PRECISION SPRAY ASPHALT DISTRIBUTOR

OWNER / OPERATOR / PARTS MANUAL

Precision Spray Serial Number: _____

Precision Spray Specification Number: _____

Chassis Serial Number: _____

Sold & Serviced by:

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Safety Introduction

I. Operator Qualifications
   a. Operators shall be required to have proper Commercial License applicable to the size and payload of the truck chassis.
   b. Operators shall carry all proper endorsements required for tank and bituminous loads. Hazmat endorsements may apply in certain states, or for certain bituminous products to be sprayed.
   c. Operators shall be up-to-date in all federal DOT requirements regarding health and safety as well as being up-to-date with the employer's policy as well.
   d. Operator shall have proper knowledge for pre-trip inspection on the chassis.
   e. Operator shall have the ability to:
      i. Understand distributor terminology and obey safety codes
      ii. Understand emergency procedures according to DOT commercial driver regulations.
      iii. Understand the responsibility for proper maintenance on the received unit.
      iv. Understand the Distributor and its control functions.
      v. Understand the operation procedures outlined in the manual.

II. Operator Conduct
   a. Operator shall not engage in activities to divert their attention for truck or distributor operations.
   b. Operator shall be responsible for the chassis, distributor and its functions during operation. If safety in operation is a concern it is the operator's responsibility to consult the supervisor.
   c. Operator shall obey all warning signs, lights, and devices concerning the chassis and distributor.
   d. Operator shall never leave the distributor while material is being heated, loaded, off-loaded, or transferred.
   e. Operator is to ensure distributor controls are in the off position before starting the chassis.
   f. Operator shall never in any way alter or make modification to the distributor system. This will directly affect the safety of the machine and void any and all warranty to the distributor.
   g. Calder Brothers Corporation will assume NO LIABILITY for accident or injury caused by improper use of the machine.

III. General Machine Safety
   a. Have first aid kit ready and available.
   b. According to DOT regulations a properly charged fire extinguisher shall be carried in the chassis.

c. Proper clothing should be worn at all times. Long sleeved shirts and pants are recommended. Always use safety glasses and proper gloves when performing functions on the machine.
d. A clean work station is a safe work station. This also aids in proper visual inspection of the machine daily, and ensures proper daily maintenance.
e. Operator shall bear the responsibility that when maintenance is complete proper safety guards, and decals have been returned to the machine.
f. Operator shall not allow riders on the Precision Spray machine.
g. Operator shall obey all laws, seat belt included.

IV. Hot Material Safety
a. Operator shall always wear protective gear for face, hands, feet, eyes, and body while working with hot bituminous products
b. Operator shall always have proper knowledge and carry in truck proper MSDS of material on board.
c. When hot asphalt touches the skin, flush area completely according to MSDS. Remember if you are not using emulsions, cool water may not be the best solution. Get medical attention.

V. Fire and Burst Explosion Safety
a. Operator shall keep machine clear of sparks, open flames and incandescent material. Some bitumen fumes are flammable and can explode.
b. Operator shall never load machine when water is present in the bottom of the tank. Hot material can cause the water to steam and burst the tank.
c. Operator shall never mix material in the tank of the distributor. Not all asphalt products mix and problems will occur. Always contact material handler before changing tank products to ensure compatibility or arrange for offload of material first.
d. DO NOT SMOKE

VI. Burner Safety
a. Operator shall never operate the burner assemblies while truck is in motion or being loaded.
b. Operator shall be present during entire heating cycle.
c. Operator shall be sure burner tubes are covered by a minimum of 8" of material before burner operation. Uncovered tubes can cause explosion in tank.
d. Operator is responsible for safe heating temperatures of the material and not exceeding the “flash point”.
e. Operator shall begin tank circulation of material as soon as possible for safe heating of product.

VII. Refueling Safety
a. Operator is responsible to keep the hose, or nozzle in contact with the tank fill tube to prevent spark.

b. Do not overfill.
c. DO NOT SMOKE.

VIII. Distributor and Chassis General Safety
a. The operator shall be responsible for the pre-trip of the chassis as well as checking the following functions.
i. Hydraulic system safety.
1. Components in proper working condition.
2. Hoses properly routed and free of leaks and chafing.
3. Obeying all DOT, State, County, and Municipal regulations concerning the machine.
4. Visual inspection of lights on distributor as well as chassis.
5. Ensuring the spray-bar is in proper position for transport.
b. Operator shall ensure that the machine is properly stored at the enc of each day in a safe secure location.
c. Operator shall ensure that all safety decals and placards are clean and in the proper location.
d. Certified parts shall be used in replacement or maintenance.

General Safety Instructions

DANGER
"Danger" indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING
"Warning" indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION
"Caution" indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also alert against unsafe practices.

The above Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! It stresses an attitude of "Heads Up for Safety" and can be found throughout this Operator's Manual and on the machine itself.

BEFORE YOU OPERATE THIS EQUIPMENT, READ AND STUDY THE FOLLOWING SAFETY INFORMATION. IN ADDITION, MAKE SURE THAT EVERY INDIVIDUAL WHO OPERATES OR WORKS WITH THIS EQUIPMENT, WHETHER FAMILY MEMBER OR EMPLOYEE, IS FAMILIAR WITH THESE SAFETY PRECAUTIONS.

Our Company ALWAYS takes the operator and his/her safety into consideration when designing our machinery and we guard exposed moving parts for the operator's protection. However, some areas can NOT be guarded or shielded in order to assure proper operation. Therefore, this Operator's Manual, and Decals on the machine, warn of further danger and should be read and observed closely.

ALWAYS keep this manual in a convenient place for instant reference and NEVER make repairs or adjustments that you do not fully understand. If you require additional information or service, contact you authorized CBC Dealer.

REMEMBER! It is the owner's responsibility to communicate information on the safe use and proper maintenance of this machine! This includes providing understandable interpretation of these instructions for operators who are not fluent in reading English.

MANDATORY SAFETY SHUTDOWN PROCEDURE

BEFORE cleaning, adjusting, lubricating, or servicing the unit:

1. Bring machine to full parking stop on level surface. Never park on a slope or hillside.
2. Fully retract left and right spraybars, raise bar to travel position, and lock in place.
3. Place rotary control switch to "OFF", turn master control switch off and push "E" stop button.
4. Idle engine for gradual cooling.
5. Turn the Starter Key Switch to OFF position and remove key. Take the key with you for security reasons.

NOTEONLY when you have taken these precautions can you be sure it is safe to proceed. Failure to follow the above procedure, could lead to death or serious bodily injury.

ADDITIONAL SAFETY REMINDERS

USER/OPERATOR SAFETY PRACTICES as established by applicable industry standards are included in this Operator's Manual and are intended to promote SAFE OPERATION of the machine.

These guidelines do not preclude the use of good judgment, care and common sense as may be indicated by the particular job site work conditions.

It is essential that operators be physically and mentally free of mind altering drugs and chemicals, and thoroughly trained in the safe operation of the machine. Such training should be presented completely to all new operators and should not be condensed for those claiming previous experience. Information on operator training is available from several sources including the manufacturer.

Some photographs in this manual may show Doors, Guards and Shields open or removed for illustration purposes ONLY. BE SURE that all Doors, Guards, and Shields are in their proper operating positions BEFORE starting the Engine to operate the unit.

The operator MUST know the capabilities and work applications for the machine, and operate it at speeds slow enough to insure complete control at all times. When working on slopes or near drop offs, use good judgment. ONLY operators with sufficient experience should attempt such work.

Be alert and avoid loose or soft surface conditions that could cause sudden tipping or loss of control. Avoid side hill travel wherever possible by driving up or down the slope. In case of slippage on grade, turn the machine IMMEDIATELY down hill. Keep the blade crossways and lowered for extra stability when scarifying across slopes.

Operating in virgin terrain (called pioneering) is especially dangerous. Be sure you know how this is done. Avoid falling branches, trees, and up-turning roots, and do not drive onto brush piles, logs, or large rocks.

IF YOU ARE NOT CAREFUL WHILE OPERATING THIS MACHINE, ANY OF THE ABOVE FACTORS COULD CAUSE THE MACHINE TO TIP AND THROW YOU OUT OF THE OPERATOR'S STATION, WHICH MAY CAUSE SERIOUS BODILY INJURY OR DEATH!

ALWAYS wear your seat belt!

ALWAYS keep hands, feet, and arms inside of the Operator's Station when operating the machine!

ALWAYS wear appropriate personal safety gear as called for by the job or working conditions!

ALWAYS be aware of pinch point areas on the machine such as Wheels to Frame, Cylinders to Frame!

ALWAYS maintain a safe distance from electric power lines or buried cables, and avoid any electrically charged conductor! Contact can result in electrocution. Call your proper local authorities for utility line locations BEFORE starting a job!

ALWAYS check the job site for terrain hazards, obstructions and bystanders!

NEVER by-pass the Starter Key Switch when starting the Engine. ALWAYS use the jump-starting procedure detailed in the Service chapter!

NEVER use your hands to search for hydraulic fluid leaks. Hydraulic fluid is pressurized. Escaping fluid can be invisible and can penetrate the skin, causing a serious injury! If any fluid is injected into your skin, see a doctor familiar with this type of injury at once! Injected fluid MUST BE surgically removed by a doctor or gangrene may result!

Do NOT operate the machine where the weight, exceeed approved load limits!

Do NOT allow minors or any unqualified personnel to operate or be near the machine unless properly supervised.

Do NOT start the Engine or operate any Controls unless properly seated in the Operator's Seat and ALWAYS wear your seat belt!

Do NOT operate the machine in an enclosed area without adequate ventilation! Internal combustion engines deplete the oxygen supply in enclosed spaces and may create a serious hazard unless the oxygen is replaced. This includes the atmosphere inside the cab when the unit is equipped with an enclosed cab!

Do NOT refill the Fuel Tank when the Engine is hot. Allow Engine to cool down BEFORE refilling. A hot Engine can ignite the fuel if it should spill or splash!

Do NOT smoke while filling the Fuel Tank or working on the fuel or hydraulic systems! Sparks can ignite fumes and/or fuel!

Do NOT remove the Radiator Cap when the Engine reaches operating temperature or becomes overheated. The Engine Coolant is extremely HOT and is under pressure. Exploding Engine Coolant will cause serious injury. ALWAYS wait for the Engine to cool down BEFORE removing the Radiator Cap to relieve pressure!

Do NOT loosen or disconnect ANY Hydraulic Lines, Hoses or Fittings without first relieving hydraulic circuit pressure. Also, be careful NOT to touch any hydraulic components that have been in recent operation. They can be extremely HOT and can burn you!

Do NOT wear loose or baggy clothing while operating or servicing the machine!

NEVER allow any riders on this machine. NEVER use the machine as a lift for personnel!

MODIFICATIONS, NAMEPLATES, MARKINGS, AND CAPACITIES

Modifications and additions which affect the capacity or safe operation shall NOT be performed without the manufacturer's prior written approval. Where such authorization is granted, tags or decals shall be changed accordingly.

All attachments MUST be marked to identify the Attachment(s) and show the approximate weight of the machine and Attachment combination.

ALWAYS make sure all nameplates, danger, warning, caution and instruction markings are in place and legible. Local government regulations may require additional decals. It is the responsibility of the Owner to provide these!

SAFETY GUARDS AND WARNING DEVICES

The machine is fitted with a Roll Over Protective Structure (ROPS) in accordance with industry standards. It is intended to offer protection to the operator from roll over and falling objects, but cannot protect against every possible impact. Therefore, it should not be considered a substitute for good judgment and care in operating the machine.

The machine is equipped with a Horn, Backup Alarm, and Side Mirrors (with Cab Option). The operator/user shall determine if conditions require the machine to be equipped with additional sound-producing or visual devices (alarms, extra mirrors, blinking lights, etc.). The operator/user is responsible for providing and maintaining such devices.

Part #100A3706-A - Located on either side of platform.

Part #165924 - Located either side of the radiator.

Part #065927 - Located at various places on the machine.

Part #108787 - Located in cab easily viewable by operator.

Part #A1002504 - Located on fuel tank.

NOTES:

SPECIFICATIONS
All Dimensions are in Inches Unless Otherwise Noted

CAPACITY
-1000to 3500 gallon truck mount
-600 to 1000 gallon tack trailers
-600 to 1000 gallon slip in tack units
-1000 t0 3500 gallon roll on/off units

SPRAYBAR
-8 to 16 ft. telescoping spray bar with straight line start and stop
-Extensions available to a total of 24 ft. width, extensions fold up vertically
-Automatic full circulating spraybar
- 4" incrament width control of spraybar after first 8 ft.
-Center breakaway spray bar
-Internal spray valves with no leak design
-Designed to spray rejuvinators to rubberized asphalts
-Largest volume bar on the market

HEATING FLUES
-Flue liners standard
-Double flue standard

EXAUST STACKS
-14 gauge stainless steel rear mounted and coverd by insulation head

BURNERS
-Diesel burners std
-Thermstatic control std.
-Outfire control

FLUSHING
-Exclusive heated "Clean Out" automatic clean out cycle
-Enviromentally safe
-25+ US gallon tank

TANK TYPE
-10 gauge shell
-7 gauge dished and flanged heads and full section surge plates
-Welded inside and out
-Meets all applicable Federal tank regulations for asphalt distributors (spec. 49-CFR-173.247)

INSULATION
-.050" aluminum jacket
-2" minral wool insulation
-4" insulated rear head

MANHOLE
-20" Diameter
-No strainers required

ASPHALT PUMP
-400 Gallons per minute
Heated (water jacket)

STRAINER SYSTEM
Single location to protect pump in all functions
-Auto cleaning
-Quick change, no tool needed

MASTER CONTROLS
-Pump Speed
-Pump Direction
-Load, unload and transfer
-Tank Circulate
-Hand Spray
-"Clean Out" clean out cycle
-BurnerControls
-Cab control on /off
-Manual mode

CAB CONTROLS
-Spray on/off
-Application rate
-Travel distance
-Spray width
-Manual mode

CONTENTS GAUGE
-Front and Rear mounted std.

Precision Spray Specifications

It is the intent of these specifications to describe a Bituminous Distributor in detail to secure bids on comparable equipment. All parts not specifically noted which are necessary to provide a complete unit shall be provided in bid price. The Distributor and truck chassis shall be a current model under production by the manufacturer.

DISTRIBUTOR SHALL PERFORM THE FOLLOWING FUNCTIONS:

- Fill tank by distributor pump from outside source.
- Full circulation of material in tank. Material during tank circulation must be returned to the front of the tank and exit rear of tank to ensure full tank circulation.
- Circulate material through spray bar.
- Spray at constant desired application rate, regardless of variation in truck speed.
- Return material in spray bar to tank by pump suction.
- Hand spray and allow hand spray hose to be cleaned by suction after use.
- Transfer material from an outside source to a secondary outside source without entering the distributor tank.
- Pump material from distributor tank to an outside source, or “offload”.
- Automatically go from spray bar circulation mode to spray mode and back to spray bar circulation using one switch mounted on in-cab controller.
- Distributor to be capable of returning all material in spray bar, and spray bar lines back to the tank by means pump suction.
- Distributor to be equipped with automatic one-touch clean-out system which flushes spray-bar, spray bar lines, and bituminous filters and returns clean-out solvent back to clean-out solvent tank. System shall signal horn when clean-out process is complete and leave not more than three quarts of cleaning solution in spray bar assembly.
- 25 gallon clean-out solvent tank.
- Clean-out solvent shall be heated by means of truck coolant circulation system.
- Clean-out tank to be capable of drainage by valve on bottom of tank to replace solvent.
- Unit to use volumetric metering with no by-pall when spraying material to insure proper spread rate.

TANK FITTINGS AND ACCESSORIES

- Capacity of 2000 US Gallons minimum
- Shape is standard oval in cross section. Overall length of tank to be designed for proper fit to truck and axle load.
- Tank shell to be constructed of 10 gauge steel. Tanks to have 7 gauge dished and flanged heads, welded to tank shell both inside and out to ensure strength.
- Surge Plates to be installed in tank. Plates to be made of 7 gauge steel, dished and flanged for integrity. Openings in plates to allow proper flow of material to the pump, and also allow man to crawl through.
- Manhole to be 20" inside diameter with cover.

- Tank to be equipped with overflow 3" in diameter and extending at least 6 inches above bituminous liquid. Overflow to be designed that the material drains clear of the clear of the chassis frame structure, and also drain from manhole cover platform.
- 2" of Mineral Wool insulation to be used in construction of tank between aluminum jacket and tank shell. 4" of insulation to be used on rear head.
- Tank to be mounted using spring bolster style saddles.
- Tank contents gauge to be mounted both front and rear sides of tank. Front tank gauge to be clearly visible from driver side mirror. Contents gauge to be in 100 gallon increments. Tank gauge to be float type.
- Spillage collar and overflow drain to be included in refiner's platform. Ladder with proper safety rails to be installed for access to platform.
- Tank design and construction to meet all applicable Federal Cargo Tank Regulations 49 CFR 173.247 with consideration for hot asphalt products.
- Dial Thermometer 3"
- Distributor to be capable of loading and transferring material while filtering before the bituminous pump through the filter box. Use of additional cone strainers for load hose not acceptable.
- Power wash-down system to be include on rear of truck. System to be equipped with 15' of hose and use a spray gun to "atomize" solvent for maximum coverage on rear of machine while using least amount of cleaning solvent. Solvent gun to use air pressure from truck unit regulated at rear of machine to draw solvent to the low pressure spray gun assembly. Additional pumping unit for solvent i.e. additional electric pump will not be acceptable.
- Hand spray attachment to have hand wand and cold handle. Attachment to have 25' hose assembly made of 1" flexible rubber. Hand spray unit to be capable of suction clean to return material back to tank.
- All bituminous material to pass through strainer box assembly before entering the asphalt pump. Strainer box and screen to be cleaned automatically during clean-out cycle and returned to clean-out solvent tank.
- Turn signals and lights at rear of distributor truck to be installed. Lights to meet federal standard 108 requirements.
- All necessary specialty tools for operation and maintenance of the distributor to be provided.
- Distributor parts shall be painted using DuPont Imron paint. Factory standard color of black or metallic gray.

POWER UNIT

- Hydrostatic pump. Infinitely variable displacement pump, axial piston type with electronic stroke control
- Crankshaft take-off to drive the hydrostatic pump to be "front live power"
- Bituminous pump to be heat jacketed pump using cooling system of truck. Pump to be 1 to 1 ratio of gallons per revolution. Relief of asphalt pump to be controlled by hydraulic relief of motor turning the pump. This will allow proper relief settings in both the forward and reverse direction of the pump. Hydraulic Motor turning bituminous pump to be direct coupled to pump with out using added gear mechanism.

- Hydraulic lines and fittings to meet S.A.E. standard for pressure and flow. All fittings to be “O” ring style either boss or flat face seal form hose to fitting.
- Only top quality hose and fittings to be used on the truck which meet or exceed the recommendations of the hydraulic transmission manufacturer.
- Rear of Machine to control hydraulic speed variance to pump for the purpose of tank circulation, loading, off-loading etc. electronically using micro controller. Emergency stop for electronic control to be located both in cab and at rear of machine.
- Minimum 20 gallon hydraulic reservoir equipped with dual temperature and level indicator.
- Minimum 10 micron replaceable spin on type filter to be installed for hydrostatic filtration. Additional filter to be installed on hydraulic reservoir return line.

BITUMEN PUMP

- Positive displacement rotary gear type. 1 to 1 ratio of gallons per revolution. Pump to be heat jacketed to speed start-up time. Pump to be capable of 400 GPM minimum
- Location of pump to be below the bottom level of the tank to allow all material to discharge properly and completely from tank to bitumen pump.
- Pump to be cleaned automatically during clean-out cycle including filter box, spray bar, and spray lines, using heated cleaning solution.

HEATING SYSTEM

- Diesel fired burners two (2) in quantity
- Two Flue tubes to run through tank and combine at exit into single exhaust stack.
- Exhaust stack to be inside of tank skin and insulation to aid in tank heating.
- Flue tubes and burners to be located on each side of the tank in parallel not stacked vertically.
- Flue liners standard.
- Auto Thermostat control for heating system.
- Out-Fire Protection
- Switch to be installed on contents gauge float to ensure that burners will not light unless flues are completely covered by bituminous material for safety.
- Burners to be capable of running blower motor only without fuel to ensure proper cooling period for flue tube and burner assembly.

SPRAY BAR

- Full circulating bar to be 16’ in length. Bar to have a minimum 12 cu. in. cross section for high volume.
- Bar to be telescoping spray bar with straight line stop and start.
- Spray valves to be on 4" centers. Valves to be internal poppet no leak design.
- Bar to have 4" incremental controls when extended past 8’ on standard bar. This eliminates the need for extra linkage to control the spray valves on the outside of the bar.

- With bar fully extended operator to control 1’ sections of bar on drivers side for outside 4’. Bar to be 4" incremental control while using the telescoping feature.
- Electronic switch to control bar sections individually, as well as a gang on off switch to be located in the cab of the machine.
- Bar to be equipped with center mount break-away system for protection in collision.
- Bar to be equipped with hydraulic extend, and raise-lower with adjustable control for spray bar height stop.
- Air solenoid valves to have independent check valve on rear of machine to ensure proper air pressure used in distributor functions.

CAB CONTROLS AND INSTRUMENTS

- Computer with in-cab operator controls to include
  - Gang on/off spray bar
  - Individual spray bar section on/off
  - 8 minimum presets for spray application including provisions for shot rate, or distance traveled for shot length.
  - Application rate adjustment switch.
  - Distance / Volume used reset switch.
  - Display Selection switch.
- In-cab Instrumentation to have illuminated display containing;
  - Truck travel speed in Feet per Minute, or Meters per Minute
  - Application rate in Gallons per Square Yard, or Liters per Square Meter.
  - Pump Rate in Gallons per Minute or Liters per Minute
  - Distance traveled (resettable)
  - Volume used (resettalbe)
- Computer rate control system will be hooked directly to the truck engine (same as truck gauge package i.e. RPM, and Speedometer) to determine ground speed for application rate. This will ensure maximum accuracy of truck speed. Use of Radar type sensor is not acceptable.
- Master Controls on rear of truck to include
  - Load / Unload / Transfer
  - Tank Circulate
  - Hand Spray
  - Automatic Clean-out Cycle
  - Cab Control
  - Burner on/off
  - Thermostat Burner Control
  - Pump Speed
  - Pump Direction

COMPONENT BOXES / FENDERS

- All component boxes / storage boxes to be weather resistant.
- Fenders to be black molded with proper mud-flap installation.

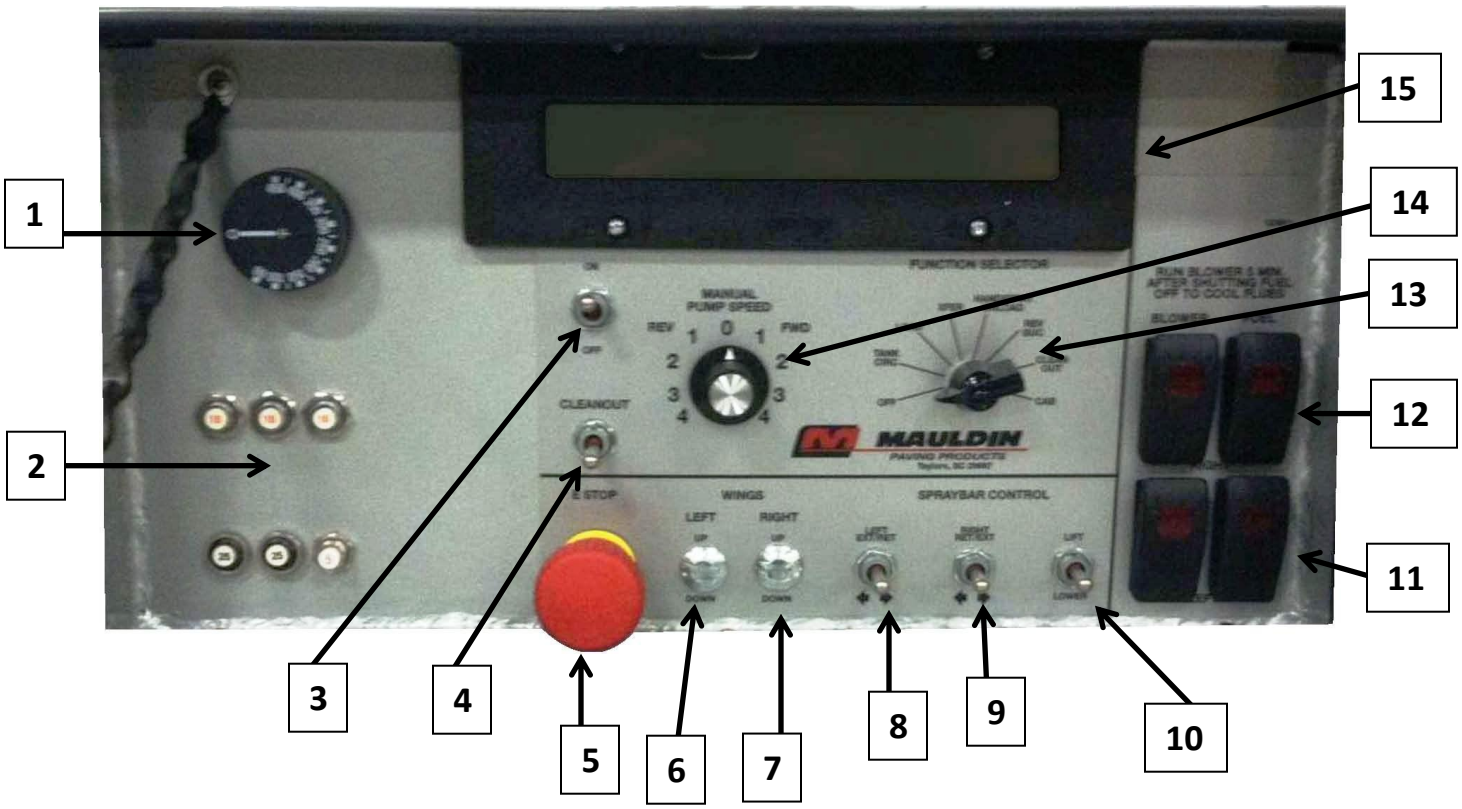
NOTES:

CAUTION

The operator must be familiar with all controls and instruments before operating the machine.

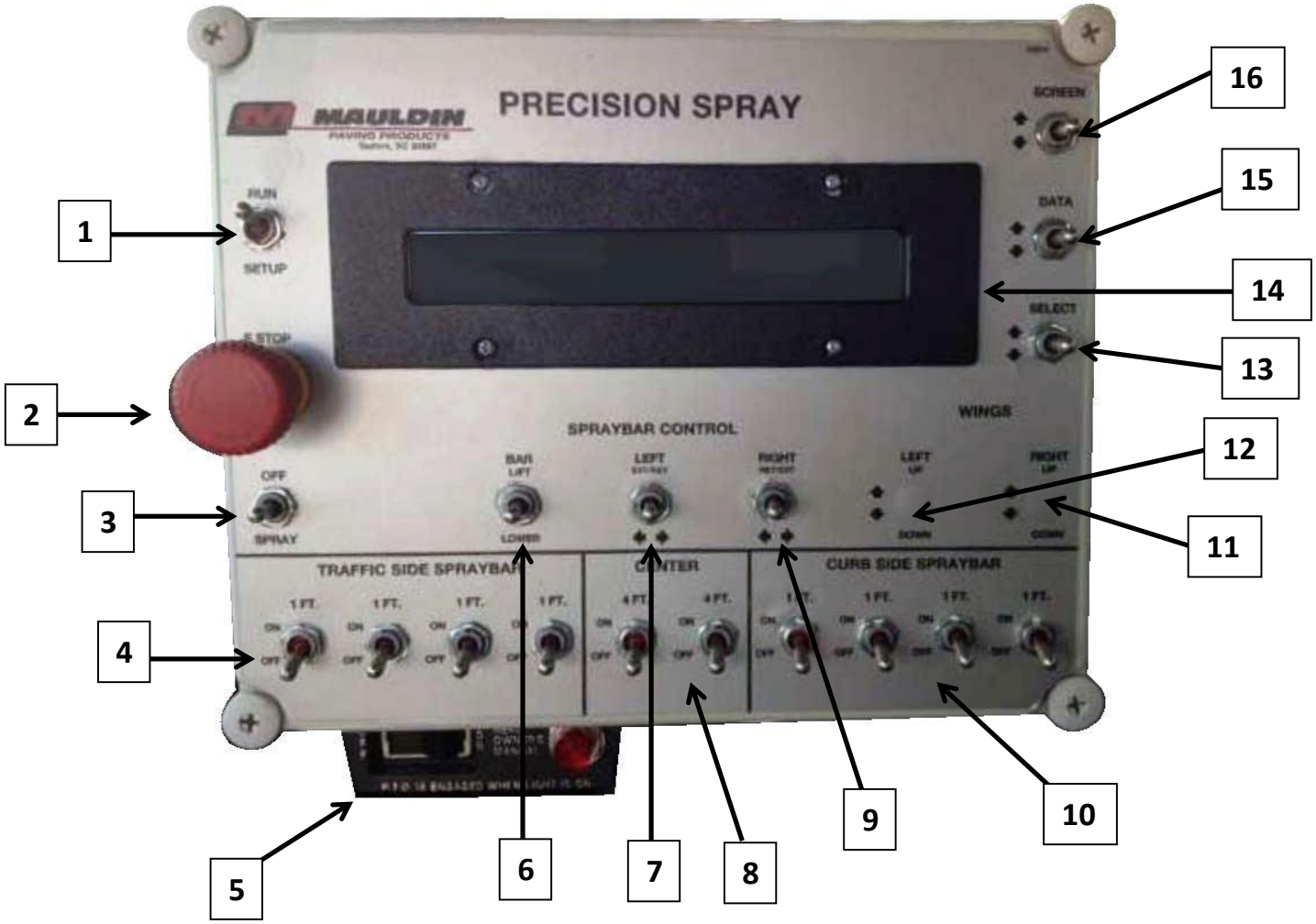
Master Control Station

(located at passenger side rear of tank)



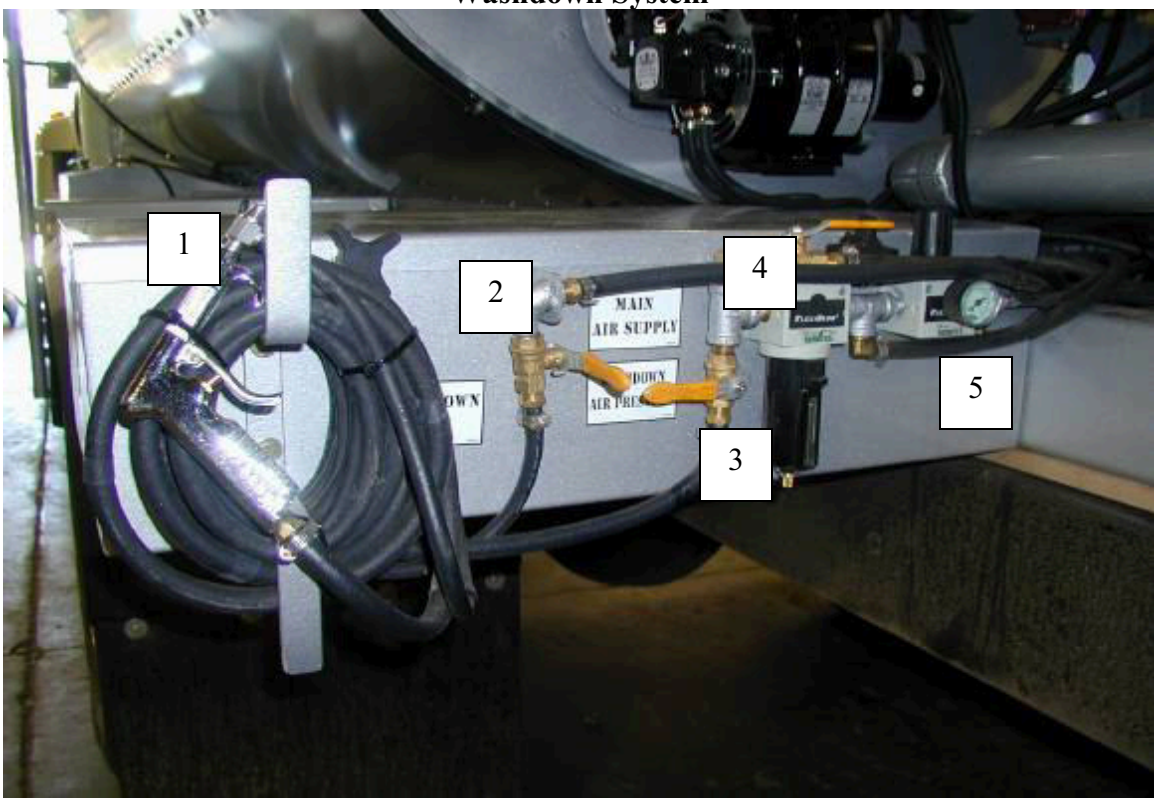
1. Diesel Burner Thermostat
2. Circuit Breakers
3. Master On / Off Switch
4. Initiate Auto Clean Out Cycle
5. Emergency Stop Button
6. Left Wing Up / Down (If Installed)
7. Right Wing Up / Down (If Installed)
8. Left Bar Extend / Retract
9. Right Bar Extend / Retract
10. Spray Bar Raise / Lower
11. Left Blower & Fuel Switches
12. Right Blower & Fuel Switches
13. Rotary Selector Switch
    - (Off, Tank Circulate, Load, Xfer, Handspray/Unload, Reverse Suction, Clean Out, Cab)
14. Manual Pump Speed Dial
15. LCD Screen

Cab Control



1. Run / Setup Switch
2. Emergency Stop Button
3. Spray Switch, On / Off
4. Traffic Side Spray Enable Switches (1 Ft. Increments)
5. PTO Switch On / Off (If Installed)
6. Bar Lift / Lower
7. Left Bar Extend / Retract
8. Center Spray Enable Switches (4 Ft. Increments)
9. Right Bar Extend / Retract
10. Curb Side Spray Enable Switches (1 Ft. Increments)
11. Right Wing Up / Down (If Installed)
12. Left Wing Up / Down (If Installed)
13. Select Switch
14. LCD Screen
15. Data Adjust Switch
16. Screen Scroll Switch

Washdown System



1) Washdown syphon gun and hose
2) Washdown fluid valve
3) Washdown air valve
4) Air dryer (do not add oil)
5) Nozzle shut pressure regulator

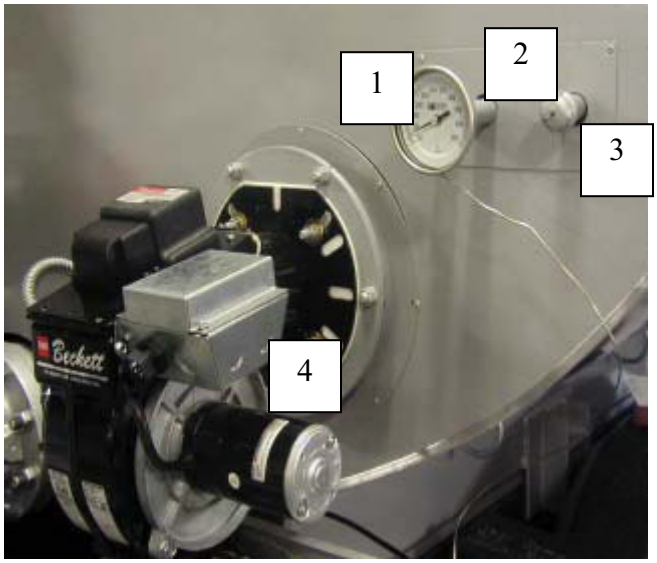
-Normal operating pressure should be between 10 and 50 psi

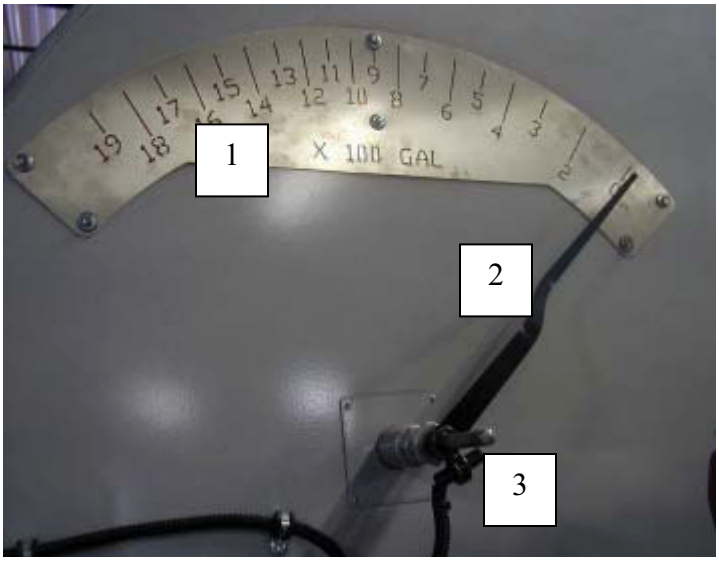
1) Dial thermometer

2) Burner thermocouple

3) Pencil thermometer tube

4) Diesel burner unit

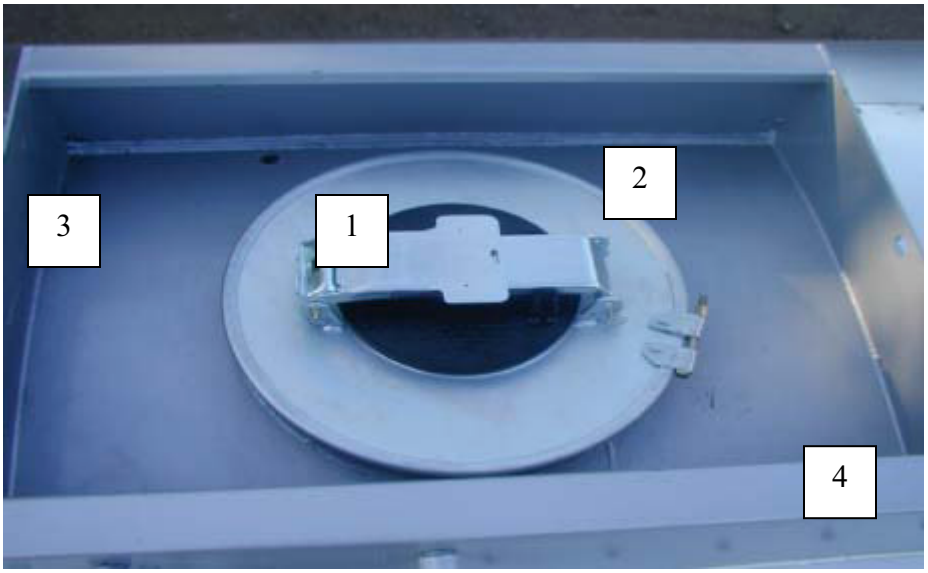




1) Contents gage

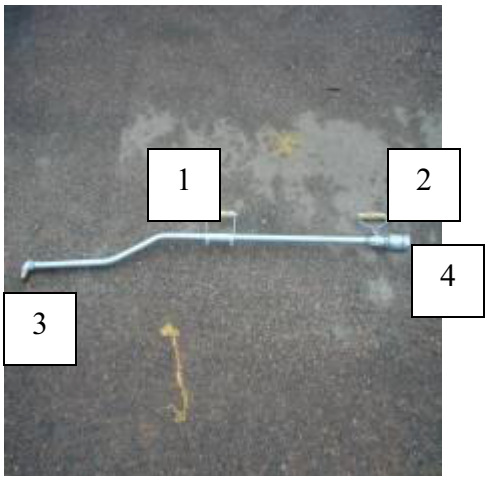
2) Contents Indicator

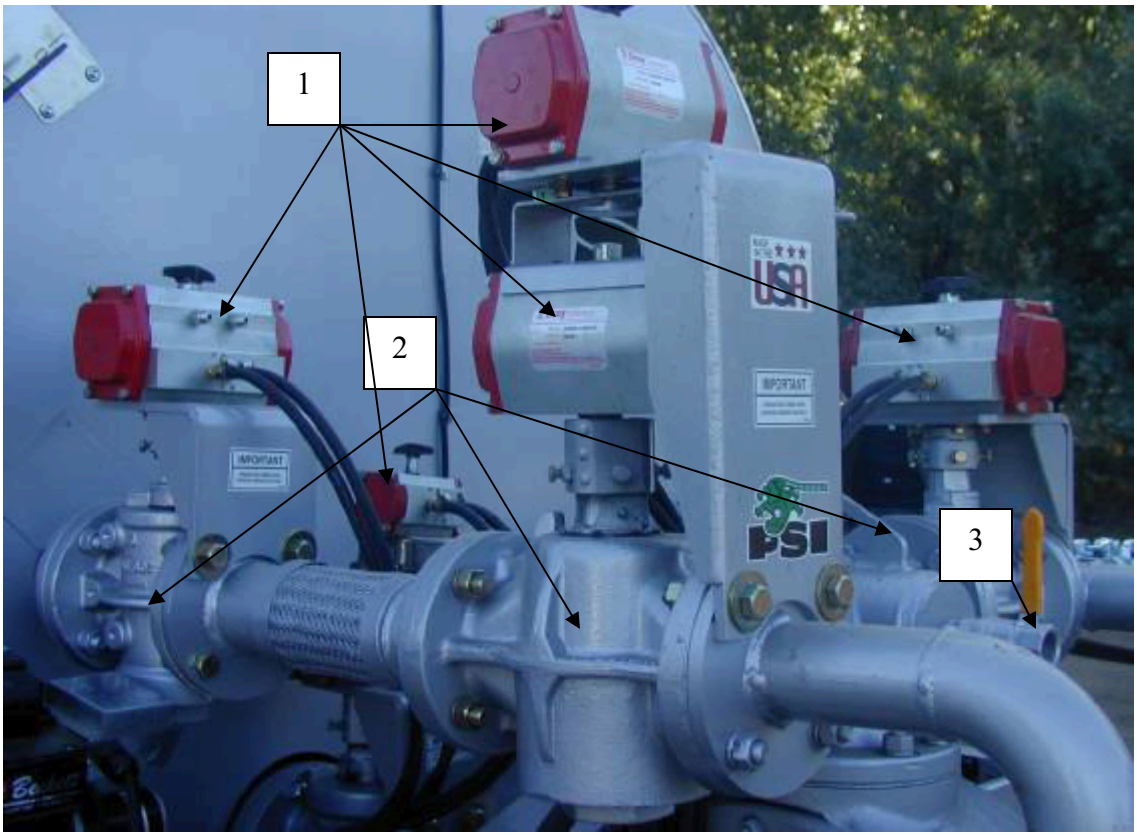
3) Mercury safety switch



1) Safety fill cover
2) Manhole opening
3) Overflow drain tube
4) Rollover protection frame

1) Fixed handle
2) Spray valve handle
3) Nozzle
4) Rotary union

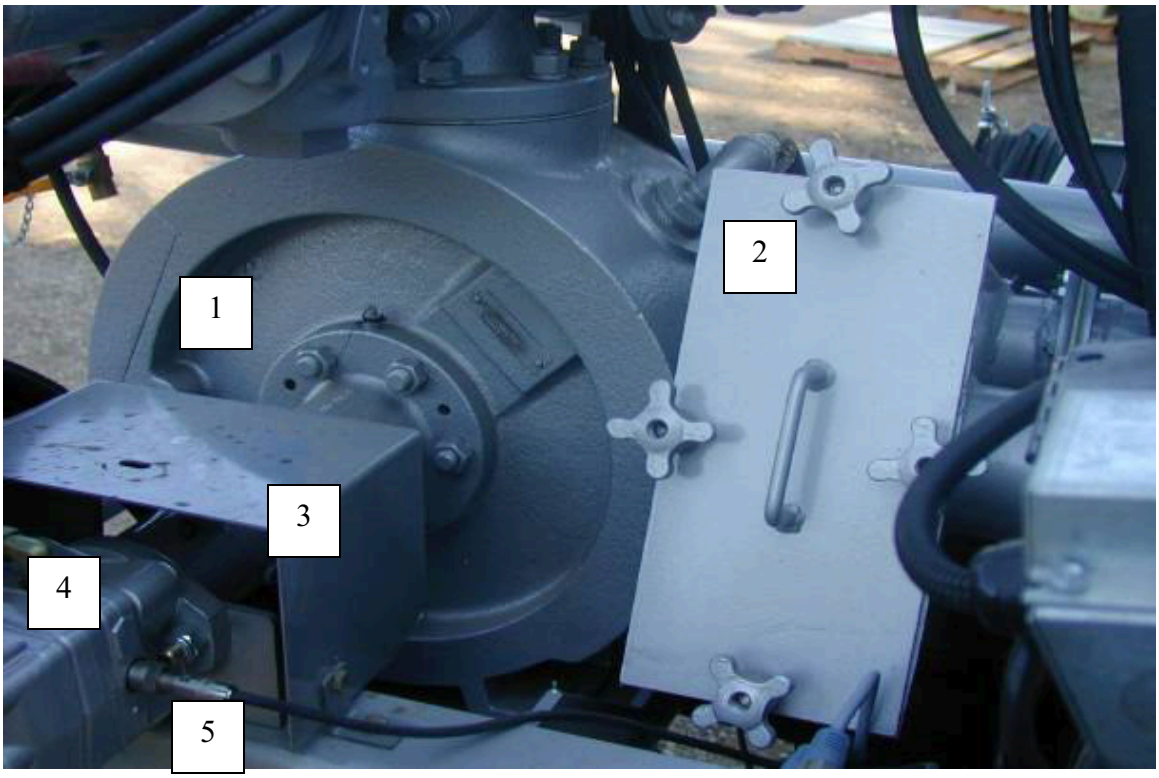




1) Pneumatic valve actuators

2) Asphalt plug valves
- **2ea. 3” 2way valves**
- **1ea. 3” 3way valve**
- **1ea. 4” 2way valve**

3) Hand spray valve



1) Asphalt pump (heat jacketed)

2) Self cleaning strainer box

3) Asphalt shaft guard

4) Hydraulic pump, asphalt power

5) Pulse pick up (counts revolutions of asphalt pump)

NOTES:

Precision Spray

Operations Manual

Asphalt Distributor

I. Description of Operation:

This machine is designed to apply liquid asphalt to the road surface prior to chip spreading, fog sealing, paving, etc. An operator can enter a desired application rate that is electronically controlled, and will control asphalt flow based on machine speed and number of nozzles that are being used.

Operators are able to run the machine from two locations: from the cab control panel,(see fig 3-1) and from the rear control panel.(see fig 3-2) The rear-control is the "Master Control" and will override any cab controls commands with exception only to the "Emergency Stop", which can be activated from either location.

Description of a typical Start up and Set up:

This section will describe for you a step by step method to safely start up operate and clean out the "Precision Spray" asphalt distributor.

II. Truck Start up:

a. Follow the truck manufactures start up procedures and safety instructions
b. After engine is running and vehicle is parked on flat surface with the beaks securely locked follow the procedures below.

III. Tank Top Loading:

a. Move Precision Spray to a flat position in close proximity of storage tanks or transfer vehicle.
b. If top loading, make sure master control is OFF.
c. Open manhole cover at top of tank and lower load line at least 24" below the top of opening and secure the load line to the tank so load line cannot lift out of tank during loading procedure.
d. Transfer material into tank, make sure you do not leave the unit un attended and keep close attention to contents gage so loading can be stopped in ample time to prevent a spill, or overflow.
e. After the desired amount of material is loaded, remove load line and close manhole cover, and make sure it is closed and latch is secured.

IV. Tank Transfer Loading:

c. Move Precision Spray to a flat position in close proximity of storage tanks or transfer vehicle.
d. Set vehicle park brakes and set engine to @ 1300 rpm's.
e. At rear "Master Control" make sure the rotary function switch is off an turn the control on.
f. Connect load hose the storage or transport tank, and to the Precision Spray load line.
g. Open the valve on the storage or transport tank.
h. Move rotary function switch to the load position.
i. Turn the rotary pump switch slowly to the right (clock wise) until desired loading speed is reached. (Note if some emulsions are loaded to fast they have a tendency to foam.)

j. Watch contents gage and turn rotary pump switch back to zero when desired contents is achieved.
k. Close tank valve on transport or storage unit.
l. Turn rotary pump switch (clock wise) to about 2 to 3, disconnect load hose from transport or storage tank allow pump to suck any material in hose back to the Precision Spray tank.
m. Disconnect load hose from Precision Spray, and replace load line plug and secure.
n. Turn rotary pump switch back to 0, and turn rotary selector switch to off.

I. Heating Materials:

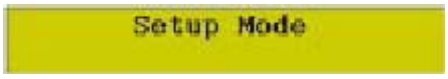
Asphalt products need to be sprayed at proper application temperatures. (fig 4.1) To achieve the proper material temperatures follow this procedure.

a. With the vehicle running, parked, brakes set and engine at @ 1000 to1200 rpm's
b. Turn the rear (Master) control ON, turn rotary function switch to OFF.
c. Flip the burner blower controls to the on position.
d. Turn the Thermostat dial to the desired spray temperature.
e. Flip the burner fuel switches to the on position and the burners will light.
f. After burners start to warm the material the rotary function switch should be put in the tank circulate position and the rotary pump switch should be turned (clock wise) to 2 –4 to allow materials to circulate as they are being heated.
g. When set temperature is reached the burners will turn off, and the material is ready to spray
h. For proper flue and flue liner life it is important to remember to run a cooling period for the burner and flue assemblies by leaving the blower switches on and turning off the fuel supply switch.(approx 5 mins.)
i. Operator shall never leave the rear of the distributor while operating the burner assemblies.

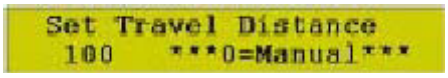
Asphalt Cements	***SprayTemp***	***FlashPoint F***	***Emulsions Cont.***	***SprayTemp***	***FlashPoint***
AC-250	270+	325	HFMS-2H	70-160	-
AC-5	280+	350	HFMS-2S	70-160	-
AC-10	280+	425	SS-1	70-160	-
AC-20	295+	450	SS-1H	70-160	-
AC-40	300+	450	CRS-1	125-185	-
AR-1000	275+	400	CRS-2	125-185	-
AR-2000	285+	425	CMS-2	70-160	-
AR-4000	290+	440	CMS-2H	70-160	-
AR-8000	290+	450	CSS-1	70-160	-
PEN40-50	300+	450	CSS-1H	70-160	-
PEN60-70	295+	450	***Cutbacks***		
PEN85-100	280+	450	MC-30	80+	100
PEN120-150	270+	425	MC-70	120+	100
PEN200-300	270+	350	MC-250	165+	150
Emulsions			MC-800	200+	150
RS-1	70-140	-	MC-3000	230+	150
RS-2	125-185	-	RC-70	120+	-
HFRS-2	125-185	-	RC-250	165+	80
MS-1	70-160	-	RC-800	200+	80
MS-2	70-160	-	RC-3000	230+	80
MS-2H	70-160	-	SC-70	120+	150
HFMS-1	70-160	-	SC-250	165+	175
HFMS-2	70-160	-	SC-800	200+	200

I. Setting up to Spray Asphalt:

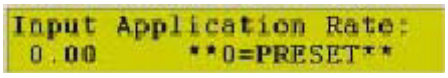
a. At rear control, turn rotary function switch to "Cab" this will set the machine to spray bar circulate and allow control to be handled from the truck cab control.
b. At cab control set control mode switch to "Setup" position
c. Use the scroll Up and Down switch to set travel distance if desired, application rate, and bar extensions if they are being used.



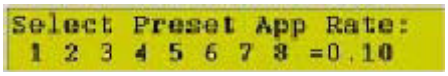
Use the Scroll Up and Scroll Down switch to scroll between the following screens:



Use the Data Inc and Data Dec switches to change the value.



Use the Data Inc and Data Dec switches to change the value.



Use the Select Up and Select Down switch to change the value.

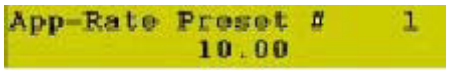
d. Use the bar extend and retract switches to set the desired bar with.
e. Once you are finished making changes, turn the Setup switch to Run, your changes will automatically be saved.

II. Spraying Asphalt:

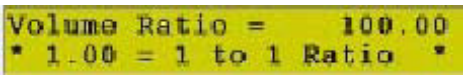
a. Position truck so spray bar is at the beginning of area to be sprayed.
b. Remember that for proper coverage the nozzle should be set at a 20 degree angle on the bar. The nozzle wrench supplied with the Precision Spray can ensure this.
c. Set "Setup/Run" switch to run.
d. Turn on the bar activation switches for the bar segments you wish to use. (Normally all switches should be turned on)
e. Using the left and right bar "Extend/Retract" switches adjust your bar to the desired width.
f. Select a transmission gear that will allow you to achieve @ 1500 rpm's at a safe operating speed.
g. Flip "Spray" switch to on this will put unit in Spray mode.
h. Start truck moving and simultaneously flip "Spray" switch to on again, and the unit will start to spray.
i. The spray will stop and go into bar circulate mode when you either switch the "Spray" switch to off, or the desired distance that was preset is achieved.
j. A special feature on the precision spray controller allows you to adjust the application rate while you are spraying, by toggling up or down the "Data" switch

I. Technicians Screens

a. When the Run/Setup switch is in the Setup position the Technicians are able to change some control parameters.
b. By toggling the Data switch up 5 times control will allow you to enter the "Technicians Mode" where the following parameters can be adjusted.

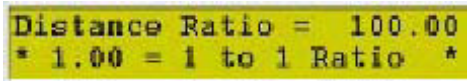


Use the Data Inc and Data Dec switches to change the value.
Use the Scroll Up and Scroll Down switch to scroll between App-Rate Presets.



Sets the percent of one turn of the asphalt pump required to get one gallon of fluid out:

Example: Volume Ratio = 0.75 so:
0.75 turns of the asphalt pump = 1 gallon



This ratios the ground-speed input:
Example: Distance Ratio = 1.25 so:
If the ground-speed input is at 100 FPM the controller converts this to 125 FPM

Once you are finished making changes, turn the Setup switch off, your changes will automatically be saved.

I. Machine Operation:

a. Using a 8 position selector switch, in the "Master Control" located at the rear of the unit, the operator can select between the following modes; "Off", "Cab", "Clean out", "Hand spray / Unload", "Transfer", "Load", "Tank Circulate", and "Reverse Suction".

b. Off:

All Functions are off.

c. Cab control:

The controller will monitor ground speed. If the machine is moving the Asphalt pump will be turned at the appropriate speed to keep the application rate constant at all ground speeds. **(Use the Scroll switch to adjust the screen contrast here.)**

Units: Flow=Gallons per Minute
Bar=FT/Inches
Rate=Gallons per Square Yard

- Upon entering this mode or anytime the OFF/SPRAY switch is momentarily clicked to OFF, the controller will be in Bar-Circulate mode pumping at 100 GPM.

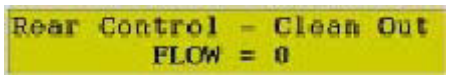
- When the OFF/SPRAY switch is momentarily clicked to SPRAY the first time the controller will go to Spray-Standby Mode. This will direct all pump flow to the bar, dead-heading the pump and pressurizing the bar. Pump flow is reduced to 25 GPM to reduce excess nozzle flow at the beginning of the spray.

- If the OFF/SPRAY switch is momentarily clicked to SPRAY a second time the controller will go to Spray Mode. This opens the Spray-Bars and sets the pump flow to maintain the set Application Rate while monitoring Bar-Width and Ground-Speed.

- If a preset Distance was set the controller will put the bar into Bar-Circulate Mode after the preset Distance has been traveled. Otherwise, if the preset Distance=0 then the bar will Spray until the OFF/SPRAY switch is momentarily clicked to the OFF position.

d. Clean out:

Operator will use this mode to clean out the spray nozzles and bar after the job is complete. By pushing the start button the auto clean cycle will begin. This will take approximately 5-10 minutes. Once the clean out cycle is complete a horn will sound.

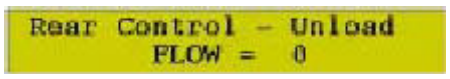


Clean-Out Mode Sequence

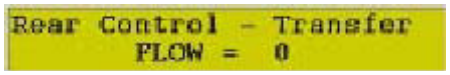
1. Wait for START Pushbutton
2. Open Tank Valve, Close Return Valve, 3-way to Bar, 2-way to Bar
3. Turn Pump CCW at eeCleanCCW_RPMa speed to REV-Suction the Bar
4. REV-Suction for eeCleanSuckBarT1
5. Open the LT-bar for eeCleanOpenBarT2
6. Close the LT-bar for eeCleanShutBarT3
7. Open the RT-bar for eeCleanOpenBarT2
8. Close the RT-bar for eeCleanShutBarT3
9. Repeat steps 5 to 8 one time
10. Open BOTH bars for eeCleanOpenBarT2
11. Close BOTH bars
12. Close Tank Valve, Close Return Valve, Close 3-Way, Stop the Pump, Open the Solvent Valves
13. Turn Pump CW eeCleanCWrevsA turns at eeCleanCW_RPMa speed. This will Circulate the solvent through the bars
14. Close Suction Solvent Valve, Open Breather Valve
15. Turn Pump CW eeCleanCWrevsB turns at eeCleanCW_RPMb speed. This will Flush the solvent out of the system back into the solvent tank
16. Stop the Pump, Close Return Solvent Valve, Close Breather Valve
17. Repeat steps 2 to 11 one time
18. Stop the Pump, Close ALL Valves
19. Cycle Complete, blow HORN

e. Hand spray / Unload:

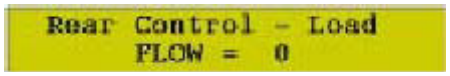
This mode allows an operator to use the remote spray wand to apply liquid. Operator must select speed and direction.



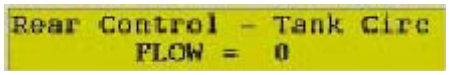
f. Transfer:
The operator must open the hand transfer valve then select direction and set speed.



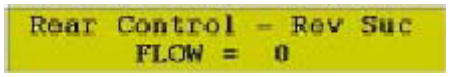
g. Load:
The operator must select pump direction and set speed.



h. Tank Circulate:
The operator must select pump direction and set speed.



i. Reverse Suction.
The operator must select pump direction and set speed.



II. Spray-Bar Auto-Calibration:

Both spray-bars need to be calibrated on machine startup or when a spray-bar sensor is adjusted or replaced. To calibrate the spray-bar sensors perform the following.

a. Turn the Power ON
b. Put the Rear-Control in the OFF position
c. Fully retract the Spray-Bar
d. Wait at least 2 seconds
e. Fully extend the Spray-Bar
f. Wait at least 2 seconds
g. Repeat steps c-f for other spray-bar if required

III. Spray-Bar Sensor Calibration:

If a sensor is improperly calibrated it can be re-calibrated by doing the following:

a. Turn the power ON
b. Wait 5 seconds
c. Re- Disconnect the sensors (see fig. 3-3)
d. connect the sensors
e. Follow the calibration procedure above.

IV. Shot- Rate Calibration:

a. A preset distance should be measured and marked on a road surface. 1000 feet is preferred.
b. Zero the distance traveled setting as described in technician portion of manual.
c. Turn all individual valve sections to the off position so that spray-bar display reads 0’ (zero feet).
d. Begin travel in desired gear for spreading product.
e. Turn the spray toggle on when crossing the first marker on the road surface at 0’ and turn spray toggle off when crossing the second marker at 1000’
f. If necessary adjust distance ratio as described in technician portion of manual.
g. Repeat steps b-f until distance displayed by computer equals distance traveled within 2%
h. Second step is to calibrate asphalt pump on the unit. Use dip-stick on level ground to accurately measure tank contents.
i. Set desired shot rate and spray over a small measured area for specific distance.
j. Dip tank level again for accurate measure on contents used.
k. If necessary adjust asphalt pump ratio as described in technician portion of manual.

NOTES:

FUELS

NOTE
Due to chemical differences in petroleum products, the following lubricants and fluids are factory recommendations. Any lubricants, fuels or fluids which are NOT recommended here are used at your own risk. The manufacturer assumes NO responsibility for the results due to the use of any lubricants, fuels or fluids which are NOT recommended.

NOTE
NEVER put additives in the fuel used in the machine unless specifically recommended by your dealer.

Keep dirt, scale, water, etc. out of stored fuel. Do NOT store fuels for any extended periods of time. Fill the Fuel Tank after completing work at the end of each day. This will reduce the problem of condensation forming in the tank overnight, which adds water to the fuel.

WARNING
ALWAYS shut off the Engine when filling the Fuel Tank. ALWAYS ground the fuel nozzle against the filler neck to avoid sparks. NEVER fuel the machine when smoking or near a fire or open flame. Avoid spilling fuel. If a spill occurs, wipe it up immediately. NEVER add fuel when Engine is HOT!

LUBRICATION

Keep parts properly lubricated to prevent excessive parts wear and early failures.

WARNING
NEVER lubricate or service the machine while the Engine is running. ALWAYS BE SURE to exercise the Mandatory Safety Shutdown Procedure in Section A - Safety, of this manual, BEFORE proceeding to lubricate or service the machine. When venting or filling the hydraulic system, loosen the Filler Cap SLOWLY and remove gradually.

Lubricants
Recommended Lubrications can be found on decals on the side of hydraulic tank.

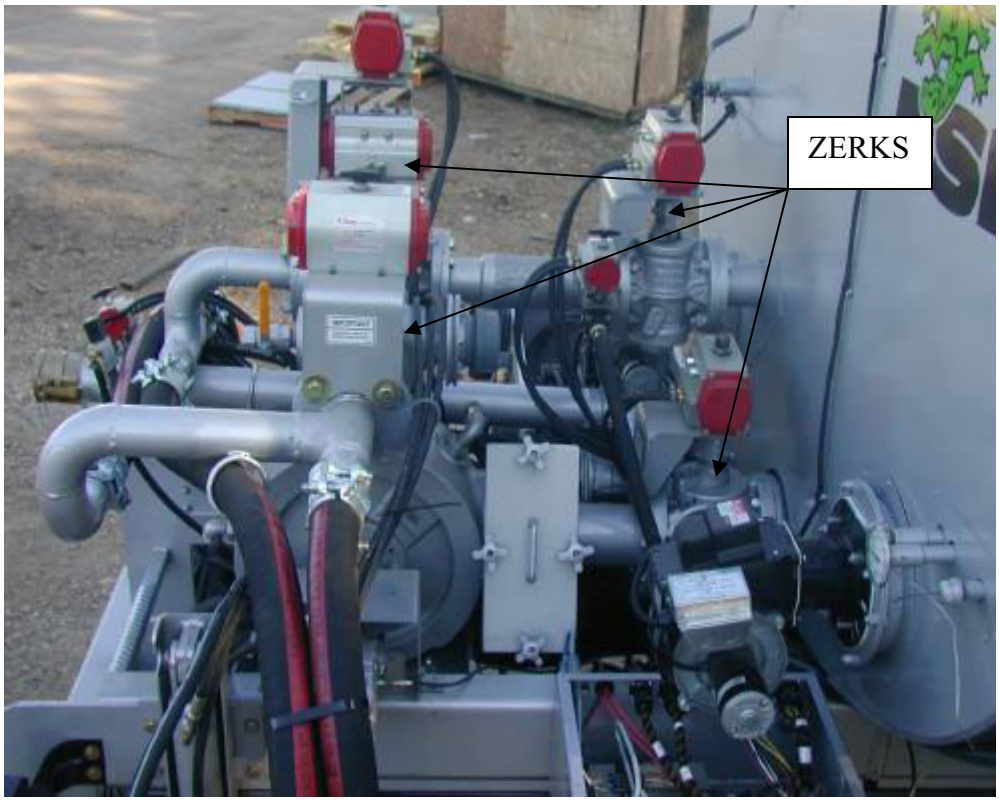
Hydraulic System Filter Elements and Fluid
1. 10 Micron - Auxiliary Hydraulic Controls Circuit
2. 7 Micron High Pressure Hydraulic Filter
3. Hydraulic Suction Strainer
4. Fluid - Mobile 424 or equivalent

NOTE
Refer to Operator Services in Section H - Service, of this manual, for detailed information regarding periodic checking and replenishing of lubricants.

Greases
Multi-Lube Lithium Grease NLGI #2 or equivalent.

Greasing
Wipe dirt from the Fittings before greasing them to prevent the dirt from being forced into the Bearings of the pivot joints. Replace any missing or damaged fittings when necessary. To minimize dirt build-up, avoid excessive greasing.

The following illustrations show the location of all grease fittings.



Rear Pump Assembly
Grease Zerks (Z)

NOTES:

TRANSPORTING

When loading or unloading in a congested area, be sure flagmen are used to insure the utmost SAFETY to the operator and other motorists and/or pedestrians in the area.

CAUTION

ALWAYS follow ALL state and local regulations regarding the operation of equipment on or across public highways! Whenever any appreciable distance exists between job sites, or if transporting on a public highway is prohibited, BE SURE to transport the machine using a vehicle of appropriate size and weight.

LOADING USING RAMPS

NOTE
A matched pair of ramps is required.

WARNING

ALWAYS abide by the following recommended procedures and guidelines when using ramps to load the machine onto (or unload it from) a truck or trailer. Failure to heed these guidelines can result in damage to equipment and serious personal injury or death!

1. The ramps MUST be of sufficient strength to support the machine. Whenever possible, use strong steel ramps as well as some type of center supporting block.
2. The ramps MUST be firmly attached to the truck or trailer bed with NO step between the bed and the ramps.
3. Incline of ramps MUST be less than 15° (ramp length MUST be at least 16 feet long.
4. Ramp width MUST be at least 1-1/2 times the tire width.

Refer to Figure F-1 below.

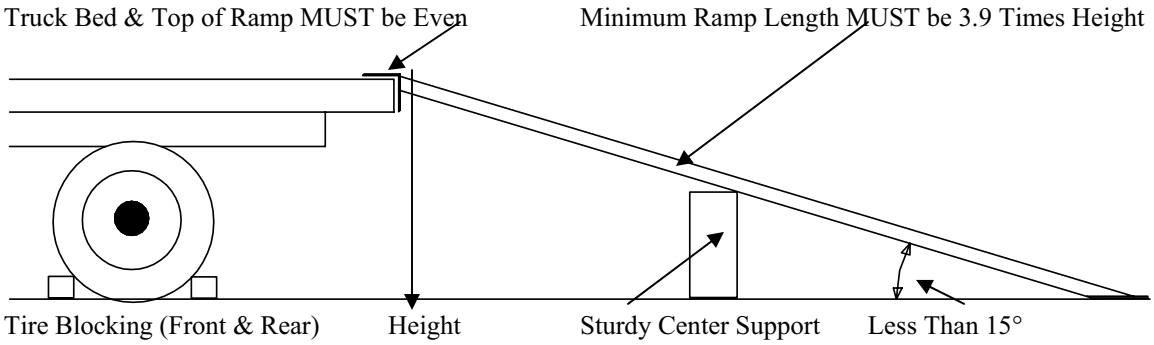


Figure F-1

5. Block the front and rear of the tires on the truck or trailer. If so equipped, engage the parking brake also.
6. Slowly drive the machine up to the ramps.
7. Slowly (at the lowest Engine speed possible), carefully drive the machine up the ramps to the forward bulkhead of the trailer.

CAUTION

NEVER adjust travel direction (even slightly) while travelling on the ramps. Instead, back down off the ramps and then re-align the machine with the ramps.

9. Engage the Park Brake on the machine.

10. Stop the Engine according to Mandatory Safety Shutdown Procedures in Section A - Safety, of this manual.
11. The forward tie down point is the front axle.
12. The rear tie downs are the rear axle

NOTE

ALWAYS use chains and chain binders. Do NOT lower tools to float position when loaded on transport vehicle. Tools in float position offer no stabilization when vehicle bounces.

IN TRANSIT

If in transit for a few days, follow these guidelines:

1. Raise air pressure in tires several pounds above normal operating pressure to prevent excessive bouncing.
2. Check cooling system for proper anti-freeze.
3. Disconnect the Battery.
4. Clean all bright surfaces and coat with heavy grease to prevent rusting.
5. Cover Exhaust Pipe to prevent entrance of water.

When transporting the machine, know the overall height to allow clearance of obstructions. Remove or tape over the slow moving vehicle emblem (SMV) if it will be visible to traffic.

WARNING

If tire pressure has been increased for transport, it MUST be lowered to operating pressure before the machine is placed back into service.

UNLOADING WITH RAMPS

NOTE
A matched pair of ramps is required.

Use ramps as described in Steps 1 thru 4 in LOADING USING RAMPS. Then proceed as follows to unload the machine:

5. Remove the chains and chain binders.
6. Start the Engine according to Startup in Section D - Operations, of this manual.
7. Clear all personnel from the ramp area.
8 Disengage the Parking Brake.
9. If necessary, adjust the machine so that the wheels are in line and centered with the ramps. Slowly (at the lowest Engine speed possible) and carefully drive the machine down the ramps.

NOTE
All loading and unloading should be done in Low gear

THEFT DETERRENTS

THE CERTAINTY OF APPREHENSION IS A STRONG DETERRENT TO THEFT OF CONSTRUCTION EQUIPMENT! PSI has recorded all Part Numbers and Serial Numbers. Users should take as many of the following actions as possible to discourage theft, to aid in the recovery in the event that the machine is stolen, or to reduce vandalism:

1. Remove keys from unattended machines.
2. Attach, secure, and lock all anti-vandalism and anti-theft devices on the machine.
3. Lock doors of cabs when NOT in use.
4. Inspect the gates and fences of the vehicle storage yard. If possible, keep machines in well lighted areas. Ask the law enforcement agency having jurisdiction to make frequent check around the storage or work sites, especially at night, during weekends, or on holidays.
5. Report the theft to the dealer and insurance company. Provide all the model and serial numbers.
6. Request that your dealer forward this same information to Calder Brothers Corporation.

NOTES:

Troubleshooting

Gauge Installation

Various pressure and vacuum gauge readings can be a great asset in troubleshooting problems with the Series 40 - M46 transmission or support system.

It will be necessary to install a high pressure gauge into the system pressure gauge ports to check the setting of the high pressure relief valves.

Measuring the charge pump inlet vacuum will help locate restrictions in the inlet lines, filter, etc.

Case pressure readings can help locate restrictions in the return lines, oil cooler, and return filter.

Gauge Information		
M1	System Pressure Port 'A'	10,000 PSI or 600 BAR Gauge 9/16–18 O-Ring Fitting
M2	System Pressure Port 'B'	10,000 PSI or 600 BAR Gauge 9/16–18 O-Ring Fitting
M3	Charge Pressure	1000 PSI or 60 BAR Gauge 9/16–18 O-Ring Fitting or Tee into Charge Pressure Filter Outlet Line
_1 _2	Case Pressure	1000 PSI or 60 BAR Gauge 1-1/16-12 O-Ring Fitting
S	Charge Pump Inlet Vacuum	Vacuum Gauge Tee into Charge Pump Inlet Line
M4	Servo Pressure	1000 PSI or 60 BAR Gauge 9/16–18 O-Ring Fitting - Later Units 7/16–20 O-Ring Fitting - Earlier Units
M5	Servo Pressure	1000 PSI or 60 BAR Gauge 9/16–18 O-Ring Fitting - Later Units 7/16–20 O-Ring Fitting - Earlier units

NOTE: Tandem pumps have additional gauge and working ports in the rear section.

Snubbers are recommended to protect pressure gauges. Frequent gauge calibration is necessary to insure accuracy.

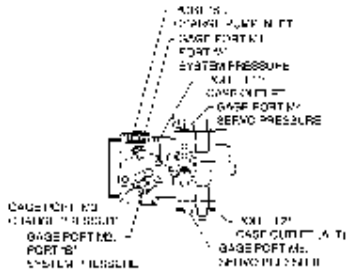


Fig. 9 - Gauge Connections — Variable Pump with Suction Filtration

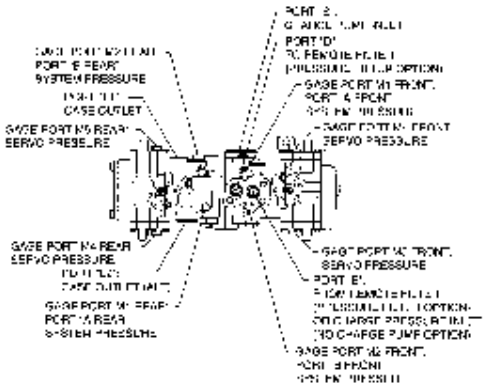
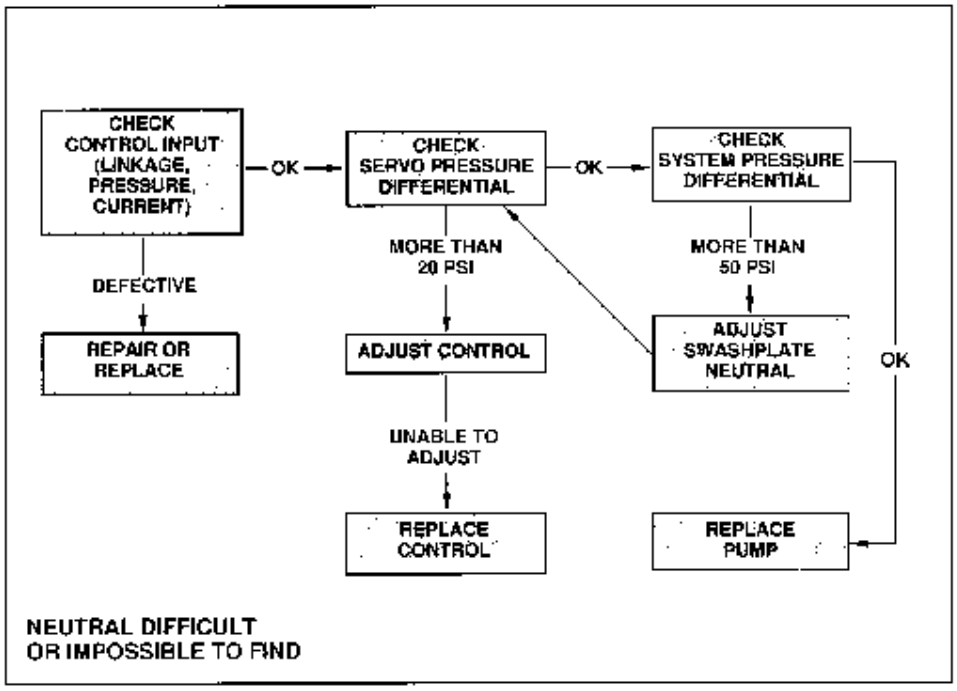
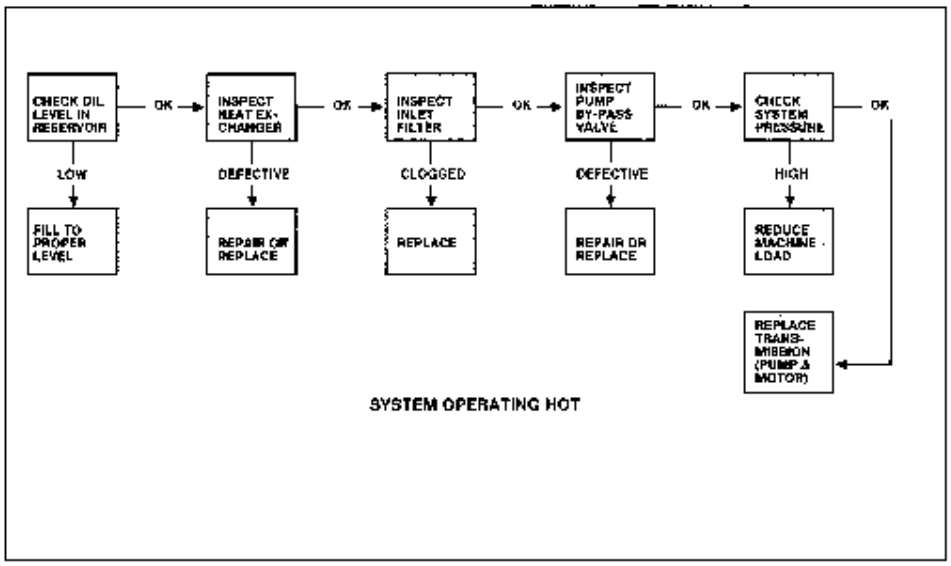


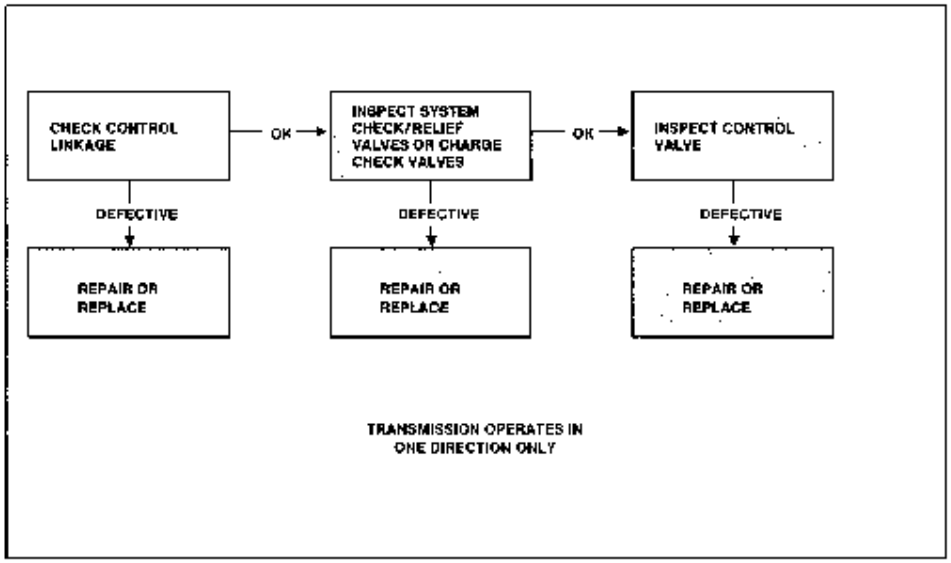
Fig. 10 - Gauge Connections — Tandem Pump with Remote Pressure Filtration

Fault-Logic Diagrams



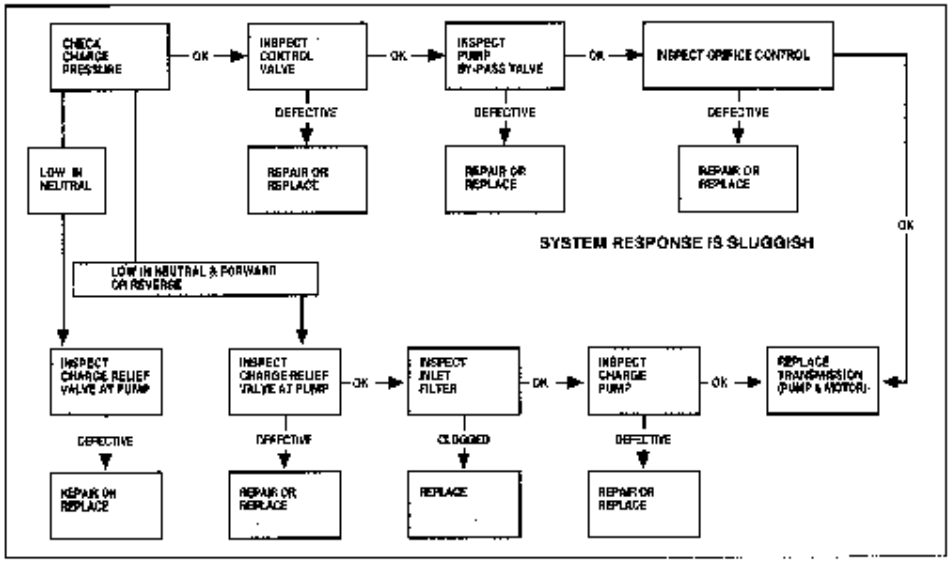


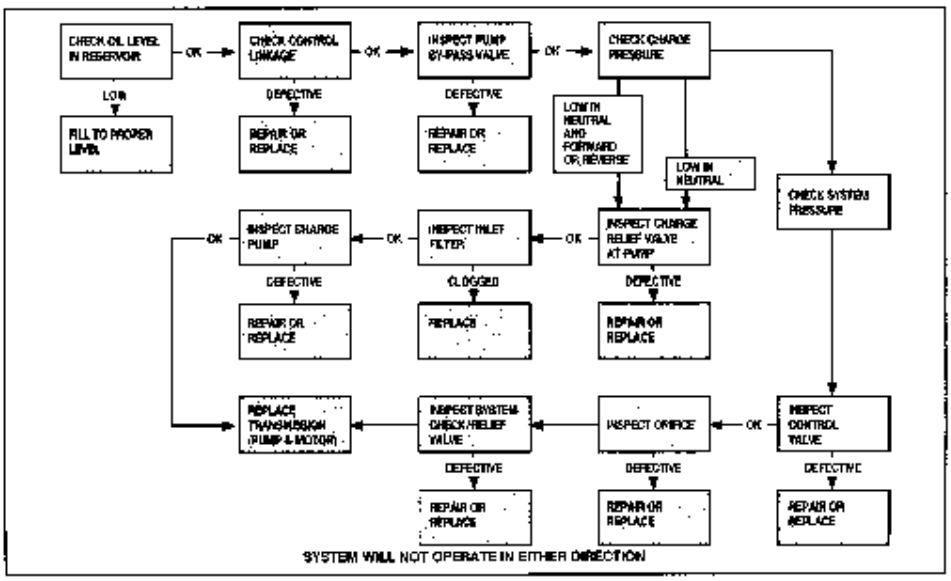
SYSTEM OPERATING HOT



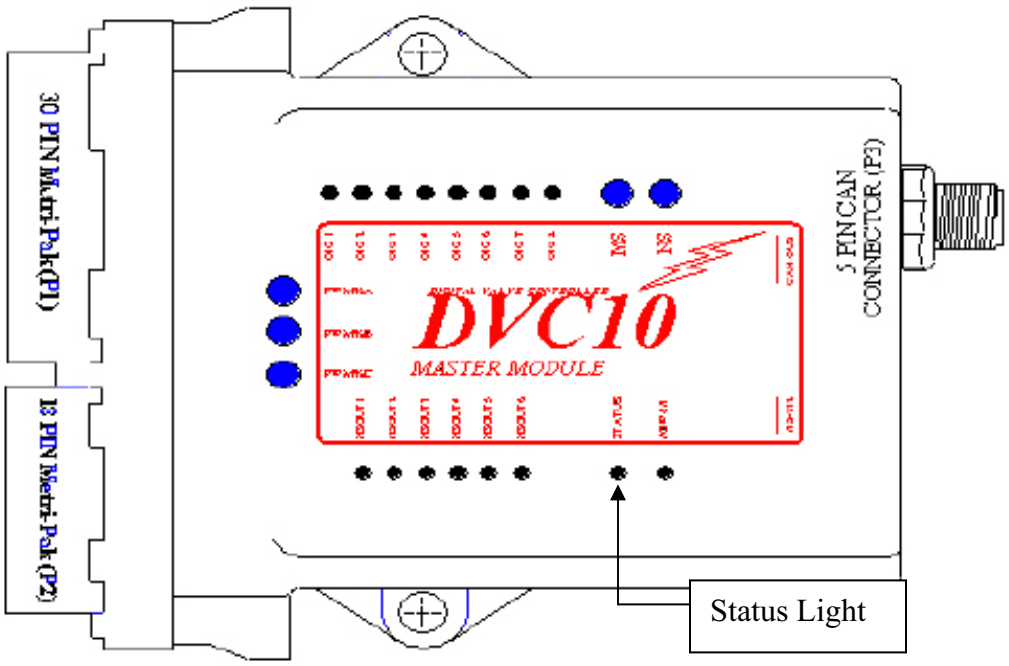
TRANSMISSION OPERATES IN ONE DIRECTION ONLY

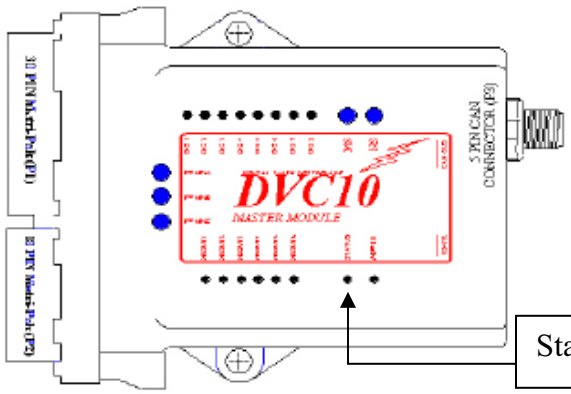
Series 40 - M46 Troubleshooting





Fault Codes for DVC10 Status LED		
Blink Code	**Reason for Fault**	**Corrective Action**
• 1	Input Stop Fault	Critical input fault causing the controller to disable all outputs
•• 2	One of the Asphalt Valves has Faulted	Check DVC41-1 and DVC41-2 controller lights
••• 3	Asphalt Pump Potentiometer signal out-of-range	Check wires and potentiometer, must be a 10K ohm pot with 1K ohm end-resistors
•••• 4	Left Bar Sensor out-of-range	Check wires and potentiometer, must be a 10K ohm pot with 1K ohm end-resistors
••••• 5	Right Bar Sensor out-of-range	Check wires and potentiometer, must be a 10K ohm pot with 1K ohm end-resistors
•••••• 6	DVC22 is not communicating	Check CAN cable and connector
•••••••• 7	DVC41 is not communicating (DVC41 with MacID of 41)	Check CAN cable and connector
••••••••• 8	DVC41 is not communicating (DVC41 with MacID of 42)	Check CAN cable and connector
•••••••••• 9	Asphalt Pump RPM sensor out-of-range	This will occur when the Asphalt pump is not turning. If the Asphalt pump is turning then check the RPM sensor and wires

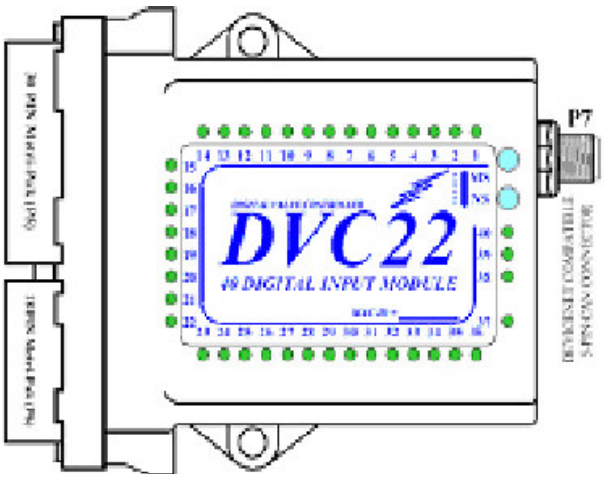




I/O LIST DVC10 MacID=10					
INPUT	**FUNCTION**	**INPUT**	**FUNCTION**	**OUTPUT**	**FUNCTION**
DIG1	Tank Circulate	UNI-1	Asphalt Pump RPM	PWM-A	PWM Pump
DIG2	Load	UNI-2	Radar Sensor	HS1	Pump CW
DIG3	Transfer	UNI-3	Ground Speed	HS2	Pump CCW
DIG4	Hand Spray	ANA-1	Left Bar Sensor	PWM-B	
DIG5	Reverse Suction	ANA-2	Right Bar Sensor	HS3	LT-Bar 1'A (Curb)
DIG6	Clean Out	ANA-3	Pump Potentiometer	HS4	LT-Bar 1' B
DIG7	Cab	-		PWM-C	LT-Bar 1' C
DIG8	Start Auto Clean	-		HS5	LT-Bar 1' D
-		-		HS6	LT-Bar 4' E

LED INDICATORS DVC10		
NAME	**NO FAULT**	**FAULT**
POWER	SOLID GREEN	●BLINKING GREEN = INPUT VOLTAGE >30VDC· ●OFF = INPUT VOLTAGE <8VDC
STATUS	OFF	SEE FAULT CODE
MODULE STATUS (MS)	SOLID GREEN	●FLASHING GREEN = DEVICE IN STANDBY STATE ●FLASHING RED = RECOVERABLE FAULT ●SOLID RED = UNRECOVERABLE FAULT ●FLASHING RED/GREEN = DEVICE IS IN SELF-TEST
NETWORK STATUS (NS)	●OFF IF NO OTHER MODULES IN SYSTEM ●SOLID GREEN IF ARE OTHER MODUALS IN THE SYSTEM	●FLASHING GREEN = DEVICE ON-LINE BUT HAS NOT CONNECTED TO OTHER MODULES ●FLASHING RED = ONE OR MORE CONNECTIONS ARE IN A TIMED-OUT STATE ●SOLID RED = AN ERROR HAS BEEN DETECTED ON THE CANBUS THAT WILL NOT ALLOW THE MODULE TO COMMUNICATE
DIG 1 - 8	GREEN WHEN ON	NA
HSOUT 1 - 6	SOLID GREEN WHEN ON	●1-BLINK/SECOND = OPEN CIRCUIT ●4-BLINK/SECOND = SHORT CIRCUIT
PWM A – C	SOLID RED TO SOLID GREEN WHEN ON RED=0% GREEN=100%	●FLASHING RED = SHORT CIRCUIT ●FLASHING GREEN = OPEN CIRCUIT

I. I/O Table DVC22

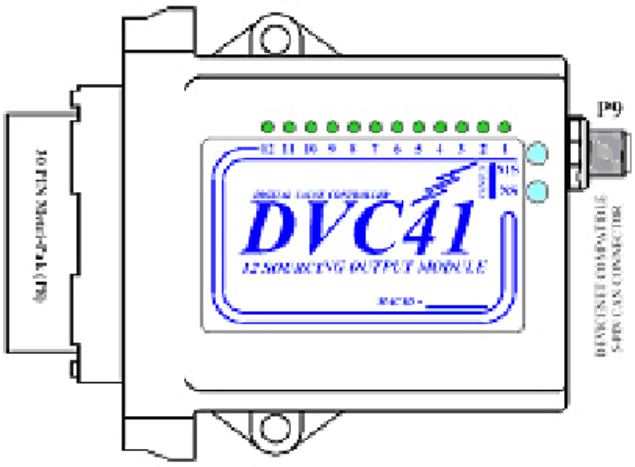


I/O LIST DVC22 MacID=22

INPUT	FUNCTION	INPUT	FUNCTION	INPUT	FUNCTION	INPUT	FUNCTION
DIG1	Scroll Up	DIG11	Right Bar Out	DIG21	Right Extension	DIG31	
DIG2	Scroll Down	DIG12	Right Bar In	DIG22		DIG32	
DIG3	Data Inc	DIG13	Left Bar Out	DIG23		DIG33	
DIG4	Data Dec	DIG14	Left Bar In	DIG24		DIG34	
DIG5	Select Up	DIG15	hift Bar Right	DIG25		DIG35	
DIG6	Select Down	DIG16	Shift Bar Left	DIG26		DIG36	
DIG7	Fold Wings Up	DIG17	Circulate On	DIG27		DIG37	
DIG8	Fold Wings Down	DIG18	Spray On	DIG28		DIG38	
DIG9	Lift Bar Up	DIG19	Setup	DIG29		DIG39	
DIG10	Lift Bar Down	DIG20	Left Extension	DIG30		DIG40	

LED INDICATORS DVC22		
NAME	**NO FAULT**	**FAULT**
MODULE STATUS (MS)	SOLID GREEN	• FLASHING GREEN = DEVICE IN STANDBY STATE • FLASHING RED = RECOVERABLE FAULT • SOLID RED = UNRECOVERABLE FAULT • FLASHING RED/GREEN = DEVICE IS IN SELF-TEST
NETWORK STATUS (NS)	• OFF IF NO OTHER MODULES • SOLID GREEN IF THERE ARE OTHER MODULES IN THE SYSTEM	• FLASHING GREEN = DEVICE ON-LINE BUT HAS NOT CONNECTED TO OTHER MODULES • FLASHING RED = ONE OR MORE CONNECTIONS ARE IN A TIMED-OUT STATE • SOLID RED = AN ERROR HAS BEEN DETECTED ON THE CANBUS THAT WILL NOT ALLOW THE MODULE TO COMMUNICATE
DIG 1 – 40	GREEN WHEN ON	NA

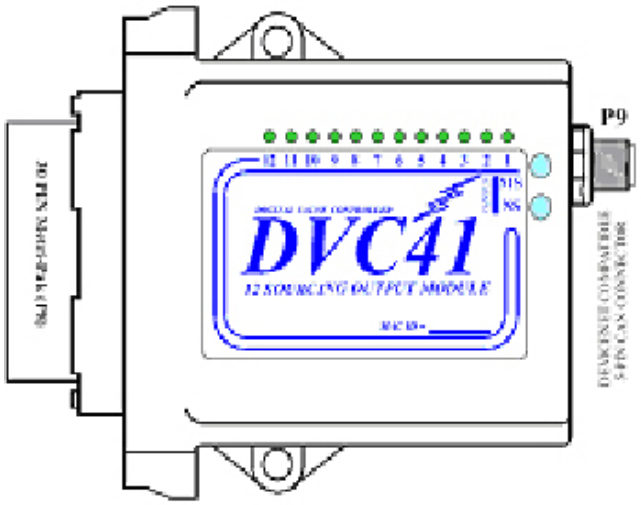
I. I/O Table DVC41 (41)



I/O LIST DVC41 MacID=41			
OUTPUT	**FUNCTION**	**OUTPUT**	**FUNCTION**
1	Tank valve	7	Solvent Valve Suction
2	3 Way Bar	8	Solvent Valve Return
3	3 Way Tank	9	Breather Valve
4	2 Way Bar	10	Open Return Valve
5	Spare	11	RT-Bar 4' A (Outside)
6	Spare	12	RT-Bar 4' B (Inside)

LED INDICATORS DVC41		
NAME	**NO FAULT**	**FAULT**
MODULE STATUS (MS)	SOLID GREEN	• FLASHING GREEN = DEVICE IN STANDBY STATE • FLASHING RED = RECOVERABLE FAULT • SOLID RED = UNRECOVERABLE FAULT • FLASHING RED/GREEN = DEVICE IS IN SELF-TEST
NETWORK STATUS (NS)	• OFF IF NO OTHER MODULES IN SYSTEM • SOLID GREEN IF THERE ARE OTHER MODULES IN THE SYSTEM	• FLASHING GREEN = DEVICE ON-LINE BUT HAS NOT CONNECTED TO OTHER MODULES • FLASHING RED = ONE OR MORE CONNECTIONS ARE IN A TIMED-OUT STATE • SOLID RED = AN ERROR HAS BEEN DETECTED ON THE CANBUS THAT WILL NOT ALLOW THE MODULE TO COMMMUNICATE
HSOUT 1 - 6	SOLID GREEN WHEN ON	• 1-BLINK/SECOND = OPEN CIRCUIT • 4-BLINK/SECOND = SHORT CIRCUIT

I/O Table DVC41 (42)



I/O LIST DVC41 MacID=42			
OUTPUT	**FUNCTION**	**OUTPUT**	**FUNCTION**
1	Right Bar On	7	Burner Relay
2	Left Bar On	8	Left Bar Extend
3	Lift Spray-Bar	9	Left Bar Retract
4	Lower Spray-Bar	10	Right Bar Extend
5	Wings Up	11	Right Bar Retract
6	Wings Down	12	Clean Out Horn

LED INDICATORS DVC41		
NAME	**NO FAULT**	**FAULT**
MODULE STATUS (MS)	SOLID GREEN	• FLASHING GREEN = DEVICE IN STANDBY STATE • FLASHING RED = RECOVERABLE FAULT • SOLID RED = UNRECOVERABLE FAULT • FLASHING RED/GREEN = DEVICE IS IN SELF-TEST
NETWORK STATUS (NS)	• OFF IF NO OTHER MODULES IN SYSTEM • SOLID GREEN IF THERE ARE OTHER MODULES IN THE SYSTEM	• FLASHING GREEN = DEVICE ON-LINE BUT HAS NOT CONNECTED TO OTHER MODULES • FLASHING RED = ONE OR MORE CONNECTIONS ARE IN A TIMED-OUT STATE • SOLID RED = AN ERROR HAS BEEN DETECTED ON THE CANBUS THAT WILL NOT ALLOW THE MODULE TO COMMMUNICATE
HSOUT 1 - 6	SOLID GREEN WHEN ON	• 1-BLINK/SECOND = OPEN CIRCUIT • 4-BLINK/SECOND = SHORT CIRCUIT

Revisions

LEVEL	II. DESCRIPTION – ECO NUMBER	III. DATE	IV. BY
0	CREATED	2/27/04	PRL
1	Prototype Additions	3/25/04	PRL
2	Moved Bar-Up/Down Outputs to DVC42 (ECO#5383)	5/24/04	PRL

Software Specification

I.Module	V. MacID	XV. BIOS Version	V.1 Baud Rate	Program Number
DVC10	10	3.41	125K	SA2278220
DVC22	22	3.41	125K	NA
DVC41	41	3.41	125K	NA
DVC41	42	3.41	125K	NA

A. EE-Memory Defaults:

1. eePulsesPerFT=6 '// Pulses per Yard traveled (6 for J1939, 30 for Radar)//
2. eePulsesBetBars=2 '// The number of pulses between the two bars //
3. eeAsphaltPumpPPR=30 '// Pulses Per Rev on the asphalt pump //
4. eeGallonRatio=100 '// Ratio for gallons, 100 = 1 to 1 //
5. eeFootRatio=100 '// Ratio for distance, 100 = 1 to 1 //
6. eeTotalYards=0 '// Working Yards Traveled Totalizer //
7. eeTotalSQyards=0 '// Square Yards of material used Totalizer //
8. eeTotalGallons=0 '// Gallons of material used totalizer //
9. eePumpRPM_DB=0 '// Deadband for the Pump RPM PI control loop //
10. eePumpRPM_Pgain=2000 '// Pgain for the Pump RPM PI control loop //
11. eePumpRPM_Igain=150 '// Igain for the Pump RPM PI control loop //
12. eeCleanCWrevsA=300 '// Auto-CleanOut revolutions to turn CW step A – Circulate Solvent //
13. eeCleanCWrevsB=100 '// Auto-CleanOut revolutions to turn CW step B – Dump Solvent back into the Solvent Tank //
14. eeCleanCW_RPMa=200 '// Auto-CleanOut RPM to turn CW step A //
15. eeCleanCW_RPMb=200 '// Auto-CleanOut RPM to turn CW step B //
16. eeCleanCCW_RPMa=350 '// Auto-CleanOut RPM to turn CCW – Rev Suction //
17. eeCleanSuckBarT1=30000 '// Auto-Cleanout time (ms) to Rev-Suck the Bar before opening //
18. eeCleanOpenBarT2=4000 '// Auto-CleanOut time (ms) to Open Bars //
19. eeCleanShutBarT3=4000 '// Auto-CleanOut time (ms) to Shut Bars //
20. eeLTbarMinInch=48 '// LT bar retracted width //
21. eeLTbarMaxInch=96 '// LT bar extended width //
22. eeRTbarMinInch=48 '// RT bar retracted width //
23. eeRTbarMaxInch=96 '// RT bar extended width //
24. eeLTbarDeadband=8 '// LT bar extended width //
25. eeRTbarDeadband=8 '// RT bar extended width //
26. eeLTbarMinVolts=1023 '// LT bar sensor Min Cal Volts //
27. eeLTbarMaxVolts=0 '// LT bar sensor Max Cal Volts //
28. eeRTbarMinVolts=1023 '// RT bar sensor Min Cal Volts //
29. eeRTbarMaxVolts=0 '// RT bar sensor Max Cal Volts //
30. eeTravelDist=100 '// Distance to Spray //
31. eeSpecRoadWidth=0 '// Special Road-Width //
32. eeAppRateMan=10 '// Manual Application Rate Entry (5 = 0.05 gal/sq.yd.) //
33. eeAppRatePre1=2 '// Preset Application Rate #1 (5 = 0.05 gal/sq.yd.) //
34. eeAppRatePre2=5 '// Preset Application Rate #2 (5 = 0.05 gal/sq.yd.) //
35. eeAppRatePre3=8 '// Preset Application Rate #3 (5 = 0.05 gal/sq.yd.) //
36. eeAppRatePre4=10 '// Preset Application Rate #4 (5 = 0.05 gal/sq.yd.) //
37. eeAppRatePre5=15 '// Preset Application Rate #5 (5 = 0.05 gal/sq.yd.) //
38. eeAppRatePre6=20 '// Preset Application Rate #6 (5 = 0.05 gal/sq.yd.) //
39. eeAppRatePre7=30 '// Preset Application Rate #7 (5 = 0.05 gal/sq.yd.) //
40. eeAppRatePre8=35 '// Preset Application Rate #8 (5 = 0.05 gal/sq.yd.) //
41. eeAppRate=9 '// Memory of Application Rate selected //
42. eeMetric_or_US=0 '// Units, 0=US, 1=Metric //

NOTES:

GENERAL PRECAUTIONS

NOTE
Do NOT perform any maintenance or repair without prior authorization. Allow only trained personnel to service the machine. In addition, WARRANTY repairs can **only** be done by a CBC Dealer. They will know what portions of the machine are covered under the terms of the CBC warranty and what portions are covered by other vendor OEM warranties.

NOTE
Always dispose of waste lubricating oils, anti-freeze and hydraulic fluids according to local regulations, or take them to a recycling center for disposal. Do NOT pour them onto the ground or into a drain.

WARNING
Do NOT smoke or allow any open flames in the area while checking and/or servicing hydraulic, battery or fuel systems. All contain highly flammable liquids or explosive gases which can cause an explosion or fire if ignited.

Keep feet, clothing, hands, and hair away from moving parts. Wear appropriate protective clothing, gloves, and shoes.

Wear a face shield when you disassemble spring loaded components or work with battery acid. Wear a helmet or goggles with special lenses when you weld or cut with a torch.

When working beneath a raised machine, always use blocks, jack-stands, or other rigid and stable supports.

Always wear safety glasses or goggles to protect eyes from electric arcs from shorts, fluids under pressure, and flying debris or loose material when the Engine is running or when tools are used for grinding or pounding.

WORK AREA PRECAUTIONS

BEFORE starting inspection and repair, move the machine onto a clean, level surface. Make sure you have sufficient room, clearances, and adequate ventilation. Shut down Engine, and release all hydraulic pressure.

Clean walking and working surfaces. Remove oil, grease, and water to eliminate slippery areas. Use sand or oil-absorbing compound, as necessary, while servicing the machine.

ALWAYS lower the Moldboard and Tool Bar to full ground contact. Place all controls in neutral. Block the Wheels.

Disconnect the Battery and remove the ignition key. Remove only those guards or covers that provide needed access. Wipe away excess grease & oil.

CAUTION
If repair welding is ever required, remove the Battery (+) positive terminal connection before proceeding to weld. In addition, BE SURE to attach the ground (-) cable from the welder as close as possible to the area to be repaired.

NEVER weld on support frame or overhead guards without the consent of the manufacturer. Special metals may have been used which require special welding techniques, or their design should NOT have welded repairs. NEVER cut or weld on fuel lines or tanks.

Rotating parts MUST be inspected during repair, and replaced if they are cracked or damaged. Excessively worn or damaged parts can fail and cause injury or death. BE SURE that all replacement parts are interchangeable with original parts and of equal quality.

Use care NOT to damage machined and polished surfaces. Clean or replace all damaged or painted over plates and decals that can NOT be read.

After servicing, check the work performed. BE SURE there are NO parts left over. Install all guards and covers, and reconnect the Battery. Replace all tools and clean any spills.

NOTE
NEVER leave guards off or access doors open when the machine is unattended. Keep bystanders away if access doors are open.

OPERATORS' SERVICING DUTIES

NOTE
Some of the operator related services will require access to components located inside various superstructure hoods and covers.

Pump Pressures
ACCESSORY DRIVE PUMP PRESSURE:
Set at 2350 PSIG +/- 100 PSIG.

TRANSMISSION PUMP PRESSURE:
Set at 3500 PSIG.

Fuse
The fuse provides ignition protection to the Engine's electrical system. If it is "blown", the gauges and indicators will NOT work and the Engine will shut off.

Hydraulic Fluid Level (10 Hours or Daily)

CAUTION
Remove the pressure cap SLOWLY to relieve any pressure.

Always check the hydraulic fluid at operating temperature, preferably at the end of the working day. BE SURE the machine is parked on a level surface for fluid checks.

Stop the Engine according to the Mandatory Safety Shutdown Procedures in Section A - Safety, of this manual.

The hydraulic Reservoir is full if the fluid is visible in the Lower Sight Gauge. If fluid is visible in the Upper Sight Gauge, the Reservoir is OVERFILLED. Excess fluid may be piped overboard through the Filler Cap.

NOTE

Battery (40 Hours or Weekly**)**

WARNING
Explosive gas is produced while a Battery is in use or being charged. Keep flames or sparks away from the Battery area. Make sure Battery is charged in a well ventilated area.

NEVER lay a metal object on top of a Battery. A short circuit can result.

Battery acid is harmful to skin and fabrics. If acid spills, follow these first aid tips:

1. Immediately remove any clothing on which acid spills.

2. If acid contacts the skin, rinse the affected area with running water for 10 to 15 minutes.

3. If acid comes in contact with the eyes, flood the eyes with running water for 10 to 15 minutes. See a doctor at once. NEVER use any medication or eye drops unless prescribed by the doctor.

Neutralize acid spilled on the floor, using one of the following mixtures:

a) 1 Pound (0.5 kg) of baking soda in 1 U.S. Gallon (4 Liters) of water.
b) 1 Pint (0.4 Liters) of household ammonia in 1 U.S. Gallon (4 Liters) of water.

Acid from the Battery can damage the paint and metal surfaces of the machine. Avoid overfilling the Battery cells.

3. Apply a thin coat of clean oil to the new oil filter gasket. Spin tighten. Refill the crankcase with new oil. Follow specifications for type and viscosity of the replacement oil. See Section E - Fuels and Lubrication, in this manual.

4. After new oil has been added, run the Engine at idle speed until the oil pressure gauge indicates oil pressure. Check for leaks at the Filter and Drain Plug. Re-tighten only as much as necessary to eliminate leakage.

If the Engine still will NOT start, consult your nearest authorized Engine dealer.

WARNING
NEVER service the fuel system while you are smoking, near an open flame, with the Engine running or while the engine is hot. Sparks can ignite fumes and/or spilled fuel.

Hydraulic Fluid Replacement (500 Hours or Every Season)
The hydraulic fluid should be replaced every 500 hours, every season or sooner if fluid becomes contaminated.

Stop the Engine and lower all attachments.

Drain the Reservoir (1-1/4" Drain Plug on bottom rear of Reservoir) and replace the Plug. Fill the Reservoir with approved hydraulic fluid ONLY to level of Lower Sight Gauge.

Start the Engine and operate all Cylinders. Raise the Boom and Tool Bar. Run the Wheels and stop Wheels.

Stop the Engine and lower the Boom and Tool Bar to the ground. Fill the reservoir, if needed, only to level of Lower Sight Gauge.

NOTE
Hydraulic System Schematics are included in the Parts Manual.

Exterior Cleaning (As Required)
The machine should be washed (or steam cleaned) whenever excess dirt buildup occurs. Be sure to lubricate all grease fittings after steam cleaning.

Diesel Burner Maintenance

Fig. 1

- Precision Spray burners should be inspected , cleaned, and adjusted every two to three months, or whenever they show intermittent operational problems.
- Start by removing the (2) screws shown in Fig. 1

Fig. 2

- Next (using fine emry paper) remove any dirt, smoke, or corrosion from contact springs see Fig. 2

Fig. 3

- With same emry paper remove any dirt, smoke, or corrosion from contact area of igniter rods, see Fig. 3

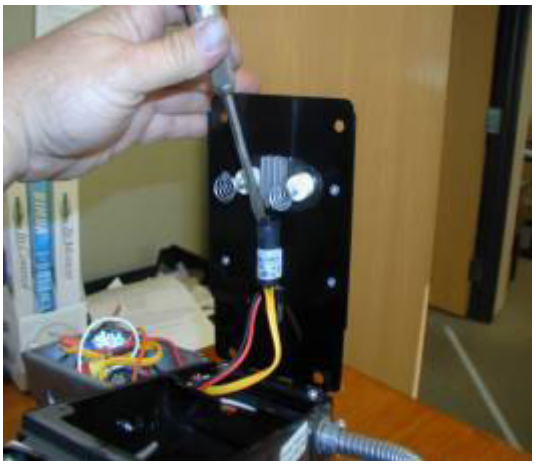


Fig. 4

o Next with clean soft cloth clean lens of photo eye, (glass cleaner may be used if needed, make sure no residue is left on the lense. See Fig. 4

Burner Fuel Air adjustments

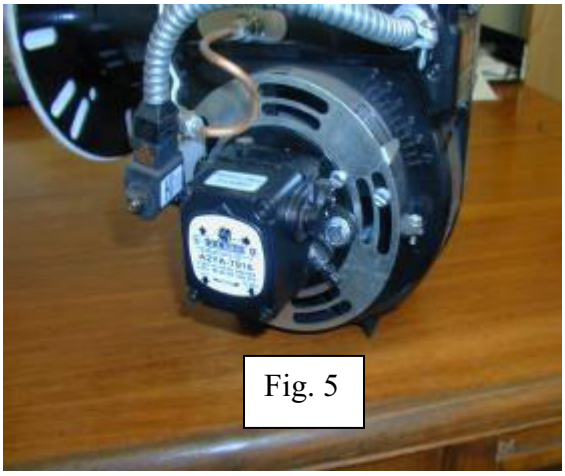


Fig. 5

o Loosten the 4 screws shown in Fig. 5

o Light the burner to be adjusted. (Allow burner to warm up for 1-3 min.)

 Open or close air intake vents to properly control mixture.

o If too much air enters the burners the smoke from the stack will be completely invisable and the burners will become very difficult to light.

o If too little air is provided the smoke from the stack will be heavy and your heating efficency will be low and the excess smoke will create o PSI diesel burners should be inspected , cleaned, and adjusted every two to three months, or whenever they show intermittent operational problems.

o Start by removing the (2) screws shown in Fig. 1

MAINTENANCE LOG

SERVICE EVERY 10 HOURS or DAILY

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Check Fuel Tank Level	Refer to Section E - Fuels & Lubrication or Engine Manual for fuel types
2. Check Engine Oil Level	Refer to Section H – Service
3. Check Radiator Cooling System	Refer to Section H – Service
4. Check Hydraulic Oil Tank Level	Refer to Section H – Service
5. Check Hydraulic System for leaks	Refer to Section H – Service
6. Check Fuel Filter, Drain Water Accumulation	Refer to Section H – Service
7. Lube Grease Fittings	Refer to Section E - Fuels & Lubrication or Engine Manual for fuel types
8. Check Backup Alarm	Refer to Section H – Service
9. Check All Decals	Refer to Section A - Safety for Decal

DATE SERVICE IS COMPLETED					

MAINTENANCE LOG

SERVICE EVERY 40 HOURS or DAILY

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Check Battery Fluid Level and Connections	Refer to Section H – Service
2. Check Fan Belt Tension & Wear	Refer to Section H – Service
3. Check Tire pressure	Refer to Section H – Service
4. Check Wheel Nuts	Refer to Section H – Service

DATE SERVICE IS COMPLETED					

MAINTENANCE LOG

SERVICE EVERY 250 HOURS or DAILY

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Change Engine Oil and Filter	Refer to Section H – Service
2. Inspect and Clean Air Cleaner Element	Refer to Section H – Service
3. Replace Fuel Filters	Refer to Section H – Service
4. Check Fluid in Power Wheel Hubs	Refer to Section H – Service
5. Check Cylinder Attach Bolts/Pin Setscrews	Refer to Section H – Service

DATE SERVICE IS COMPLETED					

MAINTENANCE LOG	
SERVICE EVERY 500 HOURS or DAILY	
COMPONENT & SERVICE REQUIRED	**PROCEDURE, SECTION, TOPIC REFERENCE**
1. Change Hydraulic System Filters & Fluid	Refer to Section H – Service
2. Change Air Cleaner Element	Refer to Section H – Service

DATE SERVICE IS COMPLETED					

MAINTENANCE LOG	
SERVICE AS REQUIRED	
COMPONENT & SERVICE REQUIRED	**PROCEDURE, SECTION, TOPIC REFERENCE**
1. Change Hydraulic Fluid	Refer to Section H – Service
2. Clean (Wash &/or Steam) Exterior Surfaces	Refer to Section H – Service

DATE SERVICE IS COMPLETED					

NOTES:

If the machine will NOT be operated for a long period of time, prepare and store it using the procedures as follows.

BEFORE STORAGE

Perform the following prior to placing the machine in storage:

1. Wash off the entire machine.

2. Lubricate ALL grease fittings as described in Section C - Fuels and Lubrication, in this manual.

3. Change Engine oil as outlined in Section H - Service, in this manual.

4. Apply grease to all exposed hydraulic Cylinder Rod areas.

5. Disconnect the Battery Cable Clamps and cover the Battery or remove the Battery from the machine and store it separately.

6. If the ambient temperature (at ANY time during the storage period) is expected to drop below freezing, make sure the Engine coolant is either completely drained from the Radiator and Engine block or that the amount of anti-freeze in it is adequate to keep the coolant from freezing. Refer to the separate Engine manual provided for anti-freeze recommendations and quantities.

7. Preferably, store the machine inside where it will remain dry. If it MUST be stored outside, park it on lumber laid on flat, level ground or on a concrete slab and cover the machine with a tarp.

DURING STORAGE

1. About once each month, connect the Battery and check ALL fluid levels to make sure they are at the proper level BEFORE starting the Engine.

NOTE
If the Hydraulic Cylinders are operated at this time, BE SURE to wipe the protective grease (and any adhering dirt) from the Cylinder Rods BEFORE starting the Engine. After operating, BE SURE to recoat the Cylinder Rods with grease if the machine is going to be returned to storage.

Calder Brothers Corporation
Model: Precision Spray Asphalt Distributor

2. Start the Engine and allow it to run until it warms up, and then move the machine a short distance to help re-lubricate the internal parts. Run the Engine until the Battery has a chance to recharge and then shut it off.

AFTER STORAGE

After removing the machine from storage and BEFORE operating it, perform the following:

1. Change Engine oil and Filter to remove condensation or other residuals.

2. Wipe off grease from Cylinder rods.

3. Lubricate ALL grease fittings.

4. Review and re-familiarize yourself with all safety precautions as outlined in Section A - Safety, in this manual.

5. Follow the starting and warm-up procedures as outlined in Section D - Operation, in this manual.

NOTES:

MAULDIN
BY CALDER BROTHERS

PARTS MANUAL

MODEL Precision Spray 2000-3500

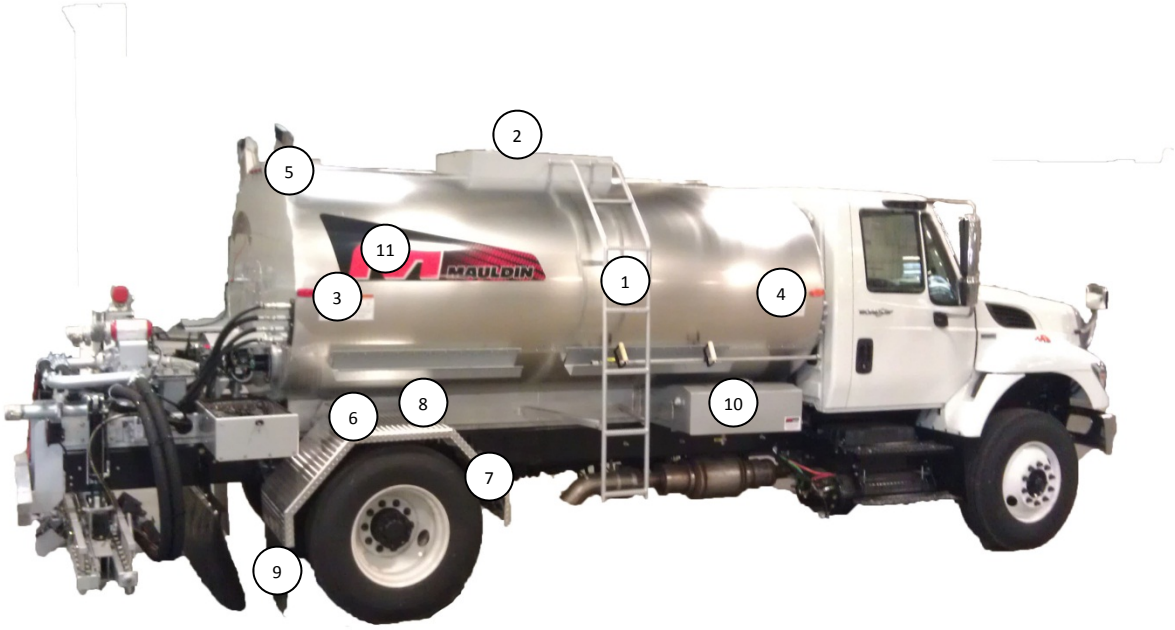
Covers Serial Number Range:

600-K-P2C---S--02600 Through _____

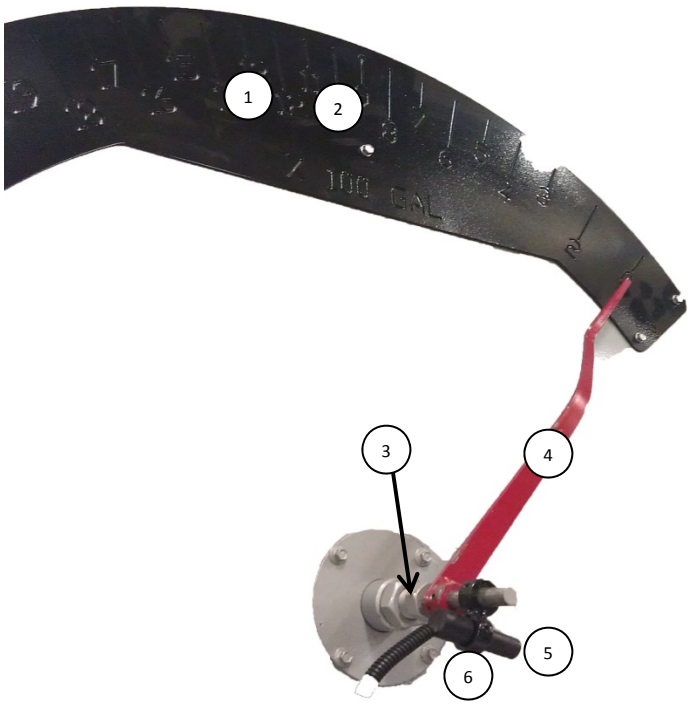
SOLD & SERVICED BY

QUICK ORDER PAGE

Nozzle Assembly w/ I bracket 123503-1
Nozzle Assembly w/ V bracket 123503
Spray valve body 124400
Spray valve gasket 123494
Spray valve poppet 123582
Spray valve nut 123494
Nozzle #1 Stamped: 95/50 123484
Nozzle #0 Stamped:95/30 123484-0
Nozzle #00 Stamped:95/15 123484-1
Nozzle #1.5 Stamped: 95/60 123484-15
Nozzle #2 Stamped: 95/80 123484-2
Nozzle #3 Stamped: 95/100 123484-3
Nozzle #4 Stamped: 40/15 123484-4
Potentiometer 123753
Asphalt pump motor PPU 124446-1
Valve, 2 way 3” valve 123485
Valve, 2 way 4” valve 124452
Valve 3 way 123486
Gasket 4” 124448
Gasket 3” 123327
Gasket Asphalt pump (square) 123-123745
Norgren 3 station air valve assembly 017-0203
Norgren 3 station individual valve section 017-0203V
Norgren 3 state cable 017-0203-9C
Norgren 7 station air valve assembly 017-0204
Norgren 7 station individual valve section 017-0204V
Norgren 7 station cable 017-0204-15C
Dial Thermometer 123480
Spray bar spring trigger 123599
Burner assembly complete 130320
Asphalt pump gasket (internal) 011-0253-2
Nozzle wrench 123557
Potentiometer cable 010-0570
Burner Thermostat 123715
Mercury Switch 020-0036
3” cam lock Cap 124439-1
Valve air actuator large 123465
Valve air actuator small 123711

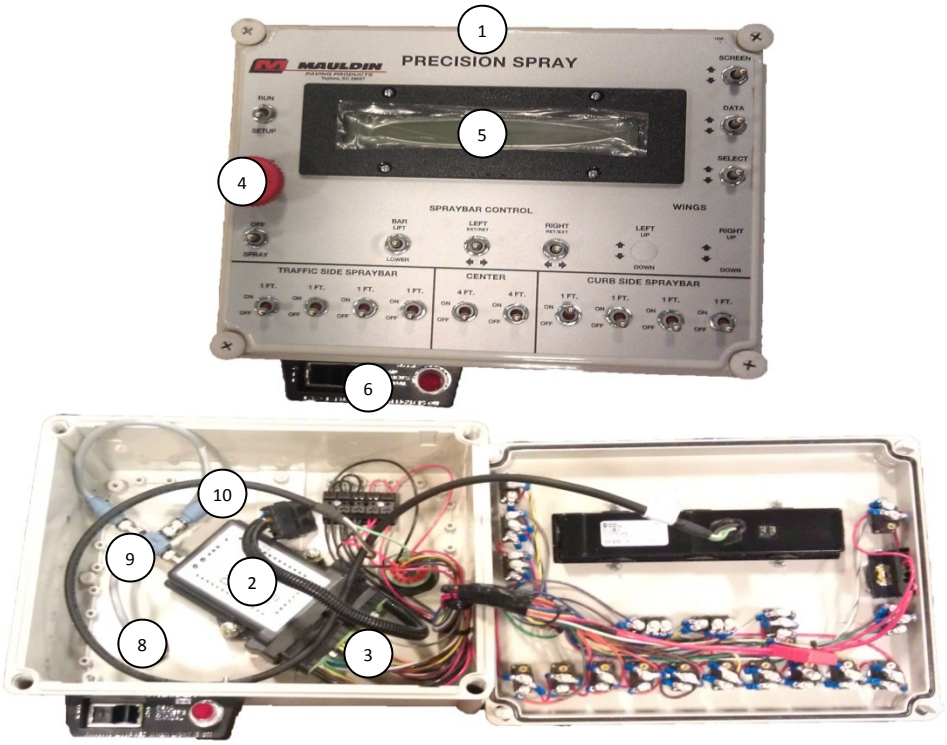


1. Ladder assembly 122-123902
2. Manhole cover assembly 123305
3. Clearance light red 123013
4. Clearance light amber 123014
5. 3 bulb light red rear 123012
6. Fender 124275
7. Fender support 122-308234
8. Fender mount 122-308230
9. Mud flaps 123140
10. Wash down tank 122-308120
    - Washdown tank cap 050-0522
11. Decal Right hand 024-0135
    - Left hand 024-0136



1. Contents gauge Rear (standard) 123378-G
    - Contents gauge Rear (metric) 123378-L
2. Contents gauge Front (standard) 123379-G
    - Contents gauge Front (metric) 123379-L
3. Contents nut gland 123-123329
4. Contents needle 122-123377
5. Mercury switch 020-0036
6. Mercury switch clip (mount) 020-0076

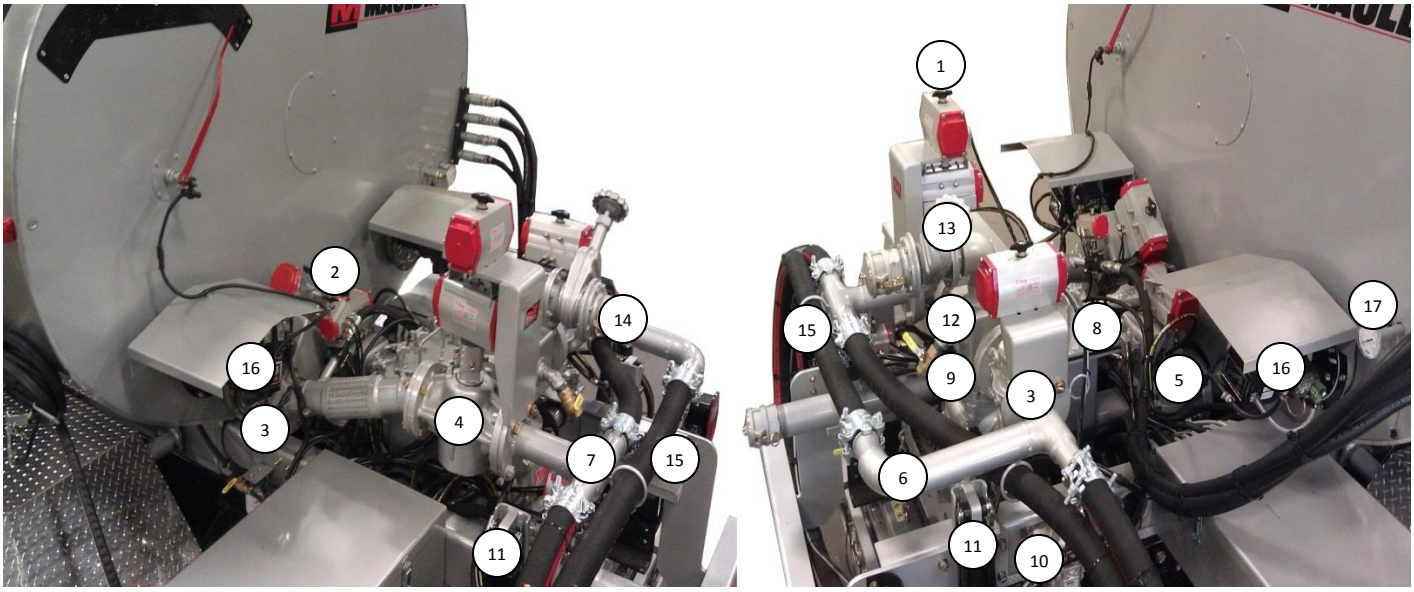
1. Diesel burner fuel tank 122-308130
    - Tank cap 050-0522
    - Sight gauge 060-066
2. Hydraulic tank..... 122-308140
    - Tank cap 060-0069
    - Sight gauge 060-0066
3. Tool box/compartment (optional equipment)..... 050-0780
    - Tool box mount R 123-308410
    - Tool box mount L..... 123-308411
4. Clearance light red 123013
5. Clearance light amber 123014
6. Fender 124275
7. Fender support..... 122-308234
8. Fender mount 122-308230
9. Mud flaps, fender mounted 123140
10. Manhole cover assembly..... 123305
11. Decal Left hand..... 024-0136
    - Right hand 024-0135



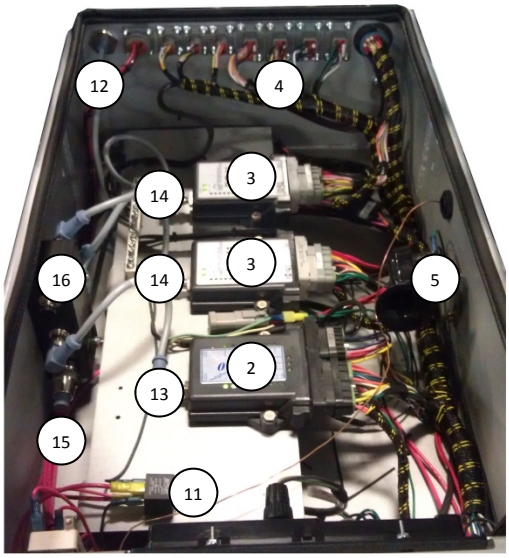
1. Box enclosure 123712
2. DVC22 computer 123701-11
3. Harness 010-0692
4. Emergency stop button 123714
    a. E stop coupling 123714-1
    b. E stop contact 123714-2
5. Display screen 123701-04
6. PTO controller 124111-1
7. Harness to rear control box (not shown) 010-0572
8. Cable eurofast bulkhead 122425
9. Eurofast connection Tee 122427
10. Resistor Eurofast connector 122428

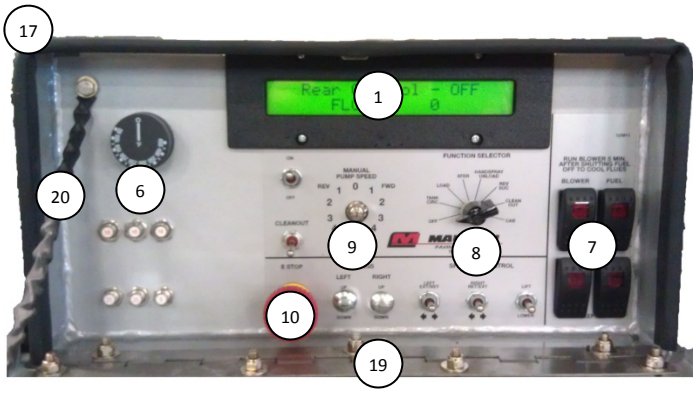
Toggles

020-0405	020-0395
Traffic Side	Bar lift
Curb Side	Left Ext
Center	Right Ext
Run/Setup	Select
	Data
	Screen
	Off/Spray
	Wing Left
	Wing Right



1. Air actuated valve (large) 123465
2. Air actuated valve (small) 123711
3. Valve 3” 2 way (2x) 123485
4. Valve 3” 3 way 123486
5. Valve 4” 2 way 124452
   - Actuator mount 2 way valve bar feed/return valve 122-123654
   - Actuator mount 3 way valve 122-124420
   - Actuator mount tank supply 122-123625
6. Elbow weldment 122-125413
7. Tee weldment 122-125415
8. Strainer box weldment 122-125401
   - Strainer basket 122-125430
   - Strainer box lid 122-125407
9. Asphalt pump 123477-p
10. Asphalt pump motor 124404
    - Sensor pulse wire 124446-1
    - Motor coupler 125422
11. Spray bar lift cylinder 012-0008
    - Cylinder pin kit 012-0028
12. Junction box 122-125410
13. Gate valve 3” 123408
14. Cam lock coupler 124438-1
    - Cam lock plug 124439-1
15. Hot asphalt hose 123564
    - Asphalt hose clamp 123566
16. Diesel burner 123459
17. Thermometer 3” 123480
18. Solenoid diesel breather (not shown) 123713-1





1. Display screen 123701-04
2. DVC10 computer 123701-02
3. DVC 41 computer 123701-03
4. Harness 010-0565
5. Horn 020-0410
6. Switch & Capillary Tube (no knob) 123715
   - Knob 123715C
   - Sensor Packing Kit 123715-1
7. Rocker switch 020-0236B
8. Selector switch 124417-1
9. 1 turn potentiometer 124420
10. Emergency stop button 123714
    - E stop coupling 123714-1
    - E stop contact 123714-2
11. Relay E0141
12. Cable minifast bulkhead 122429
13. Cable, eurofast-eurofast .3M 122433
14. Cable, eurofast-eurofast .5M 122432
15. Resistor connector minifast 122431
16. Eurofast junction box 122430
17. Trim lock 015-0308
18. Door (not shown) 123-123
19. Hinge 123-622584
20. Chain 015-0178
21. Box lid (not shown) 123-123721

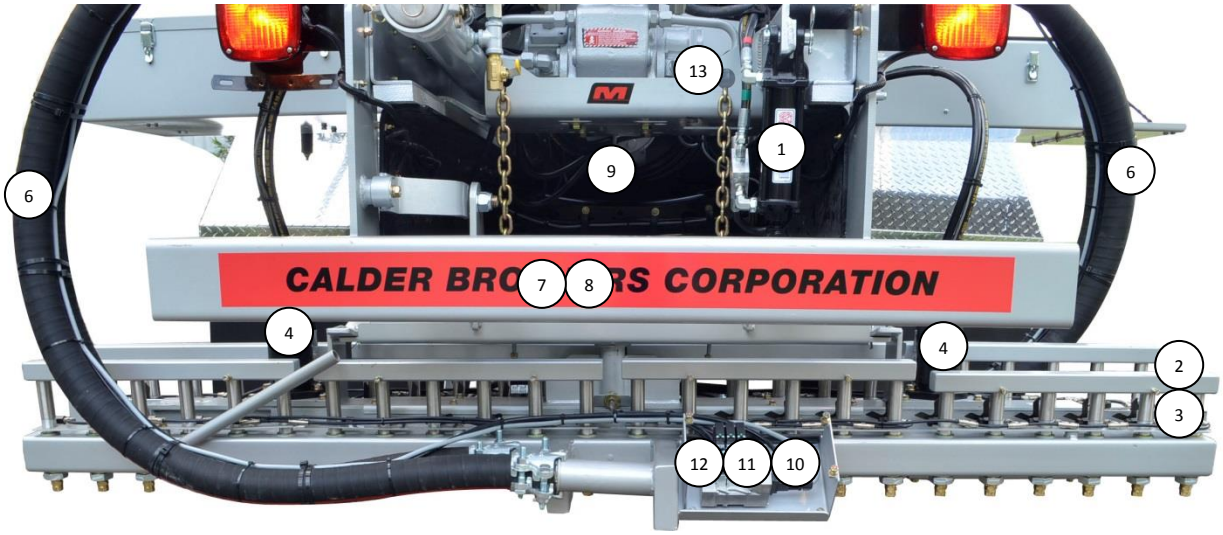
Toggles

Part Number	**020-0423**	**020-0405**	**020-0395**
Function	Clean out	On/off	Left/Right Ext
			Lift/Lower

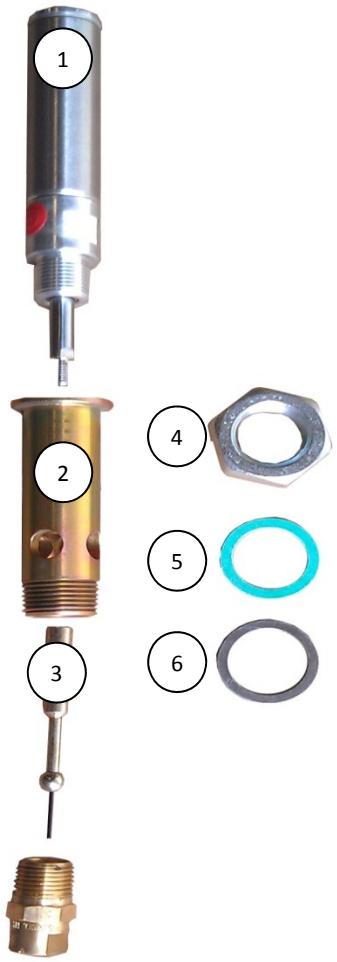
Circuit Breakers

Part Number	**E0128-1**	**E0128-2**	**E0128-3**
Circuit breaker	15 amp	5 amp	25 amp

1. 7 Bank Vale assembly..... 017-0204
    - Individual Valve Sections 017-0204V
2. Air valve harness..... 017-0204-15C
3. Hydraulic manifold..... 017-0212
4. Hydraulic harness..... 010-0568



1. Lift cylinder 012-0008
    - Pin kit 012-0028
2. Spray nozzle spacing block 122-124714
3. Nozzle retaining bar “comb” 123-123516
4. Hydraulic motors 124404
5. Potentiometer (Not Shown) 123753
    - Harness 123753-HARNESS
    - Threaded rubber mount 050-0214
6. Hot asphalt hose 123564
    - Hose clamp 123566
7. Bumper 122-123106
8. Decal “Calder Brothers Corp.”(not shown) 024-0156
9. Gear rack (not shown) 123-123542
    - Gear 015-123487
10. Air valve box 122-308298
    - Air valve box lid 123-308304
11. 3 Bank Valve Assembly 017-0203
    - Individual Valve section 017-0203V
12. Air valve, wire harness 017-0204-15C
13. Asphalt pump hydraulic motor 124446-B
    - Pulse pick up 124446-1
14. Air Valve Actuator (not shown) 121-123595



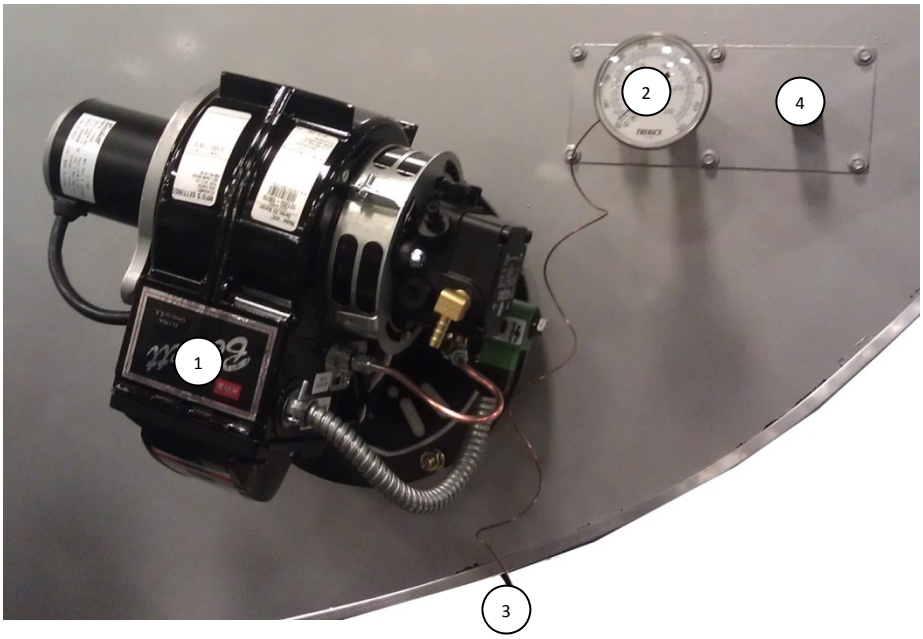
1. Air cylinder 124400
2. Body sleeve 123581
3. Poppet 123582
4. Nut 123555
5. Gasket 123494
6. Washer 123492

Nozzle guide

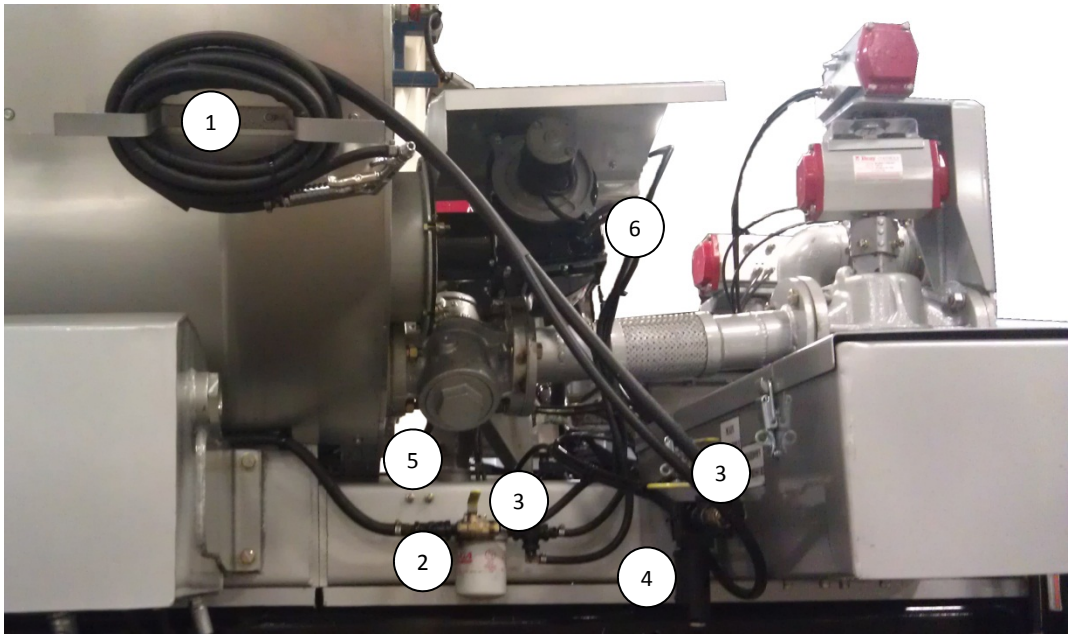
Size	Stamped Marking	Gallon per min**	GAL/SQ YD	Part #
00	15/95	1.2	.03-.08	123484-1
0	30/95	3	.05-.20	123484-0
1	50/95	4	.10-.30	123484
1.5	60/95	6	.15-.40	123484-15
2	80/95	8.5	.25-.55	123484-2

**based on pressure of 35psi

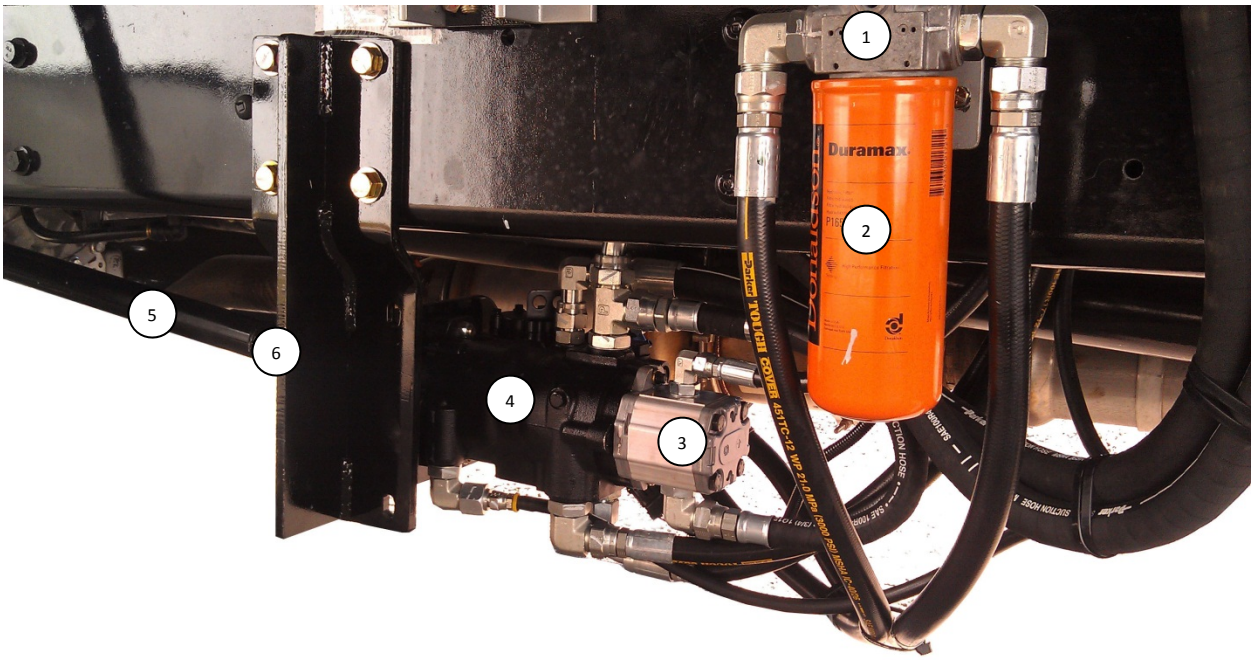
1. 1/8 npt plug 019-0012
2. Str. ¼ x ¼ npt 014-0439
3. 90° ¼ x 1/8 npt 014-0606
4. T ¼ x ¼ x ¼ 014-0607
5. Ball valve 123490
   - Ball valve w/ butterfly actuator 123491
6. ¼ in tubing 014-0440
7. Spray nozzle trigger 121-123595



1. Diesel Burner assembly..... 130320
    - SDC motor kit..... 123459-1
    - ADC motor kit 130320-1
    - Igniter..... 123459-16
    - Coil 12v..... 130320-11
2. Dial Thermometer..... 123480
3. Thermostat Capillary Tube ..... See Rear Control Box
4. Pencil Thermometer 123455



1. Hand sprayer 123930
2. Burner filter 123464
    - Mount 123-139341
    - Filter head 123464-2
    - Filter element 123464-1
3. 3/8 ball valve(3x) 122462
4. Air water separator 124402
5. Valve grease fitting(2x) 030-0534
6. Inline Burner Fuel Check Valve(1 per burner) 123464



1. Filter head 021-0233
2. Filter element 220750
3. Hydraulic motor 123462
4. PTO Unit 124115
5. Drive shaft 124121
6. Yoke end 124113
7. Lock cap screw 123122
8. Braided PTO Hose (not shown) 124112

NOTES:

CALDER BROTHERS CORPORATION

(LIMITED) PRODUCT WARRANTY

Calder Brothers Corporation warrants that the Paver or Roller under this program will be free from defects in material and workmanship for a period of (12) twelve months from date of installation. Written notice of any claimed defect must be given to Calder Brothers Corporation within the warranty period and within (30) thirty days after such defect is discovered. Liability under this warranty is limited to replacing or repairing, at Calder Brothers Corporation's election, any part or parts deemed defective after examination by Calder Brothers Corporation or an Authorized Service Representative. Any machine or any of its parts returned by customer to Calder Brothers Corporation or an Authorized Service Representative via prepaid transportation and which is found to be defective will be repaired or replaced and returned to the customer via prepaid surface transportation within the continental United States. Should any part be found not defective, Calder Brothers Corporation or an Authorized Service Representative may charge inspection and handling to the customer.

EXCLUSIONS:
This warranty does not apply to routine wearable parts of Mauldin machines such as seals, points, plugs, hoses or similar items. This warranty does not extend to any machine or part replaced or repaired under this warranty. This warranty does not cover any repair or replacement labor of any part or parts found defective after examination by Calder Brothers Corporation or an Authorized Service Representative. This warranty does not apply to defects caused by casualty or unreasonable use, including faulty repairs by others and failure to provide reasonable and necessary maintenance.

THIS WARRANTY SET FORTH HEREIN IS IN LIEU OF AND EXCLUDES ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND CUSTOMER WAIVES ANY OBLIGATION OF LIABILITY OF CALDER BROTHERS CORPORATION ARISING IN TORT OR STRICT LIABILITY IN TORT, OR FOR LOSS OR USE, REVENUE OR PROFIT WITH RESPECT TO MAULDIN MACHINE AND/OR PARTS FOR ANY LIABILTIY OF CUSTOMER TO ANY THIRD PARTY, OR FOR OTHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Customer Signature	Date	Selling Representative	Date

Calder Brothers Corporation
250 E Warehouse Ct.
Taylors SC, 29687

4amauldin.com 864-244-4800 Fax 864-244-5007