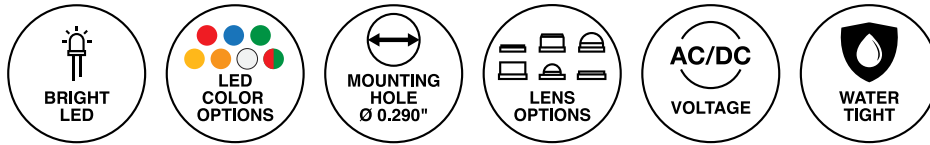# 90 Series
0.290" (7.37mm)
LED Panel Mount Indicator

90 Series with built-in long life LED offer superior construction and longer life
Cartridge, bi-pin and wire leads termination styles

| BRIGHT LED | LED COLOR OPTIONS | MOUNTING HOLE Ø 0.290" | LENS OPTIONS | AC/DC VOLTAGE | WATER TIGHT |

Key features

- Built-in LED can be used with DC circuits (5 to 60 VDC) or 120VAC circuits
- Terminal Styles: cartridge, bi-pin and wire leads (6" 24 AWG wire leads)
- Available with a variety of LEDs including AlInGaP and InGaN technology for high brightness applications, bi-color and with integrated resistors
- Available in six LED solid colors: red, green, white, blue, amber, orange and in one bi-color: red/green with or without lens
- Seven lens colors available: red, amber, yellow, green, blue, water clear and smoke
- Offered with a variety of lens options: cylindrical, flush, dome, wide cylindrical or wide flush, all featured with fresnel pattern lens which provide excellent light focus and assure maximum light output
- Spring retainer clip and washer (included) secures uniform placement of the indicator to the panel and is ideal for high vibration environments
- Offered with white or black bezel, where the black bezel enhances LED contrast
- Resistant to shock and vibration
- Mounting hardware provided (spring retainer clip and washer)
- Watertight socket options for splashdown environments
- For use with spring retainer clip (included), socket holder (PS90 or PS90T - sold separately) or wiring plug (SH90 or CSH90 - sold separately)
- Compliant with RoHS and REACH

Ordering Data

TO ORDER, FOLLOW THE EXAMPLE   Part Number: **94-LRG12H-CW0**   Mounting hardware included

Select one **BOLD** component from each numbered category in the tables below.

1 Model	**2** LED	**3** Voltage	**4** Lens Diffusion	**5** Lens Color	**6** Bezel Color
94	**-LRG**	**12H**	**-C**	**W**	**0**

1

	Cartridge	Bi-Pin	Wire Leads
Black Housing	**C**[1]	**905**[2] –No lens **91**-Cylindrical **94**-Flush **96**-Dome	**W**
White Housing		**961**-Wide cylindrical **964**-Wide flush	

2

Standard Intensity - Diffused Encapsulation

LED	Color	λpk (nm)	Iv[1] (mcd)	Viewing Angle	V/C Table[2]
-BR[4]	RED	626	6.1	60	I
-BA[4]	AMB	585	6.5	60	I
-BG[4]	GRN	569	4.7	60	I

Medium Intensity - Tinted Encapsulation

LED	Color	λpk (nm)	Iv[1] (mcd)	Viewing Angle	V/C Table[2]
-BCR	RED	626	60	35	I
-BCA	AMB	585	60	35	I
-BCG	GRN	569	70	24	I

High Intensity - Waterclear Encapsulation

LED	Color	λpk (nm)	Iv[1] (mcd)	Viewing Angle	V/C Table[2]
-NWR	RED	634	2800	30	I
-NWO	ORG	605	2000	30	I
-NWA	AMB	592	7500	30	I
-NWG	GRN	520	6500	30	II
-NWB	BLU	465	700	45	II
-NWW[8]	CWHT		6150	30	II
-NWL[8]	WWHT		4700	30	II
-NKR	RED	634	3600	15	I
-NKO	ORG	605	8000	15	I
-NKA	AMB	592	3600	15	I
-NKG	GRN	520	10000	15	II
-NKB	BLU	465	9300	20	II
-NKW[8]	CWHT		27000	20	II
-NKL[8]	WWHT		9200	15	II

Specialty LEDs - Diffused Encapsulation

LED	Color	λpk (nm)	Iv[3] (mcd)	Viewing Angle	V/C Table[5]	Description
-RLP[7]	RED	634	2.3	50	[5]	Low Power
-ALP[7]	AMB	583	2.1	50	[5]	Low Power
-GLP[7]	GRN	565	2.3	50	[5]	Low Power
-LRG[8]	RED/GRN	568/640	60/200	35	I	Bi-Color, Red Cathode

Voltage/Current

Design Vf/If	Max Vf/If
V/C Table I	
5V/22mA	5.5V/28mA
12V/20mA	14V/25mA
15V/24mA	16.5V/28mA
24V/17mA	26V/20mA
28V/16.5mA	30V/18mA
48V/15mA	50V/16mA
60V/9mA	65V/10mA
120VAC/3.5mA	130VAC/4mA

Voltage/Current

Design Vf/If	Max Vf/If
V/C Table II	
5V/15mA	5.5V/23mA
12V/15mA	14V/20mA
15V/15mA	16.5V/18mA
24V/15mA	26V/18mA
28V/15mA	30V/17mA
48V/9.5mA	50V/10mA
60V/7mA	65V/8mA
120VAC/3.5mA	130VAC/4mA

3

Voltage[6]
2
5H
12H
15H
24H
28H
48H
60H
120[9]

4

Lens Diffusion
-C Clear
-N Diffused

5

Lens Color
R Red
A Amber
Y Yellow
G Green
B Blue
W Water Clear
-S Smoke [10]

6

Bezel Color
0 Black
9 White

[1] For panel lights mounted in the PS90 or PS90T socket (pg. 5). Mounting hardware is included with the socket. Do not select the W option. C and standard pins are not solderable.

[2] Model 905 has no lens. Omit Lens Diffusion and Color (e.g. 905 ·BG5H·O).

[3] Iv = typical luminous intensity @ If = 20mA [Ta =25°C]. Iv is measured without lenses. For Low Power LEDs, If = 2mA.

[4] Use with Model 905 only.

[5] See Voltage/Current table for design specifications. Design current for low power LEDs = 2mA.

[6] Ta = 25°C. Voltage "2" indicates external resistor required. Voltages 5H through 60H are VDC. For AC operation, insert D after Voltage (e.g. 24HD). D indicates built-in rectifier; not required for 5H or 120VAC. DC operation not available for 120V. Bi-Color not available in AC voltages.

[7] Omit H when selecting a voltage (e.g. 91-RLP12-CWO).
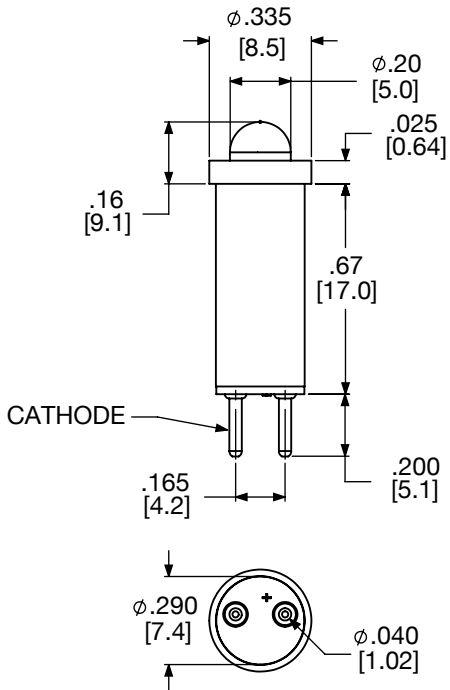
[8] Select -CW or -NW Lens only.

[9] Select high intensity LEDs only.

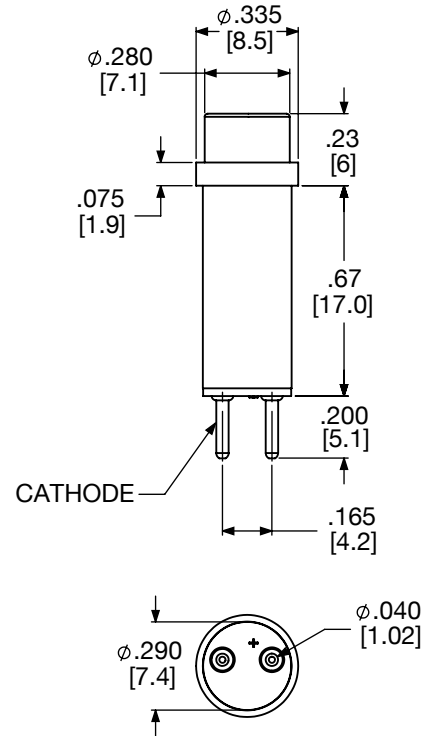[10] Omit Lens Diffusion when selecting smoked lens (e.g. 91-NWG24H-S0).

Product Dimensions
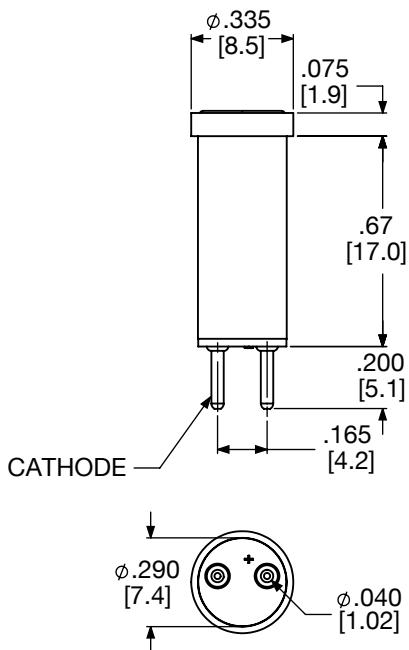
905[1]

No Lens - Black Housing

ⵁ.335 [8.5]
ⵁ.20 [5.0]
.025 [0.64]
.16 [9.1]
.67 [17.0]
CATHODE
.165 [4.2]
.200 [5.1]
ⵁ.290 [7.4]
ⵁ.040 [1.02]

91[1]

Cylindrical Fresnel Lens - Black Housing

ⵁ.335 [8.5]
ⵁ.280 [7.1]
.23 [6]
.075 [1.9]
.67 [17.0]
CATHODE
.200 [5.1]
.165 [4.2]
ⵁ.040 [1.02]
ⵁ.290 [7.4]

94[1]

Flush Fresnel Lens - Black Housing

ⵁ.335 [8.5]
.075 [1.9]
.67 [17.0]
.200 [5.1]
.165 [4.2]
CATHODE
ⵁ.290 [7.4]
ⵁ.040 [1.02]

96[1]

Dome Lens - Black Housing

ⵁ.335 [8.5]
ⵁ.280 [7.1]
.075 [1.9]
.265 [6.7]
.67 [17.0]
.200 [5.1]
CATHODE
.165 [4.2]
ⵁ.290 [7.4]
ⵁ.040 [1.02]
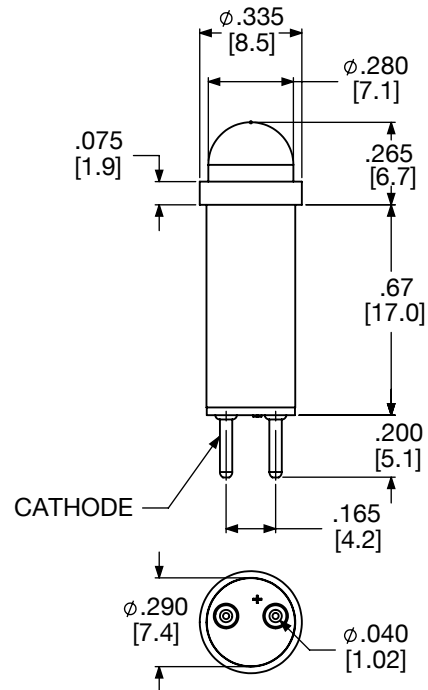
[1] Dimensions for cartridge and bi-pin

Dimensions in inches [mm]

Product Dimensions

961[1]
Wide Cylindrical Fresnel Lens - White Housing
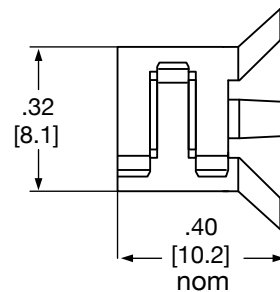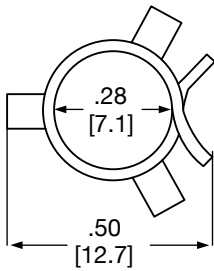

CATHODE

∅.46 [11.7]
∅.39 [9.9]
.090 [2.3]
.30 [7.6]
.65 [16.5]
.200 [5.1]
.165 [4.2]
∅.290 [7.4]
∅.040 [1.02]
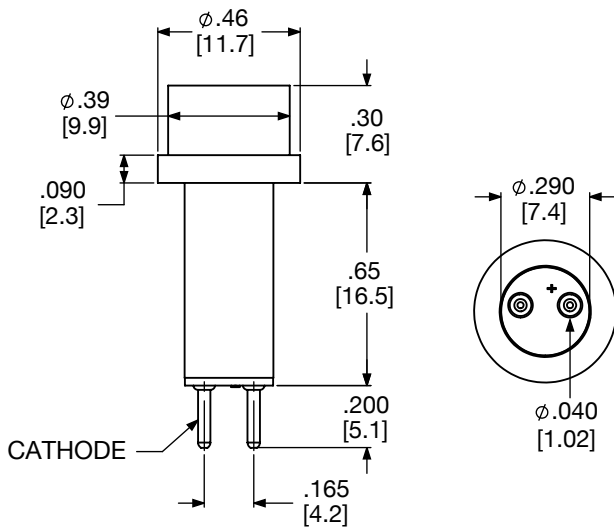
964[1]
Wide Flush Fresnel Lens - White Housing

CATHODE

.11 [2.8]
∅.46 [11.7]
∅.39 [9.9]
.090 [2.3]
.65 [16.5]
.200 [5.1]
.165 [4.2]
∅.290 [7.4]
∅.040 [1.02]
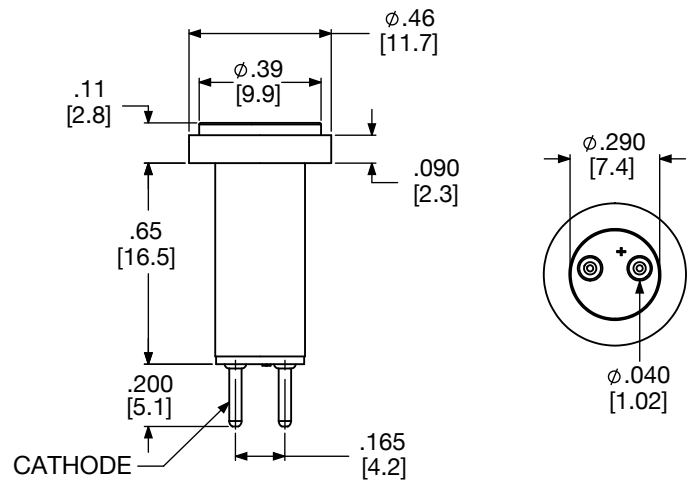
Mounting Hardware (included)

TC9-R-
Spring Retainer Clip

.28 [7.1]
.50 [12.7]
.32 [8.1]
.40 [10.2] nom

NW5
Mounting Washer

∅.42 [10.7]
∅.30 [7.6]
.05 [1.27]
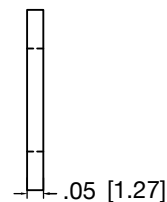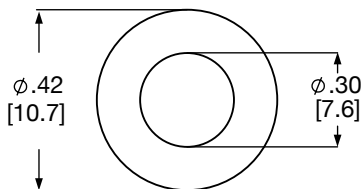
Hardness: 60 Shore A

[1] Dimensions for cartridge and bi-pin

Dimensions in inches [mm]

Accessory Options (order separately)

Lens, Retaining Collar, Wiring Plug for 90 Series

TO ORDER, FOLLOW THE EXAMPLE   Part Number: **L92-CR**

- Mounting Hole Diameter: Ø.375″ - Ø.385″
- Panel Thickness: Max: 0.80″

Select one BOLD component from each numbered category in the tables below.

1 Model	**2** Lens Diffusion	**3** Lens Color
L92	**-C**	**R**

90 Series Sockets & Hardware

1 Model	Description	Mating Components
L92	90 Series Lens	C905
PS90[1]	90 Series Socket, Solder Terminals	C905, C91, C94, C96, C961, C964
PS90T[1]	90 Series Socket, Turret Terminals	C905, C91, C94, C96, C961, C964
RC90-R-	Retaining Collar	PS90, PS90T
RC90-B-R-	Retaining Collar (Black)	PS90, PS90T
SH90	Wiring Plug	Wiring Plug
CSH90	Wiring Plug with collar	905, 91, 94, 96, 961, 964, C905, C91, C94, C96, C961, C964
TC9-R-	90 Series Spring Retainer Clip[3]	905, 91, 94, 96, 961, 964, C905, C91, C94, C96, C961, C964
NW5	Mounting Washer (neoprene)[3]	905, 91, 94, 96, 961, 964, C905, C91, C94, C96, C961, C964

90 Series Lens
(For use with PS90 or PS90T Socket with Model C905 Panel Light)

1 Model	**4** Lens Diffusion	**5** Lens Color
L92	**-C** Clear	**R** Red
	-N Diffused	**A** Amber
		Y Yellow
		G Green
		B Blue
		W Water Clear
		-S Smoke [2]

RC90-R-

SH90

L92

[1] Hardware Assembled, for watertight option see page 6
[2] Omit Lens Diffusion Code (e.g. L92-S).
[3] Mounting hardware included

Watertight Sockets for model C905 or 905

TO ORDER, FOLLOW THE EXAMPLE   Part Number: **PS90T-L92-CY-WT**

- For Splash Down Environments (not submersible)
- Mounting Hole Diameter: Ø.375″ - Ø.385″
- Panel Thickness: Max: 0.80″

	Socket Model		Lens Model		Lens Diffusion		Lens Color		Water Tight
1	**PS90**	**2**	**-L92**	**3**	**-C**	**4**	**Y**	**5**	**-WT**

Select one BOLD component from each numbered category in the tables below.

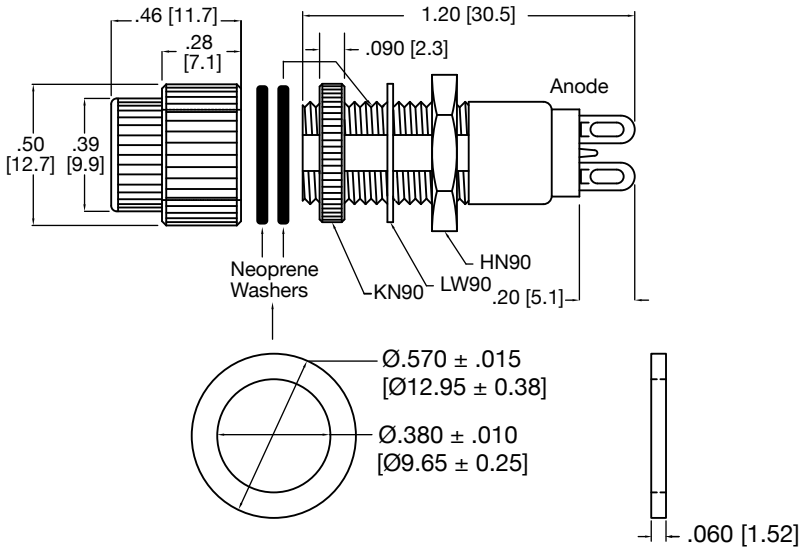| 1 Socket Model	2 Lens Model	3 Lens Diffusion	4 Lens Color	5 Water Tight
PS90 **PS90T**	**-L92**	**-C** Clear **-N** Diffused	**R** Red **A** Amber **Y** Yellow **G** Green **B** Blue **W** Water Clear **-S** Smoke [1]	**-WT**

PS90-L92-S-WT

PS90T-L92-NG-WT

[1] Omit Lens Diffusion Code (e.g. PS90T-L92-S-WT).

Dimensions in inches [mm]
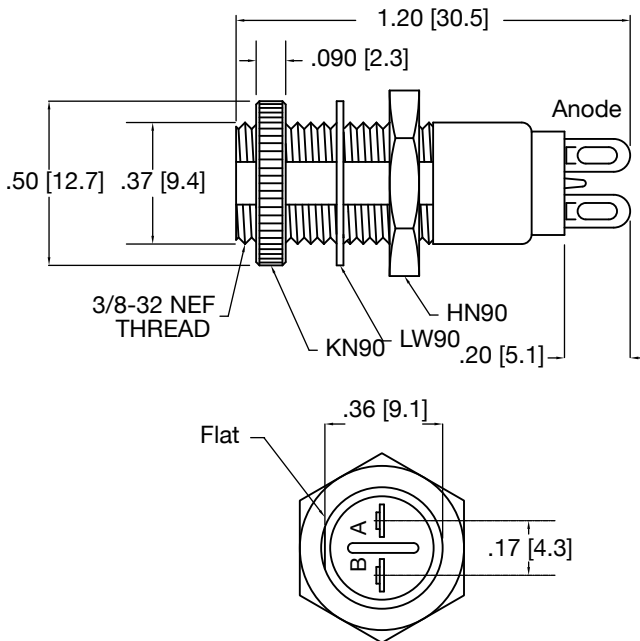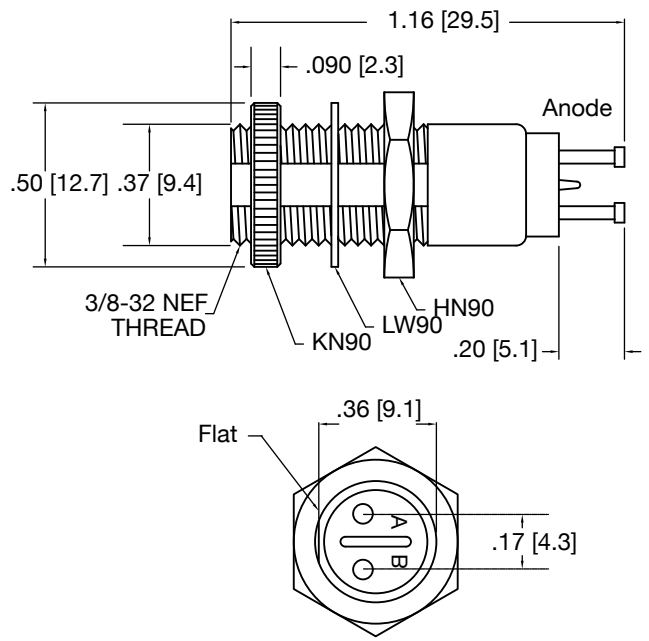
Accessory Product Dimensions

PS90, Watertight

.46 [11.7]
.28 [7.1]
1.20 [30.5]
.090 [2.3]
Anode
.50 [12.7]
.39 [9.9]
Neoprene Washers
KN90
HN90
LW90
.20 [5.1]

Ø.570 ± .015 [Ø12.95 ± 0.38]
Ø.380 ± .010 [Ø9.65 ± 0.25]
.060 [1.52]

PS90T, Watertight

.46 [11.7]
.28 [7.1]
1.16(29.5)
.090 [2.3]
Anode
.50 [12.7]
.39 [9.9]
Neoprene Washers
KN90
LW90
HN90
.20 [5.1]

PS90

90 Series Socket, Solder Terminals

1.20 [30.5]
.090 [2.3]
Anode
.50 [12.7]
.37 [9.4]
3/8-32 NEF THREAD
KN90
LW90
HN90
.20 [5.1]

Flat
.36 [9.1]
.17 [4.3]
B A
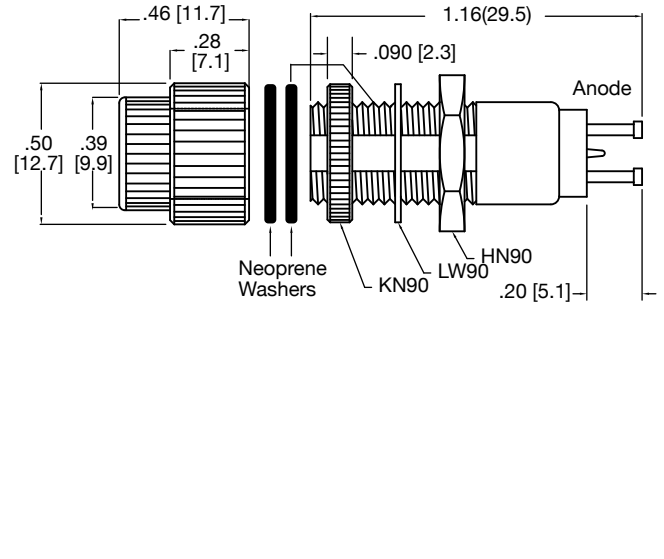
Mounting Hole Diameter
Ø 0.375″/0.385″ [Ø 9.525/9.779]

PS90T

90 Series Socket, Turret Terminals

1.16 [29.5]
.090 [2.3]
Anode
.50 [12.7]
.37 [9.4]
3/8-32 NEF THREAD
KN90
LW90
HN90
.20 [5.1]

Flat
.36 [9.1]
.17 [4.3]
A B

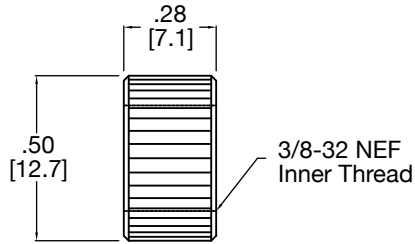| Maximum Panel Thickness |
|---|
| Max: 0.80″ [20.32] |

Dimensions in inches [mm]

RC90-R- (aluminum)
RC90-B-R- (black anodized aluminum)

Retaining Collar for PS90 and PS90T

.28
[7.1]

.50
[12.7]

3/8-32 NEF
Inner Thread

Only for use with PS90, PS90T

L92

90 Series Lens for PS90, PS90T socket and C905, 905

.46 [11.7]

.28
[7.1]

.50   .39
[12.7] [9.9]

3/8-32 NEF
Inner Thread

SH90

Wiring Plug

Ø.34 [8.6]

.54 [13.7]

.20 [5.1]

Ø.315 [8.0]

A

B

.17 [4.3]

CSH90

Wiring Plug with Collar

Ø.40 [10.2]
Ø.34 [8.6]

.69 [17.5]

.20 [5.1]

Ø.315 [8.0]

A

B

.17 [4.3]
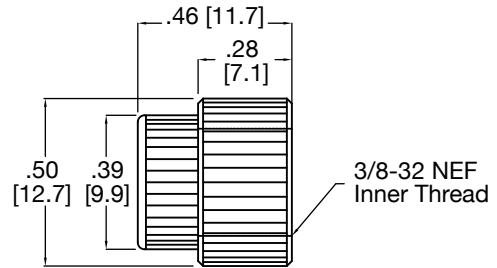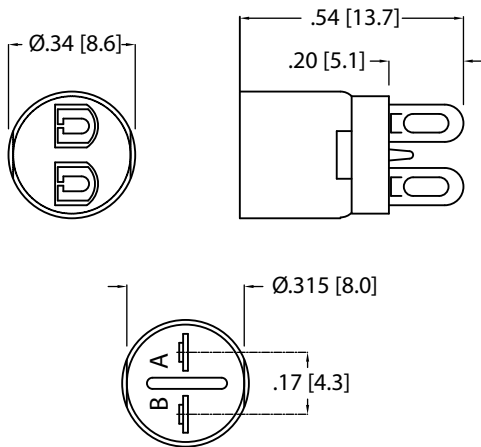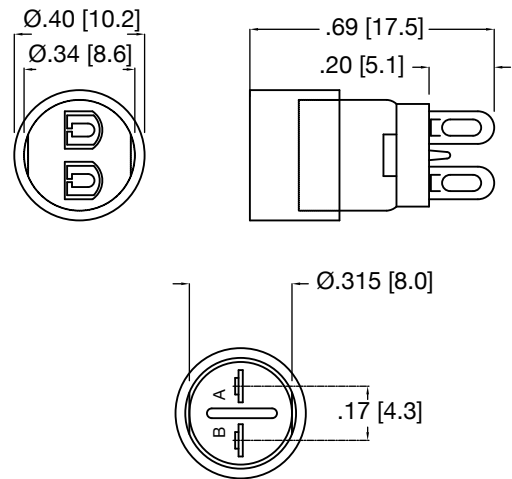
Dimensions in inches [mm]

Product Specifications

Materials

Housing	Black nylon, except 961 & 964 which are white nylon
Lens	Lexan
Pin	Brass
Wire Leads	Tinned copper conductor TPB insulation
TC9-R-	High carbon spring steel zinc plate finish
NW5	Black neoprene
RC90-R-	Aluminum
RC90-B-R-	Black Anodized Aluminum

Temperature Specifications

Operating Temperature	-30℃ to 60℃
Storage Temperature	-40℃ to 100℃

Installation Specifications

Mounting Hole	0.290″ to 0.291″ [7.37 to 7.39]
Panel Thickness	0.25″ max
Wire Leads	24 AWG - 300V lead color: red and black 6.0″ long min stripped 0.5″ nom red anode/black cathode, 24 AWG TPB UL1061 insulation. Contact sales for other lengths, gauges and colors.

Dimensions in inches [mm]

Compliances and Approvals

REACH COMPLIANCE

RoHS COMPLIANT