



**Assembly & Installation Instructions**  
**Elkhart Model 299-11 EL Free Standing Elevated Monitor**  
**10', 15', and 20' Heights**

This instruction sheet is to be used in conjunction with assembly drawing 299-11 EL.

**Assembly:**

1. Remove thread protection from end of Waterway Weldment Sub-Assembly (Item 21).
2. Install Monitor Sub-Assembly (Item 15) onto upper end of Waterway Weldment Assembly (Item 21) by wrenching Monitor Base onto Waterway Weldment. Use a good grade of pipe joint compound on pipe threads.
3. Remove grease fitting from monitor base and set aside.
4. Slide upper end of drive sleeve (Item 20) over monitor base and align the two inline holes with the two 3/4 -16 tapped holes in the monitors swivel joint making sure the third hole aligns with the tapped hole for the grease fitting. Secure drive sleeve to monitor swivel joint using two 3/4 - 16 x 5/8 bolts. Apply Loctite #262 to bolts prior to assembly.
5. Reinstall grease fitting.
6. Attach vertical control cables (Item 19) to monitor and vertical control handle as shown on drawing. Adjust cable so that handle is parallel to stream direction.
7. Attach nozzle to monitor discharge port. If adjustable fog nozzle is used, attach pattern control cable to nozzle.
8. When raising the monitor assembly, do not attach cable or sling to bent tube waterway at top of assembly. This portion of the assembly is not designed to support the weight of the long riser, and damage or failure could result.

**Installation:**

The supply pipe and companion flange configuration to which the 299-11 EL monitor is installed must be supported to withstand a bending moment of 16,000 ft-lbs applied to the flange face. A forged steel companion flange and steel pipe with adequate support are recommended. DO NOT use cast iron companion flange or cast iron pipe.

**4"-150# Flanges:** Join monitor base flange to companion flange using 5/8-11 SAW Grade 5 bolts and nuts. Use a 1/16" thick ring gasket designed for use with steel flanges. Torque flange bolts to 150 ft-lbs (Dry).

**6"-150# & 300# Flanges:** Join monitor base flange to companion flange using 3/4-10 SAW Grade 5 bolts and nuts. Use a 1/16" thick ring gasket designed for use with steel flanges. Torque flange bolts to 260 ft-lbs (Dry).

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**\*\*\*\*IMPORTANT\*\*\*\***

**DO NOT** exceed the following maximum allowable flow rates at 100 PSI nozzle pressure:

<u>Monitor Heights</u>	<u>Max. Flow at 100 PSI NP</u>	<u>Maximum Pressure At Base Flange</u>	<u>Calculated Deflection of Nozzle at Maximum Flow</u>
10 Ft.	750 GPM	127 PSI	1.05 inches
15 Ft.	750 GPM	134 PSI	4.34 inches
20 Ft.	750 GPM	143 PSI	11.33 inches

Pressure and flow characteristics of water supply must be determined prior to monitor installation, and a restricting device, such as an orifice plate, installed between flanges to limit flow and pressure to appropriate values as indicated above.

**Operation:**

**Horizontal and Vertical locks:** The monitor should **always** be locked in position when it is to be left unmanned. The horizontal travel is locked and unlocked using a friction lock operated by hand wheel assembly (Item 14). Turn the hand wheel assembly clockwise to lock the monitors horizontal travel and counterclockwise to unlock it. The vertical travel can be locked in position using the friction lock on the right hand side of the control arm. To lock the monitors vertical travel turn the lock clockwise using the handle shaft with the knob on the end (Items 1 & 2). Turn the lock counterclockwise to unlock the vertical travel of the monitor. **Always make sure both locks are engaged before flowing water.**

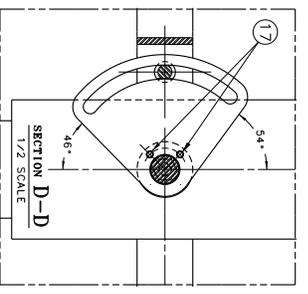
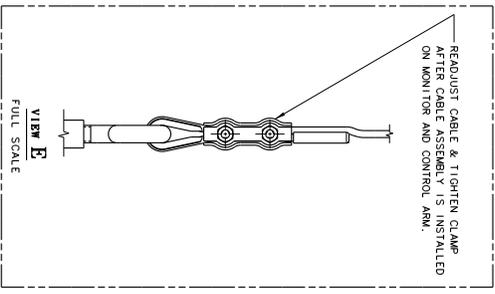
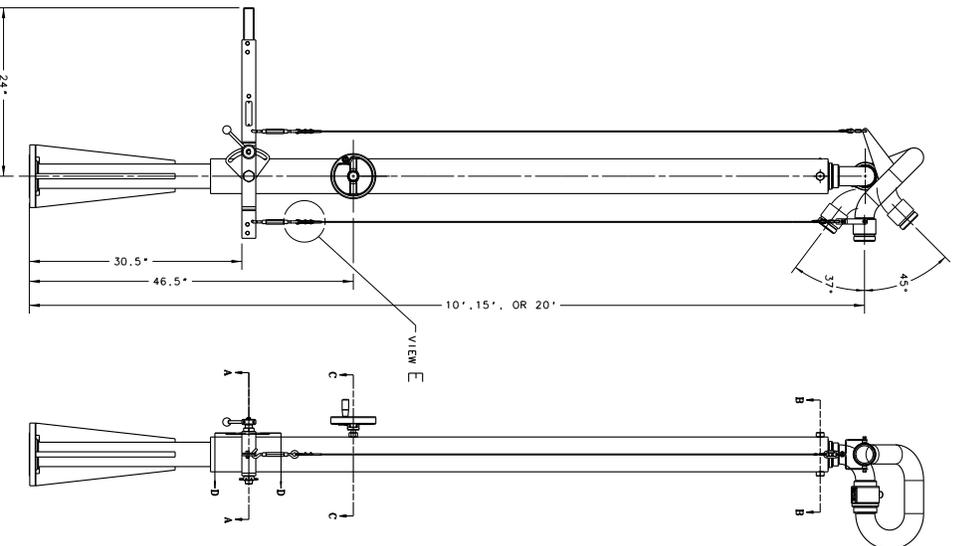
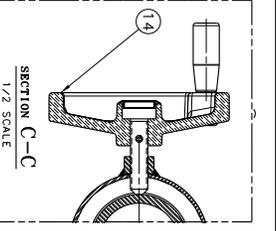
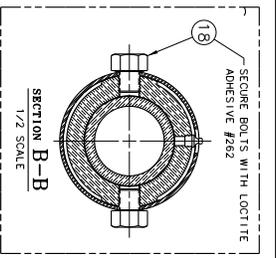
**Controlling Horizontal and Vertical movement:** The monitor movement is controlled using the hand grip (Item 16) located on the end of the control arm assembly. Firmly grasp the hand grip with one hand and release the vertical and horizontal locks with the other. Only release the locks enough to allow movement in all directions. Pushing down on the hand grip will raise the discharge of the monitor and lifting will lower the discharge. Pushing the hand grip to the left will move the discharge of the monitor to the right and pushing the hand grip to the right will move the discharge of the monitor to the left. **Do not release the monitor controls without engaging both the horizontal and vertical locks first.**

Familiarize all personnel that will be using this equipment with the operation of all the monitor's locks and controls before flowing water. The water supply to the monitor should be increased slowly to prevent whipping of the monitor due to nozzle reaction.

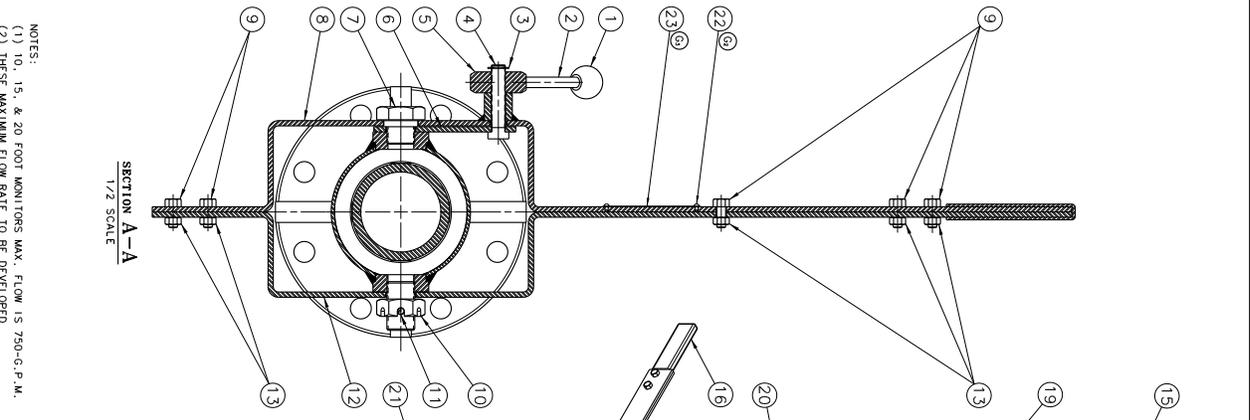
**Maintenance:**

The monitor should be moved through its entire range of motion and inspected for proper function of all locks and controls monthly. The monitor should be greased through the two fittings located on the monitor assembly (Item 15) every six months. General purpose petroleum grease should be used. Maintain paint as dictated by the environment.

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NOTES:  
 (1) 10, 15, & 20 FOOT MONITORS MAX. FLOW IS 750-G.P.M.  
 (2) THESE MAXIMUM FLOW RATE TO BE DEVELOPED WITH A MAXIMUM NOZZLE PRESSURE OF 100-P.S.I.



NO.	PART NO.	PART NAME	QTY
1	81540001	INTERMEDIATE MONITOR ASSEMBLY (100')	1
2	80713000	MONITOR ASSEMBLY (100')	1
3	80716001	CONTROL CABLE ASSEMBLY (100')	2
4	5--300#	FF FLANGE	20
5	81543001	INTERMEDIATE MONITOR ASSEMBLY (20')	1
6	80713000	MONITOR ASSEMBLY (20')	1
7	80716001	CONTROL CABLE ASSEMBLY (20')	2
8	5--150#	FF FLANGE	20
9	81542001	INTERMEDIATE MONITOR ASSEMBLY (15')	1
10	80713000	MONITOR ASSEMBLY (15')	1
11	80716001	CONTROL CABLE ASSEMBLY (15')	2
12	5--150#	FF FLANGE	20
13	81541001	INTERMEDIATE MONITOR ASSEMBLY (10')	1
14	80713000	MONITOR ASSEMBLY (10')	1
15	80716001	CONTROL CABLE ASSEMBLY (10')	2
16	5--150#	FF FLANGE	20
17	80682001	INTERMEDIATE MONITOR ASSEMBLY (5')	1
18	80713000	MONITOR ASSEMBLY (5')	1
19	80716001	CONTROL CABLE ASSEMBLY (5')	2
20	5--150#	FF FLANGE	20
21	80683001	INTERMEDIATE MONITOR ASSEMBLY (2')	1
22	80713000	MONITOR ASSEMBLY (2')	1
23	80716001	CONTROL CABLE ASSEMBLY (2')	2
24	5--150#	FF FLANGE	20