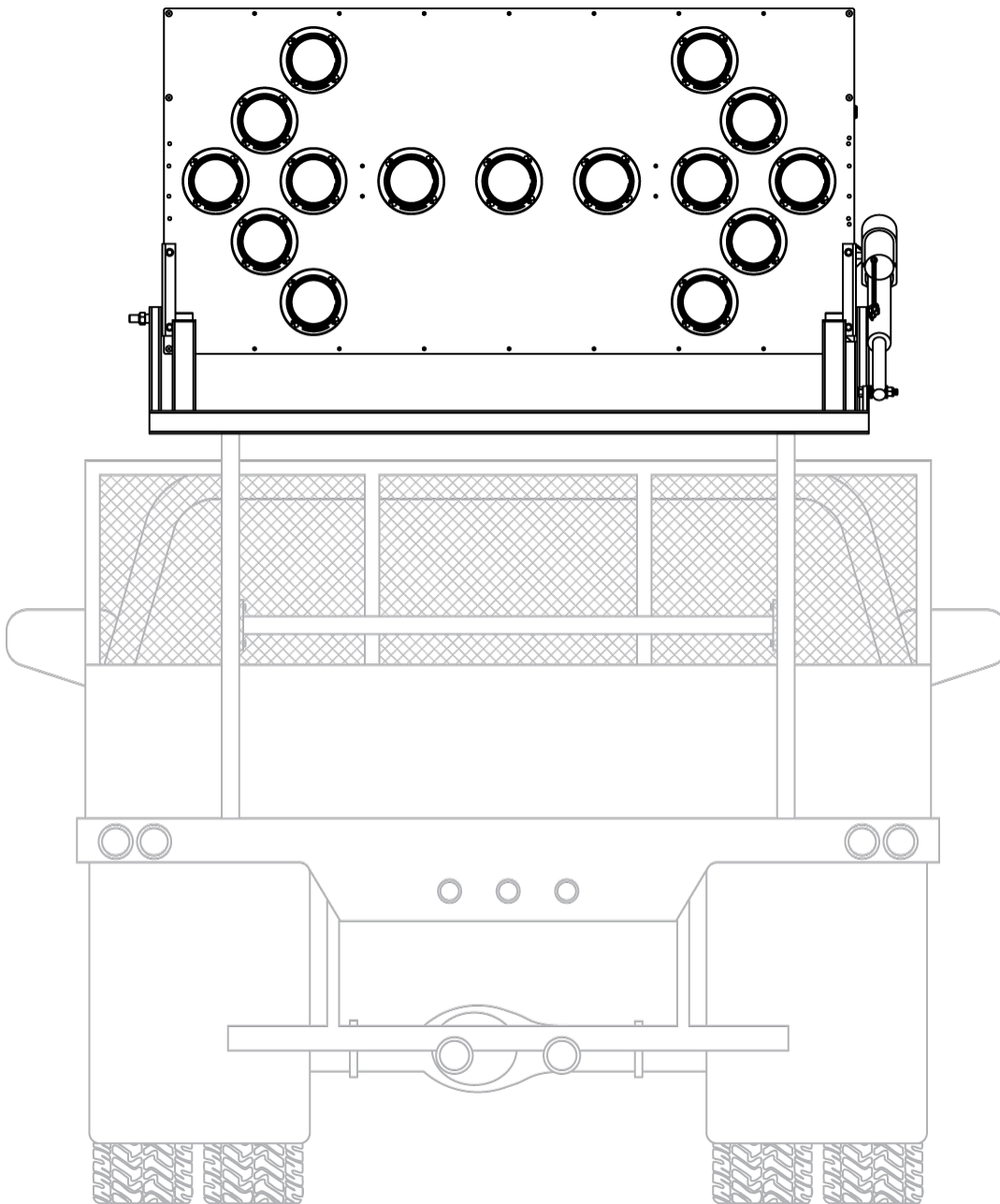# TRUCK-MOUNT ARROW BOARDS

MODELS WB, WFB, WLP & WVG
PRODUCT SPECIFICATIONS | OCTOBER 2020

1.   DESCRIPTION

1.1.	Description	Arrow boards direct traffic by flashing a brightly lit arrow pattern on a large, highly visible display panel. Wanco® Truck-Mount Arrow Boards provide an obvious solution for convoys, crash-cushion (TMA) trucks and emergency repair crews. Installed over the cab or in a truck bed, power is provided by the truck's power system. Arrows and other patterns are selected by the user using the arrow board controls inside the truck cab.

1.2.   Models

1.2.1.	Sizes	24 x 48 in (61 x 122cm)
		30 x 60 in (76 x 152cm)
		36 x 72 in (92 x 183cm)
		48 x 96 in (122 x 244cm)

1.2.2.	Lights	24 x 48 size	13-light
		All other sizes	15-light
			25-light

1.2.3.	Mounting options	See "Options and Optional Equipment"
1.2.4.	Model numbers	See Exhibit A

2.   FEATURES

2.1.	Operation	• High-output amber LEDs
		• Selection of arrow and other display patterns
		• Easy to operate and maintain
		• Controller located inside truck cab
		• Control box outputs have short-circuit protection, helping prevent blown transistors
		• Selectable automatic or manual dimming
		• Meets MUTCD
2.2.	Power system	• Wired into truck's power system
		• Power system includes reverse polarity protection and low-voltage disconnect circuit
		• Controller has resettable fuses
2.3.	Maintenance	• Durable powder-coat finish resists the elements
		• Lamps and visors are easily replaced

2.4.	Application	Common applications include:

- Roadwork zones
- Road striping convoys
- Road sweeping convoys
- Pothole repairs
- Crash cushion (TMA) trucks

3. DISPLAY

3.1.	Panel	
3.1.1.	Description	Weather-resistant cabinet provides a rigid platform for LED lamps
3.1.2.	Construction	Outer frame constructed of aluminum channel, 3" x 1" x 1/8" thick. Two interior channels add strength and prevent distortion of front and rear panels. All channel joints are welded.
		Front and rear panels constructed of aluminum sheet, 5052-H32, 0.062" (1.575mm) thick. Panels are riveted and screwed to frame and interior channels.
3.1.3.	Finish	Oven-baked, flat-black (10% gloss), powder-coat finish ensures durability and corrosion protection. Panel assembly is high-pressure phosphate-washed prior to finish coat.
3.2.	Lights	
3.2.1.	Description	Display lights are laid out across the front face of the display panel. The layout allows for a variety of arrows and other patterns to appear depending on which lights are lit. The desired pattern is selected by the operator, using the arrow board controls.

3.2.2.	Type	24 x 48 size 30 x 60 size	PAR 36 LED lamp, 4½" (11.5cm) dia.
		36 x 72 size 48 x 96 size	PAR 46 LED lamp, 5¾" (14.5cm) dia.
		See Options and Optional Equipment for other lamps	

3.2.3.	Light output	24 x 48 size 30 x 60 size	121 cd max. brightness
		36 x 72 size 48 x 96 size	320 cd max. brightness

3.2.4.	Reverse-polarity protection	Protects lamps if control box wiring is connected backwards (which sometimes happens after servicing)

3.2.5.	LEDs	Technology	AlInGaP II (aluminum indium gallium phosphide) technology, T-1¾ size
		Color range	Amber, 590 to 593 nm
		Forward voltage	2.0 to 2.1Vdc @ 20mA
		Temperature limits	Operating temperature, –22 to 185°F (–30 to 85°C)
3.2.6.	Lens	Function	Each lamp has an integrated hex lens that enhances the brightness and angularity of each LED while reducing power consumption
		Material	Acrylic
		Beam angle	Horizontal: 16.8 degrees, ±8.4 degrees
			Vertical: 9.5 degrees, ± 4.75 degrees
			Angle determined by 10% of peak candle power (certified by independent testing laboratory)
3.2.7.	Visor	Function	Each lamp is shrouded by a visor that enhances visibility by shading the lamp and preventing glare
		Material	High-impact ABS plastic
		Mounting	Four keyed slots enable visor to be removed from the display panel without removing screws
3.2.8.	Visibility	At least 1 mile (1.6km)	
3.2.9.	Replacement	Lamps can be replaced in less than two minutes. The only tool needed is a Philips screwdriver.	
3.3.	Standards	Meets requirements for minimum size, legibility, and number of elements per MUTCD, December 2009 ed., §6F.61, ¶05, Temporary Traffic Control Zone Devices: Arrow Boards	
		24 x 48 size	Meets specs for MUTCD Type A
		30 x 60 size 36 x 72 size	Meets specs for MUTCD Type B
		48 x 96 size	Meets specs for MUTCD Type C

4.   CONTROLLER

4.1.	Function		Allows operator to choose an arrow or other display pattern. Maintains display flash-rate and controls automatic dimming. Two models: one for flashing-only display patterns, another for flashing and sequential patterns; choice depends on user requirements.
			See "Options and Optional Equipment" for wireless controller option.
4.2.	Control box		
4.2.1.	Enclosure	Construction	Polycarbonate-ABS plastic
		Size	Flashing-only model: 4.5" x 2.9" x 2" (11.4 x 7.3 x 5.1cm), W x H x D
			Sequential models: 6.6" x 2.9" x 2.3" (16.8 x 7.3 x 5.8cm), W x H x D
			Size does not account for mounting bracket or wiring connectors
4.2.2.	Wiring		15 ft (4.57m) cable with wiring connector at free end; hard-wired to arrow board, connected by installer to back of control box inside truck cab
			18ga standard wire in weatherproof cable
			See "Options and Optional Equipment" for cable length options
4.2.3.	Location		User-installed, typically inside truck cab under dashboard
4.2.4.	Mounting		Adjustable steel mounting bracket attaches to truck with bolts, provided; allows for vertical angle of control box to be adjusted; requires space behind control box for wiring connections
4.2.5.	Serviceability		Entire control box is removable for easy exchange and factory servicing
4.3.	Control panel		
4.3.1.	Display switch		Control box for sequential models has a toggle switch for turning arrow board display on and off; for flashing models, display pattern rotary switch includes "off" position
4.3.2.	Display pattern selection		Rotary switch: operator simply points the switch at the desired display pattern, which is silkscreened onto the front of the control panel
4.3.3.	Tilt switch		Toggle switch for controlling optional power-operated tilt-frame
			See "Options and Optional Equipment" for mounting-frame options
4.3.4.	Brightness switch		Toggle switch for controlling arrow board display brightness and optional automatic dimming
			See "Options and Optional Equipment" for automatic dimming option

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4.3.5.	LED indicators	All models	Indicator lights when power to arrow board display is on
		Sequential model	Indicator lights while operating tilt switch
			LEDs laid out in a grid show selected display pattern

4.4.   Display patterns

4.4.1.   All models   All arrow boards can display any of the following 5 patterns (for samples, see Exhibit B):

		Flashing arrow, left or right	10 lights total 5 lights form arrowhead 5 lights form stem
		Flashing double arrow	13 lights total 5 lights form each arrowhead 3 lights form stem
		Flashing four-corner warning	4 lights total 1 light at each corner
		Flashing caution-bar warning	7 lights form horizontal bar across center of display panel

4.4.2.   Sequential models   In addition to the patterns described above, 15- and 25-light arrow boards with sequential capability can display the following 2 patterns (for samples, see Exhibit B):

| | | Sequencing stem arrow, left or right | 10 lights total
5 lights form arrowhead
5 lights form full stem |
| | | | 1st pulse: 2 far stem lights
2nd pulse: 5 far stem lights
3rd pulse: full arrow shape
4th pulse: blank display |

4.4.3.   25-light models   In addition to the patterns described above, 25-light arrow boards can display any of the following 5 patterns (for samples, see Exhibit B):

| | | Sequencing walking arrow, left or right | 10 lights total
5 lights form arrowhead
5 lights form full stem |
| | | | 1st pulse: 2 far stem lights with arrowhead
2nd pulse: 3 far stem lights with arrowhead
3rd pulse: full arrow shape
4th pulse: blank display |

|	
Sequencing chevron arrows, left or right	15 lights total
	5 lights form each arrowhead
	1st pulse: 1 far arrowhead
	2nd pulse: 2 far arrowheads
	3rd pulse: 3 arrowheads
	4th pulse: blank display
Alternating diamonds	16 lights total
	8 lights form each diamond
	1st pulse: 1 diamond shape on left
	2nd pulse: 1 diamond shape on right

4.5. Electronics

4.5.1. Location — Inside control box

4.5.2. Temperature limits — Operating temperature: –40 to 176°F (–40 to 80°C)

4.5.3. Flash rate — 30 to 40 per minute, all display patterns

4.5.4. Positive drive circuit — Positive power applied to lamps only when lit

Negative is chassis grounded

4.5.5. Fuse protection — Each driver is current-protected

4.5.6. Reverse-polarity protection — Protects the controller if battery cables are connected backwards (which sometimes happens after servicing)

4.5.7. Low-voltage disconnect — Low-voltage-disconnect circuit engages when battery voltage drops to 11.2Vdc, shutting down power to protect batteries from full discharge

5. POWER SUPPLY

5.1. Source — Arrow board display, controller, and optional actuator are all powered by vehicle alternator system

5.2. Load

Typical	8.4A @ 13.6Vdc
Maximum	Arrow board only: 5.0A @ 13.6Vdc
	Arrow board and optional power-operated tilt-frame: 20.0A @ 13.6Vdc

5.3. Voltage

Minimum	11.0Vdc
Maximum	18.0Vdc

6.   DIMENSIONS & WEIGHT

6.1.   Dimensions
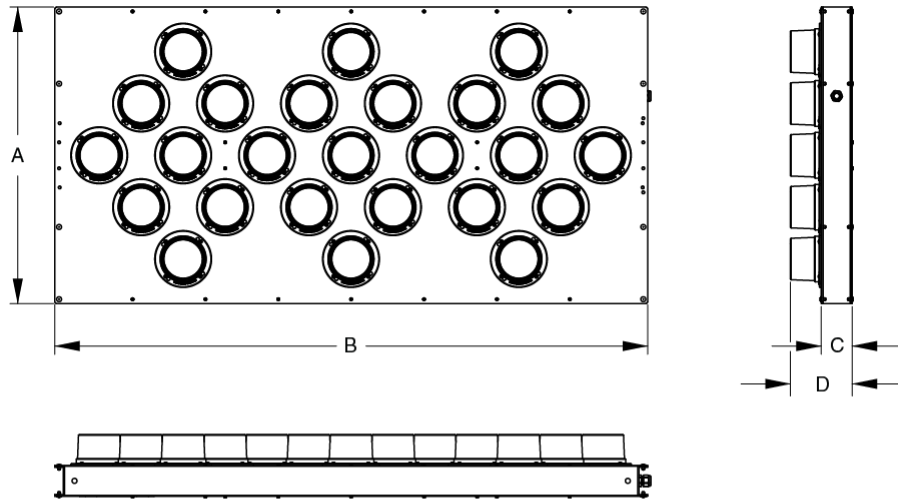
Dimensions in ^inches_(cm)

Arrow board size	A	B	C	D
24 x 48	24 (60.9)	48 (121.9)	3 1/8 (7.9)	6 3/8 (15.8)
30 x 60	30 (76.2)	60 (152.4)	3 1/8 (7.9)	6 3/8 (15.8)
36 x 72	36 (91.4)	72 (182.8)	3 1/8 (7.9)	8 1/4 (21.0)
48 x 96	48 (121.9)	96 (243.8)	3 1/8 (7.9)	8 1/4 (21.0)

6.2.   Weight

24 x 48 size   Approx. 42 lb (19kg)

30 x 60 size   Approx. 72 lb (33kg)

36 x 72 size   Approx. 100 lb (45kg)

48 x 96 size   Approx. 112 lb (51kg)

7.   OPTIONS AND OPTIONAL EQUIPMENT

7.1.   Cable length   Custom cable lengths are available for mounting control box; contact factory for details

7.2.   PAR 46 lamps   Substitute PAR 46 LED lamps for standard lamps on 15-light 30 x 60 arrow board

7.3.   Auto-dimming   A photocell detects ambient light; the controller adjusts the brightness of the LEDs accordingly, dimming display brightness in darkness, increasing to full brightness in daylight

Photocell is located on arrow board display-panel frame

7.4.   Wireless communication   Controller and arrow board communicate wirelessly via radio transmitters. Must be specified at time of arrow board order. Cannot be retrofit on wired arrow boards.

Touchscreen controller replaces standard, hard-wired controller. Full-color interface allows arrow board configuration and control and, if installed, power-tilt-frame control.

Controller power cord is fused, plugs into vehicle power outlet/cigar lighter. Arrow board power cable is fused, attaches to vehicle power in accordance with vehicle manufacturer's instructions.

System electronics located inside arrow board display cabinet.

7.5.   Mounting options   A variety of standard mounting frames and brackets are available for installing the arrow boards. See below for details.

Custom options are also available; contact factory for details.

7.5.1. Manual-tilt
(auto-lock) frame

Description   Allows the arrow board to be tilted manually. A spring-loaded locking pin snaps into place automatically, locking the board in the vertical position (when deployed) or horizontal position (when not in use).

Base model   WFB

Dimensions   *inches (cm)*

Deployed

Travel position

Arrow board size	A	B	C	D	E	F	G	H
24 x 48	24 (60.9)	48 (121.9)	41 3/4 (106.1)	58 1/2 (148.6)	6 3/16 (15.8)	51 (129.5)	24 (60.9)	12 (30.5)
30 x 60	30 (76.2)	60 (152.4)	44 3/4 (113.7)	70 1/2 (179.1)	6 3/16 (15.8)	63 (160.0)	30 (76.2)	15 (38.1)
36 x 72	36 (91.4)	72 (182.8)	47 3/4 (121.3)	82 1/2 (209.6)	8 1/4 (21.0)	75 (190.5)	36 (91.4)	18 (45.7)
48 x 96	48 (121.9)	96 (243.8)	53 3/4 (136.5)	106 1/2 (270.5)	8 1/4 (21.0)	99 (251.5)	48 (121.9)	24 (60.9)

Weight   Frame only, approx. 50 lb (22kg)

7.5.2. 90 degree power-tilt
frame

Description   Allows the arrow board to be tilted electrically. An electric actuator tilts the frame 90 degrees. The arrow board can be vertical (the deployed position) or horizontal (when not in use). The actuator is controlled with a toggle switch located inside the truck cab.

Base model   WFBP

Dimensions   *inches (cm)*

Deployed

Travel position

Arrow board size	A	B	C	D	E	F	G	H
24 x 48	24 (60.9)	48 (121.9)	41 3/4 (106.1)	58 1/2 (148.6)	6 3/16 (15.8)	51 (129.5)	24 (60.9)	12 (30.5)
30 x 60	30 (76.2)	60 (152.4)	44 3/4 (113.7)	70 1/2 (179.1)	6 3/16 (15.8)	63 (160.0)	30 (76.2)	15 (38.1)
36 x 72	36 (91.4)	72 (182.8)	47 3/4 (121.3)	82 1/2 (209.6)	8 1/4 (21.0)	75 (190.5)	36 (91.4)	18 (45.7)
48 x 96	48 (121.9)	96 (243.8)	53 3/4 (136.5)	106 1/2 (270.5)	8 1/4 (21.0)	99 (251.5)	48 (121.9)	24 (60.9)

Weight   Frame only, approx. 70 lb (32kg)

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7.5.3.   90 degree power-tilt   Description   Allows the arrow board to be tilted electrically. An electric actuator tilts
           low-profile frame   the frame 90 degrees. The arrow board can be vertical (the deployed
                                                    position) or horizontal (when not in use). In the horizontal position, the
                                                    arrow board and frame has a low-profile height. The actuator is controlled
                                                    with a toggle switch located inside the truck cab.

                                   Base model   WLP

                                   Dimensions   *inches (cm)*

Deployed
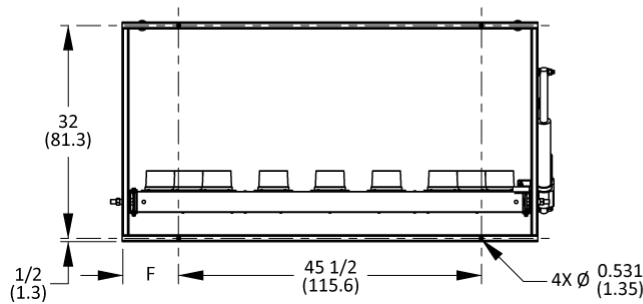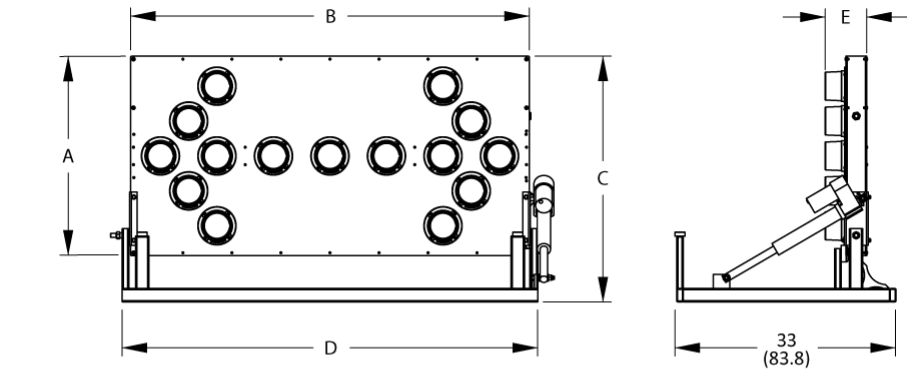
Travel position
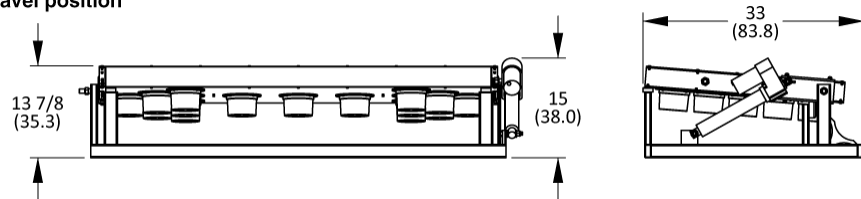
Arrow board size	A	B	C	D	E	F
30 x 60	30 (76.2)	60 (152.4)	37 (94.0)	62 1/2 (158.8)	6 3/16 (15.8)	8 1/2 (21.6)
36 x 72	36 (91.4)	72 (182.8)	39 (99.1)	74 1/2 (189.2)	8 1/4 (21.0)	14 1/2 (36.8)

           Weight   Frame only, approx. 60 lb (27kg)

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7.5.4. 180 degree power-tilt frame

Description Allows the arrow board to be tilted electrically. An electric actuator tilts the frame 180 degrees. The arrow board can face forward or backward when deployed) or downward (when not in use). The actuator is controlled with a toggle switch located inside the truck cab.

Base model WFP

Dimensions *inches (cm)*

Rear facing
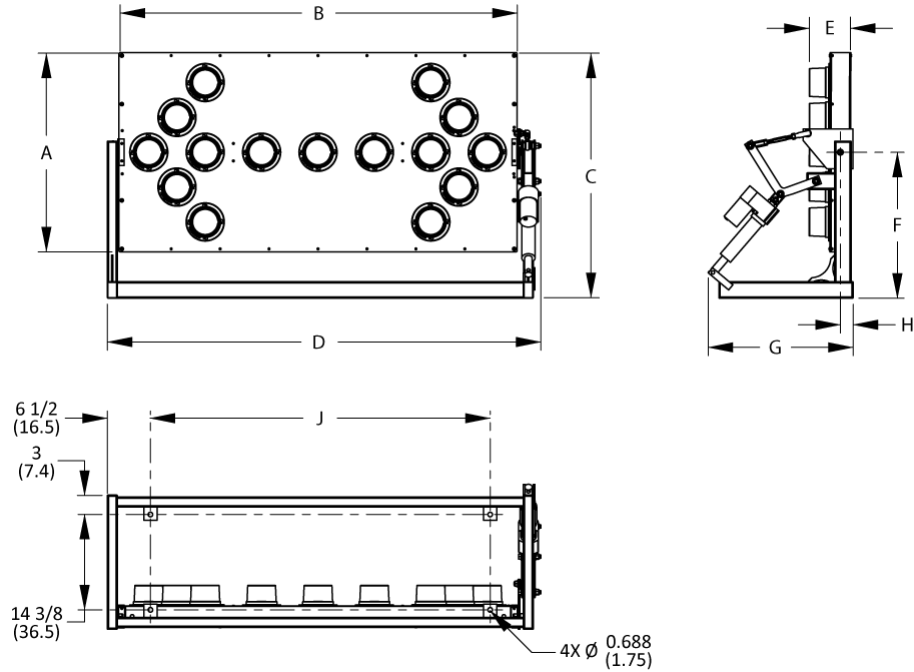
Arrow board size	A	B	C	D	E	F	G	H	J
30 x 60	30 (76.2)	60 (152.4)	37 (94.0)	65 3/8 (166.0)	6 3/16 (15.8)	22 (55.9)	21 7/8 (55.4)	1 15/16 (4.9)	51 3/16 (130.0)
36 x 72	36 (91.4)	72 (182.8)	40 (101.6)	77 3/8 (196.4)	8 1/4 (21.0)	21 7/8 (55.6)	21 3/4 (55.2)	1 13/16 (4.6)	63 3/16 (160.5)

Weight Frame only, approx. 110 lb (50kg)

7.5.5.   Low-profile   Description   Allows the arrow board to be installed on a trailer, but is specifically
          trailer-mount frame   designed for easy installation on a Traffix® Devices Scorpion® attenuator
                                              trailer. On the Scorpion trailer, two uprights slide into brackets on the
                                              front end of the trailer frame and are bolted in place. On other trailers,
                                              custom brackets must be user-supplied.

          Model   WFBD8

          Dimensions   *inches (cm)*

Deployed
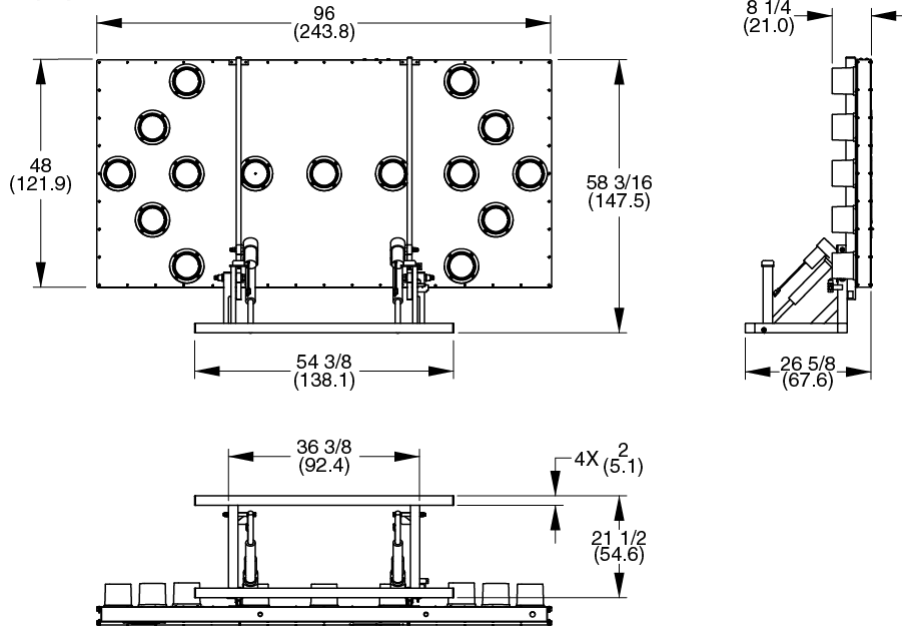
Travel position
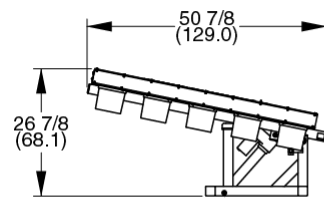
Mounting brackets
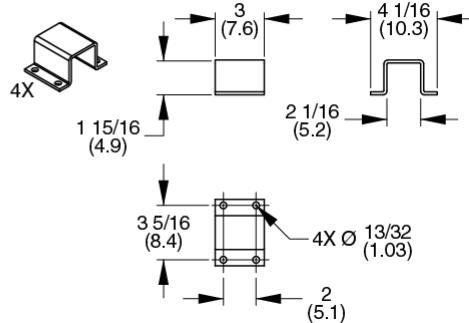
          Weight   Frame only, approx. 88 lb (40kg)

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7.5.6.	Truck-bed mounting brackets	Allows the arrow board to be installed in a truck bed. Two brackets bolt to the bed and support either the manual-tilt or 90-degree power-tilt frame

Bracket height: 31 in (78cm)
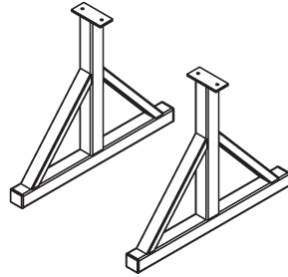
7.5.7.	Truck-bed mounting frames	Allows the arrow board to be installed in a truck bed. The mounting frame bolts to the bed and supports either the low-profile truck-mount frame or the 180-degree power-tilt frame.

Two heights are available; size is customized per customer-provide specifications; contact factory for details.
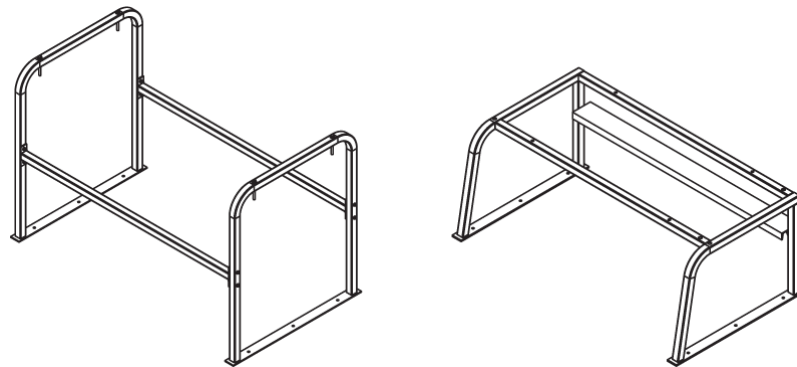
7.5.8.	Tailgate mounting brackets	Allows the arrow board to be installed in a fixed position on a truck tailgate. The brackets clamp to the tailgate for permanent or temporary installation.
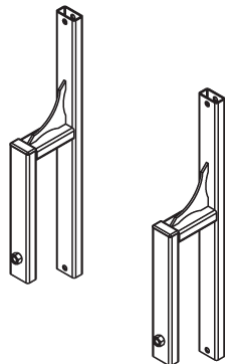
EXHIBIT A: MODEL NUMBERS

5 FLASHING ARROW PATTERNS

Display size	# of lights	No mounting	Manual tilt (auto-lock)	90° power-tilt	Low-profile 90° power-tilt	180° power-tilt	Trailer mount	Tailgate mount
24 x 48	13	WB4-LA	WFB4-LA	WFBP4-LA	—	—	—	WVGB4-LA
30 x 60	15	WB5-LA	WFB5-LA	WFBP5-LA	WLP90B5-LA	WFP180B5-LA	—	WVGB5-LA
36 x 72	15	WB6-LA	WFB6-LA	WFBP6-LA	WLP90B6-LA	WFP180B6-LA	—	WVGB6-LA
48 x 96	15	WB8-LA	WFB8-LA	WFBP8-LA	—	—	WFBD8-LA	WVGB8-LA

5 FLASHING & 2 SEQUENTIAL ARROW PATTERNS

Display size	# of lights	No mounting	Manual tilt (auto-lock)	90° power-tilt	Low-profile 90° power-tilt	180° power-tilt	Trailer mount	Tailgate mount
30 x 60	15	WB5-LSA	WFB5-LSA	WFBP5-LSA	WLP90B5-LSA	WFP180B5-LSA	—	WVGB5-LSA
36 x 72	15	WB6-LSA	WFB6-LSA	WFBP6-LSA	WLP90B6-LSA	WFP180B6-LSA	—	WVGB6-LSA
48 x 96	15	WB8-LSA	WFB8-LSA	WFBP8-LSA	—	—	WFBD8-LSA	WVGB8-LSA

5 FLASHING & 7 SEQUENTIAL ARROW PATTERNS
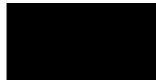
Display size	# of lights	No mounting	Manual tilt (auto-lock)	90° power-tilt	Low-profile 90° power-tilt	180° power-tilt	Trailer mount	Tailgate mount
30 x 60	25	WB5-LSAC	WFB5-LSAC	WFBP5-LSAC	WLP90B5-LSAC	WFP180B5-LSAC	—	WVGB5-LSAC
36 x 72	25	WB6-LSAC	WFB6-LSAC	WFBP6-LSAC	WLP90B6-LSAC	WFP180B6-LSAC	—	WVGB6-LSAC
48 x 96	25	WB8-LSAC	WFB8-LSAC	WFBP8-LSAC	—	—	WFBD8-LSAC	WVGB8-LSAC

EXHIBIT B: DISPLAY PATTERNS

Flashing patterns

Pulse 1   Pulse 2

Flashing arrow, left or right

Flashing double arrow

Flashing four-corner warning

Flashing caution-bar warning

Sequential patterns

Pulse 1   Pulse 2   Pulse 3   Pulse 4

Sequencing arrow, left or right

Sequencing stem arrow, left or right*

Sequencing chevron arrows, left or right*

Alternating diamonds*

Available only on 25-light arrow board models

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