

Limit Switches



ENVIRONMENT-FREE SEALED

P6
SEALED LIMIT
SWITCHES

SEALED AGAINST IMMERSION & CORROSIVE ATMOSPHERES



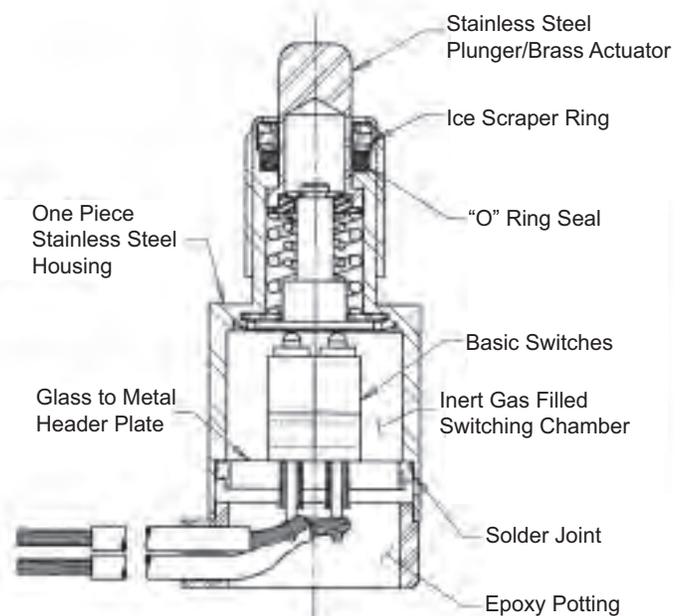
P6 series switches are sealed against immersion and corrosive atmospheres. These switches are designed for rugged duty both mechanically and electrically. A one-piece stainless steel or nickel plated brass housing, sealed at the plunger with an O-ring seal and at the base with a glass-to-metal header option provides true environment-free sealing to comply with MIL-PRF-8805/39, MIL-PRF-8805/40, MIL-PRF-8805/43, MIL-PRF-8805/100 and MIL-PRF-8805/104. Most case parts are grounded for EMI reduction.

The P6 series is available with roller plunger styles for cam or slide actuation and pin plunger for in-line actuation. Contact factory for additional designs.

P6 series features the OTTO B2, B3 or B5 series snap-action basic switch. High contact pressure and unique contact design provides low contact resistance for low level switching as well as full rated service.

Features:

- Complies with MIL-PRF-8805 sealing
- One-piece housing
- Sealed at plunger with O-rings
- Sealed at base with a glass seal
- EMI reduction construction
- Choice of pin or roller plunger
- Choice of axial or radial leads
- Reach compliant



Cross section example of OTTO P6-24XXX series.

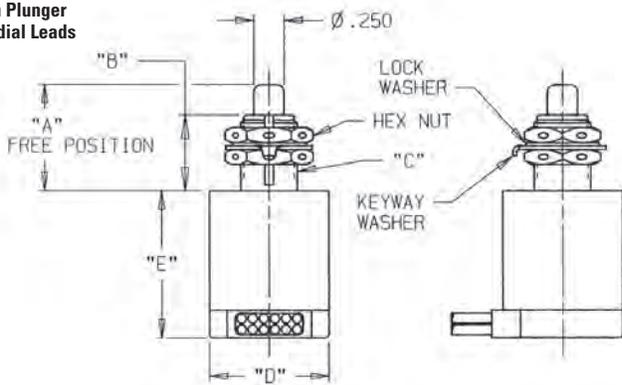
LIMIT SWITCHES

SEALED LIMIT SWITCHES

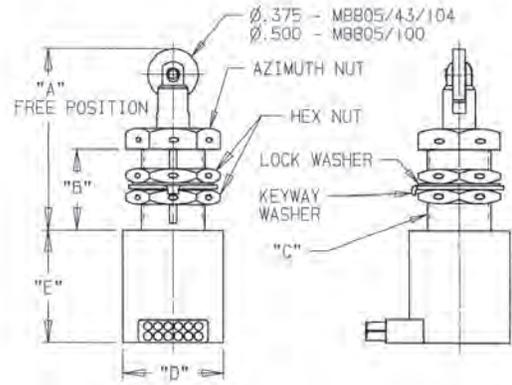
FEATURING OTTO B2 & B3 SERIES BASIC SWITCHES



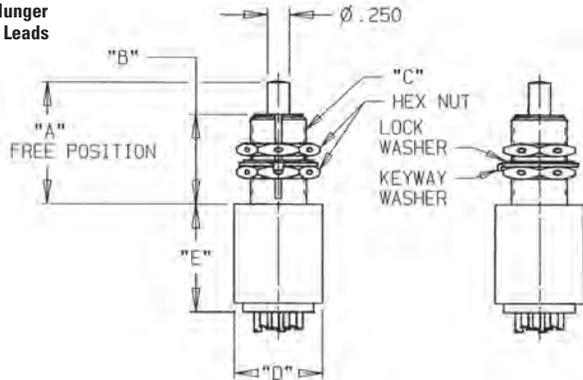
Style A
Pin Plunger
Radial Leads



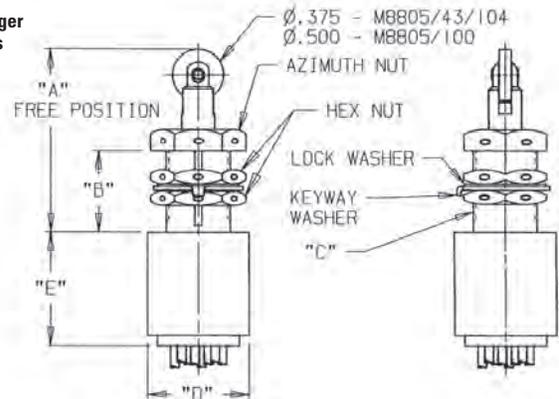
Style B
Roller Plunger
Radial Leads



Style C
Pin Plunger
Axial Leads



Style D
Roller Plunger
Axial Leads



SEALED LIMIT SWITCHES

P6
SEALED LIMIT SWITCHES

FEATURING OTTO B2 & B3 SERIES BASIC SWITCHES

SPECIFICATIONS: Standard Models					
ELECTRICAL RATINGS:					
Load	Sea Level @ 28VDC		50,000 feet @ 28VDC		
RATING TABLE 1					
Resistive	7A		7A		
Inductive	4A		2.5A		
Motor	4A		(4A)		
DWV	1000Vrms		400Vrms		
RATING TABLE 2					
Resistive	7A		7A		
Inductive	2A		2A		
Motor	4A		4A		
Lamp	2A		1A		
DWV	1250Vrms		600Vrms		
RATING TABLE 3					
Resistive	4A		4A		
Inductive	2A		2A		
Motor	4A		4A		
DWV	1000Vrms		400Vrms		
RATING TABLE 4					
Load Type	Power Circuit	Elex Logic	Low Level	Power Circuit	Elex Logic
Resistive	1A	0.01A	0.01A	1A	0.01A
Inductive	0.5A	N/A	N/A	0.5A	N/A
DWV	1000Vrms		400Vrms		

Electrical Life: 25,000 cycles
Low Level Life: 25,000 cycles
Contact Resistance: Per MIL-PRF-8805
Operating Force: 6.0 lbs. to 12.0 lbs. standard. Other forces available.
Overtravel Force: 30.0 lbs. max
Release Force: 4.0 lbs. min

Pretravel:
 MIL-PRF-8805/39, /40, /43: 0.040 inches
 MIL-PRF-8805/100: 0.070 inches
 MIL-PRF-8805/104: 0.050 inches

Movement Differential:
 MIL-PRF-8805/39, /40, /43: 0.020 inches
 MIL-PRF-8805/100: 0.035 inches
 MIL-PRF-8805/104: 0.030 inches

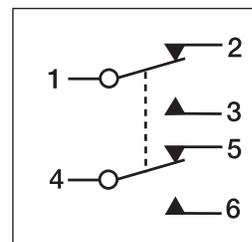
Overtravel:
 MIL-PRF-8805/39, /40, /100: 0.250 inches
 MIL-PRF-8805/43, /104: 0.125 inches

Wire Type:
 Per MIL-W-22759/7
 Marked per MIL-W-5088.
 Standard length: 6 feet. Other lengths available.

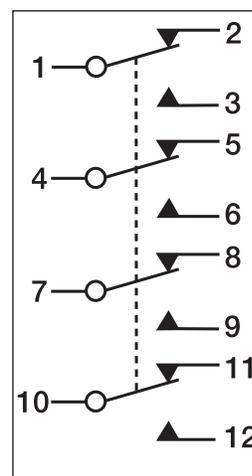
Operating Temp Range: -55°C to 85°C

Mounting/Termination:
 Bushing mounting with positive, non-turn features. Wire leads potted at terminal base for strain relief and added insulation. Each wire is marked with circuit identification.

For specific details not shown above, please consult the appropriate military specification sheet or OTTO's product drawing.



2PDT Schematic



4PDT Schematic

Circuitry	Plunger/Lead Exit Style	Dim. A Free Position (inches +/- 0.030)	Dim. B Bushing Length (inches +/- 0.030)	Dim. C Thread (inches)	Dim. D Body Dia. (max inches)	Dim. E Body Length (max inches)	Electrical Rating Table	Military Number	Catalog Number
MIL-PRF-8805/39									
2PDT	A-Pin/Radial	1.375	1.000	0.625-24	0.720	0.980	1	MS21321-1	P6-24000
4PDT	A-Pin/Radial	1.375	1.000	0.625-24	1.031	1.200	1	MS21321-2	P6-24001
MIL-PRF-8805/40									
2PDT	A-Pin/Radial	1.375	1.000	0.625-24	1.015	0.980	3	MS24331-1	P6-24002
MIL-PRF-8805/43									
2PDT	A-Pin/Radial	0.875	0.625	0.469-32	0.720	1.000	1	MS27240-1	P6-24003
4PDT	A-Pin/Radial	0.875	0.625	0.469-32	1.031	1.200	1	MS27240-2	P6-24004
2PDT	B-Roller/Radial *	1.295	N/A	0.469-32	0.720	1.000	1	MS27240-3	P6-14000
4PDT	B-Roller/Radial *	1.295	N/A	0.469-32	1.031	1.200	1	MS27240-4	P6-14001
2PDT	A-Pin/Radial	0.875	0.625	0.469-32	0.720	1.000	4	MS27240-5	P6-24005
4PDT	A-Pin/Radial	0.875	0.625	0.469-32	1.031	1.200	4	MS27240-6	P6-24006
2PDT	B-Roller/Radial *	1.295	N/A	0.469-32	0.720	1.000	4	MS27240-7	P6-14002
4PDT	B-Roller/Radial *	1.295	N/A	0.469-32	1.031	1.200	4	MS27240-8	P6-14003
MIL-PRF-8805/100									
4PDT	A-Pin/Radial	1.375	1.000	0.625-24	1.030	1.100	2	MIL-PRF-8805/100-007	P6-24043
4PDT	C-Pin/Axial	1.375	1.000	0.625-24	1.030	1.200	2	MIL-PRF-8805/100-008	P6-24044
4PDT	B-Roller/Radial **	1.781	0.794	0.625-24	0.925	1.100	2	MIL-PRF-8805/100-009	P6-14035
4PDT	D-Roller/Axial **	1.781	0.794	0.625-24	1.030	1.200	2	MIL-PRF-8805/100-010	P6-14036
4PDT	A-Pin/Radial	1.375	1.000	0.625-24	1.030	1.100	2	MIL-PRF-8805/100-015	P6-24007
4PDT	C-Pin/Axial	1.375	1.000	0.625-24	1.030	1.200	2	MIL-PRF-8805/100-016	P6-24008
4PDT	B-Roller/Radial **	1.781	0.794	0.625-24	1.030	1.100	2	MIL-PRF-8805/100-017	P6-14005
4PDT	D-Roller/Axial **	1.781	0.794	0.625-24	1.030	1.200	2	MIL-PRF-8805/100-018	P6-14006
MIL-PRF-8805/104									
4PDT	A-Pin/Radial	1.375	1.000	0.469-32	0.850	1.100	2	MIL-PRF-8805/104-001	P6-20001
4PDT	B-Roller/Radial *	1.719	0.895	0.469-32	0.850	1.100	2	MIL-PRF-8805/104-002	P6-10002
4PDT	C-Pin/Axial	1.375	1.000	0.469-32	0.850	1.100	2	MIL-PRF-8805/104-003	P6-20002
4PDT	D-Roller/Axial *	1.719	0.895	0.469-32	0.850	1.200	2	MIL-PRF-8805/104-004	P6-10003

* Roller diameter is 0.375 inches. ** Roller diameter is 0.500 inches.

NOTE: SEE MILITARY QPL CROSS REFERENCE LISTING IN APPENDIX.

APPLICATION-SPECIFIC MODIFIED PRODUCTS

Modified Military Styles

These switches are special designs meeting the requirements of MIL-PRF-8805/104.



Circuitry	Free Position (inches)	Bushing Length (inches)	Overall Length (inches)	Catalog Number
Pin Plunger, Radial Lead Exit				
2PDT	1.375	1.000	2.325	P6-20077
2PDT	1.575	1.200	2.525	P6-20084
2PDT	0.875	0.625	1.825	P6-20076
4PDT	1.285	1.000	2.485	P6-20055
Pin Plunger, Axial Lead Exit				
2PDT	0.875	0.625	2.250	P6-20003
2PDT	1.575	1.200	2.950	P6-20005
Roller Plunger, Radial Lead Exit				
2PDT	1.295	0.675	2.295	P6-10007
2PDT	1.295	0.675	2.245	P6-10016
2PDT	1.980	1.095	2.930	P6-10060
Roller Plunger, Axial Lead Exit				
2PDT	1.295	0.675	2.670	P6-10070
4PDT	1.700	1.000	3.000	P6-10050

Environment-Free Plunger

Rugged sealed two pole switch features a small rectangular case only 0.500" thick. Bushing is 15/32-32.

P6-20054

Total Travel: 0.220" min
Operating Force: 10.0 lbs. max
Release Force: 4.0 lbs. min
Circuit: 2PDT
Rating: 7 amps Resistive
 3 amps Inductive
Contacts: Gold



Flange Mount

Low profile four pole switch features flange mounted stainless steel housing with an 8 pin connector.

P6-20090

Operating Force: 4.0 lbs. to 9.0 lbs.
Release Force: 2.0 lbs. min
Circuit: 4PST N.C.
Rating: 0.5 amps Resistive for 100,000 cycles
Contacts: Gold



Longer Bushing

This two pole switch features an extra long mounting bushing. Bushing is 15/32-32.

P6-20005

Overtravel: 0.250" min
Operating Force: 9.0 +/- 3.0 lbs.
Release Force: 4.0 lbs. min
Circuit: 2PDT
Rating: 7 amps Resistive
 3 amps Inductive
Contacts: Gold



Rubber Bonded Leads

Aircraft switch features special 48" leads with a Fluorosilicone rubber bonded to wire leads.

P6-20050

Total Travel: 0.300" min
Operating Force: 11.0 +/- 5.0 lbs.
Release Force: 4.0 lbs. min
Circuit: 4PDT
Rating: 0.04 amps to 0.5 amps Inductive
Contacts: Gold



Sleaved Wires

This two pole switch features a lower spring force and sleeved wires.

P6-24111

Overtravel: 0.500" min
Operating Force: 3.0 to 6.0 lbs.
Release Force: 2.0 lbs. min
Circuit: 2PDT
Rating: 7 amps Resistive
 4 amps Inductive
Contacts: Gold



Adjustable Roller Plunger

Design 4 (Resilient) sealed 2PDT limit switch with adjustable orientation of roller plunger at 45° increments. 72" wire leads included.

P6-14000

Overtravel: 0.125" min
Operating Force: 9.0 +/- 3.0 lbs.
Release Force: 4.0 lbs. min
Circuit: 2PDT
Rating: 7 amps Resistive
 4 amps Inductive
Contacts: Gold



SUBMINIATURE WATERTIGHT SEALED

P6-3
LIMIT SWITCHES

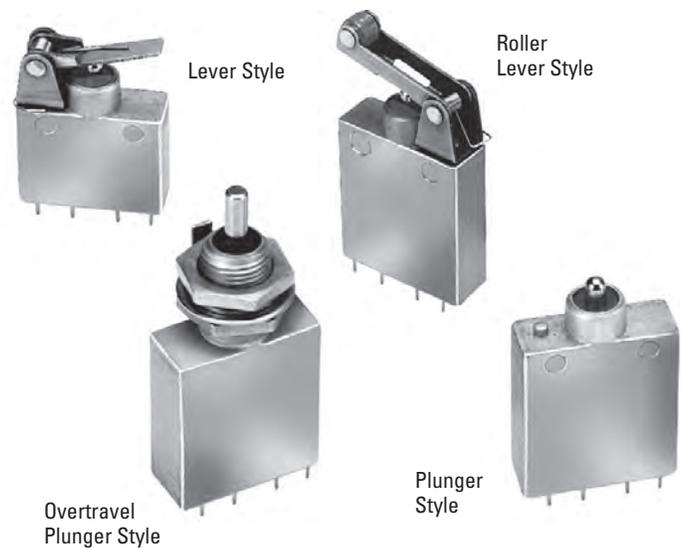
FEATURING OTTO B5 SERIES BASIC SWITCHES

These subminiature sealed switches are contained in a rugged aluminum housing with choice of lever, roller or plunger. Featuring the B5 series basic switch, the P6-3 series is able to switch up to 10 amps. The high contact pressure and superior wiping action of the OTTO design also makes the P6-3 series an excellent choice when switching logic level loads.

Sealing against water and other liquids is per MIL-PRF-8805. Wire leaded models feature potted leads. The solder terminals are epoxy sealed.

Features:

- Compact design
- Watertight to MIL-PRF-8805
- Choice of four actuator styles
- Choice of wire lead or solder termination styles
- Up to 10 amps switching capability
- High contact pressure for low levels
- Precision operating points
- Reach compliant



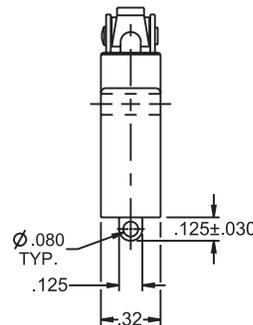
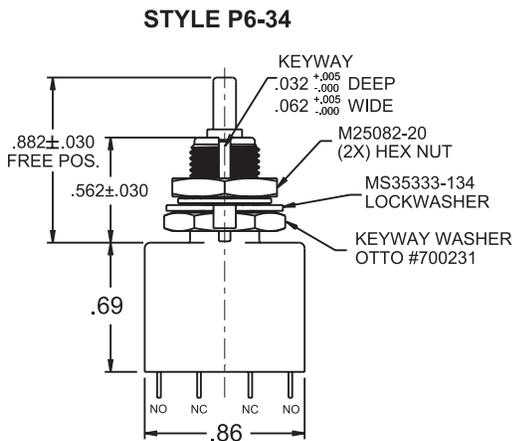
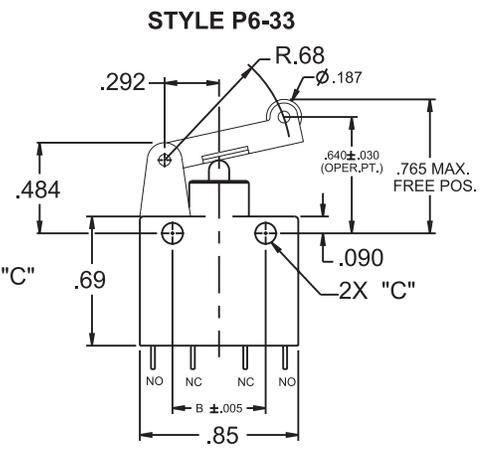
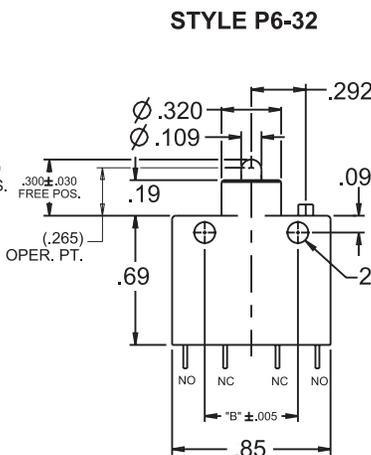
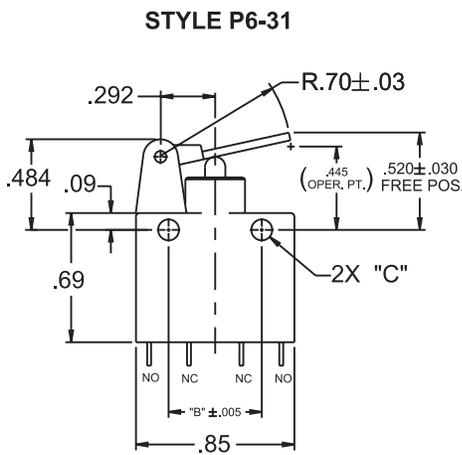
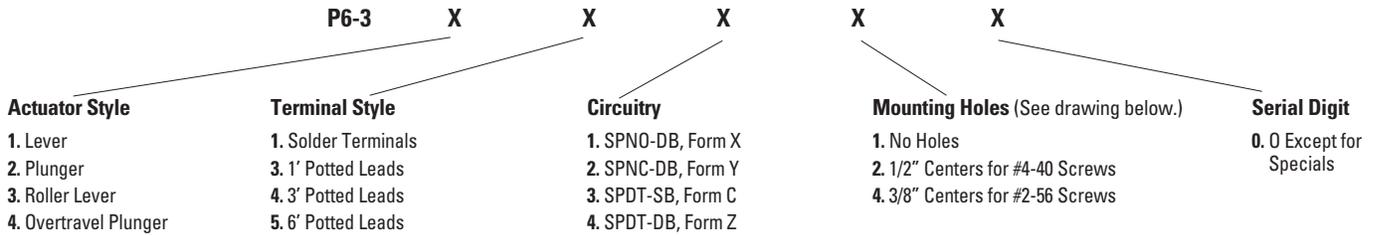
LIMIT SWITCHES

Standard Characteristics/Ratings:								
ELECTRICAL RATINGS:			Sea Level @ 28VDC			50,000 feet @ 28VDC		
Load	Single Circuit N.O. or N.C.	2 Circuit Per Pole	Single Circuit N.O. or N.C.	2 Circuit Per Pole	Single Circuit N.O. or N.C.	2 Circuit Per Pole	Single Circuit N.O. or N.C.	2 Circuit Per Pole
Resistive	10A	10A	10A	10A	10A	10A	10A	10A
Inductive	7.5A	5A	5A	3.5A	3.5A	2A	2A	2A
Motor	4A	2A	2A	N/A	N/A	N/A	N/A	N/A
DVV	1000Vrms			500Vrms				
Electrical Life:	50,000 cycles							
Mechanical Life:	50,000 cycles							
OPERATIONAL:	P6-31	P6-32	P6-33	P6-34	P6-35	P6-36	P6-37	P6-38
Operating Force:	16 oz max	40 oz max	20 oz max	40 oz max	32 oz max	60 oz max	20 oz max	48 oz max
Release Force:	4 oz min	8 oz min	4 oz min	8 oz min	4 oz min	24 oz min	4 oz min	8 oz min
Movement Differential:	0.060" max	0.020" max	0.060" max	0.020" max	0.080" max	0.035" max	0.080" max	0.040" max
Pretravel:	0.125" max	0.050" max	0.125" max	0.070" max	0.125" max	0.050" max	0.125" max	0.070" max
Overtravel:	0.025" min	0.012" min	0.025" min	0.187" min	0.025" min	0.012" min	0.025" min	0.187" min
Strength of Actuator:	10.0 lbs.	25.0 lbs.	10.0 lbs.	25.0 lbs.	10.0 lbs.	25.0 lbs.	10.0 lbs.	25.0 lbs.
Temperature Range:	-55°C to +85°C							
Seal:	Enclosure Design 3, watertight per MIL-PRF-8805							
MATERIALS:								
Plunger:	Corrosion resistant steel							
Lever:	Corrosion resistant steel (where applicable)							
Mounting Hardware:	None provided							

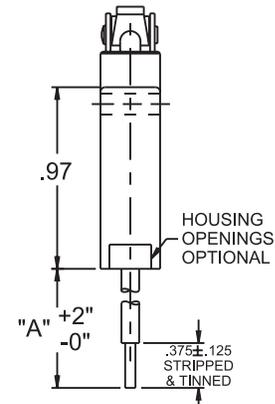
FEATURING OTTO B5 SERIES BASIC SWITCHES

P6-3 PART NUMBER CODE

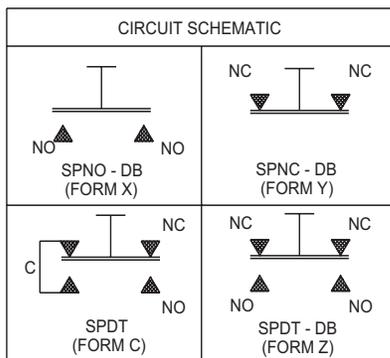
Single Pole



SOLDER TERMINAL (TERM. STYLE 1 EXAMPLE)



POTTED WIRE LEADS (TERM. STYLES 3, 4 & 5 EXAMPLE)



POTTED WIRE LEADS		DIM "B" CNTRS.	DIM "C" DIA.
STYLE	DIM "A"		
3	12"	.500	Ø.112 ± .003
4	36"		
5	72"		
MOUNTING HOLES:			
CODE 2 FOR 4-40 SCREWS		.500	Ø.112 ± .003
CODE 4 FOR 2-56 SCREWS		.375	Ø.089 ± .003

SUBMINIATURE WATERTIGHT SEALED

P6-3
LIMIT SWITCHES

FEATURING OTTO B5 SERIES BASIC SWITCHES

P6-3 PART NUMBER CODE

Double Pole

P6-3 X X X X X

Actuator Style

- 5. Lever
- 6. Plunger
- 7. Roller Lever
- 8. Overtravel Plunger

Terminal Style

- 1. Solder Terminals
- 2. Taper Tab, Quick Disconnect
- 3. 1' Potted Leads
- 4. 3' Potted Leads
- 5. 6' Potted Leads

Circuitry

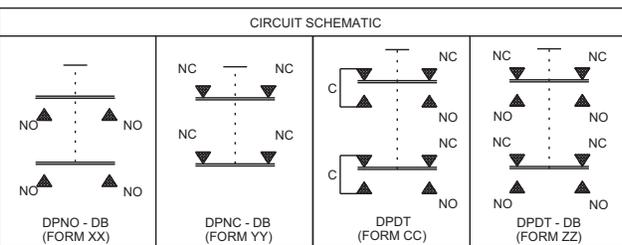
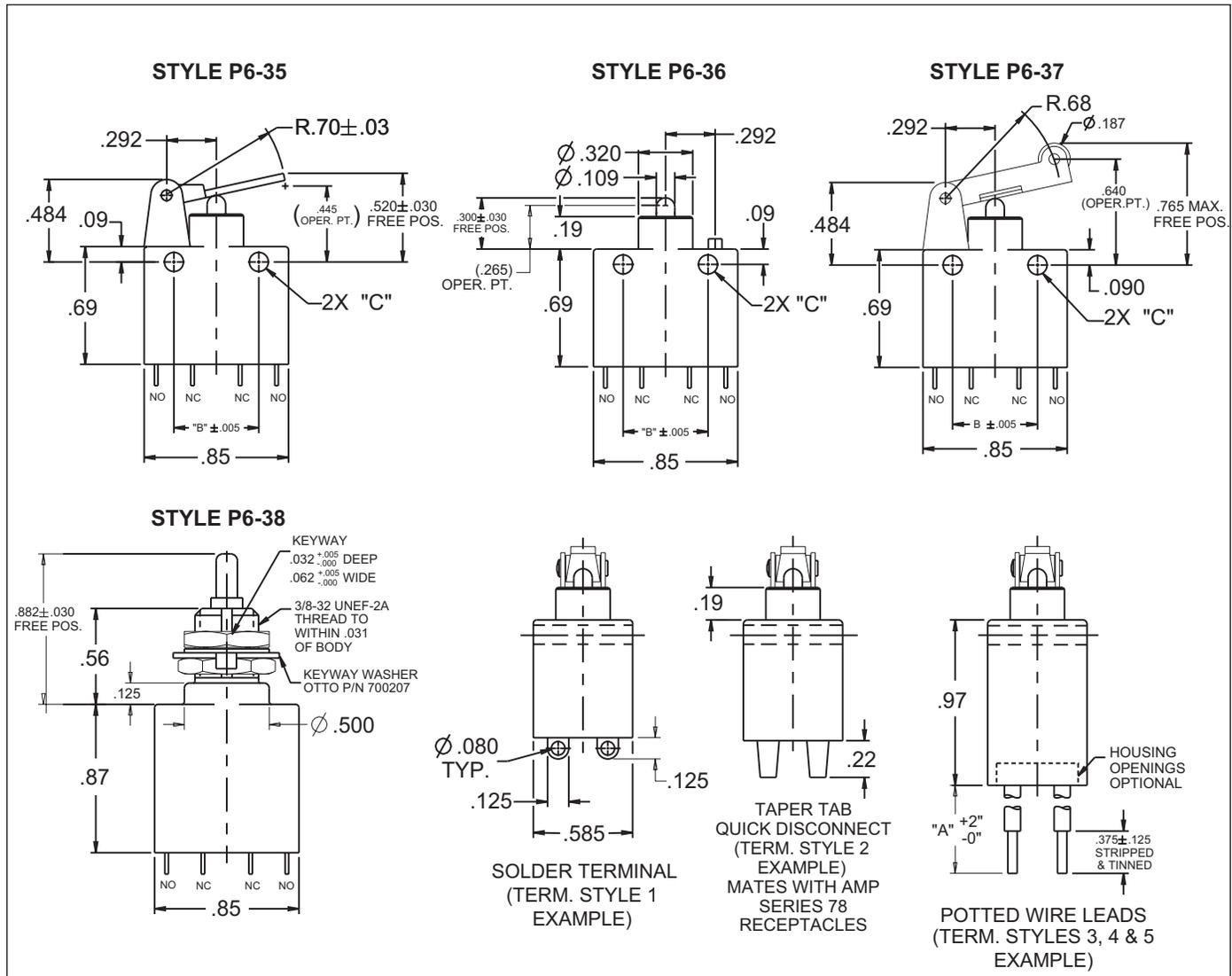
- 1. DPNO-DB, Form XX
- 2. DPNC-DB, Form YY
- 3. DPDT, Form CC
- 4. DPDT-DB, Form ZZ

Mounting Holes (See drawing below.)

- 1. No Holes
- 2. 1/2" Centers for #4-40 Screws
- 4. 3/8" Centers for #2-56 Screws

Serial Digit

- 0. 0 Except for Specials



POTTED WIRE LEADS		MOUNTING HOLES:		DIM "B" CNTRS.	DIM "C" DIA.
STYLE	DIM "A"	CODE 2 FOR 4-40 SCREWS	CODE 4 FOR 2-56 SCREWS	.500	Ø.112 ± .003
3	12"			.375	Ø.089 ± .003
4	36"				
5	72"				

LIMIT SWITCHES