



SHRINKFAST

Innovators In Heat Shrink Tools

Operating, Field Maintenance, and Parts Manual Model 998 UL[®]



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**GENERAL SAFETY PRECAUTIONS -
READ ALL INSTRUCTIONS
BEFORE OPERATING THIS HEAT TOOL**

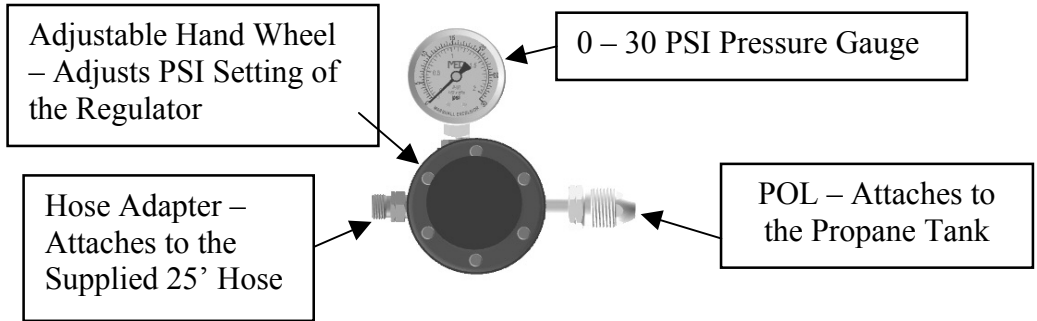
- *Do not operate this heat tool below 15 PSI or damage to the heat tool will occur.*
- Before using any heat tool, check all parts for proper function and damage to component parts including the hose, regulator and heat tool.
- "Hidden areas such as behind walls, ceilings, floors, soffit boards and other panels may contain flammable materials that could be ignited by the heat tool when working in these locations. The ignition of these materials may not be readily apparent and could result in property damage and injury to persons. When working in these locations, keep the heat tool moving in a back and forth motion. Lingering or pausing in one spot could ignite the panel or the material behind it."
- Do not use the heat tool to remove paint.
- Do not point this heat tool at anyone and do not operate in an area where there is a risk of an explosion or fire.

GENERAL SAFETY PRECAUTIONS

- When working with any type of heat or open flame, always keep a fire extinguisher close by.
- Always wear safety glasses and gloves (flame retardant or leather is suggested) when shrink wrapping. Never obstruct or cover the air inlet at the back of the heat tool. If the air flow is reduced the heat tool will not work properly.
- When shrink wrapping outdoors, do not shrink wrap when the wind is stronger than 10 mph.
- When shrink wrapping indoors, make sure the work area is well ventilated.
- Keep the work area clear of debris, wood shavings, paper products, flammable chemicals and anything else that may catch fire from the heat of the tool.
- Do not wear loose clothing while shrink wrapping and also keep long hair tied back.
- Stay alert, watch what you are doing, and use common sense when operating the heat tool. Do not use tool while tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating the heat tool may result in serious personal injury.
- Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the heat tool in unexpected situations.

- Never operate the heat tool with the combustor nozzle hard up against a surface; this could ignite any material you are shrink wrapping.
- Do not place the combustor nozzle (*where the flame comes out of the heat tool*) next to anything while it is hot. Never allow the combustor nozzle to come in contact with clothing or skin.
- Do not look down the combustor nozzle while the tool is in operation or attached to a fuel source.
- ***The heat tool should be kept 6” – 8” away from the shrink film when in operation. Never keep the heat on one area for more than a few seconds. Once heat is applied to the shrink film, it will continue to shrink even after the heat is moved away from the area.***
- Never modify the tool in any way and use only Shrinkfast replacement parts.
- Never operate in a basement or closed in, non-ventilated area.
- Never operate the heat tool on an area that you cannot see.
- Always operate the heat tool with the UL[®] Guard installed.

REGULATOR OPERATION & MAINTANENCE



Regulator Technical Overview:

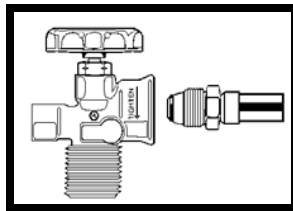
- The MEGR-6120 is a high capacity, pounds to pounds, industrial gas regulator. It is designed to conform to UL[®] Standard 144 for use with LP Gas. The maximum supply pressure is 250 PSIG. The maximum output pressure is printed on the regulator nameplate.
- This regulator is not intended for use in pressure applications below 3 PSIG and the heat tool should not be operated at a pressure below 15 PSIG. The operating temperature range is -40 to +200 degrees Fahrenheit.



This is a variable regulator assembly and the heat tool will operate properly between 15 PSI and 30 PSI. The pressure can be changed by loosening the hex nut located under the black, round hand wheel on the regulator assembly and then turning the hand wheel to the desired pressure. However, the optimum and factory recommendation is that you **do not adjust** the pressure and keep the regulator set at the factory setting of 22 PSI.

Regulator Installation:

1. Remove the yellow cap from the POL (brass, bull nose fitting) and connect the POL to your propane tank and tighten with the supplied wrench (**all threads are left handed thread, so tighten counter clockwise**).



Propane Tank ← Regulator POL

2. Connect one end of the supplied 25' hose to the hose adapter on the regulator and the other end of the hose to the heat tool. Tighten all fittings with the supplied wrench (*left handed threads, so tighten counter clockwise*).
3. Open the propane tank valve and check for any leaks by spraying a soapy water mixture on the fittings. If any bubbles are visible, shut off the propane tank and tighten the fittings.

Pictured: Hand wheel on top of your supplied propane tank.




To open the flow of propane, turn the tank hand wheel in a counter clockwise motion and watch the regulator gauge increase to the required 22 PSI.

4. When you first turn on the propane tank, the pressure gauge on the regulator will slowly move toward the factory setting of 22 PSIG. Once the hose is fully pressurized, the needle on the gauge will stop at 22 PSIG. Now the heat tool is ready to be fired.

STARTING THE HEAT TOOL

1. Depress the yellow safety that sits in the palm of your hand. If you do not depress the safety first, you will not be able to pull the trigger with your finger tips and ignite the heat tool.
2. With the safety depressed, slowly pull the trigger with your fingertips so you first hear a slight “hissing” of propane flow, then pull the trigger completely and the heat tool will “click” then ignite.
3. Should the gun fail to ignite, release both the safety and trigger fully to ensure that the igniter is reset and repeat the starting procedure.

 **WARNING: MANY NEW USERS PULL THE TRIGGER TOO QUICKLY AND MULTIPLE TIMES BELIEVING THIS IS THE BEST WAY TO IGNITE THE HEAT TOOL. PULLING THE TRIGGER TOO QUICKLY DOES NOT ALLOW THE PIEZO CRYSTAL INSIDE THE IGNITER TO SEND PROPER VOLTAGE TO THE SPARK PLUG, SO PULL THE TRIGGER SLOWLY IN ORDER TO IGNITE EVERY TIME.**

 **WARNING: DO NOT TOUCH THE WIRE METAL SHIELD (UL[®] GUARD) AFTER THE HEAT TOOL HAS BEEN FIRED.**

REGULATOR MAINTENANCE & SAFETY FEATURES

- Because the Shrinkfast UL[®] approved regulator assembly is assembled and tested at the factory to conform to UL[®] Standard 144, any maintenance or repairs should be in accordance with this listing as well as any other applicable regulations. Regulator parts showing wear should be replaced as necessary. Contact your local distributor or Shrinkfast directly for descriptions and part numbers.



IMPORTANT SAFETY FEATURE: Inside the POL fitting on the Regulator Assembly there is a safety featured called the “Excess Flow Device”.

- This safety feature is designed to stop the flow of propane if the hose becomes cut or detached from the regulator or heat tool during operation.
- The Excess Flow Device does not stop the propane flow 100%, but it does reduce the flow so the user has time to get to the tank and shut off the propane and prevent a dangerous situation from occurring.

How the Excess Flow Device Works:

- When the propane tank is first turned on the Excess Flow Device believes there may be a downstream leak and temporarily closes the POL. The POL does not stop the flow entirely, so there is enough propane entering the hose to begin pressurizing the system.

- Once the fuel has filled the entire hose and the regulator gauge reaches 22 PSI, the Excess Flow Device reopens and the heat tool is ready for operation (*you will hear an audible “click” from the POL when the pressurization is complete*).
- This pressurization process can take anywhere from 7-10 seconds from when the tank is first turned on and may take a little longer with propane tanks that are partially filled. This feature is all for the safety of the user, but you must wait the 7-10 seconds for the pressurization to complete before operation.

Attempting to Ignite the Heat Tool before Pressurization is Complete:

- If the user attempts to fire the heat tool before the pressurization is complete, the pressure gauge will drop down to 0 PSI and the heat tool will not ignite. In order to ignite the heat tool, the user must wait for the system to pressurize (22 PSI) and then the heat tool will operate properly. **This wait time will only occur when the user first turns on the propane tank.**



WARNING: As the amount of propane in the tank drops, the pressure gauge on the regulator will decrease accordingly. Do not operate the heat tool once the pressure drops down to 15 PSIG. Operating the heat tool below 15 PSIG, will result in damage to the heat tool’s internal components.

CHOOSING THE CORRECT PROPANE TANK

- **There are two types of propane tanks commonly available:**

A. **Correct**: Vapor withdrawal—Use this style (exactly the same as a BBQ grill tank)



B. **Not Correct**: Liquid withdrawal—**Do not** use this style (used on fork trucks)



⚠️ WARNING: Using a liquid withdrawal (fork truck) propane tank will clog the orifice in the heat tool and result in an extremely long and dangerous flame.

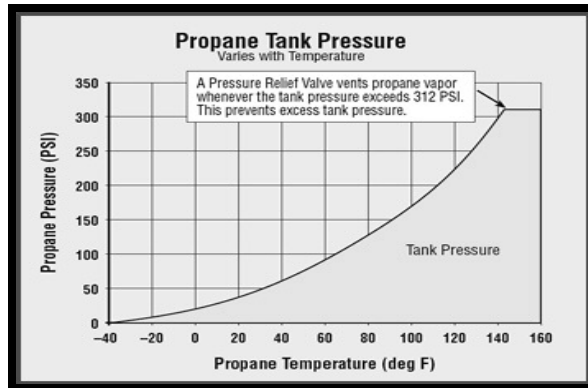
CHOOSING THE CORRECT PROPANE TANK (CONTINUED)

- Propane tanks are available in a variety of sizes. The most popular tank sizes:
 - 20 lb. tank similar to a BBQ propane tank for smaller applications.
 - 40 lb. tanks are commonly used in most industrial applications.




TANK PRESSURE, TEMPERATURE & OPERATION

- Tank pressure depends on the temperature of the tank. At room temperature (72°F) the pressure in a full tank is 110 PSI and drops to 22 PSI at 0°F.



If the propane tank ices up during operation:

When the heat tool is in operation, the temperature of the tank drops due to the evaporation process of liquid propane to propane gas. After prolonged use and continued drop in propane pressure, the temperature of the tank may drop to 0°F usually accompanied by icing on the outside of the tank and regulator.

 **WARNING: Icing of the tank and regulator is quite common when running the heat tool continuously with a partially filled propane tank. However, if you are ever in doubt regarding the safety or operation of your heat tool, shut off the tank and contact your authorized Shrinkfast distributor or Shrinkfast directly.**

- Small or nearly empty tanks ice up faster than larger, full tanks. Typically, a full 20 lb. tank, if operated continuously, will run for 90 minutes before ice builds up on the outside of the tank.
- If your shrink wrapping project requires continuous use of the heat tool, try the following methods:
 - Use multiple tanks—Switch the heat tool from one tank to another.
 - Use a portable fan—Point an ordinary desk fan at the tank, and the air flow around the tank will help the tank from icing up.

VENTALATION REQUIREMENTS WHEN OPERATING HEAT TOOL




WARNING: During operation, the heat tool consumes propane and air and produces carbon dioxide, carbon monoxide (CO), and water vapor. Prolonged exposure to Carbon Monoxide is lethal and adequate ventilation must be provided if the heat tool is to be operated indoors.

- To maintain a safe CO concentration (50 parts per million as set by OSHA Standard 1910.1000 – Air Contaminants), ventilation requirements are 2,000 cu. ft. /min. of fresh air while the heat tool is operated at a maximum operating pressure of 30 PSI.
- Based on a 1 1/2 minute heating cycle per pallet, the fresh air requirements are 3000 cu. ft. /pallet. Example: If the production rate is 10 pallets per hour, a ventilation system needs to provide 500 cu. ft. /minute.
- In areas where ventilation is provided by open doors or windows, a safe level of CO will be maintained as long as the room temperature does not rise above 150°F.

GENERAL INFORMATION ON SHRINK FILM & SHRINK BAGS

Shrink Wrap (#4 LDPE):

- The shrink wrap is manufactured in multiple colors and is typically a 6 or 7 mil, low density polyethylene (#4 for recycling purposes). What makes this material different than construction plastic sheeting is that it contains shrinking resins, UV inhibitors, anti-brittling compounds, and strengtheners so that it will not rip or tear. Make sure the shrink film is manufactured using only virgin resin material.

 **WARNING: Shrink wrap can burn. If heat is applied incorrectly, shrink wrap can ignite into open flame. It can also drop down on to other combustible material and cause secondary ignition and fire. If at any time you observe the shrink wrap on fire, immediately stop what you are doing and carefully inspect the area where you are working for a possible fire. Keep a fire extinguisher available at all times.**

Measuring for the Shrink Film:

- Regardless of the shape of the object you are covering, it must be viewed as a cube in order to find the proper shrink film size. In general, you measure the width by starting at the lowest point of the object or however far down you

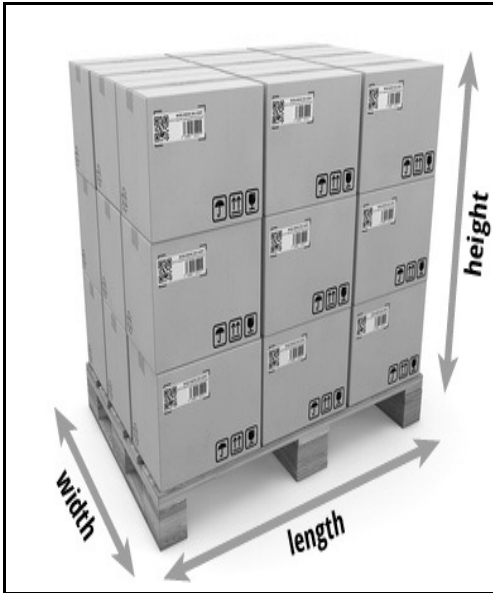
want the film cover to reach. Measure up the side, over the top, and down the opposite side to the lowest point. Add one foot to this number to accommodate heat welds and this will indicate how wide your shrink wrap should be. This process will determine the square footage of the object being shrink wrapped.

- For boat wrapping or storage purposes, a 6 or 7 mil shrink film is installed, but the mil thickness depends on the project requirements and can be best determined by a shrink film distributor.

Measuring for the Shrink Pallet Bags:

- For shrink wrapping a pallet, a 4 mil shrink bag is typically used for loads of 1,000 lbs. or less. You should always add at least 2" to the length and width of your measured object when sizing the correct pallet bag and at least 4-6" to the height (including the pallet) to account for the material shrinking when applying the heat.
- Again, not all plastic bags are shrink bags; therefore, be specific. Shrink film should be made of virgin resin, and not reprocessed material.

MEASURING FOR A SHRINK PALLET BAG



1) Measure the length, width and height of the pallet to be covered.

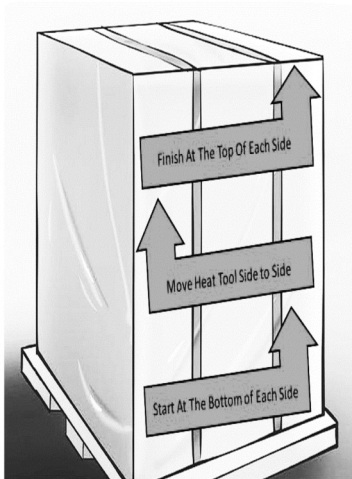
2) Determine the Length (L) of the bag, by adding 2" to the length of the pallet.

3) Determine the Width (W) of the bag, by adding 2" to the width of the pallet.

4) The Height (H) of the bag is determined by measuring the height of the pallet (including the height of the pallet itself) and adding 4-6". ***The added length allows you to tuck the ends of the bag under the pallet before applying heat so that it does not pull up over the pallet edges.***

Example: If the pallet size is 48"(length) x 40"(wide) x 50"(height), the bag dimensions are as follows: Length (L) is 50", Width (W) is 42" Height (H) is 56" (always go higher in height if they do not have the exact bag height available).

Shrink Wrapping a Pallet Bag:



Shrink the Bottom of the Pallet First:

1. Ignite the heat tool and hold it approximately 6-8" inches from the film surface.
2. Move once around the entire pallet applying the heat to the bottom edge of the bag and using the air velocity to blow it under the pallet. Shrink the film so that it grasps the underside of the pallet firmly. In doing so, the bag is locked to the pallet and thereby securing the load.

Shrink the Sides of the Pallet Next:

1. Shrink one side at a time by holding the gun approximately 6-8 inches from the film surface. Shrink the side by sweeping the gun smoothly across the bottom in a side to side motion.
2. Move up a foot and sweep back and continue sweeping across the face moving up with every sweep until the side is finished. The film wrinkles ahead of the gun as the film behind begins to shrink. It is important that the heat tool be kept in motion at all times.
3. As one side is completed, move to the next, each time beginning at the bottom and working your way up as you move from side to side.
4. The top of the pallet is shrunk last and requires less heat than the sides. This is due to the heat transfer from heat shrinking the other four sides first.
5. The pallet is now ready for shipment. Lift truck forks may be driven through the film where it covers the bottom of pallet.



SHRINK WRAPPING TIPS

- During operation, always have the heat tool moving in a side to side motion. The most important fact to keep in mind is that heat only softens the film. The greatest amount of shrinking occurs as the film cools.
- It is a common mistake to apply too much heat to one particular area of the shrink film, thus burning a hole in the film. Keeping the heat tool continuously moving will prevent this from occurring.
- With a little practice, you will find that you can hold the heat tool closer to the film and sweep faster often shrinking a pallet in less than 4 minutes.
- It is absolutely necessary that the four corners of the bag be taut under the pallet. If this is not done, the effectiveness of shrink palletizing is considerably reduced.



PATCHING HOLES IN SHRINK WRAP FILM

- **MISTAKES HAPPEN!** Occasionally holes will appear in the shrink film, but they can be easily repaired. Holes in the film can be patched by laying a square piece of shrink film over the hole and applying heat around the edges, thus heat welding the patch to the bag. **Note: Make sure you cut the film patch at least 2” larger on all sides before applying heat to the patch.**

After applying heat to the patch of film, tap the warm film with the back of your glove to ensure the film is secured over the hole. The same technique can be applied to reinforce edges or corners. After the patch has cooled, apply shrink tape to all four sides to further secure the patch.



WARNING: After shrink wrapping, never touch the shrink film with your bare hands.



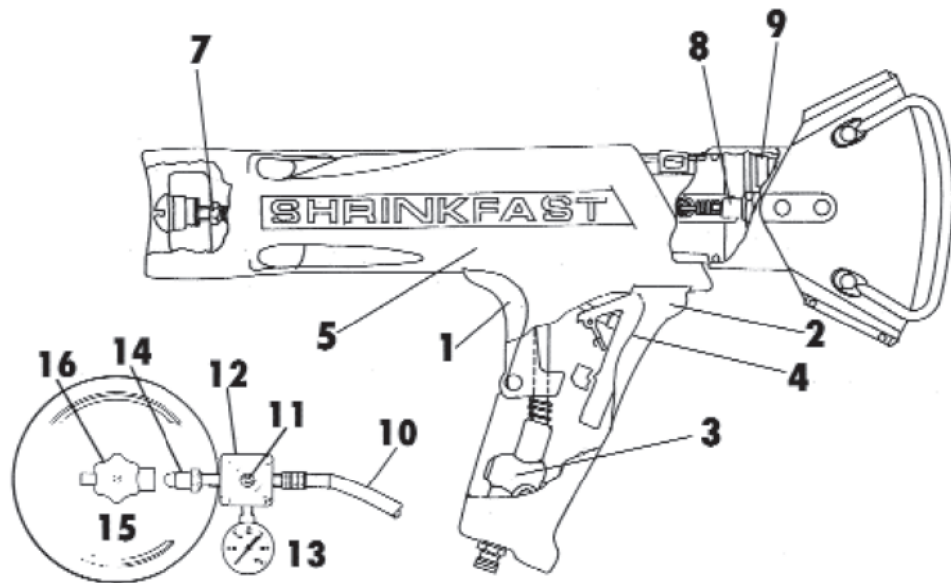
SHRINK WRAPPING LARGE OR ODD SHAPED LOADS

- Shrink wrapping is a versatile process that can be employed in a variety of applications. For example, shrink wrappers routinely wrap irregular objects such as industrial equipment.

Objects, which are too big to fit under a bag, can be wrapped by using several sheets of shrink film joined together if the following the precautions are observed:

- When adjoining sheets of film there should be an 18 inch overlap. This overlap allows the sheets to weld together during the shrink process.
- The sheets of film must be secured around the entire base of the pallet and attached to the skid with strips of wood strapping or any other method that can secure the film and prevent it from pulling up on the object when heat is applied.
- Once the film is firmly attached to the pallet, the heat tool is used to shrink the film, again using a back and forth motion, starting at the bottom of the object and working your way to the top.

OPERATING OVERVIEW

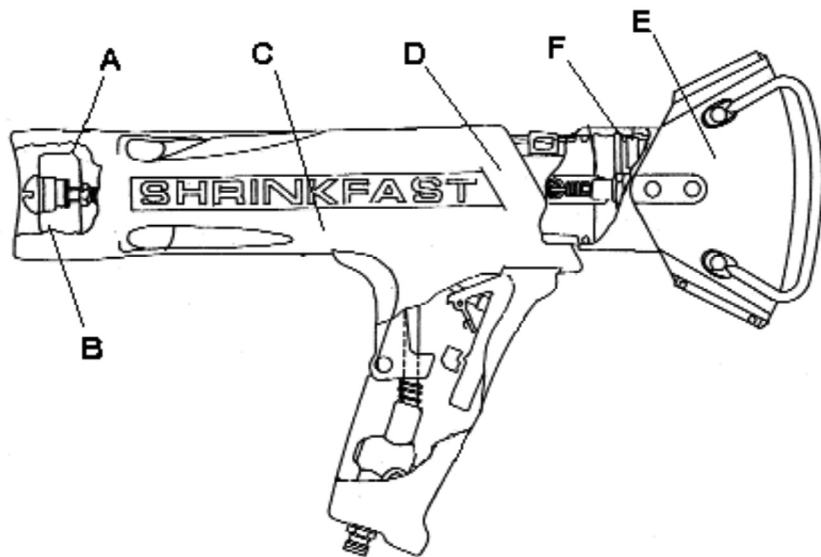


PART AND FUNCTION

1. *Safety*: Prevents accidental gas release
2. *Trigger*: Activates gas valve and igniter
3. *Valve*: Opens fuel flow
4. *Igniter*: Fires the piezoelectric spark igniter
5. *Fuel Line*: Carries fuel to orifice
7. *Orifice*: Controls fuel flow through pump body
8. *Spark Plug*: Ignites fuel
9. *Flame Holder*: Prevents flashback and flame out
10. *Hose*: Connects regulator and heat tool
11. *Adjustment Knob*: Adjusts pressure on regulator
12. *Regulator*: Regulates fuel pressure to heat tool
13. *Pressure Gauge*: Indicates pressure in the line
14. *POL Fitting*: Connects regulator to tank and contains excess flow valve
15. *Propane Tank*: See “Choosing the Correct Propane Tank” section
16. *Tank Valve*: Opens/closes fuel supply

PRINCIPLES OF OPERATION

Note: Letters Keyed To Text On Following Pages.



PRINCIPLES OF OPERATION

The Model 998 offers an improved jet pump using a multi nozzle orifice. The jet pump is shorter and more efficient with the benefits of a wider and more powerful heat pattern. The 998 is basically a simple jet engine, the high energy exhaust of which is used to pump and heat the surrounding air and deliver an air blast of high velocity and moderate temperature. Its' effectiveness is based on the high level of technical development which has gone into optimizing each stage of operation:

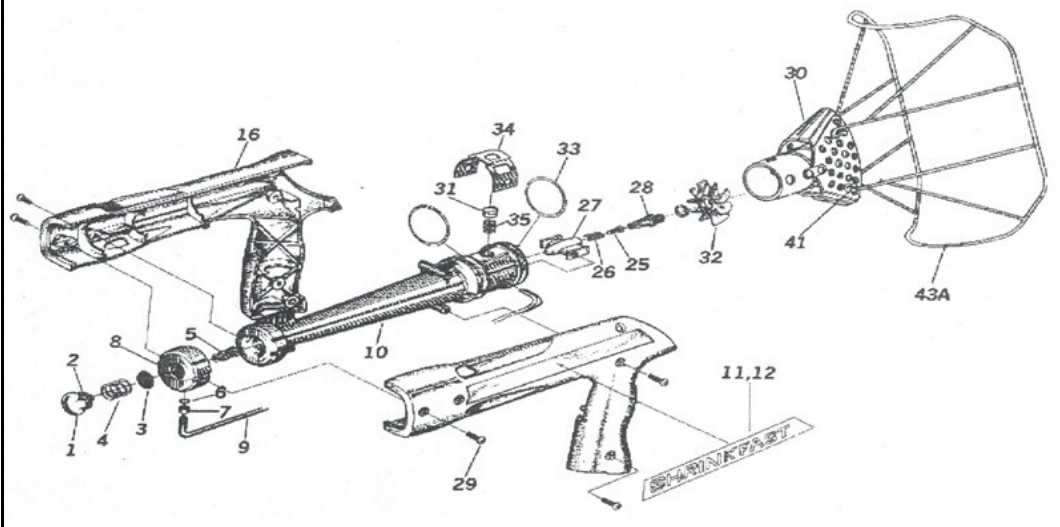
1. Jet Pump. The propane jet (A) draws the correct amount of combustion air through the air inlet (B). They mix together in the straight section (C).
2. Compression. The conical section (D) turns speed into pressure.
3. Combustion. The combustion process is carried out inside the combustor (E). The flame holder (F) prevents flashback (where the flame travels back into the jet pump) and the flame out (where the flame is blown out of the combustor). Another proprietary function of the flame holder is to achieve the effect of maintaining cold combustor walls in spite of the fact that the combustion is substantially completed inside the combustor. This is done by imparting a swirl to the mixture. During combustion, the burned portion of the mixture expands, and

its' density diminishes. The swirl centrifuges the unburned, heavier portion outward and thereby creating a blanket of cold mixture along the walls. As combustion proceeds, the process draws from the protective layer of unburned mixture, and when combustion is completed the cooling effect stops. The size of the combustor ensures that for rated flow the point of completion coincides with the outlet. Operating at less than rated pressure, the blanket of unburned mixture does not extend all the way to the outlet and results in a red hot combustor outlet.

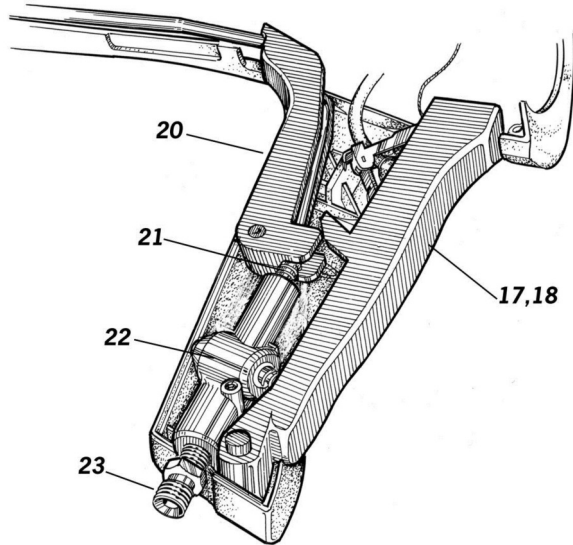
4. Expansion. By virtue of the internal combustion process at elevated pressure a portion of the heat energy is converted to exhaust gas velocity. The gasses are expanded into the atmosphere through the combustor (E) with a velocity of over 160 MPH and a noticeable amount of thrust.

5. Entrainment. A second jet pump effect is created by the exhaust gases as they leave the combustor. The slot shaped outlet of the combustor creates a large mixture interface and promotes high volume entrainment within an unusually short distance. The exhaust gases transfer their heat and momentum to the entrained air and thus create a stream of high volume, low temperature air.

Model 998 Parts Breakdown



MODEL 998 HANDLE ASSEMBLY



MODEL 998 PART NUMBER AND DESCRIPTION

Part #	Description	Part #	Description
1	Filter Holder	25	Contact Screw
2	O ring	26	Contact Spring
3	Filter Screen	27	Socket
4	Filter Spring	28	Spark Plug
5	Orifice Assembly	29	Assembly Screws (10)
6 & 24	O ring	30	Combustor
7	Retainer	31	Button
8	Inlet	32	Flame holder
9	Fuel Line	33	O ring
10	Pump Body	34	Strap
11	Label, Right Hand	35	Button Spring
12	Label, Left Hand	36A	Hose Assembly
14	Name Plate	37	Regulator
15	Housing, Right Hand	38	POL
16	Housing, Left Hand	39	Gauge
17 & 18	Trigger/Igniter Assy	40	Carrying Case
20	Safety	41	Guard Screw
21	Spring	43A	UL [®] Guard
22	Valve Assembly	44A	Wrench
23A	Hose Adapter		

ASSEMBLY AND DISASSEMBLY

1. Filter Cleaning

1.1 Unscrew filter holder (1) using a screw driver or a coin. Pull out the filter holder.



1.2 Pull out the filter screen/spring assembly (3, 4) and clean with compressed air or replace.



2. Spark Plug Replacement

2.1 Depress button (31) and remove combustor assembly (30).



2.2 Pull spark plug (28) and flame holder (32) out with a pair of pliers.



2.3 Unscrew spark plug. Note: spark plug the cable (17, 18) and the contact spring gap should be set to 3-5mm. (26).

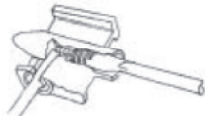


3. Trigger/Igniter Replacement

3.1 Undo the 5 mounting screws (29) and remove right housing (15).



3.2 Undo contact screw (25) which retains the trigger/igniter cable (17, 18) and the contact spring (26).



3.3 Snap off the strap (34) with a screw driver.




3.4 Pull out trigger/igniter cable (17, 18).



3.5 Trigger/igniter assembly (17, 18) can now be lifted out.



4. Orifice Replacement

 **WARNING:** The orifice (5) consists of 6 slender, thin walled tubes which can easily be bent or damaged if dropped or mishandled. Once bent, the performance of the gun can be seriously impaired. For this reason the following operation should be performed with utmost care.

4.1 Remove the right housing (15) as shown in operation 3.1



4.2 Undo the 3 mounting screws holding the pump body (10) and remove the pump first by sliding it away from the orifice and then lifting it out. This sequence is important because the orifice reaches inside the pump. Lifting the pump before sliding it away will damage the orifice tubes.

4.3 Unscrew the orifice (5).



4.4 Use a .6mm drill to clean out each orifice stem.



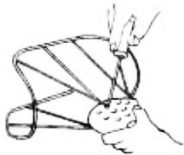
5. UL[®] Safety Guard Assembly



5.1 Push both curved tubular joints onto one half of the guard assembly (43A).



5.2 Insert the second half of the guard into the tubular joints and twist it together until the mounting struts of both halves are parallel.




5.3 Attach the guard assembly to the combustor (30) with the 4 mounting screws (41).

HEAT TOOL SERVICE INSTRUCTIONS

- In the event that your heat tool requires servicing or repair work performed, Shrinkfast and/or your distributor can provide a parts list and assembly diagram as a reference tool only.
- Neither Shrinkfast nor the distributor make any representation or warranty of any kind to the buyer that he or she is qualified to replace any parts of this or any other Shrinkfast product. Shrinkfast and/or your distributor expressly states that all repairs and part replacements should be undertaken by certified and licensed technicians and not by the buyer.
- The buyer assumes all risks and liability arising out of his or her repair to the original product or replacement parts thereto, or arising out of his or her installation of replacement parts.
- If you require any assistance with servicing or repair work, you can contact your local distributor or Shrinkfast direct at 603.863.7719 or via email at info@shrinkfast-998.com
- Shrinkfast provides free estimates on any repair or service request.

DAILY HEAT TOOL INSPECTION

- Before turning on the heat tool, visually inspect the hose for any cracks or breaks that can cause a propane leak.
- When you turn on the gas at the propane tank, make sure the regulator gauge pressurizes to 22 PSI before firing the heat tool and then leak check all fittings and connections.
- If you suspect a leak, use a spray bottle of soapy water and spray directly on each connection to detect any leaks – indicated by bubbles coming from the connection.
- Before firing the heat tool, make sure you do not have a strong smell of propane or hear any “hissing” which would indicate a possible leak inside the heat tool.
- When you are finished using the heat tool (at any time during the day), shut off the propane tank and pull the trigger on the heat tool to purge any remaining gas inside the hose.

 **WARNING: Do not operate the heat tool if the pressure on the gauge drops below 15 PSI. Operating the heat tool below 15 PSI will cause the flame to burn inside the heat tool and damage the internal components voiding the warranty.**

MONTHLY HEAT TOOL MAINTANENCE

- Using compressed air, depress the yellow button and then pull off the combustor (part # 30 in assembly diagram) and clean out any debris inside the combustor assembly.
- Using compressed air, clean out the main body of the heat tool (part # 10).
- Using compressed air, remove the filter holder assembly with a flat blade screwdriver (part # 1, 4, 3) in the back of the heat tool and clean the screen.
- Inspect the o rings (part # 33) inside the combustor for cracks and replace if necessary or apply o ring lubricant.

TROUBLESHOOTING GUIDE

Problem	Probable Cause	Remedy
Gun will not ignite	Safety and/or trigger are not fully depressed.	Depress the safety first, and then pull the trigger to ignite.
	Trigger is pulled to quickly	Squeeze the trigger slowly to ensure the propane has entered the combustor before firing.
	Propane tank pressure too low	Check the regulator to make sure the Gauge is reading a minimum of 15 PSI.
	Propane tank valve is not turned on.	Turn on tank valve and check the regulator gauge for proper pressure setting.
	Defective igniter	<u>With propane turned off and gas purged from the hose</u> , check for spark in the combustor.

Problem	Probable Cause	Remedy
Gun will not ignite	The POL excess check valve has not fully opened.	Turn on propane tank valve and wait 10 seconds or until the needle on the regulator has reached the factory setting of 22 PSI. An audible “click” will be heard when the hose has fully pressurized with gas.
	Clogged orifice	Remove and clean with compressed air.
	Clogged fuel line	Remove and clean with compressed air.
	Clogged pump body	Remove and clean with compressed air.
	Clogged hose assembly	Disconnect and clean with compressed air.
Combustor turns glowing red	Low pressure from tank	Increase pressure from tank or replace tank.
Extremely large flame	Wrong fuel type	Do not use a fork truck tank; only vapor withdrawal tanks like a BBQ tank.
Tank, regulator or hose fittings have iced up.	Low pressure from tank	Increase pressure on regulator or change to a new tank.

**TECHNICAL SPECIFICATIONS
OUTPUT CHARACTERISTICS**

**MODEL 998 TECHNICAL SPECIFICATIONS
OPERATING PRESSURE of 22 PSIG**

Distance / Ft.	Temperature / F	Velocity / Ft./Min.
6"	1120	2100
1'	650	1200
2'	390	660

Heat Capacity	172,500 BTU / Hr.
Propane Consumption	8.0 Lbs. / Hr.
Operating Pressure	22 PSIG
Weight	2 Lbs. 2 Oz.
Air Consumption	30 CFM
Emission	.015 CO/CO2