MAGUIRE PRODUCTS INC.

NVRBE Vacuum Regenerative Blower Pump®

MAGUIRE

NVRBE®

INSTALLATION • OPERATION • MAINTENANCE

Maguire Products Inc.

MAGUIRE NVRBE

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To every person concerned with use and maintenance of the MAGUIRE NVRBE Series Vacuum Pump it is recommended to read thoroughly these operating instructions. Maguire Products Inc. accepts no responsibility or liability for damage or malfunction of the equipment arising from non-observance of these operating instructions.

To avoid errors and to ensure trouble-free operation, it is essential that these operating instructions are read and understood by all personnel who are to use the equipment.

Should you have problems or difficulties with the equipment, please contact Maguire Products Inc. or your local Maguire distributor.

These operating instructions only apply to the equipment described within this manual.

Accuracy of this Manual

We make every effort to keep this manual as correct and current as possible. However, technology and product changes may occur more rapidly then the reprinting of this manual. Generally, modifications made to the pump design or to the operation of the software are may not reflected in the manual for several months. The date at the footer of this manual will indicate approximately how current this manual is. Likewise, your pump may have been produced at an earlier time and the information in this manual may not accurately describe your pump since this manual is written for the current line of pumps in production (as of the date in the footer). We always reserve the right to make these changes without notice, and we do not guarantee the manual to be entirely accurate. If you question any information in this manual, or find errors, please let us know so that we may make the required corrections or provide you with accurate information. Additionally, we will gladly provide you with an updated copy of any manuals you need at any time. We welcome comments and suggestions on ways we can improve this manual. For additional information, or to download the latest copy of this manual or any other Maguire manual, please visit our website or contact us directly.

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1. INTRODUCTION

The MAGUIRE NVRBE 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 LowPro receivers, probes, pick-up tubes, and rotary air locks. The NVRBE is used in conjunction with vacuum chambers, station-t valves, etc. to form the conveying system, which is controlled with either the LowPro system or 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 NVRBE. 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 (HP)	Line Size	Operating Vacuum (50 Hz / 60 Hz)	Width (in)	Depth (in)	Height (in)	Shipping Weight (lbs.)
NVRBE-2	1	1.85	1.5”	4” Hg / 5” Hg	18-5/8	19	47-1/2	150

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 pump's vacuum valve solenoid (Fig. 2). 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 NVRBE blower motor is pre-wired to the starter. Connect control wiring from the LowPro (see separate control instructions) to the NVRBE electrical enclosure. Verify the correct rotation of the motor with the directional labels on the pump.

Figure 3: Disconnect & ground lug

9. OPERATION

NVRBE 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 NVRBE 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 NVRBE 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 NVRBE is equipped with an over-temperature snap switch that will sense elevated temperatures in the blower and open the NVRBE’s vacuum valve, allowing the NVRBE to run in a no-load state. In this free-wheeling state, vacuum loading of material is halted, indicating an overheated condition and the NVRBE’s automatic response to protect itself from heat damage.

The NVRBE 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 NVRBE from becoming overheated, be sure that the NVRBE'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 NVRBE 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

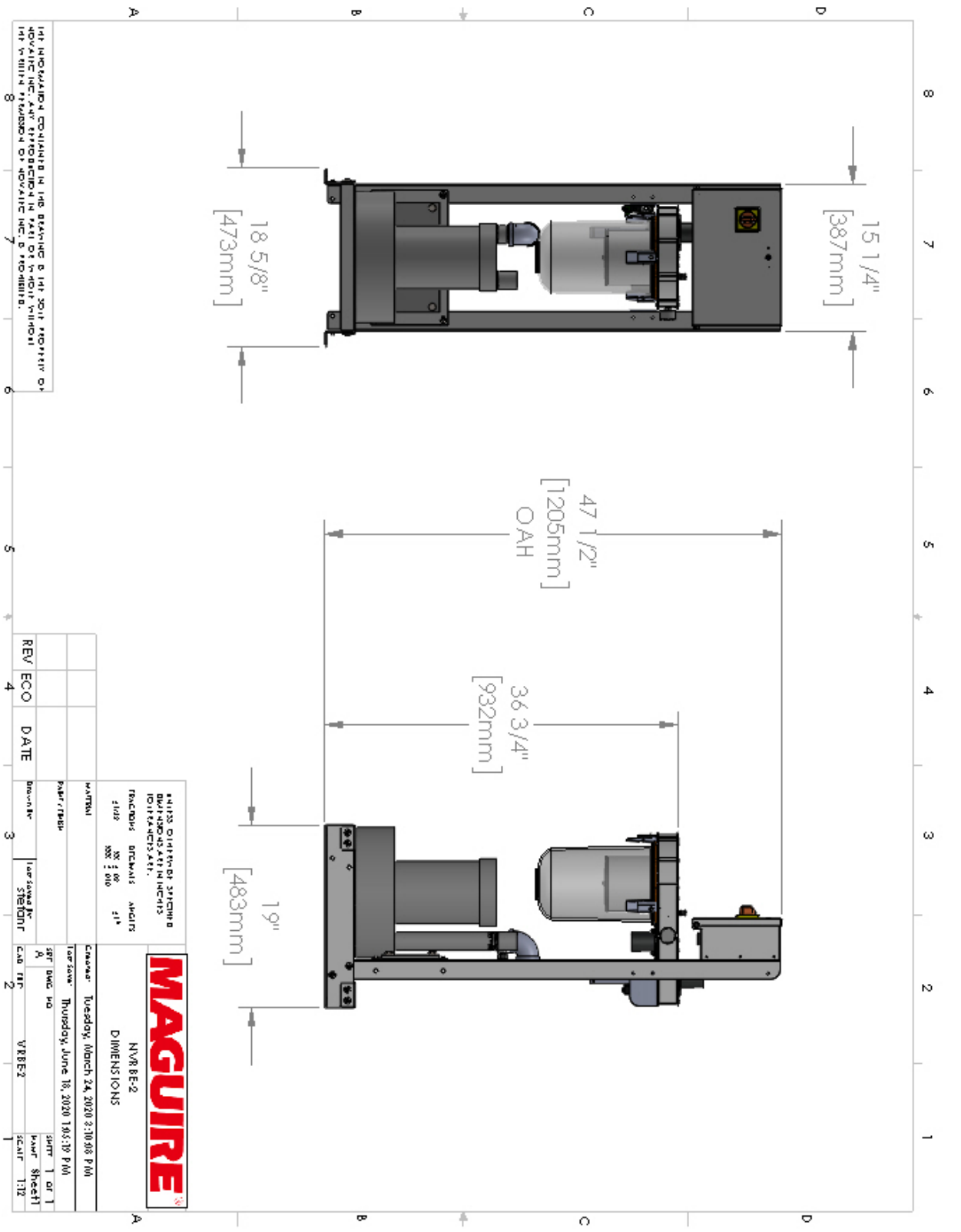
Inspect the filter element, and clean or replace as required. Remove any fines collected from the bowl (Fig 4.). This time interval should be shortened if experience indicates unusual dust loading. Check the system for air leaks and correct as required.

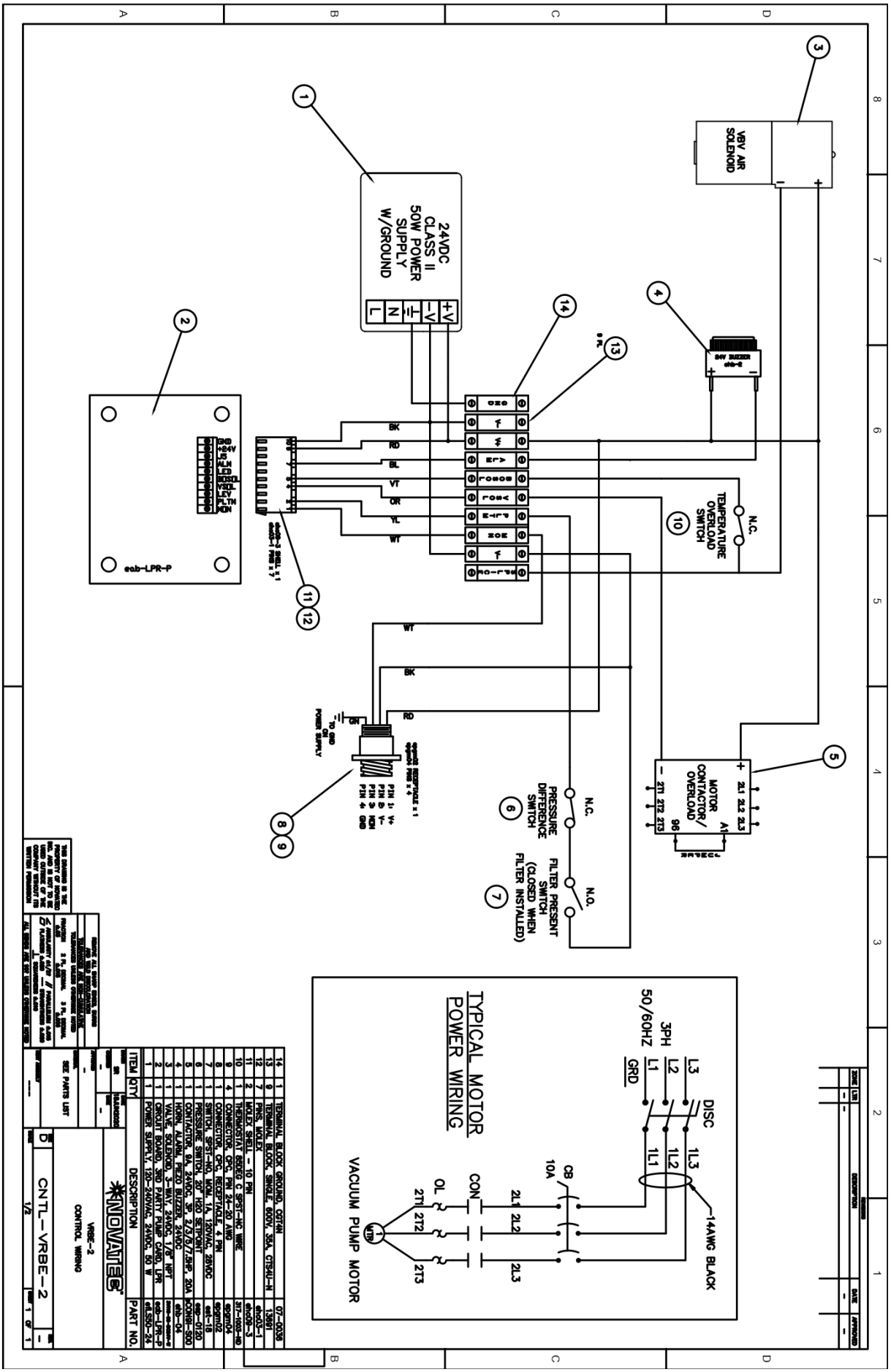
EVERY 6 MONTHS

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

Figure 4: Filter element and bowl

11. DRAWINGS & WIRING DIAGRAM




24VDC CLASS II 50W POWER SUPPLY W/GROUND
VBV AIR SOLENOID
TEMPERATURE OVERLOAD SWITCH
N.C.
MOTOR CONTACTOR/ OVERLOAD
PRESSURE DIFFERENCE SWITCH
FILTER PRESENT SWITCH (CLOSED WHEN FILTER INSTALLED)
N.O.
TO GND OR POWER SUPPLY
TYPICAL MOTOR POWER WIRING
3PH 50/60HZ
DISC
CB 10A
CON
OL
VACUUM PUMP MOTOR
14AWG BLACK
NOVATEC
VRBE-2
CONTROL WIRING
CNTL-VRBE-2

12. REPLACEMENT PARTS LIST

QTY	DESCRIPTION	NVRBE-2 PART NUMBER
1	BLOWER	R5325A-2
1	VACUUM VALVE SOLENOID	3V110-06-DC24V-W
1	VACUUM GAUGE	14502
1	VACUUM VALVE AIR CYLINDER	EFV-25-014
1	FILTER ELEMENT	903-98
1	THERMAL SWITCH	317-1003-ND

13. WARRANTY - Exclusive 5-Year

MAGUIRE PRODUCTS offers one of the MOST COMPREHENSIVE WARRANTIES in the plastics equipment industry. We warrant each Pump manufactured by us to be free from defects in material and workmanship under normal use and service; our obligation under this warranty being limited to making good at our factory any Feeder which shall within FIVE (5) YEARS after delivery to the original purchaser be returned intact to us, transportation charges PREPAID, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and MAGUIRE PRODUCTS neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sale of its products.

This warranty shall not apply to any Feeder which shall have been repaired or altered outside MAGUIRE PRODUCTS factory, unless such repair or alteration was, in our judgment, not responsible for the failure; nor which has been subject to misuse, negligence or accident,
incorrect wiring by others, or installation or use not in accord with instructions furnished by Maguire Products.

Our liability under this warranty will extend only to Feeders that are returned to our factory in Aston, Pennsylvania PREPAID.

It should be noted, however, that we strive to satisfy our customers in whatever manner is deemed most expedient to overcome any problems they may have in connection with our equipment.

Technical Support and Contact Information

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