



# Operation & Maintenance Manual For Rotary Vane Vacuum Pumps & Systems



Date: 7/2009 P/N 255450 (Rev. 2) WWW.OHIOMEDICAL.COM ServiceDept@Ohiomedical.com

### OHIO MEDICAL CORPORATION Terms and Conditions of Sale

1. QUOTATIONS: All prices quoted shall be effective for ninety-days only and are subject to change thereafter without notice. The Buyer's issuance of an order in response to Company's quotation shall be deemed an acceptance of the terms and conditions of sale herein. All orders subject to acceptance by our Office

2. TERMS: Payment terms for custom fabricated equipment unless otherwise expressly agreed shall be 1/3 down with order and the balance payable net 30 days from the date of invoice. All other purchases are subject to terms of net 30. Invoices shall be dated on the day of shipment and are payable on the face of invoice on approved credit payable in U.S. Dollars. All orders are subject to credit approval.

Ohio Medical Corporation shall have the right to collect reasonable expenses, including attorneys fees incurred in enforcing the collection of any amount due. No retention allowed. There will be a \$50.00 charge incurred for all NSF checks returned.

There will be a \$50.00 charge incurred for all NSF checks returned. No final lien release given until payment in full is received, nor partial lien release without a payment.

3. CANCELLATIONS: A written, signed purchase order is required for any fabricated product. Cancellation, waiver or alteration of the purchase order can be only made with the written consent of Ohio Medical Corporation and are subject to the following cancellation charges of

-30% of purchase price after design completion and submittal approval Additional charges will be added to cover non-recoverable costs and/or the amount of any fabrication

4. RETURNS: Merchandise returned without specific written authorization from Ohio Medical Corporation will not be accepted. We will not be responsible for any transportation or other charges resulting from disregarding this clause. All items to be returned must have a Return Material Authorization (RMA) number. To be considered for credit, these items must be in original new condition. Items that are damaged or special ordered shall not be accepted for return and no credit will be issued.

Requests for RMA's for medical gas pipeline equipment must be made within 180 days of the original shipment to the Buyer. A 25% restocking charge applies on returns before 90 days after original shipment. A 50% restocking charge applies on returns after 90 days of original shipment.

Requests for RMA's for all other type of material must be made within 30 days of original shipment to the Buyer. A 25% restocking charge applies to these returns. Returned items must be shipped prepaid within 30 days of the RMA date.

5. Delays: Seller will not be liable for any delay in the performance of orders or contracts, or in the delivery or shipment of goods, or for any damages suffered by Buyer by reason of such delay, if such delay is directly or indirectly, caused by, or in any manner arises from fires, floods, accidents, civil unrest, acts of God, war, strikes, labor difficulties, shortage of labor, fuel, power, materials, or supplies, transportation delays, or any other causes beyond its control.

6. SHIPPING CLAIMS & BREAKAGE We do not assume responsibility for loss, damage or breakage in transit. Carriers are responsible for goods lost or damaged in transit; therefore as requires in rule 3 of Uniform Bill of Lading, in case of loss or damage enroute, consignee must immediately notify the transportation agent of destination, in writing, in order to substantiate formal claim when presented.

7. Defective Goods Claims: Claims for shortages or defects must be made with in 10 days of receipt of shipment.

All our products are carefully inspected, and where possible, tested before shipment. If goods appear to be defective advise us immediately and the matter will be investigated promptly. If we find the defect to be due to faulty material or workmanship, the goods will, at our option be credited, repaired or replaced. We assume no responsibility for damages occasioned by defective goods. We will also not assume any expense in repairing defective goods unless our written consent has first been obtained.

8. WARRANTY: Please refer to the appropriate warranty issued with and for the specific product purchased. NO WARRANTY MADE AS TO THE PRODUCT PURCHASED, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY AS TO THE MERCHANTABILITY OR FITNESS FOR ANY PURPOSE IS MADE UNLESS THE SAME IS SET FORTH IN THE WARRANTY STATEMENTS

#### HEREIN ABOVE REFFERED TO AND WHICH ARE MADE AND RELATE TO THE SPECIFIC PRODUCT PURCHASED.

9. CORRECTIONS: <u>In all cases</u>, clerical and or typographical errors are subject to correction.

**10. Delivery:** Unless otherwise expressly agreed, all shipments are made strictly F.O.B. Manufacturer's Factory COLLECT. Since prices are quoted Manufacturer's Factory a pro-rated bulk charge from their factory to our warehouse may be added to the freight charge. Unless route and carrier are specifically stated, we reserve the right to route shipments at our discretion.

11. TAX: The amount of any sales, processing, or other tax, federal or state, now in effect or hereafter imposed, which the manufacturer (seller) is or shall become obligated to pay, either on his own behalf or on the behalf of the purchaser, or otherwise with respect to material covered by this quotation (order) (contract) and any increase in the manufacturer's (seller's) cost attributed to compliance with any code, agreement or license approved, prescribed or issued pursuant to the terms of any Federal, State or local acts, shall (unless such prices are expressly stated to be inclusive of such tax or increased in the same manner and with the same effects as if originally added hereto.

12. SALES TAX: The Company's charges do not include sales, use, excise or similar taxes. Consequently, in addition to the charges specified herein, the amount of any present or future sales, use, excise or other similar tax applicable to the sale, repair, inspection, maintenance, modification, or use of the equipment shall be paid by the Buyer, or in lieu thereof the Buyer shall provide the Company with a tax exemption certificate acceptable to the taxing authorities.

13. Start-up Assistance: Ohio Medical Corporation will provide start-up assistance as specified in the quotation. Four weeks notification is required. Start-ups are scheduled during normal business hours (Monday through Friday from 8:00am till 4:30pm). Start-up outside of these parameters will incur additional charges.

14. Equal Opportunity: We hereby certify that with the respect to the production of the article, and/or performance of the services covered by this order or invoice, the Seller has fully complied with all applicable requirements of Sections 6,7 and 12 of the Fair Labor Standards Act, as amended, and all requirements of the U.S Department of Labor issued under Section 14 thereof.

15. General: Buyer's obligation shall be governed by, and construed in accordance with, the internal laws of the State of Illinois, without regard to principle of conflicts of law. Buyer hereby irrevocably agree that all disputes arising out of or relating to these terms and conditions or the goods sold hereunder that cannot be resolved by the parties shall be resolved only by the State or Federal courts located in Lake County, Illinois. Buyer hereby consents and submits to the exclusive jurisdiction and venue of such State and Federal courts and waives any objection or right to contest said jurisdiction or venue or that any such action or proceeding was brought in an inconvenient court. It is agreed that either party may communicate with the other by electronic means. Each party agrees when electronic communications are used, they are deemed to be the equivalent of written and signed documents.

16. Minimum Billing: A minimum billing charge of \$50.00 will apply to all orders.

17. Controlling Provisions: These terms and conditions shall take the place of as well as supersede any provisions, terms, and conditions contained on any confirmation order, purchase order, or any other writing Buyer may give or receive, and the rights of the parties shall be governed exclusively by the provisions, terms, and conditions hereof. THE SELLER WILL NOT ACCEPT ANY TERMS OR CONDITIONS ATTACHED TO ANY CONFIRMATION ORDER, PURCHASE ORDER, OR ANY OTHER WRITING THAT BUYER MAY GIVE EXCEPT THOSE THAT SELLER EXPRESSLY AGREES TO IN WRITING. The issuance of any such order by the seller shall be deemed to note Buyers assent not only to this paragraph but also to each and every paragraph of this document and this order may not be changed or modified orally.

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#### OHIO MEDICAL / SQUIRE-COGSWELL VACUUM AND COMPRESSED AIR SYSTEMS LIMITED WARRANTY

- 1. OHIO MEDICAL warrants to the original purchaser its Vacuum and Compressed Air Systems to be free from functional defects in material and workmanship for a period of (30) thirty months from the date of shipment, or for a period of (24) twenty-four months from the date of start-up, whichever comes first.
  - a. Ohio Medical recommends that start-up should only be done by an authorized representative of Ohio Medical.
- 2. In the event there is a functional defect either in material or workmanship Ohio Medical will only repair or replace any part or component which is proven to be defective.
  - a. System Components sold as individual items are not warranted to include job site installation and wiring, and the warranty set forth in Paragraph 1 is limited to complete units which include all factory installed components and interconnected piping and wiring.
  - b. Labor on site is limited to functional defects in workmanship found to be defective at the time of start-up.
  - c. The replacement of normal wearing or maintenance items (including but not limited to packings, mechanical seals, oil seals, piston rings, contacts, coils, fuses, etc.) made in connection with normal maintenance services are not covered by this warranty.
- 3. To obtain service within the warranty period, first contact your authorized Ohio Medical dealer or the Ohio Medical Service Department. Ohio Medical's responsibility under this warranty shall be limited to providing at Ohio Medical's sole discretion new or similar rebuilt replacement parts to replace any component found to be defective within the warranty period.
  - a. Labor to repair any part or component proved to be defective within the warranty period will be provided at no charge for any item returned to our factory adequately packaged and insured with shipping costs prepaid. Standard surface freight shipping cost and return of the repaired part or component will be paid by Ohio Medical.
  - b. Before returning any part or component to the factory for warranty consideration, proper return authorization and warranty claim form must first be obtained from Ohio Medical Customer Support or Service Department. A Purchase Order must be supplied by the claimant in the event that repairs or products returned for warranty consideration are determined to be of a Non-Warranty status.
  - c. The user will be required to issue a Purchase Order for replacement items. Upon reciept of the defective items, Ohio Medical Corporation will issue a credit to the user in the amount equal to the purchase order.
- 4. The warranty is valid only when the product has been properly installed according to Ohio Medical specifications, used in a normal manner and serviced according to factory recommendations. It does not cover failure due to damage which occurs in shipment or failures which result from accidents, misuse, abuse, neglect, mishandling, alteration, misapplication or damage that may be attributable to acts of God. Similarly, this warranty does not apply to units that are re-sold or rented to others by the purchaser.
- 5. Ohio Medical shall not be liable for incidental or consequential damages resulting from the use of this product. There are no expressed or implied warranties which extend beyond the warranty of fitness for a particular purpose to the equipment and/or to its parts and components.
- 6. THE CONDITIONS OF THE BUYER'S RESPONSIBILITY ARE:
  - 6.1 The equipment is stored properly before installation.
  - 6.2 The equipment is installed according to Ohio Medical specifications and installation procedures.
  - 6.3 The room where the equipment is installed meets stated operating temperatures.
  - 6.4 The equipment is placed into initial operation by an authorized representative of Ohio Medical.
  - 6.5 The equipment is properly maintained and is not repaired or altered unless by an authorized representative of Ohio Medical.

Producers of Ohmeda Suction and Oxygen Therapy Devices, Aeros® Instruments Portable Suction Machines, Healthcair<sup>®</sup> MedGas Pipeline Equipment, Healthcair<sup>®</sup>, Labcair<sup>®</sup> & Selectorr<sup>®</sup> brand of Vacuum Systems and Air Compressor Packages

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#### PUMPS - COMPRESSORS LIMITED WARRANTY

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1. OHIO MEDICAL CORPORATION warrants to the original purchaser its Vacuum Pumps and Air Compressors to be free from functional defects in material and workmanship for a period of twelve (12) months from the date of shipment.

2. In the event there is a functional defect either in material or workmanship Ohio Medical Corporation will only repair or replace any part or component which is proven to be defective.

a. System components sold as individual items are not warranted to include job site installation and wiring.

b. The replacement of normal wearing or maintenance items (including but not limited to packing, mechanical seals, oil seals, piston rings, contacts, coils, fuses, etc.) made in connection with normal maintenance services are not covered by this warranty.

3. To obtain service within the warranty period, first contact your authorized Ohio Medical Corporation dealer or the Ohio Medical Corporation Service Department. Ohio Medical Corporation's responsibility under this warranty shall be limited to providing, at Ohio Medical Corporation's sole discretion, new or similar rebuilt replacement parts to replace any component found to be defective within the warranty period.

a. Labor to repair any part or component proved to be defective within the warranty period will be provided at no charge for any item returned to our factory adequately packaged and insured with shipping costs prepaid. Standard surface freight shipping cost and return of the repaired part or component will be paid by Ohio Medical Corporation.

b. Before returning any part or component to the factory for warranty consideration, proper return authorization, and warranty claim form must first be obtained from Ohio Medical Corporation Service Department. A Purchase Order must be supplied by the claimant in the event that repairs or products returned for warranty consideration are determined to be of a Non-Warranty status.

c. The user will be required to issue a Purchase Order for replacement items. Upon reciept of the defective items, Ohio Medical Corporation will issue a credit to the user in the amount equal to the purchase order.

4. The warranty is valid only when the product has been properly installed according to Ohio Medical specifications, used in a normal manner and serviced according to factory recommendations. It does not cover failure due to damage which occurs in shipment or failures which result from accidents, misuse, abuse, neglect, mishandling, alteration, misapplication or damage that may be attributable to acts of God. Similarly, this warranty does not apply to units that are re-sold or rented to others by the purchaser.

5. Ohio Medical Corporation shall not be liable for incidental or consequential damages resulting from the use of this product. There are no expressed or implied warranties which extend beyond the warranty of merchantability fitness for a particular purpose to the equipment and/or to its parts and components.

6. THE CONDITIONS OF THE BUYER'S RESPONSIBILITY ARE:

a. The equipment is stored properly before installation;

b. The equipment is installed according to Ohio Medical Corporation specifications and installation procedures;

c. The room where the equipment is installed meets stated operating temperatures;.

d. The equipment is properly maintained and is not repaired or altered unless by an authorized representative of Ohio Medical Corporation.

Producers of Ohmeda Suction and Oxygen Therapy Devices, Aeros® Instruments Portable Suction Machines, Healthcair<sup>®</sup> MedGas Pipeline Equipment, Healthcair<sup>®</sup>, Labcair<sup>®</sup> & Selectorr<sup>®</sup> brand of Vacuum Systems and Air Compressor Packages

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#### INSPECTION UPON DELIVERY

Check crating or packaging for visible damage that could indicate damage to components of the equipment. Report any damage to delivering carrier immediately to process your claim.

If the equipment is to be stored prior to installation it must be protected from rain and snow to prevent formation of rust on machined surfaces and components.

It is important to verify the material received against the packing list to assure receipt of all of the material ordered. It is routine to include accessory items in cartons strapped to the crate.

#### FOR YOUR SAFETY:

Items in this manual that significantly affect safety are identified with the following headings. Please read and understand this manual, paying special attention to items identified with these headings!

#### DANGER!

WARNING! CAUTION! and NOTICE! are displayed in large bold capital letters to call attention to areas of vital concern. They represent different degrees of hazard seriousness, as stated below.

#### DANGER!

Immediate hazards which will result in severe personal injury or death.

#### WARNING!

Hazards or unsafe practices that could result in personal injury or death.

#### CAUTION!

Hazards or unsafe practice which could result in minor personal injury, product or property damage.

#### NOTICE!

Indicates points of particular interest for more efficient and convenient installation operation.

Each section of this instruction manual, as well as any instructions supplied by manufacturers of supporting equipment, should be read and understood prior to starting the vacuum package. If there are any questions regarding any part of the instructions please call Ohio Medical 800-448-0700 before creating a potentially hazardous situation. Life, limb or equipment could be saved with a simple phone call.

Vacuum Pumps are precision high-speed mechanical equipment requiring caution in operation to minimize hazard to personnel and property. There are many obvious safety rules that must be observed in the operation of this type of equipment. Listed below are additional safety precautions that must be observed.

Transfer of toxic, dangerous, flammable or explosive substances is at user's risk. Turn off and lockout/tag (per O.S.H.A. Regulation 1910.147) the main power disconnect switch before attempting to perform maintenance on any part of the package.

Do not attempt to service any part of the unit while it is operating.

Per O.S.H.A. Regulation 1910.147 relieve the system of all pressure before attempting to service any part of the package.

#### DANGER! WARNING! CAUTION!

**Do not** remove or paint over any or instructional materials attached to the vacuum package. Lack of information regarding hazardous conditions can cause personal injury or property damage.

Do not use plastic pipe, rubber hose, or lead-tin soldered joints in any part of the vacuum package.

Modifications must not be made to the vacuum package without Ohio Medical's approval.

Be sure that all tools, shipping and installation debris have been removed from the vacuum package and installation site prior to starting the vacuum package.

Do not operate the vacuum pump in excess of the stated capacity.

Make a general overall inspection of the unit daily and correct any unsafe situations.

Reckless behavior of any kind is dangerous and can cause very serious injury to the participants.

Provisions should be made to have the instruction manual readily available to the operator and maintenance personnel.

Never use a flammable or toxic solvent for cleaning the air filter or any parts.

The owner, lesser or operator of the vacuum package is hereby warned that failure to observe the above safety precautions may result in serious injury to personnel and/or damage to property. Ohio Medical Corporation neither states as fact or in any way implies that the above list of safety precautions is an all-inclusive list, the observance of which will prevent injury to personnel or damage to property.

Every effort has been take to ensure that complete and correct instructions have been included in this manual. However, possible product updates and changes may have occurred since this printing. Ohio Medical Corporation reserves the right to change specification without incurring any obligation for equipment previously or subsequently sold.

#### WARNING!

#### **EXPLOSION HAZARD PRESENT**

Under no circumstances should a vacuum pump be used in an area that may be exposed to toxic, volatile, or corrosive atmosphere. Do not store toxic, volatile, or corrosive agents near the vacuum package.

These rotary vane vacuum pumps are not to be used for evacuation of flammable or explosive products.

#### WARNING!

#### HOT OIL HAZARD

Do not remove the oil fill plug when pump is running, as hot air and oil vapor will escape possibly causing severe burns. Add or check oil only when the pump is off and electrically locked out.

Always wear safety glasses.

WARNING!

Electric power always exists inside the vacuum switch whenever the package is connected to a power supply. Be careful not to touch any electrical leads when setting the vacuum switch. **WARNING!** 

Never exceed the design pressure for the system or overload the motor beyond it's Maximum Amp Draw. Full Load Amps x Service Factor = Maximum Amp Draw

#### WARNING!

Never assume a vacuum pump is safe to work on just because it is not operating. It may be in the automatic standby mode and may restart any time. Follow all safety precautions outlined under "Stopping for Maintenance".

#### LOCATION

#### CAUTION!

Indoor installation is recommended. However if it is necessary to install the pump outside, it must be protected from rain and other sources of moisture.

Do not operate the vacuum pump in ambient temperatures lower than 40°F. In cold climates the vacuum pump should be installed in a heated building.

Due to standard drive motor limitations, it is recommended that the pump be operated in temperatures under  $104^{\circ}F$ .

#### INSTALLATION

#### **Bare Pump Installation**

Install the pump in a horizontal position on a level surface so that the pump is evenly supported on its rubber feet. Leave 12-18" of access around the pump to allow proper cooling and adequate ventilation for the fan, radiator and motor.

Allow access to the oil sight glass in order to inspect the oil level and the exhaust port for easy access to change the exhaust filter. Do not tip the pump over if filled with oil The vacuum pump must be located in a clean, dry, well lighted area with the ambient temperature maintained at 40-104°F.

#### **Equipment Installation**

The equipment must be located in a clean dry well lighted area with the ambient temperature maintained at 40-104°F.

Do not operate the pump(s) in ambient temperatures lower than 40°F. In cold climates the vacuum system should be installed in a heated building.

Due to standard drive motor limitation, it is recommended that the system be operated in temperatures under 104°F.

Adequate space and ventilation must be provided on all sides of the unit for cooling and accessibility for maintenance of all components.

Inspection and maintenance checks are required daily. Therefore, we recommend a 36" walk way around the package.

Provisions must be made for adequate ventilation to remove the heat of compression (2550 BTU per horsepower) from the area.

#### CAUTION!

Improper leveling may cause unnecessary wear of the rotating parts such as bearings and couplings. In addition, improper leveling may make completion of the facility piping connections more difficult.

#### SETTING IN PLACE

Packages are manufactured in a modular fashion so that the various modules can be separated from each other to allow for transportation and installation limitations. The module bases may be bolted together directly or through base alignment plates. The piping system contains pipe unions to facilitate module separation, when necessary.

If the package modules have been separated prior to installation, they should be rejoined using the supplied base alignment plates to ensure proper re-connection of the piping system.

The package must be securely bolted to a solid stable floor or housekeeping pad utilizing all of the mounting holes provided in the frame. A shim or spacer is recommended to bring the vacuum frame level. The frame should not overhang the mounting surface on any side. The object is to make the frame tight and level to absorb and eliminate transient vibrations. The use of spring type mounting devices between the frame and the mounting surface is not recommended.

When possible, the unit should be installed on the ground or lower level machinery space.



After the installation is complete, the module base alignment plates and spacers should be removed to provide optimal vibration control.

#### **MOUNTING, ANCHORING**

Proper mounting of the vacuum package is crucial to the safe operation and longevity of the equipment. The installation requires a flat and level concrete floor or pad. Satisfactory results can usually be obtained by mounting the package on the vibration isolating pads supplied with the vacuum package. The size and quantity of the vibration isolators supplied with the package meet or exceed the entire load. Over tightened pads can cause severe vibrations resulting in cracked welds or fatigue failure. Using 1/2" or 3/4" bolts, tighten bolts and torque to 50 lbs/sq. in. See figure below



#### NOISE

Sound levels of 67-78 Dba are to be expected.

#### **PIPING CONNECTIONS**

All connecting piping must be in strict accordance with local codes and applicable engineering drawings.

All connection piping must be self-supporting to prevent stressing of the vacuum pump equipment. Flexible connectors must be used on all system connections to provide vibration control and system serviceability.

All connection piping must be clean and free of dirt or scale.

Exhaust piping should be terminated outside the building with the discharge line turned down and screened. For medical installations, this configuration is a requirement. See CGA P2.1 or NFPA-99 [para 4-3.2.1.9) For further instructions on exhaust piping, contact Ohio Medical Corporation Engineering Department.

Notes:

- 1. Exhaust piping and fittings represented by dashed lines are to be furnished and installed by contractor.
- 2. Exhaust from oil reservoir shall be collected to a single stack,
  - run to outside air with the discharge line turned down and screened.



#### WARNING!

Do not use plastic pipe or rubber hose or lead tin soldered joints in any part of the vacuum system.

#### **ELECTRICAL CONNECTIONS**

Electrical connection should be performed by qualified electrician with knowledge of the National Electrical Code (N.E.C.), O.S.H.A. code and or any local or state codes having precedence. Note this unit must be grounded. Check to insure that proper electrical service has been made available.

Make sure the electrical supply, control cabinet and the motor nameplate data are the same.

Do not connect electrically if they are not the same.

Where the unit is on the emergency power source, make sure the normal power and the emergency power are in phase.

Electrical connections must be checked and tightened when necessary.

Before installation, the electrical supply should be checked for adequate wire size and transformer capacity. A suitable circuit breaker or fused disconnect switch should be provided. When a 3-phase motor is used to drive a vacuum pump, any unreasonable voltage imbalance between the legs must be eliminated and any low voltage corrected to prevent excessive current draw.

The installation, electric motor, wiring and all electrical controls must be in accordance with NFPA 70 1993 National Electric Code, National Electric Safety Code, state and local codes. Failure to abide by the national, state and local codes may result in physical harm and or property damage.

#### DANGER!

High voltage may cause personal injury or death. Disconnect and lockout/tagout per O.S.H.A. Regulation 1910.147 all electrical power supply before opening the electrical enclosure or servicing.

#### CAUTION!

Nema electrical enclosures and components must be appropriate to the area installed.

#### **INITIAL START UP**

Initial start-up assistance by factory authorized personnel is available. Call our Service Department at 1-800-448-0770 ext: 6279 for details.

#### PRE START-UP CHECK LIST

Never assume the system is safe to work on just because it not operating. It could restart at any time. Follow all safety precautions outline in "Stopping for Maintenance".

#### WARNING!

Failure to perform the pre-start up check list may result in mechanical failure or property damage, serious injury or even death.

The following items should be performed prior to connecting the unit to a power source. If any conditions of the checklist are not satisfied, make the necessary adjustments or corrections before starting the unit.

Remove all installation tools from the unit and check for installation debris.

Check final leveling or shimming of the base and that the correct tightness has been applied to the vibration pads.

#### **Check Electrical Service**

Verify that the facility power breaker is turned "OFF".

Check to insure that the proper electrical service has been made available. Make sure the electrical supply and the control panel and motor nameplate data are the same.

Verify the facility power breaker and the supply wire size is correct per N.E.C.

Check fuses, circuit breakers, and thermal overload for proper size.

All electrical connections both inside and outside the control cabinet must be checked and tightened when necessary.

Check all safety overloads to confirm they are set correctly for the current rating of the motor.

Check all conduit connections leaving the panel to insure they are tight.

Verify that all motor disconnects and HOA switches are in the "OFF" position.

After all of the above conditions have been satisfied, the unit can be connected to the proper power source.

#### **Check Pump Rotation**

Turn the motor disconnect "ON". Jog the motor to insure the correct rotation by momentarily turning the H-O-A switch to the "H" (hand) position, then quickly returning the switch to the "O" (off) position. The correct direction of rotation is marked by an arrow on the motor housing. Facing the fan motor cover, the correct direction of rotation is counter clockwise. If the rotation is not correct, for 3 phase units, switch any two of the three electrical service lines coming into the control panel.

Each pump should be individually started, run and adjusted.

#### **STOPPING FOR MAINTENANCE**

The following procedures should be followed when stopping the system for maintenance or service. Per OSHA Regulation 1910.147: The Control of Hazardous Energy Source (Lockout/Tagout): Disconnect and lockout the main power source. Display a sign in clear view at the main power switch stating that the vacuum system is being serviced.

#### **Check Mechanical Service**

Check motor coupling for alignment and tightness on shaft.

Manually rotate the vacuum pump(s) several rotations to be sure there are no mechanical interferences.

Check to insure all pipe union connections on the vacuum system and all the connections from the facility to the system are tight.

Check all manual shut-off valves in the system are in the correct position, (normally open or normally closed) as indicated on the tags attached to each valve. Check to ensure the system isolation valve at the facility is closed.

Check for correct oil level in the sight glass. The oil level should be visible in the upper sight glass between the min-max mark.

#### Start-Up

Start the pump with the inlet closed. Run the pump for a few minutes and then stop the pump. Check the oil level again and make sure the oil level is between the **min/max mark** and full on the upper oil sight glass. Add oil if necessary. Pump oil should only be added when the pump is off and the circulating oil has had sufficient time to return to the oil sump.

#### SEQUENCE OF OPERATION

Automatic Operation

#### CAUTION!

#### Before turning motor disconnects, be sure that all HOA switches are in the "OFF" position.

Turn the motor disconnects to "ON" then turn all HOA switches to the "AUTO" position.

All vacuum pumps will start and all vacuum run lights on the control panel will turn on. The operation of any vacuum pump in the system is indicated visually by a pump run light, located on the panel.

#### Simplex System (One Vacuum Pump)

When the vacuum level in the receiver falls to the cut in setting on VS-1, the vacuum pump will start. It will run until the vacuum level reaches the cut out setting on VS-1, at which point the minimum run timer will keep the vacuum pump running 4 minutes. If the vacuum level stays above the set point, the vacuum pump will stop.

#### Duplex System (Two Vacuum Pumps)

When the vacuum level in the receiver falls to the cut in setting on VS-1, one vacuum pump (the lead vacuum pump) will start. When the vacuum level reaches the cut out setting on VS-1, the vacuum pump will stop.

If the lead vacuum pump cannot satisfy the facility demand the vacuum level in the receiver will continue to fall. When this level reaches the cut in setting on VS-2 the other vacuum pump (the "lag pump") will turn on. Both vacuum pumps will continue to run until the vacuum level in the receiver reaches the cut out setting on VS-1.

The system controls will alternate the lead vacuum pump function from one vacuum pump to the other every 1/2 hour. This is done to equalize the usage of the vacuum pumps, thereby maximizing their life.

#### Triplex System (Three Vacuum Pumps)

This system operates in the same manner as the duplex system described above except that the second and third vacuum pumps are used as the lag vacuum pumps with an additional vacuum switch (VS-3). As with the duplex system, the system controls will alternate the lead vacuum pump function to equalize vacuum pump usage.

#### Quadruplex System (Four Vacuum Pumps)

This system operates similarly to the triplex system with one lead vacuum pump and three lag vacuum pumps. However, a fourth vacuum switch (VS-4) with a setting below that of VS-3, is used to turn on the fourth vacuum pump (a third lag pump) in the event that the combination of the one lead vacuum pump and the two lag vacuum pumps cannot satisfy the vacuum demand. Again, the system controls will alternate the lead vacuum pump function to equalize vacuum pump usage.

Each vacuum pump can be operated manually by switching the corresponding HOA switch to the "HAND" position. This mode of operation is sometimes useful for troubleshooting and

maintenance purposes. However, it is important to note that in this mode, none of the automatic controls (vacuum switches, pump alteration, etc.) are effective.

#### **Standard Vacuum Switches Settings**

|      | QUAD   |         | TRIF   | PLEX    | DUF    | PLEX    | SIMPLEX |         |  |
|------|--------|---------|--------|---------|--------|---------|---------|---------|--|
|      | Cut In | Cut Out | Cut In | Cut Out | Cut In | Cut Out | Cut In  | Cut Out |  |
| VS-1 | 22     | 26      | 22     | 26      | 22     | 26      | 22      | 26      |  |
| VS-2 | 21     | 25      | 21     | 25      | 21     | 25      |         |         |  |
| VS-3 | 20     | 24      | 20     | 24      |        |         | -       |         |  |
| VS-4 | 19     | 23      |        |         | -      |         |         |         |  |

#### CAUTION!

#### When controlling vacuum pumps by "Hand" they must not be allowed to run unattended.

Lag Alarm (Optional) – Systems installed in medical facilities are equipped with a "Lag alarm" feature consisting of a warning light and alarm horn mounted on the control panel. The lag alarm is energized when the last lag pump is turned on. This alarm may be reset (turned off) by a push button on the control panel, after the vacuum level in the receiver has increased above the lowest level vacuum switch setting.

#### SHUTTING THE PUMP DOWN

To stop the pump, turn off the power. A built in anti suck back valve will prevent oil from the oil reservoir being sucked back into the cylinder after the pump is shut down.

In applications, where the quantity of water vapor is moderate, it is recommended to run the pump for 10 minutes to its normal operating temperature prior to going on process. The pump should also be operated off process for 10 minutes prior to shut down.

A slight air bleed (purge) is recommended during the 10 minute cycles to prevent vapor from condensing in the pump.

#### WARNING!

Never assume a vacuum pump is safe to work on just because it is not operating. It could restart at any time.

Display a sign in clear view at the shut-off valve stating that the vacuum pump is being serviced.

To service an individual vacuum pump, close the vacuum inlet isolation valve.

Lock out pressure relief valves within the pressurized system to allow the system to be completely depressurized. Never remove a plug to relieve the pressure.

Wait for the unit to cool before starting service.

Temperature of 125°F can burn skin.

#### MAINTENANCE SCHEDULE

To assure maximum performance and service life of your vacuum pump, a routine maintenance schedule should be developed. A sample schedule has been included here showing suggested maintenance intervals, to help you develop a maintenance schedule designed for your particular application. Time frames may need to be shortened in harsher environments.

Make copies of this checklist and retain the master to make more copies as needed. Keep the checklist and this instruction manual readily available near the vacuum system.

Scheduled maintenance intervals are rated for continuous duty operation at the maximum vacuum levels. The service interval can vary with duty cycle and vacuum level.

| Recommended<br>Maintenance   | 8<br>Hours<br>or<br>Daily | 40<br>Hours<br>or<br>Weekly | 160<br>Hours<br>or<br>Monthly | 500<br>Hours<br>or<br>3<br>Months | 1000<br>Hours<br>or<br>6<br>Months | 2000<br>Hours<br>or<br>Yearly | 5000<br>Hours<br>or<br>Every<br>2<br>Years |
|--|---------------------------|-----------------------------|-------------------------------|-----------------------------------|------------------------------------|-------------------------------|--|
| Manually open<br>Receiver Drain – Drain<br>Out Condensation                    | X                         |                             |                               |                                   |                                    |                               |  |
| Check For Unusual<br>Noise or Vibration  | X                         |                             |                               |                                   |                                    |                               |  |
| Check Distribution<br>System For Leaks   |                           | X                           |                               |                                   |                                    |                               |  |
| Inlet Filter – Inspect &<br>Clean. Replace 1 Time<br>Per Year                  |                           |                             |                               | X                                 |                                    |                               |  |
| Check Sound Level  |                           |                             |                               | X                                 |                                    |                               |  |
| Inspect Contactor  |                           |                             |                               |                                   | X                                  |                               |  |
| Inspect Vacuum<br>Switches For Wear  |                           |                             |                               |                                   | X                                  |                               |  |
| Inspect Check Valves   |                           |                             |                               |                                   | X                                  |                               |  |
| Inspect Timer For<br>Proper Alteration   |                           |                             |                               |                                   | X                                  |                               |  |
| Test Alarms  |                           |                             |                               |                                   | X                                  |                               |  |
| Grease Bearings on<br>Motor (If Applicable)                                    |                           |                             |                               |                                   |                                    | X                             |  |
| Inspect Oil Level  | X                         |                             |                               |                                   |                                    |                               |  |
| Check For Oil Leaks  | X                         |                             |                               |                                   |                                    |                               |  |
| Inspect Alarms   | X                         |                             |                               |                                   |                                    |                               |  |
| Inspect Exhaust<br>Pressure Gauge (Not<br>To Exceed 7 PSIG)                    |                           | X                           |                               |                                   |                                    |                               |  |
| Check Oil For<br>Contamination   |                           | X                           |                               |                                   |                                    |                               |  |
| Inspect & Clean  | -                         |                             | X                             |                                   |                                    |                               |  |
| Change Exhaust Filter<br>1500-2000 Hours Or<br>When Pressure<br>Exceeds 7 PSIG |                           |                             |                               |                                   |                                    | x                             |  |
| Change Oil & Oil Filter  |                           |                             |                               |                                   | Х                                  |                               |  |
| Inspect Vanes  | 1                         |                             | T                             |                                   |                                    |                               | Х  |

Change oil & filter after the first 100 hours of operation.

#### THEORY OF OPERATION/PUMP CAPACITY

1/2"

NPT

1450

Outlet Connection

RPM

1 1/4"

NPT

1800

1 1/4"

NPT

1800

1 1/4"

NPT

1800

The SelecTORR Series Pump operates according to the rotary vane principal. The rotor is mounted concentrically on the drive shaft and positioned eccentrically in the cylindrical stator. The rotor has machined slots for radial sliding vanes, which divide the pump chamber into segments. The centrifugal force of rotation pushes the vanes out these slots against the wall of the cylindrical stator. The gas enters the vacuum pump inlet then passes through the anti-suckback valves and into the cylindrical stator. The inlet is closed as the rotor revolves; the gas is compressed and pushed out through the exhaust opening located between the pump housing and exhaust box. The oil collects in the bottom of the oil exhaust separator chamber as the gas passes through a demister then through an exhaust filter before finally exhausting to atmosphere.

#### SELECTOR SERIES© ROTARY VANE VACUUM PUMP PERFORMANCE DATA CHART

|                  | PUMP      | PART        |        | FREE AIR          | 19<br>(Ga | " Hg.<br>auge) | 20"  <br>(Gau | Hg.<br>ıge) | 25"<br>(Ga | ' Hg.<br>luge) | 29.1<br>(Ga | " Hg.<br>iuge) | 29.9<br>(Ga | " Hg.<br>uge) |             |
|------------------|-----------|-------------|--------|-------------------|-----------|----------------|---------------|-------------|------------|----------------|-------------|----------------|-------------|---------------|-------------|
| _                | MODEL     | NUMBER      | HP     | CAPACITY          | ACFM      | SCFM           | ACFM          | SCFM        | ACFM       | SCFM           | ACFM        | SCFN           | ACFM        | SCFM          |             |
|                  | S1L (1PH) | 262326      | 3/4    | 7 CFM             | 7         | 2.55           | 6.75          | 2.25        | 6.5        | 1.1            | 1           | 0.03           | -           | -             |             |
|                  | S1L (3PH) | 262325      | 3/4    | 7 CFM             | 7         | 2.55           | 6.75          | 2.25        | 6.5        | 1.1            | 1           | 0.03           | -           | -             |             |
|                  | SD1       | 262057      | 1      | 14 CFM            | 14        | 5.1            | 14            | 4.7         | 14         | 2.3            | 21.9        | 0.36           | -           | -             |             |
|                  | S1        | 262064      | 1      | 14 CFM            | 14        | 5.1            | 13.5          | 4.5         | 13         | 2.2            | 2           | 0.06           | -           | -             |             |
|                  | SD2       | 262058      | 2      | 21 CFM            | 21        | 7.7            | 21            | 7           | 21         | 3.5            | 21          | 0.59           | 7.1         | 0             |             |
|                  | S2        | 262065      | 2      | 21 CFM            | 21        | 7.7            | 21            | 7           | 19.7       | 3.3            | 2           | 0.06           | -           | -             |             |
|                  | SD3L      | 262059      | 3      | 30.8 CFM          | 30.8      | 11.3           | 30.8          | 10.3        | 30.8       | 5.1            | 30.8        | 0.86           | 8.8         | 0.01          |             |
|                  | S3L       | 262066      | 3      | 30.8 CFM          | 30.8      | 11.3           | 30.8          | 10.3        | 29.4       | 4.9            | 3.5         | 0.09           | -           | -             |             |
|                  | SD3       | 262060      | 3      | 44 CFM            | 44        | 16.1           | 44            | 14.7        | 44         | 7.3            | 44          | 1.24           | 11.2        | 0.01          |             |
|                  | S3        | 262067      | 3      | 44 CFM            | 44        | 16.1           | 44            | 14.7        | 35.9       | 6              | 5           | 0.14           | -           | -             |             |
|                  | SD5L-N    | 262061      | 5      | 70 CFM            | 70        | 25.6           | 70            | 23.3        | 70         | 11.7           | 70          | 2              | 16.2        | 0.01          |             |
|                  | S5L-N     | 262068      | 5      | 70 CFM            | 70        | 25.6           | 70            | 23.3        | 70         | 11.7           | 7.5         | 0.21           | -           | -             |             |
|                  | SD5C-N    | 262323      | 5      | 118 CFM           | 118       | 43.2           | 118           | 39.3        | 118        | 19.7           | 118         | 3.3            | 39.1        | 0.03          |             |
|                  | S5C-N     | 262294      | 5      | 118 CFM           | 118       | 43.2           | 114.7         | 39.3        | 102.9      | 17.2           | 15          | 0.42           | -           | -             |             |
|                  | SD7C-N    | 262324      | 8      | 163.8 CFM         | 163.8     | 60             | 163.8         | 54.6        | 163.8      | 27.3           | 163.8       | 4.6            | 45.9        | 0.03          |             |
|                  | S7CN      | 262296      | 8      | 163.8 CFM         | 163.8     | 60             | 163.8         | 54.6        | 147        | 24.5           | 33          | 0.93           | -           | -             |             |
|                  | SD10B-N   | 262981      | 10     | 194 CFM           | 194       | 71.1           | 194           | 64.7        | 194        | 32.3           | 194         | 5.32           | 55.9        | 0.04          |             |
|                  | S10B-N    | 262925      | 10     | 194 CFM           | 194       | 71.1           | 194           | 64.7        | 176.4      | 29.4           | 35          | 0.99           | -           | -             |             |
|                  | SD15-N    | 262919      | 15     | 282 CFM           | 282       | 103            | 282           | 94          | 282        | 47             | 282         | 7.7            | -           | -             |             |
|                  | S15-N     | 262918      | 15     | 282 CFM           | 282       | 103            | 282           | 94          | 282        | 47             | 169         | 4.6            | -           | -             |             |
|                  | SD20-N    | 262927      | 20     | 306 CFM           | 306       | 112            | 306           | 102         | 306        | 51             | 306         | 8.37           | 118         | 0.08          |             |
|                  | S20-N     | 262926      | 20     | 306 CFM           | 306       | 112            | 306           | 102         | 306        | 51             | 206         | 5.65           | -           | -             |             |
|                  | SD25-N    | 262929      | 25     | 470 CFM           | 470       | 172            | 460           | 153         | 460        | 75.6           | 460         | 12.6           | 229.7       | 0.15          |             |
|                  | S25-N     | 262928      | 25     | 470 CFM           | 470       | 172            | 460           | 153         | 411        | 68.5           | 235         | 6.44           | -           | -             |             |
|                  |           |             |        |                   |           |                |               |             |            |                | 61          | 0P             |             |               | 60E/6       |
| MODEL            |           | S1/SD       | 1 S2   | 2/SD2 S3L/S       | SD3L S    | 3/SD3          | S5LB/SD5      | LB S5       | C/SD5C     | S7C/SD         | 7C SD       | 10B S          | S15/SD15    | S20/SD20      | D25         |
| Length           |           | 17"         | 2      | 3.5" 25           | 5"        | 26"            | 28"           | 3           | 33 1/2"    | 36"            | 39          | 1/2"           | 57"         | 59 1/2"       | 67 5/8"     |
| Width            |           | 9"          | 11     | 1 3/4" 11 3       | 3/4" 1    | 16 1/4"        | 16 1/4"       |             | 21"        | 21"            | 2           | 21"            | 33 7/8"     | 33 7/8"       | 33 7/8"     |
| Height           |           | 9"          | 10     | ) 3/4" 10 3       | 3/4" 1    | 12 1/4"        | 12 1/4"       |             | 15 1/2"    | 15 1/2         | "1          | 6"             | 28 1/2"     | 28 5/8"       | 28 5/8"     |
| Weight           |           | 57 lbs      | 9      | 5 lbs 117         | lbs 1     | 150 lbs        | 163 lbs       | 2           | 270 lbs    | 320 lb         | s 496       | 6 lbs          | 1111 lbs    | 1111 lbs      | 1550<br>Ibs |
| Noise Le         | evel      | 62          |        | 67 6              | 7         | 70             | 70            |             | 73         | 74             | -           | 78             | 80          | 80            | 81          |
| Inlet<br>Connect | tion      | 1/2"<br>NPT | 1<br>1 | 1/4" 11<br>NPT NF | /4"<br>PT | 1 1/4"<br>NPT  | 1 1/4" NP     | т 2         | 2" NPT     | 2" NP          | Г 2"        | NPT            | 3" NPT      | 3" NPT        | 3" NPT      |

1 1/2" NPT

1800

1 1/2" NPT

1800

2" NPT

1800

3" NPT

1200

3" NPT

1200

3" NPT

1200

1 1/4" NPT

1800

#### SYSTEM COMPONENTS/MAINTENANCE

Efficiency and safety are the primary concerns when selecting components for the vacuum pump package. Products of inferior quality may hinder performance of the unit and could cause system failures that result in bodily harm or even death. Select only top quality components for your system. Call Ohio Medical Corporation at 800-448-0770 for quality parts and professional advice.

The vacuum pumps require very little maintenance. To ensure optimum performance, the following maintenance steps and components should be utilized.

#### Vacuum Inlet Filter

Depending on the application the pump(s) may be equipped with a special intake filter. The intake filter should be monitored on a weekly basis. Proper cleaning is necessary to prevent foreign particles from entering the pump.

Remove the clamps on the filter, and remove the cartridge. Care should be taken not to knock or jar the cartridge, which could lead to foreign matter entering the pump suction port. A horizontal filter installation is recommended to prevent this. Remove any loose particles from the filter canister. The cartridge can be cleaned with an air hose. The cartridge will need replacing, if it is extremely dirty or shows signs of moisture.

#### Check Valves

Check valves are designed to prevent back-flow of air pressure in the vacuum air system (air flows freely in one direction only). The check valve must be properly sized for airflow and temperature. Do not rely upon a check valve to isolate a vacuum pump from a pressurized tank during maintenance procedures.

#### WARNING!

The anti suck back valve does not replace the need for a check valve or shut off valve in the vacuum system. For duplex or larger systems where more than one pump can operate it is necessary to install a manual or automatic operated inlet valve.

#### Vacuum Inlet Isolation Valve

The vacuum inlet isolation valve blocks the flow of air, in either direction, allowing maintenance to the individual vacuum pump(s).

A manual drain valve is located at the bottom of the air receiver to allow for moisture drainage, extend piping away from the system to provide safe and convenient removal of excess moisture.

#### DANGER!

ASME coded pressure vessels must not be modified, welded, repaired, reworked or subjected to operating conditions outside the nameplate rating. Such action will negate code status, affect insurance status and may cause death, severe injury or property damage.

#### Gas Ballast Valve

All "SD" pumps are equipped with a gas ballast valve. Its main function is to prevent water vapor from condensing in the pump that causes emulsification of the lubricating oil resulting in possible pump seizure.

The gas ballast valve in the open position allows pumping condensable vapors, thus preventing condensation.

If pumping water vapor, the vacuum pump water vapor tolerance is stated in terms of the highest absolute pressure at which the pump can handle 100% water vapor. This means that water vapor on the inlet will exhaust without any condensation occurring in the pump even though the load is 100% water vapor, providing the pump is operating between 28.7"Hg and 29.9"Hg.

To remove the vapor, prior to shutdown, run the pump with the suction blanked off for 30 minutes.

#### Exhaust Filter

The exhaust filters should be replaced 1500-2000 hours or when pressure exceeds 7 PSIG. The exhaust filter life will vary depending on the application. If the exhaust filter begins to burn oil or foreign material is lodge in the exhaust filter it will be necessary to change the element. Other indicating factors to watch for are excessive smoke and oil mist on the exhaust of the pump, an increase in amps and oil leaking from the gas ballast valve on the SD series.

Do not clean or reuse these filters. Filters must be disposed of properly as they may contain toxic substances carried over from the process. When replacing the exhaust filter element also replace the o-rings.

#### EXHAUST VALVE AND EXHAUST BOX OIL RESERVOIR

The "SD" (deeper) vacuum pumps have an anti suckback valve which is open while in operation. The gas is compressed and then pushed out through the exhaust valves.

The "S" (medium range) vacuum pumps do not have exhaust valves. As the gas is compressed it is forced out through the exhaust box. After the compressed gas and oil is displaced into the exhaust box it passes through the oil demister pad. The oil demister captures the large oil droplets, which then flow back to the bottom of the exhaust box. The remaining oil residue is captured by the exhaust filter elements. The exhaust filter elements separates the exhaust air and oil to 99.9%.

The number of exhaust elements varies depending on the pump size. See the specific part listing for the correct part number and quantity.

As the exhaust element separates the oil, droplets will collect on the outside of the filter. The oil will then accumulate on the low end of the upper half of the exhaust box. When the "SD" series (deeper vacuum pump) is operating, the oil will be drained back to the oil sump through the oil return valves.

On the "S" series pumps (medium range vacuum pumps) accumulated oil passes through the inlet flange continuously during operation via the oil return line. The oil return line is tied into the exhaust box, which is located downstream of the exhaust filter and is open to atmospheric pressure. This allows a constant amount of air sucked into the pump.

#### Lubrication

The pump should be mounted on an even grade before measuring the lubrication level. With the pump operating and the inlet closed, the oil sight glass should be at the max-mark.

Oil levels should be inspected daily. If the oil level falls below the max-mark, oil should be added through oil fill port.

The pump must be shut down long enough to allow the oil to return to the oil sump before adding oil. Do not add oil while the pump is in operation, hot oil vapor may emit through the oil fill port and cause injury. Never add oil through the inlet or exhaust ports. Never over fill the pump with oil. Use the sight glass to determine proper fill levels. The gasket should be properly seated and secured before replacing the oil fill plug.

#### Oiling system

To achieve the most effective operating conditions proper lubrication is necessary. As vacuum is created within the pump housing it draws oil from the oil reservoir to the pump end plates and through the vacuum pump. The oil tubing is sized to effectively distribute oil to the pump housing, which provides a seal between the vanes and the pumping chamber. At the same time oil is drawn through the automotive oil filter.

| MODEL NUMBER             | OIL CAPACITY GALLONS | STANDARD GALLON | STANDARD 5 - GALLONS |
|--------------------------|----------------------|-----------------|----------------------|
| SD1/S1/S1L(1PH)/S1L(3PH) | 1/8                  | 249206          | 249207               |
| SD2/S2/SD3L/S3L          | 1/4                  | 249223          | 249224               |
| SD3/S3/SD5LB/S5LB        | 1/2                  | 249223          | 249224               |
| SD5C/S5C/SD7C/S7C        | 1 1/2                | 249223          | 249224               |
| SD10B/S10B               | 2                    | 249223          | 249224               |
| S15/SD15                 | 5                    | 249223          | 249224               |
| S20/SD20                 | 5                    | 249223          | 249224               |
| S25/SD25                 | 5                    | 249223          | 249224               |

- SD1/S1 uses a 10 wt non-detergent oil
- All other models use a 40 wt synthetic oil

#### CAUTION!

Over filling the pump with oil may result in misting. If the filter is oil soaked it must be replaced.

It should not be necessary to add or drain oil under normal operating conditions between oil changes.

Should a significant drop in oil occur, it could indicate there is an oil leak, a leaking anti suck back or inlet check valve, or the exhaust filter needs to be changed. If the exhaust filter needs to be changed, the pump will be exhausting an excessive amount of smoke.

It is normal for the pump oil to be light in color and be foamy when the pump is in operation.

If the pump oil appears to be milky or white in color, it is a signal water vapor may be present in the oil. To remove the water vapor, run the pump with the suction blanked off for an extended period of time.

If the oil is contaminated it will be dark in color and it will be necessary to change the oil.

#### Oil Change

The oil should be checked on a weekly basis for contamination. This can be accomplished by shutting down the pump and draining oil through the oil drain port.

Before an oil change the pump should operate at least fifteen minutes to allow the oil to warm up. After the oil has had sufficient time to warm up, turn the pump off and drain the oil through the drain plug.

Collect the remaining oil with a rag placed in front of the drain plug. It will be necessary to flush the pump if the oil is contaminated. Drain the contaminated oil through the drain port and refill the pump with clean oil through the oil filling port. Allow the pump to operate at least thirty minutes. Turn the pump off and drain all the oil. It may be necessary to repeat this operation to thoroughly flush out all the oil. After the pump has been successfully cleaned it will be necessary to replace the oil filler. Replace and tighten the oil drain plug. Fill the pump with clean fresh oil, through the oil fill port, careful observing the oil sight glass. Do not overfill. Replace the oil fill gasket, ensuring proper seating and then replace the oil fill plug and exhaust pressure gauge.

#### CAUTION!

Oil capacity can vary depending on proper drainage. The gasket should be properly seated and secured before replacing the oil fill plug.



|                               |             | Pre-Start Up Ch    | neck list   |                |              |             |  |  |  |  |
|-------------------------------|-------------|--------------------|-------------|----------------|--------------|-------------|--|--|--|--|
| SO#:                          |             | •                  | Date:       |                |              |             |  |  |  |  |
| Facility:                     |             |                    | Contact P   | erson:         |              |             |  |  |  |  |
| Address:                      |             |                    | Company:    |                |              |             |  |  |  |  |
| City:                         |             |                    | Signature:  |                |              |             |  |  |  |  |
| State:                        |             |                    | Phone:      |                |              |             |  |  |  |  |
|                               |             |                    | T Hone.     |                |              |             |  |  |  |  |
| Air & Vacuum System(s)        |             |                    |             |                |              |             |  |  |  |  |
|                               |             |                    | System      | #1             | #2           | #3          |  |  |  |  |
|                               |             |                    | Model#      |                |              |             |  |  |  |  |
|                               |             |                    | Serial#     |                |              |             |  |  |  |  |
|                               |             |                    |             | Yes/No/NA      | Yes/No/NA    | Yes/No/NA   |  |  |  |  |
| System is properly anchored   | to house    | ekeeping pad:      |             |                |              |             |  |  |  |  |
| Electrical wiring is complete | and powe    | er is available:   |             |                |              |             |  |  |  |  |
| Piping connections are comp   | olete with  | "flex connectors"  | :           |                |              |             |  |  |  |  |
| Water connections are comp    | lete with   | "pressure reducir  | ng valves": |                |              |             |  |  |  |  |
| Dew Point and/or CO Monito    | ors are ins | stalled and ready  | for power:  |                |              |             |  |  |  |  |
|                               |             | ,                  | •           | LI             |              | I           |  |  |  |  |
| Gas Manifold System(s)        |             |                    |             |                |              |             |  |  |  |  |
|                               |             |                    | System      | #1             | #2           | #3          |  |  |  |  |
|                               |             |                    | Model#      |                |              |             |  |  |  |  |
|                               |             |                    | Serial#     |                |              |             |  |  |  |  |
|                               |             |                    |             | Yes/No/NA      | Yes/No/NA    | Yes/No/NA   |  |  |  |  |
| Manifold is properly anchore  | d to floor  | and/or wall:       |             |                |              |             |  |  |  |  |
| Electrical wiring is complete | and powe    | er is available:   |             |                |              |             |  |  |  |  |
| Gas cylinders are in place ar | nd installe | ed on the manifold | 1:          |                |              |             |  |  |  |  |
|                               |             |                    |             | <u> </u>       | J            |             |  |  |  |  |
|                               |             | Master & Area      | Alarms      |                |              |             |  |  |  |  |
| ·                             |             |                    |             |                |              |             |  |  |  |  |
| All sensors & switches        |             |                    |             |                |              |             |  |  |  |  |
| monitoring gas pressures      |             |                    | Туре        | Loca           | ation        | Yes/No      |  |  |  |  |
| are wired and piped.          |             |                    | Area        |                |              |             |  |  |  |  |
| Type Location                 | Yes/No      |                    | Area        |                |              |             |  |  |  |  |
| Master                        |             |                    | Area        |                |              |             |  |  |  |  |
| Master                        |             |                    | Area        |                |              |             |  |  |  |  |
| Area                          |             |                    | Area        |                |              |             |  |  |  |  |
| Area                          |             |                    |             |                |              |             |  |  |  |  |
| Area                          |             | Note: Start-u      | o & In-serv | vice Training  | g of system  | s will be   |  |  |  |  |
| Area                          |             | scheduled duri     | ng normal   | business h     | ours betwe   | en 8:00am   |  |  |  |  |
| Area                          |             | & 4:30pm. l        | ncomplete   | installatior   | n or personr | nel not     |  |  |  |  |
| Area                          |             | available for f    | raining wi  | ll result in r | escheduline  | g and an    |  |  |  |  |
| Area                          |             |                    | additional  | charge will    | apply.       |             |  |  |  |  |
|                               |             |                    |             |                | · 1- 1 7 ·   | Sign & Date |  |  |  |  |
|                               |             | Signature Requir   | ed          |                |              |             |  |  |  |  |

570075 (Rev 5) 580217

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MACHINE DATA **Toll Free:** 800-448-0770 Make & Model: Service: Ext. 6279 Serial #: H.P.: **Customer Support:** Ext. 6211 Lubricant: Capacity: **Tech Support:** Ext. 6234 Air Filter #: Oil Filter #: Separator #:

| Maintenance Log |       |                |         |                  |  |  |  |  |  |
|-----------------|-------|----------------|---------|------------------|--|--|--|--|--|
| Date            | Hours | Work Performed | Done By | Next Service Due |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
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|                 |       |                |         |                  |  |  |  |  |  |
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|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
|                 |       |                |         |                  |  |  |  |  |  |
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|                 |       |                |         |                  |  |  |  |  |  |

579020 (Rev 1)

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#### TROUBLESHOOTING GUIDE

| SYMPTOM   | PROBLEM CAUSE  | SUGGESTED REMEDY   |
|---|--|--|
| Pump can not maintain or<br>reach<br>required vacuum level. | Check oil for contaminates.  | Drain oil from vacuum pump.<br>Flush<br>pump and fill with new oil.<br>It may be necessary to replace oil<br>filter. Turn pump on, run for 20-30<br>minutes, and take vacuum<br>reading. |
|   | Vacuum piping may not be leak tight.   | Check piping for loose connections.  |
|   | Inlet screen may be plugged.   | Remove and clean inlet screen.<br>Replace if necessary.  |
|   | Low oil level, or no oil in<br>reservoir. Inspect Discharge<br>exhaust filter chamber in oil<br>sump for oil build up due to<br>plugged return line. | Turn pump off, drain remaining oil.<br>Replace oil filter and refill pump<br>with<br>fresh oil.  |
|   | Contamination may be causing<br>inlet valve plate to remain<br>partially open or closed.   | Clean inlet valve and screen.  |
|   | Leaking or defective oil tubing.   | Retighten or replace oil tubing or fittings.   |
|   | Shaft seal leaking.  | Check shaft seal, clean or replace as necessary.   |
|   | Vanes may be damaged or not positioned in rotor properly.  | Replace or free vanes.   |
|   | Dirty or clogged oil filter .  | Install new oil filter, replace with fresh oil if necessary.   |
| Pump starts, has high<br>amps.                              | Pump operating in the wrong<br>rotation. Check Exhaust piping<br>for closed valve or restriction.  | Check for correct rotation, pump<br>should be operating in a counter<br>clock-wise rotation when viewing<br>from the motor fan cover.  |
|   | Loose motor terminals; Motor coils improperly connected.   | Tighten loose terminals; check motor wiring diagram.   |
|   | Oil level too high, or improper oil.   | Check sight glass, see oil level<br>and oil recommendations on page<br>9 & 12.   |
|   | Inlet filter is clogged due to foreign material.   | Consult factory for<br>recommendation on proper filter<br>cartridge.   |

#### IF YOUR SYSTEM IS DOING THIS:



Providing a low level of performance.

#### WE SUGGEST YOU CHECK THIS:

A. If your system is equipped with a vacuum relief valve, it could be stuck open. The purpose of the relief valve is to open to atmosphere if the vacuum level achieved exceeds the desired level, thereby protecting the pump and other system components. However, if the vacuum relief valve seat is dirty or stuck open, the vacuum pump will always pull air from atmosphere, reducing the desired level of vacuum.

B. The system could also have a defective inlet check valve. If it is partially stuck closed, this could impede the amount of flow through the vacuum line, reducing performance. If you have a multiplex system and one of the inlet check valves is stuck open, the other pump could be pulling vacuum through the pump with the bad valve, instead of only evacuating the process line. This situation could also cause reduced vacuum performance.

C. Your vacuum pump may also have clogged exhaust filters. Their purpose is to eliminate oil mist from the discharge line. However, if they become clogged with contaminant's, this could create excessive back pressure, resulting in poor performance.

D. Your pump could have worn vanes. Each time the pump is energized, the vanes slide out of the rotor and contact the cylinder wall. When the vanes become worn, they will contribute to reduced pump performance and will need to be changed. If the vanes become very worn, they could come out of the rotor when energized and create severe pump damage.

IF YOUR SYSTEM IS DOING THIS:



Experiencing oil blowby.

WE SUGGEST YOU CHECK THIS:

A. The vacuum pump could have a defective discharge exhaust filter. For example, the filter could have a broken seam, allowing oil to flow past the filter and into the exhaust line.

B. The exhaust filter could be loose or not seated correctly. A worn or unseated gasket seal could be the cause. Like situation A above, the oil would be able to escape past the filter and into the exhaust line.

C. It could be that the vacuum pump is operating at too low a vacuum level. In such a situation, the pump could be moving an excessive level of air flow, or CFM, allowing a substantial amount of oil to escape out the discharge.

D. The pump could have a clogged scavenger line. Most rotary vane pumps have scavenger lines that scavenge the oil that normally passes the exhaust filters back to the pumping chamber.

IF YOUR SYSTEM IS DOING THIS:



Generating excessive heat.

WE SUGGEST YOU CHECK THIS:

A. Your pump may have a clogged oil to air heat exchanger. If the oil to air heat exchanger is not clean and clear the heat exchanger will not function properly. The heat exchanger must be able to suspend the oil and allow air to pass over the fins to properly cool the oil.

B. The vacuum system may be subject to heat generated by other equipment in the room. This can be the case in mechanical rooms that have a lot of mechanical equipment located close together. Vacuum systems require a minimum amount of open space around them for ventilation and service. Make sure that your vacuum system is not directly in the path of heat rejection from other equipment.

C. The ambient temperature in the room may be too high. Most rotary vane vacuum pumps and systems are air cooled. One of the necessary conditions for effective heat control is proper room temperature. The room where your system is located may require additional ventilation or an external source of cooling brought to the room. Make sure to follow manufacturers recommendations regarding maximum allowable ambient temperatures for your system.

D. You may consider retrofitting your pumps for liquid cooling. If your facility has a source of chilled water, you may be able to liquid cool the pump oil through a liquid to liquid heat exchanger.

E. You may also consider the use of synthetic oil if allowed by the pump manufacturer. Many synthetic oils are more tolerant to high temperatures, resulting in less oil break down and possible longer service intervals.

IF YOUR SYSTEM IS DOING THIS:



Frequent starts and stops.

WE SUGGEST YOU CHECK THIS:

A. Your system may have a worn vacuum switch. This could result in sending signals to the motor to start and stop more frequently than necessary.

B. If your system is a multiplex system, the pump other than the one starting and stopping excessively could have a defective check valve on it. If it is stuck open, the valve may cause the other pump to start and stop excessively, as it is trying to maintain vacuum from a partially open vacuum line.

C. The system vacuum switches could be set at differential pressures that are too close together. The closer the differential pressures are set, the more the pumps will be energized, attempting to meet the switch settings.

D. No minimum run timer. Some systems, particularly larger ones, operate best when equipped with a minimum run timer. Such a device is designed to ensure that the pump, once energized, will run for a specified minimum time before shutting off. This device is used to help save energy due to excessive power inrush and heating of pump motors.

IF YOUR PUMP IS DOING THIS:



Experiencing high amp draw and motor trip out

#### WE SUGGEST YOU CHECK THIS:

A. Low line voltage. Power consumption is a function of line voltage and amperage draw (P=I x E). If the facility's line voltage dips below required levels, the pump and motor may draw excessive amps, resulting in excessive heat and motor trip out.

B. The motor starter could have a worn or pitted contactor. Such a situation would not allow the contactor to handle the proper level of amperage, causing it to interrupt power to the motor prematurely.

C. There could be a loose wire in the main power feed or the circuit to the pump motor. Loose or inadequate wire connections will cause excessive resistance and subsequent high amp draw.

D. Your pump could have restricted discharge filters. This condition could cause excessive back pressure, resulting in high amp draw and motor trip out.

E. Your pump could also have highly contaminated oil due to the ingestion of particulates. Such oil breakdown could cause the pump's motor to trip.

F. A weak motor. If the pump's motor is old, it could become weak due to numerous occasions of heating and cooling. The motor may need to be replaced.

IF YOUR PUMP IS DOING THIS:



Making a loud chattering noise.

WE SUGGEST YOU CHECK THIS:

A. The pump's vanes may be worn and need replacing. Whether your rotary vane pump is oil sealed or dry running, the vanes will eventually wear. The chattering noise could be caused by the excessive travel required when vanes are worn past the manufactures specifications.

B. The pump's cylinder may be wash boarded due to contaminated oil or the ingestion of particulates into the pumping chamber. Due to the tight clearance between the vanes and rotor slots, contaminated oil or particulates in the pump's cylinder could cause the vanes to come out of the rotor slots on an angle, damaging the vanes, cylinder, or both.



Rotor & Vane Dimensions Figure 1

| Туре | Hou   | ising - Rot  | or Dimens    | ions         |    |                  |        |                       | Va     | ne Dimensio  | ons              |
|------|-------|--------------|--------------|--------------|----|------------------|--------|-----------------------|--------|--------------|------------------|
| TR   | LG    | ± 0.05<br>DG | ± 0.01<br>LR | ± 0.01<br>DR | а  | с                | f      | Total Axial Clearance | Length | Width<br>(b) | Thickness<br>(h) |
| S1   | 2.75  | 2.67         | 2.75         | 2.28         | .2 | .0024<br>.0017   | .00079 | Max0032<br>Min0031    | 2.75   | .70          | .149             |
| S2   | 4.33  | 3.93         | 4.33         | 3.38         | .2 | .0044<br>.0036   | .00118 | Max00531<br>Min00358  | 4.32   | 1.18         | .149             |
| S3L  | 6.30  | 3.94         | 6.30         | 3.38         | .2 | .0047<br>.0039   | .00118 | Max00571<br>Min00393  | 6.29   | 1.18         | .149             |
| S3   | 4.33  | 4.92         | 4.33         | 4.14         | .2 | .0044<br>.0036   | .00118 | Max00531<br>Min00358  | 4.33   | 1.57         | .149             |
| S5LB | 6.30  | 4.92         | 6.30         | 4.13         | .2 | .0047<br>.0039   | .00118 | Max00571<br>Min00393  | 6.29   | 1.57         | .149             |
| S5C  | 7.09  | 5.59         | 7.09         | 4.61         | .2 | .00039<br>0      | .00157 | Max00709<br>Min00590  | 7.08   | 1.97         | .157             |
| S7C  | 9.45  | 5.59         | 9.45         | 4.61         | .2 | .00079<br>0      | .00157 | Max00079<br>Min00669  | 9.45   | 1.97         | .157             |
| S10B | 8.66  | 7.09         | 8.66         | 5.98         | .2 | .00626<br>.00512 | .00157 | Max00740<br>Min00512  | 8.65   | 2.05         | .230             |
| S15  | 10.43 | 10.03        | 10.43        | 8.42         | .2 | .00827           | .00197 | Max00953<br>Min00622  | 10.43  | 2.83         | .230             |
| S20  | 10.43 | 10.12        | 10.43        | 8.42         | .2 | .00827<br>.00622 | .00197 | Max00953<br>Min00622  | 10.43  | 2.83         | .230             |
| S25  | 15.75 | 10.12        | 15.74        | 8.42         | .2 | .00393<br>.00622 | .00197 | Max01185<br>Min00819  | 15.74  | 2.83         | .230             |





### EXHAUST VALVE ASSEMBLY FIGURE 2

| Item No. | Pos. No. | Description | Qty |
|----------|----------|-------------|-----|
| 1        | 159.1    | Fixed Bolt  | 1   |
| 2        | 159.2    | Washer      | 1   |
| 3        | 159.3    | Spring      | 1   |
| 4        | 159.4    | Plate       | 1   |
| 5        | 159.5    | Lock Nut    | 1   |
| 6        | 159.6    | Seat Plate  | 1   |



## S1L PUMP MODULE

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx



## S1L OIL SEPARATOR HOUSING

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx



## S1L DRIVE MOTOR ASSEMBLY

| Pos. No. | Description                        | Squire No | Qty | Pos. No. | Description                             | Squire No |
|----------|------------------------------------|-----------|-----|----------|---|-----------|
| 1        | Cylinder                           | 262081    | 1   | 222      | Elbow hydraulic fitting                 | 262120    |
| 15       | Rotor                              | 262084    | 1   | 223      | Straight hydraulic fitting              | 262121    |
| 18       | Sleeve, Bearing                    | 262085    | 2   | 231      | Oil tube(B)                             | 262123    |
| 22       | Vane                               | 262086    | 3   | 233      | Elbow hydraulic fitting                 | 262122    |
| 25       | A-end plate                        | 262087    | 1   | 240      | Cooling spiral                          | 262124    |
| 26       | B-end plate                        | 262088    | 1   | 251      | Check valve plate                       | 262125    |
| 30       | Bearing                            | 262090    | 2   | 252      | Check valve guide                       | 262126    |
| 35       | Shaft seal                         | 262091    | 2   | 253      | O-Ring, Check val ve plate              | 262127    |
| 36       | O-Ring, Bracket                    | 262226    | 1   | 254      | Check valve spring                      | 262128    |
| 37       | Bracket                            | 262227    | 1   | 255      | Plug, Oil fill                          | 262129    |
| 38       | Hexagon head screw                 | 262238    | 3   | 260      | Inlet flange                            | 262130    |
| 50       | O-Ring, End plate                  | 262092    | 2   | 261      | Inlet screen                            | 262131    |
| 53       | Hexagon head screw                 | 262093    | 6   | 262      | Retaining ring for bores                | 262132    |
| 54       | Spring lock washer                 | 262094    | 6   | 265      | Hexagon head screw                      | 262134    |
| 60       | Taper pin                          | 262095    | 4   | 266      | Spring lock washer                      | 262094    |
| 65       | Shaft key                          | 262096    | 1   | 270      | Plug (SD Series Only)                   | 262136    |
| 75       | Oil sump                           | 262097    | 1   | 275      | Oil return valve (SD Series Only)       | 262137    |
| 83       | Oil sight glass                    | 262099    | 2   | 276      | Sealing ring (S & SD Series)            | 262138    |
| 84       | Gasket, Oil sight glass            | 262100    | 2   | 285      | Hollow-core screw (S Series Only)       | 262139    |
| 88       | O-Ring, Exhaust filter             | 262101    | 1   | 286      | Banjo fitting (S Series Only)           | 262140    |
| 89       | O-Ring, Oil fill plug              | 262102    | 1   | 288      | Sealing ring (S Series Only)            | 262257    |
| 95       | O-Ring, Inlet part                 | 262103    | 1   | 290      | Return oil tube (S Series Only)         | 262142    |
| 96       | O-Ring, Oil drain plug             | 262104    | 1   | 291      | Elbow hydraulic fitting (S Series Only) | 262120    |
| 120      | Exhaust filter                     | 262105    | 1   | 300      | Motor mounting bracket                  | 262144    |
| 121      | O-Ring, Exhaust filter             | 262106    | 1   | 301      | Allen bolt                              | 262145    |
| 125      | Filter spring                      | 262107    | 1   | 302      | Spring lock washer                      | 262094    |
| 126      | Slotted cheese head screw          | 262108    | 1   | 311      | Coupling, pump side                     | 262148    |
| 145      | Exhaust cover (w/ threaded flange) | 262222    | 1   | 312      | Coupling insert                         | 262150    |
| 150      | Gasket, Exhaust cover              | 262250    | 1   | 313      | Coupling, Motor side                    | 262152    |
| 155      | Allen bolt                         | 262212    | 4   | 316      | Set screw                               | 262412    |
| 156      | Outlet screen                      | 262276    | 1   | 317      | Set screw                               | 262412    |
| 159      | Exhaust valve ass'y                | 262112    | 1   | 400      | Motor                                   | 262155    |
| 159.1    | Exhaust valve fixed bolt           | 262484    | 1   | 400.3    | Motor fan blade                         | 262316    |
| 159.2    | Exhaust valve washer               | 262205    | 1   | 400.4    | Motor fan cover                         | 262394    |
| 159.3    | Exhaust valve spring               | 262485    | 1   | 401      | Hexagon head screw                      | 262093    |
|          | Check Valve Assembly               | 262840    | 1   |          | Conversion Kit To SD1                   | 262823    |

#### PARTS LIST - S1/SD1

Qty

Ohio Medical Corporation - 1111 Lakeside Drive, Gurnee, IL, 60031-4099 O & M Manual For Rotary Vane Vacuum Pumps & Systems #255450 (Rev. 2) 2/2009



### S2/S3L & SD2/SD3L PUMP MODULE

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx

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# S2/S3L & SD2/SD3L OIL SEPARATOR HOUSING

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx



# S2/S3L & SD2/SD3L MOTOR DRIVE ASSEMBLY

| Pos.<br>No. | Description  | Squire<br>No. | Qty | Pos.<br>No. | Description   | Squire<br>No. | Qty |
|-------------|--|---------------|-----|-------------|---|---------------|-----|
| 1           | Cylinder (S2/SD2)  | 262082        | 1   | 106         | Oil sump cover gasket (S3L/SD3L) (From                        | 262909        | 1   |
| 1           | Cylinder (S3L/SD3L)  | 262163        | 1   | 100         | pump serial # xxxx0581)                                       | 202303        |     |
| 15          | Rotor (S2/SD2)   | 262180        | 1   | 107         | Allen bolt (S2/SD2)   | 262212        | 4   |
| 15          | Rotor (S3L/Sd3L)   | 262171        | 1   | 107*        | Allen bolt (S3L/SD3L) (Up to pump serial                      | 262212        | 4   |
| 18          | Sleeve, Bearing  | 262181        | 2   | 107         | #01100571)  | 202212        | 4   |
| 22          | Vane (S2/SD2)  | 262182        | 3   | 107*        | Allen bolt (S3L/SD3L) ( from pump serial                      | 262212        | 6   |
| 22          | Vane (S3L/SD3L)  | 262383        | 3   | 107         | # xxxx0581)   | 202212        | 0   |
| 25          | A-end plate  | 262183        | 1   | 108         | Sealing ring  | 262213        | 4   |
| 26          | B-end plate  | 262184        | 1   | 120         | Exhaust filter  | 262214        | 1   |
| 30          | Bearing  | 262185        | 2   | 121         | O-Ring, Exhaust filter  | 262106        | 1   |
| 35          | Shaft seal   | 262186        | 2   | 125         | Filter spring   | 262107        | 1   |
| 42          | Supporting ring  | 262187        | 2   | 126         | Slotted cheese head screw                                     | 262108        | 1   |
| 43          | Hexagon head screw   | 262188        | 4   | 136         | Gasket, Service cover   | 262217        | 1   |
| 46.1        | Sealing ring   | 262174        | 2   | 137         | Sealing ring  | 262213        | 4   |
| 46.2        | Sealing ring   | 262174        | 2   | 138         | Allen bolt  | 262212        | 4   |
| 46.3        | Sealing ring (For SD Only)   | 262174        | 2   | 139         | Service cover   | 262220        | 1   |
| 47          | Plug (For S Only)  | 262136        | 1   | 143         | Sealing ring  | 262213        | 4   |
| 50          | O-Ring, End plate  | 262191        | 2   | 145         | Exhaust cover (w/ threaded flange)                            | 262222        | 1   |
| 53          | Hexagon head screw   | 262192        | 6   | 150         | Gasket, Exhaust_cover   | 262250        | 1   |
| 54          | Spring lock washer   | 262116        | 6   | 155         | Allen bolt  | 262212        | 4   |
| 60          | Taper pin  | 262194        | 4   | 156         | Outlet screen   | 262276        | 1   |
| 63          | Plug   | 262136        | 1   | 159         | Exhaust valve ass'y   | 262112        | 2   |
| 65          | Shaft key  | 262197        | 1   | 159.1       | Exhaust valve fixed bolt                                      | 262484        | 2   |
| 75          | Oil sump   | 262199        | 1   | 159.2       | Exhaust valve washer  | 262205        | 2   |
| 78*         | Steel Demister   | N/A           |     | 159.3       | Exhaust valve spring  | 262485        | 2   |
| 79          | Sheet metal baffle   | 262201        | 1   | 159.4       | Exhaust valve plate   | 262486        | 2   |
| 83          | Oil sight glass  | 262099        | 1   | 159.5       | Exhaust valve lock nut  | 262487        | 2   |
| 84          | Gasket, Oil sight glass  | 262100        | 1   | 159.6       | Exhaust valve seat plate                                      | 262280        | 2   |
| 88          | Plug, Oil fill   | 262101        | 1   | 185         | Gasket, Cylinder  | 262228        | 1   |
| 89          | O-Ring, Oil fill plug  | 262102        | 1   | 186         | Stud  | 262229        | 4   |
| 95          | Plug, Oil drain  | 262103        | 1   | 187         | Spring lock washer  | 262116        | 4   |
| 96          | O-Ring, Oil drain plug   | 262104        | 1   | 191         | Hexagon nut   | 262231        | 4   |
| 99          | Threaded fitting   | 262208        | 1   | 221*        | BSLM hydraulic fitting  | 262904        | 1   |
| 100         | Oil filter   | 262209        | 1   | 222*        | Straight hydraulic fitting                                    | 262908        | 1   |
| 105         | Oil sump cover plate (S2/SD2)  | 262210        | 1   | 223*        | Elbow hydraulic fitting                                       | 262907        | 1   |
|             | Oil sump cover plate (S3L/SD3L) (up to                               |               |     | 230*        | Oil tube(A)   | 262906        | 1   |
| 105^        | pump serial # 01100571)  | 262210        | 1   | 231*        | Oil tube(B)   | 262905        | 1   |
|             | Oil sump cover plate (S3L/SD3L) (From                                |               |     | 233*        | BSLM hydraulic fitting  | 262904        | 1   |
| 105*        | pump serial # xxxx0581)  | 262910        | 1   |             | Inlet flange, lower housing (Before Serial                    |               |     |
| 106         | Gasket, Oil sump cover (S2/SD2)                                      | 262211        | 1   | 250*        | Number 0203-2601)   | 262240        | 1   |
| 106         | Gasket, oil sump cover (S3L/SD3L) ( Up<br>to pump serial # 01100571) | 262211        | 1   | 250*        | Inlet flange, lower housing (From Serial<br>Number 0203-2601) | 262903        | 1   |

| Pos. No. | Description                          | Squire No. | Qty | 1 | Pos. No. | Description                             | Squire No. |
|----------|--------------------------------------|------------|-----|---|----------|---|------------|
| 251*     | Check valve plate                    | 262902     | 1   | 1 | 400.3    | Motor Fan (IEC)                         | 262207     |
| 252*     | Check valve guide                    | 262901     | 1   | 1 | 400.4    | Motor Fan Cover (IEC)                   | 262215     |
| 253      | O-Ring, Check valve plate            | 262243     | 1   | 1 | 401      | Hexagon head screw                      | 262192     |
| 254*     | Check valve spring                   | 262900     | 1   | 1 | 402      | Spring lock washer                      | 262116     |
| 255      | O-Ring, Inlet part                   | 262245     | 2   | 1 | 415      | Hexagon nut                             | 262231     |
| 260      | Inlet flange, upper housing          | 262246     | 1   | 1 | 416      | Slotted set screw                       | 262166     |
| 261      | Inlet screen                         | 262247     | 1   | 1 | 417      | Slotted set screw                       | 262460     |
| 265      | Allen bolt                           | 262248     | 4   | 1 | 421      | Rubber foot                             | 262168     |
| 266      | Spring lock washer                   | 262094     | 4   | 1 | 423      | Spring lock washer                      | 262116     |
| 270      | Plug (For SD Only)                   | 262136     | 1   | 1 | 425      | Washer                                  | 262673     |
| 275      | Oil return valve (For SD Only)       | 262137     | 1   | 1 | 430      | Name plate                              | 262667     |
| 276      | Sealing ring (For SD Only)           | 262138     | 1   | 1 | 431      | Directional arrow label                 | 262172     |
| 285      | Hollow-core screw ( For S Only)      | 262139     | 1   | 1 | 470      | BSLM hydraulic fitting (For SD Only)    | 262232     |
| 286      | Banjo fitting (For S Only)           | 262140     | 1   | 1 | 471      | Oil tube(C) (For SD Only)               | 262409     |
| 310      | Coupling                             | 262264     | 1   | 1 | 472      | Nonreturn valve (For SD Only)           | 262410     |
| 311      | Coupling, pump side                  | 262267     | 1   | 1 | 474      | Air filter (For SD Only)                | 262414     |
| 312      | Coupling insert                      | 262266     | 1   | 1 | 480      | Gas Ballast Ass'y                       | 262218     |
| 313      | Coupling, Motor side                 | 262265     | 1   | ] | 490      | Gasket Set                              | 262219     |
| 316      | Set screw                            | 262412     | 1   | ] | 500      | Maintenance Kit (S2/SD2)                | 262075     |
| 317      | Set screw                            | 262412     | 1   | ] | 500      | Maintenance Kit (S3L/SD3L)              | 262076     |
| 321*     | Fan, Pump shaft end                  | 264148     | 1   | 1 | 600*     | Motor(NEMA) (S2/SD2)                    | 262856     |
| 326      | Washer                               | 262269     | 1   | ] | 600*     | Motor(NEMA) (S3L/SD3L)                  | 262863     |
| 327      | Hexagon head screw                   | 262206     | 1   | 1 | 600.3*   | Motor Fan(NEMA) (S2/SD2)                | 262855     |
| 340      | Fan hood                             | 262270     | 1   | ] | 600.3*   | Motor Fan(NEMA) (S3L/SD3L)              | 262862     |
| 341      | Hexagon head screw                   | 262271     | 3   | ] | 600.4*   | Motor Fan Cover(NEMA) (S2/SD2)          | 262854     |
| 288      | Sealing ring (For S Only)            | 262257     | 3   | ] | 600.4*   | Motor Fan Cover(NEMA) (S3L/SD3L)        | 262861     |
| 290      | Return oil tube (For S Only)         | 262258     | 1   | ] | 601*     | Hexagon head screw(NEMA) (S2/SD2)       | 262853     |
| 291      | Elbow hydraulic fitting (For S only) | 262120     | 1   | 1 | 601*     | Hexagon head screw(NEMA) (S3L/SD3L)     | 262860     |
| 300      | Motor mounting bracket (IEC)         | 262261     | 1   |   | 602*     | Spring lock washer(NEMA) (S2/SD2)       | 262852     |
| 301      | Allen bolt                           | 262262     | 3   | 1 | 602*     | Spring lock washer(NEMA) (S3L/SD3L)     | 262859     |
| 302      | Spring lock washer                   | 262193     | 3   | 1 | 613*     | Coupling, Motor side(NEMA) (S2/SD23)    | 262851     |
| 391      | Eye bolt                             | 262272     | 1   | ] | 613*     | Coupling, Motor side(NEMA) (S3L/SD3L)   | 262858     |
| 400      | Motor (IEC) (S2/SD2)                 | 252273     | 1   | ] | 630*     | Motor Mounting Bracket(NEMA) (S2/SD2)   | 262850     |
| 400      | Motor (IEC) (S3L/SD3L)               | 262154     | 1   | ] | 630*     | Motor Mounting Bracket(NEMA) (S3L/SD3L) | 262857     |
|          | Check Valve Assembly                 | 262841     | 1   | ] |          | Conversion Kit S2 To SD2                | 262824     |
|          |                                      |            |     |   |          | Conversion Kit S3L To SD3L              | 262825     |

#### PARTS LIST - S2/SD2 - S3L/SD3L - Continued:

Qty

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## **REPLACEMENT PARTS LIST - S2/SD2 - S3L/SD3L**

| Description  | Part Number |
|--|-------------|
| REPLACEMENT PUMPS  |             |
| S2 Rotary Vane Vacuum Pump w/ 230/460 Volt Motor   | 262065      |
| SD2 Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262058      |
| S2-I M Pump Without Motor (Includes Both Couplinas)  | 262065-LM   |
| S3L Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262066      |
| SD3L Rotary Vane Vacuum Pump w/ 230/460 Volt Motor   | 262059      |
| S3L-I M Pump Without Motor (Includes Both Couplings)   | 262066-LM   |
| 2 HP TFFC WEG Motor - 208-230/460 Volt. 3 Phase, Nema 145TC  | 244250      |
| REPLACEMENT ACCESSORIES  |             |
|  |             |
| Inlet Filter   | 000750      |
| Canister With Element  | 233752      |
| Replacement Element Only   | SCAFC475500 |
| Inlet Check Valve  | 247519      |
| Starter Box With On/Off Switch And Overload  |             |
| 460 Volt Starter   | GV2ME08     |
| Enclosure For Starter  | GV2MC01     |
| 230 Volt Starter   | GV2ME14     |
| Enclosure For Starter  | GV2MC01     |
| S3L/SD3L/S3L-LM  |             |
| 460 Volt Starter   | GV2ME10     |
| Enclosure For Starter  | GV2MC01     |
| 230 Volt Starter   | GV2ME16     |
| Enclosure For Starter  | GV2MC01     |
| Exhaust Filtert (1 Needed)   | 262214      |
| Spin On Oil Filter   | 262209      |
| <b>Filter Kit</b> - (Includes (1) Exhaust Filter, (1) O-ring For Exhaust Filter,<br>Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for |             |
| Oil Filter & Drain Plugs.)   | 264139      |
| Rebuild Kit - (Includes Vanes, Seals, Bearings, Gaskets, Filters, etc.   |             |
| S2/SD2/S2-LM   | 262075      |
| S3L/SD3L/S3L-LM  | 262076      |
| Gasket Kit   | 262219      |
| Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons  | 249224      |
| Liquid Cooling Kit - (Includes 2 Oil Lines, Oil Filter Adapter, Plate  |             |
| Type Heat Exchanger  | 262164      |



# S3/S5LB & SD3/SD5LB PUMP MODULE

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx

Ó^•ơÚ¦[&^••ÂO˘čđ]{ ^}ơÃAFFĩ€Á/¦^^ÂJ, æ∦[, ÄÖ¦ãç^ÂÛčãc^ÂÛčãc^ÂÛčãc^ÂÛ]¦ð;\*•Ã2ØŠÂAGĩ€ÌËCÌGÎ O & M Manual For Rotary Vane Vacuum Pumps & Systems #255450 (Rev. 2) 7/2009



# S3/S5LB & SD3/SD5LB OIL SEPARATOR HOUSING



## S3/S5LB & SD3/SD5LB MOTOR DRIVE ASSEMBLY

Ó^•ơÚ¦[&^••ÂO˘čđ]{ ^}ơÃaFFĩ€Á/¦^^ÂJ, æ∦[, ÄÖ¦ãç^ÂUčãc^ÂUčãc^ÂUčãc ÂH GÂY địc ¦ÂU]¦ðj\*•Ã2oŠÂHCĩ€ÌÈCÌGÎ O & M Manual For Rotary Vane Vacuum Pumps & Systems #255450 (Rev. 2) 7/2009

### PARTS LIST - S3/SD3 - S5LB/SD5LB

| Pos.<br>No. | Description                | Squire<br>No. | Qty | Po:<br>No | s.<br>D | Description  | Squire<br>No. | Qty |
|-------------|----------------------------|---------------|-----|-----------|---------|--|---------------|-----|
| 1           | Cylinder (S3/SD3)          | 262286        | 1   | 13        | 8       | Allen bolt   | 262212        | 4   |
| 1           | Cylinder (S5LB/SD5LB)      | 262159        | 1   | 13        | 9       | Service cover                                      | 262220        | 1   |
| 15          | Rotor (S3/SD3)             | 264154        | 1   | 14        | 3       | Sealing ring                                       | 262213        | 8   |
| 15          | Rotor (S5LB/SD5LB)         | 264155        | 1   | 14        | 5       | Exhaust cover ( threaded flange)                   | 262222        | 1   |
| 18          | Sleeve, Bearing            | 262288        | 2   | 14        | 8       | Exhaust cover (Blocked)                            | 262312        | 1   |
| 22          | Vane (S3/SD3)              | 262289        | 3   | 15        | 0       | Gasket, Exhaust cover                              | 262250        | 2   |
| 22          | Vane (S5LB/SD5LB)          | 262158        | 3   | 15        | 5       | Allen bolt   | 262212        | 8   |
| 25          | A-end plate                | 262290        | 1   | 15        | 6       | Outlet screen                                      | 262276        | 1   |
| 26          | B-end plate                | 262291        | 1   | 15        | 9       | Exhaust valve ass'y                                | 262112        | 2   |
| 30          | Bearing                    | 262292        | 2   | 159       | .1      | Exhaust valve fixed bolt                           | 262484        | 2   |
| 35          | Shaft seal                 | 262293        | 2   | 159       | .2      | Exhaust valve washer                               | 262205        | 2   |
| 42          | Supporting ring            | 262187        | 2   | 159       | .3      | Exhaust valve spring                               | 262485        | 2   |
| 43          | Hexagon head screw         | 262188        | 4   | 159       | .4      | Exhaust valve plate                                | 262486        | 2   |
| 46.1        | Sealing ring               | 262174        | 2   | 159       | .5      | Exhaust valve lock nut                             | 262487        | 2   |
| 46.2        | Sealing ring               | 262174        | 2   | 159       | .6      | Exhaust valve seat plate                           | 262280        | 2   |
| 46.3        | Sealing ring (For SD Only) | 262174        | 2   | 18        | 5       | Gasket, Cylinder                                   | 262335        | 1   |
| 47          | Plug (For S Only)          | 262136        | 1   | 18        | 6       | Stud   | 262229        | 4   |
| 50          | O-Ring, End plate          | 262298        | 2   | 18        | 7       | Spring lock washer                                 | 262116        | 4   |
| 53          | Hexagon head screw         | 262192        | 6   | 19        | 1       | Hexagon nut  | 262231        | 4   |
| 54          | Spring lock washer         | 262116        | 6   | 21        | 9       | St hydraulic fit. 5LB Only                         | 262339        | 1   |
| 60          | Taper pin                  | 262194        | 4   | 22        | 0       | St hydraulic fit. 5LB only                         | 262340        | 1   |
| 63          | Plug                       | 262136        | 1   | 221       | 1*      | BSLM hydraulic fitting                             | 262904        | 1   |
| 65          | Shaft key                  | 262304        | 1   | 222       | 2*      | Straight hydrulic fitting                          | 262908        | 1   |
| 75*         | Oil Sump                   | 264153        | 1   | 223       | 3*      | Elbow hydraulic fitting                            | 262907        | 1   |
| 78          | Steel demister             | 262307        | 1   | 230       | )*      | Oil tube(A)  | 262906        | 1   |
| 79          | Sheet metal baffle         | 262308        | 1   | 231       | 1*      | Oil tube(B)  | 262905        | 1   |
| 83          | Oil sight glass            | 262099        | 1   | 23        | 2       | A-Oil tubing (B) 5LB Only                          | 262347        | 1   |
| 84          | Gasket, Oil sight glass    | 262100        | 1   | 233       | 3*      | BSLM hydraulic fitting                             | 262904        | 1   |
| 88          | Plug, Oil fill             | 262101        | 1   | 24        | 0       | Cooling spiral 5LB Only                            | 262350        | 1   |
| 89          | O-Ring, Oil fill plug      | 262102        | 1   | 250       | )*      | Inlet flange, lower housing                        | 262903        | 1   |
| 95          | Plug, Oil drain            | 262103        | 1   | 251       | 1*      | Check valve plate (Before Serial Number 0203-1501) | 262241        | 1   |
| 96          | O-Ring, Oil drain plug     | 262104        | 1   | 251       | 1*      | Check valve plate (After Serial Number 0203-1501)  | 262902        | 1   |
| 99          | Threaded fitting           | 262208        | 1   | 252       | 2*      | Check valve guide                                  | 262901        | 1   |
| 100         | Oil filter                 | 262209        | 1   | 25        | 3       | O-Ring, Check valve plate                          | 262243        | 1   |
| 105         | Oil sump cover plate       | 262317        | 1   | 254       | 1*      | Check valve spring                                 | 262900        | 1   |
| 106         | Gasket, Oil sump cover     | 262318        | 1   | 25        | 5       | O-Ring, Inlet part                                 | 262245        | 2   |
| 107         | Allen bolt                 | 262212        | 8   | 26        | 0       | Inlet flange, upper housing                        | 262246        | 1   |
| 108         | Sealing ring               | 262213        | 8   | 26        | 1       | Inlet screen                                       | 262247        | 1   |
| 120         | Exhaust filter             | 262214        | 2   | 26        | 5       | Allen bolt   | 262248        | 4   |
| 121         | O-Ring, Exhaust filter     | 262106        | 2   | 26        | 6       | Spring lock washer                                 | 262094        | 4   |
| 125         | Filter spring              | 262107        | 2   | 27        | 0       | Plug (For SD Only)                                 | 262136        | 1   |
| 126         | Slotted cheese head screw  | 262108        | 2   | 27        | 5       | Oil return valve (For SD Only)                     | 262137        | 1   |
| 136         | Gasket, Service cover      | 262217        | 1   | 27        | 6       | Sealing ring (For SD Only)                         | 262138        | 1   |
| 137         | Sealing ring               | 262213        | 4   | 28        | 5       | Hollow-core screw                                  | 262139        | 1   |

| Pos.<br>No. | Description                          | Squire<br>No. | Qty |    | Pos.<br>No | Description                              | Squire<br>No. | Qty |
|-------------|--------------------------------------|---------------|-----|----|------------|--|---------------|-----|
| 286         | Banjo fitting                        | 262140        | 1   |    | 417        | Slotted set screw                        | 262460        | 2   |
| 288         | Sealing ring                         | 262257        | 3   |    | 421        | Rubber foot                              | 262168        | 3   |
| 290         | Return oil tube (For S Only)         | 262369        | 1   | Ιſ | 423        | Spring lock washer                       | 262116        | 1   |
| 291         | Elbow hydraulic fitting (For S Only) | 262120        | 1   | Ιſ | 425        | Washer                                   | 262673        | 1   |
| 300         | Motor mounting bracket (IEC)         | 262372        | 1   | Ιſ | 430        | Name plate                               | 262667        | 1   |
| 301         | Allen bolt                           | 262262        | 3   | Ιſ | 431        | Directional arrow label                  | 262172        | 1   |
| 302         | Spring lock washer                   | 262193        | 3   | Ιſ | 470        | BSLM hydraulic fitting (For SD Only)     | 262232        | 1   |
| 310         | Coupling                             | 262375        | 1   | Ιſ | 471        | Oil tube(C) (For SD Only)                | 262403        | 1   |
| 311*        | Coupling, pump side                  | 264152        | 1   | Ιſ | 472        | Nonreturn valve (For SD Only)            | 262410        | 1   |
| 312*        | Coupling Sleeve                      | 264151        | 1   |    | 474        | Air filter (For SD Only)                 | 262414        | 1   |
| 313*        | Coupling, Motor side                 | 264150        | 1   | I  | 480        | Gas Ballast Ass'y                        | 262218        | 1   |
| 316         | Set screw                            | 262412        | 1   | I  | 490        | Gasket Kit                               | 262411        | 1   |
| 317         | Set screw                            | 262412        | 1   | Ιſ | 500        | Maintenance Kit (S3/SD3)                 | 262077        | 1   |
| 321*        | Fan, Pump shaft end                  | 264149        | 1   | Ιſ | 500        | Maintenance Kit (S5LB/SD5LB)             | 262078        | 1   |
| 326         | Washer                               | 262269        | 1   | Ιſ | 600*       | Motor(NEMA) (S3/SD3)                     | 262870        | 1   |
| 327         | Hexagon bolt                         | 262206        | 1   |    | 600*       | Motor(NEMA) (S5LB/SD5LB)                 | 262877        | 1   |
| 340         | Fan hood                             | 262381        | 1   |    | 600.3*     | Motor Fan(NEMA) (S3/SD3)                 | 262869        | 1   |
| 341         | Hexagon head screw                   | 262271        | 3   |    | 600.3      | Motor Fan(NEMA) (S5LB/SD5LB)             | 262876        | 1   |
| 391         | Eye bolt                             | 262272        | 1   |    | 600.4*     | Motor Fan Cover(NEMA) (S3/SD3)           | 262868        | 1   |
| 400         | Motor (IEC) (S3/SD3)                 | 262386        | 1   |    | 600.4*     | Motor Fan Cover(NEMA) (S5LB/SD5LB)       | 262875        | 1   |
| 400         | Motor (IEC) (S5LB/SD5LB)             | 262388        | 1   | Ιſ | 601*       | Hexagon head screw(NEMA) (S3/SD3)        | 262867        | 4   |
| 400.3       | Motor Fan (IEC)                      | 262373        | 1   | Ιſ | 601*       | Hexagon head screw(NEMA) (S5LB/SD5LB)    | 262874        | 4   |
| 400.4       | Motor Fan Cover (IEC)                | 262113        | 1   | Ιſ | 602*       | Spring lock washer(NEMA) (S3/SD3)        | 262866        | 4   |
| 401         | Hexagon head screw                   | 262192        | 4   | Ιſ | 602*       | Spring lock washer(NEMA) (S5LB/SD5LB)    | 262873        | 4   |
| 402         | Spring lock washer                   | 262116        | 4   | Ιſ | 613*       | Coupling, Motor side(NEMA) (S3/SD3)      | 262865        | 1   |
| 415         | Hexagon nut                          | 262231        | 1   |    | 613*       | Coupling, Motor side(NEMA) (S5LB/SD5LB)  | 262872        | 1   |
| 416         | Slotted set screw                    | 262166        | 1   |    | 630*       | Motor Mounting Bracket(NEMA) (S3/SD3)    | 262864        | 1   |
|             |                                      |               |     | Ī  | 630*       | Motor Mounting Bracket(NEMA)(S5LB/SD5LB) | 262871        | 1   |
|             |                                      |               |     | ſ  |            | S3 TO SD3 CONVERSION KIT                 | 262826        | 1   |
|             |                                      |               |     | ľ  |            | CHECK VALVE ASSEMBLY                     | 262826        | 1   |

### PARTS LIST - S3/SD3 - S5LB/SD5LB - Continued:

## **REPLACEMENT PARTS LIST - S3/SD3 - S5L/SD5L**

| Description   | Part Number |
|---|-------------|
| REPLACEMENT PUMPS   |             |
| S3 Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262067      |
| SD3 Rotary Vane Vacuum Pump w/ 230/460 Volt Motor   | 262060      |
| S3-LM Pump, Without Motor (Includes Both Couplings)   | 262067-LM   |
| S5L Rotary Vane Vacuum Pump w/ 230/460 Volt Motor   | 262068      |
| SD5L Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262061      |
| S5L-LM Pump, Without Motor (Includes Both Couplings)  | 262068-LM   |
| 3 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 182TC   | 244251      |
| 5 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 184TC   | 244252      |
| REPLACEMENT ACCESSORIES   |             |
| Inlet Filter  |             |
| Canister With Element   | 233752      |
| Replacement Element Only  | SCAFC475500 |
| Inlet Check Valve   | 247519      |
| Starter Box With On/Off Switch And Overload<br>S2/SD2/S2-LM   |             |
| 460 Volt Starter  | GV2ME10     |
| Enclosure For Starter   | GV2MC01     |
| 230 Volt Starter  | GV2ME16     |
| Enclosure For Starter   | GV2MC01     |
| S3L/SD3L/S3L-LM   |             |
| 460 Volt Starter  | GV2ME14     |
| Enclosure For Starter   | GV2MC01     |
| 230 Volt Starter  | GV2ME20     |
| Enclosure For Starter   | GV2MC01     |
| Exhaust Filtert (1 Needed)  | 262214      |
| Spin On Oil Filter  | 262209      |
| Filter Kit - (Includes (1) Exhaust Filter, (1) O-ring For Exhaust Filter,<br>Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for |             |
| Oil Filter & Drain Plugs.)  | 264140      |
| <b>Rebuild Kit</b> - (Includes Vanes, Seals, Bearings, Gaskets, Filters, etc.<br>S2/SD2/S2-I M  | 262077      |
| S3L/SD3L/S3L-LM   | 262078      |
| Gaskat Kit  | 262411      |
|   | 202411      |
| Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons   | 249224      |
| <b>Liquid Cooling Kit</b> - (Includes 2 Oil Lines, Oil Filter Adapter, Plate<br>Type Heat Exchanger   | 262164      |



## S5C/S7C/SD5C/SD7C PUMP MODULE



## SD5C/SD7C PUMP MODULE

Ó^•ơÚ¦[&^••ÂO˘čđ]{ ^}ơÃAFFĩ€Á/¦^^ÂJ, æ∦[, ÄÖ¦ãç^ÂÛčãc^ÂÛčãc^ÂÛčãc^ÂÛ]¦ð;\*•Ã2ØŠÂAGĩ€ÌËCÌGÎ O & M Manual For Rotary Vane Vacuum Pumps & Systems #255450 (Rev. 2) 7/2009



## S5C/S7C/SD5C/SD7C - OIL SEPARATOR HOUSING



## S5C/SD5C - S7C/SD7C DRIVE ASSEMBLY

PARTS LIST - S5C/SD5C - S7C/SD7C

| Pos. No. | Description              | Squire No. | Qty      | Pos. No. | Description                         | Squire No. | Qty    |
|----------|--------------------------|------------|----------|----------|-------------------------------------|------------|--------|
| 1*       | Cylinder (S5 Only)       | 264321     | 1        | 159.1    | Exhaust valve fixed bolt (S5C/SD5C) | 264294     | 2      |
| 1*       | Cylinder (S7 Only)       | 264319     | 1        | 159.2    | Exhaust valve washer (S5C/SD5C)     | 264293     | 2      |
| 1*       | Cylinder (SD5 Only)      | 264319     | 1        | 159.3    | Exhaust valve spring (S5C/SD5C)     | 264292     | 2      |
| 1*       | Cylinder (SD7 Only)      | 264323     | 1        | 159.4    | Exhaust valve plate (S5C/SD5C)      | 264291     | 2      |
| 15       | Rotor (S5C/SD5C)         | 262435     | 2        | 159.5    | Exhaust valve lock nut (S5C/SD5C)   | 264290     | 2      |
| 15       | Rotor (S7C/SD7C)         | 262416     | 3        | 159.6    | Exhaust valve seat plate (S5C/SD5C) | 264289     | 2      |
| 18       | Sleeve, Bearing          | 262436     | 2        | 159.1    | Exhaust valve fixed bolt (S7C/SD7C) | 264294     | 3      |
| 22       | Vane (S5C/SD5C)          | 262455     | 3        | 159.2    | Exhaust valve washer (S7C/SD7C)     | 264293     | 3      |
| 22       | Vane (S7C/SD7C)          | 262083     | 3        | 159.3    | Exhaust valve spring (S7C/SD7C)     | 264292     | 3      |
| 25*      | A-end plate, motor side  | 262912     | 1        | 159.4    | Exhaust valve plate (S7C/SD7C)      | 264291     | 3      |
| 26       | B-end plate. Fan side    | 262467     | 1        | 159.5    | Exhaust valve lock nut (S7C/SD7C)   | 264290     | 3      |
| 30       | Bearing                  | 262432     | 2        | 159.6    | Exhaust valve seat plate (S/C/SD/C) | 264289     | 3      |
| 35       | Shaft seal               | 262431     | 2        | 185^     | Gasket, Cylinder, S5B ONLY          | 264287     | 1      |
| 50       | O-Ring End plate         | 262420     | 2        | 185      | Gasket, Cylinder, S/BONLY           | 262947     | 1      |
| 53       | Allen bolt               | 262424     | 12       | 189"     | Allen bolt (S5B/SD5B)               | 264286     | 2      |
| 54       | Spring Lock washer       | 262121     | 12       | 189"     | Allen boll (S/B/SD/B)               | 204280     | 5      |
| 60       | Taner nin                | 262194     | 12       | 202      | U- ring                             | 204280     | 5<br>5 |
| 65       | Δ_shaft key              | 262594     | т<br>1   | 203      | LOCKING SCIEW                       | 204204     | 2<br>2 |
| 66       | R-shaft key              | 262054     | 1        | 220      | BNIC Hydraulic Filling              | 204203     | 2<br>1 |
| 75*      | Oil cump                 | 26/317     | 1        | 221      | Seeling Ring for 221                | 204273     | 1      |
| 73       | Stool domistor           | 204317     | 2        | 2210-1   | Sealing Ring for 221                | 204202     | 1      |
| 70       | Steel metal hofflo       | 204310     | 2        | 2210-2   | BSI M Hydraulic fitting             | 26/279     | 1      |
| 19       |                          | 204315     | 1        | 222      | Sealing Ring                        | 264280     | 1      |
| 00       | Oil Sigilt glass         | 204314     | 1        | 22351*   | Sealing Ring for 223 (not shown)    | 262971     | 1      |
| 04       | Gaskel, Oli sigili glass | 204313     | ן<br>ר   | 22382*   | Sealing Ring for 223 (not shown)    | 262972     | 1      |
| 00       |                          | 204312     | <u>ک</u> | 230*     | Oil tube(A-1)                       | 264278     | 1      |
| 00       | Plug, Ull IIII           | 204311     | 1        | 231*     | Oil tube(B-1)                       | 264277     | 1      |
| 09       | U-Ring, Oil IIII plug    | 264310     | 1        | 232*     | Oil Tube B-2                        | 264276     | 1      |
| 95       | Plug, Oli drain          | 264309     | 1        | 233*     | BSLM Hydraulic fitting              | 264273     | 1      |
| 96       |                          | 246308     | 1        | 233S-1*  | Sealing Ring for 233                | 264275     | 1      |
| 99       | I hreaded fitting        | 264307     | 1        | 233S-2*  | Sealing Ring for 233                | 264274     | 1      |
| 100      | Oil filter               | 264306     | 1        | 234*     | Oil Tube A-2                        | 264272     | 1      |
| 105      | Oil sump cover           | 264305     | 1        | 237*     | BLT, Hydraulic Fitting              | 264271     | 1      |
| 106      | Gasket, Oil sump cover   | 234304     | 1        | 241      | Radiator                            | 264270     | 1      |
| 107      | Allen bolt               | 264303     | 8        | 242      | Bolt, Flathead                      | 264269     | 4      |
| 108      | Sealing ring             | 264252     | 8        | 243      | O-Ring, Gas ballast                 | 264268     | 1      |
| 120      | Exhaust filter           | 264302     | 2        | 245      | Ball                                | 264267     | 1      |
| 136      | Gasket, Service cover    | 264301     | 1        | 246      | O-Ring Ball Guide                   | 264265     | 1      |
| 137      | Sealing ring             | 264223     | 2        | 247      | O-Ring, End plate for gas ballast   | 264264     | 1      |
| 138      | Allen bolt               | 264300     | 2        | 248      | Washer for 242                      | 264263     | 4      |
| 139      | Service cover            | 264299     | 1        | 251*     | Check Valve Plate                   | 264262     | 1      |
| 140      | Allen bolt               | 264298     | 4        | 252*     | Check Valve Guide                   | 264261     | 1      |
| 141      | Gasket, Separator cover  | 264297     | 1        | 253*     | O-Ring, Check valve plate           | 264260     | 1      |
| 142*     | Separator cover plate    | 264296     | 1        | 254*     | Check valve spring                  | 264259     | 1      |
| 143      | Sealing ring             | 264252     | 4        | 255      | O-Ring Inlet Part                   | 264258     |        |
| 159      | Exhaust valve ass'y      | 264295     | 3        | 256      | Snap Ring                           | 264257     |        |

|--|

| Pos. No. | Description                            | Squire No. | Qty | Pos. No. | Description                              | Squire No. | Qty |
|----------|--|------------|-----|----------|--|------------|-----|
| 260*     | Inlet flange                           | 264256     | 1   | 360      | Hexagon nut                              | 264219     | 1   |
| 261*     | Inlet screen                           | 264255     | 1   | 361      | Washer                                   | 264226     | 1   |
| 265      | Allen bolt                             | 264254     | 1   | 362      | Connecting bolt                          | 264225     | 2   |
| 275      | Hollow-core screw                      | 264253     | 1   | 364      | Separator locking valve                  | 264224     | 1   |
| 283*     | Hollow-core screw                      | 262508     | 4   | 365      | Hexagon head screw                       | 264222     | 2   |
| 285      | Hollow-core screw                      | 262422     | 2   | 366      | Float with Rod                           | 264221     | 1   |
| 286      | Banjo Fitting                          | 264251     | 2   | 367      | Float valve nozzle                       | 264220     | 1   |
| 290      | Oil Return Tube (Two 275)              | 264250     | 1   | 369      | Hexagon nut                              | 264219     | 2   |
| 300      | Motor Mounting Bracket (IEC)(S5C/SD5C) | 264249     | 2   | 390      | Adapter for eye bolt                     | 264218     | 1   |
| 301      | Allen bolt                             | 264248     | 1   | 391      | Eye bolt                                 | 264217     | 1   |
| 302      | Spring lock washer                     | 264247     | 1   | 400      | Motor (IEC) (\$5C/\$D5C)                 | 264215     | 1   |
| 311      | Coupling, pump side                    | 264245     | 3   | 400      | Motor (IEC) (S7C/SD7C)                   | 264216     | 1   |
| 312      | Connection Bolt With Rubber Boot       | 264244     | 6   | 400.3    | Motor Fan (IEC)                          | 264214     | 1   |
| 312.3    | Rubber Boot                            | 264243     | 6   | 400.4    | Motor Fan Cover (IEC)                    | 264213     | 1   |
| 313      | Coupling Half (Motor Side IEC)         | 264242     | 3   | 401      | Rexagoil lieau screw                     | 204212     | 4   |
| 316      | Set screw (Pump Side)                  | 264227     | 1   | 402      | Spillig lock washel                      | 204211     | 4   |
| 317      | Set screw (Motor Side)                 | 264227     | 1   | 417      | Pubbor foot                              | 204210     | 2   |
| 321      | Fan, Pump shaft end                    | 264241     | 1   | 421      | Rubber foot support                      | 204203     | 1   |
| 326      | Washer                                 | 264240     | 1   | 425      | Rubber foot support                      | 264200     | 1   |
| 327      | Hexagon head screw                     | 264239     | 1   | 430      | Name plate                               | 264200     | 1   |
| 330      | Knob For Exhaust Filter (S5C/SD5C)     | 264238     | 1   | 431      | Directional Arrow                        | 264206     | 1   |
| 330      | Knob For Exhaust Filter (S7C/SD7C)     | 264238     | 2   | 474*     | Gas Ballast                              | 264203     | 1   |
| 331      | Sealing Ring                           | 26/223     | 1   | 476*     | Ball valve (For SD Only)                 | 264202     | 1   |
| 333      | Hexagon Nut                            | 26/210     | 1   | 478*     | Adapter (For SD Only)                    | 264201     | 1   |
| 33/      | Washer (S5C/SD5C)                      | 06/25      | 1   | 480*     | Gas Ballast Kit                          | 264200     | 1   |
| 33/      | Washer (S7C/SD7C)                      | 06426      | 2   | 490      | Gasket Kit (S5B/SD5B)                    | 264281     | 1   |
| 335      | Separator valve stud (S5C/SD5C)        | 26/237     | 1   | 490      | Gasket Kit (S7B/SD7B)                    | 264280     | 1   |
| 335      | Separator valve stud (S2C/SD2C)        | 204237     | 2   | 500      | Maintenance Kit (S5B/SD5B)               | 262079     | 1   |
| 226      | Separator valve stud (SFC/SDFC)        | 204237     | 2   | 500      | Maintenance Kit (S7B/SD7B)               | 262080     | 1   |
| 226      | Separator valve spring (SSC/SDSC)      | 204310     | 5   | 600*     | Motor(NEMA) (S5B/SD5B)                   | 262877     | 1   |
| 330      | Separator Valve Spring (STC/SDTC)      | 204318     | 0   | 600*     | Motor(NEMA) (S7B/SD7B)                   | 262891     | 1   |
| 338      | Separator Valve Flat-Ring (SSC/SDSC)   | 204230     | 0   | 600.3*   | Motor Fan(NEMA) (S5B/SD5B)               | 262883     | 1   |
| 338      | Separator Valve Flat-Ring (S7C/SD7C)   | 204230     | 2   | 600.3*   | Motor Fan(NEMA) (S7B/SD7B)               | 262890     | 1   |
| 339      | Separator valve support                | 204235     | 2   | 600.4*   | Motor Fan Cover(NEMA) (S5B/SD5B)         | 262882     | 1   |
| 341      | Allen Bolt                             | 204234     | 1   | 600.4*   | Motor Fan Cover(NEMA) (S7B/SD7B)         | 262889     | 1   |
| 342      | Cover Holder                           | 204233     | 1   | 601*     | Hexagon head screw(NEMA) (S5B/SD5B)      | 262881     | 4   |
| 343      | Rubber Insert, Fan Hood                | 264232     | 1   | 601*     | Hexagon head screw(NEMA) (S7B/SD7B)      | 262888     | 4   |
| 345      | Fan Hood                               | 264231     | 1   | 602*     | Spring lock washer(NEMA) (S5B/SD5B)      | 262880     | 4   |
| 350      | Hexagaon Nut                           | 264219     | 1   | 602*     | Spring lock washer(NEMA) (S7B/SD7B)      | 262887     | 4   |
| 351      | Stud                                   | 264230     | 1   | 613*     | Coupling, Motor side(NEMA) (S5B/SD5B)    | 262879     | 1   |
| 352      | Adjusting Ring                         | 264229     | 1   | 613*     | Coupling, Motor side(NEMA) (S7B/SD7B)    | 262886     | 1   |
| 353      | Deminster Spring                       | 26318      | 1   | 630*     | Motor Mounting Bracket(NEMA) (S5B/SD5B)  | 262878     | 1   |
| 254      | Deminster Cover                        | 264228     | 1   | 630*     | Motor Mounting Bracket(NEMA) (S/B/SD7B)  | 262885     | 1   |
| 355      | Hexagon nut                            | 264219     | 2   |          | S5C to SD5C & S7C to SD7C Conversion Kit | 262828     | 1   |
| 356      | Set screw                              | 264227     | 1   |          | Check Valve Assembly                     | 262842     | 1   |

| <b>REPLACEMENT PARTS LIST</b> | - S5C/SD5C/S5C-LM |
|-------------------------------|-------------------|
|-------------------------------|-------------------|

| Part Number           |
|-----------------------|
|                       |
| 262204                |
| 202294                |
| 202323<br>262204 J M  |
| 202234-Livi<br>244252 |
| 277202                |
|                       |
|                       |
| SCAF-2A               |
| SCAFC875587           |
| 247251                |
|                       |
|                       |
| GV2ME14               |
| GV2MC01               |
| GV2ME20               |
| GV2MC01               |
| 262519                |
|                       |
| 262532                |
|                       |
|                       |
| 264141                |
| 262079                |
|                       |
| 262489                |
| 249224                |
|                       |
| 262164                |
|                       |

| Description   | Part Number |
|---|-------------|
|   |             |
| KEFLACEMENT FUMFS   |             |
| S7C-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor                         | 262296      |
| SD7C-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor                        | 262324      |
| S7C-N-LM Pump, Without Motor (Includes Both Couplings)                      | 262296-LM   |
| 7.5 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 213TC               | 244253      |
| REPLACEMENT ACCESSORIES   |             |
| Inlot Filtor  |             |
| Canister With Element   | SCAE-2A     |
| Replacement Element Only  | SCAFC875587 |
|   |             |
| Inlet Check Valve 2", Steel Body, Buna-N Seals                              | 247251      |
|   |             |
| Starter Box With On/Off Switch And Overload                                 |             |
| 460 Volt Starter  | GV2ME16     |
| Enclosure For Starter   | GV2MC01     |
| 230 Volt Starter  | GV2ME22     |
| Enclosure For Starter   | GV2MC01     |
|   | 0005/0      |
| Exhaust Filtert (2 Needed)  | 262519      |
| Spin On Oil Filter  | 262532      |
|   |             |
| Filter Kit - (Includes (2) Exhaust Filters, (2) O-rings For Exhaust Filter, |             |
| Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for      |             |
| Oil Filter & Drain Plugs.)  | 264142      |
| Rebuild Kit - (Includes Vanes, Seals, Bearings, Gaskets, Filters, etc.      | 262080      |
|   |             |
| Gookot Kit  | 262125      |
|   | 202100      |
| Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons                               | 249224      |
| Liquid Cooling Kit (Includes 2 Oil Lines Oil Filter Adapter Plate Type      |             |
| Heat Exchanger  | 262164      |



# S10/SD10B PUMP MODULE

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx



# S10/SD10 OIL SEPARATOR HOUSING



# S10B/SD10B MOTOR DRIVE ASSEMBLY

| Pos.<br>No. | Description                       | Squire<br>No. | Qty | Pos. No. | Des                   |
|-------------|-----------------------------------|---------------|-----|----------|-----------------------|
| 232*        | Oil tube (B-2)                    | 262961        | 1   | 341      | Hexagon head scre     |
| 233*        | BSLM hydraulic fitting            | 262641        | 1   | 345*     | Fan Cover             |
| 234*        | Oil Tube(A-2)                     | 262960        | 1   | 359*     | Allen Bolt            |
| 237*        | BLT Hydraulic fitting             | 262959        | 1   | 360*     | Allen Bolt            |
| 241*        | Radiator                          | 262958        | 1   | 390      | Adapter for eye bolt  |
| 242*        | Cover( front), radiator           | 262957        | 1   | 391      | Eye bolt              |
| 243*        | Cover( rear), radiator            | 262956        | 1   | 392      | Spring Lock washer    |
| 250         | Inlet flange,Lower housing        | 262653        | 1   | 393      | Hexagon head scre     |
| 251         | Check valve plate                 | 262654        | 1   | 400      | Motor (IEC)           |
| 252         | Check valve guide                 | 262655        | 1   | 400.3    | Motor Fan (IEC)       |
| 253         | O-Ring, Check valve plate         | 262656        | 1   | 400.4    | Motor Fan Cover (IE   |
| 254         | Check valve spring                | 262657        | 1   | 401      | Hexagon head scre     |
| 255         | O-Ring, In-let part               | 262658        | 2   | 402      | Spring Lock washer    |
| 260         | Inlet flange , Upper housing      | 262659        | 1   | 415      | Hex nut               |
| 261         | Inlet screen                      | 262660        | 1   | 416      | Slotted set screw     |
| 265         | Allen bolt                        | 262661        | 4   | 417      | Slotted set screw     |
| 266         | Spring Lock washer                | 262644        | 4   | 419      | Sleeve                |
| 270         | Plug                              | 262136        | 1   | 421      | Rubber foot           |
| 275         | Oil return valve                  | 262336        | 1   | 423      | Spring Lock Washe     |
| 276         | Sealing ring                      | 262138        | 1   | 425      | Washer                |
| 285         | Hollow-core screw                 | 262337        | 1   | 430      | Name plate            |
| 286         | Banjo fitting                     | 262140        | 1   | 431      | Directional arrow lat |
| 288         | Sealing ring                      | 262257        | 3   | 470      | BSLM hydraulic fittir |
| 290         | Return oil tube                   | 262341        | 1   | 471      | Oil tube(C)           |
| 291         | Elbow hydraulic fitting           | 262120        | 1   | 472      | Nonreturn valve       |
| 300*        | Motor mounting bracket            | 262955        | 1   | 474      | Gas ballast           |
| 301         | Stud                              | 262344        | 3   | 474      | Air filter            |
| 302         | Spring Lock washer                | 262348        | 3   | 480      | Gas Ballast Kit       |
| 303         | Hex nut                           | 262349        | 3   | 490      | Gasket Kit            |
| 311         | Coupling, pump side               | 262917        | 1   | 500      | Maintenance Kit       |
| 312         | Coupling Housing                  | 262916        | 1   | 600*     | Motor(NEMA)           |
| 313         | Coupling, Motor side              | 262915        | 1   | 600.3*   | Motor Fan(NEMA)       |
| 316         | Set screw                         | 262412        | 1   | 600.4*   | Motor Fan Cover(N     |
| 317         | Set screw                         | 262412        | 1   | 601*     | Allen Bolt (NEMA)     |
| 321         | Pump shaft end fan                | 262914        | 1   | 611*     | Coupling, Motor side  |
| 322*        | Motor shaft end fan for IEC Motor | 262954        | 1   | 613*     | Motor Mounting Flai   |
| 340*        | Fan Hood                          | N/A           |     | 622*     | Motor Shaft End Fa    |

### PARTS LIST -S10B/SD10B - Continued

| Pos. No. | Description                        | Squire<br>No. | Qty |
|----------|------------------------------------|---------------|-----|
| 341      | Hexagon head screw                 | 262360        | 3   |
| 345*     | Fan Cover                          | 262953        | 1   |
| 359*     | Allen Bolt                         | 262952        | 4   |
| 360*     | Allen Bolt                         | 262951        | 4   |
| 390      | Adapter for eye bolt               | 262398        | 1   |
| 391      | Eye bolt                           | 262399        | 1   |
| 392      | Spring Lock washer                 | 262400        | 1   |
| 393      | Hexagon head screw                 | 262401        | 1   |
| 400      | Motor (IEC)                        | 262586        | 1   |
| 400.3    | Motor Fan (IEC)                    | 262402        | 1   |
| 400.4    | Motor Fan Cover (IEC)              | 262405        | 1   |
| 401      | Hexagon head screw                 | 262407        | 4   |
| 402      | Spring Lock washer                 | 262415        | 4   |
| 415      | Hex nut                            | 262603        | 1   |
| 416      | Slotted set screw                  | 262604        | 2   |
| 417      | Slotted set screw                  | 262605        | 1   |
| 419      | Sleeve                             | 262612        | 1   |
| 421      | Rubber foot                        | 262438        | 3   |
| 423      | Spring Lock Washer                 | 262613        | 1   |
| 425      | Washer                             | 262614        | 1   |
| 430      | Name plate                         | 262667        | 1   |
| 431      | Directional arrow label            | 262172        | 1   |
| 470      | BSLM hydraulic fitting             | 262647        | 1   |
| 471      | Oil tube(C)                        | 262619        | 1   |
| 472      | Nonreturn valve                    | 262622        | 1   |
| 474      | Gas ballast                        | 262975        | 1   |
| 474      | Air filter                         | 262624        | 1   |
| 480      | Gas Ballast Kit                    | 262629        | 1   |
| 490      | Gasket Kit                         | 262635        | 1   |
| 500      | Maintenance Kit                    | 262662        | 1   |
| 600*     | Motor(NEMA)                        | 262897        | 1   |
| 600.3*   | Motor Fan(NEMA)                    | 262896        | 1   |
| 600.4*   | Motor Fan Cover(NEMA)              | 262895        | 1   |
| 601*     | Allen Bolt (NEMA)                  | 262894        | 4   |
| 611*     | Coupling, Motor side(NEMA)         | 262950        | 1   |
| 613*     | Motor Mounting Flange (NEMA)       | 262893        | 1   |
| 622*     | Motor Shaft End Fan for Nema motor | 262898        | 1   |

### PARTS LIST -S10B/SD10B - Continued

| Pos.<br>No. | Description                       | Squire<br>No. | Qty |
|-------------|-----------------------------------|---------------|-----|
| 232*        | Oil tube (B-2)                    | 262961        | 1   |
| 233*        | BSLM hydraulic fitting            | 262641        | 1   |
| 234*        | Oil Tube(A-2)                     | 262960        | 1   |
| 237*        | BLT Hydraulic fitting             | 262959        | 1   |
| 241*        | Radiator                          | 262958        | 1   |
| 242*        | Cover( front), radiator           | 262957        | 1   |
| 243*        | Cover( rear), radiator            | 262956        | 1   |
| 250         | Inlet flange,Lower housing        | 262653        | 1   |
| 251         | Check valve plate                 | 262654        | 1   |
| 252         | Check valve guide                 | 262655        | 1   |
| 253         | O-Ring, Check valve plate         | 262656        | 1   |
| 254         | Check valve spring                | 262657        | 1   |
| 255         | O-Ring, In-let part               | 262658        | 2   |
| 260         | Inlet flange , Upper housing      | 262659        | 1   |
| 261         | Inlet screen                      | 262660        | 1   |
| 265         | Allen bolt                        | 262661        | 4   |
| 266         | Spring Lock washer                | 262644        | 4   |
| 270         | Plug                              | 262136        | 1   |
| 275         | Oil return valve                  | 262336        | 1   |
| 276         | Sealing ring                      | 262138        | 1   |
| 285         | Hollow-core screw                 | 262337        | 1   |
| 286         | Banjo fitting                     | 262140        | 1   |
| 288         | Sealing ring                      | 262257        | 3   |
| 290         | Return oil tube                   | 262341        | 1   |
| 291         | Elbow hydraulic fitting           | 262120        | 1   |
| 300*        | Motor mounting bracket            | 262955        | 1   |
| 301         | Stud                              | 262344        | 3   |
| 302         | Spring Lock washer                | 262348        | 3   |
| 303         | Hex nut                           | 262349        | 3   |
| 311         | Coupling, pump side               | 262917        | 1   |
| 312         | Coupling Housing                  | 262916        | 1   |
| 313         | Coupling, Motor side              | 262915        | 1   |
| 316         | Set screw                         | 262412        | 1   |
| 317         | Set screw                         | 262412        | 1   |
| 321         | Pump shaft end fan                | 262914        | 1   |
| 322*        | Motor shaft end fan for IEC Motor | 262954        | 1   |
| 340*        | Fan Hood                          | N/A           |     |

| Pos. No. | Description                        | Squire<br>No. | Qty |
|----------|------------------------------------|---------------|-----|
| 341      | Hexagon head screw                 | 262360        | 3   |
| 345*     | Fan Cover                          | 262953        | 1   |
| 359*     | Allen Bolt                         | 262952        | 4   |
| 360*     | Allen Bolt                         | 262951        | 4   |
| 390      | Adapter for eye bolt               | 262398        | 1   |
| 391      | Eye bolt                           | 262399        | 1   |
| 392      | Spring Lock washer                 | 262400        | 1   |
| 393      | Hexagon head screw                 | 262401        | 1   |
| 400      | Motor (IEC)                        | 262586        | 1   |
| 400.3    | Motor Fan (IEC)                    | 262402        | 1   |
| 400.4    | Motor Fan Cover (IEC)              | 262405        | 1   |
| 401      | Hexagon head screw                 | 262407        | 4   |
| 402      | Spring Lock washer                 | 262415        | 4   |
| 415      | Hex nut                            | 262603        | 1   |
| 416      | Slotted set screw                  | 262604        | 2   |
| 417      | Slotted set screw                  | 262605        | 1   |
| 419      | Sleeve                             | 262612        | 1   |
| 421      | Rubber foot                        | 262438        | 3   |
| 423      | Spring Lock Washer                 | 262613        | 1   |
| 425      | Washer                             | 262614        | 1   |
| 430      | Name plate                         | 262667        | 1   |
| 431      | Directional arrow label            | 262172        | 1   |
| 470      | BSLM hydraulic fitting             | 262647        | 1   |
| 471      | Oil tube(C)                        | 262619        | 1   |
| 472      | Nonreturn valve                    | 262622        | 1   |
| 474      | Gas ballast                        | 262975        | 1   |
| 474      | Air filter                         | 262624        | 1   |
| 480      | Gas Ballast Kit                    | 262629        | 1   |
| 490      | Gasket Kit                         | 262635        | 1   |
| 500      | Maintenance Kit                    | 262662        | 1   |
| 600*     | Motor(NEMA)                        | 262897        | 1   |
| 600.3*   | Motor Fan(NEMA)                    | 262896        | 1   |
| 600.4*   | Motor Fan Cover(NEMA)              | 262895        | 1   |
| 601*     | Allen Bolt (NEMA)                  | 262894        | 4   |
| 611*     | Coupling, Motor side(NEMA)         | 262950        | 1   |
| 613*     | Motor Mounting Flange (NEMA)       | 262893        | 1   |
| 622*     | Motor Shaft End Fan for Nema motor | 262898        | 1   |
|          | S10 to SD10 Conversion Kit         | 262829        | 1   |
|          | Check Valve Assembly               | 262843        | 1   |

## **REPLACEMENT PARTS LIST - S10/SD10**

| Description   | Part Number         |
|---|---------------------|
| REPLACEMENT PUMPS   |                     |
| S10B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262925              |
| SD10B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor   | 262981              |
| S10B-N-LM Pump, Without Motor (Includes Both Couplings)   | 262925-LM           |
| 10 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 215TC  | 244254              |
| REPLACEMENT ACCESSORIES   |                     |
| Oil Valve Box for continuous deep vacuum operation  | 262190              |
| Inlet Filter<br>Canister With Element   | SCAF-2A             |
| Replacement Element Only  | SCAFC875587         |
| Inlet Check Valve 2", Steel Body, Buna-N Seals  | 247251              |
| Starter Box With On/Off Switch And Overload   |                     |
| 460 Volt Starter  | GV2ME20             |
| Enclosure For Starter   | GV2MC01             |
| 230 Volt Starter  | CMW-32B/K-240-24-36 |
| Exhaust Filtert (4 Needed)  | 262611              |
| Spin On Oil Filter  | 262532              |
| Filter Kit - (Includes (2) Exhaust Filters, (2) O-rings For Exhaust Filter,<br>Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for<br>Oil Filter & Drain Plugs ) | 264143              |
| Rebuild Kit - (Includes Vanes, Seals, Bearings, Gaskets, Filters, etc.  | 264168              |
| Gasket Kit  | 262635              |
| Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons   | 249224              |
| Liquid Cooling Kit - (Includes 2 Oil Lines, Oil Filter Adapter, Plate Type  | 000404              |
| Heat Exchanger  | 262164              |



# S15/SD15 & S20/SD20 PUMP MODULE

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx

> Ó^•oÁU¦[&^••ÁO`čậ]{ ^}oÃÁFFÏ€ÁV¦^^ÂU, æ∦[, ÄÖ¦ãç^ÂU`ãc^ÁH GÃY ậ c°¦ÂU]¦ã;\*•Ã20ŠÂHCÏ€ÌËCÌGÎ O & M Manual For Rotary Vane Vacuum Pumps & Systems #255450 (Rev. 2) 7/2009



# S15/SD15 & S20/SD20 OIL SEPARATOR HOUSING



# S15/SD15 & S20.SD20 MOTOR DRIVE ASSEMBLY

### PARTS LIST -S15/SD15 & S20/SD20B

| Pos.<br>No. | Description                           | Squire<br>No. | Qty | 1[  | Pos.<br>No. | Description                        | Squire<br>No. | Qty |
|-------------|---------------------------------------|---------------|-----|-----|-------------|------------------------------------|---------------|-----|
| 1           | Cylinder                              | 264114        | 1   | 1Г  | 125         | Exh. Filter spring Assembly        | 262107        | 8   |
| 4           | Stud                                  | 264113        | 4   | 1Г  | 126         | Slotted cheese head machine screw  | 262108        | 8   |
| 5           | Set screw                             | 264112        | 6   | 1 [ | 136         | Gasket, Service cover              | 264084        | 1   |
| 9           | Stud                                  | 264111        | 6   | 1 [ | 137         | Sealing ring                       | 262627        | 2   |
| 15          | Rotor                                 | 264110        | 1   | 1 [ | 138         | Allen bolt                         | 262615        | 2   |
| 18          | Sleeve, Bearing                       | 264109        | 2   | 1 [ | 139         | Service cover                      | 264083        | 1   |
| 19          | Sleeve, Bearing                       | 264147        | 2   |     | 140         | Allen bolt                         | 264082        | 8   |
| 22          | Vane                                  | 264108        | 3   | 1 [ | 141         | Gasket, Separator cover            | 264081        | 1   |
| 25          | A-End plate, Motor side               | 264107        | 1   | 1 [ | 142         | Separator cover plate              | 264080        | 1   |
| 26          | B-End plate, Fan Side                 | 264106        | 1   | 1 [ | 143         | Sealing ring                       | 262627        | 8   |
| 30          | Bearing                               | 264105        | 2   | 1 [ | 150         | Gasket, Exhaust_cover              | 264079        | 1   |
| 35          | Shaft seal, viton                     | 264104        | 4   | 1 [ | 152         | Sealing ring                       | 262627        | 4   |
| 47          | Plug                                  | 262115        | 1   | 1 [ | 153         | Exhaust Cover (threaded)           | 264078        | 1   |
| 50          | O-ring, End plate                     | 264103        | 2   | 1 [ | 155         | Allen bolt                         | 262608        | 4   |
| 53          | Hexagon head cap screw                | 264102        | 10  | 1 [ | 156         | Outlet screen                      | 264077        | 1   |
| 54          | Spring Lock Washer                    | 264062        | 12  | 1 [ | 159         | Exhaust valve ass'y                | 262623        | 7   |
| 56          | Hex nut                               | 264063        | 2   | 1 [ | 159.1       | Exhaust valve fixed bolt           | 262530        | 7   |
| 60          | Taper Pin                             | 264101        | 4   | 1 [ | 159.2       | Exhaust valve washer               | 262539        | 7   |
| 65          | A-Shaft key, Motor Side               | 264100        | 1   | 1 [ | 159.3       | Exhaust valve spring               | 262545        | 7   |
| 66          | B-Shaft key, Fan Side                 | 264099        | 1   |     | 159.4       | Exhaust valve plate                | 262551        | 7   |
| 75          | Oil sump                              | 264098        | 1   | 1 [ | 159.5       | Exhaust valve lock nut             | 262554        | 7   |
| 78          | Steel demister                        | 264097        | 1   | 1 [ | 159.6       | Exhaust valve seat plate           | 262555        | 7   |
| 79          | Sheet metal baffle                    | 264096        | 1   |     | 163         | Allen bolt                         | 262626        | 2   |
| 83          | Oil sight glass                       | 262598        | 1   | 1 [ | 164         | Sealing ring for Pos #163          | 262627        | 2   |
| 84          | Gasket, Oil sight glass               | 262599        | 1   | 1 [ | 168         | O-Ring, Exh. Valve cover plate     | 264131        | 1   |
| 88          | Plug, Oil fill                        | 264095        | 1   |     | 169         | Exh. Valve cover plate             | 264130        | 1   |
| 89          | O-Ring, Oil fill plug                 | 264094        | 1   |     | 175         | Plug                               | 262632        | 1   |
| 90          | Pressure gage                         | 264093        | 1   |     | 176         | Hex nut                            | 262231        | 1   |
| 95          | Plug, Oil drain                       | 262103        | 1   |     | 177         | Stud bolt                          | 264076        | 1   |
| 96          | O-Ring, Oil drain plug                | 262102        | 1   |     | 185         | Gasket, Cylinder                   | 264075        | 1   |
| 99          | Pipe Nipple                           | 264092        | 1   |     | 186         | Allen bolt                         | 264074        | 8   |
| 100         | Oil filter                            | 264091        | 1   |     | 187         | Spring Lock Washer                 | 262116        | 8   |
| 105         | Oil sump cover plate                  | 264090        | 1   |     | 205         | Oil Sump Side cover plate          | 264073        | 1   |
| 106         | Gasket, Oil sump cover                | 264089        | 1   |     | 206         | Gasket, Oil sump Side cover plate  | 264072        | 1   |
| 107         | Allen bolt                            | 262608        | 8   |     | 207         | Allen Bolt (Socket Head Cap Screw) | 262608        | 9   |
| 108         | Sealing ring for oil sump cover plate | 262627        | 8   |     | 208         | Sealing ring                       | 262627        | 9   |
| 115         | Exh. Filter bracket, Upper            | 264088        | 1   |     | 224         | Elbow, Hydraulic fitting           | 264071        | 4   |
| 116         | Exh. Filter bracket, Medium           | 264087        | 1   |     | 224S-1      | Sealing Ring for Pos # 224         | 264133        | 4   |
| 117         | Exh. Filter bracket, Lower            | 264086        | 1   |     | 224S-2      | Sealing Ring for Pos # 224         | 264134        | 4   |
| 120         | Exhaust filter                        | 264085        | 8   |     | 225         | Elbow, Hydraulic fitting           | 264070        | 2   |
| 121         | O-Ring, Exhaust filter                | 262106        | 8   | ۱ſ  | 225S        | Sealing ring for Pos # 225         | 264137        | 2   |

| Pos.<br>No. | Description                          | Squire<br>No. | Qty |
|-------------|--------------------------------------|---------------|-----|
| 226         | Elbow, Hydraulic Fitting             | 264069        | 1   |
| 226S        | Sealing ring for Pos # 226           | 264136        | 2   |
| 230         | Oil tube(A)                          | 264068        | 1   |
| 231         | Oil tube(B-1)                        | 264067        | 1   |
| 232         | Oil Tube(B-2)                        | 264066        | 1   |
| 233         | Oil Tube                             | 264065        | 1   |
| 236         | Elbow, Hydraulic fitting             | 264064        | 1   |
| 236S        | Sealing ring for Pos # 236           | 264135        | 1   |
| 238         | Hex Nut                              | 264063        | 1   |
| 239         | Spring Lock Washer                   | 264062        | 1   |
| 241         | Oil Cooler                           | 264061        | 1   |
| 250         | Inlet flange, Lower housing          | 264060        | 1   |
| 251         | Check valve plate                    | 264059        | 1   |
| 252         | Check valve guide                    | 264058        | 1   |
| 253         | O-Ring, Check valve plate            | 264057        | 1   |
| 254         | Spring, Check valve                  | 264056        | 1   |
| 255         | O-Ring, Inlet Flange                 | 264055        | 2   |
| 258         | Rubber Ball                          | 264054        | 1   |
| 260         | Inlet flange, Upper Housing          | 264053        | 1   |
| 261         | Inlet screen( Conical )              | 264052        | 1   |
| 265         | Allen bolt                           | 264051        | 3   |
| 266         | Spring Lock Washer                   | 262116        | 3   |
| 270*        | Plug                                 | 262136        | 1   |
| 275*        | Oil return valve                     | 264050        | 2   |
| 276*        | Sealing ring                         | 262138        | 1   |
| 285**       | Oil Recirculation Screw(Hollow-core) | 264049        | 1   |
| 286**       | Banjo fitting                        | 264048        | 1   |
| 287**       | Sealing ring for Pos # 286           | 264047        | 1   |
| 288**       | Sealing ring for Pos # 286           | 262627        | 1   |
| 290**       | Oil Return tube                      | 264045        | 1   |
| 291**       | Elbow, hydraulic fitting             | 264044        | 1   |
| 291S**      | Sealing Ring, for Pos# 291           | 264047        | 2   |
| 300         | Motor mounting bracket               | 264043        | 1   |
| 302         | Spring Lock Washer                   | 264042        | 4   |
| 303         | Hex nut                              | 264041        | 4   |
| 311         | Coupling Half, Motor Side            | 264040        | 1   |

### PARTS LIST -S15/SD15 & S20/SD20B - Continued

| Pos.<br>No. | Description                           | Squire No. | Qty |
|-------------|---------------------------------------|------------|-----|
| 312         | Rubber boot for coupling( Motor Side) | 264146     | 8   |
| 313         | Coupling Half, Pump Side              | 264039     | 1   |
| 316         | Set screw                             | 262412     | 1   |
| 317         | Set screw                             | 262412     | 1   |
| 320         | Spacer for fan                        | 264038     | 1   |
| 321         | Fan                                   | 264037     | 1   |
| 327         | Locking Disc                          | 264036     | 1   |
| 328         | Hex Head Cap Screw                    | 262608     | 1   |
| 329         | Spring Lock Washer                    | 262116     | 1   |
| 350         | Fan Support Ring (Pump Side)          | 264035     | 1   |
| 351         | Fan Support Ring (Radiator Side)      | 264034     | 1   |
| 352         | Fan Guard                             | 264033     | 1   |
| 353         | Allen Bolt                            | 262608     | 4   |
| 354         | Hex Nut                               | 262231     | 4   |
| 355         | Fan Supporting Bolt                   | 264032     | 5   |
| 356         | Fan Supporting Bolt                   | 264031     | 1   |
| 357         | Hex Nut                               | 262349     | 11  |
| 358         | Spring Lock Washer                    | 262591     | 11  |
| 359         | Mounting Bracket for radiator         | 264030     | 1   |
| 360         | Cheese head Cap Screw                 | 264029     | 12  |
| 391         | Eye bolt                              | 264028     | 1   |
| 400         | Motor (IEC)                           | 264027     | 1   |
| 400.3       | Motor fan blade                       | 264026     | 1   |
| 400.4       | Motor fan cover                       | 264025     | 1   |
| 401         | Hexagon head screw                    | 264024     | 4   |
| 402         | Spring Lock Washer                    | 264023     | 4   |
| 415         | Hex nut                               | 262349     | 2   |
| 416         | Stud                                  | 264022     | 2   |
| 417         | Slotted set screw                     | 264021     | 2   |
| 419         | Spacer for Foot, for IEC motor        | 264020     | 2   |
| 420         | Slotted set screw                     | 264019     | 1   |
| 421         | Rubber foot                           | 264018     | 5   |
| 423         | Spring Lock Washer                    | 262591     | 2   |
| 425         | Washer                                | 264017     | 2   |
| 430         | Name plate                            | 264016     | 1   |
| 431         | Directional arrow label               | 264015     | 1   |

| Pos.<br>No. | Description                          | Squire<br>No. | Qty |
|-------------|--------------------------------------|---------------|-----|
| 226         | Elbow, Hydraulic Fitting             | 264069        | 1   |
| 226S        | Sealing ring for Pos # 226           | 264136        | 2   |
| 230         | Oil tube(A)                          | 264068        | 1   |
| 231         | Oil tube(B-1)                        | 264067        | 1   |
| 232         | Oil Tube(B-2)                        | 264066        | 1   |
| 233         | Oil Tube                             | 264065        | 1   |
| 236         | Elbow, Hydraulic fitting             | 264064        | 1   |
| 236S        | Sealing ring for Pos # 236           | 264135        | 1   |
| 238         | Hex Nut                              | 264063        | 1   |
| 239         | Spring Lock Washer                   | 264062        | 1   |
| 241         | Oil Cooler                           | 264061        | 1   |
| 250         | Inlet flange, Lower housing          | 264060        | 1   |
| 251         | Check valve plate                    | 264059        | 1   |
| 252         | Check valve guide                    | 264058        | 1   |
| 253         | O-Ring, Check valve plate            | 264057        | 1   |
| 254         | Spring, Check valve                  | 264056        | 1   |
| 255         | O-Ring, Inlet Flange                 | 264055        | 2   |
| 258         | Rubber Ball                          | 264054        | 1   |
| 260         | Inlet flange, Upper Housing          | 264053        | 1   |
| 261         | Inlet screen( Conical )              | 264052        | 1   |
| 265         | Allen bolt                           | 264051        | 3   |
| 266         | Spring Lock Washer                   | 262116        | 3   |
| 270*        | Plug                                 | 262136        | 1   |
| 275*        | Oil return valve                     | 264050        | 2   |
| 276*        | Sealing ring                         | 262138        | 1   |
| 285**       | Oil Recirculation Screw(Hollow-core) | 264049        | 1   |
| 286**       | Banjo fitting                        | 264048        | 1   |
| 287**       | Sealing ring for Pos # 286           | 264047        | 1   |
| 288**       | Sealing ring for Pos # 286           | 262627        | 1   |
| 290**       | Oil Return tube                      | 264045        | 1   |
| 291**       | Elbow, hydraulic fitting             | 264044        | 1   |
| 291S**      | Sealing Ring, for Pos# 291           | 264047        | 2   |
| 300         | Motor mounting bracket               | 264043        | 1   |
| 302         | Spring Lock Washer                   | 264042        | 4   |
| 303         | Hex nut                              | 264041        | 4   |
| 311         | Coupling Half, Motor Side            | 264040        | 1   |

| PARTS LIST | -S15/SD15 & | S20/SD20B - | Continued |
|------------|-------------|-------------|-----------|
|            |             |             |           |

| Pos.<br>No. | Description                           | Squire No. | Qty |
|-------------|---------------------------------------|------------|-----|
| 312         | Rubber boot for coupling( Motor Side) | 264146     | 8   |
| 313         | Coupling Half, Pump Side              | 264039     | 1   |
| 316         | Set screw                             | 262412     | 1   |
| 317         | Set screw                             | 262412     | 1   |
| 320         | Spacer for fan                        | 264038     | 1   |
| 321         | Fan                                   | 264037     | 1   |
| 327         | Locking Disc                          | 264036     | 1   |
| 328         | Hex Head Cap Screw                    | 262608     | 1   |
| 329         | Spring Lock Washer                    | 262116     | 1   |
| 350         | Fan Support Ring (Pump Side)          | 264035     | 1   |
| 351         | Fan Support Ring (Radiator Side)      | 264034     | 1   |
| 352         | Fan Guard                             | 264033     | 1   |
| 353         | Allen Bolt                            | 262608     | 4   |
| 354         | Hex Nut                               | 262231     | 4   |
| 355         | Fan Supporting Bolt                   | 264032     | 5   |
| 356         | Fan Supporting Bolt                   | 264031     | 1   |
| 357         | Hex Nut                               | 262349     | 11  |
| 358         | Spring Lock Washer                    | 262591     | 11  |
| 359         | Mounting Bracket for radiator         | 264030     | 1   |
| 360         | Cheese head Cap Screw                 | 264029     | 12  |
| 391         | Eye bolt                              | 264028     | 1   |
| 400         | Motor (IEC)                           | 264027     | 1   |
| 400.3       | Motor fan blade                       | 264026     | 1   |
| 400.4       | Motor fan cover                       | 264025     | 1   |
| 401         | Hexagon head screw                    | 264024     | 4   |
| 402         | Spring Lock Washer                    | 264023     | 4   |
| 415         | Hex nut                               | 262349     | 2   |
| 416         | Stud                                  | 264022     | 2   |
| 417         | Slotted set screw                     | 264021     | 2   |
| 419         | Spacer for Foot, for IEC motor        | 264020     | 2   |
| 420         | Slotted set screw                     | 264019     | 1   |
| 421         | Rubber foot                           | 264018     | 5   |
| 423         | Spring Lock Washer                    | 262591     | 2   |
| 425         | Washer                                | 264017     | 2   |
| 430         | Name plate                            | 264016     | 1   |
| 431         | Directional arrow label               | 264015     | 1   |

| PARTS LIST -S15/SD15 & S20/SD20B - Continue | d |
|---|---|
|---|---|

| Pos.<br>No. | Description               | Squire<br>No. | Qty |
|-------------|---------------------------|---------------|-----|
| 470         | Elbow, Hydraulic Fitting  | 264014        | 1   |
| 470S-1      | Sealing Ring for Pos #470 | 264133        | 1   |
| 470S-2      | Sealing Ring for Pos #470 | 264134        | 1   |
| 471         | Oil tube(C)               | 264013        | 1   |
| 473         | Fitting                   | 264012        | 1   |
| 474         | Gas Ballast               | 264011        | 1   |
| 477         | Valve                     | 264010        | 1   |
| 480         | Gas Ballast Kit           | 264132        | 1   |
| 500         | Maintenance Kit           | 264127        | 1   |
| 501         | Gasket Kit                | 264126        | 1   |

| Pos.<br>No. | Description                         | Squire No. | Qty |
|-------------|-------------------------------------|------------|-----|
| 600         | Motor ( NEMA)                       | 264009     | 1   |
| 600.3       | Motor fan blade                     | 264008     | 1   |
| 600.4       | Motor fan cover                     | 264007     | 1   |
| 601         | Allen Bolt                          | 264006     | 4   |
| 602         | Hex head Bolt                       | 264005     | 3   |
| 603         | Spring Lock Washer                  | 264004     | 4   |
| 610         | Adapter for Nema motor              | 264003     | 1   |
| 611         | Coupling Half, Motor Side (Nema)    | 264002     | 1   |
| 619         | Spacer for foot, for Nema Motor     | 264001     | 2   |
| 630         | Motor mounting bracket              | 264000     | 1   |
|             | S15/S20 to SD15/SD20 Conversion Kit | 262830     | 1   |
|             | Check Valve Assembly                | 262844     | 1   |

## **REPLACEMENT PARTS LIST - S15/SD15**

| Description   | Part Number         |
|---|---------------------|
| REPLACEMENT PUMPS   |                     |
| S15B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262918              |
| SD15B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor   | 262919              |
| S15B-N-LM Pump, Without Motor (Includes Both Couplings)   | 262918-LM           |
| 15 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 284TC  | 244255              |
| REPLACEMENT ACCESSORIES   |                     |
| Oil Valve Box for continuous deep vacuum operation  | 262190              |
| Inlet Filter<br>Canister With Element   | SCAF-3B             |
| Replacement Element Only  | SCAF-334P           |
| Inlet Check Valve 3", Steel Body, Buna-N Seals  | 247523              |
| Starter Box With On/Off Switch And Overload   |                     |
| 460 Volt Starter  | GV2ME22             |
| Enclosure For Starter   | GV2MC01             |
| 230 Volt Starter  | CMW-50B/K-220-34-50 |
| 230 Volt Starter  | CMW-65B/K-208-45-65 |
| Exhaust Filtert (8 Needed)  | 264085              |
| Spin On Oil Filter  | 264091              |
| Filter Kit - (Includes (8) Exhaust Filters, (8) O-rings For Exhaust Filter,<br>Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for | 264454              |
|   | 204181              |
| Gasket Kit  | 264126              |
| Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons   | 249224              |
| Liquid Cooling Kit - (Includes 2 Stainless Steel Braided Oil Lines, Oil   |                     |
| Filter Adapter, Plate Type Heat Exchanger   | 262173              |

### **REPLACEMENT PARTS LIST - S20/SD20**

| Description   | Part Number         |
|---|---------------------|
|   |                     |
|   |                     |
| S20B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor                        | 262926              |
| SD20B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor                       | 262927              |
| S20B-N-LM Pump, Without Motor (Includes Both Couplings)                     | 262967              |
| 20 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 286TC                | 244256              |
|   |                     |
| REPLACEMENT ACCESSORIES   |                     |
| Oil Valve Box for continuous deep vacuum operation                          | 262190              |
| Inlet Filter  |                     |
| Canister With Flement   | SCAF-3B             |
| Replacement Element Only  | SCAF-334P           |
|   |                     |
| Inlet Check Valve 3", Steel Body, Buna-N Seals                              | 247523              |
|   |                     |
| Starter Box With On/Off Switch And Overload                                 |                     |
| 460 Volt Starter  | GV2ME32             |
| Enclosure For Starter   | GV2MC01             |
| 230 Volt Starter  | CMW-75B/K-220-54-75 |
| 230 Volt Starter  | CMW-75B/K-208-54-75 |
| Exhaust Eiltart (9 Naadad)  | 264085              |
|   | 204000              |
| Spin On Oil Filter  | 264091              |
|   |                     |
| Filter Kit - (Includes (8) Exhaust Filters, (8) O-rings For Exhaust Filter, |                     |
| Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for      |                     |
| Oil Filter & Drain Plugs.)  | 264181              |
|   | 064406              |
| Gasket Kit  | 264126              |
| Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons                               | 249224              |
| · · · · · · · · · · · · · · · · · · ·                                       |                     |
| Liquid Cooling Kit - (Includes 2 Stainless Steel Braided Oil Lines, Oil     |                     |
| Filter Adapter, Plate Type Heat Exchanger                                   | 262173              |



# S25/SD25 PUMP MODULE



# S25/SD25 OIL SEPARATOR HOUSING

Notes: "S" Type: x "SD" Type: xx "NM" Type: xxx

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## S25/SD25 DRIVE ASSEMBLY

Notes: Pos # marked with "x" is for "S" Series Pumps Pos # marked with "xx" is for "SD" Series Pumps

## PARTS LIST -S25/SD25

| Pos.<br>No. | Description                           | Squire<br>No. | Qty | Pos.<br>No. | Description                        | Squire No. | Qty |
|-------------|---------------------------------------|---------------|-----|-------------|------------------------------------|------------|-----|
| 1           | Cylinder                              | 264117        | 1   | 125         | Exh. Filter spring Assembly        | 262107     | 8   |
| 4           | Stud                                  | 264113        | 4   | 126         | Slotted cheese head machine screw  | 262108     | 8   |
| 5           | Set screw                             | 264112        | 6   | 136         | Gasket, Service cover              | 264084     | 1   |
| 9           | Stud                                  | 264111        | 6   | 137         | Sealing ring                       | 262627     | 2   |
| 15          | Rotor                                 | 264116        | 1   | 138         | Allen bolt                         | 262615     | 2   |
| 18          | Sleeve, Bearing                       | 264109        | 2   | 139         | Service cover                      | 264083     | 1   |
| 19          | Sleeve, Bearing                       | 264147        | 2   | 140         | Allen bolt                         | 264082     | 8   |
| 22          | Vane                                  | 264115        | 3   | 141         | Gasket, Separator cover            | 264081     | 1   |
| 25          | A-End plate, Motor side               | 264107        | 1   | 142         | Separator cover plate              | 264080     | 1   |
| 26          | B-End plate, Fan Side                 | 264106        | 1   | 143         | Sealing ring                       | 262627     | 8   |
| 30          | Bearing                               | 264105        | 2   | 150         | Gasket, Exhaust cover              | 264079     | 1   |
| 35          | Shaft seal, viton                     | 264104        | 4   | 152         | Sealing ring                       | 262627     | 4   |
| 47          | Plug                                  | 262115        | 1   | 153         | Exhaust Cover (threaded)           | 264078     | 1   |
| 50          | O-ring, End plate                     | 264103        | 2   | 155         | Allen bolt                         | 262608     | 4   |
| 53          | Hexagon head cap screw                | 264102        | 10  | 156         | Outlet screen                      | 264077     | 1   |
| 54          | Spring Lock Washer                    | 264062        | 12  | 159         | Exhaust valve ass'y                | 262623     | 7   |
| 56          | Hex nut                               | 264063        | 2   | 159.1       | Exhaust valve fixed bolt           | 262530     | 7   |
| 60          | Taper Pin                             | 264101        | 4   | 159.2       | Exhaust valve washer               | 262539     | 7   |
| 65          | A-Shaft key, Motor Side               | 264100        | 1   | 159.3       | Exhaust valve spring               | 262545     | 7   |
| 66          | B-Shaft key, Fan Side                 | 264099        | 1   | 159.4       | Exhaust valve plate                | 262551     | 7   |
| 75          | Oil sump                              | 264098        | 1   | 159.5       | Exhaust valve lock nut             | 262554     | 7   |
| 78          | Steel demister                        | 264097        | 1   | 159.6       | Exhaust valve seat plate           | 262555     | 7   |
| 79          | Sheet metal baffle                    | 264096        | 1   | 163         | Allen bolt                         | 262626     | 2   |
| 83          | Oil sight glass                       | 262598        | 1   | 164         | Sealing ring for Pos #163          | 262627     | 2   |
| 84          | Gasket, Oil sight glass               | 262599        | 1   | 168         | O-Ring, Exh. Valve cover plate     | 264131     | 1   |
| 88          | Plug, Oil fill                        | 264095        | 1   | 169         | Exh. Valve cover plate             | 264130     | 1   |
| 89          | O-Ring, Oil fill plug                 | 264094        | 1   | 175         | Plug                               | 262632     | 1   |
| 90          | Pressure gage                         | 264093        | 1   | 176         | Hex nut                            | 262231     | 1   |
| 95          | Plug, Oil drain                       | 262103        | 1   | 177         | Stud bolt                          | 264076     | 1   |
| 96          | O-Ring, Oil drain plug                | 262102        | 1   | 185         | Gasket, Cylinder                   | 264075     | 1   |
| 99          | Pipe Nipple                           | 264092        | 1   | 186         | Allen bolt                         | 264074     | 8   |
| 100         | Oil filter                            | 264091        | 1   | 187         | Spring Lock Washer                 | 262116     | 8   |
| 105         | Oil sump cover plate                  | 264090        | 1   | 205         | Oil Sump Side cover plate          | 264073     | 1   |
| 106         | Gasket, Oil sump cover                | 264089        | 1   | 206         | Gasket, Oil sump Side cover plate  | 264072     | 1   |
| 107         | Allen bolt                            | 262608        | 8   | 207         | Allen Bolt (Socket Head Cap Screw) | 262608     | 9   |
| 108         | Sealing ring for oil sump cover plate | 262627        | 8   | 208         | Sealing ring                       | 262627     | 9   |
| 115         | Exh. Filter bracket, Upper            | 264088        | 1   | 224         | Elbow, Hydraulic fitting           | 264071     | 4   |
| 116         | Exh. Filter bracket, Medium           | 264087        | 1   | 224S-1      | Sealing Ring for Pos # 224         | 264133     | 4   |
| 117         | Exh. Filter bracket, Lower            | 264086        | 1   | 224S-2      | Sealing Ring for Pos # 224         | 264134     | 4   |
| 120         | Exhaust filter                        | 264085        | 8   | 225         | Elbow, Hydraulic fitting           | 264070     | 2   |
| 121         | O-Ring, Exhaust filter                | 262106        | 8   | 225S        | Sealing ring for Pos # 225         | 264137     | 2   |

## PARTS LIST -S25/SD25 - Continued

| Pos.<br>No. | Description                          | Squire<br>No. | Qty | Pos.<br>No. | Description                           | Squire<br>No. | Qty |
|-------------|--------------------------------------|---------------|-----|-------------|---------------------------------------|---------------|-----|
| 226         | Elbow, Hydraulic Fitting             | 264069        | 1   | 312         | Rubber boot for coupling( Motor Side) | 264146        | 8   |
| 226S        | Sealing ring for Pos # 226           | 264136        | 2   | 313         | Coupling Half, Pump Side              | 264039        | 1   |
| 230         | Oil tube(A)                          | 264068        | 1   | 316         | Set screw                             | 262412        | 1   |
| 231         | Oil tube(B-1)                        | 264067        | 1   | 317         | Set screw                             | 262412        | 1   |
| 232         | Oil Tube(B-2)                        | 264066        | 1   | 320         | Spacer for fan                        | 264038        | 1   |
| 233         | Oil Tube                             | 264065        | 1   | 321         | Fan                                   | 264037        | 1   |
| 236         | Elbow, Hydraulic fitting             | 264064        | 1   | 327         | Locking Disc                          | 264036        | 1   |
| 236S        | Sealing ring for Pos # 236           | 264135        | 1   | 328         | Hex Head Cap Screw                    | 262608        | 1   |
| 238         | Hex Nut                              | 264063        | 1   | 329         | Spring Lock Washer                    | 262116        | 1   |
| 239         | Spring Lock Washer                   | 264062        | 1   | 350         | Fan Support Ring (Pump Side)          | 264035        | 1   |
| 241         | Oil Cooler                           | 264061        | 1   | 351         | Fan Support Ring (Radiator Side)      | 264034        | 1   |
| 250         | Inlet flange, Lower housing          | 264060        | 1   | 352         | Fan Guard                             | 264033        | 1   |
| 251         | Check valve plate                    | 264059        | 1   | 353         | Allen Bolt                            | 262608        | 4   |
| 252         | Check valve guide                    | 264058        | 1   | 354         | Hex Nut                               | 262231        | 4   |
| 253         | O-Ring, Check valve plate            | 264057        | 1   | 355         | Fan Supporting Bolt                   | 264032        | 5   |
| 254         | Spring, Check valve                  | 264056        | 1   | 356         | Fan Supporting Bolt                   | 264031        | 1   |
| 255         | O-Ring, Inlet Flange                 | 264055        | 2   | 357         | Hex Nut                               | 262349        | 11  |
| 258         | Rubber Ball                          | 264054        | 1   | 358         | Spring Lock Washer                    | 262591        | 11  |
| 260         | Inlet flange, Upper Housing          | 264053        | 1   | 359         | Mounting Bracket for radiator         | 264030        | 1   |
| 261         | Inlet screen( Conical )              | 264052        | 1   | 360         | Cheese head Cap Screw                 | 264029        | 12  |
| 265         | Allen bolt                           | 264051        | 3   | 391         | Eye bolt                              | 264028        | 1   |
| 266         | Spring Lock Washer                   | 262116        | 3   | 400         | Motor (IEC)                           | 264027        | 1   |
| 270*        | Plug                                 | 262136        | 1   | 400.3       | Motor fan blade                       | 264026        | 1   |
| 275*        | Oil return valve                     | 264050        | 2   | 400.4       | Motor fan cover                       | 264025        | 1   |
| 276*        | Sealing ring                         | 262138        | 1   | 401         | Hexagon head screw                    | 264024        | 4   |
| 285**       | Oil Recirculation Screw(Hollow-core) | 264049        | 1   | 402         | Spring Lock Washer                    | 264023        | 4   |
| 286**       | Banjo fitting                        | 264048        | 1   | 415         | Hex nut                               | 262349        | 2   |
| 287**       | Sealing ring for Pos # 286           | 264047        | 1   | 416         | Stud                                  | 264022        | 2   |
| 288**       | Sealing ring for Pos # 286           | 262627        | 1   | 417         | Slotted set screw                     | 264021        | 2   |
| 290**       | Oil Return tube                      | 264045        | 1   | 419         | Spacer for Foot, for IEC motor        | 264020        | 1   |
| 291**       | Elbow, hydraulic fitting             | 264044        | 1   | 420         | Slotted set screw                     | 264019        | 1   |
| 291S**      | Sealing Ring, for Pos# 291           | 264047        | 2   | 421         | Rubber foot                           | 264018        | 4   |
| 300         | Motor mounting bracket               | 264043        | 1   | 423         | Spring Lock Washer                    | 262591        | 2   |
| 302         | Spring Lock Washer                   | 264042        | 4   | 425         | Washer                                | 264017        | 2   |
| 303         | Hex nut                              | 264041        | 4   | 430         | Name plate                            | 264016        | 1   |
| 311         | Coupling Half, Motor Side            | 264040        | 1   | 431         | Directional arrow label               | 264015        | 1   |

## PARTS LIST -S25/SD25 - Continued

| Pos.<br>No. | Description               | Squire<br>No. | Qty | Pos.<br>No. | Description                      | Squire<br>No. | Qty |
|-------------|---------------------------|---------------|-----|-------------|----------------------------------|---------------|-----|
| 470         | Elbow, Hydraulic Fitting  | 264014        | 1   | 600         | Motor ( NEMA)                    | 264125        | 1   |
| 470S-1      | Sealing Ring for Pos #470 | 264133        | 1   | 600.3       | Motor fan blade                  | 264124        | 1   |
| 470S-2      | Sealing Ring for Pos #470 | 264134        | 1   | 600.4       | Motor fan cover                  | 264123        | 1   |
| 471         | Oil tube(C)               | 264013        | 1   | 601         | Hex head Bolt                    | 264122        | 4   |
| 473         | Fitting                   | 264012        | 1   | 603         | Spring Lock Washer               | 264121        | 4   |
| 474         | Gas Ballast               | 264011        | 1   | 611         | Coupling Half, Motor Side        | 264120        | 1   |
| 477         | Valve                     | 264010        | 1   | 619         | Spacer for foot, f or Nema Motor | 264119        | 2   |
| 480         | Gas Ballast Kit           | 264132        | 1   | 630         | Motor mounting bracket           | 264118        | 1   |
| 500         | Maintenance Kit           | 264129        | 1   |             | S25 to SD25 Conversion Kit       | 262831        | 1   |
| 501         | Gasket Kit                | 264128        | 1   |             | Check Valve Assembly             | 264118        | 1   |

| REPLACEMENT | <b>PARTS LIST</b> | - S25/SD25 |
|-------------|-------------------|------------|
|-------------|-------------------|------------|

| 2000104011  | Part Number                          |
|---|--------------------------------------|
| REPLACEMENT PUMPS   |                                      |
| S25B-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262928                               |
| SD25-N Rotary Vane Vacuum Pump w/ 230/460 Volt Motor  | 262929                               |
| S25-N-LM Pump, Without Motor (Includes Both Couplings)  | 262969                               |
| SD25-N-LM Pump, Without Motor (Includes Both Couplings)   | 262970                               |
| 25 HP TEFC WEG Motor - 208-230/460 Volt, 3 Phase, Nema 284TC  | 244257                               |
| REPLACEMENT ACCESSORIES   |                                      |
| <b>Oil Valve Box</b> for continuous (> 6 hours) deep vacuum operation   | 262190                               |
| Inlet Filter  |                                      |
| Canister With Element   | SCAF-3B                              |
| Replacement Element Only  | SCAF-334P                            |
| Inlet Check Valve 3", Steel Body, Buna-N Seals  | 247523                               |
| Starter Box With On/Off Switch And Overload   |                                      |
| 460 Volt Starter  | CMW-40B/K-460/28/40                  |
| 230 Volt Starter  | CMW-75B/K-220-57-75                  |
| 230 Volt Starter  | CMW-85B/K-208-63-85                  |
| Exhaust Filtert (8 Needed)  | 264085                               |
| Spin On Oil Filter  | 264091                               |
| Filter Kit - (Includes (8) Exhaust Filters, (8) O-rings For Exhaust Filter,<br>Spin On Oil Filter, Gaskets For Exhaust Cover & Separator, O-rings for   |                                      |
|   |                                      |
| Oil Filter & Drain Plugs.)  | 264181                               |
| Cil Filter & Drain Plugs.) Rebuild Kit - Includes Vanes, Seals, Bearings, Pins  | 264181<br>264180                     |
| Oil Filter & Drain Plugs.)         Rebuild Kit - Includes Vanes, Seals, Bearings, Pins         Gasket Kit   | 264181<br>264180<br>264182           |
| Oil Filter & Drain Plugs.)         Rebuild Kit - Includes Vanes, Seals, Bearings, Pins         Gasket Kit         Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons   | 264181<br>264180<br>264182<br>249224 |
| Oil Filter & Drain Plugs.)         Rebuild Kit - Includes Vanes, Seals, Bearings, Pins         Gasket Kit         Vacuum Pump Oil - 40 Wt Synthetic - 5 Gallons         Liquid Cooling Kit - (Includes 2 Stainless Steel Braided Oil Lines, Oil | 264181<br>264180<br>264182<br>249224 |

