



STYLE 3491 Severe Duty Electric Monitor INSTALLATION, OPERATING and MAINTENANCE INSTRUCTIONS

The following is intended to provide the basic instructions for installation, operating and maintenance of the Severe Duty Monitor.

Tools Required

- Utility knife
- Medium Phillips screwdriver
- Small Phillips screwdriver
- Electrician's pliers (multipurpose, stripping and crimping)
- Medium flat screwdriver
- Small flat screwdriver
- $\frac{1}{2}$ inch hex head wrench

PRODUCT RATINGS

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

Normal operating current (depending on operating conditions - pressure, flow, etc.):

12 volt versions	3 - 10 amps each for elevation and rotation motors 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

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: 57 lbs. (26 kg)

Maximum Flow: 750 GPM (2840 lpm)

Maximum Pressure: 200 PSI (14 bar)

PRODUCT WARNINGS

⚠ WARNING: The maximum flow of the Severe Duty is 750 GPM. The center of the waterway outlet is 8.25 inches from the bottom of the inlet. Ensure these values and an appropriate safety factor is used to determine a proper support structure.

⚠ WARNING: Aim the Severe Duty in a safe direction before pumping water through it.

- ⚠ WARNING:** Although the logic box includes a water resistant coating it is important to keep water out of the logic box. Prolonged exposure to water will cause damage. When the cover of the logic box is removed check that the O-Ring under the cover is intact and free of dirt and debris.
- ⚠ WARNING:** The Severe Duty uses current limiting for both the monitor and nozzle stops. Use only appropriate Akron Brass nozzles.
- ⚠ WARNING:** Make the connection of the vehicle and auxiliary battery the final step.
- ⚠ WARNING:** If any tags or bands are worn or damaged and cannot be easily read, they should be replaced.
- ⚠ WARNING:** Disconnect power and disable flow before maintenance.
- ⚠ WARNING:** Keep all personnel out from the front of the outlet of the monitor when the water source is attached. Dangerous flow velocities can cause serious injury.
- ⚠ WARNING:** The Severe Duty monitor contains moving parts. Keep hand, finger and objects away from pinch points.
- ⚠ WARNING:** Not designed for explosive environments.
- ⚠ WARNING:** Exceeding the maximum pressure and flow of the monitor or nozzle may cause damage.

WARRANTY AND DISCLAIMER

We warrant Akron Brass products for a period of one (1) year after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service. We will not be responsible for: wear and tear, any improper installation, use, maintenance or storage; negligence of the owner or user; repair or modification after delivery; failure to follow our instructions or recommendations; or anything else beyond our control. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. Further, we will not be responsible for any consequential, incidental or indirect damages (including, but not limited to, any loss of profits) from any cause whatsoever. No person has authority to change this warranty.

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. The wires from the control boxes can be cut to the length for the application plus 10 inches (See STEP 1). Do not extend the wires from the logic box to the monitor.
- For use with water or standard fire fighting foams only. After use with foam, flush with fresh water.
- Drain the Severe Duty monitor and nozzle after use to prevent "freeze damage" in cold weather.
- Ensure that the thread in the nozzle swivel matches the thread on the Severe Duty outlet. Do not overtighten the nozzle onto the Severe Duty Monitor.
- The Severe Duty monitor, nozzle, logic box, control boxes, optional battery, and field adjustable rotation stops are made for optimal performance, Do not alter in any manner.
- Do not install shutoffs on the outlet of the Severe Duty.
- Mount the logic box, control boxes out of range from the monitor travel.

D. JOYSTICK WITH TRIGGER FOR VALVE, STOW AND AUTO OSCILLATION

To change the nozzle pattern toward the straight stream or fog press the corresponding button on top of the Joystick. To change the horizontal position right or left move the Joystick towards the appropriate direction. To change the vertical position up or down move the Joystick forward for down and backwards for up. To open and close the valve, press the trigger to open the valve and release the trigger to close the valve. The valve can be maintained open by pressing the valve switch towards open. Note: When valve is maintained open, the trigger will not operate the valve.

To stow the monitor, press and release the Stow button. The stow LED light will turn off when stowed. The stow position can learn a new position (see Section E). The monitor is shipped with the stow position set at 0° rotation and 0° elevation. For auto oscillation, press the Auto Oscillation button. To stop the oscillation, press the Auto Oscillation button again or use the joystick and operate in the left or right direction. The monitor is shipped with the auto oscillation at 20°. To change the auto oscillation range, flip the DIP switch on. For wide auto oscillation range flip 45°.

E. LEARN MODE

The stow position can learn a new position by pressing and holding the Stow button. When the monitor reaches the default stowed position (Straight Out), continue to hold the Stow button while operating the up or down button until the desired position. Let go of just the up or down button and that will be the new elevated stow position. While continuing to hold the stow button operating the left or right button until the desired position. Release both buttons. This will be the new stowed position. If the stowed button is released at any time during the process, stop and restart the sequence.

MAINTENANCE INSTRUCTIONS

Your Severe Duty monitor and nozzle should be inspected prior to and after each use, to ensure it is in good operating condition. The monitor joints were greased and sealed at assembly, there is no greasing to be done while in use.

SITUATIONS THAT MAY CAUSE IRRERPAIRABLE DAMAGE

- Operating above maximum rated pressure and flow.
 - Not draining, and allowing water to freeze inside.
 - Prolonged exposure to temperatures above 130°F (54°C), or below -25°F (-32°C).
 - Having the nozzle hit a fixed object during operating or transportation.
- 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 Severe Duty should be taken out of service, repaired, and tested by a qualified technician before placing it back in service.

MOTOR/GEARING ASSEMBLY REPLACEMENT

To replace either the horizontal or vertical rotational motors, (refer to Exploded View on figure 2):

1. Disconnect Power from the unit.
2. Loosen and remove the four socket screws Item (41) from the gearbox housing (19).
3. Slowly remove the motor and gearbox housing assembly. To release the worm gear, rotate the discharge waterway with positive elevation to disengage the worm gear to expel it from the assembly thus removing the motor/gearbox/worm assembly direction.
4. Insert new motor and gearbox housing assembly by rotating waterways opposite of step 3.
5. Reinsert and tighten four socket screws.
6. Restore power to the unit.
7. Test the operation of the unit.

ROTATING JOINT REPLACEMENT

The horizontal or vertical joints are identical in design. It is not necessary to take apart the joint to remove and replace the motor. To replace the gear sleeve or high density polyethylene (HDPE) bearings, (refer to figure 2):

1. Disconnect Power from the unit.
2. Follow steps 2&3 outlined in MOTOR REPLACEMENT.
3. Unbolt the four $\frac{5}{16}$ hex bolts from the flanges on both sides of the joint casting.
4. Remove travel stops
5. Slide joint apart, replace worn high density polyethylene bearings (44), bronze gear sleeve (4), o-rings (43 & 45).
6. Use proper care to clean old grease residue and liberally apply new grease for re-assembly.
7. To re-assemble perform steps 2 & 3 in reverse order.
8. Insert travel stops.

Call Akron Brass Customer Service Department if any problems are encountered.

Figure 2

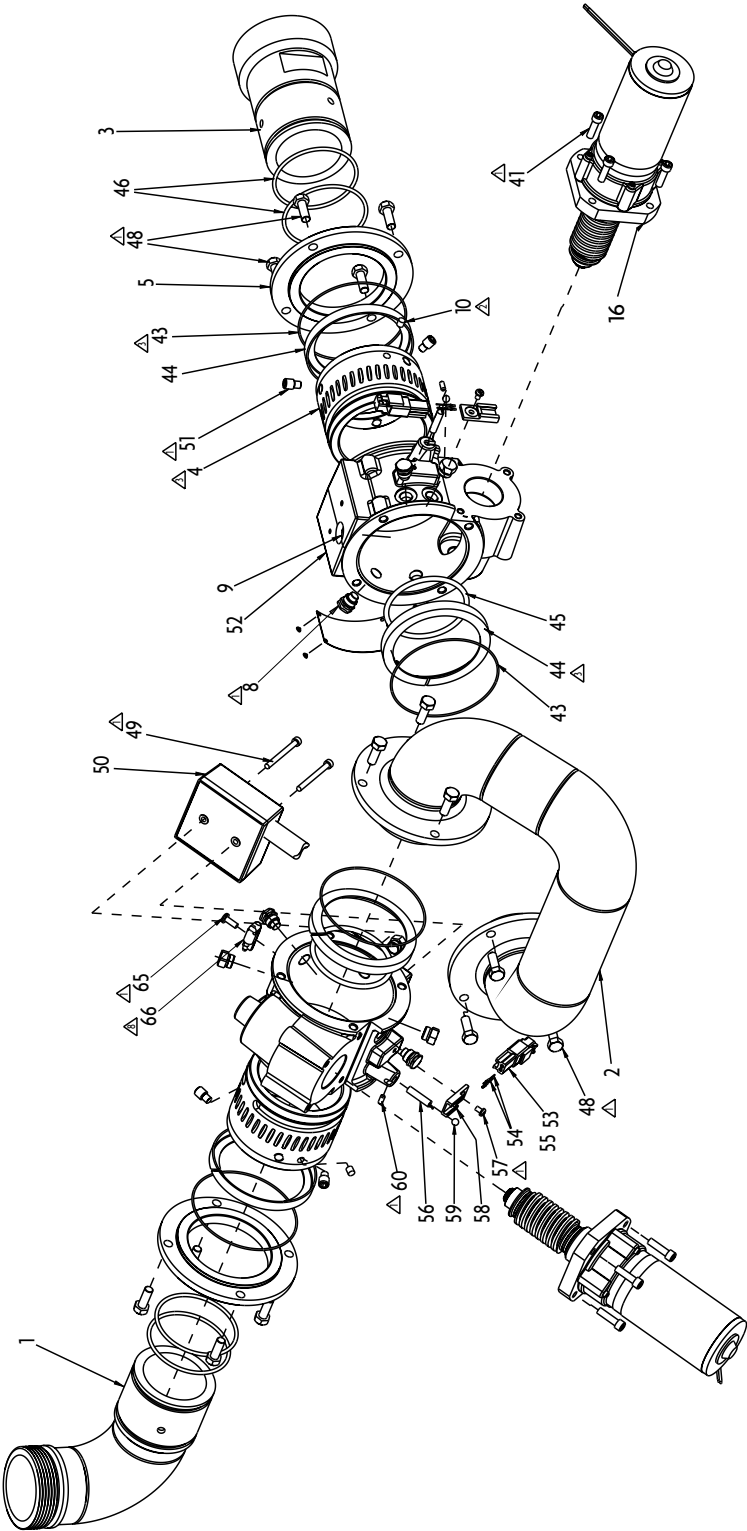


Figure 3

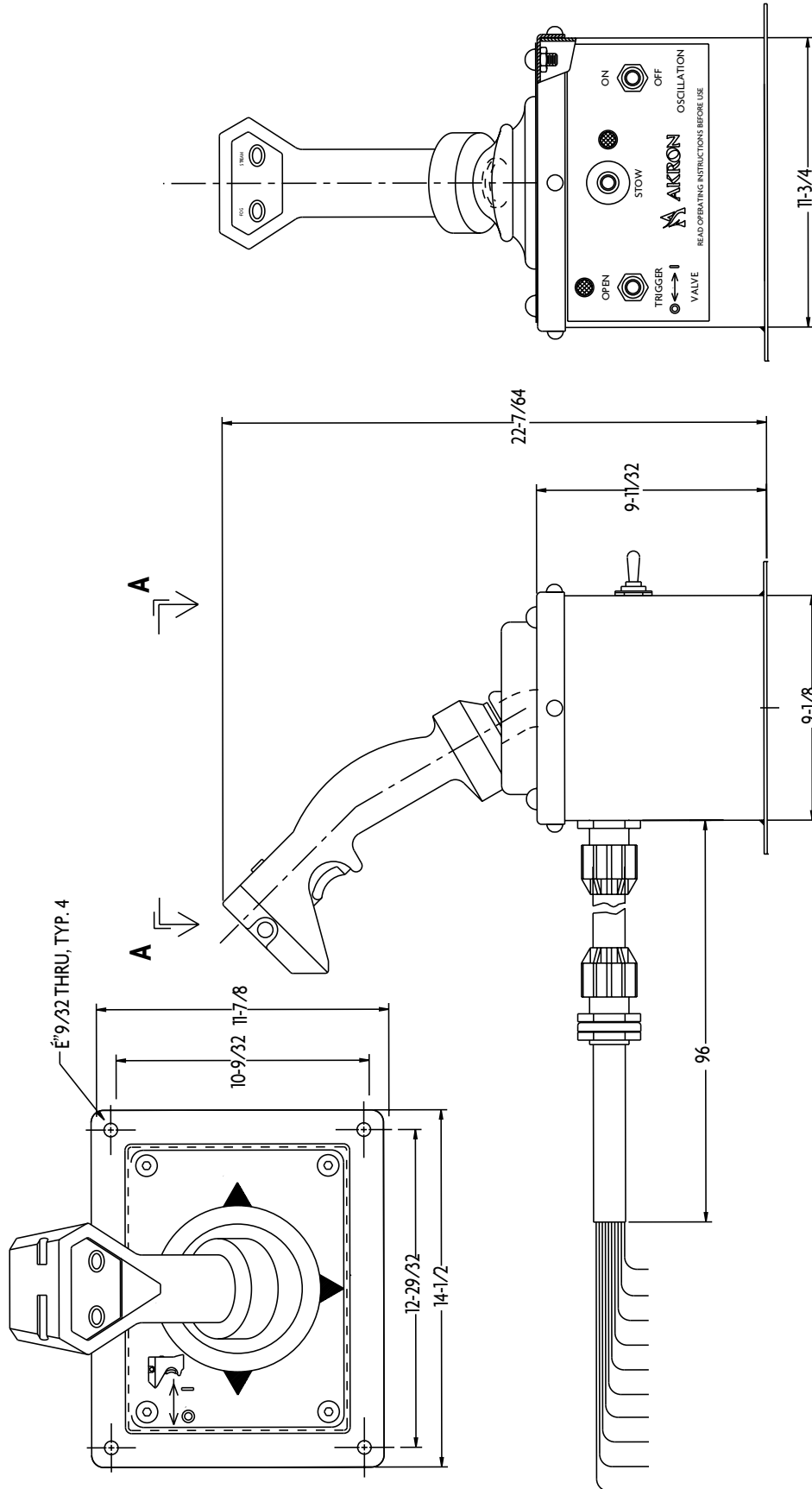


Figure 5

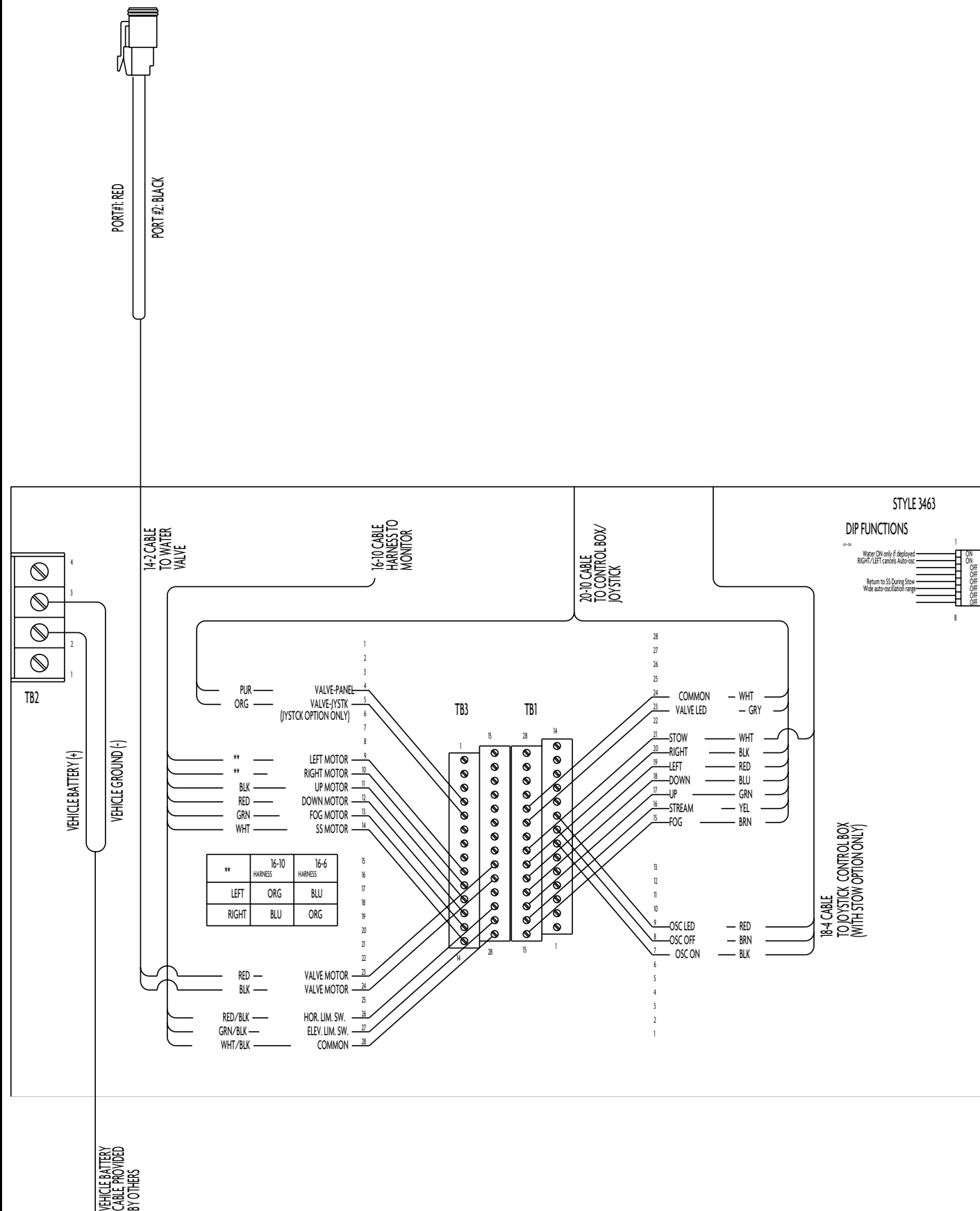


Figure 6

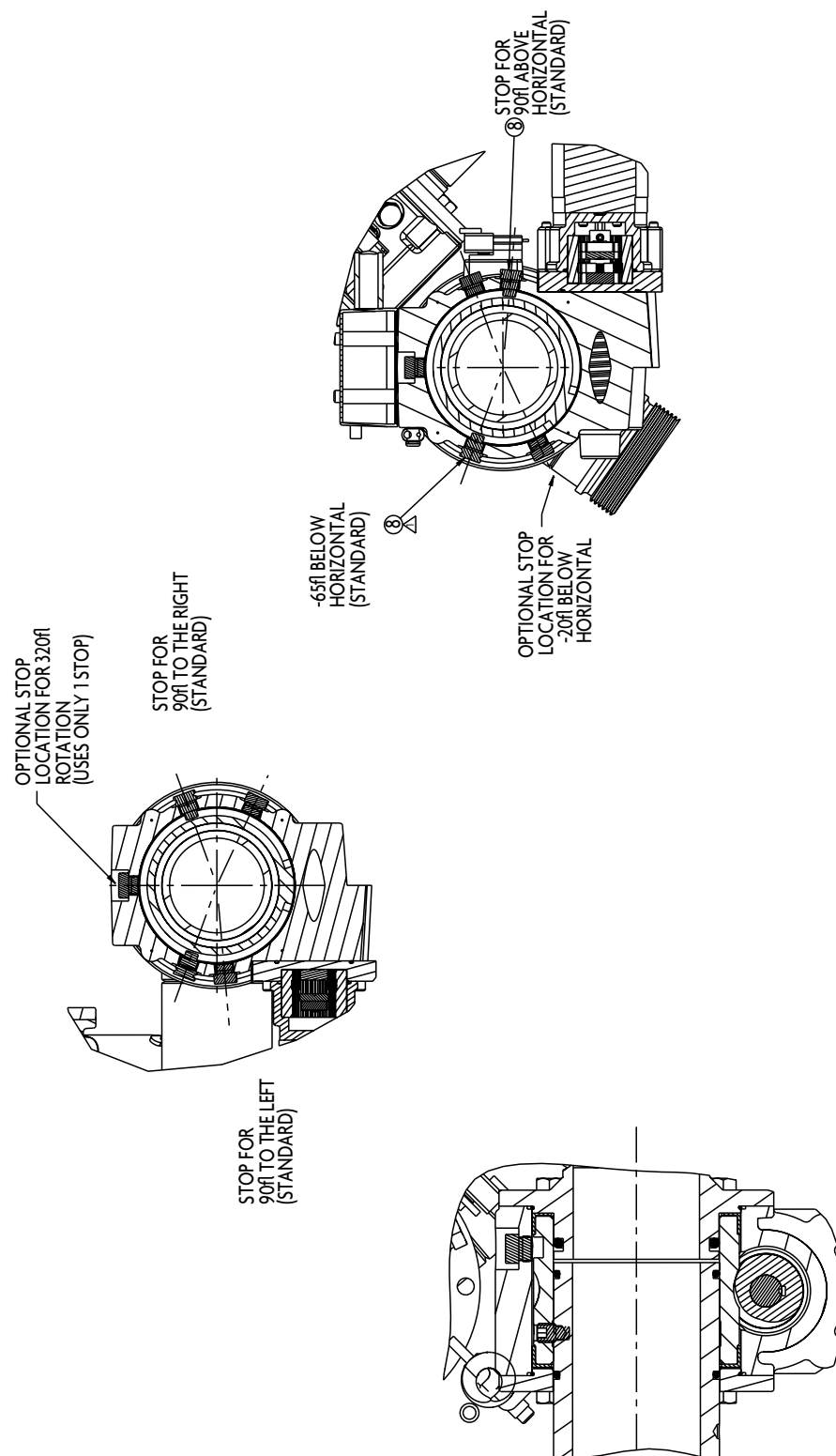


Figure 4

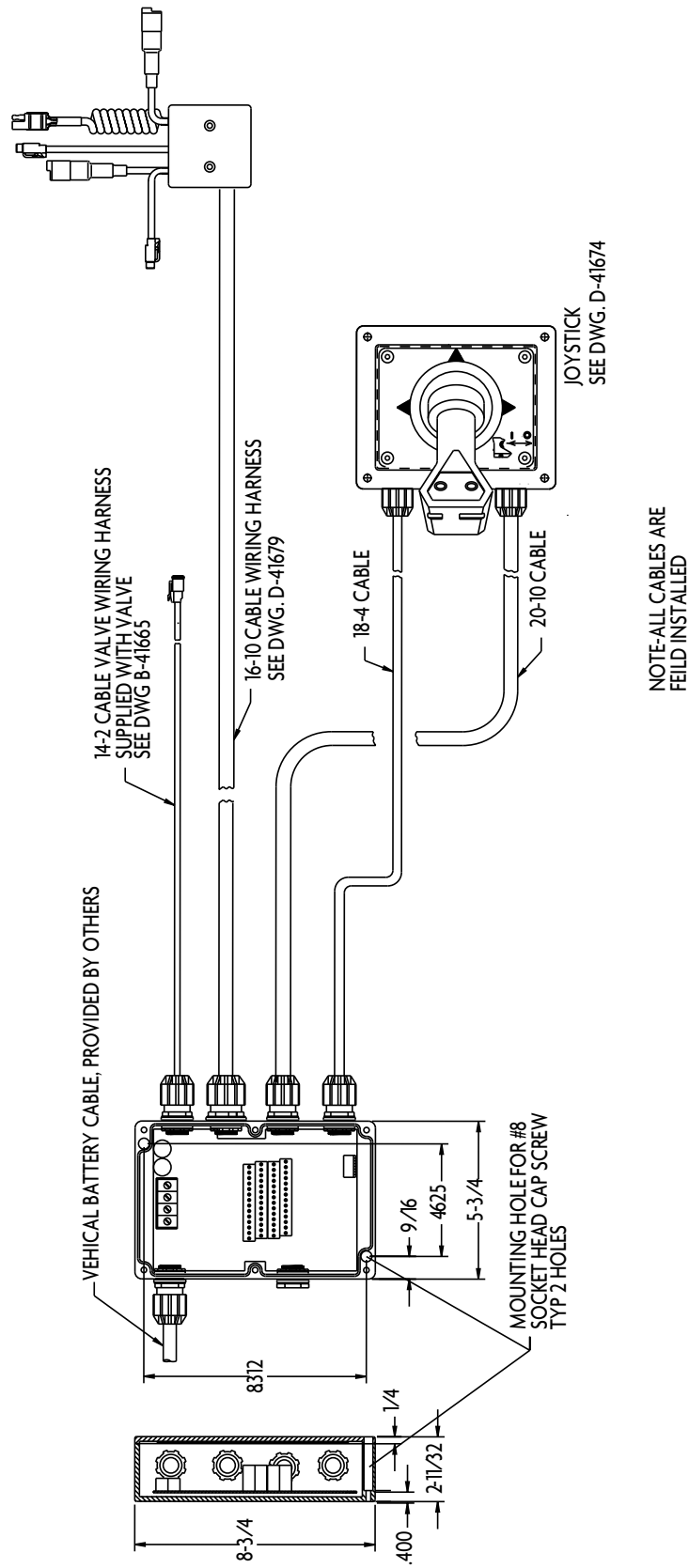
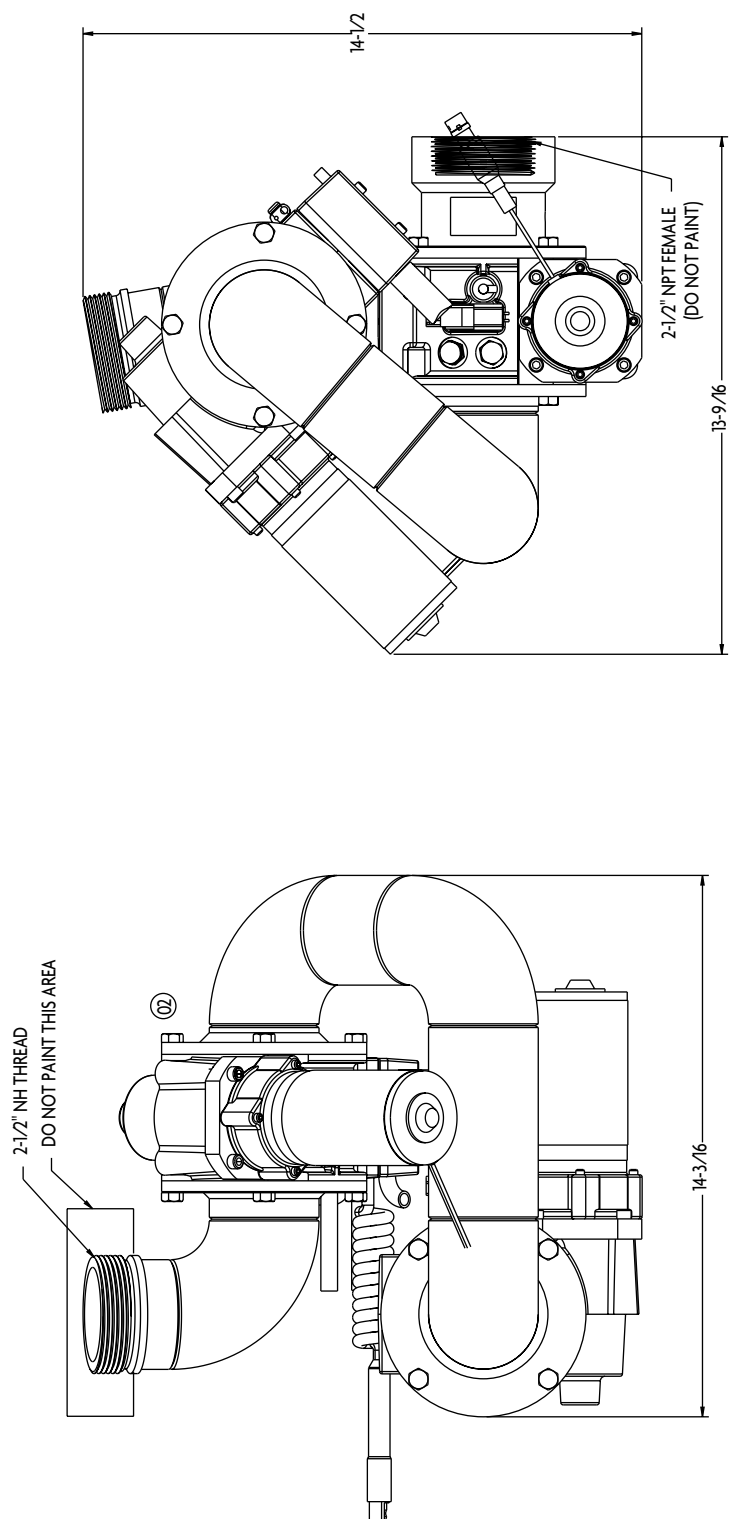


Figure 1

ELEVATION MOVEMENT:
+90°-65° (STANDARD) CAN BE CHANGED
BY CUSTOMER TO +90°-20°



SEVERE DUTY MONITOR PARTS LIST

ITEM NO.	DESCRIPTION	PART NUMBER	QUANTITY
	Complete Assembly		
	MON SEVERE DUTY 2.5NPTX2.5NH,24V,STW,BLK	34910001	
	MON SEVERE DUTY 2.5NPTX2.5NH 12V STW BLK	34910002	
	Sub Assembly & Accessories Parts List		
016	MOTOR&GEARING S/A SERVICE PART 24V, L/PT	34910201	
016	MOTOR&GEARING S/A SERVICE PART 12V, L/PT	34910202	
	BOARD PC 12/24V W/LMT TRAVEL EA REPAIR	34630034	
	LOGIC BOX 12/24V W/LMT TRVL EA VLV	34630035	
50	HARNESS WIRING FIREFOX W/STOW 3463	721361	
	SHAPER MINI 2.5NHFX2.5NHM PY#	34850005	
	PLAIN DELUGE TIP 2.5NH W/1 1/4 DSCH CS	04890007	
	NOZ 2.5NH 1000G,12 or 24V,OVRD,STREAM SHPR CE	5077	
	NOZ AKROFOAM 2.5NH W/PU TUBE & VLV	4470	
	GEAR RING REPLACEMENT KIT	* 34912009	
	Individual Parts		
015	MOTOR S/A GEAR,CONN HOUSING 24V, L/PT	35781101	2
015	MOTOR S/A GEAR,CONN HOUSING 12V, L/PT	35781082	2
001	ELBOW OUTLET 2.5"NH MCH/WELD/PLATE	710127	1
002	GOOSENECK WELDMENT MCH/WELD/PLATE	718228	1
003	INLET 2.5NPT FEM STEEL MCH/PLATE	723032	1
004	GEAR WORM BRONZE MCH/HOB	718229	2
005	CAP JOINT 6061T6 HC .28SF 3490	119719	2
008	STOP 303-304ST STL 3578	769498	4
009	PLUG 1/2-20 X1/2"3578	744337	6
010	MAGNET 1/4D. X 1/4 LG NICKEL RARE EARTH	731081	2
041	SCREW SOC HD CAP 1/4-20 X 7/8 STSTL	767157	8
043	O-RING 2-045 BUNA-N70	757427	4
044	BEARING POLYETHYLENE MCH COMP 3490	704781	4
045	O-RING 3 1/4"X 2 7/8"2-336	757074	2
046	O-RING 3 1/4"X 3"2-234 BUNA N70	757029	4
048	SCREW HEX HD CAP ST STL 5/16-18 X 7/8"	763028	16
049	SCREW SOC HD CAP 10-24X2 ST STL	763077	2
051	STUD ST STL MCH COMP 3490	769727	6
052	JOINT MCH/HC 1.19SF 3490	119721	2
056	SWITCH HAMLIN ROUND NEWARK #89F1393	769599	2
057	SCREW #8-32X1/4"PHILLIPS PAN HD ST STL	765208	2
058	BRACKET CONN. DEUTSCH #1011-026-0205	704589	2
059	BALL RUBBER 1/4"OD 3350	703544	2
060	SCREW HEX SOC SET ST STL 8-32 X 3/8"CUP	765074	2
061	SCREW SOC HD CAP 6-32 X 1 3/8"LG STSTL	767132	8
065	SCREW PAN HD 10-24 X 1/2" BLK NYLON	767147	1
066	CLIP SPEED VENDOR# 7000F (CONNECTOR)	707219	1

NOTES:

MOBILITH SHC 460 GREASE: 92100001

* KIT INCLUDES ITEMS 4, 43, 44, 45, 46, 51 AND 92100001

C. BATTERY ATTACHMENT

The battery connections should be the last connection made.

STEP 8 VEHICLE BATTERY - Remove the logic box cable grip nut for the vehicle battery and place it on to the battery cable (#10-2 or #12-2 depending on length) with the threads facing out. Thread the cable through the cable grip until the cable grip nut will grab the cable. Tighten the cable grip nut and attach the individual wires to the proper terminals (see wiring schematic figure 5). Reattach the logic box cover and secure with the 6 screws.

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

D. MECHANICAL MONITOR ATTACHMENT

The Monitor is to be mounted on the waterway with a 2 1/2" NPT thread. The monitor may have an optional 3" or 4" flange with a short nipple.

THE ROTATIONAL AND ELEVATION STOPS SET THE BOUNDARIES FOR THE AREA IN WHICH THE MONITOR IS ALLOWED TO TRAVEL. The monitor is shipped with rotation stops at 110° right, and at 110° left. All other positions are achieved by switching the factory set stop and the plug in the desired stop location. Both the stops and the plugs have a 1/2 inch hex head. Refer to Page 10 to determine which stop location is needed for the desired rotation. The elevation stop sets the upper limit of the elevation. The monitor is shipped with elevation stops at 90° above horizontal and 65° below horizontal. All other vertical positions are achieved by switching plugs and stops to the desired locations as indicated in figure 6.

OPERATING INSTRUCTIONS

A. CONTROL BOX CONTROL OPERATION

To change the nozzle pattern toward the straight stream or fog position press the proper toggle switch toward straight or fog respectively. To change the horizontal monitor position toward the right or left press the proper toggle switch toward right or left respectively. To change the vertical monitor position upward or downward press the proper toggle switch toward raise or lower respectively.

B. JOYSTICK

To change the nozzle pattern toward the straight stream or fog press the corresponding button on top of the Joystick. To change the horizontal position right or left move the Joystick towards the appropriate direction. To change the vertical position up or down move the Joystick forward for down and backwards for up.

C. JOYSTICK WITH TRIGGER FOR VALVE

To change the nozzle pattern toward the straight stream or fog press the corresponding button on top of the Joystick. To change the horizontal position right or left move the Joystick towards the appropriate direction. To change the vertical position up or down move the Joystick forward for down and backwards for up. To open and close the valve, press the trigger to open the valve and release the trigger to close the valve. The valve can be maintained open by pressing the valve switch towards open. Note: When valve is maintained open, the trigger will not operate the valve.

ELECTRICAL INSTALLATION INSTRUCTIONS

A. CONTROL BOXES AND JOYSTICK WIRING ATTACHMENT

The following steps will prepare either the joystick or control box for attachment to the logic box.

- STEP 1** Determine the length of #20-7 cable needed, add 10 inches, then cut. For example, if a five foot length of cable is needed, add 10 inches and cut the cable 5 foot 10 inches long.
- STEP 2** Remove the cable grip nut and washer from the control box and put it on the cable with the threads facing the box. On the same end of the cable remove 4 inches of the outer casing of the cable and strip back $\frac{3}{8}$ inch from each of the 10 wires.
- STEP 3** Take the 10 ring terminals from the plastic bag and crimp them on the 10 wires. Remove the four control box cover screws and set the control box cover aside. Thread the 10 wires through the cable grip attached to the control box and attach them to the proper terminals. Reattach control box cover and secure with the four screws. Tighten the cable grip nut and washer on the cable to the cable grip on the control box to secure the cable.
- STEP 4** Remove the cable grip nut from the plastic bag and put it on the other end of the cable with the threads facing out. Remove 6 inches of the outer cover and strip back $\frac{3}{8}$ inch from each of the 10 wires.
- STEP 5** Remove the 6 logic box cover screws and set the logic box cover aside. Thread the 7 wires through the hole in the logic box (see component layout, figure 4). Thread the cable grip washer and cable grip nut with the threads facing the box on the cable. Pull enough cable through the cable grip to ensure a good fit. Tighten the cable grip nut and attach the individual wires to the proper terminals (see wiring schematic figure 5). Reattach the logic box cover and secure with the 6 screws.

B. MONITOR WIRING HARNESS ATTACHMENT

These instructions are to attach the monitor wiring harness to the logic box.

- STEP 7** Remove the cable grip nut from the logic box for the wiring harness cable. DO NOT REMOVE THE CABLE GRIP. Put the cable grip nut on the wiring harness cable with the threads facing out. Put the cable through the correct logic box cable grip (see component layout, figure 4) so the cable grip nut will grab the outer cover of the cable. Tighten the cable grip nut and attach the individual wires to the proper terminals (see wiring schematic figure 5).



ISO 9001 REGISTERED COMPANY

PHONE: 330.264.5678 or 800.228.1161 | FAX: 330.264.2944 or 800.531.7335 | akronbrass.com

REVISED: 06/15

WARRANTY AND DISCLAIMER: We warrant Akron Brass products for a period of five (5) years after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service.

We will not be responsible for: wear and tear; any improper installation, use, maintenance or storage; negligence of the owner or user; repair or modification after delivery; damage; failure to follow our instructions or recommendations; or anything else beyond our control. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. Further, we will not be responsible for any consequential, incidental or indirect damages (including, but not limited to, any loss of profits) from any cause whatsoever. No person has authority to change this warranty.

© Akron Brass Company. 2015 All rights reserved. No portion of this can be reproduced without the express written consent of Akron Brass Company.