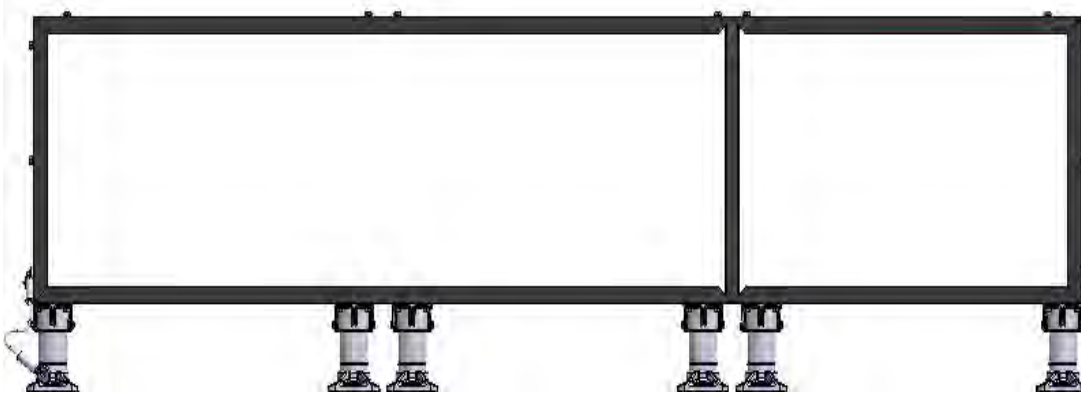


L-858 LED SIGNS

Installation and Maintenance Manual

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

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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 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.

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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. Always remove power prior to making any wire connections and touching any parts.
- 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.
- 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.

- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.

1.6 Operation

Only qualified personnel should operate this equipment. Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

- Before using this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- DO NOT touch exposed electrical connections on equipment while the power is ON.

1.7 Equipment Malfunctions

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in this manual.

1.8 Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only properly trained personnel are permitted to service this equipment.

- 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.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved Astronics DME replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

2. DESCRIPTION

2.1 Introduction

This section describes the Astronics DME L-858 LED signs. A 4 module, size 1 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.

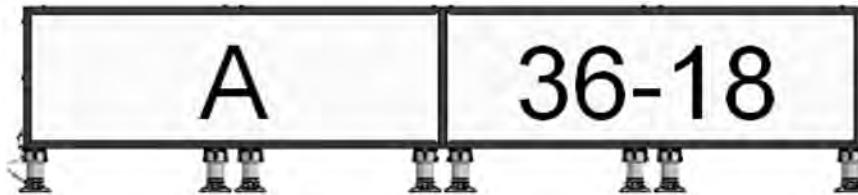
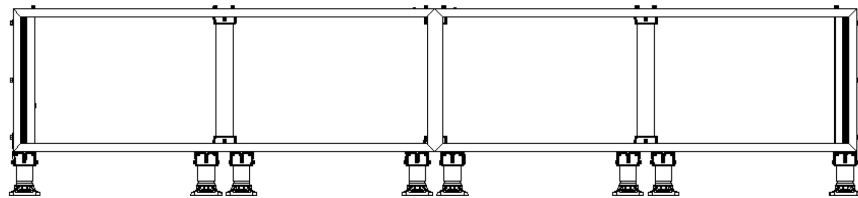


Figure 2-1 L-858 LED Sign

2.2 Uses

The Astronics DME L-858 LED 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-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
- L-858B – Runway Distance Remaining sign - white legend on a black background.

The L-858 LED signs are Intertek Testing Services certified according to FAA specification AC 150/5345-44K and Engineering Brief No 67D.

2.3 Equipment Description

2.3.1 Configurations

The description, type, size, style, class, mode and modules of L-858 LED signs Astronics DME signs offers are described in Table 2-1.

Table 2-1 L-858 LED Signs

L-858	Size	Style	Class	Mode	Module
Y, R, L	1,2,3	2,3,5	2	2,3	1,2,3,4
B	4	2,3,5	2	2	1
B	5	2,3,5	2	2,3	1

Style 2 = 3 step (4.8A to 6.6A) Constant Current Regulator (CCR)

Style 3 = 5 step (2.8A to 6.6A) Constant Current Regulator (CCR)

Style 5 = 1 step (5.5A) Series Lighting Circuit

Class 2 = -40°F - 131°F (-40°C - 55°C)

Mode 2 = 200MPH

Mode 3 = 300MPH

The Astronics DME L-858 LED signs are available in the configurations shown in Table 2-2.

A single module consists of one single module.

A double module consists of one double module.

A triple module consists of one single and one double module.

A quad module consists of two double modules.

Table 2-2 Configurations

	Single Module	Double Module	Triple Module	Quad Module
Size 1	X	X	X	X
Size 2	X	X	X	X
Size 3	X	X	X	X
Size 4	X			
Size 5	X			

Equipment Description (cont.)

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 2-3 and Figure 2-2.

Table 2-3 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	26 5/8	660	30	762
2	15	381	24	610	32 5/8	812	36	914
3	18	457	30	762	38 5/8	965	42	1067
4	40	1016	48	1219	56 5/8	1422	48	1219
5	25	635	30	762	38 5/8	965	42	1067

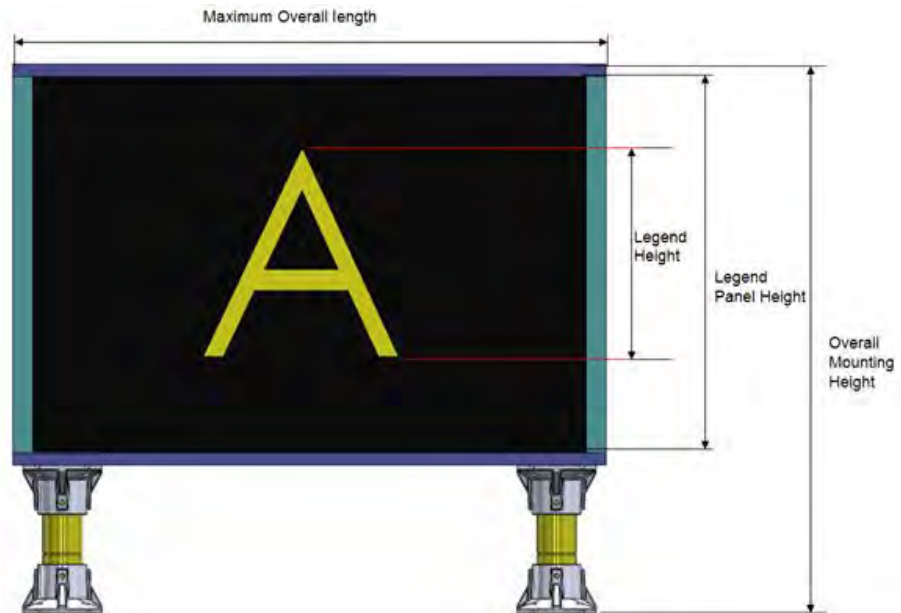


Figure 2-2 Dimensions

**Equipment
Description
(cont.)**

2.3.3 Weight

The L-858 Signs approximate weights for the various sizes and modules are listed in Table 2-4.

Table 2-4 Weight

Size	Module	Weight (lbs.)
1	Single	45
1	Double	75
1	Triple	100
1	Quad	125
2	Single	55
2	Double	95
2	Triple	130
2	Quad	165
3 & 5	Single	70
3	Double	122
3	Triple	170
3	Quad	215
4	Single	120

2.3.4 L-858 Major Components

The major components of the L-858 are shown in Figure 2-3 and Figure 2-4.

Equipment Description (cont.)

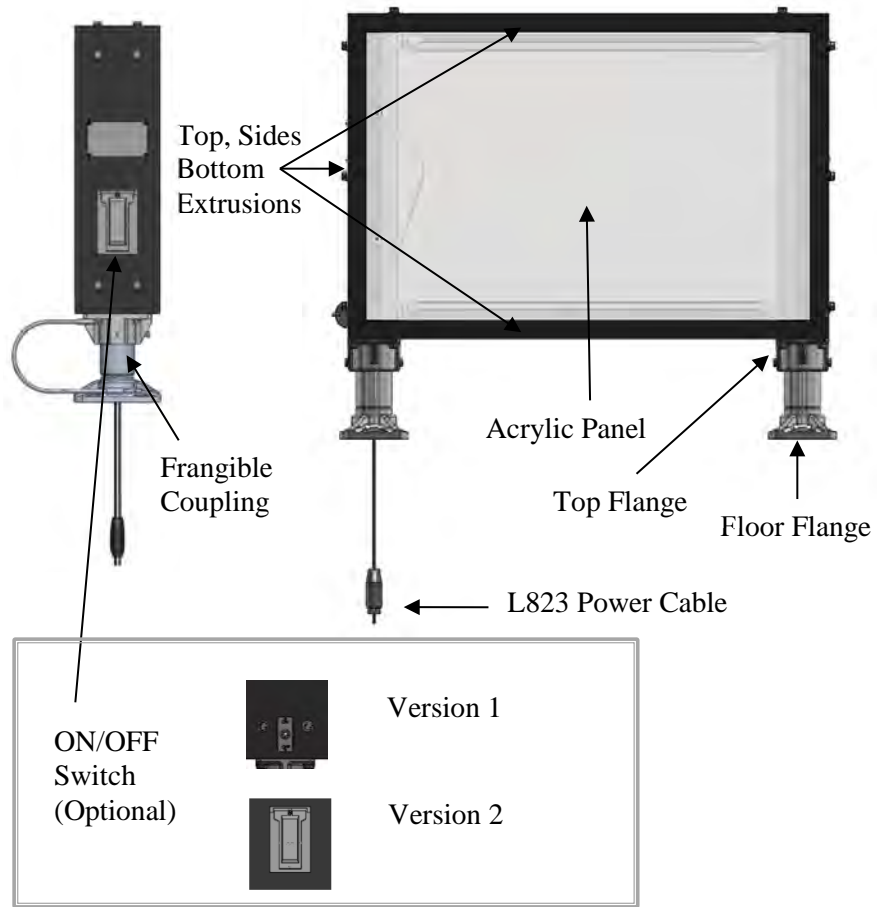


Figure 2-3 External Components (Single Module, Size 1 shown – typical)

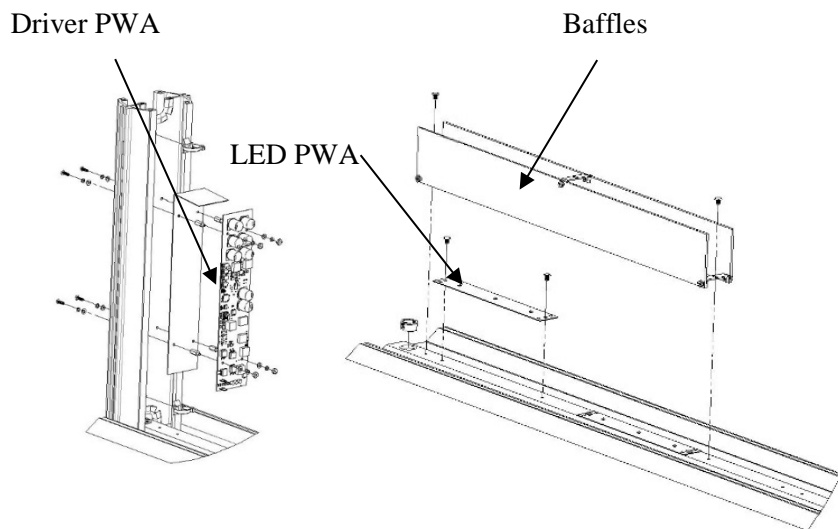


Figure 2-4 Internal Components (Single Module, Size 1 shown – typical)

Equipment Specification Data

2.3.5 Functional Characteristics

Table 2-5 list the Functional Characteristics of the L-858 LED signs.

Table 2-5 Functional Characteristics

Unit	Parameter	Requirements
L-858 Sign	Light Intensity	The average of all measurements was between 10 and 30 fL and no measurement was lower than 7 fL.
		The ratio between maximum and minimum luminance over the whole sign face does not exceed 5:1.
		Adjacent grid measurements do not exceed a 1.5:1 luminance ratio.

2.3.6 External Power Requirements

Table 2-6 lists the external power requirements of the L-858 system.

Table 2-6 External Power Requirements

Input	Power
Constant Current Regulator (CCR)	3 step - 4.8A to 6.6A 50/60Hz
Constant Current Regulator (CCR)	5 step - 2.8A to 6.6A 50/60Hz
Dedicated Sign Circuit	5.5A 50/60Hz

Equipment Specification Data

2.3.7 Environmental Characteristics

Table 2-7 lists the environmental characteristics of the L-858 LED sign.

Table 2-7 Environmental Characteristics

Condition	Range
Temperature: Operating Shipping/Storage	-40° F (-40° C) to 131° F (55° C) -67° F (-55° C) to 131° F (55° C)
Rain	Withstands exposure to wind driven rain.
Wind	Mode 2 signs withstand exposure to a wind speed of 200 mph (322 kph). Mode 3 signs withstand exposure to a wind speed of 300 mph (483 kph). (except size 4)
Sunshine	Withstands exposure to direct sunlight.

2.3.8 Equipment and Accessories Supplied

Table 2-8 lists the equipment and accessories supplied for the L-858 system.

Table 2-8 Equip and Accessories - Supplied

Description	Quantity
L858 LED Sign	1
Installation and Maintenance Manual Y3-01-0175	Manual can be downloaded at www.astronics.com

2.3.9 Equipment Required -Not Supplied

Table 2-9 through Table 2-10 list the equipment and accessories required but not supplied for the L-858 system.

Table 2-9 Equip and Accessories Req'd- Not Supplied

Description	Quantity
100W Isolation transformer – L-830-4/L-831-4 for 6.6A Circuits	1
100W Isolation Transformer – L-830-5/L-831-5 for 20A Circuits	1

Table 2-10 Load & Isolation Transformer – Not Supplied

Sign Size	Number of Modules	Power Factor	Volt Amp VA Load (Fixture + Isolation Transformer)
1	4	0.74	58
1	3	0.75	53
1	2	0.76	47
1	1	0.74	45
2	4	0.72	74
2	3	0.75	63
2	2	0.73	56
2	1	0.82	44
3	4	0.75	85
3	3	0.73	76
3	2	0.79	43
3,4,5	1	0.8	53

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 of L-858 Signs at a typical site. Refer to the airport project plans and specifications for the 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 contents and their condition. Note any exterior damage to the carton that may lead to detection of equipment damage.

3.3 Placement

This subsection describes the placement of the L-858 Signs. Follow the guidelines in Appendix A, along with FAA or ICAO specifications and site plans, when placing the light fixture.

3.4 Installation

This subsection provides installation instruction for the L-858 Signs. Refer to Appendix A for Installation Instructions.

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4. OPERATION

4.1 Introduction

This section of the manual describes the operational aspects of the L-858 Signs. The following paragraphs outline the details on controls, indicators, and system operation. Turn-on and turn-off operations are described, along with notes regarding safety hazards, where necessary

4.2 Operational Checks

4.2.1 Modes of Operation

The L-858 Signs are configured for: 3 step (4.8A to 6.6A) Constant Current Regulator (CCR); 5 step (2.8A to 6.6A) Constant Current Regulator (CCR), and a 1 step (5.5A) series lighting circuit.

4.2.2 Brightness Settings

The L-858 LED signs have one fixed intensity, irrespective of the CCR level.

4.2.3 Turn On and Checkout Procedure

Turn on the L-858 sign using the CCR. If the optional toggle switch is installed, turn on the toggle switch.

4.2.4 Operating Modes

The L-858 signs will turn on with a single intensity, independent of the current from the CCR. There is no user interface to control light intensities.

4.2.5 Checkout

To checkout L-858 signs, turn on the CCR, and switch the CCR through the steps, and observe no intensity change of signs.

4.2.6 Equipment Shutdown

Turn off the L-858 sign by turning off the CCR or if the optional toggle switch is installed, turn off the toggle switch.

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5. MAINTENANCE

5.1 Introduction

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

5.2 Maintenance Checks

Table 5-1 lists the maintenance procedures for the L-858 signs. Table 5-2 lists the maintenance checks to keep the L-858 signs operating efficiently, follow a preventive maintenance schedule. Refer to FAA AC 150/5340-26 for more detailed information.

Table 5-1 Removal, Installation, and Maintenance Procedures

Repair and Maintenance Procedures	7.2
Visual Operational Check	7.2.1
Line-of-Sight Inspection	7.2.2
Cleaning and Inspection	7.2.3
Gain Access to Internal Components	7.2.4
Close Access to Internal Components	7.2.5
Electrical Connections	7.2.6
Electrical Component Inspection	7.2.7
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K2-02-0006-001 (Version 1) ON/OFF Switch Removal	7.2.8.1
K2-02-0006-002 ON/OFF (Version 2) Switch Installation (If installed)	7.2.8.4
Driver PWA Removal	7.2.9
Driver PWA Installation	7.2.10
Light Engine Assembly Removal	7.2.11
Light Engine Assembly Installation	7.2.12
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Frangible, Floor Flange, and Top Flange Installation	7.2.20
Tether Removal	7.2.21
Tether Installation	7.2.22
Electrical Connections	7.2.8.4, 7.2.10 & 7.2.14

Table 5-2 Maintenance Checks

Interval	Task	Action
As Req'd	Check Signs for obstructions	Clean panels
	Make prediction of heavy snowfall, if necessary	Use red flags or sticks to mark location of Signs to facilitate snow removal and lessen chance of damage.
Weekly	Check for Rubber and other contaminant deposits on the panels	Clean panels
Semi-Annually	Check inside the Signs for the presence of water	Any water should be removed from inside the Signs and ensure the drain holes are clear.

6. TROUBLE SHOOTING

6.1 Introduction

This section of the manual provides onsite corrective procedures in order to diagnose, isolate, and repair malfunctions and faults that may be found in the L-858 signs in its operational environment. Field repair is limited to the replacement of easily replaceable components.

6.2 Equipment Required

The following equipment is required to perform the onsite corrective maintenance procedures:

- Standard tool kit
- Multi-meter
- Wire Extraction Tool (Astronics DME PN A1-03-0281-000)

6.3 Troubleshooting Procedures

The L-858 signs must be operated as described in Section 4. When a fault or malfunction occurs, corrective maintenance is required by an onsite technician to isolate and correct the problem. The following items should be checked/verified before other troubleshooting/maintenance procedures are performed:

- Check all cables are connected
- Check all power connections are intact

If the above do not correct the malfunction, refer to Table 6-1.

CAUTION

When removing and replacing the electronics module, handle with care to avoid damage to discrete components that can be caused by electrostatic discharge. To avoid voltage overload, make sure the power is turned off when the replacement of a module is required.

Table 6-1 Troubleshooting Procedures

Problem	Possible Cause	Corrective Action
Sign not lighting	Defective LED	Replace LED per 7.2.11.
	Defective Driver PWA	Replace Driver PWA per 7.2.9.
	Loose wire connection	Tighten wire connections. Ensure connections are correct per 7.2.8.4, 7.2.10 & 7.2.14.
	Deteriorated wire insulation	Replace wires. Ensure connections are correct per 7.2.8.4, 7.2.10 & 7.2.14.
	Internal components wired incorrectly	Ensure components are connected per 7.2.8.4, 7.2.10 & 7.2.14.
Sign too dim	Dirty panels	Clean panels per 7.2.3.
	Service life of LEDs exceeded	Replace LEDs per 7.2.11.

7. REPAIR

7.1 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 all of the L-858 signs. These repair procedures will only show one configuration, as the others will follow typical configurations.

Differences between the L-858 sign configurations will be noted in the repair procedure when required.

7.2 Repair and Maintenance Procedures

These procedures consist of the procedures required for testing, measuring, aligning, and repairing the L-858 signs. The tools and test equipment necessary for the performance of these procedures are also listed as required.

The following maintenance procedures are those required to perform the maintenance tasks listed in Section 5.

7.2.1 Visual Operational Check

1. With the system operating, visually inspect each L-858 Signs to verify LEDs are on.
2. Visually inspect each L-858 Signs for obvious damage.

7.2.2 Line-of-Sight Inspection

1. Visually inspect the lights for obstructions.
2. Refer to FAA specification AC 150/5340-26 for visibility requirements.

7.2.3 Cleaning and Inspection

1. Inspect the outside panels, extrusions, and other parts for moisture and dirt.
2. Clean all moisture and dirt from the panels, inside and out.
3. Replace any damaged parts.

7.2.4 Gain Access to Internal Components

See Figure 7-1.

WARNING

Wait at least 1 minute for circuit capacitance to discharge before performing any maintenance.

When turning OFF power using the optional switch, the switch shorts out to the isolation transformer, however a potential high voltage could still exist.

CAUTION

When removing and replacing the electronics module, handle with care to avoid damage to discrete components that can be caused by electrostatic discharge. To avoid voltage overload, make sure the power is turned off when the replacement of a module is required.

1. Shut off CCR and turn off optional switch, if installed.
2. Remove side extrusions by removing the fasteners and washers.
3. Set the side extrusion piece aside, without detaching the wires.
4. Remove panel(s) by sliding through the side extrusions and set aside.

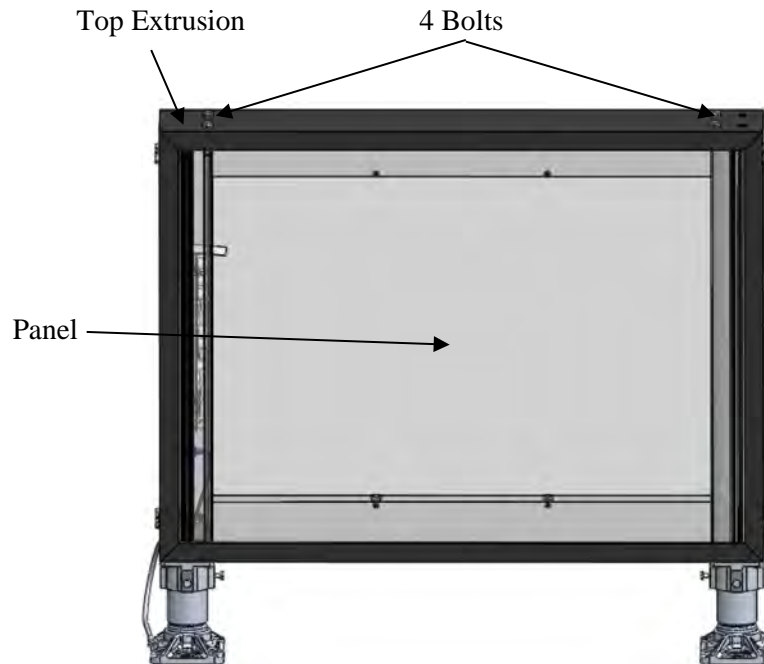


Figure 7-1 Access to Internal Components

7.2.5 Close Access to Internal Components

See Figure 7-1.

1. Ensure wiring is correct, refer to 7.2.8.4, 7.2.10 & 7.2.14, and all components are installed correctly.
2. Install panel(s) by sliding through the side extrusions.
3. Position extrusion near sign and connect the PWA connector(s) to the light engine(s).
4. Install 4 fasteners and washers on extrusion and torque to 22 ft. lbs.
5. Perform Operational Checks, refer to 4.2.

7.2.6 Electrical Connections

1. Turn OFF all power to the system.
2. Check that all connections and cable connections are tight and clean.
3. Replace or tighten all connections and terminal lugs that show signs of fatigue/stress or wear.

7.2.7 Electrical Component Inspection

1. Visually inspect the electrical components for overall condition.
2. Inspect for chipped, cracked or broken parts.

3. Visually inspect wiring insulation for signs of deterioration such as brittle, cracked, or damaged insulation.
4. Check all terminal connections to ensure they are tight and corrosion free.

7.2.8 ON/OFF Switch Removal (If installed)

Based upon a visual inspection, decide which version of equipment you are working on. Use the removal and installation instructions specific to your model number.

Version 1 (K2-02-0006-001) or version 2 (K2-02-0006-002)

7.2.8.1 K2-02-0006-001 (Version 1) ON/OFF Switch Removal

See Figure 7-2.

1. Shut off CCR.
2. Remove 4 or 6 (depending on Sign size) fasteners and washers from side extrusion.
3. Remove extrusion approximately 4-6 inches and wires from ON/OFF Switch.
4. Remove side extrusion and set aside.
5. Remove ON/OFF Switch by removing nut and switch guard on outside of side extrusion and push ON/OFF Switch through the extrusion.

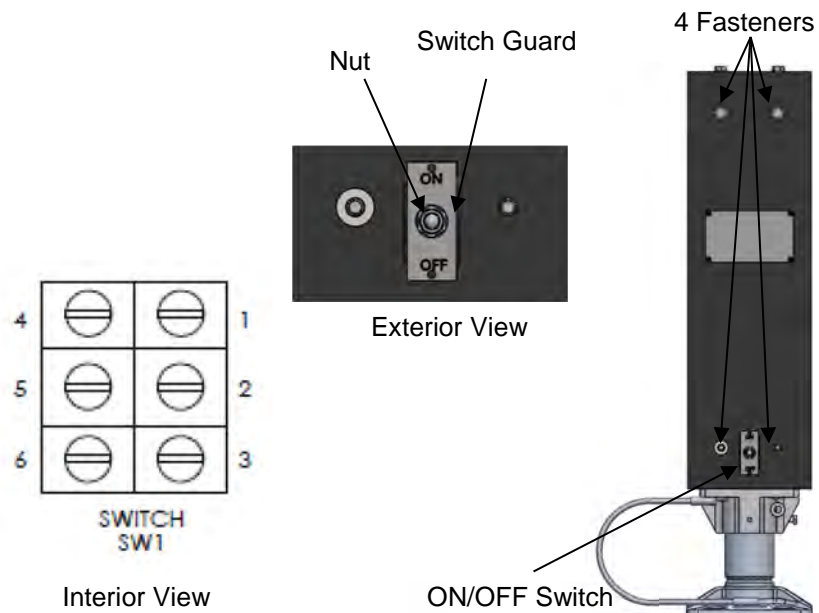


Figure 7-2 Version 1 ON/OFF Switch (If Installed)

7.2.8.2 K2-02-0006-001 (Version 1) ON/OFF Switch Installation

See Figure 7-2.

1. Install Switch Guard on exterior of extrusion.
2. Install ON/OFF Switch by inserting ON/OFF Switch through the extrusion from the interior side and installing nut and switch guard on exterior side of extrusion. Ensure that switch is mounted with the keyway facing down. Torque nut to 35 in. lbs.
3. Position extrusion approximately 12 inches from sign and install wires to ON/OFF Switch.
 - a. Connect one of the Black wires from L-823 Power Cable to SW1-2.
 - b. Connect the other Black wire from L-823 Power Cable to SW1-5.
 - c. Connect wire from PWA E1 to SW1-3.
 - d. Connect wire from PWA E4 to SW1-6.
 - e. Connect wire from SW1-1 to SW1-4.
4. Install 4 or 6 (depending on Sign size) and washers on side extrusion and torque to 35 in. lbs.
5. Turn ON CCR and turn ON optional switch, if installed to restore to operational condition.

7.2.8.3 K2-02-0006-002 (Version 2) ON/OFF Switch Removal (If installed)

See Figure 7-3.

1. Shut off CCR.
2. Remove 4 or 6 (depending on Sign size) fasteners and washers from side extrusion.
3. Remove extrusion approximately 4-6 inches and wires from ON/OFF Switch.
4. Remove side extrusion and set aside.
5. Remove ON/OFF Switch by removing the 2 screws attaching the cover and push ON/OFF Switch through the extrusion.

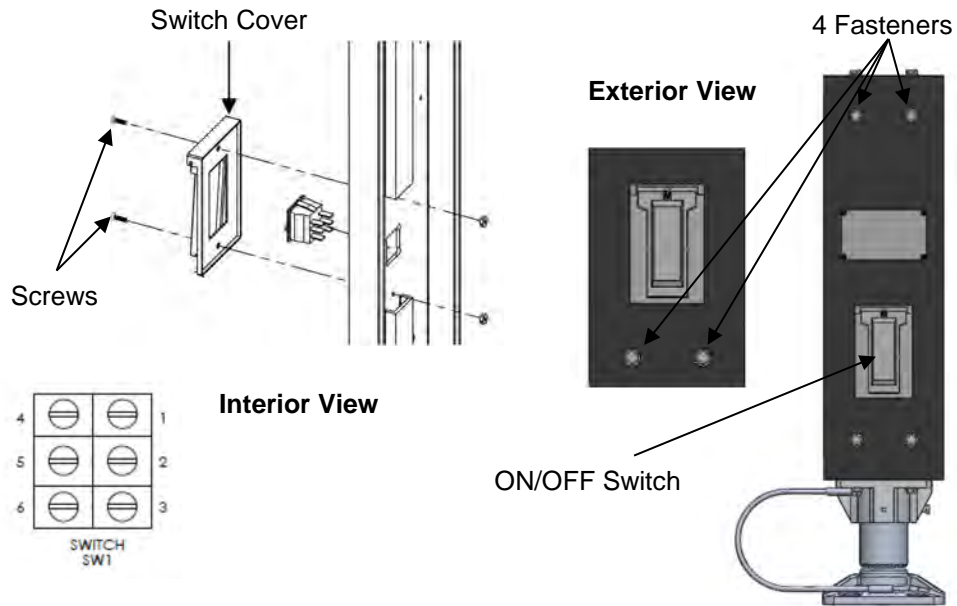


Figure 7-3 Version 2 ON/OFF Switch (If Installed)

7.2.8.4 K2-02-0006-002 ON/OFF (Version 2) Switch Installation (If installed)

See Figure 7-3.

1. Install Switch Cover on exterior of extrusion using two screws.
2. Install ON/OFF Switch by inserting ON/OFF Switch through the extrusion from the exterior side. Ensure that switch is mounted with the “↑” (ON) oriented upwards (↑).
3. Position extrusion approximately 12 inches from sign and install wires to ON/OFF Switch.
 - a. Connect one of the Black wires from L-823 Power Cable to SW1-2.
 - b. Connect the other Black wire from L-823 Power Cable to SW1-5.
 - c. Connect wire from PWA E1 to SW1-3.
 - d. Connect wire from PWA E4 to SW1-6.
 - e. Connect wire from SW1-1 to SW1-4.
4. Install 4 or 6 fasteners (depending on Sign size) and washers on side extrusion and torque to 22 in. lbs.
5. Turn ON CCR and turn ON optional switch, if installed to restore to operational condition.

7.2.9 Driver PWA Removal

See Figure 7-4.

1. Gain access to internal components. Refer to paragraph 7.2.4.
2. Remove 4 nuts and washers from Driver PWA.
3. Remove Driver PWA from standoffs and pull out Driver PWA from extrusion to access the wire connections.
4. Disconnect L-823 Power Cable from Driver PWA or from ON/OFF Switch, if installed.
5. Tag and mark wires going into Driver PWA J2, J3, J4 and J5 (if populated) with J2-1, J2-2, J3-1, J3-2, J4-1, J4-2, J5-1 and J5-2 (if populated).
6. Disconnect Light Engine Assembly wires from Driver PWA, J2, J3, J4 and J5 (if populated) using wire extraction tool. See Figure 7-5.
7. Remove Driver PWA.

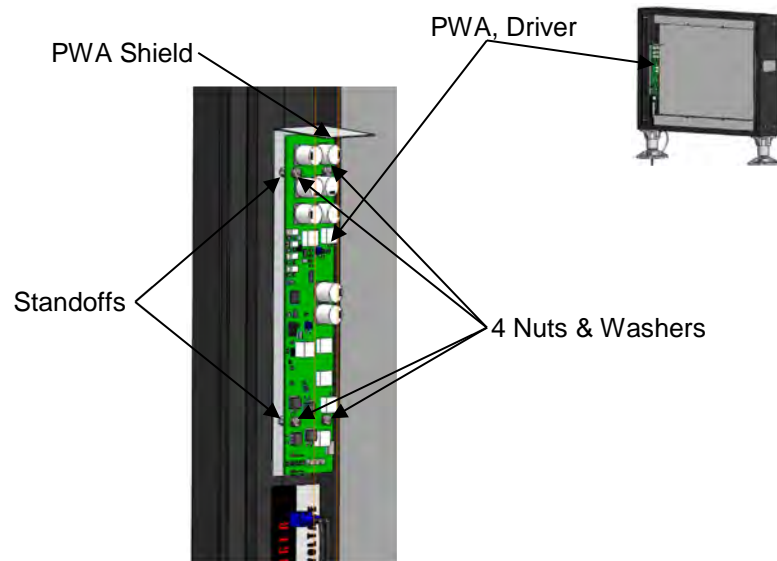


Figure 7-4 Driver PWA

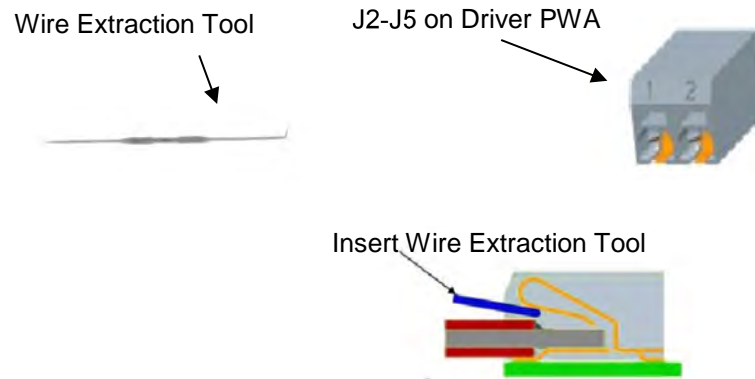


Figure 7-5 Wire Extraction Tool

7.2.10 Driver PWA Installation

See Figure 7-4.

1. Position Driver PWA near mounting standoffs, but not inside extrusion, to connect the wire connections.
2. If optional ON/OFF Switch is installed;
 - a. Connect wire from SW1-3 to PWA E1.
 - b. Connect wire from SW1-6 to PWA E4.
3. If ON/OFF Switch is not installed;
 - a. Connect one of the Black wires from the L-823 Power Cable to Driver PWA E1.
 - b. Connect the other Black wire from L-823 Power Cable to Driver PWA E4.
4. Connect Light Engine Assembly wires to Driver PWA (refer to Table 7-1 through Table 7-4 and Figure 7-6) by pushing wire into the appropriate slot.
5. Install Driver PWA on standoffs and install 4 washers and nuts, torque nuts to 8 in. lbs.
6. Ensure PWA Dip Switches are set correctly, see Figure 7-7.
7. Close access to internal components. Refer to paragraph 7.2.5.

Table 7-1 Driver PWA Connections – 1 Module

	Wire Color	From Wire	To PWA
Size 1	White	J2-1	J2-1
	Black	J2-2	J2-2
Size 2	White	J2-1	J2-1
	Black	J2-2	J2-2
Size 3 & 5	White	J2-1	J2-1
	Black	J2-2	J2-2
Size 4	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2

Table 7-2 Driver PWA Connections – 2 Module

	Wire Color	From Wire	To PWA
Size 1	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J2-1	J2-1
	Black	J2-2	J2-2
Size 2	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
Size 3	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2

Table 7-3 Driver PWA Connections – 3 Module

	Wire Color	From Wire	To PWA
Size 1	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J4-1	J4-1
	Black	J4-2	J4-2
Size 2	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J4-1	J4-1
	Black	J4-2	J4-2
Size 3	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J4-1	J4-1
	Black	J4-2	J4-2

Table 7-4 Driver PWA Connections – 4 Module

	Wire Color	From Wire	To PWA
Size 1	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J4-1	J4-1
	Black	J4-2	J4-2
	White	J5-1	J5-1
	Black	J5-2	J5-2
Size 2	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J4-1	J4-1
	Black	J4-2	J4-2
	White	J5-1	J5-1
	Black	J5-2	J5-2
Size 3	White	J2-1	J2-1
	Black	J2-2	J2-2
	White	J3-1	J3-1
	Black	J3-2	J3-2
	White	J4-1	J4-1
	Black	J4-2	J4-2
	White	J5-1	J5-1
	Black	J5-2	J5-2

CONNECTOR PIN NUMBER DETAIL

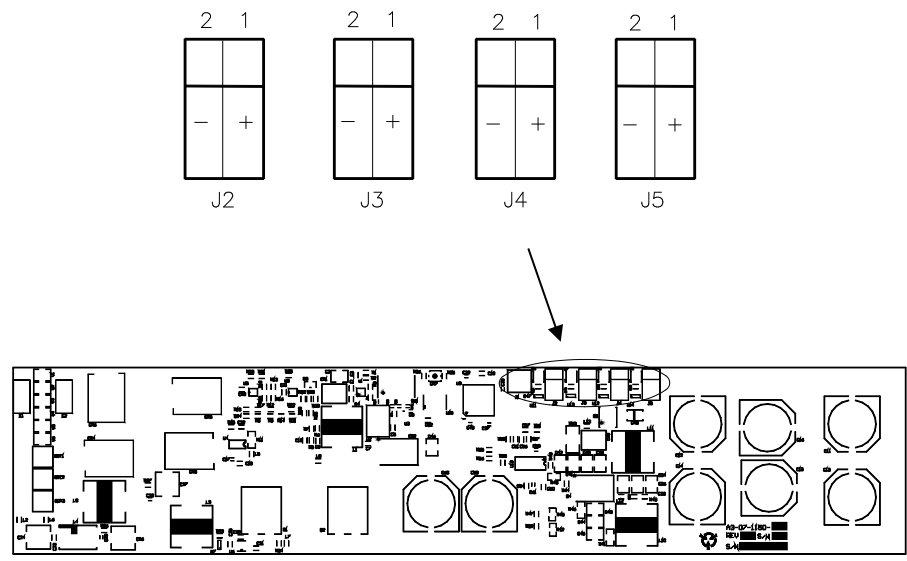


Figure 7-6 Driver PWA Connector Pin Detail

		MODULES			
		1	2	3	4
SIZE	1				
	2				
	3				
	4				
	5				

DIP SWITCH CHART
(BLACK DOT IS SWITCH POSITION)

Figure 7-7 Dip Switch Settings

7.2.11 Light Engine Assembly Removal

See Figure 7-8.

1. Gain access to internal components. Refer to paragraph 7.2.4.
2. Remove Baffle Assembly. Refer to paragraph 7.2.15.
3. Disconnect Connectors.
4. Remove Push Rivets using panel clip pliers and remove Light Engine Assembly.

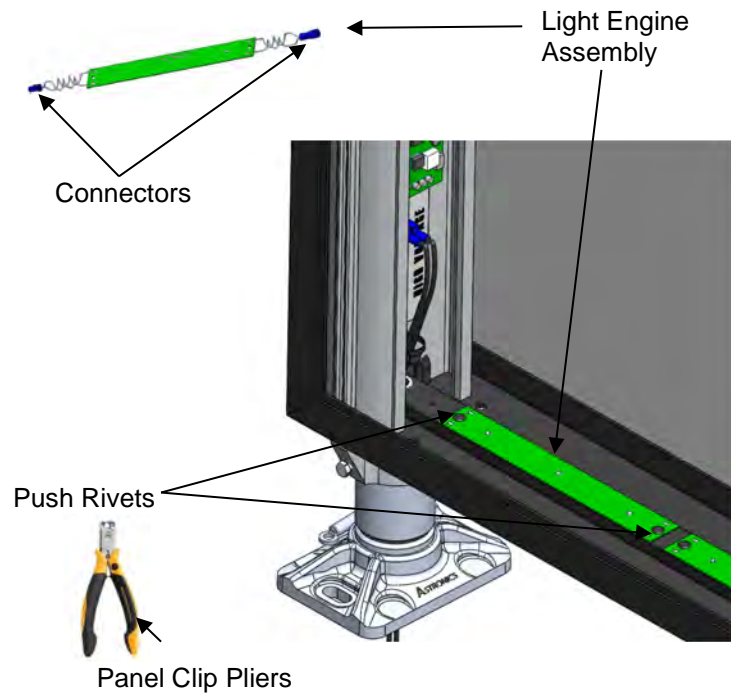


Figure 7-8 Light Engine Assembly

7.2.12 Light Engine Assembly Installation

See Figure 7-8.

1. Position Light Engine Assembly over Extrusion and install Push Rivets through Light Engine Assembly into Extrusion.
2. Connect Light Engine Assembly connectors.
3. Install Baffle Assembly. Refer to paragraph 7.2.16.
4. Close access to internal components. Refer to paragraph 7.2.5.

7.2.13 L-823 Power Cable Removal

See Figure 7-9

1. Gain access to internal components. Refer to paragraph 7.2.4.
2. Remove Flange bolts and washers holding L-858 Sign to mounting pad.
3. Disconnect L-823 Power Cable from Driver PWA or ON/OFF Switch, if installed.
4. Lift end of sign enough to disconnect L-823 Power Cable from Isolation Transformer and pull L-823 Power Cable through the Bottom Extrusion, Top Flange, Frangible and Floor Flange.

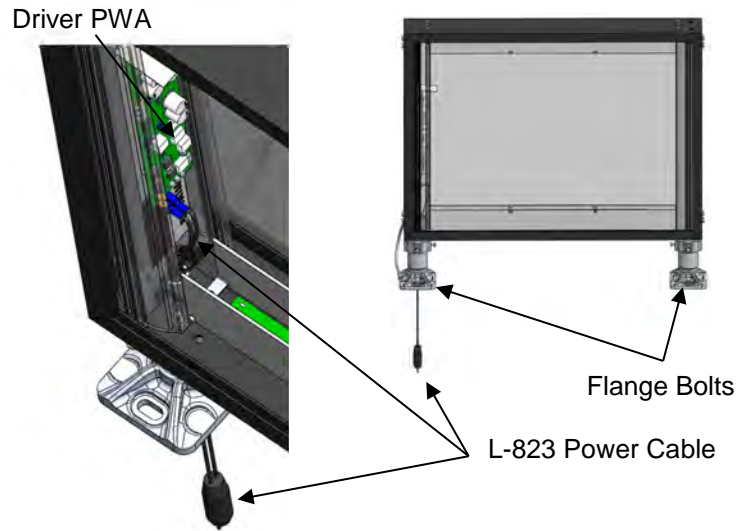


Figure 7-9 L-823 Power Cable

7.2.14 L-823 Power Cable Installation

See Figure 7-9

NOTE

Replacement of L-823 Power Cable requires installation of crimp lugs on cable.

1. Lift end of sign and route L-823 Power Cable through Floor Flange, Frangible, Top Flange and Bottom Extrusion to the Driver PWA. Tuck excess L-823 Power Cable in Frangible.
2. If optional ON/OFF Switch is installed;
 - a. Connect one of the Black wires from L-823 Power Cable to SW1-2.
 - b. Connect the other Black wire from L-823 Power Cable to SW1-5
3. If ON/OFF Switch is not installed;
 - a. Connect one of the Black wires from the L-823 Power Cable to Driver PWA E1.
 - b. Connect the other Black wire from L-823 Power Cable to Driver PWA E4.
4. Connect L-823 Power Cable to Isolation Transformer.
5. Install Flange bolts and washers holding L-858 Sign to mounting pad, torque to 40 ft. lbs.
6. Close access to internal components. Refer to paragraph 7.2.5.

7.2.15 Baffle Assembly Removal

See Figure 7-10.

1. Gain access to internal components. Refer to paragraph 7.2.4.
2. Remove Push Rivets using panel clip pliers and remove Baffle Assembly.

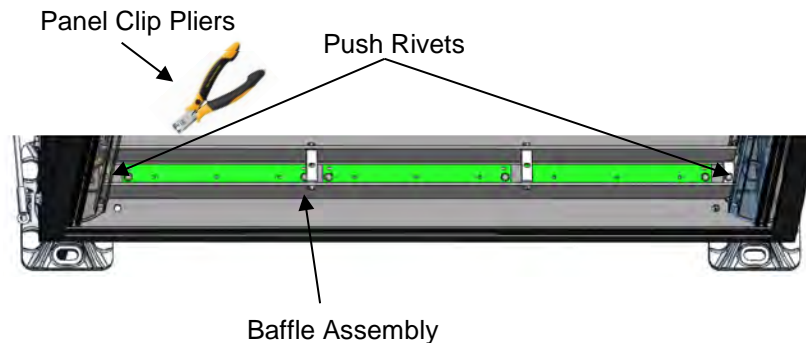


Figure 7-10 Baffle Assembly

7.2.16 Baffle Assembly Installation

See Figure 7-10.

1. Position Baffle Assembly over Extrusion and install Push Rivets through Baffle U-Brackets into Extrusion.
2. Close access to internal components. Refer to paragraph 7.2.5.

7.2.17 Uniting Strip Extrusion Removal (If Installed)

See Figure 7-11.

1. Gain access to internal components. Refer to paragraph 7.2.4.
2. Remove Uniting Strip hardware (Nut, Bolt, and Washer) from Center Tube.
3. Slide Uniting Strip out of L-858 Sign.

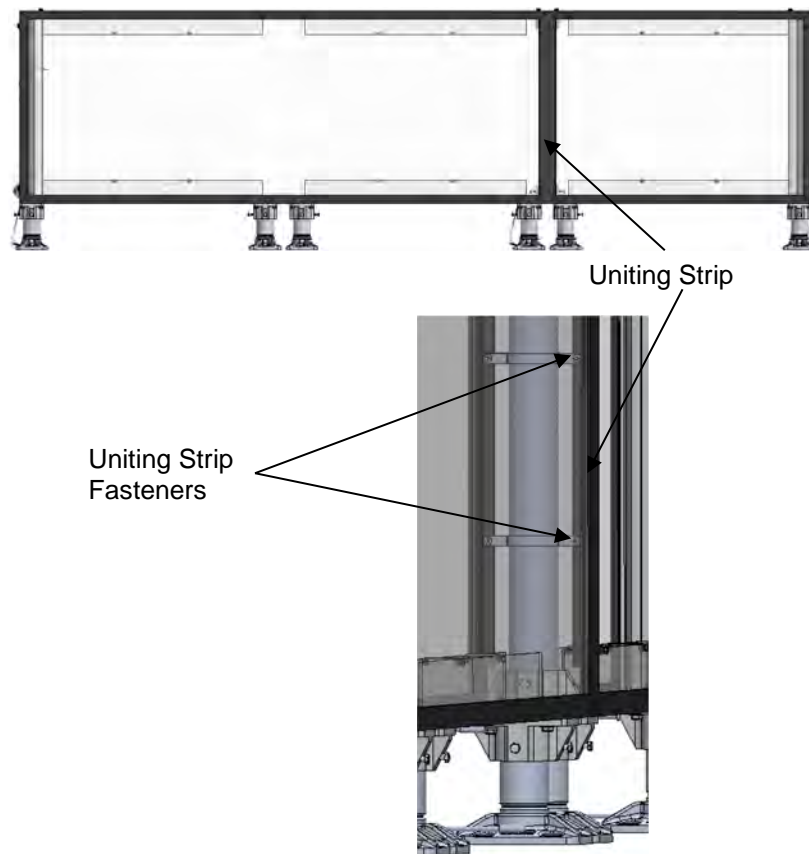


Figure 7-11 Uniting Strip Extrusion

7.2.18 Uniting Strip Extrusion Installation (If Installed)

See Figure 7-11.

1. Slide Uniting Strip into L-858 Sign.
2. Install Uniting Strip hardware (Nut, Bolt, and Washer) onto Center Tube, torque to 8 in. lbs.
3. Close access to internal components. Refer to paragraph 7.2.5.

7.2.19 Frangible, Floor Flange, and Top Flange Removal

See Figure 7-12.

1. Shut off CCR and turn off optional switch, if installed.
2. Remove Floor Flange bolts and washers holding L-858 Sign to mounting pad.
3. If removing Frangible, Floor Flange, or Top Flange with L-823 Power Cable going through, lift end of sign enough and disconnect L-823 Power Cable from Isolation Transformer.
4. Loosen Flange Bolts.
5. Lift end of sign enough to un-screw Frangible from Floor Flange.

- Remove Top Flange Bolts and washers and remove Top Flange.

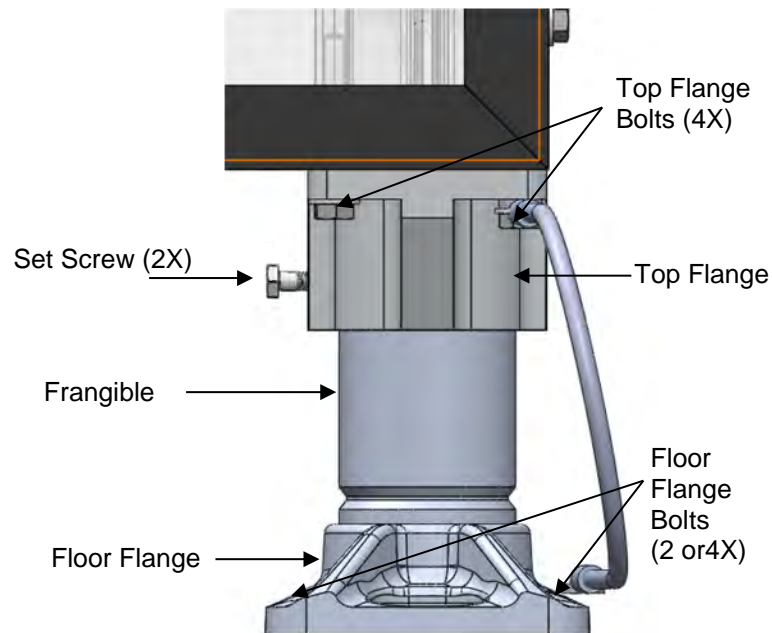


Figure 7-12 Frangible, Floor Flange, and Top Flange

7.2.20 Frangible, Floor Flange, and Top Flange Installation

See Figure 7-12.

- If installing Frangible, Floor Flange, or Top Flange with L-823 Power Cable going through, lift sign high enough to route L-823 Power Cable through Top Flange, Frangible and Floor Flange.
- Connect L-823 Power Cable to Isolation Transformer.
- Position Floor Flange on mounting pad and install 4 bolts and washers, torque to 40 ft lbs.
- Screw the Frangible into Floor Flange fully, until bottomed out.
- Position Top Flange onto Bottom Extrusion and install 4 bolts and washers, torque to 22 ft lbs.
- Insert un-threaded end of Frangible into Top Flange, torque Set Screws to 30 in. lbs.
- Perform Operational Checks, refer to 4.2.

7.2.21 Tether Removal

See Figure 7-13.

- For Tether that is attached to the outside leg, remove bolt and washer from Top Flange where Tether is attached.

2. For Tether that is attached to the inside leg, gain access to internal components, refer to paragraph 7.2.4, then remove bolt, washer and nut from Top Flange where Tether is attached.
3. Remove bolt and washer from Floor Flange where Tether is attached.
4. Remove Tether.

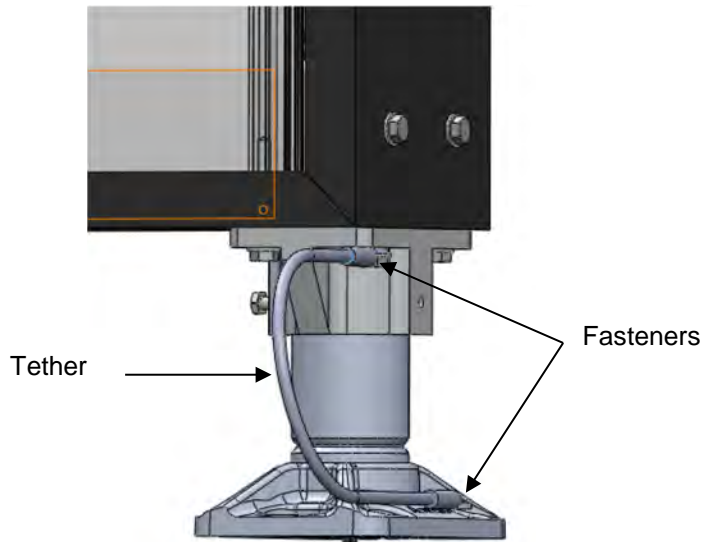


Figure 7-13 Tether

7.2.22 Tether Installation

See Figure 7-13.

1. For Tether that is attached to the outside leg, position Tether end on Top Flange and install bolt and washer, torque to 22 in. lbs.
2. For Tether that is attached to the inside leg, install bolt, washer and nut on Top Flange and torque to 22 ft. lbs.
3. Position other end of Tether on Floor Flange and install bolt and washer, torque to 40 ft. lbs.
4. Close access to internal components, if required. Refer to paragraph 7.2.5.

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8. PARTS

8.1 Introduction

This section of the manual contains the source data of the electrical and mechanical replacement parts of the L-858 LED Signs.

8.2 Name of Part and Description

A brief electrical or mechanical description of each component is given in the column labeled Part Name/Description in both Table 8-1 and Table 8-2.

8.3 Part Number

This column in both Table 8-1 and Table 8-2 gives the part number assigned to a component.

8.4 Ordering Information

Use the part numbering schemes in Figure 8-1 and Figure 8-2 to order the signs and the information in and Table 8-2 to order renewal parts.

8.4.1 L-858 LED Signs

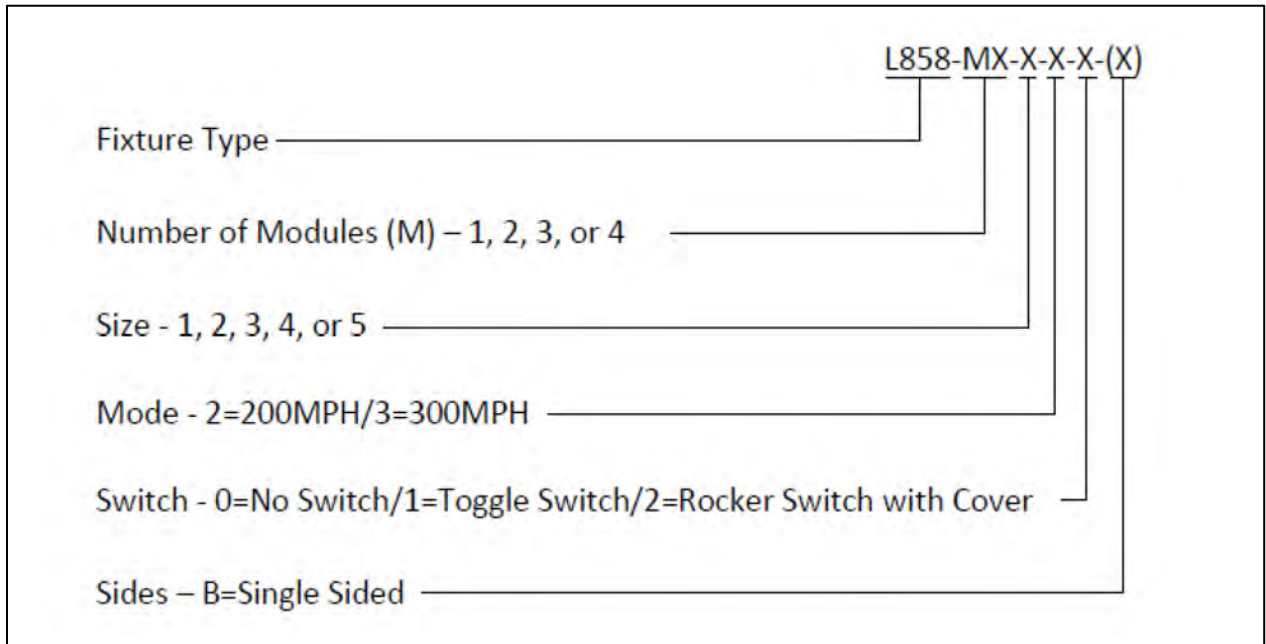


Figure 8-1 L-858, LED Sign, Part Numbering – Single Sided

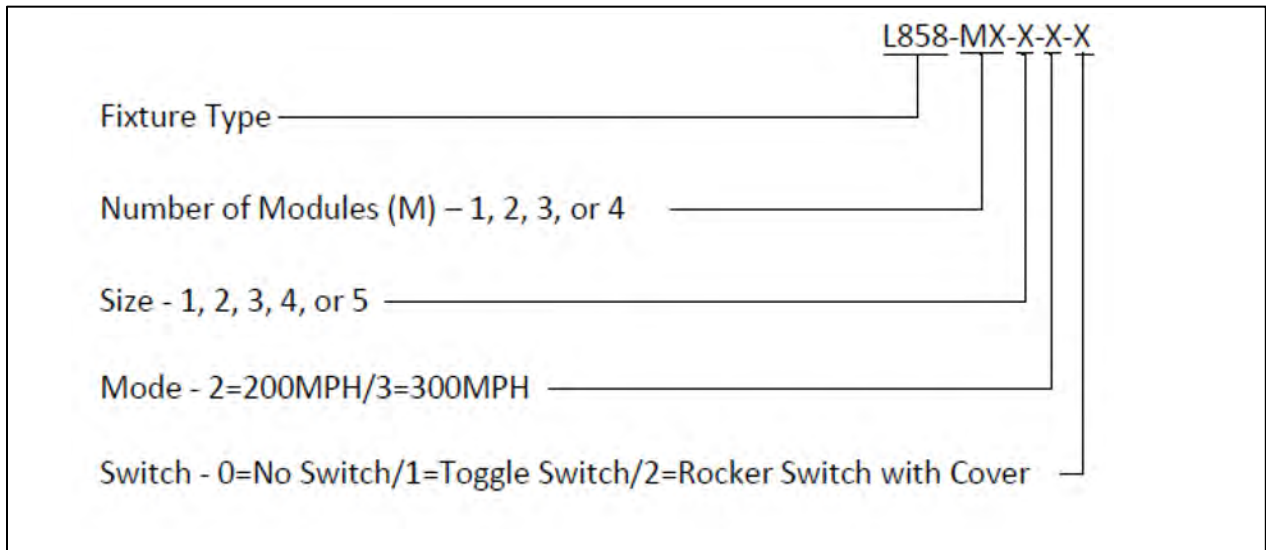


Figure 8-2 L-858, LED Sign, Part Numbering – Double Sided

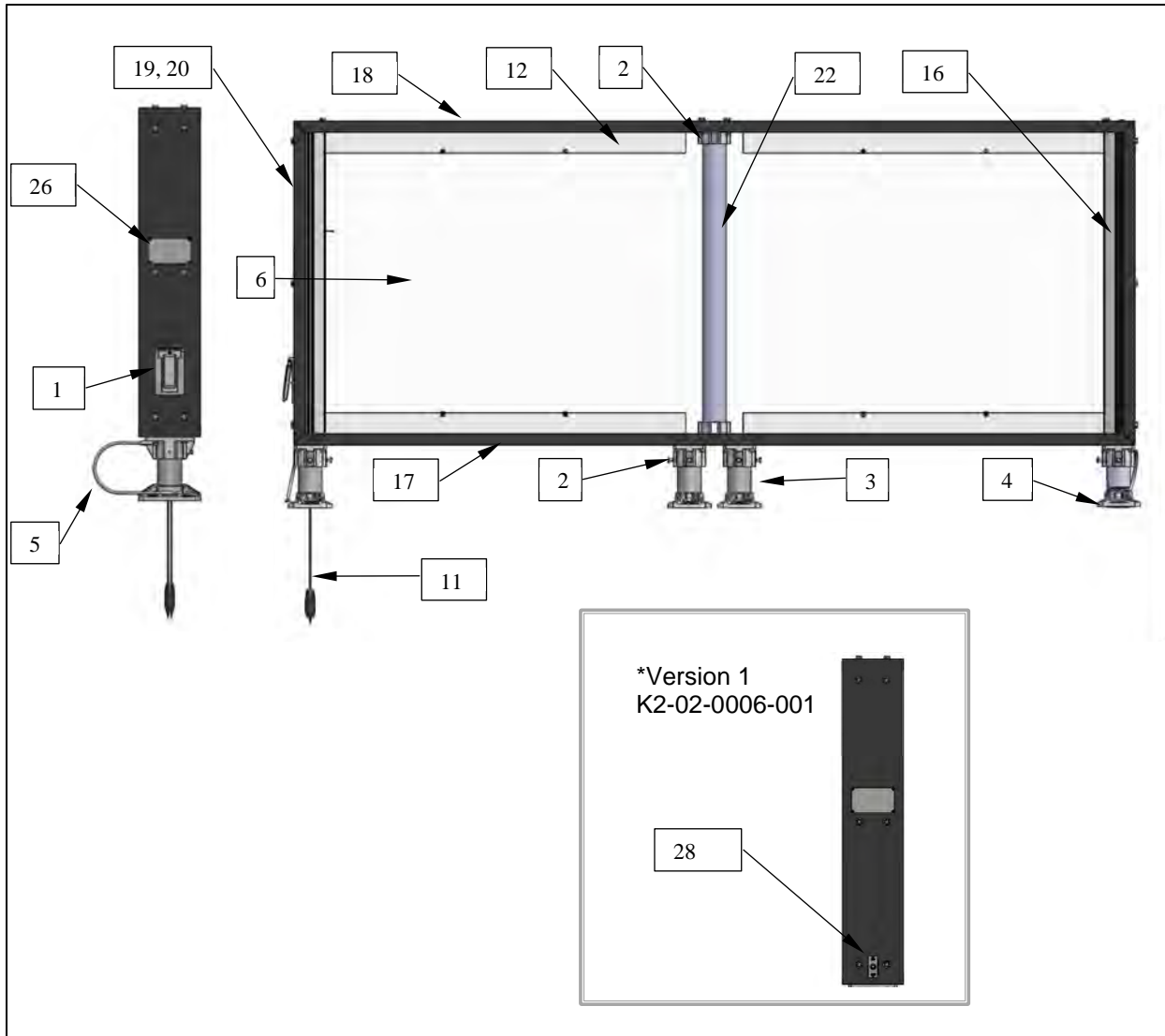


Figure 8-3 L858 LED Sign Front and Side View
(Size 3 Dual Shown – Parts are typical for all sizes/modules except where noted)

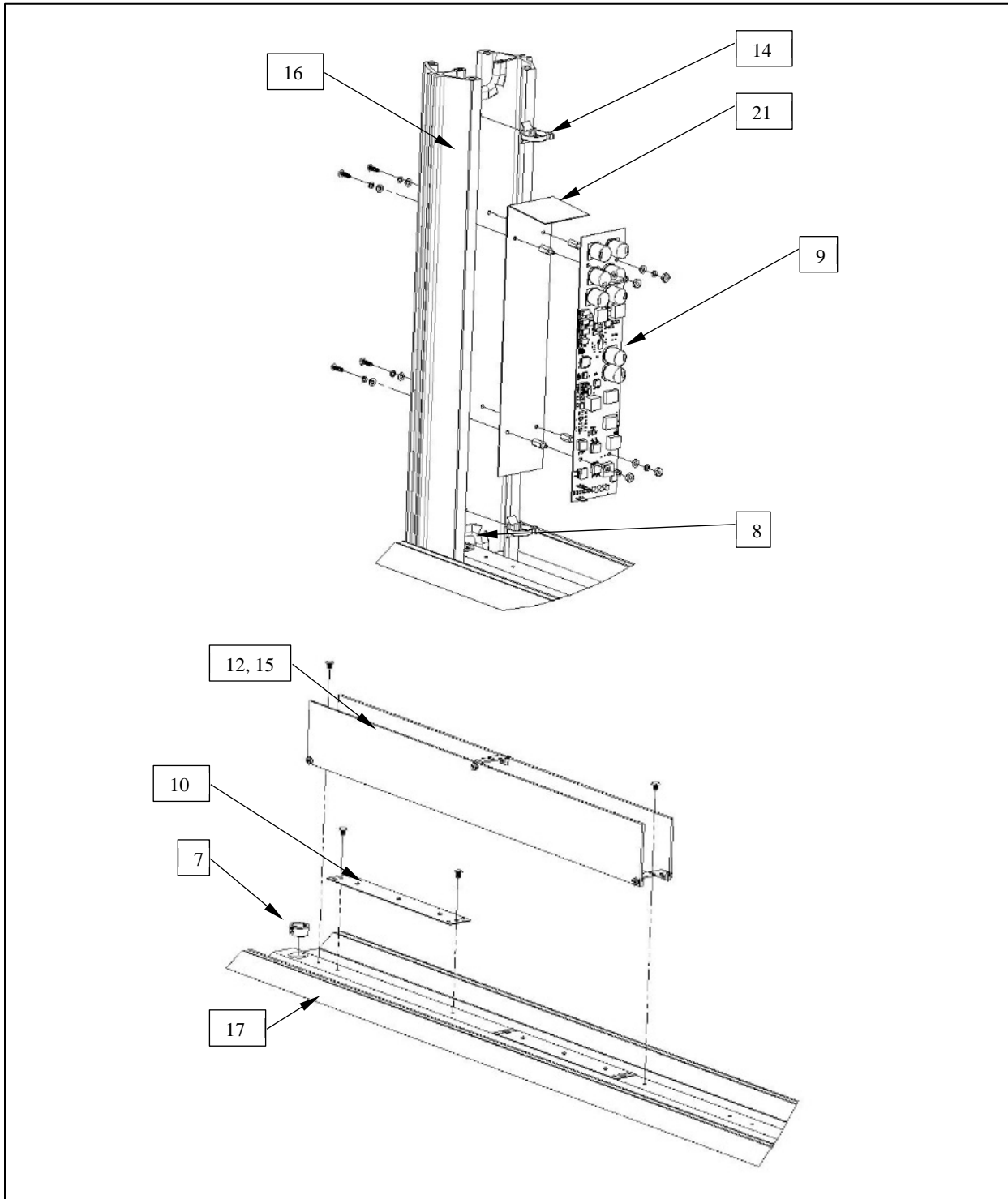


Figure 8-4 L858 LED Sign Breakout View
(Parts are typical for all sizes/modules except where noted)

Table 8-1 L-858 LED Signs Parts Listing (Reference Only)

Item	Part Name/Description	Part Number	Notes
Figure 8-3 & Figure 8-4	L-858 LED Sign	See para 8.4.1	
1	SWITCH, ROCKER	A1-12-0128-001	
2	FLANGE, TOP, SIGNS	A1-17-1075-001	
3	FRANGIBLES		
	FRANGIBLE, SIZE 1, 200MPH	A1-17-1083-001	
	FRANGIBLE, SIZE 1, 300MPH	A1-17-1083-002	
	FRANGIBLE, SIZE 2, 200MPH	A1-17-1083-003	
	FRANGIBLE, SIZE 2, 300MPH	A1-17-1083-004	
	FRANGIBLE, SIZE 3&5, 200MPH	A1-17-1083-005	
	FRANGIBLE, SIZE 3&5, 300MPH	A1-17-1083-006	
	FRANGIBLE, SIZE 4, 200MPH	A1-17-1083-007	
	FRANGIBLE, SIZE 4, 300MPH	A1-17-1083-008	
4	FLANGE, FLOOR, SIGNS		
	FLANGE, FLOOR, SIGNS, SLOW SPEED	A1-17-1076-001	
	FLANGE, FLOOR, SIGNS, HIGH SPEED	A1-17-1076-002	
5	TETHER, STEEL, 1/8" X 24" LG	A1-05-0565-001	
6	PANELS, ACRYLIC (Refer To Table 8-2 For Replacement Panel Part Numbers)		
	PANEL, CLEAR ACRYLIC, SIZE 1, SINGLE, 29.25 X 19.50	A1-18-2189-001	
	PANEL, CLEAR ACRYLIC, SIZE 2, SINGLE, 35.25 X 25.50	A1-18-2189-002	
	PANEL, CLEAR ACRYLIC, SIZE 3-5, SINGLE, 41.25 X 31.50	A1-18-2189-003	
	PANEL, CLEAR ACRYLIC, SIZE 4, SINGLE, 47.25 X 49.50	A1-18-2189-004	
	PANEL, BLACK ACRYLIC, SIZE 1, SINGLE, 29.25 X 19.50	A1-18-2209-001	
	PANEL, BLACK ACRYLIC, SIZE 2, SINGLE, 35.25 X 25.50	A1-18-2209-002	
	PANEL, BLACK ACRYLIC, SIZE 3-5, SINGLE, 41.25 X 31.50	A1-18-2209-003	
	PANEL, BLACK ACRYLIC, SIZE 4, SINGLE, 47.25 X 49.50	A1-18-2209-004	
7	SNAP BUSHING, HEYCO 2126	A1-04-0231-001	
8	RUBBER GROMMET, RG-3	A1-04-0232-001	
9	PWA, DRIVER, LED SIGNS	A3-07-1150-001	
10	ASSY, LIGHT ENGINE, SIGNS	A3-06-3121-001	
11	POWER CABLE, L-823	10518-101-001	
12	ASSY, BAFFLE, LED SIGNS		
	ASSY, BAFFLE, LED SIGNS, SIZE 1	A3-06-3145-001	
	ASSY, BAFFLE, LED SIGNS, SIZE 2	A3-06-3145-002	
	ASSY, BAFFLE, LED SIGNS, SIZE 3	A3-06-3145-003	
	ASSY, BAFFLE, LED SIGNS, SIZE 4	A3-06-3145-004	
	ASSY, SIDE BAFFLE, LED SIGNS, SIZE 4	A3-06-3145-005	

Item	Part Name/Description	Part Number	Notes
13	WIRE HARNESS (NOT SHOWN)		
	WIRE HARNESS, LED SIGNS,7"	A3-06-3147-001	
	WIRE HARNESS, LED SIGNS,13"	A3-06-3147-002	
	WIRE HARNESS, LED SIGNS,16"	A3-06-3147-003	
	WIRE HARNESS, LED SIGNS,19"	A3-06-3147-004	
	WIRE HARNESS, LED SIGNS,22"	A3-06-3147-005	
	WIRE HARNESS, LED SIGNS,76"	A3-06-3147-006	
	WIRE HARNESS, LED SIGNS,90"	A3-06-3147-007	
	WIRE HARNESS, LED SIGNS,106"	A3-06-3147-008	
	WIRE HARNESS, LED SIGNS,122"	A3-06-3147-009	
	WIRE HARNESS, LED SIGNS,144"	A3-06-3147-010	
	WIRE HARNESS, LED SIGNS,26" EXTENDER	A3-06-3147-011	
	WIRE HARNESS, LED SIGNS,32" EXTENDER	A3-06-3147-012	
	WIRE HARNESS, LED SIGNS,38" EXTENDER	A3-06-3147-013	
	WIRE HARNESS, LED SIGNS,4" EXTENDER	A3-06-3147-014	
	WIRE HARNESS, LED SIGNS,7" EXTENDER	A3-06-3147-015	
	WIRE HARNESS, LED SIGNS,13" EXTENDER	A3-06-3147-016	
14	WIRE TIE, PUSH MOUNT	A1-05-0594-001	
15	BAFFLE, LED SIGNS, SIZE 4, SIDE	A1-18-2204-005	
16	EXTRUSION, I-BEAM, SIGNS		
	EXTRUSION, I-BEAM, SIGNS, SIZE 1	A1-17-1073-001	
	EXTRUSION, I-BEAM, SIGNS, SIZE 2	A1-17-1073-002	
	EXTRUSION, I-BEAM, SIGNS, SIZE 3 & 5	A1-17-1073-003	
	EXTRUSION, I-BEAM, SIGNS, SIZE 4	A1-17-1073-004	
17	EXTRUSION, PANEL, SIGNS, BOTTOM		
	EXTRUSION, PANEL, SIGNS, BOT, SINGLE, SIZE 1	A1-17-1074-010	
	EXTRUSION, PANEL, SIGNS, BOT, SINGLE, SIZE 2	A1-17-1074-011	
	EXTRUSION, PANEL, SIGNS, BOT, SINGLE, SIZE 3 & 5	A1-17-1074-012	
	EXTRUSION, PANEL, SIGNS, BOT, SINGLE, SIZE 4	A1-17-1074-013	
	EXTRUSION, PANEL, SIGNS, BOT, DUAL, SIZE 1	A1-17-1074-014	
	EXTRUSION, PANEL, SIGNS, BOT, DUAL, SIZE 2	A1-17-1074-015	
	EXTRUSION, PANEL, SIGNS, BOT, DUAL, SIZE 3	A1-17-1074-016	
18	EXTRUSION, PANEL, SIGNS, TOP, SINGLE		
	EXTRUSION, PANEL, SIGNS, TOP, SINGLE, SIZE 1	A1-17-1074-020	
	EXTRUSION, PANEL, SIGNS, TOP, SINGLE, SIZE 2	A1-17-1074-021	
	EXTRUSION, PANEL, SIGNS, TOP, SINGLE, SIZE 3 & 5	A1-17-1074-022	
	EXTRUSION, PANEL, SIGNS, TOP, SINGLE, SIZE 4	A1-17-1074-023	
	EXTRUSION, PANEL, SIGNS, TOP, DUAL, SIZE 1	A1-17-1074-024	
	EXTRUSION, PANEL, SIGNS, TOP, DUAL, SIZE 2	A1-17-1074-025	
	EXTRUSION, PANEL, SIGNS, TOP, DUAL, SIZE 3	A1-17-1074-026	
19	EXTRUSION, PANEL, SIGNS, SIDE, WITHOUT SWITCH		
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 1	A1-17-1074-030	

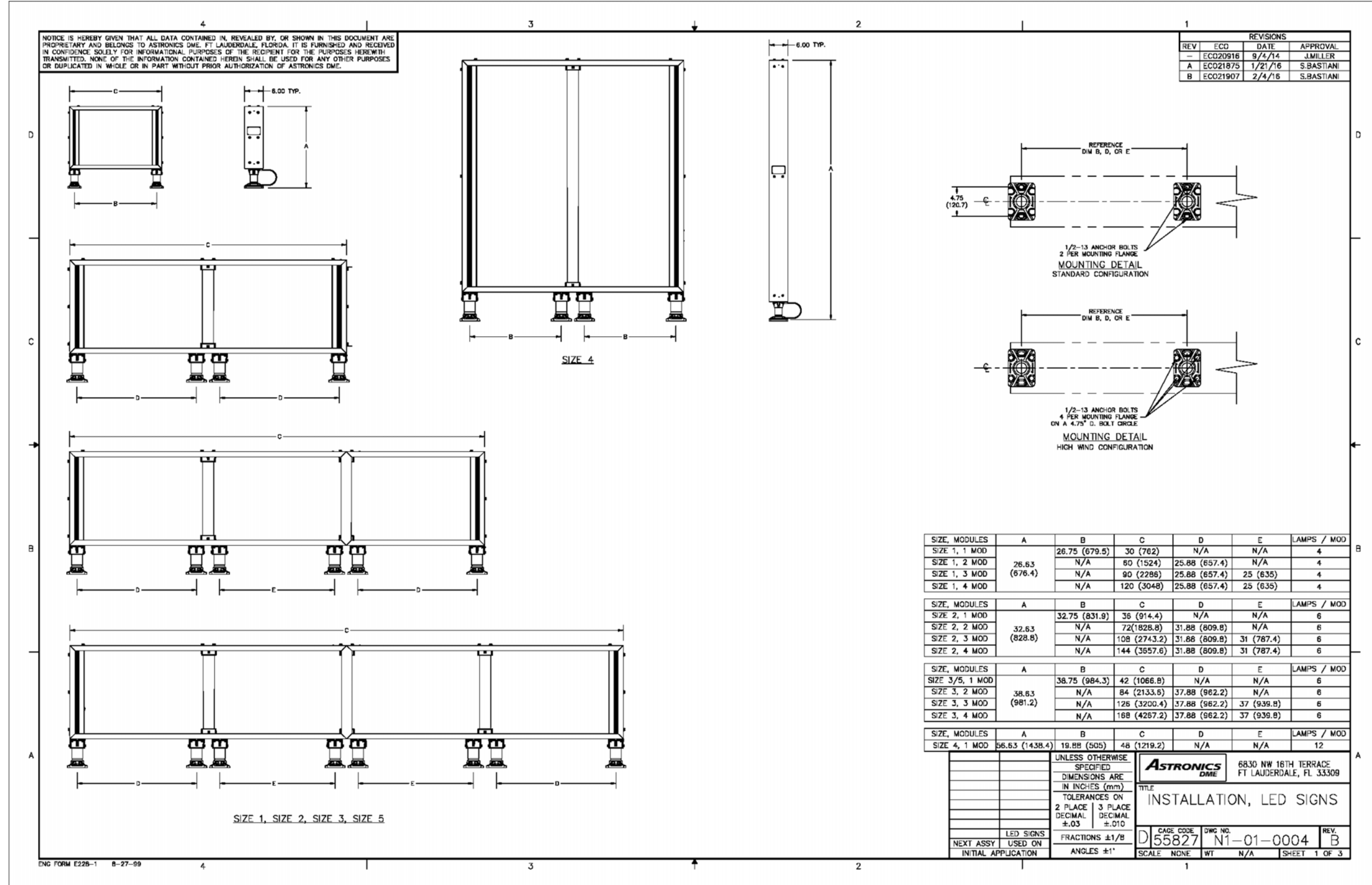
Item	Part Name/Description	Part Number	Notes
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 2	A1-17-1074-040	
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 3 & 5	A1-17-1074-050	
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 4	A1-17-1074-060	
20	EXTRUSION, PANEL, SIGNS, SIDE, WITH SWITCH		
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 1, W/SWITCH	A1-17-1074-031	
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 2, W/SWITCH	A1-17-1074-041	
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 3 & 5, W/SWITCH	A1-17-1074-051	
	EXTRUSION, PANEL, SIGNS, SIDE, SIZE 4, W/SWITCH	A1-17-1074-061	
21	PWA SHIELD, LED SIGNS	A1-17-1084-001	
22	CENTER TUBE, LED SIGNS		
	CENTER TUBE, LED SIGNS, SIZE 1	A1-17-1114-001	
	CENTER TUBE, LED SIGNS, SIZE 2	A1-17-1114-002	
	CENTER TUBE, LED SIGNS, SIZE 3	A1-17-1114-003	
	CENTER TUBE, LED SIGNS, SIZE 4	A1-17-1114-004	
23	EXTRUSION, UNITING STRIP, SIGNS (NOT SHOWN)		
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 1, RED	A1-18-2186-001	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 2, RED	A1-18-2186-002	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 3, RED	A1-18-2186-003	
24	EXTRUSION, UNITING STRIP, SIGNS, BLK (NOT SHOWN)		
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 1, BLK	A1-18-2186-004	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 2, BLK	A1-18-2186-005	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 3, BLK	A1-18-2186-006	
25	EXTRUSION, UNITING STRIP, SIGNS, YELLOW (NOT SHOWN)		
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 1, YELLOW	A1-18-2186-007	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 2, YELLOW	A1-18-2186-008	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 3, YELLOW	A1-18-2186-009	
26	NAMEPLATE, LED SIGNS	A1-20-0650-001	
27	COVER, WEATHERPROOF, 1 GANG (NOT SHOWN)	A1-17-1160-001	
28	SWITCH, TOGGLE, DPDT, 15A, 277V (Optional)	A1-12-0124-001	
	SWITCH COVER, TOGGLE (Optional)	A1-12-0123-001	

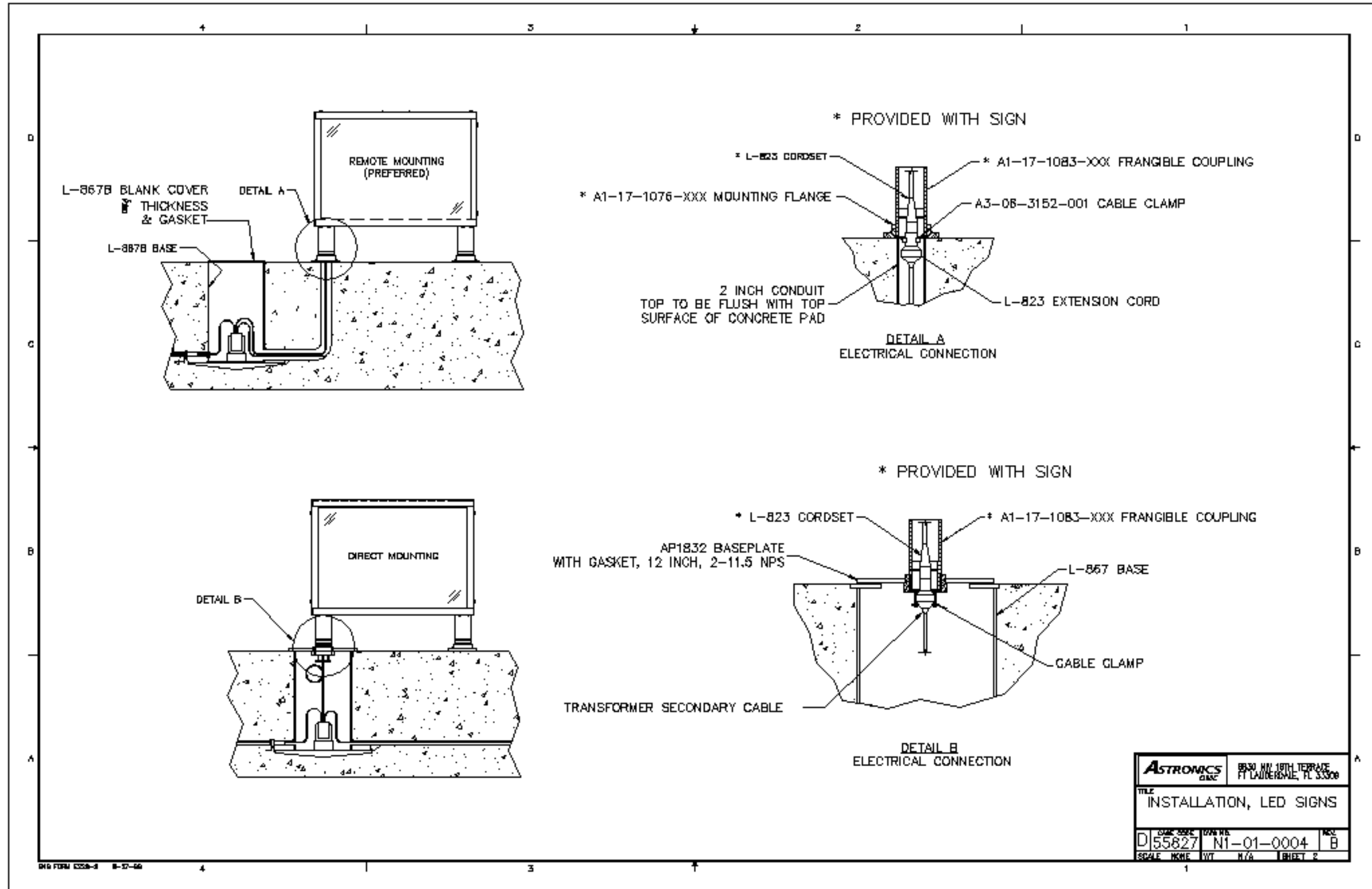
Table 8-2 L-858 LED Signs Renewal Parts
(Items Available for Purchase)

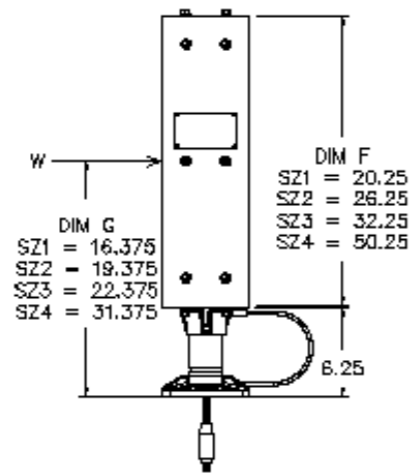
Item	Part Name/Description	Part Number
Figure 8-3 & Figure 8-4	L-858 LED Sign	See para 8.4.1
1	KIT, TOGGLE SWITCH (Version 1) W/GUARD, L-858 SIGNS KIT, ROCKER SWITCH (Version 2) W/GUARD, L-858 SIGNS	K2-02-0006-001 K2-02-0006-002
2	FLANGE, TOP, SIGNS	A1-17-1075-001
3	FRANGIBLES	
	FRANGIBLE, SIZE 1, 200MPH	A1-17-1083-001
	FRANGIBLE, SIZE 1, 300MPH	A1-17-1083-002
	FRANGIBLE, SIZE 2, 200MPH	A1-17-1083-003
	FRANGIBLE, SIZE 2, 300MPH	A1-17-1083-004
	FRANGIBLE, SIZE 3, 200MPH	A1-17-1083-005
	FRANGIBLE, SIZE 3, 300MPH	A1-17-1083-006
	FRANGIBLE, SIZE 4, 200MPH	A1-17-1083-007
4	FLANGE, FLOOR, SIGNS	
	FLANGE, FLOOR, SIGNS, SLOW SPEED (200 MPH)	A1-17-1076-001
	FLANGE, FLOOR, SIGNS, HIGH SPEED (300 MPH)	A1-17-1076-002
5	TETHER, STEEL, 1/8" X 24" LG	A1-05-0565-001
6	PANELS, ACRYLIC	
	PANELS, ACRYLIC, CLEAR, SIZE 1, M1	K2-02-0011-001
	PANELS, ACRYLIC, CLEAR, SIZE 1, M2	K2-02-0011-006
	PANELS, ACRYLIC, CLEAR, SIZE 2, M1	K2-02-0011-002
	PANELS, ACRYLIC, CLEAR, SIZE 2, M2	K2-02-0011-007
	PANELS, ACRYLIC, CLEAR, SIZE 3/5, M1	K2-02-0011-003
	PANELS, ACRYLIC, CLEAR, SIZE 3, M2	K2-02-0011-008
	PANELS, ACRYLIC, CLEAR, SIZE 4, M1	K2-02-0011-004
	PANELS, ACRYLIC, BLACK, SIZE 1, M1	K2-02-0012-001
	PANELS, ACRYLIC, BLACK, SIZE 1, M2	K2-02-0012-006
	PANELS, ACRYLIC, BLACK, SIZE 2, M1	K2-02-0012-002
	PANELS, ACRYLIC, BLACK, SIZE 2, M2	K2-02-0012-007
	PANELS, ACRYLIC, BLACK, SIZE 3/5, M1	K2-02-0012-003
	PANELS, ACRYLIC, BLACK, SIZE 3, M2	K2-02-0012-008
	PANELS, ACRYLIC, BLACK, SIZE 4, M1	K2-02-0012-004
7	SNAP BUSHING, HEYCO 2126	A1-04-0231-001
8	RUBBER GROMMET, RG-3	A1-04-0232-001
9	KIT, PWA, DRIVER, L-858 SIGNS	K2-02-0007-001
10	KIT, LED REPLACEMENT, L-858 SIGNS	K2-01-0087-001

Item	Part Name/Description	Part Number
11	POWER CABLE, L-823 W/O SWITCH W/ SWITCH	K2-02-0008-001 K2-02-0008-002
12	ASSY, BAFFLE, LED SIGNS	
	ASSY, BAFFLE, LED SIGNS, SIZE 1	K2-02-0009-001
	ASSY, BAFFLE, LED SIGNS, SIZE 2	K2-02-0009-002
	ASSY, BAFFLE, LED SIGNS, SIZE 3	K2-02-0009-003
	ASSY, BAFFLE, LED SIGNS, SIZE 4	K2-02-0009-004
13	WIRE HARNESS (NOT SHOWN)	
	WIRE HARNESS, LED SIGNS,7"	A3-06-3147-001
	WIRE HARNESS, LED SIGNS,13"	A3-06-3147-002
	WIRE HARNESS, LED SIGNS,16"	A3-06-3147-003
	WIRE HARNESS, LED SIGNS,19"	A3-06-3147-004
	WIRE HARNESS, LED SIGNS,22"	A3-06-3147-005
	WIRE HARNESS, LED SIGNS,26"	A3-06-3147-006
	WIRE HARNESS, LED SIGNS,30"	A3-06-3147-007
	WIRE HARNESS, LED SIGNS,36"	A3-06-3147-008
	WIRE HARNESS, LED SIGNS,42"	A3-06-3147-009
	WIRE HARNESS, LED SIGNS,48"	A3-06-3147-010
	WIRE HARNESS, LED SIGNS,54" EXTENDER	A3-06-3147-011
	WIRE HARNESS, LED SIGNS,60" EXTENDER	A3-06-3147-012
	WIRE HARNESS, LED SIGNS,66" EXTENDER	A3-06-3147-013
	WIRE HARNESS, LED SIGNS,72", EXTENDER	A3-06-3147-014
	WIRE HARNESS, LED SIGNS,78", EXTENDER	A3-06-3147-015
	WIRE HARNESS, LED SIGNS,84", EXTENDER	A3-06-3147-016
15	BAFFLE, LED SIGNS, SIZE 4, SIDE	K2-02-0009-005
16	SIGN TOOL KIT (NOT SHOWN)	K1-02-0049-001
17	EXTRUSION, UNITING STRIP, SIGNS (NOT SHOWN)	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 1, RED	A1-18-2186-001
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 2, RED	A1-18-2186-002
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 3, RED	A1-18-2186-003
18	EXTRUSION, UNITING STRIP, SIGNS, BLK (NOT SHOWN)	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 1, BLK	A1-18-2186-004
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 2, BLK	A1-18-2186-005
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 3, BLK	A1-18-2186-006
19	EXTRUSION, UNITING STRIP, SIGNS, YELLOW (NOT SHOWN)	
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 1, YELLOW	A1-18-2186-007
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 2, YELLOW	A1-18-2186-008
	EXTRUSION, UNITING STRIP, SIGNS, SIZE 3, YELLOW	A1-18-2186-009
20	SIGN MAINTENANCE TOOL KIT (NOT SHOWN)	K1-02-0049-001

Appendix A Installation Drawings







(200MPH) (PRESSURE=0.9)

SIZE 1, MODULES	T (FT-LBS)	P (LBS)
1 MOD	373	895
2 MOD	373	895
3 MOD	373	895
4 MOD	373	895

SIZE 2, MODULES	T (FT-LBS)	P (LBS)
1 MOD	687	1648
2 MOD	687	1648
3 MOD	687	1648
4 MOD	687	1648

SIZE 3, MODULES	T (FT-LBS)	P (LBS)
1 MOD	1137	2728
2 MOD	1137	2728
3 MOD	1137	2728
4 MOD	1137	2728

SIZE 5, MODULES	T (FT-LBS)	P (LBS)
1 MOD	1137	2728

SIZE 4, MODULES	T (FT-LBS)	P (LBS)
1 MOD	1419	3405

(300MPH) (PRESSURE=2.0)

SIZE 1, MODULES	T (FT-LBS)	P (LBS)
1 MOD	828	1990
2 MOD	828	1990
3 MOD	828	1990
4 MOD	828	1990

SIZE 2, MODULES	T (FT-LBS)	P (LBS)
1 MOD	1526	3662
2 MOD	1526	3662
3 MOD	1526	3662
4 MOD	1526	3662

SIZE 3, MODULES	T (FT-LBS)	P (LBS)
1 MOD	2526	6061
2 MOD	2526	6061
3 MOD	2526	6061
4 MOD	2526	6061

SIZE 5, MODULES	T (FT-LBS)	P (LBS)
1 MOD	2526	6061

SIZE 4, MODULES	T (FT-LBS)	P (LBS)
1 MOD	3153	7568

ANCHORING LOADS
STANDARD CONFIGURATION

SIZES 1,2,3,5

$$W = F * C * \text{PRESSURE} / (2N)$$

SIZE 4

$$W = F * C * \text{PRESSURE} / (4N)$$

$$T = W * (G/12)$$

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

$$P = T * 12 / 4.7$$

WHERE:

P = TENSION LOAD IN CONCRETE ANCHOR BOLT

T = TORQUE RESISTED AT MOUNTING FLANGE (FT-LB)

Astronics DATA		8830 NW 18TH TERRACE FT LAUDERDALE, FL 33309	
TITLE INSTALLATION, LED SIGNS			
D	55827	DWG NO. N1-01-0004	REV. B
SCALE	NONE	WT	N/A
		SHEET 3	