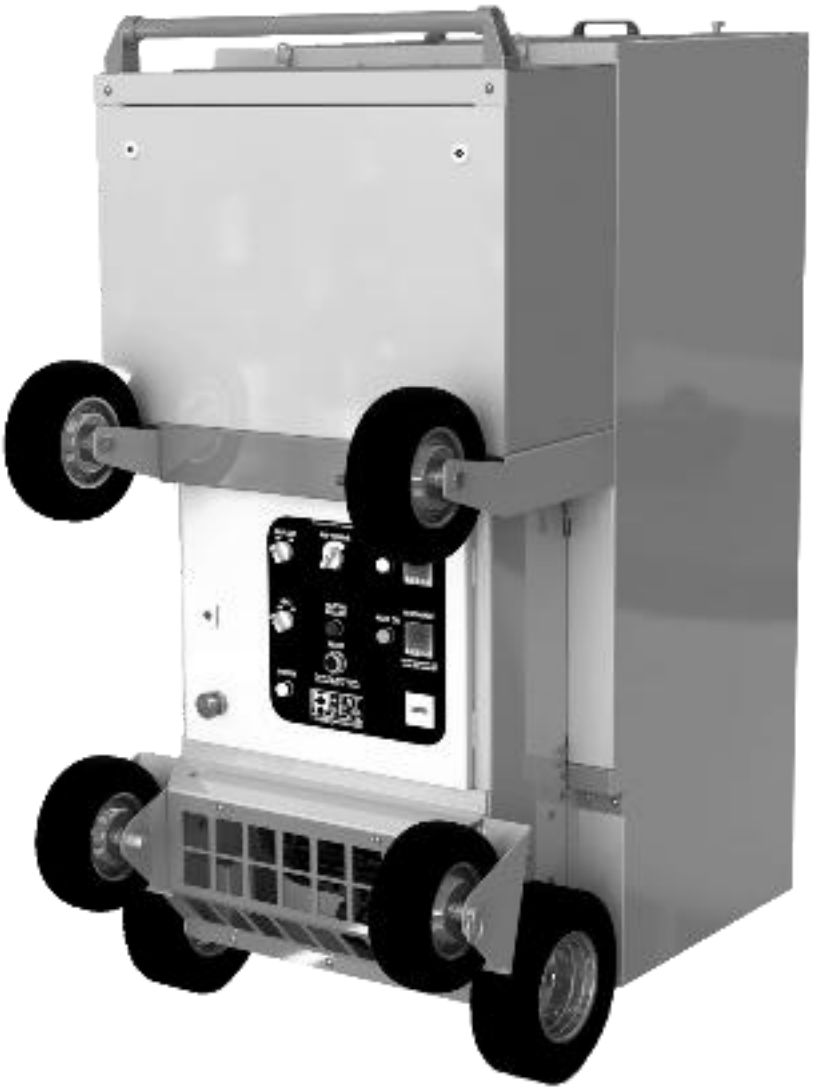
Heat Injector System
Training Manual



For more training information, please visit www.TheHeatInjectors.com
For further questions please give us a call at 770-529-5640

Topic Index

Propane Safety

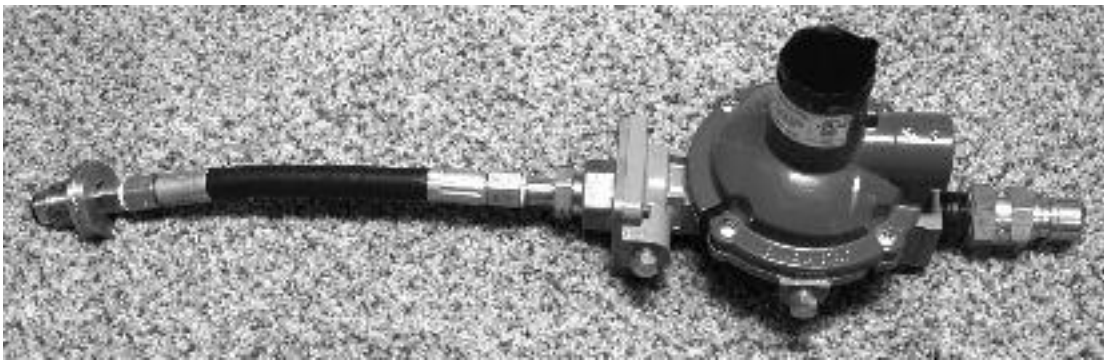
Propane canisters are required to be transported in an upright position. When the tanks get filled there is an overfill protection that limits the max fill to about 80%. A propane canister is under extreme pressure and can expand to 270% the current space. If a tank is exposed to high temperatures, it could cause the pressure release valve to release raw gas until the pressure in the tank can return to a normal level. Propane is 1.5x heavier than air, for this reason, some states ban the transportation of propane through certain under passes and tunnels. Please be sure to check your state's regulations on propane before operating.

- Tanks are **NOT** to be inside of a structure, ESPECIALLY if a heat treatment is being performed.

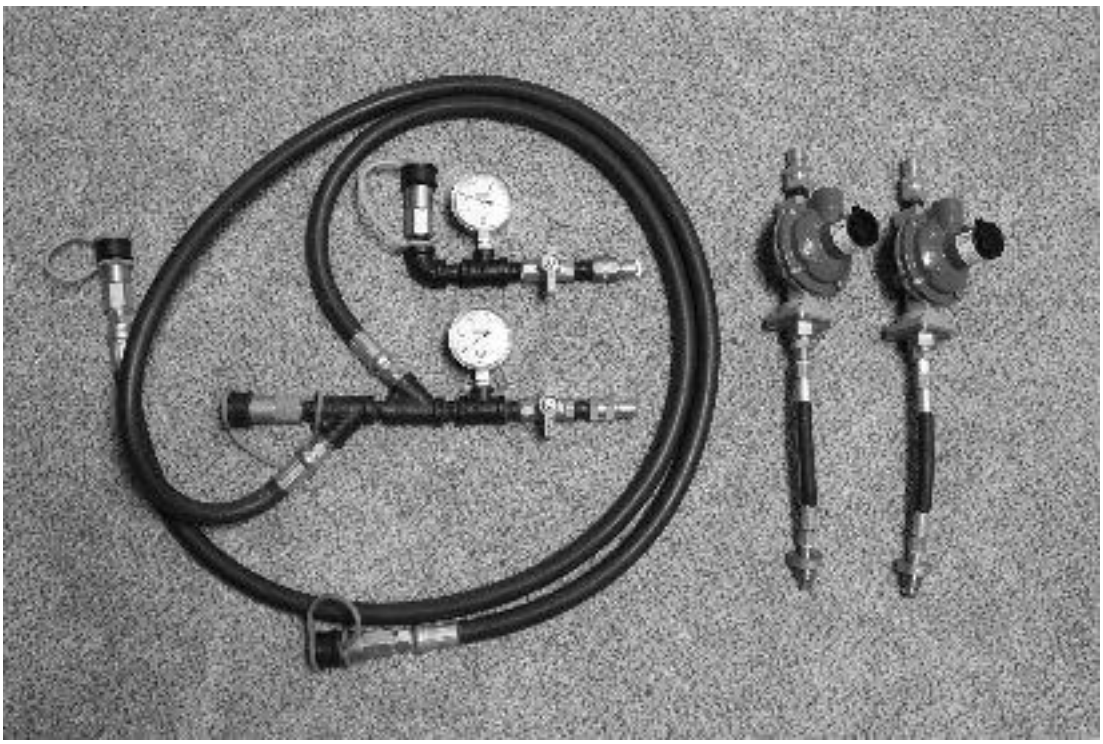
- Tanks are to be transported upright.

Gas Supply Set-up

A propane canister is under extreme pressure, about 250 PSI. The Heat Injector runs on a little less than 5 PSI. In order to reduce the tank pressure we use a Regulator that is set to 4.5 PSI. Each tank will need a regulator set to exactly the same pressure otherwise the tanks will be consumed at different rates which is not ideal.

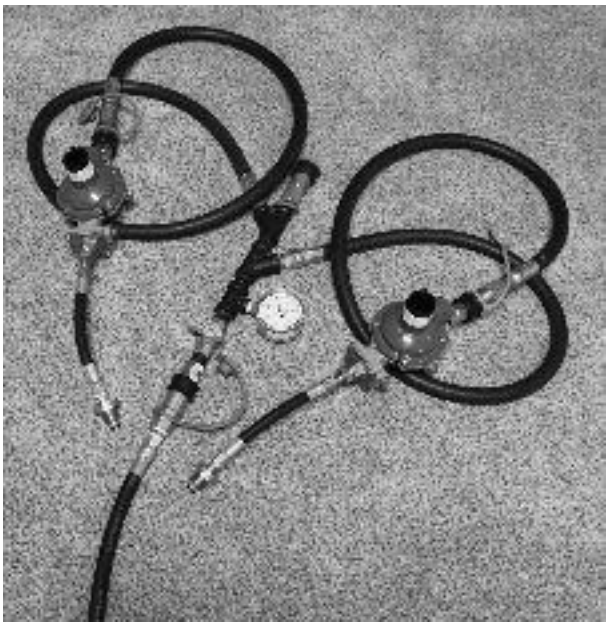


In order to run 2 tanks simultaneously, we use a “Dual Tank Manifold” which has an on/off valve for stopping gas flow and a gauge for monitoring gas pressure.



You will see a continuous pressure of 4.5 PSI until the tanks begin to run out. The Heat Injector will continue to run until the tank hits about 1 PSI.

The amount of gas hose brought to the job depends on the length needed. Most situations a 50ft gas hose will do, some jobs may require either a longer hose or will require you to gang 2 runs together. Once the gas line makes it to the Heat Injector, we use an “Inline QD Gauge” which has an on/off valve gauge for monitoring the gas pressure to the machine.




- Regulators are reverse threaded into tanks.
- Dual Tank Manifold is used with 2 or more tanks
- Inline QD Gauge is used to see gas pressure at the machine
- All gas hoses have Leak Proof Quick Disconnects
- Tanks **MUST** be turned off before removing QD on regulators.

Handling the Heat Injector

The Heat Injector was designed strategically with 8 wheels placed so a user never feels overwhelmed when moving the unit. There are 3 basic ways to roll the Heat Injector:

1. Upright
    - There are casters installed on the from of the machine so on a flat surface the machine can roll and swivel into a doorway or onto an elevator.

2. Pulled Back
    - By placing your foot on the foot-place lined with gripping tape while pulling back on the handle, the Heat Injector will lean slightly past the center of gravity and land safely on the 2nd set of wheels. This is the main maneuvering position, you are able to perform 0º turns if you pull back back to balance the weight on only the 2nd set of tires or vise versa.

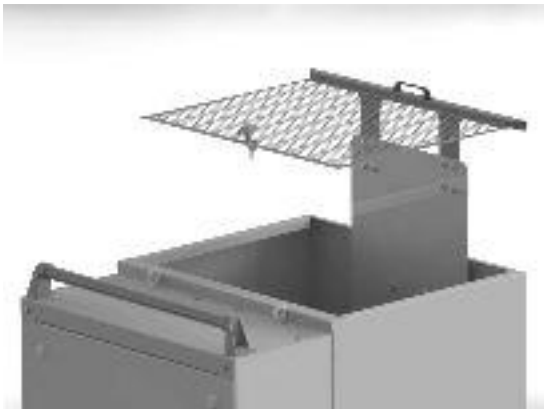
3. Transportation
    - Laying the machine all the way down on the next set of tires is called the transportation position, because when it rides in a van or trailer, it is laid down. Moving the Heat Injector in this position is especially helpful when rolling the machine on long, straight paths similar to hotel hallways or sidewalks.

Modular Design

There are TONS of advantages to the Modular Heat Injector System! In order to get the most out of this design advancement, it can take a little practice.

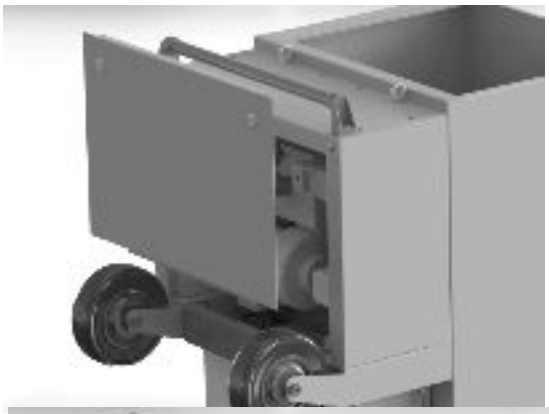
The machine completely disassembles into 3 main modules

- Burner Module
- Base Module
- Blower Module
- 1 - Motor
- 2 - Sides
- 1 - Intake Grate



Remove the two thumb screws, lift the T-handle out of the key holder and raise up the Grate with the handle near the front.

The Intake Grate is fitted with a key that confirms the Heat Injector has been installed correctly. This is the last part on and the first part off.



Remove the front cover and remove these 4 connections:

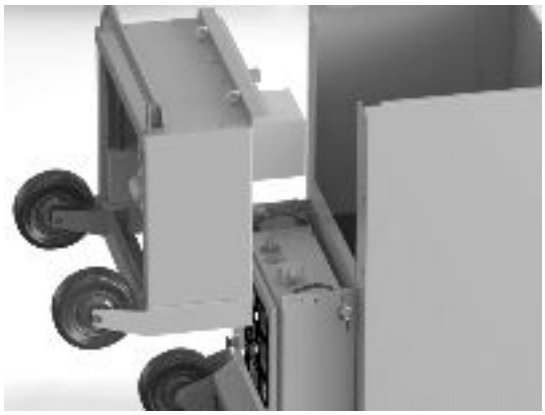
1. Main Connector
2. Blue Tube
3. Thermocouple Plug
4. Orange Cable from Burner

Unscrew the 2 interneral 5-arm knob

Note that the lower steel studs are alignment studs that pass through the sides to ensure proper alignment.

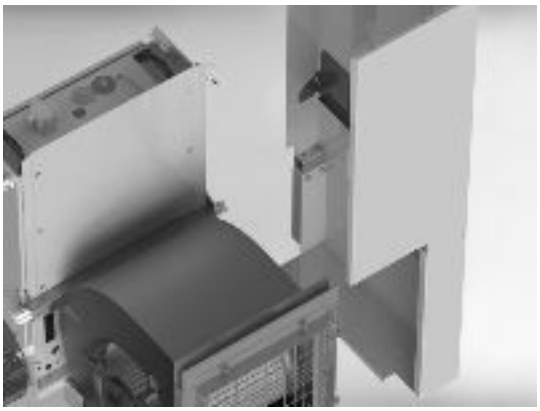
The T-Handle pull pin needs to be removed.

The toggle latch needs to be undone before the burner module can be undocked.



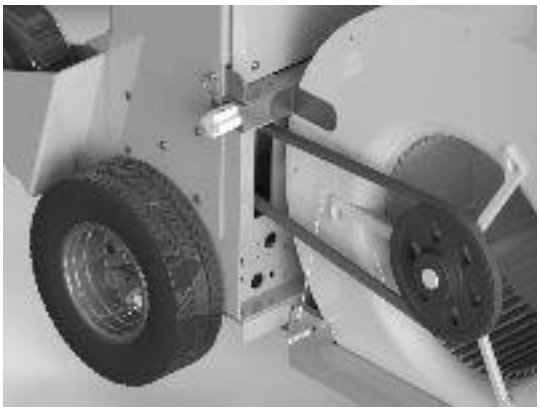
Before you remove the burner make sure the lifting straps handy. The burner is now free to slide directly outwards. By sliding only a few inches the straps can be installed before the weight is transferred.

By reaching over the control panel the two pull pins are ready to be removed.



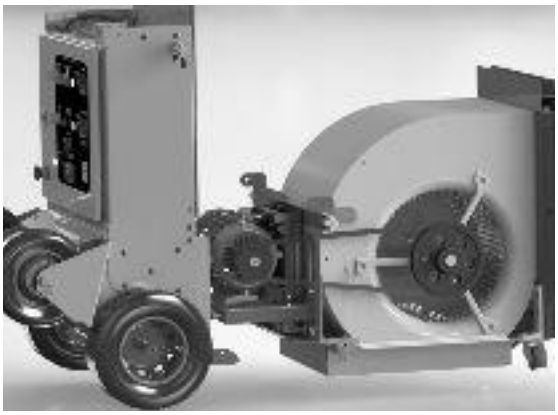
Placing a hand on the front and back of the side and pulling direcly outwards. After it slides out 2” the side can be lifted out of the black channel above the blower.

If the sides need to be placed on the ground flipping them upside down will help with stability.



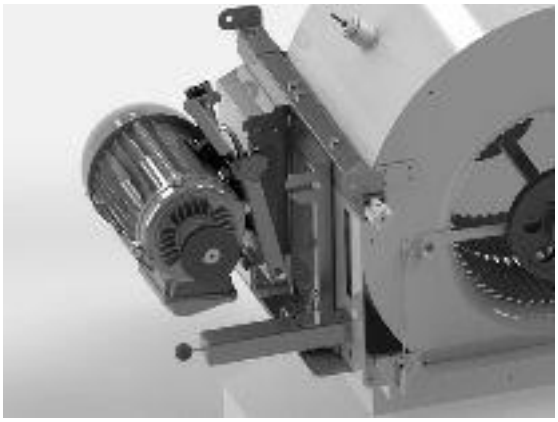
Remove the pull pin on the blower module (with the lanyard) to reduce the pressure that may shift if done in reverse order.

Then proceed to pull the upper pin on the base module. Is will appear to unlatch.



**Install docking mat under blower when assembling*

While keeping the base module stable, manually roll a wheel on the ground a ¼ turn in reverse to undock.
Roll about 18” back and unlatch and pull connector directly out.



First unlatch and remove the connector visible from above.
By slightly loosening both knobs on the motor it can be shifted forward enough for the belt to slide over the pulley on the motor.
Then lift the motor out of the slot using the handle provided.

**Appendix A* - A graphic that is a quick reference guide on where the pull pins and latches are located and the order to remove them.

Positioning the Heat Injector

There are 2 scenarios that come up when heat treating using a Heat Injector. When you want to place the machine in the doorway of the home or when you want to put the entire machine in the home.

- Doorway = Doorway Air Barrier
- In Room = Air Shell
- A tiny amount of Fresh Air is required to the unit.

Air Shell

Doorway Air Barrier

Because of the patented technology on the Heat Injector, this machine is able to recirculate the heated air within the treatment.
When it's placed in the doorway to a home the interfacing side of the machine is in the outside environment keeping the controls and motors cool and the entire intake grate and blower module is inside the home, recirculating the air.
When it's placed inside the home, there is a small amount (76cfm) of "fresh air" required by the heat injector. To meet this need we install an air tight enclosure around control panel and the lower grate that has a 12" duct attachment hole. This duct will carry the gas line and fresh air to the nearest window. When the pressurization mode it engaged, the fresh air will increase to 800-1,000 cfm.

**Appendix B* - A reference on where the controls to engage pressurization mode are located on the Heat Injector.

Operating the Machine

The Heat Injector was designed with the user in mind! Once you have your machine set up in the designated area you have chosen, there is a very simply start-up procedure:

1. Set “Air Volume” to 25%
2. Turn “Heat” Switch ON
3. Turn “Airflow” Switch ON
4. Set Discharge Temp (Most likely it will remain a set number for all jobs.)

The Control Panel has 4 indicator lights.

1. Power
    - Will be ON anytime the machine has a good power supply
2. Airflow
    - Once the Heat Switch is engaged this light is a confirmation that the main airflow blower is working properly
3. Heat ON
    - After the ignition process, this light will turn on and the above 3 lights will be on for the remainder of the treatment.

4. Ignition Failure
    - The Heat Injector only tries to start for 10 seconds before this light will turn on. Most issues are users allowing air to dilute their gas hose from improper gas line disassembly.
    - If this light illuminates, turn the “Heat” switch off, then press the blue reset button for 1 second…
    - The ignition failure light will disappear and the “Heat” switch can be re-engaged.

There are 2 temperature controllers

1. Intake
    - This controller is used to monitor the progress of the heat treatment. Just below the intake grate there is a temperature sensor that monitors the return air temperature.
    - There is a upper limit setpoint(SV), anytime the actual temp(PV) reached the SV it will turn the Heat OFF, until it drops below and will restart.

2. Discharge
    - The desired treatment temperature will be entered into this Discharge temperature controller. The SV will show the entered setpoint temp and the PV will show what the Heat Injector is discharging currently.

Heating Methods and Techniques

The method the Heat Injector uses to heat a house is closely paralleled to a homes HVAC system with registers in the rooms and a cold air return recirculating the air. With the Heat Injector System there is only one cold air return - the intake grate. The registers in each room is the ductwork pushing out the heated high pressure air where is loses its heat on the way back to the Heat Injector Intake. The amount of heat that is being adding is directly related to the temperature difference(delta T) between the intake and the discharge. So getting the heat as far away from the intake is best.

To maximize the heat transfer ability we try to use as large of a duct for as far as we can. The larger 16” duct is able to move a significantly greater amount of airflow than the smaller 12” duct.
CC = (Cinch Connector Series) **[CC-12] [CC-16]**

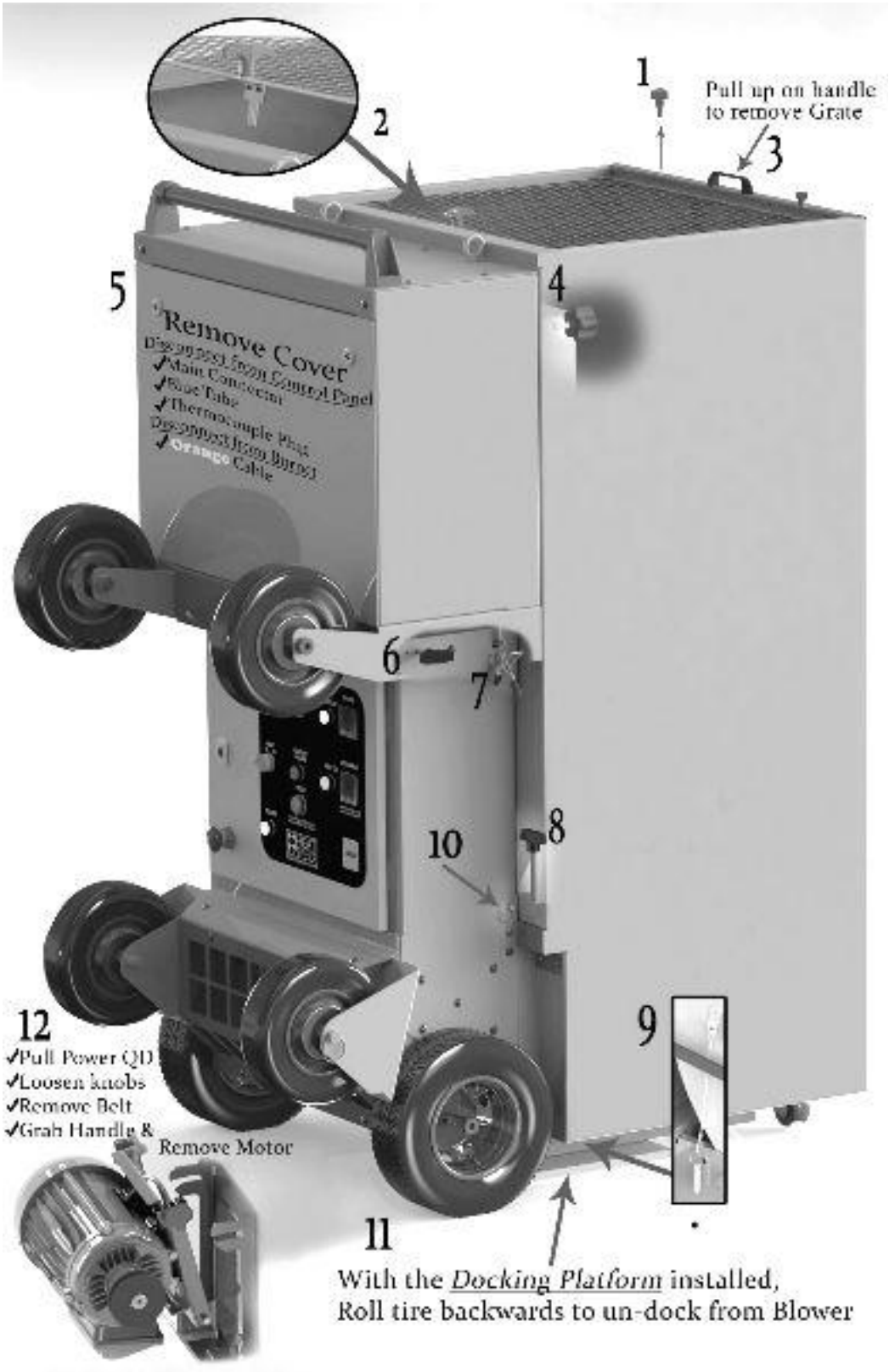


Y = (1 incoming 16” > 2 outgoing 12” or 16”) **[Y-1612] [Y-1616]**

Y3 = (1 incoming 16” > 3 outgoing 12”) **[Y3-1612]**

DC-90 = (Duct Concentrator 90” Long)

Appendix A - Assembly Guide



Appendix B - Pressurization Mode