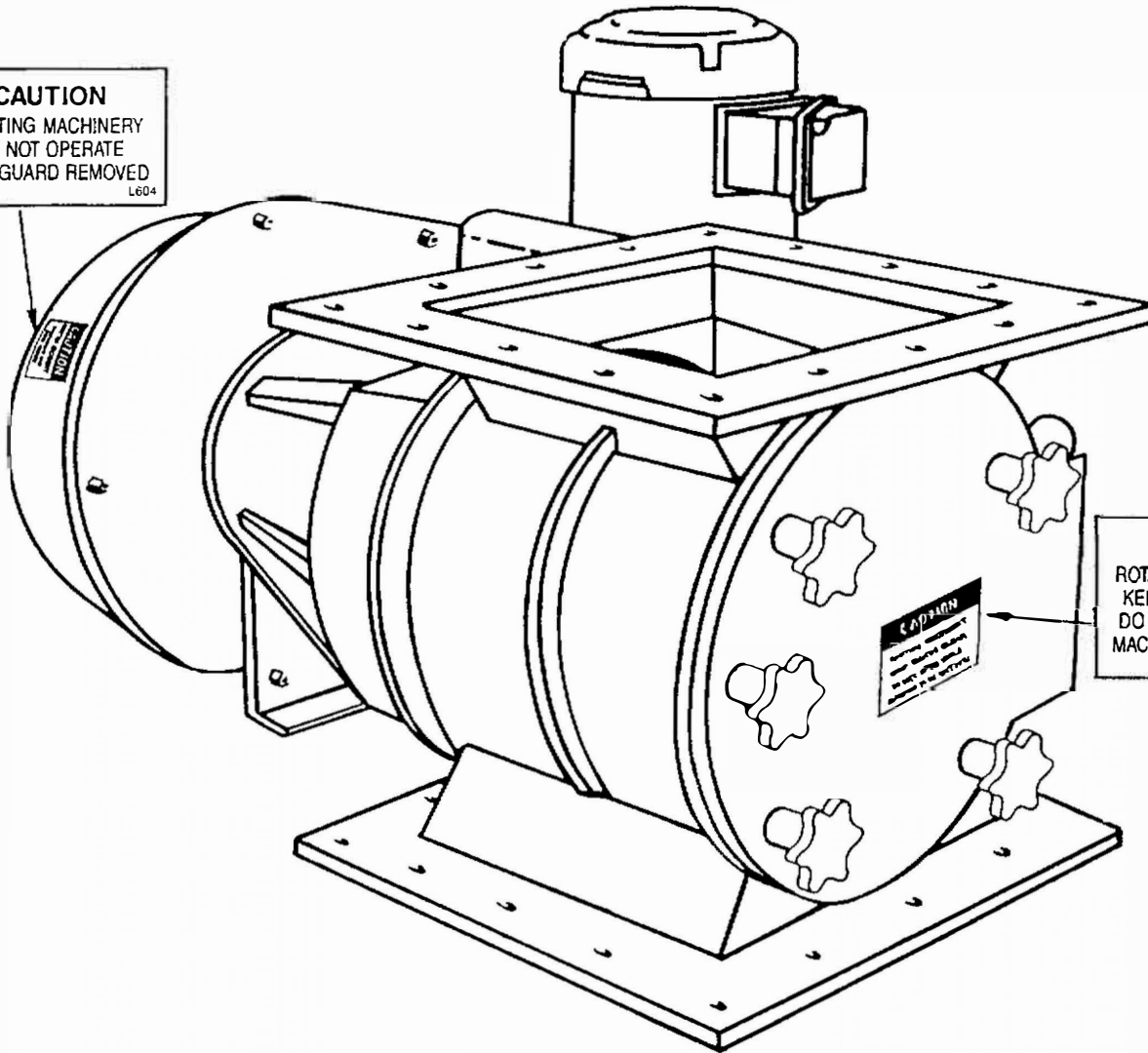


CANTILEVERED ROTARY VALVE

Installation, Operation, and Maintenance Manual

CAUTION
ROTATING MACHINERY
DO NOT OPERATE
WITH GUARD REMOVED
L604



CAUTION
ROTATING MACHINERY
KEEP HANDS CLEAR
DO NOT OPEN WHILE
MACHINE IS IN MOTION
L600

FOREWORD

Young Industries cantilevered rotary valves are furnished in a variety of standard sizes, models, and materials of construction. Drives are furnished to fulfill the requirements of each individual application. Our rotary valves have earned a reputation for their rugged construction and quality workmanship. Properly installed and maintained, they are guaranteed against defects in material and workmanship for a period of one year from date of shipment.

This manual contains instructions for installation, operation, and maintenance of Young Industries' can-

tilevered rotary valves. The care taken during receiving, storage, installation, operation, and continued maintenance will add to the reliable operation and long service life of this equipment.

This manual must be read and understood in its entirety by the operator and the plant safety director prior to performing any work on a rotary valve. Copies of this manual are being supplied with each valve order. Contact Young Industries if you require additional copies to insure the valve is operated safely and according to recommended procedures.

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SAFETY

Read and fully understand this manual prior to performing any work on or operating a Young Cantilevered Rotary Valve.

If you have previously received delivery of a Young Cantilevered Rotary Valve and have just received this latest (updated) manual, insist that the valve operator and the plant safety director read and fully understand this manual prior to continued use of the rotary valve or dismantling the valve for maintenance.

Notify Young Industries if your Young Industries Cantilevered Rotary Valve does not include safety warning labels or devices recommended within this manual which you believe may be important to improve the safe operation or maintenance of your rotary valve installation. Contact the Director of Engineering at (717) 546-3165, prior to continued use or maintenance, for assistance.

Notify Young Industries if you have sold, leased, rented, or given any Young Rotary Valves to another user. Your assistance will allow Young Industries to contact the new user with updated safety and/or operational recommendations.

Safety is a fundamental factor that must be considered at all times in the operation and maintenance of mechanical equipment. Use of proper tools and methods can prevent serious accidents that may result in injury to you and your fellow workers.

A number of safety precautions are listed throughout this manual. Study them carefully and follow them; insist that those working with you do the same. Remember, an accident can easily be caused by someone's carelessness or negligence.

The various precautions and recommendations detailed within this manual **are not necessarily** all inclusive. Young Industries has attempted to provide **SAFETY AND OPERATIONAL GUIDANCE** relating to typical installations with which we are familiar. We urge you to review your particular rotary valve installation to determine whether there are potential hazards beyond the warnings of this manual.

If you have any safety or operational questions pertaining to the design or application of a Young Rotary Valve as it relates to your particular installation, contact The Young Industries' Director of Engineering.

Most employers are subject to the Federal Occupational Safety and Health Act of 1970, as amended. This act requires an employer to keep abreast of the regulations which will continue to be issued under its authority.

Failure to observe and follow the safety precautions may result in serious personal injury or property damage.

Young Industries looks to our customers to achieve a cooperative effort for the purpose of making our rotary valve installations as safe for the operator as is reasonably possible and to insure that proper maintenance and operating procedures are followed. Many times we do not have access to the installation. Therefore, your participation in the safe installation, operation and maintenance of our rotary valve is critical.

WARNING - ELECTRICAL GROUNDING AND BONDING IS REQUIRED

Ungrounded machinery presents a potential hazard of fatal electrical shock from electrical power sources. Static electricity may also accumulate on ungrounded/unbonded equipment. Static electricity discharge from ungrounded equipment or between unbonded pieces of equipment may cause explosion or fire if flammable vapor or dust is present.

Electrical equipment must be installed by a certified professional electrician.

Before operating the equipment described by this manual or any other equipment in the same processing system, grounding and bonding must be completed in accordance with the National Electrical Code (NFPA 70) published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02269-9101, and any other applicable National, State or Municipal codes. Codes for safe control of static electricity must also be observed, including the National Fire Code "Recommended Practice on Static Electricity" (NFPA 77) and any other applicable National, State or Municipal codes.

To avoid hazardous static discharge, mobile, movable or portable equipment which may attach to or come near to other equipment and which is not prohibited by codes from being connected to ground must be safely grounded and bonded before close approach or contact is made. This warning also applies to movable containers such as drums, totes, boxes and bags.

Sections of pipe, duct and gravity spout must be bonded to adjacent sections of pipe, duct, spout or equipment, and must have a conductive path to electrical ground.

Regular periodic safety inspections of electrical systems and grounding/bonding systems are required.

WARNING!

Serious permanent disabling injury is possible! Lock out/tag out power sources and read the instruction manual before installing, operating or working on or near this machine.

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INSTALLATION

A. Receiving and Inspection

1. Upon receipt of equipment and material from Young Industries, the following basic steps should be taken:

a. Use the packing list to determine that all the items shipped have been received. Your equipment order was carefully crated or packaged for safe shipment when given to the carrier. Check for damage.

(1) Damage in transit is the responsibility of the carrier. Be sure to have the driver sign a copy of the freight bill with a notation about any damage.

(2) If a shipment was sent to you by parcel post, have the postmaster complete a damage claim report.

(3) Concealed damage: if equipment or goods are discovered to be damaged by shipment at a later date, contact the carrier and Young Industries immediately.

(4) If shipped UPS, **do not throw original carton away**. Keep all evidence for the inspector.

(5) In all cases of damage in transit, contact The Young Industries Director of Engineering for assistance in determining whether or not this damage may in any way affect safety or proper valve operation.

Note

Young Industries cannot assume any liability for shortages or damaged goods. Claims must be negotiated with the carrier. Contact the Young Industries' Director of Engineering at (717)546-3165 for assistance in rectifying any shortage or damage as may affect safe and proper rotary valve operation.

2. Moving the Cantilevered Rotary Valve.

a. Moving and installation should always be performed by trained, experienced personnel, using safe and accepted rigging practices.

b. Care and caution should be exercised to prevent damaging the valve housing, flanges, and drive components.

Caution

When moving a rotary valve or component parts, be sure that moving practices used are safe for both personnel and equipment. Contact the Young Industries Director of Engineering if there are any questions relating to what constitutes safe and accepted rigging practices for movement and/or installation of a cantilevered rotary valve.

3. Storing the Cantilevered Rotary Valve

a. If moved to storage, the equipment should be located in a dry area, preferably inside. Outside storage will require adequate protection from the weather.

b. The cantilevered rotary valve has been shipped with temporary guards or covers for both the inlet and outlet flange. Do not remove these guards or covers while the rotary valve is in storage.

c. Refer to the maintenance section of this manual for specific lubrication recommendations prior to beginning any lubrication and/or servicing in preparation for storage. Contact the Young Industries Director of Engineering if you are unsure of any detail of lubrication or servicing.

d. After prolonged storage and prior to start-up, the cantilevered rotary valve and drive shall be inspected by qualified personnel. Contact the Young Industries Director of Engineering if assistance is required.

Caution

Use caution to protect against falling objects or debris from entering or damaging the cantilevered rotary valve.

B. Supports

1. Young Industries cantilevered rotary valves are designed with close dimensional tolerances between the rotor and the housing. These close tolerances must be maintained to allow the rotary valve to operate properly. The valve housing design does not include any allowance for a weight addition to either the inlet or outlet flanges. When bolting the valve to mating flanges, care must be exercised to avoid placing loads on the valve housing that may affect the valve tolerances. Follow the three recommendations listed below and contact the Young Industries Director of Engineering if you have further questions on your particular installation.

a. Rotary valve supports must be structurally adequate to support an operating rotary valve.

b. The rotary valve must be supported from the bottom flange and bearing support leg to prevent housing distortion.

c. Rotary valves must be installed with the top and bottom flanges parallel to the mating flanges.

2. After the installation is complete and before the valve is run, check the clearance around the rotor to determine that the rotor will turn freely in the valve housing.

Danger

Disconnect and lock-out power before servicing.

Caution

Before turning rotor or working internally on the valves, disconnect and lockout power or remove drive components. Use special care to avoid the pinching action that may occur between the rotor and the valve housing.

C. Assembly

1. Prior to installing the valve and with the power disconnected and locked out, check internally for cleanliness, rotate the valve by hand using caution to avoid physical harm to personnel and equipment.
2. Add drive components, gear reducer, chain, couplings and accessories. Line up and adjust drive components. Install guards.

Caution

Before turning the rotor or working internally on the valves, disconnect and lock out power or remove drive components. Use special care to avoid the pinching action that may occur between the rotor and the valve housing.

3. We recommend that the inlet and outlet flange covers remain in place until the valve is ready to be attached to the mating equipment at both the inlet and outlet flanges.

Caution

Never operate a rotary valve unless the inlet and outlet openings are covered with temporary flange covers or the connecting equipment.

D. Electrical Installation

1. Check motor for correct rotation with drive components disconnected.
 - a. The motor can safely be "bumped" for rotation with the chain, belts, or the couplings disconnected.

Danger

Disconnect and lock out power before servicing motor or drive components.

Caution

Exercise safety and stay clear of motor when testing.

2. When limit switches are supplied, they are for use as indicators only, **not as a safety switch**. Disconnect and lock out power before servicing or working on a rotary valve or its electrical accessories: Contact the Young Industries Director of Engineering at (717)546-3165 for assistance in reviewing your particular rotary valve installation. Also contact your plant safety director and ask for a review of the rotary valve installation with regard to safety.
3. Care must be used whenever working on or around a rotary valve as the drive may be remotely controlled. Disconnect and lock out power prior to working on or around a rotary valve.

Caution

Never place fingers or hands in a rotary valve, as the rotor may be turning.

4. In addition to following the manufacturer's installation instructions, care must be taken to insure compli-

ance with federal, state, and local government requirements.

E. Compressed Gas Installation

1. The valve housing may have an air or gas connection to the end plate at the shaft seal. This connection allows gas to flow into the seal to purge product.
 - a. The gas seal requires a regulated supply pressure slightly higher than in the valve (approximately 1-3 psi differential).
 - b. Gas to the seal shall always be flowing when the rotor is turning.
 - c. Gas must be compatible with product.
2. When a pressure regulator and filter are required, adjust the pressure regulator and check the filter for cleanliness.

Caution

Compressed gas-shut off and bleed system before servicing.

F. Pre-Commissioning

1. Lubricate all gear boxes, bearings and chains.
 - a. Do not overlubricate. Overlubrication can be as harmful to the equipment as no lubrication (see Table *One-Lubrication Guide*).
2. Determine that all utility lines are properly installed and operative.
3. The rotary valve and all product lines must be clean and operational.
4. Check all limit switches to assure that they are operating properly.
5. Check alignment of drive components. Assure all guards are in position and properly tightened. Start rotary valve and stop immediately if there is any noise or vibration. (See Trouble Shooting.)
6. We urge the installation crew to notify the plant safety director and/or the plant engineer when installation is complete and prior to initial operation. Those in your plant responsible for plant safety should review your rotary valve installation prior to operation for safety in light of the extensive operating recommendations made within this manual. Contact the Director of Engineering at Young Industries if this review results in additional questions or uncertainty.

Danger

Disconnect and lock out power before servicing.



OPERATION

A. Start-Up

1. Prior to actual operation, the operator must familiarize himself with the method of starting and stopping the rotary valve, and the status of supporting utilities.
2. The general appearance of the rotary valve and surrounding area should be visually inspected to determine that the valve components and rotor can be operated safely and without damage

Caution

Rotating machinery-do not operate with guard or cover removed.

B. Loading

1. Ingredients shall be added to and discharged from the rotary valve through an enclosed spout or an opening that is protected by an approved safety guard, such as a fixed grate.
2. If your particular installation does not include these safeguards, you may have an unsafe installation. **Stop operation** of the rotary valve and immediately notify the Young Industries Director of Engineering at (717)546-3165. The Young Industries Director of Engineering can assist in speeding the return of your rotary valve to a recommended operating condition.

C. Continuous Operation

1. During valve operation, the operator should recognize and report any unusual noise or vibration. Look for any excessive bearing temperatures and/or wear to the shaft seals. Worn seals need to be replaced. Notify your maintenance personnel or Young Industries for assistance or additional guidance in defining these conditions. Refer also to the maintenance section of this manual.

2. Guards and valve inspection doors shall be in place and closed tightly whenever the rotor is turning.

Caution

Rotating machinery-keep hands clear. Do not open while machine is in motion

3. The rotary valve is designed and selected to meet specific operating conditions. Care shall be exercised to assure that the valve is operated within safe limits. The valve should be used only for the purpose for which it is designed. Refer to Young Industries Quotation to determine the application for which this rotary valve was intended. Contact the Director of Engineering at Young Industries, Painter Street, Muncy, PA 17756 if you need assistance in determining the proper application of this Young Industries Cantilevered Rotary Valve.

Caution

Consult the Young Industries Engineering Department before changing rotor speed, motor horsepower, or material being handled.

D. Shut-Down

1. When shutting down the rotary valve, shut off supporting utilities in accordance with plant operating procedures.
2. When cleaning or servicing is required on the valve, proper lock out of electrical, compressed gas and mechanical equipment should be completed before the work is started.

Danger

Disconnect and lock out power before servicing.

Caution

Rotating machinery-do not operate with guard or cover removed.

TABLE ONE-Typical Lubrication Guide

Equipment or Part Lubricated	Method of Lubrication	Lubricant (AGMA grade)
Drive Motor	Pressure Gun	EP-2 Grease
Reduction Gears	Right Angle	Hand Fill
	Parallel	Hand Fill
Bearings	Pressure Gun	EP-2 Grease
Couplings (when applicable)	Pressure Gun	EP-2 Grease
Roller Chain	Hand Fill or Brush	R&O Gear Oil-68

Note: Equipment that is out of service for extended periods of time (30 days or longer), or equipment that is placed in storage (inside or outside), should have all unpainted carbon steel surfaces coated with a rust preventative.

MAINTENANCE

A Lubrication

1. During the first few months of operation, the lubrication of the following items should be observed frequently to assure proper operation. (See Table One-Typical Lubrication Guide for lubrication instructions.)
2. Based on 5000 hours per year running time:
 - a Motors without grease fittings-lubricate every five years.
 - b. Motors with grease fittings-lubricate once every year.

Caution

Rotating machinery-do not operate with guards or covers removed.

- c. Reduction gears-check for proper lubrication, excessive heat, vibration or unusual noise which may indicate a problem with the reduction gears.
- d. Roller chains-when chain drives are used, check roller chains for proper lubrication. Couplings, when used, may require lubrication.
- e. Valve bearings-check for proper lubrication. A hot bearing may indicate lack of lubrication, overlubrication or possible mechanical problems.

Contact the Director of Engineering at Young Industries at () 546-3165 if you need additional assistance to set up an ongoing lubrication and preventive maintenance schedule.

Equipment that is out of service for extended periods of time (30 days or longer) or equipment that is placed in storage (inside or outside) should have all unpainted carbon steel surfaces coated with a rust preventative.

Danger

Disconnect and lock out power before servicing.

B. Drive

Drive must be inspected and maintained on a regular basis, using accepted practices for industrial equipment. Maintenance schedules will depend on operating requirements and conditions.

Caution

Serious permanent injury is possible! Lock out and tag the valve drive motor power supply before working on the rotary valve!

C. Rotor Removal/Installation

Warning

Use safe working procedures at all times! It is your responsibility to protect yourself and others from injury!

Equipment required for rotor removal/replacement:

A pair of cut-resistant work gloves with long cuffs is needed for rotor removal and replacement due to sharp

rotor edges. Protective headgear, safety glasses and protective footwear must be used when working around any process system. If the process gas or material is hazardous, appropriate protective equipment is needed. If there is a possibility of falling, use safety restraint equipment as recommended by OSHA and your company's safety policies. A piece of heavy cardboard or plywood should be used to protect the machined surfaces of the rotor if it is to be set down on a hard surface. Wood or plastic wedges or blocks are needed to prevent the removed rotor from rolling if it is set down.

If a rotor is to be replaced by another rotor, appropriate equipment is necessary for lifting and transporting the rotors safely. Properly installed and rated chain hoists, hand trucks or pallet trucks and restraining equipment for loose rotors are required to prevent injury to personnel or damage to the machined surfaces of the rotary valve parts.

Caution

Do not remove the rotor drive pin guard until power is locked out! Serious permanent injury or death could result!

Rotor position for service:

When preparing the rotary valve for maintenance involving removal of the rotor or adjustment of the rotor shaft seal, the rotor position when stopped must allow access to the rotor drive pin. The pin ring must be between the support webs of the bearing assembly and must be able to clear the webs when the pin is removed. See Illustration 1.

Warning

Before any work is done to the rotary valve, the process system in which the valve is installed must be made completely safe for worker access.

Rotor removal:

1. After locking and tagging the valve motor power source and with the rotor drive pin positioned as described above, remove the retaining thumb screws and slide the rotor drive pin guard on the bearing housing to uncover the drive pin. See Illustration 1.
2. Using safe working procedures as required by the work location, remove the rotor drive pin by grasping its circular ring and pulling radially outward. There will be some initial resistance to removal of the pin, as it is held in place by a spring-loaded ball detent.

Caution

Be careful not to lose your balance or sustain injury when initial pin resistance has been overcome and the pin begins to move freely.

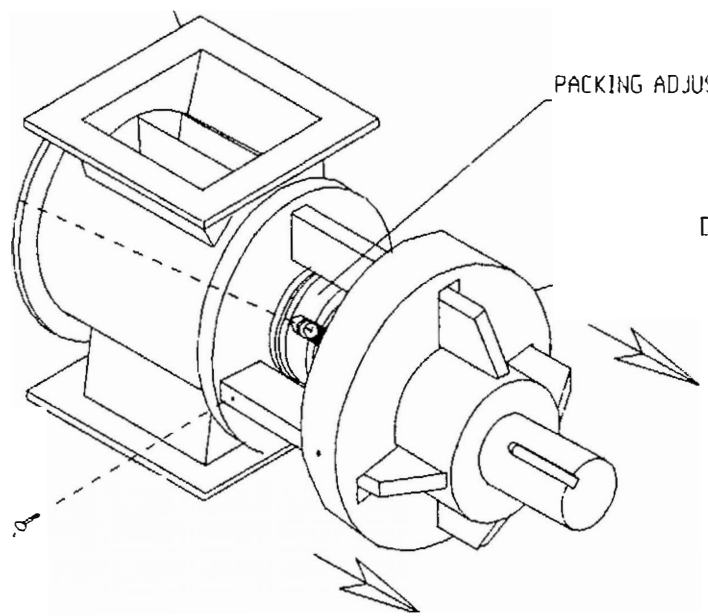
3. Loosen the plastic packing adjustment ring to relieve compression on the packing by rotating it on the rotor's threaded shank. The drive pin or a piece of ½ inch square stock can be used as a tool to turn the adjustment ring on the rotor shank,

ROTOR DRIVE PIN

VALVE BODY

PACKING ADJUSTMENT RING

DRIVE PIN GUARD



THUMB SCREW (2 PLACES)

CAUTION!

DO NOT OPEN VALVE DOOR UNLESS ALL SOURCES OF POWER HAVE BEEN LOCKED OUT AND TAGGED. DO NOT REMOVE ROTOR DRIVE PIN GUARD UNLESS VALVE DRIVE IS LOCKED OUT.

Cantilevered Rotary Valve

ILLUSTRATION 1

4. End seal models only: refer to Illustration 2. With power and purge air locked out, make the seal spring adjusting handle free to rotate by turning the seal spring adjustment lock handle one turn counter-clockwise. Turn the seal spring adjusting handle counter-clockwise until solid resistance is felt.

5. Completely loosen all but one of the door clamp hand knobs. These are captive type fasteners which cannot be removed from their holes in the door. The number of door clamp knobs will vary with the size of the rotary valve.

Caution

On end seal models, some tension from the seal spring may be present. Do not loosen the last door clamp until you are prepared.

6. Loosen the final door clamp knob two complete turns.

7. If the door does not open easily after this clamp knob has been loosened, the opening of the door may be assisted by turning the door release hand knob in the clockwise direction to push the door out of engagement with the valve housing.

Warning

*If air or gas pressure is released when the valve door begins to open, **stop immediately!** Get away from the rotary valve until process pressure is no longer present. It is extremely hazardous to open the rotary valve with process pressure present!*

8. Using one hand to hold the door and the valve body flange from freely separating, slowly loosen the final door clamp hand knob until it is free of its threads in the valve body. The hand holding the door and body flange may now be carefully released, allowing the door to open.

Caution

End seal model valves have loose parts immediately inside the valve door which might fall out of the valve when the door is opened. Be prepared to restrain these parts when opening the door.

Note

If the door release hand knob has been used, rotate the release knob counter-clockwise until the point of its screw is flush or slightly below the inner face of the door. If this is not done, the screw will interfere with reassembly of the valve.

9. End seal models only: refer to Illustration 3. When the door is opened, the seal spring, follower and seal may be immediately removed from the valve. Use care in handling the seal ring to avoid damage to its surfaces or contamination by foreign material. Place the loose parts where they cannot fall or roll away.

10. The rotor may now be removed. Depending upon size, it may be possible to remove the rotor manually or a mechanical rotor extractor may be needed. Rotor weights vs. valve size are as follows:

Valve Size	8	10	12	14
Rotor Weight (lb)	61	91	120	170

Whether removing the rotor manually or with a mechanical extractor, take care not to pinch or bind the close-fitting rotor in the valve housing bore or on the shaft.

11. Manual rotor removal

Caution

Cut-resistant gloves with long cuffs are required for safe manual removal and handling of valve rotors.

Pull the rotor about halfway out of the valve using finger tips in the rotor puller groove. Now grasp the rotor by its vanes and finish removal. Use care to pull the rotor **straight** out of the valve body to avoid binding, particularly as the rotor disengages from the valve body. Set the rotor down on heavy cardboard or plywood to prevent damage to its machined surfaces and use blocks or wedges to prevent the rotor from rolling.

12. Mechanical extractor rotor removal

Caution

Cut-resistant gloves are required for safe handling of valve rotors.

Be certain that the extractor's rotor puller groove locking fingers are both fully retracted and that the rotor locking assembly is positioned fully toward the front end of the extractor. See Illustrations 5 and 6.

Insert the tapered tip of the extractor jack screw into the centering hole in the end of the rotary valve shaft.

Lock the puller groove locking fingers into the rotor attachments groove by latching the two locking clamps.

Begin rotor removal by turning the extractor screw crank slowly in the clockwise direction.

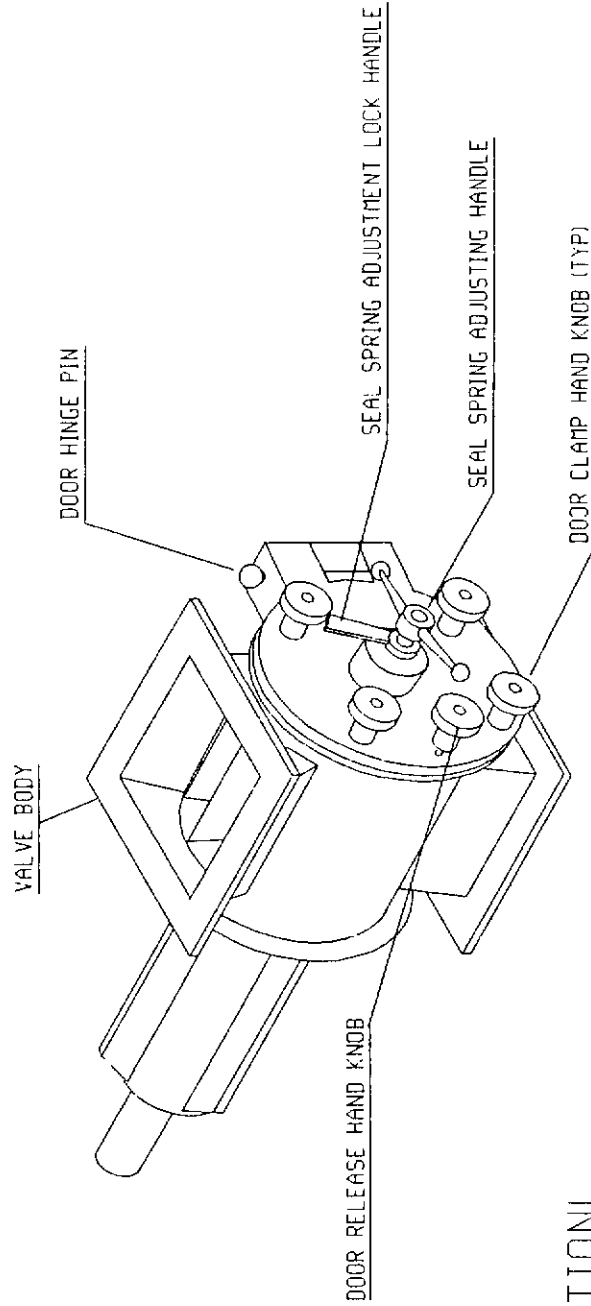
Note

*Only light resistance should normally be encountered during rotor removal. Increasing resistance to rotation of the extractor crank indicates misalignment. Do not continue to turn the extractor crank against increasing resistance! Damage to the rotary valve or to the extractor **will** result.*

Resistance to extractor operation can be corrected by turning the extractor's height adjustment handle to align the rotor with the shaft and valve bore.

Once clear of the valve body and shaft, the extractor and rotor may be moved clear of the valve on the extractor's swivel arm.

13. End seal models only: after the rotor has been removed from the valve body, the inboard seal may be manually removed from the valve for cleaning or replacement.

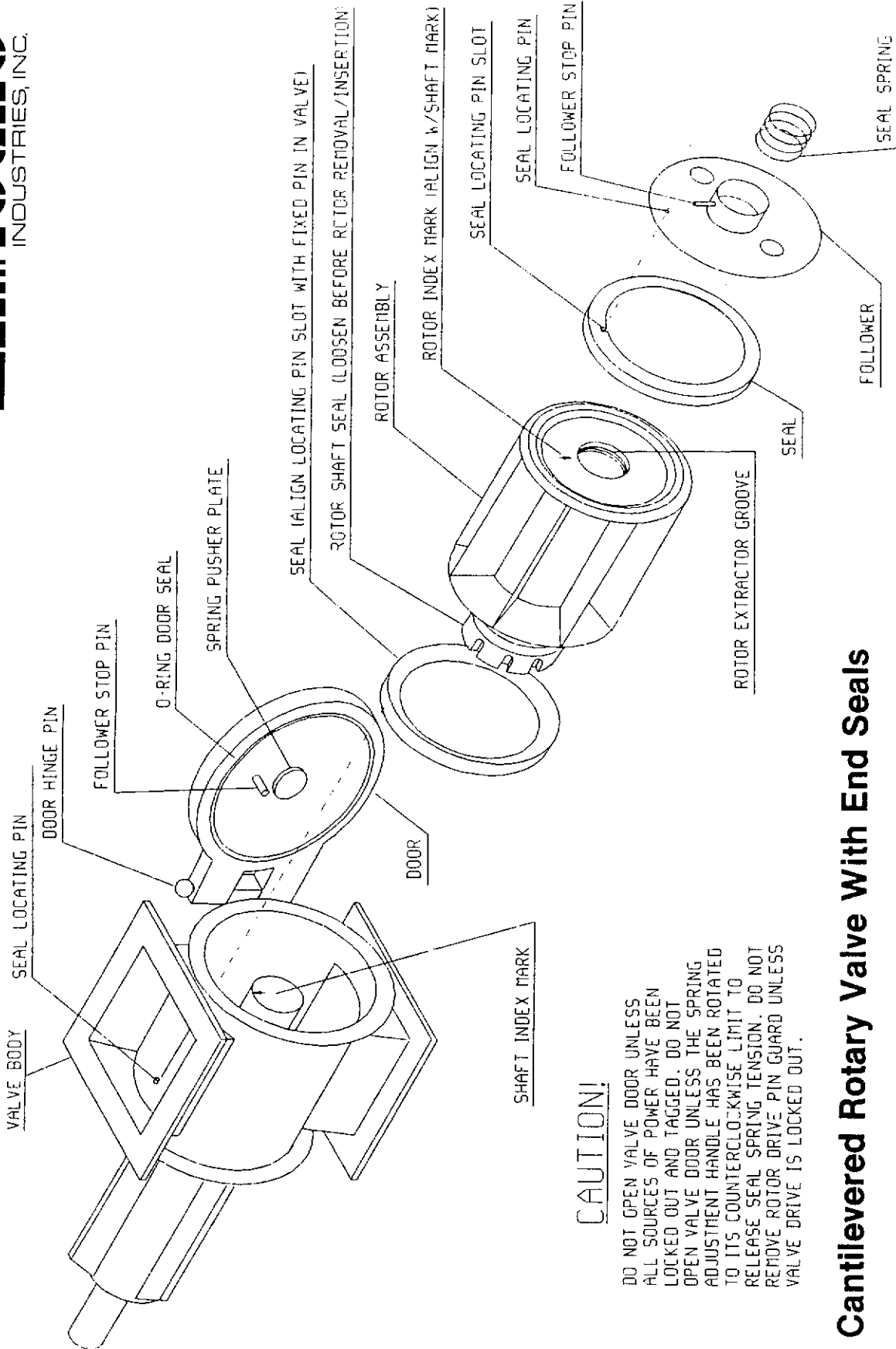


CAUTION!

DO NOT OPEN VALVE DOOR UNLESS ALL SOURCES OF POWER HAVE BEEN LOCKED OUT AND TAGGED. DO NOT OPEN VALVE DOOR UNLESS THE SPRING ADJUSTMENT HANDLE HAS BEEN ROTATED TO ITS COUNTERCLOCKWISE LIMIT TO RELEASE SEAL SPRING TENSION. DO NOT REMOVE ROTOR DRIVE PIN GUARD UNLESS VALVE DRIVE IS LOCKED OUT.

Cantilevered Rotary Valve With End Seals

ILLUSTRATION 2



CAUTION!

DO NOT OPEN VALVE DOOR UNLESS ALL SOURCES OF POWER HAVE BEEN LOCKED OUT AND TAGGED. DO NOT OPEN VALVE DOOR UNLESS THE SPRING ADJUSTMENT HANDLE HAS BEEN ROTATED TO ITS COUNTERCLOCKWISE LIMIT TO RELEASE SEAL SPRING TENSION. DO NOT REMOVE ROTOR DRIVE PIN GUARD UNLESS VALVE DRIVE IS LOCKED OUT.

Cantilevered Rotary Valve With End Seals

ILLUSTRATION 3

14. While the rotor is out of the valve, the rotor shaft seal should be examined for wear and damage. When replacing shaft packing, always install the packing rings so the point of the "V" of the packing is toward the drive end of the valve with the rotor installed. See Illustration 4. This is necessary to prevent damage to the edges of the chevron seal elements when inserting the rotor.

Rotor Installation:

1. End seal models only: if the inner rotor seal was removed for service or cleaning, be certain to align its locating pin slot with the locating pin in the back of the valve body when the seal is replaced. See Illustration 3.

2. Check the rotor shaft seal. The plastic packing adjustment ring must be loose to prevent binding of the packing when inserting the rotor in the valve.

3. Re-install the rotor in reverse order of the removal steps used. Use the alignment arrows stamped on the face of the rotor and the shaft to properly position the rotor during installation. If the mechanical rotor extractor will be used to re-install the rotor, be certain to engage the flange latch at the front of the extractor support arm with the rotary valve housing flange.

4. Packing adjustment: with the rotor installed, tighten the plastic packing adjustment ring finger tight. Tighten the ring to align the drive pin hole through the shaft and rotor with the **next** available drive pin notch in the packing adjustment ring. The rotor drive pin or 3" of ½" square stock can be used as a tool to accomplish this, but do not use excessive force. If it appears that much force will be required to align the next notch in the ring, use the next closest notch which will align without undue force.

Insert the rotor drive pin until the ball detent engages the detent groove of the pin. Reposition the drive pin guard and replace its retaining thumb screws.

5. Securing the valve.

a. End seal models only: replace the door end rotor seal. Align the seal locating pin on the seal follower with the mating slot in the seal and install the follower. The locating pin must engage with the seal slot. Replace the seal spring in the cylindrical spring holder on the follower and carefully close the valve door.

b. All models: tighten the door clamp hand knobs. If the door will not draw fully closed, check the tip of the door release hand knob (pusher screw). It must be flush or slightly recessed from the face of the door flange.

6. Adjusting seal tension of end seal model valves. Rotate the seal spring adjusting handle clockwise, counting turns, until solid resistance is felt. Rotate the handle counter-clockwise one-half as many turns as were counted. Lock the adjustment by tightening the adjustment lock handle.

This completes the rotor removal and replacement procedure.

D. Bearings and Seals

1. Refer to Illustration 4 showing a typical cross section of a Young Industries cantilevered rotary valve. The tapered roller bearing assembly is designed to center the rotor shaft and remove all bearing **clearance**.

2. Bearing and seal removal procedure:

a. Remove rotor from valve as in Section C above.

b. On some cantilevered rotary valves, the bearing housing and end plate is welded to the main valve housing; on others it is bolted. For the welded type, proceed to step c below. For the bolted type, remove the bearing housing and end plate from the main valve housing. Shims may have been used between these parts to adjust the valve clearances. Note the amounts and locations of these shims for reassembly.

c. Measure and record the distance from the end of the rotor shaft to the inner surface of the end plate.

d. Remove drive end bearing cap and bearing alignment setscrew.

e. Use a press to remove shaft and bearing assembly from bearing housing. Support drive end of bearing housing while applying steady pressure to the rotor end of the shaft until the bearing assembly is removed.

f. Remove bearing locking nut and washer from drive end of shaft.

g. Using a gear puller, remove drive end bearing.

h. Remove spacer sleeve and rotor end bearing cup.

i. Using a gear puller, remove rotor end bearing cone.

j. Drive end and rotor end seals should now be pressed from their seats.

3. Bearing and seal installation procedure:

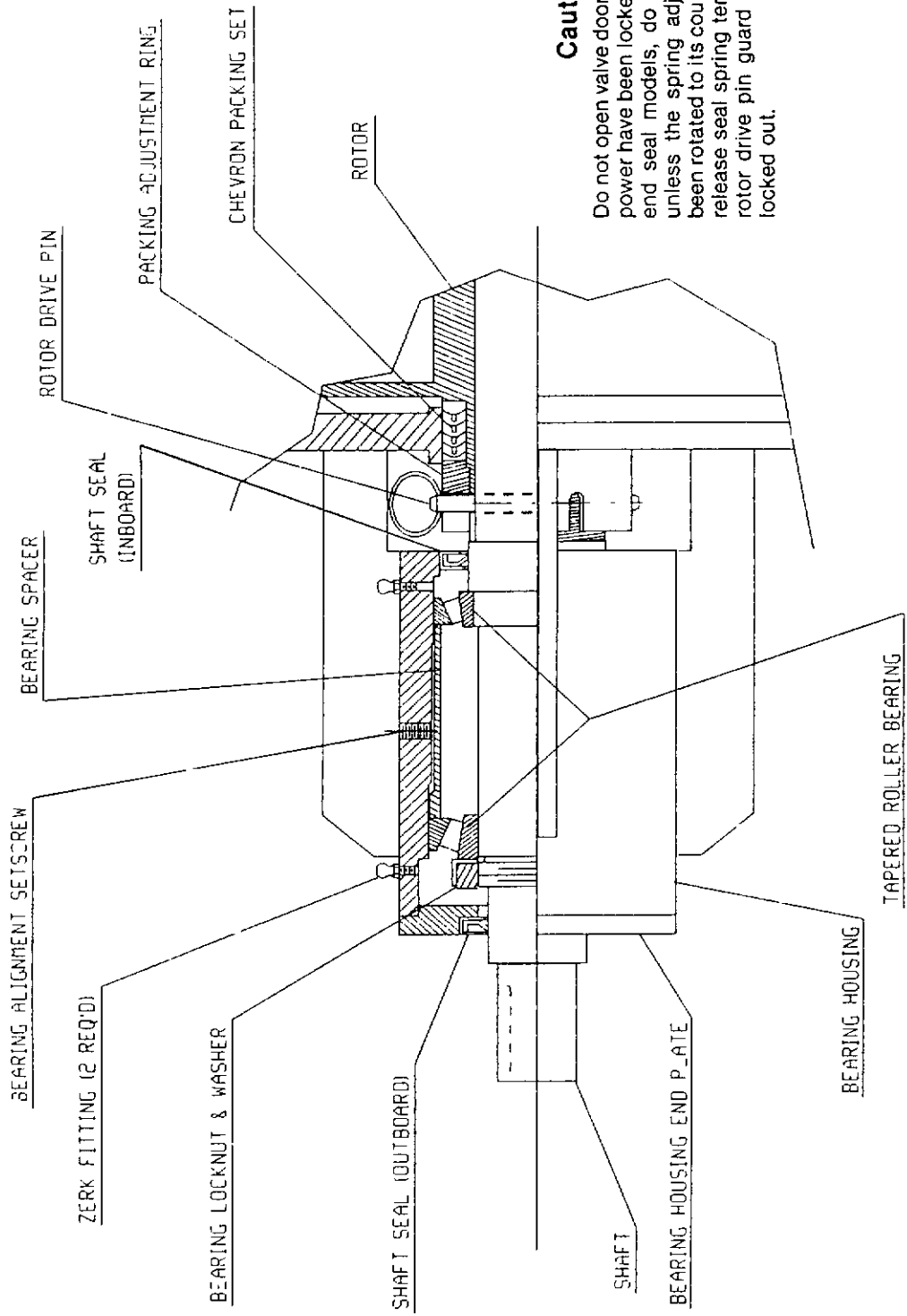
a. All valve components to be reused should be thoroughly cleaned of dirt, grease and metal burrs.

b. Install shaft seals in their respective seats.

c. The tapered roller bearings used on cantilevered rotary valves are precision bearings. The point of maximum runout is identified by a copper dot on the face of each cup and each cone. The dots on both cups must be aligned and the dots on both cones must be aligned to minimize the runout of the shaft.

d. Support the shaft in the vertical position with the drive end up. Heat the rotor end bearing cone to 250° F, using an induction type heater. Do not **overheat bearing**. With the small end of cone up, slide the cone over the shaft until it seats firmly against its shoulder on the shaft.

e. Place rotor end bearing cup over rotor end cone. Set spacer sleeve on rotor end cone with large outside diameter up. Place drive end cup on spacer sleeve. Align copper dots on cups.



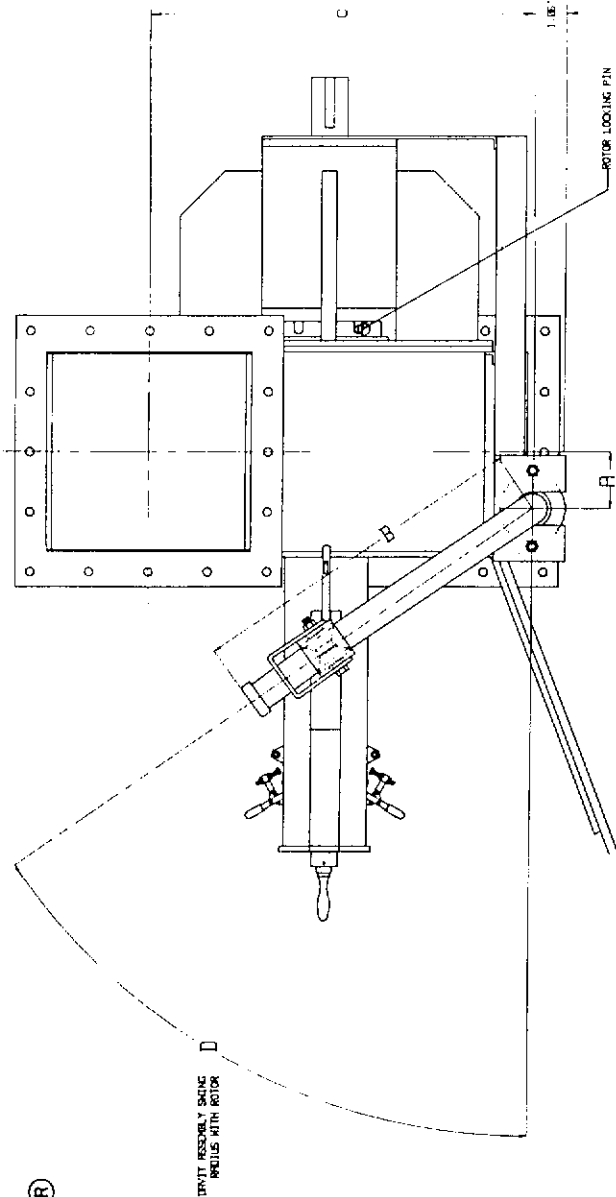
Caution:

Do not open valve door unless all sources of power have been locked out and tagged. On end seal models, do not open valve door unless the spring adjustment handle has been rotated to its counterclockwise limit to release seal spring tension. Do not remove rotor drive pin guard unless valve drive is locked out.

Cantilevered Rotary Valve Shaft Assembly

ILLUSTRATION 4





SIZE	A	B	C	D	E
18"	.25	35	24.63	46.75	38.75
12"	1.25	42	27.13	58.25	32.58
14"	1.75	44.5	29.13	54.58	35.25

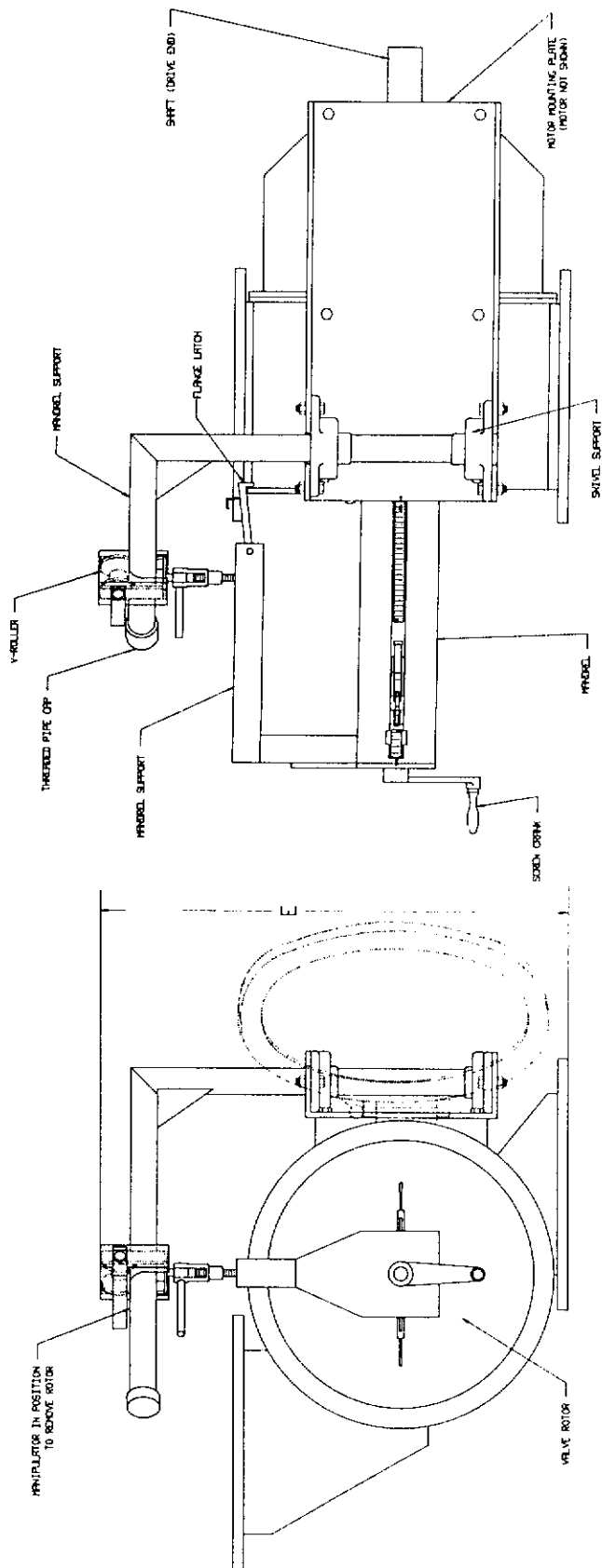
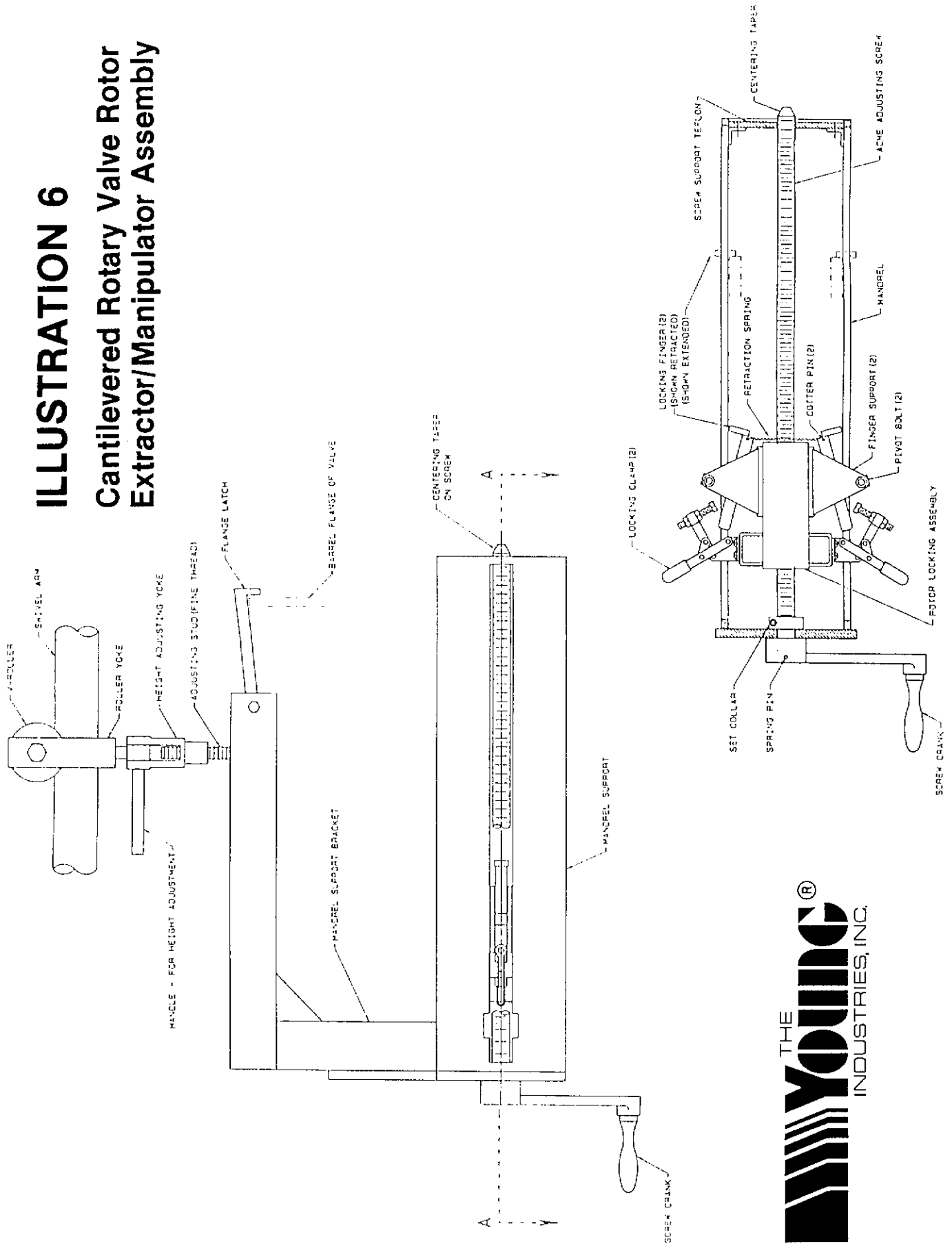


ILLUSTRATION 5

ILLUSTRATION 6

Cantilevered Rotary Valve Rotor Extractor/Manipulator Assembly



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f. Heat drive end bearing cone to 250° F. Slide drive end bearing cone onto shaft until it seats in its cup. Align copper dots on cones. Quickly install lock washer and nut and tighten to remove all looseness from bearings.

g. Place bearing housing and end plate in a press with bearing housing up. Adequate support must be provided to prevent damage from the pressing operation. Insert shaft and bearing assembly with drive end up and press steadily into bearing housing until the shaft extends through the inner surface of the endplate the same amount as recorded during disassembly.

h. Reinstall drive end bearing cap and bearing alignment setscrew.

i. For the welded type cantilevered rotary valve, proceed to step **i**- For the bolted type, bolt the bearing housing and endplate to the main valve housing. Insert shims between these parts as noted during disassembly.

j. Install rotor in housing as in Section C above (page 7).

k. Use feeler gauges to check the radial clearances between the rotor and the housing. The minimum clearance measured should not be less than .004 and the clearance at the top of the rotor should be .002 to .004 larger than at the bottom.

l. If the clearances are not within the range given above, remove or add shims as necessary to adjust the clearances on the bolted type. On the welded type, there is no field adjustment. The valve must be returned to the factory.

E. General Inspection

1. Observe equipment for any unusual vibration or noise.
2. Check valve connection and drive hold-down bolts for tightness.
3. Look for oil leaks on machinery and on the floor and surrounding areas.
4. When required, check oil sight lubricators for oil level.
5. Inspect inlet and outlet fittings, flanges and ducts for leaks. Check utility service piping and associated valves and gauges attached to the rotary valve.
6. Check all accessories for proper operation.

Danger

Disconnect and lock out power before servicing.

Caution

Compressed gas-shut off and bleed system before servicing.

F. Trouble Shooting

1. The rotary valve should be properly installed, operated, and maintained. Table 2 ("Trouble Shooting

Rotary Valves") gives symptoms, causes, and remedies for most problems that may be encountered.

G. Spare Parts Information

A nameplate is furnished with each cantilevered rotary valve. The necessary information for ordering spare parts is found on this nameplate. When ordering, please provide: **(A)** SHOP NUMBER **(B)** SERIAL NUMBER

Spare parts note: when ordering spare parts, always refer to the Young Industries serial number stamped on the rotary valve's identification plate. Do not use vendor identification numbers which are placed on drawings, as these are intended for reference only and may not be sufficient for ordering of the correct replacement part.

TABLE TWO-Trouble Shooting Rotary Valves

SYMPTOM	CAUSE	REMEDY
Valve Will Not Start	Power Source Not Furnishing Power Overload Protection Not Reset Motor Burned Out Drive Train Not Moving Rotor Jammed or Overloaded	Have Power Source Checked- Turn on Power Reset Overload Switch. If Overload Switch Needs Resetting a Second Time, Determine Cause of Overload and Correct. Repair or Replace Motor Identify Problem and Correct Eliminate Overload Condition
Drive Noisy	Gear Box Not Lubricated Drive Out of Alignment Drive Components Loose on Shaft Foreign Object in Drive Drive Chain Rubbing Guard Worn Components Chain Jumping on Sprocket	Lubricate Gear Box (See Lubrication Chart) Align and Tighten Tighten Component& Remove Foreign Object Check Drive Clearances; Realign Sprockets or Guard Replace Worn Components Tighten and Lubricate Chain
Valve Noisy	Rotor Rubbing on Housing Product Buildup on Housing or Rotor Bent Shaft	Check for External Loads on Inlet and Outlet Flanges. Bearings May Not Be Centered. Remove Product Buildup Contact Young Industries' Engineering Department for Instructions
Packing Seals Leaking	Packing Follower Needs Tightening Worn or Damaged Seal Worn or Damaged Shaft	Tighten Follower Nut Remove and Replace Seal Repair Shaft to Obtain a Smooth Concentric Surface under Seal

TABLE TWO-Trouble Shooting Rotary Valves (continued)

SYMPTOM	CAUSE	REMEDY
Bearings Noisy or Overheated	No Lubrication Improper Lubrication, Over-Lubrication Bearings Not Adjusted Properly	Lubricate Bearing Remove Lubrication and Install Proper Lubricant Remove Lubricant to Proper Amount Check Bearing Adjustment
Bearing Failure	Dirty Bearing Bearings Not Adjusted Properly	Remove Bearing, Thoroughly Remove Lubricant. Inspect and Replace Bearing If Necessary. Reassemble Bearing and Lubricate. (See Lubricating Instructions.) See Section D: Maintenance (page 12)
Gas Purge Seals Leaking	Low Gas Pressure Worn or Damaged Seal	Check Line Filter-Check Gas Purge Lines Leading to Seals-Increase Pressure 1-3 PSI Above Internal Valve Pressure Note: Leaking Seals Should Be Corrected As Soon As Possible To Avoid Damage To Shaft. Remove and Replace Seal
Hinged Door Leaking	Damaged O-Ring Door Not Seated	Replace O-Ring Check for Material Build-Up under Flange
Product Will Not Discharge	Rotor Pockets Plugged Valve Leaking from Worn Rotor or Housing	Clear Plug from Pockets Repair or Replace Worn Rotor and Housing If Rotor Tips are Adjustable, Adjust or Repair Tips

Danger

Disconnect and lock out power before servicing.

Caution

Compressed gas-shut off and bleed system before servicing.

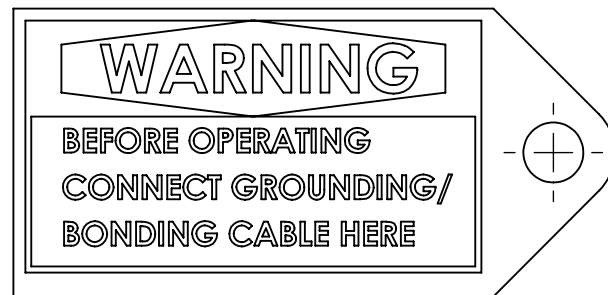
Caution

Do not operate with guards or door removed.

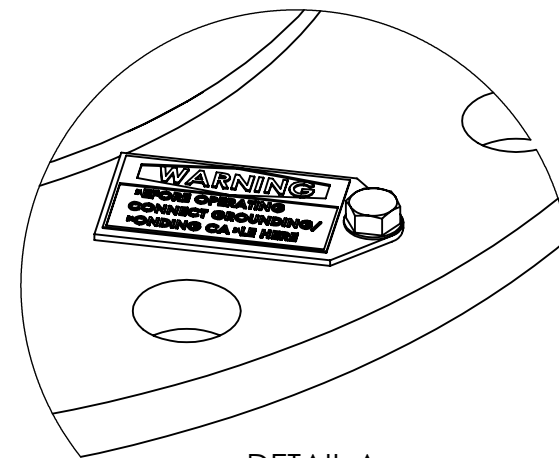
Caution

Do not extend hands or hand-held objects into rotary valve.

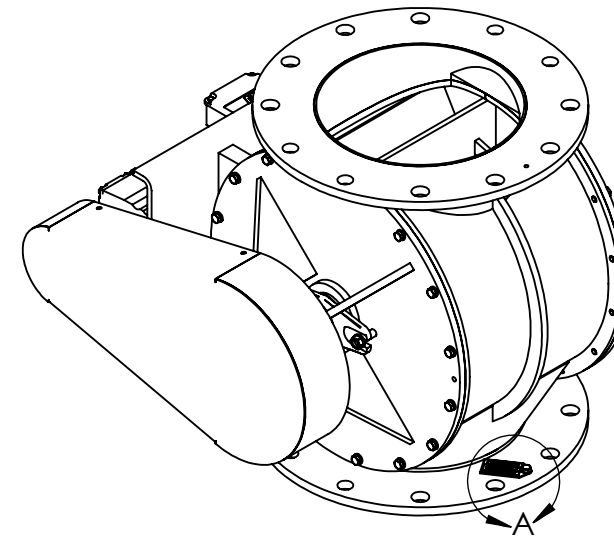
LOOK FOR THESE TAGS AND TERMINAL CONNECTING POINTS



SCALE: 1:1



DETAIL A
TYPICAL INLET AND OUTLET
SCALE 1 : 2



GENERAL TOLERANCES	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY	
MACHINING - .XX= .02 .XXX= .005	ANGLE= .50°
SURFACE ROUGHNESS HEIGHT 63 MICROINCHES OR LESS	
FABRICATION - UNDER 6	6 TO 24
24 TO 60	OVER 60
± .06	± .12 ± .19 ± .25
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	

REV. NO.	DESCRIPTION	DATE	BY
REVISIONS			
CUSTOMER:			
CUSTOMER PO NUMBER:			
YOUNG JOB NUMBER:			
TITLE SPECIFICATION- ELECTRICAL GROUNDING AND BONDING, ROTARY VALVES			
INDUSTRIES, INC. MUNCY, PENNSYLVANIA 17756 TELEPHONE: 570-546-3165			
DRAWN BY: JEH		DATE: 03/19/19	
CHECKED BY:		SCALE = 1:12	
DRAWING NUMBER	B-20625-00	SHEET: 1 OF 1	REV: 00