



## SPECIFICATIONS FOR 400 GALLON DIESEL FUELED MELTER APPLICATOR

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### GENERAL

The purpose of this specification 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 sealants and specification joint sealants without any further equipment modification. 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 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. If equipped with an application system to deliver sealant to the pavement, the melter shall incorporate a recirculation pump or other means of maintaining sealant temperature in the delivery system. Sealant that has been damaged due to overheating, reheating or prolonged heating may experience poor adhesion, softening or bleeding, difficult application or jelling in the melter.

### 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) web, 5/16 inch (.79 cm) thickness with 1 7/8 inch (4.76 cm) flanges. 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 and 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 (3175 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 dual torsional axles, each axle to have a safe load capacity of 6,000 pounds (2,721.6 kg), 2 inch (5.08 cm) by 12 inch (30.5 cm) electric brakes, four modular wheels and LT 235/85 R16 tubeless tires (Load Range E). The melter shall have dual taillights, stop lights and turn signals. 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 top of the 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 3/8 inch (.95 cm) coil proof chain, attached to the tongue with a 9/32" (.71cm) shackle connecting link on the end attached to the frame and screw type clevis pin on the opposite end. Total shipping weight is approximately 5,700 pounds (2,585.48 kg).

### HEATING TANK

The material heating tank shall be minimum of 60 inches (152.4 cm) in diameter by 32 ¾ inches (83.2 cm) deep having a capacity of 400 gallons (1,514.2 l) at ambient temperature. A double boiler type jacket shall create a reservoir which shall hold a minimum of 51 gallons (193 l) of heat transfer oil at 70°F (21.1° 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 allow for complete circulation of the heated transfer oil. The tank and jacket shall be made of 3/16 inch (.48 cm) hot rolled sheet steel minimum. 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 cold seal expansion tank for heat transfer oil shall be provided to minimize oil oxidation and prevent moisture condensation into the heat transfer oil.

## **INSULATION**

The heating tank shall be insulated with a minimum of 1½ inch (3.8 cm) thick high temperature ceramic insulation and covered by a 22-gauge (.07cm) steel outer wrapper. Fiberglass and rock wool insulations are unacceptable due to their moisture retention properties resulting in a significant loss of their insulating value.

## **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 not exceed 61 inches (154.9 cm) which 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 380 square inches (2,477.4 square cm) approximately 16 inches (40.6 cm) by 24 inches (60.9 cm) and shall be hinged to allow placement of a block of sealant onto it to simply close the lid for easy, anti-splash loading. There shall be a locking pin to secure the lid during transport.

## **HEATING SYSTEM**

One 12 volt 420,000 BTU high efficiency forced air diesel fired burner directly to the bottom of the heat transfer oil tank heats the heat transfer oil. The total area exposed to the burner shall be a minimum of 9,935 square inches (64,097 square cm). The material tank shall have a minimum of 8,996 square inches (58,039 square cm) of contact with the heat transfer oil. The oil shall be continuously circulated by means of a hydraulically driven gear pump at 1.1 gallons (4.2 l) per minute to provide consistent and uniform transfer of heat to the material tank. This provides for a melt rate of a minimum of 2,500 pounds (1,134 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 controls for ignition shall be incorporated into the thermostat control located on the curbside of the machine for operator safety.

## **TEMPERATURE CONTROL**

The melter applicator shall have a thermostatic control device that will automatically regulate hot oil temperature. Two digital readouts indicate actual temperature of heat transfer oil and at the discharge side of the material pump and are located in the control box on the curbside of the unit. One dial type temperature gauge visually indicates material tank temperature and is located on the top curbside of the unit. The thermostat shall control burner ignition for a temperature range from a low of 200°F (93.3°C) up to a high of 400°F (204.4°C) for a wide variety of sealants.

## **DRIVE AND DRIVE CONTROLS**

The motive force to the agitator and the material pump shall be hydraulic motors driven by a single hydraulic pump. The drive controls governing the speed and rotation direction of the agitator and material pump shall be by independent 3-way hydraulic valves with pressure compensated flow control spools located at the rear curbside of the machine. The reversing ability of the material pump allows material to be pumped back through all extraneous piping and into the material tank so as to leave all lines clean and unobstructed when cooling and to facilitate start-up upon subsequent use.

## **AGITATION**

The sealant material shall be mixed by a hydraulically driven full sweep vertical agitator with two opposing horizontal paddles. This feature insures 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 where it can collect and build up. The agitator shall rotate in either direction with infinite speed control.

## **PUMPING UNIT AND PIPING**

The material pumping unit shall be a 2 inch (5.1 cm) positive displacement helical gear pump, quiet operating with equal efficiency in either direction of rotation. The pump shall be hot oil jacketed for fast heating by being piped in series with the heat transfer oil circulation pump. All piping shall be no less than 2 inches (5.1 cm) in diameter. The piping and material valves shall be heated by enclosure within the heating chamber. A "T" pipe shall be

incorporated into the material plumbing system that will allow for the optional connection of a valve for filling pour pots with or without utilizing the applicator hose. The control handles for opening and closing the recirculation valve, applicator valves, and main tank valve shall be located outside the heating chamber at the rear curb side of the machine for both operator convenience and protection from handling excessively hot control valve handles. A return portal shall be constructed to facilitate the recirculation of sealant through the piping and sealant hose then back to the tank. The portal shall allow the operator to place and withdraw the delivery wand from ground level. A second recirculation return portal, also accessible from ground level, shall also be constructed to allow for a maximum of a 6 inch (15.2 cm) sealing disc. A locking device shall also be incorporated that will lock the hand wand to the shoebox or the recirculating tube.

### **SEALANT HOSE AND APPLICATOR WAND**

Hose should be one inch (2.54 cm) inside diameter and not less than 20 feet (6.1 m) in length, insulated, rubber coated, steel braid reinforced and neoprene lined. The hose is specifically manufactured for handling all asphalt based products up to temperatures of 400°F (204.4°C) at 350 psi working pressure. Hot oil jacketed sealant delivery hoses are unacceptable. The hand applicator shall be constructed of steel with sufficient strength to withstand normal day-to-day operation. It shall have two insulated handles, one of which is connected to a quarter turn ball valve used to control flow of material. The applicator wand shall disconnect in the center allowing for easy storage in the heat chamber. A variety of nozzles must be available and attachable to the applicator wand. The connection between the hose and applicator is made through a 360° swivel.

### **HOSE HEATING CHAMBER**

The machine, heating chamber, and wand shall be so designed and constructed that under normal day-to-day operations no clean out procedure is required, thereby eliminating the use of hazardous, volatile cleaning solvents and the associated conformity to EPA standards for their disposal. Provision shall be made to attach air hoses for compressed air cleaning after using exceptionally thick and heavy sealants or when preparing the machine for a period of time in storage. Hose heating chamber shall be equipped with a temperature gauge to insure proper regulation of temperature to hose and application wand while in heating chamber. An adjustable damper will be furnished over the flue vent for the heating chamber. Incorporated in the heating chamber are hose and applicator wand storage racks with drains in the floor. Doors and sidewalls are to be 100% insulated. Hinged doors should be lockable and designed to overlap and interconnect and provision shall be made for operation of applicator hose while doors remain closed to insure continuous heating of piping extraneous to the material tank.

### **ENGINE**

The unit shall be equipped with a 25.4 HP (18.94 kw) @ 3000 RPM Isuzu diesel engine complying with the following specifications:

Electric Start  
3.14" (79.7 mm) Stroke  
22 to 1 Compression Ratio  
Three Cylinders  
3.05" (77.4 mm) Bore  
Full Flow Oil Filter  
Constant Speed Mechanical Governor  
68.6" (1.12 l) Displacement

### **NOISE LEVEL**

At an average of 6 feet (1.8 m) from the unit, the noise level shall be a maximum of 85 D.B.A.

### **FUEL CAPACITY**

The melter shall have a 32 gallon (121 l) diesel fuel tank for operation of diesel engine and burner. The unit will be capable of operating a minimum of one full working day on one tank of fuel.

### **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 Ball Hitch  
\_\_\_\_ 2 1/2 inch Pintle Hitch  
\_\_\_\_ 1/2 inch Round Sealing Tip

- \_\_\_\_\_ 3 inch Pintle Hitch
- \_\_\_\_\_ V-shaped Squeegee (Qty. \_\_\_\_\_)
- \_\_\_\_\_ 10 lb. Fire Extinguisher
- \_\_\_\_\_ Tool Box
- \_\_\_\_\_ Lockable Battery Box
- \_\_\_\_\_ Lockable Engine Cover
- \_\_\_\_\_ Strobe Light
- \_\_\_\_\_ Spare Material Hose
- \_\_\_\_\_ Spare Hydraulic Filter

**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 restricted, 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.