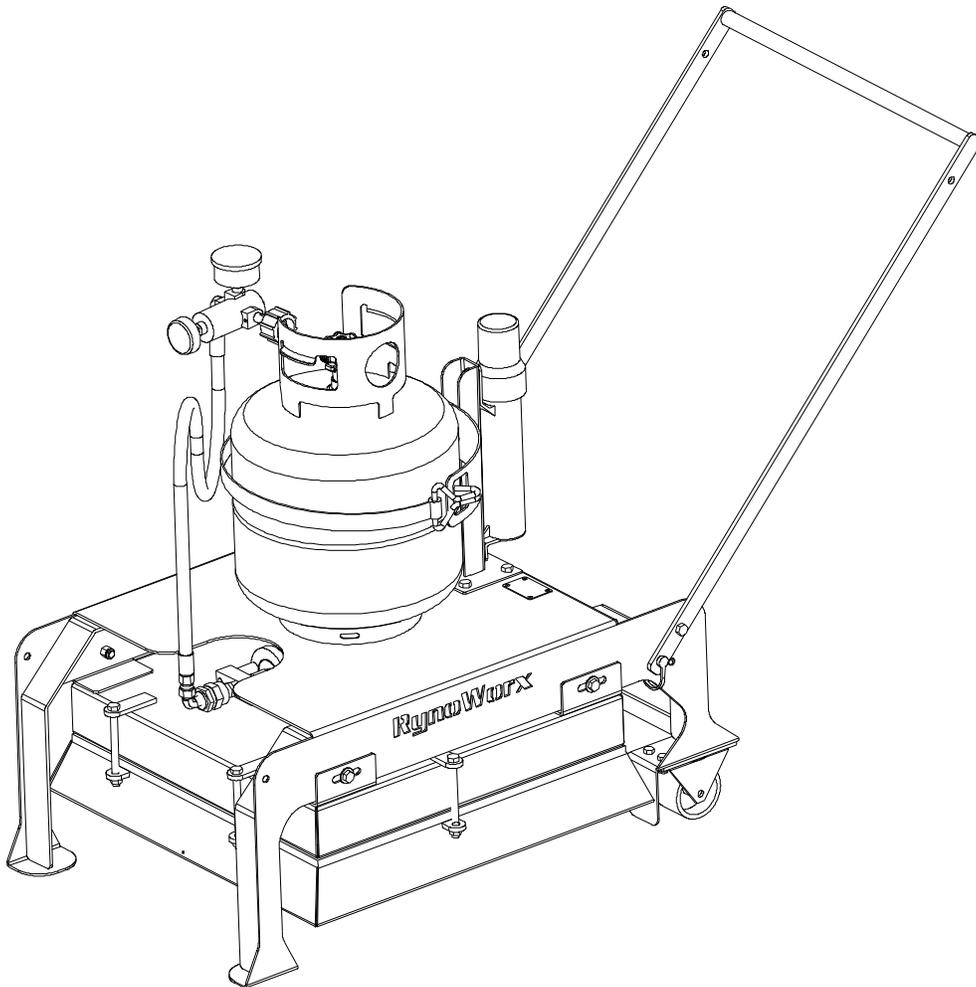


RynoWorx

Operator's Manual



Model: RY2X2-IR

MPN: RA-IHR-0001

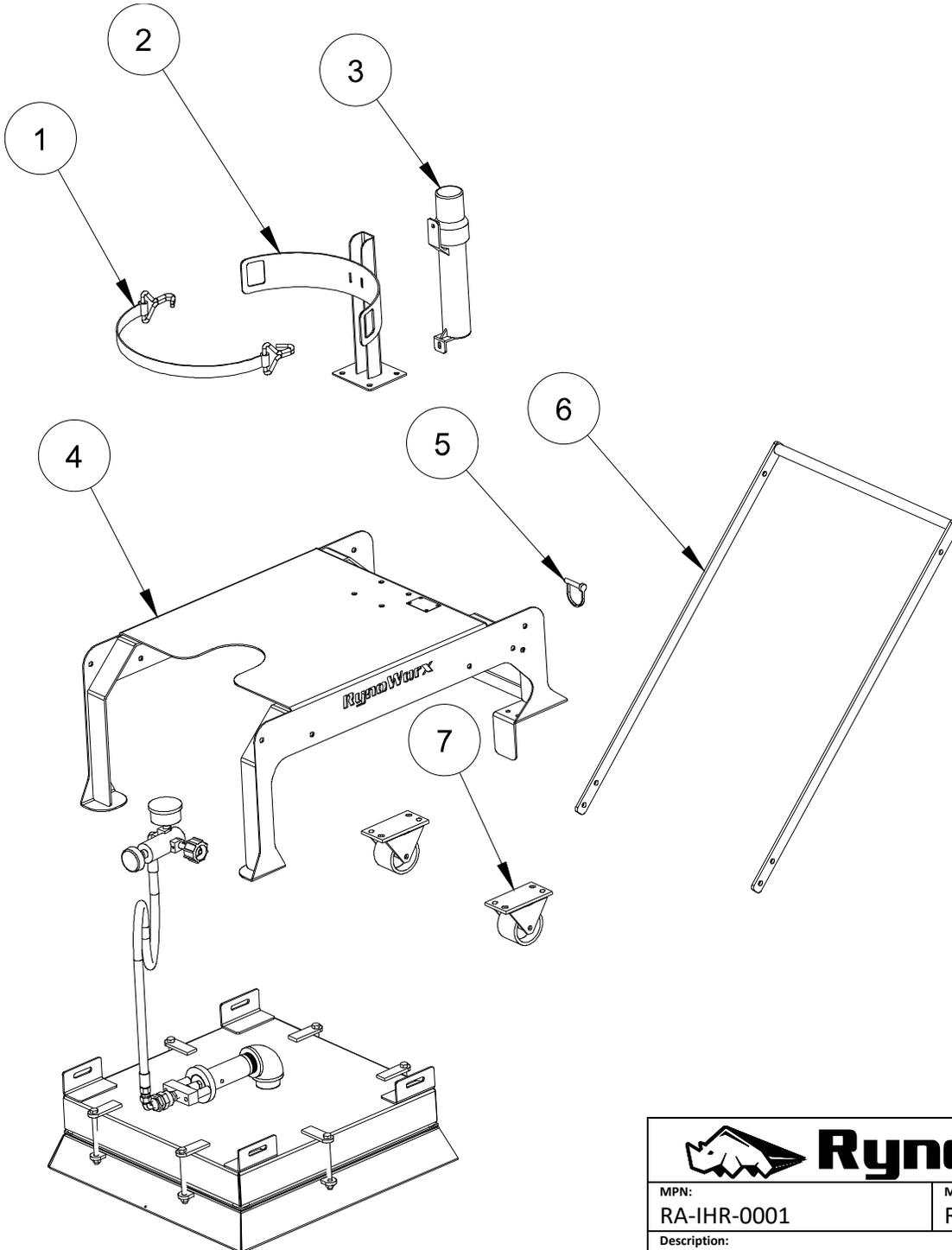
24" x 24" Portable Mini-Infrared Heater

For Technical Support Please Visit www.RynoWorx.com or Call 1-855-382-9611

WARNING

- ⚠ Read all instructions and warnings in this manual before attempting to operate this equipment.
- ⚠ This equipment is designed for outdoor use only.
- ⚠ Be sure to always wear personal protective equipment when operating this equipment.
- ⚠ Improper assembly may be dangerous. Please follow the assembly instructions in this manual. Make sure all parts are assembled and hardware is fully tightened before using. Make sure that there are no leaks in the liquid propane cylinder connection or lines.
- ⚠ Do not operate the equipment if a gas leak is present. (check for leaks and connections with every use)
- ⚠ Do not attempt to disconnect the gas regulator from the tank or any gas fitting while the equipment is in use.
- ⚠ A dented or rusty liquid propane tank may be hazardous and should be checked by your liquid propane supplier. Do not use a liquid propane tank with a damaged valve.
- ⚠ Ensure that your propane cylinder is within its expiry date for your local jurisdiction. If the tank has expired it must be properly requalified to continue using.
- ⚠ Do not store spare liquid propane cylinders within 10 feet (3m) of this equipment.
- ⚠ Do not store or use gasoline or other flammable liquids or vapors within 25 feet (8m) of this equipment.
- ⚠ Before servicing, make sure the unit is fully cooled and the liquid propane cylinder is disconnected.
- ⚠ Only genuine RynoWorx replacement parts should be used for any replacements or repairs. Do not attempt to modify or alter this product in any way.
- ⚠ Do not attempt to make any repairs to gas carrying, gas burning, igniter components or structural components. Your actions, if you fail to follow this warning, may cause a fire, an explosion, or structural failure resulting in serious personal injury or death as well as damage to property.
- ⚠ Failure to follow these instructions could result in fire or explosion which could cause property damage, personal injury or death.
- ⚠ Do not leave the machine unattended while operating.
- ⚠ Do not park the machine on a steep grade or slope.
- ⚠ Do not smoke while operating.
- ⚠ Do not operate the heater near an accumulation of grass, leaves, or other combustibles.

No	P/N	Description
1	RC-STR-0001	Propane Tank Strap - 20 lbs Cylinder
2	RC-FAB-0116	Removable Propane Tank Holder
3	RC-FAB-0117	User Manual Tube
4	RC-FAB-0110	24" Infrared Heater Frame
5	RC-PIN-0008	3/8" x 1-3/8" Lock Pin with Retainer
6	RC-FAB-0109	24" Infrared Heater Removable Handle
7	RC-WHL-0020	Infrared Heater Caster



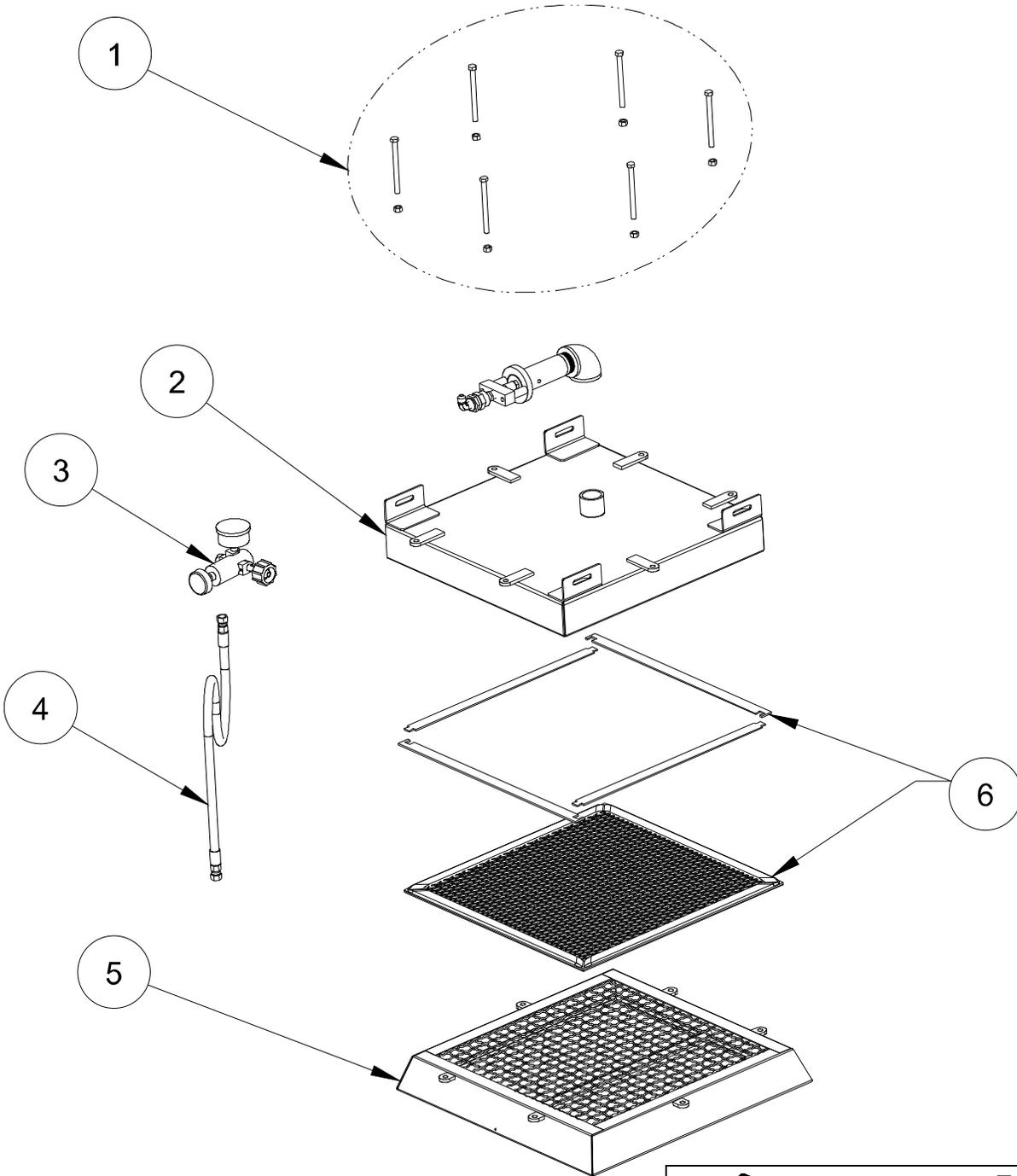
RynoWorx

MPN:
RA-IHR-0001

Model:
RY2X2-IR

Description:
24" x 24" Portable Mini-Infrared Heater

No	P/N	Description
1	RK-FAS-0055	Fastener Kit - 24" Infrared Heater Body
2	RC-FAB-0114	24"x24" Heater Top
3	RC-GCM-0071	Regulator 1/4" NPT (0-60 psi)
4	RC-HSE-0026	Propane Hose - RY2X2-IR
5	RC-FAB-0115	24" IR Heater Skirt
6	RA-CRT-0001	24" IR Heater Cartridge (with Gaskets)



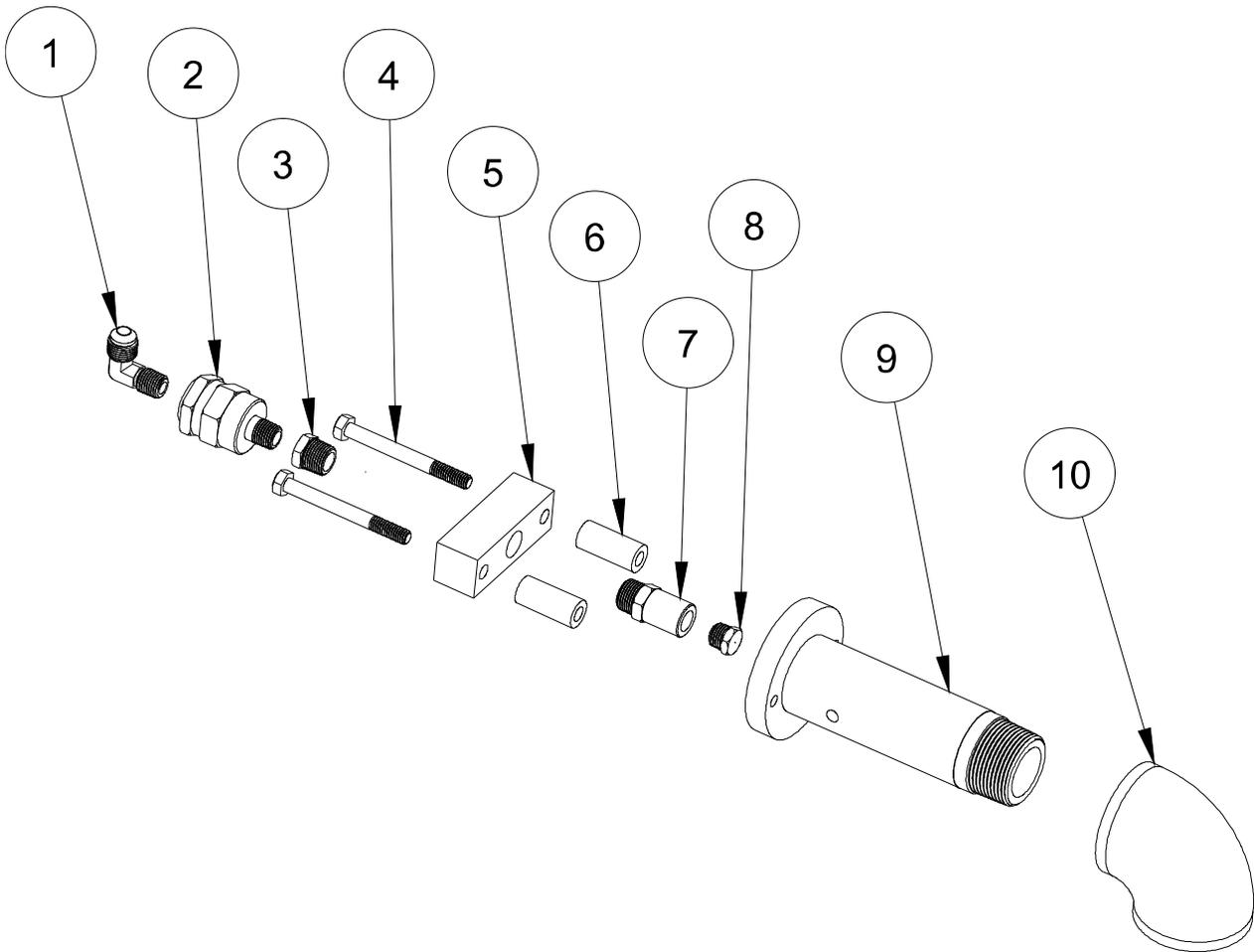
RynoWorx

MPN:
RA-IHR-0001

Model:
RY2X2-IR

Description:
24" x 24" Portable Mini-Infrared Heater

No	P/N	Description
1	RC-FIT-0079	Brass Elbow - 3/8" Male Gas Flare to 1/4" Male NPT
2	RC-FIT-0078	1/4" NPT Fuel Filter
3	RC-FIT-0077	Brass Bushing - 1/4" Female NPT to 3/8" Male NPT
4	RC-HDW-0046	Cap Screw - Venturi Assembly
5	RC-FAB-0113	Infrared Heater Venturi Orifice Block
6	RC-FAB-0112	Infrared Heater Venturi Spacer
7	RC-FIT-0076	Orifice Holder - 3/8" Male NPT to 1/4" Female NPT
8	RC-FIT-0075	#72 Orifice - Brass 1/4" Male NPT
9	RC-FAB-0111	Infrared Heater Venturi
10	RC-FIT-0074	Elbow 90 1-1/2" FPT to 1-1/4"



RynoWorx

MPN:
RA-IHR-0001

Model:
RY2X2-IR

Description:
24" x 24" Portable Mini-Infrared Heater

- **Introduction**

Forward

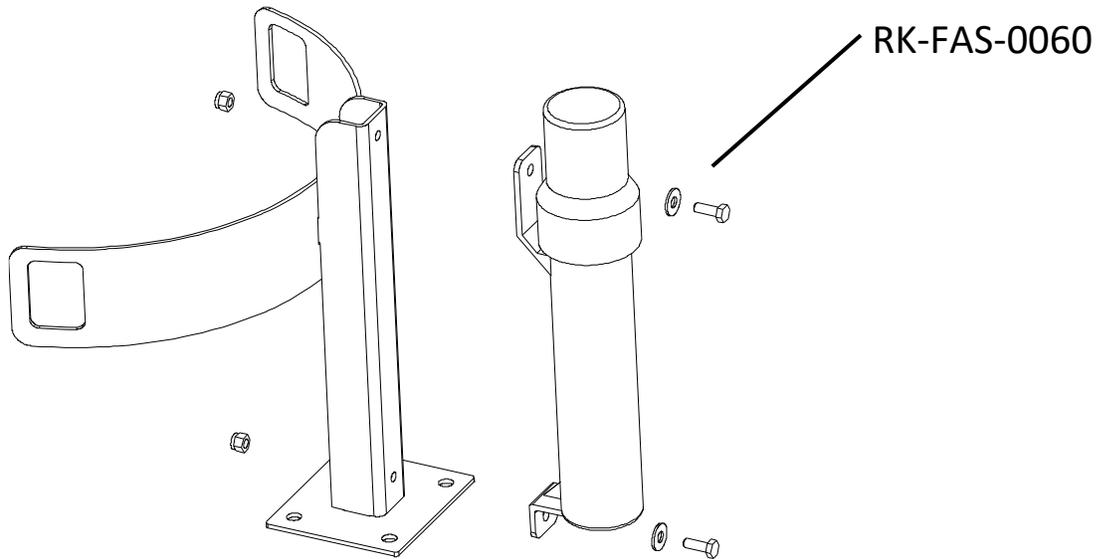
Thank you very much for purchasing RynoWorx crack maintenance equipment. We pride ourselves in being different from other equipment manufacturers with a relentless focus on innovation, simplicity, and quality.

Within this document are complete instructions for how to assemble, use, and care for your equipment. Please make sure you read and follow all instructions provided.

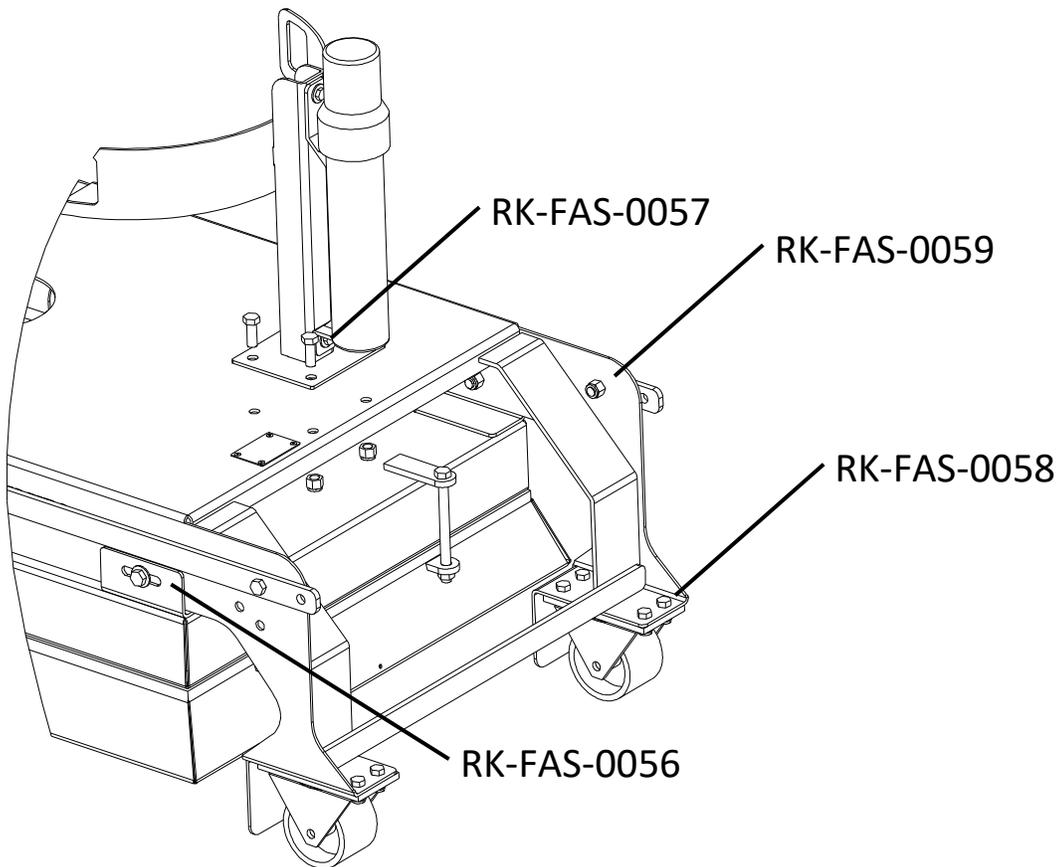
Within this document you will find the following resources:

- **Assembly Instructions** – These instructions will assist you in assembling and preparing your melter for first time use.
- **Operation Guide** – This guide will explain the functions and controls of the melter and how to use them.
- **Maintenance Guide** – This guide will provide you with suggested maintenance tips and techniques to ensure proper function and optimal performance.
- **Troubleshooting Guide** – This guide will provide you with the most commonly reported problems, possible causes, and known solutions.

1) Bolt the Manual Tube to the Propane Cylinder Bracket



2) Bolt Propane Holder to the Frame in the Direction Shown

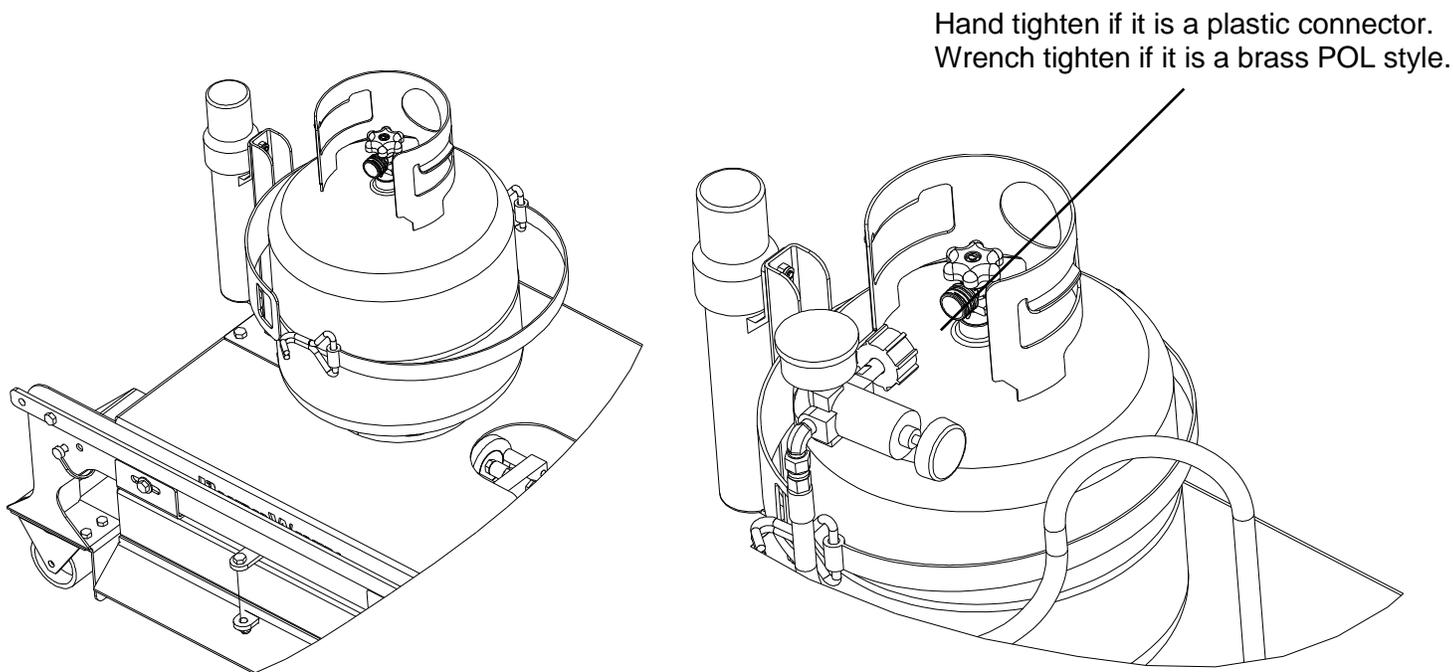


Intended Use: This machine is designed for heating the asphalt without burning the oils. The asphalt can be repaired or altered depending on the particular application.

⚠ WARNING: DO NOT OPERATE THE MACHINE IF A HOSE IS DAMAGED OR IF THERE IS A HOLE IN THE HEATER CARTRIDGE. WHEN CONNECTING YOUR PROPANE TANKS OBSERVE THE FOLLOWING PRECAUTIONS.

Tank Connection

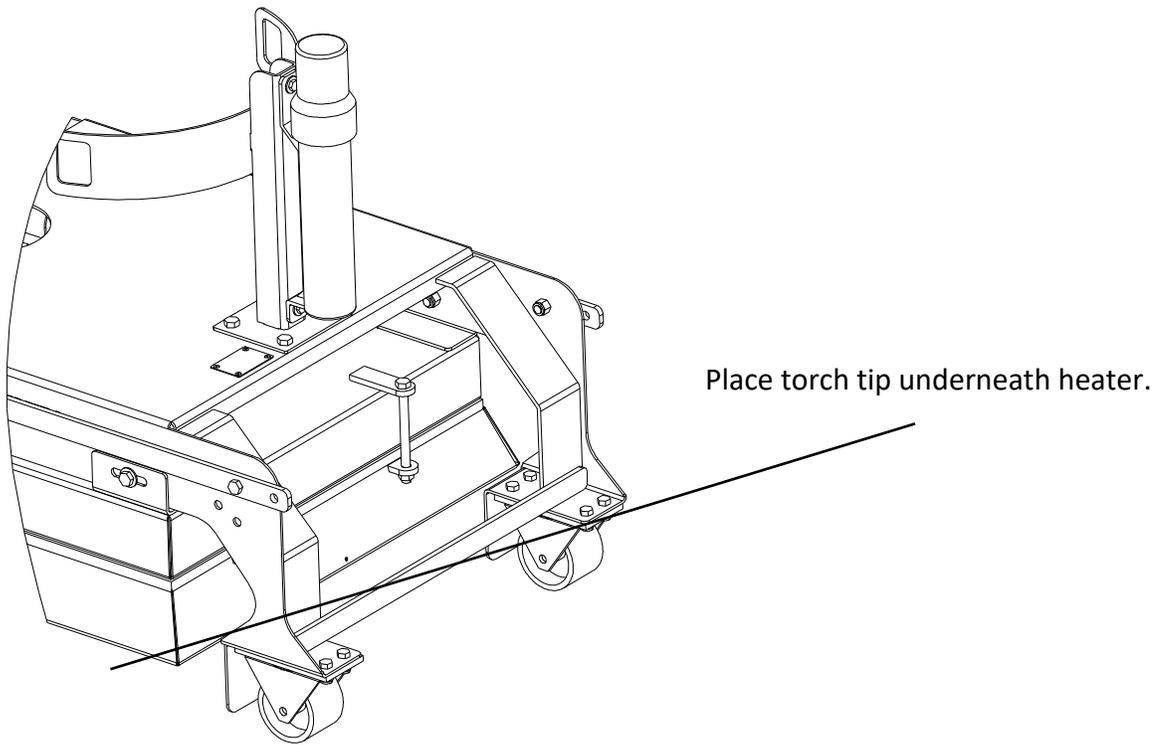
- 1) All connections must be made by a trained worker (check your local regulations).
- 2) Inspect the infrared heater, regulator and hoses for defects. Repair or replace any damaged parts.
 - Make sure all hoses and valve connections are clean.
- 3) Use proper fitting wrenches to make connections.
- 4) Check for any propane leaks using a soapy water solution.
- 5) Secure the propane cylinder with the supplied strap.



- **Operation Guide**

Lighting Procedure

- 1) Slowly open the cylinder valve and check for gas leaks when the hose line is full. When the infrared heater is in use the cylinder valve must be fully opened. Check for leaks with soapy water or leak detector.
- 2) Adjust regulator to 35 PSI (high fire).
- 3) Ignite the propane gas torch.
- 4) Place the torch tip underneath heater. Do not point the flame of the torch directly at the ceramic surface, this could damage the ceramic and reduce the life of the cartridge.



- 5) Adjust the regulator to desired pressure (10 psi to 35 psi).

Heating Procedure

- 1) Identify and mark areas to be repaired
- 2) Sweep area clean of stones and loose debris.
- 3) Place heat over area that needs repair.
- 4) Heat area that needs repair with the heater on high fire

Make sure that surface temperature of the asphalt never exceeds 150°C (300°F).

Note: Time required to soften asphalt to a depth of about 50.8 mm (2") will vary depending on the following:

A) Weather conditions

B) Type of asphalt mix (course or fine, ac content)

C) Starting temperature of asphalt

D) Dark surfaces absorb radiation better

E) Extraneous materials, (ie. Rubberized crack & sealant) are present in repair area

F) Surfaces lightness

- 5) When asphalt is workable to entire thickness of asphalt or to about 50.8 mm (2") move machine away from repair area.
- 6) Using an ice scraper, standard construction rake, rework scarify asphalt to eliminate all cracks, etc. from repaired area. Start by reworking at the edges of the patched areas. All edges should be straight and square to create uniform looking patches. Allow 2-3 inches of hot asphalt untouched in order to make the patch seamless with old asphalt.
- 7) Once the entire repair area has been reworked, an asphalt rejuvenation agent should be sprayed on the entire patched area at a rate of 1/10th of a litre per square metre and be thoroughly mixed into the repair areas using an asphalt rake or lute.
- 8) Fresh hot mix asphalt should be added as required to repair area, to compensate for voids to fill and level all depressions.
- 9) While the material is still hot, first compact the edges of the patch to ensure a seamless, smooth edge between the old and the new asphalt. Continue compacting inside area until satisfied density is delivered.
- 10) The newly patched area should be protected from traffic for a minimum two-hour period or until the asphalt has cooled sufficiently, so that use will not leave any marks.

Shut Off Procedure

- 1) Close propane tank valve while heater is running (to clear the lines of propane and so pressure gauge reaches zero).

⚠ Heater Replacement - Safety

Product Safety Information - Refractory Ceramic Fibre Product

⚠WARNING: This product contains a substance which has been identified by the International Agency for Research of Cancer (IARC) as possible carcinogenic to humans.

Risks:

- Possible cancer hazard by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract.
- Potential for Fire, Smoke, and Asphyxiation Hazards.



To the Equipment Owner: Please read and carefully follow all instructions provided in the manual regarding your responsibilities in caring for your heating equipment. Contact a professional, qualified service agency for installation, start-up or service work.

Precautionary Measures:

- Minimize air born fibres with engineering controls.
- Wear NIOSH/MSHA approved respirator.
- Wear long sleeved, loose fitting clothing, eye protection and gloves.
- Wash work clothing separately and rinse washing machine after use.

First Aid Measures:

- Eyes: Flush with water.
- Skin: Wash with soap.
- Ingestion: Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.
- Inhalation: Move to fresh clean air.

If any of the above irritations persist, seek medical attention immediately.

For additional product information and work practices refer to the material safety data sheet.

Burner Box should be inspected yearly and replaced if it shows signs of cracking and or breaking.

The above cautions should be taken when removing and installing the burner box.

Read these instructions and save for reference.

- Maintenance

⚠ Turn Propane Valve Off Before Servicing Heater.

⚠ **WARNING:** To avoid personal injury, turn the heater off and allow to cool.

Step 1) Remove damaged heater from the machine.

⚠ CAUTION

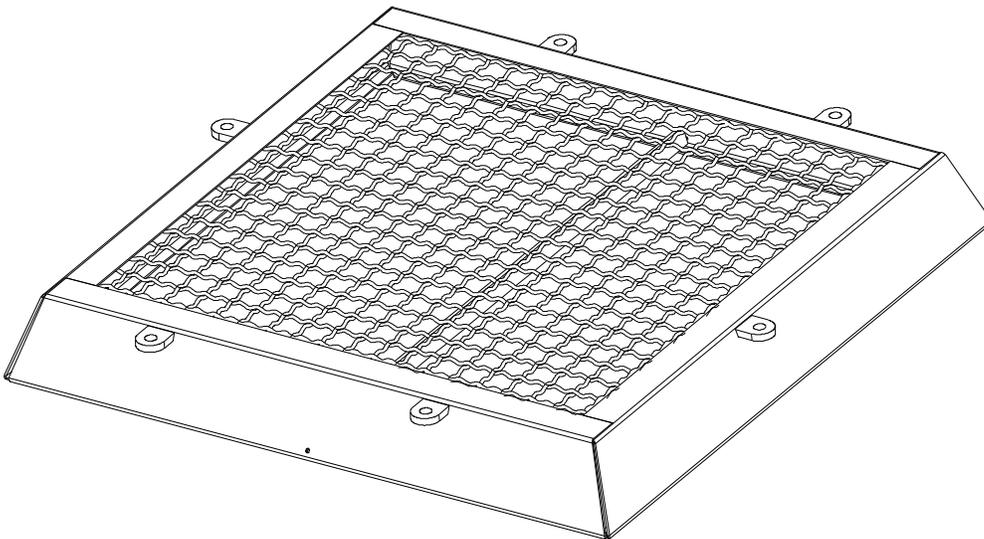
Step 2) Turn the heater upside down and run water over top of the ceramic. This will eliminate the fibres from travelling through the air.

Step 3) Remove the six bolts that hold the heater together.

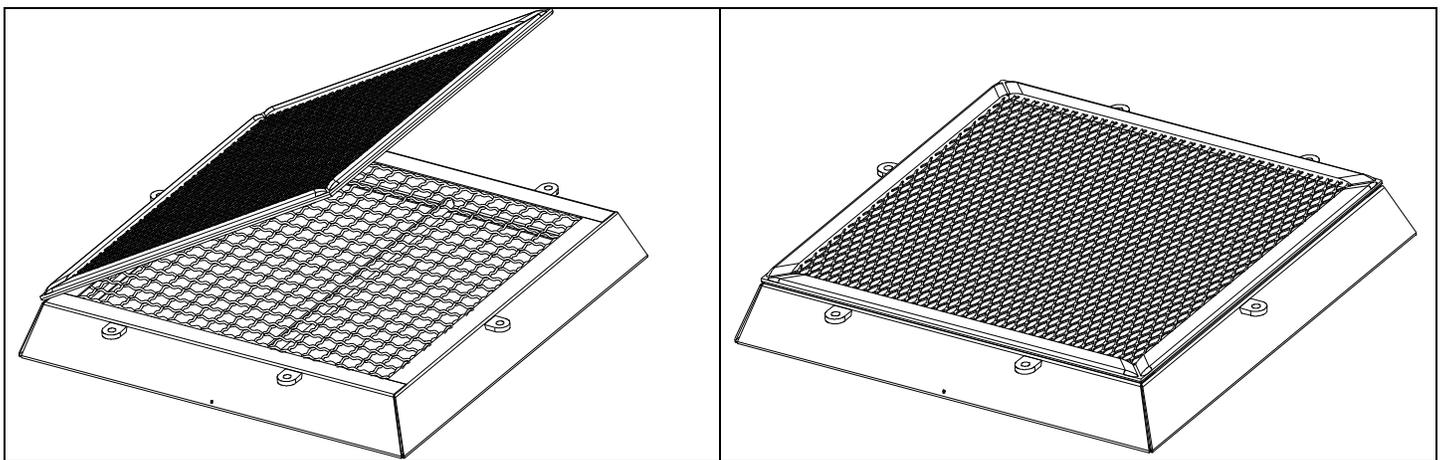
Step 4) Remove the top portion of the heater (plenum).

Step 5) Remove the heater cartridge and place in a garbage bag.

Step 6) Place the heater skirt on a flat surface.

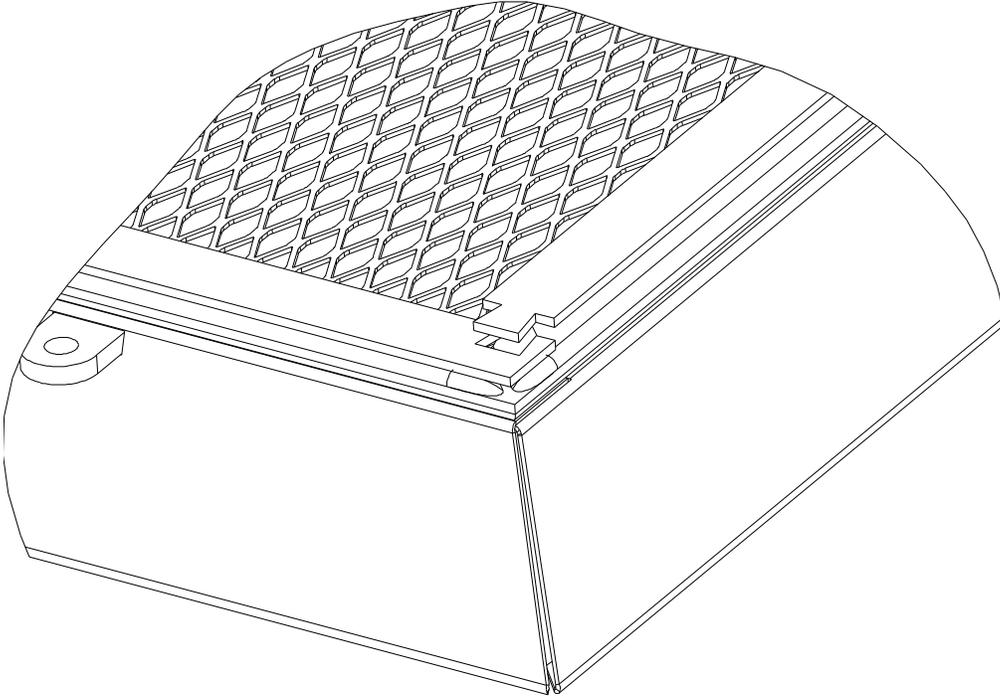


Step 7) Place the heater cartridge with the ceramic facing down on top of the heater skirt.

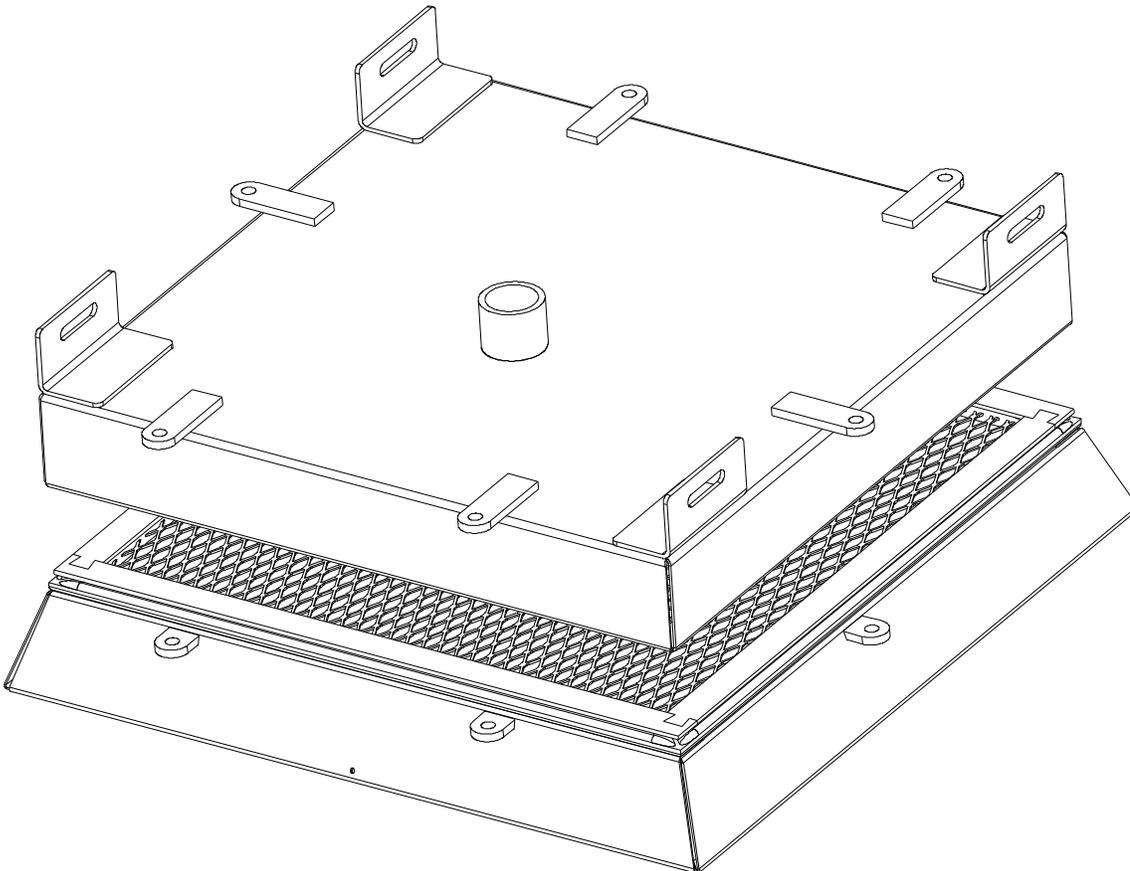


- **Maintenance**

Step 8) Place the ceramic gaskets in place

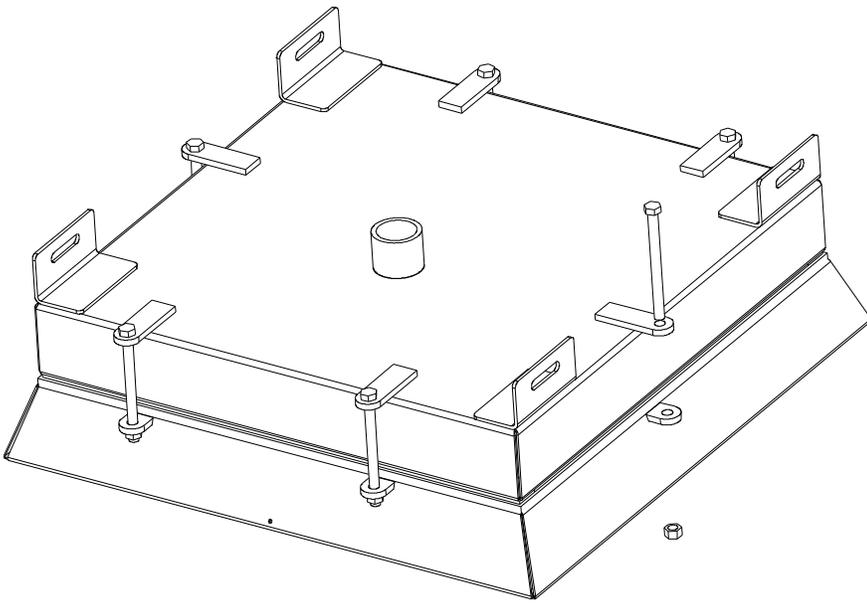


Step 9) Carefully place the heater plenum on top of the gaskets. Make sure the gaskets do not shift.



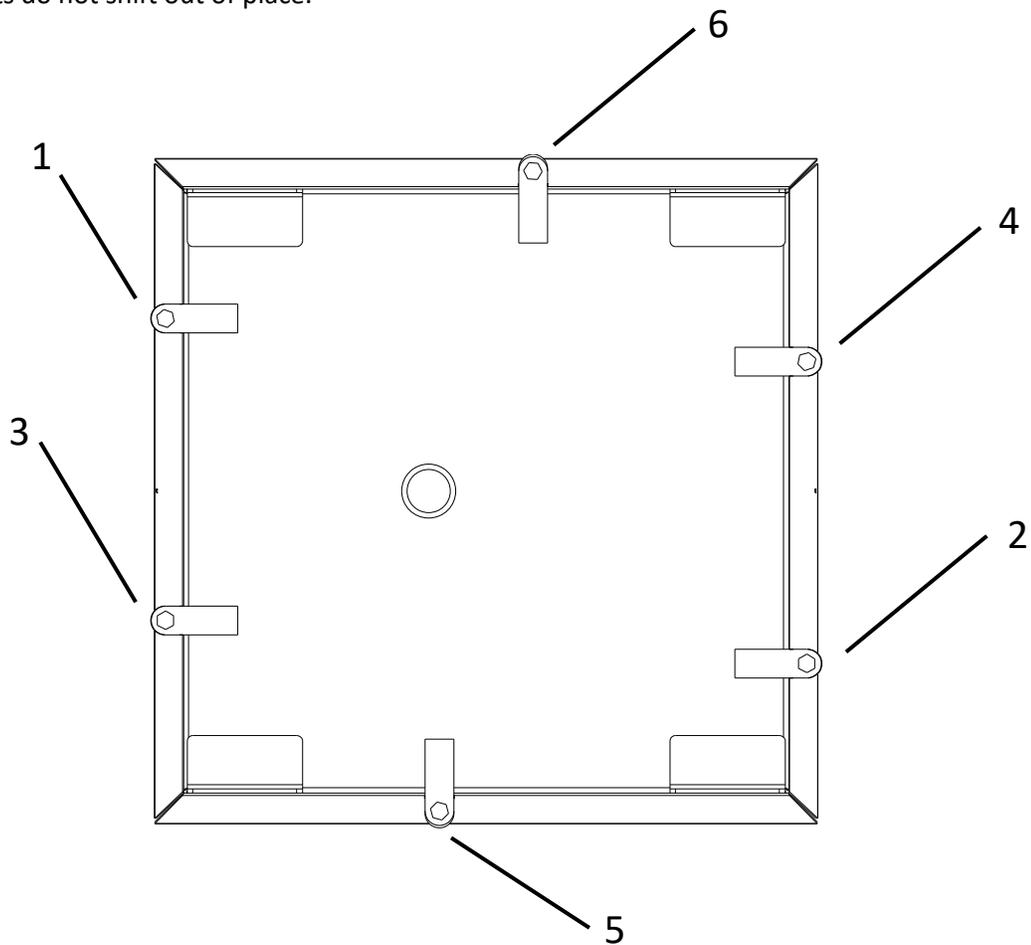
- **Maintenance**

Step 10) Install bolts and hand tighten in a figure eight type pattern. The bolts should be tightened with the pattern shown below.



Heater Assembly Torque Pattern: Using A Torque Wrench Follow the Pattern Shown Tightening Bolts To 90 in-lbs.

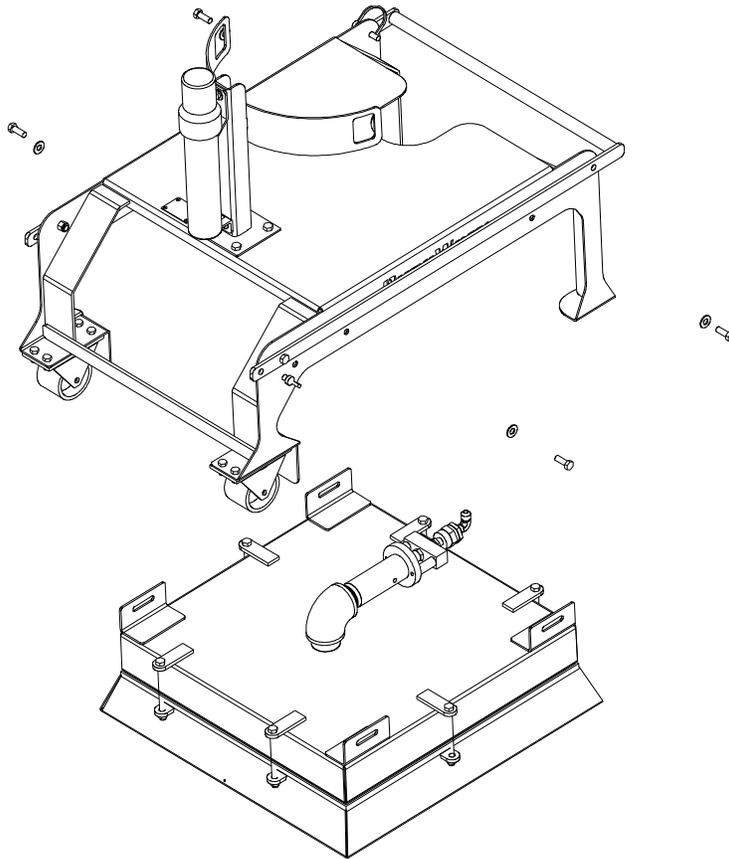
Notes: Make sure skirt, cartridge, gasket, and top are square to each other so that the gasket is not over hanging over the edge or pressed in. The gasket may require adjustment as the bolts are tightened. While tightening the bolts make sure that the gaskets do not shift out of place.



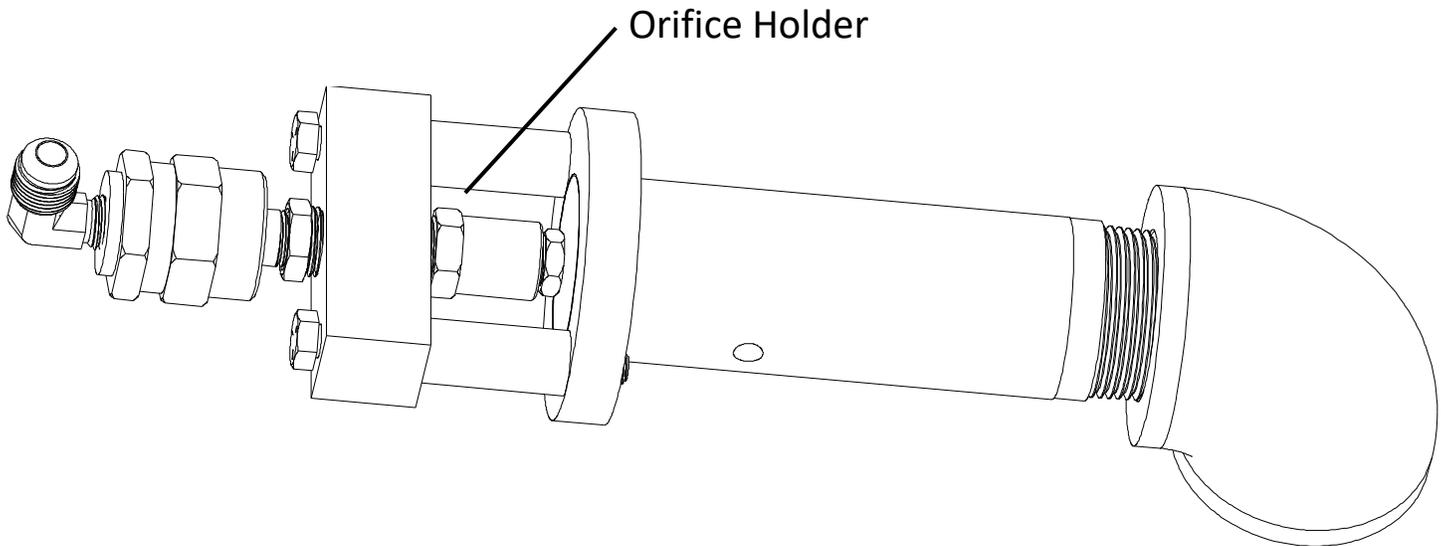
- Maintenance

Venturi Maintenance

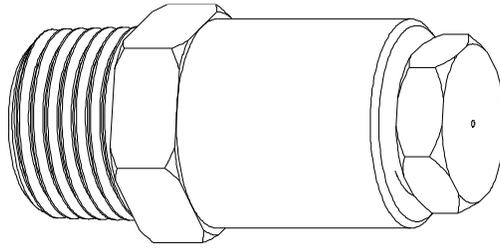
Step 1) Remove the heater assembly from the frame.



Step 2) Remove Brass Orifice holder by turning it counter clockwise using a 3/4" wrench.

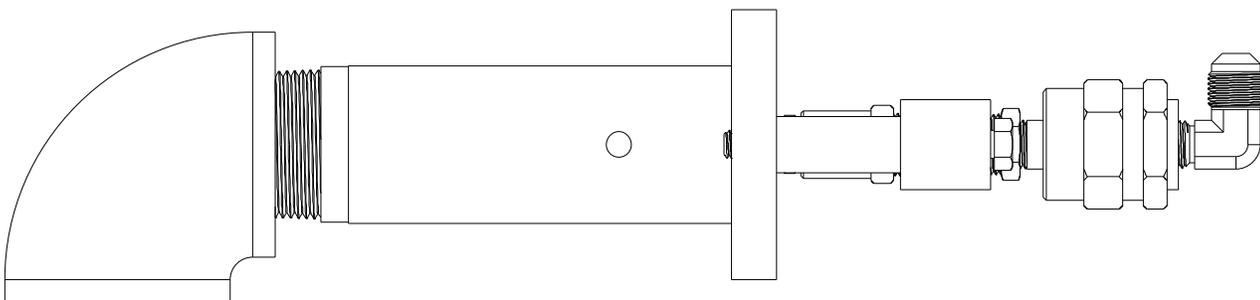
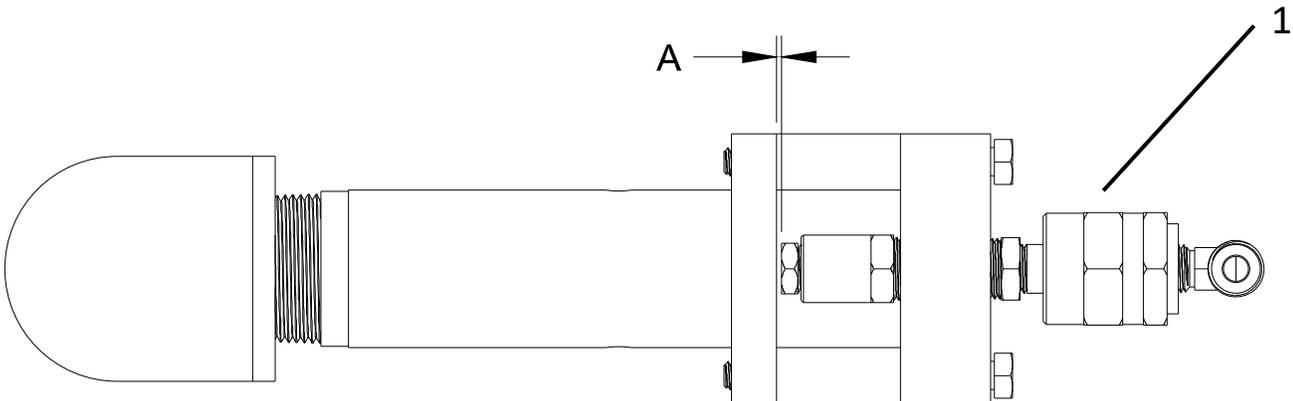


Step 3) Inspect orifice* for any debris. Remove the debris. If the orifice is severely plugged you may need to use compressed air. Check distance to inspirator.



⚠ CAUTION: Do not use torch tip cleaners. This may increase the size or angle of the orifice. This will cause the heater to perform poorly.

Step 4) Re-tighten the orifice holder ensuring there is a small amount of pipe sealant on the threads. Dim A - Approx. Flush
Suggested: Clean filter once a year (item 1)



- **Troubleshooting Guide**

Below we have provided a common problems and solutions table. Be sure to consult this table should you experience any technical problems.

Description of Problem	Possible Causes	Known Solutions
Flames are coming out between the upper plenum and heater skirt	Gasket is damaged	Replace gasket
Regulator shows pressure but there is no propane at the heater	Propane hose may be plugged	Replace hoses
Heater making popping noise	Ceramic cartridge is damaged	Replace heater cartridge
Heater will not light	Venturi orifice is plugged, very tiny obstruction will also cause issues	Clean orifice
Heater will not light	Gas pressure is too low.	Adjust pressure to 15-20 psi
Heater will not light	Tank safety valve is on	Shut off and turn on slowly
Heater has large orange and yellow flames coming underneath	Orifice is missing	Check and replace if needed
Gauge shows pressure with no propane	Gauge is broken	Replace gauge

- **Infrared Q&A**

Q: What is Infrared Asphalt Repairs? **A:** The damaged asphalt is heated so that it becomes soft, then the area is reworked. Rejuvenating emulsion is sprayed on and new asphalt is applied to fill in any voids. The entire area is then compacted with a vibratory compactor to form a seamless patch that is thermally bonded to the surrounding pavement.

Q: Will water leak through Infrared Asphalt Repairs? **A:** No. Thermal bonding of the Infrared asphalt repair with the surrounding pavement makes the repair an integral piece of the pavement.

Q: How much will it cost? **A:** Infrared asphalt repairs are comparable to conventional repairs but your selling price will depend on your specific market.

Q: How long does it take? **A:** Typical Repairs can be done in 20 minutes or less.

Q: Is Infrared Patch repair a Green Process? **A:** Yes. Infrared uses the existing asphalt which leaves little or no wasted material. In fact, Infrared asphalt repairs leaves more than 90% less carbon footprint in our environment as compared to the conventional removal and replace method.

Q: Is Infrared restoration too expensive? **A:** No. Infrared restoration is much more cost effective than traditional full depth patching and mill and pave methods. Consider the savings in manpower, time, machinery and materials by not having to cutout, remove, replace, transport and dispose of large quantities of asphalt. In addition, the result is a neat, clean, seamless patch that is thermally bonded to the surrounding asphalt.

Q: Is Infrared restoration only good for small areas? **A:** No. Infrared can be used economically on large patches and trenches as well. This is achieved by using multiple heats in succession. The larger the machine the more cost effective it will be.

Q: Is Infrared restoration permanent? **A:** Yes. A correctly installed Infrared repair will restore the damaged area to the original condition and useful life of the pavement around the repair. If there is pavement deterioration in the surrounding area it could eventually affect the restoration over time.

Q: Can Infrared be used to correct a sub-base problem? **A:** No. Infrared addresses the asphalt course or the roadway only. Nothing short of excavating and making repairs to the sub-base will correct this problem. Infrared restoration is still the most effective repair to the asphalt once the sub-base problem is corrected.

Q: How soon after a repair can you drive over it? **A:** Once the repaired surface has returned close to normal surface temperature. This is dependent on the original surface material and inclement weather, but even in poor conditions is usually no longer than 30 minutes.