

TWR Lighting, Inc.

Enlightened Technology®

HARK®

4300 WINDFERN RD SUITE 100 HOUSTON TX 77041-8943

VOICE (713) 973-6905 FAX (713) 973-9352

web: twrlighting.com

IMPORTANT!!!

PLEASE TAKE THE TIME TO FILL OUT THIS FORM COMPLETELY. FILE IT IN A SAFE PLACE. IN THE EVENT YOU EXPERIENCE PROBLEMS WITH OR HAVE QUESTIONS CONCERNING YOUR CONTROLLER, THE FOLLOWING INFORMATION IS NECESSARY TO OBTAIN PROPER SERVICE AND PARTS.

MODEL # AA0XFRM2OL2230V

SERIAL # _____

PURCHASE DATE _____

PURCHASED FROM _____

TWR Lighting, Inc.

Enlightened Technology®



AA0XFRM2OL2230V CONTROLLER

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TWR Lighting, Inc.

Enlightened Technology®

HARK®

AA0XFRM2OL2230V CONTROLLER

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TWR Lighting, Inc.

Enlightened Technology®

HARK®

AA0XFRM2OL2230V CONTROLLER

GENERAL INFORMATION

TWR Lighting®, Inc.'s Model AA0XFRM2OL2230V Controller is for application of AA0 lighting of a tower 147' above ground level (AGL) in accordance with the Federal Advisory Circular 70/7460-1K with safety and reliability in mind. TWR® welcomes you to our family of fine products, and we look forward to servicing your needs now and in the future.

Two (2) L-810 double obstruction light fixtures will be at the top of the structure.

The first double obstruction light will burn steady. When a lamp failure occurs, it will transfer power to the secondary double obstruction light, and the first double obstruction light will shut down. Each fixture requires two (2) 116 Watt 230V AC bulbs (116A21TS230V).

A by-pass switch (SW1) allows the controller to turn on during daylight hours without covering the photocell.

The photocell is the 3 blade, twist to lock type.

Power supplied to the controller should be 230V AC 50 Hz.

Controller functions that are monitored by remote alarms in the form of dry contact closures are as follows:

FIRST DOUBLE OBSTRUCTION LIGHTS

Will give an alarm when one (1) of the two (2) lamps fails, and the secondary double obstruction light will activate.

NOTE – The second double obstruction light will **not** be monitored.

INSTALLATION INSTRUCTIONS

1.0 MOUNTING THE CONTROL CABINET

(Refer to Drawing 1233-R)

1.1 The power supply control cabinet can be located at the base of the structure, or in an equipment building. Mounting footprints are shown on drawing 1233-R. Power wiring to the control cabinet should be in accordance with local methods and the National Electric Code (NEC).

1.1.1 If the control cabinet is mounted inside an equipment building, the photocell should be mounted vertically on ½" conduit outside the building above the eyes facing north. Wiring the photocell socket to the control cabinet should consist of one (1) each; red, black and white wires. The white wire is connected to the socket terminal marked "Com." The black wire is connected to the terminal marked "B," and the red wire is connected to the socket terminal marked "R." As above, the photocell shall be positioned so that it does not "see" ambient light, which would prevent it from switching to the nightmode.

1.1.2 If the control cabinet is mounted outside an equipment building, the photocell should be mounted vertically on ½" conduit so the photocell is above the control cabinet. Care must be taken to assure that the photocell does not "see" any ambient light that would prevent it from switching into nightmode. The photocell wiring is the same as in 1.1.1.

1.2 The wiring from the photocell, the service breaker, and the sidelights should enter the control cabinet through the water tight connectors in the bottom of the cabinet. Inside the cabinet, the connections will be made on the terminal strip and circuit breakers located at the bottom of the chassis. These connections are made as follows:

INSTALLATION INSTRUCTIONS

2.0 EXTERNAL PHOTOCELL WIRING

(Refer to Drawing 1233-R)

- 2.1 Connect the BLACK wire from the photocell to terminal block (TB2) marked "L."
- 2.2 Connect the RED wire from the photocell to terminal block (TB2) marked "SSR."
- 2.3 Connect the WHITE wire from the photocell to terminal block (TB2) marked "N."

3.0 POWER WIRING

(Refer to Drawing 1233-R)

- 3.1 Power wiring to the control cabinet should be in accordance with local methods and the NEC.
- 3.2 Circuit breaker needs to be rated at 5 amps.
- 3.3 Connect incoming 230V AC "HOT" to terminal block (TB1) marked "L."
- 3.4 Connect neutral to one (1) of the terminal blocks (TB1) marked "N."
- 3.5 Connect the AC ground to the grounding lug on plate.

4.0 1st and 2nd DOUBLE OBSTRUCTION LIGHT WIRING

(Refer to Drawing 1233-R)

- 4.1 Connect the BLACK wire from the first OL2 fixture to the circuit breaker marked "S1."
- 4.2 Connect the BLACK wire from the second OL2 fixture to the circuit breaker marked "S2."
- 4.3 Connect the NEUTRAL wires to one (1) of the terminal blocks on (TB1) marked "N."

INSTALLATION INSTRUCTIONS

5.0 1st DOUBLE OBSTRUCTION AND MID-LEVEL SIDELIGHTS ALARM WIRING
(Refer to Drawings 1233-R and 1233-S)

5.1 Dry contacts are provided for alarm monitoring of the 1st OL2 fixture. Alarm will occur in the event of one (1) lamp failure. The contact points for this fixture can be found on Module M1.

5.2 Alarm Wiring: To utilize the dry contacts, the customer will need one (1) pair of wires to interface with the alarm device. One (1) wire (common) will terminate on Module M1, terminal T4. The remaining wire will terminate as follows:

5.2.1 1st OL2 Alarm – Connect to Module M1, terminal T5, for normally open operations or terminal T6, for normally closed operations.

5.3 Alarm Testing: To test alarm, follow the procedures using an “OHM” meter between alarm common and alarm points.

5.3.1 1st OL2 fixture – Turn on switch SW1, or cover the photocell. Trip breaker S1 on the controller panel. A delay of a couple of seconds will be notified from the time of failure until the alarm pulls in as well as transfer occurs. At this time the standby condition red indicator on Module M1 will be illuminated, along with a change in status on the alarm contacts.

**L-810 INCANDESCENT LIGHTING
MAINTAINANCE GUIDE**

6.0 RED OBSTRUCTION LIGHTING

The only required maintenance needed to be performed is replacements of the lamps in the L-810 fixture. Lamps should be replaced after being operated for not more than 75% of the rated life, or immediately upon failure as per Federal Aviation Advisory Circular 70/7460-1K. By following these instructions, maximum safety and performance can be achieved.

TOOLS REQUIRED: NONE

6.1 L-810 LAMP REPLACEMENT

6.1.1 Unclasp the two (2) latches and allow the bail to recline backward.

6.1.2 Lift the lens up and over the lamp letting the lens hang from the safety cable.

6.1.3 Unscrew the lamp counter – clockwise and remove.

6.1.4 Install the new lamp by screwing the lamp clockwise.

6.1.5 Reinstall the lens, making sure it is seated properly on the base.

6.1.6 Reclasp the two (2) latches.

6.2 CONTROLLER

No scheduled maintenance is required. Perform on an as needed basis only.

6.3 PHOTOCELL

The photocell is a sealed unit. No maintenance is needed or required, other than replacement as needed.

THEORY OF OPERATION

7.0 POWER SUPPLY

230V AC enters the controller from the service breaker panel. Line sits at the 6390-FAA photocell waiting to be switched. When the 6390-FAA photocell is activated, line (SSR) energizes the rest of the controller. This can also be accomplished by using the photocell by-pass switch (SW1).

7.1 1st OBSTRUCTION LIGHTS – OL2

Line (SSR) is sent to Module M1, then to the breaker S1, and then on to the lamps. If the one (1) lamp from the OL2 extinguishes, then the transfer to the second OL2 will occur on that particular circuit as will a change in state on the alarm contacts.

AA0XFRM2OL2230V CONTROLLER**8.0 MAJOR COMPONENTS PARTS LIST**

QUANTITY	PART NUMBER	DESCRIPTION
1	6390-FAA	120 – 230V PHOTOCELL
1	CM-250	SIDELIGHT BURNOUT CURRENT SENSOR
1	VJ1008HWPL1X004	ENCLOSURE
7	8WA1204	TERMINAL BLOCK (TB1), (TB2)
2	S261D2	2 amp BREAKER
2	8W1808	END SECTION
1	SSPIGTAIL	20' PHOTOCELL SOCKET PIGTAIL
2	MOV1V250	METAL OXIDE VARITOR

AA0XFRM2OL2230V CONTROLLER**9.0 RECOMMENDED SPARE PARTS LIST**

QUANTITY	PART NUMBER	DESCRIPTION
1	6390-FAA	120 – 240V PHOTOCELL
1	CM-250	SIDELIGHT BURNOUT CURRENT SENSOR
1	S261D2	2 amp BREAKER

TWR Lighting, Inc.

Enlightened Technology®



AA0XFRM2OL2230V CONTROLLER

RETURN MATERIAL AUTHORIZATION (RMA) FORM

RMA#: _____ **DATE:** _____

CUSTOMER: _____

CONTACT: _____ **PHONE NO.:** _____

ITEM DESCRIPTION (PART NO.): _____

MODEL NO.: _____ **SERIAL NO.:** _____

ORIGINAL TWR INVOICE NO.: _____ **DATED:** _____

DESCRIPTION OF PROBLEM: _____

SIGNED _____ **DATE NEEDED** _____

RETURN ADDRESS: _____

PLEASE RETURN PRODUCT TO: 4300 WINDFERN RD #100 HOUSTON TX 77041-8943

TWR Lighting, Inc.

Enlightened Technology®



AA0XFRM2OL2230V CONTROLLER

RETURN MATERIAL AUTHORIZATION (RMA) FORM

RMA#: _____ **DATE:** _____

CUSTOMER: _____

CONTACT: _____ **PHONE NO.:** _____

ITEM DESCRIPTION (PART NO.): _____

MODEL NO.: _____ **SERIAL NO.:** _____

ORIGINAL TWR INVOICE NO.: _____ **DATED:** _____

DESCRIPTION OF PROBLEM: _____

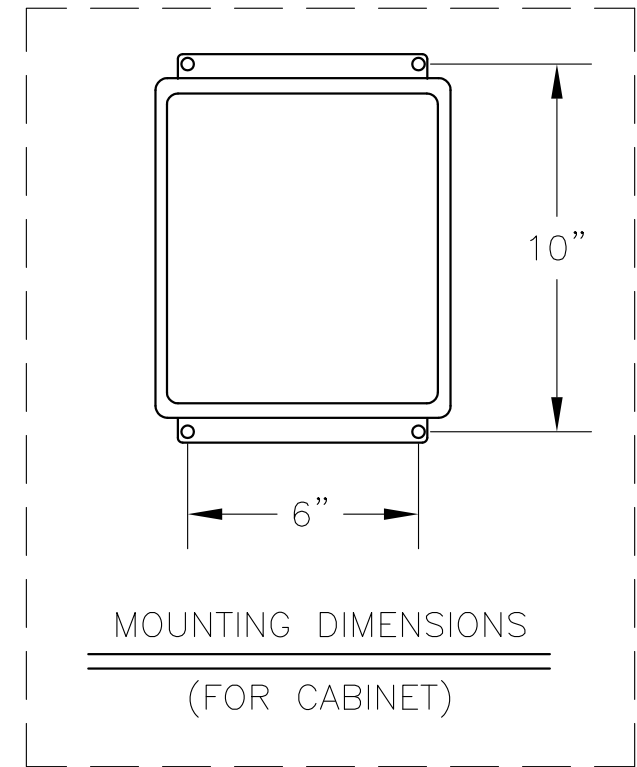
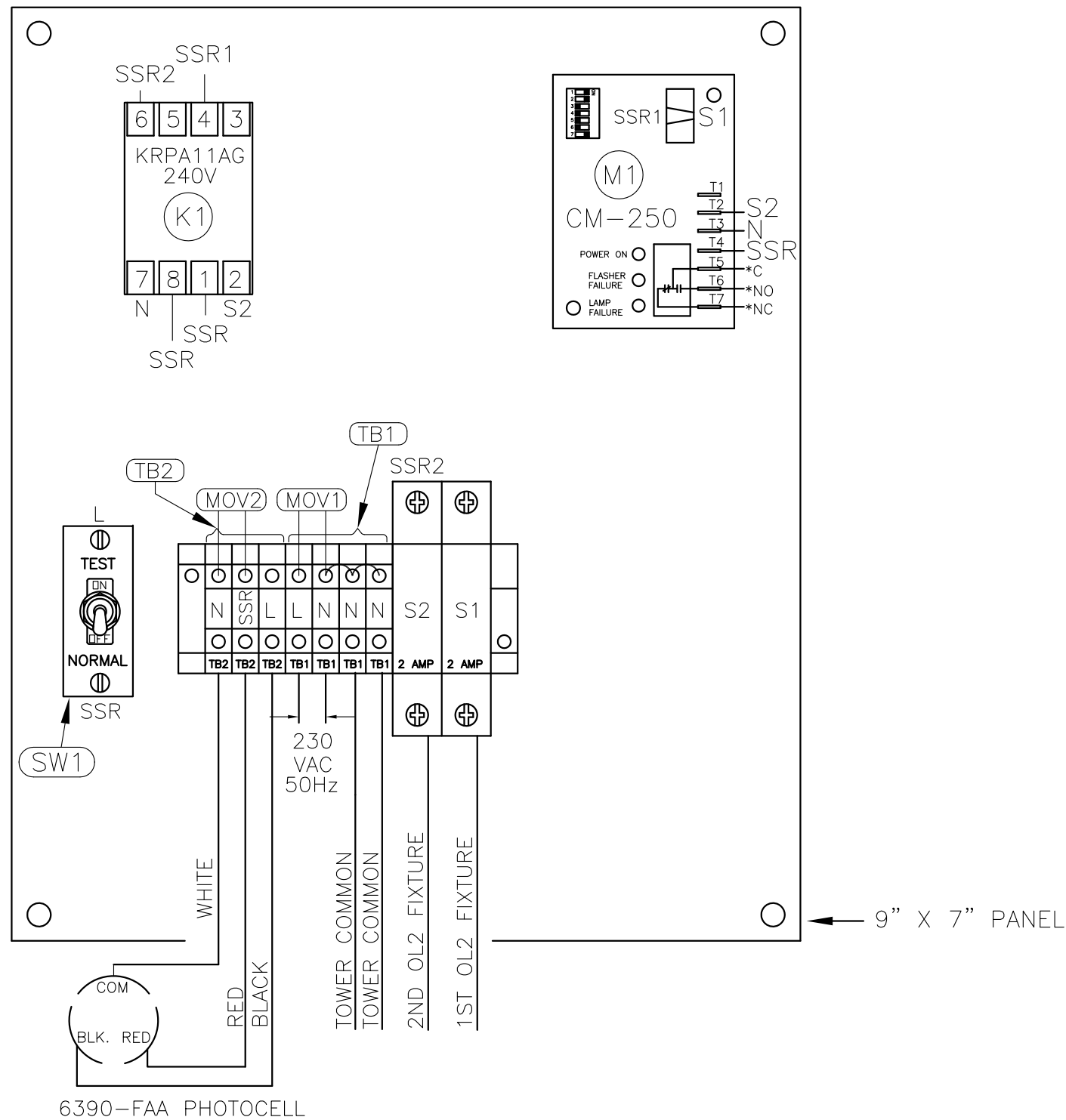
SIGNED _____ **DATE NEEDED** _____

RETURN ADDRESS: _____

PLEASE RETURN PRODUCT TO: 4300 WINDFERN RD #100 HOUSTON TX 77041-8943

*CUSTOMER ALARM POINTS

C = ALARM COMMON
 NC = NORMALLY CLOSE
 NO = NORMALLY OPEN



NOTES:

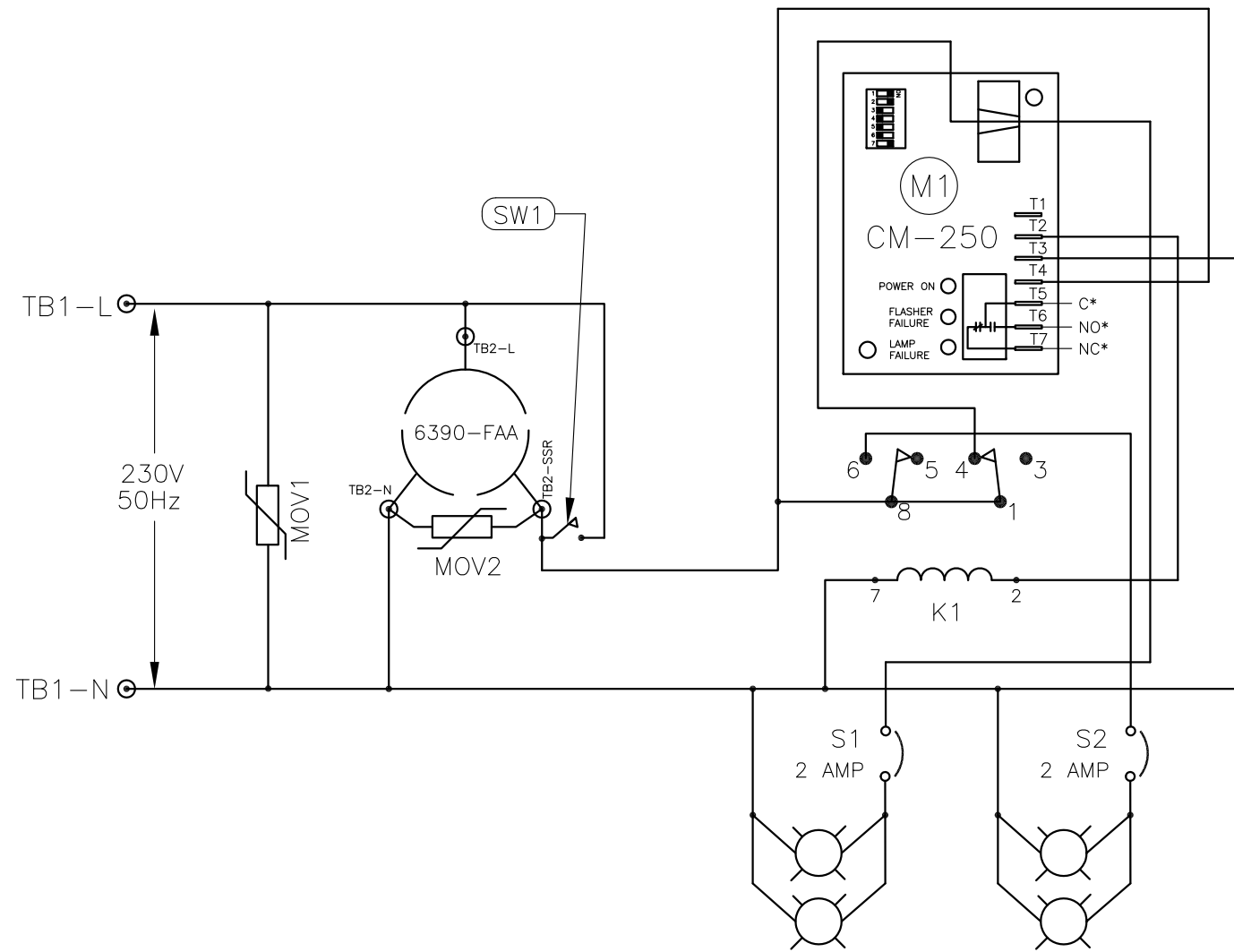
1. PLUG 6390-FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
2. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) S1 TO S1...

AAOXFRM2OL2230V CONTROLLER (CHASSIS LAYOUT)			
PROD DEPT	TWR Lighting, Inc. <i>Enlightened Technology</i> WORK		
SERV DEPT			
ENGINEER			
DRAWN BY E.A.SALAZAR	SHEET SIZE B	SHEET QTY. 1 OF 1	1
DATE 08/07/06	SCALE N.T.S.	DWG. NO.	1233-R
<small>The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43. NOTICE: The drawings and photographic images contained herein are the sole property of TWR Lighting, Inc. All information contained herein that is not generally known shall be considered confidential except to the extent the information has been previously established. The drawings and photographic images contained herein may not be reproduced, copied or used as the basis for manufacture or sale or promotion or any other purpose without the expressed written permission of TWR Lighting, Inc.</small>			

10/23/12	(A)	PHOTOCELL & M1
DATE:	LTR.	REVISION

*CUSTOMER ALARM POINTS

C = ALARM COMMON
 NC = NORMALLY CLOSE
 NO = NORMALLY OPEN



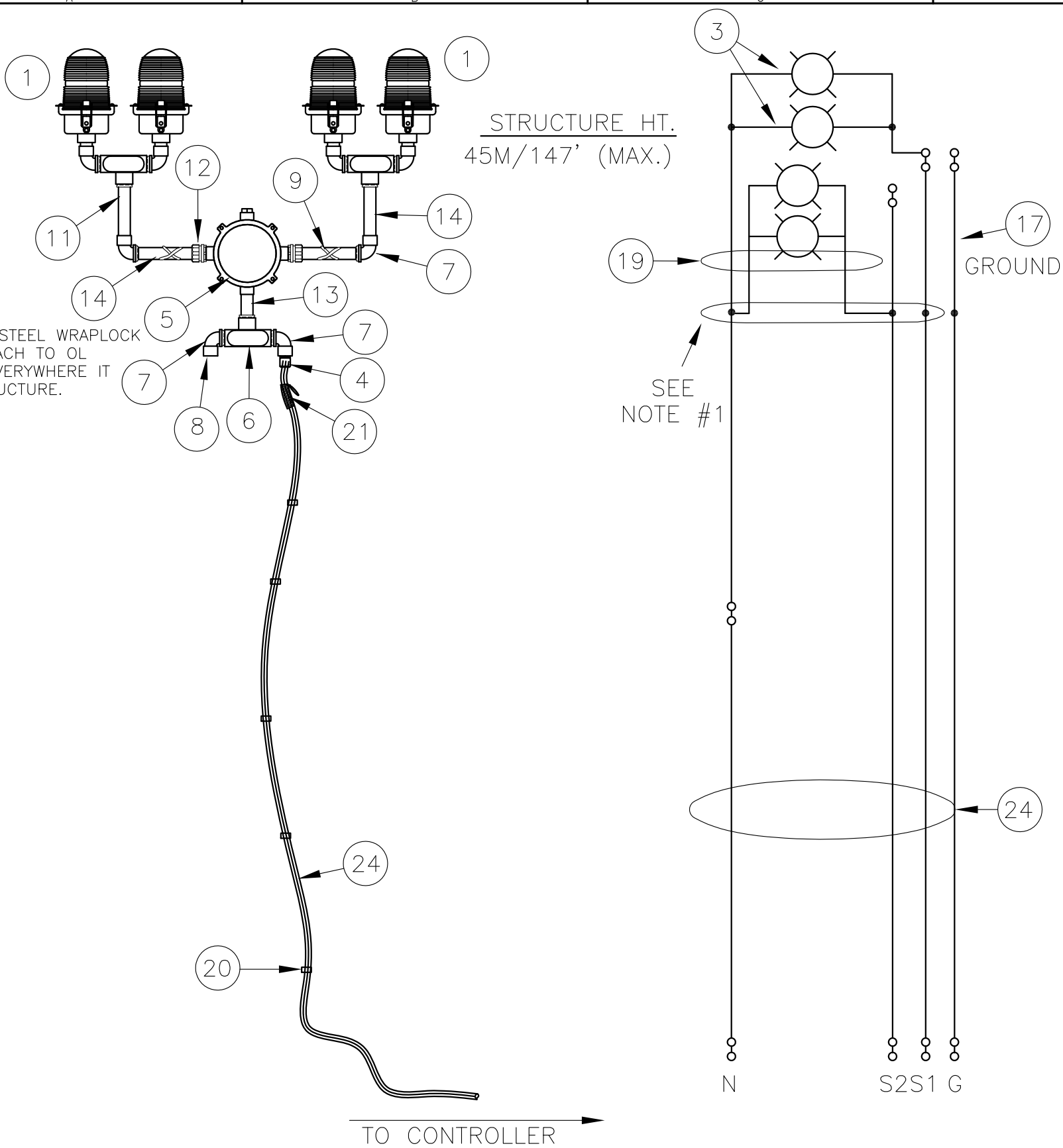
230V AC 116 WATT SIDELIGHT LAMPS

AAOXFRM20L2230V CONTROLLER
 (SCHEMATIC LAYOUT)

PROD DEPT	TWR Lighting, Inc. Enlightened Technology [®] WORK		
SERV DEPT			
ENGINEER			
DRAWN BY E.A.SALAZAR	SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 08/07/06	SCALE N.T.S.	DWG. NO. 1233-S	

10/23/12	(A)	PHOTOCELL & M1
DATE:	LTR.	REVISION

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BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	2	OL2	DOUBLE OBSTRUCTION LIGHT
2	--	--	---
3	4	116A21TS230V	116 WATT 230 VOLT LAMP
4	1	CGB295SA	3/4" CORD CONNECTOR 0.5-0.625
5	1	JB5	3/4" JUNCTION BOX
6	1	T27CG	3/4" CONDULET W/COVER AND GASKET
7	2	EL3490	3/4" 90° SHORT ELBOW
8	1	5012902	BREATHER
9	1	SS5012	WRAPLOCK 50'
* 10	1	PIPDOP	4 oz. PIPE DOPE
11	4	A314	3/4" CONDUIT LOCKNUTS
12	2	HC402	3/4" NO THREAD CONNECTOR
13	1	N34T3	3/4" x 3" NIPPLE
14	2	N34T12	3/4" X 12" NIPPLE
* 15	1	TAPEL1	BLACK ELECTRICAL TAPE
* 16	4	WIRENUTRED	RED WIRE NUT
17	2'	12THHNGRN	#12 THHN GREEN WIRE
18	--	--	---
19	2	OL2PIGTAIL	18" OL2 PIGTAIL
20	--	STCABLIE	CABLE TIES (TWR. HT. ÷ 5)
21	1	CABLEGRIP1	SINGLE EYE LACE MESH 0.5 - 0.62
* 22	1	AAO-230V	AAO 230V CONTROLLER
23	10'	CONDUIT34	3/4" CONDUIT (FOR OLS)
24	--	STCABLEOB	OBSTRUCTION LIGHT CABLE(TWR. HT.+30')

* = NOT SHOWN

- NOTES:**
- 1) USE TWR PART #WIRENUTRED AND TAPEL1 TO CONNECT STCABLEOB WIRE TO OL2PIGTAIL.
 - 2) PHOTOCELL AND PIGTAIL PROVIDED WITH CONTROLLER. PHOTOCELL IS TO BE MOUNTED OUTDOORS.
 - 3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
 - 4) STAINLESS STEEL WRAPLOCK TO BE ATTACH TO OL CONDUIT EVERYWHERE IT MEETS STRUCTURE.

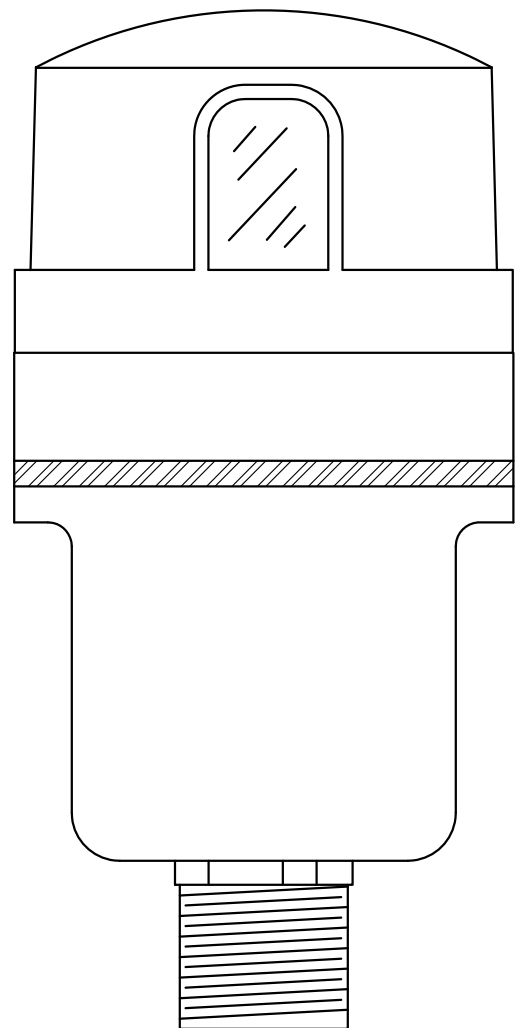
STRUCTURE HEIGHT 45M/147'

AAO LIGHTING KIT W/ TOP OL2 XFER

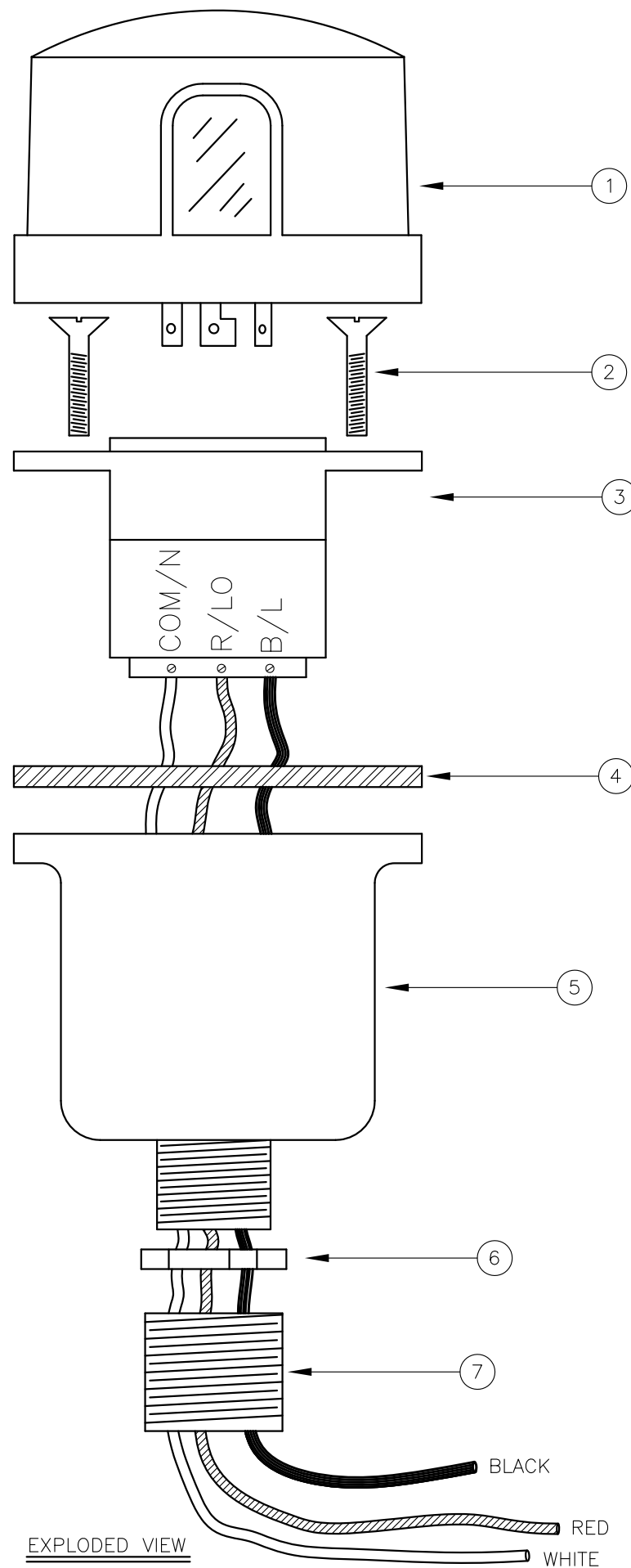
PROD DEPT	TWR Lighting, Inc. <i>Enlightened Technology®</i>	
SERV DEPT		
ENGINEER		
DRAWN BY E.A.SALAZAR	SHEET SIZE B	SHEET QTY. 1 OF 1
DATE 06/19/06	SCALE N.T.S.	DWG. NO. T1234

TOWER WIRING AND ASSEMBLY

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.
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ASSEMBLY



EXPLODED VIEW

ITEM	QTY.	DESCRIPTION
1	1	PHOTOCELL
2	2	6-32 x 1/2" SCREW
3	1	RECEPTACLE SOCKET
4	1	RECEPTACLE GASKET
5	1	RECEPTACLE HOUSING
6	1	1/2" CONDUIT LOCKNUT
7	1	3/4" TO 1/2" REDUCER

NOTES:

- ITEM #7 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.
- IF ADDITIONAL WIRE IS REQUIRED OVER THE FACTORY 20', USE THE FOLLOWING CHART.
 21' TO 300' - 16 AWG TFFN
 301' TO 500' - 14 AWG TFFN
- WIRE CONNECTIONS ARE TO BE TINNED AT ITEM 3.

PHOTOCELL HOUSING DETAIL

PROD DEPT	TWR Lighting, Inc. <i>Enlightened Technology®</i>				
SERV DEPT					
ENGINEER					
DRAWN BY	E.A.SALAZAR	SHEET SIZE	B	SHEET QTY.	1 OF 1
DATE	10/18/95	SCALE	N.T.S.	DWG. NO.	100239
<small>The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43. NOTICE: The drawings and photographic images contained herein are the sole property of TWR Lighting, Inc. All information contained herein that is not generally known shall be considered confidential except to the extent the information has been previously established. The drawings and photographic images contained herein may not be reproduced, copied or used as the basis for manufacture or sale or promotion or any other purpose without the expressed written permission of TWR Lighting, Inc.</small>					

11/17/10		CHG. LABELS
DATE:	LTR.	REVISION

TWR Lighting, Inc.®

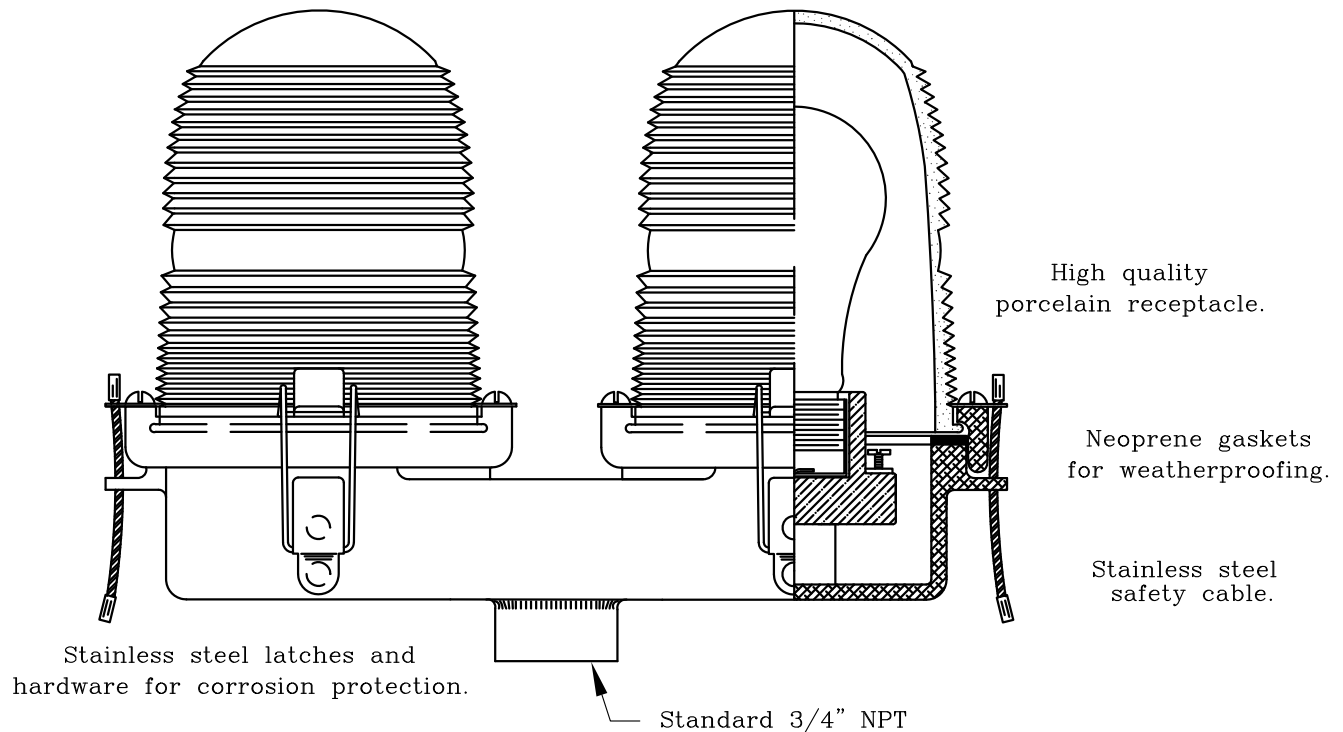
FAA Approved L-810 Double Obstruction Light OL2

FM10020RD.DWG

For use as an obstruction light on towers, buildings, etc. ETL approved to meet or exceed all FAA specifications as found in AC 150/5345-43 Type L-810.

When used with our AOXFR controller, when one bulb burns out, the unit automatically switches to backup bulb.

High temperature ultra pure
FAA approved aviation red, blue
yellow and clear lenses.

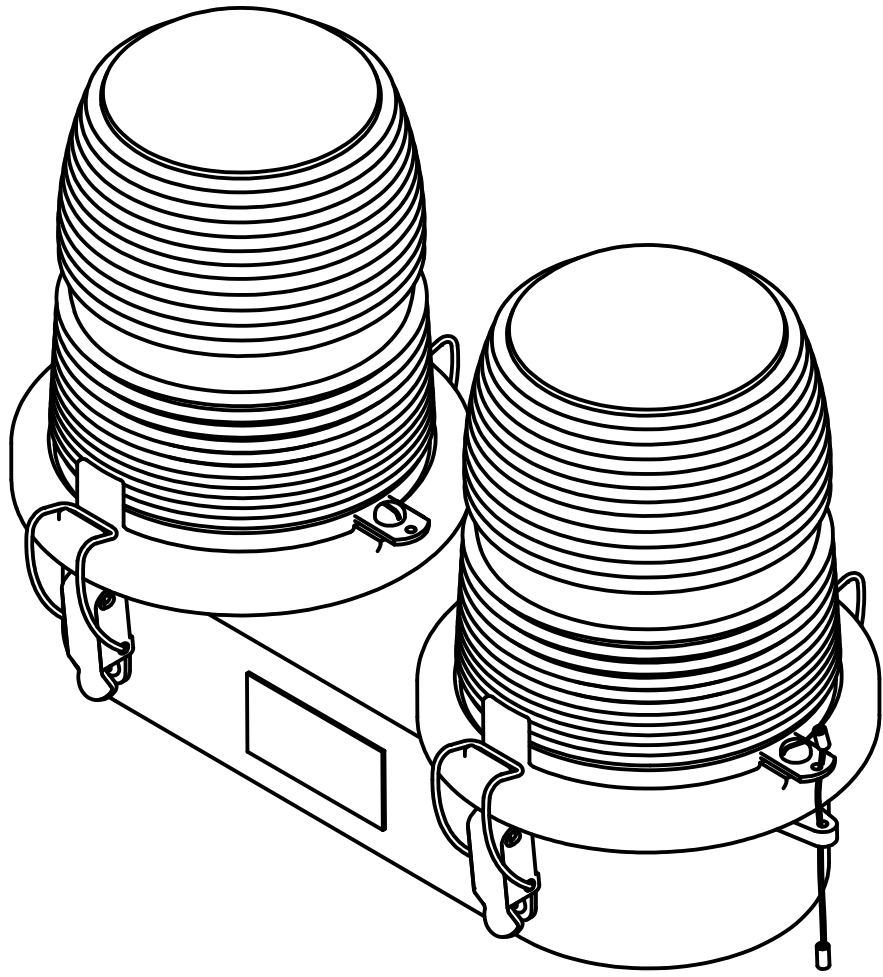


General Specifications

No special tools required for maintenance.

Height 7 inches (38.1 cm)
Weight 10 lbs. (4.5 kg)
Power 120 to 240V AC, 50 or 60Hz
Uses 116W, 120 or 240V bulbs
Bulbs sold separately

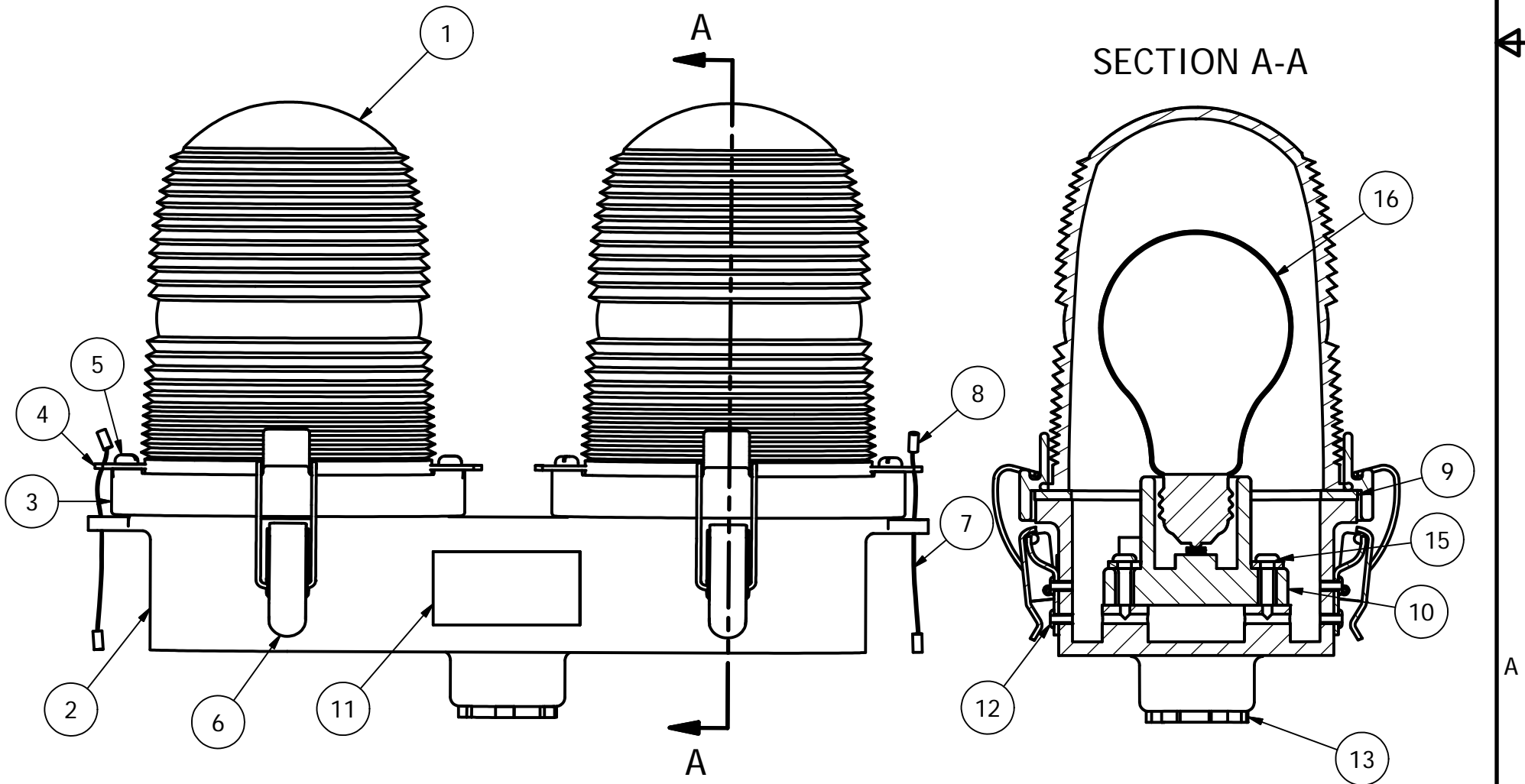
TWR Lighting, Inc.
4300 Windfern Rd. #100
Houston, Tx., 77041-8943
Phone: (713)973-6905
Fax: (713)973-9352
WEB SITE: <http://www.twrlighting.com>
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PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	AP35222	RED SIDELIGHT GLASS
2	1	OL2C	DOUBLE SIDELIGHT BODY
3	2	106C	LENS HOLDER RING
4	4	12V245	OL LENS CLIP
5	4	832X14PH	8-32 X 1/4 PH SS SLOT SCREW
6	4	HC255SS	SIDELIGHT LATCHES
7	2	7X7SS	1/16 HOL 7X7 S.S. WIRE
8	4	A1A	STAKON CRIMP
9	2	OLG	OL GASKET
10	2	TWR19062	SIDELIGHT RECEPTACLE
11	1	100324	OL2 SERIAL NUMBER LABEL
12	8	18PRSS	1/8 X .40 SS POP RIVET
13	1	A314	3/4" CONDUIT LOCKNUT GALV.
*	4	104G	WHITE TEFLON WASHER
15	4	832X34PH	8-32 X 3/4" S.S. PH SLOT
~	2	116A21TS	116W-120V LAMP (TYP.)

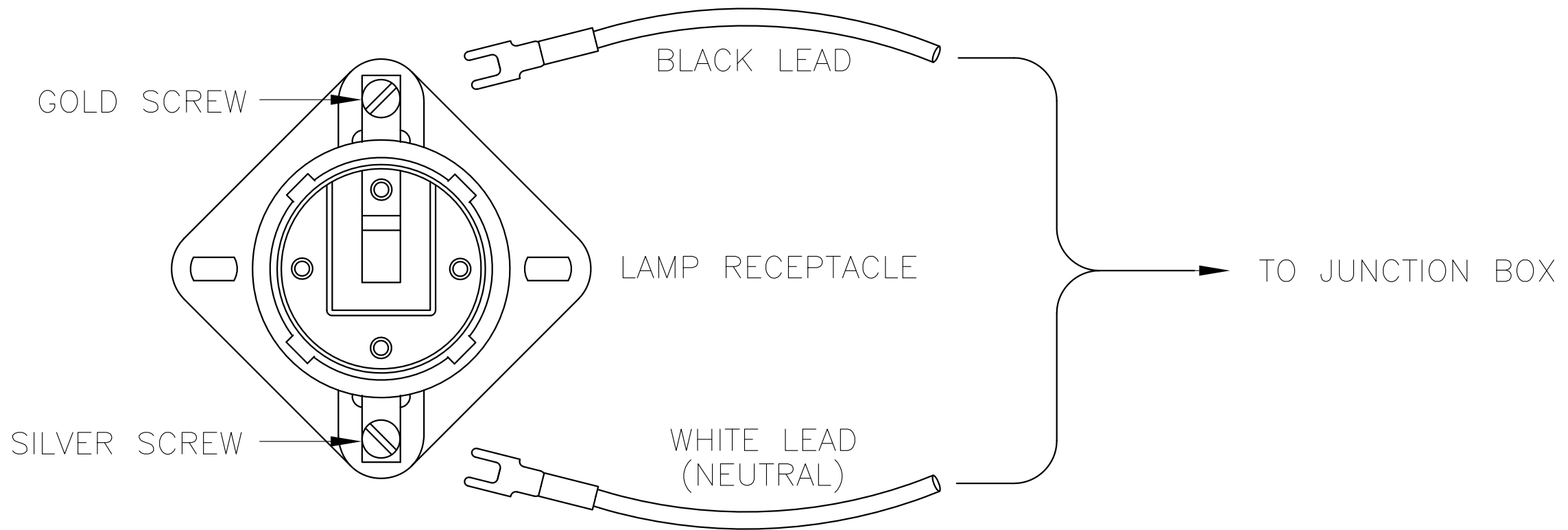
* = PART NOT SHOWN
 ~ = PART SOLD SEPARATELY

NOTE:
 1. FAA APPROVED LIGHT USES THE 116A21TS LAMP.
 OTHER LAMPS ARE AVAILABLE TO MEET YOUR APPLICATION.



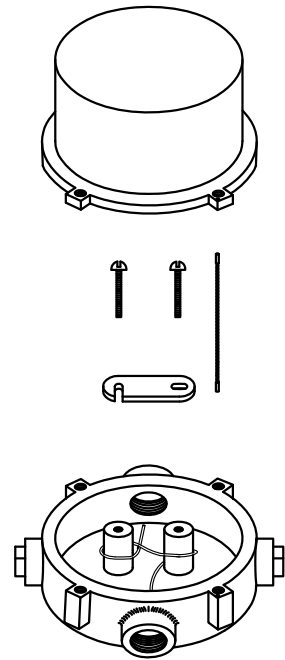
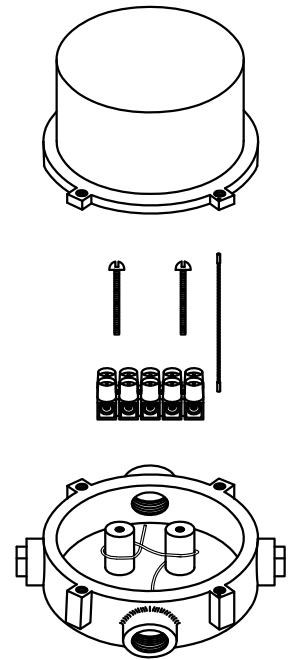
DRAWN	vhernandez	2/13/2012
CHECKED		
QA		
MFG		
APPROVED		

TWR Lighting, Inc. <i>Enlightened Technology</i>			
TITLE			
3/4" OL2 SIDELIGHT ASSEMBLY DETAIL (PART#OL2)			
SIZE	DWG NO	REV	
B	310	B	
SCALE	SHEET 1 OF 1		
2/3			

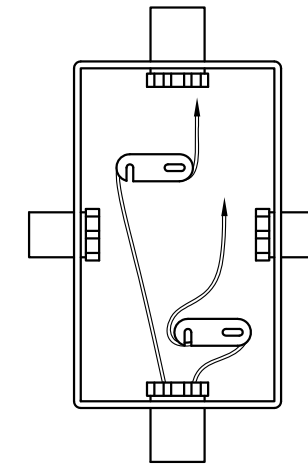
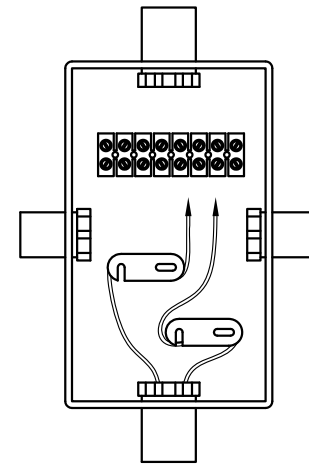


SIDELIGHT RECEPTACLE WIRING			
PROD DEPT	TWR Lighting, Inc. <i>Enlightened Technology®</i>		
SERV DEPT			
ENGINEER			
DRAWN BY G.D. SEBEK	SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 06/08/91	SCALE N.T.S.	DWG. NO. 274-S	
<small>The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.</small>			
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7/2/98	(A)	CHANGED LABEL
DATE:	LTR.	REVISION



JB-5 AND JB-0
3/4" JUNCTION BOX



JB-8 AND JB-8SR
1" JUNCTION BOX

NOTES:

- 1) DRAWING ILLUSTRATES METHOD OF STRAIN RELIEVING WIRE. USE THIS METHOD ON ALL JUNCTION BOXES.
- 2) THE NATIONAL ELECTRICAL CODE-ARTICLE 300-19-B3 REQUIRES CONDUCTORS IN A VERTICAL CONDUIT BE SUPPORTED TO RELIEVE STRAIN ON TERMINAL BLOCK CONNECTIONS.
- 3) SKETCH ILLUSTRATES METHOD OF STRAIN RELIEVING A SINGLE CONDUCTOR. SEVERAL CONDUCTORS MAY BE GROUPED TOGETHER.
- 4) CONDUCTORS MAY BE MIXED BUT SHOULD NOT TAKE UP MORE THAN 40% OF CONDUIT'S INSIDE AREA.

USING THIS JUNCTION BOX METHOD SPACING IS 100 FEET MAXIMUM.

AWG WIRE SIZE	MAX. NUMBER WIRES IN 3/4" CONDUIT	MAX. NUMBER WIRES IN 1" CONDUIT	WIRE AREA SQ. INCHES	WEIGHT PER 100 FEET
12 THHN	16	26	0.0117	2.50
10 THHN	10	17	0.0184	4.10
8 THHN	6	9	0.0373	6.70
6 THHN	4	7	0.0519	10.30
4 THHN	2	4	0.0845	16.20

JUNCTION AND STRAIN RELIEF BOXES

PROD DEPT	TWR Lighting, Inc. <i>Enlightened Technology®</i>	
SERV DEPT		
ENGINEER		
DRAWN BY G.D. SEBEK	SHEET SIZE B	SHEET QTY. 1 OF 1
DATE 07/26/93	SCALE N.T.S.	DWG. NO. 100089

9/29/00	(A)	UPDATED NOTES
DATE:	LTR.	REVISION

The use of non-TWR parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.
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