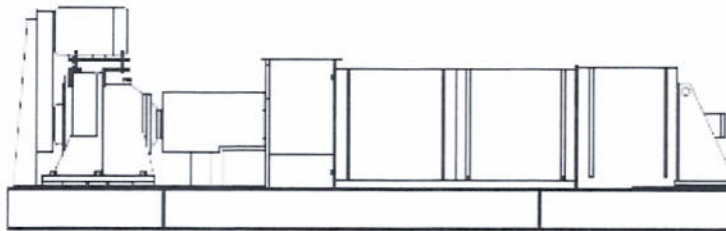


Vincent

CORPORATION

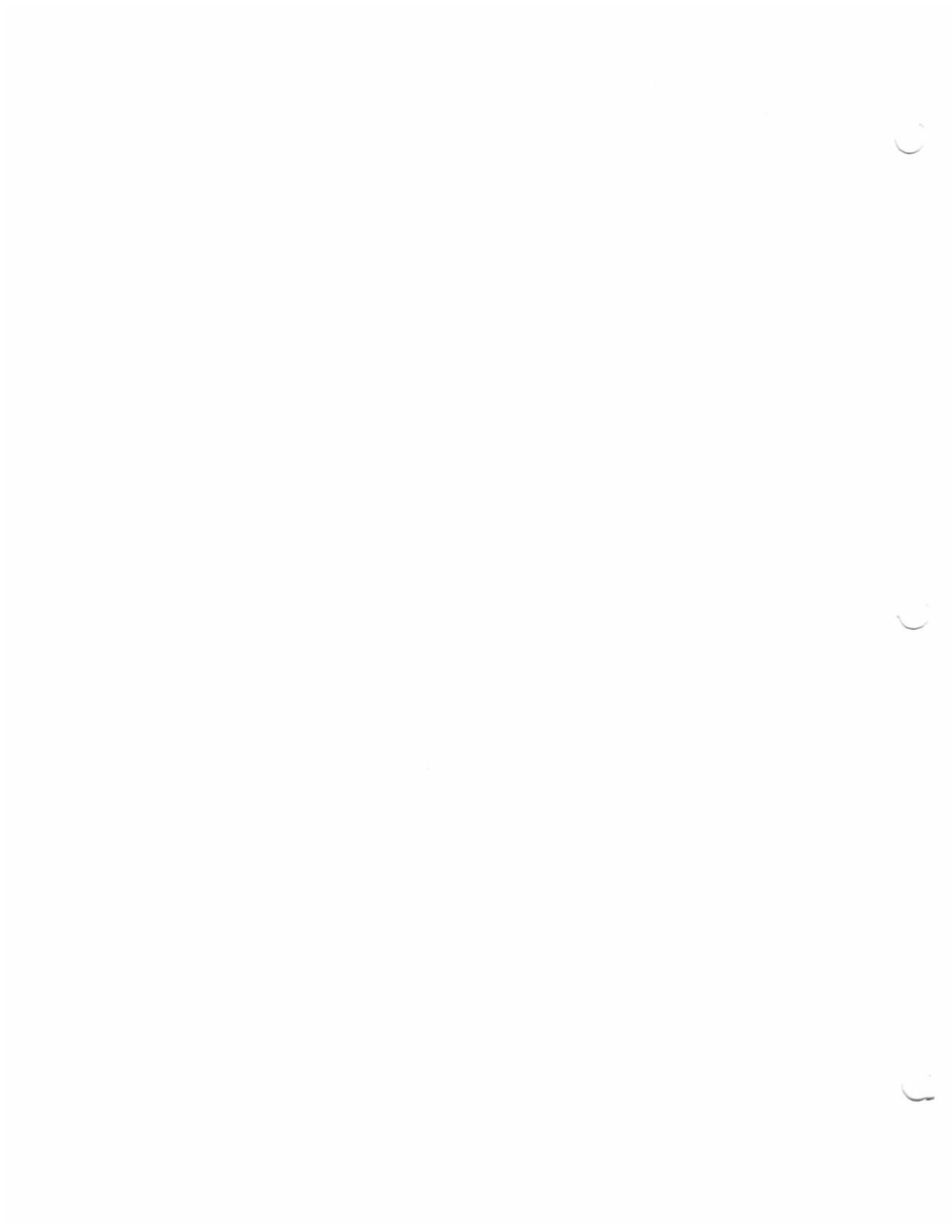
OPERATION AND MAINTENANCE MANUAL



VINCENT SCREW PRESS MODEL VP-22 SERIAL # 18155-B

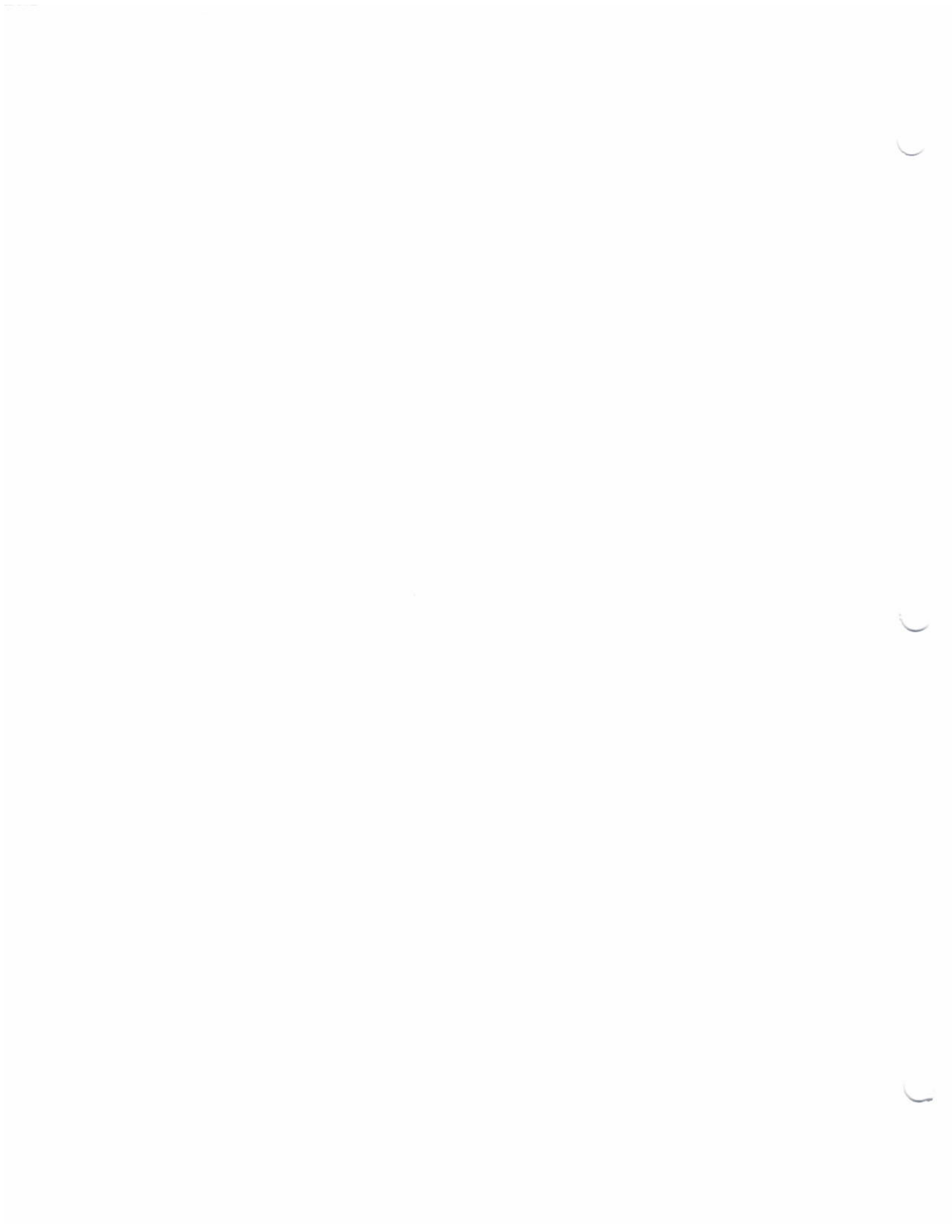
MANUFACTURED BY:
VINCENT CORPORATION
2810 East 5th Avenue
Tampa, FL 33605, USA

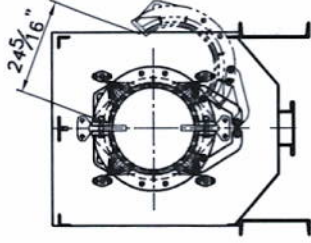
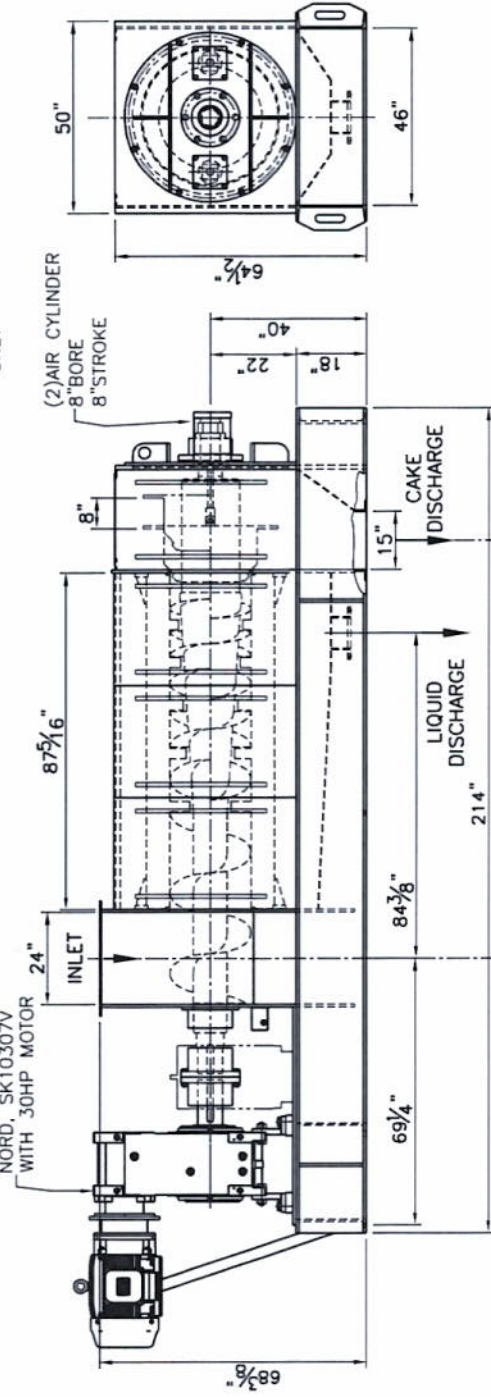
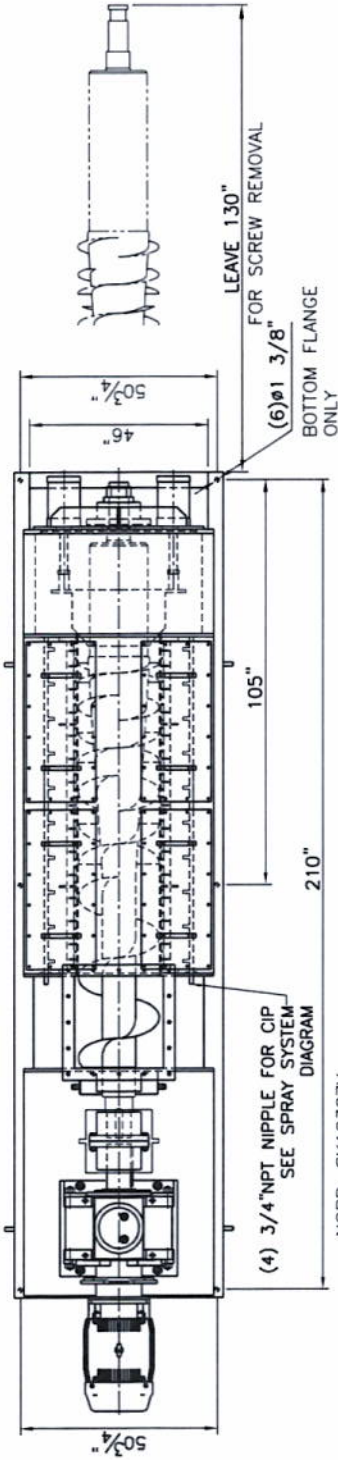
PHONE: (813) 248-2650
FAX: (813) 247-7557
E-MAIL: vincent@vincentcorp.com



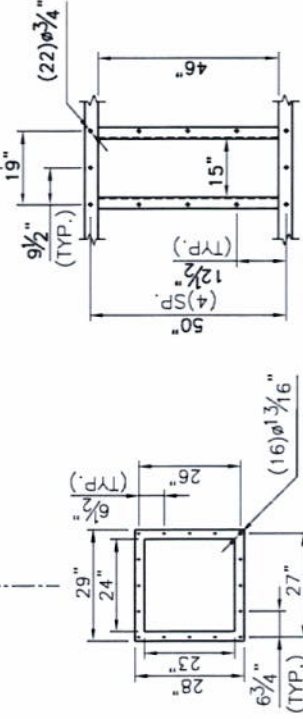
PARTS LIST
Serial #18155-B
Model VP-22

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>Qty</u>
A	Main Drive, Techtop Motor, GR3CITF326TC6BRD30, S/N 171036467, 30HP, 1180RPM, 230/460V, 3 PH, 326TC Frame,	1
B	Main Drive, Nord Reducer, Model #SK10307V N320TC, S/N 202295658-100 28402634, 177:1 Ratio, 6.2992 Output Bore Dia.	1
C	Main Drive, Coupling – Systems Components, Size 4.5 (160mm)	1
D	Shaft Seal, J/M #16930 LUPW	2
E	SS Cone with Bronze Front Bushing and Tecamio 66GF30 Rear Bushing	1
F	Discharge End Bearing, Rex MF-5500S	1
G	Air Cylinder, TRD, CYL 10001194 , 8" Bore 8" Stroke	2
H	Split Collar, ROY #60-11-0315	1
J	Screen, B-9 .375, .015-.017" Slot Width, Vincent	1
K	Screw, 21" Feed Pitch, Vincent	1
M	Valve, 4-way, Parker #PL-25	1
N	Air Filter, Regulator with gauge, Lg 1/2" #06E12A13AC	1
O	Spray Nozzles, 1/8-HH-8W	40





SPRAY SYSTEM DIAGRAM
 SPRAY NOZZLE 1/8"-HH-BW
 (10 RE'0) FOR EACH PIPE
 CAPACITY: 2 GAL. PER MIN.
 AT 80 PSI



Vincent CORPORATION
 TAMPA, FLORIDA
VP-22 PRESS
GENERAL DIMENSIONS
 S/N 18155-B

DRAWN	EG	4/9/2018	SIZE	DRAWING NO.
COMP NAME	VP-22, 18155-B, C, D, J, M		SCALE	B 18165-01
W. O. NO. 18165				SHEET

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DESCRIPTION

The modern Vincent Horizontal Screw Press has a proven design, shaped and formed over half a century. While change and innovation are valued traits at Vincent Corporation, the same basic components remain that existed 50 years ago. These components include: the drive, the inlet hopper, the screw, the screens, the cone, and the press liquor drain. See Figure 1.

The main drive consists of a fixed speed electric motor that is belt driven to a cyclo speed gear reducer. A belt drive is used because it is reliable and easy to maintain. The main drive reducer is coupled to the screw shaft with a chain coupling that is capable of taking some misalignment.

Material enters the press through a flanged inlet hopper. This hopper has a special 'relieved entry' design that prevents bridging or jamming. Once material is in the hopper, it is taken by the screw into the screens. This part of the screw has full pitch, continuous flighting.

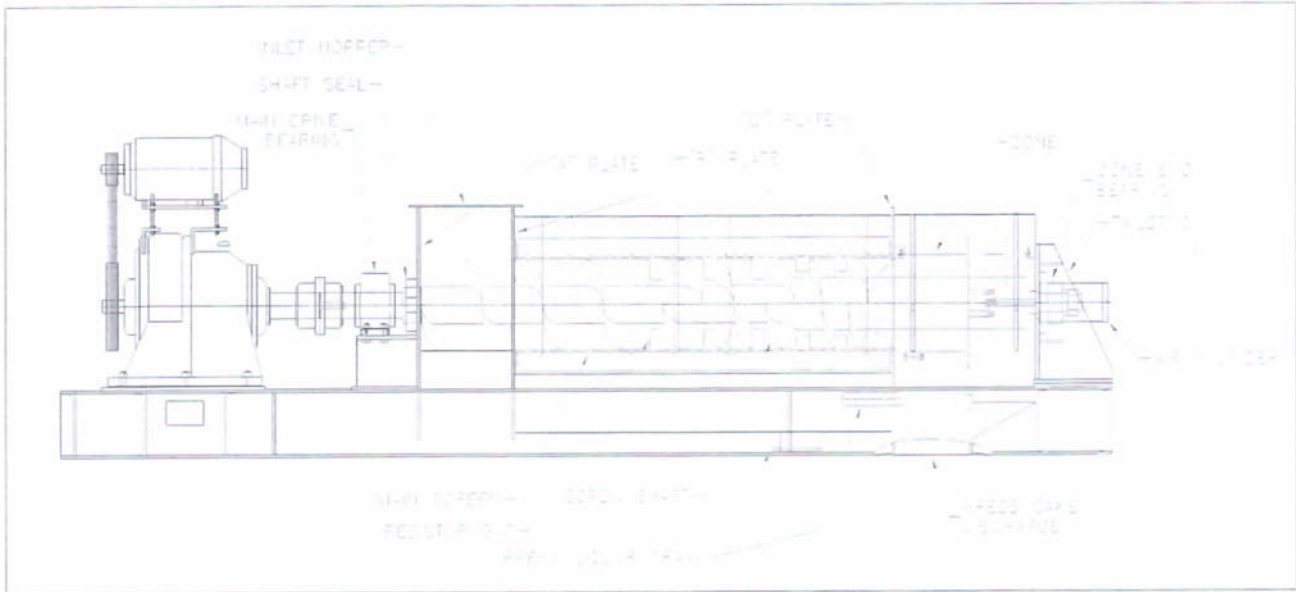


Figure 1. 22" Press Cut Away

Inside the screens, the screw flights become interrupted and have a decreasing pitch. The interruptions allow for resistor bars which prevent the material from co-rotating with the screw. The decreasing pitch of the flights creates increasing pressure as the material travels the length of the screw. See Figure 2.

As the pressure increases, free water in the feed material is pushed through the screen. The screen is designed to allow water to pass while holding back almost all of the solids. The liquid that

passes through the screen, called press liquor, falls into a drain pan while the solids left over, called the press cake, exit past the cone.

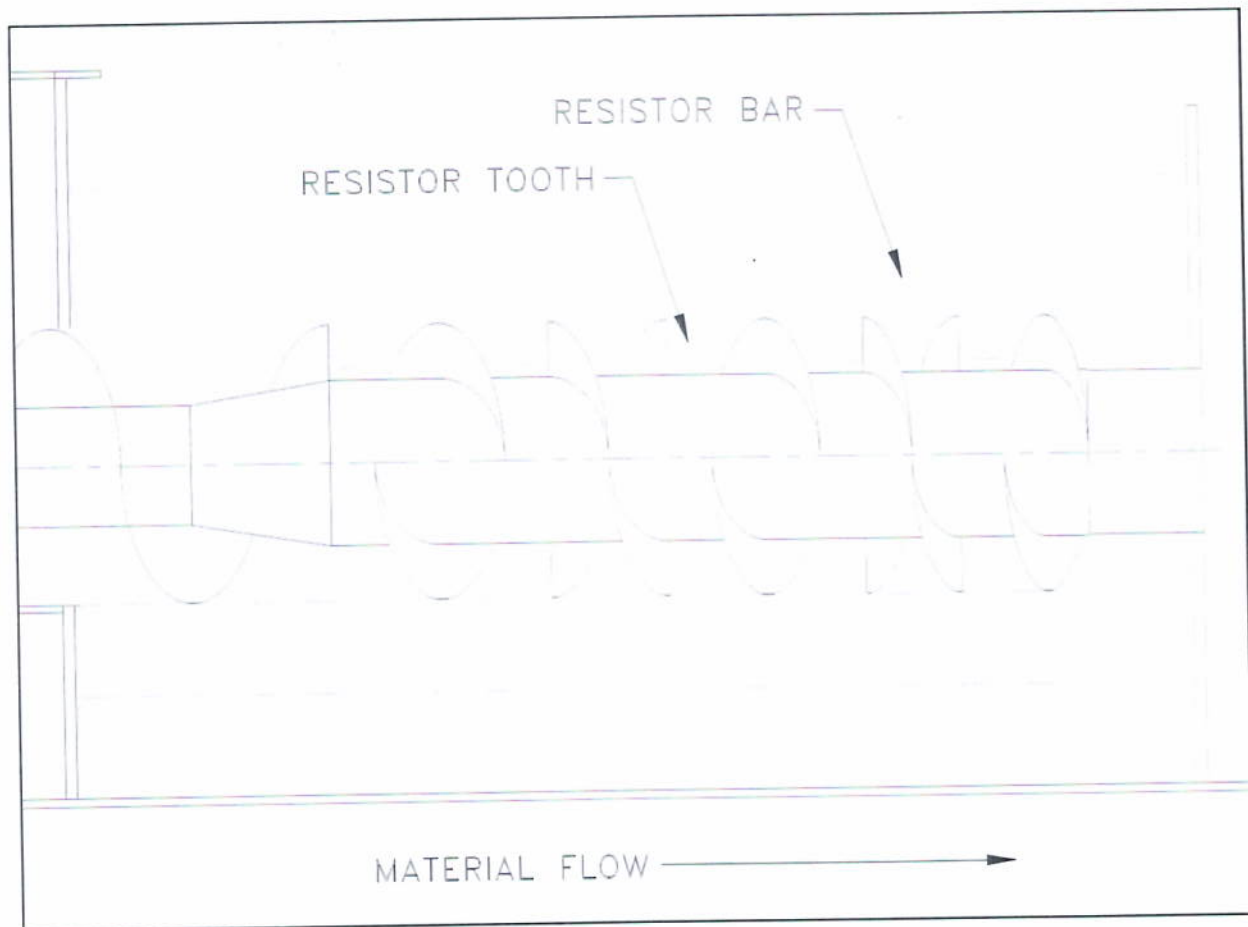


Figure 2. Screw With Resistor Bars and Interrupted Flights

The discharge cone is either pushed inward or pulled outward by an air cylinder. The direction of movement is controlled by a manual 4-way valve connected to an air supply. The pneumatic air cylinder allows the cone to move back and forth on the screw and maintain a constant pressure on the press cake. The self adjusting cone is especially helpful during start up and during fluctuations

to the feed of the press. The cone provides the last pressure point on the cake before exiting the screen. Dry press cake then falls off the cone and through the discharge chute on the bottom of the press.

The press liquor collects below the screen in the drain pan. The reinforced drain pan is supplied with a standard pipe flange in the center so that it can be easily connected.

SAFETY

Please read the entire manual before installing or operating the Vincent press.

The most important notes and cautions are indicated with the symbol:



The general rule of thumb for safety is to use common sense. The following list contains some helpful reminders.

- Keep hands and feet out of the inlet hopper at all times.
- Keep hands and feet out of the press cake discharge area.
- Do not poke or in any way push material into the inlet hopper.
- Do not remove any electrical covers unless electrical service is properly locked out.
- Do not wear any loose clothing when around the press.
- All operators must be thoroughly trained on operation and safety procedures.
- All safety procedures of the plant must be followed at all times.

INSTALLATION AND MOUNTING

The press has been tested, lubricated, and adjusted before shipment. Even though the gearbox was shipped with oil filled to the proper level, it must be checked in accordance with the manufacture's instructions located in this manual before operation. Please note that the air line lubricator is shipped dry, and must also be filled with light oil.

The installer must provide a substantial, rigid mounting structure, to match the dimensions of the press bedframe. (See the general dimensions drawing in the back of this manual.) Supporting members should be firmly anchored to resist the torque reaction of the bedframe during operation. The press should be installed level and be evenly supported to avoid misalignment. If the press is installed on a structural steel platform, leveling should be done by placing shims at the bolting points.

The following service connections are required:

- 1) Supply air, 80 to 100 psig, 1 CFM, for the discharge cone.
- 2) Electrical power for the main drive motor.
- 3) Water hose connection for wash down.

ELECTRICAL SERVICE CONNECTION

The press motor requires the specified rated voltage at the motor terminals under all operating conditions. Associated safety switches, electrical cables, and connectors are not included. Select and install electrical components that are compatible with the electrical characteristics of the motor and the rest of the plant.

When making the electrical installation, make sure that:

- Appropriate wires and conduit are used for the press motor.
- Recommendations of the main drive motor manufacturer are followed, especially for the starter heaters.
- Finally, all requirements of the National Electrical Code and all local codes are obeyed.



NOTE: After the electrical installation has been completed, check the direction of the press shaft rotation. The press shaft must rotate COUNTER-CLOCKWISE when viewed from the press main drive end. If the press shaft rotates the wrong way, the press will not work and may damage itself.

START UP

In the case of initial start up after installation of the press, turn the screw by hand, using the gear box sheave, to make sure that there is no interference between the screw and the screens or resistor bars. With direct coupled drives this is done by turning the blade of the motor cooling fan. With belt drives, the sheaves can be turned.



CAUTION

SAFETY ALERT: With belt drives, make sure to use the sheaves to turn the screw by hand. Never use the belts to turn the screw. Fingers can be severed if they get pinched between the belts and the sheave.

Before starting, check the press for the following:

- All bolts are tight and secure.
- All screen covers are in place.
- Drive belts are snug.
- No tools have been left in, on, or around the press.
- The press has been mounted securely.
- All electrical connections have been made appropriately.

- Supply air has been provided.
- A non-detergent light mineral oil has been added to the air line lubricator.
- The gear reducer has the proper oil in it, and is filled to the correct level.
- Grease fittings have been lubricated.
- Grease has been applied to the cone bushing lubrication fittings.

With the manual 4-way valve, move the cone in and out several times while applying lubricant to the cone. The cone should move with less than 10 psig, and it may jerk a little bit on the stationary shaft of the screw. Leave the cone in the open position, so that it is withdrawn and the face of the cone is visible.

Start the main drive motor. It is a good idea to listen for knocking noises at this time. If a tool has been left inside the press, it will be heard! Hopefully the press can be shut down before any damage is done.



CAUTION

NOTE: The press shaft must rotate COUNTER-CLOCKWISE when viewed from the drive end. If the shaft rotates the wrong way, the press will not work and may damage itself.

Move the cone back and forth on the screw shaft. The motion should be smooth now, no jerking. The lubricant should leave a visible film on the screw. Check the screw shaft under the cone and the reducer for overheating. The press should be ready to receive inbound material.

Initial operation of the press should be with the cone in the out (withdrawn) position. Inbound material flow should be set at the minimum rate. After a couple of minutes of operation, adjust the air pressure regulator on the press so that there is only enough pressure to move the cone to the closed position. The pressed product will soon be forced out around the cone, pushing the cone back against its air cushion. When the cone stops moving, it has reached an equilibrium for that particular air pressure. The air pressure can be increased gradually as operating conditions warrant.

All materials do not press alike. In general, the higher the cone pressure, the lower the moisture content of the press cake. In some cases, higher cone pressures will prevent the press cake from discharging freely or cause excess wear on the machine. If this happens, reduce the cone pressure. On the other hand, lower cone pressures generally increase the capacity of the press. These differences may be subtle or obvious, depending on the material being pressed. It may take a few days to find the right cone pressure for the application.

SHUTDOWN

To shut down the press, first turn off the flow of inbound material to the press. Then place the cone in the open position. Continue to operate the press until the material within the press has cleared and there is no longer any flow at the press cake discharge (probably a few minutes).

CLEANING

As with other equipment, a Vincent press requires proper cleaning during extended shutdowns. In some applications, a shutdown of more than a day or two would qualify as extended. In other applications, an extended shutdown may only be one or two hours. Clean the press as needed.

To clean the press, stop the feed to the press. Move the cone to the open position and leave the screw turning until the remainder of the material is discharged. Turn off the motor and lock out the electrical service. If necessary, isolate the drain pan lines and press cake discharge from the product line.

In some cases, the only cleaning necessary may be hosing down the screens. In other cases, the screens may have to be removed so that the screens and the screw can both be thoroughly cleaned. These standards are pretty much dictated by the application of the press. For example, pressing waste material for animal feed would require much less cleaning than pressing fruit to make juice

for human consumption. Care should be taken not to drive water into the motors and drive components.

NOTE: See the lubrication instructions in the maintenance section before putting the press back in operation after cleaning.

MAINTENANCE

General Maintenance

All machines require maintenance. If a machine never receives maintenance until it breaks down, that is exactly what will happen. Remember, machines only break down when they are needed most. If a machine is given care and attention, it will still need to be fixed occasionally, but it will almost never break down. This is the purpose of this section.

Seal Plate

Where the screw shaft goes into the inlet hopper there is a seal plate. Some seal plates have a grease filled double seal. The seal(s) may be removed by unbolting the seal plate and pushing the seal(s) and the seal spring(s) out of the seal plate. Cut the new seal(s) at an angle at one point and slip it around the shaft. The cut should be made as illustrated in Figure 3. The seal spring can then be installed and the seal plate replaced.

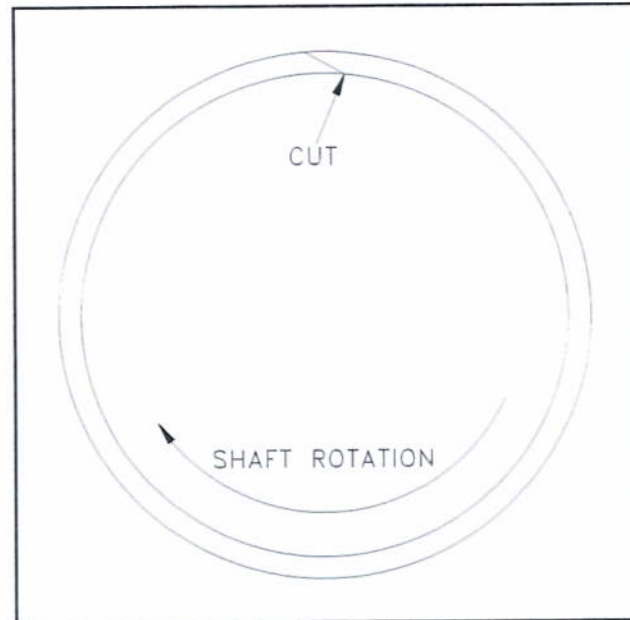


Figure 3. Shaft Seal Split

Bearings

The press is furnished with high quality bearings that have been selected by Vincent Corporation for the rated loads of the machine. However, this does not mean that the bearings do not need regular maintenance to have a long service life. A bearing's life is directly affected by the operator's commitment and should be checked periodically for signs of impending failure.

There are two bearings on the screw shaft: a pillow block style radial bearing at the drive end of the press, and a flange mounted radial/thrust load bearing at the cone end of the press. Bearings should be periodically checked for having excessive wear, heat, clearance, or damaged seals. Also, whenever possible, check the inner and outer races for signs of rust and or metal shavings. Do not operate the press with a bearing that shows any of these signs. A bearing failure could cause serious damage to the rest of the press and result in considerable down time.

The most important part of bearing maintenance is proper lubrication. Use a high-grade ball and roller bearing of NIGI No. 1 or No. 2 consistency, with maximum resistance to water washout. Mobil Oil Company Mobiltemp Grease No. 1 or Shell Oil Company Darina No. 2 are both suitable examples.

Bearings should be greased while the press is running. One or two shots from a hand grease gun should provide a sufficient amount of grease. Familiarity with the machine will determine the exact amount required.

The time interval from one application of grease to the next can only be determined from experience with the press in the environment in which it must operate. The ambient temperature, the temperature of the material being processed, and potential water or corrosive contamination are all factors which influence the frequency of lubrication. Re-greasing may vary from weekly to

monthly. If hard jets of water are used during clean-up, it is good practice to re-grease before and after clean-up to make sure the bearing chamber is full.

NOTE: The application of a small amount of grease at short intervals is much more desirable than large amounts at long intervals. THE COMMON TENDENCY IS TO OVER-LUBRICATE BEARINGS - AVOID EXCESSIVE LUBRICATION. Over-greasing causes damage to bearing seals and can be observed by a rapid build-up of expelled grease on the outside of the bearing seal.

Cone

The bronze cone bushings are fitted with grease fittings and should be lubricated with Lubriplate #630-AAA, or equal. Then, the cone should be moved back and forth from the open and closed positions to be sure the bushing surfaces are coated with lubricant. Frequency of lubrication depends on operational conditions and product handled.

Air Cylinder

Clean dry air containing a mist of light mineral oil should be provided for maximum operation life of the air cylinder. An air line lubricator is supplied with the press for this purpose. Keep the lubricator supplied with non-detergent light mineral oil. Mobil Oil Company or Shell Oil Company

non-detergent SAE 10 are suitable examples. The air line filter should be drained and cleaned as required to insure clean dry air.

Screen Frames

The VP press comes with special high strength screen frames designed to withstand heavy abrasion and high pressures. There are two halves to the main screen. Tramp materials such as metal, branches, rocks, and sand can damage or cause excessive wear on the press. Every precaution should be taken to remove such items from the feed material before they get into the press.

The screen frames should be inspected during routine operation and maintenance to see that they are in good condition and not in danger of failure. Screen frames should be replaced when they are damaged or worn to maintain their effectiveness. If worn or damaged screen frames are left in service, they may allow too many solids into the press liquor or even burst

Before removing the screen frames, it is advisable to place a sheet of metal or wood over the drain opening below the screens. This will prevent nuts, washers, or bolts from falling down the drain.

Installing screen frames is relatively simple. Larger screen frames require the use of a crane or overhead hoist to handle them. Carefully align the screen frames on the shaft providing uniform clearance between the screw and the screen. Once aligned, the screen frames can be bolted to the resistor bars.

When the press is completely assembled, the screw should be turned by hand as described in the Start Up section. There should be no unusual or rubbing noises. If there are, the screen frames need to be checked again to make sure that the screen frames are properly aligned.

Screw Removal

Remove the screen frames and the resistor bars. Support the screw with timbers. Remove the cone drive, thrust frame, bearing pedestal, cone, and cake shield from the press. Release the coupling between the reducer and the screw. Remove the flange and pillow block bearings from the screw shaft. The screw should be free to be removed now.

ORDER INFORMATION

Before ordering replacement press parts, refer to the assembly drawing and parts list in the back of this manual. Specify the quantity, part number, part name, press model, and the serial number of the press.

EXAMPLE:

(1) cone thrust bearing

For press Model #VP-22-P11

Serial #97160-A

Direct all correspondence to:

VINCENT CORPORATION

2810 East 5th Ave.

Tampa, Florida 33605 USA

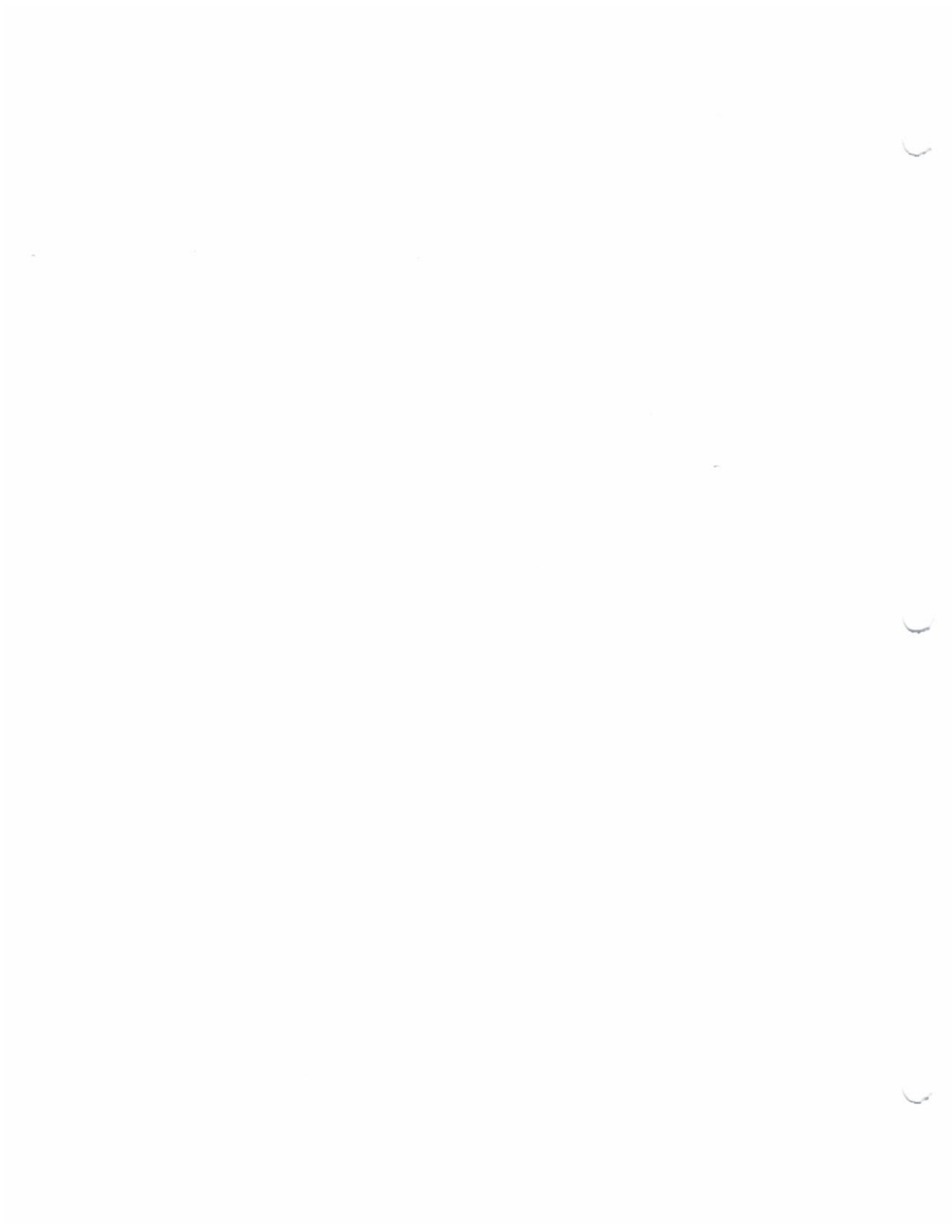
Tel: (813) 248-2650

Fax: (813) 247-7557

E-Mail: vincent@vincentcorp.com

MANUFACTURER PART INFORMATION

The following manufacturer tear sheets have been provided for your information. If you need more information, please call or write Vincent Corporation.





Rev. 2017.01

PRODUCT MANUAL

LOW VOLTAGE MOTORS

Installation, operation, maintenance and safety manual

English

MOTEURS A BASSE TENSION

Installation, le fonctionnement, la maintenance et le manuel de sécurité

Français

MOTORES DE BAJA TENSION

Manual de Instalación, funcionamiento, mantenimiento y seguridad.

Español



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1. INTRODUCTION

Before you install, operate or perform maintenance, become familiar with the following:

- NEMA Publication MG-2: Safety Standard for Construction and Guide for Selection, Installation and Use of Electric Motors.
- IEC 60072-1 Electrical and IEC72-1 Mechanical specifications
- ANSI C51.5, the National Electrical Code (NEC) and local codes and practices.
- OSHA standard 1910.147 titled: The Control of Hazardous energy (lockout/tag-out).

2. SAFETY NOTICE



WARNING All operations must be carried out by appropriately trained personnel. Electric motors have energized circuits and exposed rotating parts which may cause injuries to people.

Only qualified personnel, trained in the safe installation and operation of this equipment, should install this motor. When improperly installed or used, rotating equipment can cause serious or fatal injury. Equipment must be installed in accordance with the National Electrical Code (NEC), local codes and NEMA MG2 Safety Standards for Construction and Guide for Selection, Installation and Use of Electric Motors and Generators and OSHA regulation standard 1910.147 titled: The control of hazardous energy (lockout/tag-out).

Use correct material handling equipment to avoid injury. Use caution when removing the motor from its packaging. Sharp corners may exist on motor shaft, motor key, sheet metal and other surfaces.

1. Connect Power and Ground to the motor according to NEC or IEC and local codes.
2. Provide a permanent guard to prevent accidental contact of body parts or clothing with rotating or moving parts of motor. Beware of burns if motor is hot.
3. Shaft key must be secured before starting motor.
4. Mounting bolts should be high tensile steel. Be sure to use a suitable locking device on each bolt (spring washer or thread lock compound).
5. Do not apply power to the motor until the motor is securely mounted by its mounting holes.

6. This motor must only be connected to the proper line voltage, line frequency and load size.
7. Motors are not to be used for load holding or restraining unless a properly sized brake is installed. If a motor mounted brake is installed, provide proper safeguards in case of brake failure.
8. Disconnect all power services, stop the motor and allow it to cool before servicing.
9. For single phase motors, discharge the start and/or run capacitors before servicing.
10. Do not by-pass or render any inoperative safety devices.

3. RECEIVING

Once you receive your motor, instantly observe the condition of the shipping container. Immediately report any damage to the commercial carrier that delivered your motor.

Verify that the part number of the motor you received is the same as the part number listed on your purchase order.

4. HANDLING

Use correct material handling equipment to avoid injury. Use caution when removing the motor from its packaging. Sharp corners may exist on motor shaft, motor key, sheet metal and other surfaces.

5. GUARDING

After motor installation is complete, a guard of suitable dimensions must be constructed and installed around the motor. This guard must prevent personnel from coming in contact with any moving parts of the motor or drive assembly, but must allow sufficient cooling air to pass over the motor. If a motor mounted brake is installed, provide proper safeguards for personnel in case of brake failure.



WARNING Guards must be installed to form a safe and uncompromised perimeter around rotating parts such as couplings, pulleys, external fans, and unused shaft extensions.

All parts should be permanently guarded to prevent accidental contact by personnel. Accidental contact with body parts or clothing can cause serious or fatal injury. When this motor is installed according to these in-

structions, it complies with the EEC Machinery Directive. Electromagnetic Compatibility (EMC) requirements for CE compliance are met when the incoming power is purely sinusoidal.

6. MOUNTING

Foot mounted: Foot mounted motors should be mounted to a rigid foundation to prevent excessive vibration. Shims may be used if the location is uneven. Improper alignment may void the motor's warranty.

Flange mounted: Flange mounted motors should be properly seated and aligned. Note: If improper rotation direction is detrimental to the load, check the rotation or 'bump' the motor prior to coupling the load to the motor shaft.

V-belt drive: Mount the sheave pulley close to the motor housing. Allow clearance for end to end movement of the motor shaft. Do not over tighten belts as this may cause premature bearing failure or shaft breakage.

Direct coupled: Direct coupled motors should be carefully aligned and the shaft should rotate freely without binding or drag.

NOTE: Techtot Motors with frame 254T and larger are shipped with an opposite drive end bearing lock. If front end bearing locks are desired, please contact Techtot for assistance.

7. HAZARDOUS LOCATIONS

CLASS I (Gases, Vapors)

Group A: Acetylene

Group B: Butadiene, ethylene oxide, hydrogen, propylene oxide

Group C: Acetaldehyde, cyclopropane, diethyl ether, ethylene, isoprene

Group D: Acetone, acrylonitrile, ammonia, benzene, butane, ethylene dichloride, gasoline, hexane, methane, methanol, naphtha, propane, propylene, styrene, toluene, vinyl acetate, vinyl chloride, xylene

CLASS II (Combustible Dusts)

Group E: Aluminum, magnesium and other metal dusts with similar characteristics.

Group F: Carbon black, coke or coal dust

Group G: Flour, starch or grain dust

Division 1: In which ignitable concentrations of hazards exists, under normal operating conditions and/or where hazard is caused by frequent main-

tenance or repair work or frequent equipment failure.

Division 2: In which ignitable concentrations of hazards are handled, processed or used, but are normally in closed containers or closed systems from which they can only escape through accidental rupture or breakdown of such containers.

8. GROUNDING

Ground the motor according to NEC and local codes. In the USA, consult the National Electrical Code, Article 430 for information on grounding of motors and generators, and Article 250 for general information on grounding. In making the ground connection, the installer should make certain that there is a solid and permanent metallic connection between the ground point, the motor or generator terminal housing, and the motor or generator frame. In non-USA locations consult the appropriate national or local code applicable.

9. WIRING YOUR MOTOR

Connect the motor as shown in the connection diagram on the motor nameplate. Be sure to identify the proper wiring diagram for the motor you are installing. If you have difficulty determining the proper wiring diagram for your motor, please contact Techttop for assistance. If this motor is installed as part of a motor control drive system, connect and protect the motor according to the control manufacturer's diagram. When using AC motors with frequency inverters, be certain that the motors maximum speed rating is not exceeded. The wiring, fusing and grounding must comply with the National Electrical Code or IEC and local codes. Note: If improper rotation direction is detrimental to the load, check the rotation or 'bump' the motor prior to coupling the load to the motor shaft. When the motor is coupled to the load and started, it should start quickly and run smoothly. If not, stop the motor immediately and determine the cause. Possible causes are: low voltage at the motor, motor connections are not correct or the load is too heavy. Check the motor current after a few minutes of operation and compare the measured current with the nameplate rating.



WARNING Do not touch electrical connections unless you first ensure that power has been disconnected. Please refer to: OSHA standard 1910.147 titled: The Control of Hazardous energy (lockout/tag-out).

9.1 NEMA THREE-PHASE WIRING DIAGRAMS

208-230/460V 60Hz Direct-on-line (DOL) full voltage starting

Wye-Delta starting (Wye Start/Delta Run)

<p>NEMA 215T Frame & Smaller 9 Leads YY/Y</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>T1, T4</td> <td>Blue</td> </tr> <tr> <td>T2, T5</td> <td>White</td> </tr> <tr> <td>T3, T6</td> <td>Orange</td> </tr> <tr> <td>T7</td> <td>Yellow</td> </tr> <tr> <td>T8</td> <td>Black</td> </tr> <tr> <td>T9</td> <td>Red</td> </tr> </tbody> </table>	Lead	Color	T1, T4	Blue	T2, T5	White	T3, T6	Orange	T7	Yellow	T8	Black	T9	Red		<p>Does Not Apply</p>
Lead	Color															
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T2, T5	White															
T3, T6	Orange															
T7	Yellow															
T8	Black															
T9	Red															
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Lead	Color															
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575V 60Hz Direct-on-line (DOL) full voltage starting

Wye-Delta starting (Wye Start/Delta Run)

<p>NEMA 215T Frame & Smaller 3 Leads Y</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>T1</td> <td>Blue</td> </tr> <tr> <td>T2</td> <td>White</td> </tr> <tr> <td>T3</td> <td>Orange</td> </tr> </tbody> </table>	Lead	Color	T1	Blue	T2	White	T3	Orange		<p>Does Not Apply</p>
Lead	Color									
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Lead	Color									
T1, T4	Blue									
T2, T5	White									
T3, T6	Orange									

1. CCW rotation facing ODE for connections shown
2. Swap any two input lines to reverse rotation

9.2 IEC THREE-PHASE WIRING DIAGRAMS

208-230/460V 60Hz Direct-on-line (DOL) full voltage starting

Wye-Delta starting (Wye Start/Delta Run)

<p>IEC 132M Frame & Smaller 9 Leads YY/Y</p>		<p>Does Not Apply</p>
<p>IEC 160M Frame & Larger 12 Leads ΔΔ/Δ</p>		
<p>IEC > 100HP 6 Leads Δ (460V)</p>		

575V 60Hz Direct-on-line (DOL) full voltage starting

Wye-Delta starting (Wye Start/Delta Run)

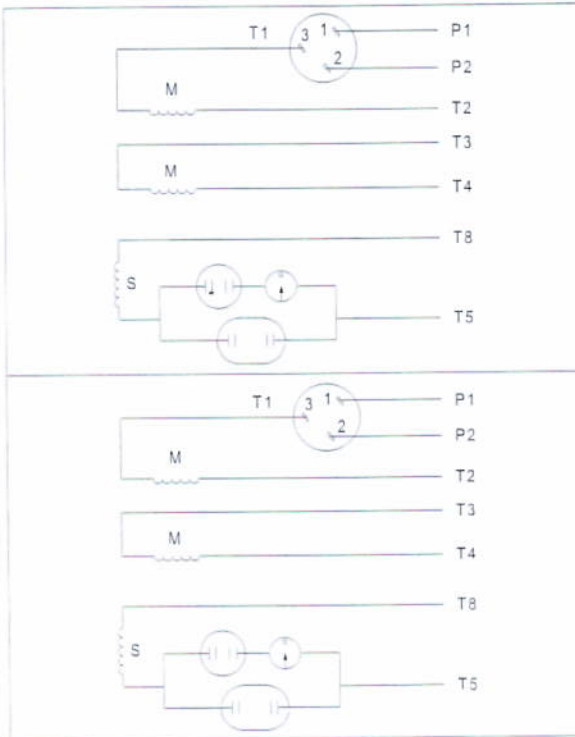
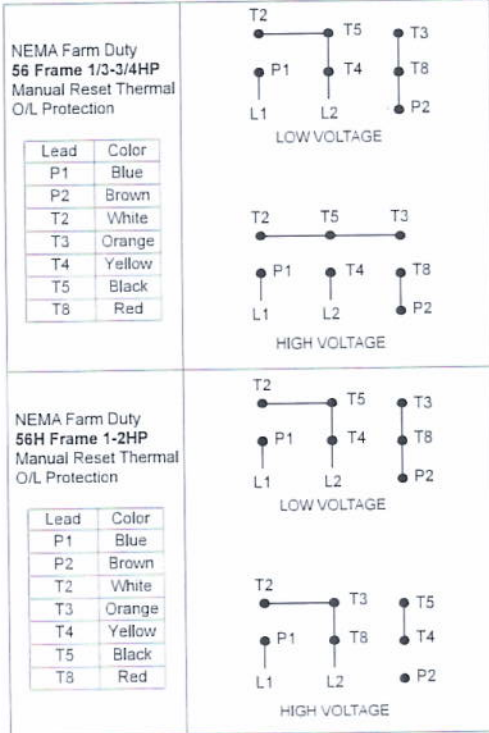
<p>IEC 132M Frame & Smaller 6 Leads Y</p>		<p>Does Not Apply</p>
<p>IEC 160M Frame & Larger 6 Leads Δ</p>		

1. CCW rotation facing ODE for connections shown
2. Swap any two input lines to reverse rotation

9.3 NEMA FARM DUTY WIRING DIAGRAMS

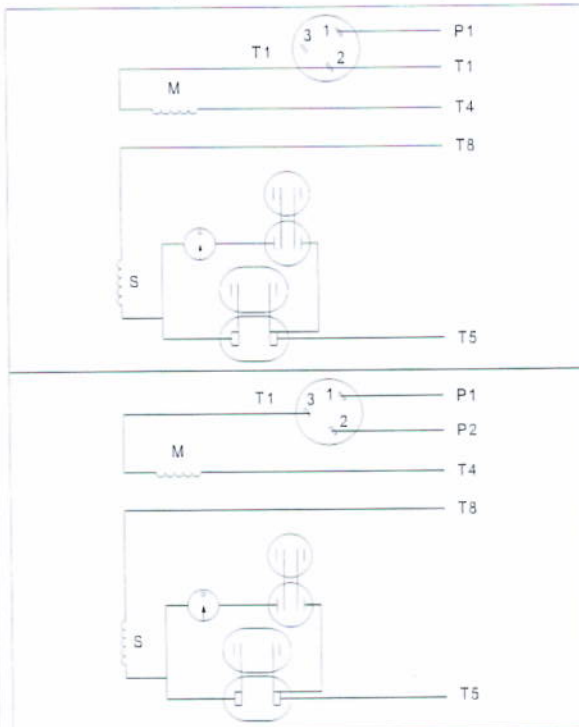
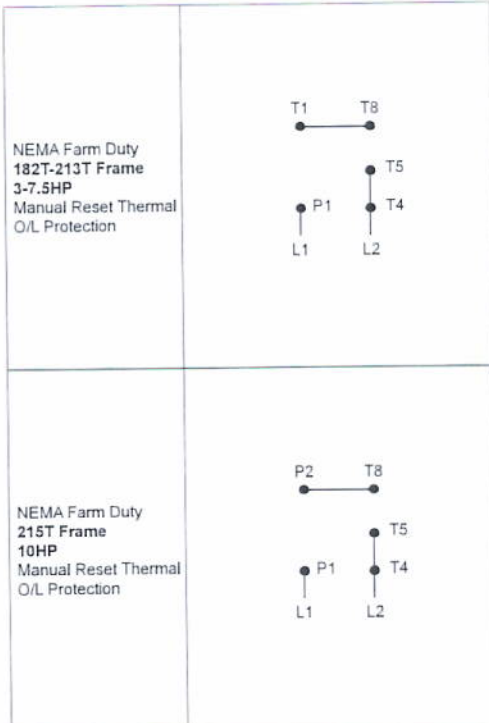
115/208-230V 60Hz Direct-on-line (DOL) full voltage starting

Thermally Protected Single-Phase Circuit Diagram



208-230V 60Hz Direct-on-line (DOL) full voltage starting

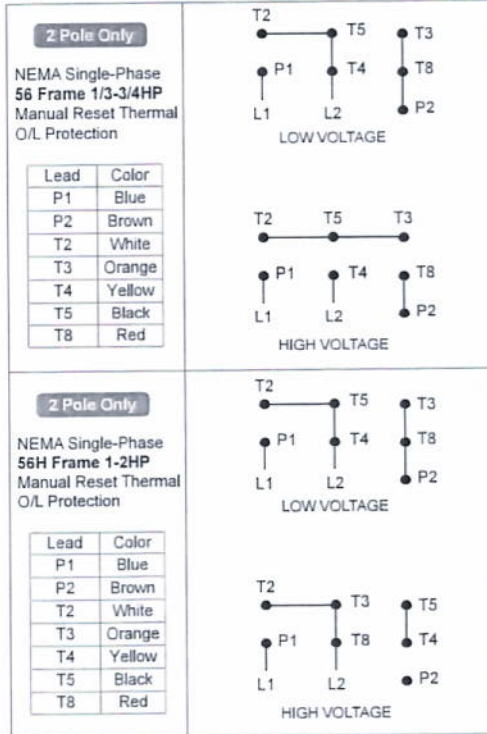
Thermally Protected Single-Phase Circuit Diagram



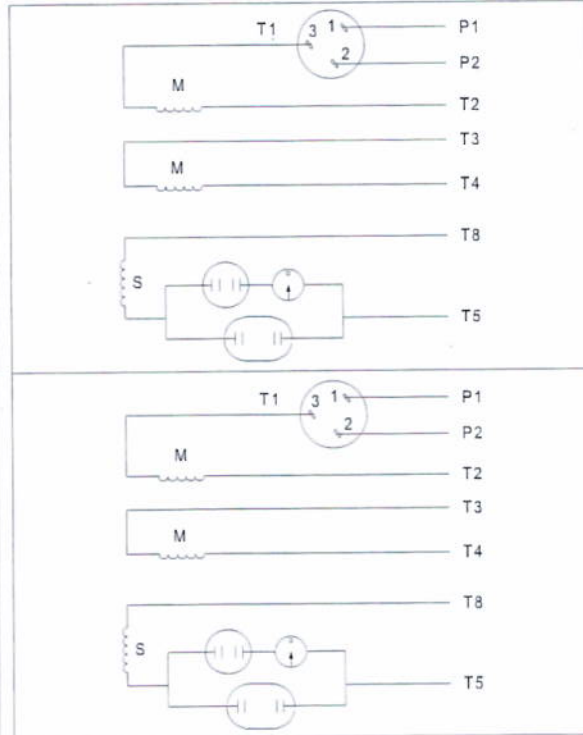
1. CCW rotation facing ODE for connections shown
2. Interchange T5 and T8 to reverse rotation

9.4 NEMA SINGLE-PHASE WIRING DIAGRAMS

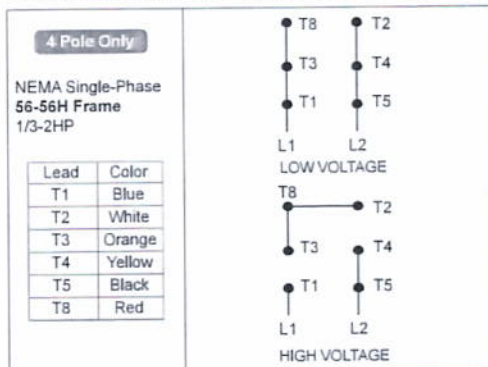
115/208-230V 60Hz Direct-on-line (DOL) full voltage starting



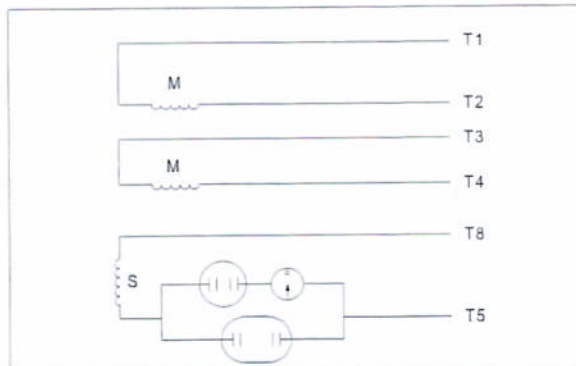
Thermally Protected Single-Phase Circuit Diagram



115/208-230V 60Hz Direct-on-line (DOL) full voltage starting



Single-Phase Circuit Diagram



1. CCW rotation facing ODE for connections shown
2. Interchange T5 and T8 to reverse rotation



WARNING Surface temperatures of motor enclosures may reach temperatures which can cause discomfort or injury to personnel coming in contact with hot surfaces. Protection should be provided by the user to protect against accidental contact with hot surfaces. Failure to observe this precaution could result in bodily injury.

10. LUBRICATION PROCEDURE



CAUTION Keep grease clean. Mixing dissimilar grease is not recommended and may result in premature bearing failure.

1. Re-lubrication is recommended when the motor is warm and the shaft is stationary.
2. Remove all dirt and wipe the outside of the grease fills and drains.
3. Clean the grease fitting (or area around grease hole, if equipped with slotted grease screws). If the motor has a purge plug, remove it. Motors can be re-greased while stopped (at less than 80°C) or while running.
4. When applicable, locate the grease inlet at the top of the bearing hub. If the motor is not equipped with grease fitting, clean the area and replace the 1/8-inch pipe plug with grease fitting.
5. Remove grease drain plug located opposite the grease inlet.
6. Apply grease gun to fitting (or grease hole). Too much grease or injecting grease too quickly can cause premature bearing failure. Slowly apply the recommended amount of grease, taking a few minutes or so to apply.
7. Operate the motor for 20 minutes and reinstall the purge plug if previously removed.
8. Install grease drain plug located opposite the grease inlet.

10.1 SUGGESTED LUBRICATION INTERVALS

Frame		RPM (r/min)	Duty	Interval
NEMA	IEC			
254T-365T	160M-225M	1800 or less	standard	2 years
254T-365T	160M-225M	1800 or less	severe	1 year
254T-365T	160M-225M	> 1800	standard	6 months
254T-365T	160M-225M	> 1800	severe	3 months
404T-500	250M-315L	1800 or less	standard	1 year
404T-500	250M-315L	1800 or less	severe	6 months
404T-500	250M-315L	> 1800	standard	3 months
404T-500	250M-315L	> 1800	severe	1 month

10.2 SUGGESTED LUBRICANT VOLUME

Frame		Volume (in ³)	Volume (fl. oz.)
NEMA	IEC		
254T-256T	160M-160L	1.00	0.55
284T-286T	180M-180L	1.25	0.69
324T-326T	200L	1.50	0.83
364T-365T	225S-225M	1.75	0.97
404T-405T	250M	2.25	1.20
444T-449T	280S-280M	2.75	1.50
500	315S-315L	3.00	1.70

11. MAXIMUM SIDE LOADING

When application calls for significant side loading of the motor, the application may require roller bearings to avoid early life failure of motor.

Properly assess the resultant side load before installing your motor. If your side load exceeds the value shown in the table, please contact Techtop to explore options for use of roller bearings.

11.1 ALLOWABLE SIDE LOAD FOR BALL BEARING MOTORS

Units are in pounds (lbs)

Frame		3600 RPM	1800 RPM	1200 RPM
NEMA	IEC			
143T	90S	106	154	179
145T	90L	109	154	176
182T	100L/112M	180	227	260
184T		180	227	260
213T	132S	230	300	350
215T	132M	230	300	350
254T	160M	470	593	703
256T	160L	470	589	705
284T	180M	570	735	838
286T	180L	570	735	838
324T	200L	660	860	990
326T		660	850	980

11.1 CONTINUED

Units are in pounds (lbs)

Frame		3600 RPM	1800 RPM	1200 RPM
NEMA	IEC			
364T	225S	820	1080	1240
365T	225M	820	1080	1240
404T	250M	--	1270	1450
405T		--	1290	1480
444T	280S	--	1560	1760
445T		--	1520	1760
447T	280M	--	1450	1660
449T		--	1490	1660
500	315S/M/L	--	1490	1660

For IEC frame, select the lower value of the equivalent NEMA frames.

If the application calls for significant thrust loads, please contact Techttop to determine if you have the correct motor for your application.

NOTES:

1. Overhung loads are considered to include belt tension and sheave weight.
2. Belt loads considered to act in a vertically downward direction.
3. To determine load at shaft end subtract 15%.
4. Overhung load radial limits are based on a bearing L-10 life of 26,280 hours.
5. Overhung load limits don't include effects of any unbalanced magnetic pull.

12. CONDENSATE DRAINS

Many Techttop motors come standard with one way sintered brass breather drains. These drains allow the motor to expel liquids from the casing without allowing liquid to enter the motor. Drains may require periodic maintenance to keep them clean of debris and flowing freely. Occasionally, remove the brass drains and wash them thoroughly. Eliminate any built up debris which may be impeding their operation.

For motors which are equipped with rubber plugs in their condensate drain holes, be sure to remove the plug (i.e. especially if the motor is installed in a location where condensate build up is likely).

In all instances, ensure that the drain is in the lowest portion of the motor. Some motors may require rotation of the end plates (i.e. if the mounting location is not a typical horizontal mounting).

13. SEALS

Inspect seals regularly for excessive wear which could lead to bearing failure. If significant wear is present, please contact Techtop for replacement seals.

If you have any questions, not answered in this manual, please contact Techtop at 1-(855)-TECHTOP(832-4867) or e-mail us at info@techttopind.com.

1. INTRODUCTION

Avant d'installer, d'exploiter ou d'effectuer l'entretien, se familiariser avec ce qui suit:

- Publication NEMA MG-2: Norme de sécurité pour la construction et le Guide pour la sélection, l'installation et l'utilisation de moteurs électriques.
- Spécifications IEC 60072-1 électriques et mécaniques IEC72-1
- ANSI C51.5, au National Electrical Code (NEC) et aux codes et pratiques locales.
- Aux normes OSHA 1910.147 intitulé: La Maîtrise des énergies dangereuses (verrouillage / tag-out).

2. AVIS DE SÉCURITÉ



AVERTISSEMENT Toutes les opérations doivent être effectuées par du personnels adéquatement formés. Les moteurs électriques ont des circuits sous tension et des pièces rotatives exposées qui peuvent causer des blessures aux personnes.

Seul le personnel qualifié, formé à la sécurité de l'installation et le fonctionnement de cet équipement, devraient installer ce moteur. S'il est mal installé ou utilisé, l'équipement rotatif peut causer des blessures graves ou mortelles. L'équipement doit être installé conformément au Code national de l'électricité (NEC), les codes locaux et NEMA Normes de sécurité pour la construction et MG2 Guide pour la sélection, l'installation et l'utilisation de moteurs électriques et générateurs et la réglementation OSHA 1910.147 norme intitulée: Le contrôle des énergies dangereuses (verrouillage / tag-out).

Utiliser un équipement de manutention de matériel correctement pour éviter les blessures. Faites preuve de prudence lorsque vous retirez le moteur de son emballage. Les angles vifs peuvent exister sur l'arbre moteur, clé du moteur, de la tôle et d'autres surfaces.

1. Faire la connexion des fils d'alimentation et de mise a la terre selon NEC ou IEC et les codes locaux.
2. Fournir un garde permanent pour éviter tout contact accidentel avec des parties du corps ou des vêtements avec des pièces en rotation ou de moteur en mouvement. Méfiez-vous des brûlures si le moteur est chaud.
3. La clé de l'arbre doit être fixé et sécuriser avant de démarrer le moteur.
4. Les boulons de fixation doivent être en acier à haute résistance. Veillez à utiliser un dispositif de verrouillage approprié sur chaque boulon (rondelle ou une colle a fillet de verrouillage).
5. Ne pas appliquer l'alimentation du moteur jusqu'à ce que le moteur est été monté en toute sécurité par ses trous de montage.

6. Les moteurs doivent être connecté à la tension d'alimentation appropriée, de la fréquence de ligne et de la taille de la charge.
7. Les moteurs ne doivent pas être utilisées pour le maintien de la charge ou de restreindre à moins qu'un frein de taille appropriée soit installée. Si un moteur avec frein monté est installé, fournir des protection adéquates en cas de défaillance des freins.
8. Débranchez tous les services d'alimentation, arrêter le moteur et laisser refroidir avant l'entretien.
9. Pour les moteurs monophasés, déchargez les condensateur de démarrage et/ou de marche.
10. Ne pas contournée les dispositifs de sécurité.

3. RÉCEPTION

Une fois que vous recevez votre moteur, observer instantanément l'état de l'emballage d'expédition. Signalez immédiatement tout dommage au transporteur commercial qui a livré votre moteur.

Vérifiez que le numéro de pièce du moteur que vous avez reçu est le même que le numéro de pièce indiqué sur votre bon de commande.

4. MANIPULATION

Utiliser un équipement de manutention de matériel adéquat pour éviter les blessures. Faites preuve de prudence lorsque vous retirez le moteur de son emballage. Les angles vifs peuvent exister sur l'arbre moteur, clé du moteur, de la tôle et d'autres surfaces.

5. PROTECTION

Après que l'installation du moteur soit terminée, un garde de protection de dimensions appropriées doit être construit et installé autour du moteur. Cette protection doit empêcher le personnel d'entrer en contact avec n'importe quel pièces mobile du moteur, mais doivent permettre à l'air de refroidissement de passer au-dessus du moteur. Si un moteur avec frein monté est installé, fournir des protections adéquates pour le personnel en cas de défaillance des freins.



AVERTISSEMENT Les protecteurs doivent être installés pour former un périmètre de sécurité et sans compromis autour des parties tels que les accouplements, les poulies, ventilateurs externes et les extensions de l'arbre tournant inutilisés.

Toutes les pièces doivent être isolé en permanence pour empêcher tout contact accidentel par le personnel. Le contact accidentel avec des parties du corps ou des vêtements peut causer des blessures graves ou mortelles. Lorsque ce moteur est installé conformément à ces instructions, il est con-

forme à la Directive Machines CEE. Compatibilité électromagnétique (CEM) pour la conformité CE sont remplies lorsque la puissance d'entrée est purement sinusoïdale.

6. MONTAGE

Montage sur pattes: Les moteurs à pattes doivent être montés à une fondation rigide pour éviter les vibrations excessives. Des cales peuvent être utilisées si l'emplacement est inégale. Un mauvais alignement peut annuler la garantie du moteur.

Montage avec bride: Les moteurs à bride doivent être correctement installés et alignés. Remarque: si le sens de rotation incorrect est préjudiciable à la charge, vérifier la rotation ou "bump" du moteur avant le couplage de la charge à l'arbre du moteur.

Entraînement a courroie V: Monter la poulie pres du batit du moteur. Laisser un espace adequat pour le vas et viens laterale de l'arbre du moteur. Ne pas trop serrer la courroie car cela pourrait entraîner une défaillance prématurée des roulements ou rupture de l'arbre.

Entraînement direct: Moteurs a entraînement directs doivent être soigneusement alignés et l'arbre doivent tourner librement sans se lier ni frotter.

REMARQUE: Les moteurs Techtop avec bâti 254T et plus sont livré avec un verrou en face de roulement à la fin de l'entraînement. Si les serrures de roulement frontaux sont souhaitées, s'il vous plaît contacter Techtop de l'aide.

7. ZONES DANGEREUSES

CLASSE I (gaz, vapeurs)

Groupe A: Acétylène

Groupe B: Butadiène, de l'oxyde d'éthylène, l'hydrogène, l'oxyde de propylène

Groupe C: Acétaldéhyde, du cyclopropane, de l'éther diethel, l'éthylène, l'isoprène

Groupe D: Acétone, acrylonitrite, de l'ammoniac, le benzène, le butane, le dichlorure d'éthylène, de l'essence, de l'hexane, le méthane, le méthanol, le naphta, le propane, le propylène, le styrène, le toluène, l'acétate de vinyle, le chlorure de vinyle, le xylème

CLASSE II (combustibles poussières)

Groupe E: Aluminium, magnésium et autres poussières métalliques ayant des caractéristiques similaires.

Groupe F: Le noir de carbone, le coke ou de poussière de charbon

Groupe G: Farine, l'amidon ou grain de poussière

Division 1: Dans le quel des concentrations inflammables à risques existent,

dans des conditions normales de fonctionnement et / ou où le danger est causée par un entretien fréquent ou des travaux de réparation ou de défaillance de l'équipement fréquente.

Division 2: Dans le quelle les concentrations inflammables de dangers sont traitées, ou utilisées, mais sont normalement dans des contenants ou systèmes fermés dont ils ne peuvent s'échapper par la rupture accidentelle ou de panne de ces conteneurs.

8. MISE À LA TERRE

Relier le moteur selon NEC et les codes locaux. Aux États-Unis, consultez le National Electrical Code, l'article 430 pour des informations sur la mise à la terre des moteurs et des générateurs, et de l'article 250 pour des informations générales sur la mise à la terre. En faisant la mise à la terre, l'installateur doit faire sorte qu'il y ait une connexion métallique solide et permanente entre le point de masse, le moteur ou le boîtier de terminal, et le bâti du moteur ou générateur. Dans les endroits non-USA consulter le code national ou local approprié applicable.

9. BRANCHEMENT DU MOTEUR

Raccorder le moteur comme indiqué dans le schéma de raccordement sur la plaque signalétique du moteur. Assurez-vous d'identifier le schéma de câblage approprié pour le moteur que vous installez. Si vous avez des difficultés à déterminer le schéma de câblage approprié pour votre moteur, s'il vous plaît contacter Techttop pour de l'aide. Si ce moteur est installé en tant que partie d'un système de commande d'entraînement de moteur, brancher et protéger le moteur selon le schéma de la commande du fabricant. Lors de l'utilisation de moteurs à courant alternatif avec des variateurs de fréquence, être certain que la cote de vitesse des moteurs maximale ne soit pas dépassée. Le câblage, fixation et mise à la terre doivent être conformes au Code national de l'électricité ou de la IEC et les codes locaux. Remarque: si le sens de rotation est incorrect et préjudiciable à la charge, vérifier la rotation ou "bump" du moteur avant le couplage de la charge à l'arbre du moteur. Lorsque le moteur est couplé à la charge et démarre, Il devrait commencer rapidement et fonctionner en douceur. Sinon, arrêter immédiatement le moteur et déterminer la cause. Les causes possibles sont: basse tension au niveau du moteur, les connexions du moteur ne sont pas correctes ou si la charge est trop lourde. Vérifiez le courant du moteur après quelques minutes de fonctionnement et de comparer le courant mesuré à la plaque signalétique.



AVERTISSEMENT Ne touchez pas les connexions électriques à moins que vous vérifiez d'abord que l'alimentation a été déconnecté. S'il vous plaît se référer à: OSHA 1910.147 norme intitulée: La Maîtrise des énergies dangereuses (verrouillage/tag-out).

9.1 SCHEMA DE BRANCHEMENT TRIPHASE NEMA

208-230/460V 60Hz

Branchement Direct Voltage

Star Démarrage / Delta Marche

<p>NEMA 215T Bâti et plus petits 9 Leads Y/Y</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Couleur</th> </tr> </thead> <tbody> <tr> <td>T1, T4</td> <td>Bleu</td> </tr> <tr> <td>T2, T5</td> <td>Blanc</td> </tr> <tr> <td>T3, T6</td> <td>Orange</td> </tr> <tr> <td>T7</td> <td>Jaune</td> </tr> <tr> <td>T8</td> <td>Noir</td> </tr> <tr> <td>T9</td> <td>Rouge</td> </tr> </tbody> </table>	Lead	Couleur	T1, T4	Bleu	T2, T5	Blanc	T3, T6	Orange	T7	Jaune	T8	Noir	T9	Rouge		<p>Ne s'applique pas</p>
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T9	Rouge															
<p>NEMA 254T Bâti et plus grand 12 Leads Δ/Δ/Δ</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Couleur</th> </tr> </thead> <tbody> <tr> <td>T1, T4</td> <td>Bleu</td> </tr> <tr> <td>T2, T5</td> <td>Blanc</td> </tr> <tr> <td>T3, T6</td> <td>Orange</td> </tr> <tr> <td>T7, T10</td> <td>Jaune</td> </tr> <tr> <td>T8, T11</td> <td>Noir</td> </tr> <tr> <td>T9, T12</td> <td>Rouge</td> </tr> </tbody> </table>	Lead	Couleur	T1, T4	Bleu	T2, T5	Blanc	T3, T6	Orange	T7, T10	Jaune	T8, T11	Noir	T9, T12	Rouge		
Lead	Couleur															
T1, T4	Bleu															
T2, T5	Blanc															
T3, T6	Orange															
T7, T10	Jaune															
T8, T11	Noir															
T9, T12	Rouge															
<p>NEMA > 100HP 6 Leads Δ (460V)</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Couleur</th> </tr> </thead> <tbody> <tr> <td>T1, T4</td> <td>Bleu</td> </tr> <tr> <td>T2, T5</td> <td>Blanc</td> </tr> <tr> <td>T3, T6</td> <td>Orange</td> </tr> </tbody> </table>	Lead	Couleur	T1, T4	Bleu	T2, T5	Blanc	T3, T6	Orange								
Lead	Couleur															
T1, T4	Bleu															
T2, T5	Blanc															
T3, T6	Orange															

575V 60Hz

Branchement Direct Voltage

Star Démarrage / Delta Marche

<p>NEMA 215T Bâti et plus petits 3 Leads Y</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Couleur</th> </tr> </thead> <tbody> <tr> <td>T1</td> <td>Bleu</td> </tr> <tr> <td>T2</td> <td>Blanc</td> </tr> <tr> <td>T3</td> <td>Orange</td> </tr> </tbody> </table>	Lead	Couleur	T1	Bleu	T2	Blanc	T3	Orange		<p>Ne s'applique pas</p>
Lead	Couleur									
T1	Bleu									
T2	Blanc									
T3	Orange									
<p>NEMA 254T Bâti et plus grand 6 Leads Δ</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Couleur</th> </tr> </thead> <tbody> <tr> <td>T1, T4</td> <td>Bleu</td> </tr> <tr> <td>T2, T5</td> <td>Blanc</td> </tr> <tr> <td>T3, T6</td> <td>Orange</td> </tr> </tbody> </table>	Lead	Couleur	T1, T4	Bleu	T2, T5	Blanc	T3, T6	Orange		
Lead	Couleur									
T1, T4	Bleu									
T2, T5	Blanc									
T3, T6	Orange									

1. Sens de rotation inverse lorsque vue par l'arrière pour le branchement indiquer
2. Interchanger 2 fils de branchement à l'entré pour changer la rotation

9.2 SCHEMA DE BRANCHEMENT TRIPHASE METRIQUE

208-230/460V 60Hz		Branchement Direct Voltage	Star Démarrage / Delta Marche
IEC 132M Bâti et plus petits 9 Leads YYY		Ne s'applique pas	
		IEC 160M Bâti et plus grand 12 Leads ΔΔ/Δ	
IEC > 100HP 6 Leads Δ (460V)			
	Ne s'applique pas		
575V 60Hz			Branchement Direct Voltage
IEC 132M Bâti et plus petits 3 Leads Y		Ne s'applique pas	
		IEC 160M Bâti et plus grand 6 Leads Δ	

1. Sens de rotation inverse lorsque vue par l'arrière pour le branchement indiquer
2. Interchanger 2 fils de branchement à l'entrée pour changer la rotation

9.3 SCHEMA DE BRANCHEMENT MOTEURS USAGE DE FERME

115/208-230V 60Hz

Branchement Direct Voltage

Diagramme De Branchement Moteur Simple Phase Avec Protection Thermique

NEMA Ferme Moteurs
56 Bâti 1/3-3/4HP
Protection thermique de surcharge avec réinitialisation manuel

Lead	Couleur
P1	Bleu
P2	Marron
T2	Blanc
T3	Orange
T4	Jaune
T5	Noir
T8	Rouge

BASSE TENSION

HAUTE TENSION

NEMA Ferme Moteurs
56 Bâti 1-2HP
Protection thermique de surcharge avec réinitialisation manuel

Lead	Couleur
P1	Bleu
P2	Marron
T2	Blanc
T3	Orange
T4	Jaune
T5	Noir
T8	Rouge

BASSE TENSION

HAUTE TENSION

208-230V 60Hz

Branchement Direct Voltage

Diagramme De Branchement Moteur Simple Phase Avec Protection Thermique

NEMA Ferme Moteurs
182T-213T Bâti 3-7.5HP
Protection thermique de surcharge avec réinitialisation manuel

NEMA Ferme Moteurs
215T Bâti 10HP
Protection thermique de surcharge avec réinitialisation manuel

1. Sens de rotation inverse lorsque vue par l'arrière pour le branchement indiquer
2. Échange T5 & T8 pour changer la rotation

9.4 SCHEMA DE BRANCHEMENT SIMPLE PHASE NEMA

115/208-230V 60Hz

Branchement Direct Voltage

Diagramme De Branchement Moteur Simple Phase Avec Protection Thermique

2 Pôles

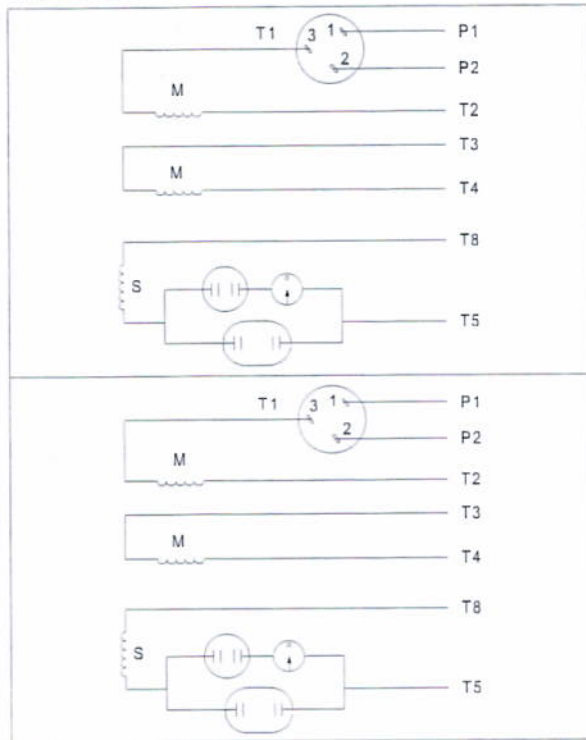
NEMA Ferme Moteurs
56 Bâti 1/3-3/4HP
Protection thermique
de surcharge avec
réinitialisation manuel

Lead	Couleur
P1	Bleu
P2	Marron
T2	Blanc
T3	Orange
T4	Jaune
T5	Noir
T8	Rouge

2 Pôles

NEMA Ferme Moteurs
56H Bâti 1-2HP
Protection thermique
de surcharge avec
réinitialisation manuel

Lead	Couleur
P1	Bleu
P2	Marron
T2	Blanc
T3	Orange
T4	Jaune
T5	Noir
T8	Rouge



115/208-230V 60Hz

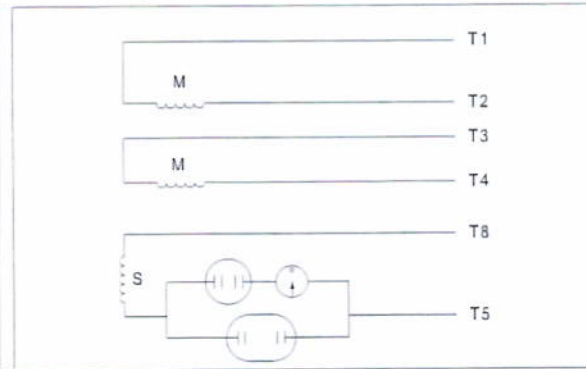
Branchement Direct Voltage

Diagramme De Branchement Moteur Simple Phase

4 Pôles

NEMA Simple Phase
56-56H Bâti
1/3-2HP

Lead	Couleur
T1	Bleu
T2	Blanc
T3	Orange
T4	Jaune
T5	Noir
T8	Rouge



1. Sens de rotation inverse lorsque vue par l'arriere pour le branchement indiquer
2. Échange T5 & T8 pour changer la rotation



AVERTISSEMENT Les températures de surface des enceintes à moteur peuvent atteindre des températures qui peuvent causer de l'inconfort ou des blessures pour le personnel en contact avec les surfaces chaudes. La protection devrait être fourni par

l'utilisateur pour se protéger contre tout contact accidentel avec des surfaces chaudes. Le non-respect de cette précaution peut entraîner des blessures corporelles.

10. PROCÉDURE DE LUBRIFICATION



AVERTISSEMENT Gardez la graisse propre. Le mélange de graisse différente n'est pas recommandé et peut entraîner une défaillance prématurée des roulements.

1. La re-lubrification est recommandée lorsque le moteur est chaud et l'arbre est à l'arrêt.
2. Enlevez toute la saleté et essuyez l'extérieur des remplissages de graisse et des drains.
3. Nettoyez le graisseur (ou la zone autour du trou de la graisse, si équipé de vis de graisse à fente). Si le moteur a un bouchon de purge, retirez-le. Les moteurs peuvent être re-graissés à l'arrêt (à moins de 80°C) ou lors de l'exécution.
4. Le cas échéant, localiser l'entrée de la graisse dans la partie supérieure du moyeu de palier. Si le moteur n'est pas équipé de graisseur, nettoyer la zone et remplacer le bouchon de tuyau de 1/8 pouce avec graisseur.
5. Retirez le bouchon de vidange de la graisse située en face de l'entrée de la graisse.
6. Appliquez de la graisse à pistolet au raccord (ou trou de la graisse). Trop de graisse ou injecter de la graisse trop rapidement peut entraîner une défaillance prématurée des roulements. Appliquez progressivement la quantité de graisse recommandée, en prenant quelques minutes pour s'appliquer.
7. Fonctionnez le moteur pendant 20 minutes et remettez le bouchon de purge si précédemment retirés.
8. Installez le bouchon de vidange de la graisse située en face de l'entrée de la graisse.

10.1 INTERVALLE DE LUBRIFICATION SUGGÉRÉ

Bâti		Vitess	Function	Intervalle
NEMA	IEC			
254T-365T	160M-225M	1800 ou moins	standard	2 years
254T-365T	160M-225M	1800 ou moins	severe	1 year
254T-365T	160M-225M	> 1800	standard	6 months
254T-365T	160M-225M	> 1800	severe	3 months
404T-500	250M-315L	1800 ou moins	standard	1 year
404T-500	250M-315L	1800 ou moins	severe	6 months
404T-500	250M-315L	> 1800	standard	3 months
404T-500	250M-315L	> 1800	severe	1 month

10.2 LUBRIFICATION SUGGÉRÉ AU VOLUME

Bâti		Volume (in ³)	Volume (fl. oz.)
NEMA	IEC		
254T-256T	160M-160L	1.00	0.55
284T-286T	180M-180L	1.25	0.69
324T-326T	200L	1.50	0.83
364T-365T	225S-225M	1.75	0.97
404T-405T	250M	2.25	1.20
444T-449T	280S-280M	2.75	1.50
500	315S-315L	3.00	1.70

11. CHARGE LATÉRAL MAXIMUM

Lorsque l'application demande d'important chargement latéral du moteur, l'application peut nécessiter des roulements à rouleaux pour éviter l'échec de début de la vie du moteur.

Évaluer correctement la charge latérale résultante avant d'installer votre moteur. Si votre charge latérale est supérieure à la valeur indiquée dans le tableau, s'il vous plaît contacter Techtop à explorer des options pour l'utilisation de roulements à rouleaux.

11.1 CHARGE LATÉRALE ADMISSIBLE POUR MOTEUR AVEC ROULEMENT À BILLES

Les unités sont en livres (lbs)

Bâti		3600 RPM	1800 RPM	1200 RPM
NEMA	IEC			
143T	90S	106	154	179
145T	90L	109	154	176
182T	100L/112M	180	227	260
184T		180	227	260
213T	132S	230	300	350
215T	132M	230	300	350
254T	160M	470	593	703
256T	160L	470	589	705
284T	180M	570	735	838
286T	180L	570	735	838
324T	200L	660	860	990
326T		660	850	980

11.1 A CONTINUÉ

Les unités sont en livres (lbs)

Bâti		3600 RPM	1800 RPM	1200 RPM
NEMA	IEC			
364T	225S	820	1080	1240
365T	225M	820	1080	1240
404T	250M	--	1270	1450
405T		--	1290	1480
444T	280S	--	1560	1760
445T		--	1520	1760
447T	280M	--	1450	1660
449T		--	1490	1660
500	315S/M/L	--	1490	1660

Pour les cadres IEC, sélectionnez la valeur inférieure des cadres NEMA équivalentes.

Si l'application nécessite des efforts de poussée importantes, s'il vous plaît contacter Techtop pour déterminer si vous avez le moteur adapté à votre application.

REMARQUE:

1. Les charges radiales sont considérés inclure la courroie et la poulie de poids.
2. Les courroies sont considérés à agir dans une direction verticale vers le bas.
3. Pour déterminer la charge à la fin de l'arbre, soustraire 15%.
4. Surplombait les limites de charges radiales sont basées sur un palier L-10 vie de 26,280 heures.
5. Limites de charge radiale ne comprennent pas les effets d'une attraction magnétique déséquilibrée.

12. DRAIN DE CONDENSATION

Beaucoup de moteurs Techtop livrés en standard avec un sens laiton fritté drains d'aération. Ces drains permettent au moteur d'expulser les liquides du corps sans laisser de liquide pénétrer dans le moteur. Les drains peuvent nécessiter un entretien périodique pour les garder propres de débris et de s'écouler librement. De temps en temps, retirer les drains en laiton et lavez-les soigneusement. Éliminer tous les débris de construction qui risque d'entraver leur fonctionnement.

Pour les moteurs qui sont équipés de bouchons en caoutchouc dans les trous d'eau de condensation, veuillez à retirer la fiche (surtout si le moteur est installé

dans un endroit où l'accumulation de condensation est probable).

Dans tous les cas, à ce que la fuite se trouve dans la partie la plus basse du moteur. Certains moteurs peuvent nécessiter une rotation des plaques d'extrémité (par exemple, si l'emplacement de montage n'est pas un montage horizontal typique).

13. REMPLACEMENT DU JOINT D'ÉTANCHÉITÉ

Inspectez les joints régulièrement l'usure excessive pourrait conduire à une défaillance du roulement. Si une usure importante est présente, s'il vous plaît contacter Techtop pour un joints de rechange.

Si vous avez des questions, sans réponse dans ce manuel, s'il vous plaît contacter Techtop au 1-(855)-TECHTOP(832-4867) ou envoyez-nous un courriel à info@techttopind.com.

1. INTRODUCCIÓN

Antes de instalar, poner en marcha o realizar el mantenimiento, se recomienda familiarizarse con lo siguiente:

- Publicación NEMA MG-2: Norma de seguridad para la construcción y guía para la selección, instalación y uso de motores eléctricos.
- IEC 60072-1 Especificaciones eléctricas y Mecánicas IEC72-1
- ANSI C51.5, el Código Eléctrico Nacional (NEC) y códigos y prácticas locales.
- Norma OSHA 1910.147 titulada: El control de Energía Peligrosa (bloqueo / etiquetado)

2. ADVERTENCIAS DE SEGURIDAD



ADVERTENCIA Toda operación debe realizarse por personal cualificado. Los motores eléctricos tienen circuitos energizados y partes giratorias expuestas que pueden causar lesiones.

Sólo el personal cualificado, formado en la instalación y operación segura de este equipo, debe instalar este motor. El uso incorrecto de las máquinas eléctricas rotativas puede causar lesiones graves o incluso mortales. El equipo debe ser instalado de acuerdo con el Código Eléctrico Nacional (NEC), los códigos locales y Normas de Seguridad para la Construcción de NEMA MG2 así como la Guía para la Selección, Instalación y Uso de Motores y Generadores Eléctricos y la norma de la OSHA 1910.147: Ergonomía (bloqueo / etiquetado).

Utilice siempre herramientas y materiales adecuados para evitar lesiones. Tenga cuidado al sacar el motor de su embalaje ya que pueden existir esquinas agudas en el eje del motor, la chaveta y la chapa metálica entre otras superficies.

1. Conecte la alimentación y la masa al motor según NEC o IEC y los códigos locales.
2. Proporcione un protector permanente para evitar el contacto accidental de partes del cuerpo o ropa con partes giratorias o móviles del motor. Tenga cuidado con las quemaduras si el motor está caliente.
3. La chaveta debe asegurarse antes de arrancar el motor.
4. Los pernos de montaje deben ser de acero de alta resistencia a la tracción. Asegúrese de usar un dispositivo de bloqueo adecuado en cada perno (arandela de resorte o compuesto de bloqueo de rosca).
5. No aplique tensión al motor hasta que este haya sido debidamente instalado en sus anclajes.

6. El motor sólo debe conectarse a la tensión, frecuencia y carga apropiadas.
7. Los motores no deben usarse para la retención o restricción de carga a menos que se instale un freno de tamaño adecuado. Si se instala un freno montado en el motor, proporcione las protecciones adecuadas en caso de fallo de los frenos.
8. Desconecte todos los servicios de energía, detenga el motor y déjelo enfriar antes de su reparación.
9. Para motores monofásicos, descargue los condensadores de arranque y/o funcionamiento antes de realizar el mantenimiento.
10. No pase por alto ni haga funcionar ningún dispositivo de seguridad inoperativo.

3. RECPCIÓN

En cuanto reciba el motor, inspeccione el estado del embalaje e informe inmediatamente de cualquier daño al transportista que entregó su motor. Verifique que el tipo de motor recibido sea el mismo que el tipo que aparece en su orden de compra.

4. MONTAJE

Utilice las herramientas de manipulación correctas para evitar lesiones. Tenga cuidado al sacar el motor de su embalaje ya que pueden existir esquinas agudas en el eje del motor, la chaveta y la chapa metálica entre

5. PROTECCIÓN

Una vez completada la instalación del motor, se debe construir e instalar un protector mecánico de dimensiones adecuadas alrededor del mismo. Este protector debe impedir que el personal entre en contacto con cualquier parte móvil del motor o conjunto de accionamiento, pero debe permitir que haya suficiente flujo de aire para su refrigeración. Si se instala un freno montado en el motor, proporcione las protecciones adecuadas en caso de fallo de los frenos.



ADVERTENCIA Los protectores mecánicos deben instalarse para formar un perímetro seguro alrededor de las piezas giratorias tales como acoplamientos, poleas, ventiladores externos y extensiones de eje no utilizadas.

Todas las partes deben estar permanentemente protegidas para evitar el contacto accidental. El contacto accidental con partes del cuerpo o con la ropa puede causar lesiones graves. La Directiva de Máquinas de la CEE

exige el cumplimiento de estas instrucciones. Los requisitos de Compatibilidad Electromagnética (EMC) acordes a la norma CE se cumplen cuando la alimentación de entrada es puramente sinusoidal.

6. MONTAJE

Montaje en patas: Los motores con patas deben montarse sobre una bancada rígida y estable para evitar vibraciones excesivas. Se pueden usar calzos en caso de que el anclaje sea irregular. Una alineación incorrecta puede anular la garantía del motor.

Montaje en brida: Los motores con brida deben estar correctamente colocados y alineados. Nota: Una dirección de rotación incorrecta podría ser perjudicial para la carga, compruebe la dirección antes de acoplar la carga al eje del motor.

Transmisión por correa trapezoidal: Montar la polea de la correa cerca de la carcasa del motor. Debe haber holgura en el movimiento de extremo a extremo del eje del motor. No apriete demasiado las correas ya que esto puede causar un fallo prematuro del cojinete o una rotura del eje.

Acoplamiento directo: Los motores de acoplamiento directo deben alinearse cuidadosamente y el eje debe girar libremente sin atarse o arastrarse.

NOTA: Los Motores Techtop a partir de la carcasa 254T se suministran con un bloqueo de cojinete en el lado ventilador. Si se desean bloqueos en cojinetes frontales, póngase en contacto con Techtop para obtener asistencia.

7. ATMOSFERAS CON RIESGO EXPLOSIVO

CLASE I (Gases, Vapores)

Grupo A: Acetileno

Grupo B: Butadieno, óxido de etileno, hidrógeno, óxido de propileno

Grupo C: Acetaldehído, ciclopropano, éter dietílico, etileno, isopreno

Grupo D: Acetona, acrilonitrilo, amoníaco, benceno, butano, dicloruro de etileno, gasolina, hexano, metano, metanol, nafta, propano, propileno, estireno, tolueno, acetato de vinilo, cloruro de vinilo, xilema

CLASE II (Polvo combustible)

Grupo E: Polvo de aluminio, magnesio y otros metales con características similares.

Grupo F: Polvo de carbón, coque o carbón

Grupo G: Harina, almidón o polvo de grano

División 1: Donde existen concentraciones de ignición peligrosas, en condiciones normales de operación y/o donde el peligro es causado por

frecuentes trabajos de mantenimiento o reparación o fallas frecuentes del equipo.

División 2: En las que se manipulan, procesan o utilizan concentraciones de peligros inflamables, pero normalmente se encuentran en sistemas cerrados, de los que sólo pueden escaparse por rotura o descomposición accidental de dichos recipientes.

8. PUESTA A TIERRA

La puesta a tierra del motor debe hacerse de acuerdo con NEC y los códigos locales. En Estados Unidos, consulte el Código Eléctrico Nacional, el Artículo 430 para obtener información sobre la puesta a tierra de motores y generadores, y el Artículo 250 para información general sobre la conexión a tierra. Al realizar la conexión a tierra, el instalador debe asegurarse de que existe una conexión metálica sólida y permanente entre el punto de puesta a tierra, el motor o la caja del terminal del generador, y el motor o el bastidor del generador. Fuera del ámbito nacional de los Estados Unidos, consulte el código nacional o local correspondiente.

9. CONEXIONADO

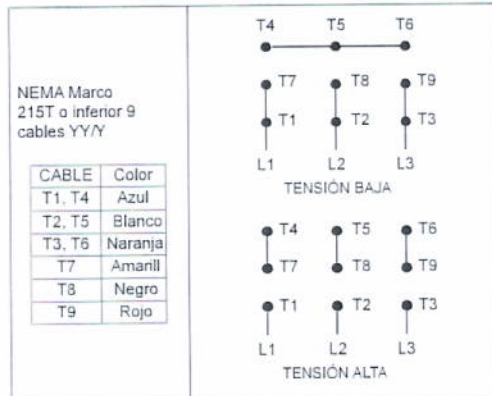
Conecte el motor tal y como se muestra en el esquema de conexiones en la placa de características del motor. Asegúrese de identificar el diagrama de conexión adecuado para el motor que está instalando. Si tiene dificultades para determinar el esquema adecuado para su motor, póngase en contacto con Techttop. Si el motor se instala como parte de un sistema de accionamiento de control, conecte y proteja el motor de acuerdo con el diagrama del fabricante del control. Cuando utilice motores de CA con convertidores de frecuencia, asegúrese de que no se exceda la velocidad máxima del motor. El cableado, fusibles y la puesta a tierra deben cumplir con el Código Eléctrico Nacional o IEC así como los códigos locales. Nota: Una dirección de rotación incorrecta podría ser perjudicial para la carga, compruebe la dirección antes de acoplar la carga al eje del motor. Cuando el motor está en marcha y acoplado a la carga, debe arrancar rápidamente y funcionar sin problemas. Si no es así, pare el motor inmediatamente y determine la causa. Las causas posibles son: baja tensión en el motor, conexión incorrecta o carga excesiva. Compruebe la corriente del motor después de unos minutos de funcionamiento y compare la corriente medida con la nominal de la placa de características.



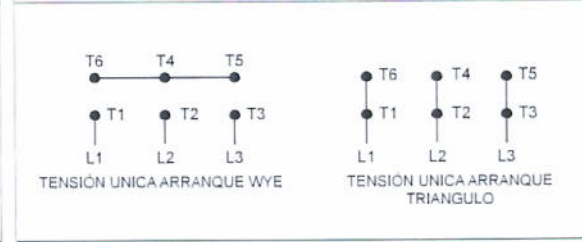
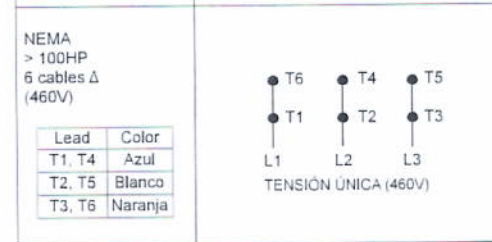
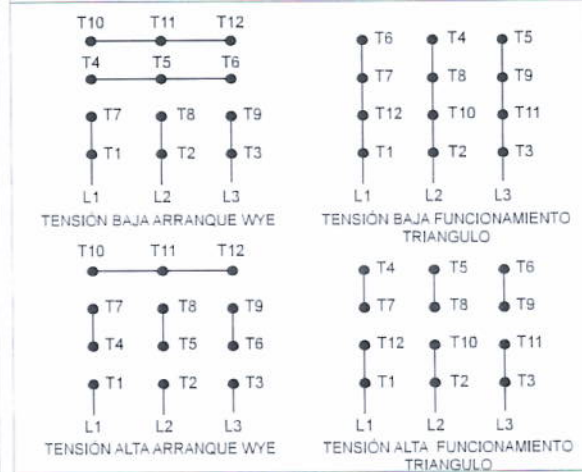
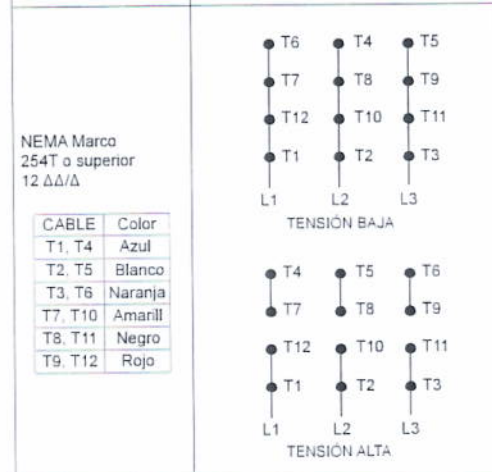
ATENCIÓN No toque las conexiones eléctricas a menos que se haya asegurado su desconexión. Véase la Norma OSHA 1910.147: El Control de la Energía Peligrosa (bloqueo / etiquetado) para más información.

9.1 ESQUEMA DE CONEXIÓN TRIFÁSICO NEMA

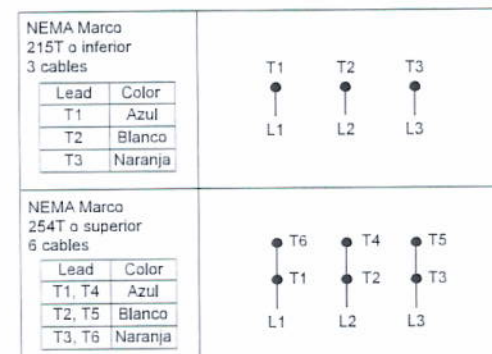
208-230/460V 60Hz Arranque directo a plena tensión



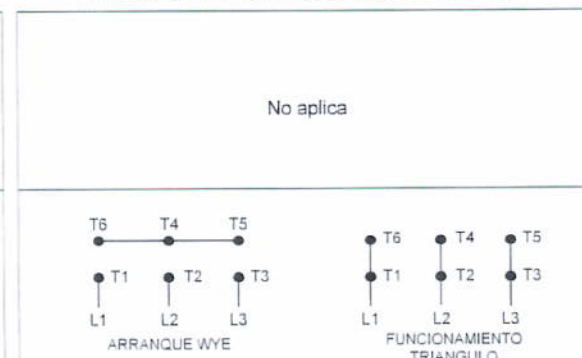
Arranque Estrella/Triangulo y Funcionamiento en triangulo



575V 60Hz Arranque directo a plena tensión



Arranque Estrella/Triangulo y Funcionamiento en triangulo



1. Conexiones para rotación CCW desde ODE
2. Intercambiar T5 y T8 para sentido de rotación contrario.

9.2 ESQUEMA DE CONEXIÓN TRIFÁSICO IEC

208-230/460V 60Hz		Arranque directo a plena tensión	Arranque Estrella/Triangulo y Funcionamiento en triangulo	
IEC Marco 132M o inferior 9 cables YY/Y			No aplica	
	IEC Marco 160M o superior 12 cables Δ/Δ/Δ			
IEC > 100HP 6 cables Δ (460V)				
	575V 60Hz		Arranque directo a plena tensión	Arranque Estrella/Triangulo y Funcionamiento en triangulo
IEC Marco 132M o inferior 6 cables Y			No aplica	
	IEC Marco 160M o superior 6 cables Δ			

1. Conexiones para rotación CCW desde ODE
2. Intercambiar T5 y T8 para sentido de rotación contrario.

9.3 ESQUEMA DE CONEXIÓN SERVICIO RURAL

115/208-230V 60Hz

Arranque directo a plena tensión

Diagrama eléctrico de protección monofásico

<p>NEMA Servicio Rural Marco 56 1/3-3/4HP Reinicio manual protección térmica sobrecarga</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>Azul</td> </tr> <tr> <td>P2</td> <td>Marrón</td> </tr> <tr> <td>T2</td> <td>Blanco</td> </tr> <tr> <td>T3</td> <td>Naranja</td> </tr> <tr> <td>T4</td> <td>Amarillo</td> </tr> <tr> <td>T5</td> <td>Negro</td> </tr> <tr> <td>T8</td> <td>Rojo</td> </tr> </tbody> </table>	Lead	Color	P1	Azul	P2	Marrón	T2	Blanco	T3	Naranja	T4	Amarillo	T5	Negro	T8	Rojo	<p>T2 — T5 — T3 P1 — T4 — T8 L1 — L2 — P2</p> <p>TENSIÓN BAJA</p> <p>T2 — T5 — T3 P1 — T4 — T8 L1 — L2 — P2</p> <p>TENSIÓN ALTA</p>	<p>T1 3 1 — P1 2 — P2</p> <p>M — T2 M — T4</p> <p>T8</p> <p>S</p> <p>T5</p>
Lead	Color																	
P1	Azul																	
P2	Marrón																	
T2	Blanco																	
T3	Naranja																	
T4	Amarillo																	
T5	Negro																	
T8	Rojo																	
<p>NEMA Servicio Rural 56H Frame 1-2HP Reinicio manual protección térmica sobrecarga</p> <table border="1"> <thead> <tr> <th>Lead</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>Azul</td> </tr> <tr> <td>P2</td> <td>Marrón</td> </tr> <tr> <td>T2</td> <td>Blanco</td> </tr> <tr> <td>T3</td> <td>Naranja</td> </tr> <tr> <td>T4</td> <td>Amarillo</td> </tr> <tr> <td>T5</td> <td>Negro</td> </tr> <tr> <td>T8</td> <td>Rojo</td> </tr> </tbody> </table>	Lead	Color	P1	Azul	P2	Marrón	T2	Blanco	T3	Naranja	T4	Amarillo	T5	Negro	T8	Rojo	<p>T2 — T5 — T3 P1 — T4 — T8 L1 — L2 — P2</p> <p>TENSIÓN BAJA</p> <p>T2 — T3 — T5 P1 — T8 — T4 L1 — L2 — P2</p> <p>TENSIÓN ALTA</p>	<p>T1 3 1 — P1 2 — P2</p> <p>M — T2 M — T4</p> <p>T8</p> <p>S</p> <p>T5</p>
Lead	Color																	
P1	Azul																	
P2	Marrón																	
T2	Blanco																	
T3	Naranja																	
T4	Amarillo																	
T5	Negro																	
T8	Rojo																	

208-230V 60Hz

Arranque directo a plena tensión

Diagrama eléctrico de protección monofásico

<p>NEMA Servicio Rural 182T-213T Frame 3-7.5HP Reinicio manual protección térmica sobrecarga</p>	<p>T1 — T8</p> <p>P1 — T5 L1 — L2 — T4</p>	<p>T1 3 1 — P1 2 — T1</p> <p>M — T4 M — T8</p> <p>T8</p> <p>S</p> <p>T5</p>
<p>NEMA Servicio Rural 215T Frame 10HP Reinicio manual protección térmica sobrecarga</p>	<p>P2 — T8</p> <p>P1 — T5 L1 — L2 — T4</p>	<p>T1 3 1 — P1 2 — P2</p> <p>M — T4 M — T8</p> <p>T8</p> <p>S</p> <p>T5</p>

1. CCW rotation facing ODE for connections shown
2. Interchange T5 and T8 to reverse rotation

9.4 ESQUEMA DE CONEXIÓN NEMA MONOFÁSICO

115/208-230V 60Hz

Arranque directo a plena tensión

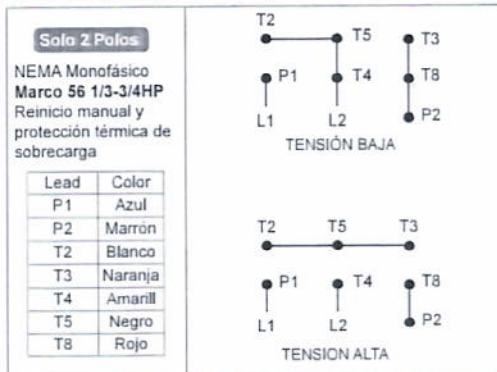
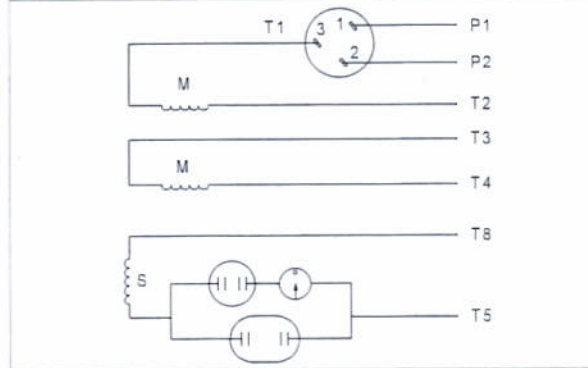
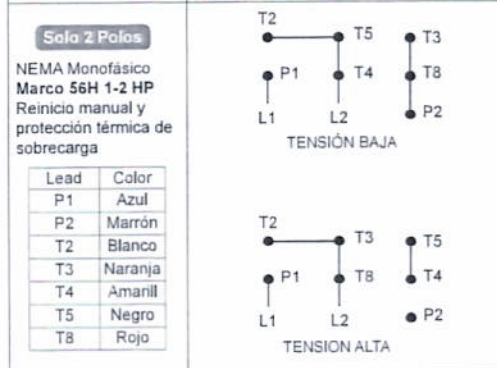
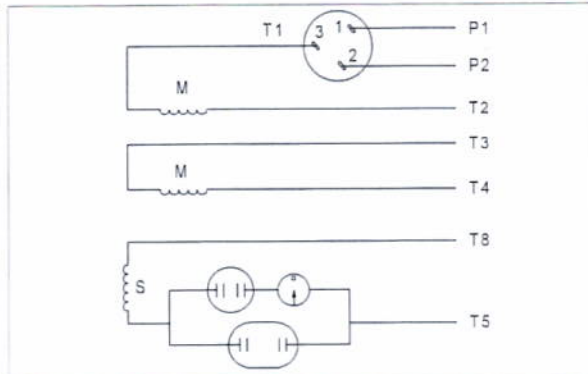


Diagrama eléctrico de protección monofásico



115/208-230V 60Hz

Arranque directo a plena tensión

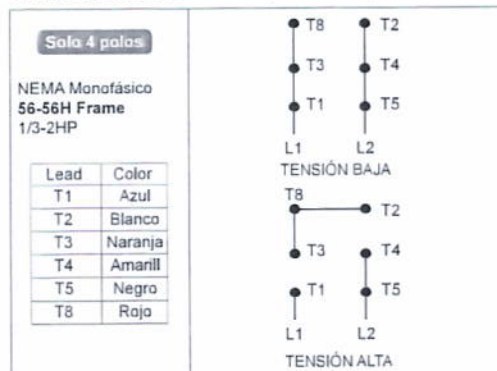
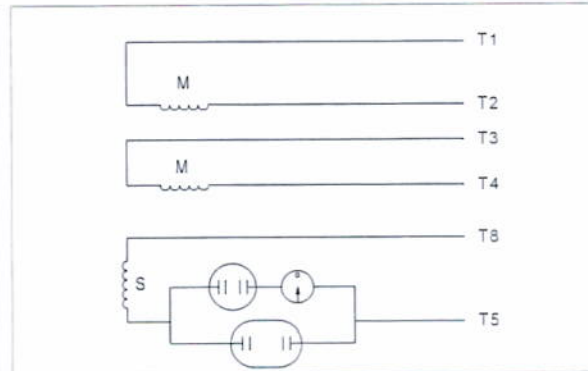


Diagrama eléctrico de protección monofásico



1. Conexiones para rotación CCW desde ODE
2. Intercambiar T5 y T8 para sentido de rotación contrario.



ATENCIÓN La temperatura superficial del motor puede alcanzar temperaturas que de entrar en contacto con la piel pueden llegar a producir quemaduras o abrasiones. La protección contra las superficies calientes debe ser proporcionada por el usuario. El incumplimiento de esta precaución podría provocar lesiones.

10. PROCEDIMIENTO DE LUBRICACIÓN



ATENCIÓN Mantenga la grasa limpia. No se recomienda mezclar grasas diferentes ya que se puede producir un fallo prematuro de los cojinetes.

1. Se recomienda volver a lubricar cuando el motor está caliente y el eje está parado.
2. Retire toda la suciedad y limpie el exterior de los aplicadores de grasa y de los drenajes.
3. Limpie el racor de grasa (o el área alrededor del orificio de la grasa, si está equipado con tornillos de grasa ranurados). Si el motor tiene un tapón de purga, retírelo. Los motores se pueden engrasar parados (a menos de 80 ° C) o mientras están en marcha.
4. Cuando corresponda, ubique la entrada de grasa en la parte superior del alojamiento del cojinete. Si el motor no tiene grasa, limpie el área y cambie el tapón de la tubería de 1/8 de pulgada con un engrasador.
5. Retire el tapón de drenaje de grasa situado enfrente de la entrada de grasa.
6. Aplique la pistola de engrase en la conexión (o en el orificio de la grasa). Si se inyecta demasiada cantidad o demasiado rápido puede causar un fallo prematuro del cojinete. Aplique lentamente la cantidad de grasa recomendada a lo largo de varios minutos.
7. Haga funcionar el motor durante 20 minutos y vuelva a instalar el tapón de purga si se ha retirado previamente.
8. Haga funcionar el motor durante 20 minutos y vuelva a instalar el tapón de purga si se ha retirado previamente.

10.1 INTERVALOS DE LUBRICACIÓN RECOMENDADOS

Marco		RPM (r/min)	Servicio	Intervalo
NEMA	IEC			
254T-365T	160M-225M	1800 o menos	estándar	2 años
254T-365T	160M-225M	1800 o menos	severo	1 año
254T-365T	160M-225M	> 1800	estándar	6 meses
254T-365T	160M-225M	> 1800	severo	3 meses
404T-500	250M-315L	1800 o menos	estándar	1 año
404T-500	250M-315L	1800 o menos	severo	6 meses
404T-500	250M-315L	> 1800	estándar	3 meses
404T-500	250M-315L	> 1800	severo	1 mes

10.2 VOLUMEN DE LUBRICANTE RECOMENDADO

Marco		Volumen (in ³)	Volumen (fl. oz.)
NEMA	IEC		
254T-256T	160M-160L	1.00	0.55
284T-286T	180M-180L	1.25	0.69
324T-326T	200L	1.50	0.83
364T-365T	225S-225M	1.75	0.97
404T-405T	250M	2.25	1.20
444T-449T	280S-280M	2.75	1.50
500	315S-315L	3.00	1.70

11. CARGA LATERAL MÁXIMA

Cuando la aplicación requiere cargas laterales significativas, es posible que sea necesario instalar rodamientos de rodillos para evitar roturas prematuras y alargar la vida del motor.

Evalúe adecuadamente la carga lateral resultante antes de instalar el motor. Si su carga lateral supera el valor indicado en la tabla, póngase en contacto con Techtop.

11.1 ADMISIBLE EN RODAMIENTOS DE BOLAS

Unidades en libras (lbs)

Marco		3600 RPM	1800 RPM	1200 RPM
NEMA	IEC			
143T	90S	106	154	179
145T	90L	109	154	176
182T	100L/112M	180	227	260
184T		180	227	260
213T	132S	230	300	350
215T	132M	230	300	350
254T	160M	470	593	703
256T	160L	470	589	705
284T	180M	570	735	838
286T	180L	570	735	838
324T	200L	660	860	990
326T		660	850	980

11.1 CONTINUACIÓN

Unidades en libras (lbs)

Marco		3600 RPM	1800 RPM	1200 RPM
NEMA	IEC			
364T	225S	820	1080	1240
365T	225M	820	1080	1240
404T	250M	--	1270	1450
405T		--	1290	1480
444T	280S	--	1560	1760
445T		--	1520	1760
447T	280M	--	1450	1660
449T		--	1490	1660
500	315S/M/L	--	1490	1660

Para marcos IEC, seleccione el valor inferior de marco NEMA equivalente.

Si la aplicación requiere cargas significativas, póngase en contacto con Techttop para determinar si tiene el motor correcto para su aplicación.

NOTES:

1. En los límites de carga se ha tenido en cuenta la tensión de la correa y el peso de la polea.
2. Para las cargas en correa se tiene en cuenta un funcionamiento vertical hacia abajo.
3. Para determinar la carga en el extremo del eje, restar el 15%.
4. Los límites de sobrecarga de la carga radial se basan en una vida L-10 del cojinete de 26.280 horas.
5. Los límites máximos de carga no incluyen los efectos de cualquier tirón magnético desequilibrado.

12. AGUJEROS DE DRENAJE

Algunos motores Techttop vienen de serie con agujeros de drenaje con válvulas latón sinterizado unidireccional. Estos drenajes permiten al motor expulsar líquidos de la carcasa sin riesgo de entrada. Es posible que se necesite un mantenimiento de los drenajes por lo que se recomienda que periódicamente, retire los drenajes de latón y lávelos a fondo. Elimine cualquier escombros acumulado que pueda estar obstaculizando su funcionamiento.

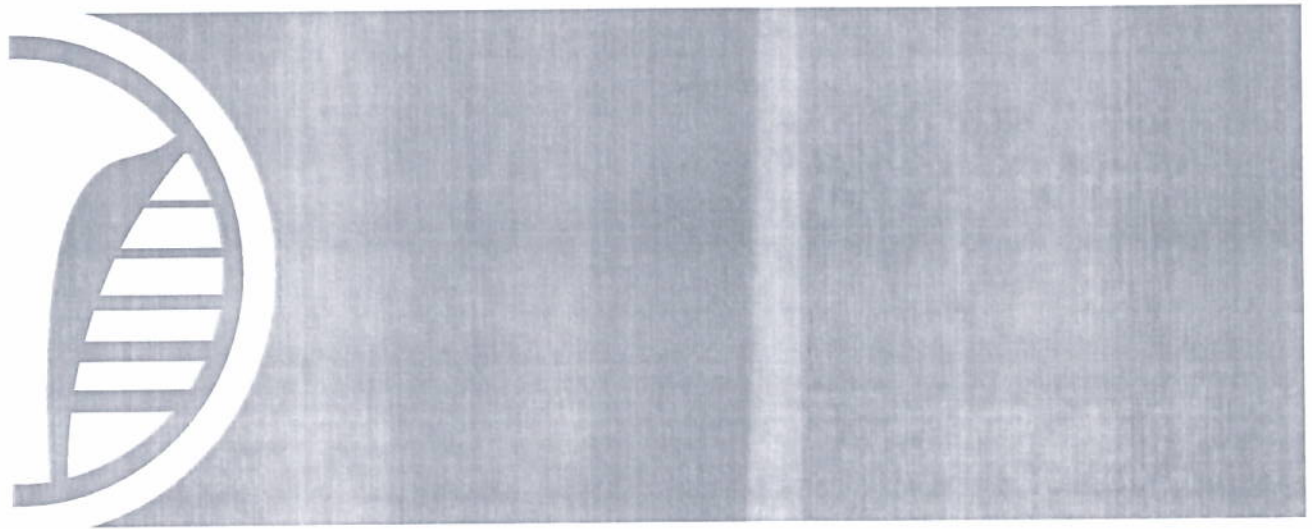
Para los motores equipados con tapones de goma en sus orificios de drenaje de condensado, asegúrese de retirar el tapón (especialmente si el motor está instalado en un ambiente con riesgo de condensación)

En todos los casos, asegúrese de que el drenaje esté en la parte más baja del motor. Algunos motores pueden requerir la rotación de los escudos o bridas si el montaje no es horizontal.

13. RETENES

Inspeccione regularmente los retenes para detectar un desgaste excesivo que podría ocasionar un fallo del rodamiento. En caso de haber un desgaste significativo, póngase en contacto con Techtop para obtener retenes de recambio.

Si tiene alguna pregunta que no haya sido contestada en este manual, comuníquese con Techtop al 1-(855)-TECHTOP(832-4867) o envíenos un correo electrónico a info@techtopynd.com.



HEAD OFFICE | Atlanta, GA

 1 (678) 436-5540

 1 (866) 204-1498

 info@techtopynd.com



www.techtopynd.com



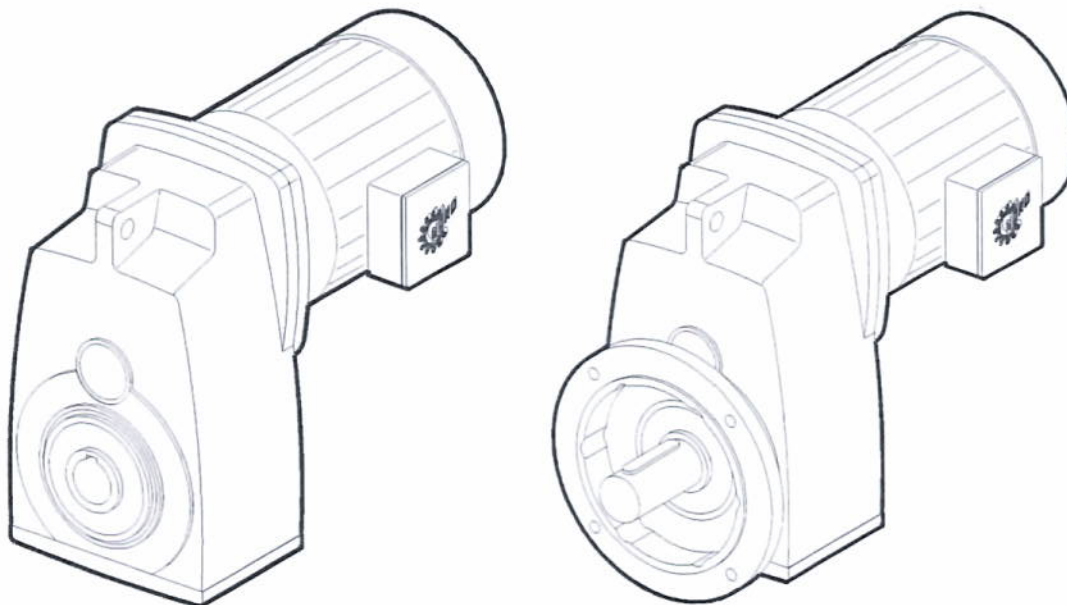
UNICASE® Shaft Mount Gearboxes Installation and Maintenance Instructions

BIM 1020

USA

CDN

Retain These Safety Instructions For Future Use



INSPECTION OF UNIT

Thoroughly inspect the equipment for any shipping and handling damage before accepting shipment from the freight company. If any of the goods called for in the bill of lading or express receipt are damaged or the quantity is short, do not accept until the freight or express agent makes an appropriate notation on your freight bill or express receipt. If any concealed loss or damage is discovered later, notify your freight carrier or express agent at once and request him to make an inspection. We will be very happy to assist you in collecting claims for loss or damage during shipment; however, this willingness on our part does not remove the transportation company's responsibility in reimbursing you for collection of claims or replacement of material. Claims for loss or damage in shipment must not be deducted from the NORD Gear invoice, nor should payment of the NORD Gear invoice be withheld awaiting adjustment of such claims, as the carrier guarantees safe delivery.

If considerable damage has been incurred and the situation is urgent, contact the nearest NORD Gear Sales Office for assistance. Please keep a written record of all communications.

RECORD NAMEPLATE DATA

Locate the gear reducer nameplate and record all nameplate data for future reference.

SK _____ S/N _____
RATIO _____ MAX TORQUE _____ RPM _____ MTG. POS _____

STORAGE

PROPER STORAGE UNTIL INSTALLED

Keep unit in a dry, temperature controlled area. If stored other than said, long term storage methods must be applied to the unit including complete fill with lubricant. Protect machined surfaces and rotate shafts periodically. Prior to putting unit into service, drain lubricant and refill to proper level as determined by the mounting position.

PROPER HANDLING OF THE UNIT

Exercise care to prevent damage to the unit when moving. Lift only at designed lifting points. Do not attach other machinery and lift by the unit lifting points. The lifting points are to be used to lift the unit only. Insure that adequate safety measures are taken to protect personnel during transportation. Protect the mounting surface from damage.

INSTALLATION OF UNIT

To ensure long service and dependable performance, an enclosed gear drive must be rigidly supported and the shafts accurately aligned. The following describes the minimum precautions required to accomplish this end.

FOUNDATION

The responsibility for the design and construction of the foundation lies with the user. The foundation must be adequate to withstand normal operating loads and possible overloads while maintaining alignment to attached system components under such loads.

MOUNTING POSITION

Unless a unit is specifically ordered for inclined mounting, the foundation must be level and flat. The lubrication system may not operate properly if the unit is not mounted in the position for which it is designed. It may be desirable to elevate the foundation to facilitate oil drainage.

CONCRETE FOUNDATION

If a concrete foundation is used, steel mounting pads and bolts of sufficient size to distribute the stress into the concrete should be grouted into the foundation.

STEEL FOUNDATION

If a structural steel foundation is used (i.e. wide flange beams or channels), a base plate or sole plate of suitable thickness should be used and should extend under the entire unit.

FOOT MOUNTED UNITS

Use shims under the feet of the unit to align the output shaft to the driven equipment. Make sure that all feet are supported so that the housing will not distort when it is bolted down. Improper shimming will reduce the life of the unit and may cause failure. Dowel pins may be installed to prevent misalignment and ensure proper realignment if removed for service.

SHAFT MOUNTED UNITS

Shaft mounted drives should be mounted as close to the driven equipment bearing support as possible to minimize bearing loads due to overhung load. Design of the joint connection between the torque reaction arm and the foundation is the user's responsibility.

Hollow Shaft Diameter tolerance

Metric (mm)

$\leq \varnothing 18 = +0.018/-0.000$
$> \varnothing 18 \leq \varnothing 30 = +0.021/-0.000$
$> \varnothing 30 \leq \varnothing 50 = +0.025/-0.000$
$> \varnothing 50 \leq \varnothing 80 = +0.030/-0.000$
$> \varnothing 80 \leq \varnothing 120 = +0.035/-0.000$
$> \varnothing 120 \leq \varnothing 180 = +0.040/-0.000$

Inch

$\leq \varnothing 4.375 = +0.0010 / -0.0000$
$> \varnothing 4.375 = +0.0015 / -0.0000$

Customer shaft diameter tolerances with keyed hollow shafts

Metric (mm)

$\leq \varnothing 18 = +0.000/-0.011$
$> \varnothing 18 \leq \varnothing 30 = +0.000/-0.013$
$> \varnothing 30 \leq \varnothing 50 = +0.000/-0.016$
$> \varnothing 50 \leq \varnothing 80 = +0.000/-0.019$
$> \varnothing 80 \leq \varnothing 120 = +0.000/-0.022$
$> \varnothing 120 \leq \varnothing 180 = +0.000/-0.025$

Inch

$\leq \varnothing 1.500 = +0.000/-0.002$
$> \varnothing 1.500 \leq \varnothing 2.500 = +0.000/-0.003$
$> \varnothing 2.500 \leq \varnothing 7.000 = +0.000/-0.004$

Shaft finish to be 125 micro inches or smoother.

Customer shaft diameter tolerance with Shrink Disc fit h6

Metric (mm)

$\leq \varnothing 18 = +0.000/-0.011$
$> \varnothing 18 \leq \varnothing 30 = +0.000/-0.013$
$> \varnothing 30 \leq \varnothing 50 = +0.000/-0.016$

$> \varnothing 50 \leq \varnothing 80 = +0.000/-0.019$
$> \varnothing 80 \leq \varnothing 120 = +0.000/-0.022$
$> \varnothing 120 \leq \varnothing 180 = +0.000/-0.025$

Inch

$\leq \varnothing 0.750 = +0.0000/-0.0004$
$> \varnothing 0.750 \leq \varnothing 1.125 = +0.0000/-0.0005$
$> \varnothing 1.125 \leq \varnothing 2.000 = +0.0000/-0.0006$
$> \varnothing 2.000 \leq \varnothing 3.000 = +0.0000/-0.0007$
$> \varnothing 3.000 \leq \varnothing 4.750 = +0.0000/-0.0008$
$> \varnothing 4.750 \leq \varnothing 7.000 = +0.0000/-0.0010$

Shaft finish to be 125 micro inches or smoother.

Customer shaft diameter tolerance with Shrink Disc fit f6 (looser fit)

Metric (mm)

$\leq \varnothing 18 = -0.016/-0.024$
$> \varnothing 18 \leq \varnothing 30 = -0.020/-0.029$
$> \varnothing 30 \leq \varnothing 50 = -0.025/-0.036$
$> \varnothing 50 \leq \varnothing 80 = -0.030/-0.043$
$> \varnothing 80 \leq \varnothing 120 = -0.036/-0.051$
$> \varnothing 120 \leq \varnothing 180 = -0.043/-0.061$

Inch

$\leq \varnothing 0.750 = -0.0006/-0.0011$
$> \varnothing 0.750 \leq \varnothing 1.125 = -0.0008/-0.0013$
$> \varnothing 1.125 \leq \varnothing 2.000 = -0.0010/-0.0016$
$> \varnothing 2.000 \leq \varnothing 3.000 = -0.0012/-0.0019$
$> \varnothing 3.000 \leq \varnothing 4.750 = -0.0014/-0.0023$
$> \varnothing 4.750 \leq \varnothing 7.000 = -0.0017/-0.0027$

Shaft finish to be 125 micro inches or smoother

FLANGE MOUNTED UNITS

If a structural steel foundation is used (i.e. wide flange beams or channels), a base plate or sole plate of suitable thickness should be used and should extend under the entire unit. If a bulk head plate is used it should be of proper strength to minimize buckling distortions.

Flange Pilot 'AK' or 'AK1' tolerance

Metric (mm)

$> \varnothing 50 \leq \varnothing 80 = +0.012/-0.007$
$> \varnothing 80 \leq \varnothing 120 = +0.013/-0.009$
$> \varnothing 120 \leq \varnothing 180 = +0.014/-0.011$
$> \varnothing 180 \leq \varnothing 230 = +0.016/-0.013$
$> \varnothing 230 \leq \varnothing 315 = +0.000/-0.032$
$> \varnothing 315 \leq \varnothing 400 = +0.000/-0.036$
$> \varnothing 400 \leq \varnothing 500 = +0.000/-0.040$

Inch

$> \varnothing 1.969 \leq \varnothing 3.150 = +0.005/-0.0003$
$> \varnothing 3.150 \leq \varnothing 4.724 = +0.005/-0.0004$
$> \varnothing 4.724 \leq \varnothing 7.087 = +0.006/-0.0004$
$> \varnothing 7.087 \leq \varnothing 9.055 = +0.006/-0.0005$
$> \varnothing 9.055 \leq \varnothing 12.402 = +0.000/-0.0013$
$> \varnothing 12.402 \leq \varnothing 15.748 = +0.000/-0.0014$
$> \varnothing 15.748 \leq \varnothing 19.685 = +0.000/-0.0016$

BOLT STRENGTH

Bolt size, strength and quantity should be verified to insure proper torque reaction capacity whatever the mounting arrangement.

LUBRICATE SHAFTS

Both the hollow shaft and the driven shaft should be liberally lubricated before assembly. The unit must slide freely onto the driven shaft. Do not hammer or force the unit into place. For shrink disc, follow instructions below.

AXIAL RETENTION

Each drive shaft must be retained in place relative to the gear reducer. Or each gear reducer must be retained in place relative to the drive shaft. Either way NORD recommends the use of shaft shoulders, locking collars or FIXING ELEMENTS to axially retain the shaft or gear reducer in position.

SET SCREWS

If set screws are used for axial retention, they should be tightened evenly. Flats may be filed on the driven shaft and a thread-locking adhesive used for more position retention.

SNAP RING RETENTION

Placing external snap rings on drive shafts must be performed with caution. The groove, which the snap ring fits into, may weaken the drive shaft causing premature failure. NORD does not recommend this type of shaft retention.

THRUST PLATE

In applications, which are subject to high vibratory loads, a thrust plate will provide greater resistance to axial movement. Follow the manufacturer's recommendations for assembly.

SHRINK DISC

If a shrink disc is used to secure a reducer hollow shaft to the driven shaft, follow this assembly procedure. Start with the shrink disc mounted onto the extension of the hollow shaft locking bolts loosened.

1. Clean reducer bore and mating solid shaft to be free of any lubricants or dirt.
2. Slide reducer onto the solid shaft until it is about half way through.
3. Lubricate the remaining portion of the solid shaft with a #2 grease or similar lubricant. This part will be located under the bronze bushing. **Do not install grease under the shrink disc gripping area.** Finish installing the solid shaft into the reducer hollow bore.
4. Finger tighten all shrink disc bolts. Now, moving a circular pattern, tighten each shrink disc locking bolt 1/4 to 1/2 turn. **Do not use criss cross pattern.** Continue tightening in the same circular direction with 1/4 or 1/2 turn increments until all bolts reach the specified bolt tightening torque. Bolt tightening torque is shown on the shrink disc label for the particular unit.
5. Run unit for 24 hours, then retighten shrink disc locking bolts to the proper bolt torque as indicated above.

TORQUE REACTION ARM

On the shaft mount 'Clincher', torque is reacted through the integral torque tab, which is part of the casting. Commonly, NORD's optional RUBBER BUFFER bushings are installed on each side of the integral torque tab to dampen torque shocks and allow for mis-alignment received from the machinery during operation.

Torque arm connection fabrications should always be mounted perpendicular to a line through the output shaft center and the point at attachment of the torque arm to the unit housing. In this position the minimum load on the attachment structure arm will be experienced. The attachment structure must be rigid and may not deflect under any load. Doing so will place extra loads on the output bearings of the reducer.

PRIME MOVER MOUNTING

Align the prime mover to the reducer-input shaft using shims under the feet. Make sure that the feet are supported. Dowel the prime mover to its foundation.

SHAFT CONNECTIONS

When connecting shafts to either the input or output of the reducer, consider the following instructions.

FITS

Clearance or interference fits for coupling hubs should be in accordance with ANSI/AGMA 9002-A86 or as follows.

Output and Input shaft Diameter tolerance

Metric (mm)

- $\leq \varnothing 18 = +0.012/+0.001$
- $> \varnothing 18 \leq \varnothing 30 = +0.015/+0.002$
- $> \varnothing 30 \leq \varnothing 50 = +0.018/+0.002$
- $> \varnothing 50 \leq \varnothing 80 = +0.030/+0.011$
- $> \varnothing 80 \leq \varnothing 120 = +0.035/+0.013$
- $> \varnothing 120 \leq \varnothing 180 = +0.040/+0.015$

Inch

- $\leq \varnothing 1.750 = +0.0000/-0.0005$
- $> \varnothing 1.750 = +0.0000/-0.0010$

Output and Input shaft Drill and tap shaft end

Metric (mm)

- $\leq \varnothing 16 = M5$
- $> \varnothing 16 \leq \varnothing 21 = M6$
- $> \varnothing 21 \leq \varnothing 24 = M8$
- $> \varnothing 24 \leq \varnothing 30 = M10$
- $> \varnothing 30 \leq \varnothing 38 = M12$
- $> \varnothing 38 \leq \varnothing 50 = M16$
- $> \varnothing 50 \leq \varnothing 85 = M20$
- $> \varnothing 85 \leq \varnothing 130 = M24$

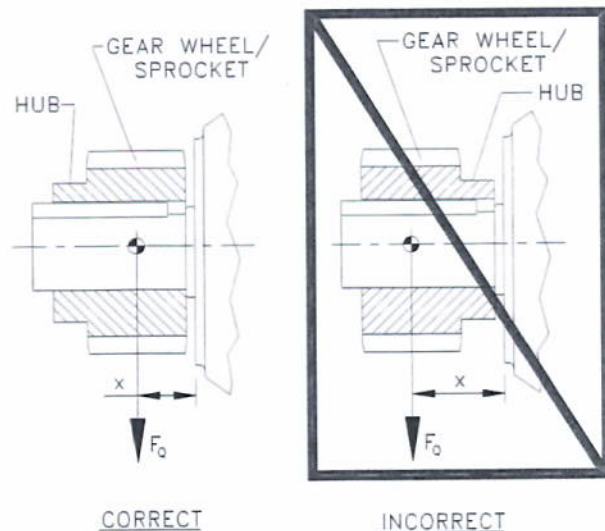
Inch

- $\leq \varnothing 0.438 = \#10-24 \times 0.4$ deep
- $> \varnothing 0.438 \leq \varnothing 0.813 = 1/4-20 \times 0.6$ deep
- $> \varnothing 0.813 \leq \varnothing 0.938 = 5/16-18 \times 0.7$ deep
- $> \varnothing 0.938 \leq \varnothing 1.125 = 3/8-16 \times 0.9$ deep
- $> \varnothing 1.125 \leq \varnothing 1.375 = 1/2-13 \times 1.1$ deep
- $> \varnothing 1.375 \leq \varnothing 1.875 = 5/8-11 \times 1.4$ deep
- $> \varnothing 1.875 \leq \varnothing 3.250 = 3/4-10 \times 1.7$ deep
- $> \varnothing 3.250 = 1-8 \times 2.2$ deep

Outboard pinion and sprocket fits should be as recommended by the pin sprockets with interference fits should be heated according to the manufacturer's recommendations, generally 250°F to 300°F, (120°C to 150°C) before assembling to the shaft.

LOCATION

Coupling hubs should be mounted flush with the shaft ends, unless specifically ordered for overhung mounting. Pinions,



sprockets and sheaves should be mounted as close as possible to the unit housing to minimize bearing loads and shaft deflections.

COUPLING ALIGNMENT

Shaft couplings should be installed according to the coupling manufacturer's recommendations for gap, angular and parallel alignment. In many installations, it is necessary to allow for thermal and mechanical shaft movement when determining shaft alignment. The coupling manufacturer's recommendations should be followed.

AXIAL DISPLACEMENT

The gap between shaft ends should be the same as the specified coupling gap unless overhung mounting of the coupling hub is specified. The coupling gap and shaft gap must be sufficient to accommodate any anticipated thermal or mechanical axial movement.

ANGULAR ALIGNMENT

Insert a spacer or shim stock equal to the required coupling gap between the coupling hub faces and measure the clearance using feeler gauges. Repeat this at the same depth at 90-degree intervals to determine the amount of angular misalignment.

PARALLEL ALIGNMENT

Mount a dial indicator to one coupling hub, and rotate this hub, sweeping the outside diameter of the other hub. The parallel misalignment is equal to one-half of the total indicator reading. Another method is to rest a straight edge squarely on the outside diameter of the hubs at 90-degree intervals and measure any gaps with feeler gauges. The maximum gap measurement is the parallel misalignment.

CHECKING ALIGNMENT

After both angular and parallel alignments are within specified limits, tighten all foundation bolts securely and repeat the above procedure to check alignment. If any of the specified limits for alignment are exceeded, realign the coupling.

SPROCKET OR SHEAVE ALIGNMENT

Align the sheaves or sprockets square and parallel by placing a straight edge across their faces. Alignment of bushed sheaves and sprockets should be checked after bushings have been tightened. Check horizontal shaft alignment by placing a level vertically against the face of the sheave or sprocket. Adjust belt or chain tension per the manufacturer's specified procedure.

OUTBOARD PINION ALIGNMENT

Align the pinion by adjusting the gear tooth clearance according to the manufacturer's recommendations and checking for acceptable outboard pinion tooth contact. The foundation bolts may have to be loosened and the unit moved slightly to obtain this contact. When the unit is moved to correct tooth contact, the prime mover should be realigned.

RECHECK ALIGNMENT

After a period of operation, recheck alignment and adjust as required.

1. Properly install unit on a rigid foundation
 - adequately supported
 - securely bolted into place
 - leveled so as not to distort the gear case
2. Properly install couplings suitable for the application and connected equipment.
3. Ensure accurate alignment with other equipment.
4. Furnish and install adequate machinery guards as needed to protect operating personnel and as required by the applicable standards of the Occupational Safety and Health Administration (OSHA), and by other applicable safety regulations;
5. Ensure that driving equipment is running in the correct direction before coupling to reducers with backstops (designed to operate only in a specific direction) or machinery designed to operate only in one direction.

CHANGES IN PERFORMANCE SPECIFICATIONS

Owner has the responsibility to consult with NORD GEAR if such items such as applied loads, operating speeds or other operating conditions have changed.

! WARNING:

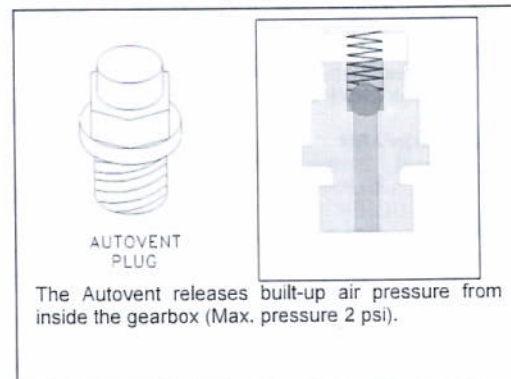
LOCK OUT POWER before any maintenance is performed. Make absolutely sure that no voltage is applied while work is being done on the gearbox.

START-UP

1. Ensure that switches, alarms, heaters, coolers and other safety and protection devices are installed and operational for their intended purpose.
2. Verify that the installed mounting position is the same as the nametag mounting position. If not, adjust the oil level accordingly and relocate the vent plug, fill plug and drain plug according to the mounting position. See following.

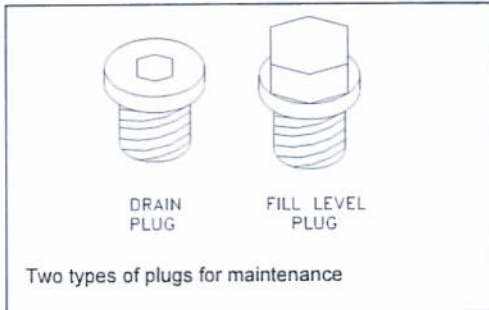
AUTOVENT PLUG

The Autovent plug is brass in color and will be located at the highest point on the gearbox. It operates like a check-valve to allow the reducer to relieve internal pressure while preventing lubricant contamination during cooling. A spring presses a ball or plunger against a machined orifice until pressure exceeds 2 psi. Above 2 psi the air is allowed to escape depressurizing the gearcase. When internal pressure drops below 2 psi, the autovent re-seals closing the unit to the outside environment. After shutdown, the reducer cools along with the air inside the reducer. The unit will temporarily maintain a slight vacuum until normalization occurs. NORD Gear supplies an Autovent as a standard feature.



FILL LEVEL & DRAIN PLUGS

The drain plugs are metric socket head cap screws. They will be located at the lowest part of the gearbox for ease of draining. The fill level plug is a hex head cap screw. It will be located between the Autovent and drain plug. Both types of plugs will have gaskets included to prevent oil from leaking.



LUBRICANT

All NORD reducers are shipped from the factory properly filled with lubricant and all plugs are installed according to the mounting position given on the reducer nametag. Acceptable oil fill level is within 1/2 inch of the bottom of the fill plug threads.

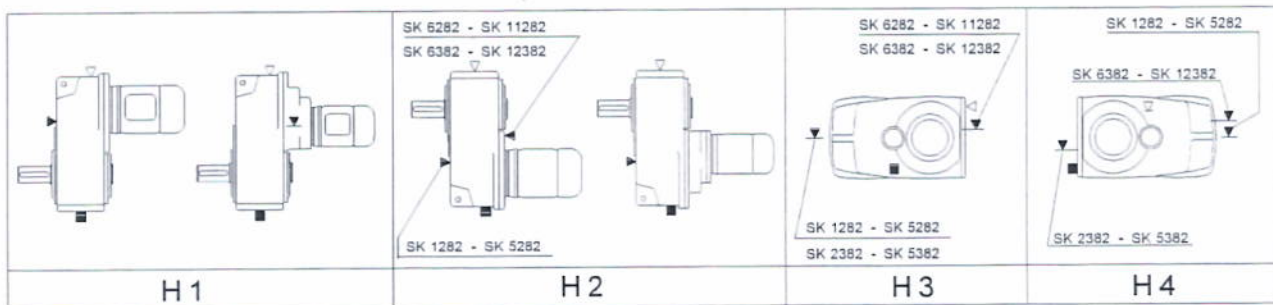
OPERATION AND MAINTENANCE CHECKLIST

1. Operate the equipment as it was intended to be operated
2. Do not overload.
3. Run at correct speed.
4. Maintain lubricant in good condition and at proper level.
5. Dispose of used lubricant in accordance with applicable laws and regulations.
6. Apply proper maintenance to attached equipment at prescribed intervals recommended by the manufacturer.
7. Perform periodic maintenance of the gear drive as recommended by NORD.

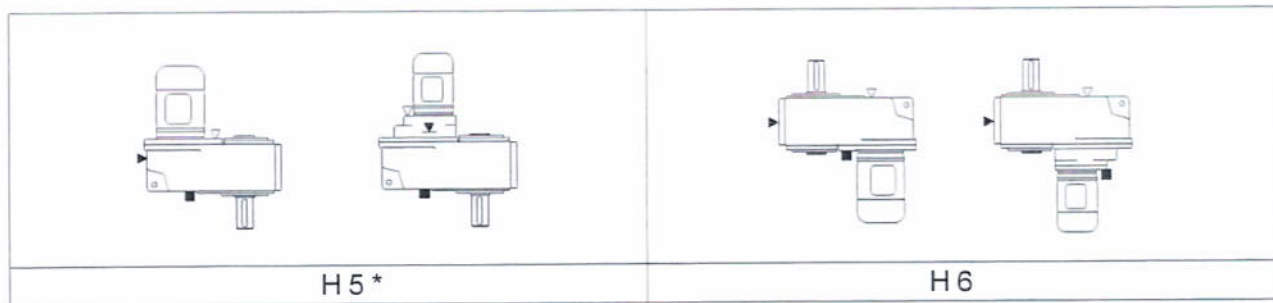
MOUNTING POSITIONS

These charts detail the mounting positions for horizontal and vertical mounting. The Autovent, oil fill plug and drain plug are indicated on each mounting position picture. The factory set mounting position and plug locations match that shown on the gearbox nametag. For mounting orientations other than shown consult NORD Gear.

Horizontal position



Vertical position



Symbols:



Vent plug



Oil level



Drain plug

* Mounting position H5 with lubricant expansion unit recommended

SK0182NB & SK1382NB have no vent or drain plugs. They are filled with synthetic oil so the units are "Lubed for Life".

MAINTENANCE

Mineral lubricant should be changed every 10,000 service hours or after two years. For synthetic oils, the lube should be changed every 20,000 service hours or after four years. In case of extreme operating (e.g. high humidity, aggressive environment or large temperature variations), shorter intervals between changes are recommended.

OIL SPECIFICATIONS

NORD supplies all reducers filled with oil from the factory. Consult the sticker adjacent to the fill plug to determine the type of lubricant installed at the factory. Standard lubricant is ISO VG220 mineral-based oil. However, some units have special lubricants designed to operate in certain environments or to extend the service life of the lubricant. If in doubt about which lubricant is needed, contact NORD Gear.

STANDARD OIL – ISO VG220

Ambient Temperature	Formulation
20 to 104°F (-5 to 40°C)	Mineral

TYPICAL OILS

Viscosity ISO NLGI	Formulation	Service Temperature Range	Mobil®	Shell	Castrol	KLUBER LUBRICATION	bp	Tribol®
VG 460	Conventional Mineral	20°C to +50°C 68F to +122°F	Mobilgear 634	Omala 460	7EP	Kluberoil GEM 1-460	Energol GR-XP 460	Tribol 1100/460
	Synthetic PAO	-30°C to +80°C -22°F to +176°F	Mobil SHC 634	Omala 460 HD	Isolube EP 460	Klubersynth EG 4-460	N/A	Tribol 1510/460
VG 320	Conventional Mineral	0°C to +30°C 32°F to +86°F	Mobilgear 632	Omala 320	6EP	Kluberoil GEM 1-320	Energol GR-XP 320	Tribol 1100/320
	Synthetic PAO	-35°C to +80°C -31°F to +176°F	Mobil SHC 632	Omala 320 HD	Isolube EP 460	Klubersynth EG 4-320	N/A	Tribol 1510/320
VG 220	Conventional Mineral	-5°C to +40°C +20°F to +104°F	Mobilgear 630	Omala 220	5EP	Kluberoil GEM 1-220	Energol GR-XP 220	Tribol 1100/220
	Synthetic PAO	-34°C to +80°C -30°F to +176°F	Mobil SHC 630	Omala 220 HD	Isolube EP 220	Klubersynth EG 4-220	N/A	Tribol 1510/220
VG 150 & VG 100	Conventional Mineral	-15°C to +25°C 5°F to +77°F	Mobilgear 629	Omala 100	4EP	Kluberoil GEM 1-150	Energol GR-XP 100	Tribol 1100/100
	Synthetic PAO	-37°C to +10°C -35°F to +50°F	Mobil SHC 629	Omala 150 HD	Isolube EP 150	Klubersynth EG 4-150	N/A	N/A
VG 68	Conventional Mineral	-15°C to +25°C 5°F to +77°F	Mobilgear 626	Omala 68	2EP	Kluberoil GEM 1-68	Energol GR-XP 68	Tribol 1100/68
	Synthetic PAO	-40°C to +10°C -40°F to +50°F	Mobil SHC 626	N/A	Isolube EP 68	N/A	N/A	N/A
VG 32	Synthetic PAO	-40°C to +10°C -40°F to +50°F	Mobil SHC 624	N/A	N/A	Klubersynth HySyn FG-32	N/A	N/A

PAO = Poly Alpha Olefin

SPECIAL PURPOSE LUBRICANTS

Ambient Temperature	Formulation	Manufacturer	Oil Brand Name
20 to 104°F (-5 to 40°C)	Food Grade Oil - Synthetic	Chevron	FM ISO 220
20 to 104°F (-5 to 40°C)	Food Grade Oil - Synthetic	OilJAX	Magnaplate 85W/140-FG
5 to 125°F (-20 to 50°C)	Fluid Grease	Mobil	Mobilith SHC 007
-30 to 140°F (-35 to 60°C)	Fluid Grease - Synthetic	Mobil	Mobilith SHC 007
-30 to 140°F (-35 to 60°C)	Fluid Grease - Synthetic	Shell	Albida LC

STANDARD BEARING GREASE – NLGI 2EP Lithium

Ambient Temperature	Formulation
-20 to 140°F (-30 to 60°C)	Mineral

OPTIONAL BEARING GREASES

Ambient Temperature	Formulation	Manufacturer	Grease Brand Name
-40 to 230°F (-40 to 110°C)	Synthetic	Shell	Aeroshell 6
-40 to 230°F (-40 to 110°C)	Food Grade - Synthetic	Lubriplate	SFL1

LUBRICANT CAPACITY

Each reducer has the oil level and oil quantity adjusted according to the mounting position shown in the tables. When replacing the oil, consult the tables below to determine the proper amount of oil to be installed according to the reducer size and mounting position. Note that this is approximate and the final level will be adjusted when the reducer is installed. Acceptable oil fill level is within 1/2 inch of the bottom of the fill plug threads.

LUBRICATION CAPACITY - SHAFT MOUNT 'CLINCHER' GEARBOXES

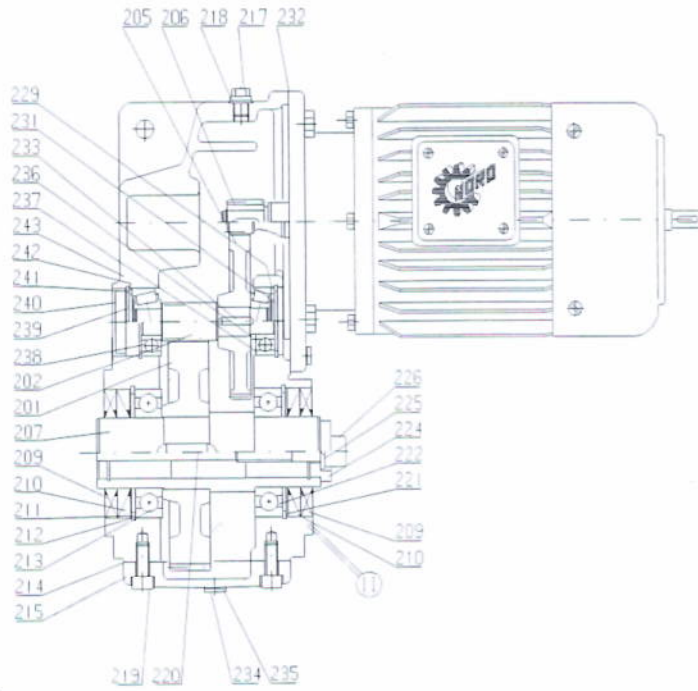
		MOUNTING POSITION					
		Horizontal				Vertical	
		H1	H2	H3	H4	H5	H6
SK 0182NB	quarts	0.42	0.63	0.53	0.53	0.58	0.58
	liters	0.40	0.60	0.50	0.50	0.55	0.55
SK0282NB	quarts	0.74	0.85	0.95	0.95	1.16	1.06
	liters	0.70	0.80	0.90	0.90	1.10	1.00
SK 1282	quarts	0.95	0.95	1.00	1.00	1.27	1.37
	liters	0.90	0.90	0.95	0.95	1.20	1.30
SK 2282	quarts	1.74	2.01	1.90	1.90	2.11	2.54
	liters	1.65	1.90	1.80	1.80	2.00	2.40
SK 3282	quarts	3.33	3.44	3.33	3.33	4.33	4.33
	liters	3.15	3.25	3.15	3.15	4.10	4.10
SK 4282	quarts	4.97	5.02	4.97	4.97	5.71	6.45
	liters	4.70	4.75	4.70	4.70	5.40	6.10
SK 5282	quarts	7.93	7.93	7.61	7.61	9.30	9.30
	liters	7.50	7.50	7.20	7.20	8.80	8.80
SK 6282	quarts	18.0	12.7	14.8	10.6	18.5	14.8
	liters	17.0	12.0	14.0	10.0	17.5	14.0
SK 7282	quarts	26.4	21.1	22.2	16.9	28.5	22.2
	liters	25	20	21	16	27	21
SK 8282	quarts	39.1	31.7	32.8	32.8	43.3	34.9
	liters	37	30	31	31	41	33
SK 9282	quarts	78.2	58.1	62.4	72.9	76.1	74.0
	liters	74	55	59	69	72	70
SK 10282	quarts	95	42	87	63	95	95
	liters	90	40	82	60	90	90
SK 11282	quarts	174	153	148	106	206	169
	liters	165	145	140	100	195	160

		MOUNTING POSITION					
		Horizontal				Vertical	
		H1	H2	H3	H4	H5	H6
SK 1382NB	quarts	1.37	1.48	2.01	2.11	2.22	2.43
	liters	1.30	1.40	1.90	2.00	2.10	2.30
SK 2382	quarts	1.80	2.01	1.59	1.59	3.28	2.75
	liters	1.70	1.90	1.50	1.50	3.10	2.60
SK 3382	quarts	4.33	3.49	3.49	3.49	5.92	4.33
	liters	4.10	3.30	3.30	3.30	5.60	4.10
SK 4382	quarts	6.24	5.18	5.18	5.18	8.77	7.19
	liters	5.90	4.90	4.90	4.90	8.30	6.80
SK 5382	quarts	13.21	7.08	8.77	8.77	14.80	12.68
	liters	12.50	6.70	8.30	8.30	14.00	12.00
SK 6382	quarts	17.4	10.1	13.2	14.8	19.0	13.7
	liters	16.5	9.6	12.5	14.0	18.0	13.0
SK 7382	quarts	23.3	16.9	20.1	24.3	26.4	21.1
	liters	22	16	19	23	25	20
SK 8382	quarts	35.9	26.4	31.7	37.0	40.2	33.8
	liters	34	25	30	35	38	32
SK 9382	quarts	77.2	47.6	63.4	68.7	78.2	74.0
	liters	73	45	60	65	74	70
SK 10382	quarts	90	77	85	85	93	93
	liters	85	73	80	80	88	88
SK 11382	quarts	169	148	143	164	222	164
	liters	160	140	135	155	210	155
SK 12382	quarts	169	148	143	164	222	164
	liters	160	140	135	155	210	155

Note: Filling quantities are approximate figures. Oil level must be checked according to oil level plug after final installation. Acceptable oil fill level is within 1/2 inch of the bottom of the fill plug threads. For mounting angles not shown, consult factory.

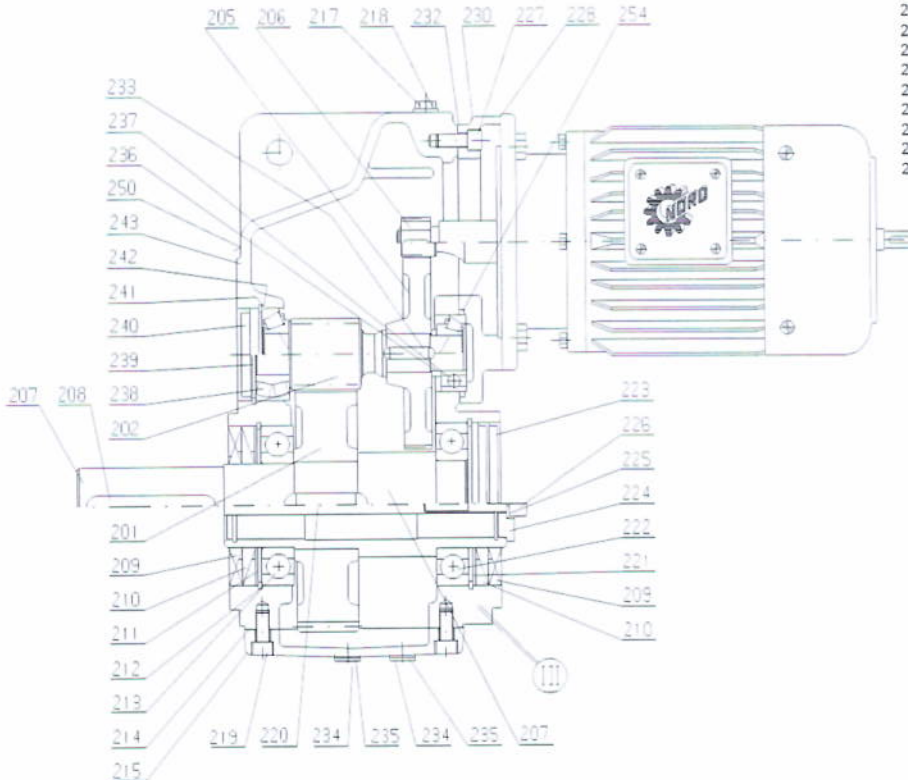
PARTS LIST

SK 1282 - SK 5282



- 201 Driven gear
- 202 Pinion shaft
- 205 Driving gear
- 206 Driving pinion
- 207 Output shaft (Hollow shaft)
- 208 Key
- 209 Shaft seal
- 210 Shaft seal
- 211 Circlip
- 212 Shim
- 213 Ball bearing
- 214 Seal
- 215 Gear case cover
- 217 Vent plug
- 218 Seal
- 219 Socket head screw
- 220 Key
- 221 Circlip
- 222 Ball bearing
- 223 Locking cap
- 224 Washer
- 225 Washer
- 226 Socket head screw
- 227 Socket head screw
- 228 Seal
- 229 Supporting disc
- 230 Gearbox cover
- 231 Circlip
- 232 Seal
- 233 Key
- 234 Drain plug
- 235 Seal
- 236 Supporting disc
- 237 Pinion shaft bearing
- 238 Pinion shaft bearing
- 239 Circlip
- 240 Locking cap
- 241 Shim
- 242 Supporting disc
- 243 Gear case
- 250 Locking cap
- 254 Spacer

SK 6282 - SK 11282



RECOMMENDED SPARE PARTS

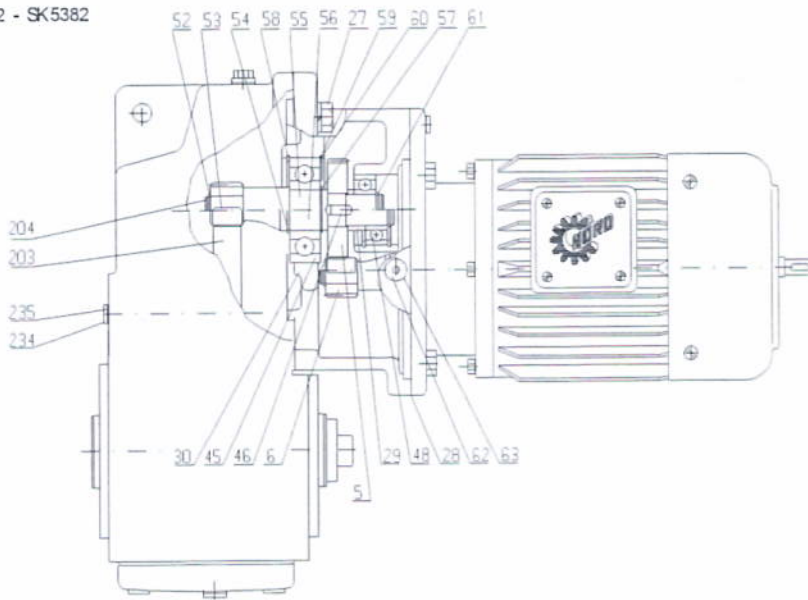
Bearings – all Gaskets – all Shims – all
 Seals – all Seal Plugs – all

IMPORTANT!

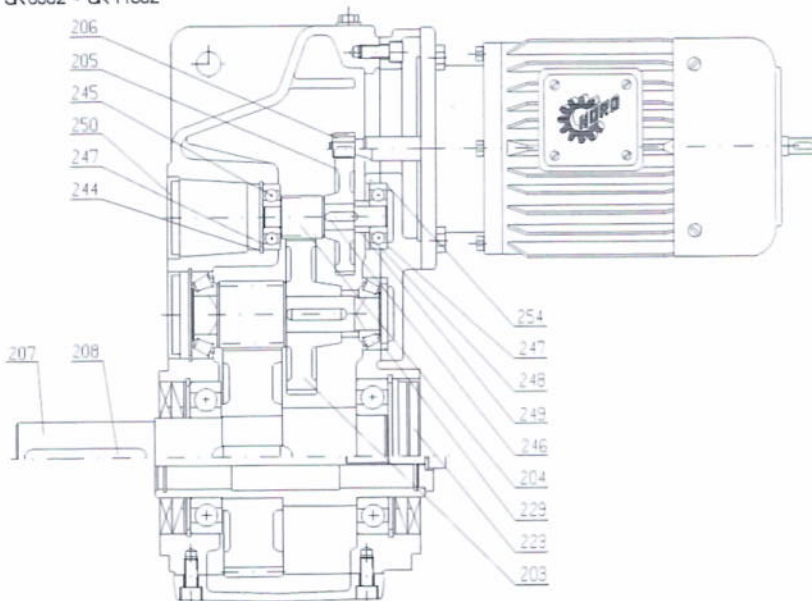
When ordering parts, it is necessary to have the **NORD SERIAL NUMBER** from the unit the parts are for. The serial number will dictate the correct parts for that particular unit. The gearbox nameplate will have the serial number on it.

PARTS LIST

SK1382 - SK5382



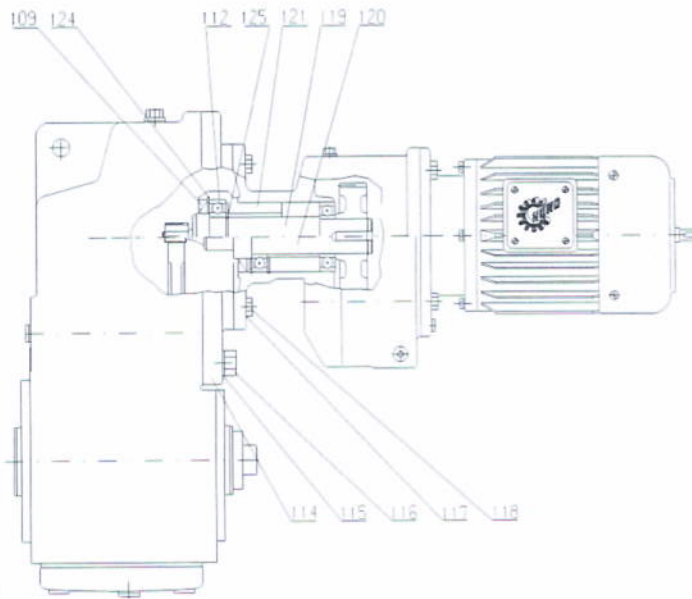
SK6382 - SK11382



- 5 Driving gear
- 27 Hexagon screw
- 28 Seal
- 29 Supporting disc
- 30 Third reduction gearcase
- 45 Ball bearing
- 46 Key
- 48 Ball bearing
- 52 Crdip
- 53 Key
- 54 Crdip
- 55 Intermediate shaft, plan
- 56 Intermediate shaft, gearcut
- 57 Crdip
- 58 Crdip
- 59 Shim
- 60 Crdip
- 61 Crdip
- 62 Drain plug
- 63 Seal
- 203 Driving gear
- 204 Pinion shaft SK 6382 - SK 6382
- 206 Driving pinion
- 207 Output shaft
- 208 Key
- 223 Locking cap
- 229 Supporting disc
- 234 Drain plug
- 235 Seal
- 244 Crdip
- 245 Ball bearing
- 246 Key
- 247 Shim
- 248 Ball bearing
- 249 Supporting disc
- 250 Locking cap
- 254 Spacer

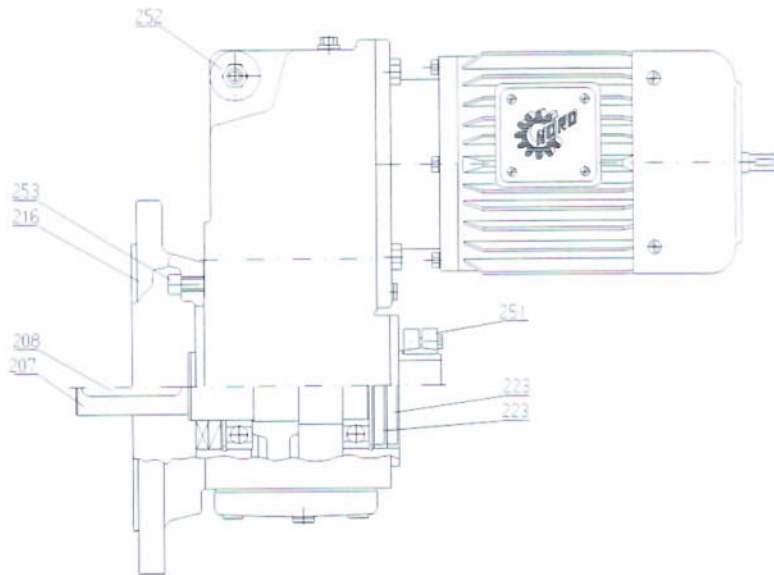
PARTS LIST

SK 1282/02 - SK 11382/52



- 109 Shaft seal
- 112 Ball bearing
- 114 Intermediate flange
- 115 Washer
- 116 Hexagon screw
- 117 Washer
- 118 Hexagon screw
- 119 Intermediate shaft, plain
- 120 Intermediate shaft, gearcut
- 121 Bearing sleeve
- 124 Circlip
- 125 Circlip
- 207 Output shaft
- 208 Key
- 216 Flange
- 223 Locking cap
- 251 Shrink disc connector
- 252 Torque arm
- 253 Socket head screw

SK 1282 - SK 11282
SK 1382 - SK 11382



NOTES

TROUBLE SHOOTING

PROBLEM WITH THE REDUCER		POSSIBLE CAUSES	SUGGESTED REMEDY
Runs Hot	Overloading	Load exceeds the capacity of the reducer	Check rated capacity of reducer, replace with unit of sufficient capacity or reduce load
	Improper lubrication	Insufficient lubrication	Check lubricant level and adjust up to recommended levels
		Excessive lubrication	Check lubricant level and adjust down to recommended levels
		Wrong lubrication	Flush out and refill with correct lubricant as recommended
Runs Noisy	Loose foundation bolts	Weak mounting structure	Inspect mounting of reducer. Tighten loose bolts and/ or reinforce mounting and structure
		Loose hold down bolts	Tighten bolts
	Worn RV Disc	Overloading unit may result in damage to disc	Disassemble and replace disc. Recheck rated capacity of reducer.
	Failure of Bearings	May be due to lack of lubricant	Replace bearing. Clean and flush reducer and fill with recommended lubricant.
		Overload	Check rated capacity of reducer.
Insufficient Lubricant	Level of lubricant in the reducer not properly maintained.	Check lubricant level and adjust to factory recommended level.	
Output Shaft Does Not Turn	Internal parts are broken	Overloading of reducer can cause damage.	Replace broken parts. Check rated capacity of reducer.
		Key missing or sheared off on input shaft.	Replace key.
		Coupling loose or disconnected.	Properly align reducer and coupling. Tighten coupling.
Oil Leakage	Worn Seals	Caused by dirt or grit entering seal.	Replace seals. Autovent may be clogged. Replace or clean.
		Overfilled reducer.	Check lubricant level and adjust to recommended level.
		Autovent clogged.	Clean or replace, being sure to prevent any dirt from falling into the reducer.
		Improper mounting position, such as wall or ceiling mount of horizontal reducer.	Check mounting position. Name tag & verify with mounting chart in manual.

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Fax 905-796-8130

Pneumatic Division
 Richland, Michigan 49083
 269-629-5000

Installation and Service Instructions:
 2F101H
 1/4" & 3/8" Economy
 1/4", 3/8" & 1/2" Compact
 1/2" & 3/4" Standard
 Particulate and Adsorber
 ISSUED: September, 2012
 Supersedes: September, 2006
 Doc.# 2F101, EN# 120039, Rev. 14

⚠ WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

⚠ CAUTION

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and diester types.

Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents, but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

Bowl guards are recommended for added protection of polycarbonate bowls where chemical attack may occasionally occur.

⚠ WARNING

To avoid polycarbonate bowl rupture that can cause personal injury or property damage, do not exceed bowl pressure or temperature ratings. Polycarbonate bowls have a 150 PSIG pressure rating and a maximum temperature rating of 125°F.

Safety Guide

For more complete information on recommended application guidelines, see the Safety Guide section of Pneumatic Division catalogs or you can download the Pneumatic Division Safety Guide at: www.parker.com/safety

Introduction

Follow these instructions when installing, operating, or servicing the product.

Application Limits

These products are intended for use in general purpose compressed air systems only.

Adsorber Filters are not effective on: Carbon monoxide, carbon dioxide, methane, ethane, ethylene or hydrogen. For a complete list of vapors that can and cannot be adsorbed effectively by activated charcoal adsorbers consult the factory.

Maximum Recommended Pressure Drop:

	kPa	PSIG	bar
Particulate Filter	70	10	0.7

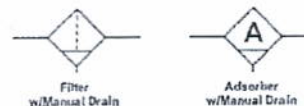
With Polycarbonate Bowl

	kPa	PSIG	bar
Operating Pressure Maximum	1000	150	10.3
Operating Temperature Maximum	52°C (125°F)		
Operating Temperature Minimum	0°C (32°F)		

With Metal Bowl

	kPa	PSIG	bar
Operating Pressure Maximum	1700	250	17.0
Operating Temperature Maximum	80°C (175°F)		
Operating Temperature Minimum	0°C (32°F)		

ANSI Symbols



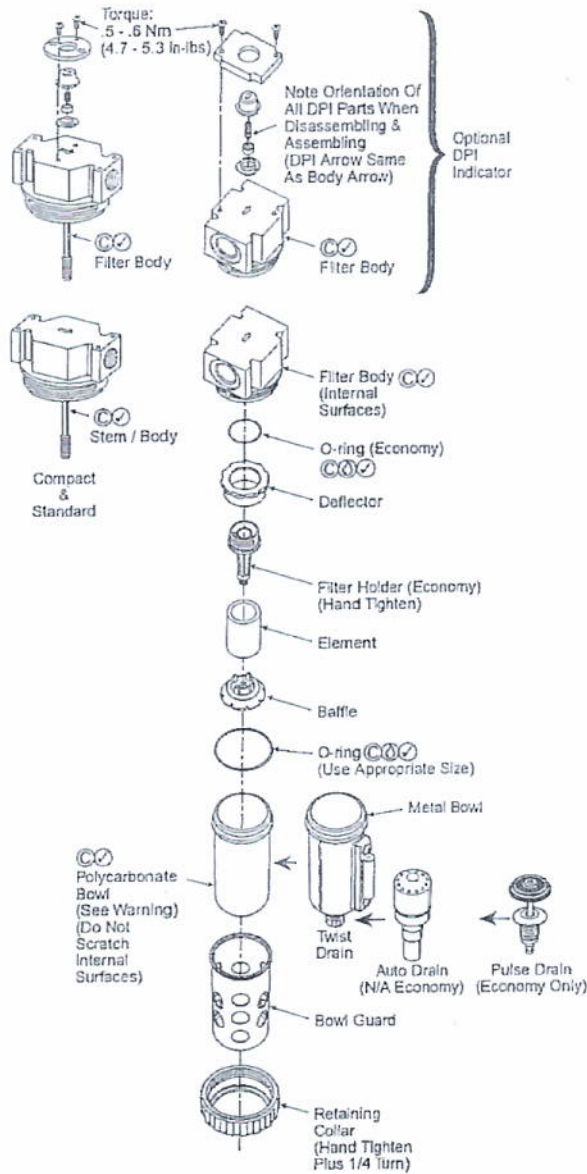
⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from The Company, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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Installation

1. The filter should be installed with reasonable accessibility for service whenever possible – repair service kits are available. Keep pipe or tubing lengths to a minimum with inside clean and free of dirt and chips. Pipe joint compound should be used sparingly and applied only to the male pipe – never into the female port. Do not use PTFE tape to seal pipe joints – pieces have a tendency to break off and lodge inside the unit, possibly causing malfunction. Also, new pipe or hose should be installed between the filter and equipment being protected.
2. The upstream pipe work must be clear of accumulated dirt and liquids.
3. Select a filter location as close as possible to the equipment being protected and upstream of any pressure regulator.
4. Install filter so that air flows in the direction of arrow on body.
5. Install filter vertically with bowl drain mechanism at the bottom. Free moisture will thus drain into the sump "quiet zone" at the bottom of the bowl.

Operation and Service

1. Manual drain filters must be drained regularly before the separated moisture and oil reaches the bottom of the lower baffle.
2. The particulate filter element should be removed and replaced when pressure differential across the filter is 10 PSIG.
3. Adsorber elements are designed to adsorb vaporous contaminants. The relative efficiency of an adsorber varies depending on the vapor to be adsorbed and the environmental temperature. At higher temperatures, adsorbers become less efficient.

Adsorber elements are not particle filters. All particles and aerosols should be removed prior to adsorbing vaporous contaminants. The initial pressure drop across an adsorber element (1.5 PSIG maximum) should never increase. The presence of any liquids, aerosols or particulate matter in an adsorber indicates that the effective life of the element has been exceeded and the element should be replaced and the system cleaned.

The most effective method of testing whether an element needs to be replaced is to smell the air coming from the adsorber. Offensive odors will be present well before oil levels become detectable.

4. The differential pressure indicator, located on top of the filter body, gives a visual indication of the pressure differential across the filter element. Change the filter element when half or more of the orange piston is above the retaining ring when air is flowing. For units without a differential pressure indicator, pressure differential gauges should be used to determine when the maximum recommended pressure differential has been reached.
5. Shut off air supply and depressurize the unit, before servicing.
6. After servicing, apply system pressure and check for air leaks. If leakage occurs, Do Not Operate — conduct servicing again.

Kits Available

Description	Economy 1/4" & 3/8"	Compact 1/4", 3/8" & 1/2"	Standard 1/2" & 3/4"
Element Kits*			
5 Micron	PS902	PS702	PS802
40 Micron	PS901	PS701	PS801
Adsorber	PS931	PS731	PS831
Porous Bronze	PS988	PS788	PS888
DPI Repair Kit	PS781	PS781	PS781

*Element kits include body / bowl seal.

- ① Lightly grease with provided lubricant.
- ② Inspect for nicks, scratches, and surface imperfections. If present, reduced service life is probable and future replacement should be planned.
- ③ Clean with lint-free cloth.

Pneumatic Division
 Richland, Michigan 49083
 269-629-5000

Installation and Service Instructions
 2R101G

1/4" & 3/8" Economy
 1/4" & 3/8" Precision
 1/4", 3/8" & 1/2" Compact
 1/2" & 3/4" Standard

ISSUED: September, 2012
 Supersedes: September, 2006
 Doc.# 2R101, EN# 120039, Rev. 15

⚠ WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

⚠ WARNING

Product rupture can cause serious injury.
 Do not connect regulator to bottled gas.
 Do not exceed maximum primary pressure rating.

Safety Guide

For more complete information on recommended application guidelines, see the Safety Guide section of Pneumatic Division catalogs or you can download the Pneumatic Division Safety Guide at: www.parker.com/safety

Introduction

Follow these instructions when installing, operating, or servicing the product.

Application Limits

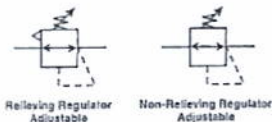
These products are intended for use in general purpose compressed air systems only.

Operating Pressure:

	kPa	psig	bar
Maximum Inlet Pressure	1720	250	17.2

Ambient Temperature Range: 0°C to 80°C (32°F to 175°F)

Symbols



Installation

1. The regulator should be installed with reasonable accessibility for service whenever possible - repair service kits are available. Keep pipe and tubing lengths to a minimum with inside clean and free of dirt and chips. Pipe joint compound should be used sparingly and applied only to the male pipe - never into the female port. Do not use PTFE tape to

seal pipe joints - pieces have a tendency to break off and lodge inside unit, possibly causing malfunction.

2. Install regulator so that air flow is in the direction of arrow. Installation must be upstream (high pressure) side and as close to the device it is to service (valve, cylinder, tool, etc.). Mounting may be in any position.
3. Gauge ports are located on both sides of the regulator body for your convenience. It is necessary to install a gauge or pipe plugs into each port during installation.
4. For protection against rust, pipe scale, and other foreign matter, install a filter on the upstream (high pressure) side as close to the regulator as possible.

Operation

1. Before turning on the air supply, turn the adjusting knob (Economy, Precision, Compact, Standard) counterclockwise until compression is released from the control spring. Then turn on air supply and adjust regulator to desired secondary pressure by turning adjusting knob/handle clockwise. This permits pressure to build up slowly, preventing any unexpected operation of the valve, cylinders, tools, etc., attached to the line. Adjustment to desired secondary pressure can be made only with primary pressure applied to the regulator.
2. To decrease regulator pressure setting, always reset from a pressure lower than the final setting desired. For example, lowering the secondary pressure from 550 to 410 kPa (80 to 60 psig) is best accomplished by dropping the secondary pressure to 350 kPa (50 psig), then adjusting upward to 410 kPa (60 psig).

On Economy, Precision, Compact and Standard units, push the adjusting knob down to lock the pressure setting. And on the Hi-Flow unit, tighten the hex nut against the bonnet to lock setting.

Service

⚠ CAUTION:
 SHUT OFF AIR SUPPLY and exhaust the primary and secondary pressure before disassembling regulator unit. (Turning the knob/handle counterclockwise reduces regulator's setting, but does not vent downstream pressure on non-relieving regulators.)

⚠ CAUTION:
 Lubricate parts with a mineral based oil/grease or silicone grease. DO NOT use synthetic oils/greases such as esters.

⚠ WARNING

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Economy, Precision, Compact & Standard Series Regulators

2R101G

A. Use the following procedure to service Economy, Precision, Compact and Standard units, see Figures 1 & 2:

1. Disengage the adjusting knob by pulling upward. Turn adjusting knob counterclockwise until the compression is released from the pressure control spring.
2. Unscrew the threaded collar and remove the bonnet assembly. Next, disassemble, clean, and carefully inspect parts for wear and/or damage. If replacement is necessary, use parts from service kits.
3. Lubricate o-ring and lip seals with grease (supplied with kits).
4. Install diaphragm assembly into bonnet. Then install bonnet assembly to body and tighten threaded collar hand tight plus 1/4 turn.

B. Servicing the Poppet Assembly-

1. Exhaust system air pressure as previously described. Then remove cap by unscrewing it from body. Next, remove poppet assembly, o-ring (Economy, Precision), cap's o-ring and poppet return spring.
2. Next, disassemble, clean, and carefully inspect parts for wear and/or damage. If replacement is necessary, use parts from service kits.
3. Lubricate o-ring (Economy, Precision) and sliding surfaces using grease supplied with service kit.
4. Turn on air supply and adjust to desired secondary pressure as described in the Operation section.

Turn on air pressure and check regulator for leakage. If leakage occurs, DO NOT OPERATE — conduct repairs again.

If you have questions concerning how to service this unit, contact your local authorized dealer or your customer service representative.

- Ⓐ Lightly grease with provided lubricant.
- Ⓑ Inspect for nicks, scratches, and surface imperfections.
If present, reduced service life is probable and future replacement should be planned.
- Ⓒ Clean with lint-free cloth.

Service Kits Available

	Economy	Precision	Compact	Standard
Regulator (Standard) Repair Kit (Relieving)	PS908	PS907	PS708	PS808
Regulator (Reverse Flow) Repair Kit (Relieving)	N/A	N/A	PS708R	PS808R
Regulator (Standard) Repair Kit (Non-Relieving)	PS909	N/A	PS709	PS809
Regulator (Reverse Flow) Repair Kit (Non-Relieving)	N/A	N/A	PS709R	PS809R
Seat Insert Repair Kit (Standard)	N/A	N/A	PS713	PS813
Seat Insert Repair Kit (Reverse Flow)	N/A	N/A	PS813	N/A
Bonnet Assembly	PS915	N/A	PS715	PS715
Air Pilot Conversion (Non-Relieving)	PS944	N/A	PS744	PS744
Air Pilot Conversion (Relieving)	PS945	N/A	PS745	PS745
Mounting Bracket Kit	PS963	PS963	PS707	PS807
Relieving Piston Kit	N/A	N/A	N/A	N/A
Non-Relieving Piston Kit	N/A	N/A	N/A	N/A
Body Service Kit (Balanced Poppet)	N/A	N/A	N/A	N/A
Gauges:				
Low Pressure 0 to 410 kPa (0 to 60 psig)	K4515N14060		K4520N14060	
Standard Pressure 0 to 1100 kPa (0 to 160 psig)	K4515N14160		K4520N14160	
High Pressure 0 to 2070 kPa (0 to 300 psig)	K4515N14300		K4520N14300	

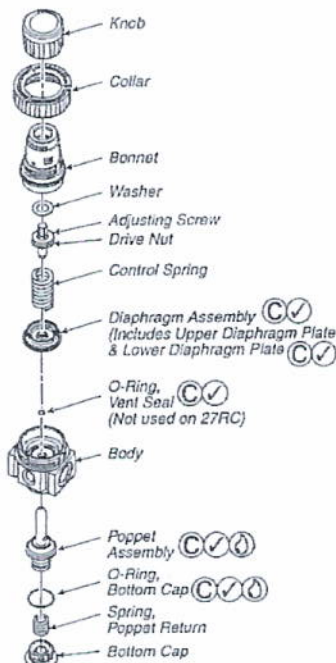


Figure 1: Economy & Precision

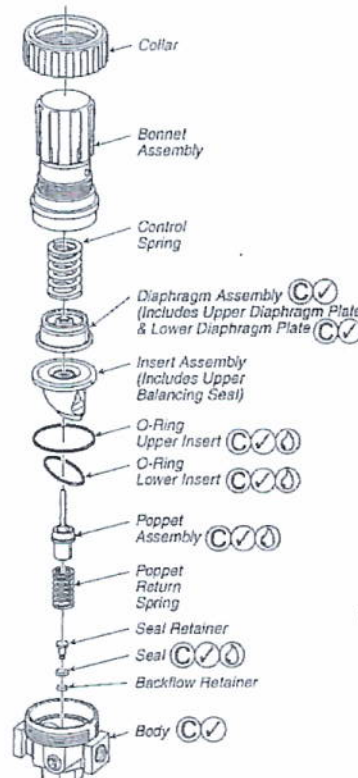


Figure 2: Compact & Standard



Pneumatic Division
Richland, Michigan 49083

Installation & Service Instructions
V201GP
Rotary Disk 3-Position Valves
(PL & VL)
ISSUED: January, 2007
Supersedes: September, 2000
Doc. #V201GP, EN #070044, Rev. 8

⚠ WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

Safety Guide

For more complete information on recommended application guidelines, see the Safety Guide section of Pneumatic Division catalogs or you can download the Pneumatic Division Safety Guide at: www.parker.com/safety

Application Limits

These products are intended for use in general purpose compressed air systems only.

Operating Pressure Range:

	kPa	PSIG	bar
Minimum	0	0	0

Standard Pressure Rating:

Maximum	1000	150	10
---------	------	-----	----

High Pressure Rating (PL25HP, PL37HP, PL50HP):

Maximum	1723	250	17.2
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Operating Temperature Range:

0°F to 160°F (-18°C to 71°C)

Installation & Operating Instructions

As received, the Lever Assembly will need to be assembled to the Valve Body Assembly. Slide the square hole on the Hub onto the Stem and secure it with the Lever Screw (using 40-45 in-lbs torque). Then screw the Ball Knob onto the Lever.

Valve should be installed with reasonable accessibility for service whenever possible - repair service parts are available. Keep pipe or tubing lengths to a minimum with inside clean and free of dirt and chips. Pipe joint compound should be used sparingly and applied only to the male pipe - never into the female port. Do not use PTFE tape to seal pipe joints - pieces have a tendency to break off and lodge inside the unit, possibly causing malfunction.

Filtered and lubricated air is necessary for maximum valve life and minimum maintenance.

Avoid excessive force on the handle. Excessive force can cause internal valve damage.

Factory Pre-Lubrication - All valves are pre-lubricated at assembly with an SAE 85W/140 lubricant, (e.g. Shell Spirax HD-85140 multi-purpose oil & gear lubricant).

⚠ **CAUTION:** This valve shall **NOT** be used to actuate a punch press. Do **NOT** use this valve on punch presses or press brakes. See OSHA 1910.219.

Valve Operation

Closed Center Valves (PL)

Position	Cyl. A	Cyl. B
CW	pressure	exhaust
Neutral	closed	closed
CCW	exhaust	pressure

Position Definition - All ports are blocked in neutral position.

Closed center valves have a 90 degree lever movement. In neutral position, inlet is closed to pressure & outlets are closed to exhaust. This valve is recommended for stationary air cylinders, and as a throttling valve for positioning air cylinders.

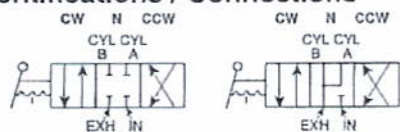
Open Center Valves (VL)

Position	Cyl. A	Cyl. B
CW	pressure	exhaust
Neutral	exhaust	exhaust
CCW	exhaust	pressure

Position Definition - Cylinder ports are open to exhaust & inlet is blocked in neutral position.

Open center valves also have a 90 degree lever movement. In neutral position, inlet is closed to pressure & outlets are open to exhaust. This valve is particularly suited for pneumatic chuck operation.

Port Identifications / Connections



PL - Closed Center

VL - Open Center

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**Rotary Disk 3-Position Valves (PL & VL)
Service Procedures**

To dis-assemble unit, use the following procedure:

Remove the lever assembly by unscrewing the lever screw and then lifting the lever's hub off of the stem. Remove the 8 socket head cap screws using an Allen wrench to detach the head from the valve body assembly. (The 1/4 & 3/8 NPT port valves require a 5/32" wrench, and the 1/2 NPT port valves require a 1/4" wrench.)

Note: These two parts will only bolt together one way but their proper orientation can be difficult to decipher quickly. Re-assembly will be easier and quicker if you draw a white line across their edges before separating them.

Note the orientation of the brass disk. For both the "P" & "V" type, the through hole is positioned above the detent boss. The two types of disks look quite similar; they are distinguished by a "P" or "V" in their flow chambers.

These valves can be converted from detent to non-detent operation by removing the steel ball and detent spring. Since the head and disk are lap finished to form an air tight seal, they need to be kept as a matched pair.

The assembly procedure is the reverse of how the unit was dis-assembled. If the valve is dirty inside, clean the valve thoroughly by wiping the dirty oil from the parts. Inspect for possible nicks, scratches, and material imperfections. Then dip the lap surface of the brass disk in a multi-purpose oil & gear lubricant before assembling it to the stem and head. Replace the body gasket with a new one.

For the valves with 1/4" & 3/8" ports, apply 40-45 in-lbs of torque to the socket head cap screws; and apply 120-130 in-lbs for those with 1/2" ports. Secure the lever assembly to the valve body assembly using 40-45 in-lbs torque.

If you have questions concerning how to service this unit, contact your local authorized dealer or your customer service representative.

Maintenance & Trouble Shooting Hints:

Air Leakage Through Exhaust Ports:

1. Check for internal leakage in cylinder being operated by the valve.
2. Check for loose socket head cap screws.
3. Check for broken disk spring, & lapped surfaces of brass disk and head for nicks, scratches, and dirt particles.

See Service Procedures for repair instructions.

Service Kit and Parts Available

Lever Assembly Service Kits:

(consists of items # 12, 13, & 14)

PL25, PL25HP, PL37, PL37HP, VL25, & VL37	PL2425BP
PL50, PL50HP & VL50	PL2424BP

Body Gasket:

PL25, PL25HP, PL37, PL37HP, VL25, & VL37	P66837
PL50, PL50HP & VL50	P66829

Part Identification List

Item #	Description
1	Valve Body Assembly
2	Valve Body
3	Disk Spring
4	Disk
5	Stem
6	Body Gasket
7	Head
8	Socket Head Cap Screw
9	Steel Ball
10	Detent Spring
11	Lever Assembly
12	Hub & Lever Bar
13	Ball Knob
14	Lever Screw (Phillips Oval Head)

