nyle Dry Kilns

User Manual

L200PRO

www.nyle.com - (800) 777-6953 - kilnsales@nyle.com

Table of Contents

⚠WARNING Read through entire manual before installing, operating, or servicing this unit. Failure to follow any steps or guidelines could result in personal injury, death, destruction of property or may cause the unit to become inoperable. These are the "original Instructions for this unit." This manual must be kept with the unit at all times.

Safety Guidelines

Precautions

Do not operate if the unit or any of its parts:

- Have been exposed to fire.
- Have been submerged in or exposed to excessive water.
- Has significant interior or exterior damage.

If any of the above are suspected make sure to have your unit serviced by a qualified professional before continuing operation.

**The unit is rated for an ambient temp of 10-40° C, 80 RH % at a maximum 200 meters.*

Electrical Grounding

The unit must be grounded.

Failure to ground the unit will result in unreliable performance or an inoperative unit. You can ground the unit by connecting the unit to a grounded metal, permanent wiring system. Make sure the unit is in accordance with national & local electrical codes. If you don't know the building codes in your area or need more information, please contact your municipal office.

**Normally airborne noise is rated at 77 dB.*

⚠WARNING Supervision!

- The appliance is not to be used by person (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Supervised children are not to play with the appliance.

⚠WARNING Refrigerant!

- Unit contains R134a refrigerant under high pressure. Refrigerant must be recovered to relieve pressure before servicing.
- **DO NOT** use unapproved refrigerants, substitutes or additives.
- Failure to abide by these guidelines can result in death, injury and property damages.
- Contact Nyle's service department for more information on refrigerant options.

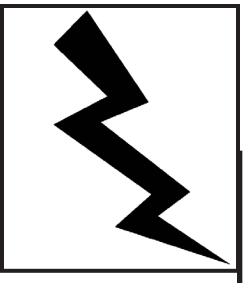
⚠WARNING

High Temperatures!

- Kiln chamber can reach internal temperatures of over 90°F. working in these temperatures can cause heat stroke and minor burns.
- Pregnant women, children, the elderly and those with significant health issues are at higher risk of heat stroke and must be supervised in high temperatures.
- Kiln operators should check for temperature and take proper safety precautions before entering the kiln chamber.

⚠WARNING

Electrical Shock!

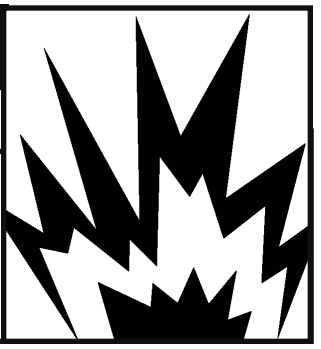


- Turn off power to unit before service.
- Make sure wires are labeled before disconnecting.
- Test unit after reconnecting wires.
- Failure to do the above could result in death or injury.

⚠WARNING

Explosion Hazard!

- DO NOT purge or pressurize this system with oxygen to test for leakage. Using oxygen may cause explosive reaction.



Your Kiln

How your Dehumidification Kiln Works

Thank you for purchasing a Nyle Dehumidification Kiln and taking the first step towards making the lumber industry cleaner and more efficient! Years of development, innovation & the highest quality materials have gone into building your kiln. It's our dedication to efficiency that sets Nyle kilns apart from the rest, making your system among the most efficient options on the market.

During kiln drying, moisture from green lumber is evaporated into the air increasing the humidity inside the chamber. The lumber can't continue to dry if the air becomes over-saturated therefore the moisture must be periodically removed from the chamber. In a conventional kiln moisture would be expelled through venting. Venting causes a significant loss of heat resulting in a waste of energy to bring the kiln back up to temperature.

Instead of venting, Nyle Dehumidification Kilns utilize a refrigeration system that condenses the excess moisture. This moisture is then drained off retaining the existing heat energy. After the moisture is removed and heat is reintroduced to the dry air it is pumped back into the kiln chamber to start the process over. Unlike conventional kilns the heater in your Nyle Kiln is only used during the initial warm up and sometimes when temperature increases are desired during the cycle, saving you time and money.

While Nyle kilns primarily use dehumidification rather than venting, a Vent System is included to provide additional control over internal kiln temperatures. If the internal kiln temperature exceeds what's required, these vents can be opened to remove excess heat and bring the temperature back to where it needs to be.

Finally Nyle offers a wide variety of upgrades and accessories to enhance your drying experience. See the upgrades and accessories section on page 34 for more information. By purchasing a Nyle Kiln you have the support of Nyle's service team, the very same professionals that built and tested your unit. Enjoy your new system!

Getting Started

Please read through carefully as some options may not apply.

Floors

Concrete floors with insulation installed underneath is recommended for best results. However if the kiln is going to be on an existing concrete floor, the insulation may be omitted. Concrete must not extend beyond the kiln walls.

Wood floors may be used but must be built to construction guidelines (see Pg 3)

Ceilings

If the kiln chamber is a freestanding outside building, the attic space must be well ventilated through the eaves. This is done to avoid any moisture buildup in this space, which will condense on the cold roof & drip onto the insulation.

An interior kiln can have the ceiling insulation open to the atmosphere.

Ceilings must be built to construction guidelines. (Pg 3)

Doors

At the front of the kiln chamber install bay/loading doors with at least two sides hinges and a center door latch to close (recommended). Top hinged or a lift off doors are also acceptable.

At least one access door should be installed in the back of the chamber to allow for service of the dehumidifier and/or lumber monitoring.

All installed doors must:

- Be built to construction guidelines. However they may be lightened by increasing the stud spacing and using 3/8" plywood. The lighter weight will reduce the load on the hinges
- Have a vapor barrier.
- Have gaskets wherever the door meets the kiln; this will give a good, airtight fit.
- Have a scraper type weather strip to reduce air leakage if door sill is not present.
- Close tightly against the gasket using turnbuckles, tarp straps, lag studs with wing nut, etc.

Remember: There will be considerable expansion and contraction during kiln use so it is imperative to plan your kiln door construction accordingly.

While outside electronic moisture meters can be used to avoid entering the kiln, during the drying cycle, Nyle strongly recommends regular checks inside the kiln to visually inspect the surface or ends for checks, mold, stain as well as testing with a hand held meter.

Construction Guidelines

Please reference Chamber Plans for more information on construction.

Step 1: Build all walls, ceilings, and floors with a 2" x 4" framework using blue or pink Styrofoam (extruded polystyrene) friction fitted between the studs.

Step 2: Cover the interior face of the studs with a 1" layer of Celotex Thermax (for better results overlap two ½" layers).

Celotex Thermax is foil faced polyisocyanurate (urethane) board, which is orange or yellow in color and is available in 4' x 8' sheets of various thicknesses. Celotex Thermax is a trade name, similar products under other trade names are acceptable.

Note: If you want to use spray foam insulation, only use urethane based spray foam applied at 2.2lb/cu ft. Fiberglass is never recommended.

Step 3: Caulk joints and nail heads with a high temperature silicone (optional: apply aluminum tape over silicone)

Step 4: Cover Thermax with one or two layers of 6 mil polyethylene, then enclose with ½" CDX or marine grade plywood.

Step 5: Coat CDX interior surface with "mobile home or metal roofing aluminum paint"

Note: Paint is an asphalt based coating with powdered aluminum and fiber for strength, available in most hardware stores. Re-coat as necessary every year.

Step 6: Finish exterior walls to suit your tastes, but avoid galvanized steel or other ferrous sidings.

Once you have completed construction of the kiln chamber install the following air deflectors and baffles to control the airflow within the chamber.

Baffles and Deflectors

Do not underestimate the effect of baffling. Correct baffling will result in faster and more even drying. The benefits more than offset the extra time & effort to correctly place the baffles.

- **Corner deflector:** typically made of plywood are used to help turn the airflow.
- **Top Baffle:** Hinged baffle that falls from the fan wall to the top of the load used to compensate for different load sizes, & allow for shrinkage of the board pile.
- **Side Baffle:** Baffle that closes in the open space when lumber that does not fill the entire width. This baffle can be fixed or portable.

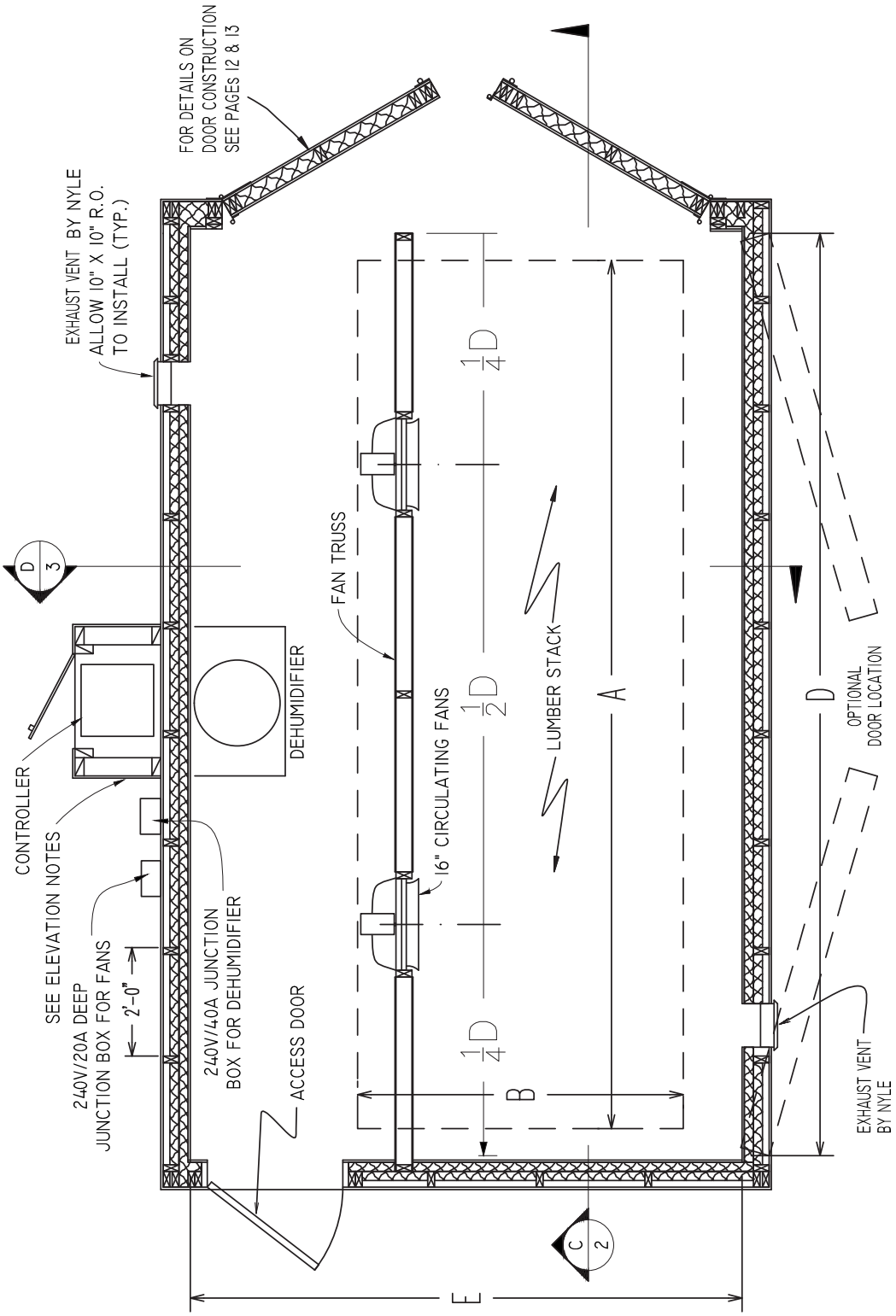
Please reference pg 13 for more information on deflectors and baffles.

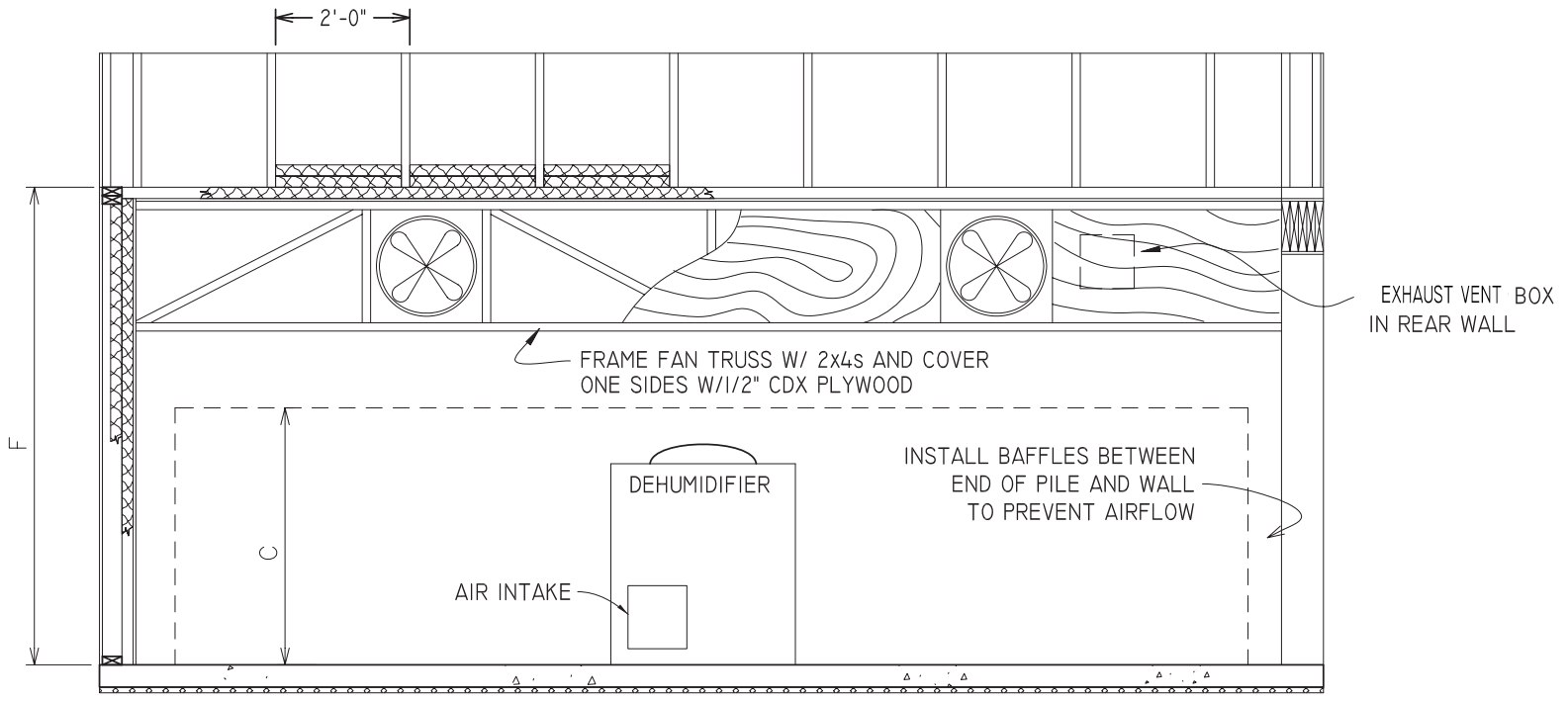
Power Vent

Nyle's Power Vent kit is comprised of a powered exhaust and manual intake. The powered exhaust is to be secured on the negative pressure side of the kiln (behind the fans) to the inside of the kiln wall the fan side facing the exterior (see figure below).

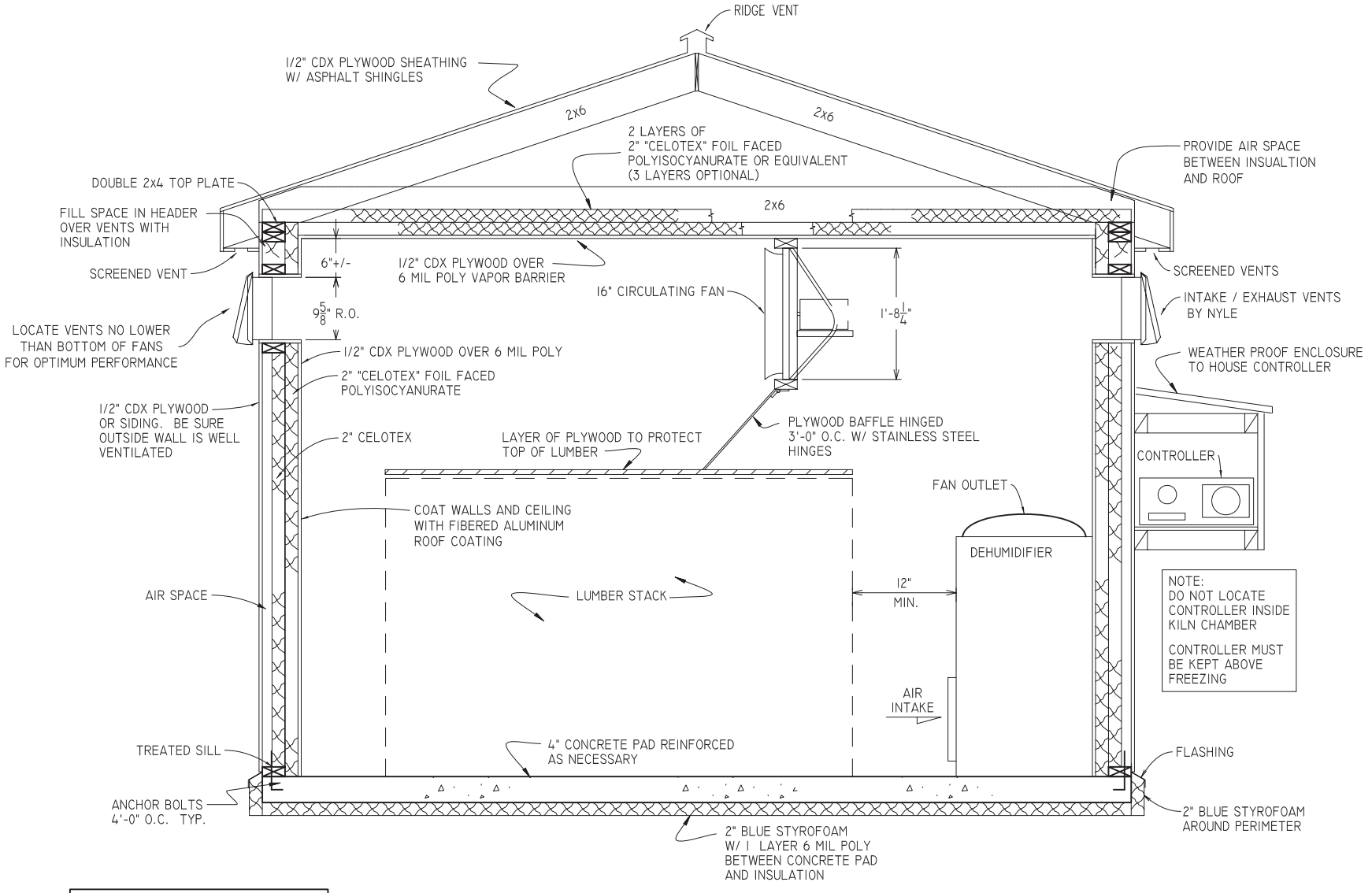
The manual intake is to be secured on the positive side of the kiln (in front of the fans) with the louvers opening into the kiln. (See chamber plans on next page)

Do It Yourself Chamber Plans



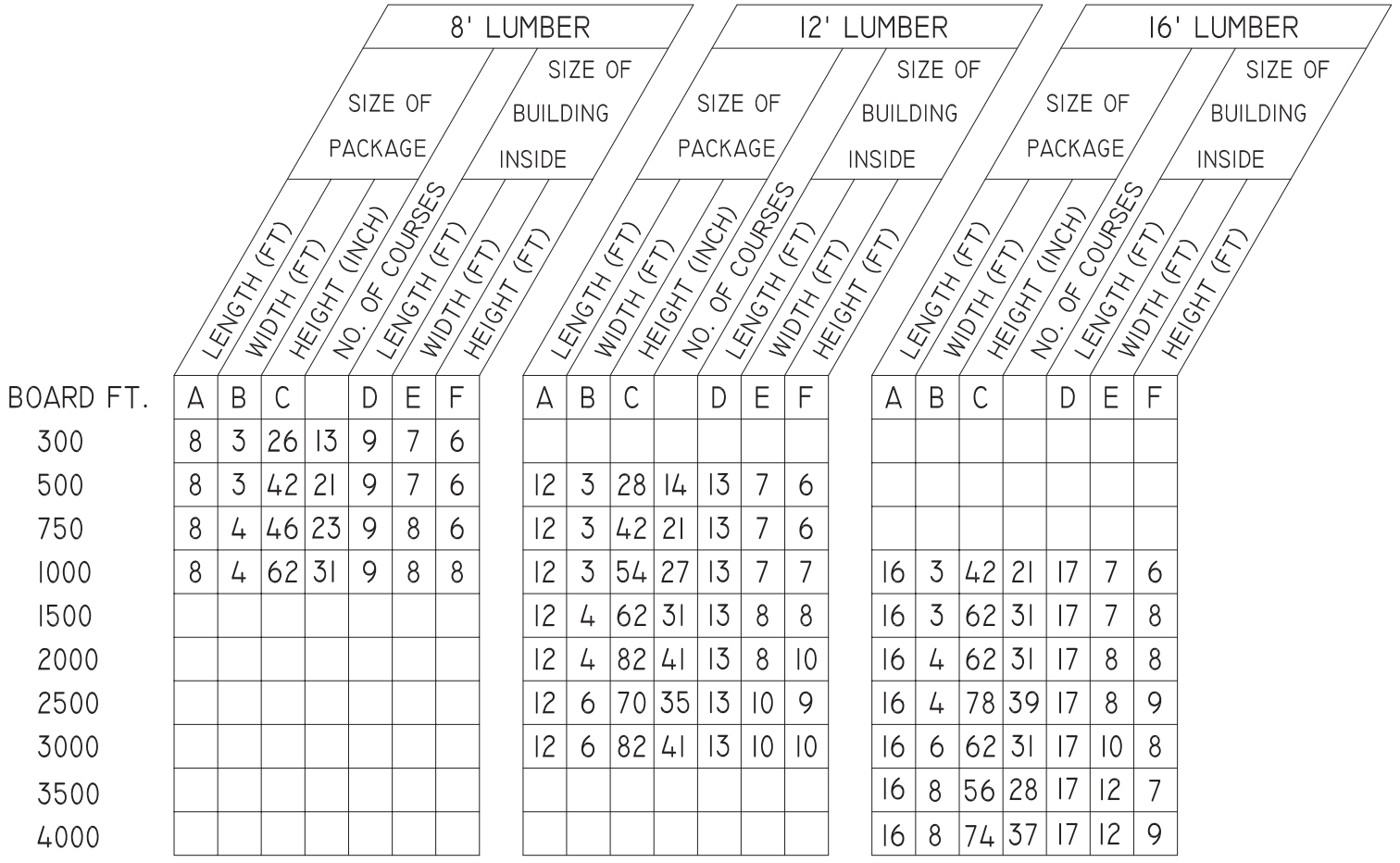


SECTION THROUGH KILN CHAMBER C/6



NOTE:
COAT INTERIOR OF KILN WITH
KILN COATING OR FIBERED, ALUMINIZED,
ASPHALT BASED METAL ROOF COATING
TO PREVENT DETERIORATION

SECTION THROUGH KILN CHAMBER D/6

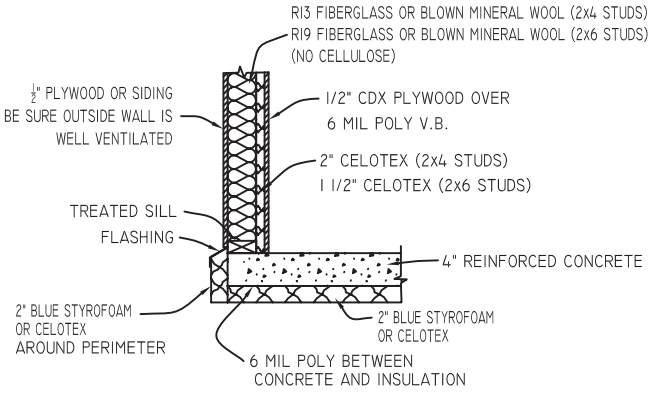


BOARD FT.	8' LUMBER SIZE OF PACKAGE LENGTH (FT) A	WIDTH (FT) B	HEIGHT (INCH) C	NO. OF COURSES	8' LUMBER SIZE OF BUILDING INSIDE LENGTH (FT) D	WIDTH (FT) E	HEIGHT (FT) F	12' LUMBER SIZE OF PACKAGE LENGTH (FT) A	WIDTH (FT) B	HEIGHT (INCH) C	NO. OF COURSES	12' LUMBER SIZE OF BUILDING INSIDE LENGTH (FT) D	WIDTH (FT) E	HEIGHT (FT) F	16' LUMBER SIZE OF PACKAGE LENGTH (FT) A	WIDTH (FT) B	HEIGHT (INCH) C	NO. OF COURSES	16' LUMBER SIZE OF BUILDING INSIDE LENGTH (FT) D	WIDTH (FT) E	HEIGHT (FT) F
300	8	3	26	13	9	7	6														
500	8	3	42	21	9	7	6	12	3	28	14	13	7	6							
750	8	4	46	23	9	8	6	12	3	42	21	13	7	6							
1000	8	4	62	31	9	8	8	12	3	54	27	13	7	7	16	3	42	21	17	7	6
1500								12	4	62	31	13	8	8	16	3	62	31	17	7	8
2000								12	4	82	41	13	8	10	16	4	62	31	17	8	8
2500								12	6	70	35	13	10	9	16	4	78	39	17	8	9
3000								12	6	82	41	13	10	10	16	6	62	31	17	10	8
3500															16	8	56	28	17	12	7
4000															16	8	74	37	17	12	9

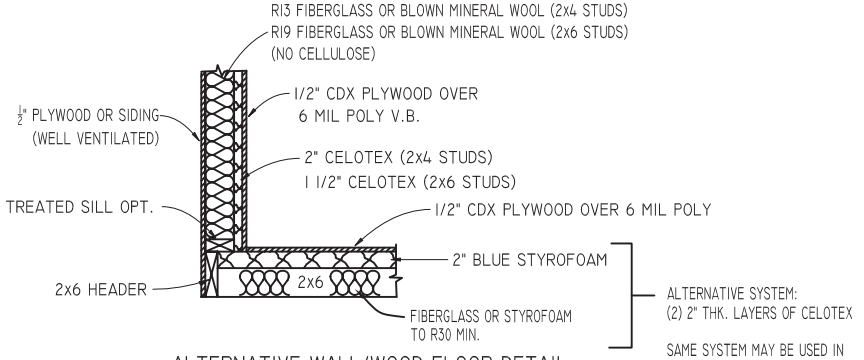
WIDTH DIMENSIONS ARE MINIMUM ACCEPTABLE.
COURSES BASED ON NOMINAL 1" ROUGHSAWN LUMBER ON 3/4" STICKERS.

BUILDING DIMENSIONS ARE FOR OPEN SPACE INSIDE INSULATION.

ADDITIONAL INTERIOR CLEARANCE IS REQUIRED FOR USE OF A KILN CART.

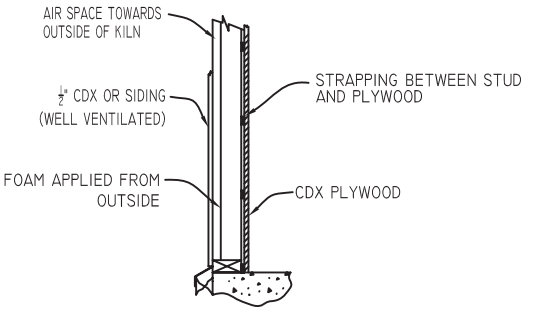


ALTERNATIVE WALL/CONCRETE FLOOR DETAIL



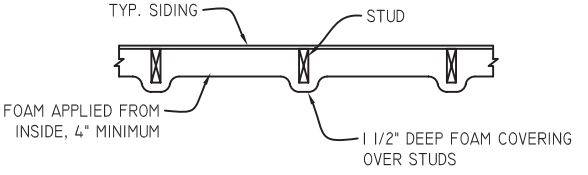
ALTERNATIVE WALL/WOOD FLOOR DETAIL

NOTE:
ALTERNATIVE CONSTRUCTION METHODS MAY BE USED IN WALLS AND CEILING.



ALTERNATIVE STUD WALL SECTION
SPRAYED URETHANE FOAM

URETHANE FOAM MUST BE APPLIED IN MULTIPLE APPLICATIONS AT A MAXIMUM DEPTH OF 1 1/2" PER COAT. A MINIMUM OF 4" OF FOAM IS REQUIRED AT A DENSITY OF 2.2 LBS PER CUBIC FOOT TO MEET THE R30 INSULATION REQUIREMENT.



ALTERNATIVE STUD WALL SECTION

NOTE:

1) POLYISOCYANURATE INSULATION BOARD (CELOTEX, THERMAX, OR TUFF-R) IS STRONGLY RECOMMENDED FOR INTERIOR INSULATION SHEATHING, 1" IS SHOWN BUT THICKER IS PREFERRED ESPECIALLY IF USING FIBERGLASS OR BLOWN MINERAL WOOL INSULATION.

2) DO NOT USE CELLULOSE OR EXPANDED POLYSTYRENE (WHITE STYROFOAM) INSULATION IN THE DRYING KILN

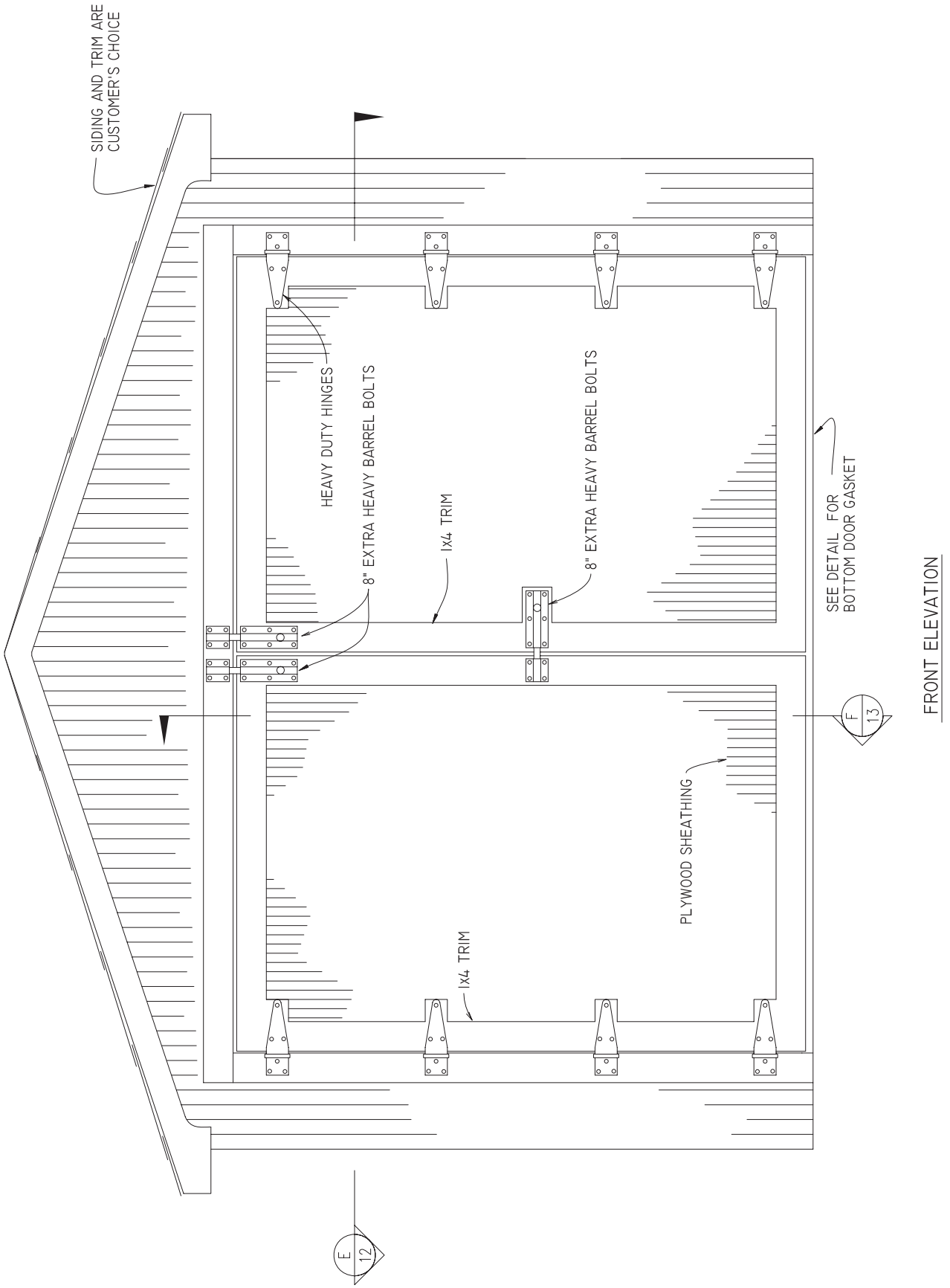
3) ALL INTERIOR FASTENERS SHOULD BE STAINLESS STEEL.

4) INSTALL INTAKE/EXHAUST VENTS AT CONVENIENT ELEVATION TO ALLOW FOR MANUAL ADJUSTMENT.

5) POWERED VENT SYSTEM AVAILABLE, CONTACT NYLE. FIT SAME ROUGH OPENINGS.

6) COAT INTERIOR WALL AND CEILING SURFACES WITH FIBERED ALUMINUM ROOF COATING.

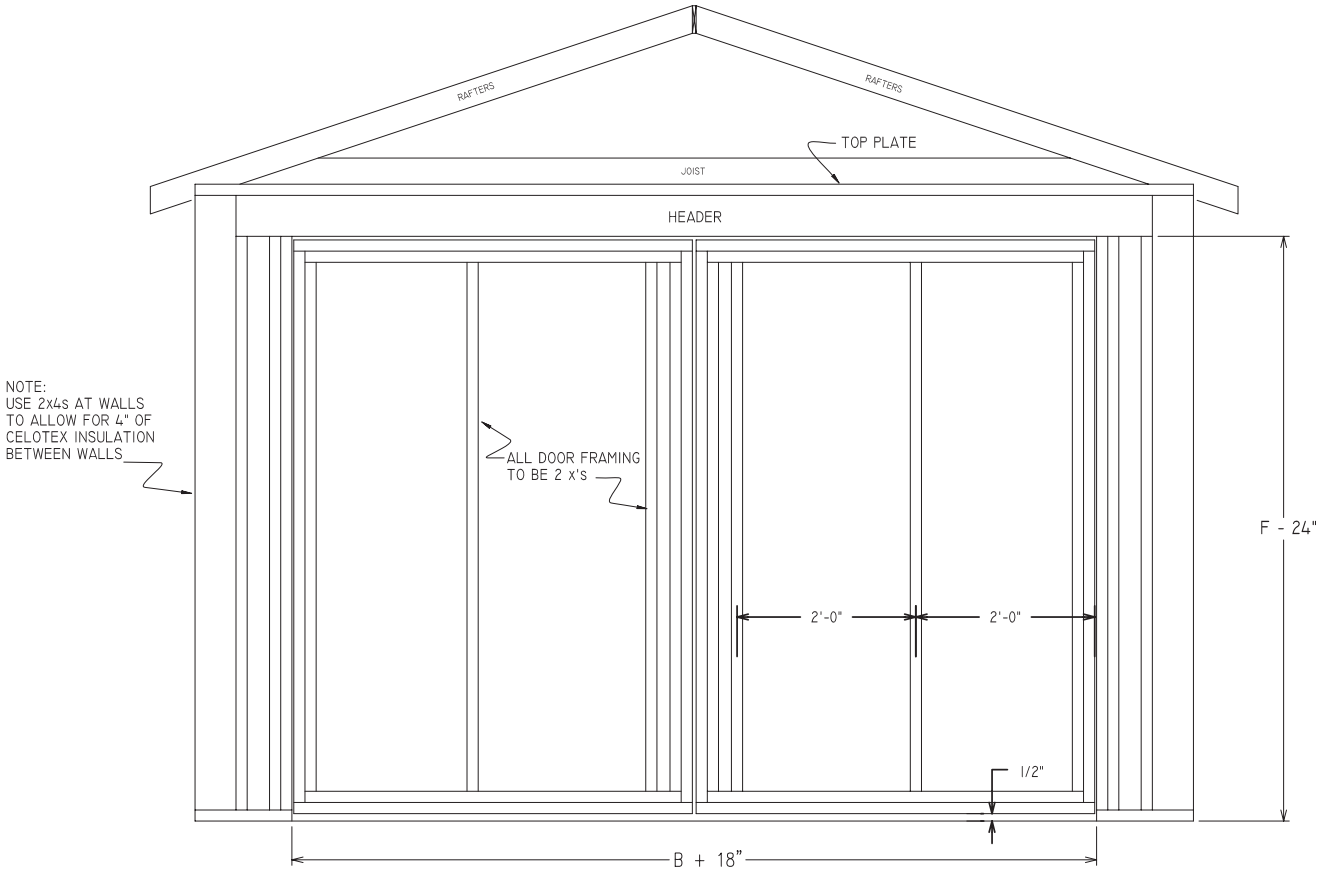
Front Elevation



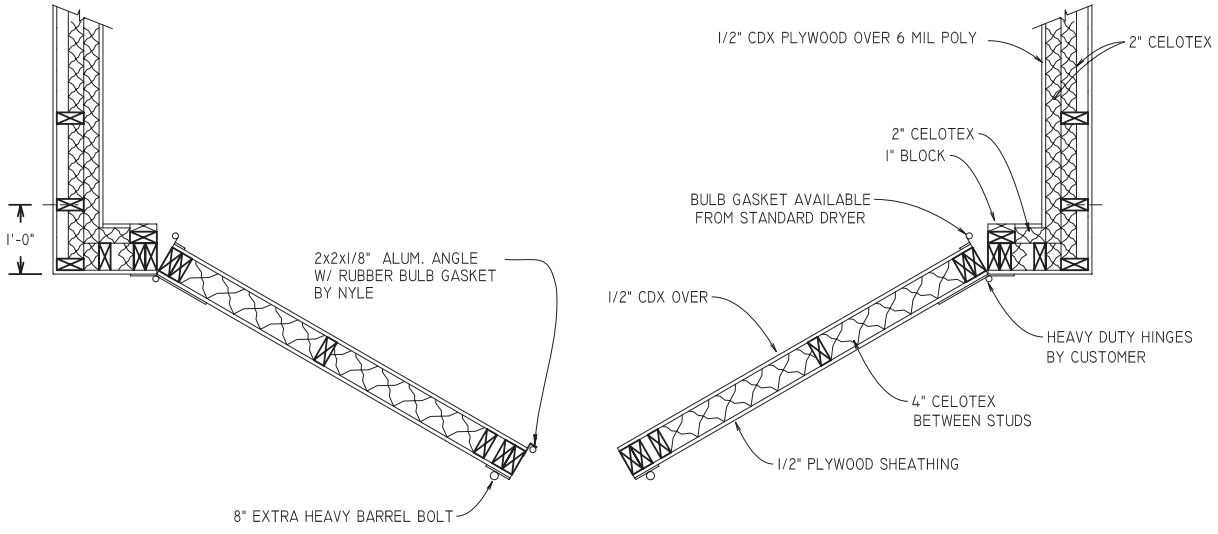
FRONT ELEVATION

NOTE: DOOR GASKET KITS ARE AVAILABLE FROM NYLE AS AN OPTION.

Door Framing

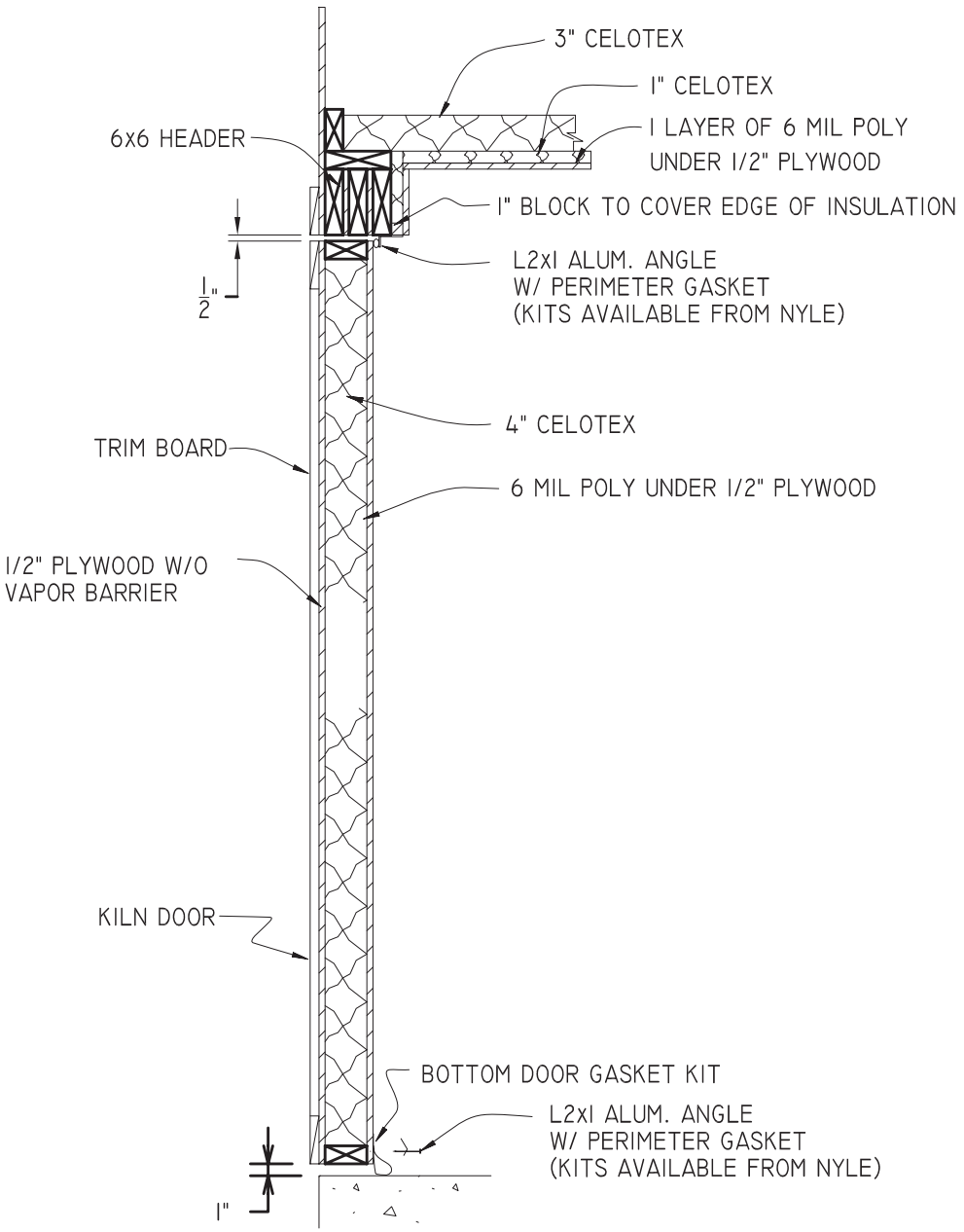


FRONT WALL AND DOOR FRAMING

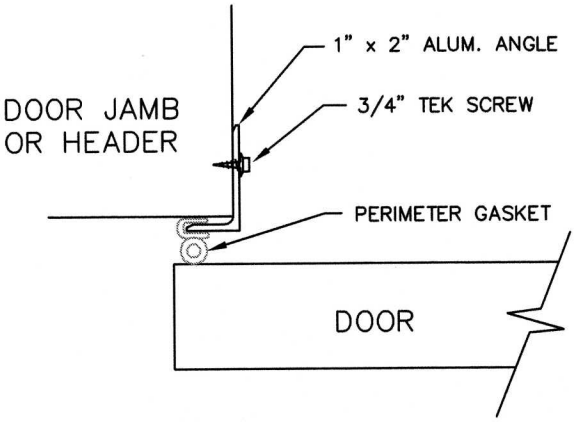


NOTE:
COAT INTERIOR OF KILN WITH KILN COATING (FIBERED, ALUMINIZED ASPHALT BASED METAL ROOF COATING) TO PREVENT DETERIORATION.

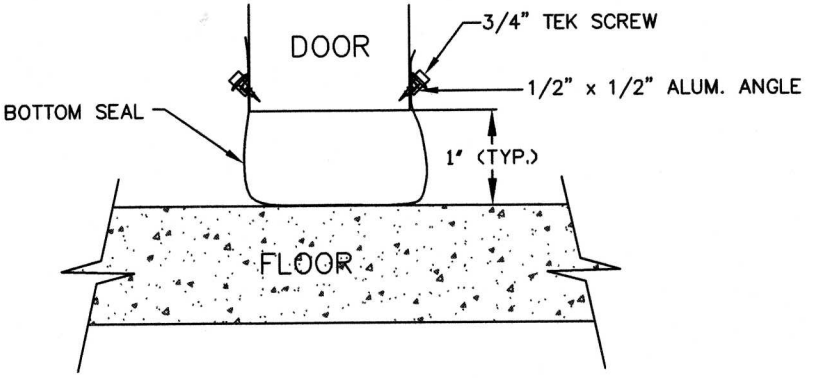
SECTION FRONT WALL OF KILN CHAMBER W/ 2 SWINGING DOORS — E 12



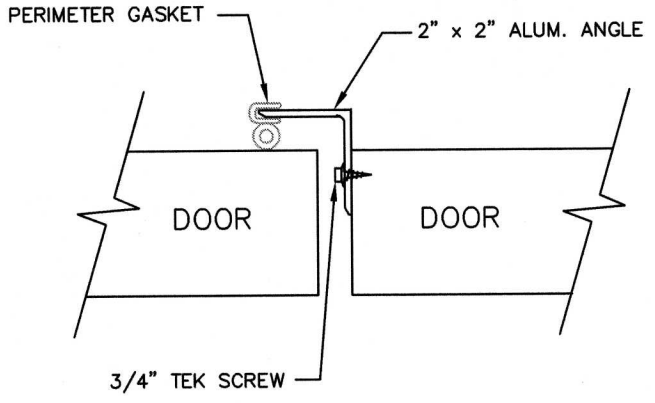
SECTION KILN DOOR AND HEADER F 13



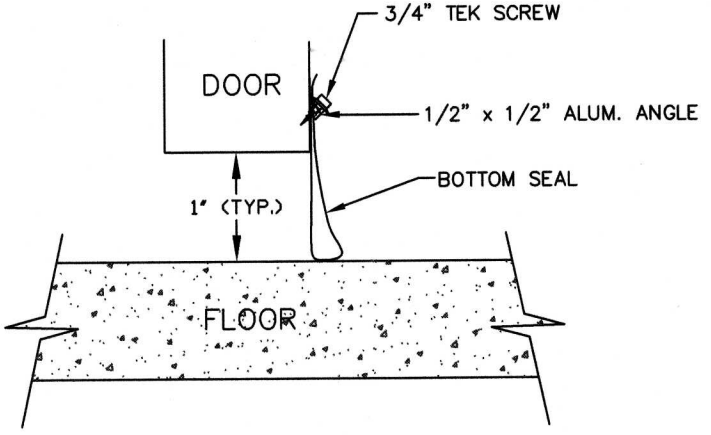
DOOR PERIMETER GASKET
INSTALLATION



INSTALLATION OF BOTTOM DOOR GASKET

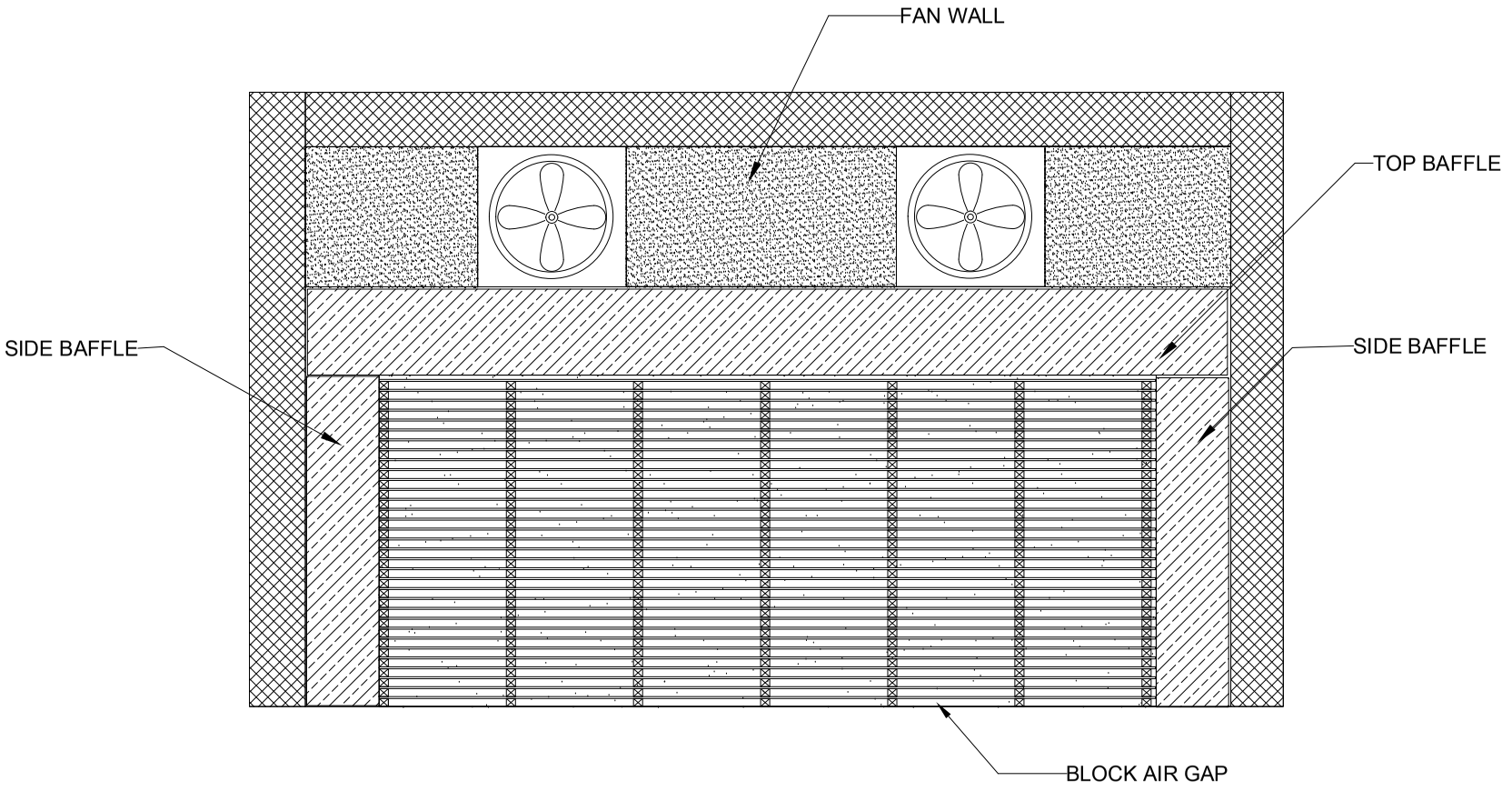


INSTALLATION OF CENTER DOOR GASKET



ALTERNATE INSTALLATION OF
BOTTOM DOOR GASKET

ADJUST ANGLE INSTALLATION SO THAT
GASKET IS SLIGHTLY COMPRESSED



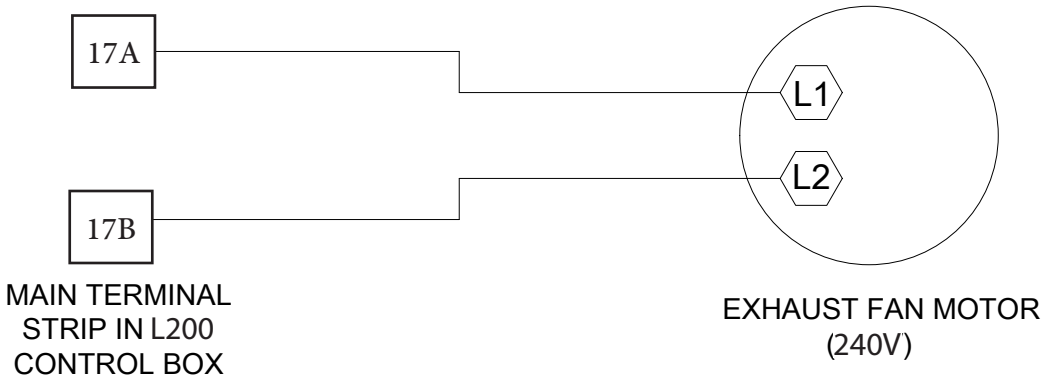
STACKING & BAFFLING

CLOSE ALL LARGE AIR GAPS SO THAT AIR CAN ONLY PASS THROUGH THE STICKER SPACE

CAREFULLY ALIGN STICKERS VERTICALLY

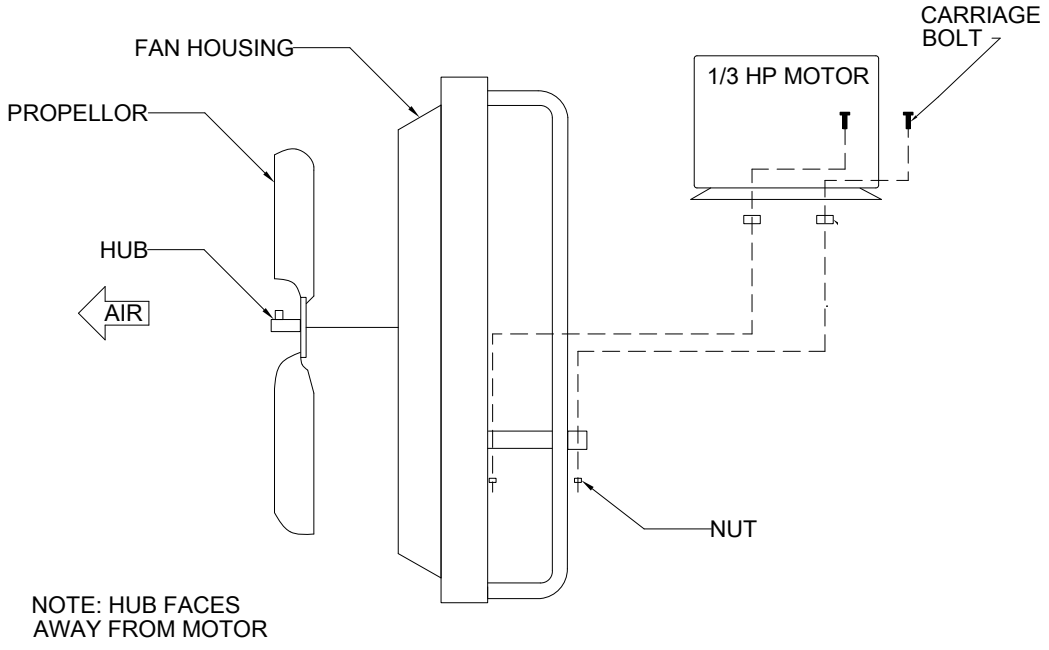
HANGED BAFFLE FROM FANWALL TO FRONT EDGE OF LUMBER STACK

Power Vent Wiring



Note: Power Vent wiring is supplied by the Customer

Fan Diagram



1. MOUNT MOTOR ON BASE USING BOLTS AND NUTS PROVIDED

2.PLACE FAN ON MOTOR SHAFT SO THAT ONE SCREW SET MEETS THE FLAT OF THE SHAFT. TIGHTEN BOTH SET SCREWS

3.ADJUST THE MOTOR SO THAT THE TIO OF THE BLADE IS EVENLY SPACED AND AT THE TRHOAT OF THE VENTURI

4.FAN MOTOR CAN BE WIRED FOR 240V OR 120V BUT THE SWITCH SUPPLIED IS 240 VOLTS ONLY. IT HAS A BUILT IN OVERLOAD.

WIRING SUGGESTION : CHECK ON LOCAL CODES

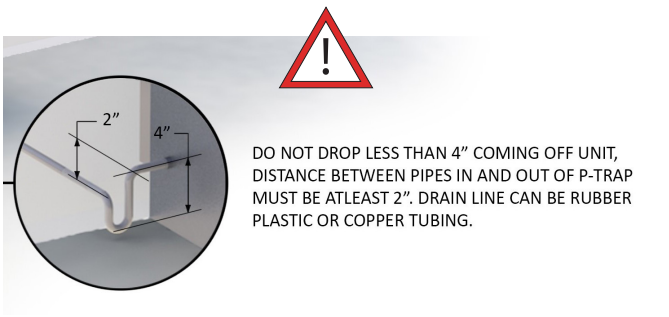
Note: Fan wiring is supplied by the Customer

Equipment Installation

Please reference Chamber Plans for more information on installation.

Step 1: Place the dehumidifier at the center of the long wall with the inlet filter facing the board pile.

Step 2: Connect an appropriate length drain hose. The drain must have a trap.



Note: The dehumidifier can be elevated to any reasonable amount to help the drain gravity feed. The wall opening should be sealed around where the drain hose extends outside of the chamber. Never have a floor drain.

Step 3: Place the controller at a convenient point outside the chamber near the dehumidifier.

Note: Be sure the controller is in a space that will not reach temperatures below freezing.

Step 4: Remove the cover

Step 5: Drill holes in the kiln wall to allow control cables and separately the sensor wires (inside the controller) to be carefully routed into the chamber. Do not route control and sensor wires through the same hole.

Step 6: Mount the Digital Sensor. See "Digital Sensor Installation" on the next page

Step 7: Remove the right side panel of the unit gaining access to the compressor & terminal strip.

Step 8: Securely connect the control cable to the dehumidifier.

Step 9: Carefully connect each wire to their corresponding terminal. Do not stretch or over stress the cable.

Note: Wire insulation is marked with the corresponding terminal number.

Step 10: Seal the holes in the kiln wall after wires are installed to keep moisture from the control box.

Step 11: Install the fans over the lumber see Chamber Plans as a reference.

Step 12: Install and caulk the vents so that they are on opposite sides of the fans and at opposite ends of the kiln.

Note: The vents should be located as shown on the chamber drawings.

Step 13: With the system switch in OFF position, connect the control box to power.

Sensors

Digital Sensor

The Digital Sensor replaces the Dry bulb and Wet bulb sensors as well as it's function on the L200 Pro Controller.

Additional Probes

The Controller also still has 2 x PT100 probes which can be used as traditional Dry bulb and wet bulb sensors by disabling the Digital Sensor on the Advanced page of the touch screen controls

Digital Sensor Installation

The Digital Sensor probe is mounted on the Dry bulb sensor bracket approximately 3-4 ft from the floor and roughly 6-12" from the loading door against the side wall that is closest to the control box

Modes of Operation

Conventional Mode

Conventional mode is the most basic and widely used drying method. It forms the foundation for all other kiln operation modes. In this setting, the controller continuously monitors humidity levels and responds by either venting to release excess moisture or activating a spray system to add humidity when the air becomes too dry.

Each function is controlled by a specific set point: the Dry Bulb set point triggers the heating system, the Wet Bulb set point activates the vents to reduce humidity, and the Spray set point controls when water is introduced to raise humidity.

Because of its balanced and reactive design, Conventional Mode is extremely versatile and capable of drying nearly any type of lumber. It is often referred to as the “jack-of-all-trades” mode and is especially useful in situations where precise control isn’t necessary.

Dehumidification DH Mode

DH Mode, developed by Nyle, is focused on maximizing energy efficiency. Rather than relying on vents to remove moisture-laden air, which results in heat loss, this mode utilizes a compressor to extract moisture while retaining and recycling the heat within the system.

The only time the vents operate in DH Mode is when the kiln needs to cool down due to an overheated Dry Bulb temperature. The control logic remains straightforward: the Dry Bulb set point governs when to apply heat, the Wet Bulb set point, referred to here as the dry point, initiates the compressor to pull moisture from the air, and the Spray set point continues to handle any need for added humidity.

DH Mode is particularly well-suited to slow-drying hardwoods & applications where reducing energy consumption is a top priority.

Hybrid Mode

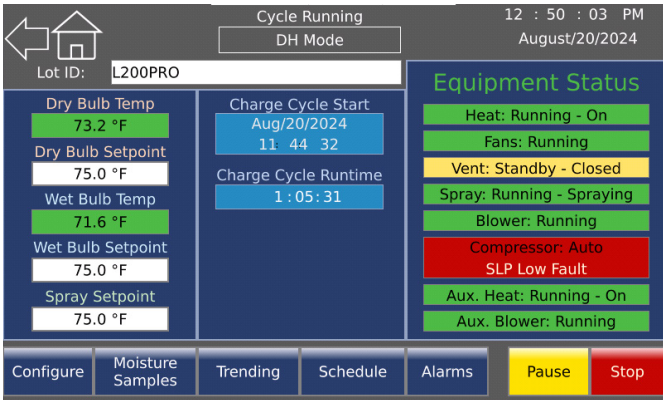
Hybrid Mode is designed specifically for use in DH kiln systems and combines traditional heat sources (like electric or gas) with the advantages of dehumidification.

In this mode, the primary heater operates in tandem with the compressor, which serves a dual purpose: it supplements the heat and removes moisture.

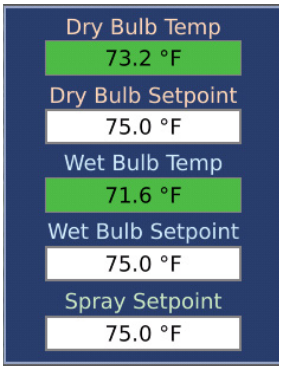
The kiln controller constantly evaluates the difference, or offset, between the Dry Bulb and Wet Bulb set points to determine whether to run the heater, the compressor, or both. Spray and vent operations are still governed by Wet Bulb thresholds.

Hybrid Mode shines in more challenging conditions where conventional DH drying may fall short, such as in small chambers or when working with fast-drying softwoods. It offers enhanced control, minimizes heat loss, & improves drying consistency across a range of materials.

Home Screen Overview



The Home screen of the L200Pro functions as the central hub for monitoring your kiln’s performance. It provides real-time updates on whether the kiln is running or stopped, displays the active drying mode, and allows you to assign a unique Lot ID to each kiln charge.



This Lot ID becomes the name of the session log file and must be manually entered.

Live sensor readings for Dry Bulb, Wet Bulb, and Spray are also shown on this screen.

Set points for each parameter appear alongside these readings. If no drying schedule is active, these fields are white and can be manually edited. When a schedule is running, they turn gray and become locked. Additional details such as the current drying cycle and total runtime are also visible, offering a complete snapshot of the kiln's operation.

Component status is color-coded: green means the unit is actively running, orange indicates it is on but idle, white shows it is turned off, yellow reflects manual mode, and red signals a fault or system trip.

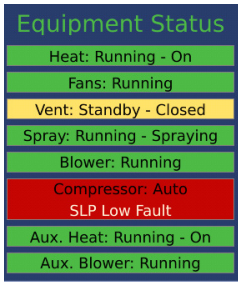
Green: Enabled and running

Orange: Enabled, not running

White: Disabled and/or Off

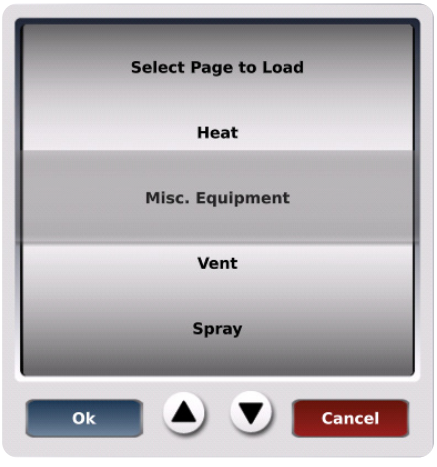
Yellow: Running in manual

Red: Trip or Fault



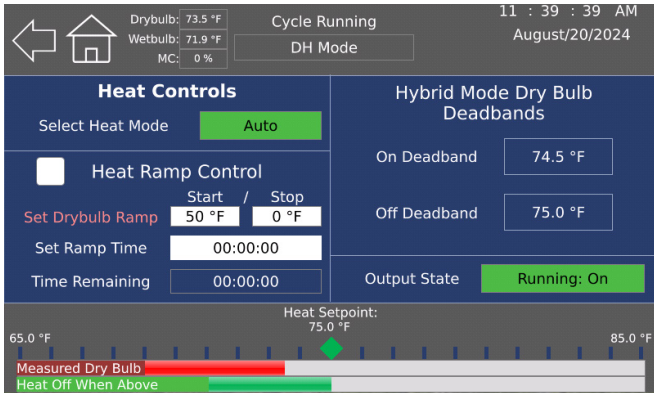
From this main screen, users can quickly navigate to settings for configuration, moisture sampling, trending data, scheduling, and alarm monitoring.

Configuring The Control



The configure button opens up a scroll wheel list of equipment in the kiln. This allows the user to access much finer degrees of control with these various pieces of equipment. Specific adjustments can only be made while logged in as an Admin.

Heat Control



In the heat control screen, specific settings and adjustments can be made. Clicking on the heat control box (highlighted green) will open a scroll wheel for heat. The heat control can be set to;

Auto: *Heat call adjusts based on kiln set point.*

Off: *The heat is always off.*

Users can also set Dry Bulb deadbands, which introduce a buffer zone. DB deadband is the difference between the Actual Dry bulb and Dry bulb set point; this tells the kiln when to call for heat.

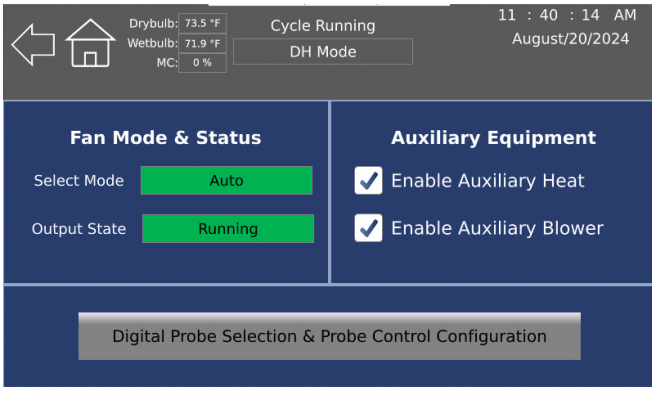
Example, with a -2.00 degree deadband on & a 0.00-degree deadband off, a kiln set to 100 degrees dry bulb will get the heat call on at 98 degrees & shut off at 100 degrees.

Heat Ramp Options

Ramp settings control how gradually the kiln increases its temperature. Adjusting these options allows users to tailor the heat-up rate for sensitive loads or specific drying profiles.

Misc. Equipment

This section allows control over additional hardware, such as the circulation fans, auxiliary equipment, and digital probes.



Fans

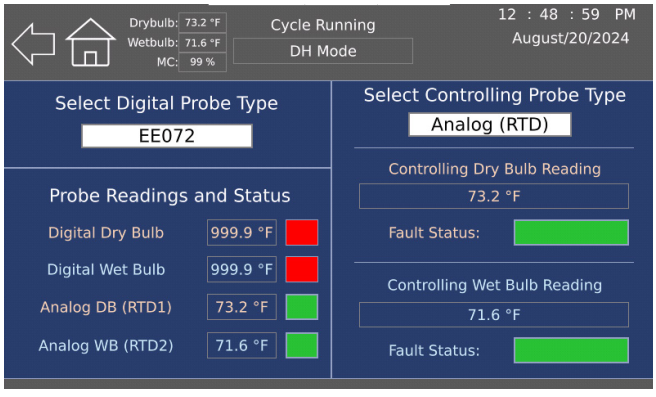
Clicking on the fan control box (highlighted in green) will open a scroll wheel which can be set to auto or off.

Implosion time is the amount of time the vents will open for upon fan start-up to prevent extreme pressures with various temperatures and air movement in the kiln. The L200Pro has a 5 second implosion time before fans start up

Auxiliary Equipment (if equipped)

From this screen you are enable the auxiliary heat or auxiliary blower if equipped.

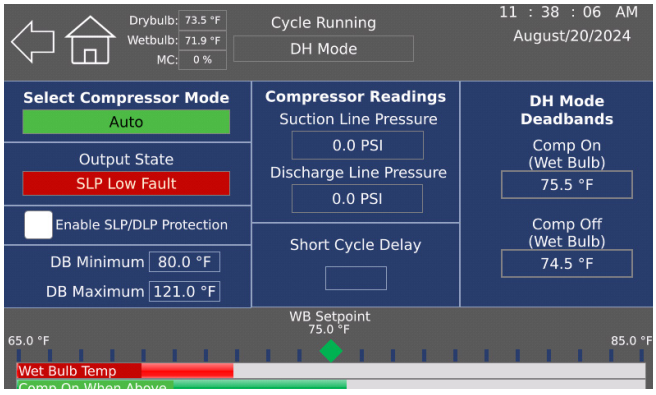
Digital Probe Configuration



Users can assign roles to probes (e.g., Dry Bulb or Wet Bulb) & view all sensor data from one location. However, Probe setup is only accessible while logged in as an admin.

⚠️ *Nyle recommends having a clear understanding of how these changes will affect the operation before making any adjustments away from the default. Please feel free to reach out to our service line with any questions. service@nyle.com*

Compressor



The Compressor Control screen allows users to make manual adjustments & view specific details related to compressor operation, these details are only accessible through this screen. By tapping the green-highlighted Comp Control box, a scroll wheel appears with two options: Auto and Off.

Auto: *the compressor operates automatically based on the kiln's programmed set-points, activating as required to maintain optimal drying conditions..*

Off: *the compressor remains inactive and will not run, regardless of temperature or humidity conditions.*

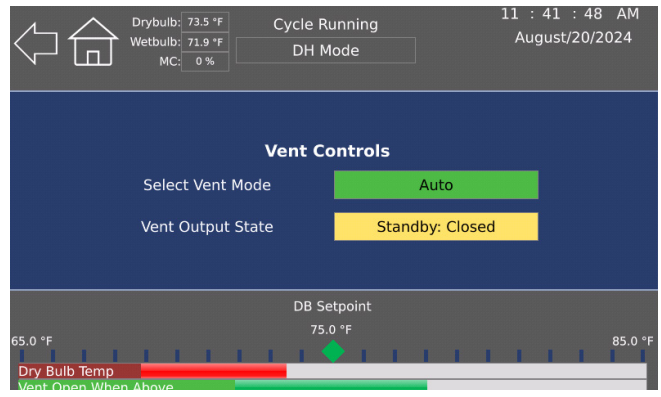
The compressor's behavior also changes depending on the selected kiln operating mode:

Conventional Mode, the compressor is locked in the Off setting and will never engage.

DH Mode, the compressor cycles based on the wet-bulb (WB) set point, activating as needed to control humidity.

Hybrid Mode, compressor operation is determined by a combination of temperature and humidity thresholds. It will run only if there is a heat call (the dry-bulb temperature is below its set point) and the wet-bulb temperature is above a defined threshold. Both conditions must be met for the compressor to activate, ensuring efficient and targeted operation.

Vents



By tapping the green-highlighted Vent Mode box, users can access three options via a scroll wheel: Vent Auto, Vent Manual, and Vent Off.

Auto: *the vents operate automatically based on the kiln's programmed set-points, opening or closing as required to maintain optimal drying conditions.*

Manual: *causes the vents to open fully, regardless of environmental conditions.*

Off: *closes them completely.*

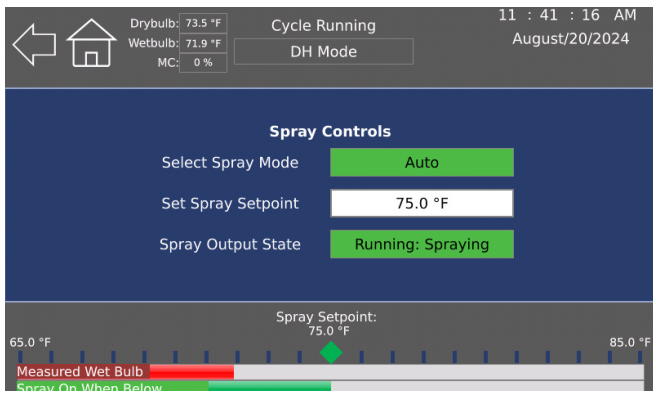
The specific behavior of these modes also depends on the kiln's operating mode:

Conventional Mode relies on the wet-bulb (WB) set point to determine when vents should open, enabling moisture release when needed. In Manual mode in this setting, the vents simply open to their maximum, without any modulation.

DH Mode, venting is controlled by the dry-bulb (DB) temperature instead of the wet-bulb. The vent control logic and associated deadbands otherwise mirror those of Conventional mode, just shifted to temperature-based triggers.

Hybrid Mode uses the same vent control logic as Conventional mode, with venting governed by the wet-bulb set point & following identical operational rules.

Spray *(if equipped)*

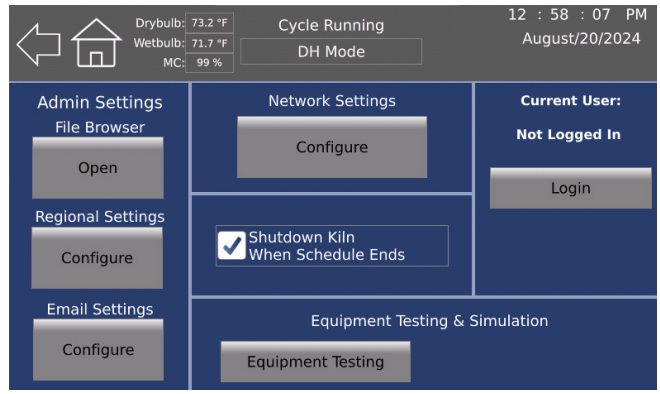


Tapping the green-highlighted Spray Control box presents three options via a scroll wheel: Spray Auto, Spray Manual, and Spray Off.

> ***Auto:*** *In this mode, the spraying system activates automatically to maintain the kiln's spray set point. It continues spraying until the wet-bulb temperature reaches the desired level. Operators can fine-tune performance using spray deadbands, this means you can define temperatures slightly above or below the set point at which spraying will turn off or start again.*
>
> ***Off:*** *Disables spraying entirely, preventing any misting regardless of temperature or humidity conditions.*

⚠ *Important Note: The spray set point cannot exceed the current wet-bulb reading. This ensures the system can always reach the desired moisture level without overshooting or over-cooling.*

Advanced Settings

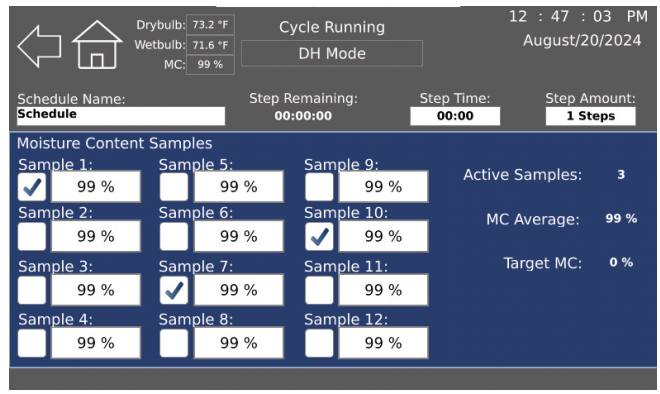


The Advanced Settings screen offers access tailored to both operator and administrator levels. Authorized users can log in with their designated credentials, unlocking additional capabilities. From here, users may:

- Browse saved sessions and logs, reviewing historical kiln operation data.
- Configure automatic email reports, enabling periodic delivery of log files to designated recipients.
- Execute equipment diagnostics, allowing users to test compressors, fans, vents, and other system components directly from the control interface.
- Manage network settings, including Wi-Fi or Ethernet connectivity, to ensure the kiln communicates with external systems or monitoring networks.

This centralized hub provides a streamlined way to monitor performance, maintain equipment health, & configure kiln behavior through a single, intuitive interface.

Moisture Sample Screen



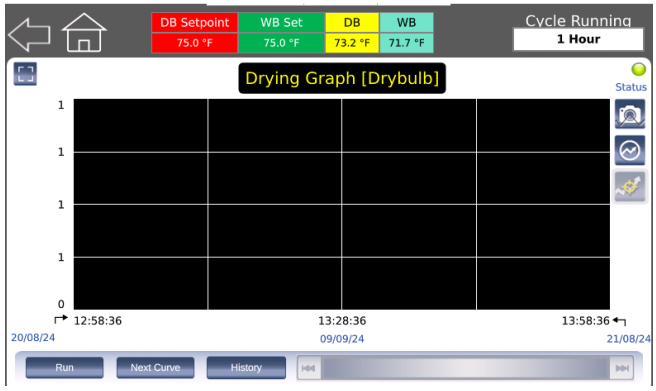
The Moisture Samples screen enables manual entry of moisture content for individual wood samples within the kiln charge. Each entry corresponds directly to moisture-content (MC%) checkpoints defined in the kiln's drying schedule.

Users can designate which samples contribute to the overall calculation by toggling the checkbox next to each sample. Only checked samples are included in the calculation of the average moisture content, which is then used to guide the MC% stages of the planned drying cycle.

This ensures that the kiln's schedule adapts intelligently to actual moisture data, based on selected representative samples.

Trend Screen

The Trending button opens the Trend view screen. This view shows trends of currently measured values and only trends values when the kiln is in run mode.



The user can zoom in and out on the data range by tapping the time span value at the top center.

This opens a scroll selection box to view the data in 1-hour, 6-hour, 24-hour, 48-hour, and 99-hour spans. The user can further zoom in on data by tapping the [Stop] button. This freezes the graph and enables the focus button.

Once this button is tapped, the cursor changes to a cross-hair, allowing one to click on a curve to see the specific time & actual value at that point.

The name of the current curve is displayed at the top.

Click on the [

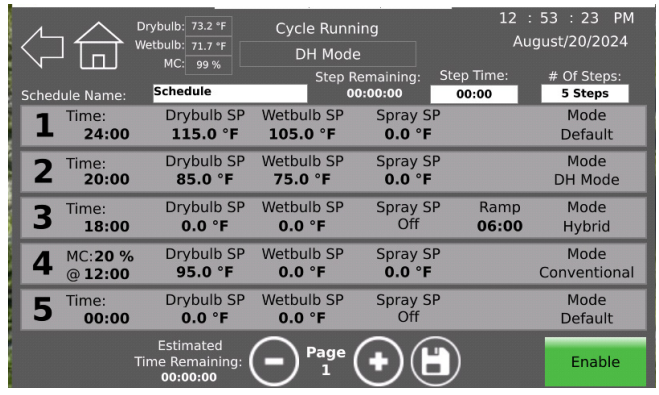
] button to scroll through the curves.

To scroll through recorded value and time, tap on the forward and back arrows, or tap on a new point on the curve.

When finished viewing data, tap on the [Run] button; this will update the graph to live data.

Note: This trend graph shows data up to 99 hours at 1-minute intervals. Should one wish to see more data, they can download the Log file of the current run to a USB drive (see File Browser section under Advanced settings), import the .csv data into MS Excel, & generate a graph of the whole run.

Schedule Screen



The Schedule tab is where users create, edit, and manage drying sequences tailored to their specific kiln loads. Each schedule is made up of sequential steps that define how the kiln operates at different stages of the drying process. Within each step, users can specify a Step Function, which determines the criteria the kiln must meet before progressing to the next step.

When editing a specific step, the following function types are available:

MC% (Moisture Content): This function advances the schedule when the average moisture content of selected samples reaches a predefined percentage. The values used here are pulled from the Moisture Samples screen. Only samples with checked boxes are included in the average. If no moisture data is input—either manually or from probes—MC% steps will not function correctly, potentially halting the schedule.

Timed Step: With this option, the kiln will proceed to the next step automatically after a set amount of

time has elapsed, regardless of current temperature or moisture conditions. This is ideal for fixed-duration stages like preheating or conditioning.

Heat Ramp: The Heat Ramp function is a combination of time & temperature logic. It allows the kiln to slowly rise to a specified Dry-Bulb (DB) temperature over a defined period. This is particularly useful when transitioning into more delicate stages of drying, where temperature must be increased gradually to avoid product stress or damage. Once the ramp time and temperature target are met, the schedule advances.

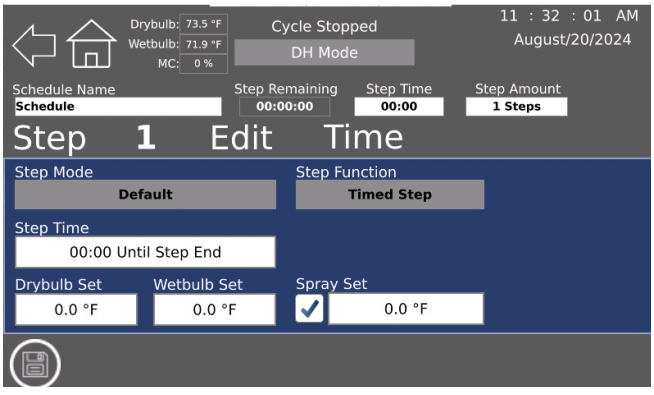
Navigating the schedule screen

Use the Plus (+) and Minus (–) buttons to scroll through multiple pages of steps.

While the kiln is operating, the Fast Forward (>>) and Rewind (<<) arrows in the lower-left corner can be used to manually cycle through active steps.

Step colors indicate their status:

- Orange – Completed steps
- Green – Current active step
- Gray – Upcoming steps



Creating a New Schedule

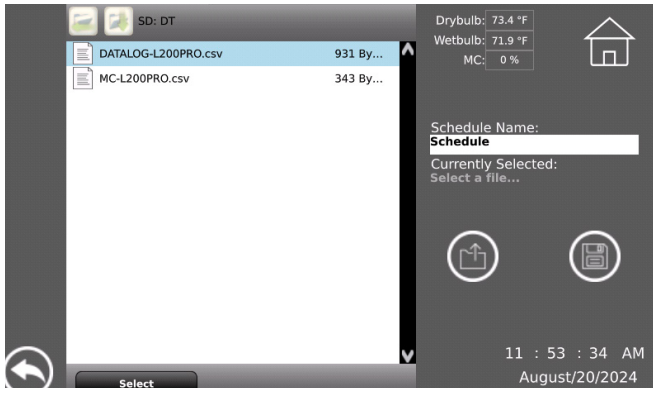
To create a schedule:

- Navigate to the **Schedule** tab.
- Set the **schedule name** in the top-left field.
- Use the step counter in the top-right to define how many steps you want to build.
- Click on each step to configure:
  - Step Mode (Conventional, DH, Hybrid)
  - Step Function (MC%, Timed, Heat Ramp)
  - Values for Time, Dry-Bulb (DB), Wet-Bulb (WB), Spray Settings, and any other applicable controls.
  - After entering the data for each step, press the Save button in the lower-left corner.
  - Use the Back Arrow (top-left) to return to the main step list.

Saving and Loading Schedules

To save a schedule:

1. Tap the Save/Load icon at the bottom of the screen. A list of saved schedules will appear.
2. By default, the schedule you just edited will be selected.
3. Click Save on the right side of the screen to store it. All saved schedules are stored as .csv files.
4. You can create and save multiple schedules; however, it's best practice to save only the schedules necessary for daily operation to make loading quicker and navigation easier.



To load a previous schedule:

1. In the Schedule tab, press the Save/Load icon.
2. Scroll through the list and select the correct .csv file (non-csv files will trigger an error).
3. Press Select to highlight the file.
4. Confirm by pressing the Load button underneath the file name and selecting "Yes" when prompted.
5. The loaded schedule will now appear in the schedule tab and be ready to run.

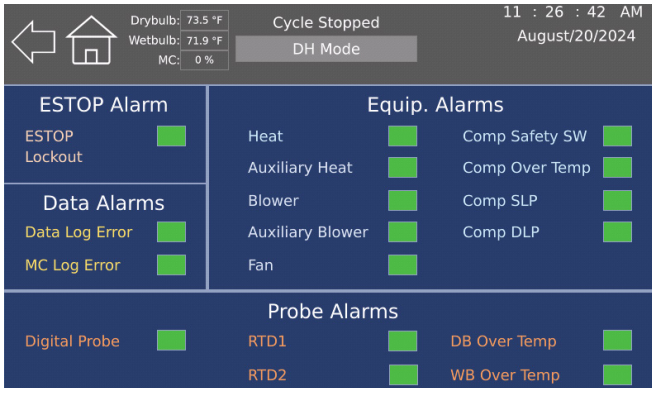
Other pertinent information

Be sure to click the “Enable” button in the bottom-right corner of the schedule tab. If not enabled, the kiln will default to manual operation & ignore the schedule entirely.

The Enable function can also be triggered during kiln start-up via a confirmation pop-up.

MC% Steps Depend on Moisture Data: If MC% steps are used in a schedule, they require moisture readings from the Moisture Samples tab. Without either manual entry or moisture probe input, the kiln will not advance past those steps.

Alarm Screen



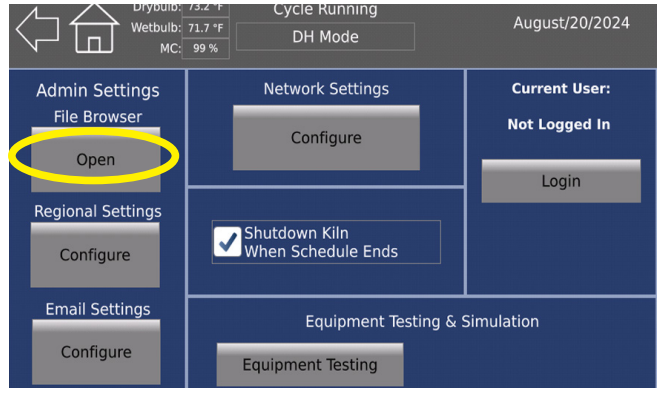
The Alarm Screen serves as the central dashboard for monitoring kiln system health & fault conditions.

Accessing the Data Logs

There are several ways to access data logs from the controller. The easiest way is to remove the micro SD card that can be found on the side of the screen near the Ethernet port. This should only be done while the unit is not in cycle to prevent data loss. The log files can be found in the DT folder.

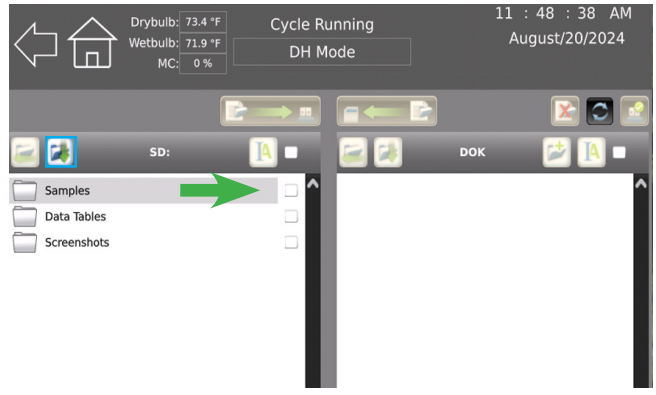
To access log files while the unit is running you can use the built in file browser to copy the logs to an external flash drive.

To do this insert a flash drive into the USB port on the side of the screen and follow these steps to navigate to and copy the desired files to the flash drive. Open the file browser on the advanced settings screen.



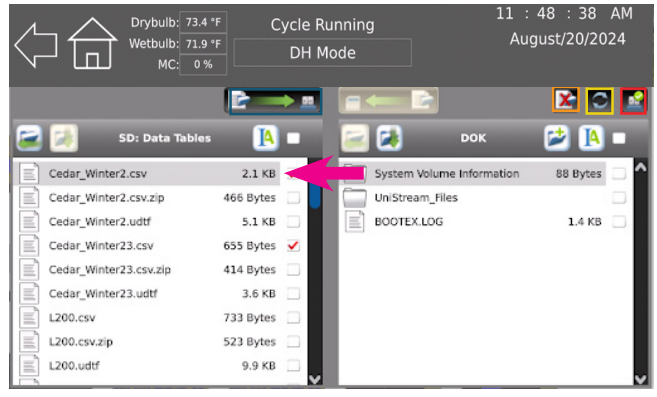
Select the “Data Tables” folder by checking the box next to it.

Open this folder.



Select the log files you would like to copy by checking the boxes next to their name.

Once you have selected all the files you would like to transfer press the copy button.

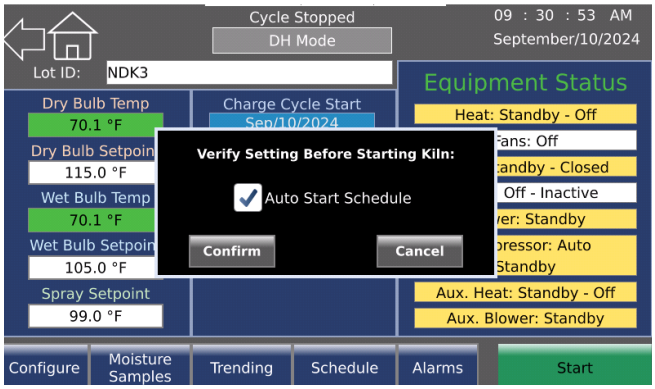


This button deletes all selected files.

Use this button to refresh any changed files.

This button ejects the flash drive so it can be safely removed.

Starting Your Kiln



To initiate a kiln cycle:

1. Tap the green Start button located at the bottom right of the main screen.
2. A confirmation dialog will appear, offering two options to define the start mode:

   Auto Start Schedule; When this box is checked, the controller will automatically enable and initiate the schedule currently loaded in the Schedule screen. The kiln will follow all predefined steps, such as timing, temperature settings, moisture control, without requiring further manual input.

   Manual Start; Leaving the box unchecked starts the kiln in manual mode. In this scenario, all set points for temperature, humidity, spray, compressors, and vents must be controlled by the operator in real-time through the control interface.

Drying Lumber

Nyle recommends that these guidelines be followed carefully

Placing Stickers and Loading Lumber

- Stickers should all be at least ¾" thick and all sticks in any load must be the same thickness.
- Thick lumber (10/4" and thicker) should be dried using double stickers.
- End stickers should be as close to the ends of the boards as possible.
- The sticker spacing should be approximately 18". This spacing can be reduced to 12" if excessive warping, cupping, and bowing are a problem.
- Keep stickers in a vertical line and always support the load under each sticker.
- If you have some wide boards, or other pieces that you want to keep as straight as possible, pile them on the bottom as the weight of the lumber above will constrain the wide boards and give the best result.
- If a less than full load is anticipated, it is better to reduce the depth rather than the height or width. This will obviously leave the stickers "hanging out", but will result in better drying.

Ensuring Proper Airflow

- When the lumber is fully loaded, the baffles should be lowered to the top of the lumber and the side baffles should be carefully positioned. If no side baffles are installed, the space could be closed off with plywood or boards.
- Never use plastic sheeting as it may come loose and become entangled in the fans.
- If the load supports are thicker than normal stickers, the extra space should be blocked with a narrow board or lath.
- Close off any large openings that will let air go around the lumber. Air will take the path of least resistance, and you must force it through the stickered pile.
- A small amount of time spent doing this correctly will result in more even, faster, and less expensive drying.

Drying Schedules

Each species of lumber has a maximum rate of drying (expressed as % loss/day) that can be tolerated without damage. These rates have been determined through experimentation by the U.S. Dept. of Agriculture, various universities and others. Schedules have been developed based on time, dry bulb-wet bulb temperatures, and even automatic moisture content devices. Due to the many important variables that affect drying such as kiln chamber heat loss, air velocity, ambient temperature and humidities, vapor leaks, etc., the most important consideration of a schedule is that you maintain a safe drying rate.

The L200 drying system dries lumber by using the dry bulb and wet bulb temperatures of the kiln to control the operation of the dehumidifier. The schedules on page 20 are based on dry bulb and wet bulb conditions (humidity). These schedules are starting points; you will probably change these over time because you will find different settings work for you. This is due to the fact that different people saw boards differently, stack lumber differently, build chambers differently, etc.

If the dry bulb temperature is above 80°F, and the wet bulb is 2°F above its set point, (factory setting) the compressor will turn on. When the compressor is on, moisture is being condensed on the cold coil in the unit, and draining away. This moisture being removed reduces the humidity, dropping the wet bulb temperature.

The moisture removal rates on page 20 are the rates to follow when first using the machine. These rates can be safely exceeded by an additional 50% (i.e., 1.0% can be raised to 1.5% and 3.3% can be increased to almost 5%) given careful judgment and operating experience for Groups 1, 2, and 3. Top quality moisture meters, or weight samples, must be used at these higher drying levels to avoid lumber damage. Some hardwoods such as Southern Red Oak, White Oak, and Group 4 hardwoods should not use any sort of accelerated schedule.

Wood Groups

Group 1 (L200 load size, 1500 BF, 3.5m³)
4/4 Softwoods
4/4 Soft Hardwoods
Group 2 (L200 load size, 3000 BF, 7m³)
4/4 Medium Hardwoods
8/4 Softwoods
8/4 Soft Hardwoods
Group 3 (L200 load size, 4000 BF, 9m³)
4/4 Hardwoods
8/4 Medium Hardwoods
Group 4
8/4 Hardwoods

Note: When drying a mixed load of woods, colored wood (ie Red Oak) must be stacked on the bottom to prevent the moisture from it staining the other wood.

Lumber Types

Softwood			
Cedar, Eastern White	Pine, Red (Norway)	Spruce, White	
Fir, Balsam	Pine, Eastern White		
Hemlock, Eastern	Spruce, Black		
Larch, Eastern	Spruce, Red		
Soft Hardwoods			
Aspen			
Basswood			
Cottonwood			
Poplar			
Medium Hardwood			
Ash, Black	Birch, Yellow	Maple, Soft	Walnut
Ash, White	Cherry, Black	Maple, Hard	
Beech	Elm, White	Sweet gum (Red gum)	
Birch, White	Hickory	Tupelo (Black gum)	
Hardwoods			
Elm. Rock			
Oak, Red			
Oak, White			

Moisture Removal Rates

Moisture Removal Rate Per Day (Maximum)

These removal rates are estimates only. Always check your actual removal rates daily, using an accurate moisture meter. There are many variables that affect drying rates, such as how lumber is sawn, stacked, and how the chamber is built.

The following chart shows the calculated moisture removal rate per 24-hour period for an L200 Running at 100% .

Load Size	1000 BF	1500 BF	2000 BF	2500 BF	3000 BF	3500 BF	4000 BF
Group 1	13.7%	9.0%	6.7%	5.4%	4.5%	3.9%	3.4%
Group 2	9.3%	6.2%	4.6%	3.7%	3.1%	2.6%	2.3%
Group 3	8.5%	5.7%	4.3%	3.4%	2.8%	2.4%	2.1%

** Drying rate may be too high, look at the maximum rates.*

Drying Group 1 woods at a rate of less than 5% per day may result in mold or staining of the lumber.

Drying Group 3 woods at a rate greater than 3.5% per day may result in checking or other degrade to the lumber.

L200 Drying Schedules

Group 1 woods generally do not have a maximum drying rate, you will want to remove the moisture quickly, and fast enough to avoid mold and stain. Set the Dry Bulb on 120º/ Wet Bulb at 75º. The compressor will run constantly. You can turn the heat switch off once the temperature reaches 100º, Heat from the compressor motor and fan motors will keep the temperature rising. (At the end of the drying cycle, for softwoods, turn the compressor switch "OFF", and set the dry bulb temperature to 150º F. or 160º F. to set pitch)

	Normal Schedule		Alternate Schedule	
Moisture Content	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
Group 2				
Above 45%	90° F	85° F	100° F	97° F
45%-35%	100° F	87° F	105° F	93° F
35%-25%	110° F	96° F	110° F	96° F
25%-Final	120 ° F	90° F	120° F	90° F
Group 3				
Above 45%	90° F	86° F	100° F	97° F
45%-35%	100° F	96° F	105° F	101° F
35%-25%	110° F	98° F	110° F	98° F
25%-Final	120° F	98° F	120° F	98° F
Group 4				
Above 50%	90° F	85° F	100° F	97° F
50%-40%	95° F	89° F	100° F	96° F
40%-35%	100° F	90° F	105° F	97° F
35%-30%	110° F	98° F	110° F	98° F
30%-Final	120° F	95° F	120° F	95° F

Use the alternate schedules if you are in a warm climate or otherwise unable to maintain a 90º F dry bulb temperature at the beginning of the drying cycle.

Drying Rates (North American Measure)

Species	Oven Dry Weight #/MBF	Avg. Green MC %	Green Weight #/MBF	# Water Per % MC	Max MC% Loss/ day
Cedar, Eastern White	1578	93	3046	16	11
Fir, Balsam	1739	118	3790	17	20
Hemlock, Eastern	2161	111	4558	22	20
Larch, Eastern	2532	52	3849	25	20
Pine, Red (Norway)	2051	83	3747	21	15
Pine, Eastern White	1950	90	3705	20	12
Spruce, Black	2110	80	3798	21	20
Spruce, Red	2000	89	3781	20	20
Spruce, White	1840	115	3967	18	20
Ash, Black	2532	95	4937	25	7
Ash, White	3055	45	4431	31	10.4
Basswood	1899	107	3933	19	12
Beech	3114	63	5089	31	4.5
Birch, White	2692	73	4659	27	10
Birch, Yellow	2954	69	4996	30	6.1
Cherry, Black	2633	58	4161	26	5.8
Elm, Rock	3165	50	4760	32	3.5
Elm, White	2692	93	5207	27	10.4
Hickory	3325	64	5452	33	6
Maple, Soft	2692	93	4389	27	13.8
Maple, Hard	3165	68	5317	32	6.5
Oak, Northern Red Upland	3277	74	5703	33	3.8
Oak, White Upland	3518	70	5981	35	2.5
Oak, Southern Red	3092	80	5567	31	2
Sweetgum (Red gum)	2740	100	5480	27	5.3
Walnut	2851	85	5274	29	8.2
Yellow Poplar, Cottonwood	1899	154	4819	19	13.8

Northeast Lumber - Based on 4/4 (1" or 25 mm)

To estimate maximum % MC loss per day for other thickness' multiply % MC loss per day from the above table by 0.6 for 6/4 and 0.4 for 8/4.

Drying Rates (Metric)

Species	Oven Dry Weight Kg / M3	Avg. Green MC %	Green Weight Kg / M3	Kg Water Per % MC	Max MC% Loss/day
Cedar, Eastern White	315.6	93	609.2	3.2	11
Fir, Balsam	347.8	118	758	3.5	20
Hemlock, Eastern	432.2	111	911.6	4.3	20
Larch, Eastern	506.4	52	769.8	5.1	20
Pine, Red (Norway)	410.2	83	749.4	4.1	15
Pine, Eastern White	390	90	741	3.9	12
Spruce, Black	422	80	759.6	4.2	20
Spruce, Red	400	89	756.2	4.0	20
Spruce, White	368	115	793.4	3.7	20
Ash, Black	506.4	95	987.4	5.1	7
Ash, White	611	45	886.2	6.1	10.4
Basswood	379.8	107	786.6	3.8	12
Beech	622.8	63	1017.8	6.3	4.5
Birch, White	538.4	73	931.8	5.4	10
Birch, Yellow	590.8	69	999.2	5.9	6.1
Cherry, Black	526.6	58	832.2	5.3	5.8
Elm, Rock	633	50	952	6.4	3.5
Elm, White	538.4	93	1041.4	5.4	10.4
Hickory	655	64	1090.4	6.8	6
Maple, Soft	538.4	93	877.8	3.7	13.8
Maple, Hard	633	68	1063.4	6.3	6.5
Oak, Northern Red Upland	655.4	74	1140.6	6.6	3.8
Oak, White Upland	703.6	70	1196.2	7.0	2.5
Oak, Southern Red	618.4	80	1113.4	6.2	2
Sweetgum (Red gum)	548	100	1096	5.5	5.3
Walnut	570.2	85	1054.8	5.7	8.2
Yellow Poplar, Cottonwood	379.8	154	963.8	3.8	13.8

Northeast Lumber - Based on 4/4 (1" or 25 mm)

To estimate maximum % MC loss per day for other thickness' multiply % MC loss per day from the above table by 0.6 for 6/4 and 0.4 for 8/4.

Kiln Sample Boards

It is best to use sample boards to measure moisture content on a daily basis. Moisture meters are not accurate enough for most hardwood dry kiln operations when the wood is above 30% MC and there is a need to keep a close watch on the drying rate. In Oak, for example, all checks and honeycombing occur when the wood is drying from green down to 40% MC, so that is when the drying rate needs to be closely controlled.

Uses for Sample Boards

- To estimate the Moisture Content of the load in the chamber, so that kiln conditions can be regulated according to drying schedules.
- To measure the drying rate, which allows control of drying quality.
- To check on any degrade development.
- To check on final MC and drying stresses.
- To develop a MC vs. time curve.
- To study variations in drying within the kiln.
- To monitor changes in MC after drying (during storage and shipping) Note: It is a good idea to keep sample boards with dried lumber so that they can be used to track moisture content changes in storage.

Taking Samples

1. Select sample boards. Keep in mind that they need to represent a "sample" of the lumber in the kiln. Do not select junk boards, & select both the slowest and the fastest drying boards of the load. Generally, you want six sample boards.
2. Cut 30" samples, at least 12" from the ends of each of the sample boards. Avoid having knots, splinters or bark in the sample.
3. Number the samples you cut.
4. Cut two 1" sections off each end of the samples, and mark them with the number of the board they came from.

   Example: the two sections that came from sample board 3 would be labeled 3A and 3B.

5. Apply end coat to the 28" sample boards. This assures that the sample board will dry as though it were a larger piece of lumber.

   End coatings are not usually required when lumber is placed in the kiln directly after being sawn. However when lumber is air dried prior to kiln drying, end coating is often helpful in preventing end checks

6. Weigh the 28" sample boards. An accuracy of .025 pounds or 1 gram is recommended. Record these values.
7. Put the 28" sample boards in the lumber stacks in places where they can be reached and will dry at the same rate as the lumber. Do not place the sample boards where they will receive more air flow than the rest of the lumber.
8. Take the "green weight" by weighing all the 1" sections, to 0.1 gram accuracy is suggested. Record these values.
9. Oven dry the 1" sections using one of the two methods below.

- **Microwave with carousel tray:** Put sections on a paper towel on the tray. Use low power (to avoid smoking) for 20 minutes. Weigh the section, and put back in the microwave for 1 minute. If the section has not lost any weight, it is oven dry. If still losing water, continue drying in 5 minute increments until a constant weight is achieved.
- **Oven:** Place the 1" section in an oven at 215°F (101°C) until the section stops losing weight, usually takes 24 hours. Check hourly until the section weighs the same in separate weighings.

10. Calculate the moisture content of each 1" section separately using the following formula:

$$\%MC = \left(\frac{\text{Wet Weight}}{\text{Oven Dry Weight}} - 1 \right) X\ 100$$

11. Average the moisture content of the two 1" sections from each 28" sample board to calculate the estimated moisture content of the sample board when it was cut.
12. Calculate the oven dry weight of the 28" sample board is using the following formula and the average moisture content (MC) from the previous step:

$$\text{OD weight} = \left(\frac{\text{Wet Weight}}{100 + \%MC} \right) X\ 100$$

13. Write the calculated OD weight on the sample board so that it is readily available.

14. At about the same time each day, weigh the sample boards and calculate the current moisture content with this formula:

$$\text{Current } \%MC = \left(\frac{\text{Current Weight}}{\text{Calculated Oven Dry Weight}} - 1 \right) X\ 100$$

15. Place the 28" sample board back in the same place in the kiln it came from.

16. Calculate the daily drying rate for each section. Keep all the figures written down as a record of the load. Make any adjustments to the schedule based on the fastest drying sample.

17. Once the moisture content of the kiln is below 20%, it is often a good idea to cut new 1" sections from the center of the sample boards (1 section per board).

    Example: Two 1" sections are cut from 30" sample board 1, and labeled 1A and 1B. They are weighed on a balance, and the weights are: A=2.5g and B=2.3g. The sections are placed in a microwave on low power for 20 minutes and weighed, weighing A=1.7g and B=1.6g. They are put back in the microwave for 1 minute and weighed again. The weights did not change, so these values are now oven dry weights.

- Calculate the moisture content using the formula in step 10.

  A = [(2.5 / 1.7) -1] x 100 = 47.06 B = [(2.3 / 1.6) -1] x 100 = 43.75

- Average the two calculations together:

  (47.06 + 43.75) / 2 = 45.40%.

  This is the calculated moisture content for the rest of the sample board.

- Calculate the oven dry weight of the sample board 1. Use the formula in step 11. The green weight is 1.64 kilograms.

  ODW = (1.64 / 145.4) x 100 = 1.13 kg.

- After a day in the kiln, weigh sample board 1 and it weights 1.58 kg. Using the formula in step 13, the moisture content is:

  %MC = [(1.58 / 1.13) -1] x 100 = 39.8

- The daily change in moisture content is:

  45.4 -39.8 = 5.6%.

Record Keeping

A good system of record keeping for the dry kiln is essential to developing a good operating procedure. The records that are kept will indicate when operations are deviating from the norm and will allow future schedules to alter to improve production.

Note: It is recommended that all information be kept on the sample boards as outlined in the Dry Kiln Operator's Manual.

In addition to the records kept daily on the sample boards, it is also very important to plot on a graph the average and wettest drying sample. If possible, plot all the samples on the graph. This will indicate the drying rate and often any adjustment will become apparent on the graph before it is analyzed in the data.

Each day, the water removal should be weighed for one minute and that figure recorded on the kiln records. While one direct use is made of this information in the drying schedule, a deviation from normally expected water flows will give early warning of a malfunction in the refrigeration system.

Several times during the cycle the bulb should be measured on both sides of the load and in several areas. The average should be noted on the kiln record. As with measuring the water removal rate, this is not used in the operation of the kiln but deviations from normal will indicate a problem in loading, baffling, airflow etc. That will affect drying. These figures will always vary but being familiar with them, the operator will be able to detect a malfunction early.

Record should be kept for comparison throughout the year. It is wise to compare summer loads with summer and winter loads.

Drying Rate Index (DRI)

The dry kiln industry has never had a method of predicting drying rates. This is remarkable as one main reason for having a kiln is to bring about predictable production rates. The EMC value gives an end point of what the moisture content of the lumber would eventually become but it does not give an indication of how long it will take to reach that moisture content.

Drying schedules for dehumidification drying were developed in the late 1970's. It became obvious that a method of adjusting kiln schedules to meet drying time objectives within the limitations of the operation range of the dehumidifiers had to be found. It was common to look up a drying schedule in the Dry Kiln Operators Manual or some other reference, and then find a set of conditions at which dehumidifier could run using the same EMC. This resulted in unnecessarily long drying cycles and was quickly shown to be an ineffective method of doing kiln schedules.

Nyle developed the Drying Rate Index in response to that but time has shown that the Drying Rate Index is very useful in both conventional and dehumidification kilns. With the trend to control kilns by monitoring drying rate to get maximum productivity & quality, the Drying Index becomes a very valuable tool.

The drying rate is a function of the vapor pressure deficit. Everyone knows that things dry faster in hotter, drier air. Every fluid has a vapor pressure associated with it that varies with the temperature of the fluid. Air has a vapor pressure that is of function of temperature and humidity. The difference between the two determines the rate drying. This is how everything in the world dries whether it is paint, the ocean, the lumber or perspiration. When the humidity of the air is 100% no evaporation takes place regardless of the temperature. As relative humidity drops the rate the fluid evaporates increases. The problem is that a way of predicting the change in drying rate with changes in temperature and humidity was needed.

The Drying Rate Index is a relative number.

Example: A kiln is operating at 120° F. dry bulb and 110° F. wet bulb, that means the depression is:

10° (120° F.- 110° F. = 10° F.) According to the Nyle Drying Chart, The relative humidity is 72% the Equilibrium Moisture Content (EMC) is 12.1% and the Drying Rate Index (DRI) is 1.0. The EMC indicates where the lumber will end eventually. The EMC is also an indication of where the surface moisture content of the lumber will go fairly quickly. The whole board will eventually be 12.1 % but the surface will reach 12.1% much quicker.

In the above example, the lumber might be drying at 3% per day but it could be dried faster at 5% per day. In order to change the drying rate from 3% per day to 5% per day, it would be necessary to find a DRI that is 1.67 times the existing drying rate.

- Desired Drying Rate/Existing Drying Rate =
- Multiplier. (5/3=1.67)
- Multiplier x Existing DRI= Desired DRI
- The existing DRI is 0.9 so the new DRI should be 1.5 (0.9 x 1.67)

Referring to the Nyle Drying Chart (Pg 27), it can be seen that if the temperature were increased to 130° F and the depression 13° F (read between 12 and 14 on the chart), the DRI will be 1.5. Other combinations of dry bulb and depression will give the same result.

Example: Dry bulb could be left at 120° F and the depression increased to 17° F, or the dry bulb could be raised to 140° F. and the depression left at 10° F. All of these would result in a 1.5 DRI and thus would dry the lumber at 5% per day.

Note: The above three choices, 130/13, 120/17 and 140/10, the EMC is 10.5, 9.1 and 11.9 respectively. It is clear that EMC has nothing to do with how fast lumber dries but it does mean that low temperatures and bigger depressions may mean the surface moisture content will be lower. In some cases, were this pressed to an extreme, it may make the surface shrink too much so that factor should be considered.

The best way to use the drying chart is to check the kiln each day. Calculate the moisture loss and then adjust the kiln temperature and humidity each day to achieve the drying rate desired. Each charge of lumber will be different and will result in a different drying schedule. For this reason, it will be clear that drying schedules are of little use except as a starting point. None of the

drying schedule published state at what airflow they were developed. So running a schedule from a manual or another operation is ineffective as the airflow in the kiln may be different and may change through the cycle if variable speed fans are used.

Drying Tips

- Fresh cut lumber drys better and is less likely to be damaged during the drying process. Try to get it in the kiln as soon as possible.
- If you can't dry your lumber immediately after its been cut make sure that it is stacked, stickered and stored in a clean, dry place. Monitor it until it is ready to be put in the kiln as its moisture content will change during this time.
- Carefully plan your drying schedules for every batch of lumber and follow through with them, only making alterations when necessary. Neglecting an effective schedule can ruin product and cost you money.
- Air flowing through the lumber will be removing the moisture. Make sure you take the time to properly sticker and stack your lumber in the kiln. Better airflow will result in better drying.
- Use baffles and deflectors to control airflow inside the kiln when drying, it will be more efficient and result in more evenly dried lumber.
- Keep detailed records of every batch. If necessary you can use them as a reference when making improvements in scheduling or correcting mistakes.
- Make sure that an operator is always available when drying so that any necessary adjustments can be made as soon as possible. This will reduce the chance of any major issues during the process.
- Always double check your numbers at the end of a schedule to make sure that you have achieved your desired result.
- Every detail is important when drying lumber. Make sure that you are following operation and safety guidelines. Cutting corners can ruin your product, damage your unit, or even cause injury.
- If you are unsure about any aspect of operation or if something seems to be working incorrectly please contact Nyle as soon as possible. Do not continue operation, attempt any adjustment or repair to a unit with out consulting a licensed professional.
- Once a batch of lumber is dried keep it in a clean, dry location, away from the elements. Ideally kept inside and off the ground.
- Always stay up to date with the latest info on lumber drying. Attend trainings and seminars whenever possible and keep in contact with your local forestry offices

Wet Bulb Depression [Dry Bulb - Wet Bulb] °F

Dry Bulb °F	Measurement	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	25°	30°	35°	40°	45°	50°
30°	RH	78.0	57.0	36.0	17.0												
	EMC	15.9	10.8	7.4	3.9												
	DRI	0.0	0.1	0.1	0.1												
35°	RH	81.0	63.0	45.0	28.0	11.0											
	EMC	16.8	11.9	8.8	6.0	2.9											
	DRI	0.0	0.1	0.1	0.1	0.2											
40°	RH	83.0	68.0	52.0	37.0	22.0	8.0										
	EMC	17.6	12.9	9.9	7.4	5.0	1.9										
	DRI	0.0	0.1	0.1	0.2	0.2	0.2										
45°	RH	85.0	72.0	58.0	44.0	31.0	19.0	6.0									
	EMC	18.3	13.7	10.7	8.5	6.5	4.2	1.5									
	DRI	0.0	0.1	0.1	0.2	0.2	0.2	0.3									
50°	RH	86.0	74.0	62.0	50.0	38.0	27.0	16.0	5.0								
	EMC	19.0	14.4	11.5	9.4	7.6	5.7	3.9	1.5								
	DRI	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3								
55°	RH	88.0	76.0	65.0	54.0	44.0	34.0	24.0	14.0	5.0							
	EMC	19.5	15.1	12.2	10.1	8.4	6.8	7.3	3.6	1.3							
	DRI	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4							
60°	RH	89.0	78.0	68.0	58.0	48.0	39.0	30.0	21.0	13.0	5.0						
	EMC	19.9	15.6	12.7	10.7	9.1	7.6	6.3	4.9	3.2	1.3						
	DRI	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.5						
65°	RH	90.0	80.0	70.0	61.0	52.0	44.0	36.0	27.0	20.0	13.0						
	EMC	20.3	16.1	13.3	11.2	9.7	8.3	7.1	5.8	4.5	3.0						
	DRI	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.5						
70°	RH	90.0	81.0	72.0	64.0	55.0	48.0	40.0	33.0	25.0	19.0	3.0					
	EMC	20.6	16.5	13.2	11.6	10.1	8.8	7.7	6.6	5.5	4.3	0.7					
	DRI	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7					
75°	RH	91.0	82.0	74.0	66.0	58.0	51.0	44.0	37.0	31.0	24.0	10.0					
	EMC	20.6	16.8	14.0	12.0	10.5	9.3	8.2	7.2	6.2	5.1	2.3					
	DRI	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8					
80°	RH	91.0	83.0	75.0	68.0	61.0	54.0	47.0	41.0	35.0	29.0	15.0	3.0				
	EMC	21.0	17.0	14.3	12.3	10.9	9.7	8.6	7.7	6.8	5.8	3.5	0.3				
	DRI	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.9	1.0				
85°	RH	92.0	84.0	76.0	70.0	63.0	56.0	50.0	44.0	38.0	33.0	20.0	9.0				
	EMC	21.2	17.2	14.5	12.5	11.2	10.0	9.0	8.1	7.2	6.3	4.3	1.7				
	DRI	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.8	1.0	1.1				
90°	RH	92.0	85.0	78.0	71.0	65.0	58.0	52.0	47.0	41.0	36.0	24.0	13.0	3.0			
	EMC	21.3	17.3	14.7	12.8	11.4	10.2	9.3	8.4	7.6	6.8	4.9	2.8	0.9			
	DRI	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.9	1.1	1.2	1.4			
95°	RH	92.0	85.0	79.0	72.0	66.0	60.0	55.0	49.0	44.0	39.0	28.0	17.0	8.0			
	EMC	21.3	17.4	14.9	12.9	11.6	10.5	9.5	8.7	7.9	7.1	5.3	3.6	1.9			
	DRI	0.1	0.2	0.3	0.5	0.6	0.7	0.7	0.8	0.9	10.0	1.2	1.4	1.5			
100°	RH	93.0	86.0	80.0	73.0	68.0	62.0	56.0	51.0	46.0	41.0	30.0	21.0	12.0	4.0		
	EMC	21.3	17.5	15.0	13.1	11.8	10.6	9.6	8.9	8.1	7.4	5.7	4.2	2.8	0.7		
	DRI	0.1	0.3	0.4	0.5	0.6	0.7	0.9	0.9	1.0	1.1	1.4	1.5	1.7	1.9		

105°	RH	93.0	87.0	80.0	74.0	69.0	63.0	58.0	53.0	48.0	44.0	34.0	24.0	16.0	8.0		
	EMC	21.4	17.5	15.1	13.2	11.9	10.8	9.8	9.0	8.3	7.6	6.1	4.6	3.3	1.8		
	DRI	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.7	1.9	2.1		
110°	RH	93.0	87.0	81.0	75.0	70.0	65.0	60.0	55.0	50.0	46.0	36.0	26.0	19.0	11.0	4.0	
	EMC	21.4	17.5	15.1	13.3	12.0	10.8	9.9	9.2	8.4	7.7	6.3	4.8	3.8	2.5	1.1	
	DRI	0.2	0.3	0.5	0.6	0.8	0.9	1.0	1.2	1.3	1.4	1.7	1.9	2.1	2.3	2.5	
115°	RH	93.0	88.0	82.0	76.0	66.0	61.0	56.0	52.0	48.0	38.0	29.0	22.0	14.0	8.0	2.0	
	EMC	21.4	17.5	15.1	13.4	12.1	10.9	10.0	9.3	8.6	7.8	6.5	5.2	4.1	2.9	1.7	0.4
	DRI	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.3	1.4	1.6	1.9	2.1	2.4	2.6	2.8	2.9
120°	RH	94.0	88.0	82.0	77.0	72.0	67.0	62.0	58.0	53.0	49.0	40.0	31.0	24.0	17.0	10.0	15.0
	EMC	21.3	17.4	15.1	13.4	12.1	11.0	10.0	9.4	8.7	7.9	6.6	5.4	4.4	3.3	2.3	1.1
	DRI	0.2	0.4	0.6	0.8	1.0	1.1	1.3	1.4	1.6	1.8	2.1	2.4	2.6	2.9	3.1	3.3
125°	RH	94.0	88.0	83.0	77.0	73.0	68.0	63.0	59.0	55.0	51.0	41.0	33.0	26.0	19.0	13.0	8.0
	EMC	21.2	17.3	15.0	13.4	12.1	11.0	10.0	9.4	8.7	8.0	6.7	5.5	4.6	3.6	2.7	1.6
	DRI	0.2	0.5	0.7	0.9	1.1	1.3	1.5	1.6	1.8	1.9	2.3	2.7	2.9	3.2	3.4	3.6
130°	RH	94.0	89.0	83.0	78.0	73.0	69.0	64.0	60.0	56.0	52.0	43.0	35.0	28.0	21.0	15.0	10.0
	EMC	21.0	18.2	14.9	13.4	12.1	11.0	10.0	9.4	8.7	8.0	6.8	5.6	4.8	3.8	3.0	2.0
	DRI	0.3	0.5	0.8	1.0	1.1	1.4	1.6	1.8	2.0	2.2	2.6	2.9	3.3	3.6	3.9	4.1
140°	RH	95.0	89.0	84.0	79.0	75.0	70.0	66.0	62.0	58.0	54.0	46.0	38.0	31.0	25.0	19.0	14.0
	EMC	1.0	16.9	14.8	13.2	11.9	10.6	10.0	9.4	8.7	8.0	6.9	5.8	5.0	4.1	3.4	2.6
	DRI	0.3	0.6	0.9	1.2	1.5	1.8	2.0	2.2	2.5	2.7	3.2	3.7	4.1	4.4	4.8	5.1
150°	RH	95.0	90.0	85.0	80.0	76.0	72.0	68.0	64.0	60.0	57.0	48.0	41.0	35.0	28.0	23.0	18.0
	EMC	20.2	16.9	14.5	13.0	11.8	10.8	9.9	9.2	8.6	8.0	6.9	5.8	5.1	4.2	3.6	2.9
	DRI	0.4	0.8	1.1	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.9	4.5	5.0	5.5	5.8	6.2
160°	RH	95.0	90.0	86.0	81.0	77.0	73.0	69.0	65.0	62.0	58.0	50.0	43.0	37.0	31.0	25.0	21.0
	EMC	19.8	16.2	14.2	12.7	11.5	10.6	9.7	9.1	8.5	7.9	6.8	5.8	5.1	4.3	3.7	3.2
	DRI	0.5	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.7	4.1	4.8	5.5	6.1	6.7	7.2	7.6
170°	RH	95.0	91.0	86.0	82.0	78.0	74.0	70.0	67.0	63.0	60.0	52.0	45.0	39.0	33.0	28.0	24.0
	EMC	19.4	15.8	13.9	12.4	11.3	10.4	9.6	9.0	8.4	7.8	6.7	5.7	5.1	4.4	3.7	3.2
	DRI	0.6	1.1	1.7	2.2	2.7	3.2	3.7	4.0	4.5	4.9	5.9	6.7	7.5	8.2	8.8	9.3
180°	RH	96.0	91.0	87.0	83.0	79.0	75.0	72.0	68.0	65.0	62.0	54.0	47.0	41.0	35.0	30.0	26.0
	EMC	18.9	15.5	13.7	12.2	11.1	10.1	9.4	8.8	8.1	7.6	6.5	5.7	5.1	4.4	3.8	3.3
	DRI	0.6	1.4	2.0	2.6	3.2	3.8	4.3	4.9	5.4	5.8	7.0	8.1	9.0	10.0	10.7	11.3
190°	RH	96.0	92.0	88.0	84.0	80.0	76.0	73.0	69.0	66.0	63.0	56.0	49.0	43.0	37.0	32.0	28.0
	EMC	18.5	15.2	13.4	12.0	10.9	10.0	9.2	8.6	7.9	7.4	6.4	5.5	4.9	4.4	3.8	3.3
	DRI	0.8	1.5	2.3	3.0	3.8	4.6	5.1	5.9	6.5	7.0	8.4	9.7	10.9	12.0	12.9	13.7
200°	RH	96.0	92.0	88.0	84.0	80.0	77.0	84.0	80.0	67.0	64.0	57.0	51.0	45.0	39.0	34.0	30.0
	EMC	18.1	14.9	13.2	11.8	10.8	9.8	9.1	8.4	7.7	7.2	6.2	5.4	4.8	4.3	3.8	3.3
	DRI	0.9	1.9	2.8	3.8	4.7	5.4	6.1	7.0	7.8	8.5	10.1	11.5	13.0	14.3	15.5	16.4
210°	RH	96.0	92.0	88.0	85.0	81.0	78.0	75.0	71.0	68.0	65.0	59.0	52.0	46.0	41.0	36.0	32.0
	EMC	17.7	14.6	13.0	11.7	10.6	9.7	9.0	8.3	7.6	7.1	6.1	5.3	4.7	4.2	3.7	3.2
	DRI	1.2	2.3	3.5	4.3	5.5	6.3	7.2	8.3	9.2	10.1	11.8	16.8	15.5	17.0	18.4	19.6
Dry Bulb °F	**Measurement**	**2°**	**4°**	**6°**	**8°**	**10°**	**12°**	**14°**	**16°**	**18°**	**20°**	**25°**	**30°**	**35°**	**40°**	**45°**	**50°**

Kiln Carts

Installation

VIEW ON KILNSTORE

1. Install V Groove Wheels in the mounts using the wheel axle and flat washer; ensuring the wheels are oriented so that the grease fittings face outward. (See Fig A)

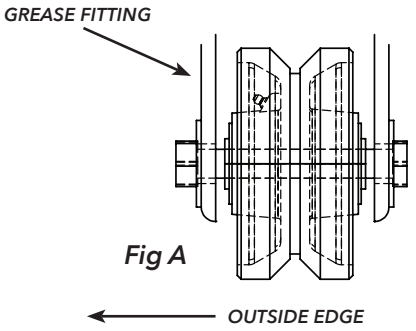


Fig A

2. After installation layout the new installed cart frame out and place the rails on top aligning the holes. (see Fig B)

   Note: when placing the rails on the frame be sure to have the smaller holes facing the frame and larger holes facing up.

3. Install rails onto the base frame using the supplied bolts and locknuts. (See Fig C)

   Note: To tighten the bolts, go through the top holes in the rail with a ratchet, 3/4" socket and extender.

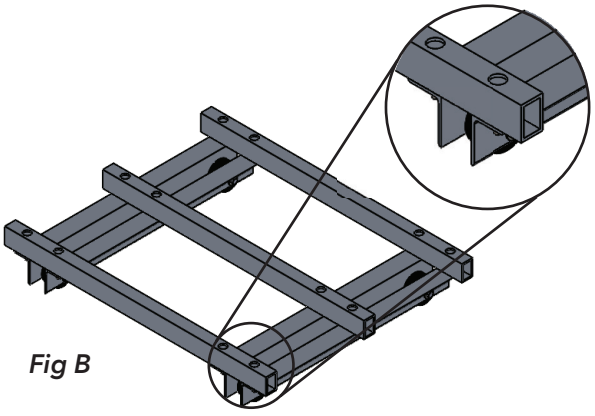


Fig B

Part List

Part No.	Description	Qty
10449657	3" x 2" x 48" Aluminum Kiln Cart Rails	3
10024662	1/2" x 4" Wheel Axle (with nuts attached)	4
31030000	38" Cart Base Frames	4
10527622	V Groove Wheels	4
10024658	1/2"-13 x 1 1/2" Stainless Steel Serrated Flange Bolt	12
10332242	1/2"-13 Stainless Steel Serrated Flange Locknut	12
10542460	5/8" Stainless Steel Flat Washer	8

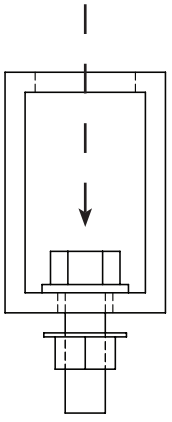
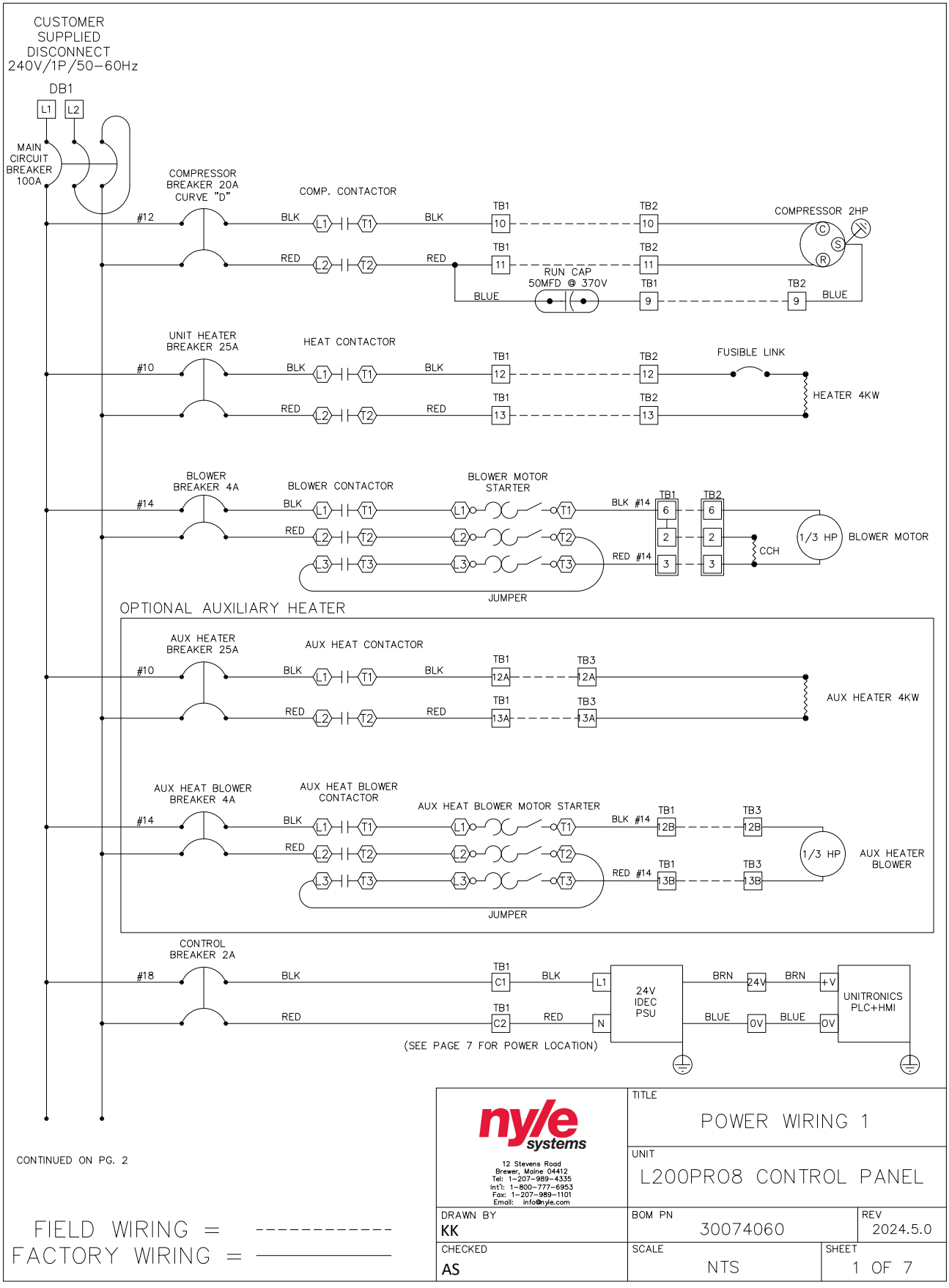
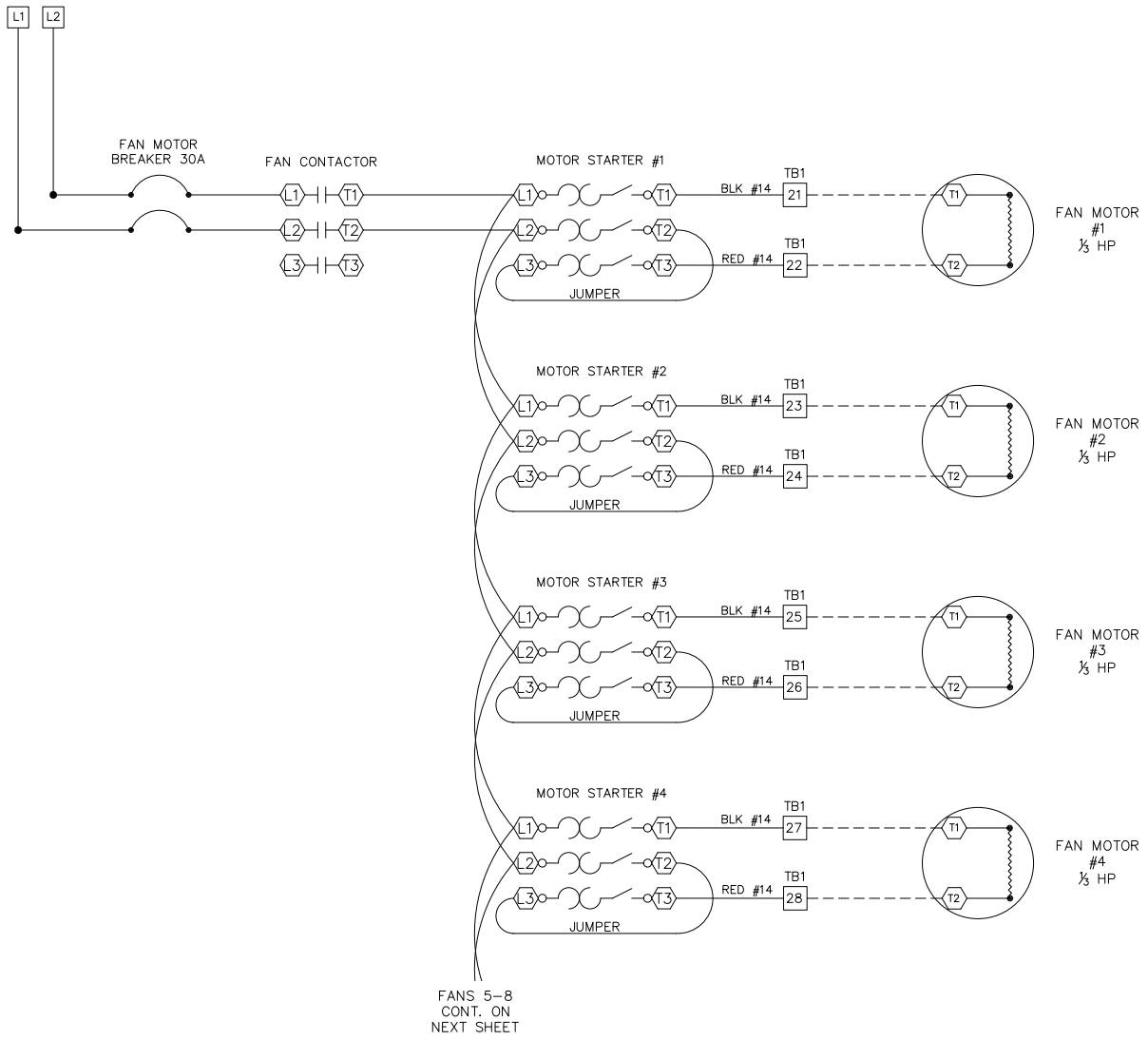


Fig C

Wiring Diagram



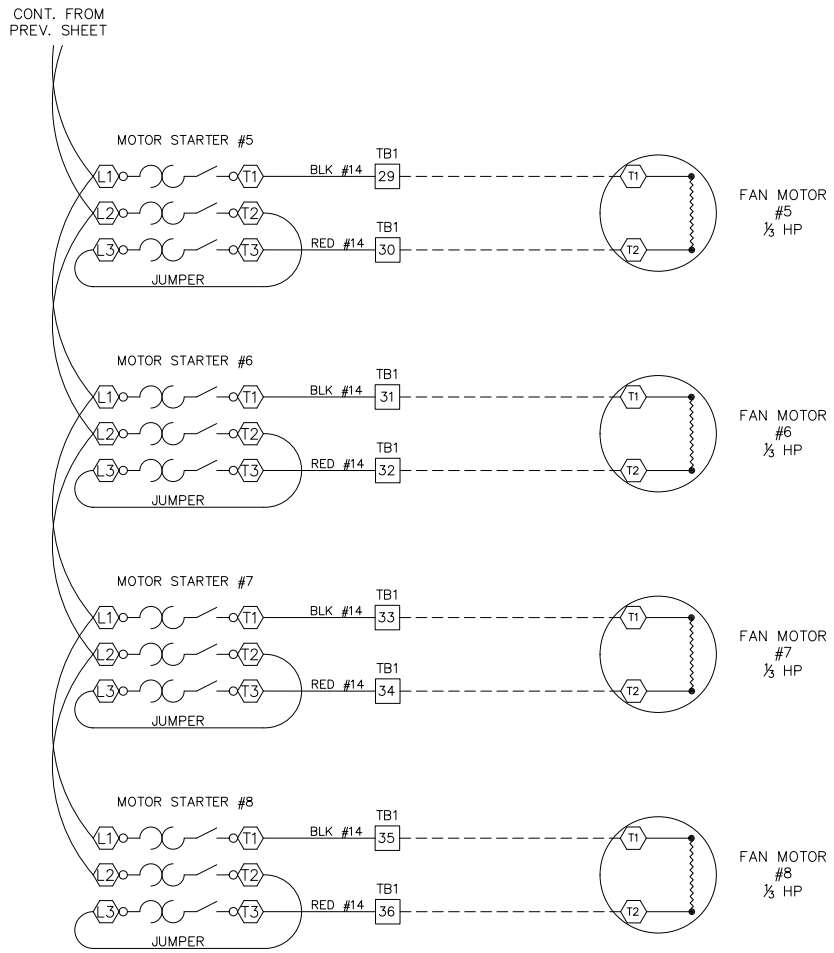


FIELD WIRING = ----------

FACTORY WIRING = ——————

nyle systems
12 Stevens Road
Brewer, Maine 04412
Tel: 1-207-989-4335
Int'l: 1-800-777-6953
Fax: 1-207-989-1101
Email: info@nyle.com

TITLE: POWER WIRING 2		
UNIT: L200PRO8 CONTROL PANEL		
DRAWN BY: KK	BOM PN: 30074060	REV: 2024.5.0
CHECKED: AS	SCALE: NTS	SHEET: 2 OF 7



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Int'l: 1-800-777-6953
Fax: 1-207-989-1101
Email: info@nyle.com

TITLE: POWER WIRING 3		
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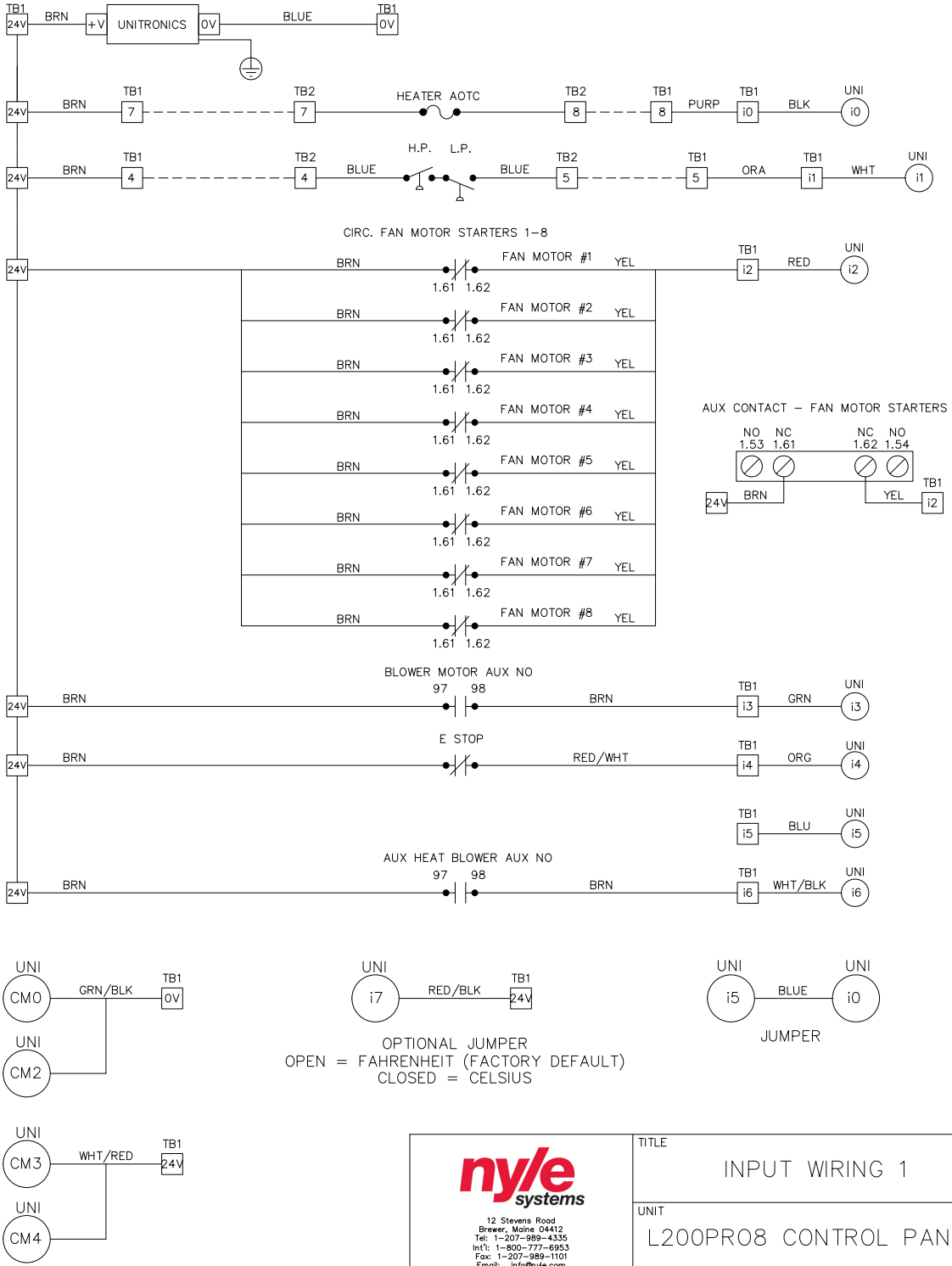

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Email: info@nyle.com

TITLE: INPUT WIRING 1		
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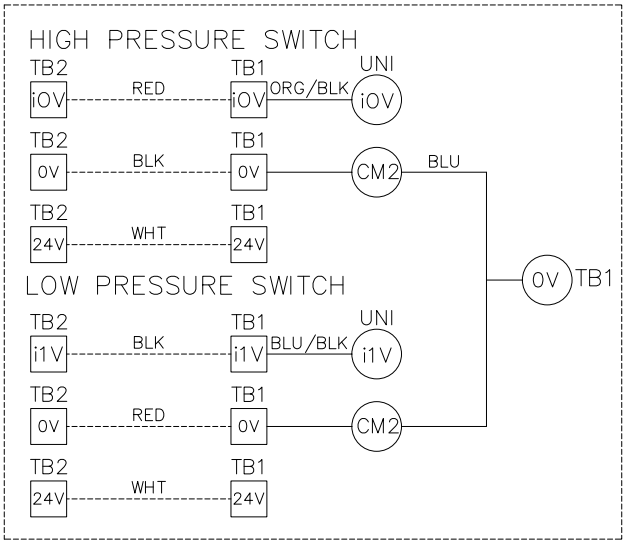
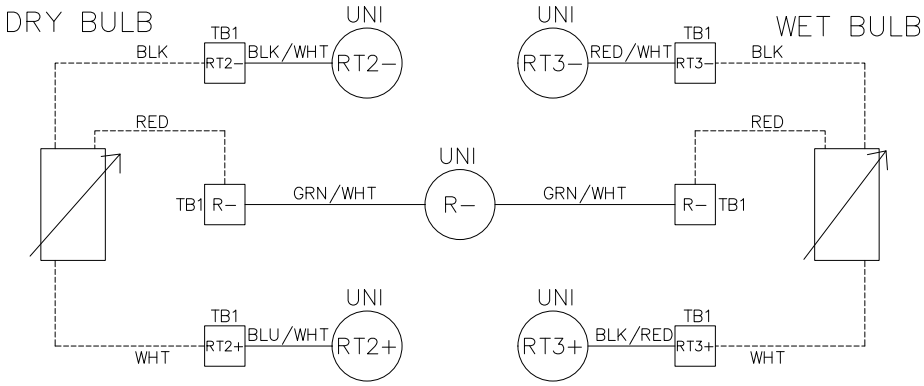
DRAWN BY: KK	BOM PN: 30074060	REV: 2024.5.0
CHECKED: AS	SCALE: NTS	SHEET: 4 OF 7





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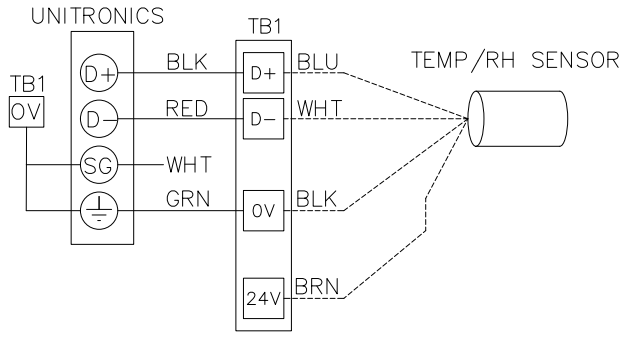

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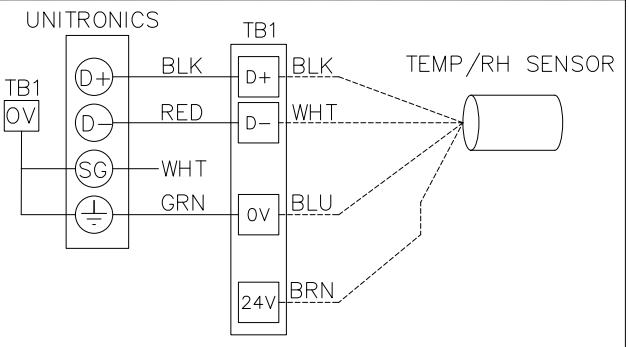

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nyle systems
12 Stevens Road
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Int'l: 1-800-777-6953
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Email: info@nyle.com

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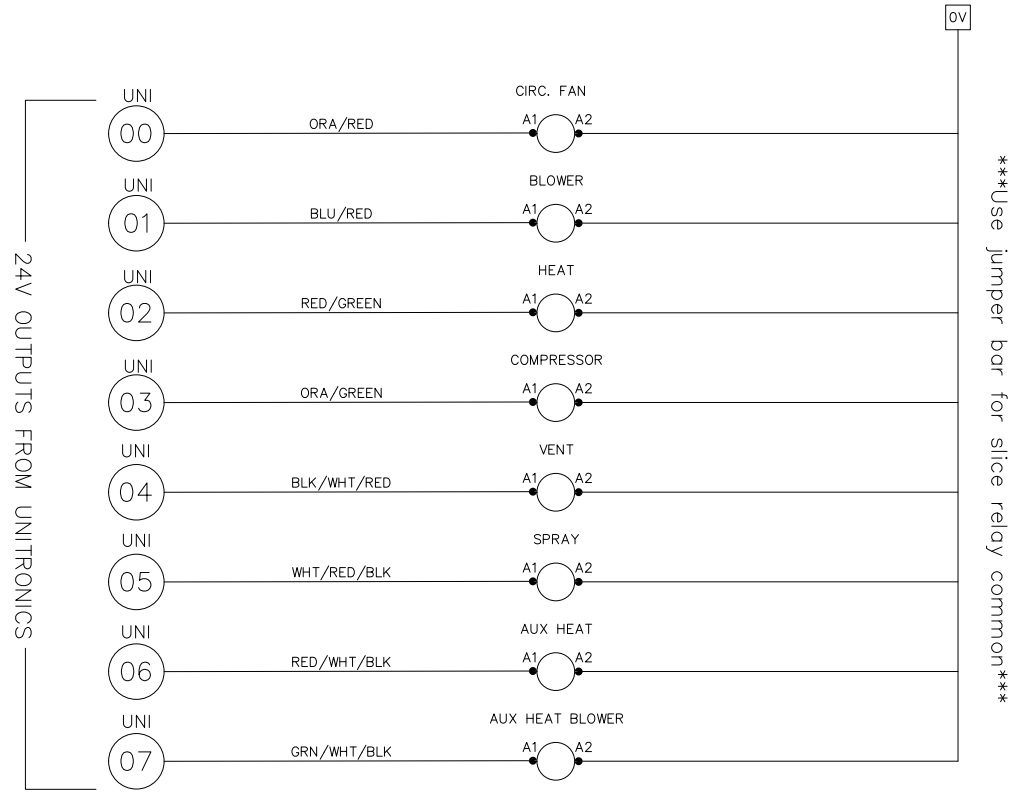
UNIT: L200PRO8 CONTROL PANEL		
DRAWN BY: KK	BOM PN: 30074060	REV: 2024.5.0
CHECKED: AS	SCALE: NTS	SHEET: 5 OF 7

OUTPUTS TO SLICE RELAYS



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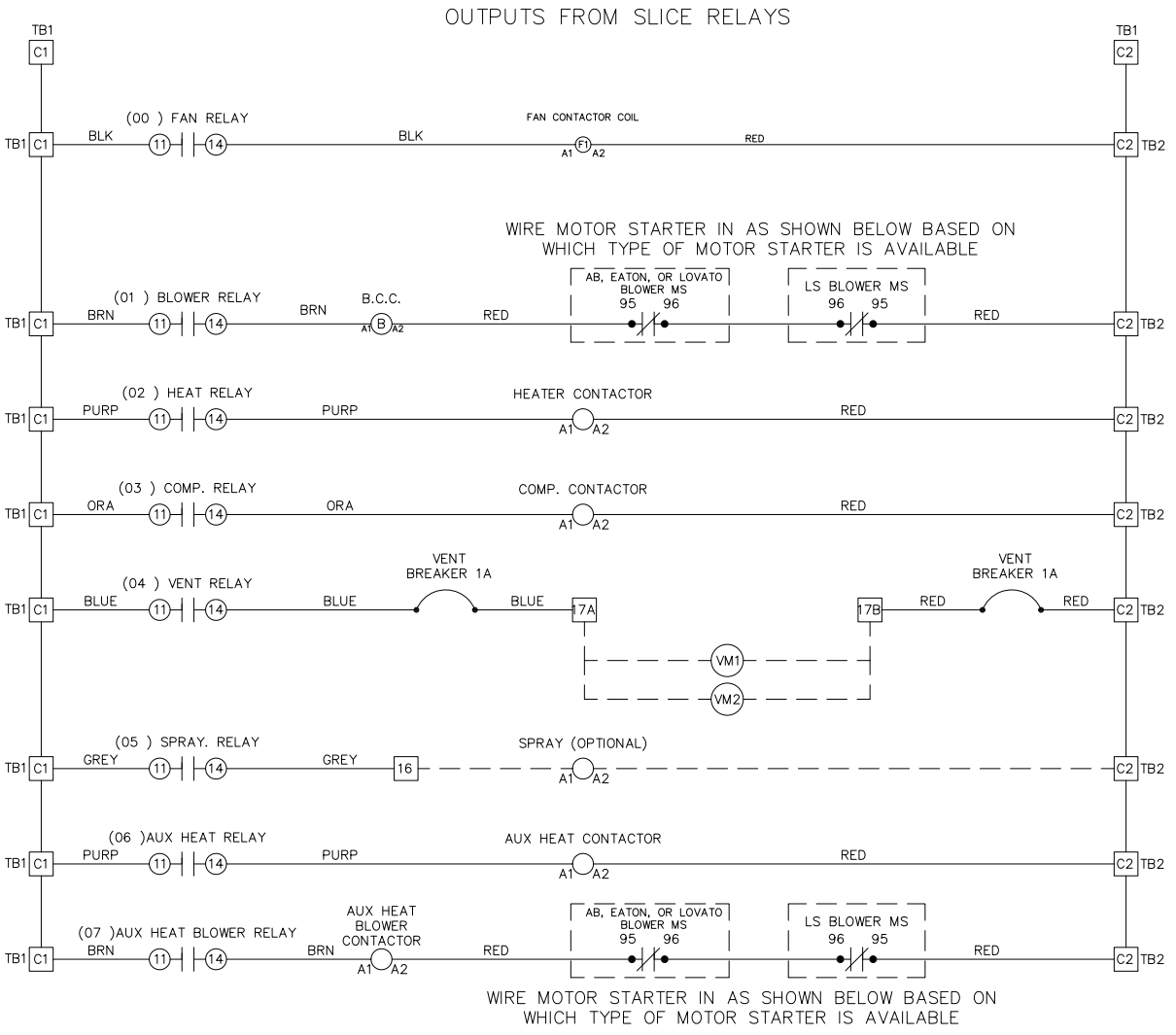
Int'l: 1-800-777-6953
Fax: 1-207-989-1101
Email: info@nyle.com

	TITLE: OUTPUT WIRING 1	
	UNIT: L200PRO8 CONTROL PANEL	
DRAWN BY: KK	BOM PN: 30074060	REV: 2024.5.0
CHECKED: AS	SCALE: NTS	SHEET: 6 OF 7



FIELD WIRING = ----------

FACTORY WIRING = ——————

nyle systems
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Brewer, Maine 04412
Tel: 1-207-989-4335
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TITLE: OUTPUT WIRING 2		
UNIT: L200PRO8 CONTROL PANEL		
DRAWN BY: KK	BOM PN: 30074060	REV: 2024.5.0
CHECKED: AS	SCALE: NTS	SHEET: 7 OF 7

L200 Maintenance

General Maintenance

The L200 is designed for continuous duty, with little maintenance. However, when a problem does arise prompt repair will ensure long life for the machine.

The blower system is direct drive and the motor has sealed high temperature ball bearings. This unit does not need regular maintenance.

The circulating fan system is also direct drive with a ball bearing motor. The motor does not require lubrication.

Air Inlet Filters

The air filters are provided to keep the air inside the unit as clean as possible. Dirt build-up on the coils will lead to poor heat transfer with loss of capacity.

In extreme cases, the coil will completely clog. The air filter should be washed when dirty and replaced when necessary. If the filter becomes clogged, the air supply will be drastically reduced, causing the heater to overheat and the refrigeration system to overload. Evap coil should be kept clean. Clean with dish soap and water.

Refrigerant Charging Procedure

The refrigeration system is a closed loop system with its own lubrication oil supply. Nyle uses only the best trade practices when assembling these systems. The system should give years of trouble free service. However, if the system is not removing the right amount of water, or if a problem should arise from rough shipping or a refrigeration leak, the system should only be looked at and worked on by a qualified refrigeration mechanic.

When the system experiences reduced water output, this is generally associated with a leak in the refrigeration system. If the leak is found and repaired before the system is empty, there is little chance that the system will be contaminated with moisture. If the system is ignored for a long period of time, moisture can enter the system and combine with the refrigerant to form acid. The system will then corrode from the inside-out if not corrected properly.

Warning: Refrigeration professionals should use caution, these refrigeration conditions are uncommon.

These systems operate over a very wide temperature and humidity range. The pressures will be relatively high when compared to air conditioners and heat pumps. For these reasons, you cannot charge by the sight glass, the sight glass will eventually clear at certain conditions but it is unlikely that those conditions will exist when servicing.

If the kiln is loaded with lumber, it will be very dangerous to run the kiln at extreme limits, as the lumber will degrade severely. With this danger factor and the factor of time involved of heating the kiln, Nyle insists that these machines have weighed in charge. The amount is as follows:

L200 20 oz. R134a

CALL NYLE IF YOUR TECHNICIAN LACKS THE RECOMMENDED REFRIGERANT. WE CAN RECOMMEND ALTERNATIVES

Controller Factory Settings

These setting are programmed by Nyle before unit ships, and are provided for reference only. **Please do not attempt to adjust these settings without consulting Nyle service first.**

To enter the Initial Setup mode, hold the “Select” key and immediately hold the down arrow to enter in “Setup” mode, then release both the “Select” and down arrow; the first parameter setting screen will appear. To set the next parameters press the “Select” key again.

Note: The controller will automatically exit from the configuration mode after setting the last parameter or 10 seconds without any activity on the keyboard

1. Fahrenheit mode (on/off)

Screen Appearance: SETUP 1

Fahrenheit ON/OFF

If the parameter is set to ON, the temperature will be displayed in Fahrenheit, otherwise it will be displayed in Celsius degrees.

2. Compressor enabling temperature

(20°C to 99°C/68°F to 210°F)

Screen Appearance: SETUP 2

COMPRESSOR 80° F

It is the minimum temperature required to enable the compressor. Below this temperature the compressor will remain turned off.

3. Compressor hysteresis (0 to 20° C/F)

Screen Appearance: SETUP 3

Hy COMPRESSOR 1° F

This parameter is used to define a range around the WB temperature setting where the status (On or Off) of the compressor is left unchanged. This is useful to prevent undesired oscillations due to the measurement precision or to small fluctuations around the threshold values (see "Relay activation conditions").

4. Overheating threshold (0 to 20° C/F)

Screen Appearance: SETUP 4

Hy VENT 2° F

It defines a threshold above the DB temperature setting to activate the overheating relay. The relay is turned OFF when the DB temperature decrease to the DB set point (see "Relay activation conditions").

5. Humidification hysteresis (0 to 20° C/F)

Screen Appearance: SETUP 5

Hy SPRAY 2° F

This parameter is used to define a range around the WB temperature setting where the status (On or Off) of the humidification relay is left unchanged. This is useful to prevent undesired oscillations due to the measurement precision or to small fluctuations around the threshold values (see "Relay activation conditions").

6. Temperature hysteresis (0 to 20)

Screen Appearance: SETUP 6

Hy Temperature 1° F

This parameter is used to define a range around the DB temperature setting where the status (On or Off) of the heating relay is left unchanged. This is useful to prevent undesired oscillations due to the measurement precision or to small fluctuations around the threshold values (see "Relay activation conditions").

Appendix

Terminology

DRY BULB: The temperature as measured by a thermometer.

WET BULB: The temperature of a thermometer with a wet wick over the sensor.

WET BULB DEPRESSION: The difference between the dry bulb temperature and the wet bulb temperature.

Example: if the dry bulb is 105° F. and the wet bulb is 98° F., the depression is 105° F.-98° F., or 7° F.

RH-RELATIVE HUMIDITY: The ratio of the amount of water in the air to what the air could hold. At 50% RH, the air has 50% as much water in it as it would hold at 100% RH. 100% is a 0° F. depression.

EMC-EQUILIBRIUM MOISTURE CONTENT: This is the average moisture content all wood will reach eventually when exposed to these conditions.

Example: At a dry bulb of 115° F. and a wet bulb of 101° F., a 14° F. depression, the EMC is 10%. This means that eventually all wood will average 10%. Wood drier than 10% will pick up water and wood that is wetter than 10% will give up water.

DRI-DRYING RATE INDEX: This is an index of relative drying rate.

Example: If a dryer is operating at 120° F. and a wet bulb depression of 12° F., and drying the load at a rate of 1.5% per day, at the DRI is 1.1. If the wood will dry at 2 times the rate (2.2/1.1=2), or 3% per day. This assumes that other conditions remain the same.

Problem	Possible Causes / Actions	Corrections
Fan(s) won't Start	• Power issue • Wiring issue	• Ensure power switch is on. • Check wiring. • Check fan motors have power.
No Heat	• Check that the automatic over temperature control switch (AOTC) is in auto position & the control is calling for heat, use wiring diagram to check heat circuit. • Check fusible link • Check heater coil	• Replace the AOTC or fusible link if bad. • Replace whole heater if coil is bad.

Compressor doesn't run	• High Pressure Switch has tripped
	• Fault in circuit
		• Reset High Pressure Switch.
		• With a multimeter and wiring diagram check if:
		  • Low Pressure switch tripped ; call nyle.
		  • Time delay relay is bad; Replace if it is.
		  • Compressor has power ; call nyle if it does.

Unit Starts and Runs but Screen is Dead	• Bad fuse in controller	• Check fuse if fuse is bad, call nyle.
Water isn't Draining	• Issue with drain line/ trap	• Clear any blockages in drain line / trap. • Add trap to drain line if no trap installed.
Temperature is flashing ERR or both Wet & Dry Bulb	• Wet bulb too high • Wet bulb equals Dry bulb	• Check Wet bulb bottle for water. • Check Wet bulb wick. • Make sure Wet bulb temperature doesn't equal Dry Bulb Temp.

Fusible Link

Automatic Over Temperature Control Switch (AOTC)

Still need help? Check out our video series KilnTECH on YouTube for more support .

Control Alarm Codes

Error Message	Explaination
Estop Lockout	The emergency stop button was pressed
Data Log Error	Error recording data to the drying log file
Mc Log Error	Error recording data to the moisture sample log
Digital Probe	Digital probe faulted
RTD 1&2	Rtd probe damaged or disconnected
DB Overtemp	Temp is above 160
WB Overtemp	Wetbulb is greater than 20 degrees over setpoint
Heat	Breaker tripped in heat circuit
Auxiliary Heat	Breaker tripped in auxiliary heat circuit
Blower	Failed to start, motor starter or breaker tripped.
Fan	One or more fan motors has tripped on over current
Comp Safety SW	Compressor pressure safety switch has tripped
Compressor Over Temp	Compressor shut off due to high drybulb temp (i think the cutout is 140, but you will only get this alarm if you do not have the pressure transducers enabled. I would double check with joe on the cutout temp.)
Comp SLP	Compressor suction line transducer faulted
Comp DLP	Compressor discharge pressure faulted or out of range to operate compressor

L200 Upgrades & Accessories

Spray System Kiln

Although not standard on Nyle DH Kilns you may choose to add on this optional Spray System Kit which will provide extra control when drying. The Sprayers are designed to be automatically activated by the system when needed and help with regulating the relative humidity within the kiln chamber.

Nyle spray systems are designed to inject into kiln air one gallon of water per hour for every 1000 BF. Because air temperature affects the quantity of water evaporated (warmer air holds more water vapor), we need to balance the quantity of water vapor to the kiln capacity. DH units with small heaters will require proportionately less water than larger units with bigger heating capacity. There are options available for every unit so be sure that the kit you are purchasing matches the specifications for the unit that it will be installed in.

Nyle encourages boosting water pressure to 100 psi for the spray system to have the best results. Commonly this is done with the use of a jet pump, which can be purchased through Nyle if requested. Contact your Nyle Sales or Service Representative for more information. You can reach a Nyle Service Professional by:

Calling us directly at (800)777-6953 X 923 or by sending us an email at service@nyle.com

Heat Booster Package

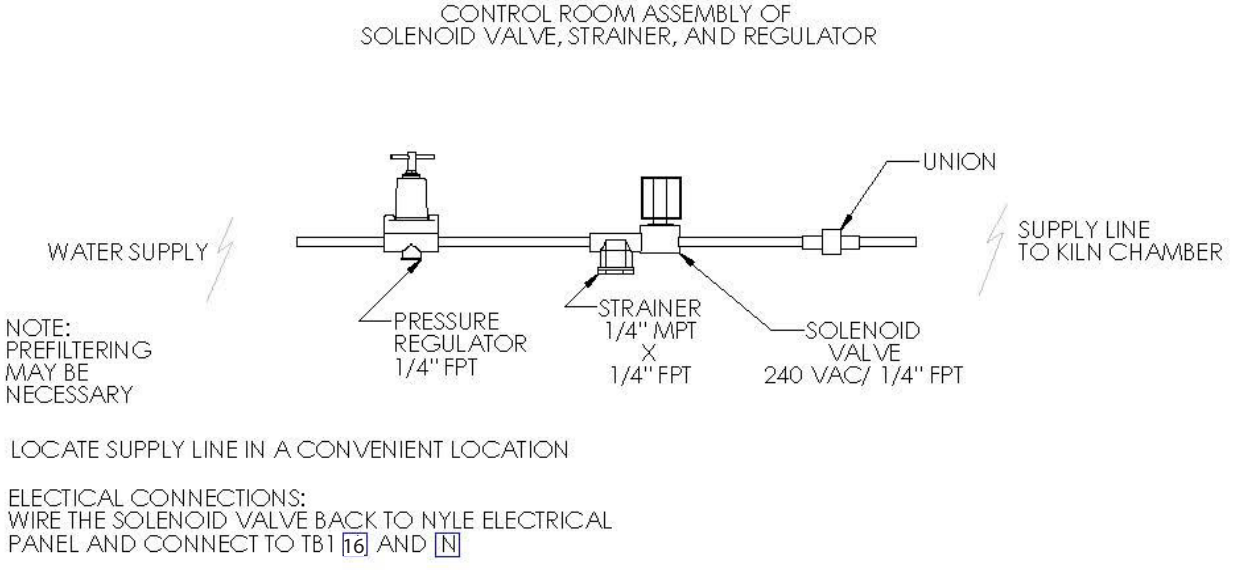
The Heat Booster is an auxiliary heater that can be connected to the control and provide additional heat and airflow within the kiln. This upgrade is used to;

Set Pitch: The heat booster allows the kiln temperature to reach 160° F to set the pitch and prevent any future running.

Note: Pitch setting is only required when drying Pine.

Sterilize the Load: By the kiln reaching 160° F it also sterilizes the load. During this sterilization process any bugs or mold in the wood is killed off.

The heat booster is also used to increase the speed at which the kiln chamber heats to the desired temperature. This becomes useful for when you have a larger chambers.



Kiln Store

At Nyle Systems, we like to be there for our clients whether they have just bought a new kiln or if they have owned a Nyle kiln for years. It is because of this that we try to make replacement parts easily accessible right Online in our Kiln Store.

From The Kiln Store you can find many parts, equipment and accessories for both conventional kilns and DH kilns. Anything and everything you need to keep your Nyle Kiln running for years to come. We even sell parts supplies that will fit Non-Nyle kilns if you need them.

At The Kiln Store you can expect to find everything you need including:

- Accessory Kits
- Controls and Control Accessories
- Additional Heaters and Fans
- Sample Testing Supplies and Charts
- Replacement Meters, Probes and Sensors
- Replacement Belts, Filters and Parts

So when you need a part for your kiln you don't have to look any further than www.nyle.com to find exactly what you need.

If you ever need assistance don't forget Nyle's star service team is always available to help you whether its finding the right replacement part or purchasing additional accessories for upgrades.

Contact your Sales or Service Representative for more information. You can reach a Nyle Service Professional by:

Calling us directly at (800)777-6953 X 923 or by sending us an email at service@nyle.com

Warranty

LIMITED WARRANTY: The equipment supplied by Nyle Dry Kilns is warranted to be free from defects in workmanship & materials for a period of one year from the date of the original installation under normal use and maintenance, or 15 months from the date of delivery, whichever comes first.

A new or re-manufactured part will be supplied by Nyle Dry Kilns if the defective part is first returned to Nyle Dry Kilns for inspection. The replacement part assumes the unused portion of the warranty. The warranty does not include labor or other costs incurred for diagnosis, repairing or removing, installing or shipping the defective or replacement part(s).

Nyle Dry Kilns makes no warranty as to the fitness of the equipment for a particular use and shall not be liable for any direct, indirect or consequential damages in conjunction with this contract and/or the use of its equipment. Buyer agrees to indemnify and save harmless Nyle Dry Kilns from any claims or demands against Nyle Dry Kilns for injuries or damages to the third parties resulting from buyer's use or ownership of the equipment. No other warranties, expressed or implied, will be honored unless in writing by an authorized officer of Nyle Dry Kilns.

Model_____

Serial Number _____

Date Purchased _____

Service Log

Issue Description	Date	Servicer

Service Log

Issue Description	Date	Servicer

Service Log

Issue Description	Date	Servicer

Service Log

Issue Description	Date	Servicer

Contact Us

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Brewer, ME 04412

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