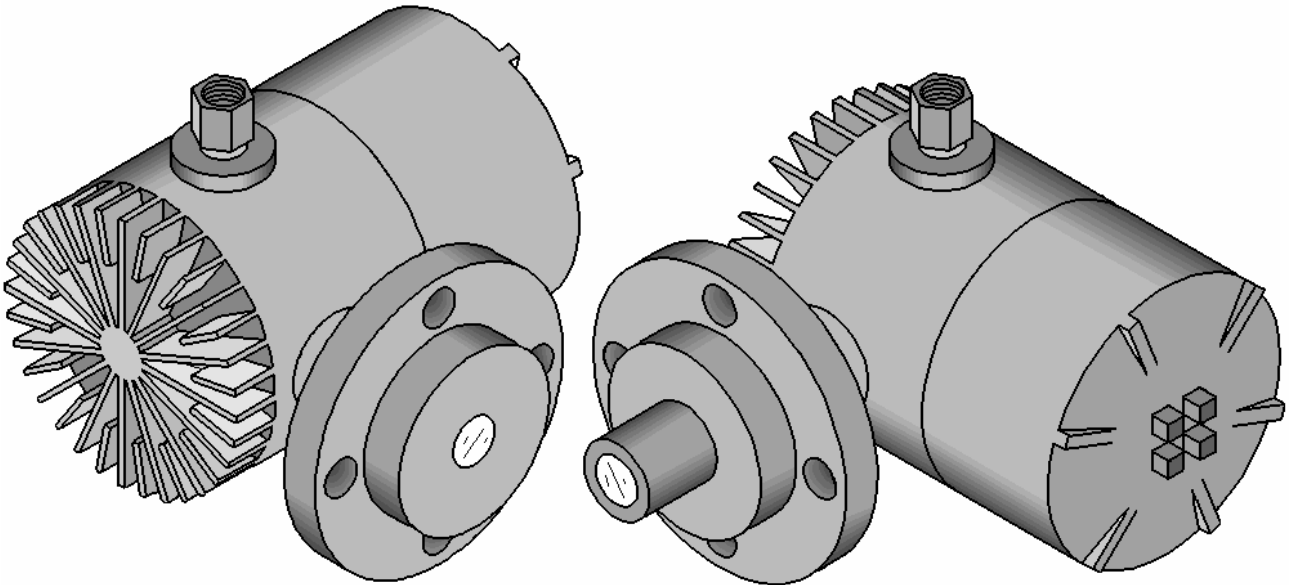


# J.M. CANTY MANUAL

## HYL80 Toroidal Explosionproof/Flameproof/Weatherproof Process Lights



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FOR GERMAN LANGUAGE MANUAL, SEE 96A6574

## 1. Description

Models covered by this manual: HYL80-1T-\* / HYL80-1X-\* / HYL80-1SRDO-\* / HYL80-1PR-\*.

The JM Canty explosionproof/flameproof/weatherproof light is a high output halogen process light designed for use in :

- NEMA 4 and IP66 rated environments.
- FM & CSA Approved Explosionproof, Class I, Div. 1, Groups B, C and D, Class II, Div 1, Groups E, F & G, NEMA 3R areas. CSA File No. LR82987, FM File No. 2Z2A0.AE
- Flameproof EEx d IIC T6 with maximum ambient temp 30° C, EEx d IIC T5 with maximum ambient temperature 40° C. SCS File No. Ex93C1095X
- Potentially Explosive Atmospheres Directive 94/9/EC, ATEX SCS File No. 00C1179X

The toroidal light source features a high efficiency transformer. This transformer is designed to accept a 120 or 240 V AC single phase power source. A high output halogen bulb and reflector assembly focuses the light into a Canty fused glass fiber optic light pipe assembly provided in a flanged, NPT, Tri-Clamp sanitary connection, flexible fiber optic bundle or custom light pipe assembly. An infrared filter is standard on every light source to filter unwanted heat from the light, delivering only cool, effective light into the process. Dual thermal cut-outs are provided to prevent the light source from over-heating if the housing temperature becomes too high, where they will open-circuit the power to the light. Once the light sufficiently cools, these thermal cut-outs will then automatically close-circuit, resuming normal operation.

All toroidal light systems (except when combined with a camera system) feature an integral 5 min. - 3 hr. timer to allow the user to select the length of the illumination period. Once the light is energized, the light will remain "ON" for the illumination period selected. The length of the illumination period is user selectable. The light will automatically turn itself "OFF" after this period, thus maximizing bulb life. To turn the light "ON" again, you must reset the timer by momentarily turning the power supply switch to the "OFF" position, then back to the "ON" position.

## 2. Unpacking

Inspect the shipping carton(s) immediately upon receipt for evidence of mishandling or damage during transit. Depending upon the condition of the shipping carton proceed as follows:

### *NO APPARENT DAMAGE*

If there is no apparent damage to your carton(s):

- Carefully unpack all cartons while examining for any damages that may not have been initially noted.
- Examine each item for possible damage. Examine all glass surfaces for gouges, cracks or chips. Note that small scratches do not necessarily degrade lighting quality. Examine any threads that may be present for burrs or nicks. Check the entire shipment for evidence of damage.

### *VISIBLE DAMAGE*

- If any containers show signs of damage from shipping, please open the carton(s) in the presence of a representative from the shipping company. If this is not possible, please contact a representative from the shipping company immediately and arrange for an on-site insurance claim inspection. **Do not attempt to repair or install damaged equipment.**
- Arrange through the shipping company to have the equipment inspected for insurance purposes and decide to repair or replace the damaged equipment.
- Do not return any material to JM Canty without first obtaining an RMA number (return material authorization) from the factory. Please contact the appropriate plant. No equipment will be accepted without an RMA number.
- Repackage the damaged item(s) and place in it's original shipping material or a secure container, and ship freight prepaid to JM Canty Inc. (US) or JM Canty Ltd. (Ireland).

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### 3. Initial Testing

It is important to test your light prior to installation to verify the unit is fully operational. This will facilitate the timer adjustment process (if required) or troubleshooting process. Using the instructions from this manual, provide power to your light and verify it is fully operational. Refer to sections 6, 8 and 10 for additional information.

### 4. Fused Light Pipe Installation

If a Flexible Fiber Optic Bundle Lighting System was purchased, please reference section 4.1. If an NPT, Flanged or Tri-Clamp System was purchased, please proceed to section 4.2.

#### 4.1 MOUNTING THE LIGHT SOURCE TO THE LIGHT PIPE - FLEXIBLE BUNDLE SYSTEMS

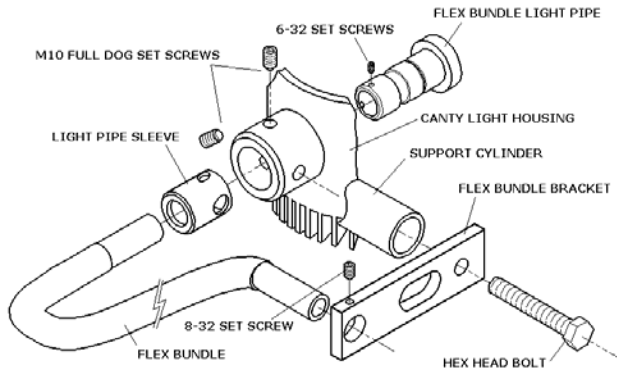


Fig. 4.1a Light Pipe Installation - Flexible Bundle Systems Over 24"

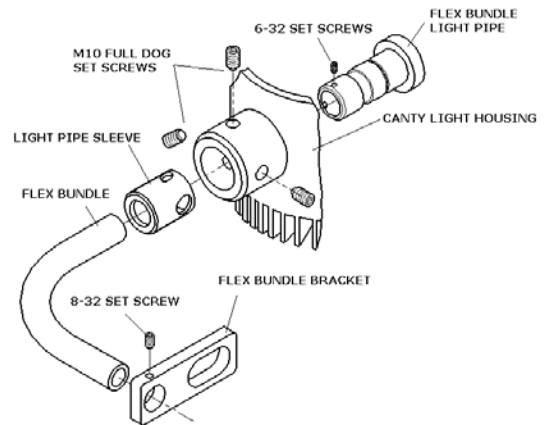


Fig 4.1b Light Pipe Installation – 12" Flex Lights

□ Insert a feeler gauge from the outside of the light source around the light pipe (Fig. 4.1). The gap between the OD of the light pipe and the ID of the light source should be less than 0.0020 inches. If the gap is greater than 0.0020 inches, **do not use your light source!** The explosionproof/flameproof integrity cannot be maintained. Consult the factory immediately. If your light is rated for weatherproof environments only do not be concerned with the flame path gap. (Note: It may be easier to check the flame path with the o-ring temporarily removed. However, do not forget to reinstall the o-ring in order to maintain NEMA 4 and IP66 ratings.)

□ Insert the light pipe sleeve over the flex bundle light pipe. Rotate the light pipe sleeve until the two 6-32 set screws in the light pipe are visible. Loosen these two setscrews and insert the bundle into the light pipe until the end of the flexible bundle rests against the fused glass of the light pipe. Tighten the two 6-32 light pipe set screws until the flexible fiber optic bundle is held firmly in place.

□ Rotate the light pipe sleeve so that the hex head bolt will thread through Cauty light housing and into the largest hole in the light pipe sleeve as illustrated above.

□ Insert the two full dog set screws through the light housing and into the two smaller diameter holes in the light pipe sleeve. Tighten both full dog setscrews securely. **Verify that the setscrews tighten on the light pipe locking groove only!** Do not tighten on any other surface except this groove.

□ Insert the hex head bolt through the flex bundle bracket and support cylinder into the light housing, and tighten as illustrated above. *Note: bracket, cylinder and bolt are an optional mounting accessory package.*

□ Reference Fig. 5.6 a for mounting details.

#### 4.2 MOUNTING THE LIGHT SOURCE TO THE LIGHT PIPE - NPT, FLANGED OR TRI-CLAMP SYSTEMS (ILLUSTRATED WITH AN NPT LIGHT PIPE)

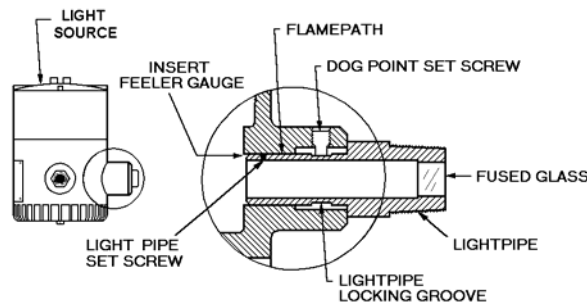


Fig. 4.2 - Light Pipe Installation - NPT, Flanged or Tri-Clamp Mounted Systems

- ❑ Inspect the light pipe for burrs or nicks. Ensure the light pipe set screw is below the outer surface of the light pipe.
- ❑ Insert the light pipe into the light source housing and remove the cover from the light source.
- ❑ Insert a feeler gauge from the inside of the light source around the light pipe as shown in the previous figure (Fig. 4.2). Referencing the flame path illustrated in dotted rectangular lines, the gap between the OD of the light pipe and the ID of the light source should be less than 0.0020 inches. If the gap is greater than 0.0020 inches, **do not use your light source!** The explosionproof/flameproof integrity cannot be maintained. Consult the factory immediately. If your light is rated for weatherproof environments only do not be concerned with the flame path gap. (Note: It may be easier to check the flamepath with the o-ring temporarily removed. However, do not forget to reinstall the o-ring, in order to maintain NEMA 4 and IP66 ratings).
- ❑ Tighten the three full dog set screws as shown. **Verify that the setscrews tighten on the light pipe locking groove only!** Do not tighten on any other surface except this groove. Reinstall the light source cover.

## 5. Installing the Toroidal Light onto the Vessel

### ANSI or DIN Flange Mounted Lights

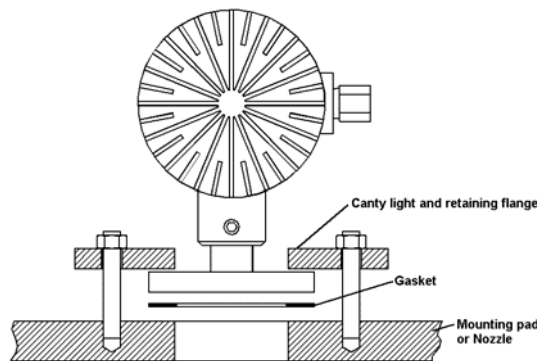
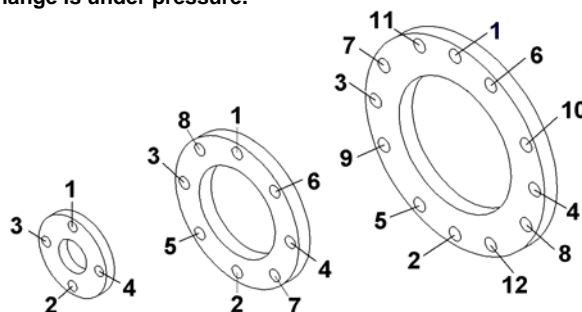


Fig 5.1 Flange Mounted Light Installation (shown without optional insertion)

- ❑ Visually inspect all glass surfaces, gaskets and studs. The weld pad or nozzle should not be painted or plated unless specified otherwise. All sealing surfaces must be clean and free of scratches or defects that may hinder sealing. All bolts should be lubricated and should easily thread in by hand. If the bolts catch or turn with difficulty, the holes should be cleaned with a tap. Bolts that do not thread easily will lead to false torque readings during installation.
- ❑ Place the gasket on the weld pad or nozzle so that it lies centered on the sealing surface. Place your spray ring and additional gasket (if purchased) on the mounting pad.
- ❑ Install the Canty flange mounted light and light pipe assembly onto the gasket. The light pipe should be labeled showing the wetted surface. Mount the flange with the side featuring the light pipe facing away from the vessel.
- ❑ Manually thread in all bolts until hand tight. Torque in the flange in increments of 40% of the final torque value or 60 in-lbs, whichever is less. See figure 5.2 for torque values and sequence.
- ❑ If the flange is used where the temperature exceeds 100 degrees Fahrenheit, check the bolt torque after operation. **Do not tighten the bolts while the flange is under pressure.**



#### Torque Sequence - Flanged Lights

#### Torque Specifications - Steel and Glass Wetted Flange Mounts

Size (in/mm)	1.5/40	2/50	3/80	4/100	6/150	8/200	10/250
Min [in-lbs] (N-m)	200 (22.6)	300 (33.9)	300 (33.9)	300 (33.9)	350 (39.6)	800 (90.4)	1000 (113.0)
Max [in-lbs] (N-m)	250 (28.3)	400 (45.2)	400 (45.2)	400 (45.2)	450 (50.9)	900 (101.7)	1200 (135.6)

Fig. 5.2 Torque Sequence And Specifications - Flanged Lighting Systems

## Glass Wetted Flange Mounted Lights

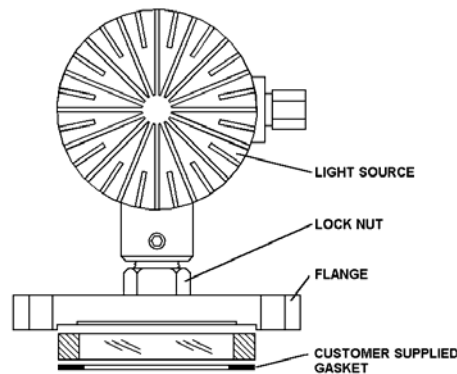


Fig 5.3 Glass Wetted Flange Mounted Light Installation

- ❑ Visually inspect all glass surfaces, gaskets and studs. All sealing surfaces must be clean and free of scratches or defects that may hinder sealing. All bolts should be lubricated and should easily thread in by hand. If the bolts catch or turn with difficulty, the holes should be cleaned with a tap. Bolts that do not thread easily will lead to false torque readings during installation.
- ❑ Place the gasket on the weld pad or nozzle so that it lies centered on the sealing surface. Place your spray ring and additional gasket (if purchased) on the mounting pad.
- ❑ Install the Cauty fuseview sightglass onto the weld pad or nozzle. The flush side of the fuseview should face the mounting pad (ref Fig 5.3 above). Install the Cauty light/light pipe assembly onto the fuseview.
- ❑ Manually thread in all bolts until hand tight. Torque in the flange in increments of 40% of the final torque value or 60 in-lbs, whichever is less. See figure 5.2 for torque values and sequence. If the flange is used where the temperature exceeds 100 degrees Fahrenheit, check the bolt torque after operation. **Do not tighten the bolts while the flange is under pressure.**

## NPT Mounted Lights

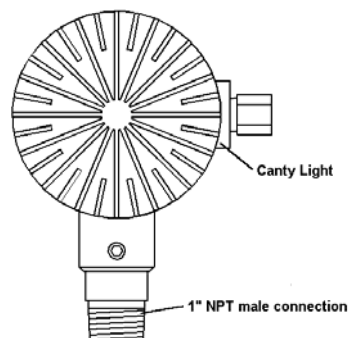


Fig. 5.4 NPT Mounted Light Installation (shown without optional insertion)

- ❑ Inspect all threads to ensure that they are free of nicks and burrs. Use Teflon tape or the appropriate pipe dope on the threads to ensure proper sealing.
- ❑ Thread the Cauty light with male NPT light pipe into your female NPT coupling until hand tight. Using the flat section of the light pipe, tighten the light pipe with the proper size wrench. **Do not over tighten!** A torque of 600 in-lbs is usually adequate for proper sealing. If available, please tighten to the appropriate specifications of your vessel.

## Tri-Clamp Mounted Lights

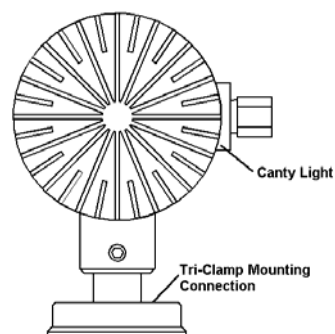


Fig. 5.5 Tri-Clamp Mounted Light Installation (shown without optional insertion)

- ❑ Thoroughly inspect the sanitary Tri-Clamp before installing. All surfaces must be clean and free from scratches or defects.
- ❑ Customer specifications are to be used for selecting all hardware, including gaskets and mating Tri-Clamp assembly. The Tri-Clamp must be tightened until it meets the customer's approval.

### Flexible Bundle Mounted Light

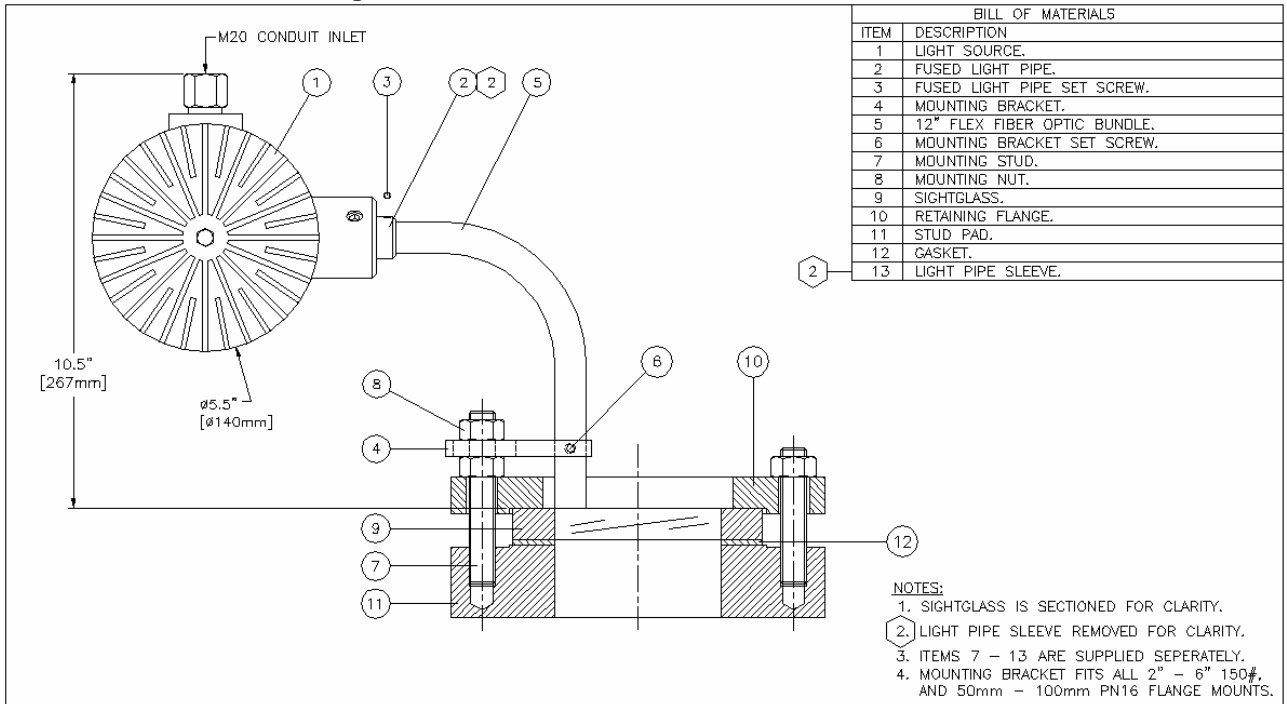


Fig 5.6a 12" Solid Bundle Mounting Illustration - Sightglass Mounting

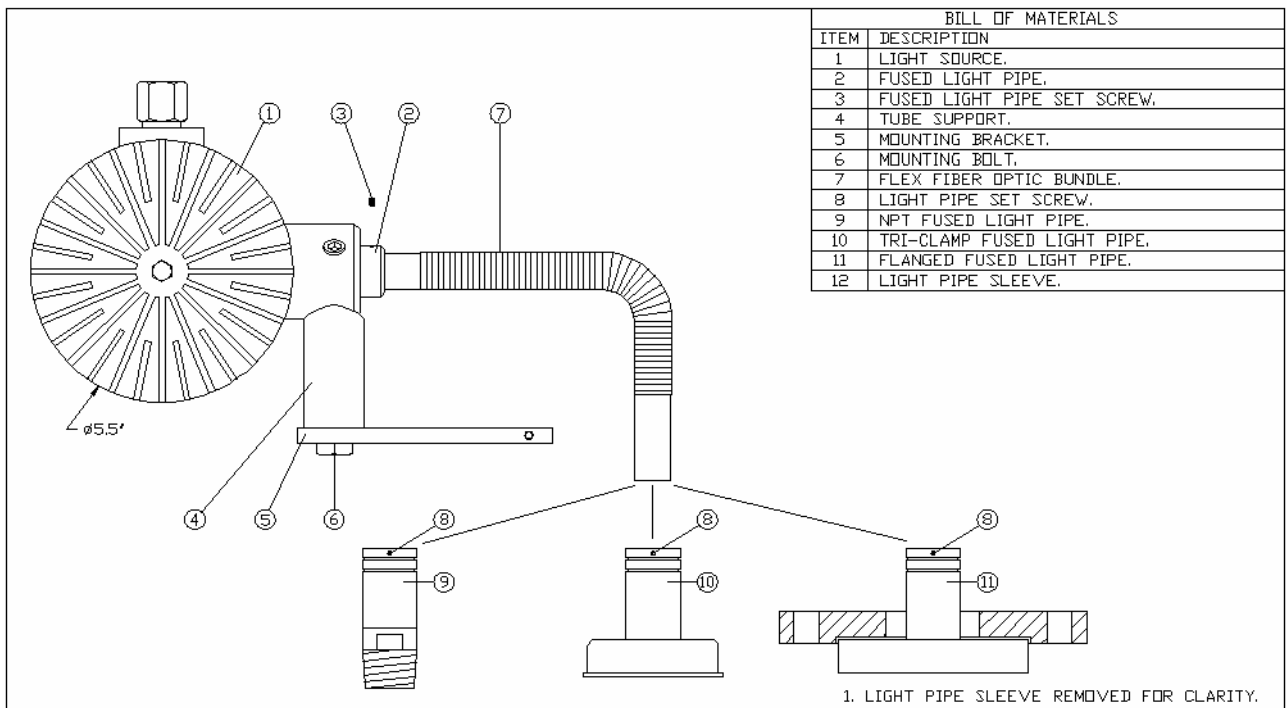


Fig. 5.6b Flexible Bundle Mounting Illustration - NPT, Tri-Clamp or Flange Connections

## Bend Radius

Please reference the figure below for the minimum bend radius of your flexible fiber optic bundle. Do not exceed the bend radius specifications or irreparable damage may occur to the bundle. Do not exceed 90 degrees on any bend.

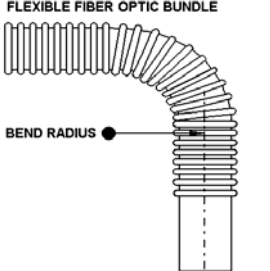
OVERALL BUNDLE LENGTH	MINIMUM BEND RADIUS	
12"	N/A	
24" AND LARGER	2.5"	

Fig. 5.6c Minimum Bend Radius Specifications

## Cooling Fin Orientation

It is very important to properly orient your light source so that the cooling fins are mounted correctly. Reference figure 5.7 below for details. The plane of the cooling fins must be mounted in a vertical manner for ideal cooling. If this is not possible due to the geometry of the vessel, please rotate the fins so that they face slightly upwards. Do not allow the fins to face down.

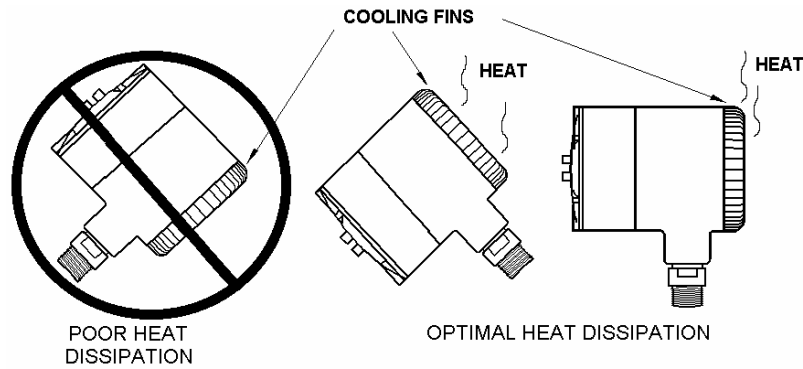


Fig. 5.7 Cooling Fin Orientation

## External Earth Connection

All lights required to meet CENELEC standards must use an external earth connection. Please use the external earth connection as required by your application.

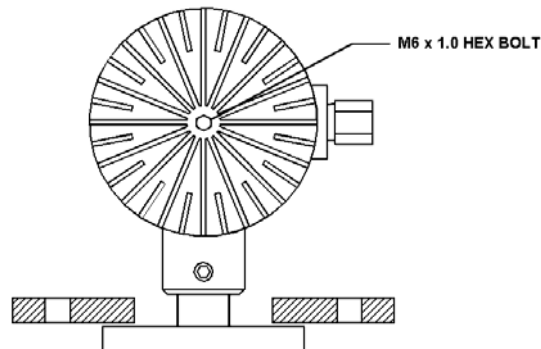


Fig. 5.8 External Earth Connection

## 6. Electrical Connections

### A) HYL 80-1X-EXP-\* models

If an explosionproof light and switch has been purchased, please reference figure 6.1 below for wiring details.

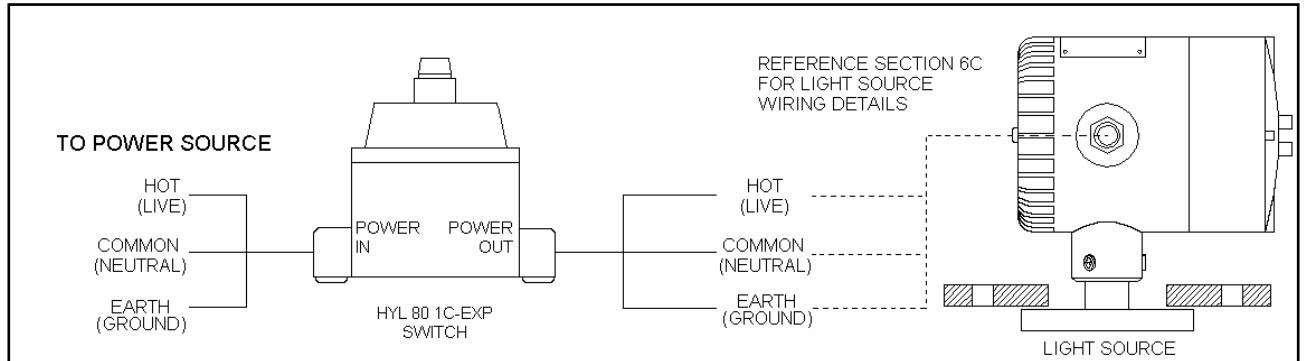


Fig. 6.1 HYL 80-1X-EXP-\* Wiring

### B) HYL 80-1SRDO -\* models

If you have purchased a cabinet mounted power supply please reference the following diagram.

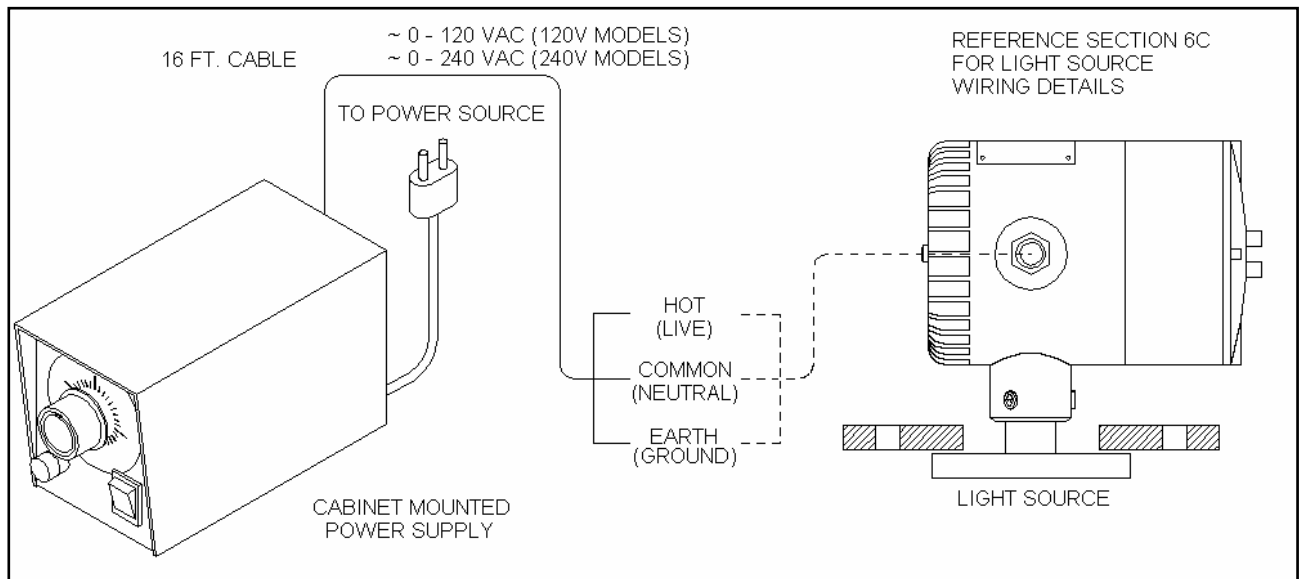


Fig. 6.2 - HYL 80-1SRDO-\* Wiring



C) HYL 80-1T-\* models, Light Source Wiring Schematic

Please reference the figure below for light source wiring details. Please note that flameproof, explosionproof models require a conduit seal within 50mm of the enclosure or a suitable certified flameproof cable gland to meet applicable regulations. Weatherproof models require an appropriate cord grip or cable gland to meet NEMA 4 or IP66 requirements.

**Warning: Refer to the product label for additional requirements.**

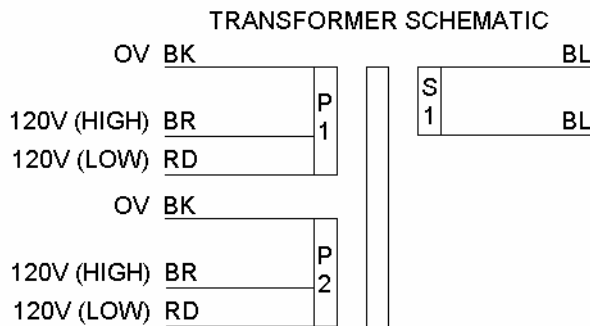
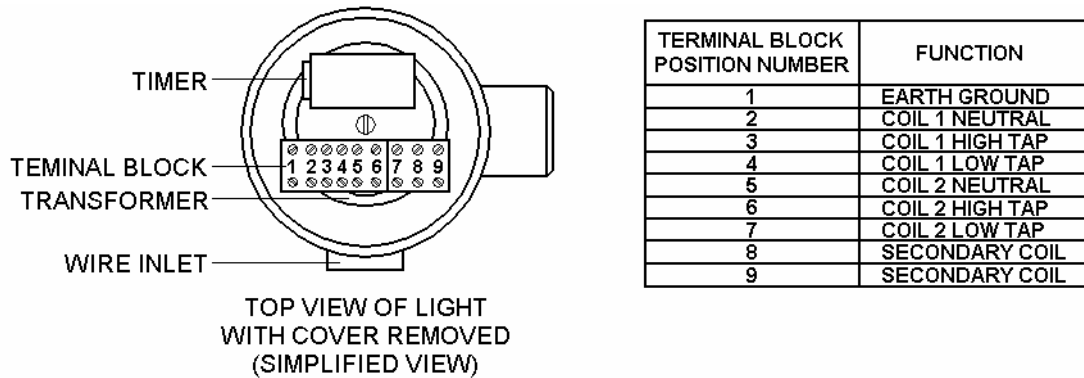


Fig. 6.3 Toroidal Light Source Wiring Diagram

**For 120 V AC Models:**

Terminal Block Position Number	Connection
1	Earth Ground
2	120V AC Common / Neutral
3	120 V AC Hot / Live (for High Light Output)
4	120 V AC Hot / Live (for Low Light Output)

**Do not apply power to terminal block position numbers 3 and 4 simultaneously or damage will occur to the transformer.**

**For 240 V AC Models:**

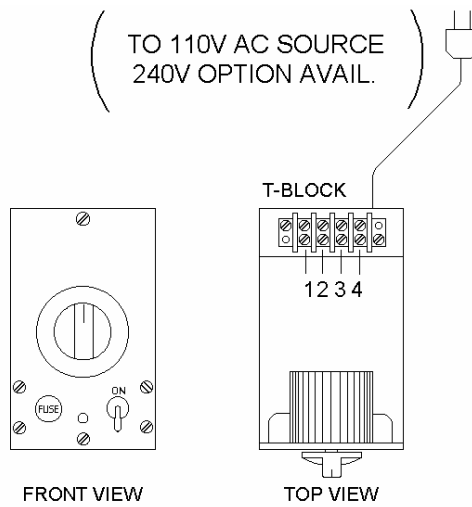
Terminal Block Position Number	Connection
1	Earth Ground
2	240 V AC Neutral
6	240 V AC Live (for High Light Output)
7	240 V AC Live (for Low Light Output)

Note: Terminal block positions 3 and 5 must be connected together for 240V input.

**Do not apply power to terminal block position numbers 6 and 7 simultaneously or damage will occur to the transformer.**

### D. HYL 80-1PR-\* Models

If you have purchased an HYL 80-1PR-\* model light, a panel mounted remote dimmer has been provided. Please reference the figure below for wiring details.



### PANEL MOUNTED DIMMER

DIMMER T-BLOCK POSITION	FUNCTION
1	NC
2	110V AC OUT (COMMON)
3	110V AC OUT (VARIABLE)
4	GND

Fig. 6.4 HYL 80-1PR-\* Wiring

### E. HYL 80-1X-WP-\* Models

If a weather proof / IP light with switch has been purchased, the power supply is provided with an OFF/ LOW / HIGH switch in a fiberglass enclosure as shown below. The output of the switch features a 3 conductor, 16' pigtailed connection. BK = 120V AC (Hot), WH = 120V AC (Com), GR = Ground. Connect pigtailed leads to terminal block in light source. Reference figure 6.3 for light source connections.



Fig. 6.5 HYL 80-1X-WP-\* Wiring

## 7. Operation

To operate the CANTY toroidal light, turn the power supply "ON". The light will turn on and remain on until the internal timer disconnects power from the circuit (if available). To reset the timer, merely turn the switch to the "OFF" position. Once the switch is turned "ON" again, the light will turn on until it is timed off.

If a dimmer option is purchased, rotate the control knob clockwise to increase the light output intensity. Rotate the control knob counterclockwise to decrease the light output intensity.

**Warning: Do not open in flammable atmosphere even if isolated!  
Disconnect power before servicing.**

## 8. Timer Adjustment

The timer is located inside the light source. It is factory preset for approximately 5 minutes. It is strongly suggested that the timer be set for a period equal to or less than 5 minutes in order to provide an optimum illumination period. However, if a timer adjustment is required please use the following steps.

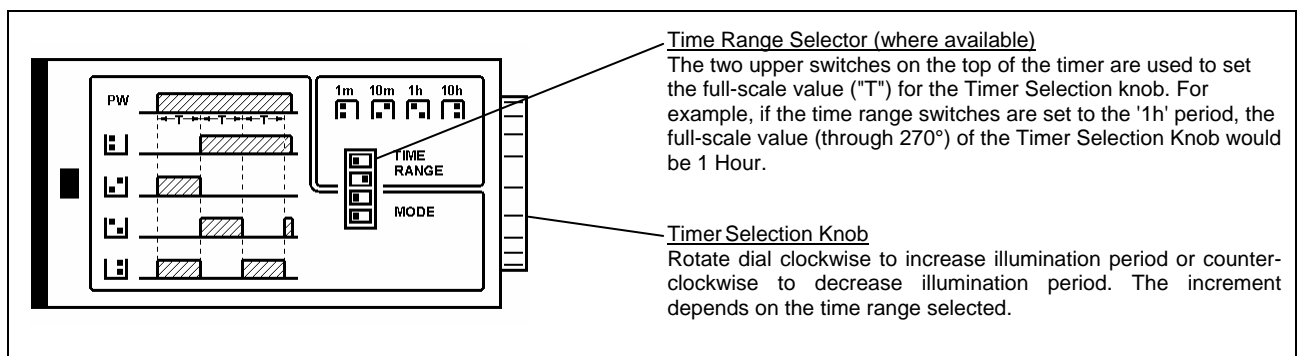


Fig. 8 - Timer Adjustment

- Turn the power supply to the "OFF" position, disconnect all power and allow the light to cool.
- Remove the light source cover and locate the timer. It will be directly on top of the toroidal shaped transformer.
- To adjust the timer setting, locate the timer selection knob on the front of the timer. Rotate the timer selection knob (after setting time range) until the dial indicator has selected the desired time period. Rotating the timer knob clockwise will increase the time period. Rotating the dial in a counter clockwise direction will decrease the time period. The units for the time period selected are clearly marked on the face plate. The timer range will vary with the time range selected.
- Carefully replace the light source cover.
- Reconnect power and test your light.

## 9. Maintenance

### Replacing a Bulb

- Turn the power supply to the "OFF" position, disconnect all power and allow the light to cool.
- Turn the light source cover in a counter clockwise direction until the cover is removed. Loosen the hinged plate fastener and rotate the bracket upward.
- Raise the lamp ejector arm to eject the bulb. Remove the bulb and lower the arm to its original position.
- Replace the bulb with a certified CANTY replacement bulb. The bulb can be replaced by lining up the two base pins with the bulb socket and carefully sliding the bulb into position.
- Lower the hinged plate and replace the fastener.
- Check the o-ring on the light source cover. Please replace if necessary.
- Replace the light source cover and tighten until the o-ring seals.
- Reconnect power and test your light.

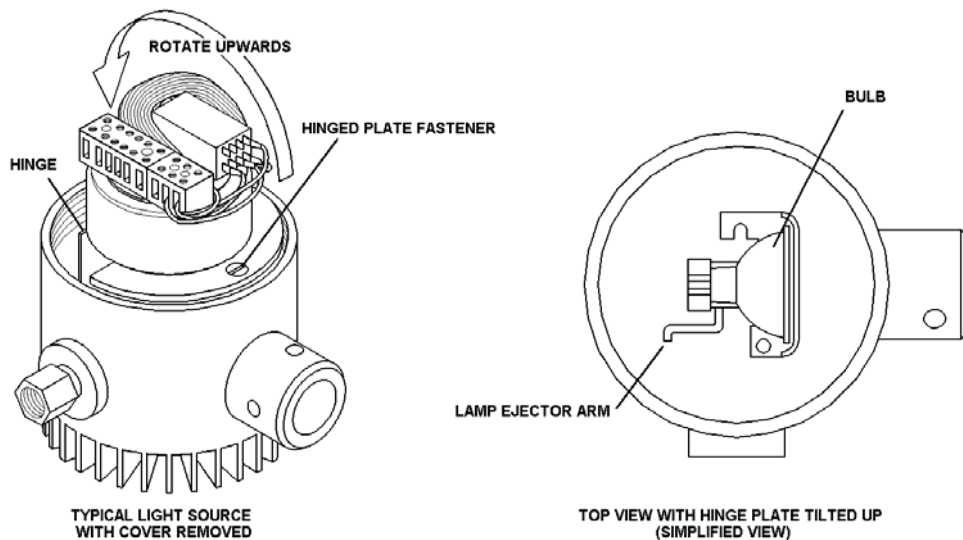


Fig. 9 - Replacing a Bulb

### ***Cleaning Your Cauty Light***

Your Cauty light can be cleaned with a mild detergent and soft cloth. Avoid harsh cleansing agents, paint thinner, acetone, caustic soda and similar agents.

The light source housing is manufactured from an aluminum or stainless steel housing, with an anodized, painted, Ni plated or natural finish. Avoid using chemicals, which may damage the finish of your light source.

Your light pipe features a high safety, fused glass seal. Avoid using chemicals or cleaning agents that may damage your glass in any manner.

## **10. Troubleshooting Tips**

### *Light Does Not Turn On*

- ♦ Check power source for the proper input, output voltage.
- ♦ Check for an open-circuited fuse.
- ♦ Check bulb for ruptured filament.
- ♦ Check for poor connection between bulb and socket.
- ♦ Check continuity for thermal cut-outs. Replace if necessary.
- ♦ Check for faulty switch or switch in "OFF" position.

### *Light Cycles On and Off*

This is usually an indication of improper performance of the thermal cut-outs. Thermal cut-outs are used to prevent the light housing from becoming excessively hot, maintaining proper T ratings for the environment. Possible solutions include:

- ♦ Check orientation of cooling fins. Reference figure 5.6 for details.
- ♦ Is the ambient temperature of the light excessively high?
- ♦ Replace thermal cut-outs.

### *Bulb Life too Short*

- ♦ Verify the use of proper power supply voltage. For 120 V models, verify the input voltage is less than or equal to 120 V AC, single phase.

For 240 V models, verify the input voltage is less than or equal to 240 V AC, single phase.

- ♦ Is a Cauty replacement bulb used? Many bulbs are manufactured in an identical mounting package, but are designed for different working voltages.
- ♦ Verify that a timer is used and set for the minimum time period.
- ♦ Check for voltage surges in the line. Use a transient spike suppresser if required.
- ♦ Is the ambient temperature too high? Excessive heat will decrease bulb life.
- ♦ Check for excessive vibration from process. Dampen vibration on mount.
- ♦ Use the "low" light setting.

## 11. Spare Parts List

*Please consult your local Canty representative for an updated price on all spare parts.*

<u>Part #</u>	<u>Description</u>
80 LA	80 LA Replacement Bulb
80 LA-6	Box of six 80 LA Replacement Bulbs
80 LA-24	Box of twenty four 80 LA Replacement Bulbs
80 LL	80 LL Replacement Bulb
80 LL-6	Box of six 80 LL Replacement Bulbs
80 LL-24	Box of twenty four 80 LL Replacement Bulbs
L330	Infra red Lens
L316	Bulb socket
L347	Cover O-ring
L333	Thermal cut-out
LB3978-4	24 V Timer
L054	Transformer

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