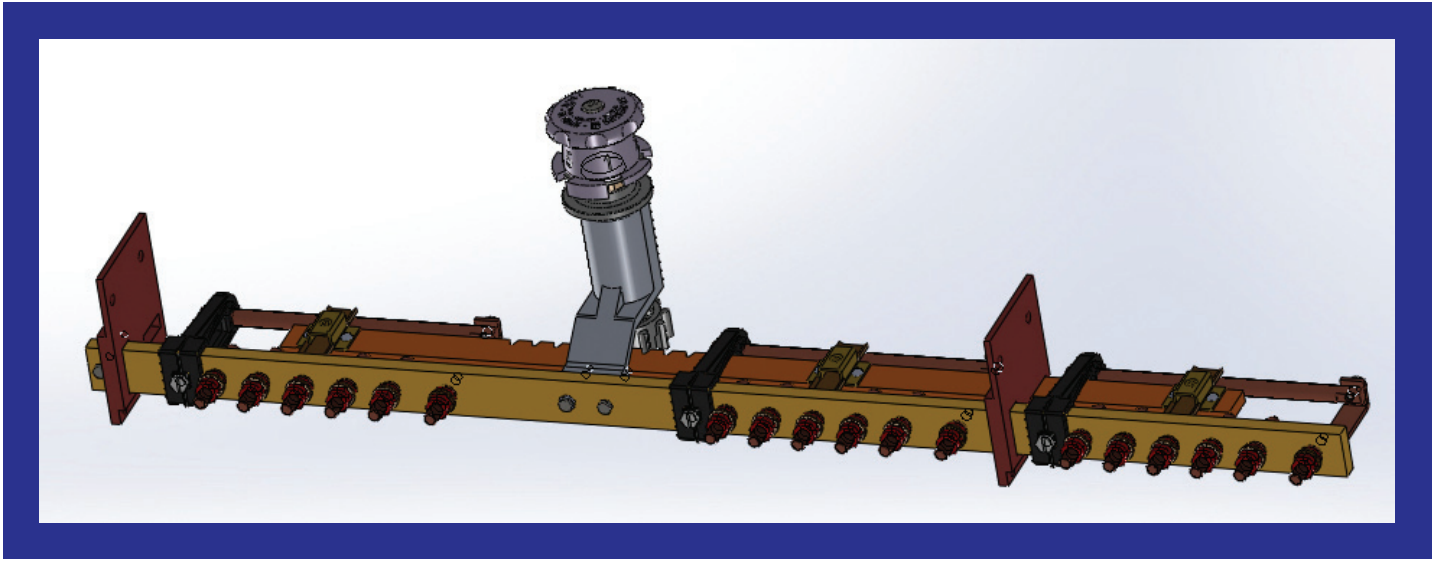


ER KAR

Transformer
Accessories and Equipments



EKM

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 91 and 131 mm.

Driving mechanism can be either on the edge or in the middle of the phases.

Connection diagrams in page EKM 2 can be applied in any variation to all types.

These tap changers are bolted together with supports, under transformer cover and allow strong construction.

ASSEMBLY

A notch is provided to mark each position. For operation, the notch must be released by applying an axial pull on the control knob. Once the knob is in the desired position it will drop into the respective space by the help of a high tension spring. This process is clearly marked on control knob as; " LIFT - TURN - SWITCH ON "

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.

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

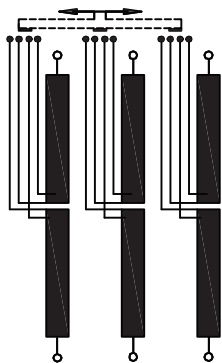
CURRENT	CONTACT INNER DIA. (For cable connection)
30 A	ø 3.1 mm.
63 A	ø 5.1 mm.
120 A	ø 8.1 mm.

VOLTAGE CLASS

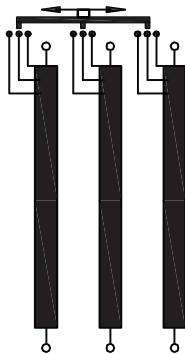
VOLTAGE CLASS	B. I. L.
10 kV	75 kV
15 kV	95 kV
20 kV	125 kV
30 kV	170 kV

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

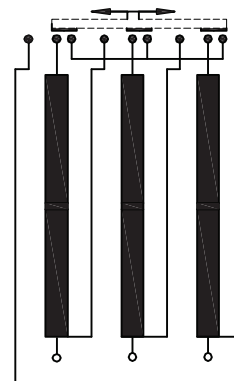
Usual diagram



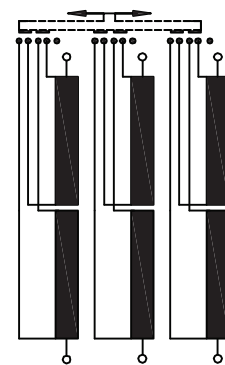
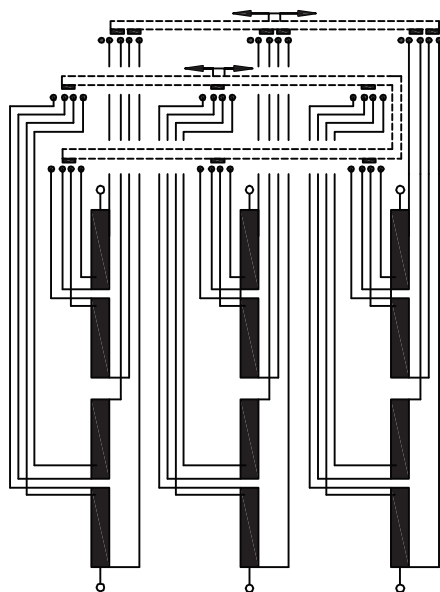
setting for delta transformer



setting for star transformer



star - delta coupling

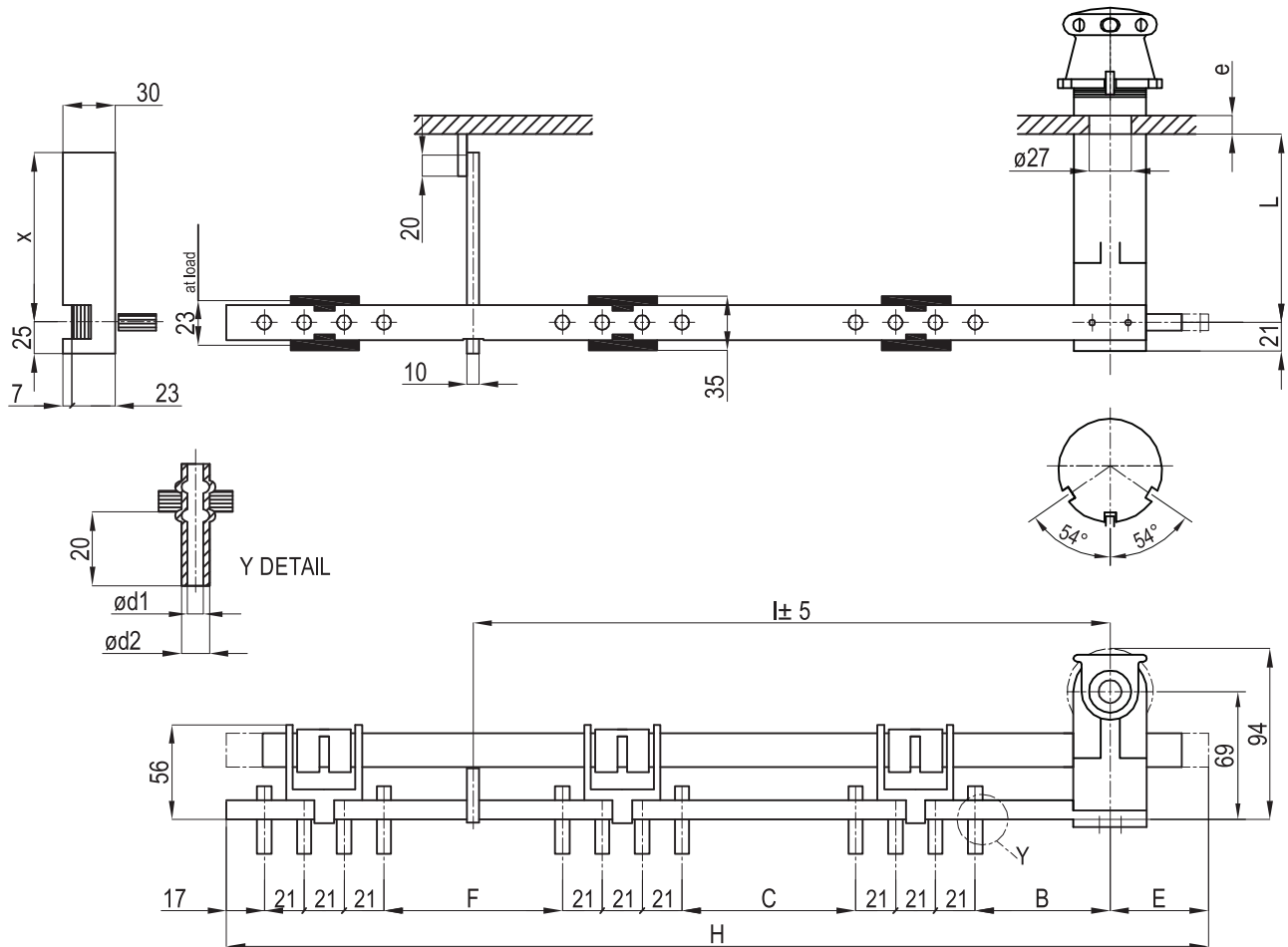


series - parallel coupling

Typical combination :

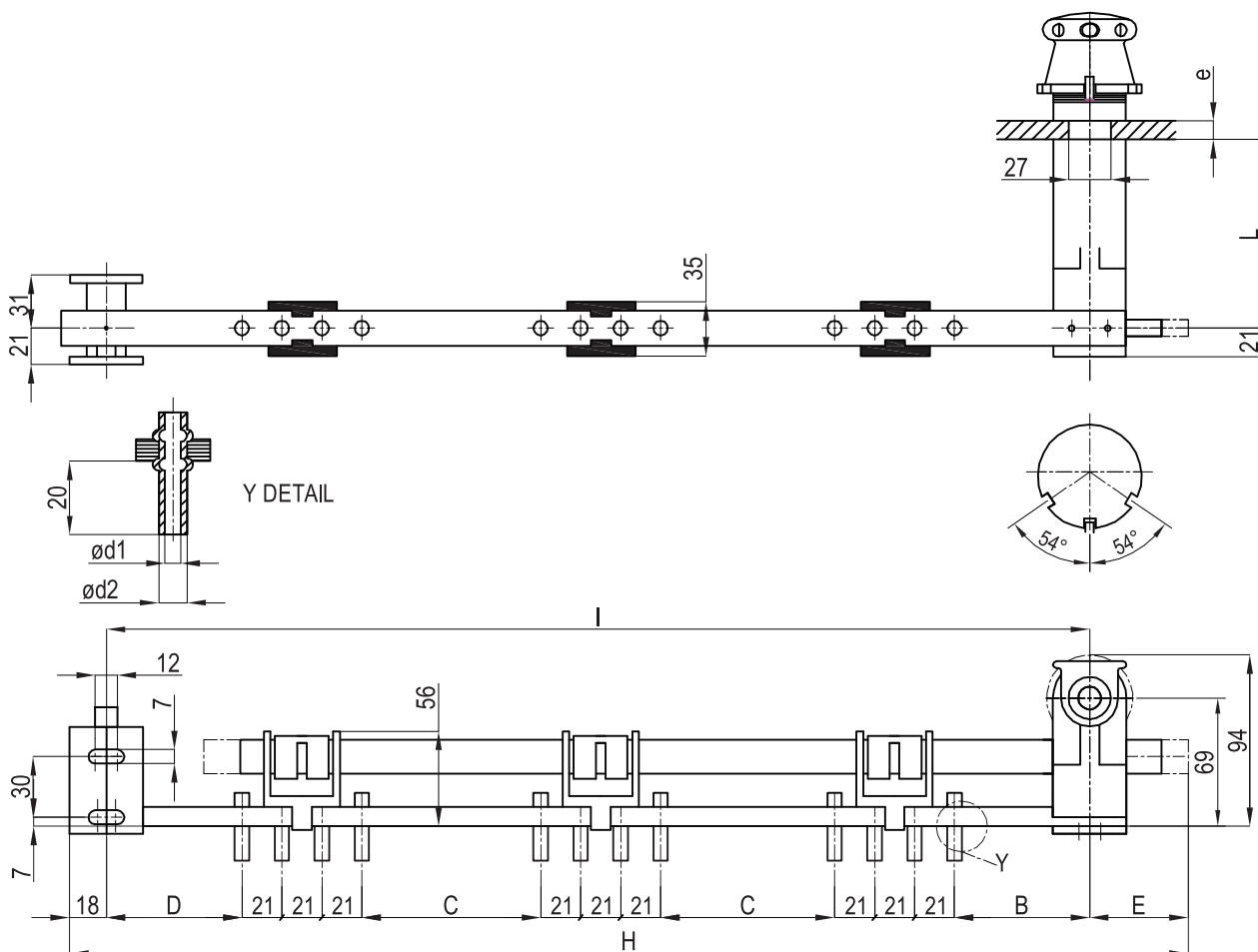
- * 1 stage, series - parallel coupling
- * 2 stages, delta diagram - setting $\pm 2,5\%$.

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



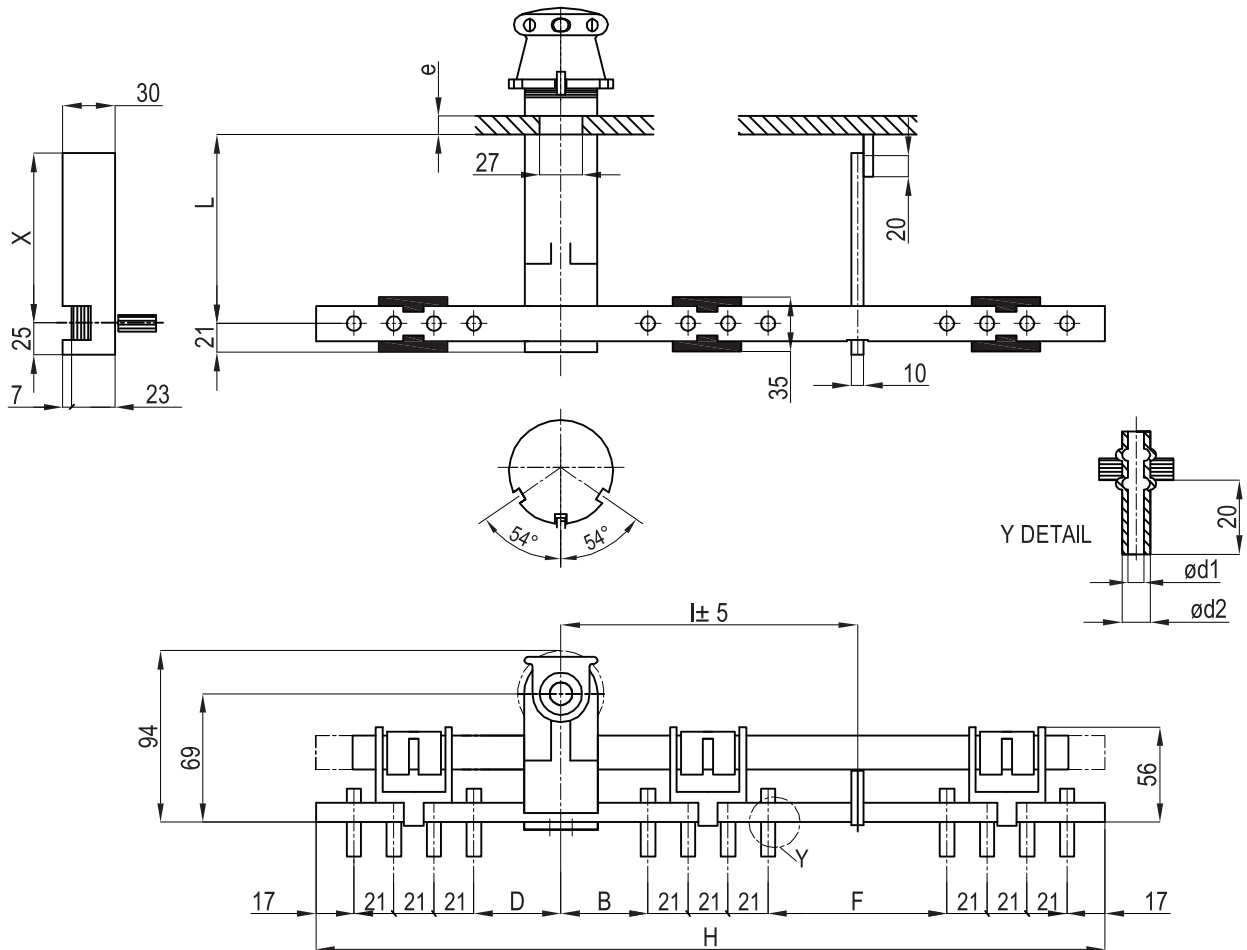
VOLTAGE CLASS kV	NUMBER OF POSITIONS	H	I	E	B	C	F	$\phi d1$	$\phi d2$	UNIT No	UNIT No	UNIT No	UNIT No
										30A	30A	63A	63A
										d1= 3.1 d2= 5	d1= 3.1 d2= 5	d1= 5.1 d2= 7	d1= 5.1 d2= 7
										L = 91 X = 85	L = 131 X = 120	L = 91 X = 85	L = 131 X = 120
20	3	503	313	72	84	65	76	8.1	12	H.697643	K.697643	H.697623	K.697623
	4	587	355	93	84	65	76	8.1	12	H.697644	K.697644	H.697624	K.697624
	5	671	397	114	84	65	76	8.1	12	H.697645	K.697645	H.697625	K.697625
	6	755	439	135	84	65	76	8.1	12	H.697646	K.697646	H.697626	K.697626
	7	839	481	156	84	65	76	8.1	12	H.697647	K.697647	H.697627	K.697627
30	3	583	386	72	125	90	90	8.1	12	H.697443	K.697443	H.697423	K.697423
	4	667	428	93	125	90	90	8.1	12	H.697444	K.697444	H.697424	K.697424
	5	751	470	114	125	90	90	8.1	12	H.697445	K.697445	H.697425	K.697425
	6	835	512	135	125	90	90	8.1	12	H.697446	K.697446	H.697426	K.697426
	7	919	554	156	125	90	90	8.1	12	H.697447	K.697447	H.697427	K.697427

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



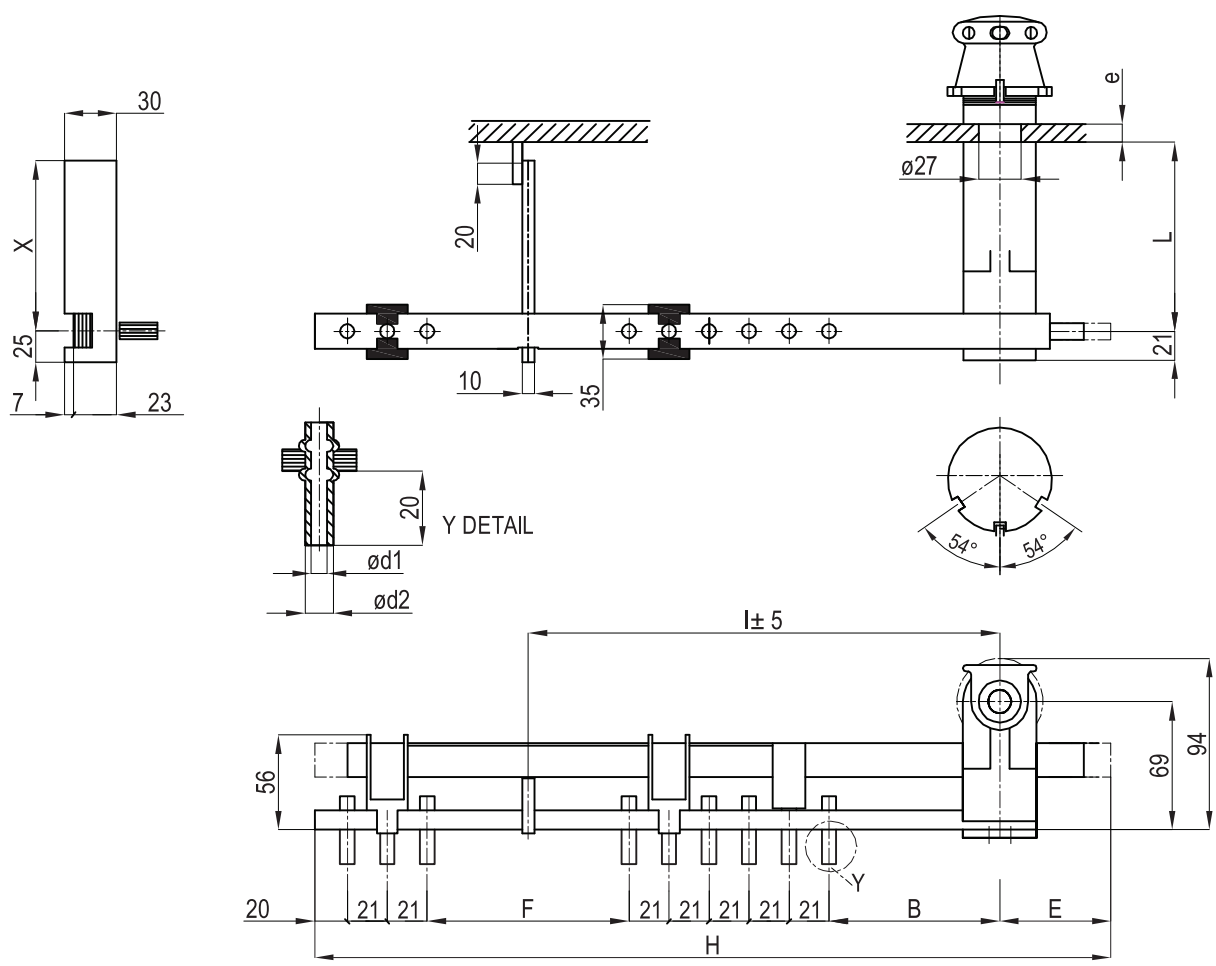
VOLTAGE CLASS KV	NUMBER OF POSITIONS	H	I	D	E	C	B	ø d1	ød2	UNIT No	UNIT No	UNIT No	UNIT No
										30A	30A	63A	63A
										d1= 3.1 d2=5	d1= 3.1 d2=5	d1= 5.1 d2=7	d1= 5.1 d2=7
										L = 91	L = 131	L = 91	L = 131
20	3	569	479	76	72	65	84	8.1	12	H.696643	K.696643	H.696623	K.696623
	4	653	542	76	93	65	84	8.1	12	H.696644	K.696644	H.696624	K.696624
	5	737	605	76	114	65	84	8.1	12	H.696645	K.696645	H.696625	K.696625
	6	821	668	76	135	65	84	8.1	12	H.696646	K.696646	H.696626	K.696626
	7	905	731	76	156	65	84	8.1	12	H.696647	K.696647	H.696627	K.696627
30	3	701	611	117	72	90	125	8.1	12	H.696443	K.696443	H.696423	K.696423
	4	785	674	117	93	90	125	8.1	12	H.696444	K.696444	H.696424	K.696424
	5	869	737	117	114	90	125	8.1	12	H.696445	K.696445	H.696425	K.696425
	6	953	800	117	135	90	125	8.1	12	H.696446	K.696446	H.696426	K.696426
	7	1037	863	117	156	90	125	8.1	12	H.696447	K.696447	H.696427	K.696427

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



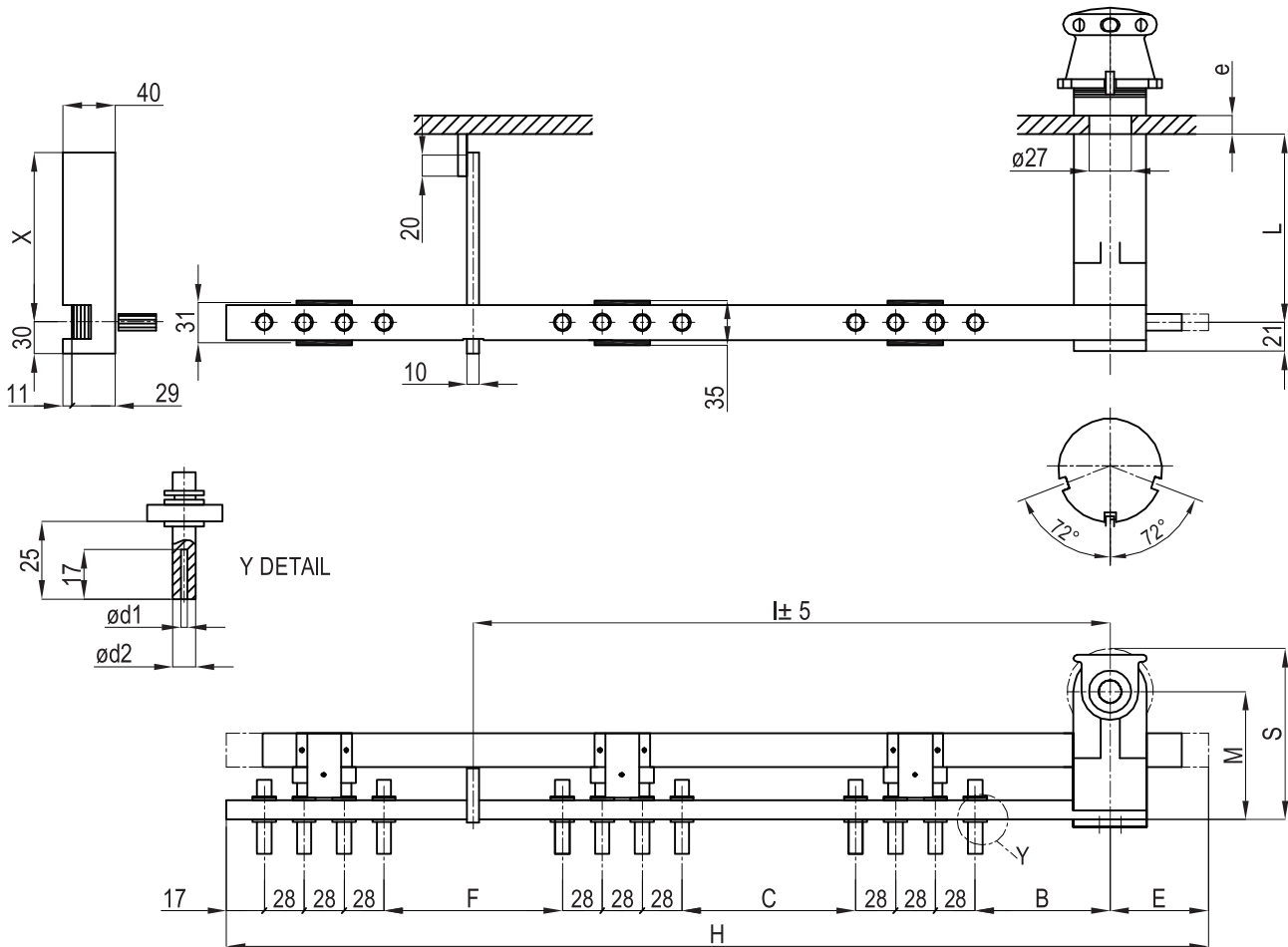
VOLTAGE CLASS KV	NUMBER OF POSITIONS	H	I	D	B	F	ø d1	ød2	UNIT No	UNIT No	UNIT No	UNIT No
									30A	30A	63A	63A
									d1= 3.1 d2= 5	d1= 3.1 d2= 5	d1= 5.1 d2= 7	d1= 5.1 d2= 7
									L = 91 X = 85	L = 131 X = 120	L = 91 X = 85	L = 131 X = 120
20	3	551	227	105	105	118	8.1	12	H.693643	K.693643	H.693623	K.693623
	4	572	227	105	84	97	8.1	12	H.693644	K.693644	H.693624	K.693624
	5	593	227	84	84	76	8.1	12	H.693645	K.693645	H.693625	K.693625
	6	656	248	84	84	76	8.1	12	H.693646	K.693646	H.693626	K.693626
	7	719	269	84	84	76	8.1	12	H.693647	K.693647	H.693627	K.693627
30	3	647	275	146	146	132	8.1	12	H.693443	K.693443	H.693423	K.693423
	4	668	275	146	125	111	8.1	12	H.693444	K.693444	H.693424	K.693424
	5	689	275	125	125	90	8.1	12	H.693445	K.693445	H.693425	K.693425
	6	752	296	125	125	90	8.1	12	H.693446	K.693446	H.693426	K.693426
	7	815	317	125	125	90	8.1	12	H.693447	K.693447	H.693427	K.693427

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



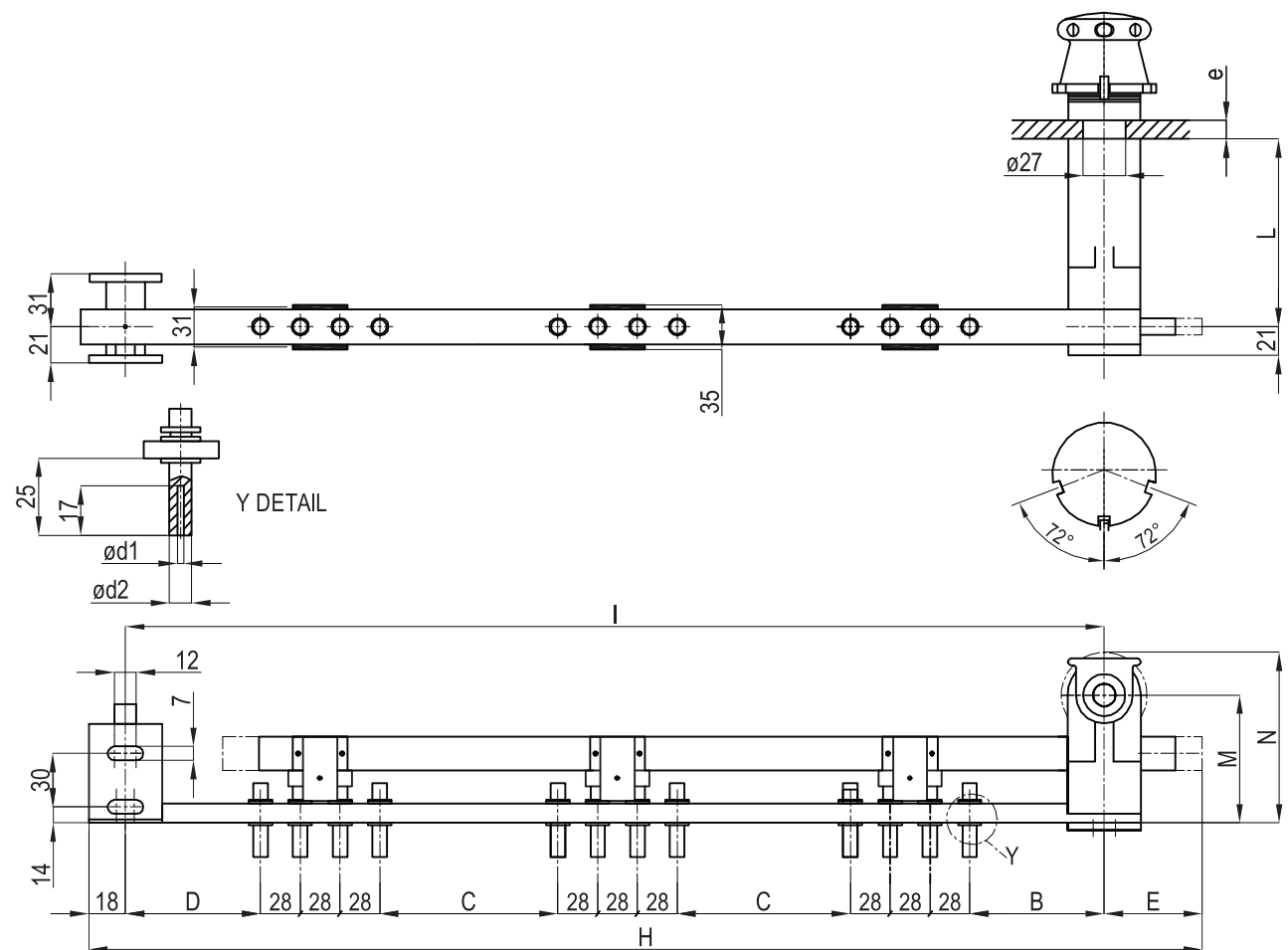
VOLTAGE CLASS KV	NUMBER OF POSITIONS	H	I	E	B	F	$\phi d1$	$\phi d2$	UNIT No	UNIT No	UNIT No	UNIT No
									30A	30A	63A	63A
									d1= 3.1 d2= 5	d1= 3.1 d2= 5	d1= 5.1 d2= 7	d1= 5.1 d2= 7
									L = 91 X = 85	L = 131 X = 120	L = 91 X = 85	L = 131 X = 120
20	3	373	214	72	84	50	8.1	12	H.687643	K.687643	H.687623	K.687623
	4	457	256	93	84	50	8.1	12	H.687644	K.687644	H.687624	K.687624
	5	541	298	114	84	50	8.1	12	H.687645	K.687645	H.687625	K.687625
	6	625	340	135	84	50	8.1	12	H.687646	K.687646	H.687626	K.687626
	7	709	382	156	84	50	8.1	12	H.687647	K.687647	H.687627	K.687627
30	3	414	255	72	125	50	8.1	12	H.687443	K.687443	H.687423	K.687423
	4	498	297	93	125	50	8.1	12	H.687444	K.687444	H.687424	K.687424
	5	582	339	114	125	50	8.1	12	H.687445	K.687445	H.687425	K.687425
	6	666	381	135	125	50	8.1	12	H.687446	K.687446	H.687426	K.687426
	7	750	423	156	125	50	8.1	12	H.687447	K.687447	H.687427	K.687427

Off - circuit operation can be used in oil
 Delta diagram 20 - 30 kV 120 A. 3 - 5 positions



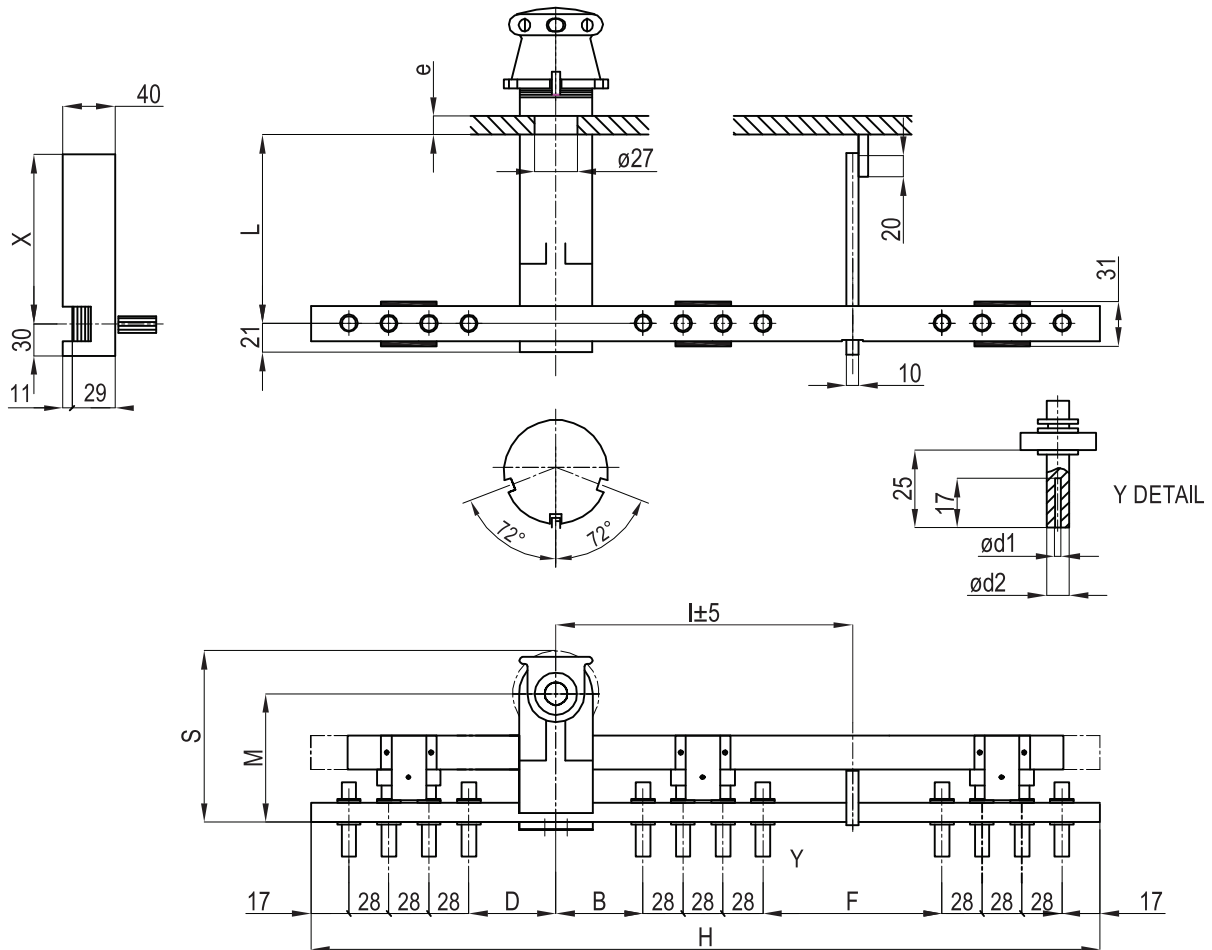
VOLTAGE CLASS kV	NUMBER OF POSITIONS	H	I	E	B	C	F	M	S	$\phi d1$	$\phi d2$	UNIT No	UNIT No		
												120A		120A	
												d1= 8.1	d2= 12	d1= 8.1	d2= 12
20	3	587	364	86	90	71	71	76	101	8.1	12	H.697613	K.697613		
	4	699	420	114	90	71	71	76	101	8.1	12	H.697614	K.697614		
	5	811	476	142	90	71	71	76	101	8.1	12	H.697615	K.697615		
30	3	675	440	86	130	95	95	76	101	8.1	12	H.697413	K.697413		
	4	787	496	114	130	95	95	76	101	8.1	12	H.697414	K.697414		
	5	899	552	142	130	95	95	76	101	8.1	12	H.697415	K.697415		

Off - circuit operation can be used in oil
 Delta diagram 20 - 30 kV 120 A. 3 - 5 positions



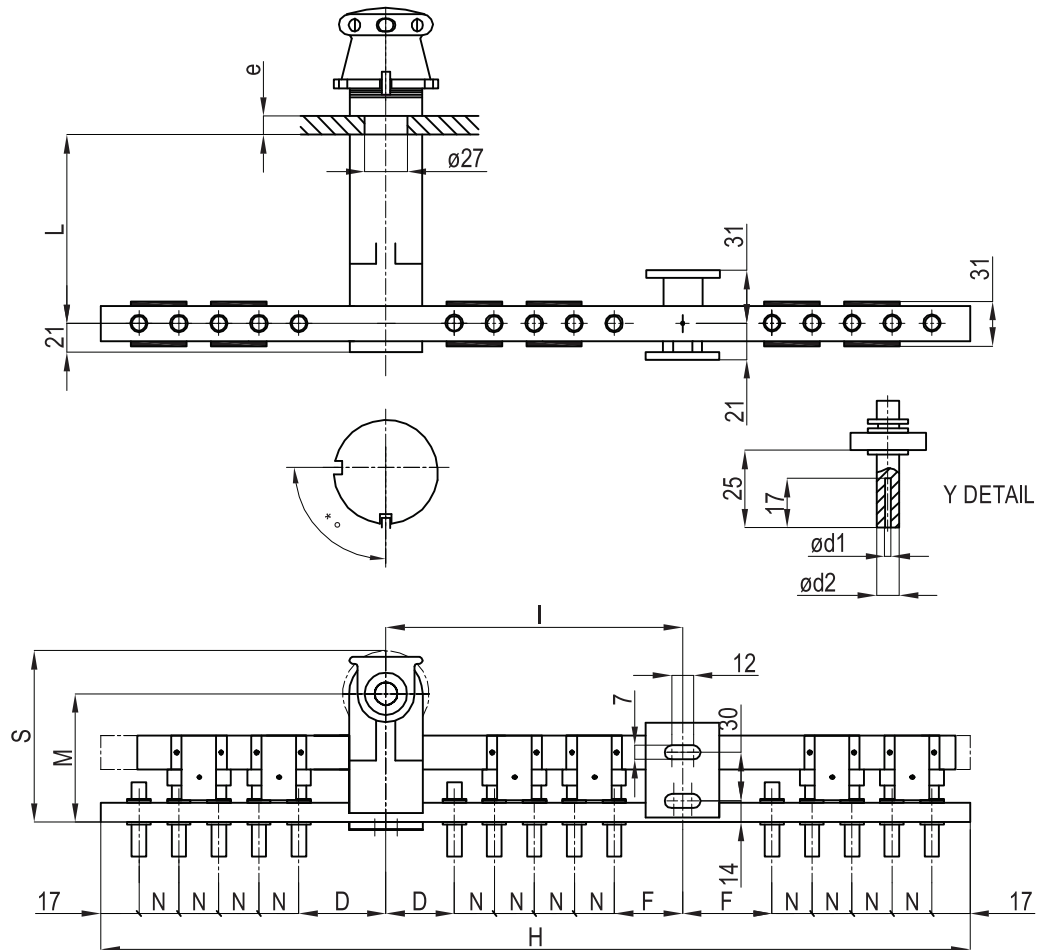
VOLTAGE CLASS KV	NUMBER OF POSITIONS	H	I	D	E	B	C	M	S	$\phi d1$	$\phi d2$	UNIT No 120A	
												d1= 8.1 d2= 12	d1= 8.1 d2= 12
20	3	670	566	82	86	90	71	76	101	8.1	12	H.696613	K.696613
	4	782	650	82	114	90	71	76	101	8.1	12	H.696614	K.696614
	5	894	734	82	142	90	71	76	101	8.1	12	H.696615	K.696615
30	3	798	694	122	86	130	95	76	101	8.1	12	H.696413	K.696413
	4	910	778	122	114	130	95	76	101	8.1	12	H.696414	K.696414
	5	1022	862	122	142	130	95	76	101	8.1	12	H.696415	K.696415

Off - circuit operation can be used in oil
 Delta diagram 20 - 30 kV 120 A. 3 - 5 positions



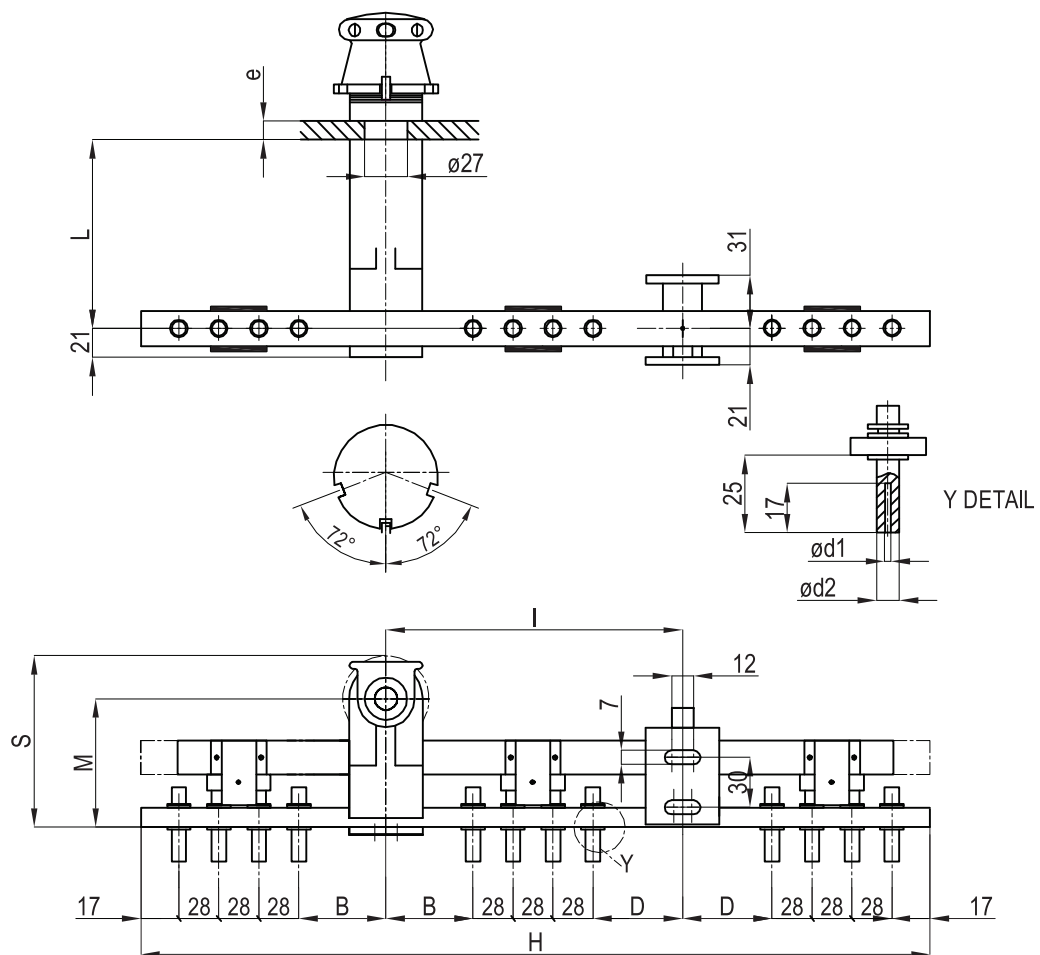
VOLTAGE CLASS kV	NUMBER OF POSITIONS	H	I	D	B	F	M	S	$\phi d1$	$\phi d2$	UNIT No 120A d1= 8.1 d2= 12	
											L = 91 X = 85	L = 131 X = 120
20	3	537	209	90	90	71	76	101	8.1	12	H.693613	K.693613
	4	621	237	90	90	71	76	101	8.1	12	H.693614	K.693614
	5	705	265	90	90	71	76	101	8.1	12	H.693615	K.693615
30	3	641	261	130	130	95	76	101	8.1	12	H.693413	K.693413
	4	725	289	130	130	95	76	101	8.1	12	H.693414	K.693414
	5	809	317	130	130	95	76	101	8.1	12	H.693415	K.693415

Off - circuit operation can be used in oil or askarel
 Series parallel coupling 20 - 30 kV 120 A.



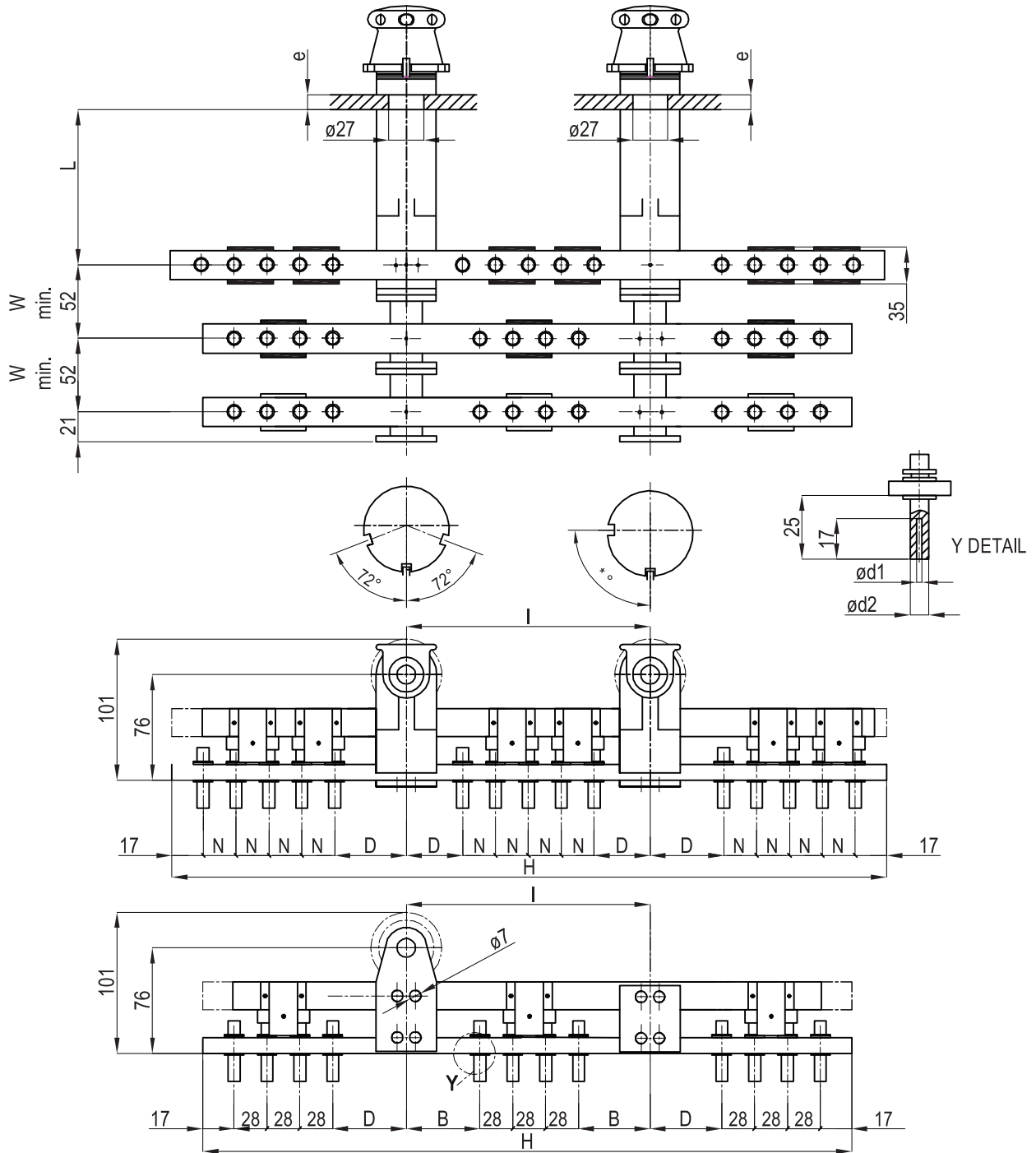
VOLTAGE CLASS KV	H	I	D	B	N	M	S	\ast°	$\phi d1$	$\phi d2$	UNIT No 120A	UNIT No 120A
											d1= 8.1 d2= 12	d1= 8.1 d2= 12
											L = 91	L = 131
10 - 20	882	340	82	90	42	76	101	108°	8.1	12	H.674819	K.674819
25 - 30	1126	448	122	130	49	76	101	126°	8.1	12	H.674219	K.674219

Off - circuit operation can be used in oil
 Delta diagram 20 - 30 kV 120 A. 3 - 5 positions



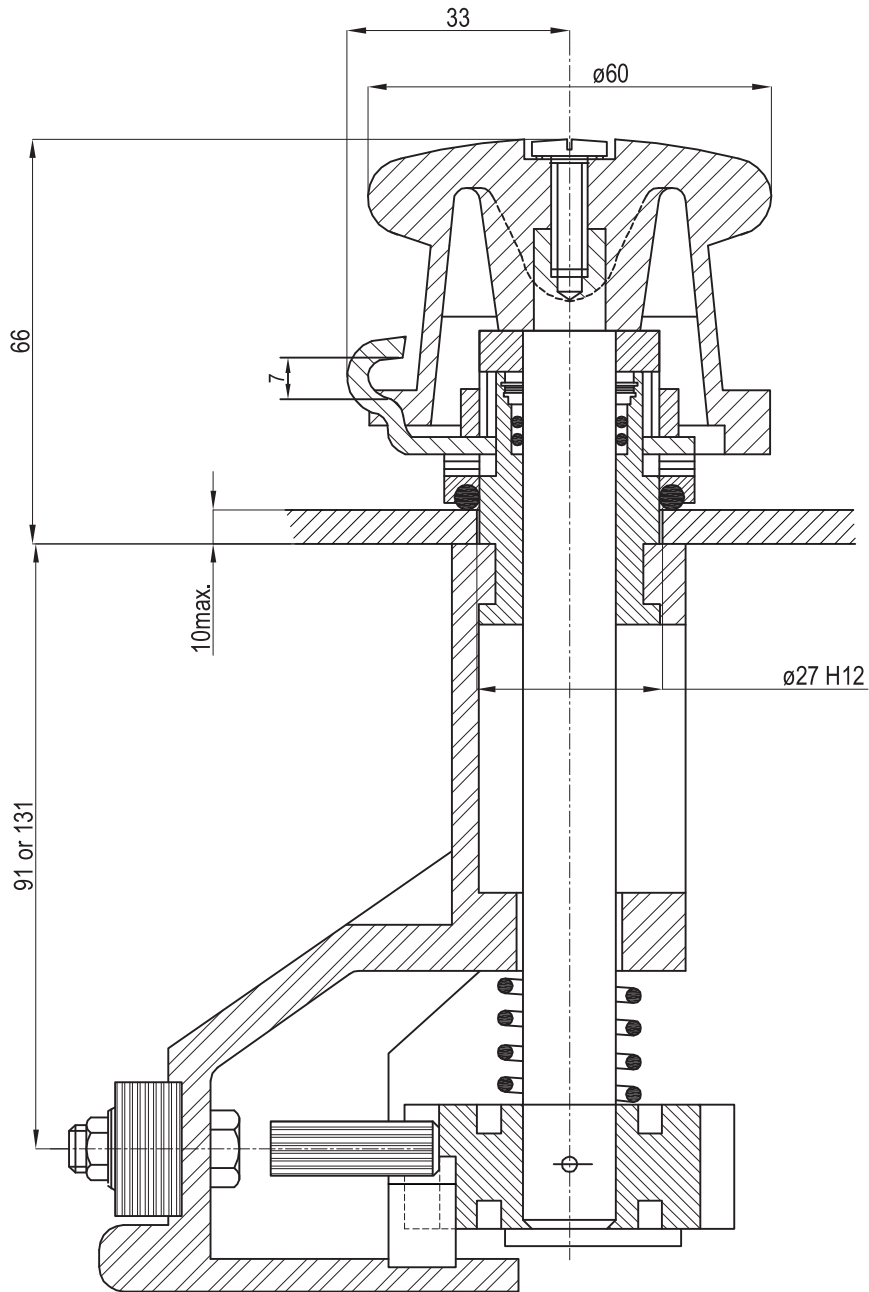
VOLTAGE CLASS kV	NUMBER OF POSITIONS	H	I	D	B	M	S	$\phi d1$	$\phi d2$	UNIT No 120A	UNIT No 120A
										d1= 8.1 d2= 12	d1= 8.1 d2= 12
20	3	630	256	82	90	76	101	8.1	12	H.694613	K.694613
	4	714	284	82	90	76	101	8.1	12	H.694614	K.694614
	5	798	312	82	90	76	101	8.1	12	H.694615	K.694615
30	3	790	336	122	130	76	101	8.1	12	H.694413	K.694413
	4	874	364	122	130	76	101	8.1	12	H.694414	K.694414
	5	958	392	122	130	76	101	8.1	12	H.694415	K.694415

Off - circuit operation can be used in oil or askarel
 1 Series parallel coupling 10-20 / 25-30 kV 120A.
 2 Delta settings 20-30 kV 120 A.



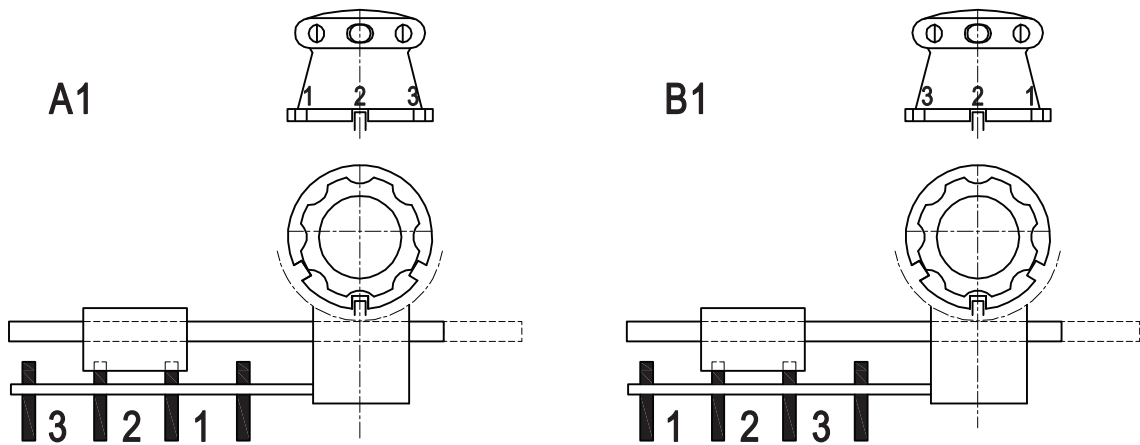
VOLTAGE CLASS kV		NUMBER OF POSITIONS	H1	H2	I	D	B	N	* °	$\phi d1$	$\phi d2$	UNIT No 120A d1= 8.1 d2= 12	UNIT No 120A d1= 8.1 d2= 12
SERIES PARALLEL	DELTA											L = 91	L = 131
10 - 20	20	3	898	730	348	90	132	42	108°	8.1	12	H.609113	K.609113
		4		786			118					H.609114	K.609114
		5		842			104					H.609115	K.609115
25 - 30	30	3	1142	918	456	130	186	49	126°	8.1	12	H.609213	K.609213
		4		974			172					H.609214	K.609214
		5		1030			158					H.609215	K.609215

Control Devices

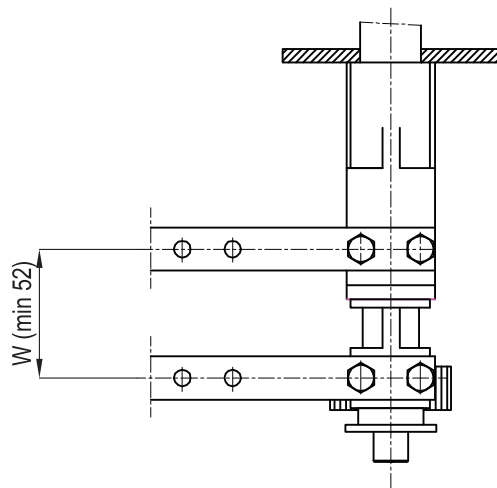


55 656
Standard type

Numbering



Combinations



All type EKM tap changers can be paired by superimposing several tap changers whose purpose - built steel brackets are assembled by nuts and bolts.

Depending on the diagram adopted, the user can:

- * either operate the tap changers with one shaft
- * or operate part of the tap changers with one shaft and the other part with another

If doing so, specify the position of the coupling taps shaft and the position of the setting taps shaft.

Note : It is essential, when ordering, to quote dimension "W" the minimum of which to be set in each case depends on the insulation conditions and on the position of the different tap changers.

WHEN ORDERING PLEASE QUOTE:

- 1 - The 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 ($\phi d1$ and $\phi d2$)
- 8 - L, e, X, W dimensions from the tables.

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