



## SPECIFICATIONS FOR 250 GALLON DIESEL FUELED MELTER APPLICATOR WITH PUMP ON DEMAND FEATURES AND COMPRESSOR

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### GENERAL

The purpose of these specifications is to describe a double-boiler type melter applicator that is specifically designed for and shall be capable of heating and applying all grades of asphalt rubber sealant and specification joint sealant without further equipment modification. It may be used for the application of resinous, colored sealant and fillers. This unit shall be the manufacturer's current production model. The machine shall be capable of starting at ambient temperature and bringing the sealant material up to application temperature in one hour or less. All qualified bidders must have and maintain a complete inventory of repair parts and have experienced factory-trained service personnel for this equipment. A comprehensive safety manual and an operational/maintenance CD shall be supplied with each unit. A factory-trained person shall be made available for initial start-up and training in the operation of the melter. The material should be heated in a kettle or melter constructed as a double boiler, with space between the inner and outer shells filled with oil or other heat-transfer medium. Thermostatic control for the heat-transfer medium shall be provided and shall have sufficient sensitivity to maintain sealant temperature within the manufacturer's specified application temperature range. Temperature indicating devices shall have intervals no greater than 5°F (2.8°C) and shall be calibrated as required to assure accuracy. The melter shall have continuous sealant agitation and a mixing system to provide uniform viscosity and temperature of material being applied. Do not attempt to apply 2-component or PVC coal tar products with this unit. This includes Crafco "SuperSeal" brand joint sealants.

### REQUIRED SAFETY FEATURES

The unit shall have a safety shut-off on the lid that automatically stops the agitator when the lid is opened. The applicator wand shall be equipped with an automatic shut-off feature that will stop the flow of sealant when the handle is released or dropped. The sealant line pressure will automatically cease when the sealant flow is stopped. There shall be no valves in the line to allow interruption of sealant flow from the pump to the wand end.

### TOWING FRAME AND JACK

This unit shall be trailer mounted. The longitudinal side frames and tongue members of the trailer shall be of one continuous piece construction composed of hot rolled steel channel having the minimum dimensions of 5 inches (12.7 cm) depth, 5/16 inch (.79 cm) web thickness with 1.75 inch (4.5 cm) flange width. The configuration of the channels shall be cold formed with the flanges on the outside resulting in a one-piece frame member with no cross welding of or on the flanges to avoid any possibility of flange stress cracking. The tongue shall be equipped with an appropriate heavy-duty ball or pintle hitch. It shall be adjustable in height above ground level from a minimum of 14 inches (35.6 cm), to a maximum of 32 inches (81.3 cm), permitting practically level towing with a wide range of towing vehicles. The towing hitch shall be bolted to the hitch plate for easy height adjustment and/or conversion to other type hitches. A screw-post tongue jack shall be furnished. It shall be a heavy-duty type with a load capacity of 7,000 pounds (3,175 kg) and it shall be side mounted and swing away for positive road clearance while under tow.

### RUNNING GEAR

The unit shall be equipped with a dual independent rubber torsional suspension each having a safe load capacity of 5,200 pounds (2,358 kg), electric brakes, modular wheels and ST 225/75 R15 tubeless tires (Load Range D). This suspension eliminates springs and shackles that rust and reduce ground clearance. The melter shall have dual taillights, stoplights and turn signals. The lighting shall be ICC approved. A license plate holder shall be attached to the driver's side taillight. All melter fluid tanks shall be positioned no lower than the deck level and be mounted on the top of channel frame members to assure proper ground clearance. The unit shall also be equipped with two safety chains not less than 48 inches (121.9 cm) of .38 inch (.97 cm) coil proof chain, attached to the tongue with a drilled type clevis pin on the end attached to the frame and screw type clevis pin on the opposite end. Total shipping weight is approximately 5,860 pounds (2,658 kg).

### HEATING TANK

The material heating tank shall be a minimum of 50.50 inches (128.27 cm) in diameter by 29.50 inches (74.93 cm) deep having a minimum capacity of 250 gallons (946 l) at ambient temperature. The tank will have a rear discharge from the pump and rear plug outlet. A double boiler type jacket shall create a reservoir that shall hold a minimum of 49 gallons (185 l) of heat transfer oil at 70° F (21° C). (Note: at 500° F (260° C) the heating oil will expand approximately 18%) The jacket shall wrap around 100% of the outside area of the circular material tank and bottom and allow for complete circulation of the heated transfer oil. The tank and jacket shall be made of not less than 3/16 inch (.94 cm) rolled sheet steel. There shall be a plug to allow the entire heat transfer oil system to be drained. The heat transfer oil shall be of ISO grade 68.

### EXPANSION TANK

A sealed expansion tank for heat transfer oil shall be provided to minimize oil oxidation and prevent moisture condensation into the heat transfer oil. Overflow down tubes are unacceptable.

### HYDRAULIC SYSTEM

The hydraulic system shall incorporate a double hydraulic pump to power the agitation, pumping and air compressor system. All valves shall be solenoid operated by toggle switch and wand handle switch. The controls will allow for bi-directional operation of the sealant pump. A flow control valve will be mounted on the rear of the unit to allow the operator to adjust the pump operational speed. The minimum 32-gallon (121 l) hydraulic tank will be equipped with an internal 10-micron full flow filter. The filter shall be equipped with a restriction indicator to indicate the need for service. A sight gauge level indicator equipped with a thermometer to measure oil temperature will be mounted on the tank and located where it is easily viewed.

## **INSULATION**

The heating tank shall be insulated with a minimum of 1 1/2-inch (3.81 cm) thick high temperature ceramic insulation and covered by a 22 gauge steel outer wrapper. Fiberglass and rock wool insulation are unacceptable due to their moisture retention properties resulting in a significant loss in insulating value over an eighteen-month period.

## **LOADING HATCH**

A low profile angled lid opening for loading shall be required at the top of the material tank and shall be located on the curbside of the machine for operator safety. The loading height shall be a minimum of 50 inches (127 cm) and shall not exceed 59 inches (149 cm) for correct ergonomic lifting and fume exposure. This will allow the operation of the equipment, including sealant loading, from curbside. Loading systems that require the operator to step onto the melter are unacceptable. The opening shall have a minimum area of 384 square inches (2,477 square cm), while not exceeding 400 square inches (2,580 square cm) in order to prevent heat loss, and shall be hinged to allow placement of a block of sealant onto lid and closure of lid for easy, anti-splash loading. The loading hatch shall be easily adaptable for the addition of a retrofit powered loading conveyor with anti-splash tower.

## **HEATING SYSTEM**

The heat transfer oil is heated by one 290,000 BTU high efficiency forced air diesel fired burner directly at the bottom of the heat transfer oil tank. The total area exposed to the burner shall be a minimum of 7,655 square inches (49,387 square cm). The material tank shall have a minimum of 6,632 square inches (42,787 square cm) of contact with the heat transfer oil. This provides for a melt rate of 1,700 pounds (771 kg) per hour.

## **IGNITION OF BURNER**

The burner shall be lit by a constant duty high voltage transformer powering an electric spark igniter. This igniter shall work in conjunction with a sensor that detects a lack of burn or ignition and shuts down the fuel supply. The thermostat control is located on the curbside of the machine for operator safety.

## **INTEGRATED CONTROL SYSTEM**

The melter applicator shall have electronic thermostat controls that will automatically regulate hot oil, material and hose temperatures and in turn display these temperatures on digital readouts. The controls shall operate at temperature ranges needed for proper application of sealant. They shall be activated by a single power switch, which will then turn on the agitator and pump at the proper time by use of interlocks. The interlock for the agitation system will not allow the agitator to be activated until the material temperature reaches 275° and the interlock for the pumping system will not allow the pump to be activated until the hose temperature reaches 325°. All temperature controls shall be contained in a single weatherproof control box. This control box shall also contain the engine ignition controls, hour meter and any engine gauges.

## **DRIVE AND DRIVE CONTROLS**

The motive force to the agitator and material pump shall be hydraulic motor driven by a single hydraulic pump. A non-adjustable hydraulic valve shall control the rotational speed of the agitator. The drive controls governing the speed of the material pump shall be controlled by an adjustable hydraulic valve from the rear of the machine. The material pump will have infinite speed control and is electronically actuated by a toggle switch on the control panel or a switch on the hand wand.

## **AGITATION**

A hydraulically driven full sweep vertical agitator with two opposing horizontal paddles with vertical risers attached to the ends shall mix the sealant material. This feature ensures that material remains in complete suspension and that the hot material stays in the lower area of the tank and does not get splashed or thrown to the upper areas of the tank. The agitation system shall be chain driven from the hydraulic motor to the agitator. The agitator rotates shall rotate in either direction. For additional safety the agitator will shut off automatically when the loading hatch is opened.

## **BI-DIRECTIONAL VARIABLE SPEED PUMPING UNIT**

A hardened steel gear pump is located in the center of the material tank attached to the bottom of the tank. Pumping of material is controlled by a switch on the hand wand and output is controlled hydraulically. The pump and agitator drive shaft stands vertically attached to two motors on the top surface of the tank. One motor rotates an axial tube having radial mixing blades at the chamber bottom. The second motor drives a coaxial shaft running through the tube to the pump. Sealant pumping shall be on demand. When pumping stops, all line pressure and sealant flow shall stop. No external plumbing or recirculation back into the tank is needed. No internal or external valves shall be used in the pumping and sealant delivery system. The pump shall be capable of delivering sealant at a rate that exceeds the melt rate of the unit.

## **ACTIVE PUMP PROTECTION**

The pump shall be completely encircled by a protective screen. The screen shall not allow anything larger than 1/2 inch (1.27 cm) in size to pass from the sealant tank into the pump suction port. The screen shall continuously rotate 360° around the pump whenever the sealant agitator is engaged. The active screen will protect the pump from foreign object damage and will self-clean as it rotates around the sealant pump and suction port.

## **SEALANT HOSE AND APPLICATOR WAND**

Both the hose and wand are heated by low voltage electric current and are temperature regulated. Due to weight and safety considerations, an oil-jacketed hose is unacceptable. The hose shall be specifically manufactured for handling liquid asphalt products up to 500° F (260° C) at 500 psi (34.47 bar) working pressure. Hose shall not be less than 18 feet (5.48 m) in length. For maximum operator safety it shall be made of stainless steel braid with a 3/4 inch (1.91 cm) inside diameter and shall be Teflon lined. Further, it shall be heavily insulated to prevent hot material from leaking out. Total diameter of the hose shall be not greater than 2 1/4 inch (5.72 cm). The total weight of the hose shall not exceed 20 pounds (9.07 kg). The hose is to be wrapped with a minimum of three electrical wires with terminal ends. The wires will be capable of heating the hose to 400°F (204°C) in less than 45 minutes and have variable temperature control capability. The hand wand shall be constructed of steel with sufficient strength to withstand normal day-to-day operation. Material flow is activated by a trigger switch. For greater operator mobility, the connection between the wand and hose shall be through a 360° swivel. There shall be no obstruction or valves between the material pump and the wand end.

The hose is supported by a 6 ft. boom (1.83 m), which swivels side to side on dual pillow block bearings. The boom is centered at the rear of the machine.

**ENGINE**

The unit shall be equipped with a diesel engine complying with the following specifications:

Electric Start

Three Cylinder 33.3 HP (24.83 kw) @ 3000 RPM

3.62" (92 mm) Stroke

Constant Speed Mechanical Governor

91.3"3 (1.49l) Displacement

Full Flow Oil Filter

3.27" (83 mm) Bore

22 to 1 Compression Ratio

Water Cooled

The engine speed is preset at the factory for optimal alternator output to power the heated wand and hose.

Engine Shutdown Package (low oil pressure & high temperature)

**FUEL CAPACITY**

The melter shall have a 32 gallon (121 l) diesel fuel tank for operation of the entire unit. The unit will be capable of operating for a minimum of 12 hours on one tank of fuel. The tank shall be equipped with full length sight gauges for fuel level indication protected in a steel cover.

**AIR COMPRESSOR**

The melter shall be equipped with a 53.8 cfm (1525 l/m) @ 100psi (6.89 bar), Rotary Vane Air Compressor. The compressor shall be driven hydraulically and the air pressure is controlled by a continual intake valve modulation which adjusts the air flow to increase or decrease depending on the user's demands. The compressor has an integral toroidal cooler to maintain proper oil temperature, along with a high temperature shutdown switch for safety. The unit shall also be equipped with a self-contained air to oil hydraulic cooler with an electric switch to turn on/off the cooling fan. The noise level which the compressor puts out is 78 dba @ 1 meter.

**PAINT**

All painted surfaces shall be coated with DuPont two-part epoxy paint applied by DuPont certified painters.

**OPTIONS (X if to be included:)**

\_\_\_ 2-5/16 inch (5.9cm) Ball Hitch

\_\_\_ 2 inch (5cm) Pintle Hitch

\_\_\_ 2 inch (5cm) Ball Hitch

\_\_\_ 3 inch (7.6cm) Pintle Hitch

\_\_\_ Sealant Tip Adapter

\_\_\_ 3 inch (7.6cm) Applicator Disk

\_\_\_ V-shaped Squeegee (Qty. \_\_\_)

\_\_\_ 1/2 inch Round Sealing Tip

\_\_\_ Cold Air Lance

\_\_\_ Hot Air Lance

\_\_\_ Extra Electric Hose

\_\_\_ Extra Hydraulic Filter

\_\_\_ Lockable Battery Cover

\_\_\_ Lockable Engine cover

\_\_\_ Fire Extinguisher Mounted on the Trailer Frame

\_\_\_ Tool Box

\_\_\_ Mast Mounted Strobe Light

\_\_\_ Auto Loader

\_\_\_ Overnight Heater

**TRAINING**

An authorized, factory-trained representative will be made available for a full day of training at a facility designated by the bidding agency. At this training session a complete operational, mechanical and safety overview will occur. The CD manual will be viewed and discussed with all concerned personnel. Additionally, the representative will be available at that time for "on the job" safety and field training.

**SAFETY AND TRAINING MANUALS**

A written Safety Manual will be provided to the bidding agency.

**PARTS**

Bidders must show proof that a large stock of parts for the model of equipment upon which he is bidding is maintained at his facility.

**AWARD**

Equipment is for use by the Highway Department and must meet the requirements of that agency as interpreted by the Highway Commissioner. Prior to award the Purchasing Agency may require a visit to the supplier's facility to assure supplier has plant capacity to manufacture and deliver equipment on time as required. If it is determined that the supplier cannot supply as requested, this is just cause for cancellation.

**WARRANTY**

The manufacturer shall warranty the equipment for one year or as otherwise noted in the manufacturer's standard warranty policy.

**QUALIFICATIONS OF BIDDERS**

No bid will be considered unless the bidder can meet the following conditions:

1. That it has in operation a parts/service location and keeps a sufficient stock of parts on hand at all times.
2. That it is bidding upon the stock model chassis that meets the requirements of the specifications without material changes or modifications. The model is regularly advertised and sold as having a capacity of not less than called for herein. The bidder has been engaged in the manufacture of equipment of the type bid upon for at least twenty-four months.

**APPROVED EQUAL**

These specifications are not intended to be restrictive, but are meant to describe the kind and size of unit desired to be purchased in detail. If a bidder is basing his proposal on other equipment than what is specified in these bid documents and wishes the equipment he proposed to be considered as an "approved equal," he will submit on a separate sheet attached to the Technical Specifications contained herein, an item by item description of that which he proposes. For purposes of comparison, include only those items on each sheet as given in these technical specifications. Such bidders shall also include, but not as a substitute for the above, any manufacturer's literature or specifications. In addition, if the bidder takes exception to any item, he will note the item and describe in detail the exception and how his proposal is an "approved equal". Failure to carry out the provisions noted herein may be deemed sufficient reason to reject the bidder's proposal.

Prior to bid award, the agency may request an on-site demonstration of a like model unit. Upon request from the agency, prospective bidders will have no more than 30 days to provide a demonstration at a location designated by the agency.