TROUBLE SHOOTING GUIDE

DIAPHRAGM PUMP

PROBLEM	SOLUTION
Loss of Operating Pressure	1 Plugged suction filter 2 Air leak on suction side a. Defective o-ring b. Pin hole in hose c. Crack in plastic fitting 3 Plugged or partially plugged suction tube (inside tank) 4 Self-cleaning filter cone contains fluid 5 Self-cleaning filter screen plugged 6 Self-cleaning filter cone stuck 7 Defective constant pressure seats 8 Defective o-ring in Hardi-matic valve 9 Excessive return fluid causing turbulence around suction tube 10 Agitaion nozzle (inside tank) fallen off 11 Foreign material lodged in pop-off valve 12 Defective gauge 13 In-line filters plugged 14 Low fluid level in tank 15 Foreign material lodged in pop-off valve 16 Defective pump valves
Pump is slow to prime	1 Air leak on suction side 2 Suction filter plugged 3 Agitation bypass valve in wrong postion 4 Suction tube jammed into sump (Nav 1000) 5 Suction tube plugged 6 Defective o-ring in Hardi-matic valve 7 Foreign material lodged in pop-off valve 8 Foreign material lodged in pump valves 9 Defective pump valves
Fluid leaking from bottom of pump	1 Diaphragms defective 2 Hairline crack in main pump housing or front cover
Fluid leaking around diaphragm covers	1 Cover retaining bolts loose 2 Valve o-rings defective 3 Pinched diaphragm 4 Diaphragm cover cracked
Excessive jumping of suction hose (spiral renforced)	1 Restricted or plugged suction filter 2 Air leak on suction side a. O-ring at suction filter b. Pin hole in suction hose c. O-ring at main / flush tank valve d. O-ring at suction fitting on pump e. O-ring at fittings on pressure regulator (NP 1100) f. O-ring at pop off valve (NP 1100) g. O-ring at S-93 tee, suction hose to pump (NP 1100)

	3	Suction valve, main tank/flush tank valve, closed
	4	Suction tube (inside tank) plugged
	5	Suction tube (inside tank) touching bottom of sump (Navigator 1000 and 1000 M)
Excessive jumping of pressure hose (smooth hose)	1	Self-cleaning filter cone contains fluid
	2	Self-cleaning filter screen plugged
	3	Self-cleaning filter cone stuck
	4	Agitation bypass valve in wrong position
	5	Foreign material logged in pump valves
	6	Defective pump valves
Sudden Pressure Fluctuation +/- 10 to 15 psi.	1	Suction filter beginning to plug
	2	Self-cleaning filter cone sticking
	3	Restriction in bottom of self-cleaning filter
	4	Self-cleaning filter screen plugging
	5	Fluid in self-cleaning filter cone
	6	In-line or tip screen filters plugging
	7	O-ring in Hardi-matic valve blown
	8	Agitation nozzle (inside tank) loose
	9	Pump cavitation (low fluid level)
Loss of pressure while spraying	1	Suction filter beginning to plug
	2	Pin hole in suction hose
	3	In-line or tip screen filters plugging
	4	Pin hole in suction tube
	5	Excessive return fluid around bottom of suction tube
	6	Foreign material lodging in pump valves
Excessive pressure variation between manifold and boom gauges	1	Constant pressure seats worn
	2	Fluid in self-cleaning filter cone
	3	Self-cleaning filter screen plugging
	4	Cone sticking in bottom of housing
	5	Defective gauge
	6	Chemical buildup in boom tubes
	7	Restriction in bottom of self-cleaning filter
Ball valve turns hard	1	Ball and ball seat dry due to chemical
	2	Ball or ball seat damaged
	3	Displaced o-ring restricting ball
Pressure fluxuation when boom valve turned off	1	Constant pressure not properly set
	2	Constant pressure seats worn
	3	Constant pressure seats defective
Loss of pressure after refill	1	Suction tube touching bottom of sump restricting pump flow (Navigator 1000)
	2	Suction filter plugging
	3	Agitation bypass valve set to pump (if so equipped)
	4	Suction valve closed
	5	Agitation nozzle (inside tank) fallen off
	6	Chemical filler valve open
	7	Foreign material lodged in pump valves
Hose blows or valve seperates from excess pressure	1	Pop-off valve stuck or set too higjh
	2	Pressure side valve closed
	3	Fluid in self-cleaning filter cone
	4	Screen in self-cleaning filter plugged

	5	Self-cleaning filter cone stuck
Poor agitation	1	Agitation valve closed
	2	Agitation line or nozzles restricted
	3	Air leak on suction side
	4	Low pump pressure
Can't get all the fluid out of the tank	1	Sprayer not leveled
	2	Suction tube cut too short
	3	Excessive fluid return around sump
	4	Pin hole or crack in lower part of suction tube

NOTE; In some application where low gallons per acre is desired, unused fluids returning to the tank may cause a vortex to develop around sump causing cavitation of pump resulting in lost pressure and an inabilty to draw fluid from the tank when tank levels are low.

CENTRIFUGAL PUMPS

It is very important to remember that operating a Centrifugal Pump without fluid present will cause internal seal damage and necessitate seal replacement.

Pump does not pime	1	Pump is air locked
	2	Shut off valve (under tank) closed
	3	Flush tank? Main tank valve closed
	4	PTO pump drive belt slipping
	5	Damaged impeller
	6	Outlet port in bottom of tank plugged or restricted
	7	Hydraulic drive pump damaged
	8	Drive gears defective (Hypro Pump)

BOOM PRESSURE AND SECTION CONTROL VALVES

Manual valves are used on smaller units and the most common model of valves used are the M-70 and BK-180

The majority of field sprayers use Electric control valves. While models of of controls vary, some components are the same regardless of the model. boom control valves and pressure regulating valves are all the same.

Pressure motor only turn one way	1	Switch in control box not making good contact
	2	Defective pressure adjust switch in control box
	3	Defective micro-switch in pressure motor housing
	4	Poor connection between boom control box and main control cable
	5	Poor connection inside boom control box
	6	Poor connection at circuit board inside junction box (located below boom valves
	7	Defective circuit board in boom control box
	8	Defective circuit board in junction box
	9	Defective pressure motor
Fluid leaks between boom control valves	1	Stainless steel nut on end of valve assembly loose
	2	Defective o-rings between valve bodies
	3	Cracked valve housing

One boom valve not working	1	Boom switch not making good contact
	2	Defective boom control box switch
	3	Poor connection in boom control box
	4	Poor connection between boom control box and main cable
	5	Poor connection on circuit board in junction box (located below boom valves)
	6	Defective circuit board in control box
	7	Defective circuit board in junction box
	8	Pinched wire in main cable
	9	Defective boom motor
Fuse in control box blows continuously	1	Defective fuse holder
	2	Wrong AMP fuse
	3	Defective switch
	4	Defective roller in boom control valve
	5	Pinched wire in main cable
	6	Defective boom or pressure motor
	7	Defective circuit board in control box
	8	Defective circuit in junction box
Unable to balance boom	1	Constan pressure seats worn
Boom sections not spraying equal amounts	1	In-line filters or tip screens plugging
	2	Worn nozzles
	3	Worn rollers in boom valves
	4	Constant pressure seats worn
	5	Chemical buildup in nozzles tubes
	6	Kink or partial plug in boom feed hoses
Boom control box does not work	1	Blown fuse
	2	Power supply cable damaged
	3	Loose or broken wire in male plug for boom control box
	4	Poor connection at battery
	5	Blown fuse in 12 volt outlet box
	6	Loose or broken wire on circuit board inside boom control box
	7	Defective boom control box circuit board
Boom and pressure valves operate backwards	1	Polarity reversed (check power source)

MANUAL CONTROLS

Manual pressure valve not adjusting pressure	1	Pressure valve seat worn
	2	Fluid bypassing through main on/off control
	3	Hairline crack in housing
Manual on/off lever not shutting nozzles	1	On/oof valve ball seat worn
	2	Control lever loose on shaft
Low to No pressure	1	Air leak on suction side
	2	Suction tube restricted

	3	Suction filter plugging (some models)
	4	On/off valve seat worn, bypassing fluid back into tank

NOZZLES

To achieve the optimum spray operation, no component is any more important then the nozzles. For this reason it is advisable to run a nozzle catch test at the start of each spray season. Another important component is boom suspension and boom adjustment. A properly adjusted suspended boom will maintain proper boom heigth at 20 to 24" and extend boom life. .

Uneven spray pattern	1	Constant pressure seats worn
	2	Worn nozzles
	3	In-line filters or tip screens partially plugged
	4	Chemical buildup in nozzles tubes
	5	Mismatched nozzles tubes
Nozzles not turning on	1	Low pressure to boom
	2	Plugged in-line filters
	3	Blown fuse in ontrol box
	4	Pump air locked (centrifugal)
	5	Pressure relief valve weak, bypassing fluid
Triplet nozzle bodies hard to turn	1	Backside of triplet is dry or dirty
	2	Snap locks on triplets too rigid
	3	O-rings in triplet housings swollen
Outer nozzles spraying less	1	Tip screens plugging
	2	Chemical builup in nozzle body
	3	Chemical buildup in outer end of nozzle tube

BOOMS

Boom fails to raise and lower	1	Slide pads on H-frame dry or dirty
	2	Slide pads out of adjustment
	3	Hydraulic lift cylinder seals defective
	4	Pinced hydraulic hose
	5	Defective hydraulic coupler
One side of EAGLE boom will not unfold or fold Joystick Control	1	No Power to the Joystick
	2	Poor wire connection in solenoid
	3	Loose wire in electric junction box next to hydraulic solenid block
	4	Wire loose in plug at junction of Joystick cable and sprayer cable
	5	Poor wire connection in solenoid
	6	Defective switch in Joystick
	7	Defective boom solenoid
	8	Foreign material blocking fold cylinder restrictor
	9	Defective hydraulic coupler
	10	Defective seals in fold cylinder
	11	Pinched hose
	12	Crack in aluminum solenoid block

DH Hydralic Control	1	Low voltage, check power connection
	2	Loose wire in plug at junction of DH cable and sprayer cable
	3	Poor connection in solenoid junction box
	4	DH hydraulic switching valve locked up
	5	Poor electric connection at solenoid
	6	Dective boom solenoid
	7	Piched hydraulic hose
	8	Pinched cable
	9	Defective hydraulic coupler
	10	Defective seals in fold cylinder
EAGLE or FORCE Boom fails to unfold "Joystick Control"	1	Low voltage, check power cable connections
	2	Joystick power cable not connected
	3	Wire loose in Joystick
	4	Loose wire in male plug adapter on Joystick power cable
	5	Loose wire in plug at junction of Joystick cable and sprayer cable
	6	Loose wire in electric solenoid junction box
	7	Pinched hose
	8	Pinched wire
	9	Defective hydraulic coupler
DH Control	1	Low voltage, check power cable connections
	2	DH power cable not connected
	3	Hydraulic switching valve locked up
	4	Loose wire in plug at junction of DH cable and sprayer hydraulic cable
	5	Broken wire in cable
	6	Pinched wire
	7	Pinched hose
	8	Defective hydraulic coupler
Connander 4400-6600 Boom will not Unfold	1	Steering Switch not in Lock Position
	2	Control Cable not locked in control box securely
	3	Steering lock pin not in locked position
	4	15 amp fuse in JobCom blown or corroded
	5	5500 Controller not getting signal from Lock Sensor
	6	Lock Sensor not getting power
	7	DH Valve not cycling
	8	DH valve solenoid not getting electrical power
	9	DH electrical solenoid defective
Twin boom (650 & 950)	1	Low voltage, check power cable
	2	Pinched power cable
	3	Pinched hose
	4	Blown fuse in junction box (rear of sprayer)
	5	Hydraulic hoses (P& T) reversed at tractor couplers, oil flowing in wrong direction
	5	Loose or displaced wire in junction box
	6	Hydraulic valves sticky, not moving, restricting oil flow
	7	Defective hydraulic coupler
	8	Defective hydraulic valve
Twin force (750, 875, & 1200)	1	Low voltage, check power cable
	2	Low hydraulic pressure
	3	Low oil level

	4	Blown fuse in junction box (rear of sprayer)
	5	Pinched power cable
	6	Hydraulic hoses (P&T) crossed at tractor couplers, oil flowing in wrong direction
	7	Poor connection in electrical junction box. (mounted on rear of sprayer)
	8	Poor connection of jumper wire between junction boxes at rear of sprayer
	9	Foreign material holding HZ valve open
	10	Defective hydraulic valve
One side of boom folds and unfolds regardless of which switch is actuated	1	Foreign material holding HZ valve open
	2	Defective hydraulic valve
	3	Defective fold cylider seals
Boom unfolds when not in operation	1	Electrical short keeping solenoid open
	2	Defective solenoid valve
	3	Crack in aluminum HZ soloenoid block
Boom folds and unfolds too fast	1	Air in hydraulic system
	2	Tractor hydraulic flow set too high
Boom suspension not operating properly Manual Fold	1	Transport lock pin still in place
	2	Trapeze slide pads dry
	3	Trapeze bushings worn out
	4	Trapeze bolts too tight
Hydraulic Fold	1	Slide pads dry
	2	Slide pads worn
	3	Slide pad adjustment bolts too tight
	4	Suspension shock absorber defective
	5	Suspension springs weak
Boom not running level	1	Suspension slide pads dry
	2	Suspension slide pads worn out
	3	Suspension springs weak
	4	Suspension pad adjustment bolt too tight
	5	Suspension pivot arms binding
	6	Leveling rod (HY) out of adjustment
	7	Eyelet in tilt cylinder out of adjustment
	8	Trapeze bushings worn out
	9	Bushings in suspension pivot arms worn
Breakaway clutch not releasing	1	Clutch claws dry
	2	Clutch pressure spring need adjusted
	3	Clutch claws worn out
	4	Axle shift in clutch bent
Outer boom section not folding in all the way SPB and SPC boom	1	Fold cables loose
	2	Hinge area dry needs grease
	3	Bind in hinge area
FORCE boom	1	Air in hydraulic system
	2	Broken or bent pivot pin or bolt
	3	Broken piston pin in outer fold cylinder
	4	End stop defective
	5	Ram in outer fold cylinder bent
	6	Defective seals in outer fold cylinder
Main fold works, outer fold does	1	Loose wire in Joystick control

not "FORCE boom"	2	Defective switch in Joystick
	3	Poor connection at plug between Joystick cable and sprayer cable
	4	Loose wire in eletrical junction box
	5	End stop valve need adjustment
	6	Loose wire in solenoid
	7	Foreign material holding solenoid open
	8	Defective solenoid
	9	Broken or pinched wire in main cable
Boom will not unfold "SPB and SPC EAGLE Boom"	1	Low voltage, check power connections
	2	Dislodged wire in male adapter of power cable
	3	Loose wire in Joystick control Dislodged wire in solenoid valve
	4	Dislodged wire in junction box located on center section of boom Foreign material holding solenoid open
	5	Defective solenoid
	6	Hydraulic switching valve locked (DH control)
	7	Defective hydraulic coupler
	8	Pinched wire or broken wire in boom cable
	9	Pinched hydraulic hose
	10	Hairline crack in aluminum solenoid block
"Force Boom"	1	Low vaoltage, check power connections
	2	Dislodged wire in Joystick
	3	Dislodged wire in male adapter of power cable
	4	Poor connection at plug between Joystick cable and boom cable
	5	Poor connection in solenoid junction box
	6	Loose wire in solenoid
	7	Foreign material holding solenoid open
	8	Defective switch in Joystick
	9	Defective solenoid
	10	Pinched or broken wire in main boom cable
	11	Hydraulic switching valve locked (DH control)
	12	Defective switch in DH control box
	13	Poor connection at DH cable junction
Boom fails to fold into transport "SPB and SPC Boom"	1	Fold cables out of adjustment
	2	Hinge movement obstructed
	3	Main hinge bent
	4	Fold cylinder seals defective
	5	Fold cylinder rod bent
"Force Boom"	1	Flow divider out of adjustment
	2	End stop bypassing hydraulic fluid
	3	Fold arm pivot pin bent or broken
	4	Fold arm bent
	5	Piston pin bent or broken in outer fold cylinder
	6	Outer fold cylinder rod bent
	7	Intermediate fold cylinder rod bent
	8	Intermediate fold cylinder seals defective
	9	Main fold cylinder seals defective
	10	Outer boom hinge arm bent
	11	Intermediate boom hinge arm bent

Outer fold cylinder rod bends or piston pin snaps "Force Boom"	1	Outer lock (turnbuckle) out of adjustment
	2	Fold arm pivot pin bent or broken
	3	Fold arm bent
	4	Outer boom hinge arm bent
Force boom will not unfold or fold in proper sequence	1	Air in hydraulic system
	2	End stop adjustment incorrect
	3	Outer cylinder limit switch out of adjustment
	4	Flow divider adjustment incorrect
	5	Pinched hose

TWIN AND TWIN FORCE

Not enough air flow	1	Defective switch in control box
	2	Hydraulic oil supply low
	3	Hydraulic oil filter plugged
	4	Air bag damaged
	5	Pump overheating
	6	Relief valve in hydraulic pump weak
	7	Fan speed adjustment arm loose on shaft
	8	Defective drive coupler between fluid pump and hydraulic pump
	9	Defective hydraulic pump
Arm or shaft broken off in top of hydraulic pump	1	Fan speed not returning to zero when unit shut off
Air slots will not adjust "Twin Force"	1	Blown fuse
	2	Defective power connection
	3	Dislodged or broken wire in rear junction box
	4	Defective relay
	5	Pinched or broken wire in main cable
	6	Defective switch in control box
"Twin"	1	Defective power connection
	2	Dislodged or broken wire in rear junction box
	3	Pinched or broken wire in main cable
	4	Poor electrical connection at Vickers valve
	5	Vickers valve stuck
	6	Foreign material in flow divider valve
	7	Pinched hydraulic hose
	8	Poor connection at junction of control box and main cable
	9	Defective switch in control box
	10	Defective cylinder seals
Hydraulic pump noisy	1	Oil level in gear box low
	2	Oil foaming (wrong type oil)
	3	Oil level too low
	4	Hydraulic oil filter plugged
	5	Weak hydraulic relief valve in pump
	6	Gears in gear box worn
	7	Hydraulic pump defective
Hydraulic pump or gearbox overheating	1	Oil level low
	2	Oil foaming (wrong type oil)
	3	Hydraulic oil filter plugged

STANDARD FOAM MARKER

The standard foam marker uses air from the compressor to pressurize the foam supply tank, push fluid through the solenoid valves, and out to the mix chambers. The compressor also supplies air to the mix chambers to create foam. It is imperative that the foam marker has 12 volts available to it at all times. Poor electrical connections cause many of the problems associated with foam markers

As of June, 2000, the stanndard foam marker was updated with different componants that simlified the number of parts found within the compressor housing. A potted module replaced the circuit board, the metering valve, and the fuse and fuse holder. An automotive type fuse is now used and located near the positive lead on the power cable.

Compresor will not run	1	Low voltage, check power supply cables
	2	Reverse polarity
	3	Fuse on circuit board blown (pre 6/ 2003)
	4	Dirty connections
	5	Cycle switch in control box dirty
	6	Slow blow fuse blown (pre 6/ 2003)
	7	Main fuse connections dirty or corroded (pre 6/ 2003)
	8	Main fuse holder defective (pre 6/ 2003)
	9	Loose or corroded connection on circuit board (pre 6/ 2003)
	10	Fuse holder, on circuit board, loose or corroded (pre 6/ 2003)
	11	Defective circuit board (pre 6/ 2003)
	12	Cycle switch in control box defective
	13	Loose connection in wiring harness
	14	Potted module in compressor housing defective (post 6/ 2003)
	15	Defective wiring harness
	16	Defective bearing in compressor
	17	Defective compressor
Compressor runs but no foam out the droppers	1	Lid on fluid tank loose or seal defective
	2	Filter in bottom of supply tank plugged
	3	Solenoid valves dirty, not opening
	4	Compressor relief valve leaking air
	5	Metering valve plugged (pre 6/ 2003)
	6	Pinched fluid lines
	7	Red plastic lines, off compressor, cracked
	8	Air distribution fitting, on compressor, cracked
	9	Reed valve, in compressor, defective
	10	Foam filter, in mix chamber, plugged (pre 94)
	11	Mix chamber cracked, not up dated (pre 2003)
	12	Loose or corroded connections on solenoid valves
	13	Defective potted module (post 6/ 2003)
Runny foam	1	Hard water
	2	Antifreeze not completely drained from system
	3	Frozen foam concentrate
	4	Poor quality foam concentrate
	5	Amount of foam concentrate incorrect
	6	Air solenoid valve sticky, not opening

	7	Cracked or pinched air lines to mix chambers
	8	Air line fittings at compressor or mix chamers leaking
	9	Compressor relief valve weak
	10	Loose or corroded conections on circuit board (pre 6/ 2003)
	11	Crack in mix chamber housing
	12	Defective o-ring on mix chamber fittings
Makes foam on only one side	1	Solenoid valve stuck
	2	Fluid line pinched
	3	Defective o-ring on mix chamber fittings
	4	Cracked mix chamber (not up dated)
Cannot increase amount of foam being dropped	1	Metering valve wide open (pre 6/ 2003
	2	Metering valve stuck (pre 6/ 2003)
	3	Filter in bottom of supply tank, partially plugged
	4	Loose or corroded wires on metering valve motor (pre 6/ 2003)
	5	Defective metering valve motor (pre 6/ 2003)
	6	Potted module not increasing solenoid valve cycle (post 6/ 2003)
Foam disipates too quickly	1	Foam concentrate mixture incorrect
	2	Frequency of drop too great
	3	Filter in bottom of solution tank partially plugged
	4	Fluid lines pinched
	5	Metering valve partially plugged (pre 6/ 2003)
	6	Potted module not cycling solenoid valves correctly
	7	Defective o-ring on mix chamber fittings
Circuit board fuse blows (pre 6/ 2003)	1	Polarity reversed, check electrical connections
	2	Incorrect fuse
	3	Fuse holder loose on circuit board
	4	Defective solenoid valve
	5	Defective circuit board
	6	Compressor bearing defective
Slo-blow fuse, front of compressor housing, blows (pre 6/ 2003)	1	Reverse polarity, check power connections
	2	Defective fuse holder
	3	Defective bearing in compressor
	4	Defective compressor

HIGH CAPACITY FOAM MARKER

The Hi Capacity foam marker uses a few of the same components as the standard version but the concept of fluid delivery and the function of the compressor is different. The major components are the compressor, the fluid delivery pump, the solution tank, the directional valve, and the mix chambers. Fluid is pumped from the supply tank, via the fluid pump, to the directional valve. Air is supplied by the compressor directly to the directional valve. Theswitch on the foamer control box turns on the compressor, the fluid pump and actuates thedirectional valve which directs the foam to either the right of left dropper. A solid 12 volts is necessary for the foam marker to operate properly, therefore, attach the power cable directly to the battery.

Compressor will not run	1	Low voltage, check power connections
	2	Polarity reversed
	3	Fuse blown

	4	Loose or corroded connections in cable unions
	5	Cycle switch in foamer control dirty or defective
	6	Potted module wires loose or corroded
	7	Potted module defective
	8	Defective compressor
Main fuse keeps blowing	1	Polarity reversed
	2	Incorrect fuse
	3	Short in electrical wiring
	4	Short in potted module
	5	Defective compressor
Compressor runs but no foam being produced	1	Fluid pump air locked
	2	Fluid pump not running, check electrical connections
	3	Supply tank filter plugged
	4	Fluid line kinked or plugged
	5	Poor electrical connections at module
	6	Fluid pump defective
	7	Potted Module defective
Only makes foam on one side	1	Directional valve not functioning, check electrical connections
	2	Directional valve stuck, clean valve
	3	Pinched or kinked foam line
	4	Power wire from compressor housing to directional valve defective
	5	Loose or corroded connections at potted module, in compressor housing
	6	Defective directional valve
	7	Cycle switch, in control box, dirty or corroded
	8	Defective potted module
Runny foam	1	Hard water
	2	Anti-freeze not completely drained from tank
	3	Frozen concentrate
	4	Quantity of concentrate incorrect
	5	Compressor filter plugged
	6	Comressor not running
	7	Air leak between compressor and directional valve
	8	Air line kinked or cracked
	9	Reed valve in compressor defective
	10	Defective compressor
Cannot increase foam drop	1	Supply tank filter partially plugged
	2	Potentiometer switch dirty or corroded
	3	Potentiometer switch defective
	4	Fluid pump defective
Foam disipates too quickly	1	Quanity of concentrate incorrect
	2	Drop frequency too low
	3	Kink or restriction in fluid line
	4	Directional valve sticky
	5	Fluid pump weak

MONITORS AND CONTROLLERS

HM1500 Monitor and HC2500 Controller

The HM1500 monitor shows the operator his actual ground speed and application rate but will not make any adjustments to pressure for speed changes. A distance calibration and a flow calibration test must be done to ensure accuracy of the HM1500.

The HC2500 controls the aplication rate u rate using electrcal impulses generated by the flow and speed transducers. Ultimate accuracy of the HC2500 is determined by the accuracy achieved when running the nozzle catch test and distance calibration.

The HM1500 and the HC2500 use the same components, a flow meter, a speed sensor, a Scanbox, and a display. There are different flow meter housings, depending on the model of sprayer, and the amount of necessary flow. There are two speed sensors offered, one sensor requires magnets while the other has a built in magnet and does not require external ones. This sensor is, primarily, used with the HD 10 bolt hubs or in situations where mounting magnets wo et would be difficult, A special electrical pigtail is necessary when using the proximetry sensor with an HM1500 or HC2500.

There is a power port, in the bottom of the Scanbox, DO NOT USE THIS POWER PORT FOR ANYTHING OTHER THEN THE BOOM CONTROL BOX.

Mustang 3500 Controller

The Mustang 3500 controls the applicatic ication rate using electrical impulses generated by the flow and speed transducers. It The M 3500 controls boom functions and the foam marker as well as controlling the sprayer and supplying the operator with GPA and speed.

NOTE; When attaching the power cable to the battery, make sure not to **cross polarize. Cross polarization can cause serious damage to the HM1500 and the HC 2500 Scanbox**

Display will not power up	1 Low voltage, check power connections 2 Blown fuse 3 Cross polarization, check power connections 4 Loose Wire in Scanbox power cable. 5 Defective power switch in Scanbox 6 Defective Scanbox circuit board 7 Defective cable between Scanbox and Display 8 Defective display
Controller not adjusting pressure	1 Controller in manual, touch up or down arrow 2 PPU number incorrect 3 On/off valve setting incorrect in Extended Menu 4 No power to flow meter 5 Flow meter magents dirty or missing 6 Foreign material, in flow meter housing, restricting the flow meter 7 Scanbox not reading flow meter 8 Loose wire in flow meter or flow meter plug 9 Incorrect number of nozzles in main menu 10 Boom size not set in main menu 11 SS nut off pressure valve (inside housing) 12 Pressure valve locked up.
Display shows proper GPA, but actual application rate too high of low	1 PPU number incorrect 2 PPU fine tune procedure not completed 3 Constant pressue settings not done 4 Boom size not entered correctly 5 Number of nozzles not entered correctly.

	6	Constant pressure seats leaking
	7	Overlapping
	8	Foreign material restricting flow meter
	9	Incorrect flow meter housing.
Display not reading flow	1	Wires in flow meter plug loose or incorrect
	2	Broken wire in flow transducer cable
	3	Foreign material restricting flow meter
	4	Missing or dirty magnets on flow meter wheel
	5	Flow meter wheel worn
	6	Defective flow meter
	7	Defective Scanbox circuit board
Speed reading inaccurate	1	UPP number incorrect
	2	One or more wheel magnets installed incorrectly
	3	Magnet mounting ring bent
	4	Magnets loose on ring
	5	Sensor too far away from magnets or wheel
	6	Wires in speed sensor plug loose or incorrect
	7	Broken wire in speed sensor cable
	8	Defective speed sensor
Fuse in Scanbox keeps blowing	1	Reverse polarity, check power connections
	2	Improper use of Scanbox power port, only to be used to power boom control box
	3	Wrong fuse
	4	Short in main power cable
	5	Loose or bare wire in Scanbox
	6	Defective circuit board in Scanbox
Pressure slow to adjust after speed change	1	Regulation conatant, in extended menu, not set correctly, default setting -50, lower to -40 to increase response speed
	2	Minimum duty pressure, in extended menu, not set correctly, default setting -10, lowering to -20 increases power to motor
	3	Check pressure motor, green handle is slower then yellow handle. Default settings different for green handle
Controller fails to show application rate even when sprayer turn on	1	Controller not reading flow meter
	2	Foreign material rstricting flow meter
	3	Loose or broken wire in flow meter plug
	4	Controller not recognizing sprayer being turned on
	5	Controller not recognizing speed
	6	On/off valve, in extended menu, not set correctly
	7	Defective flow meter
	8	Defective circuit board in Scanbox
Boom pressure goes all the way up or down when in automatic mode	1	On/off valve, in extended menu, not set correctly
	2	PPU number incorrect
	3	Speed constant incorrect
	4	Foreign material restricting flow meter
	5	Loose or broken wire in flow meter plug
	6	Flow meter magnets dirty or missing
	7	Defective flow meter
	8	Defective circuit board in Scanbox
Controller not reading correct	1	Speed calibration incorrecct

acres	2	Controller not recognizing when sprayer turned off
	3	Boom size not entered correctly
	4	Overlapping

CHEMICAL INDUCTOR

Tank back fills when valve open or drains slowly	1	Pump running too slowly
	2	Pump sucking air, not giving full flow
	3	Restrictor cone missing in tee under tank
	4	Directional valves not set correctly
Fluid keeps running out of tank rinse tube	1	Tank rinse valve defective

FLUSH AND RINSE

Will not draw water from flush tank	1	Flush tank/main tank valve not set correctly
	2	Air leak between flush tank and pump