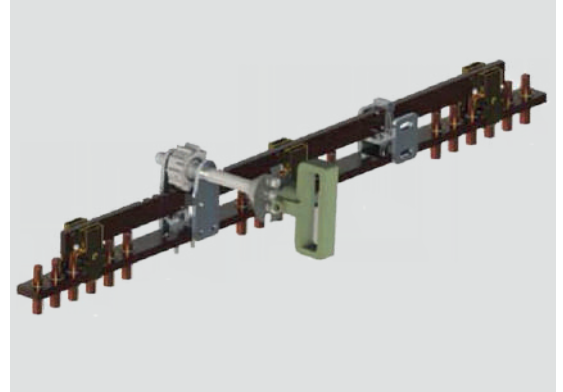


Tap Changer Type MHZ

Specification, Assembly and Materials



Descriptions	Remarks
General Specifications	• available in one, two or three phase application • multi layer types upon request • shaft length available in variable sizes • driving mechanism can be either on the edge or in the middle of the phases • connection diagrams (on page 5) can be applied in any variation to all types • are bolted together with supports under transformer cover and allow strong construction

Materials

Steel Parts	• available in stainless or mild steel • mild steel parts are cadmium or zinc plated	galvanizing upon request
Polyamide Parts	Nylon 66 / superior mechanical properties against all acting forces / strong against UV lights	
Aluminium Parts	GAlSi12(Cu)	
Brass Parts	CuZn40Pb2 (CW617N) / F34 DIN 17 673	
Copper Parts	E-Cu F25 DIN 40500	
Insulator Parts	Paper phenol - plastic resin based laminates / HP 2061.5 class of DIN 7735	
Current	30 A / 63 A / 120 A	
Upon Request	• aluminium parts can be protected by anodic oxidation • mild steel parts supplied in stainless steel • brass and copper parts are either tin-, silver- or cadmium-plated	

Operating Instructions

For each operation, the handle must first be pulled axially in the direction of the user in order to be subsequently rotated to the desired position. After being turned, the handle drops into the intended position by means of a high tension spring. Each position is precisely marked by a notch.

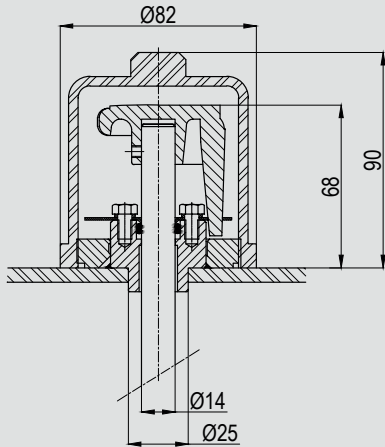
This process is clearly marked on control knob as; „ **LIFT - TURN - SWITCH ON** „ (can be engraved in any language)

Current	Contact inner dia. (cable connection)
30 A	Ø 3,1 mm
63 A	Ø 5,1 mm
120 A	Ø 8,1 mm

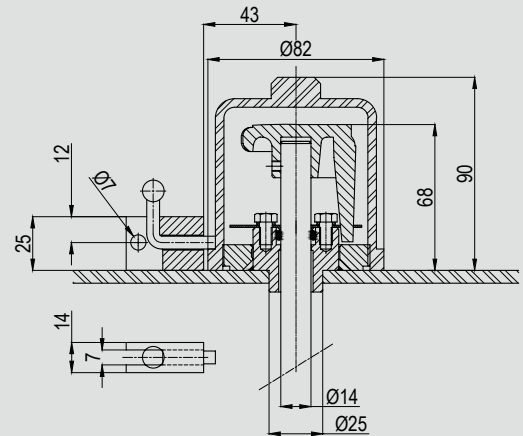
Voltage Class	B.I.L. (other values upon request)
10 kV	75 kV
15 kV	95 kV
20 kV	125 kV
30 kV	170 kV

Type MHZ Threephase Tap Changer Control Devices

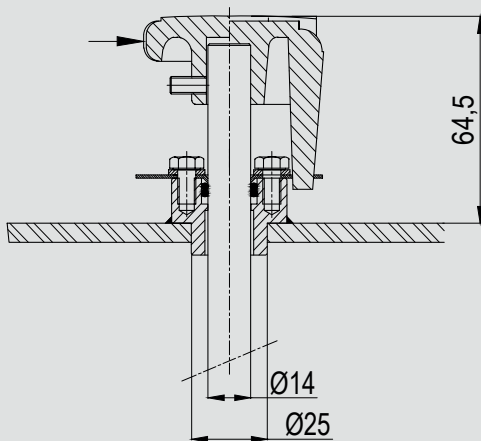
MH 341 (With Protective Cover Standard Type)



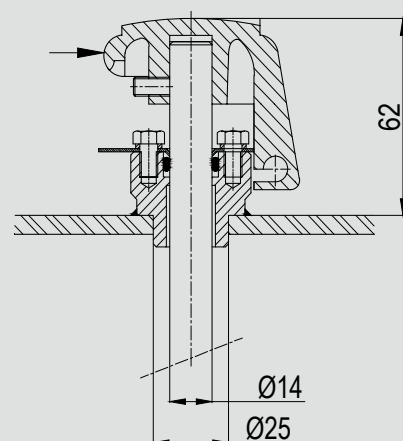
MH 341A (With Protective Cover Padlockable Type)



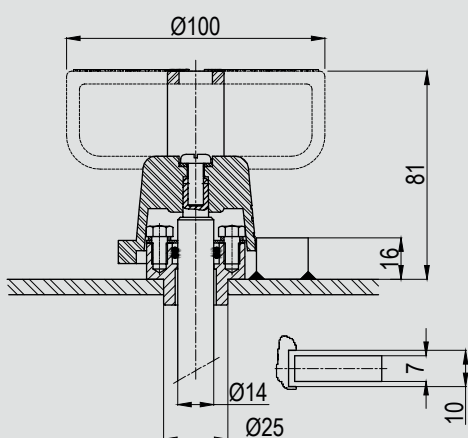
MH 342 (Standard Type)



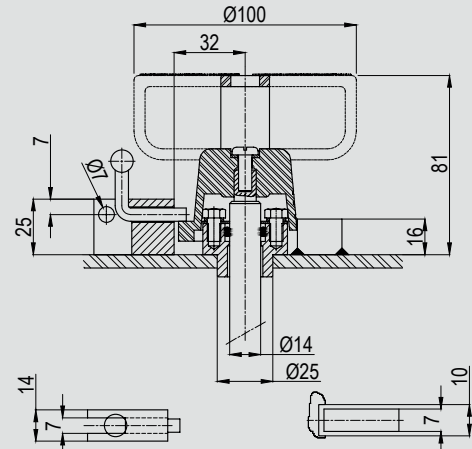
MH 342A (Padlockable Type)



MH 353 (Standard Type)



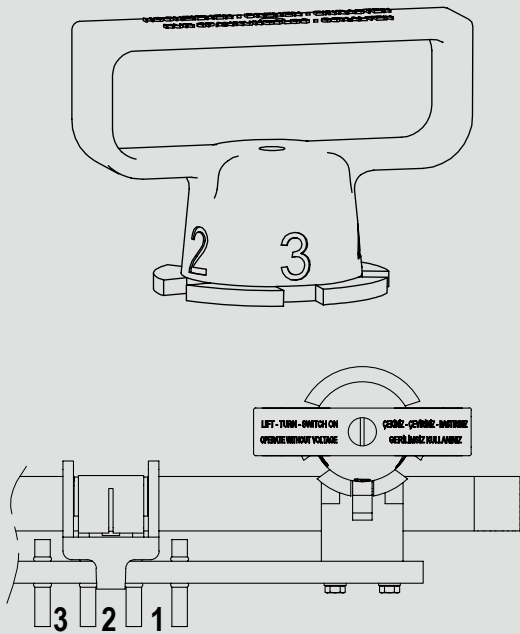
MH 353A (Padlockable Type)



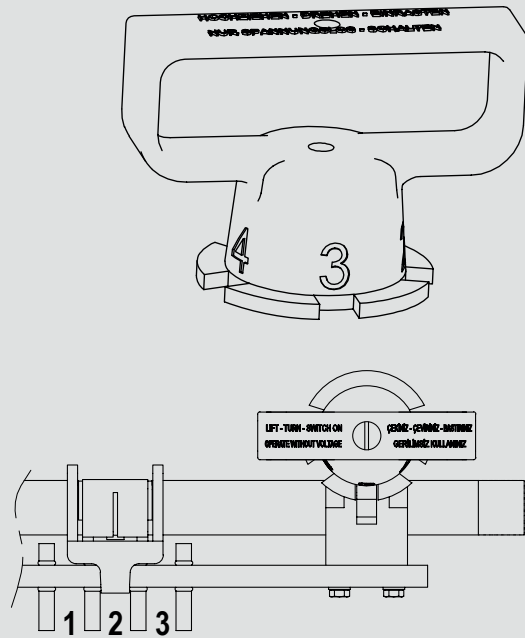
Type MHZ Threephase Tap Changer

Handle Directions

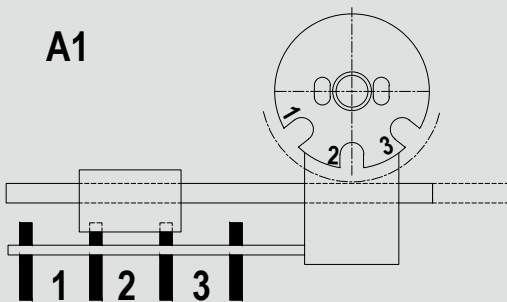
Handle direction A1
Clockwise direction



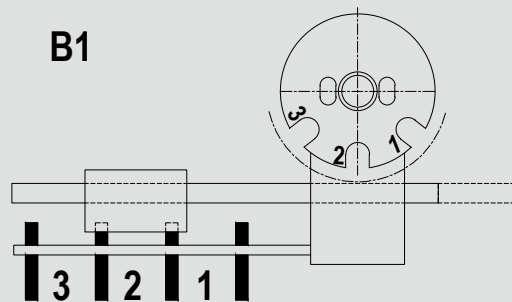
Handle direction B1
Counterclockwise direction



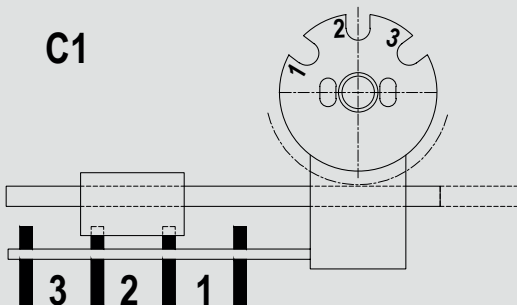
A1



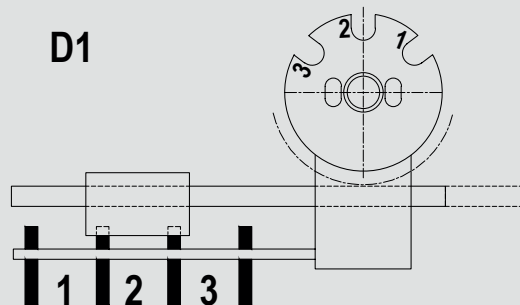
B1



C1



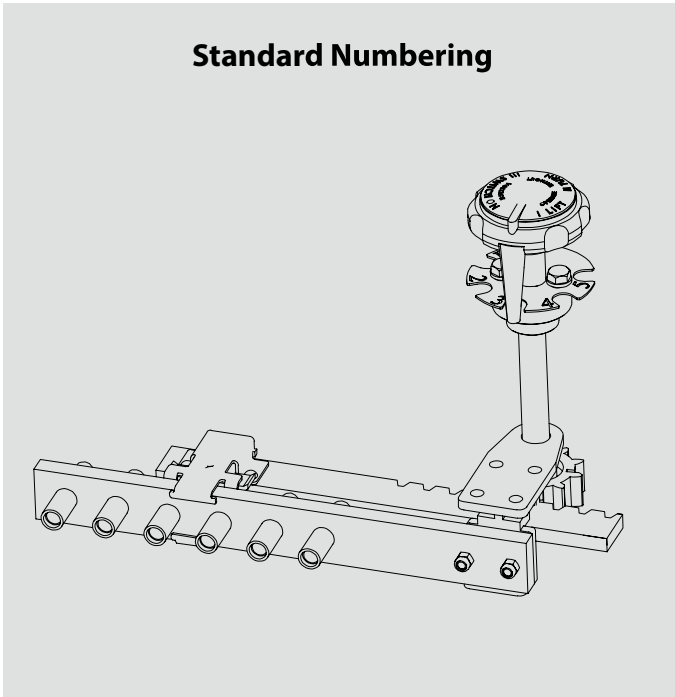
D1



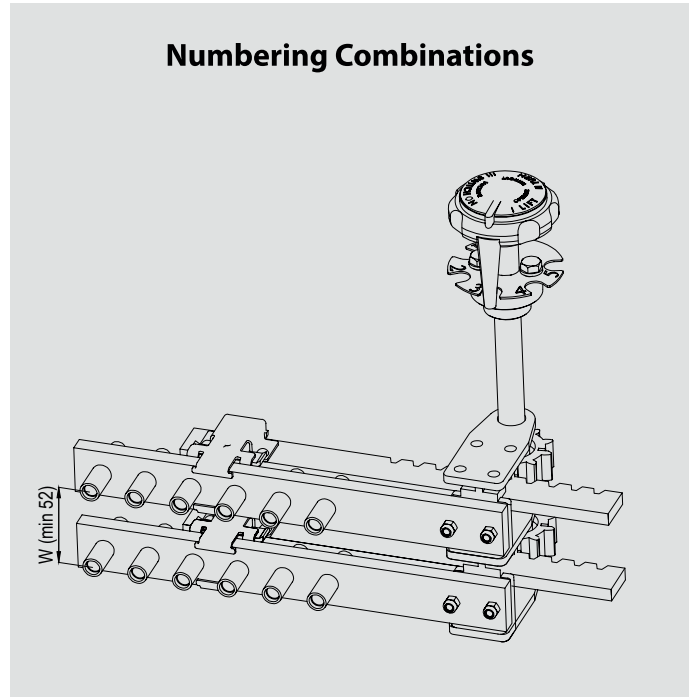
Type MHZ Threephase Tap Changer

Numbering Combinations

Standard Numbering



Numbering Combinations

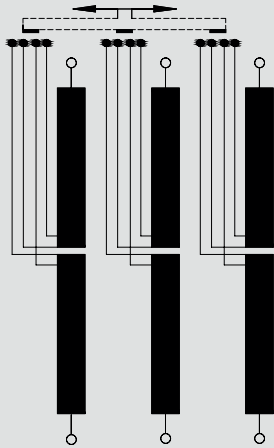


- all MHZ standard horizontal tap changers can be paired by superimposing several tap changers
 - built steel brackets are assembled by nuts and bolts
- depending on which system is adopted, the user can:
- either operate the tap changers with one shaft
 - or operate part of the tap changers with one shaft, and the other part with a second shaft
 - the position of the coupling shaft and the position of the setting shaft has to be specified

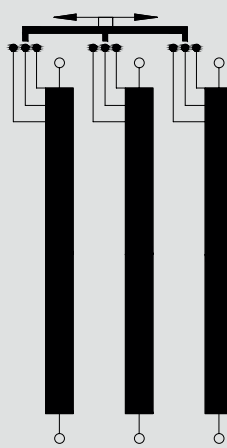
Note: It is essential, when ordering, to quote dimension „W“ the minimum value of which to be set in each case depends on the insulation conditions and on the position of the different tap changers



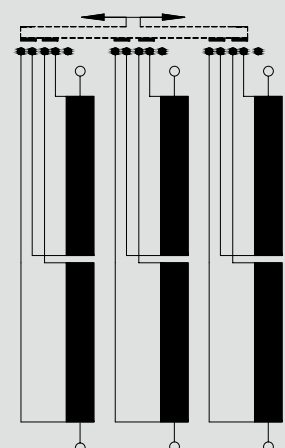
Type MHZ Threephase Tap Changer *Connection Diagrams*



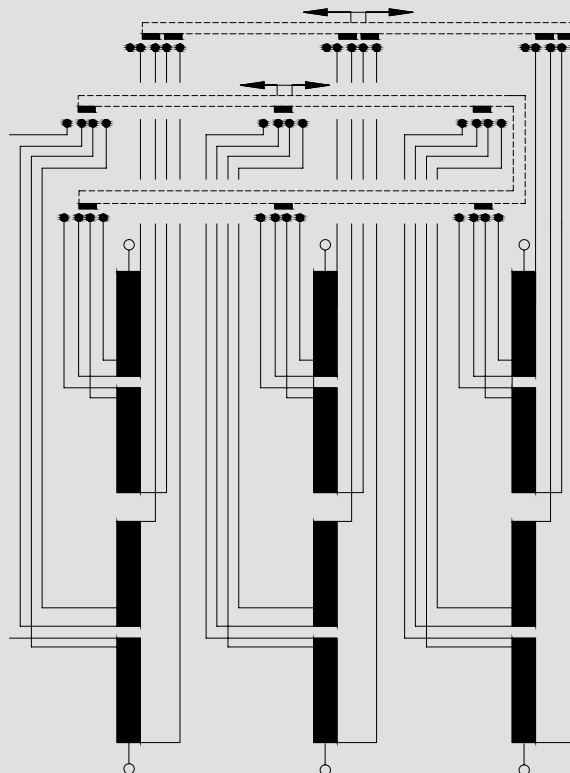
Setting for delta Transformer



Setting for star Transformer



Series - parallel coupling



Typical Combination

1 Stage: Series - parallel coupling

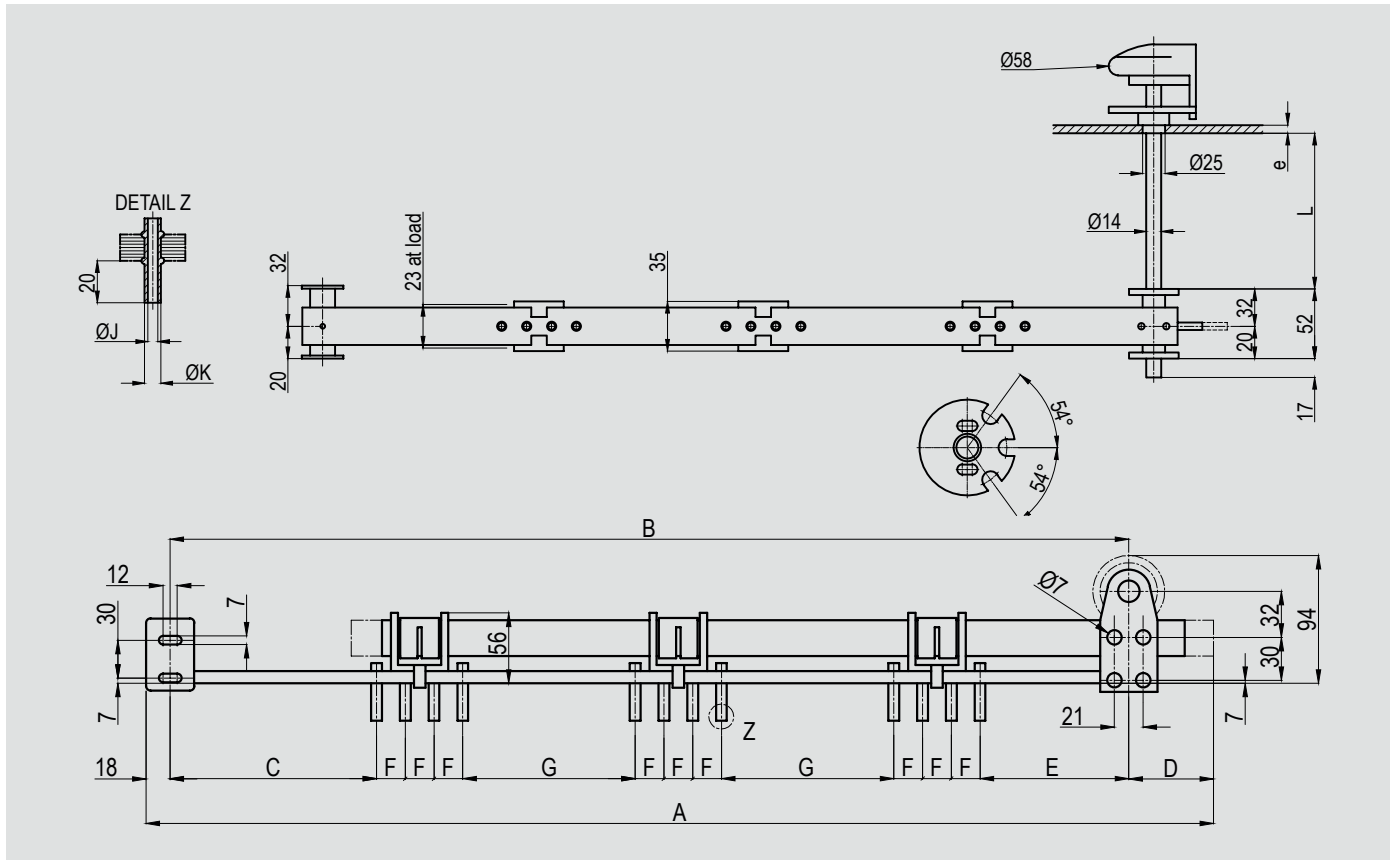
2 Stage: Delta diagram - $\pm 2,5 \%$

Delta Diagram 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With HP Support)

Voltage Class kV	Current A	Number of Positions	A	B	D	E	G	F	I	X min	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7		
10	30 or 63	2	347	212	51	61	42	21	50	48	Please specify when ordering		A233D222	A233D223		
		3	431	254	72	61	42	21	50	48			A233D322	A233D323		
		4	515	296	93	61	42	21	50	48			A233D422	A233D423		
		5	599	338	114	61	42	21	50	48			A233D522	A233D523		
		6	683	380	135	61	42	21	50	48			A233D622	A233D623		
		7	767	422	156	61	42	21	50	48			A233D722	A233D723		
15	30 or 63	2	384	244	51	76	54	21	60	48			A233D232	A233D233		
		3	468	286	72	76	54	21	60	48			A233D332	A233D333		
		4	552	328	93	76	54	21	60	48			A233D432	A233D433		
		5	636	370	114	76	54	21	60	48			A233D532	A233D533		
		6	720	412	135	76	54	21	60	48			A233D632	A233D633		
		7	804	454	156	76	54	21	60	48			A233D732	A233D733		
20	30 or 63	2	419	271	51	84	65	21	76	48			Please specify when ordering		A233D242	A233D243
		3	503	313	72	84	65	21	76	48					A233D342	A233D343
		4	587	355	93	84	65	21	76	48					A233D442	A233D443
		5	671	397	114	84	65	21	76	48					A233D542	A233D543
		6	755	439	135	84	65	21	76	48					A233D642	A233D643
		7	839	481	156	84	65	21	76	48					A233D742	A233D743
30	30 or 63	2	499	344	51	125	90	21	90	88	A233D252	A233D253				
		3	583	386	72	125	90	21	90	88	A233D352	A233D353				
		4	667	428	93	125	90	21	90	88	A233D452	A233D453				
		5	751	470	114	125	90	21	90	88	A233D552	A233D553				
		6	835	512	135	125	90	21	90	88	A233D652	A233D653				
		7	919	554	156	125	90	21	90	88	A233D752	A233D753				

Type MHZ Threephase Tap Changer

Delta Diagram 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (Without Aluminium Support)

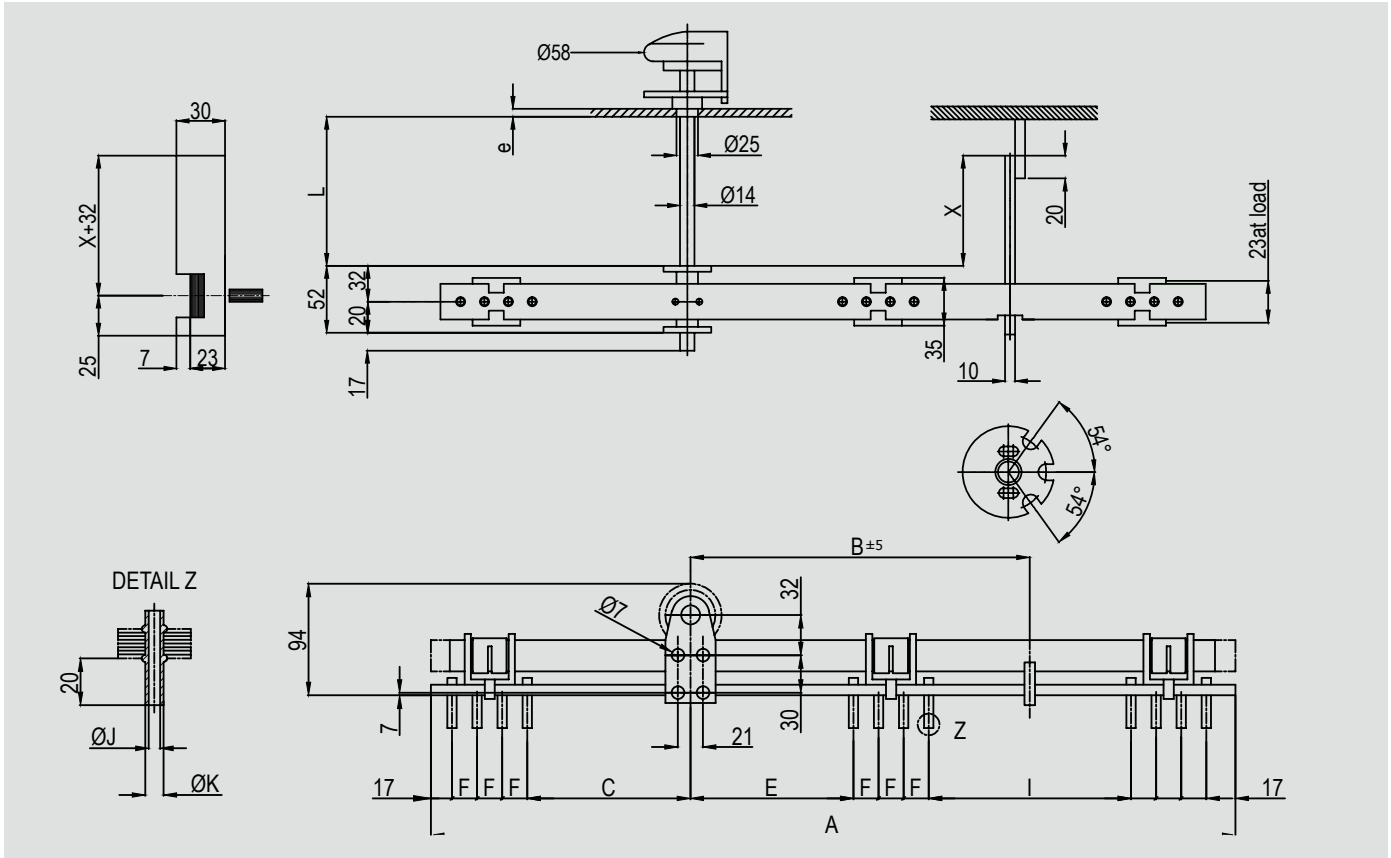


Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	G	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	393	324	53	51	61	21	42	Please specify when ordering		A231D222	A231D223
		3	477	387	53	72	61	21	42			A231D322	A231D323
		4	561	450	53	93	61	21	42			A231D422	A231D423
		5	645	513	53	114	61	21	42			A231D522	A231D523
		6	729	576	53	135	61	21	42			A231D622	A231D623
		7	813	639	53	156	61	21	42			A231D722	A231D723
15	30 or 63	2	445	376	66	51	76	21	54			A231D232	A231D233
		3	529	439	66	72	76	21	54			A231D332	A231D333
		4	613	502	66	93	76	21	54			A231D432	A231D433
		5	697	565	66	114	76	21	54			A231D532	A231D533
		6	781	628	66	135	76	21	54			A231D632	A231D633
		7	865	691	66	156	76	21	54			A231D732	A231D733
20	30 or 63	2	485	416	76	51	84	21	65			A231D242	A231D243
		3	569	479	76	72	84	21	65			A231D342	A231D343
		4	653	542	76	93	84	21	65			A231D442	A231D443
		5	737	605	76	114	84	21	65			A231D542	A231D543
		6	821	668	76	135	84	21	65			A231D642	A231D643
		7	905	731	76	156	84	21	65			A231D742	A231D743
30	30 or 63	2	617	548	117	51	125	21	90			A231D252	A231D253
		3	701	611	117	72	125	21	90			A231D352	A231D353
		4	785	674	117	93	125	21	90			A231D452	A231D453
		5	869	737	117	114	125	21	90			A231D552	A231D553
		6	953	800	117	135	125	21	90			A231D652	A231D653
		7	1037	863	117	156	125	21	90			A231D752	A231D753



Type MHZ Threephase Tap Changer

Delta Diagram 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (Without Aluminium Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	E	F	I	X min	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	332	128	61	61	21	50	48	Please specify when ordering		A235D222	A235D223
		3	395	149	61	61	21	50	48			A235D322	A235D323
		4	458	170	61	61	21	50	48			A235D422	A235D423
		5	521	191	61	61	21	50	48			A235D522	A235D523
		6	584	212	61	61	21	50	48			A235D622	A235D623
		7	647	233	61	61	21	50	48			A235D722	A235D723
15	30 or 63	2	372	148	76	76	21	60	48			A235D232	A235D233
		3	435	169	76	76	21	60	48			A235D332	A235D333
		4	498	190	76	76	21	60	48			A235D432	A235D433
		5	561	211	76	76	21	60	48			A235D532	A235D533
		6	624	232	76	76	21	60	48			A235D632	A235D633
		7	687	253	76	76	21	60	48			A235D732	A235D733
20	30 or 63	2	404	164	84	84	21	76	48			A235D242	A235D243
		3	467	185	84	84	21	76	48			A235D342	A235D343
		4	530	206	84	84	21	76	48			A235D442	A235D443
		5	593	227	84	84	21	76	48			A235D542	A235D543
		6	656	248	84	84	21	76	48			A235D642	A235D643
		7	719	269	84	84	21	76	48			A235D742	A235D743
30	30 or 63	2	500	212	125	125	21	90	88			A235D252	A235D253
		3	563	233	125	125	21	90	88			A235D352	A235D353
		4	626	254	125	125	21	90	88			A235D452	A235D453
		5	689	275	125	125	21	90	88			A235D552	A235D553
		6	752	296	125	125	21	90	88			A235D652	A235D653
		7	815	317	125	125	21	90	88			A235D752	A235D753

Delta Diagram 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With Aluminium Support)

Voltage Class kV	Current A	Number of Positions	A	B	C	E	F	L	e	Unit No 30A J: 3,1 K: 5	Unit No 63A J: 5,1 K: 7
10	30 or 63	2	388	156	53	61	21	Please specify when ordering		A234D222	A234D223
		3	451	177	53	61	21			A234D322	A234D323
		4	514	198	53	61	21			A234D422	A234D423
		5	577	219	53	61	21			A234D522	A234D523
		6	640	240	53	61	21			A234D622	A234D623
		7	703	261	53	61	21			A234D722	A234D723
		15	30 or 63	2	444	184	66			76	21
3	507			205	66	76	21			A234D332	A234D333
4	570			226	66	76	21			A234D432	A234D433
5	633			247	66	76	21			A234D532	A234D533
6	696			268	66	76	21			A234D632	A234D633
7	759			289	66	76	21			A234D732	A234D733
20	30 or 63			2	480	202	76			84	21
		3	543	223	76	84	21			A234D342	A234D343
		4	606	244	76	84	21			A234D442	A234D443
		5	669	265	76	84	21			A234D542	A234D543
		6	732	286	76	84	21			A234D642	A234D643
		7	795	307	76	84	21			A234D742	A234D743
		30	30 or 63	2	644	284	117			125	21
3	707			305	117	125	21			A234D352	A234D353
4	770			326	117	125	21			A234D452	A234D453
5	833			347	117	125	21	A234D552	A234D553		
6	896			368	117	125	21	A234D652	A234D653		
7	959			389	117	125	21	A234D752	A234D753		

Delta Diagram 10 - 30 kV / 30 - 63 A / 8 - 11 Positions / Setting 2.5 % per Position (With HP Support)

Voltage Class kV	Current A	Number of Positions	A	B	B1	C	D	E	F	G	L	e	Unit No 30A J: 3,1 K: 5	Unit No 63A J: 5,1 K: 7
10	30 or 63	8 9 10 11	902 986 1070 1154	762 765 828 891	- - - -	53 53 53 53	182 203 224 245	61 61 61 61	21 21 21 21	42 42 42 42	Please specify when ordering		A231D822 A231D922 A231D1022 A231D1122	A231D823 A231D923 A231D1023 A231D1123
15	30 or 63	8 9 10 11	954 1038 1122 1206	754 817 880 943	- - - 619	66 66 66 66	182 203 224 245	76 76 76 76	21 21 21 21	54 54 54 54			A231D832 A231D932 A231D1032 A231D1132	A231D833 A231D933 A231D1033 A231D1133
20	30 or 63	8 9 10 11	994 1078 1162 1246	794 857 920 983	- - 601 643	76 76 76 76	182 203 224 245	84 84 84 84	21 21 21 21	65 65 65 65			A231D842 A231D942 A231D1042 A231D1142	A231D843 A231D943 A231D1043 A231D1143
30	30 or 63	8 9 10 11	1126 1210 1294 1378	926 989 1052 1115	596 638 680 722	117 117 117 117	182 203 224 245	125 125 125 125	21 21 21 21	90 90 90 90			A231D852 A231D952 A231D1052 A231D1152	A231D853 A231D953 A231D1053 A231D1153

*Delta Diagram 10 - 30 kV / 30 - 63 A / 8 - 11 Positions / Special Diagram / Setting 2.5 % per Position
(With Aluminium Support)*

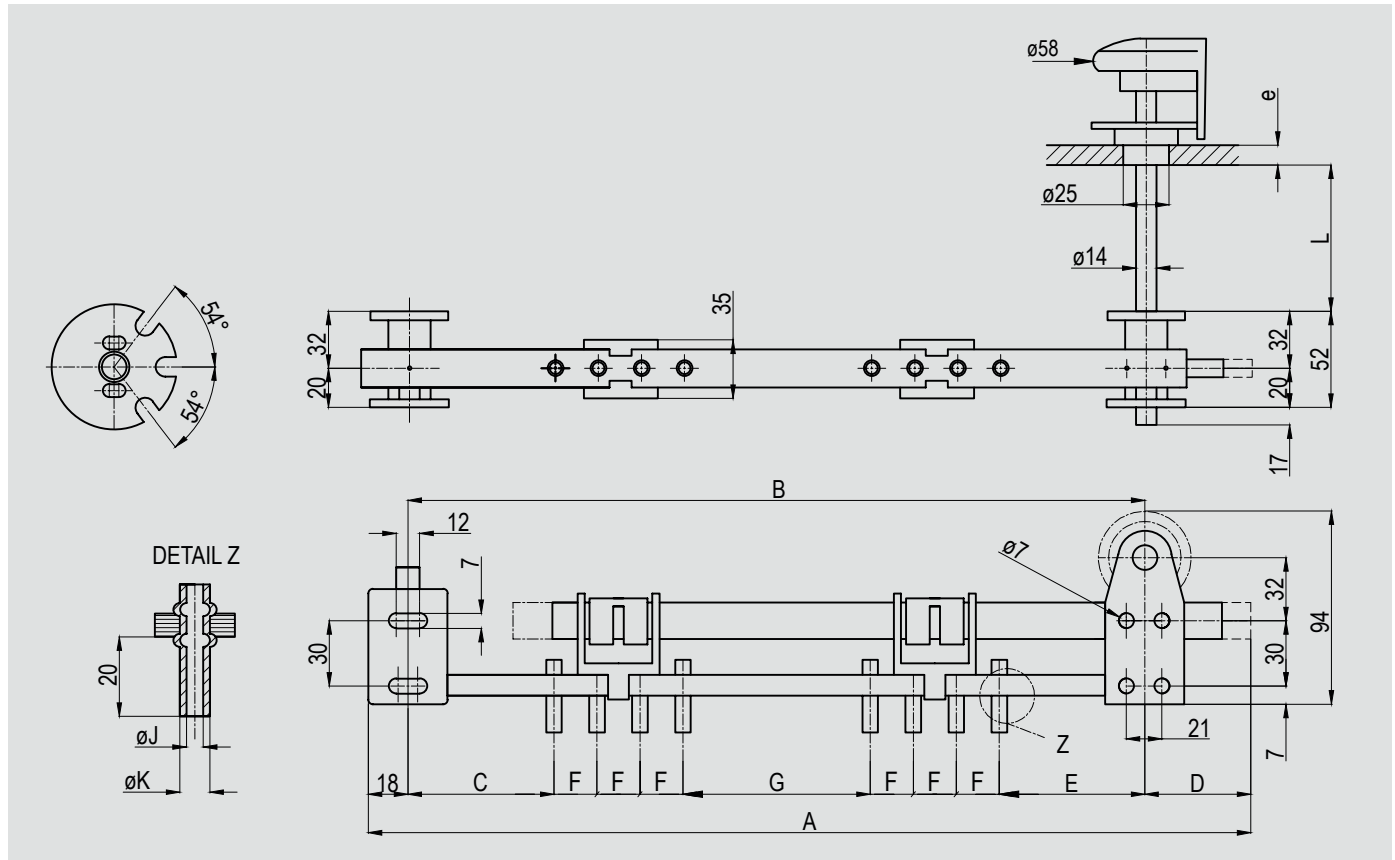
Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	G	L	e	W	Unit No 30A J: 3,1 K: 5	Unit No 63A J: 5,1 K: 7
10	30 or 63	8 9 10 11	692 755 818 881	492 534 576 618	53 53 53 53	182 203 224 245	61 61 61 61	21 21 21 21	42 42 42 42	Please specify when ordering			A271D822 A271D922 A271D1022 A271D1122	A271D823 A271D923 A271D1023 A271D1123
15	30 or 63	8 9 10 11	732 795 858 921	532 574 616 658	66 66 66 66	182 203 224 245	76 76 76 76	21 21 21 21	54 54 54 54				A271D832 A271D932 A271D1032 A271D1132	A271D833 A271D933 A271D1033 A271D1133
20	30 or 63	8 9 10 11	761 824 887 950	561 603 645 687	76 76 76 76	182 203 224 245	84 84 84 84	21 21 21 21	65 65 65 65				A271D842 A271D942 A271D1042 A271D1142	A271D843 A271D943 A271D1043 A271D1143
30	30 or 63	8 9 10 11	868 931 994 1057	668 710 752 794	117 117 117 117	182 203 224 245	125 125 125 125	21 21 21 21	90 90 90 90				A271D852 A271D952 A271D1052 A271D1152	A271D853 A271D953 A271D1053 A271D1153

*Delta Diagram 10 - 30 kV / 30 - 63 A / 8 - 11 Positions / Special Diagram / Setting 2.5 % per Position
(With Aluminium Support)*

Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	L	e	W	Unit No 30A J: 3,1 K: 5	Unit No 63A J: 5,1 K: 7
10	30 or 63	8 9 10 11	476 524 572 620	282 303 324 345	53 53 53 53	182 203 224 245	61 61 61 61	21 21 21 21	Please specify when ordering			A281D822 A281D922 A281D1022 A281D1122	A281D823 A281D923 A281D1023 A281D1123
15	30 or 63	8 9 10 11	510 558 606 654	310 331 352 373	66 66 66 66	182 203 224 245	76 76 76 76	21 21 21 21				A281D832 A281D932 A281D1032 A281D1132	A281D833 A281D933 A281D1033 A281D1133
20	30 or 63	8 9 10 11	528 576 624 672	328 349 370 391	76 76 76 76	182 203 224 245	84 84 84 84	21 21 21 21				A281D842 A281D942 A281D1042 A281D1142	A281D843 A281D943 A281D1043 A281D1143
30	30 or 63	8 9 10 11	610 658 706 754	410 431 452 473	117 117 117 117	182 203 224 245	125 125 125 125	21 21 21 21				A281D852 A281D952 A281D1052 A281D1152	A281D853 A281D953 A281D1053 A281D1153

Type MHZ Twophase Tap Changer

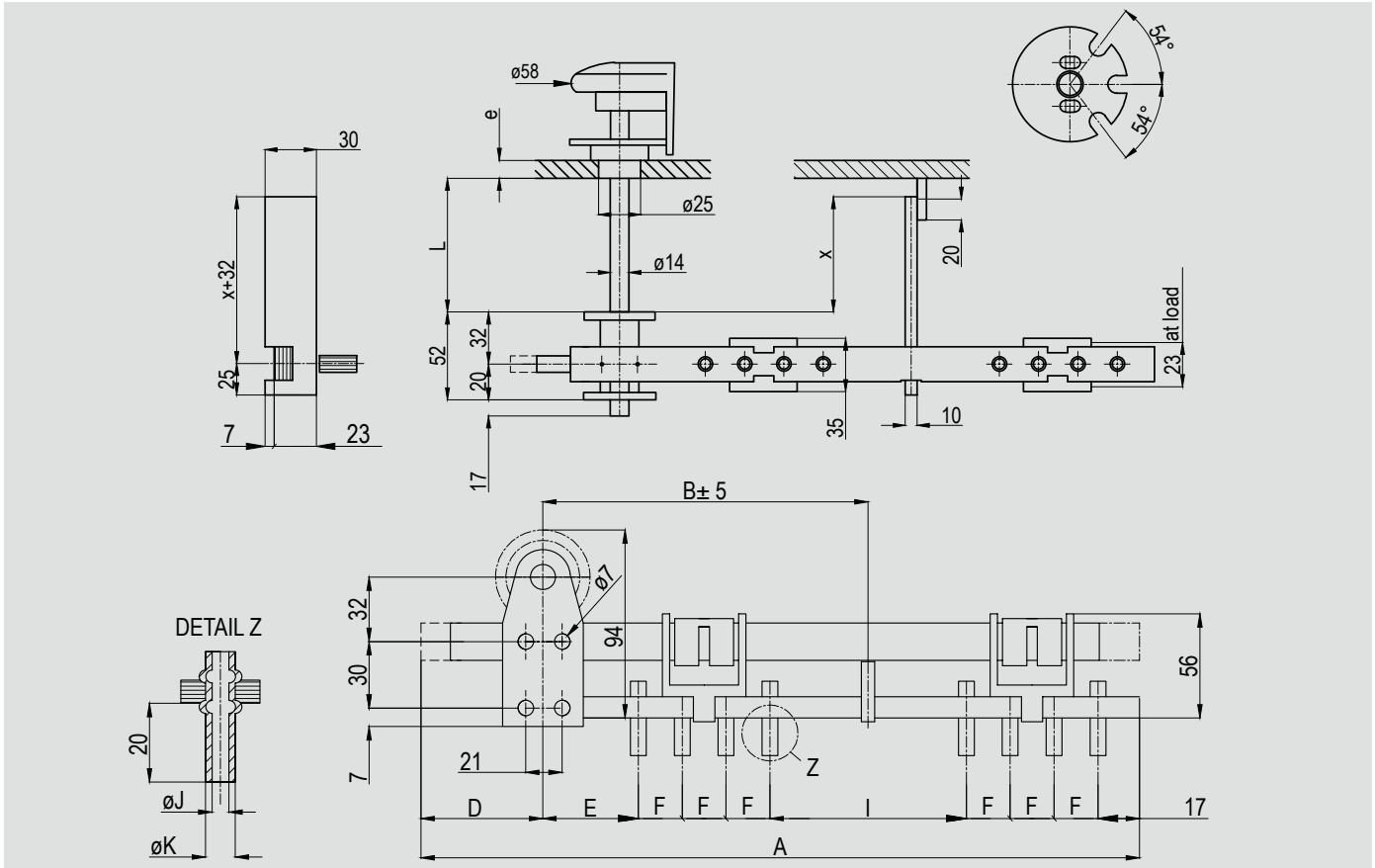
Delta Diagram / 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With Aluminium Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	G	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	309	240	53	51	61	21	42	Please specify when ordering		A221D222	A221D223
		3	372	282	53	72	61	21	42			A221D322	A221D323
		4	435	324	53	93	61	21	42			A221D422	A221D423
		5	498	366	53	114	61	21	42			A221D522	A221D523
		6	561	408	53	135	61	21	42			A221D622	A221D623
		7	624	450	53	156	61	21	42			A221D722	A221D723
15	30 or 63	2	349	280	66	51	76	21	54			A221D232	A221D233
		3	412	322	66	72	76	21	54			A221D332	A221D333
		4	475	364	66	93	76	21	54			A221D432	A221D433
		5	538	406	66	114	76	21	54			A221D532	A221D533
		6	601	448	66	135	76	21	54			A221D632	A221D633
		7	664	490	66	156	76	21	54			A221D732	A221D733
20	30 or 63	2	378	309	76	51	84	21	65			A221D242	A221D243
		3	441	351	76	72	84	21	65			A221D342	A221D343
		4	504	393	76	93	84	21	65			A221D442	A221D443
		5	567	435	76	114	84	21	65			A221D542	A221D543
		6	630	477	76	135	84	21	65			A221D642	A221D643
		7	693	519	76	156	84	21	65			A221D742	A221D743
30	30 or 63	2	485	416	117	51	125	21	90			A221D252	A221D253
		3	548	458	117	72	125	21	90			A221D352	A221D353
		4	611	500	117	93	125	21	90			A221D452	A221D453
		5	674	542	117	114	125	21	90			A221D552	A221D553
		6	737	584	117	135	125	21	90			A221D652	A221D653
		7	800	626	117	156	125	21	90			A231D752	A221D753

Type MHZ Twophase Tap Changer

Delta Diagram / 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With HP Support)



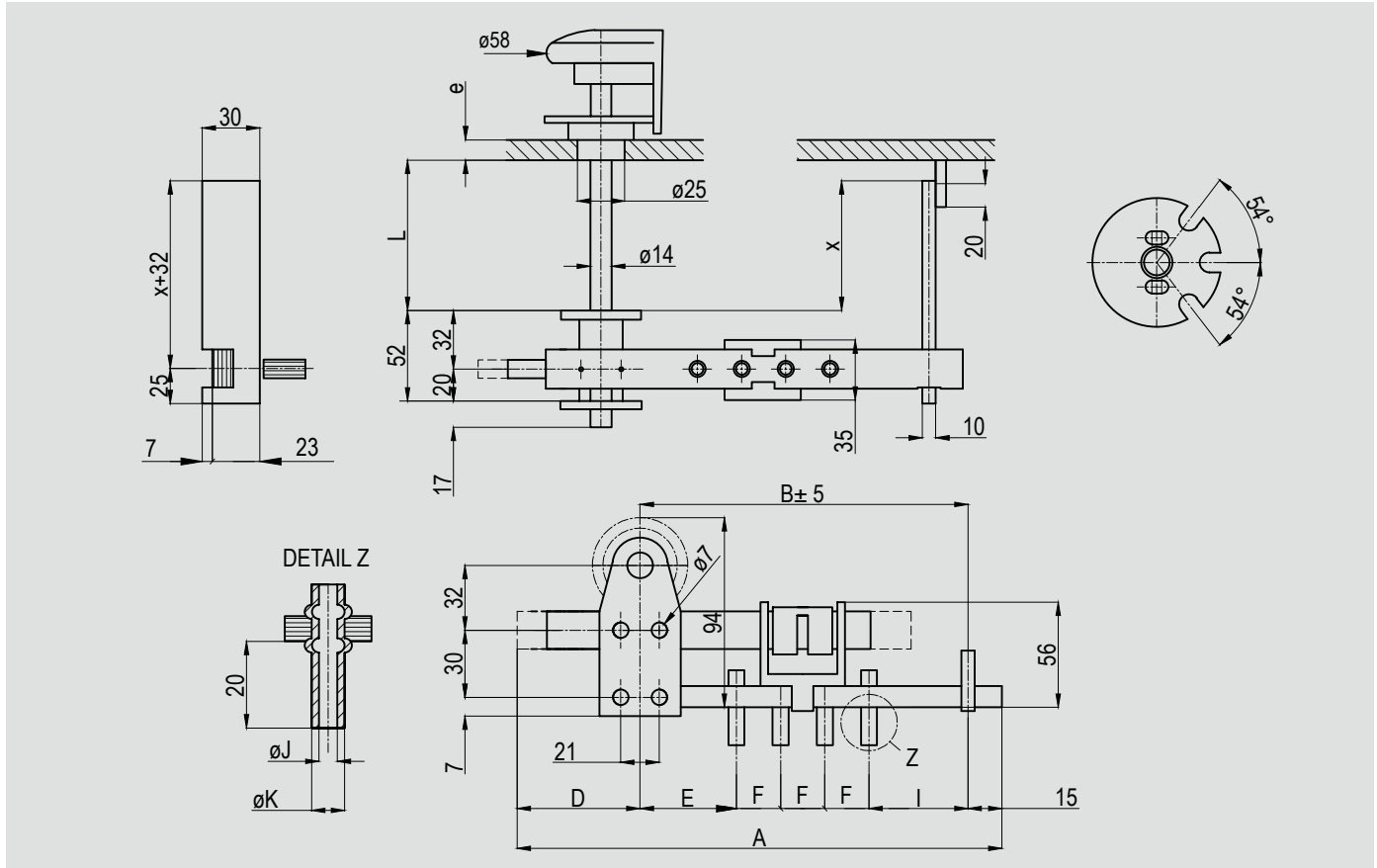
Voltage Class kV	Current A	Number of Positions	A	B	D	E	F	I	X min	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	257	128	45	61	21	50	48	Please specify when ordering		A223D222L	A223D223L
		3	320	149	66	61	21	50	48			A223D322L	A223D323L
		4	383	170	87	61	21	50	48			A223D422L	A223D423L
		5	446	191	108	61	21	50	48			A223D522L	A223D523L
		6	509	212	129	61	21	50	48			A223D622L	A223D623L
		7	572	233	150	61	21	50	48			A223D722L	A223D723L
15	30 or 63	2	282	148	45	76	21	60	48			A223D232L	A223D233L
		3	345	169	66	76	21	60	48			A223D332L	A223D333L
		4	408	190	87	76	21	60	48			A223D432L	A223D433L
		5	471	211	108	76	21	60	48			A223D532L	A223D533L
		6	534	232	129	76	21	60	48			A223D632L	A223D633L
		7	597	253	150	76	21	60	48			A223D732L	A223D733L
20	30 or 63	2	306	164	45	84	21	76	48			A223D242L	A223D243L
		3	369	185	66	84	21	76	48			A223D342L	A223D343L
		4	432	206	87	84	21	76	48			A223D442L	A223D443L
		5	495	227	108	84	21	76	48			A223D542L	A223D543L
		6	558	248	129	84	21	76	48			A223D642L	A223D643L
		7	621	269	150	84	21	76	48			A223D742L	A223D743L
30	30 or 63	2	361	212	45	125	21	90	88			A223D252L	A223D253L
		3	424	233	66	125	21	90	88			A223D352L	A223D353L
		4	487	254	87	125	21	90	88			A223D452L	A223D453L
		5	550	271	108	125	21	90	88			A223D552L	A223D553L
		6	613	296	129	125	21	90	88			A223D652L	A223D653L
		7	676	317	150	125	21	90	88			A223D752L	A223D753L

Delta Diagram / 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With Aluminium Support)

Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	225	156	53	51	61	21	Please specify when ordering		A211D222	A211D223
		3	267	177	53	72	61	21			A211D322	A211D323
		4	309	198	53	93	61	21			A211D422	A211D423
		5	351	219	53	114	61	21			A211D522	A211D523
		6	393	240	53	135	61	21			A211D622	A211D623
		7	435	261	53	156	61	21			A211D722	A211D723
15	30 or 63	2	253	184	66	51	76	21			A211D232	A211D233
		3	295	205	66	72	76	21			A211D332	A211D333
		4	337	226	66	93	76	21			A211D432	A211D433
		5	379	247	66	114	76	21			A211D532	A211D533
		6	421	268	66	135	76	21			A211D632	A211D633
		7	463	289	66	156	76	21			A211D732	A211D733
20	30 or 63	2	271	202	76	51	84	21			A211D242	A211D243
		3	313	223	76	72	84	21			A211D342	A211D343
		4	355	244	76	93	84	21			A211D442	A211D443
		5	397	265	76	114	84	21			A211D542	A211D543
		6	439	286	76	135	84	21			A211D642	A211D643
		7	481	307	76	156	84	21			A211D742	A211D743
30	30 or 63	2	353	284	117	51	125	21	A211D252	A211D253		
		3	395	305	117	72	125	21	A211D352	A211D353		
		4	437	326	117	93	125	21	A211D452	A211D453		
		5	479	347	117	114	125	21	A211D552	A211D553		
		6	521	368	117	135	125	21	A211D652	A211D653		
		7	563	389	117	156	125	21	A211D752	A211D753		

Type MHZ Monophase Tap Changer

Delta Diagram / 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With HP Support)



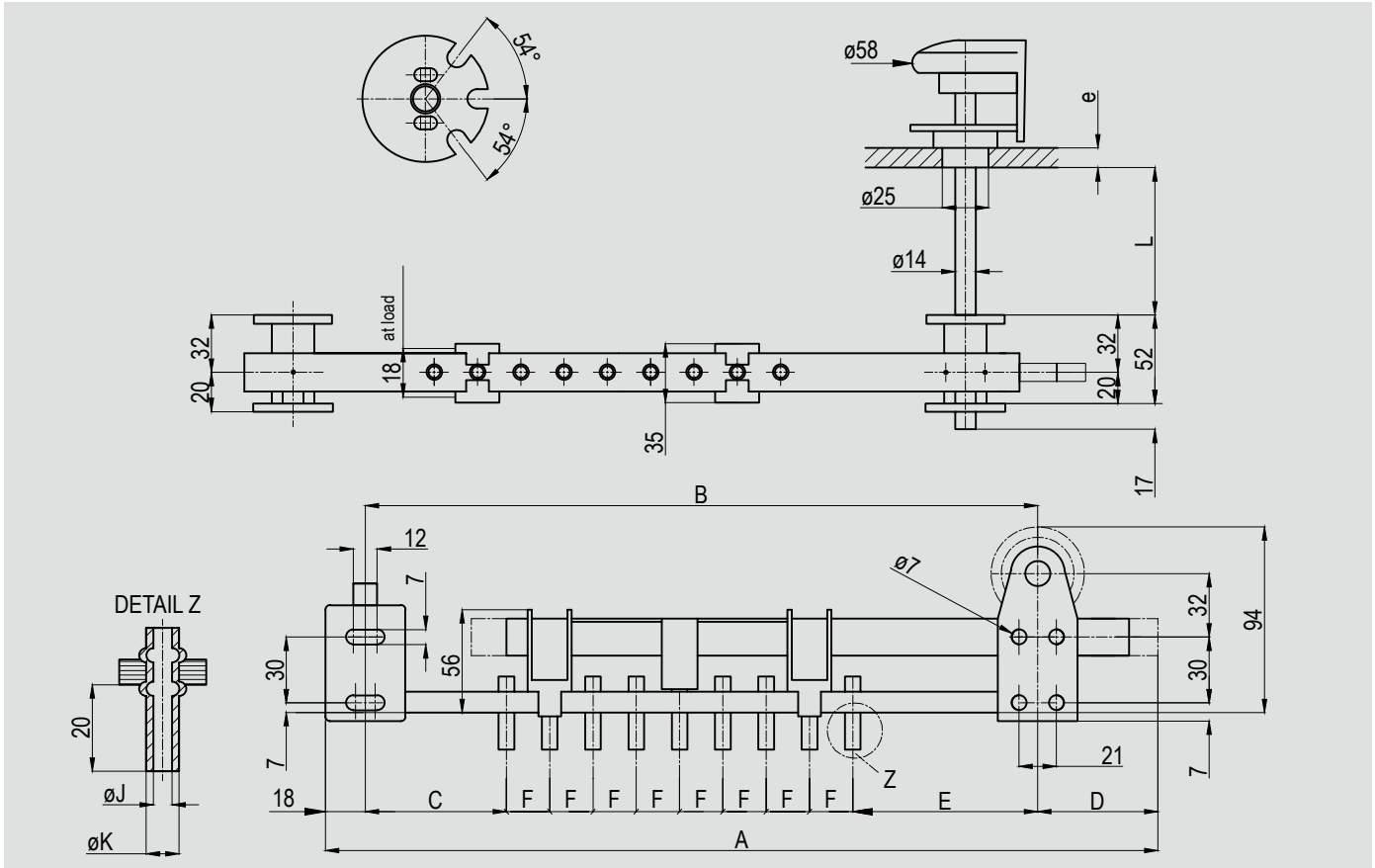
Voltage Class kV	Current A	Number of Positions	A	B	D	E	I	F	X min	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	188	128	45	61	25	21	48	Please specify when ordering		A217D222	A217D223
		3	230	149	66	61	25	21	48			A217D322	A217D323
		4	272	170	87	61	25	21	48			A217D422	A217D423
		5	314	191	108	61	25	21	48			A217D522	A217D523
		6	356	212	129	61	25	21	48			A217D622	A217D623
		7	398	233	150	61	25	21	48			A217D722	A217D723
15	30 or 63	2	208	148	45	76	30	21	48			A217D232	A217D233
		3	250	169	66	76	30	21	48			A217D332	A217D333
		4	292	190	87	76	30	21	48			A217D432	A217D433
		5	334	211	108	76	30	21	48			A217D532	A217D533
		6	376	232	129	76	30	21	48			A217D632	A217D633
		7	418	253	150	76	30	21	48			A217D732	A217D733
20	30 or 63	2	224	164	45	84	38	21	48			A217D242	A217D243
		3	266	185	66	84	38	21	48			A217D342	A217D343
		4	308	206	87	84	38	21	48			A217D442	A217D443
		5	350	227	108	84	38	21	48			A217D542	A217D543
		6	392	248	129	84	38	21	48			A217D642	A217D643
		7	434	269	150	84	38	21	48			A217D742	A217D743
30	30 or 63	2	272	212	45	125	45	21	88			A217D252	A217D253
		3	314	233	66	125	45	21	88			A217D352	A217D353
		4	356	254	87	125	45	21	88			A217D452	A217D453
		5	398	275	108	125	45	21	88			A217D552	A217D553
		6	440	296	129	125	45	21	88			A217D652	A217D653
		7	482	317	150	125	45	21	88			A217D752	A217D753

Star Diagram / 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With HP Support)

Voltage Class kV	Current A	Number of Positions	A	B	D	E	I	F	X min	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	266	149	51	61	50	21	48	Please specify when ordering		A233S222	A233S223
		3	350	191	72	61	50	21	48			A233S322	A233S323
		4	434	233	93	61	50	21	48			A233S422	A233S423
		5	518	275	114	61	50	21	48			A233S522	A233S523
		6	602	317	135	61	50	21	48			A233S622	A233S623
		7	686	359	156	61	50	21	48			A233S722	A233S723
		15	30 or 63	2	281	164	51	76	50			21	48
3	365			206	72	76	50	21	48			A233S332	A233S333
4	449			248	93	76	50	21	48			A233S432	A233S433
5	533			290	114	76	50	21	48			A233S532	A233S533
6	617			332	135	76	50	21	48			A233S632	A233S633
7	701			374	156	76	50	21	48			A233S732	A233S733
20	30 or 63			2	289	172	51	84	50			21	48
		3	373	214	72	84	50	21	48			A233S342	A233S343
		4	457	256	93	84	50	21	48			A233S442	A233S443
		5	541	298	114	84	50	21	48			A233S542	A233S543
		6	625	340	135	84	50	21	48			A233S642	A233S643
		7	709	382	156	84	50	21	48			A233S742	A233S743
		30	30 or 63	2	330	213	51	125	50			21	88
3	414			255	72	125	50	21	88			A233S352	A233S353
4	498			297	93	125	50	21	88			A233S452	A233S453
5	582			339	114	125	50	21	88	A233S552	A233S553		
6	666			381	135	125	50	21	88	A233S652	A233S653		
7	750			423	156	125	50	21	88	A233S752	A233S753		

Type MHZ Threephase Tap Changer

Star Diagram / 10 - 30 kV / 30 - 63 A / 2 - 7 Positions / Setting 2.5 % per Position (With Aluminium Support)



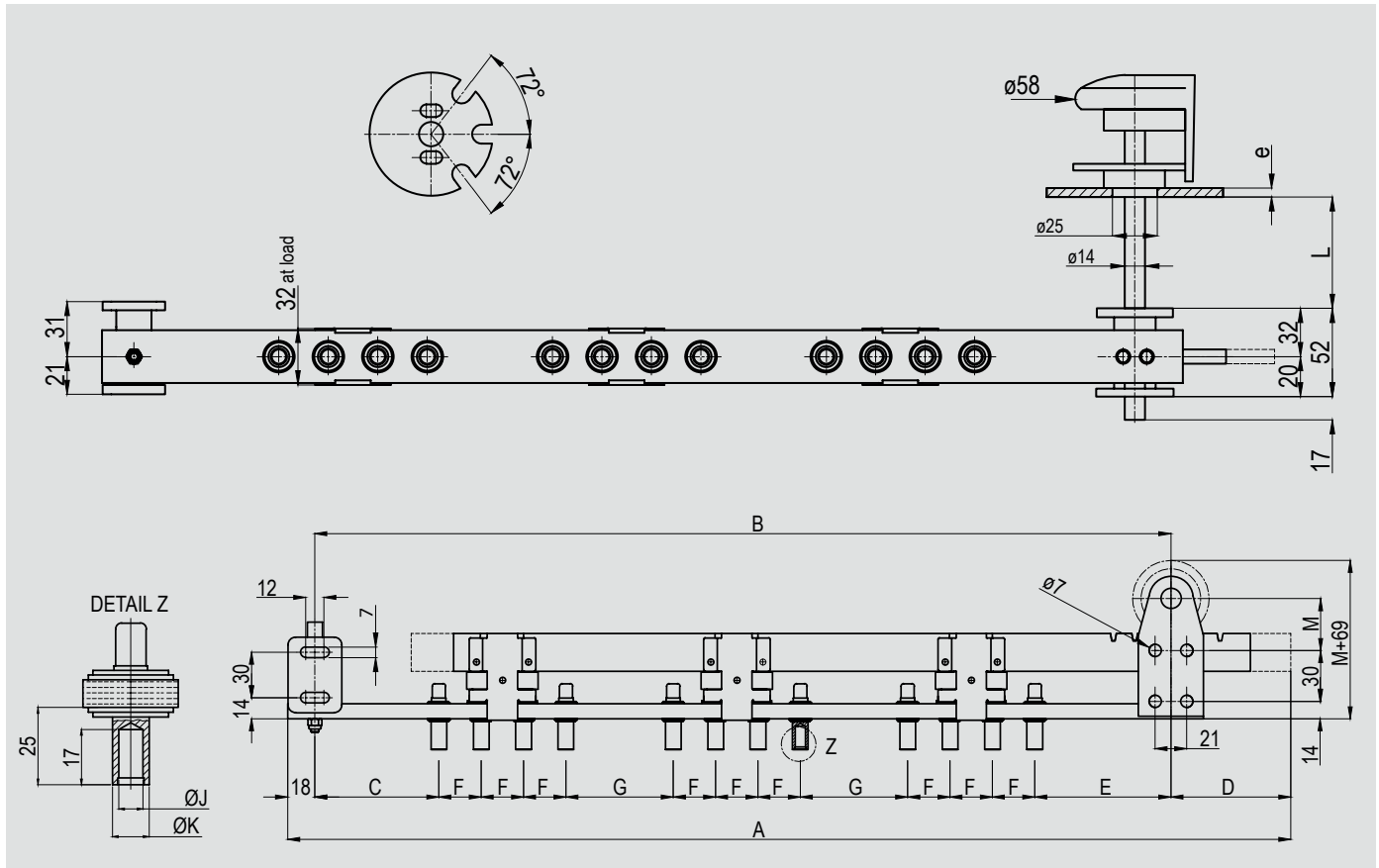
Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	L	e	Unit No 30A J: 3.1 K: 5	Unit No 63A J: 5.1 K: 7
10	30 or 63	2	288	219	53	51	61	21	Please specify when ordering		A231S222	A231S223
		3	372	282	53	72	61	21			A231S322	A231S323
		4	456	345	53	93	61	21			A231S422	A231S423
		5	540	408	53	114	61	21			A231S522	A231S523
		6	624	471	53	135	61	21			A231S622	A231S623
		7	708	534	53	156	61	21			A231S722	A231S723
20	30 or 63	2	334	265	76	51	84	21			A231S242	A231S243
		3	418	328	76	72	84	21			A231S342	A231S343
		4	502	391	76	93	84	21			A231S442	A231S443
		5	586	454	76	114	84	21			A231S542	A231S543
		6	670	517	76	135	84	21			A231S642	A231S643
		7	754	580	76	156	84	21			A231S742	A231S743
30	30 or 63	2	416	347	117	51	125	21			A231S252	A231S253
		3	500	410	117	72	125	21			A231S352	A231S353
		4	584	473	117	93	125	21			A231S452	A231S453
		5	668	536	117	114	125	21			A231S552	A231S553
		6	752	599	117	135	125	21			A231S652	A231S653
		7	836	662	117	156	125	21			A231S752	A231S753

Delta Diagram / 10 - 30 kV / 120 A / 2 - 5 Positions / Setting 2.5 % per Position (With HP Support)

Voltage Class kV	Current A	Number of Positions	A	B	D	E	G	I	F	X min	M	L	e	Unit No 120 A J: 8.1 K: 12				
10	120	2	406	251	58	67	48	48	28	48	32	Please specify when ordering		A233D224				
		3	518	307	86	67	48	48	28	48	32			A233D324				
		4	630	363	114	67	48	48	28	48	32			A233D424				
		5	742	419	142	67	48	48	28	48	32			A233D524				
20	120	2	475	308	58	90	71	71	28	48	32			Please specify when ordering		A233D244		
		3	587	364	86	90	71	71	28	48	32					A233D344		
		4	699	420	114	90	71	71	28	48	32					A233D444		
		5	811	476	142	90	71	71	28	48	32					A233D544		
30	120	2	563	384	58	130	95	95	28	88	32					Please specify when ordering		A233D254
		3	675	440	86	130	95	95	28	88	32							A233D354
		4	787	496	114	130	95	95	28	88	32							A233D454
		5	899	552	142	130	95	95	28	88	32							A233D554

Type MHZ Threephase Tap Changer

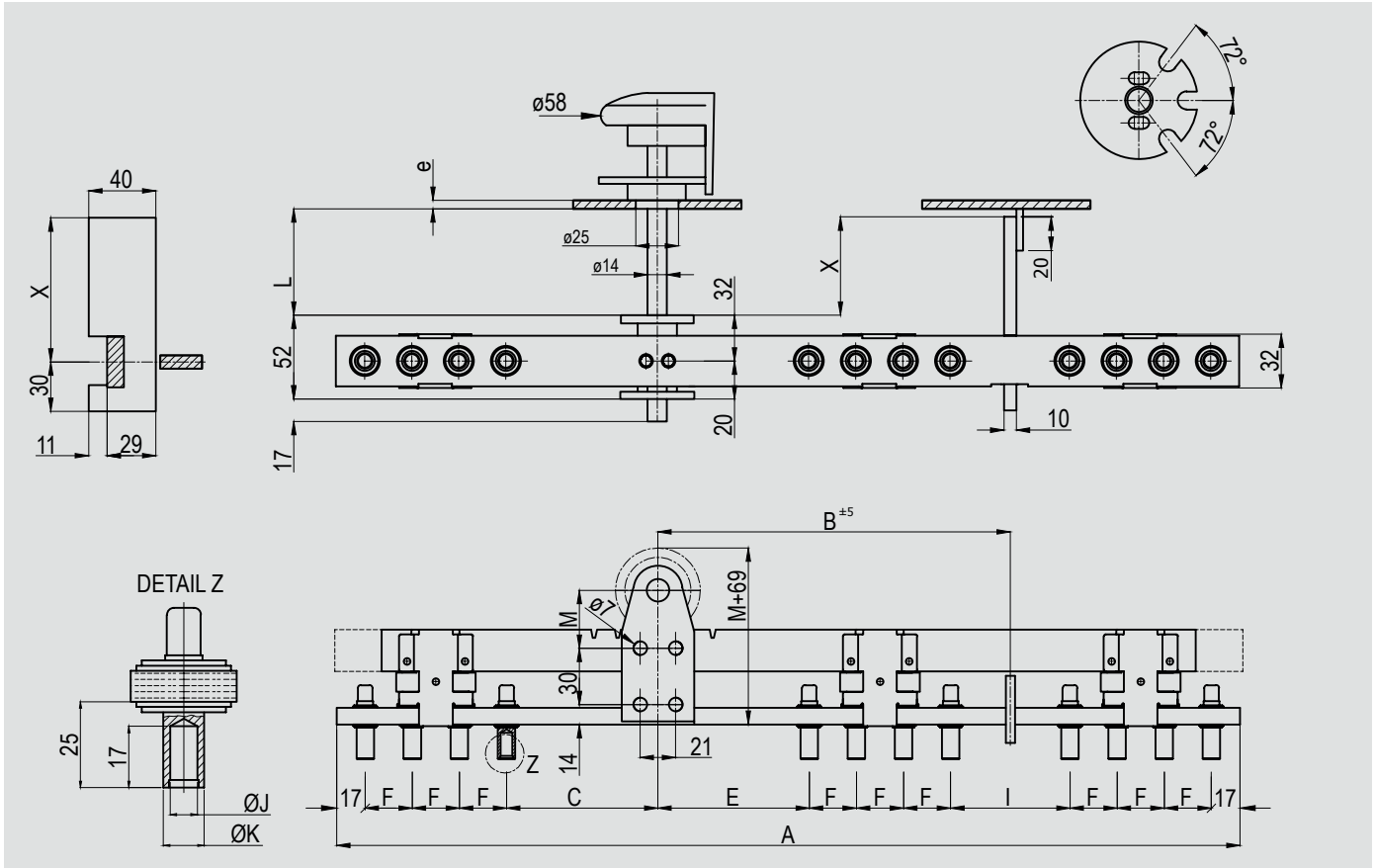
Delta Diagram / 10 - 30 kV / 120 A / 2 - 5 Positions / Setting 2.5 % per Position (With Aluminium Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	G	F	M min.	L	e	Unit No 120 A J: 8.1 K: 12				
10	120	2	466	390	59	58	67	48	28	32	Please specify when ordering		A231D224				
		3	578	474	59	86	67	48	28	32			A231D324				
		4	690	558	59	114	67	48	28	32			A231D424				
		5	802	642	59	142	67	48	28	32			A231D524				
20	120	2	558	482	82	58	90	71	28	32			Please specify when ordering		A231D244		
		3	670	566	82	86	90	71	28	32					A231D344		
		4	782	650	82	114	90	71	28	32					A231D444		
		5	894	734	82	142	90	71	28	32					A231D544		
30	120	2	686	610	122	58	130	95	28	32					Please specify when ordering		A231D254
		3	798	694	122	86	130	95	28	32							A231D354
		4	910	778	122	114	130	95	28	32							A231D454
		5	1022	862	122	142	130	95	28	32							A231D554

Type MHZ Threephase Tap Changer

Delta Diagram / 10 - 30 kV / 120 A / 2 - 5 Positions / Setting 2.5 % per Position (With HP Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	E	I	F	X min	M	L	e	Unit No 120 A J: 8.1 K: 12
10	120	2	384	147	67	67	48	28	48	32	Please specify when ordering	A235D224 A235D324 A235D424 A235D524	
		3	468	175	67	67	48	28	48	32			
		4	552	203	67	67	48	28	48	32			
		5	636	231	67	67	48	28	48	32			
20	120	2	453	181	90	90	71	28	48	32			A235D244 A235D344 A235D444 A235D544
		3	537	209	90	90	71	28	48	32			
		4	621	237	90	90	71	28	48	32			
		5	705	265	90	90	71	28	48	32			
30	120	2	557	233	130	130	95	28	88	32		A235D254 A235D354 A235D454 A235D554	
		3	641	261	130	130	95	28	88	32			
		4	725	289	130	130	95	28	88	32			
		5	809	317	130	130	95	28	88	32			

Delta Diagram / 10 - 30 kV / 120 A / 2 - 5 Positions / Setting 2.5 % per Position (With Aluminium Support)

Voltage Class kV	Current A	Number of Positions	A	B	C	E	F	M	L	e	Unit No 120 A J: 8.1 K: 12	
10	120	2	454	182	59	67	28	32	Please specify when ordering		A234D224	
		3	538	210	59	67	28	32			A234D324	
		4	622	238	59	67	28	32			A234D424	
		5	706	266	59	67	28	32			A234D524	
20	120	2	546	228	82	90	28	32			A234D244	
		3	630	256	82	90	28	32			A234D344	
		4	714	284	82	90	28	32			A234D444	
		5	798	312	82	90	28	32			A234D544	
30	120	2	706	308	122	130	28	32				A234D254
		3	790	336	122	130	28	32				A234D354
		4	874	364	122	130	28	32				A234D454
		5	958	392	122	130	28	32				A234D554

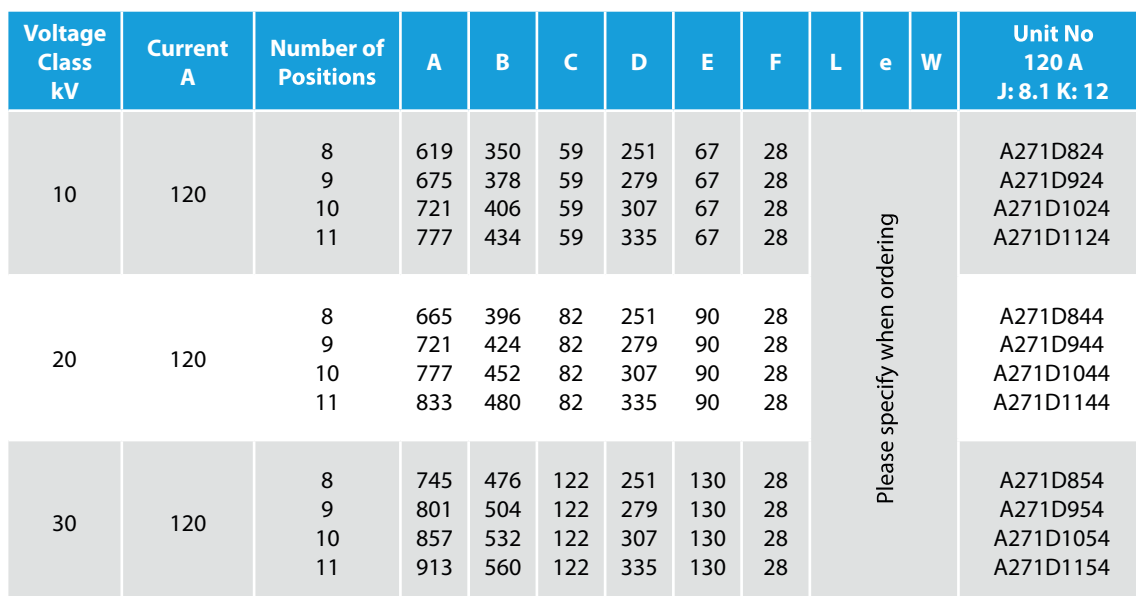
Delta Diagram / 10 - 30 kV / 120 A / 6 - 11 Positions / Setting 2.5 % per Position (With Aluminium Support)

Voltage Class kV	Current A	Number of Positions	A	B	C	E	S	T	M	F	& °	L	e	Unit No 120 A J: 8.1 K: 12
10	120	6	790	294	59	67	30	44	129.5	28	44,3 °	Please specify when ordering		A234D624
		7	874	322	59	67	30	44	129.5	28	44,3 °		A234D724	
		8	958	350	59	67	30	56	152.5	28	33 °		A234D824	
		9	1042	378	59	67	30	56	152.5	28	33 °		A234D924	
		10	1126	406	59	67	30	56	152.5	28	33 °		A234D1024	
		11	1210	434	59	67	30	56	152.5	28	33 °		A234D1124	
20	120	6	882	340	82	90	30	44	129.5	28	44,3 °			A234D644
		7	966	368	82	90	30	44	129.5	28	44,3 °		A234D744	
		8	1050	396	82	90	30	56	152.5	28	33 °		A234D844	
		9	1134	424	82	90	30	56	152.5	28	33 °		A234D944	
		10	1218	452	82	90	30	56	152.5	28	33 °		A234D1044	
		11	1302	480	82	90	30	56	152.5	28	33 °		A234D1144	
30	120	6	1042	420	122	130	30	44	129.5	28	44,3 °			A234D654
		7	1126	448	122	130	30	44	129.5	28	44,3 °		A234D754	
		8	1210	476	122	130	30	56	152.5	28	33 °		A234D854	
		9	1294	504	122	130	30	56	152.5	28	33 °		A234D954	
		10	1378	532	122	130	30	56	152.5	28	33 °		A234D1054	
		11	1462	560	122	130	30	56	152.5	28	33 °		A234D1154	

*Delta Diagram / 10 - 30 kV / 120 A / 8 - 11 Positions / Special Diagram / Setting 2.5 % per Position
(With Aluminium Support)*

Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	G	F	L	e	W	Unit No 120 A J: 8.1 K: 12	
10	120	8	866	622	59	251	67	48	28	Please specify when ordering			A271D824	
		9	950	678	59	279	67	48	28		A271D924			
		10	1034	734	59	307	67	48	28		A271D1024			
		11	1118	790	59	335	67	48	28		A271D1124			
20	120	8	935	691	82	251	90	71	28					A271D844
		9	1019	747	82	279	90	71	28		A271D944			
		10	1103	803	82	307	90	71	28		A271D1044			
		11	1187	859	82	335	90	71	28		A271D1144			
30	120	8	1039	795	122	251	130	95	28					A271D854
		9	1123	851	122	279	130	95	28		A271D954			
		10	1207	907	122	307	130	95	28		A271D1054			
		11	1291	963	122	335	130	95	28		A271D1154			

*Delta Diagram / 10 - 30 kV / 120 A / 8 - 11 Positions / Special Diagram / Setting 2.5 % per Position
(With Aluminium Support)*



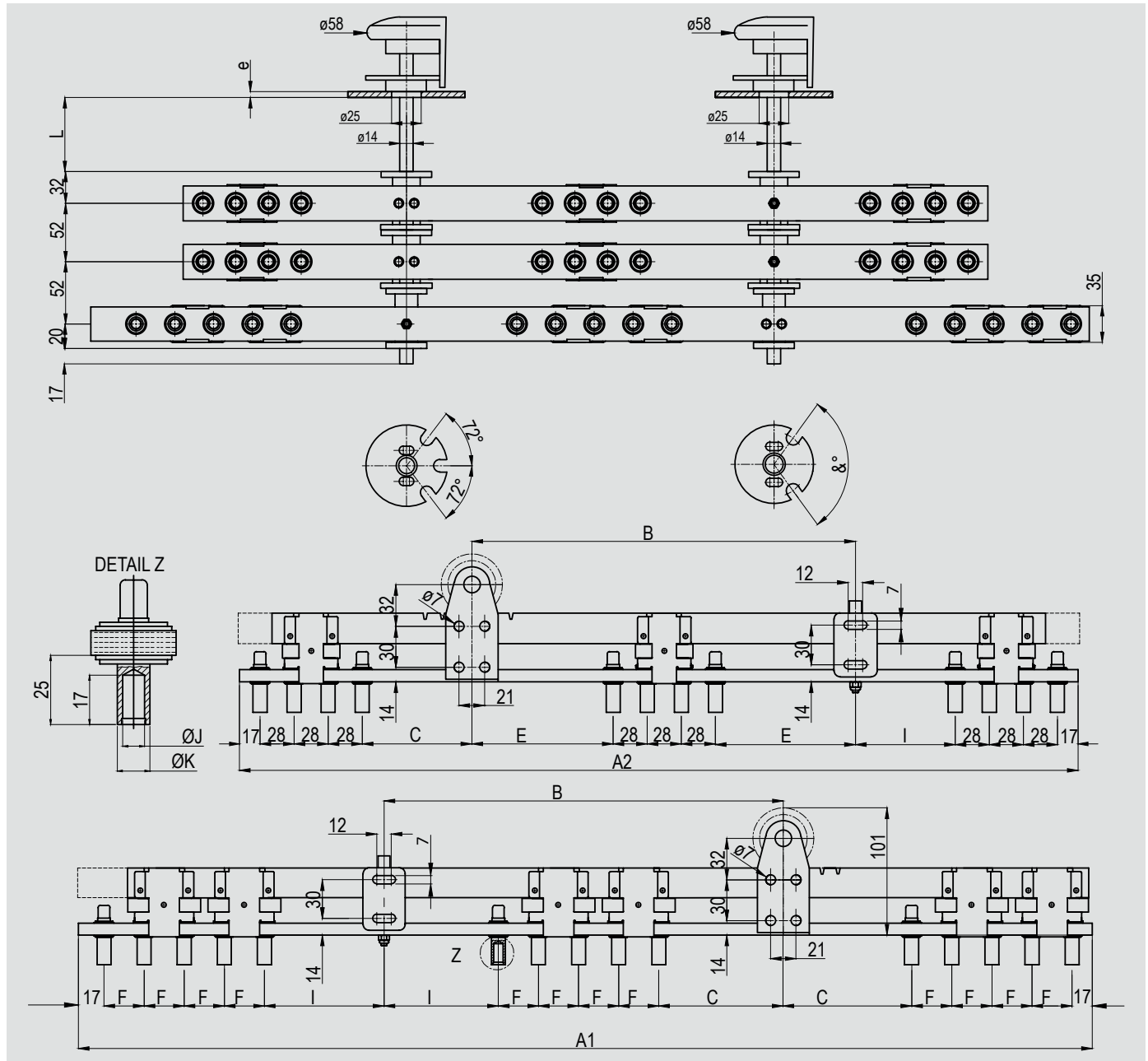
Voltage Class kV	Current A	A	B	C	D	E	F	G	& °	L	e	Unit No 120 A J: 8.1 K: 12
5 - 10	120	833	743	68	72	75	42	48	108 °	Please specify when ordering		A231P294
10 - 20		908	818	82	72	90	42	71	108 °			A231P274
25 - 30		1127	1030	122	79	130	49	95	126 °			A231P284



Type MHZ Threephase Tap Changer

1. Series Parallel Coupling / 10 - 30 kV / 120 A

2. Delta Settings / 20 - 30 kV / 120 A / Setting 2.5 % per Position (With Aluminium Support)



Voltage Class kV		Current A	Number of Positions	A		B	C	E	I	F	°	L	e	Unit No 120 A J: 8.1 K: 12
Series Parallel	Delta			A	A1									
10 - 20	20	120	3	833	714	340	90	128	82	42	108 °	Please specify when ordering		A254K374
			4	908	770	340	90	114	82	42	108 °			A254K474
			5	1127	826	340	90	100	82	42	108 °			A254K574
25 - 30	30	120	3	1126	902	448	130	182	122	49	126 °			A254K384
			4	1126	958	448	130	168	122	49	126 °			A254K484
			5	1126	1014	448	130	154	122	49	126 °			A254K584

When ordering please quote

- 1 - Tap changer unit no.
- 2 - Voltage class, current and type of setting or coupling
- 3 - The service voltages and test voltages at industrial frequency (50 Hz) and on impulse (1/50), on the earth, across phases, across contact of the same phase, across contact and common output
- 4 - Control device no. (MH 341 / MH 342 / MH 353)
- 5 - The language on the control device (page 1)
- 6 - Number of positions
- 7 - The indication of the repeater disc (A1, B1, C1, D1)
- 8 - Dimensions of the fixed contacts (J and K)
- 9 - L, e, X, W dimensions from the tables

For special setups not shown in the catalogue please contact us