

NovaWheel™ DESICCANT WHEEL DEHUMIDIFYING INSTRUCTION MANUAL

Models: NWPG-600 thru NWPG-5000
NovaWheel PowerGuard Dryers

All With 9" NovaTouch™ Color Touch Panel PLC



NWPG-1000



NWPG-3800

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Instruction Manual NWPG-600-5000 IM 9 May, 2017



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

NOTES:

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

Instruction Manual: NWPG-600-5000 IM 9 May, 2017

Model #: _____

Serial # _____

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FOREWORD

This manual is dedicated to the principle that any engineered system will have many elements contributing to the smooth operation of the systems, and that these must be understood in order that installation and operation can proceed successfully. The electrical and mechanical components in the NW Series dryers have been manufactured, selected and assembled with care to give you excellent service. A wide range of NW dryers enable our valued customers to select the right model for their application. The NW series dryer has been designed for use in closed loop resin drying systems. All components of your NW 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.

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 you 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.

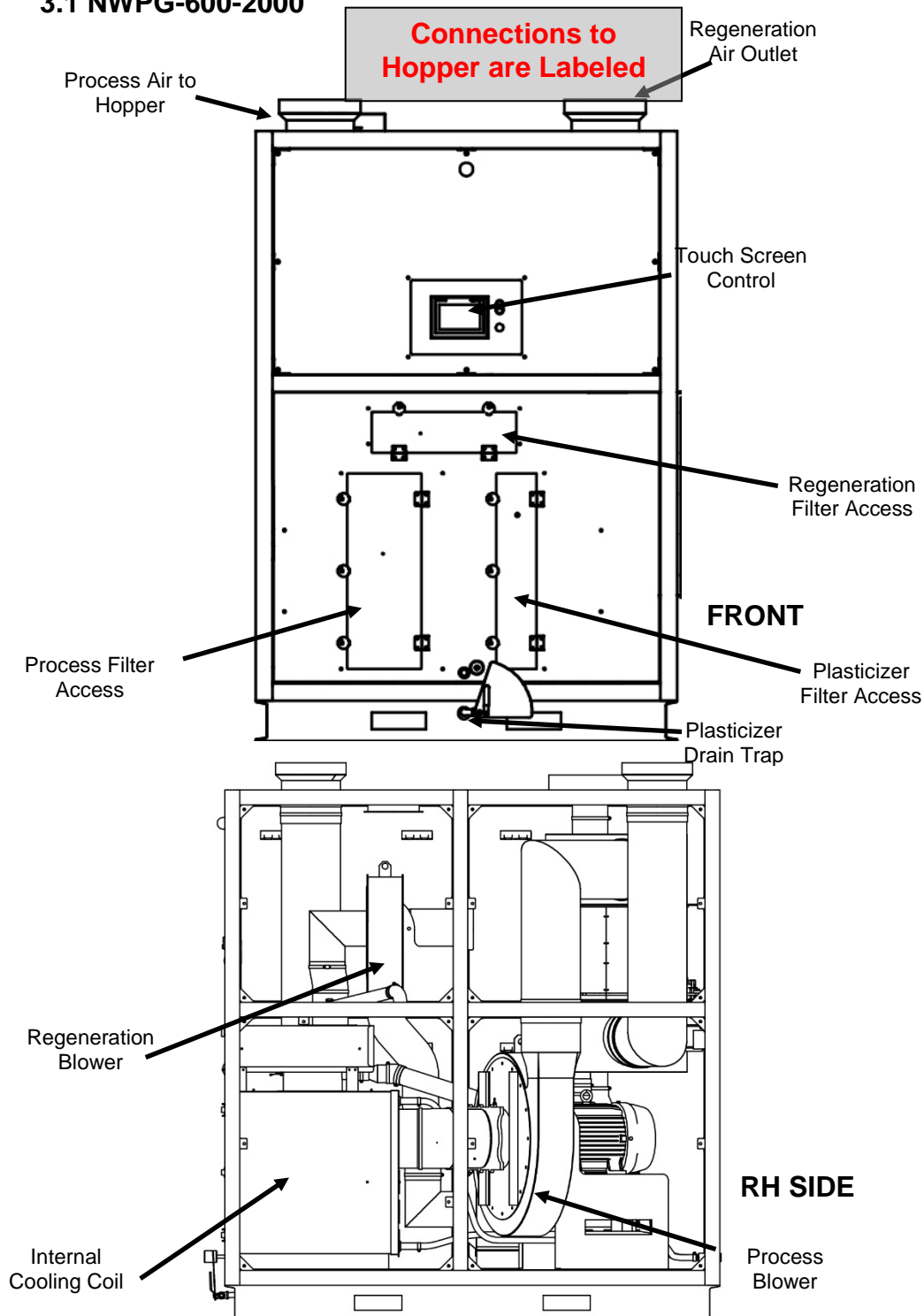
NOVATEC thoroughly tests and inspects all products before shipment. You are to make the piping, and electrical connections for final installation and commissioning. If there any problems, shut down the equipment and contact the NOVATEC Technical Service Department.

3.0 PRODUCT FAMILIARIZATION

The major product components are shown below.

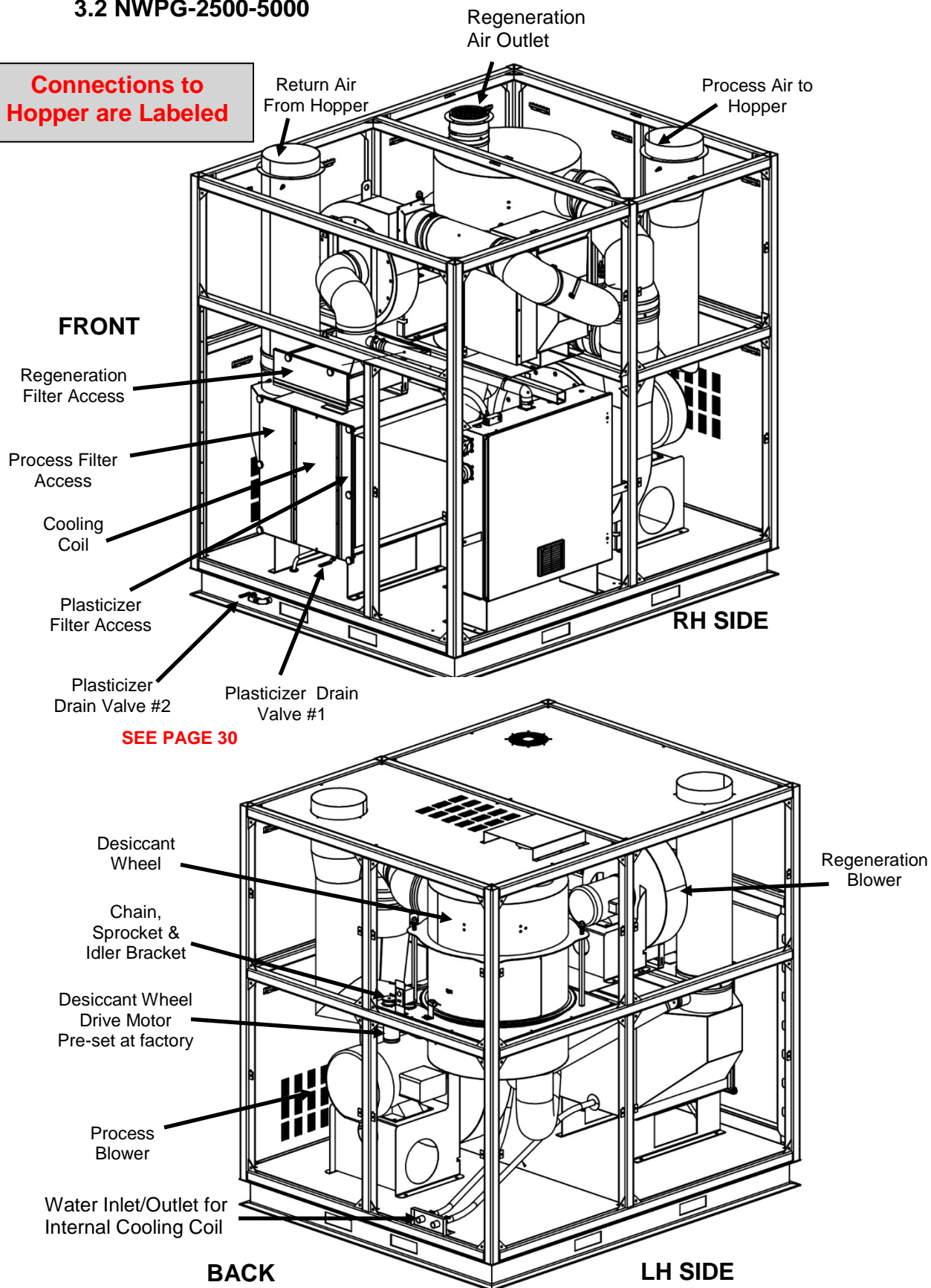
If the Process Heater is a separate Gas-Fired unit, the electric process heater is eliminated.

3.1 NWPG-600-2000

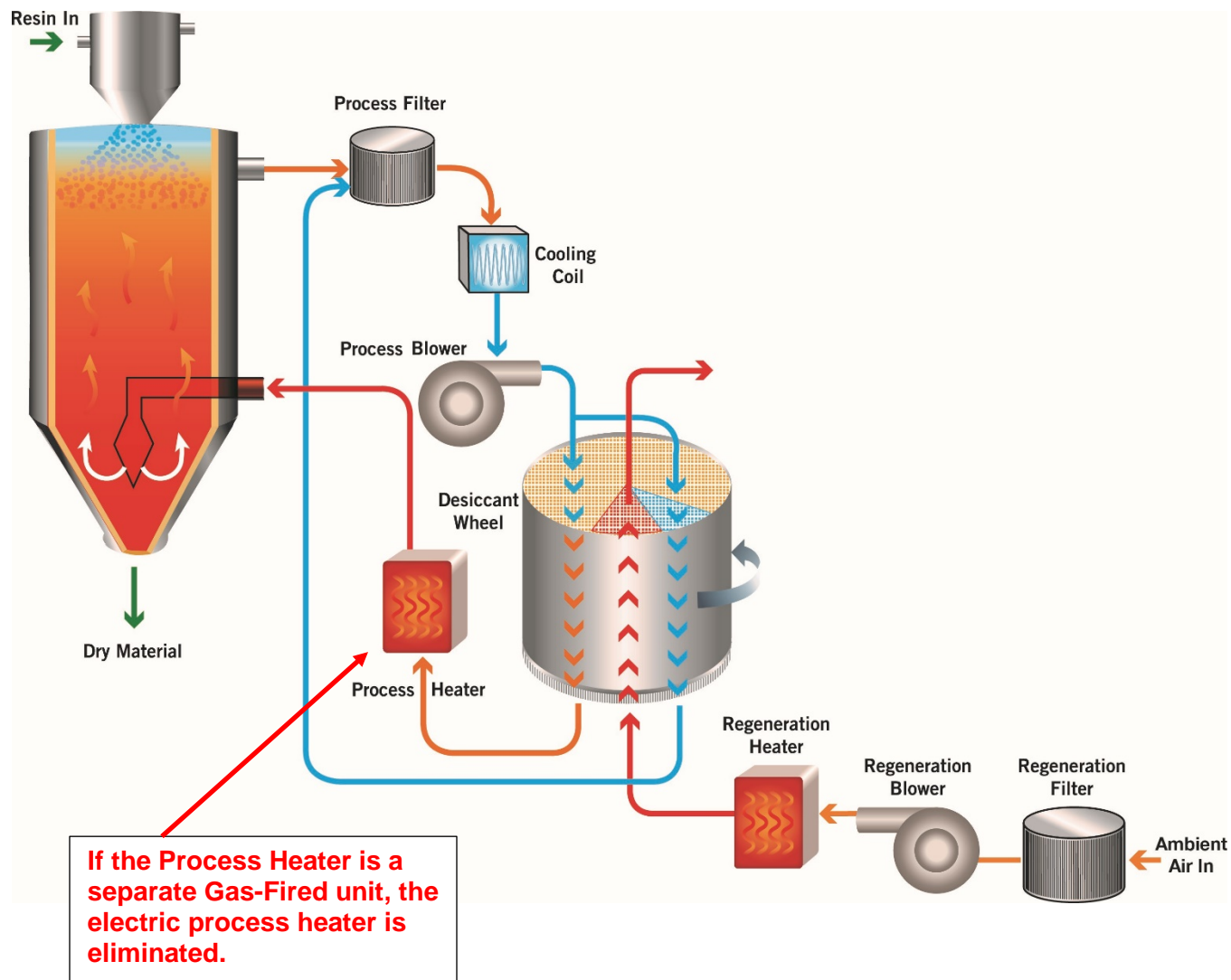


3.2 NWPG-2500-5000

Connections to Hopper are Labeled



3.3 System Flow Diagram



3.4 Specifications – NovaWheel™ Dryer

Model	NWPG-600	NWPG-800	NWPG-1000	NWPG-1300	NWPG-1600	NWPG-2000
*Max Material Flow - Lbs./Hr. Kg/Hr.	600 273	800 364	1000 455	1300 590	1600 727	2000 909
Voltage – Phase - Hz	460-3-60	460-3-60	460-3-60	460-3-60	460-3-60	460-3-60
Customer Water Line Size (min) O.D.:	5/8" (16 mm)	3/4" (20 mm)	3/4" (20 mm)	3/4" (20 mm)	1" (25 mm)	1" (25 mm)
Water Required - Nominal (GPM):	10	12	14	15	16	20
Wheel Speed - nominal (revolutions per hr.):	9-11	9-11	9-11	9-11	9-11	9-11

Model	NWPG-2500	NWPG-3000	NWPG-3800	NWPG-5000
*Max Material Flow - Lbs./Hr. Kg/Hr.	2500 1136	3000 1364	3800 1727	5000 2273
Voltage – Phase - Hz	460-3-60	460-3-60	460-3-60	460-3-60
Customer Water Line Size (min) O.D.:	1" (25 mm)	1" (25 mm)	1" (25 mm)	1" (25 mm)
Water Required - Nominal (GPM):	25	30	40	40
Wheel Speed - nominal (revolutions per hr.):	9-11	9-11	9-11	9-11

*Based on 38 lb./ft³ Bulk Density - Reduce kg/hr. by 20% for 415/3/50 voltage.
Kg/hr. for 575/3/50voltage same as above.

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

4.0 INSTALLATION

CAUTION: FOLLOW ALL NATIONAL AND LOCAL ELECTRICAL AND MECHANICAL CODES, AS REQUIRED. ONLY QUALIFIED AND TRAINED PERSONNEL SHOULD INSTALL AND OPERATE THIS EQUIPMENT.

4.1 Location

Locate your NW Series dryer in a low traffic area, this will avoid disturbance of the hoses connecting your dryer to the hopper. 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.

There must be a grounded power source that will supply the correct voltage per the dryer nameplate.

Water (tower or chilled at +45 to 85°F) must be supplied to the cooling coil using flexible hoses.

4.2 Customer Piping Connections

Care should be taken while connecting the process air piping. If hoses are used, it should be suitable for at least 350°F and silicone hose is recommended. On larger piping, hard piping with steel tubing should be considered. The piping should not block the access doors of the dryer. See below for the correct connection size from the dryer to the hopper.

Process air connections for NC-C models

NW-600:	6 inches diameter
NW-800:	6 inches diameter
NW-1000:	8 inches diameter
NW-1300:	8 inches diameter
NW-1600:	8 inches diameter
NW-2000:	12 inches diameter
NW-2500:	12 inches diameter
NW-3000:	12 inches diameter
NW-3800:	12 inches diameter
NW-5000:	12 inches diameter

4.3 Electrical Connections

The NW Series dryer comes from the factory with all control circuits wired and the dryer needs to be connected to the proper power source. ***Electrical Drawings are included with this package.***

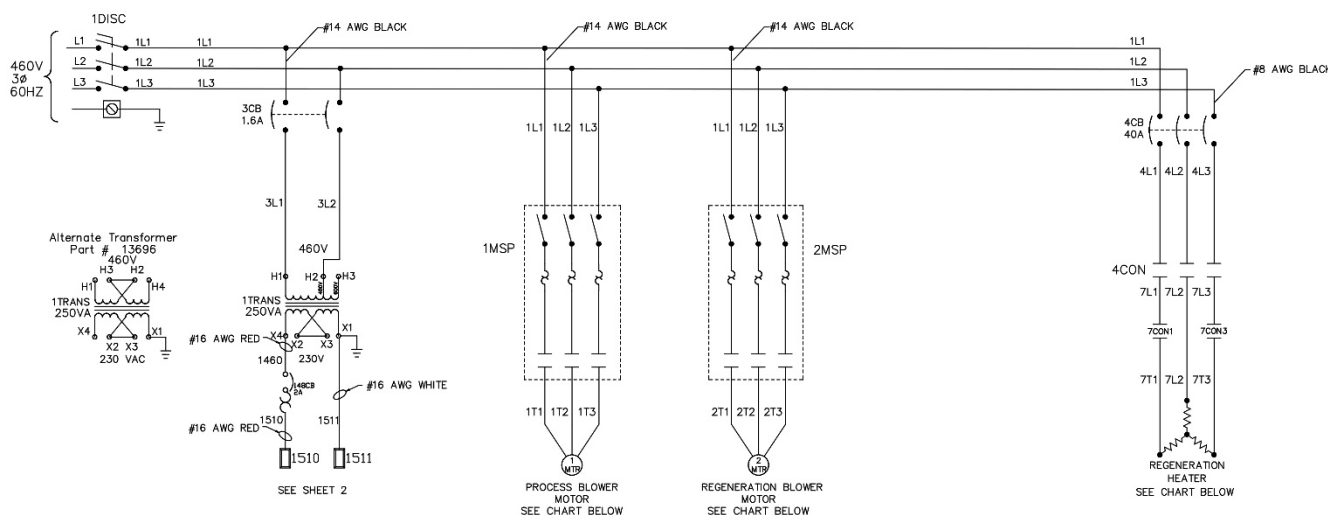
CAUTION:

- 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.**

Procedure:

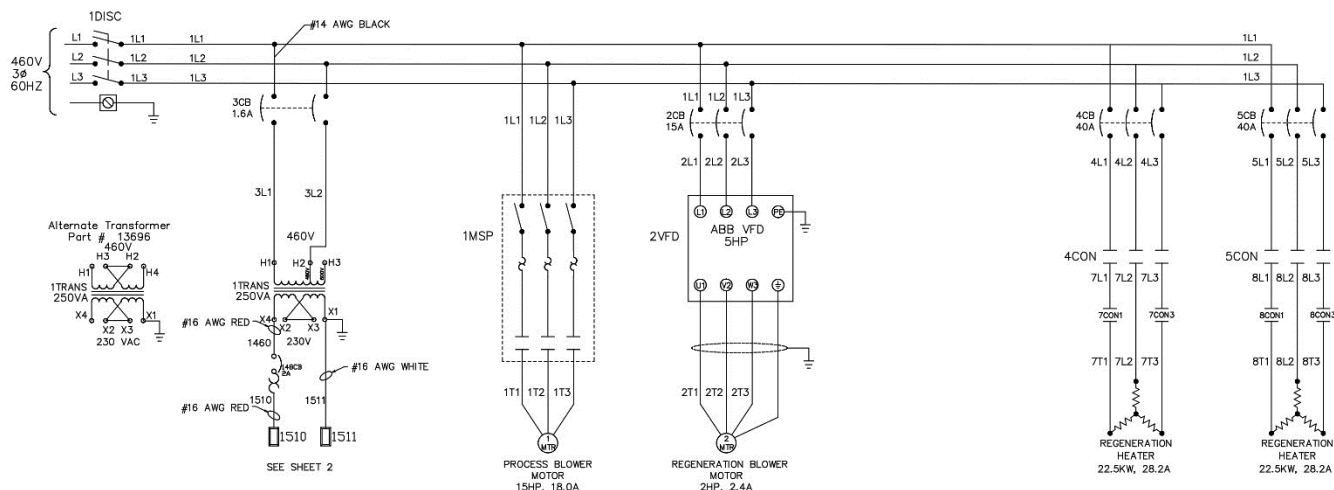
- Turn disconnect on the door to the "OFF" position, lock out the main power source and open the electrical enclosure.
- Per the electrical diagram, install the main power wire to the main disconnect switch holder and install the ground wire.

4.3.1 -600 through -1300



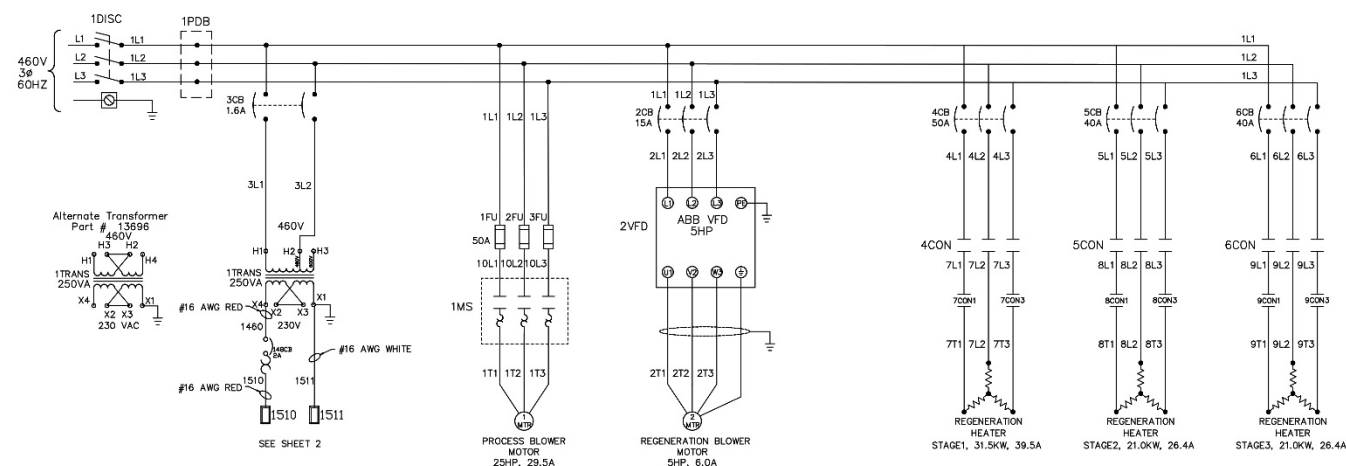
MODEL	TOTAL CONNECTED POWER KVA/AMPS	PRO MOTOR HP/AMPS	REG MOTOR HP/AMPS	REG HTR KW/AMPS	PRO HTR KW/AMPS
NWPG-600	19.8/24.8	3/3.7	1/1.8	15/18.8	SEPERATE FEED
NWPG-800	28.9/36.3	5/5.8	1/1.8	22.5/28.2	SEPERATE FEED
NWPG-1000	28.9/36.3	5/5.8	1/1.8	22.5/28.2	SEPERATE FEED
NWPG-1300	28.9/36.3	5/5.8	1/1.8	22.5/28.2	SEPERATE FEED

4.3.2 -1600 through -2000



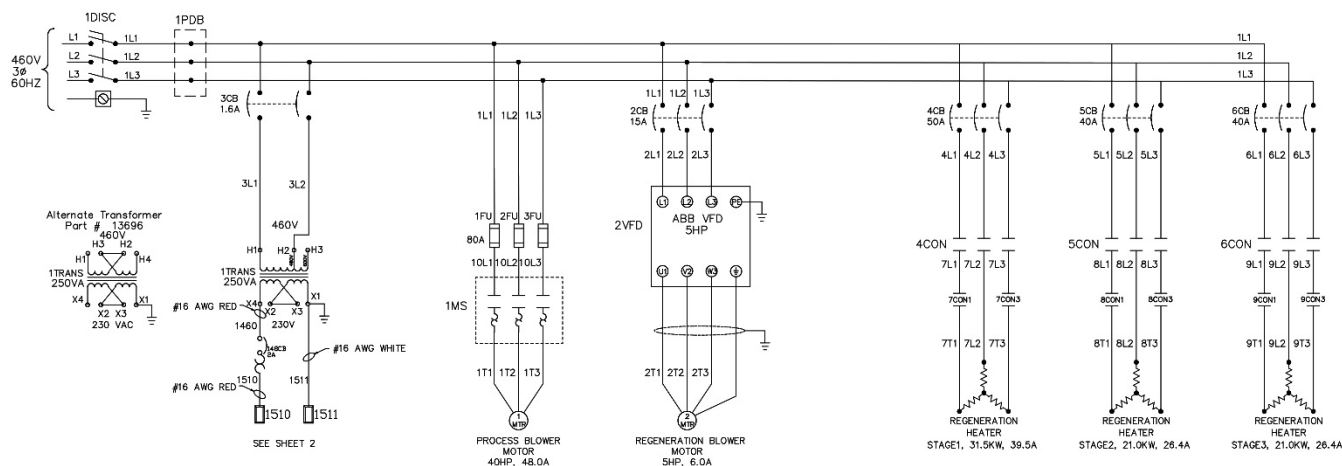
MODEL	TOTAL CONNECTED POWER KVA/AMPS	PRO MOTOR HP/AMPS	REG MOTOR HP/AMPS	REG HTR KW/AMPS	PRO HTR KW/AMPS
NWPG-1600	62.1/77.9	15/18.0	2/2.4	45/56.4	SEPERATE FEED
NWPG-2000	62.1/77.9	15/18.0	2/2.4	45/56.4	SEPERATE FEED

4.3.3 -2500



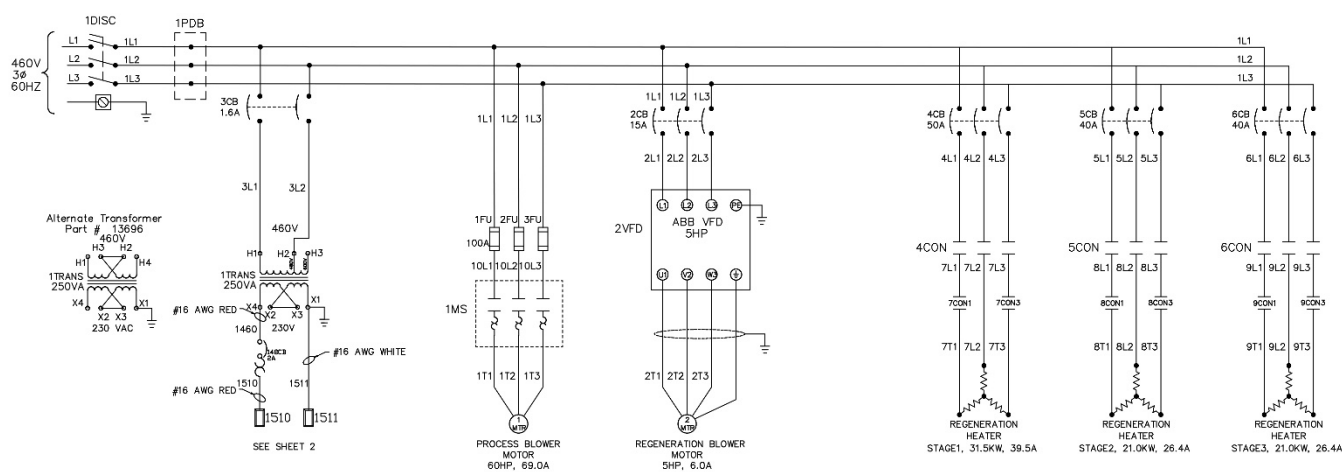
MODEL	TOTAL CONNECTED POWER KVA/AMPS	PRO MOTOR HP/AMPS	REG MOTOR HP/AMPS	REG HTR KW/AMPS	PRO HTR KW/AMPS
NWPG-2500	102.7/128.9	25/29.5	5/6.0	73.5/92.3	SEPERATE FEED

4.3.4 -3000



MODEL	TOTAL CONNECTED POWER KVA/AMPS	PRO MOTOR HP/AMPS	REG MOTOR HP/AMPS	REG HTR KW/AMPS	PRO HTR KW/AMPS
NWPG-3000	117.4/147.3	40/48.0	5/6.0	73.5/92.3	SEPERATE FEED

4.3.5 -3800 through -5000



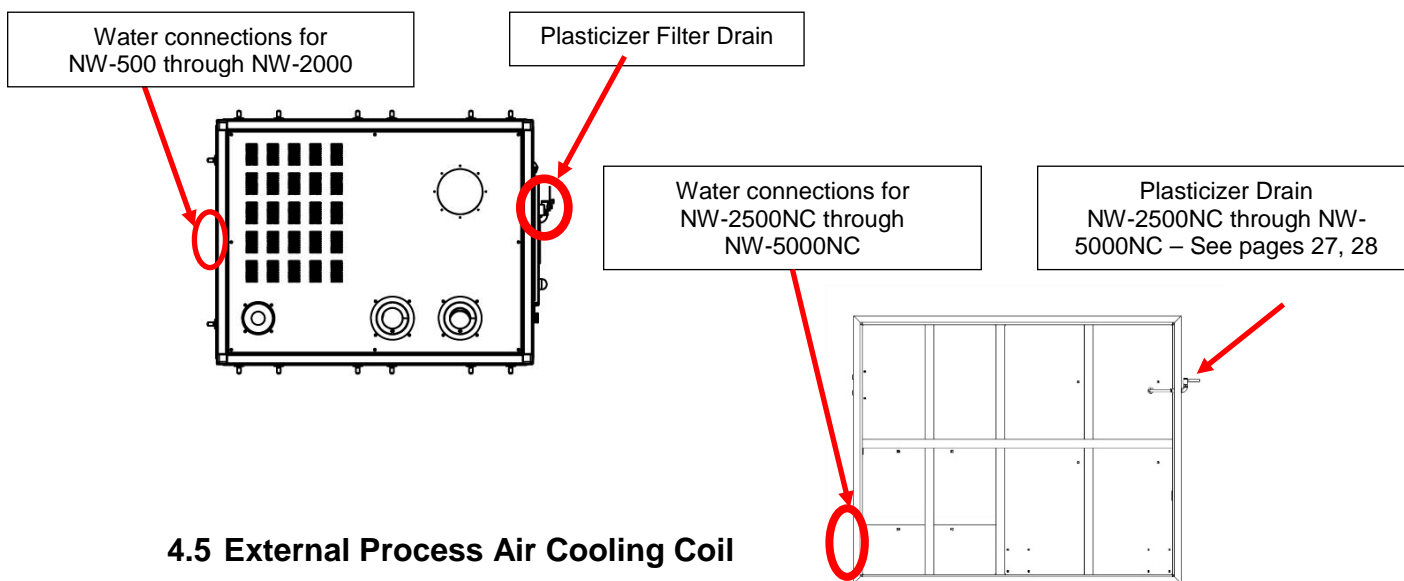
MODEL	TOTAL CONNECTED POWER KVA/AMPS	PRO MOTOR HP/AMPS	REG MOTOR HP/AMPS	REG HTR KW/AMPS	PRO HTR KW/AMPS
NWPG-3800	134.2/168.4	60/69.0	5/6.0	73.5/92.3	SEPERATE FEED

NWPG-5000	134.2/168.4	60/69.0	5/6.0	73.5/92.3	SEPERATE FEED
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4.4 Cooling Coil Connection

A Cooling Coil is installed in NW series dryers and is required to lower the hopper return temperature **when drying temperatures are above 225° F**. This increases the efficiency of dryer.

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 on page 8.*



4.5 External Process Air Cooling Coil

For drying temps under 170° F (77°C) an External Process Air Cooling Coil is required.

Cooling coils are available with plasticizer drain features.

5.0 FUNCTION CONTROLS

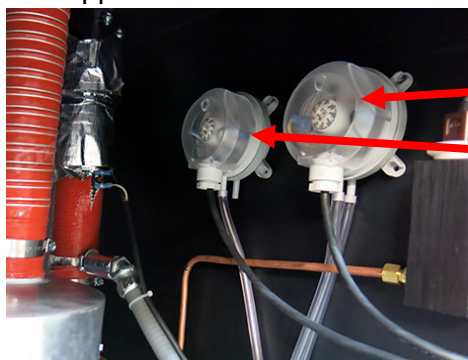
The NW Series dryers come complete with the following controls:

5.1 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.

5.2 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.



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.

5.3 Process Air Dew Point Monitor

It measures the process air dew point from the dryer.

5.4 Intelligent Regeneration & Variable Frequency Drive **See 8.7-8.8**

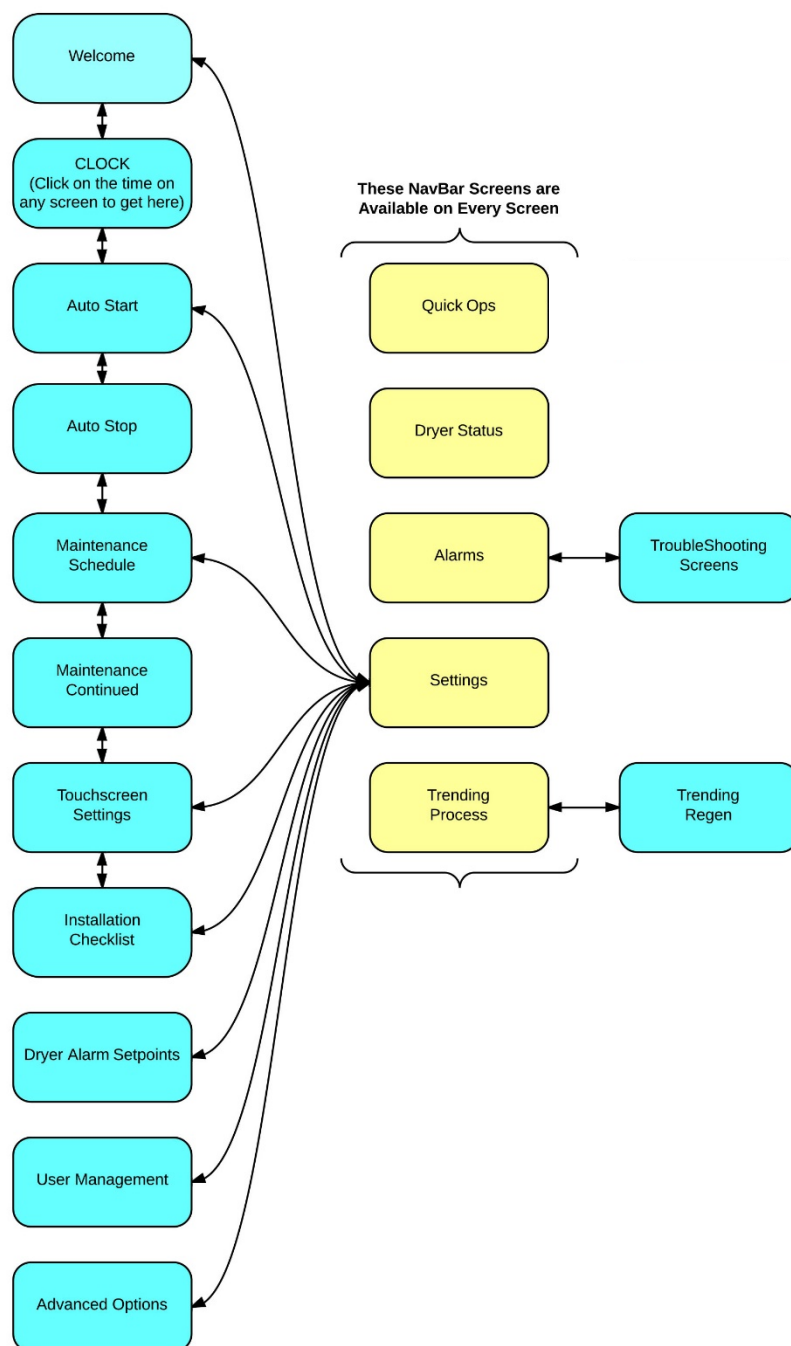
Intelligent Regen constantly monitors the regeneration inlet and outlet temperatures and controls them to optimize the energy and dew point performance on all NWPG Series dryers. NWPG Dryers from -1600 through -5000 also employ a variable frequency drive that automatically optimizes the regen blower speed.

6.0 NovaTouch™ PLC CONTROL

The NovaTouch control provided with this dryer is a hi-resolution 9" color touch panel PLC. It is designed and programmed for the utmost convenience of NOVATEC customers.

6.1 Screen Map:

For all operational functions available to processor:



6.2 System Conventions:

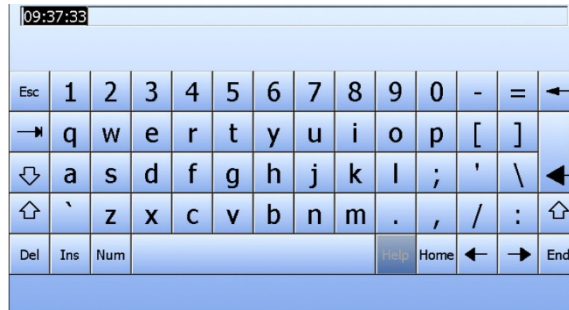
All information and data displays will appear two dimensional in configuration and flat. All data entry points or operational features will appear three dimensional in configuration and raised or depressed in appearance depending on their operational position.

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 applicable screen keyboard opens and displays the current value.
2. Set the value.
The following options for entering values are available:

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

Select  to confirm your entries or cancel them with . Both actions close the screen keyboard.

"[?]" or an  may appear on any screen, or in any alarm message. This is the indication that there is additional information available. By pressing the symbol, an information page will appear on the screen. The information page will be removed by pressing the X in the upper right hand corner of the page.

6.3 Glossary of Icons



To Previous Screen



To Home Screen



To Dryer Status Screen



To Alarms Screen



To System Settings Screen



To Trending Screen



To Remote Connect Screen – This icon may not appear if there is no connection to a conveying program.



To Next Screen



To Clean/Adjust Screen



To Password Screen



To Alarm Set Points

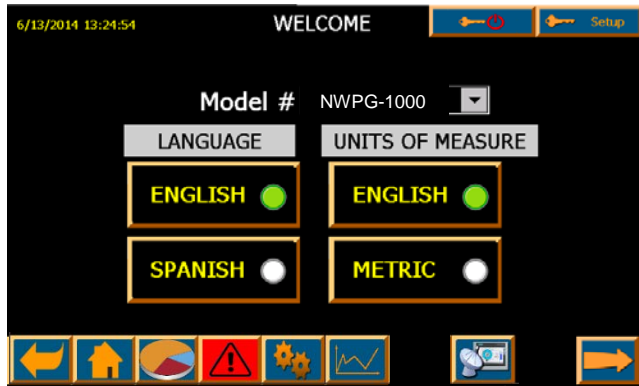



To Advanced Options

7.0 INITIAL DRYER SETUP

7.1 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.
If the electrical phase is incorrect, the red warning light will come on and a warning will appear on the touch screen.

Turn the MAIN DISCONNECT SWITCH to "OFF" and correct the phasing.

WARNING:

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

Turn the Main Disconnect to ON.

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

NOTE: 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.

7.2 Explanation of Password Levels

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

setup : 4444

level1 : 1111(Operator) –
Can set clock, choose pre-set recipe and run it.

level2 : 2222 (Production Supervisor) –
level1 plus can change recipes & Auto Start/Stop

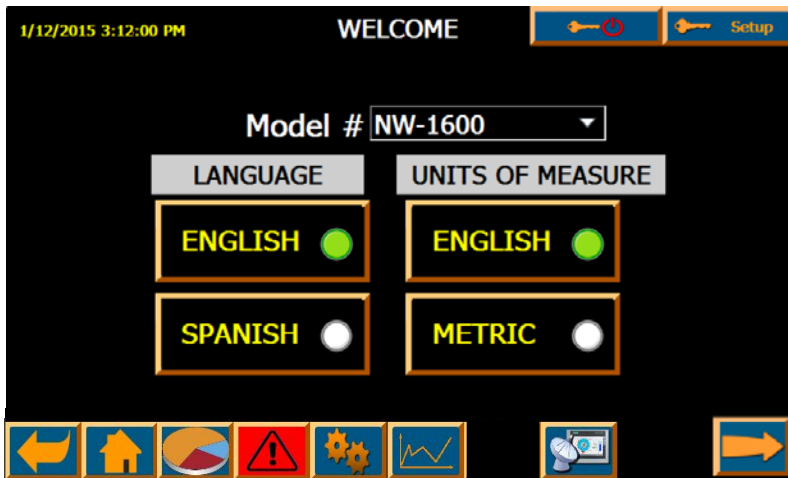
level3 : 3333 (Maintenance) level 2 plus
make entries on Maintenance Screens & Advanced Functions.

Machine Configuration – Factory Pre-sets (NOVATEC Only)

Setup can change all usernames & passwords
level3 can change level1-3 passwords
level2 can change level1-2 passwords
level1 can change level1 passwords

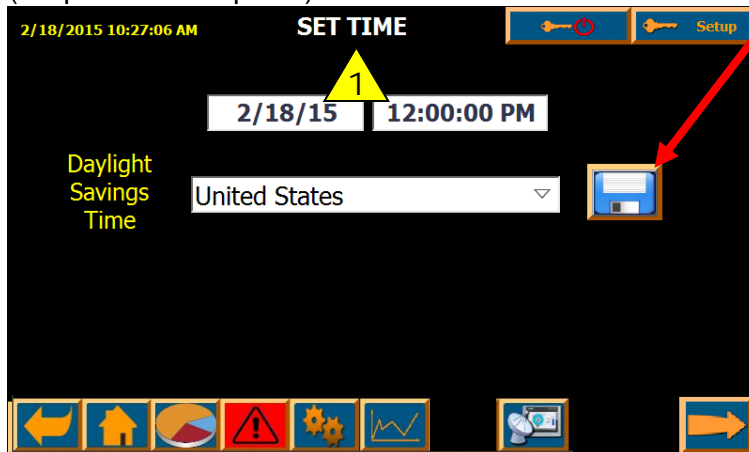
7.3 WELCOME Screen

Pressing METRIC will change °F to °C.






7.4 Verify/Set Time and Date

(No password required)



Press the SAVE icon to save the time and date.



Press  to **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.

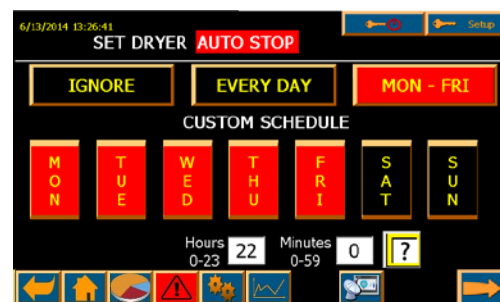
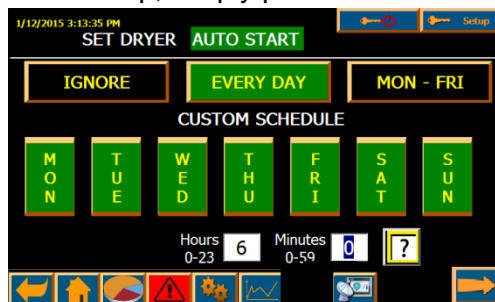
Press  after each entry is complete.

Setting date and time assures that alarms will have correct date & time stamp.

Setting time is a level1 function after initial setup.


7.5 Auto Start/Auto Stop Screens

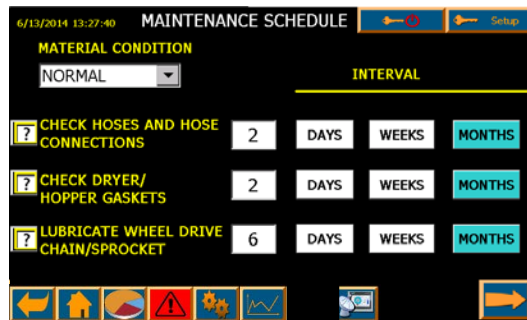
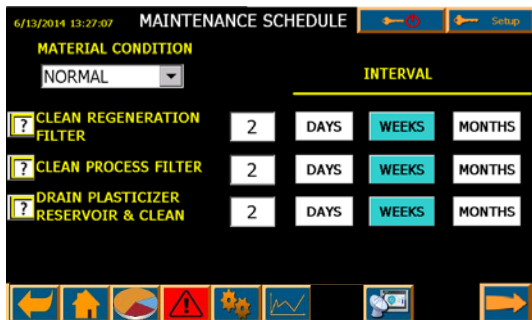
Press  and the **AUTO START** screen will appear. Choose days and times and press  again to enter **AUTO STOP** days and times. Entries are optional. If you do not want to set Auto Start/Stop, simply press IGNORE.



Auto Start/Stop is a level2 function after Initial Setup

7.6 Maintenance Schedule

Press  to page forward to set up maintenance schedule.



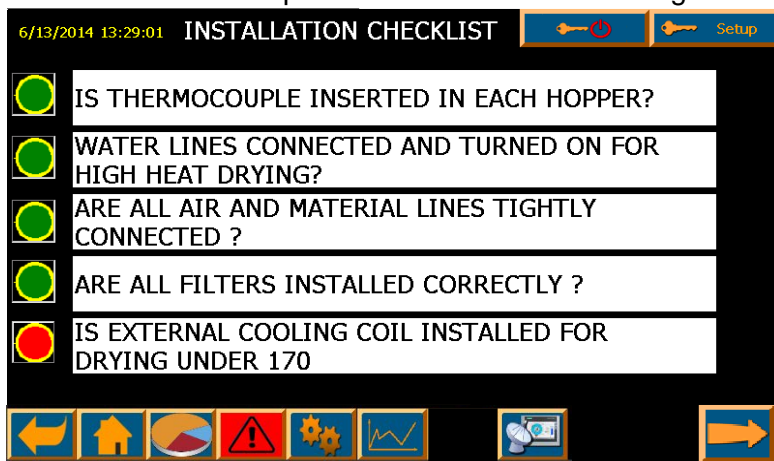
Choose the material condition that will be run and then the appropriate maintenance schedule for each task.

Maintenance Schedule is a level 3 function after initial setup.

NOTE: Performing maintenance on regular intervals will enhance dryer performance and life and minimize downtime.

7.7 Installation Checklist

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

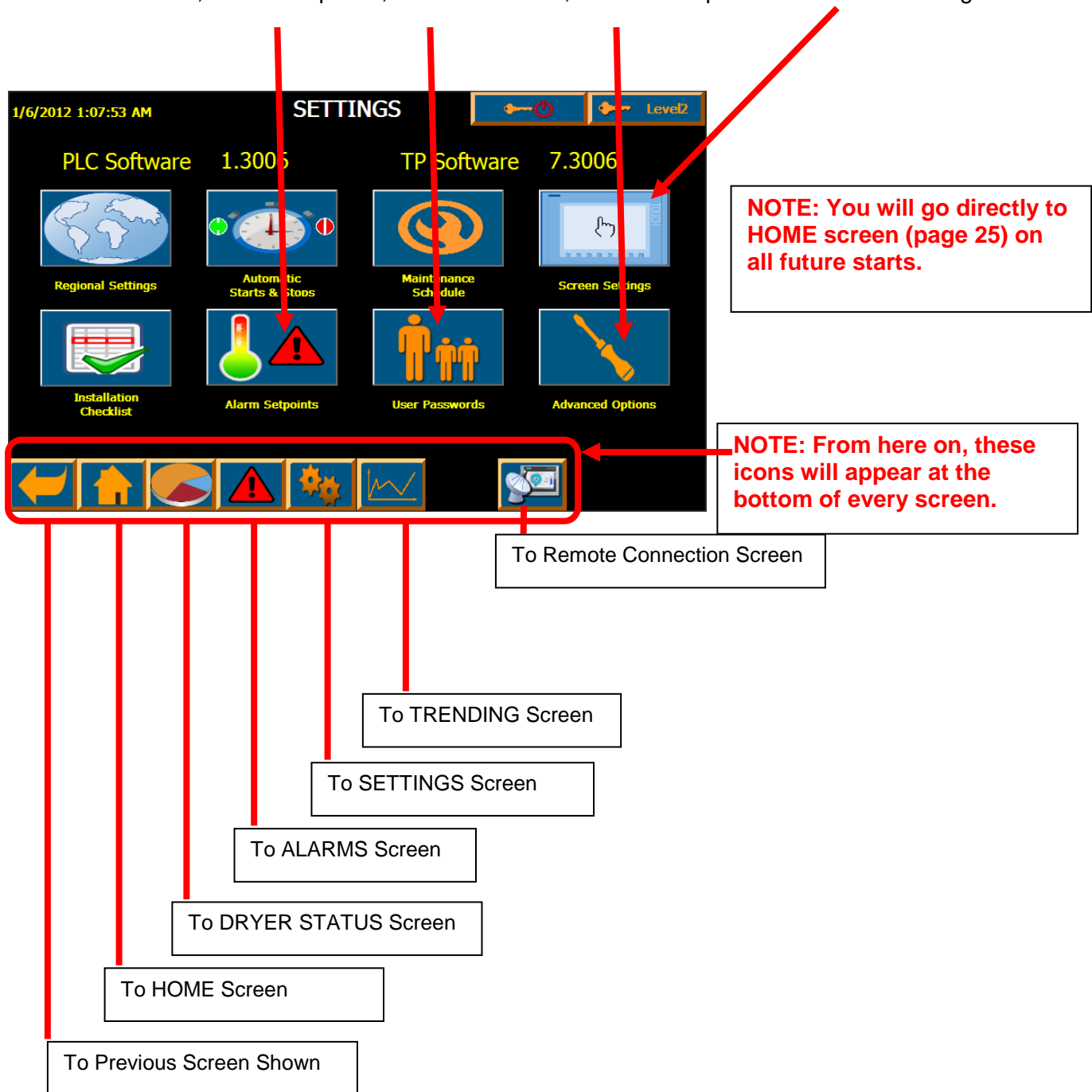


Pressing the FORWARD button one more time will open the Settings screen (next page).

8.0 SETTINGS SCREEN (Any level can view)

8.1 Dryer Alarm Settings

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



8.2 Dryer Alarm Settings (Set Points)






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




Since the process temperatures are set at the Drying hoppers, the Process High and Low Temp Alarms will not be activated at the Central Dryer.




8.3 Users Management (User Passwords)



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.

6/13/2014 13:51:29 USERS MANAGEMENT					 Setup
User	Password	Group	Logoff t...		
Level1	*****	Ope...	0		
Level2	*****	Sup...	5		
Level3	*****	Mai...	5		
PLC User	*****	Una...	5		
Setup	*****	Setup	5		

setup level required for initial setup of dryer.

Preset usernames/passwords:

setup: 4444

level1: 1111 (Operator)

level2: 2222 Prod Supr.

level3: 3333 (Maint.)

These should be re-set.

Setup can change all usernames & passwords

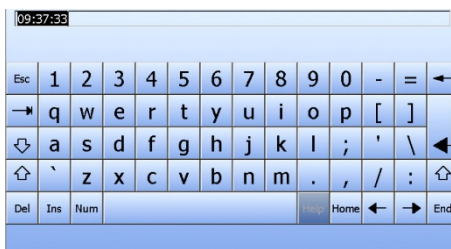
level3 can change level1-3 passwords

level2 can change level1-2 passwords

level1 can change level1 passwords

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.

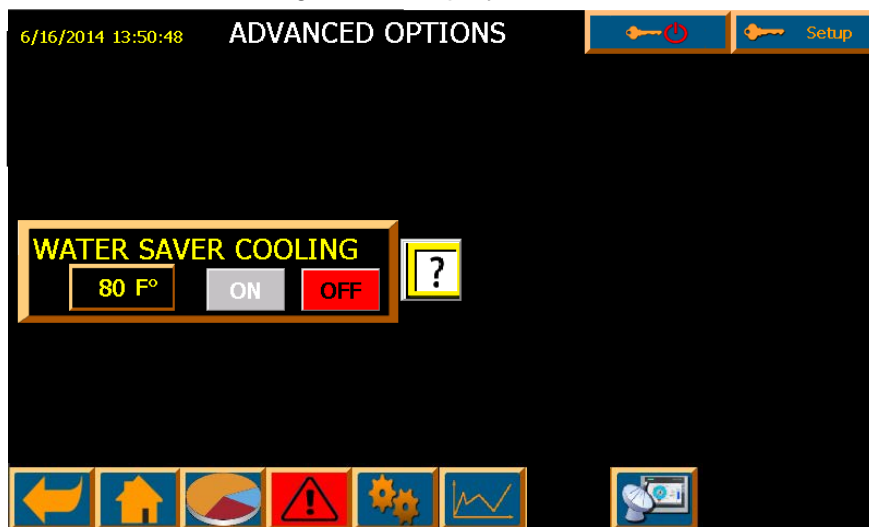


You will be prompted to enter the password twice. Press  to return to USERS MANAGEMENT screen.

8.4 Advanced Options – Must be Ordered in Advance



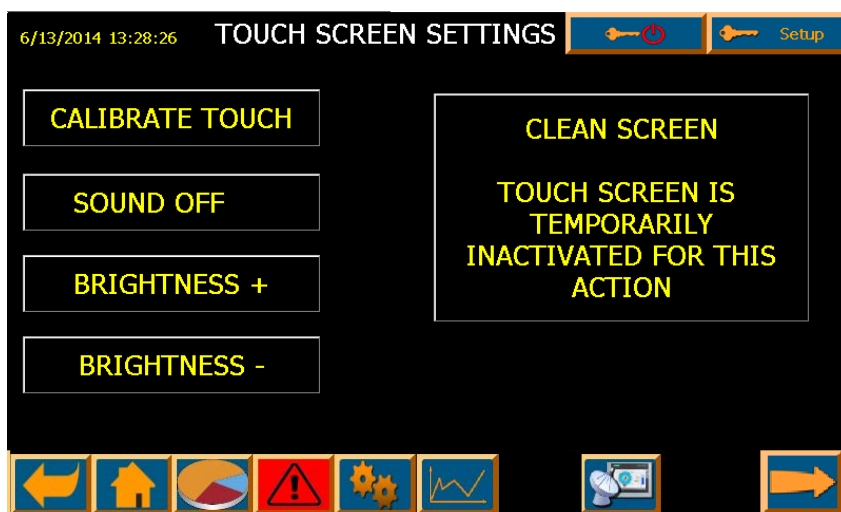
Water Saver is an option that must be ordered in advance and can be activated when an external Cooling Coil is employed.




8.5 Touch Screen Settings

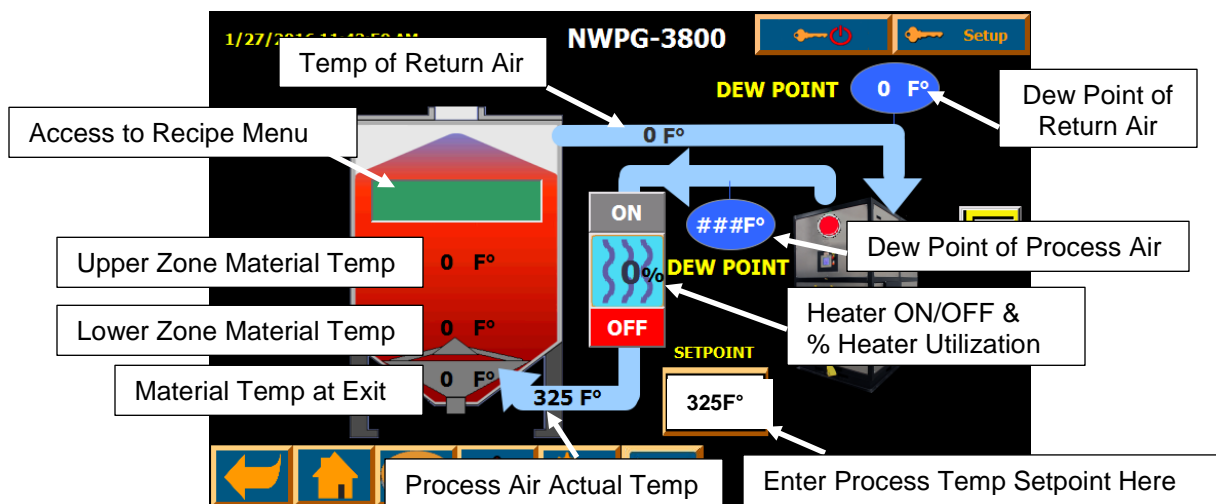


You can calibrate “Touch”, Brightness and turn Sound ON or OFF. If the screen is dirty, a button allows you to clean it without disturbing the settings.

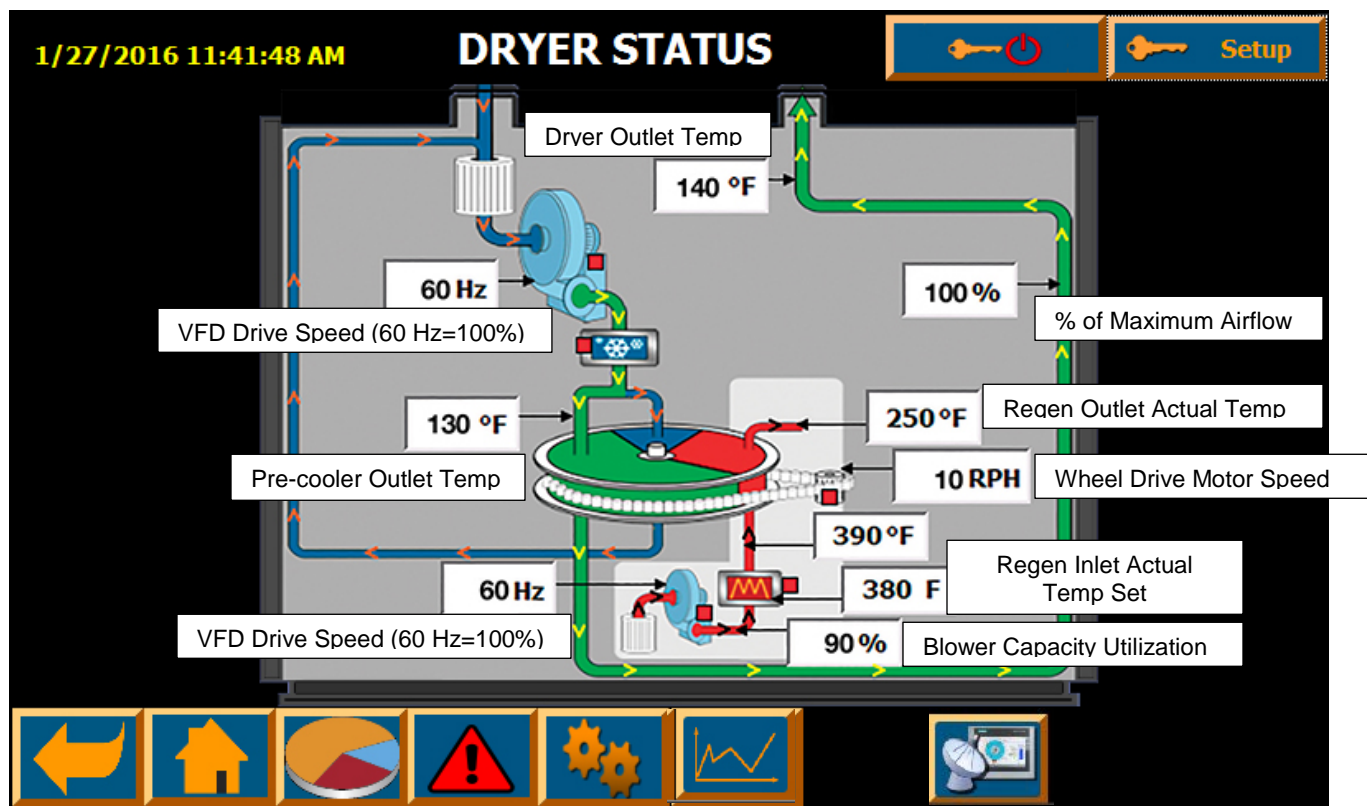


Press  to access HOME Screen .



8.6 Features of HOME SCREEN




8.7 Features of Dryer Status Screen



8.7 Intelligent Regen Set Point

Access by pressing  on SETTINGS screen, then .




	Time Delay SP (Secs)	VDFreq SP (HZ)	ON	OFF
Wheel Exhaust Temp SP				
250 F°				
VFD Step #1	300	58	ON	OFF
VFD Step #2	300	56	ON	OFF
VFD Step #3	300	54	ON	OFF
VFD Step #4	300	52	ON	OFF
VFD Step #5	300	50	ON	OFF
VFD Step #6	300	48	ON	OFF
VFD Step #7	300	46	ON	OFF
VFD Step #8	300	44	ON	OFF

Intelligent Regen Operation

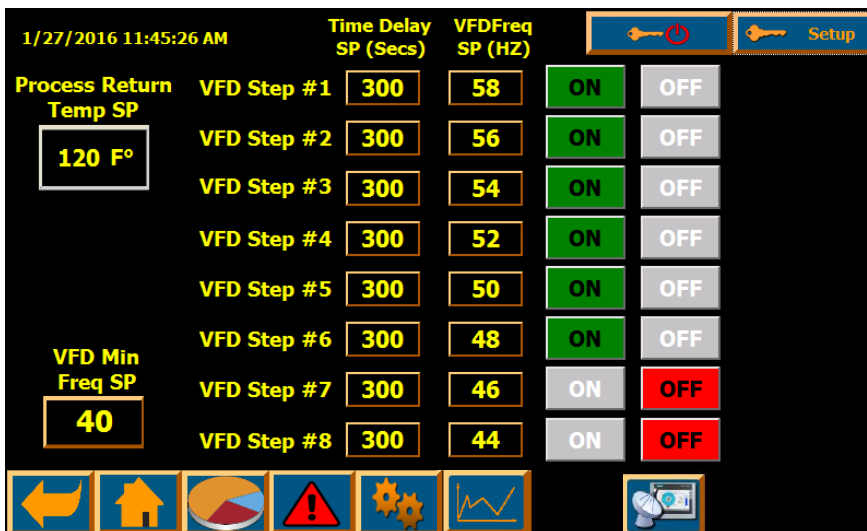
Intelligent Regen SP (Setpoint) is the minimum temperature to which the regeneration can be reduced. Wheel Exhaust Temp SP (Setpoint) is the temperature at which the temperature reduction will begin. The Regeneration optimization is designed to use no more energy in regeneration than is required to heat to a point where the moisture gained in drying is removed. The first thing that will occur is to reduce the regeneration temperature from the initial regeneration temperature to no lower than the Intelligent Regen SP in a series of steps until it achieves the Wheel Exhaust Temp SP. If, after reaching the Intelligent Regen SP, the Wheel Exhaust Temp actual value is still higher than the SP (Setpoint) the VFD (Variable Frequency Drive) on the regeneration air blower will begin reducing the speed (and thus the air flow) until the SP value is achieved.

The frequency that the blower is operating, at the current time, will be highlighted.

8.8 VFD Drive setup for NWPG OverDry Protection (Optional)

Access by pressing .

This page contains the setup variables which define the OverDrying algorithm.



	Time Delay SP (Secs)	VDFreq SP (HZ)	ON	OFF
Process Return Temp SP				
120 F°				
VFD Step #1	300	58	ON	OFF
VFD Step #2	300	56	ON	OFF
VFD Step #3	300	54	ON	OFF
VFD Step #4	300	52	ON	OFF
VFD Step #5	300	50	ON	OFF
VFD Step #6	300	48	ON	OFF
VFD Step #7	300	46	ON	OFF
VFD Step #8	300	44	ON	OFF

Process Return Temp Set Point-

The maximum temperature of air returning from the hopper to the dryer before over drying occurs. When the return air gets above this temperature set point, OverDry Protection will engage by reducing the Process blower speed to maintain the return air temperature at or below this set point

9.0 STARTING THE DRYER

Make sure the Main Disconnect Switch is in the “ON” position.

Depress the GREEN START  switch on the front panel to start the dryer.

The blowers 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.**

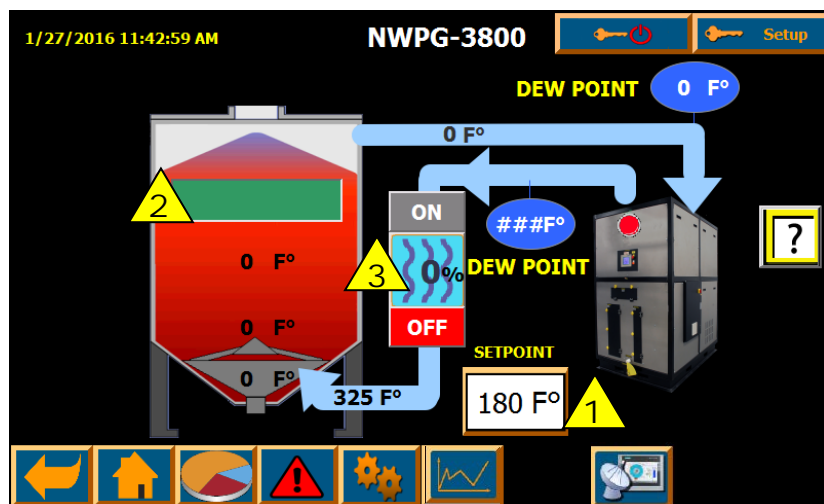
WARNING: Always use the Green/Red switch to START or STOP the dryer.
The Power Disconnect switch and the EMERGENCY STOP button should only be used in True Emergency conditions.
Repeated use of Power Disconnect or EMERGENCY STOP can cause dryer component failure.

10.0 DRYING MATERIAL






Drying hoppers that are online should be at least half-filled with resin before setting the drying temperature and activating the heater/blower at each hopper.

10.1 Home Screen

Here is where you enter basic drying parameters.



NOTE: Hopper must be at least ½ full before starting heater.

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 & Blowers. Note that Process Heater can also be turned OFF or ON using buttons  (3). Values are entered on a dropdown screen. Press  after each entry.

10.2 Resin Menu – Accessed by pressing **2** on **HOME** screen.
Select a material by pressing the button next to a Material.

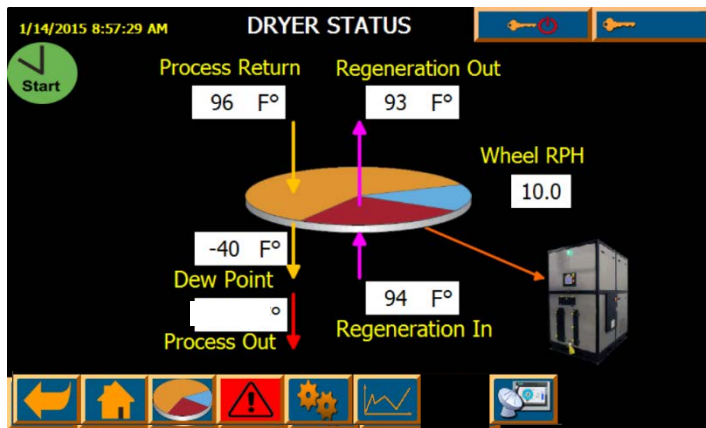


level2 personnel can change Material Names or Drying Temperatures by pressing these buttons

and entering a new name and/or drying temperature on the alpha/numeric screen shown above.

10.3 Dryer Status Screen

This screen is widely used by processors



Access by pressing the dryer image on the

Home screen or **1** on ANY screen.

All of the dryer parameters can be monitored.

- Regeneration 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.

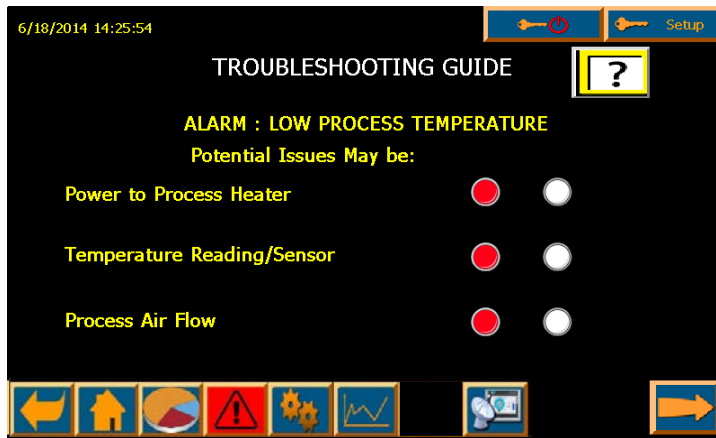
10.4 Message Screen – Alarms

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

Alarm messages will appear as a closeable pop-up window on any screen when new alarms occur. The Alarm History screen displays the same information and can be accessed by pressing the Alarm icon on the navigation bar.

11.0 INSTRUCTIONAL TROUBLESHOOTING SCREENS

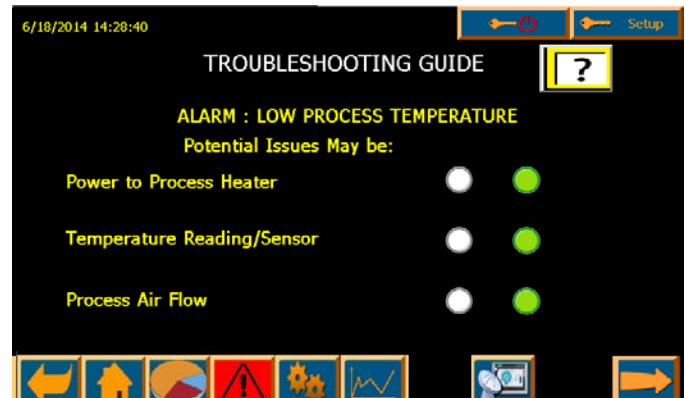
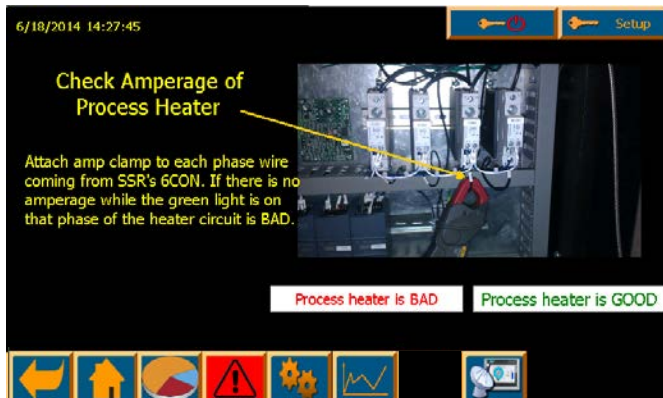
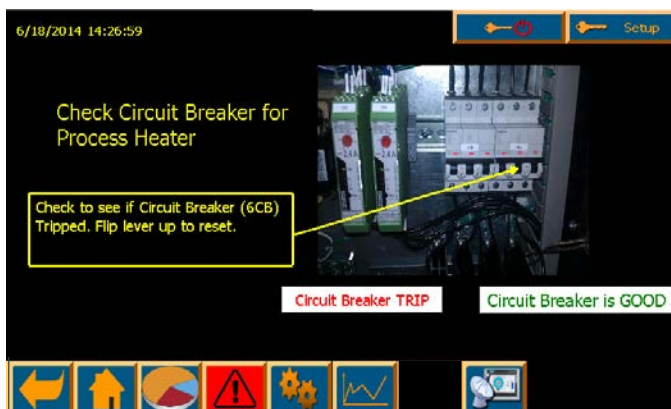
Examples are shown below.



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 to proceed.



Press **?** to view possible solutions to resolve an alarm.



12.0 MAINTENANCE INSTRUCTIONS

12.1 Suggested Maintenance Schedule*

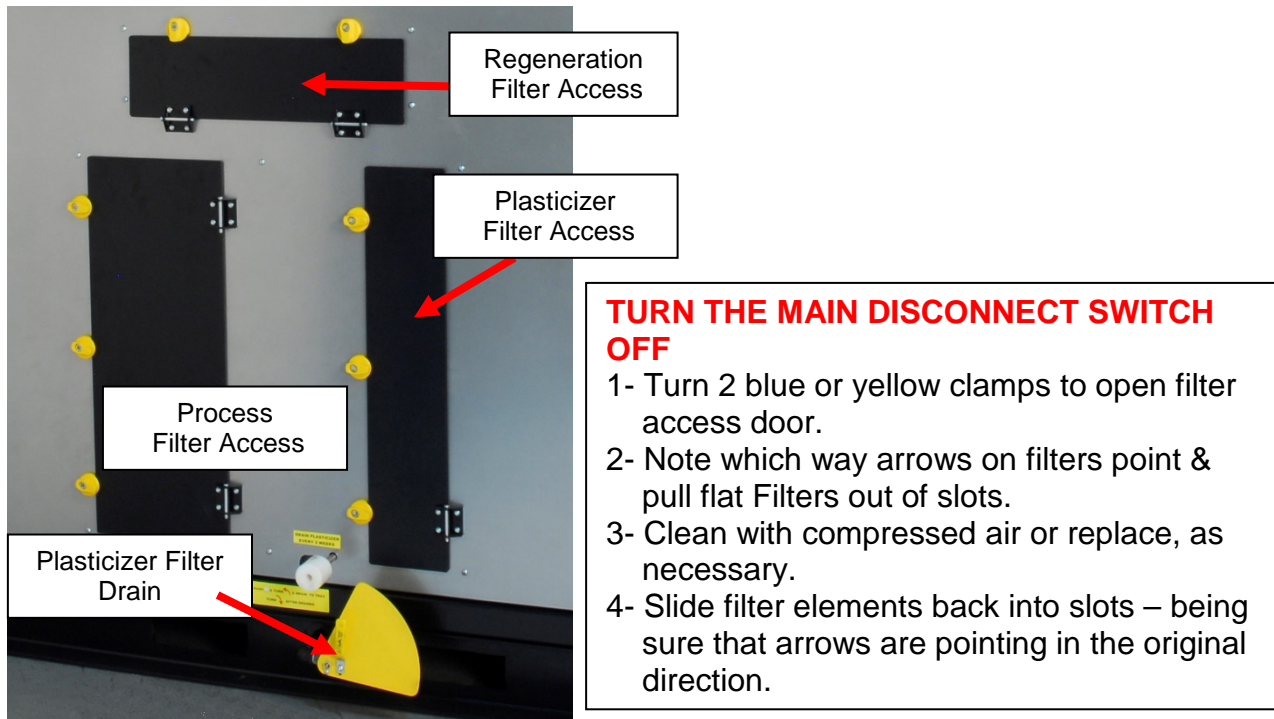
Component	Action	Frequency
Process Blower Motor Reactivation Fan Motor Rotor Drive Motor	Permanently lubricated - No Action required.	X
Process Filter Regeneration Filter Conveying Air Filter	Clean with compressed air or replace as necessary.	Every 2 weeks
Plasticizer Drain	Drain plasticizer into pan	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

*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.

12.2 Process, Regeneration & Plasticizer Filters

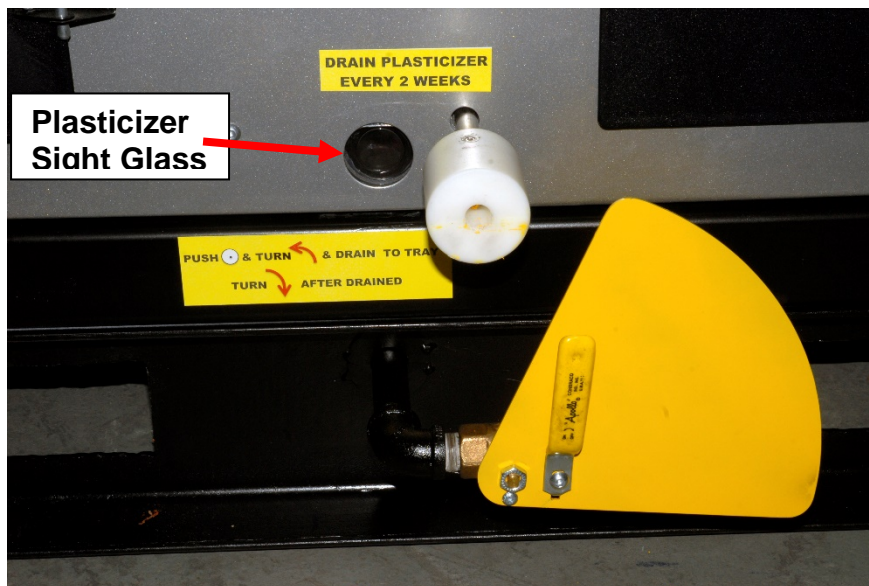
The filters shipped with the dryer are cleanable. The maintenance interval for the filters depends on the cleanliness of the surroundings and the dust/fines in plastic raw materials. A program should be established to ensure the filters are cleaned.

For -500 through -2000



NOTE: The best way to clean the plasticizer filter is to steam clean it, then wash with hot, soapy water and rinse thoroughly.
A backup filter can be installed during this process.

12.2.1 Draining Plasticizer for -500 through -2000 Models



Plasticizer Drain shown in normal (non-draining) position.

**Drain Plasticizer
Every Two Weeks**

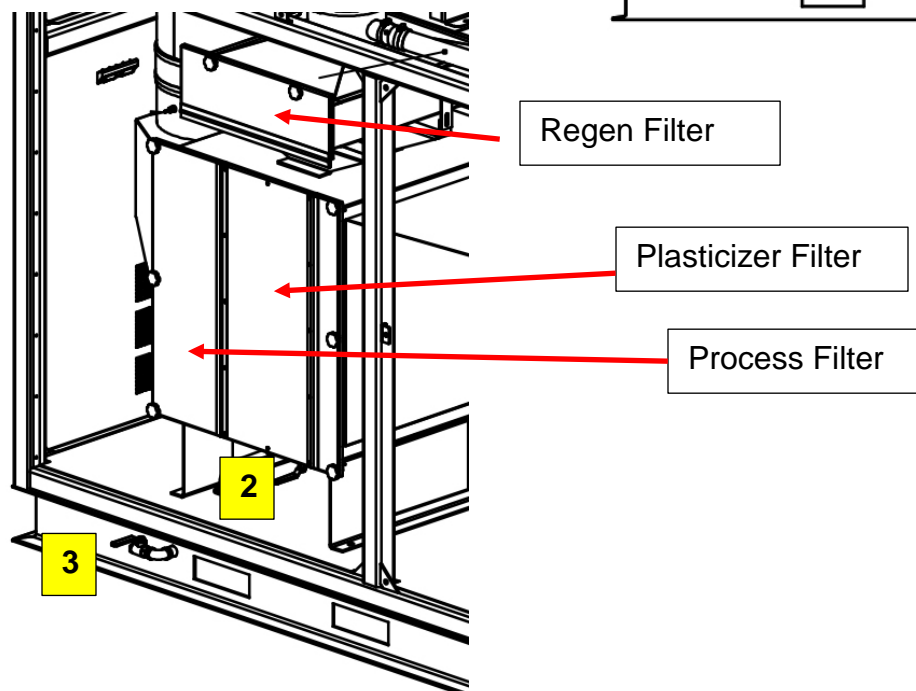
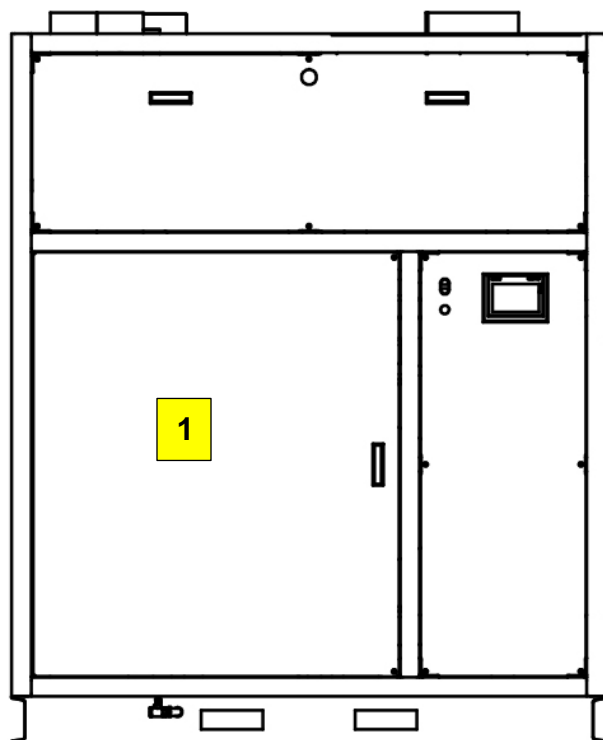


To Drain Plasticizer: Place a pan under the valve exit. Push white cylinder towards dryer and turn the valve handle to the left. Plasticizer will drain into the pan. When finished draining, pull valve handle back to 12 o'clock position.

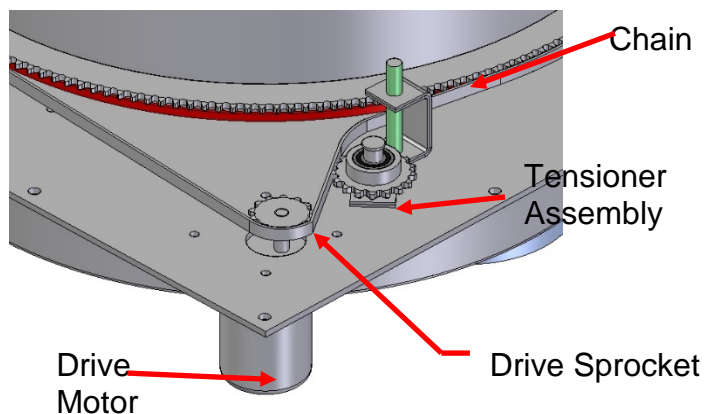
12.2.2 Filter Access and Draining Plasticizer for -2500 through -5000 Models

TURN THE MAIN DISCONNECT SWITCH OFF

- 1- Open Door **1** to access filters and interior plasticizer drain valve
- 2- Reach into dryer and turn valve **2** 90°
- 3- Place shallow container under valve **3**
- 4- Turn **3** 90°
- 5- After plasticizer has drained, turn both valves to close them
- 6- This is a good time to check the Process, regen and Plasticizer filters and clean or replace them.
- 7- When task completed, replace the door **1**



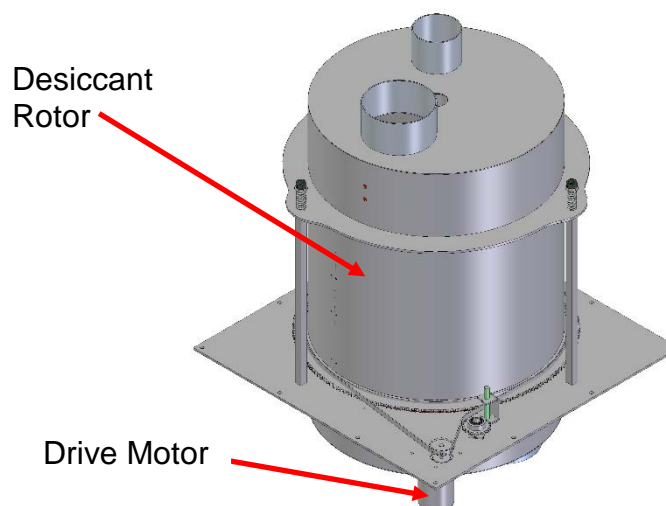
12.3 Chain and Sprockets



Chain and sprockets should be lubricated every six months.

12.4 Desiccant Rotor

The state-of-the-art desiccant rotor supplied with NWB-DC+ 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.



12.5 Motor Rotation Signal

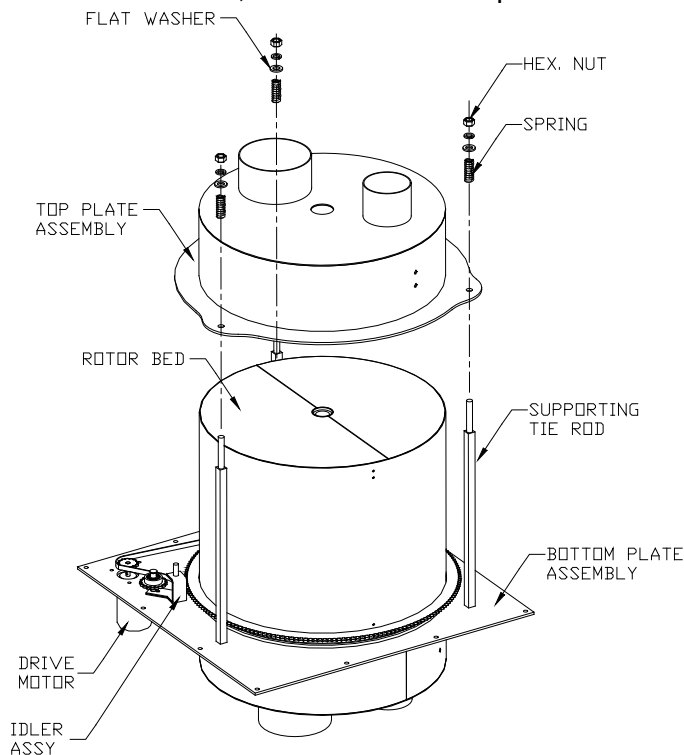
Check that the wheel rotor is rotating properly and each time a signal goes to the controller, ensure that rotor complete its cycle and the limit switch hump has reset the limit switch provided near the rotor. If the hump is not resetting the limit switch, reset the limit switch toward the rotor.

12.6 Rotor Replacement

Desiccant rotor removal is accomplished bas follows:

1. Remove the hex nuts on the Top Plate Assy..
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.

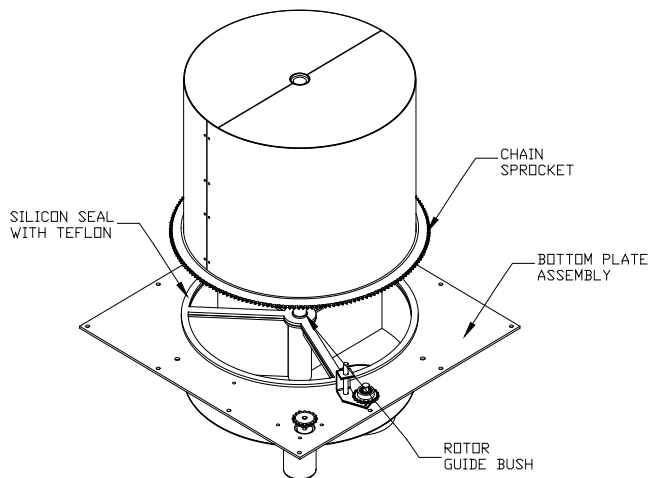
To re-install rotor, reverse the above procedure.



12.7 Seal Replacement

The top and bottom silicon PTFE coated fabric flat seals which separates the process from the reactivation 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 above.
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 24 hrs.



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.

12.8 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.

13.0 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 NWB-DC+ 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 NWB-DC+ microprocessor controller. it should be 380° F. (190°C) Replace heaters.

TROUBLE	PROBABLE REASON	CORRECTIVE ACTION
5. Material in hopper not getting dried properly.	<p>Clogged Filters</p> <p>Door gasket leaking or damaged.</p> <p>Leak in hose. Hose connection loose. Wrong process temperature for material being dried.</p> <p>Hopper is running almost empty. See #6 below</p>	<p>Inspect, clean/replace filters as necessary</p> <p>Check all gaskets (filter cover, hopper doors, and hopper lids) and repair or replace damaged gaskets.</p> <p>Replace hose</p> <p>Tighten hose connections.</p> <p>Add material to hopper and control the</p>
6. High dew point in process air from dryer into hopper.	<p>High inlet temperature to the wheel rotor (should be less than 150°F per the display).</p> <p>Leaks in the system.</p> <p>High moisture levels in plastic resin being dried in hopper, reducing the drying performance.</p>	<p>Check the cooling water is flowing to the cooling coil and make sure the temperature is below 85°F and at the proper flow.</p> <p>Check the dryer system & hopper for any air leaks & repair as required.</p> <p>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.</p>
7. Process blowers not running.	<p>Motor main circuit breaker tripped.</p> <p>Motor overload tripped.</p>	<p>Reset main circuit breaker. Rectify fault reset overload and check motor AMPS are in limit.</p>
8. Dew Point Sensor not working properly.	<p>Not operating</p> <p>High or erratic dew point</p>	<p>Check sensor wiring for tightness & breaks.</p> <p>Check sensor wiring and check tubing to the sensor & sensor for tightness and air leaks.</p> <p>Replace the dew point sensor as required (it should be replaced yearly)</p>
9. Wheel rotor turning but not indexing or showing a RPH speed.	<p>Rotor limit switch not aligned properly. Rotor drive motor defective.</p>	<p>Align the limit switch it should be reset by limit switch hump on each rotation.</p> <p>Replace motor</p>

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

14.0 WARRANTY

WARRANTY – NOVATEC, INC. - Effective Date 8 MAY 2017

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

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 *

Resin Blending and Feeding to Include

WSB Blenders, MaxiBatch & Feeders *
Gaylord Sweeper Systems

Resin Conveying to Include

GSL Series Vacuum Loaders
GlassVu Loaders, Receivers and Hoppers

Downstream Extrusion Equipment to Include

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

3-Year

When a Prophecy data plan is activated for VPDB and SVP pumps with PumpSense™, Novatec automatically extends the warranty to 3 years. The data plan must be activated within 60 days after pump 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.

2-Year

Central System Controls to Include

FlexTouch™ Series Controls
FlexXpand™ Series Controls
OptiFlex™ Series Controls
PLC Communications Modules
Greenboard Communications Modules
LOGO! Mini PLC

Moisture Measurement Equipment to Include

MoistureMaster®

PET Resin Crystallizers

Resin Conveying and Systems Components to Include

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

1-Year

Resin Conveying System Components to Include

*VPDB Vacuum Positive Displacement Pumps
*SVP Vacuum Pumps
MVP Vacuum Pumps
UltraVac Vacuum Pumps
Vacuum Regenerative Blower Pumps
Velocity Control Valves

Central System Controls to Include

MCS-600 Series Controls – (Distributed I/O)
MCS-400 Series Controls
CL Silo Manager

Infrared Dryers

***Custom Equipment of any kind unless otherwise specified
Railcar Unloading Systems***

*See 3-Year Warranty above

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

This warranty shall not apply to equipment:

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

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