



Rotary Airlock Feeders

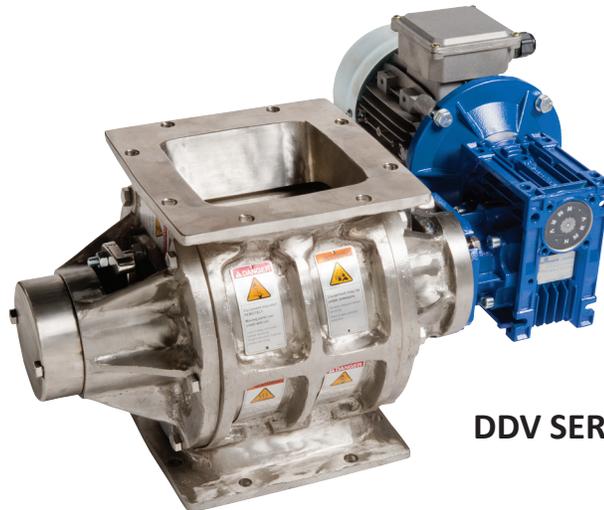
INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS



HDX SERIES



UDV SERIES



DDV SERIES

Your Source for Bulk Handling/Air Process Equipment

Wm. W. Meyer & Sons, Inc.

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SECTION I SAFETY PRECAUTIONS

WARNING TO THE OWNER, AND INSTALLATION, OPERATION AND MAINTENANCE PERSONNEL

The safety of the operator and those people that may come into contact with the equipment is of great importance to Wm. W. Meyer & Sons, Inc. “Meyer”. The decals, shields, guards and other protective features designed, furnished or recommended for this machine are there for your protection. BEFORE attempting to install, operate or perform maintenance on this Equipment READ carefully and UNDERSTAND all safety instructions contained in this set of **Instructions** in addition to all applicable government safety/health laws and regulations and generally recognized industry standards. The operation and maintenance of this equipment should be restricted to only those personnel trained in its use. Consult Factory for the availability of manuals in other languages.

Installation, Operation and Maintenance personnel should READ carefully and UNDERSTAND the sections of this **Instruction Manual** relevant to the work they are performing. The various precautions and recommendations detailed within this manual are not necessarily all inclusive. These instructions are intended to provide general safety and operational guidance relating to typical uses with which Meyer is familiar. Additional information may be provided that pertains to your specific piece of equipment upon request.

SAFETY FIRST!

DANGER Indicates the presence of a hazardous situation that, if not avoided, WILL result in death or serious injury.

WARNING Indicates the presence of a hazardous situation that, if not avoided, COULD result in death or serious injury.

CAUTION Indicates the presence of a hazardous situation that, if not avoided, COULD result in minor or moderate injury.

NOTICE Indicates information that is important, but is not related to a particular hazard.

Additional information may be provided that pertain to your specific installation upon request. Equipment owners are responsible for understanding the contents of this document and compliance with applicable government laws and regulations and appropriate industry standards. Appropriate plant safety and Equipment training is the responsibility of the plant owner. This Manual is intended to assist the owner in the training process. The operation, installation and maintenance of this Equipment should be restricted to only those personnel properly trained:

- Installation and maintenance of equipment must be performed by qualified mechanics/millwrights/maintenance personnel.
- Installation of any electrical equipment must be completed by qualified electricians, in compliance with applicable codes and ordinances.

Because Wm. W. Meyer & Sons is not always aware of the application and does not always have access to the installation, your participation in the safe installation, operation and maintenance of your Rotary Airlock Feeder is critical. If you have any safety or operational questions pertaining to the design or applications of the Rotary Airlock Feeder we encourage you to contact the factory at (800) 963-4458.

 **DANGER** Always CONTROL / DE-ENERGIZE potentially hazardous energy sources when installing and maintaining the Rotary Airlock Feeder, as follows:

1. The Rotary Airlock Feeder product family uses a common mechanical principle which creates an *internal* pinch point in order to function properly: a metal rotor with blades rotates around an axis within a metal housing.
 - a. The Rotary Airlock Feeder should **never be maintained or operated in a manner which could expose personnel to the internal moving parts**; either via the inlet/discharge port, an access door of any kind or via ancillary equipment affixed to the Rotary Airlock Feeder. **To do so will expose personnel to the potential risk of serious injury.**
 - b. Avoid serious injury by **always** keeping hands, fingers, feet or any parts of your body, loose clothing, and foreign objects away from inlet and discharge openings, drive components, auxiliary components, and associated equipment.
2. **Always de-energize all electrical equipment by Locking Out/Tagging Out power** before working on this Rotary Airlock Feeder, including motors, switches, solenoids and other ancillary electrically powered or controlled Equipment. If the electrical components are not properly de-energized, this will expose personnel to the potential risk of serious injury.

 **DANGER** The Rotary Airlock Feeder may stop and start automatically, and may also operate very quietly. Equipment in an idle mode does not mean it is off-line.

3. Inlet and Outlet flanges must **always** be permanently fastened to mating system components. Such components must be designed so that under normal operation personnel are neither allowed access to the inlet or outlet flange nor able reach the internal moving parts. If requested, Meyer can design, build and supply custom ductwork, transition pieces, piping or special guards to protect against the risk of injury.
4. Rotary Airlock Feeders, their drive components, accessory components, and any auxiliary or companion equipment, should be installed and operated only with protective guarding correctly and securely fastened in place.

5. Never open access covers/doors to inspect the Equipment when the overall plant system is under process pressure. Wait for process pressures to be relieved (i.e. ambient pressure is confirmed).
6. If working on the Rotary Airlock Feeder when the surface is hot, always wear appropriate protective clothing (e.g. gloves and other protective outer clothing), or if hot surfaces could burn skin, wait for surfaces to cool before performing work which could put someone in a hazardous situation.
7. The weight of a Rotary Airlock Feeder or its components parts, such as the rotor, head plates, etc., can cause serious injury or damage if accidentally dropped or mishandled during installation. Use safe and acceptable methods when handling this equipment. Contact the factory for recommended safe handling and rigging techniques.
8. Refer also to appropriate supporting vendor safety information, MSDS sheets or any other applicable safety information in addition to these Instructions.

SAFETY LABELING

Your unit is shipped with an attached discharge flange guard. **DO NOT** operate equipment with unguarded inlet or outlet. **DO NOT** remove flange guard. The safety labels shown are affixed to your Equipment. A Safety Supplement Data sheet is packed with your equipment at the time of shipment. Additional Safety Supplement label packs are available at no additional charge for the system installer's or plant owner's discretionary use/placement to ensure this Equipment is installed, operated and maintained in the safest possible manner.

NOTICE If you have received a unit without affixed labels or if labels fall off or are damaged, contact Wm. W. Meyer & Sons immediately (800-963-4458) to obtain replacements at no charge prior to installation, use or maintenance.





	 WARNING
	<p>Moving parts can crush and cut.</p> <p>Never operate with guard removed.</p> <p>Lockout/Tagout power before servicing.</p> <p>430Z-202B</p>

	 WARNING
	<p>Hazardous voltage.</p> <p>Risk of electrical shock.</p> <p>Lockout/Tagout power before servicing.</p> <p>430Z-209</p>

Meyer ships the equipment with affixed safety labels which are located on the Rotary Airlock Feeder housing and other surfaces, the drive guards and drive bases (when included). However, as the orientation of the Equipment varies, the OWNER is responsible for requesting, at no charge, any supplementary labels to allow safety label visibility to be maximized. The following recommendations are offered to assist placement of safety labels:

- Place labels in locations that all personnel operating and maintaining the Rotary Airlock Feeder or any other people that may have access to the Equipment will readily see as they are either working on the Equipment and/or as they approach the Equipment. The safety objective is for anyone who could come in contact with a hazard sees the label alerting him or her to such a hazard and the means to avoid the hazard.
- In some cases, labels may be located near the Rotary Airlock Feeder (e.g. on nearby structural steel, adjacent equipment), if this is the point of access where it can be easily seen and the hazard is clearly associated with the label's location and how it relates to the Rotary Airlock Feeder.
- Consult Factory when the equipment is operated at temperatures over 350°F.

INFORMATION FOR SAFETY AND SERVICE

Because of the wide variety of material handling systems for which a Rotary Airlock Feeder must be tailored, many considerations determine the proper size, design, materials of construction, operating speed, type of driver, etc. A description of every Meyer Rotary Airlock Feeder is kept on file with the factory. These specifications can be referenced by supplying the serial number to your local Meyer Representative. If you have any safety or Equipment-related questions we encourage you to contact the Meyer factory based on the cover contact information.

NOTE: The serial number is located on a metal identification label permanently affixed to every Rotary Airlock Feeder feeder before it leaves the factory. To aid us in providing you with a special service, application assistance and help with spare part requirements, please record the following:

Type/Size _____
Serial Number _____
Date of Installation _____



SECTION II APPLICATION

A. Application

Meyer Rotary Airlock Feeders (also called Rotary Valves) are used in pneumatic conveying systems, dust control equipment, and as volumetric feed-controls to maintain an even flow of material through processing systems.

The basic use of the Rotary Airlock Feeder is as an airlock transition point, sealing pressurized systems against loss of air or gas while maintaining a flow of material between components with different pressure. Rotary Airlock Feeders are also widely used as volumetric feeders for metering materials at precise flow rates from bins, hoppers or silos into conveying or processing systems.

Rotary Airlock Feeders have wide application in industry wherever dry free-flowing powders, granules, crystals, or pellets are used. Typical materials include: cement, sugar, minerals, grains, plastics, dust, fly ash, flour, gypsum, lime, coffee, cereals, pharmaceuticals, etc.

B. Operational Specifications

CFR = Cubic Feet per Revolution. Displacements are * based on 8 Vane open end rotor and 100% fill factor.

Size	HDX		UDV*	DDV*	BLOW-THRU*
	6V	8V*			
	CFR	CFR	CFR	CFR	CFR
6X6	0.07	0.065	0.095	0.095	
8X8	0.18	0.17	0.23	0.23	
10X10	0.36	0.34	0.48	0.48	
11X10					0.47
12X12	0.64	0.61	0.9	0.9	
12X21	1.08	1.03			
13X12					0.8
14X14	1.12	1.08	1.54	1.54	
16X16	1.62	1.55			
18X18	2.29	2.2			
22X22	4.34	4.2			
26X26	7.3	7			
30X30	11.3	11.12			
36X36	20	20*			

C. Models

The HDX/UDV and DDV differ mainly in their drive configuration and the number of options available. The HDX/UDV uses a chain drive while the DDV has a direct drive mounted on one head plate.

The DDV is provided with a standard 22 RPM direct drive and motor with either beveled rotor or urethane seal strip rotor.

The UDV comes standard in 15, 20 and 25 RPM chain driven rotor speeds, with gear reducer and motor with either beveled rotor or urethane seal strip rotor.

The HDX is available in 15 or 20 RPM standard speed plus a wide variety of drive and special speed configurations. Many coatings, housings and rotor options are available to meet the most demanding applications.



SECTION III INSTALLATION

A. RECEIVING AND INSPECTION

Upon receipt of equipment and material from Wm. W. Meyer & Sons, Inc., the following basic steps should be taken:

1. Use the packing list to determine that all the items shipped have been received. Your equipment was carefully crated for safe shipment when given to the carrier. If items are missing, contact Wm. W. Meyer & Sons, Inc., per contact information at the end of this section.
2. Check for damage. Damage in transit is the responsibility of the carrier. Title to your machine and all other items in the shipment were transferred to you as soon as the shipment left our dock, thus it is your responsibility to handle any claim. In the event damage has occurred:
 - a. Be sure to have the driver sign a copy of the freight bill with a notation about any damage and contact their office before the driver leaves your premises.
 - b. Contact the truck line to arrange for an independent inspector to come out to inspect the damage and to prepare the inspection report. *It is imperative that this inspection is done before you start to unpack or use any of the equipment.*
 - c. If there are any visible problems with your machine or any other items in the shipment, you or the driver must note in detail the damage on all copies of the freight bill before signing for the shipment. Then immediately call Wm. W. Meyer & Sons, Inc.
 - d. If helpful, photographic records of the damage may be used to communicate the extent and type of damage as well as provide a clear record.
 - e. If a shipment was sent to you by parcel post, have the postmaster complete a damage claim report.
 - f. Concealed Damage: If Equipment or goods are discovered to be damaged in shipment at a later date, contact the carrier and Wm. W. Meyer & Sons, Inc., Immediately.
 - g. In all cases of damage in transit, contact Wm. W. Meyer & Sons, Inc., for assistance in determining whether or not this damage may in any way affect safety or proper operation. Please contact us so that we can assist you with replacement parts or with any questions about the claim process, using the following contact information:

Wm. W. Meyer & Sons, Inc.
1700 Franklin Blvd
Libertyville, IL 60048

800-963-4458 or 847-918-0111
sales@wmmeyer.com

B. STORING THE ROTARY AIRLOCK FEEDER

1. Short Term Storage (Up to 4 weeks)
 - 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 inlet and outlet of the Rotary Airlock Feeder should be securely covered to protect the interior while in storage. For prolonged storage an anti-rust compound should be applied to all interior surfaces. See motor and reducer data for storage rules.
 - c. After storage and prior to start-up, the Rotary Airlock Feeder and its drive train should be inspected by qualified personnel.
2. Long Term Storage
 - a. Spray the interior of the unit with anti-rust preservative oil.
 - b. Provide and install metal covers for inlet and outlet flanges with at least four cap screws in each flange. Keep covers on unit until ready for service.
 - c. Read and follow motor, speed reducer, and other equipment manufacturer's instructions for long term storage.
 - d. Plug all conduit box openings on motors and switches.
 - e. Store off the floor in a dry, adequately ventilated, indoor area not subject to extreme temperature changes. These requirements are minimum.
 - f. If stored for more than 6 months, turn the rotor 20 revolutions every month. Leave the rotor in a different angular position after turning.
3. Placing In Service After Long Term Storage
 - a. Drain and re-fill gear speed reducer per manufacturer's recommendation.
 - b. Follow motor manufacturer's instructions for removing motor from storage.
 - c. Clean preservative oil from the interior.

C. MOUNTING

1. Prior to installing the Rotary Airlock Feeder and with the power disconnected, check to assure no foreign objects have been left inside or have accidentally fallen into the valve.
2. We recommend that inlet and outlet flanges remain covered until the unit is ready to be attached to the mating equipment.
3. Rotary Airlock Feeders must be installed with the top and bottom flanges parallel to the mating system flanges and adequately supported to prevent distortion.



DANGER

Never operate the Rotary Airlock Feeder with unguarded inlet/outlet. Contact Wm. W. Meyer & Sons, Inc. for flange guards at no additional charge.

D. ELECTRICAL CONNECTION

1. Check for correct rotation by “bumping” motor. Unless specified otherwise, Meyer Rotary Airlock Feeders operate in the clockwise direction as viewed from the drive end.



DANGER

Disconnect power before servicing Rotary Airlock Feeder, motor or drive components to prevent serious personal injury.



SECTION IV START-UP PROCEDURE

1. Prior to actual operation, the operator must be familiar with the method of starting and stopping the Rotary Airlock Feeder.
2. The general appearance of the Rotary Airlock Feeder and surrounding area should be visually inspected to determine that the valve can be operated safely and without causing any type of damage.
3. The speed reducer has been filled to the correct oil level with the appropriate lubricant by the manufacturer.
4. “Bump” the unit with the motor starter to check for correct rotation. Change the phase sequence to the motor if rotation is wrong. Always assure the unit is properly grounded in accordance with OSHA, the NEC and local codes.
5. Start the unit again, noting any unusual noise or vibration. If noise is evident it is recommended that the equipment be shut down and contact the factory immediately.
6. All chain and flange guards must be in place and closed securely whenever the Rotary Airlock Feeder is in service.
7. After the initial operating period, we recommend that your plant engineering and maintenance personnel continue to monitor the operation of the unit on a regular schedule. Particular attention should be paid to the following items:

a. Speed Reducer

Monitor gearbox during startup for excessive heat, vibration or unusual noise which may indicate a problem with the speed reducer.

b. Bearings

The condition of Rotary Airlock Feeder bearings should be checked routinely. Excessive heat, vibration, or unusual noise indicates a potential problem.

c. Seals

The type of seal depends on the model and options of your Meyer Rotary Airlock Feeder. Maintenance is limited to replacement of the packing when the wear and leakage becomes excessive.

d. Drive

The drive should run smoothly with minimal vibration. If a problem exists consult Meyer for an application review.

GENERAL INSPECTION

1. Observe equipment for any unusual vibration, noise or operating temperatures in excess of the maximum specified for your installation.
2. Check the flange and purge connections, and all nuts/cap screws for tightness.
3. Be alert to oil leaks on machinery and around the surrounding area.
4. Inspect inlet and outlet fittings, flanges and ducts for leaks. Check utility service piping and associated valves and gauges attached to the Rotary Airlock Feeder.
5. Check all accessories for proper operation.



SECTION V PROPER CARE AND HANDLING

The Meyer Rotary Airlock Feeder has been manufactured from the finest materials available and to exacting standards of workmanship. Very close and precise tolerances assure the best possible fit and seal between all components. As with any quality product, it should be given proper handling and care, as outlined below:

1. Never switch a rotor from within one housing into another without contacting the Meyer factory. Due to temperature and application considerations not all parts are interchangeable. Some housings and rotors are “mated”.
2. Use special care and handling to avoid damaging (i.e., nicking, scoring, gouging, galling, etc.) any internal surface, edge or contour of the housing, rotor or end plate. Any degradation of these machined surfaces may upset the internal clearances, cause the unit to bind and cause extensive damage.
3. Rotary Airlock Feeders of cast iron construction without any special purpose surface coating (such as electroless nickel) are subject to rust and corrosion when exposed to moisture. If water is used as a cleansing agent, be sure it is completely dry and rotor is free to turn before returning to service.
4. Sealed and pre-lubricated bearings are normally supplied with the Rotary Airlock Feeder. If the components are to be submerged in a cleaning tank or similar type of bath, the bearings must first be removed from the head plate.
5. Always clean and inspect one unit at a time and reassemble immediately to avoid mismatching parts.



SECTION VI MAINTENANCE



DANGER

Before beginning any work on the Rotary Airlock Feeder, make sure that the incoming power to the gearbox / motor is LOCKED OUT. Follow your company's LOCKOUT-TAGOUT procedures.

A. LUBRICATION

1. Speed Reducer

Standard models utilize a right angle gear type. Lubricant instructions are published by the particular reducer manufacturer.

2. Bearings

a. Ball Bearing Units

Rotary Airlock Feeders manufactured with ball bearings utilize pre-lubricated, sealed, anti-friction ball bearings that do not require regreasing. Optional grease fittings for HDX units are available to make the bearings regreasable. A Lithium Base NLGI #2 grease may be used for relubrication. Remove the bearing caps prior to regreasing and when grease begins to come out of the seals the bearings will contain the correct amount of lubricant. In some applications HDX units are designed to operate in temperatures above 500°F, special bearings and lubricant are recommended. Contact the factory for these high temperature applications.

b. Spherical Bearing Units

Rotary Airlock Feeders manufactured with spherical bearings require regreasing. Grease fittings are standard to make the bearing regreasable, A Lithium Base NLGI #2 grease may be used for relubrication. In some applications HDX units are designed to operate in temperatures above 500°F, special bearings and lubricant are recommended. Contact the factory for these high temperature applications.

3. Seals/Packing Gland

UDV and DDV use a split packing gland nut design which allows the packing gland nuts to be removed from the valve for ease of service. UDV and DDV Feeders are supplied with aramid fiber packing within the packing gland housing. Special UDV valves may be supplied with higher temperature seal materials if the application requires.

Standard HDX Feeders are supplied with graphite impregnated aramid fiber packing within the packing gland housing. Optional Teflon Chevron, U-Cup, or braided shaft seals are also available. Maintenance is limited to replacement of the packing rings in each head plate when wear and leakage becomes excessive. Simply loosen the packing gland retainer hex nuts and slide the packing gland nut away from the housing.

Gas Purge or Grease Purge seals are available as an option on HDX units. When gas (most commonly air) purge is selected, a lantern ring is supplied inboard of the packing rings. Compressed gas is introduced to the lantern ring through a drilled hole in the head plate. Optional filter-

regulator- lubricator and/or solenoid valve is available to control the gas pressure and flow into the Rotary Airlock Feeder. The gas should be turned on before the valve is started and turned off after the unit is stopped to insure that dust does not enter the lantern ring. Gas pressure should be 15 psi above the system's operating pressure.

When grease purge is selected, a lantern ring is sandwiched between two rows of packing. Grease is introduced to the lantern ring through a drilled hole in the head plate. A Lithium Base NLGI #2 grease or equivalent may be used for lubrication. Higher temperature-rated greases may be required when the product temperature exceeds 275°F.

4. Chain

The roller chain furnished with standard units is pre-lubricated at the factory. The chain should be oiled periodically with a brush or spout can every 50 hours of operation. A good grade of non-detergent petroleum base oil should be used with the viscosity shown below:

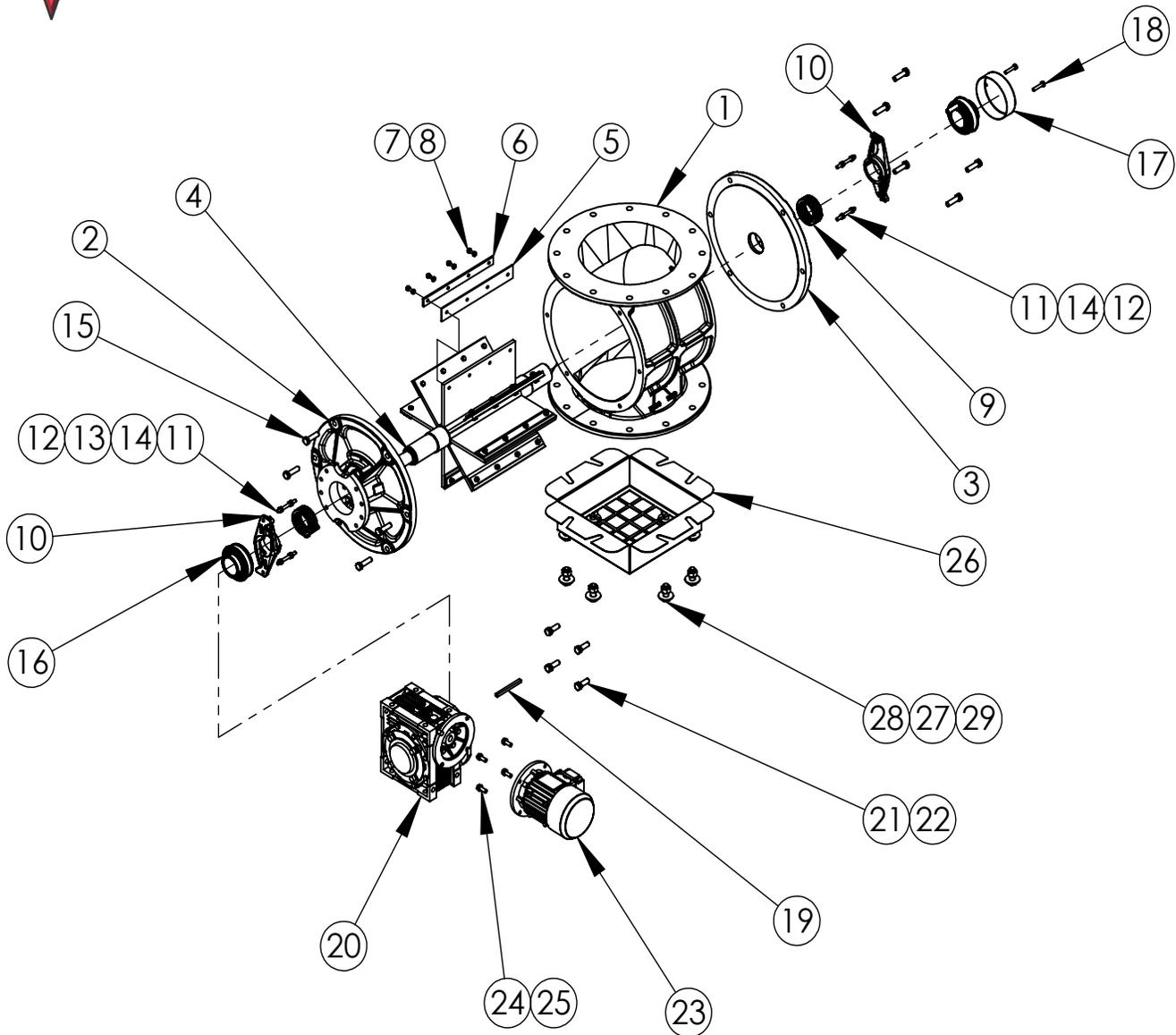
Ambient Temperature (Deg F)	Lubricant
20-40	SAE 20
40-100	SAE 30
100-120	SAE 40
120-140	SAE 50

B. SEAL STRIP REPLACEMENT

Instructions are available upon request.



SECTION VII
PARTS LIST
DDV ROTARY AIRLOCK

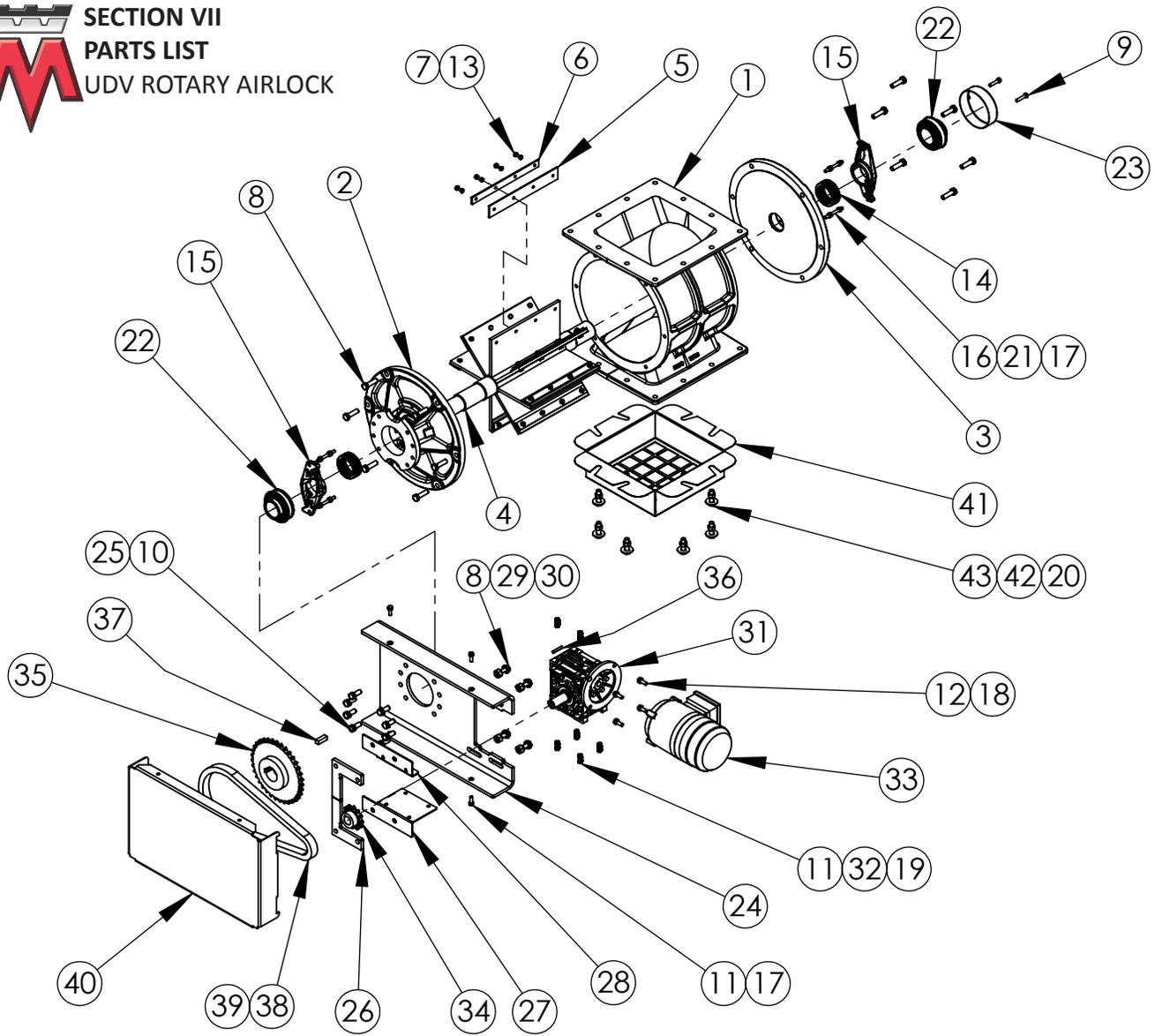


ITEM	Description	Qty.	ITEM	Description	Qty.
1	HOUSING	1	16	BEARING	2
2	DRIVE HEADPLATE	1	17	BLIND END BEARING CAP	1
3	BLIND HEADPLATE	1	18	HEX HEAD BOLT	**
4	ROTOR	1	19	KEYSTOCK	1
5	SEALSTRIP	***	20	GEARBOX	1
6	SEALSTRIP HOLDER	***	21	HEX HEAD BOLT	**
7	SEALSTRIP HEAD BOLT	***	22	NORD LOCK WASHER	**
8	SEALSTRIP HEX LOCKNUT	***	23	MOTOR	1
9	PACKING RING	6	24	HEX HEAD BOLT	**
10	PACKING NUT	4	25	LOCK WASHER	**
11	STUD	4	26	FLANGE GUARD	1
12	LOCK WASHER	**	27	FLAT WASHER	**
13	HEX NUT	**	28	HEX BOLT	**
14	CENTERLOCK HEX LOCKNUT	**	29	HEX NUT	**
15	HEX HEAD CAP SCREW	**			

** AS REQUIRED
*** OPTIONAL



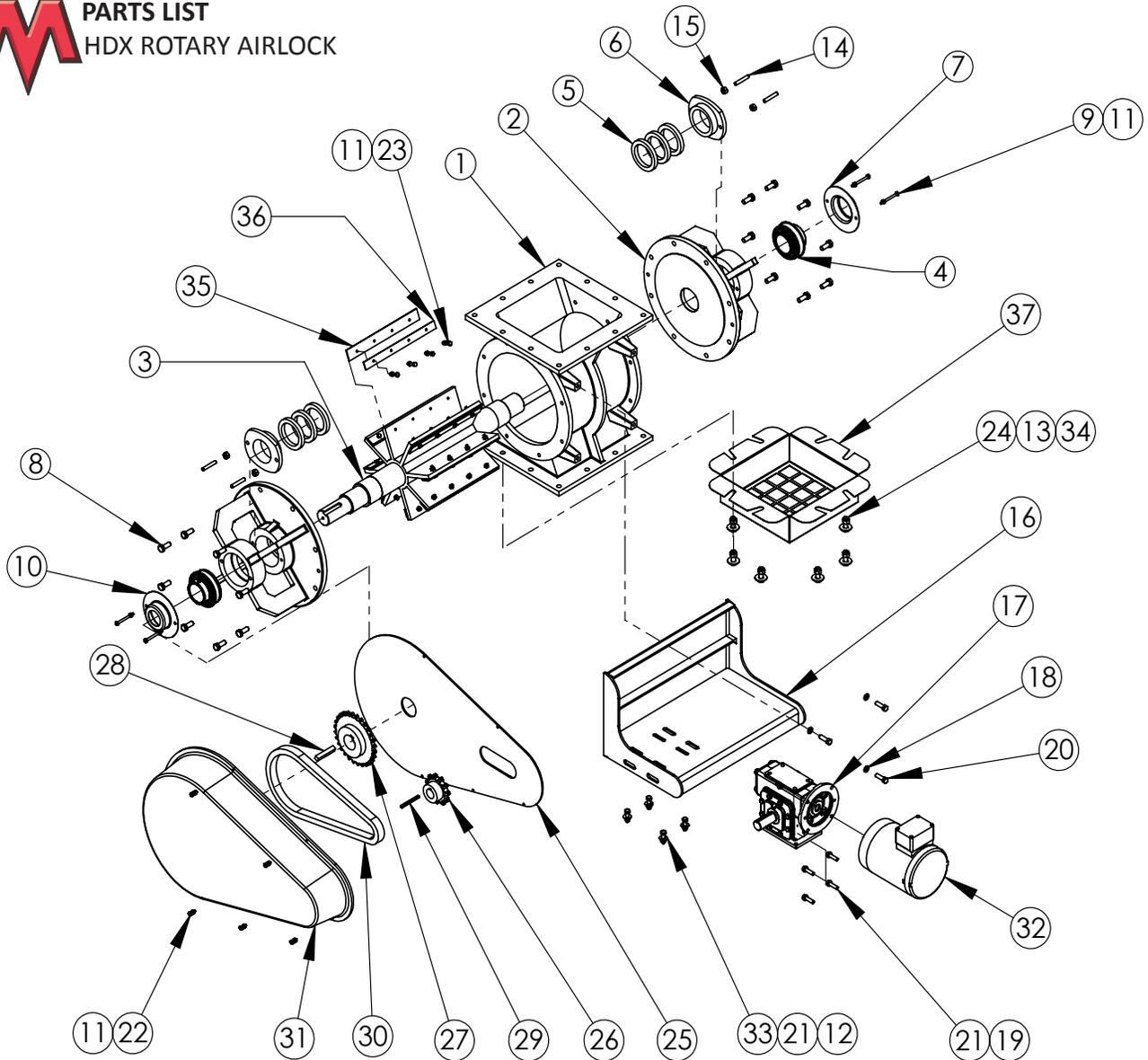
SECTION VII
PARTS LIST
 UDV ROTARY AIRLOCK



ITEM	Description	QTY.	ITEM	Description	QTY.
1	HOUSING	1	23	BEARING CAP	1
2	DRIVE HEADPLATE	1	24	DRIVE BASE	1
3	BLIND HEADPLATE	1	25	DRIVEBASE TO HEADPLATE WASHER	**
4	ROTOR	1	26	GEARBOX SPACER	2 ** AS REQUIRED
5	SEALSTRIP	***	27	GEARBOX BOTTOM BRACKET	1 *** OPTIONAL
6	SEALSTRIP HOLDER	***	28	GEARBOX TOP BRACKET	1
7	SEALSTRIP BOLT	***	29	DRIVEBASE LOCKWASHER	4
8	CAPSCREW	**	30	DRIVEBASE NUT	4
9	BEARING CAP BOLT	2	31	GEARBOX	1
10	DRIVEBASE TO HEADPLATE BOLT	8	32	GEARBOX WASHER	**
11	DRIVEBASE AND MOTOR BOLT	**	33	MOTOR	1
12	GEARBOX TO MOTOR BOLT	4	34	DRIVEN SPROCKET	1
13	SEALSTRIP NUT	***	35	DRIVE SPROCKET	1
14	PACKING RING	6	36	DRIVEN KEY	1
15	PACKING NUT	4	37	DRIVE KEY	1
16	PACKING NUT STUD	4	38	CHAIN	**
17	PACKING NUT AND DRIVEBASE WASHER	**	39	CHAIN MASTER LINK	1
18	GEARBOX TO MOTOR WASHER	**	40	DRIVE GUARD	1
19	GEARBOX NUT	**	41	FLANGE GUARD	1
20	DISCHARGE GUARD NUT	**	42	FLANGE GUARD WASHER	**
21	PACKING NUT LOCKNUT	4	43	FLANGE GUARD BOLT	**
22	BEARING	2			



SECTION VII
PARTS LIST
HDX ROTARY AIRLOCK



ITEM	Description	Qty.	ITEM	Description	Qty.
1	HOUSING	1	20	HEX BOLT	**
2	HEADPLATE	2	21	HEX BOLT	**
3	ROTOR	1	22	FASTENER	**
4*	BEARING	2	23	HEX BOLT	**
5*	PACKING	**	24	HEX BOLT	**
6	PACKING GLAND NUT	2	25	DRIVE GUARD BACKPLATE	1
7	BLIND END BEARING CAP	1	26	DRIVE SPROCKET	1
8	HEX HEAD BOLT	**	27	DRIVEN SPROCKET	1
9	HEX HEAD BOLT	**	28	DRIVEN SPROCKET KEY	1
10	BEARING CAP	1	29	DRIVE SPROCKET KEY	1
11	HEX NUT	**	30	CHAIN	**
12	HEX NUT	**	31	DRIVE GUARD	1
13	HEX NUT	**	32	MOTOR	1
14	PACKING GLAND STUD	4	33	FLAT WASHER	**
15	HEAVY HEX NUT	4	34	FLAT WASHER	**
16	MOTOR BASE	1	35*	SEAL STRIP	***
17	SPEED REDUCER	1	36*	SEAL STRIP HOLDER	***
18	LOCK WASHER	**	37*	FLANGE GUARD	1
19	LOCK WASHER	**			

* RECOMMENDED SPARE PARTS
 ** AS REQUIRED
 *** OPTIONAL