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SPECIFICATIONS FOR 1500 Liter (396 GALLON) MELTER APPLICATOR WITH 63 CFM COMPRESSOR; PUMP ON DEMAND; DIESEL FUELED

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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, fiber modified asphalt 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 manufactured in the United States of America. 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 products with this unit.

REQUIRED SAFETY FEATURES

The unit shall have a safety shut-off feature on the lid that automatically stops the agitator when the lid is opened.

The electric 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. The operator shall not be required to perform any additional activity other than releasing the wand trigger switch to cease sealant line pressure. There shall be no valves in the line to allow interruption of sealant flow from the pump to the electric wand end. The heat transfer oil shall adequately and efficiently bring the sealant material to application temperature without the use of a heat transfer oil circulation pump. This eliminates the potential exposure of personnel to pressurized hot heat transfer oil.

TOWING FRAME AND JACK

This unit shall be trailer mounted. The longitudinal side frames and tongue members of the trailer shall be on one continuous piece construction composed of hot rolled steel channel having the minimum dimensions of 5 inches (12.7 cm) web, .325 inch (.825 cm) thickness with 1.885 inch (4.789cm) 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 (81.3cm), 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 dual independent rubber torsional suspension each having a safe load capacity of 6,000 pounds (2,721 kg), electric brakes, modular wheels and ST235/85 R16 tires (Load Range E). This suspension eliminates springs and shackles that rust and reduce ground clearance. The melter shall have dual taillights, stop lights and turn signals. Lights 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, 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 (121.9cm) 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 6,700 pounds (3,039 kg). Gross Vehicle weight shall be 12,168 pounds (5,519 kg.).

HEATING TANK

The material heating tank shall be a minimum of 64.25 inches (163.19 cm) diameter by 28.75 inches (73.03 cm) deep having a minimum capacity of 396 gallons (1500 l) at ambient temperature. The tank will have a rear discharge from the pump and rear plug outlet. A double boiler type jacket with internal oil column shall create a reservoir that shall hold a minimum of 43.0 gallons (162.72 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 heat transfer oil tank design shall provide a center tower of a minimum 18 inches (7.08 cm) in height to provide efficient melting and uniform product heating. At no point in the tank shall there be a distance of greater than 27.8 inches (70.6 cm) from a heat surface. The tank and jacket shall be made of not less than 3/16 inch (.94 cm) rolled sheet steel. There shall be one plug to allow the entire heat transfer oil system to be drained. The heat transfer oil shall be of ISO grade 68. The efficiency rating shall be a minimum of 95% as determined by the ratio of the material tank surface area to the HTO tank surface area. Units with an efficiency ratio of less than 95% are unacceptable.

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 systems. 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. All controls shall be mounted at the curb side rear on the trailer for easy access by the operator. Hydraulic controls located at the side or forward portion of the trailer are unacceptable. The minimum 24 gallon (90.8 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 (.07cm) steel outer wrapper. Fiberglass and rock wool insulation are unacceptable due to their moisture retention properties resulting in a significant loss of their insulating value over an eighteen-month period.

LOADING HATCH
Two low profile angled lid openings 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 56 inches (142.24 cm) for operator safety. Loading heights below 50 inches may expose the operator to splash hazards and fume exposure when loading and are unacceptable. One loading door will allow the operation of the equipment, including sealant loading, from curbside even when equipped with a conveyor loading system. Loading systems that require the operator to step onto the melter are unacceptable. The passenger side opening shall have a minimum area of 384 sq. in. (2,477.4 sq. cm.) approximately 16 inches (40.6 cm) by 24 inches (60.9 cm). The drivers side opening shall have a minimum area of 252 square inches (1,625 square cm), approximately 14 inches (35.56 cm) by 18 inches (45.72 cm) and shall be hinged to allow placement of a block of sealant onto lid and closure of lid for easy, anti-splash loading. Each door will have an insulated handle for opening and closing while the unit is hot. The drivers side loading hatch shall be easily adaptable for the addition of a retrofit power loading conveyor with anti-splash tower.

HEATING SYSTEM
The heat transfer oil is heated by one 12-volt 420,000 BTU high efficiency forced air diesel fired burner directly at the bottom of the heat transfer oil tank. The burner shall fire into an easy access removable burner combustion chamber box. The box will be insulated by a high temperature flexible insulation that is resistant to damage from vibration and over the road travel. Rigid insulation is unacceptable. The total area of the heat transfer oil tank exposed to the burner shall be a minimum of 9,921 square inches (64,000 sq cm). The material tank shall have a minimum of 9,448 square inches (60,954 sq cm) of contact with the heat transfer oil. This provides for a melt rate of 2,800 pounds (1,270 kg) per hour.

IGNITION OF BURNER
The burner shall be lit by a constant duty high voltage transformer powering an electric spark ignitor. This ignitor 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 rear curbside of the machine and shall have a toggle switch shut off 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 temperature without any action by the operator. 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 and located at the rear passenger side of the machine for operator safety. This control box shall also contain the engine ignition controls, hour meter and any engine gauges. Any operational controls located at the side or forward portion of the trailer are unacceptable.

DRIVE AND DRIVE CONTROLS
The motive force to the agitator and material pump shall be hydraulic motors driven by a single hydraulic pump. The drive controls governing the rotational speed of the material pump shall be controlled by adjustable hydraulic valves. The drive controls governing the speed of the material pump shall be controlled from the rear passenger side of the machine. The material pump will have infinite speed control and is electrically actuated by a toggle switch on the hand wand or recirculation port switch. The material pump can be reversed by a toggle switch on the control panel as required. Material pump will also be activated when wand is inserted into the shoebox for recirculation of the material. This function shall be controlled by a switch that can be turned “OFF” or “ON” by the operator as desired from the control box. Recirculation shall not be required to operate unit.

AGITATION
The sealant material shall be mixed by a hydraulically driven, full sweep vertical agitator with two opposing horizontal paddles and vertical risers attached to the ends shall mix the sealant at an ASTM specified tip speed of 250 ft/min. Variable speed agitation is Unacceptable. The surface area of the agitator paddles shall be a minimum of 613 sq. in. (3955 cm). Surface areas of less than 600 sq. in. (3871 cm) are unacceptable. The distance between the wall and the edge of the paddles shall never exceed three inches. 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. Units that do not comply are unacceptable. The agitation system shall be direct driven from the hydraulic motor to the agitator. The agitator rotates in both directions. For additional safety the agitator will shut off automatically when the loading hatch is opened.

BI-DIRECTIONAL VARIABLE SPEED PUMPING UNIT
The material pumping unit shall be a 2 inch (5.1 cm) positive displacement helical gear pump rated at 20 GPM. The pump shall be hot oil jacketed for fast heating and piped in series with the heat transfer oil circulation pump. All piping and material valves are heated by an enclosed insulated heating chamber. Heat flow to this chamber is controlled with a single slide gate that will separate this chamber from the tank air jacket. The insulated chamber shall have a removable rear panel for easy access to the pump. The heating chamber shall have an insulated door hinged and notched for sealant hose access. The heating chamber shall provide storage for a sealant hose. Pumping of material is controlled by a switch on the electric hand wand and output is controlled hydraulically. Sealant pump operation shall be ON DEMAND for electric hose only. The pump rotation shall stop when

sealant application wand trigger is not activated on the electric wand. Units that divert sealant flow without stopping the pump rotation are not ON DEMAND and are unacceptable. Controls for opening and closing the recirculation valve, application valve, and main tank valve shall be located outside the heating chamber at the rear of the machine for operator convenience. The pump shall be capable of delivering sealant at a rate that exceeds the melt rate of the machine.

SEALANT HOSE AND APPLICATOR WAND

Unit shall be capable of using both heated and non-heated hose and wand applicator. 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. Both the hose and wand will be serviceable (designed to be factory rebuilt). The manufacture must have an established re-build program to service these components. 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 15 feet (4.57 m) in length. For maximum operator safety it shall be made of stainless steel braid with a 3/4 inch (1.91cm) 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. A digital readout displays the temperature. The hand wand shall be constructed of steel with sufficient strength to withstand normal day-to-day operation. Material flow is controlled 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 7ft 2in. boom (2.18 m), which swivels side to side on dual pillow block bearings. The hose carriage at the end of the boom shall pivot and have 7ft (2.13m) of horizontal linear movement on a roller bearing wheels for further operator comfort. There shall be a minimum of 6ft. 6in. clearance under the boom. Fixed carriage hose booms are unacceptable as they do not allow for easy maneuverability.

AIR COMPRESSOR

The melter shall be equipped with a 63 cfm (1784 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 torroidal 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.

ENGINE

The unit shall be equipped with a diesel engine complying with the following specifications:
Electric Start
Three Cylinder 41.6 HP (31.02 kW) @ 3000 RPM
3.54" (90 mm) Stroke
Constant Speed Mechanical Governor
91.53 Cu. In, (1.51) Displacement
Full Flow Oil Filter
3.31" (84 mm) Bore
19.0 to 1 Compression Ratio
Water Cooled
High Water Temperature Shut Down
Low Oil Pressure Shut Down

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 30 gallon (113.56 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.

PAINT

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

OPTIONS (X if to be included:)

_____2-5/16 inch (5.9 cm) Ball Hitch
_____3 inch (7.6 cm) Pintle Hitch
_____18" Hitch Extension
_____28" Hitch Extension
_____39" Hitch Extension
_____Dripless Tip Adapter
_____3" Swivel Disk Applicator
_____4" Swivel Disk Applicator
_____V-shaped Squeegee (Qty.___)
_____1/2 inch round Sealing Tip
_____Extra Electric Hose
_____Lockable Battery Cover
_____Extra Hydraulic Filter
_____Auto Loader
_____Lockable Engine Cover
_____Fire Extinguisher Mounted on the Trailer Frame

_____Mast Mounted Strobe Light
_____Tool Box
_____Overnight Heater
_____Custom Paint

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 manufacturer 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. Failure to carry out the provisions noted herein may be cause to deem the bid "non-responsive.

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.