



Assembly & Installation Instructions

Elkhart Model 299-11 EL Free Standing Elevated Monitor

25', 30', and 40' Heights

This instruction sheet is to be used in conjunction with assembly drawing 299-11 EL. Item numbers referenced below are called out on the drawing along with the appropriate weld locations and symbols. Assembly and field fabrication is to be accomplished as follows with tubing components laid out horizontally:

Assembly:

1. Insert lower end of Upper Waterway Weldment Sub-Assembly (Item 18) into the upper end of Lower Waterway Weldment Sub-Assembly (Item 22) for a length of twelve inches.
2. Weld upper and lower waterway sections together by making continuous 3/8" bevel weld at top end of Lower Waterway Weldment Sub-Assembly (Item 22).
3. Slide Lower Horizontal Drive Sleeve Assembly (Item 23) over waterway section over waterway piping. Grinding of weld made in step 2 above may be necessary in order to provide clearance for bushed lower end of the horizontal drive sleeve. Slide this sleeve as far as possible toward flanged end of waterway.
4. Slide Upper Horizontal Drive Sleeve (Item 17) over waterway tubing and into socket end of Lower Horizontal Drive Sleeve.
5. Install Monitor Sub-Assembly (Item 16) onto Upper Waterway Weldment Sub-Assembly (Item 18), by wrenching Monitor Base onto Upper Waterway Weldment. Use a good grade pipe joint compound on the pipe threads.
6. Slide both sections of Horizontal Drive Sleeve (Items 17 & 23) toward monitor so that upper end of Drive Sleeve (Item 17) slides over the monitor lower swivel joint. Align two holes in Drive Sleeve (Item 17) with two tapped holes in monitor swivel joint. Secure drive sleeve to monitor swivel joint using two $\frac{3}{4}$ - 16 x 1.00 bolts. Apply Loc-Tite #262 to bolts prior to assembly.
7. Assemble Horizontal Control Arm & Vertical Lock Assembly (#81310001) to Lower Drive Sleeve (Item 23).
8. Rotate Lower Horizontal Drive Sleeve (Item 23) to align vertical control handle with monitor discharge port. Support section of horizontal drive sleeve as necessary to align sections prior to welding.

98464000 (REV-E)

9. Join upper and lower sections of Horizontal Drive Sleeve (Item 17 & 23) by making continuous 1/8" bevel weld at top end of lap joint sleeve.
10. Attach Vertical Control Cables (Item 15) to monitor vertical control handle as shown on drawing. Adjust cable lengths so that handle is parallel to stream direction.
11. Attach nozzle to monitor discharge port. If adjustable fog nozzle is used, attach pattern control cable to nozzle.
12. When raising the monitor assembly, do not attach cable 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 23,000 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. Join monitor base flange to companion flange using 3/4-10 SAE 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).

******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>
25 Ft.	750 GPM	136 PSI	11.84 inches
30 Ft.	750 GPM	139 PSI	12.54 inches
40 Ft.	500 GPM	130 PSI	13.30 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.**

98464000 (REV-E)

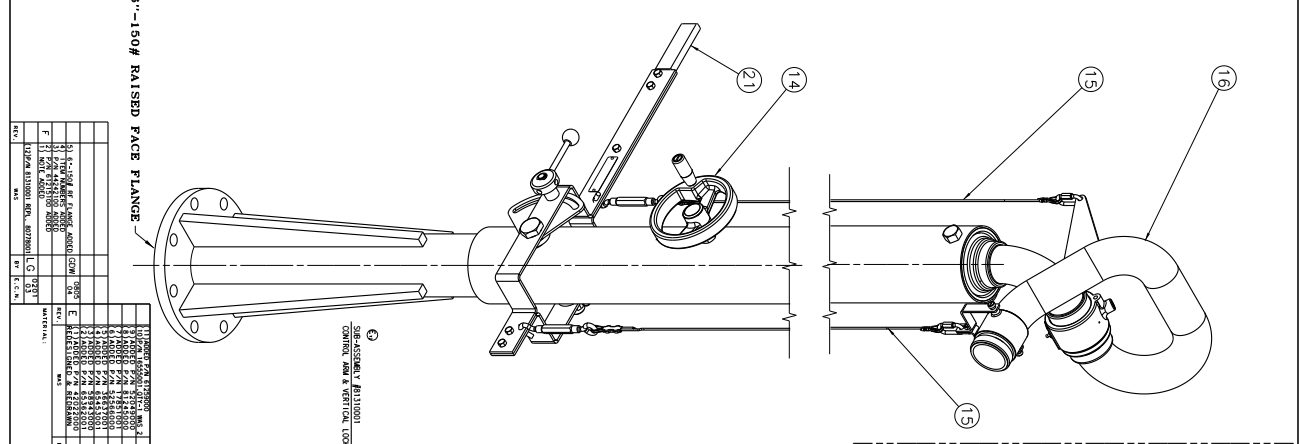
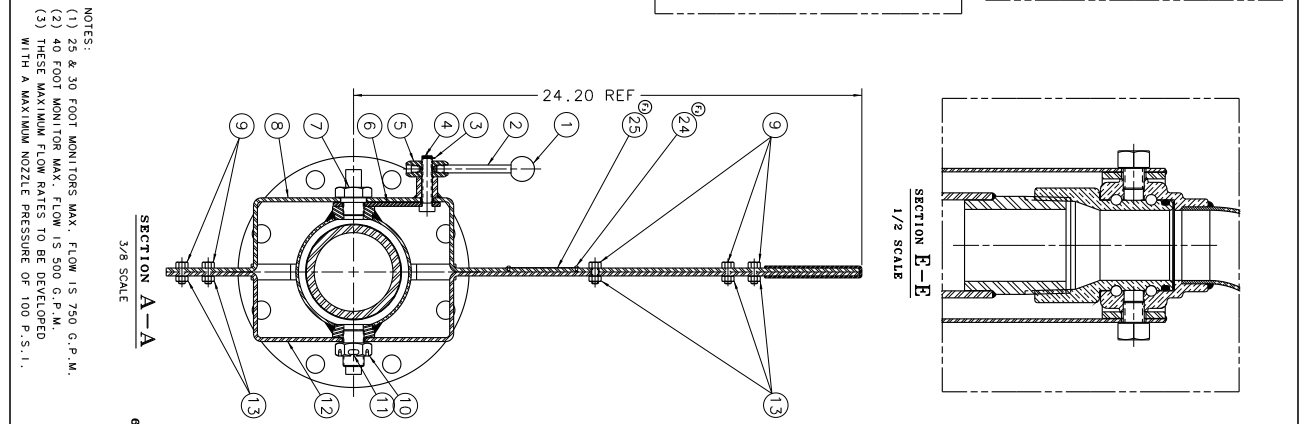
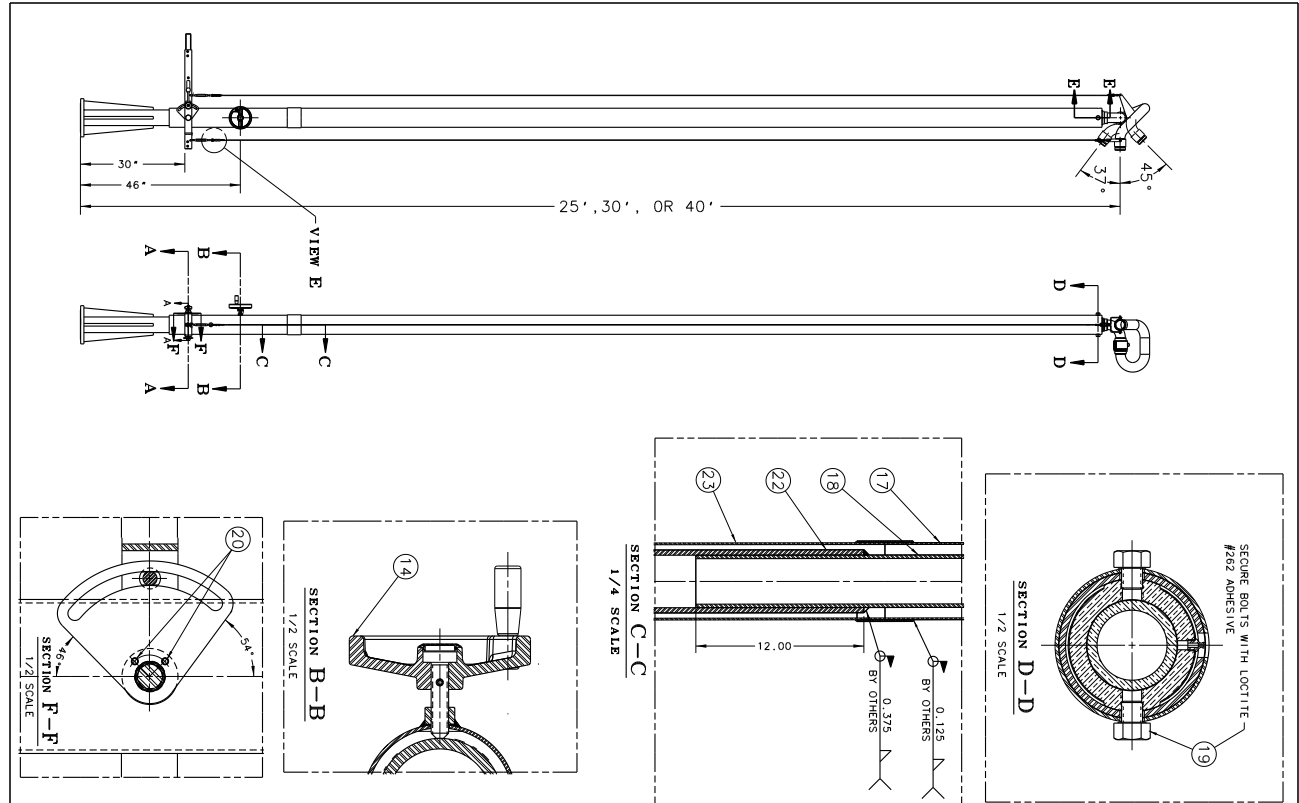
Controlling Horizontal and Vertical movement: The monitor movement is controlled using the hand grip (Item 21) located on the end of the control arm assembly. Firmly grasp the hand grip with one hand and release the vertical and horizontal locks with the other. Only release the locks enough to allow 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 16) every six months. General purpose petroleum grease should be used. Maintain paint as dictated by the environment.

98464000 (REV-E)



ITEM	NUMBER	DESCRIPTION	QTY
21	80705000	PIVOT ASSEMBLY	1
22	80687001	LOWER WATERWAY WELDMENT (40")	1
23	80710001	CONTROL CABLE ASSEMBLY (40")	2
24	99193101	6"-150# RF FLANGE	2
25	80702000	LOWER PORT ZONAL W/RT WELDMNT (25")	1
26	80686001	LOWER WATERWAY WELDMENT (25")	1
27	80703001	CONTROL CABLE ASSEMBLY (25")	2
28	80704001	CONTROL CABLE ASSEMBLY (30")	2
29	80705001	CONTROL CABLE ASSEMBLY (30")	2
30	80706001	CONTROL CABLE ASSEMBLY (30")	2
31	80707001	CONTROL CABLE ASSEMBLY (30")	2
32	80708001	CONTROL CABLE ASSEMBLY (30")	2
33	80709001	CONTROL CABLE ASSEMBLY (30")	2
34	80710001	CONTROL CABLE ASSEMBLY (30")	2
35	80711001	CONTROL CABLE ASSEMBLY (30")	2
36	80712001	CONTROL CABLE ASSEMBLY (30")	2
37	80713001	CONTROL CABLE ASSEMBLY (30")	2
38	80714001	CONTROL CABLE ASSEMBLY (30")	2
39	80715001	CONTROL CABLE ASSEMBLY (30")	2
40	80716001	CONTROL CABLE ASSEMBLY (30")	2
41	80717001	CONTROL CABLE ASSEMBLY (30")	2
42	80718001	CONTROL CABLE ASSEMBLY (30")	2
43	80719001	CONTROL CABLE ASSEMBLY (30")	2
44	80720001	CONTROL CABLE ASSEMBLY (30")	2
45	80721001	CONTROL CABLE ASSEMBLY (30")	2
46	80722001	CONTROL CABLE ASSEMBLY (30")	2
47	80723001	CONTROL CABLE ASSEMBLY (30")	2
48	80724001	CONTROL CABLE ASSEMBLY (30")	2
49	80725001	CONTROL CABLE ASSEMBLY (30")	2
50	80726001	CONTROL CABLE ASSEMBLY (30")	2
51	80727001	CONTROL CABLE ASSEMBLY (30")	2
52	80728001	CONTROL CABLE ASSEMBLY (30")	2
53	80729001	CONTROL CABLE ASSEMBLY (30")	2
54	80730001	CONTROL CABLE ASSEMBLY (30")	2
55	80731001	CONTROL CABLE ASSEMBLY (30")	2
56	80732001	CONTROL CABLE ASSEMBLY (30")	2
57	80733001	CONTROL CABLE ASSEMBLY (30")	2
58	80734001	CONTROL CABLE ASSEMBLY (30")	2
59	80735001	CONTROL CABLE ASSEMBLY (30")	2
60	80736001	CONTROL CABLE ASSEMBLY (30")	2
61	80737001	CONTROL CABLE ASSEMBLY (30")	2
62	80738001	CONTROL CABLE ASSEMBLY (30")	2
63	80739001	CONTROL CABLE ASSEMBLY (30")	2
64	80740001	CONTROL CABLE ASSEMBLY (30")	2
65	80741001	CONTROL CABLE ASSEMBLY (30")	2
66	80742001	CONTROL CABLE ASSEMBLY (30")	2
67	80743001	CONTROL CABLE ASSEMBLY (30")	2
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70	80746001	CONTROL CABLE ASSEMBLY (30")	2
71	80747001	CONTROL CABLE ASSEMBLY (30")	2
72	80748001	CONTROL CABLE ASSEMBLY (30")	2
73	80749001	CONTROL CABLE ASSEMBLY (30")	2
74	80750001	CONTROL CABLE ASSEMBLY (30")	2
75	80751001	CONTROL CABLE ASSEMBLY (30")	2
76	80752001	CONTROL CABLE ASSEMBLY (30")	2
77	80753001	CONTROL CABLE ASSEMBLY (30")	2
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83	80759001	CONTROL CABLE ASSEMBLY (30")	2
84	80760001	CONTROL CABLE ASSEMBLY (30")	2
85	80761001	CONTROL CABLE ASSEMBLY (30")	2
86	80762001	CONTROL CABLE ASSEMBLY (30")	2
87	80763001	CONTROL CABLE ASSEMBLY (30")	2
88	80764001	CONTROL CABLE ASSEMBLY (30")	2
89	80765001	CONTROL CABLE ASSEMBLY (30")	2
90	80766001	CONTROL CABLE ASSEMBLY (30")	2
91	80767001	CONTROL CABLE ASSEMBLY (30")	2
92	80768001	CONTROL CABLE ASSEMBLY (30")	2
93	80769001	CONTROL CABLE ASSEMBLY (30")	2
94	80770001	CONTROL CABLE ASSEMBLY (30")	2
95	80771001	CONTROL CABLE ASSEMBLY (30")	2
96	80772001	CONTROL CABLE ASSEMBLY (30")	2
97	80773001	CONTROL CABLE ASSEMBLY (30")	2
98	80774001	CONTROL CABLE ASSEMBLY (30")	2
99	80775001	CONTROL CABLE ASSEMBLY (30")	2
100	80776001	CONTROL CABLE ASSEMBLY (30")	2

NOTES:
 (1) 25 & 30 FOOT MONITORS MAX. FLOW IS 750 G.P.M.
 (2) 40 FOOT MONITOR MAX. FLOW IS 500 G.P.M.
 (3) THESE MAXIMUM FLOW RATES TO BE DEVELOPED WITH A MAXIMUM NOZZLE PRESSURE OF 100 P.S.I.

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