

INSTRUCTION MANUAL

Models: VRBE-3S, VRBE-5S, VRBE-8D



NOVATEC[™]
Part of the **MAGUIRE** Family

Novatec, Inc. 222 E. Thomas Ave. Baltimore, MD 21225 | www.novatec.com

Phone: 410-789-4811
Toll Free: 800-938-6682
Main Fax: 410-789-4638

Parts Email: parts@novatec.com
Service Email: service@novatec.com
Sales Email: sales@novatec.com

Please record the following information, which is specific to this piece of equipment, in the space provided. Our Parts/Service Department will need these numbers to properly respond to any of your requests.

Instruction Manual: <u>VRBE-IM 20JUN2022</u>
<u>Model #:</u> _____
<u>Serial #</u> _____

DISCLAIMER: NOVATEC, Inc. shall not be liable for errors contained in this Instruction Manual nor for misinterpretation of information contained herein. NOVATEC shall not, in any event, be held liable for any special, indirect or consequential damages in connection with performance or use of this information.

Novatec Inc.

VRBE

Table of Contents

1 INTRODUCTION	1
2 WARNING	1
3 OPERATING LIMITATIONS	1
4 UNPACKING	2
5 GENERAL INSPECTION	2
6 SPECIFICATIONS	2
7 MECHANICAL INSTALLATION	2
8 ELECTRICAL INSTALLATION	3
9 OPERATION	4
10 MAINTENANCE & INSPECTION SCHEDULE	5
11 DRAWINGS AND WIRING DIAGRAM	9
12 REPLACEMENT PARTS LIST	13
13 WARRANTY	14

1. INTRODUCTION

The Novatec VRBE Series Vacuum Pump is designed to pneumatically convey plastic pellets in a vacuum conveying system. It does this by creating a vacuum to “pull” air through the piping system. Plastic pellets are introduced into the moving air stream in various ways, including through the use of receivers, probes, pick-up tubes, and rotary air locks. The VRBE is used in conjunction with vacuum chambers, station-t valves, etc. to form the conveying system, which is controlled by Distributed Control Panels. Several vacuum power units may be designed into the system as required. Vacuum conveying systems typically distribute material from silos, surge bins, blenders, or drying hoppers to processing machinery.

2. WARNING

Always disconnect power before servicing. Only qualified technicians should service, maintain, or repair the VRBE. Before using this equipment, read in detail the product bulletins and other information found in this manual. A safe installation is necessary before operating the equipment. The instructions should be understood and followed before installing or operating this equipment.

3. OPERATING LIMITATIONS

Elevation and Exhaust Temperature

Do not operate the vacuum pump at elevations higher than 2500 feet above sea level. Consult factory to review high elevation applications to determine if performance limitations apply. Decreased motor FLA limits may require alternate overload protection or alternate HP models to provide adequate vacuum power.

Blower exhaust temperature and motor cooling are a function of both vacuum level and elevation. Blower exhaust temperature must not exceed 215°F to avoid premature blower failure. A thermal “snap switch” is provided on the pump’s exhaust outlet. This switch is interconnected with the vacuum valve to stop conveying material and allow cool ambient air into the pump. In the event the switch “opens”, the simple cool-down of the switch over time will restore operation.

High air inlet temperatures can also cause excess blower exhaust temperature. So, closed loop systems commonly used when conveying dehumidified materials may require an inlet cooler, or reduced vacuum levels.

4. UNPACKING

Caution should be exercised to see that the equipment is not handled roughly. The crate must be removed carefully. The machine must not be used to pry against when removing the crate. The vacuum power unit is usually shipped completely assembled and requires no further attention prior to installation.

5. GENERAL INSPECTION

When the unit is unpacked, make a visual inspection looking for missing parts or damage which may have occurred during shipment. All electrical and mechanical connections should be checked for tightness, as vibration during transit may cause them to loosen.

6. SPECIFICATIONS

Model	Stages	Pump Power	Line Size	Operating Vacuum	Width (in)	Depth (in)	Height (in)	Weight (lbs.)
		50 Hz						
VRBE-3S	1	3HP (2.2kW)	1.5"	6.5" Hg	18-5/8	19	47-1/2	155
		3.5HP (2.6kW)						
VRBE-5S	1	4.6HP (3.4kW)	2"	6.5" Hg	18-5/8	19	47-1/2	170
		5HP (3.7kW)						
VRBE-8D	2	7.4HP (5.5kW)	2"	11" Hg	24	19	56	275
		8.5HP (6.3kW)						

7. MECHANICAL INSTALLATION

Only qualified technicians familiar with local and national codes should install the equipment. Connect the vacuum lines as shown on the installation drawings. Connect the compressed air supply to air actuated valves as required.

Locate the pump where it can be interconnected with the vacuum system piping

easily.

Accommodations should be made to allow full access of the pump for service. The vacuum gauge should be visible (Fig. 1). The pump should be secured to the floor to prevent movement from vibration and isolating pads (not supplied) may be installed to minimize noise transfer to the floor, if desired.



Figure 1: Vacuum gauge

Compressed Air Supply:

Clean compressed air (80-100 psi / 5.5-6.9 Bar) should be supplied to the NVRBE regulator (Fig. 2) using ¼" tubing. A filter (not supplied) should be provided if the cleanliness of the air is questionable.



Figure 2: Vacuum valve air inlet

8. ELECTRICAL INSTALLATION

Connect the proper power supply (check nameplate) through a main line disconnect (field supplied) to terminal connections L1, L2, L3 and ground into the NVRBE electrical enclosure (Fig. 3). The VRBE blower motor is pre-wired to the starter. Connect control wiring (see separate control instructions) to the VRBE

electrical enclosure. Verify the correct rotation of the motor with the directional

labels on the pump.

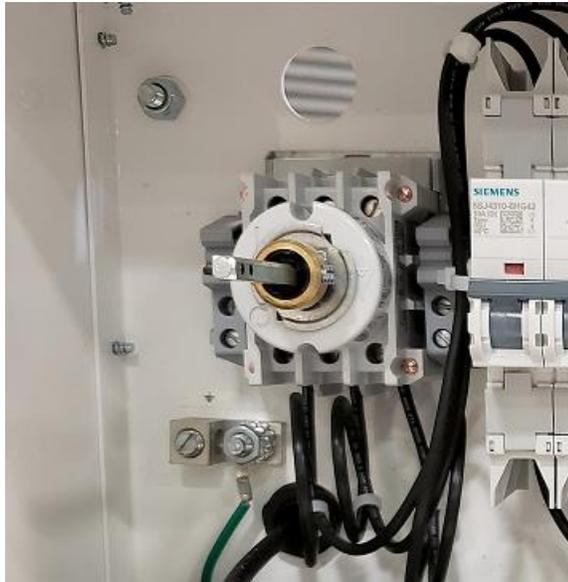


Figure 3: Disconnect & ground lug

9. OPERATION

VRBE Series Vacuum Pumps operate in response to control signals from the central vacuum conveying system control. They start automatically in response to system demands to convey plastic pellets to vacuum receivers.

The VRBE is equipped with a pump protection filter to protect the blower from carryover dust and fines that can create blockages, adhere to the warm surfaces of the blower, increase operating heat, and create an imbalance of the blower's turbine; all of which can result in premature blower failure. The filter must be kept clean and defect-free to allow full vacuum air flow and protect against entrained dust.

In addition, operating the VRBE at excess vacuum levels, in high elevations, or with heated inlet air can create elevated blower temperatures. To guard against damage or failure from overheating, the VRBE is equipped with an over-temperature snap switch that will sense elevated temperatures in the blower and open the VRBE's vacuum valve, allowing the VRBE to run in a no-load state. In this free-wheeling state, vacuum loading of material is halted, indicating an overheated condition and the VRBE's automatic response to protect itself from heat damage.

The VRBE will continue in this mode until the elevated heat of the blower is reduced and the snap switch returns to its normal position, closing the vacuum valve and allowing the vacuum system to operate normally. Note that during this temperature reduction mode, the conveying system connected to this pump is not operating, and material levels may run low, creating an alarm condition at the central control.

To prevent the VRBE from becoming overheated, be sure that the VRBE's pump protection filter is installed correctly in its housing, is in good condition (not bent, no holes or fractures), and is kept clean. Be sure the collection bowl at the bottom of the filter is emptied as needed, to prevent pass-through of dust and fines towards the blower.

The VRBE is also equipped with a clogged filter sensor and a filter-present interlock. If the filter element is significantly soiled or not installed correctly, an alarm will sound and the blower will not operate.

10. MAINTENANCE AND INSPECTION SCHEDULE

It is recommended that maintenance and inspection is done on a scheduled basis. Maintenance requirements will vary widely for each installation and specific operating conditions. It is suggested that a complete inspection be performed with the necessary maintenance at the end of the first day, the first week, the first month and the first 3 months. These inspections will be indicative of how often future maintenance will be necessary.

EVERY WEEK

Inspect the filter element, and clean or replace as required. Remove any fines collected from the bowl (Fig 4.). This time interval should be shortened if experience indicates unusual dust loading. Check the system for air leaks and correct as required.

EVERY 6 MONTHS

Check for loose electrical connections. Tighten all bolts and nuts.



Figure 4: Filter element and bowl

FILTER REPLACEMENT

DO NOT DISCARD the two stainless steel discs and bolt/nut that came with your pump filter. These discs must be transferred to the new replacement filter (Fig. 5). The smaller disc sits inside the filter while the larger disc sits on the outside, creating a seal.



Figure 5: Filter discs

10.1 Bearings

The frequency of lubricating the bearings depends on the operating temperature, the daily hours of operation and environmental conditions such as dust and moisture. Based on a normal installation with a 67F intake air temperature, 37% humidity and a clean environment, the bearings should be lubricated at approximately 5000 hours or at least annually. For more severe installations, the bearings require more frequent lubrication.

To determine when the bearings should be lubricated for your specific installation, we recommend checking the bearing lubricant at the end of 500 hours. At that time, re-fill or repack the bearing lubricant and note the amount of lubricant added. It is recommend to check the bearing lubricant at the end of 1000 hours. At that time, re-fill or repack the bearing lubricant and note the amount of lubricant added. These two measurements will provide a guide as to how often the bearings require lubrication in the future.

We also recommend that a new blower bearing lubrication be inspected prior to the initial installation. This step is recommended to insure the bearings have been properly lubricated during assembly at the factory. This step also provides a base line to determine how frequently the bearings should be lubricated in the future.

10.2 Bearing Grease

HIGH TEMPERATURE RATED BLOWER. Blowers with a Model Number with an “H”, utilize Exxon Polyrex Ep2 with a minimum melt point of 350 Deg F. Check with your lubricant supplier for a grease that is compatible and with a melt point equal to or greater than the above lubricant.

Blower Model	Impeller Side Bearing	Type	Max Temp F	Motor Fan End Bearing	Type	MaxTemp F
RB6 Series	6206z	Shield Open	284	6304z	Shield	284
RB8 Series	6207z	Shield Open	284	6207z	Shield	284
RB43 Series	6205z	Shield	284	6205z	Shield	284
RB63 Series	6206z	Shield	284	6207z	Shield	284
RB83 Series	6207z	Shield	284	6207z	Shield	284

10.3 BEARING MAINTENANCE

When Adding Lubricant:

Blower Model RB6:

1. Turn off the Blower
2. Remove the motor end bell

3. Remove blower housing compressor cover

Blower Model RB8 and all 2-stage Blowers:

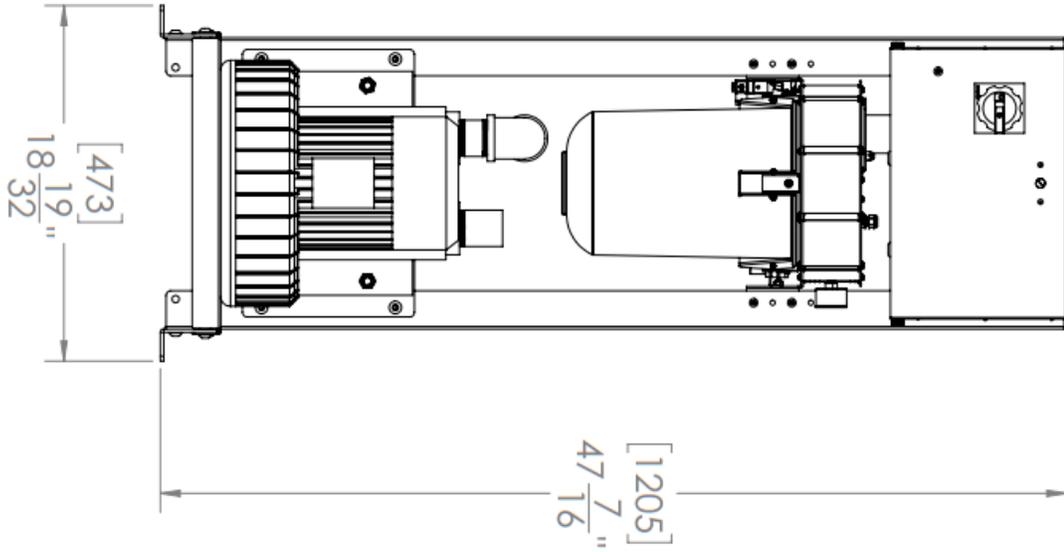
1. Turn off the blower.
2. Remove the grease relief plug located at the 6 O'clock position on the bearing housing.
3. Refill while the blower is hot.
4. Add ball bearing grease until all of the old grease is expelled through the drain hole.
5. Wait 10 minutes before replacing the plug.

Cleaning:

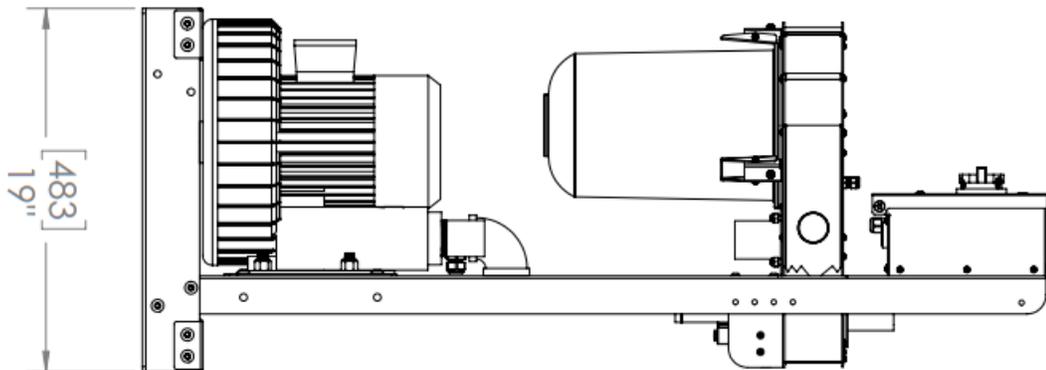
When required by the operating conditions, dismantle the cover from the blower by removing the screws or nuts on the cover. Do not lose the screws or nuts because they are required for re-assembly. Remove and clean the cover. Clean the impeller and the internal portion of the blower with low pressure air after covering the rolling contact bearing and the bearing grease housing. Be careful not to blow dirt or contaminants into the bearing grease. If dirt does enter the lubricant, wash out the contaminated bearing grease, clean the bearing and replenish the bearing with fresh grease.

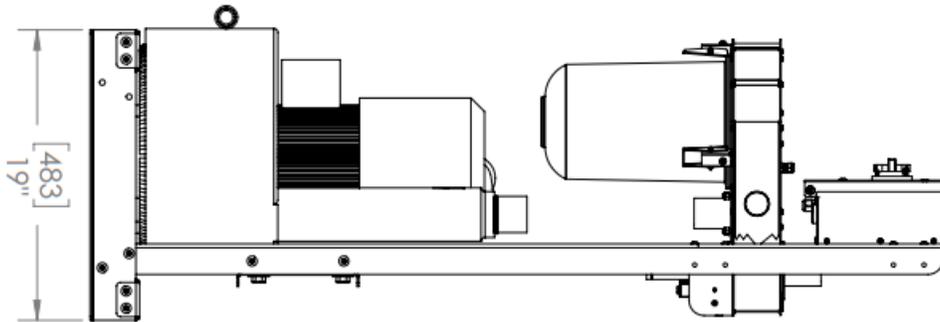
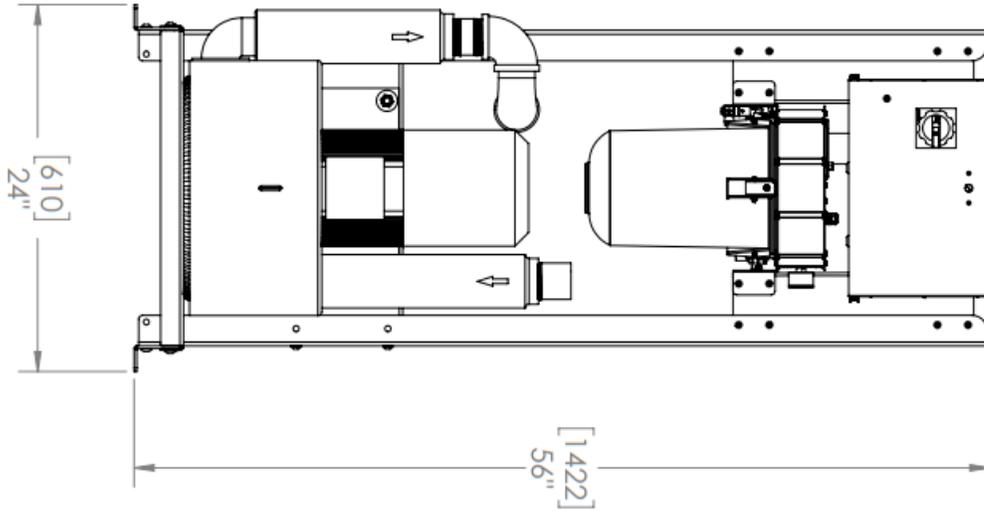
Note: After removing the blower cover screws or nuts, some parts held with centering fits can suddenly separate, fall and possibly cause injury and damage other parts. Care needs to be taken during re-assembly to insure no parts remain in the blower and are securely held in place.

11. DRAWINGS & WIRING DIAGRAMS

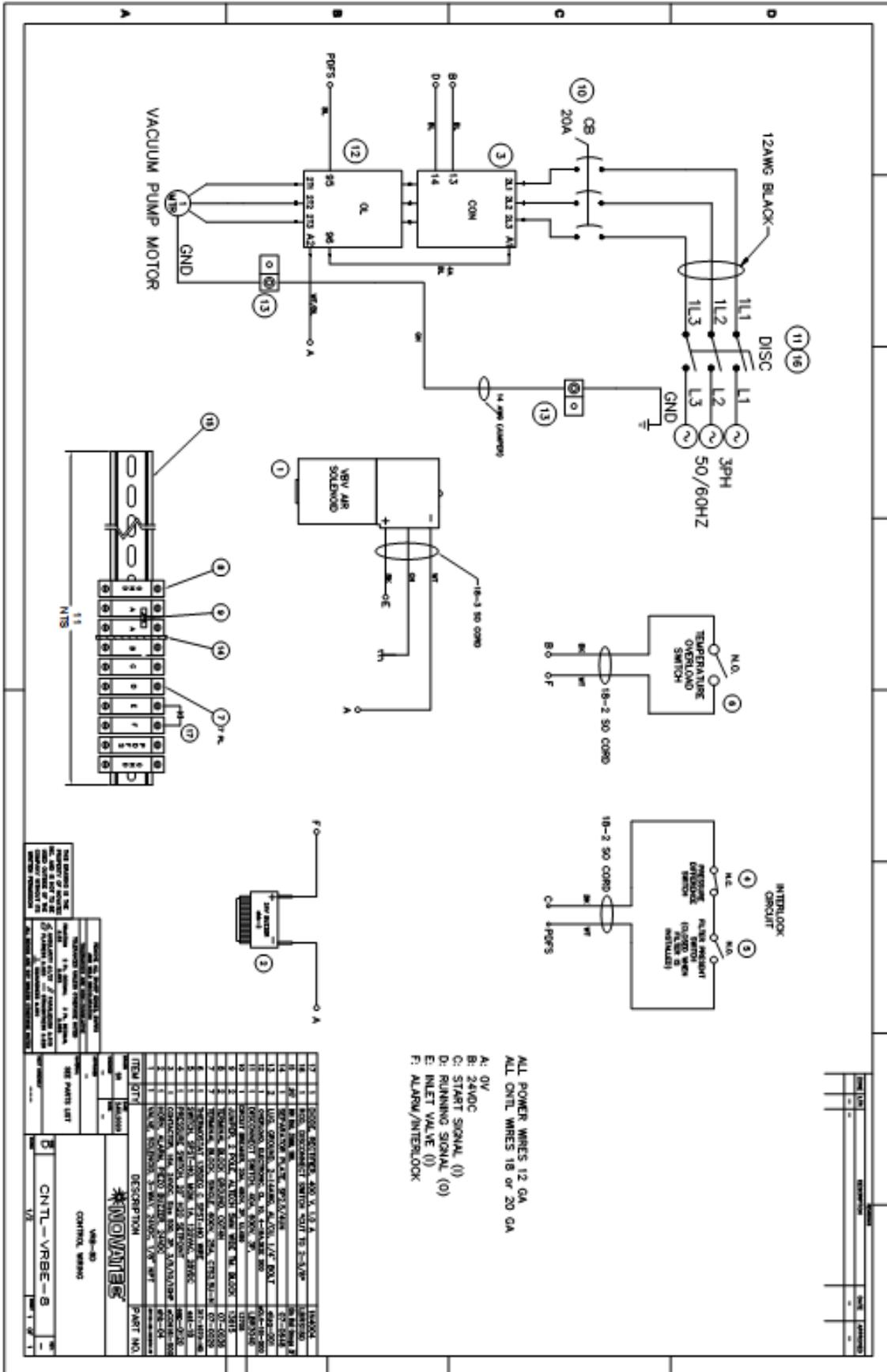


VRBE-3S/5S DIMENSIONS





VRBE-8D DIMENSIONS



12. REPLACEMENT PARTS LIST

QTY	DESCRIPTION	VRBE-3S	VRBE-5S	VRBE-8D
1	BLOWER	prtVRB-3S-001	prtVRB-5S-001	prtVRB-8D-001
1	VACUUM VALVE SOLENOID	4V110-06-DC24V-W	←	←
1	VACUUM GAUGE	14502	←	←
1	VACUUM VALVE AIR CYLINDER	prtVRBE-020	←	←
1	FILTER ELEMENT	903-98	←	←
1	FILTER DISC (INNER)	prtVRBE-039	←	←
1	FILTER DISC (OUTER)	prtVRBE-043	←	←
1	THERMAL SWITCH	317-1070-ND	←	←
1	AIR REGULATOR	SDR100062T	←	←

13. WARRANTY - NOVATEC, INC. - Effective Date 7 FEBRUARY 2018

NOVATEC, INC. offers COMPREHENSIVE PRODUCT WARRANTIES on all of our plastics auxiliary equipment. We warrant each NOVATEC manufactured product to be free from defects in materials and workmanship, under normal use and service for the periods listed under "Warranty Periods". The obligation of Novatec, under this warranty, is limited to repairing or furnishing, without charge, a similar part to replace any part which fails under normal use due to a material or workmanship defect, within its respective warranty period. It is the purchaser's responsibility to provide Novatec with immediate written notice of any such suspected defect. Warranted replacement parts are billed and shipped freight pre-paid. The purchaser must return the suspect defective part, freight prepaid and with identifying documentation to receive full credit for the part returned. Novatec shall not be held liable for damages or delay caused by defects. No allowance will be made for repairs or alterations without the written consent or approval of Novatec.

The provisions in equipment specifications are descriptive, unless expressly stated as warranties. The liability of Novatec to the purchaser, except as to title, arising out of the supplying of the said equipment, or its use, whether based upon warranty, contract or negligence, shall not in any case exceed the cost of correcting defects in the equipment as herein provided. All such liability shall terminate upon the expiration of said warranty periods. Novatec shall not in any event be held liable for any special, indirect or consequential damages. Commodities not manufactured by Novatec are warranted and guaranteed to Novatec by the original manufacturer and then only to the extent that Novatec is able to enforce such warranty or guaranty. Novatec, Inc. has not authorized anyone to make any warranty or representation other than the warranty contained here. Non-payment of invoice beyond 90 days will invalidate the warranty. A renewed warranty can be purchased directly from Novatec.

Please note that we always strive to satisfy our customers in whatever manner is deemed most expedient to overcome any issues in connection with our equipment.

Warranty Periods:

Note: All warranty periods commence with the shipment of the equipment to the customer.

5-Year (Except 1-Year on Non-Novatec Buy-Out Items)

Resin Drying to Include

- NovaWheel™ Dryers *
- Dual Bed Dryers
- NovaDrier *
- NDM-5 Membrane Dryer
- Gas-Fired Process Heaters
- Gas-Fired Regeneration Heaters
- Drying Hoppers
- Central Drying Hopper Assemblies
- Heater/Blower Units and Hot-Air Dryer
- Silo Dehumidifiers
- NovaVac Dryers *
- Nitrogen NovaDriers (Nitro)
- DryTemp Plus

Central System Controls to Include

- FlexTouch™ Series Controls
- FlexXpand™ Series Controls
- OptiFlex™ Series Controls
- PLC Communications Modules
- Greenboard Communications Modules
- LOGO! Mini PLC
- MCS-600 Series Controls – (Distributed I/O)
- MCS-400 Series Controls
- CL Silo Manager

Moisture Measurement Equipment to Include

- MoistureMaster®

PET Resin Crystallizers

Resin Blending and Feeding to Include

- WSB Blenders, MaxiBatch & Feeders *
- Gaylord Sweeper Systems

Downstream Extrusion Equipment to Include

- C and NC Bessemer Series Cutters
- NPS Bessemer Series Pullers
- NPC Mini Puller/Cutter
- All NS Series Servo Saws
- All Cooling and Vacuum Tanks Manufactured by Novatec

Resin Conveying and Systems Components to Include

- GSL Series Vacuum Loaders
- GlassVu Loaders, Receivers and Hoppers
- VL/VLP Series Loaders
- VRH, VR, VR-FL & VRP Series Receivers
- Compressed Air Loaders
- AL-B Barrel Loader
- Cyclone Dust Collectors
- Conveying System Accessories
- Surge Bins
- Valves and Accessories
- Electronic Metal Separators
- Quick Select Manifolds
- Tilt Tables
- Filter Dust Collectors
- Drawer Magnets
- Velocity Control Valves

3-Year

Resin Conveying System Components to Include

- ** VPDB Vacuum Positive Displacement Pumps
- ** SVP Vacuum Pumps
- ** MVP Vacuum Pumps
- ** Railcar Unloading Systems

****5-Year Extended Warranty** - When a MachineSense® data plan is activated for products with **, Novatec automatically extends the warranty to 5 years. The data plan must be activated within 60 days after product shipment, and remain active through the warranty period to maintain extended warranty eligibility. The first 6-months of data plan usage is free from Novatec.

1-Year

- Infrared Dryers
- Custom Equipment of any kind unless otherwise specified

- UltraVac Vacuum Pumps
- Vacuum Regenerative Blower Pumps



Exclusions:

Routine maintenance/replacement parts are excluded from the warranty. These include, but are not limited to: hoses, desiccant, filters, filter elements, wiper seals, gaskets, dew point sensors, infrared lamps, motors, internal solenoids, fuses and motor brushes. Use with abrasive materials will void the warranty of any standard product. Wear resistant options may be available to extend usable service life with abrasive materials. Novatec reserves the right to limit the warranty if the customer installs replacement parts that do not meet the specifications of the original parts supplied by Novatec.

***Specific Exclusions:**

1. NovaDrier and NovaDrier-Nitro warranty is void if coalescing filters are not replaced on a 6-month or yearly basis (per instruction manual) and/or membrane has been exposed to ozone.
2. NovaVac Dryer -The ability of the canisters to hold vacuum will be compromised if the vacuum seal edge is damaged from mishandling. We do not warranty canisters damaged from improper handling. We do, however, warranty the seals.
3. LOAD CELLS on our WSB's are covered by Novatec standard warranty as long as they have not been damaged from improper handling.
4. Desiccant Wheel Warranty will be void if the wheel has been exposed to plasticizer, dust or other contaminants as a Result of negligence on the part of the processor.

This warranty shall not apply to equipment:

1. Repaired or altered without written approval of NOVATEC unless such repair or alteration was, in our judgment, not responsible for the failure
2. Which has been subject to misuse, negligence, accident or incorrect wiring by others
3. Warranty is void if processing rates exceed manufacturer-recommended levels or if damage is caused by ineffective power isolation and/or power spikes/sags or incorrect installation.

NOTE: All conditions and content of this warranty are subject to changes without notice.