



TECHNICAL SERVICE MANUAL

GENERAL PURPOSE SPECIAL MOUNTED PUMPS

SERIES 75 AND 475

SIZES G - HL

SECTION	TSM 320.2
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ISSUE	H

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INTRODUCTION

The illustrations used in this manual are for identification purposes only and **should not be used for ordering parts**. Secure a parts list from the factory or a Viking® representative. Always give complete name of part, part number and material, with the model number and serial number of the pump when ordering repair parts. This model number and serial number can be found on the nameplate attached to the pump casing. This is important identification for ordering parts or replacement pump. It is positive assurance you will receive the correct pump parts.

Your pump is composed of four major parts. Only two of these are moving parts: the rotor and idler.

An exploded parts drawing and list of parts is included to help you identify each part correctly. However, to disassemble and reassemble the pump, you will be covered step by step. Refer to pages 2 to 9.

UNMOUNTED PUMP MODELS	
WITH LIP SEAL	WITH MECHANICAL SEAL
G75	G475
GG75	GG475
H75	H475
HJ75	HJ475
HL75	HL475

MOUNTED PUMP MODELS			
WITH LIP SEAL	WITH MECHANICAL SEAL	NORMAL GPM	
		@ 1200 RPM	@ 1800 RPM
G75M	G475M	5	7
GG75M	GG475M	7	10
H75M	H475M	10	15
HJ75M	HJ475M	13	20
HL75M	HL475M	20	30

INTERCHANGEABILITY

These pumps are furnished with either a mechanical seal or lip seal.

All models of the mechanical seal pumps and lip seal pumps are dimensionally interchangeable on 56C, 143TC, 145TC, 182C and 184C NEMA "C" flange motors. The mechanical seal is interchangeable with the lip seal in all pump sizes.

INSTALLATION

The suction line should be air tight and at least as large as the pump suction port connections to prevent loss of prime or capacity. It should also be equipped with a strainer and if pumping light liquids at a high suction lift, a foot or check valve should be used. Always avoid high spots and obstructions in the suction line as these may cause noise, loss of capacity or air lock. Since these are positive displacement pumps, be sure there is no obstruction in the discharge line and all valves are in operating position before starting the pump. Be sure the adjusting screws of the relief valve on the pump point towards the suction port. Factory assembled pumps will have right hand port suction and left hand port discharge unless otherwise specified. Port location is determined by looking at the mounting flange end of the pump. The relief valve on the pump is excellent insurance against a clogged discharge line or closed valves in the discharge line.



FIGURE 1
UNMOUNTED PUMP SHOWING
FRONT VIEW OF G AND GG SIZE

SPECIAL INFORMATION

ROTATION: Viking pumps operate equally well in a clockwise or counterclockwise rotation. Shaft rotation determines which port is suction and which is discharge. Port in area where pumping elements (gear teeth) come out of mesh is suction port.



SAFETY INFORMATION AND INSTRUCTIONS

IMPROPER INSTALLATION, OPERATION OR MAINTENANCE OF PUMP MAY CAUSE SERIOUS INJURY OR DEATH AND/OR RESULT IN DAMAGE TO PUMP AND/OR OTHER EQUIPMENT. VIKING'S WARRANTY DOES NOT COVER FAILURE DUE TO IMPROPER INSTALLATION, OPERATION OR MAINTENANCE.

THIS INFORMATION MUST BE FULLY READ BEFORE BEGINNING INSTALLATION, OPERATION OR MAINTENANCE OF PUMP AND MUST BE KEPT WITH PUMP. PUMP MUST BE INSTALLED, OPERATED AND MAINTAINED ONLY BY SUITABLY TRAINED AND QUALIFIED PERSONS.

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

Symbol Legend :



Danger - Failure to follow the indicated instruction may result in serious injury or death.

WARNING

Warning - In addition to possible serious injury or death, failure to follow the indicated instruction may cause damage to pump and/or other equipment.



BEFORE opening any liquid chamber (pumping chamber, reservoir, relief valve adjusting cap fitting, etc.) be sure that :

- Any pressure in the chamber has been completely vented through the suction or discharge lines or other appropriate openings or connections.
- The pump drive system means (motor, turbine, engine, etc.) has been "locked out" or otherwise been made non-operational so that it cannot be started while work is being done on the pump.
- You know what material the pump has been handling, have obtained a material safety data sheet (MSDS) for the material, and understand and follow all precautions appropriate for the safe handling of the material.

WARNING

INSTALL pressure gauges/sensors next to the pump suction and discharge connections to monitor pressures.



WARNING

USE extreme caution when lifting the pump. Suitable lifting devices should be used when appropriate. Lifting eyes installed on the pump must be used **only** to lift the pump, **not** the pump with drive and/or base plate. If the pump is mounted on a base plate, the base plate must be used for all lifting purposes. If slings are used for lifting, they must be safely and securely attached. For weight of the pump alone (which does not include the drive and/or base plate) refer to the Viking Pump product catalog.



BEFORE operating the pump, be sure all drive guards are in place.



DO NOT attempt to dismantle a pressure relief valve that has not had the spring pressure relieved or is mounted on a pump that is operating.



DO NOT operate pump if the suction or discharge piping is not connected.



AVOID contact with hot areas of the pump and/or drive. Certain operating conditions, temperature control devices (jackets, heat-tracing, etc.), improper installation, improper operation, and improper maintenance can all cause high temperatures on the pump and/or drive.



DO NOT place fingers 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.



WARNING

THE PUMP must be provided with pressure protection. This may be provided through a relief valve mounted directly on the pump, an in-line pressure relief valve, a torque limiting device, or a rupture disk. If pump rotation may be reversed during operation, pressure protection must be provided on **both** sides of pump. Relief valve adjusting screw caps must always point towards suction side of the pump. If pump rotation is reversed, position of the relief valve must be changed. Pressure relief valves cannot be used to control pump flow or regulate discharge pressure. For additional information, refer to Viking Pump's Technical Service Manual TSM 000 and Engineering Service Bulletin ESB-31.

WARNING

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



WARNING

BEFORE operating the pump, be sure that:

- It is clean and free from debris
- all valves in the suction and discharge pipelines are fully opened.
- All piping connected to the pump is fully supported and correctly aligned with the pump.
- Pump rotation is correct for the desired direction of flow.



WARNING

THE PUMP must be installed in a matter that allows safe access for routine maintenance and for inspection during operation to check for leakage and monitor pump operation.

PRESSURE RELIEF VALVES:

1. Viking pumps are positive displacement pumps and must be provided with some sort of pressure protection. This may be a relief valve mounted directly on the pump, an inline pressure relief valve, a torque limiting device or a rupture disk.
2. This series of pumps may be equipped with an integral pressure relief valve. Standard configuration is for clockwise rotation.
3. If pump rotation is reversed during operation, pressure protection must be provided on **both** sides of the pump.
4. Relief valve adjusting screw cap must **always** point towards the suction side of the pump.
5. Pressure relief valves should not be used to control pump flow or regulate discharge pressure.

For additional information on pressure relief valves, **Refer to Technical Service Manual TSM000 and Engineering Service Bulletin ESB-31.**

NOTE: Lip seal pumps, Models G75, GG75, H75, HJ75, HL75, G75M, GG75M, H75M, HJ75M and HL75M are equipped with an internal suckback arrangement. A small suckback screw (self-locking) is inserted in a hole on the discharge side of the pump. This can be seen through the port opening and behind the rotor (**refer to figure 3**). The hole on the suction side must be left open to prevent damage to the lip seals. Both holes are plugged in the mechanical seal pump Model G475, GG475, H475, HJ465, HL475, G475M, GG475M, H475M, HJ475M, and HL475M. Since these pumps have only two moving parts and are all performance tested at the factory, they seldom cause trouble. If trouble does occur we always advise investigating all other possible causes before disassembling the pump. Most troubles are caused by air leaks and obstruction in the suction line.

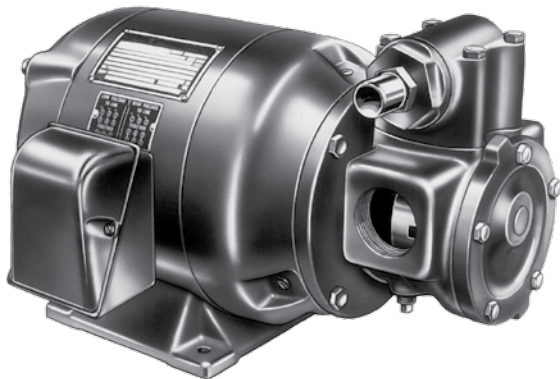


FIGURE 2
MOTOR MOUNTED PUMP SHOWING
H, HJ AND HL SIZE

MAINTENANCE

The Series 75 and 475 pumps are designed for long trouble free life under a wide variety of application conditions with minimum maintenance, however, the following should be considered:

1. **LUBRICATION** – External lubrication is not required for this series of pumps. The liquid being pumped lubricates the internal bearings in the pump.

2. **END CLEARANCE ADJUSTMENT** – After long term operation it is sometimes possible to improve the performance of the pump, without major repair, by adjusting the end clearance. **Refer to ASSEMBLY, page 4**, for information regarding this procedure.
3. **PRESSURE RELIEF VALVE** – If your pump is equipped with a pressure relief valve, adjustment can be made as follows. Remove the adjusting screw cap, turn in the adjusting screw to increase the pressure and turn-out to decrease the pressure. If the pump is not producing the rated capacity, adjustment of the pressure relief valve may be necessary. Be sure the adjusting screw cap is re-installed before the pump is started.
4. **CLEANING THE PUMP** – It is good practice to keep the pump as clean as possible. This will facilitate inspection, adjustment and repair work.
5. **STORAGE** – If the pump is to be stored or not used for any appreciable length of time it should be drained and a light coat of lubricating and preservative oil should be applied to the internal parts

SUGGESTED REPAIR TOOLS: The following tools must be available to properly repair Series 75 and 475 pumps. These tools are in addition to standard mechanics' tools such as open end wrenches, pliers, screw drivers, etc. Most of the items can be obtained from an industrial supply house.

1. Soft headed hammer
2. Allen wrenches (some mechanical seals and set collars)
3. Mechanical seal installation sleeve
4. Brass bar
5. Arbor press

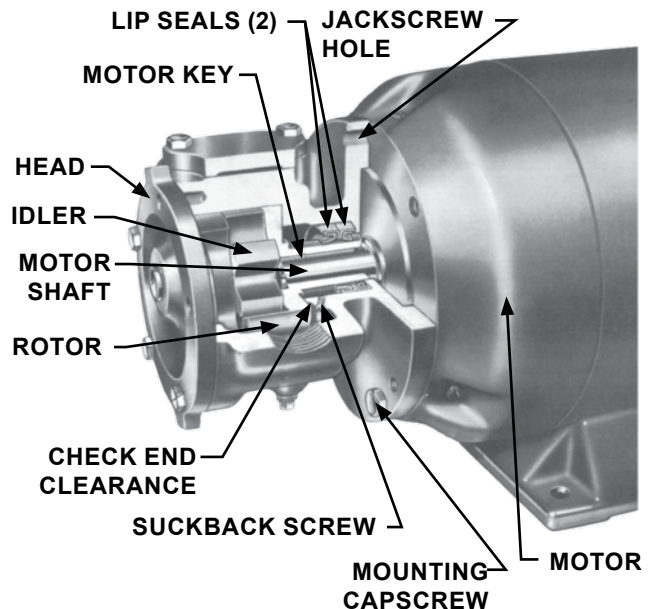


FIGURE 3
CUTAWAY OF H, HJ AND HL 75
LIP SEAL PUMPS

DISASSEMBLY

DANGER !

Before opening any Viking pump liquid chamber (pumping chamber, reservoir, relief valve adjusting cap fitting, etc.)

Be sure:

1. That any pressure in the chamber has been completely vented through the suction or discharge lines or other appropriate openings or connections.
2. 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 pump.
3. That you know what liquid the pump has been handling and the precautions necessary to safely handle the liquid. Obtain a material safety data sheet (MSDS) for the liquid to be sure these precautions are understood.

Failure to follow above listed precautionary measures may result in serious injury or death.

1. **REMOVE THE PUMP FROM THE MOTOR.** Remove the four capscrews and use three as jackscrews in the threaded holes of the pump from the motor shaft.

NOTE: If the pump has a valve, it must be removed first to have room for the jackscrews.

2. **REMOVE PUMP HEAD.**

NOTE: Mark the head and casing before disassembly to make sure they are reassembled properly. The idler pin, which is offset in the pump head, should be properly positioned toward and equal distance between the port connections to allow for proper flow of liquid through the pump.

If it is necessary to disassemble the pump for inspection or repair, first remove the head capscrews and remove head by tapping the head removing lugs lightly.

3. **REMOVE THE HEAD GASKETS.** If a new set is not available, the original gaskets may be reused provided they are not damaged.
4. **REMOVE THE IDLER FROM THE IDLER PIN.** If the idler pin is worn, the head, idler pin and idler bushing should all be replaced.

If the idler bushing is worn, a new bushing is needed.

If the new bushing is carbon graphite, special care must be taken when pressing it into the idler. An arbor press should always be used; be sure the bushing is started straight. **DO NOT STOP** the pressing operation until the bushing is in its proper location. Carbon graphite is brittle; starting and stopping the pressing operation

frequently results in a cracked bushing. If cracked in the idler, the bushing will quickly disintegrate.

5. **REMOVE THE ROTOR FROM THE CASING.** The rotor of the two smaller pumps (G & GG sizes) can be removed by pressing on the end of hollow drive end of the rotor. It will be necessary on the models with mechanical seals (G475 & GG475) to use an arbor press and an arbor of approximately 1.375" diameter. The seal will remain in the casing.

The rotor of the three larger size pumps (H, HJ, HL sizes) can also be removed by pushing on the hollow drive end of the rotor. The spring and rotary member of the mechanical seal will come out with the rotor in these pumps.

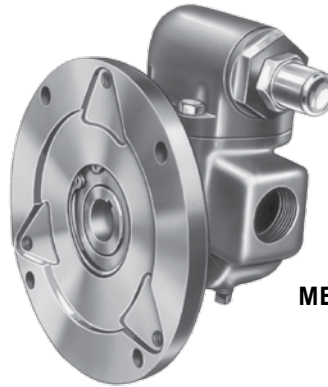


FIGURE 4
VIEW OF FLANGE END
OF G AND GG475
MECHANICAL SEAL PUMPS

6. **REMOVE THE MECHANICAL SEAL OR LIP SEALS.** (See figure 4) Remove the snap ring in the casing of the two smaller pumps (G and GG sizes) and the complete seal can be removed out of the large flanged end of the casing.

Remove the spring and rotary member from the rotor and the seal seat or lip seals from the pump end of the casing of the three larger size pumps (H, HJ, HL).

ASSEMBLY

Reassembly of these pumps is explained by one of the following sets of instructions. Follow the instructions for the proper pump model.

Before starting to reassemble the pump, clean all parts thoroughly and replace those which show signs of excessive wear or damage.

To Reassemble Model G75 or GG75 Lip Seal Pumps: see Figure 5)

1. **INSTALL THE LIP SEALS.** The lip seals should be installed in the casing one at a time from the large flanged end. The sealing lips must face away from each other.

NOTE: Use an arbor press with an arbor of 2.188 diameter and press the lip seals in the casing as far as they will go. **See figures 7, 8, 9, and 10** for a cross section of your pump models.

2. **LUBRICATE THE LIP SEALS.** Fill the area between the lips of the lip seals with grease.
3. **INSTALL THE ROTOR.** Flush the rotor hub with light oil (not grease) and insert the rotor in the casing with the hub through the lip seals.

CAUTION !

Turn the rotor back and fourth as you exert enough force to push it through the lip seal and to the bottom of the casing. Be careful not to fold under the lip of the inner seal.

4. **INSTALL THE IDLER.** Put the idler with the bushings on the idler pin.

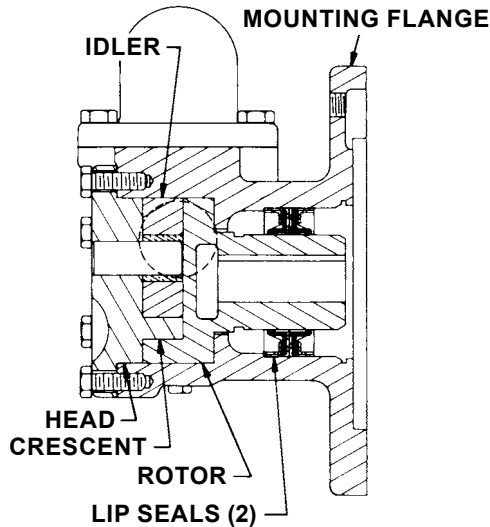


FIGURE 5
SECTIONAL DRAWING OF MODELS G75 & GG75
LIP SEAL PUMPS

5. **PLACE HEAD GASKETS ON THE PUMP HEAD.** The proper amount of gaskets should be used to provide necessary end clearance within the pump so it turns freely with no appreciable end play. **Gasket Table 1** gives the normal amount of gaskets used.

6. **THE HEAD CAN NOW BE ASSEMBLED ON THE PUMP.** Tilt the top of the head away from the pump slightly until the crescent enters the inside diameter of the rotor and rotate the idler until its teeth mesh with the rotor teeth. Do not damage the head gaskets. Note correct position of the idler and crescent (**See Figure 5** and **Disassembly step 2**). Tighten the head capscrews and then check the end clearance.

7. **CHECK PUMP END CLEARANCE.** Measure the clearance between the back of the rotor and the mechanical surface in the bottom of the casing by inserting a feeler gauge through the port opening. This is the end clearance; the normal amount is 0.003" to 0.005". Add or remove gaskets until the figure is reached.

PUMP MODELS	NORMAL AMOUNT USED (INCH)	ONE SET OF GASKETS CONSISTS OF THE FOLLOWING
G75 & GG75 Lip Seal Pumps	.010" - .015"	2 - .005" Plastic 3 - .002" Plastic

GASKET TABLE 1

8. **BOLT THE VALVE INTO THE CASING.** Place the valve gasket and valve or cover-plate on the pump and fasten securely with the four capscrews.

CAUTION !

Be sure the adjusting screw of the relief valve points toward the suction port.

9. **ASSEMBLE THE PUMP ON THE MOTOR.** Install the full length key in the keyway of the motor shaft.

NOTE: Key must be full length to avoid misalignment of the pump rotor, which could cause serious damage to the pump. Slide the pump on the motor shaft and fasten securely with the four capscrews.

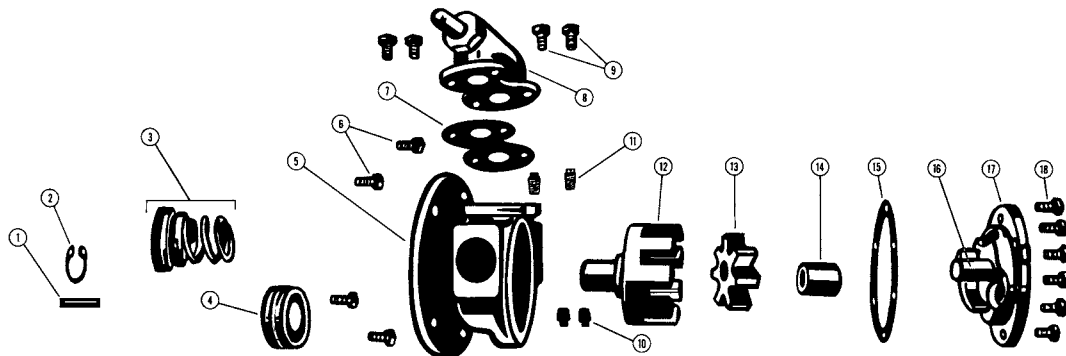


FIGURE 6
EXPLODED VIEW SERIES 75 & 475 PUMPS (G AND GG SIZE)

ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART
1	Key for Motor Shaft (Full Length)	7	Gasket for Relief Valve or Cover Plate	13	Idler
2	Snap Ring (Mech. Seal Pumps Only)	8	Relief Valve	14	Idler Bushings
3	Mechanical Seal (Complete)	9	Capscrews for Relief Valve or Cover Plate	15	Gasket for Head
4	Lip Seal (2)	10	Pipe Plugs - 1/8"	16	Idler Pin
5	Casing	11	Machine Screw (2-Mech. Seal, 1-Lip Seal)	17	Head
6	Capscrews (Pump on Motor)	12	Rotor	18	Capscrews for Head

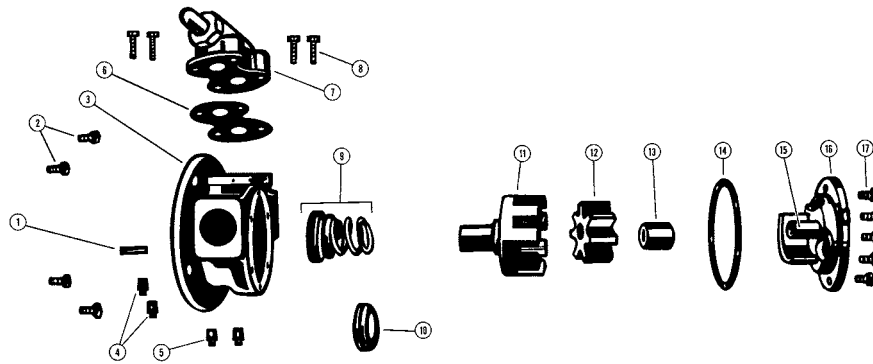


FIGURE 7
EXPLODED VIEW SERIES 75 & 475 PUMPS (H, HJ AND HL SIZE)

ITEM	NAME OF PART	ITEM	NAME OF PART	ITEM	NAME OF PART
1	Key for Motor Shaft (Full Length)	7	Relief Valve	13	Idler Bushing
2	Capscrews (Pump on Motor)	8	Capscrews for Relief Valve or Cover Plate	14	Gasket for Head
3	Casing	9	Mechanical Seal (Complete)	15	Idler Pin
4	Pipe Plugs - 1/8"	10	Lip Seal (2)	16	Head
5	Machine Screw (2-Mech. Seal, 1-Lip Seal)	11	Rotor	17	Capscrews for Head
6	Gasket for Relief Valve or Cover Plate	12	Idler		

To Reassemble Model H75, HJ75, or HL75 Lip Seal Pumps: See Figure 8)

- 1. INSTALL THE LIP SEALS.** The lip seals should be installed in the casing one at a time from the head end. The sealing lips must face away from each other.
NOTE: Use an arbor press of 2.188 diameter and press the lip seals in the casing as far as they will go.
- 2. LUBRICATE THE LIP SEALS.** Fill the area between the lips and the lip seals with grease.
- 3. INSTALL THE ROTOR.** Flush the rotor hub with light oil (not grease) and insert the rotor in the casing with the hub through the lip seals.

CAUTION !

Turn the rotor back and fourth as you exert enough force to push it through the lip seal and to the bottom of the casing. Be careful not to fold under the lip of the inner seal.

- 4. INSTALL THE IDLER.** Put the idler with the bushing on the idler pin.
- 5. PLACE THE HEAD GASKETS ON THE PUMP HEAD.** The proper amount of gaskets should be used to provide the necessary end clearance within the pump so it turns freely with no appreciable end play. **Gasket Table 2** gives the normal amount of gaskets used.
- 6. THE HEAD CAN NOW BE ASSEMBLED ON THE PUMP.** Tilt the top of the head away from the pump slightly until the crescent enters the inside diameter of the rotor and rotate the idler until its teeth mesh with the rotor teeth. Do not damage the head gaskets. Note the

- 7. CHECK PUMP END CLEARANCE.** Measure the clearance between the back of the rotor and the machined surface in the bottom of the casing by inserting a feeler gauge through the port opening. This is the end clearance. Normal amount is 0.003" to 0.005". Add or remove gaskets until the figure is reached.

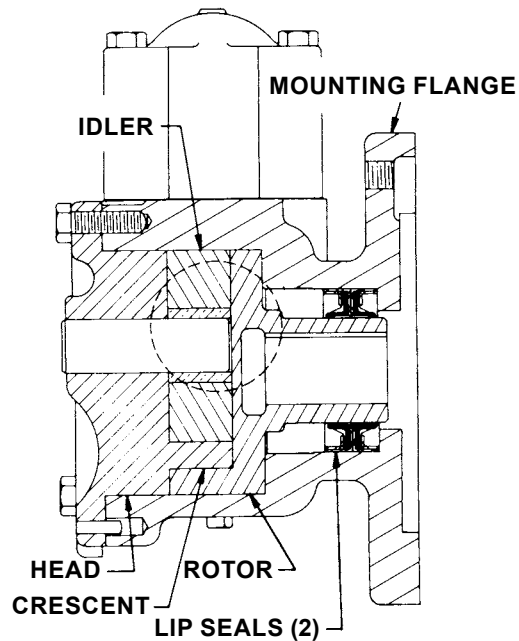


FIGURE 8
SECTIONAL DRAWING OF MODELS H75, HJ75 & HL75 LIP SEAL PUMPS

PUMP MODELS	NORMAL AMOUNT USED (INCH)	ONE SET OF GASKETS CONSISTS OF THE FOLLOWING
G75 & GG75 Lip Seal Pumps	.010" - .015"	2 - .005" Plastic 3 - .002" Plastic

GASKET TABLE 2

- BOLT THE VALVE TO THE CASING.** Place the valve gasket and valve or coverplate on the pump and fasten securely with the four capscrews.

CAUTION !

Be sure the adjusting screw of the relief valve points toward the suction port.

- ASSEMBLE THE PUMP ON THE MOTOR.** Install the full length key in the keyway of the motor shaft.
NOTE: Key must be full length to avoid misalignment of the pump rotor, which could cause serious damage to the pump. Slide the pump on the motor shaft and fasten securely with the four capscrews.

To Reassemble Model G475 or GG475 Mechanical Seal Pumps: see Figure 9)

- INSTALL THE ROTOR IN THE CASING.**
- INSTALL THE IDLER.** Put the idler with bushing on the idler pin.
- PLACE THE HEAD GASKET ON THE HEAD.** The proper amount of gaskets should be used to provide the necessary end clearance within the pump so it turns freely with no appreciable end play. **Gasket Table 3** gives the normal amount of gaskets used.

PUMP MODELS	NORMAL AMOUNT USED (INCH)	ONE SET OF GASKETS CONSISTS OF THE FOLLOWING
G75 & GG75 Mechanical Seal Pumps	.010" - .015"	2 - .005" Plastic 3 - .002" Plastic

GASKET TABLE 3

- THE HEAD CAN NOW BE ASSEMBLED ON THE PUMP.** Tilt the top of the head away from the pump slightly until the crescent enters the inside diameter of the rotor and rotate the idler until its teeth mesh with the rotor teeth. Do not damage the head gaskets.
Note the correct position of the idler and crescent (**See Figure 9** and **Disassembly Step 2**). Tighten the head capscrews and then check the end clearance.
- CHECK THE PUMP END CLEARANCE.** Measure the clearance between the back of the rotor and the machined surface in the bottom of the casing by inserting the feeler gauge through the port opening. This is the end clearance. Normal amount is 0.003" to 0.005". Add or remove gaskets until the figure is reached.

- INSTALL THE MECHANICAL SEAL.** Slide the seal spring washer over the rotor hub as far as it will go. Flush the rotor hub and seal housing bore with light oil (not grease) and assemble the spring, rotary member and seat of the mechanical seal in position, refer to **Figure 9**.

CAUTION !

Never touch the sealing faces of the mechanical seal with anything except fingers or a clean cloth.

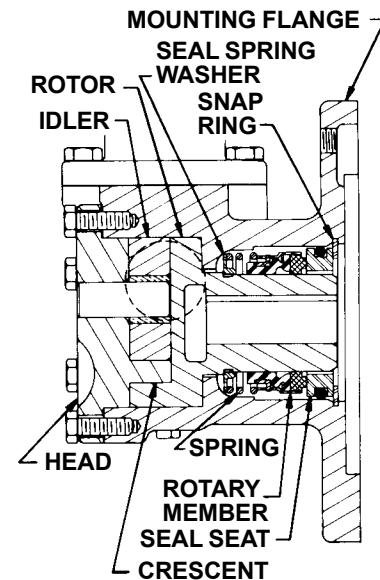


FIGURE 9
SECTIONAL DRAWING OF MODELS G475 & GG475 MECHANICAL SEAL PUMPS

- INSTALL THE SNAP RING.** Install the snap ring in the groove in the casing. This will hold the seal at its proper working length.
- BOLT THE VALVE TO THE CASING.** Place the valve gasket and valve or coverplate on the pump and fasten securely with the four capscrews.

CAUTION !

Be sure the adjusting screw of the relief valve points toward the suction port.

- ASSEMBLE THE PUMP ON THE MOTOR.** Install the full length key in the key way of the motor shaft.
NOTE: Key must be full length to avoid misalignment of the pump, which could cause serious damage to the pump. Slide the pump on the motor shaft and fasten securely with the four capscrews.

To Reassemble Model H475, HJ475, or HL475 Mechanical Seal Pumps: see Figure 10)

1. **INSTALL THE SEAL SEAT.** Lubricate the outside diameter of the seal seat and the inside of the seal seat and the inside of the seal housing bore with the light oil (not grease). Start the seal seat in the casing and press into place.

CAUTION !

Never touch the sealing faces of the mechanical seal with anything except fingers or a clean cloth.

2. **INSTALL THE ROTARY MEMBER OF SEAL.** Flush the rotor hub and the inside of the rotary member with light oil. Slide the spring and rotary member over the rotary hub only far enough to hold the spring in position. Do not compress the spring at this time.
3. **INSTALL THE ROTOR IN THE CASING.**
4. **INSTALL THE IDLER.** Put the idler with the bushing on the idler pin.
5. **PLACE THE HEAD GASKETS ON THE HEAD.** The proper amount of gaskets should be used to provide the necessary end clearance within the pump so it turns freely with no appreciable end play. **Gasket Table 4** gives the normal amount of gaskets used.
6. **THE HEAD CAN NOW BE ASSEMBLED ON THE PUMP.** Tilt the head away from the pump slightly until the crescent enters the inside diameter of the rotor and rotate the idler until its teeth mesh with the rotor teeth. Do not damage the head gaskets. Note the correct position of the idler and crescent. **Refer to Figure 10 and Disassembly step 2.**

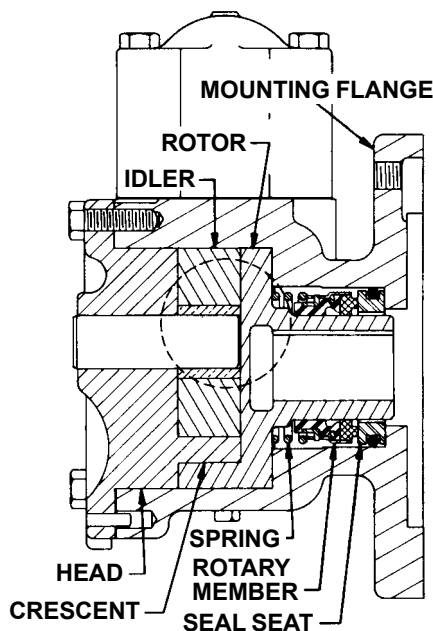


FIGURE 10
SECTIONAL DRAWING OF MODELS H475, HJ475 & HL475 MECHANICAL SEAL PUMPS

7. **CHECK THE PUMP END CLEARANCE.** Measure the clearance between the back of the rotor and the machined surface in the bottom of the casing by inserting a feeler gauge through the port opening. This is the end clearance; normal amount is 0.003" and 0.005". Add or remove gaskets until the figure is reached.

PUMP MODELS	NORMAL AMOUNT USED (INCH)	ONE SET OF GASKETS CONSISTS OF THE FOLLOWING
H475, HJ475 & HL475 Mechanical Seal Pumps	.010" - .015"	2 - .002" Plastic 2 - .006" Paper

GASKET TABLE 4

8. **BOLT THE VALVE INTO THE CASING.** Place the valve gasket and valve or coverplate on the pump and fasten securely with the four capscrews.
9. **ASSEMBLE THE PUMP ON THE MOTOR.** Install the length key in the keyway in the motor shaft.
NOTE: Key must be full length to avoid misalignment of the pump, which could cause serious damage to the pump. Slide the pump on the motor shaft and fasten securely with the four capscrews.

SAFETY RELIEF VALVE INSTRUCTIONS

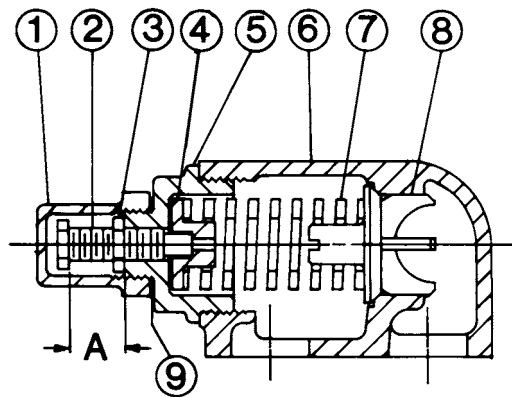


FIGURE 11
PRESSURE RELIEF VALVE - G, GG, H, HJ & HL SIZE

VALVE - LIST OF PARTS	
1. Valve Cap	6. Valve Body
2. Adjusting Screw Cap	7. Valve Spring
3. Lock Nut	8. Poppet
4. Spring Guide	9. Cap Gasket
5. Bonnet	

DISASSEMBLY

NOTE: Mark valve and head to be sure they are reassembled in the same relative position.

1. Remove valve cap.
2. Measure and record the length of extension of the adjusting screw. **See "A" on Figure 11.**
3. Loosen the lock nut and back out adjusting screw until spring pressure is released.
4. Remove bonnet, spring guide, spring and poppet from the valve body. Clean and inspect all parts for wear or damage and replace as necessary.

ASSEMBLY

Follow the procedure outlined under disassembly.

If valve is removed for repairs, be sure to replace in the same position. The valve cap should point towards the suction port.

PRESSURE ADJUSTMENT

If the pressure setting of the safety relief valve is to be changed from that which the factory has set, the following instructions should be carefully followed:

1. Remove the valve cap, which covers the adjusting screw, and loosen the lock nut that locks the adjusting screw so the pressure setting will not change during operation of the pump.
2. A pressure gauge somewhere in the discharge line must be used for actual adjustment operation.
3. The adjusting screw should be turned in for increasing the pressure or turned out for decreasing the pressure.
4. With the discharge line closed at a point beyond the pressure gauge, the gauge will show the maximum pressure the valve will allow while the pump is in operation.

IMPORTANT

In ordering parts for the pressure relief valve, always give model number and serial number of the pump as it appears on the nameplate and the name of the part wanted. When ordering springs, be sure to give the pressure settings desired.

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/warranty-info). 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.

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