IR Series

IR-1, IR-2.5, IR-5, and IR-12

Cleaning, Maintenance & Troubleshooting Guide

2019

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Please read all sections of this manual and retain for future reference.

DANGER

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

- The completed roaster installation **MUST BE INSPECTED** for compliance to building codes in your specific location, and by your local fire inspector **PRIOR TO** operating the roaster. Failure to have these inspections performed may void the warranty and will relieve Diedrich Roasters of any liability associated with the installation and use of your machine.

DANGER

Keep the area around the roaster free and clear from combustibles and maintain a minimum of 18-inches clearance around the roaster at all times.

DANGER

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

DANGER

Avoid contact with hot surfaces.

- A fire extinguisher should be located close to the roasting system. Consult with your local fire department for recommendations on suitable fire extinguishers.

WARNING

Always be aware of the risk of a fire. Fires are caused by failure to maintain a clean roaster and its exhaust duct system.

- Proper installation, cleaning, and safe operation of the coffee roaster are the owner's and operator's responsibility.
- This roaster is intended for professional use only and is to be operated by qualified personnel only**. Never permit an unqualified person to operate the roaster.**

DANGER

Instructions to be followed in the event the operator smells gas or otherwise detects a gas leak must be posted in a prominent location. This information can be obtained from the local gas company or gas supplier.

Table of Contents

Safety Information

Before attempting to operate your unit, read the instructions in this manual thoroughly. Throughout this manual, you will find notations enclosed in bordered boxes similar to the ones below.

CAUTION

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CAUTION boxes contain information about actions or conditions that *may cause or result in a malfunction of your system*.

WARNING

WARNING

WARNING boxes contain information about actions or conditions that *may cause or result in damage to your system*, and which may cause your system to malfunction.

DANGER

DANGER

DANGER boxes contain information about actions or conditions that *may cause or result in injury to personnel*, and which may cause damage to your system and/or cause your system to malfunction.

SAFEGUARDS

WARNING

ALWAYS disconnect roaster at electrical source (at the circuit breaker or safety shut-off switch) before servicing.

- Proper installation, cleaning and safe operation of the coffee roaster and ancillary equipment is the owner and operator's responsibility.
- Ensure the coffee roaster is cool to the touch prior to cleaning or servicing.
- Wear protective gloves and eyewear when scraping residue off of internal walls and components.
- Do not use a water hose or any type of sprayer other than a normal cleaning bottle for the purposes of cleaning.

At a minimum, the Cleaning & Maintenance Schedule found at the back of this manual should be completed as directed.

1. CLEANING

1.0 Suggested Hand Tools

- Allen wrench (at a minimum): 3/16", 3/32", 5/32", 1/8"
- Wrenches: 7/16" 5/8", 1/2", 5/16"
- Phillips 3-inch screwdriver #2, and #3
- Flathead screwdriver,
- Socket set,
- Slotted screwdriver,
- Nut driver 5/16-inch,
- Grease gun (cartridge type),
- Wire brush,
- Small spray bottle,
- Putty knife (flexible),
- Pry bar
- Small hammer
- Vacuum Cleaner (with reversible airflow)

1.1 Lubricants Required / Where Used:

- High Temperature Food Grade Grease (Available for purchase from Diedrich Manufacturing) / Use on bearing, agitator, and impeller.
- SAE20 non-detergent oil or sewing machine oil / Use on chain driven motor ONLY,
- WD-40 spray lubricant / Use on hinges.

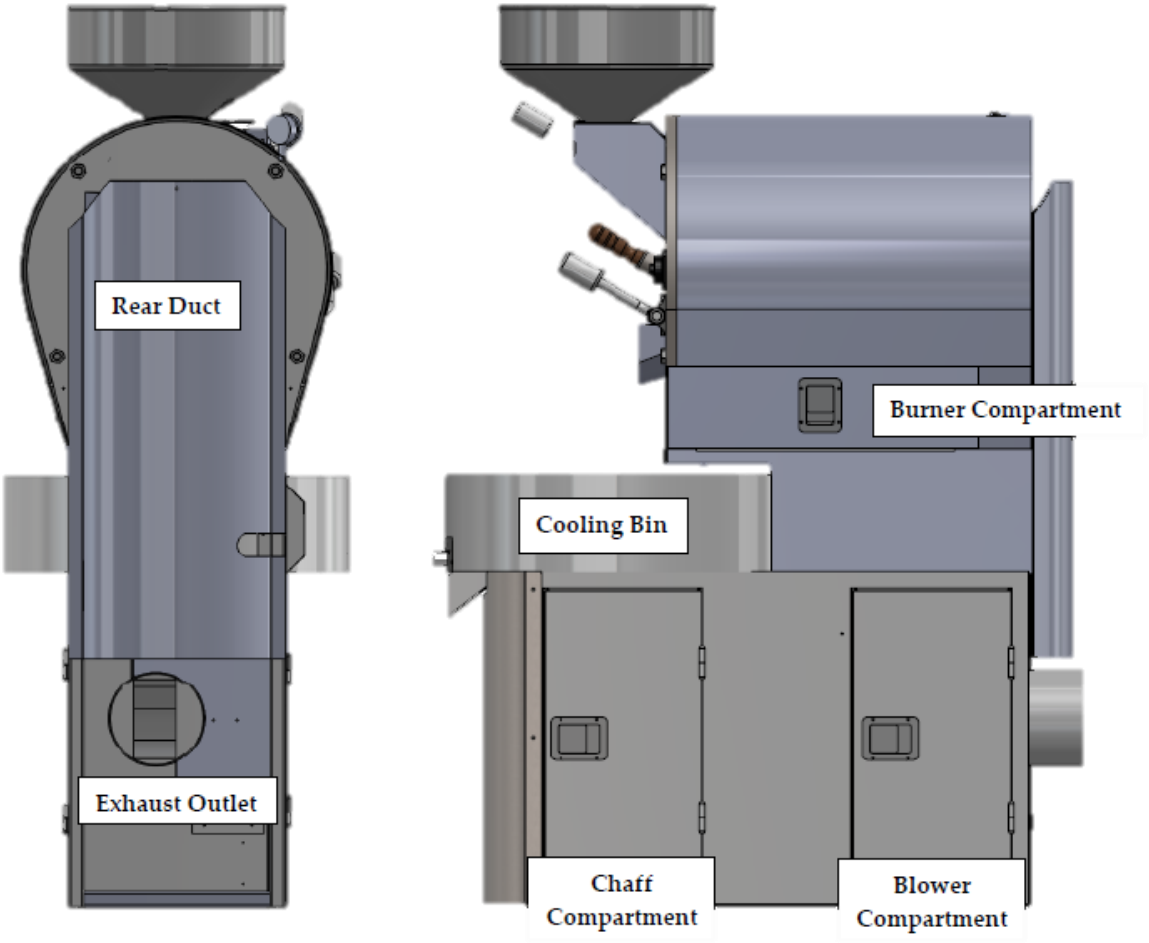
ATTENTION

All motors are sealed and should not require service.

2. CLEANING POINTS

DANGER

Electrical Power MUST be Disconnected and Locked Out.



IR-5/IR-12 Roaster Representation

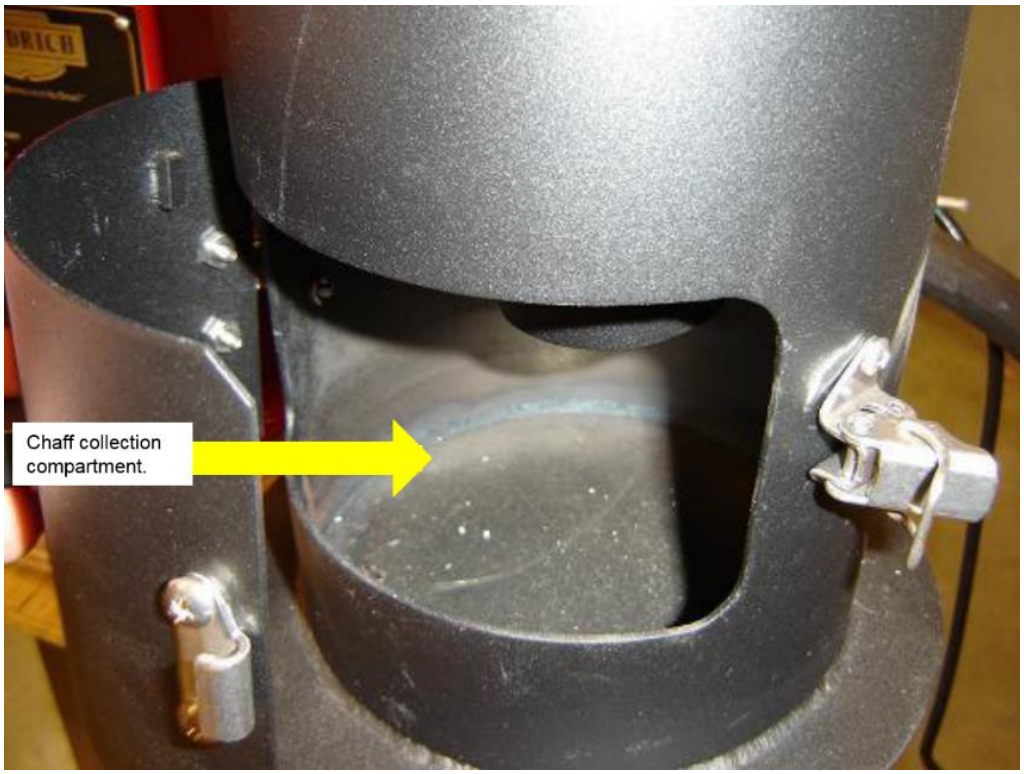
2.1 Cyclone Chaff & Chaff Collection Compartment

⚠DANGER

Make sure the chaff inside the cyclone and/or chaff collection compartment is cool to the touch and contains no hot embers before vacuuming. Vacuuming hot embers may start a fire and/or cause personal injury.

The cyclone and chaff collection compartment's function is to collect the chaff that separates from the coffee during the roasting process. These areas fill up quickly and require frequent emptying. Residue will accumulate on the metal surfaces within the compartment.

Use a wire brush or scraping tool to scrape off any residue, down to bare metal. Diedrich Roasters recommends cleaning these areas after 4-hours of roasting.

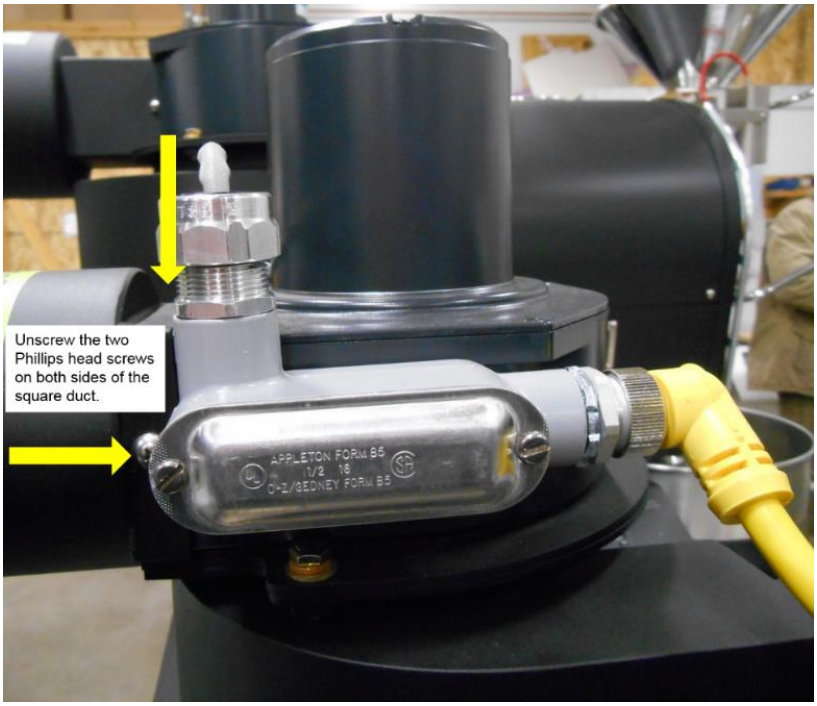


IR-1 & IR-2.5

IR-5 & IR-12

2.2 Blower Fan

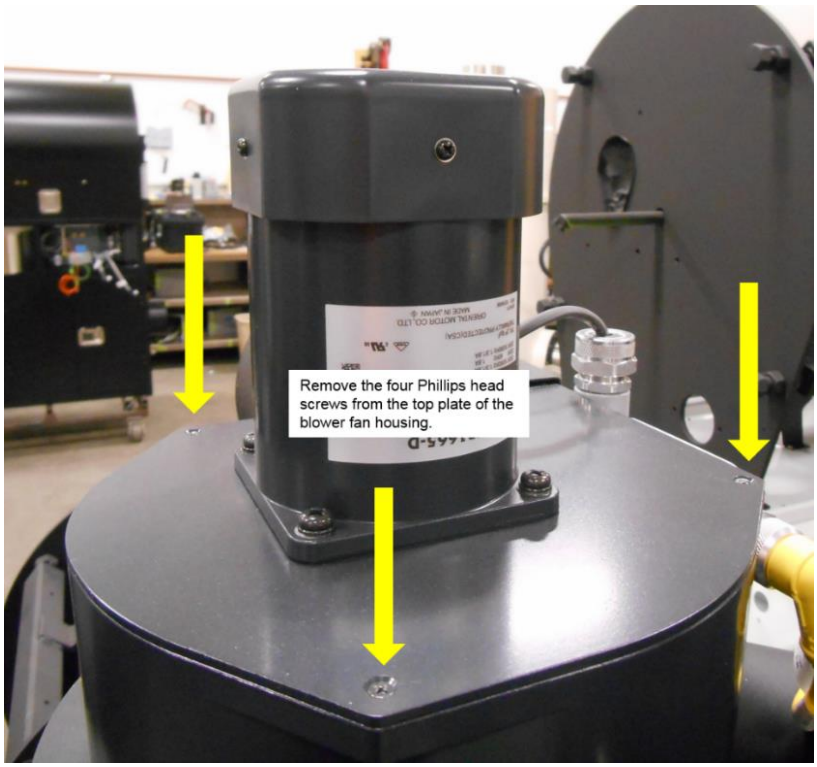
2.2.1 IR-1 & IR-2.5 ONLY



IR-1 & IR-2.5 Blower Fan

2.2.2 Unscrew the two Phillips head screws that secure the duct to the blower housing

2.2.3 **NOTE: There may be a line of caulk used to secure the top and bottom parts of the blower housing. Carefully remove the caulk from the housing.** Once the screws have been taken out, remove the duct from the blower housing.

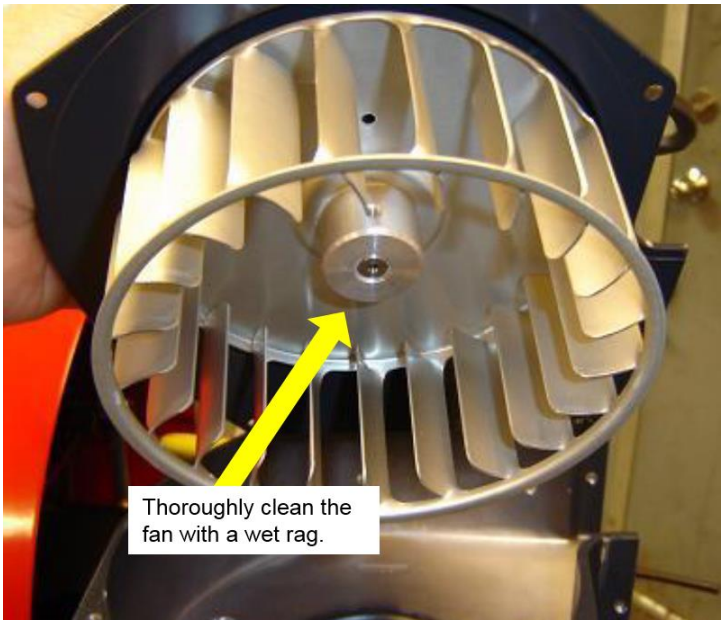


2.2.4 Remove the four Phillips head screws from the top plate of the blower housing.

2.2.5 Lift the top plate and motor off of the housing.

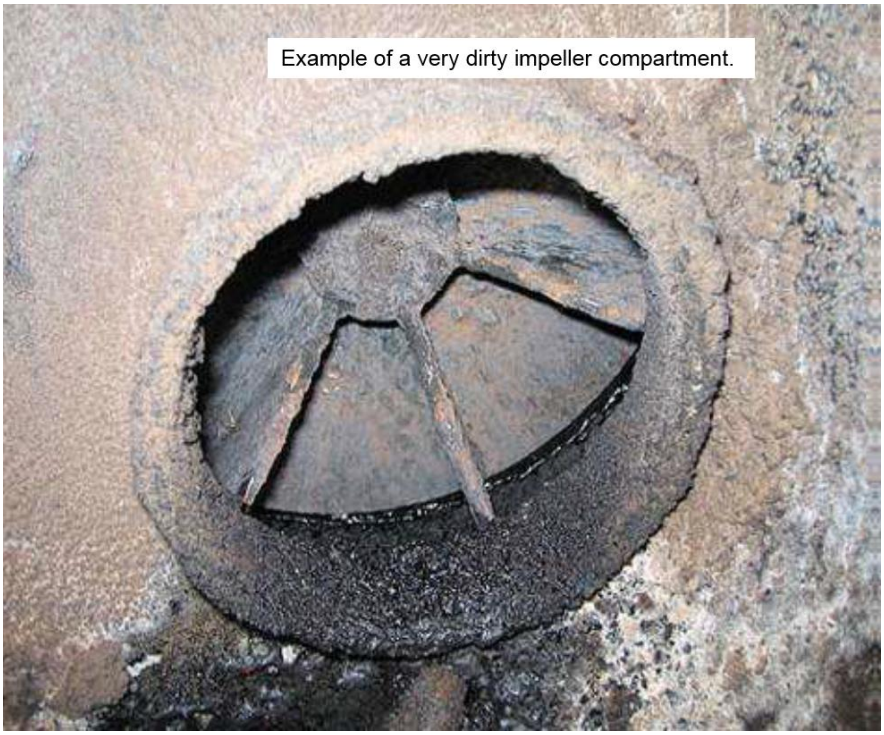
CAUTION

Do not spray any kind of liquid directly onto the fan.

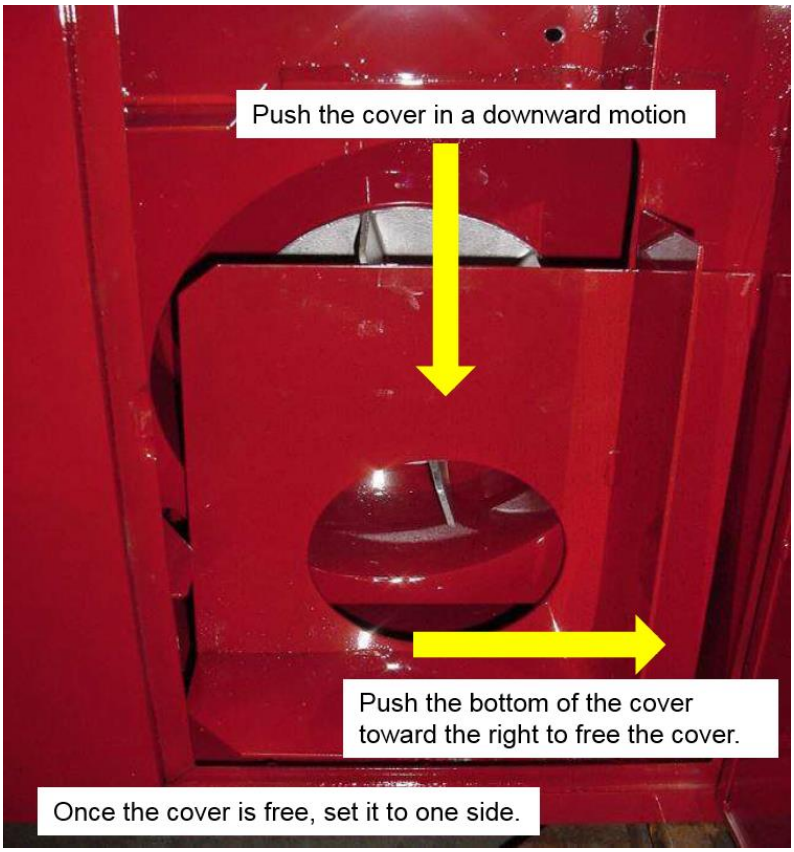


2.2.6 Being careful to not bend the impeller blades, clean the fan with a wet rag.
2.2.7 Reassemble the blower cover in the reverse order making sure to reapply caulk if necessary.

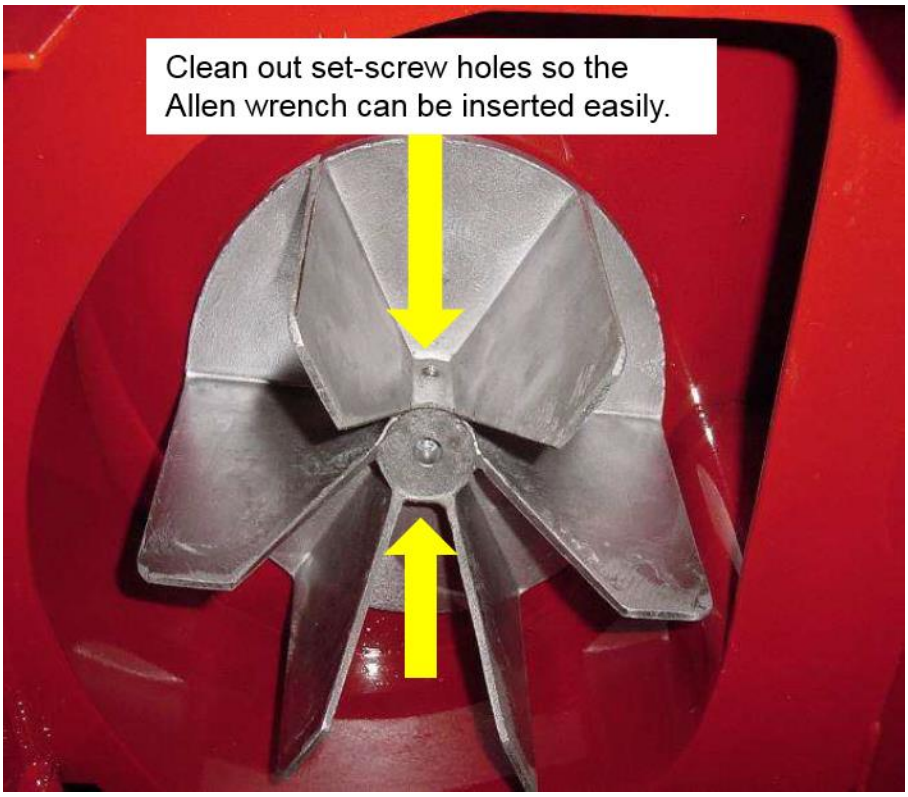
2.3 Impeller Compartment (IR-5 & IR-12 ONLY)



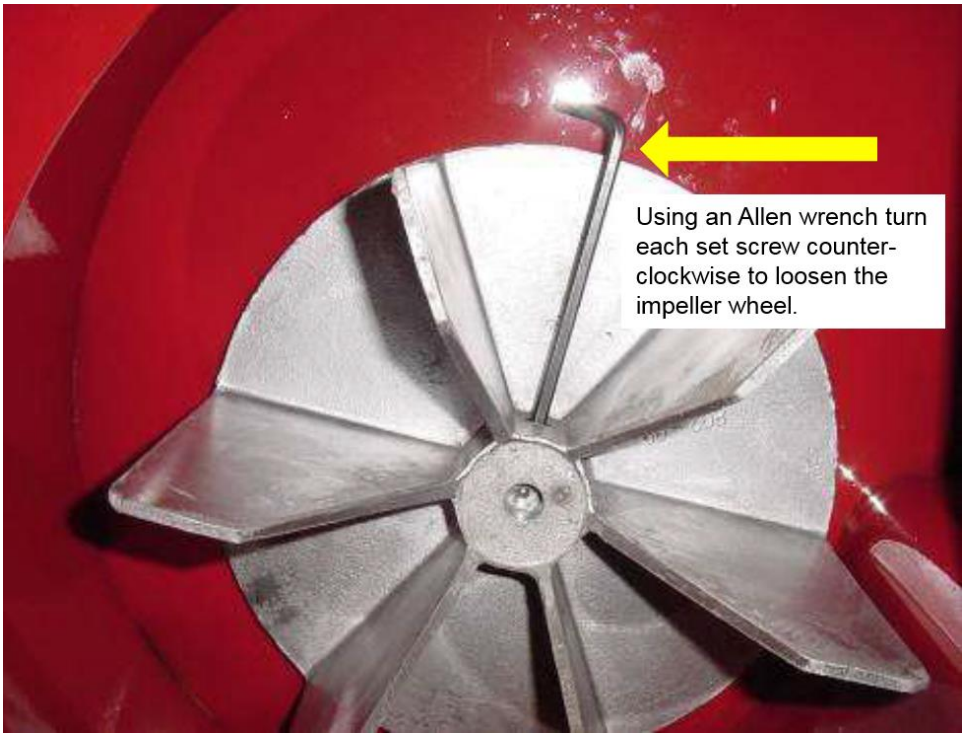
2.3.1 Unscrew the two wingnuts securing the impeller cover



2.3.2 Remove the cover from the impeller compartment.



2.3.3 Clean out the set screw holes.



NOTE: *Prior to removing the impeller, measure the gap between the impeller and the housing to ensure the position on the shaft doesn't change when you reinstall it.*

2.3.4 Using a 5/32" Allen wrench, unscrew the set screws (NOTE: It may be necessary to use a penetrating oil such as Liquid Wrench to assist in removing the set screws.)

2.3.5 Grab the impeller firmly with both hands and pull it towards you. (**NOTE:** It may be necessary to pry the impeller loose using a flathead screwdriver or pry bar depending on the state of cleanliness.)

2.3.6 After thoroughly cleaning the impeller, apply anti-seize to the motor shaft before reinstalling it.

2.3.7 Reinstall the impeller on the motor shaft in the same location.

2.3.8 Insert and tighten the set screw on the keystock of the shaft first. This set screw should be screwed in as tight as possible.

2.3.9 Being careful to not over-tighten the screw, insert and tighten the second set screw that sits on the round portion of the shaft.

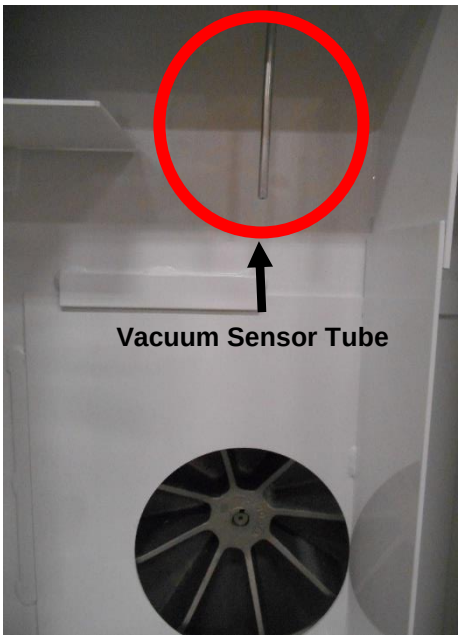
2.3.10 Reinstall the impeller cover and tighten the two wing nuts.

2.3.11 Spin the impeller by hand to make sure it doesn't interfere with the cover. If there is interference, a slight adjustment will be required.

2.4 Vacuum Sensor Tube

The vacuum sensor tube (IR-5 & IR-12 – aluminum; IR-1 & IR-2.5 – black plastic) hangs above the impeller in the blower compartment or in the side of the cyclone if you have one. The tube connects directly to the vacuum sensor which is monitoring the air pressure in the roaster system – the sensor does not suck or blow so debris is usually lodged right at the termination point. The vacuum tube's purpose is to measure pressure within the impeller compartment. If it is clogged with oily residue the roaster will fail to ignite. This is a built-in safety feature. The air light on the switch panel illuminates if the tube becomes clogged.

Example of a dirty sensor tube.



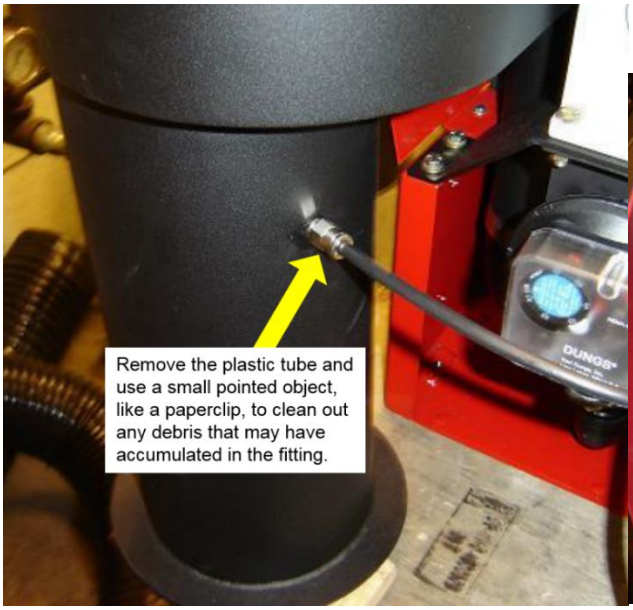
IR-5/12 Vacuum Sensor Location

2.4.1 Locate the aluminum tube in the impeller compartment.

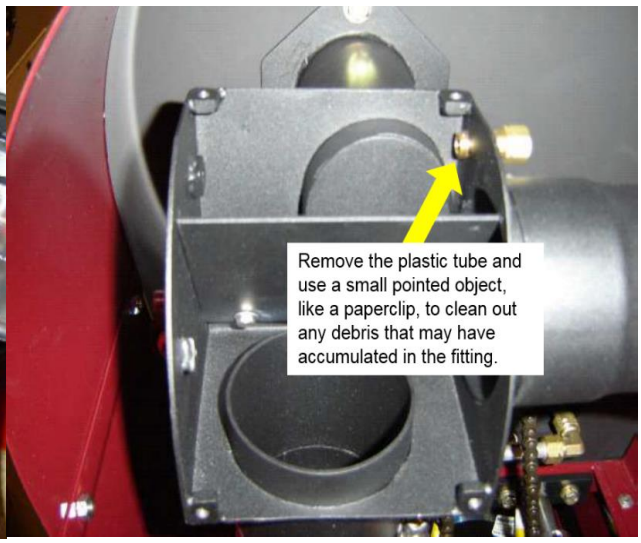
2.4.2 **NOTE: Do not use a vacuum cleaner to clean the tube.** If any debris or residue is evident, clean the inside of the tube using a thin tool or wire to pull the residue through the tube.

2.4.3 Use a wire brush or scotch-brite pad to clean the outside of the sensor if necessary.

IR-1



IR-2.5



2.4.4 **NOTE: Do not use a vacuum cleaner to clean the tube.** Use a small pointed object, like a paperclip, to clean out any debris that may have accumulated in the vacuum tube opening.

2.5 Air Flapper

The air flapper is located in the blower compartment to the top left. As you change your air position from cooling bin to 50/50 to through the roasting drum, this flapper rotates to direct the air through a different section of the roaster.

IR-5/12 Air flapper

2.5.1 Scrape the flapper down to metal on all sides.
2.5.2 Scrape the side walls down to help with smooth movement.

2.6 Cooling Bin

The cooling bin's function is to cool the fresh roasted beans before processing for storage, blending, packaging, etc. Proper air-flow through the cooling bin is critical to rapidly cool the beans and arrest any further roast development.

Dirty Cooling Bin Screen

2.6.1 **IR-1 and IR-2.5**

For cooling efficiency and to minimize a fire hazard, the area below the screen must be cleaned.


Roaster without agitator.

For roasters without agitators:

2.6.1.1 Lift the cooling bin from the roaster frame by simply lifting the cooling bin up and sliding it away from the roaster.

Remove screw and lift hub.

For roasters with agitators:

2.6.1.2 Pry off the cap on top of the agitator hub.

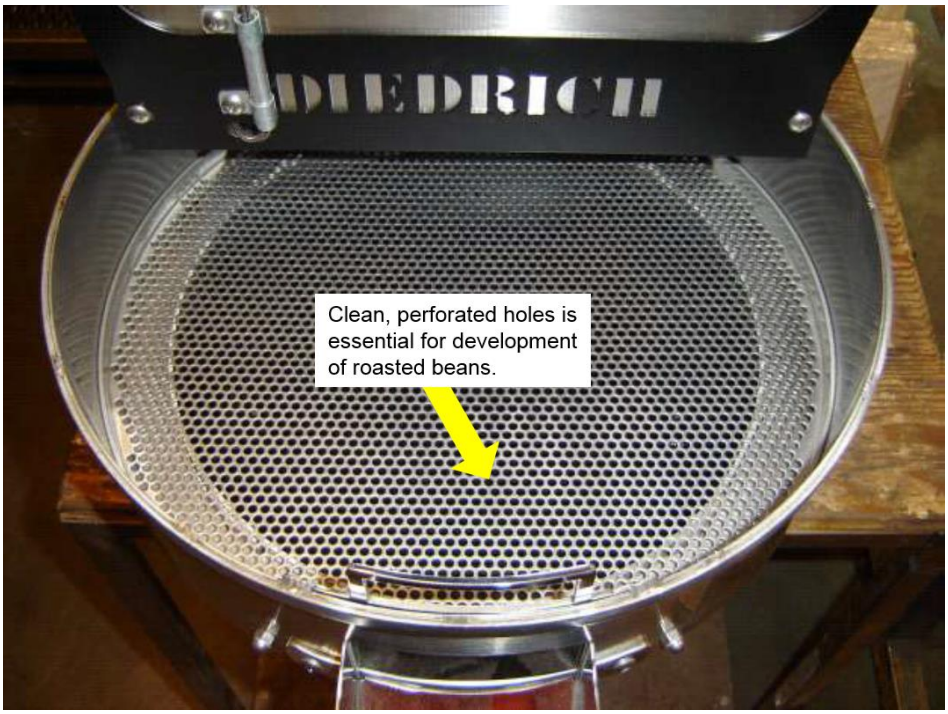
2.6.1.3 Using a 3/16” hex key, remove the screw under the cap.

2.6.1.4 Lift the hub to remove the agitator.

2.6.1.5 Tilt the front edge of the cooling bin up.

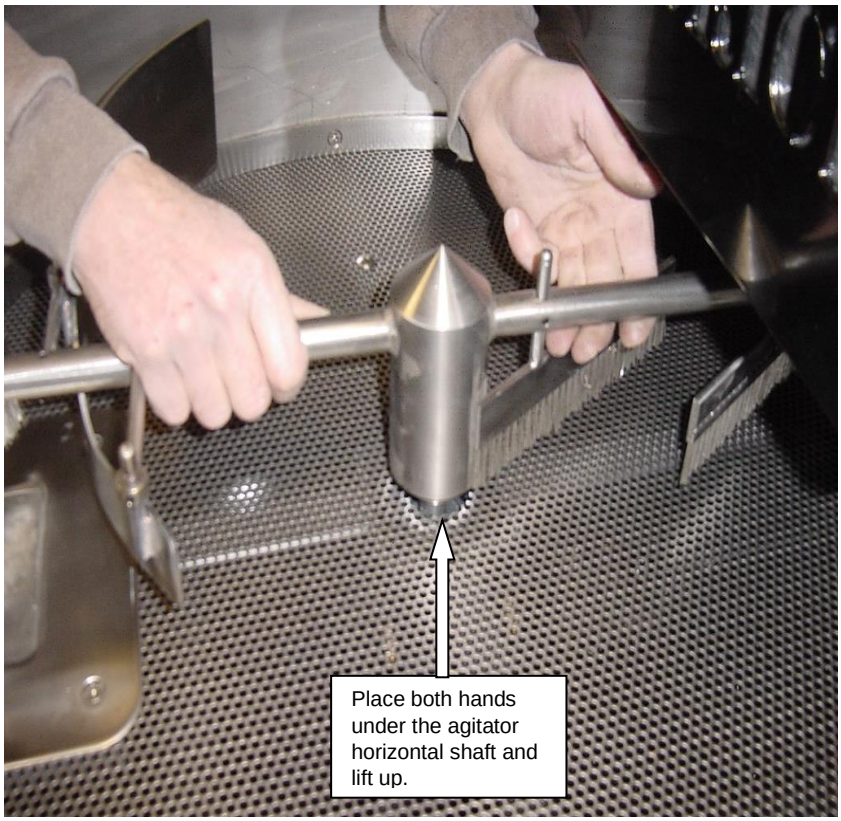
2.6.1.6 Slide the cooling bin to the right.

2.6.1.7 Guide the cooling bin up and over the agitator motor shaft.
2.6.1.8 Use a wire brush or screen cleaning tool to dislodge debris from the screen.
2.6.1.9 Thoroughly clean both sides of the screen *(at a minimum of every six months.).*
2.6.1.10 Vacuum any chaff from under the cooling bin.
2.6.1.11 Re-install the cooling bin and agitator in the reverse order.



Example of a Clean IR-1 & IR-2.5 Cooling Bin Screen

2.6.2 **IR-5 and IR-12 Cooling Bin**



(NOTE: *The agitator arm assembly is held in place by its own weight. There is not a set screw or bolt securing it to the gearbox shaft.)* Place one hand on each side of the horizontal agitator arm and lift the whole agitator assembly up.

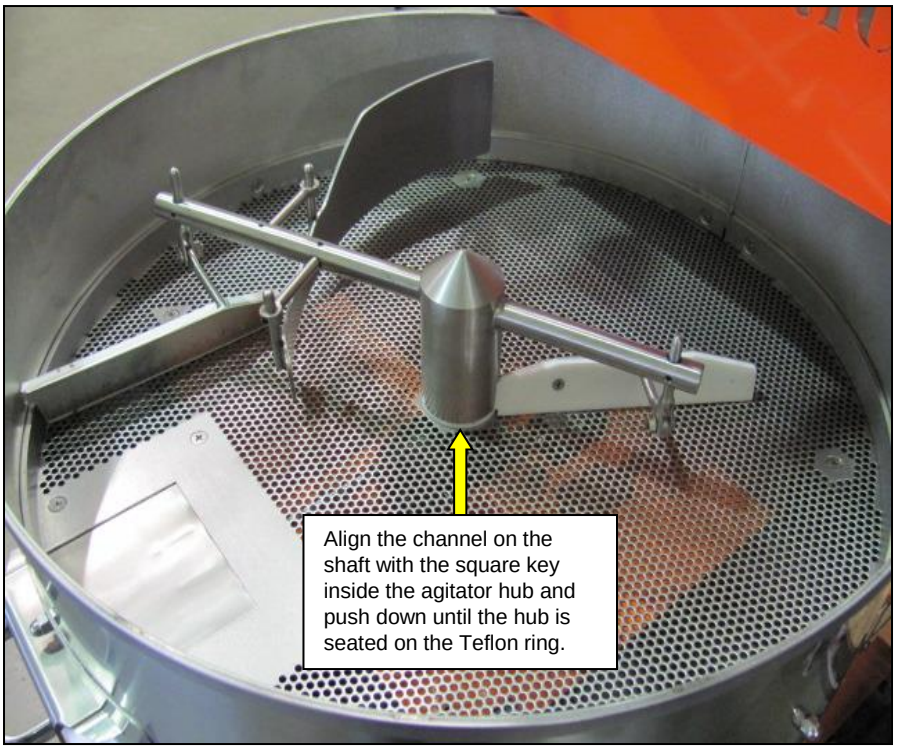
2.6.2.1 Use a wire brush or screen cleaning tool to dislodge debris from the screen.

2.6.2.2 Thoroughly clean both sides of the screen *(at a minimum of every six months.).*

2.6.2.3 Vacuum any chaff from under the cooling bin.

Reassembly

2.6.3 Apply a lubricant such as food grade grease or anti-seize to the gearbox shaft



2.6.4 Reinstall the agitator on the agitator shaft.

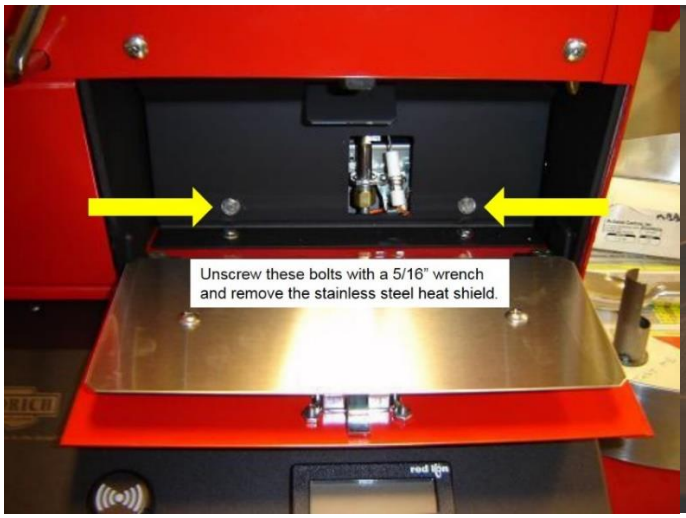
Example of a Clean IR-5 & IR-12 Cooling Bin Screen

2.7 Infrared Burner Compartment

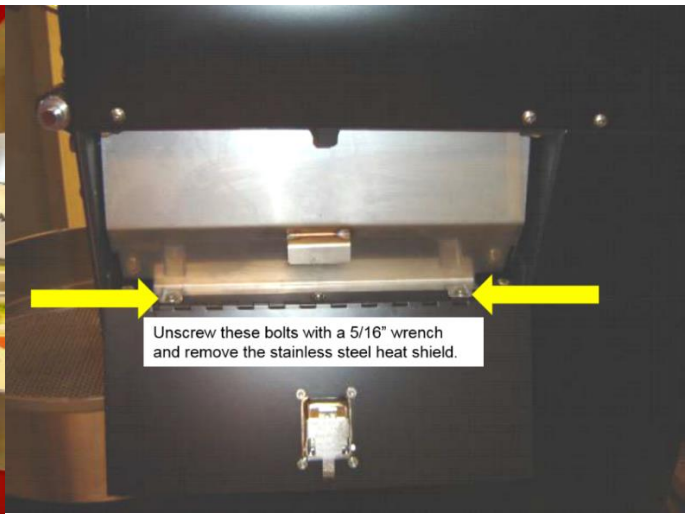
DANGER

Make sure the chaff inside the burner compartment is cool to the touch and contains no hot embers before vacuuming. Vacuuming hot embers may start a fire or cause personal injury.

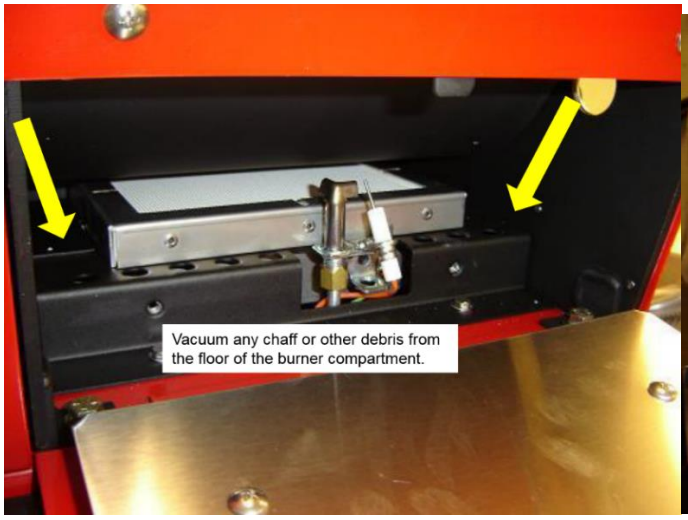
IR-1



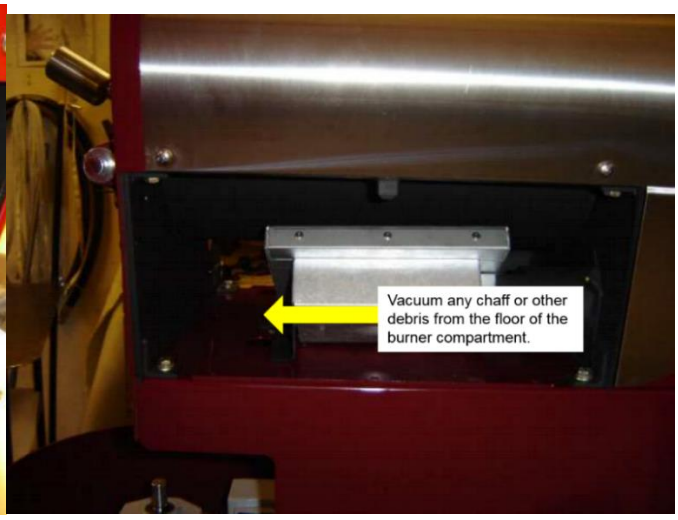
IR-2.5

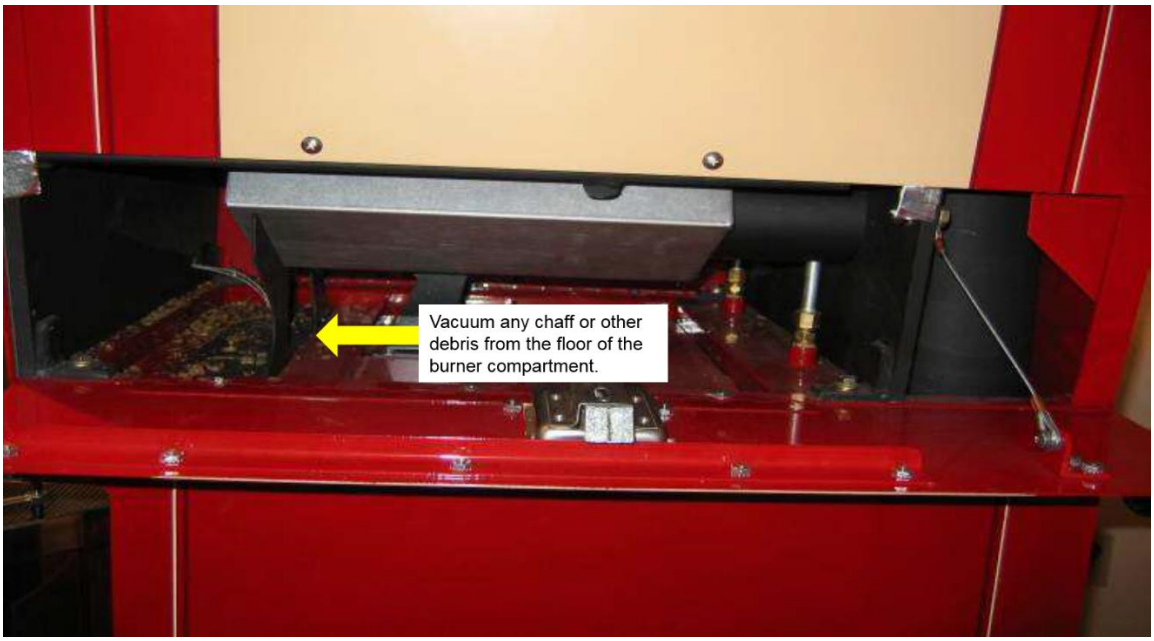


IR-1



IR-2.5





IR-5 & IR-12 Burner Compartment

WARNING

Use caution not to move the ignitor sensor while vacuuming the burner compartment.

2.8 Burner & Drum Tray Access Doors

The burner and drum access doors provide access to clean or service burners, pilot igniter electrodes and drum chaff tray.

2.8.1 Use a multi-use spray lubricant (WD-40 or like) to lubricate both sides of the door hinges (Recommended at least every six months.)

2.8.2 Wipe both doors and adjacent surfaces to remove any excess grease and overspray.

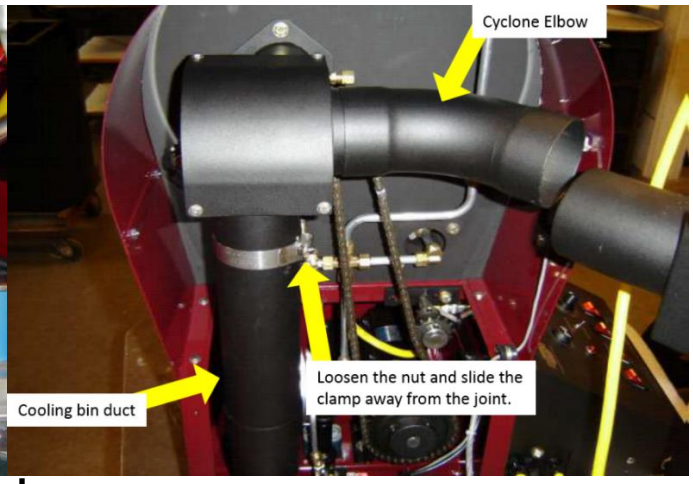
2.9 Rear Ducting

The rear duct is the 3” pipe located at the back of the roaster that connects the air box area at the top of the roaster with the cooling bin and the cyclone *(if applicable)* on the side of the roaster. The vacuum that is created from the spinning impeller pulls air from the drum and cooling bin, through the air box, and into the cyclone. This duct experiences residue buildup. Loosen the clamp holding the cooling bin duct to the air box, slide it out of the way, and pull off the cooling bin duct.

IR-1

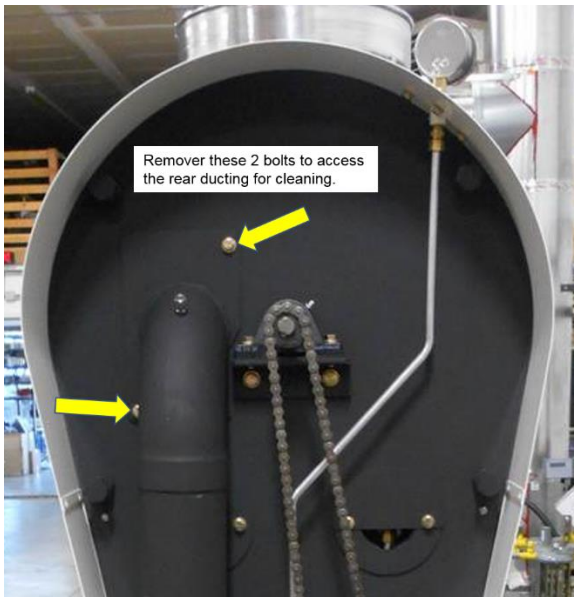
Pull away the cyclone and check for buildup inside the square section.

IR-2.5



Pull away the cyclone and check the elbow for buildup.

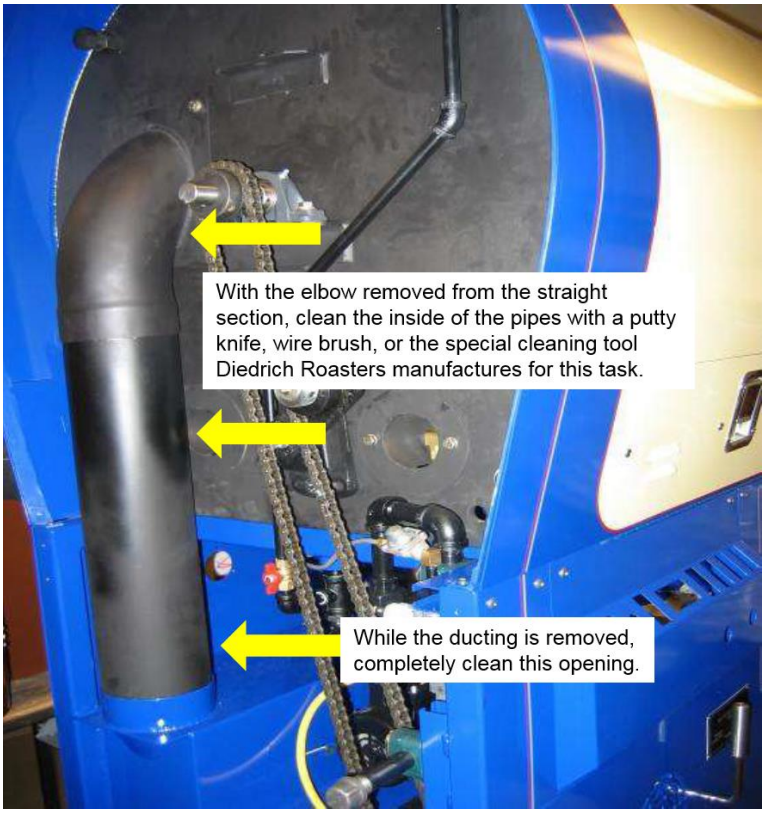
IR-5 *(with chain drive motor)*



IR-5/IR-12 *(with direct drive motor)*

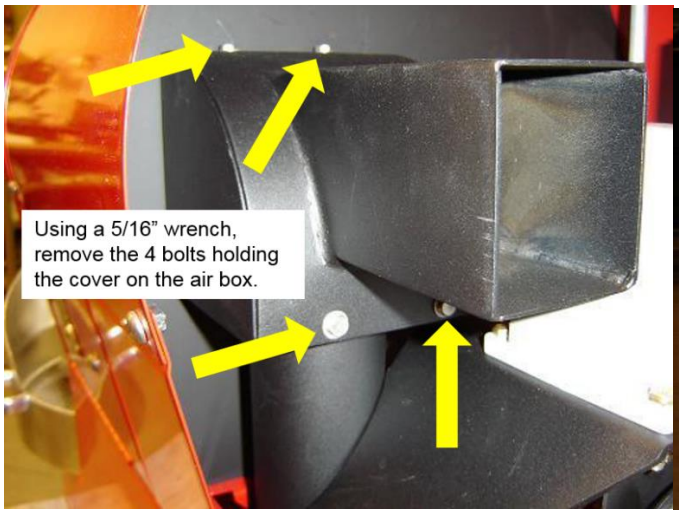
The rear duct is the 3”, 4”, or 5” pipe located at the back of the roaster that connects the drum area at the top of the roaster with the impeller area at the bottom of the roaster. The vacuum that is created from the spinning impeller pulls air through the drum and the duct. This duct experiences considerable residue buildup.

IR-5 & 12

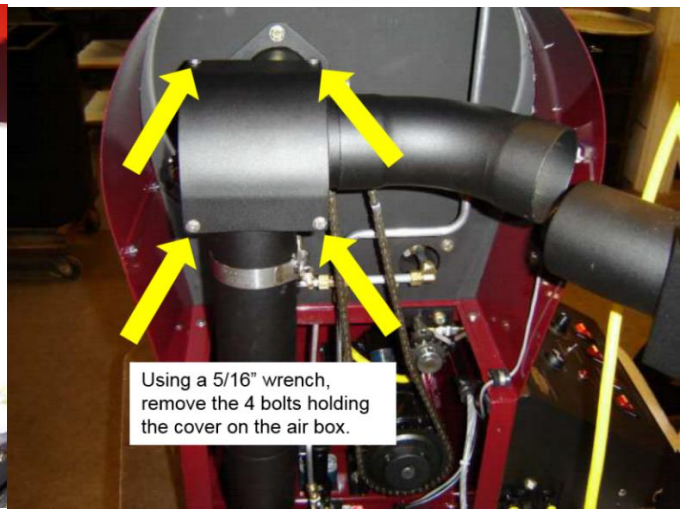

With the elbow removed from the straight section, clean the inside of the pipes with a putty knife, wire brush, or the special cleaning tool Diedrich Roasters manufactures for this task.
While the ducting is removed, completely clean this opening.

2.10 **Air Box** *(IR-1 and IR-2.5 ONLY)*

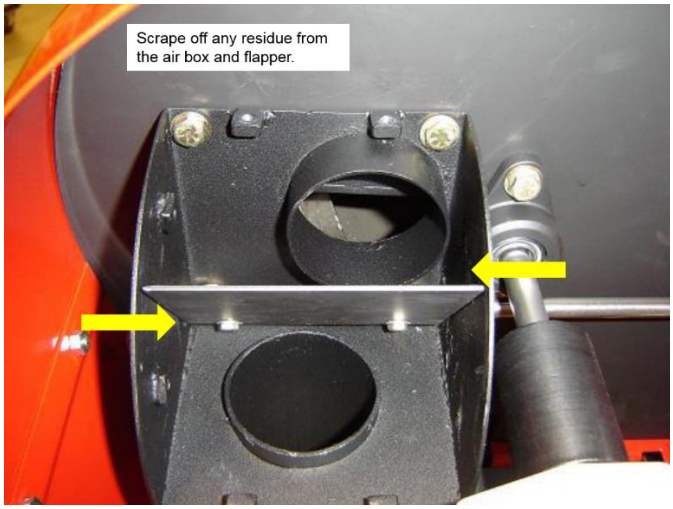
IR-1



IR-2.5



IR-1



2.11 Exhaust Ducting

The exhaust ducting is an integrated part of the roasting system. Dirty exhaust ducting will also effect the performance of your roaster and your cupping results. Additionally, dirty exhaust ducting creates the possibility of a ducting fire which could cause collateral damage to your building.

3. MAINTENANCE PROCEDURES

Diedrich roasters are specifically designed to require minimal maintenance. Following the cleaning schedule (example located at the end of this manual) will help to achieve your performance expectations.

3.1 Suggested Hand Tools

- Allen wrench (at a minimum): 3/16", 3/32", 5/32", 1/8"
- Wrenches: 7/16" 5/8", 1/2", 5/16"
- Phillips 3-inch screwdriver #2, and #3
- Flathead screwdriver,
- Socket set,
- Slotted screwdriver,
- Nut driver 5/16-inch,
- Grease gun (cartridge type),
- Wire brush,
- Small spray bottle,
- Putty knife (flexible),
- Pry bar
- Small hammer
- Vacuum Cleaner (with reversible airflow)

3.2 Lubricants Required / Where Used:

- High Temperature Food Grade Grease (Available for purchase from Diedrich Manufacturing) / Use on bearing, agitator, and impeller.
- SAE20 non-detergent oil or sewing machine oil / Use on chain driven motor ONLY,
- WD-40 spray lubricant / Use on hinges.

DANGER

Electrical Power MUST be Disconnected and Locked Out.

CAUTION

All motors are sealed and should not require service.

3.3 Roasting Drum Drive Chain (IR-2.5 ONLY)

DANGER

Keep Fingers, Hair, and Loose Clothing Clear of Moving Chain and Sprockets.

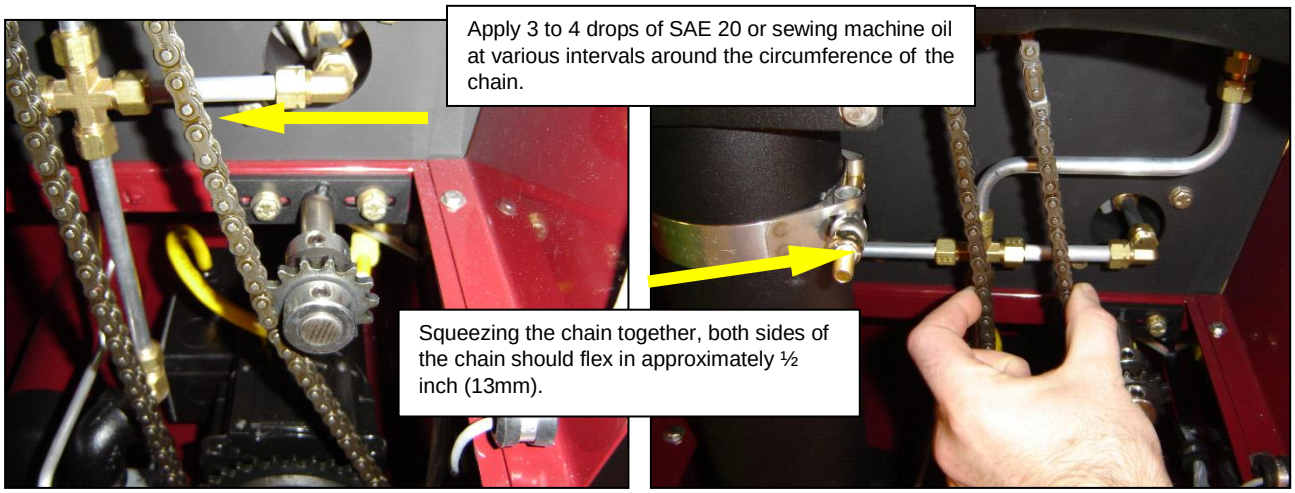
3.3.1 To access the roasting drum drive chain, remove the rear cover panel.

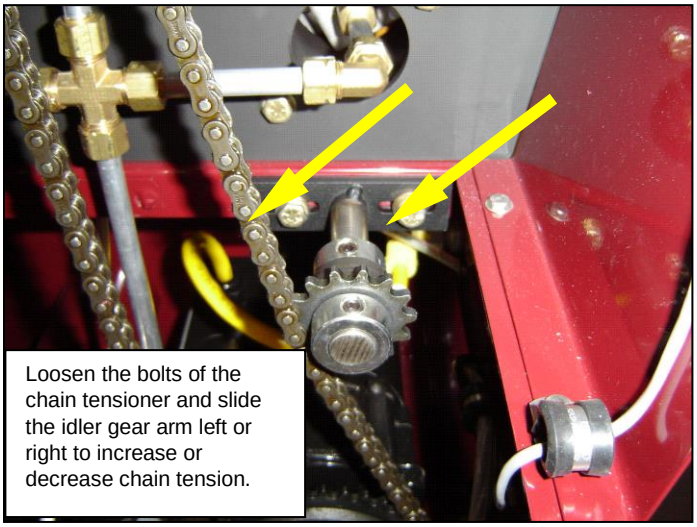
3.3.2 Oil the chain *(at a minimum of every six months)* with SAE20 non-detergent, or sewing machine, oil. **DO NOT** over-lubricate.

3.3.3 With the drum motor turned "OFF" and roaster disconnected at electrical source, the chain can be adjusted.

3.3.4 Loosen the bolts of the chain tensioner and slide the idler gear arm left to increase, or right to decrease the chain tension.

3.3.5 Use a wrench to tighten the bolts to prevent a loose engagement of the chain and motor sprocket**.**





NOTE: *With a new machine the drum drive chain may need to be adjusted several times to compensate for the initial stretching of the chain. After completing the first 40-hour cleaning check the tension of the chain and adjust accordingly.* ***The first three 40-hour cleaning cycles should include checking the tension of the drum drive chain.***

3.4 Lubricate Drum Bearing(s)

(IR-2.5, and applicable IR-5, and IR-12)

WARNING

Failure to lubricate the bearings may cause their premature failure.

ATTENTION

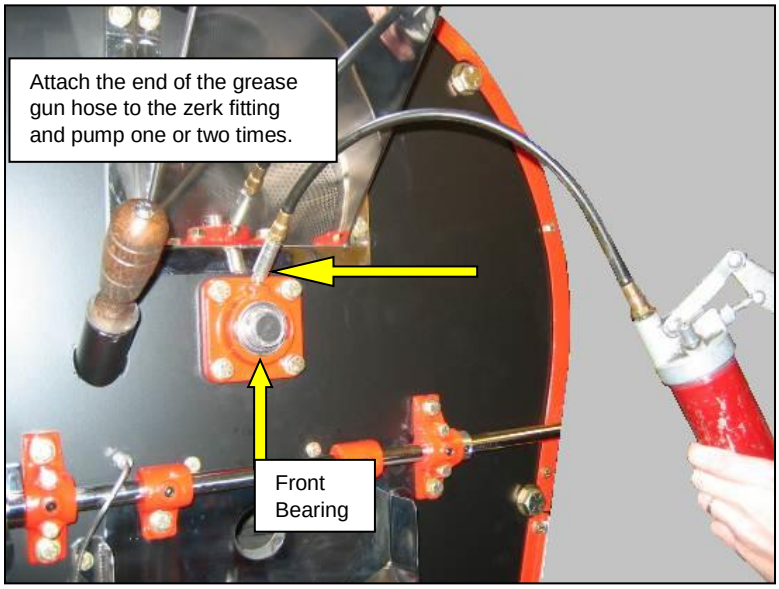
Use only high temperature food grade grease.

NOTE: *The grease will flow more easily if the roaster is at roasting temperature.*

NOTE: *Lubrication is best done after finishing the day's roasting while the roaster is still hot.*

Front Bearing

3.4.1 To lubricate the front bearing attach a grease gun to the bearing fitting (grease zerk).
3.4.2 Inject 1-2 pumps of grease into the bearing fitting.
3.4.3 Remove the grease gun and wipe off any excess grease.
3.4.4 Restart the drum motor and allow it to run several minutes.
3.4.5 Wipe off any excess grease.



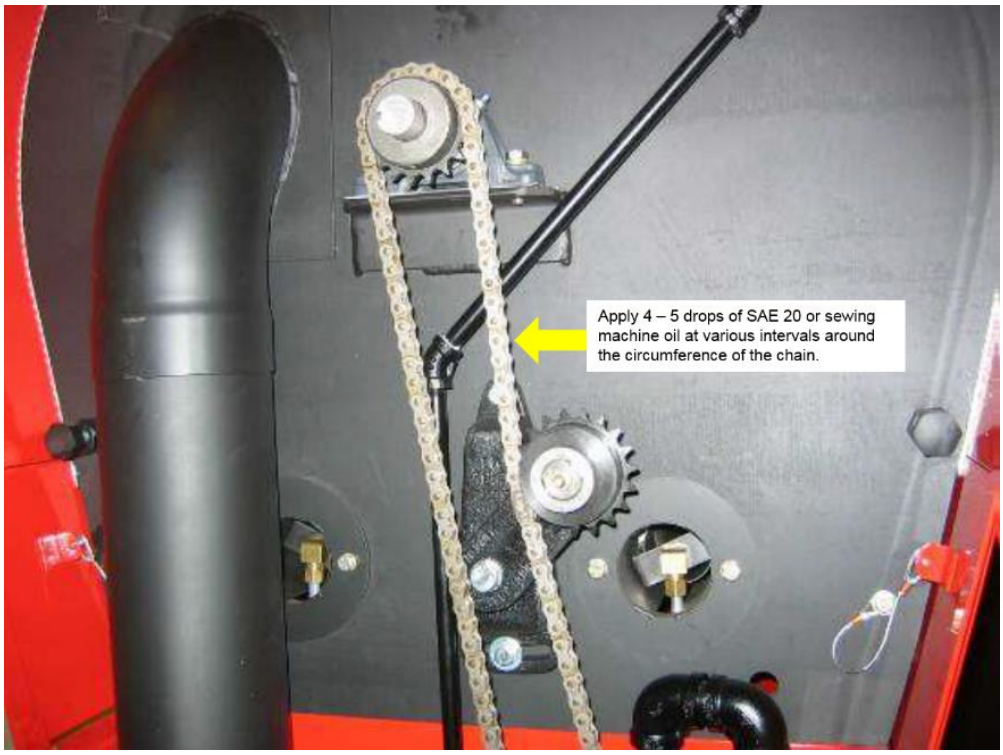
Rear Bearing (For roasters with chain-drive motors ONLY)

3.4.6 Before lubricating the rear bearing, **STOP THE DRUM FROM ROTATING**.
3.4.7 Insert the grease gun onto fitting. Inject 1-2 pumps of grease into the bearing fitting (grease zerk).
3.4.8 Remove the grease gun and wipe off any excess grease.
3.4.9 Restart the drum motor and allow it to run for several minutes.
3.4.10 Wipe off any excess grease.

3.5 **Lubricate Drum Drive Chain** *(For roasters with chain drive motors ONLY)*

WARNING

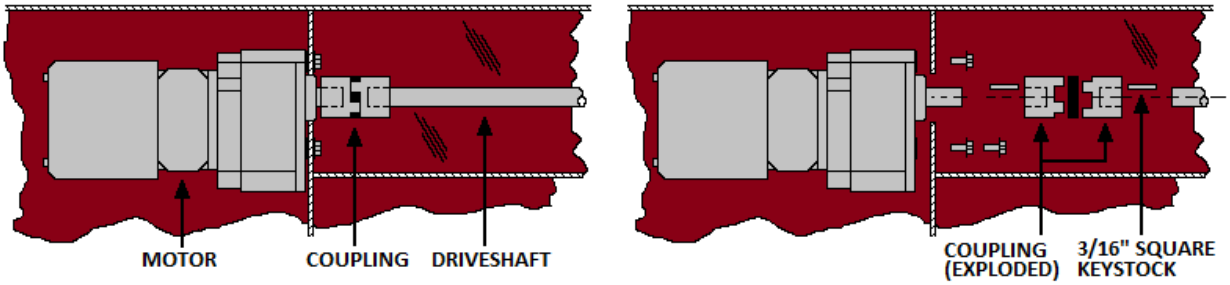
Keep Fingers, Hair, and Loose Clothing Clear of Moving Parts.



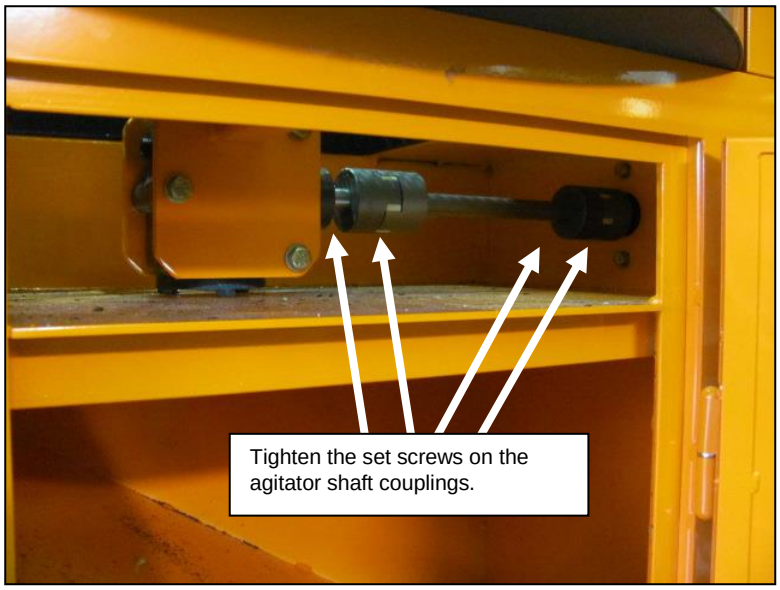
Oil the chain every six months with SAE20 non-detergent oil or sewing machine oil. For access, remove the rear cover panel. **DO NOT** over-lubricate.

3.6 **Agitator Drive Shaft Coupling**

Check drive shaft coupling setscrews every six months. The couplings are located under the cooling bin forward of the agitator motor. The drive shaft connects the motor to the agitator assembly in the cooling bin.



Agitator motor and drive shaft



3.7 Air Flow Control Lever ***(Manual roasters only)***

3.7.1 ***(IR-5 & IR-12 ONLY)*** Open the impeller motor compartment door located below the control panel. ***NOTE:*** *Immediately to the right is the air flow position mechanism that is connected to air flow control handle on the outside of the roaster. This mechanism pivots as the airflow control handle is moved from Cooling Bin Position, 50/50 Position, and Roasting Drum Position.)*

3.7.2 Lubricate the check ball every six months with high temperature grease.

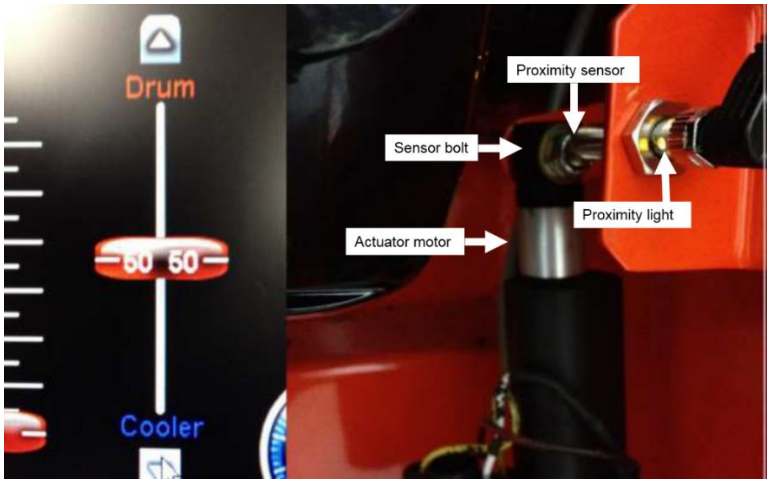
4 TROUBLESHOOTING AND FAQ's

4.1 Airflow

Our Technical Support Department receives numerous calls every year regarding under-performing coffee roasters and/or oxidizers. The problem is usually identified as an airflow issue. Airflow issues are a result of inadequate cleaning and maintenance. As the coffee residue accumulates (becomes thicker and thicker) on the sidewalls, in the ducting, etc., the chance of a fire increases because the residue acts as a fuel source. **Never allow the residue buildup to exceed 1/8 of an inch/3mm!**

Refer to the cleaning portion of this manual to avoid buildup and clean your roaster.

4.2 How to check if your actuator motor is working (roasters with automation)



On the automation screen, select Drum. Does the actuator motor move to the stop position and stop?

On the screen, select 50 50. Does the actuator motor stop at the halfway point and does the proximity sensor light up? If the motor passes the halfway point without stopping, check that the bolt is close enough for the sensor to see. Try using a flathead screwdriver in front of the sensor, does it light up? On the screen, select Cooler. Does the actuator move to the bottom and stop?

5 Frequently Asked Question's

Q1 - I have no power to my roaster.

Make sure the "Emergency-Stop" button is pulled all the way out and the reset button has been pushed.

Q2 - I just got my roaster and I see that there's no power cable from the roaster to the outlet. Am I supposed to wire this in myself? If so, how do I do it?

The IR Series roasters do not come with an electrical cord due to the fact that there are so many different codes and regulations that come in to play when you install the roaster. Diedrich Roasters LLC, recommends that you use a licensed electrician to perform this part of the installation to make sure that you are in compliance with all applicable codes and regulations.

Q3 - Today as I prepared to roast, I turned on the drum and blower and then the gas but the red gas light on the panel did not light up and there was no clicking sound that ignites the pilot light. I looked inside the electric panel and do not see anything out of the ordinary, no burnt wiring etc. Is there something that I can check myself to find the problem?

Frequently the cause of ignition trouble is a dirty roaster. When cleaning, be sure to clean the vacuum sensor tube, the ducting, and the cooling bin screen to make sure air can move freely.

Q4 - We are getting an air failure light on the control panel and when we put air through the roaster we can't get it to light. Is there a sensor or something we need to check?

If you are seeing an air failure, you'll want to start by cleaning the roaster and ducting down to metal and check the vacuum sensor tube which reads the air flow through the roaster. Usually the vacuum sensor tube is in the front hopper. Use a paperclip or a thin wire to dig out any debris to clear the tube. DO NOT put a vacuum on it!

Q5 - The manometer on my roaster tends to be sluggish and/or has a bouncing needle.

This process works better if you have two people performing it. First, locate the brass limiter valve on the line leading to the gauge and unscrew the cap. Under the cap you'll use a flathead screwdriver to make minimal adjustments. Have another person turn the fuel up and down and make ¼ turn corrections until the movement smooth's out and is not sticking. The knob has more play in it than you actually have control over the valve so it will take some playing with to get used to the control range.

Q6 - Can we convert our roaster from propane to natural gas or natural gas to propane?

Yes, it is just a matter of changing out a few parts. Gas conversion kits can be purchased from Diedrich Roasters Technical Support.

Q7 - Should paint be chipping on the inside compartments of my roaster?

It is normal for paint to chip off on the inside of your roaster. If you are cleaning the way you should, (scraping down to metal) the paint on the interior compartments does come off. The light dust and chaff can be vacuumed or brushed off but after about 40-hours of roasting, or sooner if you do a lot of dark roasts, coffee oils start to build up on the chaff/dust creating a thick, hard coating that needs to be scraped off. A scraper or chisel will do the job. The whole roaster's performance depends on good airflow and it only takes 1/8" of buildup before you'll notice a change in performance.

Q8 - What are some back up parts to have on hand?

Frequently ordered spare parts are grease, bearings, thermocouple, ignition controller, ignition assembly, and rocker switches.

Q9 - How do I clean the drum of my roaster?

The drum in your roaster is similar to a cast iron skillet in so much that you don't clean it because the oils from the coffee are needed in order to prevent the beans from scorching. If you look in through the view window or the drum door and see a black coating on the drum – that is normal and should be left alone.

If you're noticing a lot of crusty black buildup coming out in your roasts, you can put a few handfuls of green beans in the drum with no heat and let them roll around for a while to knock the debris loose.

Q10 - How do I contact Diedrich Technical Support?

Diedrich Technical Support is available Monday through Friday [excluding: New Year's Day, Memorial Day (last Monday in May), July 4, Labor Day (first working Monday in September), Thanksgiving Holiday (last Thursday and Friday of November), and Christmas Holiday (December 25); from 7:00 a.m. to 3:30 p.m. Pacific Standard Time.

You can reach them via telephone: (208) 904-1989 or toll free (844) 343-3742

Diedrich Roasters Technical Support email address is: support@diedrichroasters.com

Diedrich Roaster IR Series Cleaning & Maintenance Schedule

Daily	**Date**	**✓when complete**	**Initials**
Vacuum all chaff from the cyclone chaff collection compartment.			
Vacuum any chaff and/or bean debris from the infrared burner compartment.			
Inspect perforated cooling bin screen for clogging. Clean as necessary with a screen roller, wire brush or by utilizing a pointed object to clean out the perforated holes.			
Vacuum all debris under the perforated cooling bin screen.			
Weekly or every 40 hours of roasting	**Date**	**✓when complete**	**Initials**
Lubricate roasting drum bearing(s).			
Check the vacuum tube for evidence of residue blockage. Clean all residues from the tube or port.			
Wipe down all exterior surfaces of the roasting system.			
Inspect the blower fan and clean accordingly.			
Check residue build-up in the air box and piping. If accumulation is greater than 1/8th inch (3mm), then scrape/clean all effected interior surfaces and clean the impeller with a liquid cleaner and brush.			
Check the residue build-up in the cyclone chaff collection compartment. If accumulation is greater than 1/8th inch (3mm), then scrape/clean all affected interior surfaces.			
Check the residue build-up at the roaster's exhaust outlet & intermediate ducting. If the accumulation is greater than 1/8th inch (3mm), then clean thoroughly.			
Check the clean out port on the exhaust ducting. It the residue accumulations is greater than 1/8th inch (3mm), then ensure a professional chimney sweep cleans all the exhaust ducting.			
Semi Annually (Every 6 months)	**Date**	**✓when complete**	**Initials**
Lubricate air flow control mechanism.			
Lubricate drum drive chain. (IR-2.5 & IR-5 only)			
Check drum drive chain for proper tension. (IR-2.5 & IR-5 only)			
Do a cursory check of all bolts and screws and ensure they are tight.			
Annually	**Date**	**✓when complete**	**Initials**
Have a professional chimney sweep clean the exhaust ducting at least once a year regardless of the buildup.			