Nordson iDry® Series Induction Dryers

Customer Product Manual
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– English –
Issued 05/25

For parts and technical support, call the Industrial Coating Solutions Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

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NORDSON CORPORATION • 100 NORDSON DRIVE, AMHERST, OHIO 44001 • USA

Table of Contents

Contact Us
Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
http://www.nordson.com

http://www.nordson.com/en/global-directory

Change Record

Revision	Date	Change
04	03/16	Ambient Temperature Compensation instructions added
05	09/23	Revised for TUV Compliance
06	03/24	Clarified and corrected content from translation review.
07	05/25	Updated manufacturer address

Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate. Observe safety information as it pertains to your system.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

User instructions, safety instructions, and warning labels in their original form are delivered in English. For compliance to 2014/35/EU Low Voltage Directive (LVD), Nordson Corporation will provide user instructions, safety instructions, and warning labels in the language of the end user. These translations of the original instructions will be made available upon request of the end user.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors that

- have experience operating and maintaining high-power and high-voltage electrical equipment.
- can safely perform their assigned tasks.
- are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.
- Qualified Personnel are Skilled person(s)

WARNING: The control enclosure and coil tray contain high voltages and high power levels. Failure to ensure and employ all appropriate safety measures may result in serious injury or death.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials and atmospheres
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

Refer to the Declaration of Conformity for approvals standards.

Personal Safety

WARNING: To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Verify that the ventilation system is operating properly to prevent dangerous concentrations of volatile particles or vapors.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Disconnect, lock out, and tag switches before servicing electrical equipment. Allow 10 minutes for all internal energy storage devices to completely discharge before opening the enclosure.
- Keep parts of your body and metal implements away from the induction heating zone while the system is energized. Metal objects will heat up very quickly. Remove all jewelry, watches, and rings.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Never disarm any diagnostic or interlock devices including but not limited to:
  - Current sensor
  - Overtemperature switches
  - Air pressure switch
  - Coil tray lid safety switches

  Disarming these devices will void the warranty and may cause personal harm or equipment failure.

- Obtain and read Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.
- When performing maintenance on the Coil or Capacitor Bank, a wait time of 10 minutes is required after turning power off before servicing. Surface temperatures of these components may be elevated during normal operation.

High-Pressure Fluids

High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

If you suffer a fluid injection injury, seek medical care immediately. If possible, provide a copy of the SDS for the injected fluid to the health care provider.

The National Spray Equipment Manufacturers Association has created a wallet card that you should carry when you are operating high-pressure spray equipment. These cards are supplied with your equipment. The following is the text of this card:

WARNING: Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show them this card
- Tell them what kind of material you were spraying

MEDICAL ALERT — AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

The seriousness of the wound depends on where the injury is on the body, whether the substance hit something on its way in and deflected causing more damage, and many other variables including skin microflora residing in the paint or gun which are blasted into the wound. If the injected paint contains acrylic latex and titanium dioxide that damage the tissue's resistance to infection, bacterial growth will flourish. The treatment that doctors recommend for an injection injury to the hand includes immediate decompression of the closed vascular compartments of the hand to release the underlying tissue distended by the injected paint, judicious wound debridement, and immediate antibiotic treatment.

Fire Safety

WARNING: The system is designed for use with water-based sealing compounds only. It is not approved for used with solvent-based compounds.

To avoid a fire or explosion, follow these instructions.

- All equipment must be grounded and bonded to the building ground.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking. Allow 10 minutes for all internal energy storage devices to completely discharge.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

WARNING: In the event of an electrical fire, use a Class C rated Fire Extinguisher or a multi-rated extinguisher that includes Class C rating.

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

Element	Symbol	Prefix
Fluorine	F	“Fluoro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

Check your material SDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your Nordson representative for information about compatible Nordson components.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power.
- Close any hydraulic and pneumatic shutoff valves and relieve pressures.
- See the *Troubleshooting* section of this manual to help diagnose system faults.
- *Never* attempt to operate the system with doors or coiltray lid open, or access panels removed.
- Perform component diagnostic tests with the power OFF.
- Avoid multiple restarts of the system after a fault is indicated on the display. Additional restarts may cause further damage to high voltage component.
- Identify the reason for the malfunction and correct it before restarting the system.

Action in the Event of Serious Injury

Personal injury could occur when the induction dryer is in a normal operating mode and also in the event of a severe equipment malfunction.

In normal operating conditions product may travel through various cage work transitions and conveying surfaces. This is normal as the intended flow of product is to be pushed along a horizontal or vertical path thru the dryer.

External pressure feed equipment is used to control the flow along the conveyor path. Typically the external equipment is not controlled by the induction dryer, and may not stop when the dryer E-stop is pressed, or disconnect is in the OFF position.

WARNING: INJURY WARNING

- Pinch points exist as product flows in a continuous manner thru and exiting the induction dryer.

  Never attempt to touch, use a tool, or similar into the path of moving product, or attempt to touch or divert the intended path of moving product.
- Serious injury may result if a hand, finger, or similar is used to inhibit or attempt to change the product path while the product is in motion.
- Product exiting the induction dryer will be at an elevated temperature and open to the air to evaporate water in the product coating.

  Never touch the product in any way as serious thermal burns may occur.

In the event of injury due to contact with the product, follow standard medical procedures for trauma to a body part, and if needed the treatment of thermal burns. Immediately seek professional medical help.

In the event of a catastrophic equipment malfunction, injury may occur from the result of an electrical fire, arc flash, or similar.

In the event of injury due to electrical discharge or contact with live electrical parts, follow standard medical procedures trauma to a body due to electrical contact, and immediately seek professional medical help.

Equipment Grounding and Bonding

WARNING: Only properly trained personnel should be operating the induction dryer equipment

WARNING: Proper grounding and bonding are an essential part of safe operation of the induction dryer.

- The induction dryer uses a single point primary ground connection for sheet metal components as shown below.
- Ground and bonding tests are performed at the factory and meet or exceed acceptable levels per the certifications covering this product.
- Always reconnect ground connections removed when servicing the equipment.
- Never attempt to operate the system with doors or coil tray lid open, or access panels removed.

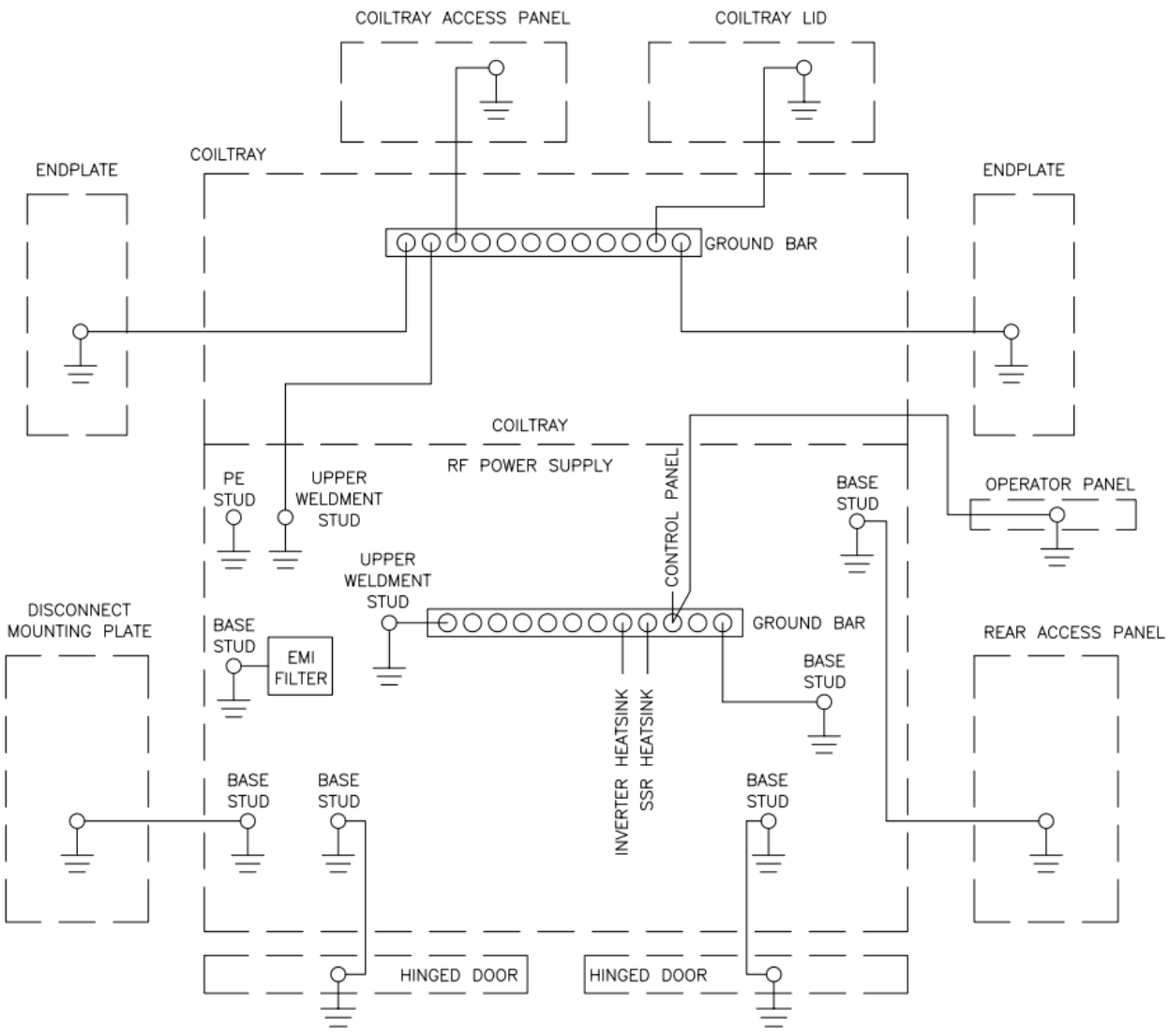


Figure 1 Simplified Grounding Diagram

EMI Exposure

Induction equipment generates a magnetic field which dissipates energy rapidly with increasing distance from the source. See safe zone distances in the Figure below.

- Avoid wearing watches or rings near the induction field
- Never place a hand wearing a watch or ring into the coil at any time
- People wearing a pacemaker should avoid being within 5 m (16 ft) of the induction field during operation
- Pregnant women should seek professional medical advice before prolonged exposure to the induction magnetic field.
- Figure below is for reference only. Safe distances shown are applicable to any model induction dryer.

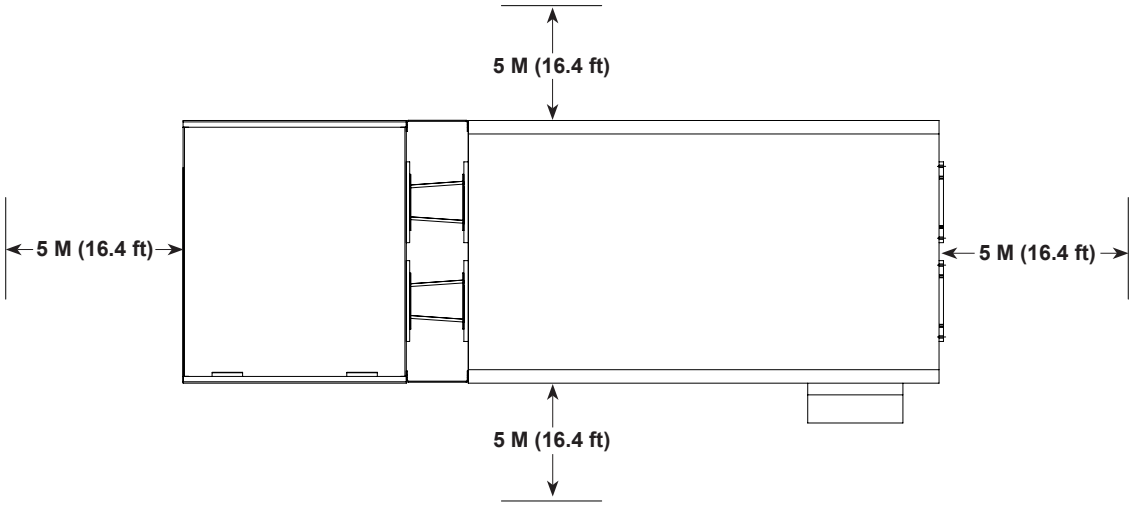


Figure 2 Safety Distance Zone

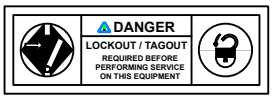
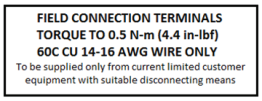
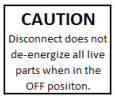
Disposal

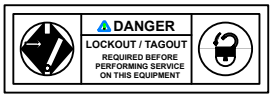
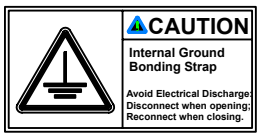
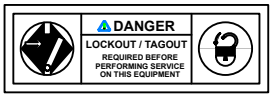
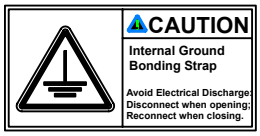
Dispose of equipment and materials used in operation and servicing according to local codes.

Caution and Warning Labels

See Figure 3 and Figure 4. Caution and warning labels used on the induction system described in this manual are shown below, with the approximate location where the label can be located. These labels should not be removed. If they are damaged, worn, or otherwise illegible, please contact Nordson Corporation for replacements.

Table 1 Label Information

Item	Location	Labels	Warnings
1	Coil Tray		Electrical Potential Hazard, High Voltage
			Use Lockout / Tagout Procedures when Servicing
			Pinch Point Caution
2	Disconnect Panel		Electrical Potential Hazard, High Voltage
3	Customer Interlock Terminals		Required Wire Type, Rating, and Torque
4	Control Enclosure		Electrical Potential Hazard, High Voltage
			Arc Flash Potential
			Energized Connections when Disconnect is in ON Position.
5	Coil Tray		Emits Electrical and Magnetic Fields (EMF)
6	Air Heater		Electrical Potential Hazard, High Voltage

Item	Location	Labels	Warnings
7	Capacitor Access Panel		Electrical Potential Hazard, High Voltage
			Use Lockout / Tagout Procedures when Servicing
			Ground Bonding Caution
8	Lower Base Access Panel		Electrical Potential Hazard, Arc Flash Potential
			Use Lockout / Tagout Procedures when Servicing
			Ground Bonding Caution
9	Power Input Terminals		Electrical Potential Hazard High Voltage
			Flash Hazard Warning
			Protective Earth (Ground) Connection Stud / Terminal
			Operational Line Voltage and Frequency
			Required Wire Type, Rating, and Torque

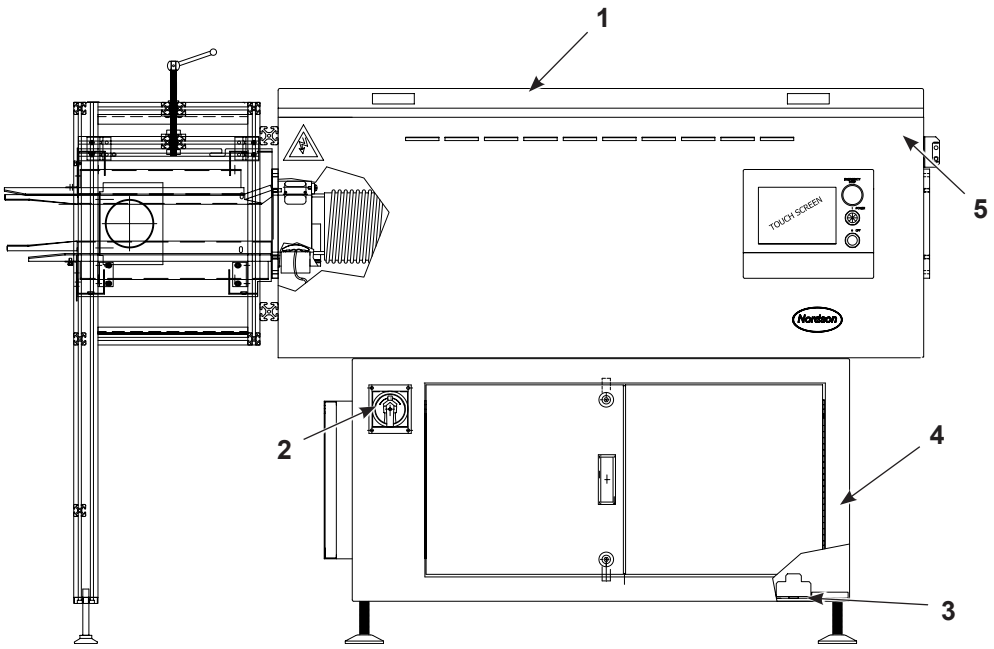


Figure 3 Locations of Warning Labels on iDry Series Induction Dryer (Shown with Optional Magnet Separator)

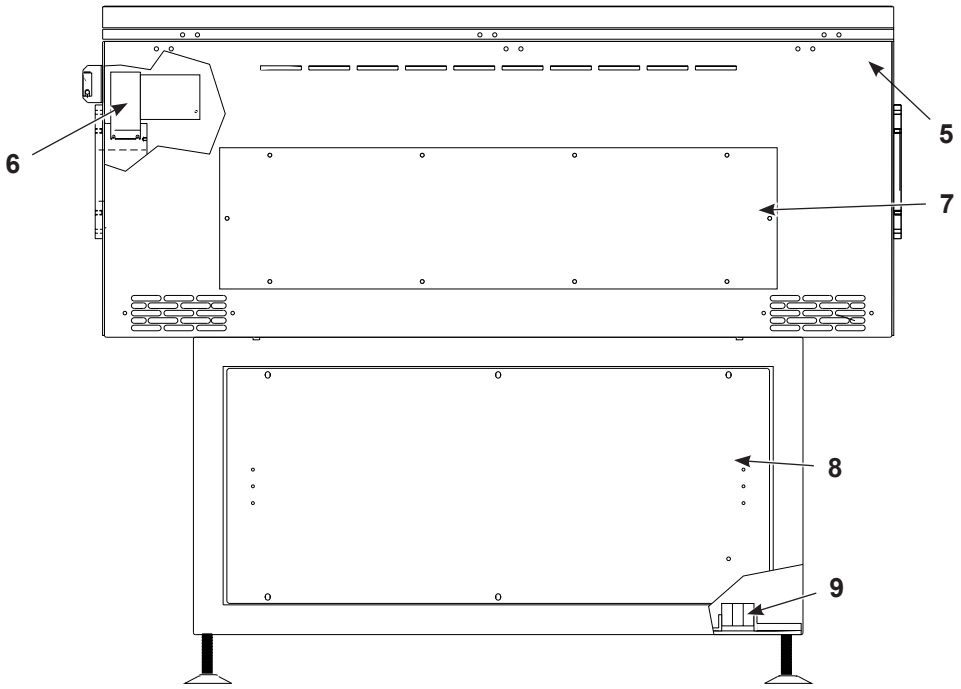


Figure 4 Locations of Warning Labels shown on iDry Series Induction Dryer (Back Side)

Description

The Nordson iDry Series Induction Dryers provide simple, efficient, and uniform drying of water-based end-sealing compounds applied to can ends. The dryers use solid-state induction heating to generate heat within the can ends and dry the sealing compound, at line speeds of up to 2,200 ends a minute. The dryers can be designed for can end diameters from 57 to 170 mm.

The dryers are available with single or dual channels and can be configured to mate to almost any line height. Each dryer is designed to handle a particular material and can end size or limited range of can end sizes, according to the customer's specifications.

Figure 5 iDry Series Induction Dryer (with Optional Magnetic Separator)

Table 2 Features and Benefits

Feature	Benefit
Instant On/Off	When the line starts, heating within the can ends instantly starts. Since heat is created directly within the ends, there is no thermal inertia. When the line stops, heating instantly stops. This produces a very uniform product.
No Jams	The short length of the dryer and the straight-through design minimizes jams.
Energy Savings	Solid state induction heating is extremely efficient. Greater than 80% of the power consumed is directly realized as heat in the can ends. When the line stops, almost no power is consumed.
Reliability	The solid-state design of the dryers minimizes downtime. There are few moving parts to wear out.
Small Footprint	Because induction drying is so effective, the dryer is much smaller than conventional ovens.
Temperature Control	The dryer continuously monitors the temperature of the can ends as they exit the dryer and adjusts coil power to maintain the desired setpoint temperature, providing uniform control of product quality.
Magnetic Separator	An optional magnetic separator can be installed at the dryer exit.

Dryer Components

See Figure 6 and Figure 7.

Table 3 Components and Descriptions

Item	Name	Description
1	Coil Tray	Contains the induction coil, glass coil tube, auxiliary air heater, heater blower, and exhaust blower. The can ends travel through the glass tube and are heated by the induction coil. Cabinet air is heated and forced through the tube to carry off the moisture vaporizing out of the sealing compound. The exhaust blower draws the heated air and moisture out of the tube. The coil tray attaches to the customer infeed and outfeed system.
2	Motion Sensor	A laser sensor that monitors the movement of can ends at the entrance to the dryer. The controller will only apply power to the induction coil when the motion sensor detects can ends moving through the dryer.
3	Operator Control Console	Contains the operator interface terminal (touch screen) which contains all operator control functions including warnings and faults. The console includes an Emergency Stop button and system on/off push buttons.
4	Control Enclosure	Contains the system controller (PLC), cooling air filters and fan, and power inverter devices and circuit boards.
5	Temperature Sensor	Senses the product temperature as the ends exit the coil tray. The temperature controller then regulates the power applied to the induction coil to produce the desired can end exit temperature. The sensor is a low-mass type K thermocouple.
6	Magnetic Separator	Allows for product separation when used in conjunction with steel products (only). Adjustable over a large product size range. A magnetic wheel must be used immediately after the separator for proper separation.
7	Induction Coil and Glass Tube	The coil is connected in parallel to the capacitor bank which creates a resonant tank circuit. As steel or aluminum products are conveyed through the coil, heat is induced into the product. The glass tube is the conveying surface for the product. The glass tube is located in the center of the coil.
8	Disconnect Panel	Removes AC Line voltage from the front side control panel, and HV inverter system. AC line terminals and line filter remain energized.
9	Customer Interlock Terminals	Interlock Signal connection terminals. See the External Interlock section of this manual.
10	Capacitor Access Panel	Allows service access to the capacitor bank
11	Lower Base Access Panel	Allows service access to the main AC Power connections, inverter assembly, solid state relay assembly, chokes, transport board assembly, snubber boards, ferro-resonant transformer, and DC voltage regulator assembly.
12	Air Heater	Air heater provides a pressurized high temperature air to the glass tube to increase the level of water absorption. Air heater is only active while product is in motion through the dryer.
13	Vacuum Blower	Vacuum blower is used in conjunction with the air heater to purge the glass tube of humidified air.
14	Power Input Terminals	AC line voltage connection terminals. See the Specifications section of this manual for line voltage and frequency.

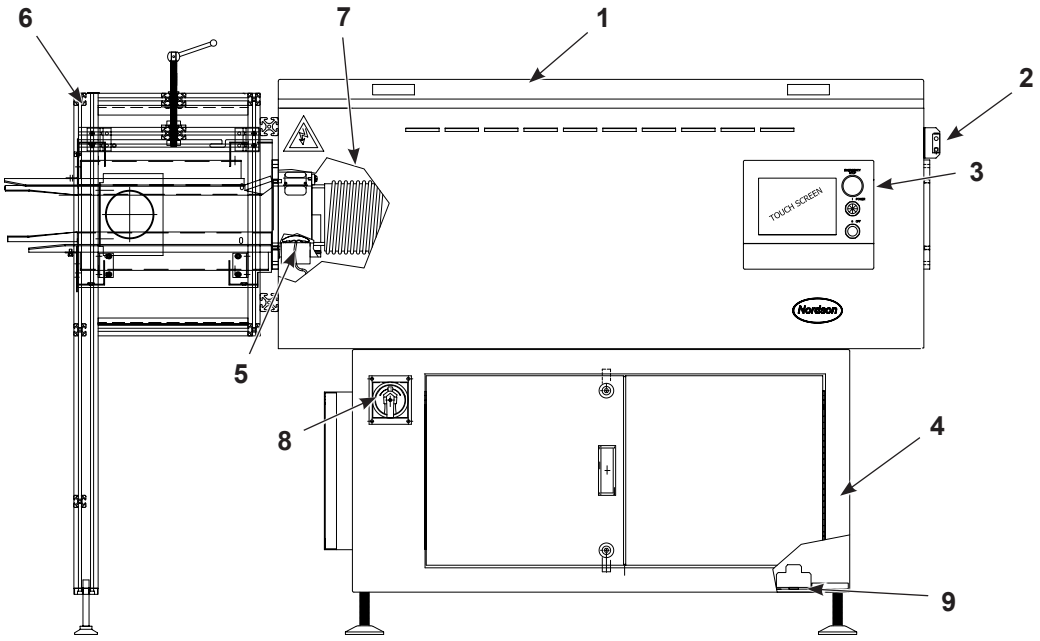


Figure 6 iDry Series Induction Dryer (Shown with Optional Magnet Separator)

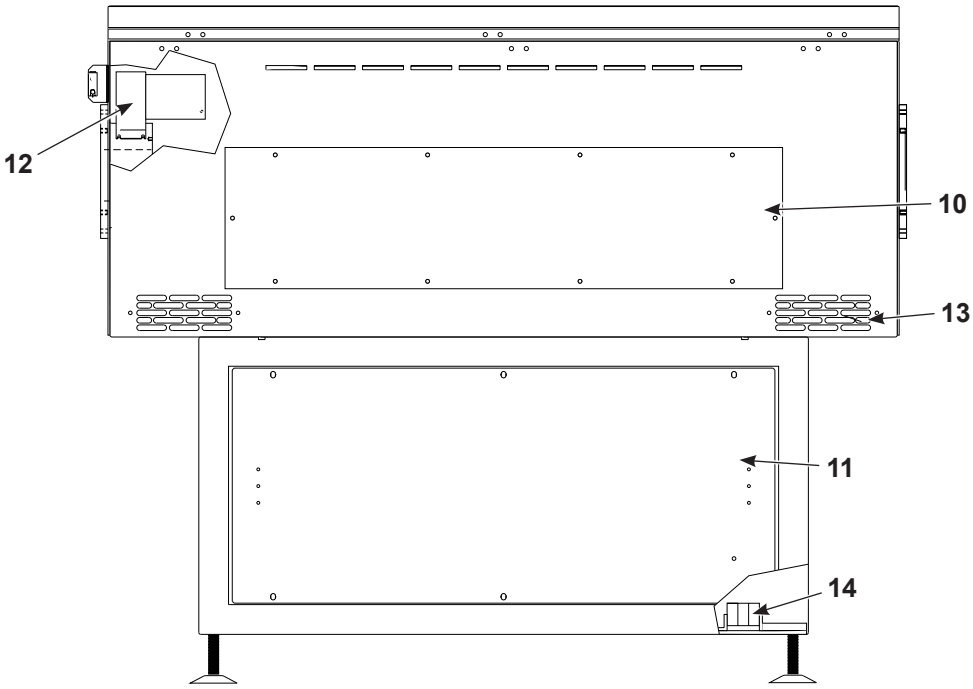


Figure 7 iDry Series Induction Dryer (Back Side)

Theory of Operation

See Figure 8 and Figure 9.

The can ends move through a glass coil tube inside the coil tray. The tube is surrounded by the induction coil. As can ends enter the dryer, the motion sensor at the entrance signals the controller. The controller causes the power inverter to apply alternating current to the coil windings. The coil windings generate an alternating magnetic field that creates large eddy currents in the can ends. The resistance to the eddy currents generates heat within the can ends and dries the sealing compound. If the can end line stops, the motion sensor signals the controller, which shuts off power to the coil windings.

The temperature sensor (thermocouple) at the exit senses the can end temperature and signals the temperature controller, which adjusts the power going to the coil windings to maintain the temperature at the setpoint. The controller uses a PID (Proportional-Integral-Derivative) algorithm that automatically adjusts the amount of power supplied to the coil to eliminate temperature variations due to line voltage fluctuations, applied compound weight, and can end start temperature.

A blower in the controller/power inverter enclosure pulls in room air and directs it over the electrical components to cool them. The air then flows into the coil tray and over the coil to cool it. An air heater mounted on the tube hub at the entrance end of the coil tray interior then adds additional heat to the air as it enters the coil tube to carry off moisture vaporizing out of the sealing compound. An exhaust blower mounted in the tube exit hub draws the air out of the tube and exhausts it out into the room. If an optional magnetic separator is installed at the tube exit, heated air is also ducted directly into the separator.

Safety interlocks include door interlock switches, thermocouples, and a pressure switch. A customer interlock is also provided. Interlock status is indicated on the operator control panel.

WARNING: Never disarm any diagnostic or interlock devices including but not limited to:

- Current sensor
- Overtemperature switches
- Air pressure switch
- Coil tray lid safety switches

Disarming these devices will void the warranty and may cause personal harm or equipment failure.

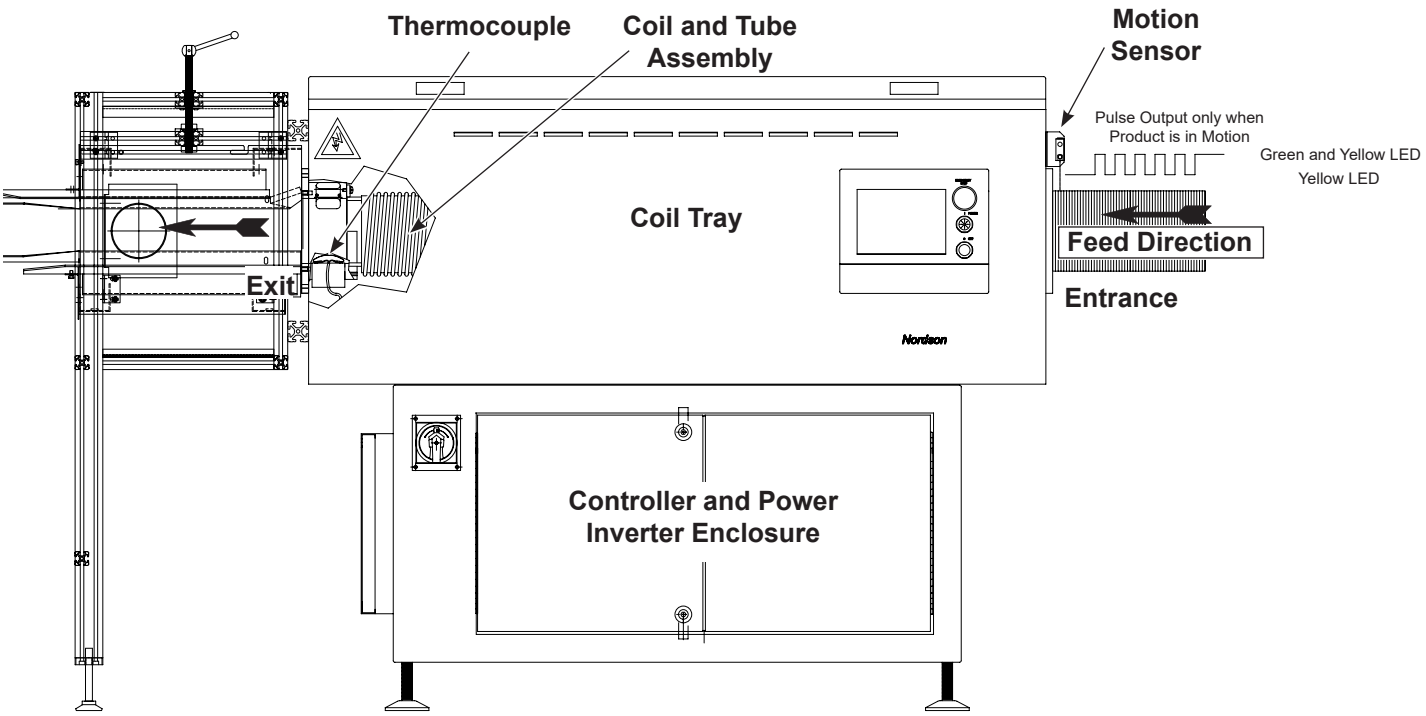


Figure 8 Theory of Operation

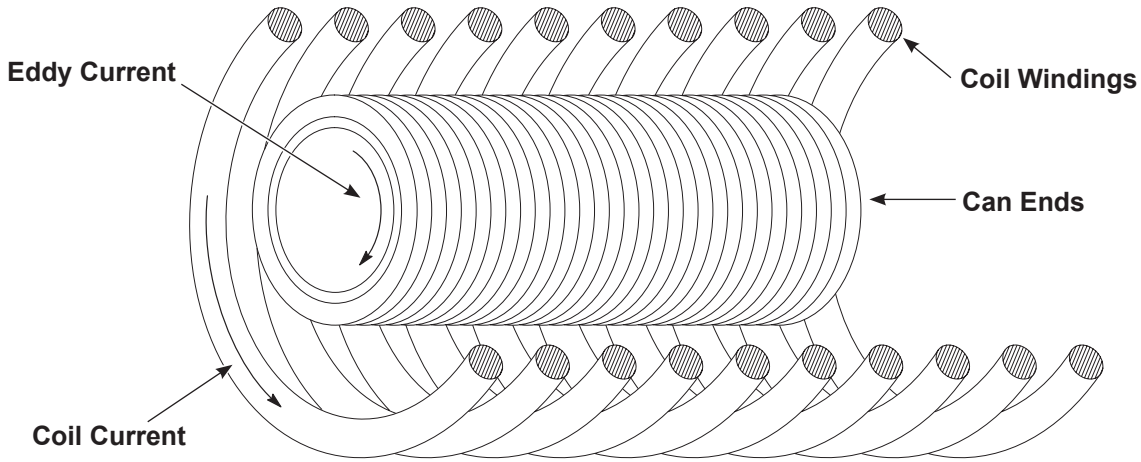


Figure 9 Coil Operation

Safety Devices

Table 4 Safety Devices

Item	Name	Description
1	Coil Tray Lid Interlock Switch	Opening the coil tray lid will interrupt control voltage to the MCR (Master Control Relay) and de-energize CR1 (Circuit Relay 1). All RF power will be removed from the inverter system.
2	Estop Switch, Operator Panel	The E-stop is a maintained-position mushroom-head switch supplied with redundant contacts. Pressing the switch will remove control power, de-energize the MCR (Master Control Relay) and de-energize CR1. All RF power will be removed from the inverter system.
3	Stop Switch, Operator Panel	The STOP switch is a momentary control button. Pressing the switch will interrupt control power, de-energize the MCR (Master Control Relay) and de-energize CR1. All RF power will be removed from the inverter system.
4	Control Panel Interlock Switch	Opening the hinged doors to the control panel will interrupt control voltage to the MCR (Master Control Relay) and de-energize CR1. All RF power will be removed from the inverter system.
5	Disconnect Switch	This removes power from the control panel and RF system. In the OFF position power remains energized at the TBL power entry terminals, and LF-1 EMI line filter, and the line connection side of the disconnect switch.

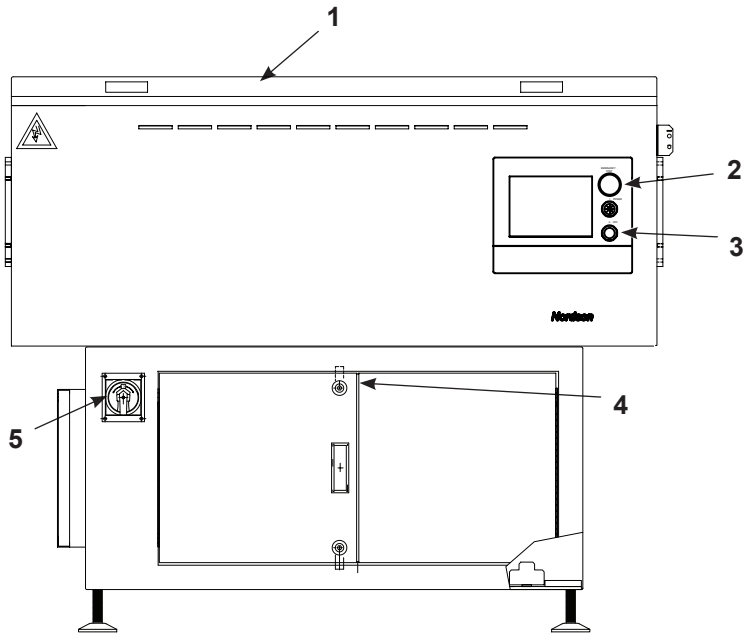


Figure 10 Locations of Safety Devices

Programming

Nordson Induction Dryers are provided pre-programmed and ready for operation after correct installation.

Both the touchscreen display (OIT/HMI) and Programmable Logic Controller (PLC) require programs. New or updated programs can be loaded in the field. Program download link is provided by Nordson Engineering. Loading instructions are provided with program update.

Table 5 Programming Essentials

Type of Control	Brand Name	Programming Requirement
Touchscreen (OIT/HMI)	Pro-face™ GP Series	One (1) Blank USB flash drive, 1GB or larger. Nordson Part 1604912
Touchscreen (OIT/HMI)	Allen-Bradley® PanelView™ Plus 7	One (1) Blank USB flash drive, 1GB or larger. Nordson Part 1604912
PLC	Siemens® S7-1200	Manufacturer's brand SD card: 6ES7954-8LC03-0AA0
PLC	Allen-Bradley® 5370	Manufacturer's brand SD card: 1784-SD1

Specifications

Manufacturing Date Code

Serial Number: BK X X X X − X X X

year month

Operating Parameters

Table 6 Conditions and Parameters

Category	Condition	Parameter
Temperature	Storage	-40° to 70°C (-104° to 158°F)
Humidity	Storage	up to 95% (non-condensing)
Temperature	Ambient, while equipment is in use	5° to 45°C (40° to 112°F)
Humidity	Ambient, while equipment is in use	0 to 70% (for full system functionality)
Altitude (above sea level)	Ambient, while equipment is in use	less than 1,524 m (5,000 ft)

NOTE: If the equipment is to operate at an elevation of higher than the recommended altitude, it must be de-rated. Contact your Nordson representative.

Power Requirements for Operation

Refer to dryer utility tag for line voltage and frequency power requirements.

Typical Operating Power Requirements:

- 360−415 Vac 50 Hz 3 Phase + Ground
- 440−480 Vac 60 Hz 3 Phase + Ground

Other global voltage / frequency combinations are available.

Standard tolerance fluctuations in Line Voltage should not affect dryer operation. Avoid severe power fluctuations.

NOTE: Dryers are dependent on the Vac line frequency. The ferro-resonant control power transformer assembly must be changed if changing operating frequency.

NOTE: Do not use GFCI breakers to power the dryer.

Model Numbers

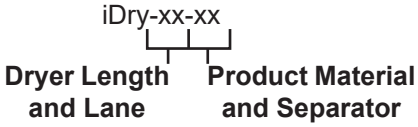


Table 7 Model Numbers and Letters

Code	Description
4	54 in. (137.2 cm) length dryer
6	86.2 in. (219.0 cm) length dryer
8	98.2 in. (249.4 cm) length dryer
9	114.3 in (290.3 cm) length dryer
S	single-lane
D	dual-lane
A	Aluminum
S	Steel
0	No separator
1	16 in. (40.6 cm) length separator
3	32 in. (81.3 cm) length separator

Weights

Table 8 Models and Weights

Model	Weight
iDry 4S-S0	715 lb (324.3 kg)
iDry 4D-S0	825 lb (374.2 kg)
iDry 6S-S0	1,050 lb (476.3 kg)
iDry 6D-S0	1,200 lb (544.3 kg)
iDry 8S-S0	1,100 lb (499.0 kg)
iDry 8D-S0	1,250 lb (567.0 kg)
iDry 9S-S0	1,150 lb (521.6 kg)
iDry 9D-S0	1,300 lb (589.7 kg)
S1 Magnetic Separator, 16 in. (40.6 cm)	54 lb (24.5 kg)
S3 Magnetic Separator, 32 in. (81.3 cm)	87 lb (39.5 kg)

Dimensions

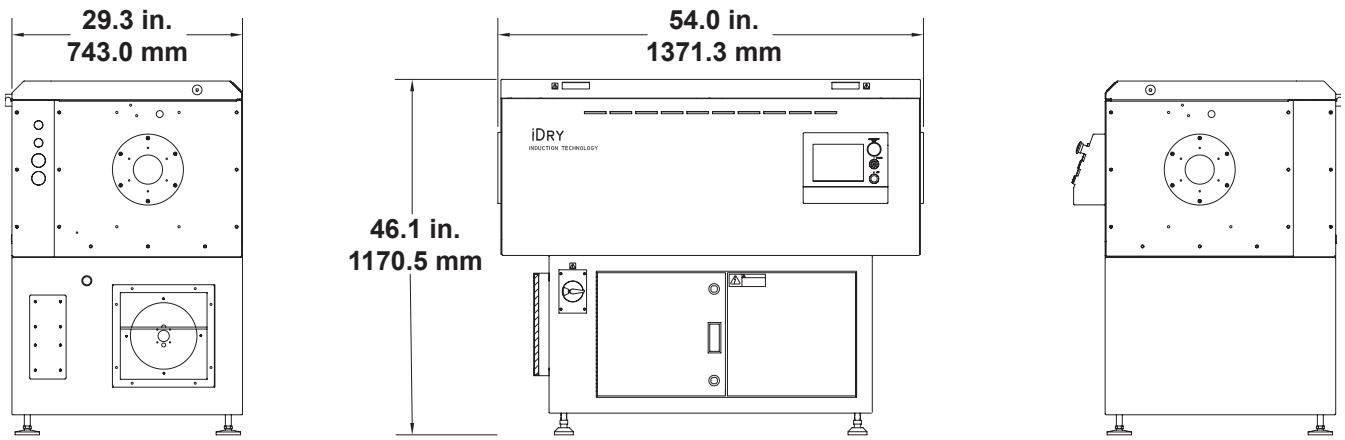


Figure 11 iDry 4S-S0 and 4D-S0

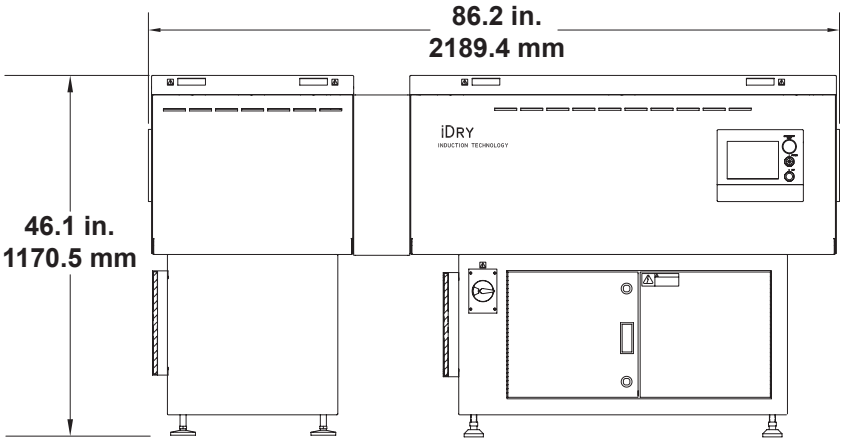


Figure 12 iDry 6S-S0 and 6D-S0

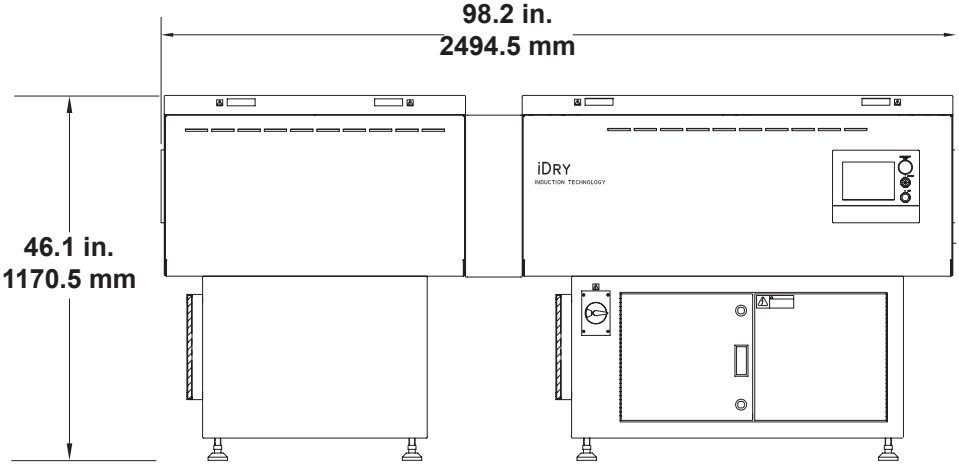


Figure 13 iDry 8S-S0 and 8D-S0

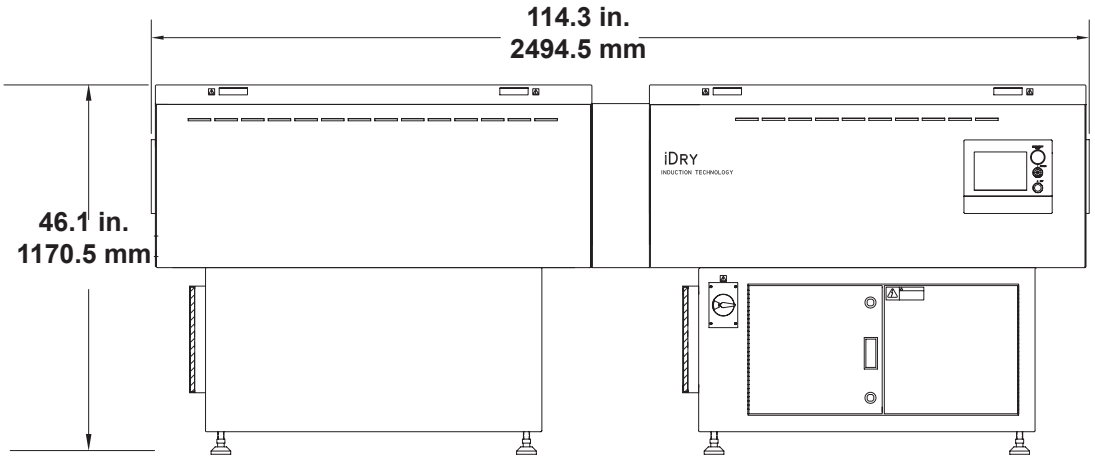


Figure 14 iDry 9S-S0 and 9D-S0

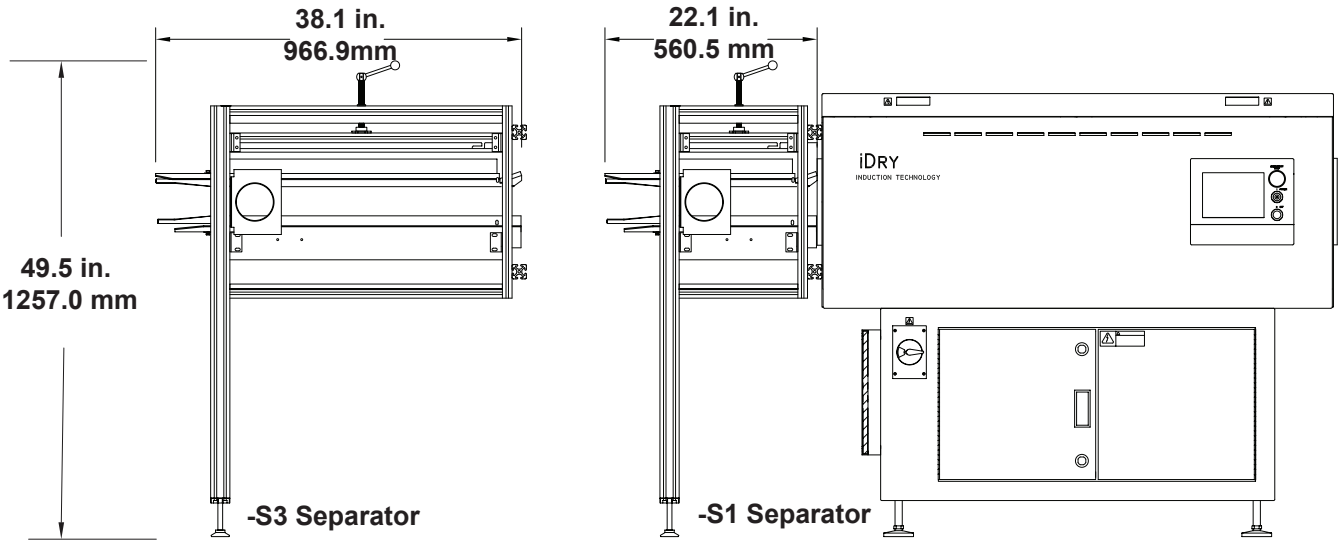


Figure 15 -S3 Separator and -S1 Separator

Operating Sound Levels

See Figure 16. Measurements taken at 5 ft, 4 in. (1.6 m) above floor level.

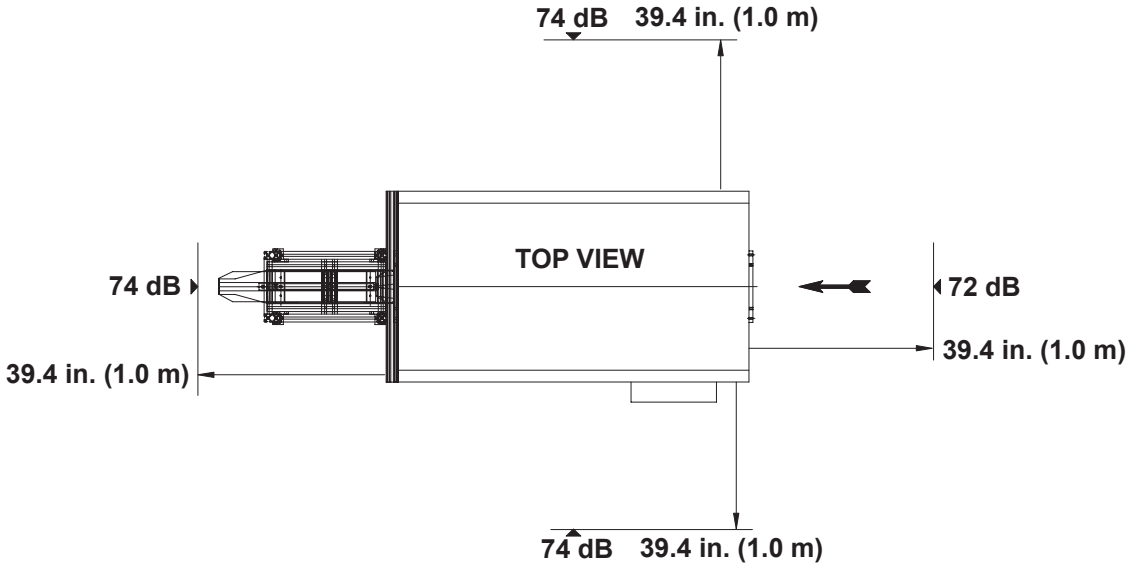


Figure 16 Operating Sound Levels

Installation

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Inspection

Inspect the dryer external surfaces for any shipping related damage.

The iDry system glass and coils are packaged separately. Carefully unpack and inspect each glass and coil. In the event of any damage or shortage, please notify the shipper and your Nordson representative immediately.

Glass Tube

The glass tube should have no sizable chips or cracks on the edges or along the length of the glass. The outer surface of the glass tube is wrapped in a fiberglass cover starting 0.88 in. (22mm) from each end of the glass tube. The fiberglass is not shown in Figure 17.

NOTE: Do not remove the fiberglass cover from the glass tube.

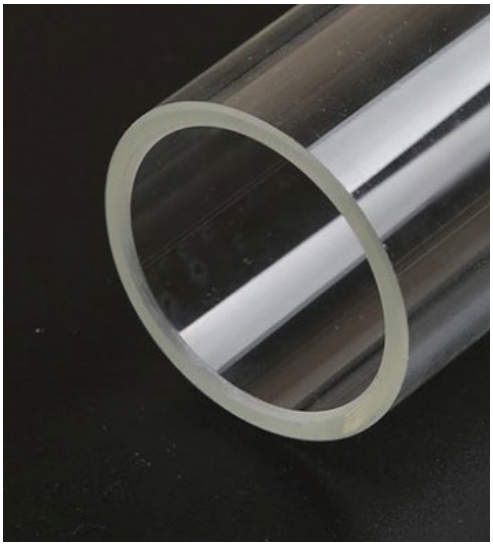


Figure 17 Glass Tube

Coil Type

The coil(s) appearance may vary depending on the application power levels.

Table 9 Coils

Model	Weight
Monofilar Coil	Single helix wrap of a conductor
Bifilar Coil	Dual helix wrap of two conductors
Magnet Wire	A single copper conductor (typically 8 awg)
Litz Wire	A combination of smaller conductor strands twisted to form a rope (typically 22 or 24 awg wires, 45 to 100 strands)

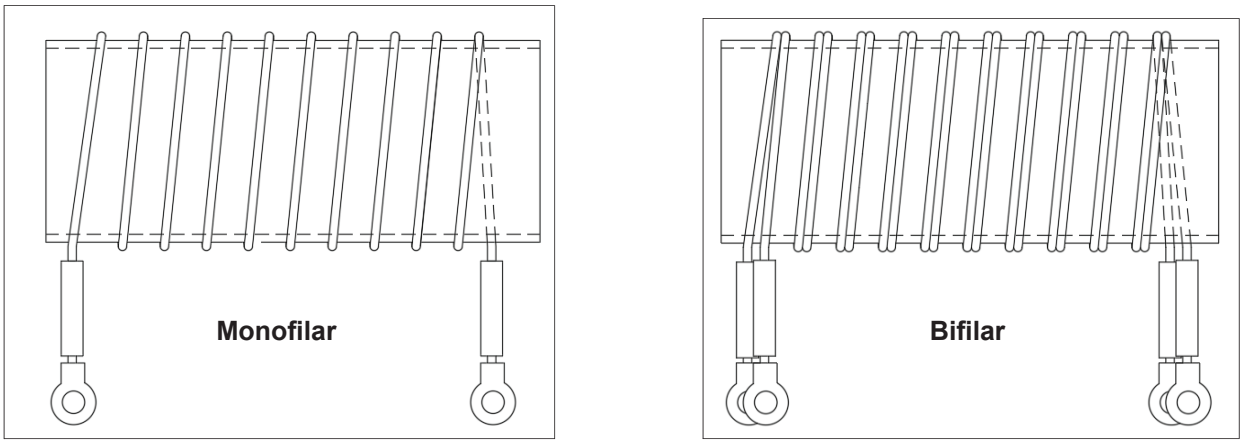


Figure 18 Monofilar and Bifilar Coils

Coil Inspection

The coil(s) should have no gouges or scrapes along the copper wire surfaces. Variations in the spacing of the wires is normal.

The fiberglass coil form should be a continuous tube without cracks or deformity.

NOTE: Litz wire coils will have multiple wire bundles at each end of the coil, with a ring terminal connected to each bundle.

Lift Points

Always use the designated lift points when moving the iDry systems.

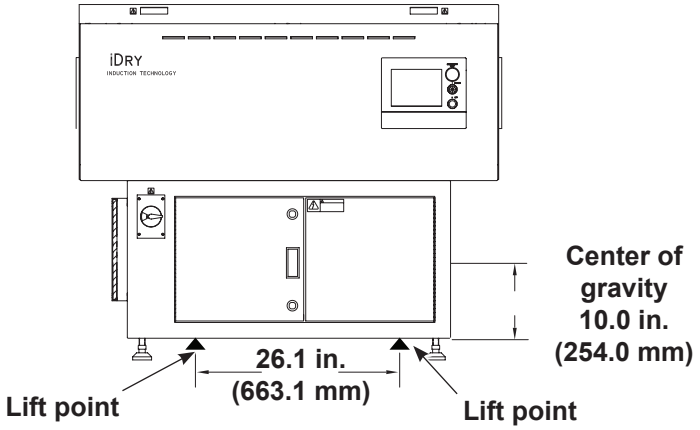


Figure 19 Lift points for iDry 4S-S0 and 4D-S0

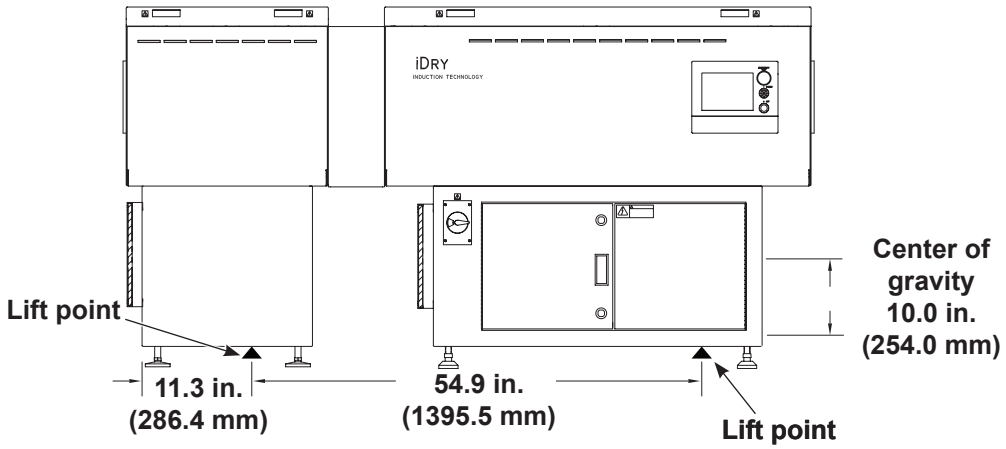


Figure 20 Lift points for iDry 6S-S0 and 6D-S0

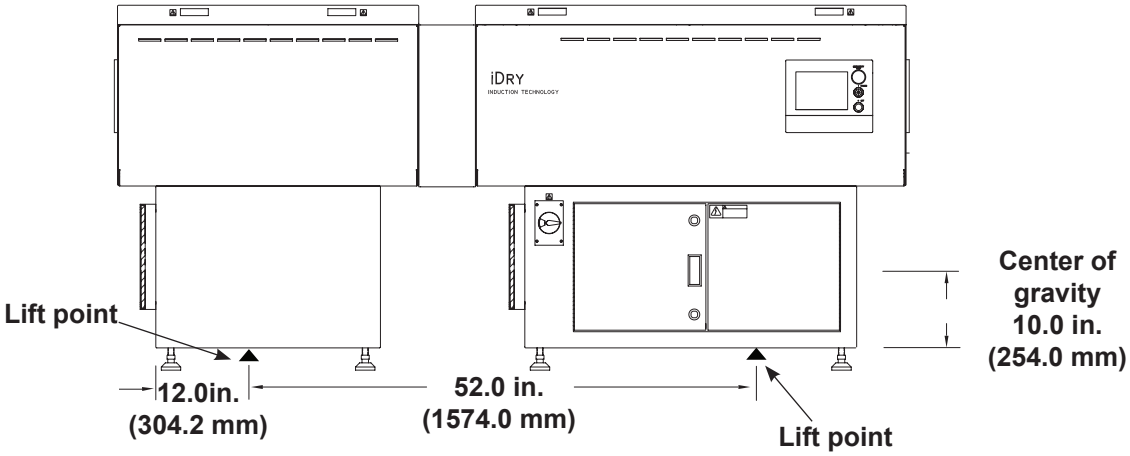


Figure 21 Lift points for iDry 8S-S0 and 8D-S0

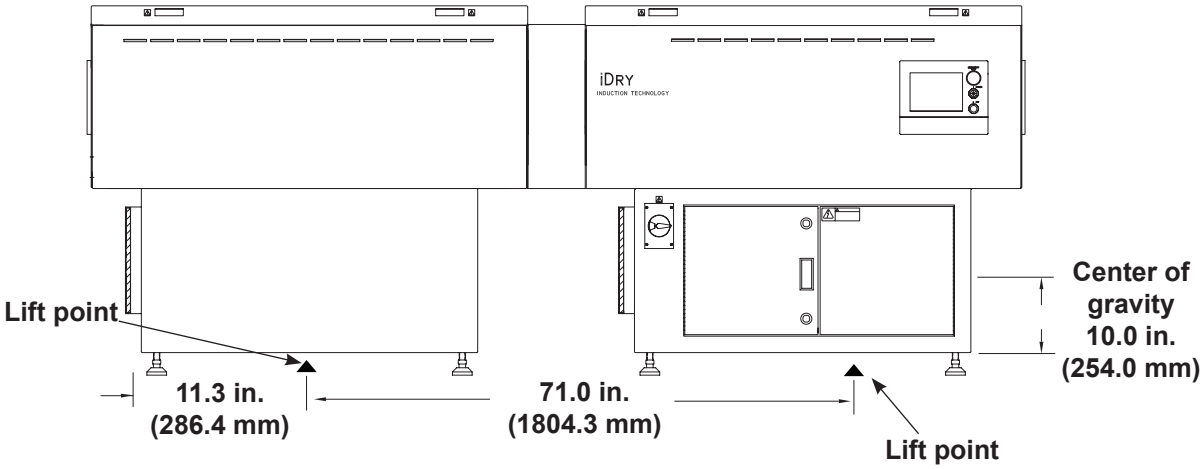


Figure 22 Lift points for iDry 9S-S0 and 9D-S0

System Positioning and Mounting

Always use the lift points shown in the Lift Points section of this manual.

Flow Direction

The dryer must be positioned so that can ends pass through it in the correct direction. When moving the dryer into position in the production line, note the position of the motion sensor head. This is the dryer entrance. A flow direction arrow is also located inside the coil tray.

NOTE: Optional magnetic separators, if installed, are only installed at the exit end of the dryer.

Clearances

Provide clearances around dryer as follows:

- Make sure blower intake (filters) and vents are not obstructed.
- Provide 1 m (39 in.) of space at the rear of the dryer to remove the access panel for power and interlock connections and repairs.
- Provide 1 m (39 in.) of space in front of the dryer to open the enclosure doors.

Mounting and Line Connections

Installation and adjustment of the dryer mounting feet (x4 or x8) will allow for approximately height listed on the customer approval form supplied with the purchase order. Level the dryer and bolt the mounting feet to the floor using 5/16-in. diameter (M8) nominal sized lag screws. Two screws are required for each mounting foot. The suggested length is 3.0” (75mm) with flat washer.

Additional anti-vibration techniques are not required.

See Entrance and Exit Hub Mounting Hole Pattern. Six evenly spaced 1/4−20 NCB threaded holes are provided in the dryer exit and entrance hubs. Secure your can end rod cages or trays to the entrance and exit hubs as required.

CAUTION: Do not apply excessive force to the hub assemblies. The ancillary trackwork or rod cage assemblies must be carefully fit to prevent applying strain to the hubs. The force will be transmitted to the glass coil tube and cause the tube to fracture.

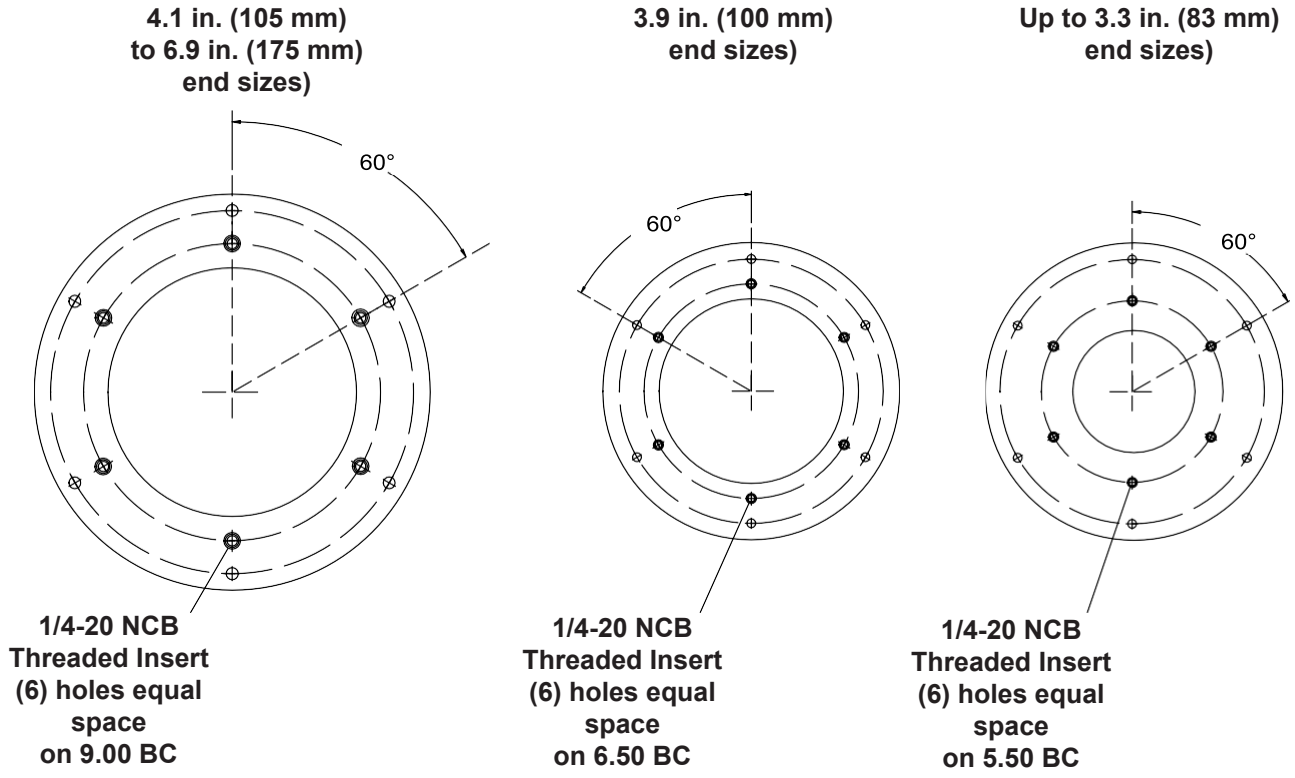


Figure 23 Entrance and Exit Hub Mounting Hole Pattern

Coil and Tube Installation

See Figure 25. Install the coil and glass coil tube as follows:

1. Disconnect and lockout power to the dryer.
2. Use a 5/16 in. hex wrench to unlock the locks at each end of the coil tray lid. Lift the lid to the full up position.
3. Remove the screws (1) securing the air heater and exhaust vent to the entrance and exit hubs. Move the air heater and exhaust vent away from the hubs.
4. Remove the coil tube hold-down screws and cushions (2) from the entrance and exit hubs.
5. Unpack the coil (4) and glass coil tube (3). Carefully insert the tube through the coil.
6. Carefully install the coil and tube assembly in the coil tray, positioning the ends of the tube into the hubs. Unless the coil is marked with the flow direction, it does not matter which end of the coil is at the entrance or exit.
7. Re-install the coil tube cushions and hold-down screws (2) on the exit and entrance hubs.
8. Re-install the heater blower and exhaust vents on the entrance and exit hubs with the screws (1).
9. Connect the coil wiring to the bus bar terminals (5). Attach the wiring per the markings on the insulation jacket and the bus bar numbering. One end of the coil attaches to the first bus bar while the opposite end attaches to the second bus bar.

NOTE: Bi-Filar and multiple terminated coils have more than one terminal at each end of the coil. Attach all terminations at one end to the common bus bar, and all terminations at other end to other common bus bar.

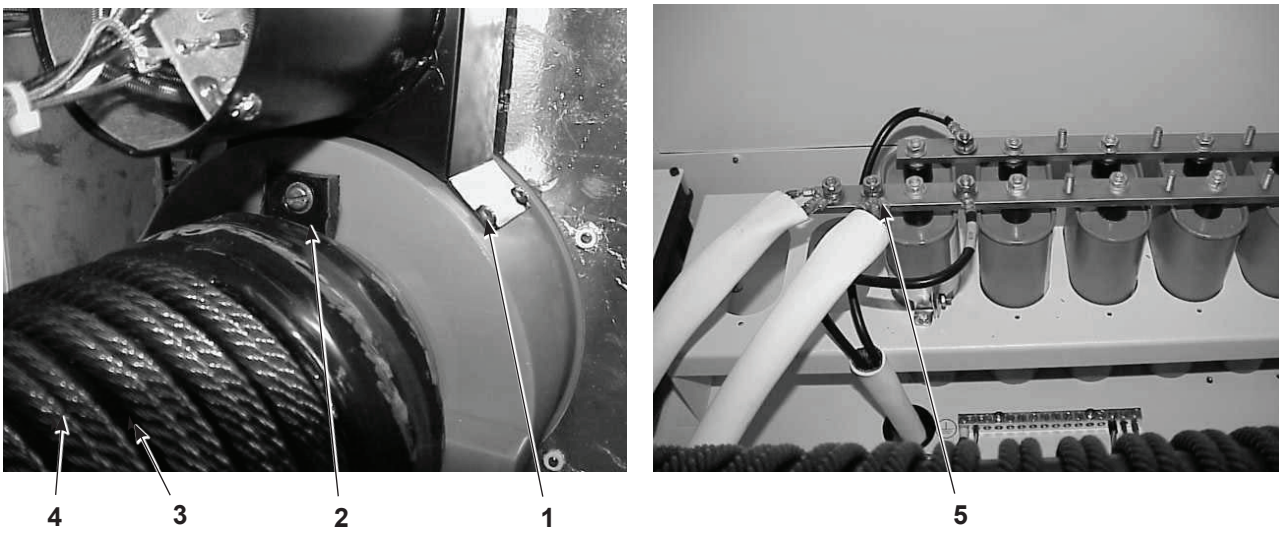


Figure 24 Coil and Tube Installation

1. Air heater and exhaust vent screws (4 on each hub)
2. Cushion and hold-down screws
3. Glass coil tube
4. Coil
5. Bus bar terminals

System Wiring

Schematics and Wiring Diagrams

Refer to the Addendum to this manual for dryer schematics and wiring diagrams.

Connect AC Operating Voltage

See Figure 25 for power input connections. Refer to Specifications Section: Power Requirements for Operation.

WARNING: If plant supply is not through current-limiting Class J 50 amp fusing, customer is required to follow arc flash hazard criteria and label appropriately.

WARNING: Install a locking breaker (non-GFCI) or disconnect in the electrical supply line ahead of the dryer so that power to the dryer can be disconnected and locked out when repairs are made. All electrical connections must be made according to code, including a proper ground connection. Failure to observe this warning could result in severe personal injury or death from electrical shock.

WARNING: Not all energized components are de-energized with the dryer disconnect in the OFF position. Disable AC line voltage to dryer when servicing.

See Figure 25. Vac Line power is supplied to the system through a 3/4-in. (1.9-cm) conduit fitting in the lower left-hand corner of the dryer exit end.

NOTE: Wire gauge must be copper and comply with local and national electrical codes.

1. Route three #8 AWG (8.36 mm2) or #6 AWG (13.3 mm2) wires to the input terminal block (TBL) on the input side of the line filter. See applicable codes for proper sizing.
2. Route one #8 AWG (8.36 mm2) or #6 AWG (13.3 mm2) ground wire to the cabinet grounding terminal (PE) located next to the input terminal block.

WARNING: DANGER! L1, L2, L3 Line input terminals remain live even with the dryer main disconnect in the Off position.

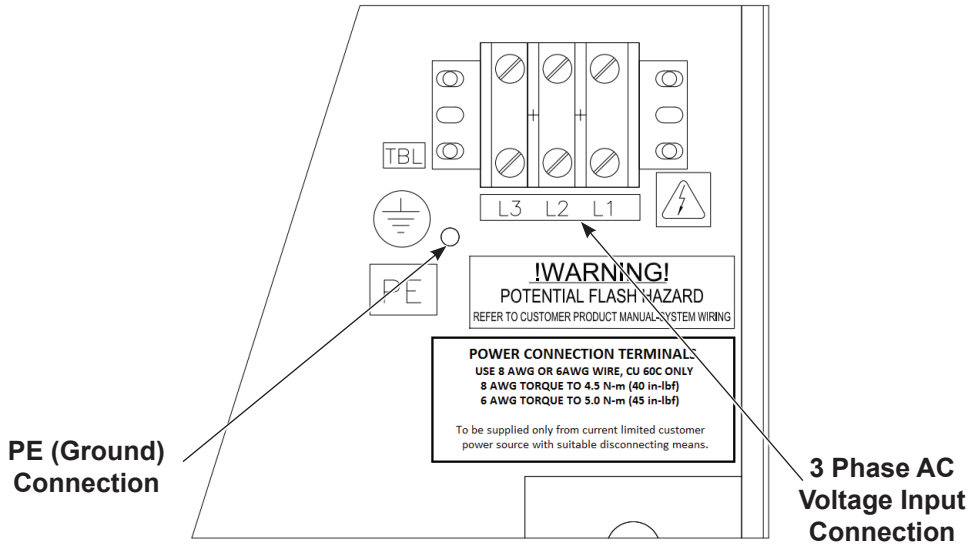


Figure 25 Power and Ground Connections

External Interlock

The external interlock is an optional connection that inhibits dryer heating until signaled that the production line is running. When the interlock is used, the dryer controller will not apply power to the induction coil if there is no interlock signal.

CAUTION: Nordson engineering recommends that the external interlock be connected and enabled. Without the interlock, random line motion can cause the controller to apply power to the coil while the line is stopped, which could overheat and damage stationary can ends inside the coil.

Connecting the External Interlock

The external interlock requires an external 24 Vdc source at 100 mA to power CR4 relay coil (refer to Note below). The external 24 VDC power source is not referenced to the dryer ground. The interlock is an input to the dryer that the production line is running. Without this signal, the controller will not apply power to the induction coil.

NOTE: The interlock relay coil is relay CR4. Additional relay voltages are available.

The interlock terminals are located behind the control enclosure doors, in the front of the enclosure.

1. See Figure 26. Drill a hole or use a knockout tool to bring your interlock cable into the enclosure. Install a properly sized strain relief or conduit connector in the knockout.
2. Connect the interlock wiring to the top and bottom tier of terminal TB31.

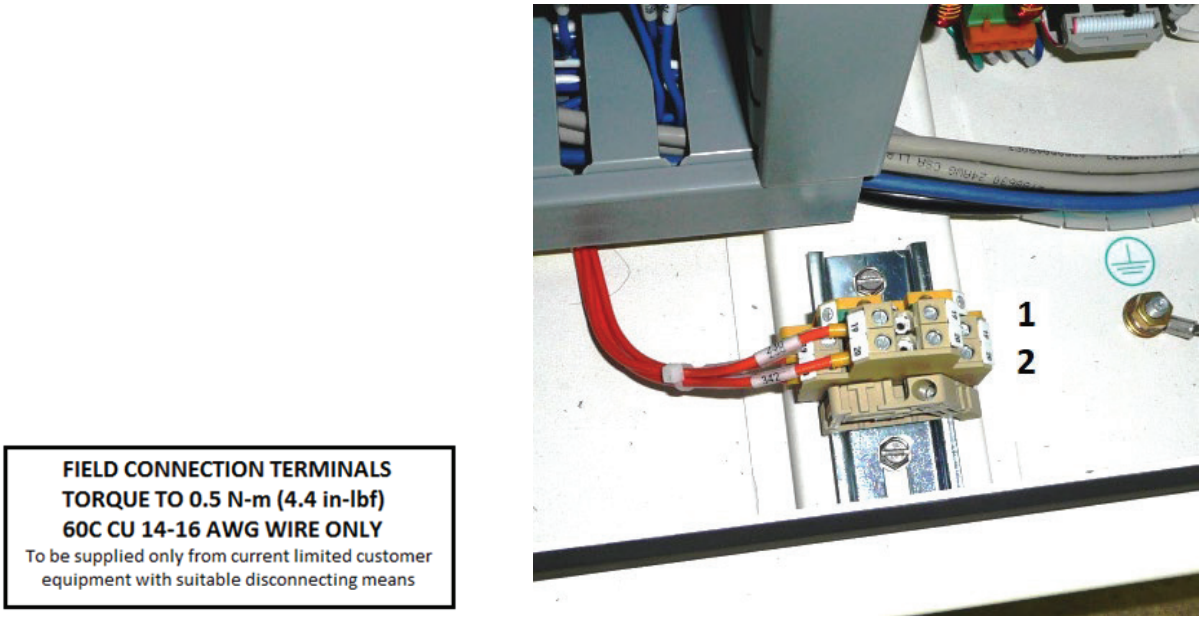


Figure 26 External Interlock and Status Contact Connections

1. External Interlock terminal TB31
2. Status Contact terminal TB32

External Interlock Monitoring or Ignoring

To enable the use of the external interlock, see the External Interlock Activation part of this manual.

Optional Dryer Ready Status Contact

See Figure 26. The status contact provides a Dryer Ready signal. It is used in conjunction with the external interlock. The contact indicates when the dryer is off or in a fault condition. The contact is off when:

- The dryer is turned off.
- Any fault on the operator panel is activated.

Status Contact Connection: Terminal 32 Output Contact (output)

Motion Sensor

See Figure 27. The motion sensor mounting is designed to locate the sensor in either of the two positions shown. Use the 12:00 o'clock position when possible. If a rod cage entry is used with a rod at 12:00 o'clock or if an overhead guide interferes with the sensor line of sight, reposition the motion sensor to the 30° position as shown.

Adjust the motion sensor sensitivity as described in the Laser Motion Sensor Sensitivity Adjustment section of this manual.

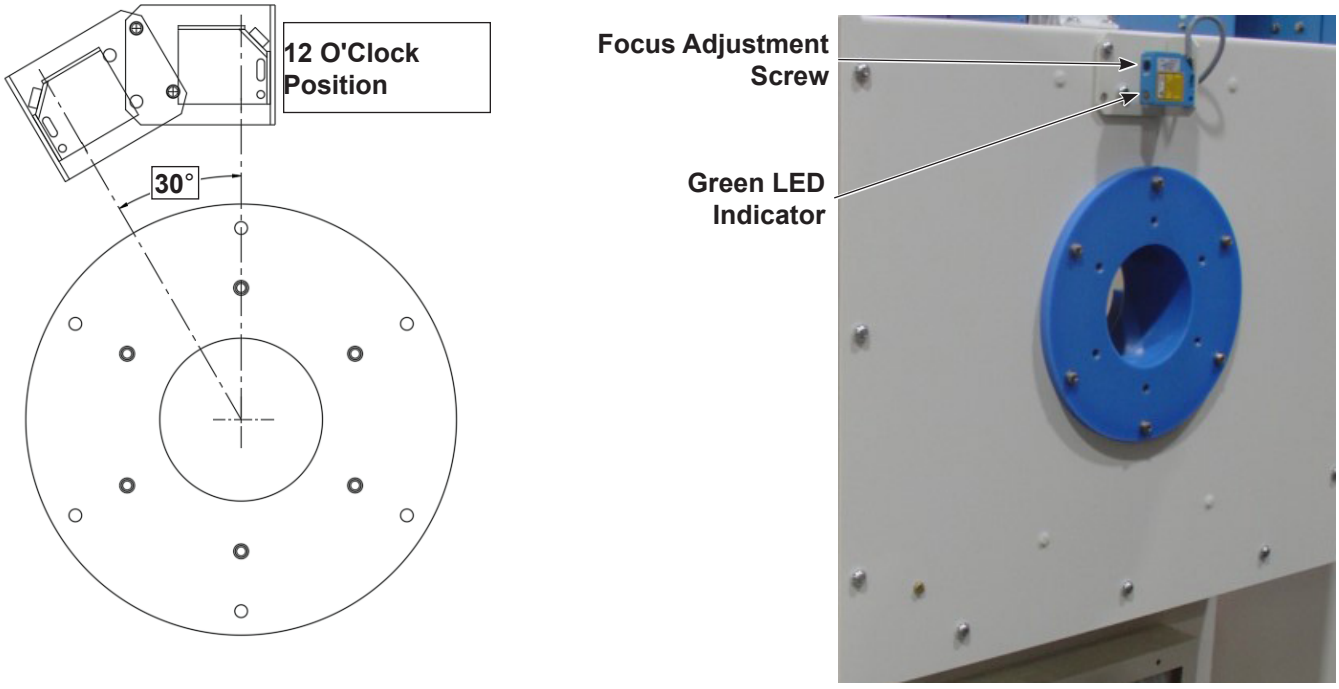


Figure 27 Motion Sensor Position

Magnetic Separator (Optional)

Refer to the Magnetic Separator Adjustments instruction sheet, part number 1040053, for instructions on adjusting the magnetic separator for correct operation.

Exhaust Ducting (Optional, Customer−Supplied)

Small amounts of water vapor and hot air are released from the exhaust vents located on the entrance end and rear. Exhaust hoods and ducting are not required but can be installed if desired. Do not restrict the air flow from the exhaust vents.

Return Shipping Instructions

Refer to the Specifications Section for proper lift points.

Domestic/USA

1. Remove the glass coil tube and coil. Carefully pack the tube and coil separately.
2. Remove the leveling pads and place the system on a heavy duty shipping skid. Bolt the system to the skid through the leveling pad mounting holes.
3. Secure the coil tube and coil packages to the skid.
4. Wrap the system with plastic wrap or shrink wrap.

Export

Prepare the system as described in the Domestic/USA return shipping instructions. In addition, do the following:

- Fully crate the system with all sides protected with 13 mm (1/2 in.) minimum OSB material or equivalent.
- If shipping by ocean freight add silica gel to the shipping crate.

Setup

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Setup consists of:

- System functionality verification
- Laser motion sensor sensitivity adjustment
- Language selection
- Timer and ramp Settings
- Ramp mode power level adjustment
- Ramp timer setting
- Motion timer and sensitivity settings
- External Interlock timer setting and activation (optional)
- Temperature offset and limits Setting
- PID control settings
- Temperature setpoint, display, and alarm settings
- Alarm settings

NOTE: The screens used during setup can be locked from the password protected Config/ Options screen. If you do not have access to the screens required for setup, contact your Nordson representative.

Setup normally needs to be performed at initial startup. Refer to the Operation section for an overview of the controls used for setup.

WARNING: Do not touch any electrical terminals or connections inside the enclosure while the dryer is powered up. Do not attempt to operate the dryer with the coil tray lid open.

System Functionality Test

Verify the following before performing the system functionality test:

- Dryer is secured to the factory floor
- Coil and glass have been installed into the dryer
- Entry and exit product trackwork are attached to the dryer
- Product can be moved through the dryer without obstruction
- AC Line voltage is connected and energized
- External Interlock signals are connected to line PLC
- Thermocouple or IR sensor is correctly positioned to detect product temperature at the exit of the dryer

Preparation

1. Use a 5/16 inch hex wrench to unlock and open the control enclosure doors.
2. Override the enclosure door interlock switch by pulling the switch actuator all the way out.

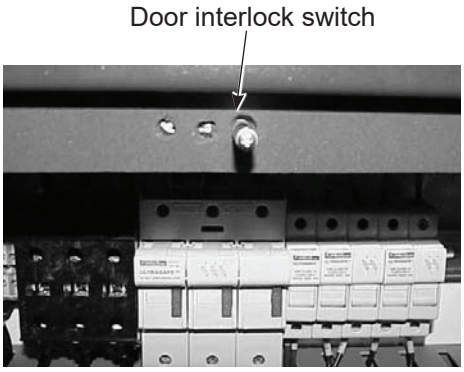


Figure 28 Enclose Door Interlock Switch Override

3. Verify the Coil Tray Lid(s) are closed and locked
4. Turn the Dryer disconnect to the ON position.
5. Release the ESTOP button (if pressed)
6. Press the POWER button on the operator panel. The POWER button illuminates green.

A Nordson Splash logo screen will appear for approximately 20 seconds, followed by the Automatic Mode operator screen.

Initialization

Figure 29 Testing screen

1. During initialization, the Dryer will:

- Test that the Air Pressure Switch System is OFF
- Test that the Air Heater Contactor is OFF
- Energize the Blower Control Relay (typically CR1)
- The Automatic Operation screen will be displayed.
- Actual temperature displayed = current ambient temperature

NOTE: A flashing FAULT icon is normal at this step of the verification process

2. On the control panel, locate the distribution board, and verify:

- +15vdc & -15vdc green LEDS are both ON
- RF Fault Indicator LED is OFF

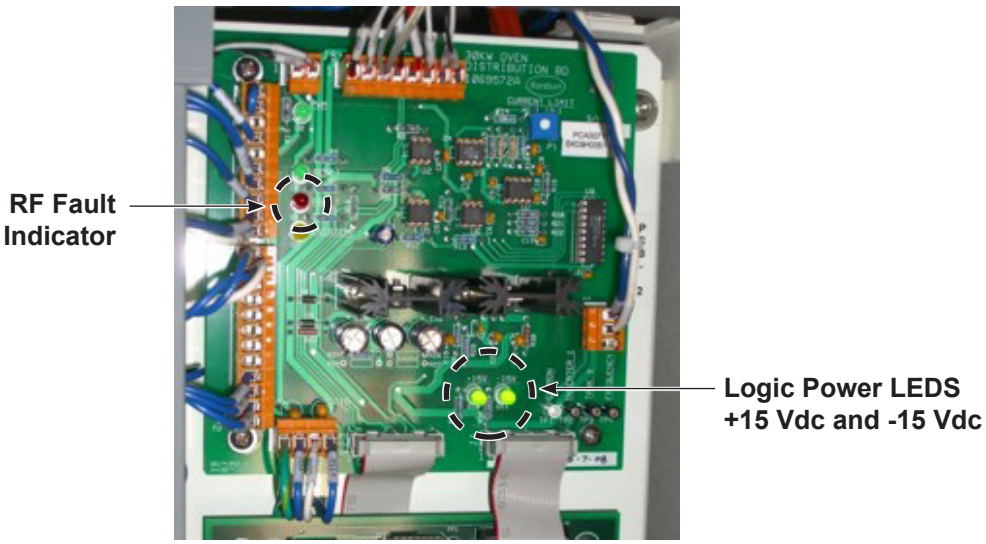


Figure 30 RF Fault Indicator and Logic Power LEDs

3. At the entrance of the dryer, verify the motion sensor visible laser is projected down onto the product and the laser is not obstructed by cage work connected to the dryer. Move the product stick slightly by hand. The green LED should turn on and off as the peak of the product stick (end to end product formation) passes under the laser. The yellow LED may be on continuously at this time. Refer to the Laser Motion Sensor Sensitivity Adjustment section of this manual for more information.
4. Press the OFF button on the operator panel. Close and lock the control panel access doors and press the START button again.
5. After the power up sequence has completed, the Automatic Page will be displayed with no fault indications. If the FAULT icon appears, please refer to the Troubleshooting section of this manual.
6. The RF SUPPLY READY message on the screen will be displayed at the top of the Automatic Mode page. This indicates that the startup sequence is complete, and the dryer is ready for operation.
7. Verify the following system settings (Refer to the Operation section of this manual):

- MOTION OFF TIMER is set to 3 seconds.
- RAMP POWER is set to 50%
- SETPOINT TEMP is set to 50°C / 122°F
- RAMP TIMER is set to 60 seconds
- EXTERNAL INTERLOCK is set to IGNORE

8. While watching the display, slightly move the ends under the motion sensor for only a few seconds, until the display shows the following:

- MOTION DETECTED indicator turns ON
- RAMP MODE indicator turns ON
- POWER COLUMN GAGE shows some level of power output

CAUTION: Do not continually activate the dryer with the line stopped. The product may overheat and the glass could be damaged.

Figure 31 Setpoint screen 2

9. After 3 seconds of no motion sensor output transitions, the dryer will return to the idle mode.

Additional activation of the motion sensor will begin the heating cycles. Do not heat products in the dryer for more than 15 seconds unless in production mode.

CAUTION: Do not continually activate the dryer when the product in the dryer is not moving. The product may overheat and the glass could be damaged.

Figure 32 Setpoint Screen 3

Laser Motion Sensor Sensitivity Adjustment

WARNING: Laser radiation. Do not look directly into the laser beam or its reflection from can bodies. Doing so could result in serious eye injury.

The SICK laser sensor focal point is adjustable between 30−60 mm from the sensor face.

Adjust the distance screw for the optimum distance while observing the reception indicator.

Distance/gain adjustment

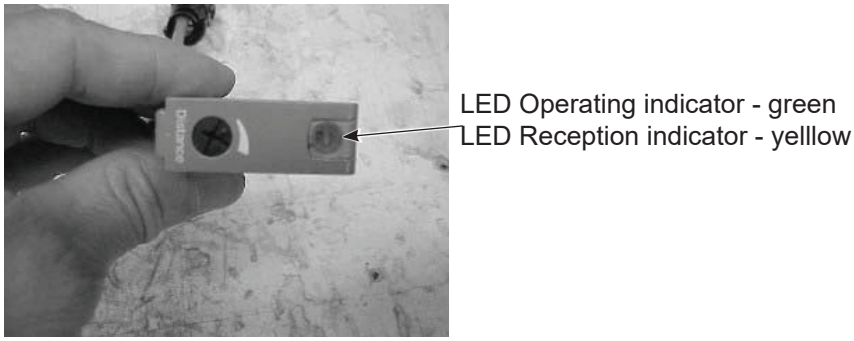


Figure 33 SICK Motion Sensor Module

A properly adjusted motion sensor will output high to low transitions as the production ends pass under the sensor.

The green LED should be flashing when product is in motion.

At rest the status LEDs could be continuously yellow, or yellow and green.

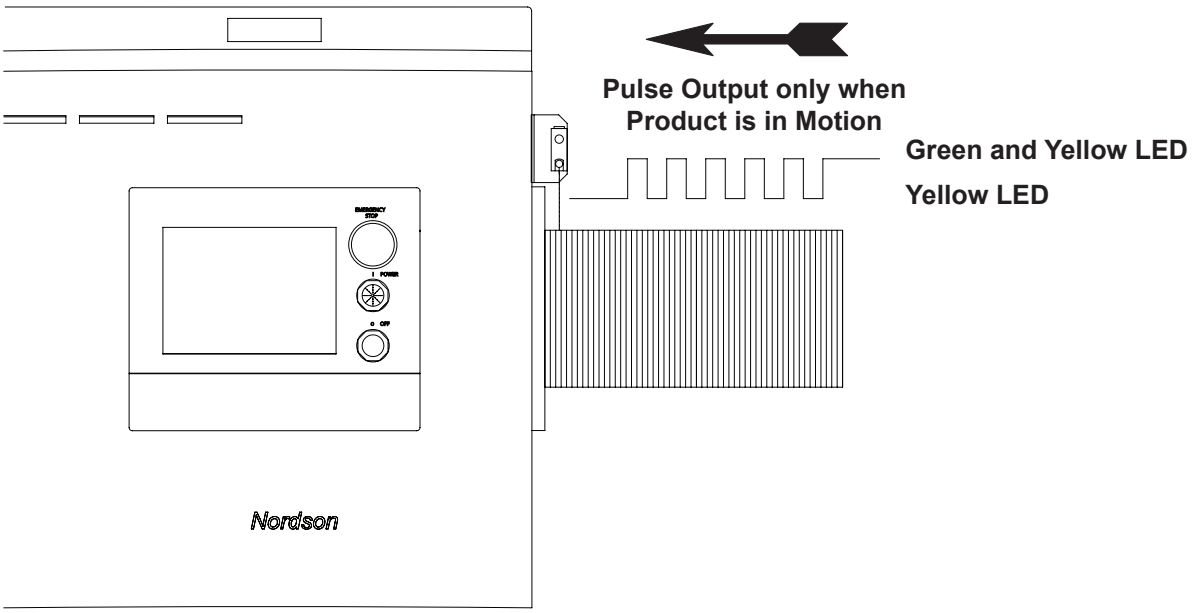


Figure 34 LEDs

Language Selection

English is the default operator interface language. Other languages available are: Spanish, French, Italian, and German.

1. Press the green power button on the operator terminal to turn on the dryer.
2. The Nordson iDry splash screen appears, then the Auto screen.

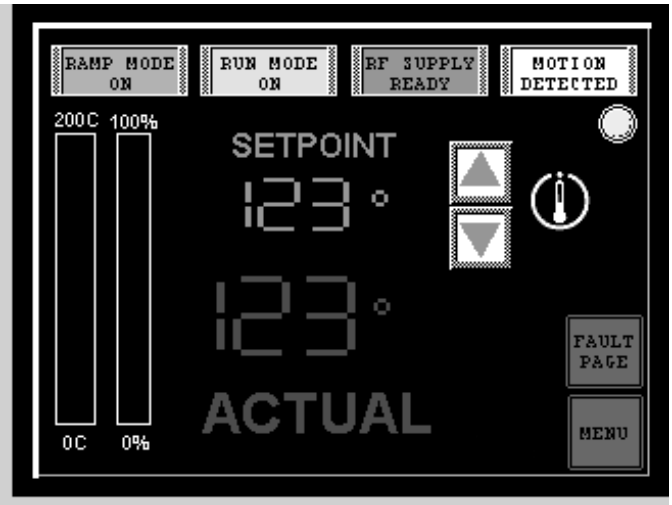


Figure 35 Auto Mode Screen

3. Touch the Menu button in the lower right-hand corner. The Navigation screen appears.

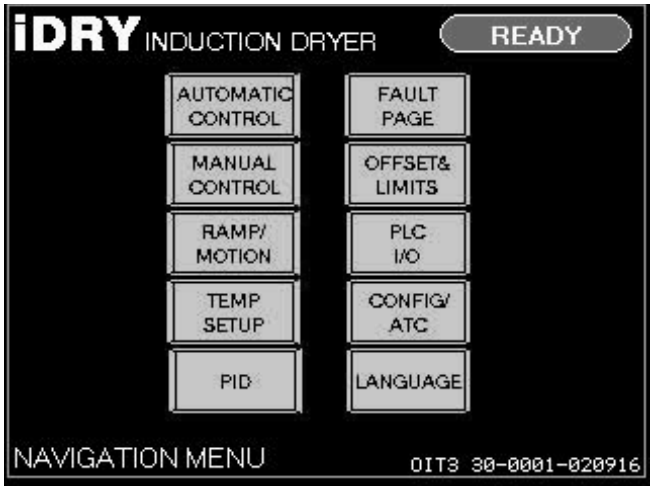


Figure 36 Navigation Screen

4. Touch the LANGUAGE button. The Language Selection screen appears. The currently selected language is displayed at the top.

Figure 37 Language Selection Screen

Timer and Ramp Settings

Ramp Mode Power Level Adjustment

The ramp mode power level is the percentage of total power needed to reach the setpoint temperature during the ramp time (ramp time = time in seconds for a can end to travel the length of the dryer). Ramp mode is activated when the product transitions from stopped to moving (motion detected).

1. Press the green power button on the operator terminal.
2. The Nordson iDry splash screen appears, then the Auto screen (Figure 35).
3. Touch the MENU button in the lower right-hand corner. The Navigation screen appears (Figure 36).
4. Touch the RAMP/MOTION button. The Timers and Ramp Control screen appears (Figure 38). (This screen may be password-protected.)
5. Touch the RAMP TIMER field to select it, then use the screen keypad to set the timer to 999 seconds (16.6 minutes). This prevents the controller from entering PID mode.
6. Touch the ENT key to save your setting.

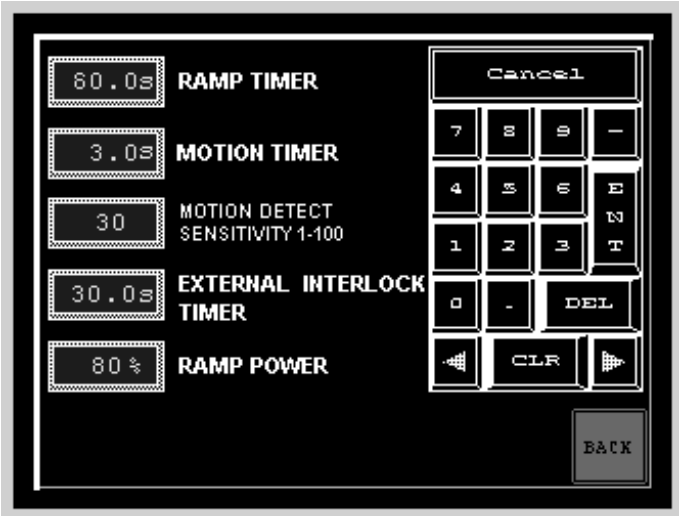


Figure 38 Timers and Ramp Control Screen

7. Touch the BACK button to return to the Navigation screen (Figure 36).
8. Touch the MANUAL CONTROL button. The Manual Mode screen appears.

NOTE: The Manual Mode screen is password-protected by default. To access this screen you must first enable it from the Options Setup screen.

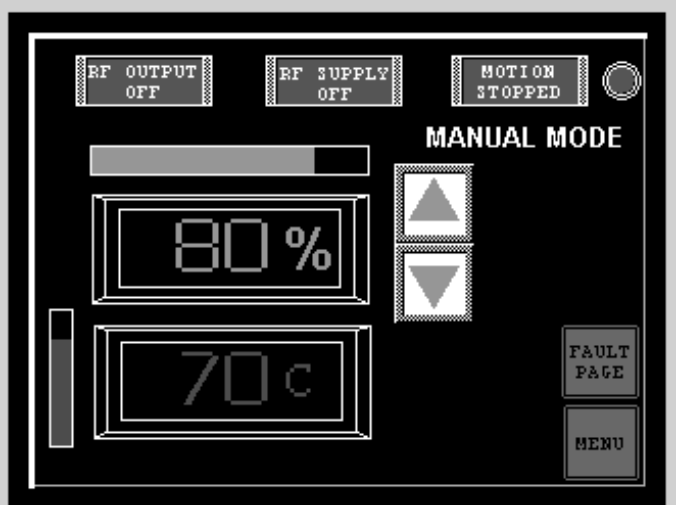


Figure 39 Manual Mode Screen

9. Run can ends through the dryer at the desired production speed.
10. The Manual Mode screen displays Actual Temperature and % Power. Use the Up or Down arrow keys to adjust the % Power until the ends exiting the dryer are at the target setpoint +/- 5 degrees. Note the % Power. You will need to enter it into the Ramp Power field.
11. Touch the MENU button to return to the Navigation screen.
12. Touch the RAMP/MOTION button. The Timer and Ramp Control screen appears (Figure 38).
13. On the Timer and Ramp Control screen, touch the RAMP POWER field and use the screen keypad to adjust ramp power to the % Power setting on the Manual Control screen.
14. Touch the ENT key to save your setting.

Ramp Timer Setting

The Ramp Time is the time it takes for a can end to travel the length of the dryer, from the entrance to the exit. This time is dependent on your line speed. The factory default is 60 seconds.

1. Mark a can end in the line ahead of the dryer.
2. Start the line and time the end as it travels through the dryer.
3. On the Timer and Ramp Control screen (Figure 38), touch the RAMP TIMER field and set the time with the keypad.
4. Touch the ENT key to save your setting.

Motion Timer Setting

The Motion Timer setting delays turning off coil power when can end motion stops. This prevents control cycling to ramp mode each time the line momentarily stops. The factory default setting is 3 seconds. Do not set the motion timer for more than 5 seconds.

The recommended settings are:

- 2 seconds for lines with continuous motion
- 3 seconds for lines with intermittent motion

1. On the Timer and Ramp Control screen (Figure 38, touch the MOTION TIMER field and set the time with the keypad.
2. Touch the ENT key to save your setting.

Motion Detect Sensitivity Setting

The Motion Detect Sensitivity setting adjusts the time cycle of motion pulses from the motion sensor. This can be useful for extreme line speeds (less than 300 ends per minute or more than 1600 ends per minute).

The factory default setting is 30. Recommended settings per line speed are:

- Less than 750 ends/minute: 30−35
- 750−1500 ends/minute: 25−30
- Greater than 1500 ends/minute: 20−25

1. On the Timer and Ramp Control screen (Figure 38), touch the Motion Detect Sensitivity field and set the time with the keypad.
2. Touch the ENT key to save your setting.

External Interlock Timer Setting (Optional)

The External Interlock timer starts when a run signal is received from the customer line. If the motion sensor does not detect motion before the timer expires, the alarm relay will change state and activate a customer-supplied external alarm. The timer setting is dependent on line speed.

1. Touch the RAMP/TIMER button on the Navigation screen (Figure 36). The Timer and Ramp Control screen appears (Figure 38).
2. Touch the EXTERNAL INTERLOCK TIMER field and set the desired time with the keypad.
3. Touch ENT to save your setting.

External Interlock Activation

The External Interlock must be wired and activated before you can set the timer. Refer to Installation for information on wiring. The following procedure details the settings required to use the interlock.

1. Touch the CONFIG button on the Navigation screen (Figure 36). The Option Setup screen appears. (This screen is password-protected by default, contact your Nordson representative).

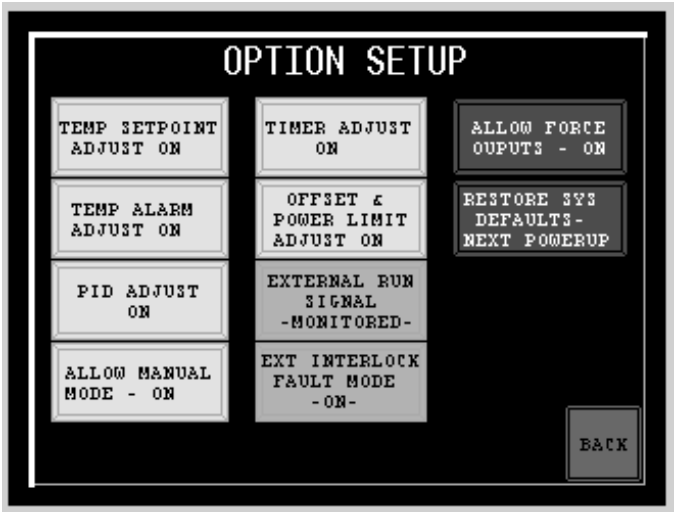


Figure 40 Option Setup Screen

2. Touch the EXTERNAL RUN SIGNAL button to toggle the mode to MONITORED.
3. Touch the EXT INTERLOCK FAULT MODE button to toggle the mode to ON.
4. Touch the BACK button to return to the Navigation screen and touch the RAMP/ MOTION button.
5. Touch the EXTERNAL INTERLOCK TIMER field and set the desired time with the keypad.

Temperature Offset and Power Limit Settings

Touch the OFFSET & LIMITS button on the Navigation screen (Figure 36). The Temperature Offset and Power Limits screen appears. This screen can be password-protected.

Figure 41 Temperature Offset and Power Limits Screen

Temperature Offset

Temperature offset is used to alter display temperature versus input temperature. This is used to match temperature to a master hand-held temperature probe, or to alter temperature output when using IR-type sensors where emissivity needs to be adjusted for various metal types.

Touch the TEMPERATURE OFFSET field and use the keypad to set the desired offset. Touch ENT to save your setting.

Power Limits

Power Limit Control: Touch the POWER LIMIT button to toggle the limits ON or OFF.

Maximum Power Output Limit: This limits the maximum power output of the dryer. The typical setting is 30% higher than the Ramp Power setting. The factory default setting is 100%.

Touch the MAX POWER OUTPUT LIMIT field and use the keypad to set the desired offset. Touch the ENT key to save your setting.

Minimum Power Output Limit: This limits the minimum power output of the dryer. The typical setting is 30% lower than the Ramp Power setting. The factory default setting is 0%.

Touch the MIN POWER OUTPUT LIMIT field and use the keypad to set the desired offset. Touch the ENT key to save your setting.

PID Control Settings

Touch the PID SETUP button on the Navigation screen (Figure 36). The PID Control screen appears. This screen can be password-protected.

Figure 42 PID Control Screen

For the dryer to control temperature properly, three parameters must be set:

- Proportional band (P) heat
- Integral (I) heat
- Derivative (D) heat

These parameters make up the PID loop that controls the duty cycle used to regulate the amount of power applied to the induction coil. PID settings for your dryer are optimized to provide the best possible response (fastest rise time with minimum overshoot).

The default settings are:

Proportional:	40
Integral:	8.30 seconds
Derivative:	0.50 second
Sample Time:	0.2 second

To adjust these settings, touch the desired field and use the keypad to set a new value. Touch the ENT key to save your settings.

Temperature Setpoint, Display, and Alarm Settings

Touch the TEMP SETUP button on the Navigation screen (Figure 36). The Temperature Setpoint, Display, and Alarms screen appears. This screen can be password-protected.

Figure 43 Temperature Setpoint, Display, and Alarm Screen

Product Temperature Setpoint

This setting duplicates the setpoint display on the Auto Mode screen. The controller will attempt to maintain the temperature of the can ends exiting the dryer at this setting.

Alarm High and Low Setpoint Values

The Alarm High and Low Setpoint values are temperature deviations. If the actual product temperature is > than the Temperature Setpoint + Alarm High Setpoint, or < than the Temperature Setpoint – Low Alarm Setpoint, then a fault sequence will begin and start the Temperature Alarm Delay Timer. If the fault condition is maintained throughout the Temperature Alarm Delay timer, a hard fault will be issued, and the system will fall into an alarm state.

Touch the setpoint field and use the keypad to enter the desired setpoint. Touch the ENT key to save your setting.

Temperature Alarm Delay

This is a timer that delays the activation of an temperature fault if the Alarm High or Alarm Low setpoints are exceeded. The factory default settings is 5 seconds.

Touch the TEMPERATURE ALARM DELAY field and use the keypad to enter the desired setpoint. Touch the ENT key to save your setting.

Temperature Display Selection

Touch the display field to toggle between C (Celsius) or F (Fahrenheit).

Configuration/ Option Setup

NOTE: The Options screen is password-protected by default. This screen should only be accessed by qualified personnel. If you do not have the password, contact your Nordson representative.

Touch the CONFIG button on the Navigation screen (Figure 36). A keypad appears. Enter the password and touch the ENT key. The Option Setup screen appears.

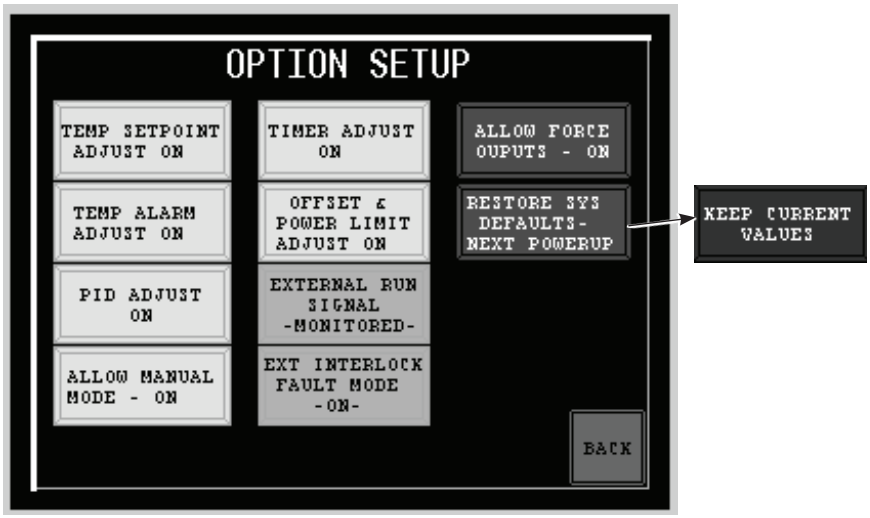


Figure 44 Option Setup Screen

This screen allows you to control the ability to change settings on the setup screens, enable the external interlock, or restore system defaults.

Touch a screen button to toggle change access ON or OFF for the following screens and functions. The factory default setting for each is listed, along with the page number for the instructions for setting each screen's functions.

Table 10 Default settings

Function or Screen	Default
Temp. Setpoint Adjustments, Auto screen	ON
Temp. Setpoint, Display, and Alarms	ON
PID Control	OFF
Manual Mode	OFF
Timer and Ramp Control	ON
Temperature Offset and Power Limits	ON
External Run Signal	IGNORED
External Interlock Fault Mode	OFF

NOTE: The ALLOW FORCE OUTPUTS function and the PLC I/O Display screen are reserved for Nordson service only.

Restore System Defaults

The default power up state is KEEP CURRENT VALUES. To restore all settings to the factory defaults, touch the button to toggle it to RESTORE SYS DEFAULTS − NEXT POWERUP, then cycle dryer power.

Operation

Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

The induction dryer is ONLY intended to heat and assist in drying a water-based coating on container lids (can lids). Never insert anything into the induction field except the intended production parts to be dried.

Dryer Controls

iDry controls consist of:

- Main disconnect (on left side of control enclosure)
- Emergency Stop switch
- Power pushbutton/indicator (Start)
- Off pushbutton (Stop)
- Operator Interface Terminal (OIT)

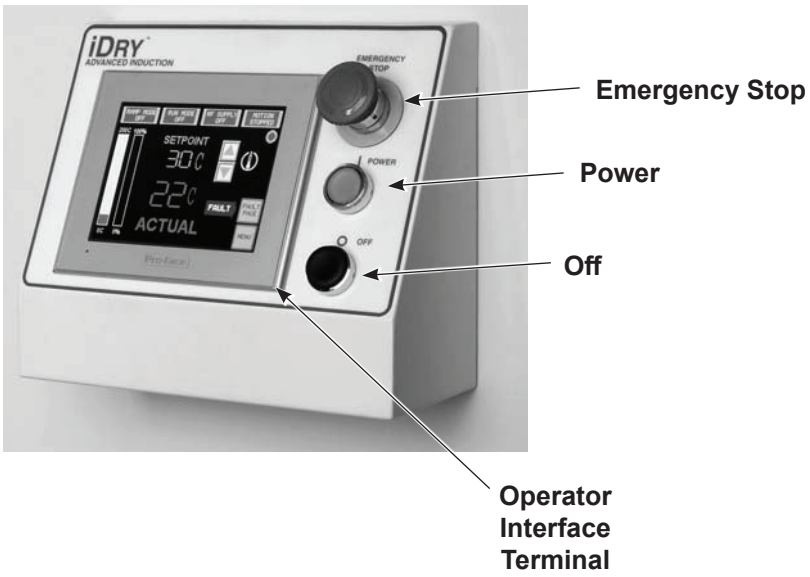


Figure 45 Control Panel

Startup

1. Turn the main disconnect switch to the ON position.
2. Make sure that the:
   - coil tray lid is closed and locked
   - enclosure doors are closed and locked
   - rear access panel is fastened into place
   - Emergency Stop switch is in the released position
3. Press the green POWER pushbutton.

The power indicator lights, and the system runs a self-test.

The Operator Interface displays either the Auto mode screen or the Manual mode screen, depending on the mode in use the last time power was turned off.

NOTE: Refer to the chart at the end of this manual for Celsius to Fahrenheit conversions.

When the self-test is complete:

- If no faults are detected, then the system is ready to operate.
- If a fault occurs during the test, touch the FAULT PAGE button. Refer to Troubleshooting section of this manual to correct the problem.

4. Start your production line and run can ends through the dryer.

The system powers the induction coil and heats the can ends whenever the motion sensor detects moving can ends. When the line stops, the dryer automatically stops heating the ends. It automatically resumes heating when the line restarts.

Auto Mode

The default operating mode is Auto mode. The Auto mode screen automatically appears when the dryer is turned on. In Auto mode, the PID loop continually adjusts the power output to achieve the temperature setpoint.

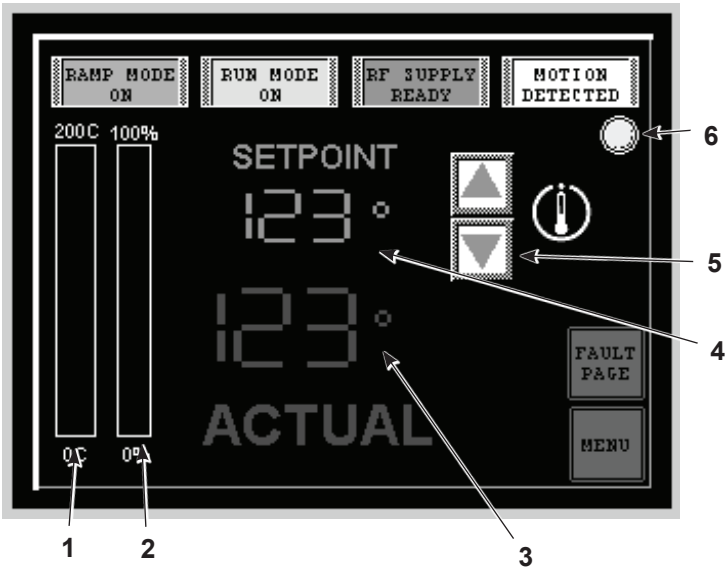


Figure 46 Temperature Controller

1. Actual temperature bar graph
2. Percent power bar graph
3. Actual temperature value
4. Temperature setpoint
5. Up and down buttons
6. Mode indicators

Adjusting the Temperature Setpoint

NOTE: The actual and setpoint temperature can be displayed in either Celsius or Fahrenheit. To change the display, refer to the SETUP section of this manual.

A typical temperature setpoint is 65−70 °C (149−158 °F). The temperature setpoint can be password-protected so it cannot be changed by the operator. Refer to the SETUP section of this manual for setting protection.

The temperature setpoint can be adjusted in two ways:

- Touch the Up or Down buttons to change the setpoint temperature one degree at a time.
- For larger adjustments, touch the setpoint temperature value (5). A numerical keypad will appear. Set a new setpoint and touch the ENT button on the keypad to save the setting.

Manual Mode

The dryer can also be operated in Manual mode. The Manual mode screen can be password protected so that it cannot be accessed. Access is turned off by default. Refer to the SETUP section in this manual for accessing the Manual mode screen.

This screen allows the dryer to operate in open loop mode, with no temperature feedback. The % of power setpoint controls the dryer and must be set to run the dryer in manual mode. If a thermocouple is installed the actual can end temperature will be displayed, however the thermocouple feedback is not required or used to operate the dryer in this mode.

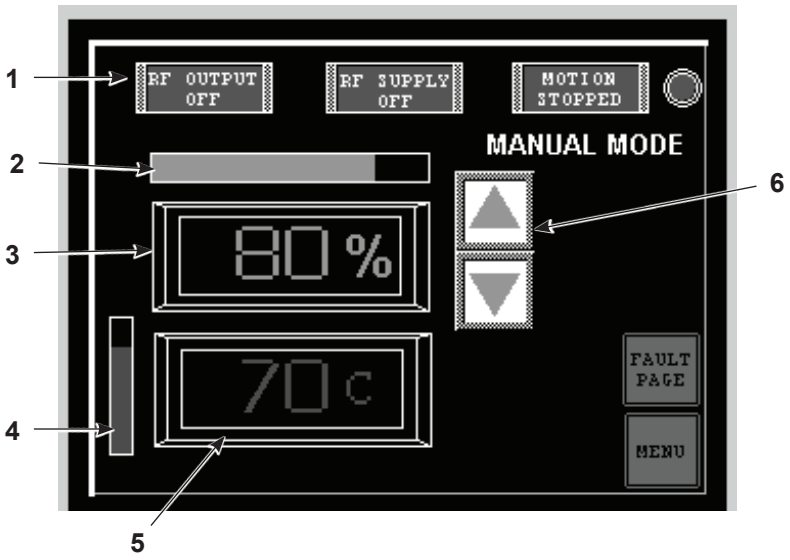


Figure 47 Manual Mode Screen

1. Mode indicators
2. Percent power bar graph
3. Power setpoint
4. Actual temperature bar graph
5. Actual temperature value
6. Up and down buttons

Adjusting the Power Setpoint

NOTE: The actual temperature can be displayed in either Celsius or Fahrenheit. To change the display, refer to the SETUP section of this manual.

The power setpoint can be adjusted in two ways:

- Touch the Up or Down buttons to change the power setpoint one percent at a time.
- For larger adjustments, touch the setpoint value (4). A numerical keypad will appear. Set a new setpoint and touch the ENT button on the keypad to save the setting.

High and Low Alarms

If the difference between the setpoint temperature and the actual temperature rises above the Alarm High deviation or falls below the Alarm Low deviation, the dryer will continue to operate for a preset period of time (Temperature Alarm Delay). If the actual temperature is still above or below the alarm setpoints when the delay timer runs out, a system fault will occur. The dryer will automatically turn off and a fault indicator will appear on the OIT.

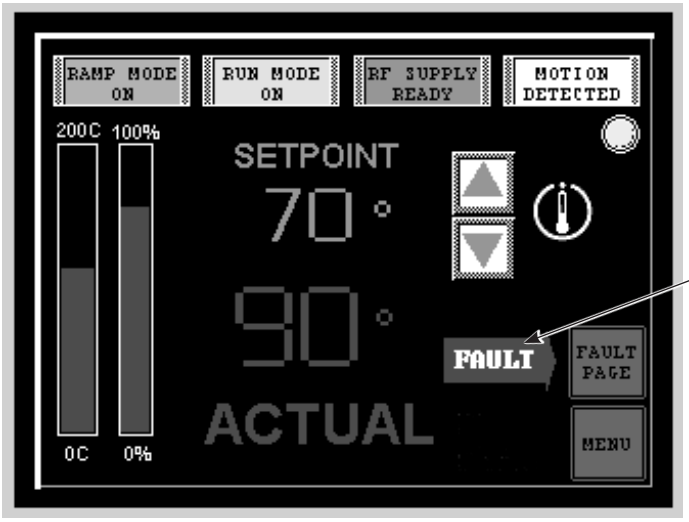


Figure 48 Auto Mode Screen with Fault

Faults

Touch the FAULT PAGE button to open the Fault screen (Figure 49).

System faults are displayed in red. The problem must be corrected and the fault reset before restarting the system. Refer to Troubleshooting for fault descriptions and recommended corrections.

NOTE: If the message THERMOCOUPLE FAULT USE MANUAL MODE appears on the Auto screen, refer to the Troubleshooting section of this manual.

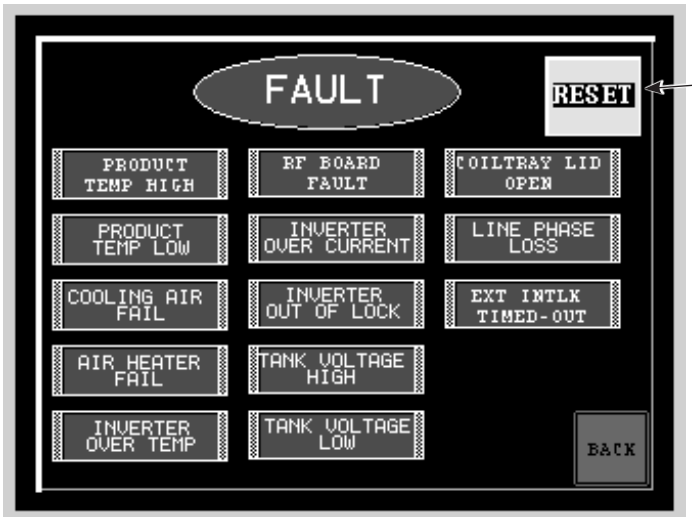


Figure 49 Fault Screen

Navigation Screen

The Navigation screen provides access to the system settings, auto and manual screens, and operator language screen.

Touching the MENU button on any screen will open this screen.

NOTE: Some screens are password-protected. If they are protected they can be opened but the values they display cannot be changed. These screens are normally used for setup and test only.

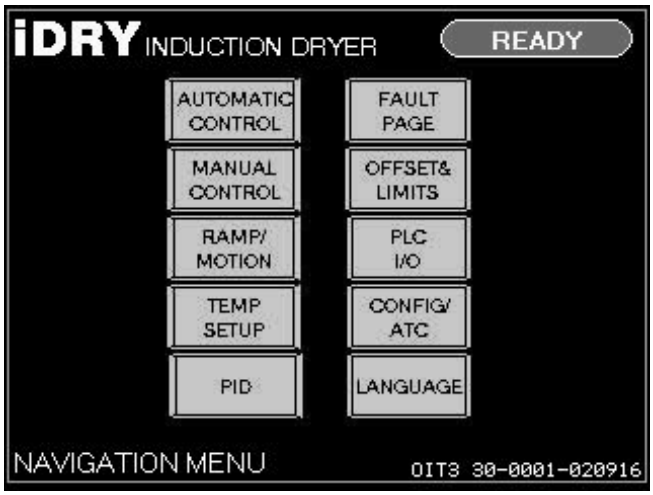


Figure 50 Navigation Screen

Ambient Temperature Compensation

The ambient temperature compensation option allows the dryer to track ambient temperature changes in the plant and automatically adjust the ramp power setting. This is beneficial for plants seeing substantial temperature swings.

It is critical to complete the ramp power setup procedure before you proceed. The initial ramp power setting obtained will be loaded into the setup page for ambient compensation.

Ambient Temperature Compensation Setup

1. From the main Menu / Navigation screen, select the CONFIG button (Password required).
2. See Figure 51. Select the AMBIENT TEMP COMPENSATION button.

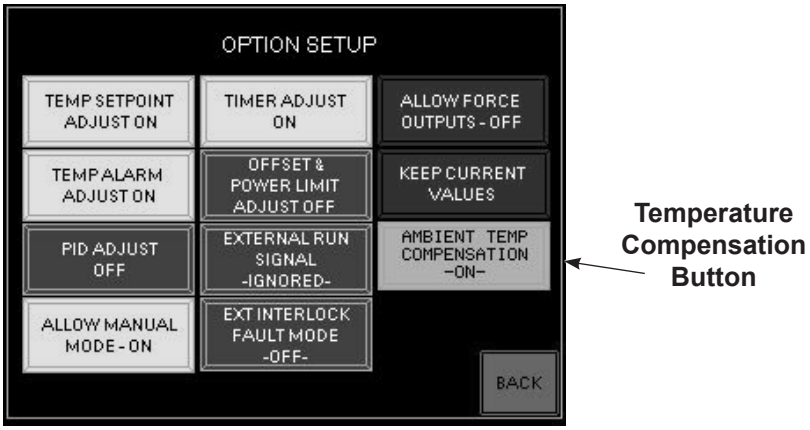


Figure 51 Configuration Screen

3. See Figure 52. On the Setup screen, select the PRODUCT TEMP SETPOINT field and use the screen keypad to adjust the product temperature setting.
4. On the Setup screen, select the RAMP POWER field and use the screen keypad to adjust ramp power. Ramp power setting was obtained by following the procedures in the SETUP section of this manual.
5. Select the ACCEPT SETTINGS button. The Menu / Navigation screen appears.

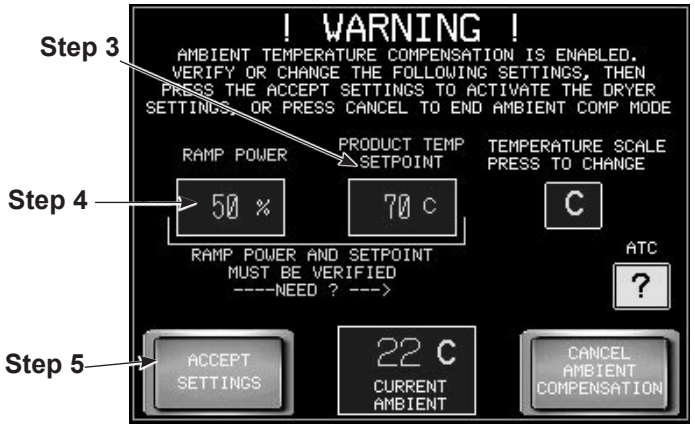


Figure 52 Setup Screen

NOTE: When ambient temperature compensation is ON, the standard iDry Temperature Setup screen will be locked from use. Use the Ambient Compensation Setup screen to change setpoint temperature.

6. See Figure 53 and Figure 54. Verify that the following screens are automatically updated:

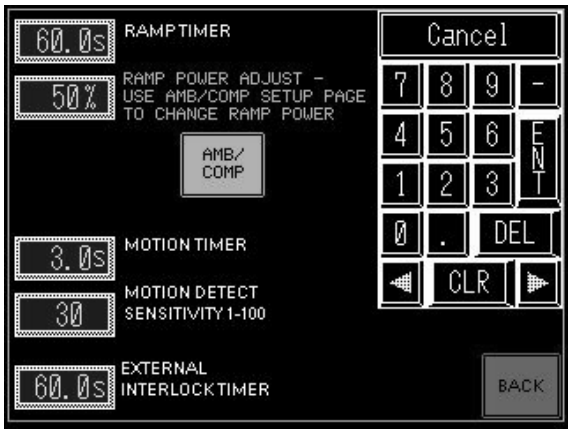


Figure 53 Ramp/Motion Setup with Ambient Compensation Activated

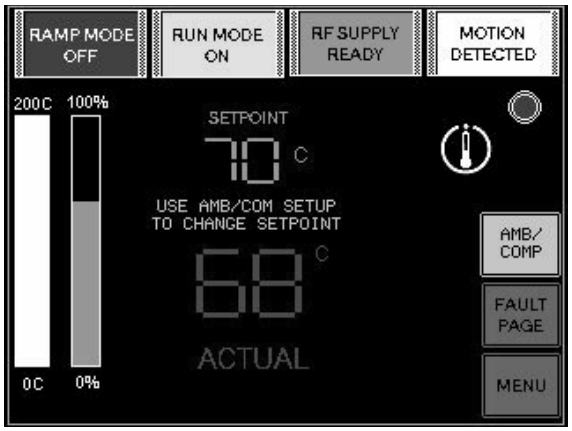


Figure 54 Auto Run Screen with Ambient Compensation Activated

How to Change the Setpoint Temperature from the Auto Run Screen

1. See Figure 55. Select the AMB/COMP button from the Auto Run screen.

See Figure 56.

2. Select the ENTER NEW DATA from the Warning screen.
3. A Pop-up screen will appear. Enter password.
4. Enter information into the PRODUCT TEMP SETPOINT field.
5. Select the COMPENSATION SETTINGS ACCEPTED button.

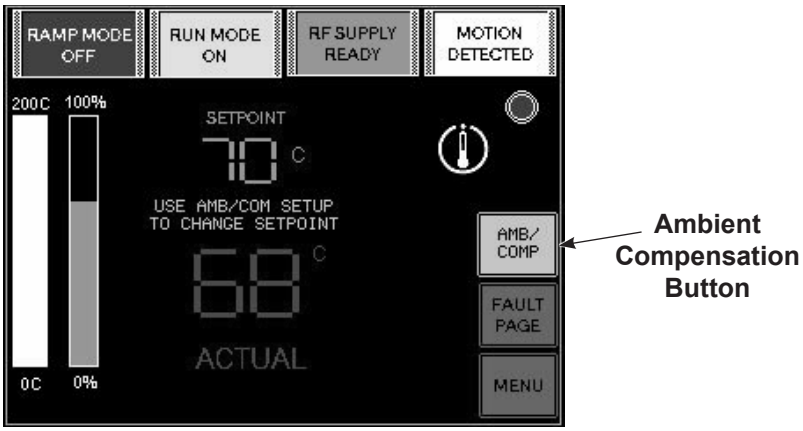


Figure 55 Auto Run Screen with Ambient Compensation Activated

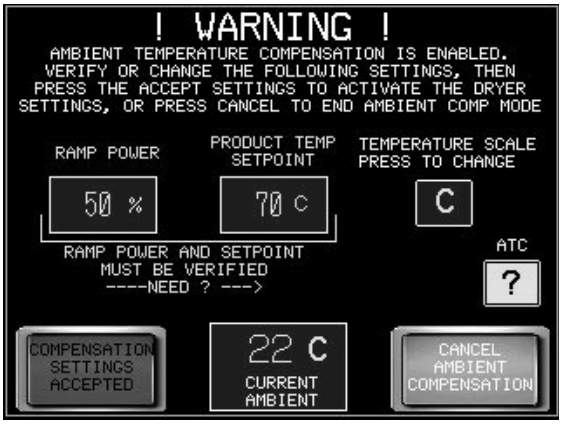


Figure 56 Warning/Temperature Change Screen

Ambient Temperature Comp. Cancellation

Ambient temperature compensation can be turned off at any time.

NOTE: A password is required to perform the following procedure.

1. To cancel temperature compensation mode, select the MENU button to transfer to the Menu/Navigation screen. Then select the CONFIG/ATC button.
2. Enter password if prompted.
3. Select AMBIENT TEMP COMPENSATION button.
4. See Figure 57. Select CANCEL ATC MODE button from the warning screen.

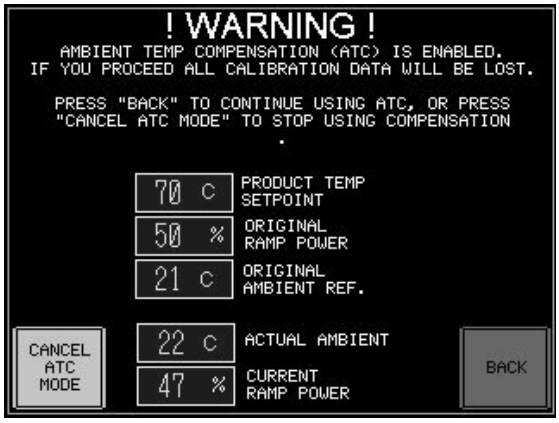


Figure 57 Warning/Cancel ATC Mode Screen

Ambient Comp. Data Monitor

Compensation data can be monitored to compare original presets to current settings.

1. Select the MENU button.
2. See Figure 58. From Menu screen select the PLC / IO button.
3. From PLC / IO screen select the AMB/C DATA Button. The data table appears (Figure 59).

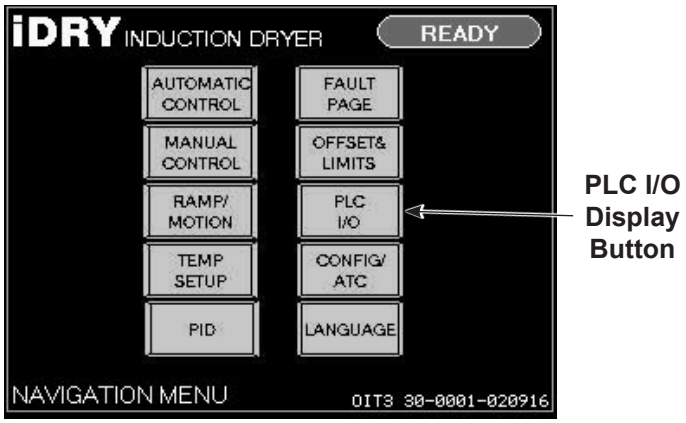


Figure 58 Navigation Screen

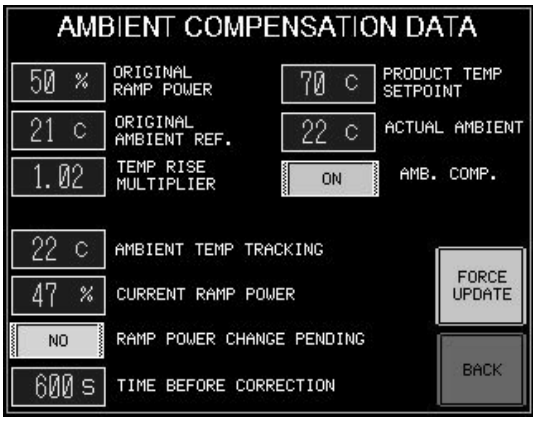


Figure 59 Compensation Data Table

Shutdown

To shut down the dryer, press the OFF pushbutton on the operator panel.

NOTE: While you can stop the dryer by pressing the EMERGENCY STOP button or by switching the main disconnect switch to the OFF position, you should use the OFF pushbutton, which provides a controlled shutdown.

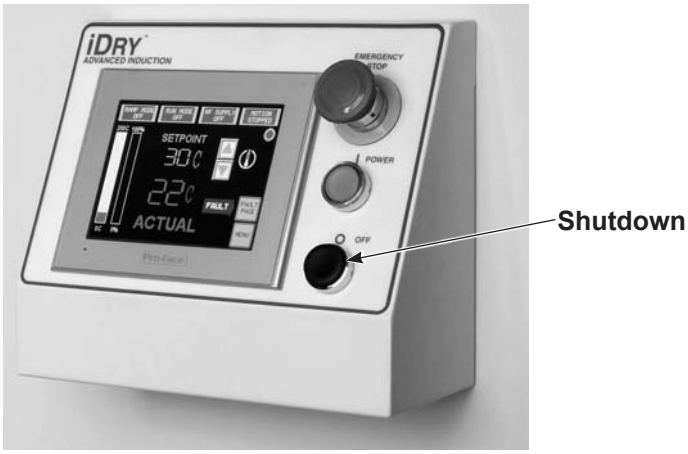


Figure 60 Control Panel

Maintenance and Troubleshooting Requirements

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

WARNING: The control enclosure and coil tray contain high voltages and high power levels. Failure to ensure and employ all appropriate safety measures may result in serious injury or death.

Lock out/Tag out procedures are required prior to opening any of the doors or access panels to the induction dryer. The dryer disconnect does not de-energize all circuits in the dryer.

Always Lock out/Tag out the facility power source providing AC Line power to the dryer.

Always Lock out/Tag out external equipment providing interlock signals to the dryer. These energy sources are independent and may remain energized when the dryer disconnect or facility power source to the dryer is disabled.

Never attempt to operate the induction dryer with a secured panel or door in the open position. Only trained maintenance personnel should conduct any repairs. Please contact Nordson Customer Service for troubleshooting and repairs not covered in this product manual.

Use proper Personal Protective Equipment (PPE) before attempting any service work on the Dryer, especially eye and shock hazard protection.

Individuals performing service tasks should be grounded to the equipment PE/frame using a ground strap or similar device.

Maintenance

Monthly

Table 11 Monthly Maintenance

Item	Procedure
Thermocouple	Check the thermocouple for wear and good contact with the can ends. Replace the thermocouple as needed.
Motion Sensor	Clean the sensor head lens with a clean, soft cloth. When the system is not being used, cover the lens with the attached cover.
Cooling Blower Filter	Inspect the blower filter for dust or obstruction. Replace the filter as needed. If the air flow is reduced, the system electronics can overheat. End drying may also be affected by reduced air flow.
Coil Tray	Periodically inspect the glass coil tube for cleanliness and integrity. Clean the tube with common solvents. Do not to get any solvent on the nylon hubs at the dryer entrance or exit. Some solvents may also have an adverse effect on the dryer's exterior finish. If the glass tube is cracked, replace it with a new tube supplied by Nordson only. Different sizes and wall thicknesses are used depending on the can end size and the application.

Safety Device Testing - Monthly

Table 12 Monthly Testing

Item	Procedure
Emergency Stop	With control power ON (green power indicator is ON) press the Emergency Stop operator button, and verify the green indicator turns OFF, and control power is removed.
Stop Button	With control power ON (green power indicator is ON) press the Stop operator button, and verify the green indicator turns OFF, and control power is removed.
Disconnect Switch	With control power ON (green power indicator is ON) turn the Disconnect handle to the OFF position, and verify the green indicator turns OFF, and control power is removed.
Control Panel Interlock Switch	With the Disconnect in the ON position, Emergency Stop button in the non- safety position, and the coil tray lid closed and locked, OPEN the control panel doors. Press the green power button, and verify the system does not start. Control power will remain off.
Coil Tray Interlock Switch	With the Disconnect in the ON position, Emergency Stop button in the non-safety position (not pressed), and the control panel doors closed and locked, OPEN the coil tray lid. Press the green power button, and verify the system does not start. Control power will remain off.

Quarterly

Table 13 Quarterly Maintenance

Item	Procedure	
Electrical Connections	With power off, check all wiring connections for vibration loosening. Use the following torque ratings for each location:	
	PCB connectors	4 in-lb (0.45 N•m)
	Terminal blocks	5 in-lb (0.57 N•m)
	Circuit breakers	6.5 in-lb (0.73 N•m)
	Rejection fuse holders	15 in-lb (1.7 N•m)
	F1 A/B/C	35 in-lb (4.0 N•m)
	F2 A/B/C	40 in-lb (4.5 N•m)
	CR1 Coil / Aux	6 in-lb (0.68 N•m)
	CR1 Contacts	35 in-lb (2.8 N•m)
	IEC Circuit Relays	10 in-lb (1.13 N•m)
	PLC/HMI	5 in-lb (0.57 N•m)
	Operator Controls	9 in-lb (1.0 N•m)
	Inverter Assembly, HV	35 in-lb (2.8 N•m)
	SSR Control	14 in-lb (1.58 N•m)
	SSR Load	19 in-lb (2.1 N•m)
	3 Phase Bridge	31 in-lb (3.5 N•m)
	Weldment Ground studs	35 in-lb (2.8 N•m)
	Coil, Tank Capacitor, Choke	35 in-lb (2.8 N•m)
Electrical Components	With the power off, check for excessive dust and dirt. Vacuum if necessary.	

Semi-Annually

Table 14 Semi-annual Maintenance

Item	Procedure	
Ground Connections	With the disconnect in the OFF position, and factory power removed from the dryer, check the torque of the termination points of the dryer ground locations as defined in the Equipment Grounding and Bonding section of this manual. Use the following torque ratings for each location:	
	Terminal blocks	5 in-lb (0.57 N•m)
	Weldment Ground studs	35 in-lb (2.82 N•m)
Ground Measurements	With the disconnect in the OFF position, and factor power removed from the dryer, measure each ground path as indicated in the Equipment Grounding and Bonding section of this manual. Measure resistance between any two wired ground connections:	
	Using calibrated & nulled 4 digit precision Ohm Meter	< 0.125 ohms
	Using calibrated 3-1/2 digit general purpose multimeter	< 1.50 ohms

Critical Voltage Measurements

Voltage measurements shown below are critical for proper operation of the Nordson induction dryer. Consult Nordson Engineering if the measured results are outside the specified ranges.

Table 15 Voltage Measurements

Location	Component Description	Voltage Description	Measurement
1	TB110 Distribution Block	Line Voltage after Disconnect	Line Voltage (380 to 480 Vac 3 phase)
2	TB170 Distribution Blocks	24 Vdc Control Power	22.5 Vdc to 25.5 Vdc
3	TB138 Distribution Blocks	24 Vdc Blower/Fan Power	23.0 Vdc to 26.5 Vdc
4	J4 Distribution Board	+/-15 Vdc Control Power	J4 pos (1) to (2): 14.2 Vdc to 15.5 Vdc J4 pos (3) to (2): -14.2 Vdc to -15.5 Vdc

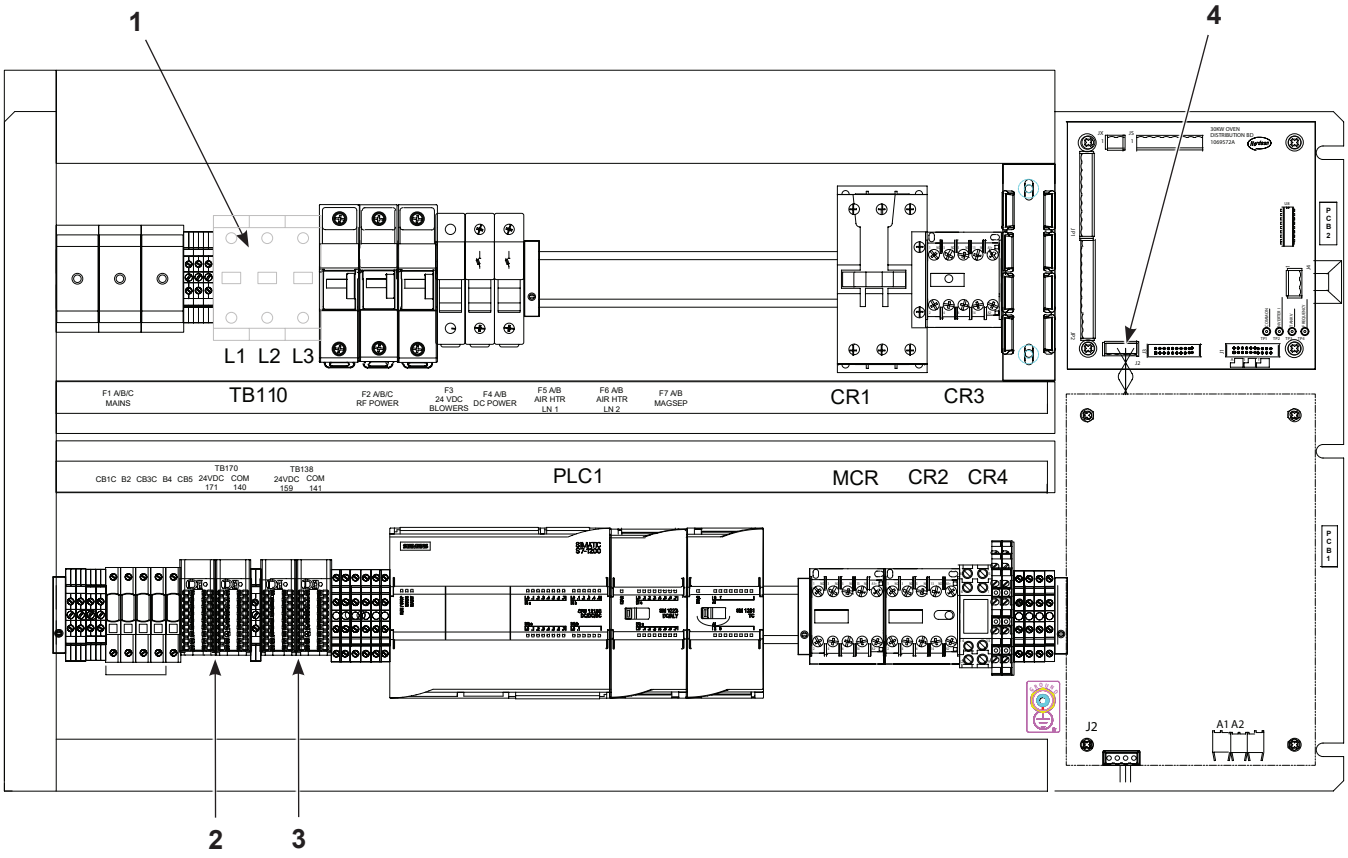


Figure 61 Voltage Measurement Locations

Table 16 Voltage Measurements, continued

Location	Component Description	Voltage Description	Measurement
5	TFR-1 Ferro-Resonant Transformer Assembly	Control Power Transformer	(5A) 380/480 to COM = Line Voltage, 2 Ph (5B) 30 V to 30 V = 32 Vac to 34 Vac 30 V to CT = 16 Vac to 17 Vac * (5C) 48 V to 48 V = 52 Vac to 57 Vac 48 V to CT = 26 Vac to 28.5 Vac *
6	TBL Line Voltage Terminal Block	AC 3 Phase Line Voltage	L1 to L2 = Line Voltage Vac, Phase to Phase L2 to L3 = Line Voltage Vac, Phase to Phase L1 to L3 = Line Voltage Vac, Phase to Phase
7	D1 Diode Module	24 Vdc Blower Power Half Bridge Rectifier	D1:1 to D1:3 = 52 Vac to 57 Vac D1: 2 to (5C)/CT = 26 Vdc to 28.5 Vdc D1: 4 to (5C)/CT = 26 Vdc to 28.5 Vdc
8	Power Regulator Assembly	24 Vdc Bulk Power – Fans 24 Vdc Bulk Power – Controls +/- 15 Vdc Unregulated	(8A) JTA-1 to JTA-3 = 52 Vac to 57 Vac (8A) JTA-1 to JTA-2 = 26 Vac to 28.5 Vac (8A) JTA-2 to JTA-3 = 26 Vac to 28.5vac (8A) JTA-4 to JTA-6 = 32 Vac to 34 Vac (8A) JTA-4 to JTA-5 = 16 Vac to 17 Vac (8A) JTA-5 to JTA-6 = 16 Vac to 17 Vac (8B) JTB-1+ to JTB-2- = 26 Vdc to 28.5 Vdc (8B) JTB-3+ to JTB-2- = 26 Vdc to 28.5 Vdc (8C) JB-1+ to JB-2- = 22 Vdc to 27 Vdc (8D) JC-1+ to JC-2- = 22 Vdc to 27 Vdc (8E) JA-1+ to JA-2- = 15.5 Vdc to 16.5 Vdc (8E) JA-3+ to JA-2- = -15.5 Vdc to -16.5 Vdc
* - Approximate Values			

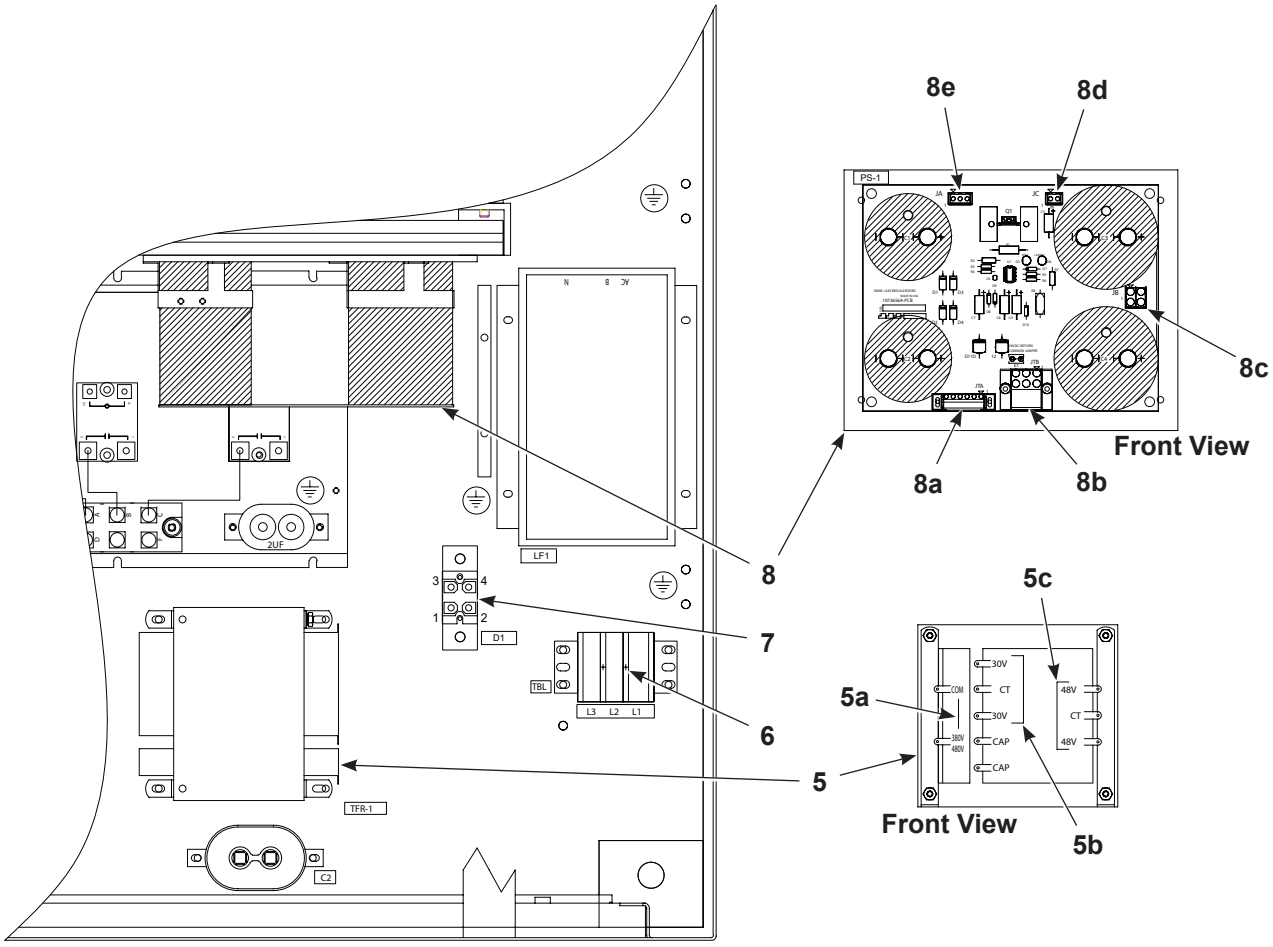
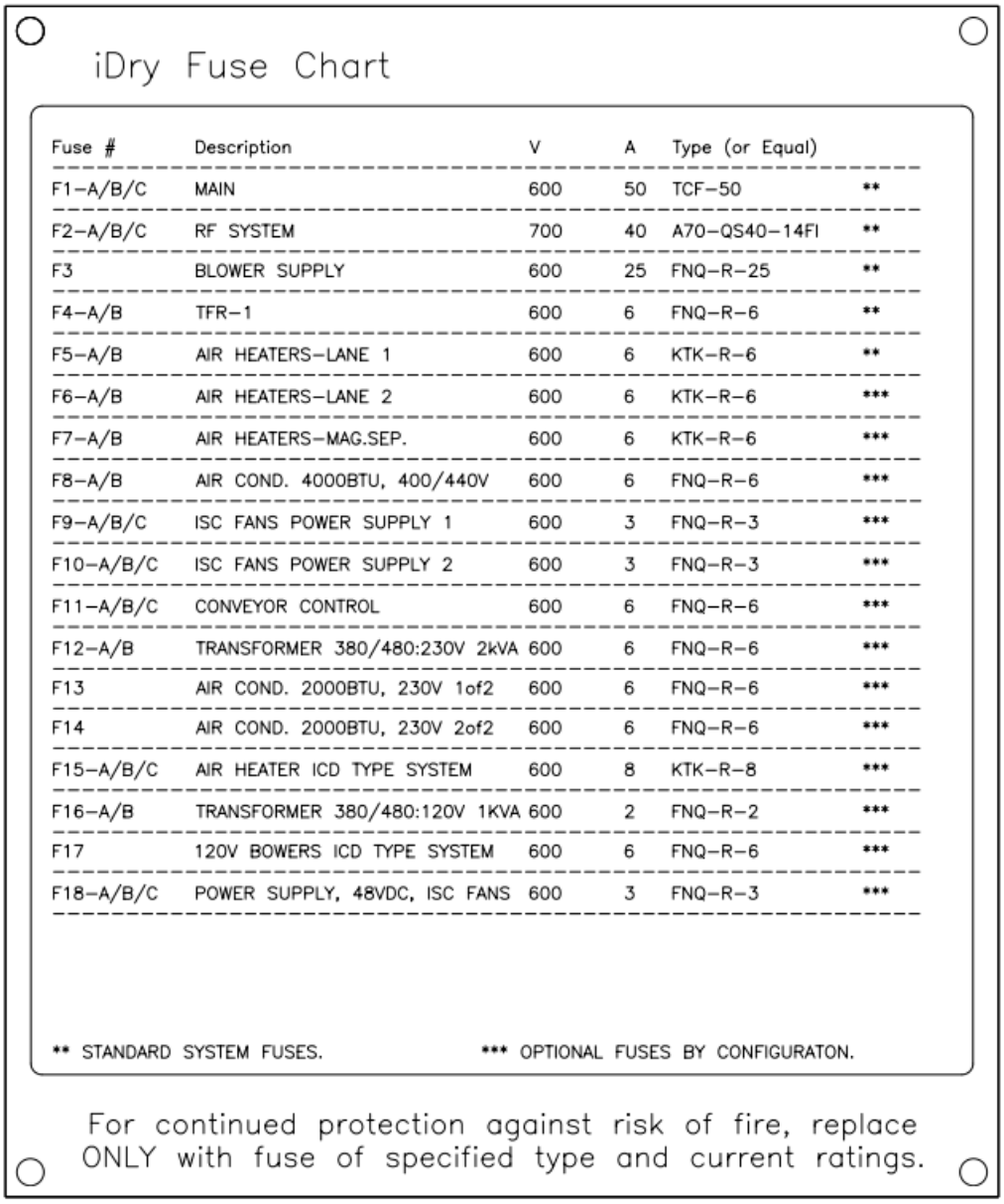


Figure 62 Voltage Measurement Locations, continued

Fuse Chart



iDry Fuse Chart

Fuse #	Description	V	A	Type (or Equal)	
F1–A/B/C	MAIN	600	50	TCF–50	**
F2–A/B/C	RF SYSTEM	700	40	A70–QS40–14FI	**
F3	BLOWER SUPPLY	600	25	FNQ–R–25	**
F4–A/B	TFR–1	600	6	FNQ–R–6	**
F5–A/B	AIR HEATERS–LANE 1	600	6	KTK–R–6	**
F6–A/B	AIR HEATERS–LANE 2	600	6	KTK–R–6	***
F7–A/B	AIR HEATERS–MAG.SEP.	600	6	KTK–R–6	***
F8–A/B	AIR COND. 4000BTU, 400/440V	600	6	FNQ–R–6	***
F9–A/B/C	ISC FANS POWER SUPPLY 1	600	3	FNQ–R–3	***
F10–A/B/C	ISC FANS POWER SUPPLY 2	600	3	FNQ–R–3	***
F11–A/B/C	CONVEYOR CONTROL	600	6	FNQ–R–6	***
F12–A/B	TRANSFORMER 380/480:230V 2kVA	600	6	FNQ–R–6	***
F13	AIR COND. 2000BTU, 230V 1of2	600	6	FNQ–R–6	***
F14	AIR COND. 2000BTU, 230V 2of2	600	6	FNQ–R–6	***
F15–A/B/C	AIR HEATER ICD TYPE SYSTEM	600	8	KTK–R–8	***
F16–A/B	TRANSFORMER 380/480:120V 1KVA	600	2	FNQ–R–2	***
F17	120V BOWERS ICD TYPE SYSTEM	600	6	FNQ–R–6	***
F18–A/B/C	POWER SUPPLY, 48VDC, ISC FANS	600	3	FNQ–R–3	***

** STANDARD SYSTEM FUSES.

*** OPTIONAL FUSES BY CONFIGURATON.

For continued protection against risk of fire, replace ONLY with fuse of specified type and current ratings.

Figure 63 iDry fuses

Troubleshooting

These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

WARNING: The control enclosure and coil tray contain high voltages and high power levels. Failure to ensure and employ all appropriate safety measures may result in serious injury or death.

Lock out/Tag out procedures are required prior to opening any of the doors or access panels to the induction dryer. The dryer disconnect does not de-energize all circuits in the dryer.

Always Lock out/Tag out the facility power source providing AC Line power to the dryer.

Always Lock out/Tag out external equipment providing interlock signals to the dryer. These energy sources are independent and may remain energized when the dryer disconnect or facility power source to the dryer is disabled.

Never attempt to operate the induction dryer with a secured panel or door in the open position. Only trained maintenance personnel should conduct any repairs. Please contact Nordson Customer Service for troubleshooting and repairs not covered in this product manual.

WARNING: Use proper Personal Protective Equipment (PPE) before attempting any service work on the Dryer, especially eye and shock hazard protection.

Individuals performing service tasks should be grounded to the equipment PE/frame using a ground strap or similar device.

WARNING: Never disarm any diagnostic or interlock devices including but not limited to:

- Current sensor
- Overtemperature switches
- Air pressure switch
- Coil tray lid safety switches
- Disarming these devices will void the warranty and may cause personal harm or equipment failure.

NOTE: Use the schematics provided with your system when performing troubleshooting procedures.

Problem	Possible Cause	Corrective Action
1. Dryer will not turn on when POWER button is pressed	Main disconnect off	Turn main disconnect switch to ON position.
	Coil tray lid or control enclosure doors open	Close and lock lid and doors. Adjust door interlock switch.
	EMERGENCY STOP switch pushed in	Pull switch out to release.
	Fuses F1A, 1B, or 1C open	Check the fuse indicators: if black replace the fuses. With power disconnected and locked out at an external breaker or disconnect switch, test the fuses and check for loose connections.
2. Can ends not heating, RUN MODE or RAMP MODE ON	Fuses F1A, 1B, or 1C open	Check the fuse indicators: if black replace the fuses. With power disconnected and locked out at an external breaker or disconnect switch, test the fuses and check for loose connections.
3. Can ends not heating, MOTION LED off	Motion sensor lens dirty	Clean lens with a clean, soft cloth.
	Motion sensor not calibrated	Perform the Laser Motion Sensor Sensitivity Adjustment procedure.
4. Actual temperature reading erratic, over or under setpoint	Thermocouple worn or defective	Replace the thermocouple. Refer to Thermocouple Replacement in the Repair section.
5. COILTRAY LID OPEN fault	Coil tray lid or control enclosure doors open	Close and lock lid and doors. Adjust door interlock switch.
6. AIR HEATER FAIL fault or air heater not heating air flowing into coil tube	Fuses 5A and 5B, 6A and 6B, 7A and 7B open	Test fuses, replace if blown. **NOTE:** Fuses are application specific, some systems do not require fuses 6 and 7.
	Broken heater element or thermal one-shot opened	Replace heater.
	Heater housing thermostat open	Shut down system. Heater will auto-reset on cool down. Check air filter to ensure air flow is not reduced by dirty filters.
7. COOLING AIR FAIL fault	Obstructed or dirty air filter	Remove any obstructions that might impede air flow, replace filter if dirty.
	Fuse F8 open	Test fuse, replace if blown.
	Rear access panel loose or removed	Install access panel properly.
8. Temperature overshoots on startup	Incorrect ramp mode power level adjustment	Adjust setting (Ramp Mode Power Level Adjustment).
9. System stays in Ramp Mode (Never switches to Run Mode ON)	Motion timer set too short to compensate for line jogging and surges or ramp timer set too long	Increase motion timer setting (Motion Timer Setting) or decrease ramp timer setting (Ramp Timer Setting).
10. INVERTER OVER TEMP fault	Rear access panel loose or removed	Install access panel properly.
	Obstructed or dirty air filter	Remove any obstructions that might impede air flow, replace filter if dirty.
	Obstructed air flow under dryer	Remove any obstructions that might impede air flow.

Problem	Possible Cause	Corrective Action
11. PRODUCT TEMP HIGH fault	Ramp power setting too high	Adjust setting (Ramp Mode Power Level Adjustment).
	Motion timer setting cannot compensate for line jogging that keeps system in Ramp mode, overheating cans	Adjust setting (Ramp Timer Setting).
12. PRODUCT TEMP LOW fault	Ramp power setting too low	Adjust setting (Ramp Mode Power Level Adjustment).
	Fuse F1B open	Test fuse, replace if blown.
13. LINE PHASE LOSS fault	Fuse F2A, F2B, F2C open	Test fuses, replace if blown.
14. RF BOARD FAULT	Occurs with one or more of following faults: Inverter Over Current, Tank Voltage High or Low, Inverter Out Of Lock	DISCONNECT AND LOCKOUT POWER BEFORE PROCEEDING! Perform diagnostic test on power processing subsystems.
15. INVERTER OVER CURRENT fault	Excessive current being drawn by tank circuit	DISCONNECT AND LOCKOUT POWER BEFORE PROCEEDING! Perform diagnostic test on power processing subsystems.
16. TANK VOLTAGE HIGH fault	Excessive current draw in power processing circuitry for high frequency generator	DISCONNECT AND LOCKOUT POWER BEFORE PROCEEDING! Perform diagnostic test on power processing subsystems.
17. TANK VOLTAGE LOW fault	Line voltage low or loss of phase	DISCONNECT AND LOCKOUT POWER BEFORE PROCEEDING! Perform diagnostic test on power processing subsystems.
18. INVERTER OUT OF LOCK fault (desynchronized)	Tank circuit failure or incorrect product load	DISCONNECT AND LOCKOUT POWER BEFORE PROCEEDING! Perform diagnostic test on power processing subsystems.
	RF board/driver failure	
19. EXT INTLK TIMED-OUT fault	Customer-supplied run signal present, but motion sensor does not activate	Line jam. No product movement at dryer entrance. Timer setting too short. Adjust timer to allow for line fill. Refer to Ramp Timer Setting and Motion Timer Setting.
20. System shuts down, THERMOCOUPLE FAULT USE MANUAL MODE is displayed	Thermocouple broken	Replace thermocouple. Put unit in manual mode to continue operating until thermocouple can be replaced. Refer to Thermocouple Troubleshooting in this section.

Thermocouple Troubleshooting

The iDry system monitors the integrity of the bi-metal thermocouple. If the thermocouple breaks the system shuts down and displays the error message on the screen below:

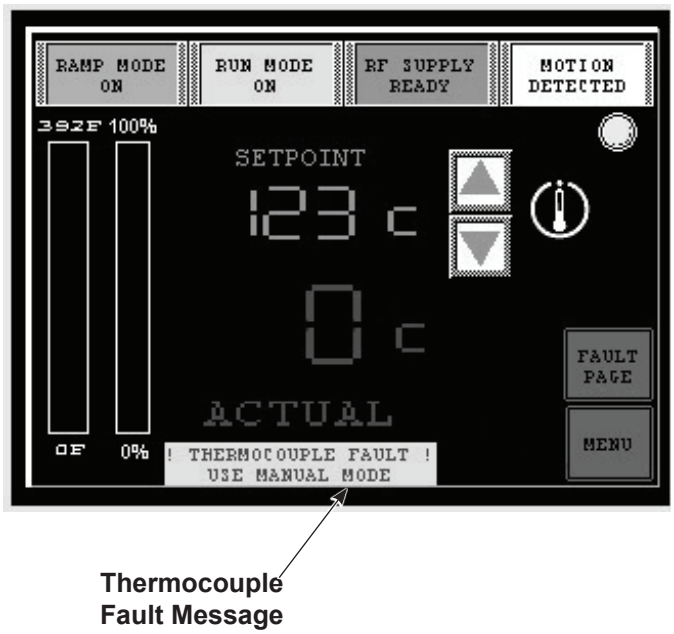


Figure 64 Auto Screen with Thermocouple Fault

Switching to manual mode allows you to override the missing thermocouple input and continue to operate until you can replace the thermocouple.

NOTE: Manual Mode is disabled by default and must be enabled from the password-protected Options screen. Refer to Configuration/ Option Setup for information on enabling Manual Mode.

To switch to manual mode from the Auto mode screen:

1. Touch the MENU button. The Navigation screen opens.
2. Touch the MAN (Manual Control) button. If enabled, the Manual mode screen opens.
3. Enter the desired % of power to run the dryer in manual mode. This should be the same number entered for the Ramp Power setting.

Replace the thermocouple as soon as possible. Running on a fixed percentage of power will not compensate for process variations. The thermocouple fault message will remain on the manual screen until it is replaced.

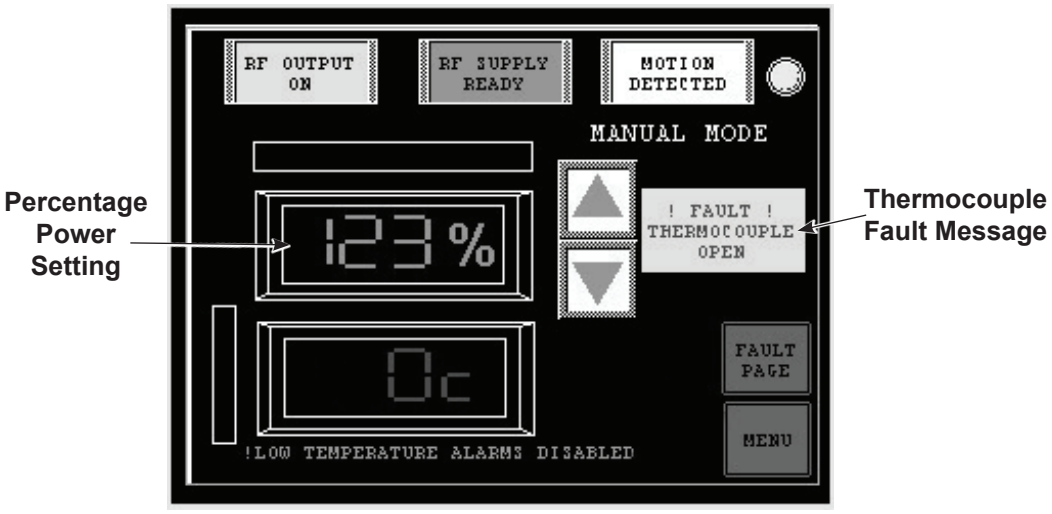


Figure 65 Manual Screen with Thermocouple Fault

Repair

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

WARNING: HIGH VOLTAGE! Disconnect and lockout all power to the system before performing any of the procedures in this section. Failure to observe may result in fatal injury to personnel.

Repair of the dryer consists mainly of replacing damaged or failed components. Most repairs require no more than basic tools. Electrical repairs should always be done by a qualified electrician with knowledge of high voltage systems.

For help with repairs not covered in this manual, contact your Nordson representative.

WARNING: Never disarm any diagnostic device including but not limited to the current sensor, overtemperature switches, air pressure switch, or coil tray lid safety switches. Disarming diagnostic devices will void the warranty and may cause equipment failure.

Coil and Coil Tube Replacement

The coil and coil tube can be replaced separately. They both must be removed to replace one or the other.

1. Shut down the dryer, turn the main disconnect to the OFF position, then disconnect and lockout power at an external disconnect.
2. Unlock and open the coil tray lid.
3. If necessary, remove the screws securing the coil tray rear access panel with a hex wrench. This provides access to the capacitor bank.
4. See Figure 66. Remove the screws (3) securing the exhaust vent housing (1) and air heater (2) from the entrance and exit hubs (4). Move the exhaust vent housing and air heater out of the way.
5. Remove the screws and rubber cushions (5) from the face of the hubs.
6. Disconnect the coil wiring (8) from the bus bar (9) terminals.

CAUTION: There may be multiple coil wire bundles. If only replacing the coil tube, make sure the wires are marked and match the corresponding bus bars.

7. Lift the coil and tube assembly out of the dryer. Get help if needed.
8. Slide the coil tube out of the coil.

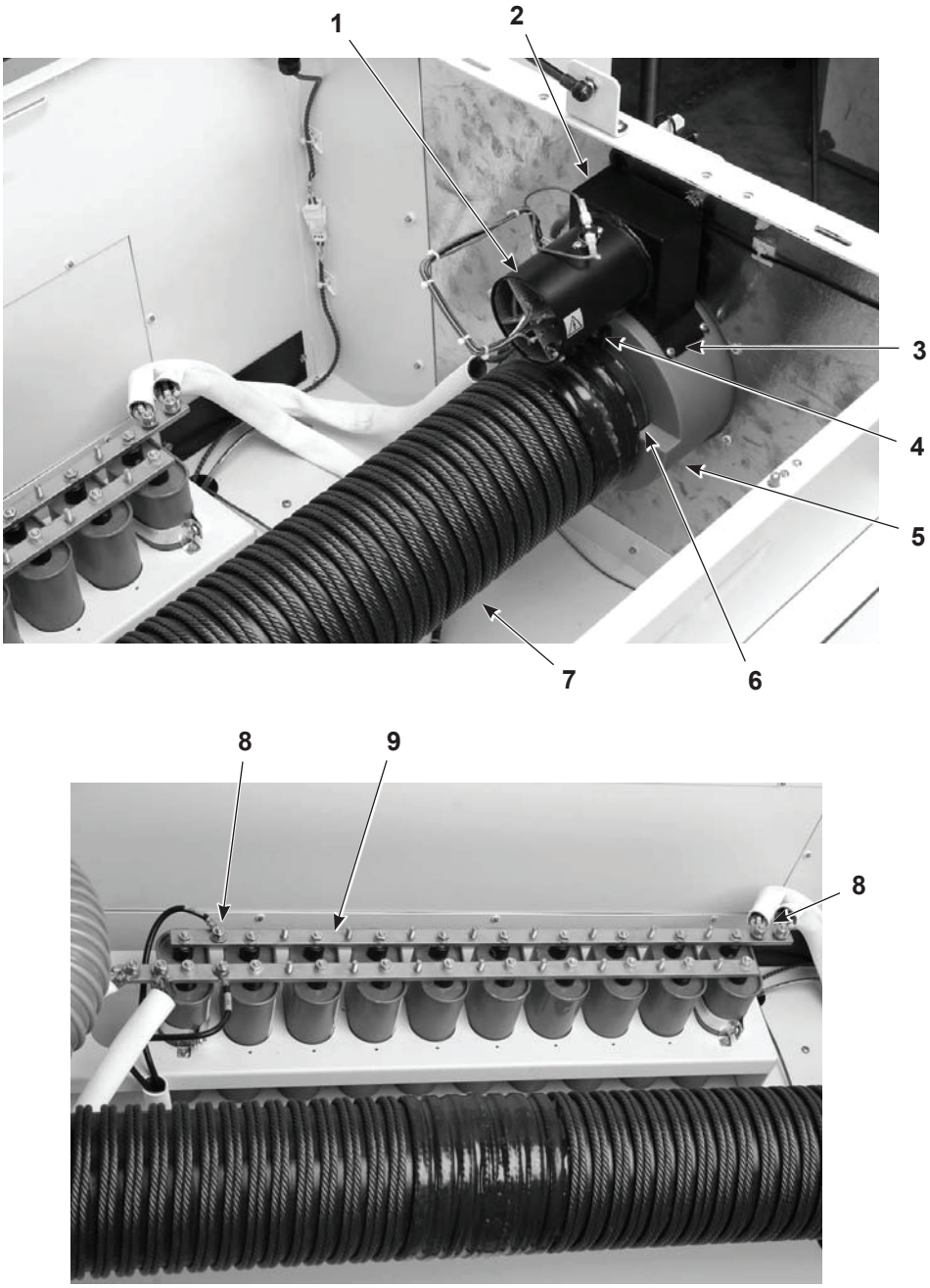


Figure 66 Coil and Tube Replacement (Air Heater at Entrance End shown)

1. Air Heater
2. Vent housings
3. Screws (4 on each hub)
4. Nylon slotted screws
5. Hubs
6. Glass tube (inside coil)
7. Coil
8. Coil connections (typical)
9. Bus bars

9. Unpack the new component(s) and carefully install the glass coil tube inside the coil.
10. Carefully install the coil and tube assembly in the coil tray, positioning the ends of the tube into the hubs. It does not matter which end of the coil is at the entrance or exit unless the coil is marked with the flow direction.
11. Check the clearance between the end of the glass tube and the output hub. There must be 0.8−1.6 mm (0.03−0.06 in.) of clearance to allow for thermal expansion. If this clearance does not exist, shim the hub as follows:
    a. Loosen the six output hub mounting screws and install shim stock between the external hub flange and the sheet metal end plate.
    b. Tighten the hub mounting screws and check the tube clearance.
    c. Trim away any protruding shim stock.
12. Re-install the two cushions and screws into the entrance and exit hubs.
13. Re-install the heater blower and exhaust vents on the entrance and exit hubs.
14. Connect the coil wiring to the terminals on the bus bars according the markings on the insulation jackets and the bus bar numbering. One end of the coil attaches to the first bus bar while the opposite end attaches to the second bus bar.

Thermocouple Replacement

See Figure 67.

1. Loosen the screw (2) in the face of the exit hub.
2. Remove the thermocouple (1) from the exit hub and unplug the thermocouple wiring from the wiring harness.
3. Install a new thermocouple.

NOTE: The bi-metal thermocouple element is also available as a replacement part. If replacing the element only, note the polarity of the element and install the replacement correctly (blue end of element attaches to red wire).

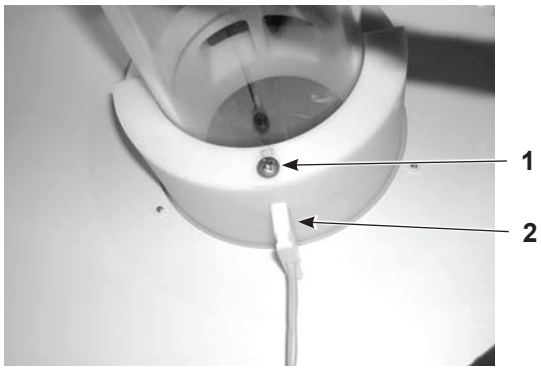


Figure 67 Thermocouple Replacement

Air Filter Replacement

See Figure 68. To replace the filter, pull it out of the right side of the holder.

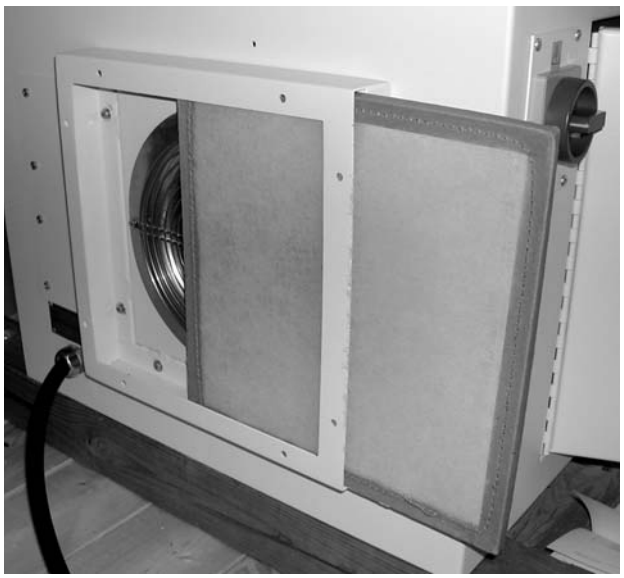


Figure 68 Filter Replacement

Parts

Refer to the Addendum to this manual for spare parts.

Temperature Conversions

Celsius−Fahrenheit Temperature Table

Table 17 Celsius to Fahrenheit

Celsius	Fahrenheit
50	122.0
51	123.8
52	125.6
53	127.4
54	129.2
55	131.0
56	132.8
57	134.6
58	136.4
59	138.2
60	140.0
61	141.8
62	143.6
63	145.4
64	147.2
66	149.0
67	152.6
68	154.4
69	156.2
70	158.0
71	159.8
72	161.6
73	163.4
74	165.2
75	167.0
76	168.8
77	170.6
78	172.4
79	174.2
80	176.0

Conversion Equations

Celsius to Fahrenheit: F = 9/5 * C + 32

Fahrenheit to Celsius: C = 5/9 * F − 32

EU DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: iDry, hDry, and EcoDry Induction Ovens

Models: iDry/hDry Series and EcoDry series

Description: This is an induction oven used for curing liquid or powder coating on the inside seam of a container (can) assembly.

Applicable Directives:

2006/42/EC	Machinery Directive
2014/35/EU	Low Voltage
2014/30/EU	EMC Directive

Standards used for Compliance:

EN12100-1	EN55011
EN60519-1	EN61000-6-2
EN60519-3	EN61000-6-3

Principles:
This product has been manufactured according to good engineering practices.
The product specified conforms to the directive and standards described above.

Quality System DNV – ISO9001 Certified

Date: 08Dec22

_____

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UK DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: iDry, hDry, and EcoDry Induction Ovens

Models: iDry/hDry Series and EcoDry series

Description: This is an induction oven used for curing liquid or powder coating on the inside seam of a container (can) assembly.

Applicable UK Regulations
Supply Machinery Safety Regulations 2008
Electrical Equipment Safety Regulations 2016
Electromagnetic Compatibility Regulations 2016

Standards used for Compliance:

EN12100-1	EN55011
EN60519-1	EN61000-6-2
EN60519-3	EN61000-6-3

Principles:
This product has been manufactured according to good engineering practice.
The product specified conforms to the directive and standards described above.

Quality System DNV – ISO9001 Certified

Date: 08Dec22

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