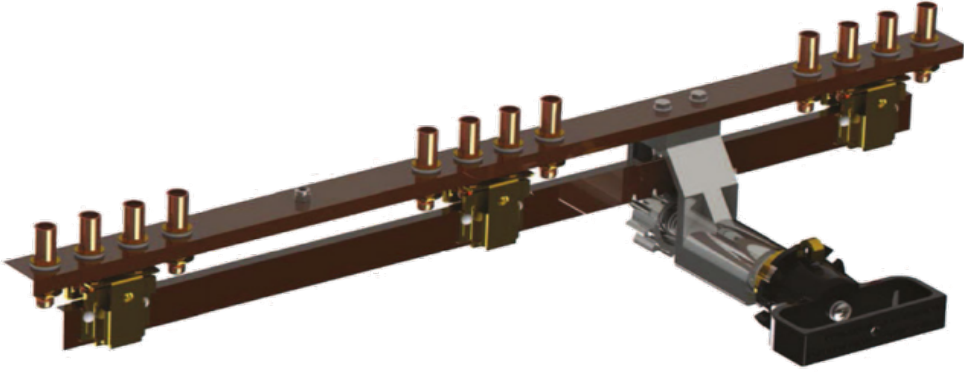


TAP CHANGER TYPE MHM



Specification Assembly and Materials



Descriptions	Remarks
General Specifications	- available in one, two or three phase application - multi layer types upon request - shaft length is fixed as sizes 91 and 131 mm - driving mechanism can be either on the edge or in the middle of the phases - connection diagrams (on Page 4) 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 40 500	
Insulator Parts	Paper phenol - plastic resin based laminates / HP 2061.5 class of DIN 7735	
Transformer Cover Thickness	10 mm-4 mm (6 spacer rings with each 1 mm)	
Current	30 A / 63 A / 120 A	
Upon Request	- aluminum parts protected by anodic oxidation - mild steel parts supplied in stainless steel - brass and copper parts are either tin-, silver- or cadmium-plated	

Operating Instructions

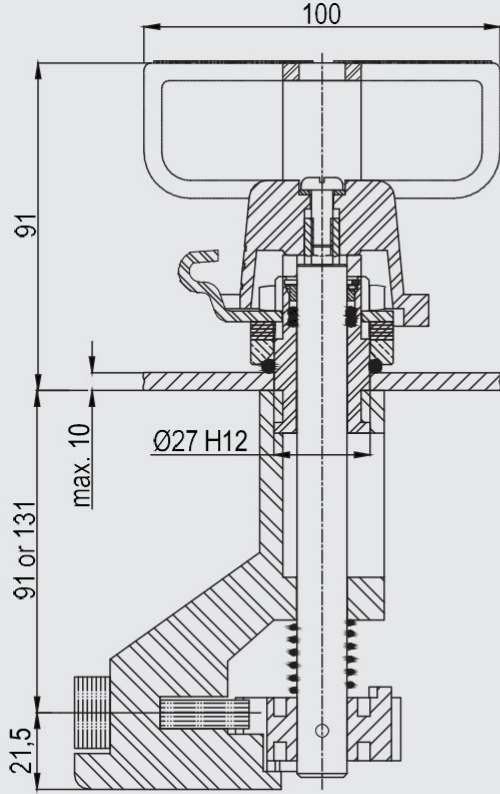
For each operation, the handle must first be pulled axially in the direction of the user in order to be subsequently rotated to the desired position. After being turned, the handle drops into the intended position by means of a high tension spring. Each position is precisely marked by a notch.

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

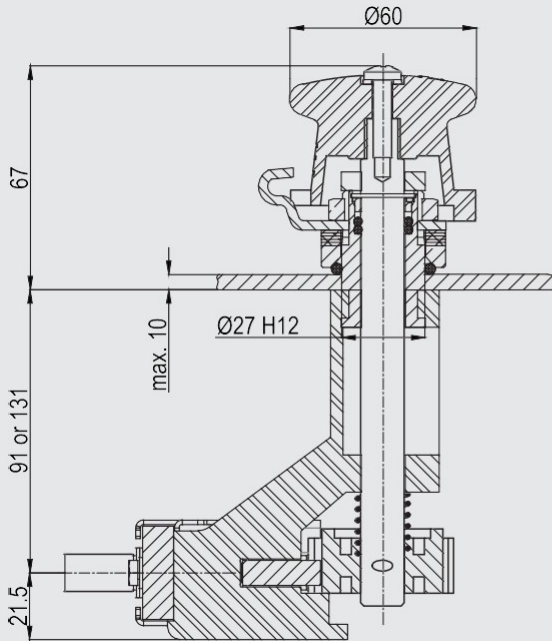
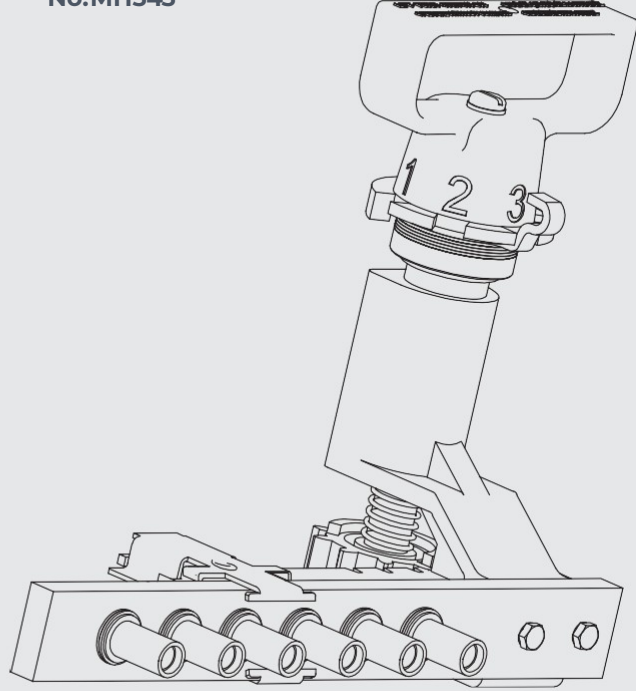
Current	Contact inner dia. (cable connection)	Voltage Class	B.I.L
30 A	Ø 3,1 mm	20 kV	125 kV
63 A	Ø 5,1 mm	30 kV	170 kV
120 A	Ø 8,1 mm	other B.I.L. values upon request	



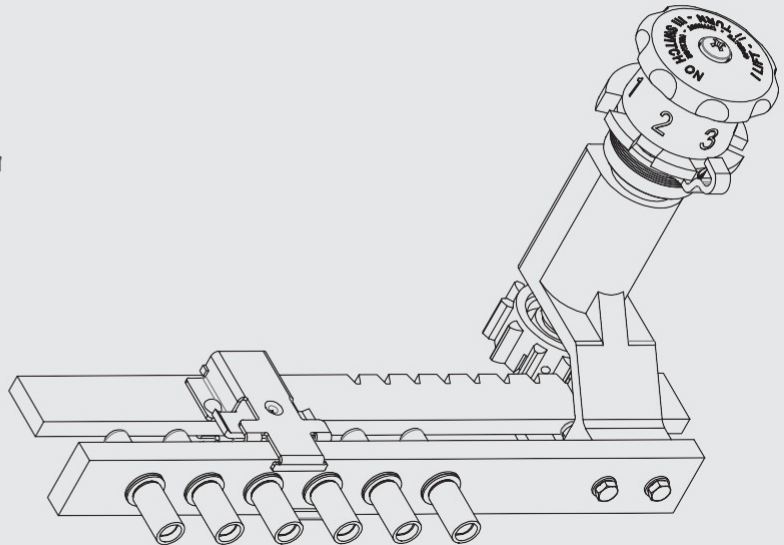
Control Devices



Control Device
No. MH343



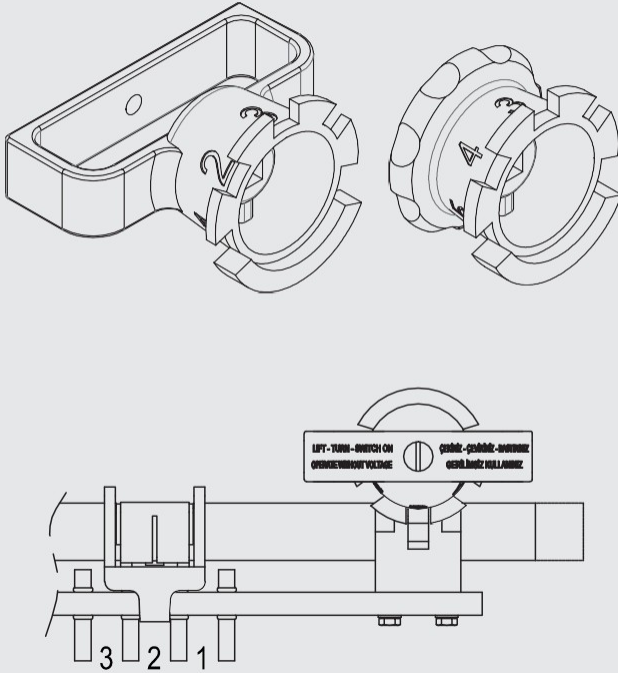
Control Device
No. MH363



Handle Directions and Numbering Combinations

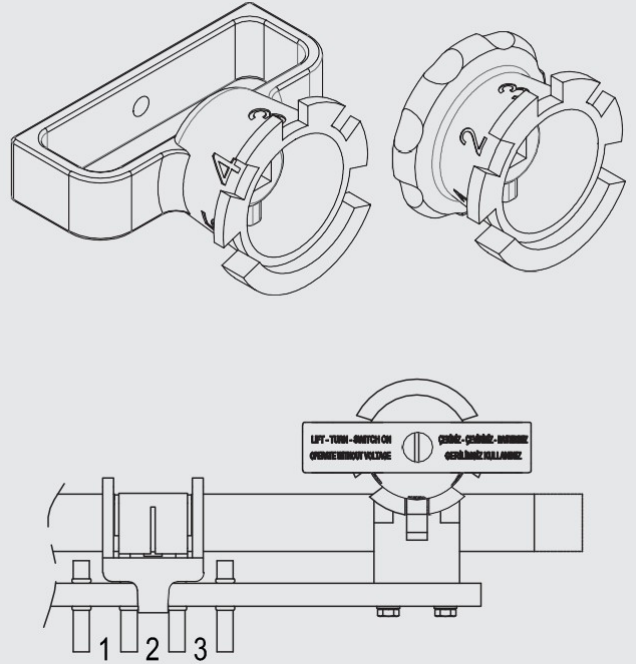
Handle direction A1

Clockwise direction

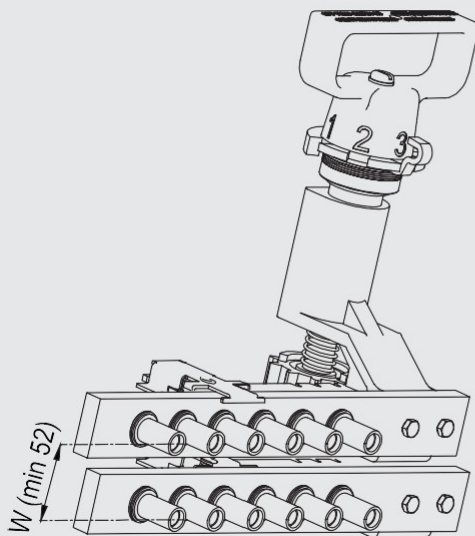


Handle direction B1

Counterclockwise direction

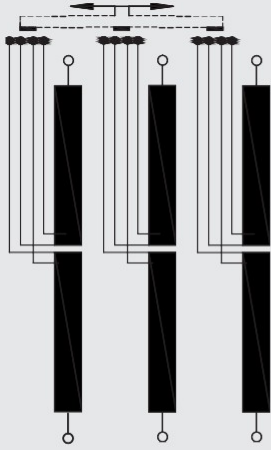


Numbering Combinations

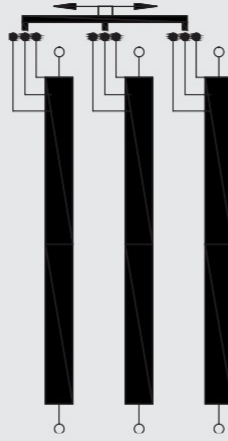


- all MHM tap changers can be paired by superimposing several tap changers whose purpose
- built steel brackets are assembled by nuts and bolts depending
- on the diagram adopted, the user can:
 - either operate the tap changers with one shaft
 - or operate part of the tap changers with one shaft, and the other part with another shaft
- the position of the coupling taps shaft and the position of the setting taps shaft has to be specified
- 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

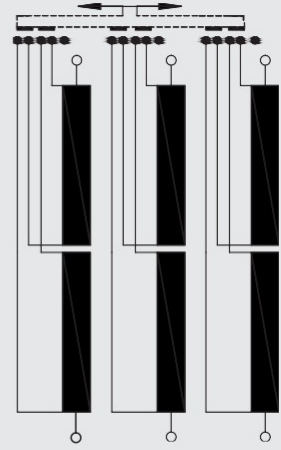
Connection Diagrams



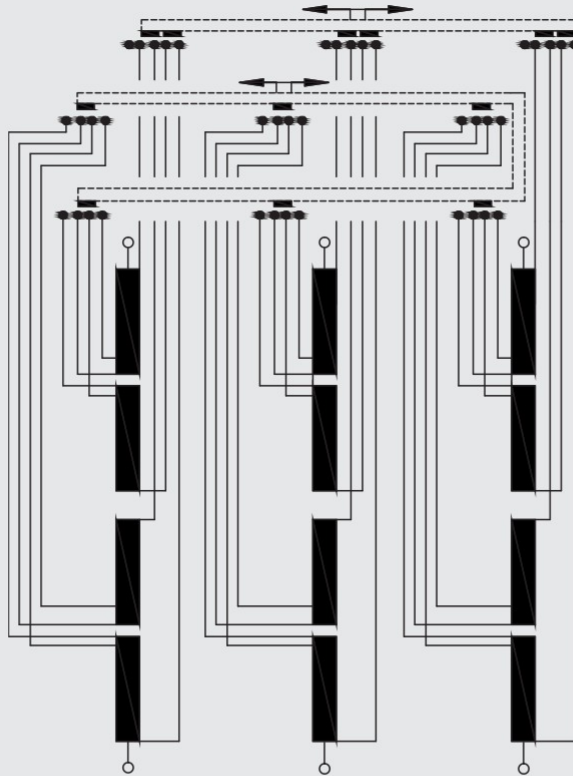
Setting for delta Transformer



Setting for star Transformer



Series - parallel coupling

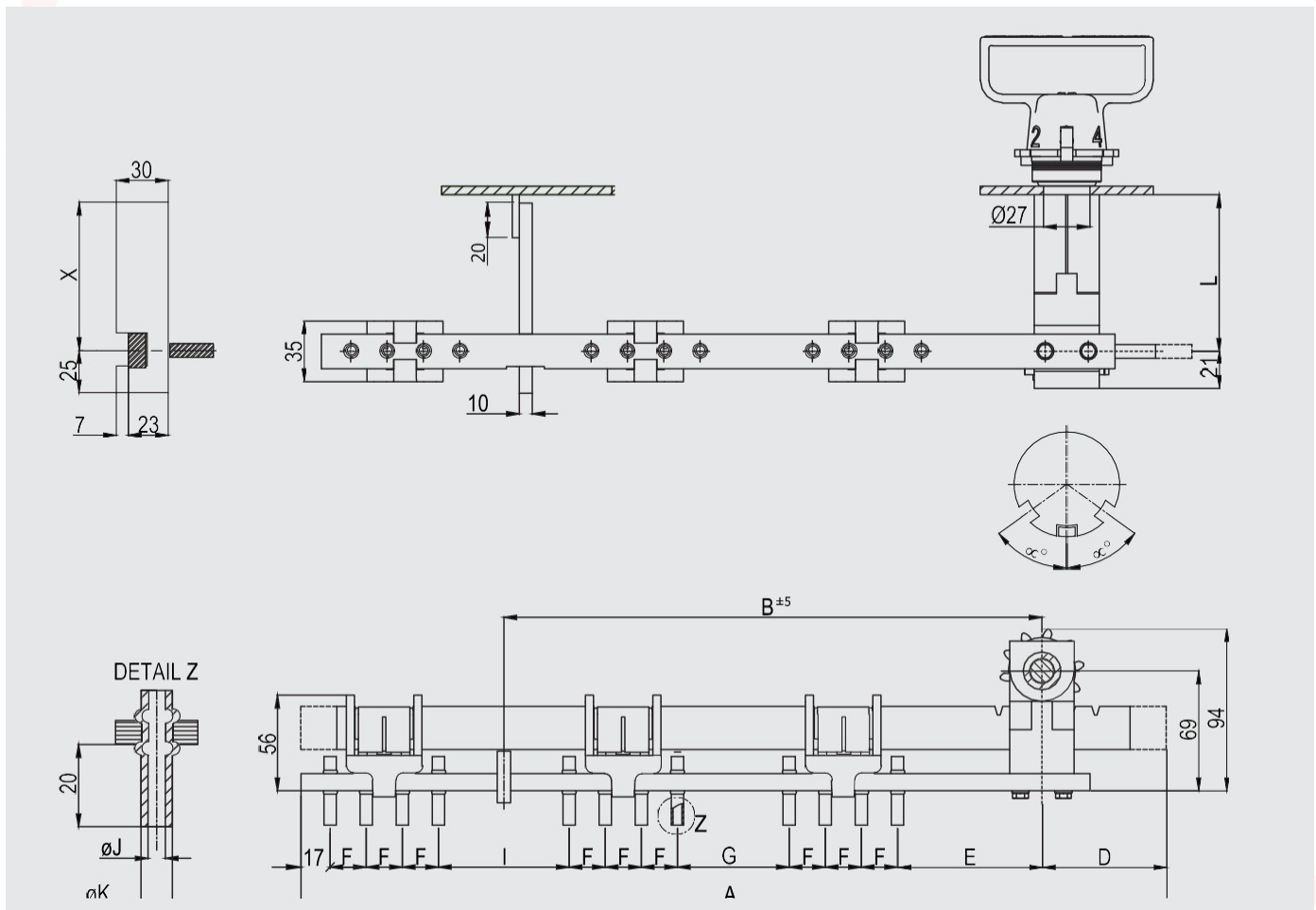


Typical Combination

1. Stage: Series - parallel coupling
2. Stage: Delta diagram - $\pm 2,5\%$

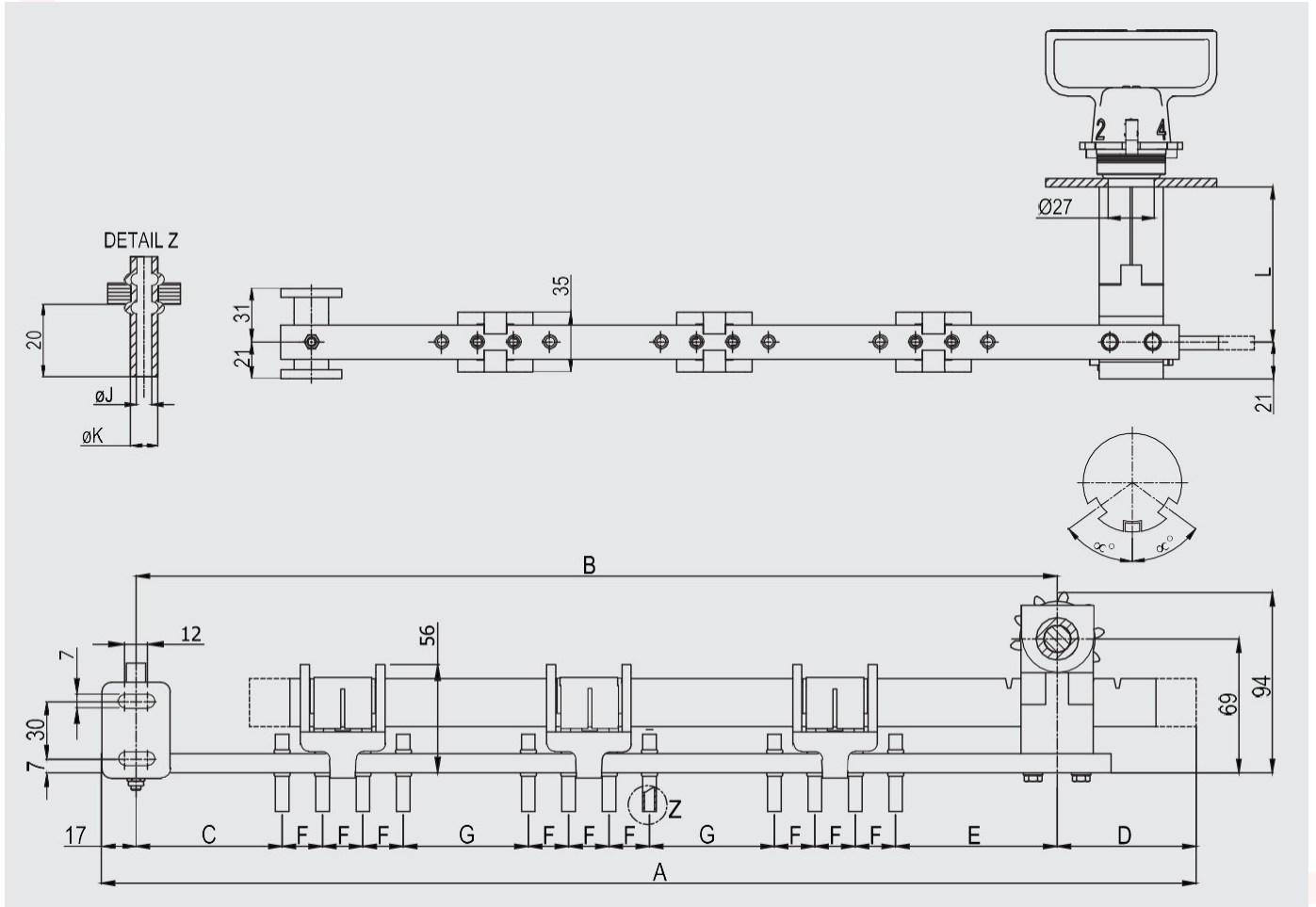


Delta Diagram 20 - 30 kV/30 - 63 A/3 - 7 Positions/Setting 2.5 % per Position



Voltage Class kV	Number of Positions	A	B	D	E	F	G	I	°	Unit No.			
										30 A/J= 3,1/K= 5		63 A/J= 5,1/K= 7	
										L= 91 X= 85	L= 131 X= 120	L= 91 X= 85	L= 131 X= 120
20	3	503	313	72	84	21	65	76	54°	MB333D342	MA333D342	MB333D343	MA333D343
	4	587	355	93	84	21	65	76	54°	MB333D442	MA333D442	MB333D443	MA333D443
	5	671	397	114	84	21	65	76	54°	MB333D542	MA333D542	MB333D543	MA333D543
	6	755	439	135	84	21	65	76	54°	MB333D642	MA333D642	MB333D643	MA333D643
	7	839	481	156	84	21	65	76	54°	MB333D742	MA333D742	MB333D743	MA333D743
30	3	583	386	72	125	21	90	90	54°	MB333D352	MA333D352	MB333D353	MA333D353
	4	667	428	93	125	21	90	90	54°	MB333D452	MA333D452	MB333D453	MA333D453
	5	751	470	114	125	21	90	90	54°	MB333D552	MA333D552	MB333D553	MA333D553
	6	835	512	135	125	21	90	90	54°	MB333D652	MA333D652	MB333D653	MA333D653
	7	919	554	156	125	21	90	90	54°	MB333D752	MA333D752	MB333D753	MA333D753

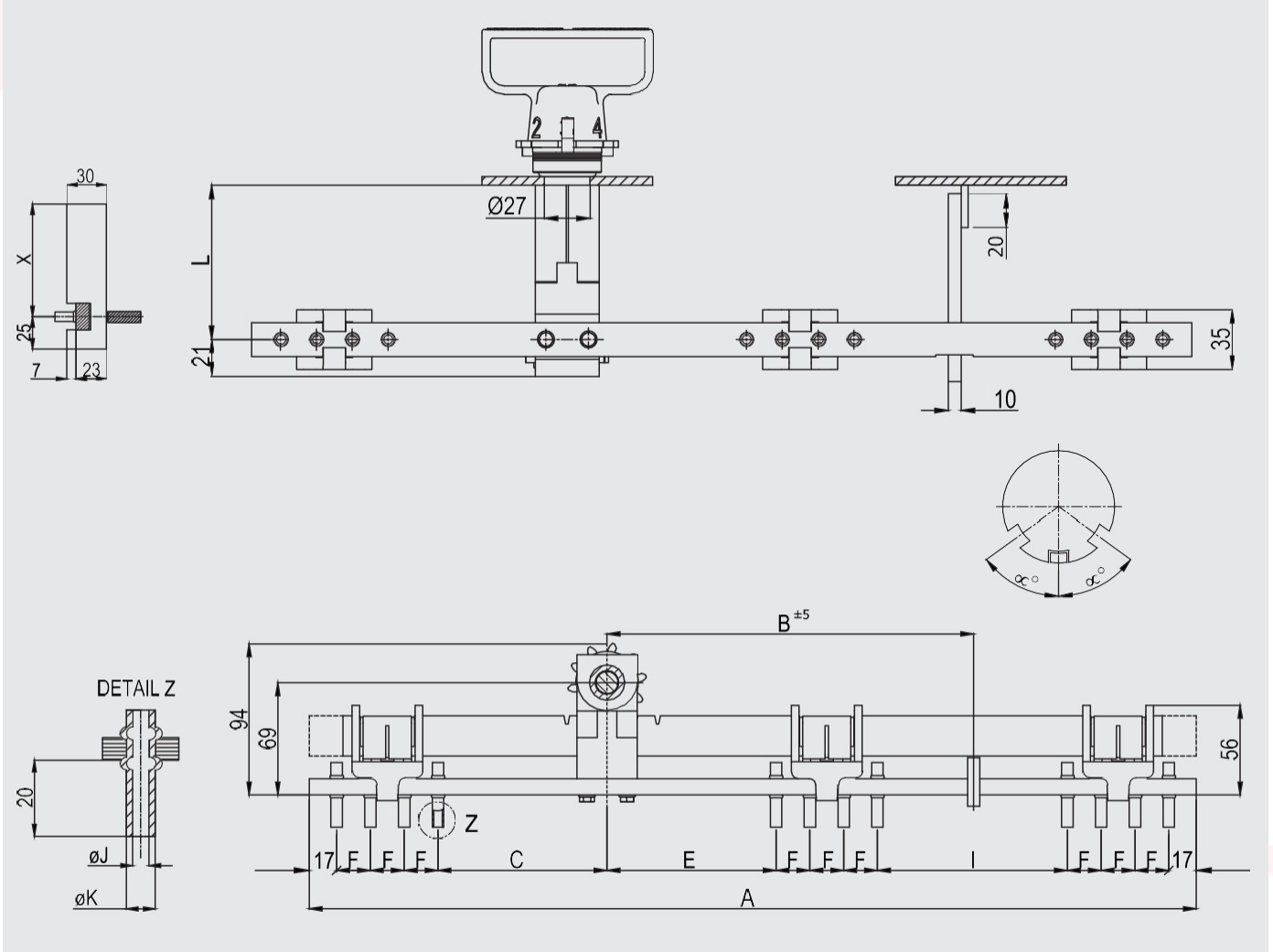
Delta Diagram 20 - 30 kV/30 - 63 A/3 - 7 Positions/Setting 2.5 % per Position



Voltage Class kV	Number of Positions	A	B	C	D	E	F	G	8°	Unit No.			
										30 A/J= 3,1/K= 5		63 A/J= 5,1/K= 7	
										L= 91	L= 131	L= 91	L= 131
20	3	569	479	76	72	84	21	65	54°	MB331D342	MA331D342	MB331D343	MA331D343
	4	653	542	76	93	84	21	65	54°	MB331D442	MA331D442	MB331D443	MA331D443
	5	737	605	76	114	84	21	65	54°	MB331D542	MA331D542	MB331D543	MA331D543
	6	821	668	76	135	84	21	65	54°	MB331D642	MA331D642	MB331D643	MA331D643
	7	905	731	76	156	84	21	65	54°	MB331D742	MA331D742	MB331D743	MA331D743
30	3	701	611	117	72	125	21	90	54°	MB331D352	MA331D352	MB331D353	MA331D353
	4	785	674	117	93	125	21	90	54°	MB331D452	MA331D452	MB331D453	MA331D453
	5	869	737	117	114	125	21	90	54°	MB331D552	MA331D552	MB331D553	MA331D553
	6	953	800	117	135	125	21	90	54°	MB331D652	MA331D652	MB331D653	MA331D653
	7	1037	863	117	156	125	21	90	54°	MB331D752	MA331D752	MB331D753	MA331D753



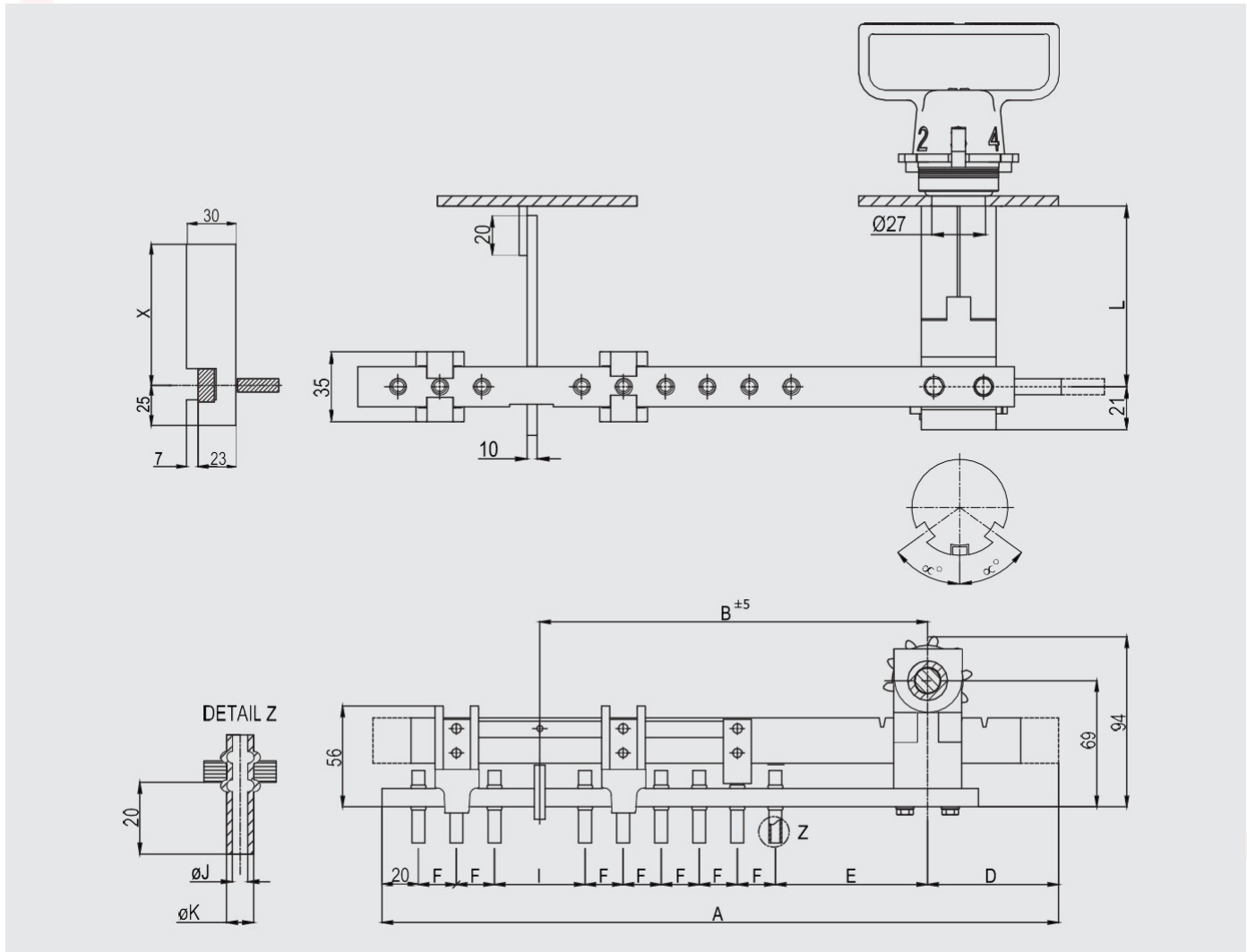
Delta Diagram 20 - 30 kV/30 - 63 A/3 - 7 Positions/Setting 2.5 % per Position



Voltage Class kV	Number of Positions	A	B	C	E	F	I	8°	Unit No.			
									30 A/J=3,1/K=5		63 A/J=5,1/K=7	
									L= 91 X=85	L= 131 X=120	L= 91 X= 85	L= 131 X=120
20	3	551	227	105	105	21	118	54°	MB335D342	MA335D342	MB335D343	MA335D343
	4	572	227	105	84	21	97	54°	MB335D442	MA335D442	MB335D443	MA335D443
	5	593	227	84	84	21	76	54°	MB335D542	MA335D542	MB335D543	MA335D543
	6	656	248	84	84	21	76	54°	MB335D642	MA335D642	MB335D643	MA335D643
	7	719	269	84	84	21	76	54°	MB335D742	MA335D742	MB335D743	MA335D743
30	3	647	275	146	146	21	132	54°	MB335D352	MA331D352	MB335D353	MA335D353
	4	668	275	146	125	21	111	54°	MB335D452	MA331D452	MB335D453	MA335D453
	5	689	275	125	125	21	90	54°	MB335D552	MA331D552	MB335D553	MA335D553
	6	752	296	125	125	21	90	54°	MB335D652	MA331D652	MB335D653	MA335D653
	7	815	317	125	125	21	90	54°	MB335D752	MA331D752	MB335D753	MA335D753

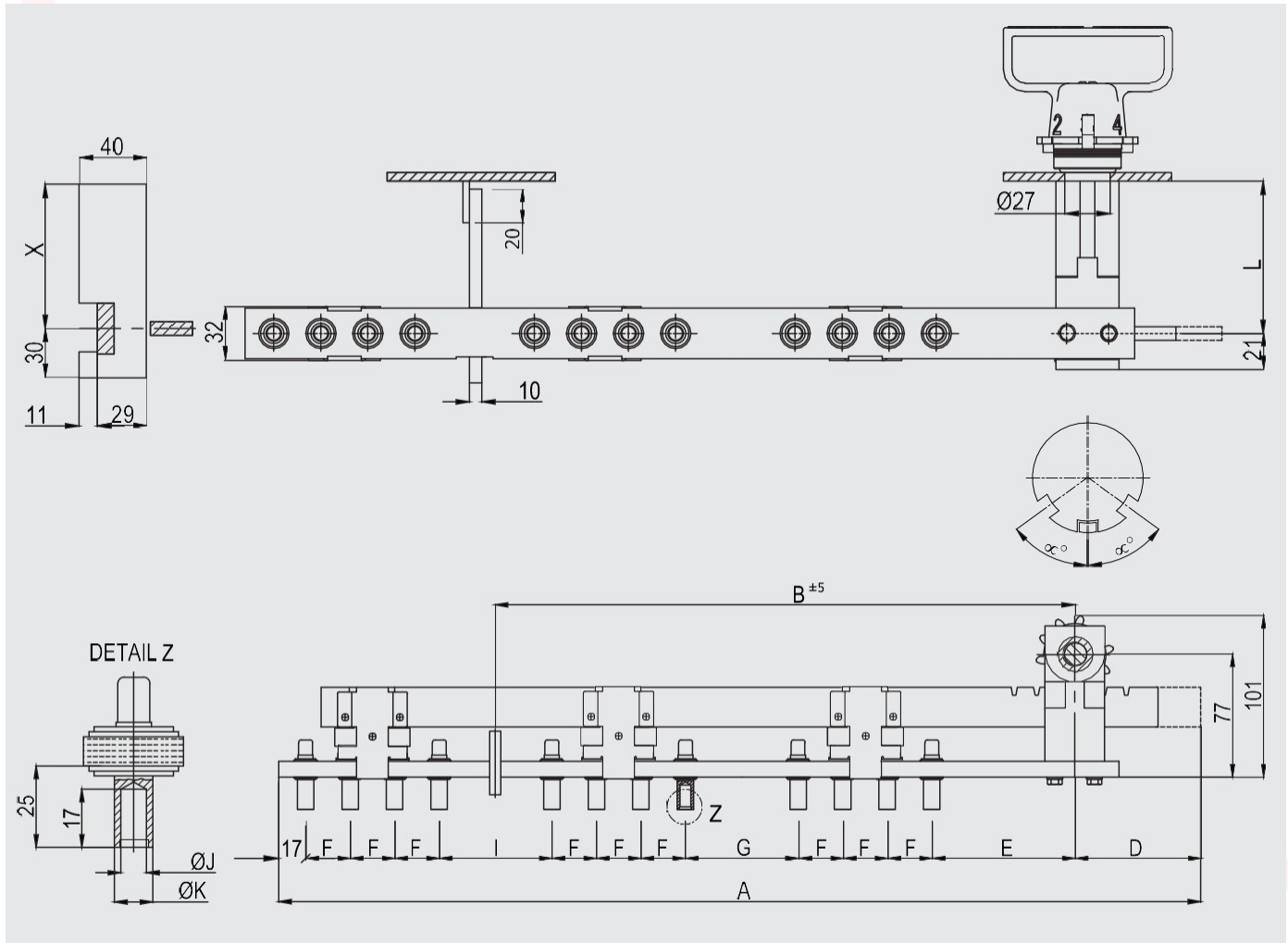


Star Diagram 20 - 30 kV/30 - 63 A/3 - 7 Positions/Setting 2.5 % per Position



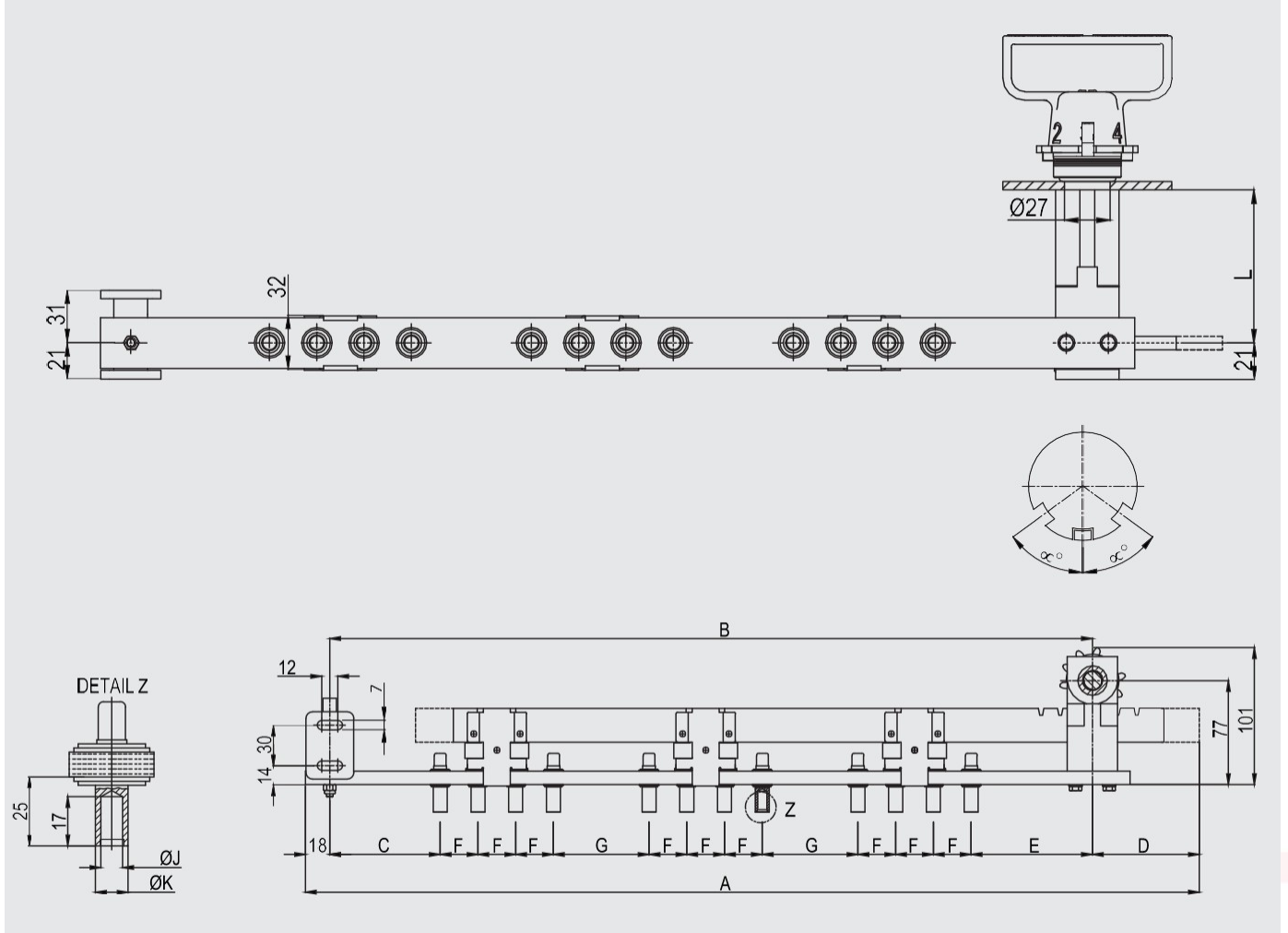
Voltage Class kV	Number of Positions	A	B	D	E	F	I	8°	Unit No.			
									30 A/J= 3,1 /K= 5		63 A/J= 5,1 /K= 7	
									L= 91	L= 131	L= 91	L= 131
20	3	373	214	72	84	21	50	54°	MB333S342	MA333S342	MB333S343	MA333S343
	4	457	256	93	84	21	50	54°	MB333S442	MA333S442	MB333S443	MA333S443
	5	541	298	114	84	21	50	54°	MB333S542	MA333S542	MB333S543	MA333S543
	6	625	340	135	84	21	50	54°	MB333S642	MA333S642	MB333S643	MA333S643
	7	709	382	156	84	21	50	54°	MB333S742	MA333S742	MB333S743	MA333S743
30	3	414	255	72	125	21	50	54°	MB333S352	MA333S352	MB333S353	MA333S353
	4	498	279	93	125	21	50	54°	MB333S452	MA333S452	MB333S453	MA333S453
	5	582	339	114	125	21	50	54°	MB333S552	MA333S552	MB333S553	MA333S553
	6	666	381	135	125	21	50	54°	MB333S652	MA333S652	MB333S653	MA333S653
	7	750	423	156	125	21	50	54°	MB333S752	MA333S752	MB333S753	MA333S753

Delta Diagram 20 - 30 kV/120 A/3 - 5 Positions/Setting 2.5 % per Position



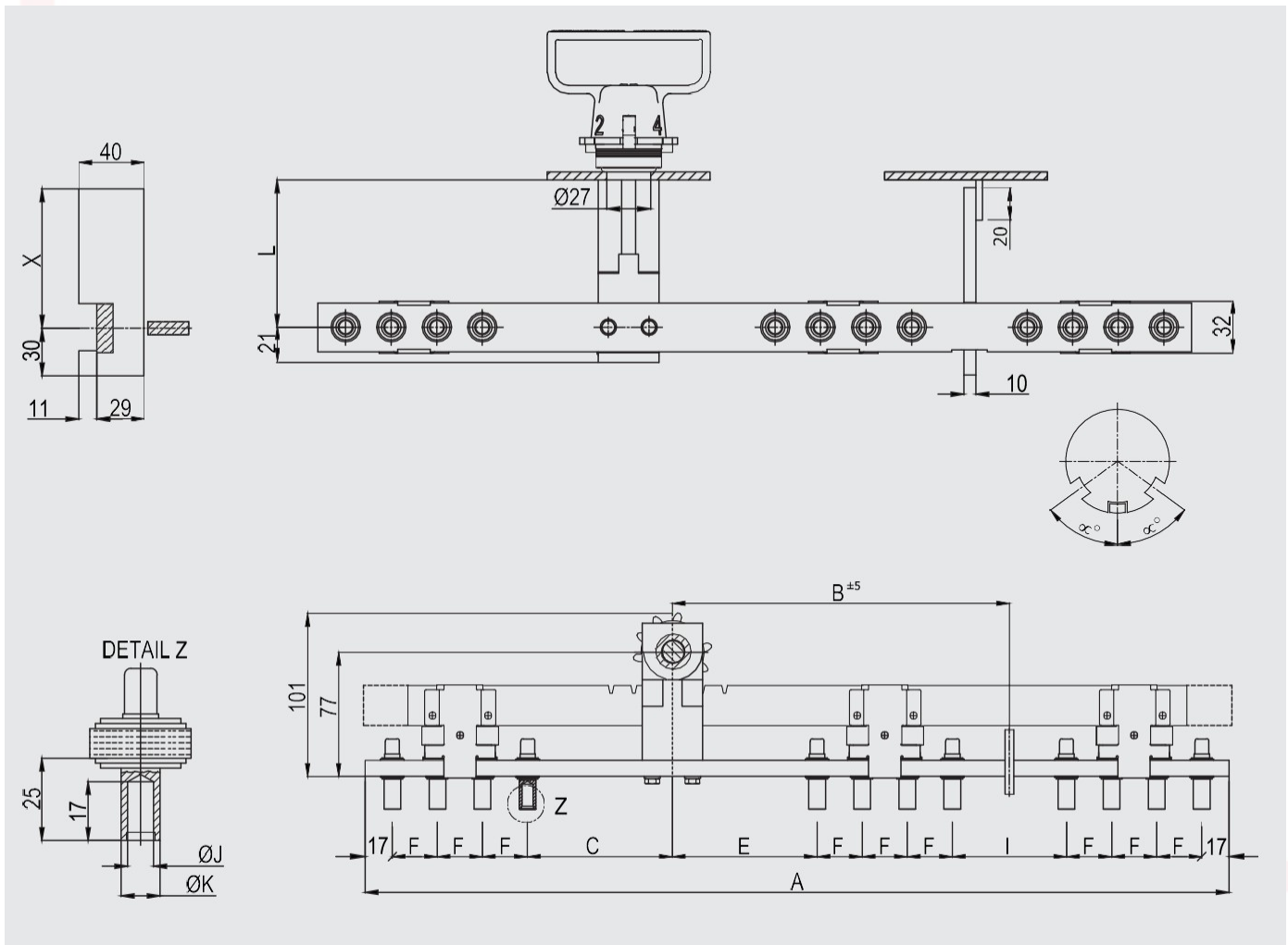
Voltage Class kV	Current A	Number of Positions	A	B	D	E	F	G	I	g°	Unit No.	
											120 A / J= 8,1 / K= 12	
											L= 91 X= 85	L= 131 X= 120
20	120	3	587	364	86	90	28	71	71	72°	MB333D344	MA333D344
		4	699	420	114	90	28	71	71	72°	MB333D444	MA333D444
		5	811	476	142	90	28	71	71	72°	MB333D544	MA333D544
30	120	3	675	440	86	130	28	95	95	72°	MB333D354	MA333D354
		4	787	496	114	130	28	95	95	72°	MB333D454	MA333D454
		5	899	552	142	130	28	95	95	72°	MB333D554	MA333D554

Delta Diagram 20 - 30 kV/120 A/3 - 5 Positions/Setting 2.5 % per Position



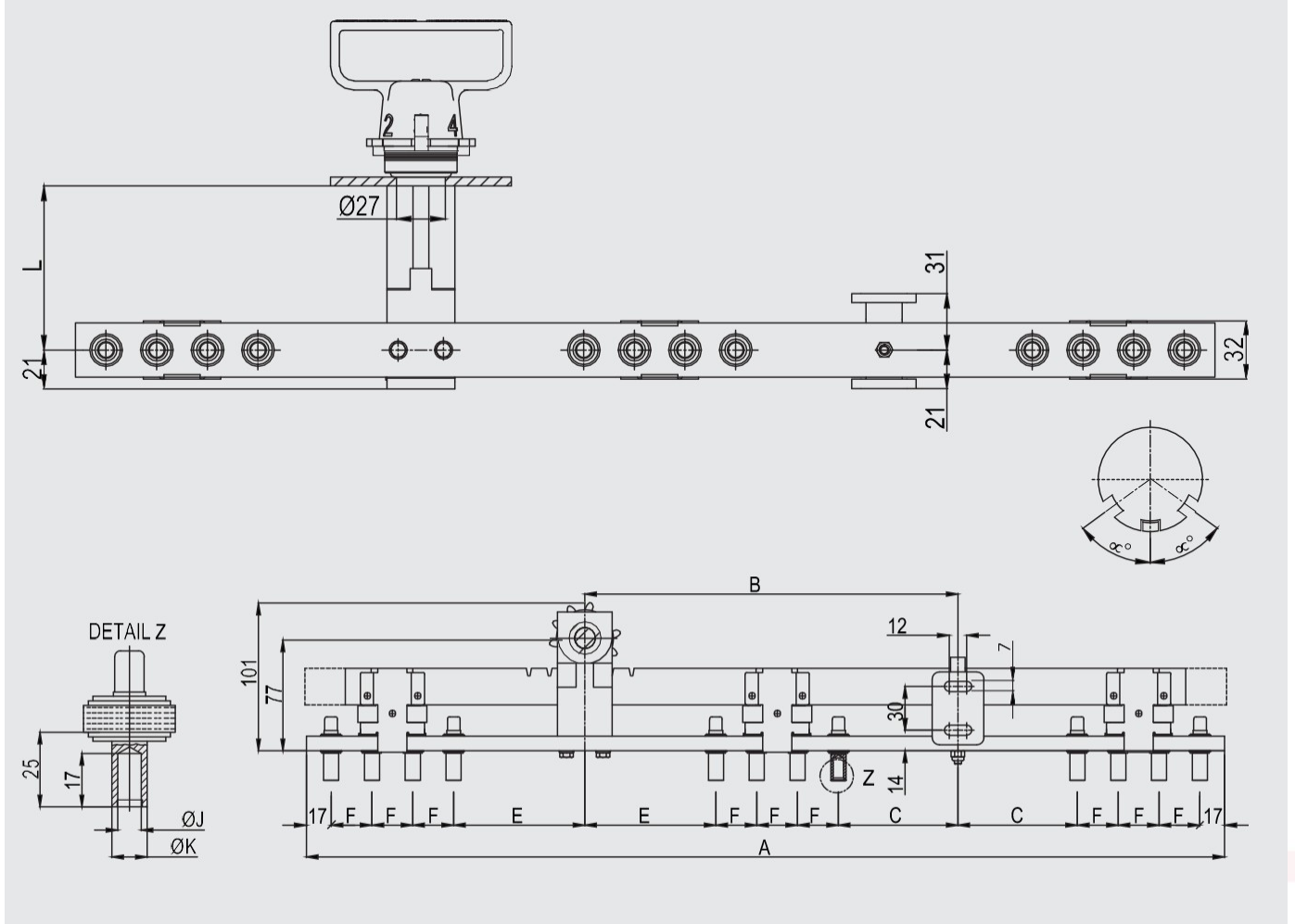
Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	G	8°	Unit No.	
											120 A/J= 8,1/K= 12	
											L= 91	L= 131
20	120	3	670	566	82	86	90	28	71	72°	MB331D344	MA331D344
		4	782	650	82	114	90	28	71	72°	MB331D444	MA331D444
		5	894	734	82	142	90	28	71	72°	MB331D544	MA331D544
30	120	3	798	694	122	86	130	28	95	72°	MB331D354	MA331D354
		4	910	778	122	114	130	28	95	72°	MB331D454	MA331D454
		5	1022	862	122	142	130	28	95	72°	MB331D554	MA331D554

Delta Diagram 20 - 30 kV/120 A/3 - 5 Positions/Setting 2.5 % per Position



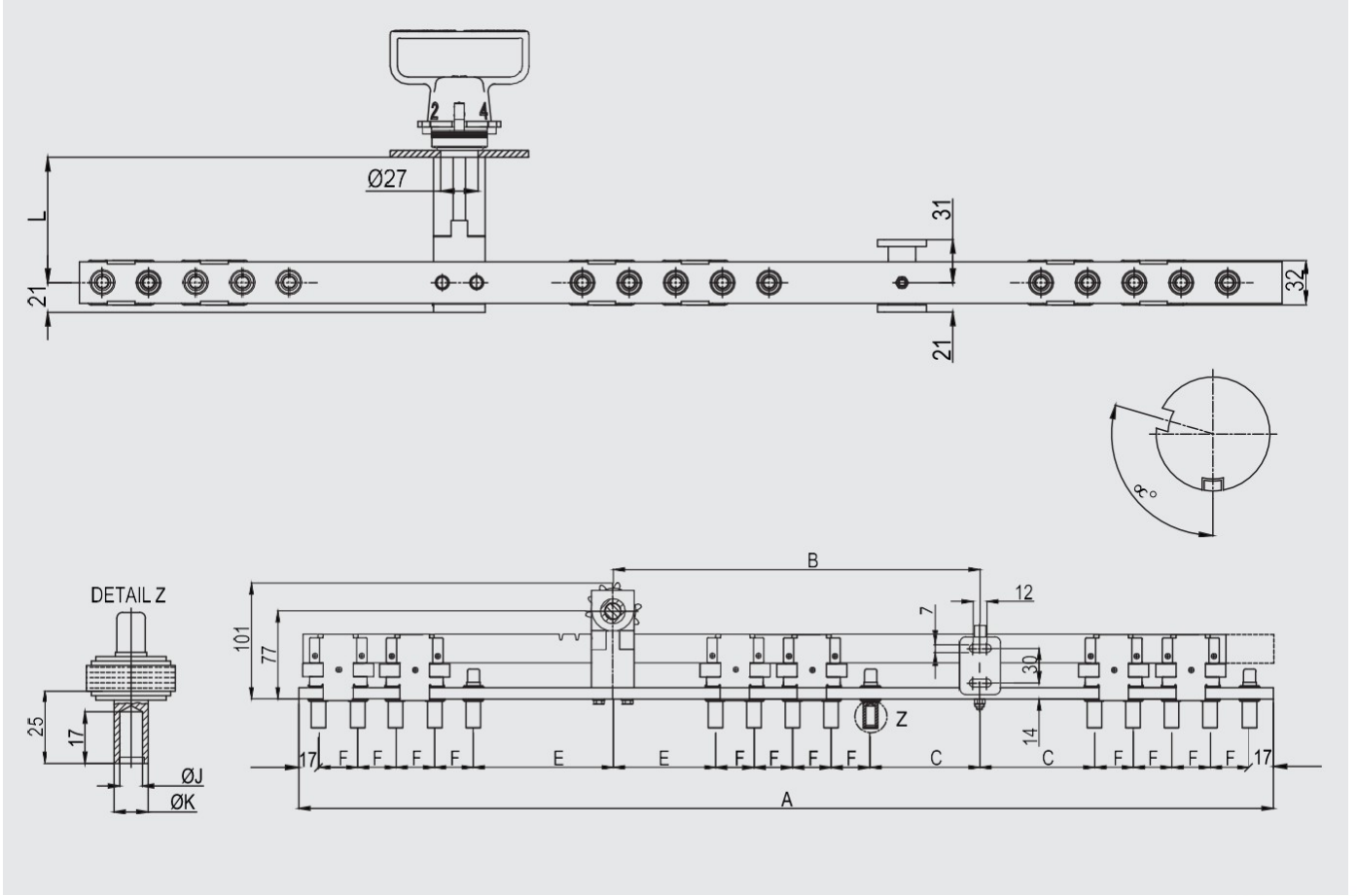
Voltage Class kV	Current A	Number of Positions	A	B	C	E	F	I	α°	Unit No.	
										120 A/J= 8,1/K= 12	
										L= 91 X= 85	L= 131 X= 120
20	120	3	537	209	90	90	28	71	72°	MB335D344	MA335D344
		4	621	237	90	90	28	71	72°	MB335D444	MA335D444
		5	705	265	90	90	28	71	72°	MB335D544	MA335D544
30	120	3	641	261	130	130	28	95	72°	MB335D354	MA335D354
		4	725	289	130	130	28	95	72°	MB335D454	MA335D454
		5	809	317	130	130	28	95	72°	MB335D554	MA335D554

Delta Diagram 20 - 30 kV/120 A/3 - 5 Positions/Setting 2.5 % per Position



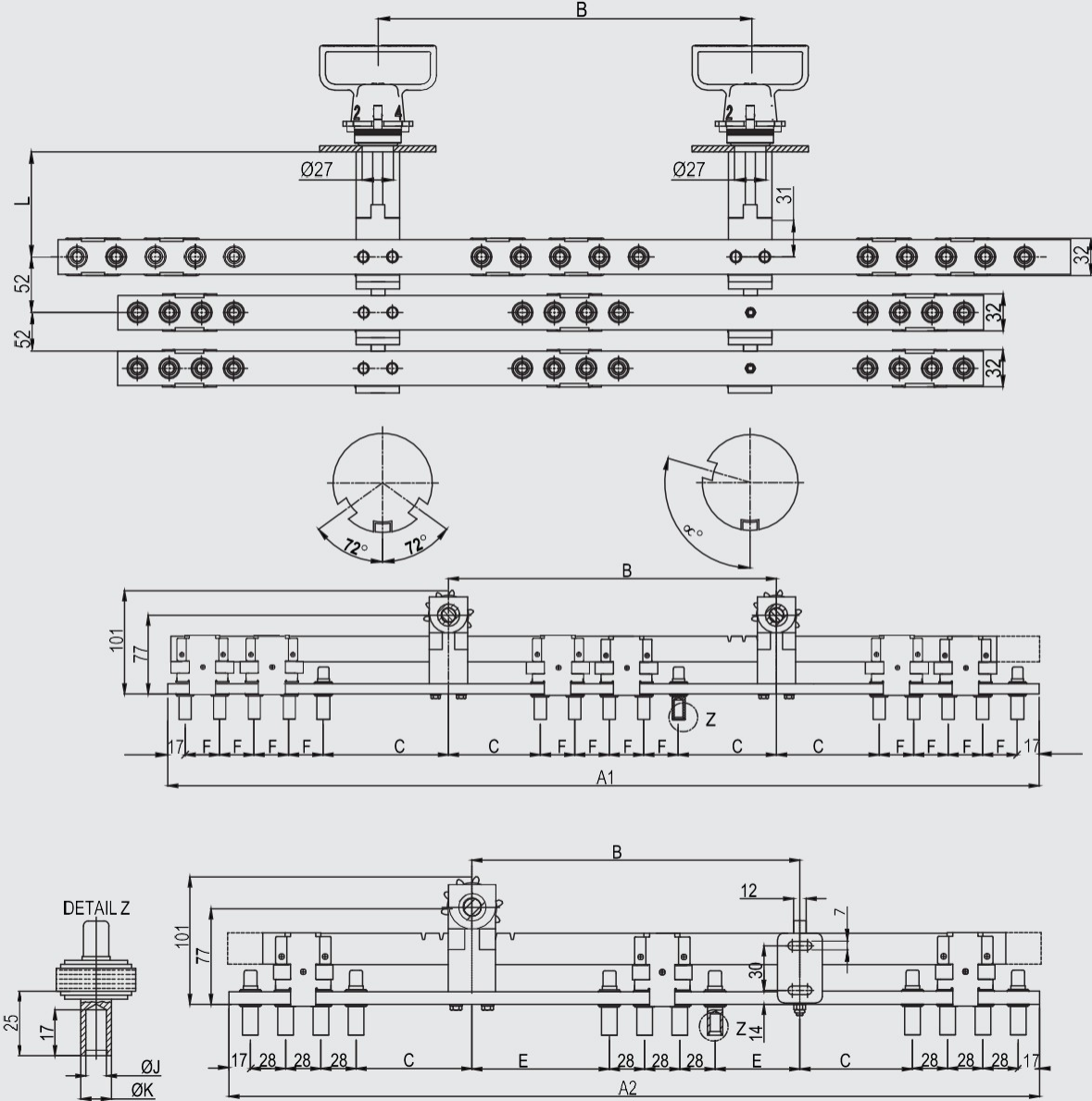
Voltage Class kV	Current A	Number of Positions	A	B	C	E	F	°	Unit No.	
									120 A/J=8,I/K=12	
									L=91 X=85	L=131 X=120
20	120	3	630	256	82	90	28	72°	MB334D344	MA334D344
		4	714	284	82	90	28	72°	MB334D444	MA334D444
		5	798	312	82	90	28	72°	MB334D544	MA334D544
30	120	3	790	336	122	130	28	72°	MB334D354	MA334D354
		4	874	364	122	130	28	72°	MB334D454	MA334D454
		5	958	392	122	130	28	72°	MB334D554	MA334D554

Series Parallel Coupling 20 - 30 kV / 120 A



Voltage Class kV	Current A	A	B	C	E	F	8°	Unit No.	
								120 A / J= 8,1 / K= 12	
								L= 91	L= 131
10 - 20	120	882	340	82	90	42	108°	MB334P272	MA334P274
25 - 30	120	1126	448	122	130	49	126°	MB334P284	MA334P284

1. Series Parallel Coupling 10 - 20 kV/120 A
2. Delta Setting 20 - 30 kV/120 A/Setting 2.5 % per Position



Voltage Class kV		Number of Positions	A1	A2	B	C	E	F	8°	Unit No.	
										120 A/J= 8,1 / K= 12	
Series Parallel	Delta									L= 91	L= 131
10 - 20	20	3		730			132			MB354K374	MA354K374
		4	898	786	348	90	118	42	108 °	MB354K474	MA354K474
		5		842			104			MB354K574	MA354K574
25 - 30	30	3		918			186			MB354K384	MA354K384
		4	1142	974	456	130	172	49	126 °	MB354K484	MA354K484
		5		1030			158			MB354K584	MA354K584

When ordering please quote

- 1 - Tap changer unit no.
 - 2 - The voltage class, current and type of setting or coupling
 - 3 - The number of the fixed contacts
 - 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 ($\emptyset$ J and $\emptyset$ K)
 - 9 - L, e, X, W dimensions from the tables ($\emptyset$ / b / a / d) for hanger
- For special setups not shown in the catalogue please contact us*

<https://www.ktcelektrik.com.tr/>

