













All Type C Switches Are Rated NEMA Type And UL Type 6P

	Select Turret Head	Select Basic Switch	Top Plunger Type				Wobble Stick Type				Plug-in Unit Less Head	Plug-in Receptacle Only	
			Top Roller Plunger Spring Return	Top Push Rod Plunger Spring Return	Top Push Rod Plunger Adjustable Spring Return	Palm Operated *	Universal †	Wobble Stick DELRIN Extension †	Wobble Stick Wire Extension †	Wobble Stick Coil Spring Extension †			Cat Whisker
													
	Contacts	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	
Standard Box Plug-in	1 N.O. 1 N.C.	C54D \$110.00	C54E \$103.00	C54ED \$110.00	C54R * \$103.00	C54JKC \$90.00	C54J \$103.00	C54K \$103.00	C54KC \$103.00	C54L \$77.00	CO54 \$59.00	CT54 \$12.80	
	2 N.O. 2 N.C.	C62D 129.00	C62E 121.00	C62ED 129.00	C62R * 121.00	C62JKC 113.00	C62J 121.00	C62K 121.00	C62KC 121.00	C62L 96.00	CO62 71.00	CT62 12.80	
	2 N.O. - 2 N.C. Neutral Position	...	...	...	...	...	...	...	...	...	CO68 77.00	CT62 12.80
Compact Box Plug-in	2 N.O. - 2 N.C. Two Stage	C66D 148.00	C66E 141.00	C66ED 148.00	C66R * 141.00	C66JKC 132.00	C66J 141.00	C66K 141.00	C66KC 132.00	C66L 121.00	CO66 90.00	CT62 12.80	
	1 N.O. 1 N.C.	C52D 110.00	C52E 103.00	C52ED 110.00	C52R * 103.00	C52JKC 93.00	C52J 103.00	C52K 103.00	C52KC 103.00	C52L 77.00	CO52 52.00	CT52 12.80	
UL Listed for Hazardous Location Division I Class I Groups B,C,D Class II Groups E, F and G	1 N.O. 1 N.C.	CR53D 187.00	CR53E 179.00	CR53ED 187.00	CR53R * 179.00	CR53JKC 170.00	CR53J 179.00	CR53K 179.00	CR53KC 179.00	CR53L 155.00	...	...
	2 N.O. 2 N.C.	CR61D 205.00	CR61E 199.00	CR61ED 205.00	CR61R * 199.00	CR61JKC 190.00	CR61J 199.00	CR61K 199.00	CR61KC 199.00	CR61L 164.00	...	...
	2 N.O. - 2 N.C. Neutral Position	...	...	...	...	...	...	...	...	...	...	...
	2 N.O. - 2 N.C. Two Stage	CR65D 225.00	CR65E 218.00	CR65ED 225.00	CR65R * 218.00	CR65JKC 210.00	CR65J 218.00	CR65K 218.00	CR65KC 218.00	CR65L 193.00	...	...
Head Only	Type Number	D 44.90	E 38.60	ED 44.90	R * 38.60	JKC 29.00	J 38.60	K 38.60	KC 38.60	L 12.70	...	...
Nominal Operating Data	Pre-travel	.08"				10" (Any Direction)				20"	...	...
	Pre-travel Two Stage	First Stage	.08"				10" (Any Direction)				20"
		First to Second Stage	.01"				4"				5"
	Total Travel	.25"				90°				90°	...	...
	Differential	.02"				3"				6"	...	...
	Reverse Overtravel	...				...				...	...	...
	Operating Torque/Force — 1 Pole and 2 Pole	3 lbs.				3 lb.-in.				7 oz.-in.	...	...
Repeat Accuracy — Linear travel of cam	±.001"				...				...	...	...
Plug-in Replacement Units	To order basic switch and head less the plug-in receptacle base, substitute the letters "CO" for the first "C" in the type number. Example: Open type replacement for Type C54D is Type CO54D.												

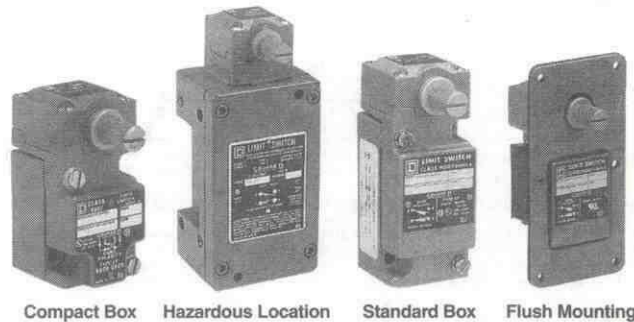
* Price does not include mushroom button. Must be ordered separately. See page 19-8.
 ■ To lock the nut in the desired position, crimp the slot near the bottom of the nut.

† Wobble stick extensions are available separately for the universal head or as replacements for complete devices as follows:

Description	Type	Price
DELRIN extension	WJ	\$11.80
Wire extension	WK	11.80
Coil Spring extension	WKC	11.80

Types C and CF  File CCN E42259 NKCR  File Class LR25490 3211-03 

Type CR  File CCN E10054 NOIV  File Class LR26817 3218-02



Acceptable Wire Sizes: 12-22 AWG
 Recommended Terminal Clamp Torque 7 in. lbs.

For additional information, reference Catalog # 9007CT9701R8/98 or D-FAX™ # 1558.

Current Ratings

All Limit Switch Types

Contact Configurations – Direct opening contacts to meet IEC 947-5-1 requirements for positive opening contacts, snap action, slow make-slow break, Reed contacts and other terms used below are described in the glossary of the Product Catalog.

Maximum Current Ratings For Control Circuit Contacts – All Types

Switch Type	Contacts	Direct Opening Contacts to Meet IEC 947-5-1 Requirements for Positive Opening Contacts	AC – 50 or 60 Hz						DC				AC or DC
			Volts	Inductive 35% Power Factor				Resistive 75% Power Factor	Volts	Inductive and Resistive		Continuous Carrying Amperes	
				Make		Break				Make and Break Amperes			
				Amps	VA	Amps	VA	Single Pole		Double Pole			
AO-1, AC	SPDT Form Z SPST Form X or Y	No	120	40	4800	15	1800	15	125	0.5	0.25	15	
			240	20	4800	10	2400	10	250	0.25	0.1	15	
			480	10	4800	6	2880	6	600	0.05	.....	15
			600	8	4800	5	3000	5	.....	.....	.....	15
AW, AO-2 and AO-6, AB, AP	SPDT Form Z SPST Form X or Y	No	120	40	4800	15	1800	15	125	2.0	0.5	15	
			240	20	4800	10	2400	10	250	0.5	0.2	15	
			480	10	4800	6	2880	6	600	0.1	0.02	15	
			600	8	4800	5	3000	5	.....	.....	.....	15
AW, CO-3 and CO-6, CB, CC, CP	DPDT Form ZZ DPST Form AA or BB	No	120	30	3600	3	360	3	125	1.0	0.2	10	
			240	15	3600	1.5	360	1.5	250	0.3	0.1	10	
			480	7.5	3600	0.75	360	0.75	600	0.1	.....	10
			600	6	3600	0.6	360	0.6	.....	.....	.....	10
C (9007)	SPDT Form Z	No	120	60	7200	6	720	6	125	0.55	0.22	10	
			240	30	7200	3	720	3	250	0.27	0.11	10	
			480	15	7200	1.5	720	1.5	600	0.1	.....	10
			600	12	7200	1.2	720	1.2	.....	.....	.....	10
C (9007)	DPDT Form ZZ	No	120	60	7200	6	720	6	125	0.22	0.22	10	
			240	30	7200	3	720	3	250	0.11	0.11	10	
			480	15	7200	1.5	720	1.5	600	.....	.....	10
			600	12	7200	1.2	720	1.2	.....	.....	.....	10
C (9007)	Reed* SPST Form A or B	No	120	15	1800	1.5	180	1.5	125	0.55	.....	5
			240	7.5	1800	0.75	180	0.75	250	0.27	.....	5
			480	3.75	1800	0.375	180	0.375	.....	.....	.....	5
			600	3	1800	0.3	180	0.300	.....	.....	.....	5
L	SPDT with 2 or 3 Contacts Form Z	No	120	150	18000	20	2400	20	125	2.2	.....	20
			240	75	18000	12.5	3000	12.5	250	1.1	.....	20
			480	37.5	18000	6.25	3000	6.25	600	0.4	.....	20
			600	30	18000	5	3000	5.0	.....	.....	.....	20
MS (9007)	SPST Form C	No	120	60.0	7200	6.0	720	.....	.....	.....	.....	10 (AC) 5 Res @ 28Vdc
			240	30.0	7200	3.0	720	.....	.....	.....	.....	10 (AC) 5 Res @ 28Vdc
ML (9007)	SPDT Form Z	No	120	60.0	7200	6.0	720	.....	.....	.....	.....	10 (AC) 5 Res @ 28Vdc
			240	30.0	7200	3.0	720	.....	.....	.....	.....	.....
T and FT (9007)	SPDT Quick Make and Break Form Z	No	120	150	18000	20	2400	20	125	5.0	.....	20
			240	75	18000	12.5	3000	12.5	250	1.0	.....	20
			480	37.5	18000	6.25	3000	6.25	600	0.2	.....	20
			600	30	18000	5	3000	5.0	.....	.....	.....	20
XA (9007)	Reed* SPST Form A or B	No	120	2.0	240	0.2	24	0.2	125	0.2	.....	0.5
			240	1.0	240	0.1	24	0.1	.....	.....	.....	0.5
			
			
XCKJ Plug-in	SPDT Form Z	No	120	60	7200	6	720	6	125	0.55	.....	10
			240	30	7200	3	720	3	250	0.27	.....	10
XCKJ Non Plug-in	2SPDT Form ZZ	No	480	15	7200	1.5	720	1.5	600	0.1	.....	10
			600	12	7200	1.2	720	1.2	.....	.....	.....	10
XCKL XCKML	SPDT Form Zb	Yes	120	60	7200	6	720	6	125	0.55	.....	10
			240	30	7200	3	720	3	250	0.27	.....	10
XCK-P/T	SPDT Form Zb	Yes	120	60	7200	6	720	6	125	0.55	.....	10
			240	30	7200	3	720	3	250	0.27	.....	10
XCMA	SPDT Form C	No	120	30	3600	3	360	3	125	0.55	.....	5
			240	15	3600	1.5	360	1.5	250	0.27	.....	5
XCMB	SPDT Form Z	Yes	120	30	3600	3	360	3	125	0.55	.....	5
			240	15	3600	1.5	360	1.5	250	0.27	.....	5

* Use of a transient suppressor will extend life of the switch when using on heavy electrical loads.
● SPST versions are rated 1/2 HP at 110 and 200 Vac.

Alternate Current Ratings – Several product lines offer special versions or options with alternate contact configurations or contact materials, which may result in current ratings that differ from those listed above. Refer to the respective product sections for further information.

For additional information, reference Catalog # 9007CT9701R8/98 or D-FAX™ # 2409.



19 LIMIT SWITCHES

Enclosure Construction

Enclosure Ratings

Type	NEMA Type												IEC Type		
	1	2	3	4	4X	6	6P	7	9	12	13	IP65	IP66	IP67	
9007 AF	X	X		X						X	X				
9007 AW	X	X		X						X	X				
9007 C	X	X		X		X	X			X	X				
9007 CF	X	X		X		X	X			X	X				
9007 CR	X	X		X		X	X	X	X	X	X				
9007 FT	X	X		X						X	X				
L	X			X							X				
9007 MS/ML ▼	X	X		X		X	X			X	X			X	
T	X	X		X						X	X				
XA	X	X		X		X	X			X	X				
XCK-J	X	X	X	X						X				X	
XCK-L	X	X	X	X						X				X	
XCK-P & T ▲	X			X						X		X			
XCM														X	

X Indicates NEMA or IEC Type Rating available for each product.
 ▲ For indoor use only—not UV protected.
 ▼ Enclosure ratings are NEMA 1, 2, 3, 4, 6, 6P, 12, and 13 except for option 21 (low force) which is NEMA 1 only. The 9007 MOS5 (omni-directional operation) enclosure ratings are 1, 2, 12, and 13.

Ambient Temperature Ranges

The low temperatures listed below are based on the absence of freezing moisture or water. Care should be taken to avoid sub-freezing temperatures where dripping or splashing water is present and to avoid bringing a cold switch into a warm humid atmosphere and then back into sub-freezing temperatures. The water or moisture can freeze around the switch lever arm or plunger and cause jamming.

	Low Temperature	High Temperature At Full Rated Load
9007 AF, AW		
Lever Type	-65°F (-54°C)	185°F (85°C)
Plunger Type	0°F (-17.8°C)	185°F (85°C)
9007 C		
Lever Type	-20°F (-28.9°C)	185°F (85°C)
Plunger & Wobble Stick Type	0°F (-17.8°C)	185°F (85°C)
9007 FT*, T	-10°F (-23°C)	185°F (85°C)
HL	0°F (-17.8°C)	350°F (177°C)
L	0°F (-17.8°C)	200°F (93°C)
9007 MS/ML	-40°F (-40°C)	221°F (105°C)
9007 XA	-20°F (-28.9°C)	140°F (60°C)
XCK-J, L, P, T	-13°F (-25°C)	158°F (70°C)
XCM	-13°F (-25°C)	158°F (70°C)

* The Type FT will withstand hot falling sand up to 300°F (149°C); however, ambient temperature for the FT switch is the same as the Type T above (185°F, 85°C) and cannot be used in higher temperature ambients.

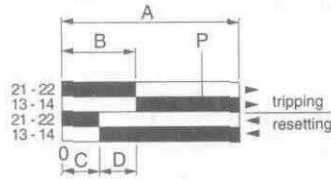
Alternate Temperature Limits

Some switches are available with higher or lower temperature limits, by selecting special versions or special options. Refer to the respective product sections for further information.

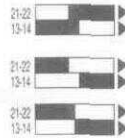
Sealing

- 9007 AF, AW
 Plunger seals PTFE (Teflon)
 All other seals nitrile (Buna N)
- 9007 C, CF, CR
 Standard shaft seals on lever types fluorocarbon (VITON)
 Plunger and wobble stick boots neoprene
 All other seals nitrile (Buna N)
 Fluorocarbon seals are available in place of nitrile and neoprene on 9007 Type C.
- Denison L PVC
- 9007 T and FT
 Shaft seal nitrile (Buna N)
 Cover gasket nitrile (Buna N)
 Base plate gasket cellulose fiber laminate
- XCK-J, P, T nitrile

Contact Function Diagrams



A=Maximum travel of the operator in mm or degrees.
 B=Tripping travel of the contact.
 C=Reset travel.
 D=B-C=Differential travel.
 P=Point from which positive opening is assured.



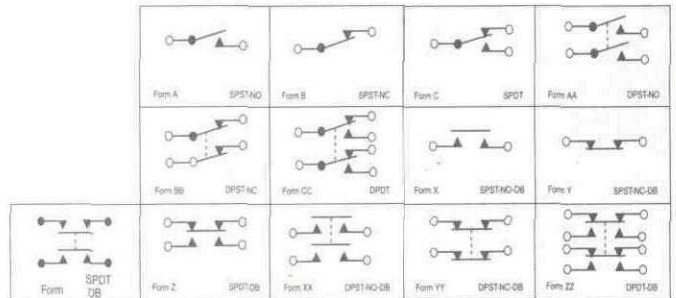
Make-before-break (overlapping) SPDT: the normally open contact closes before the normally closed contact opens.

Break-before-make (offset) SPDT: the normally closed contact opens before the normally open contact closes.

Simultaneous make and break - SPDT: the normally closed contact opens at the same time as the normally open contact closes.

Terms used in identifying ratings are defined in the glossary of the Product Catalog.

Wiring Diagrams



See page 19-2, "Contacts," to determine contact type and form.

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