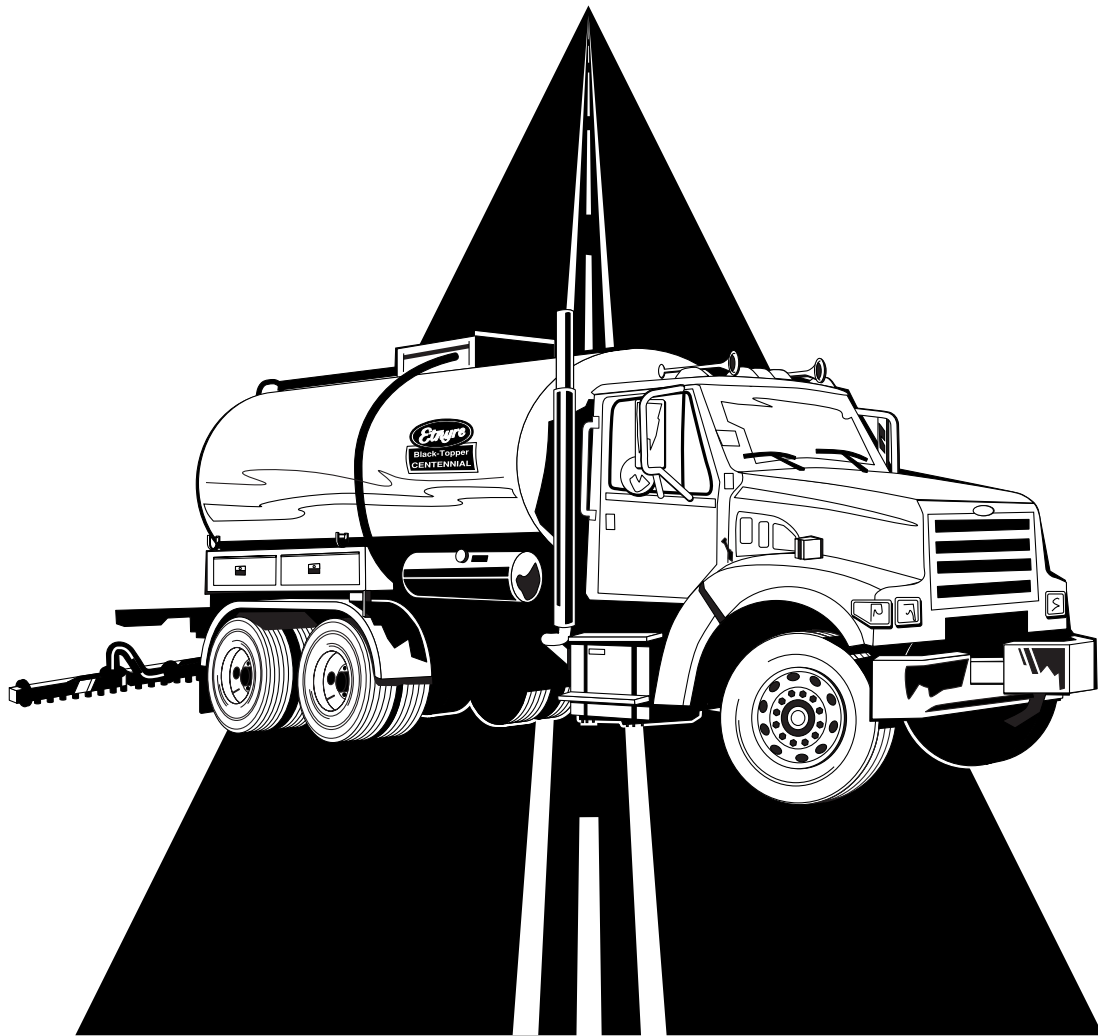


M-104-04R2
Replaces M-104-04R1

Troubleshooting Guide

Asphalt Distributors

For Units with DC2 and S2X Controls



E. D. ETNYRE & CO.

Troubleshooting Guide

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Problem 1

Asphalt Pump will not turn when using Circulation Rate Switch in Front Control Box

- 1) Make sure spray switch in cab is shut OFF.
- 2) Try operating Asphalt Pump with the Rear Pump Control in the Rear Control Box. Adjust Asphalt Pump Speed with the Pump Speed Knob
 - a) Asphalt Pump still will not turn..... go to # 2
 - b) Asphalt Pump turns and the display reads GPM..... go to # 7
 - c) Asphalt Pump turns and display does not read GPM.....go to Problem 5
- 3) Override the Hydraulic Pump manually at the Pump Stroker
NOTE: make sure to move the override in the correct direction, this varies depending on type of pump and input rotation (Asphalt Pump shaft rotation always remains the same ccw)
 - a) Asphalt Pump still will not turn..... go to # 3
 - b) Asphalt Pump turns go to # 6
- 4) Make sure Asphalt Pump is free, turn manually.
 - a) If Asphalt Pump does not turn free..... inspect the Asphalt Pump.
 - b) If Asphalt Pump turns free go to # 4
- 5) Check pressure of Hydraulic Pump, making sure that the pump is coming on stroke
 - a) If pressure is low go to # 5
- 6) Check case drain of Hydraulic Pump and Hydraulic Motor
 - a) repair as needed
- 7) Check the Pump Control Switch (front/rear) in the Rear Control Box
 - a) Check connections at switch
 - b) Check wiring from the Pump Control Switch to Hydraulic Pump Servo (EDC)
Refer to applicable Electrical Schematic
- 8) Check Pump Control Switch (front/rear) wiring circuits
 - a) Check wiring from switch to Front Control Box
 - b) Make sure Master Spray Switch is (Off)
 - c) Check circulation rate switch

Problem 2

Asphalt Pump Surges, Gallon Per Minute (GPM) Fluctuates when circulating in tank

- 1) Circulate in tank using Front Controls and watch display and Asphalt Pump.
 - a) Display fluctuates and Asphalt Pump Surges.....go to # 2
- 2) Set Pump Control to (Rear) in the Rear Control Box and increase the Asphalt Pump Speed using the Pump Control Speed Knob
 - a) Asphalt Pump speed stays steady, but display still fluctuatesgo to # 3
 - b) Asphalt Pump and display are both steadygo to # 4
 - c) Asphalt Pump Surges and display still fluctuates..... go to # 5
- 3) Check GPM Speed Sensor and wiring.
 - a) Check GPM Speed Sensor adjustment (Refer to Problem 5 for proper sensor identification and adjustments)
 - b) Check wiring from GPM Speed Sensor to the Front Control Box. (Refer to Problem 5 for wiring and connection information or applicable Electrical Schematic)
 - c) If wiring checks out (OK).....Replace GPM Speed Sensor
- 4) Check Hydraulic Pump and Hydraulic Pump Servo (EDC)
 - a) Check wiring from Pump Control Switch (front / rear) to the Front Control Box
 - b) Repair as needed
- 5) Check Pump Control Switch in the Rear Control Box
 - a) Check connections at the switch
 - b) Check wiring from the switch to Hydraulic Pump Servo (EDC)
 - c) Repair as needed
 - d) If switch and wiring check out (OK)go to # 4

Problem 3

Asphalt Pump Surges while spraying

- 1) Make sure engine (RPM) does not exceed 1800 while spraying; this could put the mechanical ability of the pump at maximum. This will cause the computer to overcompensate and create a pulsing or surging effect.
- 2) Check Feet Per Minute (FPM) reading on display while the distributor is moving
 - a) Reading fluctuates (+ or -) 20 FPM go to #3
 - b) Reading is steady go to Problem 2
- 3) Check Radar Head and wiring
 - a) Make sure radar head does not have any moisture inside lens or housing
 - b) Check wiring and connections from Radar Head to Front Control Box (Refer to Problem 6 or applicable Electrical Schematic)
 - c) Replace Radar and Calibrate to ensure accuracy (Refer to Problem 6)

Problem 4

When trying to spray, Little or No Asphalt comes out of the Spray Bar

Note: make sure you have the air supply turned (On) and you have air pressure in the system

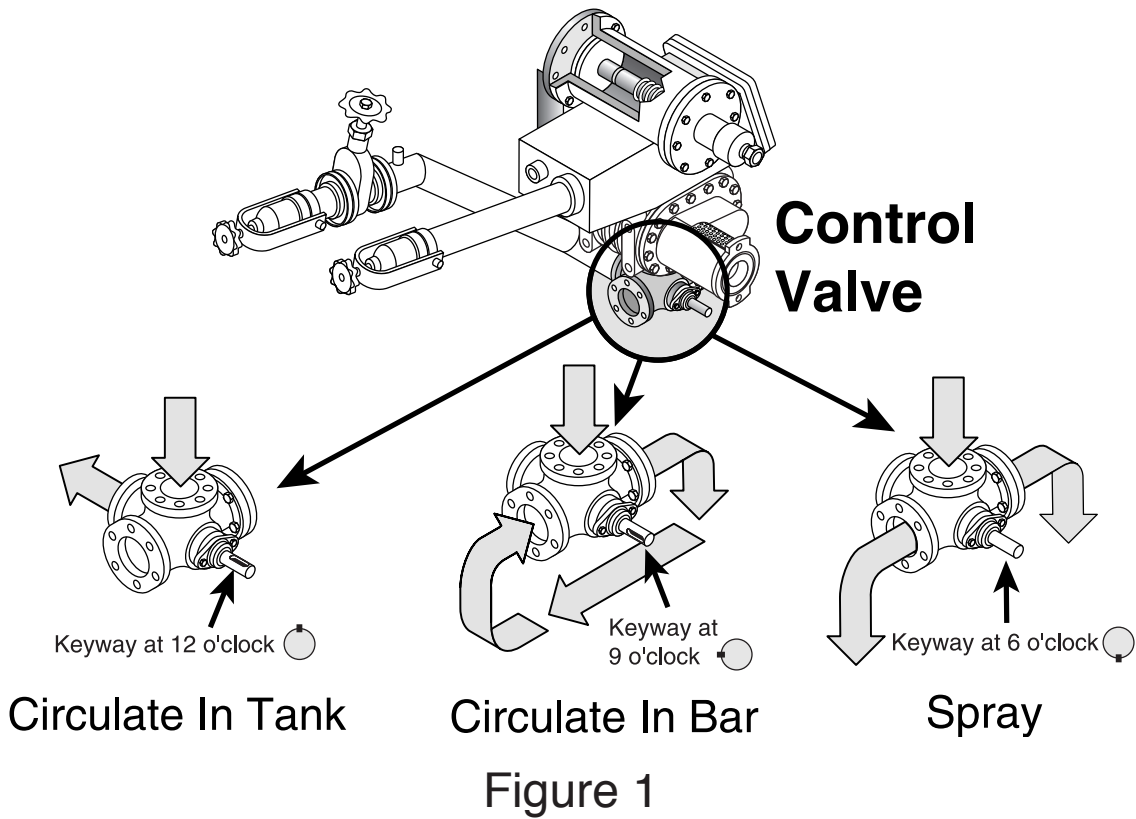
- 1) Make sure 4-way Valve is in Circulate in Bar position (keyway at 9 o'clock) with Master Spray Switch (Off). Refer to Figure 1 & 2
- 2) With Master Spray Switch (On) 4-way Valve should rotate to the 6 o'clock position. Refer to Figure 1 & 2
 - a) 4-way Valve does not move to 6 o'clock positiongo to # 3
 - b) 4-way Valve moves to 6 o'clock positiongo to # 6
- 3) Check Mac Valve Asm that controls 4-way Air Cylinder or Rotary Actuator
 - a) Override Mac Valve, If Cylinder or Rotary moves.....go to # 4
 - b) If Cylinder or Rotary does not movego to # 5
- 4) Check voltage and wiring at Mac Valve and back to Master Spray Switch
 - a) Check voltage at the Mac Valve Coil (12VDC)
 - b) Check to make sure there is a good ground at the Mac Valve Coil
 - c) Check voltage (12VDC) across the Master Spray Switch. Refer to applicable Electrical SchematicRepair as needed
- 5) Check air supply from mac valve to Air Cylinder or Rotary Actuator
 - a) Repair air leak
 - b) Replace Cylinder or Rotary
 - c) Replace Mac Valve
 - d) Free up 4-way Valve
- 6) Check to see if Nozzles open and Asphalt Pump is turning
 - a) Asphalt Pump is turning, but nozzles do not open.....go to # 7
 - b) Nozzles open, but Asphalt Pump does not turngo to # 8
 - c) Asphalt Pump turns and Nozzles opengo to # 10

Problem 4 (continued)

- 7) Check Spray Delay Switch mounted on the 4-way Valve (S-2000) or Spray Delay setting in the Computer Set-up (Centennial)
 - a) Check adjustment of Spray Delay Switch (1/4" in clearance) in Spray mode-----Spray Delay setting (0.2) seconds
 - b) Check Spray Delay Relay in the Rear Control Box (S-2000 and Earlier Centennial) Units with purchased wiring harnesses the Relay is mounted in the Front Control Box
 - 6 VDC Relay(S-2000) Relay terminal **A** has (12VDC)
Terminal **B** is grounded through the Spray Delay switch
 - 12 VDC Relay (Centennial) Terminal **A** gets (12 VDC) from Computer. (Packard 18 pin F-2)
Terminal **B** is grounded
 - c) Made sure ground from terminals 7, 8 and 9 are going to Mac Valves.
 - d) Made sure all 1 Ft Control Switches are (On) and you have (12 VDC) at the Mac Valves
- 8) Check to see if the Asphalt Pump turns with the Master Spray Switch (Off) while circulating oil
 - a) If Asphalt Pump does not turn go to Problem 1
 - b) If Asphalt Pump turnsgo to # 9
- 9) Check Radar Head:

	Dickey John	RDS
12 VDC		Red
Brown		
Ground	Black	Blue
4-7 VAC (when moving)	Green	Yellow / Green

Repair or replace as needed
- 10) Check Suction Valve and Suction Box Asm
 - a) Make sure Suction Valve is (Open) check Mac Valve and Suction Valve Switch
 - b) Check Suction Box Strainer, it could be plugged starving the Asphalt Pump for material
 - c) Check for something inside the Tank blocking the Suction Valve and starving the Asphalt Pump
 - d) Check for broken 4-way Valve shaft



Timing Adjustment of Actuators

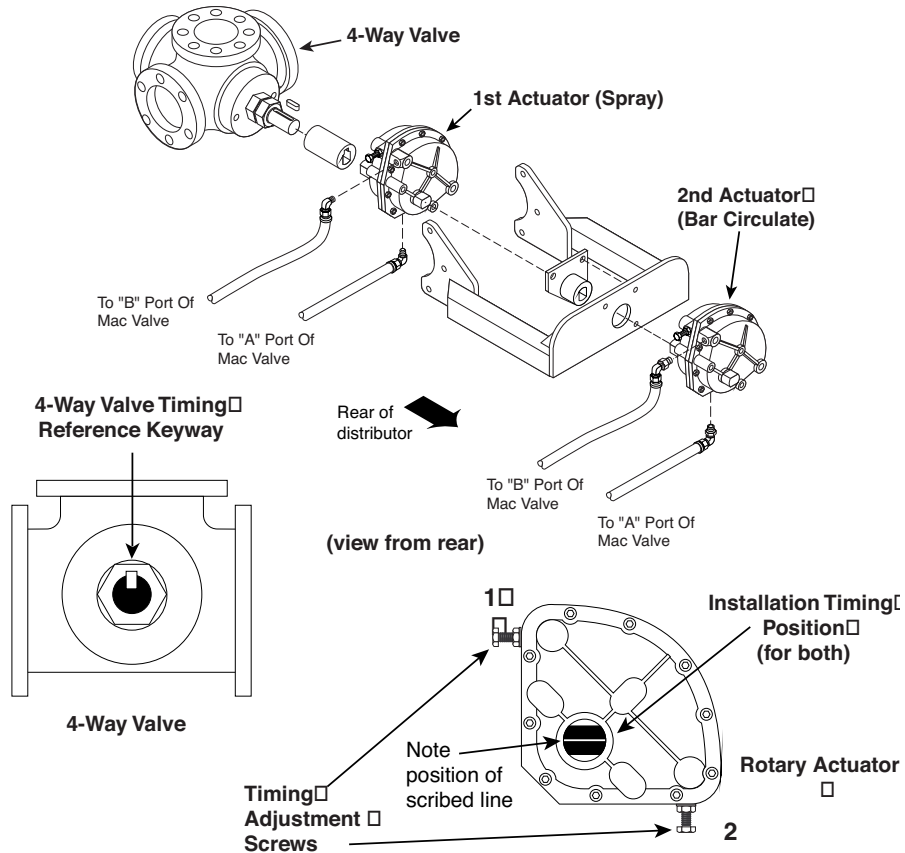


Figure 2

Problem 5

No Gallon Per Minute (GPM) reading on Display while Asphalt Pump is turning

- a) Check to make sure gear is turning
- b) Check GPM Speed Sensor adjustment (1/16" clearance)
 - * If 6702531 GPM Speed Sensor is used, make sure reference mark is properly in-line with gear (Refer to Figure 3)
 - * If 3370323 GPM Speed Sensor is used (Refer to Figure 4 for installation instructions)
- c) Check wiring from GPM Speed Sensor to the Computer. (sensor unplugged)
 - 12 VDC system (2002 and before)
 - Red wire 12 VDC
 - Black wire Ground
 - White wire Signal
 - (Check voltage across the white and black wires 9-10 VDC)
 - Bare wire Shield
 - 5 VDC system (2002 and after)
 - Red wire 5 VDC
 - Black wire Ground
 - White wire Signal
 - (Check voltage across the white and black wires 4 VDC)
 - Green wire Shield (could also be a bare wire)
- d) Check GPM Speed Sensor (plugged into harness)
 - 12 VDC system (2002 and before)
 - Red wire 12 VDC
 - Black wire Ground
 - White wire 4-7 VAC (with gear turning)
 - Bare wire Shield
 - 5 VDC system (2002 and after)
 - Red wire 5 VDC
 - Black wire Ground
 - White wire 2-4 VAC (with gear turning)
 - Green wire Shield
- e) Repair or replace sensor as needed

Refer to Figure 3 to correctly identify the type of sensor that you have

GPM Speed Sensors (Mag Pick-ups)

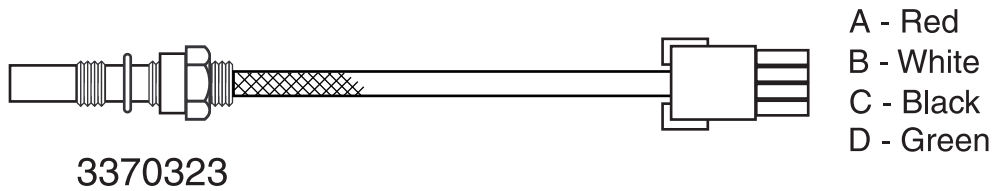
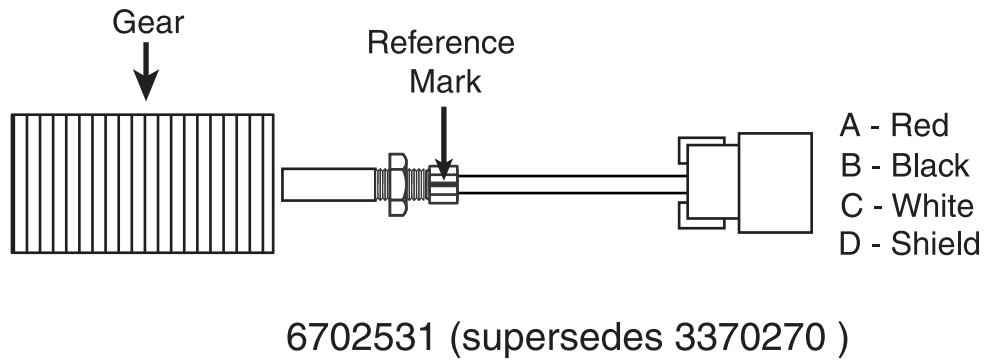
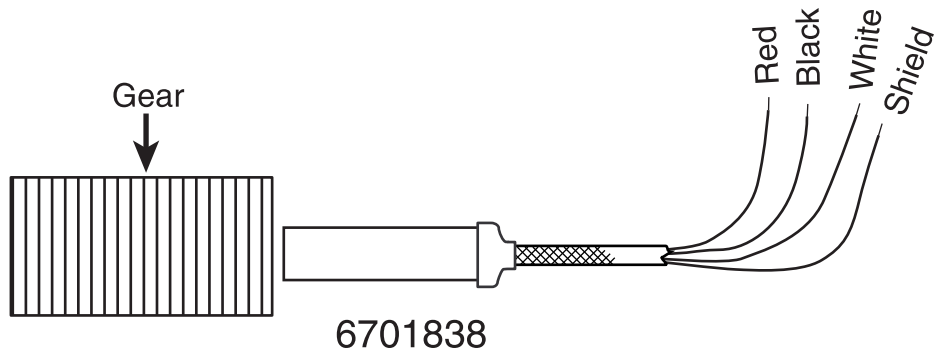
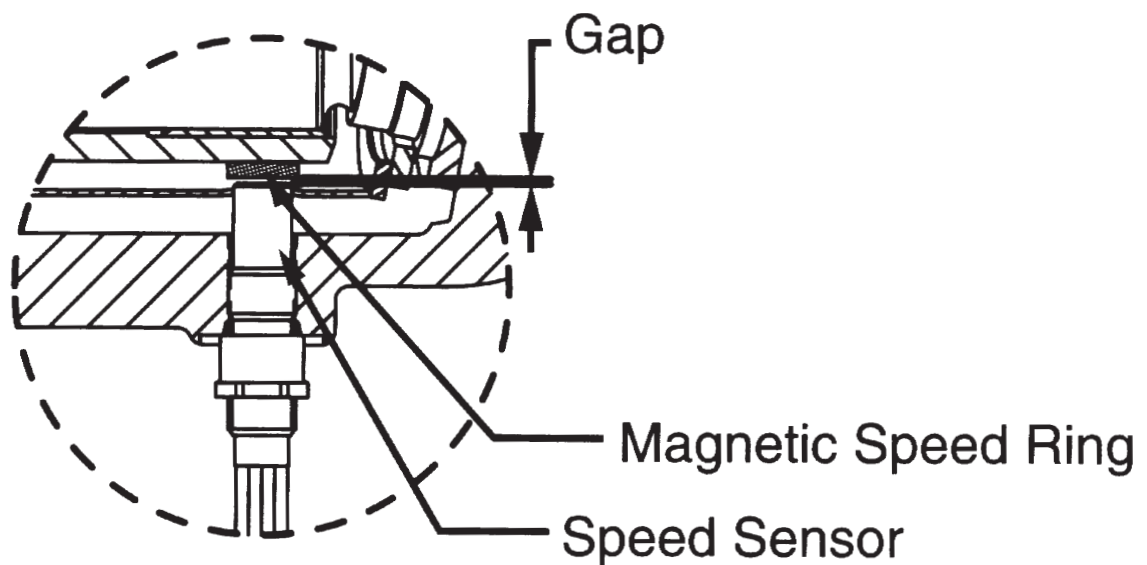


Figure 3

Adjusting and installation procedure for # 3370323 GPM Speed Sensor

1. Loosen locknut and remove the old GPM Speed Sensor
2. Turn in the new GPM Speed Sensor clockwise by hand until the bottom end gently touches the internal speed ring
3. Back the GPM Speed Sensor out counter clockwise 1/2 to 3/4 turn
4. Using a 1/2 inch wrench to hold the speed pickup, torque the locknut to 10 lb-ft (13Nm) with an 11/16 inch wrench



Cross Section View of Speed Sensor in fixed Motor

Figure 4

Problem 6

No Feet Per Minute (FPM) reading on Display while Distributor is moving

1) Check Radar Head mounting: (Refer to Figure 5)

Dickey John	34 to 35 degrees.
RDS	52 degrees.

a) Check wiring from Radar Head to Computer.

b) Check Radar Head wiring and connections:

Dickey John	Red wire	12 VDC
Black wire	Ground	
Clear wire	4 - 7 VAC	while moving
RDS	Brown	12 VDC
Blue	Ground	
Yellow/Green	4 - 7 VAC	while moving

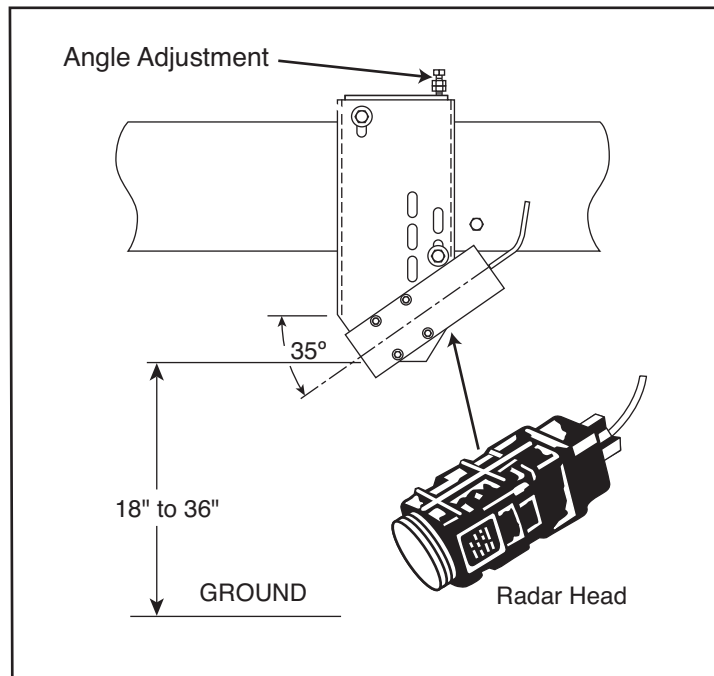


Figure 5

Problem 7

One or Both Spray Bar Wings will not turn on

- 1) Make sure 1 Ft Control Switches are turned (On) at the Front Control Box
 - 2) Check Mercury Switches (position activating) located out on the Spray Bar at the folds
 - 3) Check Spray Delay Relay inside the Rear Control Box. (Newer Centennial models the Spray Delay Relay is located inside the Front Control Box)
 - 4) Check wiring from Mercury Switch to Spray Delay Relay and also to the Mac Valves.(this is a ground circuit)
 - 5) Check voltage at the MacValves. When the 1Ft Control Switches are turned (On) there should be 12VDC supplied to the Mac Valve Coils
 - 6) Check wiring from Mac Valves to Front Control Box
- Repair and replace as needed

Problem 8

Distributor Sprays Lighter than Application Rate

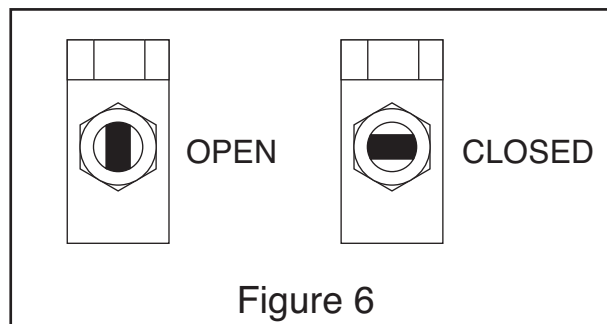
- 1) Check RPM of Asphalt Pump ($\text{RPM} \times .61 = \text{GPM}$) see if it matches the GPM reading on the display in the Front Control Box
 - a) If OKgo to # 2
 - b) If not OK.....go to # 7
- 2) Check with Computator (slide rule) to see if Asphalt Pump GPM is correct with the # of feet of Spray Bar selected, the Application Rate and the FPM
 - a) If the GPM is correctgo to # 3
 - b) If the GPM is not correctgo to # 8
- 3) Check to see if 4-way Valve is in time (Refer to Figure 1 & 2)
 - a) If 4-way Valve is not in time.....Repair and adjust
 - b) If 4-way Valve is in time go to # 4
- 4) Check to see if Suck Back Valves are closed (close if needed) Refer to Figure 6
 - a) If closed, check to make sure center shaft is not loose in ball.
 - b) If wornrepair as needed
 - c) If OKgo to # 5
- 5) Check Suction Box Strainer, it could be plugged starving Asphalt Pump for material
 - a) If plugged, clean or replace
 - b) If strainer is OKgo to # 6
- 6) Check Suction Valve and Tank Outlet
 - a) Suction Valve operation
 - b) Restriction in Tank or Suction Valve
- 7) Check GPM Speed Sensor, gear and Computer setup
 - a) GPM reading on display (fluctuating)
 - b) Gear – make sure it is not slipping
 - c) Check Computer set-up screens (flow factor - pulses/gal adjust)
- 8) Check radar reading
 - a) Check Radar Head angle (Refer to Figure 5)
 - b) Calibrate the Radar Head (adjust angle to get correct # of Feet)

Problem 9

Distributor Sprays Heavier than Application Rate

- 1) Check RPM of Asphalt Pump, ($\text{RPM} \times .61 = \text{GPM}$) see if it matches the GPM reading on the display in the Front Control Box
 - a) If OKgo to # 2
 - b) If not OK.....go to # 4
- 2) Check with Computator (slide rule) to see if Asphalt Pump GPM is correct with the # of feet of Spray Bar selected, the Application Rate and the FPMgo to # 3
- 3) Check Radar Head
 - a) Check angle
 - b) Calibrate Radar Head (adjust angle to get correct # of Feet)
- 4) Check GPM Speed Sensor and gear
 - a) GPM Speed Sensor adjustment and wiring. (Refer to problem 5 and Figures 3 & 4)
 - b) Sensor geargo to # 5
- 5) Check Computer set-up screen

Flow Factor should be set at (1000) – the lower the number, the heavier it will spray



Flow Factor.

Flow Factor is normally set at (1000). The lower the number is set, the heavier it will spray. The higher the number is set, the lighter it will spray.

<i>Pulses/Gallon Adjust</i>	
S-2000 Distributor	131 pulses/gal
Shooter Distributor	65 pulses/gal
Centennial Distributor w/2 speed Hydraulic Motor	65 pulses/gal
Centennial “Next Generation” Distributors	
42 series w/1.53 cc Hydraulic Motor part # 6603157 (standard production)	309 pulses/gal
90 series w/2.69 cc Hydraulic Motor part # 6603173 (torque)	331 pulses/gal
90 series w/1.53 cc Hydraulic Motor part # 6603157 (speed/volume)	309 pulses/gal
90 series w/2.1 cc Hydraulic Motor part # 6603219 (torque/speed-standard production)	331 pulse/gal
Shooter II Distributors	164 pulses/gal

Figure 7

Problem 10

Auxillary Hydraulics do not function

- 1) Check to see if all of them are not working.
 - a) All of them not workinggo to # 2
 - b) One or more workinggo to # 6
- 2) Check Hydraulic Pressure on system.....repair as needed
 - a) Pressure OKgo to # 3
- 3) Check Dump Valve.
 - a) Check for voltage on coil while trying to operate a function (12 VDC)
 - b) If no voltagego to # 4
 - c) If 12 voltsgo to # 5
- 4) Check Dump Valve system
 - a) Check wiring
 - b) Check for (12 VDC) in side Front and Rear Control Boxes at Function Switches 1 side/ circuit of the switch operates the function the other side/ circuit of the switch operates the Dump Valve
- 5) Check ground at Dump Valve
 - a) See if Dump Valve is operating.....repair or replace as needed
- 6) Check for voltage at Hydraulic Spool Coils (12 VDC)
 - a) Check voltage at switches (12 VDC)
 - b) Check wiring from the coils to the Function Switches
 - c) Check ground at coils

Repair or replace as needed
- 7) Check Hydraulic Hoses and Cylinders and repair or replace as needed

Problem 11

Material will not Suck Back in the Spray Bar

- 1) Run Asphalt Pump at 200 GPM and check for vacuum at fill line.
Install a vacuum gauge in fill line cap (1/4 NPT fitting available)
Have the Front Controls set to Load / Suck Back (Centennial) Rear
Controls set to Circulate in Tank, with Suction Valve closed (S2000)
and Suck Back Valves closed
 - a) Gauge shows vacuum, (5 in. minimum)go to # 2
 - b) No or low vacuum.go to # 5
- 2) Leave vacuum gauge in fill cap and open Suck Back Valves
 - a) Gauge still shows vacuum.go to # 3
 - b) No or low vacuum on gauge.....go to # 6
- 3) Open one nozzle near top of each wing
 - a) No suction at bar and fill line cap gauge shows vacuum.go to # 4
 - b) Good suction.....go to # 7
- 4) Check Suck Back Valves
 - a) Make sure valves are opening (the balls inside are moving)
 - b) Check timing of linkage (if equipped) Refer to Figure 6
 - c) Check for a restriction between Suction Box and drop tubes
 - d) Repair as needed
- 5) Pour about 1 quart of oil in fill line and reinstall fill cap with gauge
Run asphalt pump at 200 GPM and check vacuum reading
 - a) Good vacuum and holds it. Pump was probably dry. Retest system
 - b) No or low vacuum. Check for leaks in suction system. (Repair as needed)
 - c) No or low vacuum. Check condition of asphalt pump. (Repair as needed)
- 6) Check for a vacuum leak in the Spray Bar system. (Repair as needed)
- 7) Check Suck Back tube located inside the drop tubes. (Repair as needed)



Something Wrong with this manual?

If you find inaccurate or confusing information in this manual, or just have a suggestion for improvement, please let us know.

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Page Number	Reference Number	Paragraph Number	Figure Number	Problem (please be specific)

