

Tap Changer Type KHF III

Specification, Assembly and Materials



Descriptions	Remarks
General Specifications	<ul style="list-style-type: none"> • available in one, two or three phase applications • shaft length available in variable sizes • connection diagrams (page 5) can be applied in any variation to all types • bolted on the supports • welded under transformer cover and allow strong construction

Materials

Steel Parts	<ul style="list-style-type: none"> • available in stainless or mild steel • mild steel parts are cadmium or zinc plated 	galvanizing upon request
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	
Upon Request	<ul style="list-style-type: none"> • aluminum parts can be protected by anodic oxidation • mild steel parts can be supplied in stainless steel • brass and copper parts can be tin, silver or cadmium plated 	
Current	up to 800 A	
Voltage Class	B.I.L (other B. I. L. values are available upon customer request)	
20 kV / 30 kV	125 kV / 170 kV	

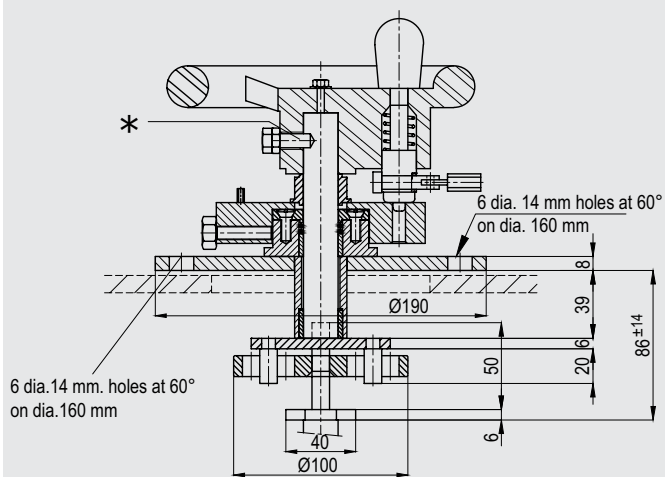
Operating Instructions

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)

Type KHF III Threephase Tap Changer

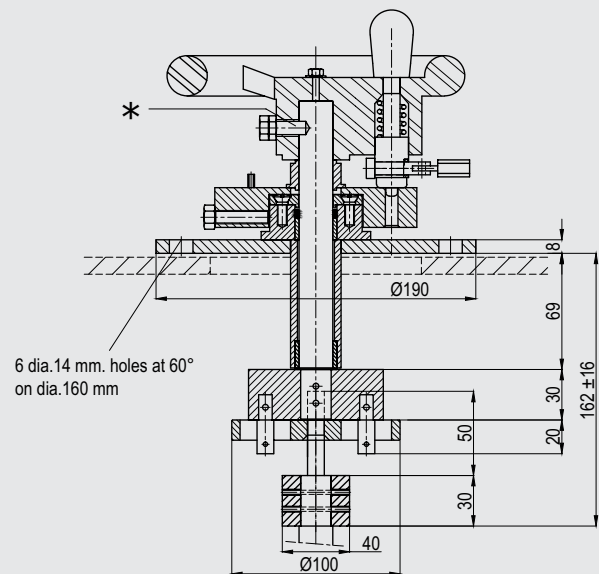
Control Devices

Control Device No. KH 320

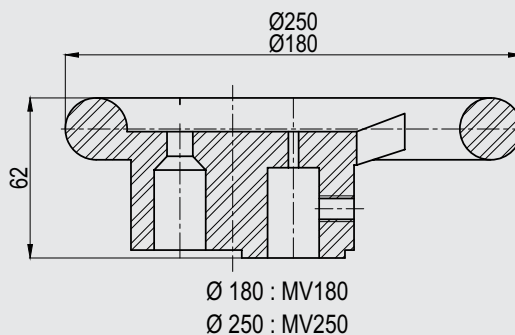


- plug-in standard type
- flange mounted
- permitted angular variation: 3°
- permitted alignment variation: 8 mm

Control Device No. KH 330



- plug-in with aluminium overall dimensions
- flange mounted
- permitted angular variation: 3°
- permitted alignment variation: 8 mm



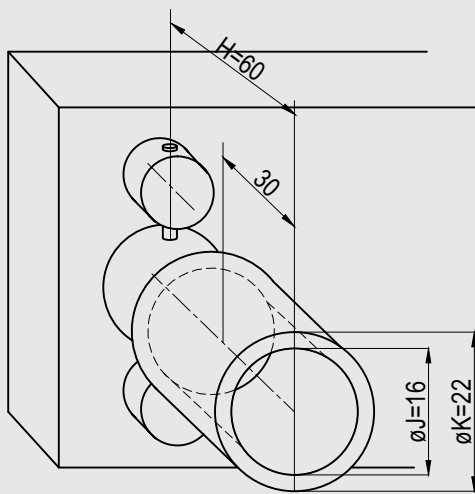
* the hole on the shaft is drilled at parallel position with respect to the middle position of the tap changer

* L min: 95 for KH 320 / 170 for KH 330

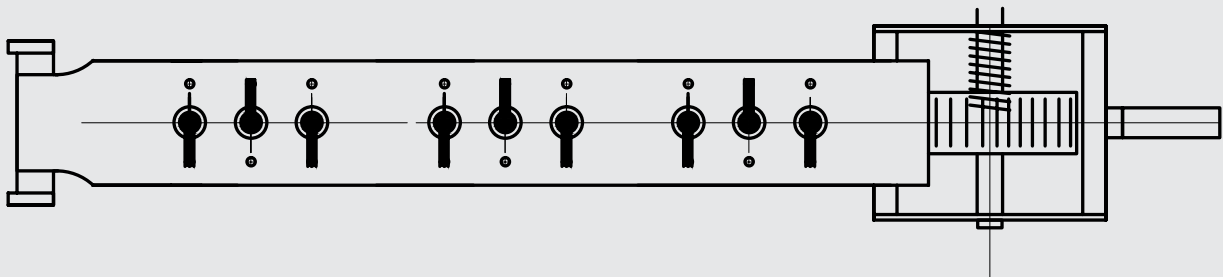
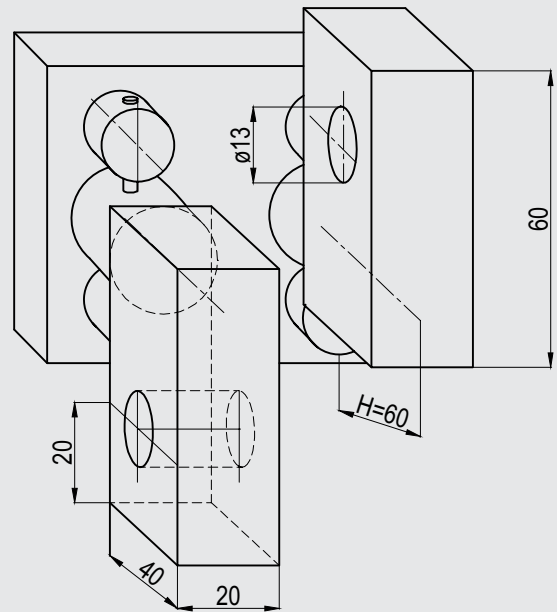
Type KHF III Threephase Tap Changer

Fixed Contacts

KH 374
(Flag Type Contacts)



KH 375
(Tubular Contacts)

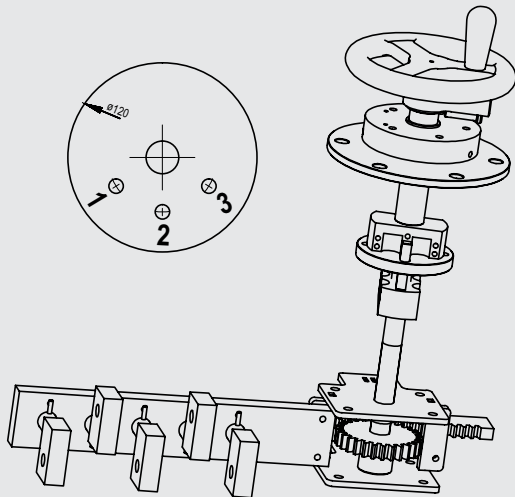


Unless otherwise specified by the customer, flag type contacts are positioned as in the diagram above.
The contact situated near the operating device is facing downwards.

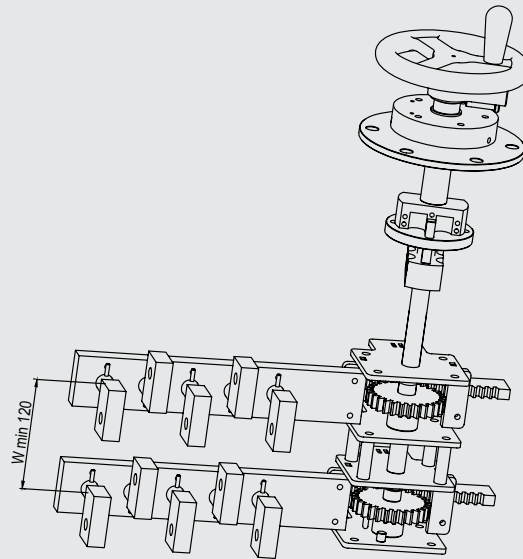
Type KHF III Threephase Tap Changer

Numbering of the Repeater Disc and Numbering Combinations

Standard Numbering



Numbering Combinations



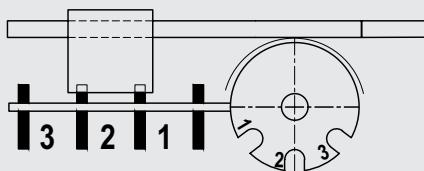
KHF III tap changers can be paired by superimposing several tap changers. Built steel brackets are assembled by nuts and bolts.

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.

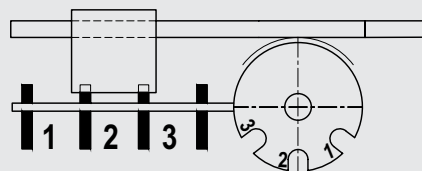
Note: It is essential, when ordering, to quote dimension „W“ the minimum value of which to be set in each case depends on the insulation conditions and on the position of the different tap changers

Numbering of the repeaters for rack and pinion drive

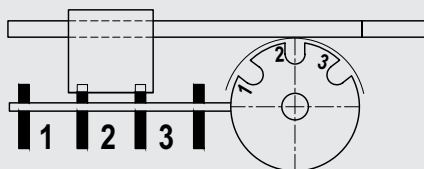
A1



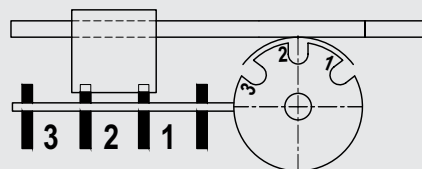
B1



C1

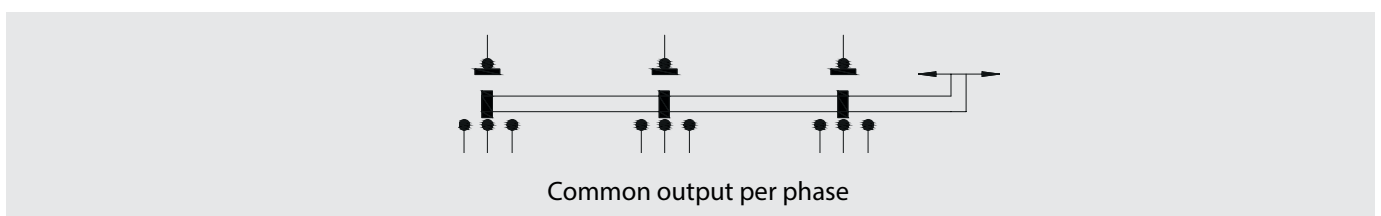
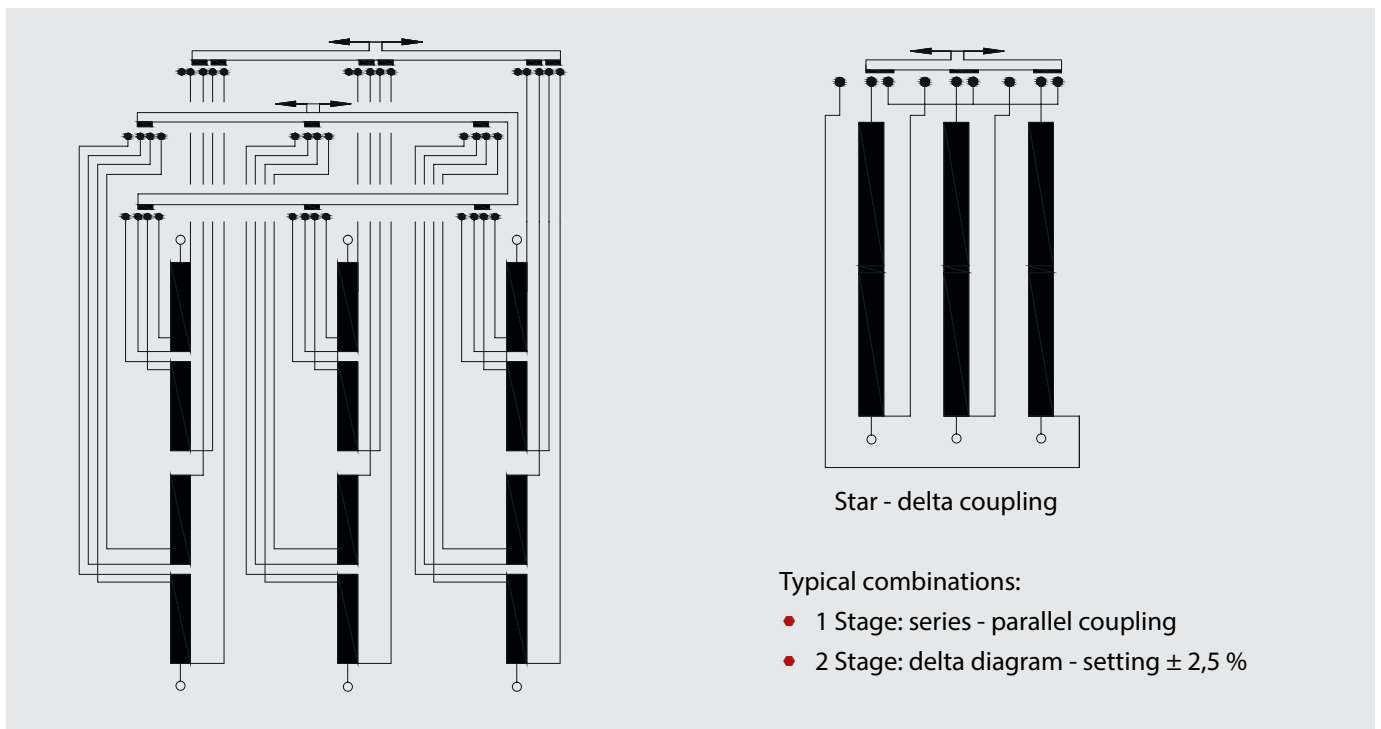
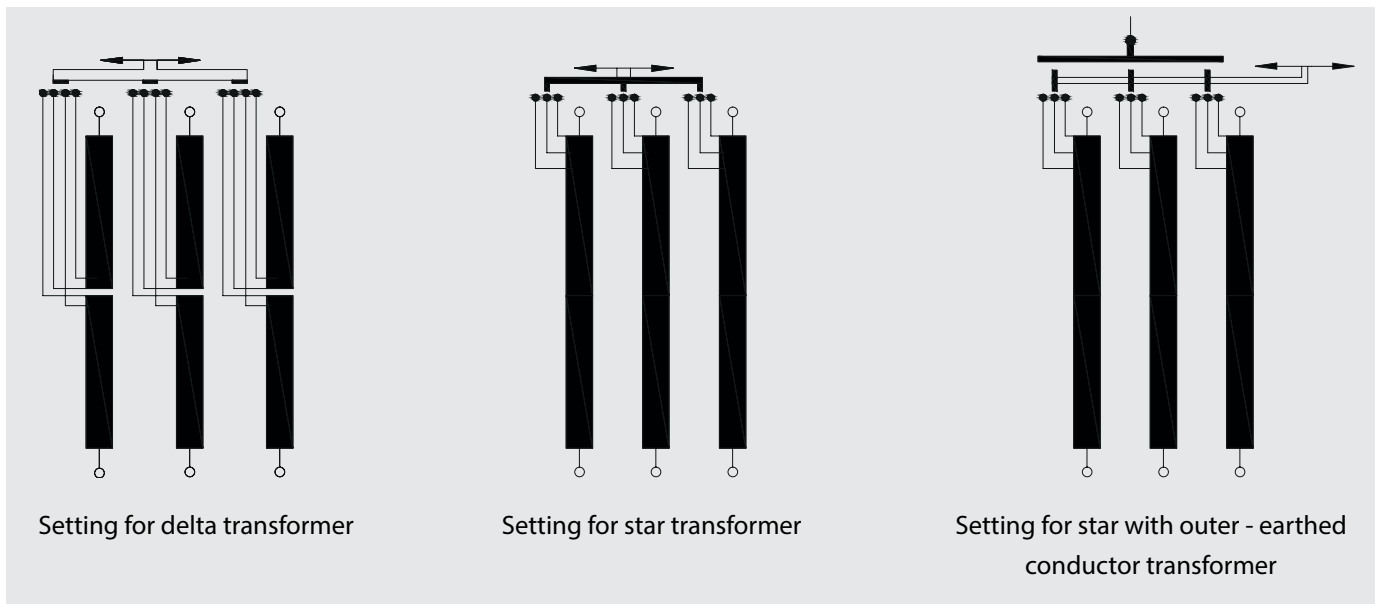


D1



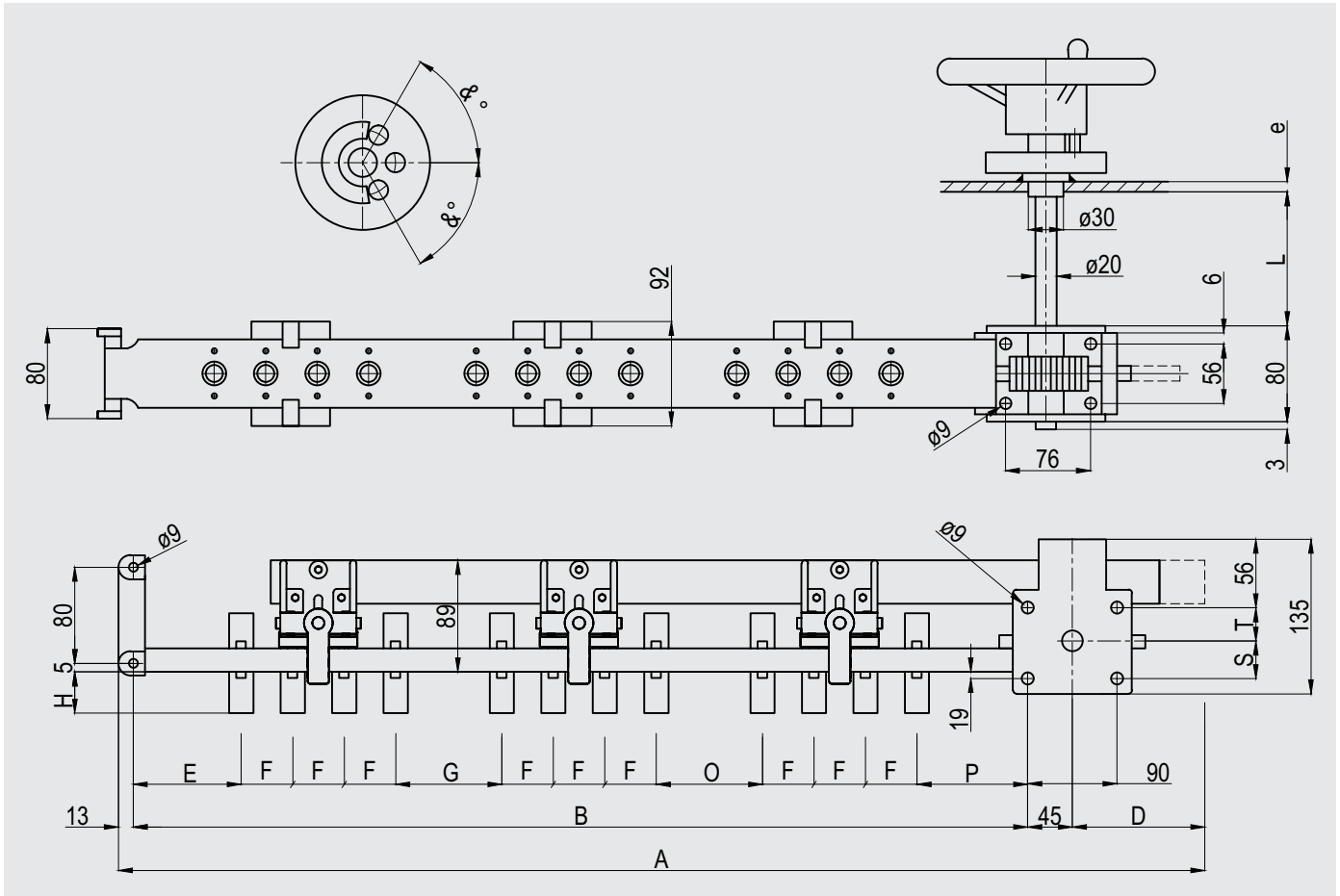
Type KHF III Threephase Tap Changer

Numbering Combinations



Type KHF III Threephase Tap Changer

Delta Diagram / 20 - 30 kV / 400 - 800 A / 3 - 6 Positions / Setting 2.5 % per Position (With Aluminium Support)



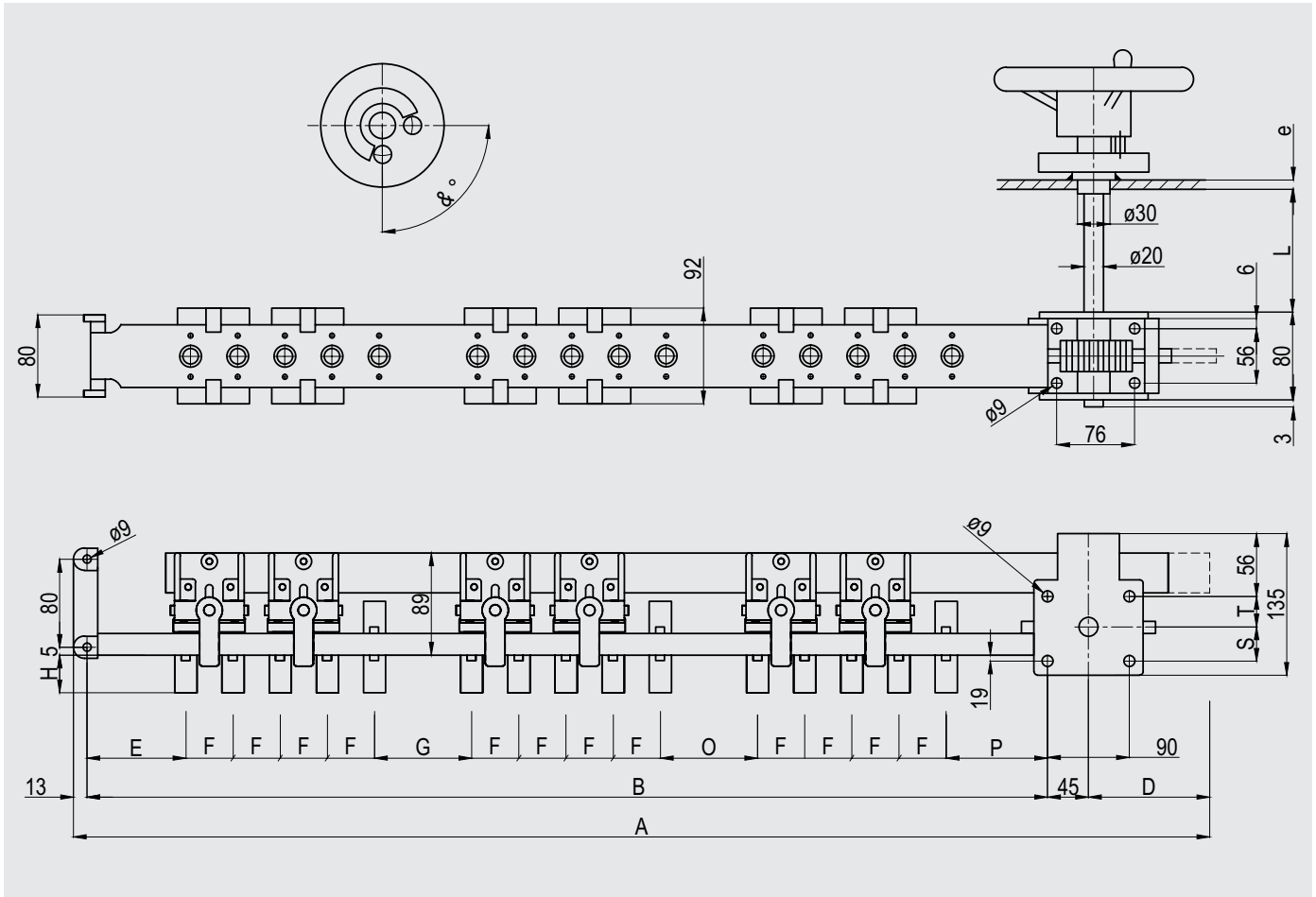
Voltage Class kV	Number of Positions	A	B	D	E	F	G	H	O	P	S	T	&°	L	e	Unit No
20	3	1018	830	130	90	50	90	Depends on fixed contacts	90	110	32	32	67°	Please specify when ordering		431D347
	4	1218	980	180	90	50	90		90	110	32	32	67°			431D447
	5	1418	1130	230	90	50	90		90	110	32	32	67°			431D547
	6	1618	1280	280	90	50	90		90	110	30	34	64°			431D647
30	3	1138	950	130	120	50	120	Depends on fixed contacts	120	140	32	32	67°	Please specify when ordering		431D357
	4	1338	1100	180	120	50	120		120	140	32	32	67°			431D457
	5	1538	1250	230	120	50	120		120	140	32	32	67°			431D557
	6	1738	1400	280	120	50	120		120	140	30	34	64°			431D657

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device

Type KHF III Threephase Tap Changer

Series Parallel Coupling / 20 - 30 kV / 400 - 800 A / Setting 2.5 % per Position (With Aluminium Support)



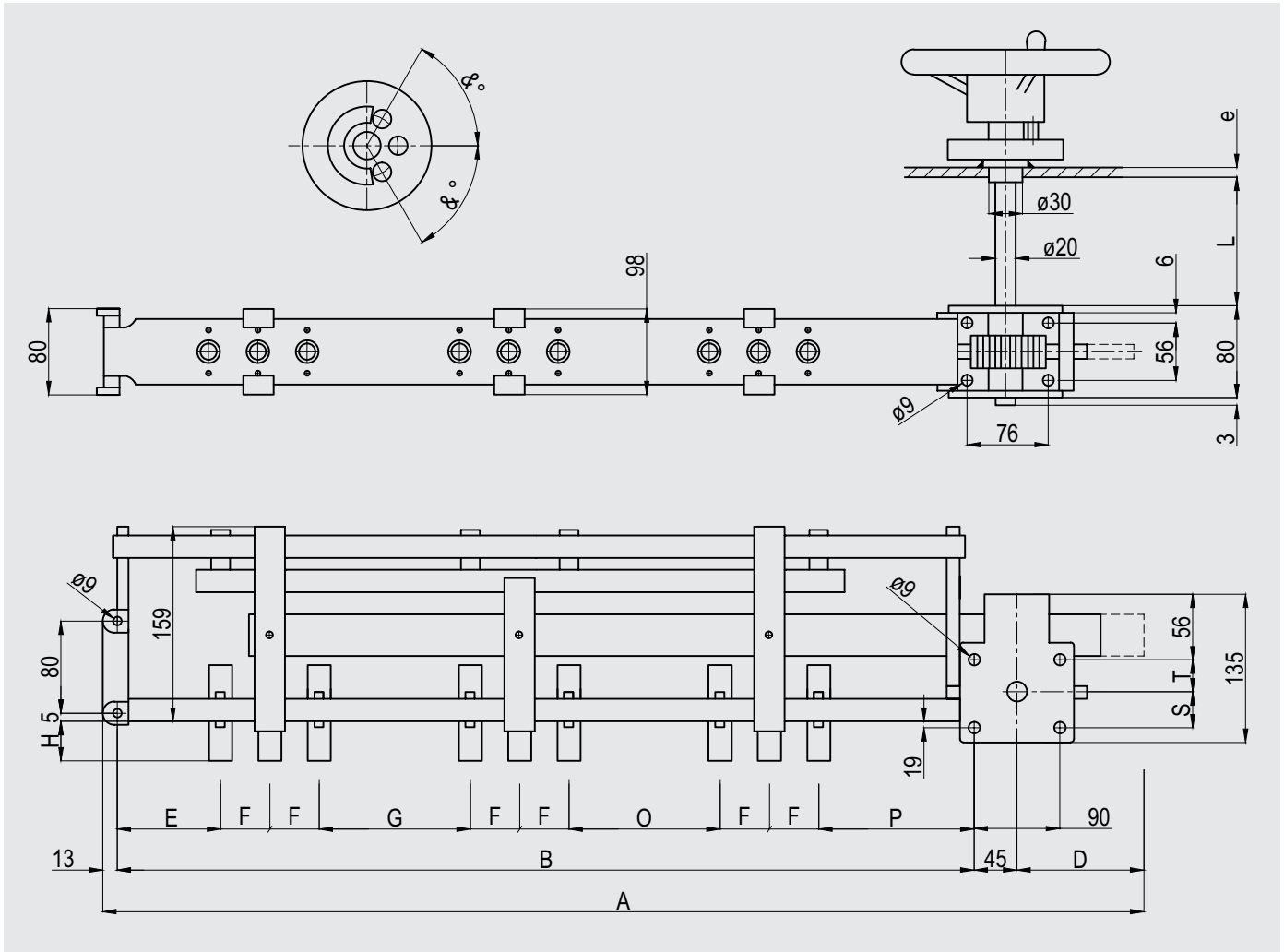
Voltage Class kV	A	B	D	E	F	G	H	O	P	S	T	&°	L	e	Unit No
10 - 20	1352	1196	98	90	68	90	Depends on fixed contacts	90	110	32	32	93°	Please specify when ordering		M431P277
15 - 30	1472	1316	98	120	68	120		120	140	32	32	93°			M431P287

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device

Type KHF III Threephase Tap Changer

Star Diagram / 20 - 30 kV / 400 - 800 A / 3 - 6 Positions / Setting 2.5 % per Position (With Aluminium Support)



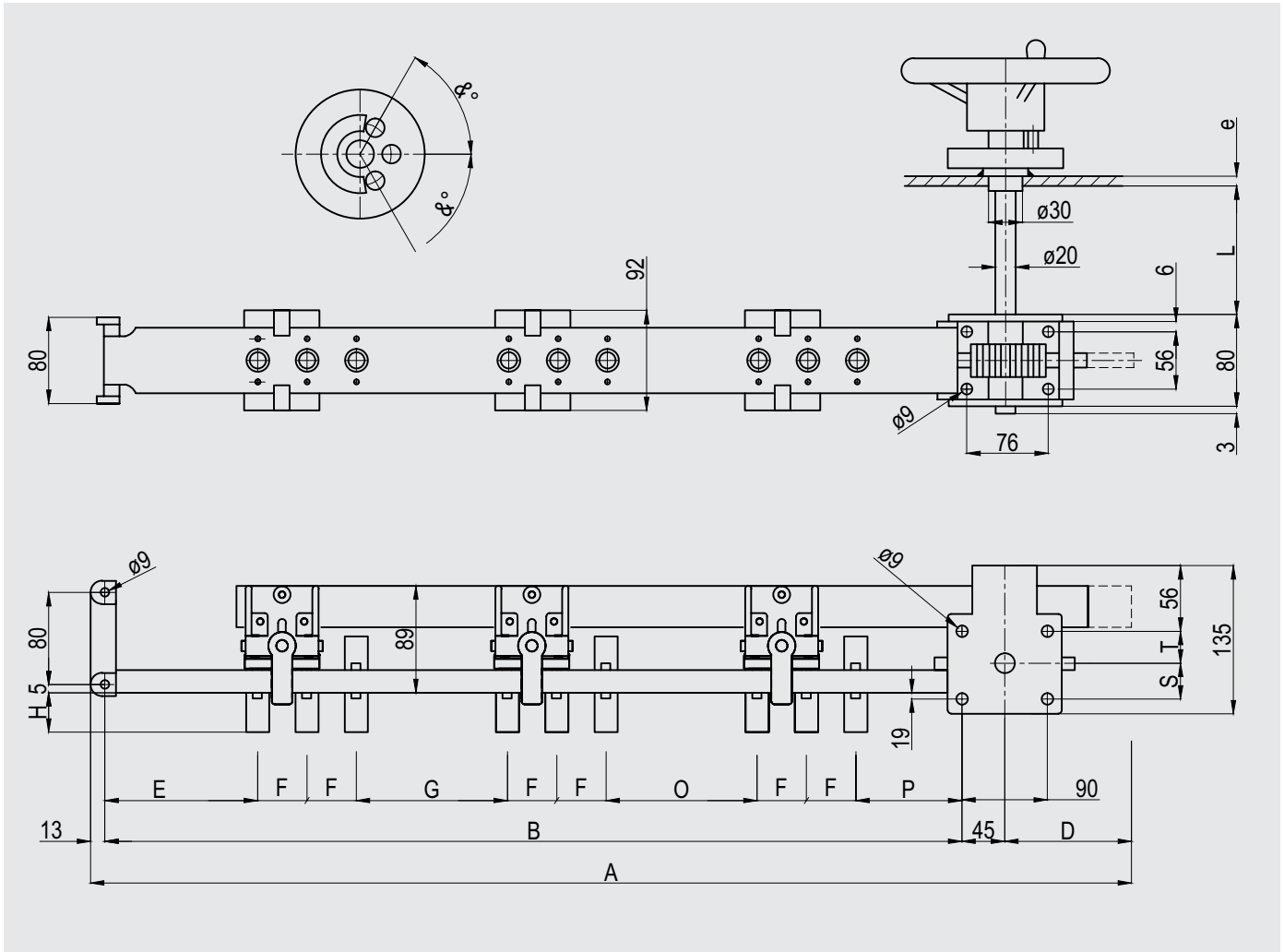
Voltage Class kV	Number of Positions	A	B	D	E	F	G	H	O	P	S	T	&°	L	e	Unit No
20	3	788	600	130	90	50	50	Depends on fixed contacts	50	110	32	32	68°	Please specify when ordering		M431S347
	4	988	750	180	90	50	50		50	110	32	32	68°			M431S447
	5	1188	900	230	90	50	50		50	110	32	32	68°			M431S547
	6	1388	1050	280	90	50	50		50	110	30	34	64°			M431S647
30	3	848	660	130	120	50	50	Depends on fixed contacts	50	140	32	32	68°	Please specify when ordering		M431S357
	4	1048	810	180	120	50	50		50	140	32	32	68°			M431S457
	5	1248	960	230	120	50	50		50	140	32	32	68°			M431S557
	6	1448	1110	280	120	50	50		50	140	30	34	64°			M431S657

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device

Type KHF III Threephase Tap Changer

Star-Delta Coupling / 20 - 30 kV / 400 - 800 A / (With Aluminium Support)



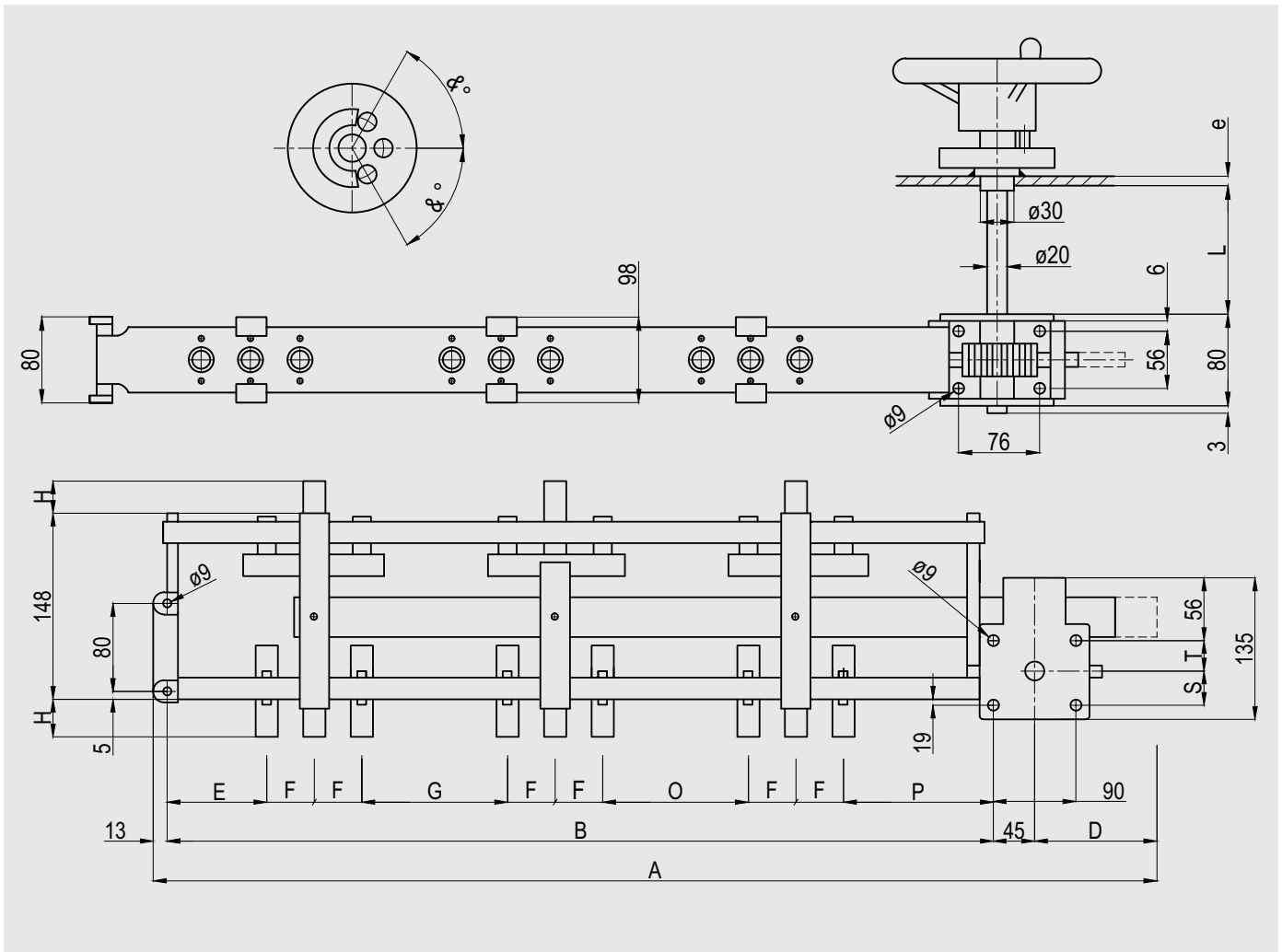
Voltage Class kV	A	B	D	E	F	G	H	O	P	S	T	&°	L	e	Unit No
20	944	788	98	90	68	90	Depends on fixed contacts	90	110	32	32	93°	Please specify when ordering		M431R247
30	1246	1064	124	120	94	120		120	140	32	32	126°			M431R257

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device

Type KHF III Threephase Tap Changer

Common Output per Phase / 20 - 30 kV / 400 - 800 A / 3 - 6 Positions / Setting 2.5 % per Position
(With Aluminium Support)



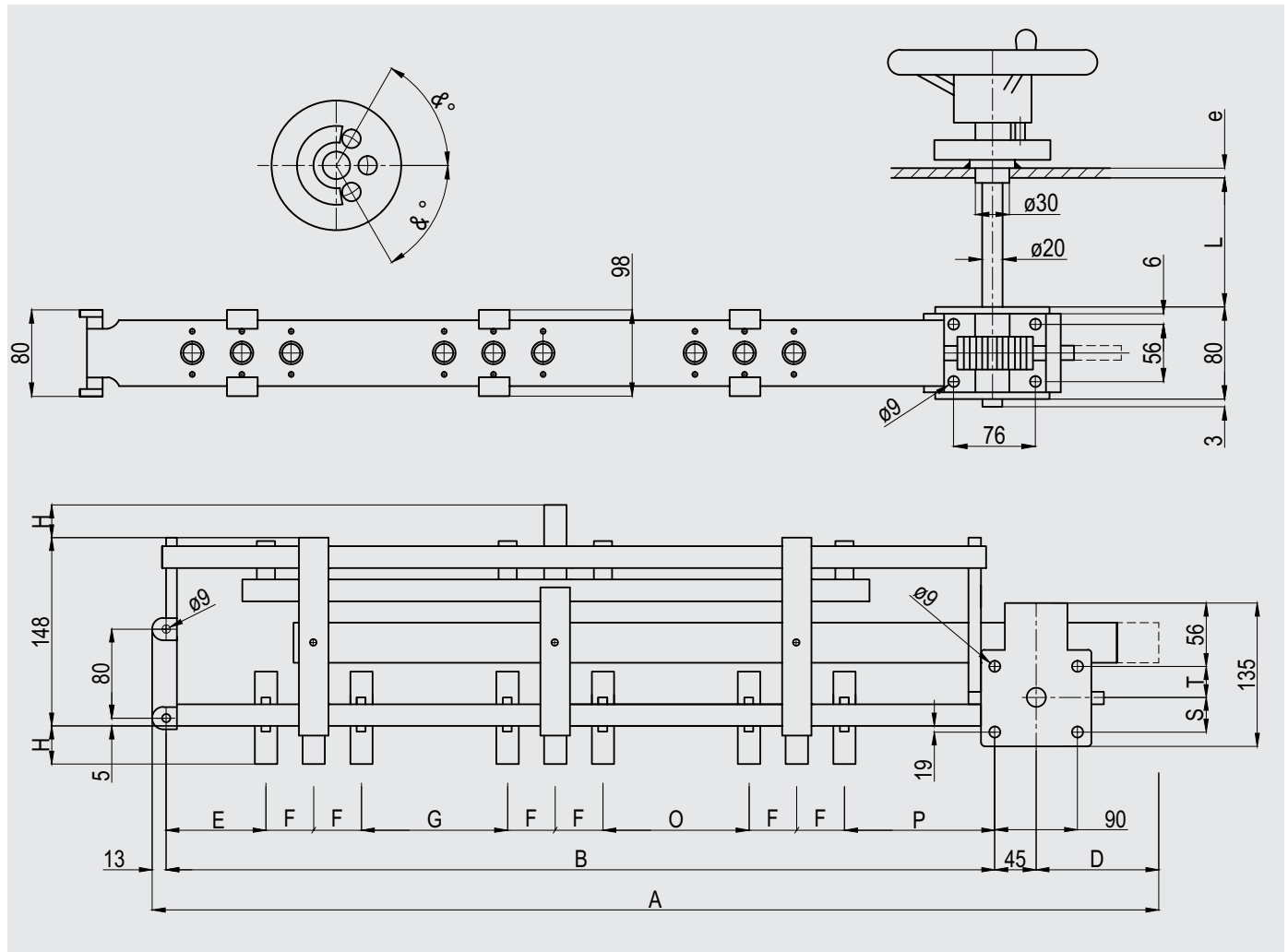
Voltage Class kV	Number of Positions	A	B	D	E	F	G	H	O	P	S	T	°	L	e	Unit No
20	3	868	680	130	90	50	90	Depends on fixed contacts	90	110	32	32	68°	Please specify when ordering		M431C347
	4	1068	830	180	90	50	90		90	110	32	32	68°			M431C447
	5	1268	980	230	90	50	90		90	110	32	32	68°			M431C547
	6	1468	1130	280	90	50	90		90	110	30	34	64°			M431C647
30	3	988	800	130	120	50	120	Depends on fixed contacts	120	140	32	32	68°	Please specify when ordering		M431C357
	4	1188	950	180	120	50	120		120	140	32	32	68°			M431C457
	5	1388	1100	230	120	50	120		120	140	32	32	68°			M431C557
	6	1588	1250	280	120	50	120		120	140	30	34	64°			M431C657

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device

Type KHF III Threephase Tap Changer

Star diagram whit outer-earthed conductor / 20 - 30 kV / 400 - 800 A / 3 - 6 Positions /
Setting 2.5 % per Position (With Aluminium Support)



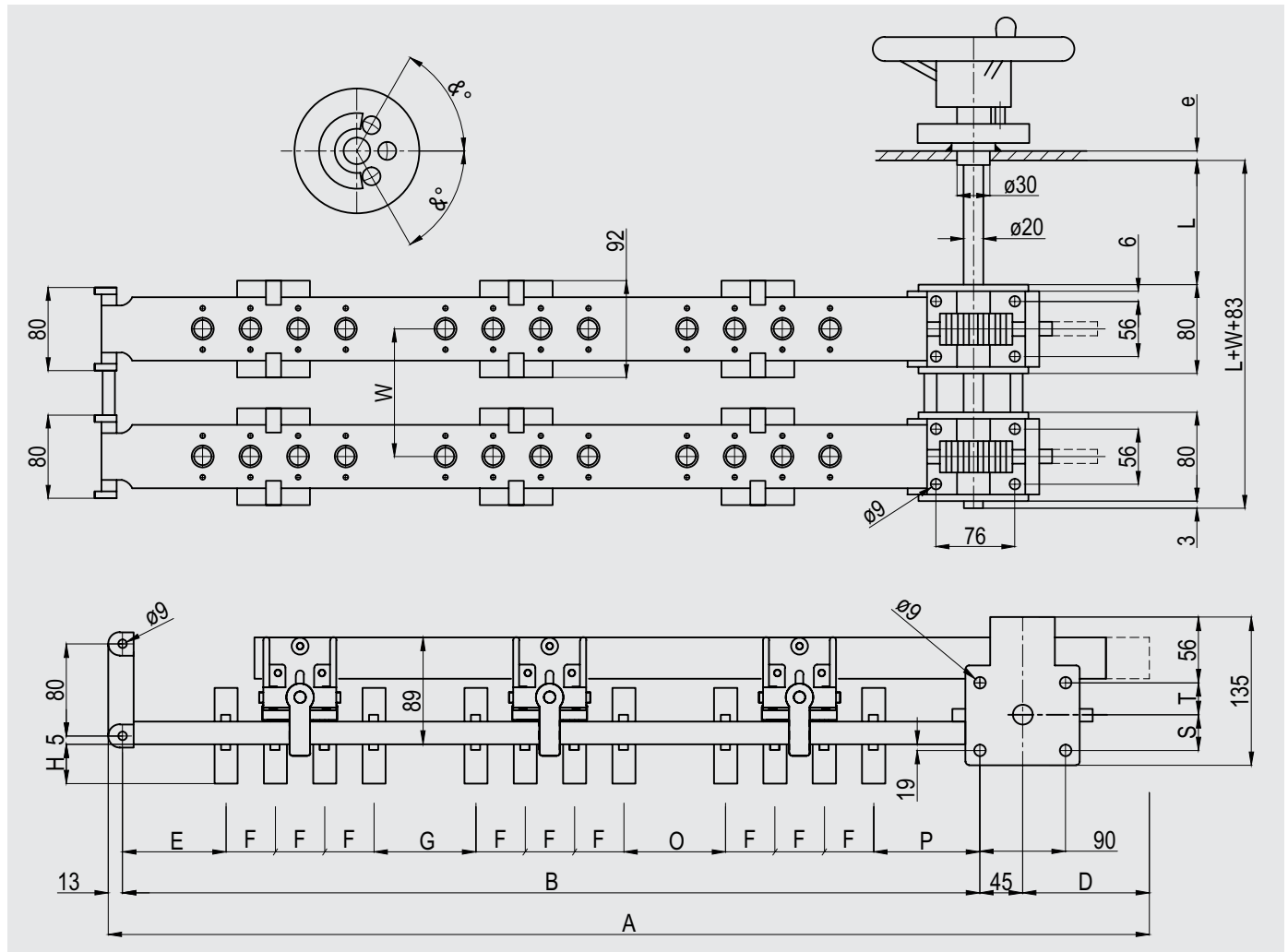
Voltage Class kV	Number of Positions	A	B	D	E	F	G	H	O	P	S	T	&°	L	e	Unit No
20	3	788	600	130	90	50	50	Depends on fixed contacts	50	110	32	32	68°	Please specify when ordering		M431F347
	4	988	750	180	90	50	50		50	110	32	32	68°			M431F447
	5	1188	900	230	90	50	50		50	110	32	32	68°			M431F547
	6	1388	1050	280	90	50	50		50	110	30	34	64°			M431F647
30	3	848	660	130	120	50	50	Depends on fixed contacts	50	140	32	32	68°	Please specify when ordering		M431F357
	4	1048	810	180	120	50	50		50	140	32	32	68°			M431F457
	5	1248	960	230	120	50	50		50	140	32	32	68°			M431F557
	6	1448	1110	280	120	50	50		50	140	30	34	64°			M431F657

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device

Type KHF III Threephase Tap Changer

Two-stage Delta diagram / 20 - 30 kV / 400 - 800 A / 3 - 6 Positions / Setting 2.5 % per Position
(With Aluminium Support)



Voltage Class kV	Number of Positions	A	B	D	E	F	C	H	O	P	S	T	α°	L	e	Unit No
20	3	1018	830	130	90	50	90	Depends on fixed contacts	90	110	32	32	68°	Please specify when ordering		M441D347
	4	1218	980	180	90	50	90		90	110	32	32	68°			M441D447
	5	1418	1130	230	90	50	90		90	110	32	32	68°			M441D547
	6	1618	1280	280	90	50	90		90	110	30	34	64°			M441D647
30	3	1138	950	130	120	50	120	Depends on fixed contacts	120	140	32	32	68°	Please specify when ordering		M441D357
	4	1338	1100	180	120	50	120		120	140	32	32	68°			M441D457
	5	1538	1250	230	120	50	120		120	140	32	32	68°			M441D557
	6	1738	1400	280	120	50	120		120	140	30	34	64°			M441D657

* L min: 95 for KH320 control device

* L min: 170 for KH330 control device