RTS = Rotary Tap Switch
LTS = Linear Tap Switch
MB = Moulded Bracket
BC = Butterfly Contact
A = LEFT HAND
B = RIGHT HAND

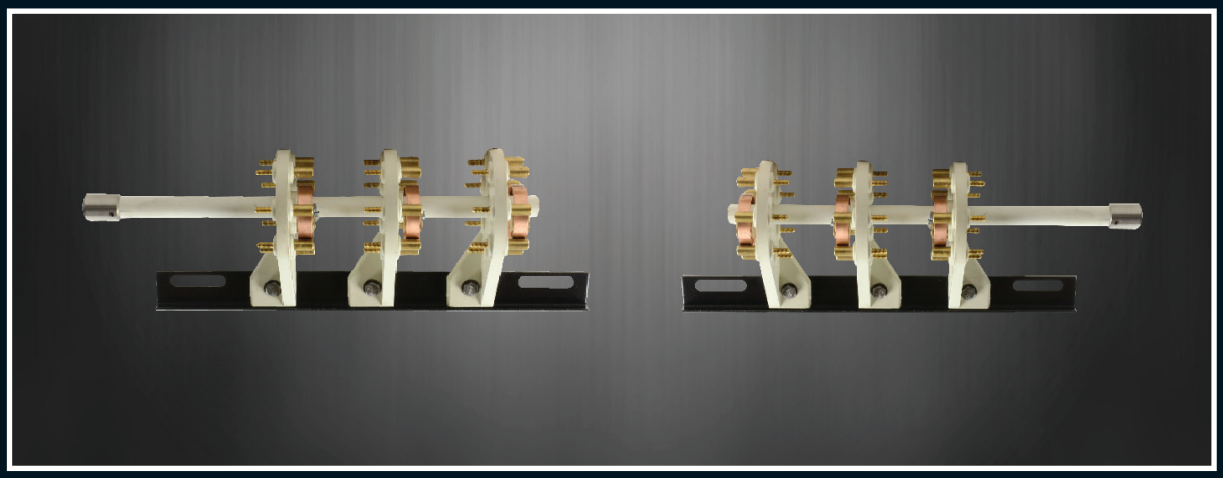
Rotary Tap Switches

Contact Arrangement Types

All Rotary Tap - Switches are available with two types of moving contacts as indicated below:

Butterfly Contact Arrangement

Standard Contact Arrangement



Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-522	RTS 22 Kv 100A 1Ph - Type A	22	100	1	A	Steel	Std
040-523	RTS 22 Kv 100A 1Ph - Type B	22	100	1	B	Steel	Std
040-508 BC	RTS 22Kv 100A 3Ph - Type A / 90° / BC	22	100	3	A	Steel	Butterfly
040-505	RTS 22Kv 100A 3Ph - Type A / MB	22	100	3	A	Moulded	Std
040-528	RTS 22Kv 100A 3Ph - Type A	22	100	3	A	Steel	Std
040-530	RTS 22Kv 100A 3Ph - Type AB	22	100	3	AB	Steel	Std
040-530 BC	RTS 22Kv 100A 3Ph - Type AB / BC	22	100	3	AB	Steel	Butterfly
040-506 BC	RTS 22Kv 100A 3Ph - Type B / 90° / BC	22	100	3	B	Steel	Butterfly
040-501	RTS 22Kv 100A 3Ph - Type B / MB	22	100	3	B	Moulded	Std
040-527	RTS 22Kv 100A 3Ph - Type B	22	100	3	B	Steel	Std

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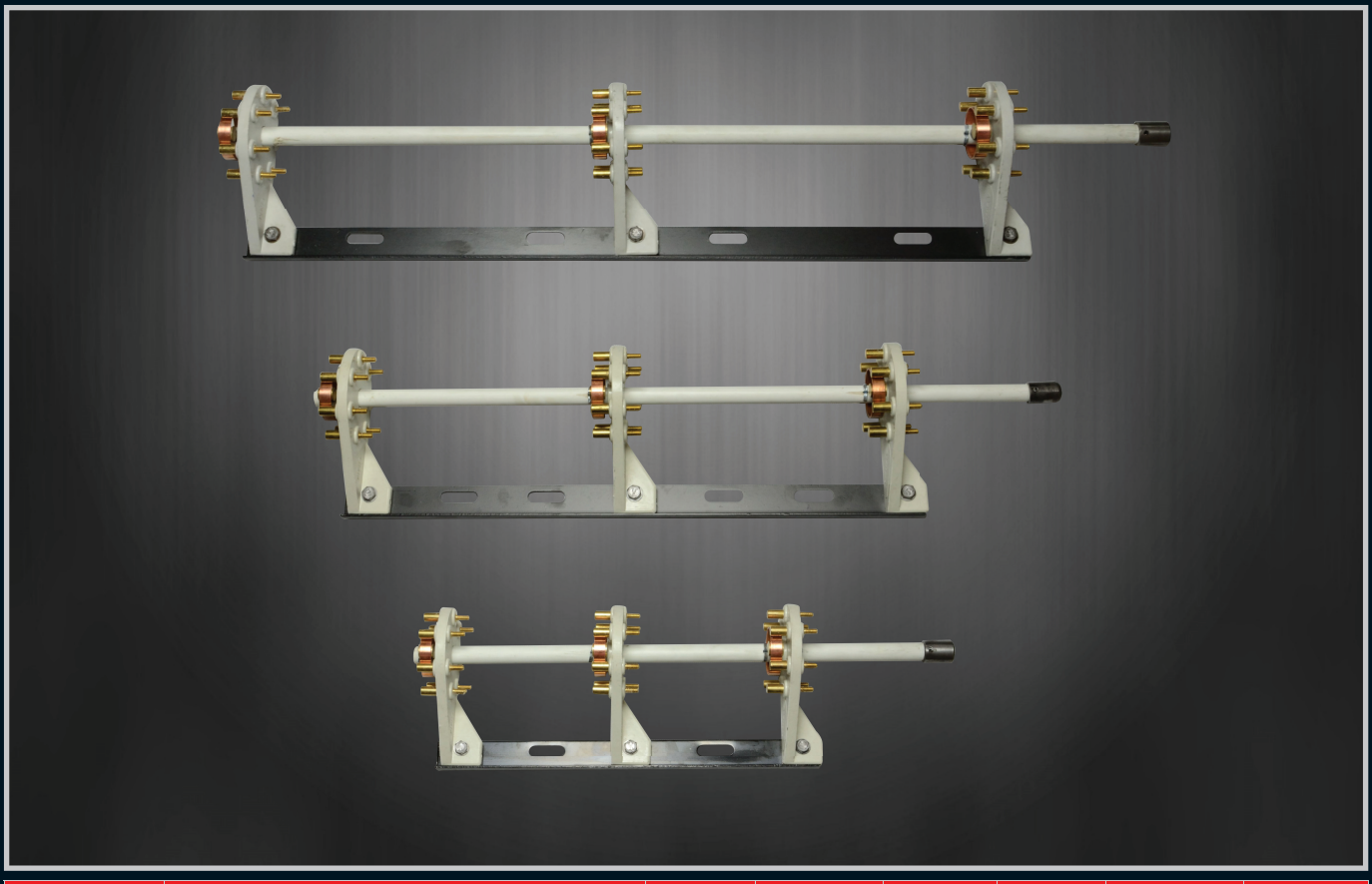

Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-534	RTS 22Kv 100A 3Ph (180 CNT) Type AB	22	100	3	AB	Steel	Std
040-533	RTS 22Kv 100A 3Ph (270 CNT) Type AB	22	100	3	AB	Steel	Std
040-532	RTS 22Kv 100A 3Ph (360 CNT) Type AB	22	100	3	AB	Steel	Std
040-521	RTS 22Kv 100A 3Ph (180 CNT) Type A	22	100	3	A	Steel	Std
040-518	RTS 22Kv 100A 3Ph (180 CNT) Type B	22	100	3	B	Steel	Std
040-520	RTS 22Kv 100A 3Ph (270 CNT) Type A	22	100	3	A	Steel	Std
040-517	RTS 22Kv 100A 3Ph (270 CNT) Type B	22	100	3	B	Steel	Std
040-519	RTS 22Kv 100A 3Ph (360 CNT) Type A	22	100	3	A	Steel	Std
040-516	RTS 22Kv 100A 3Ph (360 CNT) Type B	22	100	3	B	Steel	Std

RTS = Rotary Tap Switch
LTS = Linear Tap Switch
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BC = Butterfly Contact
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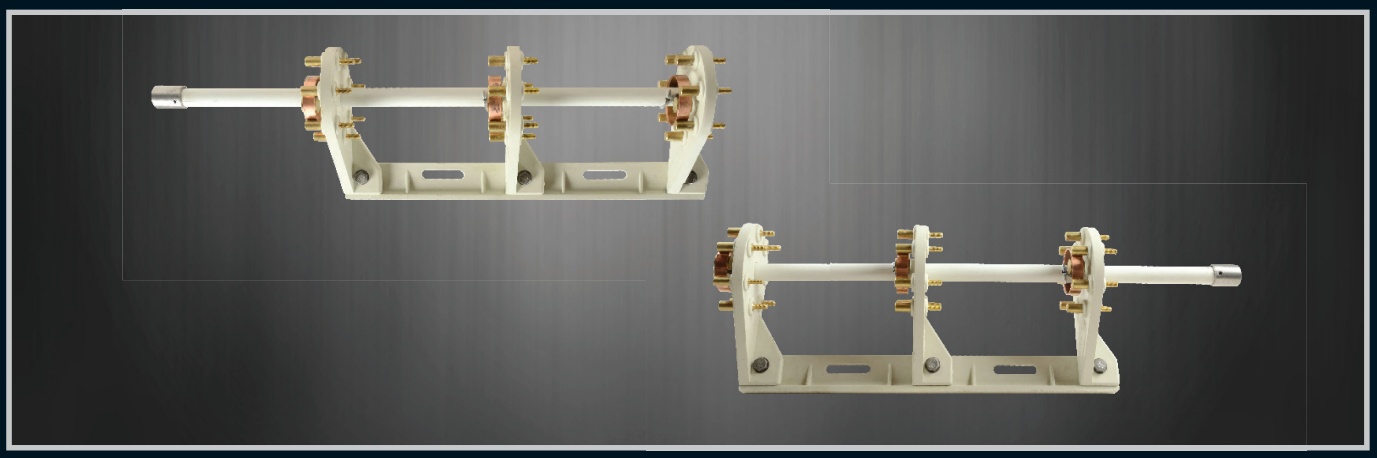
B = RIGHT HAND



Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-512	RTS 33Kv 100A 3Ph - Type A / MB	33	100	3	A	Moulded	Std
040-529 BC	RTS 33Kv 100A 3Ph - Type AB / BC	33	100	3	AB	Moulded	Butterfly
040-529	RTS 33Kv 100A 3Ph - Type AB / MB	33	100	3	AB	Moulded	Std
040-500	RTS 33Kv 100A 3Ph - Type B / MB	33	100	3	B	Moulded	Std

Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-513	RTS 22Kv 100A 6Ph - Type A	22	100	6	A	Steel	Std
040-531	RTS 22Kv 100A 6Ph - Type AB	22	100	6	AB	Steel	Std
040-502	RTS 22Kv 100A 6Ph - Type B	22	100	6	B	Steel	Std

RTS = Rotary Tap Switch
LTS = Linear Tap Switch
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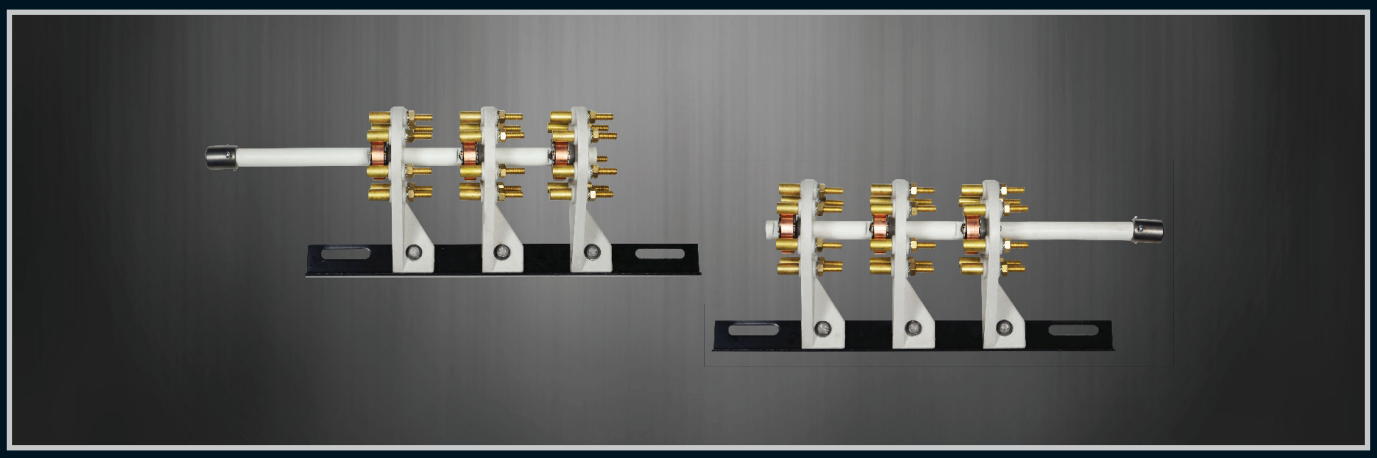
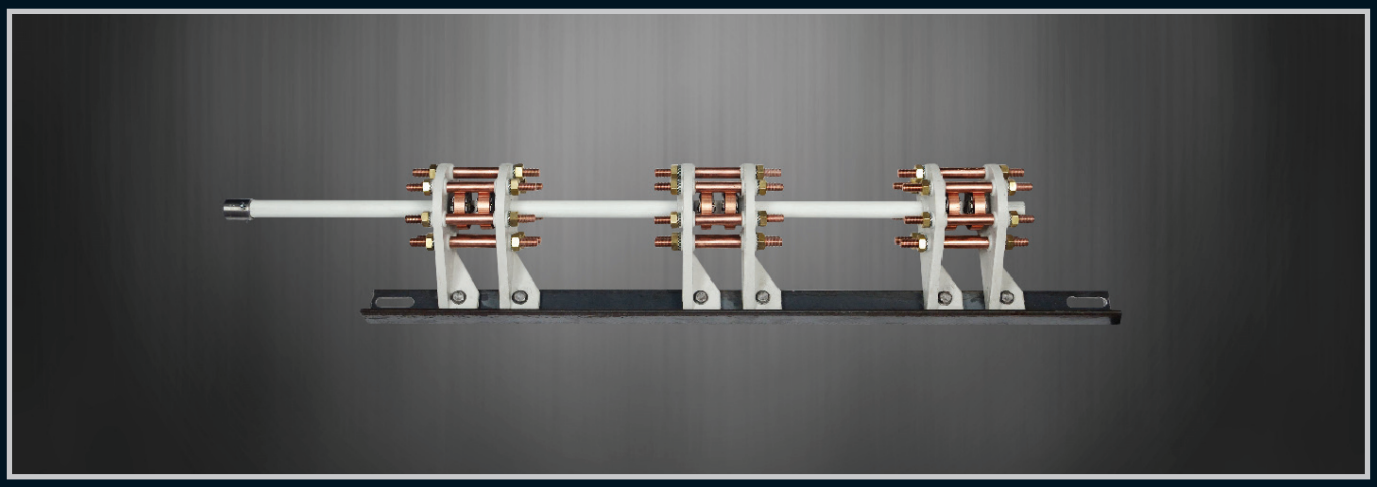
B = RIGHT HAND

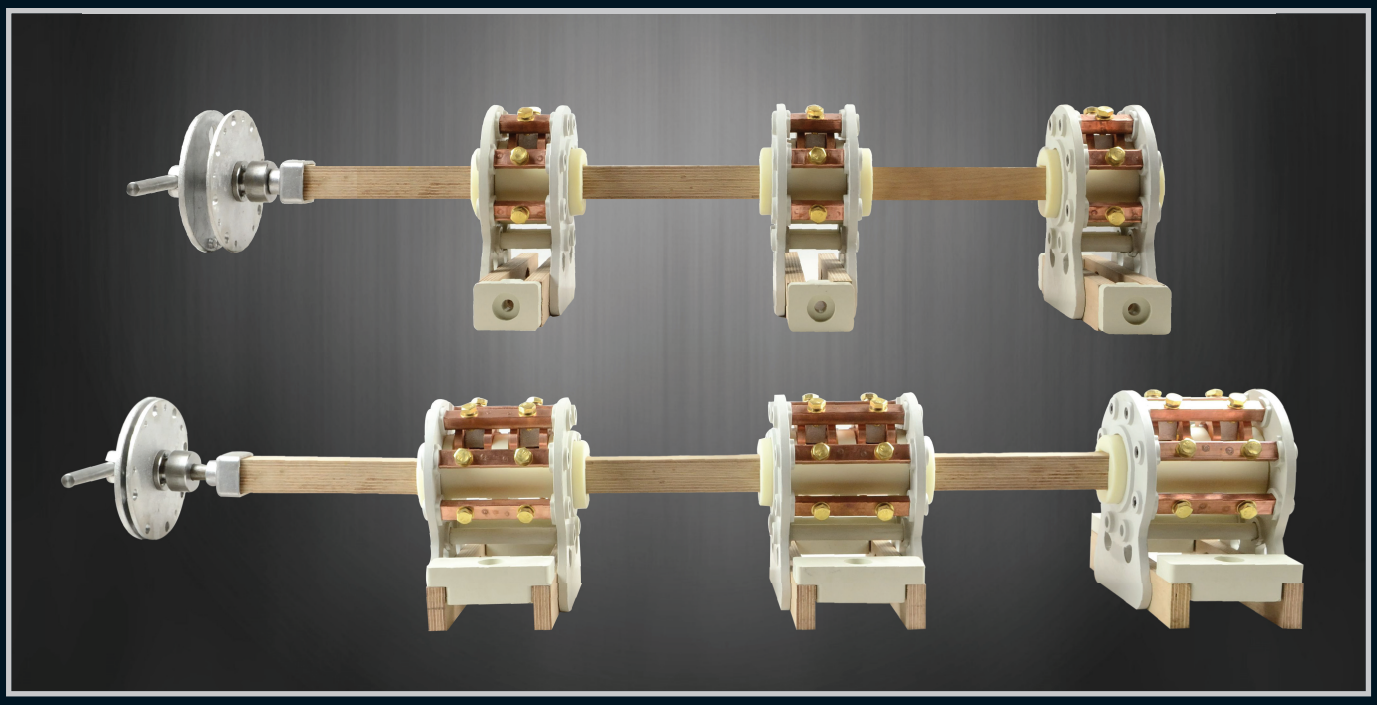


Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-509 BC	RTS 22Kv 150A 3Ph - Type A / 90° / BC	22	150	3	A	Steel	Butterfly
040-510 BC	RTS 22Kv 150A 3Ph - Type A / BC	22	150	3	A	Steel	Butterfly
040-511 BC	RTS 22Kv 150A 3Ph - Type B / 90° / BC	22	150	3	B	Steel	Butterfly
040-507 BC	RTS 22Kv 150A 3Ph - Type B / BC	22	150	3	B	Steel	Butterfly



Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-514 BC	RTS 22Kv 300A 3Ph - Type A / BC	22	300	3	A	Steel	Butterfly
040-538 BC	RTS 22Kv 300A 3Ph - Type AB / BC	22	300	3	AB	Steel	Butterfly
040-503 BC	RTS 22Kv 300A 3Ph - Type B / BC	22	300	3	B	Steel	Butterfly
040-538 BC-M	RTS 22Kv 300A 3Ph - Type AB / M	11	300	3	AB	Steel	Butterfly

SC = Slide Contact
RTS = Rotary Tap Switch
LTS = Linear Tap Switch
MB = Moulded Bracket
BC = Butterfly Contact
A = LEFT HAND
B = RIGHT HAND



Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-543	RTS 88Kv 315A 3Ph - Type AB	88	315	3	AB	Permali	T - Type
040-542	RTS 88Kv 630A 3Ph - Type AB	88	630	3	AB	Permali	T - Type

Linear Tap Switches

Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-526	LTS 22Kv 30A 2Ph 5Pos	22	30	2	N/A	Nylon	Linear
040-525	LTS 22Kv 30A 3Ph 5Pos	22	30	3	N/A	Nylon	Linear

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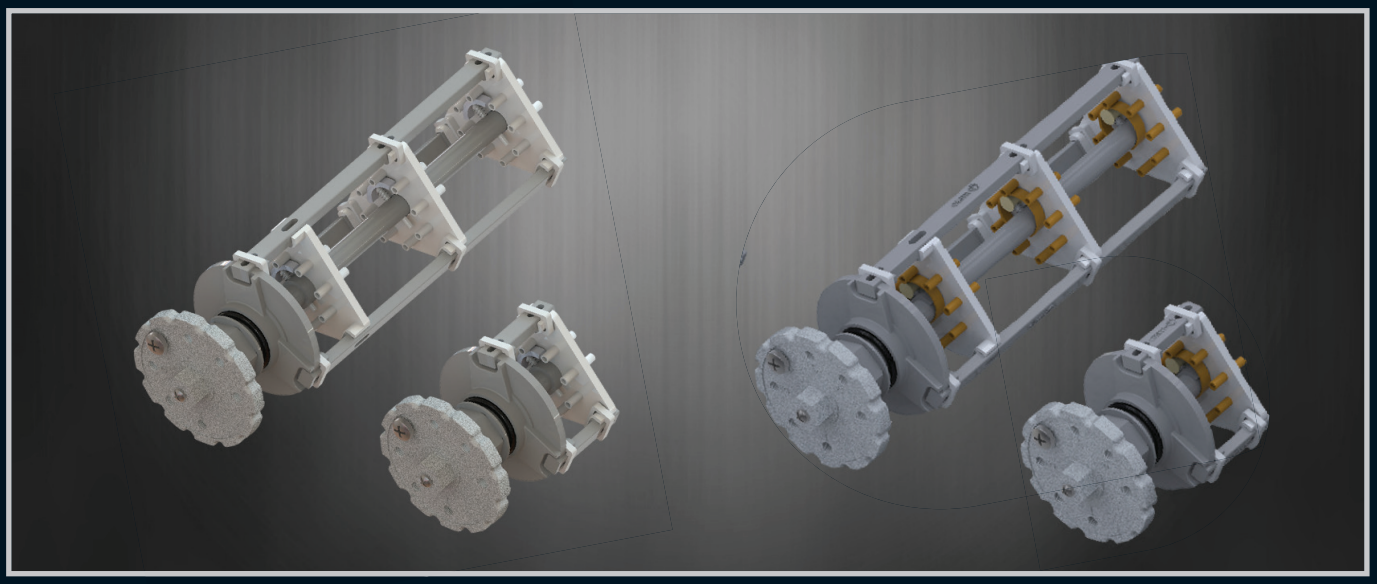


Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Bracket	Contact
040-580X	RTS 33Kv 60A 1PH 7POS - SC	33	60	1	N/A	N/A	Slide
040-581X	RTS 33Kv 60A 3PH 7POS - SC	33	60	3	N/A	N/A	Slide
040-585X	RTS 33Kv 60A 1PH 7POS - RC/DP	33	60	1	N/A	N/A	Slide
040-586X	RTS 33Kv 60A 3PH 7POS - RC/DP	33	60	3	N/A	N/A	Slide

Part Number	Description	U.m (kV)	Ir (A)	Phase	Type	Contact
040-582/X	RTS 33Kv 60A 3Ph 7POS - SC/SP	33	60	3	AB	Slide
040-594/X	RTS 11/6K6 60A 3PH 2POS - SC/SP	11/6	60	3	AB	Slide
040-595X	RTS 22Kv 150A 3PH 7POS - SC/SP	33	150	3	AB	Slide

Tapswitch Information & Installation Manual

1. INFORMATION

1.1 Information:

A tap changer is a mechanism in transformers which allows for variable turn ratios to be selected in discrete steps.
This mechanism makes it possible to obtain a variable turn ratio, by connecting to a number of access points known as taps along either the primary or secondary winding.

Tap changers exist in two primary types:

1. No load tap changers (NLTC) which must be de-energized before the turn ratio is adjusted.
2. On load tap changers (OLTC) which may adjust their turn ratio during operation.
   Allbro manufactures NLTC's, up to a maximum rated voltage of 88Kv and 630A. NLTC's operate and are manufactured in two types of formats: Rotary & Linear.

1.2 NLTC Defining Parameters:

There are FIVE parameters that define NLTC's:

1. Voltage (in kV): Typically 11, 22, 33 or 88.
2. Current (in Amperes): Typically 60A, 100A, 150A, 300A, 315A and 630A.
3. Number of Phase Panels: Typically 3, 6 up to a maximum of 9.
4. Number of Positions: Typically 5, 6 or 7.
5. Orientation: Type A, (left Hand) or Type B (Right Hand).

2. INSTALLATION & FITMENT RECOMMENDATIONS:

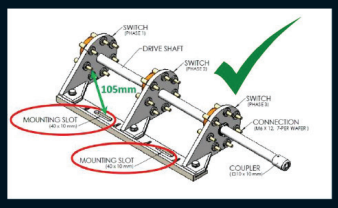
2.1 Correct mounting of the NLTC's, rated up to 22kV:

Up to 22kV, all NLTC's are supplied with metal "L" Base Brackets, typically with mounting slots, for ease of spacing & alignment.

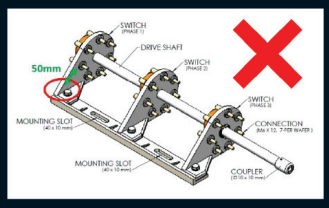
2.2 Correct mounting of the 33kV NLTC's:

These NLTS's are easily identified by their DMC or Permali Base Brackets. These materials assist in Achieving a higher arcing distance, from phase to earth. It is therefore critical that these NLTC's are correctly mounted, to ensure that no failures occur.

Below is a picture of a 33Kv Switch, indicating the CORRECT mounting points, to the core.The flash-over distance is 105mm



Below is a picture of a 33Kv Switch, indicating the INCORRECT mounting points, to the core. The Flash-over distance is reduced to 50m



2.3 Recommended Connecting Methods:

One of the biggest causes of failures, is when arcing distances are compromised. In this case, we are referring to the arcing distance from phase panel connections, to the mounting bracket.
The potential difference between these two points is typically more than 11kV.

There are three precautions to take :

1. Quality of Insulation Paper Tube, that covers the winding wires, from the core section to the NLTC.
2. Routing of connections : Where possible, Winding Connections to the phase panel should be made at 90' to the edge of the phase panels.

3. Insulating of the Lugs: the crimped sections of the lugs need to be adequately Insulated, either by the use of approved heat shrink or the use of Lace tie-down.

2.4 Recommended Torque settings for threaded:

The contact pins are typically made from brass or copper. Over-tightening of these may cause the thread to strip or break.Our recommended torque settings are listed below:

Thread Size	Torque
M6	3.0 Nm
M8	5.0 Nm
M10	10 Nm
M12	16 Nm

The Mounting Bracket Nyloc Nuts must be torqued to 15 Nm

2.5 NLTC Alignment Precautions:

Please note that the NLTC phase panels are carefully aligned and set by Allbro,ensuring that all the selectable positions make proper contact. The warranty will be invalid if a customer dismantles the switch and then re-assembles it.