

TAKAOKA TOKO Disconnecter

(24kV ~ 550kV)



 TAKAOKA TOKO CO., LTD.

Head Office

8F HULIC TOYOSU PRIME SQUARE
5-6-36, Toyosu, Koto-ku, Tokyo, 135-0061 Japan

International Sales Department
TEL : +81-3-6371-4463
FAX : +81-3-6371-5511
URL : <http://www.tktk.co.jp/en/>

Safety concerns

To a full and complete reading of instructions manual, all the users are supposed to understand all about basic knowledge of devices, security information, and precautionary statements concerning about disconnectors and accessory for proper use. Please keep the Instructions manual carefully at hand in case of necessary to check in the manual again.

 TAKAOKA TOKO CO., LTD.

Highlights

High quality sustained by our lasting many year experience!

Because of our long working experience of disconnector manufacturing since 1920, we are proud of providing customer-oriented disconnectors, which contribute to power supply industry by unrelenting development in each product to meet various needs in each era of our business history.



Staying at No.1 share in the Disconnector market in Japan

Since we have been kept with high reliability by many of customers who are in need of disconnectors, private/public(including governmental)-sector, railway companies, power, and so on. Our disconnectors are so familiar to a wide range of industries that call for them for many decades.

A wealth assortment of disconnector is giving you the best possible choice to your need!

Since our customers have been content with our disconnectors ranging from AC 550kV 8,000A to DC 1.5kV 5,000A, all of which meet the respective needs of different clients calling for those of a variety of rated voltages, currents, disconnect way, installation conditions. It must find you a good choice among from our fruitful significant manufacturing experiences.

Replacement will be well set to keep your satisfaction!

Because of our profound knowledge of disconnector, we are welcome to replace any type of present disconnectors from other manufactures to ours.

Easy setting and maintenance under the stringent environmental requirements.

Since certain parts such as switching contacts (conductive parts) and operating device are set in a form of block parts to be easily replaced when necessary, under severe site environment, then, users keep easy maintenance service.

Applicable Standards

JEC: Japanese Electrotechnical Committee standard
 IEC: International Electrotechnical Commission standard
 We are welcome to provide peculiar specification disconnectors, please feel free to inquire.

(1) Type

Horizontal double break disconnector

Model	Type	Description	Installation types	Type of operation mechanism
Standard	THS2	Horizontal double break (direct contact)	Upright mounting (LG)	Motor or Manual
High reliable	THS3		Underhung mounting (LDG)	
Standard	THR5	Horizontal double break (twisted blade contact)	Vertical mounting (LVG)	
High reliable	THR6			

Horizontal center break disconnector

Model	Type	Description	Installation types	Type of operation mechanism
Standard	THB	Horizontal center break	Upright mounting (LG)	Motor or Manual
	THB2			
	THB7			
High reliable	THB8			

(2) Rating

THS2/THS3 Horizontal double break type (direct contact)

Rated voltage (kV)	24/36
Rated normal current (A)	≥2000
Rated short time withstand current 1s (kA)	25/31.5/40

THR5/THR6 Horizontal double break type (twisted blade contact)

Rated voltage (kV)	52.5/72.5	100/123	145/170/245
Rated normal current (A)	≥3150		
Rated short time withstand current 1s (kA)	20/25/31.5	25/31.5/40	

THB7/THB8 Horizontal center break type

Rated voltage (kV)	52.5/72.5	100/123	145/170	245/300
Rated normal current (A)	≥3150			
Rated short time withstand current 1s (kA)	20/25/31.5	25/31.5/40		31.5/40/50

THB2/THB3/THB5 Horizontal center break type

Rated voltage (kV)	362/420/550
Rated normal current (A)	≥8000
Rated short time withstand current 1s (kA)	50/63

*Rated voltages are indicated in accordance with IEC.
 *Any other specifications with other ratings are also available upon request.



Horizontal Double Break / Horizontal Center Break Disconnecter



Characteristic

Stability of power distribution on the contact points

Well tighten electric contact points and high contact pressure let electric connection stabilized.

Blade rotating functions / hinge device part that keeps smooth switching actions

Our Horizontal double break model guarantees smooth and stable operation by employing ball bearings and our original blade with stability apparatus sustaining properly twisting condition. Our Horizontal center break model does also by employing ball bearings in the hinge rolling mechanism with thin copper clad laminate (commonly called "corbel plate") in the conductive parts.

Rolling mechanism of insulator that works in a quick and efficient manner

Ball bearings are employed at the part of thrust bearing to sustain rolling insulator which makes switching device work in stable manner for long time.

Excellent adequacy for seismic and natural disasters <Seismic hazardous adequacy>

Stoppers that are capable of suitably suppressing relative displacement for our horizontal double break model or hook assembly part (standard requirement for over 120kV) for our horizontal center single break model with robust base setting enable our model to perform effectively against earthquake at the level 6.0 in the seismic intensity.

<Earthquake performance>

- 1) Designed according to IEEE 693, High level.
- 2) Designed according to IEC 62271-207, High level

<Natural disastrous adequacy>

All types of our disconnecters have demonstrated smooth operations under such severe circumstance as typhoon with a scale of wind velocity, 40m/s, and as withstanding electromagnetic force due to short circuit.



Horizontal center break disconnecter (THB7/8)



300kV Horizontal center break disconnecter

High reliable model disconnecter

"Highly reliable" model disconnecter is also available for every TAKAOKA TOKO disconnecter that employs silver graphite points on the blade contact side, and all stainless for ball bearings as well.

Reasonably saved service for maintenance

As a general rule, our standard model disconnecter normally requires regular maintenance service every three years. Our High reliability type does instead every six years, so that it becomes very reasonable with cost cut off due to no more service for maintenance in normal case.

Higher reliability of main contacts

Silver graphite contacts function with self-lubricating system to perform well for wear-proofing and in switching, contact-cleaning effect by double-contact pressure performs well for insulated coat elimination

Controlling operating force increase

With a stainless ball bearings and silver graphite contacts set, this model can provide efficient operation force to contain possibilities of causing imperfect actions.



Horizontal double break disconnecter (THR5/6)



Accessories

(1) Earthing switches

Our disconnectors offer with earthing switches.

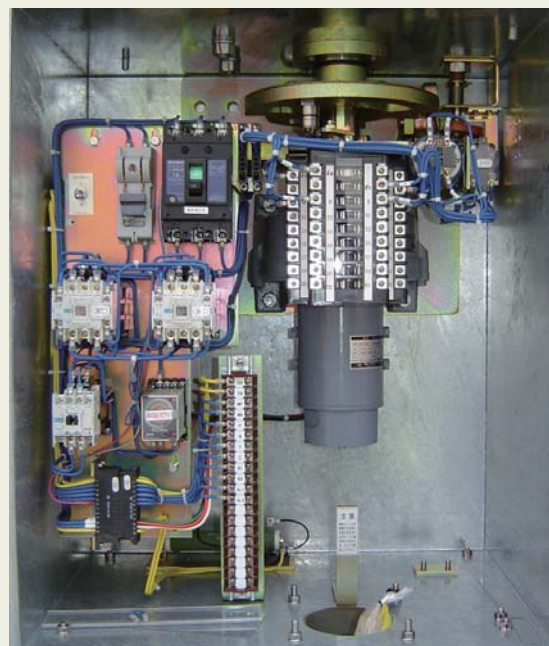
(2) Enclosed type motor operating mechanism

Power mechanism employs a built-in motor with speed reduction gear that works operational shaft as power output. Also, its the mechanism is set simple in a low noise level situation. Another merit is there is no gear mechanism exposed to the outside which requires greasing for maintenance.

Depending on combinations with disconnectors and those earthing switch types, the best possible stable and efficient switching operation provide the most efficient operating time for output performance.

Stable output performance is covered also with electrical damping power (electric brake) so that it will not be rebounding when stops.

Since electrical components such as electromagnetic contactors are set in a single certain panel, your needs for easy replacement will be fully satisfied.



Type	MCDA-DB1 (Enclosed type)	MTDA-DB1* (Sealed type)
Operating voltage	DC100/110V (Standard)	
Control voltage	DC100/110V (Standard)	

Note: Rated voltage AC 200V/220V is also available upon request.

*Also available 12-year maintenance-free type for severe site condition or for that of difficult maintenance service. (MTDA-DB1)

(3) Manual operating mechanism

Type : TA

This unit is employed for manual operation of disconnector / earthing switch with rated voltage less than 300kV. As option, auxiliary switch / interlocking device are available.

(4) Other accessories

More accessories are ready to meet more specified needs of customers as below.

1) For Disconnectors

① Current switching arcing contact (LCS, auxiliary contact)

The contact that functions to protect main contacts to switch small capacitive current breaking (charging current), small inductive current breaking (excitation current) and loop current.

② Line Switch Check Contact (LSCC)

Switching tester in disconnector side testing directly disconnector switching motions.

③ Snow preventing cover

Cover for preventing operation trouble by snow damage.

④ Universal rod

Rod that is set in properly when vertical fixing is hard between main body of disconnector and operation device.

⑤ Wire support clasp

Clasp for preventing wire cut between the contacts due to aerial wiring vibrate (applicable for horizontal double break model).

⑥ Earth hook clasp

Clasp for installing earthing clasp (earthing rod).

⑦ Terminal adapter

Terminal adapter used in the difference of the number of holes and/or hole pitch to the terminal base of disconnector or in case of special occasion where revision of joint current direction is necessary.

⑧ Wraparound stopper

Device to avoid wire wraparound towards the interpole distance direction of disconnector. (applicable for horizontal center break model)

⑨ Outgoing base

Outgoing base employed in need of change of fixing position of operation device.

2) For Earthing switches

① Protective gap

Protective gap to save from abnormal voltage such as carried by lightning strike.

② Earthing Mechanism Check Contact (EMCC)

Switching tester in earthing switch side (earthing blade) testing directly switching motions.

3) For Motor operating mechanism

① Mechanical locking device

In case of power outage, to prevent wrong/false operation, device that locks mechanically operating mechanism for security.

② Actuating cycle counter

Counter for actuating cycle of Disconnector.

③ Red-green signal lamp

Signal lamp for showing open/close state.

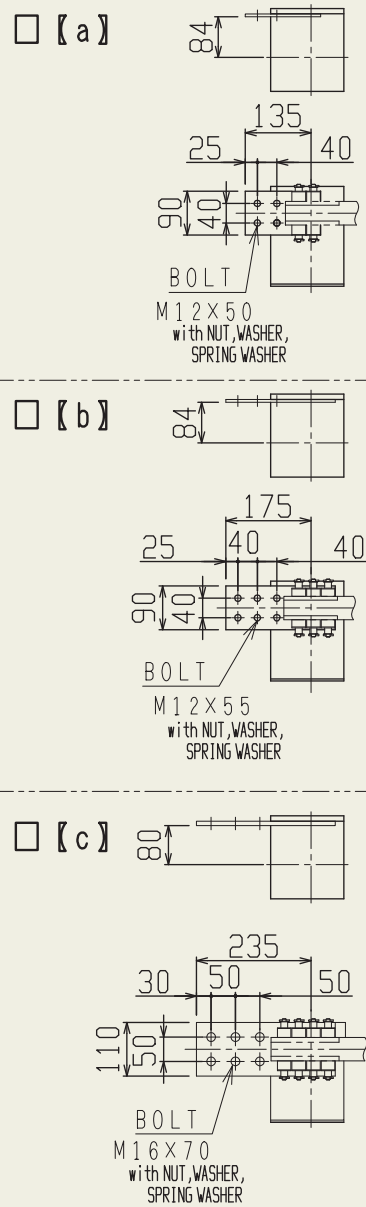


**TYPE: THR5-LG
RATED**

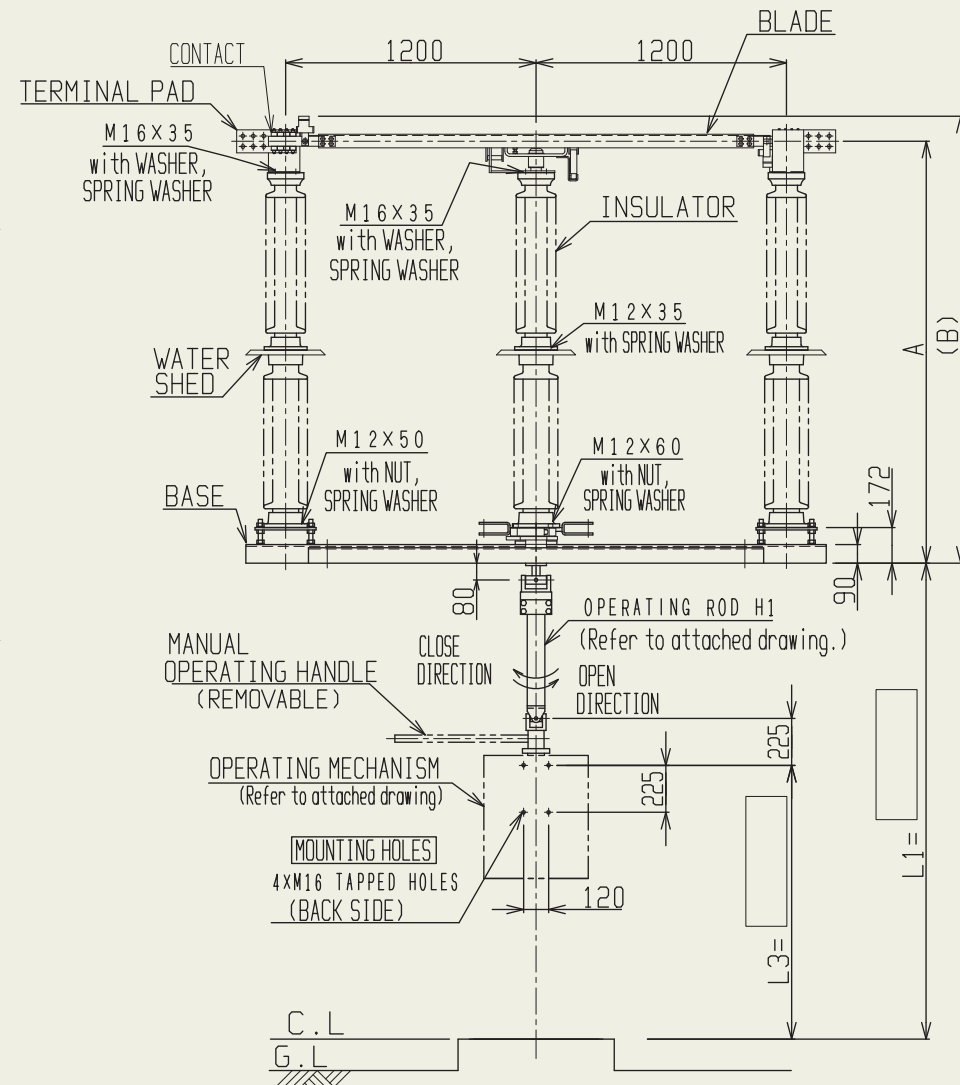
VOLTAGE (kV)	CONTINUOUS CURRENT (A)	SHORT-TIME WITHSTAND CURRENT (kA)	DURATION OF SHORT-CIRCUIT (s)	DIMENSION (mm)		WATER SHED
				A	B	
145	630	12.5	1	2620	2740	WITHOUT
168	800	16	2			
170	1000	25				WITH
204	1250	31.5				
	1600	40				
	2000					

NOTE

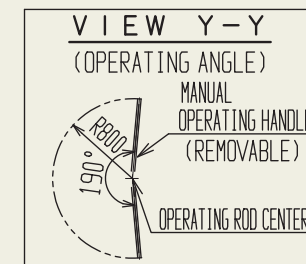
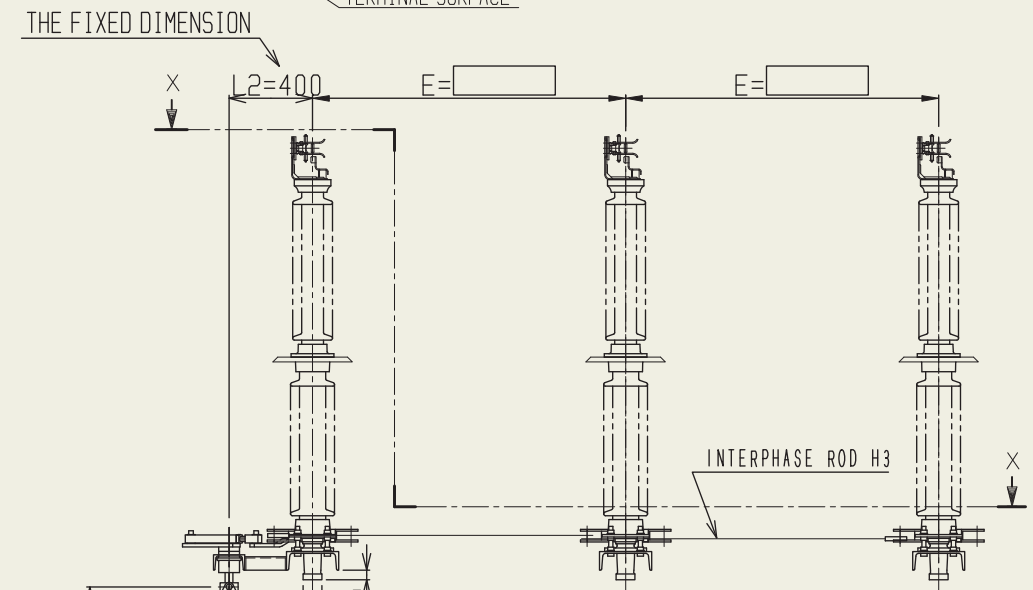
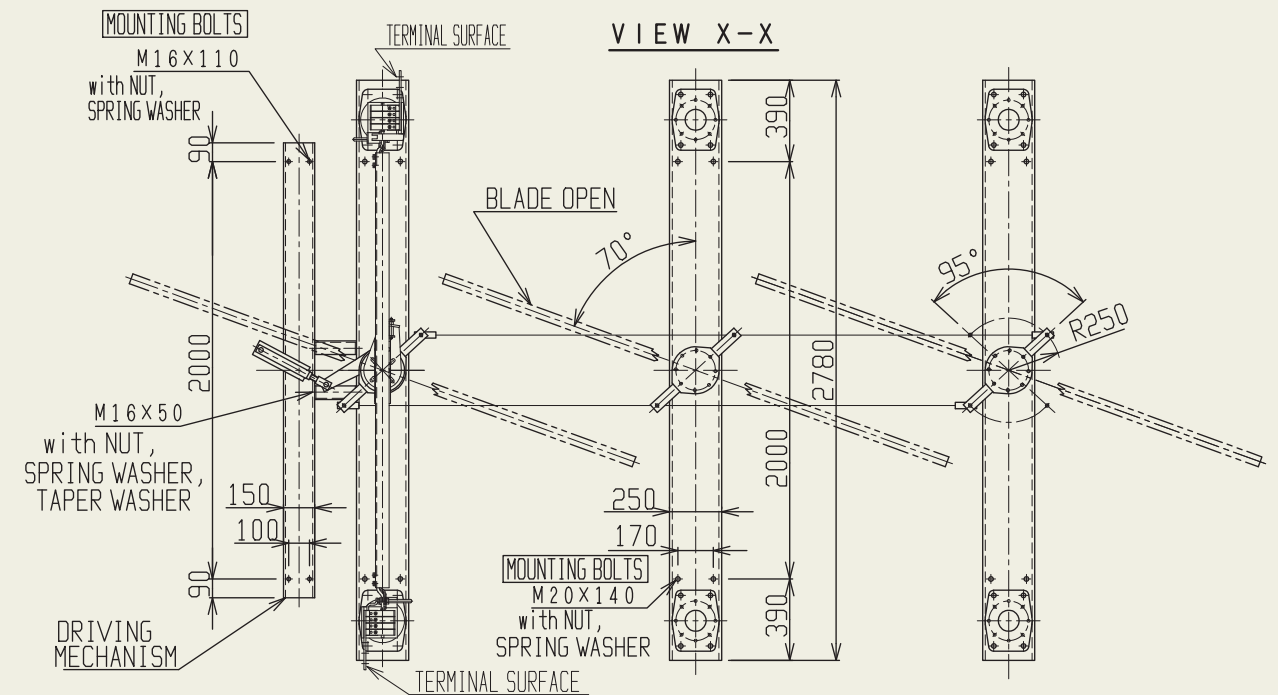
DETAILED TERMINAL PAD



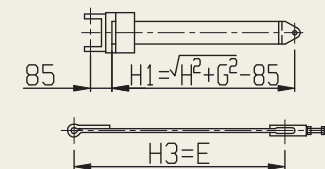
QUANTITY: SETS



(Figure shows the [c] type.)



The dimensions of OPERATING ROD and INTERPHASE ROD are as follows:



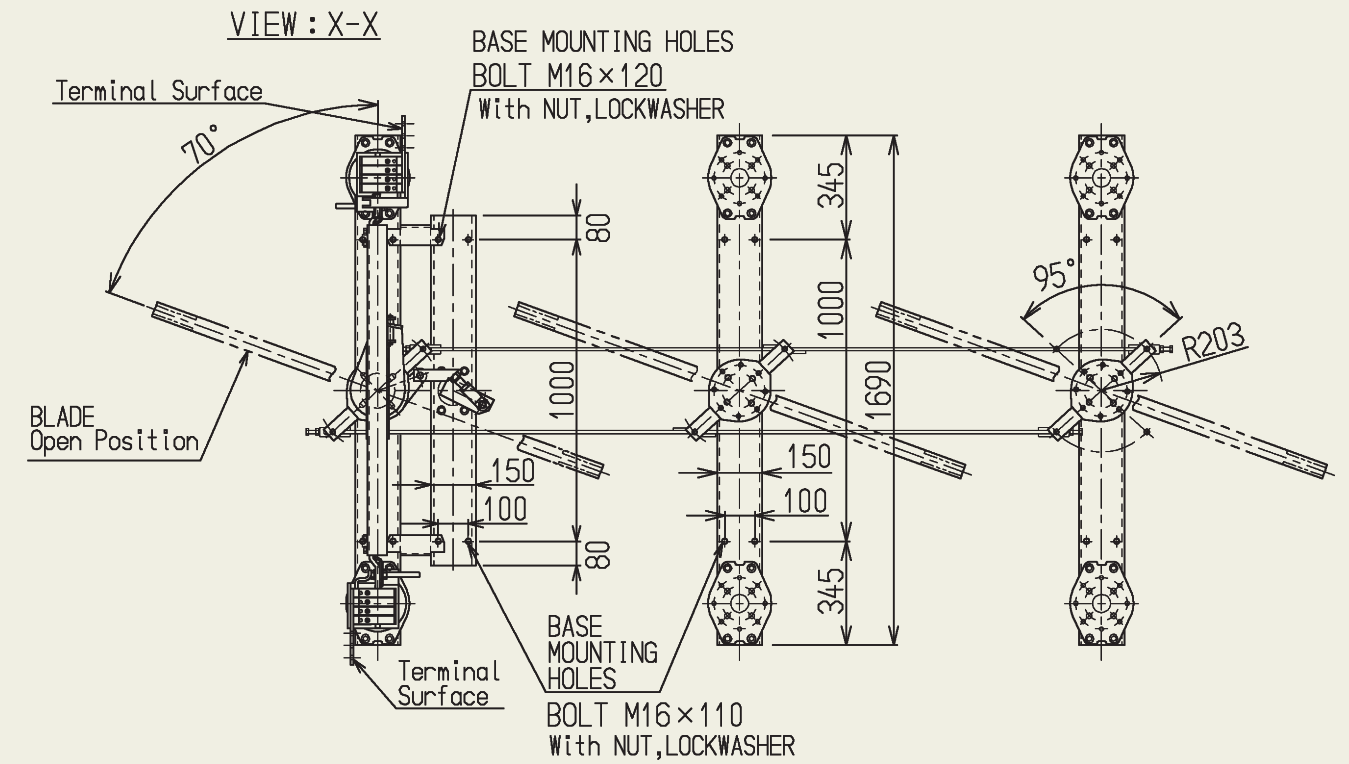
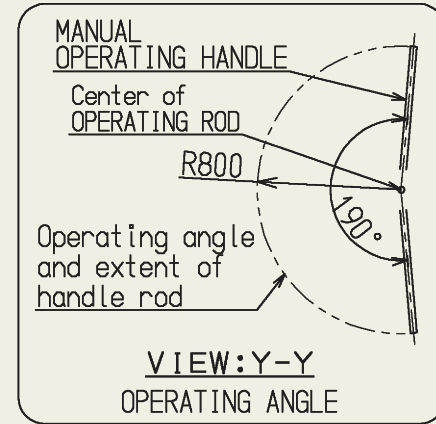
- (1) θ° is used within 30° for one genuine, used within 5° for two genuine, $G/H \leq 0.57$
- (2) H DIMENSION is calculated by the following equation, $H=L1-(L3+305)$

TYPE : THR5-LG
RATINGS

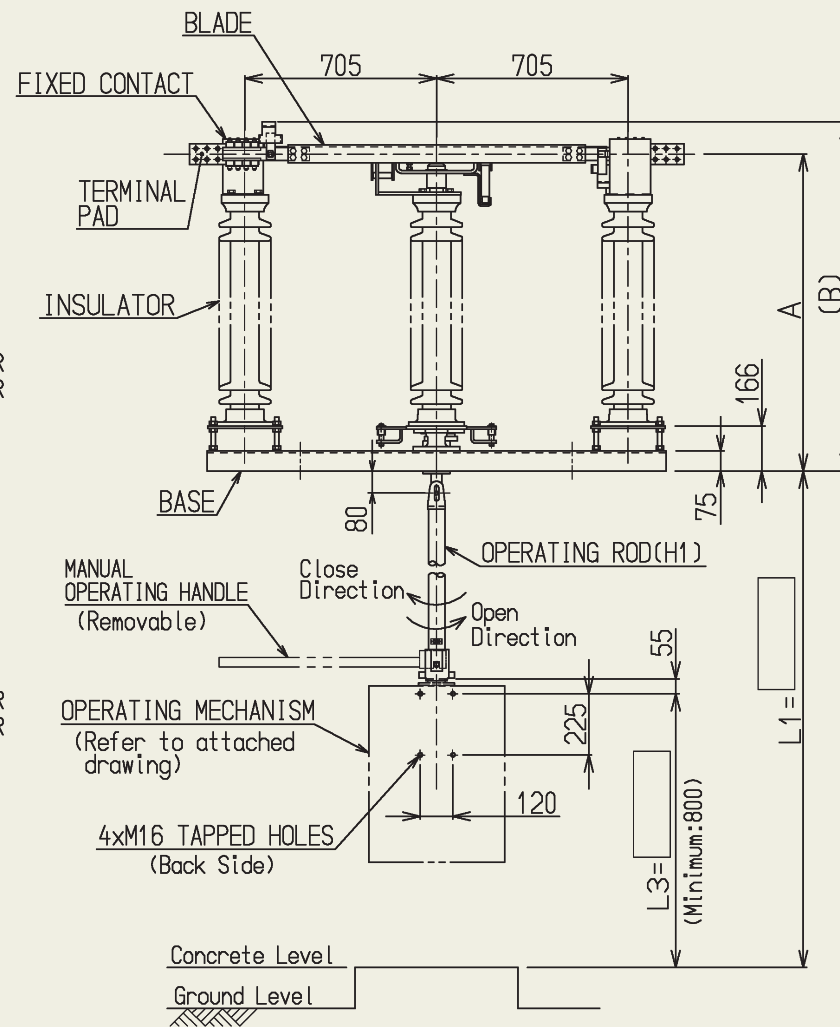
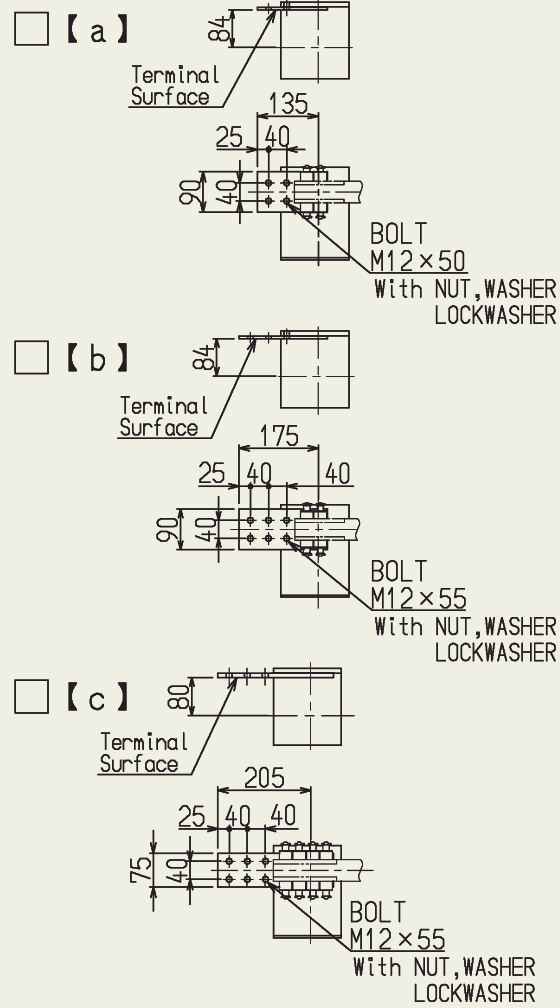
Voltage (kV)	Current (A)	Short-time withstand current (kA)	Duration of short circuit (s)
52	630	12,5	1
72	800	16	2
72.5	1000	20	
	1200	25	
	1250	31,5	
	1600		
	2000		

INSULATOR	A(mm)	B(mm)
SP-60	1115	1225
SP-70	1215	1325
SP-850A	1165	1275
SP-1150A	1465	1575

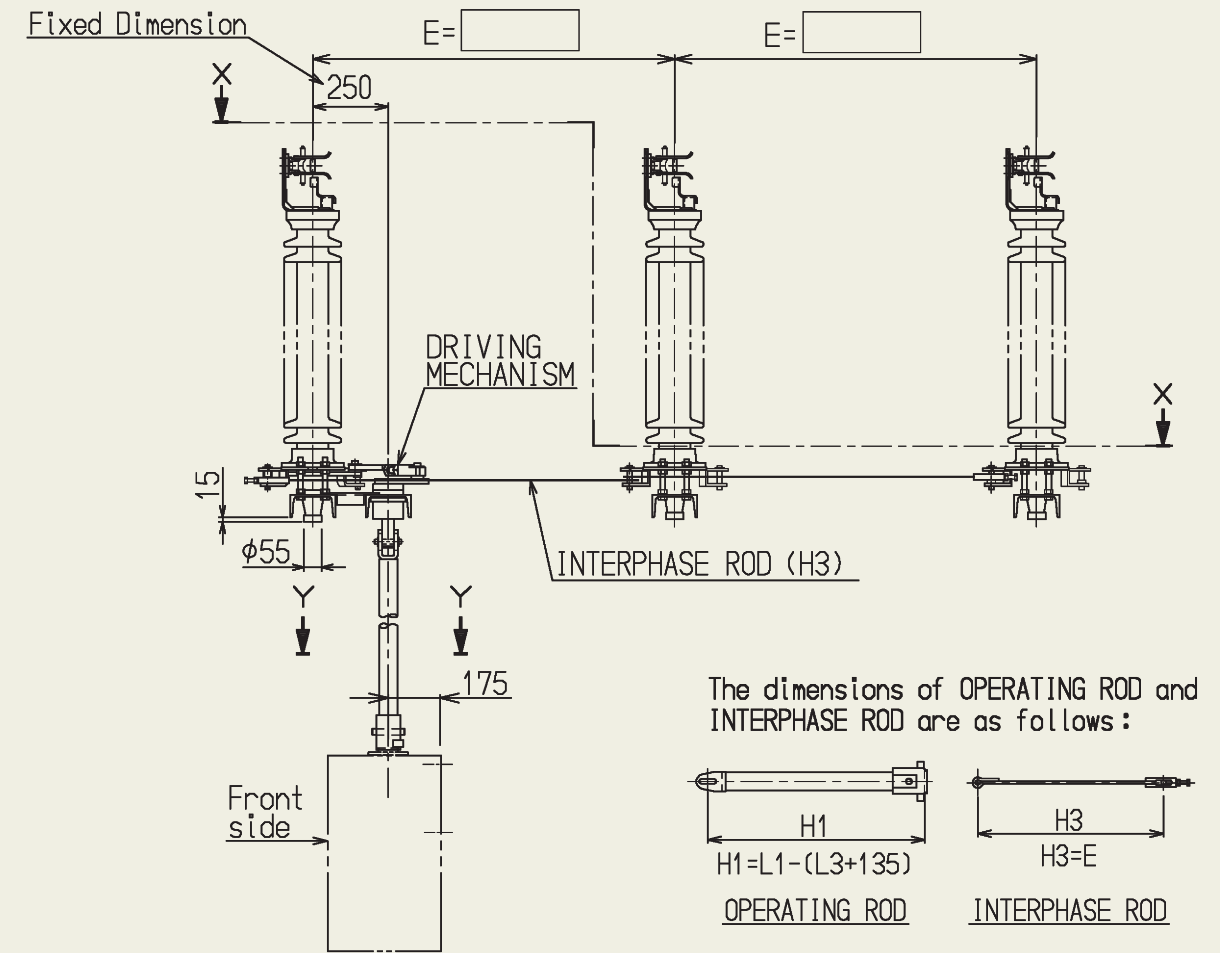
Quantity : _____



DETAILED TERMINAL PAD



(Figure shows the [c] type.)



TYPE: THB7-LG

RATED

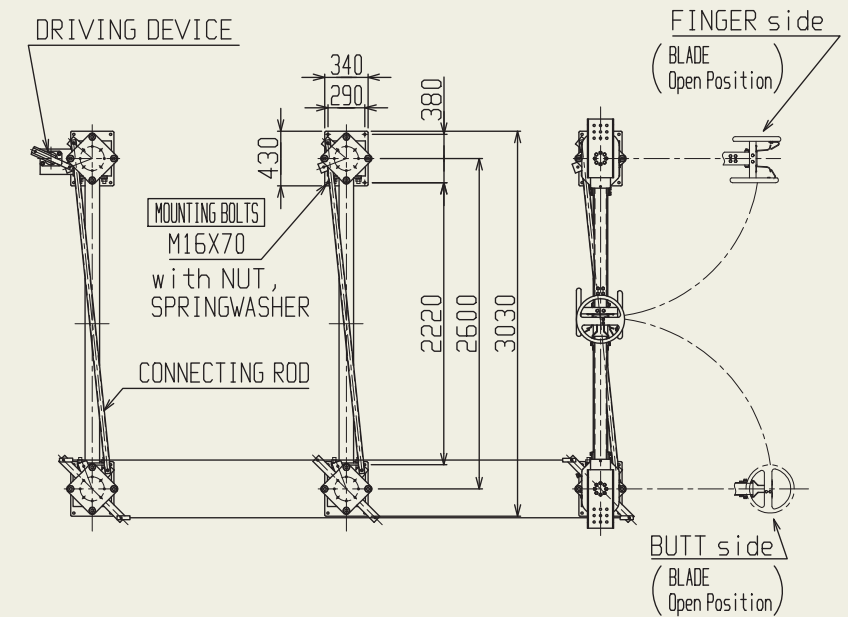
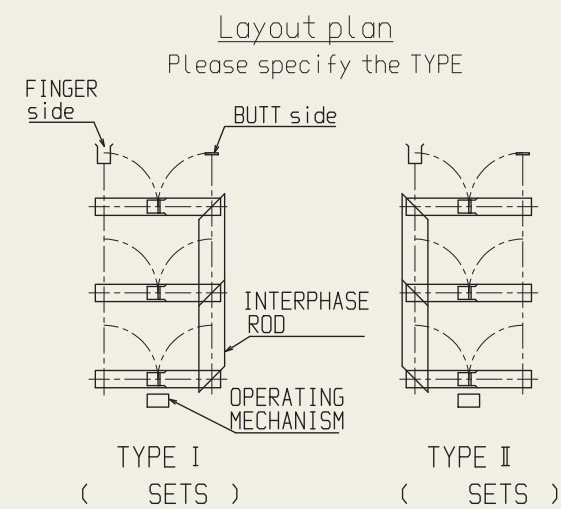
QUANTITY: _____ SETS

VOLTAGE (kV)	CONTINUOUS CURRENT (A)	SHORT-TIME WITHSTAND CURRENT (kA)	DURATION OF SHORT-CIRCUIT (s)	WATER SHED
240	1200	31.5	1	WITH OUT
	2000	40	2	
	3000	50		
	4000			

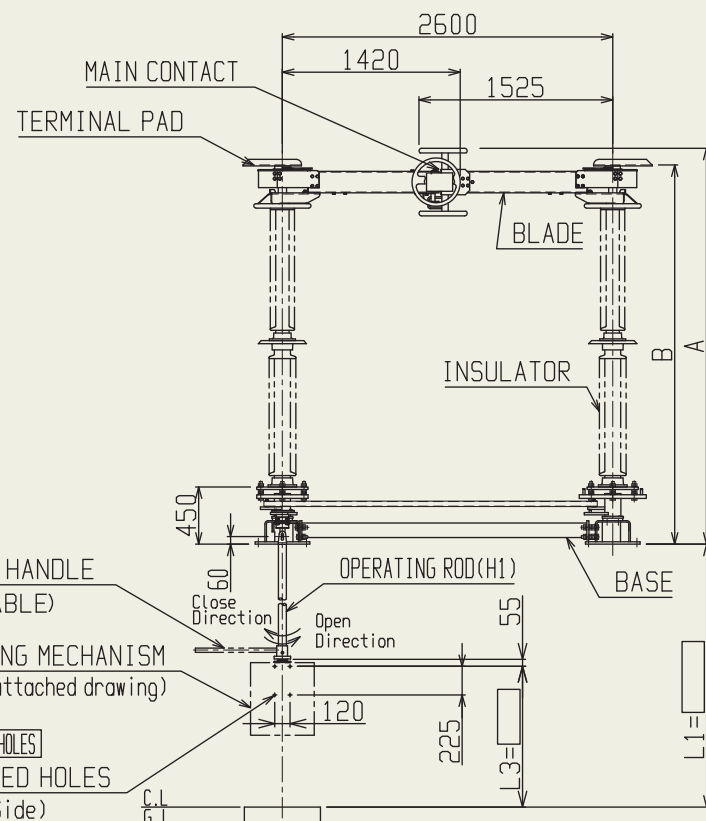
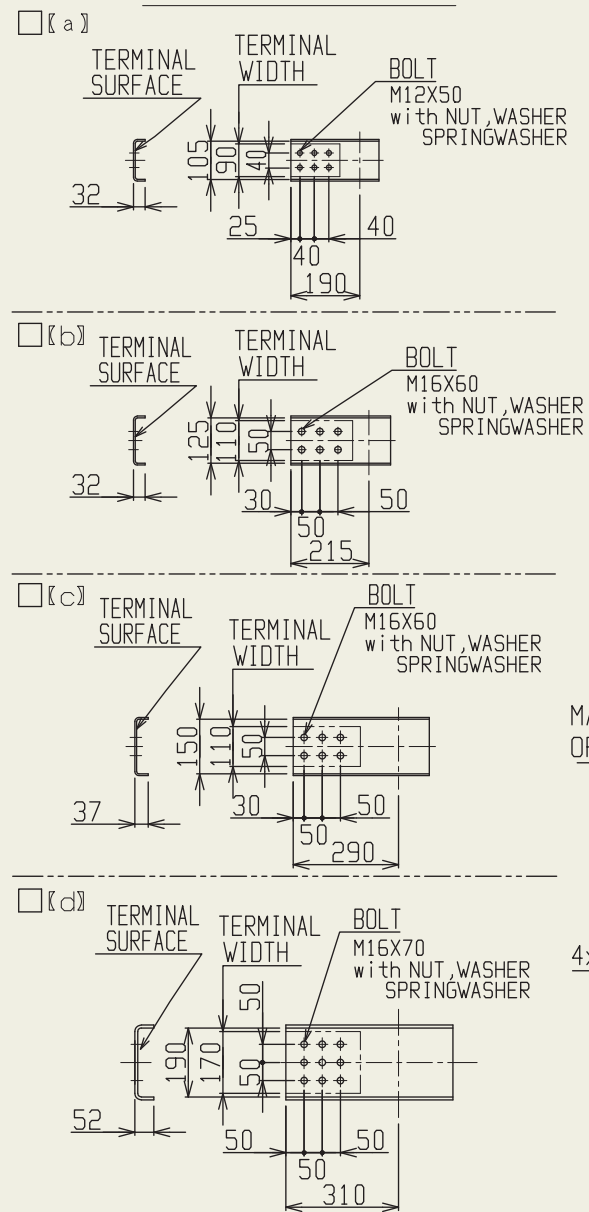
INSULATOR	DIMENSION (mm)			
	A		B	
	1200/2000A	3000/4000A	1200/2000A	3000/4000A
SP-1150A SP-950B	2900	2910	2735	2780

NOTE

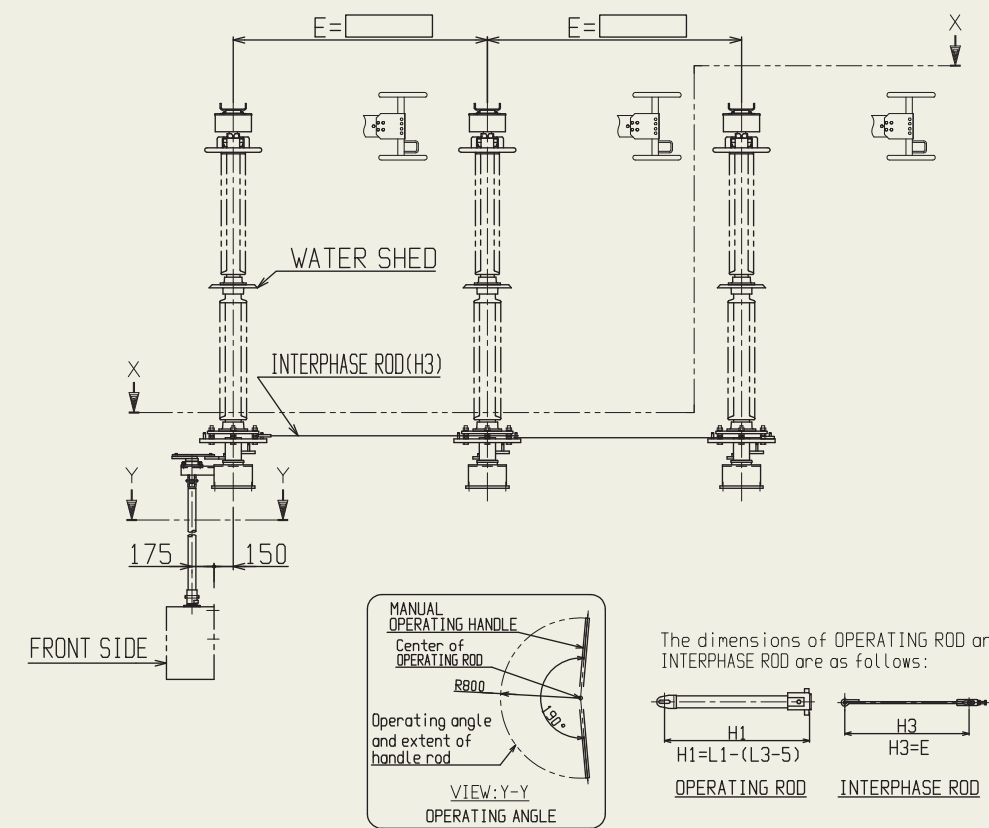
VIEW: X-X
(Figure shows the case of TYPE I)



DETAILED TERMINAL PAD



(Figure shows the [d] type.)



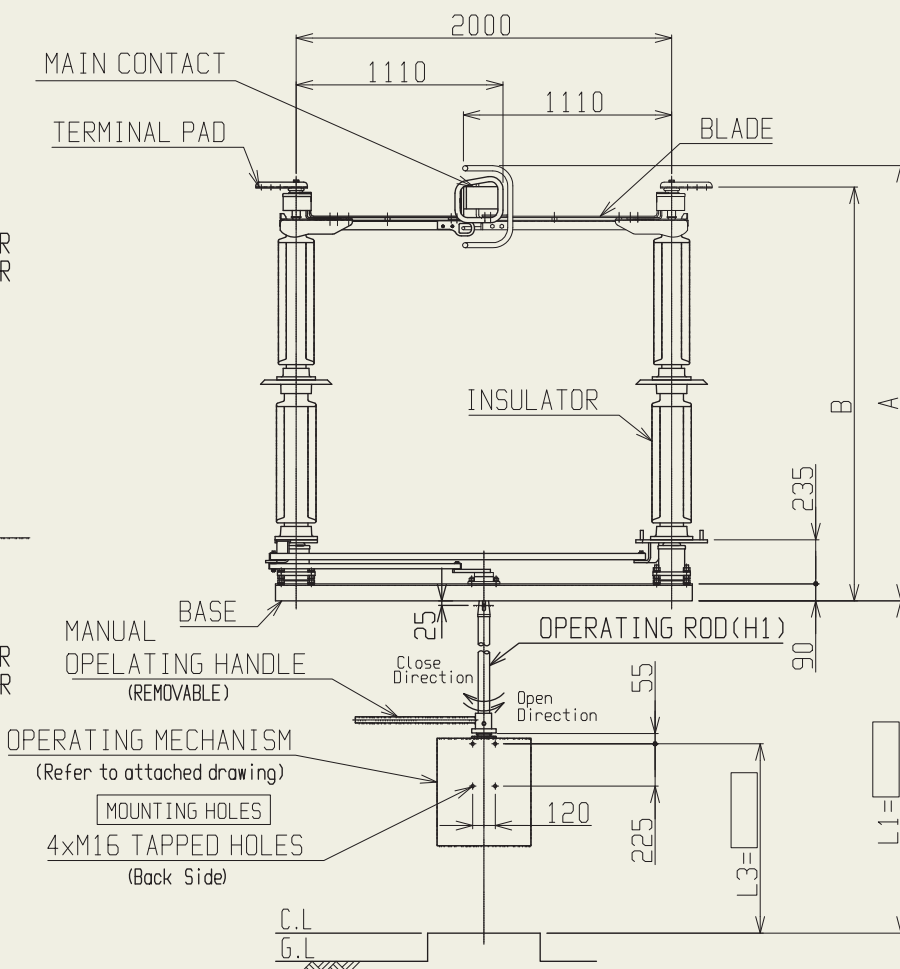
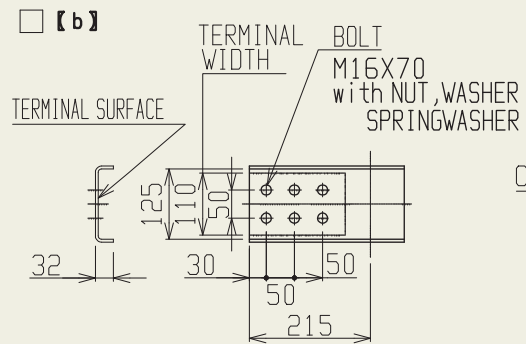
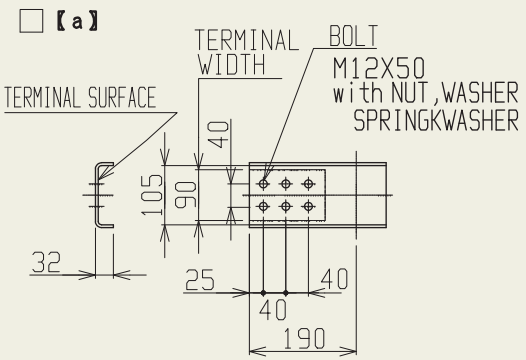
TYPE : THB7-LG
RATED

VOLTAGE (kV)	CONTINUOUS CURRENT (A)	SHORT-TIME WITHSTAND CURRENT (kA)	DURATION OF SHORT-CIRCUIT (s)	INSULATOR	DIMENSION (mm)		WATER SHED
					A	B	
145	800	12.5	1	SP-850A	2315	2205	WITHOUT
168	1200	20	2	SP-850B			
170	2000	25					
204		31.5					
		40					

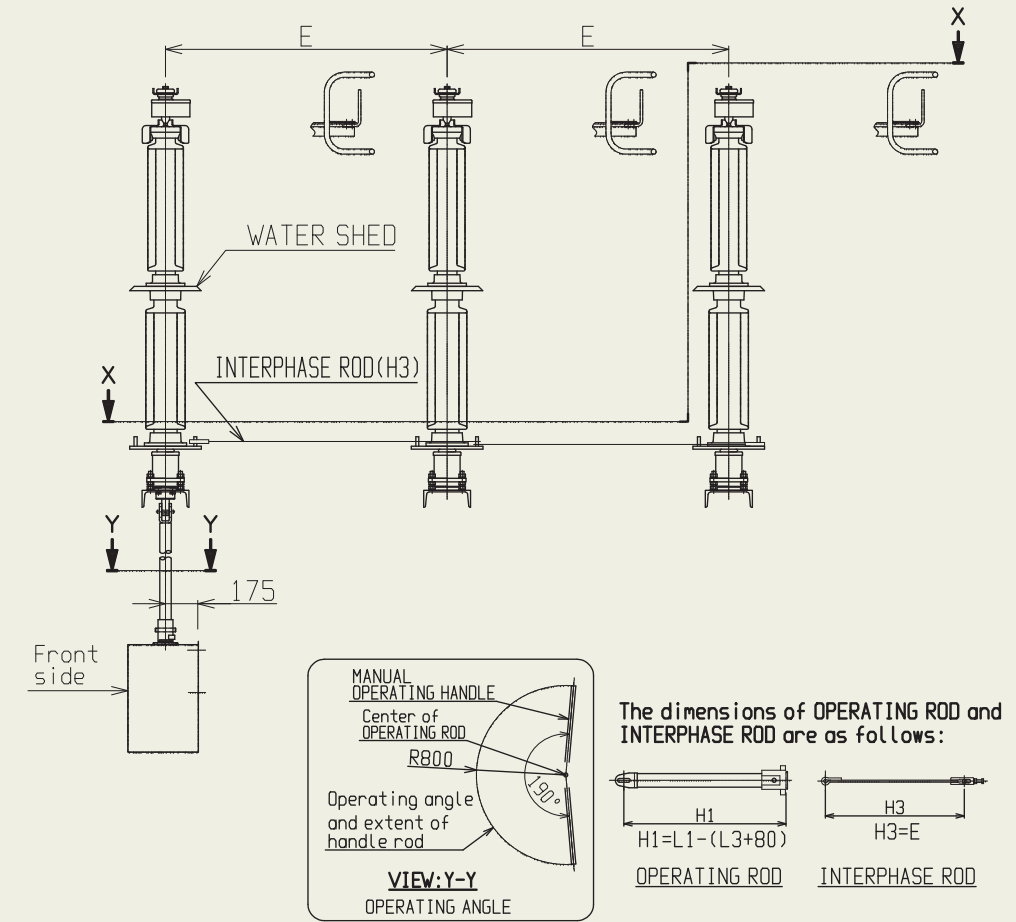
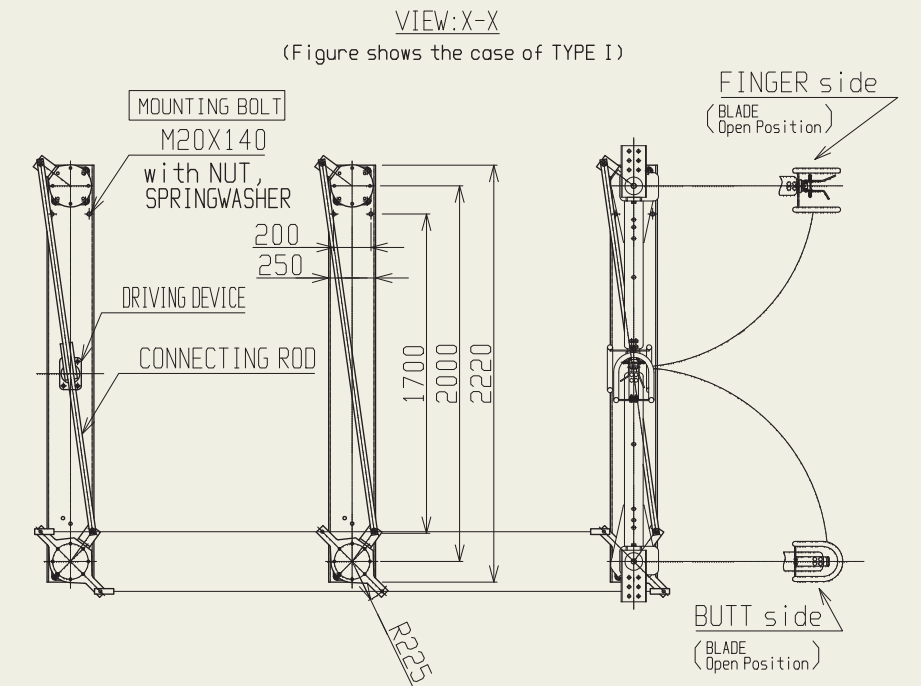
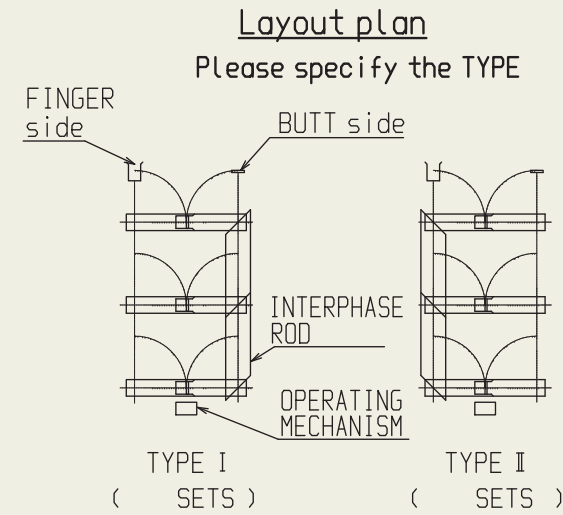
NOTE

Quantity: _____ SETS

DETAILED TERMINAL PAD



(Figure shows the (b) type.)



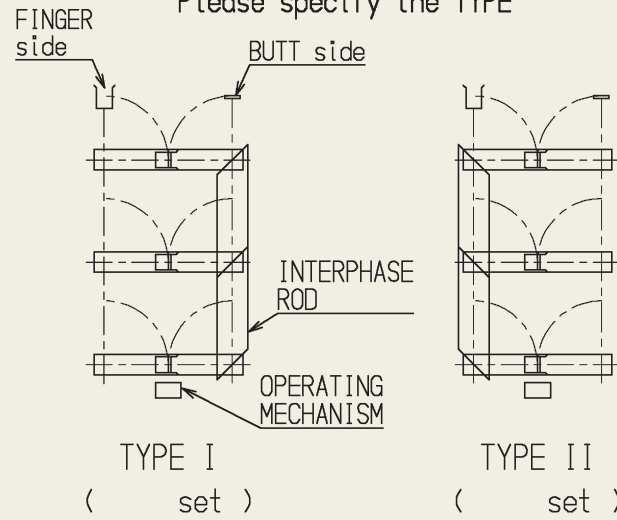
TYPE : THB7-LG
RATINGS

Voltage (kV)	Current (A)	Short-time withstand current (kA)	Duration of short circuit (s)
52	630	12,5	1
72	800	16	2
72.5	1000	20	
	1200	25	
	1250	31,5	
	1600		
	2000		

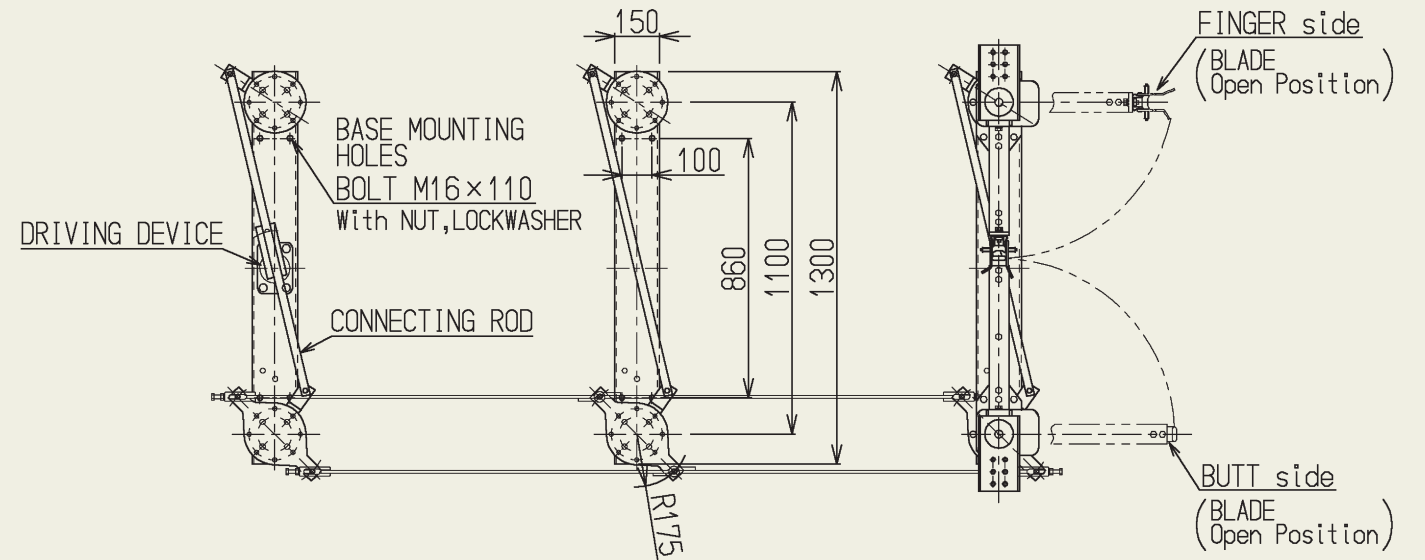
INSULATOR	A(mm)	B(mm)
SP-60	1270	1230
SP-70	1370	1330
SP-850A	1320	1280
SP-1150A	1620	1580

Quantity : _____

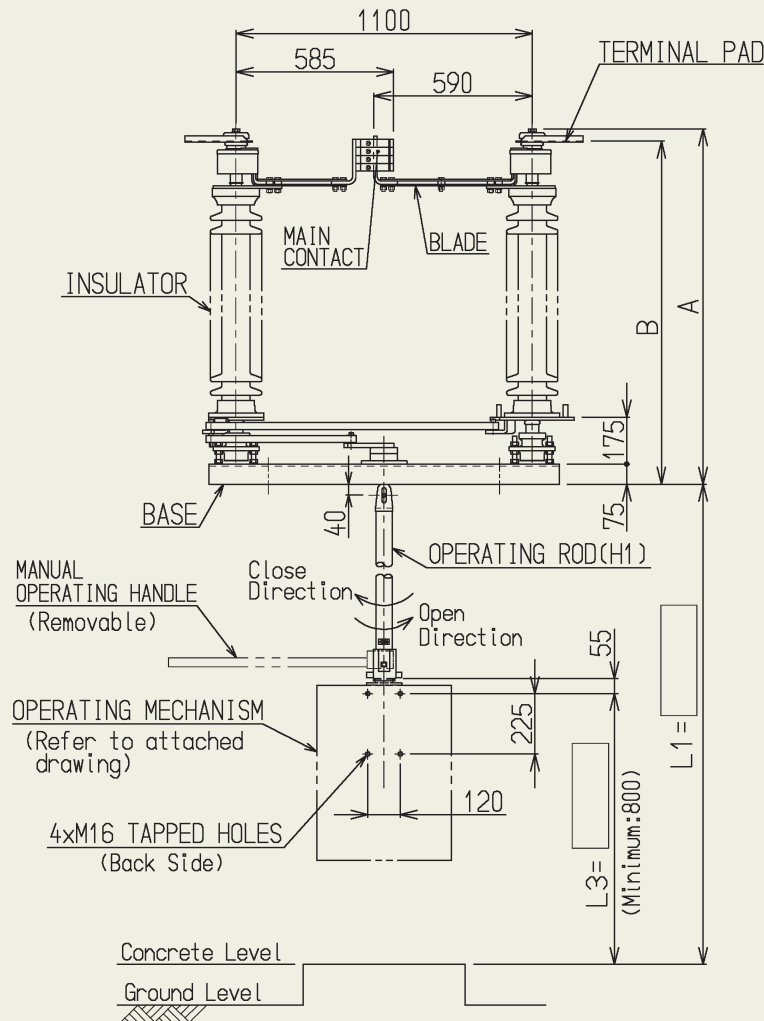
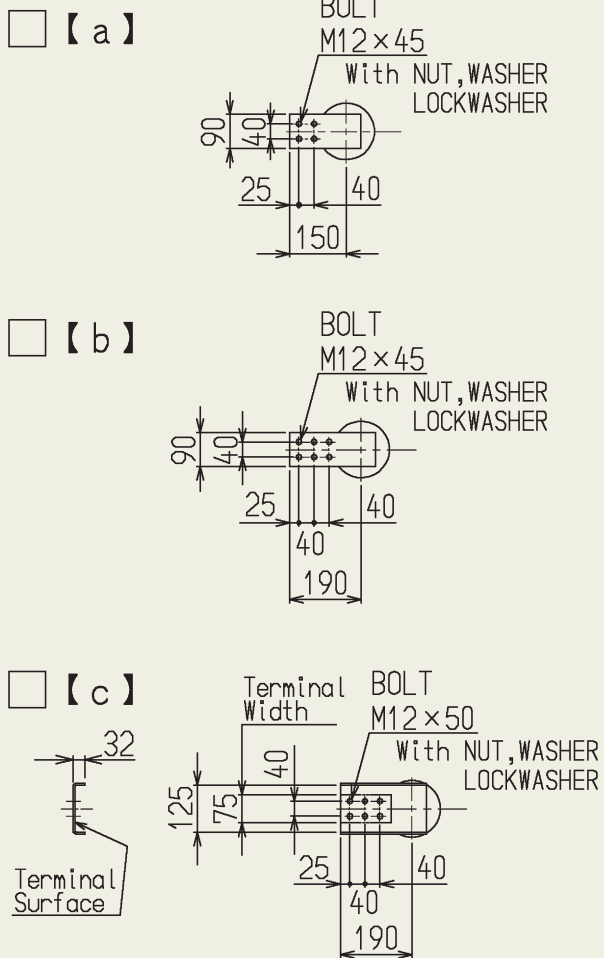
Layout plan
Please specify the TYPE



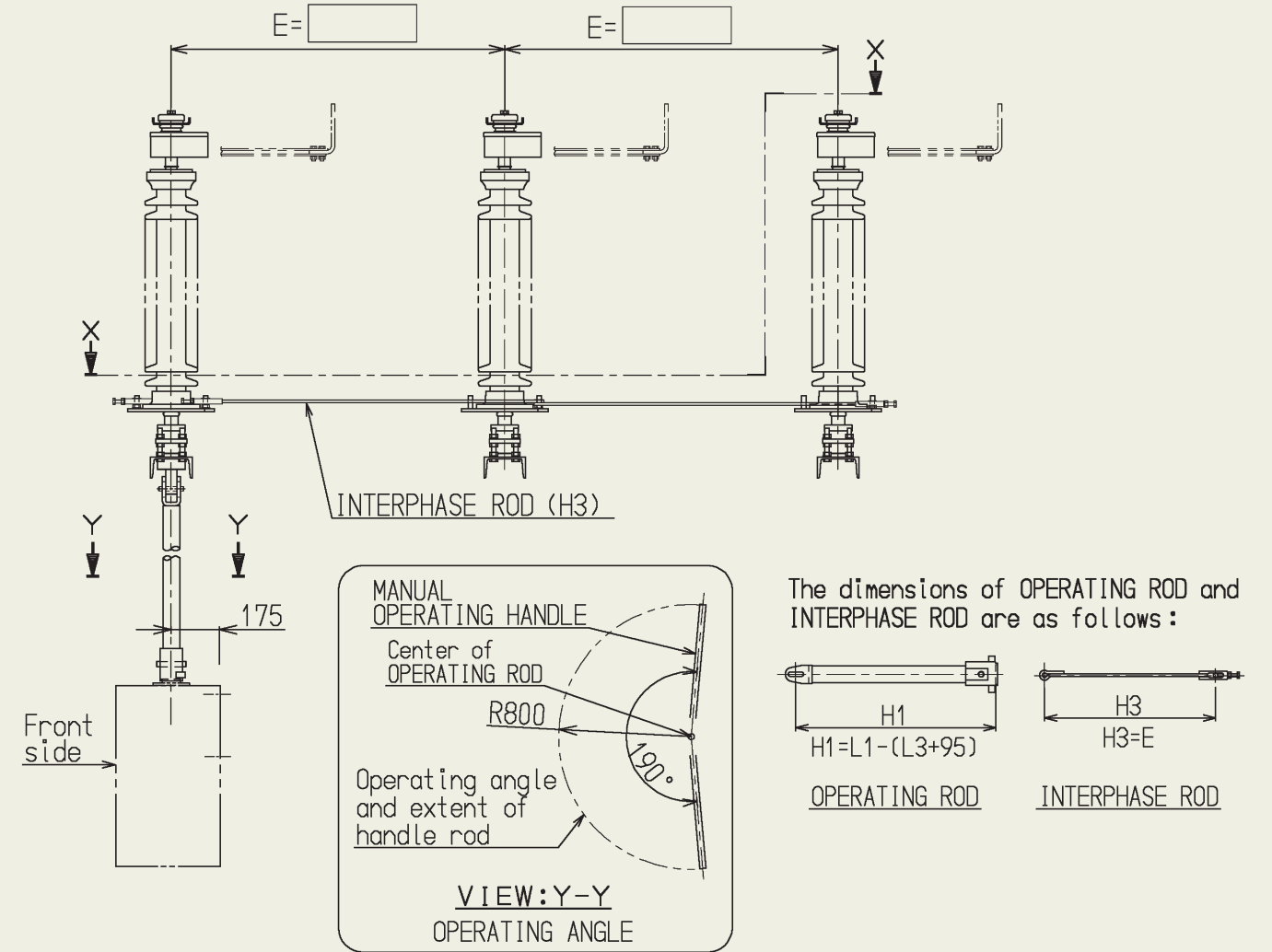
VIEW : X-X
(Figure shows the case of TYPE I)



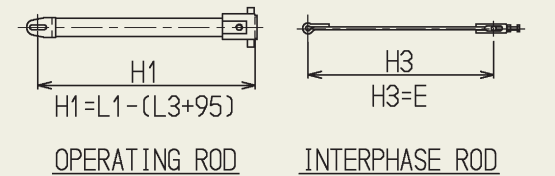
DETAILED TERMINAL PAD



(Figure shows the [c] type.)



The dimensions of OPERATING ROD and INTERPHASE ROD are as follows :

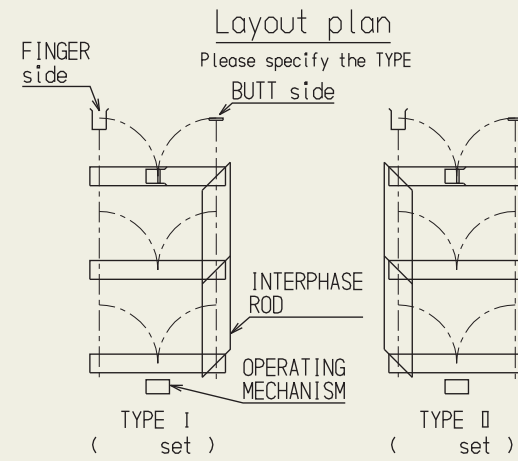


TYPE: THB9E-LG

RATINGS

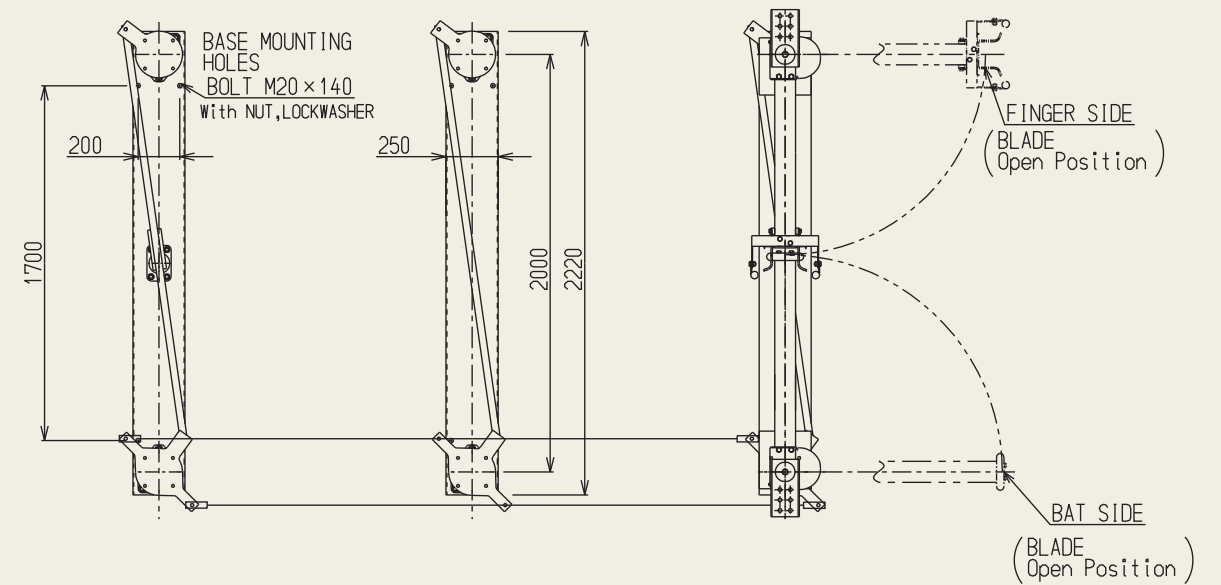
VOLTAGE (kV)	CURRENT (A)	SHORT TIME WITHSTAND CURRENT (kA)	Duration of short circuit (s)
170	630	12,5	1
	800	16	2
	1000	20	3
	1200	25	
	1250	31,5	
	1600	40	
	2000		
2500			

INSULATOR			
MODEL	CREEPAGE DISTANCE (mm)	A (mm)	B (mm)
C6-750-I	3100	2150	2190
C6-750-A	4860		
C6-750-B	5990		



Quantity: _____

VIEW : X-X
(Figure shows the case of TYPE I)



Detailed TERMINAL PAD (TIN PLATED OF COPPER)

