

L-858 Unlighted Signs

Installation and Maintenance Manual

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ETL Certified to FAA Specifications
AC 150/5345-44K

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**NAVIGATE
SERIES**



Intertek

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Record of Changes

Revision	Date	Change Description	Approval
-	03/22/2017	ECO# 22346	S. Bastiani
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Warranty

Astronics DME warrants products against mechanical, electrical, physical, and workmanship defects for a period of two years from the date of manufacture or one year from the date of installation, whichever occurs first.

This warranty, excludes consumable items such as batteries, filters, or lamps.

Astronics DME will repair or replace, at its option, equipment or parts, which fail because of mechanical, electrical, physical, or workmanship defects, provided the equipment or parts were installed operated or maintained in accordance with approved practice, and used for the intended purpose. Any product which has been repaired or altered in such a way, in Astronics DME's judgment, as to affect the product adversely will not be covered under warranty.

Astronics DME reserves the right to examine the part(s) to determine if the equipment/part(s) is (are) covered under this warranty or to authorize scrap on site and provide replacement parts without examination by Astronics DME Customer Product Support.

Astronics DME shall have the right to substitute replacement parts having the same form, fit, function, and specification.

All repaired or overhauled parts will be warranted to be free from defect in material and workmanship, in accordance with the above stipulations, for a period of ninety (90) days from the date of shipment.

For products not manufactured by, but sold by Astronics DME, warranty is limited to that extended by the original manufacturer.

Customers must notify Astronics DME Customer Product Support (CPS) in writing within ten (10) working days of the failure/defect discovery with a detailed description of the problem and, if known, the cause of the problem.

In accordance with FAA requirements, Astronics DME warrants LED airfield lighting products against electrical defects for a period of four years from the date of installation.

Customers must obtain a Return Material Authorization (RMA) Number (and identify equipment with this number before returning material) from:

Astronics DME Customer Product Support
6830 NW 16th Terrace, Fort Lauderdale, FL 33309
DMEsupport@astronics.com
(954) 975-2206

Astronics DME's Customer assumes responsibility for incoming freight and custom charges unless these have been previously authorized in writing by Astronics DME.*

Disclaimer

This manual could contain technical inaccuracies or typographical errors. Astronics DME reserves the right to revise this manual from time to time in the contents thereof without obligation of Astronics DME to notify any person of such revision or change.

Details and values given in this manual have been compiled with care. They are not binding, however, and Astronics DME disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights.

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1. SAFETY

1.1 Introduction

This section contains general safety instructions. Some safety instructions may not apply to the equipment in this manual. Specific warnings are included in the manual where appropriate. Follow all warnings, cautions and notes in the instructions carefully as failure to do so may result in personal injury, death, or damage to equipment.

To use this equipment safely:

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations.
- Read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- Read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- Keep this manual within easy access of personnel installing, operating, maintaining, or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used.

1.2 Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or damage to equipment.

WARNING

May result in personnel injury or death.

CAUTION

May result in damage to equipment.

NOTE

Informational guidance.

1.3 Qualified Personnel

Defined as personnel who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain, and repair the equipment.

1.4 Intended Use

Astronics DME is not responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or equipment damage.

Unintended uses may result from taking the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Astronics DME replacement parts.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards.
- Allowing unqualified personnel to perform any task.

1.5 Installation

Read and understand the installation section of all system component manuals before installing the equipment.

- Failure to follow safety procedures may result in injury or death.
- Allow only qualified personnel to install the equipment.

- Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals and the warranty.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.

1.6 Maintenance and Repair

Allow only properly trained, qualified personnel to perform maintenance, troubleshooting, and repair tasks.

- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Use only approved Astronics DME replacement parts. Using unapproved parts or making unapproved modifications to equipment may void the warranty and or create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.

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2. DESCRIPTION

2.1 Introduction

This section describes the Astronics DME L-858 Unlighted signs. A size 1 single sided sign is shown in Figure 2-1 for reference. This user manual will show a 'typical' sign and detail the differences when needed for the various modules and sizes.

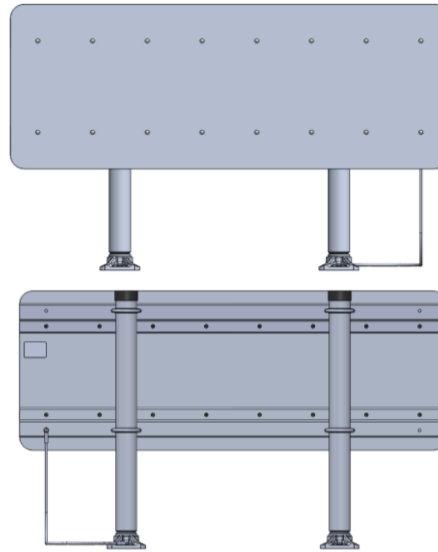


Figure 2-1 L-858 Unlighted Sign

2.2 Uses

The Astronics DME L-858 Unlighted signs are designed to guide pilots on the airfield, identify holding positions, identify taxiway and runway intersections, prohibit aircraft entry into designated areas, and provide runway distance remaining information to pilots during takeoff and landing.

Types of signs:

- L-858C – Taxiway Ending Marker sign, yellow 45 degree diagonal stripes on a black background
- L-858Y – Direction, Destination, and Boundary signs black legend on a yellow background
- L-858R – Mandatory Instruction sign - black outline on outside edge of white legend on a red background
- L-858L – Taxiway Location signs - yellow legend and border on a black background

The L-858 Unlighted signs are Intertek Testing Services certified according to FAA specification AC 150/5345-44K.

2.3 Equipment Description

2.3.1 Configurations

The type, size, style, class, mode and modules of L-858 Unlighted signs offered are described in Table 2-1.

Table 2-1 L-858 Unlighted Sign Configurations

L-858	Size	Style	Class	Mode	Module (Length)
Y, R, L, C	1,2,3	4	N/A	1, 2	48" and 72"

The information/signage required on the faces of the panels will be specified using the form shown in Figure 6-2.

2.3.2 Dimensions

The dimensions of the various sizes, legend height, legend panel height, overall mounting height and maximum overall length are detailed in Table 2-2 and Figure 2-2.

Table 2-2 Dimensions

Sign Size	Legend Height		Legend Panel Height		Overall Mounting Height		Maximum Overall Length	
	in.	mm	in.	mm	in.	mm	in.	mm
1	12	305	18	457	29 5/8	660	72	762
2	15	381	24	610	33 5/8	812	72	914
3	18	457	30	762	36 5/8	965	72	1067

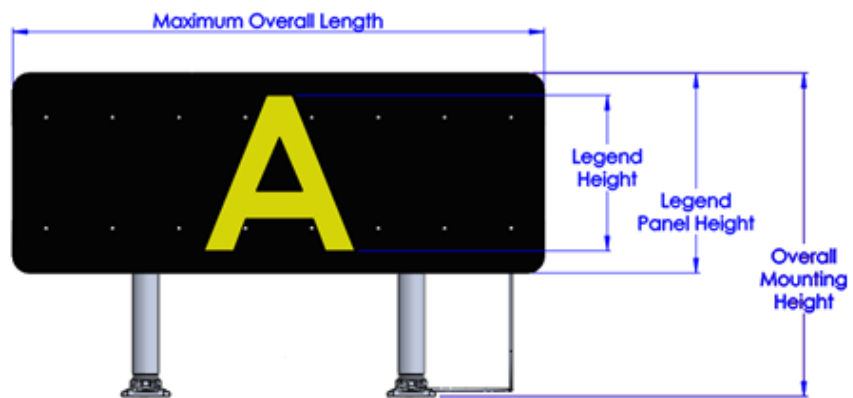


Figure 2-2 Dimensions

2.3.3 Weight

The L-858 Signs approximate weights for the various sizes and modules are listed in Table 2-3.

Table 2-3 Weight

Size	Length (in.)	Singled-Sided Weight (lbs.)	Double-Sided Weight (lbs.)
1	48	28	48
1	72	42	72
2	48	33	56
2	72	49	84
3	48	37	64
3	72	55	96

2.3.4 L-858 External Components

The external components of the L-858 are shown in Figure 2-3.

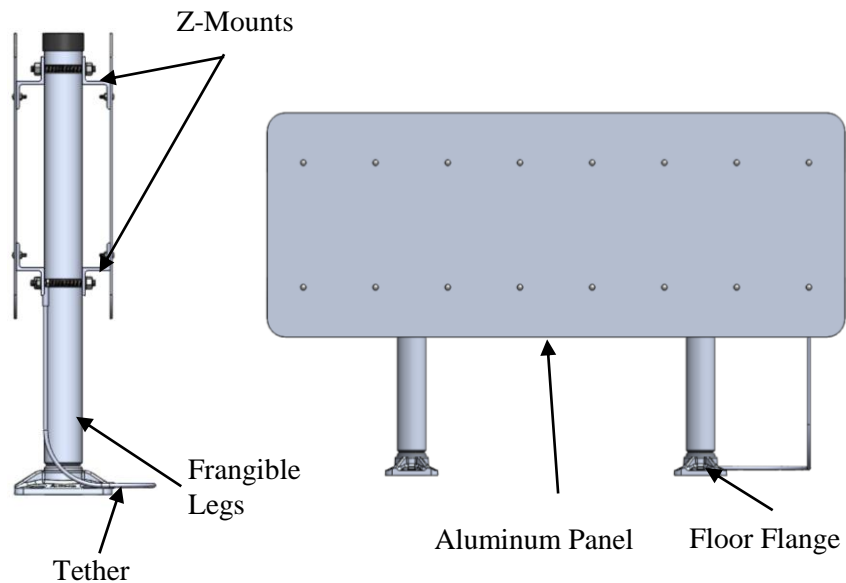


Figure 2-3 External Components
(48" Sign, Size 1 shown – typical)

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3. INSTALLATION

WARNING

Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

3.1 Introduction

This section of the manual contains general instructions for installation, unpacking and placement of L-858 Signs at a typical site. Refer to Appendix A and the airport project plans and specifications for specific installation instructions.

3.2 Unpacking

The equipment is shipped ready for installation. Handle equipment very carefully to prevent component damage. Unpack the carton upon receipt and check the condition of the contents. Note any exterior damage to the carton that may lead to the detection of equipment damage.

3.3 Placement

Follow the guidelines in Appendix A, along with FAA specifications and site plans, when placing the sign.

3.4 Installation

Refer to Appendix A for installation instructions.

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4. MAINTENANCE

4.1 Introduction

This section of the manual lists the maintenance tasks and procedures required for the L-858 signs. The performance checks and maintenance tasks in this section are required to ensure optimum equipment performance.

4.2 Maintenance Checks

Table 4-1 lists the removal, installation, and maintenance procedures for the L-858 signs. Table 4-2 lists the scheduled maintenance checks that need to be performed to keep the L-858 signs operating efficiently. Refer to FAA AC 150/5340-26 for more detailed information.

Table 4-1 Removal, Installation, and Maintenance Procedures

Repair and Maintenance Procedures	5.2
Visual Operational Check	5.2.1
Line-of-Sight Inspection	5.2.2
Inspection	5.2.3
Frangible and Floor Flange Removal	5.2.4
Frangible and Floor Flange Installation	5.2.5
Tether Removal	5.2.6
Tether Installation	5.2.7

Table 4-2 Maintenance Checks

Interval	Task	Action
As Required	Check signs for obstructions	Clean panels
Weekly	Check for rubber and other contaminant deposits on the panels	Clean panels
As Required	Watch weather reports for prediction of heavy snowfall, if applicable	Use red flags or sticks to mark location of signs to facilitate snow removal and lessen chance of damage.

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5. REPAIR

5.1 Introduction

This section of the manual provides maintenance personnel with step-by-step procedures for performing the maintenance procedures required for the L-858 signs.

These repair procedures are typical for any of the L-858 signs. These repair procedures will only show one configuration and are typical for the other configurations. Differences between the L-858 sign configurations will be noted in the repair procedure when required.

5.2 Repair and Maintenance Procedures

The following maintenance procedures are those required to perform the maintenance tasks listed in Section 4. The specifications, tools and test equipment necessary to perform these procedures are also listed as required.

5.2.1 Visual Operational Check

Visually inspect each L-858 Sign for obvious damage.

5.2.2 Line-of-Sight Inspection

Refer to FAA specification AC 150/5340-26 for visibility requirements.

5.2.3 Inspection and Cleaning

1. Inspect the panels for dirt.
2. Clean all dirt from the panels.

5.2.4 Frangible and Floor Flange Removal

See Figure 5-1.

Remove Floor Flange bolts and washers while holding the sign to the mounting pad.

5.2.5 Frangible and Floor Flange Installation

See Figure 5-1.

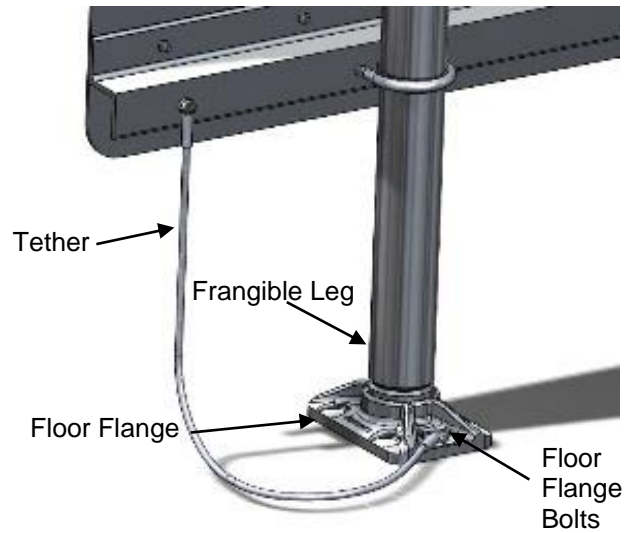


Figure 5-1 Frangible, Floor Flange

5.2.6 Tether Removal

See Figure 5-2.

1. For Tether that is attached to the Frangible Leg, remove bolt and washer from Z-Mount where Tether is attached.
2. Remove bolt and washer from Floor Flange where Tether is attached.
3. Remove Tether.

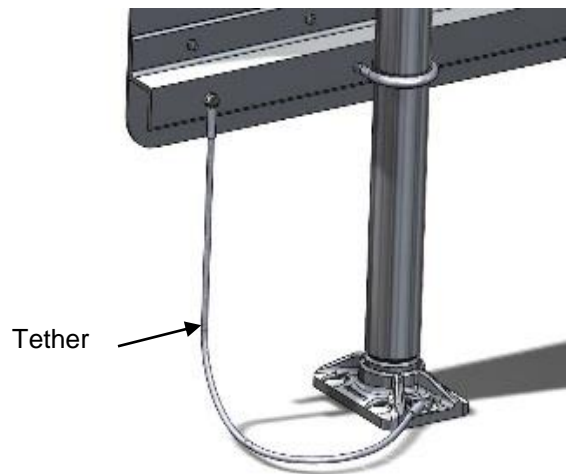


Figure 5-2 Tether

5.2.7 Tether Installation

See Figure 5-2.

1. For Tether that is attached to the Frangible leg, position Tether end on Z-Mount and install bolt and washer. Torque to 11 ft. lbs.
2. Position other end of Tether on Floor Flange and install bolt and washer. Torque to 40 ft. lbs.

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6. PARTS

6.1 Introduction

This section of the manual provides ordering information, mechanical parts and renewal parts of the L-858 Unlighted Signs.

6.2 Ordering Information

Use the part numbering scheme in Figure 6-1 along with the form in Figure 6-2 to order the signs and the information in Table 6-2 to order renewal components.

6.3 Mechanical Parts

Refer to Figure 6-3, Figure 6-4, and Table 6-1 for a complete listing of parts for the L-858 Unlighted Signs.

6.4 Renewal Parts

Refer to Table 6-2 for a complete list of L-858 Unlighted Signs renewal parts.

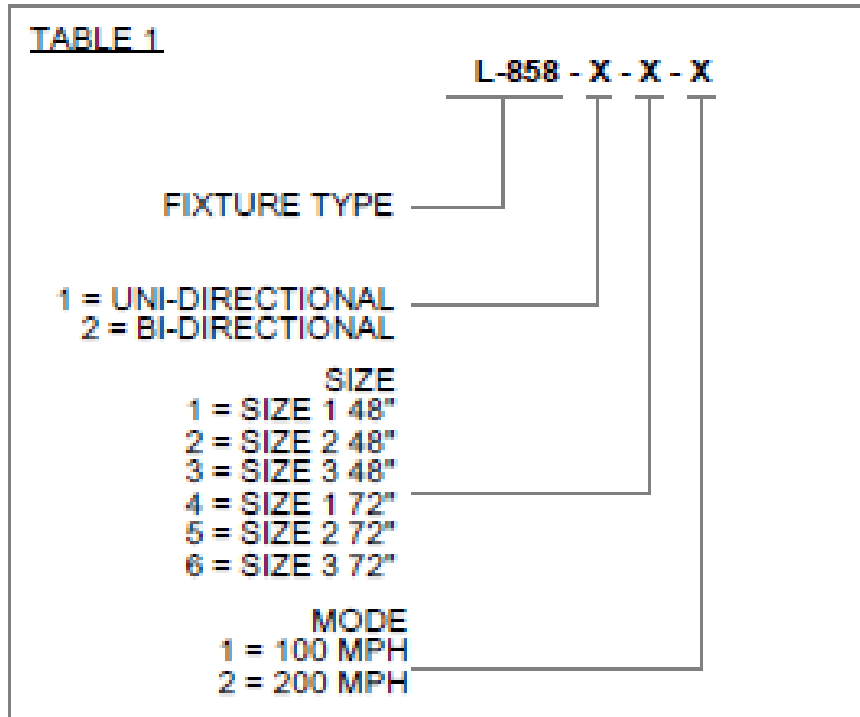



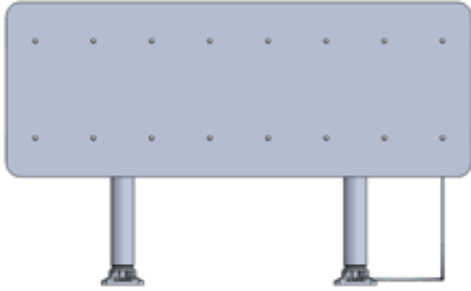
Figure 6-1 L-858, Unlighted Sign, Part Numbering



Unlighted Signs (Style 4)
4' Sign Order Form

Airport Name: Creation Date: Rev. Date:
 Sign #:

(Panel Type) See Sheet 3



Part #:

<input type="checkbox"/> New Sign		<input type="checkbox"/> Panels Only	
# Of Sides	<input type="checkbox"/> Uni-Directional	<input type="checkbox"/> Bi-Directional	
Size	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Mode	<input type="checkbox"/> 100 MPH	<input type="checkbox"/> 200 MPH	
Panel Type	Description		
Y	Black legend on a yellow background		
R	Black outline on outside edge of white legend on a red background		
L	Yellow legend and border on a black background		
C	Yellow stripe on black background		
H	White legend on black background		

NOTES: 1) Sign comes complete with frangible legs, floor flanges, stainless steel tether (one per module).
 2) Anchor bolts are not included.

Form SM-021 Rev (-)

Astronics DME
 6830 NW 16th Terrace, Ft. Lauderdale, Florida 33309
www.astronics.com P: 954-975-2100 F: 954-979-3313

Figure 6-2 Signage and Panels (4' Sign Order Form Shown)

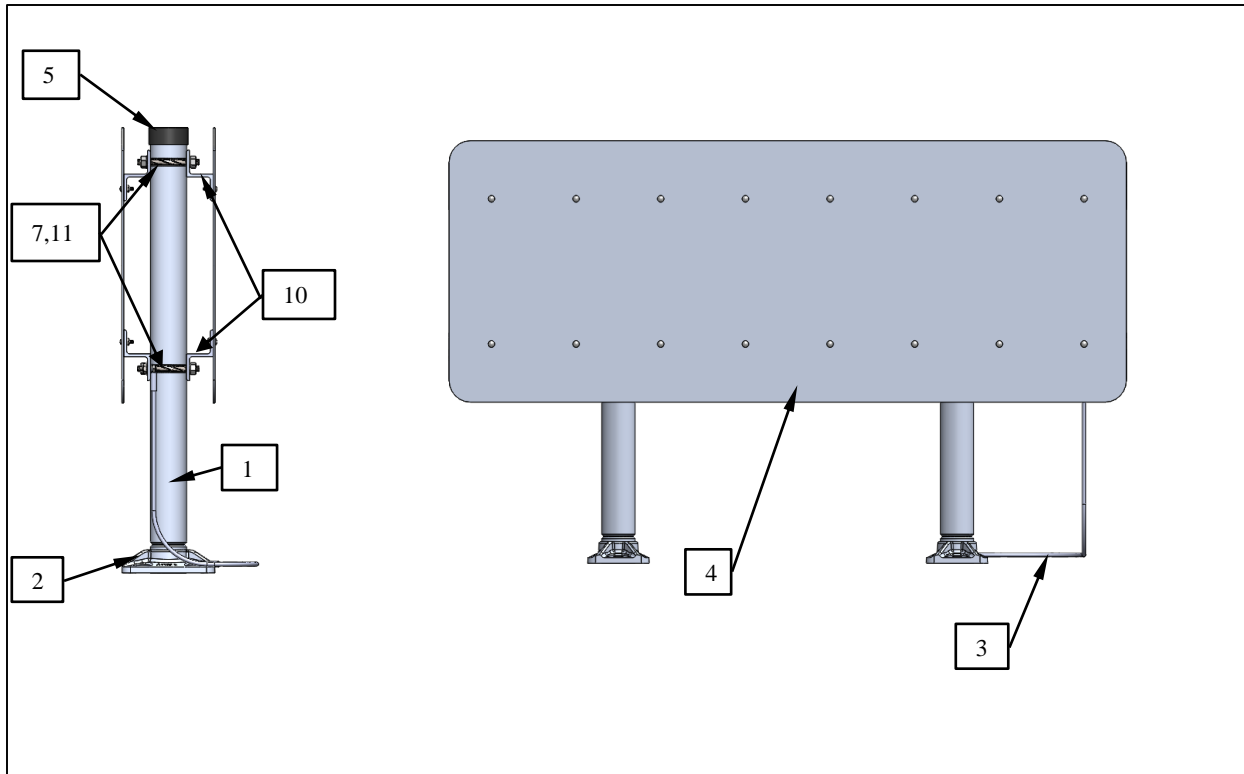


Figure 6-3 L-858 Unlighted Sign Bi-Directional Views
(Size 1 72" Sign Shown – Parts are typical for all sizes except where noted)

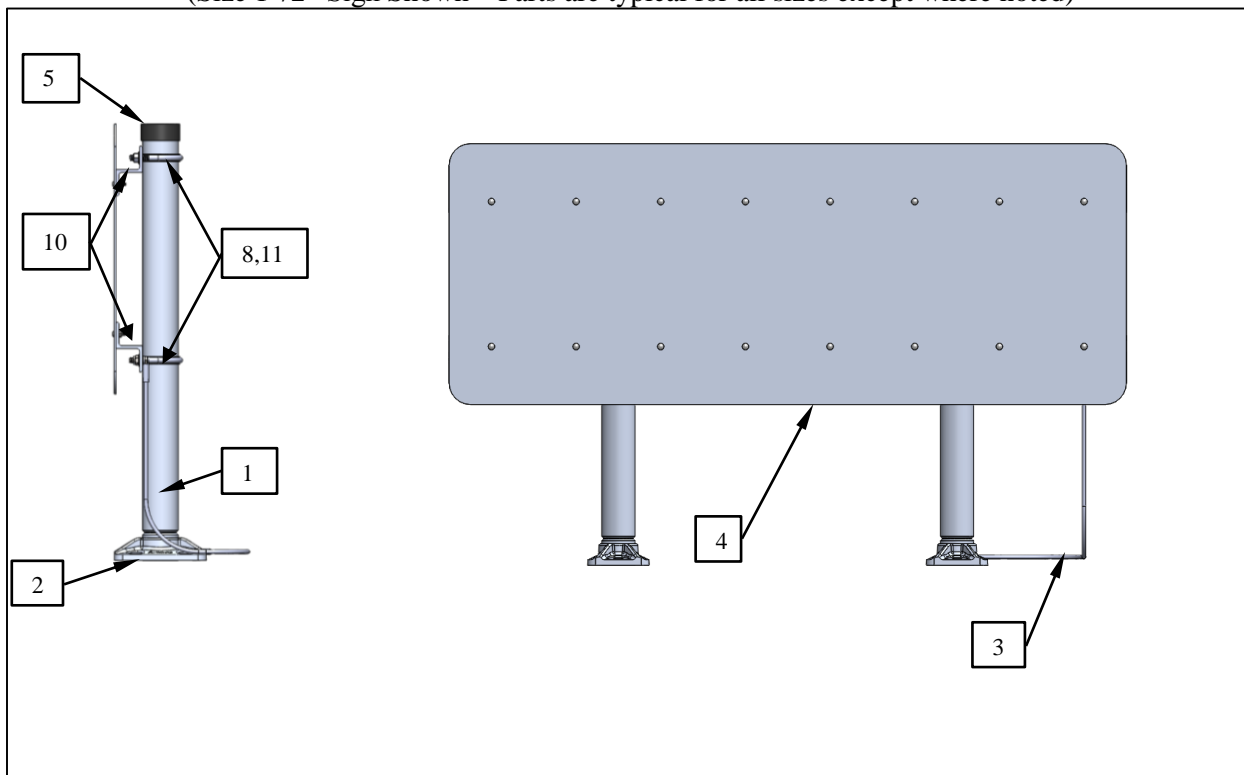


Figure 6-4 L-858 Unlighted Sign Uni-Directional Views
(Size 1 72" Sign Shown – Parts are typical for all sizes except where noted)

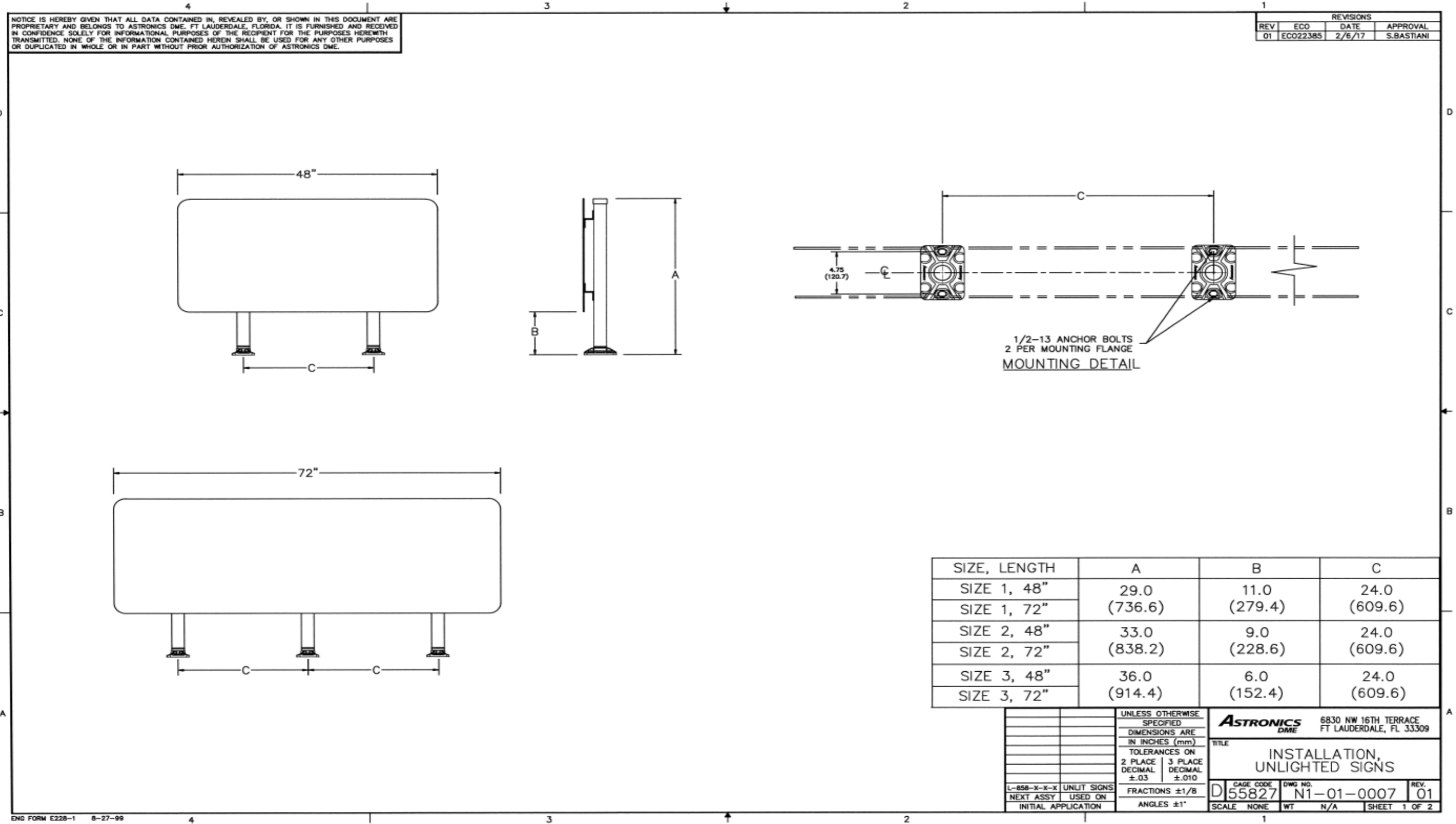
Table 6-1 L-858 Unlighted Signs Parts Listing (Reference Only)

Item	Part Name/Description	Part Number	Notes
	L-858 Unlighted Sign	See Figure 6-1	
1	FRANGIBLE LEG		
	FRANGIBLE, SIZE 1, 100MPH	A1-17-1113-001	
	FRANGIBLE, SIZE 2, 100MPH	A1-17-1113-002	
	FRANGIBLE, SIZE 3, 100MPH	A1-17-1113-003	
	FRANGIBLE, SIZE 1, 200MPH	A1-17-1113-004	
	FRANGIBLE, SIZE 2, 200MPH	A1-17-1113-005	
	FRANGIBLE, SIZE 3, 200MPH	A1-17-1113-006	
2	FLANGE, FLOOR, SIGNS		
	FLANGE, FLOOR, SIGNS, SLOW SPEED	A1-17-1076-001	
3	TETHER, STEEL, 1/8" X 24" LG	A1-05-0565-001	
4	PANELS, ALUMINUM		
	PANEL, ALUMINUM, SIZE 1, 48X18	A1-17-1111-001	
	PANEL, ALUMINUM, SIZE 2, 48X24	A1-17-1111-002	
	PANEL, ALUMINUM, SIZE 3, 48X30	A1-17-1111-003	
	PANEL, ALUMINUM, SIZE 1, 72X18	A1-17-1111-004	
	PANEL, ALUMINUM, SIZE 2, 72X24	A1-17-1111-005	
	PANEL, ALUMINUM, SIZE 3, 72X30	A1-17-1111-006	
5	CAP, PIPE, FITS 2" NPT	A1-05-0592-001	
6	LOCTITE 242 BLUE (NOT SHOWN)	A2-06-0070-002	
7	ROD THREADED, 4", .375-16 THD	A1-05-0606-001	
8	.375-16, SS, U-BOLT	A1-05-0590-002	
9	BLANK LABEL (NOT SHOWN)	A1-20-0617-001	
10	EXTRUSION Z-MOUNT		
	EXTRUSION, Z-MOUNT, UNLIGHTED SIGNS, 48"	A1-17-1112-001	
	EXTRUSION, Z-MOUNT, UNLIGHTED SIGNS, 72"	A1-17-1112-002	
11	FLEX SEAL®, TAPE, 7.25X2	A2-05-0063-001	

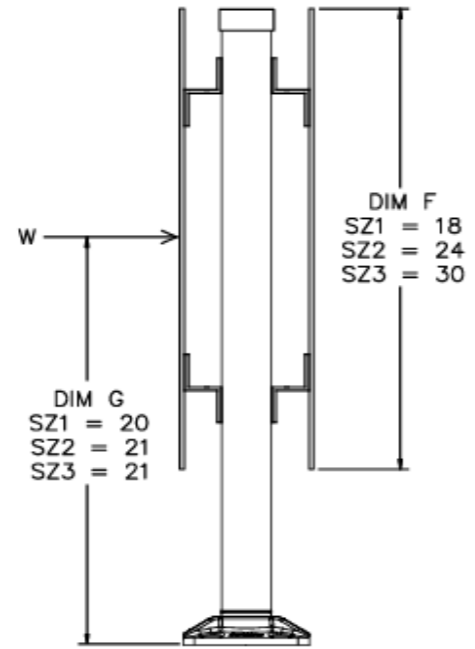
Table 6-2 L-858 Unlighted Signs Renewal Parts
(Items Available for Purchase)

Item	Part Name/Description	Part Number	Notes
	L-858 Unlighted Sign	See Figure 6-1	
1	FRANGIBLE LEG		
	FRANGIBLE, SIZE 1, 100MPH	A1-17-1113-001	
	FRANGIBLE, SIZE 2, 100MPH	A1-17-1113-002	
	FRANGIBLE, SIZE 3, 100MPH	A1-17-1113-003	
	FRANGIBLE, SIZE 1, 200MPH	A1-17-1113-004	
	FRANGIBLE, SIZE 2, 200MPH	A1-17-1113-005	
	FRANGIBLE, SIZE 3, 200MPH	A1-17-1113-006	
2	FLANGE, FLOOR, SIGNS		
	FLANGE, FLOOR, SIGNS, SLOW SPEED	A1-17-1076-001	
3	TETHER, STEEL, 1/8" X 24" LG	A1-05-0565-001	
4, 10, 11	PANELS, ALUMINUM		
	PANEL, ALUMINUM, SIZE 1, 48X18	K1-02-0047-001	
	PANEL, ALUMINUM, SIZE 2, 48X24	K1-02-0047-002	
	PANEL, ALUMINUM, SIZE 3, 48X30	K1-02-0047-003	
	PANEL, ALUMINUM, SIZE 1, 72X18	K1-02-0047-004	
	PANEL, ALUMINUM, SIZE 2, 72X24	K1-02-0047-005	
	PANEL, ALUMINUM, SIZE 3, 72X30	K1-02-0047-006	
5	CAP, PIPE, FITS 2" NPT	A1-05-0592-001	
7	ROD THREADED, 4", .375-16 THD	A1-05-0606-001	
8	.375-16, SS, U-BOLT	A1-05-0590-002	

Appendix A Installation Drawings



NOTICE IS HEREBY GIVEN THAT ALL DATA CONTAINED IN, REVEALED BY, OR SHOWN IN THIS DOCUMENT ARE PROPRIETARY AND BELONGS TO ASTRONICS DME, FT LAUDERDALE, FLORIDA. IT IS FURNISHED AND RECEIVED IN CONFIDENCE SOLELY FOR INFORMATIONAL PURPOSES OF THE RECIPIENT FOR THE PURPOSES HEREWITH TRANSMITTED. NONE OF THE INFORMATION CONTAINED HEREIN SHALL BE USED FOR ANY OTHER PURPOSES OR DUPLICATED IN WHOLE OR IN PART WITHOUT PRIOR AUTHORIZATION OF ASTRONICS DME.



(100MPH) (PRESSURE=0.23)

SIZE 1, LENGTH	T (FT-LBS)	P (LBS)
48"	166	424
72"	166	424

(200MPH) (PRESSURE=0.9)

SIZE 1, LENGTH	T (FT-LBS)	P (LBS)
48"	648	1654
72"	648	1654

SIZE 2, LENGTH	T (FT-LBS)	P (LBS)
48"	232	592
72"	232	592

SIZE 2, LENGTH	T (FT-LBS)	P (LBS)
48"	907	2316
72"	907	2316

SIZE 3, LENGTH	T (FT-LBS)	P (LBS)
48"	290	740
72"	290	740

SIZE 3, LENGTH	T (FT-LBS)	P (LBS)
48"	1134	2895
72"	1134	2895

ANCHORING LOADS
STANDARD CONFIGURATION

$W = F * C * \text{PRESSURE} / (2N)$
 $T = W * (G/12)$
 WHERE:
 W = WIND LOADING PER LEG (LB)
 T = TORQUE RESISTED AT MOUNTING FLANGE (FT-LB)
 F = HEIGHT OF SIGN FACE
 C = LENGTH OF SIGN FACE
 G = BASE OF MTG FLANGE TO CENTER OF SIGN FACE
 N = NUMBER OF MODULES (FOR DOUBLE, 1.5)

$P = T * 12 / 4.7$
 WHERE:
 P = TENSION LOAD IN CONCRETE ANCHOR BOLT
 T = TORQUE RESISTED AT MOUNTING FLANGE (FT-LB)

ASTRONICS DME		6830 NW 16TH TERRACE FT LAUDERDALE, FL 33309	
TITLE INSTALLATION, UNLIGHTED SIGNS			
CAGE CODE D 55827	DWG NO. N1-01-0007	REV. 01	
SCALE NONE	WT N/A	SHEET 2	