) Impeller reverses 	<ul style="list-style-type: none"> a) Check power supply and motor b) Replace or correct wiring
<ul style="list-style-type: none"> • Discharge capacity is too low. Foreign matter 	<ul style="list-style-type: none"> a) Strainer is clogged with 	<ul style="list-style-type: none"> a) Remove foreign matter in strainer
<ul style="list-style-type: none"> • Vacuum gauge indicates very high value 	<ul style="list-style-type: none"> a) Air pocket exists in suction pipe b) Foreign matter clogs the inlet of impeller c) Air penetrates through suction line d) Foreign matter clogs the discharge side of pump 	<ul style="list-style-type: none"> a) Check arrangement of suction pipe and adjust it properly b) Disassemble partially, then remove foreign matter c) Check flanges are sufficiently sealed d) Remove foreign matter
<ul style="list-style-type: none"> • Vacuum gauge shows high value, but pressure gauge shows normal value 	<ul style="list-style-type: none"> a) Air pocket exists in suction pipe 	<ul style="list-style-type: none"> a) Check if a rising part exists in suction line Clean suction pipe
<ul style="list-style-type: none"> • Pressure gauge shows high value, while vacuum gauge shows normal value 	<ul style="list-style-type: none"> a) Total dynamic head is higher than planned values 	<ul style="list-style-type: none"> a) Check dynamic head including friction loss
<ul style="list-style-type: none"> • Both pressure gauge and vacuum gauge show low value 	<ul style="list-style-type: none"> a) Direction of rotation is incorrect 	<ul style="list-style-type: none"> a) Change wiring arrangement
<ul style="list-style-type: none"> • Motor is overheated 	<ul style="list-style-type: none"> a) Voltage drop b) Overload c) Ambient temperature is too high 	<ul style="list-style-type: none"> a) Take necessary measures of voltage or frequency are incorrect b) Check if specific gravity and viscosity of the liquid are proper c) If motor fan does not rotate smoothly with a screwdriver, make sure that there is no foreign matter in pump and around pump bearing Make draft condition better
<ul style="list-style-type: none"> • Discharge capacity suddenly drops 	<ul style="list-style-type: none"> a) Strainer is clogged with foreign matter 	<ul style="list-style-type: none"> a) Remove foreign matter

