

# GRIZZLY

## OPERATOR'S INSTRUCTION MANUAL

MODEL: 603 000 / 615 000 / 625 000  
635 000 / 650 000 / 680 000 ENGINE MODEL: \_\_\_\_\_

SERIAL: \_\_\_\_\_ ENGINE SERIAL: \_\_\_\_\_

DATE OF PURCHASE: \_\_\_\_\_

PURCHASED FROM: \_\_\_\_\_

**WARNING:** THIS PRODUCT IS DESIGNED AND MANUFACTURED TO GIVE SAFE AND DEPENDABLE SERVICE IF OPERATED ACCORDING TO INSTRUCTIONS. THE MANUFACTURER PROVIDES THE FOLLOWING INSTRUCTIONS FOR USE AND CARE OF THIS EQUIPMENT AND RELIES UPON THE PURCHASER TO SEE TO IT THAT THESE INSTRUCTIONS ARE MADE CLEAR TO THE PERSONS WHO WILL ACTUALLY BE USING THE EQUIPMENT. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR EQUIPMENT DAMAGE.

### GRIZZLY EQUIPMENT

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## INTRODUCTION

# 600 000 SERIES ROOFING KETTLES

Thank you for purchasing this quality **GRIZZLY** product. With proper use and care, this kettle will provide many years of reliable service. For the safety of all jobsite personnel it is mandatory that the instructions provided for the use and handling of the equipment be read and thoroughly understood by the operators.



## CAUTION

INTENDED USE: THIS MACHINE IS INTENDED TO BE USED FOR THE SOLE PURPOSE OF MELTING AND CIRCULATING ASPHALT OR FOR THE HOT ROOFING PROCESS (AND PUMPING HOT ASPHALT TO ROOF ON PUMPER MODELS). ANY OTHER USE OF THIS EQUIPMENT VOIDS THE MANUFACTURER'S WARRANTY AND IS THE SOLE RESPONSIBILITY OF THE OWNER/USER, SHOULD ANY DAMAGE OR INJURY OCCUR.

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## **PREPARATION**

### OPERATOR:

**START BY READING AND FULLY UNDERSTANDING OPERATING INSTRUCTIONS. IF SOMETHING IS NOT UNDERSTOOD, HAVE SOMEONE ELSE READ AND EXPLAIN THE INSTRUCTIONS TO THE OPERATOR OR CALL THE MANUFACTURER FOR INFORMATION. AN UNINFORMED OPERATOR CAN SUBJECT HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY.**

## **WEAR PROPER ATTIRE**

Safety glasses are recommended and must be worn if any roof cutting or scraping is being done in the vicinity. Safety glasses and or face shield are also necessary when working with hot stuff.

Wear properly fitting clothes. Tight clothing can restrict movement and slow down reaction time in a dangerous situation. Loose fitting clothing can be dangerous and cause serious injury if it gets caught in moving mechanical parts. Wear a long-sleeved shirt, buttoned at the cuffs, safety shoes, and pants without cuffs, and knit wrist type gloves. Hard hat must be worn by operator when work is being done.

## **ROOF PREPARATION**

### Inspect Roof Deck

Before allowing equipment and personnel access to roof, make certain roof is strong enough to support the weight. Check load limits of deck with owner, builder or architect. Clear the work area of all potentially dangerous obstacles that could cause personal injury to the operator or others. Keep unauthorized people away from construction area. Check to see that all roof openings are guarded to protect against falls.

### Warning Line System

The operation of this piece of equipment must be in compliance with Federal **OSHA** standards governing safety perimeters with respect to the use of power equipment. When operating parallel to roof edge warning line system must be at least six feet from edge. When operating perpendicular to edge warning line must be ten feet from roof edge. For specific information on warning lines, the use of guard rails and motion-stopping-safety systems, refer to section on OSHA Law.

## SPECIFICATION CHART

<b>Model #</b>	<b>Capacity Canadian gallons</b>	<b>Capacity U.S. gallons</b>	<b>Burners</b>	<b>Weight</b>
603000	37	45	1 X 603175	280 lbs (127 kg)
615000	150	180	1 X 942411	1100 lbs (500 kg)
625000	250	300	1 X 942412	2000 lbs (910 kg)
635000	350	420	2 X 942411	2300 lbs (1043 kg)
650000	500	600	2 X 942412	3500 lbs (1590 kg)
680000	667	800	2 X 942412	4600 lbs (2090 kg)

## TOWING

1. Before setting up to tow, know how much weight is to be towed. Look up the weight of your kettle in the specification chart. Add 8 lbs for every gallon of asphalt in the Kettle.
2. Make certain the towing vehicle and hitch is rated to tow the total weight of your Kettle. Check to see that hitch is in safe operating condition.
3. Kettle must be level when towing to maintain adequate tongue weight.
4. Make certain that hitch is secure and that safety chains are attached. Chains should have only enough slack to allow the towed vehicle to turn easily, but tight enough to prevent the tongue from dragging in the event that hitch becomes disconnected. Safety chains must be attached to frame of towing vehicle.
5. Check to see that tires have the right pressure for the load. Check lug bolts on wheels for tightness.
6. Tail lights are provided on all towable Kettles, test them to see that they work.
7. Brakes are provided on all pumper kettles, test them to see that they work. Also be aware of minimum stopping distance regulations where the Kettle is being towed. Allow plenty of braking distance.
8. Remember the length of your vehicle when towing.
9. Always raise jacks up out of the way for clearance before towing. All Kettle openings must be closed. Burners must be off and Kettle must be cooled down.
10. Bitumen level must be no higher than just above the flues. Never tow Kettle when more than half full.
11. Never tow at speeds unsafe for surface conditions. Do not exceed 50 miles per hour (50MPH).

## EQUIPMENT AND JOB SITE PREPARATION

### 1. Pre-job site checklist:

- a) Check all valves, hoses and attachments carefully.
- b) Check to see there is no water or foreign matter in Kettle.
- c) Make certain you have a CO<sub>2</sub> or dry powder fire extinguisher for the job and that it is in good operating condition.
- d) Check to see that lids fit properly.
- e) Inspect Kettle thoroughly for worn or broken parts, cracks, and loose parts. Make repairs before using.

### 2. Selecting Kettle set-up area.

- a) Kettle should be close enough to building to allow for proper set-up of thin wall tubing. Care must be taken to protect building and property. Locate as close to building as practical but be aware of the possible hazards from locating too close such as splashing of asphalt or the spread of fire.
- b) Locate the Kettle close to work area on roof to reduce transport distance and minimize cooling of material prior to application.
- c) Avoid locating near openings and air intakes on building to lessen the effect of fumes on people inside.
- d) Select a clear, level area with firm ground.
- e) Locate away from flammable materials.
- f) Locate away from all electrical wires.

### 3. Set-up properly.

- a) Lower front jack and drop rear leg before disconnecting hitch. Chock wheels front and back when Kettle is in its operating position. Make sure Kettle is level and stable from rocking. Placing tar paper underneath the Kettle will protect the ground from spillage.
- b) Set up a warning line system around the entire Kettle working area. Keep unauthorized people away from the area.
- c) If LP fuel is being used, secure tank so that it can't tip over. Locate cylinder at least 15 feet from burners. Keep all fuel upwind from the Kettle and away from open flames.
- d) Place asphalt or pitch to be used for the day in a location convenient for loading the Kettle.

## COLD START LOADING

1. Check the material you are going to heat. Find out if it's asphalt, coal tar or special bitumen product.
2. Check the residue in the Kettle to make sure it's the same material you are using. Never mix coal tar pitch with asphalt.
3. Place a sheet of plywood or metal on ground near loading area to use for preparing material and protecting the ground.
4. Place a keg of bitumen in preparation area, and remove wrapping. Dispose of flammable wrapping materials. Maintain good housekeeping.
5. If Kettle is empty, bitumen should be chopped into very small pieces. Two inch chunks are ideal. Smaller pieces of asphalt will melt more quickly. Load material evenly into Kettle until vat is half full. Never fire the Kettle before tubes are covered.

## LIGHTING THE BURNERS

1. Check that all safety hoses and connections for leaks and replace if necessary for safety.
2. Open the exhaust stack covers.
3. Place the burners on the ground, pointing away from the kettle or any combustible material. Remember that the propane flame is difficult to see on a bright day.
4. Make certain that the ball valve (at burner) is closed and adjust regulator (on the tank) to 25 psig. **DO NOT EXCEED THIS SETTING.** Open valve on propane tank only slightly.
5. Use long wooden matches or long neck lighter to ignite the generating coil while opening ball valve slightly.
6. Open valve on propane tank fully.
7. When the flame starts, re-adjust regulator to 25 psig and insert burner into burner well.
8. Open ball valve fully and again adjust regulator to 25 psig. Flame size can be decreased by reducing pressure at regulator.
9. To shut off burners close valve at top of LP tank and burn gas out of system. Do not disconnect lines until flame is extinguished and pressure reads zero.

## HEATING

1. With the vat about half full and bitumen chunks stacked around the flues, light the burner(s) to begin the melting process. Be sure exhaust stacks are open. Use a low flame until chunks have melted and the liquid bitumen has covered the flues. Extreme care must be taken when melting material from a cold start. There may be hot spots that could heat material above the flash point. Watch the thermometer carefully. Watch the smoke for warning signs of overheated material. Small white puffs indicate proper heating. As smoke becomes thicker, turn down the burners accordingly. Thick yellowish smoke means the material has been overheated and could result in fire at any time.
2. Once the flues are immersed in melted bitumen, you can start the pump if you have a pumper model. Be sure you read through pump system instructions before operating. The pump can help melting time and minimize hot spots by circulating the hot bitumen. Now add more material to bring it to the desired level and increase heat to full output of burners. Larger chunks of bitumen can now be used; not larger than 6 inches to a side.
3. When the bitumen is completely melted, adjust the burner(s) to maintain the desired temperature. Do not overheat the material. Monitor temperatures closely. Never leave Kettle unattended.

**WARNING: DUE TO THE POSSIBILITY OF FLASHING AND FIRE, NEVER HEAT MATERIAL HIGHER THAN MATERIAL MANUFACTURER'S RECOMMENDATION. CHECK MATERIAL'S TEMPERATURE WITH ACCURATE THERMOMETER. CHECK THERMOMETER'S ACCURACY WITH EACH USE.**

4. When loading chunks of bitumen into hot vat, do not drop or throw the material. Lower it carefully to avoid splashing. Severe burns could otherwise result.
5. Level of asphalt must not be allowed to drop below the top of any portion of the flues. To ignore this may result in flash fire or eruption.
6. If flash fire occurs from overheated asphalt, close the lids at once. Never throw water into vat. Turn off the burners. Make certain area is clear of flammables. Use of CO<sub>2</sub> fire extinguisher is highly recommended for control of Kettle fires. As a last resort cover the fire with some sort of powdered cement, sand or dirt. If fire threatens to spread call the fire department.

## REMOVAL OF HOT BITUMEN FROM DRAINCOCK

1. Make certain material is hot enough for proper application and that draincock is thawed, but do not overheat the material.
2. Place container to be filled under draincock and open valve slowly. Never attempt to pry draincock open if it is stuck.
3. Do not overfill containers.
4. Keep bitumen level above the flues.

## PUMPING HOT STUFF

1. Before starting pump connect thin wall tubing to roof (or cap pump discharge if no pipe to roof is used).
2. Attach valve control rope to end of cable on valve (see fig. 2). Untie any knots in the line that could cause binding. Pulling on valve control rope closes the valve sends hot stuff to the roof. Releasing the rope opens the valve and stops the flow of material to roof. Valve must be in open position (rope released) before starting engine. Always check to see that valve is operating freely with nothing obstructing it before starting pump system.

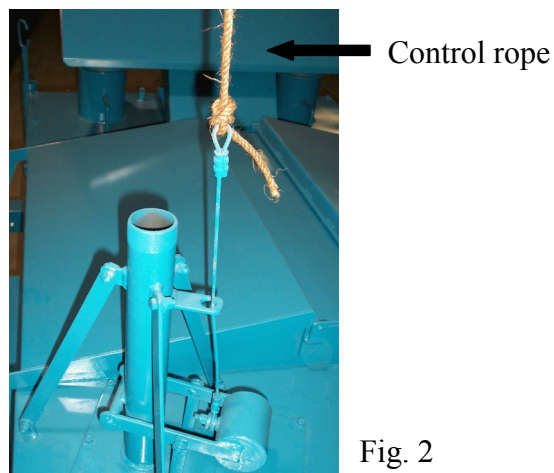


Fig. 2



3. Never start the pump engine until material is melted and hot. Make sure pump is thawed out before running. You can test pump by pulling start rope on engine slowly to make certain pump is not binding.
4. Once the pump is running it will circulate material in vat through the safety flow valve. This will even out the temperature in vat. Bitumen should be heated according to material manufacturer's recommendation.
5. When material is required at the roof, pull the rope to close the safety flow valve until the required amount of hot stuff needed is delivered to roof. Releasing the rope opens the valve and stops the flow to roof. When first starting pumping operation it is best to pump in stages rather than one continuous flow. This will prevent the bitumen from being overly cooled. Allow the material to be pumped several feet, then release the rope to re-circulate bitumen. Repeat this procedure, pumping the hot stuff farther each time in order to preheat the whole supply line.

**CAUTION: UNDER NO CIRCUMSTANCES SHOULD A PLUGGED PIPE LINE BE "THAWED" WHILE IN PLACE. DISMANTLE FIRST AND HEAT WHILE ON THE GROUND. PIPE LINES OVER 50 FT. SHOULD ALWAYS BE SUPPORTED.**

6. Check the pump packing frequently (when hot) and tighten if there is any excessive leakage. Do not over-tighten. Add new packing when the adjustment nuts near maximum travel.
7. Grease pump twice a day: once at noon when entire system is hot and once at shut down at the end of the day. Use hi-temp grease.
8. Keep bitumen level above flues during pumping operation. If you must pump to a lower level, burners should be shut off at least ten minutes prior to lowering of level.

## **SHUTTING DOWN KETTLE FOR THE DAY**

Allow pump to circulate for a few minutes (with valve rope released) so that the supply line can drain into Kettle. Failure to drain supply line completely will result in freeze-ups later.

1. Stop engine using rotary stop switch.
2. Make certain that burners are extinguished and fuel supplies are shut off. Close exhaust stack covers and lock up engine cover, burner well cover, lid(s) and draincock to prevent possibility of property damage or injury.

## **SAFETY PRECAUTIONS**

1. Never overheat the asphalt. Check material manufacturer's recommendations.
2. Make certain all water and or moisture is removed from vat before heating.
3. Do not mix asphalt products with pitch products.
4. Wear proper attire: Hard hat with face shield; long cotton shirt, buttoned at cuff; long pants without cuffs; gloves (cotton or leather) that cover wrist and fit snug at cuff; high top safety shoes.
5. Avoid putting head or hands under kettle hood and or exhaust stacks.
6. Check all hoses, fittings & valves for leaks before starting burners.
7. Have a fully charged dry chemical or CO2 fire extinguisher at the kettle site at all times; be prepared to use it. Keep flammables away from kettle.
8. In case of a fire, close the hood and vents. Never throw water on a kettle fire. Shut off valve at tank. Use fire extinguisher on any flames outside the vat and to prevent the spread of fire. If fire threatens to spread, call the fire department. Prevention: Clean kettle at least once a year and monitor temperatures per instructions to avoid kettle fires.
9. Never leave the kettle unattended during operation.
10. Lock the draincock when left unattended.
11. Never disconnect hotline while pumping hot bitumen.
12. Do not pump hot stuff below the flues.
13. Use only small chunks when loading the kettle; lower material carefully to prevent splashing.
14. Keep hands away from moving parts on the pump system.
16. Handle gasoline with extreme care. Store gasoline in a safe place. Refuel kettle engine when kettle is cold if possible. Auto-ignition temperature for gasoline is 500EF. To refuel a hot kettle, shut off engine and burners and allow to cool at least 5 minutes. Close the kettle hood.
17. Fill fuel tank with a funnel. Wipe up all spills with a clean cloth; put fuel away in safe place. Restart engine and burners.
18. Read instructions for proper hotline set up.
19. Do not tow kettle when more than half full. Check list 1) Burners off, 2) Vents & hood closed, 3) Kettle is cooled down (bitumen solidified), 4) Safety chains and hitch securely attached, 5) Kettle meets local requirements for brakes, lights and minimum stopping distances.
20. Do not tow kettle at speeds over 50 mph.

## **MAINTENANCE**

A well maintained kettle is your best insurance against work slowdowns or stoppages, damage or injury. Check it frequently, paying special attention to tire pressure, burners, engine and pump. Individual instruction books are supplied for the engine and pump and it is essential the manufacturer's recommendations for operation and maintenance are followed.

## CLEANING

A clean kettle heats better and lasts longer, therefore it is important that a cleaning schedule be maintained. Frequency will depend on usage and other circumstances, but it is recommended that the inside be completely cleaned at least once a year. To do this, tilt the kettle while still hot and drain as completely as possible through the draincock or draining nut below the draincock. Then remove pump intake strainer, pipe and elbows, lids and bolts holding the rear flue covers. With a chain hoist hooked into the rings on the flue exhaust stacks, lift the rear of the flues - at the same time sliding them back until the junction box is clear of the pump and the front cover. Then put additional hooks into the heat riser tubes provided at the front of the flues and remove the entire unit. It is not necessary to remove the pump.

With cover and flues removed it is relatively easy to shovel out any trash and residue remaining in the vat. If there is any carbon build-up on the walls it should be chipped off, taking care not to damage the interior of the vat. Scrape or sandblast the flues. It is also good practice to clean the draincock with a wire brush.

To reinstall flues reverse the above procedure, making sure that all bolts are tightened securely.

## SAFETY HAZARDS

Safety hazards are not always obvious to workers. Unlike exposure to health hazards, where illness or injury develop slowly, safety hazards usually result in immediate injury or death.

Broken bones, cut, bruises, sprains, burns and loss of limbs, eyesight and hearing are the kinds of injuries caused by safety hazards.

The rate of occupational injuries in roofing, in fact, ranks in the top ten of all major occupational groups.

### Falls

Falls are the number one cause of serious injury and death to roofers. An estimated 10 percent of all roofing accidents result from falls off roof edges, through roofing openings or off ladders, more than half of the non-fatal accidents result in serious injury.

Unprotected and unguarded roof edges and roof openings create extremely hazardous conditions.

Ladders with cracked, loose or missing steps: with side rails broken or cracked and not attached firmly to the steps; with broken, loose or missing locks, or coated with grease, oils or hardened bitumen can lead to serious injury. Ladders should be inspected to make sure they're properly maintained and constructed and that they're long enough to extend three feet above the roof's surface.

Improperly balanced or unstable hoists overturn and will often carry the worker along. Rolls of roofing felt should never be used as counterweight. Workers should know the load capacity; it should be posted.

### Burns

Skin contact with hot asphalt and hot coal tar pitch usually results in second and third degree burns. They usually involve deeper portions of the skin and are easily infected.

An estimated 16 percent of all injuries are burns from hot stuff. The major causes of burns have been from;

- Kettle flashes
- Kettle splashes from dropping pieces of coal pitch or asphalt into the kettle
- Slips and trips while carrying hot bitumen in open containers
- Splashes involving transfer operations like from the hot pipe outlet to a hot lugger, from a hot lugger to a mop cart or a pail, or from the kettle to a pail

## **Heavy Lifting**

Sprains and strains, a majority of which involve the back, are the most common roofing injury and one of the most severe. Almost 30 percent of these injuries result in 10 or more days away from work.

## **Fire/Explosion**

Two conditions must be met in order for fires and explosions to occur. First, there must be an ignition source, a welding arc, spark, cigarette, flame or simply a hot spot as in a kettle or tanker. Secondly, there must be the right mixture of vapours (from asphalt, pitch, solvents) and oxygen.

For kettles and tankers, fire/explosion conditions arise when;

- Oversized burners are used to fire the kettle, causing localized overheating of the heating tubes creating a hot spot.
- The temperature of the bitumen is brought up to the desired operation temperature too quickly.
- Allowing the level of bitumen to drop to the level of the firing tubes, allowing excessively high surface temperatures.
- Heating the bitumen to its flash point (for asphalt, about 525E-540E; for pitch, about 450E-475E)
- The temperature of the bitumen is hot enough to reach the auto-ignition level
- In tankers, the vent pipe is clogged or plugged so that flammable vapours can build up to explosive levels

Many solvents evaporate quickly at roof temperatures. Explosive mixtures of vapours can be readily formed within confined spaces like high parapet walls, in atriums or in any space where little or no ventilation exists. And any kind of spark or flame can ignite the vapours.

## **Electrocution**

Low voltage electricity can cause shock, muscle contractions, breathing difficulty, irregular heartbeat, severe burns and death. The route that the current takes through the body affects the degree of injury. Current flowing from one finger to another would not pass vital organ, while from one hand to another would pass through the heart and lungs.

Electrical tools should be properly grounded. The electrical cord should end in a three-prong grounding contact, or the wires should be enclosed in a metal case with a special grounding attachment.

Employers are required to provide ground fault circuit interrupters for all outlets on construction sites that are not part of the permanent wiring of the building. This is actually a fast-acting circuit breaker, which can shut off electricity in a fraction of a second.

Aluminum or other metal ladders pose a serious electrical hazard around electrical equipment and energized lines.

## **Falling Objects**

Tools, bricks, materials, buckets, boxes, pallets or almost anything dropped from a sufficient height can cause severe damage. Head injuries, one of the highest compensated injuries to workers, often include brain damage.

Workers need protective head gear when working beneath people, tools and equipment.

## **Flying Objects**

Objects can be projected by machines, from welding or grinding operations and can be windblown. Tear-off operations, where power cutters, power brooms and power spudders are generally used, are the major source of flying substances.

The part of the body most often injured is the eyes.

## **Unguarded Machinery**

Exposed blades and chains on powered machinery like hoists and roof cutters can severely lacerate and crush parts of the body. Guards should always be fitted over moving parts to protect workers.