Rotary Air Lock Operating and Maintenance Manual

PLEASE READ THE ENTIRE MANUAL BEFORE HANDLING ERECTING OR OPERATING EQUIPMENT

Record your air lock serial number here _____
this number will be required to obtain capacity, information and parts in the future
Your serial number is a five digit number beginning with the last two digits in the year of manufacture i.e. 88001 means this equipment was manufactured in 1988 this will be required to obtain capacity information and parts in the future.

N. R. Murphy Limited

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Foreword

With proper care and maintenance, your Murphy rotary air lock will provide many years of trouble-free performance. We are sure that it will prove to be a most valued asset to your company.

Our interest in your equipment does not end with its sale. We are interested in constantly maintaining contact with your company. Should you have any questions or problems, or wish to have your equipment serviced or updated, by all means contact us and we would be pleased to have our representatives discuss these questions with you.

The purpose of this manual is to assist you in keeping your rotary air lock in the best possible operating and mechanical condition at all times. It is our endeavour to manufacture the finest equipment available and to be able to solve your dust collecting problems.

If you have any special requirements, from small to large, contact us and we would be pleased to supply the information on the equipment you require.

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Safety Precautions

EQUIPMENT WITH ROTATING PARTS CAN BECOME A SOURCE OF INJURY AND DEATH IF NOT PROPERLY INSTALLED, OPERATED OR MAINTAINED. Do not exceed the maximum operating temperature or speed limits for which the equipment was designed. Limits for the air lock are available from N. R. Murphy Limited and must not be determined otherwise. Do not rely on limits obtained in any other manner. The user must make all personnel in contact with the equipment aware of all hazards.

THE RESPONSIBILITY FOR PROVIDING SAFETY ACCESSORIES FOR AIR LOCKS SUPPLIED BY N. R. MURPHY LIMITED IS THAT OF THE USER OF THE EQUIPMENT. N. R. Murphy Limited sells air locks with or without safety accessories, and accordingly, we can supply standard safety accessories and components if ordered. It is the customers responsibility to ensure that all necessary safety accessories and guards have been installed prior to operation of the equipment.

THE WARNING NOTICE, AS ILLUSTRATED BELOW SHOULD BE ATTACHED TO ROTARY AIR LOCKS AT ALL TIMES

N. R. Murphy Limited

Warning

This equipment has rotating parts and can cause serious personal injury or death. Keep body, hands and feet, loose clothing and foreign objects away from inlet, outlet, shafts and drives. Do not touch equipment or motor during operation as it may be hot.

Do not attempt any service or maintenance work without thoroughly adhering to the instructions and procedures as defined in the Operating and Maintenance Manual for this specific equipment.

No work is to be performed by untrained personnel. Be sure to disconnect all electrical power sources and lock the disconnect switch in the off position before commencing any work. Clean-out doors must be secure during operation. An unsecured clean-out door can become a projectile during operation because of pressure buildup.

Additional safety accessories are available from N. R. Murphy Limited. The responsibility for providing necessary safety accessories is that of the user. Consult the manual for guidance.

Failure to follow the manufacturer's instructions for installation, operation, maintenance, adjustment, safety equipment or appropriate operation conditions can result in damage to the equipment, damage to other objects, personal injury or death

The user of ROTARY AIR LOCKS, in making their determination as to the appropriate safety accessories to be installed and any additional warning notices to be affixed upon the exhaust equipment, should consider the following:

- location of the air lock
- accessibility or personnel to the exhauster
- adjacent equipment
- applicable building codes
- applicable health and safety legislation
- any other current regulations or regulations awaiting future implementation

Installation and Operation of the Air Lock

Introduction

The purpose of this section is to aid in the proper installation, operation and maintenance of your air lock. These instructions are not intended to supplement good general practices and are not intended to cover detailed installation procedures.

The receipt, handling, installation, operation and maintenance of N. R. Murphy Limited equipment is the responsibility of the user. It is important that the installation and start-up of the equipment be supervised or inspected by personnel experienced in such work and equipment.

Shipment and Receiving

N. R. Murphy Limited has thoroughly inspected the equipment at the factory and has prepared the air lock for shipment. The equipment should be in as new condition when received unless damaged in transit. Upon acceptance by the carrier, as evidenced by a signed bill of lading, the carrier accepts responsibility for all shortages or damage, whether concealed or evident. Claims covering shortages or damage must be made to the carrier by the purchaser. Any shortages or damage should be noted by the user on the delivery receipt.

Handling and Storage

The air lock should be handled with care. The air lock has holes in the flanged inlet and outlet that can be used for lifting. Never use the motor or drive unit to lift the air lock as it could cause severe damage to these components. If the air lock cannot be installed immediately it should be stored in a dry area which is free of vibration and be protected from extreme and rapid changes in humidity and temperature using the following guidelines:

1. Temperatures: between 10°C (50°F) and 49°C (120°F)
2. Maximum relative Humidity: 60%
3. Shock or Vibration: 2 mils displacement maximum to prevent bearings from Brinelling.

Installation

It is recommended that access be available or access doors be installed at the inlet and outlet side of the air lock for ease of inspection and internal maintenance.(Disconnect and lock out all electrical power to the air lock before performing any maintenance) Ensure that bearings are properly locked to the shaft and that the **speed reducer vent plug is installed** prior to putting the air lock into service. Jog the motor electrically to ensure that the rotor rotation agrees with the rotation sticker as affixed to the air lock housing.

Maintenance of Air Locks

CAUTION: DISCONNECT AND LOCK OUT ALL ELECTRICAL POWER TO THE AIR LOCK BEFORE PERFORMING ANY MAINTENANCE

Bearings

Ensure that bearings are properly locked to the shaft and bearing housings are bolted securely to the side plates of the air lock. Re-lubricate bearings every four to six months. As a Rule of Thumb, one shot of grease from a standard grease gun is sufficient and must be slowly applied while the air lock is in operation.

Speed Reducer (Direct drive units)

The vent plug (shipped loose) **must be installed before the unit is put into service**. See **Figure 1** for proper installation location. Gear oil should be replaced every 6 months or 2,500 hours of service. We recommend **Mobil SHC 626**. See **Figure 1** for proper Oil level.

OIL CAPACITIES ARE AS FOLLOWS

Size 1 RAL	**826 Reducer**	**1.18 litres (40 oz)**
Size 2 RAL	**832 Reducer**	**2.13 litres (72 oz)**
Size 3 RAL	**842 Reducer**	**3.31 litres (112 oz)**

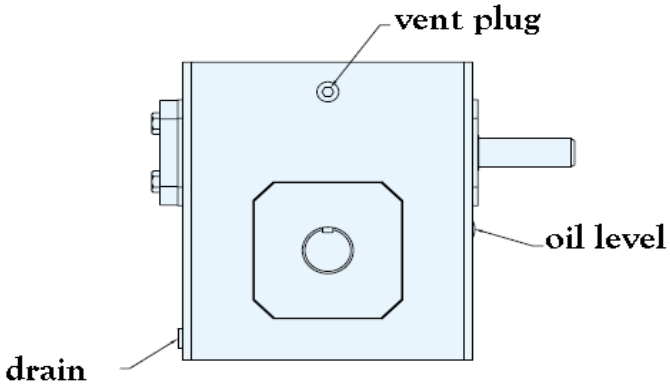


Figure 1

Mounting bolts holding the torque bracket to the speed reducer housing and the bolts securing the torque arm to the torque brackets should be checked after the first week of operation and then every six months thereafter.

Seals

Seals should be inspected every 4 to 6 months for wear. If wear is visible and there is air leakage between the inlet and discharge sides of the air lock, the seals should be changed. A leaking air lock can prevent material from dropping out normally in a dust collector and can lead to plugging of the collector filters. See "Procedure for Removal and Replacement of Air Lock Seals"

Motors

Check motor cooling fan every 3 months. Cooling fan must be clear to prevent overheating.

Spare Parts

Replacement and maintenance parts may be obtained through N. R. Murphy Limited by providing us with the Air Lock Serial number and a description of the component that you require. Due to the custom built nature of many of our products, we maintain files on every piece of equipment we sell. If further information is required please contact the N. R. Murphy Limited or your Technical Representative.

Procedure for Seal Removal and Replacement

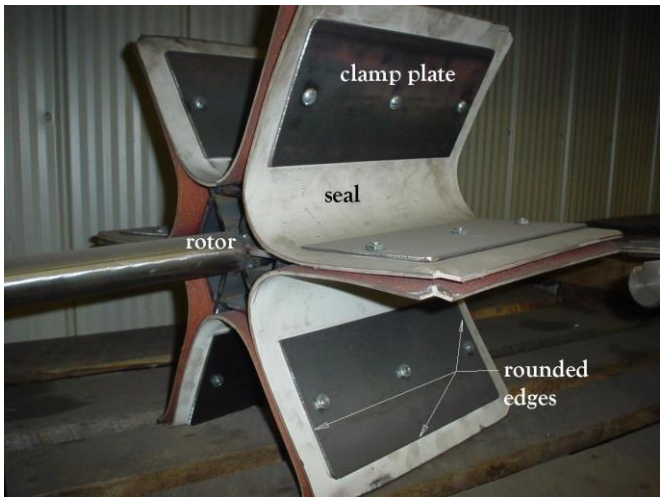
CAUTION: DISCONNECT AND LOCK OUT ALL ELECTRICAL POWER TO THE AIR LOCK BEFORE PERFORMING ANY MAINTENANCE

1. Remove set screws from the bearing opposite the drive of the air lock, then unbolt and remove the bearing.

2. Unbolt the rotary air lock side plate and remove the side plate to gain access to the rotor assembly.

3. Remove from the rotor assembly one seal at a time by unbolting the two clamping plates.

4. If the seals have been provided UNPUNCHED, use the old seal as a template. Placing the old seal on top of the new seal to mark and punch the bolting hole locations. Position the new seal in place and replace clamping plates and bolts before moving on to the next location.



CAUTION: NOTE ROUNDED CORNERS OF CLAMPING PLATES FACE THE OUTSIDE EDGES OF THE ROTOR AS ILLUSTRATED. INSTALLING THE CLAMPING PLATES SHARP EDGE OUT WILL RESULT IN PREMATURE FAILURE OF THE SEALS.

5. When completed for all the seals on the rotor, reinstall the air lock side plate **BUT DO NOT TIGHTEN THE SIDE PLATE BOLTS COMPLETELY**.

6. Reinstall the bearing but **DO NOT REINSTALL THE SHAFTING SET SCREWS**.

7. Jog the air lock electrically several times and then run for several rotations to allow the seals to seat and assume the correct rotation.

8. Tighten the air lock side plate bolts.

9. Replace the shaft screws on the bearing.

PLEASE NOTE THAT ON OLDER STYLE ROTARY AIR LOCKS THAT THE REMOVABLE SIDE PLATE IS ON THE SAME SIDE AS THE DRIVE. IN THIS CASE THE SIDE PLATE, ROTOR AND DRIVE ASSEMBLY ARE REMOVED FROM THE AIR LOCK AS A SINGLE ASSEMBLY IN ORDER TO FACILITATE THE SEAL REPLACEMENT.

1. Remove set screws from the bearing opposite the drive of the air lock, then unbolt and remove the bearing.

2. Unbolt the rotary air lock side plate and remove the side plate, rotor and drive assembly from the air lock housing.

3. Remove from the rotor assembly one seal at a time by unbolting the two clamping plates.

4. If the seals have been provided UNPUNCHED, use the old seal as a template. Placing the old seal on top of the new seal to mark and punch the bolting hole locations. Position the new seal in place and replace clamping plates and bolts before moving on to the next location.

CAUTION: NOTE ROUNDED CORNERS OF CLAMPING PLATES FACE THE OUTSIDE EDGES OF THE ROTOR. INSTALLING THE CLAMPING PLATES SHARP EDGE OUT WILL RESULT IN PREMATURE FAILURE OF THE SEALS.

5. When completed for all the seals on the rotor, reinstall the removed air lock side plate, rotor and drive assembly into the air lock housing **BUT DO NOT TIGHTEN THE SIDE PLATE BOLTS COMPLETELY**.

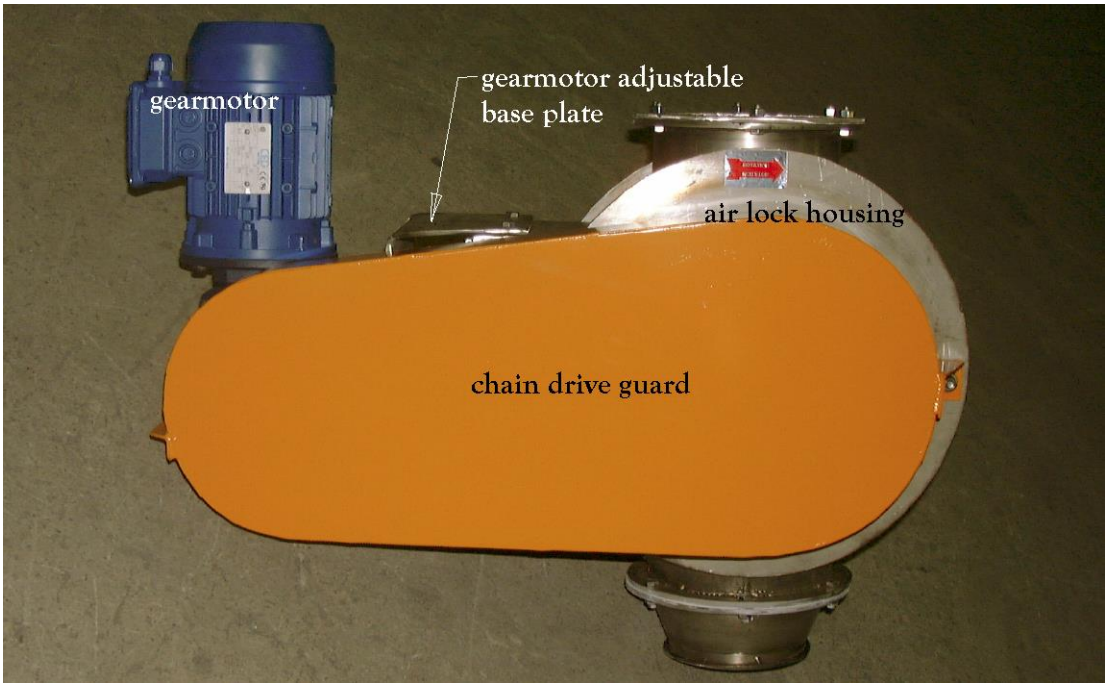
6. Reinstall the bearing but **DO NOT REINSTALL THE SHAFTING SET SCREWS**.

7. Jog the air lock electrically several times and then run for several rotations to allow the seals to seat and assume the correct rotation.

8. Tighten the air lock side plate bolts.

9. Replace the shaft screws on the bearing.

Chain Drive Air Lock Adjustment and Maintenance



Air lock drive chain tension should be checked after every 200 operating hours. Unbolt / remove air lock drive chain guard and check for sag between drive and driven sprockets. Chain should be loose enough to allow for some movement at midpoint through

manual hand pressure up and down. Adjusting the drive centres to either loosen or tighten the chain is accomplished by loosening 4 bolts on the mount between the gearmotor adjustable base plate and the mounting bracket. Chains should be cleaned and regreased after every 500 operating hours.

Manufacturer's Warranty

- *All equipment is guaranteed as per the original manufacturer's guarantee & warranty. All parts fabricated by N. R. Murphy Limited are guaranteed to be free from defects in material and workmanship under normal use and service for the period of one year from the date of delivery or 2,000 hours of operation, whichever occurs first, on the cost of parts only, NOT replacement labour. Cost of labour and/or transportation is by the customer. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, WRITTEN OR ORAL, WHETHER EXPRESSED BY AFFIRMATION, PROMISE, DESCRIPTION, DRAWING, MODEL OR SAMPLE. ANY AND ALL WARRANTIES OTHER THAN THIS ONE, WHETHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.*
- *LIMITATION OF DAMAGES: THE COMPANY'S LIABILITY, WHETHER IN CONTRACT OR IN TORT, ARISING OUT OF WARRANTIES, REPRESENTATIONS, INSTRUCTIONS, OR DEFECTS FROM ANY CAUSE SHALL BE LIMITED EXCLUSIVELY TO REPAIRING OR REPLACING PARTS UNDER THE CONDITIONS AS AFORESAID, AND IN NO EVENT WILL THE COMPANY BE LIABLE FOR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, RENTAL OR SUBSTITUTE EQUIPMENT, OR OTHER COMMERCIAL LOSS.*
- *LIMITATION OF DAMAGES: THE SELLER WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS) ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS IT CONTEMPLATES. IN NO EVENT WILL THE SELLER'S LIABILITY EXCEED THE PRICE THE BUYER PAID TO THE SELLER FOR THE SPECIFIC GOODS PROVIDED BY THE SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION.*

To avoid losses in operation it is always recommended that the customer stock operational and plant critical components. We at N. R. Murphy try to stock many of the common components but due to incoming replacement orders and new equipment builds sometimes these components are not always in house.

In many instances the equipment supplied on projects are custom fabrications to suit the customer's requirements and are application specific to suit installations conditions. We recommend that the customer stocks production critical components or the spare parts necessary to minimize downtime in the event of equipment failure. Although we at N. R. Murphy endeavour to stock components in our facilities, times do arise when components may be out of stock.

Maintenance Log

Motor Data HP _____ VOLTAGE _____/_____/_____ RPM_____ FLA _____ SERVICE FACTOR _____

DRIVE SPROCKET _____ DRIVEN SPROCKET _____ AMP DRAW _____ , _____ , _____

Date	Tension	Lubricate Bearings	Technician

Date	Tension	Lubricate Bearings	Technician