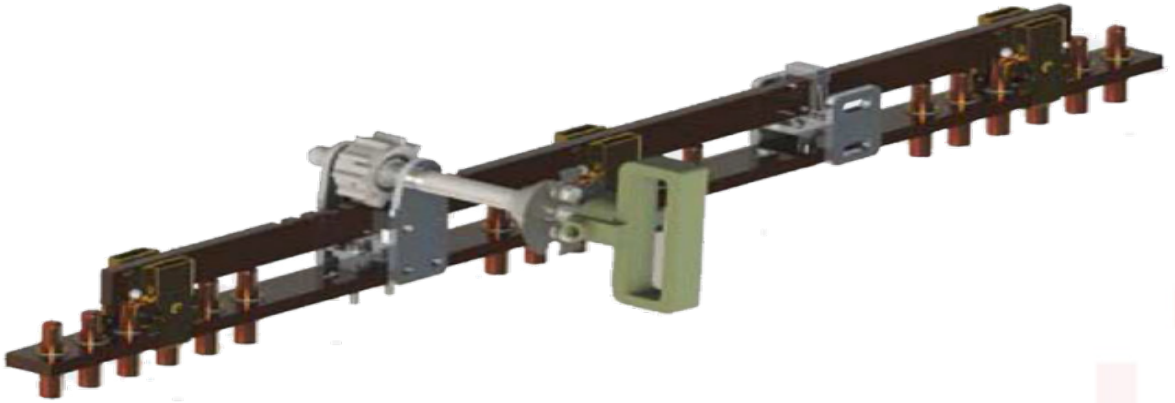
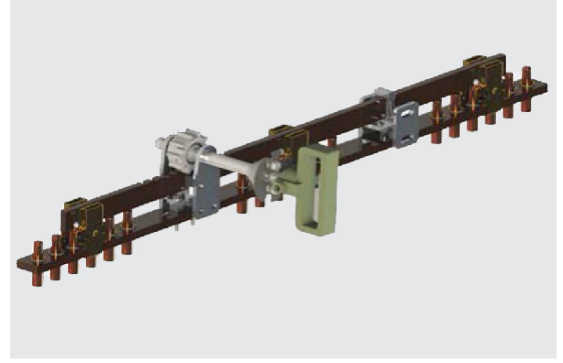


Tap Changer Type MHZ



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	GAISI2(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.

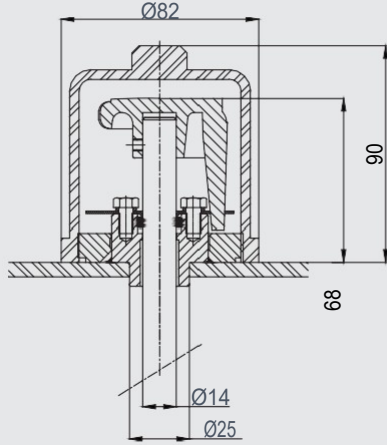
This process is clearly marked on control knob as: „ **LIFT - TURN - SWITCH ON** „ (can be engraved in any language)

Current	Contact inner dia. (cable connection)	Voltage Class	B.I.L (other values upon request)
30 A	Ø 3,1 mm	10 KV	75 KV
63 A	Ø 5,1 mm	15 kV	95 kV
120 A	Ø 8,1 mm	20 kV	125 kV
		30 kV	170 kV

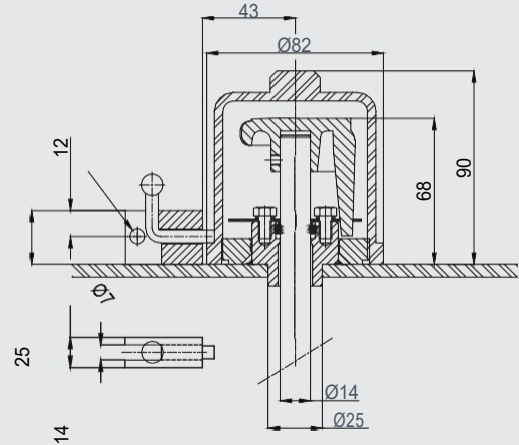


Control Devices

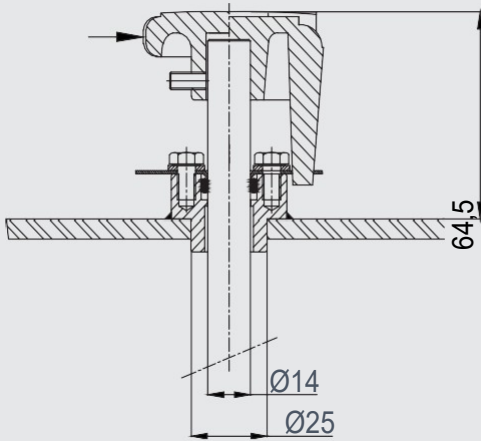
MH 341 (With Protective Cover Standard Type)



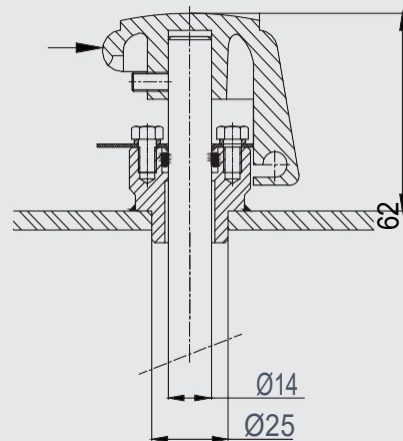
MH 341A (With Protective Cover Padlockable Type)



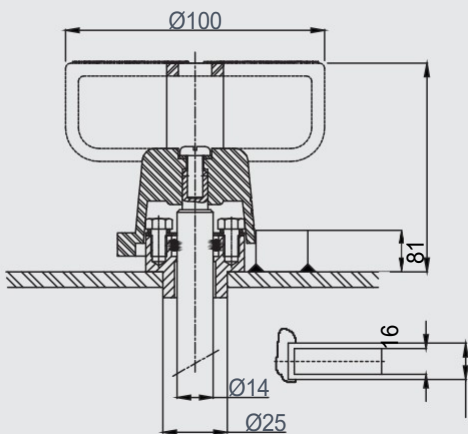
MH 342 (Standard Type)



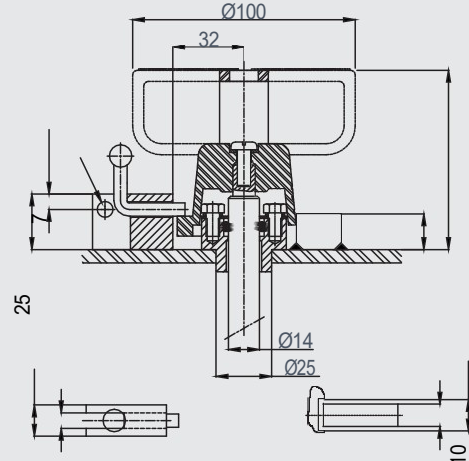
MH 342A (Padlockable Type)



MH 353 (Standard Type)



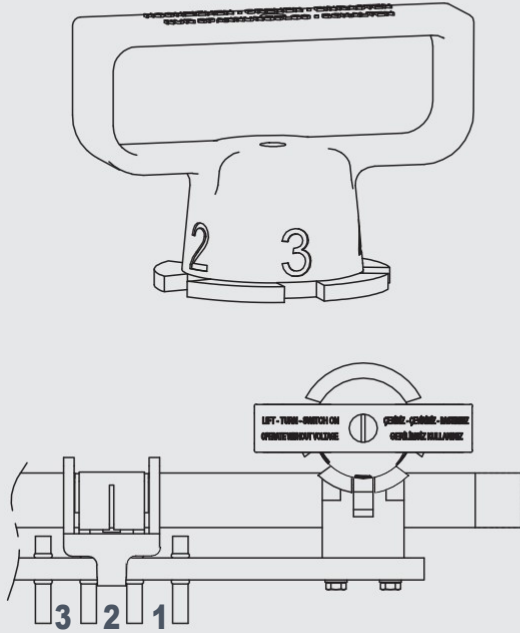
MH 353A (Padlockable Type)



Handle Directions

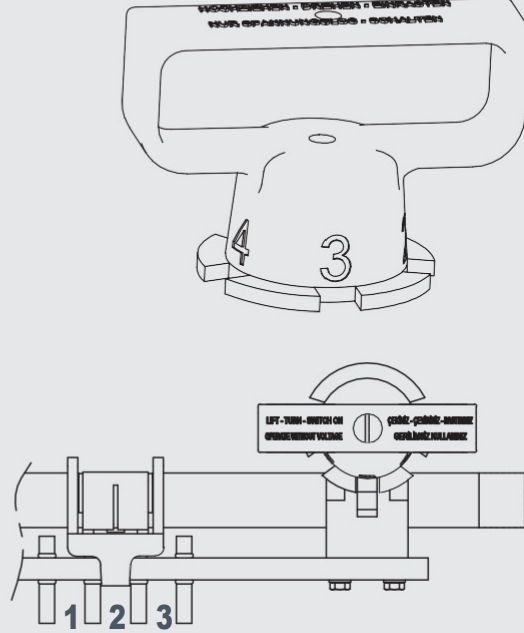
Handle direction A1

Clockwise direction

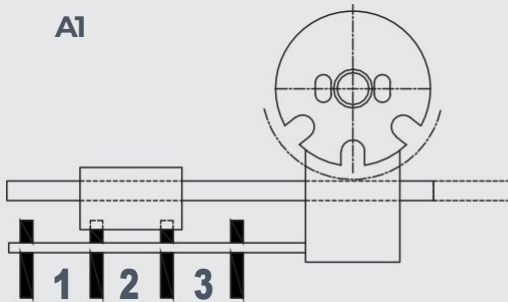


Handle direction B1

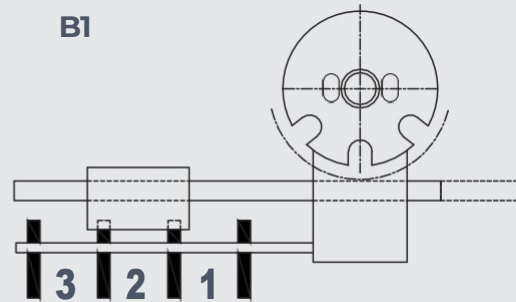
Counterclockwise direction



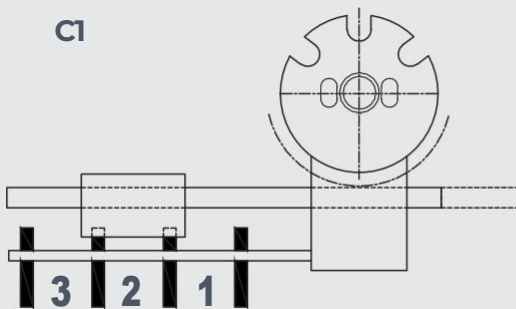
A1



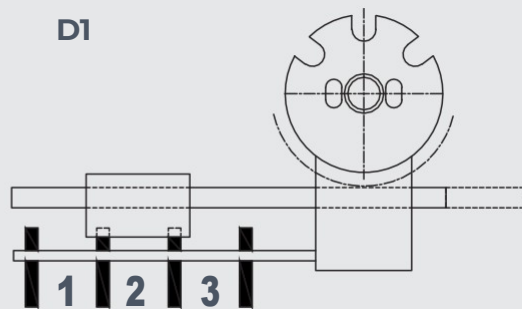
B1



C1

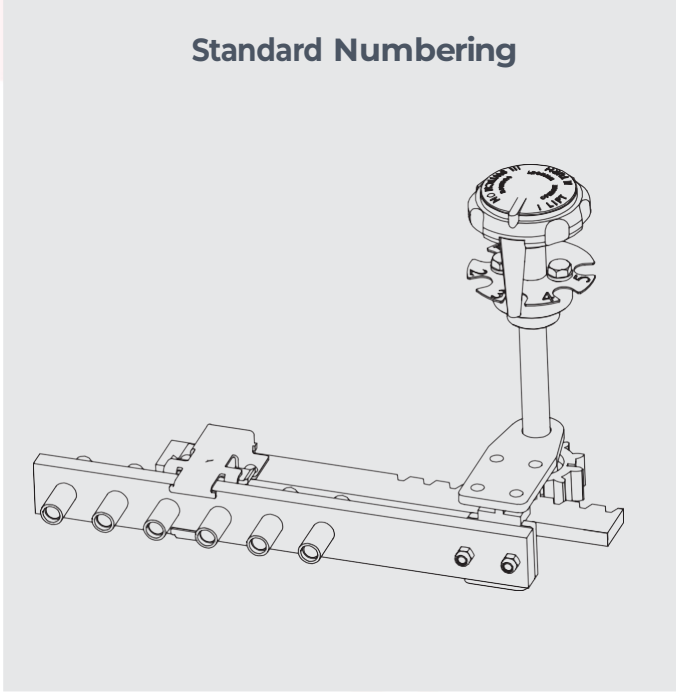


D1

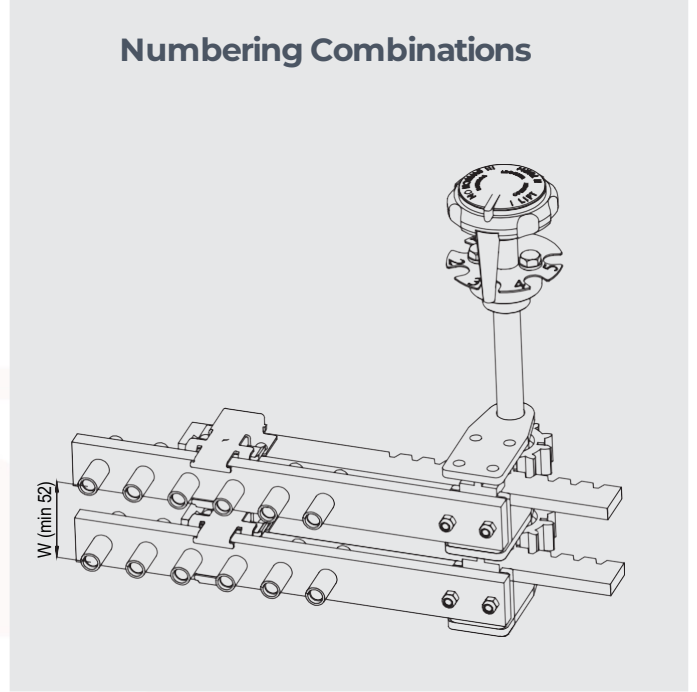


Numbering Combinations

Standard Numbering



Numbering Combinations

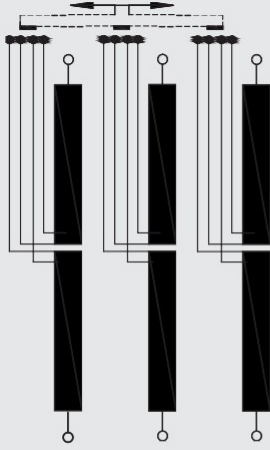


- all MHZ standard horizontal tap changers can be paired by superimposing several tap changers
- built steel brackets are assembled by nuts and bolts depending on which system is adopted, the user can:
 - either operate the tap changers with one shaft
 - or operate part of the tap changers with one shaft,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

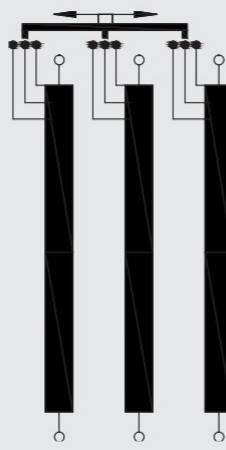
Note: It is essential, when ordering, to quote dimension „W“ the minimum value of which to be set in each case depends on the insulation conditions and on the position of the different tap changers



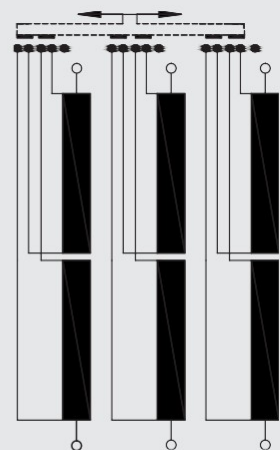
Connection Diagrams



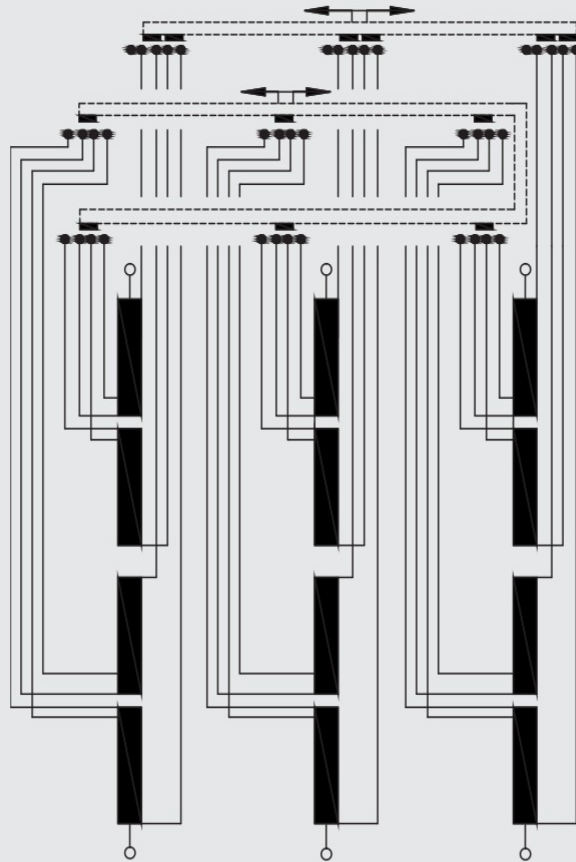
Setting for delta Transformer



Setting for star Transformer



Series - parallel coupling

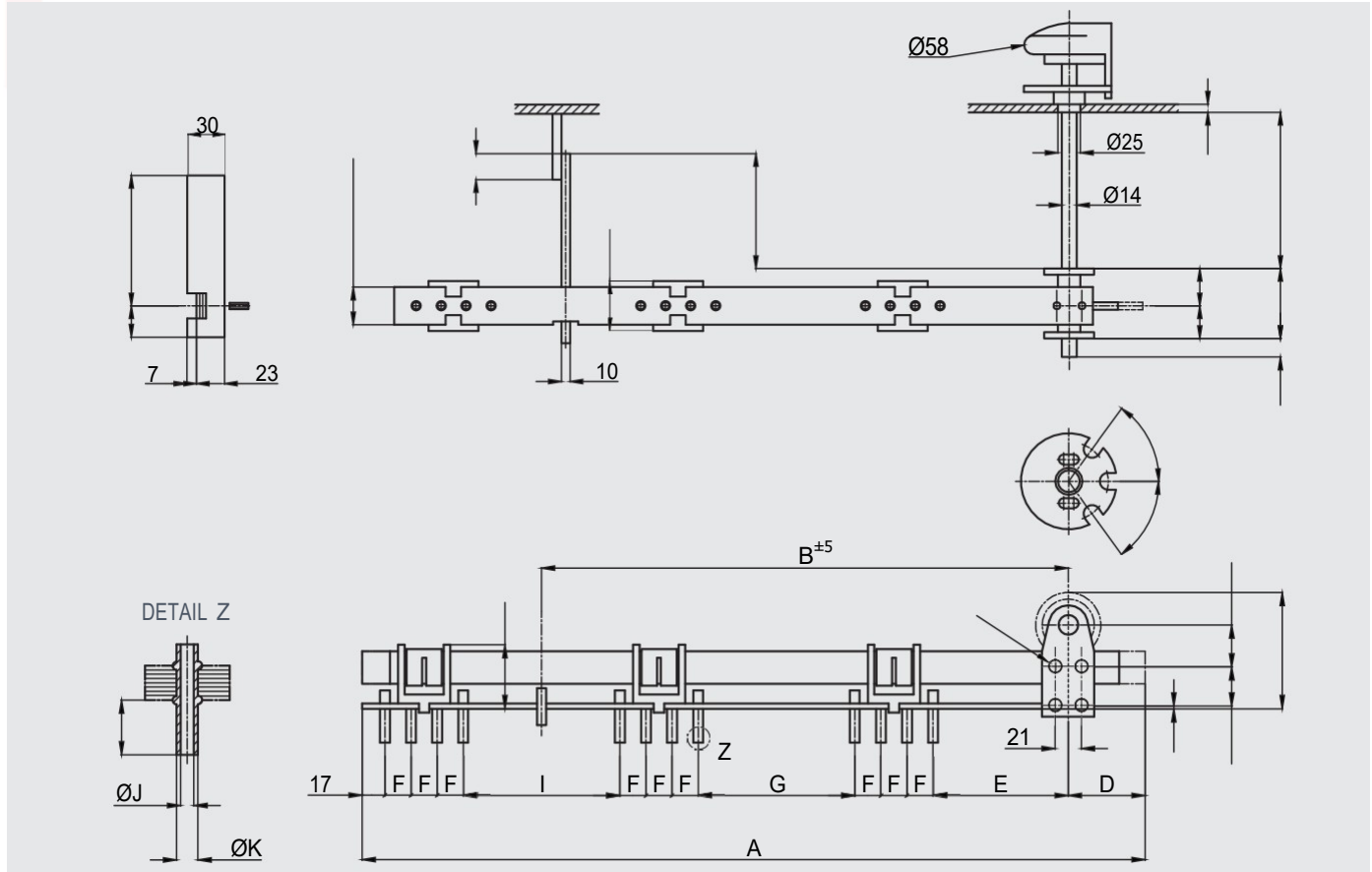


Typical Combination

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



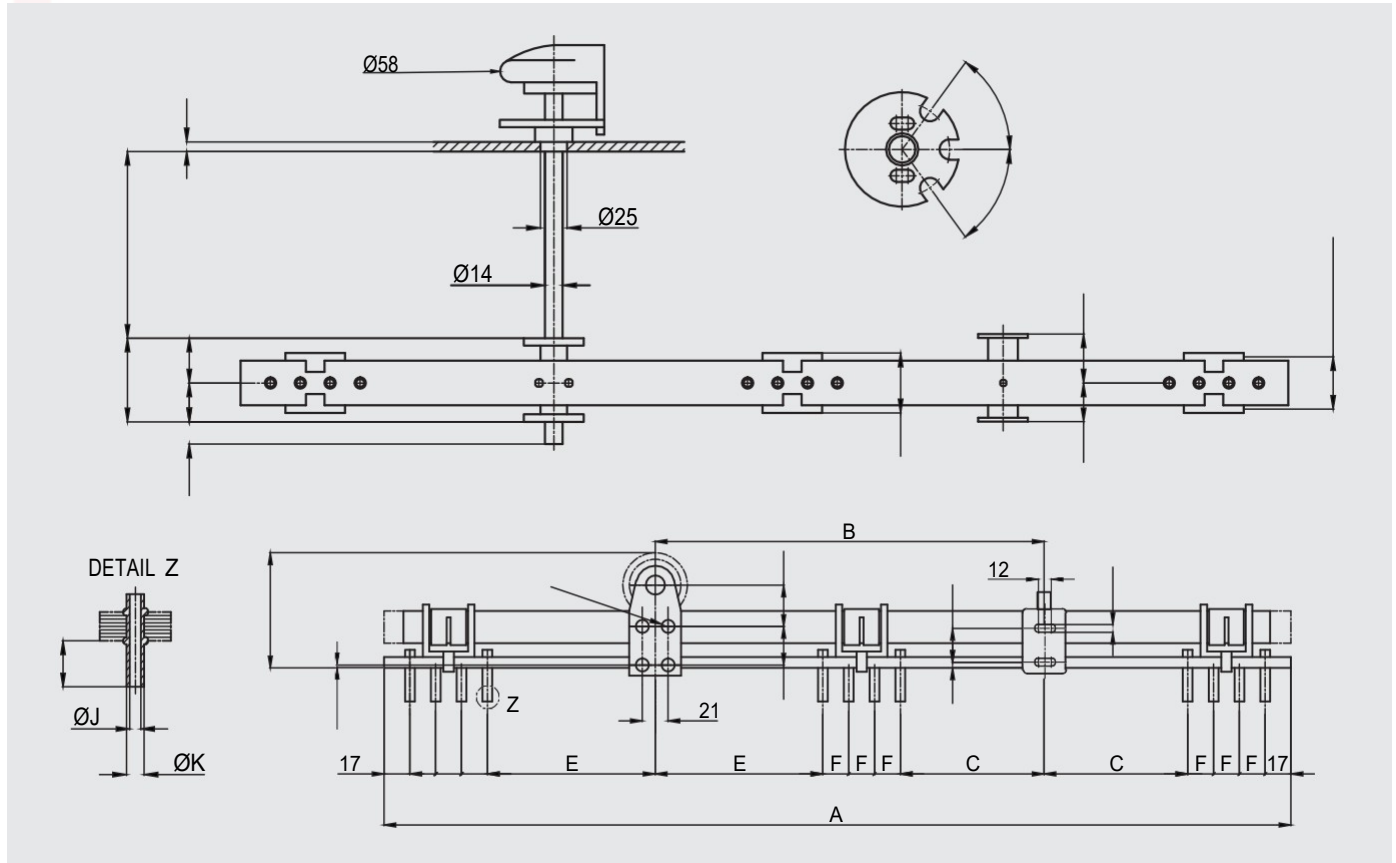
Delta Diagram 10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position (With HP Support)



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		M233D222	M233D223
		3	431	254	72	61	42	21	50	48			M233D322	M233D323
		4	515	296	93	61	42	21	50	48			M233D422	M233D423
		5	599	338	114	61	42	21	50	48			M233D522	M233D523
		6	683	380	135	61	42	21	50	48			M233D622	M233D623
		7	767	422	156	61	42	21	50	48			M233D722	M233D723
15	30 or 63	2	384	244	51	76	54	21	60	48			M233D232	M233D233
		3	468	286	72	76	54	21	60	48			M233D332	M233D333
		4	552	328	93	76	54	21	60	48			M233D432	M233D433
		5	636	370	114	76	54	21	60	48			M233D532	M233D533
		6	720	412	135	76	54	21	60	48			M233D632	M233D633
		7	804	454	156	76	54	21	60	48			M233D732	M233D733
20	30 or 63	2	419	271	51	84	65	21	76	48			M233D242	M233D243
		3	503	313	72	84	65	21	76	48			M233D342	M233D343
		4	587	355	93	84	65	21	76	48			M233D442	M233D443
		5	671	397	114	84	65	21	76	48			M233D542	M233D543
		6	755	439	135	84	65	21	76	48			M233D642	M233D643
		7	839	481	156	84	65	21	76	48			M233D742	M233D743
30	30 or 63	2	499	344	51	125	90	21	90	88			M233D252	M233D253
		3	583	386	72	125	90	21	90	88			M233D352	M233D353
		4	667	428	93	125	90	21	90	88			M233D452	M233D453
		5	751	470	114	125	90	21	90	88			M233D552	M233D553
		6	835	512	135	125	90	21	90	88			M233D652	M233D653
		7	919	554	156	125	90	21	90	88			M233D752	M233D753

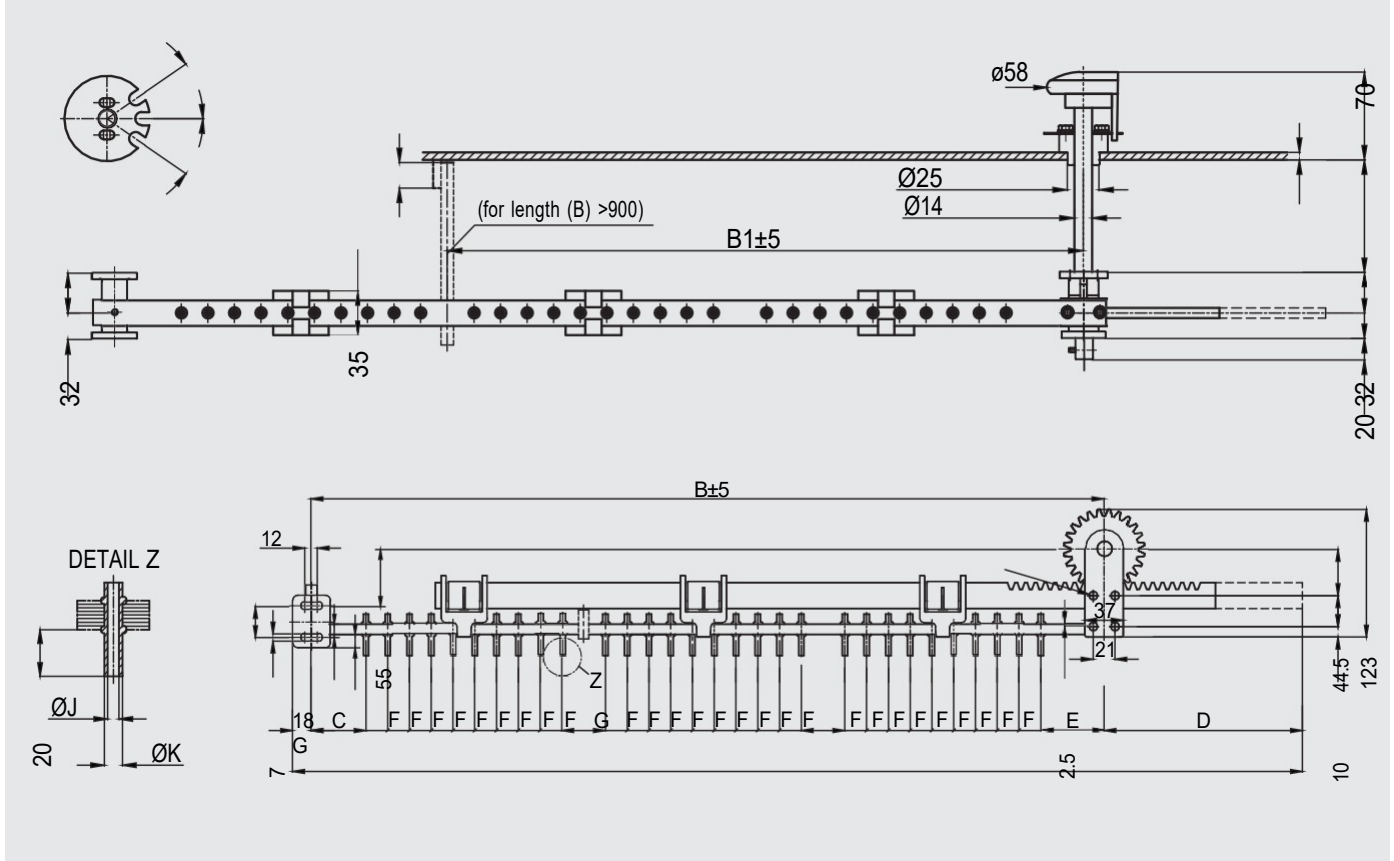


Delta Diagram 10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position (With Aluminium Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	E	F	L	e	Unit No 30A J:3,I K:5	Unit No 63A J:5,I K:7
10	30or63	2	388	156	53	61	21	Please specify when ordering		M234D222	M234D223
		3	451	177	53	61	21			M234D322	M234D323
		4	514	198	53	61	21			M234D422	M234D423
		5	577	219	53	61	21			M234D522	M234D523
		6	640	240	53	61	21			M234D622	M234D623
		7	703	261	53	61	21			M234D722	M234D723
15	30or63	2	444	184	66	76	21			M234D232	M234D233
		3	507	205	66	76	21			M234D332	M234D333
		4	570	226	66	76	21			M234D432	M234D433
		5	633	247	66	76	21			M234D532	M234D533
		6	696	268	66	76	21			M234D632	M234D633
		7	759	289	66	76	21			M234D732	M234D733
20	30or63	2	480	202	76	84	21			M234D242	M234D243
		3	543	223	76	84	21			M234D342	M234D343
		4	606	244	76	84	21			M234D442	M234D443
		5	669	265	76	84	21			M234D542	M234D543
		6	732	286	76	84	21			M234D642	M234D643
		7	795	307	76	84	21			M234D742	M234D743
30	30or63	2	644	284	117	125	21			M234D252	M234D253
		3	707	305	117	125	21			M234D352	M234D353
		4	770	326	117	125	21			M234D452	M234D453
		5	833	347	117	125	21			M234D552	M234D553
		6	896	368	117	125	21			M234D652	M234D653
		7	959	389	117	125	21			M234D752	M234D753

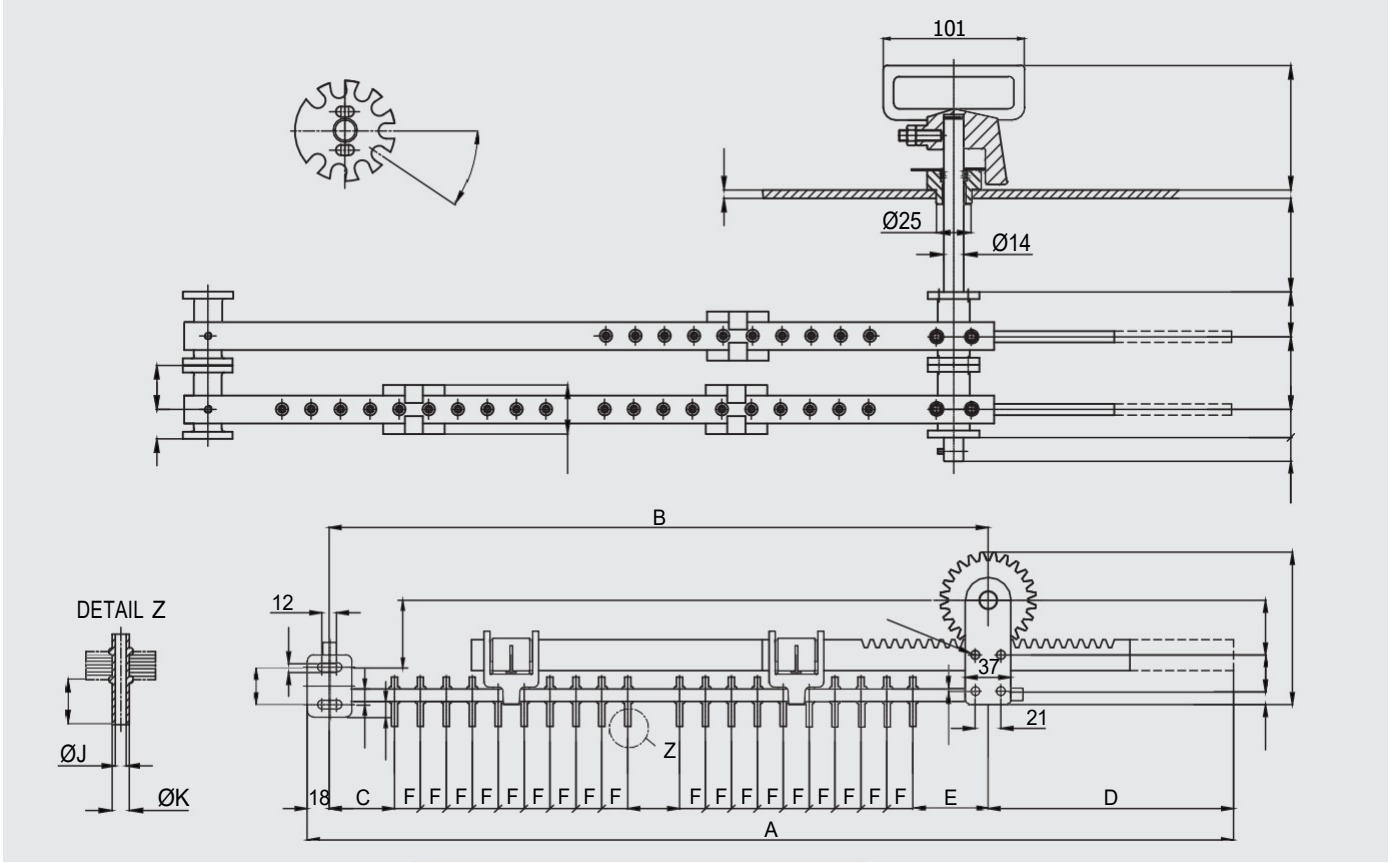
Delta Diagram 10 - 30 kV/30 - 63 A/8 - 11 Positions/Setting 2.5 % per Position (With HP Support)



Voltage Class kV	Current A	Number of Positions	A	B	B1	C	D	E	F	G	L	e	UnitNo 30A J:3,1 K:5	UnitNo 63A J:5,1 K:7
10	30 or 63	8	902	762	-	53	182	61	21	42	Please specify when ordering		M231D822	M231D823
		9	986	765	-	53	203	61	21	42			M231D922	M231D923
		10	1070	828	-	53	224	61	21	42			M231D1022	M231D1023
		11	1154	891	-	53	245	61	21	42			M231D1122	M231D1123
15	30 or 63	8	954	754	-	66	182	76	21	54			M231D832	M231D833
		9	1038	817	-	66	203	76	21	54			M231D932	M231D933
		10	1122	880	-	66	224	76	21	54			M231D1032	M231D1033
		11	1206	943	619	66	245	76	21	54			M231D1132	M231D1133
20	30 or 63	8	994	794	-	76	182	84	21	65			M231D842	M231D843
		9	1078	857	-	76	203	84	21	65			M231D942	M231D943
		10	1162	920	601	76	224	84	21	65			M231D1042	M231D1043
		11	1246	983	643	76	245	84	21	65			M231D1142	M231D1143
30	30 or 63	8	1126	926	596	117	182	125	21	90			M231D852	M231D853
		9	1210	989	638	117	203	125	21	90			M231D952	M231D953
		10	1294	1052	680	117	224	125	21	90			M231D1052	M231D1053
		11	1378	1115	722	117	245	125	21	90			M231D1152	M231D1153



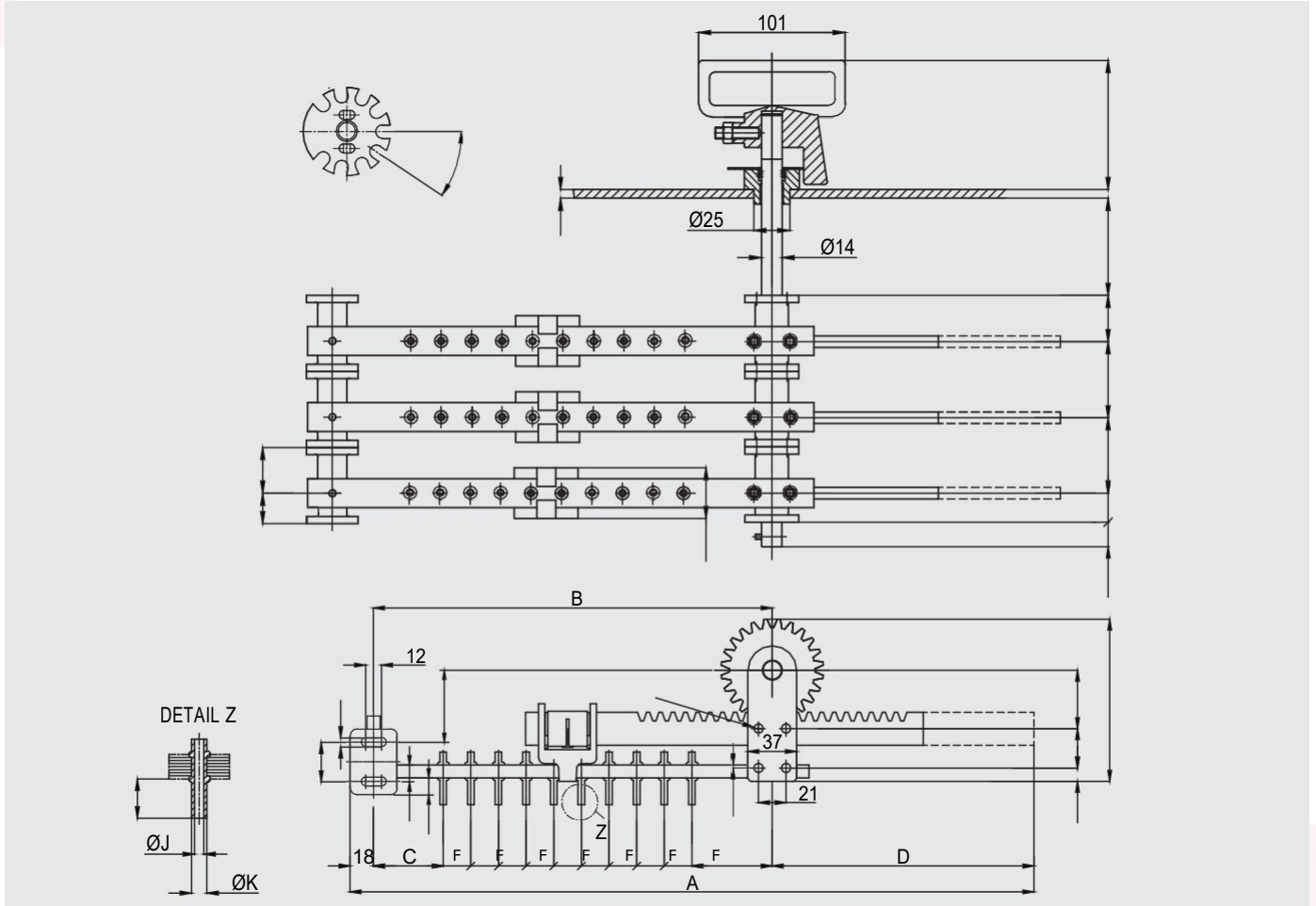
Delta Diagram 10 - 30 kV/30 - 63 A/8 - 11 Positions/Special Diagram /Setting 2.5 % per Position (With Aluminium Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	G	L	e	W	Unit No 30A J:3,I K:5	Unit No 63A J:5,I K:7
10	30 or 63	8	692	492	53	182	61	21	42	Please specify when ordering			M271D822	M271D823
		9	755	534	53	203	61	21	42				M271D922	M271D923
		10	818	576	53	224	61	21	42				M271D1022	M271D1023
		11	881	618	53	245	61	21	42				M271D1122	M271D1123
15	30 or 63	8	732	532	66	182	76	21	54				M271D832	M271D833
		9	795	574	66	203	76	21	54				M271D932	M271D933
		10	858	616	66	224	76	21	54				M271D1032	M271D1033
		11	921	658	66	245	76	21	54				M271D1132	M271D1133
20	30 or 63	8	761	561	76	182	84	21	65				M271D842	M271D843
		9	824	603	76	203	84	21	65				M271D942	M271D943
		10	887	645	76	224	84	21	65				M271D1042	M271D1043
		11	950	687	76	245	84	21	65				M271D1142	M271D1143
30	30 or 63	8	868	668	117	182	125	21	90				M271D852	M271D853
		9	931	710	117	203	125	21	90				M271D952	M271D953
		10	994	752	117	224	125	21	90				M271D1052	M271D1053
		11	1057	794	117	245	125	21	90				M271D1152	M271D1153



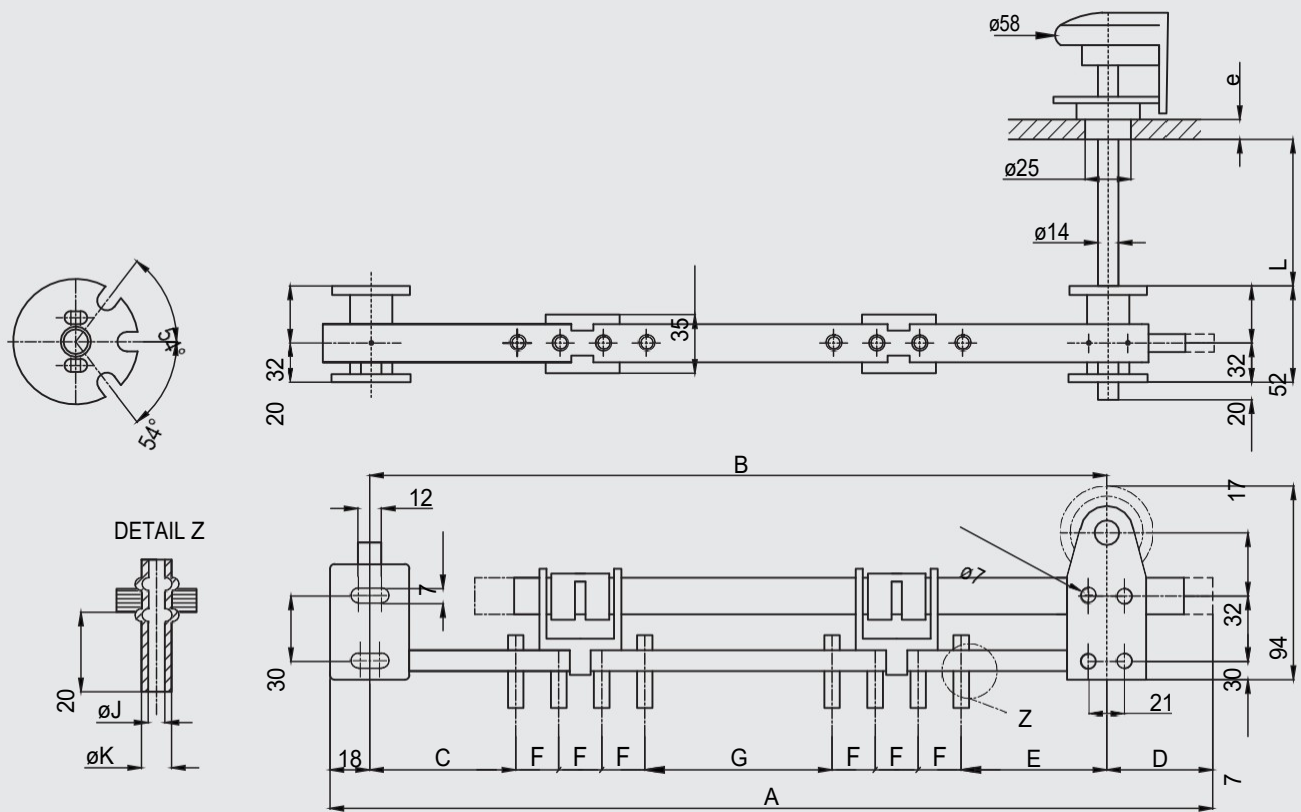
Delta Diagram 10 - 30 kV/30 - 63 A/8 - 11 Positions /Special Diagram /Setting 2.5 % per Position (With Aluminium Support)



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	476	282	53	182	61	21	Please specify when ordering			M281D822	M281D823
		9	524	303	53	203	61	21				M281D922	M281D923
		10	572	324	53	224	61	21				M281D1022	M281D1023
		11	620	345	53	245	61	21				M281D1122	M281D1123
15	30 or 63	8	510	310	66	182	76	21				M281D832	M281D833
		9	558	331	66	203	76	21				M281D932	M281D933
		10	606	352	66	224	76	21				M281D1032	M281D1033
		11	654	373	66	245	76	21				M281D1132	M281D1133
20	30 or 63	8	528	328	76	182	84	21				M281D842	M281D843
		9	576	349	76	203	84	21				M281D942	M281D943
		10	624	370	76	224	84	21				M281D1042	M281D1043
		11	672	391	76	245	84	21				M281D1142	M281D1143
30	30 or 63	8	610	410	117	182	125	21				M281D852	M281D853
		9	658	431	117	203	125	21				M281D952	M281D953
		10	706	452	117	224	125	21				M281D1052	M281D1053
		11	754	473	117	245	125	21				M281D1152	M281D1153

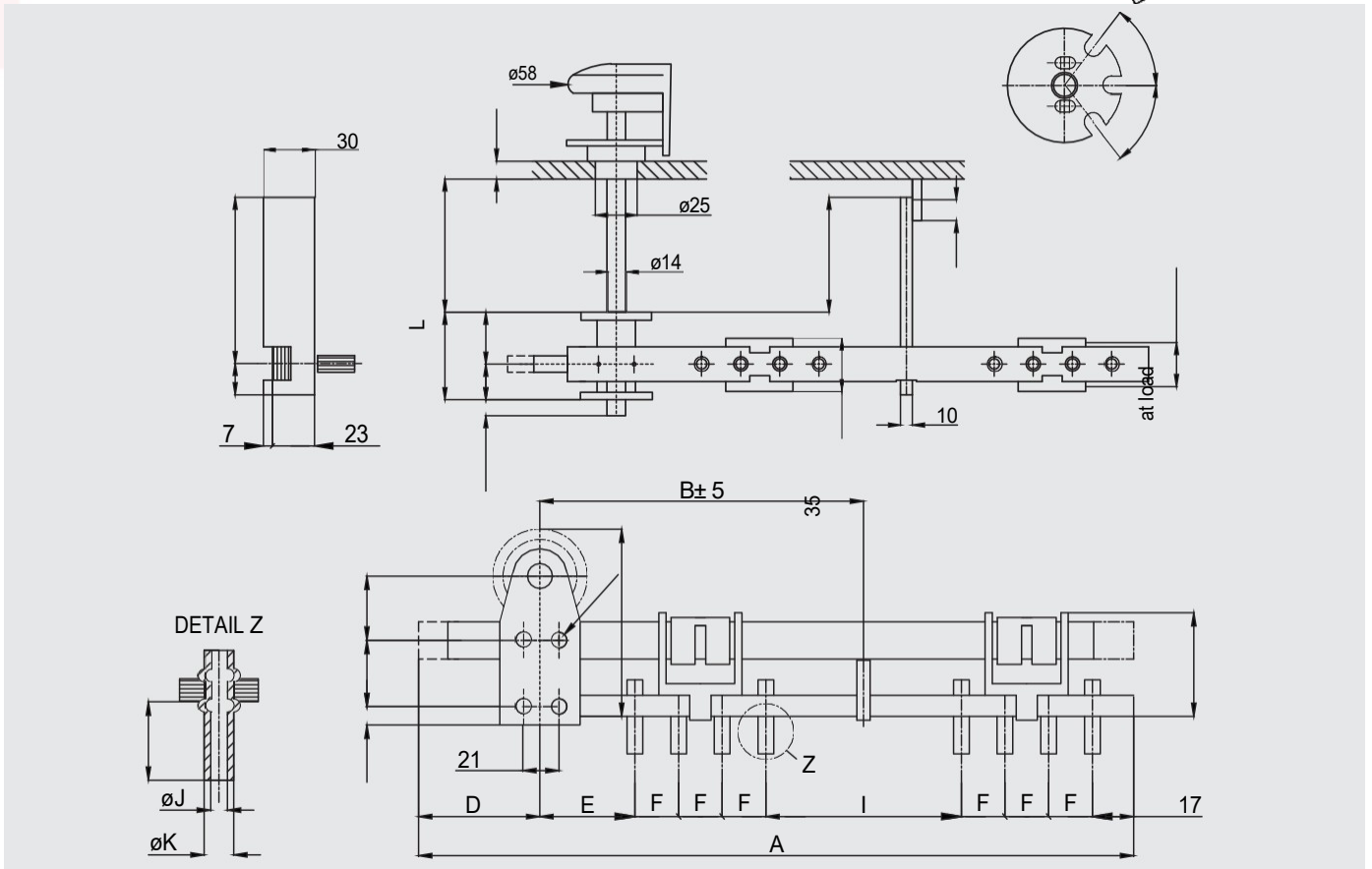


***Delta Diagram /10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position
(With Aluminium Support)***



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		M221D222	M221D223
		3	372	282	53	72	61	21	42		M221D322	M221D323	
		4	435	324	53	93	61	21	42		M221D422	M221D423	
		5	498	366	53	114	61	21	42		M221D522	M221D523	
		6	561	408	53	135	61	21	42		M221D622	M221D623	
		7	624	450	53	156	61	21	42		M221D722	M221D723	
		2	349	280	66	51	76	21	54		M221D232	M221D233	
15	30 or 63	3	412	322	66	72	76	21	54		M221D332	M221D333	
		4	475	364	66	93	76	21	54		M221D432	M221D433	
		5	538	406	66	114	76	21	54		M221D532	M221D533	
		6	601	448	66	135	76	21	54		M221D632	M221D633	
		7	664	490	66	156	76	21	54		M221D732	M221D733	
		2	378	309	76	51	84	21	65		M221D242	M221D243	
20	30 or 63	3	441	351	76	72	84	21	65		M221D342	M221D343	
		4	504	393	76	93	84	21	65	M221D442	M221D443		
		5	567	435	76	114	84	21	65	M221D542	M221D543		
		6	630	477	76	135	84	21	65	M221D642	M221D643		
		7	693	519	76	156	84	21	65	M221D742	M221D743		
		2	485	416	117	51	125	21	90	M221D252	M221D253		
30	30 or 63	3	548	458	117	72	125	21	90	M221D352	M221D353		
		4	611	500	117	93	125	21	90	M221D452	M221D453		
		5	674	542	117	114	125	21	90	M221D552	M221D553		
		6	737	584	117	135	125	21	90	M221D652	M221D653		
		7	800	626	117	156	125	21	90	M231D752	M221D753		

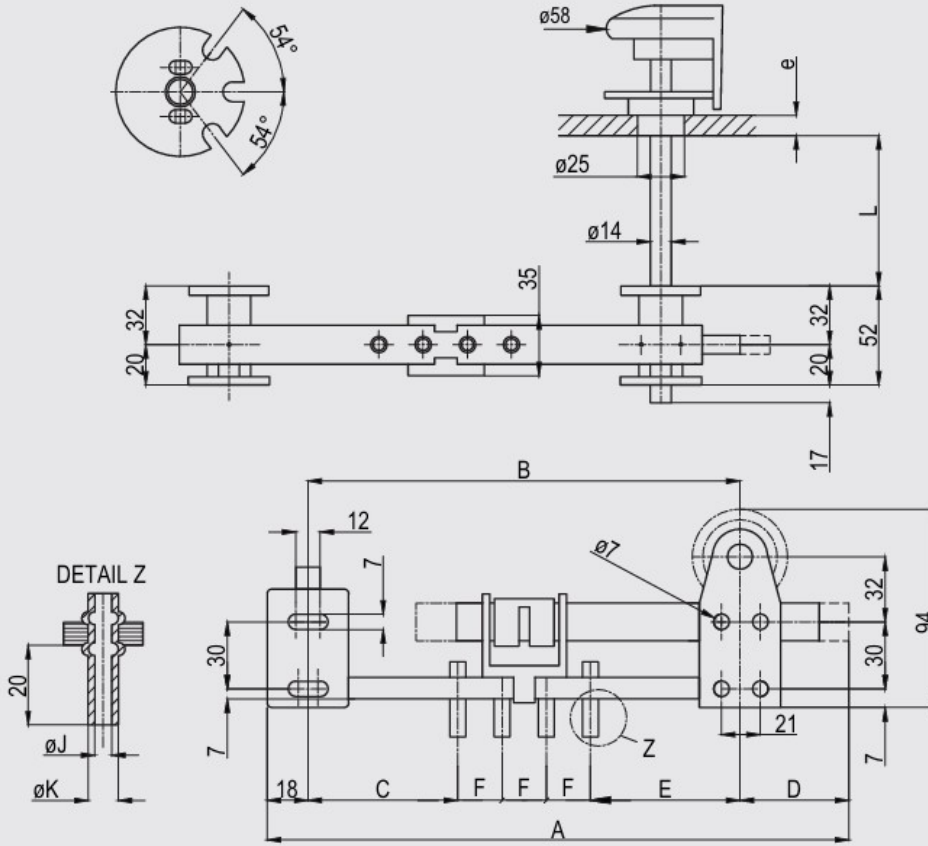
Delta Diagram /10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position (With HP Support)



Voltage Class kV	Current A	Number of Positions	A	B	D	E	F	I	X min	L	e	UnitNo 30A J:31 K:5	UnitNo 63A J:51 K:7
10	30or63	2	257	128	45	61	21	50	48	Please specify when ordering		M223D222L	M223D223L
		3	320	149	66	61	21	50	48			M223D322L	M223D323L
		4	383	170	87	61	21	50	48			M223D422L	M223D423L
		5	446	191	108	61	21	50	48			M223D522L	M223D523L
		6	509	212	129	61	21	50	48			M223D622L	M223D623L
		7	572	233	150	61	21	50	48			M223D722L	M223D723L
15	30or63	2	282	148	45	76	21	60	48			M223D232L	M223D233L
		3	345	169	66	76	21	60	48			M223D332L	M223D333L
		4	408	190	87	76	21	60	48			M223D432L	M223D433L
		5	471	211	108	76	21	60	48			M223D532L	M223D533L
		6	534	232	129	76	21	60	48			M223D632L	M223D633L
		7	597	253	150	76	21	60	48			M223D732L	M223D733L
20	30or63	2	306	164	45	84	21	76	48			M223D242L	M223D243L
		3	369	185	66	84	21	76	48			M223D342L	M223D343L
		4	432	206	87	84	21	76	48			M223D442L	M223D443L
		5	495	227	108	84	21	76	48			M223D542L	M223D543L
		6	558	248	129	84	21	76	48			M223D642L	M223D643L
		7	621	269	150	84	21	76	48			M223D742L	M223D743L
30	30or63	2	361	212	45	125	21	90	88			M223D252L	M223D253L
		3	424	233	66	125	21	90	88			M223D352L	M223D353L
		4	487	254	87	125	21	90	88			M223D452L	M223D453L
		5	550	271	108	125	21	90	88			M223D552L	M223D553L
		6	613	296	129	125	21	90	88			M223D652L	M223D653L
		7	676	317	150	125	21	90	88			M223D752L	M223D753L



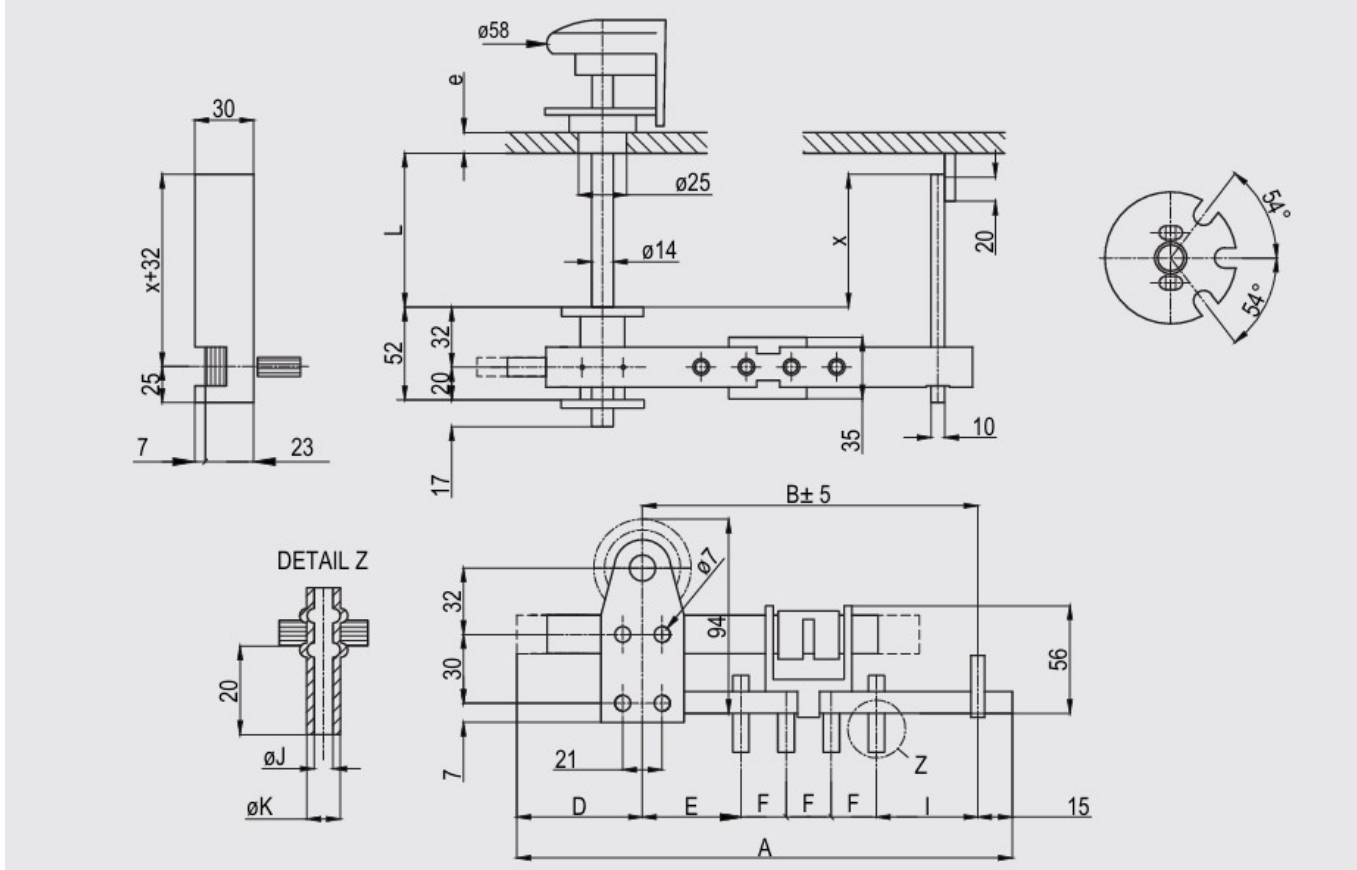
**Delta Diagram /10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position
(With Aluminium Support)**



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		M211D222	M211D223
		3	267	177	53	72	61	21			M211D322	M211D323
		4	309	198	53	93	61	21			M211D422	M211D423
		5	351	219	53	114	61	21			M211D522	M211D523
		6	393	240	53	135	61	21			M211D622	M211D623
		7	435	261	53	156	61	21			M211D722	M211D723
15	30 or 63	2	253	184	66	51	76	21			M211D232	M211D233
		3	295	205	66	72	76	21			M211D332	M211D333
		4	337	226	66	93	76	21			M211D432	M211D433
		5	379	247	66	114	76	21			M211D532	M211D533
		6	421	268	66	135	76	21			M211D632	M211D633
		7	463	289	66	156	76	21			M211D732	M211D733
20	30 or 63	2	271	202	76	51	84	21			M211D242	M211D243
		3	313	223	76	72	84	21			M211D342	M211D343
		4	355	244	76	93	84	21			M211D442	M211D443
		5	397	265	76	114	84	21			M211D542	M211D543
		6	439	286	76	135	84	21			M211D642	M211D643
		7	481	307	76	156	84	21			M211D742	M211D743
30	30 or 63	2	353	284	117	51	125	21			M211D252	M211D253
		3	395	305	117	72	125	21			M211D352	M211D353
		4	437	326	117	93	125	21			M211D452	M211D453
		5	479	347	117	114	125	21			M211D552	M211D553
		6	521	368	117	135	125	21			M211D652	M211D653
		7	563	389	117	156	125	21			M211D752	M211D753



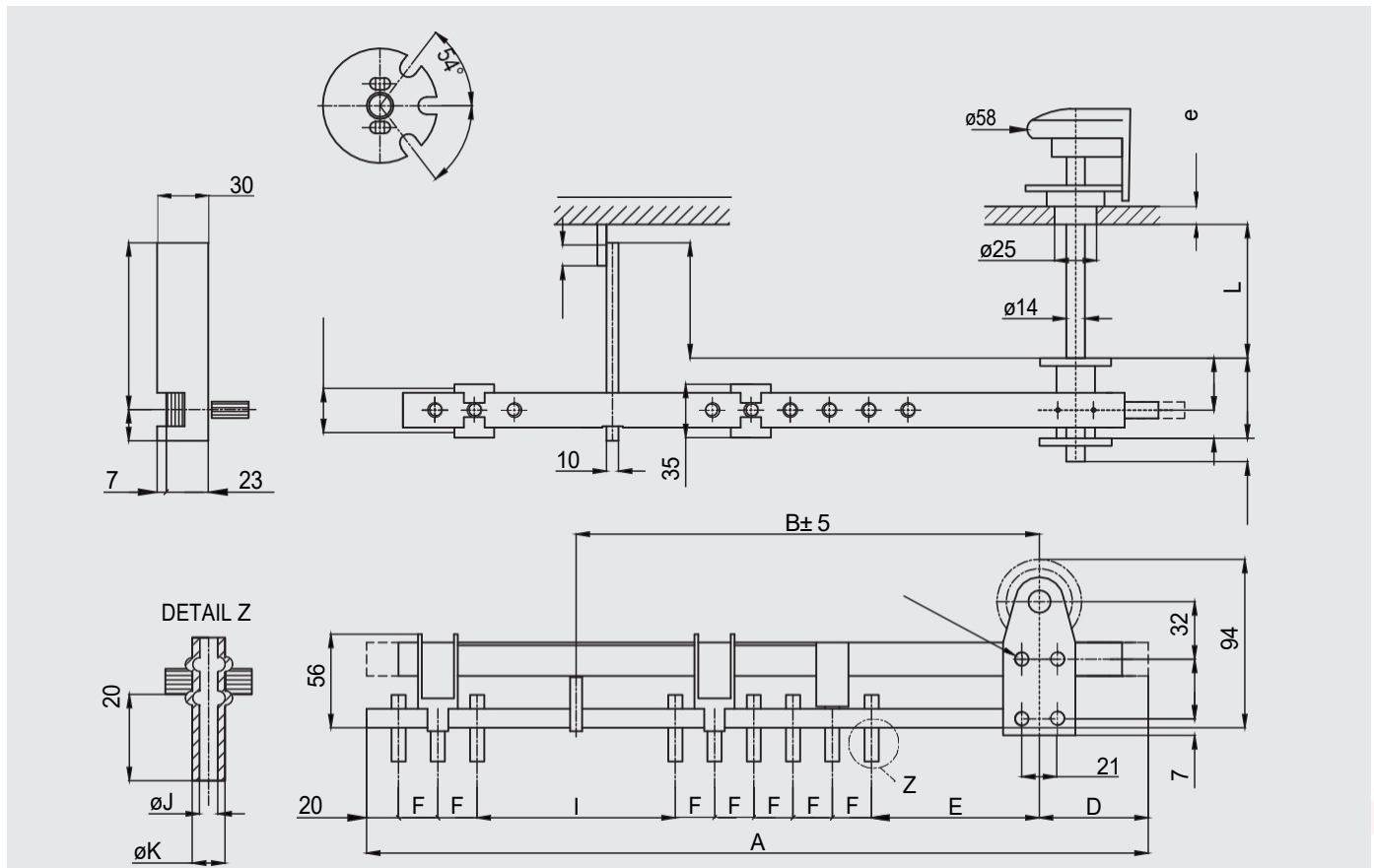
Delta Diagram /10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position (With HP Support)



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		217D222	217D223
		3	230	149	66	61	25	21	48			217D322	217D323
		4	272	170	87	61	25	21	48			217D422	217D423
		5	314	191	108	61	25	21	48			217D522	217D523
		6	356	212	129	61	25	21	48			217D622	217D623
		7	398	233	150	61	25	21	48			217D722	217D723
15	30 or 63	2	208	148	45	76	30	21	48			217D232	217D233
		3	250	169	66	76	30	21	48			217D332	217D333
		4	292	190	87	76	30	21	48			217D432	217D433
		5	334	211	108	76	30	21	48			217D532	217D533
		6	376	232	129	76	30	21	48			217D632	217D633
		7	418	253	150	76	30	21	48			217D732	217D733
20	30 or 63	2	224	164	45	84	38	21	48			217D242	217D243
		3	266	185	66	84	38	21	48			217D342	217D343
		4	308	206	87	84	38	21	48			217D442	217D443
		5	350	227	108	84	38	21	48			217D542	217D543
		6	392	248	129	84	38	21	48			217D642	217D643
		7	434	269	150	84	38	21	48			217D742	217D743
30	30 or 63	2	272	212	45	125	45	21	88			217D252	217D253
		3	314	233	66	125	45	21	88			217D352	217D353
		4	356	254	87	125	45	21	88			217D452	217D453
		5	398	275	108	125	45	21	88			217D552	217D553
		6	440	296	129	125	45	21	88			217D652	217D653
		7	482	317	150	125	45	21	88			217D752	217D753

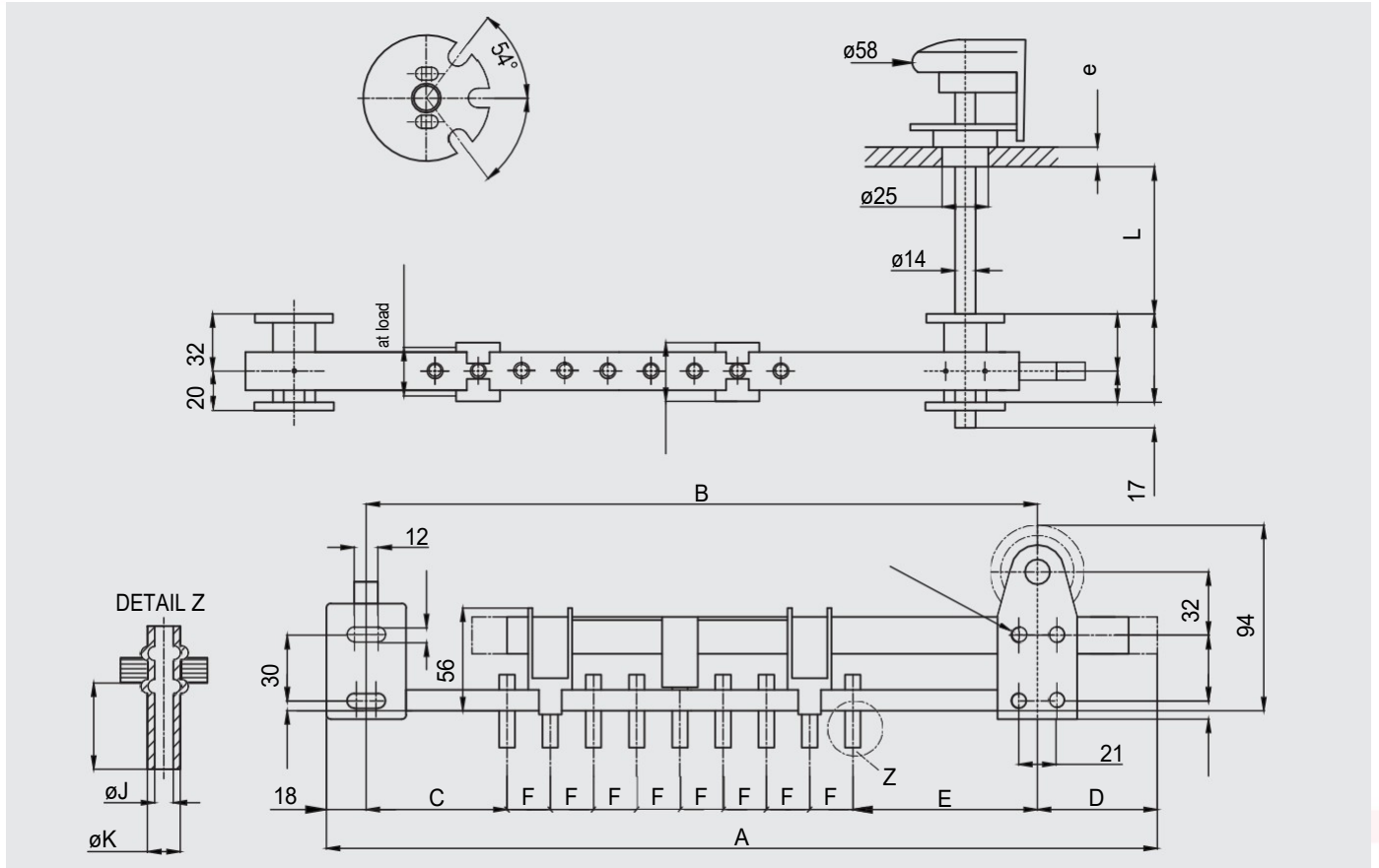


**Star Diagram /10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 25 % per Position
(With HP Support)**



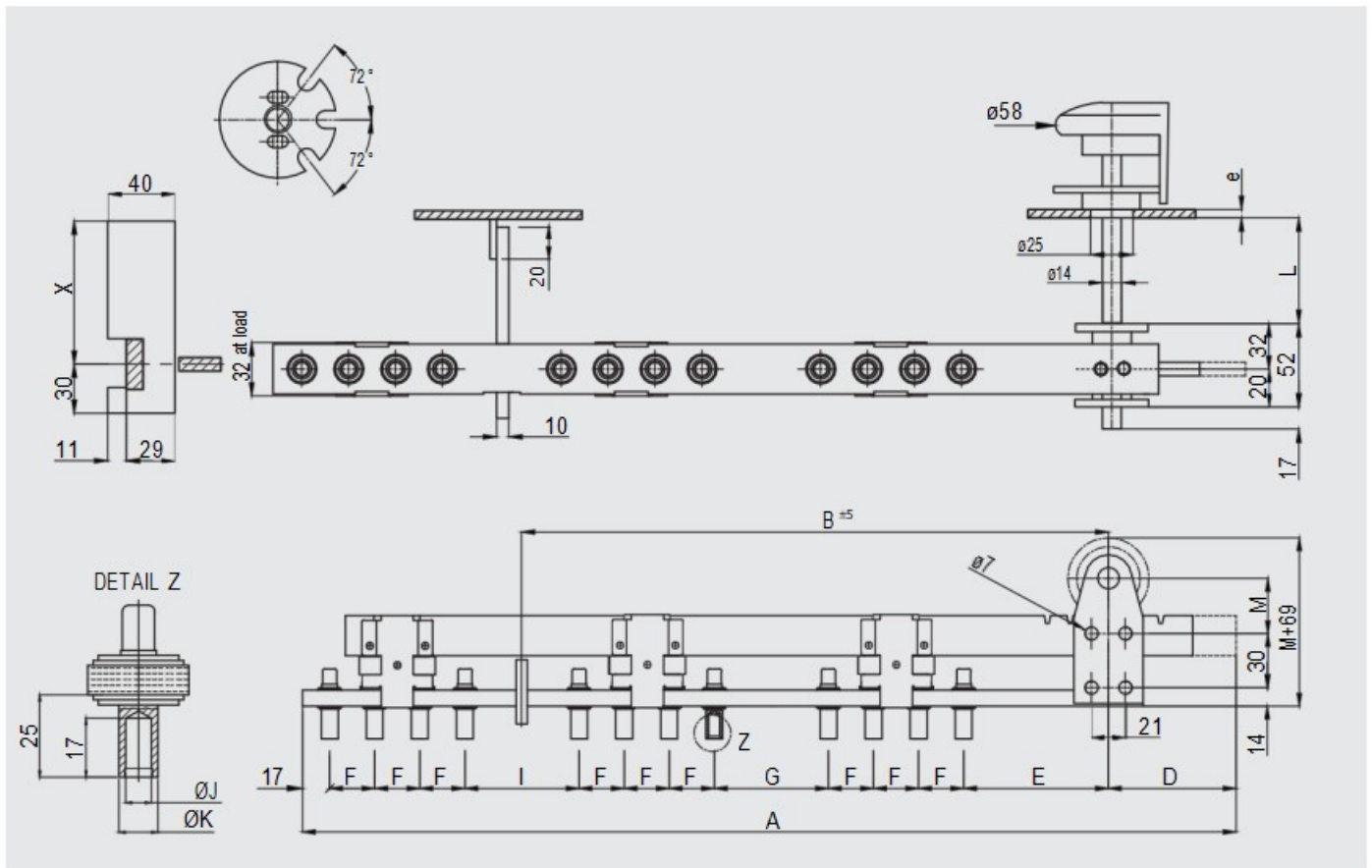
Voltage Class kV	Current A	Number of Positions	A	B	D	E	I	F	X min	L	e	Unit No 30A J:3 I K:5	Unit No 63A J:5 I K:7
10	30 or 63	2	266	149	51	61	50	21	48	Please specify when ordering		M233S222	M233S223
		3	350	191	72	61	50	21	48		M233S322	M233S323	
		4	434	233	93	61	50	21	48		M233S422	M233S423	
		5	518	275	114	61	50	21	48		M233S522	M233S523	
		6	602	317	135	61	50	21	48		M233S622	M233S623	
		7	686	359	156	61	50	21	48		M233S722	M233S723	
		15	30 or 63	2	281	164	51	76	50		21	48	M233S232
3	365			206	72	76	50	21	48		M233S332	M233S333	
4	449			248	93	76	50	21	48		M233S432	M233S433	
5	533			290	114	76	50	21	48		M233S532	M233S533	
6	617			332	135	76	50	21	48		M233S632	M233S633	
7	701			374	156	76	50	21	48		M233S732	M233S733	
20	30 or 63			2	289	172	51	84	50		21	48	M233S242
		3	373	214	72	84	50	21	48		M233S342	M233S343	
		4	457	256	93	84	50	21	48		M233S442	M233S443	
		5	541	298	114	84	50	21	48		M233S542	M233S543	
		6	625	340	135	84	50	21	48		M233S642	M233S643	
		7	709	382	156	84	50	21	48		M233S742	M233S743	
		30	30 or 63	2	330	213	51	125	50		21	88	M233S252
3	414			255	72	125	50	21	88		M233S352	M233S353	
4	498			297	93	125	50	21	88		M233S452	M233S453	
5	582			339	114	125	50	21	88	M233S552	M233S553		
6	666			381	135	125	50	21	88	M233S652	M233S653		
7	750			423	156	125	50	21	88	M233S752	M233S753		

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



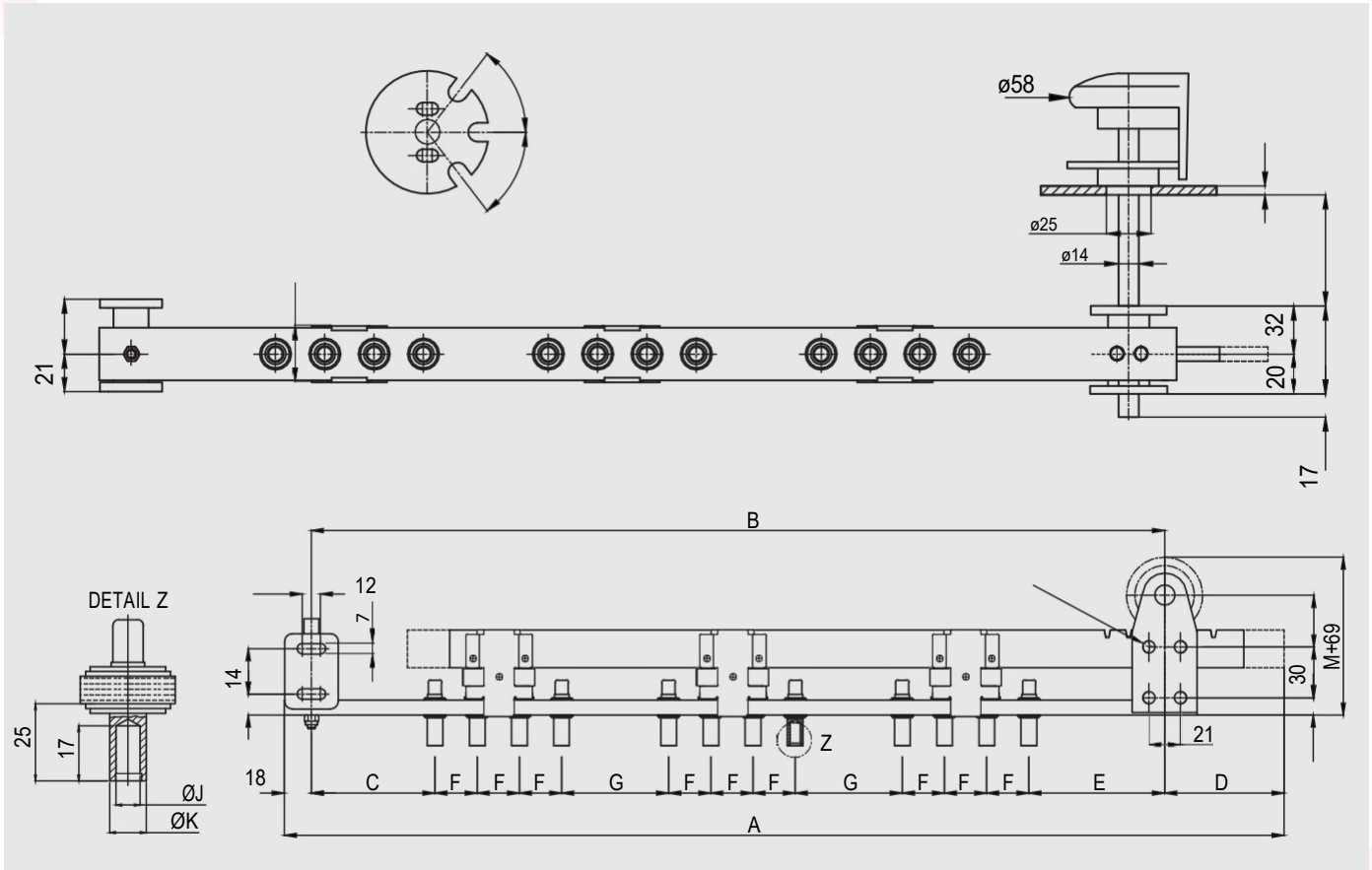
Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	L	e	Unit No 30A J:3.1 K:5	Unit No 63A J:5.1 K:7
10	30 or 63	2	288	219	53	51	61	21	Please specify when ordering		M231S222	M231S223
		3	372	282	53	72	61	21			M231S322	M231S323
		4	456	345	53	93	61	21			M231S422	M231S423
		5	540	408	53	114	61	21			M231S522	M231S523
		6	624	471	53	135	61	21			M231S622	M231S623
		7	708	534	53	156	61	21			M231S722	M231S723
20	30 or 63	2	334	265	76	51	84	21			M231S242	M231S243
		3	418	328	76	72	84	21			M231S342	M231S343
		4	502	391	76	93	84	21			M231S442	M231S443
		5	586	454	76	114	84	21			M231S542	M231S543
		6	670	517	76	135	84	21			M231S642	M231S643
		7	754	580	76	156	84	21			M231S742	M231S743
30	30 or 63	2	416	347	117	51	125	21			M231S252	M231S253
		3	500	410	117	72	125	21			M231S352	M231S353
		4	584	473	117	93	125	21			M231S452	M231S453
		5	668	536	117	114	125	21			M231S552	M231S553
		6	752	599	117	135	125	21			M231S652	M231S653
		7	836	662	117	156	125	21			M231S752	M231S753

***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 I20 A J:8.1 K:12
10	120	2	406	251	58	67	48	48	28	48	32	Please specify when ordering		M233D224
		3	518	307	86	67	48	48	28	48	32			M233D324
		4	630	363	114	67	48	48	28	48	32			M233D424
		5	742	419	142	67	48	48	28	48	32			M233D524
20	120	2	475	308	58	90	71	71	28	48	32			M233D244
		3	587	364	86	90	71	71	28	48	32			M233D344
		4	699	420	114	90	71	71	28	48	32			M233D444
		5	811	476	142	90	71	71	28	48	32			M233D544
30	120	2	563	384	58	130	95	95	28	88	32			M233D254
		3	675	440	86	130	95	95	28	88	32			M233D354
		4	787	496	114	130	95	95	28	88	32			M233D454
		5	899	552	142	130	95	95	28	88	32			M233D554

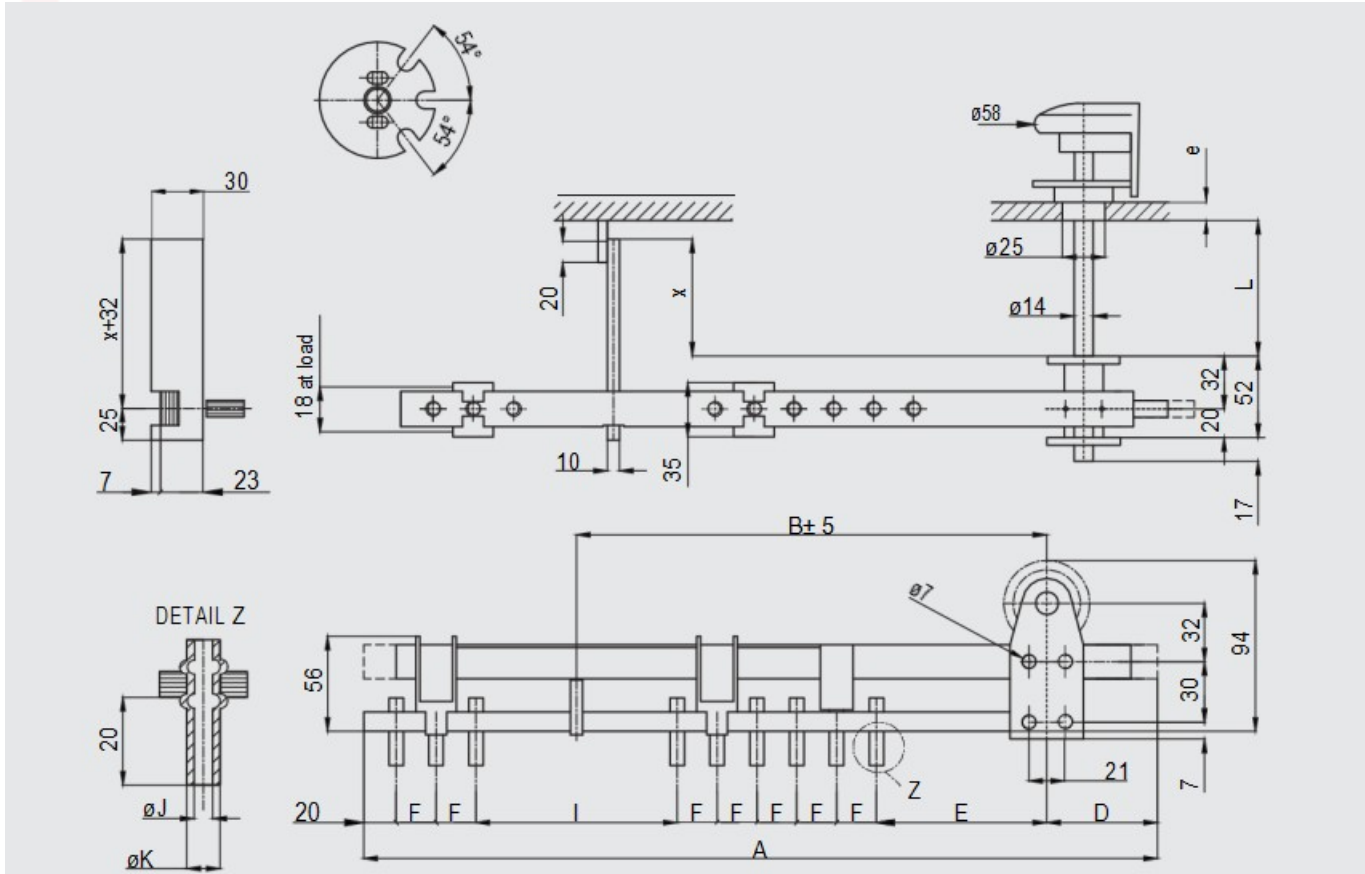
Delta Diagram /10 - 30 kV/120 A/2 - 5 Positions/Setting 2.5 % per Position (With Aluminium Support)



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		M231D224
		3	578	474	59	86	67	48	28	32			M231D324
		4	690	558	59	114	67	48	28	32			M231D424
		5	802	642	59	142	67	48	28	32			M231D524
20	120	2	558	482	82	58	90	71	28	32			M231D244
		3	670	566	82	86	90	71	28	32			M231D344
		4	782	650	82	114	90	71	28	32			M231D444
		5	894	734	82	142	90	71	28	32			M231D544
30	120	2	686	610	122	58	130	95	28	32			M231D254
		3	798	694	122	86	130	95	28	32			M231D354
		4	910	778	122	114	130	95	28	32			M231D454
		5	1022	862	122	142	130	95	28	32			M231D554

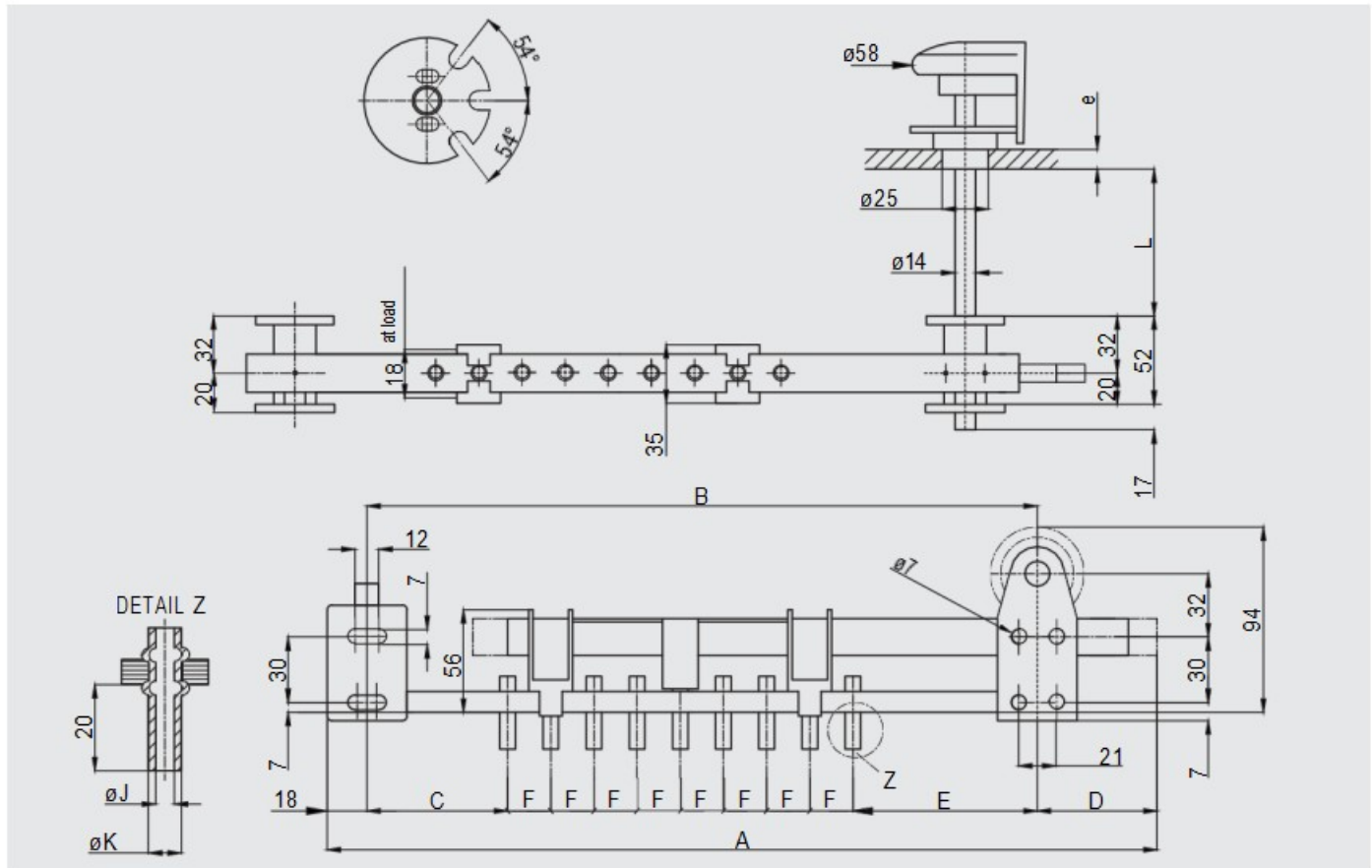


**Star Diagram /10 - 30 kV/30 - 63 A/2 - 7 Positions/Setting 2.5 % per Position
(With HP Support)**



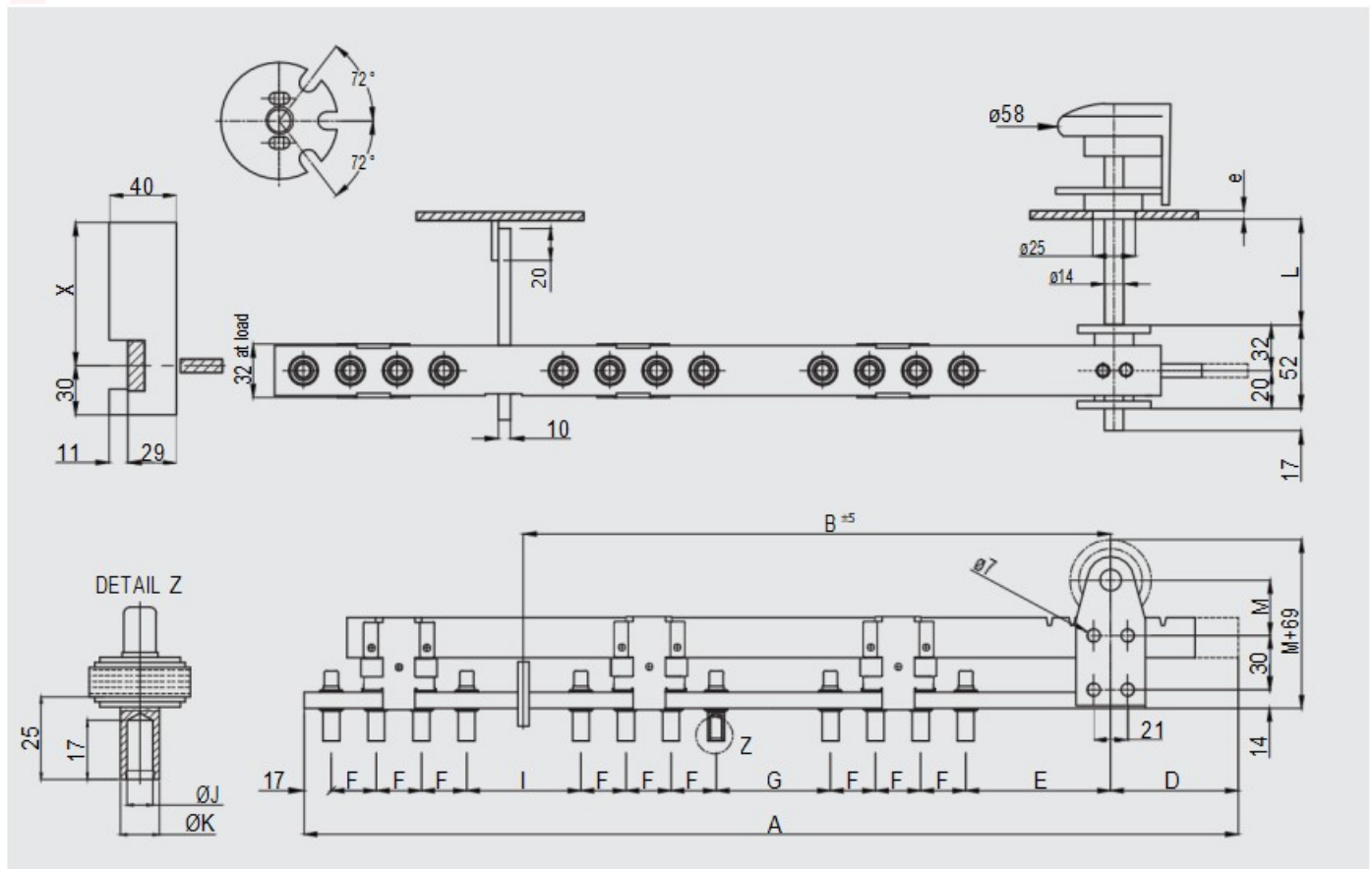
Voltage Class kV	Current A	Number of Positions	A	B	D	E	I	F	X min	L	e	Unit No 30A J:3.1 K:5	Unit No 63A J:5.1 K:7
10	30 or 63	2	266	149	51	61	50	21	48	Please specify when ordering		M233S222	M233S223
		3	350	191	72	61	50	21	48			M233S322	M233S323
		4	434	233	93	61	50	21	48			M233S422	M233S423
		5	518	275	114	61	50	21	48			M233S522	M233S523
		6	602	317	135	61	50	21	48			M233S622	M233S623
		7	686	359	156	61	50	21	48			M233S722	M233S723
15	30 or 63	2	281	164	51	76	50	21	48			M233S232	M233S233
		3	365	206	72	76	50	21	48			M233S332	M233S333
		4	449	248	93	76	50	21	48			M233S432	M233S433
		5	533	290	114	76	50	21	48			M233S532	M233S533
		6	617	332	135	76	50	21	48			M233S632	M233S633
		7	701	374	156	76	50	21	48			M233S732	M233S733
20	30 or 63	2	289	172	51	84	50	21	48			M233S242	M233S243
		3	373	214	72	84	50	21	48			M233S342	M233S343
		4	457	256	93	84	50	21	48			M233S442	M233S443
		5	541	298	114	84	50	21	48			M233S542	M233S543
		6	625	340	135	84	50	21	48			M233S642	M233S643
		7	709	382	156	84	50	21	48			M233S742	M233S743
30	30 or 63	2	330	213	51	125	50	21	88			M233S252	M233S253
		3	414	255	72	125	50	21	88			M233S352	M233S353
		4	498	297	93	125	50	21	88			M233S452	M233S453
		5	582	339	114	125	50	21	88	M233S552	M233S553		
		6	666	381	135	125	50	21	88	M233S652	M233S653		
		7	750	423	156	125	50	21	88	M233S752	M233S753		

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



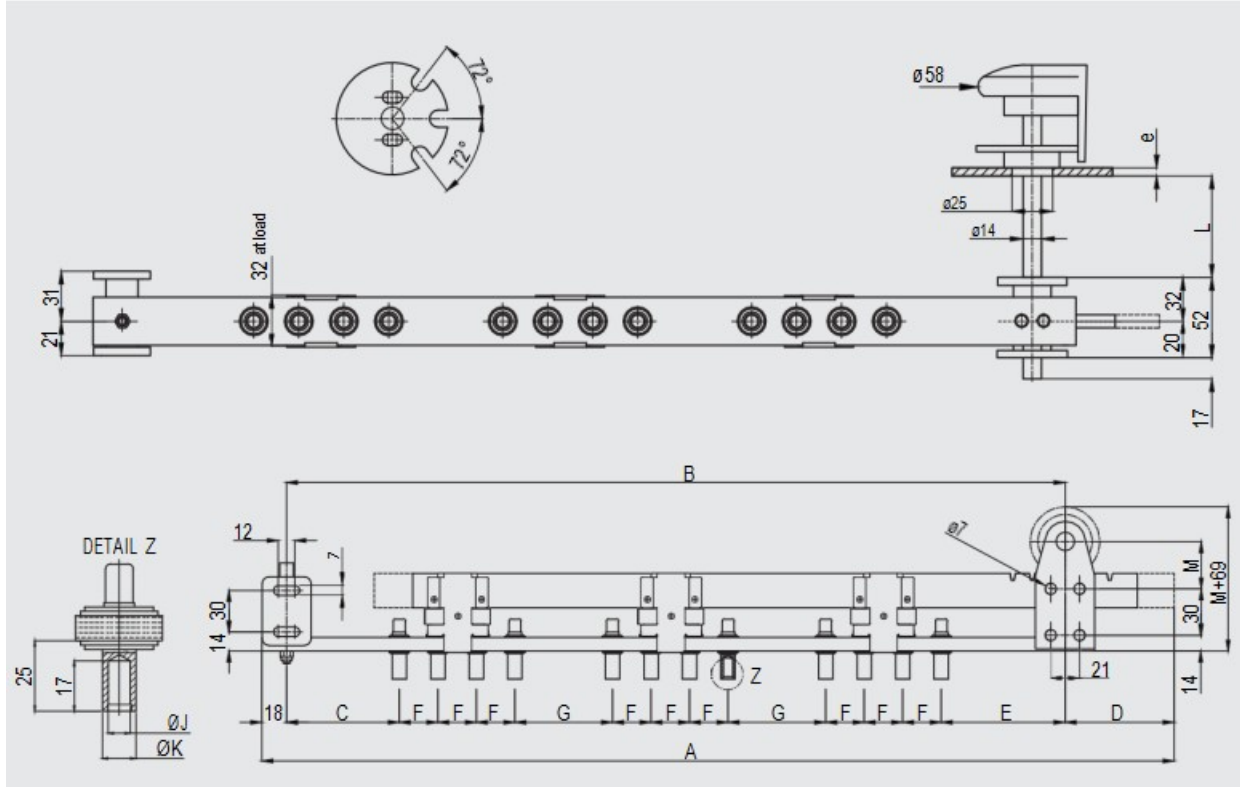
Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	L	e	Unit No 30A J:31 K:5	Unit No 63A J:51 K:7
10	30 or 63	2	288	219	53	51	61	21	Please specify when ordering		M23IS222	M23IS223
		3	372	282	53	72	61	21			M23IS322	M23IS323
		4	456	345	53	93	61	21			M23IS422	M23IS423
		5	540	408	53	114	61	21			M23IS522	M23IS523
		6	624	471	53	135	61	21			M23IS622	M23IS623
		7	708	534	53	156	61	21			M23IS722	M23IS723
20	30 or 63	2	334	265	76	51	84	21			M23IS242	M23IS243
		3	418	328	76	72	84	21			M23IS342	M23IS343
		4	502	391	76	93	84	21			M23IS442	M23IS443
		5	586	454	76	114	84	21			M23IS542	M23IS543
		6	670	517	76	135	84	21			M23IS642	M23IS643
		7	754	580	76	156	84	21			M23IS742	M23IS743
30	30 or 63	2	416	347	117	51	125	21			M23IS252	M23IS253
		3	500	410	117	72	125	21			M23IS352	M23IS353
		4	584	473	117	93	125	21			M23IS452	M23IS453
		5	668	536	117	114	125	21			M23IS552	M23IS553
		6	752	599	117	135	125	21			M23IS652	M23IS653
		7	836	662	117	156	125	21			M23IS752	M23IS753

***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		M233D224
		3	518	307	86	67	48	48	28	48	32			M233D324
		4	630	363	114	67	48	48	28	48	32			M233D424
		5	742	419	142	67	48	48	28	48	32			M233D524
20	120	2	475	308	58	90	71	71	28	48	32			M233D244
		3	587	364	86	90	71	71	28	48	32			M233D344
		4	699	420	114	90	71	71	28	48	32			M233D444
		5	811	476	142	90	71	71	28	48	32			M233D544
30	120	2	563	384	58	130	95	95	28	88	32			M233D254
		3	675	440	86	130	95	95	28	88	32			M233D354
		4	787	496	114	130	95	95	28	88	32			M233D454
		5	899	552	142	130	95	95	28	88	32			M233D554

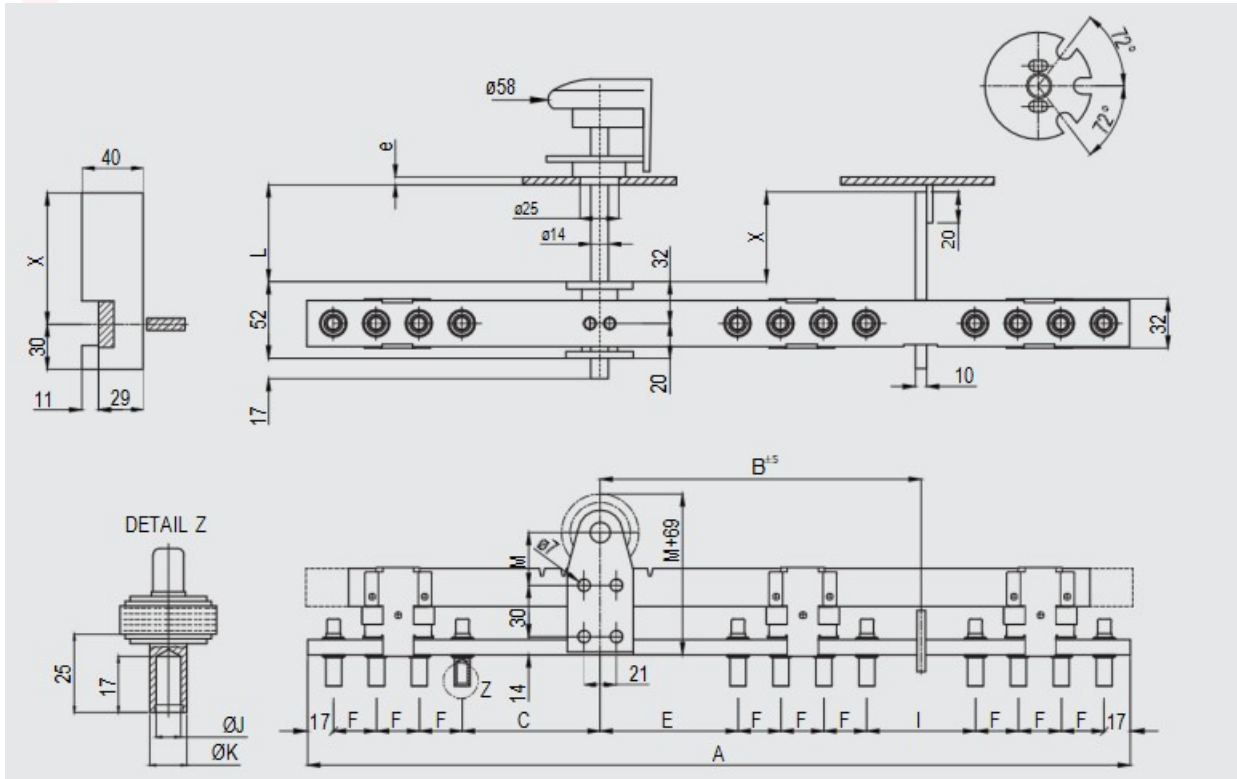
Delta Diagram /10 - 30 kV/120 A/2 - 5 Positions/Setting 2.5 % per Position (With Aluminium Support)



Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	G	F	M min.	L	e	Unit No 120 A J:8.1K:12
10	120	2	466	390	59	58	67	48	28	32	Please specify when ordering		M231D224
		3	578	474	59	86	67	48	28	32			M231D324
		4	690	558	59	114	67	48	28	32			M231D424
		5	802	642	59	142	67	48	28	32			M231D524
20	120	2	558	482	82	58	90	71	28	32			M231D244
		3	670	566	82	86	90	71	28	32			M231D344
		4	782	650	82	114	90	71	28	32			M231D444
		5	894	734	82	142	90	71	28	32			M231D544
30	120	2	686	610	122	58	130	95	28	32			M231D254
		3	798	694	122	86	130	95	28	32			M231D354
		4	910	778	122	114	130	95	28	32			M231D454
		5	1022	862	122	142	130	95	28	32			M231D554

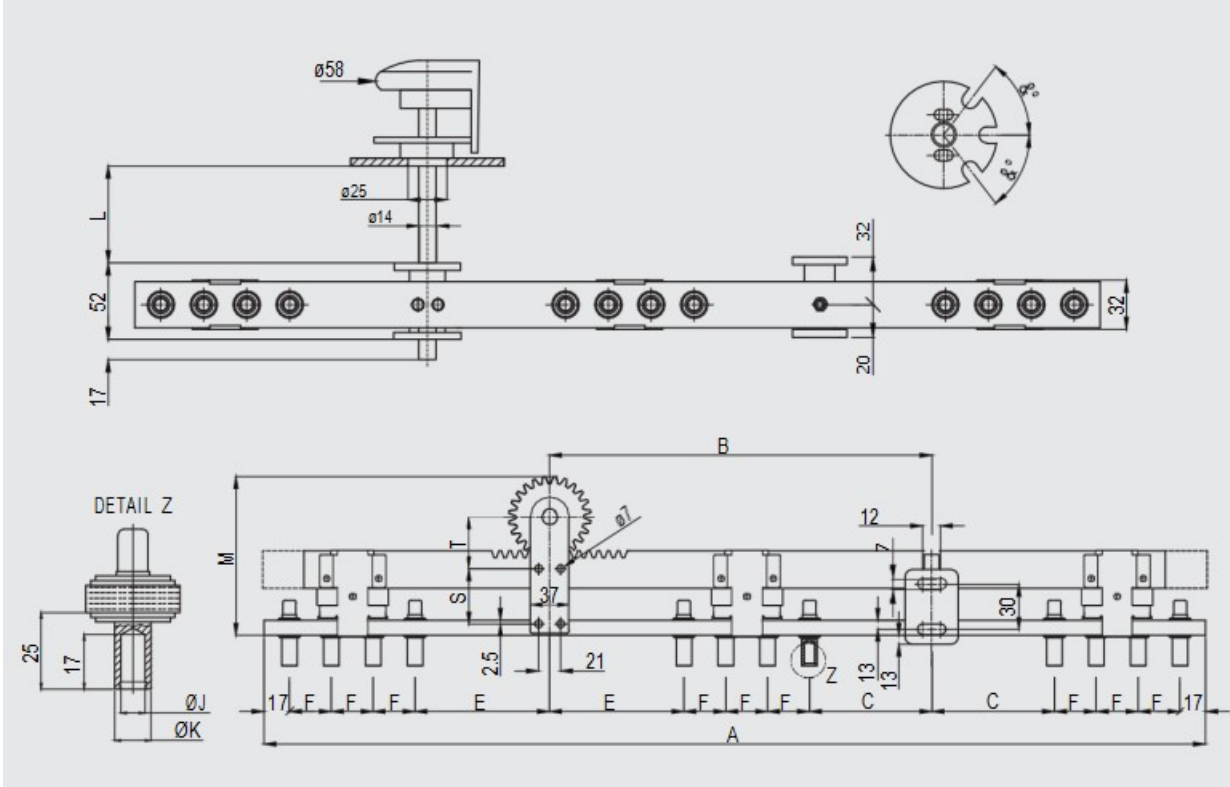


***Delta Diagram /10 - 30 kV/120 A/2 - 5 Positions/Setting 2.5 % per Position
(With HP Support)***



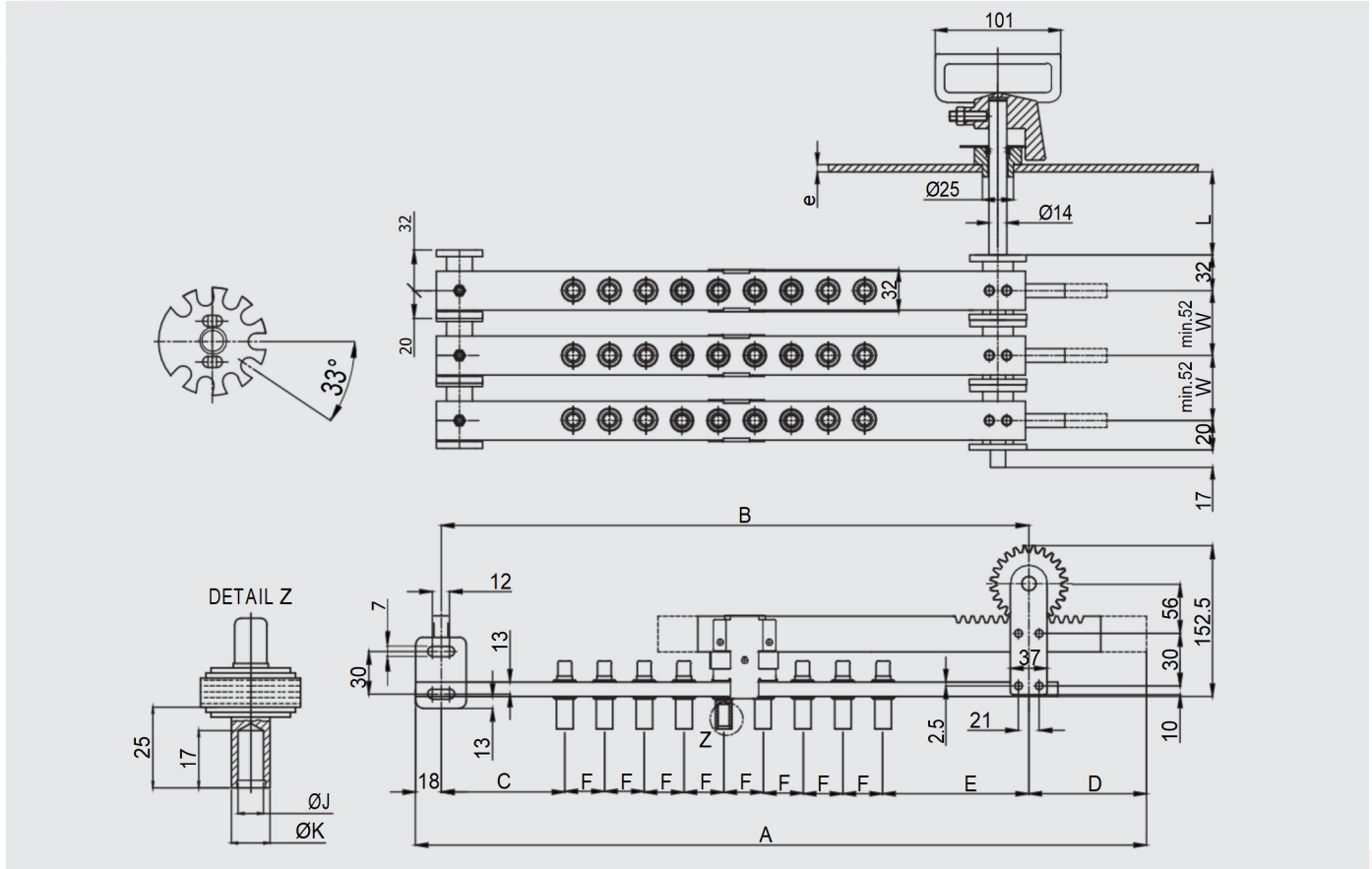
Voltage Class kV	Current A	Number of Positions	A	B	C	E	I	F	X min	M	L	e	Unit No 120 A J:81 K:12
10	120	2	384	147	67	67	48	28	48	32	Please specify when ordering		M235D224
		3	468	175	67	67	48	28	48	32			M235D324
		4	552	203	67	67	48	28	48	32			M235D424
		5	636	231	67	67	48	28	48	32			M235D524
20	120	2	453	181	90	90	71	28	48	32			M235D244
		3	537	209	90	90	71	28	48	32			M235D344
		4	621	237	90	90	71	28	48	32			M235D444
		5	705	265	90	90	71	28	48	32			M235D544
30	120	2	557	233	130	130	95	28	88	32			M235D254
		3	641	261	130	130	95	28	88	32			M235D354
		4	725	289	130	130	95	28	88	32			M235D454
		5	809	317	130	130	95	28	88	32			M235D554

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



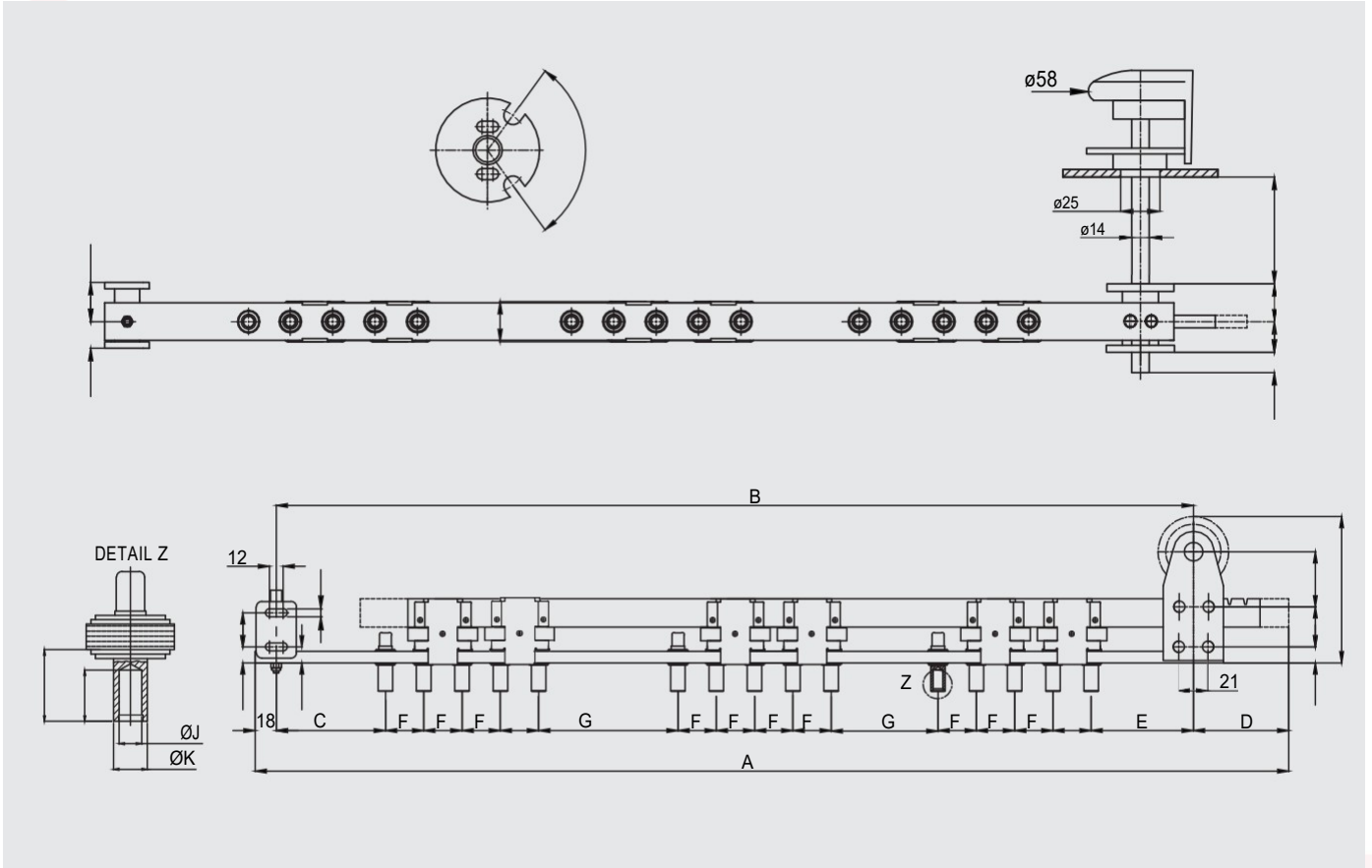
Voltage Class kV	Current A	Number of Positions	A	B	C	E	S	T	M	F	&°	L	e	Unit No 120 A J:8.1 K:12
10	120	6	790	294	59	67	30	44	129.5	28	44,3°	Please specify when ordering		M234D624
		7	874	322	59	67	30	44	129.5	28	44,3°			M234D724
		8	958	350	59	67	30	56	152.5	28	33°			M234D824
		9	1042	378	59	67	30	56	152.5	28	33°			M234D924
		10	1126	406	59	67	30	56	152.5	28	33°			M234D1024
		11	1210	434	59	67	30	56	152.5	28	33°			M234D1124
20	120	6	882	340	82	90	30	44	129.5	28	44,3°			M234D644
		7	966	368	82	90	30	44	129.5	28	44,3°			M234D744
		8	1050	396	82	90	30	56	152.5	28	33°			M234D844
		9	1134	424	82	90	30	56	152.5	28	33°			M234D944
		10	1218	452	82	90	30	56	152.5	28	33°			M234D1044
		11	1302	480	82	90	30	56	152.5	28	33°			M234D1144
30	120	6	1042	420	122	130	30	44	129.5	28	44,3°			M234D654
		7	1126	448	122	130	30	44	129.5	28	44,3°			M234D754
		8	1210	476	122	130	30	56	152.5	28	33°			M234D854
		9	1294	504	122	130	30	56	152.5	28	33°			M234D954
		10	1378	532	122	130	30	56	152.5	28	33°			M234D1054
		11	1462	560	122	130	30	56	152.5	28	33°			M234D1154

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



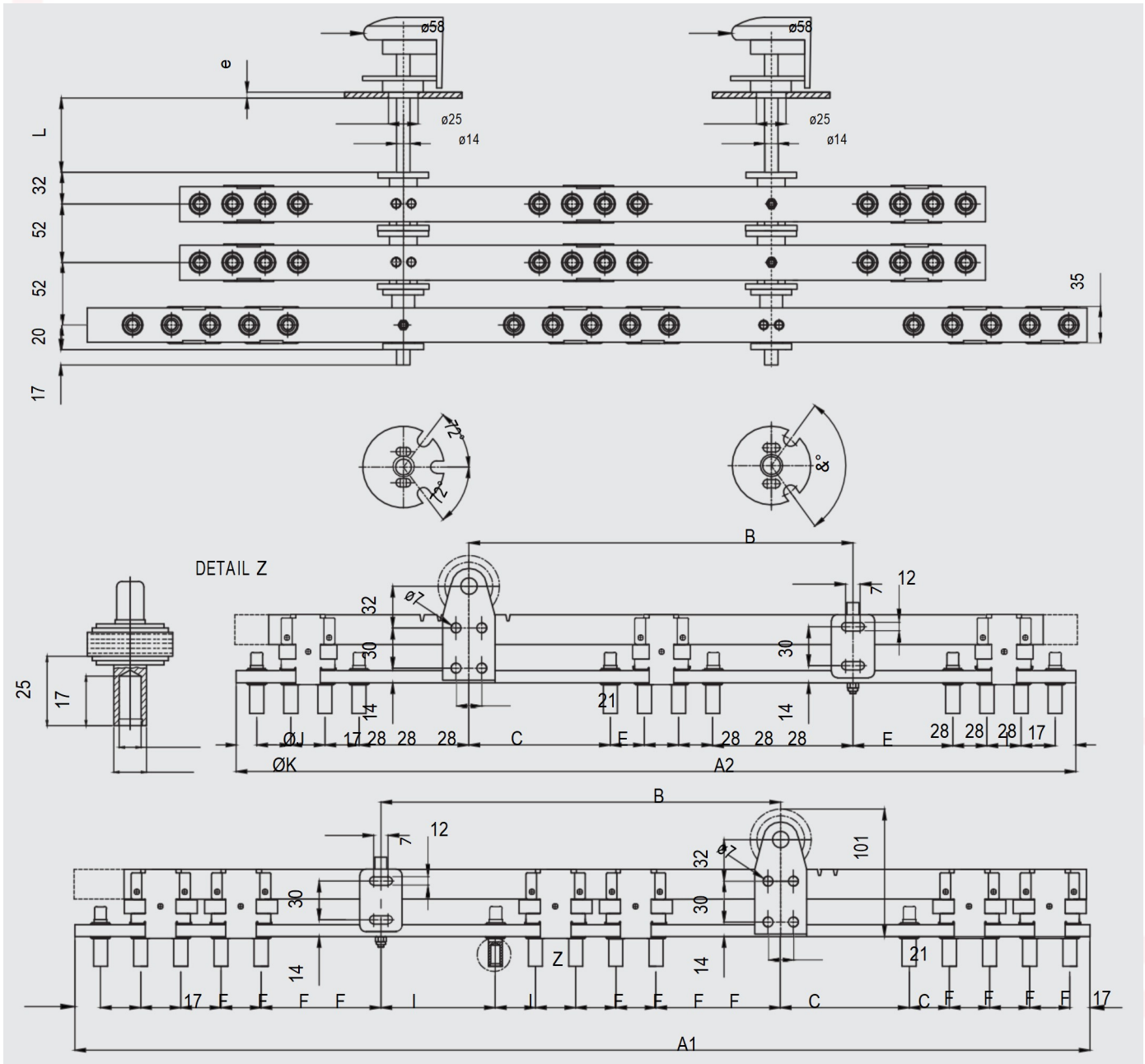
Voltage Class kV	Current A	Number of Positions	A	B	C	D	E	F	L	e	W	Unit No 120 A J:8.1K:12
10	120	8	619	350	59	251	67	28	Please specify when ordering			M271D824
		9	675	378	59	279	67	28				M271D924
		10	721	406	59	307	67	28				M271D1024
		11	777	434	59	335	67	28				M271D1124
20	120	8	665	396	82	251	90	28				M271D844
		9	721	424	82	279	90	28				M271D944
		10	777	452	82	307	90	28				M271D1044
		11	833	480	82	335	90	28				M271D1144
30	120	8	745	476	122	251	130	28				M271D854
		9	801	504	122	279	130	28				M271D954
		10	857	532	122	307	130	28				M271D1054
		11	913	560	122	335	130	28				M271D1154

Series Parallel Coupling / 25 - 30 kV / 120 A (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		M231P294
10 - 20		908	818	82	72	90	42	71	108 °			M231P274
25 - 30		1127	1030	122	79	130	49	95	126 °			M231P284

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											Unit No
Series Parallel	Delta			A	A1	B	C	E	I	F	&°	L	e	
10 - 20	20	120	3	833	714	340	90	128	82	42	108°			M254K374
			4	908	770	340	90	114	82	42	108°			M254K474
			5	1127	826	340	90	100	82	42	108°			M254K574
25 - 30	30	120	3	1126	902	448	130	182	122	49	126°			M254K384
			4	1126	958	448	130	168	122	49	126°			M254K484
			5	1126	1014	448	130	154	122	49	126°			M254K584

Please specify
When
ordering

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/>

