INSTRUCTION MANUAL

Vacuum Receivers
VRX Series

Models:
VRX-12, VRX-19, VRX-30
VRX-38, VRX-76, VRX-114T

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 provide. Our Parts/Service Department will need these numbers to properly respond to any of your requests.

Instruction Manual: VRX IM 12 FEBRUARY 2021

Model #:_____

Serial #:_____

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

Table of Contents

1.) INTRODUCTION

Vacuum conveying is one of the most commonly used methods for moving plastic materials from storage to drying to the processing machines. It is an integral part of plastics manufacturing and is relied upon to keep production operating at optimal efficiency. This can be accomplished with self-contained vacuum loaders for smaller (or isolated) systems; and/or a centralized conveying system consisting of a series of vacuum pumps, vacuum/material tubing & valves, and vacuum receivers for larger more demanding facilities.

Vacuum Receivers are an integral part of any plastics Central Conveying System. They are often referred to as 'vacuum chambers', 'vacuum stations', or just 'stations'. It doesn't really matter how many vacuum receivers or 'stations' there are in a system. In a single facility, there could be 6 or there could be 200 working to supply material to where it is needed. As long as one or more central vacuum pumps are used to provide vacuum to transfer plastics, a *Vacuum Receiver* is used instead of a Vacuum Loader. The plastics Central Conveying Control is programmed by the processor to determine the load and dump times as well as the number of blowback blasts included in each sequence – if the blowback option is included. The ebb and flow of vacuum to draw resin through the material lines into the *Vacuum Receiver* is controlled by either a Station 'T' Valve or an "External Fill Valve" built into the lid of the *Vacuum Receiver*.

Vacuum Receivers are typically used in a Central Conveying System to transfer plastic pellets, regrind, or free-flowing powders from a material source to destinations like Surge Bins, Drying Hoppers, Blender Bins, or directly to the throat of a processing machine. So, some are called Powder Receivers and others are called Machine-Mount Receivers.

The VRX series *Vacuum Receivers* introduces many re-designed features to provide a range of functionality to accommodate many different applications; and to provide the ability to repurpose Vacuum Receivers post-purchase if the need arises. This is accomplished by the modular design; allowing the interchange of vacuum outlet tubing connections, body sections, and filter & lid options; and the bolt-on/plug-n-play ability to add Machine-Mount functionality to several models.

2.) WARNING

Before conducting any maintenance, be sure to turn off the receiver at the central control and/or disconnect electrical power and compressed air supplies. This also applies to all pneumatic valves incorporated into the conveying system. Receivers/valves may be automatically energized to operate without warning, startling the operator or maintenance worker.

3.) UNPACKAGING AND INSPECTION

When the unit is unpacked, make a visual inspection looking for missing parts or damage that may have occurred during shipment. Although the units are packaged securely, vibration and mishandling during transit can cause damage. Halt receipt of the product and report any noticeable shipping related damage to the transportation service used. Report any missing parts or other damage to Novatec, Inc. immediately. All electrical and mechanical connections should be checked for tightness, as vibration during transit may cause them to loosen.

Since receivers are part of a system and do not operate alone, examine the carton carefully for accessories, wiring, and spare parts that may have been included in the shipment. Check inside chambers for parts and shipping materials.

4.) BASIC FUNCTIONS OF VACUUM RECEIVERS

NOVATEC, INC. VRX Series are modular vessels for receipt of materials being conveyed by a vacuum loading system consisting of a central vacuum pump, interconnected vacuum tubing & valves, material convey tubing, and a centralized control system. VRX receivers are designed to receive virgin pellets and regrind materials vacuum conveyed to them from storage containers, and typically are located over drying hoppers, blenders, and process machines.

The VRX series receivers incorporate swappable material inlet bodies and vacuum outlets to allow the receiver to be adapted to a number of different system applications; and provide the opportunity to repurpose the receiver for other system sizes as applications change.

Machine mount hopper accessories are also available for the VRX series to load material directly into the machine throat.

Each unit is designed to operate within a specific pre-engineered central vacuum system and must be matched to the line size of the system (tubing diameter), control voltage, and throughput capacity/demand. Each receiver must be accompanied by a range of accessories for its operation. These components are purchased separately:

- Central control system,
- Vacuum pumps and accessories
- Material lances and/or vacuum probes
- Tubing, bends, couplers, and flex hose of the correct diameter for vacuum system, and
- Tubing, bends, couplers, and flex hose of the correct diameter for material conveying.

The VRX series provides the option to utilize a standard integrated External Fill Valve (EFV) on the hinged lid of the receiver, or a remote mounted Station “T” Valve (SV) with a tube stub on the receiver lid.

(*If a VRX-38, VRX-76, or VRX-114T is ordered with 3.5” or 4” O.D. vacuum lines, these specific units can only be operated with the remote SV and tube stub.*)

4.1) NOVATEC VRX Hinged Lid Receivers

NOVATEC, INC. VRX Hinged Lid Receivers mimic the function of the standard VR series, but with premium features. The hinged lid incorporates an EFV with bolt-on tube stubs or a remote station valve with lid bolt-on tube stubs that can allow the receiver to be adapted a series of vacuum line sizes. The lid is secured by a hinged bracket and three/four fixed rotary draw latches. The hinged bracket allows the lid to be self-supported when the lid is opened for easy maintenance access to the filter and receiver internals.

4.2) Standard Features

VRX Series Standard Features:

- Material Inlet (Tangential) & Bolt-On Vacuum Outlet Stub Diameters from 1.5” O.D. to 4” O.D. (Dependent on Model & Size)
- Hinged Lid with Integrated External Fill Valve (EFV) with Bolt-On Tube Stub
- Low-Profile Discharge Valve with Integrated Demand Level Switch (3” & 5” Discharge Sizes)
- Local Junction Box with ON/OFF switch and Demand/Loading Indicator Lights
- 24VDC Control Voltage Standard
- 12’ Drop Cable Standard

Local Junction Box & Low-Profile Discharge Valve

4.4) Options & Accessories

VRX Series Options:

- Upsized Vacuum Line Adaptation for Upsized Vacuum Header
- Upsized Material Line Adaptation for Line Step Applications
- Alternate Control Voltages (120VAC or 24VAC, in lieu of 24VDC)
- DeviceNet Cables = for 24VDC Only
- Blowback or Filter-less
- High-Wear Package
- High-Heat Package = for materials conveyed or in applications above 220^{o}F (104.4^{o}C)
- External Fill Valve Deleted = Lid Tube Stub (for use with Station Valve in lieu of EFV)
- Proportioning Valve (Pre-Wired)
- Capacitance Level Switch & Mounting Bracket
- All Stainless-Steel Material Contact
- FDA Material Contact Gaskets
- Machine Mount Glass Hopper (Retrofittable to Existing VRXs; 8, 12, & 16 lb)
    - Photo-Eye Level Switch
    - Capacitance Level Switch
    - Flange Adapter Choices:
        - 6X6 with 2.0” ID Pass-Thru
        - 7X7 with 3.5” ID Pass-Thru
    - Custom Drilling of Adapter Flange (Standard Base Flange comes Blank)

Blowback Option

Filter-less Option

VRX Series Accessories:

- Station Valve (Optional with EFV-Delete Receivers)
- Pulsed Blowback Standalone Control
- Proportioning Valve Standalone Control

5.) ENGINEERING DATA

5.1) Specifications

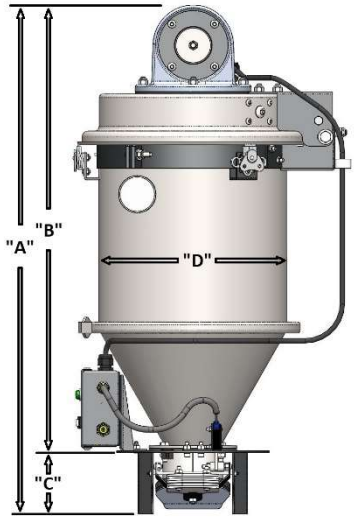
Model	Configuration	Available Line Size		Volume		Capacity*	
		in	mm	ft^3	L	lb	kg
VRX-12	Standard	1.50 - 2.50	38-64	0.33	7.4	12	5.4
	Blowback (Option)						
	Filter-less (Option)	1.50 - 2.00	38 - 50				
VRX-19	Standard	1.50 - 3.00	38 - 76	0.50	15	19	8.6
	Blowback (Option)						
	Filter-less (Option)	1.50 - 2.00	38 - 50				
VRX-30	Standard	1.50 - 3.00	38 - 76	0.79	22.4	30	13.6
	Blowback (Option)						
	Filter-less (Option)	1.50 - 2.00	38 - 50				
VRX-38	Standard	1.50 - 3.00	38 - 76	1.0	31.2	38	17.2
	Blowback (Option)						
	Filter-less (Option)	1.50 - 2.50	38 - 64				
VRX-76	Standard	1.50 - 4.00**	38 - 100**	2.0	52.4	76	34.5
	Blowback (Option)						
	Filter-less (Option)	1.50 - 2.50	38 - 64				
VRX-114T	Standard	1.50 - 4.00**	38 - 100**	3.0	74.5	114	51.7
	Blowback (Option)						
	Filter-less (Option)	1.50 - 2.50	38 - 64				

*Resin capacity based on 38lb/ft^3 bulk density.
** 3.50” & 4.00" vacuum line only available as lid tube stub and used with the SV-35 or SV-40 station valves (included).
For all models: 24VDC Standard - 120VAC is a no charge option.

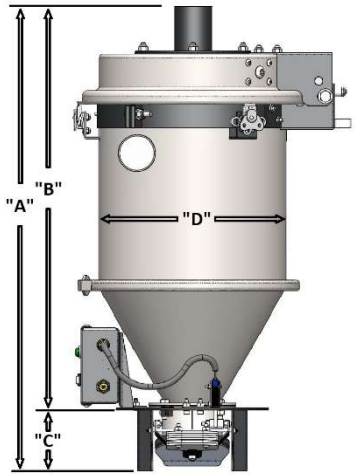
5.2) Dimensions & Weights

Hopper Loading Packages											
Configuration	Part Number	A		B		C		D		Shipping Weight	
		in	cm	in	cm	in	cm	in	cm	lb	kg
Standard	**VRX-12**	23.4	59.4	9.5 - 9.9	24.1 - 25.1	3.3	8.4	10	25.4	25	11
	VRX-19	27.4	69.6	13.5 - 13.9	34.3 - 35.3	3.3	8.4	10	25.4	29	13
	VRX-30	33.8	85.9	19.9 - 20.3	50.5 - 51.6	3.3	8.4	10	25.4	40	18
	VRX-38	31.3	79.5	16.4 - 17.4	41.7 - 44.2	3.5	8.9	16	40.6	45	21
	VRX-76	41.3	104.9	26.4 - 27.4	67.1 - 69.6	3.5	8.9	16	40.6	55	25
	VRX-114T	51.7	131.3	36.8 - 37.8	93.5 - 96.0	3.5	8.9	16	40.6	65	30
Option: Tube Stub in lieu of EFV	**VRX-12**	21.3	54.1	9.5 - 9.9	24.1 - 25.1	3.3	8.4	10	25.4	25	11
	VRX-19	25.3	64.3	13.5 - 13.9	34.3 - 35.3	3.3	8.4	10	25.4	29	13
	VRX-30	31.7	80.5	19.9 - 20.3	50.5 - 51.6	3.3	8.4	10	25.4	40	18
	VRX-38	29.2	74.2	16.4 - 17.4	41.7 - 44.2	3.5	8.9	16	40.6	45	21
	VRX-76	39.2	99.6	26.4 - 27.4	67.1 - 69.6	3.5	8.9	16	40.6	55	25
	VRX-114T	49.6	126.0	36.8 - 37.8	93.5 - 96.0	3.5	8.9	16	40.6	65	30

Filter-less Units, VRX-12 through -30: Add 7" to dimension "A"
Filter-less Units, VRX-38 through -114T: Add 9" to dimension "A "



Standard VRX

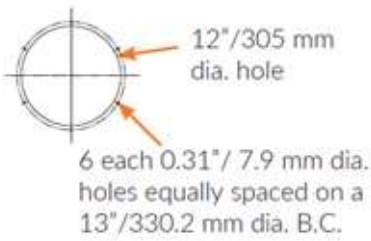


VRX with EFV Delete Option

Mounting Patterns

VRX-12 THRU VRX-30
(3" discharge assembly)

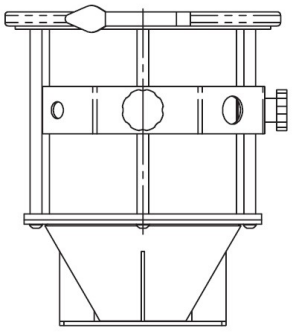
VRX-38 THRU VRX-114T
(5" discharge assembly)



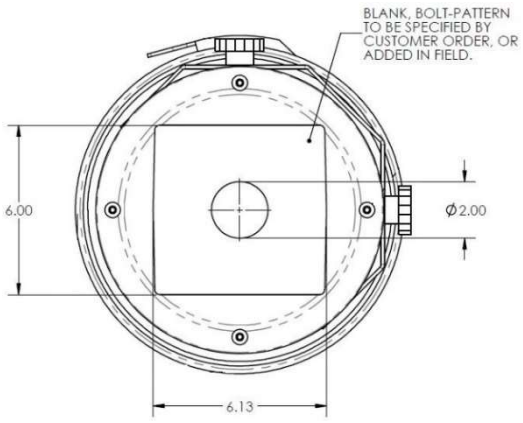
Machine Mount Packages								
Part Number	Height		Capacity		Discharge Diameter		Shipping Weight	
	in	cm	lb	kg	in	cm	lb	kg
***opt-VRX-MM-8**	14.4	36.6	8.0	3.6	2.0	5.1	30	13.6
***opt-VRX-MM-8-7F**	13	33.0	8.0	3.6	3.5	8.9	34	15.5
***opt-VRX-MM-12**	18.4	46.7	12.0	5.5	2.0	5.1	45	20.5
***opt-VRX-MM-12-7F**	17	43.2	12.0	5.5	3.5	8.9	50	22.7
***opt-VRX-MM-16**	21.4	54.4	16.0	7.3	2.0	5.1	60	27.3
***opt-VRX-MM-16-7F**	20	50.8	16.0	7.3	3.5	8.9	65	29.5
****MHA-38**	27.0	68.6	38.0	17.3				

*For VRX-12 through VRX-38.

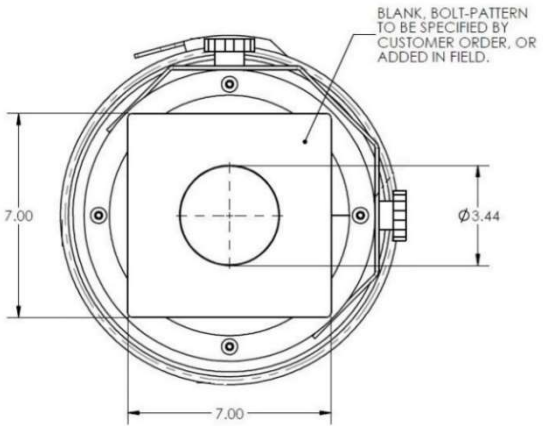
**For VRX-76, use machine/surge hopper MHA-38. See MHA data sheet for details.



8-16lb Machine Mount package shown with bracket that comes with optional photo-eye sensor.



2.0” Discharge, 6.0” Flange, 8-16lb
opt-VRX-MM-XX-20



3.5” Discharge, 7.0” Flange, 8-16lb
opt-VRX-MM-XX-7F

6.) PRINCIPLE OF OPERATION – VACUUM SYSTEMS

NOVATEC, INC central vacuum conveying systems utilize a powerful vacuum pump to generate vacuum conveying power for a group of receivers. Vacuum receivers are interconnected with the vacuum pump through a series of tubing, receiver isolation valves, and a centralized control system. Each receiver has the ability to use the central pump for vacuum conveying power within a sequencing arrangement…one receiver operating at a time. The selected conveying control system in use determines the sequence of operation and triggers vacuum isolation valves, located near or incorporated into each receiver, one at a time, to allow vacuum to be pulled on each receiver with a demand for a set period of time. After that receiver loads, the vacuum signal is passed onto another receiver with vacuum demand, allowing it to start loading.

6.1) Standard Receivers

Vacuum systems typically utilize a central dust collector located near the vacuum pump. The dust collector allows material fines and dust that are carried through from each receiver to be trapped before they are allowed to enter the pump. Filtered vacuum receivers use a physical fine mesh barrier (backed by a rigid expanded metal structure) to separate the material from the air stream. The mesh is small enough to stop the material from entering the vacuum line of the conveying system, but large enough to allow dust and some fines through. The dust and fines that do pass through are trapped by the central dust collector. In regard to this, users find efficiency in two ways:

Filtered vacuum receivers use a physical fine mesh barrier (backed by a rigid expanded metal structure) to separate the material from the air stream.

1. The conveyed materials are somewhat ‘stripped’ of dust and fines by the vacuum system. These fines typically provide little value and/or detract from the molding process.
2. There maintenance required for the filter medium is greatly reduced and is more conveniently located at floor level, near the pump.

6.2) Filter-less Receivers

Vacuum systems typically utilize a central dust collector located near the vacuum pump. The dust collector allows material fines and dust that are carried through from each receiver to be trapped before they are allowed to enter the pump. Filter-less receivers employ a cyclonic design to separate material from the air stream. The dust and fines that do pass through are trapped by the central dust collector. Regarding this, users find efficiency in two ways:

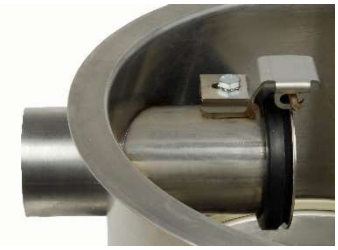
1. The conveyed materials are somewhat “stripped” of dust and fines by the vacuum system. These fines typically provide little value and/or detract from the molding process.
2. There are no filters on the receivers to be cleaned or replaced.

Filter-less receivers employ a cyclonic design to separate material from the airstream.

7.) PRINCIPLE OF OPERATION – VACCUM RECEIVERS

Each receiver is equipped with a material level switch that signals the control system with a 'demand' for vacuum power from the central vacuum pump to load. The switch may be a tilt switch, located on the flapper/dump valve below each receiver, or in the form of a pair of photoelectric sensors that can sense the presence or absence of material in a sight glass below the receiver. The switch is designed to signal a lack of material and the need, or demand, for the material supply to be replenished.

The control system will receive the demand signal from the receiver; when it is able, send a signal to that receiver station to pull vacuum, allowing it to load. The receiver station is equipped with a vacuum isolation valve that will open, allowing vacuum power to pull from only that receiver, creating suction to pull its discharge flapper shut, and to pull material to the receiver from the selected material source. As material is pulled into the receiver vessel, it passes through a check valve integrated into the material inlet, and material fills the chamber. The vacuum air used for this process is drawn through the filter media of the receiver back towards the central pump for the time setting established on the central control for that receiver. The filter media blocks the loaded material from entering the vacuum line that exits the receiver.



Inlet Check Valve Inside Receiver Chamber

Once the load time setting expires, the central control turns off the signal to that receiver, allowing the vacuum isolation valve to close, shutting off the vacuum supply to that receiver. While the control system directs the vacuum signal to move on to other receivers in the system, the loaded receiver, no linger under the negative pressure of vacuum, unloads it material into the vessel or machine below it with the assistance of gravity. At this point, receivers equipped with the optional blowback feature will trigger and send a pulsed blast of compressed air down through the filter screen, cleaning off collected dust and fines. The check valve installed on the material inlet of the VRX, now closed, blocks the flow of blowback air from entering the material conveying line, forcing it through the dump valve.

Material discharges from the chamber by gravity and flows to its destination (dryer, blender, machine). If the loaded material completely evacuates the chamber and does not back up into the receiver, the process will repeat when vacuum power is available. This is a result of the discharge flapper on the base of the receiver, which is pushed open by the discharged material, swinging back by gravity towards closing after material is unloaded. The flapper's demand switch will indicate a new demand to the central controls. If material does back up into the receiver, it will not allow the discharge flapper to swing shut. This will stop the demand switch on the flapper from sending another demand signal to the control. Once the material recedes away from the flapper, the flapper will swing by gravity towards closing and once again create a demand signal.

Counter-Weighted Flapper Discharge Valve with Tilt Demand Switch.

Machine mount applications combine the vacuum receiver with a clear sight tube or hopper, which mounts vacuum-tight to the machine throat. When used, either the tilt demand switch with flapper valve on the receiver (depending on hopper and machine throat size) or a sensor mounted on the hopper to control loading operations based upon the level of material with the hopper can be used. In many cases, the flapper in the machine mount assemblies are redundant, but are still utilized to assure a vacuum-tight seal while loading. When using the integrated flapper demand switch (if available), the receiver will call for material when the flapper freely swings back to towards closing. When a sensor is used on the machine mount sight glasses, it may be a capacitance type with a sensitivity adjustment, set against the glass; or photoelectric sensors, a.k.a. 'Photo-Eyes', that consist of an emitter and a receiver, sending a signal through the glass. In either case, the switches/sensors send a signal to the central control system when material is not present, and that receiver requires loading. Note that for the photo-eyes and the capacitance switch, the bracket on the sight glass may be vertically adjustable for various levels of material in the machine mount hopper, i.e., the user can adjust at what level the receiver will call for more material; unlike the flapper tilt demand switch that is not adjustable, as it will call for demand as soon as the material drops low enough to allow the flapper to swing towards the closed position.

VRX with Machine Mount (GMM)

8.) UTILITIES CONNECTIONS

8.1) Electrical Installation

Control signal and voltage provided by central conveying control system. Wire provided 12' control cable to the control system according to the control schematic and receiver schematic "asVRX-JB-XX" (See Section 10).

8.2) Compressed Air Installation

Connect 80-100psig compressed air to the receiver Station Valve (SV), External Fill Valve (EFV), Blowback (BB, optional), and/or material External Proportioning Valve (EPV) solenoid. A compressed air filter (not supplied) should be provided if the cleanliness of the air is questionable.

9.) RECEIVER INSTALLATION

9.1) Hopper Mount

Mount the receiver body to the hopper lid, positioning it so that the material inlet is directed towards the material pickup point or conveying line. Make sure the discharge valve flapper has enough room to move freely. Secure the receiver to the hopper lid with captive bolts or clamps to ensure a safe installation with no chance of hardware vibrating loose. Ensure a tight seal when securing the loader to the hopper or machine. Use flexible material hose to connect to a pick-up wand/lance or directly to the material conveying line. Conveying lines should be installed horizontal and/or vertical, using a 90^{o} radius bend for directional changes, and it should be as direct as possible with no slope. All connection must be vacuum tight. Rigid conveying tubing should be properly supported by the installer to provide a safe and secure installation.

9.2) Machine Mount

The bottom flange of the machine mount hopper is usually supplied undrilled to allow a range of mounting patterns and hardware choices. A gasket is used to provide a tight seal between the receiver base and the machine throat. Use flexible material handling hose to connect the material pick-up wand/lance or to a conveying line from a vacuum take-off box.

9.3) Adjusting Lid Orientation

The lid orientation can be easily adjusted by loosening the nut and bolt on the black band clamp. You will need a 7/16" socket and a 5/32" Allen key wrench. Once loosened, simply rotate the lid to the new convenient position. Push the band clamp up against the body flange; re-tighten the nut and bolt.

9.4) Connection the Receiver to the System

Each receiver in the vacuum loading system requires a vacuum isolation or station valve to be connected to it, which in turn is connected to the central vacuum header comping from the vacuum pump & dust collector. The header typically interconnects several receivers with the vacuum pump. The vacuum isolation valve is the key device for directing vacuum power to the receiver for operation.

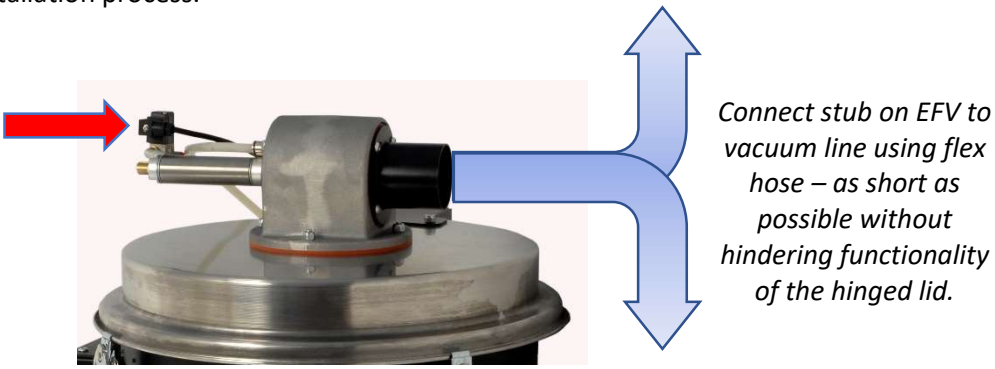
The VRX series receiver provides the option to operate with either an External Fill Valve (EFV, available up to 3.0" vacuum line), or a remote Station "T" Valve (SV, available for all line sizes). The SV/EFV is the only electrical/pneumatic device associated with the receiver; unless other options are employed. The valve requires a connection to clean and dry compressed air, between 80-100psig. The valve also requires an electrical connection to the control system being used. See the central control instructions to assure that the solenoid on the vacuum isolation valve is the proper voltage, and to connect the valve solenoid coil to the control system.

9.4.1) External Fill Valve (EFV)

The VRX series with hinged lid incorporates an External Fill Valve (EFV) to greatly simplify the installation process.

Pneumatic Solenoid:

- *Connect to control system*
- *Connect to compressed air*

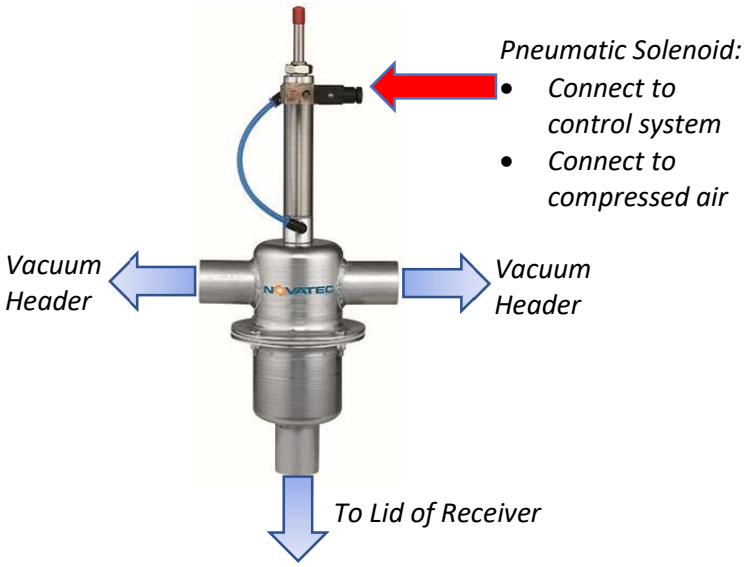


Connect stub on EFV to vacuum line using flex hose – as short as possible without hindering functionality of the hinged lid.

If stubs are used instead of EFV, an external Station "T" Valve (SV) valve must be installed in the vacuum line, and the VRX receiver is then connected to the SV.

9.4.2) Station "T" Valve (SV)

Connect the SV to the lid of the receiver as described in the SV instructions. Depending upon the installation, the valve to the receiver connection can be a combination of tubing and flex hose as required, but the flex should be kept as short as possible. The final connection to the lid of the receiver should be provided with flex hose to allow easy of operation of the hinged lid for cleaning and maintenance.



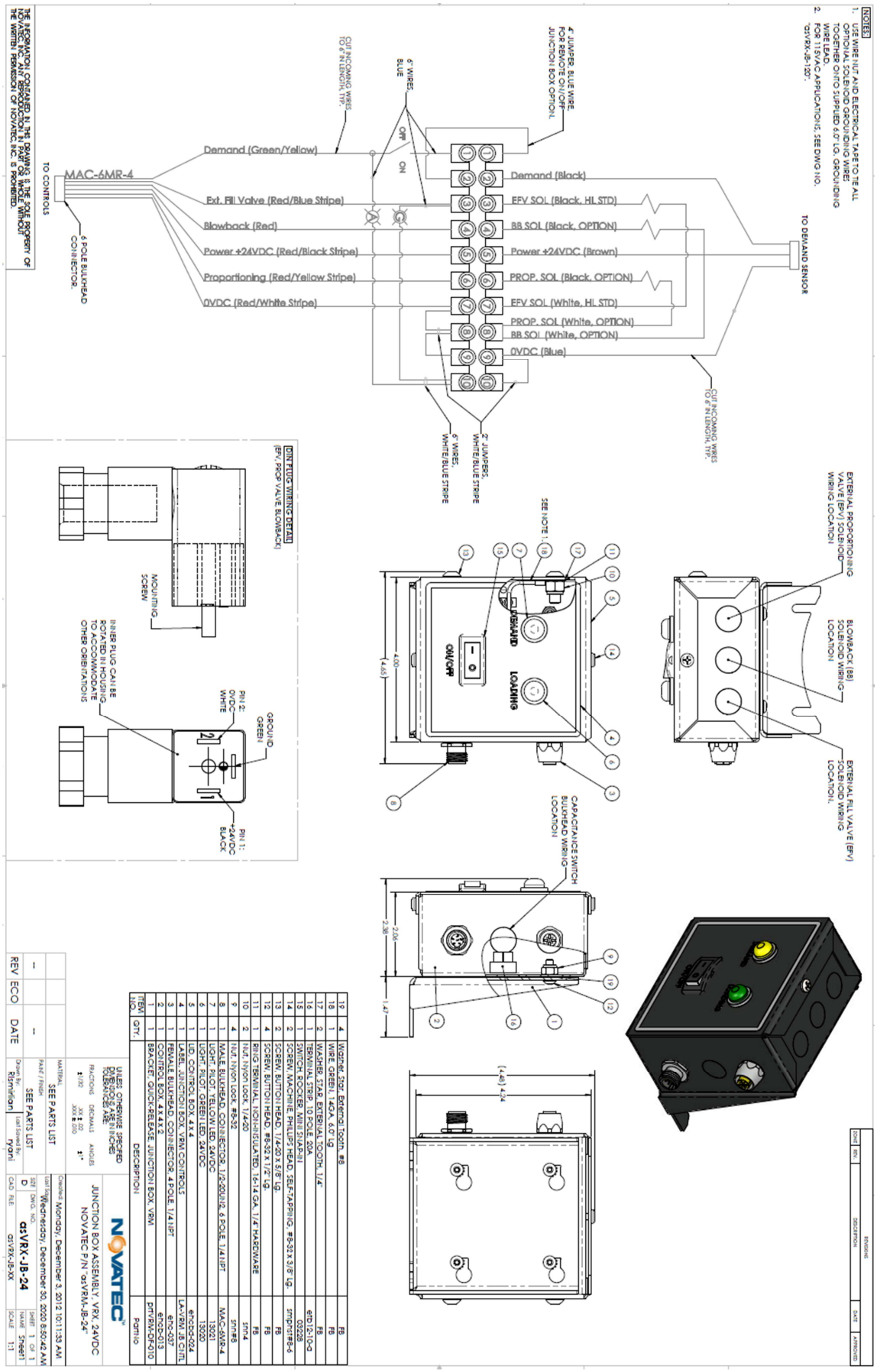
10.) RECEIVER WIRING TO CENTRAL CONTROLS

Each receiver is equipped with a demand level switch that must be connected to the central control system. The switch may be in the form of a tilt switch on the discharge flapper valve, a capacitance sensor or rotating level switch located in a bin below the receiver, a photoelectric sensor on the sight glass of a machine mount receiver, or some other form. In all cases, this demand switch is required to tell the central control system when this receiver is in need of material. Since the receiver may be moved occasionally for cleaning or equipment changes, NOVATEC, INC. provides most demand switches with detachable connectors, allowing the receiver to be removed while the wiring to the control can remain intact. With the localized junction box on the VRX series receivers, a single detachable cable is needed to connect to the central conveying controls. This connector provides a reliable connection point for wiring to the control.

The following diagram shows 24VDC wiring details for NOVATEC, INC VRX series junction boxes. Use this schematic in conjunction with the wiring instructions for your central controls to carefully connect the receiver to your control system.

CAUTION: Follow all plant wiring formats and Local/National electrical codes.

10.1) 24VDC (Standard)



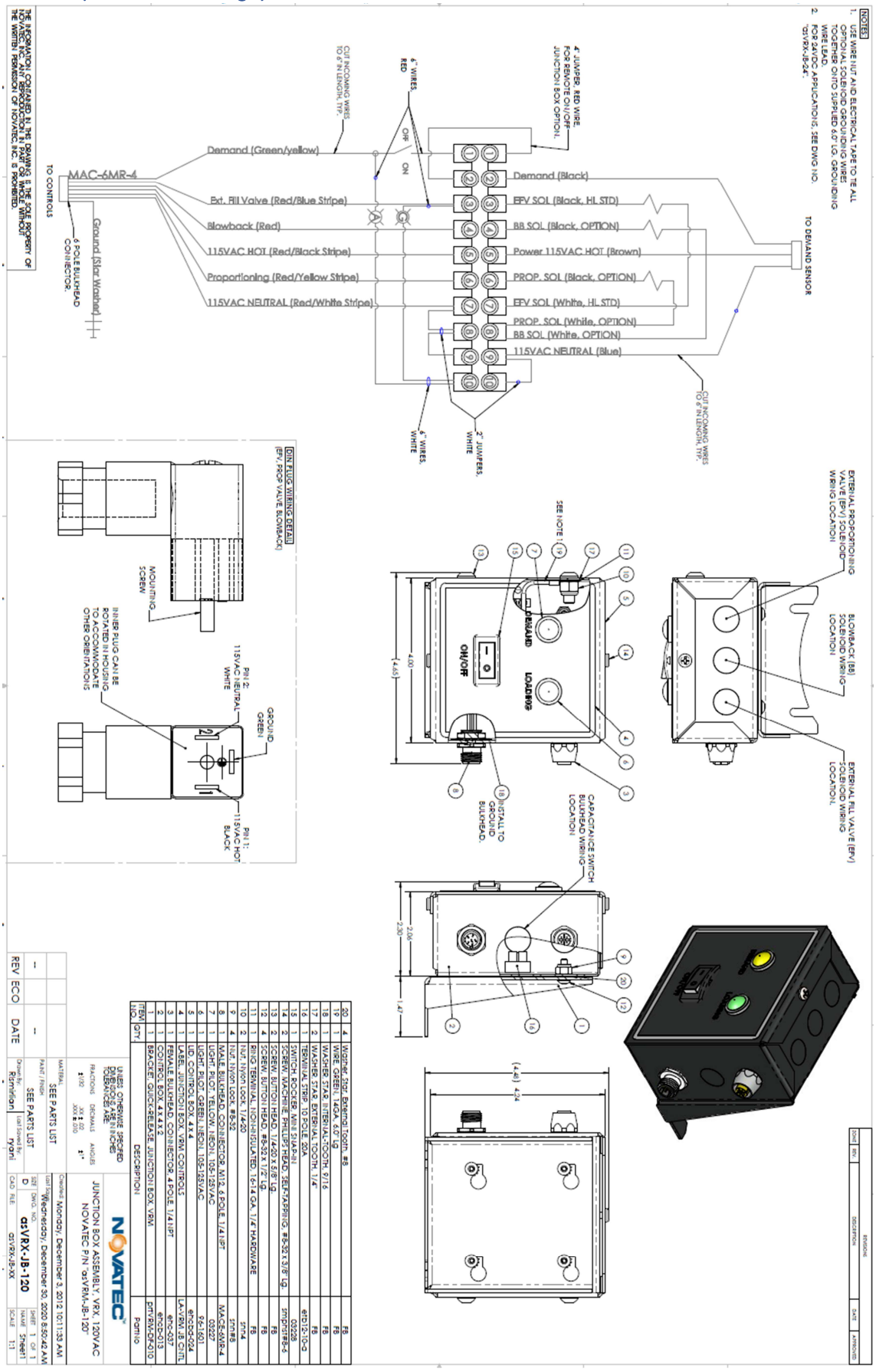
ITEM NO.	QTY.	DESCRIPTION	PART NO.
1	1	BRACKET, QUICK-RELEASE, JUNCTION BOX, VRM	pfVRM-DF-010
2	1	CONTROL BOX, 4 X 4 X 2	eNCD-013
3	1	FEMALE BULKHEAD CONNECTOR, 4 POLE, 1/4 NPT	eNCD-037
4	1	LABEL, JUNCTION BOX, VRM CONTROLS	LA-VRM-JB CNTL
5	1	LID, CONTROL BOX, 4 X 4	eNCDD-024
6	1	LIGHT, PILOT, GREEN LED, 24VDC	13020
7	1	LIGHT, PILOT, YELLOW LED, 24VDC	13021
8	1	MALE BULKHEAD CONNECTOR, 1/2-20UNS, 6 POLE, 1/4 NPT	MAC-6MR-4
9	4	NUT, NYLON LOCK, #8-32	SNT-#8
10	2	NUT, NYLON LOCK, 1/4-20	SNT-4
11	1	RING TERMINAL, NON-INSULATED, 16-14 GA, 1/4" HARDWARE	FB
12	4	SCREW, BUTTON HEAD, #8-32 X 1/2" LG.	FB
13	2	SCREW, BUTTON HEAD, 1/4-20 X 5/8" LG.	FB
14	2	SCREW, MACHINE, PHILLIPS HEAD, SELF-TAPPING, #8-32 X 3/8" LG.	SMPHST#8-4
15	1	SWITCH, ROCKER, MINI SPST-ON	03228
16	1	TERMINAL STRIP, 10 POLE, 20A	eTD12-10-0
17	2	WASHER, STAR, EXTERNAL TOOTH, 1/4"	FB
18	1	WIRE, GREEN, 14GA, 6.0" LG	FB

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/32
DECIMALS .XX ±.02 .XXX ±.010
ANGLES 1°
MATERIAL: SEE PARTS LIST
PAINT / FINISH:
Drawn By: Rjmmiron
Last Saved By: ryan
DATE: --
ECO: --
REV: --

NOVATEC
JUNCTION BOX ASSEMBLY, VRX, 24VDC
NOVATEC P/N: dsVRM-JB-24"
Created: Monday, December 3, 2012 10:11:39 AM
Last Saved: Wednesday, December 30, 2020 8:50:42 AM
SIZE: D
DWG. NO.: dsVRX-JB-24
SHEET: 1 OF 1
CAD FILE: dsVRX-JB-XX
NAME: Sheet1
SCALE: 1:1

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF NOVATEC, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF NOVATEC, INC. IS PROHIBITED.

10.2) 120VAC (Alternate Voltage)



ITEM NO.	QTY.	DESCRIPTION	PartNo	REV
1	1	BRACKET, QUICK-RELEASE, JUNCTION BOX, VRM	pnVRM-DF-010	FB
2	1	CONTROL BOX, 4 X 4 X 2	enclB-013	FB
3	1	FEMALE BULKHEAD, CONNECTOR, 4 POLE, 1/4 NPT	enclB-037	FB
4	1	LABEL, JUNCTION BOX, VRM CONTROLS	LA-VRM-JB CNTL	FB
5	1	LID, CONTROL BOX, 4 X 4	enclBtd-004	FB
6	1	LIGHT, PILOT, GREEN, NEON, 105-125VAC	95-1601	FB
7	1	LIGHT, PILOT, YELLOW, NEON, 105-125VAC	03227	FB
8	1	MALE, BULKHEAD, CONNECTOR, M12, 4 POLE, 1/4 NPT	MACBE-4MR-4	FB
9	4	Nut, Nylon Lock, #8-32	pnN8	FB
10	2	Nut, Nylon Lock, 1/4-20	pnN4	FB
11	1	PINS, TERMINAL, NON-INSULATED, 16-14 GA, 1/4" HARDWARE	03228	FB
12	2	SCREW, BUTTON HEAD, #8-32 X 1/2" LG	pnBHS8-8	FB
13	2	SCREW, MACHINE, PHILLIPS HEAD, SELF-TAPPING, #8-32 X 3/8" LG	pnPHTB8-6	FB
14	1	SWITCH, ROCKER, MINI SNAP-IN	03229	FB
15	1	TERMINAL STRIP, 10 POLE, 20A	erb12-10-G	FB
16	1	WASHER, STAR, EXTERNAL TOOTH, 1/4"	pnW4	FB
17	2	WASHER, STAR, INTERNAL-TOOTH, #8	pnW8	FB
18	1	WASHER, STAR, INTERNAL-TOOTH, 9/16	pnW916	FB
19	1	WIRE, GREEN, 14GA, 6.0" LG	pnWG14-6	FB
20	4	Washer, Star, External Tooth, #8	pnW8	FB

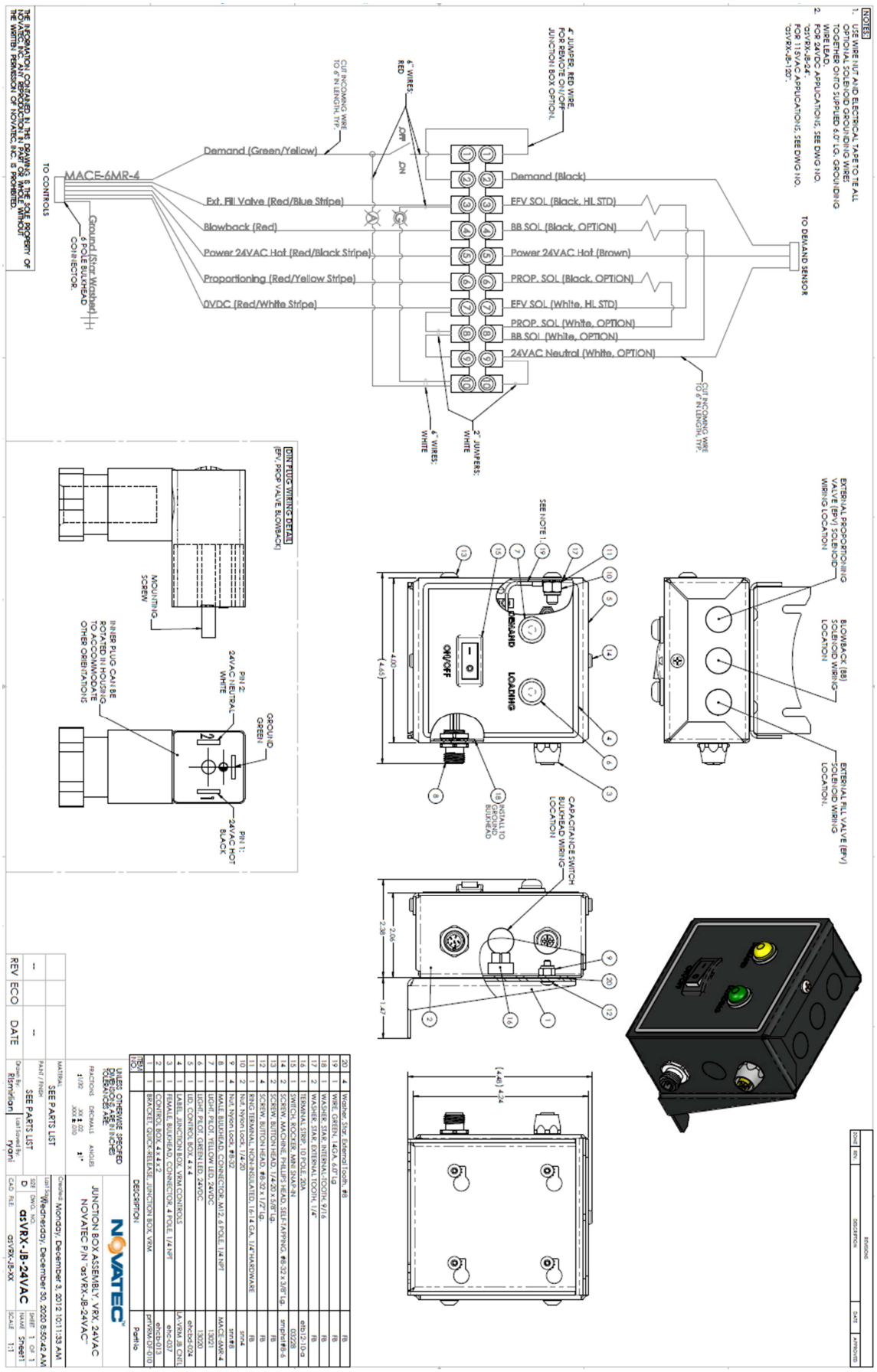
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/32 DECIMALS .XX ±.02 .XXX ±.010 ANGLES ±1°
MATERIAL: SEE PARTS LIST
PAINT / FINISH:
Drawn By: Rjmorton
Last Saved By: ryoni
DATE: --
ECO: --
REV: --

NOVATEC
JUNCTION BOX ASSEMBLY, VRX, 120VAC
NOVATEC P/N "dsVRM-JB-120"
SIZE: D
DWG. NO.: dsVRX-JB-120
REV: --
CAD FILE: dsVRX-JB-XX
Last Saved: Wednesday, December 30, 2020 8:50:42 AM
Checked: Monday, December 3, 2012 10:11:38 AM
SHEET 1 OF 1
NAME: Sheet1
SCALE: 1:1

ZONE	REV.	DESCRIPTION	DATE	APPROVED

NOTES:
1. USE WIRE NUT AND ELECTRICAL TAPE TO TIE ALL OPTIONAL SOLENOID GROUNDING WIRES TOGETHER ONTO SUPPLIED 6.0" LG. GROUNDING WIRE LEAD.
2. FOR 24VDC APPLICATIONS, SEE DWG NO. "dsVRX-JB-24".

10.3) 24VAC (Alternate Voltage)



11.) INITIAL START UP

For optimum receiver operation, adjust the vacuum-on load time on the central control so that the vacuum receiver is almost completely full at the end of the load cycle. **Do not allow the chamber to overfill!** This is especially important in situations where line purging is a part of the system loading cycle, account for remaining material filling the receiver chamber when setting the load time.

11.1) VRX Filtered Receivers Load Time

Adjust the load time so that the receiver is filled no higher than 4" below the center of the material inlet. The discharge time should be set so it is only 1 to 2 seconds longer than the time necessary to completely fill the chamber. Adjustments can be made to better suit system need once this baseline is set.

11.2) VRX Filter-less Receiver Load Time

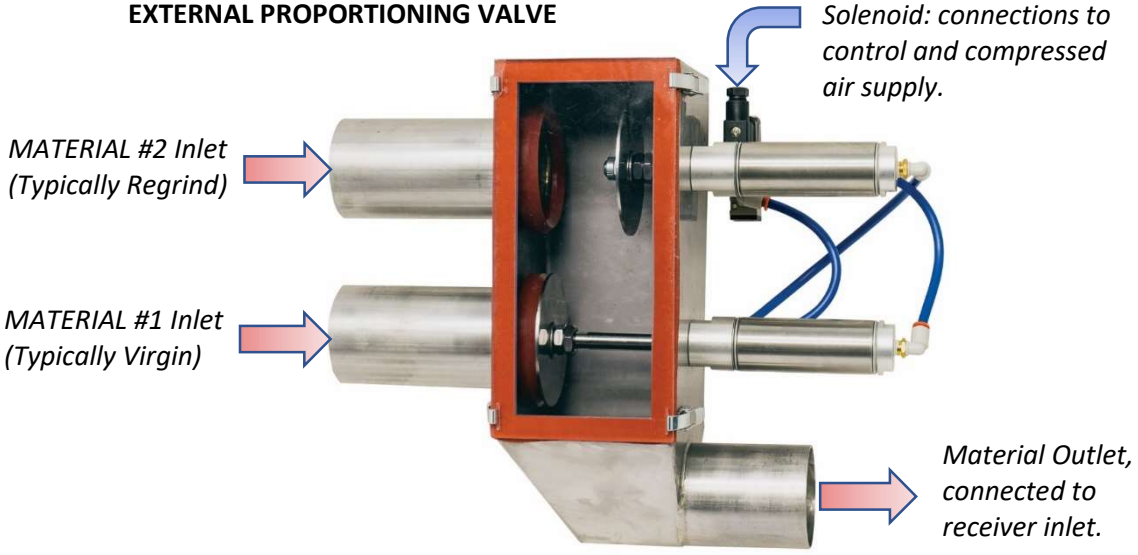
Adjust the load time so the receiver is filled no higher than 4" below the center of the material inlet. Do not overfill; conveyed material may be inadvertently pulled through the receiver and into the vacuum manifold. Adjustments can be made to better suit system need once this baseline is set.

12.) USE OF PROPORTIONING VALVES

External Proportioning Valves (EPV) are a convenient method for introducing regrind material into the process while vacuum loading of virgin material. The EPV is typically installed onto the material inlet of the receiver and is connected to the central control system through the VRX junction box, or an accessory control specifically designed for EPV operation.

NOTE that a proportioning valve should never be relied upon for *accurate* mixing of two materials but are only a process convenience for loading a second material (typically regrind). An ideal use of a proportioning valve is emptying a granulator of reground material, in quantities known to not exceed the limitations or specifications of the process. If requirements for the proportioning valve require more accuracy, consult with NOVATEC, INC. regarding the use of a blender in lieu of a simple EPV.

EXTERNAL PROPORTIONING VALVE



Proportioning valves and their associated controls split the central control's vacuum-on time for a designated receiver into two parts: one for loading virgin material and one for loading regrind.

Making initial setting for the proportioning valve will require:

1. Determining and setting the approximate percentage of vacuum-on time to be dedicated to regrind loading, based upon the specs of the product being produced.
2. Depending upon the control being used, determining and setting the approximate percentage of vacuum-on time to be dedicated to virgin loading.
3. The number of valve switches (virgin/regrind/virgin/regrind, etc.) the valve will perform while vacuum loading, to encourage 'mixing' of the two materials.
4. Increasing the vacuum-on time to compensate for the use of the proportioning valve.

Be aware that use of an EPV will ask the vacuum system to alternately vacuum convey *two* materials, and each time a material is to be loaded, it takes time to stimulate the material into motion by vacuum. This process adds valuable time to the conveying process and can create conveying problems if too many 'mixing' cycles are set on the control.

Also, the density and flow characteristics of virgin and regrind materials are usually very different, as well as the conveying distances. These factors must be taken into consideration as the percentage and number of valve cycles are set on the proportioning controls. A 50% setting of vacuum time dedicated to regrind will never equate to a 50% quantity of regrind material ending up in the receiver. It is best to make trial and error tests of proportional loads to see what results are created rather than assuming a specific outcome based on purely control settings.

It is common that vacuum-on time for any receiver equipped with a proportioning valve must be increased to allow for dual loading capabilities of the proportioning valve.

13.) MAINTENANCE

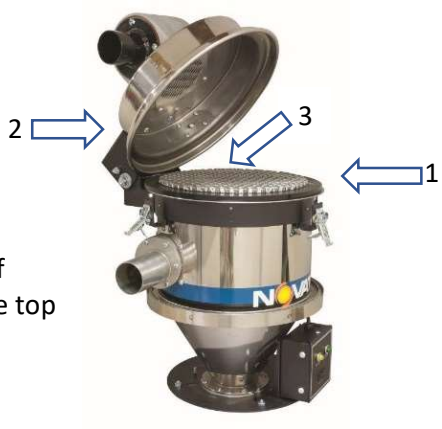
CAUTION: Before conducting any maintenance, be sure to turn off the receiver at the central control and/or disconnect electrical power and compressed air supplies. Receivers may be automatically energized to operate without warning, startling the operator or maintenance worker.

13.1) Flat Screen Filter Cleaning and Orientation (Does not apply for Filter-less receivers)

The VRX series receivers are commonly used for conveying virgin pellets and/or regrind material. The amount of regrind or small, irregularly size particles within the conveyed materials that might be trapped in the screen, along with conveying velocity and throughput, will all determine the frequency of necessary screen filter cleanings. Typically, a standard screen filter will only need to be manually cleaned when changing materials. In the event of infrequent (or no) material changes, once a week is recommended.

To gain access to the filter screen for inspection and cleaning:

1. Turn the spring-loaded butterfly clamps (around the lip of the lid) counterclockwise.
2. Lock the lid into place at the hinge.
3. Access screen and remove.



Vacuum cleaning the bottom (fine mesh side) of the screen is recommended to remove collected resin debris, dust, and fines. If compressed air is used, be sure to wear goggles and blow from the top (coarse expanded metal side) of the filter down through the finer screen media. Never bang the filter against any hard surface to dislodge debris. Distortion of the filter screen or sealing ring can result.

Once clean, thoroughly inspect the filter for severe wear, holes, tears, and material abrasion. Any break in the filter screen indicates the need for a new filter. Do not attempt to repair the screen. Remember that the screen assures that loaded material makes its way into the process and not to the vacuum line, central dust collector, or the pump. This ring provides the vacuum seal between the lid, the filter, and the receiver body. The ring must be smooth, clean, and intact to provide a suitable seal for vacuum-tight conveying. Replace the filter if the seal is not in perfect shape.

Once cleaning/inspection is complete, the filter may be reinstalled by placing it on the flat rim of the loader body (**fine mesh screen DOWN and coarse expanded metal UP**) and reattaching/lowering the receiver lid on the body so the screen filter is centered between the two. Filters may have the expanded metal backing 'bell-up' or 'bell-down'; no matter the style of the filter, the **coarse/expanded-metal backing <u>MUST BE UP</u>** towards the lid of the receiver. Re-tighten the butterfly clamps by turning clockwise. Same can be applied to filter-less units with the cyclonic scroll insert.

*Coarse/expanded-metal backing side **UP***

13.2) Check Valve Inspection and Replacement

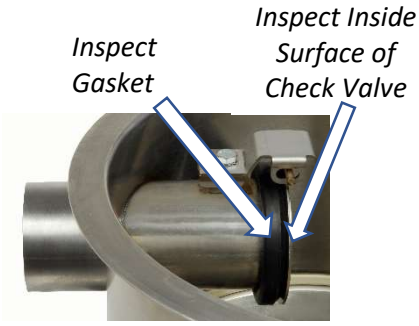
As the receiver goes through cycles of loading and discharging, experiencing vacuum and relief, puts the sealing components through operational cycles that can result in fatigue and wear; along with contact with the material stream. Over time, gaskets and deflector plates can be worn to the point where it will inhibit the functionality of the receiver and the conveying system. Silicone gaskets & stainless-steel plates can be long lasting wear items (for non- to mildly abrasive material); however, it is important to inspect the components on a regular basis and change as necessary. The check valve is exposed to the flow of the material during the conveying process and will need to be inspected and replaced as needed to assure the receiver and the conveying system operate correctly.

To gain access to the check valve for inspection:

1. Turn the spring-loaded butterfly clamps (around the lip of the lid) counter-clockwise.
2. Lock the lid into place at the hinge.
3. Remove mesh screen or filter-less scroll.

Wipe down the gasket surface and check for obvious signs of wear and fatigue; cracks, missing chunks, worn/textured surface, etc. Replace gasket if needed. Wipe down check valve deflector plate and check for excessive thinning, holes, or bending. Replace if needed.

Once inspection/replacement is complete, the filter may be reinstalled by placing it on the flat rim of the loader body (**fine mesh screen DOWN and coarse expanded metal UP**) and reattaching/ lowering the receiver lid on the body so the screen filter is centered between the two. Filters may have the expanded metal backing 'bell-up' or 'bell-down'; no matter the style of the filter, the **coarse/expanded-metal backing MUST BE UP** towards the lid of the receiver. Re-tighten the butterfly clamps by turning clockwise. Same can be applied to filter-less units with the cyclonic scroll insert.



13.3) Discharge Flapper Inspection and Replacement

As the receiver goes through cycles of loading and discharging, experiencing vacuum and relief, puts the sealing components through operational cycles that can result in fatigue and wear; along with contact with the material stream. Over time, gaskets and deflector plates can be worn to the point where it will inhibit the functionality of the receiver and the conveying system. Silicone gaskets, aluminum & stainless-steel plates can be long lasting wear items (for non- to mildly abrasive material); however, it is important to inspect the components on a regular basis and change as necessary. The discharge valve is exposed to the flow of the material during the conveying process and will need to be inspected and replaced as needed to assure the receiver and the conveying system operate correctly.

To gain access to the discharge flapper gasket for inspection, detach the receiver from loading destination: machine mount hopper, drying hopper, surge hopper, blender, etc. Be sure to disable and disconnect all controls cables and compressed air lines to the receiver prior to moving the receiver; the receiver may need to be laid down or brought to ground level for safe inspection. The discharge valve components are external on the receiver.

Wipe down the gasket surface and check for obvious signs of wear and fatigue; cracks, missing chunks, worn/textured surface, etc. Replace gasket if needed. Wipe down discharge valve flapper plate and check for excessive thinning, holes, or bending. Replace if needed with the corresponding flapper material for the receiver package (aluminum for standard, stainless-steel for high wear package).

Once inspection/replacement is complete, re-mount the receiver to loading destination.

14.) PARTS LIST

14.1) Standard, VRX

VRX SERIES RECEIVER, STANDARD
(SUBJECT TO CHANGE WITHOUT NOTICE)

Description	QTY	Model	
		VRX-12 thru VRX-30	VRX-38 thru VRX-114T
Cable, Controls, 6 Pole, Female to Leads, Yellow, 24VDC, Lg = 12'	1	MAC-6FP-12	
Cable, Controls, 6 Pole, Female to Leads, Yellow, 24VDC, Lg = 20'	1	MAC-6FP-20	
Cable, Controls, 6 Pole + Ground, Female to Leads, Yellow, 120VAC & 24VAC, Lg = 12'	1	MACEB-6FSP-12	
Cable, Controls, 6 Pole + Ground, Female to Leads, Yellow, 120VAC & 24VAC, Lg = 20'	1	MACEB-6FSP-20	
Check Valve Assembly, Std, S/S, 1.50”	1	04505	
Check Valve Assembly, Std, S/S, 1.75” & 2.00”	1	04506	
Check Valve Assembly, Std, S/S, 2.25” & 2.50”	1	04507	
Check Valve Assembly, Std, S/S, 3.00”	1	04508	
Check Valve Assembly, Std, S/S, 3.50” & 4.00”	1	N/A	04509
Demand Switch Assembly	1	asVRM-DF-03	
Filter Assembly, 20 Mesh, Std.	1	04544-VRH	04549
Filter-less Filter Assembly*	1*	VRFL-006	VRFL-002
Flapper Assembly, Discharge Std., ALUM.	1	asVRM-DF-01	asVRM-DF-02
Flapper Plate, Discharge, Std., ALUM.	1	prtVRM-DF-001	prtVRM-DF-006
Gasket, Inlet Check Valve, Neoprene, 1.50”	1	50069	
Gasket, Inlet Check Valve, Neoprene, 1.75” & 2.00”	1	01693	
Gasket, Inlet Check Valve, Neoprene, 2.25” & 2.50”	1	01694	
Gasket, Inlet Check Valve, Neoprene, 3.00”	1	01695	
Gasket, Inlet Check Valve, Neoprene, 3.50” & 4.00”	1	N/A	04675
Gasket, Discharge Valve, Neoprene	1	01695	14759
Gasket, Outlet Tube Stub, EFV, Neoprene	1	EFV-25-005-N	
Gasket, Outlet Tube Stub, Lid, Neoprene	1	EFV-25-006-N	
Solenoid, Pneumatic, Blowback, 24VDC**	1	3V110-06-DC24V-W	
Solenoid, Pneumatic, Blowback, 120VAC**	1	3V110-06-AC-110V-W	
Solenoid, Pneumatic, External Fill Valve, 24VDC	1	4V110-06-DC24V-W	
Solenoid, Pneumatic, External Fill Valve, 120VAC	1	4V110-06-AC-110V-W	

*For use only on receivers with Filter-less Option.
**For use only on receivers with Blowback Option

NOTE: Parts shown are for VRX series units. Refer to option or special job drawings for custom unit information. Verify information on existing part before ordering and installing replacement. All information is subject to change without notice. For parts assistance, please contact the Novatec Sales Department.

14.2) Optional Packages, VRX

VRX SERIES RECEIVER, HIGH WEAR & TEMP PACKAGES

(SUBJECT TO CHANGE WITHOUT NOTICE)

Description	QTY	Model	
		VRX-12 thru VRX-30	VRX-38 thru VRX-114T
Check Valve Assembly, High Wear, High Wear, Ceramic Coated S/S, 1.50”	1	06-0815	
Check Valve Assembly, High Wear, High Wear, Ceramic Coated S/S, 1.75” & 2.00”	1	7268-004	
Check Valve Assembly, High Wear, High Wear, Ceramic Coated S/S, 2.25” & 2.50”	1	06-0003	
Check Valve Assembly, High Wear, High Wear, Ceramic Coated S/S, 3.00”	1	06-1350	
Check Valve Assembly, High Wear, High Wear, Ceramic Coated S/S, 3.50” & 4.00”	1	N/A	06-0376
Filter Assembly, 20 Mesh, High Temp	1	04557-OS	04549-OS
Flapper Assembly, Discharge, High Wear, S/S	1	asVRM-DF-01-SS	asVRM-DF-02-SS
Flapper Plate, Discharge, High Wear, S/S	1	prtVRM-DF-001-SS	prtVRM-DF-006-SS
Gasket, Inlet Check Valve, Silicone, 1.50”	1	12338	
Gasket, Inlet Check Valve, Silicone, 1.75” & 2.00”	1	12339	
Gasket, Inlet Check Valve, Silicone, 2.25” & 2.50”	1	12340	
Gasket, Inlet Check Valve, Silicone, 3.00”	1	12341	
Gasket, Inlet Check Valve, Silicone, 3.50” & 4.00”	1	N/A	12342
Inlet Tube Stub, 1.50" OD, High Wear, Ceramic Coated S/S	1	prtVR-WT15-7.5-CER*	prtVR-WT15-10-CER*
Inlet Tube Stub, 1.75" OD, High Wear, Ceramic Coated S/S	1	TBD*	TBD*
Inlet Tube Stub, 2.00" OD, High Wear, Ceramic Coated S/S	1	prtVR-WT20-7.5-CER*	prtVR-WT20-10-CER*
Inlet Tube Stub, 2.25" OD, High Wear, Ceramic Coated S/S	1	TBD*	TBD*
Inlet Tube Stub, 2.50" OD, High Wear, Ceramic Coated S/S	1	prtVR-WT25-7.5-CER*	prtVR-WT25-10-CER*
Inlet Tube Stub, 3.00" OD, High Wear, Ceramic Coated S/S	1	14750**	prtVR-WT30-10-CER*
Inlet Tube Stub, 3.50" OD, High Wear, Ceramic Coated S/S		N/A	TBD**
Inlet Tube Stub, 4.00" OD, High Wear, Ceramic Coated S/S		N/A	TBD**
Wear Plate, Cylinder Body, High Wear, Bolt-on	1	prtVR-WT-DEF-SM-CER	prtVR-WT-DEF-LG-CER

*Receiver line sizes use press-in style wear tube package.
**Receiver line sizes use bolt-in style wear inlet package.

NOTE: Parts shown are for VRX series units. Refer to option or special job drawings for custom unit information. Verify information on existing part before ordering and installing replacement. All information is subject to change without notice. For parts assistance, please contact the Novatec Sales Department.

VRX SERIES RECEIVER, MACHINE MOUNT HOPPERS

(SUBJECT TO CHANGE WITHOUT NOTICE)

Description	QTY	Model	
		VRX-12 thru VRX-38*	VRX-38 thru VRX-114T
Adapter Plate, VRX Mount to MM	1	prtVRM-MM-001	N/A
Adapter Plate, VRX Mount to MHA	1	N/A	01066
Borosilicate Glass Tube, 8lb, MM	1	VRMM-004	N/A
Borosilicate Glass Tube, 12lb, MM	1	VRMM-005	N/A
Borosilicate Glass Tube, 16lb, MM	1	VRMM-006	N/A
Capacitance Switch, 24VDC	1	opt-VRX-CP-24	
Capacitance Switch, 115VAC	1	opt-VRX-CP-120	
Flanged Adapter, 6" Flange, 2" OD Discharge, MM (Cast Aluminum)	1	20550-013	N/A
Flanged Adapter, 7" Flange, 3.5" OD Discharge, MM (Fabricated Stainless)	1	smVRM-MM-02-FAB	N/A
Glass MM Assembly, 8lb, 6” Flange		GMM-VRX-8	N/A
Glass MM Assembly, 8lb, 7” Flange		GMM-VRX-8-7F	N/A
Glass MM Assembly, 12lb, 6” Flange		GMM-VRX-12	N/A
Glass MM Assembly, 12lb, 7” Flange		GMM-VRX-12-7F	N/A
Glass MM Assembly, 16lb, 6” Flange		GMM-VRX-16	N/A
Glass MM Assembly, 16lb, 7” Flange		GMM-VRX-16-7F	N/A
Hopper Drain Port, MHA	1	N/A	HSG-24
Machine Mount Hopper, ½cuft	1	MHA-19	N/A
Machine Mount Hopper, 1cuft	1	MHA-38	
Photoelectric Sensors, 24VDC	1	opt-VRX-PE-24	N/A
Photoelectric Sensors, 115VAC	1	opt-VRX-PE-120	N/A

*VRX-38 is only compatible with glass machine mount hoppers through option “opt-VRX-MM-16-XX” where the standard 5” discharge is swapped for a 3” discharge. Otherwise, the standard VRX-38 is compatible with MHA-38.

NOTE: Parts shown are for VRX series units. Refer to option or special job drawings for custom unit information. Verify information on existing part before ordering and installing replacement. All information is subject to change without notice. For parts assistance, please contact the Novatec Sales Department.

15.) TROUBLESHOOTING

If experiencing issues where poor or no conveying is taking place, follow the inspection and action items below:

1. **Vacuum Station "T" Valve (SV) Operation**

   Every vacuum receivers in the conveying system is coupled to a remote vacuum Station "T" Valve (SV) or an integrated External Fill Valve (EFV) that isolates the vacuum conveying power of the pump to one receiver at a time for conveying. Each valve in the system must close off air flow when it is NOT in operation, allowing other receivers to receive full vacuum. One 'stuck' valve can ruin the vacuum supply for the entire system. Check that each valve operates in response to its receiver's turn in the vacuum system. Each valve should open for loading and close when loading is complete. For the SV, the extended shaft of the unit's cylinder is a good indication of that. For the EFV, the plunger position can be seen by looking at the valve through the finger guard on the underside of the receiver lid.

   Rule of Thumb: If only one receiver in the system is conveying correctly, it is probably that receiver's vacuum station valve that is not closing properly.

2. **Receiver Discharge Flapper Operation**

   The discharge flapper valve at the base of the receiver provides three critical functions:

   - Seal off the base of the receiver, creating a sealed vacuum chamber and allowing it to load,
   - Open reliably to allow material to empty out, and
   - Signal the conveying control system of the need for more material (when it swings shut, by its own weight).

   If the flapper valve is stuck open or does not fully close, conveying cannot take place. A problem receiver can be easily check for proper, free movement of its flapper valve:

   - If conveying is not triggered when the flapper is closed, there is an issue with the electrical demand switch,
   - If the flapper does not swing nearly shut by its own weight, there is a pivot point (hinge) or counterweight issue,
   - If the flapper is 'stuck' in the open position, there is a material contamination issue with the pivot point (hinge) of the valve and it must be cleaned and examined for wear. Contamination of the hinge is typically caused by material finding its way into the picot point, but in older receivers, may also be a metal burr that has formed from age.

3. **Inlet Check Valve Operation**

   Many receivers are equipped with swinging check valves on their material inlets. Check valves provide a variety of useful functions for system and unit operation. The check valve is pushed open when material is conveyed into the receiver. On systems that convey material from one source to multiple receivers, each check valve in the system must seal to allow the one receiver being loaded to utilize the full vacuum force from the conveying pump. A check valve that is stuck open, either by hinge wear or a trapped pellet, will leak valuable vacuum air, decreasing vacuum capability at other receivers or even preventing conveying throughout the system.

   Rule of Thumb: On systems that convey material from one source to multiple receivers via a common material line; if only one receiver in the system conveys correctly, it is probably that receiver's check valve that is not closing properly.

4. Conveying Control Programming/Re-Programming

Central material conveying systems that include a network of pumps, receivers, and material sources, provide high efficiency and multitude of flexibility. Often, new requirements are not completely programmed after material or system configuration changes. Items to check:

- Is the new material source further away than the previous source? More conveying time and/or purge time might be required to accommodate this difference in distance.
- Is the new material as free-flowing as the last material? Does the material have a tendency to clog the conveying lines, or simply convey slower due to weight or shape? Changes to load/purge times as well as material pick-up tube changes may be required.
- Has the receiver been assigned to the proper vacuum pump? The proper material valve?
- Has system piping and/or wiring been modified to accommodate this new configuration for conveying?

5. Conveying Pump Vacuum Breaker Valve (VBV) Operation

Located on the central vacuum pump of the system, the vacuum breaker valve allows ambient air to be drawn into the pump when the conveying system is NOT conveying. This function prevents rapid re-starts and stops of the pump during the 'seek' time of the loading control, cool the pump, and prevents the over loads in the pump starter from overheating. The pneumatically-operated breaker valve must close and seal when the vacuum system is conveying material, directing all the vacuum force to the job of conveying. Check the following:

- The valve is connected to a reliable source of clean compressed air, which is turned on. Air pressure should be 80-100psig.
- The valve must not be leaking vacuum air. Often a sucking sound can be heard, indicating the valve is not sealing properly.
- View the level of vacuum created by the pump on its vacuum gauge while attempting to convey material; although the reading on this gauge will vary greatly depending upon the system configuration, it is a valuable tool for assessing system operation and discovering faults. Vacuum levels below -6" Hg indicate a breaker valve fault or other problems in the vacuum system.

6. Material Source

Easily overlooked, the source of your material may be either empty, wrong tubing connections, or valve connections have been made.

Common bulk box issues include:

- 'Rat-holing': The feed tube has sucked up all the free-flowing material around the pick-up end and the material must now be stirred to allow material to flow into the feed tube again. A gaylord tilter may be helpful in this situation.
- Bag liner line plugging: The feed tube has sucked in the thin film lining of the gaylord, blocking off material flow to the receiver.
- Feed tube fell out of the box: By weight of its own hose, or by vibrations of the flex hose while conveying.
- Out-of-material: Time to move in a new bulk box.

Common material selection issues:

- Conveying line connected to the wrong source of material.
- Wrong purge valve selected: If a purge valve is used at the material source, it must be programmed by the system control to operate in conjunction with a specific receiver. Material changes require making a new valve selection at the system control.
- Purge valve is not operating: If a purge valve is used at the material source, it must be energized to allow material loading (and de-energized for purging). A fault at this valve, i.e. lost compressed air connection, an open purge valve access door, or a material jammed purge valve will prevent material movement.

7. Feed Tube/Wand/Lance or Take-Off Box Probe Settings

The conveying of material by air cannot be accomplished without air movement. Regardless of the type of pickup device being used; purge valve, wand, take-off box, etc…these devices must be adjusted to allow the introduction of material and air, in a mixture suitable for conveying the specific material the distance required.

16.) WARRANTY

WARRANTY – NOVATEC, INC. - Effective Date 1 APRIL 2019

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 *
NITROdry™ Nitrogen Driers
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
Rx SmartMed Extrusion Products
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
VRX, VR, & 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 NITROdry™ 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.
5. DryTemp+ - We assume no responsibility from equipment failures resulting from untreated or improperly treated water.

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.