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Sensing and Control  
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**Sensing and Control**  
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## Enclosed Switches







OP enclosed switches are precision snap-action switches sealed in rugged cast aluminum housings. Cover and shaft seals keep out moisture and other contaminants on rotary operated switches. The plungers in the Q-plunger version are not sealed.

Refer to page A123 for explosion-proof Type EX switches, which are dimensionally interchangeable with OP switches.

### FEATURES

- Cast aluminum housing
  - Mounts from 4 sides
  - Cover seal, captive cover screws
  - Momentary contact
  - UL Recognized, file #E12252
  - CSA Certified, file #LR57325
  - Grounding screw
  - NEMA 1, 3\*, 4\* and 13\*
- (\* Except Q-plunger and high temperature types)

### ELECTRICAL RATING

Circuitry	Electrical Rating
 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.
 Double-pole Double-throw	B UL/CSA Rating: 10 amps, 125, 250 VAC; 0.3 amp, 125 VDC; 0.15 amp, 250 VDC.
 Single-pole Double-throw	D UL/CSA Rating: 20 amps, 125, 250 or 480 VAC; 1 Hp, 125 VAC; 2 Hp, 250 VAC; 1/2 amp, 125 VDC; 1/4 amp, 250 VDC. Lamp Load — 10 amps, 125 VAC.
 Single-pole Double-throw	E 5 amps, 125, 250 or 480 VAC; 1/2 amp - 125VDC; 1/4 amp - 250 VDC

## ROLLER LEVER ACTUATED SWITCHES



N = Newtons  
 \* Actuation is designated as CW (clockwise) or CCW rotation, when looking at the switch nameplate.  
 † Choice of levers available for use with OP-AR20:  
**6PA5-EX** (non-sparkling roller), **6PA6-OP** (steel roller), **6PA127-EX** (nylon roller), **6PA130-EX** (CW), **6PA142-EX** (CCW), and **6PA136-EX** (Aluminum rod).

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.

### ORDER GUIDE

Description		Elec. Rating	Catalog Listing	O.F.	P.T. max. mm in.	O.T. max.	D.T. max. mm in.
Roller Lever is field adjustable through 360°	CW actuation* SPDT	A	<b>OP-AR</b>	2,22-5,56 N .5-1.25 lbs.	5,56 .219 (8°)	90°	0,18 .007 (.25°)
	CW actuation* SPDT will withstand 400°F for 100 hours	E	OP-AR400	2,22-5,56 N .5-1.25 lbs.	5,56 .219 (8°)	90°	0,18 .007 (.25°)
	CW actuation* High capacity. SPDT	D	<b>OPA-AR</b>	3,34-8,90 N .75-2 lbs.	5,56 .219 (8°)	25°	0,3 .012 (.4°)
	CW actuation* DPDT	B	<b>OPD-AR</b>	2,22-6,67 N .5-1.5 lbs.	4,78 .250 (10°)	25°	2,77 .109 (4°)
	CCW actuation* SPDT	A	<b>OP-AR30</b>	1,11 N max. 2.5 lbs. max.	1,65 .065 (3.5°)	25°	0,18 .007 (.25°)
	CCW actuation* Basic switch plunger held depressed (normal position) DPDT	B	<b>OPD-AR30</b>	12,2 N max. 2.75 lbs. max.	5,56 .219 (8°)	25°	2,77 .109 (4°)
	CW or CCW actuation* No lever return spring. No mounting bracket furnished. SPDT.	A	OP-AR16	0,56 N max. 2 oz. max.	—	—	—
No lever furnished.† CW actuation.* SPDT	A	<b>OP-AR20</b>	0,08-0,23 N .75-2 in. lb.	8°	90°	.25°	

## Enclosed Switches

### CROSS ROLLER LEVER ACTUATED SWITCH



#### ORDER GUIDE

Description	Elec. Rating	Catalog Listing	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
CW actuation* Field adjustable through 360°. SPDT	A	OP-CR	2,22-5,56 .5-1.25	5,56 .219 (8°)	90° max.	0,18 .007 (.25°)

### MANUALLY ACTUATED SWITCH



#### ORDER GUIDE

Description	Elec. Rating	Catalog Listing	O.F. max.
Large 3x3.5 inch paddle for fast, easy operation SPDT	A	OP-AR50	11.1 Newtons 2.5 lbs. (approx.)

Limit/Enclosed

### OVERTRAVEL PLUNGER ACTUATED SWITCHES



#### ORDER GUIDE

Description		Elec. Rating	Catalog Listing	O.P. mm in.	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
In-line actuation	SPDT	A	OP-Q	47,2±1,52 1.859±.060	13,3 3	1,98 .078	4,78 .188	0,10 .004
	High Capacity SPDT	D	OPA-Q	46±1,52 1.812±.060	8,90 2	1,27 .050	3,18 .125	0,23 .009
	DPDT	B	OPD-Q	46±1,52 1.812±.060	13,3 3	2,77 .109	3,58 .141	1,52 .060

### BOOT SEALED PLUNGER ACTUATED SWITCH

#### ORDER GUIDE

Description	Elec. Rating	Catalog Listing	O.F. max. N lbs.	P.T. max. mm in.	O.T. min. mm in.	D.T. max. mm in.
In-line actuation with boot seal	A	OP-N	15,5 3.5	1,98 .078	4,78 .188	0,10 .004

\* Clockwise actuation, when looking at the switch nameplate.  
N = Newtons

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

## Enclosed Switches

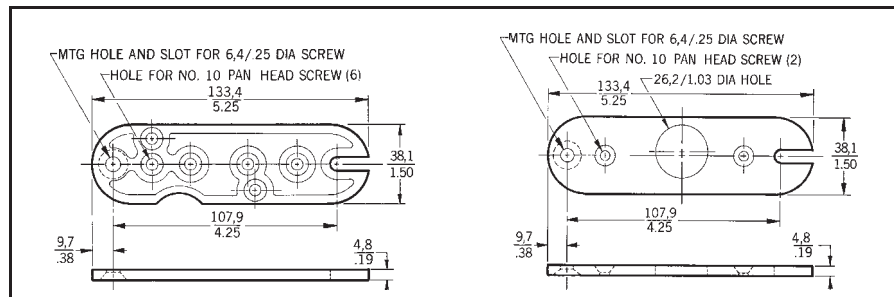
### REPLACEMENT PARTS

In addition to the items shown below, these replaceable internal levers are available:  
**33PA2-OP** for OP-AR, OP-AR20 and OP-CR; and  
**33PA3-OP** for OP-AR50.

Switch Listing	Catalog Listing Replacement Part Numbers		
	Switching Unit	Acuator	Springs
OP-AR	<b>BZ-2R-P4</b>	<b>6PA6-OP</b>	<b>33PA7-EX</b>
OPA-AR	<b>BA-2R-P4</b>	<b>6PA6-OP</b>	<b>33PA6-EX</b>
OPD-AR	<b>DT-2R4-A7</b>	<b>6PA6-OP</b>	<b>33PA6-EX</b>
OP-AR30	<b>BZ-2R-P4</b>	<b>6PA6-OP</b>	<b>33PA5-EX</b>
OPD-AR30	<b>DT-2R711-A7</b>	<b>6PA6-OP</b>	<b>33PA5-EX</b>
OP-AR16	<b>BZ-2RW88-P5</b>	<b>6PA6-OP</b>	—
OP-AR20	<b>BZ-2R-P4</b>	†	<b>33PA7-EX</b>
OP-Q	<b>BZ-2R-P4</b>	<b>8PA7-OP</b>	—
OPA-Q	<b>BA-2R-P4</b>	—	—
OPD-Q	<b>DT-2R-A7</b>	—	—
OP-CR	<b>BZ-2R-P4</b>	<b>6PA131-EX</b>	<b>33PA7-EX</b>
OP-AR50	<b>BZ-2R-P4</b>	<b>6PA134-OP</b>	<b>33PA7-EX</b>

† Levers for OP-AR20 are on pages A108 and A109.

### MOUNTING BRACKETS



**15PA85-EX** is used for top, bottom, back or end mounting. It is furnished with each switch, except OP-AR16 and OP-AR62.

**15AP86-EX** is ordered separately for top mounting of plunger switches.

(Switches may also be direct mounted using 10-32 NF screws.)

### CONDUIT SEALING PACKETS

Catalog Listing Packet	Cable O.D. Inches
2PA6	.400" - .435"
2PA16	.435" - .470"
2PA1	.530" - .570"

(See page A99 for description.)

### MOUNTING DIMENSIONS (For reference only)

