

TECHNICAL SERVICE MANUAL: INSTALLATION, OPERATION & MAINTENANCE

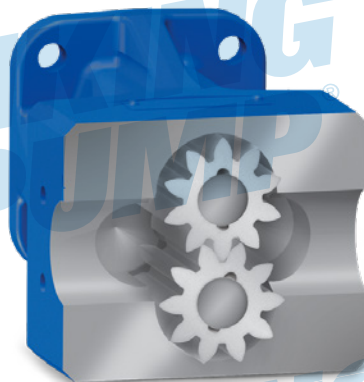


FOR VIKING PUMPS, INCLUDING PUMPS INTENDED
FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES
ATEX / CE

TSM	4010
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SAFETY INFORMATION & INSTRUCTIONS

INCORRECT INSTALLATION, OPERATION OR MAINTENANCE OF EQUIPMENT MAY CAUSE SEVERE PERSONAL INJURY OR DEATH AND/OR EQUIPMENT DAMAGE AND MAY INVALIDATE THE WARRANTY.

THIS INFORMATION MUST BE READ FULLY BEFORE BEGINNING INSTALLATION, OPERATION OR MAINTENANCE AND MUST BE KEPT WITH THE PUMP. ALL INSTALLATION AND MAINTENANCE MUST BE UNDERTAKEN BY SUITABLY TRAINED OR QUALIFIED PERSONS ONLY.

THE FOLLOWING SAFETY INSTRUCTIONS MUST BE FOLLOWED AND ADHERED TO AT ALL TIMES.

⚠ DANGER = FAILURE TO FOLLOW THESE LISTED PRECAUTIONARY MEASURES MAY RESULT IN SERIOUS INJURY OR DEATH

⚠ WARNING = SAFETY INSTRUCTIONS WHICH SHALL BE CONSIDERED FOR REASONS OF SAFE OPERATION OF THE PUMP OR PUMP UNIT AND/OR PROTECTION OF THE PUMP OR PUMP UNIT ITSELF

⚠ DANGER

DO NOT OPERATE PUMP IF:

- The front cover is not installed correctly.
- Any guards are missing or incorrectly installed.
- The suction or discharge piping is not connected.

⚠ DANGER

DO NOT place fingers, etc. into the pumping chamber or its connection ports or into any part of the drive train if there is ANY possibility of the pump shafts being rotated. Severe injury will occur.

⚠ DANGER

DO NOT exceed the pumps rated pressure, speed, and temperature, or change the system/duty parameters from those for which the pump was originally supplied, without confirming its suitability for the new duty.

⚠ DANGER

INSTALLATION AND OPERATION OF THE PUMP MUST ALWAYS COMPLY WITH HEALTH AND SAFETY REGULATIONS.

⚠ WARNING

A device must be incorporated into the pump, system, or drive to prevent the pump exceeding its stated duty pressure. It must be suitable for both directions of pump rotation where applicable. Do not allow pump to operate with a closed/blocked discharge unless a pressure relief device is incorporated. If an integral relief valve is incorporated into the pump, do not allow re-circulation through the relief valve for extended periods.

⚠ DANGER

The mounting of the pump or pump unit should be solid and stable. Pump orientation must be considered in relation to drainage requirements. Once mounted, shaft drive elements must be checked for correct alignment. Rotate pump shaft by at least one full revolution to ensure smoothness of operation.

Incorrect alignment will produce excessive loadings and will create high temperatures and increased noise emissions. Do not use any drive arrangements which cause side-loading of the drive shaft.

⚠ DANGER

The installation must allow safe routine maintenance and inspection (to check for leakage, monitor pressures, etc) and provide adequate ventilation necessary to prevent overheating.

⚠ WARNING

Before operating the pump, be sure that it and all parts of the system to which it is connected are clean and free from debris and that all valves in the suction and discharge pipelines are fully opened. Ensure that all piping connecting to the pump is fully supported and correctly aligned with its relevant connections.

Misalignment and/or excess loads will cause severe pump damage.

Be sure that pump rotation is correct for the desired direction of flow.

⚠ WARNING

DO NOT INSTALL THE PUMP INTO A SYSTEM WHERE IT WILL RUN DRY (I.E. WITHOUT A SUPPLY OF PUMPED MEDIA).

⚠ WARNING

Pressure gauges/sensors are recommended, next to the pump suction and discharge connections to monitor pressures.

⚠ DANGER

Caution must be taken when lifting the pump. Suitable lifting devices should be used as appropriate. Lifting eyes installed on the pump must only be used to lift the pump, not pump with drive and/or baseplate. If pump is baseplate mounted, the base plate must be used for all lifting purposes. If slings are used for lifting, they must be safely and securely attached. For weights of bare shaft pumps refer to catalog.

⚠ DANGER

DO NOT attempt any maintenance or disassembly of the pump or pump unit without first ensuring that :

- The pump is fully isolated from the power source (electric, hydraulic, pneumatic).
- The pumping chamber, relief valve and any shaft seal support system are depressurized and purged.
- Any temperature control devices (jackets, heat-tracing, etc) are fully isolated, that they are depressurized and purged, and components are allowed to reach a safe handling temperature.

⚠ DANGER

DO NOT attempt to dismantle a pressure relief valve which has not had the spring pressure relieved or is mounted on a pump that is operating. Serious personal injury or death and/or pump damage may occur.

⚠ DANGER

DO NOT loosen or undo the front cover, any connections to the pump, shaft seal housings, temperature control devices, or other components, until sure that such action will not allow the unsafe escape of any pressurized media.

⚠ DANGER

Pumps and/or drives can produce sound power levels exceeding 85 dB(A) under certain operating conditions. When necessary, personal protection against noise must be taken.

⚠ DANGER

Avoid any contact with hot parts of pumps and/or drives which may cause injury. Certain operating conditions, temperature control devices (jackets, heat-tracing, etc.), bad installation, or poor maintenance can all promote high temperatures on pumps and/or drives.

⚠ WARNING

When cleaning, either manually or by CIP method, the operator must ensure that a suitable procedure is used in accordance with the system requirements.

During a CIP cleaning cycle, a pump differential pressure of between 30 and 45 psi is recommended to ensure suitable velocities are reached within the pump head. The exterior of the pump should be cleaned periodically.

SAFETY PRECAUTIONS

GUIDE

The pump should only be used for the purpose and duty conditions originally specified by the purchaser. If the purchaser wishes to change from the agreed duty, the purchaser is required to check the new parameters with Viking Pump or our distributor.

INCORRECT APPLICATIONS

Viking pump will only consider the pump safe for the purpose and duty conditions originally specified by the purchaser. Viking Pump will not accept responsibility for pump failure or personal injury arising from mis-application of the product.

MAINTENANCE, INSPECTION, INSTALLATION

The purchaser must ensure that all maintenance, inspection and installation work is carried out by authorised and qualified personnel, who are sufficiently trained in the operation of the pump. Work on the pump should only be carried out when the following has been complied with:

1. That any pressure in the chambers has been completely vented through the suction or discharge lines or other appropriate openings or connections.
2. That the pump unit is properly 'Earthed' at all times preventing Electrostatic charge build up. (When an ATEX approved pump is requested, a 'Ground' contact point is fitted to the pump unit).
3. That the driving means (motor, turbine, engine etc) has been "locked out" or made non- operational, so that it cannot be started while work is being carried out on the pump.
4. That pumps which have been used in conjunction with dangerous substances have been decontaminated.

OPERATION

Under certain operating conditions the pump and its driver may emit sound pressure levels in excess of 85 dB(A). Under these conditions ear protection should be worn.

In the event of any one of the following conditions occurring the pump should be shut down and the cause investigated and rectified.

1. Unaccountable rise in discharge pressure.
2. Release of liquid from the pressure relief mechanism.
3. Excessive noise emissions.
4. Unaccountable rise in operating temperature.
5. Excessive power consumption.
6. Loss of flow.

UNAUTHORIZED MODIFICATION

Modifications or changes to the product are only permissible in agreement with Viking Pump or its approved Viking Distributor. Unauthorised modifications or use of components other than original Viking spares revokes any liability for consequences, which may result.

NOTES ON INSPECTION & REPAIR

Legal requirements with respect to safety at work, such as regulations for the workplace or governing dangerous materials, accident prevention, environmental protection obligate all commercial businesses to protect their employees and the environment from adverse effects caused by contact with dangerous materials.

The purchaser should make those involved in handling the pump aware of any special precautions, which must be taken.

PACKING, TRANSPORTATION, STORAGE & LIFTING

PACKING & TRANSPORTATION

The Pumps are despatched via palletised cardboard boxes with sufficient packing material to ensure that the product arrives at the purchaser's premise undamaged.

Upon receipt of the goods check for transit damage and report any problems to the carrier and Viking Pump or our authorised distributor immediately.

Local regulations should be complied with when disposing of unwanted packing materials.

Pumps supplied with baseplate and driver should only be lifted by using shackles through the bolt down holes on the baseplate. It is important that the complete pump and drive units are not lifted via means of the rings on the pump, motor or gearbox. These rings are for lifting the individual components only, and personal injury may result from using them to lift the complete unit.

STORAGE

Viking Pumps are only protected for the period of transportation and/or short term storage. In the case of prolonged storage, suitable arrangements must be made by the purchaser.

LIFTING

Viking pumps can be moved safely by personnel trained in the use of good techniques and safe working practices for lifting.

It is advisable that the pumps be left packed and transported as closely as possible to the location of installation. When in doubt please contact Viking pump or our approved distributor.

INSTALLATION

GENERAL NOTES

Before installation is started, a few items of a general nature should be considered.

- 1. Location** - always locate the pump as close as possible to the supply of liquid to be pumped. Locate it below the liquid supply if at all practical. Viking pumps are self priming but the better the suction conditions the better the performance.
- 2. Accessibility** - the pump should be located where it is accessible for inspection, maintenance, and repair. For large pumps, allow room to remove the rotor and shaft without removing the pump from the base.
- 3. Port Arrangement** - since the pumps have different port arrangements depending on the model, port location should be checked before starting the installation. The ports may be upright, opposite or at right angles to each other, depending on your particular model designation.
- 4. Suction/Discharge** - shaft rotation will determine which port is suction and which is discharge. When determining shaft rotation, always look from the shaft end of the pump. For internal gear pumps, standard rotation is clockwise, which makes the suction port on the right side of the pump. The idler pin, which is offset in the pump head, should be properly positioned toward and at equal distance between the port connections. For external gear pumps, standard rotation is clockwise, which makes the suction port on the left side of the pump. Always note any rotation arrows on the pump as the pump may be built with non-standard rotation.
- 5. Pressure Protection** - Viking pumps are positive displacement pumps. This means that when the pump is rotated, liquid will be delivered to the discharge side of the pump. If there is no place for this liquid to go, i.e. the discharge line is blocked or closed, pressure can build up until the motor stalls, the drive equipment fails, a pump part breaks or ruptures, or the piping bursts. To prevent the possibility of any one or more of these things happening in case of unintentional closing of the discharge line, the use of a pressure relief valve or some other form of over pressure protection device in the system is **ESSENTIAL**. This may be relief valve mounted directly on the pump, an inline relief valve, a torque limiting device or a rupture disk. The pressure relief valve mounted on Viking pumps and most in-line valves are of the spring loaded poppet design. For pumps intended for use in potentially explosive atmospheres (ATEX approved pumps) a Return-to-Tank type pressure relief valve is recommended.

Viking pumps can be furnished with either an internal pressure relief valve - one which directs the flow from the valve back to the suction side of the pump - or a return-to-tank valve - which directs the flow through piping back to the supply tank. An inline pressure relief valve mounted in the discharge piping also directs the flow back to the supply tank. This type of valve should be mounted close to the pump so that the pressure drop through the piping between the pump and the valve is at a minimum. Be sure there are no shutoff valves between the pump and relief valve. Piping from a return-to-tank or an in-line valve to the supply tank should also be as short and as large as possible.

NOTE: On some models, the relief valve is mounted on the pump casing instead of the pump head.

The spring-loaded poppet-type valve is strictly a differential valve, sensing only those pressures on each side of the poppet. It should not be used as a pressure or flow control device. It is intended strictly as a pressure relief valve.

The pressure at which either the return-to-tank or internal pressure relief valve bypasses can be changed by turning the adjusting screw. Do not back the adjusting screw all the way out. Stop when spring tension is off the screw (the screw starts to turn easily). For details on maintenance of the relief valve, refer to the Technical Service Manual covering your model series.

- 6. Electric Motors** - Follow the local electrical codes when wiring electric motors. Be sure that the phases are connected to provide correct direction of rotation or serious damage to the pump may result. All motors used should carry appropriate protection for specific use intended.

FOUNDATION

Every pump should have a good foundation. It may be any structure sufficiently strong to hold the pump rigid and to absorb any strain or shock that may be encountered.

A certified print of the pumping unit should be used in preparing the foundation. If a separate foundation is provided, make it at least four inches wider and longer than the base of the unit.

When the unit is placed on the foundation it should be leveled, checked for position against the piping layout and then fastened down.

ALIGNMENT

CHECK ALIGNMENT AFTER MOUNTING

For detailed coupling alignment procedures see coupling manufacturers' recommendations.

DANGER !

Before checking alignment, make sure that the driving means (motor, turbine, engine, etc.) has been "locked out" or made non-operational so that it cannot be started while work is being done on the pump.

The pump, drive, and motor were properly aligned at the time they were assembled. During shipping and mounting the alignment is often disturbed. **BE SURE TO RECHECK ALIGNMENT AFTER THE PUMP UNIT IS INSTALLED!**

1. Check pump ports to be sure they are square and in the proper position; shim or move the pump as required. Do not force piping to line up with the ports.
2. If the pump is driven by a flexible coupling(s) either directly connected to the motor or through a reducer, remove any coupling guards or covers and check alignment of the coupling halves. At a minimum, a straightedge (such as a piece of key stock) across the coupling must rest evenly on both rims at the top, bottom, and sides.
3. If the pump is driven by V-belts (not recommended for ATEX pumps), check the alignment by using a long straightedge or tightly drawn string across the face of the pulleys/sheaves.
4. Make a final check on alignment after piping is hooked up.

PIPING

The cause of many pumping problems can be traced to improper suction piping. It should always be as large and short as practical. For help in selecting the proper size suction and discharge piping, refer to **Viking General Catalog Section 1510**.

Before starting the layout and installation of your piping system, consider the following points:

1. Never use piping smaller than the pump port connections.
2. Be sure the inside of the pipe is clean before hooking it to the pump.
3. **FOOT VALVE** - When pumping a light liquid with a suction lift, a foot valve at the end of the suction piping or a check valve in the first horizontal run will hold the liquid in the line and make it easier for the pump to prime. Be sure the foot or check valve is big enough so that it doesn't cause excessive line loss.
4. When approaching an obstacle in the suction or discharge line, go around the obstacle instead of over it. Going over it creates an air pocket.
5. Where practical, slope the piping so no air or liquid pockets will be formed. Air pockets in the suction line make it hard for the pump to prime.
6. For a suction line with a long horizontal run, keep the horizontal portion below the liquid level if possible. This keeps the pipe full of liquid and reduces the amount of air the pump must evacuate at startup. This is most helpful when there is no foot valve.
7. When piping a hot or cold system (liquid being handled is at a temperature different from the air surrounding the pump), be sure allowance is made for expansion and contraction of the piping. Loops, expansion joints, or unsecured (this does not mean unsupported) runs should be used so the pump casing is not distorted or put into a bind.
8. **STRAINER** - It is always good practice to consider installing a strainer on the suction side of a positive displacement pump. The strainer will keep foreign objects from going into the pump. Without a strainer objects can lock the pump, and damage the internals and drive. The strainer basket mesh or perforation size should be big enough so that it does not cause excessive pressure drop, but it should be fine enough to protect the pump. When in doubt as to the proper size, check with the manufacturer, giving pipe size, flow rate, and viscosity involved. Provision should be made for cleaning the strainer. If the pump operates continuously, a bypass should be built around the strainer, or two strainers should be put in parallel with proper valving so they can be isolated for cleaning. Use of a strainer is particularly important at start up to help clean the system of weld beads, pipe scale, and other foreign objects. For additional information, refer to **TSM 1986 or TSM 1987**.
9. If the pump is not equipped with a relief valve, consideration should be given to mounting one in the discharge line. Refer to discussion on pressure protection under Start-Up.
10. The pump should not be used to support the piping. The weight of the piping should be carried by hangers, supports, stands, etc.
11. When fastening the piping to the pump it should not be necessary to impose any strain on the pump casing.

"Springing" or "drawing" the piping up to the pump will cause distortion, possible misalignment, and probable rapid wear of the pump. Do not use the pump to correct errors in piping layout or assembly.

12. All joints of the piping system should be tight; pipe sealer or appropriate sealing will help assure leak-free threaded joints. Leaks in the suction line permitting air to be drawn in may cause a noisy pump or a reduction in capacity.
13. **ALIGNMENT** - Check the alignment of the drive after the piping is hooked up. As a final check on pump alignment, remove the head of the pump and with a feeler gauge determine if there is clearance all the way around between the rotor and casing. Because of manufacturing tolerances, bushing clearances, etc., the rotor may not be centered in the casing, but it should not drag; dragging would indicate unit misalignment or casing distortion from piping strain.
14. The auxiliary piping hooked to jackets, glands, etc. for heating, cooling, quenching, or for other purposes should receive the same attention as the piping handling the pumped liquid.

15. Provide a pressure relief device in any part of a pump and piping system that can be valved off and, thus, completely isolated. This is particularly important:

- a. When handling a cold liquid such as refrigeration ammonia that can warm up to ambient temperatures when the pump is shut off.
- b. When handling a liquid such as asphalt or molasses that has to be heated before it can be pumped.

The rise in temperature causes the liquid to expand; if there is no provision for pressure relief in the closed off section, there is a chance that the pump or piping will rupture.

16. Provision for over-speed shutdown of the pump must be made if the pump is installed in a system which includes a steam, air or vapour blow/purge where the pump may act as a turbine.

START-UP

Before pushing the "start" button, check the following:

1. Are there vacuum and pressure gauges on or near the pump? These gauges are the quickest and most accurate way of finding out what is happening in the pump.
2. Check alignment - See suggestions under "Installation - Alignment" in this manual.
3. Check piping to be sure there is no strain on the pump casing.
4. Rotate the pump shaft by hand to be sure it turns freely.
5. Check that all guards are correctly replaced and firmly fitted.
6. Check any pressure relief mechanism to be sure it is installed correctly and without any means to isolate it from the pump.
7. Check suction piping to be sure:
 - a. It is all connected and tight
 - b. Valves are open
 - c. End of pipe is below liquid level
8. Check discharge piping to be sure:
 - a. It is all connected and tight
 - b. Valves are open
 - c. There is a place for the liquid to go
9. Lubricate any grease fitting on the pump using a good general purpose no 2 consistency bearing grease. Check any gear reducer, motor, coupling, etc. for instructions and lubricate as recommended. See **Engineering Service Bulletin ESB-515**.
10. For packed pumps, loosen packing gland nuts so gland can be moved slightly by hand. Adjust gland to reduce leakage only after pump has run long enough to reach constant temperature. Packing should weep a little to keep it cool and lubricated.

11. Do not use the Viking pump to flush, pressure test or prove the system with water. Either remove the pump or run piping around it while flushing or testing. Pumping water, dirty or otherwise, can do more damage in a few minutes than months of normal service.
12. Check that all tools, gauges or other loose items are safely located away from moving parts of the pump. Check that the suction and discharge valves are open.
13. Connect the electrical power and jog motor to be sure it is turning in the right direction; see discussion on pump rotation under "Installation".
14. For high temperature applications (those above 150 C) allow pump to reach operating temperature, then re-check alignment. Remember to isolate the power supply before removing guards and to ensure they are refitted before starting up again.

The pump should deliver liquid within 60 seconds. If it does not, push the "stop" button. Do not run the pump longer than one minute without liquid in it; you will ruin it. Review the steps just outlined, consider what the suction and discharge gauges indicate, if everything appears to be in order put some liquid in the pump, a lubricating liquid is best. This will help it prime.

Push the "start" button again. If nothing is flowing within two minutes, stop the pump. The pump is not a compressor, it will not build up much air pressure; it may be necessary to vent the discharge line until liquid begins to flow. If it still does not pump, review again all points given under START UP; read through TROUBLESHOOTING in this manual and try again. If it still does not pump, contact Viking Pump or our authorized distributor.

TROUBLESHOOTING

A Viking pump that is properly installed and maintained will give long and satisfactory performance.

NOTE: Before making any pump adjustment or opening the pump liquid chamber in any manner, make sure that:

1. Any pressure in the pumping chamber has been vented through the suction or discharge lines or other openings provided for this purpose.
2. The driver has been "locked out" so that it cannot inadvertently be started while work is being done on the pump.
3. The pump has been allowed to cool down to the point where there is no chance of anyone being burned.

If trouble does develop, one of the first steps toward finding the difficulty is to *install a vacuum gauge in the suction port and a pressure gauge in the discharge port*. Readings on these gauges often will give a clue as to where to start looking for the trouble.

VACUUM GAUGE - SUCTION PORT

1. High reading would indicate:

- a. Suction line is blocked by a stuck foot valve, stuck gate valve, or plugged strainer.
- b. Liquid is too viscous to flow through the piping.
- c. Lift is too high.
- d. Line is too small.

2. Low reading would indicate:

- a. Air leak in suction line.
- b. End of pipe is not in liquid.
- c. Pump is worn.
- d. Pump is dry - should be primed.

3. Fluttering, jumping, or erratic reading:

- a. Liquid is vaporizing.
- b. Liquid is coming to pump in slugs, possibly an air leak, insufficient liquid above the end of the suction pipe.
- c. Vibrating from cavitation, misalignment, or damaged parts.

PRESSURE GAUGE - DISCHARGE PORT

1. High reading would indicate:

- a. High viscosity, small diameter discharge line or long discharge line.
- b. Gate valve is partially closed.
- c. Filter is plugged.
- d. Vertical head did not consider a high specific gravity liquid.
- e. Line is partially plugged from build up on inside of pipe.
- f. Liquid in the pipe is not up to temperature.
- g. Liquid in the pipe has undergone a chemical reaction and has solidified.
- h. Relief valve is set too high.

2. Low reading would indicate:

- a. Relief valve is set too low.
- b. Relief valve poppet is not seating properly.
- c. Bypass around the pump is partially open.
- d. Too much extra clearance.
- e. Pump is worn.

3. Fluttering, jumping, or erratic reading:

- a. Cavitation.
- b. Liquid is coming to the pump in slugs.
- c. Air leak is in the suction line.
- d. Vibrating from misalignment or mechanical problems.

Some of the following may also help pinpoint the problem:

A. Pump does not pump.

1. Pump has lost its prime due to air leak, low level in tank, foot valve stuck.
2. Suction lift is too high.
3. Rotating in wrong direction.
4. Motor does not come up to speed.
5. Suction and discharge valves not open.
6. Strainer is clogged.
7. Bypass valve open, relief valve set too low, relief valve poppet stuck open.
8. Pump is worn out.
9. Any changes in the liquid system or operation that would help explain the trouble, e.g. new source of supply, added more lines, inexperienced operators, etc.
10. Too much end clearance.
11. Head position is incorrect.

B. Pump starts, then loses its prime.

1. Supply tank is empty.
2. Liquid is vaporizing in the suction line.
3. Air leaks or air pockets in the suction line; leaking air through packing or mechanical seal.
4. Pump is worn out.

C. Pump is noisy.

1. Pump is being starved (heavy liquid cannot get to pump fast enough). Increase suction pipe size or reduce length.
2. Pump is cavitating (liquid vaporizing in the suction line). Increase suction pipe size or reduce length. If pump is above the liquid, raise the liquid level closer to the pump. If the liquid is above the pump, increase the head of liquid.
3. Check alignment.
4. May have a bent shaft or rotor tooth. Straighten or replace.
5. Relief valve chatter. Increase pressure setting.
6. May have to anchor base or piping to eliminate or reduce vibration.
7. May be a foreign object trying to get into the pump through the suction port.

D. Pump not up to capacity.®

1. Starving or cavitating. Increase suction pipe size or reduce length.
2. Strainer partially clogged.
3. Air leak in suction piping or along pump shaft.
4. Running too slowly. Check the motor is running at the correct speed and that it is wired correctly.
5. Bypass line around pump partially open.
6. Relief valve set too low or stuck open.
7. Pump is worn out.
8. Too much end clearance.
9. Head position incorrect.

E. Pump takes too much power.

1. Running too fast - is correct motor speed used.
2. Is liquid more viscous than unit sized to handle; heat the liquid, increase the pipe size, slow the pump down, or get a bigger motor.

3. Discharge pressure higher than calculated, check with pressure gauge. Increase size or reduce length of pipe, reduce speed (capacity), or get bigger motor.
4. Packing gland drawn down too tight.
5. Pump misalignment.
6. Extra clearance on pumping elements may not be sufficient for operating conditions. Check parts for evidence of drag or contact in pump and increase clearance where necessary.

F. Rapid Wear.

On most applications the pump will operate for many months or years before it gradually loses its ability to deliver capacity or pressure. Examination of such a pump would show a smooth wear pattern on all parts. Rapid wear, occurring in a few minutes, hours or days, shows up as heavy grooving, galling, twisting, breaking or similar severe signs of trouble.

DISASSEMBLY / ASSEMBLY

GENERAL

The purchaser must ensure that all maintenance work which includes disassembly and assembly is carried out by authorized and qualified personnel, who are sufficiently trained in the operation of the pump.

Detailed information can be obtained by referring to the **Technical Services Manual for the specific model of pump.**

Work on the machinery should only be carried out after:

1. Pressure in the chambers has been completely vented through the suction or discharge lines or other appropriate openings or connections.
2. The driving means (motor, engine, turbine etc) has been "locked out" or made non operational, so that it cannot be started while work is being carried out on the pump.
3. Pumps that are used for handling dangerous substances have been decontaminated.

Refer to the specific Technical Services manual or contact Viking Pump or our approved distributor for more information.

⚠ CAUTION !

Prior to Starting the pump ensure that all guards are in place.

PREVENTATIVE MAINTENANCE

Performing a few preventative maintenance procedures will extend the life of your pump and reduce the cost per litre pumped.

- A. Lubrication** - Grease all nipples after 500 hours of operation or after 60 days, whichever occurs first. If service is severe, grease more often. Do it gently with a hand gun. Use a # 2 consistency bearing grease for normal applications. For hot or cold applications use an alternative grease. See Engineering Service Bulletin ESB-515.
- B. Packing Adjustment** - Occasional packing adjustment may be required to keep leakage to a slight weep. If impossible to reduce leakage by gentle tightening, replace packing or use different type. See Technical Service Manual on particular model series for details on repacking. Always consult factory when using packed pumps in an ATEX environment.
- C. End Clearance Adjustment** - After long service the running clearance between the end of the Rotor teeth and the head may have increased through wear to the point where the pump is losing capacity or pressure. Resetting end clearance will normally improve pump performance. See Technical Service Manual on particular model series for procedure on adjusting end clearance for pump involved.
- D. Examine Internal Parts** - Refer to the specific Technical Services manual or contact Viking Pump or our approved distributor for more information on disassembly / assembly procedures.
- E. Cleaning the Pump** - A clean pump is easier to inspect, lubricate, adjust, and runs cooler.
- F. Storage** - If a pump is to be out of service or stored for a long time, drain it and protect it from rusting inside and out. The condition of elastomers should be checked after long periods of storage before re-use of the pump.

DO'S & DON'TS

Do's and Don'ts for installation, operation, and maintenance of Viking pumps to assure safe, long, trouble-free operation.

INSTALLATION

1. **DO** install pump as close to supply tank as possible.
2. **DO** leave working space around the pumping unit.
3. **DO** use large, short, and straight suction piping.
4. **DO** install a strainer in the suction line.
5. **DO** double check alignment after the unit is mounted and piping is hooked up.
6. **DO** provide a pressure relief valve for the discharge side of the pump.
7. **DO** cut out the center of gaskets used as port covers on flanged port pumps.
8. **DO** record pump model number and serial number and file for future reference.

OPERATION

1. **DON'T** run pump at speeds faster than shown in the catalog for your model.
2. **DON'T** require pump to develop pressures higher than those shown in the catalog for your model.
3. **DON'T** operate pumps at temperatures above or below limits shown in the catalog for your pump.
4. **DON'T** operate pumps without all guards being in place.
5. **DON'T** operate pump without a relief valve on the pump or in the discharge piping. Be sure valve is mounted and set correctly.
6. **DON'T** exceed catalog limits for temperature and pressures of fluids in jacketed areas of pump.
7. **DON'T** use the pump in a system which includes a steam, air, or vapor blow or purge **without** provision for over-speed shutdown, in case the pump starts to act as a turbine and over-speeds the drive.
8. **DON'T** operate the pump with all of the liquid bypassing through a pump mounted internal type relief valve, or without any flow of liquid going through the pump for more than a couple of minutes. Operation under either of these conditions may result in a heat build-up in the pump, which could cause hazardous conditions or happenings.
9. Do have spare parts, pumps or standby units available, particularly if the pump is an essential part of a key operation or process.
10. Do have Power Monitoring, Temperature Probe and a Flow Meter fitted, where appropriate, when using a Viking pump in a potentially explosive atmosphere. The pump / unit should also be "Earthed" (Ground Contact) at all times.

MAINTENANCE

1. **DO** make sure any pump that has residual system pressure in it, or that has handled high vapor pressure liquids, such as LP-gas, ammonia, Freons, etc., has been vented through the suction or discharge lines or other openings provided for this purpose.
2. **DO** make sure that if the pump is still hooked to the driver while maintenance is being performed that the driver has been "locked out", so that it cannot be inadvertently started while work is being done on the pump.
3. **DO** make sure any pump that has handled a corrosive, flammable, hot, or toxic liquid has been drained, flushed, vented and/or cooled before it is disassembled.
4. **DON'T** drop parts during disassembly, e.g., idler can slip from the pin as the head is removed from the pump. It may cause personal injury or damage the part.
5. **DON'T** stick fingers in the ports of a pump. Serious injury may result.
6. **DON'T** spin the idler on the idler pin. Fingers may be jammed between teeth and crescent.
7. **DO** remember that a few simple preventative maintenance procedures such as periodic lubrication, adjustment of end clearance, examination of internal parts, etc., will extend the service life of your pump.
8. **DO** obtain, read and keep maintenance instructions furnished with your pump.
9. **DON'T** use non-authentic Viking spare parts or the essential safety features designed into the product may be at risk.

TECHNICAL DATA

The pump should only be used for the purpose and duty conditions originally specified by the purchaser.

The parameters listed below are for general guidance only. They are not to be considered as maximum operating parameters, which will vary according to specific application, but as a guide to safe working limits.

Exceeding the speed and pressure limits shown may result in personal injury.

Pump Size	Speed - RPM	Pressure - BAR	Noise - dB(A)
C	1800	14.5 *	64
F / FH	1800	14.5 *	68
G / GG	1750	14.5 *	77
H	1750	14.5 *	75
HJ	1750	14.5 *	74
HL	1750	14.5 *	79
AS	1450	14.0 *	85
AK	1450	14.0 *	82
AL	1450	14.0 *	87
K / KK	780	14.0 *	81
L / LQ / LL	640	14.0 *	84
LS	640	14.0 *	87
Q / QS	520	14.0 *	89
M	420	14.0 *	89
N	350	8.6 *	87
R / RS	280	8.6 *	90
SG	2850	35.0 **	68
KE	1450	12.0 **	85
KKE	1450	12.0 **	85
LQE	970	12.0 **	85
LVP	1450	14.0 *	85

These parameters are for viscosities in excess of 22 cSt.

* For viscosities below 22 cSt the rated pressure is 50% of the listed value.

** For viscosities below 2 cSt the rated pressure is 60% of the listed value.

TEMPERATURE CLASS & MAXIMUM LIQUID TEMPERATURES

Temperature Class	Maximum Surface Temperature (C°) Permitted	Max. Liquid Temperature (C°) (A lower pump limit may apply in some cases – Consult Factory)		Comments
		Sealed Pumps	Magnetic Drive	
T1	450	400	350	High Temperature Liquids
T2	300	275	270	
T3	200	180	175	
T4	135	115	110	Normal Class - except for High Temp Liquids
T5	100	Refer	Refer	For Special Designs Consult Factory
T6	85	Refer	Refer	For Special Designs Consult Factory

Note: A temperature probe should be used at all times to monitor liquid temperatures. A lower pump limit may apply in some cases.

EUROPUMP (ATEX OR UKEX) CLASSIFICATION

Equipment - Group II - Category 2

Viking Pump Inc. conforms to Group 2, Category 2.

Equipment in Group 2, Category 2, is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur.

G & D atmosphere

In G type Explosive atmosphere (Gas, vapour mist), equipment is suitable for use in Zone 1 areas. In D type explosive atmosphere (Dust), equipment is suitable for use in Zone 21 areas.

Temperature Class

Viking Pump Inc. uses Temperature Class T4 (as above) as the norm.

Additional Equipment Recommended

Additional equipment such as a Power Monitor, Temperature Probe and a Flow meter, should be fitted at all times when using a Viking Pump in a potentially explosive atmosphere. The pump / unit should also be "Earthed" (Ground Contact) at all times.

A PUMP SHOULD NEVER BE "RUN DRY" ESPECIALLY IN POTENTIALLY EXPLOSIVE ATMOSPHERES.

EUROPUMP (ATEX OR UKEX) CLASSIFICATION

Identification & Marking (CE or UKCA & Ⓜ)

When "ATEX Classification" or "UKEX Classification" is requested, all pumps are labelled with an ATEX / UKEX Tag detailing the following:

- Name and address of manufacturer
- CE and/or UKCA marked
- Model type & Serial Number
- Year of Manufacture
- Explosion protection symbol Ⓜ
- Equipment group and category
- The letter 'G' (concerning explosive atmospheres caused by gases, vapours or mists); and/or the letter 'D' (concerning explosive atmospheres caused by dust)
- Temperature class

Documentation Required

The technical documentation enables the conformity of the product with the requirements of the Directive.

The technical file comprises of the following:

- Standard / Master Catalogue including spare parts catalogue and performance curves
- Technical Service Manuals
- Engineering Service Bulletins
- Application Data Sheets
- Declaration(s) of Conformity

RISK ASSESSMENT 1

INTERNAL & EXTERNAL POSITIVE DISPLACEMENT ROTARY GEAR PUMPS WITH MAGNETIC DRIVE

Sources of Hazards	Potential Hazards	Recommended Measures
Unvented Cavities	Build up of O ₂ -/gas	Power Monitor; (pump and auxiliary systems); operating manual
Casing/ Rotor/ Head	Unintended mechanical rubbing contact	Power Monitor; operating manual
Pump External Surfaces (Jacketed)	Excess Temperature Electrostatic charging	Temperature Monitor; operating manual, Ground Contact
Sealing Arrangements	Gas / Liquid Leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual
Internal Clearance	Excess temperature Unintended mechanical rubbing contact	Power Monitor; Operating Manual Non-sparking Material;
Closed Internal Liquid Circuit	Excess temperature	Temperature Control at containment shell
Closed Valve Condition	Excess temperature, Excess pressure	Power Monitor, Temperature Monitor, Operating Manual
Antifriction Bearing	Excess temperature (Loss of Lubricant)	Service Plan (operator); Operating Manual
Mechanical Coupling	Mechanical Slipping / Break-up	Non-sparking (ATEX approved); Operating Manual
Guard	Mechanical Contact	Non-sparking; Operating Manual
Pump Casing / Head / pressure containing parts	Leakage (if Flammable)	O-ring seals, operating manual
Plastic Parts (Rotating Contact) exposed to atmosphere	Electrostatic Charge, Deterioration due to heat	Power Monitor, Temperature Monitor, Service Plan (operator); Operating Manual
Shaft	Random Induced Current	Ground Contact
Plain Bearing	Excess temperature due to Loss of Lubrication	Power Monitor, Operating Manual
Rotor / Casing Clearance	Mechanical Contact	Power Monitor, Operating Manual
Containment Casing (all materials)	Gas / Liquid leakage	Power Monitor, Operating Manual
Containment Casing (metallic)	Excess temperature (induced eddy current losses)	Power Monitor, Temperature Control, Operating Manual
Decoupling on rotor (mag drive)	Excess temperature	Power Monitor, Operating Manual, Temperature Control
Rotor / Secondary Containment / Brackets	Mechanical Contact	Non Sparking material

RISK ASSESSMENT 2

INTERNAL & EXTERNAL POSITIVE DISPLACEMENT ROTARY GEAR PUMPS WITH SHAFT SEALING

Sources of Hazards	Potential Hazards	Recommended Measures
Unvented Cavities	Build up of O ₂ -/gas	Power Monitor; (pump and auxiliary systems); operating manual
Casing/ Rotor / Head	Unintended mechanical rubbing contact	Power Monitor; operating manual
Pump External Surfaces (Jacketed)	Excess Temperature Electrostatic charging	Temperature Monitor (operator); operating manual, Ground Contact
Sealing Arrangements	Gas / Liquid Leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual
Pump Casing / Head / pressure containing parts	Leakage (if Flammable)	Elastomer seals; operating manual
Mechanical Seal	Excess temperature Unintended mechanical rubbing contact Gas / Liquid leakage (if Flammable) Build up of O ₂ -/gas	Double mechanical seal required with monitored pressurising system & flow detection.
Gland Packing	Gas / Liquid leakage Excess temperature Build up of O ₂ -/gas	Not Recommended
Rotation Direction Test	Excess temperature	Power Monitor, Temperature Monitor, Operating Manual
Internal Clearance / Lantern Ring / Gland	Excess temperature Unintended mechanical rubbing contact	Power Monitor, Temperature Monitor, Double Mechanical Seal Required
Closed Valve Condition	Excess temperature; Excess Pressure	Power Monitor, Temperature Monitor, Operating Manual
Auxiliary System for Shaft Sealing	Gas / Liquid leakage Build up of O ₂ -/gas	Operating Manual
Shaft	Random Induced Current	Ground Contact
Antifriction Bearing	Excess temperature (Loss of Lubricant)	Service Plan (operator); Operating Manual
Mechanical Coupling	Mechanical Slipping / Break-up	Non-sparking (ATEX approved); Operating Manual
Guard	Mechanical Contact	Non-sparking; Operating Manual
Plastic Parts (Rotating Contact) exposed to atmosphere	Electrostatic Charge, Friction, Melting, Burning	Service Plan (operator); Operating Manual
O-Pro® Seal	Excess temperature, Unintended mechanical rubbing contact, Gas / liquid leakage (if flammable), Build up of O ₂ -/gas	Pressure monitoring system with flow detection, Power monitor, Temperature monitor, Service plan (operator), Operating manual

RISK ASSESSMENT 3

RP EXTERNAL POSITIVE DISPLACEMENT ROTARY GEAR PUMPS WITH SHAFT SEALING

Sources of Hazards	Potential Hazards	Recommended Measures
Unvented Cavities	Build up of O ₂ -/gas	Power Monitor; (pump and auxiliary systems); operating manual
Casing/ Rotor / Head	Unintended mechanical rubbing contact and hence melting of plastics, e.g. achieving the burning temperature of the plastic by rubbing contact	Power Monitor; operating manual
Pump External Surfaces (Jacketed)	Electrostatic Charge (depending on fluid properties), Excess Temperature	Conductive Material, Temperature control (operator); operating manual
Closed Valve Condition	Excess temperature; Excess Pressure	Power Monitor, Temperature Monitor, Operating Manual
Sealing Arrangements	Gas / Liquid Leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual
Mechanical Seal	Excess temperature due to loss of lubrication mechanical contact Liquid leakage (if Flammable) Build up of O ₂ -/gas	Double mechanical seal required with monitored pressurised system & barrier flow monitor.
Auxiliary System for Shaft Sealing	Liquid leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual
Rotation Direction Test	Excess temperature	Operating Manual, Flow Monitor, Temperature Monitor
Shaft	Random Induced Current	Ground Contact
Antifriction Bearing	Excess temperature (Loss of Lubrication)	Power Monitor, Temperature Monitor, Service Plan (operator); Operating Manual
Mechanical Coupling	Mechanical Slipping / Break-up	Non-sparking; Operating Manual
Guard	Mechanical Contact	Non-sparking; Operating Manual
Plastic Parts (Rotating Contact) exposed to atmosphere	Electrostatic Charge, Friction, Melting, Burning	Service Plan (operator); Operating Manual

RISK ASSESSMENT 4

RP EXTERNAL POSITIVE DISPLACEMENT ROTARY GEAR PUMPS WITH MAGNETIC COUPLING

Sources of Hazards	Potential Hazards	Recommended Measures
Unvented Cavities	Build up of O ₂ -/gas	Power Monitor; (pump and auxiliary systems); operating manual
Casing/ Rotor / Head / Casing Clearance / Inner Rotor	Unintended mechanical rubbing contact and hence melting of plastics, e.g. achieving the burning temperature of the plastic by rubbing contact	Power Monitor; Operating Manual
Pump External Surfaces (Jacketed)	Electrostatic Charge (depending on fluid properties), Excess Temperature	Conductive Material, Temperature control (operator); operating manual
Closed Valve Condition	Excess temperature, Excess pressure	Operating Manual
Sealing Arrangements	Gas / Liquid Leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual
Plain Bearing or Antifriction Bearing	Excess temperature (Loss of Lubrication)	Power Monitor, Service Plan (operator); Operating Manual
Containment Casing	Gas / Liquid leakage	Leakage Control
Outer Rotor / Casing / Lantern	Unintended mechanical rubbing contact	Non-sparking material
Mechanical Coupling	Mechanical Slipping / Break-up	Non-sparking (ATEX approved); Operating Manual
Guard	Mechanical Contact	Non-sparking; Operating Manual
Auxiliary Systems	Liquid leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual

RISK ASSESSMENT 5

STRAINERS

Sources of Hazards	Potential Hazards	Recommended Measures
External Surfaces	Electrostatic Charge (depending on fluid properties), Excess Temperature	Conductive Material, Temperature control (operator); operating manual
Pipe work and Strainer properly supported	Gas / Liquid leakage	Service Plan (operator); operating manual
Sealing Arrangements	Gas / Liquid Leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual, torque all nuts
Containment Casing	Gas / Liquid leakage	Leakage Control
System / Strainer Blockage	Pressure Build Up / Excess Pressure	Differential Pressure Gauge Fitted

RISK ASSESSMENT 6

LVP POSITIVE DISPLACEMENT ROTARY VANE PUMPS WITH SHAFT SEALING

Sources of Hazards	Potential Hazards	Recommended Measures
Decoupling of rotor	Excess Temperatures	Power Monitor; operating manual, temperature control
Unvented Cavities	Build up of O ₂ -/gas	Power Monitor; (pump and auxiliary systems); operating manual
Casing/ Rotor / Head	Unintended mechanical rubbing contact	Power Monitor; operating manual
Pump External Surfaces	Excess temperature, Electrostatic charging	Temperature Monitor (operator); operating manual, Ground Contact
Sealing Arrangements	Gas / Liquid Leakage Build up of O ₂ -/gas	Service Plan (operator); operating manual
Pump Casing / Head / pressure containing parts	Leakage (if Flammable)	Elastomer seals; operating manual
Mechanical Seal	Excess temperature, Unintended mechanical rubbing contact Gas / Liquid leakage (if Flammable) Build up of O ₂ -/gas	Double mechanical seal required with monitored pressurising system & flow detection
Vanes (Rotating Contact) exposed to atmosphere	Electrostatic Charge, Friction, Melting, Burning	Service Plan (operator); Operating Manual
Rotation Direction Test	Excess temperature	Power Monitor, Temperature Monitor, Operating Manual
Internal Clearance	Excess temperature, Unintended mechanical rubbing contact	Power Monitor, Temperature Monitor, Double Mechanical Seal Required
Closed Valve Condition	Excess temperature; Excess Pressure	Power Monitor, Temperature Monitor, Operating Manual
Auxiliary System for Shaft Sealing	Gas / Liquid leakage Build up of O ₂ -/gas	Operating Manual
Shaft	Random Induced Current	Ground Contact
Antifriction Bearing	Excess temperature (Loss of Lubricant)	Service Plan (operator); Operating Manual
Mechanical Coupling	Mechanical Slipping / Break-up	Non-sparking (ATEX approved); Operating Manual
Guard	Mechanical Contact	Non-sparking; Operating Manual
Plastic Parts (Rotating Contact) exposed to atmosphere	Electrostatic Charge, Friction, Melting, Burning	Service Plan (operator); Operating Manual

VIKING PUMP®

WARRANTY

Viking pumps, strainers and reducers are warranted to be free of defects in material and workmanship under normal conditions of use and service. The warranty period varies by type of product. A Viking product that fails during its warranty period under normal conditions of use and service due to a defect in material or workmanship will be repaired or replaced by Viking. At Viking's sole option, Viking may refund (in cash or by credit) the purchase price paid to it for a Viking product (less a reasonable allowance for the period of use) in lieu of repair or replacement of such Viking product. Viking's warranty is subject to certain restrictions, limitations, exclusions and exceptions. A complete copy of Viking's warranty, including warranty periods and applicable restrictions, limitations, exclusions and exceptions, is posted on Viking's website (www.vikingpump.com/warranty#information). A complete copy of the warranty may also be obtained by contacting Viking through regular mail at Viking Pump, Inc., 406 State Street, Cedar Falls, Iowa 50613, USA.

THIS WARRANTY IS AND SHALL BE VIKING'S SOLE AND EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT, ALL OF WHICH OTHER WARRANTIES ARE EXPRESSLY EXCLUDED.

THE RIGHTS AND REMEDIES UNDER THIS WARRANTY ARE AND SHALL BE THE SOLE AND EXCLUSIVE RIGHTS AND REMEDIES AGAINST VIKING. EXCEPT FOR THE SPECIFIC LIABILITIES AND OBLIGATIONS PROVIDED UNDER THIS WARRANTY, VIKING SHALL HAVE NO LIABILITY OR OBLIGATION WITH RESPECT TO ANY PRODUCT CLAIMED TO BE DEFECTIVE IN ANY MANNER.

UNDER NO CIRCUMSTANCES SHALL VIKING BE LIABLE UNDER THIS WARRANTY OR OTHERWISE FOR SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, LOST OR UNREALIZED SALES, REVENUES, PROFITS, INCOME, COST SAVINGS OR BUSINESS, LOST OR UNREALIZED CONTRACTS, LOSS OF GOODWILL, DAMAGE TO REPUTATION, LOSS OF PROPERTY, LOSS OF INFORMATION OR DATA, LOSS OF PRODUCTION, DOWNTIME, OR INCREASED COSTS, IN CONNECTION WITH ANY PRODUCT, EVEN IF VIKING HAS BEEN ADVISED OR PLACED ON NOTICE OF THE POSSIBILITY OF SUCH DAMAGES AND NOTWITHSTANDING THE FAILURE OF ANY ESSENTIAL PURPOSE OF ANY PRODUCT.

ADDITIONAL SAFETY EQUIPMENT RECOMMENDED BY VIKING PUMP

TEMPERATURE MONITOR

Viking Magnetically coupled pumps are offered with a temperature monitor option which can provide the pump user, a means of detecting elevated temperatures in the magnetic area.

IMPORTANT: The probe must be wired to some type of indicator/controller for temperature readout and/or switchable control.

Viking offers a Digital Indicating Temperature Control and Indicator, which is available in Explosion Proof and Standard Weather Proof. This control provides temperature display and a switch enables the user to remotely operate a motor controller or signal a remote sensing device whenever the temperature exceeds pre-set point.

Provided with the pump and drive is a bracket mounted thermal probe which monitors the surface temperature of the containment canister. The sensor is not immersed in liquid and does not break the liquid barrier.

The Viking Mag Drive Temperature monitor option is available in Thermocouple and Resistance Temperature Device (RTD) configurations.

Temperature Monitor Option
Thermocouple or RTD Temperature Probe. Includes Drilling and Tapping. (Standard Weather Proof or Explosion Proof)
Digital Indicating Temperature Control & Indicator. (Standard Weather Proof or Explosion Proof) See IMPORTANT Description above
Drill and Tap for temperature Probe only

1 **DOSSIER RECEIPT - RENEWAL**

2 **Equipment (or Component Intended for use on/in an Equipment)**
3 **Intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

4 Receipt Number: **Baseefa11ATEX0076DR/RN2**
5 Equipment or Component: **Various Pumps**
6 Manufacturer: **Viking Pump (Europe) Limited**
7 Address: **406 State Street, Cedar Falls, Iowa, 50613, USA**
8 Manufacturer's Reference for the Dossier: **Various Pumps**

9 SGS Fimko Oy certifies that SGS Baseefa previously received the dossier identified above and that this receipt renewal extends the original period of commitment to retain the dossier. The original Dossier Receipt was issued by SGS Baseefa Ltd. It, and any Renewals previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy. The original certificate number is retained.

10 SGS Fimko Oy will retain the dossier for a period not less than ten years from the date of issue of this receipt renewal and will make it available to the relevant national authorities on request.

11 The period of retention may be further increased at the request of the manufacturer, in order to preserve a record of the dossier for a period not less than ten years after last production of the equipment or component to which the dossier relates.

12 Unless confirmed otherwise in a later Dossier Receipt Renewal, the dossier will be retained until **16/02/2034**

13 The manufacturer may add supplemental information to the dossier during the period of retention, but may not remove or otherwise alter the dossier during the period of retention.

14 The manufacturer may not mark the equipment with the number of this receipt nor use this receipt to make representations about the design of the equipment.

SGS Fimko Oy Customer Reference No. **5119**

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TECHNICAL SERVICE MANUAL: INSTALLATION, OPERATION & MAINTENANCE**VIKING
PUMP®**FOR VIKING PUMPS, INCLUDING PUMPS INTENDED
FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES
ATEX / CE

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Receipt Number
BAS21UKEX0639TDR

Issued 13 September 2021
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- 1 **TECHNICAL DOCUMENTATION RECEIPT**
- 2 **Equipment (or Component Intended for use on/in an Equipment)**
Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended)
- 3 Receipt Number: **BAS21UKEX0639TDR**
- 4 Equipment or Component: **Various Pumps**
- 5 Manufacturer: **Viking Pump (Europe) Limited**
- 6 Address: **406 State Street, Cedar Falls, Iowa, 50613, USA**
- 7 Manufacturer's Reference for the Technical Documentation: **Various Pumps®**
- 8 SGS Baseefa certifies receipt of Technical Documentation, identified above, in accordance with UKSI 2016:1107 (as amended) Schedule 3 Paragraph 14.
- 9 SGS Baseefa has not read the Technical Documentation, is not aware of its contents and has assumed that the manufacturer has prepared the Technical Documentation as required by UKSI 2016:1107 (as amended) Schedule 3A Part 6 "Internal Production Control".
- 10 SGS Baseefa will retain the Technical Documentation for a period not less than ten years from the date of issue of this receipt and will make it available to the relevant national authorities on request.
- 11 The period of retention may be increased on the request of the manufacturer, in order to preserve a record of the Technical Documentation for a period not less than ten years after last production of the equipment or component to which the Technical Documentation relates.
- 12 Unless confirmed otherwise in a later Technical Documentation Receipt Renewal, the Technical Documentation will be retained until **16/02/2034**
- 13 The manufacturer may add supplemental information to the Technical Documentation during the period of retention but may not remove or otherwise alter the Technical Documentation during the period of retention.
- 14 Neither the number of this Technical Documentation Receipt, nor the SGS Baseefa Approved Body Number shall be marked on the equipment. The manufacturer shall hold this receipt available to the national authority on request but shall not use this receipt to make representations about the design of the equipment.

SGS Baseefa Customer Reference No. **5119**Project File No. **21/0593**

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R S Sinclair
R S SINCLAIR

TECHNICAL MANAGER

On behalf of SGS Baseefa Limited