

Hazardous Location Push Buttons

Product Overview/Specifications



Bulletin 800H/Hazardous Location Push Buttons

- Hazardous locations push buttons and stations
- Classes I, II & III Divisions 1 & 2
- 3/4 in. - 14 NPSM barrel
- Type 7 & 9
- Explosion-proof operators

Table of Contents

See below.

Standards Compliance

UL698, UL1604
CSA 22.2, No. 14

Certifications

Enclosures:

UL Listed (File No. E71673
Guide No. NNNY)

Devices:

UL Listed (File No. E10314
Guide No. NOIV)

Stations:

CSA (File No. LR11924)

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Description

Application

When properly mounted in a Type 7 & 9 enclosure, Bulletin 800H Type 7 & 9 operators are designed to meet the requirements of the National Electrical Code for Class I, Divisions 1 & 2, Groups B, C & D Hazardous Gas; Class II, Divisions 1 & 2, Groups E, F and G Hazardous Dust; and, Class III Hazardous Fiber Locations. In addition, the single gang shallow base, Cat. No. 800H-IHZX7, meets Class I, Group B requirements. This Type 7 & 9 equipment is listed by Underwriters Laboratories, Inc.

Per National Electrical Code:

Zone 1. In Class I, Zone 1 locations, all wiring methods permitted for Class I, Division 1 locations and Class I, Zone 0 or Zone 1 locations, including requirements for sealing, shall be permitted.

Zone 2. In Class I, Zone 2 locations, all wiring methods permitted for Class I, Division 2, Class I, Division 1 or Division 2, and Class I, Zone 0 or Zone 1 locations, including requirements for sealing, shall be permitted.

Operator Construction

The Allen-Bradley line of hazardous location devices features copper-free (less than 0.4 of 1% copper content) die cast aluminum bushings and mounting rings, Type #316 stainless steel operating shafts and an O-ring seal for added corrosion resistance. These components mount into a threaded hole (3/4 in.-14 NPSM) in a suitable enclosure.

Bulletin 800H Type 7 & 9 components are available in two basic formats: standard barrel (Bulletin 800H) and long barrel (Bulletin 800HL). Standard barrel devices are suitable for mounting in panel thickness up to 1 in.; Long barrel devices are suitable for mounting in panel thickness greater than 1 in. and no thicker than 2-1/2 in. Both style operators offer a unique locking bracket which provides an anti-turn feature to guard against loosening. The mounting rings in front of the panel are knurled to provide a second means of tightening each unit into the panel.

Outdoor Use

Bulletin 800H Type 7 & 9 stations and enclosures are not configured for outdoor use as standard. A Type 3 rating is available, while maintaining Type 7 & 9 integrity of the enclosure, by the addition of a Type 3 sealing flange and an approved drain. The sealing flange shown below may be purchased as an option or as an accessory. A Type 4 rating can be achieved by using sealing nuts to seal the push button operators in addition to using the sealing flange. Sealing nuts are available as accessories (see page 10-179.)

Elimination of Conduit Seal Off Requirement

Bulletin 800H Type 7 & 9 units may be installed with a variety of sealing options. By utilizing either a sealing well or flanged sealing well, these stations may be installed without a conduit seal off in most applications (subject to applicable codes and laws). The sealing wells shown below may be purchased as an option or as an accessory. Sealing wells are also available with an integral Type 3 flange seal for outdoor applications.

Sealed switch contact blocks are another way to eliminate the need for conduit seal fittings in most applications (subject to applicable codes and laws). Sealed switch contact blocks may be purchased as an option on assembled stations by changing the Bulletin No. from 800H to 800R. Sealed switch contact blocks can be ordered as an accessory (see page 10-175). A push button station with a sealed switch contact block is shown below.



Type 3 Flange Seal



Sealing Wells



Sealed Switch Contact Blocks



Specifications*

Electrical Ratings	
Contact Ratings	Refer to the contact ratings tables below.
Dielectric Strength	2200V for one minute, 1300V for one minute (Logic Reed)
Electrical Design Life Cycles	1 000 000 at max. rated load, 200 000 at max. rated load (Logic Reed)
Mechanical Ratings	
Vibration	10...2000 Hz 1.52 mm displacement (peak-to-peak) Max./10 G Max. (except Logic Reed)
Shock	1/2 cycle sine wave for 11 ms ≥ 25 G (contact fragility) and no damage at 100 G
Degree of Protection	Type 7 & 9 Explosion Proof (Type 3 and Type 4 ratings available with accessories)
Mechanical Design Life Cycles	
Push Buttons	250 000 minimum
Potentiometers	100 000 minimum
All other devices	200 000 minimum
Contact Operation	Shallow and mini contact blocks: slow double make and break Logic Reed & sealed switch contact blocks: snap-action
Wire Gauge/Terminal Screw Torque	# 18...12 AWG/6...8 lb•in
Typical Operating Forces	
Operators without contact blocks:	Flush, extended, standard mushroom, jumbo mushroom: 2.9 lb max. Jumbo and extended aluminum mushroom head: 3.95 lb maximum Maintained selector switch: 4.0 in•lb maximum
Spring Return Selector Switches:	5 in•lb to stop, 0.2 in•lb to return
Illuminated Push Buttons and Push-to-Test Pilot Lights	5.6 lb maximum
2-Position Push-Pull	9 lb maximum push or pull
3-Position Push-Pull	12 lb maximum push to in position or pull to center position (15 lb maximum pull to out position)
Contact Blocks:	
800T-XA	1 lb
Logic Reed	1 lb maximum
Sealed Switch	3 lb maximum at 0.205 in. plunger travel
Stackable Sealed Switch	1 lb maximum
Environment	
Temperature Range	Operating: -4...+13 °F (-20...+55 °C) Storage: -40...+185 °F (-40...+85 °C)
Note: Operating temperatures below freezing are based on the absence of freezing moisture and liquids.	
Humidity	50% at +104 °F (+40 °C)

* Performance Data — See page Important-3.

* External thread major diameter: 1.034 in. max., 1.024 in. min. Internal thread minor diameter: 0.958 in. min., 0.970 in. max.

Standard Contact Ratings

Maximum thermal continuous current I_{th} 10 A AC/2.5 A DC.
 Bulletin 800H Type 7 & 9 units with 800T-XA contacts have ratings as follows:

Max. Oprtnl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 600	AC-15	A600	120...600	7200VA	720VA
			72...120	60 A	720VA
			24...28*	60 A	10 A
DC 600	DC-13	Q600	28...600	69VA	
			24...28*	2.5 A	

* For applications below 24V and 24 mA, PenTUFF™, Logic Reed or stackable sealed switch contacts are recommended.

Sealed Switch Contact Ratings

Maximum continuous current I_{th} 5 A.

Max. Oprtnl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 600	AC-15	B600	120...600	3600VA	360VA
			0...120	30 A	3 A
DC 300	DC-13	P300	24...300	138VA	
			0...24	5.0 A	

Stackable Sealed Switch Contact Ratings

Maximum continuous current I_{th} 3 A. Bulletin 800T units have control circuit ratings with sealed switch contact blocks as follows:

Max. Oprtnl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 300	AC-15	C300	120...300	1800VA	180VA
			0...120	15 A	1.5 A
DC 150	DC-13	Q150	24...150	69VA	
			0...24	2.5 A	

Logic Reed Contact Ratings

Maximum: 150V AC, 0.15 A, 8 VA and 30V DC, 0.06 A, 1.8 VA.

Should only be used with resistive loads.

PenTUFF™ (Low Voltage) Contact Ratings

Minimum DC: 5V, 1 mA

Maximum thermal continuous current I_{th} 2.5 A AC/1.0 A DC.

Bulletin 800H units with 800T-XAV contacts have ratings as follows:

Max. Oprtnl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 300	AC-15	C300	120...300	1800VA	180VA
			0...120	15 A	1.5 A
DC 150	DC-13	R150	24...150	28VA	
			0...24	1.0 A	



Modifications and Accessories, Continued

Boots—Non-Illuminated Momentary Contact Push Buttons Units

Note: For Bul. 800H/HL Type 7&9 operators, order one adapter and one boot per operator.

Adapters

Push Button Type	Cat. No.
Flush head	800H-NPAF
Extended head	800H-NPAE

Boots

Boots supplied with control stations and components are made of a chlorosulfonated polyethylene material with stainless steel insert ring. To order boots with silicone, urethane, or ethylene propylene material, see the table below. Material application information shown below.



Cat. No. 800H-N5A

Insert Material	Boot Color	Material			
		Chlorosulfonated Polyethylene ‡	Silicone • ‡	Urethane •• ‡	Ethylene • Propylene •• ‡
		Cat. No.	Cat. No.	Cat. No.	Cat. No.
Stainless steel §	Red	800H-N5A	800H-N101R	800H-N100R	800H-N103R
	Green	800H-N5B	800H-N101G	800H-N100G	800H-N103G
	Black	800H-N5H	800H-N101B	800H-N100B	800H-N103B
	Yellow	800H-N5E	800H-N101Y	800H-N100Y	—
	Blue	800H-N5C	800H-N101BL	800H-N100BL	—

* May be added to flush or extended head push button units to protect against foreign materials reaching the opening between the button and the locking ring.

§ Series B boots incorporate a stainless steel insert as standard.

‡ Dots printed on the inside of the boot identify the boot material.

Booted Knobs



Booted Standard Knob Selector Switch
Cat. No. 800H-NP5



Booted Knob Lever Selector Switch
Cat. No. 800H-NPE5

Switch Type	Boot Material*			
	Chlorosulfonated Polyethylene	Silicone •	Urethane ••	Ethylene • Propylene ••
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Standard Knob Selector Switch*	800H-NP5	800H-NP101	800H-NP100	800H-NP103
Knob Lever Selector Switch*	800H-NPE5	800H-NPE101	800H-NPE100	800H-NPE103

* Dots printed on the inside of the boot identify the boot material.

* Includes color insert kit.

Push Button Guards and Mushroom Push Button Guards



Cat. No. 800H-NP19



Cat. No. 800H-NP13



Cat. No. 800H-NP9



Cat. No. 800H-NP12

Push Buttons, Pilot Lights and Push-to-Test	Extra Long Guard (1 in.) for Push Button	Mushroom	Jumbo Mushroom
Cat. No.	Cat. No.	Cat. No.	Cat. No.
800H-NP19	800H-NP13	800H-NP9	800H-NP12

Protective Rings



Protective Ring for 2-Position Push-Pull
Cat. No. 800H-NP40



Jumbo Protective Ring for 2-Position Push-Pull
Cat. No. 800H-NP40J

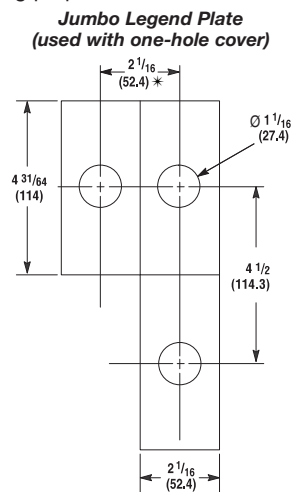
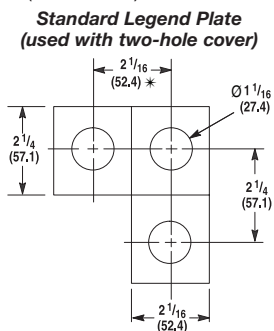
Protective Ring for Push-Pull Devices		
Description	Type	Cat. No.
Protective ring for Bul. 800H 2-position non-illuminated push-pull operators. Often used to avoid unintentional tripping of E-stop operators. Available for standard size button (40 mm) or for jumbo button (60 mm).	For standard size button	800H-NP40
	For jumbo size button	800H-NP40J

Hazardous Location Push Buttons

Approximate Dimensions

Approximate Dimensions and Shipping Weights

Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.



Note: Mounting hole requirements for components — 3/4 in. - 14 NPSM.*

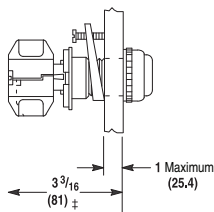
* External thread major diameter: 1.034 in. max., 1.024 in. min.

Internal thread minor diameter: 0.958 in. min., 0.970 in. max.

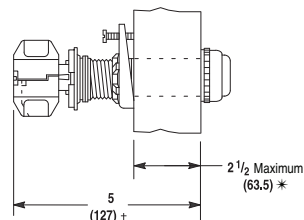
† Sketch illustrates the minimum distance between center lines when mounting Bulletin 800H units with legend plates either side by side or one above the other in non Allen-Bradley enclosures. **Minimum spacing without legend plate:** When units are mounted so that the contact block terminals face each other, the 2-1/4 in. (57.2 mm) dimension must be used in order to get proper electrical clearance. When control units are mounted so that the contact block terminals do not face each other, the 1-27/32 in. (46.8 mm) dimension can be used.

Panel Thickness Requirements

Standard Barrel
[devices will fit panels up to 1 in. (25.4 mm)]



Long Barrel
[devices will fit panels up to 2-1/2 in. (63.5 mm)]

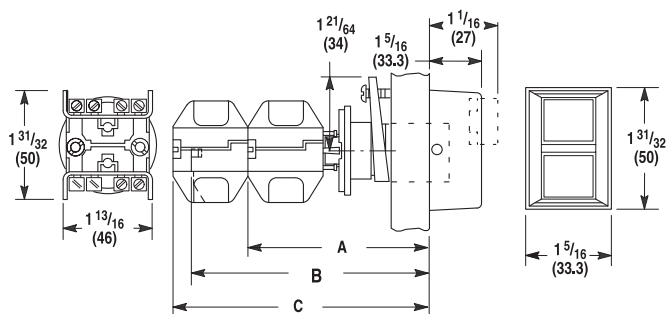


‡ When mounting in a panel thicker than 2-1/8 in. (54 mm) locking bracket not required.

† This dimension for push buttons only.

Push Buttons

Dual Head



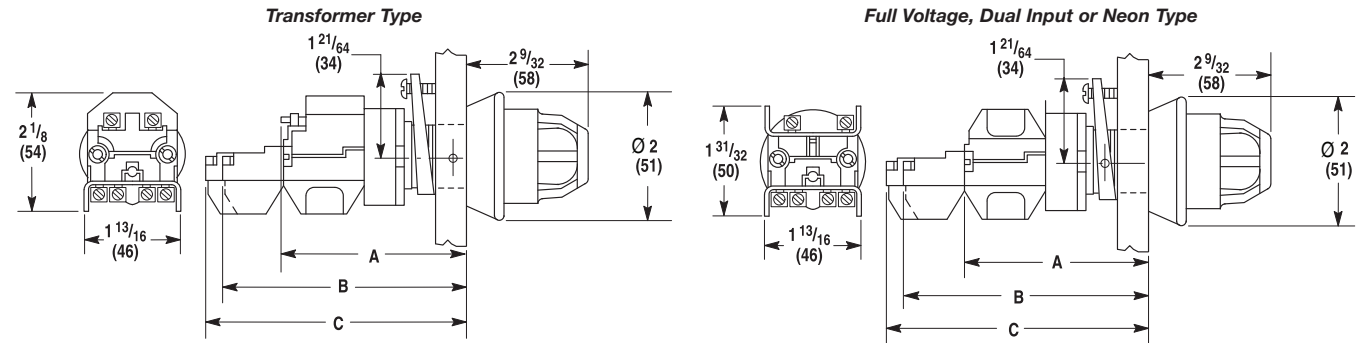
Dim.	A	B	C	Ship. Wt. [oz (kg)]
Standard Barrel	3-5/16 (84.1)	4-3/16 (106.4)	4-7/16 (112.7)	10-3/8 (0.30)
Long Barrel	4-19/32 (116.7)	5-15/32 (138.9)	5-23/32 (145.2)	13 (0.37)



Approximate Dimensions and Shipping Weights, Continued

Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

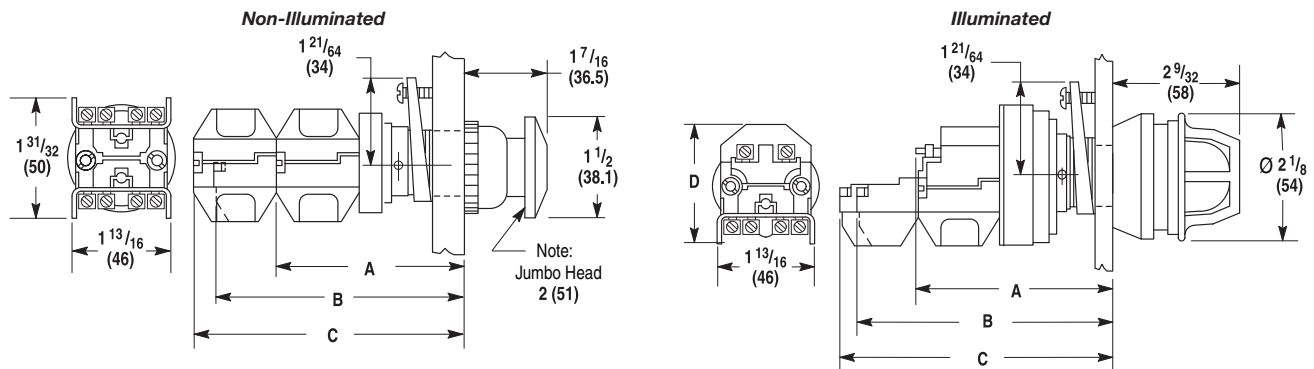
Illuminated Push Buttons or Push-to-Test Pilot Lights



Illuminated Push Buttons, Push-to-Test Pilot Lights

Description	Style	A *	B	C	Ship. Wt. [oz (kg)]
Transformer Type	Standard Barrel	3-5/32 (80.2)	3-29/32 (99)	4-1/8 (105)	14 (0.40)
	Long Barrel	5-1/16 (128.6)	5-13/16 (147.6)	6-1/16 (154)	16-3/16 (0.45)
Full Voltage Dual Input or Neon Type	Standard Barrel	3-1/32 (77)	3-29/32 (99)	4-1/8 (105)	11-5/8 (0.33)
	Long Barrel	4-15/16 (125.4)	5-13/16 (147.6)	6-1/16 (154)	13-7/16 (0.38)

Push-Pull Units



Push-Pull Units

Description	Style	A *	B	C	D	Ship. Wt. [oz (kg)]
Illuminated Transformer Type	Standard Barrel	3-9/16 (90.5)	4-9/16 (115.9)	4-5/8 (117.5)	2-1/8 (54)	15-1/2 (0.44)
	Long Barrel	4-21/32 (118.3)	5-13/32 (137)	5-21/32 (143.7)	2-1/8 (54)	17-7/16 (0.49)
Illuminated Full Voltage Type	Standard Barrel	3-7/16 (87.3)	4-9/16 (115.9)	4-5/8 (117.5)	1-31/32 (50)	12-13/16 (0.33)
	Long Barrel	4-17/32 (115.1)	5-13/32 (137)	5-21/32 (143.7)	1-31/32 (50)	14-3/4 (0.41)
Non-Illuminated Push-Pull Units	Standard Barrel	3-1/2 (88.9)	4-3/8 (111.1)	4-5/8 (117.5)	—	11-1/8 (0.32)
	Long Barrel	4-17/32 (115.1)	5-13/32 (137)	5-21/32 (143.7)	—	12-5/16 (0.34)

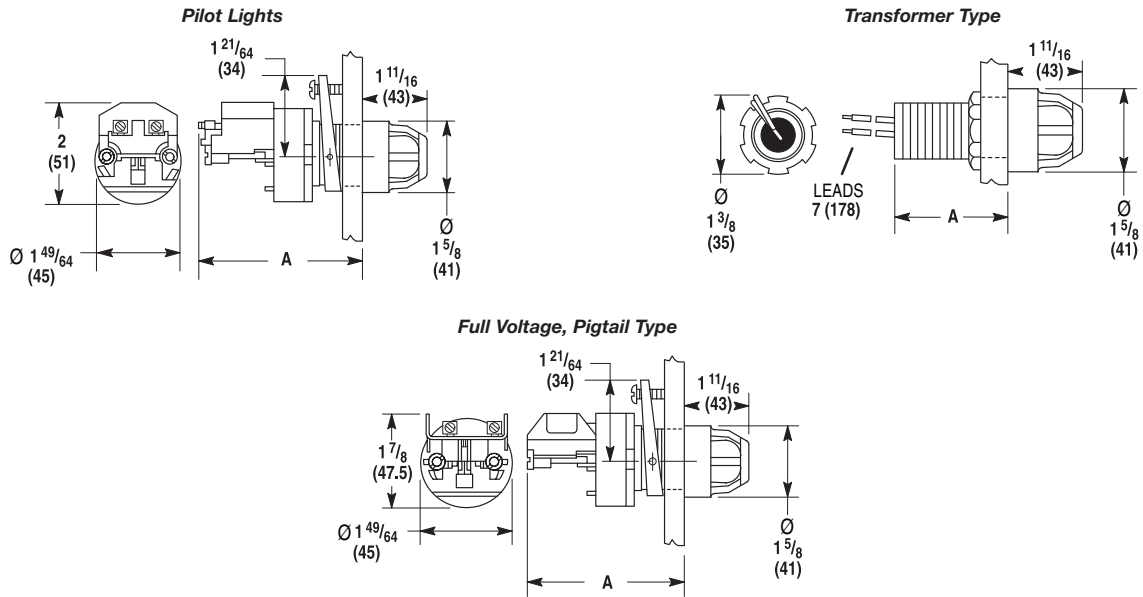
* When using sealed switch contact block add 7/8 in. (22.2 mm) to the listed dimension.

Hazardous Location Push Buttons

Approximate Dimensions

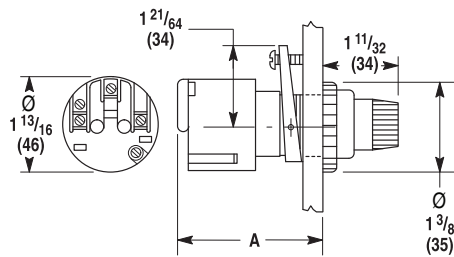
Approximate Dimensions and Shipping Weights, Continued

Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.



Description	Style	A	Ship. Wt. [oz (kg)]
Transformer type and dual input transformer type pilot lights	Standard Barrel	3-5/32 (80)	8-9/16 (0.24)
	Long Barrel	4-9/16 (115.9)	30-1/4 (0.85)
Full voltage, neon or dual input diode and resistor type pilot lights	Standard Barrel	3-1/32 (77)	5-13/16 (0.17)
	Long Barrel	4-7/16 (112.7)	27-1/2 (0.77)
Full voltage pigtail type pilot lights	Standard Barrel	2-3/16 (55.5)	5-5/8 (0.16)
	Long Barrel	3-43/64 (94)	8-5/16 (0.24)

Potentiometer Units



Style	A	Ship. Wt. [oz (kg)]
Standard barrel	3-1/8 (79.5)	5-3/8 (0.16)
Long barrel	4-1/2 (114.3)	8 (0.23)

Approximate Dimensions and Shipping Weights, Continued

Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Shallow Base Stations

Figure 1
Shallow Base Station Lever Type

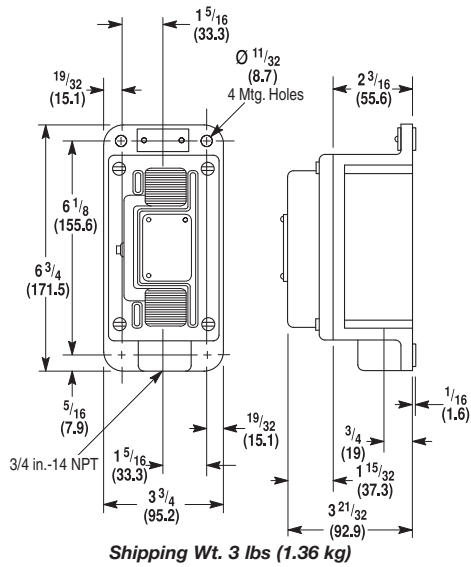
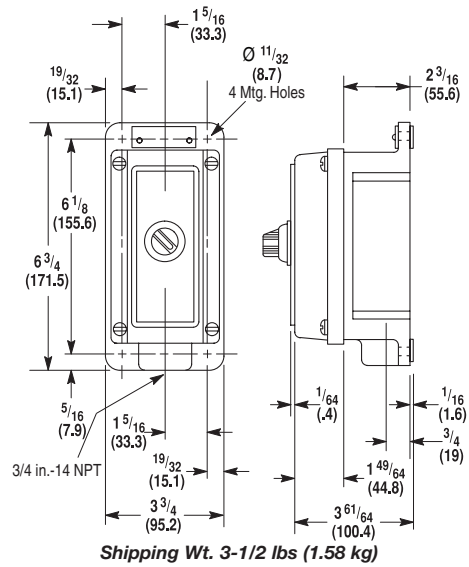


Figure 2
Shallow Base Station Component Type
1-Gang (1 or 2 devices)



Deep Base Stations

Figure 3
Deep Base Station Lever Type
1-Gang

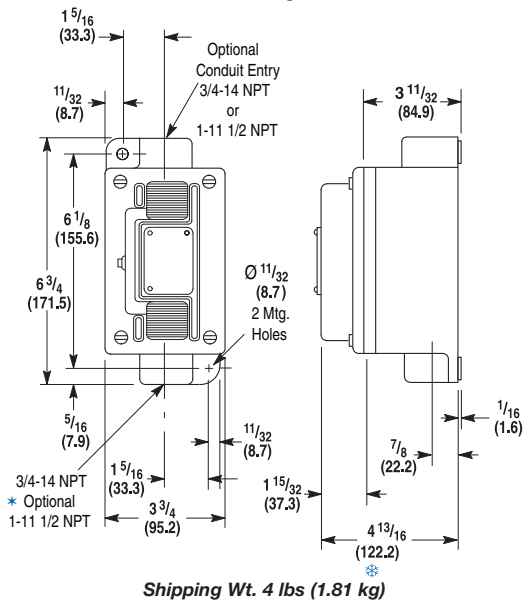
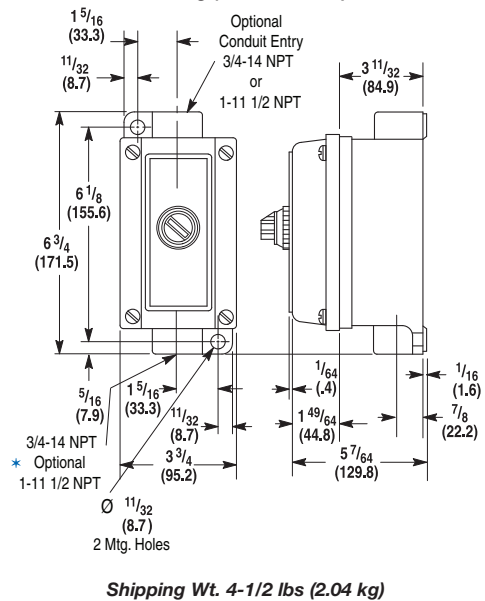


Figure 4
Deep Base Component Lever Type
1-Gang (1 or 2 devices)



* When using a flange seal, an approved drain fitting must be provided (refer to National Electrical Code).

* When used add the following to the max. depth: Flange seal add 3/16 in. (4.8 mm). Sealing well with or without integral flange seal add 1/2 in. (12.7 mm).

Hazardous Location Push Buttons

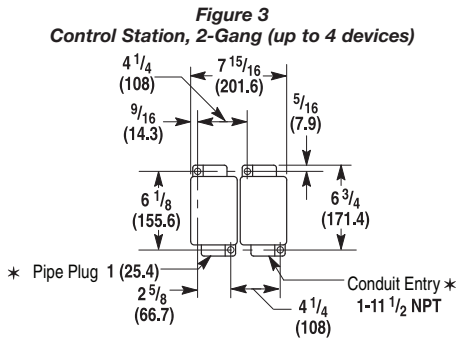
Approximate Dimensions

Approximate Dimensions and Shipping Weights, Continued

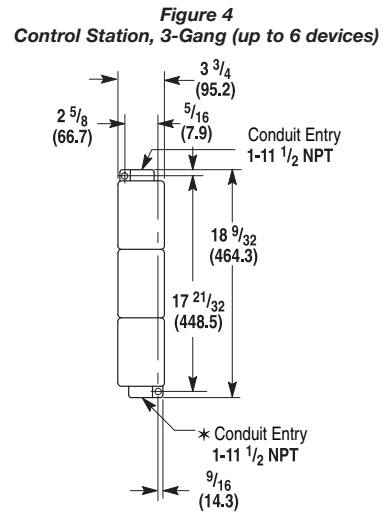
Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Factory-Assembled Stations

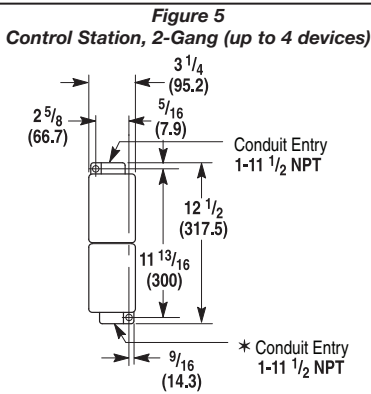
For depth dimension refer to Figure 3 or 4 on page 10-187.



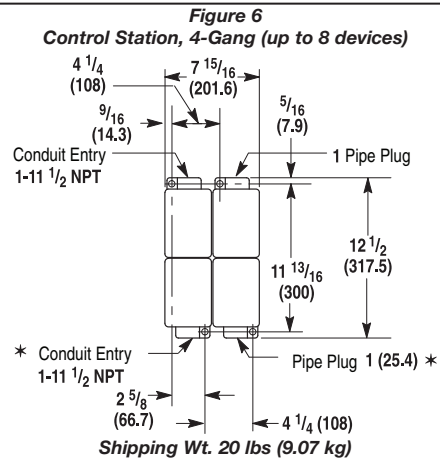
Shipping Wt. 10 lbs (4.54 kg)



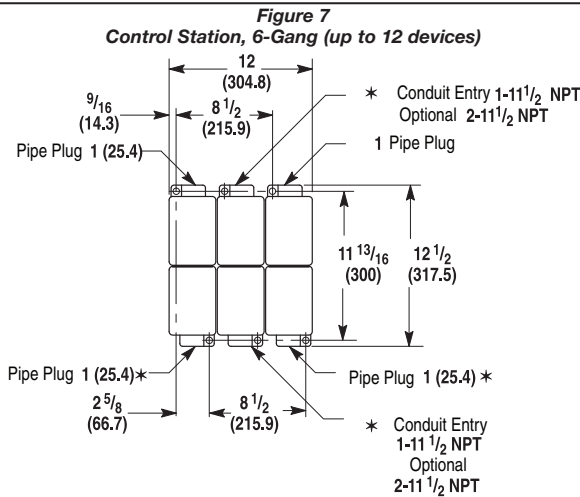
Shipping Wt. 16 lbs (7.26 kg)



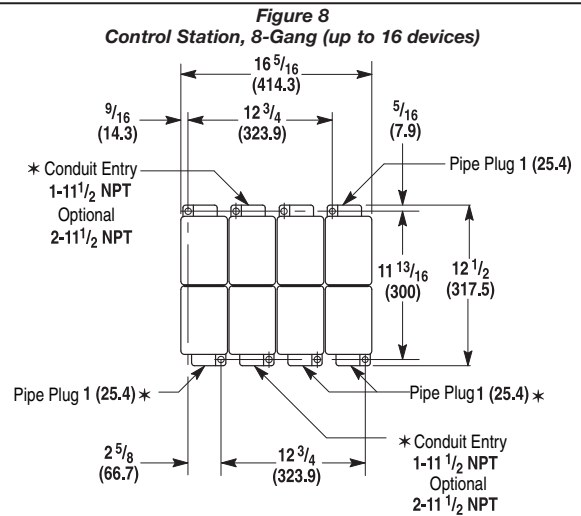
Shipping Wt. 10 lbs (4.54 kg)



Shipping Wt. 20 lbs (9.07 kg)



Shipping Wt. 32 lbs (14.5 kg)



Shipping Wt. 40 lbs (18.1 kg)