



Saskatchewan
Highways and
Transportation

Asphalt Distributor

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Introduction

There are a number of different companies that manufacture asphalt distributors. If you have been operating one already, you will recognize at least some of the names:

- Etnyre
- Seamans
- Rosco
- Little Ford
- Bear Cat

Safety First Instructions

The operation of a bituminous distributor normally requires the handling of liquid products at elevated temperatures. Additionally, these liquids may be of a volatile nature. A heating system is supplied to raise or maintain the product temperature. And these systems use highly combustible fuels. And, as with any type of construction equipment, there are certain hazards associated with improper or careless operation.

Safety warnings have been provided to call attention to any potentially hazardous situation that may cause personal injury or death to the operator or bystanders. These safety warnings are identified by the following warning symbols:

- The **DANGER** symbol alerts you to immediate hazards which **WILL** result in severe personal injury or death.
- The **WARNING** symbol alerts you to hazards which may cause severe personal injury or death.

All of these warnings are listed below and they also appear throughout the manual. You will also find **CAUTIONS** and **NOTES** throughout the manual:

- A **CAUTION** alerts you to procedures that may result in damage to the equipment if not followed properly.
- A **NOTE** provides general information that the operator should be aware of when performing an operation

DANGERS, **WARNINGS**, and **CAUTIONS** always precede the instructions to which they apply.

Danger

To avoid an extreme fire hazard or explosion, never use gasoline as fuel in low pressure or generating burners.

Warning

A fully charged dry chemical fire extinguisher must be within easy reach whenever the burners are operating or there is an open flame near the distributor. Minimum dry capacity of the fire extinguisher should be 10 pounds.

To prevent an explosion or fire hazard: eliminate sparks from engine exhaust.

To prevent an explosion or fire hazard: position unit broadside to wind whenever possible to prevent fumes from drifting towards burners.

To prevent an explosion or fire hazard: flues must be covered by a minimum 6 inches of material (bitumen) when burners are in operation.

To prevent an explosion or fire hazard: do not remove material from tank in any manner when burners are in operation.

Warning

To prevent an explosion or fire hazard: Do not operate burners if tank is damaged or leaking.

To prevent an explosion or fire hazard: Do not operate burners when vehicle is unattended, when vehicle is in motion, or with vehicle in a confined area.

To prevent an explosion or fire hazard: When burners go out, shut off fuel supply to both burners and allow flues to ventilate for several minutes before re-lighting burners.

To prevent an explosion or fire hazard: Do not heat material beyond the manufacturer's recommended temperature.

To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and overflow vents.

To prevent possible hand or facial burns: Always light inside burner first. Do not reach across alit burner to light (or re-light) inside burner. Shut off outside burner before lighting inside burner.

To prevent possible burns: Always use a torch to light burners. Never attempt to light burners with a match or pocket lighter.

To prevent possible burns from leaking material: Be sure all pipe, cap, and hose connections are secure before opening valves.

To prevent possible burns from hot asphalt spray: Do not stand, or allow anyone to stand, where accidental opening of a valve may cause contact with hot asphalt.

To prevent burns from accidental spraying: TUC bar must be OFF and remain OFF when spray bar is rotated upward.

To prevent an explosion or fire hazard: Keep area free of sparks or open flames when spraying with volatile materials.

To prevent foaming or violent eruption: Do not load tank with material temperature over 2000°F if water or condensation is present in tank, or if emulsion was used in the previous load. Clean and thoroughly drain tank first. If water or emulsion may be present in spray bar or circulating system, allow a small amount of hot material to circulate in bar BEFORE filling tank. Do not heat material over 2000°F if moisture or emulsion is present in the tank.

To prevent possible burns from hot asphalt spray when hand spraying: Hold hand spray gun in proper position and watch for other people.

To prevent burns: Always wear insulated gloves when handling spray bar sections or hoses.

To prevent severe injury from becoming entangled in machinery: Stand clear of rotating drives.

To prevent possible injury: Always open manhole cover slowly. Pressure build-up in tank may cause cover to burst open.

To prevent possible fire hazards, urns or scolds: Keep unit clean for safe operation.

To prevent being struck by control lever on rear quadrant: Stand clear when ON/OFF function is being performed with air control.

To prevent possible burns from material overflow: Allow sufficient space in tank for expansion of material when heating.

The operator's manual for each type must be read by the operator to allow for specifics on that unit.

So now that we have looked at the direction this manual will take you, let's start by going through the steps.

Daily Walk Around

- Block the wheels
- Under the hood inspection of belts, hoses, engine oil, power steering fluid, coolant, windshield washer, and (if applicable) brake fluid levels.
- Suspension, front slack adjuster travel ($\frac{3}{4}$ " or less with manual; 1" or less with self-adjusting)
- While carrying out these checks, look for loose fittings, bolts or clamps.
- Check the air filtering system to make sure there are no leaks. The filter does not need to be checked on a daily basis, use the air filter restriction gauge as your guide. If the unit does not have an air filter restriction gauge, the filter is to be checked at each servicing.
- Close the hood and latch.

Fuel Tanks

- Check levels. Keep in mind that on many of our units, there will be 3 different types of fuel:
 - ↳ Main truck will be either gas or diesel
 - ↳ Fuel supply for rear engine (gas or diesel)
 - ↳ Fuel supply for heating asphalt (propane) check gauge. Supply valve burners turned off and appropriate Dangerous Goods and WHMIS labels on tank.
 - ↳ Diesel fuel supply is also carried for cleaning the unit and flushing the bar (most often this will be a separate storage tank).

These can all be checked as you circle the unit in a counter-clockwise method

Dangerous Goods Placards

- Be sure they are in place and clean: 4 required (front, rear, and both sides) when transporting SC, MC, or RC asphalts. Emulsions are exempt, placards are not to be displayed when using this type of asphalt.
- Make sure you carry your Dangerous Goods wallet card with you and have proper documentation.

Wheels and Tires

- Spoke type wheels are to be checked with a brisk rap of a hammer on the lug (not the nut or stud).
- Bud wheels are to be checked with a wheel wrench. This type of wheel also requires a specific tightness which may vary with manufacturer. It is essential to check with the operator's manual for the specs.
- Tire pressure can be checked with a rap of a hammer on the face of the tire. Look for wheel seal leaks.

Brakes

- Look at cables on manual emergency and leakage in lines of hydraulic brakes.
- Slack adjustor pushrod travel on air brake equipped units ($\frac{3}{4}$ " or less with manual; 1" or less with self-adjusting).

Mud Flaps

- Check condition and security.

Auxiliary Engine

- Check engine oil, coolant, belts, and hoses. If this engine is rear mounted check the radiator closely for asphalt drift which, depending on wind conditions, can become sealed off with asphalt. Air intakes and **filter** require close inspection. Oil pressure and engine temperature gauges clean.

Asphalt Heating Burners

- Condition of these are important.
- Valves for fuel supply shut off.
- Also make sure the stacks are covered when not in use to prevent moisture from entering.

Warning Decals

- Keep them in place and clean.

Gloves

- A minimum of 1 pair of rubber gloves that meet OH&S regulations.

Spray Bar

- Relatively clean, hydraulic, and airlines for damage, support chains (for bar extensions), in some cases lift the cable.

Asphalt Filler Cap

- In place with a safety chain.

Lights and Reflectors

- Clean and in operational condition.

Hand Spray Wand

- Properly mounted and stored.
- Condition of the hose and wand.

Hydraulic Oil

- Level on this is particularly important when you are operating a hydrostatic drive distributor.

Fire Extinguisher

- Minimum of one 10 pound fire extinguisher.
- Must be certified on a yearly basis.
- Must be covered with an orange plastic cover to prevent exposure to weather and asphalt contamination or in a clean container to keep from the elements.
- Must be easily accessible.

Back-up Alarm

- Working

Exhaust

- Free of leaks

Glass

- Windshield, side windows, rear window, and mirrors are clean.

License

- Clean and valid

Daily Checks

Picture of Oiler

Filling Instructions

Check the following:

- Top hatch is closed tight
- Supply hose condition
- Gasket on coupler
- Cleanliness and condition of coupler
- If you leave the asphalt hose connected to the storage tank, it is a good idea to have a 20L pail with some diesel fuel to put the coupler end of the fill hose that is used to connect to the asphalt distributor to soak in when not in use. This keeps it clean and easy to use for the next loads.
- If carrying the hose on the asphalt distributor, the hose opening should be plugged with appropriate plugs.
- Tightness of connections
- Set the controls on the asphalt distributor to the fill position (as per the operators manual).

When all of the checks have been completed, the storage tank valve can be opened. Do so slowly while watching for leaks.

Start up the engine and watch the tank gauge to make sure the asphalt is being transferred to the distributor tank.

Stay with your unit while it is filling. Leaving the unit unattended could result in overfilling or equipment failure that could be costly and time consuming in clean up and loss of asphalt.

Once the fill is complete:

- Shut the valve off at the storage tank, while leaving the asphalt pump or the motor on distributor running.
- Open the connection at the tank slowly (cam-lock type open one side). Allow the hose to be drained.
- Shut the supply valve off at the asphalt distributor.
- Turn off the asphalt pump or shut off the distributor motor.
- Disconnect asphalt hose from the distributor (As mentioned earlier, place this hose in a 20 L pail with some diesel fuel to keep it clean and easy to hook up for next loading or unloading.)
- Place cap back on distributor filler line.
- If the asphalt in the storage is heated to proper temperature, place valves in the distributor stage, making sure that valve to the spray bar is in the closed position.
- Start asphalt pump or motor (engage clutch slowly).
- Set litre per minute gauge for the application rate you will be using. (You may have predetermined setting while waiting for the tank to fill.) This will determine if any leaks exist that should be repaired before leaving the yard. If your application rates are the same as the previous loads, it is a check to insure the system is working properly.

If the asphalt is too cold for application, you will have to heat it to the proper temperature for that type of asphalt.

Heating Asphalt in Distributor Tank

(picture of oiler)

Warning
<p>To prevent an explosion or fire hazard: Position unit broadside to wind whenever possible to prevent volatile fumes from drifting towards burners.</p> <p>To prevent an explosion or fire hazard: Flues MUST be covered by a minimum 6 inches of material when burners are in operation.</p> <p>To prevent an explosion or fire hazard: Do not remove material from tank in any manner when burners are in operation.</p>

Heating Asphalt in Distributor Tank

Danger

To avoid an extreme fire hazard or explosion, never use gasoline as fuel in high pressure generating burners or low pressure atomizing burners

Warning

To prevent an explosion or fire hazard:
Do not operate burners if tank is damaged or leaking.

To prevent an explosion or fire hazard:
When burners go out allow flues to

Warning

Residual fuel in LPG burners will support a flame for several minutes after the fuel flow has been shut off. After using the LPG burners, confirm that all flame has been extinguished before attempting any operation that could release flammable vapours.

Failure to ensure that the flame is completely extinguished could result in an explosion that could cause injury or death.

Warning

A fully charged dry chemical type fire extinguisher must be within easy reach whenever the burners are operating or there is an open flame near the distributor. Minimum dry chemical capacity of the fire extinguisher should be 10 pounds.

To prevent an explosion or fire hazard:
Do not heat the material beyond the manufacturer's recommended temperature.

To prevent foaming or violent eruption, do not heat material over 200° if moisture or emulsion is present in tank.

To prevent possible burns from material overflow, allow sufficient space in tank for expansion of material when heating.

To prevent possible hand or facial burns, always light inside burner first. Do not reach across a lit burner to light (or re-light) inside burner. Shut off the outside burner before lighting inside burner.

To prevent possible burns, always use a torch to light burners. Never attempt to light a burner with a match or pocket lighter.

Warning

To prevent an explosion or fire hazard:
Position unit broadside to wind whenever possible to prevent volatile fumes from drifting toward burners.

To prevent an explosion or fire hazard:
Flues **MUST** be covered by a minimum of 6 inches of material when burners are in operation.

To prevent an explosion or fire hazard:
Do not remove material from tank in any manner when burners are in operation.

Heating Asphalt in Distributor Tank

(THREE PICTURES of Burners)

Important

Circulating bitumen in the tank while heating is recommended for faster heating and reduced carbon on the flues. Only when the asphalt pump is “frozen” is it acceptable to operate burners without circulating material. However, if the asphalt pump is frozen, carefully apply heat to the pump housing and start circulating material as soon as possible

LPG SUPPLY TANK REQUIREMENTS

Use only liquid withdrawal type supply tanks for your LPG burners!

Two types of LPG supply tanks are available: tanks for liquid type burners and tanks for vapour-type burners. The LPG burners on your Etnyre equipment require a supply tank equipped for liquid-type burners. Liquid type burners will operate from a vapour withdrawal tank, however, the amount of heat delivered will be dramatically reduced, and the life of the burner will be greatly decreased.

This section will cover three types of LPG burners: manual control burners, burners with outfire control, and burners with automatic ignition and temperature limiting control.

Manual Control Burners

Burner Control Valves

There are four valves associated with operation of the manual control burners: one at the supply tank and three in the burner piping.

The two smaller valves (one at each burner) are bleeder type valves with a small hole drilled through the valve case that bypasses the main cut off. It is not possible to completely cut off all fuel flow to the burners with these valves.

The large valve located in the fuel line to the outside (or upper) burner is a positive cutoff valve that allows all fuel to be cut off to the bleeder valve on the outside burner. The only way to

completely stop fuel flow to the inside burner is to close the main supply valve at the fuel supply tank.

Burner Operation

1. Ensure that all burner control valves are fully closed before starting.
2. Open the covers on the heat exhaust stacks.
3. Open the valve at the supply tank and quickly check for leaks if no leaks are found light the inside burner. As soon as the flame is established, open the bleeder valve fully. No preheating is necessary.

Heating Asphalt in Distributor Tank

Warning

To prevent possible burns, always use a torch to light burners. Never attempt to light burners with a match or lighter.

A fully charged dry chemical type fire extinguisher must be within easy reach whenever the burners are operating or there is an open flame near the distributor. Minimum dry chemical capacity of the fire extinguisher should be 10 pounds.

Important

It is recommended that two persons are involved in lighting the first burner. When the main fuel valve is opened at the bottle or tank, there is an immediate trickle of gas passing through the inside burner bleeder valve. The longer the gas is allowed to collect in the flue, the more likely there will be a flashback when the burner is ignited. Having one person light the burner while the other opens the main supply valve will reduce the likelihood of a flashback.

1. Check the fuel pressure regulator. Too much fuel pressure for a small tank will waste fuel. The little fuel pressure on a large tank will increase heating time. Some experimentation with pressures will allow you to determine the most efficient fuel pressure to use. The following is a good rule of thumb:

1000-1250 gallon tank	15 PSI
1500-1750 gallon tank	20 PSI
2000-2250 gallon tank	25 PSI
2250-2500 gallon tank	30 PSI
2750 gallon and larger	40 PSI

2. If necessary, adjust the flame with the bleeder valve at the burner.

When the LPG burners are operating, the outside of the fuel line up to the first coil of the burner should frost over. If no frost forms, it is an indication that the burners are operating on vapor instead of liquid. This condition must be corrected immediately to prevent damage to the burners.

If after the lines frost over, the flame starts to die down and the frost melts off the fuel line, it is likely there is moisture in the fuel supply tank. When the moisture passes through the frost covered lines, it forms ice crystals that stop the fuel flow. This can be overcome by adding 1 pint of 99.85% pure Genuine Anhydrous Methanol when the tank is filled with fuel. Keeping the tank valve closed when the tank is empty will keep moisture from entering tank.

NOTE: When there is at least 6 inches of product covering the entire length of the upper flue the second burner can be ignited.

Warning:

To prevent possible burns, always use a torch to light burners. Never attempt to light with a match or pocket lighter.

3. To ignite the second burner, ensure the bleeder valve on the burner is closed. Position a torch at the burner nozzle and open the positive shut off valve in the line to the burner. As soon as the low flue is established, the bleeder valve can be fully opened.
4. Monitor the product temperature. When the desired temperature is reached, **CLOSE THE MAIN FUEL SUPPLY VALVE AT THE BOTTLE OR TANK FIRST**. Allow the burners to operate at full capacity until the fuel in the line from the bottle burns out, then close both bleeder valves and the positive shut off valve at the burners.
5. Close the exhaust stack covers to prevent heat loss and to prevent water from entering the stacks.

Burners with Outfire Control

Equipment Description

The burner mounting and the burner control valves are identical to the manual operated burner system. However, burners with outfire control are equipped with an outfire control box. The outfire controls consist of two thermocouple switches, a push button start switch, an electric fuel solenoid valve, a pressure regulator, and a pressure gauge.

A heat sensing probe is positioned in each burner. These probes are connected to the thermocouple switches by a capillary tube. If either burner loses flame, the probe senses the reduced temperature, the thermocouple switch activates the fuel solenoid, and all fuel to both burners is cutoff.

The only difference in operation between manual burners and burners with optional outfire control is the start-up and shut-down procedures. Unlike the manual burners, when the burners are equipped with outfire control, no fuel flows to the burners when the main fuel supply valve is opened.

Operation

1. Open the covers on the heat exhaust stacks.
2. Ensure that all three burner control valves are closed.
3. Open the main fuel supply valve tank.

Important

Both burners must be lit on low flame even if only one burner will be used for heating.

Warning

A fully charged fire extinguisher must be within easy reach whenever the burners are operating or there is an open flame near the distributor. Minimum dry capacity of the fire extinguisher should be 10 pounds.

4. Place the ignition torch at the side of the inside burner nozzle and depress the push button in the outfire control box. Continue to hold the push button in until both burners are lit.
5. As soon as the low fire is established at the inside burner, open the positive shut off valve to the outside burner and light the outside burner on low fire.
6. If both burners are to be used for heating, you can now open both bleeder valves fully. If only the inside burner is to be used for heating, open the bleeder valve on the inside burner and allow the outside burner to remain burning on low flame so the thermocouple will be heated. Remember, if either flame goes out, the outfire will cut off fuel to both burners.
7. After 30 to 40 seconds, release the push button and observe the pressure gauge. If the pressure starts to drop rapidly, depress the push button and hold it for another 30 seconds. It may require a slight increase in fuel to the outside burner to heat the thermocouple. Once both thermocouples are heated, the push button can be released.

When the LPG burners are operating, the outside of the fuel line up to the first coil of the burner should frost over. If no frost forms, it is an indication that the burners are operating on vapor instead of liquid. This condition must be corrected immediately to prevent damage to the burners.

If after the lines frost over, the flame starts to die down and the frost melts off the fuel line, it is likely there is moisture in the fuel supply tank. When the moisture passes through the frost covered lines, it forms ice crystals that stop the fuel flow. This can be overcome by adding one pint of 99.85% pure Genuine Anhydrous Methanol when the tank is filled with fuel. Keeping the tank valve closed when the tank is empty will keep moisture from entering the tank.

8. When the desired product temperature is reached:
 - a. Close the main fuel supply valve at the bottle.
 - b. Depress the push button in the outfire box and hold it until all the fuel is burned and there is no flame at either end.
 - c. Close both bleeder valves and the positive cut off valve at the burners.
 - d. Close the exhaust stack covers to prevent heat loss and to prevent water from entering stacks.

Burners with Automatic Ignition and Temperature Limiting Control

Equipment Description

The temperature limiting control box contains the temperature limiting control components as well as the automatic ignition circuitry.

The automatic ignition circuit consists of two 12-volt coils, two spark plugs, a pair of thermocouple temperature probes (one at each pilot burner), and a momentary push button switch. The 12-volt coils send high voltage to the spark plugs that cause a spark to arc intermittently at each pilot burner whenever there is fuel pressure in the line from the main supply bottle. The temperature probes provide a signal that indicates when there is a flame at the pilot burners. The momentary push button switch on the control box is used to fire the main burners once the pilot burners have ignited and the thermocouples have heated sufficiently.

The temperature limiting control circuit consists of a temperature probe in the distributor tank that senses product temperature, a thermostatic switch in the control box, and a temperature adjustment dial on the face of the control box. When the product in the distributor is heated to the temperature selected with the temperature adjustment dial, the thermostatic switch shuts down the burners.

Burner Operation

1. Open the covers on the heat exhaust stacks.
2. Open the main fuel supply valve at the supply tank. The spark plugs will begin arcing and ignite the pilot burners.

NOTE: With this type of control, the inside (lower) burner may be operated without opening the positive shut off valve to the outside (upper) burner. If both burners are to be used, the positive shutoff valve to the outside burner should be opened.

3. Allow the pilot burners to heat the thermocouple probes for a minute or two, then press the momentary push button switch to fire the main burners. The bleeder valves may then be fully opened.
4. On new or rebuilt units, monitor the product thermometers to make certain the burners shut down when the desired temperature is reached (as set on the temperature adjustment dial). If the burners do not shut down at the correct temperature, refer to “Calibrating the Thermostat” on the next page.

5. To shut the system down:

- a. Close the main fuel supply valve at the supply tank.
- b. Increase the thermostat setting 50° to 75° higher and push the start button. This will bring on the main burners and quickly burn off all the fuel in the line between the bottle and the control box. The pilot burners may continue to burn for a short while after the main burners cut *off*. Do not draw material from the tank as long as there is flame present.

Calibrating the Thermostat

If the desired temperature is reached and the burners have not shut down, remove the thermostat dial. Using a small screwdriver, slowly turn the screw in the center of the thermostat shaft counterclockwise until the main burners shut down.

If the main burners shut down before the desired temperature is reached, remove the dial and rotate the screw clockwise half a turn and push the start button. Monitor the thermometer and make further adjustments if needed to calibrate the thermostat.

Warning

Stay with the unit while heating is taking place. Preferably in the cab.

Reminder

Remove fire extinguisher from holder and have it near the rear of the unit before heating begins.

Circulate in Tank

Warning

To prevent an explosion or fire hazard, keep burning cigarettes or other sources of combustion away from manhole or overflow vents.

To prevent possible burns from leaking material, be sure all pipe, cap, and hose connections are secure before opening valves.

To prevent possible burns from hot asphalt spray, do not stand, or allow anyone to stand, where accidental opening of a valve may cause contact with hot asphalt.

To prevent becoming entangled in machinery, stand clear of rotating devices.

Hydrostatic drive units

1. Set the truck engine RPM to about one-third throttle.
2. Adjust the hydraulic control knob to obtain between 450-630 LPM on the pump tachometer.
3. Grasp the Intake Valve lever and slowly pull the lever downward. If the pump slows down and almost stops, quickly move the Intake Valve lever to the up position.
4. If the pump fails to quickly regain its speed, put a small amount of diesel fuel into the fill line to free up the pump.
5. Even if the product in the tank is at (or near) spraying temperature, the cold pump may chill the product sufficiently to lock up the pump. If this occurs, heat may be applied to the pump with a hand-held torch.

Warning

To prevent possible burns, use extreme caution when using a torch to heat the pump housing. Asphalt accumulated on or around the pump housing may ignite when heating the pump housing with a torch.

A fully charged chemical type fire extinguisher must be within easy reach.

Set-Up

To determine if the product is hot enough to be circulated, set the control valves and levers as specified in that unit's operator's manual.

Engine Drive Units

1. Shift the transmission into low gear.
2. Engage the engine clutch and increase the engine speed so the pump tachometer reads 450-631 LPM.

NOTE: To gain access to the pump, there is an opening in the sheet metal pump housing located several inches to the lower right of the discharge head cup.

3. After approximately ten minutes of heating, try pulling the Intake Valve lever down again. Repeat manual heating of the pump if circulation cannot be accomplished.
4. If the product is too cold to be circulated, some heating with the flue burners will be needed to increase the temperature enough to start circulating. Refer to operating instructions for your particular burner type.

Warning

Allow the flue burners to operate for a long period of time without circulating can damage the product and create explosive fumes. If product cannot be circulated after 15 minutes of heating without circulation, the burners should be stopped to 20-30 minutes before relighting the burners.

Moving the distributor back and forth while the burners are off will allow the hot product to mix with the cooler product. This should decrease the time required to bring the product temperature up enough to start circulating. Once circulation has been established, the heating can continue without interruption. Circulate at 450-720 LPM.

Warning

To prevent an explosion or fire hazard, never move the vehicle when burners are operating.

Circulating in Spray Bar

Warning

To prevent an explosion or fire hazard: Do not remove material from tank in any manner when burners are in operation.

To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and overflow vents.

To prevent an explosion or fire hazard: Keep area free of sparks or open flames when spraying with volatile materials.

To prevent possible burns from leaking material, be sure all pipe, cap, and hose connections are secure before opening valves.

To prevent possible burns from hot asphalt spray, do not stand, or allow anyone to stand, where accidental opening of a valve may cause contact with hot asphalt.

To prevent burns from accidental spraying, TUC bar must be OFF and remain OFF when spray bar is rotated upward.

To prevent burns, always wear insulated gloves when handling spray bar sections or hoses.

To prevent becoming entangled in machinery, stand clear of rotating devices.

To prevent being struck by control lever on rear quadrant, stand clear when ON/OFF function is being performed with air control.

Set-Up

Set the control valves and levers as shown on next page.

Circulating Product in Bar

Caution

To prevent excessive pressure in spray bar, asphalt pump speed should not exceed 720 LPM while circulating.

Circulate product long enough to ensure removal of all air from bar, and to heat spray valves efficiently.

NOTE: Material will circulate in bar ends with extensions folded or in spraying position.

On engine drive units, partially close throttle if asphalt pump speed exceeds 720 LPM. Do not change governor setting.

On units with hydrostatic drive, pull hydraulic control knob up to decrease asphalt pump speed if pump speed exceeds 720 LPM. Do not change control knob setting.

****Picture of back of distributor****

****Picture of spray bar****

Spraying Operation

Warning

To prevent an explosion or fire hazard: Do not heat material beyond the manufacturer's recommended temperature.

To prevent an explosion or fire hazard: Keep burning cigarettes or other sources of combustion away from manholes and overflow vents.

To prevent an explosion or fire hazard: Keep area free of sparks or open flames when spraying with volatile materials.

A fully charged dry chemical type of fire extinguisher must be within easy reach whenever the burners are operating or there is an open flame near the distributor. Minimum dry chemical capacity of the fire extinguisher should be 10 pounds.

To prevent foaming or violent eruption, do not load tank with material temperature over 2000°F if water or condensation is present in tank, or if emulsion was used in the previous load. Clean and thoroughly drain tank first. If water or emulsion may be present in spray bar or circulating system, allow a small amount of hot material to circulate in bar BEFORE filling tank. Do not heat material over 2000°F if moisture or emulsion is present in tank.

To prevent possible burns from leaking material, be sure all pipe, cap, and hose connections are secure before opening valves.

To prevent possible burns from hot asphalt spray, do not stand, or allow anyone to stand, where accidental opening of a valve may cause contact with hot asphalt.

To prevent burns from accidental spraying, the bar must be OFF and remain OFF when spray bar is rotated upward.

To prevent possible burns from hot asphalt spray when hand spraying, hold hand spray gun in proper position and watch for other people.

To prevent burns, always wear insulated gloves when handling spray bar sections or hoses.

To prevent becoming entangled in machinery, stand clear of rotating devices.

To prevent being struck by control levers on rear quadrant, stand clear when ON/OFF function is being performed with air control.

General

Correct spray cannot be obtained unless bitumen is heated to proper spraying temperature. Cold bitumen will not provide sharp spray edges, and will cause streaking.

Refer to “Circulating Product for Spraying Operations” on page for setting proper asphalt pump seeds. Higher pump speeds will cause excessive fogging of spray. If higher pump and truck speeds are desired, use larger spray nozzles. Low pump speeds will cause fan to sag and cause heavy edges.

Adjusting Spray Bar Nozzle Angle

Adjust nozzles to obtain an angle of approximately 300 with bar centerline. Every nozzle should be at the same angle.

NOTE: A nozzle adjustment wrench is supplied in the tool box of each new set.

Adjusting Spray Bar Height

Lower spray bar and adjust so that nozzles are approximately 12 inches above road when tank is empty. At this height, spray fans will overlap to provide triple lap coverage.

NOTE: Under heavy wind conditions, it may be necessary to lower spray bar further.

Valve Settings

Set operating valves and levers as indicated in the operator’s manual for the specific make and model you are operating.

Spraying Operation

Triple Coverage

- will result in the most effective quality job.

Double Coverage

- used when there are strong winds (cuts down asphalt drift).

Single Coverage

- not recommended poor job quality

Formula for Application Rates

L.P.M. – litres per minute Gauge—Asphalt Output

M.P.M. – Meters per minute Gauge –Travel Speed

Length of Spray Bar in meters

M.P.M. x Spray Bar Length = Square Meters

L.P.M. Divided by M²

Will give the application rate 1M²

Spraying Operation

Spraying with Engine Drive Models

1. If throttle was partially closed to limit pump speed while circulating product in bar, re-open throttle to proper setting before spraying and immediately put truck in motion.

Caution

To prevent damage to equipment on units with fixed control spray bars do not move control lever to spraying position if end section is folded without first removing shoulder bolt at hinge that controls extension valves.

FC – Fixed Controls

2. 1b spray, push thumb button down or pull catch lever up (depending on control style), and move Quadrant Control Lever from “Circulated In Bar” to “Distribute” position. On units with one man control, lock thumb button down with “T” shaped lever provided.

Note: Thumb button or catch lever is used only to engage control for turning spray bar valves on and off.

3. 1b stop spraying, return Quadrant Control Lever to “Circulate in Bar” position. Release thumb button or catch lever if spraying operation is completed.

4. Reduce throttle setting if asphalt pump speed exceeds 720 LPM. This will prevent excess pressure in spray bar.

Spraying with Hydrostatic Models

1. Engage truck transmission in gears previously determined for proper application speeds.
2. If hydraulic control knob was pulled up to limit pump speed while circulating product in bar, push control down against stop before spraying and immediately put truck in motion.

Caution

To prevent damage to equipment on units with fixed control spray bars do not move control lever to spraying position if end section is folded without first removing shoulder bolt at hinge that controls extension valves.

FC – Fixed Controls

3. To spray, push thumb button down or pull catch lever up (depending on control style), and move Quadrant Control Lever from “Circulate in Bar” to “Distribute” position. On units with one man control, lock thumb button down with “T” shaped lever provided.

Note: Thumb button or catch lever is used only to engage control for turning spray bar valves on and off.

4. Before spraying, momentarily drive at dry run, speed to check that bitumeter and pump tachometer reading are still at predetermined ratio. The desired application rate will be applied regardless of road speed.

5. To stop spraying trim Quadrant Control Lever to “Circulate in Bar” position. Release thumb button or catch lever if spraying operation is completed.

6. Reduce throttle setting if asphalt pump speed exceeds 720 LPM. This will prevent excess pressure in spray bar.

Circulating Product for Spraying Operations

1b set engine governor or hydrostatic controls for spraying requirements when circulating in tank, set pump speed as follows:

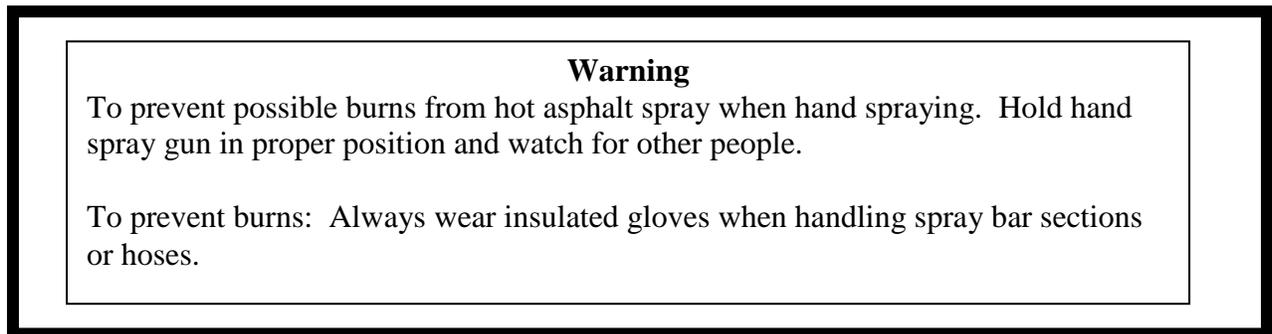
1/8” Nozzles: 45 – 68 LPM per foot of bar
Example: 720 – 1088 LPM for a 16 foot bar

1/16” Nozzles: 68 – 90 LPM per foot of bar
Example: 1088 -- 1440 LPM for a 16 foot bar

3/32” Nozzles: 32 – 45 LPM per foot of bar
Example: 508 – 720 LPM for a 16 foot bar

Hand Spraying

Figure 25: Valve setting for Hand Spraying and Pump-off



1. Set the operating valves and levers as shown in Figure 25.
2. Turn hand spray valve 90° on hand spray gun for spraying.
3. Adjust hand spray pressure with butterfly valve. Push in lever to increase, pull out to decrease.
4. When finished hand spraying proceed as follows:
 - Pull butterfly valve lever out.
 - Close intake valve by moving lever up.

- Move Quadrant Control Lever to “Circulate and Fill” position.
- Suck back material from hand spray hose by turning Vacu-Flo lever to the left position. After approximately one minute crack hand spray valve open on hand spray hose.

Note: If finished hand spraying for the day, crack hand spray valve open with nozzle submerged in flushing oil

- Turn transfer valve lever back to “Distribute” position.
 - Disconnect hand spray hose.
 - Turn Vacu-Flo lever straight up to normal position.
5. If desired to blow out hand spray hose after spraying proceed as follows:
- Raise intake valve lever.
 - Remove filling cap.
 - Open hand spray valve and push butterfly valve in against stop. Add flushing oil if desired.

Hand Spray Operation

This operation will require some adjustment to valve placing that re different from distributing asphalt through the spray bar.

- Check condition of the hose and fittings.
- Keep the hand wand pointed downward, away from others and down wind.
- Open the hand spray valve slowly, allowing air to escape. Opening this valve quickly can cause messy splatters or asphalt and possible burns.

Cleaning the Bar and Hand Spray of Asphalt

- Placing all controls in the same manner as you would for filling the tank.
- Run the distributor pump or motor for approximately two minutes.
- On the spray bar open three or more nozzles on one of the wing portions to allow air in to fully clean the asphalt from the tank.
- On the hand wand open the valve allowing air to clean out the hose.
- Shut the valves off at the distributor to prevent seepage of asphalt back into the bar and hoses.
- The operators manual for each unit will give clear directions.
- Cleaning the hoses and bar out after each day’s operation will make your job easier.
- If cold weather is a problem (spring and fall), it is a good idea to keep the distributor in the shop.

Strainers

There are two strainers one on the fill line and one on the discharge line after the asphalt pump. The asphalt is strained through before entering the bar. These require cleaning.

Cleaning Discharge Strainer

1. Place a suitable container under the discharge header cap and remove the cap.
2. Remove discharge strainer and clean with diesel fuel.
3. Install strainer in discharge header as shown in Figure 5 and install header cap.

Note: Projection on header cap should be inserted into opening in end of strainer cone to keep strainer centered in discharge pipe;

Trouble Shooting

Trouble	Cause	Remedy
Spray Fogs	Pump speed too fast for size of nozzle.	Lower pump speed or change nozzles. See “Establishing Flow Rate/Ground Speed Ratio”
Spray Streaks	Pump speed too slow. Nozzles not at proper angle. Spray bar at improper height above ground. Material temperature too low.	Increase pump speed. See “Establishing Flow Rate/Ground Speed Ratio” Adjust angle of nozzles Adjust spray bar height. Heat material to correct temperature.
Spray Lacks Pressure	Pump speed too slow. One or more control valves in incorrect position, not fully opened or closed, or leaking. Discharge strainer plugged.	Adjust pump speed. Check position of all control valves. Be sure all valves are fully opened or closed. Repair leaking valves as necessary. Clean discharge strainer.
All Nozzles Do not Cut off Spray	Spray bar linkages not adjust correctly	Adjust linkage.
Left Control valve Leaks at top.	Pump speed too high when circulating in bar.	Adjust pump speed.
Intake Valve Leaks	Loose spring on operating shaft or damaged valve.	Tighten spring on operating shaft or repair valve.
Pump Slows when Moving Quadrant Control Leaver from Circulate in Tank to Circulate in Bar.	Butterfly Valve closed.	Open Butterfly Valve by pulling on control link.
Quadrant Control Lever Turns hard when moving from “Circulate in Bar” to “Spray” position.	Spray bar valves not adjusted properly.	Adjust spray bar valves

Trouble

Pump will not turn or turns slowly

Cause

Material in tank or pump below pumping temperature

Air leak in suction line from reservoir to filter to inlet of charge pump.

Hydraulic system pressure low.

Low oil in hydraulic reservoir.

Spray bar valves set improperly.

Defective pump or motor

Remedy

Heat material to proper pump temperature

Locate and repair leak,

Raise pressure.

Add hydraulic oil to correct level.

Correct spray bar valve settings

Check for excessive case drain in pump and/or motor. Repair or replace defective components.

Heat material to proper pump temperature.

Locate and repair leak.

Hydraulic Oil Overheats

Material in tank or pump below pumping temperature.

Air leak in suction line from reservoir to filter to inlet of charge pump.

Low oil in hydraulic reservoir.

Spray bar valves set improperly.

Ball joint retaining ring is loose.

Ball joint gaskets not fully seated

Heat material to proper pump temperature.

Locate and repair leak.

Add hydraulic oil to correct level.

Correct spray bar valve settings.

Tighten or replace ball joint retaining ring.
Circulate hot material through spray bar and supply tubes while shifting spray bar from side to side. This should seat gaskets and stop leaks.

Spray Bar Supply tube ball joints leak

Note: When using emulsions below recommended pumping temperatures, it may be necessary to heat ball joints with a torch to help seat gaskets.

Caution: to prevent damage to equipment do not allow flame to

be applied directly to gasket material.

Trouble

Application Rate
Varies

Causes

Quality of material in tank not being measured accurately.

Discharge strainer plugged.

Engine governor or hydrostatic Controls not firmly positioned.

Thumb button on quadrant control lever not properly engaged.

Fault tachometer or bitumeter.

Remedy

Use: measuring stick for accurate readings. Be sure tank is level when measuring.

Clean discharge strainer regularly. Ensure that all controls are firmly locked in place.

On air control units, thumb button should be held down with "T" shaped catch. On units with single control shafts, pull engagement lever outward.

Have tachometer and/or bitumeter checked and calibrated.

Hand Spraying and Pump-off

1. Connect hand spray hose or pump-off line to transfer valve.
2. Move transfer valve lever from “Distribute” to Hand Spray” position (in).
3. Run pump at 80 to 100 GPM.
4. For hand spraying move butterfly valve to “Hand Spray” position. For pump-off move butterfly valve to “Transfer” position.
5. Move quadrant lever to “hand Spray” position.
6. Open intake valve by moving intake lever down. When pumping off check to insure all valves in pump-off line between distributor and storage tank are open before moving intake lever down.
7. Turn hand spray valve 90 degrees on hand spray gun for spraying.
8. Adjust hand spray pressure with butterfly valve. Push in lever to increase, pull out to decrease.

When through hand spraying or pumping off.

1. Pull butterfly valve lever out.
2. For pump-off closed valve at storage tank soon after pulling butterfly valve out.
3. Shut intake valve by moving lever up.
4. Move quadrant lever to “Circulate and Fill” position.
5. Suck back hand spray hose and on pump-off line by turning Vac-Flo valve lever to the left position. After approximately one minute crack hand spray valve with nozzles submerged in flushing oil; use 3 quart can supplied,
6. Turn Transfer Valve lever back to “Distribute”.

7. Disconnect pump-off line.
8. Turn Vac-Flo lever straight up to normal position.
9. To blow out hand spray, if desired after spraying, raise intake valve lever, remove filler cap, open hand spraying valve and push butterfly valve lever in against stop. Add flushing oil if desired.

Caution

- 1. Remain clear of rotating drives when unit is in operation to prevent becoming entangled in machine.**
- 2. Use gloves or insulated material when handling spray bar sections or hoses to prevent burns.**
- 3. Monthly check and if necessary clean 3" overflow tube to insure tube has not become clogged.**
- 4. Keep area clear of open flames or sparks when spraying material with volatile cutbacks to reduce fire hazard.**
- 5. Do not stand in a location such that accidental opening of spray bar valves will cause contact with bitumen spray with resulting burns.**
- 6. Fill line cap or connection must be securely attached before operating intake lever to eliminate momentary discharge.**
- 7. "TUC" bar must be off and remain off when bar is rotated upwards.**
- 8. When hand spraying, maintain gun in proper position and be aware of other personnel.**