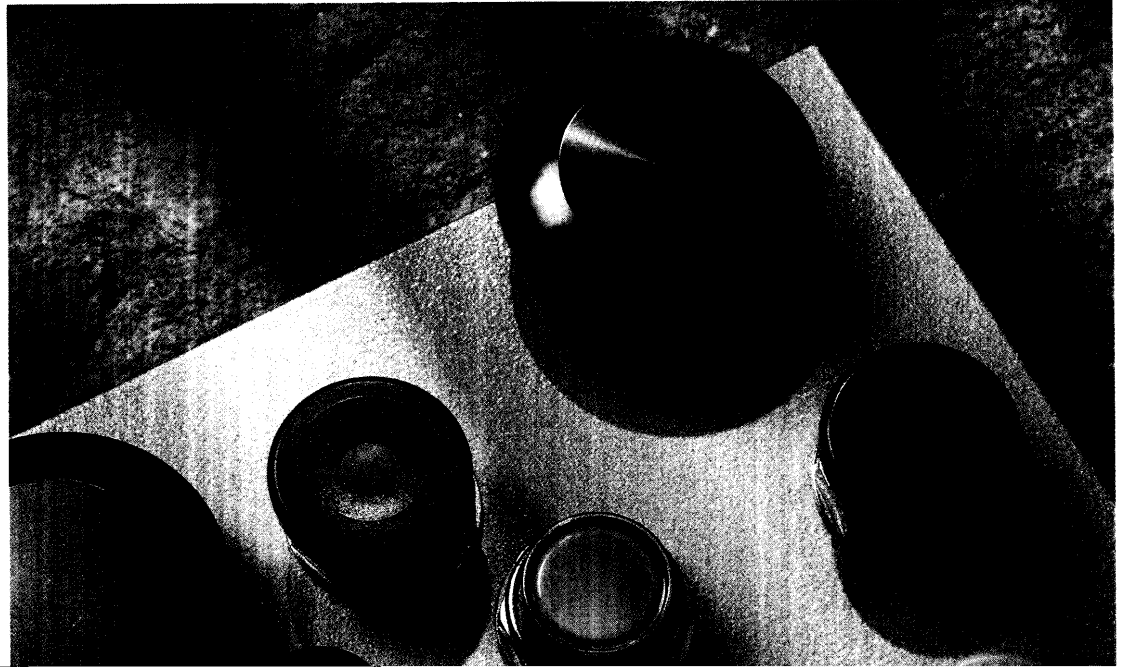


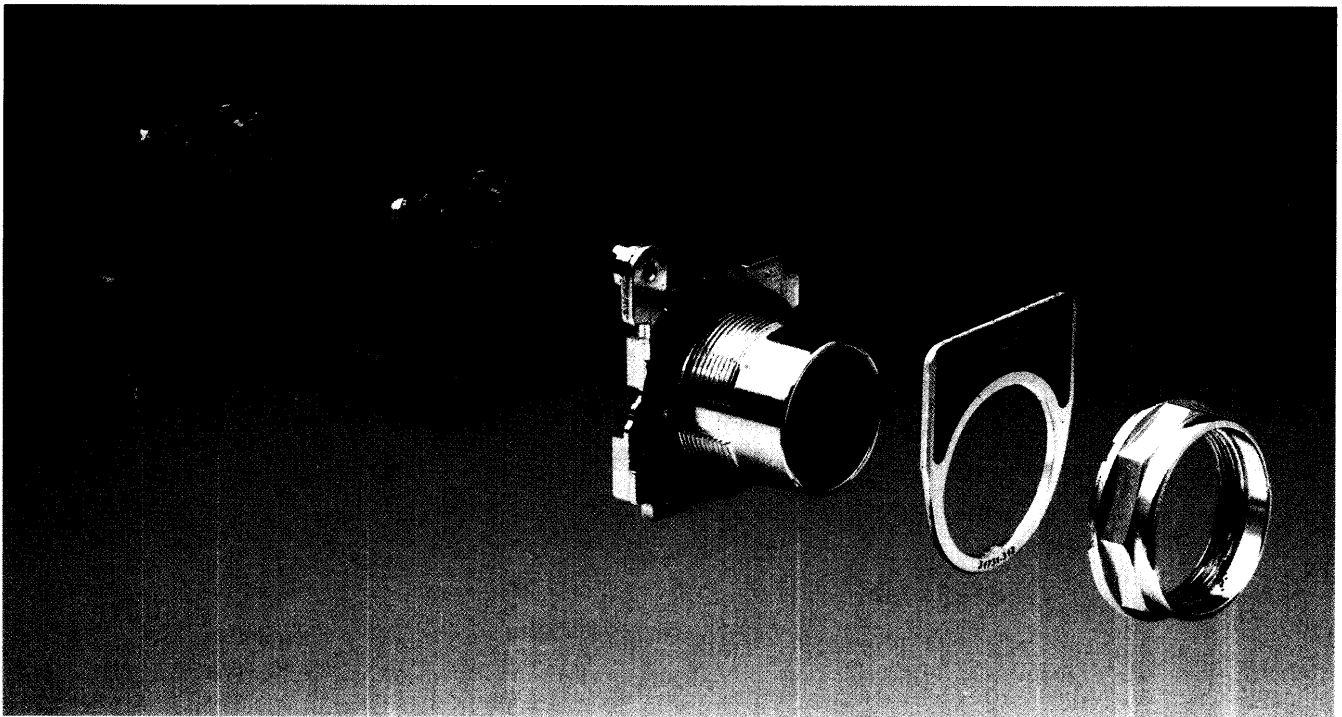
Cutler-Hammer 30.5mm Pushbuttons, Indicating Lights & Selector Switches Type 91000T



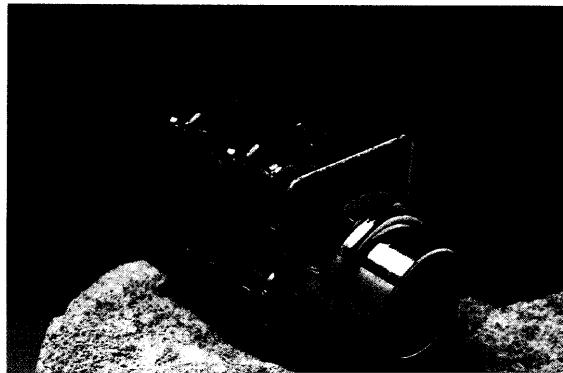
Cutler-Hammer 30.5mm Pushbuttons are versatile, durable, flexible and last the test of time ...

Even under the most hostile of environments

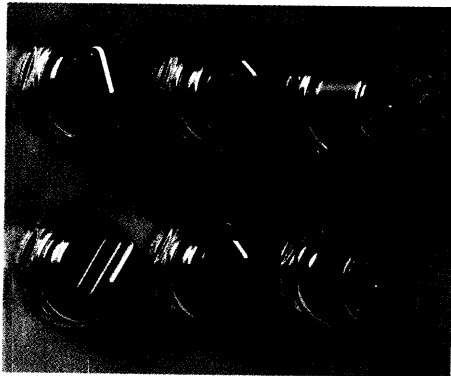
Modular in design



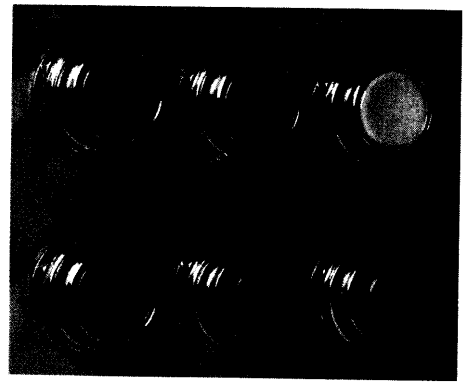
- Contact blocks contain up to 2 separate and distinct circuits and with the availability to stack up to 6 blocks per operator a total of 12 circuits can be achieved
- A diaphragm seal of neoprene ensures oiltightness for countless operations
- Smooth moulded plastic buttons with colour all



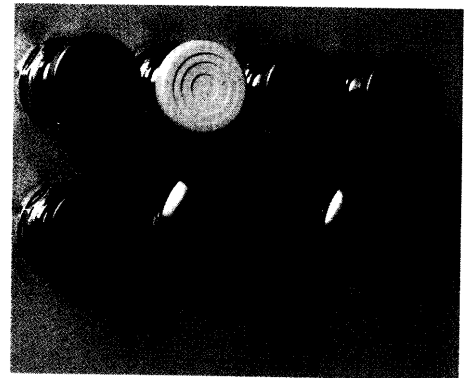
Attractive in appearance



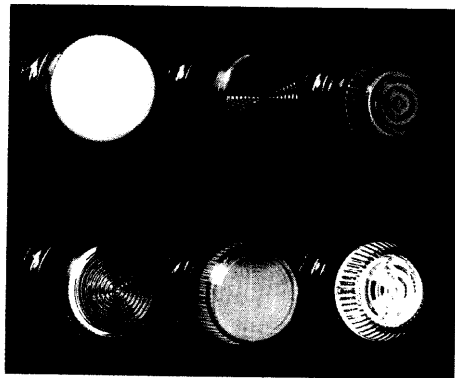
Selector switches



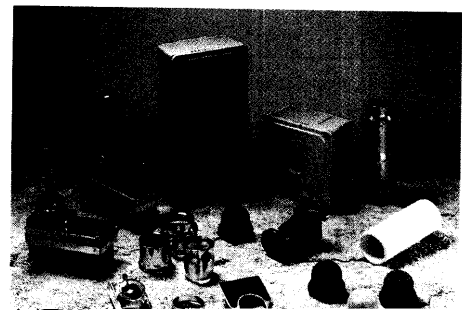
Pushbuttons



Mushroom pushbuttons



Indicating lights

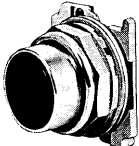
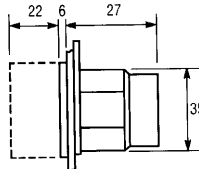
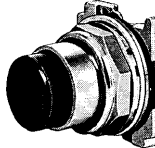
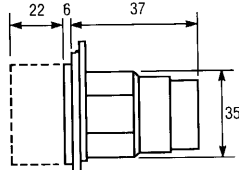

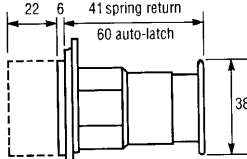

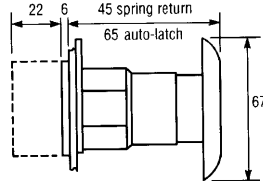




Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

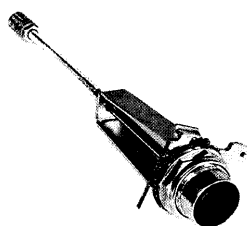
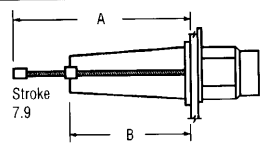
Pushbutton Operators

Pushbuttons

Operators

Description	Button colour	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
Flush button 	Black	91000T101		0.093
	Red	91000T102		0.093
	Green	91000T103		0.093
	Yellow	91000T104		0.093
	White	91000T106		0.093
	Blue	91000T108		0.093
Extended button 	Black	91000T111		0.093
	Red	91000T112		0.093
	Green	91000T113		0.093
Padlockable, lockdown fitted with 38mm mushroom push	Red	91000TA45		0.95
Bare shaft operator for mushroom or palm push 	Momentary, spring return	91000T100		0.095
	Auto-latch	91000T140		0.095
Operating pushes for bare shaft operators				
Mushroom 38.1mm 	Black	91000T281		
	Red	91000T282		
	Green	91000T283		
	Yellow	91000T284		
	Blue	91000T288		
Palm 63.5mm 	Black	91000T291		
	Red	91000T292		
	Green	91000T293		
Extended pushbutton 	Red	91000T2820		

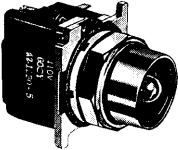
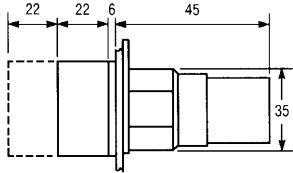
Mechanical push operators

Description	Colour	Catalogue numbers	Overall dimensions (mm)	Weight (kg)														
Flush push, standard reach, 127mm 	Black	91000TA85		0.015														
	Green	91000TA86		0.015														
	Red	91000TA87		0.015														
Flush push, long reach, 217mm	Black	91000TA97	<table border="1"> <thead> <tr> <th rowspan="2">Dimension</th> <th colspan="2">A</th> <th rowspan="2">B</th> </tr> <tr> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Std. reach</td> <td>35</td> <td>127</td> <td>8</td> </tr> <tr> <td>Long reach</td> <td>118</td> <td>217</td> <td>85</td> </tr> </tbody> </table>	Dimension	A		B	Min	Max	Std. reach	35	127	8	Long reach	118	217	85	0.015
	Dimension	A			B													
		Min		Max														
Std. reach	35	127	8															
Long reach	118	217	85															
Green	91000TA98	0.015																
	Red	91000TA99	0.015															

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Pushbutton Operators

Illuminated pushbuttons BA9s bayonet fitting. For replacement bulbs see page 14.

Description	Supply voltage 50/60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)	
 <p>Transformer type 6V 1W secondary. Bulb supplied</p>	110/120	91000T411		0.19	
	220/240	91000T412		0.19	
	380/415	91000T413		0.19	
	440/480	91000T414		0.19	
<p>Direct voltage Supplied without bulb</p>	6 to 240	91000T441		0.093	
BA9s bayonet bulbs (for use with 91000T441)					
Filament type	6V (1W) flasher	28-2225-26			
	6.3V (1W)	28-2225-72			
	12V (1.2W)	28-2225-29			
	24V (1.2W)	28-2225-30			
	28V (1.12W)	28-2225-73			
	50V (1W)	28-2225-31			
	60V (1.2W)	28-2225-32			
	110V (2.2W)	28-2225-24			
	Neon type	110V (0.8mA)	28-2225-48		
		240V (1.5mA)	28-2225-49		

Operator

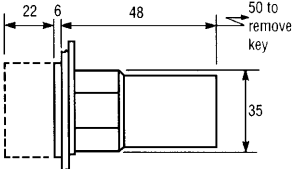
Lens

Plastic lens (for use with illuminated pushbuttons).

Colour	Catalogue numbers	Colour	Catalogue numbers	Colour	Catalogue numbers
Red	91000TC21	Amber	91000TC43	Clear	91000TC25
Green	91000TC22	Blue	91000TC24	White	91000TC26

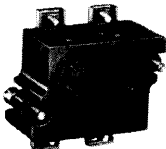
Cylinder lock pushbuttons

Operators (Supplied with the standard lock and 2 keys, key ref. H661).

Key position and pushbutton operation	Key removal positions			Catalogue numbers	Overall dimensions (mm)	Weight (kg)
	Left	Centre	Right			
Lock-up	Free	Lock down	All	91000T430		0.185
Blocked	Free	Push to lock	C & R	91000T437		0.185

Special lock selection: Add the appropriate suffix code from page 7. eg 91000T430H620.

Contact blocks

Description	Catalogue numbers:		Overall dimensions (mm)	Weight (kg)
	One-hole mounting	Base mounting		
	1 N.O. 1 N.C.	91000T1	91000T6	0.025
	2 N.O.	91000T2	91000T7	0.025
	2 N.C.	91000T3	91000T8	0.025
	1 N.C.	91000T51	91000T52	0.025
	1 N.O.	91000T53	91000T54	0.025
	2 N.O. 2 N.C.	91000T44	–	0.025
	1 N.O. 1 N.C.	91000T55	–	0.025
	make before break	91000T55	–	0.025

Note:

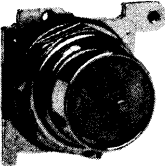
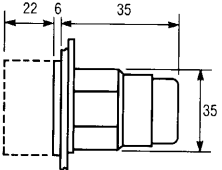

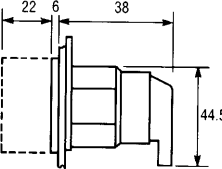
A maximum of 6 blocks (12 circuits) may be fitted to each operator except for 91000T44 where a maximum of 4 blocks (16 circuits) may be fitted.

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Selector Switches

Knob operated selector switches

Bare shaft operator

Description	Cam code	Catalogue numbers	Overall dimensions (mm)	Weight (kg)	
2-position					
	Stayput	1		0.115	
	Spring return right to left	1		91000T4081	0.115
3-position					
	Stayput	2		0.115	
		3		91000T4023	0.115
		4		91000T4024	0.115
		6*		91000T4026	0.115
	Spring return from left, stayput centre and right	2		91000T4032	0.115
		3		91000T4033	0.115
	Spring return to centre from left and right	2		91000T4042	0.115
		3		91000T4043	0.115
Stayput left and centre, spring return from right	2	91000T4052	0.115		
	3	91000T4053	0.115		
Knob (for any operator)		91000TKB			
Lever (for any operator)		91000TLB			

Cam selection chart showing contact sequence

To determine the number of the cam you require and the right contact block select the contact sequence desired from table below. O = contacts open, X = contacts closed. The cam number is shown at top of column. The catalogue number of the appropriate contact block is shown at extreme left of table.

Catalogue numbers of contact block	Base mounting	Circuit (see note (1) at foot of table)	2-position selector switch		3-position selector switch		
			Cam code no. 1	Cam code no. 2	Cam code no. 3	Cam code no. 4	Cam code no. 6 †
91000T1	91000T6	A N.C.	XO	OXO	OXX	XOO	XOO
		B N.O.	OX	OOX	OOX	OXO	OXO
91000T1	91000T6	A N.O.	OX	XOX	XOO	OXX	OOX
		B N.C.	XO	XXO	XXO	XOX	OOX
91000T2	91000T7	A N.O.	OX	XOX	XOO	OXX	OOX
		B N.O.	OX	OOX	OOX	OXO	OXO
91000T3	91000T8	A N.C.	XO	OXO	OXX	XOO	XOO
		B N.C.	XO	XXO	XXO	XOX	OOX

Switching angle.

60° between each position.

Note:

(1) Each contact block contains two contact circuits. The top set of contacts is identified as 'Circuit A' and the lower set as 'Circuit B' is indicated in the table. The chart shows the contact arrangements with the three contact blocks available and in each operator position. Additional contact combinations are obtainable by stacking contact blocks in tandem up to a maximum of 6 blocks (12 circuits).

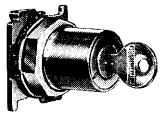
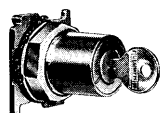
† A maximum of 2 are to be used with cam 6. Rated to A.C. only.

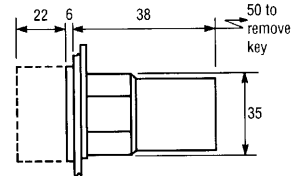
Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Selector Switches

Key operated selector switches

Operators (Supplied with the standard lock and 2 keys, key ref. H661)

	Description	Cam code	Key removal position	Catalogue numbers		Overall dimensions (mm)	Weight (kg)
				Vertical mounting *	Horizontal mounting *		
	2-position						
	Stayput	1	Right & left	91000T15113	91000T16113		0.185
	Spring return right to left	1	Left only	91000T15712	91000T15812		0.185
	3-position						
	Stayput	2	Left, right	91000T15227	91000T16227		0.185
		3	& centre	91000T15237	91000T16237		0.185
		4		91000T15247	91000T16247		0.185
		6		91000T15267	91000T16267		0.185
	Spring return from left	2	Right &	91000T15325	91000T16325		0.185
		3	centre	91000T15335	91000T16335		0.185
	(spring return to centre from left and right)	2	Centre	91000T15424	91000T16424		0.185
		3	only	91000T15434	91000T16434		0.185
	Spring return from right	2	Left &	91000T16526	91000T16626		0.185
		3	centre	91000T16536	91000T16636		0.185



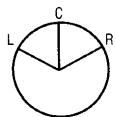
* **Vertical mounting** means terminals are left & right of contact block.

Horizontal mounting means terminals are top & bottom of contact block. This allows close spacing of adjacent operators with easy access to terminals.

Alternative key removal position selection

To select an alternative key removal position change the last digit of the listed catalogue number with a code from the table below e.g. 91000T1522**6** is a 3 position stayput switch with key removal from left and centre.

Key removal position	Suffix
Right	1
Left	2
Right and Left	3
Centre	4
Right and Centre	5
Left and Centre	6
All Positions	7



Note: Select one suffix number only. Key removal in a spring return position is not available.

Special lock selection

To select an alternative lock add the suffix code from the table below to the operator catalogue number e.g. 91000T15113**H621**

Special lock Suffix	Suffix
H620	H654
H621	H663
H634	H675
H635	H683
H639	H688
H643	–

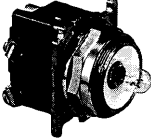
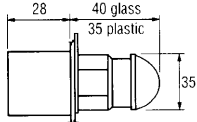
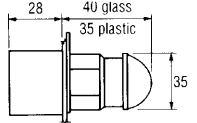

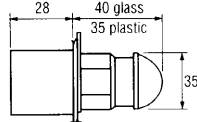
Special locks are supplied with two keys. Extra keys may be ordered, refer to accessories page 14.

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Indicating Lights

Standard indicating lights

Lamp units Bulbs supplied with units unless otherwise stated. For replacement light bulbs see page 14

	Description	Supply volts 50/60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
	Transformer type	110/120	91000T181N		0.22
	6V 1W secondary BA9s	220/240	91000T182N		0.22
	bayonet bulb under rated by 10% for longer life.	380/415	91000T183N		0.22
		550/600	91000T185N		0.22
	Resistor type	110/120	91000T201N		0.112
	120V 2.2W BA9s bayonet bulb	220/240	91000T202N		0.112
	Direct voltage unit (MCC/MBC)	6 to 240	91000T197N		0.11
	Supplied without bulb. Suitable for BA9s bayonet bulbs				
	BA9s bayonet bulbs (for use with 91000T197N)				
	Filament type	6V (1W) flasher	28-2225-26		
		6.3V (1W)	28-2225-72		
		12V (1.2W)	28-2225-29		
		24V (1.2W)	28-2225-30		
		28V (1.12W)	28-2225-73		
		50V (1W)	28-2225-31		
		60V (1.2W)	28-2225-32		
		110V (2.2W)	28-2225-24		
	Neon type	110V (0.8mA)	28-2225-48		
		240V (1.5mA)	28-2225-49		
	Direct voltage unit (SBC)	6 to 240	91000T200N		0.11
	Supplied without bulb. Suitable for BA15d bayonet bulb				
	BA15d bulbs (filament type)	6	28-2225-18		
	6 – 10 watt.	12	28-2225-19		
	For use with 91000T200N	24	28-2225-20		
		48	28-2225-21		
		130	28-2225-22		
		240	28-2225-23		

Lenses

Colour	Catalogue numbers Plastic	Glass
Red	91000TC1N	91000TC7N
Green	91000TC2N	91000TC8N
Amber	91000TC19N	91000TC9N
Blue	91000TC4N	91000TC10N
Clear	91000TC5N	91000TC11N
White	91000TC6N	91000TC12N



L.E.D.s

Description	Operating voltage	Catalogue numbers Red	Green	Yellow
Multi-cluster for long life (50,000 hrs)	8/9V ac/dc	28-2225-60	28-2225-61	28-2225-62
	12V ac/dc	28-2224-63	28-2225-64	28-2225-65
BA9s bayonet fitting	24V ac/dc	28-2225-66	28-2225-67	28-2225-68


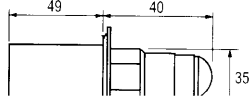
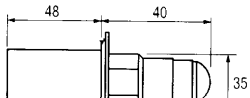
All LED's are suitable for light unit 91000T197N. 8/9V versions are also suitable for transformer type light units 91000T181N – 185N.

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Indicating Lights

Pretest indicating lights

Lamp units For replacement light bulbs see page 14.

Description	Supply volts 50/60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
 <p>Transformer type 6V 1W secondary BA9s bayonet bulb underrated by 10% for longer life</p>	110/120	91000T221N		0.29
	220/240	91000T222N		0.29
	380/415	91000T223N		0.29
<p>Resistor type 120V 2.2W BA9s bayonet bulb</p>	110/120	91000T231N		0.185
	220/240	91000T240N		0.185
<p>Direct voltage unit (MCC/MBC) Suitable for BA9s bayonet bulbs</p>	6 to 240	91000T230N		0.175
<p>BA9s bayonet bulbs (for use with 91000T230N)</p> <p>Filament type</p>				
	6.3V (1W)	28-2225-72		
	12V (1.2W)	28-2225-29		
	24V (1.2W)	28-2225-30		
	50V (1W)	28-2225-31		
	60V (1.2W)	28-2225-32		
	110V (2.2W)	28-2225-24		
<p>Neon type</p>	110V (0.8mA)	28-2225-48		
	240V (1.5mA)	28-2225-49		

Lenses

Colour	Catalogue numbers	
	Plastic	Glass
Red	91000TC21	91000TC13N
Green	91000TC22	91000TC14N
Amber	91000TC43	91000TC15N
Blue	91000TC24	91000TC16N
Clear	91000TC25	91000TC17N

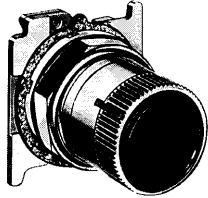


Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Pushbutton Operators

Roto-push pushbutton (a combined selector switch and pushbutton)

Description



Button colour

Black
Green

Catalogue numbers

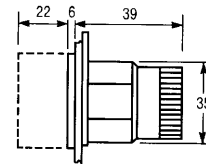
Vertical mounting

91000T241*
91000T243*

Horizontal mounting

91000T251*
91000T253*

Overall dimensions (mm)



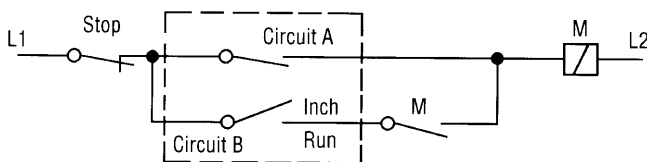
Weight (kg)

0.128
0.128

* Complete the catalogue number by adding the respective cam code number from the table below. Example: 91000T24111 is a 2 position roto-push for use as shown below.

Typical application run-inch, start-inch

2 position roto-push 91000T24111 + 91000T1



With the roto-push sleeve turned to Inch depression of the push energises coil M through circuit A only so long as the push is pressed i.e. the motor will inch. With the roto-push sleeve turned to Run, the roto-push contact connected to the maintaining contact of M through circuit B is permanently closed, thus when the push is pressed (circuit A) M will close and maintain itself and the motor will run.

Cam selection chart showing contact sequence

0 = contacts open, X = contacts closed. The catalogue number of the appropriate contact block is shown at extreme left of table.

Catalogue number of contact block		Button position	Circuit +	2 position operators								3 position operators		
One hole mounting	Base mounting			Cam code number								7	8	9
				1	2	3	4	5	6	10	11			
91000T1	91000T6	N	A N.C.	XX	XX	XO	XX	XX	XO	XX	XX	XXX	XOX	XOO
		N	B N.O.	00	00	OX	OX	OX	OX	OX	OX	OXX	OXO	OOX
		D	A N.C.	XO	XO	00	00	XO	XO	OX	00	OXO	OOX	XOO
		D	B N.O.	XO	XX	XX	XX	OX	XX	OX	OX	OXX	OXX	OOX
91000T1§	91000T6§	N	A N.O.	00	00	OX	00	00	OX	00	00	000	OXO	OOX
		N	B N.C.	XX	XX	XO	XO	XO	XO	XO	XO	XOO	XOX	XXO
		D	A N.O.	OX	OX	XX	XX	OX	OX	XO	XX	XOX	XXO	OXO
		D	B N.C.	OX	00	00	00	XO	00	XO	XO	XOO	XOO	XXO
91000T2	91000T7	N	A N.O.	00	00	OX	00	00	OX	00	00	000	OXO	OOX
		N	B N.O.	00	00	OX	OX	OX	OX	OX	OX	OXX	OXO	OOX
		D	A N.O.	OX	OX	XX	XX	OX	OX	XO	XX	XOX	XXO	OXO
		D	B N.O.	XO	XX	XX	XX	OX	XX	OX	OX	OXX	OXX	OOX
91000T3	91000T8	N	A N.C.	XX	XX	XO	XX	XX	XO	XX	XX	XXX	XOX	XOO
		N	B N.C.	XX	XX	XO	XO	XO	XO	XO	XO	XOO	XOX	XXO
		D	A N.C.	XO	XO	00	00	XO	XO	OX	00	OXO	OOX	XOO
		D	B N.C.	OX	00	00	00	XO	00	XO	XO	XOO	XOO	XXO

Note: Cam codes 6 & 7 are for ac use only.

† Each contact block contains two contact circuits. The top set of contacts is identified as 'circuit A' and the lower set as 'B'. The table shows contact arrangement of each contact block with the operating button in normal and depressed positions and in each rotary sleeve position. Additional combinations are obtainable by stacking contact blocks in tandem.

§ These contact blocks are the same as the ones above except rotated 180° when assembled to the operator.

Switching angle: 60°

N = Button in free or normal position

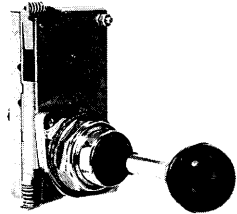
D = Button depressed

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

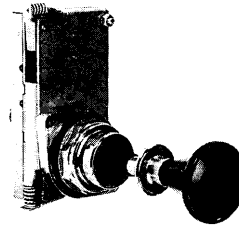
Joystick Controllers

Operators

Eight circuit
Non-latched operator



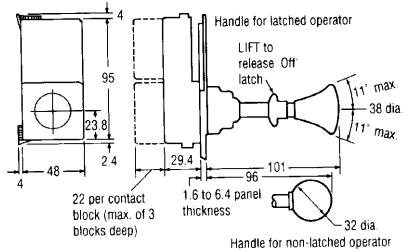
Latched operator



- Supplied with 4 position gate fitted
- 3 additional gates supplied which allows conversion to 2, 3 or 8 positions. (T1030, T1050, T1020)
- Up to eight switching positions
- Up to twelve circuits.
- Each circuit N.O. or N.C. as required a.c. or d.c.

Description	Catalogue numbers	
	Without latch:	With off position latch:
Spring return only	91000T450	91000T460
Field adjustable spring return to stayput	91000T451	91000T461

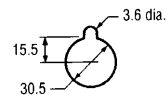
Overall dimensions (mm)



Contact blocks

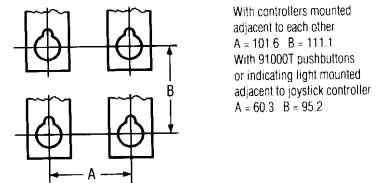
Description	Catalogue numbers
1 N.O. – N.C.	91000T1
2 N.O.	91000T2
2 N.C.	91000T3
1 N.O. 1N.C. make before break	91000T55

Panel drilling dimensions (mm)



Legend plates

Description	Catalogue numbers
Blank	91000TJS1
Engraved	91000TJS2
Hole plug	91000TA700



Positioning gate 91000T1010 is fitted as standard to each operator

The arrows shown in the 'Handle positions' column A indicates the handle positions and movements available when the indent mark on the gate is adjacent to the letter A on the handle assembly base casting. (No indent mark is provided on gates 91000T1010 and T1020).

Gate profile	Handle position				Catalogue numbers
	A	B	C	D	
					91000T1100

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Legend Plates

Catalogue numbers



Medium



Large

Legend	Catalogue numbers		Legend	Catalogue numbers		Legend	Catalogue numbers	
	Medium	Large		Medium	Large		Medium	Large
	91000T	91000T		91000T	91000T		91000T	91000T
Auto off hand	M49	J49	Inch Run	M41	J41	Raise	M28	J28
(Blank)	M36	J36	Inch Safe Run	M52	J52	Raise Lower	M76	J76
(Blank)§	M37	J37	Jog	M19	J19	Ready	M78	J78
(Blank)	M95+	J95+	Left	M73	J73	Reset	M29	J29
(Blank)§	M96+	J96+	Left Right	M74	J74	Reverse	M30	J30
Close	M11	J11	Local Off			Right	M79	J79
Down	M12	J12	Remote	M66	J66	Run	M31	J31
Emerg Stop§	M13	–	Local Remote	M63	J63	Run Inch	M44	J44
Emergency			Low	M22	J22	Safe Run	M45	J45
Stop§	–	J13	Lower	M23	J23	Seq. Test	M62	J62
Fast	M14	J14	Man Auto	M67	J67	Slow	M32	J32
For Off Rev	M50	J50	Man Off Auto	M68	J68	Slow Fast	M84	J84
For Rev	M38	J38	Motor Run	M58	J58	Slow Off Fast	M85	J85
Forward	M15	J15	Motor Running	M56	J56	Start	M33	J33
Hand Auto	M39	J39	Motor Stop§	M59	J59	Start Inch	M46	J46
Hand Off Auto	M51	J51	Motor Stopped	M57	J57	Start Stop	M47	J47
High	M16	J16	O§	M64	J64	Stop§	M34	J34
High Low	M40	J40	Off§	M24	J24	Stop Reset§	M88	J88
I	M65	J65	Off On	M42	J42	Stop (Turn barrel to release)§	M90	–
In	M17	J17	On	M25	J25	Supply On	M61	J61
Inch	M18	J18	Open	M26	J26	Test	M60	J60
Inch For	M20	–	Open Close	M43	J43	Up	M35	J35
Inch Forward	–	J20	Open Off Close	M53	J53	Up Down	M48	J48
Inch Rev	M21	–	Out	M27	J27	Up Off Down	M54	J54
Inch Reverse	–	J21	Power On	M55	J55			

The standard colour field is black, except for those legends marked § for which the standard colour is red. Legends marked thus † are of brass. All other legends are of aluminium.

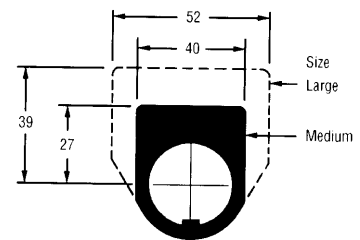
Non-standard legends

If a legend not quoted above is required, give the blank catalogue number for the size/colour and add the suffix 'X' to the code, indicating (e.g. by dashes not to be reproduced on the plate) the number of positions to be catered for, e.g. M36X JET-OFF-SPRAY (medium, black, 3-position).

The following table gives the maximum number of letters of a certain size which can be engraved on standard legend plates.

Dimensions (mm)

Note: Two large size legend plates cannot be mounted one above the other on standard enclosures.





Type	Letter size (mm)													
	1.6		3.2		4.8		6.4		8		9.5		12.7	
	No. of lines	No. of letters	No. of lines	No. of letters	No. of lines	No. of letters	No. of lines	No. of letters	No. of lines	No. of letters	No. of lines	No. of letters	No. of lines	No. of letters
Medium	3	24	2	12	1	8	1	6	1	4	1	4	–	–
Large	6	30	4	15	3	10	2	7	2	5	1	5	1	3



Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Accessories

Catalogue numbers

	Description	Catalogue numbers
Padlock attachments		
	Padlock attachment for stop button. Permits locking N.C. contacts in open position, prevents operation of button	91000TA2
	Padlock attachment with hinged transparent flap, for flush or extended pushbuttons and	91000TA38

Boots

	Protective boot for flush pushbutton operators	Blue	91000TA46
		Black	91000TA47
		Red	91000TA48
		Green	91000TA49
		Yellow	91000TA50
	Protective boot for mushroom and palm pushbutton operators. Not suitable for use with 91000T140	Black	91000TA88
		Black	91000TA3

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Accessories

Catalogue numbers (continued)

Trip and reset attachment

Description	Catalogue number
Trip and reset attachment. Use with two pushbutton operators and one or more contact blocks. The contact blocks are mounted under the reset or stop push which latches in the depressed position until released by depression of the trip push.	91000TA1



Replacement light bulbs *





Type	Voltage	Used on	Catalogue numbers
BA9s flasher filament	6	91000T181N – 185N 91000T221N – 223N 91000T411 – 414	28-2225-26
BA9s filament	6.3	91000T181N – 185N 91000T221N – 223N 91000T411 – 414	28-2225-72
BA9s filament	110/120	91000T201N, T202N 91000T231N, T240N	28-2225-24





* **Note:** Replacement bulbs are for use with current series 'B' operators. For replacement bulbs for series 'A' (round bezelled) operators contact Cutler-Hammer.

Bulb removal tool

BA9s and BA15d type bulbs	91000TA65
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Other accessories

Description	Catalogue numbers
 Wobble stick complete with locking ring for mounting on a flush pushbutton. Designed for emergency or hurried operation	91000TA5
 Plug for unused hole in cover. Finish in light grey (RAL 7032)	91000TA7
 Protective washer, used as substitute when legend plate is not required. Prevents locking ring from scratching paint.	91000TA8
 Double ended box spanner for easy installation of control units on panel. (Will not fit over selector switch levers).	E22CW

Description	Catalogue numbers
 2 spare keys for special locks, state key 'H' code as suffix e.g. 91000TA151H620	91000TA151H*
 2 spare keys for standard lock ref. no. H661	91000TA152
4BA stacking screws for series A operators	91000TA89 (pack of 10)
6-32 stacking screws for series B operators	91000TA79 (pack of 10)
 Round bezel with 24 T.P.I. to convert octagonal style pushbutton operators to round	91000TA201
 Octagonal bezel with 26 T.P.I. to convert round style pushbutton operators to octagonal	91000TA202


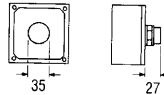

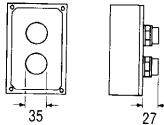
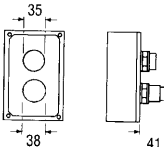
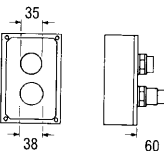

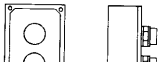
Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Pushbutton Stations

Assembled pushbutton stations

Features and characteristics


- Oiltight stations
- IP65 ingress protection
- Surface mounted die-cast aluminium enclosures
- Threaded conduit entry
- Powder coat painted light grey (RAL7032)

Description	Operator	Contact arrangement	Catalogue numbers	Weight (kg)	Operator dimensions (mm)
Single way station 	Start	N.O. – N.C.	91000T3516	0.68	
Two way stations 	Start Stop	N.O. – N.C. N.C.	91000T3525	0.98	
	Start Mushroom stop (spring return)	N.O. – N.C. N.C.	91000T3526	0.98	
	Start Mushroom stop (auto latch)	N.O. – N.C. N.C.	91000T3630	0.98	
Three way stations 	Forward Reverse Stop	N.O. – N.C. N.O. – N.C. N.C.	91000T3532	1.2	

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

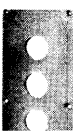
Aluminium Alloy Enclosures

Catalogue numbers

Description Painted light grey (RAL7032) textured finish	Operator capacity per enclosure	Catalogue numbers			
		One contact block deep:	Two contact blocks deep:	Three contact blocks deep:	
	1	91000TN1	91000TN11	–	
	1†	91000TN100	–	–	
	2	91000TN2	91000TN12	–	
	3	91000TN3	91000TN13	–	
	4	91000TN4	91000TN14	–	
	6	–	91000TN15	–	
	9	–	91000TN16	–	
	12	–	–	91000TN17	
	16	–	–	91000TN18	
	4 operator enclosure				

† Enclosure has yellow lid

Covers only

Description	No. of operators per cover	Catalogue numbers	
		Flat plate	Raised plate
	1	91000TF1	91000TF11
	2	91000TF2	91000TF12
	3	91000TF3	91000TF13
	4	91000TF4	91000TF14
	6	91000TF5	

Cutler-Hammer 30.5mm Pushbuttons – Type 91000T

Technical Data

Technical data

Standards and approvals

IEC 947-5-1, MTTA*
CSA C22-2 no. 14, UL508

Ingress protection (IP ratings to IEC144 (BS5420))

IP65
IP66, NEMA 4 on pushbuttons when fitted with a rubber boot
IP65 on enclosures

Max. frequency of operations

All pushbuttons: 6000 ops/hr.
Key and lever selector switch: 3000 ops/hr.
Auto-latch devices: 1200 ops/hr.

Mechanical life

Pushbuttons: 10 x 10⁶ operations
Contact blocks: 10 x 10⁶ operations
Pretest units: 1 x 10⁶ operations
Lever & key sel. sw.: 0.25 x 10⁶ operations
Twist to release p/btns: 0.3 x 10⁶ operations

Climatic conditions

Operating: Max 60°C at 95% RH.
Temp. -17°C to +66°C
Altitude 2000 metres
Storage: Max. 60°C at 95% RH.
Temp. -40°C to +80°C

Shock resistance

Shock duration: 20 ms ≥ 5g

Electrical ratings

Rated insulation: U_i = 660V ac or dc
Rated thermal: I_{th} = 10A
Short circuit (IEC947-5-1): 1000A with a 6A (NIT) fuse (to BS88)
NEMA, UL rating: A600, P600
AC load life duty cycle 1200 ops/hr
10A 110V pf 0.4 - 1 x 10⁶ operations
5A 250V pf 0.4 - 1 x 10⁶ operations
2A 660V pf 0.4 - 1 x 10⁶ operations

Switching capacity

AC15 rated make/break (11 x I_e at 1.1 x U_e)
6A 120V pf 0.7
4A 240V pf 0.7
2A 660V pf 0.7
DC13 rated make/break (1.1 x I_e at 1.1 x U_e)
1.0A 120V L/R ≥ 0.95 at 300ms
0.5A 240V L/R ≥ 0.95 at 300ms
0.1A 660V L/R ≥ 0.95 at 300ms
10A 110V pure resistive

Light units

Transformers will withstand short circuit for 1 hour per IEC947-5-1.
Bulbs average life:
Transformer type = 20,000 hrs.
Resistor/direct voltage type = 2,500 hrs min. at rated voltage.

Low voltage switching

Conical shaped points or "reliability nibs" improve performance in dry circuit, corrosive, fine dust and other contaminated atmospheres. Under normal environmental conditions, the minimum operational voltage is 5V and the minimum operational current is 1mA, ac/dc.

Contact operation

Slow make and break. All normally closed contacts have positive opening operation. i.e. normally closed contacts are forced open in the event of contact weld or spring breakage.

Terminal marking

Dual marking system 1 – 2 for normally closed 3 – 4 normally open to meet BS5472 (Cenelec EN50 005) and N.C. – N.O. moulded in the contact block to meet the NEMA requirements.

Terminal clamps

Terminals are saddle clamp types for 1 x 0.5mm² to 2 x 3mm² conductors.

Panel thickness

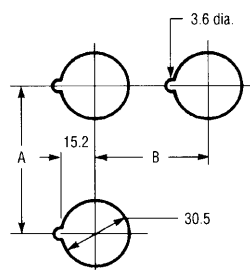
Maximum = 8mm including legend plate.
Minimum = 1.6mm.

*M.T.T.A. (Machine Tool, Trades Association)

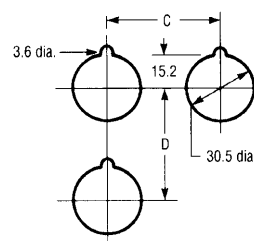
A range of pushbutton operators to meet the requirements of M.T.T.A. standard "Electrical Equipment of Machine tools and other industrial machines and equipment for the automobile industry" are included in the 91000T range.

Mounting matrix

Legend plate	A	B	C	D
Medium	57	45	45	57
Large	57	57	57	57



Horizontal mounting



Vertical mounting

Vertical mounting means terminals are left & right of contact block. Horizontal mounting means terminals are top & bottom of contact block. This allows close spacing of adjacent operators with easy access to terminals.