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Cam Operated Rotary Switches

Cam Operated Rotary Switches used to perform Make and Break operation in a sequential way by rotating the switch to different positions.

The Cam, which closes and opens the contacts, has rotary movement to multiple positions, thereby multiple Circuit functions can be controlled.

Further, the flexibility in the switch type selection covering various current / voltage ratings and options to select the number of contacts, is added advantage. This ensures that a right switch is chosen for the desired application. CAM Switches thus offer complete design flexibility to assemble complex switching programs, contact ratings and customize all switching applications.

Moreover the Cam Switches are suitable for AC as well as DC switching applications.

The basic operating mechanism of Cam Switch is required to suit intended application coupled with “Quick-Make”, “Quick-Make-Quick-Break” and “Spring Return” operating mechanisms are offered to cover wide range requirements.

The Cam Switches offers versatile mounting options in addition to Standard Panel/Flush Mounting and other special features like single hole, door interlocking, padlock, Lock and Key for various needs. The wide option such as type of Knob, Front plate Color and customized marking on the Marking Plate gives compatible to the panel design and thus eliminates the need of the separate label on the panel.

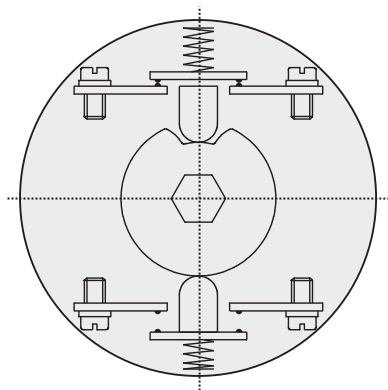
The superior quality of engineering materials and “Double Butt” contacts with silver bimetal on copper/brass provide stable electrical performance. The high-grade engineering plastics with high tracking index like Nylon, Celcon and glass filled polyamide for the components ensures greater mechanical strength.

Advanced manufacturing processes for Cam Switch components under stringent quality conditions ensures durability, reliability and enhanced life and safe operations for a very long time.

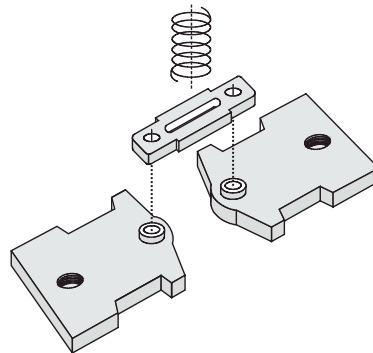
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Construction



Cam Assembly



Contact Assembly

Series S, TP, RT and SL Cam Switches incorporate two double break silver alloy contacts per stage at 180 degree disposition. The AC Switches are "Quick Make-Slow Break" with in-built latching device feature in cam design. The Cam Switches can be offered for DC applications with additional contacts in series according to the DC switching voltage and with suitable duration and the DC Switches are "Quick Make - Quick Break".

Contacts : Double break type AgCdO
Insulation : Glass filled polyamide
with high tracking index

Operating temp : -15°C to 55°C
Operating frequency : 50 to 60Hz
Humidity : 95%, Rh 48 hours

S Series
Open Version



- Available from 6 to 400Amp
- Open terminals for easy accessibility

TP Series
Touch Proof



- Available from 6 to 20Amp
- Finger Protection (IP20)

RT Series
Touch Proof &
Rear Termination



- Available from 16 to 63Amp
- 'Finger Protected convenient accessibility

SL Series
Touch Proof &
Screwless Termination



- Available from 6 & 10Amp
- Cage clamp (finger protected) (IP20)

AC Duty Rating	
Category	Typical AC Application
AC-1	Non-Inductive or slightly Inductive Loads, Resistance Furnaces
AC-3	Squirrel Cage otors: starting switching off motors during running
AC-15	Control of AC electromagnetic loads
AC-21A	Switching of resistive loads, including moderate overloads (frequent switching)
AC-23-A	Switching of motor loads or other highly inductive loads (frequent switching)

DC Duty Rating	
Category	Typical DC Application
DC-1	Non-Inductive or slightly Inductive Loads, Resistance Furnaces.
DC-22	Switching of resistive loads, including moderate overloads
DC-13	Control of DC electromagnets
DC-23	Switching of motor loads or other highly inductive loads
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Technical Specifications



Conformance to standards :

European : IEC-60947-1 : 1988
IEC-60947-3 : 1990
IEC-60947-5 : 1992
Canadian : CSA 22.2 No.14-2010
American : UL 508 (2009)

IEC/EN Ratings

AC Rating Code	Unit	S6 TP6	S10 TP10	S16/TP16/ RT16	S20/TP20/ RT20	S25 RT25	S32 RT32	S40 RT40	S63 RT53	S80	S100	S125	S200
Rated Operational Voltage(Ue)	V	440	440	690	690	690	690	690	690	690	690	690	690
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated impulse withstand Voltage(Uimp)	Kv	4	4	6	6	6	6	6	6	6	6	6	6
Rated Operational Current(Ie) AC21/AC1	A	6	10	16	20	25	32	40	63	80	100	125	200
Rated Uninterrupted Current (Ith)	A	8	12	20	25	32	40	50	80	100	125	150	225
Rated Operational Power													
AC23A "3 Ph , 415 V"	KW	2.2	3	7.5	7.5	11	15	18.5	22	33	41	45	55
AC3	A	--	--	13	13	19	26	32	38	57	71	78	95
"3 Ph , 415 V"	KW	1.5	3	5.5	5.5	7.5	11	15	18.5	22	33	37	45
Short Circuit Capacity	A	--	--	10	10	13	19	26	32	38	57	64	78
Rated Fuse Short Circuit Current	KA	3	3	5	5	10	10	20	20	25	25	25	25
Fuse Size (Type gG/gM)	A	6	10	16	20	25	32	40	63	80	100	125	200
Terminal Cross Section													
Single / Multiple	min	0.7	0.7	1.5	1.5	1.5	2.5	2.5	4	6	10	10	10
	max	1.5	1.5	4	4	4	6	10	16	25	35	50	70
Fine strand	min	0.7	0.7	1	1	1	1.5	2.5	2.5	6	10	10	10
	max	1.5	1.5	2.5	2.5	2.5	4	6	10	16	25	35	50
Terminal Cross Section	Metric	M3	M3	M3.5	M3.5	M4	M4	M5	M5	2XM5	2XM5	2XM5	M10
Terminal Tightening Torque	Nm	0.5	0.5	0.8	0.8	1.2	1.2	2	2	2.5	2.5	2.5	2.5

Rated Duty: 8 Hours, Installation, Operation and Maintenance Condition: Suitable for Environment A (for Industrial Application).
Switch life under standard operating conditions: Mechanical 100,000 operations @ 300 cycles / hour, Electrical 10,000 operations at 100 % rated duty for 120 cycles/hour

CSA/UL Ratings

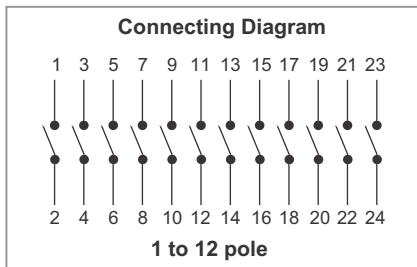
AC Rating Code	Unit	S6	S10	S16 TP16 RT16	S20 TP 20 RT 20	S25 RT25	S32 RT32	S40	S63	S80	S100	S125	S200
Ampere Rating	A	6	10	15	20	20	30	40	55	80	100	100	175
Operational Voltage	V	460	460	600	600	600	600	600	600	600	600	600	600
HP Rating 1 Phase	HP	0.25	0.33	0.33	0.33	1.5	1.5	2	3	-	-	-	-
240V	HP	0.50	0.75	1	1	3	3	5	7.5	-	-	-	-
3 Phase	HP	0.75	1	1.5	1.5	3	3	5	7.5	10	10	10	15
120V	HP	1	1	3	3	7.5	7.5	10	15	20	20	20	25
240V	HP	1	2	3	3	10	10	20	30	40	40	40	50
480V	HP	1	2	3	3	10	10	20	30	40	40	40	50
600V	HP	-	-	5	5	15	15	24	40	50	50	50	50

Note :- AC4 Rating = AC3 rating / 2, Star Delta Rating = 60% of AC3 Rating

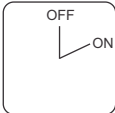
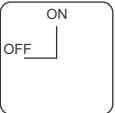
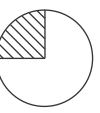
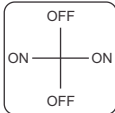
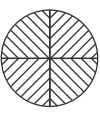
Isolator Switches

Isolators are ON-OFF Switches to isolate the power to a particular area of operation. The Isolator Switches are offered in a wide range from 1 Pole to 12 Poles. Isolators with spring return upto 4 Poles are available to energise circuits. Isolators with pre-close contacts are used for safety circuits and for connecting neutral and earth lines. Isolators are generally rated for AC1/AC21 while for motor applications they need to be rated for AC3/AC23A duty.

Applications: Switching of main/control and instrumentation circuits motor ON-OFF and other special application circuits.

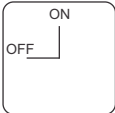
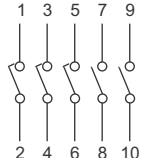
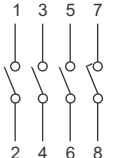


Stayput

Script Plate Marking	 	 	 	
Description	60 Degree Programme Code	90 Degree Programme Code	90 Degree Complete Rotation Programme Code	No of Stages
1 Pole	61001	61191	61195	1
2 Pole	61002	61192	61198	1
3 Pole	61003	61199	61197	2
4 Pole	61004	61194	61196	2
5 Pole	61005	-	-	3
6 Pole	61006	61906	-	3
7 Pole	61007	-	-	4
8 Pole	61008	-	-	4
9 Pole	61009	-	-	5
10 Pole	61010	-	-	5
11 Pole	61011	-	-	6
12 Pole	61012	-	-	6

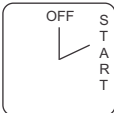
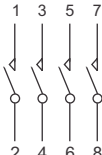
Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 25, 20, 32, 40, 63, 80, 100, 125, 200 and 400Amps.

Isolators with Pre-close Contact

 		
Description	Programme Code	No of Stages
4 Pole - 1 Pole Preclose	61194	2
4 Pole - 3 Pole Preclose	61904	2
5 Pole - 3 Pole Preclose	61905	3
3 Pole with Neutral Terminal	61178	2

Feasible ampere rating for S, TP and RT Series: 16, 20, 25, 32, 40, 63, 80, 100, 125, 200 and 400Amps.

Spring Return Isolators 45 Degree

Spring return to OFF  		 1 to 4 Pole
Description	Programme Code	No of Stages
1 Pole Spring Return	61351	1
2 Pole Spring Return	61352	1
3 Pole Spring Return	61353	2
4 Pole Spring Return	61354	2

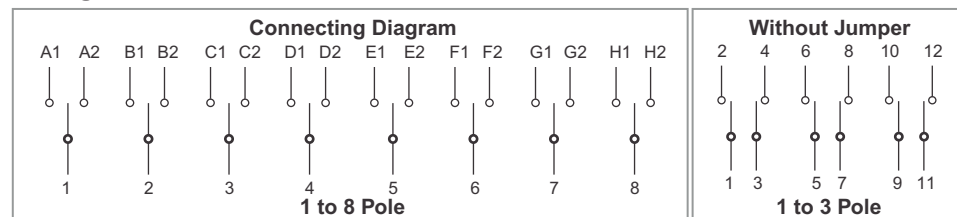
Feasible ampere rating for S, TP and RT Series: 16, 20, 25 and 32Amps.

Changeover Switches with OFF

Changeover Switches also called Double Throw Switches are available with OFF and without OFF. These are used to operate two different circuits with different number of inputs and outputs. Changeover Switches without Jumpers (potential free contacts) are used to connect two different circuits from two different sources with two different operating voltages or any other incompatible lines. All contacts by default are “Break Before Make” (BBM) type to avoid overlapping of different circuits. However, for overlapping changeover contacts. “Make Before Break” (MBB) type are offered against specific requirements.

Application: Power Supply to Generator Changeover, Auto/Manual Changeover, Standby/Remote Changeover and other special application circuits. Mainly used in Distribution Panels, UPS etc.

Changeover with Centre OFF



Stayput

Description	60 Degree Programme Code	No of Stages	Description	90 Degree Programme Code	
1 Pole	61025	1	1 Pole	61151	
2 Pole	61026	2	2 Pole	61152	
3 Pole	61027	3	3 Pole	61153	
4 Pole	61028	4	4 Pole	61154	
5 Pole	61029	5	-	-	
6 Pole	61030	6	-	-	
7 Pole	61031	7	-	-	
8 Pole	61032	8	-	-	

Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25, 32, 40, 63, 80, 100, 125, 200 and 400Amps.

Spring Return

45 Degree Spring Return to “0”		No of Stages	Spring Return from 1 to “0”		
Description	Programme Code		Description	Programme Code	
1 Pole	61361	1	1 Pole	61364	
2 Pole	61362	2	2 Pole	61365	
3 Pole	61363	3	3 Pole	61369	

Feasible ampere rating for S, TP and RT Series : 16, 20, 25, and 32Amps.

Feasible ampere rating for S, TP and RT Series : 16, 20, 25, and 32Amps.

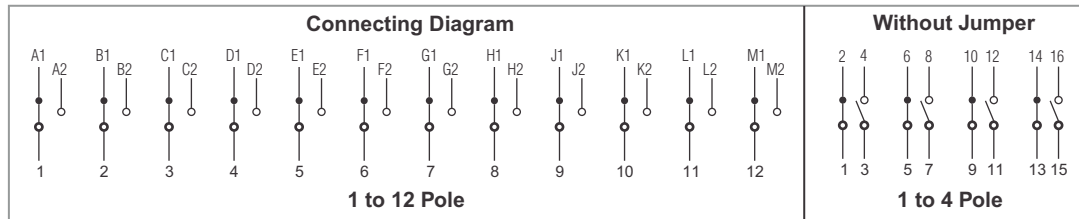
Stayput without Jumper

60 Degree Stayput without Jumper		No of Stages	45 Degree Spring Return without Jumper		
Description	Programme Code		Description	Programme Code	
1 Pole without Jumper	61625	1	1 Pole without Jumper	61761	
2 Pole without Jumper	61626	2	2 Pole without Jumper	61762	
3 Pole without Jumper	61627	3	-	-	

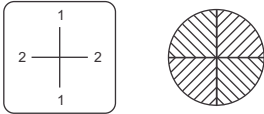
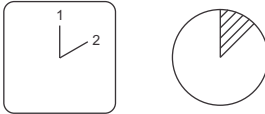
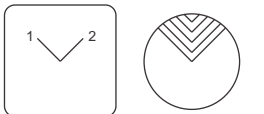
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Feasible ampere rating for S, TP and RT Series : 16, 20, 25, 32Amps.

Changeover Switches without OFF

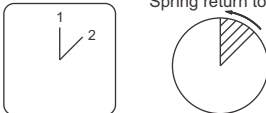


Stayput

								
90 Degree Complete Rotation		No of Stages	60 Degree		No of Stages	60 Degree		No of Stages
Description	Programme Code		Description	Programme Code		Description	Programme Code	
1 Pole	61037	1	5 Pole	61041	5	1 Pole	60177	1
2 Pole	61038	2	6 Pole	61042	6	2 Pole	60178	2
3 Pole	61039	3	7 Pole	61043	7	3 Pole	60179	3
4 Pole	61040	4	8 Pole	61044	8	4 Pole	60180	4
-	-	-	9 Pole	61045	9	-	-	-
-	-	-	10 Pole	61046	10	-	-	-
-	-	-	11 Pole	61047	11	-	-	-
-	-	-	12 Pole	61048	12	-	-	-

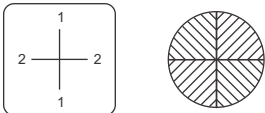
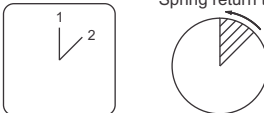
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Spring Return

		
45 Degree Spring Return		No of Stages
Description	Programme Code	
1 Pole	61371	1
2 Pole	61372	2
3 Pole	61373	3

Feasible ampere rating for S, TP and RT Series: 16, 20, 25, and 32Amps.

Stayput without Jumper

				
90 Degree Stayput without Jumper		No of Stages	45 Degree Spring return without Jumper	
Description	Programme Code		Description	Programme Code
1 Pole without Jumper	61637	1	1 Pole without Jumper	61771
2 Pole without Jumper	61638	2	-	-
3 Pole without Jumper	61639	3	-	-
4 Pole without Jumper	61640	4	-	-

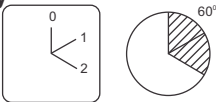
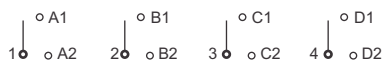
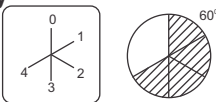
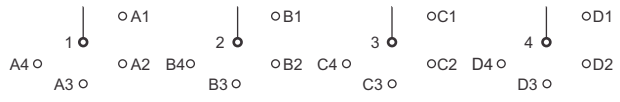
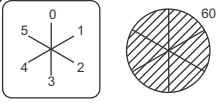
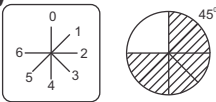
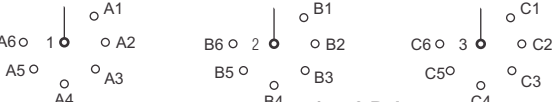
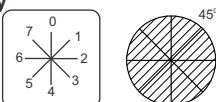
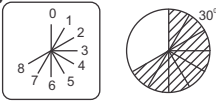
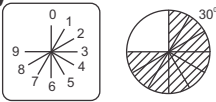
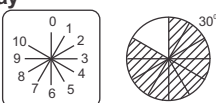
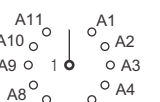
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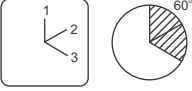
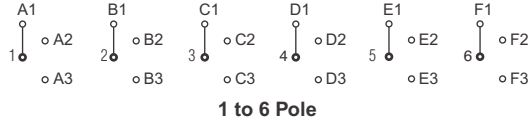
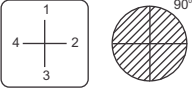
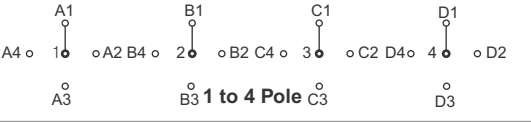
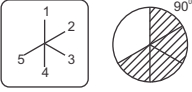
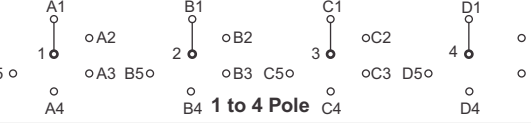
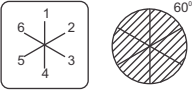
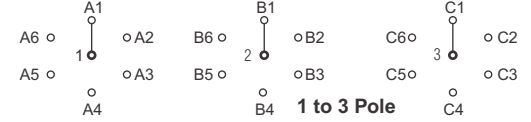
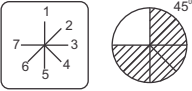
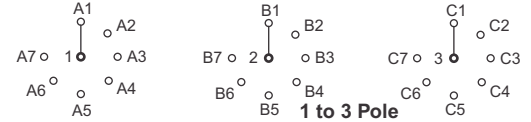
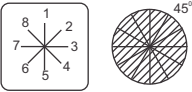
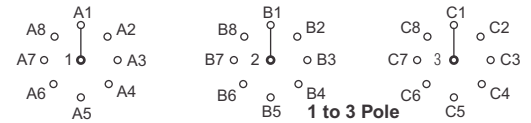
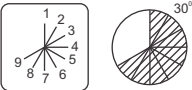
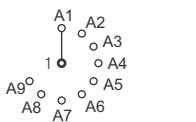
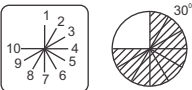
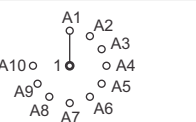
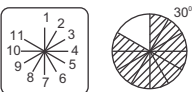
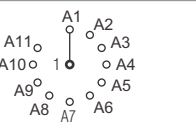
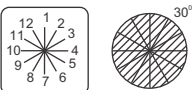
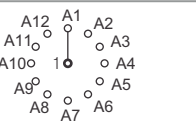
Multistep Switches with OFF

Multi-Step Switches also called Pole-Way Switches, are available with OFF and without OFF. Multi-Step Switches connect different circuits to a common supply or vice-versa. Multi-Step Switches with 1 Pole, 2 Poles and 3 Poles are popular for 1-Phase, 2-Phase and 3-Phase supply.

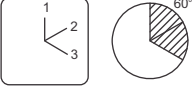
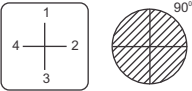
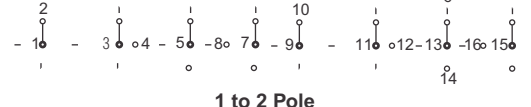
Applications: As Tap Changing Switch for Transformer/Stabiliser and other special application circuits.

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61059	1 Pole -2 Way	2 Way 	 1 to 4 Pole	1
61079	2 Pole-2 Way			2
61099	3 Pole-2 Way			3
61130	4 Pole-2 Way			4
61060	1 Pole-3 Way	3 Way 	 1 to 4 Pole	2
61080	2 Pole-3 Way			3
61100	3 Pole-3 Way			5
61131	4 Pole-3 Way			6
61061	1 Pole-4 Way	4 Way 	 1 to 4 Pole	2
61081	2 Pole-4 Way			4
61101	3 Pole-4 Way			6
61132	4 Pole-4 Way			8
61062	1 Pole-5 Way	5 Way 	 1 to 3 Pole	3
61082	2 Pole-5 Way			5
61102	3 Pole-5 Way			8
61063	1 Pole-6 Way	6 Way 	 1 to 3 Pole	3
61083	2 Pole-6 Way			6
61103	3 Pole-6 Way			9
61064	1 Pole-7 Way	7 Way 	 1 to 2 Pole	4
61084	2 Pole-7 Way			7
61065	1 Pole-8 Way	8 Way 		4
61066	1 Pole-9 Way	9 Way 		5
61067	1 Pole-10 Way	10 Way 		5
61068	1 Pole-11 Way	11 Way 		6

Multistep Switches without OFF

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61049	1 Pole - 3 Way	3 Way 	 1 to 6 Pole	2
61069	2 Pole - 3 Way			3
61089	3 Pole - 3 Way			5
61120	4 Pole - 3 Way			6
61124	5 Pole - 3 Way			8
61126	6 Pole - 3 Way			9
61050	1 Pole - 4 Way	4 Way 	 1 to 4 Pole	2
61070	2 Pole - 4 Way			4
61090	3 Pole - 4 Way			6
61121	4 Pole - 4 Way			8
61051	1 Pole - 5 Way	5 Way 	 1 to 4 Pole	3
61071	2 Pole - 5 Way			5
61091	3 Pole - 5 Way			8
61122	4 Pole - 5 Way			10
61052	1 Pole - 6 Way	6 Way 	 1 to 3 Pole	3
61072	2 Pole - 6 Way			6
61092	3 Pole - 6 Way			9
61053	1 Pole - 7 Way	7 Way 	 1 to 3 Pole	4
61073	2 Pole - 7 Way			7
61093	3 Pole - 7 Way			11
61054	1 Pole - 8 Way	8 Way 	 1 to 3 Pole	4
61074	2 Pole - 8 Way			8
61094	3 Pole - 8 Way			12
61055	1 Pole - 9 Way	9 Way 		5
61056	1 Pole - 10 Way	10 Way 		5
61057	1 Pole - 11 Way	11 Way 		6
61058	1 Pole - 12 Way	12 Way 		6

Multistep Switches without Jumper

61649	1 Pole - 3 Way without OFF without Jumper	3 Way 	 1 to 2 Pole	3
61650	1 Pole - 4 Way without OFF without Jumper	4 Way 	 1 to 2 Pole	2
61670	2 Pole - 4 Way without OFF without Jumper			4

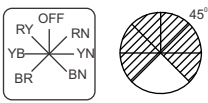
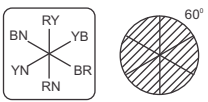
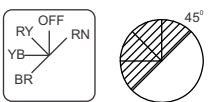
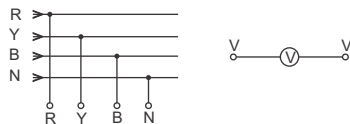
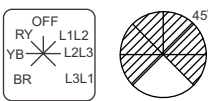
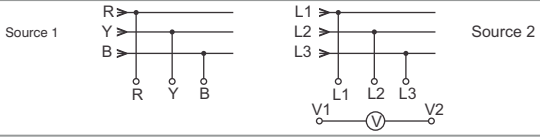
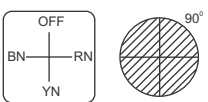
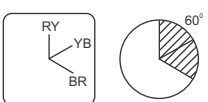
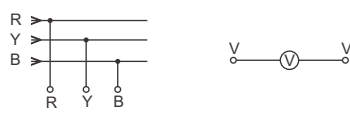
Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25, 32, 40, 63, 80, 100, 125 and 200 Amps.

Instrumentation Selector Switches

The Instrumentation Selector Switches help to:

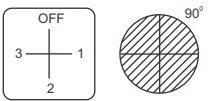
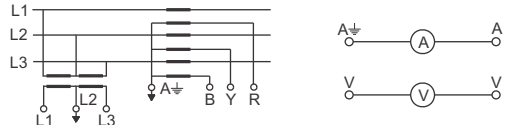
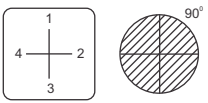
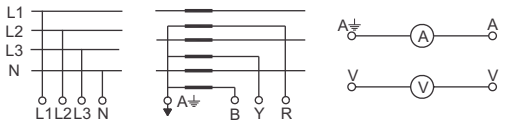
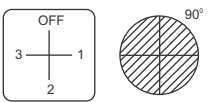
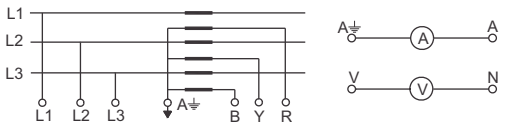
- Measure currents in different circuits with a current transformer a single analog ammeter and a switch
- Measure voltages between phases and phase and neutral with one voltmeter and a switch
- Measure voltages and currents of a circuit with one voltmeter one ammeter and a single switch

Voltmeter Selector Switches

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61312	3 - Phase Line to Line			2
61313	3 - Phase Line to Line & Line to Neutral			3
61314	3 - Phase Line to Line, Line to Neutral & Without OFF			3
61317	3 - Phase Line to Line & L1 to N			3
61318	3 - Phase Line to Line 2 Sources			4
61311	3 - Phase Line to Neutral			2
61319	3 - Phase Line to Line Without OFF			2

Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25 and 32Amps.

Voltmeter and Ammeter Selector Switches

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61336	3 Voltages Line - Line & 3 Currents			5
61337	4 Voltages & 3 Currents			6
61338	3 Voltages Line to Neutral & 3 Currents			5

Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25 and 32Amps.

Ammeter Selector Switches

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61325	1 Pole - 3 Transformer with OFF			3
61321	1 Pole - 1 Transformer			1
61331	1 Pole - 2 Transformer			2
61384	1 Pole - 3 Transformer without OFF			3
61326	1 Pole - 4 Transformer with OFF			4
61327	2 Pole - 2 Transformer with OFF			3
61328	3 Pole - 3 Transformer with OFF			5
61329	3 Pole - 3 Transformer without OFF			5
61330	4 Pole - 4 Transformer without OFF			6
71000	Direct ammeter Selector without Current Transformer (16 to 63Amps)			5

Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25 and 32Amps.

Power Factor Meter and Wattmeter Switches

73078	One Current Transformer One Voltage Transformer			2
73079	Two Current Transformer			2
73071	Two Wattmeter Method			5

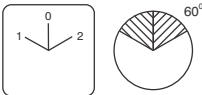
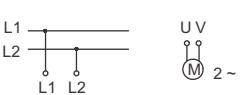
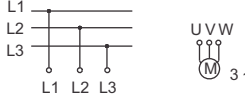
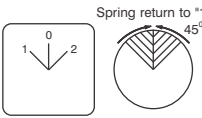
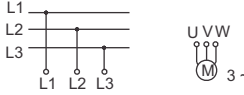
Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25 and 32Amps.

Motor Control Switches

Motor Control Switches directly operate the motor with AC3 or AC4 duty rating.

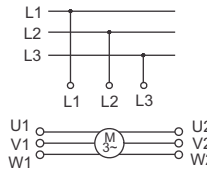
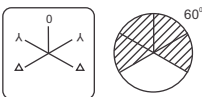
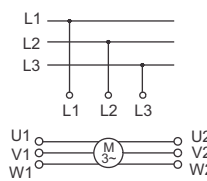
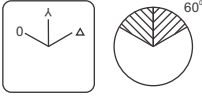
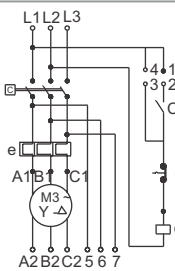
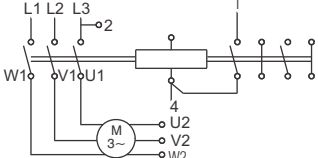
They are typically used for “Forward-Reverse”, “Star-Delta” and “Two Speed Forward-Reverse”. Motor Control Switches are also designed to operate with a contactor having built-in tripping feature in the event of power failure and overload.

Motor Reversing Switches

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61210	2 Pole			2
61211	3 Pole			3
61253	3 Pole Spring Return			3

Feasible ampere rating for S, TP and RT Series: 16, 20, 25, 32Amps and above.

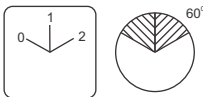
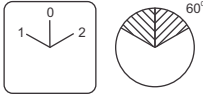
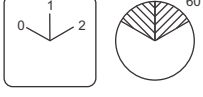
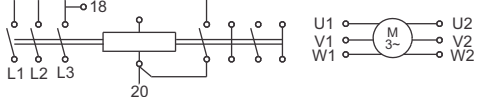
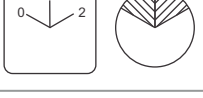
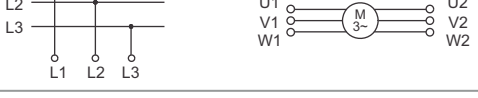
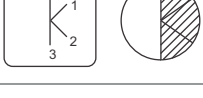
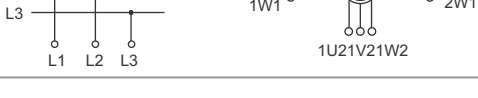
Motor Switches/Star Delta Switches

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61200	OFF - Star - Delta			4
61201	Spring Return from Star to OFF			4
61203	Standard			5
61239	Star Delta with Sequence Locking & LMD Contactor			3
61240	For use with Contactors			4

Feasible ampere rating for S, TP and RT Series: 16, 20, 25, 32, 40 and 63Amps.

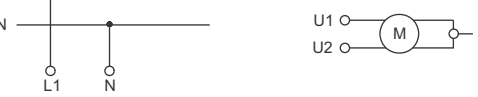
Cam Operated Rotary Switches

Motor Switches/Multi Speed Switches

Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61212	2 Speed in one Direction Single Winding			4
61213	2 Speed with Centre OFF Single Winding			4
61215	2 Speed Single Winding for use (with Contractor)			5
61217	2 Speed Single Winding Forwarding/Reversing			6
61219	2 Speed 2 Separate Windings			3
61226	3 Speed 2 Windings (O-A-B-A)			6
61243	3 Speed 2 Windings (O-A-B-B)			6

Feasible ampere rating for S, TP and RT Series: 16, 20, 25, 32, 40 and 63Amps.

Motor Switches - Start and Run Switches

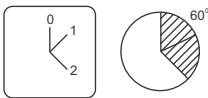
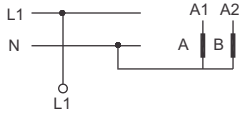
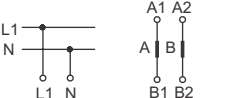
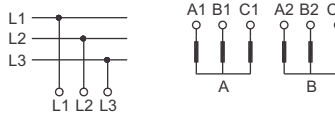
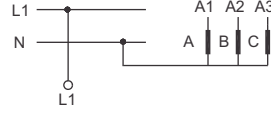
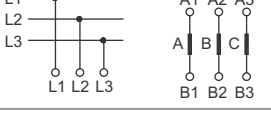
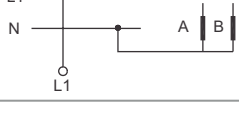
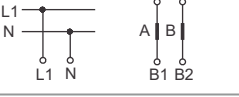
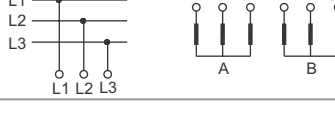
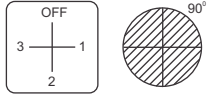
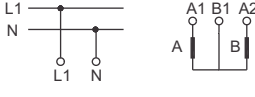
Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61208	Split - Phase Start			2
61209	Split - Phase Start Reversing			3
61270	Split - Phase Start Reversing Switching			3

Feasible ampere rating: 16, 20, 25 and 32Amps and for Sprint Return Switches and for Stay put 16Amps and above.

Gang Switches

The Gang Switches increase capacity of circuits by ganging in serial or parallel operations for different circuit capacity. Serialing enhances power of battery supply and paralleling the power of resistor.

Applications: In railway coaches for controlling the Alternator and Battery supply. Also in telecom panels and special application circuits.

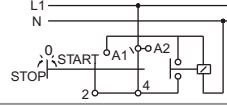
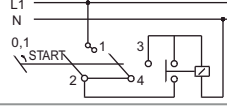
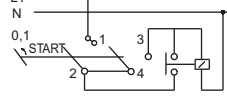
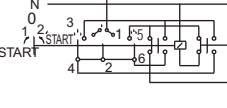
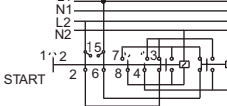
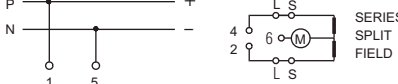
Prog No	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. of Stages
61109	2 Gang with OFF 1 Pole	2 GANG 	 1 Pole	1
61117	2 Gang with OFF 2 Pole		 2 Pole	2
61111	2 Gang with OFF 3 Pole		 3 Pole	3
61110	3 Gang with OFF 1 Pole	3 GANG 	 1 Pole	2
61118	3 Gang with OFF 2 Pole		 3 Pole	3
61112	3 Gang with OFF 3 Pole		 1 Pole	5
61113	2 Gang, Series with OFF 1 Pole	2 GANG 	 2 Pole	1
61115	2 Gang, Series with OFF 2 Pole		 3 Pole	2
61114	2 Gang, Series with OFF 3 Pole		 3 Pole	3
61116	2 Gang, Series - Parallel with OFF 2 Pole	2 Gang Series Parallel 	 3 Pole	2

Feasible ampere rating for S, TP and RT Series : 6, 10, 16, 20, 25, 32, 40 and 63Amps.

Control Switches

Control Switches are used to energise contactors for controlling motor operations. Most of the Switches are “Spring Return” type for latching of the circuit with NO contact and facilitate tripping by the tripping device.

Applications: Control Switches offer unique alternative to multiple “Push Button Stations”, when one Switch controls instead of many Push Buttons. Control Switch with many positions are offered for a suitable combination.

Prog No.	Description	Script Plate Marking/ Operating Quadrant	Connecting Diagram/Terminal Marking	No. Of Stages
61300	1 Pole STOP - START with Spring Return	Spring return 		1
61388	2 Pole STOP - START with Spring Return			2
61301	1 Pole STOP - START with Spring Return from Start to Run	Spring return from START to "1" 		1
61701	Without Jumper			
61307	STOP - START SWITCH with Spring Return to Run for a2 Units	Spring return from START 		2
61707	Without Jumper			
61366	Contactor Control with Spring Return to OFF	Spring return to "0" 		2
61271	Motor Voltage Control Switch			2

Feasible ampere rating for S, TP and RT Series: 16, 20, 25, 32, 40 and 63Amps.

Mountings Feasibility

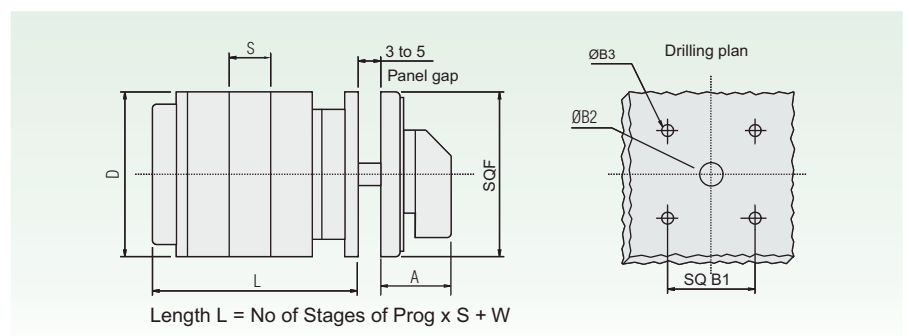
Mounting Code	Description	Feasibility					
		6/10A	16/20A	25/32A	40/63A	80/100/125A	200/400A
B03	Front Mounting, Standard Mounting plate		✓	✓	✓	✓	✓
B13	Front Mounting with next size plate	✓	✓	✓	✓	✓	✓
B00	Front Mounting 48X48 plate for 25/32A and 64x64 plate for 40/63A			✓	✓		
B19	Single Hole Mounting 32x32 plate for 6/10A only 48x48 Plate for 16-32Amps	✓	✓	✓			
B14	Single Hole Mounting 48x48 plate for 6/10A	✓					
B33	Front Mounting with Round padlock for 2 Position (for Isolators)		✓	✓	✓	✓	✓
B30	Front Mounting with Rectangular Padlock 2 Position (for Isolators)		✓	✓	✓	✓	✓
B63	Key Lockable type (Handle/Knob)		✓	✓	✓		
B90	Centre Key Lock (Pistol grip Handle in black colour only)		✓	✓			
B02	Rear/(Back/Base) Mounting	✓	✓	✓	✓	✓	✓
B21	Din Rail Mounting on 35mm Rail 6-32Amps	✓	✓	✓			
B32	Rear/Base Mounting, Door Interlock + Rectangular Padlock (B30+B42)		✓	✓	✓	✓	✓
B34	Rear/Base Mounting, Door Interlock + Round Padlock (B33+B42)		✓	✓	✓	✓	✓
B41	Rear Mounting with Clutch Mechanism on Door (Door Open in all position without Interlock)		✓	✓	✓	✓	✓
B42	Rear Mounting with Interlock Mechanism on Door		✓	✓	✓	✓	✓
F47	Door Clutch, Mounting Plate at front		✓	✓	✓	✓	✓
B17	ABS Enclosure	upto 4	upto 3	upto 5	upto 5		
B31	ABS Enclosure with Round Padlock (B33+B17)		upto 3	upto 2	upto 2		
M17	Metal Enclosure	upto 4	upto 4	upto 3			✓
A17	Aluminium Enclosure	upto 4	upto 3	upto 2			
B40	Single Hole Mounting with Padlock 48 x 48 Plate For 16-32A		✓	✓			
B43	Single Hole Mounting with Centre Key 48 x 48 Plate for 16-32A		✓	✓			
B45	Single Hole Mounting with Round Ring with Knob 16A-32A		✓	✓			

Mountings

B03



Front Mountings



6/10 Amps by default B13 mounting 48x48mm only

Quote B13 for next bigger size front plate

IP55 protection from front

Features:

- Standard 4 Hole front panel mounting
- Knob/Handle operatable
- Suitable for all switching angles and Spring Return Switches
- Front assembly in 4 different colors, Yellow/Red, Grey/Black, Black/Black and aluminum finish

Type	A	B1	B2	B3	D	F	S	W	Max
S6/S10/TP6/TP10/SL6/SL10 (48x48mm)-B13	28	36	12	4.5	38	48	9.5	18.5	12
S16/TP16/RT16/TP20/RT20	28	36	12	4.5	58	48	12	26	21
S25/S32/RT25/RT32	35	48	12	5.5	64	64	15	27	18
S40/S63/RT40/RT63	44	68	15	5.5	95	88	21	33	12
S80/S100/S125	44	68	15	5.5	118	88	26	40	10
S200	44	68	15	5.5	99	88	32	40	10
S400	44	68	15	5.5	99	88	64	40	4

Cam Operated Rotary Switches

B19/B14

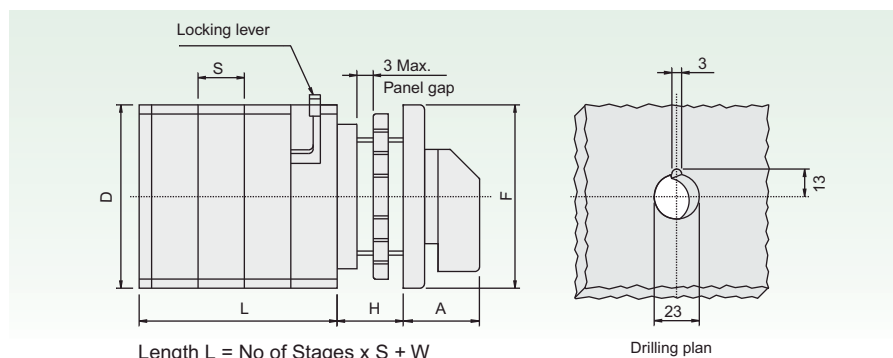


IP65 protection from front

Features:

- Single hole mounting with std dia 22.5 mm
- Eliminates the need for screws/hardware for Quick-Fit Single Hole panel fixing
- Easy termination
- Available upto 32Amp

Single Hole Mounting (22.5mm cutout)



Quote B14 for next bigger size front plate (available for 6/10Amps. only)

Type	Code	A	D	F	S	H	W	Max
S6/S10/TP6/TP10	B19	25	38	32	9.5	13.5	28.5	10
	B14	27	38	48	9.5	13.5	28.5	10
S16/TP16/RT16/TP20/RT20	B19	32	58	48	12	13	36	8
S25/S32/RT25/RT32	B19	32	64	48	15	13	37	6

B33

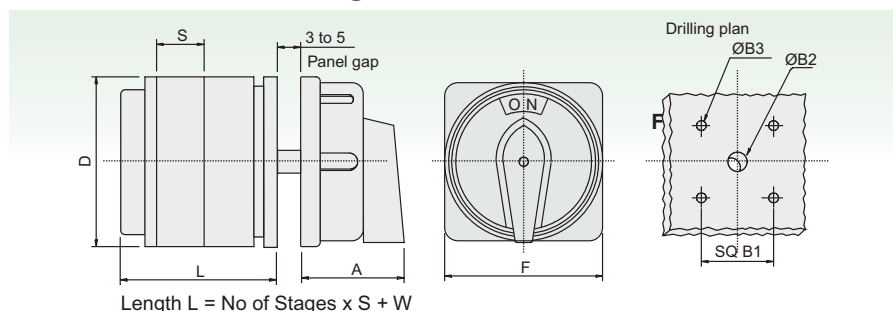


IP55 protection from front

Features:

- Four hole round padlockable mounting
- Secure with max. 3 padlocks in OFF position prevents switching ON by unauthorised personnel
- Suitable for switches only with 90° switching angle

Pad Lockable Mountings



F-48mm with B1-36mm also available on request for 16,25,32Amps

Type	A	B1	B2	B3	D	F	S	W	Max
S16/TP16/RT16/TP20/RT20	44	36	12	4.5	58	65	12	26	6
S25/S32/RT25/RT32	44	36	12	4.5	64	65	15	27	6
S40/S63/RT40/RT63	48	68	15	5.5	95	95	21	33	6
S80/S100/S125	48	68	15	5.5	118	95	26	40	6
S200	48	68	15	5.5	99	95	32	40	6
S400	48	68	15	5.5	99	95	64	40	3

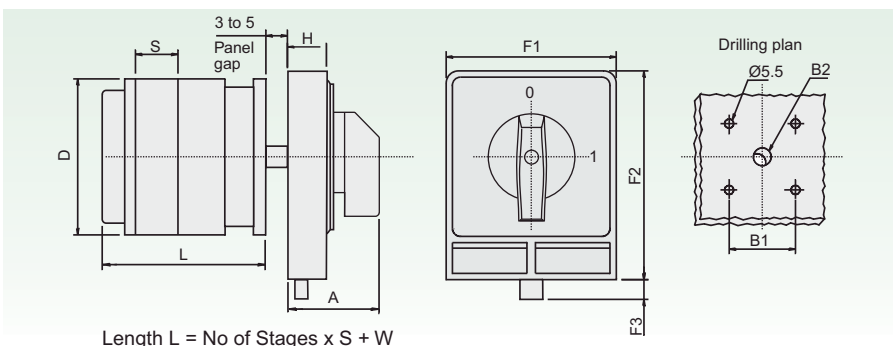
B30



IP55 protection from front

Features:

- Four hole rectangular padlockable mounting
- Secure with max four padlocks in OFF position
- Prevents switching only
- Unauthorised personnel
- Suitable for switches with 90° switching angle
- Available in Yellow/Red only



Type	A	B1	B2	D	F1	F2	F3	H	S	W	Max
S16/TP16/RT16/TP20/RT20	35	48	12	58	76	104	12	23	12	26	6
S25/S32/RT25/RT32	35	48	12	64	76	104	12	23	15	27	6
S40/S63/RT40/RT63	44	68	15	95	99	128	15	25	21	33	6
S80/S100/S125	44	68	15	118	99	128	15	25	26	40	6
S200	44	68	15	99	99	128	15	25	32	40	6
S400	44	68	15	99	99	128	15	25	64	40	3

B63

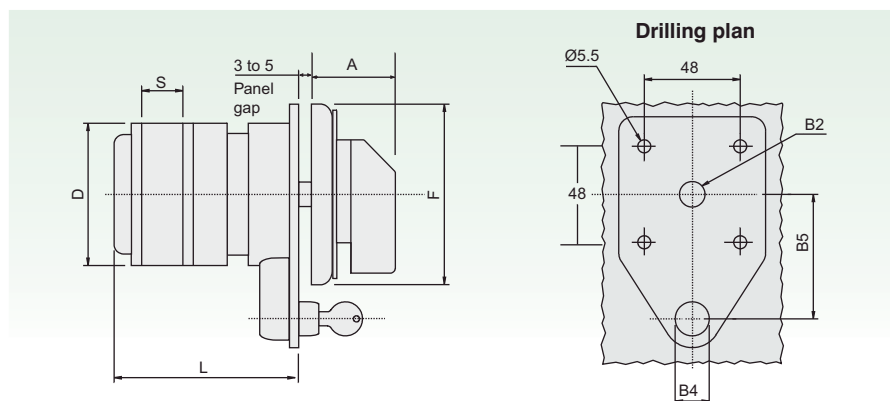


IP40 protection from front

Features:

- Knob/Handle operatable Switch
With key lockable assembly prevents switching by unauthorised personnel
- Key lock/Key removable only in OFF position by default, key lockable and removable in any other position to be specified
- Lock assembly can also be provided on any side
- Common key for all Switches

Key Lockabale



Length L = No of Stages x S + W

Type	A	B2	B4	B5	D	F	S	W	Max
S16/TP16/RT16/TP20/RT20	35	13	23	43.5	58	64	12	45	21
S25/S32/RT25/RT32	35	13	23	43.5	64	64	15	45	15
S40/S63/RT40/RT63	44	13	23	43.5	95	64	21	47	10

B17

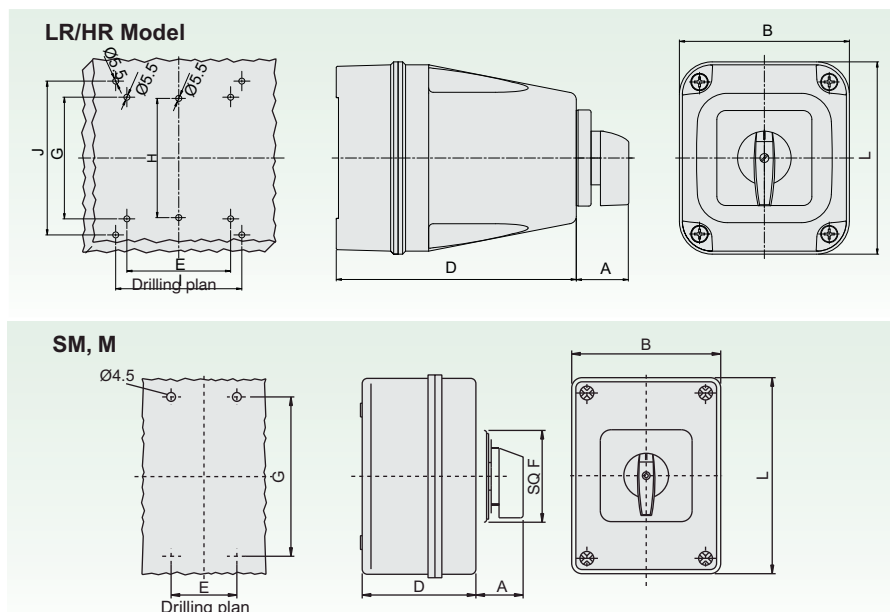


IP55

Features:

- Switch mounted in ABS Enclosure
- Provides protection from dust and hazardous material with regular Front Plate and Knob
- Suitable for all switching angles
- Knob/Handle operatable
- IP65 can be given on request

Enclosure



Quote B31 (B17 Enclosure and B33 Round Padlock) only for Isolater ON/OFF Switches

Type	Box Type	A	L	B	D	E	G	Stages
S6/S10/TP6/TP10	SM	28	125	100	72	80	115	4
S16/TP16/RT16	SM	28	125	100	72	80	115	3
S16/TP16/RT16	M	28	175	125	90	105	155	4
S25/S32/RT25/RT32	SM	35	125	100	72	80	115	2
S25/S32/RT25/RT32	M	35	175	125	90	105	155	4
S40/S63/RT40/RT63	M	44	175	125	90	105	155	2

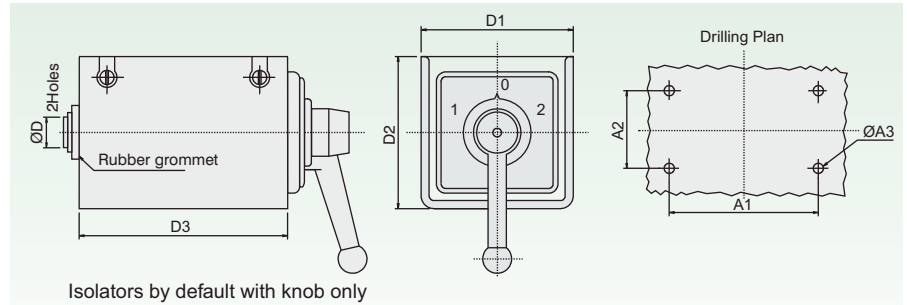
Type	Code	A	L	B	D	E	G	H	I	J	Stages
S25/S32/RT25/RT32	LR	38	130	115	161	87	102	100	-	-	5
S40/S63/RT40/RT63	HR	46	180	155	220	120	100	-	122	147	5

Cam Operated Rotary Switches

M17



Metal Enclosure



Features:

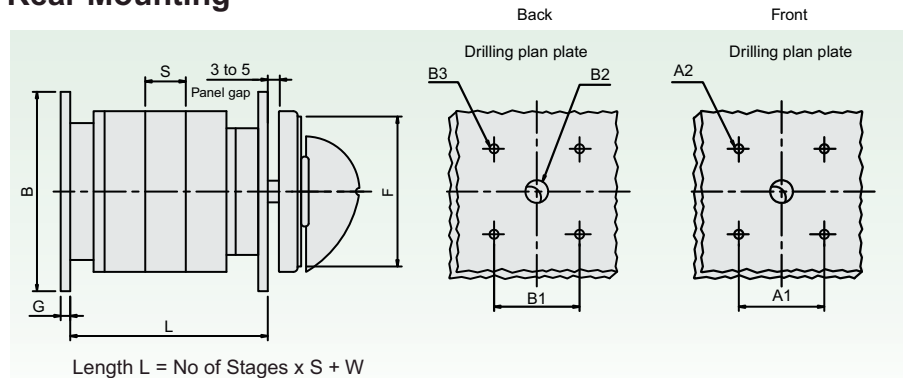
- Switches mounted in sheet metal Enclosures provides protection from hazardous environment
- Knob/Handle operatable
- Suitable for Switches upto 32Amp

Type	A1	A2	A3	D1	D2	D3	Max
S6/S10/TP6/TP10	70	60	6	85	89	98	4
S16/TP16/RT16/TP20/RT20	70	60	6	85	89	98	4
S25/S32/RT25/RT32	70	60	6	85	89	98	4
16A Forward/OFF/Reverse Only	70	60	5	75	75	110	--

B02



Rear Mounting



Features:

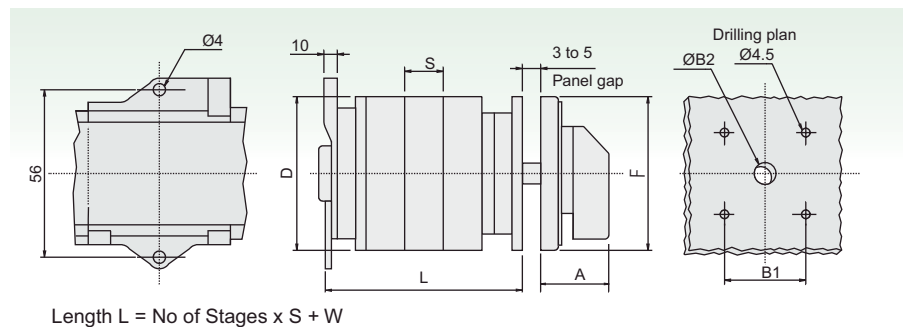
- Four hole base mounted on rear side of the panel
- Knob/Handle operatable
- Can also be used for panel/door mounting

Type	A	A1	B1	B2	B3	F	B	G	S	W	Max
S6/S10/TP6/TP10	28	36	36	9	4.5	48	48	4.5	9.5	26	12
S16/TP16/RT16/TP20/RT20	28	36	48	12	4.5	48	64	3.5	12	30	12
S25/S32/RT25/RT32	35	48	48	12	4.5	64	64	3.5	15	31	8
S40/S63/RT40/RT63	43	68	68	15	5.5	88	88	5	21	41	6
S80/S100/S125	43	68	100	15	5.5	88	124	5	26	48	6
S200	43	68	83	15	5.5	88	104	5	32	48	6
S400	43	68	83	15	5.5	88	104	8	64	48	3

B21



DIN Rail Mounting



Features:

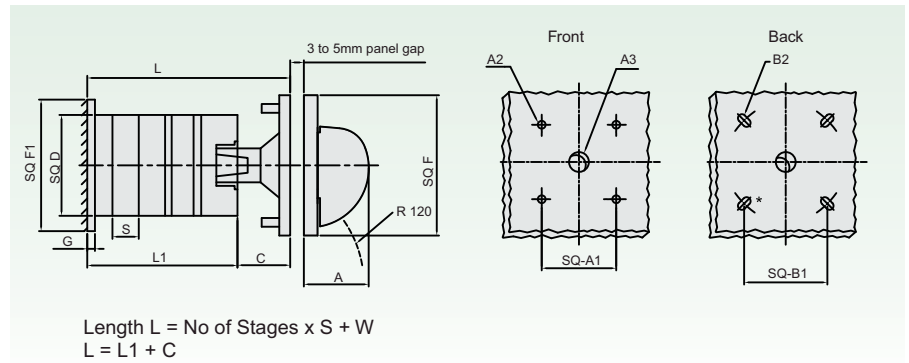
- Snap mounting base on DIN EN50022 (Omega) Rail 35mm and 1.2mm thick or two hole rear mounting
- Provides easy termination
- Can also be used for panel/door mounting

Type	A	B1	B2	D	F	S	W	Max
S6/S10/TP6/TP10	28	36	9	38	48	9.5	28.5	10
S16/TP16/RT16/TP20/RT20	28	36	12	58	48	12	37	12
S25/S32/RT25/RT32	35	48	12	64	64	15	38	8

B42



Door Interlock



IP55 protection from front

Features:

- Mounted on rear side of the panel and operated from the front door
- Door interlockable mechanism and panel door openable only in OFF position
- Provides safety feature
- Knob/Handle operatable

Quote B41 for door openable in both positions without door interlock

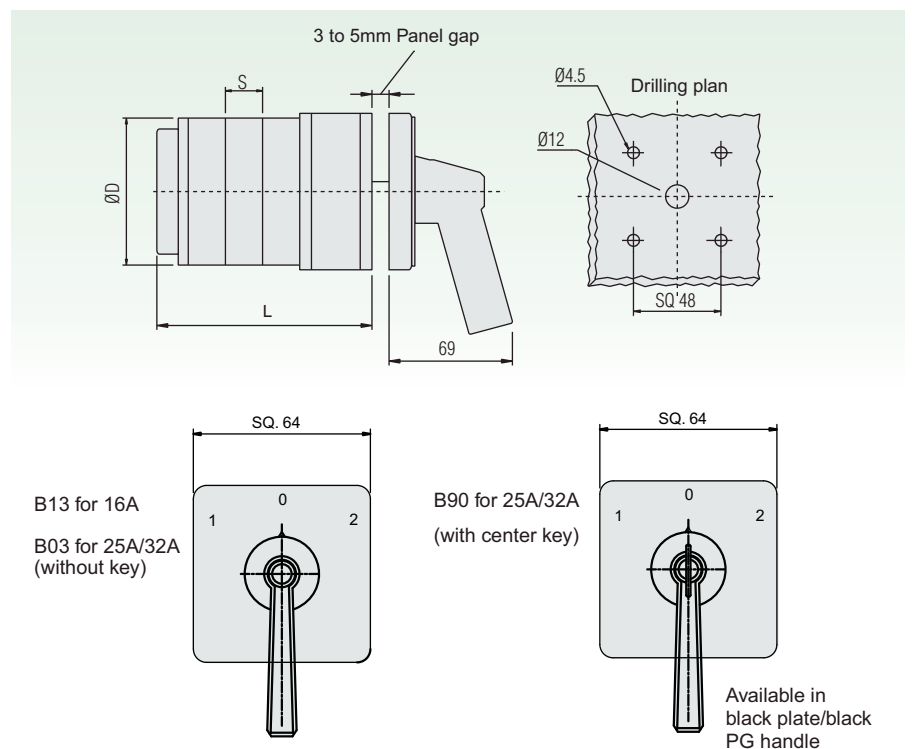
Type	A	A1	A2	A3	B1	F	B	G	C	N	S	W	Max
S16/TP16/RT16 TP20/RT20	35	48	4.5	15	48	64	64	3.5	25	22	12	54	8
S25/S32/RT25/RT32	35	48	4.5	15	48	64	64	3.5	25	22	15	57	8
S40/S63/RT40/RT63	44	68	5.5	18	83	88	104	5	27	26	21	66	6
S80/S100/S125	44	68	5.5	18	100	88	124	5	27	26	26	72	6
S200	44	68	5.5	18	83	88	104	5	27	26	32	72	6
S400	44	68	5.5	18	83	88	104	8	27	26	64	72	3

B03

(Square Latching Mechanism)



Standard Mounting-Spring Return



IP55 protection from front

Features:

- Standard 4 hole front panel mounting pistol grip handle operatable
- Suitable for 45°/60° only
- Advanced special star/spring design on latching provides guaranteed spring return operation

For B03 without key & for B90 with center kKey

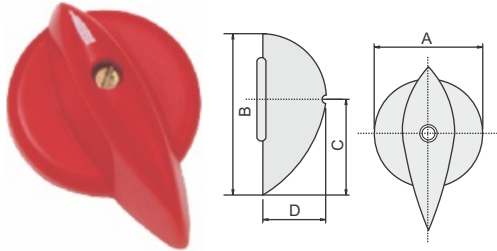
Type	L (No. of Stages)						
	1	2	3	4	5	6	7
S16 / TP16 / RT16 (B13)	52.5	64.5	76.5	88.5	100.5	112.5	124.5
S25 / S32 / RT25 / RT32	55.5	70.5	85.5	100.5	115.5	130.5	145.5

Cam Operated Rotary Switches

Knobs and Handles

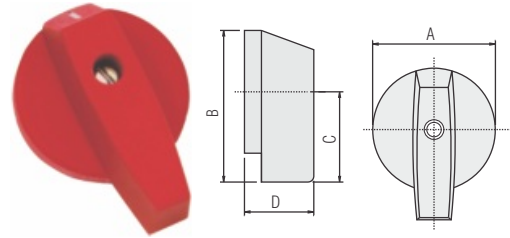
Knobs / Handle Colours ■ RED ■ BLACK

TD - TEAR DROP



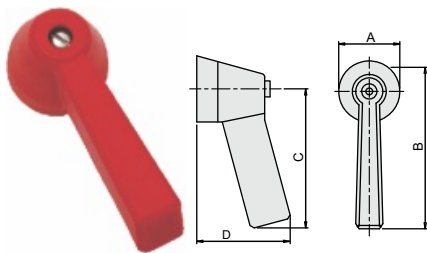
CODE - TD	A	B	C	D
S6/S10/TP6/TP10	27	41	25	21
S16/TP16/RT16	27	41	25	21
S25/S32/RT25/RT32	36	51	31	25
S25/S32/RT25/RT32	50	70	42	33

FL - FLAG KNOB



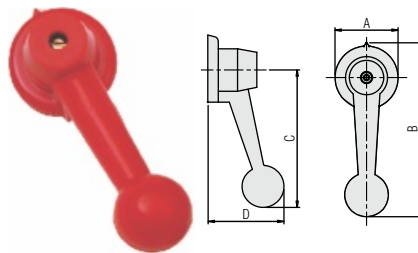
CODE - FL	A	B	C	D
S6/S10/TP6/TP10	17	23	13.75	19
S16/TP16/RT16	27	38	24	23
S25/S32/RT25/RT32	27	38	24	23
S25/S32/RT25/RT32	50	68	42.5	32

PG - Pistol Grip Handle



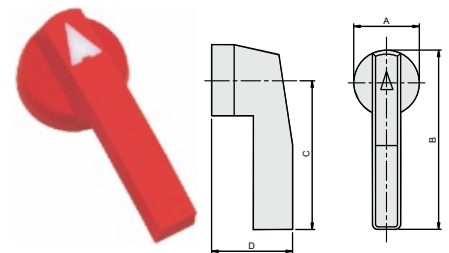
CODE - PG	A	B	C	D
S16/TP16/RT16/TP20/RT20	36	102	82	56
S25/S32/RT25/RT32	36	102	82	56
S40/S63	36	102	82	56

BG - Ball Grip Handle



CODE - BG	A	B	C	D
S16/TP16/RT16/TP20/RT20	36	100	67	45
S25/S32/RT25/RT32	36	100	67	45
S40/S63	36	100	67	45

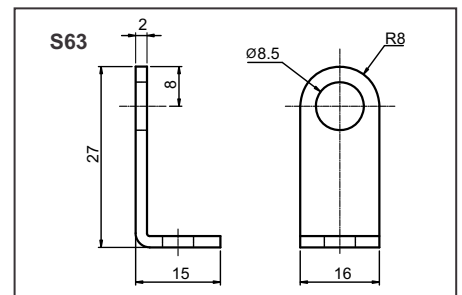
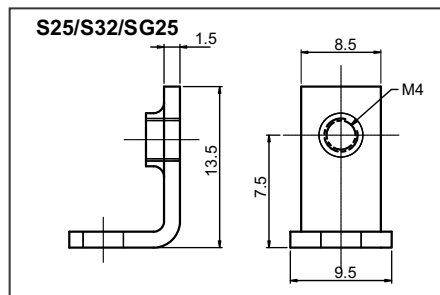
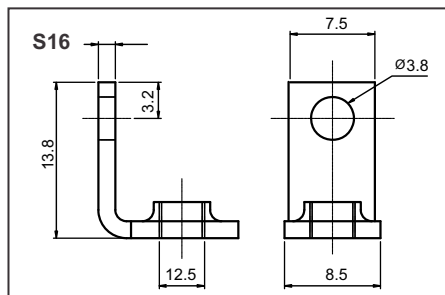
LV - Lever Handle



CODE - LV	A	B	C	D
S80/S100/S125	50	115	90	45
S200/S400	50	115	90	45

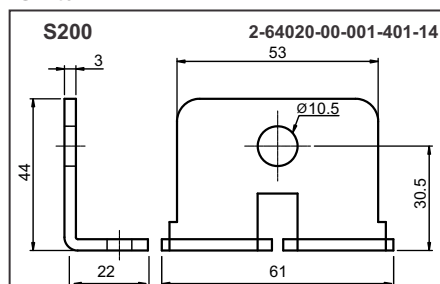
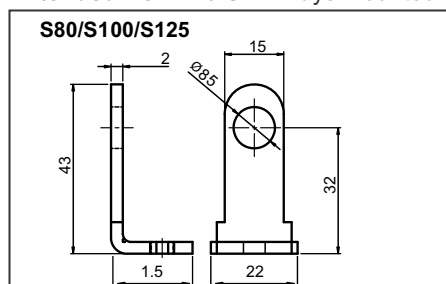
Accessories

Extended Terminals



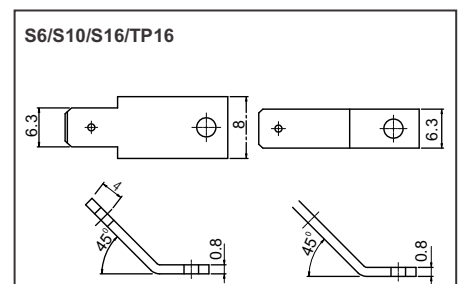
Supplied as optional for S40 and S63 on request

Extended Terminals - Always mounted on Switch



Always mounted on Switch

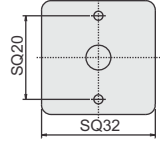
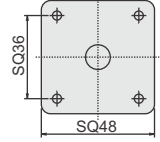
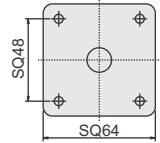
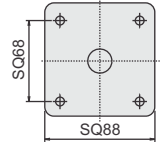
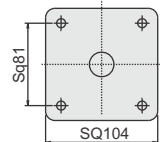
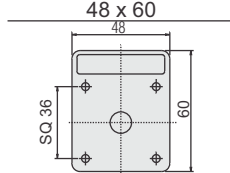
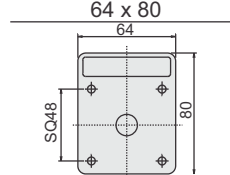
Push On Terminals



Mating terminal socket Code No : 1653

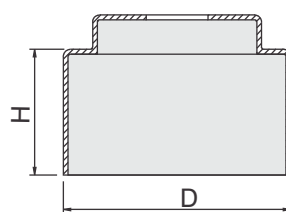
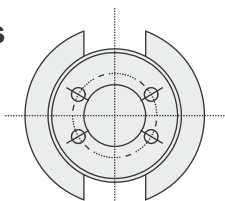
Accessories

Front Plate

Standard Style	Frame Size	Bigger Style
Current Ratings 6/10Amps		---
16/20Amps		6/10Amps
25/32Amps		16/20Amps
S40Amps & above		25/32Amps
---		S40Amps & above
Special Front Plates		
10Amps 16Amps 20Amps		---
25/32Amps		16/20Amps

Protection Covers (Shrouds)

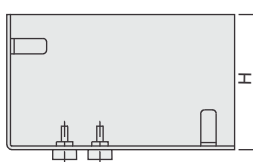
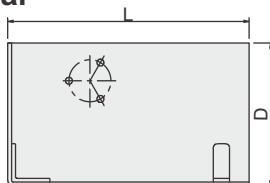
S-Series



Type	ØD	H	
		2 Stage	3 Stage
S6/S10	43 ^{+0.2}	25	34.5
S16/S25/S32	69 ^{+0.2}	35	50
S40/S63	95 ^{+0.2}	54	75

Other special size mounting plates at Front or Rear can be supplied against requirement.

Rectangular



Type	L	D	H	No. of Stages
S40/S63	210	200	73	2
	210	200	94	3
S80 to S200	175	110	115	2
	210	200	100	2

In case of fixing at site use supplied hardware only.

Front plate			Programme Number															
Switching angle °																		
Switching positions																		
		1																
		2																
		3																
		4																
		5																
		6																
		7																
		8																
		9																
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		23																
		24																
Locked position			Contact closed															
			Contact closed without interruption															
			Spring return															
1	Switch Type			2	Mounting Form			3	Position	With	Without							
4	Front plate	Size	Colour	7	Optional extras													
5	Marking																	
6	Handle	Type	Colour	Customer							Date							
Customer Code No.																		

Customised Programme Formation

The Switch design and construction gives flexibility for making customised programmes within a very short period. Basically an engineer trying to specify the customised programme should concentrate on the following points.

- Number of operating positions of Switch Handle
- Total number of contacts required
- Contact closing sequence of all the contacts required in various positions of handle. Please note :
 - Each position should be identified and script plate marking required in those positions should be mentioned.
 - The standard latching angle (angle between positions)/switching angles are 60°, 90°, 45° and 30°. Spring Return are also possible for 45° and 90° switching angle.
- Total number of contacts can be decided based on the actual need. You may arrange the contacts to your convenience and number them as 1/2, 3/4, 5/6...etc. While making the Switch, we may rearrange the contacts to use solid Jumpers so as to avoid loose wire Jumpers.
- Fill up the Programme sheet by marking 'X' at places where contacts have to Close (NC).

Also specify the ampere rating, mounting style, switching angle, script plate markings, terminal marking and lockable position (If any).

For example refer the sample customised programme sheet of a Bedroom Switch having 3 contacts controlling a tube, fan and night lamp.

Note: The above construction carries a five digit number starting with (7xxxx) allotted by us. This number alone is sufficient for future correspondence and further ordering.

Front plate	Programme Number	7 3 0 3 7																																																																								
Switching angle 60°																																																																										
Switch positions	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td></tr> </table>		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36																																							
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OFF	1																																																																									
TUBE	2																																																																									
TUBE & FAN	3																																																																									
FAN	4																																																																									
FAN & LAMP	5																																																																									
NIGHT LAMP	6																																																																									
Locked positions	X Contact Closed																																																																									
Switch Type	S 16																																																																									
Front plate	Type 50 Colour Yellow																																																																									
Marking	Type Colour Customer Date																																																																									
Handle	Type Colour Customer Date																																																																									
CUSTOMER CODE No.																																																																										

Ordering Code

Programme Code					Type	Ampere			Mounting			Knob		Color	

Example : 6 1 1 9 7 S 2 0 0 B 0 3 T D Y R

Programme Selection

Programmes	Prog Code
Isolators	Pg 06
Changeovers with OFF	Pg 07
Changeovers without OFF	Pg 08
Multistep with OFF	Pg 09
Multistep without OFF	Pg 10
Instrumentation Switches	Pg 11
Motor Control Switches	Pg 13
Gang Switches	Pg 15
Control Switches	Pg 16

Type Selection

Type	Code	Possible Amps
S-Series	S	6 to 400Amps
Touch Proof	T	6 to 20Amps
Rear Access Termination	R	16 to 63Amps
DC Switches	D	16 to 500Amps
Phase Selector only for 1 Pole 3 Way with OFF	P	25 to 63Amps
Ammeter (CT Operated)	P	6 and 10Amps (available only with four hole mounting)
Voltmeter (Phase to Phase with OFF)	P	
L - Series (Spring clamp screwless)	L	6 to 10 Amps

Ampere	Code	Ampere	Code
6	A	100	K
10	B	125	L
16	C	200	N
20	D	250	O
25	E	300	P
32	F	400	Q
40	G	500	R
63	I		
80	J		

Color Combination Selection



Knobs and Handles Selection



Breaker Control Switches

Under this 3 types are widely used

- Spring return
- Lost Motion contact (LMD)
- Sequence Locking (Two consecutive movement in one direction arrested)

All the above can also be with external KEY and LOCK arrangement.

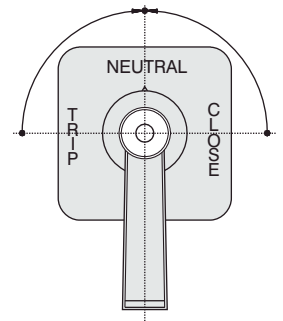
In SPRING RETURN type the handle is always return to NEUTRAL position and does not stay in other TWO positions, when the handle returned to Neutral the Main/TRIP contact will be in open condition.

In LMD, the contact block is divided into two, as main contacts and LMD contacts. LMD Contacts will be closed with the handle is moved to CLOSE side/TRIP side and the contact closing will be retained even though the handle is returned to the NEUTRAL by virtue of Spring Return nature. When the handle is rotated on the opposite direction then only the LMD contact will open.

Thus the LMD mechanism enables the Switch to have a memory feature of the previous operation, which is considered to be a very essential for Circuit Breaker applications.

In case of sequence lock, it acts like a mechanical interlock in the switch not permitting two consecutive "CLOSE" operations. When you Turn the handle to CLOSE Position and handle will be back to NEUTRAL due to Spring Return action. Again the handle movement on the CLOSE side will be locked. When the handle is moved to TRIP position then only rotation to CLOSE position permitted.

As indicated all the above feature models can also be supported with external lock and key arrangement with key lockable and removable only at NEUTRAL position and the handle shall not be turned when the key is in locked condition.



- Spring Return to Neutral Position from both the sides
- Memory feature of the previous Operation(LMD)
- Permits only one Close Operation(Sequential Lock)

Technical Specifications

Description		Unit	S25	S32
Rated Operational Voltage	Ue	V AC	690	690
		V DC	250	250
Resistance to Surge Voltage	Uimp	kV	6	6
Rated Uninterrupted Current	Ith	A	32	40
Rated Operational Current Pilot Duty Ac15				
220-240V AC		A	8	14
380-440V AC		A	5	6
Short circuit protection HRC fuse size		A	25	32
Rated short circuit		kA	10	10
Terminal cross section				
Rigid wire	min	mm ²	1.5	2.5
	max		4	6
Flexible wire	min	mm ²	1	1.5
	max		2.5	4
Terminal Screw			M4	M4
Terminal Tightening Torque			1.2 Nm	1.2 Nm

General

Endurance :

Mechanical

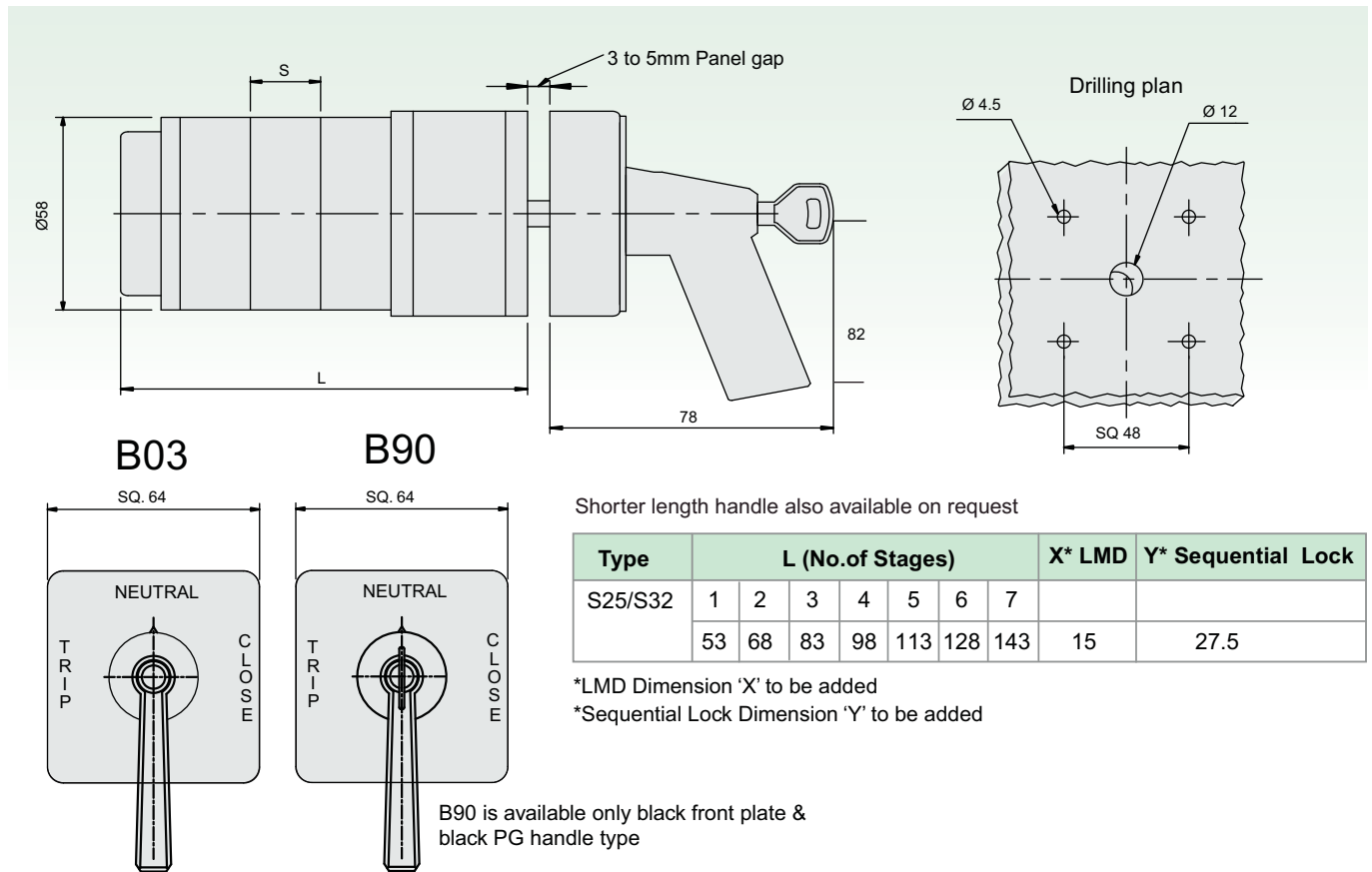
100,000 operations at
300 cycles/hour

Electrical

10,000 operations at
120 cycles/hour
Operational Temperature
25°C to 55°C, frequency
upto 5 kHz

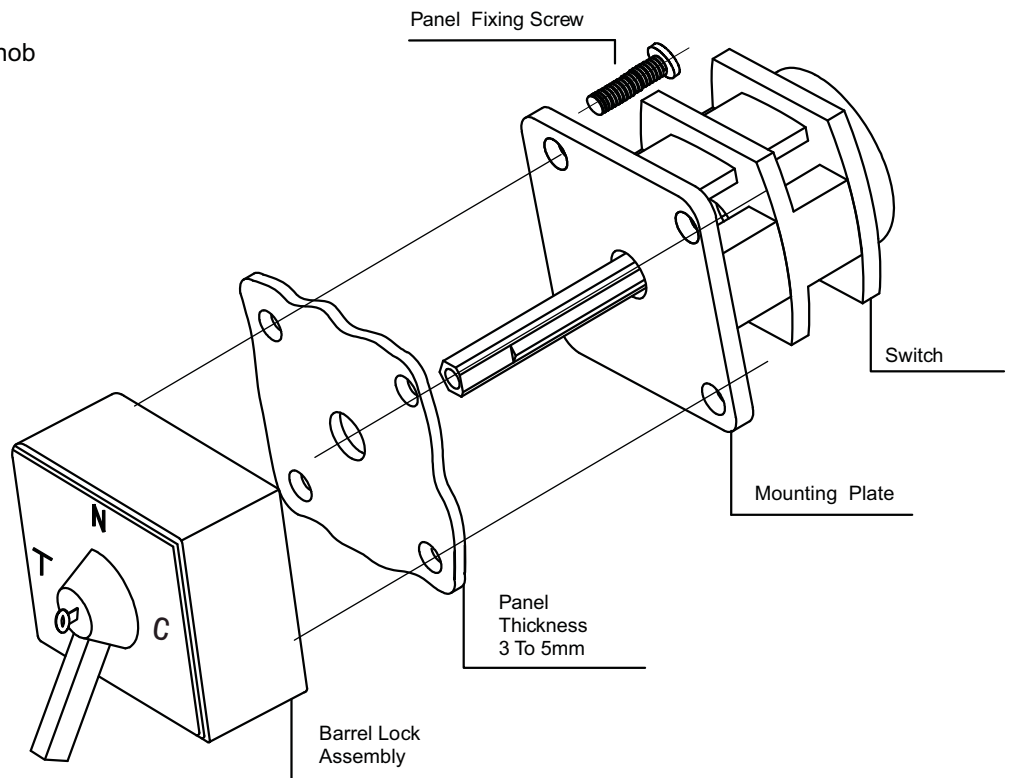
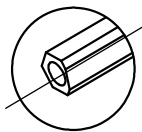
Voltage	No of Contacts in series	S25/SG 25				S32/SG32			
		Resistive Amps	Inductive L/R Amps			Resistive Amps	Inductive L/R Amps		
			10 msec	20 msec	40 msec		10 msec	20 msec	40 msec
50V	1	20	20	15	6	25	25	18	8
	2	-	-	20	14	-	-	25	18
	3	-	-	-	20	-	-	-	25
125V	1	3	2.5	1.5	1.0	5	3	2	1.2
	2	20	15	10	5	25	18	12	6
	3	-	20	20	10	-	25	25	12
250V	1	1.0	0.5	0.3	0.2	1.2	0.6	0.4	0.3
	2	5	2	1.0	0.5	6	2.5	1.2	0.6
	3	20	10	4	1	25	12	5	1.2

Mounting Styles

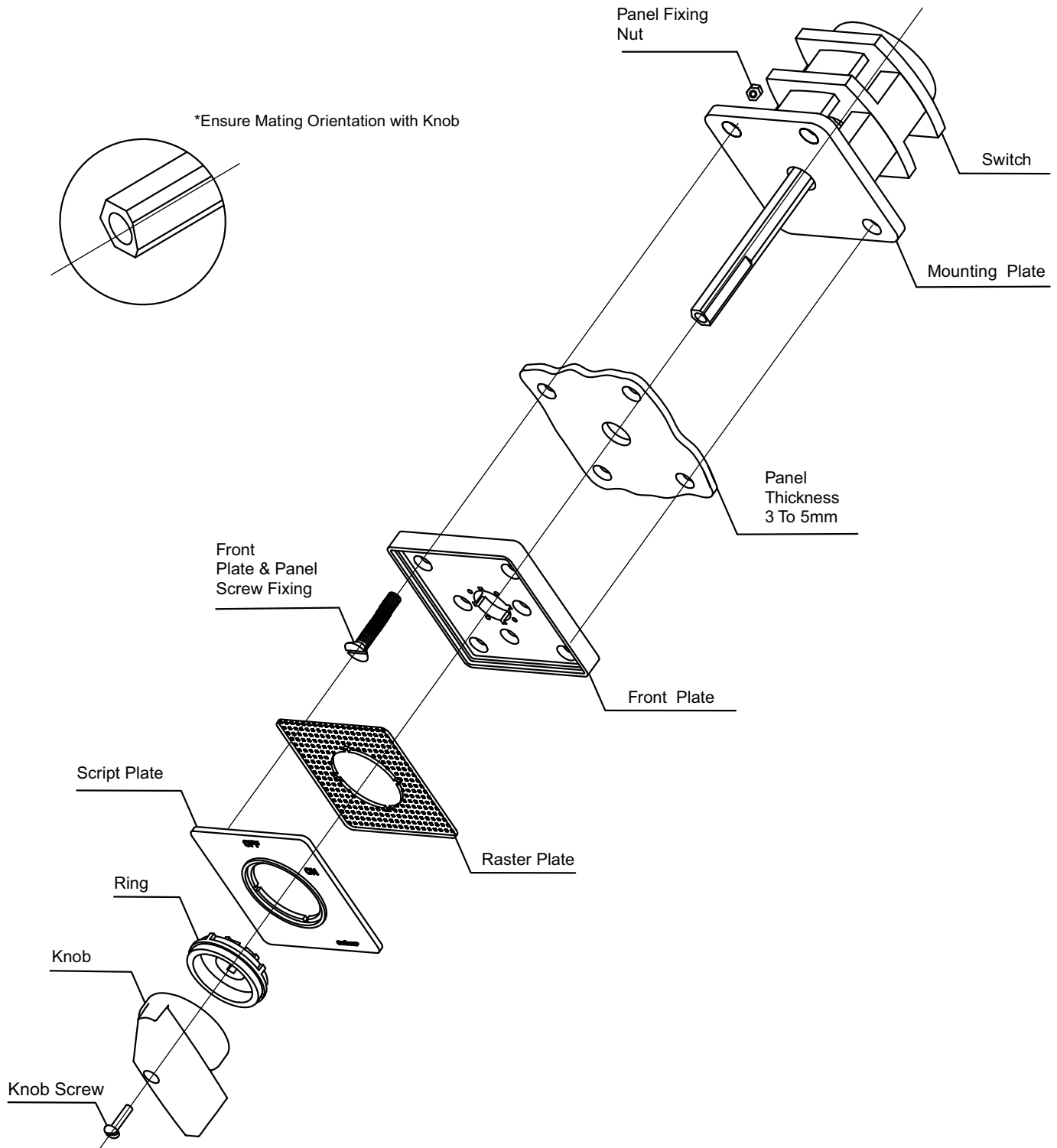


Installation Procedure for Barrel Lock (Center Key Lock)

Ensure Mating
Orientation with Knob



Installation Procedure-Standard Switch



DC Switches (CPRI Tested & RDSO Approved)

Construction and Features

D16 - D63

D Series Switches are designed for DC Switching applications. These Switches are Constructed using snap action mechanism which provides "Quick Make Quick Break" of the contacts which is essential for DC switching. The contacts are of AgCdO, double break and butt type housed in a glass filled polyamide contact stage and are operated through cams for higher electrical endurance and smooth operation.

Suitable for 90 and 60 degree switching programmes and applicable for both AC and DC Switching. Suitable switching programmes for Isolator, Changeover, Multi-step and Gang Switches etc. are offered.

DC Switches D100A-D500A

Features:

- Housing made up of SMC material for rigidity and higher mechanical strength.
- "Wiping contacts" operations helps in dust free & self cleaning concepts
- Extended terminals for Bus bar / Aluminium cable connections
- Capston Handle Operation for better leverage.

Applications:

- D40R – Railway coaches lighting & fan circuits switching
- 'All DC power circuits – Railways, Telecommunications & Power plants
- Battery charging equipments

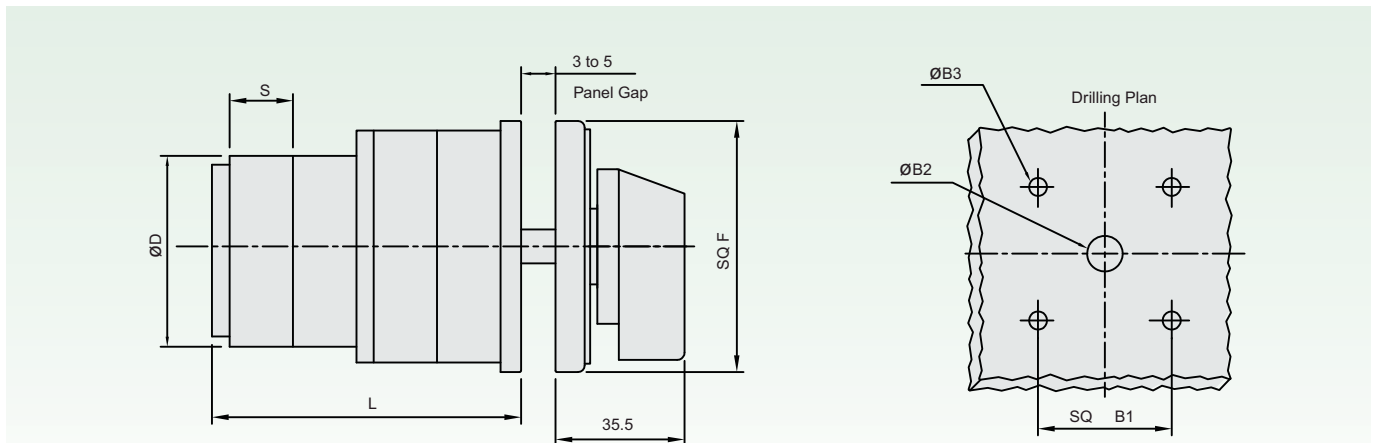


Technical Specifications

DC Ratings	Description		Unit	Rated Operational Current Ie				
				Switch Type				
				D 16	D 25	D 32	D 40	D 63
Rated on Interrupted Current (I th)			A	20	32	40	50	80
DC 22A L/R 2m sec								
Rated Operational Voltage	110 V	250 V	A	16	25	32	40	63
No of Series Contacts	1	2						
AC Ratings	AC3 Rating 3 Phase 380-440V		HP	7	10	14	20	25
	AC21 Rating		A	16	25	32	40	63
General	Fuse Protection		A	16	25	32	40	63
	Short Circuit through fault current		kA	5	10	10	20	20
	Terminal Cross Section	[Rigid] min	mm ²	1.5	1.5	1.5	1.5	1.5
		[Flex] max	mm ²	4	4	6	10	16
	Tightening Torque		Nm	0.8	1.2	1.2	2	2
	Maximum Contact Stages			16	10	10	6	6
Description			UNIT	D 100	D 200	D 300	D 400	D 500
Duty Rating - DC 22 A L/R 2m sec								
Operational Voltage			V DC	250	250	250	250	250
Voltage for AC Rating			V AC	460	460	460	460	460
Operational Current			A	100	200	300	400	500
Thermal Current (I th)			A	125	250	375	500	625
Switching Angle			Deg	90	90	90	90	90
Maximum Contact Stages				9	9	9	9	9

Cam Operated Rotary Switches

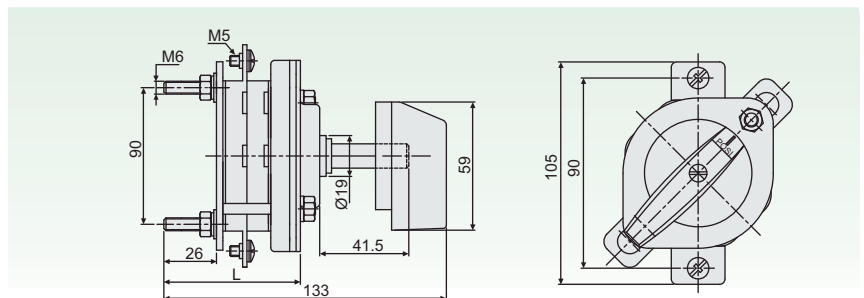
D16 D63



Type	B1	B2	B3	D	F	S
D 16	48	12	5.5	50	64	12
D 25 / D 32	48	12	5.5	50	64	15
D 40 / D 63	68	15	5.5	70	88	21

Stages		1	2	3	4	5	6	7	8	9	10	11	12
Length L in mm	D 16	62	74	86	98	110	122	134	146	158	170	182	194
	D 25/32	65	80	95	110	125	140	155	170	185	200	215	230
	D 40/63	69	90	111	132	153	174	195	216	237	258	279	300

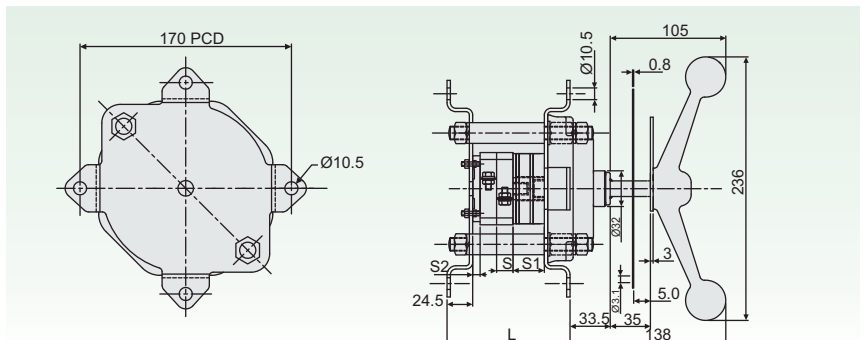
D40 R



Type	S	S1	S2	Length L							
				1	2	3	4	5	6	7	8
D40	10	30.5	15	55.5	65.5	75.5	85.5	95.5	105.5	115.5	125.5

L = No. of Stages x S + (S+S)

D100



Type	S	S1	S2	Length L						
				1	2	3	4	5	6	7
D100	32	32	15	112	144	176	208	240	272	304



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