



IMPORTANT
DO NOT FILE AWAY
 READ THIS MANUAL PRIOR TO INSTALLATION
 START-UP OR OPERATION OF ANY COMPONENT

Customer:			
Customer Order No.:			
Industrial Valves and Power Job No.:			
Drawing No.:			
TECHNICAL DATA			
ROTARY VALVE	Insp. By	MOTOR & DRIVE	Insp. By
Rotor To Valve Housing:		Operating Speed:	
Clearance:		Motor Type:	
Flange Drill Pattern:		Drive Type:	
Seal Purge w/Lantern Rings:		Controller:	
End Plate Purge:		Chain:	
Body Vent:		Valve Sprocket:	
Special Coating:		Drive Sprocket:	
Rotor Type:		Speed Switch:	
Pellet Feeder:			
Line Loader:			

WARNING!



DO NOT PUT HANDS
 IN VALVE INLET
 OR OUTLET WHILE
 EQUIPMENT IS
 IN OPERATION.

INDUSTRIAL VALVES
 AND POWER
 75 Highland Drive Putnam, CT 06260

USE COMMON SENSE SAFETY PRECAUTIONS

Industrial Valves and Power can assume no responsibility for damage or injury resulting from misuse of the equipment

Industrial Valves and Power reserves the right to make changes, without prior notice, at any time.



INTRODUCTION

The instructions contained in this manual are designed to aid in the initial receiving, handling, installation, operation and maintenance of your valve. **If you do not read and fully understand the information contained herein, the equipment could be damaged from improper unloading, storage, installation, and/or initial start up.** Such mistreatment or damage may void the equipment warranty. More importantly, improper action could result in injury or loss of life. Please use this manual and common sense safety and handling precautions. Ensure that all installers, operators and maintainers have access to this manual; DO NOT FILE IT AWAY!

Industrial Valves and Power is constantly making improvements in its products, to bring industry increased value for its equipment investment. Consequently, there may be minor variations between the equipment you receive and the details described in this manual. If any problems arise that this manual does not cover adequately, contact our main office toll free at 888-810-5557.

Receiving

Examine the equipment. Report any shortages, or damage within 48 hours of receipt. Sometimes damage cannot be detected until the equipment is placed in operation, i.e., a bent shaft. Contact your supplier immediately when such defects are discovered.

Handling

Sling rotary valves from under the base of the unit. Avoid slinging from the rotor shafts. If forklifts are used to move the unit, take care to prevent damage to underneath parts. Improper handling can cause distortion, misalignment and/or breakage, particularly on flange corners.

Storage

If stored, cover securely to protect from the elements, dust and any possibility of damage. If feasible, do not remove packaging or protective agents until installation. When removed from storage, inspect the valve for foreign objects, water, corrosion, etc. If storage is prolonged in a vibration area, the shafts should be rotated weekly to prevent bearing peening.

Installation

- **Do not permit, nor require, rotary valves to support any load.** Ducting must be supported separately.
- Use minimum 1/8" gaskets on the inlet and outlet flanges.
- Draw bolts up to snug only. Do not over tighten.
- Do not distort the flanges on the housing.
- Provide clearance for valves installed under storage bins to protect them from the thermal expansion of the bin.
- Check for free rotation of the rotor by hand.
- **Make sure the gearbox is filled with lubricant to the correct level, in accordance with the manufacturer's instructions stated on the gearbox.**
- When the electrical connection has been made, check that the valve is rotating in a clockwise direction when viewed from the chain guard side. Check on the position of the direction arrow on the casting. This should point up.
- Set the rotor/body clearance according to the material passing through the valve and the pressure differential above and below the valve. For normal operating conditions, if the rotor is withdrawn from a "fully in" position (the tapers locked), by turning the adjusting ring clockwise one complete revolution, the rotor/body clearance will be .004" (.10mm).
- Provide venting for rotary valves in positive pressure systems. If air purge is fitted, check connections (see venting & purging).
- **Check that adjusting rings are locked tight to the bearing (non-driven end).**



- Check that the two bearing socket set screws are tight against the shaft (non-driven end).
- Check gland packing. NOTE: The packing rings are manufactured from Teflon, or graphite impregnated Teflon. This gives very low coefficient of friction and care must be taken not to over tighten the gland screws. Normally, a sufficient seal is obtained by screwing the nuts on finger tight, and then one complete turn with a wrench. It is advisable to run the valve dry for approximately one hour and then readjust the packing to ensure the seals are set in (see packing run-in section).

Body Vent and End Cap/Packing Purge

Your valve has been equipped with provisions for venting and purging. These features must be used under the following conditions.

Body Vent

If your system is subject to pressure below the valve, as product discharges through the outlet, the now empty rotor pocket will pick up air pressure. If this pressure is not relieved when the rotor pocket again rotates to the inlet, the pressure will be released into the vessel above, causing "blow back". Blow back will degrade the full efficiency of the valve, and hamper throughput, especially with very light products. The body vent, which is provided in a boss on the side of the body, is drilled and tapped to 1" NPT. Reduction to 1/2" NPT may be required in some cases. When used, you will need to run a line from the vent to a "nonpressurized" area, such as the input of the storage vessel (do not vent into the line below the valve). The vessel input is a good place to vent, due to the fact that small amounts of product may be released through the vent, with the air stream.

End Cap Purge

When using a shrouded "closed-end" type rotor, there is always the possibility of product accumulating within the void between the shroud and the end cap. In the case of resins, fine powders, and other products which may have a tendency to cake and/or harden, material may solidify within the void, causing increased drag on the drive, and wear to the rotor. In extreme cases, seizing may occur. In these cases, air pressure is applied to the end cap purge, which thereby forces product out of the void. It is very important that the end cap purge pressure be set at 1 to 2 PSI above differential pressure as a starting point. The pressure may have to be increased, or decreased to accommodate product size, bulk density, or texture. If differential pressure is 0, then purge pressure should be from 1 to 2 PSI. If differential pressure is 5 PSI, then end cap pressure MUST be 6 to 7 PSI. It is very important that on pressurized systems, the end cap purge pressure remain above differential pressure. This is necessary to overcome differential pressure, bringing about air flow across the rotor shrouds. If end cap purge pressure is lower than differential pressure, then the product could still flow into the void.

Packing Purge

In cases where fine abrasive products are used, material can accumulate in the gland packing area, causing wear on the packing and on the rotor journals. In these cases, a packing purge with lantern rings is provided. Packing purge pressure should be applied identically to the end cap purge as indicated above. For more information on the use of purges, contact us at 888-810-5557.

Safety

Operators and maintainers should always follow standard OSHA, state, local, and factory safety regulations. In addition, plant management must brief their personnel on the following safety rules.



1. Lock out the motor electrically before performing any maintenance.
2. Do not start the rotary valve if the chain guard is not in place.
3. Do not put hands or tools in the inlet or outlet openings while the valve is running.
4. If your valve has been equipped with rotor tips, when adjusting the tips, be aware of sharp edges and the pinch point where the rotor tips enter the body chamber.

If the above safety rules are ignored, the consequences could result in bodily injuries, for which Industrial Valves and Power, Inc., will not be responsible.

Lubrication

1. Lubrication - Valve

The valve rotor shaft bearings are prelubricated by the manufacturer. Additional lubrication should not be required for the life of the bearing unit.

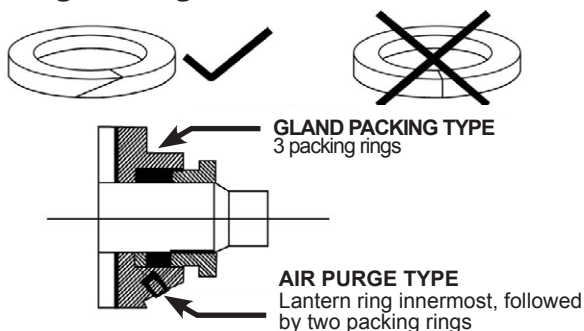
2. Lubrication - Roller Chain

For most applications, apply oil or light grease to the chain by manual brushing. This is done periodically with interval application dependent upon operating time.

3. Lubrication - Gear motor

Gear motors that require oil are normally furnished with the oil. When additional oil is needed, follow the reducer manufacturer's lubricating instructions which were provided with the gear motor.

Installing Packing



- Cut rings with beveled ends.
- When installing packing, make sure the beveled ends are laid together correctly, as illustrated above.
- Stagger joints when placing rings in the packing housing.

Packing Run In

The valves are normally provided with the packing retainer loosely tightened. For proper packing run-in, follow the instructions below.

- Tighten packing gland bolts until the rotor becomes difficult to turn by hand.
- Run the rotor under power for 30 minutes to one hour or until it is no longer difficult to turn by hand. (At this state, the valve must not be conveying material).
- Take up on packing bolts.
- Valve is ready to operate.

NOTE: In seal purge operations, the innermost packing ring is replaced by a lantern ring.

Shaft Seal Leakage

The shaft must, of course, rub against the packing. As wear progresses, fine powders may work in between the packing and the shaft, especially in positive pressure conveying systems. This infiltration of powder into the packing can cause wear in the outside ring of the packing. As such, leakage can occur. When this happens, shut the system down and replace the packing. Sometimes you may roll the packing rings the other way and use them a second time. Do not attempt to stop a leak of abrasive material by tightening the packing gland bolts. Material caught along the shaft under the packing would only cause more wear to the packing and cause damage to the shaft. When replacing packing, inspect the seal area on the shaft for roughness or scoring. If such conditions are evident, remove the rotor and polish the shaft.



Operating & Maintenance Instructions

1. If the rotary valve has to be stopped for any reason, then all operations in section 1 must be completed.
2. Before commissioning the valve, check that the gear units are filled with oil. Note--there may be two separate filling ports on variable speed units.
3. Read the instruction and maintenance booklet for the variable speed gear unit before attempting to alter the speed setting.

SECTION 1 -- Operations Prior to Dismantling.

1. Ensure the vessel above the valve is empty of material, or if equipped with a shut-off or slide valve, close the valve and empty the rotary valve.
2. Shut off all air or gas supply to the rotary valve.
3. Switch off valve and isolate motor from the electrical supply.
4. Disconnect all wiring from the motor. The valve is now ready for maintenance.

SECTION 2 -- Dismantling Operations for a Complete Overhaul.

1. Disconnect air or gas pipe line from rotary valve and remove complete valve from the feeding system.
2. Remove the chain guard outer cover.
3. Slacken geared unit securing bolts and move the unit as far as possible toward the rotary valve.
4. Disconnect the chain joining link and remove chain.
5. Remove the drive sprocket.
6. Remove the valve sprocket and shaft key.
7. Remove all nuts and screws securing chain guard back plate and remove back plate.
8. Loosen the gland nuts and glands to allow for easy removal of the end caps.
9. Check the keyway in the rotor shaft for burrs, etc., and loosen socket set screws securing the bearing to the shaft.
10. Remove the outer adjusting ring.
11. Remove all bearing screws and slide complete

bearing away from the end caps and shaft.

12. Remove the inner adjusting ring.
13. Remove all bolts securing end caps and remove end caps from body.
14. Slide rotor assembly out of body, taking care not to score rotor or body.
15. Unscrew and remove seal clamp nuts, and remove the seal clamp and the packing seals. (Applies to both caps)
16. Thoroughly clean all individual parts prior to inspection. The chain should be cleaned with paraffin and hung to drain.

SECTION 3 -- Inspection and Checking of Components.

1. Check body for wear in the bore. Light score marks may be observed. If wear is excessive, the body should be repaired or replaced; contact Industrial Valves and Power.
2. Inspect end cap surfaces for scoring. Light scoring may be smoothed with fine emery cloth; otherwise, end cap will require replacement.
3. Inspect all edges of the rotor blades and dress up as necessary. Check the rotor shaft for abrasion from gland packing. Lightly emery if scoring is light.
4. Check bearings, chain sprockets, and chain for excessive play and replace if necessary.

SECTION 4 -- Assembly Sequence-Bare Shaft Valve

1. Place the valve body on a safe work surface, ensuring the inlet is on top (check that the cast arrows are facing up). Insert the rotor into the body and slide it hard until the rotor and valve body are locked together on their tapered surfaces. The rotor shaft and valve body are now parallel to each other.
2. Install seals and seal clamp to end caps.
3. Carefully slide the valve end caps over the rotor shaft, making certain not to "roll" over the



packing rope. When sliding caps on, use a rotating motion until caps are seated into their fully on position. Note, align the end cap's packing purge boss (raised and beveled surface near the shaft opening), so it is in the uppermost position. Bolt the end cap to the valve body.

4. Thread on one adjusting nut to the non driven end of the rotor shaft.

5. Fit the flanged bearings to the end caps, ensuring the machined recess of the bearing flange meets the machined recess of the end cap.

6. Using a pin style spanner wrench, turn the outside adjusting nut until the rotor is released from the valve body and begins to spin. Using a feeler gauge, check the gap between the rotor blades and the valve body inlet opening, this gap may vary depending on the product and operating temperatures, but the factory settings are typically from .006" to .010". Once the rotor is set, make sure the inside adjusting nut is tight against the inside of the bearing.

7. On the bearings, tighten the two set screws up to the rotor shaft until they just make contact. Now tighten both completely. Note: the set screws on the non driven end of the shaft will do some damage to the threaded shaft. The drive end of the shaft is optional, some people do not use these set screws as they are hard to get to when the sprocket and chain guards are mounted. If the set screws are not sufficiently tightened, the rotor may shift during operation, causing damage to the valve.

8. The rotor should now turn freely by hand. CAUTION! IF A METAL ON METAL SOUND IS HEARD, DO NOT PUT THE VALVE INTO OPERATION; DAMAGE WILL RESULT TO THE VALVE.

8. Fasten the bearing/shaft end cap to the bearing flange on the non driven end of the shaft with two of the four bolts from the bearing mounting flange.

SECTION 5 -- Drive Replacement

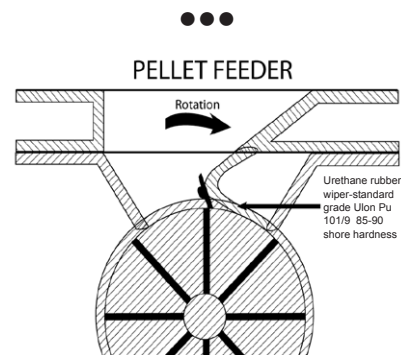
1. Fit chain guard back plate by securing with three long end cap screws and spacer tubes.
2. Fit key to the rotor and assemble the driven sprocket.
3. Assemble the drive sprocket to the geared unit output shaft and replace chain.
4. Adjust chain tension and tighten geared unit securing screws and nuts. Align sprockets and secure as required (lubricate chain with a light grease).
5. Fit the rotary valve into the feeding system and reconnect air or gas pipes to body.

SECTION 6 -- Operations Prior to Recommissioning

1. Wire up gear motor and switch on power at the circuit breaker. Start up the rotary valve and check direction of rotation against general arrangement drawing of the rotary valve. When correct direction of rotation is achieved, (clockwise when viewed from the driven-end of the rotor shaft), stop the valve and refit the chain guard cover. The valve is now ready for recommissioning.

SECTION 7 -- Recommissioning Operation for Rotary Valve

1. Start up the rotary valve.
2. Open the air line system to the rotary valve.
3. Open the vessel above the valve or commence filling the vessel.



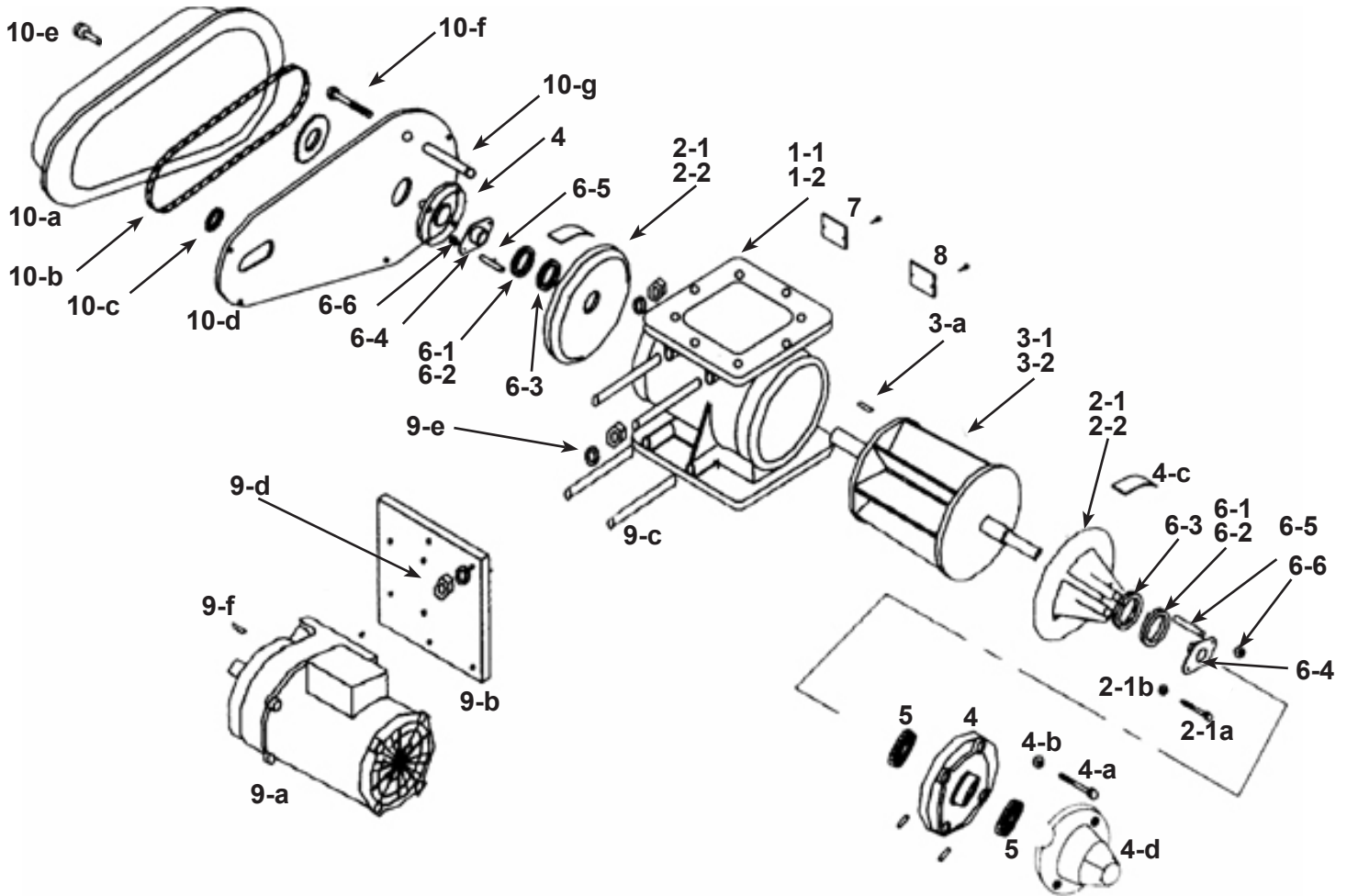


SECTION 8. Maintenance Chart for Tapered Rotary Valves

COMPLETE VALVE		To be kept free from external accumulations of dust or other particles.
BEARINGS - Normal Temperature	Standard Type Self aligning flange cartridge bearing unit	The bearing is prepacked with a lithium-based grease appropriate to the operating temperature and will not normally require lubricating unless operating under adverse conditions. Periodically check that socket set screws are tight (2 per bearing)
BEARINGS - Higher Temperature	Special Type	*Special instructions will be issued with the valve concerning special type bearings. * See valve general arrangement drawing.
SEALS	Gland Packing	Tighten up the seal clamp only to prevent loss of air and material. Replace packing material. Excessive tightening of the packing material when it has become ineffective will cause the rotor shaft to become worn.
ADJUSTING RINGS		Periodically check that both rings are tight against the bearing.
GEARED ELECTRIC MOTOR	Gearbox Motor	Fill gearbox according to manufacturer's instructions before start-up. Per manufacturer's instructions.
CHAIN DRIVE		Should be periodically removed, thoroughly cleaned, and immersed in heated mineral grease.
AIR PURGES		Check periodically for secureness and leaks.

SECTION 9.

Should any questions arise over valve operation or spares, please do not hesitate to call Industrial Valves and Power at 888-810-5557. Be sure to have the valve nomenclature and serial number.



ITEM #	DESCRIPTION	RQD	MAT'L OF CONST	ITEM #	DESCRIPTION	RQD	MAT'L OF CONST
1-1	Body	1	Cast Iron	6-4	Seal Retainer Clamp	2	Aluminum
1-2	Body	1	Stainless Steel	6-5	Seal Retainer Stud	4	Steel-Zinc Plated
2-1	End Caps	2	Cast Iron	6-6	Seal Retainer Nut	4	Steel-Zinc Plated
2-2	End Caps	2	Stainless Steel	7	Serial No. / ID Plate	1	Aluminum
2-1a	End Cap Bolts	12	Steel-Zinc Plated	8	Safety Inst. Plate	1	Aluminum
2-1b	End Cap Washers	12	Steel-Zinc Plated	9-a	Gearmotor	1	
3-1	Rotor	1	Mild Steel	9-b	Motor Mounting Plate	1	Mild Steel
3-2	Rotor	1	Stainless Steel	9-c	Motor Plate Mounting Studs	4	Steel-Zinc Plated
3-a	Rotor Shaft Key	1	Steel	9-d	Motor Plate Mounting Nuts	8	Steel-Zinc Plated
4	Bearing	2		9-e	Plate Mounting Washers	8	Steel-Zinc Plated
4-a	Bearing Mount Bolts	8	Steel-Zinc Plated	9-f	Reducer Shaft Key	8	Steel-Zinc Plated
4-b	Bearing Washer	8	Steel-Zinc Plated	10-a	Guard Cover	1	Mild Steel
4-c	Bearing Dust Guard	6	Screens	10-b	Chain	1	Galvanized Steel
4-d	Shaft Cover	1	Aluminum	10-c	Sprockets	1	Steel
5	Clearance Adjusting Ring	2	Steel	10-d	Guard Plate	2	Steel
6-1	Seal Packing - Graphite	6	Graphite	10-e	Guard Cover Mt Screw	5	18-8SS
6-2	Seal Packing - Kevlar	6	Kevlar	10-f	Guard Plate Mounting Bolts	3	Steel-Zinc Plated
6-3	Purge Lantern Ring	2	Aluminum or Bronze	10-g	Guard Plate Mounting Spacer	3	Aluminum

Note: Please specify valve type and serial number when requesting parts information.