

IT'S EASY TO BUILD YOUR OWN POTENTIOMETER

Simply pick the code number from each of the sections below and combine them to build your part number.

Potentiometer Operators

POTO –
/ *II* *III* *IV*

Example: To build one of our most popular Potentiometer Operators, the part number would be **POTO + II + III + IV** or **POTO5K-TBW**



I. OPERATOR TYPE		
CODE	DESCRIPTION	LIST
POTO	Potentiometer Operator	\$58.00

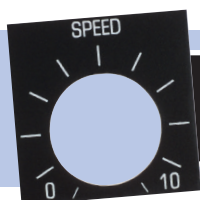
II. CLAMP RING		
CODE	DESCRIPTION	LIST
(Blank)	Black Polyester (Type 4X)	—
A	Aluminum (Type 4)	\$ 4.30

III. RESISTANCE		
CODE	DESCRIPTION	LIST
(Blank)	Operator only	—
1K	1k Potentiometer	\$22.00
2.5K	2.5k Potentiometer	\$22.00
5K	5k Potentiometer	\$22.00
10K	10k Potentiometer	\$22.00

Special order values available—consult factory
(not available for guaranteed same day shipping).

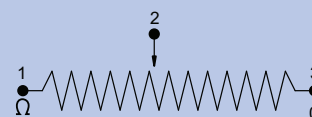
IV. TERMINAL BLOCK		
CODE	DESCRIPTION	LIST
(Blank)	Operator only	—
TBW	Terminal Block installed and wired	\$16.00

Terminal block kit may be ordered separately (part number TBK, List \$9.60) or installed and wired at the factory to the potentiometer operator.



LEGEND PLATES FOR POTENTIOMETER OPERATORS are available for same day shipping. See pages 30 & 31 for complete selection.

WIRING DIAGRAM



Clockwise knob rotation as seen from the front of the panel

Measuring Between Terminals:

1 & 2 Decreasing Resistance ($\downarrow \Omega$)

2 & 3 Increasing Resistance ($\uparrow \Omega$)

2 is the common

30MM POTENTIOMETER OPERATORS

Our single-turn Potentiometer Operators utilize standard 2 watt potentiometers with 1/4" (6.4mm) bushing and 7/8" (22.5mm) long slotted shafts. A 5/64" allen wrench is required for installation. All c3controls 30mm operators are UL Listed and are rated Type 4/4X as standard for watertight and corrosion resistance. In addition, operators are also listed for Type 1, 2, 3, 3R, 12 and 13, and meet global standards requirements. CSA File # LR 47446-9.

Product features include:

- Polyester construction for superior corrosion resistance, moisture rejection and electrical insulation.
- Polyester or polished aluminum clamp rings.
- Single-turn standard 2 watt potentiometer.
- #6 terminal screws with self-lifting captive wire clamps accommodate #22 through two #12 AWG wires (0.5 - 4mm²) per terminal.
- Operators conveniently mount in a round 1-13/64" (30.5mm) hole that is directly interchangeable with competitors units.



UNIQUE PRODUCT FEATURES



1. Our revolutionary U-Cup seal is infused with a Teflon coating to eliminate cracking when exposed to harsh conditions such as heat, dryness and sunlight.
2. All frictional parts are molded with an internal self-lubricant to provide outstanding wear without troublesome greases used by others that attracts dust and other particles in the area.
3. Three point terminal block and hardware.

IT'S EASY TO BUILD YOUR OWN LEGEND PLATE

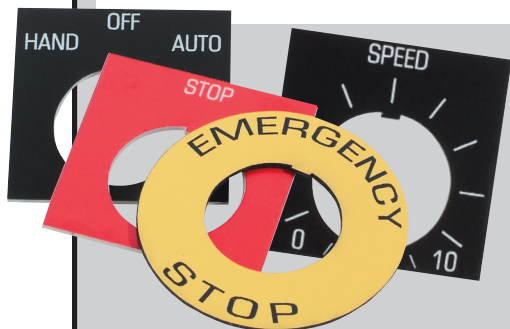
Simply pick the code number from each of the sections below and combine them to build your part number.

Legend Plates



Legend plates feature 2 lines of text with approximately 16 characters per line. Upper case is standard unless specified.

*The tall legend plate (LPT) features 3 lines of text with approximately 16 characters per line and the Potentiometer legend plate comes standard with a scale and one or two lines of text, see chart D below.



I. LEGEND PLATE TYPE

CODE	DESCRIPTION	LIST
LP	Standard 2" h x 2" w	\$ 4.00
LPN	Narrow 2" h x 1-3/4" w	\$ 4.00
LPS	Short 1-3/4" h x 2" w	\$ 4.00
LPT	Tall 2-1/4" h x 2" w*	\$ 5.00
LPR	Standard Round 2-13/32" Dia.	\$ 9.00
LPRM	Medium Round 2-3/4" Dia.	\$11.00
LPRJ	Jumbo Round 3-3/4" Dia.	\$12.00

II. FACE AND LETTER COLOR

CODE	FACE COLOR	LETTER COLOR
AL	Aluminum	Black
(Blank)	Black	White
BE	Blue	White
GN	Green	White
RD	Red	White
WE	White	Black
YW	Yellow	Black

III. LEGEND DESIGNATION

A. PUSH BUTTONS AND LIGHTS

CODE	DESCRIPTION
00	(Blank)
01	AUTO
02	CLOSE
31	CYCLE START
100	CYCLE STOP
03	DOWN
102	EMERGENCY
04	EMERGENCY STOP
06	FAST
101	FAULT
07	FORWARD
08	HAND
32	HIGH
33	IN
09	INCH
10	JOG
38	JOG FORWARD
39	JOG REVERSE
34	LOW
35	LOWER
11	MANUAL
26	MOTOR RUN
12	OFF
13	ON
14	OPEN
36	OUT
27	OVERLOAD
15	POWER OFF
16	POWER ON
30	PUSH TO RESET
17	PUSH TO TEST
37	RAISE
109	READY
18	RESET
19	REVERSE
20	RUN
21	SLOW
22	START
23	STOP
24	TEST
29	TRIP
25	UP

B. 2-POSITION SELECTOR

CODE	LEGEND LEFT	LEGEND RIGHT
00	(Blank)	(Blank)
50	AUTO	HAND
68	AUTO	MANUAL
51	DOWN	UP
63	FAST	SLOW
52	FWD	REV
53	HAND	AUTO
73	HIGH	LOW
54	INCH	RUN
75	LEFT	RIGHT
70	LOCAL	REMOTE
55	MANUAL	AUTO
56	OFF	ON
57	ON	OFF
58	OPEN	CLOSE
65	PULL START	PUSH STOP
66	PUSH OFF	PULL ON
64	PUSH ON	PUSH OFF
67	PUSH TO STOP	PULL TO START
71	RAISE	LOWER
59	REV	FWD
60	RUN	JOG
69	SLOW	FAST
61	START	STOP
62	STOP	START
74	SUMMER	WINTER
72	UP	DOWN

C. 3-POSITION SELECTOR

CODE	LEGEND LEFT	LEGEND CENTER	LEGEND RIGHT
00	(Blank)	(Blank)	(Blank)
108	A	O	H
92	AUTO	OFF	HAND
93	AUTO	MAN	OFF
80	DOWN	OFF	UP
81	FWD	AUTO	REV
82	FWD	OFF	REV
107	H	O	A
83	HAND	OFF	AUTO
94	HIGH	OFF	LOW
99	JOG	OFF	AUTO
90	LOCAL	OFF	REMOTE
84	MANUAL	OFF	AUTO
89	OFF	RUN	START
85	OFF	START	RUN
86	OFF	1	2
95	OPEN	OFF	CLOSE
91	RAISE	OFF	LOWER
96	SLOW	OFF	FAST
97	SUMMER	OFF	WINTER
98	UP	OFF	DOWN
87	1	OFF	2
88	1	2	3

D. POTENTIOMETER*

CODE	DESCRIPTION
40	Blank Legend 0 - 10
41	"SPEED" 0 - 10
43	Blank Legend 0 - 100
44	"SPEED" 0 - 100

IV. ADHESIVE BACK

CODE	DESCRIPTION
(Blank)	No Adhesive Back
A	Adhesive Back

DISCOUNT
SCHEDULE **E**

IT'S EASY TO BUILD YOUR OWN LEGEND PLATE

Simply pick the code number from each of the sections below and combine them to build your part number.

Special Legend Plates



All legend plates are a 2-ply laminated plastic, laser engraved for a permanent and quality appearance. Uppercase is standard unless specified.



I. LEGEND PLATE TYPE

CODE	DESCRIPTION	LIST
LP	Standard 2" h x 2" w	\$ 4.00
LPN	Narrow 2" h x 1-3/4" w	\$ 4.00
LPS	Short 1-3/4" h x 2" w	\$ 4.00
LPT	Tall 2-1/4" h x 2" w*	\$ 5.00
LPR	Standard Round 2-13/32" Dia.	\$ 9.00
LPRM	Medium Round 2-3/4" Dia.	\$11.00
LPRJ	Jumbo Round 3-3/4" Dia.	\$12.00

Legend plates feature 2 lines of text with approximately 16 characters per line.

*The tall legend plate (LPT) features 3 lines of text with 16 characters per line.

DISCOUNT
SCHEDULE

E

II. FACE AND LETTER COLOR

CODE	FACE COLOR	LETTER COLOR
AL	Aluminum	Black
(Blank)	Black	White
BE	Blue	White
GN	Green	White
RD	Red	White
WE	White	Black
YW	Yellow	Black

III. LEGEND DESIGNATION

CODE	DESCRIPTION	LIST
SP	Special Legend	\$14.00

IV. ADHESIVE BACK

CODE	DESCRIPTION
(Blank)	No Adhesive Back
A	Adhesive Back

Upon receipt of your order, legend plates will be set-up as specified and a proof will be sent to you prior to production to ensure accuracy.

To order, submit your drawing to:

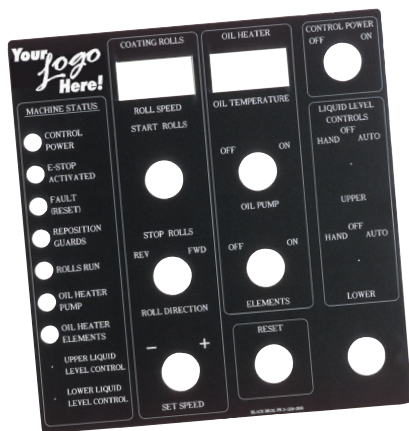
Mail: c3controls
Attn: Customer First
PO Box 496
Beaver, PA 15009

Fax: 724.775.5283

Email: legendplates@c3controls.com

To help simplify your order process, templates are available by calling our factory at 724.775.7926 or reference one of the drawings shown on page 42.

Special legend plates are not available for same day shipping.



(Sample custom plate)

CUSTOM LEGEND PLATES

- **Add your Corporate Logo!** Send us your corporate logo electronically to promote your company image in a clean professional legend plate.
- Available in 2-ply 12" x 24" (304.8mm x 609.6mm) sheets of laminated plastic for custom laser engraving.
- To order, specify part number LP-CP (no adhesive back) or LP-CP-A (adhesive back).
- Initial Set-Up Fee Per Legend Plate: \$50/hour (minimum fee \$50.00).
- \$2.00/Square Inch (minimum \$18.00).
- Design services available. Consult factory for details and hourly rate.
- Custom legend plates are not available for same-day shipping.

To order, submit your drawing to:

Mail: c3controls
Attn: Customer First
PO Box 496
Beaver, PA 15009

Fax: 724.775.5283

Email: legendplates@c3controls.com

30MM INDUSTRIAL PILOT DEVICES

ELECTRICAL RATINGS								
Lamp	Industry Number	Rated Volts	Lumens (MSCD)	Design Life (Hrs.)	Current Draw (mA)	Lamp Type	Shock & Vibration	Leakage Protection
FVB6	1866	6.3V	0.65	5,000	250	Incandescent	Very Good	N/A
FVB12	756	14V	0.31	15,000	80	Incandescent	Good	N/A
FVB24	757	28V	0.62	7,500	80	Incandescent	Good	N/A
FVB55	1835	55V	1.1	5,000	50	Incandescent	Good	N/A
FVB120	**	130V	0.36	10,000	20	Incandescent	Good	N/A
LED6	**	6V†	Varies w/ Color 2000 mcd Typical	100,000	50	LED	Excellent	14 mA
LED12	**	12V†		100,000	<20	LED	Excellent	4 mA
LED24	**	24V†		100,000	<20	LED	Excellent	4 mA
LED130	**	120/130V†		100,000	<10	LED	Excellent	2 mA
FVB120NG	—	95-135V	Typical (Glow)	25,000	<5	Neon/Green	Very Good	N/A
FVB120NR	—	95-135V	Typical (Glow)	25,000	<5	Neon/Red	Very Good	N/A

**Designates a lamp design optimized for c3controls illuminated devices. See LED replacement lamps on page 33.

† LED voltage tolerance is +/- 10%

MULTI-VOLTAGE POWER CONSUMPTION & CURRENT DRAW

System Voltage	AC Current Draw (mA)	DC Current Draw (mA)	Power Consumption (W)
24V	21	20	AC: <1 DC: <1/2
48V	17	7	
120V	3.5	—	
125V	—	3	
240V	2.5	—	
250V	—	2	
277V	2.5	—	

PROTECTION FEATURES

Fused to Fail Open

Yes

**DIELECTRIC STRENGTH
(TERMINAL TO GROUND)**

2200V for 1 Minute

STANDARD CONTACTS

Utilization Category

	IEC	UL	Make Rating	Break Rating	Ith-Thermal Current
AC	AC-15	A600	7200VA	720VA	10A
DC	DC-13	P300	138VA	138VA	5A

NOTE: For AC voltage below 72V AC the max. allowed switching current is 10A = Ith. For DC voltages below 28V DC the max. allowed switching current is 5A = Ith.

For switching applications below 24V/40mA - Hermetic REED contacts are recommended. Hermetic Reeds are also excellent in environments containing chemical vapors, oxidizing agents, and explosive gases. Please refer to the HAZARDOUS section of the Series 30 devices for more information. Available on c3controls' 30MM products only.

	UNITS	
ENVIRONMENTAL RATINGS		
Operators		Rated and Certified for use in Type 1, 2, 3, 3R, 4/4X, 12, & 13 and IP65
Operating Temperature	°F / °C	-40 to +131 / -40 to +55
Storage Temperature	°F / °C	-40 to +185 / -40 to +85

NOTE: Operating environments below freezing temperatures are assumed to be absent of freezing liquids or pollutants.

TERMINAL & WIRING CONSIDERATION

AWG Conductor		22-12 CU (Copper only - Solid & Stranded) [.5 ~ 4mm ²] One or two wires permitted per termination
Recommended Torque	in-Lb. [Nm]	7 - 10 [0.8 - 1.0]

CONSTRUCTION

OPERATING FORCES

PUSH BUTTONS (OPERATORS ONLY)

Momentary	lbs. [N]	1.3 [5.8]
Illuminated Momentary	lbs. [N]	2.8 [12.4]
Maintained	lbs. [N]	4 - 6 [17.9 - 26.7]
Illuminated Maintained	lbs. [N]	4.6 [20.5]

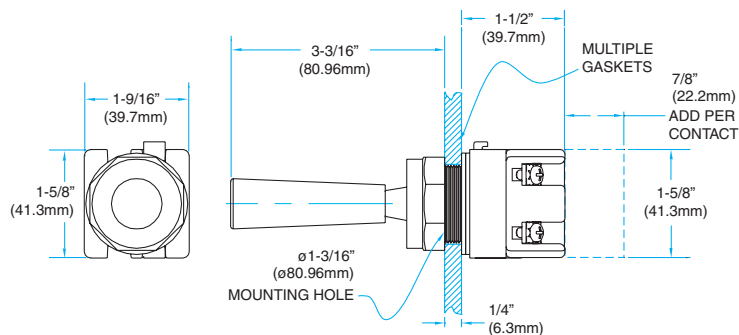
30MM INDUSTRIAL PILOT DEVICES

	UNITS	
CONSTRUCTION (CONTINUED)		
OPERATING FORCES (CONTINUED)		
RESET PUSH BUTTON	lbs. [N]	1.5 [6.7]
SELECTOR SWITCHES		
Maintained	in-lbs. [Nm]	1.7 [.19]
Momentary	in-lbs. [Nm]	1.7 [.19]
Key Operated	in-lbs. [Nm]	1.7 [.19]
CABLE PULL		
Standard	lbs. [N]	4 – 6 [17.9 – 26.7]
Heavy Duty	lbs. [N]	13 [57.8]
PUSH-TWIST RELEASE	lbs. [N]	4.7 [20.9]
POTENTIOMETER		
2 Watt “J” Series	in-oz. [Nm]	3 – 12 [.11 Max.] (300° Rotation)
STANDARD CONTACT BLOCKS	lbs. [N]	1 [4.45]
INDICATING LIGHTS		Refer to the appropriate Lamp Data
MULTI-VOLTAGE LIGHTS	VAC/VDC	20-277 (Burden .816W Max.)
MECHANICAL ENDURANCE		
PUSH BUTTONS		
Maintained	Ops.	250,000
Momentary	Ops.	5,000,000
SELECTOR SWITCHES	Ops.	500,000
ALL OTHER DEVICES	Ops.	250,000
STANDARD CONTACT BLOCKS	Ops.	10,000,000
INDICATING LIGHTS	Ops.	Refer to the appropriate Lamp Data
MATERIALS		
Operator Housings		Thermoplastic Polyester and Polyester Blends (UV Stabilized for outdoor use)
Operator Caps and Handles - Non-Illuminated (Glass Reinforced Grades)		Thermoplastic Polyester and Polyester Blends (UV Stabilized for outdoor use)
Mounting Rings and Nuts		Thermoplastic Polyester and Polyester Blends (UV Stabilized for outdoor use)
Thrust Washer		Thermoplastic Polyester and Polyester Blends (UV Stabilized for outdoor use)
Trim Washer		Thermoplastic Polyester and Polyester Blends (UV Stabilized for outdoor use)
Pilot Light Lens		High Impact Polycarbonate (UV Stabilized for outdoor use)
Transparent Push Button and Mushroom Caps		High Impact Polycarbonate (UV Stabilized for outdoor use)
Certain CAM and Bearing Parts		Custom Polymers: Teflon, Silicon and Moly-Disulfide impregnated for improved wearability
Rubber Boots		Custom Polymers: Fluorosilicone and Thermoplastic Neoprene
Seals		Neoprene Gaskets
		Thermoplastic - Molded Neoprene and Alloy Derivitives
		BUNA N - Rubber - Teflon Coated
		Thermoplastic - Elastomer Molded Seals
		Fluorosilicone - Boots
Push Pull Bearings		Brass and Stainless Steel
Internal Tubes for Maintained Devices		Brass and Stainless Steel
Detents for Maintained Devices		Brass and Stainless Steel
Springs		Stainless Steel throughout
Optional Mounting Nut		Aluminum
ROHS COMPLIANCE		For RoHS compliance documentation by product, refer to www.c3controls.com

WOBBLE STICK

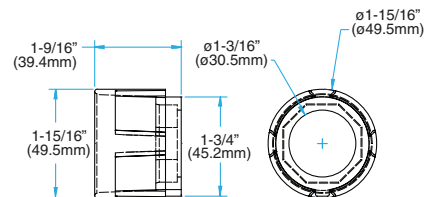
Fully-assembled operators come standard with one 3/16" (4.8mm) and three 1/16" (1.6mm) gaskets.

See mounting gasket specifications chart #3 on page 42.



GUARD ATTACHMENT

PPGD

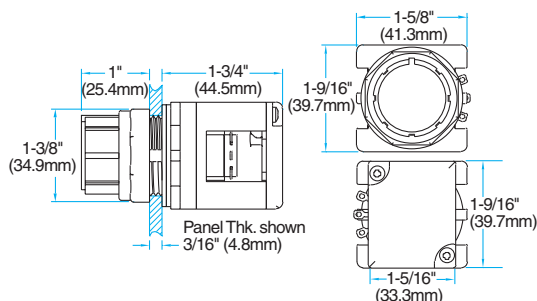


POTENTIOMETER WITH & WITHOUT TERMINAL BLOCK

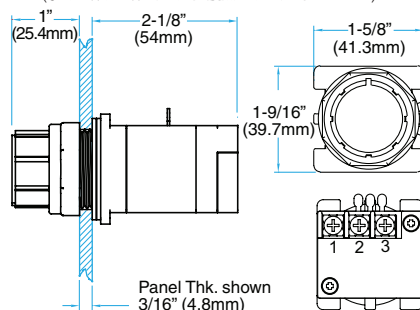
Fully-assembled operators come standard with one 3/16" (4.8mm) and three 1/16" (1.6mm) gaskets.

See mounting gasket specifications chart #3 on page 42.

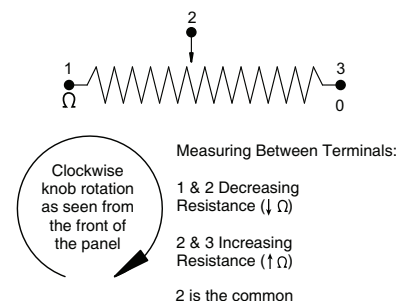
POTENTIOMETER OPERATOR
(SHOWN WITHOUT TERMINAL BLOCK)



POTENTIOMETER OPERATOR
(SHOWN WITH TERMINAL BLOCK)

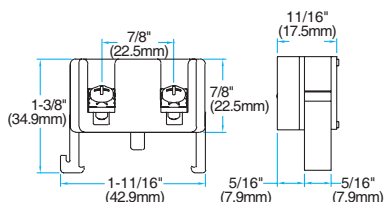


WIRING DIAGRAM

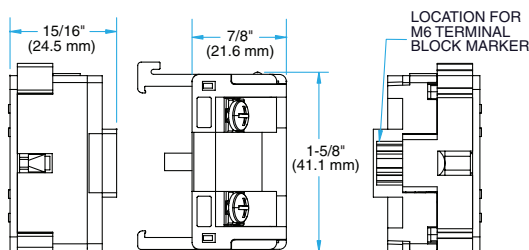


CONTACT BLOCKS

CONTACT BLOCK



CONTACT BLOCK
(SHOWN WITH IP20 TERMINAL GUARD)



A600 (AC) Rating Designation:

A600 (7200 VA Make and 720 VA Break), 600V AC Maximum, Maximum Continuous Thermal Current, Ith: 10A

P300 (DC) Rating

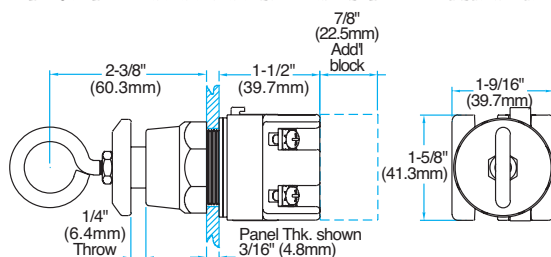
Designation: P300 (138 VA Make and 138 VA Break), 250V DC Maximum, Maximum Continuous Thermal Current, Ith: 5A

CABLE PULL OPERATORS

Fully-assembled operators come standard with one 3/16" (4.8mm) and three 1/16" (1.6mm) gaskets.

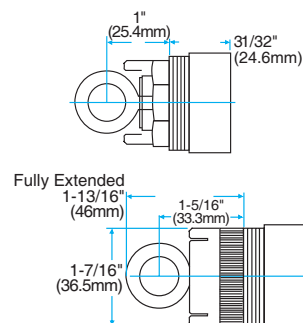
See mounting gasket specifications chart #3 on page 42.

PUSH-PULL MAINTAINED CABLE PULL OPERATOR

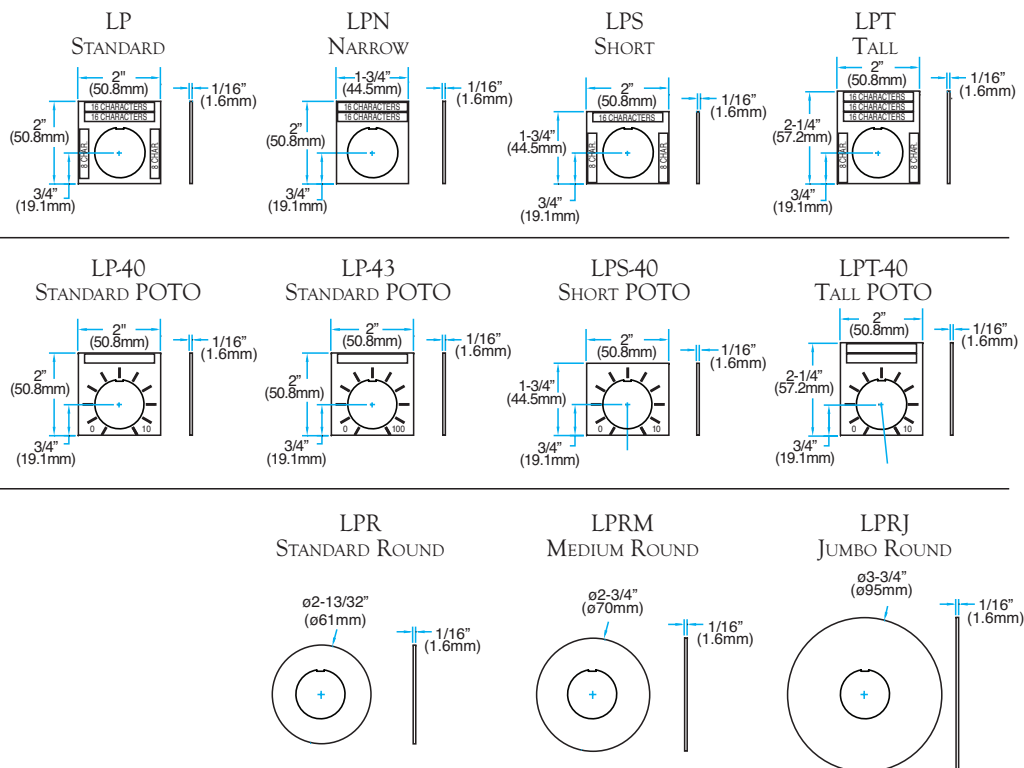
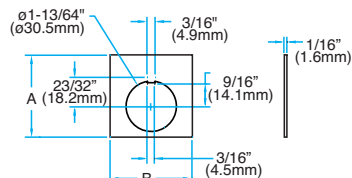


MOMENTARY AND
HEAVY DUTY
CABLE PULL
OPERATORS

MOMENTARY
BOOTED CABLE
PULL OPERATOR



LEGEND PLATES



Note: Legend plates feature a tab for optional break-away positioning and can be used in conjunction with the Thrust & Trim Washer accessory.

MOUNTING GASKETS

MOUNTING GASKETS CHART #1

PANEL THICKNESS IN DECIMALS	# OF GASKETS NEEDED 3/16" & 1/16" (4.8mm) (1.6mm)
less than .080	1 3
.080 – .132	1 2
.133 – .185	1 1
.186 – .238	0 3
.239 – .291	0 2
.292 – .344	0 1
NOTE: Remove one 1/16" (1.6mm) gasket when using a legend plate.	

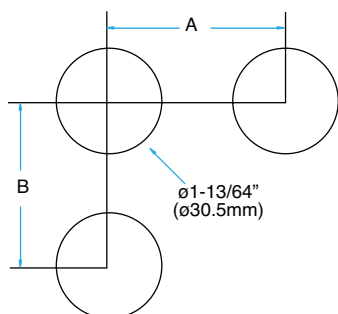
MOUNTING GASKETS CHART #2

PANEL THICKNESS IN DECIMALS	# OF GASKETS NEEDED 3/16" & 1/16" (4.8mm) (1.6mm)
less than .080	1 2
.080 – .132	1 1
.133 – .185	0 3
.186 – .238	0 2
.239 – .291	0 1
NOTE: Remove one 1/16" (1.6mm) gasket when using a legend plate.	

MOUNTING GASKETS CHART #3

PANEL THICKNESS IN DECIMALS	# OF GASKETS NEEDED 3/16" & 1/16" (4.8mm) (1.6mm)
less than .080	1 5
.080 – .132	1 4
.133 – .185	1 3
.186 – .238	1 2
.239 – .291	1 1
.292 – .344	0 3
NOTE: Remove one 1/16" (1.6mm) gasket when using a legend plate.	

MOUNTING HOLE PATTERN



MOUNTING HOLE PATTERN

SPACING	A	B
Minimum	2" (50.8mm)	2" (50.8mm)
Standard	2-1/14" (57.2mm)	2-1/14" (57.2mm)