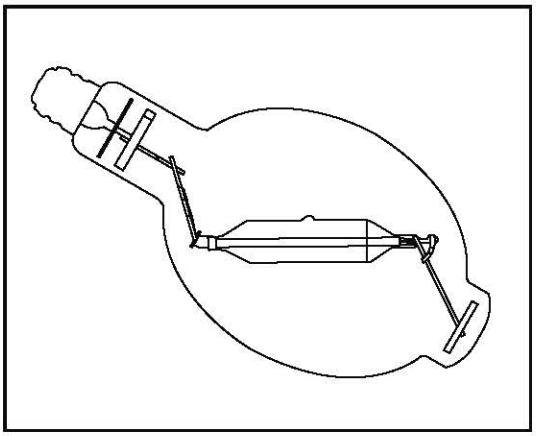
Smart Lamp™ Operating System

1500 Watt Metal Halide Lamp (Clear)
Technical Data Sheet

Proprietary to Musco Lighting



Ordering Information

Ordering Code	LA-30Z-1
ANSI Designation	M48
Description	MH1500 MZ
Lamp Type	HID: Metal Halide

Physical Characteristics

Bulb Size	BT-56
Bulb Finish	Clear
Base	Mogul Screw Position Oriented
Maximum Overall Length (MOL)	15⅜" (391mm)
Light Center Length (LCL)	9⅛" (232mm)
Arc Tube Lighted Length	3 5/16" (84mm)
Arc Tube Material	Fused Silica
Maximum Permissible Bulb Temperature	400˚C (752˚F)
Maximum Permissible Base Temperature	210˚C (410˚F)

Photometric Operating Characteristics[1]

System Rated Constant Lumens Over Life [2]	134,000
Operating Position	Arc Tube Horizontal
Lamp Replacement Interval, Hours [3]	5000
Correlated Color Temperature (Approximate)	4200K
CIE Chromaticity Coordinates (Approximate)	x-.370, y-.390
Color Rendering Index (R_a)	65-70

Electrical Data

Average Lamp Wattage Over Operating Life [2]	1450
Warm-up Time to 80% of Output	3-5 Minutes
Re-strike Time for Hot Lamp	10-15 Minutes
Lamp Operating Current (Max. rms Amps) [4]	6.0
Ballast Type	ANSI M48
Minimum Starting Temperature	-30˚C

Footnotes:

(1) Operating Characteristics are per the Musco Smart Lamp(TM) Operating System on a commercial ballast with arc tube horizontal. Lamp lumen measurements in accordance with IESNA LM-51-00. Lamp color data in accordance with IESNA LM-58-94. Lamp operating cycle of five hours per start to reflect expected field use in the sports lighting industry.

(2) Lamp starts out at a reduced wattage and increases over life to offset lumen loss as lamp ages. Average wattage over life is 1450 watts.

(3) Beyond 5,000 hours is the time when constant lumens are no longer maintained by the Smart Lamp™ Operating System. Average lamp life before failure is substantially greater than 5,000 hours as tested and defined per IESNA LM-47-01 with five hours per start.

(4) Does not include ballast losses.

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Recommended Warnings, Cautions and Operating Instructions

⚠ **WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA:21CFR 1040.30 Canada:SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb could cause glass to fly if the envelope is struck.

⚠ **WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000˚C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

CAUTION: TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC TUBE RUPTURE, THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED.

Hg - LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See www.lamprecycle.org or call 1-800-825-6020

Lamp Operating Instructions:

1. Turn off lamps at least once a week for at least 15 minutes in systems which are operating on a continuous basis (24 hours/day-7days/week). FAILURE TO TURN OFF LAMPS FOR THE MINIMUM RECOMMENDED TIME MAY INCREASE THE POSSIBILITY OF AN INNER ARC-TUBE RUPTURE.
2. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
3. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.
4. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load, refer to ballast manufacturers electrical data.
5. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.
6. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.
7. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
8. Time should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock, and color appearance may vary between individual lamps.
9. Lamps may require 10 to 20 minutes to re-light if there is a power interruption.
10. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.
11. Do not use this lamp in a fixture that contains a Pulse Start metal halide ballast and is specifically designed for use with Pulse Start metal halide lamps.
12. Use only in an enclosed fixture capable of withstanding particles of glass having temperatures up to 1000˚C.

Smart Lamp™ Operating System

Ballast and Capacitor – Technical Data Sheet

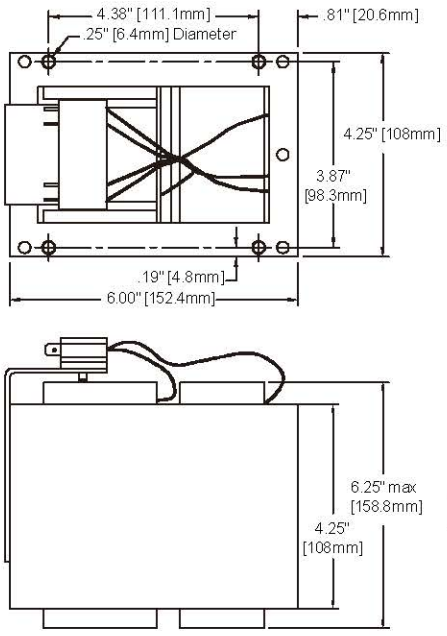
1500 Watt Metal Halide Lamp – 60Hz
ANSI Code M48

Constant Wattage Autotransformer (CWA)
120 – 480 volts, 60 Hz

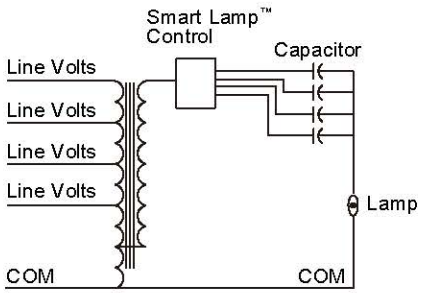
Input Volts	120	208	220	240	277	347	380	480
Power Factor (minimum)	90%							
Regulation								
Line Volts	10%							
Lamp Watts	10%							
Line Current (Amperes)								
Operating (min/max)	11.7/15.0	6.7/8.6	6.0/7.7	5.9/7.5	5.1/6.5	4.0/5.1	3.7/4.7	2.9/3.7
Open Circuit	-	-	-	-	-	-	-	-
Starting (max)	13.1	7.4	7.4	6.5	5.3	4.1	3.4	2.9
UL Temperature Ratings								
Insulation Class	H (180 deg. C)							
Coil Temperature Code 1029	F	F	B	D	D	B	C	E
Min. Ambient Starting Temperature	-20°F or -30°C	-20°F or -30°C	-30°F or -35°C	-20°F or -30°C	-20°F or -30°C	-20°F or -30°C	-30°F or -35°C	-20°F or -30°C
Nominal Open Circuit Voltage	450							
Input Voltage at Lamp Dropout	74	130	125	145	163	200	220	278
Input Watts (nominal)	1564							
Fuse Rating (amperes)	30	20	20	20	15	25	20	15
Testing Procedures								
High Potential Test (volts)								
1 minute	2000							
2 seconds	2500							
Open Circuit Voltage Test (volts)	400 - 500							
Short-Circuit Current Test (Amps)								
Secondary Current	7.2 – 9.0							
Input Current	9.8 – 14.8	5.6 – 8.3	5.7 – 8.5	5.2 – 7.8	4.4 – 6.7	3.6 – 5.4	3.3 – 4.9	2.5 – 3.8
Catalog Number	SC-278	SC-278	SC-306	SC-278 or SC-271	SC-278	SC-302	SC-306	SC-315

Ballast Dimensions

Weight = 31 lbs.



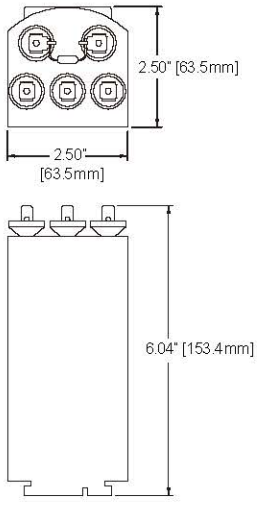
Typical Wiring



Notes:

Capacitor Rating:

Minimum Withstand Voltage 525



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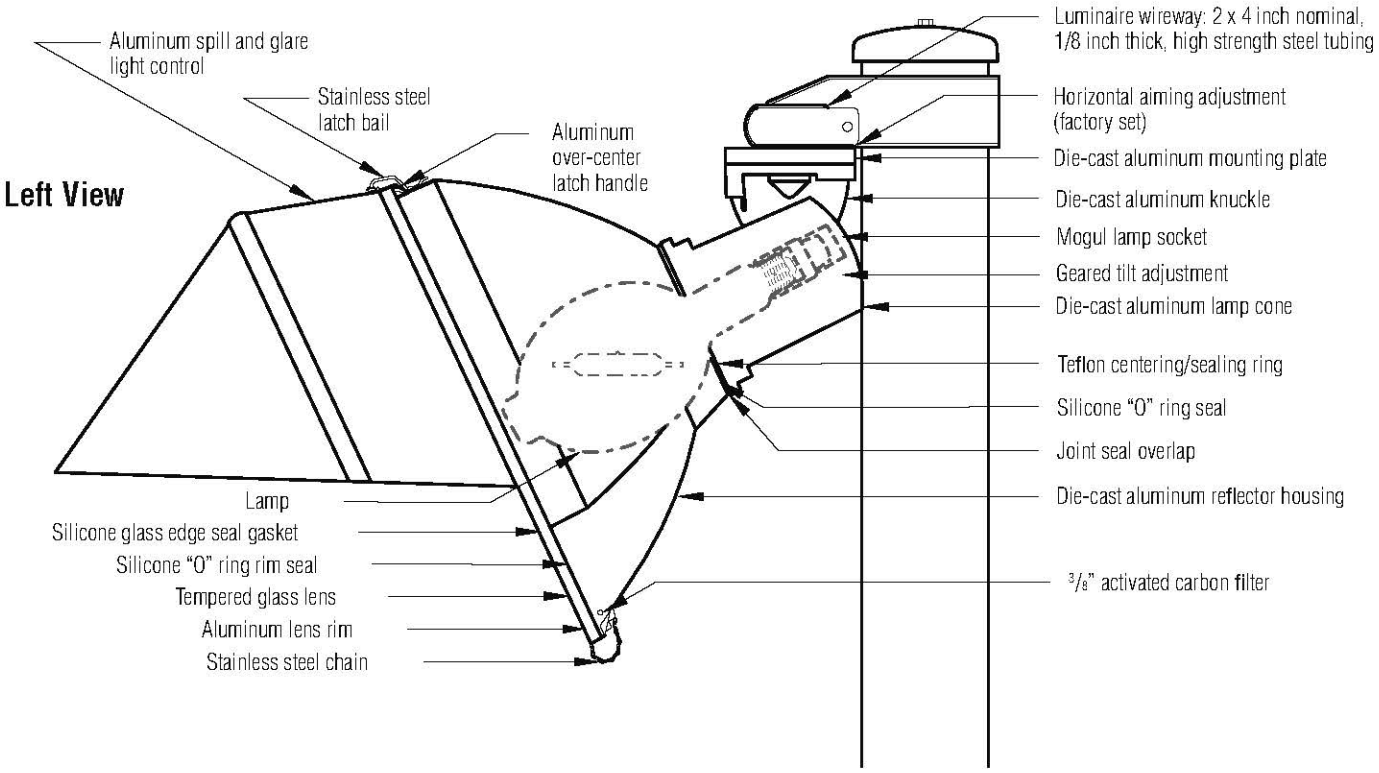
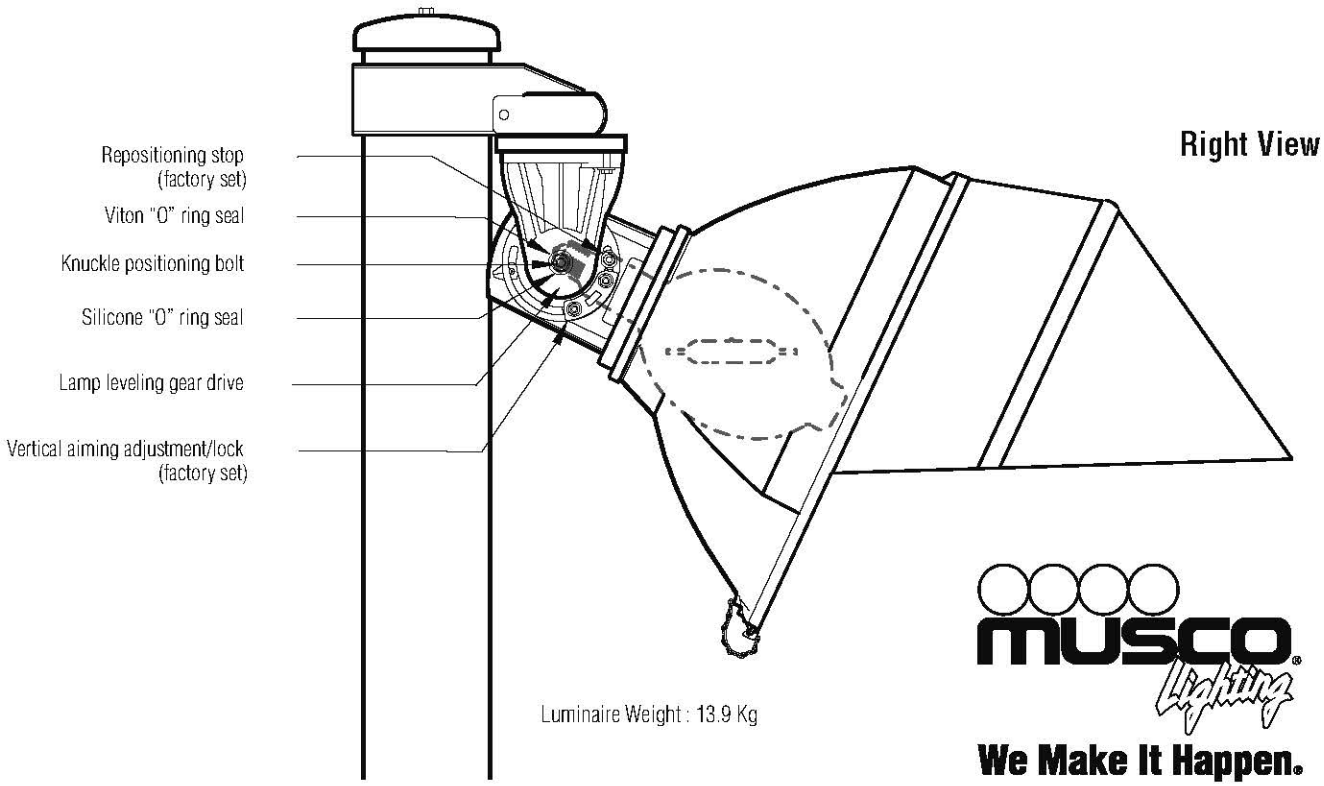
Luminaire Assembly





Luminaire Weight : 13.9 Kg

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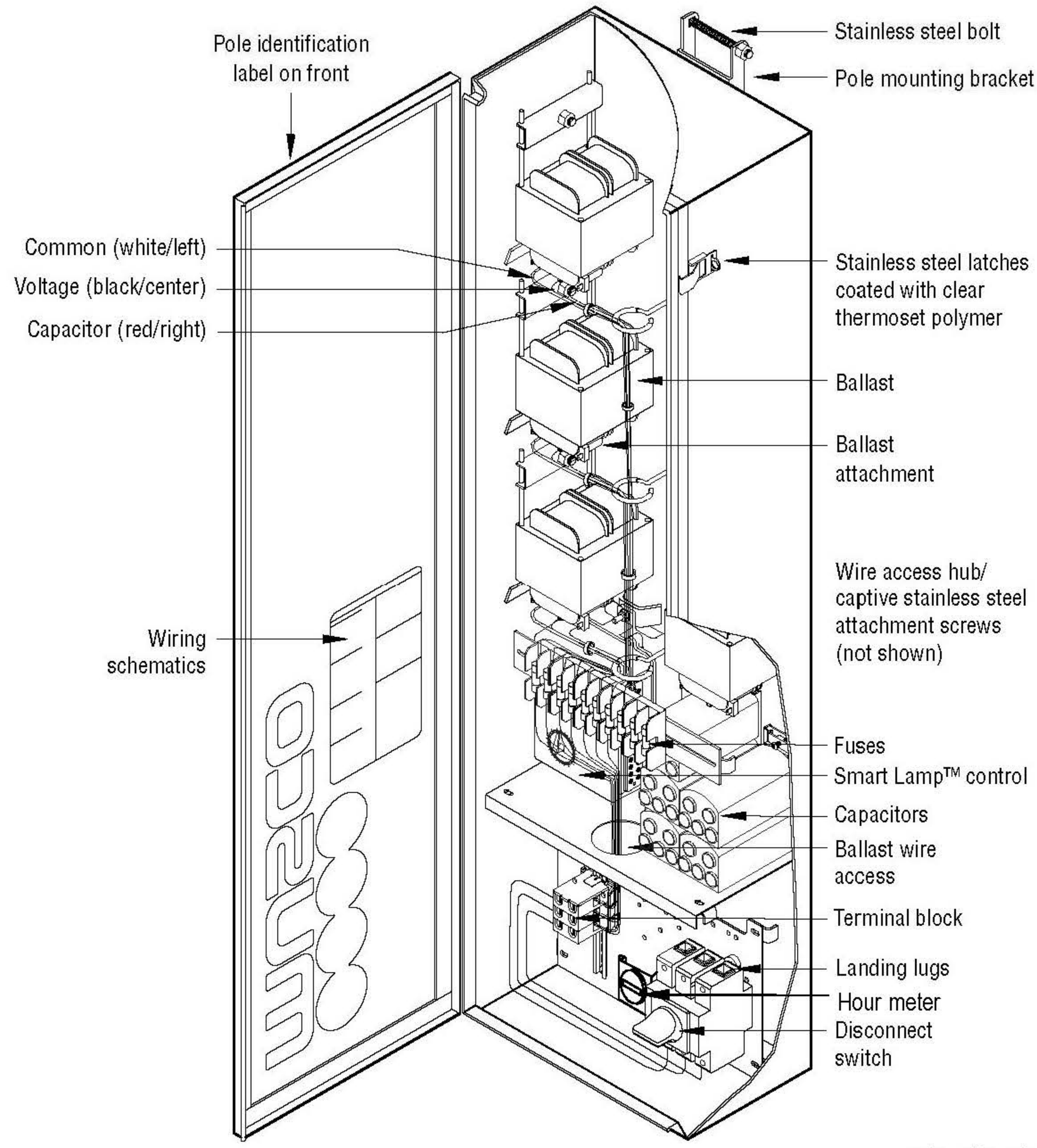
Electrical Components Enclosure



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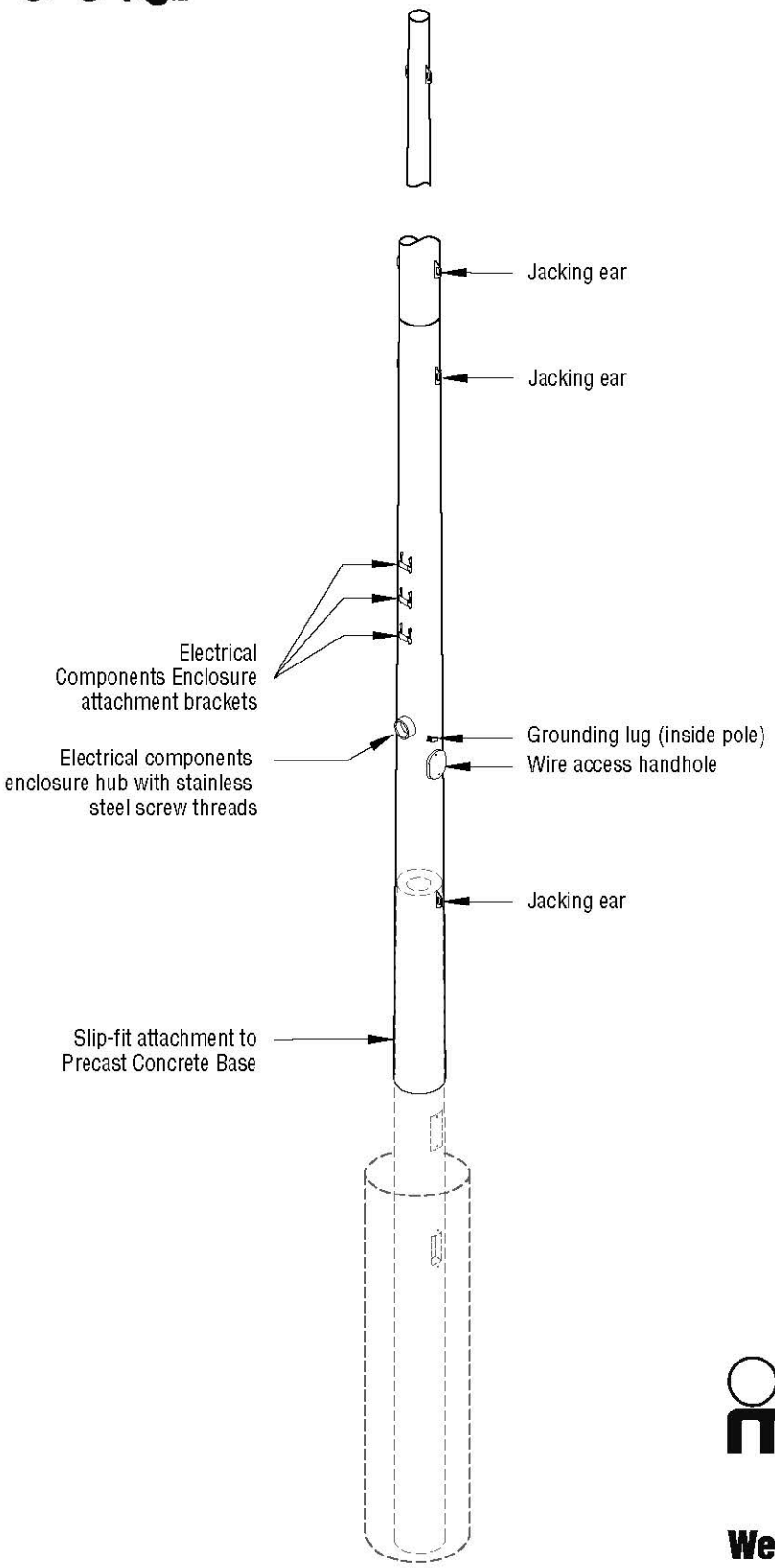
Galvanized Steel Pole



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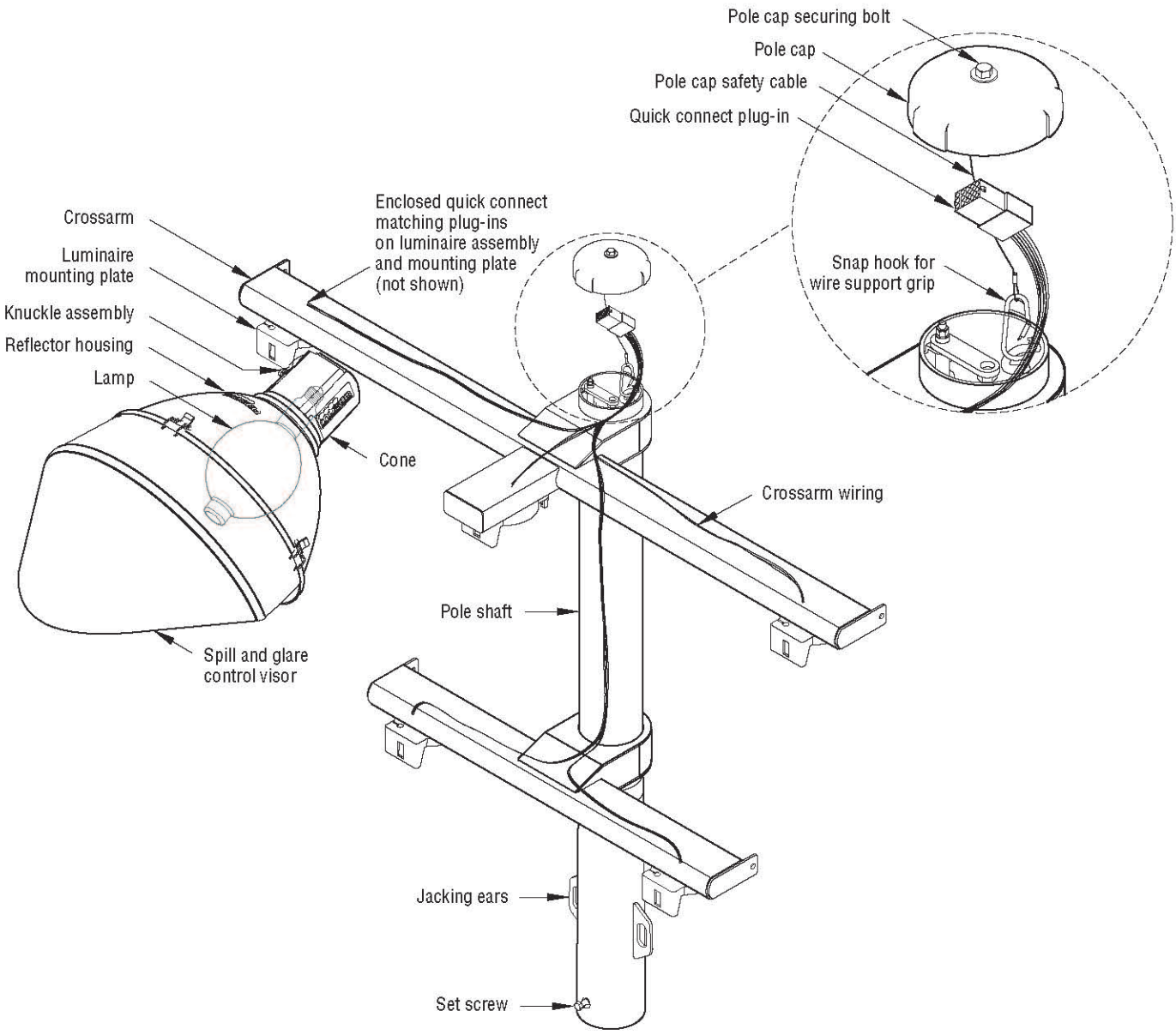
Poletop Luminaire Assembly



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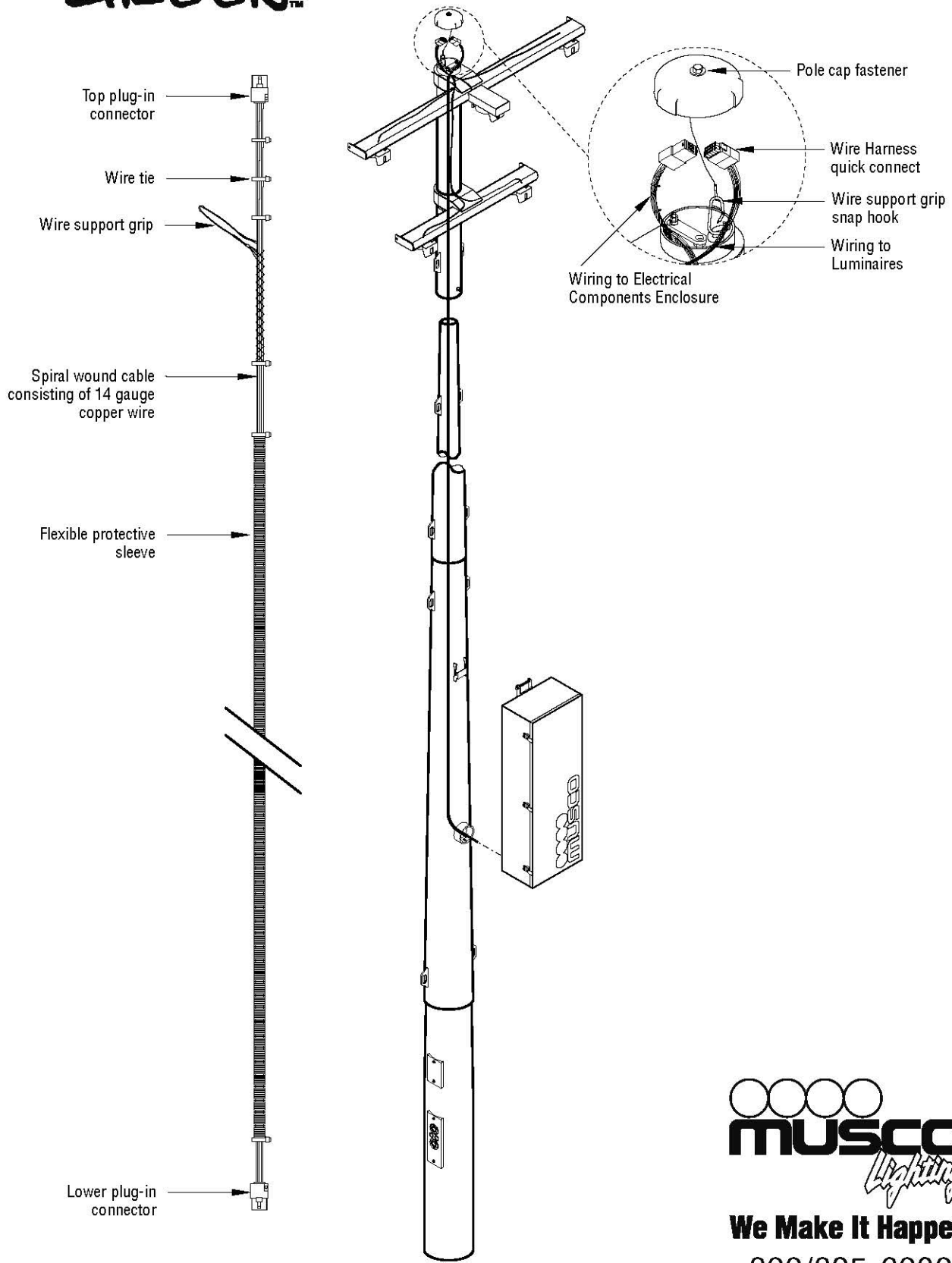
Wire Harness



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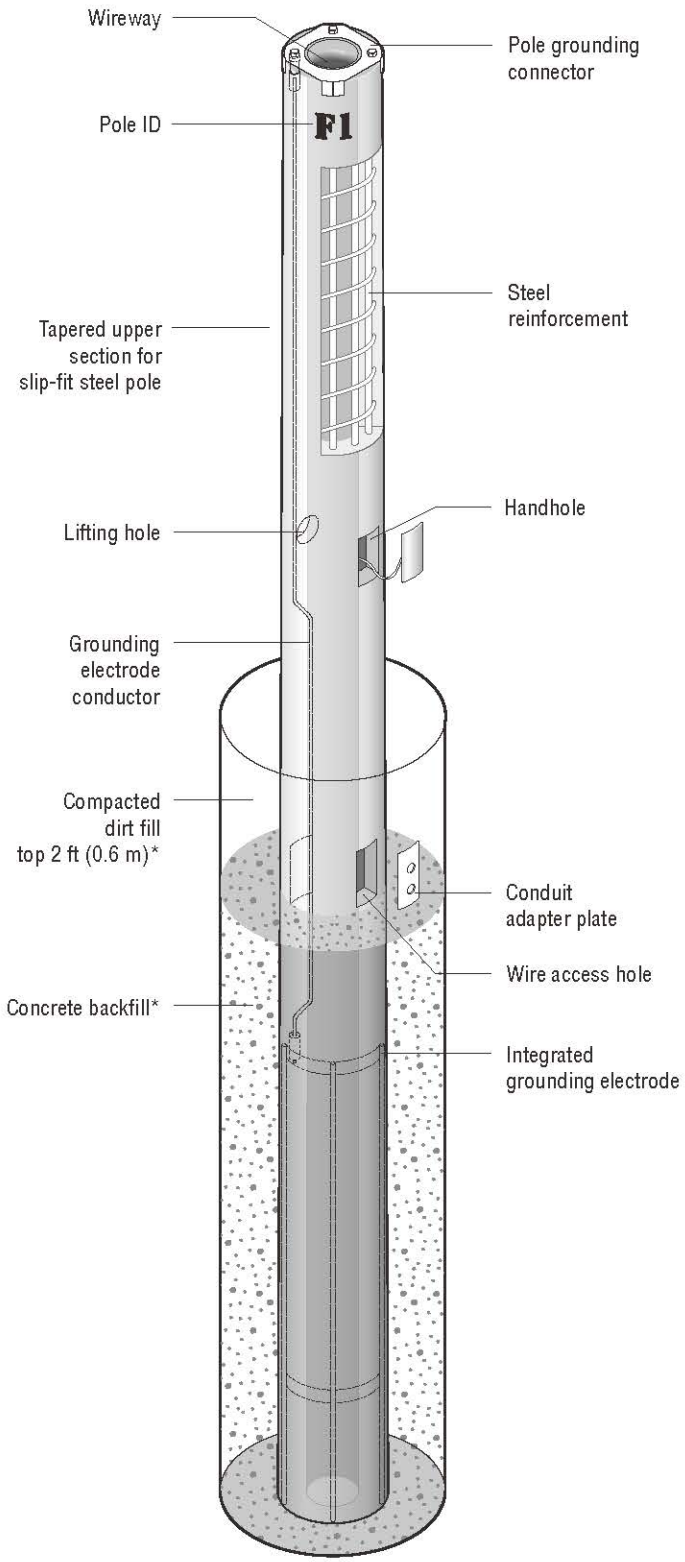
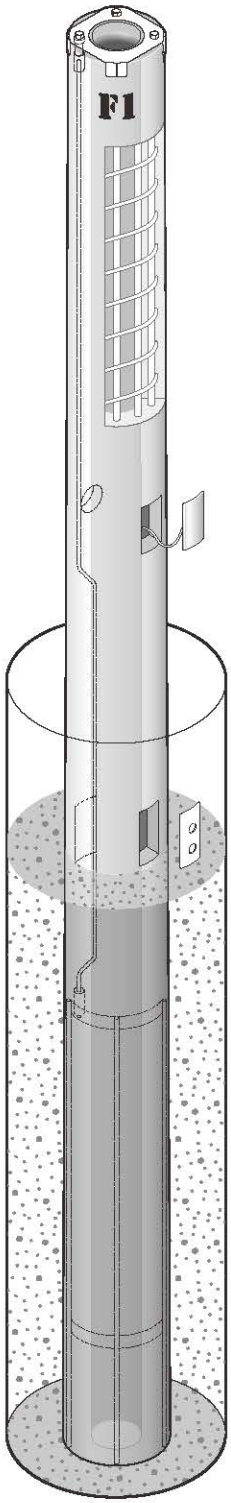
Precast Concrete Base



*Standard pier foundation shown. Foundation and/or backfill may vary per alternate foundation design.

Precast Concrete Base



Overview

The precast concrete base is set directly into the ground and backfilled with concrete. The base includes an integrated lightning ground system.

Features

Base

- Set pole on base in 24 hours
- Tapered upper section for slip-fit steel pole
- Access holes for wire entry
- Epoxy coated ends prevent water intrusion
- Lifting hole accepts load-rated steel rod provided by Musco

Integrated Lightning Ground System

- Complies with NFPA 780, UL 96A, and EN 62305 standards when installed per Musco installation instructions
- UL Listed, Class II Lightning Protection, file number E337467
- Tested up to 100 kA by independent laboratory
- Steel pole interfaces with integrated grounding system by means of the pole grounding connector
- 2/0 AWG (crossectional area of 67.4 mm^2) grounding electrode conductor
- Concrete-encased grounding electrode, 20 feet (6.1 m) total length, ½ inch (12.7 mm) diameter

Technical Specifications

Base dimensions vary. For measurements refer to project specific foundation and pole assembly drawing.

Construction

- Spun concrete construction
- Prestressed vertical strands and steel coil spiral for radial reinforcement throughout base
- Minimum design strength is 9500 lb/in^2 (65.5 MPa) at 28 days

Quality Assurance Tests

- 28-day compressive strength
- Bending moment capacity
- Grounding system continuity