



STYLE 3578 STREAMMASTER™
INSTALLATION, OPERATING, AND MAINTENANCE INSTRUCTIONS
For Style 6032 Universal 2 Logic Box

The following is intended to provide the basic instructions for installation, operation and maintenance of the StreamMaster electric monitor, and to assist in attaining the best possible performance from the unit. Read and understand these operating instructions before use.

PRODUCT RATINGS

INPUT POWER REQUIREMENT:

12VDC (Min: 11VDC; Max: 14VDC) OR

24VDC (Min: 22VDC; Max: 28VDC)

- **RECOMMENDED POWER WIRE SIZE:** 12VDC: 10AWG
24VDC: 12AWG
- **REQUIRED FUSE:** 12VDC: 20 amp Slow Blow
24VDC: 10 amp Slow Blow
- **PEAK AMP DRAW:** 50amp for 100ms

Maximum Motor Current Draw:

- | | |
|------------------|---|
| 12 volt versions | 14.0 amps each for elevation and rotation motors
3.0 amps for nozzle pattern motor |
| 24 volt versions | 7.5 amps each for elevation and rotation motors
1.5 amps for nozzle pattern motor (except 1577 Saberjet) |

Normal Operating Current: (Depending on operating conditions—pressure, flow, etc.)

- | | |
|------------------|--|
| 12 volt versions | 3.0 to 10.0 amps each for elevation and rotation
0.7 amps for nozzle pattern motor |
| 24 volt versions | 2 - 5 amps each for elevation and rotation motors
0.4 amps for nozzle pattern motor(except 1577 Saberjet) |

Minimum Voltage: (Truck engine must be operating for proper voltage requirement.)

All 12 volt motors: 11.5 volts while operating

All 24 volt motors: 23 volts while operating

Mass: 39 lbs. (17.7 kg)

Maximum Flow: 2000 gpm (7600 lpm)

Maximum Pressure: 200 psi (14 bar)

Noise Emission: 95 DL @ 1m with maximum flow

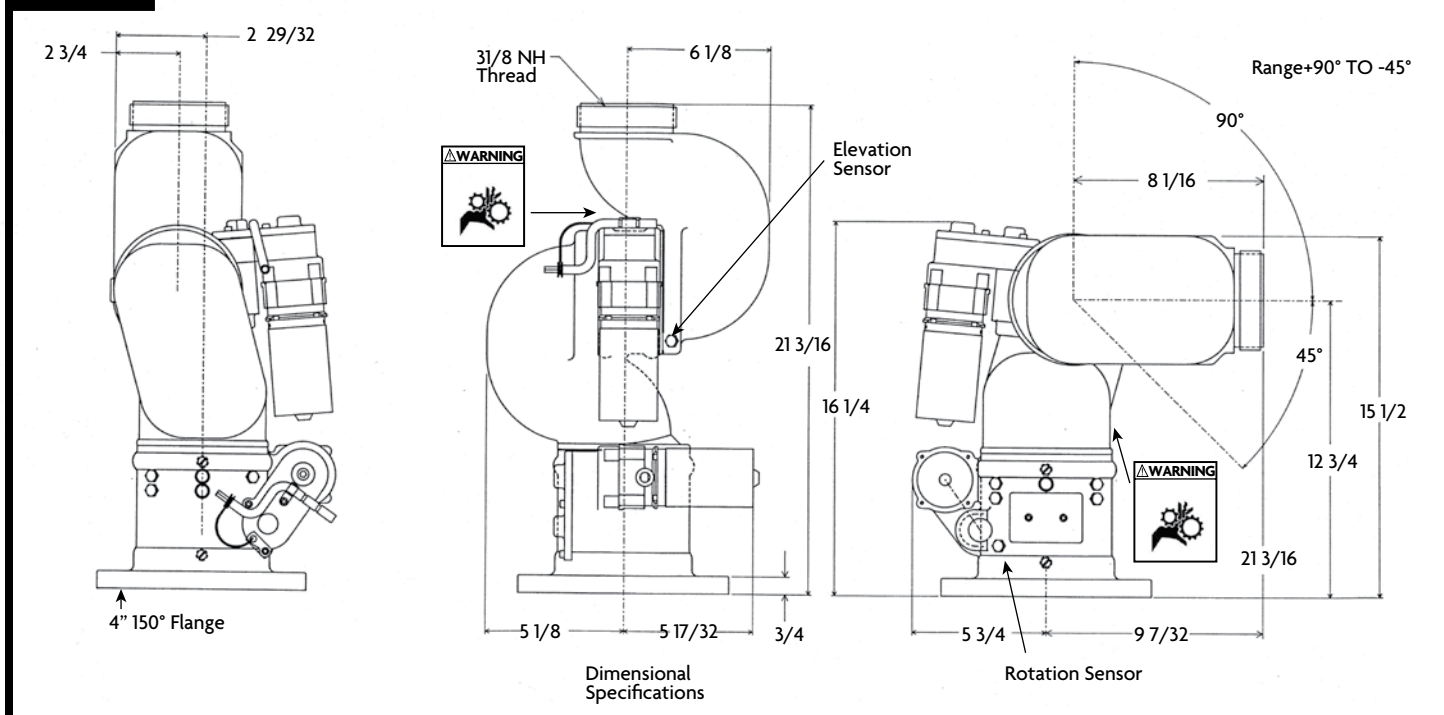
PRODUCT WARNINGS

- WARNING:** Read the Manual! Failure to follow operating instructions could result in death or serious injury. Read & understand the operator's manual before using the monitor.
- WARNING:** Charge the unit slowly. Rapid charging may cause a pressure surge that has the potential to cause an injury, or damage the monitor.
- WARNING:** DO NOT stow or deploy the StreamMaster monitor while flowing. Pressing the stow or deploy buttons causes the nozzle to move automatically and the water stream may cause damage to equipment or injury to personnel.
- WARNING:** Aim the unit in a safe direction before pumping water through it. (i.e. Away from power lines)
- WARNING:** Although the circuit board includes a water-resistant coating, it is important to keep water out of the control box and logic box. Prolonged exposure to water will cause damage.
- WARNING:** The StreamMaster monitor uses current limiting for both the monitor and nozzle. Use only appropriate Akron Brass Company nozzles.
- WARNING:** Do not use the electric controls when the override cranks are being used or are in position for use.
- WARNING:** Make the connection of the vehicle and auxiliary battery the final step.
- WARNING:** Replace the identification tags if they should become worn or damaged.
- WARNING:** DO NOT exceed the maximum pressure or flow ratings of the monitor. Exceeding these ratings may lead to an injury or may cause damage to the monitor.
- WARNING:** DO NOT install shutoffs on the outlet of the monitor. Shutoffs increase the potential for pressure surges due to water hammer, which have the potential to cause an injury or damage to the monitor.
- WARNING:** The StreamMaster monitor, nozzle, logic box, control box, tether controller, and field adjustable stops are made for optimal performance. Do not alter in any manner.
- WARNING:** The StreamMaster monitor was designed for use with the Akromatic nozzle. Use of any other nozzle could affect the speed or operation of the unit and should be tested before being put into service.
- WARNING:** The StreamMaster monitor contains moving parts. Keep hand, finger and objects away from pinch points (Figure 1).
- WARNING:** Disconnect power and disable flow before maintenance.
- WARNING:** Keep all personnel out of the Danger Zone in front of the outlet of the monitor when the water source is attached. Dangerous flow velocities can cause serious injury.
- WARNING:** Not designed for explosive environments.

GENERAL INSTRUCTIONS

- Review the instructions, wiring diagram, component layout and rotational stops diagram before installing this unit. This unit operates on 12 volt DC or 24 volt DC depending on the unit chosen. All electrical current flows through the wires. The monitor does not act as a ground.
- Not recommended for use in salt water applications.
- For firefighting by trained firefighters only.
- For use with water or standard firefighting foams only. After use with foam, flush with fresh water.
- Do not use the StreamMaster nozzle as a forcible entry tool.
- Drain the StreamMaster monitor and nozzle after use to prevent "freeze damage".
- Ensure that the thread in the nozzle swivel matches the thread on the StreamMaster outlet. Do not over-tighten the nozzle onto the Stream Master.

FIGURE: 1



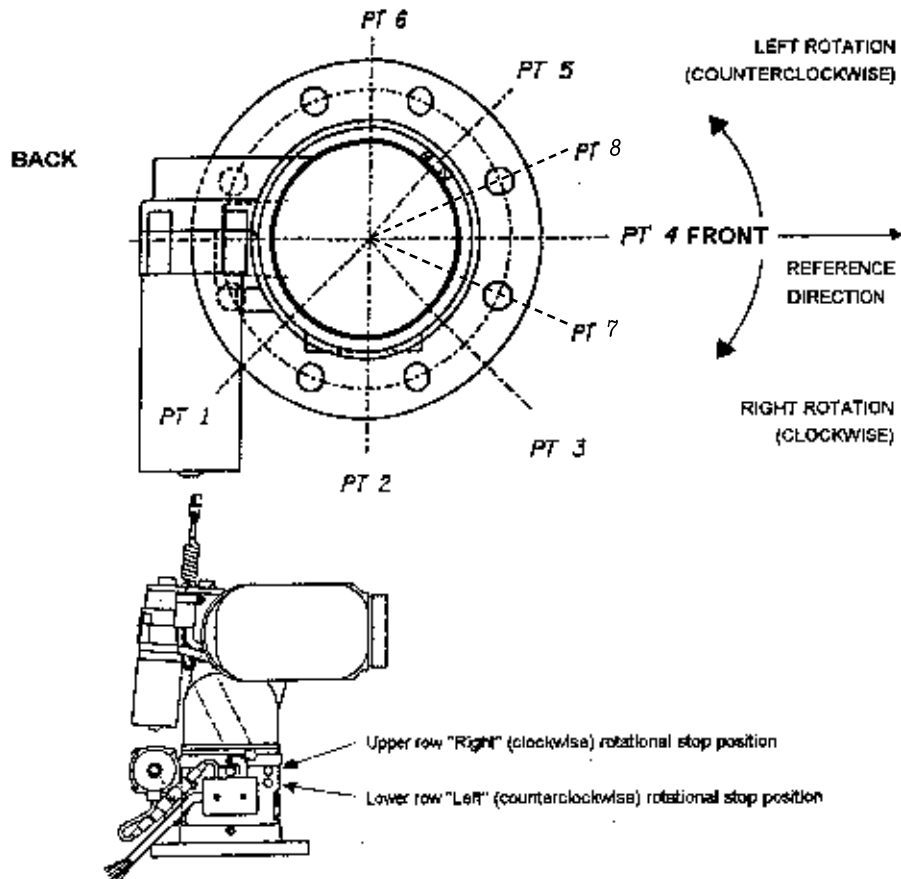
MECHANICAL MONITOR ATTACHMENT

The Monitor is to be mounted on the waterway with eight 5/8 inch bolts and nuts of grade five minimum and suitable washers with a minimum of six threads engagement. The front of the monitor in Figure 2 is considered to be point 4 and is above the identification tag. The bolts must be tightened in a criss cross pattern progressively increasing tightening torque to a maximum of 100 foot pounds dry.

NOTE: Not recommended to mount on a raised flange or have a butterfly valve between the flanges. This may cause damage to the monitor's flange when tightening the bolts.

THE ROTATIONAL AND ELEVATION STOPS SET THE BOUNDARIES FOR THE AREA IN WHICH THE MONITOR IS ALLOWED TO TRAVEL AND MEETS THE REQUIREMENTS OF THE NFPA. The upper row controls the right travel, and the lower row controls the left travel. The angles for the rotational stops are with respect to the "reference direction" illustrated in Figure 2. The monitor is shipped with the upper row stop at point 3 which stops the monitor at 90° right, clockwise and the lower row stop at point 5 which stops the monitor at 90° left, counterclockwise. All other positions are achieved by switching the factory set stops and the plugs in the desired stop location. Both the stops and the plugs have a 1/2 inch hex head. Refer to Figure 2 to determine which stop location is needed for the desired right, clockwise or left, counterclockwise rotation. The elevation stop sets the upper and lower limits of the elevation. The monitor is shipped with the upper limit at 45° or 90° above horizontal (mounted vertically) and the lower limit at 45° below horizontal to meet NFPA. All other vertical positions are achieved by switching plugs and stops to the desired locations as indicated in Figure 3.

FIGURE: 2



**STREAMMASTER
ROTATION FOR EACH STOP COMBINATION**

Upper Row

CW / CCW	1	2	3	4	5	6	7	8	NO STOP
1	78 / 168	78 / 213	78 / 258	45 / 270	0 / 270	78 / 33	67.5 / 270	22.5 / 270	78 / 270
3	180 / 0	135 / 0	90 / 0	45 / 0	0 / 0	315 / 0	67.5 / 0	22.5 / 0	348 / 0
4	180 / 45	135 / 45	90 / 45	45 / 45	0 / 45	303 / 33	67.5 / 45	22.5 / 45	303 / 45
5	180 / 90	135 / 90	90/90	45 / 90	0 / 90	258 / 33	67.5 / 90	258 / 90	258/90
6	180 / 135	135 / 135	90 / 135	45 / 135	0 / 135	213 / 33	67.5 / 135	22.5 / 135	213/135
7	180 / 22.5	135 / 22.5	90 / 22.5	45 / 22.5	0 / 22.5	315 / 22.5	67.5 / 22.5	22.5 / 22.5	325.5/22.5
8	180 / 67.5	135 / 67.5	90 / 67.5	45 / 67.5	0 / 67.5	280.5 / 33	67.5 / 67.5	22.5 / 67.5	280.5 / 67.5
NO STOP	180 / 168	135 / 213	90 / 258	45 / 303	0 / 348	315 / 33	67.5 / 280.5	22.5 / 325.5	N/A

LOWER ROW

Factory Set Stops

NOTE: There is no lower row for point 2 due to the location of the wiring harness.

Each possible combination is listed and a maximum of 348 degrees can be achieved for total rotation. The factory will set the stops at Lower Row point 5 and Upper Row point 3. This will give a rotation of 90 degrees clockwise (CW) and 90 degrees counterclockwise (CCW) for a total rotation of 180 degrees. Factory Set Stops

NOTE: There is no lower row for point 2 due to the location of the wiring harness.

FIGURE: 3

ELEVATION STOPS

The elevation stop position and their corresponding stop/plug configurations are shown in the table below. The hole location for the plug/stop is referred to by an angle from the horizontal. The outlet angle is the angle trajectory (from horizontal) the water will flow from the StreamMaster unit.

HOLE LOCATION				Lower Outlet Angle	Upper Outlet Angle
15°	0°	-45°	-60°		
P	PS	S	P	-45°	45°
P	PS	P	S	-45°	30°*
S	PS	P	P	-30°	90°
P	PS	P	P	-45°	90°
S	PS	P	S	-30°	30°*
S	PS	S	P	-30°	45°

*-The Stow Function will not operate properly when the upper outlet angle is set to 30°.

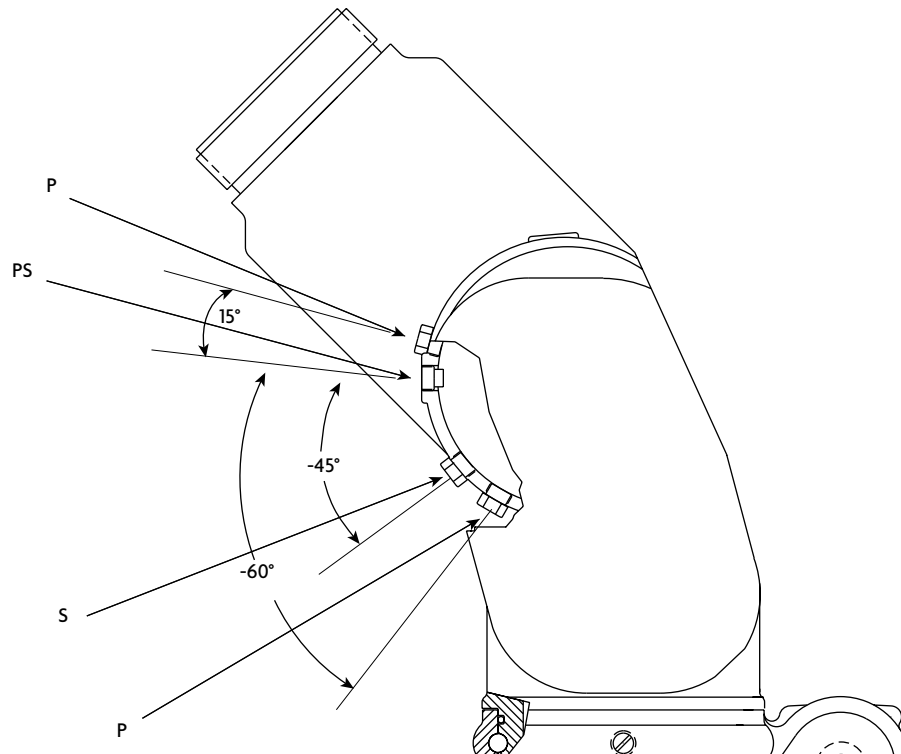
P=PLUG S=STOP PS=PERMANENT STOP

Factory Set Stops

Note that the permanent stop must remain installed. If this stop is removed, the outlet will go past vertical and the gear will run out of travel.

There are six options for the customer to use. This is achieved with 3 plugs, 1 permanent stop, and 2 stops provided (the unit will be assembled with the permanent stop in 0° location, 1 stop in the -45°; and plugs in the remaining 15° and -60° locations).

The parts kit will contain 1 stop and 1 plug.

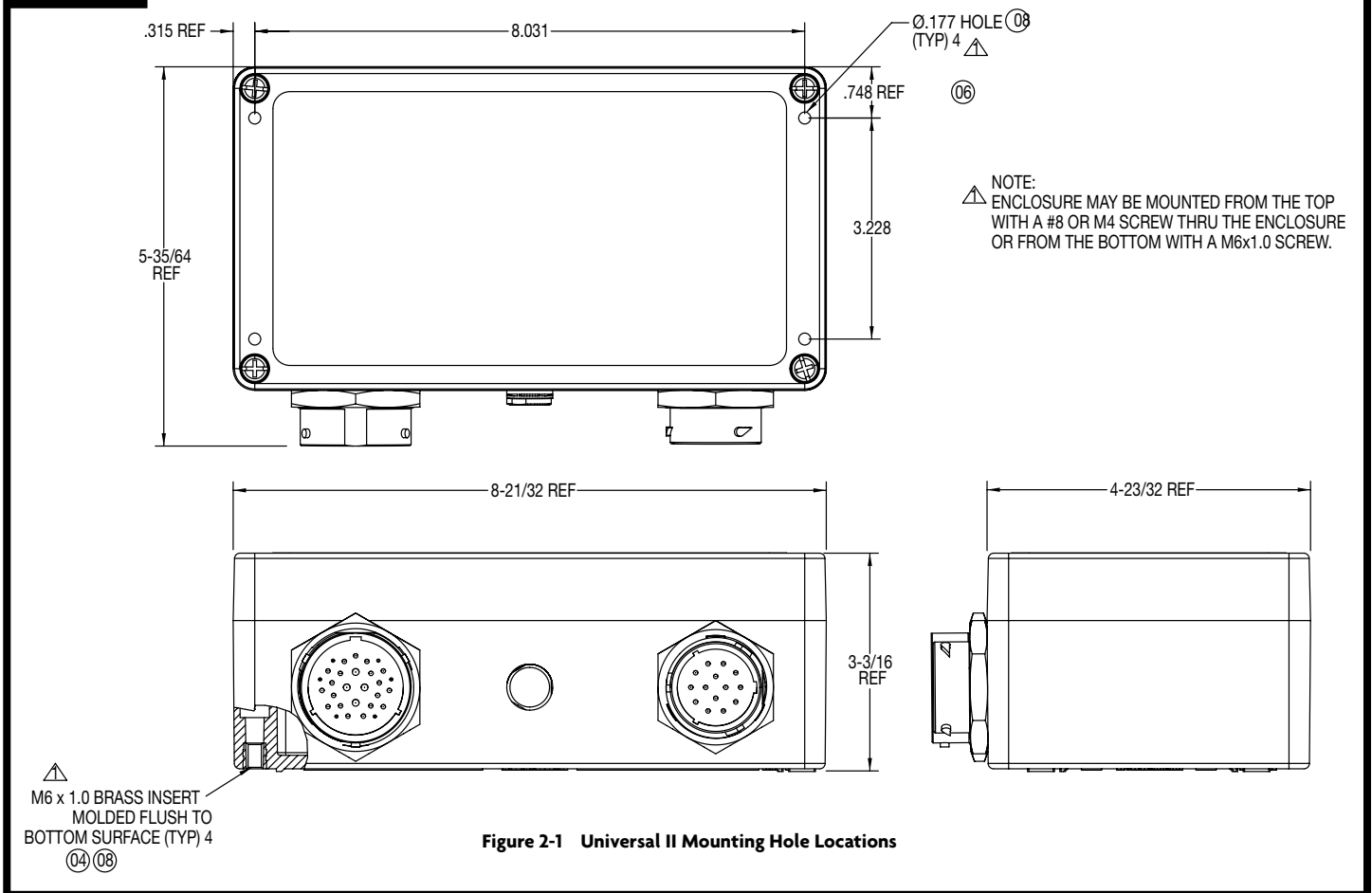


MECHANICAL ATTACHMENT OF LOGIC BOX

The Universal II has two options for mounting:

1. Through hole mounting. The through hole mounting holes provided on the Universal II are .177 inches in diameter and suitable for #8 or M4 screws. These allow inserting screws from the top side and into threaded holes on the customer's back panel.
2. Mounting with threaded inserts. There are four threaded inserts in the enclosure bottom which are M6 X 1.0. These allow screws to be inserted from behind the customer's back panel and into these inserts on the Universal II enclosure bottom.
3. The Universal 2 logic box must be mounted close enough to the monitor to allow the monitor wiring harness sufficient slack to allow the monitor to travel through its full range. The logic box overall dimensions and mounting hole dimensions are given in Figure 4.

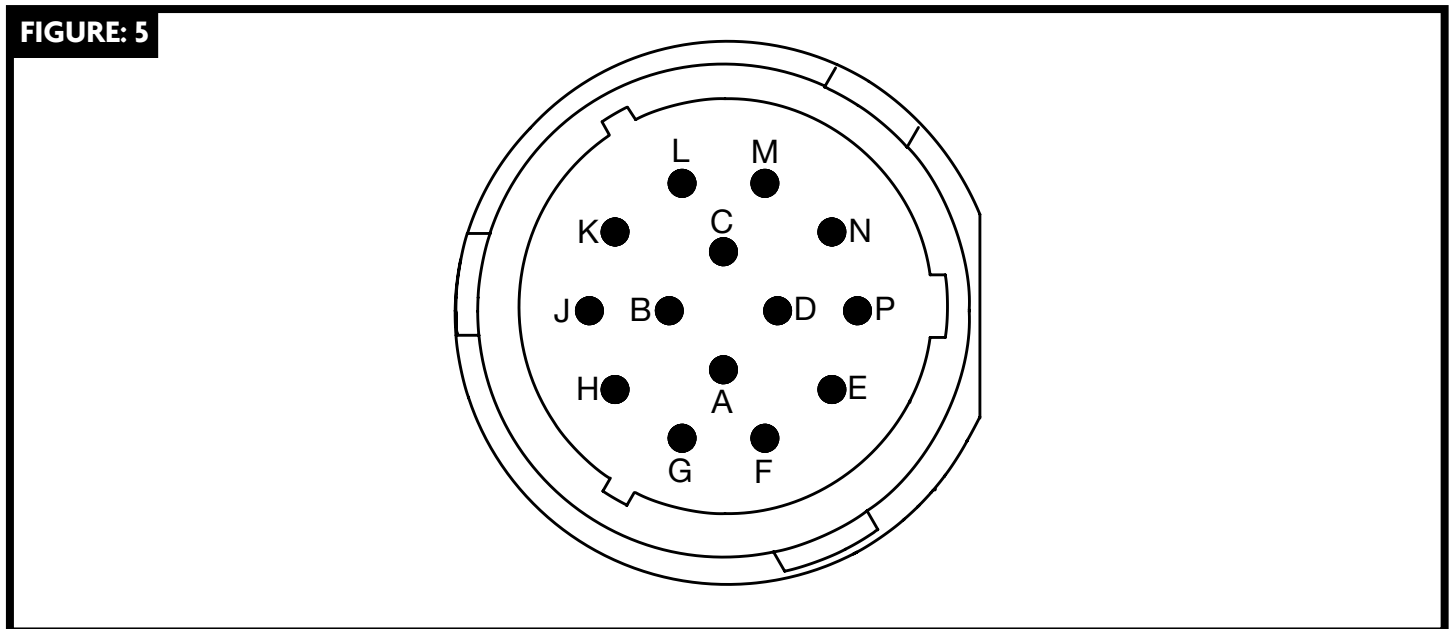
FIGURE: 4



4. Monitors and Turrets designed for use with the Universal II come fitted with a harness and connector ready for direct plug-in to the Universal II. While these are configured for “plug and play” installation, removal of the connector to run through a bulkhead may be necessary from time to time. In that event, or in the event of troubleshooting, Table 2-2 is provided for reference.

PIN	Description	Monitor Function	Comment
A	Analog Common		(Ground)
B	Analog, Switch, PWM In #1	Rotation Position	
C	Analog, Switch, PWM In #2	Elevation Position	
D	Analog, Switch, PWM In #3	Unused	Unused
E	Analog Exc.	Power for limit switches/Sensors	(+5 volts)
F	Unused	Unused	Unused
G	H-Bridge Axis #1	+ (Up)	Elevation
H		- (Down)	
J	H-Bridge Axis #2	+ (Left)	Rotation
K		- (Right)	
L	H-Bridge Axis #3	+ (Fog)	Pattern
M		- (Stream)	
N	H-Bridge Axis #4	+ (Low)	Unused
P		- (High)	

Table 2-2 Monitor/Turret Connector Pin-out



WARNING: Do not extend the monitor wiring harness.

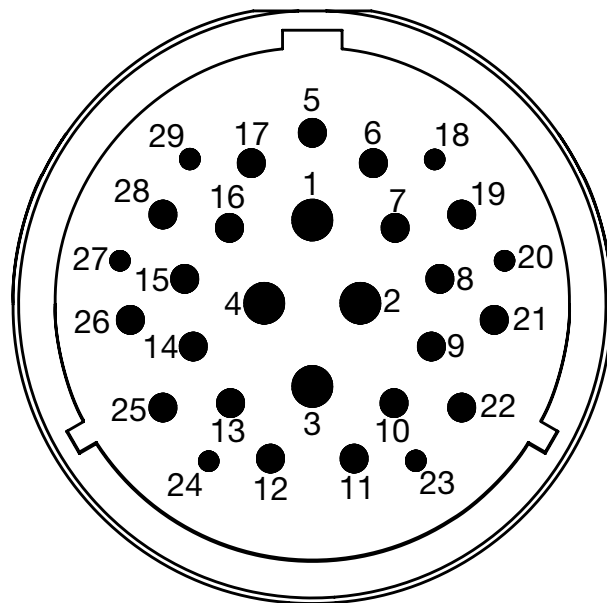
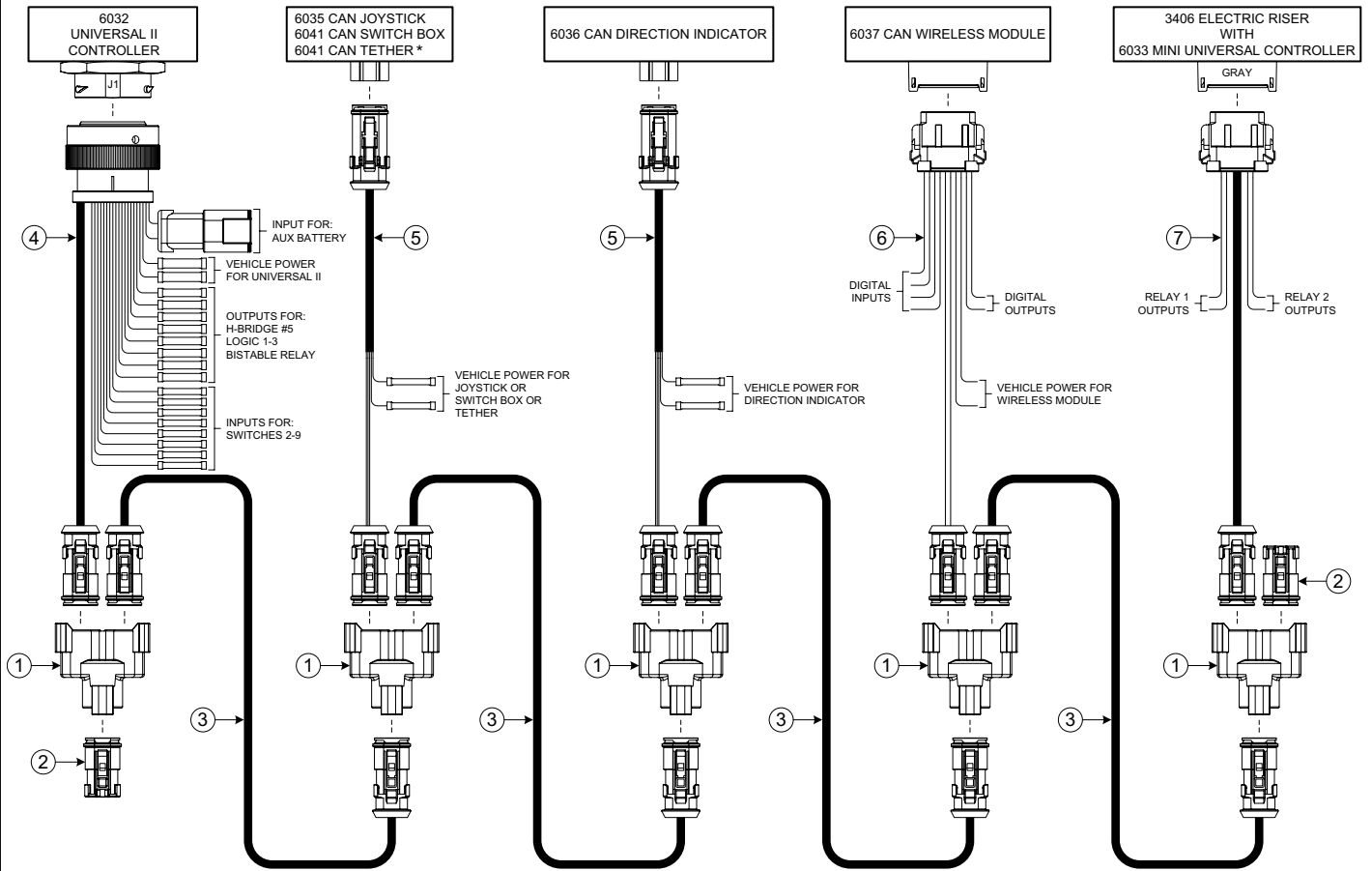
ELECTRICAL INSTALLATION INSTRUCTIONS

A. CONTROLLER, JOYSTICK OR TETHER CONNECTOR ELECTRICAL ATTACHMENT

These instructions are for attaching the controller, joystick or the tether connector to the logic box.

STEP 1

FIGURE: 6



* 6041 CAN tether requires 60510005 interface

29 Pin Male Mixed AWG Connector				
Pin Number	Type	Potential Function	Comments	AWG
1	Power Input (Vehicle)	+ Battery	Main Battery	12
2		- Battery		12
3	Power Input (Aux. Battery Box)	+ Battery	Auxiliary Battery (Optional)	12
4		- Battery		12
5	H-Bridge Axis #5	+ (Open)	Electric Valve	16
6		- (Close)		16
7	Logic Output #1	Panel LED (2A Max)	Current Sourcing (2A Max)	16
8	Logic Output #2	Discharge ON (2A Max)		16
9	Logic Output #3	CAFS On (2A Max)		16
10	Bi-stable Relay Contact Output (Form C)	Common	Enable Output to Warning Light Circuit or other	16
11		N.O. (1A Max) †		16
12		N.C. (1A Max) ††		16
13	Switch Input # 1	Enable Input	Safety Interlock	16
14	Switch Input # 2	(+v) Right/Left (-v)		16
15	Switch Input # 3	(+v) Up/Down (-v)		16
16	Switch Input # 4	(+v) Stream/Fog (-v)		16
17	Switch Input # 5	(+v) Discharge		16
18	Switch Input # 6	Unused		20
19	Switch Input # 7	Oscillate Set (+v) Pause/Resume (-v)		16
20	Switch Input # 8	(+v) Deploy/Stow (-v)		20
21	Switch Input # 9	(+v) CAFS Dry/CAFS Wet (-v)		16
22	Battery + Out	Peripheral Power (1A Max)	Communications to Vehicle bus and/or Smart peripherals	16
23	Data +	To external J1939		16
24	Data -	Vehicle CAN bus		16
25	Battery - Out	Peripheral Power (Common Ground)		16
26	Data +	NOT USED		16
27	Data -			16
28	Data +	NOT USED		16
29	Data -			16

BATTERY ATTACHMENT

The battery connections should be the last connection made.

NOTE: Auxiliary Battery is not intended to operate the monitor.

VEHICLE BATTERY – Use the butt splice connections on the J1 harness and connect the battery cable (#10-2 or #12-2 depending on length).

NOTE: To supply enough current to operate the monitor properly, adequate wire size is critical.

† Connected to pin 10 when stowed

†† Connected to pin 10 when deployed

OPERATING INSTRUCTIONS

A. CONTROLLER OPERATION

The controller is used to control the monitor and nozzle.

1. To deploy the monitor for use: Push and hold the deploy toggle switch up for 2 seconds and release.
2. To stow the monitor after use: Push and hold the stow toggle switch down for 2 seconds and release.
Note: Some controllers are not equipped with a stow/deploy switch. If another controller has been used to stow the monitor, another function such as raise/lower or left/right can be used to remove the monitor from stow. Just hold the selected switch for 2 seconds.
3. To change the horizontal monitor position toward the right or left: Press the proper toggle switch toward "RIGHT" or "LEFT" respectively, as labeled on the controller, until the desired position is reached.
4. To change the vertical monitor nozzle position upward or downward: Press the proper toggle switch toward "RAISE" or "LOWER" respectively, as labeled on the controller, until the desired position is reached.
5. To change the nozzle pattern toward the straight stream or fog position: Press the proper toggle switch toward "STRAIGHT" or "FOG" respectively, as labeled on the controller, until the desired nozzle position is reached.

B. EMERGENCY STOP (Operator Override) DURING DEPLOY OR STOW

If it is necessary to immediately stop the StreamMaster monitor during the deploy or stow sequence, activate any switch on the control panel and the unit will stop moving. To continue operation after an emergency stop, operate any switch or press the Stow or Deploy switch to continue the sequence.

C. MANUAL OVERRIDE CONTROLS

The manual override control is to be used only when the power to the monitor is off. An override crank with a 1/4" hex drive is provided and attached to the monitor for use on both the horizontal and vertical override controls. To use the manual override, insert the hex drive end of the override crank into the hexagon shaped hole on the shaft end opposite the motor. Rotate the override crank in the desired direction to aim the monitor.

WARNING: When the override crank is no longer in use, put it back in the storage position. Do not use the electric controls when the override crank is being used or is in position for use.

D. SETUP MODE

The Universal II allows many configuration options during setup.

The following functions can be configured in the setup mode:

- Right, Left, Up and Down soft limits – (Requires Position Feedback Option)
- Monitor orientation (sideways or inverted mounting)
- Obstacle Avoidance – (Requires Position Feedback Option)
- Stow and Deploy positions
- Position Sensor zero (For Position Feedback units only)
- Restore Factory Defaults

To enter the setup mode for the above functions, follow these steps:

1. Turn power off to Universal II
2. Press and HOLD the stream switch (can be done on Joystick, toggle switch box, tether or wireless control)
3. Turn power on to Universal II while continuing to hold the stream switch
4. Wait 3-4 seconds and release the stream switch

The Universal II should now be in setup mode. When it is setup mode, the LED on the operator station will be slowly blinking (a short blink followed by a long pause) about one blink every three seconds. If it is not slowly blinking, turn the power off and repeat steps 1-4. If the operator station does not have an LED, the blink codes can also be accessed by connecting an indicator light to pin #7 (wire #7 of the 721582 interface cable) of the J1 connector on the logic box.

All setup functions options except Stow and Deploy can be scrolled through by pressing the stream switch. Each time the stream switch is pressed, another function is active for configuration. If a function is configured and saved using the fog switch, it will automatically move to the next function. For example, the first time the stream switch is pressed, the right soft limit is ready for programming (LED CODE 1-1). If it is pressed again, the left soft limit is ready for programming (LED CODE 1-2). If the left soft limit is set and the fog switch is pressed, it will automatically move to the up soft limit without having to press stream again (LED CODE 1-3).

Alternately, activating the Stream command will abort this mode without storing the position and forward the user to the next Soft Limit Position mode. Entering the Stow and Deploy programming modes can only be accomplished by activating the Stow or Deploy switch while at the start of the setup menu (LED CODE 1 Slow blink).

To aid in determining which setup menu the Universal II is in, the LED on the operator station has been programmed to blink a different code for each function. The table below lists the LED codes for each function. The codes have two parts. The LED code will start with either one or two short blinks, a short pause, another series of short blinks, and then a long pause. The first number in the LED code is the one or two blinks and the second number is the second series of blinks before the long pause.

Any of the following functions may be configured by stopping at that function and performing the operation.

LED code

Setup Menu Function	3578	3578 W/Feed Back
Setup Mode Start	1 Slow Blink	1 slow blink
Right Soft Limit	N/A	1-1
Left Soft Limit	N/A	1-2
Up Soft Limit	N/A	1-3
Down Soft Limit	N/A	1-4
Monitor Orientation	1-7	1-7
Zero Position Sensors	N/A	1-8
Restore Factory defaults	1-9	1-9
Obstacle avoidance Disable	N/A	2-1
Obstacle Avoidance Manual Operation	N/A	2-2
Obstacle Avoidance Auto Operation	N/A	2-3
Obstacle Avoidance Learn	N/A	2-4
Electric Riser OFF	3-1	3-1
Electric Riser ON	3-2	3-2
Stow	1-5	1-5
Deploy	1-6	1-6

Trouble-shooting

1 - Will not turn off LEDs or Cab indicator light after monitor appears to have completed a STOW cycle.

Monitor stops moving after a stow command, and looks like it is stowed, but the Indicator LEDs go back to being on solid. Reason: Stow cycle is being interrupted (stopped) by a mechanical stop before the logic box has completed the timing cycles for the stow movements. Go through the LEARN procedure again, and try teaching a new stow position where the elevation, and / or rotation positions are not so close to the mechanical stops.

Example:

On an aerial, where the 3578 is mounted under the ladder, the desired stow position may have the elevation set all the way up so that the nozzle is right up under the ladder. This setting may be too close to the mechanical stop. Try "Learning" a new stow position where the nozzle is slightly lower than before.

Make sure that the truck engine is running while going through the LEARN mode.

Truck voltage should be at normal running level.

2 - STOW problems / Will not learn a new STOW position

The logic box LEDs will ALSO blink out an error code if the magnets are not "seen" by the reed switches during the stow sequence. A problem with either rotation or elevation will cause the LEDs to blink out an error code after the monitor has tried a couple of times to locate the magnets.

F. FAULT CODES

Your StreamMaster monitor comes with built in diagnostic tools. On the controller for stow is a small LED indicator. The primary function of the LED indicator is to indicate whether the monitor is stowed or deployed. The LED indicator also functions as a Fault Indicator. Alternately, wire #7 on the J1 harness is an indicator output (2A max.) that will show error & setup codes.

Deployed: The light will repeatedly flash twice as the unit is deploying. When the fully deployed position is reached the light will stop flashing and remain on.

Stowed: When the fully stowed position is reached the LED indicator will go out.

Fault Code:

- 1-1 Rotation Sensor (Position feedback only)
- 1-2 Elevation Sensor (Position feedback only)
- 1-5 Operator Override
- 1-6 Obstacle Avoidance Profile Needed (Position feedback only)
- 1-7 Rotation Hard Stop
- 1-8 Elevation Hard Stop
- 2-1 Electric Riser enabled but not detected

MAINTENANCE INSTRUCTIONS

Your StreamMaster monitor and nozzle should be inspected prior to and after each use to ensure it is in good operating condition. Periodically, an unanticipated incident occurs where the unit is misused in a manner that is inconsistent with standard operating practices. A partial list of potential misuses includes:

- Operating above the maximum rated pressure or flow.
- Prolonged exposure to temperatures above 130°F, or below -25°F.
- Operating in a corrosive environment.
- Having the StreamMaster nozzle hit a fixed object during operation or transportation.
- Any other misuse that might be unique to your specific environment.

Also, there are many telltale signs that indicate repair is in order, such as:

- Controls that are either inoperable or difficult to operate.
- Excessive wear
- Poor discharge performance
- Water leaks.

If any of the above situations are encountered, the StreamMaster monitor should be taken out of service, repaired, and tested by a qualified technician before placing back in service.



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