



USER GUIDE

ThermalTM NovaWheelTM Portable Dry-Convey Dryers

MODELS:

Thermal+ Series, With NovaTouchTM
7" Color Touch Panel PLC

> MODELS NWB-25-DC-HX+ through
NWB-150-DC-HX +



In the space provided below you should record the model and serial number(s) of your equipment and the date the equipment was received.

In the event you would need aftermarket assistance our parts and service department uses this information, along with the manual number, to provide help for the specific equipment installed.

Please keep this instruction manual, any relevant addendums, engineering prints and parts lists together for accurate documentation of your equipment.

User Manual:

Thermal+ NWB UG 22 May 2019

Serial Number(s):

Model Numbers:

NOTES

DISCLAIMER: NOVATEC, Inc., shall not be liable for errors in this instruction manual. Information can change without notice. Novatec makes no warranty of any kind concerning the information contained herein, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

FOREWORD

This manual is dedicated to the principle that any engineered system will have many elements contributing to the smooth operation of the system, and that these must be understood in order that installation and operation can proceed successfully.

The electrical and mechanical components in the Thermal+ Series dryers have been manufactured, selected and assembled with care to give you excellent service. A wide range of Thermal+ Series dryers have been introduced to enable our valued customers to select the right model for their application. These Thermal+ Series dryers.

Dry/Convey) series dryers have been designed for beside-the-press drying applications. All components of your Thermal+ Series dryers have been carefully engineered and manufactured and have been thoroughly inspected for quality, function and performance.

Before installing this system, please read this manual, review the diagrams and the safety information. This should save valuable installation and operation time later and will help ensure safe operation and long life.

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1.0 SALES AND SERVICE

NOVATEC maintains qualified sales, engineering, and service personnel to assist in any way possible. If you have any comments concerning the types of equipment which NOVATEC manufactures that might improve your process, or any questions concerning service, we urge you to contact us. Please have your Model and Serial Number handy.

Sales: 1-800-BEST-DRY • 1-800-237-8379

Fax: 410-789-4638 • Sales@novatec.com

Technical Service Department: 1-800-938-6682

Service@novatec.com

2.0 SHIPPING AND INSPECTION

Although NOVATEC uses reputed carriers to deliver products, it has no control over the products once it leaves the manufacturing facility. Upon receiving the products, thoroughly inspect all equipment inside and out for damage that may have occurred during shipment. If any damage is found, a claim should be filed immediately with your carrier.

NOVATEC thoroughly tests and inspects all products before shipment. You are to make the piping, and electrical connections for final installation and commissioning. If there are any problems, shut down the equipment and contact the NOVATEC Technical Service Department.

3.0 UNPACKING for NovaWheel™ NWB-DC-HX+ DRY/CONVEY MODELS

3.1 Unpacking

3.1.1 Tools You Will Need for Unpacking:

- Box Cutter
- Mallet or hammer
- Tin Snips
- ½" socket wrench for -150 model only

3.1.2 Unpacking Instructions:

- 1-Please look for any signs of damage and report to your carrier immediately.
- 2-Unpack the Dryer/Hopper
- 3-Remove shrink wrap, and any wood framing attached to the skid.
- 4-Cut the metal strapping that secures the Dryer/Hopper to the skid.
- 5-Lift the Dryer/Hopper off the pallet and set it in a low-traffic area.

NOTE: All models are shipped with casters installed except the -150, so while they are being supported by the fork lift, attach one of the supplied casters under each corner of the frame using a ½" socket wrench.

-Unpack the components to be assembled from separate cartons.

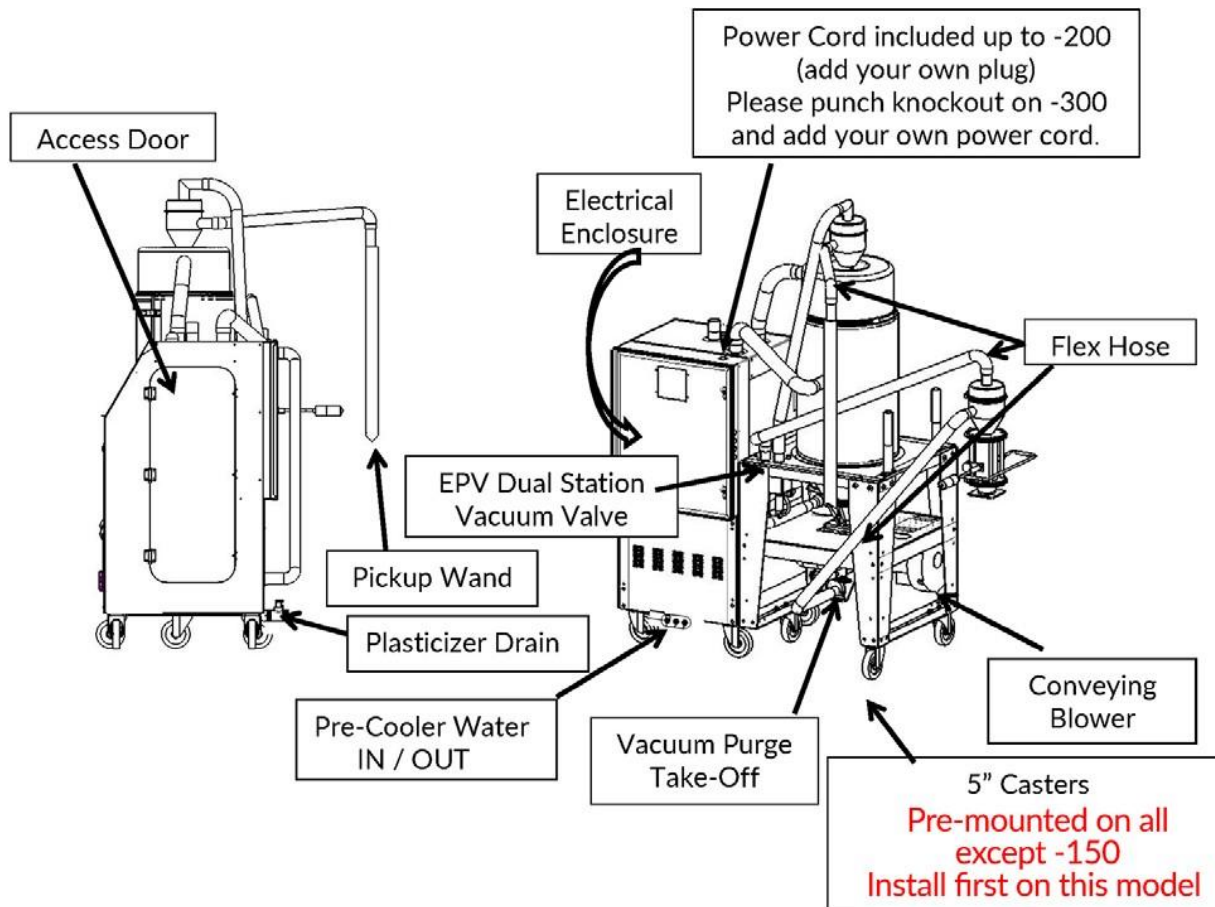
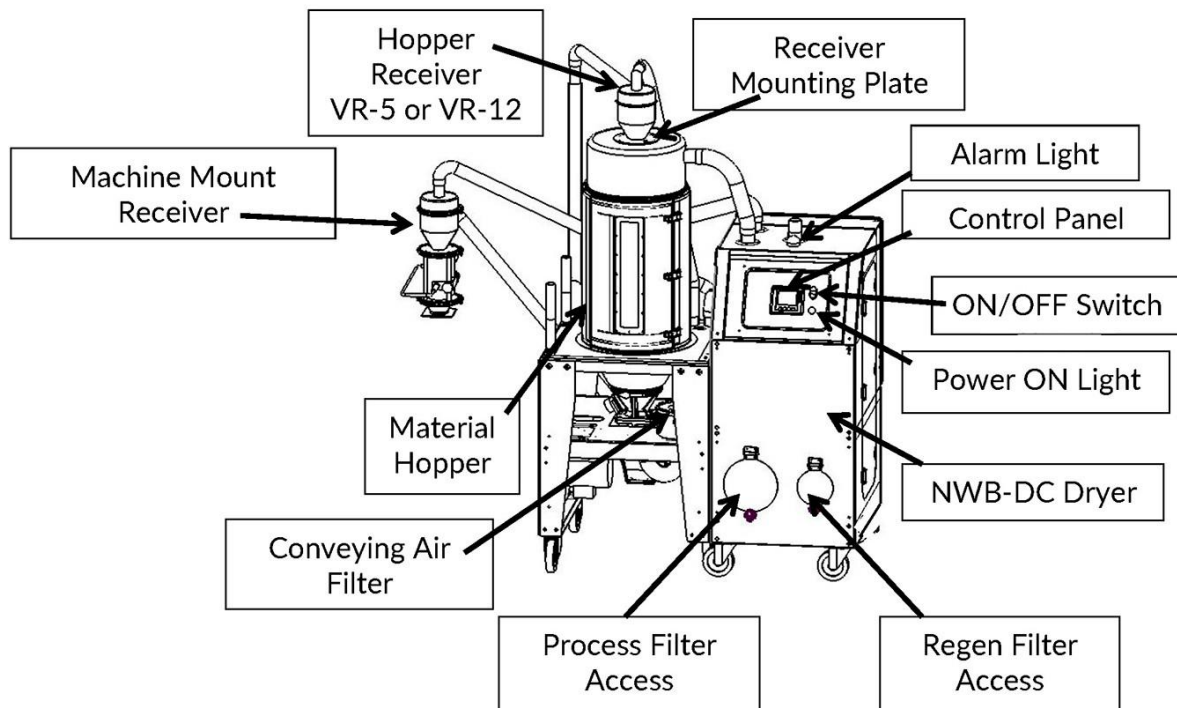
-Remove the shrink wrap from the carton(s) and take out the contents.

NOTE: The Hopper Receiver should be set on the floor with the bottom inside the round fiber tube (supplied) so the bottom flapper is protected by the tube.

3.1.3 List of UNPACKED CONTENTS:

- Dryer/Hopper Assembly
- Machine Mount Receiver (with sight glass)
- Hopper Receiver on Fiber Tube (with flapper valve underneath)
- 5' Long Pickup Wand
- Photo Eye Level Sensor
- 50' of 1.5" of Flex Hose*
- 8 Hose Clamps
- Casters, Bolts & Washers (packed separately for -150)

4.0 BASIC COMPONENTS OF NOVATEC NWB-DC DRYER ASSEMBLY



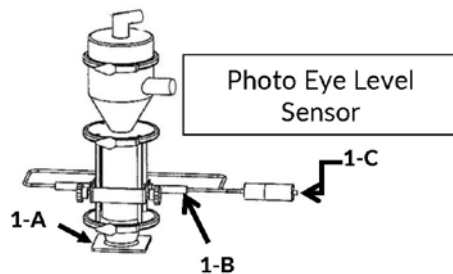
5.0 ASSEMBLY INSTRUCTIONS

Tools You Will Need for Assembly:

- Hacksaw to cut PVC flex hose
- Flat Blade Screwdriver and/or 5/16" socket for hose clamps
- 5/32" Allen wrench to mount Receivers
- Drill press and drill bit sized to match mounting holes on machine throat so holes can be drilled in base of Machine Mount Receiver. (Unless base is pre-drilled)
- 6'-8' Ladder
- Tape measure

5.1 Prepare/Assemble Machine Mount Receiver

NOTE: As you proceed with assembly, make sure that all bolts and hose clamps are securely fastened to ensure that there are no air or material leaks in the system. Do not use excessive flex hose but avoid sharp turns as this will hurt the efficiency of the system operation.



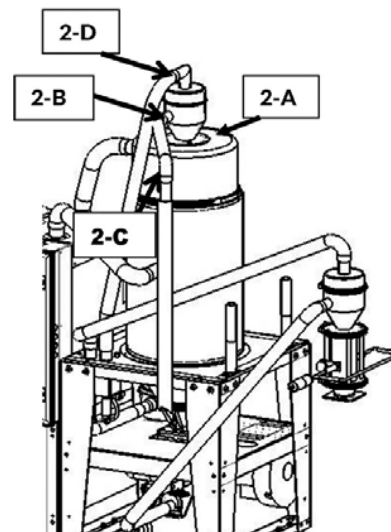
5.2 Mount Hopper Receiver & Connect Flex Hose and Pickup Wand

2-A: Remove cover plate from top of Material Hopper (save bolts and washers) then, after removing masking tape from flapper, place Hopper Receiver in hole. Align inlet stub to face direction from where material will be pulled. Fasten the Receiver to the Hopper using the saved 1/4" x 20 bolts and washers.

2-B: Place hose clamp over one end of flex hose and push end of the hose on to the material inlet stub on the side of the receiver. Fasten hose clamp securely.

2-C: Cut the flex hose to a length that will allow the 5' long pickup wand to reach all corners of the bulk container supplying the material to the dryer hopper. Push the cut end of the flex hose over the end of the pickup wand and secure with hose clamp.

2-D: Follow same instructions to attach flex hose running from the vacuum stub on top of the Hopper Receiver **to the nearest EPV Dual Station Vacuum Valve Stub extending from the top of the dryer.** (See illustration) **Hopper Receivers with Blowback** are supplied with a male/female twist lock plug to which 115/1/50-60 VAC should be wired. A clean source of 80-120 psi compressed air should be connected to the supplied FNPT fitting. (3/8" on the VR-5 and 1/4" on the VR-12)



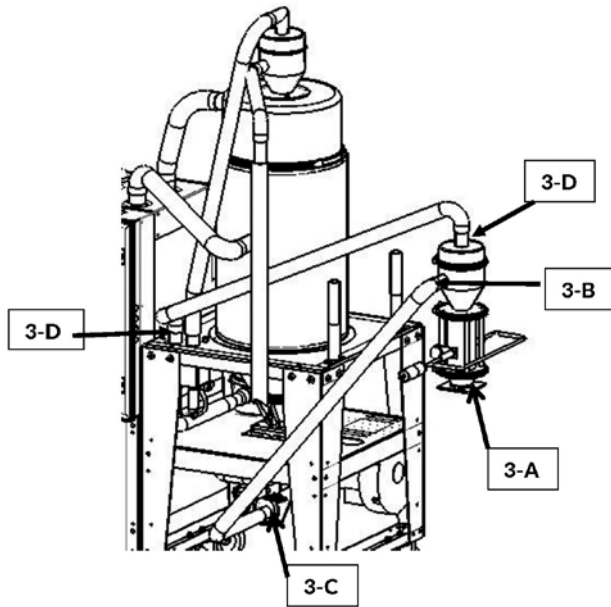
5.3 Positioning the NWB-DC

Roll the NWB-DC into position next to the process machine it will be serving.

NOTE: LOCATION

Position your NWB-DC Series dryer in a location where material and vacuum hoses will not be disturbed. Allow sufficient distance (at least 2 feet) from the surrounding equipment, so the access doors may be opened to perform routine maintenance on the dryer and for safe operation.

5.4 Install Machine Mount Receiver and Connect Flex Hose



3-A Bolt the Machine Mount Receiver to the process machine throat with user-supplied bolts.

3-B Push one end of the flex hose all the way onto the material inlet stub on the side of the receiver and fasten it securely with a hose clamp (supplied).

3-C String flex hose to the vacuum purge take-off (attached to the bottom of the hopper) cut it to length and fasten securely with a hose clamp.

3-D Attach one end of flex hose to the vacuum inlet stub on top of the Machine Mount receiver and fasten it securely with a hose clamp. String the flex hose to the farthest EPV Dual Station Vacuum Valve Stub extending from the top of the dryer. Cut flex hose to length and attach it securely to the stub with a hose clamp.

6.0 ELECTRICAL CONNECTIONS

The Thermal+ Series dryers come from the factory with all control circuits wired and a 10' power cord. A quick-connect plug should be installed if moving the Thermal+ to other process machines is anticipated.

CAUTION

- All electrical connections must be made by qualified electricians, per national and local electrical codes.
- Disconnect and lock out the main power source before making the electrical connection.

Turn the Main Disconnect on the electrical panel door to the "OFF" position, lock out the main power source and open the electrical enclosure. Per the electrical diagram, install the main power wire to the main disconnect switch holder and install the ground wire.

Full size electrical drawings are included with this Instruction package for the voltage of the dryer you ordered

NOTE: 3 Phase detection is included on this model. If the connection is not correct, a pop-up alarm will appear on the touch screen upon startup. You should immediately correct this condition.

NOTE: Please make sure all electrical connections are tight. It is not common but a loose connection is possible after a long truck ride.

Model	Total connected power KVA/AMPS	Pro Motor Hp/AMPS	Regular Motor Hp/AMPS	Regular Heater Kw/AMPS	Pro Heater Kw/AMPS
-25	9.0/10.8	.025/0.4	.025/0.4	3.0/3.8	3.0/3.8
-50	11.9/14.7	0.67/1.2	.025/0.4	3.0/3.8	5.5/6.9
-75	14.2/17.8	1.1/1.8	.025/0.4	3.0/3.8	7.5/9.4
-100	16.7/20.9	1.1/1.8	.025/0.4	5.5/6.9	7.5/9.4
-150	16.7/20.9	1.1/1.8	.025/0.4	5.5/6.9	7.5/9.4

7.0 PRE-COOLER WATER CONNECTIONS

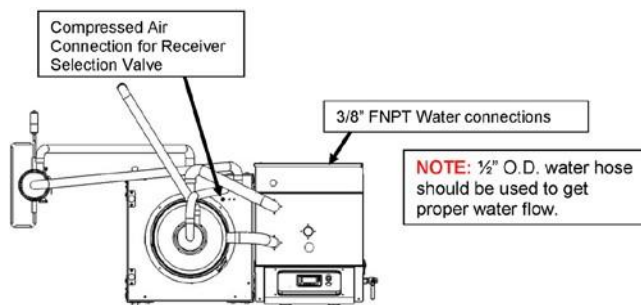
A Cooling Coil is installed in Thermal+ series dryers and is required to lower the hopper return temperature and this increases the efficiency of dryer **IF THE DRYING TEMPERATURE IS ABOVE 225°F**.

Tower, city or chilled water is required at between 40 to 85°F. Connect the cooling water supply and return using flexible hose that is at least 2 feet long, to allow for easy removal of the cooling coil for cleaning. The water flow rates and the required customer connection sizes for different models are shown in the chart below.

The process airstream must be connected to an external cooling coil if the drying temperature is below 170°F. Contact Factory for Options.

8.0 COMPRESSED AIR CONNECTION

The touch screen control operates a dual station vacuum valve inside the dryer to activate vacuum to either the hopper receiver or the machine mount receiver. A clean compressed air supply (60-90 psi) should be connected to the 1/8" NPT inlet.

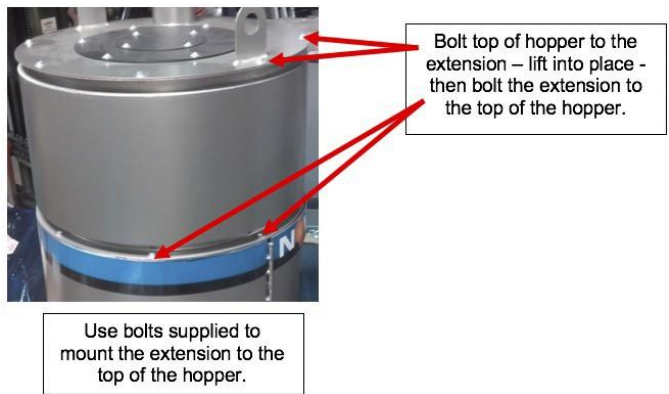


NOTE: Processor must use 1/2" ID water hose to get proper flow.

NOTE: Cooling water is required if drying temperature is over 225°F.

9.0 HOPPER EXTENSIONS

If you ordered a hopper extension, it will be a bolt-on type. The extension will be installed at the factory if the overall height of the unit fits into a standard height truck for shipping. If the unit is too tall for the extension to be factory-mounted, it will be shipped in a separate container and must be installed at the processor’s plant.



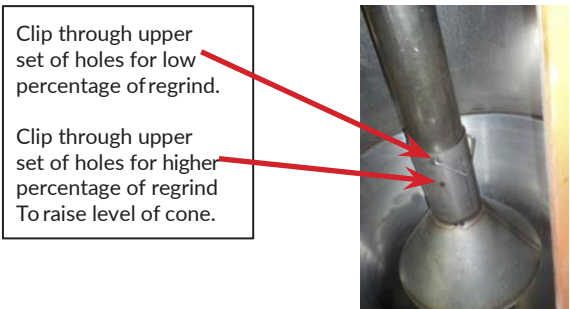
10.0 ADJUSTABLE DIFFUSER CONE POSITIONING IMPORTANT FOR

Models NWB-XX-DC-HX+	.25	-50	-75	-100	-150
Water Inlet/Outlet Connections (inches)	3/8				
Flow Rate- GPM (gal/m)	0.25	0.5	0.75	1.0	1.5

PROPER DRYING

We have found that processors can improve the efficiency of their drying process by adjusting the position of the diffuser cone as described below.

The diffuser cone should be placed in the lower position z(shown) when drying virgin resin or resin with a low percentage of regrind.
When drying resin with a high percentage of regrind, spread the clip, raise the cone and place the clip through the lower set of holes.



You are now ready to proceed to Dryer Setup.
See QuickCard attached to dryer.

11.0 PRINCIPLE OF OPERATION

The Thermal+ Series is designed to convey moisture laden resin from a source container, dry it, and deliver it to the throat of a process machine.

11.1 Standard Resin Drying

The NWB-DC and DC+ NovaWheel Series dryers was engineered and designed to effectively remove moisture (in the vapor state) from hygroscopic plastic resins. This process is accomplished by the continuously rotating desiccant wheel and the three air streams (Process, Purge and Regeneration). The Process return air is exposed to an adsorbing media (desiccant wheel) in a sealed air stream, where the desiccant adsorbs the moisture from process air. After the desiccant has adsorbed the moisture, it is exposed to a Regeneration air stream which has been pre-heated to a temperature of about 380°F. (190°C). This causes the moisture to be driven out from the desiccant and prepares it for more moisture adsorption. Now the desiccant media passes through third air stream called purge air stream. Here the desiccant media is cooled down by some of the process air before entering back into the process to provide for better performance. The three air streams (process, regeneration and purge) are separated by special Teflon fabric coated silicon seals. The process air and regeneration air is compressed by using regenerative blowers.

The dry air from the dryer is then heated to the desired drying temperature by an electric heater located in the dryer cabinet. The hot dry air enters the hopper at the bottom and removes moisture vapor from the resin in the hopper. The air from the top of the hopper is returned to the dryer, where it is filtered, passed through the desiccant wheel to remove moisture from the air stream and cooled before the process blower sends the air back through the heater and into the bottom of the hopper again in a continuous process.

11.2 Thermal+ Option

NWB-DC-HX+ series press-side dryers up to 150 lb/hr are equipped with Thermal+ from Novatec to ensure that new heat-sensitive resins are dried properly.

Processors are being inundated new resins with which they have no previous experience. If they are not dried to the required specifications the molded products produced are subject to rejection due to stringent quality control requirements or they fail prematurely in the field.

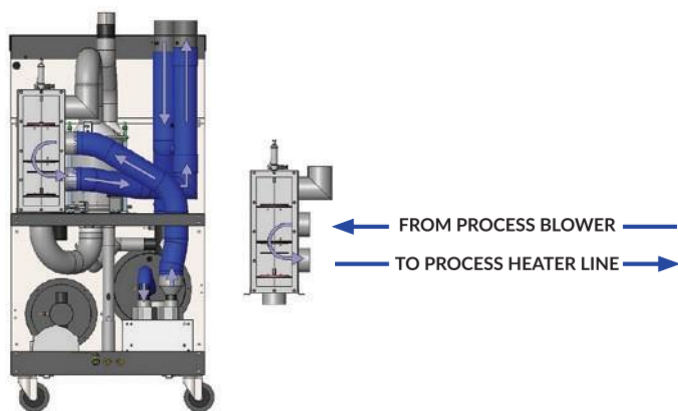
11.3 How Thermal+ Works...

Automatically Controlled Valving Changes

Sensor measurement out of the drying hopper determines whether moisture is being pulled from the resin, or if the resin is already dried to the appropriate moisture level.



This icon indicates the dryer is equipped with Thermal Plus.



11.4 Resin Conveying

A regenerative blower pulls resin from a bulk container through a pickup wand and flexible hose to an appropriately-sized vacuum receiver where the material is fed into the drying hopper, as needed. As the material passes through the drying hopper it is metered through a vacuum takeoff valve to a machine mount vacuum receiver mounted on the process machine, thereby maintaining a constant flow of dry material to the feed throat.

If The Resin Requires More Drying

The sensor in the hopper outlet signals this condition, and dry air is introduced into the loop automatically.

When The Resin Is Dry

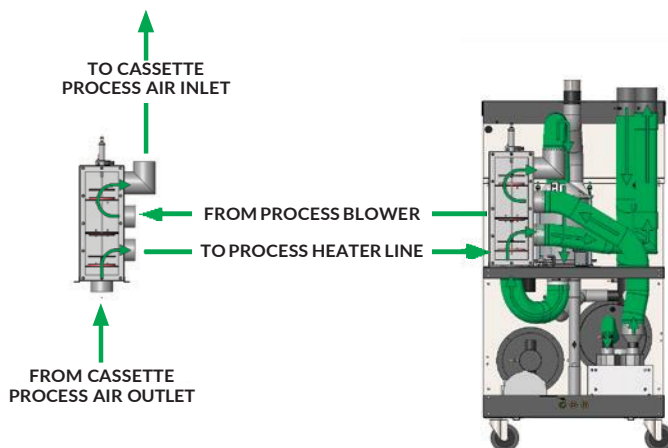
The blower loop will exclude the desiccated -40°F/C air and recirculate heated air.

Additional Drying Is Required At Any Point

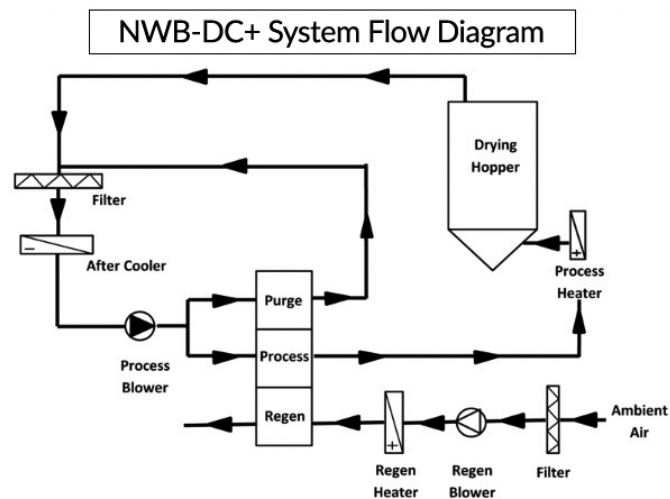
Dry air is introduced into the loop automatically and when the desired dryness is achieved, the desiccant wheel is again bypassed automatically.

All Of These Operations Occur Without Any Operator Intervention

Each resin can have a recipe that always ensures proper resin moisture.



11.5 System Flow Diagram



12.0 SPECIFICATIONS – NWB-XX-DC-HX+ DRY CONVEY SERIES

Process Air dew Point (nominal): -40°F (-40°C)

Drying Temperature: 150-350°F (66-177°C)

Air and Material Hose Diameter: 1.5" ID (40 mm)

Compressed Air Fittings for Hopper Receivers
with Blowback:

VR-5-B: 3/8" FNPT, VR-12-B: 1/4" FNPT

Compressed Air requirements for Blowback:

80-120 psi (5.5-8.3 Bar)

*Based on material bulk density of 38 lb./ft.³

Model Number*	Width		Depth		Height**		Air Connection		Hopper Capacity***		Throughput Capacity***			
											@460/3/60		@415/3/50	@575/3/60
	in	cm	in	cm	in	cm	in	cm	lb	Kg	lb/hr	Kg/hr	Kg/hr	Kg/hr
NWB-25-DC-HX+	53	135	32.8	83.0	67.3	171	2	5	55	25	25	11.5	10	11.5
NWB-50-DC-HX+					70.7	179	2	5	110	50	50	22.7	19	22.7
NWB-75-DC-HX+					86.7	220	2	10	165	75	75	34.1	29	34.1
NWB-100-DC-HX+	61.5	156	34	86	79.2	201	4	10	220	100	100	45	38	45
NWB-150-DC-HX+ †					92.7	235	4	10	330	150	150	68	57	68

*If dryer ordered without Dry/Convey, delete -DC from Model Number and replace it with -HC+. If Dryer ordered without hopper, delete -DC+ from model number and deduct 29" from width.

**Add 11" to "H" for VR-5 on NWB-25-DC+ & -50-DC+. **Add 14" to "H" for VR-12 on NWB-100-DC+ **Add 20" to "H" for VR-12 on NWB-75-DC+.

***Based on polycarbonate pellets @ 38 lb/ft³

†Casters or hopper extension are packed separately to avoid extra freight charges due to height.

13.0 FUNCTION CONTROLS

The Thermal+ Series dryers come complete with the following controls:

13.1 Process Temperature Control (Drying Temperature)

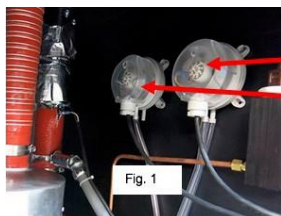
The Temperature Control is a part of the NovaWheel NovaTouch PLC controller and controls the process outlet temperature as per the set value. In addition, there is a process high temperature limit thermostat that is provided for extra safety. (Refer to the controller section).

13.2 Regeneration Temperature Control

The regeneration temperature is controlled by the NovaTouch PLC controller. In addition, there is a regeneration high temperature limit thermostat, which provides extra safety. The regeneration temperature is set at about 380°F. (190°C) and should not be changed.

13.3 Process & Regeneration Air Filter Pressure Switches (PS)

The air pressure differential across the process filter and the regeneration filter is monitored and the NovaTouch display will alarm and show when a filter needs to be cleaned or replaced. These are factory set but often need to be adjusted in the field once the customer loads resin in the hopper.



Process Filter Pressure Switch
Regen Filter Pressure Switch

Access pressure switches after opening the side panel of the dryer. Remove Phillips screw that holds clear cover in place (Fig. 1). Turn knob clockwise or counter-clockwise to either increase or decrease.

13.4 Process Air Dew Point Monitor

It measures the process air dew point from the dryer.

13.5 Intelligent Regeneration

Intelligent Regen constantly monitors the regeneration inlet and outlet temperatures and controls them to optimize the energy and dew point performance of the dryer.

13.6 Conveying Control

Provides entry of load/dump times and number of attempted loads before No-Load Alarm is activated plus Blow Back control, if specified.

14.0 PRE-OPERATING SYSTEM CHECK

Once material, vacuum hose, water and electrical connections are made, the Thermal+ Series dryer should be given a final checkout.

14.1 Starting The Dryer

Turn the main disconnect switch to “ON” position to power the dryer. Depress the GREEN START switch on the front panel to start the dryer.



The blowers and heaters are now energized and the desiccant wheel will begin turning and start to dry the return air. It will take several minutes and a couple revolutions of the wheel, for the dew point to get down to the -40° dew point.

WARNING: Always use the Green/Red switch to START or STOP the dryer. The Power Disconnect switch should only be used in True Emergency conditions. Repeated use of Power Disconnect can cause dryer component failure.

14.2 Checking Electrical Phase

Your NOVATEC Thermal+ Dryer includes Phase Detection. This is particularly important for dryers that may be moved around the plant. When you turn the MAIN Disconnect switch to the ON position, a Pop-Up Alarm will appear on the screen if the connection is not correct. You should immediately correct this condition.

WARNING: Any wiring procedure should only be done by a qualified electrician familiar with three phase electrical wiring.

14.3 Changing From F° to C°

The factory setting is F but degrees can be set to C or F on the opening WELCOME screen. (See page 21)

NOTE: All dryers are set to display temperatures in degrees F when shipped.

150 NovaTouch™ CONTROL

151 System Conventions:

All information and data displays will appear two dimensional in configuration and flat. All data entry points or operational features will appear three dimensional in configuration and raised or depressed in appearance depending on their operational position.



Numerical Entries: When you touch an IO field on the HMI device touch screen that requires only a numerical entry (Password, Temperature, number of seconds etc.) the following keyboard will appear.

Alpha/Numeric Entries: When you are prompted to enter alphabetical and numerical data (Resin Names/ Numbers) this screen will appear:



Proceed as follows:

- 1. Touch the relevant IO field on the screen.
- The numerical screen keyboard opens and displays the current value.
- 2. Set the value.

You can only operate keys which are visualized in 3D format. The type of value to be entered determines whether a key is enabled or disabled.

The following options for entering values are available:

The current value is deleted when you enter the first character. Enter the value again.

Use the and keys to move the cursor within the current value. You can now edit the characters of the current value or add characters.

Use the key to delete the character to the left of the cursor.

Use the key to change the sign of the value.

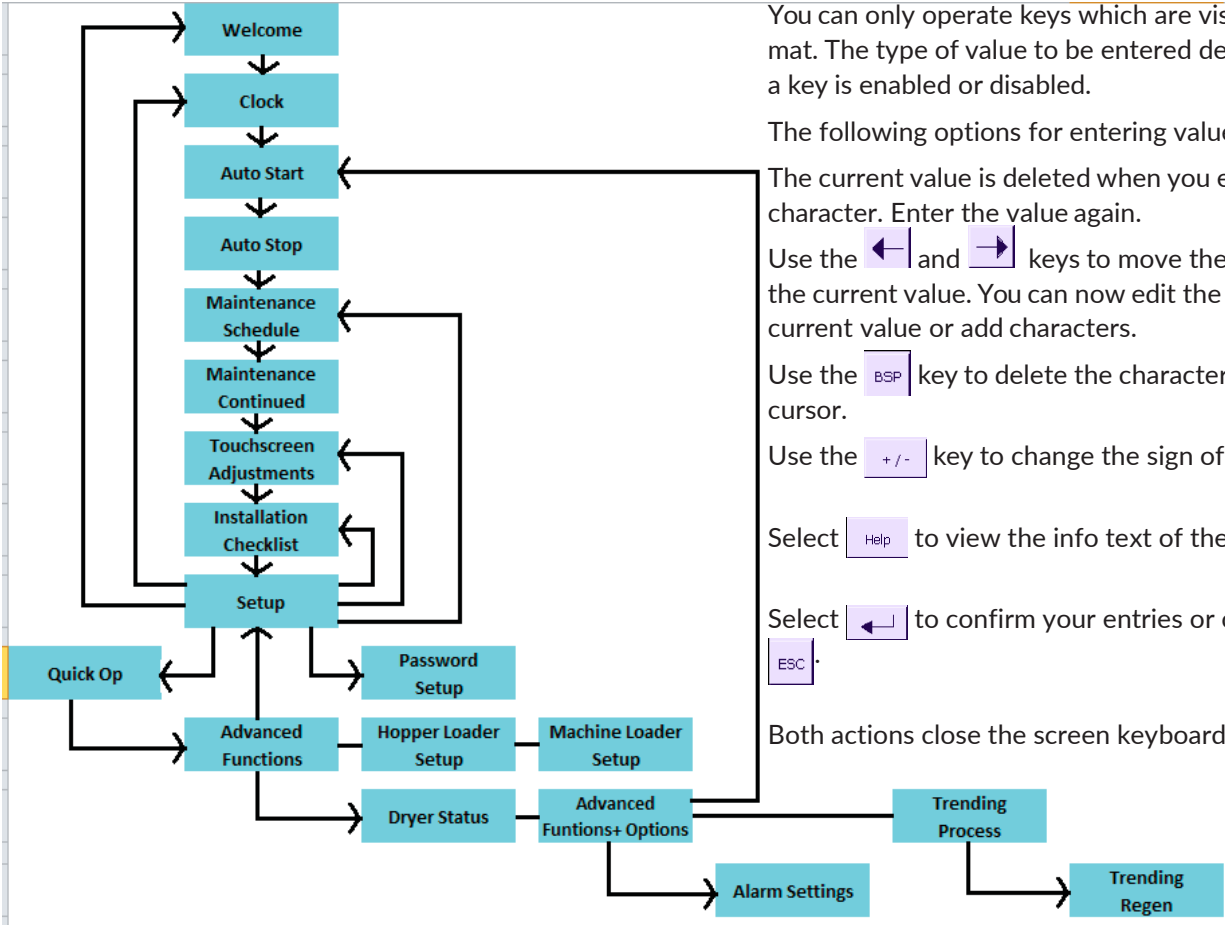
Select to view the info text of the IOfield.

Select to confirm your entries or cancel them with .

Both actions close the screen keyboard.

152 Screen Map

For all processor operations.



16.0 INITIAL DRYER STARTUP

16.1 Dryer Pre-Check

NOTE: Assure voltage, connection and phasing are correct, cooling water is supplied (for drying over 225°F) and thermocouple is inserted in hopper.

Connect material source to Hopper Loader

Turn Main Disconnect Switch to "ON" position.

On first start you should enter Information requested on WELCOME screen.

NOTE: Username setup and password 4444 is required for initial setup. If the proper level of password protection has not been entered prior to attempting changes, the alpha/numeric password entry keypad will appear, prompting the user to input the proper password before changes can be made.

Setup username and password will not be required after initial setup except to change other usernames and passwords.

16.2 Explanation of Password Levels

User name and Password factory defaults (below) should be updated to ensure proper access. To do that, double-tap the ***** after each Level and enter the new password on the alpha/numeric screen that will appear. You will be prompted to enter the password twice. Press to return to USERS MANAGEMENT screen.

USERS MANAGEMENT			
User	Password	Group	Logoff t...
Level1	*****	Ope...	0
Level2	*****	Sup...	5
Level3	*****	Mai...	5
PLC User	*****	Una...	5
Setup	*****	Setup	5

User names and Password factory defaults (below) should be updated to ensure proper access.

Level1: 1111(Operator) – Can choose

pre-set recipe and run it.

Level2: 2222 (Production Supervisor)

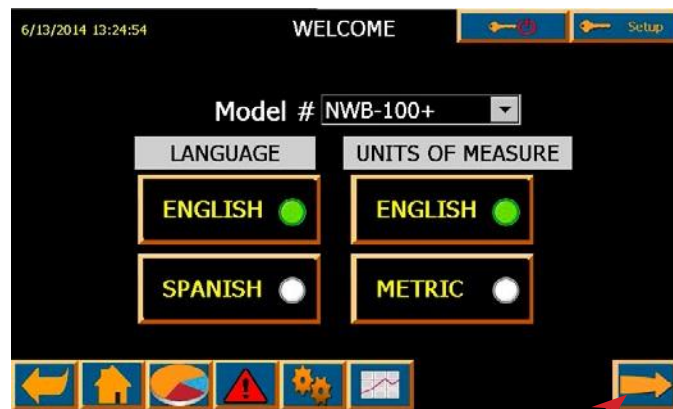
– level1 plus can change recipes, set clock & Auto START/STOP

USERS MANAGEMENT			
User	Password	Group	Logoff t...
Level1	*****	Ope...	0
Level2	*****	Sup...	5
Level3	*****	Mai...	5
PLC User	*****	Una...	5
Setup	*****	Setup	5

Setup: can change passwords for all levels
Level 3 can change Level 3 passwords
Level 2 can change Level 2 passwords
Level 1 can change Level 1 passwords

16.3 WELCOME Screen (setup username and password 4444 required for initial setup)

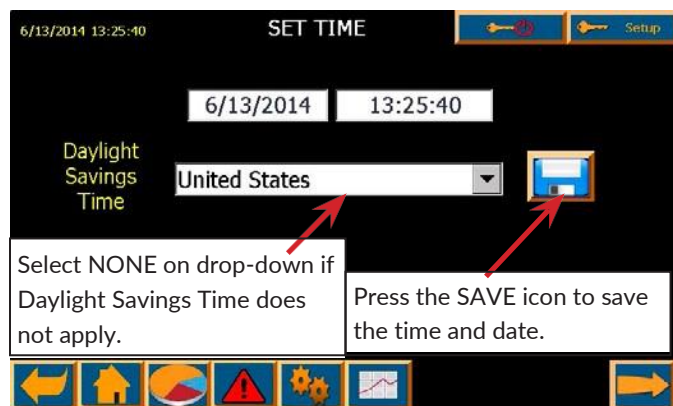
Pressing METRIC will change °F to °C.



Press the Forward Arrow to TIME and DATE

16.4 Verify/Set Time & Date


If corrections are required, press date or time box.



Press  for VERIFY/SET TIME CLOCK.




Check the time pre-sets. If corrections are required, press Date or Time Box.

An alpha-numeric screen will appear. Enter date as xx/xx/xx and time as xx:xx:xx AM or PM.




Press  after each entry is complete.

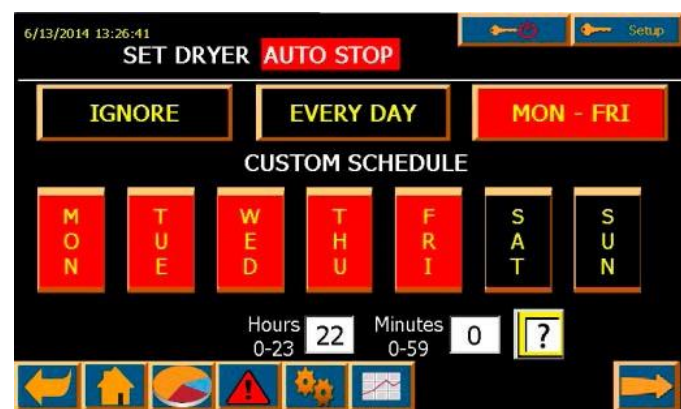
To have time follow Daylight Savings Time in your geographic area, choose area from drop-down and press SAVE.

Setting date and time assures that alarms will have correct date & time stamp.**16.5 Auto Start/Stop (Level 2)**


Press  and the AUTO START screen will appear. Choose days and enter times on numeric entry screen that will appear. Press  after each entry and  to enter AUTO STOP days and times. Entries are optional. If you do not want to set Auto Start/Stop, simply press IGNORE.

16.5 Auto Start/Stop (Level 2)

Press  and the AUTO START screen will appear. Choose days and enter times on numeric entry screen that will appear. Press  after each entry and  to enter AUTO STOP days and times. Entries are optional. If you do not want to set Auto Start/Stop, simply press IGNORE



16.6 Maintenance Schedule (setup)

Press  to page forward to set up maintenance schedule.



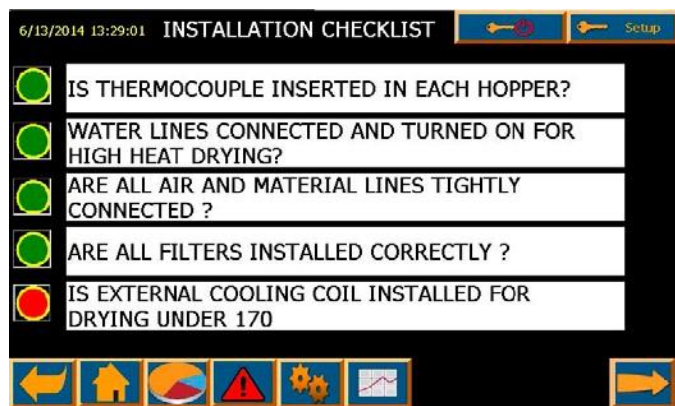
Choose the material condition that will be run and then the appropriate maintenance schedule for each task.



NOTE: Performing maintenance on regular intervals will enhance dryer performance and life and minimize down-time.

16.7 Installation Checklist (setup)

It is important that each of these things are checked before starting the dryer.



Pressing the FORWARD button one more time will open the Settings screen (next page).

17.0 SETTINGS SCREEN (Any level can view)

This screen allows changes to be made to previous screens and also allows adjustments to be made to... Alarm Setpoints, User Passwords Advanced Options and Screen Settings.

Alarm Setpoints User Passwords Advanced Options

6/13/2014 13:29:57

SETTINGS

PLC Software 1.2001

TF Software 7.2001

Regional Settings

Automatic Starts & Stops

Maintenance Schedule

Screen Settings

Installation Checklist

Alarm Setpoints

User Passwords

Advanced Options

NOTE: You will go directly to Quick Op screen (page 25) on all future starts.

NOTE: From here on, these icons will appear at the bottom of every screen.

To TRENDING Screen

To SETTINGS Screen Screen

To ALARMS Screen

To DRYER STATUS Screen

To QUICK OPS Screen

To Previous Screen Shown

17.1 Dryer Alarm Settings (level 2)

These variables are pre-set at the factory but can be changed by the processor. Setting the values too tightly can cause nuisance alarms.

6/13/2014 13:50:30

DRYER ALARM SETTINGS

DEW POINT ALARM

-10 F°

PROCESS TEMP HIGH DEVIATION ALARM (+)

20 F°

PROCESS TEMP LOW DEVIATION ALARM (-)

15 F°

WATER SAVER ALARM

100 F°

17.2 Users Management (Any level can view)

A setup Function

6/13/2014 13:51:29

USERS MANAGEMENT

User	Password	Group	Logoff t...
Level1	*****	Ope...	0
Level2	*****	Sup...	5
Level3	*****	Mai...	5
PLC User	*****	Una...	5
Setup	*****	Setup	5

You may want to set passwords for various personnel so they only have access to certain functions.

To do that, double-tap the ***** after each Level and enter the new password on the alpha/numeric screen that will appear.

You will be prompted to enter the password twice. Press to return to USERS MANAGEMENT screen.

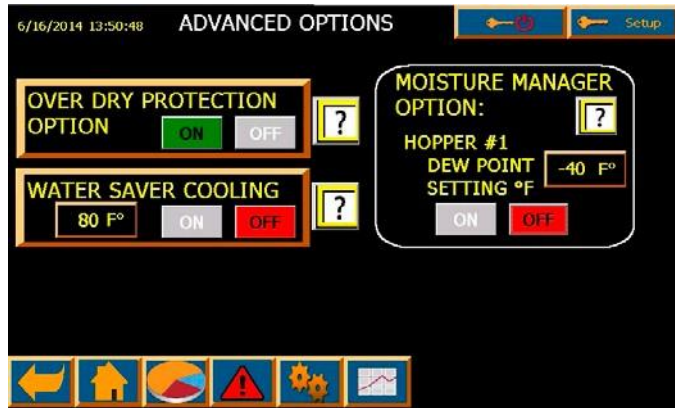
17.3 Advanced Options (level 2 & up)

OverDry Protection is Standard on DC+ models and can be activated for moisture sensitive resins like nylon.

Water Saver can be activated when an external Cooling oil is employed.

Moisture Manager is an option that must be ordered in advance.

Alarm Settings are pre-set at NOVATEC but Level3 personnel can adjust the settings.



No security to view these pages but Level 2 and up required to make changes


17.4 Touch Screen Settings

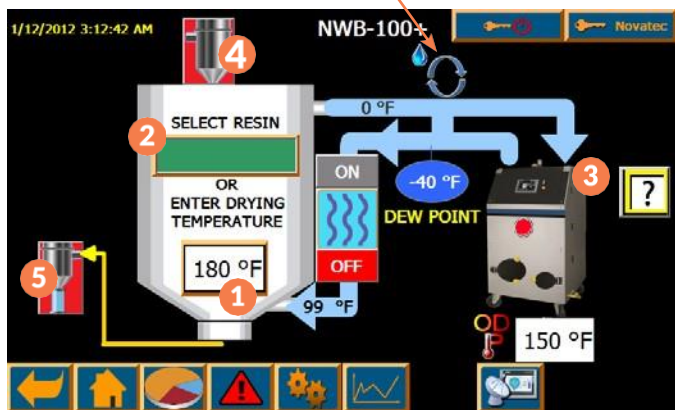
You can calibrate "Touch", Brightness and turn Sound ON or OFF. If the screen is dirty, a button allows you to clean it without disturbing the settings.



18.0 DRYING MATERIAL


18.1 Quick Op Screen

NOTE: Assure voltage, connection and phasing are correct, cooling water is supplied (for drying over 225°F) and thermocouple is inserted in hopper. Connect material source to Hopper Receiver. Turn Main Disconnect Switch to "ON" position. This icon  indicates Thermal+.



Process Temperature is factory set at 160°F.

Press temperature button **1** to change temperature or **2** to access RESIN MENU and choose one of the pre-set resins.



Press Green "ON"  switch to start the Process Heater and Blowers. Note that Process Heater can be turned OFF or ON using buttons **3** on the Quick Op screen.

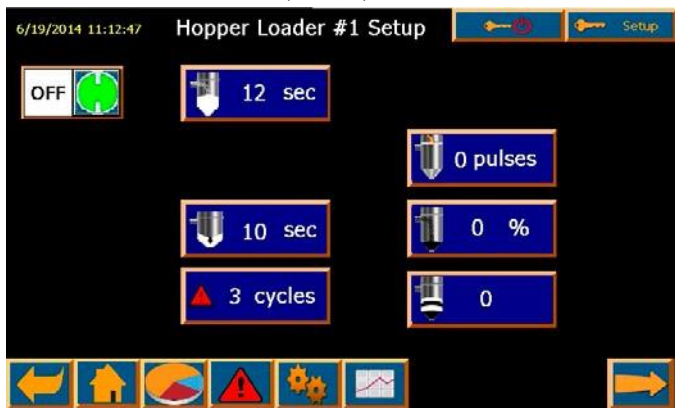
NOTE: Do not turn the process heater and blowers on until the hopper is at least half full.

Press Hopper Receiver icon **4** to access Hopper Loading screen shown below.

18.2 Hopper Loader Setup

Press each function and enter value on numeric screen.

Press  after each entry. Press  on Hopper Loader screen or **5** on Quick Op screen to access Machine Mount Receiver screen (below).



NOTE: Values in Hopper and Machine Receiver screens should be adjusted to optimal values after processing begins. Blowback must be specified when order placed.



Fill Time - the overall time, in seconds, that material enters the convey air stream. It is the time the station T vacuum valve, and if equipped, the material purge valve, are open, allowing material flow. This setting is relative to the size of the receiver and the flow characteristics of the material. Default time is 10 seconds. Note that on receivers equipped with a proportioning valve this is the overall virgin and regrind loading time.



Purge Time - (if equipped) is the time in seconds that the station T valve remains open while the material purge valve is closed to material flow. It allows for the purging of material from the conveying line after the Load Time has expired. This time is relative to the distance from the material purge valve to the receiver and how smoothly the material flows. Default time is 10 sec.



Dump Time - this is the time that the material takes to fall from the receiver into the drying hopper, bin or machine after loading is completed. This time is determined by how smoothly or slowly the material flows by gravity from the receiver. Default is 10 seconds. NOTE: Dump Time should be set for 10 seconds or more.



Pulses - For receivers equipped with filter cleaning blowback capability, this setting defines how many bursts of compressed air are released into the receiver during the dump cycle, to clean the filter. Requires password level 3 to make changes.



Regrind Pct (Regrind Percent) - defines what proportion of vacuum time will be dedicated to loading regrind into the hopper. This value is a percentage of the FILL time. For example, if the FILL time was 10 seconds and the Regrind Percent was 40%, then the proportioning valve will dedicate 4 seconds to filling regrind material. The proportioning valve will then allow virgin material to be loaded for the remaining 6 seconds.

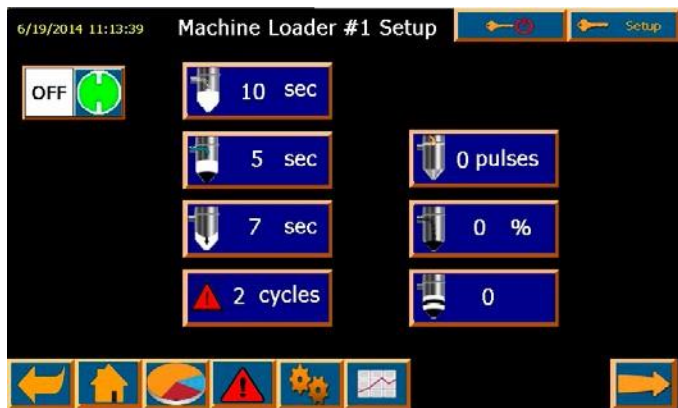


Regrind Layer - works in conjunction with the Regrind Percent. It tells the proportioning valve how many times to switch between loading regrind material and virgin material within a single fill cycle. A layer consists of both a regrind material part and a virgin material part. CAUTION: The calculated load time per layer should be 2 seconds or greater to move material consistently. Proportioning repeatability improves as each layer's load time increases.


18.3 Machine Loader Setup

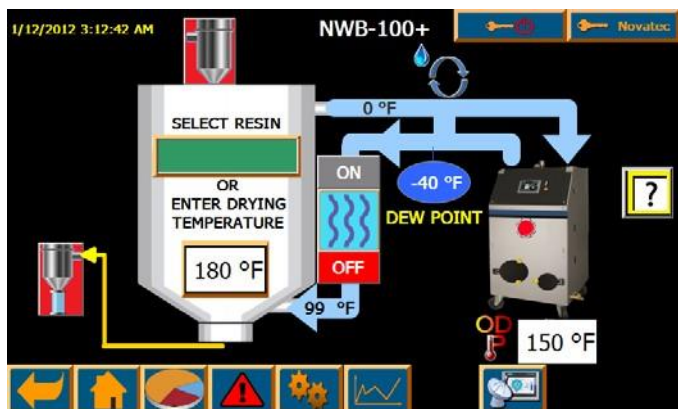
Press each function and enter value on numeric screen.

Press  after each entry.



Press  to access Quick Op Screen .

Press  on Machine Loader 1 screen and again on Hopper Loader 1 screen to return to Quick Ops screen.



18.4 Resin Menu

Access by pressing  on QUICK OP screen.

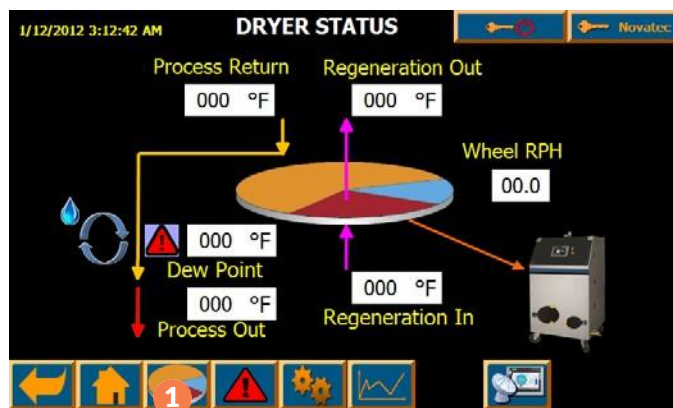
Select a material by pressing the button next to a Material. Several materials with appropriate drying temperatures have been pre-loaded into the resin menu.



Up to 10 different recipes can be entered. Note that level1 personnel can choose a recipe and run it but only level 2 personnel can change recipes.

18.5 Dryer Status Screen

This screen is widely used by processors



Access by pressing the dryer image on the

Quick Op screen or  on ANY screen.


All of the dryer parameters can be monitored.

- Reactivation inlet and outlet temperature
- Process inlet and outlet temperature
- System dew point
- Calculated desiccant wheel RPH

The graphics on this screen will change appearance in accordance with the mode of operation.

18.6 Message Screen – Alarms

No.	Time	Date	Status	Text	GR
26	13:45:57	6/13/2014	C	The process #1 temperature is below the low alarm.	0
22	13:45:47	6/13/2014	C	The reactivation temperature is below the low limit.	0
19	13:45:47	6/13/2014	C	The system's dew point is above the dew point control...	0

This icon  will appear on all screens when there is an alarm. It will flash for an active alarm and show the count for how many alarms are active. It will disappear when the alarms clear or are cleared by operator intervention.

Alarm messages will appear as a drop-down box on any screen when the Alarm icon is pressed.

19.0 INSTRUCTIONAL TROUBLESHOOTING SCREENS

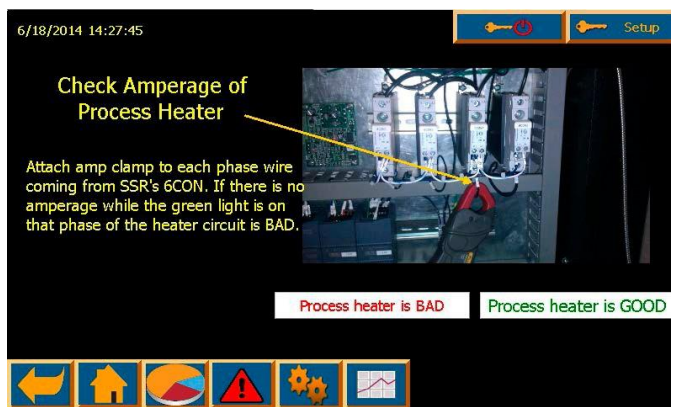
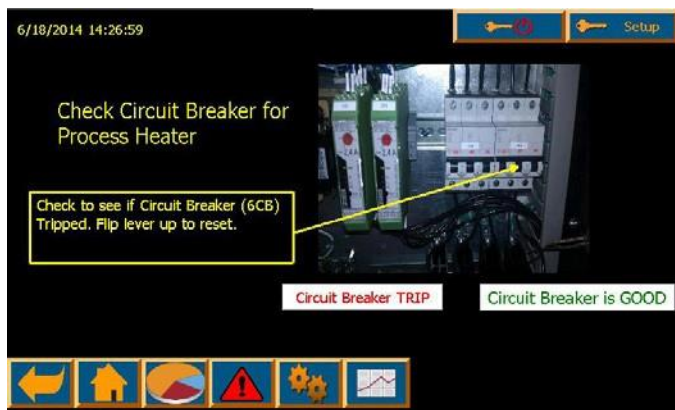
Examples are shown below.



If you need more information about a particular alarm, press and a more detailed explanation of the alarm will appear, if available. Some even have photos with instructions on how correct the issue.

Press to see those screens

Press to view possible solutions to resolve an alarm.



20.0 ADDITIONAL TROUBLESHOOTING PROCEDURES

20.1 Material Is Not Being Conveyed

- If pulling material from a Gaylord, make sure the plastic bag is not being pulled into the material lance.
- Make sure the Vacuum receivers are not being over-filled, causing the unit to dead-head.
- Adjust the overload setting on the 3MS motor starter for the conveying blower.

Phoenix motor-starter configuration instructions
The configuration sequence is as follows:

1. Stop the motor involved, you cannot adjust the set-point while the motor starter is active.
2. Press the reset button for more than 2 seconds (but less than 6) to show the current set-point. The 4 lights on the front of the controller will now indicate the adjustment. The chart on the next page shows the light codes.
3. Press the reset button for 6 seconds until the green power light flashes once. The adjuster is now operational. This potentiometer will increase or decrease the amperage set-point and display the set-point using the 4 LEDs.
4. Press the reset button again to store the value.
5. Press the reset button for more the 2 seconds (but less than 6) to confirm the current set-point.



If the motor starter is reset several times in rapid succession the motor starter will activate a time-delay which prevents the motor starter from being reset for approximately 20 minutes.

A visual explanation is available at:

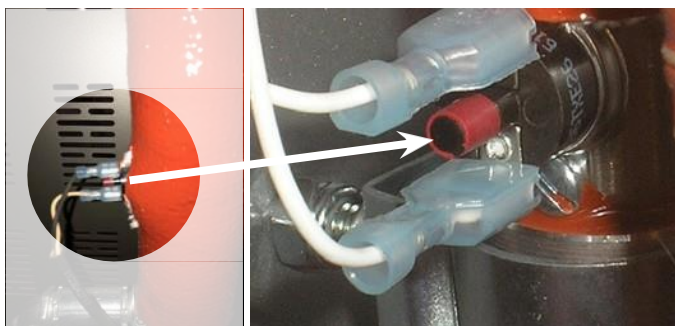
<https://www.youtube.com/watch?v=jkp80Q7D4IE>

The amperage chart for the electronic motor starters is shown on the next page.

CODE				Nominal Current (MA)		
PWR	ERR	Ladj	ON	ELR 0,6	ELR 2,4	ELR9
0	0	0	0	0.075	0.18	1.5
0	0	0	1	0.11	0.25	2
0	0	1	0	0.145	0.41	2.5
0	0	1	1	0.18	0.56	3
0	1	0	0	0.215	0.71	3.5
0	1	0	1	0.25	0.87	4
0	1	1	0	0.285	1.02	4.5
0	1	1	1	0.32	1.17	5
1	0	0	0	0.355	1.33	5.5
1	0	0	1	0.39	1.48	6
1	0	1	0	0.425	1.63	6.5
1	0	1	1	0.46	1.79	7
1	1	0	0	0.495	1.94	7.5
1	1	0	1	0.53	2.09	8
1	1	1	0	0.565	2.25	8.5
1	1	1	1	0.6	2.40	9

20.2 HTL Error Is Showing and Won't Clear

- **High Temp Limit** switch has tripped and has to be manually reset.



The heater in your dryer maybe slightly different the high temp limit switch will look like this.

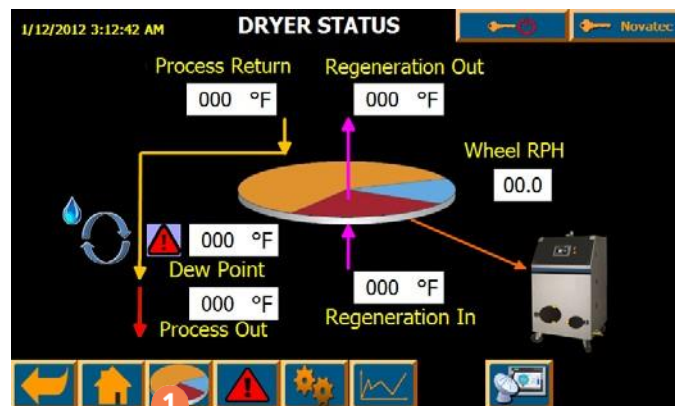
Press the black button to reset. It will not click or make any noise but pressing it will reset it.

Acknowledge the message on the message screen.

If the error reappears, you will need to troubleshoot why the switch is tripping.

- 1) Reset the HTL switch and check continuity.
- 2) Check the 24 VDC signal to the HTL switch.
- 3) Check the VDC signal from the switch to the PLC input.
- 4) Is the heater turning Off/On at the temperature set-point? If not, call our service department.

20.3 Material Not Drying/High Dew Point



Press **1** on any screen to access dryer status screen.

Call Novatec customer service and advise them of the temperatures shown on the screen.

21.0 MAINTENANCE INSTRUCTIONS

21.1 Suggested Maintenance Schedule*

Component	Action	Frequency
Process Blower Motor	Permanently lubricated - No Action required.	X
Reactivation Fan Motor		
Rotor Drive Motor		
Process Filter	Clean with compressed air or replace as necessary	Every 2 weeks
Regeneration Filter		
Conveying Air Filter		
Plasticizer Drain	Drain plasticizer into pan	Every 2 weeks
Receiver Filters	Clean with compressed air or replace if necessary	Every 2 weeks
Process Heater	Compare process temperature setting to hopper inlet temperature to make sure they are comparable. If they are not - Contact NOVATEC Service Department.	Every 2 weeks
Hose, Tubing & Clamps	Check for leaks or holes. Tighten or replace as necessary.	Every 2 months
Hopper Gaskets & Seals	Check for leaks Repair or replace as necessary.	Every 2 months
Pellet Screen	Locate wire mesh at hopper return air outlet and clean with compressed air.	Every 2 months
Rotor Drive Chain & Sprockets	Lubricate	Every 6 months
Rotor Seals	Do Not Disturb Except in an Emergency	X
Rotor Rotation	Preset at factory-No action required. Rotor speed should be 6-12 rotations/ hour. If outside this parameter, make sure the limit switch hump is re-setting the limit switch.	X
Rotor Rotation	Check for leaks or holes.	

*This schedule may have to be varied depending on the dust level and abrasiveness of the materials you are processing and the number of hours you are operating the dryer each week.

21.2 Filters

The filters shipped with the dryer are cleanable. The maintenance interval for the filters depends on the cleanliness of the surroundings and the dust/fines in plastic raw materials. A program should be established to ensure the filters are cleaned.

21.3 Process and Regeneration Filters

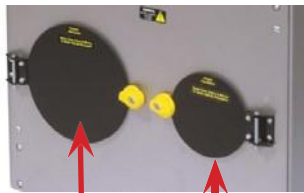
TURN THE MAIN DISCONNECT SWITCH OFF.

On All Models:

Turn the yellow knob, lift the filter access cover, remove the lock nut and pull cartridge filter out from housing. Replace the filter or clean it with compressed air, reinstall filter, re-tighten the lock nut, close filter access cover and turn the yellow knob to the locked position. Turn the power ON and restart dryer.



Conveying Air Filter Canister



Process Air Filter Access

Regen Air Filter Access

21.4 Conveying Air Filter

Loosen the clips on the Conveying Air Filter and remove it from the canister. Clean it with compressed air or replace as necessary and re-install.

21.5 Draining Plasticizer

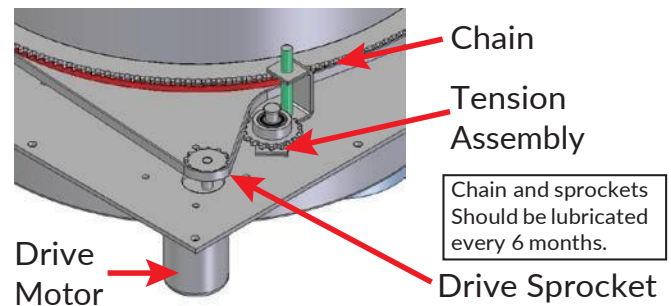


All models have a plasticizer drain on the *back panel. Every 2 weeks (or more often) a pan should be placed under the drain and the valve should be turned to the open position to drain any accumulated plasticizer.

Close the valve after draining.

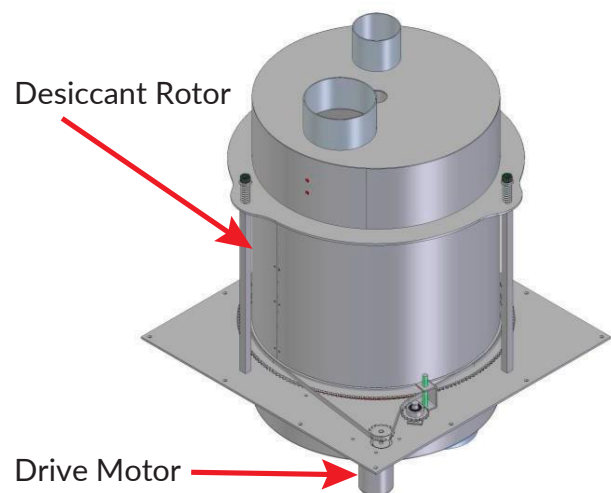
*-300 &-400 plasticizer drain on front.

21.6 Chain and Sprockets



21.7 Desiccant Rotor

The state-of-the-art desiccant rotor supplied with Thermal+ series dryers will last very long under ideal conditions. Due to the nature of desiccant and honeycomb matrix they make very good filters. The life of desiccant is directly related to the air born contaminants passed through it. Avoid exposure to acidic gases or unusual amounts of dust. Although the desiccant rotor is considered a cleanable/washable media, the preferred method of cleaning is to blow dust out with low pressure compressed air and to reactivate the rotor at a maximum temperature of 380°F (190°C) for 15 minutes. Washing the rotor, although possible, is not recommended as wash water impurities may contaminate the desiccant. Proper filtration and preventing contact with chemicals will greatly improve the life of the desiccant. Inspect the face of the rotor to see that no surface damage has occurred. The rotor should turn smoothly upon the shaft.



21.8 Drive Motor Replacement

Desiccant rotor removal is accomplished as follows:

1. Remove the chain from the drive sprocket.
2. Remove the drive sprocket from the motor shaft.
3. Remove the screws of the motor from the plate.
4. Replace the drive motor.

To re-install drive motor, reverse the above procedure.

21.9 Motor Rotation Signal

Check that the wheel rotor is rotating properly and each time a signal goes to the controller, ensure that rotor complete its cycle and the limit switch hump has reset the limit switch provided near the rotor. If the hump is not resetting the limit switch, reset the limit switch toward the rotor.

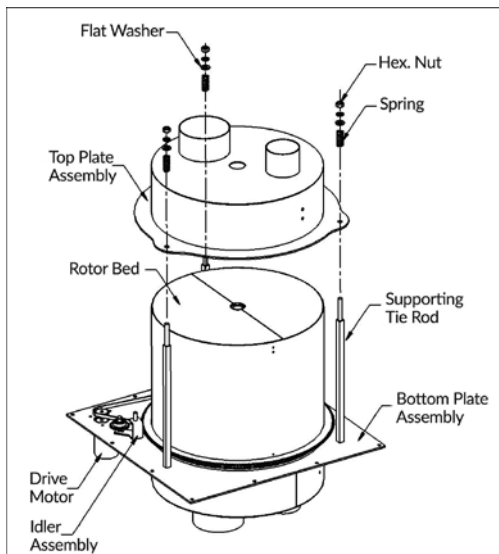
21.10 Desiccant Rotor Replacement

Desiccant rotor removal is accomplished as follows:

1. Remove the hex nuts on the Top Plate Assembly.
2. Remove the washers & spring from the Tie Rod.
3. Slide the Top Plate Assembly straight & upward gently.
4. Loosen the Supporting Tie Rod from where rotor is to be moved.
5. Remove the driven sprocket.
6. Slide the Rotor straight & upward, make sure that rotor does not get damaged.
7. Replace the desiccant rotor.

To re-install rotor, reverse the above procedure.

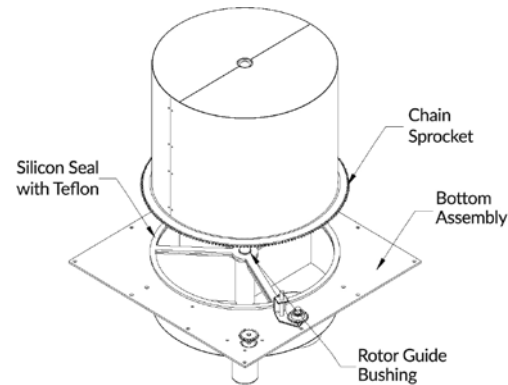
Removing top plate assembly



21.11 Seal Replacement

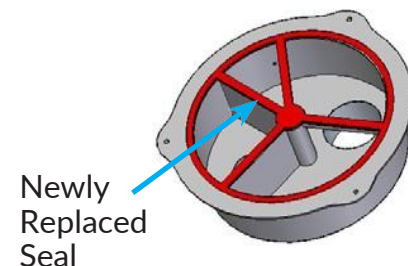
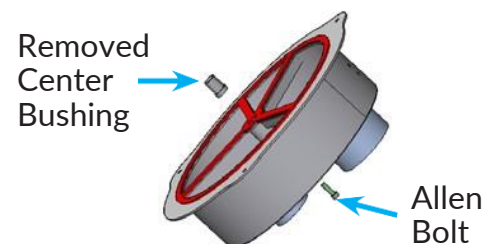
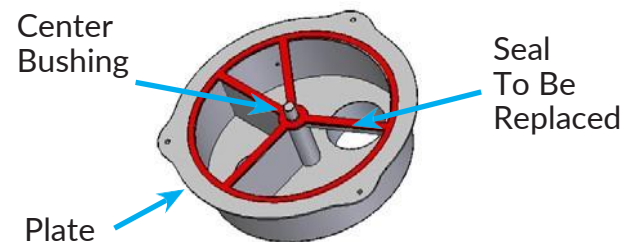
The top and bottom silicon PTFE coated fabric flat seals which separates the process from thereactivation purge compartments. Normally they do not require service or replacement. However, should damage occur, or if air leakage is suspected of causing poor performance, the seal should be replaced using the following procedure.

1. Remove rotor from the cassette as explained in 20.10.
2. Remove the old seal using knife. Also remove silicon sealant.
3. Clean the plate surface.
4. Apply fresh silicon sealant.
5. Gently press the seal towards the plate, make sure the seal's section does not get offset
6. After joining the seal to the plate, let it dry for 24hrs.



Removing desiccant rotor

NOTE: The smooth Teflon coated side of the seal is always on the top side of the seal and there should not be any silicon sealant remaining on that side.



Follow same procedure for upper and lower seals.

21.0 TROUBLE SHOOTING and ERROR MESSAGES

Trouble	Probable Reason	Corrective Action
1. Unit not running	Control main circuit breaker tripped. Main power off. Control power interrupted.	Reset the breaker. Check line and main. Check per item as per electrical wiring diagram.
2. Material in hopper melts.	Process temperature controller set too high for material being dried. Temperature probe not installed in process air stream. Process blower rotating in wrong direction. Temperature sensor connection loose or reversed.	Check set temperature for proper drying process temperature. Ensure temperature probe is installed in the dryer outlet, or in the hopper inlet. Change blower rotation. Correct the connection.
3. Reactivation (regeneration) temperature too high.	Reactivation temperature set too High.	Check set-temperature on Thermal+ controller. It should be 380°F (190°C)
4. Reactivation (regeneration) heat too low (Rotor not fully reactivating.)	Reactivation thermostat setting too low Reactivation temperature controller set too Low Reactivation heaters faulty.	Adjust thermostat for proper reactivation heat at around 380° F (190°C) Check set temperature on Thermal+ microprocessor controller. It should be 380° F. (190°C) Replace heaters.
5. Material in hopper not getting dried properly.	Clogged Filters Door gasket leaking or damaged. Leak in hose. Hose connection loose. Wrong process temperature for material being dried. Hopper is running almost empty. See #6 below	Inspect, clean/replace filters as necessary Check all gaskets (filter cover, hopper doors, and hopper lids) and repair or replace damaged gaskets. Replace hose Tighten hose connections. Add material to hopper and control the level higher.
6. High dew point in process air from dryer into hopper.	High inlet temperature to the wheel rotor (should be less than 150°F per the display). Leaks in the system. High moisture levels in plastic resin being dried in hopper, reducing the drying performance.	Check the cooling water is flowing to the cooling coil and make sure the temperature is below 85°F and at the proper flow. Check the dryer system & hopper for any air leaks & repair as required. Reduce the moisture of the resin being loaded into the hopper. Keep the resin sealed until ready for use, to reduce the amount of moisture being picked up by the resin from the surrounding air.
7. Process blowers not running.	Motor main circuit breaker tripped. Motor overload tripped.	Reset main circuit breaker. Rectify fault reset overload and check motor AMPS are in limit.
8. Dew Point Sensor not working properly.	Not operating High or erratic dew point	Check sensor wiring for tightness and breaks. Check sensor wiring and check tubing to the sensor and the sensor for tightness and air leaks. Replace the dew point sensor as required (it should be replaced yearly)
9. Wheel rotor turning but not indexing or showing a RPH speed.	Rotor limit switch not aligned properly. Rotor drive motor defective.	Align the limit switch it should be reset by limit switch hump on each rotation. Replace motor

NOTE: When ALARM message is followed by a ?, press the message for more information.

12.0 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 Dryers
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
VRH, VR, VR-FL, VRP & VRM 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
UltraVac Vacuum Pumps
Vacuum Regenerative Blower Pumps
Custom Equipment of any kind unless otherwise specified

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.



Drying > Conveying > Blending > Downstream

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