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Sensing and Control  
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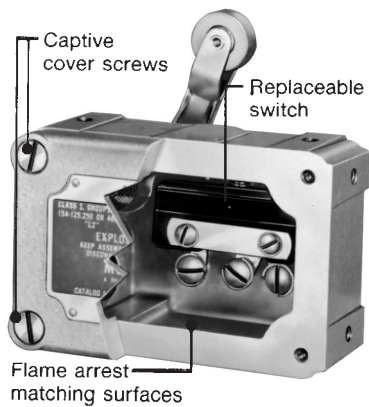
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# Limit and Enclosed Switches

## Explosion-Proof Switches

EX Series

Single-Conduit  
Connect Switch\*



\* See page A124 for double conduit connect switches.

EX switches feature the smallest UL-listed housings available for use in hazardous locations. Flame paths within the housing cool exploding gases below the kindling temperature before they reach the explosive gases surrounding the housing.

The enclosed switching unit, which is held in place by screws, is accessible when the cover plate is removed. A tapped conduit

opening is located in one end of one group of EX listings (pages A122-A123); while a second group (page A124) has a conduit opening in each end of the switch.

These switches are not sealed against liquids and are not intended to be subjected to liquid splash or for outdoor applications. If a sealed explosion-proof switch is required, refer to the type CX and LSX.

### FEATURES

- NEMA 1, 7 and 9
- Compact, rugged housing
- Up to 20 amp capacity
- Ample wiring space
- Mounts from 4 sides
- Roller arms adjustable through 360°
- Non-sparking actuators
- Captive cover screws
- UL Listed, file #E14274
- CSA Certified, file #LR57324
- Grounding screw

### NEMA

NEMA standards: 1, 7 and 9.

UL listed and CSA certified: Class I, Div. 1, Groups B, C and D (Group B - only as noted in order guides); and Class II, Div. 1, Groups E, F and G.

Also refer to NEMA application note in the Reference Standards section at the rear of this catalog.

### TEMPERATURE RANGE

EX switches are for use in a temperature range of -40 to 160°F (-40 to 71°C). For applications outside these limits, please call the 800 number.

### ACTUATORS

Roller arm versions are designed for cam or slide operation. Listings include clockwise and counterclockwise actuation. Levers are adjustable through 360°. The roller is non-sparking material.

The cross-roller arm switch is for use where the operating mechanism approaches from a direction perpendicular to the longitudinal axis of the switch.






The overtravel plunger has a case hardened, radius tipped, push-rod plunger guided by a sturdy bushing.

The manually operated switch has a large paddle-shaped actuator.

### REPLACEMENT PARTS

Available replacement parts are listed on page A125. An installation sheet packed with each switch describes these parts in detail and explains how they are installed.

### ELECTRICAL RATINGS

Circuitry	Electrical Ratings
 Single-Pole Double-Throw	A UL/CSA Rating: 15 amps, 125, 250 or 480 VAC; 1/8 Hp, 125 VAC; 1/4 Hp, 250 VAC; 1/2 amp, 125 VDC; 1/4 amp, 250 VDC.
 Single-Pole Double-Throw	B UL/CSA Rating: 20 amps, 125, 250 or 480 VAC; 10 amps, 125 VAC "L"; 1 Hp, 125 VAC; 2 Hp, 250 VAC; 1/2 amp, 125 VDC; 1/4 amp, 250 VDC.
 Double-Pole Double-Throw	C UL/CSA Rating: 10 amps, 125 or 250 VAC; 0.3 amp, 125 VDC; 0.15 amp, 250 VDC.
 Single-Pole Double-Throw	D UL/CSA Rating: 10 amps, 125, 250 or 480 VAC; 1/2 amp, 125 VDC; 1/4 amp, 250 VDC.
 Single-Pole Double-Throw	E UL Rating: 1 amp, 125 VAC.

Limit/Enclosed


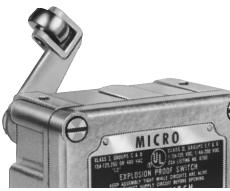



## Explosion-Proof Switches

### ROLLER LEVER ACTUATED SWITCHES



#### AUXILIARY ACTUATORS

Order rotary actuators for the EX-AR20 from the selection shown below.

 <p><b>Roller Lever</b></p> <p><b>6PA5-EX</b> (Bronze roller)</p> <p><b>6PA127-EX</b> (Nylon roller)</p>
 <p><b>Cross Roller Lever</b></p> <p>6PA131-EX (Bronze roller)</p>
 <p><b>One-Way Roller Lever</b></p> <p>For CW actuation: <b>6PA130-EX</b> (Bronze roller) For CCW actuation: <b>6PA142-EX</b> (Bronze roller)</p>
 <p><b>Adjustable Length Roller Lever</b></p> <p><b>6PA138-EX</b> (Nylon roller)</p>
 <p><b>Rod Lever</b></p> <p><b>6PA136-EX</b> (Aluminum rod)</p>

#### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F.	P.T. max. mm in.	O.T. max.	D.T. max. mm in.
CW actuation*. 15 amp. SPDT.	A	<b>EX-AR</b>	2,22-5,56 N .5-1.25 lb.	5,56 .219 (8°)	90°	0,18 .007 (0,25°)
CW actuation*. 20 amp. SPDT.	B	<b>EXA-AR</b>	3,34-8,90 N .75-2 lb.	5,56 .219	25°	0,3 .012 (4°)
CCW actuation*. 15 amp. SPDT.	A	<b>EX-AR30</b>	11,1 N 2.5 lb. max.	2,65 .065	25°	0,18 .007 (0,25°)
CW or CCW actuation*. 15 amp. Low O.F. (no return spring). Without mtg. bracket. SPDT.	A	<b>EX-AR16</b>	0,56 N 2 oz. max.	—	—	—
Also UL listed and CSA certified for Class I Group B (hydrogen) atmospheres.	CW actuation*. 15 amp. SPDT.	<b>EX-AR800</b>	2,22-5,56 N .5-1.25 lb.	5,56 .219	90°	0,18 .007 (0,25°)
	CCW actuation*. 15 amp. SPDT.	EX-AR830	11,1 N 2.5 lb. max.	1,65 .065	25°	0,18 .007 (0,25°)
	CW actuation*. 10 amp. DPDT.	<b>EXD-AR-3†</b>	2,22-6,67 N .5-1.5 lb.	6,35 .250	25°	2,77 .109 (4°)
	CCW actuation*. 10 amp. DPDT.	<b>EXD-AR30-3†</b>	12,2 N 2.75 lb.	5,56 .219	25°	2,77 .109
	CW actuation*. 1 amp.** SPDT.	<b>EXH-AR3</b>	2,22-6,67 N .5-1.5 lb.	5,56 .219	25°	0,64 .025
	CCW actuation*. 1 amp.** SPDT.	<b>EXH-AR33</b>	11,1 N 2.5 lb. max.	1,65 .065 (3,5°)	25°	0,64 .025
No lever furnished. (Order levers shown at left of this page as separate items.) CW actuation*. SPDT.	A	<b>EX-AR20</b>	0,22 Nm 31.25 in./oz.	5,56 .219	90°	0,18 .007 (0,25°)
As above except CCW actuation.	A	EX-AR230	0,22 Nm 31.25 in./oz.	5,56 .219	90°	0,18 .007 (0,25°)

Nm = Newton meters

\* CW (clockwise) or CCW actuation, when looking at nameplate.

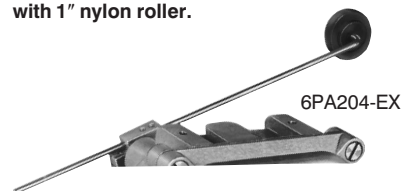
\*\* Hermetically sealed switching unit, furnished with 10.5 ft./3.2 m leadwire.

† Furnished with 0,91 m (3 ft.) leadwire

Characteristics; O.F. — Operating Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel

For rapid response – off the shelf service, all **bold face** listings are normally stocked items.

Adjustable length 12.5" max. rod lever with 1" nylon roller.



## Explosion-Proof Switches

### CROSS ROLLER LEVER ACTUATED SWITCH



#### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F. N oz.	P.T. max. mm in.	O.T. max.	D.T. max. mm in.
CW actuation* 15 amp. SPDT	A	EX-CR	2,22-5,56 8-20	5,56 .219	90°	0,18 .007

### ONE-WAY ROLLER LEVER ACTUATED SWITCH



#### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F. N oz.	P.T. max. mm in.	O.T. max.	D.T. max. mm in.
CW actuation* 15 amp. SPDT	A	EX-AR128	2,22-5,56 8-20	5,56 .219	90°	0,18 .007

Limit/Enclosed

### LOW FORCE ROD LEVER ACTUATED SWITCH



#### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F. max. N oz.	P.T. max.	O.T. min.	D.T.
Furnished without mounting bracket. CW actuation* 15 amp. SPDT	A	EX-AR1613	0,56 2	18°	40°	—

### MANUALLY ACTUATED SWITCH



#### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F. max. N lb.
Large 3 x 3.5 inch paddle for fast, easy operation. 15 amp. SPDT	A	EX-AR50	11,1 2.5

### OVERTRAVEL PLUNGER ACTUATED SWITCHES



#### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F. max. N lb.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.	O.P.** mm in.
15 amp. SPDT	A	EX-Q	13,34 3	1,98 .078	4,78 .188	0,10 .004	47,22 1.859
20 amp. SPDT	B	EXA-Q	8,90 2	1,27 .050	3,18 .125	0,23 .009	46,02 1.812
Also UL listed for Class I, Group B (hydrogen) atmospheres.	15 amp SPDT	EX-Q800	13,34 3	1,98 .078	4,78 .188	0,10 .004	47,22 1.859
	10 amps DPDT	EXD-Q-3†	13,34 3	3,96 .156	3,58 .141	1,52 .060	46,02 1.812
With seal boot on plunger. 10 amp. SPDT	D	EX-N15	13,34 3	1,98 .078	4,78 .188	0,10 .004	52,32 2.060

\* CW (Clockwise) or CCW actuation, when looking at nameplate.

\*\* Tolerance ± 1.52 in./0.060 mm.

† Furnished with 0,91 m (3 ft.) leadwire.

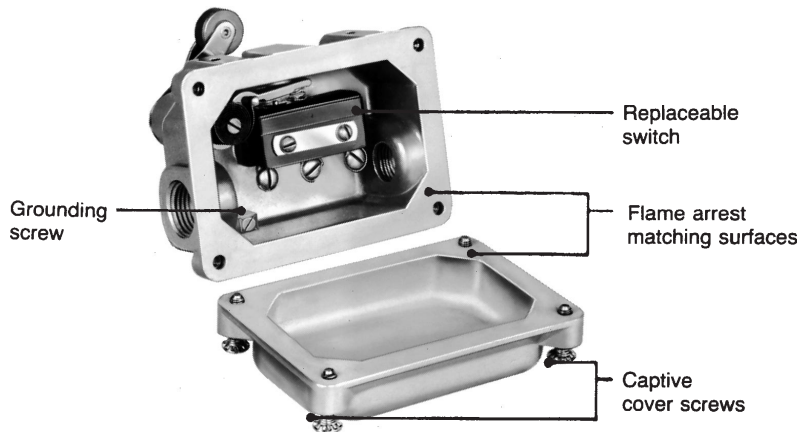
Characteristics: O.F. — Operating Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel  
N = Newtons

# Limit and Enclosed Switches

## Explosion-Proof Switches

EX Series

Double-conduit connect switch



EX switches on this page have conduit openings on each side of the enclosure which enable through-wiring. This feature also allows the user to split the wiring of a double-pole switch, with one-pole exiting from each side.

The enclosure is larger than EX switches with one conduit opening and provides additional space for wiring.

### NEMA

Double-conduit connect EX switches also meet the applicable portions of the NEMA classifications listed on page A121.

## ROLLER LEVER ACTUATED SWITCHES



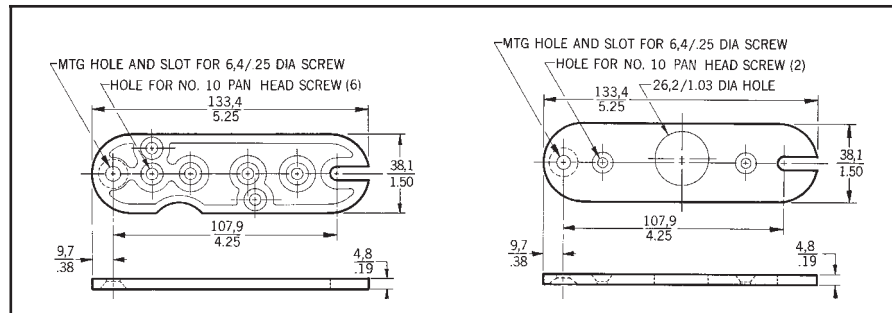
### ORDER GUIDE

Description	Elec. Rating Pg. A121	Catalog Listing	O.F. N oz.	P.T. max. mm in.	O.T. max.	D.T. max. mm in.
Two ½ in. conduit openings. CW actuation.* 15 amp. SPDT.	A	1EX1	2,22-5,56 8-20	5,56 .219	90°	0,18 .007
Two ½ in. conduit openings. CW actuation.* 20 amp. SPDT.	B	2EX1	3,61-8,90 13-32	5,56 .219	25°	0,3 .012
Two ¾ in. conduit openings. CW actuation.* 10 amp. DPDT.	C	4EX1-3†	2,22-6,67 8-24	6,35 .250	25°	2,77 .109

\* CW (clockwise) or CCW actuation, when looking at nameplate.  
N = Newtons  
† Furnished with 0,91 m (3 ft.) leadwire.

Characteristics: O.F. — Operating Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel.

### MOUNTING BRACKETS



15PA85-EX is used for top, bottom, back or end mounting. It is furnished with each switch, except where noted in the order guides.

15PA86-EX is ordered separately for top mounting of plunger switches. EX switches may also be direct mounted, using 10-32 UNF screws.

## Explosion-Proof Switches

### REPLACEMENT PARTS

Switch Listing	Catalog Listing Replacement Part Numbers		
	Switching Unit	Actuator	Springs
EX-AR	BZ-2R-P4	6PA5-EX	33PA7-EX
EX-AR16	BZ-2RW88-P5	6PA5-EX	—
EX-AR20	BZ-2R-P4	*	33PA7-EX
EX-AR30	BZ-2R-P4	6PA5-EX	33PA5-EX
EX-AR50	BZ-2R-P4	6PA134-OP	33PA7-EX
EX-AR800	BZ-2R-P4	6PA5-EX	33PA7-EX
EX-CR	BZ-2R-P4	6PA131-EX	33PA7-EX
EX-Q	BZ-2R-P4	8PA15-EX	—
EX-N15	BZ-2R15-P4	8PA12-EX	—
EXA-AR	BA-2R-P4	6PA5-EX	33PA6-EX
EXD-AR-3	DT-2R4-A7	6PA5-EX	33PA6-EX
EXH-AR3	4HS202	6PA5-EX	33PA6-EX
EXH-AR33	4HS203	6PA5-EX	33PA5-EX
EXD-AR30-3	DT-2R711-A7	6PA5-EX	33PA5-EX

Switch Listing	Catalog Listing Replacement Part Numbers		
	Switching Unit	Actuator	Spring
EX-AR128	BZ-2R-P4	6PA130-EX	33-PA7-EX
EX-AR1613	BZ-2RW88-P5	6PA136-EX	—
EX-Q800	BZ-2R-P4	8PA15-EX	—
EXA-Q	BA-2R-P4	8PA15-EX	—
EXD-Q-3	DT-2R-A7	8PA77-EX	—
1EX1	BZ-2R-P4	6PA5-EX	33PA7EX
2EX1	BA-2R-P4	6PA5-EX	33PA6-EX
4EX1-3	DT-2R4-A7	6PA5-EX	33PA6-EX

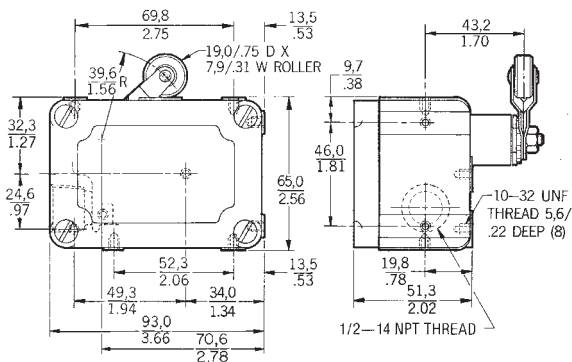
\* Actuators for EX-AR20 are shown on page A122.

In addition to the items shown above, the following replaceable internal levers are available: **33PA1-EX** for EX-AR, EX-AR800, EXA-AR, EXD-AR-3, EXH-AR3, EX-AR20, EX-CR, EX-AR128, 1EX1, 2EX1, and 4EX1-3.

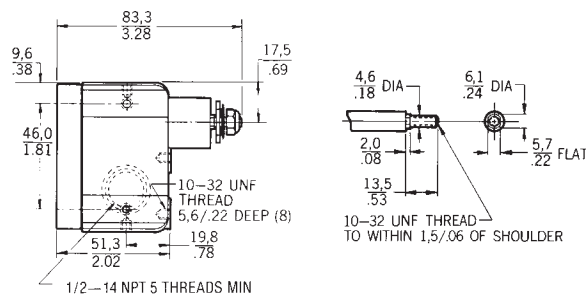
Limit/Enclosed

### MOUNTING DIMENSIONS (For reference only)

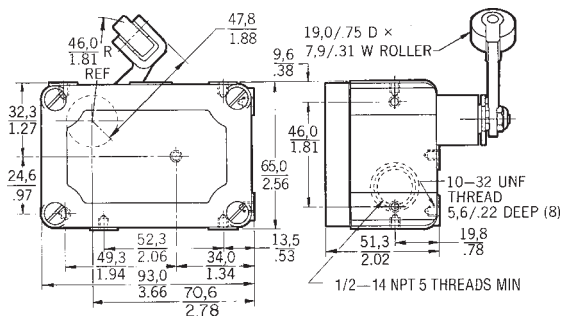
#### ROLLER LEVER



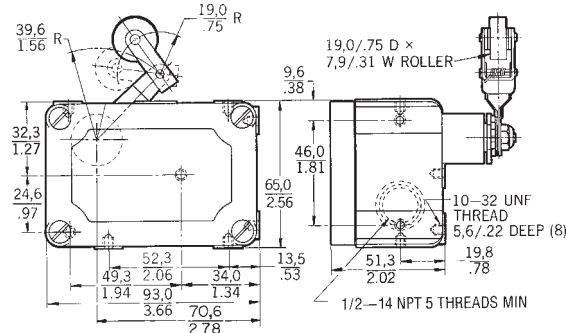
#### NO LEVER



#### CROSS ROLLER LEVER



#### ONE-WAY ROLLER LEVER



Key: 0,0 = mm  
0.00 = inches



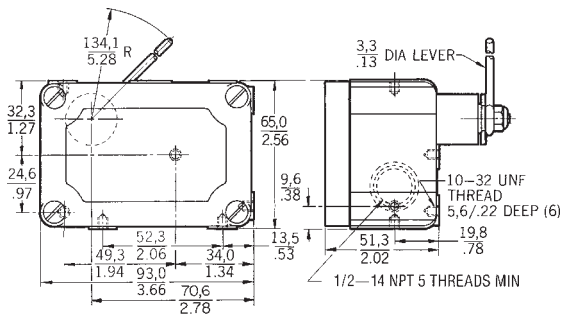
# Limit and Enclosed Switches

EX Series

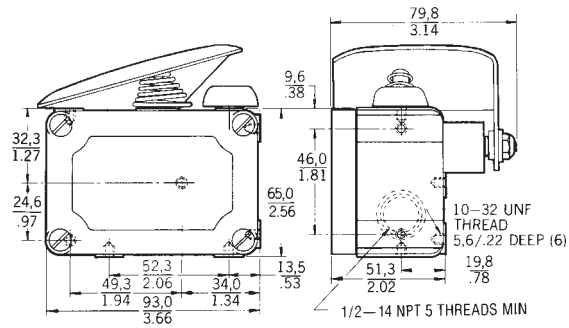
## Explosion-Proof Switches

MOUNTING DIMENSIONS (For reference only)

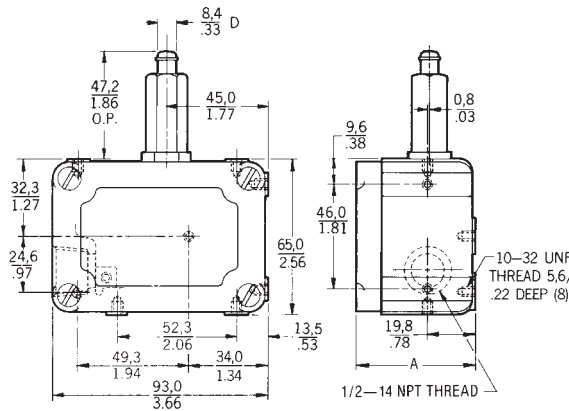
### LOW FORCE ROD



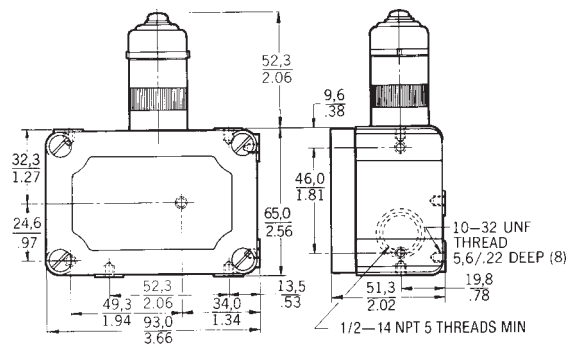
### MANUAL ACTUATOR



### PLUNGER



### PLUNGER WITH SEAL BOOT



### SWITCHES WITH DOUBLE CONDUIT OPENINGS

#### ROLLER LEVER

