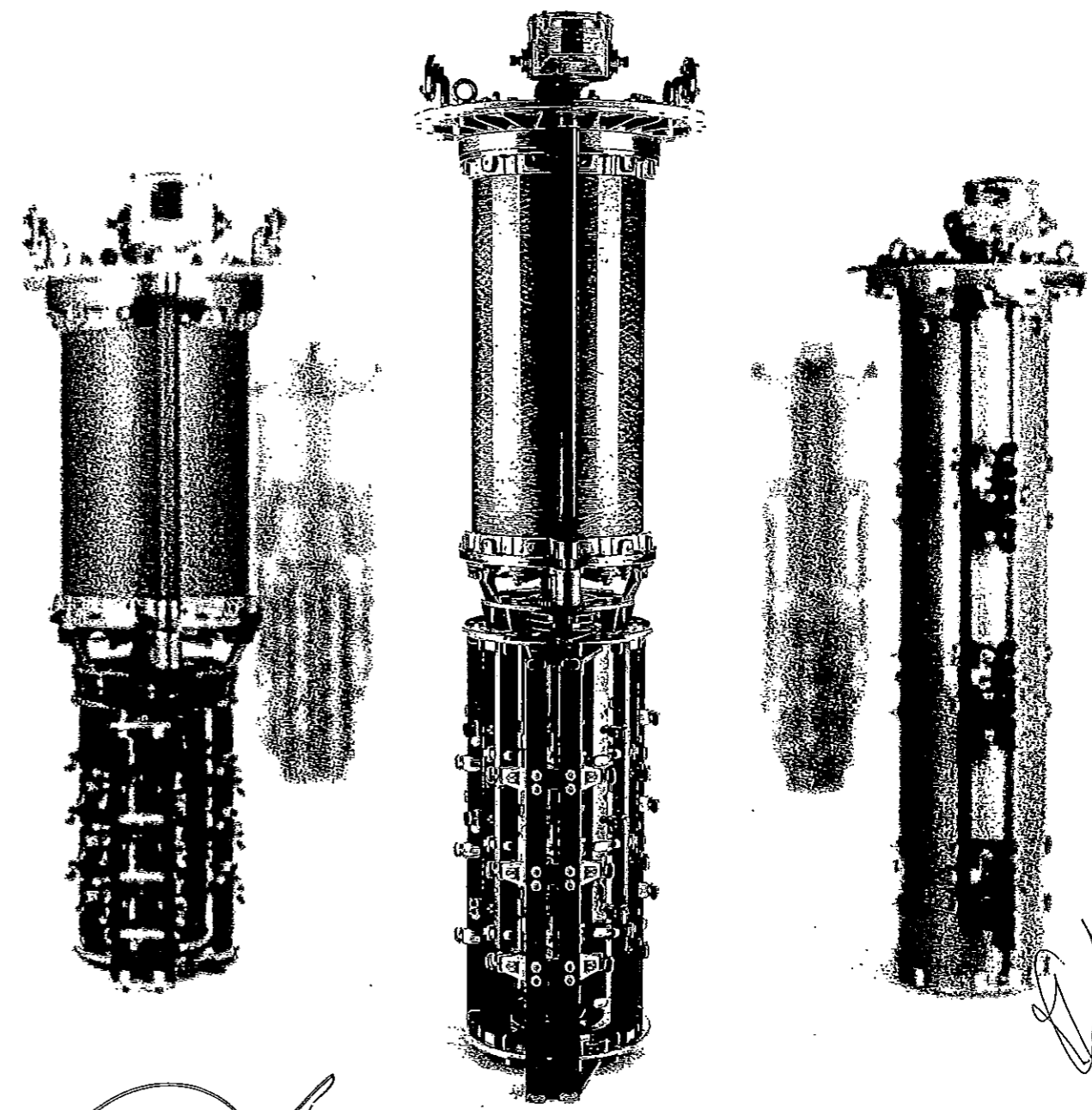
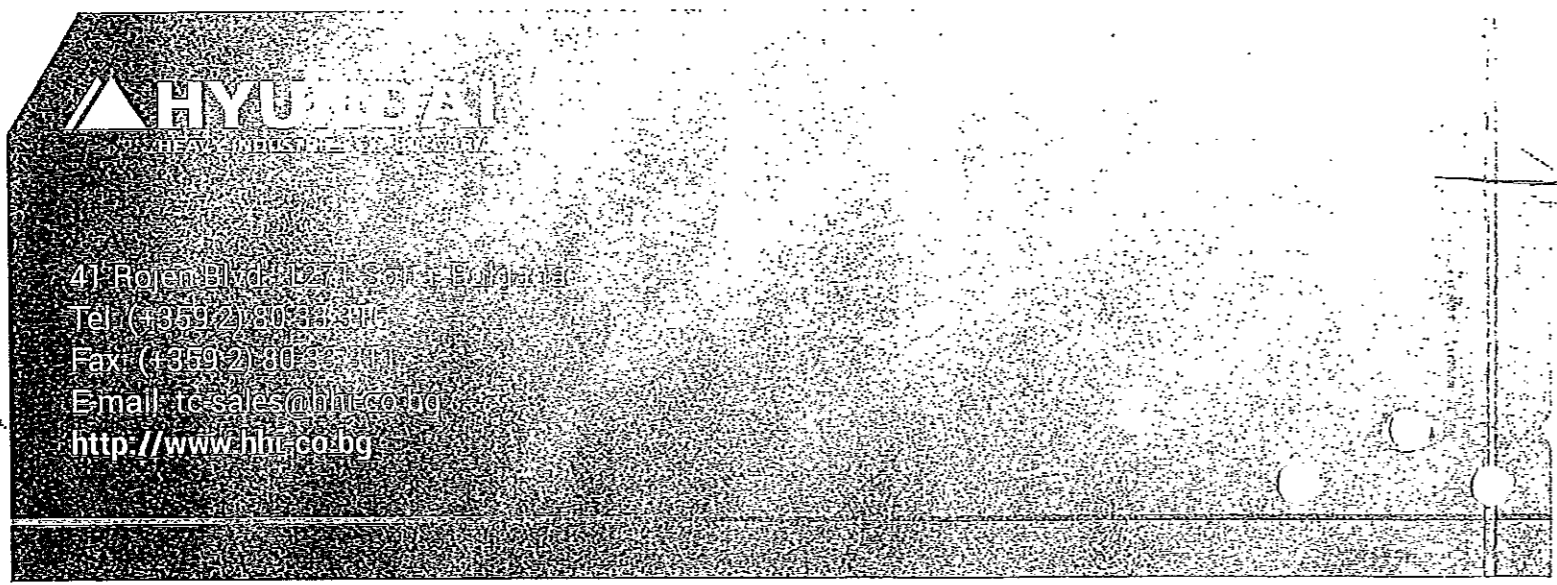


ON LOAD TAP CHANGERS  
**TYPE RSV 9.3**

ON LOAD TAP CHANGERS  
**TYPE RSV 9.3**



123

101

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**ON LOAD TAP CHANGERS  
RSV 9.3  
TECHNICAL DATA**

**Hyundai Heavy Industries  
Co. Bulgaria**

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2017-2 *Handwritten mark*

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**Notes:**

- 1) This technical data catalog is intended to be used by transformer designers as well as other technical personnel responsible for maintenance, diagnostics and operation of OLTCs.
- 2) HHI-Bulgaria reserves the right to make changes in the overall dimension drawings and connection diagrams without prior notice. Updated drawings are provided as part of the technical documentation received by the customer at the time of the product delivery; updated drawings can be provided also to potential customers on request.
- 3) The OLTC is manufactured according to the specific data in the order specification sheet filled in by the client.
- 4) HHI-Bulgaria is not responsible for the client's improper selection of an OLTC.

**1. Basic characteristics**

The OLTCs of Hyundai Heavy Industries Co. Bulgaria (HHIB) meet the requirements of the IEC 60214-1 standard.

**1.1. Basic technical data**

**Table 1**

OLTC type	RSV 9.3 III-400	RSV 9.3 III-550	RSV 9.3 III-700	RSV 9.3* I-400	RSV 9.3 I-550	RSV 9.3 I-700	RSV 9.3 I-1200	RSV 9.3 I-1500							
Number of phases and application	3 – in the neutral			1 phase – at any point on the winding											
Maximum rated through current (A)	400	550	700	400	550	700	1200	1500							
Short circuit withstand current (kA)	R.m.s. value (3 s duration)		6	8	10	6	8	10	15	15					
	Peak value		15	20	25	15	20	25	37,5	37,5					
Maximum rated step voltage per phase (V)	3500	3000	3200	3500	3000	3200	3000	2300							
Rated step capacity (kVA)	1400	1650	2240	1400	1650	2240	3600	3450							
Rated frequency (Hz)	50...60														
Insulation to earth	Highest voltage for equipment Um (kV,r.m.s.) <sup>0</sup>		72.5	123	170	245	300								
	Rated separate source AC withstand voltage, Imin duration (kV, r.m.s.)		140	230	325	460	460								
	Rated switching impulse withstand voltage (kV, 250/2500 μs)		-	-	-	850	850								
	Rated lightning impulse withstand voltage (kV, 1,2/50 μs)		350	550	750	1050	1050								
Number of operating positions	Without change-over selector – max. of 18 With change-over selector – max. of 35														
Tap selector	Five tap selector sizes (K, L, M, N, P) are available corresponding to the requirements of the voltage stress across the regulating winding. The tap selector insulation level can be chosen independently from the maximum operating voltage to earth. For the test voltages, see Section 1.4.														
Oil pressure in the diverter switch oil compartment	Operating oil pressure up to 0,3x10 <sup>5</sup> Pa (testing pressure – 0,6x10 <sup>5</sup> Pa), Vacuum-proof for drying.														
Siphon for draining the oil from the diverter switch oil compartment	Basic design – left or right														
Drying	In vacuum furnace – up to 110° C In kerosene vapour – up to 125° C														
OLTC type	RSV 9.3 III-400/550/700				RSV 9.3 I-400/550/700				RSV 9.3 I-1200	RSV 9.3 I-1500					
Tap selector sizes	K	L	M	N	K	L	M	N	P	L	N	P	L	N	
Weight in kg (approximately)	268	272	278	286	218	224	229	235	245	258	273	283	260	275	
Displacement volume in dm <sup>3</sup> (approx.)	72,5 kV	168	173	178	188	148	153	158	163	168	170	180	187	172	182
	123 kV	178	183	188	198	158	163	168	173	178	180	190	197	182	192
	170 kV	-	193	198	208	-	183	188	193	198	200	210	227	202	212
	245 kV	-	-	213	223	-	-	208	213	218	220	230	237	222	232
Oil filling quantity of the diverter switch oil compartment Vs in dm <sup>3</sup> (approx.)	72,5 kV	130				110				130					
	123 kV	140				125				140					
	170 kV	160				140				160					
	245 kV	175				155				175					
300 kV	185				165				185						

1) In accordance with IEC 60214-1, chapter 3.60 highest effective value for phase-to-phase voltage in a three-phase system for which an on-load tap-changer is designed with respect to its insulation.

\* Suitable for operation in natural esters - Envirotemp FR3 fluid

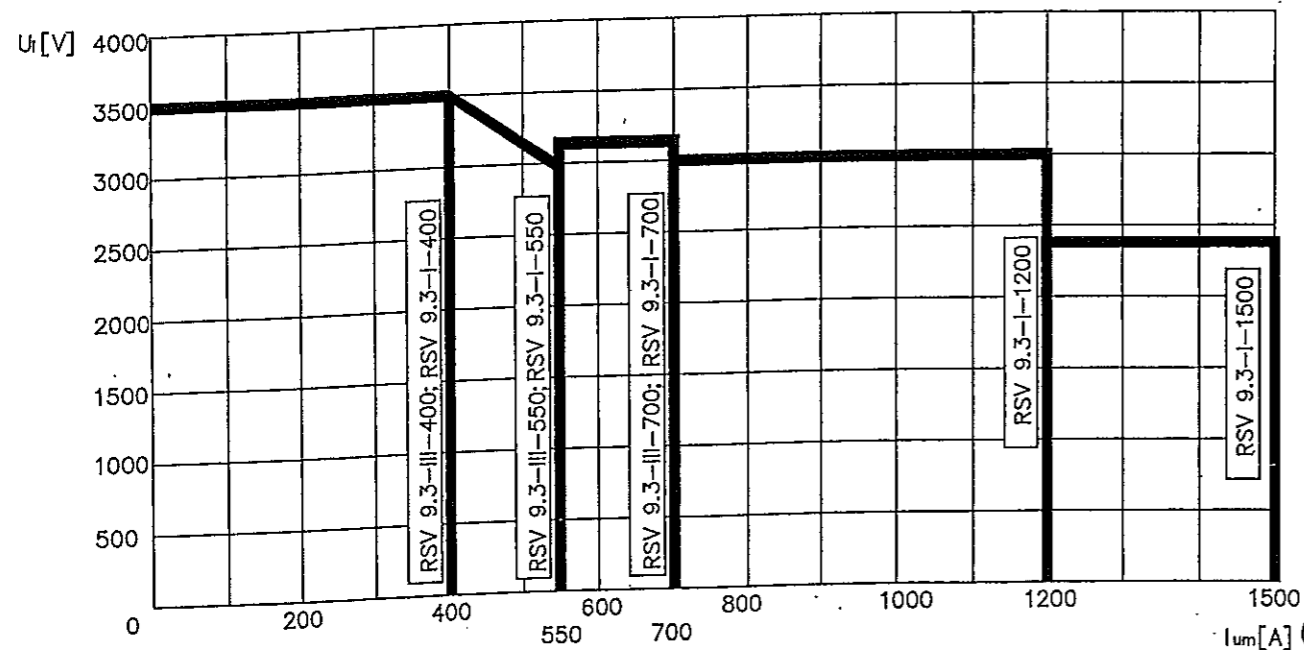
**Notes:** 1. Minimum volume of the conservator, considering the temperature oil expansion when the temperature changes from -30° C to +100° C:  $\Delta V = 0,1Vs + 5$  (dm<sup>3</sup>).  
2. The RSV 9.3 OLTC can operate with a rated load at oil temperature from -25° C to +105° C.

**1.2. Rated through current ( $I_u$ ), rated step voltages ( $U_i$ ), rated step capacity ( $P_{stN}$ )**  
Table 2 shows the maximum values of  $I_u$ , the corresponding step voltage  $U_i$  and the rated step capacity  $P_{stN}$ .

**Table 2: Maximum rated through current ( $I_{um}$ ), rated step voltages ( $U_i$ ), rated step capacity ( $P_{stN}$ )**

OLTC	RSV 9.3 - III			RSV 9.3 - I				
	400	550	700	400	550	700	1200	1500
$I_{um}$ (A)	400	550	700	400	550	700	3000	2300
$U_i$ (V)	3500	3000	3200	1400	1650	2240	3600	3450
$P_{stN}$ (kVA)	1400	1650	2240	1400	1650	2240	3600	3450

The rated through current  $I_u$  and its corresponding rated step voltage  $U_i$  are determined by the curve of the rated step capacity (Fig. 1).



**Fig. 1: Step capacities (rated through current  $I_u$  [A]; rated step voltages  $U_i$  [V])**

In case of overexcitation of the transformer, the maximum step voltage can be increased with 10 % under the condition that the step capacity is limited to its rated value.  
The specific commutation regimes are clarified in the technical data catalog for all HHIB OLTCs.

**1.3. Electrical and mechanical endurance**

Table 3 gives the average values for the number of switching operations till inspection of the diverter switch and replacement of the vacuum interrupter. These values have been obtained as a result of experimenting with real loads under maximum rated through current  $I_{um}$  (A), rated step voltage  $U_i$  (V) and  $\cos\phi = 1$ .

**Table 3: Electrical and mechanical endurance**

OLTC	RSV 9.3 - III, RSV 9.3 - I			RSV9.3 - I	
	400 A	550 A	700 A	1200 A	1500 A
Number of switching operations till inspection	300 000	300 000	250 000	150 000	150 000
Number of switching operations till replacement of vacuum interrupters	600 000	500 000	500 000	500 000	300 000
Mechanical endurance - number of switching operations	1 200 000			800 000	800 000

Detailed information about the number of switching operations till inspection for the different tap changers is given in the RS 9.3/RSV 9.3 Installation and Operation Manual.

**1.4. Insulation level**

The insulation level of the OLTC is determined by a number of withstand voltage values. The rated withstand voltage values to earth are given in Table 1. These voltages are determined by national and international standards.  
The internal insulation is dimensioned depending on the voltages defined by the transformer winding taps to the different parts of the selector, change-over selector and the diverter switch.  
Fig. 2 and 3 show the main connection diagrams and the typical insulation distances to them.  
The withstand voltage values from the different insulation distances are given in Table 4. For a correct OLTC selection, these voltage values should correspond to the voltage values that occur during the lightning impulse test, the induced voltage test and the power frequency voltage test of the transformer.  
The least favorable position of the OLTC should be taken into account.  
The insulation to earth and the tap selector insulation size are not mutually connected and can be selected in accordance with the specific requirements.

RSV 9.3 - III - 400/550/700 OLTCs

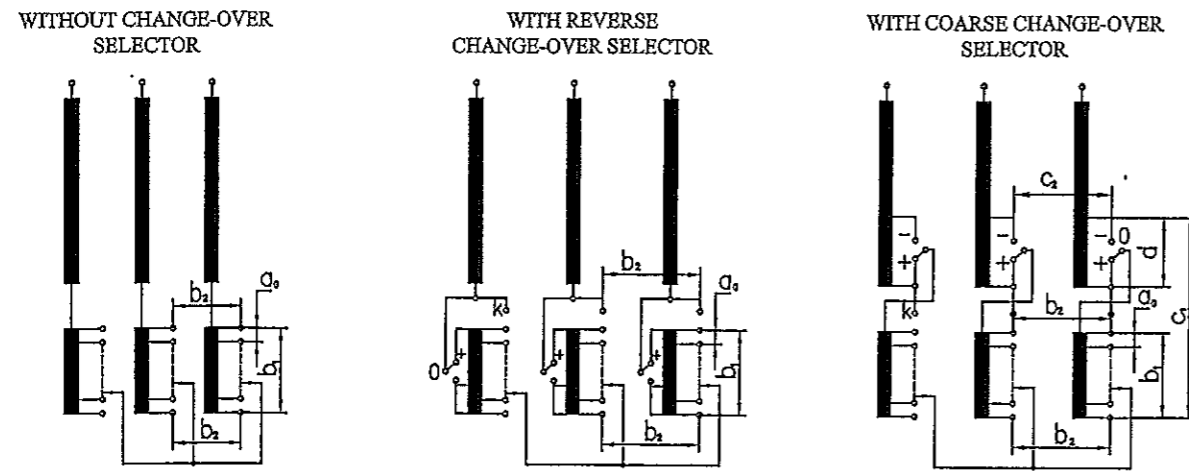


Fig. 2: Insulation distances of the transformer windings

RSV 9.3 - I - 400/550/700/1200/1500 OLTCs

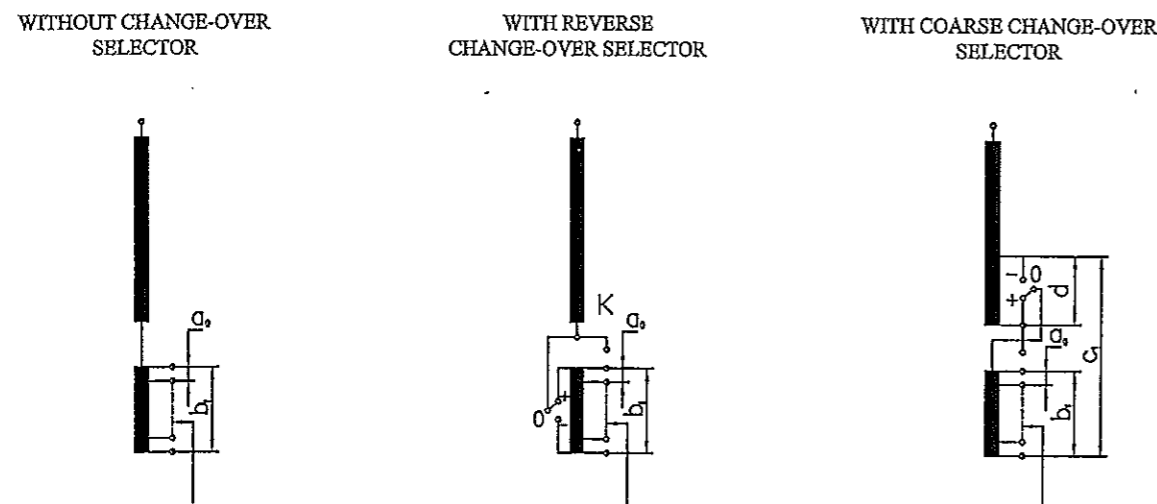


Fig. 3: Insulation distances of the transformer windings

Table 4: Rated withstand voltages

Insulation distances	Rated withstand voltages (kV)									
	Tap selector size - K		Tap selector size - L		Tap selector size - M		Tap selector size - N		Tap selector size - P	
	1,2/50 $\mu$ s	50 Hz 1min	1,2/50 $\mu$ s	50 Hz 1min	1,2/50 $\mu$ s	50 Hz 1min	1,2/50 $\mu$ s	50 Hz 1min	1,2/50 $\mu$ s	50 Hz 1min
a <sub>0</sub>	100	25	120	35	130	40	130	40	140	40
b <sub>1</sub>	230	55	290	80	340	100	410	120	490	140
b <sub>2</sub>	230	55	290	80	340	100	410	120	490	140
c <sub>1</sub>	290	65	390	120	450	130	520	150	-	-
c <sub>2</sub>	290	65	390	120	450	130	520	150	-	-
d	290	80	290	80	410	120	410	120	490	140

2. Review of the RSV 9.3 types

2.1. Main dimensions<sup>d)</sup>

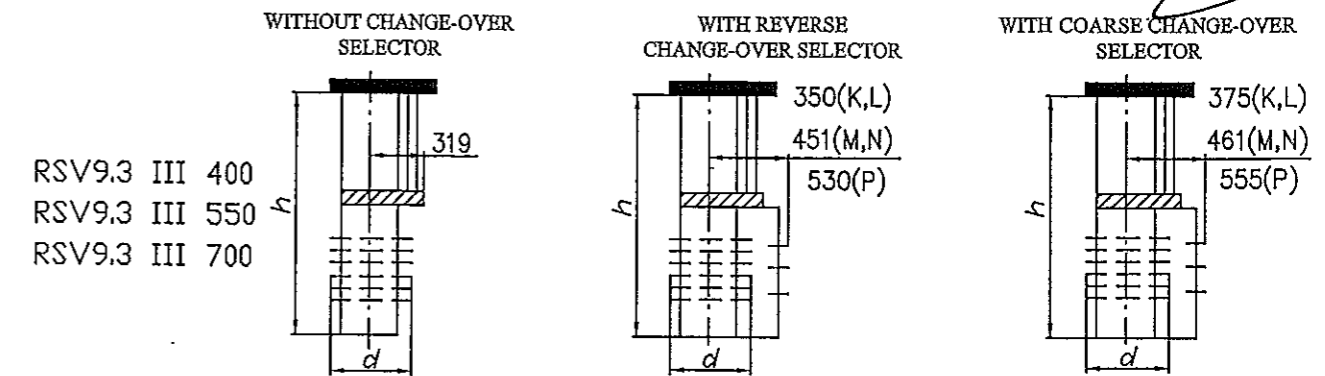


Fig. 4: RSV 9.3 - III

Table 5: RSV 9.3 - III

Um	Insulation level of the selector									
	K		L		M		N		P	
	h	d	h	d	h	d	h	d	h	d
72.5 kV	1741	386	1896	386	2011	480	2201	480	2514	558
123 kV	1791	386	1946	386	2061	480	2251	480	2564	558
170 kV	-	-	2102	386	2217	480	2407	480	2720	558
245 kV	-	-	-	-	2317	480	2507	480	2820	558

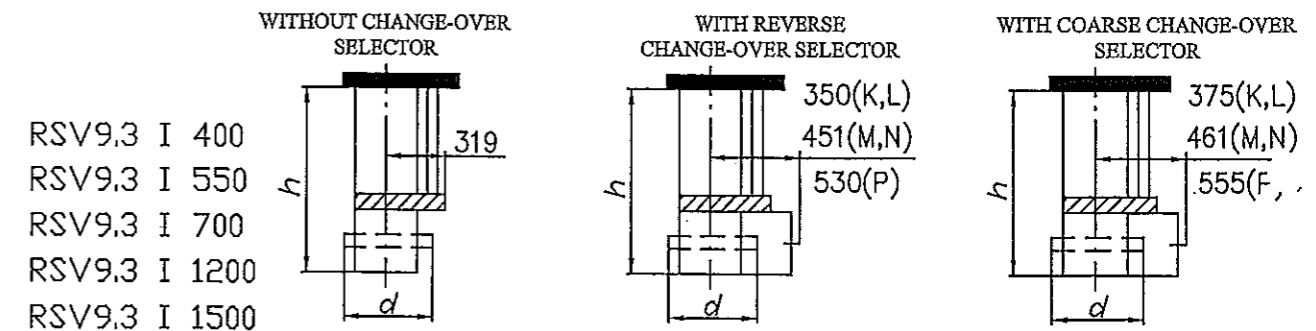


Fig. 5: RSV 9.3 - I

Table 6: RSV 9.3 - I

Um	Insulation level of the selector									
	K		L		M		N		P	
	h	d	h	d	h	d	h	d	h	d
72.5 kV	1202	386	1297	386	1352	480	1462	480	1695	558
123 kV	1401	386	1496	386	1551	480	1661	480	1894	558
170 kV	-	-	1596	386	1651	480	1761	480	1994	558
245	-	-	-	-	1751	480	1861	480	2094	558

1) For the rest of the dimensions see appendices

2.2 Number of steps and basic connection diagrams

Fig. 6, 6a and 6b show the basic connection diagrams where the selector contacts are designated according to the overall dimension drawings.

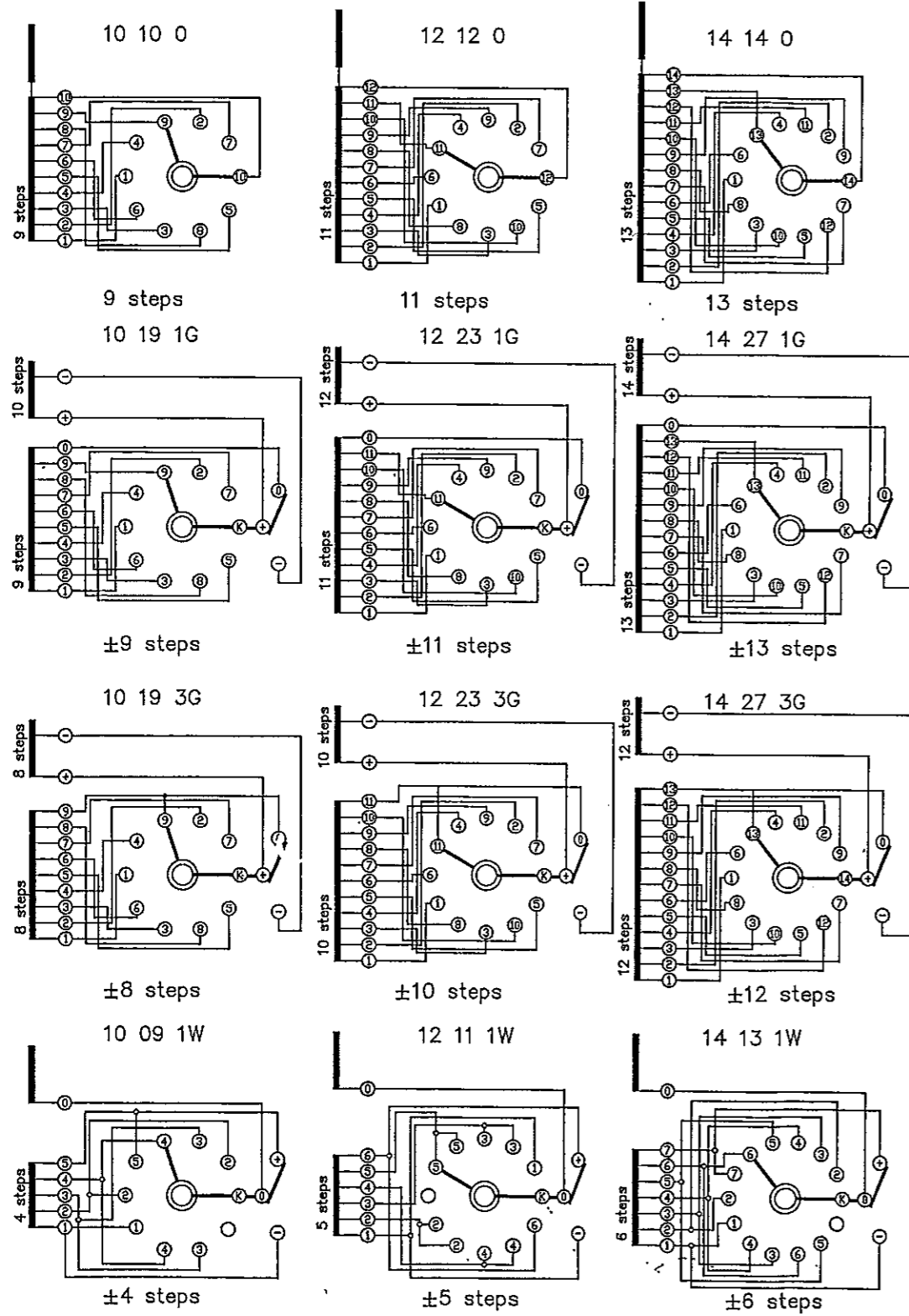


Fig. 6: Basic connection diagrams

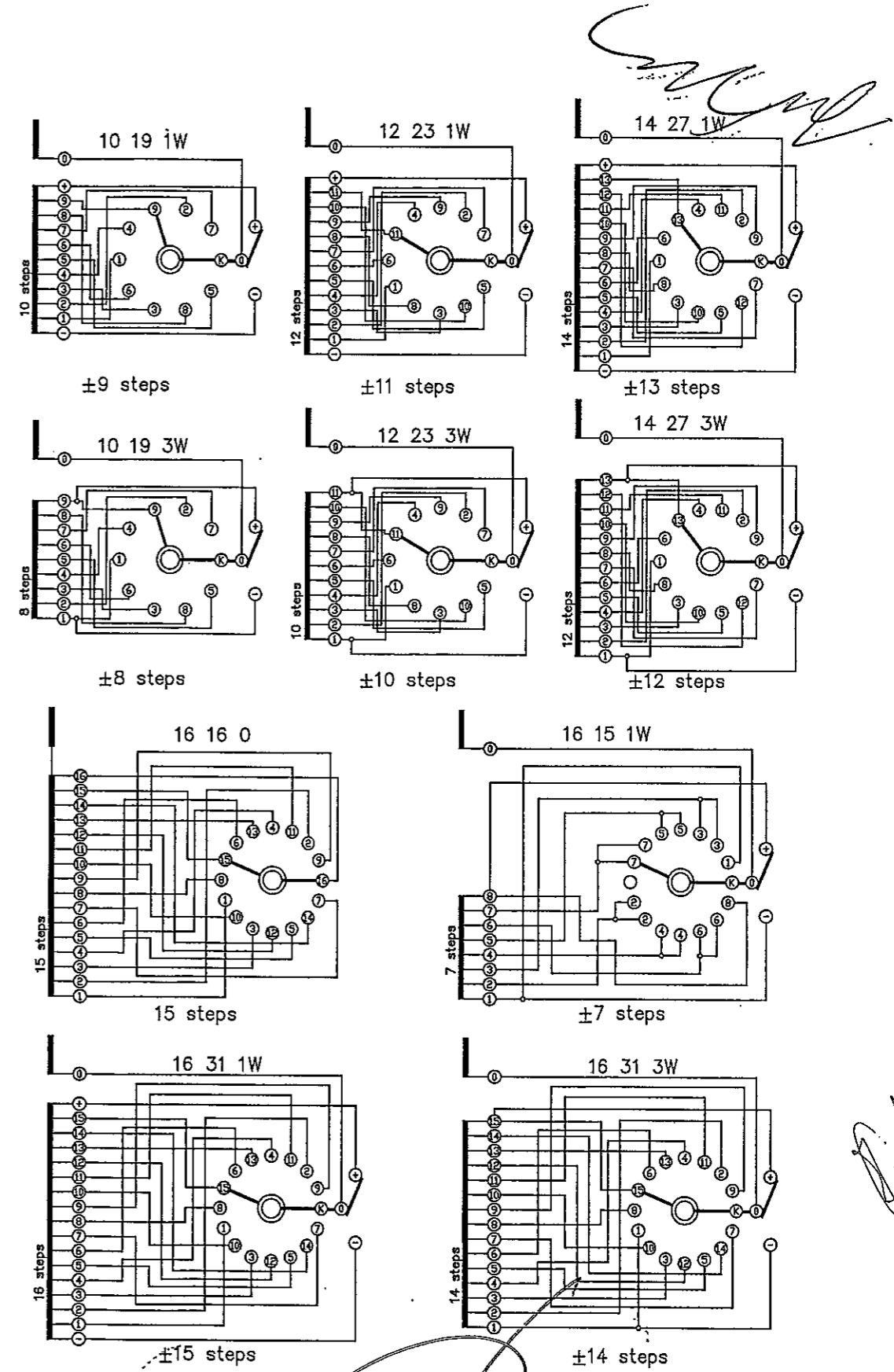


Fig. 6a: Basic connection diagrams

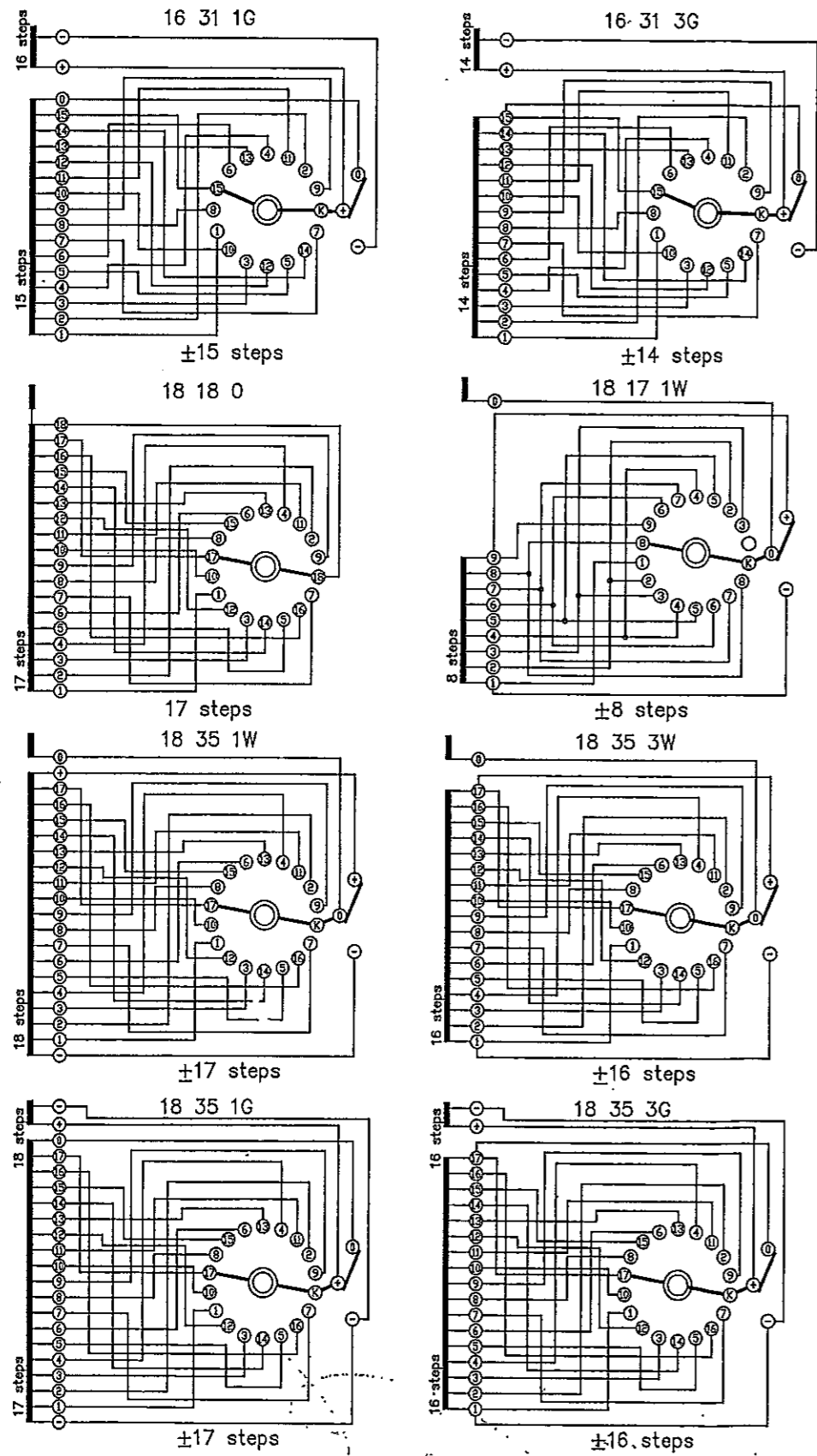


Fig. 6b: Basic connection diagrams

ONLY PHASE "X" OF RS9/RS9.3/RSV9.3 - 10.19.1W SHOWN

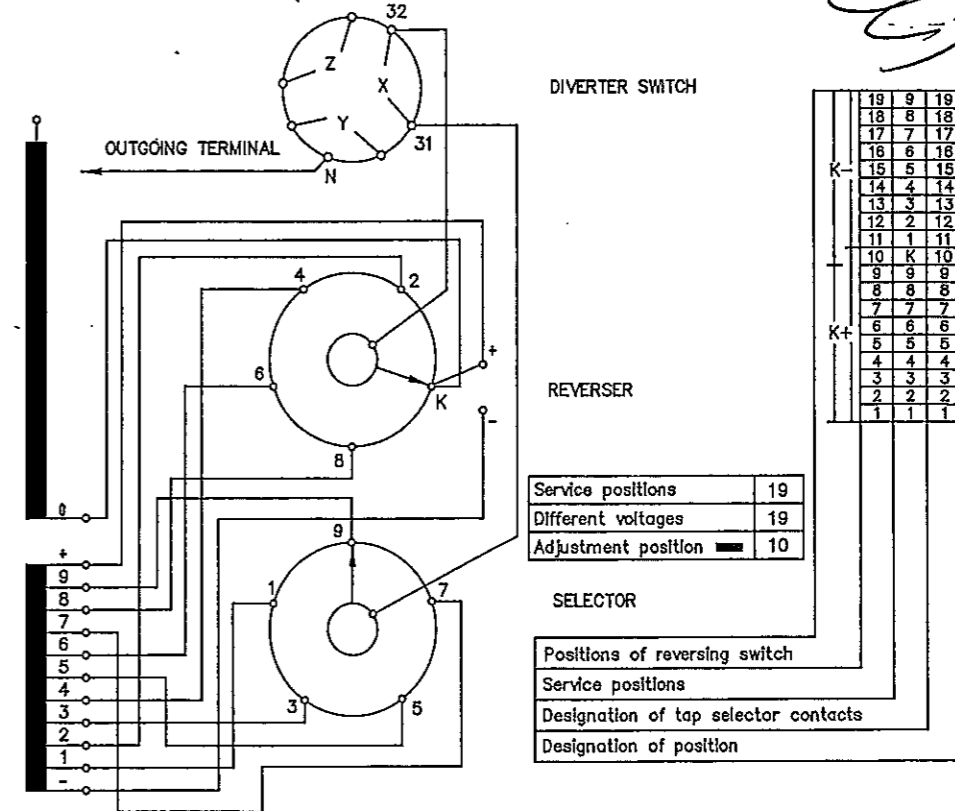


Fig. 7: Basic connection diagram 10 19 1W

ONLY PHASE "X" OF RS9/RS9.3/RSV9.3 - 10.19.3W SHOWN

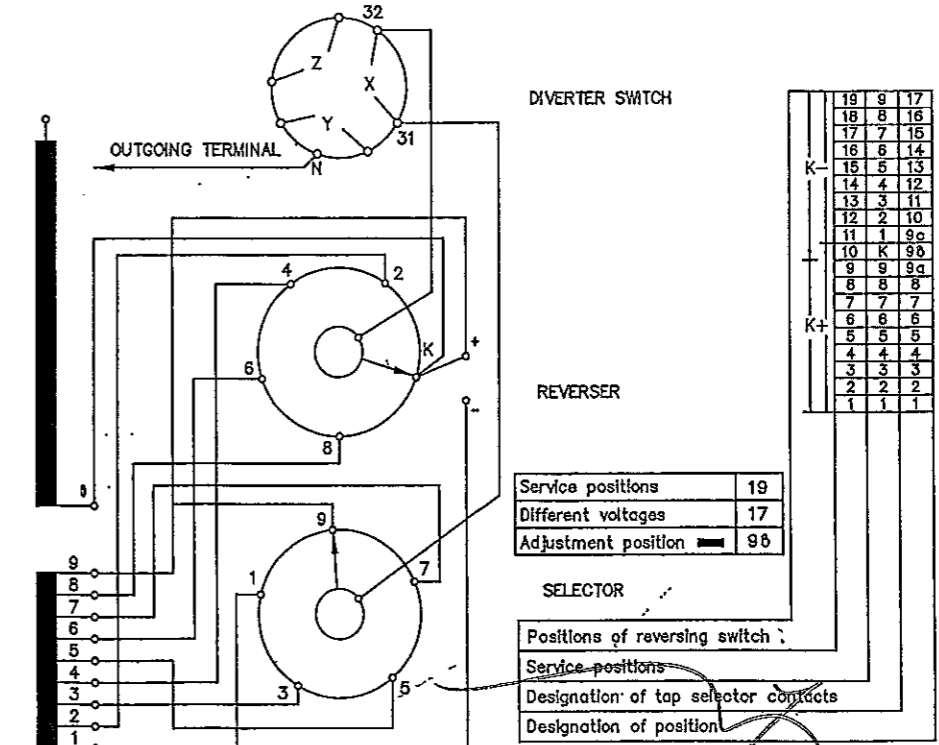


Fig. 8: Basic connection diagram 10 19 3W

ONLY PHASE "X" OF RS9/RS9.3/RSV9.3 - 10.19.1G SHOWN

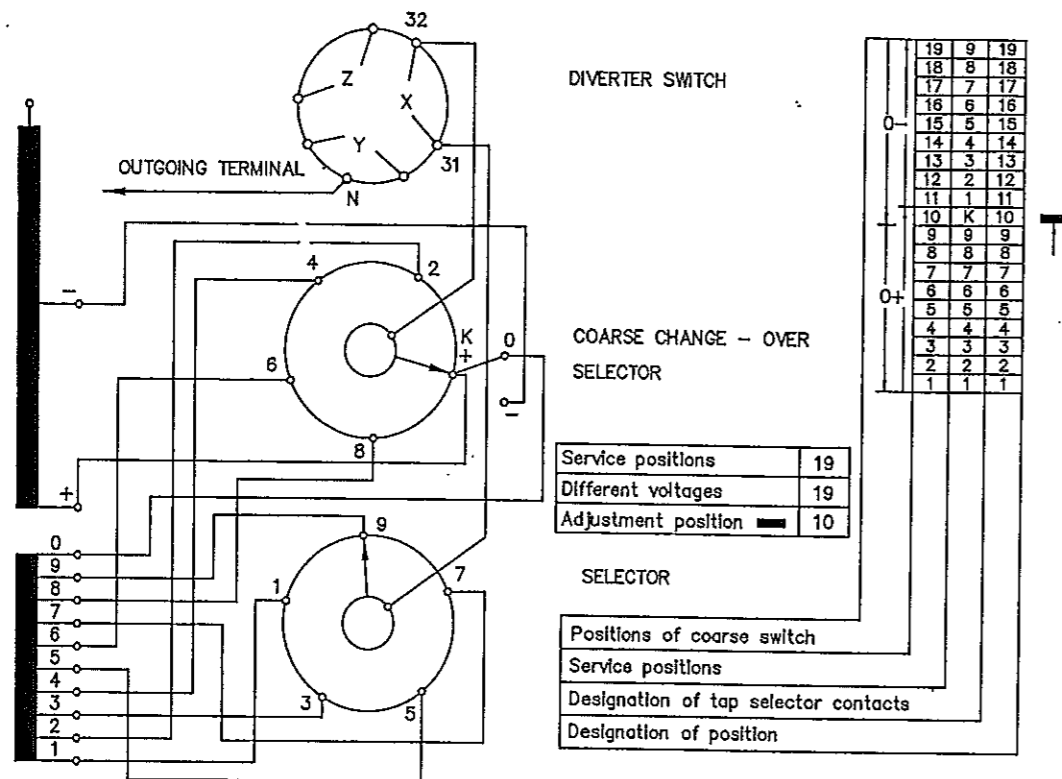


Fig. 9: Basic connection diagram 10 19 1G

ONLY PHASE "X" OF RS9/RS9.3/RSV9.3 - 10.19.3G SHOWN

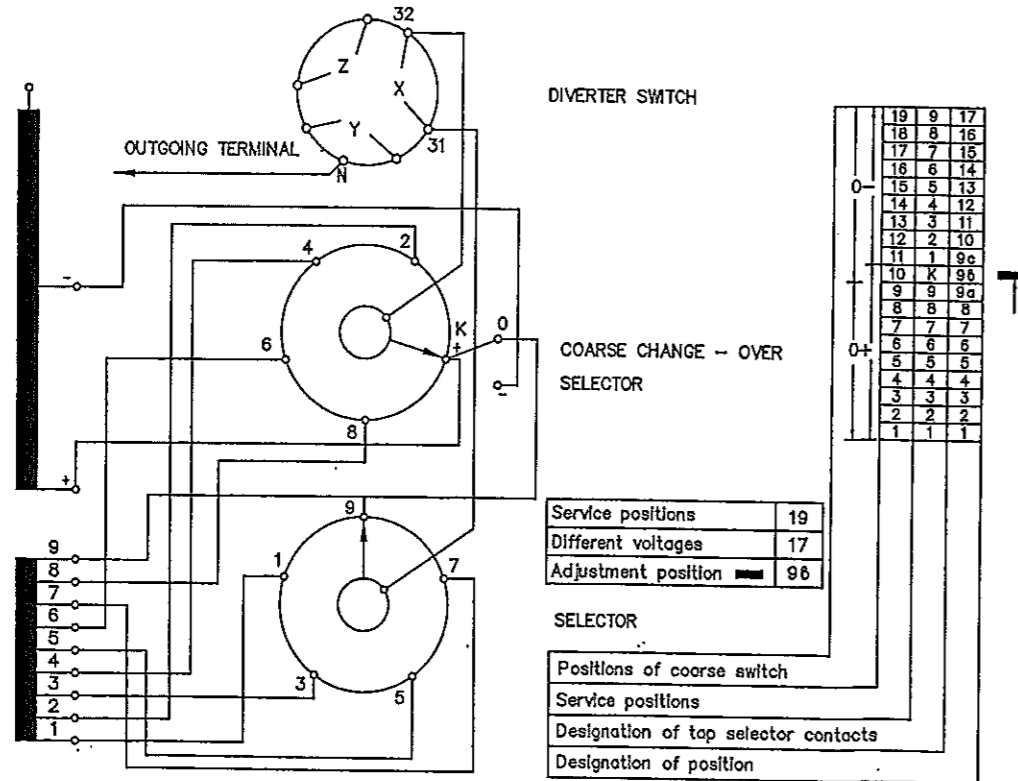


Fig. 10: Basic connection diagram 10 19 3G

3. Appendices

3.1. Overall dimension drawings of OLTCs

RSV 9.3 - III - 400/550/700	№1075
RSV 9.3 - III - 400/550/700-P	№1078
RSV 9.3 - I - 400/550/700	№1074
RSV 9.3 - I - 400/550/700-P	№1079
RSV 9.3 - II - 400/550/700	№1076
RSV 9.3 - I - 1200	№1077
RSV 9.3 - I - 1200 245/P-10.19.3 W	№1080
RSV 9.3 - I - 1500	№1084
OLTCs with pressure relief device and tie-in resistors	№310Q
OLTCs RS 9.3 /RSV 9.3 flange's configuration	№999

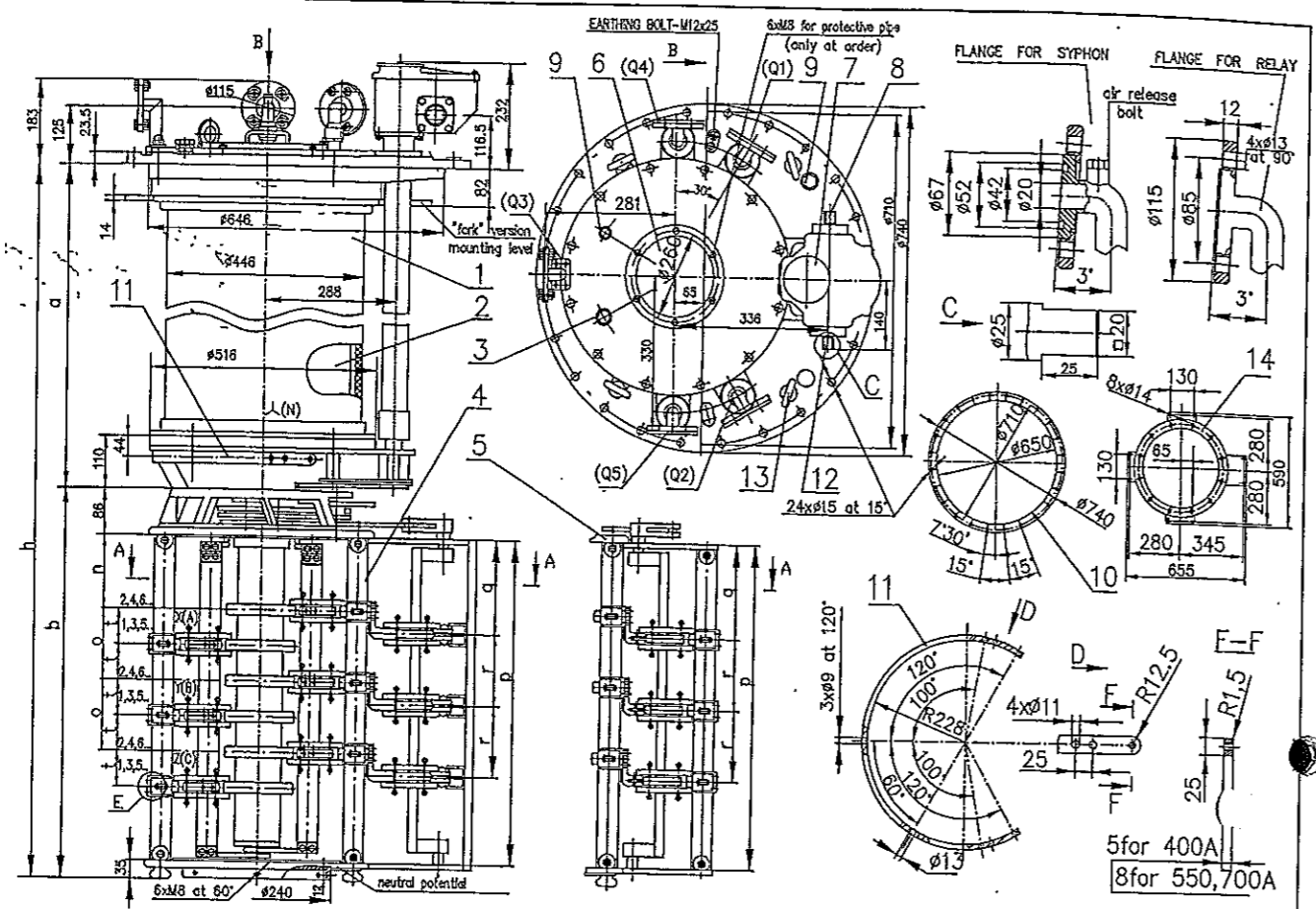
3.2. Additional drawings of OLTCs

RS 9.3/RSV 9.3 - III - 10, 12, 14 - arrangement of the selector contacts	№374
RS 9.3/RSV 9.3 - III - 16, 18 - arrangement of the selector contacts	№375
RS 9.3/RSV 9.3 - I - 10, 12, 14 - arrangement of the selector contacts	№376
RS 9.3/RSV 9.3 - I - 16, 18 - arrangement of the selector contacts	№377

3.3. OLTC type RS 9.3 - driving shafts arrangement

№209.3





DWG.1 (Coarse change-over selector)

DWG.2 (Reverser) (for the rest see dwg.1)

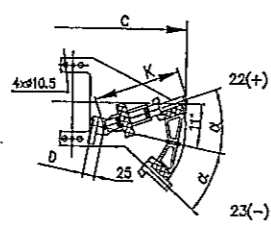
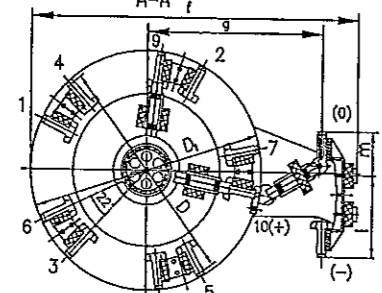
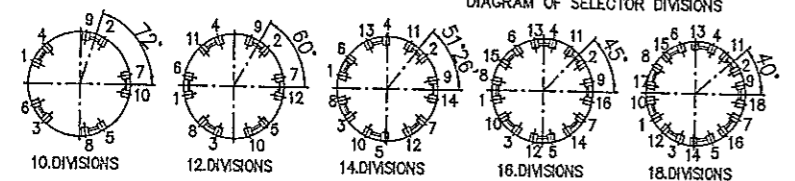


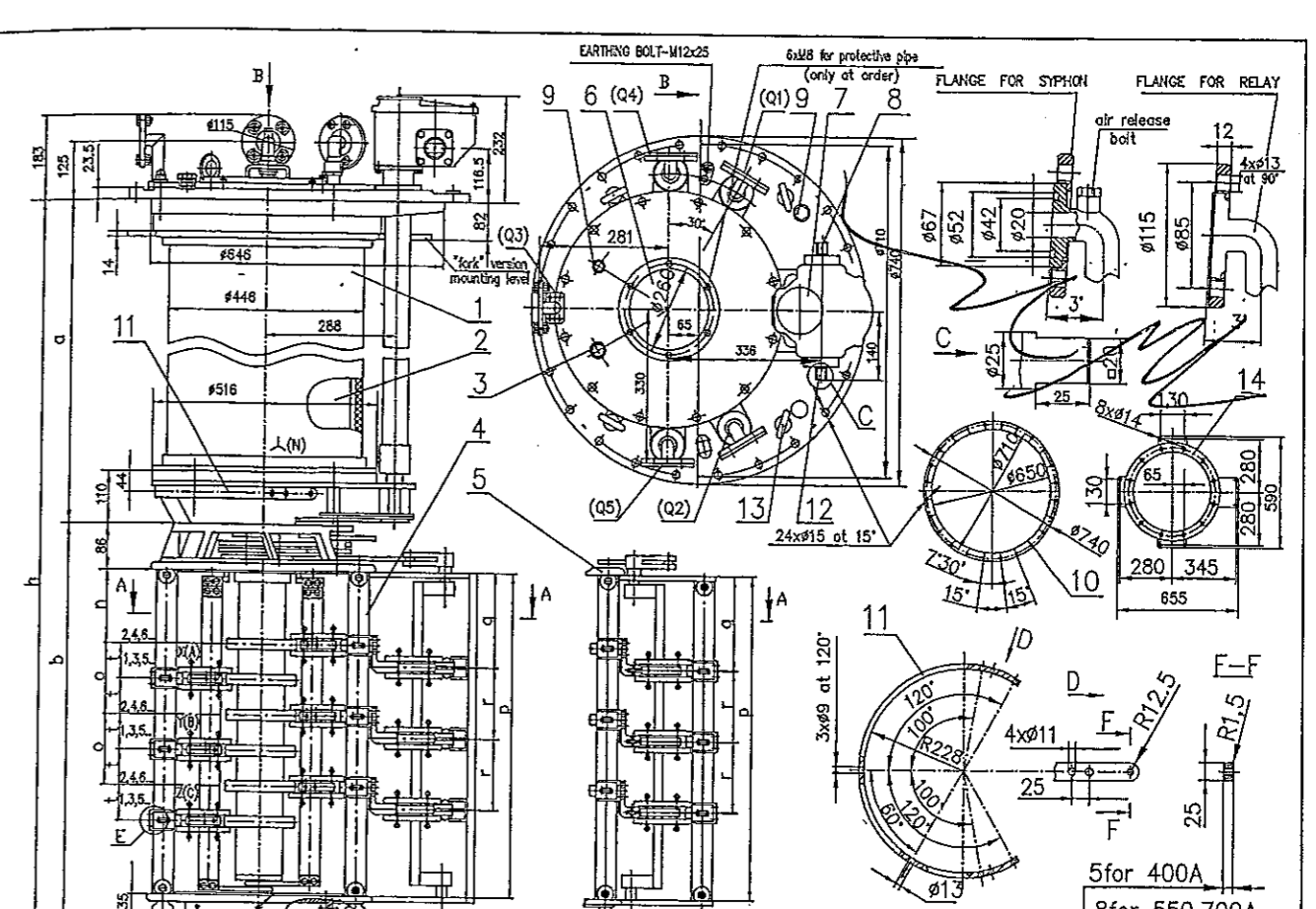
DIAGRAM OF SELECTOR DIVISIONS



1. Diverter switch oil vessel
2. Diverter switch
3. Opening for temperature sensor
4. Selector with coarse change-over selector
5. Selector with reverser
6. Protective membrane
7. Position indicator
8. Incoming shaft at right side driving
9. Bleeding of the OLTC
10. Disposal of the openings for fixing to the transformer tank
11. Disposal of the outgoing terminal (neutral)
12. Incoming shaft at left side driving
13. Lifting hook 4x35 mm
14. Disposal of the openings for "fork" mounting

NOTE: 1) Horizontal dimensions of "K" and "L" (16,18 div.) are same as selector sizes "M" and "N"  
 2) We are offering OLTC's without change-over selector  
 3) Additional information about Q1,Q2,Q3,Q4,Q5: dwg. N°999

		RSV9.3 III 400-72.5...123/K		RSV9.3 III 400-72.5...170/A		RSV9.3 III 400-72.5...245/M		RSV9.3 III 400-72.5...245/N	
		RSV9.3 III 550-72.5...123/K		RSV9.3 III 550-72.5...170/A		RSV9.3 III 550-72.5...245/M		RSV9.3 III 550-72.5...245/N	
		RSV9.3 III 700-72.5...123/K		RSV9.3 III 700-72.5...170/A		RSV9.3 III 700-72.5...245/M		RSV9.3 III 700-72.5...245/N	
		Number of contacts per phase 10,12,14,16,18							
		Um (Insulation to Earth) in kV							
		72.5	123	170	245	123	170	245	245
a	h	1741	1791	1896	1948	2102	2011	2061	2217
a	a	1090	1140	1090	1140	1296	1090	1140	1296
b	b	651		806		921		1111	
n	n	115		155		175		220	
a	a	120		160		180		220	
l	l	60		75		90		110	
o	o	386		386		480		480	
o1	o1	400		400		498		498	
r	r	575		575		710		710	
e	e	550		550		700		700	
p	p	540		695		810		1000	
r	r	145		192.5		220		275	
q	q	120		150		180		220	
s	s	294		294		377.5		377.5	
m	m	65		65		60		60	
k	k	138		138		169		169	
x	x	140		140		185		185	
α	α	35°		35°		30°		30°	
g	g	250±260 kg		254±264 kg		258±270 kg		264±278 kg	



DWG.1 (Coarse change-over selector)

DWG.2 (Reverser) (for the rest see dwg.1)

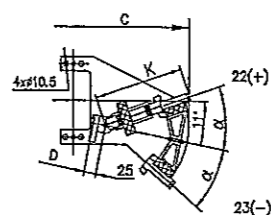
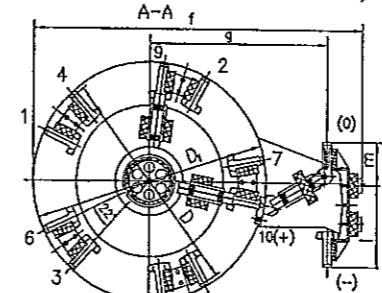
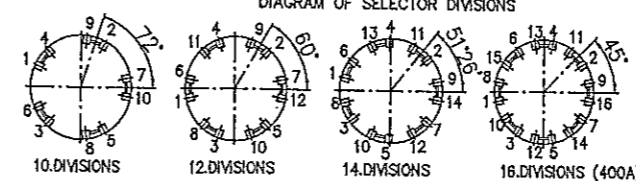


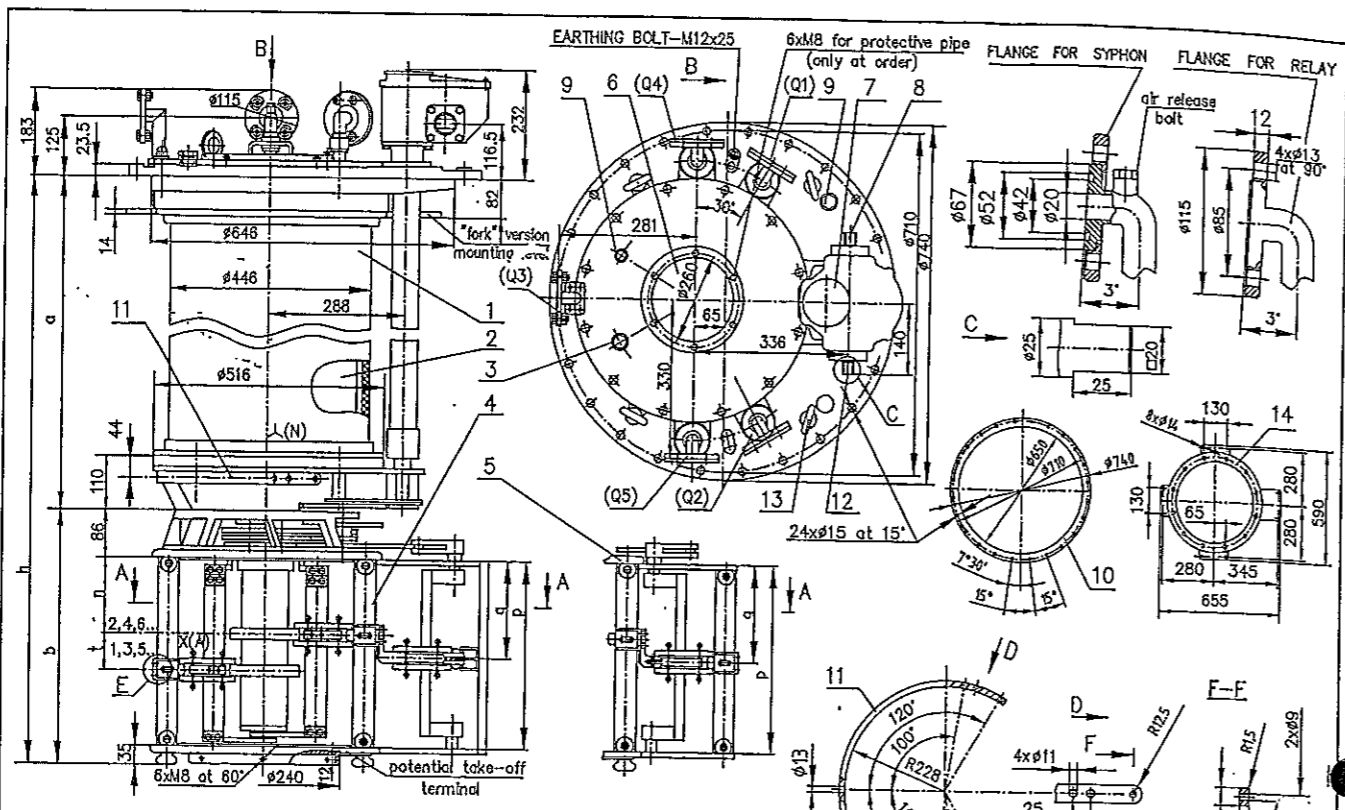
DIAGRAM OF SELECTOR DIVISIONS



1. Diverter switch of vessel
2. Diverter switch
3. Opening for temperature sensor
4. Selector with coarse change-over selector
5. Selector with reverser
6. Protective membrane
7. Position indicator
8. Incoming shaft at right side driving
9. Bleeding of the OLTC
10. Disposal of the openings for fixing to the transformer tank
11. Disposal of the outgoing terminal (neutral)
12. Incoming shaft at left side driving
13. Lifting hook 4x35 mm
14. Disposal of the openings for "fork" mounting

NOTE: 1) We are offering OLTC's without change-over selector  
 2) Additional information about Q1,Q2,Q3,Q4,Q5: dwg. N°999  
 3) Selectors with 16 divisions are used only for currents of 400A

		RSV9.3 III 400-72.5...245/P			RSV9.3 III 550-72.5...245/P			RSV9.3 III 700-72.5...245/P		
		Number of contacts per phase 10,12,14,16								
		Um (Insulation to Earth) in kV								
		72.5	123	170	245	123	170	245	245	245
a	h	2514	2564	2720	2820	2514	2564	2720	2820	2514
a	a	1090	1140	1296	1396	1090	1140	1296	1396	1090
b	b			1424				1424		
n	n			275				275		
o	o			300				300		
t	t			150				150		
D	D			558				558		
Of	Of			573				573		
f	f			830				830		
e	e			820				820		
p	p			1296				1296		
q	q			306				306		
r	r			300				300		
g	g			480				480		
m	m			107				107		
l	l			196				196		
k	k			238				238		
α	α			36°				36°		
g	g			285±305 kg				285±305 kg		



DWG.1 (Coarse change-over selector)

DWG.2 (Reverser)  
(for the rest see dwg.1)

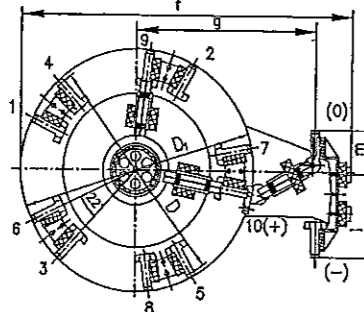
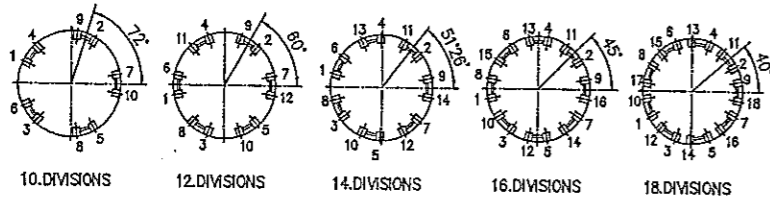


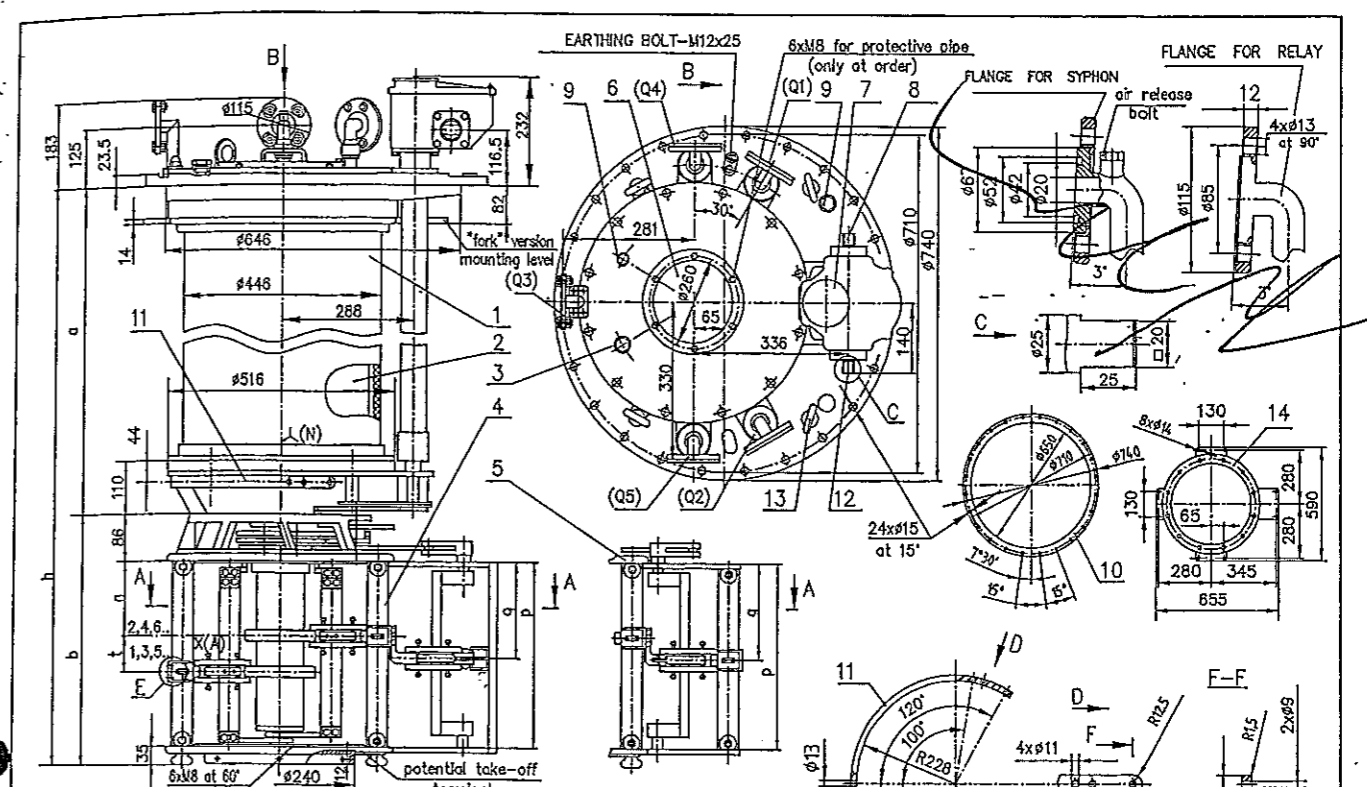
DIAGRAM OF SELECTOR DIVISIONS



1. Diverter switch of vessel
2. Diverter switch
3. Opening for temperature sensor
4. Selector with coarse change-over selector
5. Selector with reverser
6. Protective membrane
7. Position indicator
8. Incoming shaft at right side driving
9. Bleeding of the OLTC
10. Disposal of the openings for fixing to the transformer tank
11. Current take-off terminal
12. Incoming shaft at left side driving
13. Lifting hook 4x35 mm
14. Disposal of the openings for "fork" mounting

NOTE:1) Horizontal dimensions of "K" and "L" (16,18 div.) are same as selector sizes "M" and "N"  
2) We are offering OLTC's without change-over selector  
3) Additional information about Q1,Q2,Q3,Q4,Q5: dwg. N°999

RSV9.3   400-72.5...123/K		RSV9.3   400-72.5...170/L		RSV9.3   400-72.5...245/M		RSV9.3   400-72.5...245/N	
RSV9.3   550-72.5...123/K		RSV9.3   550-72.5...170/L		RSV9.3   550-72.5...245/M		RSV9.3   550-72.5...245/N	
RSV9.3   700-72.5...123/K		RSV9.3   700-72.5...170/L		RSV9.3   700-72.5...245/M		RSV9.3   700-72.5...245/N	
Number of contacts per phase 10,12,14,16,18							
Um (Insulation to Earth) in kV							
h	72.5	123	170	72.5	123	170	245
a	1202	1461	1297	1498	1568	1362	1551
t	791	990	791	990	791	990	1190
b	411		506		561		671
n	115		155		175		220
t	60		75		90		110
D	388(1)		388(1)		480		480
Di	400		400		498		498
f	578		575		710		710
c	550		550		700		700
p	300		395		450		560
q	145		192.5		220		275
g	-29.4		29.4		377.5		377.5
m	85		85		80		80
l	138		138		169		169
k	140		140		185		185
a	35°		35°		30°		30°
G	203-210 kg		208-216 kg		212-221 kg		217-227 kg



DWG.1 (Coarse change-over selector)

DWG.2 (Reverser)  
(for the rest see dwg.1)

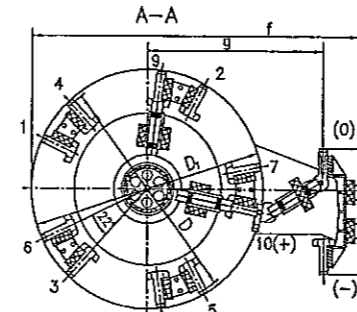
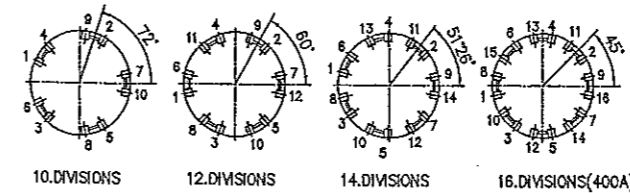


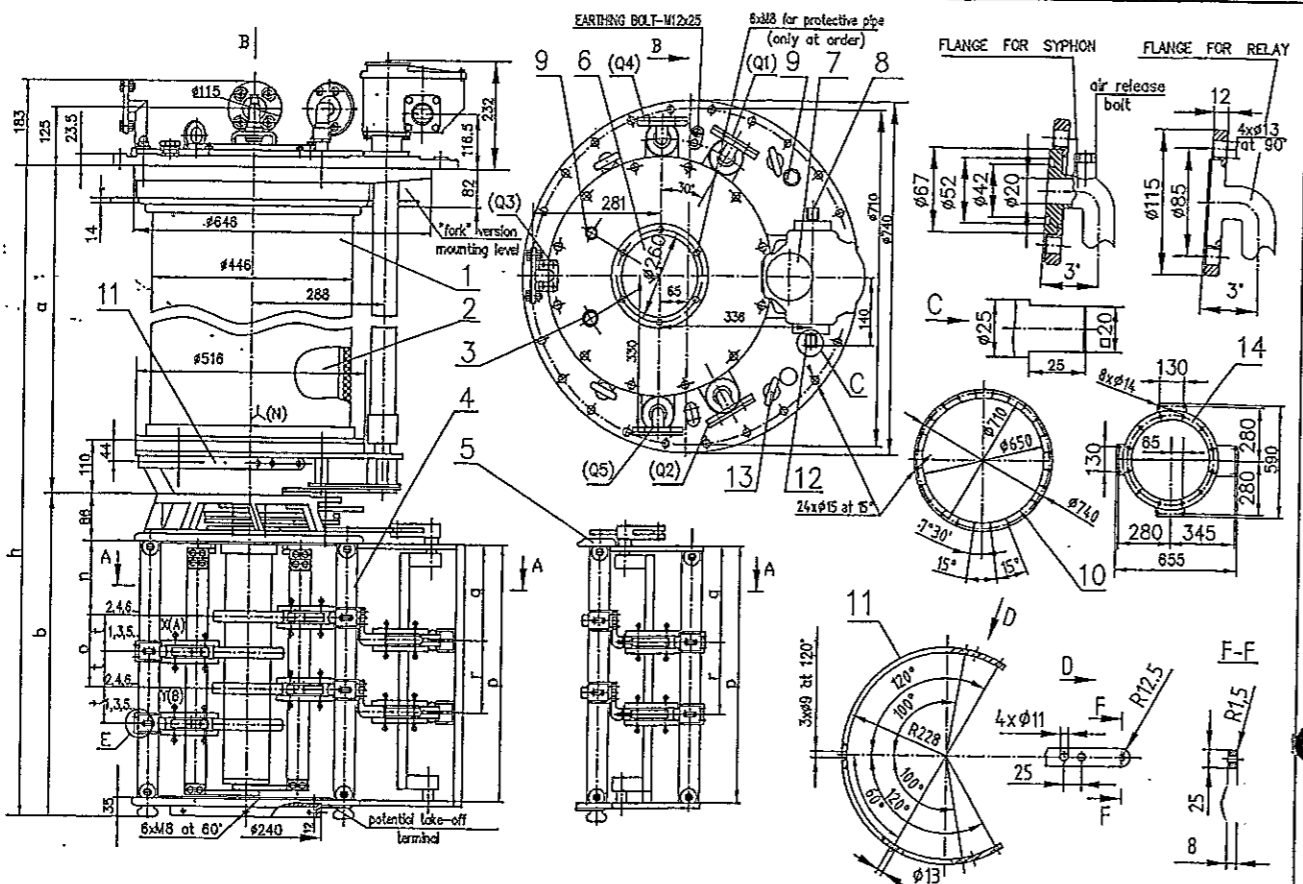
DIAGRAM OF SELECTOR DIVISIONS



1. Diverter switch of vessel
2. Diverter switch
3. Opening for temperature sensor
4. Selector with coarse change-over selector
5. Selector with reverser
6. Protective membrane
7. Position indicator
8. Incoming shaft at right side driving
9. Bleeding of the OLTC
10. Disposal of the openings for fixing to the transformer tank
11. Current take-off terminal
12. Incoming shaft at left side driving
13. Lifting hook 4x35 mm
14. Disposal of the openings for "fork" mounting

NOTE:1) We are offering OLTC's without change-over selector  
2) Additional information about Q1,Q2,Q3,Q4,Q5: dwg. N°999  
3) Selectors with 16 divisions are used only for currents of 400A

RSV9.3   400-72.5...245/P		RSV9.3   550-72.5...245/P		RSV9.3   700-72.5...245/P	
Number of contacts per phase 10,12,14,16					
Um (Insulation to Earth) in kV					
h	72.5	123	170	245	
a	1695	1894	1994	2094	
t	791	990	1090	1190	
b			904		
n			300		
t			180		
D			558		
Di			573		
f			830		
c			820		
p			776		
q			331		
g			480		
m			107		
l			196		
k			238		
a			36°		
G			230+245 kg		



DWG.1 (Coarse change-over selector)

DWG.2 (Reverser) (for the rest see dwg.1)

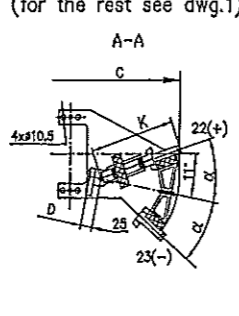
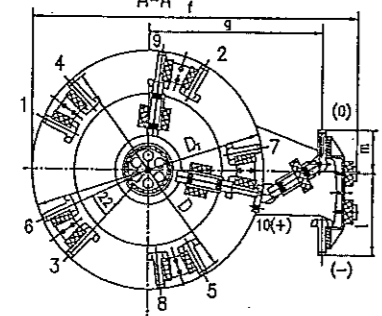
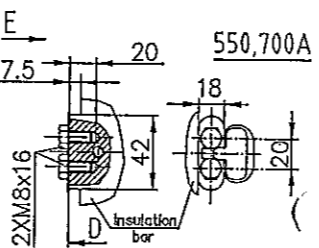
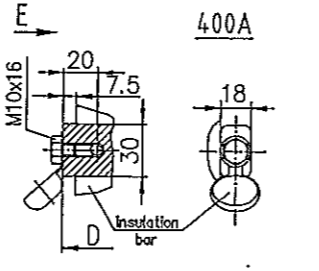
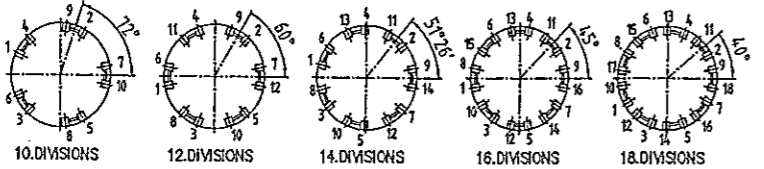


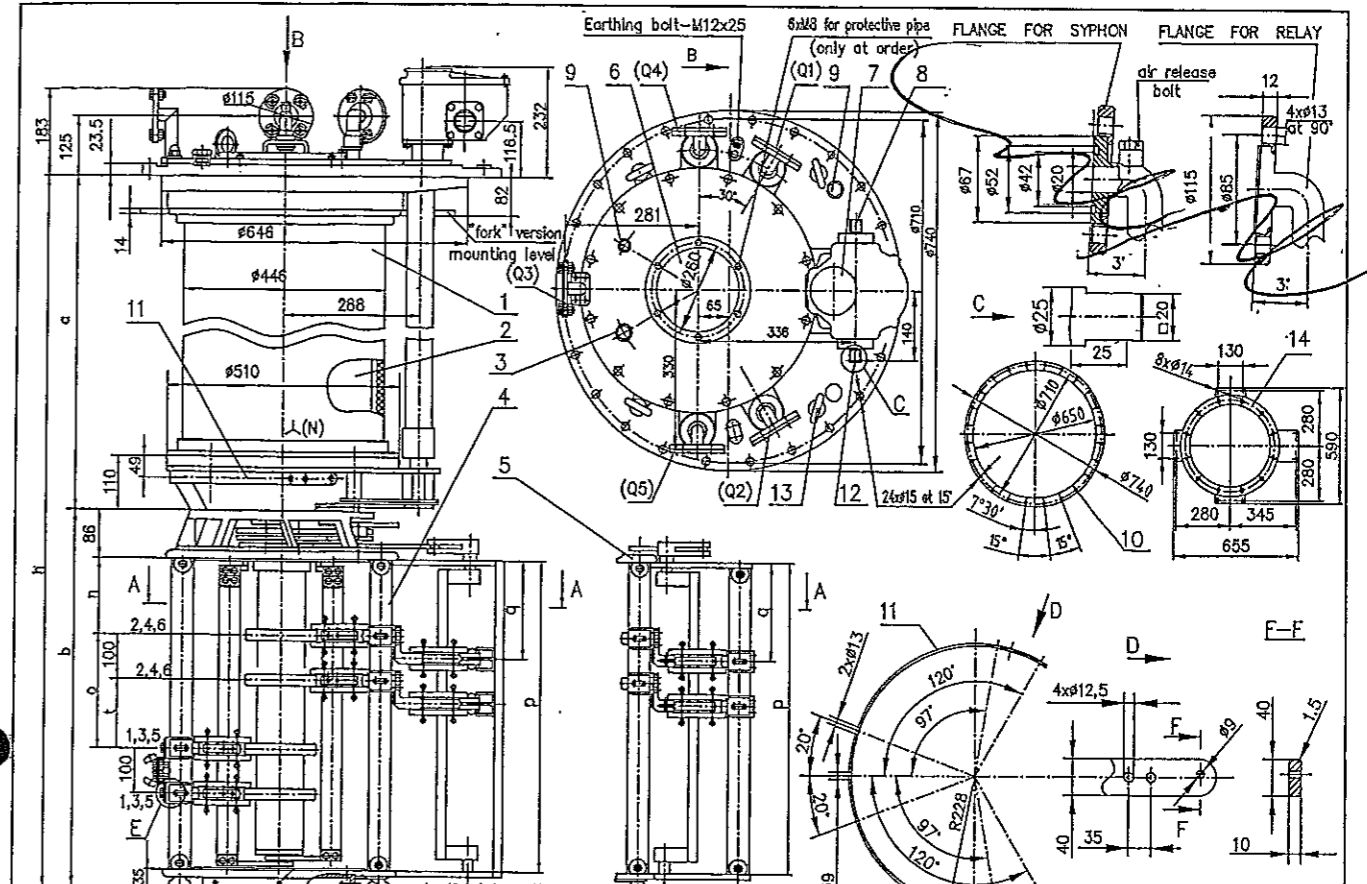
DIAGRAM OF SELECTOR DIVISIONS



1. Diverter switch oil vessel
2. Diverter switch
3. Opening for temperature sensor
4. Selector with coarse change-over selector
5. Selector with reverser
6. Protective membrane
7. Position indicator
8. Incoming shaft at right side driving
9. Bleeding of the OLTC
10. Disposal of the openings for fixing to the transformer tank
11. Current take-off terminal
12. Incoming shaft at left side driving
13. Lifting hook 4xØ35 mm
14. Disposal of the openings for "fork" mounting

NOTE:1) Horizontal dimensions of "K" and "L" (16,18 div.) are same as selector sizes "M" and "N".  
 2) We are offering OLTC's without change-over selector  
 3) Additional information about Q1,Q2,Q3,Q4,Q5: dwg. N'999

RSV9.3 II 400-72.5-123/K		RSV9.3 II 400-72.5-170/L		RSV9.3 II 400-72.5-245/M		RSV9.3 II 400-72.5-245/N		
Number of contacts per phase 10,12,14,16,18								
Um (insulation to Earth) in kV								
	72.5	123	170	245	72.5	123	170	245
b	1621	1746	1796	1896	1831	1891	1981	2031
a	1090	1140	1090	1240	1090	1140	1240	1372
b	531	656	741	891				
n	115	155	175	220				
o	120	150	180	220				
t	60	75	90	110				
D	386	386	480	480				
Df	400	400	498	498				
f	575	575	710	710				
e	550	550	700	700				
p	420	545	630	780				
s	145	192.5	220	275				
r	120	150	180	220				
g	294	294	377.5	377.5				
m	65	65	80	80				
l	138	138	169	169				
k	140	140	185	185				
α	35°	35°	30°	30°				
e	223÷230 kg	228÷236 kg	232÷241 kg	237÷247 kg				



DWG.1 (Coarse change-over selector)

DWG.2 (Reverser) (for the rest see dwg.1)

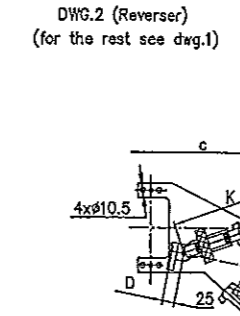
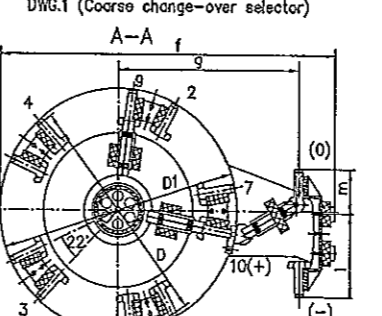
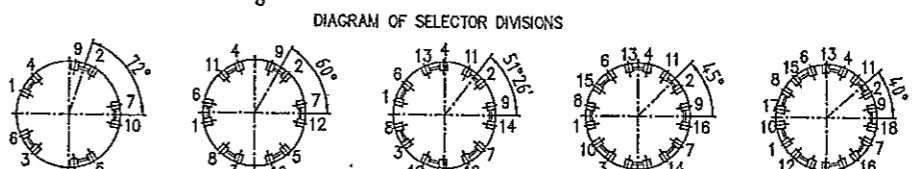


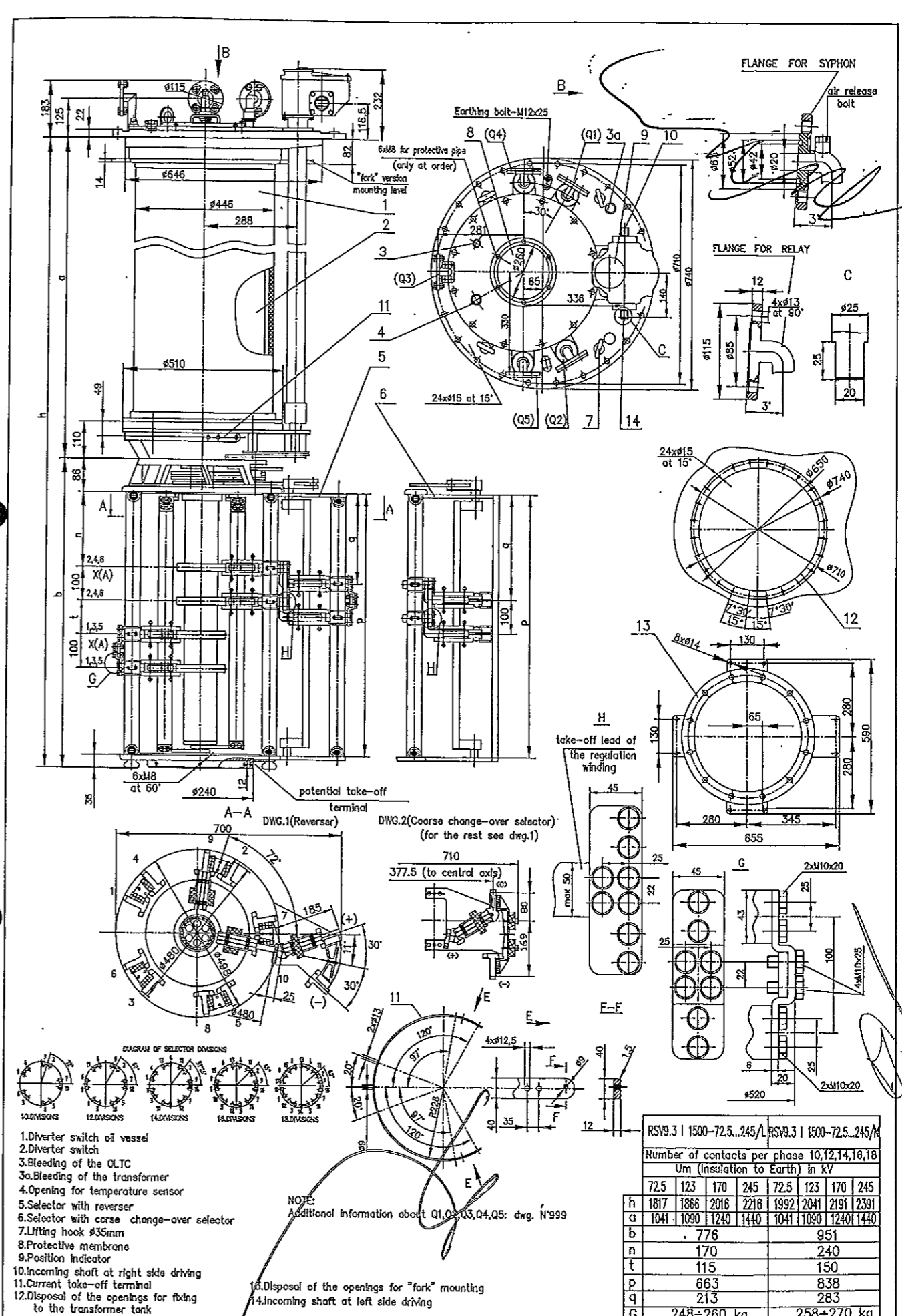
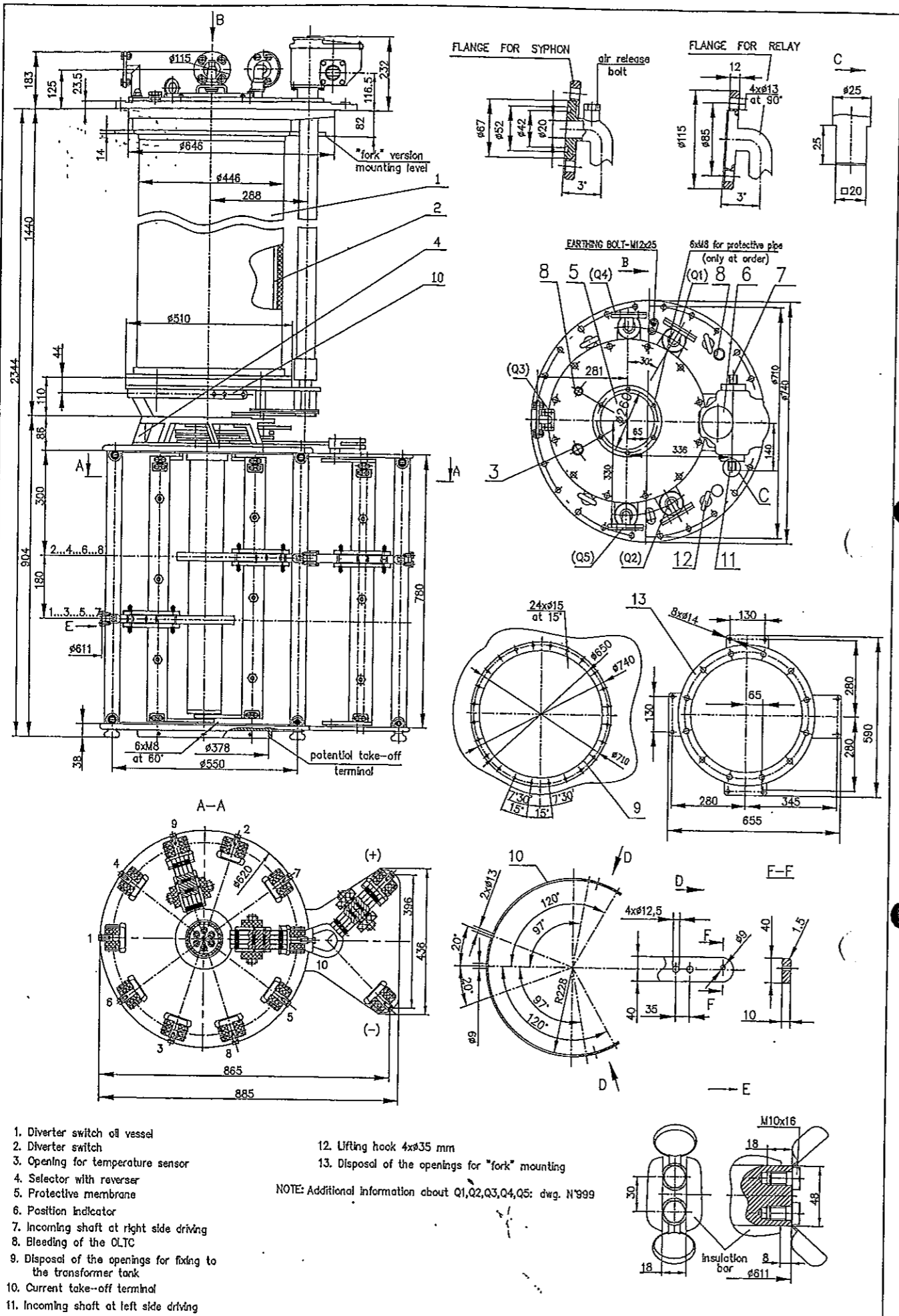
DIAGRAM OF SELECTOR DIVISIONS

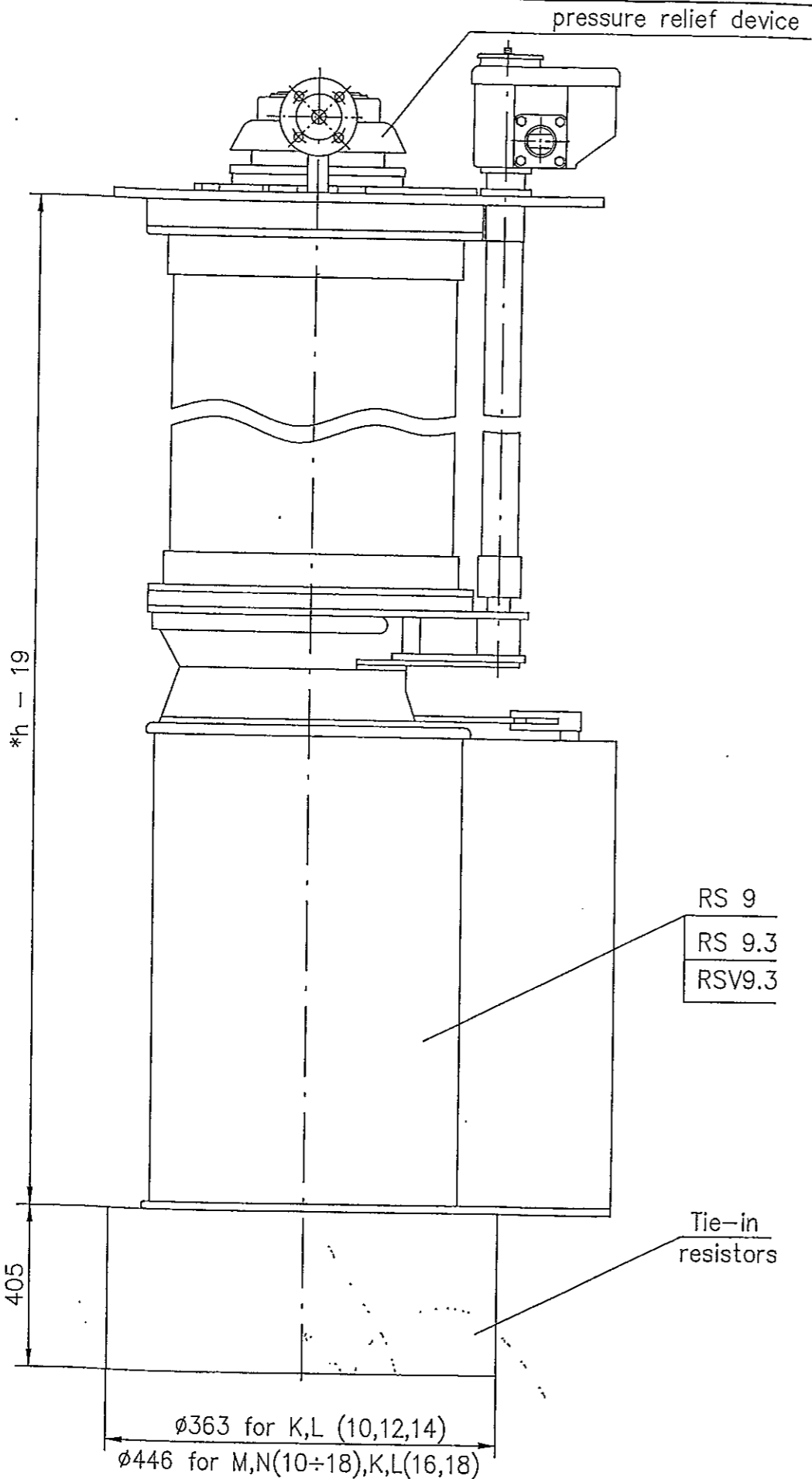


1. Diverter switch oil vessel
2. Diverter switch
3. Opening for temperature sensor
4. Selector with coarse change-over selector
5. Selector with reverser
6. Protective membrane
7. Position indicator
8. Incoming shaft at right side driving
9. Bleeding of the OLTC
10. Disposal of the openings for fixing to the transformer tank
11. Current take-off terminal
12. Incoming shaft at left side driving
13. Lifting hook 4xØ35 mm
14. Disposal of the openings for "fork" mounting

NOTE:1) Additional information about Q1,Q2,Q3,Q4,Q5: dwg. N'999  
 2) We are offering OLTC's without change-over selector  
 3) Horizontal dimensions of "L" (16,18 div.) are same as selector sizes "N".

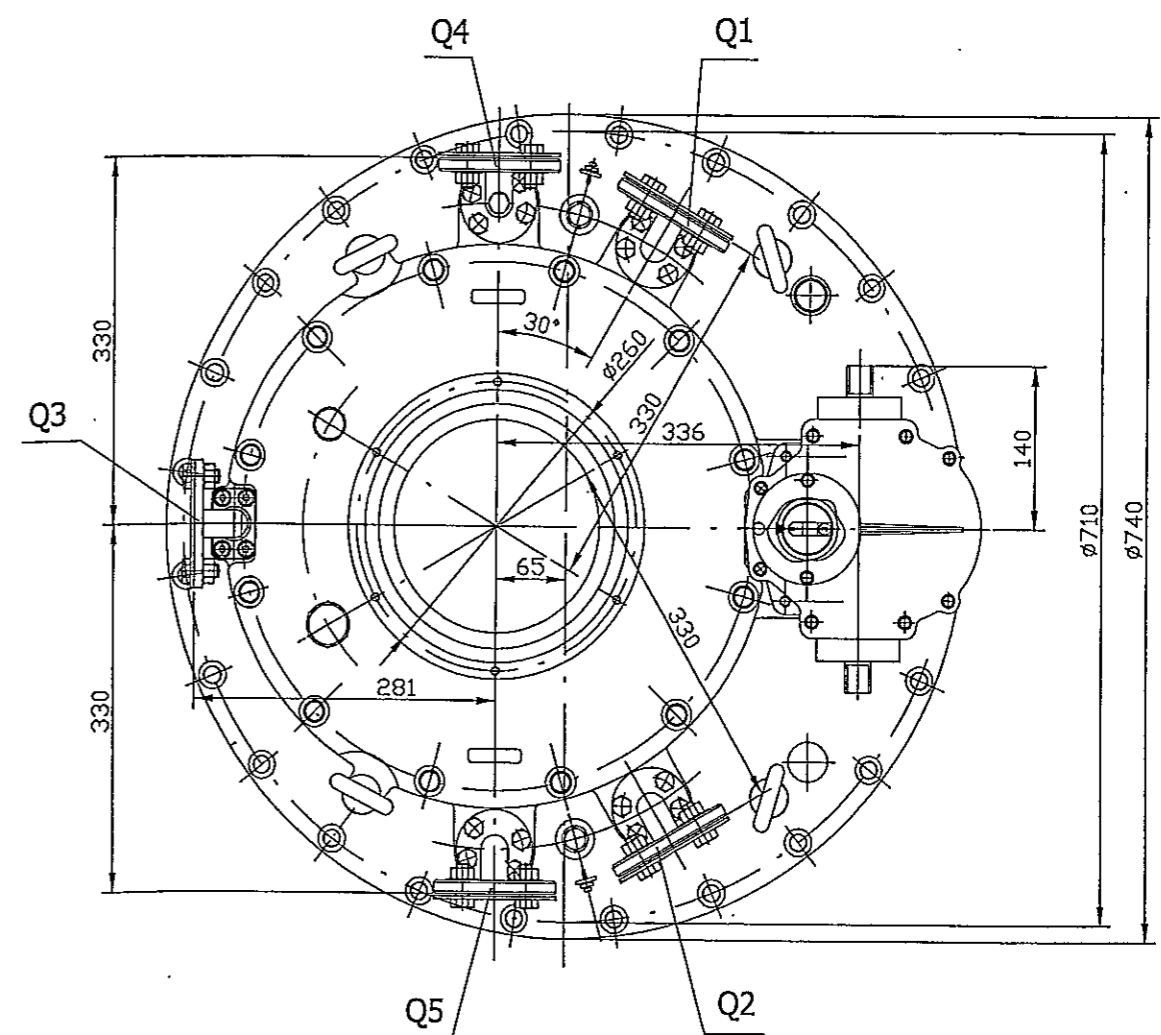
RSV9.3 - I - 1200 72.5...245/L		RSV9.3 - I - 1200 72.5...245/N		
Number of contacts per phase 10,12,14,16,18				
Um (insulation to Earth) in kV				
	72.5	123	170	245
b	1747	1796	1946	2146
a	1041	1090	1240	1440
b		706		871
n		155		220
o		175		210
t		75		110
D		426		520
Df		400		498
f		575		710
e		570		720
p		595		760
q		192.5		275
g		294		377.5
m		85		100
l		158		189
k		160		205
α		35°		30°
G		240 + 250 kg		250 + 260 kg





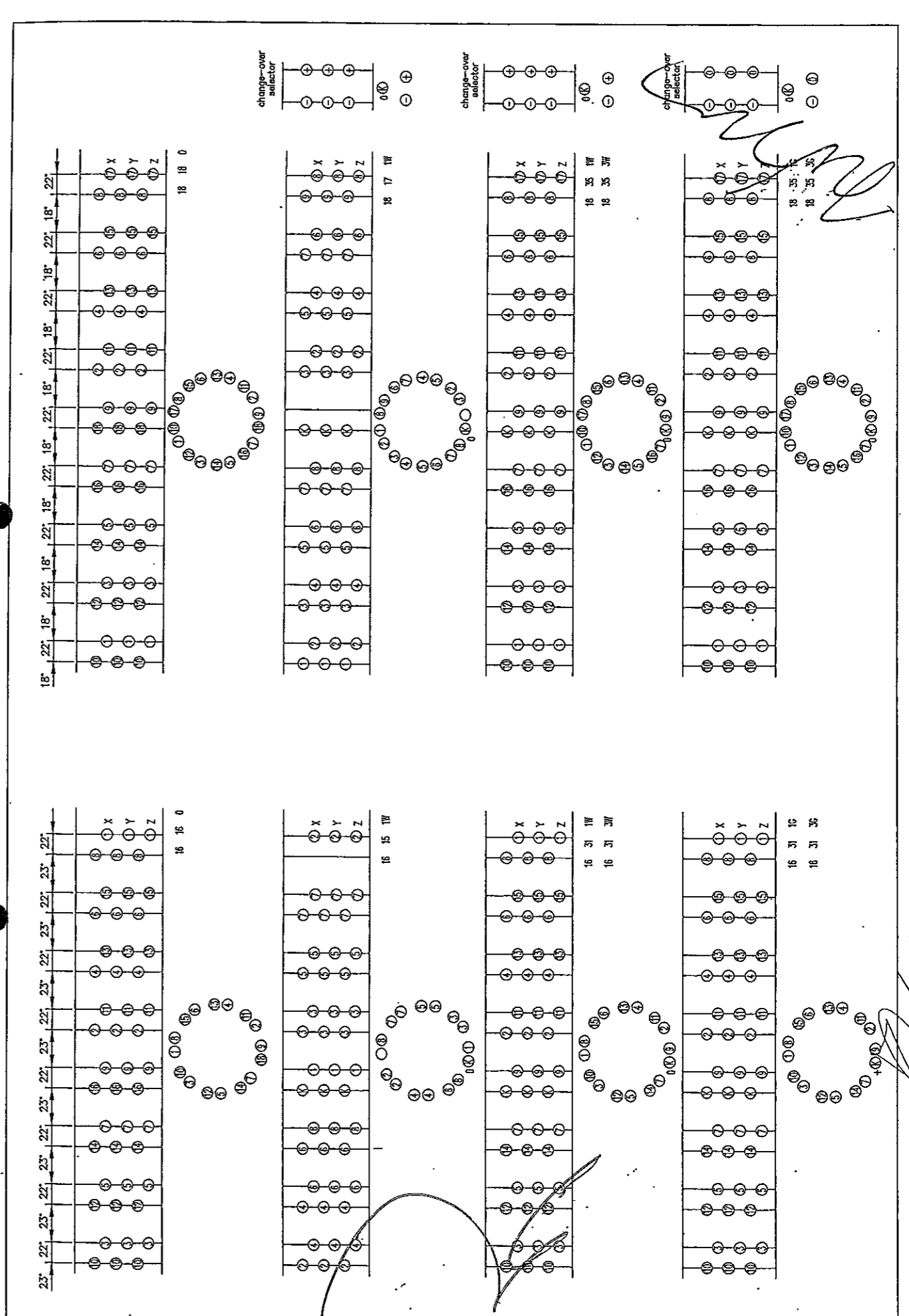
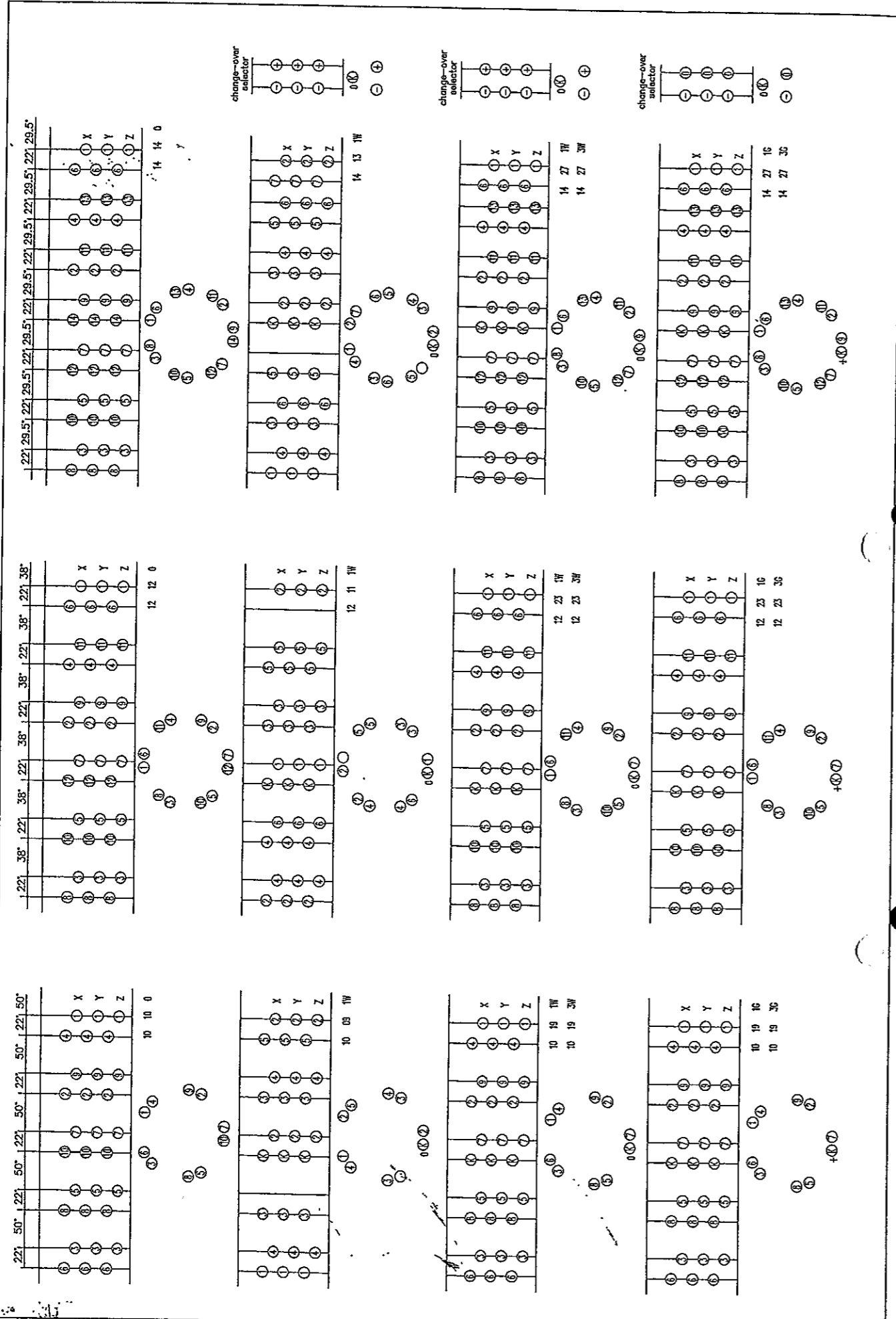
\*h - See Drawings in the RS9/RS9.3/RSV9.3 Technical Data Catalogs

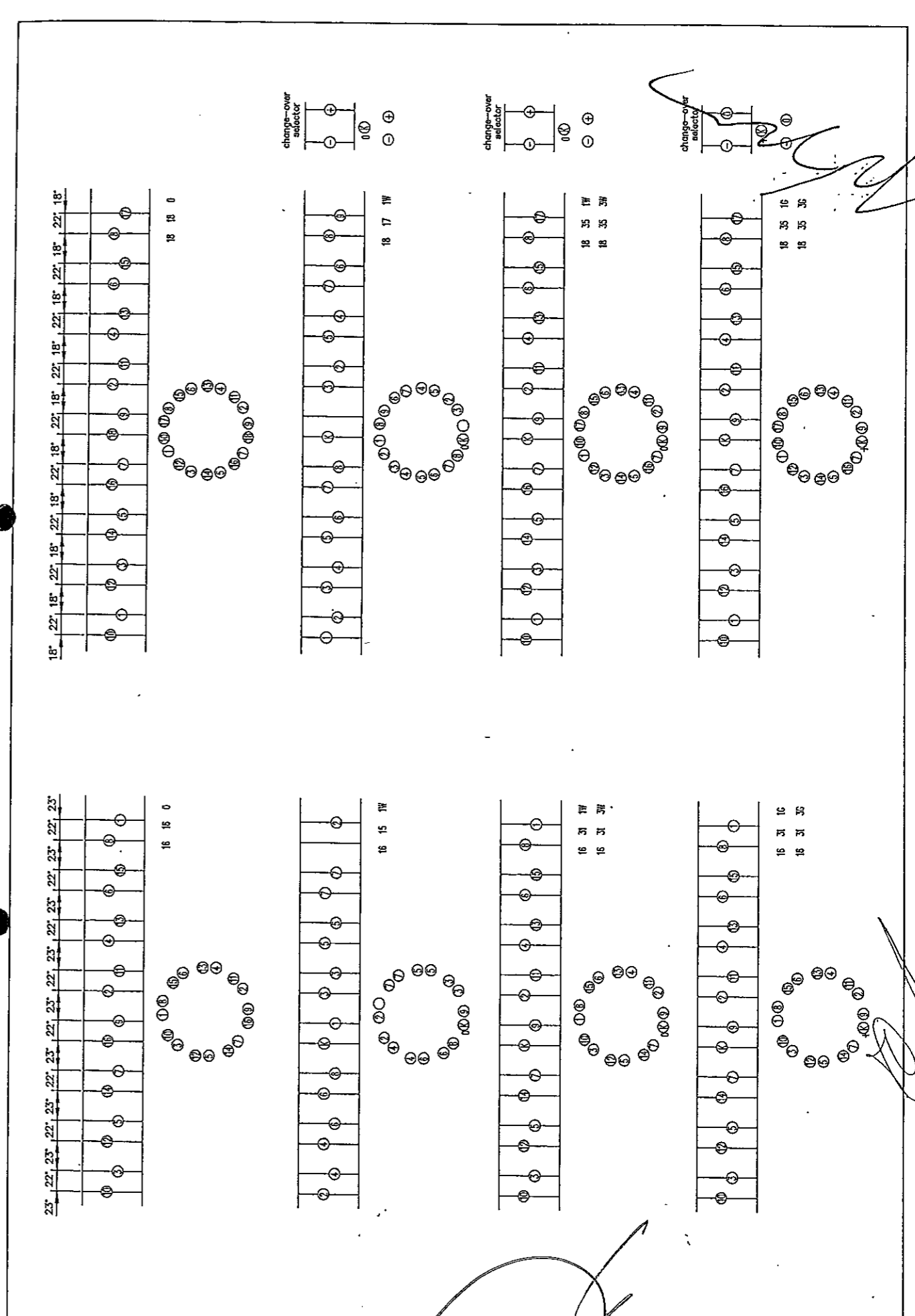
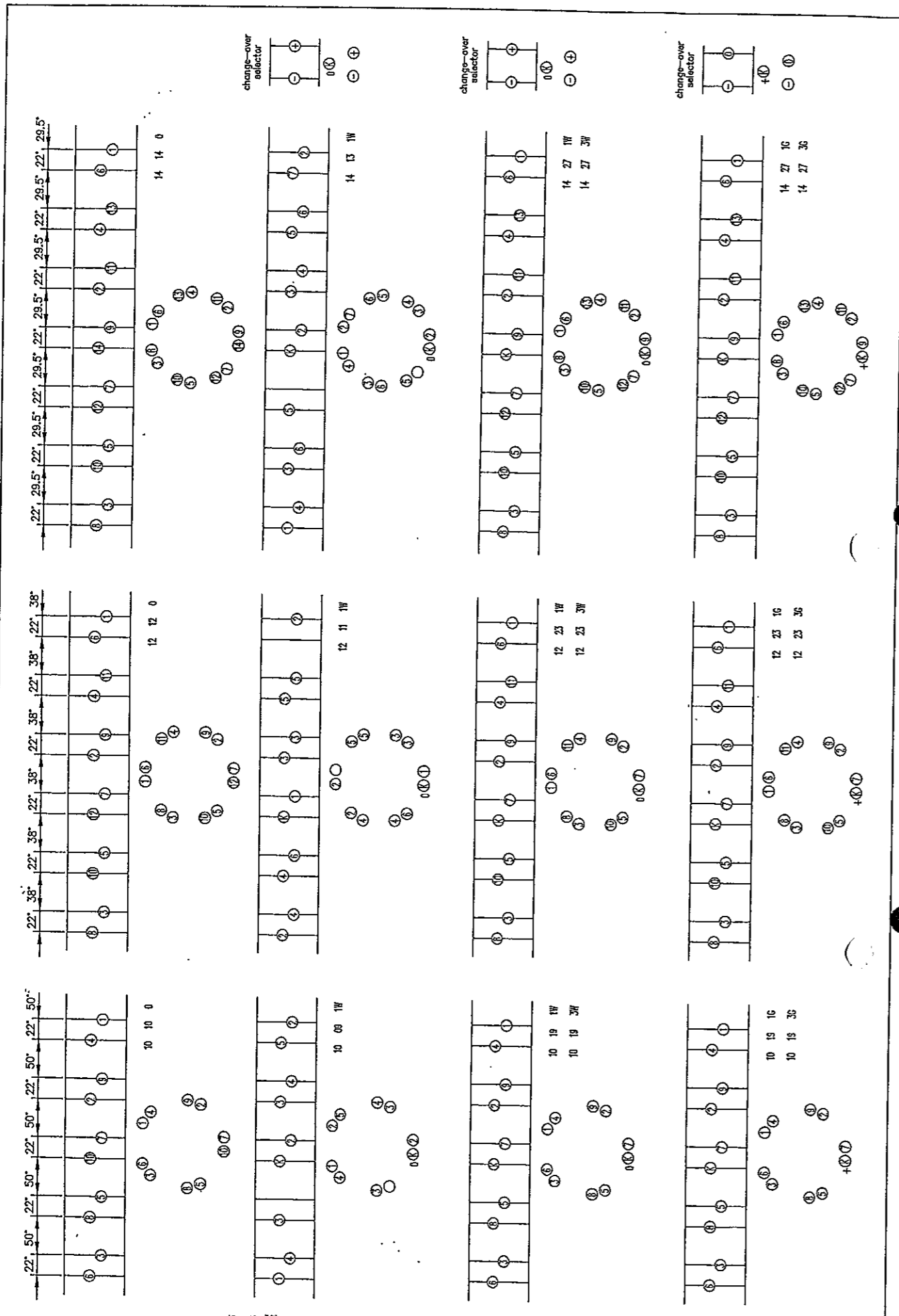
	<b>ON LOAD TAP CHANGER RS 9/RS 9.3/RSV 9.3 WITH PRESSURE RELIEF DEVICE AND TIE-IN RESISTORS</b>	No 310.Q	
		2017	



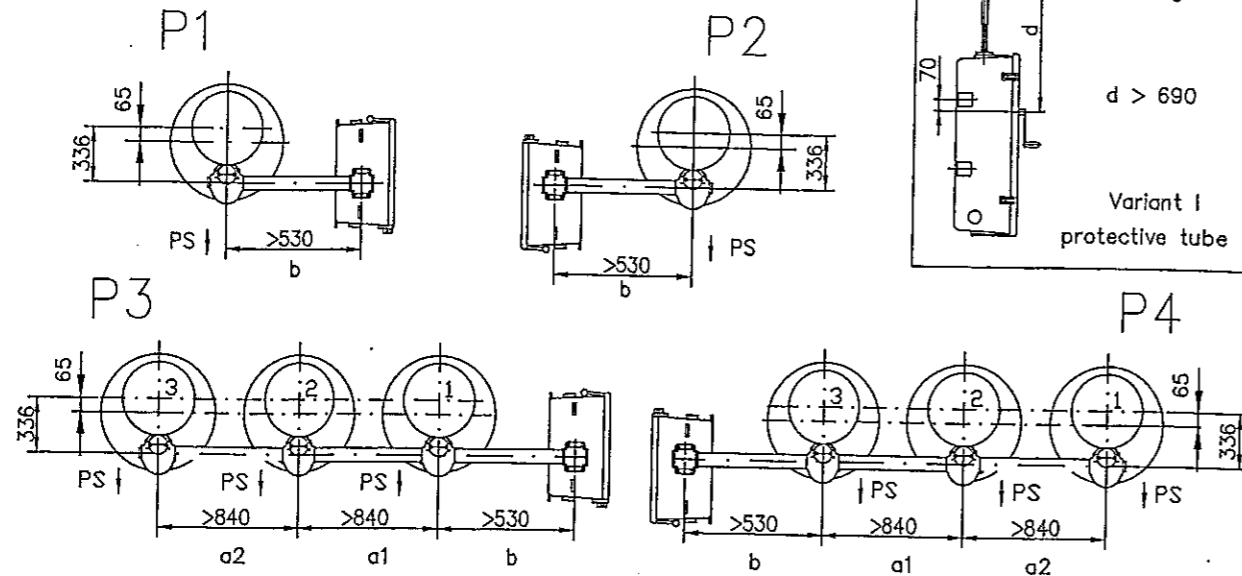
Q1, Q2 - FLANGE FOR A PROTECTIVE RELAY OR AN OIL FILTER (ROTATING)  
Q3 - FLANGE FOR A PROTECTIVE RELAY OR AN OIL FILTER (NON-ROTATING)  
Q4, Q5 - FLANGE FOR A SIPHON OR PROTECTIVE RELAY.  
NOTE: IN THE ORDER SPECIFICATION SHEET, PLEASE FILL IN THE DESIGNATION SYMBOLS OF THE CONNECTING FLANGES (Q1,Q2,Q3,Q4,Q5) WHICH YOU HAVE SELECTED FOR YOUR ORDER.

	<b>ON LOAD TAP CHANGERS RS 9.3/RSV 9.3/RS 7.3/RSV 7.3</b>	No 999.22	
		2017	

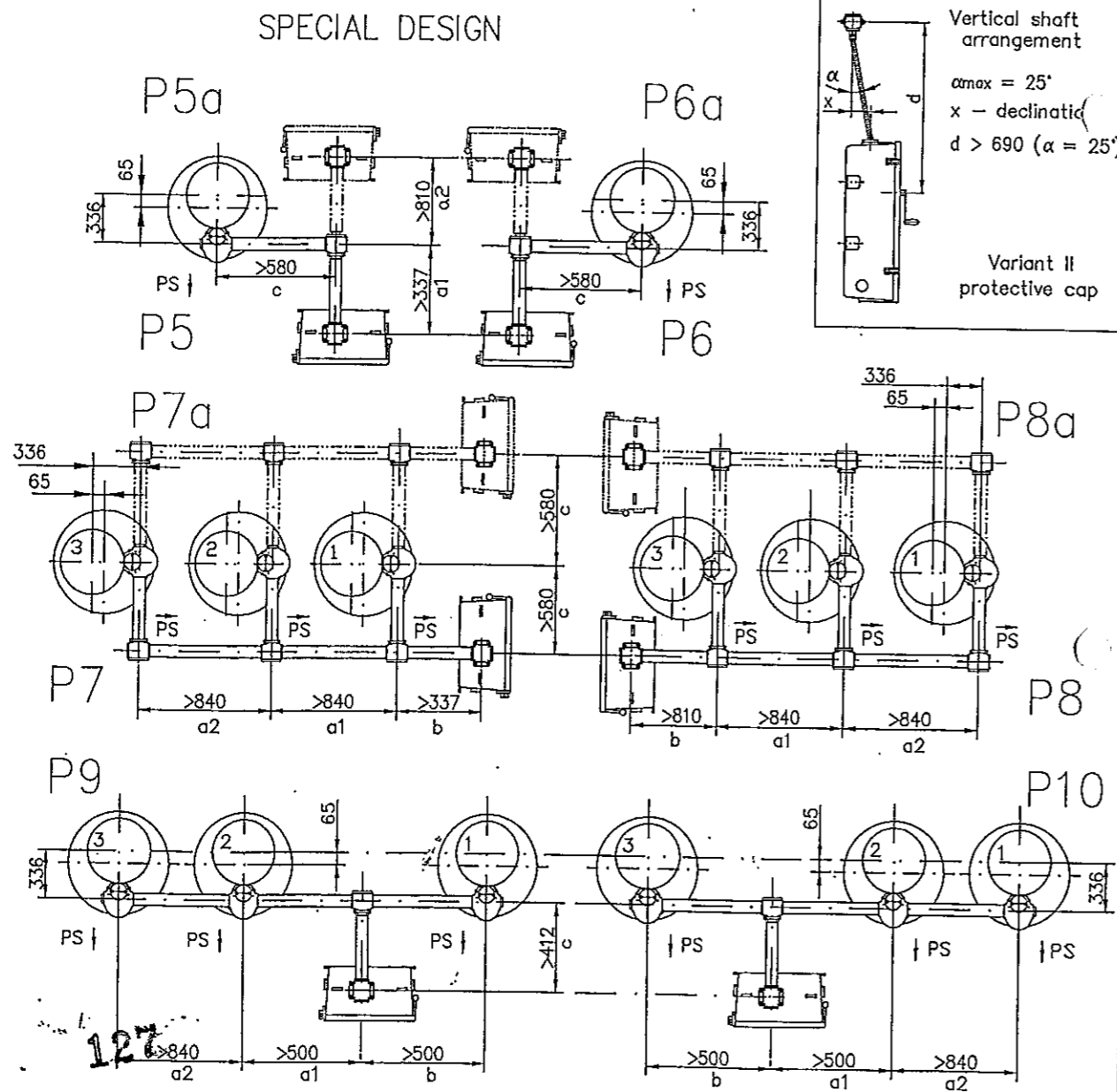




STANDARD DESIGN

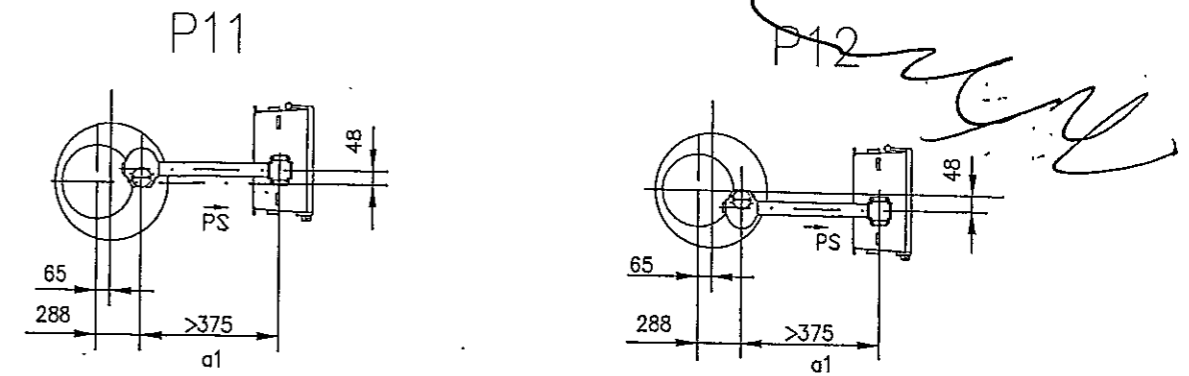


SPECIAL DESIGN



see notes on N°209.3 sheet 2

SPECIAL DESIGN



CALCULATION ( FORMULAS )

Arrangement	P1	P2	P3	P4	P5	P5a	P6	P6a
Lenght								
La1	—	—	a1-345	a1-280	—	a1-280	—	—
La2	—	—	a2-345	—	a2-280	—	a2-280	—
Lb	b-315				—	—	—	—
Lc	—	—	—	—	c-386			
Ld	$\frac{d-582}{\cos \alpha}$ ; ( $\alpha_{max}=25^\circ$ )							

Arrangement	P7	P7a	P8	P8a	P9	P10	P11	P12
Lenght								
La1	a1-280			a1-315				
La2	a2-280				a2-345			
Lb	b-280				b-315			
Lc	c-386				c-352			
Ld	$\frac{d-582}{\cos \alpha}$ ; ( $\alpha_{max}=25^\circ$ )							

NOTES:

1. "L"—Driving shaft length
2. PS —Disposal of change-over selector
3. In case of two units — numbers 3 or 1 are omitted
4. Distances are determined for mechanical reasons.  
The insulating distances are not considered



*Handwritten signature*



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10.11

130

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