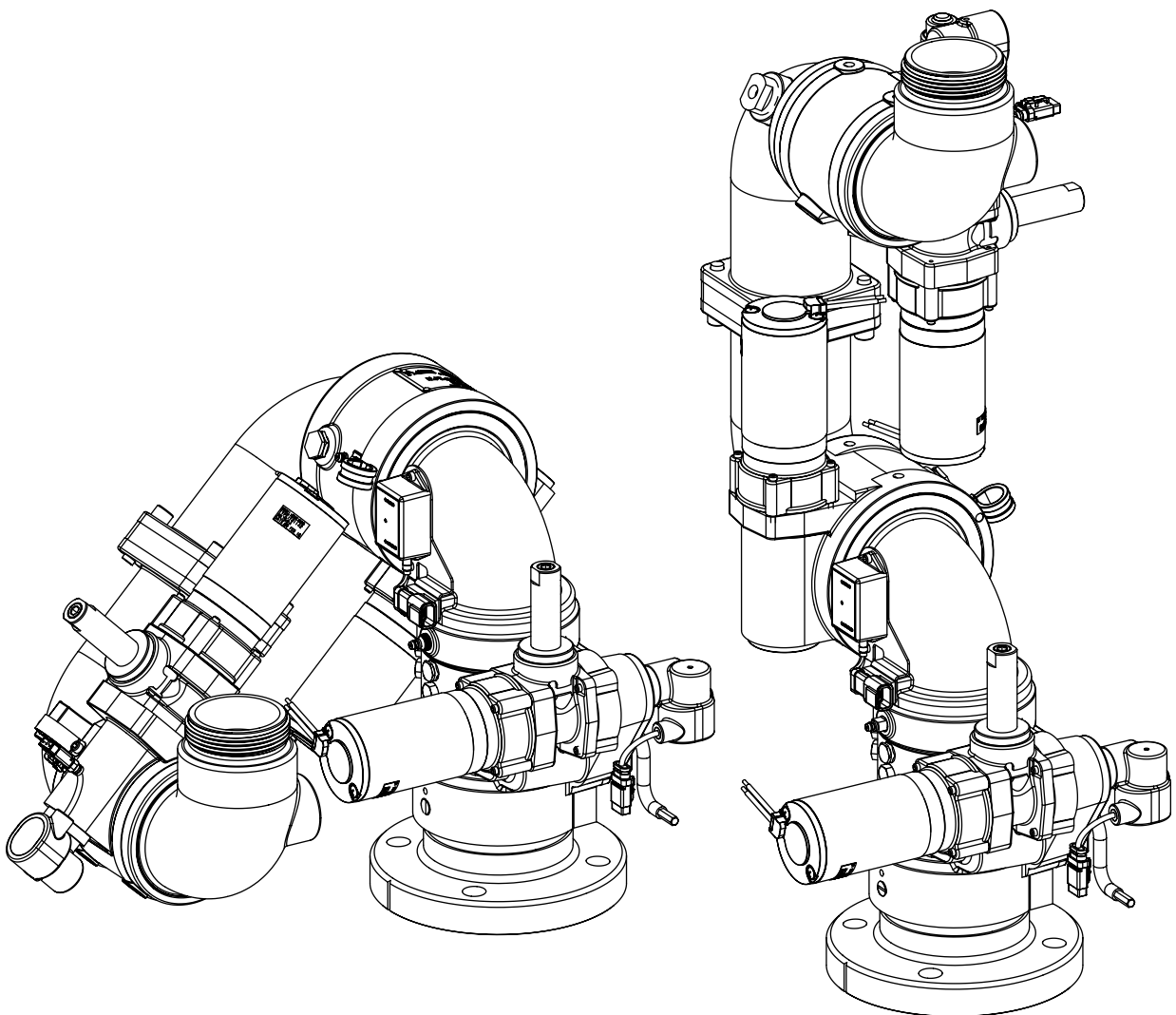




**STYLE 3440 DECKMASTER™ ELECTRIC MONITOR FOR
STANDARD CONFIGURATION WITH POTENTIOMETERS & U2 LOGIC BOX
INSTALLATION, OPERATING, AND MAINTENANCE INSTRUCTIONS**



The following is intended to provide the basic instructions for installation, operation and maintenance. Read and understand these operation instructions before use.



Product Ratings

Electrical Specifications

MOTOR	12-VOLT SYSTEM (11-14 Volts DC)		24-VOLT SYSTEM (22-28 Volts DC)	
	Maximum Operating Current	Normal* Operating Current	Maximum Operating Current	Normal* Operating Current
Rotation	14 Amps	3-10 Amps	7.5 Amps	2-5 Amps
Elevation	14 Amps	3-10 Amps	7.5 Amps	2-5 Amps
Swing Arm	14 Amps	3-10 Amps	7.5 Amps	2-5 Amps
Pattern**	3-10 Amps	0.7-5.0 Amps	1.5-5.0 Amps	0.4-2.5 Amps

* Normal operating currents depend on operating conditions such as pressure, flow, etc.

** Pattern currents depend on the type of nozzle being used.





Mechanical Specifications

Parameter	U.S. Measure	Metric Measure
Maximum Flow Rate	1250 GPM	4800 LPM
Maximum Pressure	200 PSI	14 Bar
Mass	55 Lbs.	25 kg







Tools Required

- Wrench for flange mounting bolts
- 1/2" hex head wrench in case there is a need to change the hard stop locations

Safety Symbols

-  **DANGER** Indicates a hazardous situation which, if not avoided, WILL result in death or serious injury
-  **WARNING** Indicates a hazardous situation which, if not avoided, COULD result in death or serious injury
-  **CAUTION** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury
-  **NOTICE** Addresses practice not related to personal injury

Product Warnings, Cautions and Notices

-  **WARNING** Use only for firefighting by trained operators.
-  **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 monitor while flowing. Pressing the Stow or Deploy button 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, e.g., away from power lines.
-  **WARNING** Do not use the electric controls when the manual override cranks are being used or are in position for use.
-  **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 the monitor.
- ⚠ 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** Ensure the thread on the nozzle swivel matches the thread on the monitor outlet. Do not over-tighten the nozzle onto the unit.
- ⚠ WARNING** Insufficient structural support at the inlet flange can lead to failure, which has potential to cause an injury.
- ⚠ WARNING** Not designed for explosive environments
- ⚠ CAUTION** The monitor contains moving parts. Keep hands, fingers and objects away from pinch points.
- ⚠ CAUTION** Operating the monitor without the permanent travel limit stops in place could cause damage to the monitor and could potentially injure the operator.
- NOTICE** Ensure that the monitor is returned to the Stow position after use.
- NOTICE** If not equipped with an automatic drain valve, drain the monitor after use to prevent freeze damage.
- NOTICE** The monitor, nozzle, logic box, control box, tether controller and field adjustable stops are made for optimal performance. Do not alter in any manner.
- NOTICE** The monitor was designed for use with the 5177Akromatic, 1577 SaberMaster or 2499 Stack Tip nozzles. Use of any other nozzle could affect the speed or operation of the unit and should be tested before being put into service.
- NOTICE** Replace the identification tags if they should become worn or damaged.
- NOTICE** Not recommended for use in salt water applications
- NOTICE** Not recommended to mount onto a raised flange. This may cause damage to the monitor's flange when tightening bolts.
- NOTICE** Use a nozzle of the same material as the monitor to eliminate the effects of galvanic corrosion.

Mechanical Installation Instructions

The monitor is to be mounted on a waterway which is capable of withstanding the pressure applied to the monitor as well as the reaction force and resulting bending moment of the nozzle (934 lbs. at 200 PSI and 1250 GPM).

Use the operating windows of figures 1a or 1b to determine the mounting area required.

FIGURE: 1A - Operating Window

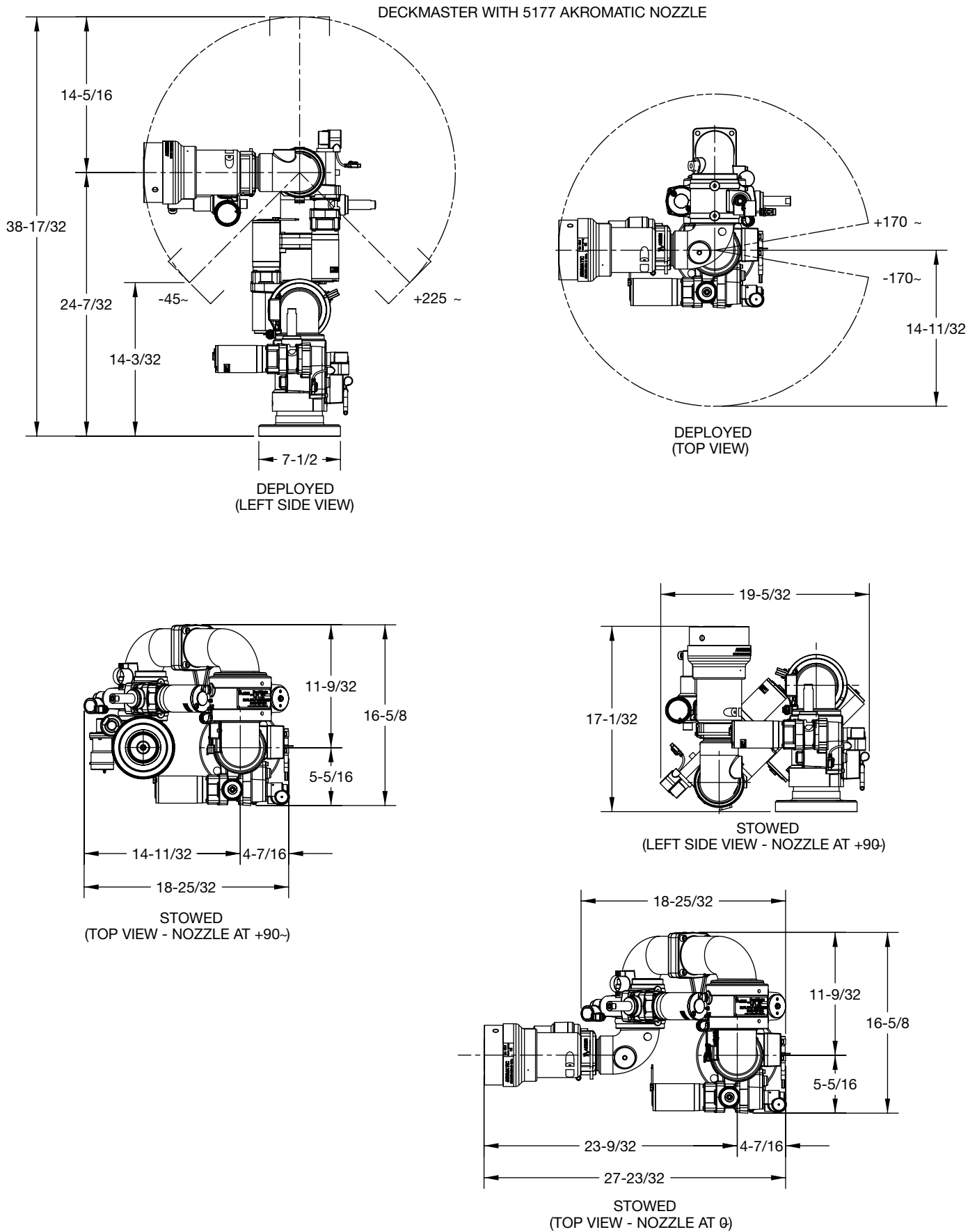
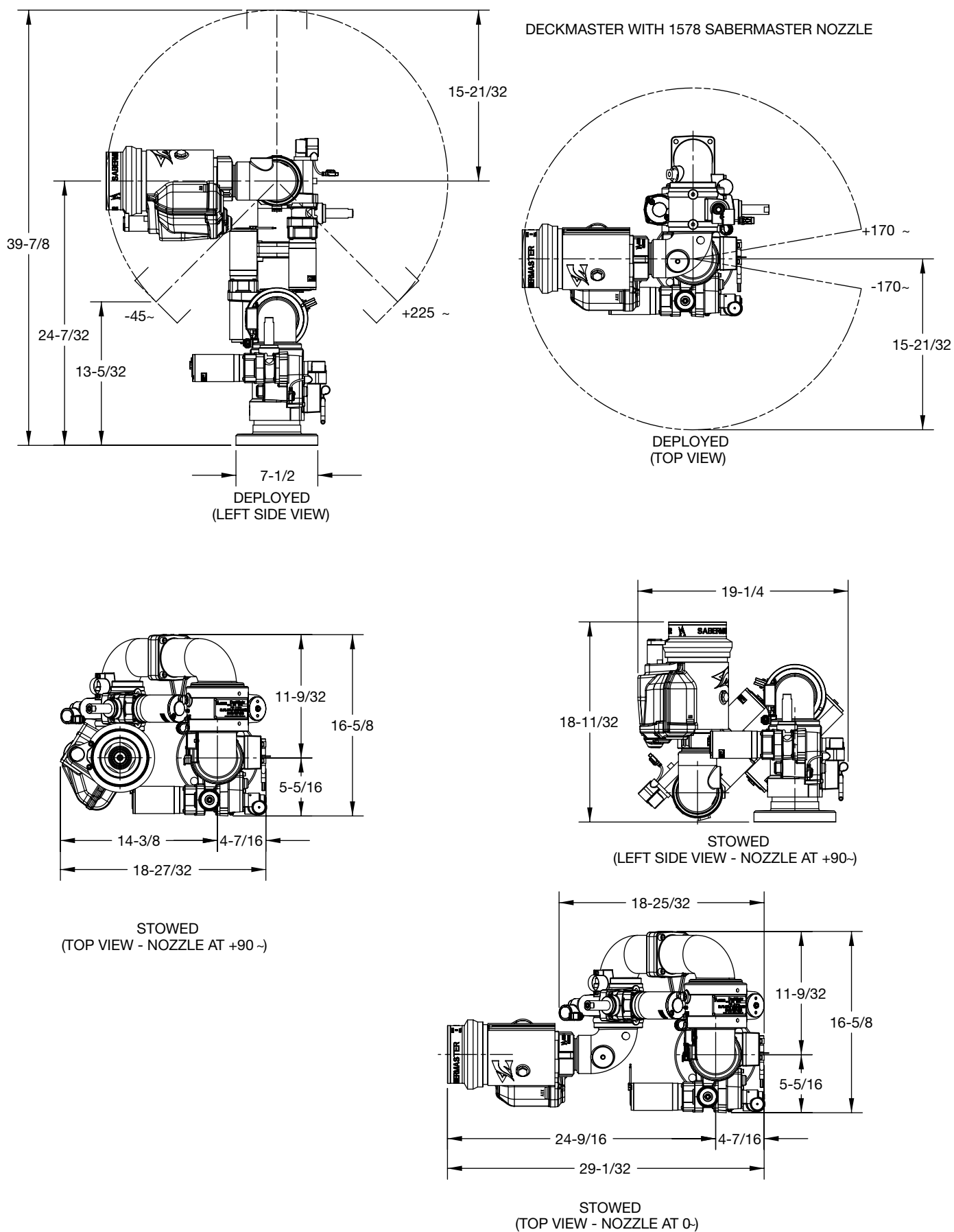


FIGURE: 1B - Operating Window

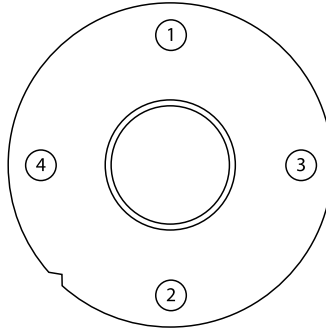


Bolt Spec and Tightening Procedure

Use four 5/8" bolts and nuts of grade five minimum and suitable washers. There must be a minimum of six threads of engagement. Use a ring gasket conforming to ASME 16.21. The notch that is cut into the side of the inlet flange is the front of the monitor (see Figure 2).

Start the bolt tightening procedure by lubricating the nuts and bolts. Hand tighten the nuts until they are snug against the flange. The final torque of the bolts should be a maximum of 100 lb-ft. Following the correct sequential order as shown in figure 2, tighten the bolts to 30% of the final torque. Repeat the tightening sequence to 60% of the final torque. Repeat a third time to 100% of the final torque. Finally, repeat the sequence at the final torque.

FIGURE: 2 - Bolt Torque Order



Rotational Hard Stops

The stainless steel rotational hard stops set the boundaries for the area that the monitor is allowed to travel left (counterclockwise) and right (clockwise). The stop in the lower row controls the left (CCW) travel, and the stop in the upper row controls the right (CW) travel. Refer to figure 3 for the locations of the upper row and the lower row, as well as points 1-5.

The monitor is shipped with a stop in the lower row at point 1, which stops the monitor at -170° CCW, and a stop in the upper row at point 5, which stops the monitor at $+170^{\circ}$ CW. To set a different boundary area, swap the positions of the steel hard stop and a plastic plug. Refer to figure 4 to select a desired boundary area. Both the stops and the plugs have a 1/2" hex head.

FIGURE: 3 - Hard Stop and Plug Locations

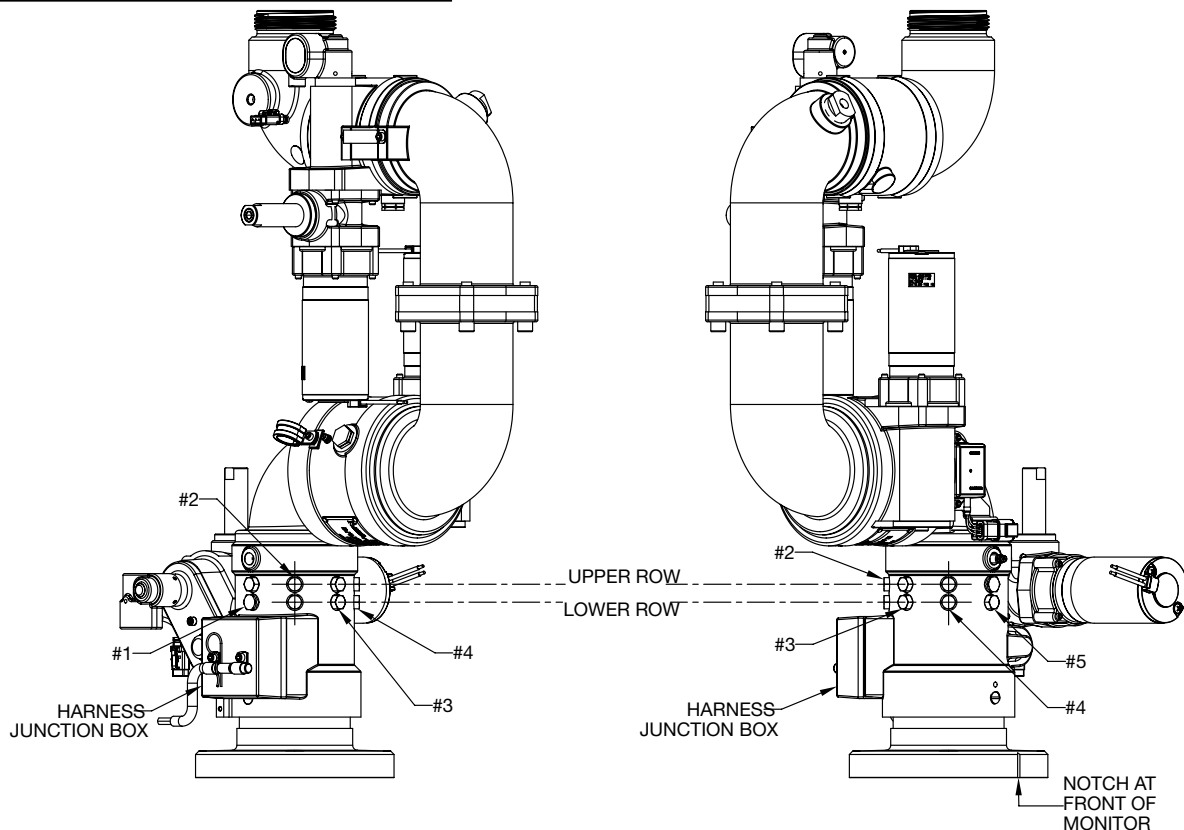
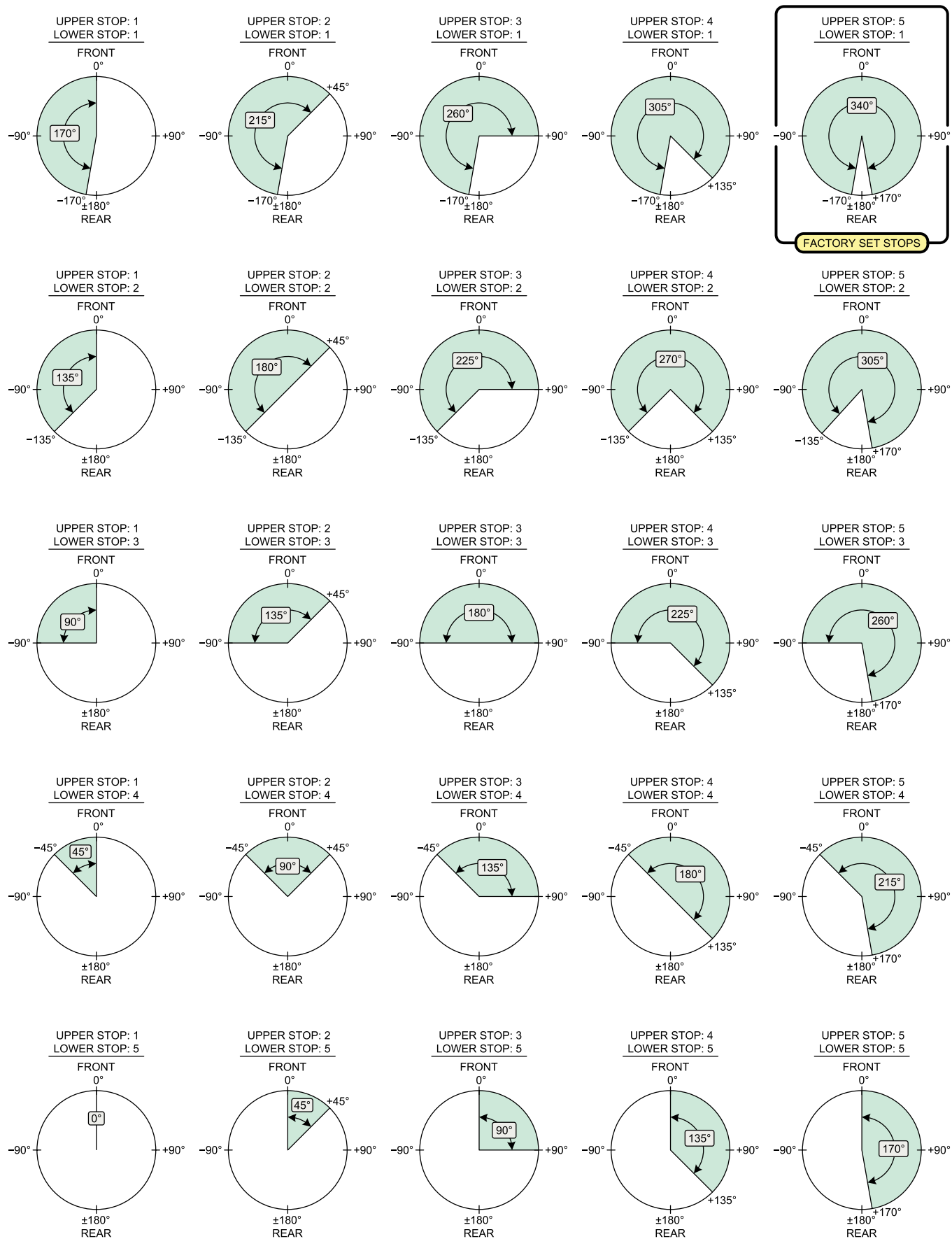


FIGURE: 4 - Boundary Areas Set by Rotational Hard Stops



Nozzle Installation

The nozzle should be threaded onto the outlet of the monitor. Place the pattern actuator in a position that does not stretch the power cord, and then tighten the swivel. **Verify that the actuator orientation does not interfere with the monitor.**

Controller Box Installation

This monitor is used with a 6032 Universal II Controller. It normally mounts on or below the deck and must be mounted close enough to the monitor so that the 10 foot cable of the monitor wiring harness has sufficient slack to allow the monitor to travel through its full rotational range. Refer to the “6032 Universal II Controller Installation, Operation & Maintenance Manual” (part number 122552) as a guide.

NOTICE Do not extend the monitor wiring harness.

Electrical Installation Instructions

Make the I/O and power connections to the 6032 controller and then plug the monitor harness into the controller. Refer to the “6032 Universal II Controller Installation, Operation & Maintenance Manual” (part number 122552) as a guide

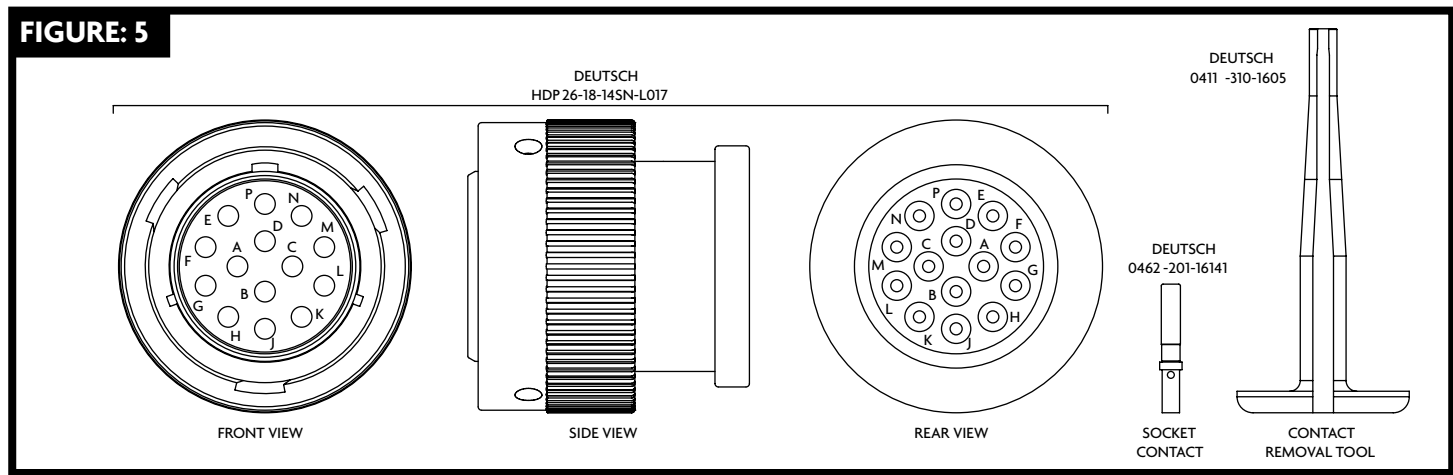
Harness 721582 for Power & Signal Connector J1 on Controller			
Contact Position	Function	Comments	Wire Color & Size
1	Power In – Vehicle Battery (+12/24 VDC)		Red – 12 AWG
2	Power In – Vehicle Battery (–)		Black – 12 AWG
3	Power In – Auxiliary Battery (+12/24 VDC)	(Optional)	Green – 12 AWG
4	Power In – Auxiliary Battery (–)	(Optional)	Black – 12 AWG
5	Output – H-Bridge #5A		Red – 16 AWG
6	Output – H-Bridge #5B		Black – 16 AWG
7	Output – Logic #1	Panel LED	Brown – 16 AWG
8	Output – Logic #2	Discharge	Red – 16 AWG
9	Output – Logic #3		Orange – 16 AWG
10	Output – Bi-stable Relay Common		Yellow – 16 AWG
11	Output – Bi-stable Relay N.O.		Green – 16 AWG
12	Output – Bi-stable Relay N.C.		Blue – 16 AWG
13	Input – Switch #1 (System Enable)		Brown – 18 AWG
14	Input – Switch #2	+ Right / Left -	Red – 18 AWG
15	Input – Switch #3	+ Up / Down -	Orange – 18 AWG
16	Input – Switch #4	+ Stream / Fog -	Yellow – 18 AWG
17	Input – Switch #5	+ Valve Open / Close -	Green – 18 AWG
18	Input – Switch #6	+ Gallonage High / Gallonage Low -	Blue – 18 AWG
19	Input – Switch #7	+ Oscillate Set / Pause -	Violet – 18 AWG
20	Input – Switch #8	+ Deploy / Stow -	Gray – 18 AWG
21	Input – Switch #9	+ Aux Agent 2 / Aux Agent 1 -	White – 18 AWG
22	Power Out – Peripheral (+12/24 VDC)	Powers the System Enable (#13)	Brown – 18 AWG
23	Data – J1939 CAN High (+)		Yellow – 18 AWG
24	Data – J1939 CAN Low (–)		Green – 18 AWG
25	Power Out – Peripheral (–)		Drain – 18 AWG
26	Data – Proprietary CAN High (+) (Unused)		Sealing Plug
27	Data – Proprietary CAN Low (–) (Unused)		Sealing Plug
28	Data – V-Mux Com A (+) (Unused)		Sealing Plug
29	Data – V-Mux Com B (–) (Unused)		Sealing Plug

Table 1 – Power & Signal Harness Connections

The DeckMaster comes fitted with a harness and connector ready for direct plug-in to the Universal II controller. While this is 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, the following table is provided for reference.

Deutsch Plug for J2 Connector on Controller (Part No. HDP26-18-14SN-L017)		
Contact Position	Wire Color	Function
A	Black	Power Out – Switch and Position Sensor (–)
B	White	Input – Rotation Switch (Voltage)
C	(Sealing Plug)	Input – Multifunction #2 (Unused)
D	Red	Input – Swing Arm Position Sensor (Voltage)
E	Green	Power Out – Position Sensor (+5 VDC)
F	(Sealing Plug)	Data – Lin Bus (Unused)
G	Orange	Output – Rotation Motor (Right)
H	Blue	Output – Rotation Motor (Left)
J	White/Black	Output – Elevation Motor (Up)
K	Red/Black	Output – Elevation Motor (Down)
L	Green/Black	Output – Pattern Motor (Stream)
M	Orange/Black	Output – Pattern Motor (Fog)
N	Blue/Black	Output – Swing Arm Motor (Deploy)
P	Black/White	Output – Swing Arm Motor (Stow)

Table 2 – Monitor Harness Connections



3440 DeckMaster with UII control Initial setup

The following functions can be configured in the setup mode:

- Monitor Orientation (sideways or inverted mounting)
- Restore Factory Defaults
- Obstacle Avoidance
- Electric Riser Disable/Enable
- Stow and Deploy Positions

To enter the setup mode, follow these steps:

1. Turn power off to the Universal II Controller.
2. Press and HOLD the Stream switch (can be done on the Joystick or the Toggle Switch Box).
3. Turn power on to the Universal II Controller while continuing to hold the Stream switch.
4. Wait 3-4 seconds and release the Stream switch.

The Universal II Controller should now be in setup mode. When in setup mode, the LED on the operator station will be slowly blinking (a short blink followed by a long pause). If it is not slowly blinking, repeat steps 1-4 above.

All setup functions except the Stow and Deploy Positions 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, the next function will be automatically selected. Activating the Stream command will abort this function without storing the position and the next function will be selected. Entering the Stow and Deploy Positions 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). (See the sections for Stow Position and Deploy Position for more detail).

To aid in determining which setup menu the monitor is in, the LED on the operator station has been programmed to blink a different code for each function. Table 3-1 below lists the LED codes for each function. The codes have two parts. The LED code will start with either one, two, three or four short blinks, a short pause (LED off), another series of short blinks, then a long pause (LED off). The first number in the LED code is the one, two, three or four blinks and the second number is the second series of blinks before the long pause. If an OEM is using their own operator station that has no LED, the codes will also be available on pin #7 of the 29 pin interface connector on the UII logic box.

Setup Parameter	Blink Code	34405XXX Position Feedback Units
Beginning of setup	0-1 (One slow blink)	Programming Order (See Notes)
Right Soft Limit	1-1	NOTE 2
Left Soft Limit	1-2	NOTE 2
Up Soft Limit	1-3	NOTE 2
Down Soft Limit	1-4	NOTE 2
Stow	1-5	NOTE 4
Deploy	1-6	NOTE 4
Monitor Orientation	1-7	
Zero Position Sensors	1-8	NOTE 1
Restore Factory defaults	1-9	
Obstacle avoidance Disable	2-1	
Obstacle Avoidance Manual Operation	2-2	NOTE 3
Obstacle Avoidance Auto Operation	2-3	NOTE 3
Obstacle Avoidance Learn	2-4	NOTE 3
Stow rotation position	2-7	NOTE 4
Electric Riser disable	3-1	
Electric Riser enable	3-2	
CAN Valve Disable	4-1	
CAN Valve Enable	4-2	
CAN Valve Pair	4-3	
CAN Valve Calibrate	4-4	

NOTES:

1. This step only needs to be done in two cases. If there is a position indicator in the system and/or the monitor is mounted such that the physical rotational zero position is not in line with the physical center of the apparatus. If needed, this step must be done first before setting ANY other positions. This setting will erase any previously set positions including obstacle avoidance and stow/deploy.
2. These steps must be performed. The soft limits must be programmed so that the monitor stops before hitting a hard limit. Hitting a hard limit will cause a sensor error code. If there is an active sensor error code, all soft limits and automatic functions (stow/deploy, oscillation and obstacle avoidance) are ignored and the monitor will move throughout its entire physical range with no restrictions which could cause collisions with the truck or truck mounted obstacles.
3. These steps are optional and depend on the application needs.
4. Stow/Deploy position programming should be done after soft limits and obstacle avoidance (if used)

(Setup Continued)

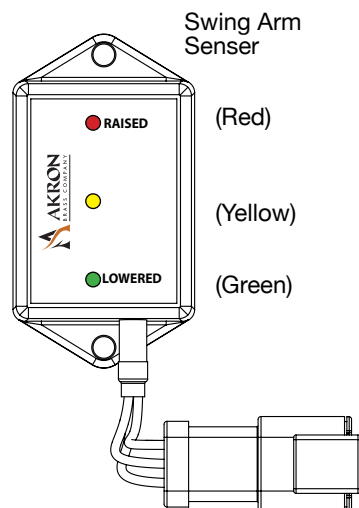
1. If further programming is needed, turn system power off, press and hold the “Stream” switch and turn system power back on. Within a few seconds, the LED on the control panel will begin to blink once approximately every three seconds.
2. To program a new deploy position, momentarily press the “Deploy” switch. The monitor will proceed to the default deploy position and stop. The LED on the control panel will be blinking a code of 1-6 meaning you are in deploy setup mode. After the monitor stops, use right/left/raise/lower controls to position the monitor nozzle to the desired deploy position.
3. When the nozzle is in the desired position, you can save it by pressing either the “Stream” or “Fog” switches. If you use the “Stream switch” the nozzle will go to the stream position during deploy. If you use the “Fog” switch, the nozzle will go to the fog position during deploy.
4. Once the position has been saved, the LED on the control panel will go back to blinking once every three seconds. From this point, you can reset the UII logic box by momentarily pressing the fog switch and it will reboot into normal operation mode or continue to step 5 to program the stow position.
5. To program a new stow position, momentarily press the “Stow” switch. The monitor will proceed to the default stow position and stop. The LED on the control panel will be blinking a code of 1-5 meaning you are in stow setup mode. Only the nozzle elevation can be set for the stow function. Use the “Raise” or “Lower” controls to move the nozzle to the desired position.
6. When the nozzle is in the desired position, you can save it by pressing either the “Stream” or “Fog” switches. If you use the “Stream switch” the nozzle will go to the stream position during stow. If you use the “Fog” switch, the nozzle will go to the fog position during stow.
7. Once the position has been saved, the LED on the control panel will go back to blinking once every three seconds. From this point, you can reset the UII logic box by momentarily pressing the fog switch and it will reboot into normal operation mode or continue to step 2 below to program the Home position.

POSITION SENSORS

The DeckMaster monitor has been provided with two potentiometers and a Swing Arm Sensor. The two potentiometers measure the position of the elevation and rotation. The “Home” position is set at the factory for the middle of the rotation range and coincides with the monitor facing the forward physical position (in line with the vertical groove on the outside diameter of the mounting flange). The home position can be adjusted to allow the monitor to stow at any rotational position between the rotational stops. The Swing Arm Sensor determines which position the Swing Arm (center elbows) are in, Stowed, Deployed or somewhere in between. It puts out a different signal for each of the three positions that the logic box uses for proper sequencing and error reporting. These signals are also visible as different colored LED's on the face of the sensor. See figure below.

To Adjust the Home Position:

1. Enter the setup mode. See instructions above for entering the setup mode.
2. Using the “Stream switch, advance to setup code 2-7.
3. Operate unit left or right to desired Home position.
4. Press the “Fog” switch to store the Home position.
5. Cycle power on to the Universal II Controller. The monitor will now stow at the new Home position.



OPERATING INSTRUCTIONS

A. PANEL CONTROLLER OPERATION

The panel controller is used to control the monitor and nozzle.

1. To deploy the monitor for use:
2. Locate the STOW/DEPLOY switch and push the toggle switch up for three seconds and release.
3. To stow the monitor after use:
4. Locate the STOW/DEPLOY switch and push the toggle switch down for three seconds and release.
5. To change the horizontal monitor position toward the right or left:
6. Press the proper toggle switch toward "RIGHT" or "LEFT" respectively, as labeled on the controller, until the desired position is reached.
7. To change the vertical monitor nozzle position upward or downward:
8. Press the proper toggle switch toward "RAISE" or "LOWER" respectively, as labeled on the controller, until the desired position is reached.
9. To change the nozzle pattern toward the straight stream or fog position:
10. Press the proper toggle switch toward "STRAIGHT" or "FOG" respectively, as labeled on the controller, until the desired nozzle position is reached.

B. MANUAL OVERRIDE CONTROLS

The manual override control is to be used only when the power to the monitor is off. A single 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 and the stow/deploy control. 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.

MAINTENANCE INSTRUCTIONS

Your DeckMaster 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 DeckMaster nozzle hit a fixed object during operation or transportation.
- Any other misuse that might be unique to your specific environment.

Also, there are many “tell tale” 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 DeckMaster monitor should be taken out of service, repaired, and tested by a qualified technician before placing back in service.

Greasing of the elevation and rotation joints is not required under normal operating conditions. Check the motor operating current periodically to confirm the current is within the Normal Operating Current ranges listed under Product Ratings. If the current has risen above the normal range, it may be necessary to add additional grease to the joint or to overhaul the joint to clean and replace the grease. See Table 1 and Table 2 below for grease volumes.

Periodically inspect the condition of the grease in the elevation and rotation joints. See the tables below for recommendations regarding the condition of the grease.

Do not apply grease more frequently than 1 time per month.

Standard recommended grease is Lubriplate Low Temp. This is an anhydrous calcium, NLGI 1.5 grade lubricant. The color is white.

For extreme or harsh environments or for continuous duty usage applications, Mobilith SHC460 grease is recommended. This is a synthetic hydrocarbon grease + lithium complex soap thickener, NLGI 1.5 grade lubricant. DIN 51825: KPHC1-2N-40. The color is red.

Use of any grease with an NLGI rating higher than 1.5 is not recommended. This may result in excessive operating currents/stalled motors.

Grease Condition Evaluation (Standard Lubriplate Low Temp grease):	
Color:	Action:
White	None
Gray	Add grease to the joint according to Table 1 be-low
Black	Component needs overhaul. Clean and remove old grease. Reapply grease to ball races and gears prior to re-assembly according to Table 2 below.

Grease Condition Evaluation (Optional Grease: Mobilith SHC460):	
Color (Standard Lubriplate Low Temp grease):	Action:
Red	None
Reddish Brown	Add grease to the joint according to Table 1 be-low
Black	Component needs overhaul. Clean and remove old grease. Reapply grease to ball races and gears prior to re-assembly according to Table 2 below.

Table 1: Adding Grease to an Assembled Monitor	
Joint:	Grease volume:
Rotation	1.0 oz. (29mL)
Elevation	0.25 oz. (7.4mL)

ERROR CODES

Error Codes consist of a two part blink code. The first digit can be 1, 2 or 3 short blinks followed by another set of short blinks (1-9). On the last blink of the second digit the LED remains on so it appears to be a long blink, then the code repeats itself. For example, error code 1-1 appears visually as a short blink, short pause with LED off, then a long blink, then another short pause with the LED off, then repeats.

1-1	Rotation sensor	Rotation mag switch was not detected during a stow or deploy sequence.
1-2	Elevation sensor	Elevation mag switch was not detected during a stow or deploy sequence.
1-3	Swing Arm sensor (3440 Only)	Monitor is in stowed or deployed mode and the swing arm sensor signal is lost or sending an invalid value (regardless of mode)
1-6	Obstacle Avoidance profile missing	The obstacle avoidance feature is turned on but the avoidance profile has not been learned
1-7	Rotation hard stop	N/A
1-8	Elevation hard stop	N/A
1-9	Swing Arm hard stop	An unexpected hard stop encountered while stowing or deploying after leaving a valid stowed or deployed position
2-1	Electric Riser	The electric riser function has been turned on but the riser is not available on the network
2-2	CAN Valve Not Calibrated	Valve function turned on and paired but not yet calibrated.
2-3	CAN Valve Not Located	Pairing process failed during setup or valve lost power and/or CAN communications while operating



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