

# LSA / EXPERIMENTAL AIRCRAFT LIGHTING PRODUCTS 2014



Photo courtesy of Team Aerodynamix

**WHELEN<sup>®</sup>**  
MANUFACTURED IN AMERICA

ISO 9001 Registered QMS

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## MEET THE TEAM

**TOP RIGHT:**  
OFFICE - GREG, JEFF, BRYAN,  
SHARON, JESSICA, & TRISH  
**BOTTOM LEFT:**  
CORPORATE PILOT - JIM  
**BOTTOM RIGHT:**  
CORPORATE PILOT - DENNIS



## MANUFACTURING FACILITIES



Corporate Headquarters, Chester, Connecticut



Charlestown, New Hampshire Division



## Where it all began...

It all started 1952 in a garage with the first Rotating Beacon.

A privately owned company, Whelen has experienced positive growth for over 60 years. The pride and commitment of its work force, whose employment longevity averages over 22 years, is rewarded through a profit sharing plan established by the Whelen family since the company was founded.

The development of the first aviation light helped launch Whelen into the automotive safety lighting industry as well.

Whelen currently provides safety lighting for Police, Fire, EMS, and DOT professionals as well as many other industries. The production volumes seen in the automotive sector have allowed Whelen to invest in the latest automated assembly equipment in order to compete world-wide. Last year Whelen purchased over 44 million LEDs for use in their extensive family of products. In the 1970s, Whelen introduced the Outdoor Warning Siren ... totally electronic and capable of not just warning tones but also high-powered voice messages. The Mass Notification Division has saved lives around the world.

At Whelen Engineering, our goal is to bring innovative, life saving products to market more quickly while maintaining strict quality control throughout the process. We have accomplished this through a vertical manufacturing initiative to eliminate or reduce out-sourcing; the use of robotics and state-of-the-art production equipment; and, perhaps most importantly, a motivated workforce of over 1100 employees. This allows us to meet and adapt to our customer's changing needs in the shortest amount of time.

- Two manufacturing facilities totaling over 586,000 square feet.
- Largest staff of Design Engineers in the industry.
- Research and development.
- Partnering with OEMs on new vehicle design and product integration.
- Plastics injection molding machines from 30 to 2000 tons capacity.
- In-house plastics, hard-coating, metallizing, & sheet metal fabrication.
- On-site test lab for environmental dust, moisture, vibration, etc, acoustic anechoic sound chamber, industry certifications (SAE, AMECA, FAA to name a few).
- Sales and Technical Personnel are trained at the factory training center and return for updates on a regular schedule.
- Worldwide network of Sales, Service and Training.

Makers of Aviation, Automotive and Industrial Safety Lighting since 1952  
Whelen Aviation Warning Products are all designed, assembled, tested and manufactured in the United States of America.  
CONTACT US: WWW.WHELEN.COM or AVIATION@WHELEN.COM



## WHELEN CORPORATE CAPABILITIES -

### DESIGN & ENGINEERING

The largest staff of Design Engineers in the industry! Many of our Engineers are Fire Volunteers and EMTs so they know firsthand the critical need for life saving, innovative products.



3-D Product Design



Whelen's Professional Design Engineers

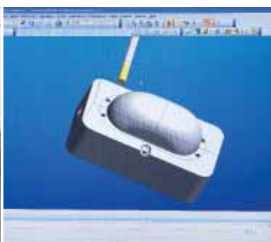


### INJECTION AND VACUUM MOLDING

1600 molds, 38 molding machines from 30 to 2000 tons, 20 million parts produced every year. Vacuum machines produce irregularly shaped components not suitable for injection molding.



Injection Mold Making



3-D Tool Designs



1700 Ton Molding



3 Trimming Formed Parts Machines



5 Over Molding Electronics Machines



38 Robotic Molding Machines



Die-Cast Tool Making



Aircraft Lens Mold Making

### ELECTRONICS MANUFACTURING

Surface mount and through-hole circuit boards are manufactured, assembled and tested in-circuit.



14 Transformer Winding Machines



15 Cable & Wire Machines



5 Electronic Board Assemblies



12 Electronic Board Testing Machines



Electronic Assemblies



SMT Assemblies



Lightbar Production



Automatic Robotic Cable Assembly



## FABRICATION

Robotic and laser cutting and drilling, Robotic Bending Cells for stand-alone operation. All machine parts are produced and maintained by automated production machine shops in New Hampshire and Connecticut.



Five-Axis Laser



Cutting Center



4 Laser Cut Punch & Tapping Centers



8 Metal Forming Machines



Transformer Manufacturing



8 Wire Cutting, Stripping & Terminals Machines



Inventory



Automatic Kit Bagging

## FINISHING PROCESSES

Hard-coating of lenses and powder coating housings make them resistant to weather and abrasion. Metallizing reflectors adds reflectivity and helps prevent corrosion and oxidation.



Powder Coating



Moisture Proof Coatings



Silicone Hard Coating



5 Vacuum Metallizing Reflector Machines

## PRODUCTION MACHINE SHOP

The production machine shop uses state-of-the-art milling machines, CNC lathes and screw machines to make the precision parts required for our products.



2 High Speed Screw Machines



Robotic Five-Axis 48 Pallet Milling Center



15 Milling and Turning Centers

## AMERICAN EMPLOYEES, AMERICAN MANUFACTURING, AMERICAN PRIDE!



## QUALITY CONTROL AND TESTING

Quality Control is maintained throughout the manufacturing process. Certified test labs on site facilitate product development and shorten lead times.



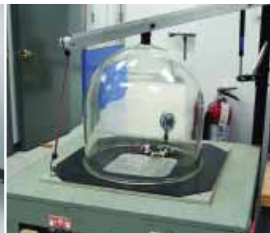
EMI



RF



Corrosion



Atmospheric



Rain



Vibration



Dust



Environmental



Photometric Chamber



Acoustic Chambers



Quality Control & Reliability Testing



## REPAIR, SERVICE AND TRAINING

Whelen's repair goal is to get product repaired and back out the door to you within 24 hours. Authorized service facilities are located around the globe. Training is available not only at the Chester Training Facility but at sites around the country. All Whelen Authorized Managing Sales Representatives and technicians return to the plant several times a year for new product introduction and advanced training.



Repair Service Technician



Electronics Technician



Technical Support



Chester Corporate Training Facility



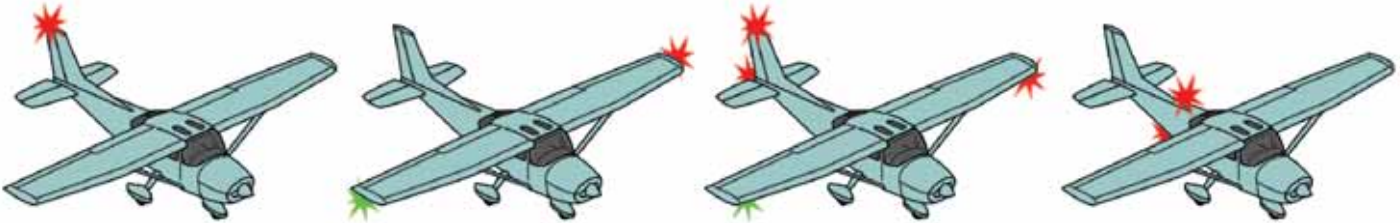
## LIGHTING REGULATIONS -

### LIGHTING INSTALLATION LOCATIONS

**Wingtip:** The major difference in systems is the location of the strobe power supplies which can be mounted locally, one in each wingtip, or a single power supply can be mounted in the fuselage. Installation time can be greatly reduced if done in conjunction with an annual or one hundred-hour inspection. Properly installed power supplies and cabling are necessary for the safe operation of Whelen or any light systems.

**Fuselage:** Fuselage mounted units can be either self-contained with the power supply and lighthouse as one unit, or remote lighthouses run off a separate power supply. To meet the field of coverage, one must be on the top of the fuselage and one on the bottom.

**Vertical Fin:** Finally, if applicable, a single anti-collision light can be mounted on the vertical stabilizer. It can be either a self-contained or remote lighthouse depending on the aircraft.



#### VERTICAL FIN

One anti-collision strobe light mounted on the vertical fin will meet the minimum requirements on most aircraft. A half Red and half White lens is recommended.

#### WING TIP

Two wingtip strobe lights that protrude beyond the wingtip.

#### ENCLOSED WINGTIP

Enclosed wingtip anti-collision strobe lights, require a third strobe light on the tail or vertical fin, to fill in the required light envelope. This is an approved anti-collision system.

#### FUSELAGE

In a fuselage mounted anti-collision strobe light system, a minimum of two strobe lights are necessary to get the required vertical coverage. This is an approved anti-collision system.

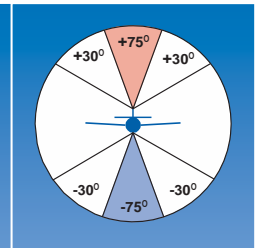
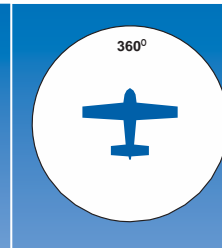
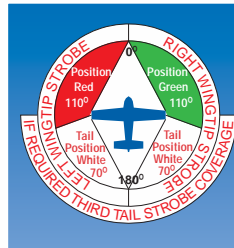
ANGLE ABOVE OR BELOW THE HORIZONTAL PLANE	EFFECTIVE INTENSITY (CANDLES)
0° to 5°	400
5° to 10°	240
10° to 20°	80
20° to 30°	40
30° to 75°	20

ASTM Spec F2245-07, section A2 (LSA to be flown at night) must be met - A2.6 Required Equipment:

- A2.6.2 Position lights as specified in A2.7.2
- A2.6.3 An aviation Red or aviation White anti-collision light system specified in A2.7.3

- A2.7.3.6 Minimum Effective Intensities for Anti-Collision Lights:

- Each Anti-Collision Light effective intensity must equal or exceed the applicable values in the following table.



An approved anti-collision strobe light system must project light 360° around the aircraft's vertical axis. One or more strobe lights can be used.

An approved anti-collision strobe light system must project light + or - 30° above and below the horizontal plane of the aircraft. One or more strobe lights can be used. The + or - 75° projected light is required since July 18, 1977.

## LIGHTING TECHNOLOGY GLOSSARY-

#### HALOGEN LAMP:

A halogen lamp is an incandescent lamp with a tungsten filament contained within an inert gas.



#### STROBE TUBE:

Strobe light consist of a tube containing an inert gas, such as Xenon. Capacitors inside the light are charged up to a relatively high voltage, roughly 300 volts for small strobes, then discharged via a trigger to create a bright burst of light.



#### LED:

LEDs are solid-state devices. These products operate on a square wavelength which creates higher visibility with longer on time. LEDs lifespan far outlive that of conventional halogen and strobe units.



## ORION™ 600 SERIES -

### ORION650E POSITION / ANTI-COLLISION LIGHTHEAD

Whelen Engineering is proud to introduce the NEW ORION600 Series of FAA TSO/ETSO approved LED aviation lighting. Incorporating the latest state-of-the-art LED Technology available in an all-inclusive package, the ORION600 series eliminates the need for external flasher boxes. Flush mountable for a wide variety of applications with minimal integration and easily retrofitable to the Whelen legacy strobe products. The ORION600 series is quite simply the brightest form of LED anti-collision and position lighting available.

- Replaceable hard-coated polycarbonate lens to maintain maximum light output
- Aerodynamic design without sacrificing light output
- Exceeds FAA minimum intensity requirements for maximum visibility and increased safety of flight
- Environmentally tested and certified to RTCA/DO-160F standards
- Fully FAA TSO/ETSO-C96a & TSO-C30b Approved
- FAR SPEC Certified

**FAR SPEC**

**FAA TSO/  
ETSO-C96a  
& TSO-C30c**

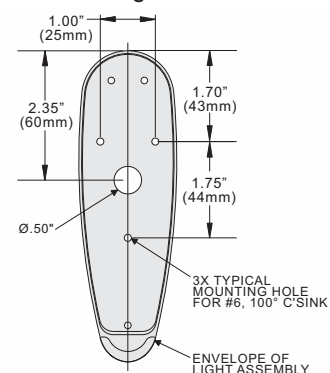


Drawing #	Weight	Dimensions H x W x L	Current Draw 12V / 28V	Position LED colors	Anti-Collision LED color	Lenses
71733	0.5 lbs. (227gm)	2.04" (52mm) x 1.78" (45mm) x 5.65" (144mm)	0.48/0.17 Amps Position 1.0/0.5 Amps Avg. ACL	Aviation Red Aviation Green Aviation White	Aviation White	Clear Polycarbonate Hard-coated, Field Replaceable

Model #	Part #	Description	Approvals
OR6001G	01-0771733-01	Wingtip PTA Green, 12 VDC	FAA TSO/ETSO-C96A Class II / TSOETSO-C30c Type II & III
OR6002G	01-0771733-11	Wingtip PTA Green, 28 VDC	
OR6001R	01-0771733-02	Wingtip PTA Red, 12 VDC	FAA TSO/ETSO-C96A Class II / TSOETSO-C30c Type I & III
OR6002R	01-0771733-12	Wingtip PTA Red, 28 VDC	

### Mounting Pattern



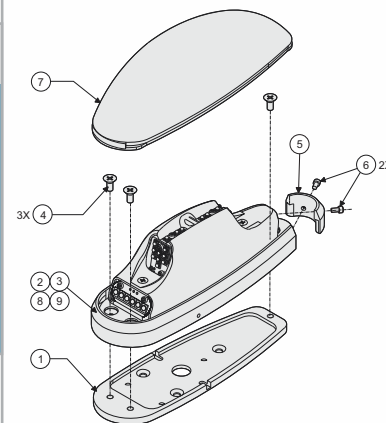
### FAR SPEC

A Technical Standard Order (TSO) is a minimum performance standard and does equal compliance with the applicable Federal Aviation Regulations. In fact other manufacturers produce TSO approved items with operational characteristics that contradict the FARs. Whelen designs products as FAR SPEC, Federal Aviation Regulations- Specified Lighting. FAR SPEC is compliant with all applicable FAR's making your installation legal.

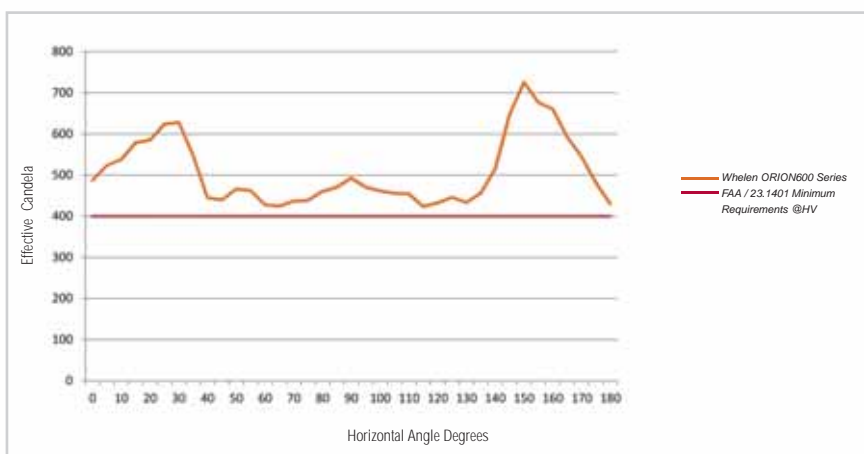
\* Installers must follow the approved guidance for installation of the product to be FAR SPEC compliant.

### ITEM # PART NUMBER PART EXPLODED VIEW DESCRIPTION

1	06-171708-001	Baseplate, Model 90670 with Heli-Coils
2	01-0271759-01	Assembly, 12V LED Wingtip Light Green 71733
3	01-0271759-02	Assembly, 12V LED Wingtip Light Red 71733
4	14-0050581B03	Screw, 4-40 X 5/16 P100FH MS24693-C3B
5	19-171730-000	Retainer, Lens Model 71733
6	14-026A36-03M	Screw, 2-56 X 3/16 SCKT HD HEX with NYLOK
7	02-0371773-30	Lens Assembly with Hardcoat
8	01-0271759-11	Assembly, 28V LED Wingtip Light Green 71733
9	01-0271759-12	Assembly, 28V LED Wingtip Light Red 71733



### AMECA Certified Testing Laboratory Results



## ORION™ 650E SERIES -

### ORION650E POSITION / ANTI-COLLISION LIGHthead

Whelen Engineering is proud to introduce the NEW ORION650E Series. Incorporating the latest state-of-the-art LED Technology available in an all-inclusive package, the ORION600 series eliminates the need for external flasher boxes. Flush mountable for a wide variety of applications with minimal integration and easily retrofitable to the Whelen legacy strobe products. The ORION650E series is quite simply the brightest form of LED anti-collision and position lighting available.

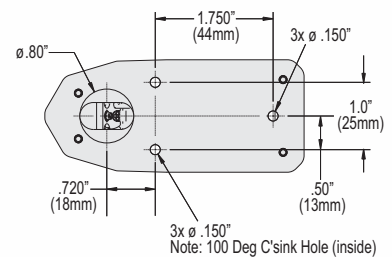
- FAA/TSO-C96a & TSO-C30c Approved
- FAR SPEC Certified
- Exceeds FAA minimum intensity requirements for maximum visibility and increased safety of flight
- Environmentally tested and certified to RTCA/DO-160G standards

**FAR SPEC**

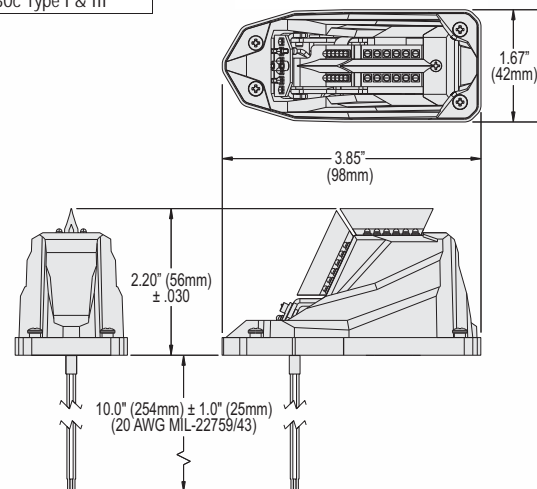
**FAA/TSO-C96a  
& TSO-C30c**



#### Mounting Pattern



#### Dimensions

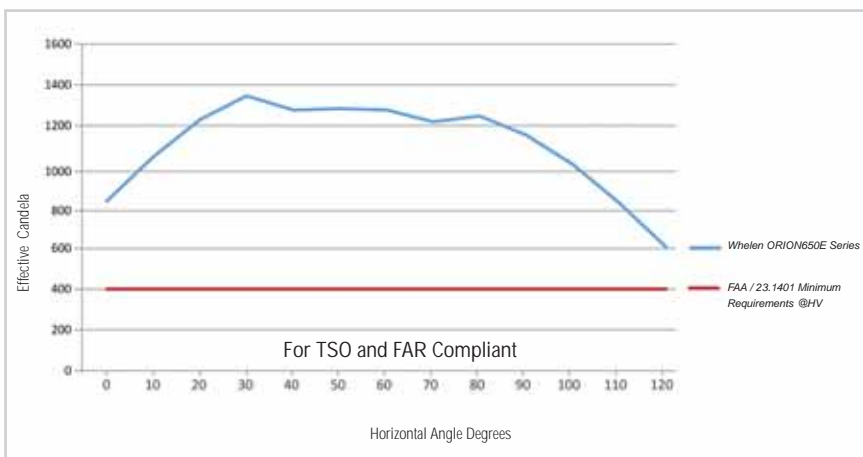


#### FAR SPEC

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#### AMECA Certified Testing Laboratory Results



**Note:** High light output to accommodate typical attenuation and distortion behind the aircraft lens.





## ORION™ 650 SERIES -

### ORION650 POSITION / ANTI-COLLISION LIGHTHEAD

Whelen Engineering is proud to introduce the NEW ORION650 Series. Incorporating the latest state-of-the-art LED Technology available in an all-inclusive package, the ORION600 series eliminates the need for external flasher boxes. Flush mountable for a wide variety of applications with minimal integration and easily retrofitable to the Whelen legacy strobe products. The ORION650 series is quite simply the brightest form of LED anti-collision and position lighting available.

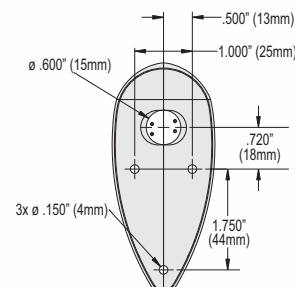
- FAA/TSO-C96a & TSO-C30c Approved
- FAR SPEC Certified
- Replaceable hard-coated polycarbonate lens to maintain maximum light output
- Aerodynamic design without sacrificing light output
- Exceeds FAA minimum intensity requirements for maximum visibility and increased safety of flight
- Environmentally tested and certified to RTCA/DO-160G standards

**FAR SPEC**

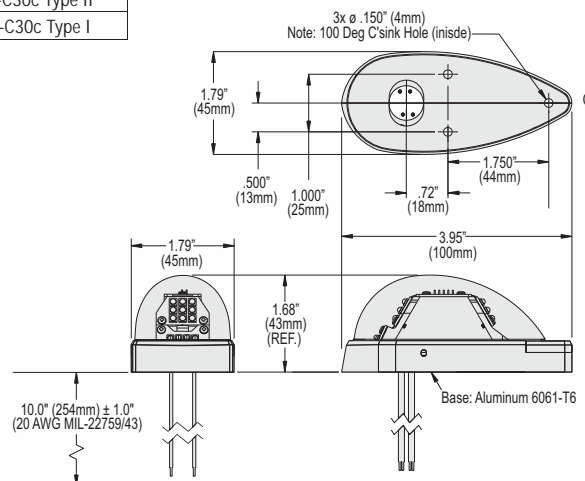
**FAA/TSO-C96a  
& TSO-C30c**



### Mounting Pattern



### Dimensions

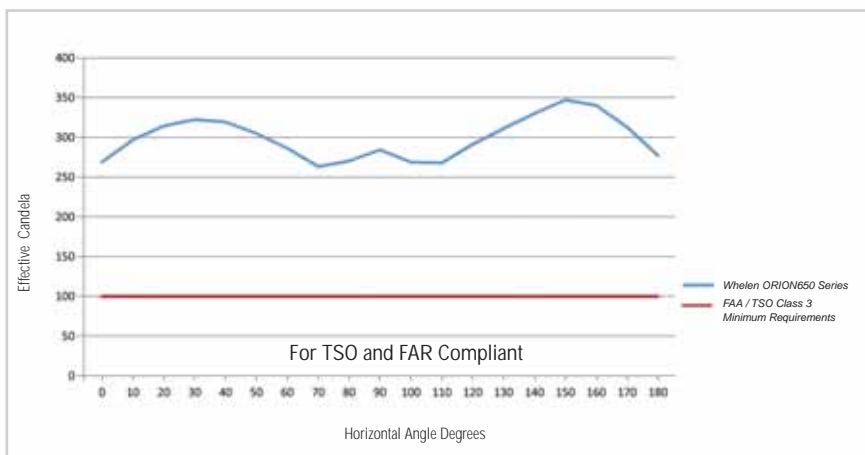


### FAR SPEC

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### AMECA Certified Testing Laboratory Results



## ORION™ 500 SERIES -

### ORION500 POSITION / ANTI-COLLISION LIGHTHEAD

Whelen Engineering is proud to introduce the NEW ORION500 Series of FAA/TSO approved LED aviation lighting. Incorporating the latest state-of-the-art LED Technology available in an all-inclusive package, the ORION500 series eliminates the need for external flasher boxes. Flush mountable for a wide variety of applications with minimal integration and easily retrofitable to the Whelen legacy strobe products. The ORION500 series is quite simply the brightest form of LED anti-collision and position lighting available.

- Fully FAA/TSO-C96a & TSO-C30c Approved
- FAR SPEC Certified
- Replaceable hard-coated polycarbonate lens to maintain maximum light output
- Aerodynamic design without sacrificing light output
- Exceeds FAA minimum intensity requirements for maximum visibility and increased safety of flight
- Environmentally tested and certified to RTCA/DO-160G standards

**FAR SPEC**

**FAA/TSO-C96a  
& TSO-C30c**



Drawing #	Weight	Dimensions H x W x L	Current Draw 12V / 28V	Position LED colors	Anti-Collision LED color	Lenses
71774	0.29 lbs (132gm)	See dimension drawing	0.20/0.10 Amp (Position) 0.7/0.35 Amp (Anti- Collision)	Aviation White	Aviation White	Clear Hard-coated Polycarbonate

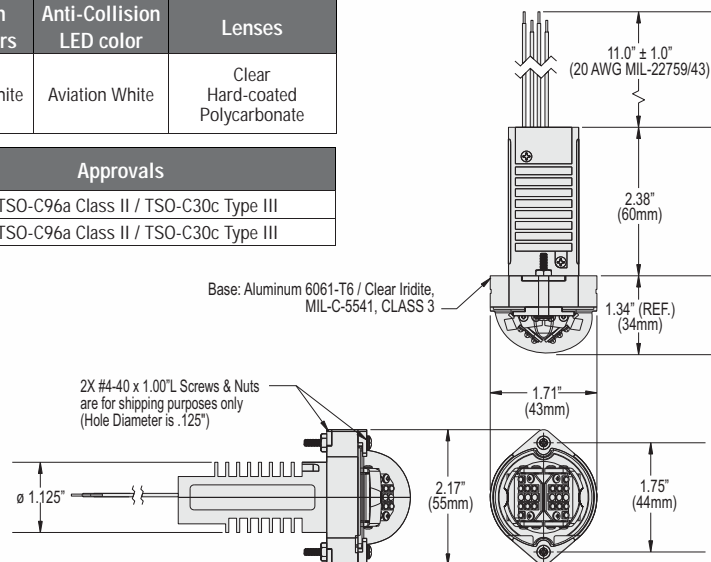
Model #	Part #	Description	Approvals
OR5001V	01-0771774V01	Tail PTA Light White, 12 V	FAA TSO-C96a Class II / TSO-C30c Type III
OR5002V	01-0771774V02	Tail PTA Light White, 28 V	FAA TSO-C96a Class II / TSO-C30c Type III

#### FAR SPEC

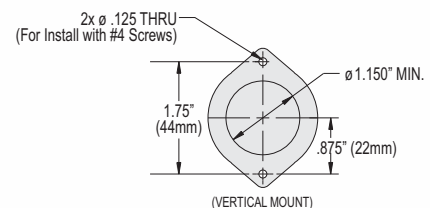
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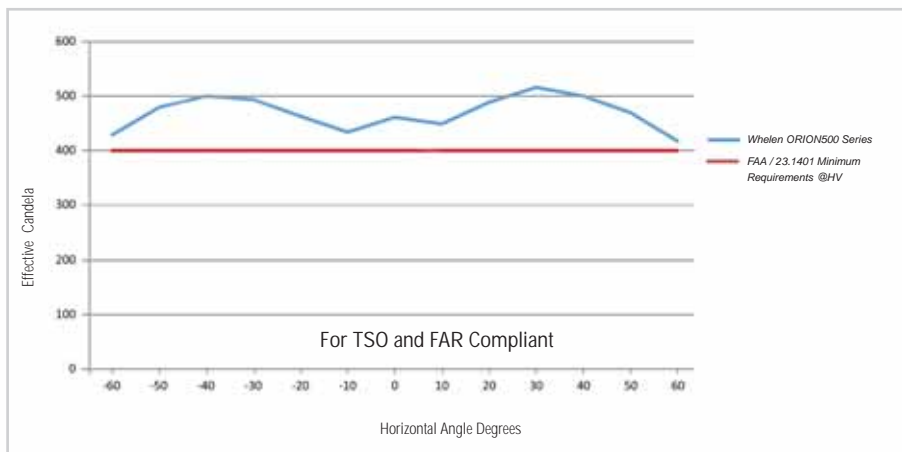
#### Dimensions



#### Mounting Pattern



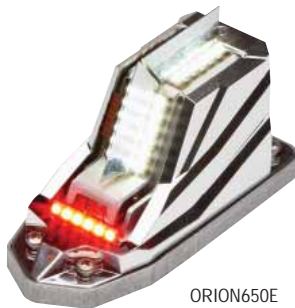
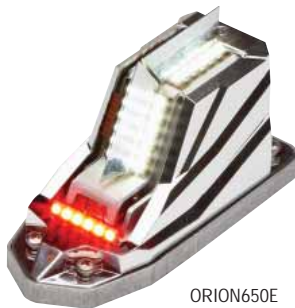







#### AMECA Certified Testing Laboratory Results





## LEGACY SERIES & ORION SERIES CROSSOVER CHART

NOTE: Items in red will require extra wiring for Anti-Collision function of Orion Series

Legacy Part Number	Legacy Model Number	Mounting Location	Orion Replacement Model Number	Orion Series Pictorial View
01-0770054-01	A650PG28	Within Faring	OR6502GE/ OR6502RE *NOTE Not to be mounted on exterior of aircraft	 ORION650E Series
01-0770054-03	A650PR28			
01-0771110-03	7111003			
01-0771110-04	7111004			
01-0770001-42	W1285PG28			
01-0770001-52	W1285PR28			
01-0771105-03	7110503			
01-0771105-04	7110504	Within Faring	OR6501GE / OR6501RE *NOTE Not to be mounted on exterior of aircraft	 ORION650E Series
01-0770054-00	A650PG14			
01-0770054-02	A650PR14			
01-0771110-01	7111001			
01-0771110-02	7111002			
01-0770001-41	W1285PG14			
01-0770001-51	W1285PR14			
01-0771105-01	7110501	Wingtip Mounted	OR6502G/ OR6502R	 ORION650 Series
01-0771105-02	7110502			
01-0770054-01	A650PG28			
01-0770054-03	A650PR28			
01-0771110-03	7111003			
01-0771110-04	7111004			
01-0770001-42	W1285PG28			
01-0770001-52	W1285PR28	Wingtip Mounted	OR6501G/ OR6501R	 ORION650 Series
01-0771105-03	7110503			
01-0771105-04	7110504			
01-0770054-00	A650PG14			
01-0770054-02	A650PR14			
01-0771110-01	7111001			
01-0771110-02	7111002			
01-0770001-41	W128514	Wingtip Mounted	ORION6002G/ ORION6002R	 ORION600 Series
01-0770001-51	W128514			
01-0771105-01	7110501			
01-0771105-02	7110502			
01-0790006-03	A600PR28	Wingtip Mounted	ORION6001G/ ORION6001R	 ORION500 Series
01-0790006-01	A600PG28			
01-0790340-03	9034003			
01-0790340-04	9034004			
01-0790006-00	A600PR14	Tail Mounted	OR5001V	 ORION500 Series
01-0790006-02	A600PG14			
01-0790340-01	9034001			
01-0790340-02	9034002			
01-0770024-00	A500AV14	Tail Mounted	OR5002V	 ORION500 Series
01-0770034-00	A555AV14			
01-0770024-01	A500AV28	Tail Mounted	OR5002V	 ORION500 Series
01-0770034-01	A555AV28			

## 90340 SERIES -

### STROBE ANTI-COLLISION / LED POSITION LIGHT ASSEMBLY

90340 Series is an all inclusive wingtip mounted strobe anti-collision/position light assembly utilizing LEDs for both the forward & tail position lights, eliminating the need for a tail mounted position light. The LEDs provide a significant reduction in current draw over conventional position light bulbs. The strobe light lens assembly is radio-shielded for maximum EMI/RFI protection.

Model #	Part #	Description	Approvals
9034001	01-0790340-01	Position Green, 14 VDC	FAA TSO-C96a Class II / TSO-C30c Types II & III
9034002	01-0790340-02	Position Red, 14 VDC	FAA TSO-C96a Class II / TSO-C30c Types I & III

Drawing #	Weight	Dimensions H x W x L	Current Draw	Available LED colors	Lenses
90340	0.60 lbs. (272gm) 14 VDC	Exposed Height: 2.70" (69mm) x	LED Navigation Light Power Consumption: 0.5 amps @ 14 VDC, 0.25 amps @ 28 VDC	Aviation Red Aviation Green Aviation White	Clear RFI coated Glass: Strobe
	0.65 lbs. (295gm) 28 VDC	1.87" (47.49mm) x 5.69" (144.52mm)			Clear Polycarbonate: Navigation Lights



MODEL 9034002

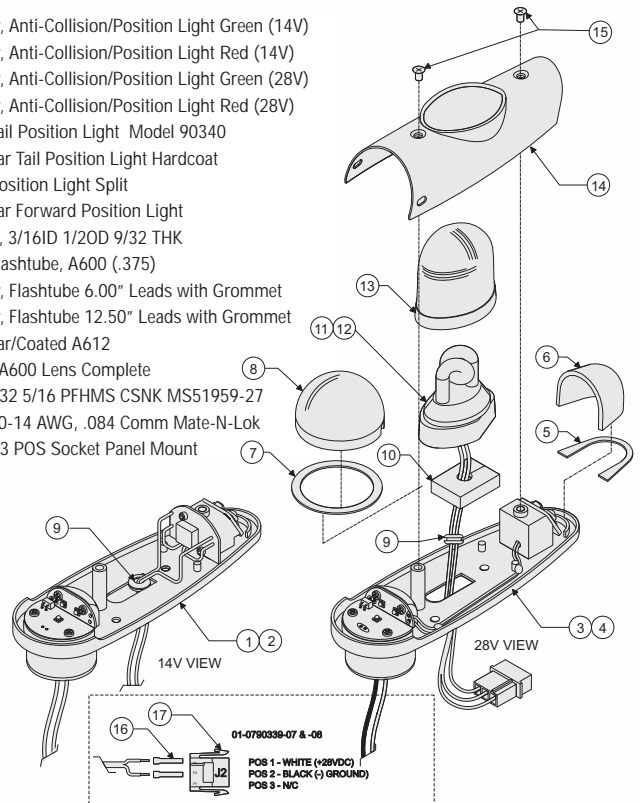


MODEL 9034001



#### ITEM # PART NUMBER PART EXPLODED VIEW DESCRIPTION

- 1 01-0271789-01 Assembly, Anti-Collision/Position Light Green (14V)
- 2 01-0271789-02 Assembly, Anti-Collision/Position Light Red (14V)
- 3 01-0271789-03 Assembly, Anti-Collision/Position Light Green (28V)
- 4 01-0271789-04 Assembly, Anti-Collision/Position Light Red (28V)
- 5 38-0250901-00 Gasket, Tail Position Light Model 90340
- 6 68-3950903A30 Lens, Clear Tail Position Light Hardcoat
- 7 38-0230021-01 Gasket, Position Light Split
- 8 68-3950902A30 Lens, Clear Forward Position Light
- 9 21-11061209-0 Grommet, 3/16ID 1/2OD 9/32 THK
- 10 38-0130878-01 Gasket, Flashtube, A600 (.375)
- 11 36-0050626-01 Assembly, Flashtube 6.00" Leads with Grommet
- 12 36-0050626-02 Assembly, Flashtube 12.50" Leads with Grommet
- 13 68-2290005-34 Lens, Clear/Coated A612
- 14 19-170049-010 Retainer, A600 Lens Complete
- 15 14-0050508-27 Screw, 6-32 5/16 PFHMS CSNK MS51959-27
- 16 39-0501326-04 Socket, 20-14 AWG, .084 Comm Mate-N-Lok
- 17 39-0403811-04 Housing, 3 POS Socket Panel Mount





## 71110 SERIES -

### STROBE ANTI-COLLISION / LED POSITION LIGHT ASSEMBLY

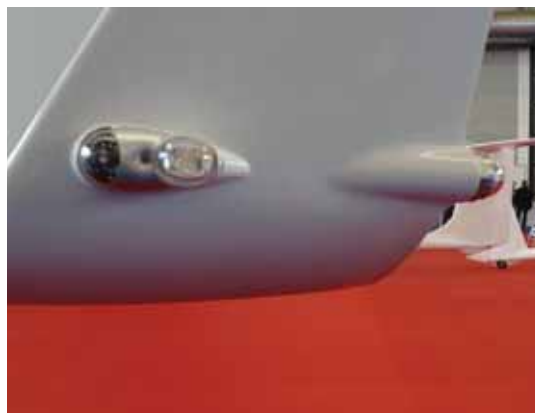
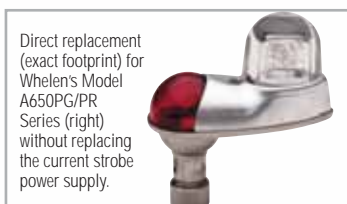
71110 Series is a wingtip mounted strobe anti-collision/position light assembly utilizing LEDs for the forward position lights. The LEDs provide a significant reduction in current draw over conventional position light bulbs. The strobe light lens assembly is radio-shielded for maximum EMI/RFI protection. Navigation light portion is wired with flying leads.

Model #	Part #	Description	Approvals
7111001	01-0771110-01	Position Green, 14 VDC	FAA TSO-C96a Class II / TSO-C30c Type II
7111002	01-0771110-02	Position Red, 14 VDC	FAA TSO-C96a Class II / TSO-C30c Type I
7111003	01-0771110-03	Position Green, 28 VDC	FAA TSO-C96a Class II / TSO-C30c Type II
7111004	01-0771110-04	Position Red, 28 VDC	FAA TSO-C96a Class II / TSO-C30c Type I

Drawing #	Weight	Dimensions H x W x L	Current Draw	Available LED colors	Lenses
71110	0.45 lbs. (204gm) 14 VDC 0.50 lbs. (227gm) 28 VDC	Exposed Height: 2.35" (60.69mm) x 1.78" (45.21mm) x 3.88" (98.55mm)	LED Navigation Light Power Consumption: 0.25 amps @ 14 or 28 VDC	Aviation Red Aviation Green	Clear RFI Coated Glass: Strobe Clear Polycarbonate: Navigation Lights

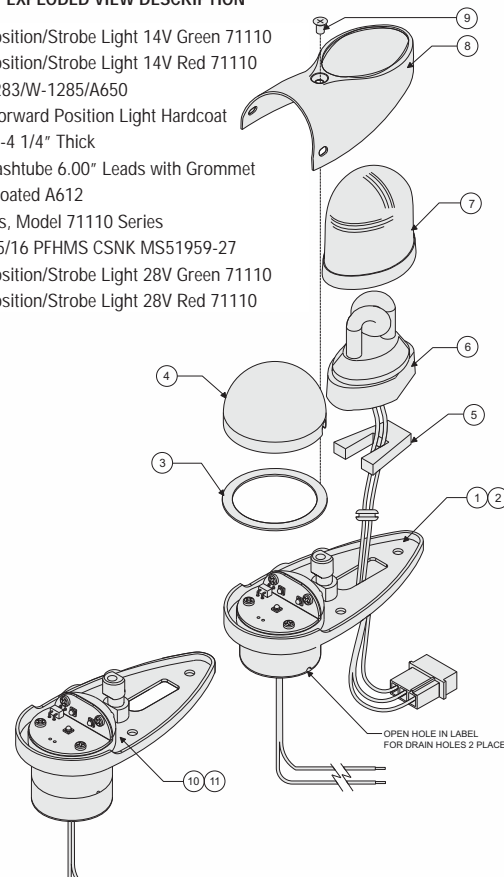


MODEL 7111001



#### ITEM # PART NUMBER PART EXPLODED VIEW DESCRIPTION

- 1 01-0271757-01 Assembly, Position/Strobe Light 14V Green 71110
- 2 01-0271757-02 Assembly, Position/Strobe Light 14V Red 71110
- 3 38-0230021-00 Gasket, W-1283/W-1285/A650
- 4 68-3950902A30 Lens, Clear Forward Position Light Hardcoat
- 5 38-0130107-00 Gasket, A427-4 1/4" Thick
- 6 36-0050626-01 Assembly, Flashtube 6.00" Leads with Grommet
- 7 68-2290005-34 Lens, Clear/Coated A612
- 8 19-171122-200 Retainer, Lens, Model 71110 Series
- 9 14-0050508-27 Screw, 6-32 5/16 PFHMS CSNK MS51959-27
- 10 01-0271757-03 Assembly, Position/Strobe Light 28V Green 71110
- 11 01-0271757-04 Assembly, Position/Strobe Light 28V Red 71110



## 71554 SERIES -

### FORWARD / REAR POSITION & TAIL SECTION LIGHT

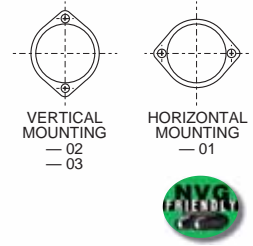
71554 Series in our newest LED tail position light. exact footprint for Whelen Models A555A and 71011 tail lights. Available in horizontal or vertical mount. Models -01 and -02 come with flying leads. Model -03 has a pin and a ring terminal for connections.

Drawing #	Weight	Dimensions H x W x L	Current Draw	Available LED colors	Lenses
71554	.14 lbs. (64gm)	Exposed Height: 1.4" (35.56mm) x 1.59" (40.38mm) x 2.07" (52.57mm)	.13 A @ 28 VDC	Aviation White	Clear Hard-coated Polycarbonate

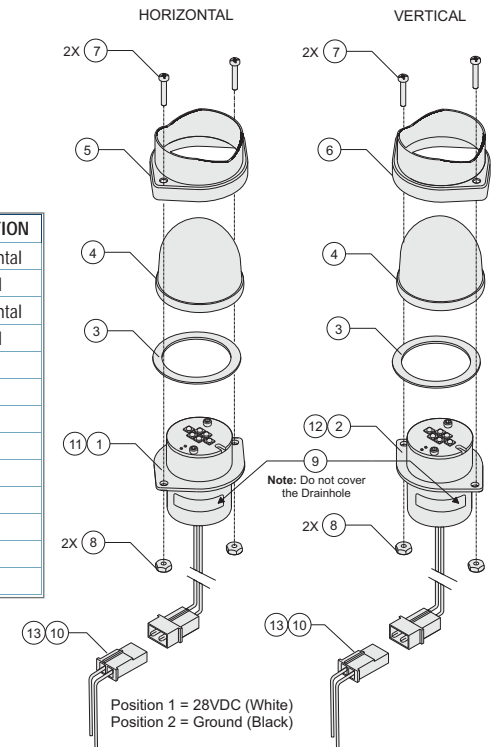
Model #	Part #	Description	Approvals (Pending)
7155401	01-0771554-01	Horizontal mount, 28 VDC	FAA TSO-C30c Type III
7155402	01-0771554-02	Vertical mount, 28 VDC	FAA TSO-C30c Type III
7155403	01-0771554-03	Vertical mount (Cessna), 28 VDC	FAA TSO-C30c Type III
7155411	01-0771554-11	Horizontal mount, 14 VDC	FAA TSO-C30c Type III
7155412	01-0771554-12	Vertical mount, 14 VDC	FAA TSO-C30c Type III



MODEL 7155401



ITEM	PART NUMBER	ITEMIZED PART EXPLODED VIEW DESCRIPTION
1	01-0271552-01	Assembly, 28V LED Tail Position Light Horizontal
2	01-0271552-02	Assembly, 28V LED Tail Position Light Vertical
11	01-0271552-11	Assembly, 14V LED Tail Position Light Horizontal
12	01-0271552-12	Assembly, 14V LED Tail Position Light Vertical
3	38-0231260-00	Gasket, Lens 90296 Housing
4	68-3970991-30	Lens, Clear Hardcoat Tail Position Light
5	19-0150350-06	Retainer Mask, Horizontal
6	19-0150350-07	Retainer Mask, Vertical
7	14-0050505-18	Screw, 4-40 x 5/8 PPHMS MS51957-18
8	13-040130-040	Nut, 4-40 x 1/4 Hex Brass
9	10-0531255-XX	Label, PN/MFG Model 71554XX
10	46-0750898-00	Assembly, 28V Pigtail 6" Black/White
13	46-0750898-01	Assembly, 14V Pigtail 6" Black/Red



## A500A SERIES -

### COMBINATION STROBE / TAIL NAVIGATION LIGHT

A500A Series combination strobe/tail navigation light is used when the wingtip anti-collision lights are mounted in an enclosure and can't provide 360° of strobe coverage. It is a direct replacement for the standard tail position light. Available in a radio-shielded version. Voltage (14 or 28) and mounting (horizontal or vertical) must be specified when ordering.

Model #	Part #	Description	Approvals
A500AV14	01-0770024-00	Vertical mount, 14 VDC	FAA/PMA, FAA TSO-C30b
A500AH14	01-0770024-02	Horizontal mount, 14 VDC	FAA/PMA, FAA TSO-C30b
A500AVD1	01-0770024-04	Vertical mount, radio-shielded, 14 VDC	FAA/PMA, FAA TSO-C30b
A500AHD1	01-0770024-06	Horizontal mount, radio-shielded, 14 VDC	FAA/PMA, FAA TSO-C30b

Drawing #	Weight	Dimensions H x Dia.	Current Draw	Available LED Colors	Lenses
70024	0.3 lbs. (136gm)	1.7" (43mm) x 1.5" (38mm)	14 VDC	Aviation White	Glass





## HOW TO CHOOSE A POWER SUPPLY AND ABOUT COMETFLASH®

The power supply needed depends on the application, and the mounting location. Model HDACF Series is a fuselage mounted power supply that will power two or three lights. Model A490ATSC Series is designed for installation adjacent to the strobe lighthouse and will power one light assembly. Model A490TCF Series is the most economical power supply when adding only one light. It mounts adjacent to the strobe lighthouse assembly (not legal for light output with Red strobe light). Most other Whelen power supplies are application specific, contact factory for details. Unless otherwise noted, all power supplies are CometFlash. Whelen Engineering is proud to have introduced the CometFlash CF, a major advancement in the field of safety lighting. By pulsing the flash tube four times in rapid succession, the effective "on-time" of the strobe is increased from 2/1000 of a second to 4/10 of a second. This increases your airplane's visibility. The development of the CometFlash reflects Whelen's dedication to safety.

## HDACF SERIES -

### STROBE POWER SUPPLY (NSN 6210-14456688)

Model HDACF Series provides simultaneous flashing, alternate flashing or both. It will operate one, two or three strobe lighthouses. Operating the wingtip strobes in the alternating mode will provide an accumulated 42 joules of power to each light. When in the simultaneous mode, the accumulated power to each light is 21 joules. In the three light mode, the wingtips will flash simultaneous at an accumulated 21 joules each, they alternate with a third light operating at an accumulated 42 joules. On the trigger selector outlet, a switch mounted in place of the jumper will allow wingtip outlets 2 & 3 to be turned off, while the tail outlet 1 will remain on. This function is commonly used when the third light is for ground operations. This power supply will operate from 10 to 30 VDC.

Drawing #	Weight	Dimensions H x W x L	Current Draw
70028	2.1 lbs. (953gm)	2.37" (60mm) x 5.0" (127mm) x 5.50" (140mm)	7.0 amps @ 14 VDC; 3.5 amps @ 28 VDC

Model #	Part #	Description	Approvals
HDACF	01-0770028-05	A413AHDACF power supply	FAA/PMA



## MODEL A490ATSC -

### STROBE POWER SUPPLY

Model A490ATSC operates one strobe lighthouse. Its compact size allows mounting in the wingtip and/or the tail, adjacent to the lighthouse. It produces an accumulated 34 joules of power and can be equipped to flash simultaneously with up to 5 other like units by connecting an 18 gauge wire between outlet 3 on the input power connector. This power supply will operate from 10 to 30 VDC.

Drawing #	Weight	Dimensions H x W x L	Current Draw
70062	1.7 lbs. (771gm)	3.06" (78mm) x 3.12" (79mm) x 5.0" (127mm)	4.0 amps @ 14 VDC; 2.0 amps @ 28 VDC

Model #	Part #	Description	Approvals
A490ATSC	01-0770062-03	A490ATSC power supply	FAA/PMA



## MODEL A490TCF -

### STROBE POWER SUPPLY (NSN 6130-10071195)

A490TCF Series operates one strobe lighthouse. It is our most compact unit and can be mounted in the wingtip and/or the tail adjacent to the lighthouse. It produces an accumulated 19 joules of power. It will only meet 400 CP when used with the A470A-W. This unit cannot be synchronized. This power supply operates from 10 to 30 VDC (not approved for use with Red strobe light).

Drawing #	Weight	Dimensions H x W x L	Current Draw
70006	1.2 lbs. (544gm)	2.38" (60mm) x 3.12" (79mm) x 5.0" (127mm)	1.7 amps @ 14 VDC; 0.85 amps @ 28 VDC

Model #	Part #	Description	Approvals
A490TCF	01-0770006-08	Standard unit, 20" leads, amp connectors	FAA/PMA
A490TCFM	01-0770006-14	20" leads, Molex connectors	-
7000615	01-0770006-15	20" leads, no connectors	-



## MICROBURST™ SERIES LED WINGTIP & TAIL LIGHTING -

- Economically priced.
- 14 VDC.
- Low current, long life, lightweight.
- Self-contained (no external power supply needed).
- Aerodynamic with vibration and moisture resistance.
- Synchronizable.
- Replaceable lenses.
- Super bright, rivaling strobe in impact.
- Available with CometFlash®, the lighting concept that revolutionized aviation lighting.

### MICROBURST III - FORWARD & REAR FACING WINGTIP NAVIGATION LIGHT

Model#	Part#	Description	Approvals
MB3R	01-0771507-020	Forward facing wingtip nav, with CometFlash 180° LED-Strobe and rear facing White nav	-
MB3G	01-0771507-010		

Drawing #	Weight	Dimensions exp. H x W x L	Current Draw	Available LED Colors	Lenses
71507	0.21 lbs. (95gm)	1.5" (38mm) x 1.6" (41mm) x 4.6 (116mm)	0.45 amps @ 14 VDC	Red, Green	Polycarbonate



Microburst III

### MICROBURST II - FORWARD FACING WINGTIP NAVIGATION LIGHT

Model#	Part#	Description	Approvals
MB2R	01-0771519-020	Forward facing wingtip nav, with CometFlash 180° LED-Strobe	-
MB2G	01-0771519-010		

Drawing #	Weight	Dimensions exp. H x W x L	Current Draw	Available LED Colors	Lenses
71519	0.20 lbs. (90gm)	1.5" (38mm) x 1.6" (41mm) x 4.6 (116mm)	0.40 amps @ 14 VDC	Red, Green	Polycarbonate



Microburst II

### MICROBURST I - NAVIGATION TAILLIGHT

Model#	Part#	Description	Approvals
MB1	01-0771490-000	Nav taillight with CometFlash 180° LED-Strobe. Utilizes same mounting as all Whelen legacy assemblies	-

Drawing #	Weight	Dimensions H x Dia	Current Draw	Available LED Colors	Lenses
71490	0.15 lbs. (68gm)	1.7" (43mm) x 1.5 (38mm)	0.45 amps @ 14 VDC	White	Polycarbonate



Microburst I

## VERTEX™ SERIES -

### LED ANTI-COLLISION LIGHT ASSEMBLY

Model#	Part#	Description	Approvals
VTX609R	01-066B715-50	Red Anti-Collision	-
VTX609C	01-066B715-30	Clear Anti-Collision	
VTXFB	01-0443756-00	Flange Kit, Black	
VTXFC	01-0443756-03	Flange Kit, Chrome	

Drawing #	Weight	Dimensions H x Dia	Current Draw	Available LED Colors	Lenses
6B715	-	1" ( 25mm) H x 1-5/8" (41mm) Dia.	0.3 amps	Red, White	Polycarbonate



## PARMETHEUS™ SERIES -

### PAR-36 SUPER-LED® LIGHTING

LED lighting is the ideal technology for aviation applications. Whelen LED lights are time and field-tested for reliability and long-life performance under the tough conditions required by Fire, Emergency, DOT and Law Enforcement professionals around the world. Parmetheus PAR-36 Super-LED lights are a drop-in replacement for outdated Halogen or HID lamps. Lightweight, low-current and moisture resistant, they provide stable light output for thousands of operating hours.

- First FAA/PMA Approved PAR-36 Super-LED for aviation applications.
- Moisture resistant providing stable light output for thousands of trouble-free operating hours.
- Available in Landing and Taxi versions.
- Direct replacement for outdated PAR-36 Halogen & HID lamps.
- Convenient "drop-in" design for ease of installation:
  - Power wiring attaches to brass screw terminals.
  - Weight is virtually identical to previous PAR-36 lamps.
  - Assembly design includes clocking notch.
- Whelen TIR™ (Total Internal Reflector) technology, combine spot and flood optical combination, resulting in superior intensity and effectiveness.
- Polycarbonate, replaceable, hard-coated outer lens.
- Low current and lightweight.
- Metal, heat dissipating coated housing.
- Proudly designed and manufactured in the USA.
- Three year warranty.



**FAA PMA  
APPROVED**

Model#	Part#	Description	Type	Current Draw	Approvals
PLED2L	01-0771424-20	PAR-36 Super-LED drop-in replacement	Landing (Spot Light, 10°)	.6 Amps @ 28 VDC	FAA/PMA
PLED2T	01-0771424-25		Taxi (Spreader Optic, 40°)		
PLED1L	01-0771424-10		Landing (Spot Light, 10°)	1.2 Amps @ 14 VDC	
PLED1T	01-0771424-15		Taxi (Spreader Optic, 40°)		

Drawing #	Weight	Dimensions Dia x W	Available LED Colors	Lenses
71424	0.6 lbs. (272gm)	4.38" Round x 1.75" face to screw terminal	White	Clear Hard-coated Polycarbonate
Replacement Outer Lens: 68-3971486A30				

**Note:** Brackets and mounting will vary from aircraft to aircraft; FAA Field Approval (Form 337) may be required to use this product.



### WHELEN PARMETHEUS (PLED2L)



Close-up View

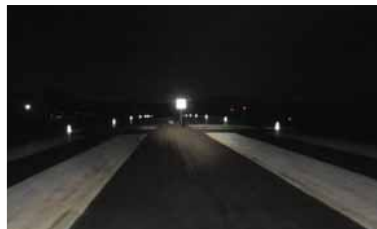


First Cone 210° Target 300'



f/5 1/15th ISO 1600

### PAR-36 HALOGEN LAMP GE4509



Close-up View



First Cone 210° Target 300'



f/5 1/15th ISO 1600



## PARMETHEUS™ SERIES -

### PAR-46 SUPER-LED® LIGHTING

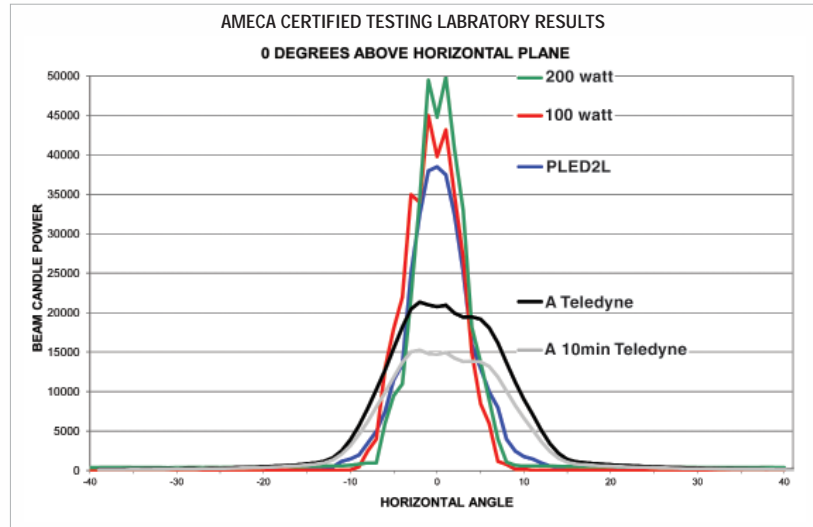
LED lighting is the ideal technology for aviation applications. Whelen LED lights are time and field-tested for reliability and long life performance under the tough conditions required by Fire, Emergency, DOT and Law Enforcement professionals around the world. Parmetheus PAR-46 Super-LED lights are a drop-in replacement for outdated halogen or HID lamps. Lightweight, low-current and moisture resistant, they provide stable light output for thousands of operating hours.

- Moisture resistant providing stable light output for thousands of trouble-free operating hours.
- Direct replacement for outdated PAR-46 Halogen & HID lamps.
- Available in a landing version.
- Convenient "drop-in" design for ease of installation:
  - Power wiring attaches to brass screw terminals.
  - Weight is virtually identical to previous PAR-46 lamps.
  - Assembly design includes clocking notch.
- Polycarbonate, replaceable, hard-coated outer lens.
- Whelen TIR™ (Total Internal Reflector) technology, combines spot and flood optical combination, resulting in superior intensity and effectiveness.
- Low current and lightweight.
- Metal, heat dissipating coated housing.
- Proudly designed and manufactured in the USA.
- Three year warranty.



Landing Light  
PLED462L

Par46 compared to Halogen lamp



Model#	Part#	Description	Type	Current Draw	Approvals
PLED462L	01-0790623-20	PAR-46 Super-LED drop-in replacement	Landing (Spot Light, 10° Horizontal & 10° Vertical)	1.3 Amps @ 28 VDC	FAA/PMA
PLED461L	01-0790623-10			2.6 Amps @ 14 VDC	

Drawing #	Weight	Dimensions Dia x W	Available LED Colors	Lenses
90623	1.0 lbs. (454 gm)	5.65" Round x 2.25" face to screw terminal	White	Clear Hard-coated Polycarbonate

Replacement Outer Lens: 68-3971577A30

### PAR-46 PLED462L

### GE4553 LANDING LIGHT



300' LED



50' LED



50' Halogen

## 71685 SERIES -

### LED RECOGNITION/LANDING LIGHT ASSEMBLY

71685 Series LED Recognition/Landing light assembly. Available with a polycarbonate 30° optic spreader lens for taxiing.

Model #	Part #	Description	Approvals
7168500	01-0771685-00	28 VDC	-
7168501	01-0771685-01	14 VDC	

Drawing #	Weight	Dimensions H x W x D	Current Draw	Available LED colors	Lenses
71685	Weight with Lens 0.28 lbs. (127gm)	2.07" (53mm) x 3.64" (93mm) x 0.979" (25mm)	1.0 amps @ 14 VDC  0.43 amps @ 28 VDC	White	Polycarbonate 30° optic spreader lens



## 71125 SERIES -

### LED RECOGNITION LIGHT

71125 series LED Recognition lights are designed to provide supplemental lighting for a wide variety of aircraft applications. Low current draw, low heat, long life and no EMI/RFI. Perfect for vibration prone areas. Several different beam spreads available. Designed to replace the Whelen A775 series. Item ships with flying leads. Version with an integrated MS connector also available. Can be used in conjunction with 71115 flasher control assembly. Contact your OEM for installation information.

Model #	Part #	Description	Approvals
7112510	01-0771125-10	10 degree beam pattern, 14 VDC	FAA/PMA
7112511	01-0771125-11	20 degree beam pattern, 14 VDC	
7112512	01-0771125-12	90 degree beam pattern, 14 VDC	

Drawing #	Weight	Dimensions H x W x D	Current Draw	Available LED colors	Lenses
71125	0.3 lbs. (136gm)	1.95" (50mm) x 3.25" (83mm) x 1.25" (32mm) overall	0.9 amps @ 14 VDC	White	Polycarbonate 30° optic spreader lens



## 71325 SERIES -

### LED RECOGNITION LIGHT

Model 71325 is an LED Recognition/Exterior illumination product. It is an updated version of Model 71092 Recognition light (2008 Catalog). Model 71325 exceeds light output of 71092 three fold. Unit ships with 7 inch wires into A447 style pin connector. Optimized for 28 VDC, will operate from 14-28VDC.

Model #	Part #	Description	Approvals
7132500	01-0271325-00	LED Recognition light	-

Drawing #	Weight	Dimensions W x D x H	Current Draw	Available LED colors	Lenses
71325	0.17 lbs. (77gm)	2.56" (65mm) x 1.38" (35mm) x 1.45" (37mm) (center to center mounting holes)	0.25 amps @ 28 VDC	White	Clear Polycarbonate



## MODEL 71700 -

### FLASHER ASSEMBLY

Model 71700 is an electronic light flasher for use with Whelen LED Exterior lighting products. The flasher operates two outputs steady on or will flash outputs alternately. This has the operating ability to handle up to 5 amps of power.

Model#	Part#	Number of Outlets	Total Output Rating	On Time	Material:
71700	01-0771700-00	2 Outputs: Alternating or Steady On	5 Amps Max	350ms (+/- 25ms)	Polycarbonate
Drawing #	Weight	Dimensions H x W x L	Current Draw	Combined Alternating Flash Rate	
71700	0.14 lbs. (64gm)	.54" (14mm) x 2.04" (52mm) x 2.74" (70mm)	14 or 28VDC (Nominal)	90 FPM (+/- 10 FPM)	



## OS SERIES -

### INTERIOR LIGHT

Model#	Part#	Description	Approvals
OSC0EDCR	01-066A086132	White interior light with Clear lens	-
OAC0EDCR	01-066A584132	White interior light with Clear lens and 45° angled Chrome-plated bezel	

Drawing #	Weight	Dimensions exp. H x W x L	Current Draw	Available LED Colors	Lenses
6A086 6A584	0.21 lbs. (95gm)	1.5" (38mm) x 1.6" (41mm) x 4.6 (116mm)	0.45 amps @ 14 VDC	Red, Green	Polycarbonate

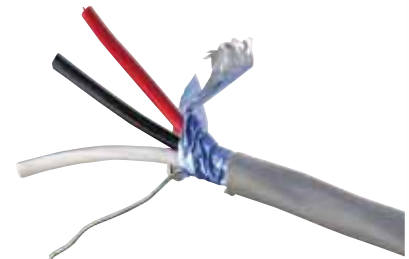


## INSTALLATION CABLE -

### 16 GAUGE 3/C SHIELDED CABLE KITS

Cable kits include all required connectors for hooking up the strobe light to the power supply. Warning placards and the installation service manual are included. (Kits do not include switches or breakers).

Model#	Part#	Dimensions Dia.	Weight	Description
HS5	01-0750215-00	0.275" (7mm)	0.05 lbs. per linear foot	5' 16 gauge 3/C shielded Cable kit
HT10	01-0750218-00			10' 16 gauge 3/C shielded Cable kit
HS30	01-0750214-00			30' 16 gauge 3/C shielded Cable kit
HD60	01-0750206-00			60' 16 gauge 3/C shielded Cable kit NSN
HDT390	01-0750205-00			90' 16 gauge 3/C shielded Cable kit
HT	01-0750216-00			Install kit only, no cable or connectors



## CONNECTORS -

### REPLACEMENT PARTS

Replacement connector kits and assemblies for cables.

Model#	Part#	Description	Approvals
A441	01-0430011-00	3 Position male connector with pin kit	-
A442	01-0410823-00	3 Position female connector with socket kit	
A444	02-0230007-00	2 Position male connector with pin ass'y	
A446	02-0230085-00	2 Position female connector with socket ass'y	
A447	01-0417808-00	4 position male connector with pins	
A448	01-0417808-01	4 position female connector with sockets	





## STROBE TO LED REPLACEMENT -

### STROBES

### LEDs

LEDs have direct DC voltage hook-up, without any need for a power supply

Model A470AS Strobe



Model A470AR Strobe



MOUNTING POSITION FITS

Model HR,CFA Strobe  
with integrated "self-  
contained" strobe  
power supply



MOUNTING POSITION FITS

Model 90520 LED

01-0790520-01 (28 VDC)

01-0790520-51 (14 VDC)

Fixed wing Class III

OR

Model 71080 LED

01-0771080-01 (28 VDC)

01-0771080-51 (14 VDC)

All Red Helicopter Class I and  
Fixed wing aircraft Class III



Model 90520 LED

01-0790520-05 (28 VDC)

01-0790520-55 (14 VDC)

Model A440

19-130074-009

Ring usually installed inward

OR

Model 71080 LED

01-0771080-05 (28 VDC)

01-0771080-55 (14 VDC)

All Red Helicopter and others





**Q.** How do I choose a lighting package?

**A.** Consider your wingtip options:

**- Enclosed wingtip lighting configuration**

- A forward position light and anti-collision light are required.
- Also a rear tail position light and anti-collision light will be required to comply with ASTM specifications for night flight operations.

**- End of wingtip light configuration**

- An all inclusive position, tail and anti-collision light may be utilized for compliance with the ASTM specifications for night flight operations.

## Additional considerations:

**- Landing & Recognition light options**

- Mounting locations (wingtip, cowl, landing gear)
- Size and shape restrictions (circular, rectangular or square, depth).

**- Strobe and power supply mounting locations**

- Wingtip (requires power supplies adjacent to each lighthouse).
- Cabin of aircraft (single power supply to operate all lighthouse assemblies).

**- Cable kit selections**

- What is the distance from your strobe tube to your power supply?
- How many light assemblies do you need to connect?



## SYSTEM RECOMMENDATIONS -

Approved for night flight

### FOR AIRCRAFT WITH STANDARD WINGTIP

The most widely used system on the market, this provides all the components for anti-collision and position lights without the need for a taillight. The power supply is mounted in the fuselage and shielded cable is run to the strobe lights. The following is recommended:

Quantity	Model#	Part#	Description
1 each	OR6001G	01-0771733-01	ORION600™ LED position/anti-collision light, 14 VDC, Green
1 each	OR6001R	01-0771733-02	ORION600 LED position/anti-collision light, 14 VDC, Green

Quantity	Model#	Part#	Description
1 each	HDACF	01-0770028-05	Power supply
1 each	9034001	01-0790340-01	Wingtip strobe/LED position light, 14 VDC, Red
1 each	9034002	01-0790340-02	Wingtip strobe/LED position light, 14 VDC, Green
<b>Note: Model 90340 can be an alternate to Model OR6001G/OR6001R</b>			
1 each	HD60	01-0750206-00	Installation package



Standard Wingtip



MODEL HDACF



MODEL 9034001



MODEL 9034002

### FOR AIRCRAFT WITH ENCLOSED WINGTIP

If the position and strobe lights are mounted under a clear fairing, a third tail strobe is required. The following is recommended:

Quantity	Model#	Part#	Description
1 each	HDACF	01-0770028-05	Power supply
1 each	7111001	01-0771110-01	LED Wingtip light, 14 VDC, Green
1 each	7111002	01-0771110-02	LED Wingtip light, 14 VDC, Red
1 each	A500AV14	01-0770024-00	Tail position/strobe light assembly
1 each	HDT390	01-0750205-00	Installation package
<b>Note: Model A650PG14/A650PR14 can be an alternate to Model 711100( ) for a strobe/LED solution</b>			



Enclosed Wingtip



MODEL HDACF



MODEL 7111002



MODEL 7111001



# WHELEN<sup>®</sup>

ENGINEERING COMPANY, INC.

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