NovaDrier[™] MEMBRANE DRYER for Plastics

MODELS: ND-7, ND-25, ND-50, ND-75, ND-100, ND-150, ND-200



U.S. Patent No. US 6,584,701 B1 NOTE: See important information about air supply on next page.

©NOVATEC, Inc. 2017 All Rights Reserved

Document: ND IM 3 JAN 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:	ND IM 3 JAN 2017

Model #:

Serial #

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

CAUTION!

OZONE IN COMPRESSED AIR WILL VOID MEMBRANE WARRANTY!

Use ONLY a lubricated compressor or if you have a non-lubricated compressor, Order and install a

NOVATEC Ozone Containment Kit

P/N OX-1 for model ND-7 P/N OX-2 for models ND-25 through ND-100 P/N OX-3 for model ND-150 and ND-200



Table of Contents

1-UNPACKING AND INSPECTION	4
1.1 Unpacking	4
1.2 General Inspection & Mounting	5
1.3 Clamp Ring Inspection	6
2 SPECIFICATIONS	7
2.1 NovaDrier STANDARD COMPONENT Set Points	7
3 INSTALLATION	8
3.1 Mounting The Dryer	8
3.2 Connecting Power	8
3.3 Compressed Air	9
3.3.1 Compressed Air Requirements	9
3.3.2 Connecting Compressed Air	.10
3.3.3 Condensate Drains	.10
4 DESCRIPTION OF OPERATION	.11
5 INITIAL START-UP & OPERATION	.12
5.1 Turning The Dryer On	.12
5.4 Other Parameters	.14
6 USING THE 7 DAY TIMER OPTION:	.15
7 SETTING ENERGY SAVER OPTION ON ND-100 AND LARGER SIZES	.16
8 UPDATING FIRMWARE	.17
9 TROUBLESHOOTING GUIDE	.18
9.1 Dryer Fault Lights	.18
9.2 Power Failure	.18
9.3 Troubleshooting Chart	.19
10 MAINTENANCE AND INSPECTION SCHEDULE	.20
10.1 Vendor Instructions	.22
10.1.1Compressed Air Inlet Filters	.22
10.1.2 Round Re-Circulation Air Filter	.23
10.1.3 Heater Housing Thermostat	.23
10.1.4 Spare Parts Notes	.23
11 WARRANTY – NOVATEC, INC Effective Date 21 SEPT 2016	.24



1- UNPACKING AND INSPECTION

Congratulations, you have purchased the finest Dryer on the market from the finest dryer manufacturer. It has a (2) year warranty (as long as you replace the filter elements regularly and exercise good maintenance – see the warranty information in section 8). This manual will provide you with proper procedures to insure that you will be completely satisfied with your purchase. Please review this manual carefully.

1.1 Unpacking

Caution should be exercised to make sure the equipment is not damaged during handling. The crate must be removed carefully. The machine must not be used to pry against when removing the crate. The dryer is usually shipped completely assembled and requires no further assembly prior to installation.



Remove crating carefully.

Do not pry against the dryer or hopper.



Dryer is typically shipped fully assembled, ready to be installed.



1.2 General Inspection & Mounting

When the unit is unpacked, make a visual inspection looking for missing parts or damage, which may have occurred during shipment. Some parts, such as hoses, and hose clamps may be packed inside the hopper as well as the instruction manual. It is important that all electrical and piping connections should be checked for tightness because vibration during transit may cause them to loosen.

Inside of the hopper door, the (2) perforated air diffuser tubes (upper & lower) should be thoroughly cleaned to remove any dust, moisture or oil that may have accumulated during shipment. The diffuser tubes must be reinstalled so they are properly aligned and secure. The upper diffuser tube must be installed at the end of the vertical tube in the center of the hopper (it is a friction fit) and should stick out from the end of this tube as follows:



NovaDrier Upper Diffuser Tube



NovaDrier Lower Diffuser Tube



Optional Short Run Diffuser Tube for use when hopper is less than 100% full. **NOTE: NovaDriers should always be** run with a 100% full hopper- never below 75% full.



1.3 Clamp Ring Inspection

Make sure the clamp rings on the hopper that connect the sections of the hopper together are tight, particularly the one at the lower part of the hopper that connects the bottom of the conical section. Note that the clamp ring that attaches the hopper lid does not have to be as tight.



If loose, tighten clamp rings



NOTE: If your hopper is fitted with an extension, those clamp rings should also be checked for tightness.



2 SPECIFICATIONS

Model	ttThre Cap	ughput acity	Comp Air I	ressed Flow	Elec "Der "U:	ctric mand sage	I	H	Ň	N	I)	†Shij We	pping ight	Hop Volu	oper ume	Hop Cap	oper acity
THOUGH	lb/hr	Kg/hr	SCFM	NM ⁸ /hr	kW	kW	in	cm	in	cm	in	cm	њ	Kg	ft ^a	liters		Kg
ND-7	7	3.2	2.6	4.1	1.8	0.21	39	99	21	53	25	64	235	107	0.5	14	20	9
ND-25	25	11.3	5.7	9.2	1.8	0.46	48	122	25	64	25	64	324	147	1.85	52	60	27
ND-50	50	22.7	11.9	19.1	6.1	1.0	59	150	30	76	25	64	370	168	4.2	120	150	68
ND-75	75	34	17.0	28.1	6.1	1.5	75	190	30	76	25	64	520	236	6.1	173	225	100
ND-100	100	45.5	24.8	39.9	10.6	2.0	71	181	38	95	37	94	670	305	10.3	292	400	182
ND-150	150	68	39.9	64.2	13.3	3.2	77	196	46	116	40	102	790	360	15.7	446	600	272
ND-200	200	91	53	93	18.6	4.1	85	215	46	116	40	102	850	386	21	595	800	363

Standard Voltage: 115/1/50-60 on ND-7 & ND-25 • 460/3/60 on ND-50 through ND-200.

*Total connected load. **Usage at 180° F. (82° C). † Without stand. †† Throughput based on polycarbonate pellets at 38 lb/ft*.



Bolt hole patterns: 4.75" sq. for ND-7 through ND-75, 6" sq. for ND-100 through ND-200

Options:

7-Day Timer: Available on all models

Short Run Diffuser Tube: Available on ND-25 through ND-75

Stainless Steel Contact Surfaces Inside Hopper: For ND-100 through ND-200 (Standard on ND-25 through ND-75)

Alternate Voltage:

220/1/50-60 for ND-7 through ND-75 (No Charge) 415//3/50 for ND-25 through ND-200 (No Charge) 575/1/60 for ND-25 through ND-200



ALL MODELS			
Required Compressed Air Pressure - PSIG	85-125 psig (5.9 -8.7 Barg)		
Max. Temperature °F/ºC	100°F / 38°C		
Max Inlet Dew Point °F/ºC	100°F / 38°C		
Process Air Outlet Temp. °F/ºC (max)	350⁰F / 163°C		
Process Air Dew Point (max)	-40°F / -40°C		

Accessories:

Hopper Extension: For ND-25 through ND-100

Floor Stand: For ND-25 through ND-200

Casters, 5", set of 4

Vacuum Take-off Box & Vacuum Purge Valve: Request information

<u>Note</u>** If set point is exceeded by 5°F (3°C) the heater will shut down for 1 minute to allow it to come back to set point. If it does not, the dryer will alarm and shut down.

2.1 NovaDrier STANDARD COMPONENT Set Points

Air Amplifier setting:	See sticker inside control box
LOWER air pressure regulator setting (R1) - located inside the upper part of the control box:	See sticker inside control box
UPPER air pressure regulator setting (R2) - located inside the lower part of the control box:	See sticker inside control box
Low air pressure switch:	70 PSIG (4.7 BagG)
Over-temperature shut-down set point from both the temperature controllers (see **note above):	5°F (3°C) higher than the control set point after one minute
Angle needle valve that controls flow to Hygro Dew Point Sensor option (if supplied):	(2) turns open from full closed
Heater Thermostats - legend "TSH" (if supplied):	375°F (191°F)



3 INSTALLATION

3.1 Mounting The Dryer

Mount the NovaDrier to the processing machine (if machine mounted). Use the control panel support bracket supplied on the bottom of the control box, as the control box must be supported properly.



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

3.2 Connecting Power

Refer to the specifications in Section 2 and the mechanical and electrical drawings provided.



Connect the required electrical power to the unit through a main line disconnect (field supplied) as indicated on the NOVATEC nameplate, which is located on the side of the control box. Because the controllers and various sensors are sensitive to "Industrial Noise" the system must be properly connected to true earth ground. This is the only power connection necessary as the system is completely pre-wired.

Main power connection inside control panel



3.3.1 Compressed Air Requirements

IMPORTANT NOTE: The introduction of OZONE to the flow of compressed air will damage the membrane and void the warranty.

CAUTION!

OZONE IN COMPRESSED AIR WILL VOID MEMBRANE WARRANTY!

Use ONLY a lubricated compressor or if you have a non-lubricated compressor, Order and install a NOVATEC Ozone Containment Kit P/N OX-1 for model ND-7 P/N OX-2 for models ND-25 through ND-100 P/N OX-3 for model ND-150 and ND-200

OZONE in the atmosphere near the air compressor intake can also damage the NovaDrier membrane.

To avoid membrane damage from atmospheric ozone please order and install the Catalyst Modules listed above.



3.3.2 Connecting Compressed Air

Connect a clean, ozone-free, vapor-free and liquid water-free compressed air line to the compressed air inlet ball valve located on the left side of the control panel. *See the minimum compressed air inlet line size requirement below.* The pressure of the compressed air to the system should be **at least 85 psig but not more than 125 psi** (note that the system will run more efficiently at higher air pressures). The inlet compressed air temperature should be less that 100°F. Note that the (2) coalescing inlet compressed air filters on the NovaDrier each have an internal condensate trap that is designed to remove small amounts of water droplets from un-dried incoming compressed air but they are not designed to remove liquid water. Make sure that hazardous vapors, like solvents or ozone, are not being introduced into the compressed air system that is feeding the NovaDrier.



Condensate drains: Collect discharge or attach drain lines.

IMPORTANT

MODEL	ND-7	ND-25	ND-50	ND-75	ND-100	ND-150	ND-200
Minimum compressed air line size	3/8" hose or 10 mm	3/8" hose or 10 mm	3/8" hose or 10mm	3/8" hose or 10mm	1/2" hose or 12 mm	3/4" hose or 20 mm	3/4" hose or 20mm

3.3.3 Condensate Drains

Connect the automatic compressed air condensate drains at the bottom of the (2) compressed air filters on the side of the cabinet, so the condensate is captured and disposed of properly. If the drains are not piped away, oily water may spray down periodically from the automatic drains. Use a 1/8" npt male fitting to connect into each drain.



4 DESCRIPTION OF OPERATION

- Compressed air is filtered by two coalescing filters in series, to remove all aerosols as well as any particles, all down to 0.01 micron.
- Inside the control box the compressed air flow splits. The bulk of the airstream is
 expanded to atmospheric pressure through a pressure regulator (to lower the dew point),
 heated and injected into the middle of the hopper. An Air Amplifier, driven by the
 expansion of the compressed air, is used to re-circulate much of the air in the upper part
 of the hopper.
- This insures that heat is transferred into the material quickly, evenly and at the correct velocity, to insure good drying. The inlet air temperature to the hopper is controlled by a thermocouple and a solid state temperature controller (located in the right side of the control box and it is the top controller & labeled "UPPER HEAT").
- The rest of the compressed air goes through a special membrane, located inside the control box. This membrane filters out the water vapor, which is continuously exhausted through vents in the side.
- The dry air is then expanded to atmospheric pressure through a pressure regulator, heated and injected into the bottom of the hopper to dry the material in the lower part of the hopper. The dry air temperature to the lower part of the hopper is controlled by a thermocouple and a solid state temperature controller (located in the right side of the control box and it is the one on the bottom labeled "LOWER"). After drying the material, the moisture laden air is vented through the relief valve at the top of the hopper.





5 INITIAL START-UP & OPERATION

WARNING:

- 1) Never turn off the compressed air flow to the system while power is on, as compressed air must always be flowing for proper operation of the heaters and to avoid product and system damage from overheating and poor temperature control.
- 2) The (2) insulated heaters and the piping from the heaters inside the control box are hot. When operating the system with the door of the control box off, be careful to avoid touching these hot surfaces.
- 3) If the NovaDrier is mounted on a floor stand with casters, be careful moving it, to avoid tipping, as damage and injury may result. Material loaders and other equipment located on top of the drying hopper will increase the need for care when moving this equipment.
- 4) The drying hopper and the red silicone hoses may be hot.
- 5) Only qualified and properly trained personal should operate this equipment!

Refer to the drawing and the information in this Technical Manual. Contact NOV ATEC if there are any questions about how to operate or maintain this equipment!

Before starting, the compressed air inlet valve (located on the side of the dryer) must be fully open.



Fill the hopper with material, being careful not to overfill it. The hopper should never be less full than the Minimum Level arrow next to the sight glass. When ready to start the system, fully open the compressed air inlet valve (located on the side of the dryer cabinet) and assure that a minimum of 85 psi shows on the dryer's air pressure gauge. Compressed air should be flowing through the system.

Turn on control and <u>immediately</u> set both temperature controls to the proper drying temperature (see "Changing the Drying Temperature", below).

5.1 Turning The Dryer On

After making sure that compressed air is flowing to the dryer (pressure gauge should show 85-125 psi), and making sure that the drying hopper is filled to above the minimum level shown next to the sight glass, turn the dryer "ON" using this switch.



Control will display the factory default of 160F°.



On the display under UPPER HEAT –

(NOTE: initial temps shown are the set points entered during testing.)





NOTE: The ND dryer has two heaters: UPPER and LOWER, each with its own temperature control. Both controls must be adjusted when changing the process drying temperature. Both displays will default to show the actual temperature.

UPPER HEAT SELECT ← J ENTER → I		250	Drying
LOWER HEAT SELECT حا	•	250	Temperature Adjustment
ENTER →			

- 1. Press the UPPER or LOWER temp adjustment buttons, △ or ▽, once, to switch from displaying actual drying temp, to display that heater's set point.
- 2. While set point is displayed, press \triangle to increase the set point, or ∇ to reduce the set point.
- 3. The control will revert back to display actual temperature and the dryer's heaters will respond, displaying the new set point.
- 4. Adjust both UPPER (top) and LOWER (bottom) temperatures to the same set point value.

NOTE: The SELECT → and ENTER → buttons are <u>NOT</u> required for changing the drying temperature.

5.4 Other Parameters

There are other dryer parameters that are pre-set at the factory and they should not be changed unless directed to do so by an authorized NOVATEC Service technician.



Grasslin 7-Day Timer # FM1D20E-24V NOVATEC P/N 13777

The 7-Day Timer option allows the NovaDrier[™] to be programmed so it automatically will turn on (and/or off) at preset times. Refer to the instructions below and the separate timer instruction manual for more details of timer operation.

Before Setting the Timer:

Assure that compressed air is supplied to the dryer, turn the dryer ON and set the drying temperature on both temperature controls.

Setting the Timer:

- 1- Press Menu
- 2- Press +/- for 24 hour or AM/PM mode. Press OK.
- 3- Set correct hour of day with +/- & press OK
- 4- Set correct minutes with +/- & press OK
- 5- Set day of week with +/- & press OK
- 6- Prog 01 appears Press OK
- 7- Press +/- to choose hour of day for "ON". Press OK
- 8- Press +/- to choose minutes of "ON" hour. Press OK
- 9- Use +/- to choose Mon-Sun, Mon-Sat., Mon-Friday, Sat/Sun, or single day. Press OK.
- 10-Prog 02 appears Press OK and choose schedule for "OFF" in same manner. Press OK. Your 7-day timer is now set.



When the Timer Turns the Dryer On:

- 1) A solenoid valve automatically opens, allowing compressed air to enter the drying hopper.
- 2) The dryer's heaters and control circuit are automatically activated.
- 3) The NovaDrier operates normally, at the set point you preselected, until the timer or an operator turns it off.

When the Timer Turns the Dryer Off:

- 1) The NovaDrier heaters and control circuit are automatically turned off immediately.
- 2) After a 5 minute delay to cool the heaters, the compressed air solenoid valve closes,
- shutting off the air LOWER to the dryer.



7 SETTING ENERGY SAVER OPTION ON ND-100 AND LARGER SIZES

- 1. Press and Hold the UPPER "SELECT" and "↓" down arrow buttons for five seconds when "Unt" appears on the UPPER display.
- 2. Press " \downarrow " three times to make ES appear on the UPPER display.
- 3. Press "SELECT" and "OFF" will appear on the UPPER display
- Press "↑" to select the desired Return Air Temperature at which the Energy Saver function should engage. Press "ENTER" twice to exit the menu.
- 5. If the Return Air Temperature is greater than or equal to the Energy Saver functions set point "EnG" will appear and the power to the UPPER Heater will turn off. Note: Air will continue flowing to the UPPER heater for five minutes after the Energy Saver function engages to ensure proper cooling of the heaters elements.
- 6. When Return Air Temperature falls below the Energy Saver functions set point the UPPER Heater will turn back on and if the air LOWER to the heater was "OFF" the air LOWER will then re-open. Note: If the Energy Saver function cycles faster than every five minutes compressed air will never turn off. To improve energy savings lower the Energy Saver functions set point to lengthen the amount of time the UPPER Heater remains "OFF".

To turn off the Energy Saver Option:

- Press and Hold the UPPER "SELECT" and "↓" down arrow buttons for five seconds when "Unt" appears on the UPPER display.
- Press "↓" three times to make ES appear on the UPPER display.
- 3. Press "SELECT" and the Energy Saver function set point will appear on the UPPER display.
- 4. Press "↓" until the UPPER display reads "OFF"
- 5. Press "ENTER" twice to exit the menu.

To Monitor the Return Air Temperature

- 1. Press and Hold the UPPER "SELECT" and the LOWER "SELECT" buttons for five seconds.
- After five seconds the Return Air Temperature will be displayed on the UPPER display. The Return Air Temperature will remain displayed as long as the two "SELECT" buttons are depressed.
- 3. Release the "SELECT" buttons and the UPPER display will return to the UPPER Heater Temperature.

	Energy Saver		
Drying	Return Air		
Setpoint	Setpoint		
(deg. F)	(deg. F)		
160.0	130.0		
170.0	132.5		
180.0	135.0		
190.0	137.5		
200.0	140.0		
210.0	142.5		
220.0	145.0		
230.0	147.5		
240.0	150.0		
250.0	152.5		
260.0	155.0		
270.0	157.5		
280.0	160.0		
290.0	162.5		
300.0	165.0		
310.0	167.5		
320.0	170.0		
330.0	172.5		
340.0	175.0		
350.0	177.5		
360.0	180.0		



When the NovaDrier is powered on, the Temperature Control Dual Display will show the current firmware version across both displays. When required or advised, firmware updates are loaded into the NovaDrier via a SD flash memory card.

The SD flash memory card slot is located within the NovaDrier's electrical cabinet. Firmware updates can be supplied via shipment of a pre-loaded SD flash memory flash card or may be downloaded or sent via email and loaded onto your own SD flash memory card.

Firmware Updates apply when the NovaDrier is turned on. After the firmware is updated, the firmware file is deleted from the SD card. This is to prevent repeated update attempts of the firmware in the event that the flash card is left in the SD slot indefinitely. If more than one NovaDrier is to be updated, request additional pre-loaded SD cards from NOVATEC, or instructions on copying the file onto your computer prior to updating, so the card can be reloaded for updating other dryers.

Procedure:

- 1. Disconnect power to the NovaDrier prior to opening the electrical cabinet. The cabinet door opens by rotating the two ¼-turn latches counter-clockwise. Locate the elevated printed circuit board in the lower left corner of the cabinet and the SD card slot on its base.
- Insert the SD update card into the slot until it clicks. Note that some dryers have "large" slots (about an inch wide) and some have "small" slots (about ½" wide). Small slots take the SD card directly. Large slots require the use of an SD card adaptor.
- 3. Close the electrical box door and close the ¹/₄ turn latches. Reconnect power.
- 4. To update the firmware, turn on the machine. On power up, the UPPER and LOWER displays will show "UPT" and an incremental counter from 000 to 100. It will then display the new firmware version.
- 5. Once the updated version disappears and temperature is once again displayed on the readouts, the update is complete. Shut the dryer off once again and disconnect power. Open the cabinet and remove the SD card.
- 6. Default settings must be reloaded following a firmware update. At the dryer's dual control readouts, use the upper "UPPER" display and press the upper left and lower right buttons simultaneously to enter Set-up mode.
- 7. Use the up and down buttons of the UPPER readout to navigate to the setting "LdF" (Load Factory defaults), then hold the Select (upper left) button down for 2 seconds.
- 8. When the Select button is released "dne" (done) will be displayed on the top readout, indicating the factory default settings are done being restored.
- 9. NovaDrier's equipped with the Energy Saver feature must be have this feature re-activated and the Energy Saver temperature set, to complete the firmware update process.
- 10. At the dryers' dual control readouts, use the upper "UPPER" display and press the upper left and lower right buttons simultaneously to once again, enter Set-up mode.
- 11. Use the up and down buttons to navigate to the setting "ES" (Energy Saver).
- 12. Press the Select (upper left) button and view "Off" setting on the readout. The desired energy saver temperature may now be set with the up and down arrows.
- 13. Lock in your setting by pressing the lower left Enter button and the dryer is now ready to operate normally with the updated firmware.



9 TROUBLESHOOTING GUIDE

Note that most drying problems are the result of dirty filter(s), too high a material flow or air leaks. It is seldom that components fail.

9.1 Dryer Fault Lights

OVER TEMP Light is On:

This is factory set to shut down both heaters when the air temperature from either heater rises about 15°F higher than the set point.

1.Usually the result of incorrect deviation or alarm set points in temperature controller(s). Refer to Section 4, "Parameters-Full Explanation" in this manual to adjust settings for your

Particular drying application.

2.Thermocouple failure(s). Repair or replace the thermocouple(s).

Once the reason for the over temperature alarm is corrected, and the heaters have cooled down, you can restart the heaters by turning the control switch off and then on to reset the control.

LOW AIR PRESSURE Light is On:

An internal pressure switch detects insufficient compressed airflow and heaters are automatically turned off.

1.Be sure air LOWER valve is fully on (handle is vertical) and ample air is supplied (85 psi +) as read on the pressure gauge on the side of the cabinet.

2. Drain water and clean drainage tubes and/or base of filters, or replace both filters.

NOTE: Visible liquid in the sight glasses, located on the side of the compressed air filter modules indicates a blockage in the drainage system at the base of the filter, or a saturated filter.

To assure good drainage flow, inspect and clean the base fitting of the filter and the drainage line (if installed) to assure that there are no blockages that might prevent the automatic liquid evacuation from the filter. If this does not remedy the collection of visible **Sight Glasses** liquid, the filters should be replaced.



9.2 Power Failure

A power failure will de-energize the controls and the heaters but compressed air will continue to flow through the system and be dried through the filters and membrane. When the power is restored, the system will automatically come back on and resume operation.

WARNING:

BEFORE OPENING THE DOOR OF THE CONTROL BOX, DISCONNECT ALL POWER TO THE UNIT AND TURN OFF THE COMPRESSED AIR TO THE NOVADRIER! NOTE THAT THE SMALL "ON/OFF" ELECTRICAL SWITCH, LOCATED ON THE SIDE OF THE CABINET, DISCONNECTS ONLY THE CONTROL POWER AND DOES NOT SHUT-OFF THE MAIN POWER INTO THE UNIT.



9.3 Troubleshooting Chart

PROBLEM	TROUBLESHOOTING CODE
Power won't come on ("POWER" light off on panel)	A, B, C
No or low inlet compressed air pressure	F, G, H, I
Inadequate or no process heat	D, E, F, G, H, I, M, S
Material not being dried properly	D, E, F, G, H, I, J, K, M, N, O, P, Q, R, S
High air dew point	F, G, H, I, J, L,N

CODE	CHECK	CONDITIONS	SOLUTIONS
A	Power LOWER	No voltage or incorrect voltage	Check field installed disconnect or incoming voltage.
В	Transformer (if supplied)	No voltage on primary: No voltage on secondary:	See code "A" Check fuse – if ok & power to primary, replace transformer
С	Light bulb	Burnt out	Replace
D	Heater amperage	Voltage correct but amps incorrect (check both heaters inside box)	Replace heater element as required
E	Re-circulation air filter (located at the top of the box, unscrew the top wing nut to replace)	Dirty filter restricting the re-circulation air flow	Replace filter element (replace about very 6 month min, as required)
F	Two Compressed air inlet filters (on left side of box & red in color).	One or both of the air pressure drop indicators on top of the filters have changed from green to red, indicating a clogged filter element.	Replace both filter elements – (Both filters must be replaced yearly to maintain warranty!).
G	Two Compressed air inlet filters (on left side of box & red in color).	Condensate from one or both filters not draining from the automatic traps in the bottom of each filter. This will cause a high dew point from the Dryer & a high air pressure drop across the filters. Water shows in the level gauge on the side of the filter(s).	 Check air filter drain tubing (if installed) for restrictions. Make sure the filter is vertical. Clean or replace the automatic drain, as required.
н	Leaks in system	Air leaking out of system causing poor performance.	 Check piping & gasket for leaks; repair or replace as required. Check clamp ring(s) & door clamps on hopper to make sure they're tight, gaskets are okay & sealing properly. Gate valve on material drain valve at the bottom of hopper on the side is fully closed & (2) setscrews are tight. Check air tubing inside of control box to make sure their connected properly. Check all hoses to make sure hose clamps are tight & hoses are not damaged. Wing nut on top of round filter housing (F3) on top of control box is tight.
I	Inlet compressed air LOWER pressure is less than 85 psi, as read on the pressure gauge supplied on the left side of the unit.	Low inlet compressed air LOWER pressure. Red light "low compressed air pressure" may be on.	 Air inlet valve fully open? Check airline to NovaDrier for obstructions or restrictions. Is airline the correctly size per specification sheet on p3? Are there airline "quick connects" with restrictive internals & check valve that is reducing the air pressure? Check plant air system.
J	Inlet compressed air LOWER temperature is more than 100°F	High inlet compressed air LOWER temperature.	Check plant air system & correct so the inlet temperature is below 100°F.
к	Relief valve (on top of hopper)	Clogged with material or dust.	Clean dust out. On the ½" & ¾" npt brass valves on models N-7, N-25 & N-50: unscrew valve body & clean valve disk.
L	Dew Point Sensor (optional feature, if supplied)	Not operating:	Check cable & wiring for breaks or tightness.Replace sensor- change yearly
		Hi or Erratic Dew Point:	Check for air leaks into sensor or in tubing to sensor.

Instruction Manual ND IM 3 JAN 2017



CODE	CHECK	CONDITIONS	SOLUTIONS
М	(2) Temperature controllers for	Adjustment incorrect:	• Re-check process air set points per section 4
	heaters	Not controlling properly: Heater over temperature shuts down system & red light "Heater Overtemp" is on.	 Check for loose wiring. Check thermocouple for proper operation, tightness & correct installation (replace if required). Auto Tune controller(s) per instructions at end of section. See over temperature settings in section 1. Readjust deviation alarm per instructions in sect. 9 (if req.) or thermostats (if supplied). Low compressed airflow (see sections F, G, H, I). To reset heaters, when the heaters have cooled, turn power on & off using the on/off
Ν	Lower & Upper air pressure regulators inside of box.	Regulators out of adjustment resulting in incorrect air flow to hopper. Low airflow causes inadequate drying & high airflow may cause the heaters to deliver air at too low a temperature.	Refer to the set points on the label inside the box.
0	LOWER orifice	Orifice plugged with material. This is a hex shaped brass fitting screwed into air inlet of LOWER heater (H1).	Remove the orifice & clean out the particles (if required).

Р	Upper & lower screen in hopper.	Screens are clogged with material.	Remove & clean (see General Inspection section on p4 for the proper position of this screen).
		Screens are positioned incorrectly and not straight.	See General Inspection section on page 4 for the proper position of this screen.
Q	Material level in hopper.	Low material level in hopper reducing the drying	Make sure the material level in the hopper is always
R	Initial moisture content in the plastic material being dried.	Higher than normal moisture content of the material being loaded into the hopper is reducing the Dryer efficiency.	The material being dried should be sealed until it is ready to be dried, to keep it from picking up additional moisture from the atmosphere.
S	Heater housing Thermostat(s) – if supplied	Adjustment incorrect causing the heaters to turn off & lock out.	Re-check the set point (see the set point on page 4). Re-adjust the thermostat if required.



10 MAINTENANCE AND INSPECTION SCHEDULE

It is recommended that maintenance and inspection is done on a scheduled basis. Maintenance requirements will naturally vary widely for each installation and with specific operating conditions. It is suggested that a complete inspection be performed with necessary maintenance at the end of the first month, the first three months, and the first six months. These inspections can determine how often future maintenance will be necessary. The system has been designed with no moving parts to keep maintenance to a minimum.

The special membrane, located inside the control box, is designed to last indefinitely under normal operating conditions and with proper care. To properly protect the membrane, the inlet compressed air filter elements (the two compressed air filters on the side of the unit) must be replaced every <u>12 months.</u> These replacements must be documented to maintain the 2-year warranty.

Also, liquid water and oil from the compressed air LOWER system must be prevented from entering the dryer as this will permanently damage the dryer media and it may have to be replaced.

Every Month:

A. Check system for air leaks or flow obstructions and correct as required.

B. Inspect the re-circulated air filter (located with the filter housing on the top of the control cabinet). Be careful as this filter housing and the filter inside may be hot. Carefully vacuum collected dust from the filter housing and further clean as required. Thoroughly clean the filter cartridge with a vacuum cleaner or replace the cartridge if it is loaded with material, damaged or torn. The time interval for inspection should be shortened if experience indicates high or unusual dust loading.

Every 3 Months:

- A. Check heater amperage (see Specification Sheet.)
- B. Check all electrical connections to make sure that they have not become loose, especially those connections at the heater contactors and heater elements.
- C. Check the two, compressed air filters on the side of cabinet: If the air pressure drop indicator, located on the top of one filter is red, replace both filters immediately.



NOTE: Both air filter elements must be replaced YEARLY, regardless of color indicator on top.



10.1 Vendor Instructions

A. Replace compressed air filter elements on side of cabinet. \ Document this replacement to protect the equipment warranty.

Every (2) Years:

A. Change the sensor on the Hygro Dew Point Monitor.



Valve Closed (horizontal)

This procedure is for replacing the filter element for the two compressed air inlet and located on the left-hand side of the box (Fig 1). Make sure the correct filter element is installed in the correct filter.

- 1.0 **Important:** The <u>air inlet valve</u> (located immediately upstream of the filters) <u>must be fully closed</u> and the *air pressures* (as read on the pressure gauge that is immediately downstream of the filters) <u>must be fully depressurized</u> and read 0 psi. Serious injury may result if the filter bowl is removed when there is pressure in the bowl.
- 2.0 With <u>no</u> pressure in the system, unscrew the four screws in each corner of each filter housing cap (Fig 2) with a 4mm Allan wrench. A ball ended wrench typically works best. 5/32 will also work. Remove 8 screws total.
- 3.0 Remove the existing filter elements.
- 4.0 Insert the new filter elements into each filter bowl and carefully refit into the filter housing cap. Note that the filter element can only fit in one position and must be installed correctly, so the air inlet aligns properly. The new filter element number must match that listed for the filter housing. Make sure the correct filter element is installed, as each filter requires a different filter element and they look the same.
- 5.0 Replace the 4 mm screws and tighten. Restore operation.

Note that the <u>filter elements in each filter are different</u> (although they look the same) and they must be installed in the proper filter! The first filter has a coarser element that removes most of the liquids and the second filter has a finer micron rating that removes the last traces of liquids and particles. When replacing the filter elements, <u>make sure the model number on the element</u> <u>corresponds with the model number on top the filter housing</u>! Note that the elements cannot be cleaned or blown out and it may not be always apparent that the filter is dirty and needs to be



replaced, from a visual inspection. The filters must be in a near vertical position for the automatic traps to work properly.

Both inlet compressed air filter elements <u>must be replaced every 12 months</u>, in order to properly protect the system and to maintain the warranty on the system.

The element replacement must be documented to maintain the 2-year warranty.

These filters are supplied with a:

- Automatic trap to drain away any liquid water or oil.
- Differential air pressure indicator on top that changes to red when the filter element needs to be replaced. This indicator changes when the air pressure drop across the filter element becomes more than about 5 psi, which means that the filter element is loaded with particles & dust.

10.1.2 Round Re-Circulation Air Filter

(located on top the control cabinet)

To check or replace this filter, the system must be shut down and the filter housing should be cool to the touch. Carefully remove the filter housing. The filter element can be removed to inspect or replace. Any particles in the filter element can be vacuumed out carefully, however it is better to replace the filter element when it is dirty, for better performance of the system. Install the filter element and replace the filter housing on top of the filter. Make sure the seal, where the lid mates onto the filter housing, is in good condition.

10.1.3 Heater Housing Thermostat

(if supplied)

These are 3/8" npt by 2" long stainless steel adjustable thermostats that are used for over temperature protection. The set point is factory set. If an adjustment is required, turning the adjustment screw clockwise decreases the set point and turning the adjustment screw counterclockwise increases the set point.

10.1.4 Spare Parts Notes

Go to this link for ordering information on most common NovaDrier parts. <u>http://www.novatec.com/parts/ND/</u>



11 WARRANTY - NOVATEC, INC. - Effective Date 21 SEPT 2016

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 prepaid. 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 LOWERing 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 Period:

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

ND Series NovaDrier[™] = 5 Years

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.

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.