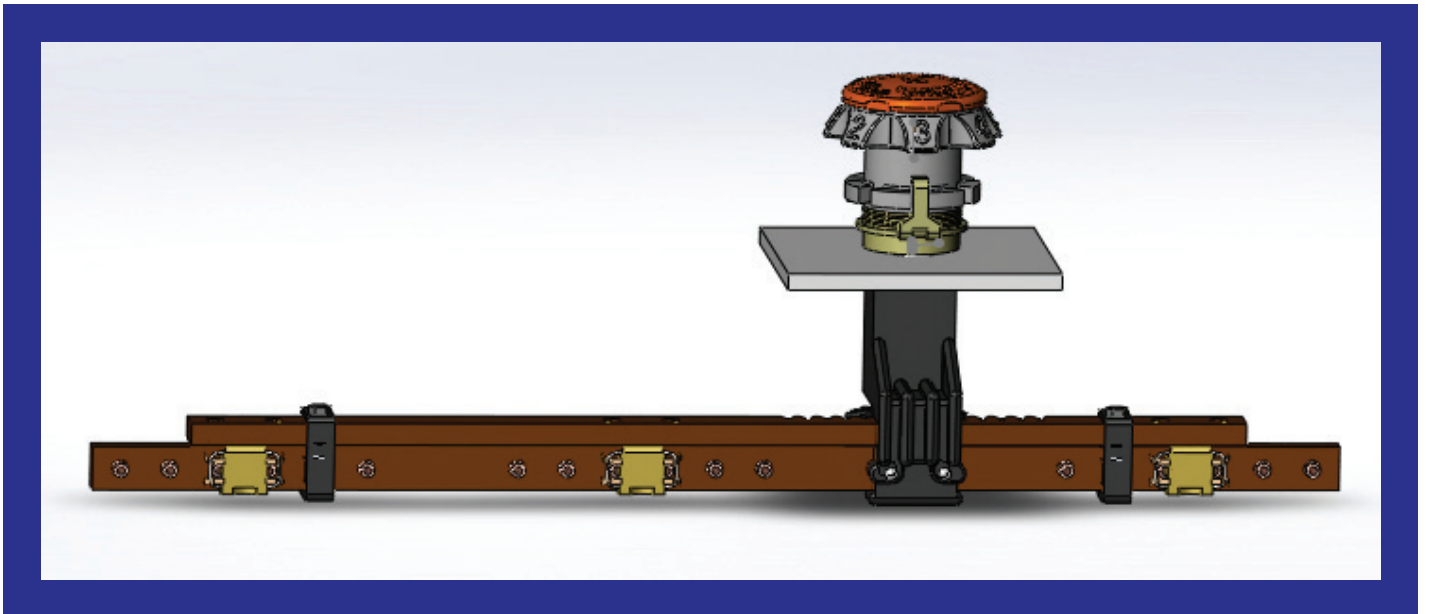


ER KAR

Transformer
Accessories and Equipments



EKR

GENERAL SPECIFICATION

These tap changers are available in one two or three phase applications. Multi layer types are also available. The shaft length is fixed as 50, 70, 100 or 130mm. Driving mechanism can be either on the edge or in the middle of the phases. Connection diagrams in page EKR 2 can be applied in any variation to all types. Easy assembly and compact desing provides labor and cost savings.

ASSEMBLY

A notch is provided to mark each position. For operation, unscrew and release the notch by applying an axial pull on the control knob. Then turn the knob to the desired position. Engage the knob and screw the lock nut. This process is clearly marked on control knob as;

" UNSCREW 1 - PULL 2 - PLACE 2 -SCREW 2"
This description can be engraved in any language.

MATERIALS

Steel Parts: These parts can be stainless or mild steel. Mild steel parts are cadmium or zinc plated. Upon request galvanizing is also available.

Polyamide Parts : These parts are NYLON 66, superior mechanical properties against all acting forces, strong against UV lights.

Aluminum Parts : GAISi12Cu

BrassParts : Cu ZN40Pb2 Ms 60 F34 DIN 17 673

Copper Parts :E - Cu F25 DIN 40 500

Insulator Parts : Paper phenol - plastic resin based laminates, HP 2061.5 class of DIN 7735.

ON REQUEST

The aluminum parts can be protected by anodic oxidation.
The mild steel parts can be supplied in stainless steel.
The brass and copper parts can be tin, silver or cadmium plated.

CURRENT

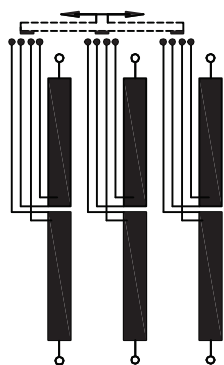
CURRENT	CONTACT INNER DIA. (For cable connection)
10 A	ø 2.1 mm.
30 A	ø 3.1 mm.
63 A	ø 5.1 mm.

VOLTAGE CLASS

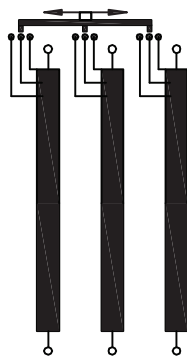
VOLTAGE CLASS	B. I. L.
15 kV	95 kV
20 kV	125 kV
30 kV	170 kV

Other B. I. L. values are also available upon customer request.

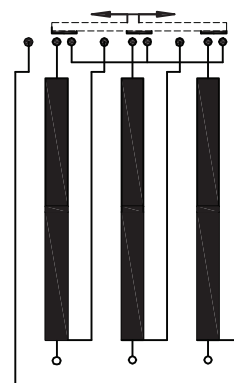
Usual diagrams



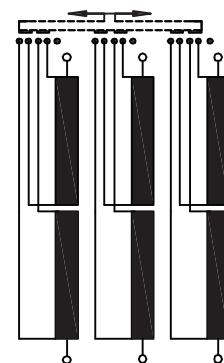
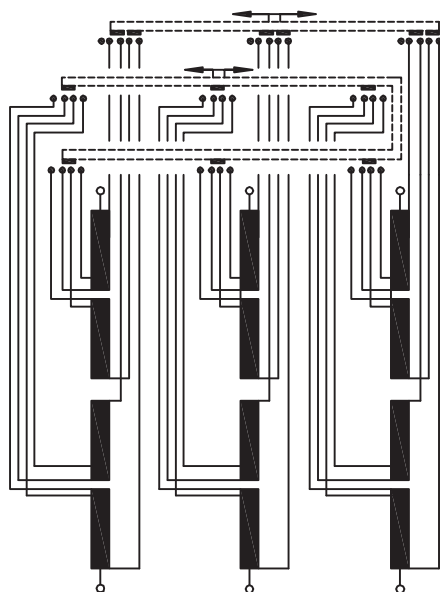
setting for delta transformer



setting for star transformer



star - delta coupling



series - parallel coupling

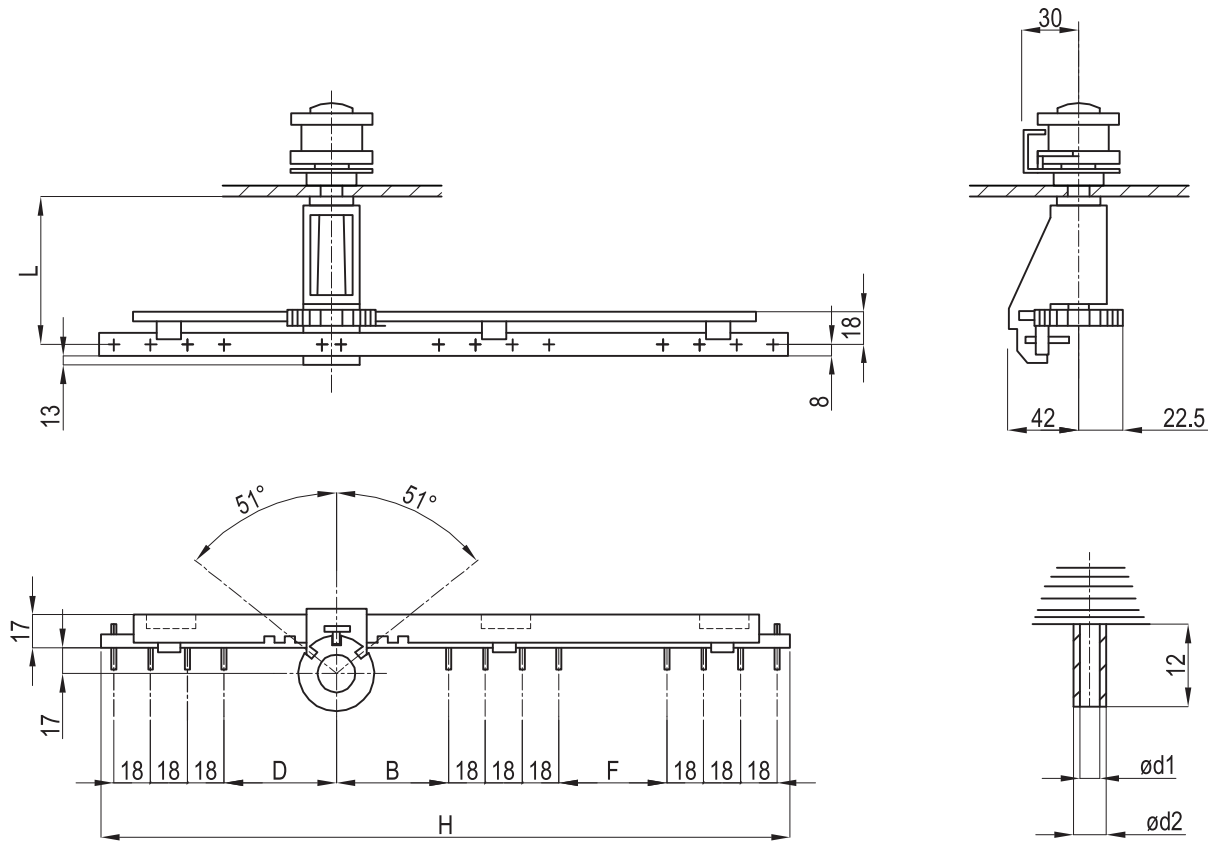
Typical combination :

- * 1 stage, series - parallel coupling
- * 2 stages, delta diagram - setting $\pm 2,5\%$.



common output per phase

Off - circuit operation can be used in oil
 Delta diagram 20-30 kV 30-63A. 3-7positions

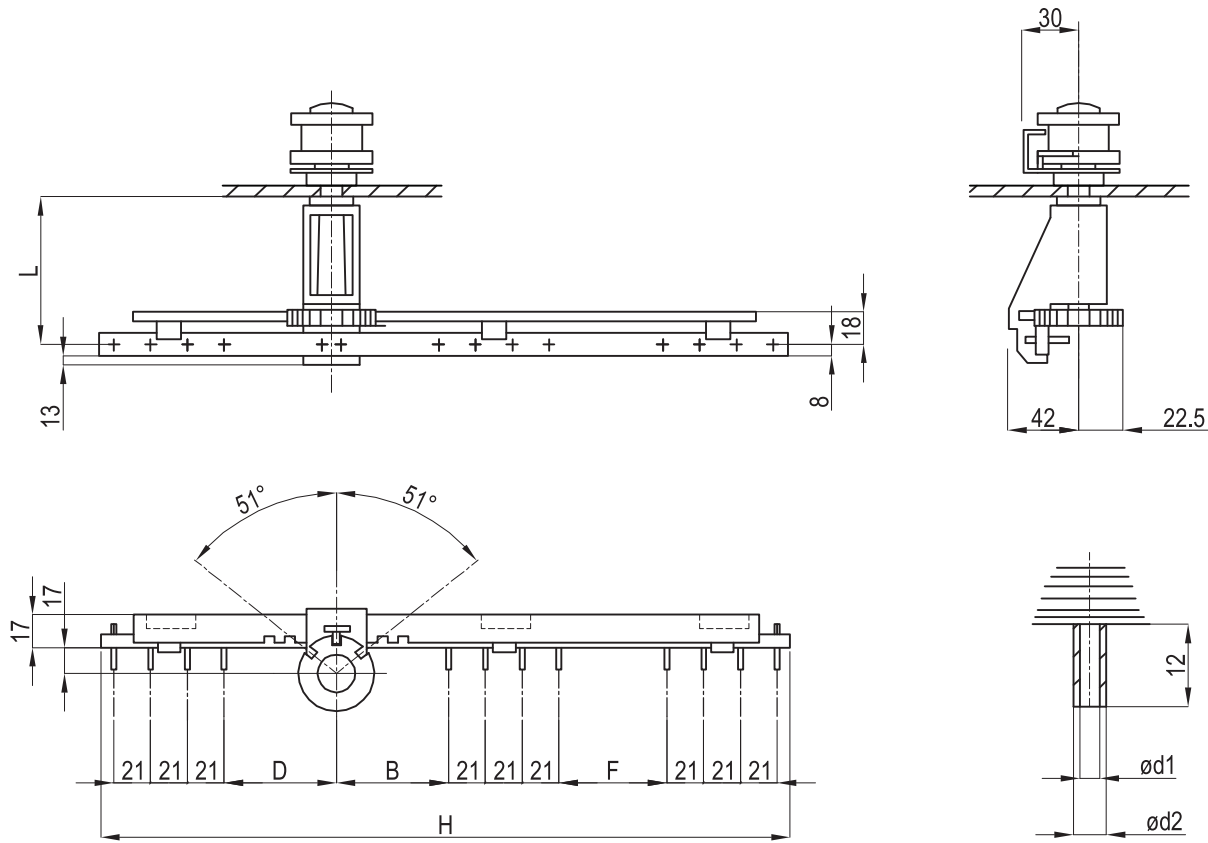


L	NUMBER OF POSITIONS	20 kV				30 kV			
		H	10A UNIT. NO	30A UNIT. NO	63A UNIT. NO	H	10A UNIT. NO	30A UNIT. NO	63A UNIT. NO
50	3	347	M790663	M790643	M790623	---	---	---	---
	4	401	M790664	M790644	M790624	---	---	---	---
	5	455	M790665	M790645	M790625	---	---	---	---
	6	509	M790666	M790646	M790626	---	---	---	---
	7	563	M790667	M790647	M790627	---	---	---	---
70	3	347	N790663	N790643	N790623	422	N790463	N790443	N790423
	4	401	N790664	N790644	N790624	476	N790464	N790444	N790424
	5	455	N790665	N790645	N790625	530	N790465	N790445	N790425
	6	509	N790666	N790646	N790626	584	N790466	N790446	N790426
	7	563	N790667	N790647	N790627	638	N790467	N790447	N790427
100	3	347	P790663	P790643	P790623	422	P790463	P790443	P790423
	4	401	P790664	P790644	P790624	476	P790464	P790444	P790424
	5	455	P790665	P790645	P790625	530	P790465	P790445	P790425
	6	509	P790666	P790646	P790626	584	P790466	P790446	P790426
	7	563	P790667	P790647	P790627	638	P790467	P790447	P790427
130	3	347	R790663	R790643	R790623	422	R790463	R790443	R790423
	4	401	R790664	R790644	R790624	476	R790464	R790444	R790424
	5	455	R790665	R790645	R790625	530	R790465	R790445	R790425
	6	509	R790666	R790646	R790626	584	R790466	R790446	R790426
	7	563	R790667	R790647	R790627	638	R790467	R790447	R790427

	10A	30A	63A
d1	2.1	3.1	5.1
d2	4	5	7

	20kV	30kV
D	55	80
B	55	80
F	55	80

Off - circuit operation can be used in oil
 Delta diagram 30 kV 30-63A. 3-7positions (#)



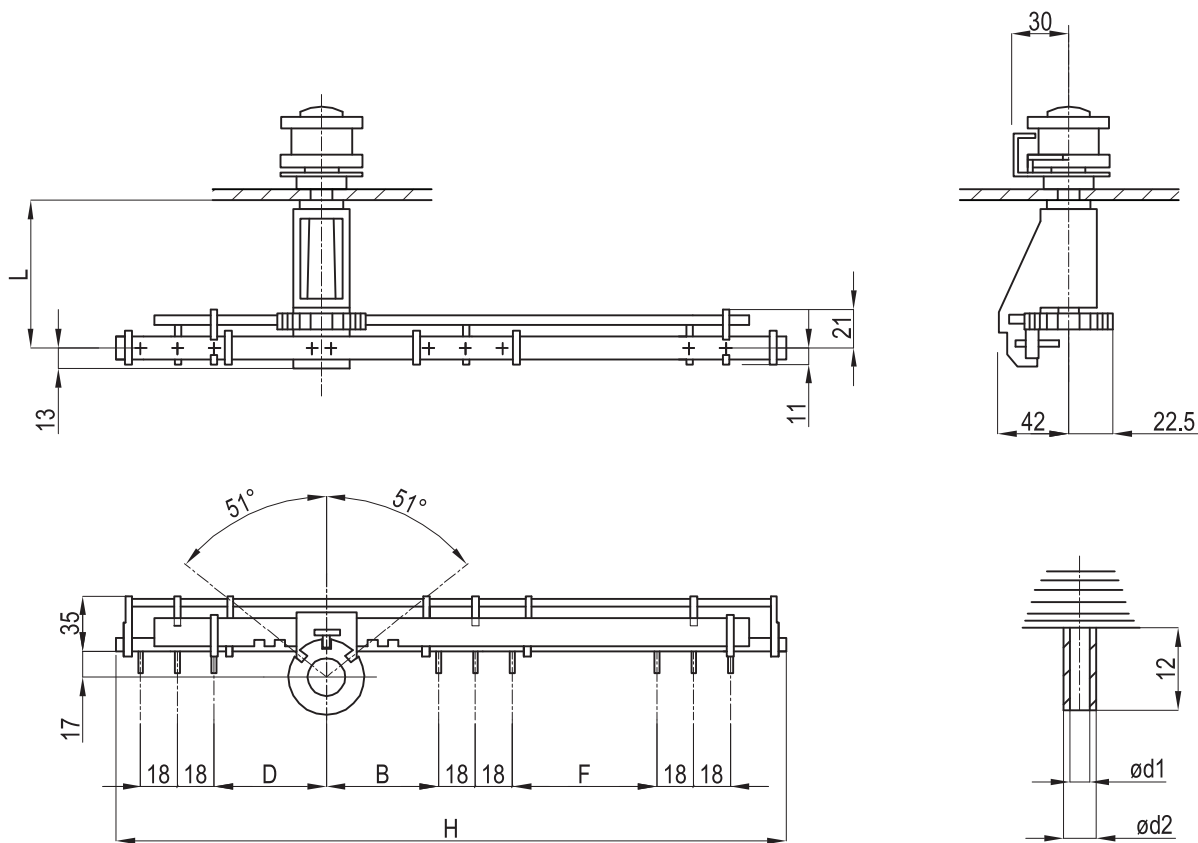
L	NUMBER OF POSITIONS	30 kV		
		H	30A UNIT. NO	63A UNIT. NO
100	3	449	8P790443	8P790423
	4	512	8P790444	8P790424
	5	575	8P790445	8P790425
	6	638	8P790446	8P790426
	7	701	8P790447	8P790427
130	3	449	8R790443	8R790423
	4	512	8R790444	8R790424
	5	575	8R790445	8R790425
	6	638	8R790446	8R790426
	7	701	8R790447	8R790427

	30A	63A
d1	3.1	5.1
d2	5	7

	30kV
D	80
B	80
F	80

(#)Special type with 21mm. distance between contacts for 30 kV.

Off - circuit operation can be used in oil or askarel
 Star diagram 20 to 30 kV 10 - 30A.
 3-5-7 positions

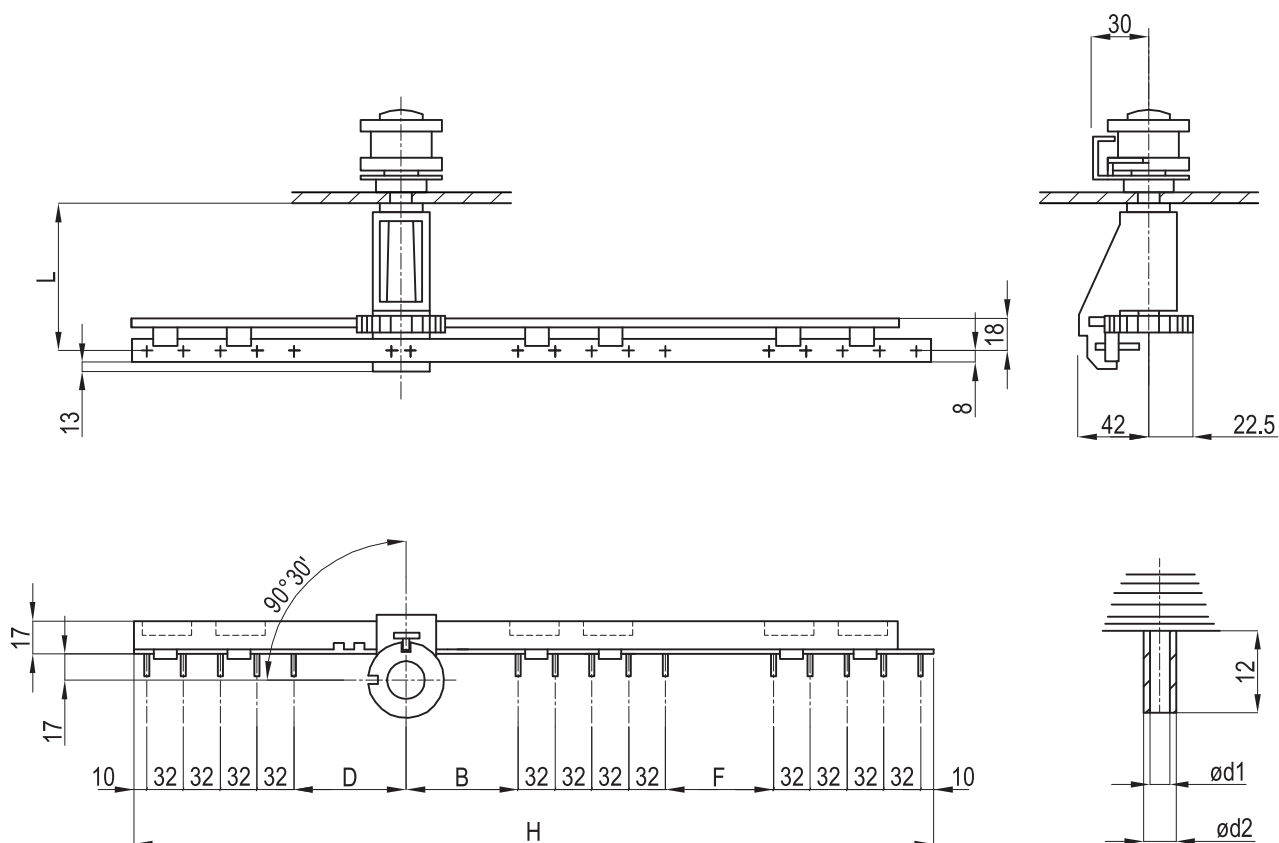


L	NUMBER OF POSITIONS	20 kV			30 kV		
		H	UNIT. NO 10A	UNIT. NO 30A	H	UNIT. NO 10A	UNIT. NO 30A
70	3	347	N780633Y	N780633Z	455	N780433Y	N780433Z
	5	456	N780635Y	N780635Z	563	N780435Y	N780435Z
	7	564	N780637Y	N780637Z	671	N780437Y	N780437Z
100	3	347	P780633Y	P780633Z	455	P780433Y	P780433Z
	5	456	P780635Y	P780635Z	563	P780435Y	P780435Z
	7	564	P780637Y	P780637Z	671	P780437Y	P780437Z
130	3	347	R780633Y	R780633Z	455	N780433Y	R780433Z
	5	456	R780635Y	R780635Z	563	N780435Y	R780435Z
	7	564	R780637Y	R780637Z	671	N780437Y	R780437Z

	10A	30A
d1	2.1	3.1
d2	4	5

	20kV	30kV
D	55	91
B	55	91
F	55	91

Off - circuit operation can be used in oil
 Series parallel coupling 15 - 20 kV 30 - 63A.

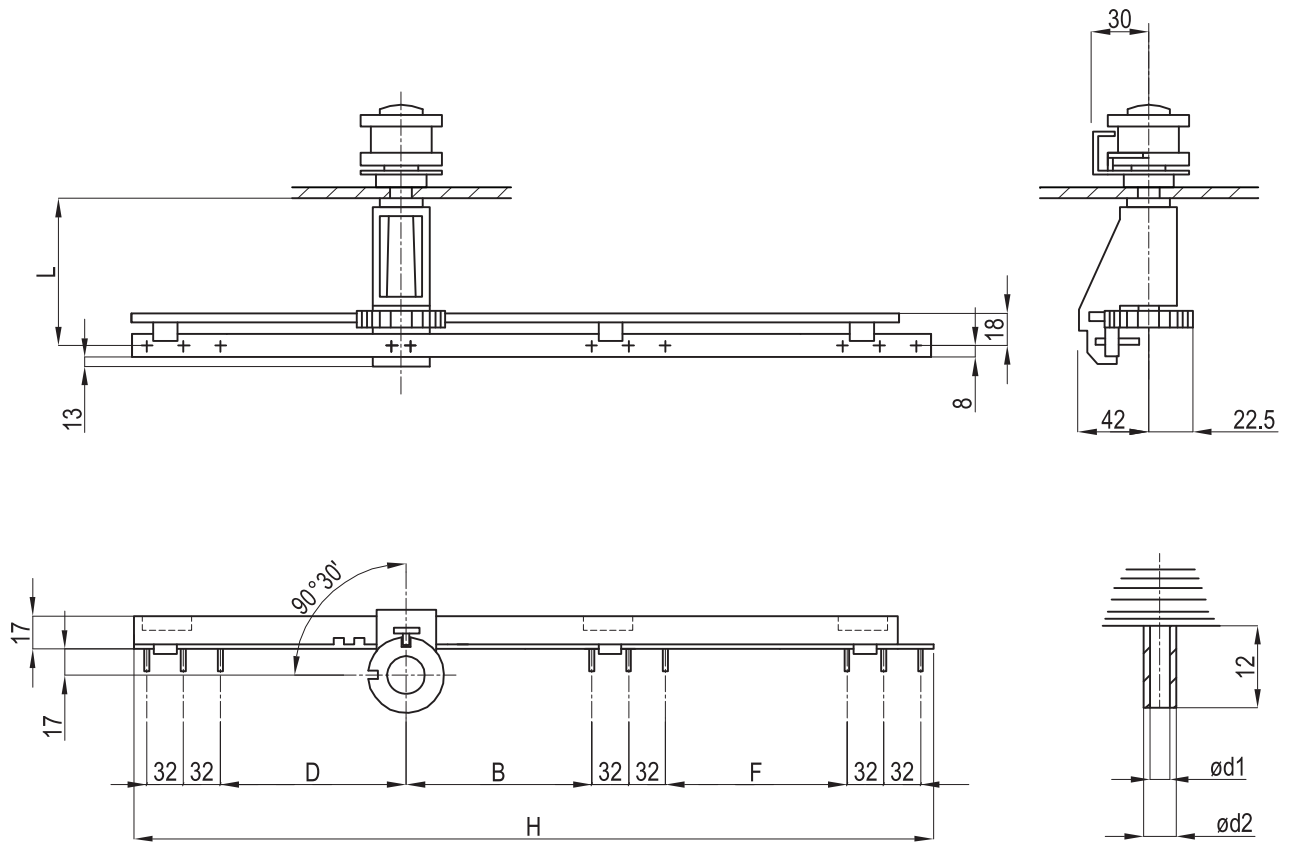


L	NUMBER OF POSITIONS	H	30A UNIT. NO	63A UNIT. NO
50	2	569	M770142	M770122
70	2	569	N770142	N770122
100	2	569	P770142	P770122
130	2	569	R770142	R770122

	30A	63A
d1	3.1	5.1
d2	5	7

	15 - 20KV
D	55
B	55
F	55

Off - circuit operation can be used in oil
 Star - delta coupling 15 - 20 kV 30 - 63A.

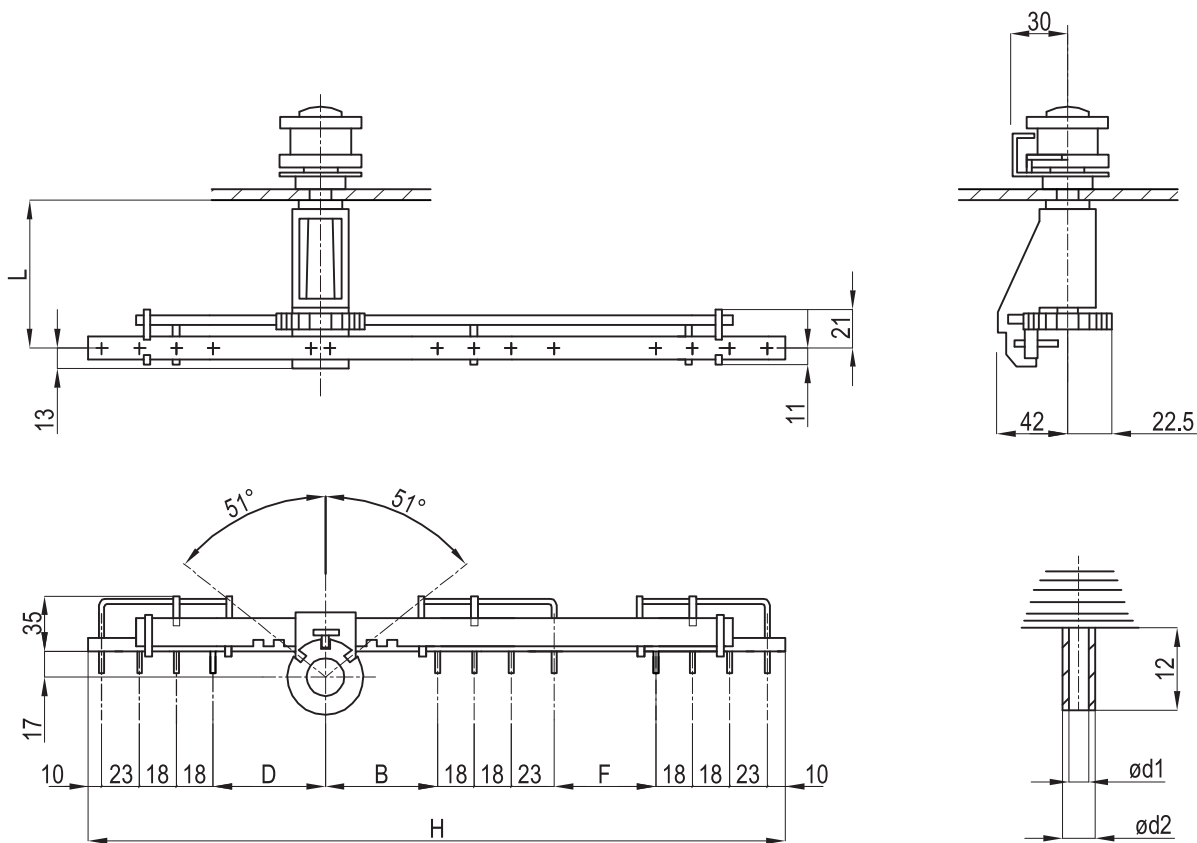


L	NUMBER OF POSITIONS	H	30A UNIT. NO	63A UNIT. NO
50	2	383	M750142	M750122
70	2	383	N750142	N750122
100	2	383	P750142	P750122
130	2	383	R750142	R750122

	30A	63A
d1	3.1	5.1
d2	5	7

	15 - 20KV
D	55
B	55
F	55

Off - circuit operation can be used in oil or askarel
 Common output per phase 20kV 10 to 63A.
 3-5-7 positions

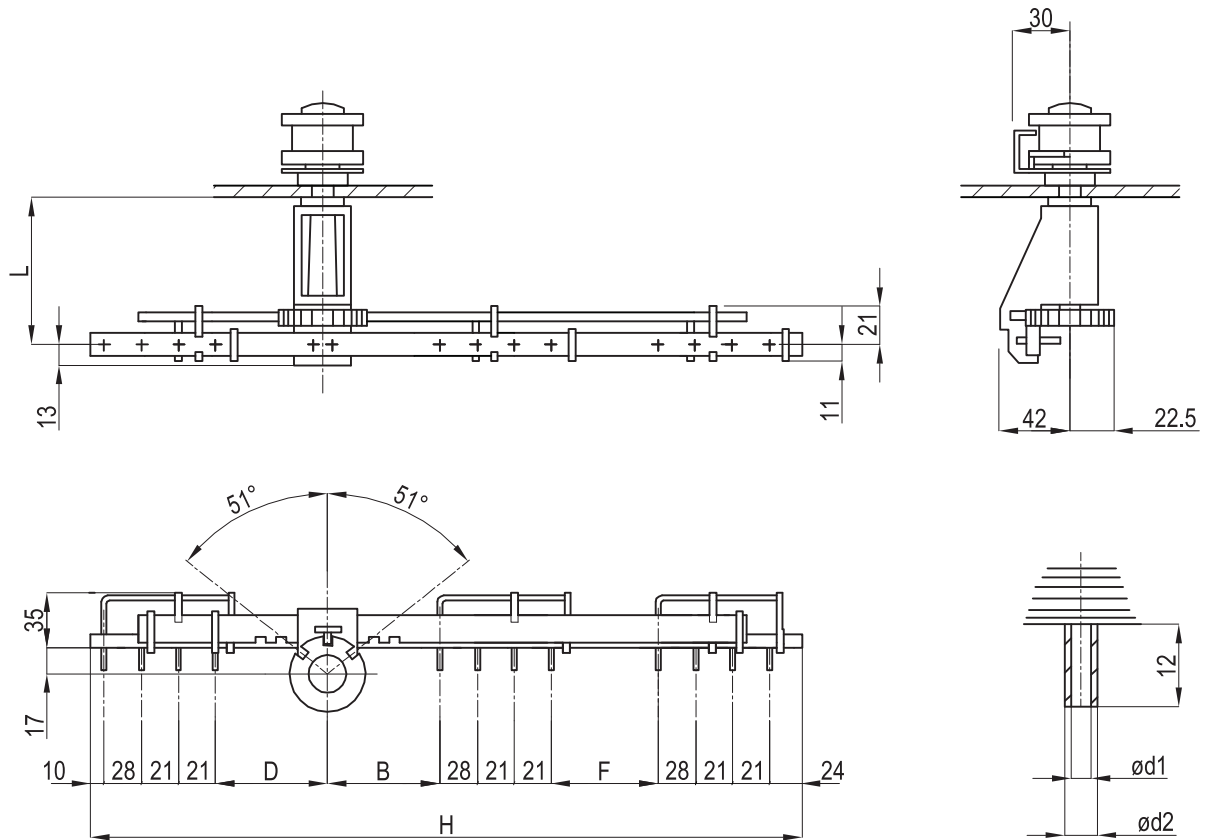


L	NUMBER OF POSITIONS	20 kV			
		H	UNIT. NO 10A	UNIT. NO 30A	UNIT. NO 63A
50	3	392	M760663	M760643	M760623
	5	500	M760665	M760645	M760625
	7	608	M760667	M760647	M760627
70	3	392	N760663	N760643	N760623
	5	500	N760665	N760645	N760625
	7	608	N760667	N760647	N760627
100	3	392	P760663	P760643	P760623
	5	500	P760665	P760645	P760625
	7	608	P760667	P760647	P760627
130	3	392	R760663	R760643	R760623
	5	500	R760665	R760645	R760625
	7	608	R760667	R760647	R760627

	10A	30A	63A
d1	2.1	3.1	5.1
d2	4	5	7

	20kV
D	65
B	65
F	65

Off - circuit operation can be used in oil or askarel
 Common output per phase 30kV 10 to 63A.
 3-5-7 positions

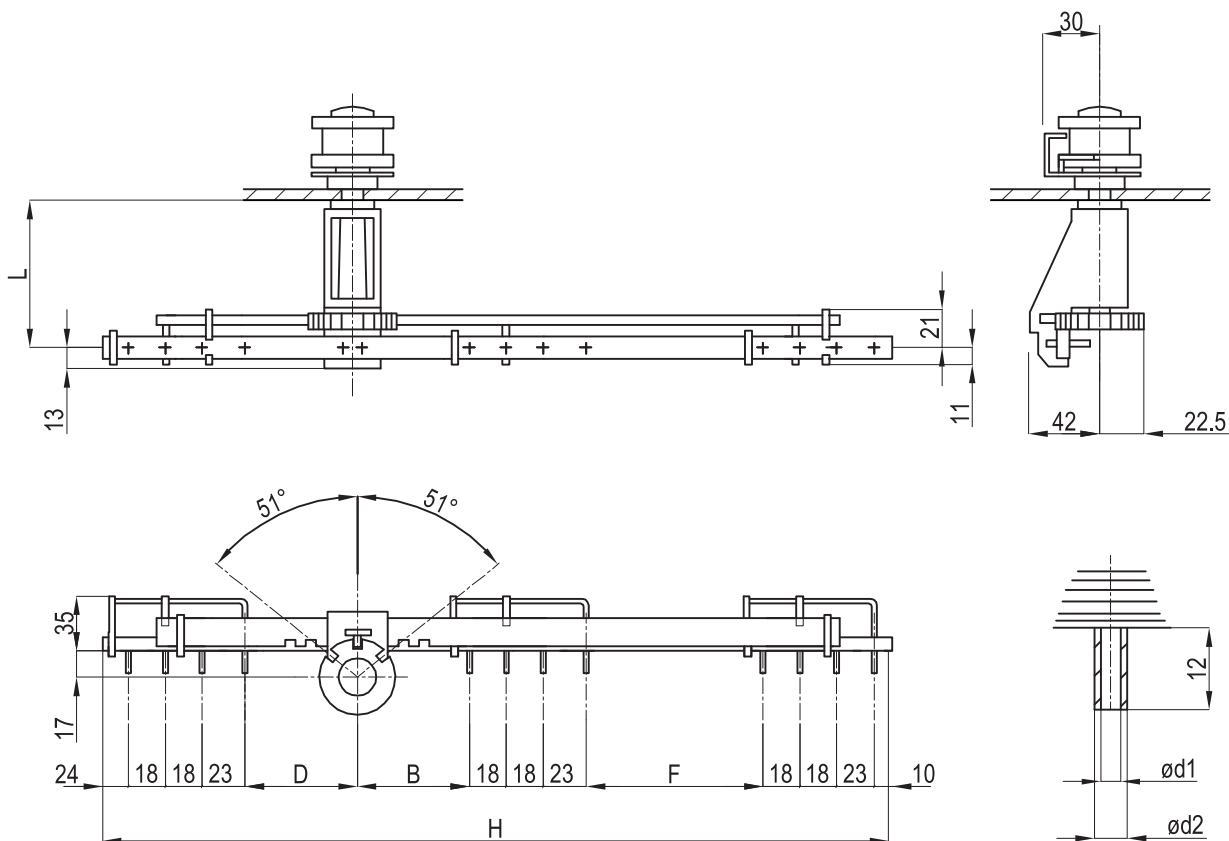


	10A	30A	63A
d1	2.1	3.1	5.1
d2	4	5	7

L	NUMBER OF POSITIONS	30 kV			
		H	UNIT. NO 10A	UNIT. NO 30A	UNIT. NO 63A
100	3	484	8P760663	8P760643	8P760623
	5	610	8P760665	8P760645	8P760625
	7	736	8P760667	8P760647	8P760627
130	3	484	8R760663	8R760643	8R760623
	5	610	8R760665	8R760645	8R760625
	7	736	8R760667	8R760647	8R760627

	30kV
A	80
B	80
C	80

Off - circuit operation can be used in oil or askarel
 Common output per phase 20kV 10 to 63A.
 3-5-7 positions

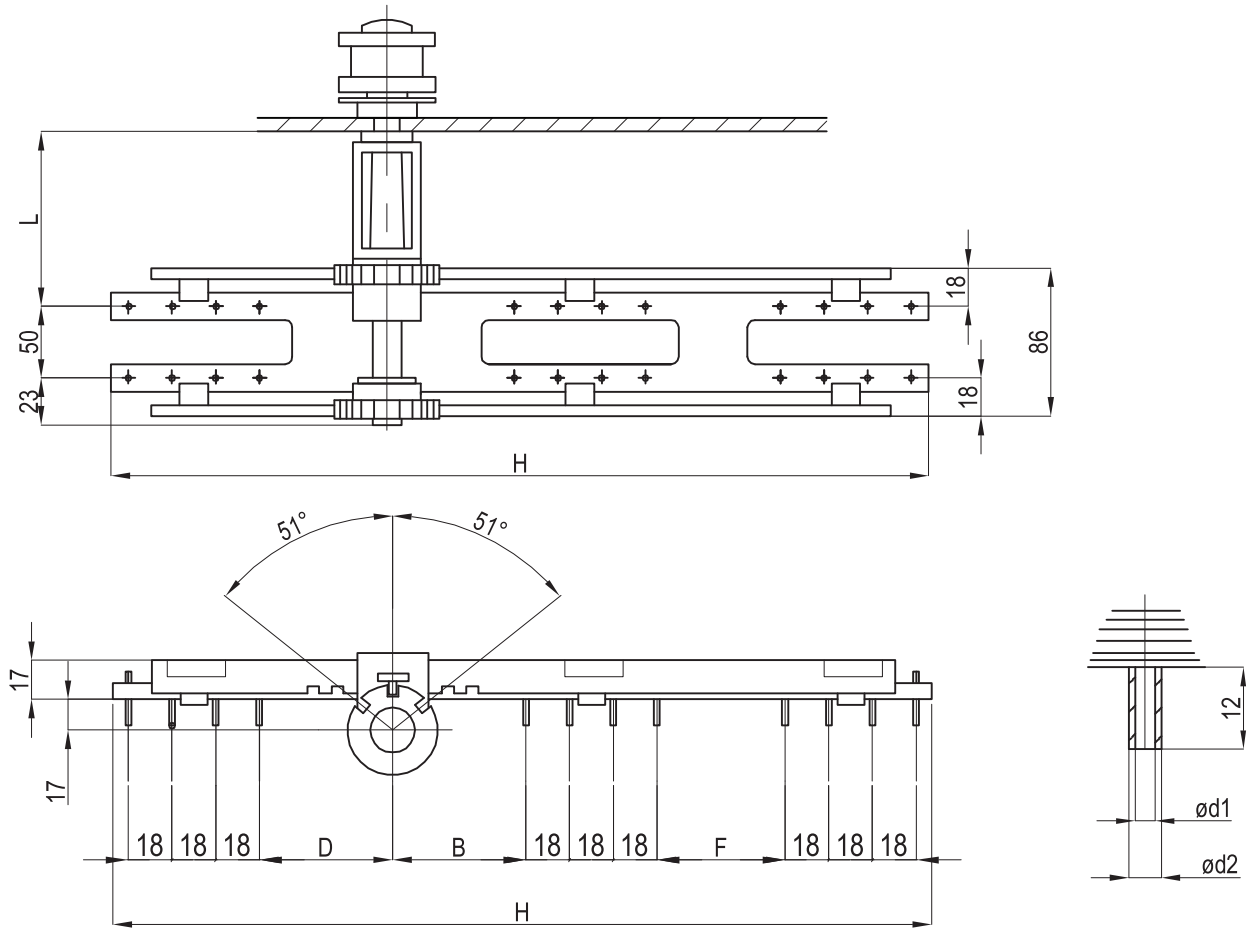


L	NUMBER OF POSITIONS	20 kV			
		H	UNIT. NO 10A	UNIT. NO 30A	UNIT. NO 63A
50	3	495	M730663	M730643	M730623
	5	603	M730665	M730645	M730625
	7	711	M730667	M730647	M730627
70	3	495	N730663	N730643	N730623
	5	603	N730665	N730645	N730625
	7	711	N730667	N730647	N730627
100	3	495	P730663	P730643	P730623
	5	603	P730665	P730645	P730625
	7	711	P730667	P730647	P730627
130	3	495	R730663	R730643	R730623
	5	603	R730665	R730645	R730625
	7	711	R730667	R730647	R730627

	10A	30A	63A
d1	2.1	3.1	5.1
d2	4	5	7

	20kV
D	71
B	71
F	142

Off - circuit operation can be used in oil or askarel
 Two Stages - Delta diagram 20 - 30 kV 30-63A. 3 - 7 positions

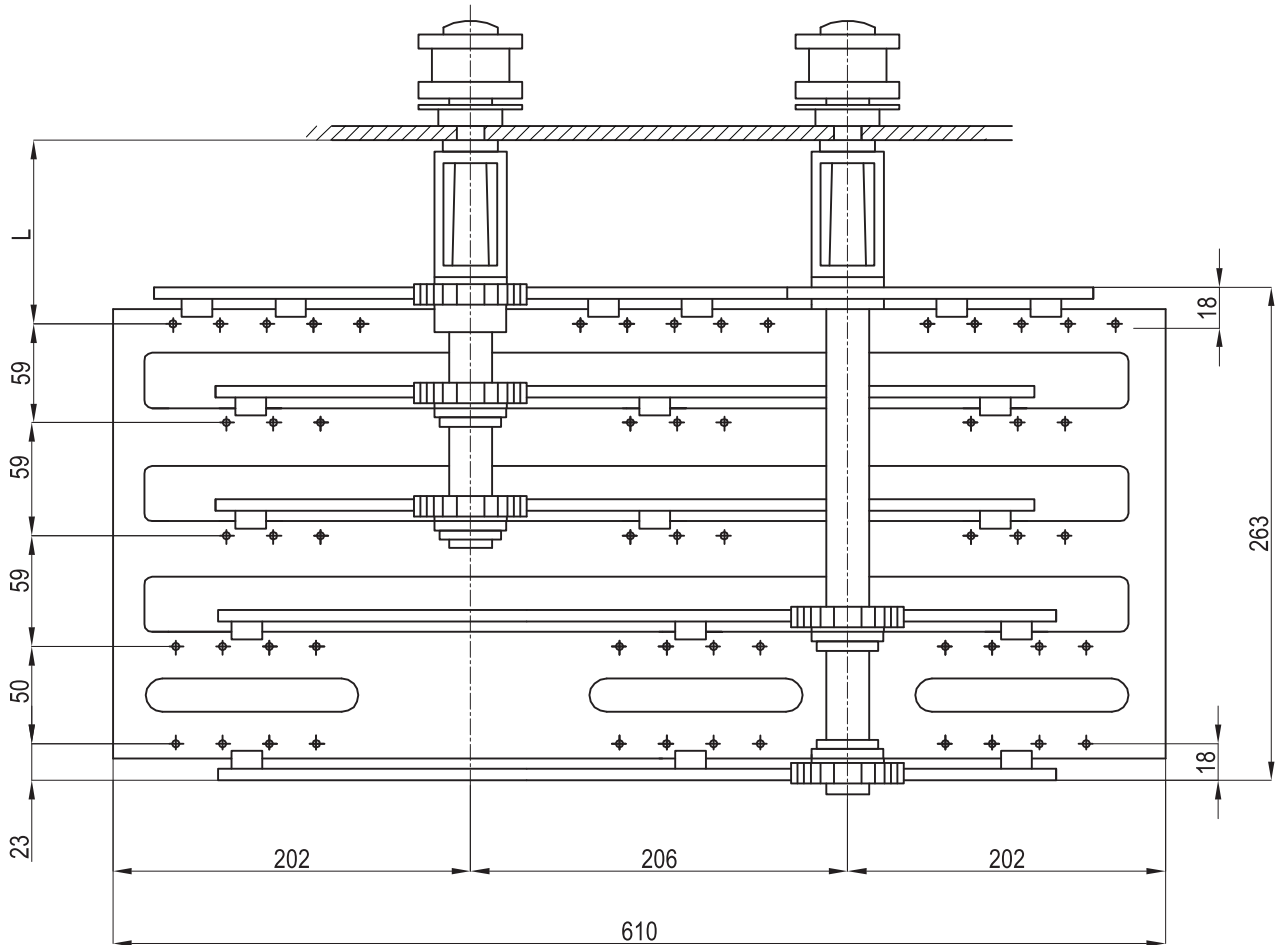


L	NUMBER OF POSITIONS	20 kV				30 kV			
		H	10A UNIT. NO	30A UNIT. NO	63A UNIT. NO	H	10A UNIT. NO	30A UNIT. NO	63A UNIT. NO
50	3	358	M2X790663	M2X790643	M2X790623	--	--	--	--
	4	412	M2X790664	M2X790644	M2X790624	--	--	--	--
	5	466	M2X790665	M2X790645	M2X790625	--	--	--	--
	6	520	M2X790666	M2X790646	M2X790626	--	--	--	--
	7	574	M2X790667	M2X790647	M2X790627	--	--	--	--
70	3	358	N2X790663	N2X790643	N2X790623	433	N2X790463	N2X790443	N2X790423
	4	412	N2X790664	N2X790644	N2X790624	487	N2X790464	N2X790444	N2X790424
	5	466	N2X790665	N2X790645	N2X790625	541	N2X790465	N2X790445	N2X790425
	6	520	N2X790666	N2X790646	N2X790626	595	N2X790466	N2X790446	N2X790426
	7	574	N2X790667	N2X790647	N2X790627	649	N2X790467	N2X790447	N2X790427
100	3	358	P2X790663	P2X790643	P2X790623	433	P2X790463	P2X790443	P2X790423
	4	412	P2X790664	P2X790644	P2X790624	487	P2X790464	P2X790444	P2X790424
	5	466	P2X790665	P2X790645	P2X790625	541	P2X790465	P2X790445	P2X790425
	6	520	P2X790666	P2X790646	P2X790626	595	P2X790466	P2X790446	P2X790426
	7	574	P2X790667	P2X790647	P2X790627	649	P2X790467	P2X790447	P2X790427
130	3	358	R2X790663	R2X790643	R2X790623	433	R2X790463	R2X790443	R2X790423
	4	412	R2X790664	R2X790644	R2X790624	487	R2X790464	R2X790444	R2X790424
	5	466	R2X790665	R2X790645	R2X790625	541	R2X790465	R2X790445	R2X790425
	6	520	R2X790666	R2X790646	R2X790626	595	R2X790466	R2X790446	R2X790426
	7	574	R2X790667	R2X790647	R2X790627	649	R2X790467	R2X790447	R2X790427

	10A	30A	63A
d1	2.1	3.1	5.1
d2	4	5	7

	20kV	30kV
D	55	80
B	55	80
F	55	80

Off - circuit operation can be used in oil or askarel
Multi - stage tap changers



Five - stage tap changer

1 stage, series - parallel coupling : 10 20 kV -30 to 63A

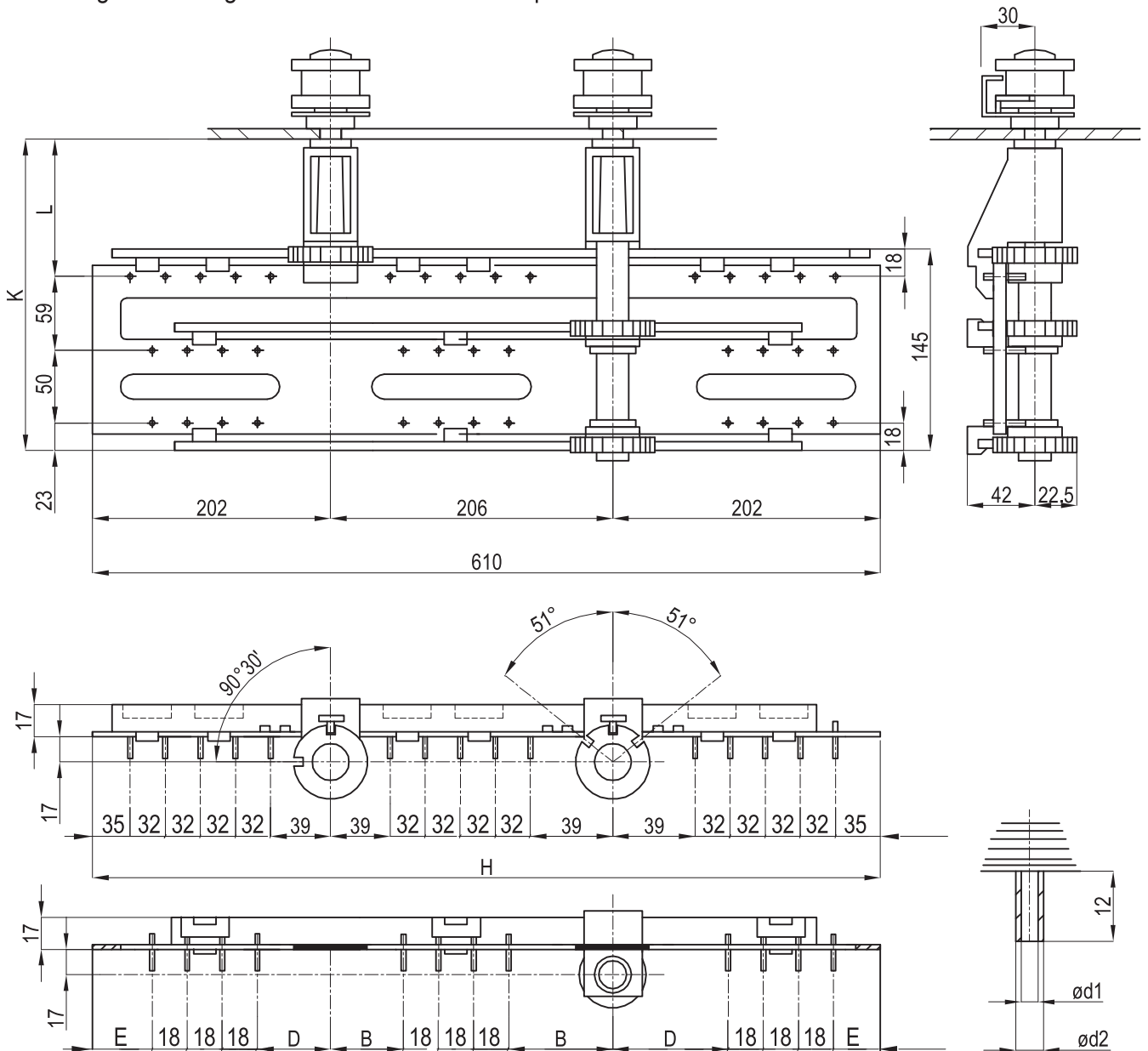
2 stages, star - delta coupling : 15 -20 kV - 30 to 63A

2 stages, delta diagram : 20kV - 30 to 63A

3-5-7 positions - setting 2.5 % per position

Off - circuit operation can be used in oil

1. Stage series parallel coupling 15 - 20 kV 30 - 63A.
2. Stage delta diagram 20 kV 30 - 63A. 3-5-7 positions



L	NUMBER OF POSITIONS	K	30A UNIT. NO	63A UNIT. NO
50	3	182	M799943	M799923
	5		M799945	M799925
	7		M799947	M799927
70	3	202	N799943	N799923
	5		N799945	N799925
	7		N799947	N799927
100	3	232	P799943	P799923
	5		P799945	P799925
	7		P799947	P799927
130	3	262	R799943	R799923
	5		R799945	R799925
	7		R799947	R799927

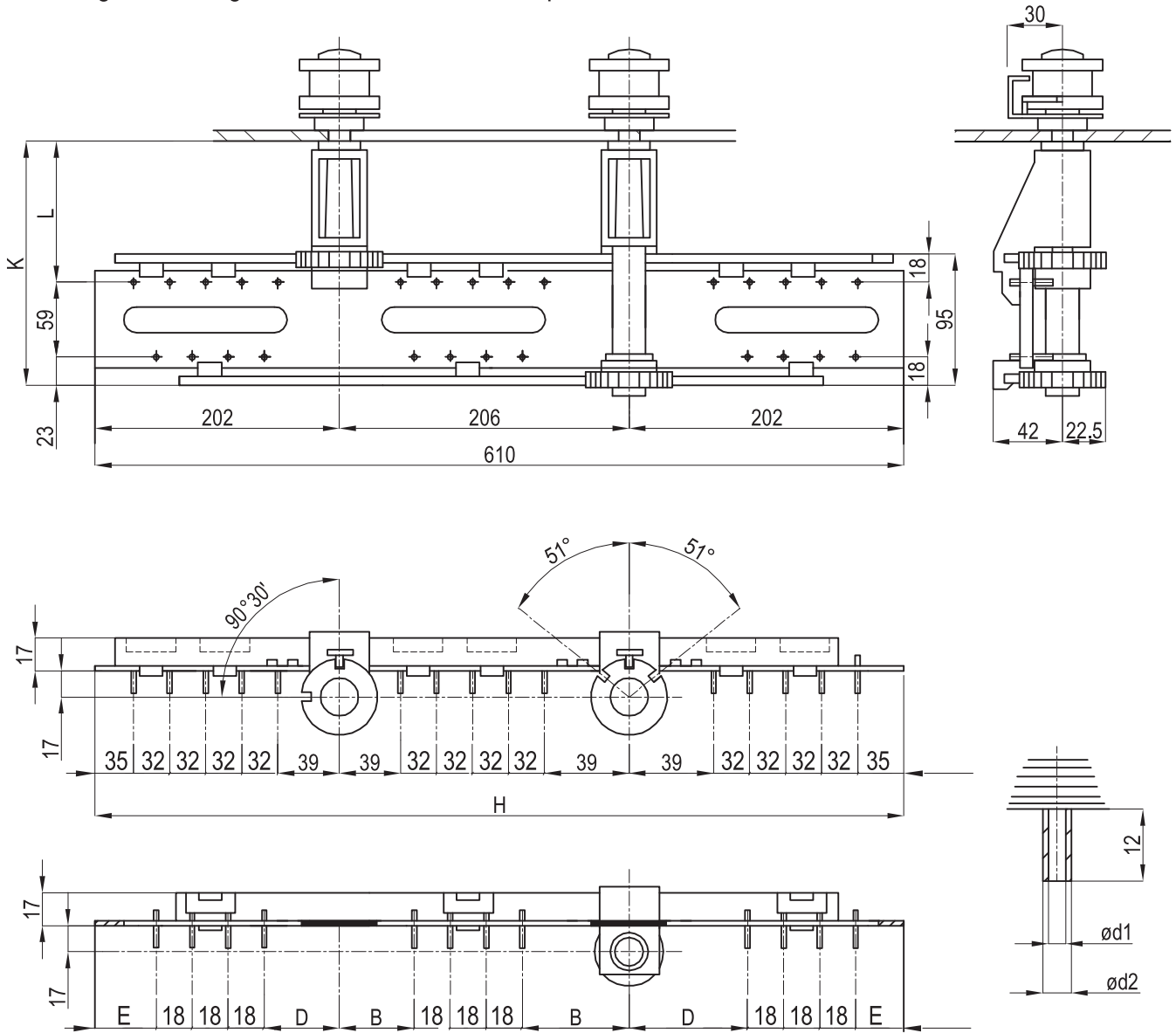
	30A	63A
d1	3.1	5.1
d2	5	7

NUMBER OF POSITIONS	D	B	E
3	73	76	75
5	55	58	57
7	37	40	39

Off - circuit operation can be used in oil

1. Stage series parallel coupling 15 - 20 kV 30 - 63A.

1. Stage delta diagram 20 kV 30 - 63A. 3-5-7 positions

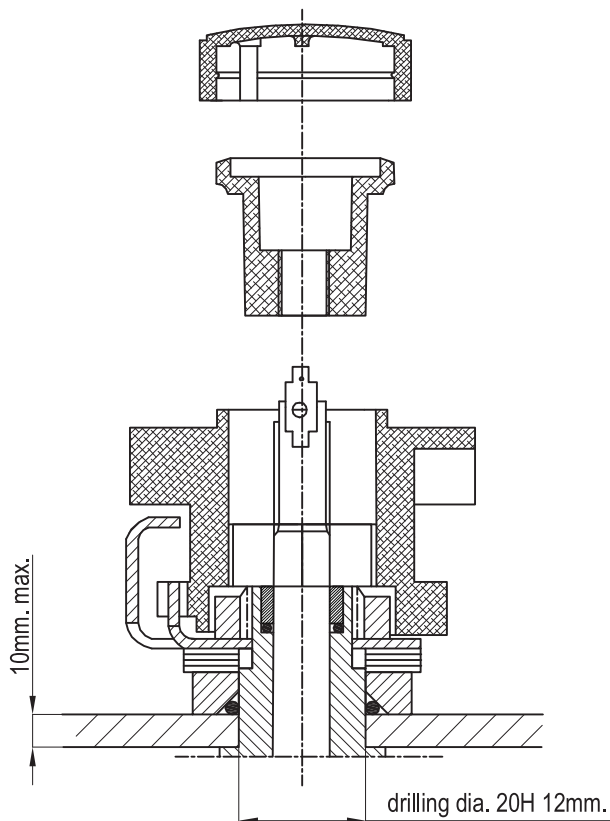
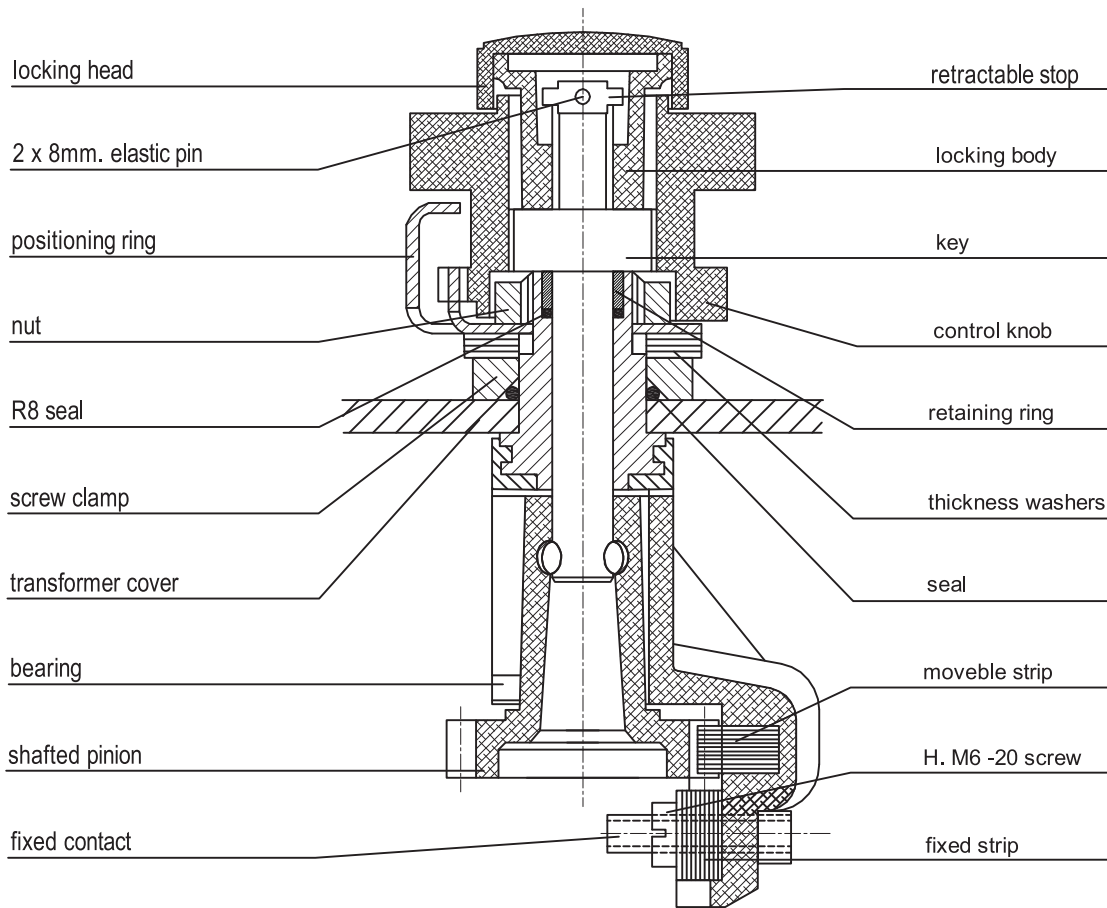


L	NUMBER OF POSITIONS	K	30A UNIT. NO	63A UNIT. NO
50	3	132	M719143	M719123
	5		M719145	M719125
	7		M719147	M719127
70	3	152	N719143	N719123
	5		N719145	N719125
	7		N719147	N719127
100	3	182	P719143	P719123
	5		P719145	P719125
	7		P719147	P719127
130	3	212	R719143	R719123
	5		R719145	R719125
	7		R719147	R719127

	30A	63A
d1	3.1	5.1
d2	5	7

NUMBER OF POSITIONS	D	E	B
3	73	76	75
5	55	58	57
7	37	40	39

Control devices



Fitting the tap changer:

Insert the bearing into the dia. 20 H 12mm. hole

Fit in the following order:

- * the R16 seal
- * the screw clamp
- * the thickness washers
(total thickness cover + washers: 10mm.)
- * the positioning ring
- * the nut

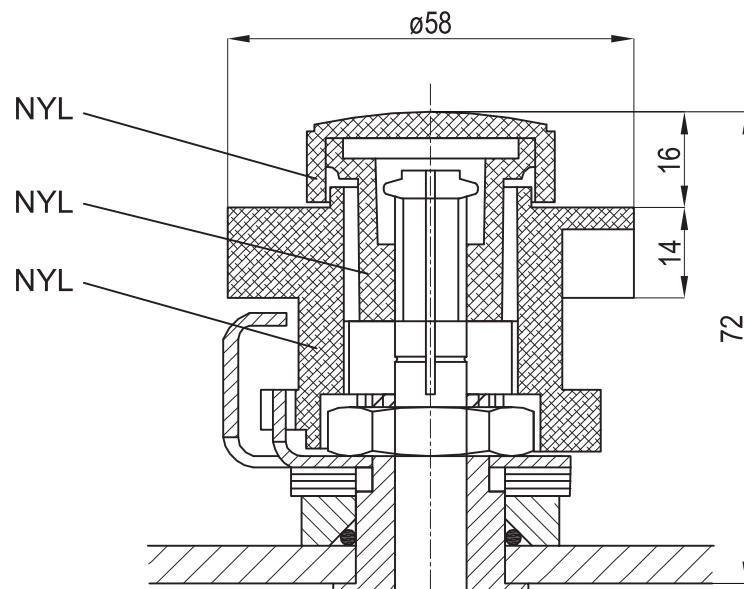
After clamping up, install:

- * the R8 seal
- * the retaining ring
- * the key
- * the control knob
- * the locking body

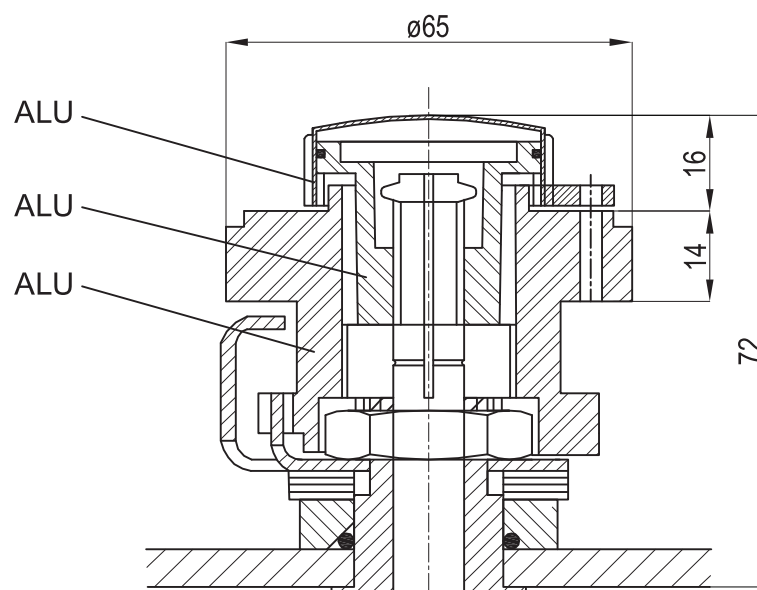
Trip the retractable stop

- * fit the locking head
- * if applicable, screw on the protective cover.

Control devices



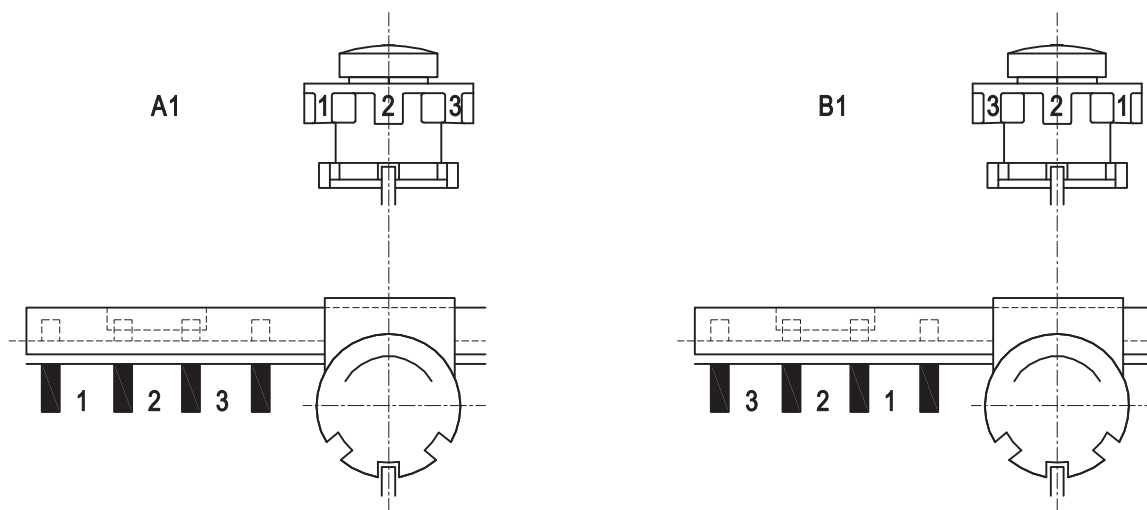
Code No: 55 662
Standard type



Code No: 55 664
Aluminium padlockable type

Numbering of the positions

KNOB NUMBERING



WHEN ORDERING PLEASE QUOTE:

- 1 - The tap changer unit no.
- 2 - The voltage class current and type of setting or coupling.
- 3 - Control device no.
- 4 - The language on the control device.
- 5 - Number of positions.
- 6 - The indication of the repeater disc (A1, B1)
- 7 - Dimensions of the fixed contacts ($\varnothing d1$ and $\varnothing d2$)
- 8 - L, e, x, w dimensions from the tables.

For special setups not shown in the catalogue please consult us.