

Dati tecnici VACUTAP® VM®, VM 300, VMS®. Commutatore sotto carico

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1 Introduzione

Questa documentazione tecnica contiene informazioni dettagliate sulle caratteristiche tecniche del prodotto. Per ulteriori informazioni fondamentali consultare i dati tecnici TD 61 - Parte generale.

1.1 Denominazioni dei commutatori sotto carico

Ogni tipo di commutatore sotto carico è fornito in numerose versioni, diverse per numero di fasi, corrente passante nominale massima, tensione massima per dispositivo U_m , grandezza del selettore e schema elettrico di base. La designazione della versione del commutatore sotto carico deve essere pertanto determinata anche in base a questi criteri. Il commutatore sotto carico è così identificato in modo univoco.

1.1.1 Esempio di designazione di commutatori sotto carico

Commutatore sotto carico VACUTAP® VM III 650 Y-72,5 / C-10 19 1W R.

Designazione modello	VACUTAP® VM III 650 Y-72,5 / C-10 19 1W R
VACUTAP® VM®	Tipo di commutatore sotto carico
III	Numero delle fasi
650	Corrente passante nominale massima I_{um} in A e numero di settori collegati (ultima cifra) in commutatori sotto carico monofase
Y	Impiego con centro stella
72,5	Tensione massima per dispositivo U_m in kV
C	Tipo di selettore
10 19 1W R	Collegamento base

Tabella 1: esempio di designazione di un commutatore sotto carico

1.1.2 Numero di gradini e collegamento base

Il selettore può essere adeguato in larga misura al numero di gradini e al circuito di collegamento dell'avvolgimento fine necessari. I collegamenti base si distinguono a seconda dei passi del selettore, al numero delle posizioni di esercizio, al numero delle posizioni intermedie, alla versione del preselettore e al tipo di connessione di polo.

Esempio: 10 19 1 WR

Designazione dello schema di collegamento base	10 19 1 WR
10	Ripartizione anello dei contatti del selettore
19	Numero massimo di posizioni d'esercizio
1	Numero di posizioni intermedie

Designazione dello schema di collegamento base	10 19 1 WR
W	Esecuzione preselettore: W= invertitore G= gradino grossolano
R	Tipo di connessione di polo: R= resistenze di polo montate S= contatto di polo e resistenze di polo su piastra P= contatto di polo con resistenze di polo montate

Tabella 2: esempio di designazione dello schema di collegamento base

1.2 Versione dei commutatori sotto carico

La sezione Panoramica modelli [► Sezione 4.1, Pagina 28] contiene una panoramica delle versioni di commutatore sotto carico.

1.3 Collegamenti base

Di seguito sono riportati alcuni esempi di collegamenti base del commutatore sotto carico con designazione dei contatti di collegamento del selettore come da standard MR. I collegamenti realmente realizzabili sono riportati nella sezione "Sollecitazioni di tensione ammesse".

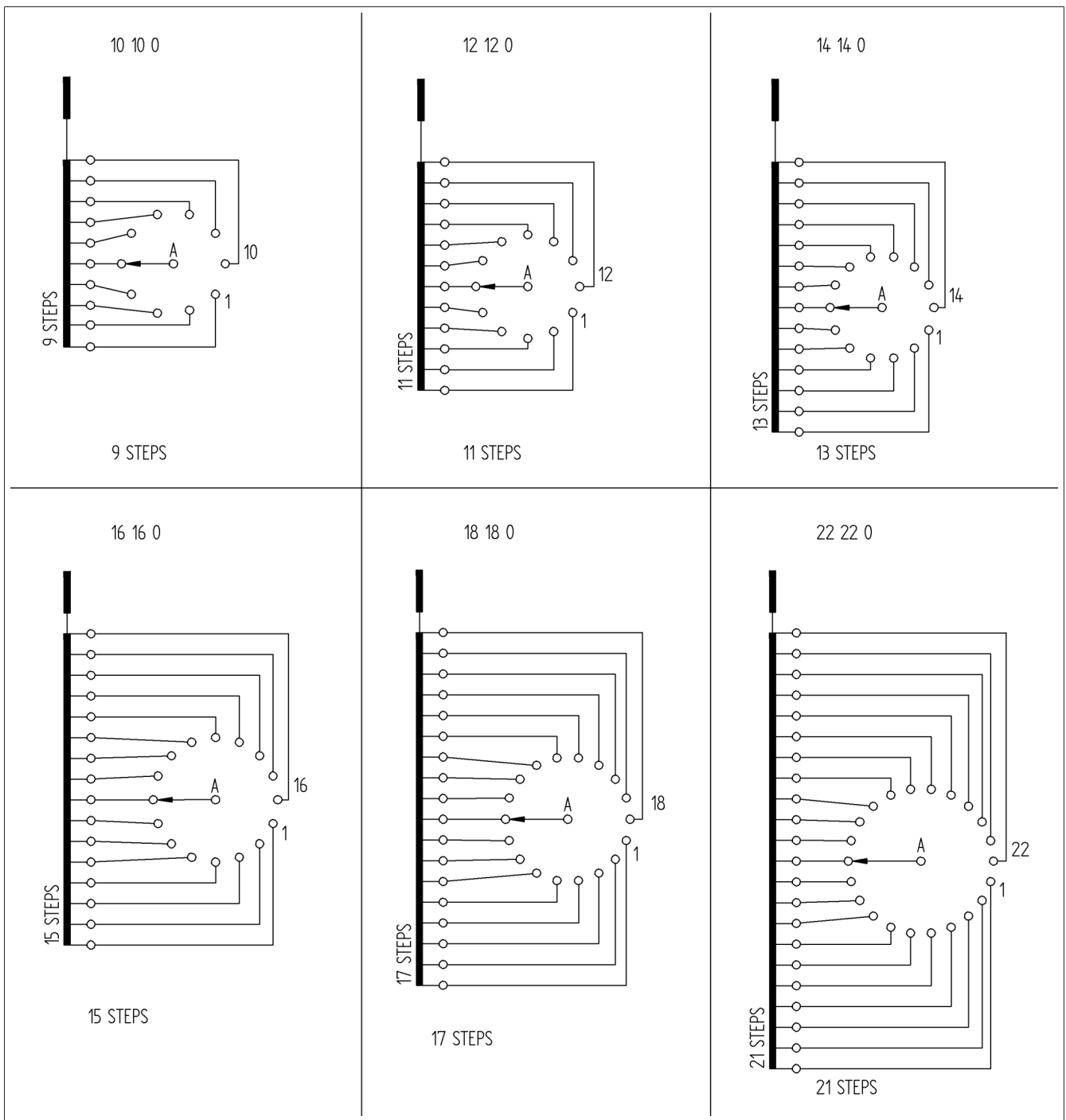


Figura 1: collegamenti base senza preselettore, VACUTAP® VM® I II III e VACUTAP® VMS® III, tipo di selettore C

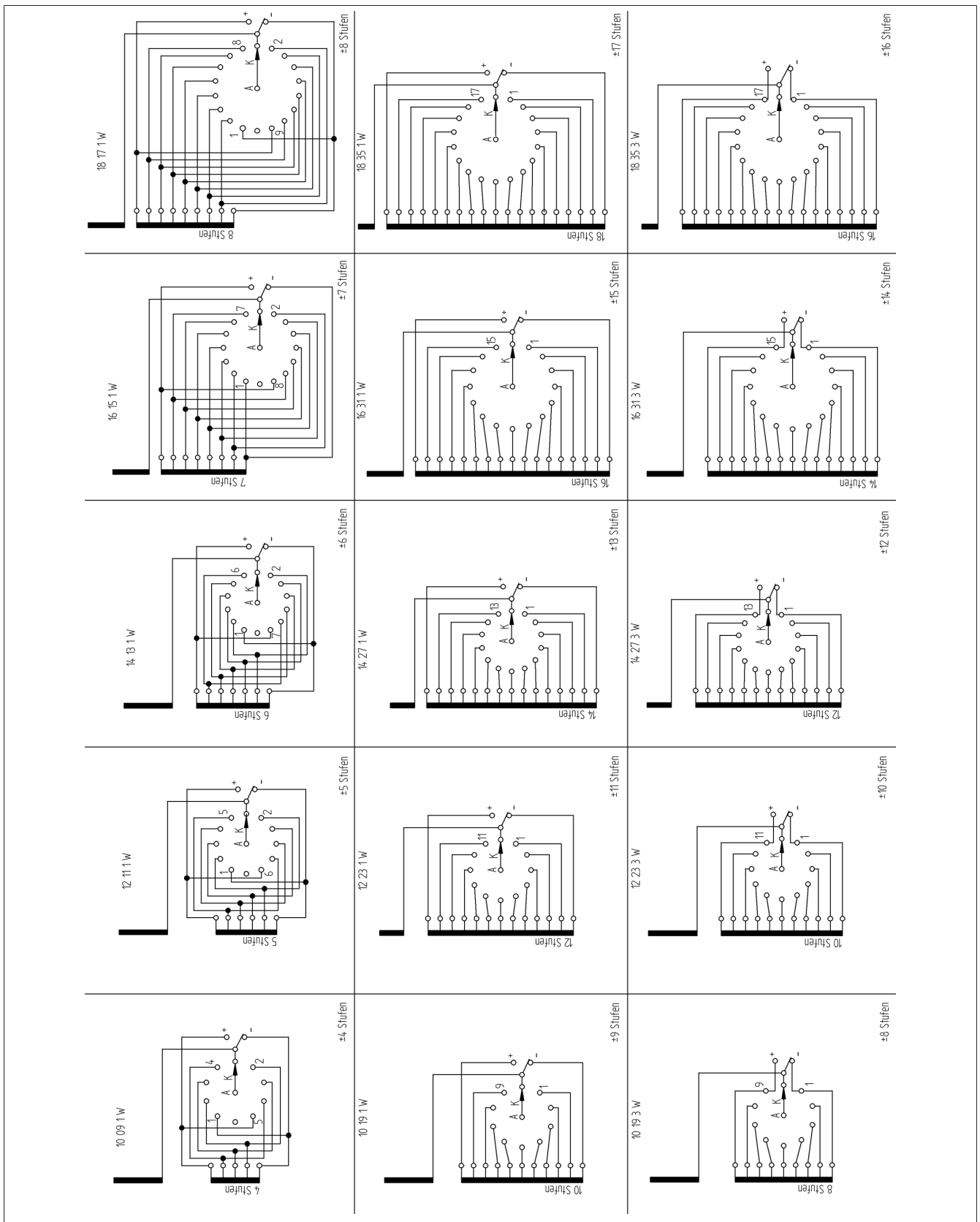


Figura 2: collegamenti base con collegamento a invertitore, VACUTAP® VM® I II III e VACUTAP® VMS® III, tipo di selettore C

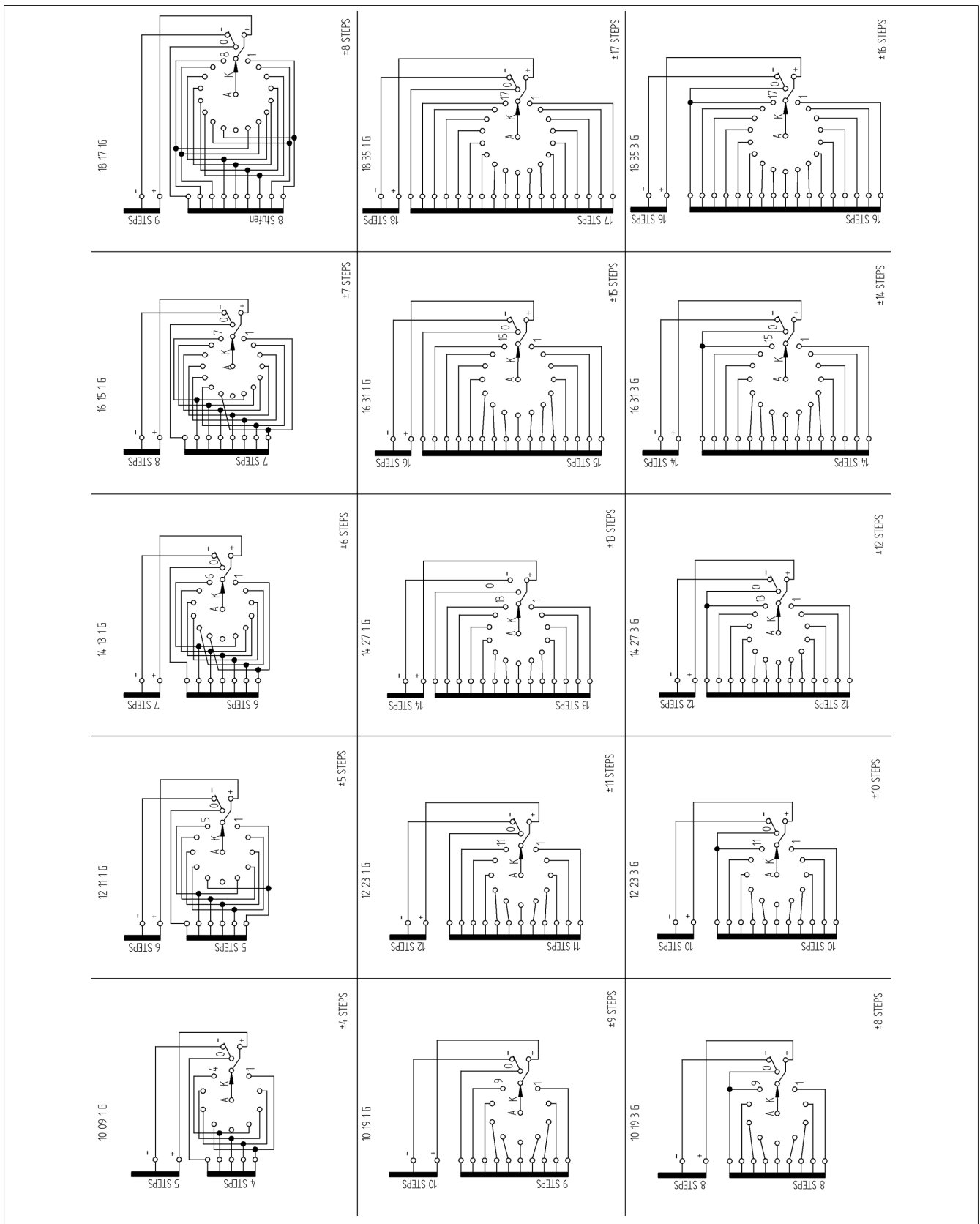


Figura 3: collegamenti base con collegamento ad avvolgimento grossolano, VACUTAP® VM® I II III e VACUTAP® VMS® III, tipo di selettore C

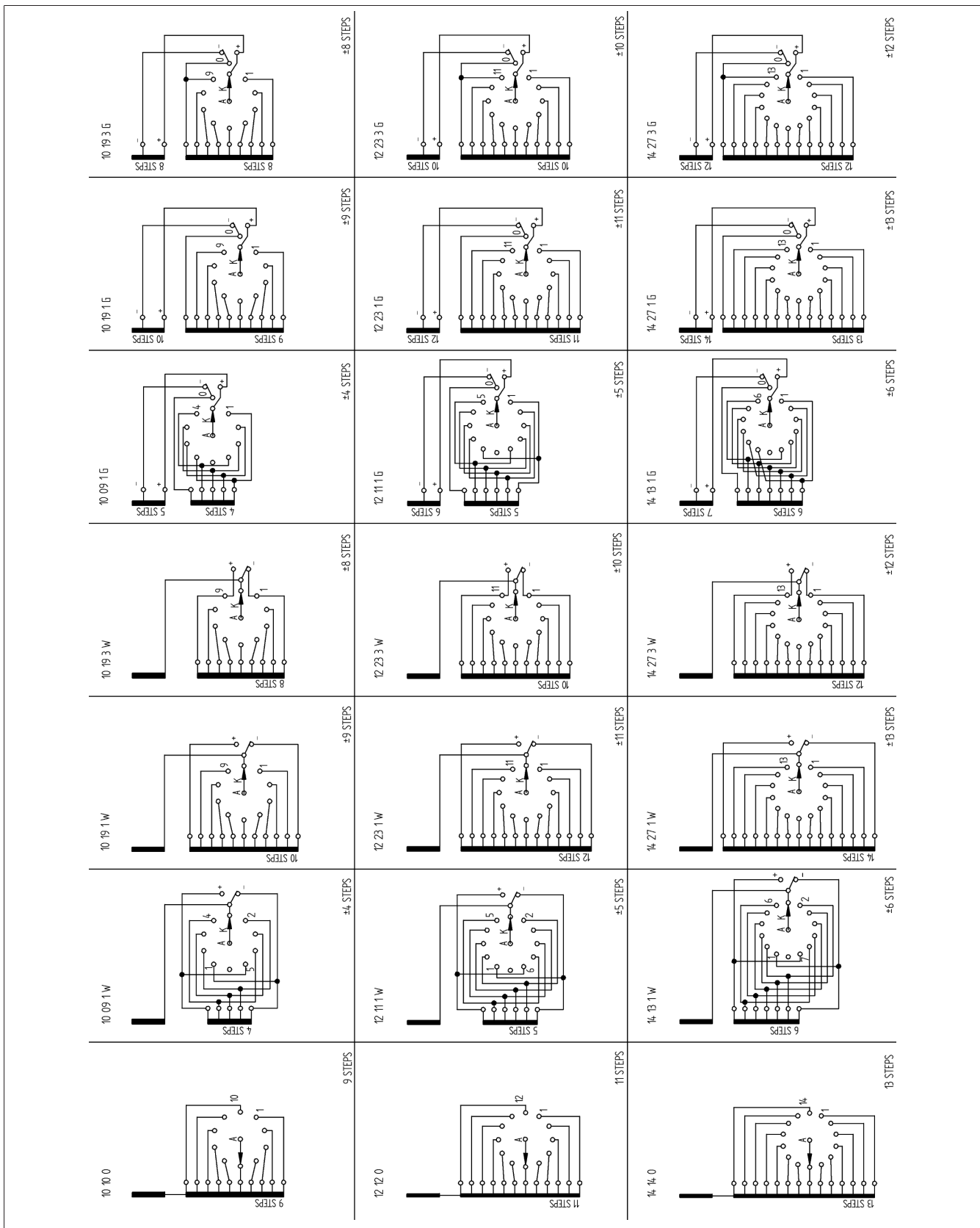


Figura 4: collegamenti base, VACUTAP® VM 300 e VACUTAP® VMS® III, tipo di selettore B

2 Dati tecnici

2.1 Caratteristiche del commutatore sotto carico

Dati elettrici VACUTAP® VM

Commutatore sotto carico	VM I 351	VM I 501	VM I 651	VM I 802	VM I 1002	VM I 1203	VM I 1503
Corrente passante nominale max. I_{um} [A]	350	500	650	800	1 000	1 200	1 500
Corrente di breve durata nominale [kA]	4,2	5	6,5	8	10	12	15
Durata nominale del cortocircuito [s]	3						
Corrente impulsiva nominale [kA]	10,5	12,5	16,25	20	25	30	37,5
Tensione di gradino nominale max. U_{irm} [V] ¹⁾	3 300						
Potenza di gradino P_{stN} [kVA]	1 155	1 625	1 625	2 600	2 600	3 500	3 500
Frequenza nominale [Hz]	50...60						

Tabella 3: dati elettrici VACUTAP® VM I

Commutatore sotto carico	VM II 352	VM II 502	VM II 652
Corrente passante nominale max. I_{um} [A]	350	500	650
Corrente di breve durata nominale [kA]	4,2	5	6,5
Durata nominale del cortocircuito [s]	3		
Corrente impulsiva nominale [kA]	10,5	12,5	16,25
Tensione di gradino nominale max. U_{irm} [V] ¹⁾	3 300		
Potenza di gradino P_{stN} [kVA]	1 155	1 625	1 625
Frequenza nominale [Hz]	50...60		

Tabella 4: dati elettrici VACUTAP® VM II

Commutatore sotto carico	VM III 350 Y	VM III 500 Y	VM III 650 Y
Corrente passante nominale max. I_{um} [A]	350	500	650
Corrente di breve durata nominale [kA]	4,2	5	6,5
Durata nominale del cortocircuito [s]	3		
Corrente impulsiva nominale [kA]	10,5	12,5	16,25
Tensione di gradino nominale max. U_{irm} [V] ¹⁾	3 300		
Potenza di gradino (P_{stN}) [kVA]	1 155	1 625	1 625
Frequenza nominale [Hz]	50...60		

Tabella 5: dati elettrici VACUTAP® VM III

¹⁾ Un superamento del 10% della tensione di gradino nominale massima, causato da una sovraeccitazione del trasformatore, è consentito se non viene superata la potenza di gradino.

Dati elettrici VACUTAP® VM 300

Commutatore sotto carico	VM I 301 / VM II 302 / VM III 300 Y
Corrente passante nominale max. I_{um} [A]	300
Corrente di breve durata nominale [kA]	4
Durata nominale del cortocircuito [s]	3
Corrente impulsiva nominale [kA]	10
Tensione di gradino nominale max. U_{im} [V] ¹⁾	3 300
Potenza di gradino P_{stN} [kVA]	990
Frequenza nominale [Hz]	50...60

Tabella 6: dati elettrici VACUTAP® VM 300

¹⁾ Un superamento del 10% della tensione di gradino nominale massima, causato da una sovraeccitazione del trasformatore, è consentito se non viene superata la potenza di gradino.

Dati elettrici VACUTAP® VMS®

Commutatore sotto carico	VMS III 400 Y	VMS III 650 Y
Corrente passante nominale max. I_{um} [A]	400	650
Corrente di breve durata nominale [kA]	4	6,5
Durata nominale del cortocircuito [s]	3	
Corrente impulsiva nominale [kA]	10	16,25
Tensione di gradino nominale max. U_{im} [V] ¹⁾	1 300	
Potenza di gradino (P_{stN}) [kVA]	520	845
Frequenza nominale [Hz]	50...60	

Tabella 7: dati elettrici VACUTAP® VMS® III, tipo di selettore C

Commutatore sotto carico	VMS III 400 Y
Corrente passante nominale max. I_{um} [A]	400
Corrente di breve durata nominale [kA]	4
Durata nominale del cortocircuito [s]	3
Corrente impulsiva nominale [kA]	10
Tensione di gradino nominale max. U_{im} [V] ¹⁾	1 300
Potenza di gradino (P_{stN}) [kVA]	520
Frequenza nominale [Hz]	50...60

Tabella 8: dati elettrici VACUTAP® VMS® III, tipo di selettore B

¹⁾ Un superamento del 10% della tensione di gradino nominale massima, causato da una sovraeccitazione del trasformatore, è consentito se non viene superata la potenza di gradino.

Dati meccanici VACUTAP® VM

N. delle posizioni di esercizio	senza preselettore: massimo 18 con preselettore: massimo 35 con preselettore multiplo di gradini grossolani: massimo 107
N. dei settori collegati	1...3
Tipi di selettore	B, C, D, DE (non con preselettore multiplo di gradini grossolani)
Dimensioni	Vedere disegni quotati
Peso	
Volume dislocato e contenuto olio	

Tabella 9: dati meccanici VACUTAP® VM I III III

Dati meccanici VACUTAP® VM 300

N. delle posizioni di esercizio	senza preselettore: massimo 14 con preselettore: massimo 27
N. dei settori collegati	1...3
Tipi di selettori	B
Dimensioni	Vedere disegni quotati
Peso	
Volume dislocato e contenuto olio	

Tabella 10: dati meccanici VACUTAP® VM I 301 / VM II 302 / VM III 300 Y

Dati meccanici VACUTAP® VMS®

N. delle posizioni di esercizio	senza preselettore: massimo 18 con preselettore: massimo 35
N. dei settori collegati	3
Tipi di selettore	C
Dimensioni	Vedere disegni quotati
Peso	
Volume dislocato e contenuto olio	

Tabella 11: dati meccanici VACUTAP® VMS® III, tipo di selettore C

N. delle posizioni di esercizio	senza preselettore: massimo 14 con preselettore: massimo 27
N. dei settori collegati	3
Tipi di selettore	B
Dimensioni	Vedere disegni quotati
Peso	
Volume dislocato e contenuto olio	

Tabella 12: dati meccanici VACUTAP® VMS® III, tipo di selettore B

2.2 Condizioni ambientali ammissibili

Temperatura aria in esercizio	- 25 °C...+ 50 °C
Temperatura del liquido isolante in esercizio	- 25 °C...+ 105 °C (in caso di esercizio d'emergenza del trasformatore fino a 115 °C)
Temperatura di trasporto e stoccaggio	- 40 °C...+ 50 °C
Temperature d'essiccamento	vedere Istruzioni per il montaggio e la messa in funzione, capitolo "Montaggio"
Resistenza alla pressione	vedere Dati tecnici TD 61- Parte generale
Liquido isolante	<ul style="list-style-type: none"> - Oli isolanti nuovi derivanti da prodotti petroliferi¹⁾ secondo IEC60296 e ASTM D3487 (norme equivalenti su richiesta) - Oli isolanti nuovi derivanti da altri idrocarburi incontaminati secondo IEC60296, o miscele di questi oli con prodotti petroliferi¹⁾ secondo IEC60296, ASTM D3487 o norme equivalenti su richiesta - Liquidi isolanti alternativi, p. es. esteri naturali e sintetici o oli al silicone, su richiesta <p>¹⁾ In questo contesto gli oli gas-to-liquid (oli GTL) sono considerati prodotti petroliferi</p>
Altezza di montaggio del conservatore dell'olio	vedere Dati tecnici TD 61- Parte generale
Altezza d'installazione sopra il livello del mare	vedere Dati tecnici TD 61- Parte generale

Tabella 13: Condizioni ambientali ammissibili

2.3 Diagrammi potenza di gradino

2.3.1 Diagramma delle potenze di gradino per applicazioni di rete VACUTAP® VM® e VM 300

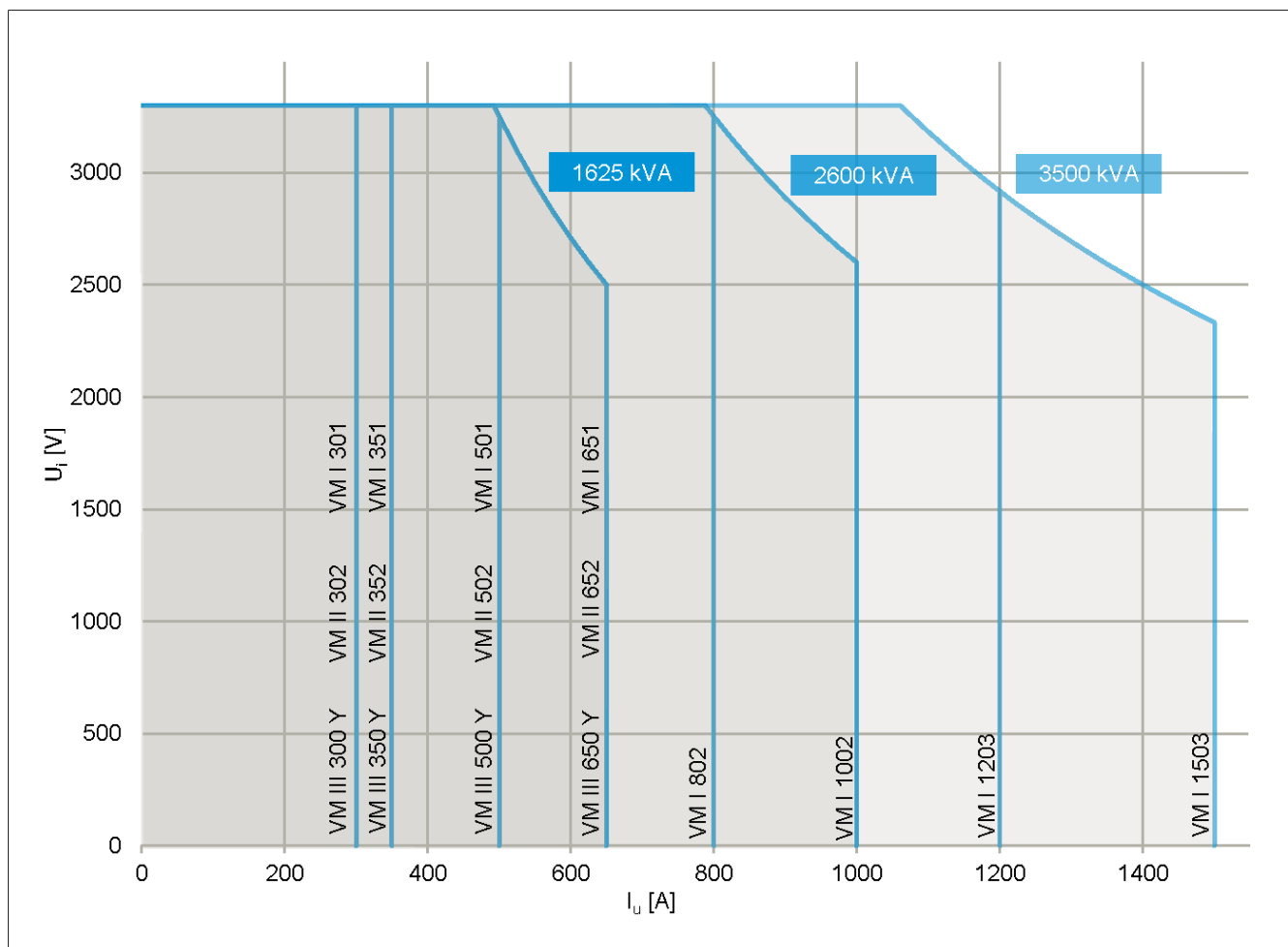


Figura 5: potenze di gradino (tensione di gradino nominale U_g con corrente passante nominale I_g)

2.3.2 Diagramma delle potenze di gradino per applicazioni da forno ad arco elettrico VACUTAP® VM® e VM 300

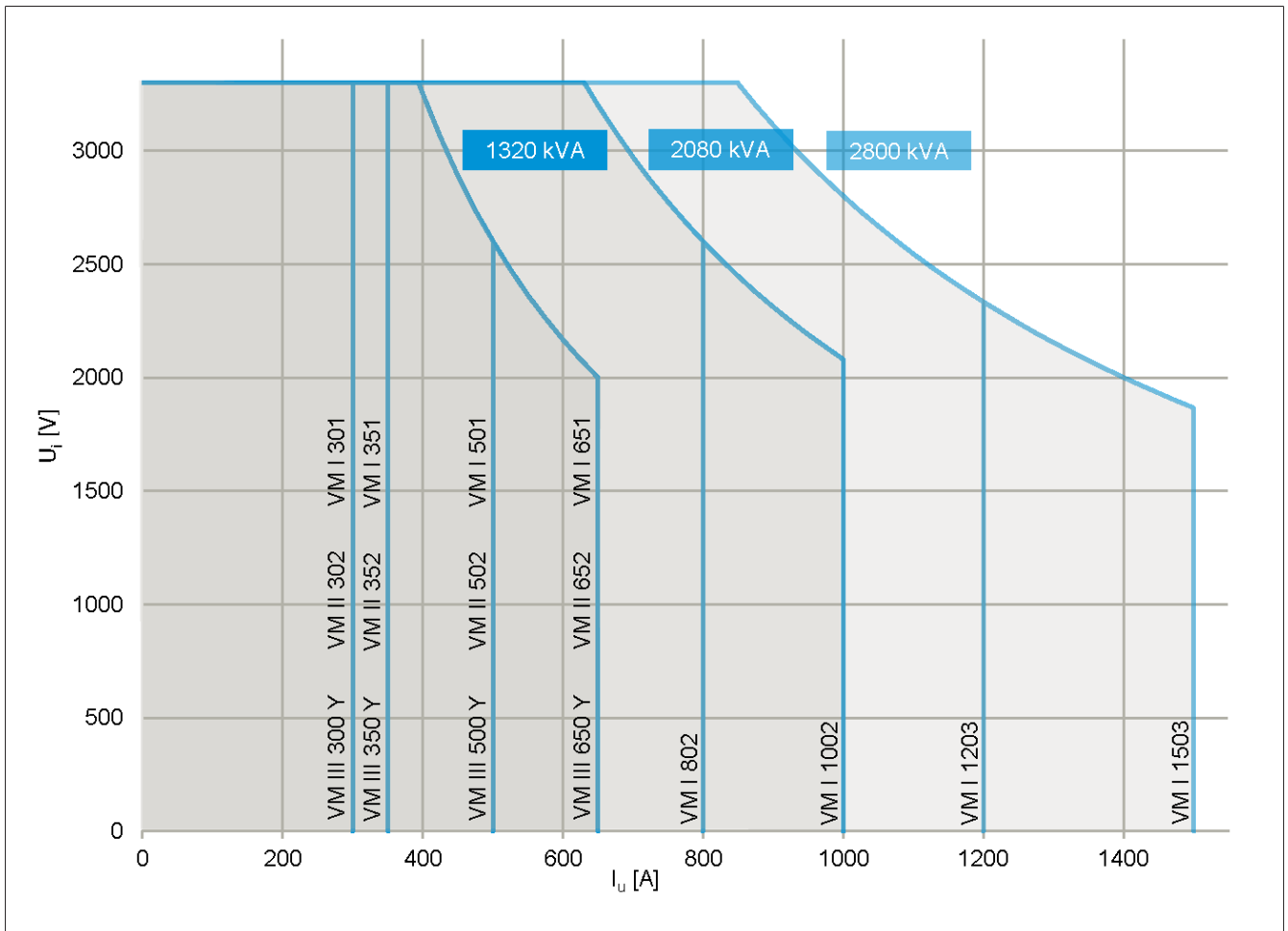


Figura 6: potenze di gradino (tensione di gradino nominale U_g , con corrente passante nominale I_g)

2.3.3 Diagramma delle potenze di gradino per applicazioni di rete VACUTAP® VMS® III

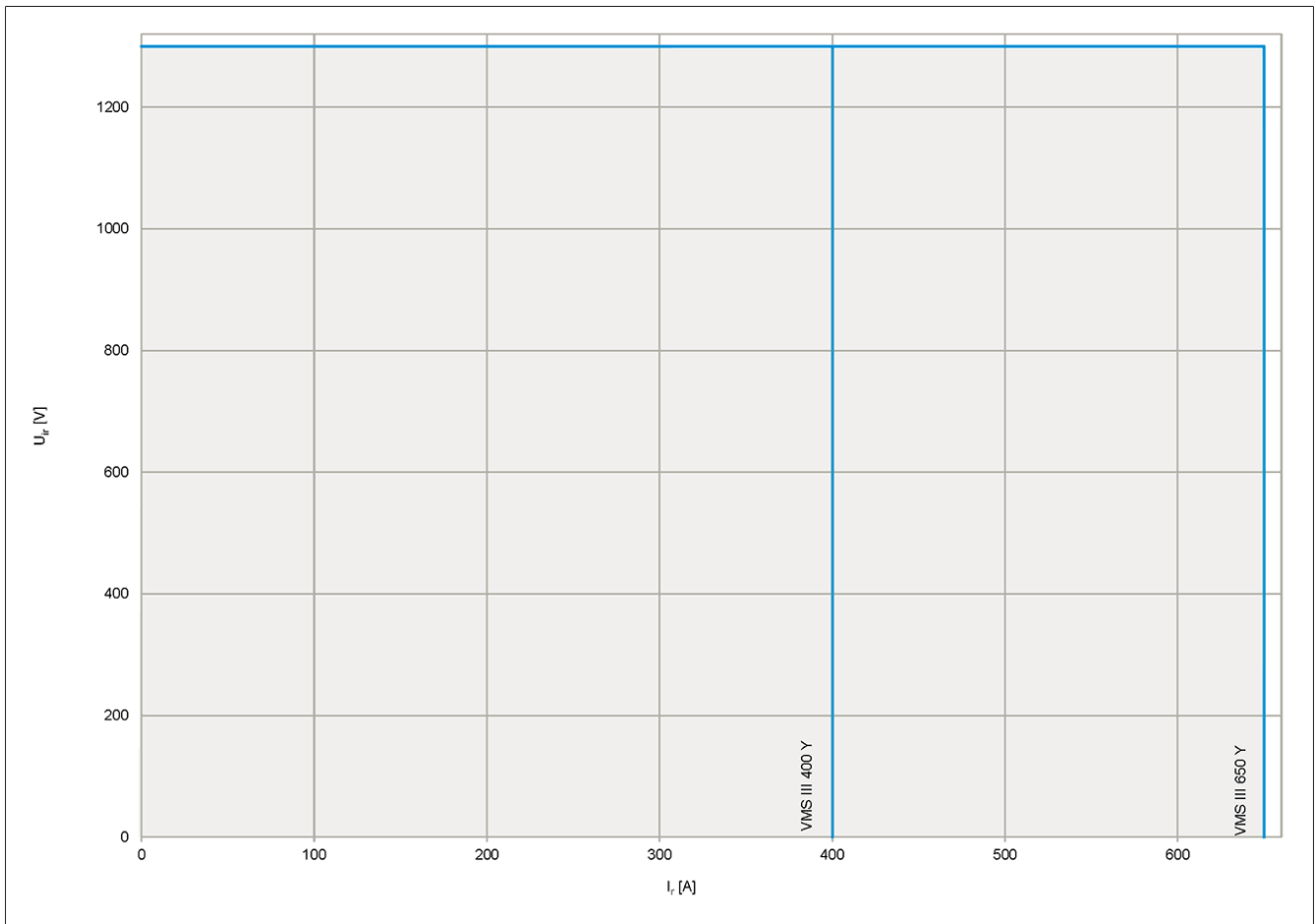


Figura 7: potenze di gradino (tensione di gradino nominale U_{ir} con corrente passante nominale I_r)

2.4 Sollecitazioni di tensione ammesse

In questa sezione sono descritte le sollecitazioni di tensione ammesse sul commutatore sotto carico.

Nella scelta del commutatore sotto carico occorre verificare che le sollecitazioni massime che si verificano non superino le relative tensioni di tenuta nominali sulle distanze di isolamento.

2.4.1 Distanze di isolamento senza preselettore multiplo di gradini grossolani

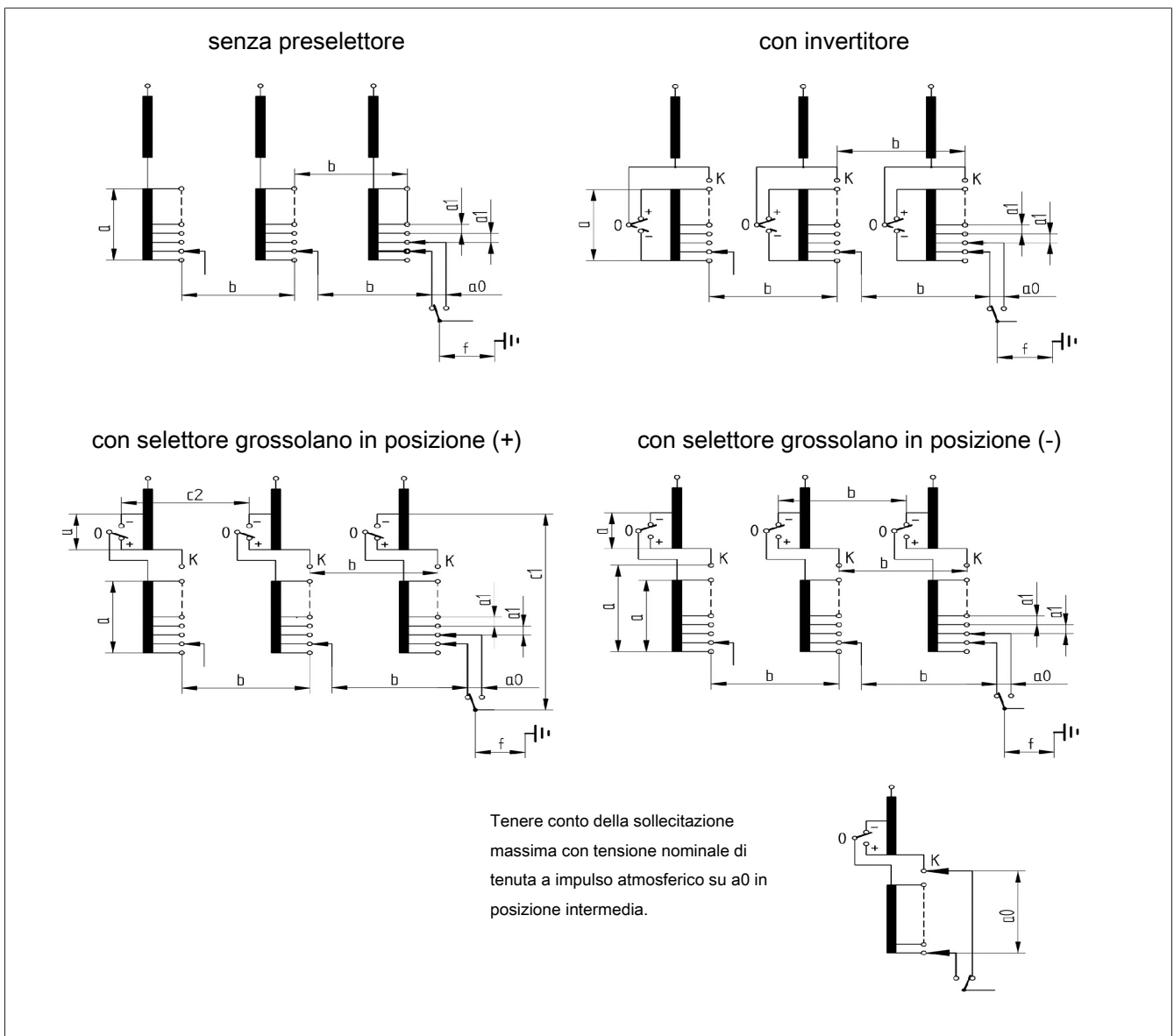


Figura 8: Distanze di isolamento

a0	fra contatto di posizione selezionato e preselezionato su interruttore
a1	fra contatti del selettore fine dell'avvolgimento di un gradino (connesso o non connesso)
a	fra inizio e fine di un avvolgimento fine e, nella versione con avvolgimento grossolano, fra inizio e fine di un avvolgimento grossolano Avvertenza per collegamento ad avvolgimento grossolano in posizione (-) del preselettore: Soprattutto in caso di sollecitazione con tensione ad impulso si deve tenere conto della tensione di tenuta ammissibile "a" fra la fine di un avvolgimento grossolano collegato con il contatto del selettore fine K e il contatto del selettore fine alla fine dell'avvolgimento fine della stessa fase.
b	fra i contatti del selettore fine di fasi diverse e fra i contatti del preselettore di fasi diverse che sono collegati con l'inizio/la fine di un avvolgimento fine o con un contatto del selettore fine.
f	fra derivazione dell'interruttore e terra
Inoltre, in caso di collegamento ad avvolgimento grossolano in posizione (+) del preselettore:	
c1	da un contatto (-) del preselettore verso la derivazione della stessa fase
c2	fra contatti (-) del preselettore di fasi diverse

Abbreviazioni per il livello di isolamento nominale:

LI	tensione ad impulso atmosferico ad onda piena (kV, 1,2/50 μ s)
LIC	tensione ad impulso atmosferico ad onda tronca (kV, 1,2/50/3 μ s)
SI	tensione di tenuta a impulso di manovra (kV, 250/2500 μ s)
CA	tensione applicata (kV, 50 Hz, 1 min)

Livello di isolamento nominale su interruttore

Distanza di isolamento f				
U_m ¹⁾	LI	LIC	SI	CA
72,5	350	385	-	140
123	550	605	460	230
170	750	825	620	325
245 ²⁾	1 050	1 155	850	460
300 ²⁾³⁾	1 050	1 155	850	460

Tabella 14: Livello di isolamento nominale su interruttore

¹⁾ Secondo IEC 60214-1: il valore massimo effettivo di una tensione fra due fasi in un sistema trifase per il quale è dimensionato un commutatore sotto carico relativamente al suo isolamento.

²⁾ VACUTAP® VMS® solo fino a $U_m=170$ kV

³⁾ Solo commutatori sotto carico monofase

Livello di isolamento nominale per isolamento interno sul selettore, VACUTAP® VM® I II III, tipo di selettore B, C, D, DE e VACUTAP® VMS® III, tipo di selettore C, senza preselettore multiplo di gradini grossolani

La tensione di esercizio massima ammissibile sulle singole distanze dei selettori corrisponde a metà del valore dei valori riportati per tensione applicata (AC).

Distanza di isolamento		Tipo di selettore			
		B	C	D	IT
a0	LI	150 ²⁾			150 ²⁾
	LIC	165 ²⁾			165 ²⁾
	SI	100 ²⁾			100 ²⁾
	CA	20			20
a1	LI	150			150
	LIC	165			165
	SI	100			100
	CA	30			30
a	LI	265	350	490	550
	LIC	295	385	540	605
	SI	175	230	320	360
	CA	50	82	105	120
b ¹⁾	LI	265	350	490	550
	LIC	295	385	540	605
	SI	175	230	320	360
	CA	50	82	146	160
c1	LI	485	545	590	660
	LIC	535	600	650	725
	SI	315	355	385	430
	CA	143	178	208	230
c2 ¹⁾	LI	495	550	590	660
	LIC	545	605	650	725
	SI	325	360	385	430
	CA	150	182	225	250

Tabella 15: livello di isolamento nominale dell'isolamento interno del selettore

¹⁾ Non prevista per commutatori sotto carico monofase

²⁾ Tensione d'intervento varistore con impulso atmosferico 1,2/50 µs: da 45 kV ($U_{100\%}(t)_{standardizzata} \neq U_{75\%}(t)_{standardizzata}$), tensione residua con corrente di picco 3 kA: 56 kV

Livello di isolamento nominale per isolamento interno sul selettore, VACUTAP® VM 300 e VACUTAP® VMS® III, tipo di selettore B, senza preselettore multiplo di gradini grossolani

La tensione di esercizio massima ammissibile sulle singole distanze dei selettori corrisponde a metà del valore dei valori riportati per tensione applicata (AC).

Distanza di isolamento		Tipo di selettore B
a0	LI	150 ¹⁾
	LIC	165 ¹⁾
	SI	100 ¹⁾
	CA	20
a	LI	300
	LIC	330
	SI	195
	CA	70
b	LI	300
	LIC	330
	SI	195
	CA	70
c1	LI	400
	LIC	440
	SI	260
	CA	120
C2	LI	400
	LIC	440
	SI	260
	CA	120

Tabella 16: livello di isolamento nominale dell'isolamento interno del selettore

¹⁾ Tensione d'intervento varistore con impulso atmosferico 1,2/50 µs: da 45 kV ($U_{100\%}(t)_{standardizzata} \neq U_{75\%}(t)_{standardizzata}$), tensione residua con corrente di picco 3 kA: 56 kV

2.4.2 Distanze di isolamento con preselettore multiplo di gradini grossolani

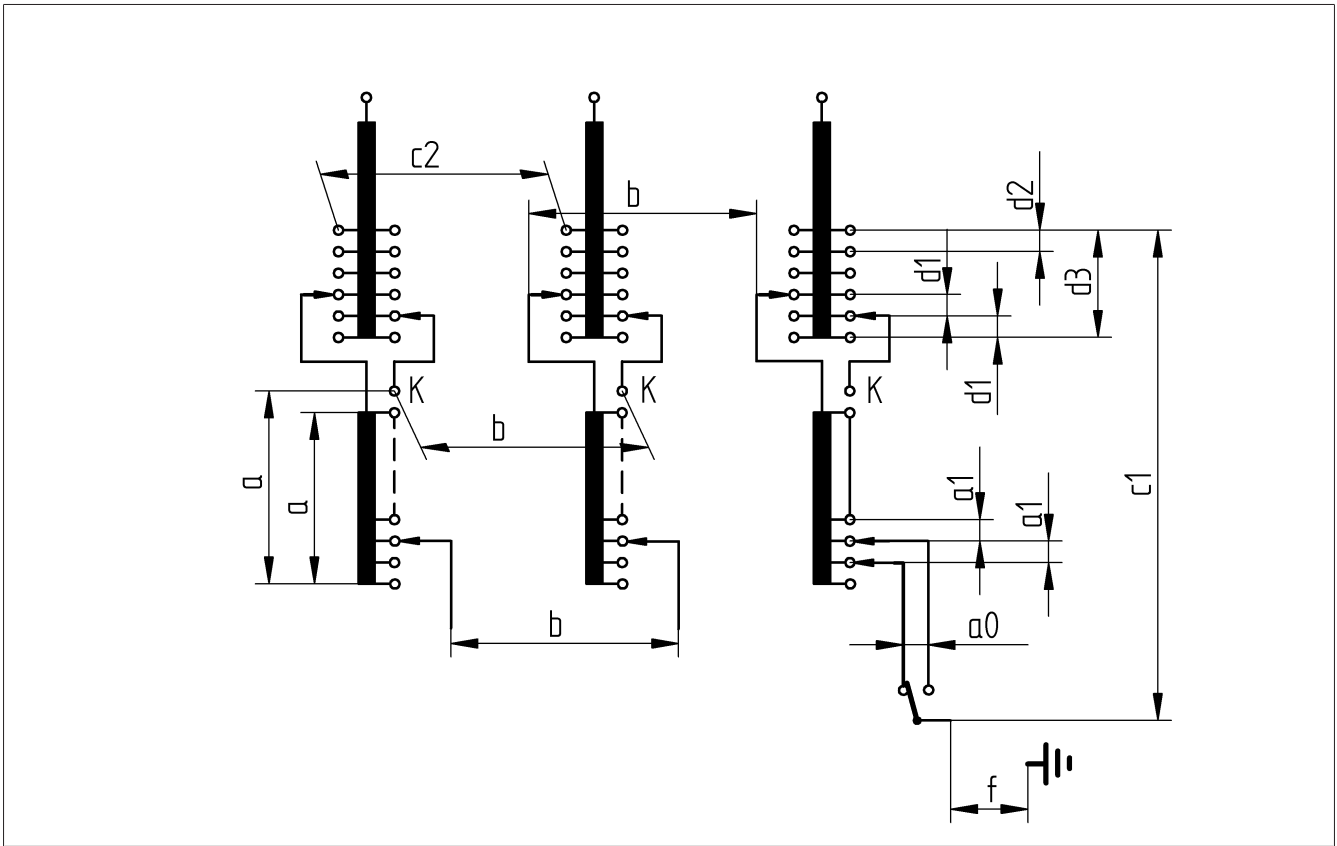


Figura 9: distanze di isolamento VACUTAP® VM® I II III, tipo di selettore B, C, D con preselettore multiplo di gradini grossolani

a0	fra contatto di posizione selezionato e preselezionato su interruttore
a1	fra contatti del selettore fine dell'avvolgimento di un gradino (connesso o non connesso)
a	fra inizio e fine di un avvolgimento fine e fra il contatto K connesso e qualsiasi punto dell'avvolgimento fine della stessa fase
b	fra i contatti del selettore fine di fasi diverse e fra il contatto K connesso di una fase e qualsiasi punto dell'avvolgimento fine di un'altra fase
c1	fra qualsiasi contatto di posizione di gradino grossolano di una fase e la derivazione dell'interruttore della stessa fase
c2	fra gli stessi contatti di posizione di gradino grossolano non connessi di fasi diverse
d1	fra contatto di gradino grossolano connesso ed adiacente in una fase
d2	tra contatti di gradino grossolano non connessi ed adiacenti di una fase
d3	fra l'inizio e la fine di tutti i gradini grossolani di una fase
f	fra derivazione dell'interruttore e terra

Per distanza di isolamento f vedere Livello di isolamento nominale su interruttore

Livello di isolamento nominale per isolamento interno sul selettore, con preselettore multiplo di gradini grossolani, VACUTAP® VM® I II III, tipo di selettore B, C, D

La tensione di esercizio massima ammissibile sulle singole distanze dei selettori corrisponde a metà del valore dei valori riportati per tensione applicata (AC).

Distanza di isolamento		Tipo di selettore		
		B	C	D
a0	LI	150 ²⁾		
	LIC	165 ²⁾		
	SI	100 ²⁾		
	CA	20		
a1	LI	150		
	LIC, SI	valori su richiesta		
	CA	30		
a	LI	265	350	450
	LIC, SI	valori su richiesta		
	CA	50	82	105
b ¹⁾	LI	265	350	450
	LIC, SI	valori su richiesta		
	CA	50	82	146
c1	LI	455	525	590
	LIC, SI	valori su richiesta		
	CA	127	165	210
c2 ¹⁾	LI	455	525	590
	LIC, SI	valori su richiesta		
	CA	127	165	215
d1	LI	265	350	450
	LIC, SI	valori su richiesta		
	CA	50	82	105
d2	LI	350	450	450
	LIC, SI	valori su richiesta		
	CA	82	105	105
d3	LI	350	450	490
	LIC, SI	valori su richiesta		
	CA	82	105	120

Tabella 17: livello di isolamento nominale dell'isolamento interno sul selettore con preselettore multiplo di gradini grossolani

¹⁾ Non prevista per commutatori sotto carico monofase

²⁾ Tensione d'intervento varistore con impulso atmosferico 1,2/50 μ s: da 45 kV ($U_{100\%}(t)_{standardizzata} \neq U_{75\%}(t)_{standardizzata}$), tensione residua con corrente di picco 3 kA: 70 kV

2.4.3 Commutazioni realizzabili

Collegamenti realizzabili con relativo tipo di selettore VACUTAP® VM® I II III

I collegamenti indicati qui di seguito possono essere realizzati anche per il pre-selettore con invertitore e 3 posizioni intermedie (3W) e per il preselettore con gradino grossolano e 3 posizioni intermedie (3G).

senza preselettore		con invertitore		Con selettore grossolano	
Collegamento	Tipo di selettore	Collegamento	Tipo di selettore	Collegamento	Tipo di selettore
10050	B/C/D/DE	10071W	B/C/D/DE	10071G	B/C/D/DE
10060	B/C/D/DE	10081W	B/C/D/DE	10081G	B/C/D/DE
10070	B/C/D/DE	10091W	B/C/D/DE	10091G	B/C/D/DE
10080	B/C/D/DE	12101W	B/C/D/DE	12101G	B/C/D/DE
10090	B/C/D/DE	12111W	B/C	12111G	B/C
10100	B/C/D/DE	14111W	D/DE	14111G	D/DE
12110	B/C/D/DE	14121W	B/C	14121G	B/C
12120	B/C/D/DE	14131W	B/C	14131G	B/C
14130	B/C/D/DE	16121W	D/DE	16121G	D/DE
14140	B/C/D/DE	16131W	D/DE	16131G	D/DE
16150	B/C/D/DE	16141W	B/C/D/DE	16141G	B/C/D/DE
16160	B/C/D/DE	16151W	B/C	16151G	B/C
18170	B/C/D/DE	18151W	D/DE	18151G	D/DE
18180	B/C/D/DE	18161W	B/C	18161G	B/C
22190	B/C/D/DE	18171W	B/C	18171G	B/C
22200	B/C/D/DE	10191W	B/C/D/DE	10191G	B/C/D/DE
22210	B/C	12231W	B/C/D/DE	12231G	B/C/D/DE
22220	B/C	14271W	B/C/D/DE	14271G	B/C/D/DE
		16311W	B/C/D/DE	16311G	B/C/D/DE
		18351W	B/C/D/DE	18351G	B/C/D/DE

Tabella 18: collegamenti realizzabili VACUTAP® VM® I II III

collegamenti realizzabili VACUTAP® VMS® III, tipo di selettore C

I collegamenti indicati qui di seguito possono essere realizzati anche per il pre-selettore con invertitore e 3 posizioni intermedie (3W) e per il preselettore con gradino grossolano e 3 posizioni intermedie (3G).

Collegamento senza preselettore	Collegamento con invertitore	Collegamento con selettore grossolano
10050	10071W	10071G
10060	10081W	10081G
10070	10091W	10091G
10080	12101W	12101G
10090	12111W	12111G
10100	14121W	14121G

Collegamento senza preselettore	Collegamento con invertitore	Collegamento con selettore grossolano
12110	14131W	14131G
12120	16141W	16141G
14130	16151W	16151G
14140	18161W	18161G
16150	18171W	18171G
16160	10191W	10191G
18170	12231W	12231G
18180	14271W	14271G
	16311W	16311G
	18351W	18351G

Tabella 19: collegamenti realizzabili VACUTAP® VMS® III, tipo di selettore C

Collegamenti realizzabili VACUTAP® VM 300 e VACUTAP® VMS® III, tipo di selettore B

I collegamenti contrassegnati con ¹⁾ possono essere realizzati anche per il preselettore con invertitore e 3 posizioni intermedie (3W) e per il preselettore con gradino grossolano e 3 posizioni intermedie (3G).

Collegamento senza preselettore	Collegamento con invertitore	Collegamento con selettore grossolano
10100	10091W	10091G
12120	12111W	12111G
14140	14131W	14131G
	10191W ¹⁾	10191G ¹⁾
	12231W ¹⁾	12231G ¹⁾
	14271W ¹⁾	14271G ¹⁾

Tabella 20: collegamenti realizzabili VACUTAP® VMS® III, tipo di selettore B

3 Versioni speciali

3.1 Ponti per la commutazione in parallelo di livelli del selettore

Per la ripartizione della corrente ai contatti di collegamento del selettore su 2 piani solo per commutatori sotto carico VACUTAP® VM I 802/1002 e su 3 piani solo per commutatori sotto carico VACUTAP® VM I 1203/1503.

I ponticelli dei contatti del selettore sono assolutamente necessari se l'avvolgimento di regolazione è stato avvolto su due o più vie e ciascuna di queste vie viene connessa ai contatti di collegamento del selettore come contatto di posizione.

Questo provvedimento impedisce sicuramente:

- Il trasferimento di correnti di compensazione nei circuiti di corrente di selettore e interruttore
- Un arco voltaico di commutazione sui ponti dei contatti mobili del selettore
- Sovratensioni fra contatti di collegamento del selettore adiacenti e connessi in parallelo

3.2 Combinazione di commutatori sotto carico per collegamento a triangolo

È possibile combinare commutatori sotto carico monofase con commutatori sotto carico bifase per regolare la tensione degli avvolgimenti del trasformatore in un collegamento a triangolo. Questa combinazione di commutatori sotto carico a due colonne è designata con "VR III K" (dove "K" sta per la parola tedesca "Kombination" ovvero "combinazione").

Sono possibili le seguenti combinazioni di commutatori sotto carico:

- VM I 301 con VM II 302
- VM I 351 con VM II 352
- VM I 501 con VM II 502
- VM I 651 con VM II 652

Prevedere gli avvolgimenti di regolazione come da grafica seguente:

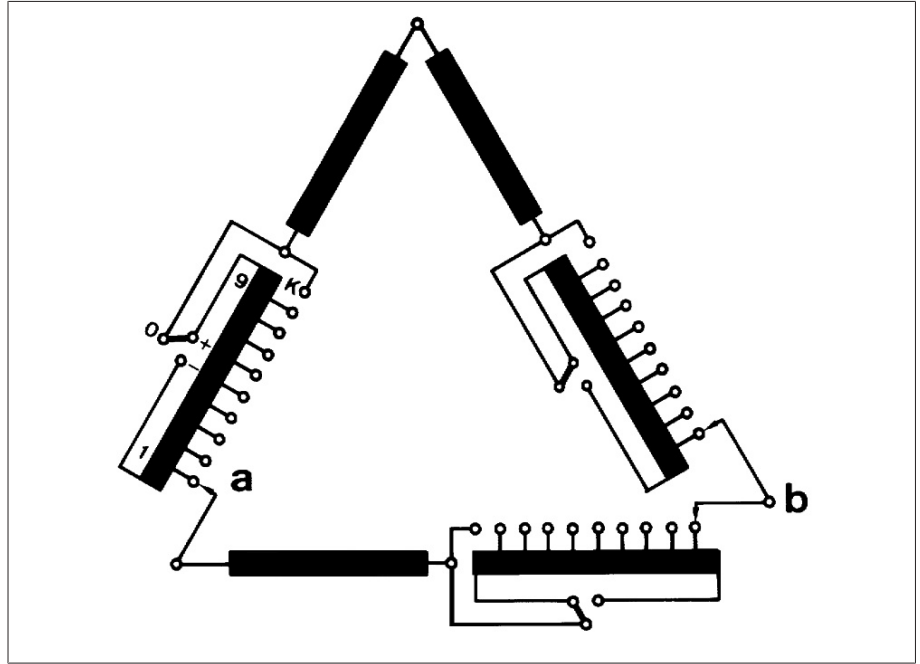


Figura 10: combinazione di commutatori sotto carico VM III K per collegamento a triangolo VM I 351/VM II 352 (a = VM I 351, b = VM II 352)

3.3 Commutatori sotto carico VACUTAP® VM III 650 Y...VM I 1503 con preselettore multiplo di gradini grossolani (fino a massimo 5 gradini grossolani)

Per una regolazione della tensione particolarmente precisa è necessario un numero elevato di posizioni di esercizio che può essere realizzato, in certe situazioni, solo con un selettore di gradini grossolani multipli.

Ad esempio, utilizzando un avvolgimento grossolano a 5 gradini e un avvolgimento fine con 18 derivazioni, si possono ottenere 107 posizioni di esercizio.

Il preselettore di gradini grossolani multipli è montato alle due estremità del selettore fine

I commutatori sotto carico sono disponibili per U_m da 72,5 a max. 300 kV e per 2...5 gradini grossolani (serie di selettori B, C e D).

3.4 Commutatore sotto carico a due fasi VACUTAP® VM II 302/352/502/652

Il commutatore sotto carico VM II 302/352/502/652 è disponibile come commutatore sotto carico a due fasi per collegamento a punto intermedio monofase con gli stessi dati tecnici corrispondenti del commutatore sotto carico VM III 300 Y, VM III 350 Y, VM III 500 Y o VM III 650 Y.

3.5 Commutatore sotto carico per collegamento a stella con centro stella aperto

Ai commutatori sotto carico con centro stella aperto possono essere collegati **soltanto trasformatori di corrente** al centro stella aperto, poiché in caso contrario possono verificarsi sovratensioni inammissibili sul centro stella.



Non devono essere collegate bobine d'induttanza.

Collegamento delle tre derivazioni del comparto dell'olio (= centro stella aperto)	VACUTAP VM III 300/350/500/650 Y	
Collegamento del trasformatore di corrente e creazione del centro stella al di fuori del commutatore sotto carico	A) Tensioni di prova ammissibili tra i contatti di derivazione della camera d'olio	
	- Tensione nominale di tenuta a impulso atmosferico	< 140 kV (1,2/50 µS) ¹⁾
	- Tensione nominale di tenuta a frequenza industriale	1 kV (50 Hz, 1 min.)
	B) Tensione d'esercizio massima ammissibile tra i contatti di derivazione della camera d'olio	1 kV (50...60 Hz)
¹⁾ Tensione d'intervento varistore con impulso atmosferico 1,2/50 µs: > 1,4 kV, tensione residua con corrente di picco 1000 A (8/20 µs) < 3 kV; massima sollecitazione energetica ammessa del varistore < 100 J		

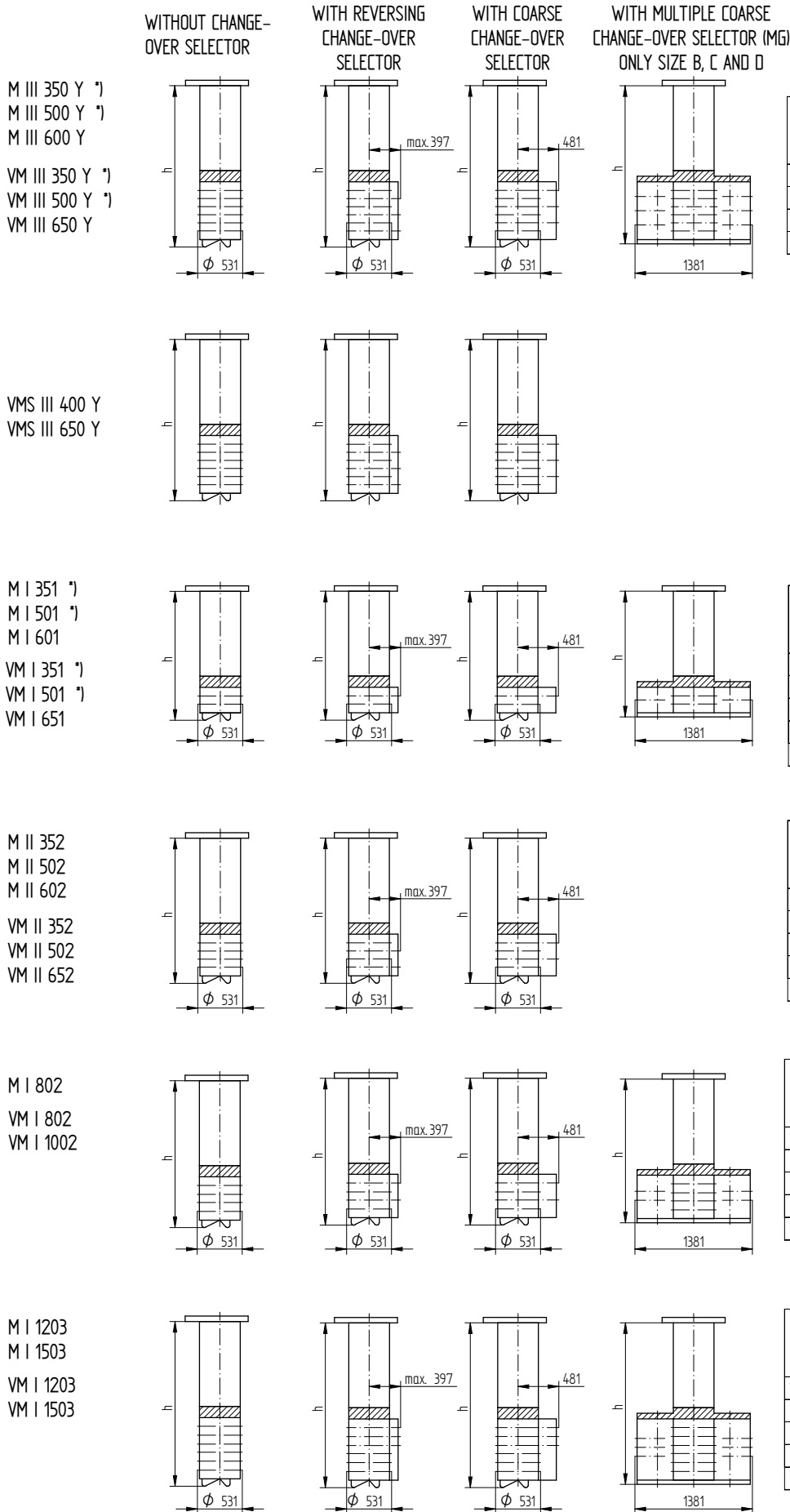
Tabella 21: Tensioni di prova e tensioni d'esercizio ammissibili per VACUTAP® VM III 300/350/500/650 Y

4 Disegni

4.1 Panoramica modelli

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DATE	NAME	DOCUMENT NO.
DFTR. 13.07.2018	BUTERUS	SED 1663609 000 04
CHKD. 16.07.2018	WILHELM	SCALE
STAND. 16.07.2018	PRODASTSCHUK	CHANGE NO. 1086956



M III 350 Y *)
 M III 500 Y *)
 M III 600 Y
 VM III 350 Y *)
 VM III 500 Y *)
 VM III 650 Y

VMS III 400 Y
 VMS III 650 Y

M I 351 *)
 M I 501 *)
 M I 601
 VM I 351 *)
 VM I 501 *)
 VM I 651

M II 352
 M II 502
 M II 602
 VM II 352
 VM II 502
 VM II 652

M I 802
 VM I 802
 VM I 1002

M I 1203
 M I 1503
 VM I 1203
 VM I 1503

*) NOT AVAILABLE AS MULTIPLE COARSE CHANGE-OVER SELECTOR (MG)

INSTALLATION LENGTH h IN MM

U _m [kV]	SELECTOR SIZE					
	B		C		D/DE	D
	0/W/G	MG	0/W/G	MG	0/W/G	MG
72,5	1894	1856	2069	2031	2524	2486
123	2024	1986	2199	2161	2654	2616
170	2154	2116	2329	2291	2784	2746
245	2254	2216	2429	2391	2884	2846

U _m [kV]	SELECTOR SIZE	
	C	
	0/W/G	
72,5	2069	
123	2199	
170	2329	

U _m [kV]	SELECTOR SIZE					
	B		C		D/DE	D
	0/W/G	MG	0/W/G	MG	0/W/G	MG
72,5	1514	1476	1589	1551	1784	1746
123	1644	1606	1719	1681	1914	1876
170	1774	1736	1849	1811	2044	2006
245	1874	1836	1949	1911	2144	2106
300	2026	1988	2101	2063	2296	2258

U _m [kV]	SELECTOR SIZE			
	B	C	D/DE	
	0/W/G	0/W/G	0/W/G	
72,5	1704	1829	2154	
123	1834	1959	2284	
170	1964	2089	2414	
245	2064	2189	2514	
300	2216	2341	2666	

U _m [kV]	SELECTOR SIZE					
	B		C		D/DE	D
	0/W/G	MG	0/W/G	MG	0/W/G	MG
72,5	1724	1686	1799	1761	1994	1956
123	1854	1816	1929	1891	2124	2086
170	1984	1946	2059	2021	2254	2216
245	2084	2046	2159	2121	2354	2316
300	2236	2198	2311	2273	2506	2468

U _m [kV]	SELECTOR SIZE					
	B		C		D/DE	D
	0/W/G	MG	0/W/G	MG	0/W/G	MG
72,5	1934	1896	2009	1971	2204	2166
123	2064	2026	2139	2101	2334	2296
170	2194	2156	2269	2231	2464	2426
245	2294	2256	2369	2331	2564	2526
300	2446	2408	2521	2483	2716	2678

DIMENSION IN mm EXCEPT AS NOTED



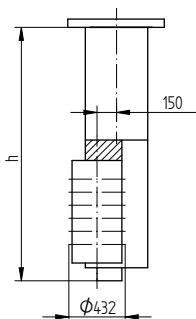
ON-LOAD TAP-CHANGER OILTAP® M / VACUTAP® VM®, VMS®-C
M-SELECTOR SIZE B/C/D/DE
SURVEY OF MODELS

SERIAL NUMBER

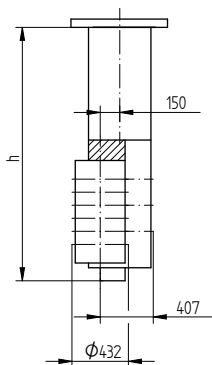
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WITHOUT
CHANGE-OVER SELECTOR



WITH
CHANGE-OVER SELECTOR



INSTALLATION LENGTH h IN MM

VMS III 400 Y

U _m [kV]	SELECTOR SIZE B
72,5	1942
123	2072
170	2202

DATE	NAME	DOCUMENT NO.
11.07.2018	BUTERUS	SED 6185260 001 00
CHKD. 16.07.2018	WILHELM	CHANGE NO.
STAND. 16.07.2018	PRODASTSCHUK	1086956
		SCALE
		-

DIMENSION
IN mm
EXCEPT AS
NOTED



ON-LOAD TAP-CHANGER VACUTAP® VMS®
 SELECTOR SIZE B
 SURVEY OF MODELS

SERIAL NUMBER

MATERIAL NUMBER	SHEET
101170260E	1/1

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DATE	NAME	DOCUMENT NO.
22.01.2016	RAEDLINGER	SED 24:16819 001 01
25.02.2016	TKBIRKMANN	CHANGE NO.
25.02.2016	PRODASTSCHUK	1072100
SCALE		-

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



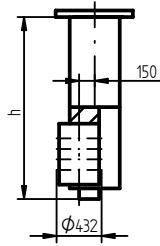
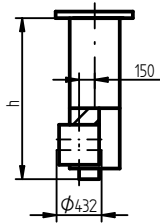
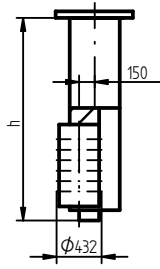
ON-LOAD TAP-CHANGER VACUTAP® VM 300
 SELECTOR SIZE B
 SURVEY OF MODELS

SERIAL NUMBER

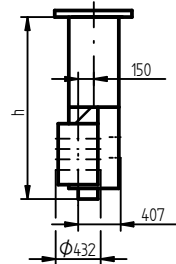
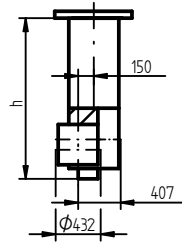
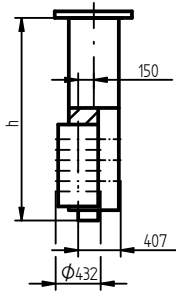
MATERIAL NUMBER
 7658351E

SHEET
 1/1

without
 change-over selector



with
 change-over selector



Installation length h in mm

VM III 300 Y

U _m [kV]	Selector size B
72,5	1942
123	2072
170	2202
245	2302

VM I 301

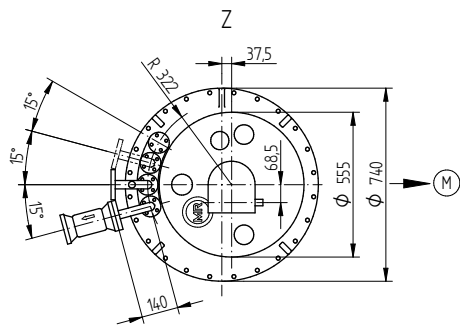
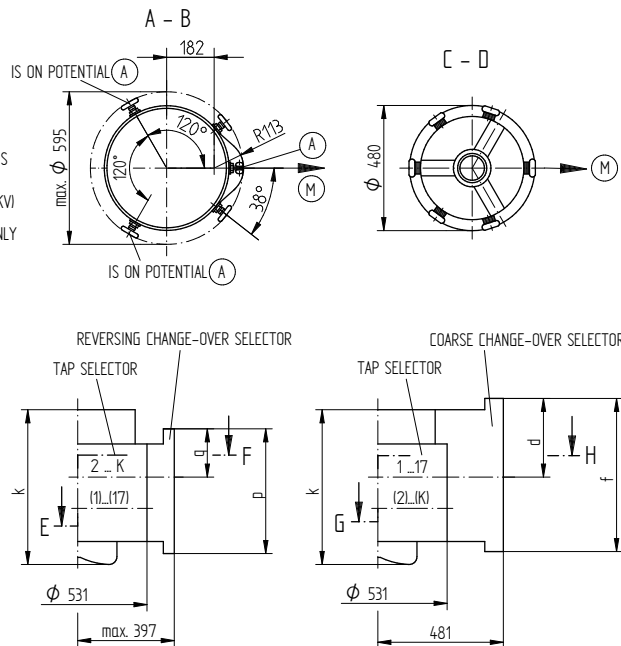
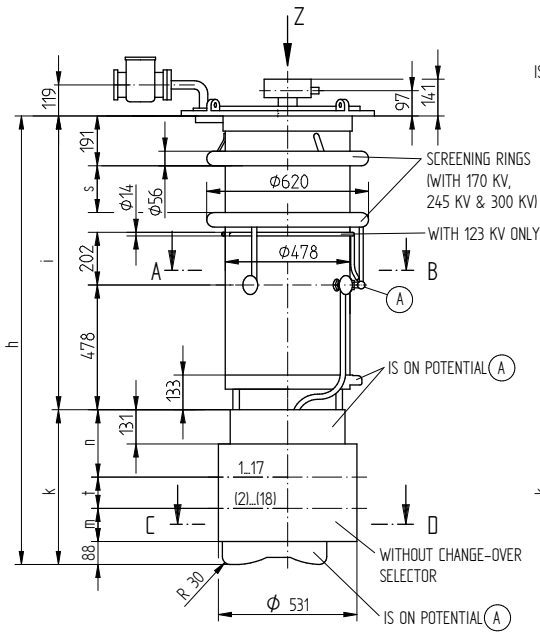
U _m [kV]	Selector size B
72,5	1542
123	1672
170	1802
245	1902

VM II 302

U _m [kV]	Selector size B
72,5	1742
123	1872
170	2002
245	2102

4.2 Disegni quotati

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E - F
REFER TO 723590

G - H
REFER TO 723590

FOR INHERENT DRAWINGS REFER TO 898012

- (A) ON-LOAD TAP-CHANGER TAKE-OFF LEAD
- (M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

SELECTOR SIZE	B					C					D / DE					
	U _M [KV]	72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300
DIMENSIONS [MM]	h	1514	1644	1774	1874	2026	1589	1719	1849	1949	2101	1784	1914	2044	2144	2296
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508
	s	-	-	267	367	520	-	-	267	367	520	-	-	267	367	520
	k	518					593					788				
	n	233					258					323				
	m	102					127					192				
	t	95					120					185				
	q	160					185					250				
	p	403					478					673				
	d	276.5					3015					366.5				
f	512					587					782					
OIL VOLUME [DM ³]	130	150	170	190	210	130	150	170	190	210	130	150	170	190	210	
DISPLACEMENT [DM ³]	193	218	238	258	278	193	218	238	258	278	195	220	240	260	280	
WEIGHT [KG]	280	285	290	295	300	290	295	300	305	310	300	305	310	315	320	

DATE	NAME	DOCUMENT NO.
18.12.2015	RAEDLINGER	SED 2312716 001 01
01.12.2015	TKBIRKMAN	CHANGE NO.
01.12.2015	PRODASTSCHUK	1069171
DFTR.	SCALE	1:10

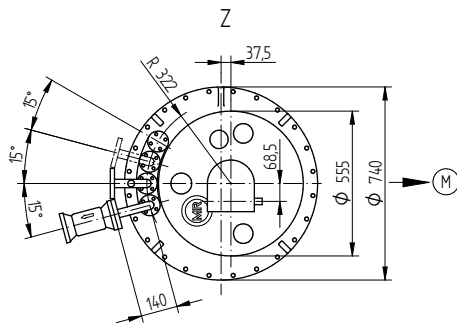
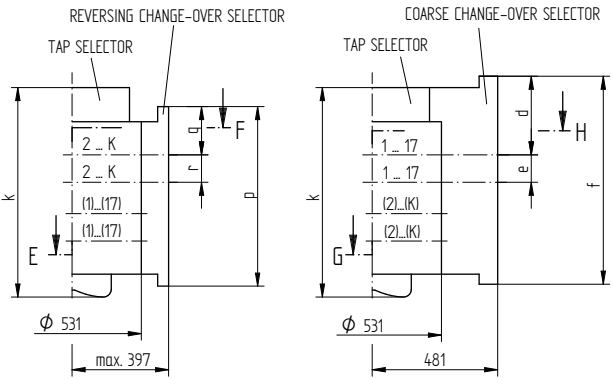
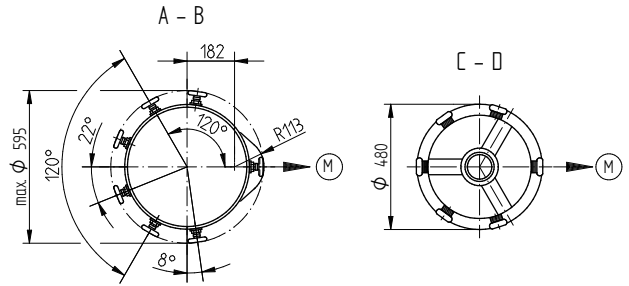
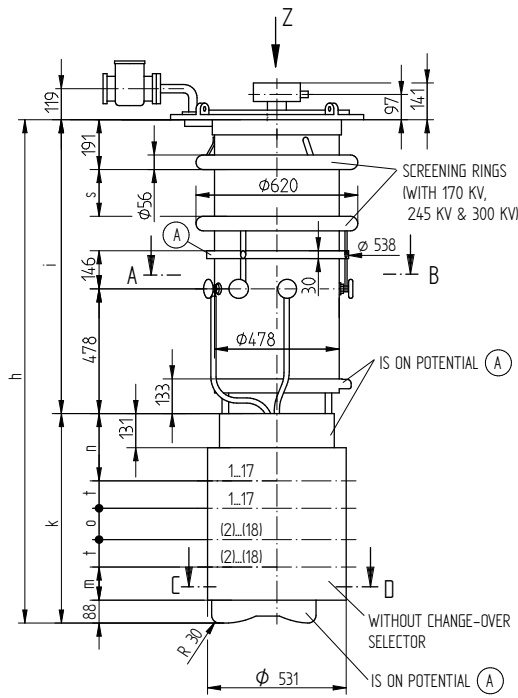
DIMENSION IN mm EXCEPT AS NOTED



ON-LOAD TAP-CHANGER VACUTAP® VM
 VM I 351/501/651 - B/C/D/DE - 0/W/G
 DIMENSION DRAWING

SERIAL NUMBER	
MATERIAL NUMBER	SHEET
7462211E	1/1

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E - F
REFER TO 723590

G - H
REFER TO 723590

FOR INHERENT DRAWINGS REFER TO 898012

- (A) ON-LOAD TAP-CHANGER TAKE-OFF TERMINAL
- (M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

SELECTOR SIZE	B					C					D / DE				
U _m [KV]	72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300
h	1724	1854	1984	2084	2236	1799	1929	2059	2159	2311	1994	2124	2254	2354	2506
i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508
s	-		267	367	520	-		267	367	520	-		267	367	520
k											998				
n											323				
o											185				
m											192				
t											105				
r											105				
q											250				
p											883				
e											105				
d											366.5				
f											992				
OIL VOLUME [DM ³]	130	150	170	190	210	130	150	170	190	210	130	150	170	190	210
DISPLACEMENT [DM ³]	196	221	241	261	281	196	221	241	261	281	199	224	244	264	284
WEIGHT [KG]	310	315	320	325	330	320	325	330	335	340	330	335	340	345	350

DATE	NAME	DOCUMENT NO.
18.12.2015	RAEDLINGER	SED 2312691 001 02
01.12.2015	TKBIRKMAN	CHANGE NO.
01.12.2015	PRODASTSCHUK	1069171
		SCALE
		1:10

DIMENSION IN mm EXCEPT AS NOTED



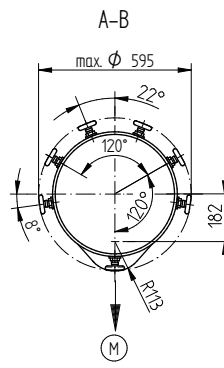
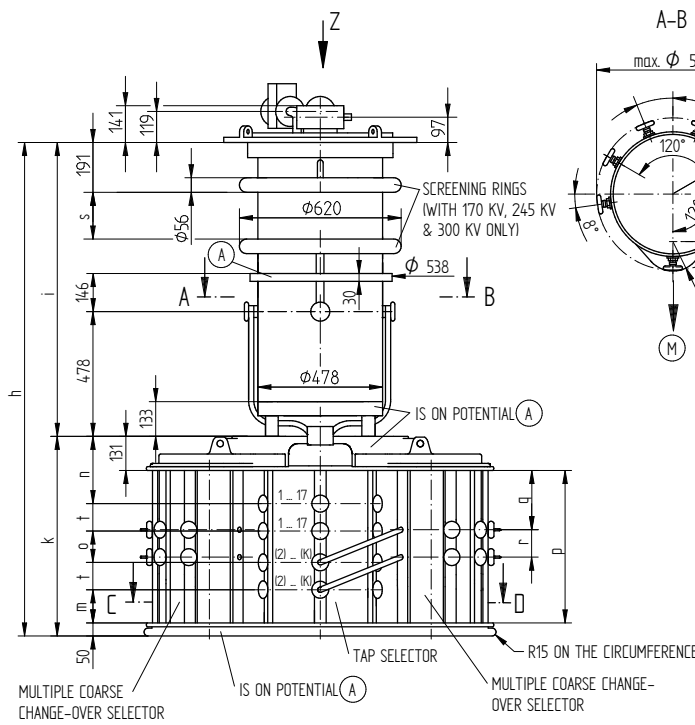
ON-LOAD TAP-CHANGER VACUTAP® VM
 VM I 802/1002 - B/C/D/DE - O/W/G
 DIMENSION DRAWING

SERIAL NUMBER

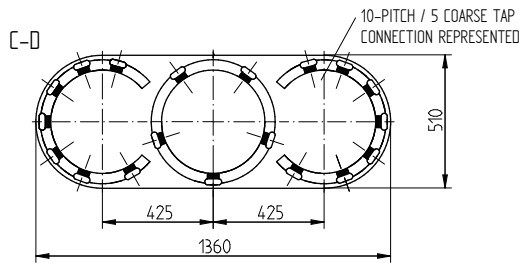
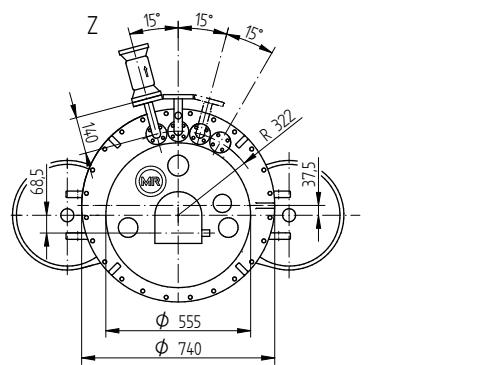
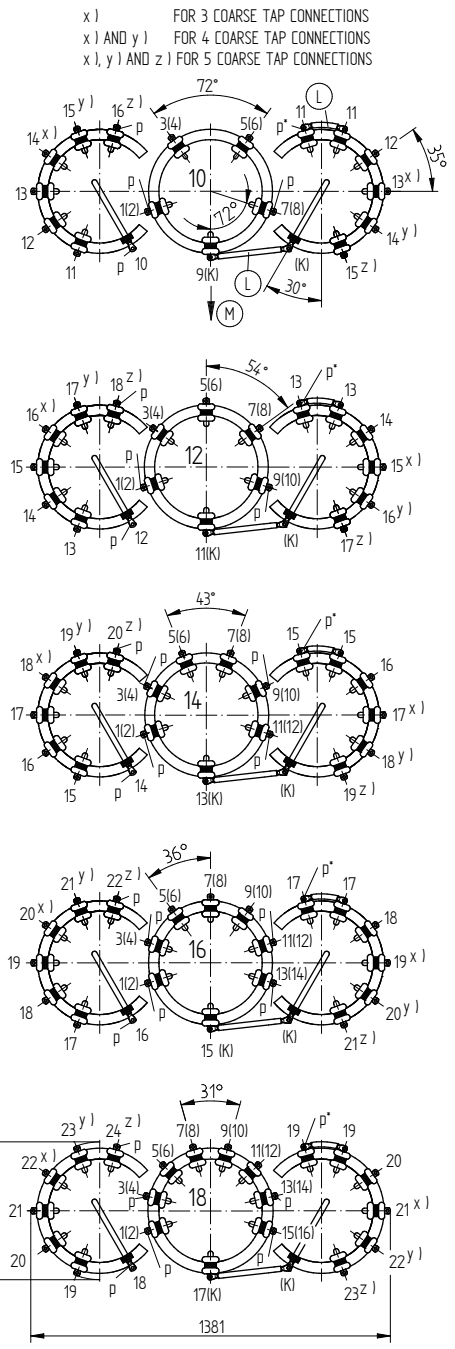
MATERIAL NUMBER
7462222E

SHEET
1/1

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ARRANGEMENT OF SELECTOR CONTACTS, 2-5 COARSE TAP CONNECTIONS (PLAN VIEW)



DOCUMENT NO.	SED 23/15/141 001 02
NAME	RAEDLINGER
DATE	18.11.2015
SCALE	1:10
CHANGE NO.	TKBRKMMANN
CHKD.	01.12.2015
PRODASTSCHUK	1069171
STAND.	01.12.2015

p = CONNECTION MIN. 3 MM PAPER INSULATED
 p' = CONNECTION ALREADY 3 MM PAPER INSULATED BY MR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

- (A) ON-LOAD TAP-CHANGER TAKE-OFF TERMINAL
- (L) CONNECTING LEAD
- (M) DRIVE SIDE OF SELECTOR

SELECTOR SIZE	B					C					D					
U _M [KV]	72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300	
DIMENSIONS [MM]	h	1686	1816	1946	2046	2198	1761	1891	2021	2121	2273	1956	2086	2216	2316	2468
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508
	s	-	-	267	367	520	-	-	267	367	520	-	-	267	367	520
	k	-	-	690	-	-	-	-	765	-	-	-	-	960	-	-
	n	-	-	233	-	-	-	-	258	-	-	-	-	323	-	-
	o	-	-	95	-	-	-	-	120	-	-	-	-	185	-	-
	m	-	-	102	-	-	-	-	127	-	-	-	-	192	-	-
	t	-	-	105	-	-	-	-	105	-	-	-	-	105	-	-
	r	-	-	105	-	-	-	-	105	-	-	-	-	105	-	-
	q	-	-	189,5	-	-	-	-	227	-	-	-	-	324,5	-	-
	p	-	-	509	-	-	-	-	584	-	-	-	-	779	-	-
OIL VOLUME [DM ³]	130	150	170	190	210	130	150	170	190	210	130	150	170	190	210	
DISPLACEMENT [DM ³]	200	225	245	265	285	200	225	245	265	285	208	233	253	273	293	
WEIGHT [KG]	410	415	420	425	430	420	425	430	435	440	430	435	440	445	450	

DIMENSION IN mm EXCEPT AS NOTED

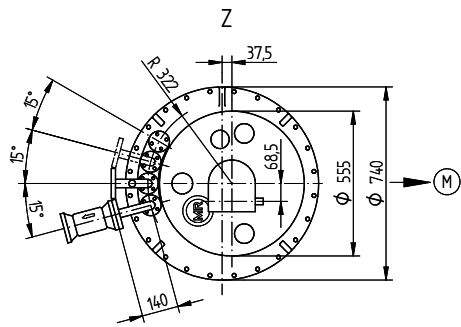
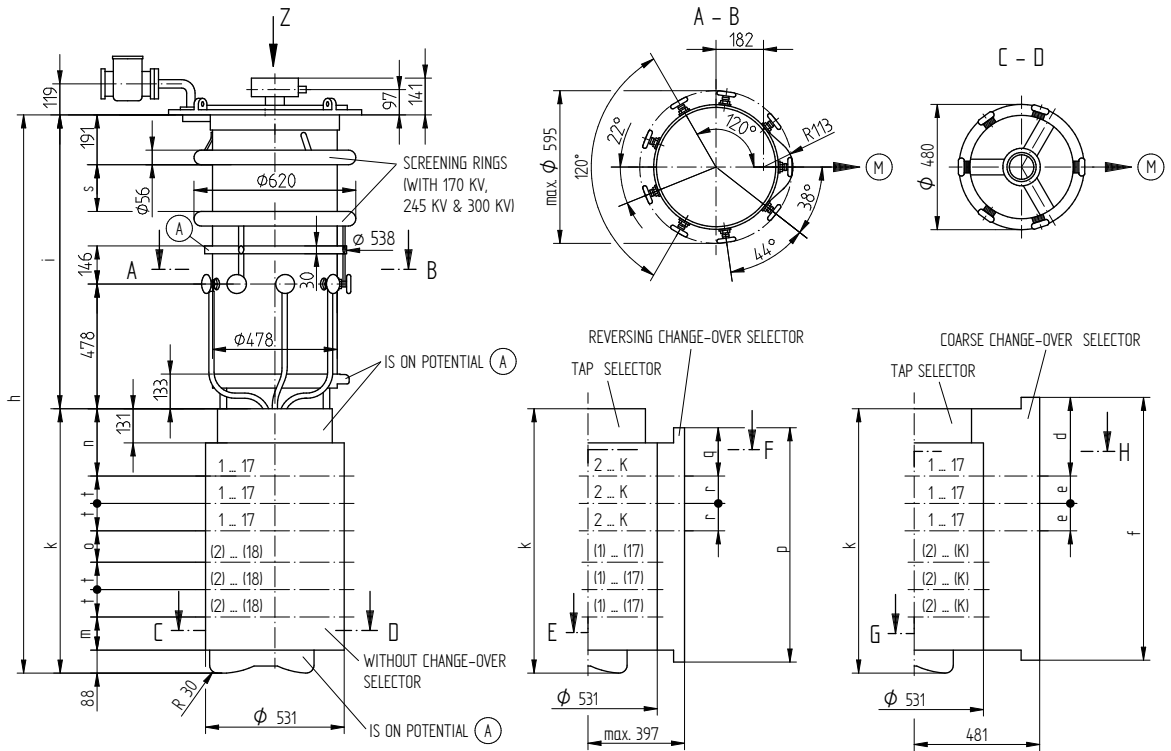


ON-LOAD TAP-CHANGER VACUTAP® VM
 VM I 802/1002 - B/C/D WITH MULTIPLE COARSE C.-O. SELECTOR
 DIMENSION DRAWING

SERIAL NUMBER

MATERIAL NUMBER 7462282E
 SHEET 1/1

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E - F
 REFER TO 723590

G - H
 REFER TO 723590

FOR INHERENT DRAWINGS REFER TO 898012

- (A) ON-LOAD TAP-CHANGER TAKE-OFF TERMINAL
- (M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

SELECTOR SIZE	B					C					D/DE					
	72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300	
U _m [KV]	72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300	
DIMENSIONS [MM]	h	1934	2064	2194	2294	2446	2009	2139	2269	2369	2521	2204	2334	2464	2564	2716
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508
	s	-	267	367	367	520	-	267	367	367	520	-	267	367	367	520
	k			938					1013					1208		
	n		233						258					323		
	o		95						120					185		
	m		102						127					192		
	t		105						105					105		
	r		105						105					105		
	q		160						185					250		
	p		823						898					1093		
	e		105						105					105		
	d		276.5						301.5					366.5		
f		932						1007					1202			
OIL VOLUME [DM ³]	130	150	170	190	210	130	150	170	190	210	130	150	170	190	210	
DISPLACEMENT [DM ³]	200	225	245	265	285	200	225	245	265	285	204	229	249	269	289	
WEIGHT [KG]	350	355	360	365	370	360	365	370	375	380	375	380	385	390	395	

DATE	NAME	DOCUMENT NO.
18.11.2015	RAEDLINGER	SED 2313229 001 01
01.12.2015	TKBIRKMAN	CHANGE NO.
01.12.2015	PRODASTSCHUK	1069171
SCALE		1:10

DIMENSION IN mm EXCEPT AS NOTED



ON-LOAD TAP-CHANGER VACUTAP® VM
 VM I 1203/1503 - B/C/D/DE - O/W/G
 DIMENSION DRAWING

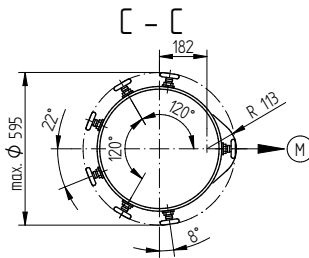
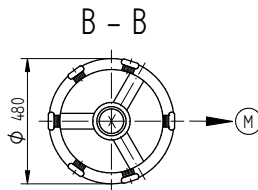
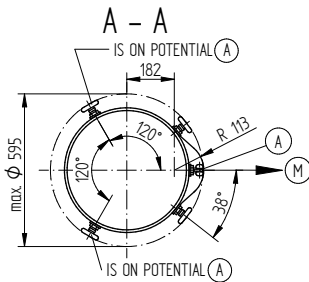
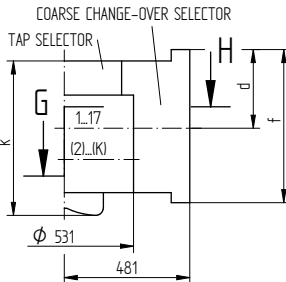
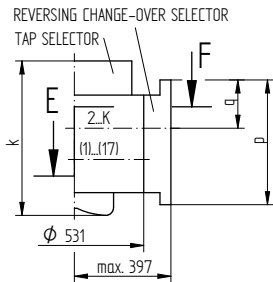
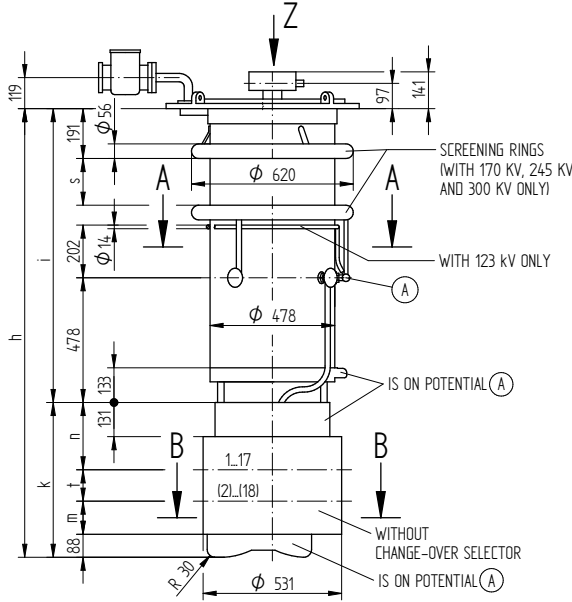
SERIAL NUMBER

MATERIAL NUMBER 7462231E SHEET 1/1

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VM I 351 / 501 / 651 - 0 / W / G

SELECTOR SIZE		B				C				D/DE							
Um IN KV		72.5	123	170	245	300	72.5	123	170	245	300	72.5	123	170	245	300	
DIMENSIONS IN MM	h	1514	1644	1774	1874	2026	1589	1719	1849	1949	2101	1784	1914	2044	2144	2296	
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508	
	s	-	267	367	520	-	267	367	520	-	267	367	520	-	267	367	520
	k	-	-	518	-	-	-	593	-	-	788	-	-	833	-	-	1158
	n	-	-	233	-	-	-	258	-	-	323	-	-	258	-	-	323
	m	-	-	102	-	-	-	127	-	-	192	-	-	240	-	-	370
	t	-	-	95	-	-	-	120	-	-	185	-	-	240	-	-	377
	q	-	-	160	-	-	-	185	-	-	250	-	-	305	-	-	435
	p	-	-	403	-	-	-	478	-	-	673	-	-	718	-	-	1043
	d	-	-	2765	-	-	-	3015	-	-	3665	-	-	3015	-	-	3665
f	-	-	512	-	-	-	587	-	-	782	-	-	827	-	-	1152	
OIL VOLUME	DM³	130	150	170	190	210	130	150	170	190	210	130	150	170	190	210	
DISPLACEMENT	DM³	193	218	238	258	278	193	218	238	258	278	195	220	240	260	280	
WEIGHT	KG	280	285	290	295	300	290	295	300	305	310	300	305	310	315	320	



FOR INHERENT DRAWINGS REFER TO 898012

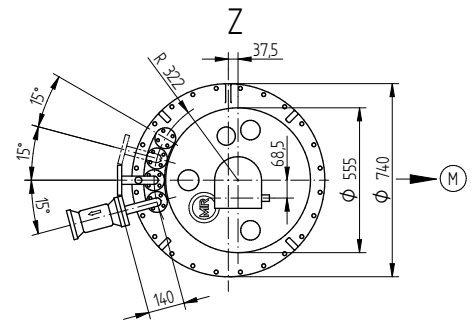
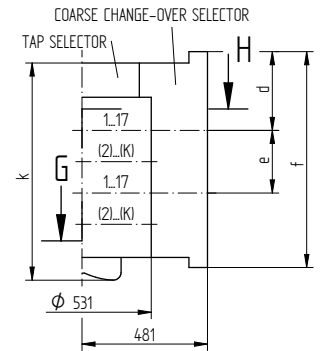
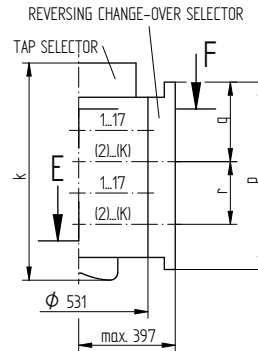
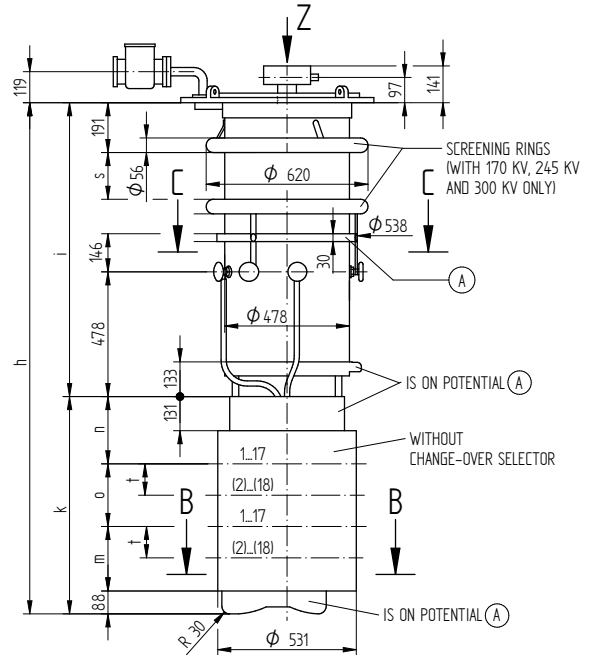
(A) ON-LOAD TAP-CHANGER TAKE-OFF LEAD

(M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

VM II 352 / 502 / 652 - 0 / W / G

SELECTOR SIZE		B				C				D/DE							
Um IN KV		72.5	123	170	245	300	72.5	123	170	245	300	72.5	123	170	245	300	
DIMENSIONS IN MM	h	1704	1834	1964	2064	2216	1829	1959	2089	2189	2341	2154	2284	2414	2514	2666	
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508	
	s	-	267	367	520	-	267	367	520	-	267	367	520	-	267	367	520
	k	-	-	708	-	-	-	833	-	-	1158	-	-	1158	-	-	1518
	n	-	-	233	-	-	-	258	-	-	323	-	-	258	-	-	323
	o	-	-	190	-	-	-	240	-	-	370	-	-	240	-	-	370
	m	-	-	197	-	-	-	247	-	-	377	-	-	247	-	-	377
	t	-	-	95	-	-	-	120	-	-	185	-	-	120	-	-	185
	r	-	-	190	-	-	-	240	-	-	370	-	-	240	-	-	370
	q	-	-	255	-	-	-	305	-	-	435	-	-	305	-	-	435
p	-	-	593	-	-	-	718	-	-	1043	-	-	718	-	-	1043	
e	-	-	190	-	-	-	240	-	-	370	-	-	240	-	-	370	
d	-	-	2765	-	-	-	3015	-	-	3665	-	-	3015	-	-	3665	
f	-	-	702	-	-	-	827	-	-	1152	-	-	827	-	-	1152	
OIL VOLUME	DM³	130	150	170	190	210	130	150	170	190	210	130	150	170	190	210	
DISPLACEMENT	DM³	196	221	241	261	281	196	221	241	261	281	199	224	244	264	284	
WEIGHT	KG	310	315	320	325	330	320	325	330	335	340	330	335	340	345	350	



E - F / G - H

REFER TO 723590

DATE	NAME	DOCUMENT NO.
DFTR. 18.11.2015	RAEDLINGER	SED 2315008 001 02
CHKD. 01.12.2015	TKBIRKMAN	SCALE 1:10
STAND. 01.12.2015	PRODATSCHUK	CHANGE NO. 1069171

DIMENSION IN mm EXCEPT AS NOTED



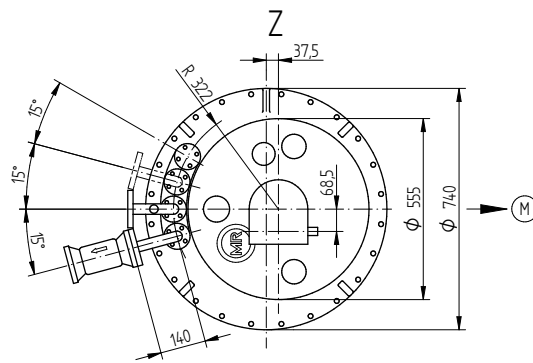
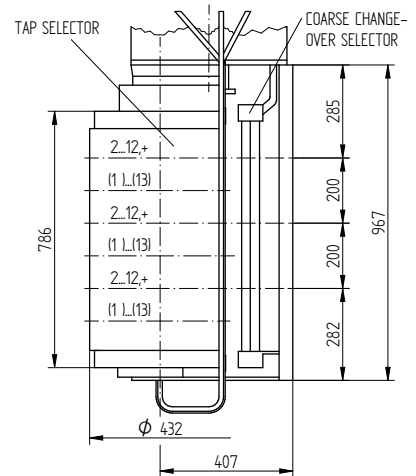
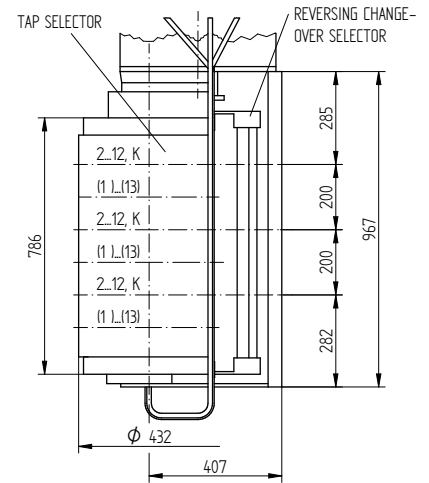
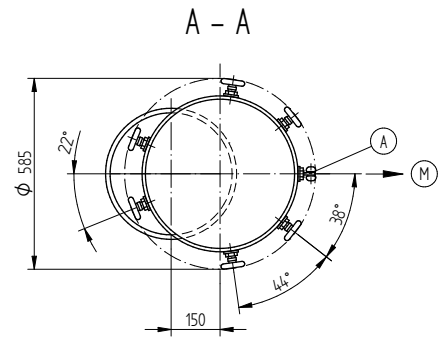
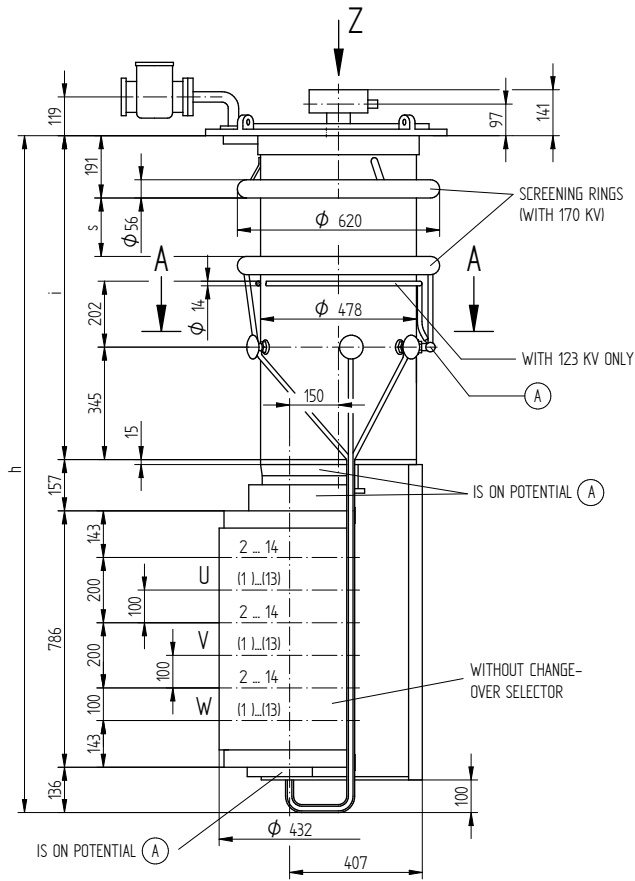
ON-LOAD TAP-CHANGER VACUTAP® VM
VM III 350/500/650 K-B/C/D/DE-0/W/G
DIMENSION DRAWING

SERIAL NUMBER

MATERIAL NUMBER
746224ZE

SHEET
1/1

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DATE	NAME	DOCUMENT NO.
11.07.2018	BUTERUS	SED 6011085 001 00
16.07.2018	WILHELM	CHANGE NO.
16.07.2018	PRODASTSCHUK	1086956
DFTR.	SCALE	18

FOR INHERENT DRAWINGS REFER TO 898026

(A) ON-LOAD TAP-CHANGER TAKE-OFF LEAD (NEUTRAL)

(M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

SELECTOR SIZE	B		
U_M [KV]	72,5	123	170
DIMENSIONS [MM]	h	1942	2072
	i	863	993
	s	267	
OIL VOLUME [DM ³]	130	150	170
DISPLACEMENT [DM ³]	190	220	240
MAX. WEIGHT [KG]	280	285	290

DIMENSION IN mm EXCEPT AS NOTED

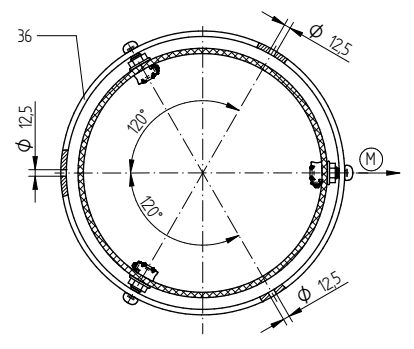
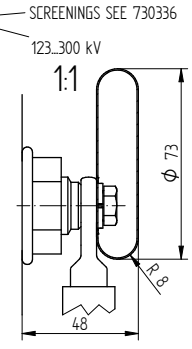
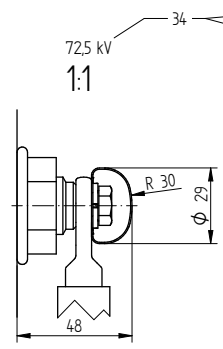
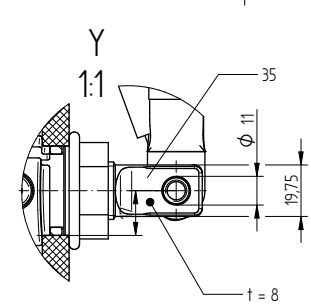
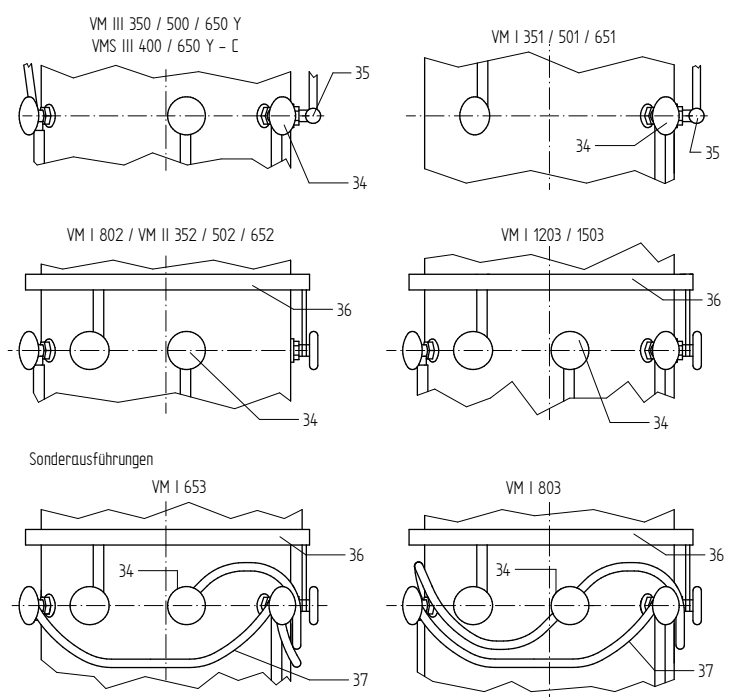
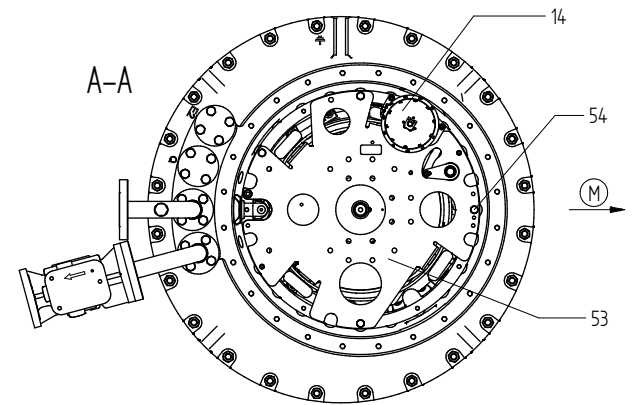
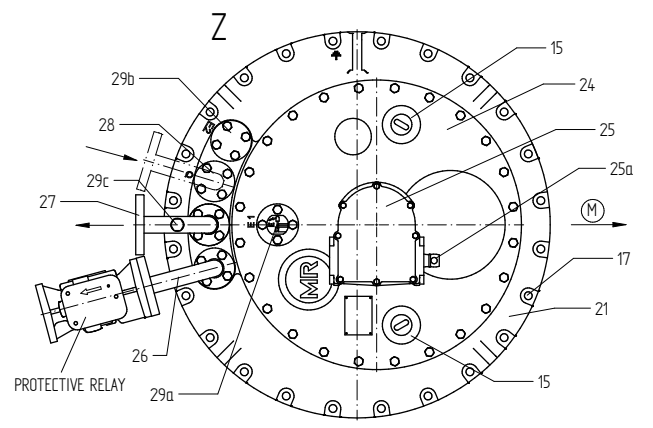
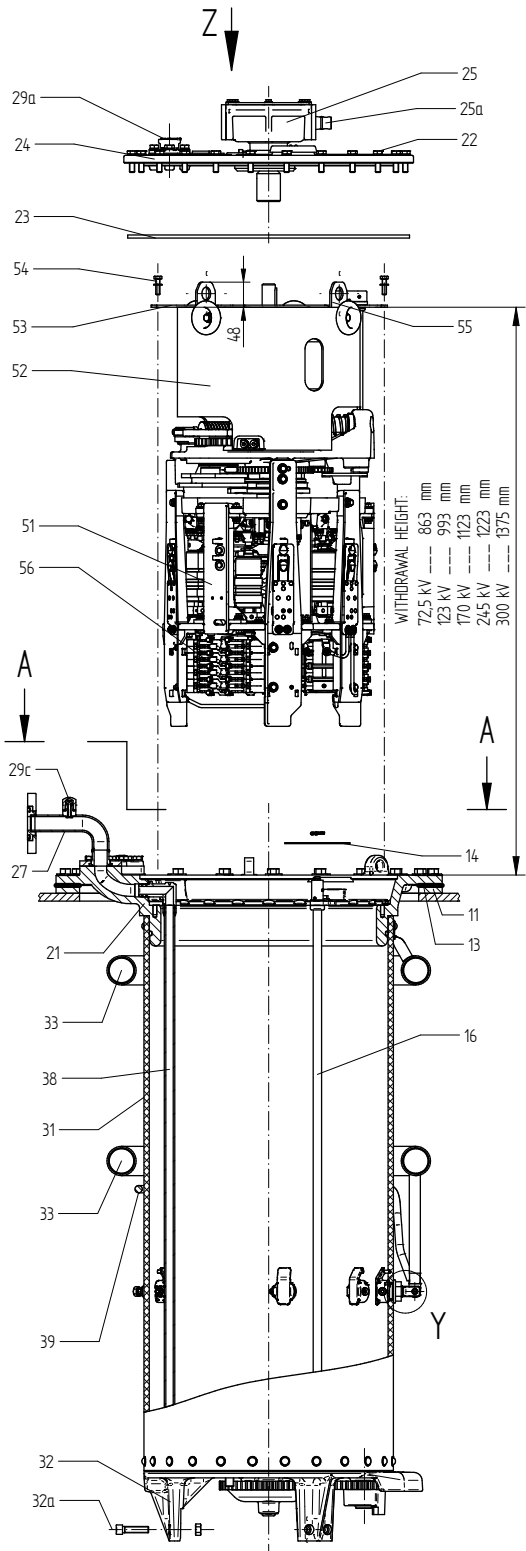


ON-LOAD TAP-CHANGER VACUTAP® VMS®
 VMS III 400 Y - B - 0/W/G
 DIMENSION DRAWING

SERIAL NUMBER

MATERIAL NUMBER 101165600E
 SHEET 1/1

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Datum	Name	Dokumentnummer
13.07.2018	BUTERUS	SED 231710 001 03
Gez. bepr.	WILHELM	Änderungsnummer
16.07.2018	PRODASTSCHUK	1086956
Norm.		15

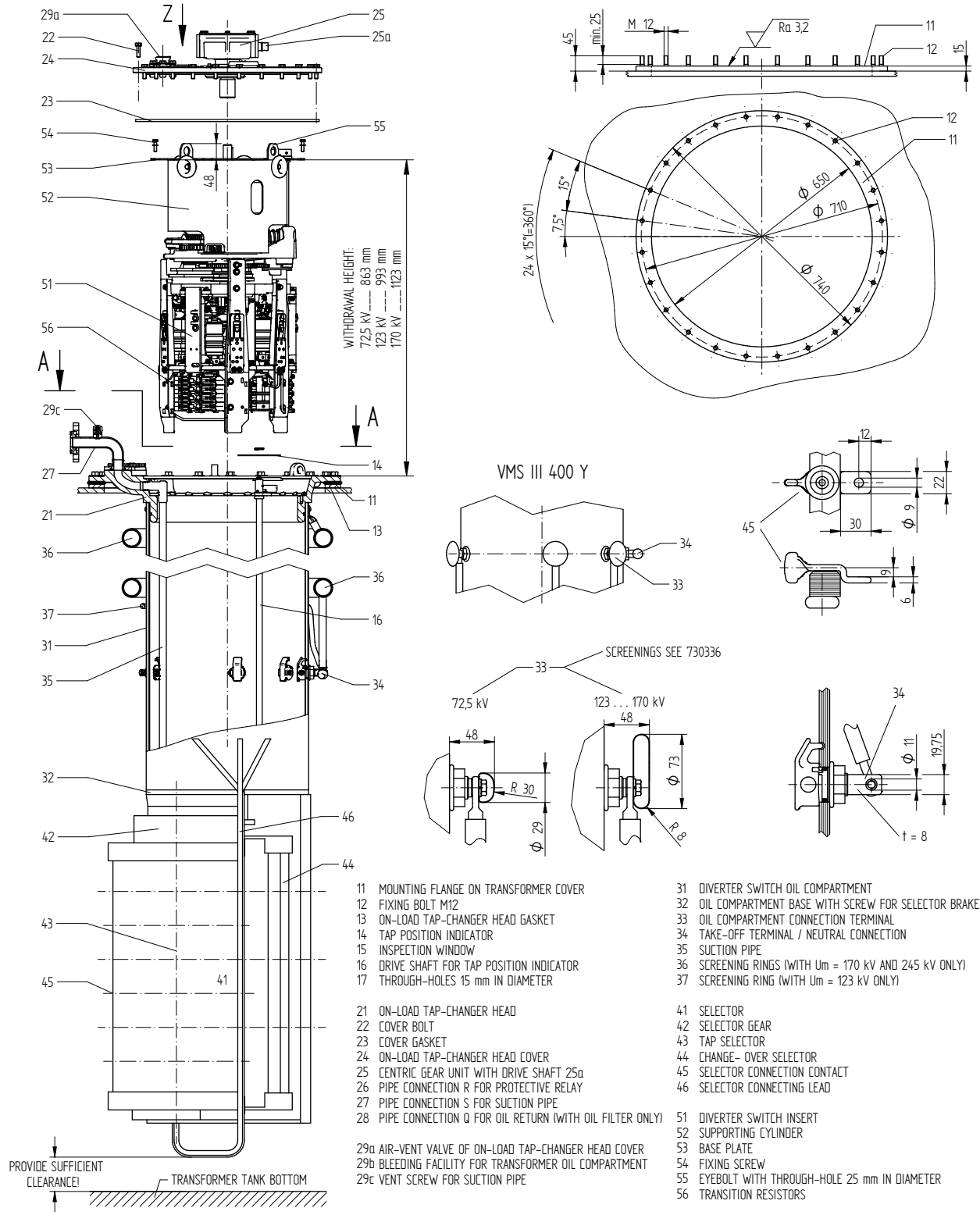
Maßangaben
 in mm, soweit
 nicht anders
 angegeben



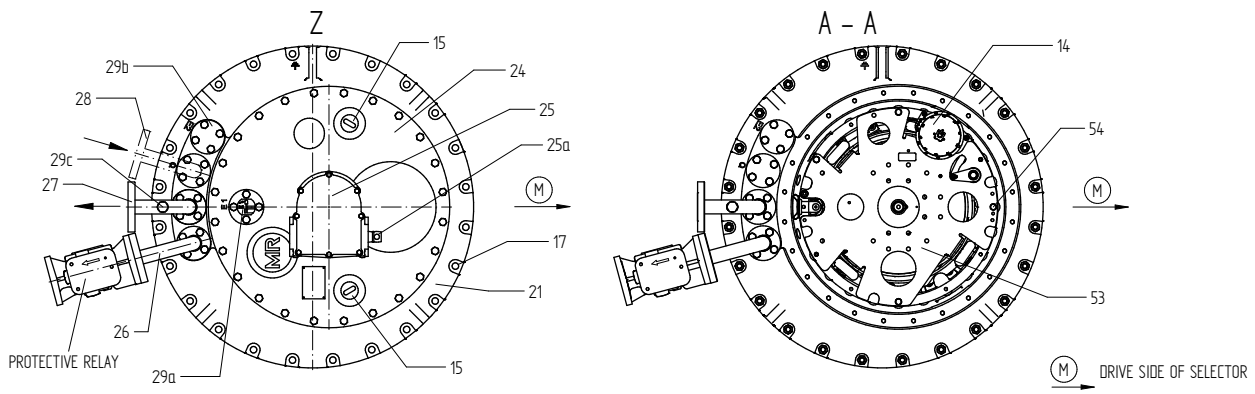
ON-LOAD TAP-CHANGER VACUTAP® VM®, VMS®-C
 M-SELECTOR SIZE B/C/D/DE (CENTRIC DRIVE)
 INSTALLATION DRAWING

Serialnummer	
Materialnummer	Blatt
7462303E	1/2

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- | | |
|--|---|
| <ul style="list-style-type: none"> 11 MOUNTING FLANGE ON TRANSFORMER COVER 12 FIXING BOLT M12 13 ON-LOAD TAP-CHANGER HEAD GASKET 14 TAP POSITION INDICATOR 15 INSPECTION WINDOW 16 DRIVE SHAFT FOR TAP POSITION INDICATOR 17 THROUGH-HOLES 15 mm IN DIAMETER 21 ON-LOAD TAP-CHANGER HEAD 22 COVER BOLT 23 COVER GASKET 24 ON-LOAD TAP-CHANGER HEAD COVER 25 CENTRIC GEAR UNIT WITH DRIVE SHAFT 25a 26 PIPE CONNECTION R FOR PROTECTIVE RELAY 27 PIPE CONNECTION S FOR SUCTION PIPE 28 PIPE CONNECTION Q FOR OIL RETURN (WITH OIL FILTER ONLY) 29a AIR-VENT VALVE OF ON-LOAD TAP-CHANGER HEAD COVER 29b BLEEDING FACILITY FOR TRANSFORMER OIL COMPARTMENT 29c VENT SCREW FOR SUCTION PIPE | <ul style="list-style-type: none"> 31 DIVERTER SWITCH OIL COMPARTMENT 32 OIL COMPARTMENT BASE WITH SCREW FOR SELECTOR BRACKET 33 OIL COMPARTMENT CONNECTION TERMINAL 34 TAKE-OFF TERMINAL / NEUTRAL CONNECTION 35 SUCTION PIPE 36 SCREENING RINGS (WITH Um = 170 kV AND 245 kV ONLY) 37 SCREENING RING (WITH Um = 123 kV ONLY) 41 SELECTOR 42 SELECTOR GEAR 43 TAP SELECTOR 44 CHANGE-OVER SELECTOR 45 SELECTOR CONNECTION CONTACT 46 SELECTOR CONNECTING LEAD 51 DIVERTER SWITCH INSERT 52 SUPPORTING CYLINDER 53 BASE PLATE 54 FIXING SCREW 55 EYEBOLT WITH THROUGH-HOLE 25 mm IN DIAMETER 56 TRANSITION RESISTORS |
|--|---|



DOCUMENT NO.	SED 6018599 001 00		SCALE	1
NAME	BUTERUS	WILHELM	CHANGE NO.	1086956
DATE	11.07.2018	16.07.2018	PRODASTSCHUK	
DFTR.	11.07.2018	16.07.2018		
CHKD.				
STAND.				

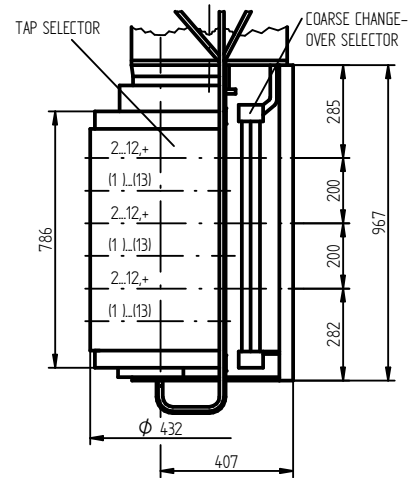
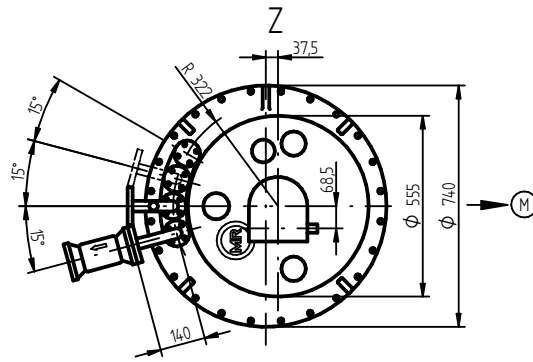
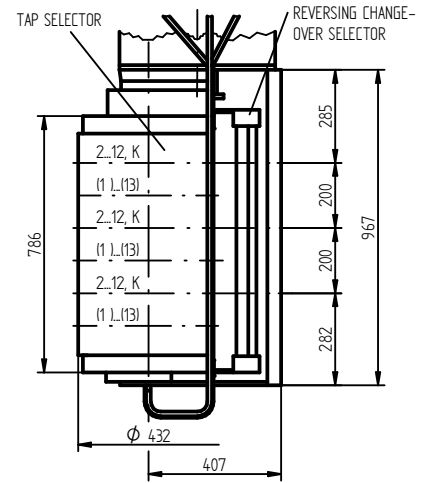
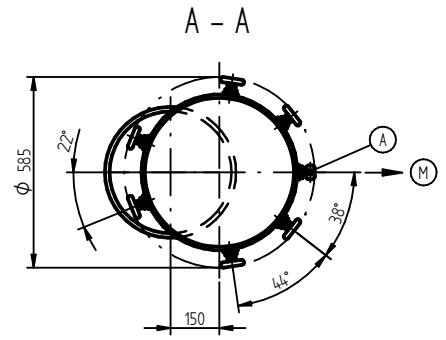
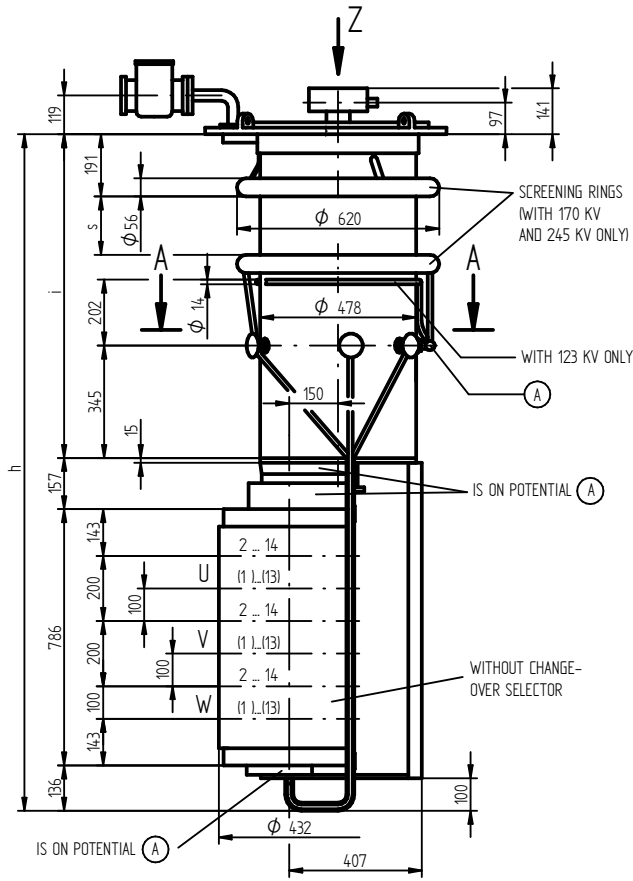
DIMENSION IN mm EXCEPT AS NOTED



ON-LOAD TAP-CHANGER VACUTAP® VMS®
SELECTOR SIZE B (CENTRIC DRIVE)
INSTALLATION DRAWING

SERIAL NUMBER	
MATERIAL NUMBER	SHEET
101170220E	1/1

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DATE	NAME	DOCUMENT NO.
18.11.2015	RAEDLINGER	SED 2532402 001 02
CHKD.	TKBIRKMAN	SCALE
01.12.2015	PRODASTSCHUK	1:8
STAND		CHANGE NO.
		1069171

FOR INHERENT DRAWINGS REFER TO 898026

- (A) ON-LOAD TAP-CHANGER TAKE-OFF LEAD (NEUTRAL)
- (M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

SELECTOR SIZE	B			
U_M [kV]	72,5	123	170	245
DIMENSIONS [mm]	h	1942	2072	2202
	i	863	993	1123
	s	-		267
OIL VOLUME [DM ³]	130	150	170	190
DISPLACEMENT [DM ³]	190	220	240	260
MAX. WEIGHT [KG]	280	285	290	295

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



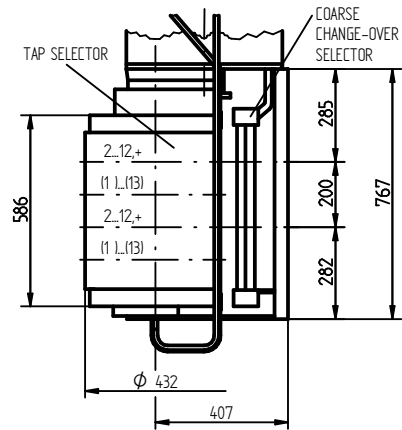
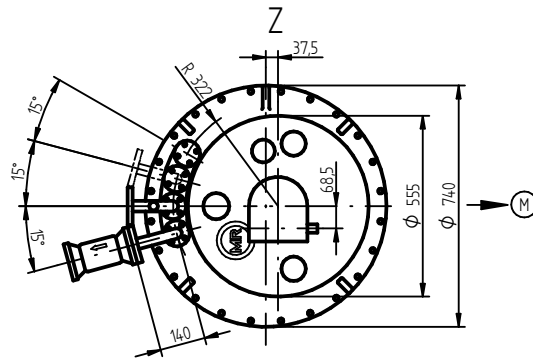
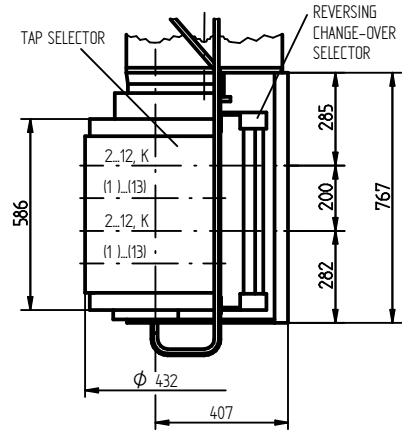
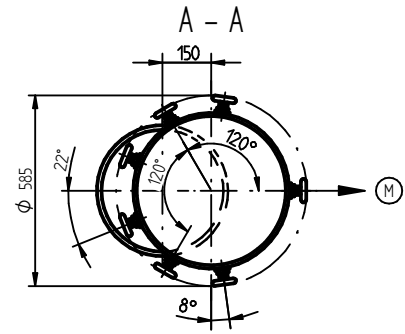
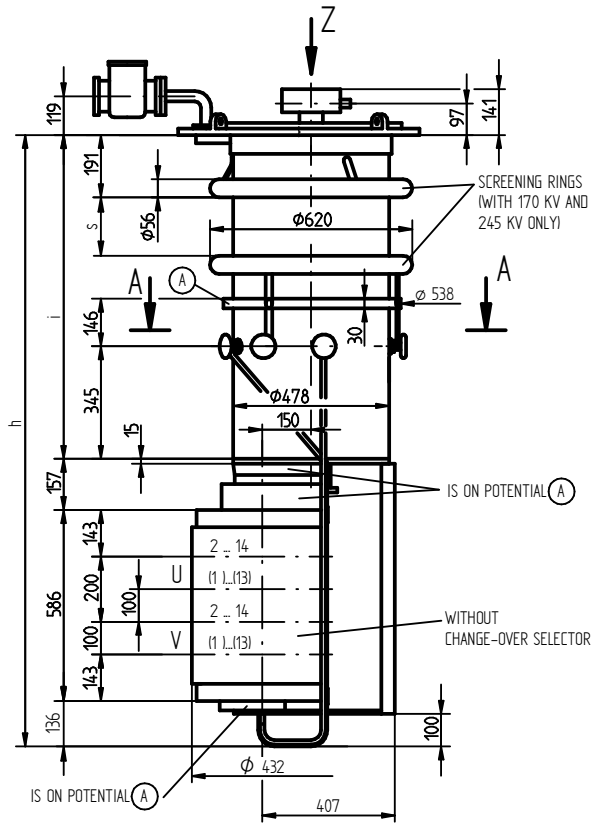
ON-LOAD TAP-CHANGER VACUTAP® VM®
 VM III 300 Y - B- 0/W/G
 DIMENSION DRAWING

SERIAL NUMBER

MATERIAL NUMBER
 7686982E

SHEET
 1/1

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DATE	NAME	DOCUMENT NO.
01.04.2016	RAEDLINGER	SED 2742981 001 02
CHKD. 11.04.2016	MENZELS	SCALE
STAND 11.04.2016	PRODASTSCHUK	18
		CHANGE NO. 1073378

FOR INHERENT DRAWINGS REFER TO 898026

(A) ON-LOAD TAP-CHANGER TAKE-OFF TERMINAL

(M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

SELECTOR SIZE	B			
U_M [KV]	72,5	123	170	245
DIMENSIONS [MM]	h	1742	1872	2002
	i	863	993	1123
	s	-		267
OIL VOLUME [DM ³]	130	150	170	190
DISPLACEMENT [DM ³]	180	210	230	250
MAX. WEIGHT [KG]	260	265	270	275

DIMENSION IN mm EXCEPT AS NOTED



ON-LOAD TAP-CHANGER VACUTAP® VM®
 VM II 302 - B - 0/W/G
 DIMENSION DRAWING

SERIAL NUMBER

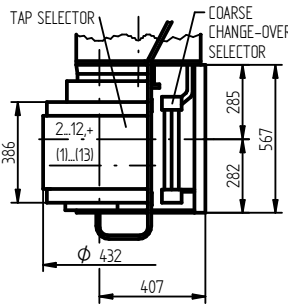
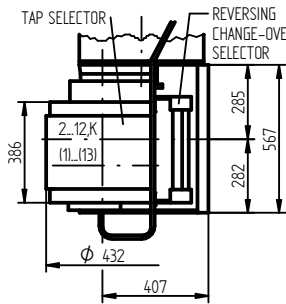
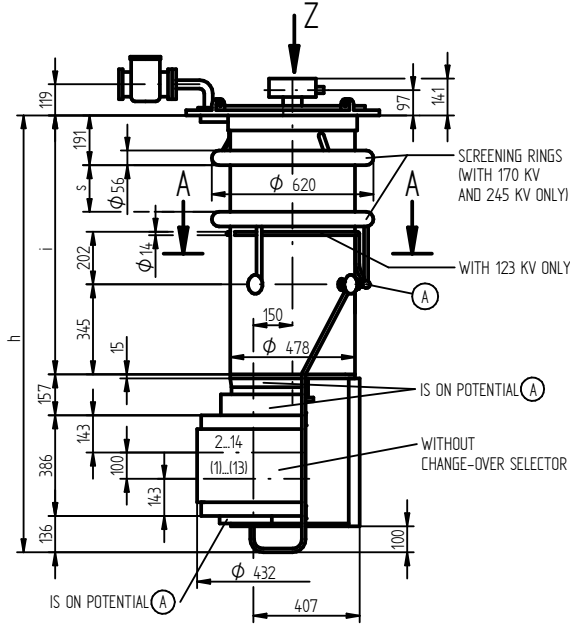
MATERIAL NUMBER
 7692252E

SHEET
 1/1

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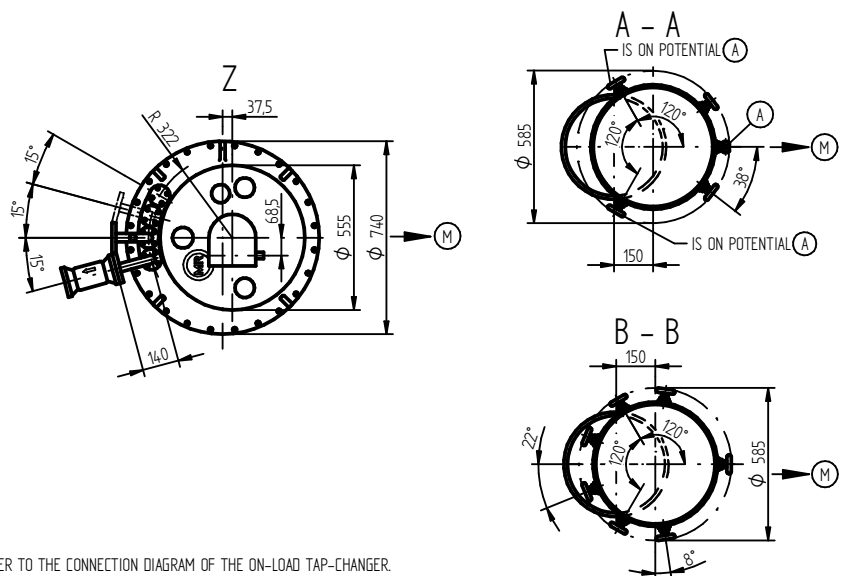
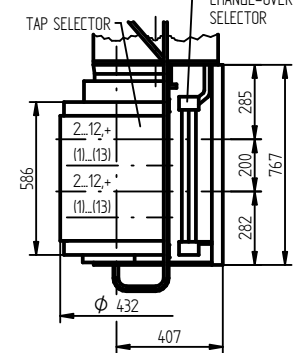
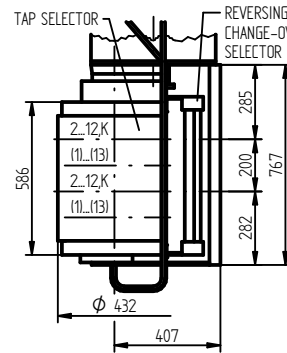
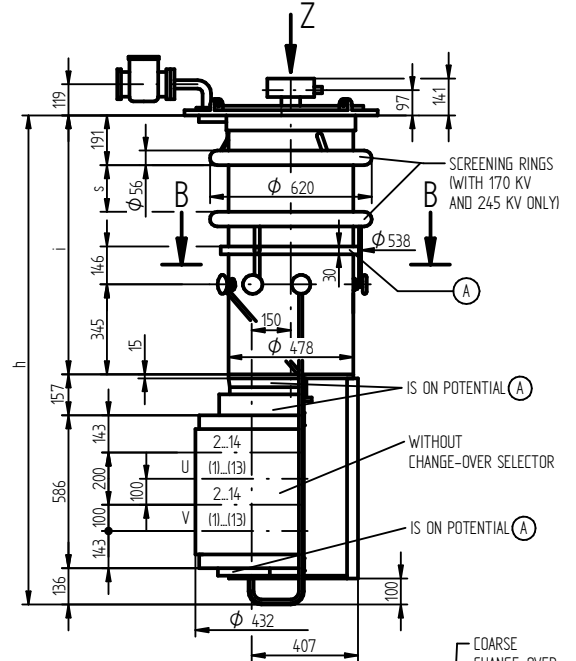
VM I 301 - 0 / W / G

SELECTOR SIDE		B			
Um [kV]		72.5	123	170	245
DIMENSIONS [MM]	h	1542	1672	1802	1902
	i	863	993	1123	1223
	s	-	-	267	367
OIL VOLUME [DM ³]		130	150	170	190
DISPLACEMENT [DM ³]		160	190	210	230
MAX. WEIGHT [KG]		240	245	250	255



VM II 302 - 0 / W / G

SELECTOR SIDE		B			
Um [kV]		72.5	123	170	245
DIMENSIONS [MM]	h	1742	1872	2002	2102
	i	863	993	1123	1223
	s	-	-	267	367
OIL VOLUME [DM ³]		130	150	170	190
DISPLACEMENT [DM ³]		180	210	230	250
MAX. WEIGHT [KG]		260	265	270	275



FOR INHERENT DRAWINGS REFER TO 898026

- (A) ON-LOAD TAP-CHANGER TAKE-OFF LEAD
- (M) DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

DATE	NAME	DOCUMENT NO.
18.11.2015	RAEDLINGER	SED 2559763 001 02
01.12.2015	TKBIRKMAN	CHANGE NO.
01.12.2015	PRODASTSCHUK	1069171
		SCALE 1:10

DIMENSION IN mm EXCEPT AS NOTED



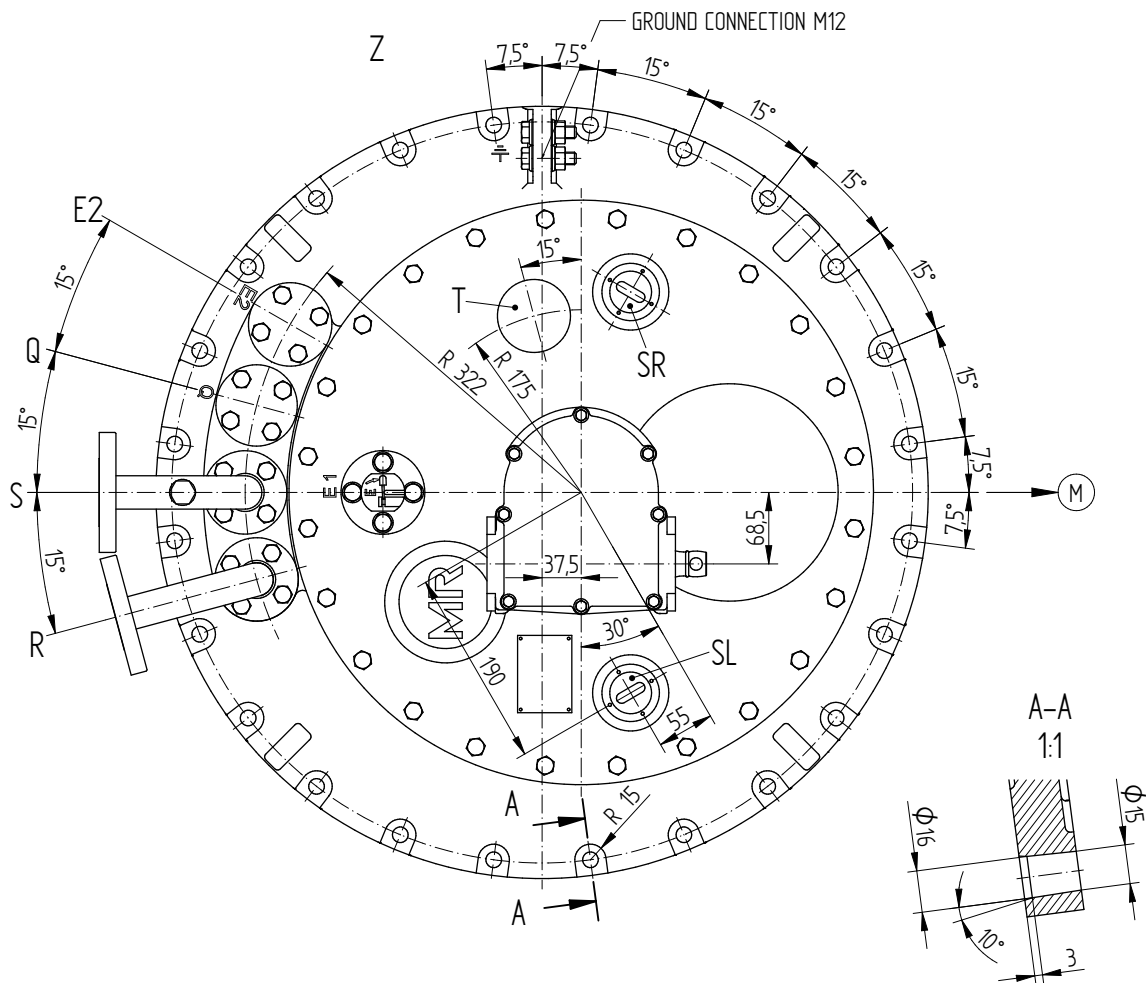
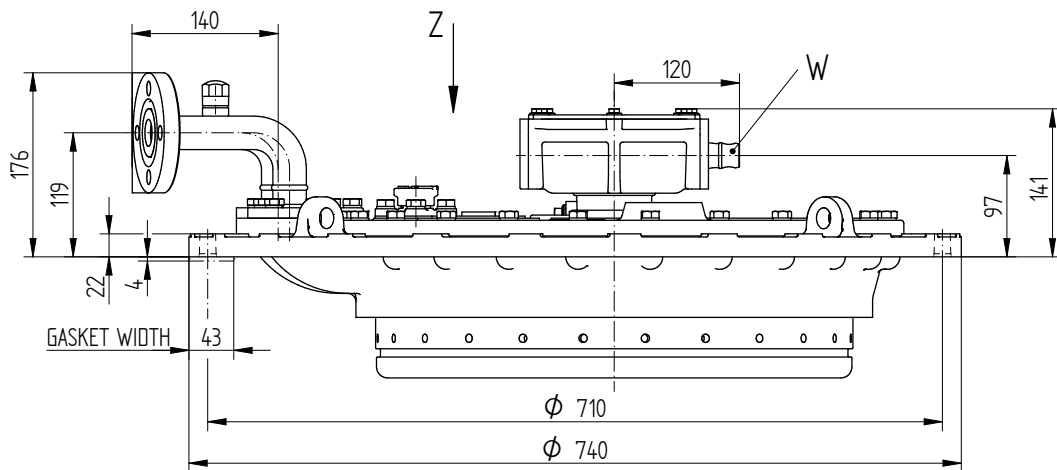
ON-LOAD TAP-CHANGER VACUTAP® VM®
 VM III 300 K - B - 0/W/G
 DIMENSION DRAWING

SERIAL NUMBER

MATERIAL NUMBER 7688512E SHEET 1/1

4.3 Testa del commutatore sotto carico

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E1 = BLEEDING FACILITY FOR ON-LOAD TAP-CHANGER HEAD

E2 = BLEEDING FACILITY FOR SPACE UNDER THE HEAD OUTSIDE

THE TAP-CHANGER OIL COMPARTMENT (SAME PIPE CONNECTION AS R, S, Q OR BLEEDER SCREW CAN BE USED)

Q = CONNECTION FOR OIL RETURN PIPE OR TAP-CHANGE SUPERVISORY CONTROL

S = CONNECTION FOR SUCTION PIPE

R = CONNECTION FOR PROTECTIVE RELAY (EXCHANGEABLE WITH CONNECTION Q)

T = THERMOMETER BAG / TEMPERATURE SENSOR (OPTIONALLY)

SR = INSPECTION WINDOW, RIGHT

SL = INSPECTION WINDOW, LEFT

W = DRIVE SHAFT

(M) DRIVE SIDE OF SELECTOR

CONNECTIONS SWIVELING
 DIMENSIONS AND SELECTION 899496: / 899497.

DATE	NAME	DOCUMENT NO.
DFTR. 11.07.2018	BUTERUS	SED 1661272 001 04
CHKD. 16.07.2018	WILHELM	SCALE 1:2,5
STAND. 16.07.2018	PRODASTSCHUK	CHANGE NO. 1086956

DIMENSION
 IN mm
 EXCEPT AS
 NOTED

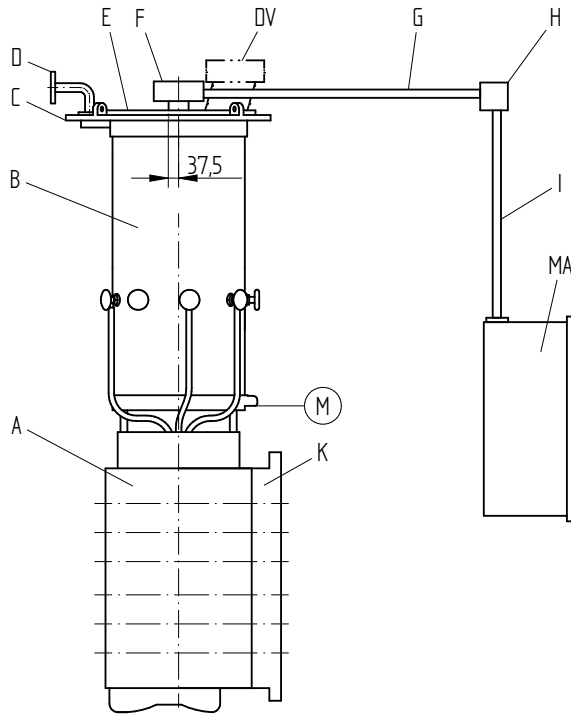


ON-LOAD TAP-CHANGER
 OILTAP® M, MS, R, RM AND VACUTAP® VR®, VM®, VMS®
 ON-LOAD TAP-CHANGER HEAD, CENTRIC DRIVE

SERIAL NUMBER

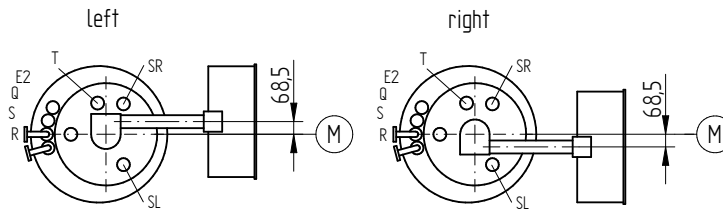
MATERIAL NUMBER
 893899FE

SHEET
 1/1

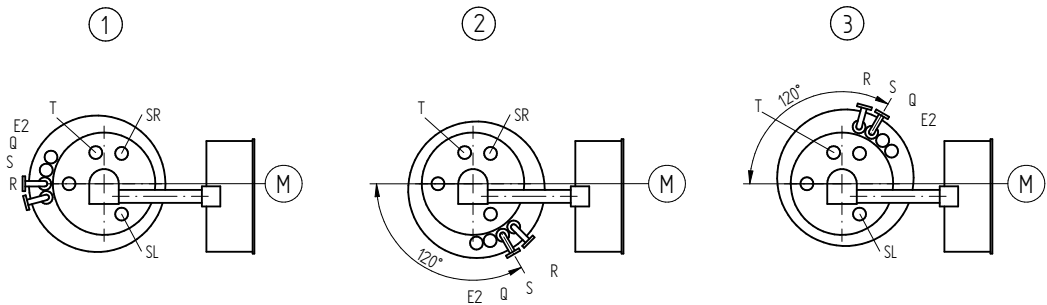


- A = selector
 - K = change-over selector
 - B = diverter switch oil compartment
 - C = on-load tap-changer head
 - D = pipe connections (R, S, Q, E2)
 - DV = pressure relief device
 - E = on-load tap-changer head cover
 - F = upper gear unit
 - G = drive shaft, horizontal
 - H = bevel gear
 - I = drive shaft, vertical
 - MA = motor-drive unit
 - (M) = drive side of selector
 - SR = inspection window on the right
 - SL = inspection window on the left
 - T = temperature sensor
- } represented version type M

Position of drive shaft of gear unit



Head variants



Swivel ranges

A considerable number of variants of the on-load tap-changer head are available for adapting the horizontal part of the drive shaft to the transformer tank.

The mounting position of the selector A and diverter switch oil compartment B is determined by the drive side of selector (M).

The on-load tap-changer head C together with its pipe connections D may be turned through 120 degrees clockwise or anti-clockwise. This results in the variants 1, 2 and 3.

The upper gear unit F can be turned continuously on its own axis. Table 720027: Lists the limitation of the swivel range for the particular head variant. The angle specifications refer to the center of rotation of the gear unit. Pay particular attention to the offset of the drive shaft.

DATE	11.07.2018	DOCUMENT NO.	SED 1063796 001 05
DATE	16.07.2018	NAME	BUTERUS
DATE	16.07.2018	NAME	WILHELM
DATE	16.07.2018	NAME	PRODASTSCHUK
CHKO.	16.07.2018	CHANGE NO.	1086956
STAND.	16.07.2018	SCALE	1

DIMENSION
IN mm
EXCEPT AS
NOTED



ON-LOAD TAP-CHANGER
OILTAP® MS, M, RM, R AND VACUTAP® VR®, VM®, VMS®
VARIANTS OF THE ON-LOAD TAP-CHANGER HEAD

SERIAL NUMBER

MATERIAL NUMBER
7200264E

SHEET
1/1

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DATE	NAME	DOCUMENT NO.
11.07.2018	BUTERUS	SED 1664686 001 04
16.07.2018	WILHELM	CHANGE NO. SCALE
16.07.2018	PRODASTSCHUK	1086956 1

SKETCH	HEAD VERSION COMPONENTS USED	LIMITATION OF THE SWIVEL RANGE
	DRIVE SHAFT RIGHT HEAD VERSION 1	
	PIPE CONNECTION R	-168° to -140°
	PIPE CONNECTION S	-155° to 177°
	PIPE CONNECTION Q	-171° to 162°
	PIPE CONNECTION E2	147° to 174°
	PRESSURE RELIEF DEVICE DV	-150° to -35°
	TEMPERATURE SENSOR T	96° to 175°
INSPECTION WINDOW SL / SR	-64° SL -8° 56° SR 112°	
	DRIVE SHAFT RIGHT HEAD VERSION 2	
	PIPE CONNECTION R	-48° to -21°
	PIPE CONNECTION S	-63° to -36°
	PIPE CONNECTION Q	-78° to -51°
	PIPE CONNECTION E2	-93° to -66°
	PRESSURE RELIEF DEVICE DV	-150° to -35°
	TEMPERATURE SENSOR T	96° to 175°
INSPECTION WINDOW SR	56° SR 112°	
	DRIVE SHAFT RIGHT HEAD VERSION 3	
	PIPE CONNECTION R	72° to 99°
	PIPE CONNECTION S	57° to 84°
	PIPE CONNECTION Q	42° to 69°
	PIPE CONNECTION E2	27° to 54°
	PRESSURE RELIEF DEVICE DV	-150° to -35°
	TEMPERATURE SENSOR T	96° to 175°
INSPECTION WINDOW SL	-64° SL -8°	
	DRIVE SHAFT LEFT HEAD VERSION 1	
	PIPE CONNECTION R	-162° to 171°
	PIPE CONNECTION S	-177° to 156°
	PIPE CONNECTION Q	141° to 168°
	PIPE CONNECTION E2	126° to 153°
	PRESSURE RELIEF DEVICE DV	35° to 150°
	TEMPERATURE SENSOR T	34° to 114°
INSPECTION WINDOW SL / SR	-112° SL -56° 8° SR 64°	
	DRIVE SHAFT LEFT HEAD VERSION 2	
	PIPE CONNECTION R	-69° to -42°
	PIPE CONNECTION S	-84° to -57°
	PIPE CONNECTION Q	-99° to -72°
	PIPE CONNECTION E2	-114° to -87°
	PRESSURE RELIEF DEVICE DV	35° to 150°
	TEMPERATURE SENSOR T	34° to 114°
INSPECTION WINDOW SR	8° SR 64°	
	DRIVE SHAFT LEFT HEAD VERSION 3	
	PIPE CONNECTION R	50° to 78°
	PIPE CONNECTION S	35° to 62°
	PIPE CONNECTION Q	21° to 48°
	PIPE CONNECTION E2	6° to 33°
	PRESSURE RELIEF DEVICE DV	35° to 150°
	TEMPERATURE SENSOR T	34° to 114°
INSPECTION WINDOW SL	-112° SL -56°	

- LIMITATION OF THE SWIVEL RANGE THROUGH PIPE CONNECTIONS R AND S
- LIMITATION OF THE SWIVEL RANGE THROUGH OPTIONAL EXISTING PIPE CONNECTIONS Q, E2 AND PRESSURE RELIEF DEVICE DV
- SWIVEL RANGE POSSIBLE, BUT THE TEMPERATURE SENSOR T AND THE INSPECTION WINDOW SL / SR ARE NOT VISIBLE

DIMENSION
IN mm
EXCEPT AS
NOTED

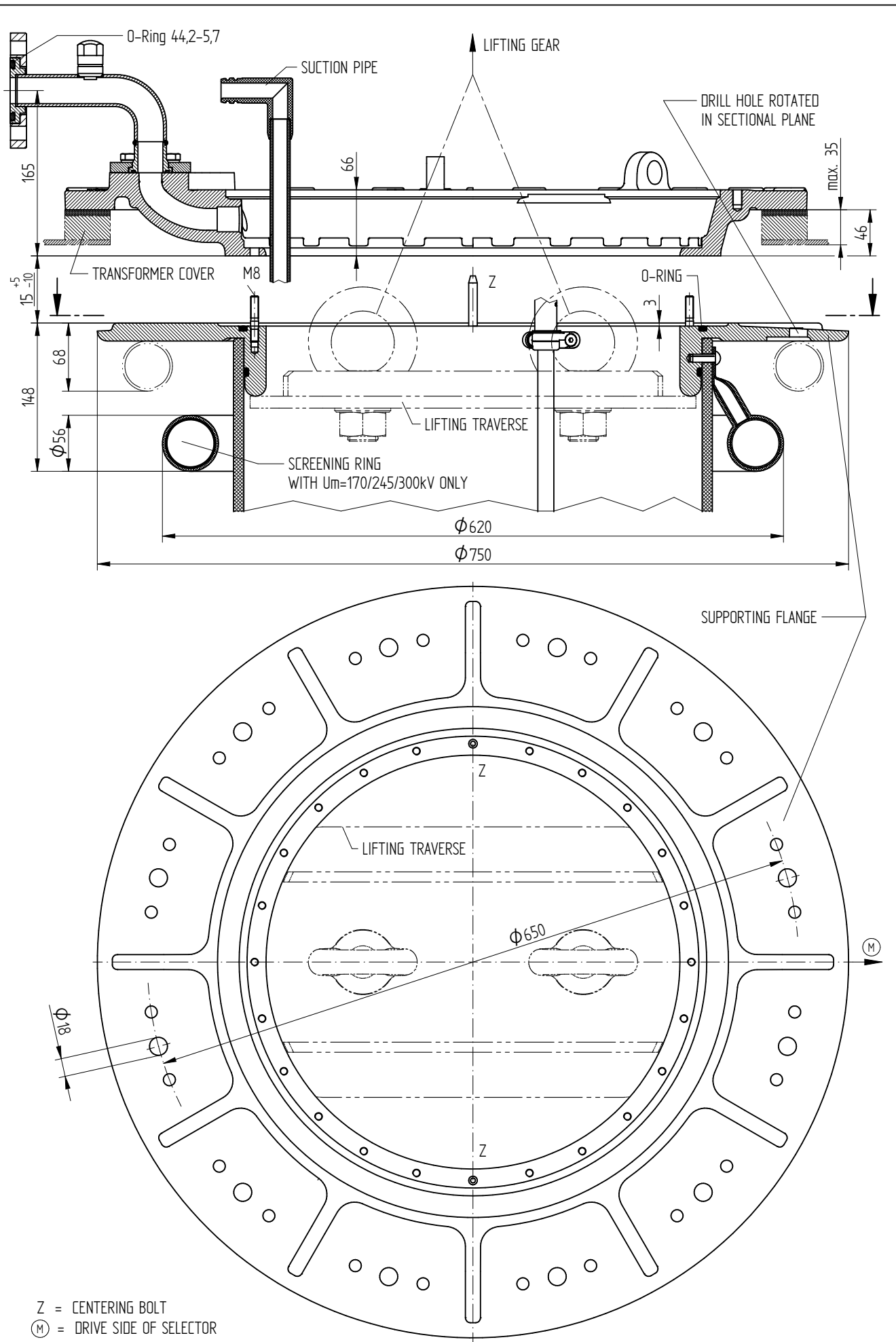


ON-LOAD TAP-CHANGER
 OILTAP® MS, M, RM, R AND VACUTAP® VR®, VM®, VMS®
 SWIVEL RANGE OF THE GEAR UNIT

SERIAL NUMBER

MATERIAL NUMBER	SHEET
7200276E	1/1

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Z = CENTERING BOLT
 (M) = DRIVE SIDE OF SELECTOR

DATE	NAME	DOCUMENT NO.
13.07.2018	BUTERUS	SED 1507378 000 04
16.07.2018	WILHELM	CHANGE NO.
16.07.2018	PRODASTSCHUK	1086956
		SCALE
		1:2,5

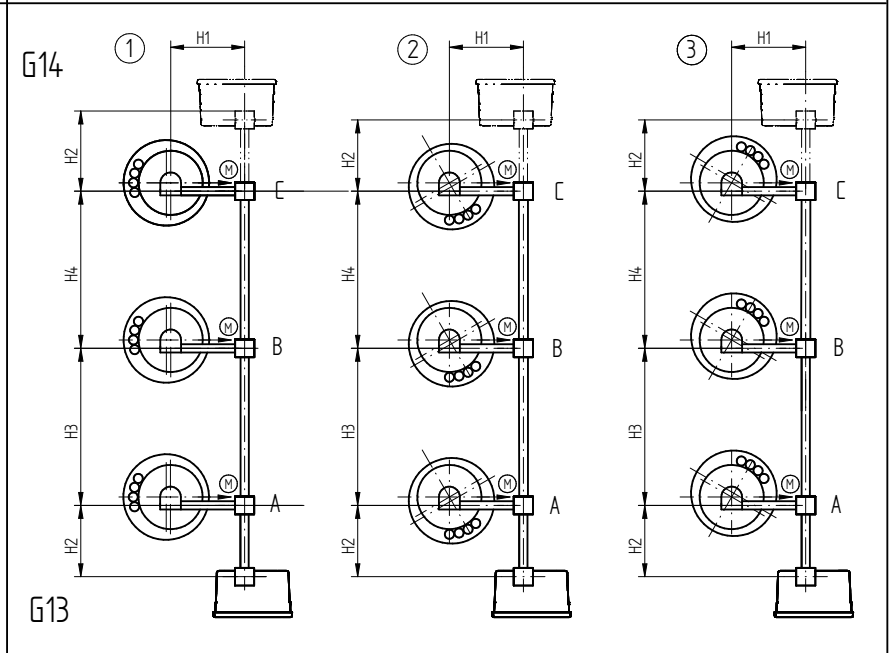
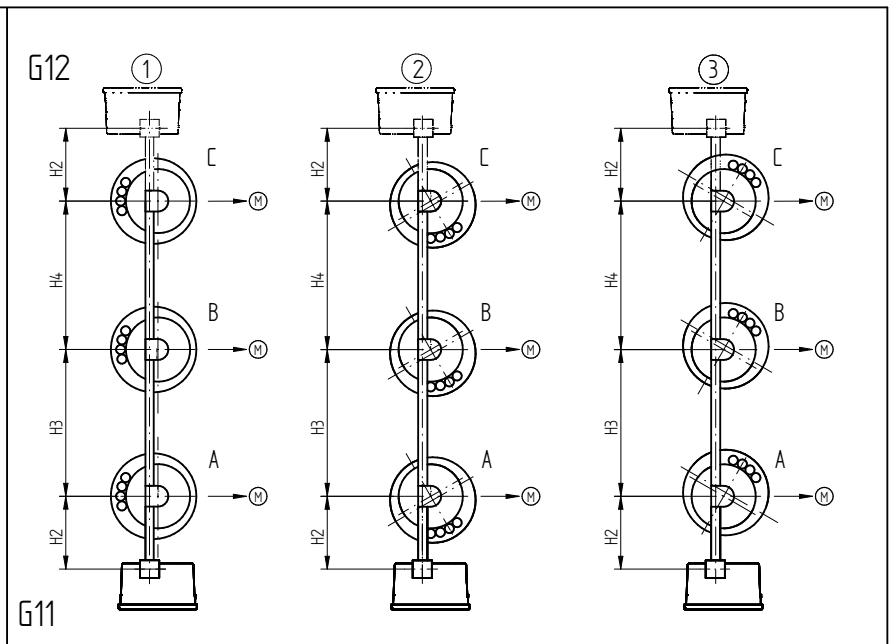
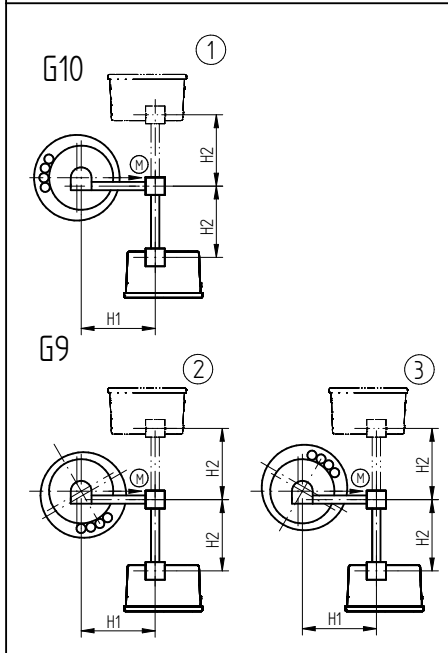
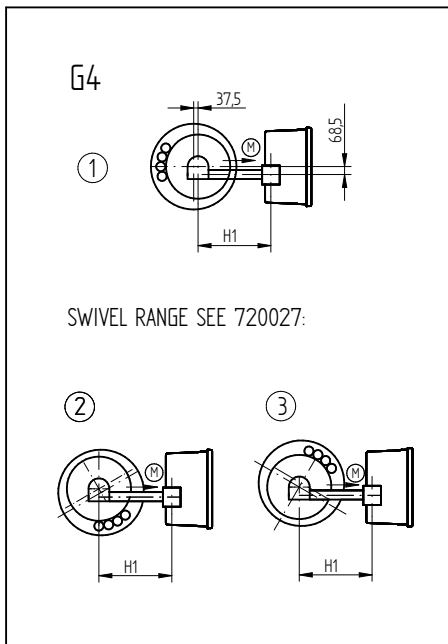
DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER
 OILTAP® M, R, RM, MS AND VACUTAP® VM®, VMS®
 SPECIAL DESIGN BELL-TYPE TANK INSTALLATION FOR Um UP TO 300 kV

SERIAL NUMBER	
MATERIAL NUMBER	SHEET
896762CE	1/1

DATE	NAME	DOCUMENT NO.
13.07.2018	BUTERUS	SED 1706827 001 05
16.07.2018	WILHELM	CHANGE NO.
16.07.2018	PRODASTSCHUK	1086956
CHKO.	SCALE	1



ARRANGEMENT	G4	G9, G10	G11, G12	G13, G14	
STANDARD DESIGN	■		■		
SPECIAL DESIGN		■		■	
MINIMUM DIMENSIONS ¹⁾ (DETERMINED FOR MECHANICAL REASONS; NECESSARY INSULATION SPACINGS NOT CONSIDERED!)	H1	535	545	-	545
	H2	-	323	515	323
	H3 ²⁾	-	-	840	840
	H4 ²⁾	-	-	840	840
NOTE: 1) FOR OLTCs WITH THE CHANGE-OVER SELECTOR ATTACHED Laterally, THE DIMENSIONS OF THE CHANGE-OVER SELECTOR AFTER INSTALLED IN POSITION HAVE TO BE TAKEN INTO ACCOUNT (SEE THE CORRESPONDING OLTC-DIMENSION DRAWING) 2) IN GENERAL DETERMINED BY THE INSULATION SPACING BETWEEN POLES A, B, C.					
INTERMEDIATE BEARING FOR	H1 >	2254	2309	-	2309
	H2 >	-	2259	2254	2259
	H3 >	-	-	2249	2259
	H4 >	-	-	2249	2259

① ② ③ - HEAD VERSION
 → (M) - DRIVE SIDE OF SELECTOR

DIMENSION IN mm EXCEPT AS NOTED



OLTC OILTAP® M, MS, RM, R / VACUTAP® VR®, VM®, VMS®
 HORIZONTAL DRIVE SHAFT, CENTRIC DRIVE (LIMIT DIMENSIONS)
 SELECTOR SIZE B/C/D/RC/RD/RDE

SERIAL NUMBER

MATERIAL NUMBER 893896DE
 SHEET 1/1

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DFTR.	DATE	NAME	DOCUMENT NO.
CHKD.	11.07.2018	BUTERUS	SED 1661250 001 03
STAND.	16.07.2018	WILHELM	CHANGE NO.
	16.07.2018	PRODASTSCHUK	1086956
			SCALE
			1:2,5

DIMENSION
 IN mm
 EXCEPT AS
 NOTED

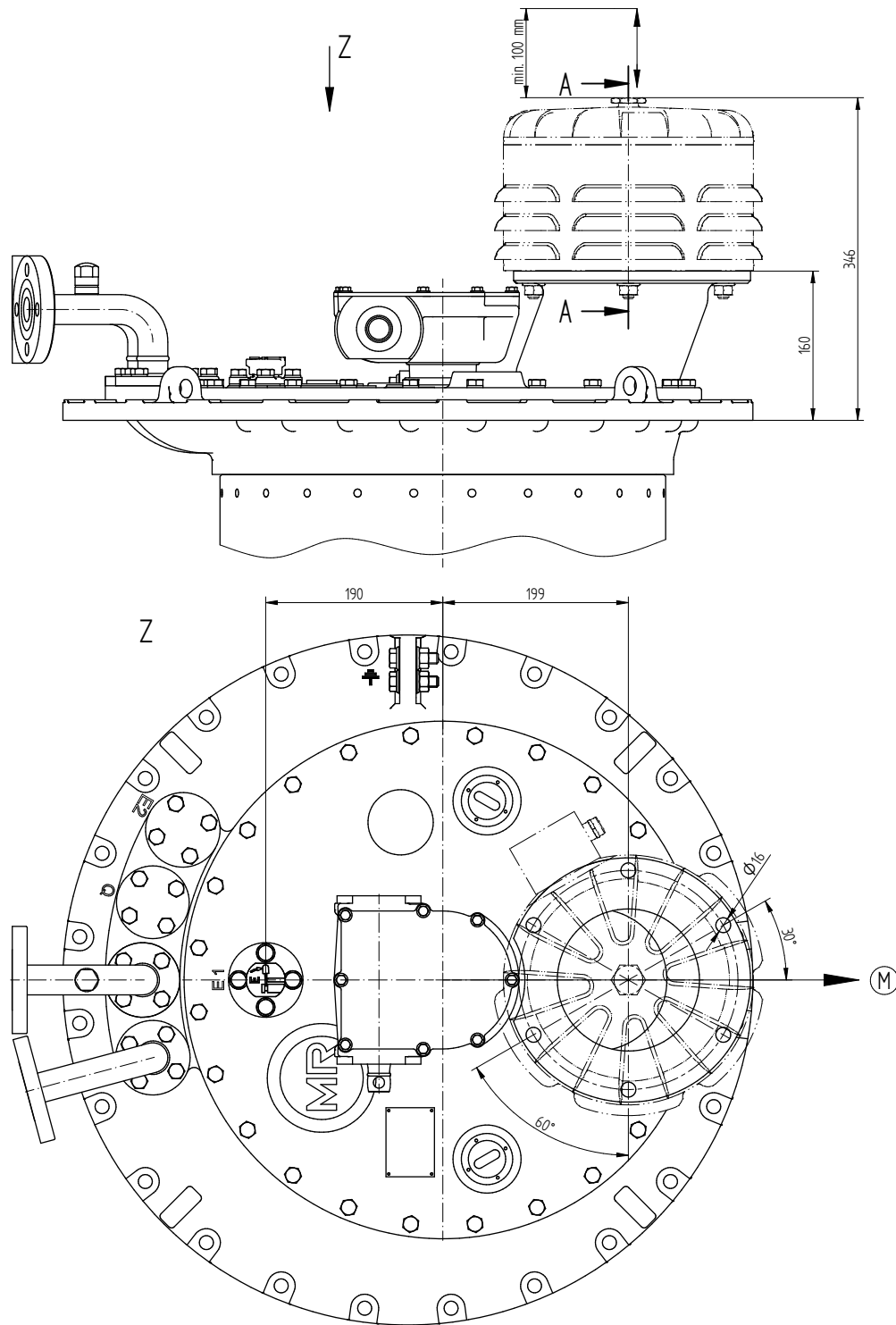


ON-LOAD TAP-CHANGER
 OILTAP® M, MS, R, RM AND VACUTAP® VR®, VM®, VMS®
 WITH MOUNTING FLANGE FOR PRESSURE RELIEF DEVICE

SERIAL NUMBER

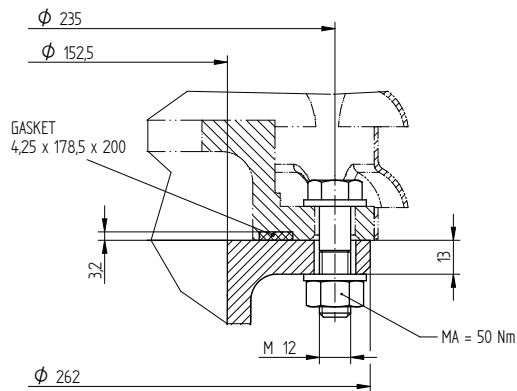
MATERIAL NUMBER
 8951689E

SHEET
 1/1



(M) DRIVE SIDE OF SELECTOR

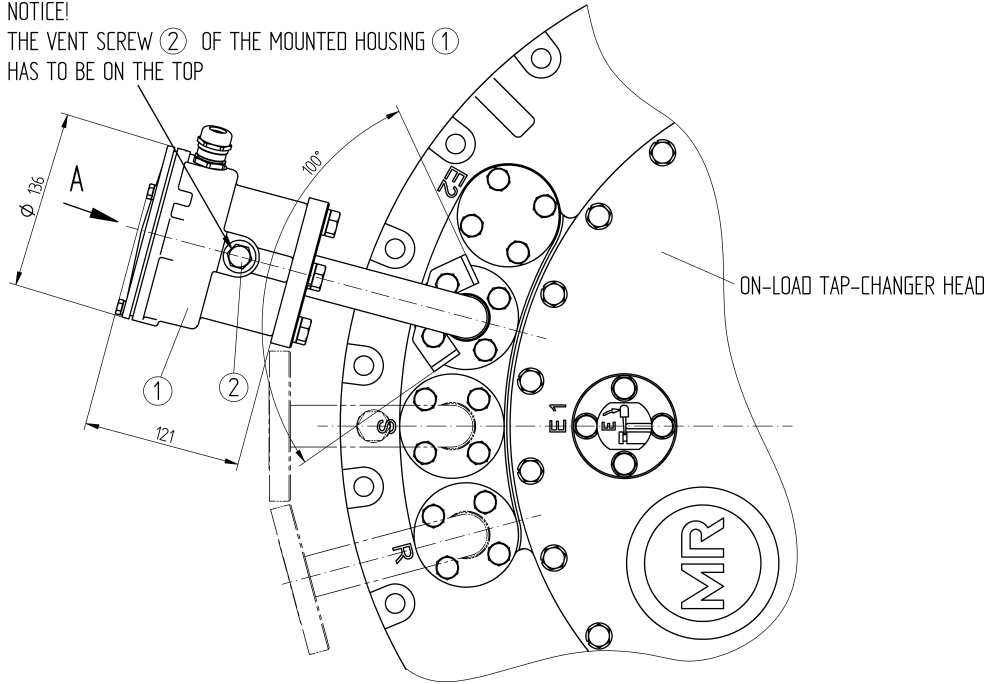
A-A
 1:1



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PIPE CONNECTION WITH TAP-CHANGE SUPERVISORY CONTROL BUSHING WITHOUT OIL FILTER UNIT

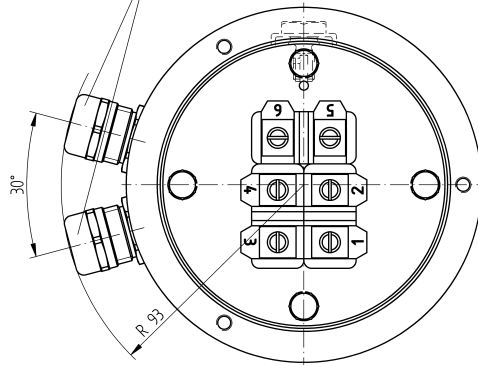
NOTICE!
 THE VENT SCREW ② OF THE MOUNTED HOUSING ① HAS TO BE ON THE TOP



A ↻ 1:1

REPRESENTED WITHOUT COVER

M20x1.5
 CLAMPING RANGE FOR CONNECTION CABLE:
 EXTERNAL DIAMETER: 7 - 13 mm



CONNECTION TERMINALS FOR TAP-CHANGE SUPERVISORY CONTROL

WIRING SEE CONNECTION DIAGRAM OF THE MOTOR-DRIVE UNIT

FUNCTION DIAGRAM FOR TAP-CHANGE SUPERVISORY CONTROL SEE MOTOR-DRIVE CONNECTION DIAGRAM

RATED CONTINUOUS CURRENT: 2A
 RATED VOLTAGE DC/AC (50HZ): 24V ... 250V
 DIELECTRIC STRENGTH: 1150V / 50HZ / 1 MIN.

DIELECTRIC TEST OF ALL VOLTAGE CARRYING TERMINALS TO GROUND:
 2000V AC , 50HZ , TEST-DURATION 1 MIN.

DATE	NAME	DOCUMENT NO.
03.11.2016	RAEDLINGER	SED 2425358 001 02
CHKD.	NERRETER	SCALE
04.11.2016	PRODASTSCHUK	1:2
STAND.		CHANGE NO.
		1078202

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER VACUTAP® VM, VR
 PIPE CONNECTION WITH TAP-CHANGE SUPERVISORY CONTROL

SERIAL NUMBER

MATERIAL NUMBER
 7661612E

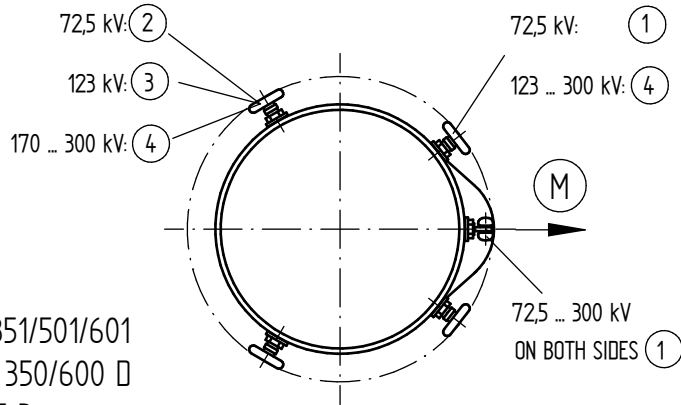
SHEET
 1/1

4.4 Camera d'olio

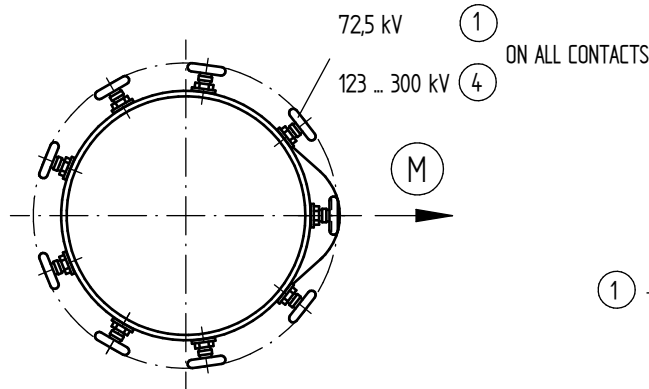
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DATE	DOCUMENT NO.
13.07.2018	SED 1668294_001 02
NAME	SCALE
BUTERUS	-
WILHELM	CHANGE NO.
PRODASTSCHUK	1086956
DATE	DOCUMENT NO.
16.07.2018	SED 1668294_001 02
NAME	SCALE
BUTERUS	-
WILHELM	CHANGE NO.
PRODASTSCHUK	1086956

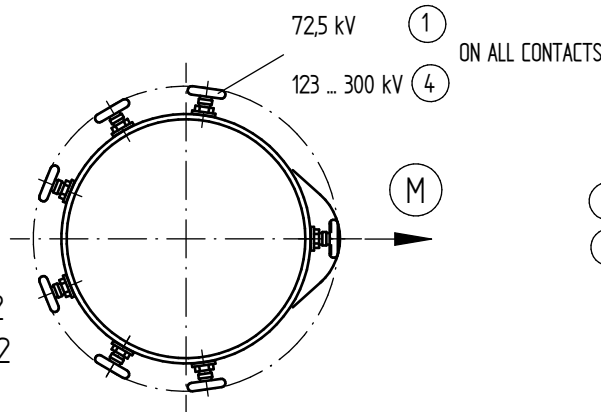
MI 351/501/601
 MIII 350/600 D
 POLE B
 VMI 351/501/651



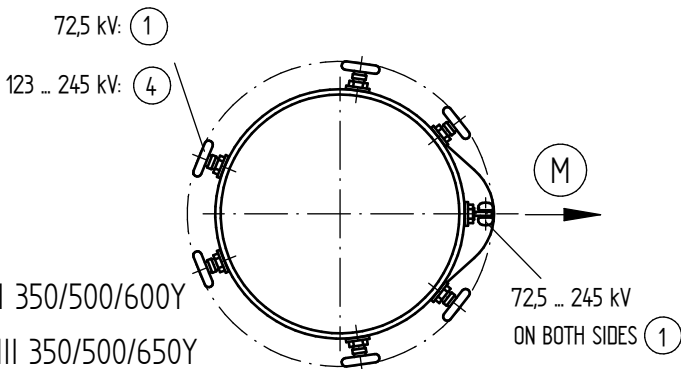
MI 603/803
 MI 1203/1503



VMI 653/803
 VMI 1203/1503

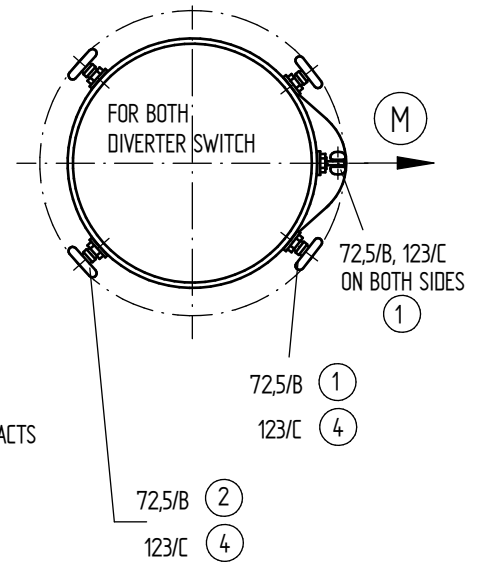


MI 502/602/802
 MII 352/502/602
 VMI 502/652/802
 VMII 352/502/652

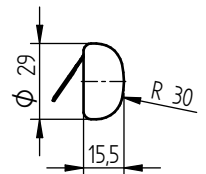


MIII 350/500/600Y
 VMIII 350/500/650Y
 VMSIII 400/650Y

MIII 350/500 D POLE A
 VMIII 350/500 D POLE A

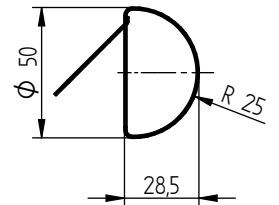


(1) - 056919 (UNCOATED)

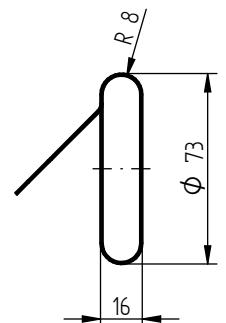
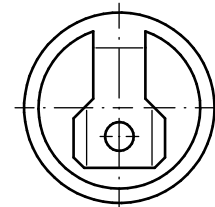


(2) - 016768 (UNCOATED)

(3) - 067620 (COATED)



(4) - 066845 (COATED)



WITH THE CURRENT TAKE-OFF RINGS SCREENING CAPS (1) ARE USED TO ATTACH THE LOWER SCREENING RING (170 ... 300 kV)

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER OILTAP® M / VACUTAP® VM®, VMS®
 SCREENINGS ON OIL COMPARTMENT TERMINALS

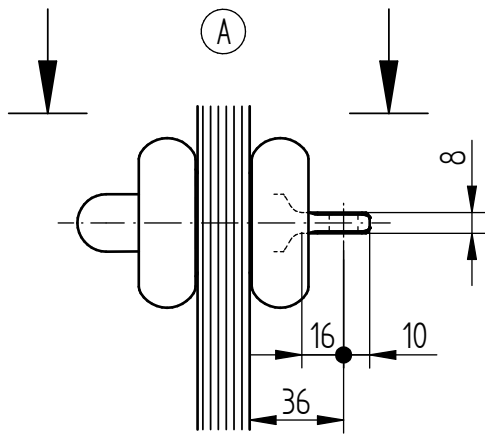
SERIAL NUMBER

MATERIAL NUMBER
 7303362E

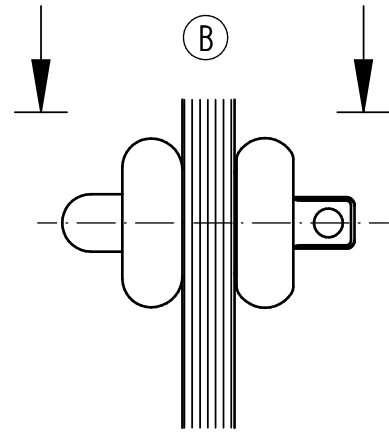
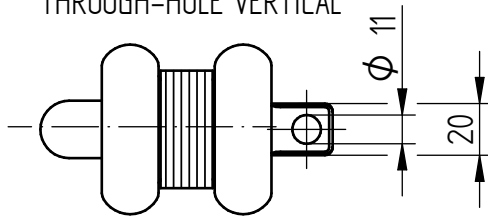
SHEET
 1 / 1

4.5 Selettore

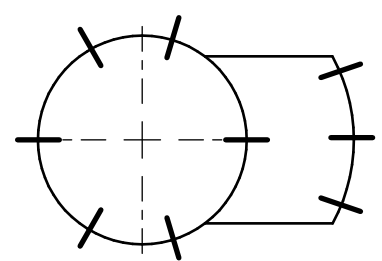
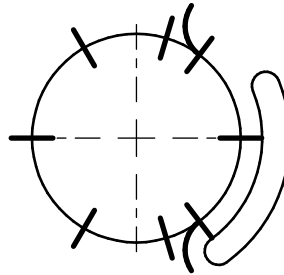
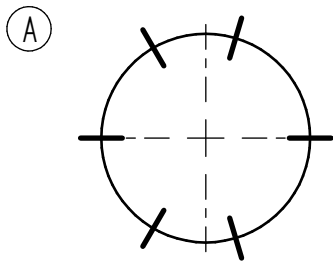
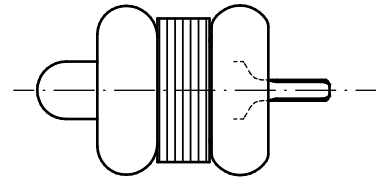
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THROUGH-HOLE VERTICAL



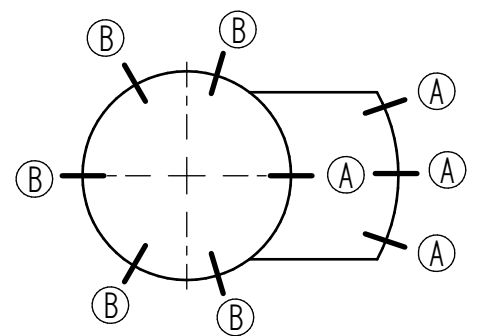
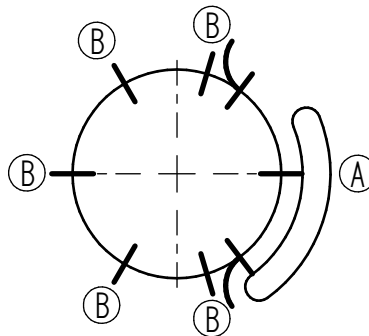
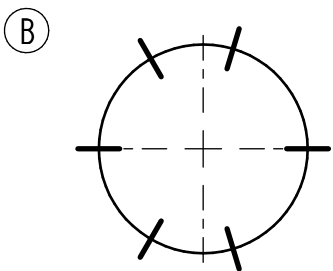
THROUGH-HOLE HORIZONTAL



M III 350 / 500 / 600Y - 0
 VM III 350 / 500 / 650Y - 0
 VMS III 400 / 650Y - C - 0
 M II 352 / 502 / 602 - 0
 VM II 352 / 502 / 652 - 0
 M I 351 / 501 / 601 - 0
 VM I 351 / 501 / 651 - 0

M III 350 / 500 / 600Y - W
 VM III 350 / 500 / 650Y - W
 VMS III 400 / 650Y - C - W
 M II 352 / 502 / 602 - W
 VM II 352 / 502 / 652 - W
 M I 351 / 501 / 601 - W
 VM I 351 / 501 / 651 - W

M III 350 / 500 / 600Y - G
 VM III 350 / 500 / 650Y - G
 VMS III 400 / 650Y - C - G
 M II 352 / 502 / 602 - G
 VM II 352 / 502 / 652 - G
 M I 351 / 501 / 601 - G
 VM I 351 / 501 / 651 - G



M I 802 - 0
 VM I 802 - 0
 VM I 1002 - 0
 M I 1203 / 1503 - 0
 VM I 1203 / 1503 - 0

M I 802 - W
 VM I 802 - W
 VM I 1002 - W
 M I 1203 / 1503 - W
 VM I 1203 / 1503 - W

M I 802 - G
 VM I 802 - G
 VM I 1002 - G
 M I 1203 / 1503 - G
 VM I 1203 / 1503 - G

(A) + (B)

DATE	NAME	DOCUMENT NO.
13.07.2018	BUJERUS	SED 1706800 000 03
16.07.2018	WILHELM	CHANGE NO.
16.07.2018	PRODASTSCHUK	1086956
SCALE		1:2

DIMENSION
IN mm
EXCEPT AS
NOTED



OLTC OILTAP® M / VACUTAP® VM®, VMS®-C
 INSTALLATION POSITION OF SELECTOR CONNECTION CONTACTS
 M-SELECTOR SIZE B/C/D/E

SERIAL NUMBER

MATERIAL NUMBER
890477BE

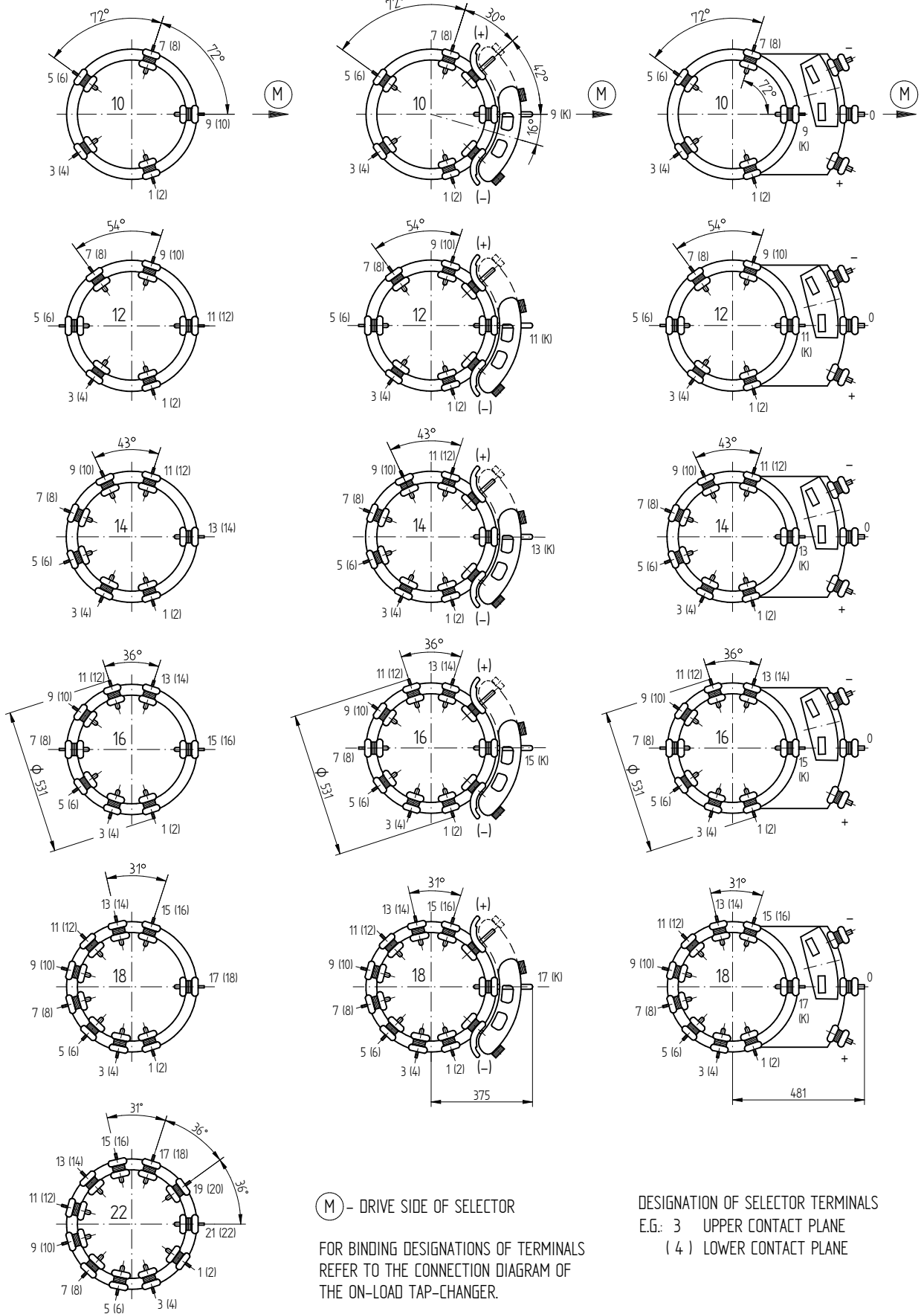
SHEET
1 / 1

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SELECTOR WITHOUT CHANGE-OVER SELECTOR:

SELECTOR WITH REVERSING CHANGE-OVER SELECTOR:
 REPRESENTATION APPLIES TO TYPES M/ VM®/ VMS®-C/ VRC/ VRE III Y AND M/ VM®/ VRC/ VRE II.
 THE UPPER AND LOWER SELECTOR PLANE ARE INTERCHANGED IN TYPES M/ VM®/ VRC/ VRE I AND VRC I HD/ VRE I HD.

SELECTOR WITH COARSE CHANGE-OVER SELECTOR:



(M) - DRIVE SIDE OF SELECTOR

FOR BINDING DESIGNATIONS OF TERMINALS REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

DESIGNATION OF SELECTOR TERMINALS
 E.G.: 3 UPPER CONTACT PLANE
 (4) LOWER CONTACT PLANE

DATE	13.07.2018	DOCUMENT NO.	SED 1050444 001 05
DFTR.	16.07.2018	NAME	BUTERUS
CHKD.	16.07.2018	CHANGE NO.	1086956
STAND.	16.07.2018	SCALE	1:10
		PRODASTSCHUK	

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



OLTC OILTAP® M / VACUTAP® VM®, VMS®-C, VRC, VRE
 ARRANGEMENT OF CONTACTS AT SELECTOR
 M-SELECTOR SIZE B/C/D/DE - SELECTOR PITCH 10 ... 22

SERIAL NUMBER

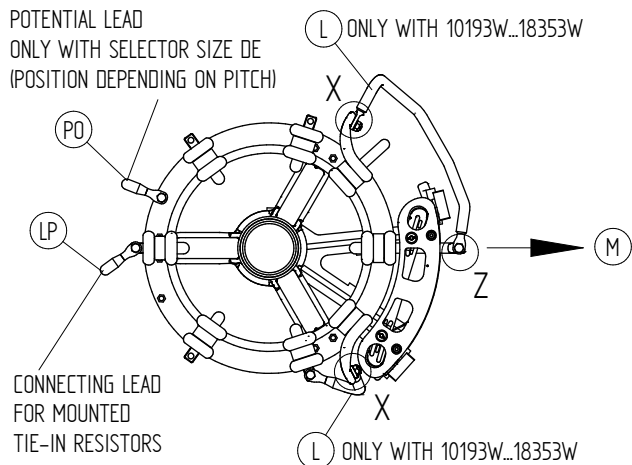
MATERIAL NUMBER
 8980136E

SHEET
 1/1

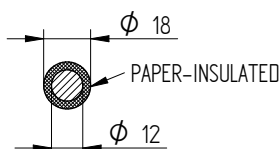
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REVERSING CHANGE-OVER SELECTOR

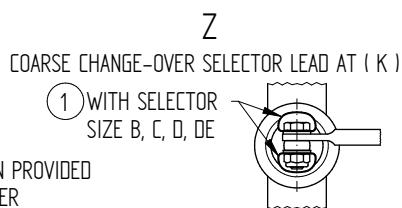
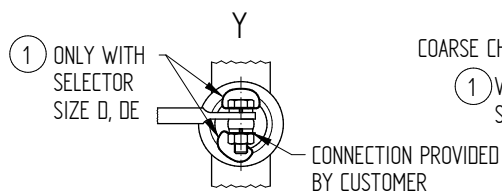
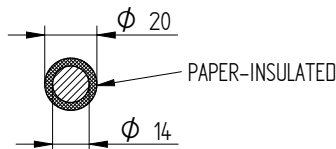
REPRESENTATION OF SELECTOR, 12-PITCH



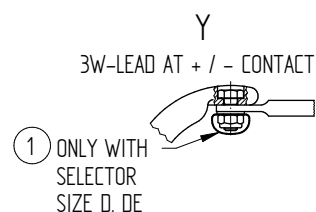
LEAD PROFILE (LP)



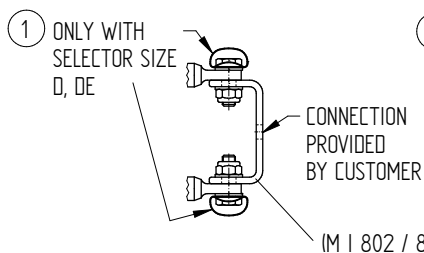
LEAD PROFILE (PO), (L) ONLY WITH SELECTOR SIZE DE



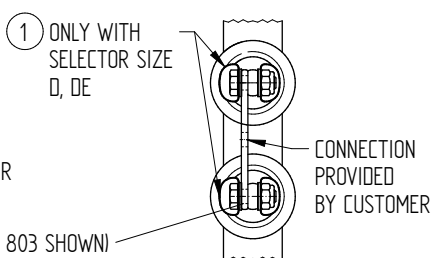
LEAD PROFILE (L) WITH SELECTOR SIZE B, C, D



PARALLEL BRIDGES ARRANGEMENT OF CONTACTS A



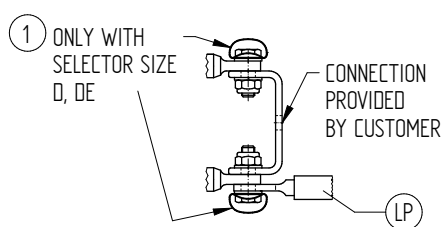
PARALLEL BRIDGES ARRANGEMENT OF CONTACTS B



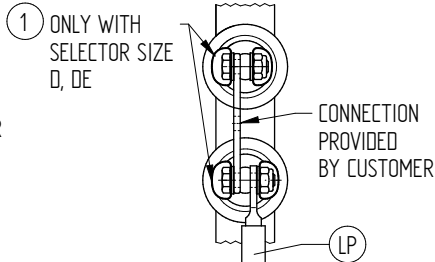
PARALLEL BRIDGES AT + / - CONTACT (WITH REVERSING CHANGE-OVER SELECTOR)



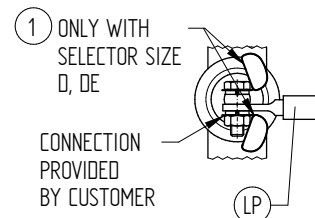
PARALLEL BRIDGES ARRANGEMENT OF CONTACTS A WITH (LP)



PARALLEL BRIDGES ARRANGEMENT OF CONTACTS B WITH (LP)



CONNECTION CONTACT (STANDARD) WITH (LP)



(M) DRIVE SIDE OF SELECTOR
(LP) (PO) (L) CONNECTING LEADS

NOTICE: WITH SELECTOR SIZE D AND DE SCREENING CAPS 1 ARE UNMOUNTED DELIVERED TO ATTACH THE LEADS, PROVIDED BY CUSTOMER, TO THE TAPINGS OF THE TAP WINDING.

DOCUMENT NO.	DATE	NAME	CHANGE NO.	SCALE
1668279 001 03	13.07.2018	BUTERUS		
1086956	16.07.2018	WILHELM		
	16.07.2018	PRODASTSCHUK		

DIMENSION IN mm EXCEPT AS NOTED



OLTC OILTAP® M, RM / VACUTAP® VRC/VRE, VM®, VMS®-C
SCREENINGS AT TAP SELECTOR AND CHANGE-OVER SELECTOR
M-SELECTOR SIZE B/C/D/DE

SERIAL NUMBER

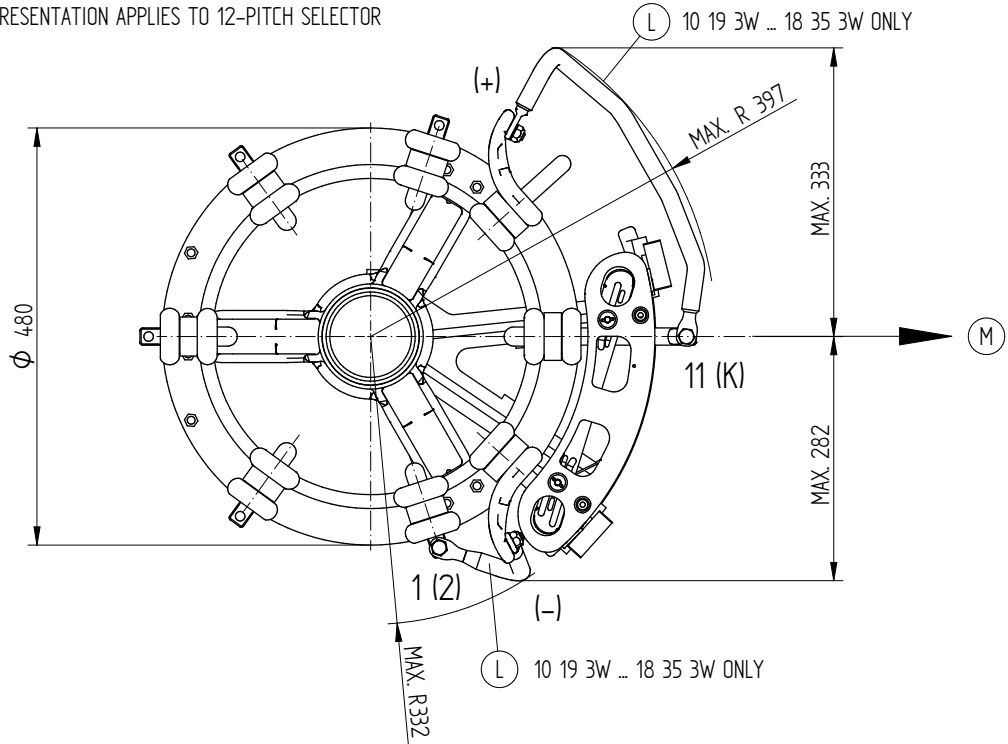
MATERIAL NUMBER 7303353E SHEET 1/1

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DATE	NAME	DOCUMENT NO.
DFTR. 13.07.2018	BUTERUS	SED 1474939 000 06
CHKD. 16.07.2018	WILHELM	CHANGE NO.
STAND. 16.07.2018	PRODASTSCHUK	1086956
		SCALE 1:3

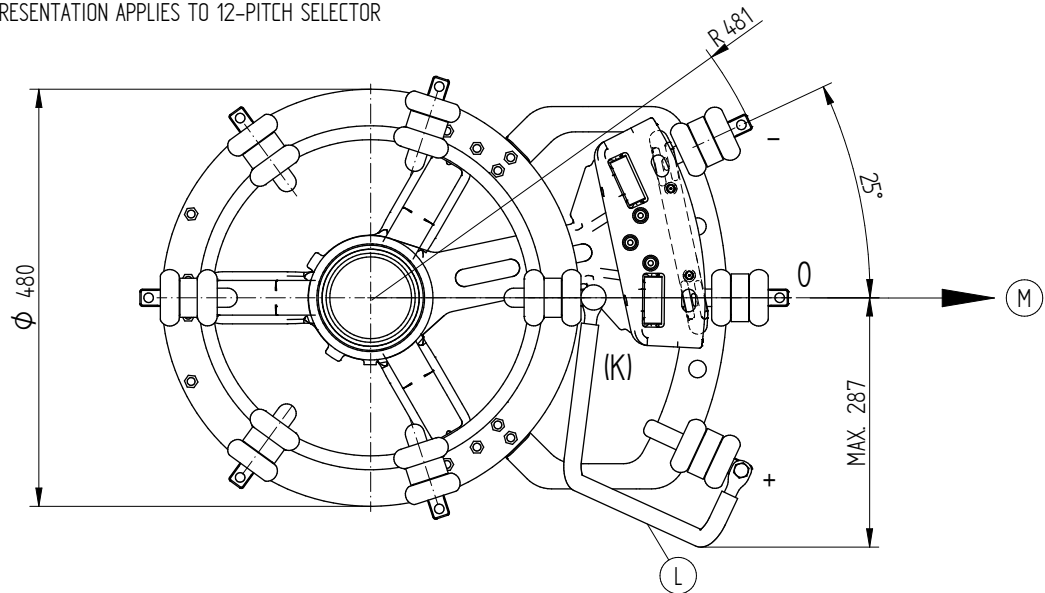
REVERSING CHANGE-OVER SELECTOR

E - F (TYPE M / VM / VMS-C) AND D - D (TYPE VRC / VRE / VRC I HD / VRE I HD / VRS / VRM)
 REPRESENTATION APPLIES TO 12-PITCH SELECTOR



COARSE CHANGE-OVER SELECTOR

G - H (TYPE M / VM / VMS-C) AND E - E (TYPE VRC / VRE / VRC I HD / VRE I HD / VRS / VRM)
 REPRESENTATION APPLIES TO 12-PITCH SELECTOR

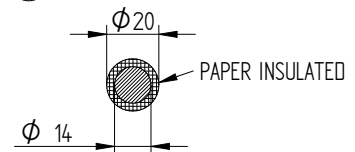
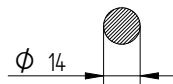


(L) SELECTOR SIZE B, C, D

(L) SELECTOR SIZE DE

(M) DRIVE SIDE OF SELECTOR

(L) CONNECTING LEADS



THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS

DIMENSION
IN mm
EXCEPT AS
NOTED



OLT C OILTAP® M / VACUTAP® VM®, VMS®-C, VRC, VRE, VRS, VRM
 CONNECTING LEAD 3W AND 1G / 3G
 M-SELECTOR SIZE B/C/D/DE

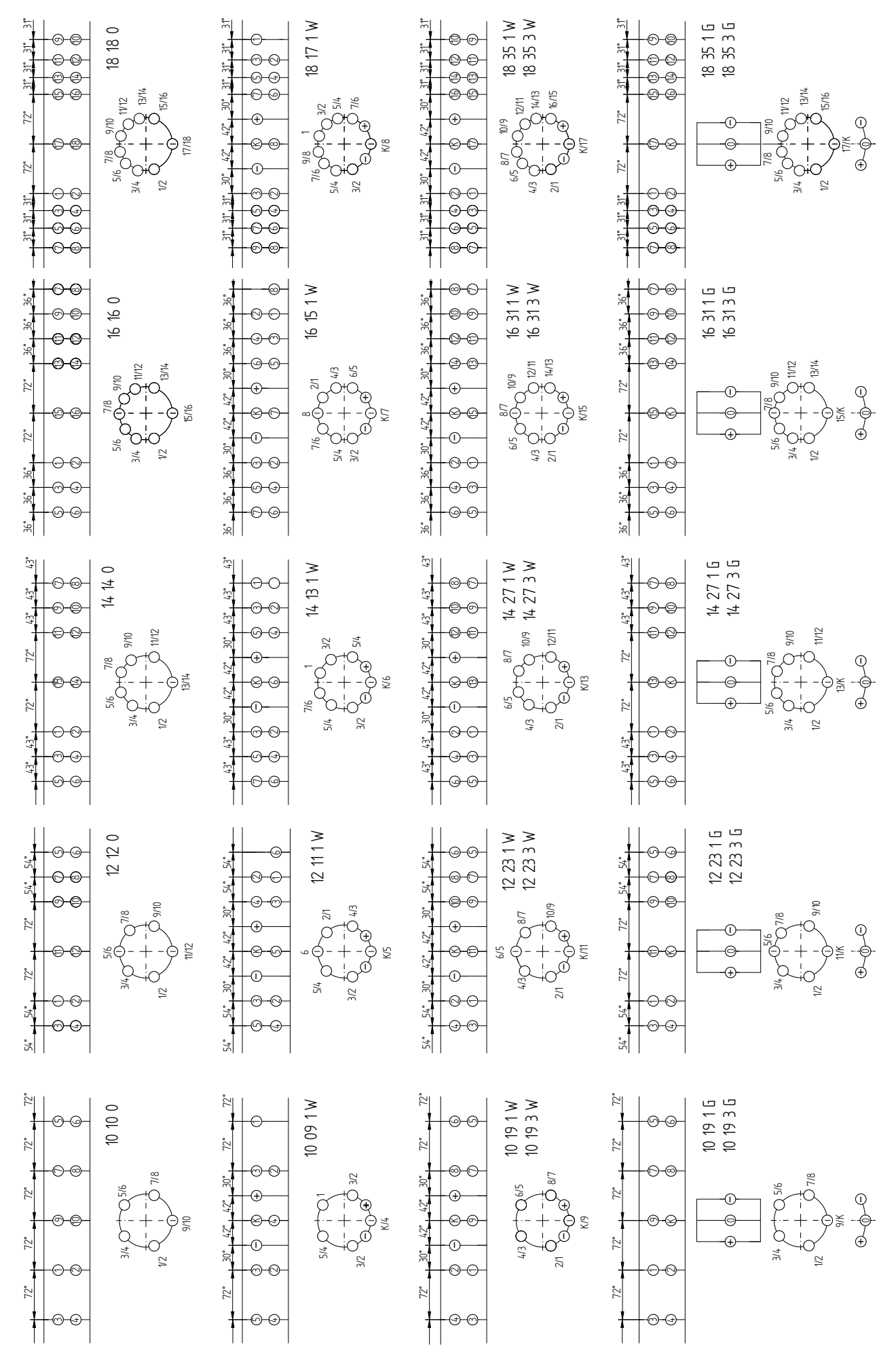
SERIAL NUMBER

MATERIAL NUMBER
7235904E

SHEET
1/1

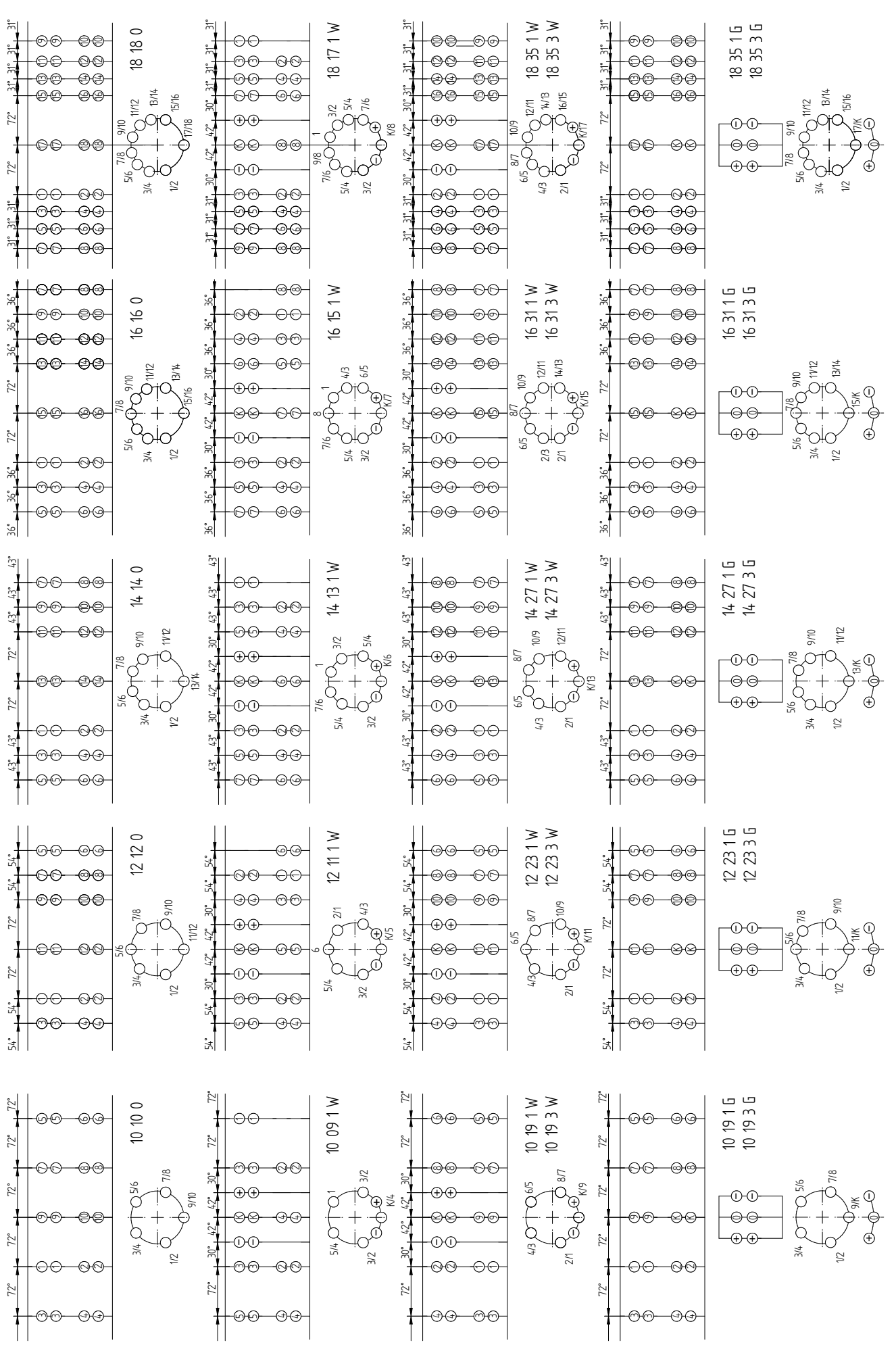
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DATE	NAME	DOCUMENT NO.
19.08.2015	RAEDLINGER	SED 26/13347_001 01
21.08.2015	TKBIRKMANN	CHANGE NO.
24.08.2015	KLEYN	1066507
		SCALE
		-



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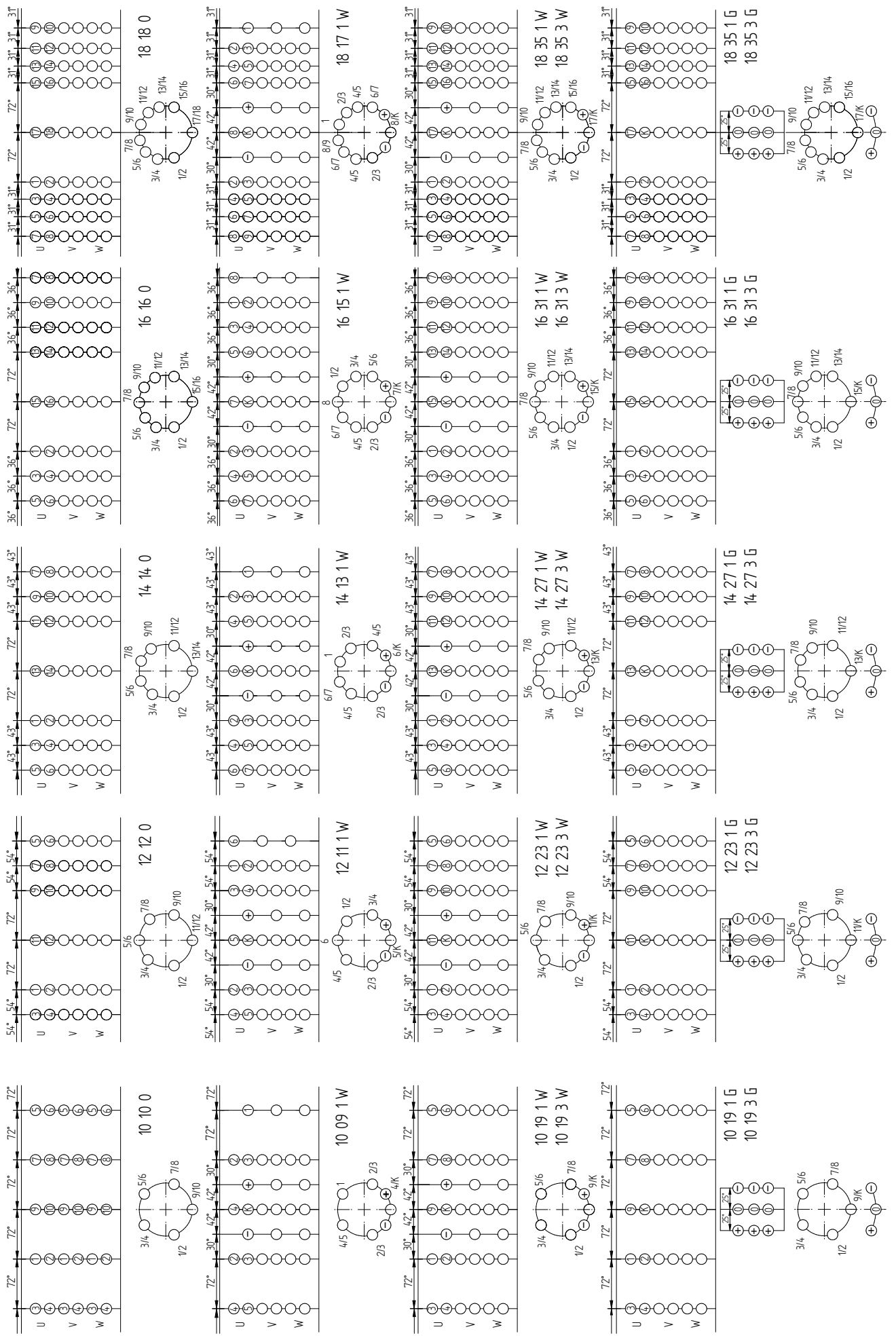
DATE	NAME	DOCUMENT NO.
DFTR. 19.08.2015	RAEDLINGER	SED 26/13/29 001 01
CHKD. 21.08.2015	TKBIRKMAN	CHANGE NO.
STAND. 24.08.2015	KLEYN	1066507
		SCALE
		-



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DATE	NAME	DOCUMENT NO.
DfTR. 13.07.2018	BUTERUS	SED 261976 001 02
CHKD. 16.07.2018	WILHELM	CHANGE NO.
SCALE		
STANDJ. 16.07.2018	PRODASTSCHUK	1086956



DIMENSION
IN mm
EXCEPT AS
NOTED



OLTC VACUTAP® VM® III 350/500/650, VMS® III 400/650 - C
VRC III 400/550/700, VRE III 700 / OILTAP® M III 350/500/600, RM III 600
CONTACT ARRANGEMENT M-SELECTOR SIZE B/C/D/DE

SERIAL NUMBER	
MATERIAL NUMBER	SHEET
8911076E	1/1

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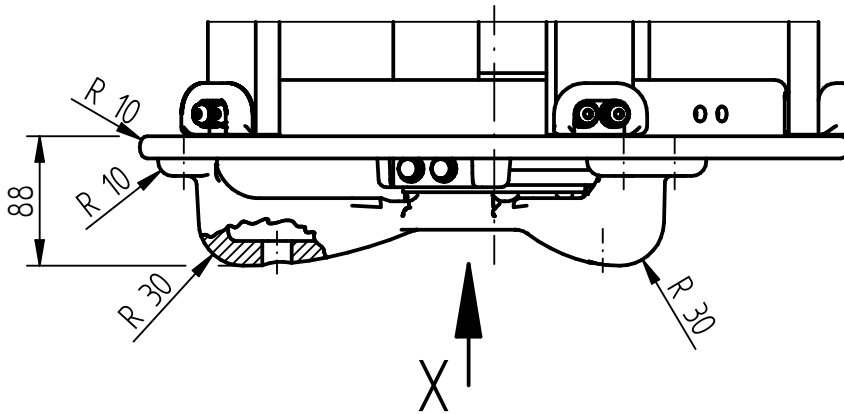
DATE	NAME	DOCUMENT NO.
DFTR. 13.07.2018	BUTERUS	SED 1708618 000 03
CHKD. 16.07.2018	WILHELM	CHANGE NO. SCALE
STAND. 16.07.2018	PRODASTSCHUK	1086956 15

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



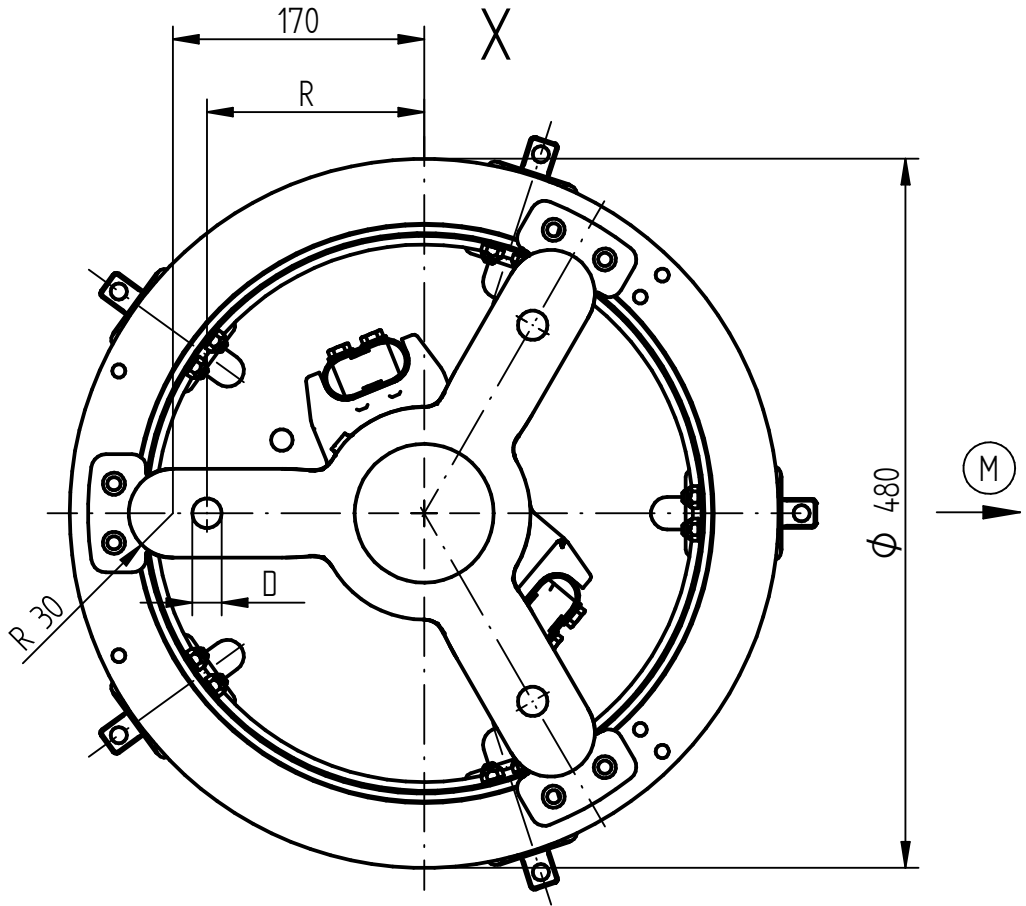
ON-LOAD TAP-CHANGER OILTAP® M / VACUTAP® VM®, VMS®-C
 SELECTOR BASE WITH HOLE Ø20 AND Ø13
 M-SELECTOR SIZE B/C/D/DE

SERIAL NUMBER	
MATERIAL NUMBER 7256494E	SHEET 1 / 1



(M) DRIVE SIDE OF SELECTOR

R	D	SELECTOR BASE
147	20	097251
160	13	097252



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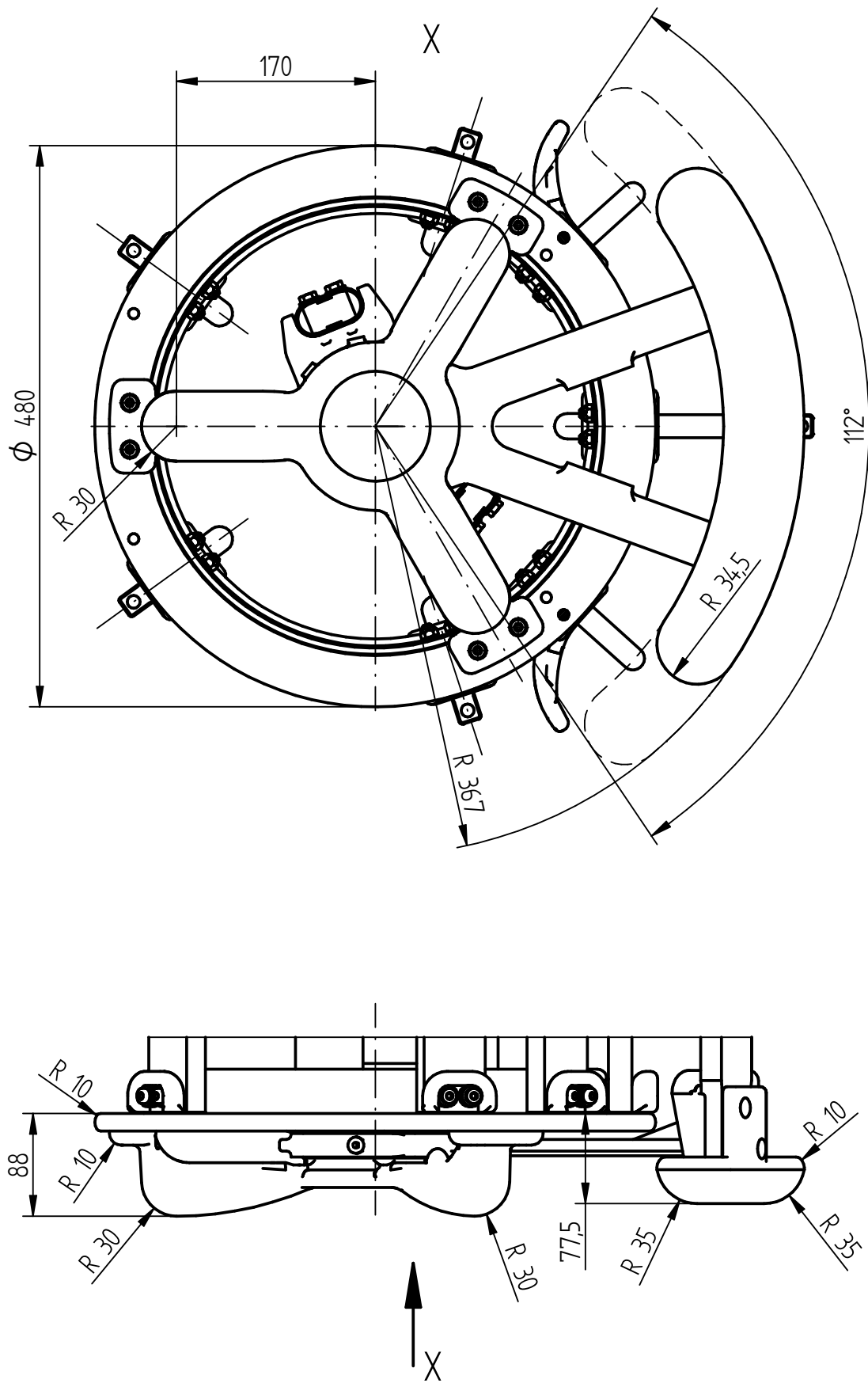
DATE	NAME	DOCUMENT NO.
DFTR. 13.07.2018	BUTERUS	SED 1708547 000 03
CHKD. 16.07.2018	WILHELM	CHANGE NO. SCALE
STAND. 16.07.2018	PRODASTSCHUK	1086956 15

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



OLTC OILTAP® M / VACUTAP® VM®, VMS®-C, VRC, VRE
 ADDITIONAL SCREENING ON SELECT OR BASE - REVERSING COS
 M-SELECTOR SIZE B/C/D/DE

SERIAL NUMBER	
MATERIAL NUMBER 8939344E	SHEET 1 / 1



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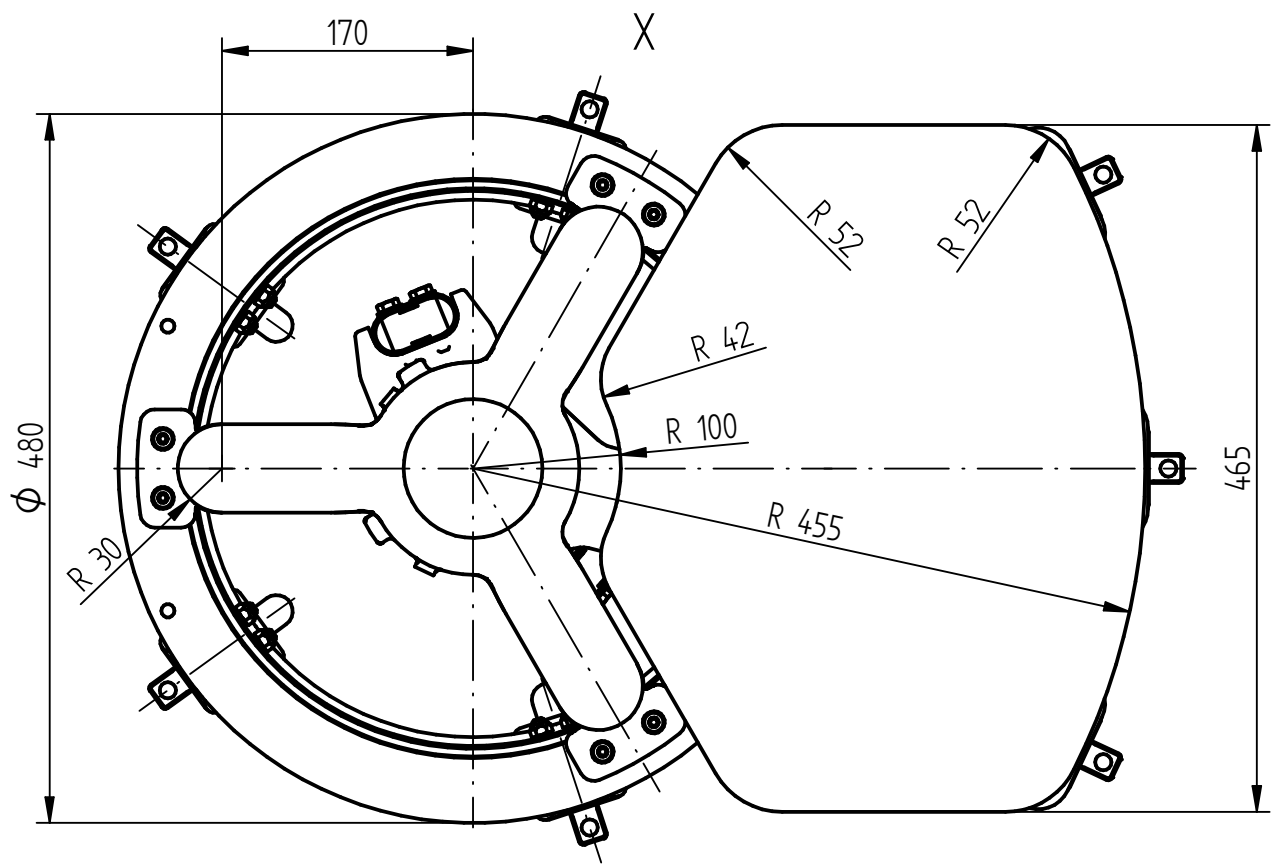
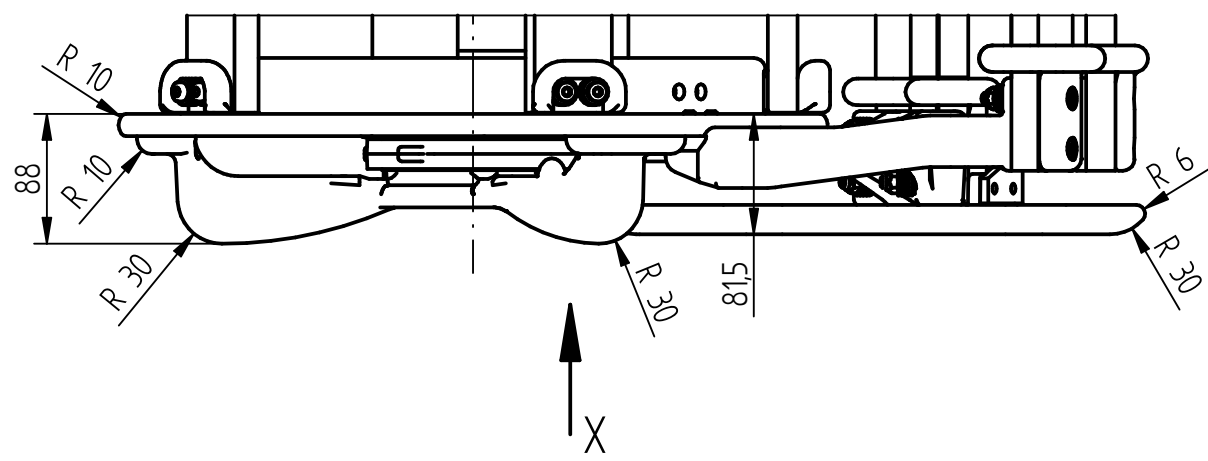
DATE	NAME	DOCUMENT NO.
DFTR. 13.07.2018	BUTERUS	SED 1708571 000 03
CHKD. 16.07.2018	WILHELM	CHANGE NO. SCALE
STAND. 16.07.2018	PRODASTSCHUK	1086956 15

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



OLTC OILTAP® M / VACUTAP® VM®, VMS®-C, VRC, VRE
 ADDITIONAL SCREENING ON SELECTOR BASE - COARSE COS
 M-SELECTOR SIZE B/C/D/DE

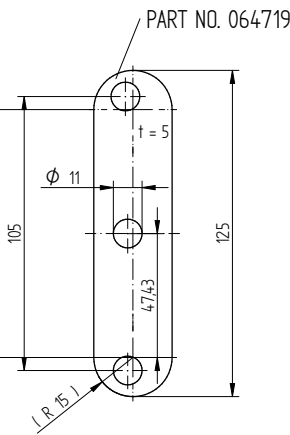
SERIAL NUMBER	
MATERIAL NUMBER 8939354E	SHEET 1 / 1



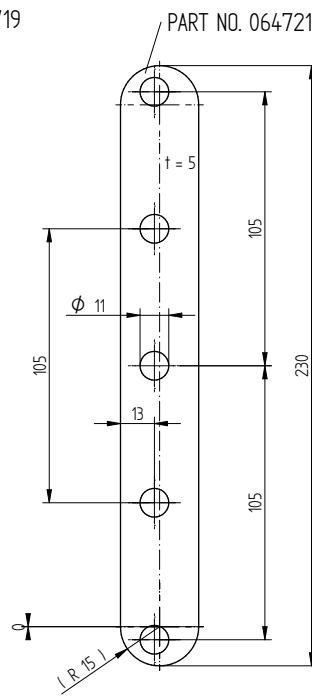
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ARRANGEMENT OF CONTACT B

M | 802 / 803
VM | 802 / 1002

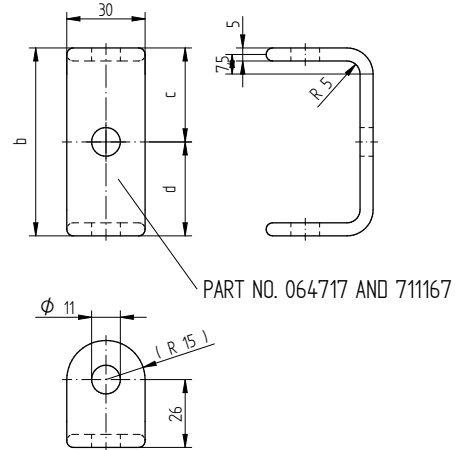


M | 1203 / 1503
VM | 1203 / 1503



ARRANGEMENT OF CONTACT A

M | 802 / 803 / 1203 / 1503
VM | 802 / 1002 / 1203 / 1503

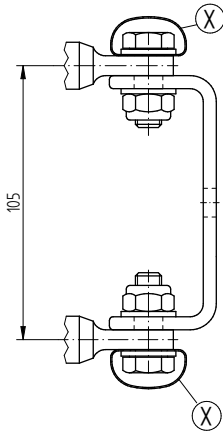


ARRANGEMENT OF CONTACT (see 890477:.)	PART NO.	DIMENSION b	DIMENSION c	DIMENSION d
A WITHOUT CONNECTING LEAD	064717	97	48,5	48,5
A WITH CONNECTING LEAD	711167	91	48,5	42,5

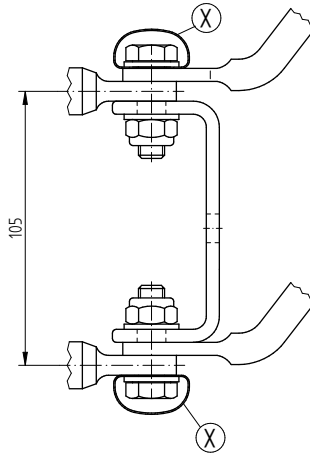
INSTALLATION OF PARALLEL BRIDGES FOR ARRANGEMENT OF CONTACT A WITHOUT AND WITH CONNECTING LEAD FOR 3W CONNECTION

M | 802 / 803
VM | 802 / 1002

WITHOUT
CONNECTING LEAD

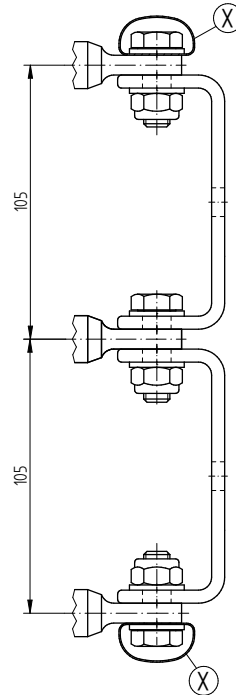


WITH CONNECTING LEAD

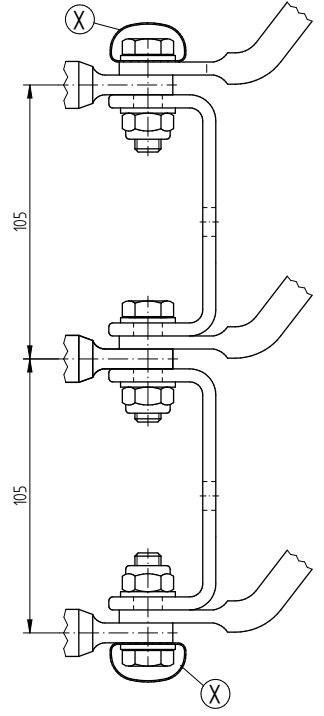


M | 1203 / 1503
VM | 1203 / 1503

WITHOUT
CONNECTING LEAD



WITH CONNECTING LEAD



(X) ONLY FOR SELECTOR SIZE D AND DE

PLEASE NOTE: PARALLEL BRIDGES ARE NOT INCLUDED IN THE STANDARD DELIVERY.

DATE	NAME	DOCUMENT NO.
18.01.2016	RAEDLINGER	SED 1050471 000 05
25.02.2016	TKBIRKMAN	CHANGE NO.
25.02.2016	PRODASTSCHUK	1072100
		SCALE 1:1

DIMENSION
IN mm
EXCEPT AS
NOTED



ON-LOAD TAP-CHANGER OILTAP® M | 802/803/1203/1503 AND
VACUTAP® VM | 802/1002/1203/1503 - SELECTOR SIZE B/C/D/DE
BRIDGES FOR PARALLEL CONNECTION OF SELECTOR CONN. CONT.

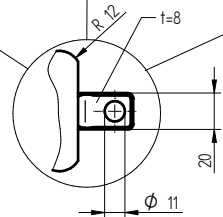
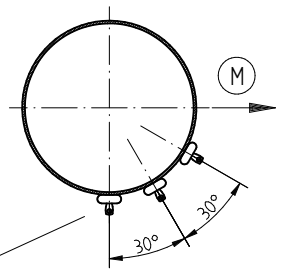
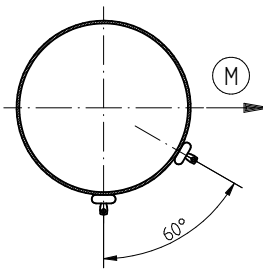
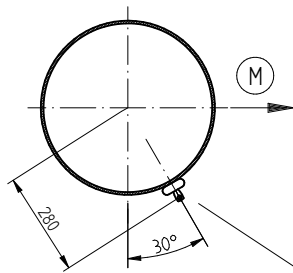
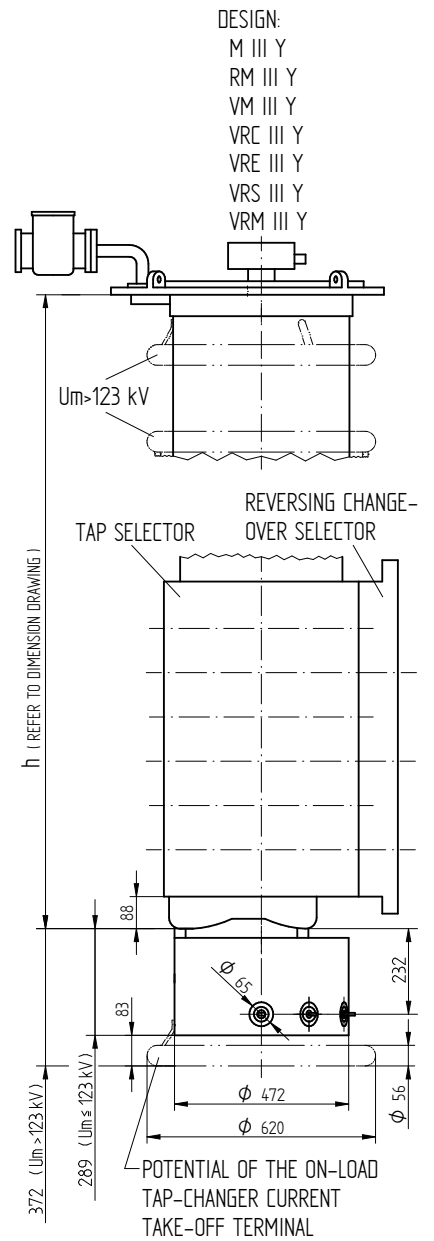
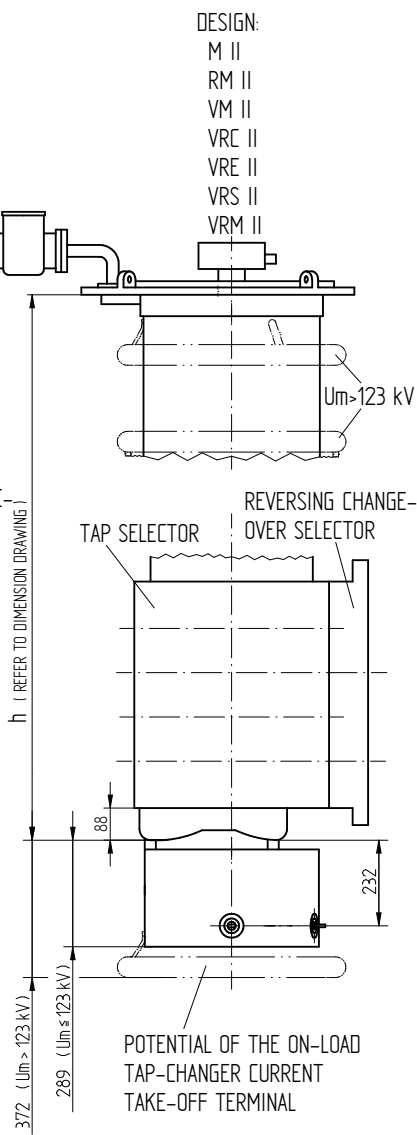
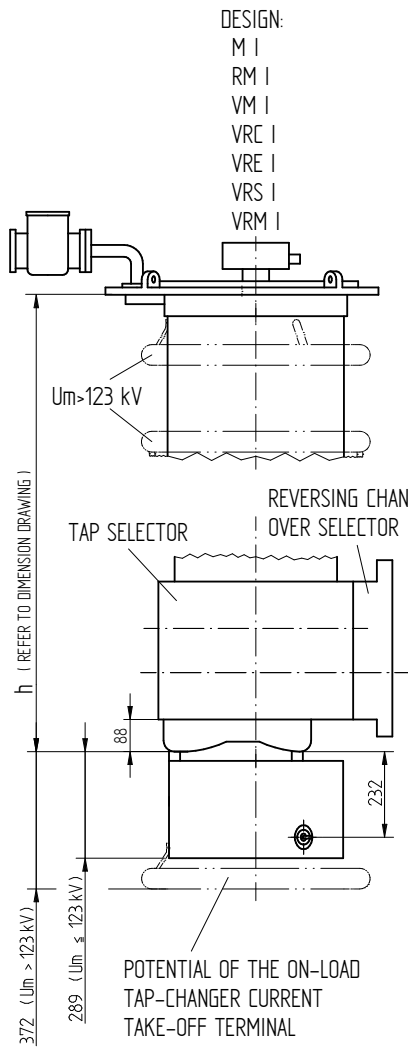
SERIAL NUMBER

MATERIAL NUMBER
8995984E

SHEET
1/1

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DATE	18.10.2016	DOCUMENT NO.	SED 1050468 001 07
DFTR.	19.10.2016	NAME	CTETPRAKTIK2
CHKD.	20.10.2016	CHANGE NO.	HILTNER 1077668
STAND.		SCALE	1:10
		PRODASTSCHUK	



CONNECTION FOR EXTERNAL TIE-IN RESISTOR

(M) DRIVE SIDE OF SELECTOR

CONNECTING FROM TIE-IN SWITCH TO ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL IS CARRIED OUT BY MR THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES

NOT APPLICABLE TO VM I 301, VM II 302 AND VM III 300 Y

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



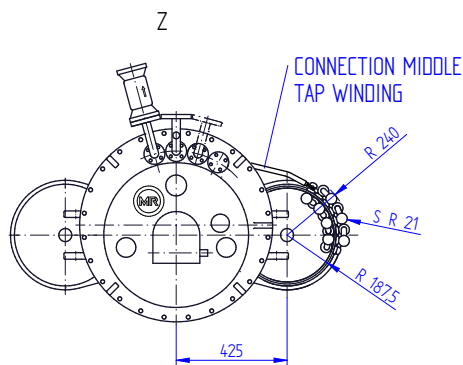
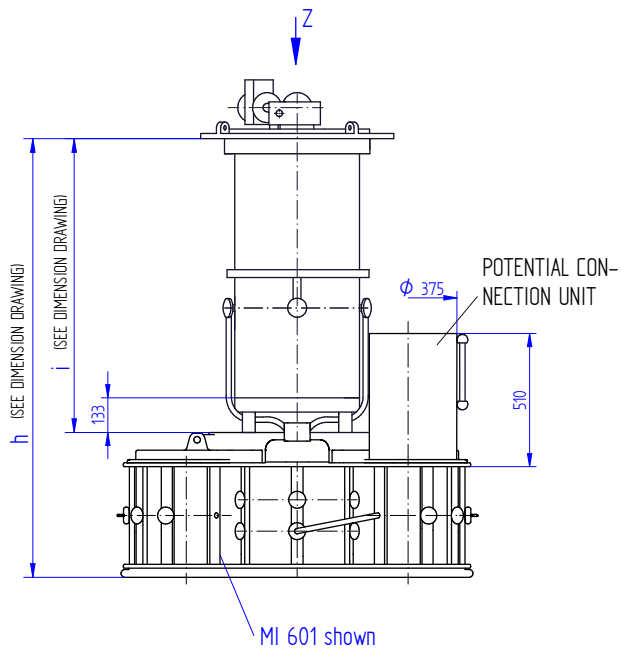
ON-LOAD TAP-CHANGER OILTAP®M, RM / VACUTAP® VM, VR
 M/RM/VM/VRC/VRE/VRS/VRM - REVERSING CHANGE-OVER SEL. - SIZE B/C/D/DE
 POTENTIAL CONNECTION UNIT WITH TIE-IN SWITCH WITHOUT TIE-IN RESISTORS

SERIAL NUMBER

MATERIAL NUMBER
 8988046E

SHEET
 1/1

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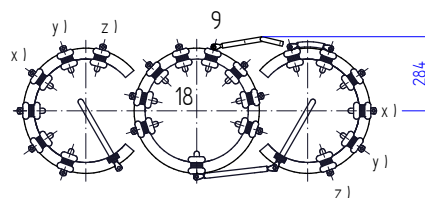
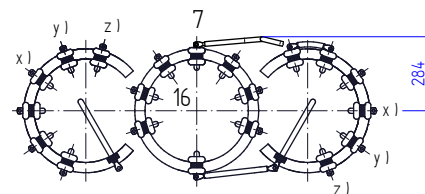
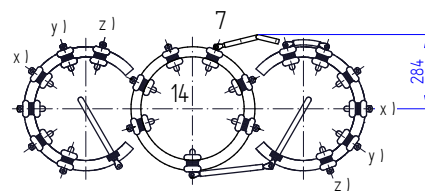
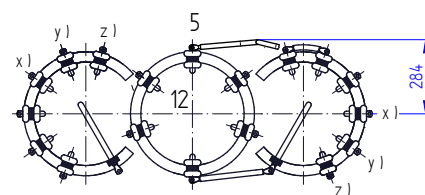
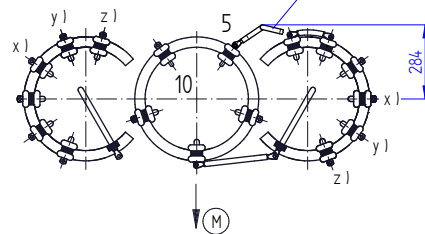
MAX. 7 RESISTOR ELEMENTS
(AS SHOWN)

ARRANGEMENT OF SELECTOR CONTACTS,
 2-5 COARSE TAP CONNECTIONS

(PLAN VIEW)

- x) FOR 3 COARSE TAP CONNECTIONS
- x) AND y) FOR 4 COARSE TAP CONNECTIONS
- x), y) AND z) FOR 5 COARSE TAP CONNECTIONS

CONNECTION MIDDLE TAP WINDING



FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

(M) DRIVE SIDE OF SELECTOR

DOCUMENT NO.	19.04.2018	NAME	1087395
DFTR.	25.04.2018	RAEDLINGER	110
CHKD.	25.04.2018	HAUER	SCALE
STAND.	25.04.2018	PRODASTSCHUK	1:10

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER OILTAP® M I AND VACUTAP® VM I, VRC I, VRS I, VRM I
 WITH MULTIPLE COARSE CHANGE-OVER SELECTOR
 MOUNTING OF TIE-IN RESISTORS - SELECTOR SIZE B/C/D

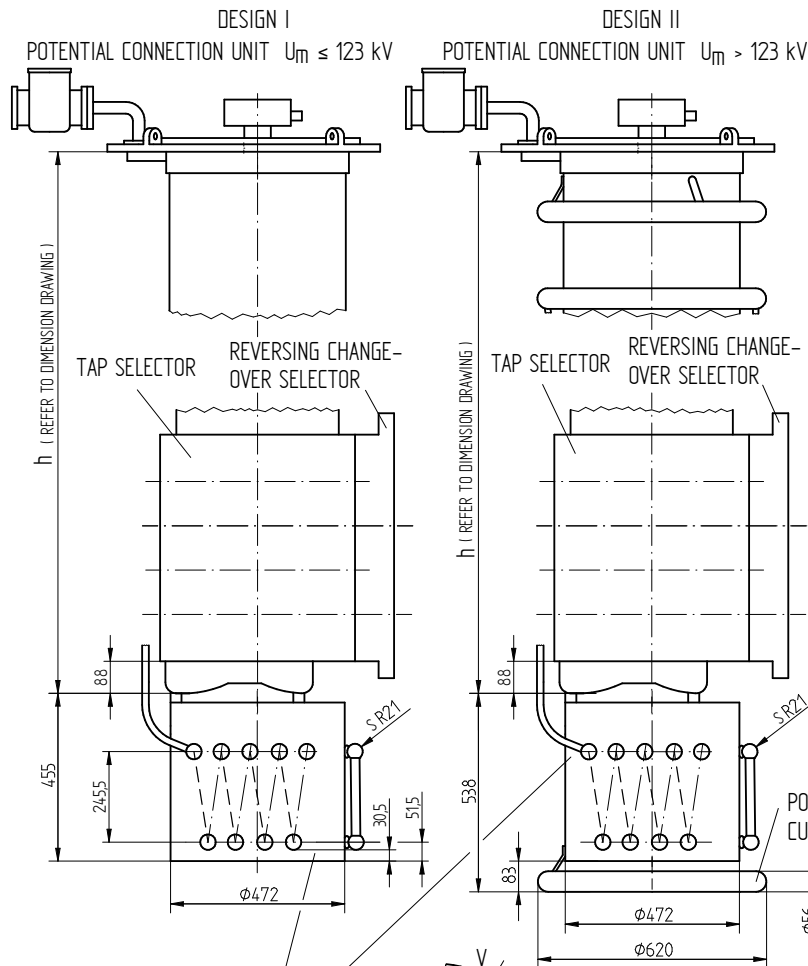
SERIAL NUMBER

MATERIAL NUMBER
 7197337E

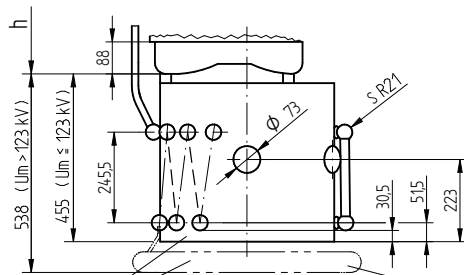
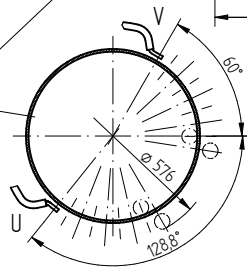
SHEET
 1/1

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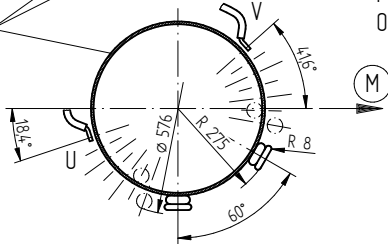
DATE	20.10.2016	DOCUMENT NO.	SED 1665189 000 05
DATE	20.10.2016	NAME	CTETPRAKTIK2
DATE	20.10.2016	SCALE	1:10
DATE	20.10.2016	CHANGE NO.	1077668
DATE	20.10.2016	PRODASTSCHUK	1077668



WITHOUT TIE-IN SWITCH
 FOR MAX. 8 RESISTOR
 ELEMENTS PER PHASE
 (AS SHOWN)



WITH TIE-IN SWITCH
 FOR MAX. 6 RESISTOR
 ELEMENTS PER PHASE
 (AS SHOWN)

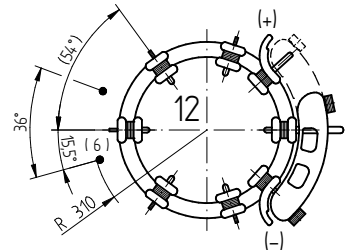
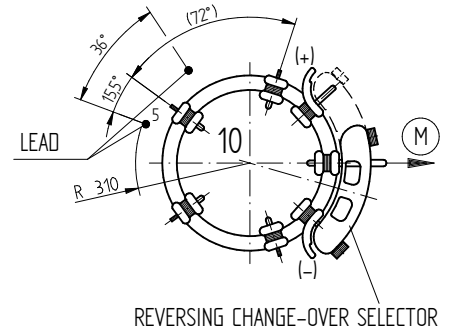


(M) DRIVE SIDE OF SELECTOR

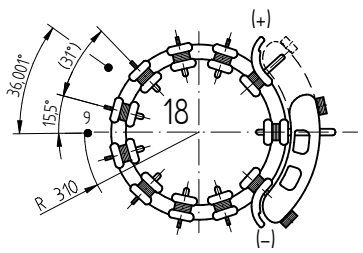
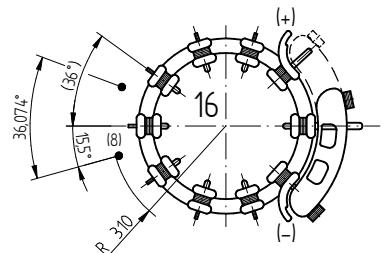
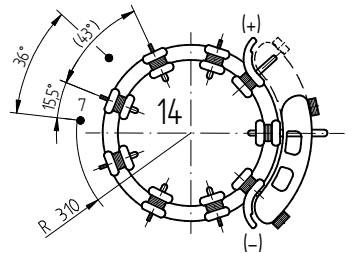
THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES
 CONNECTIONS FROM THE TIE-IN RESISTOR TO THE SELECTOR AND TO THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL ARE CARRIED OUT BY MR

NOT APPLICABLE TO VM II 302

ARRANGEMENT OF LEADS
 TIE-IN RESISTOR - PHASE
 FOR CONTACT LOCATION REFER TO
 RELEVANT DIMENSION DRAWING



POTENTIAL OF THE ON-LOAD TAP-CHANGER
 CURRENT TAKE-OFF TERMINAL



DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER OILTAP®M, RM / VACUTAP® VM, VR
 M/RM/VM/VRC/VRE/VRS/VRM II- REVERS. CHANGE-OVER SEL- SIZE B/C/D/DE
 TIE-IN RESISTORS WITH/WITHOUT TIE-IN SWITCH

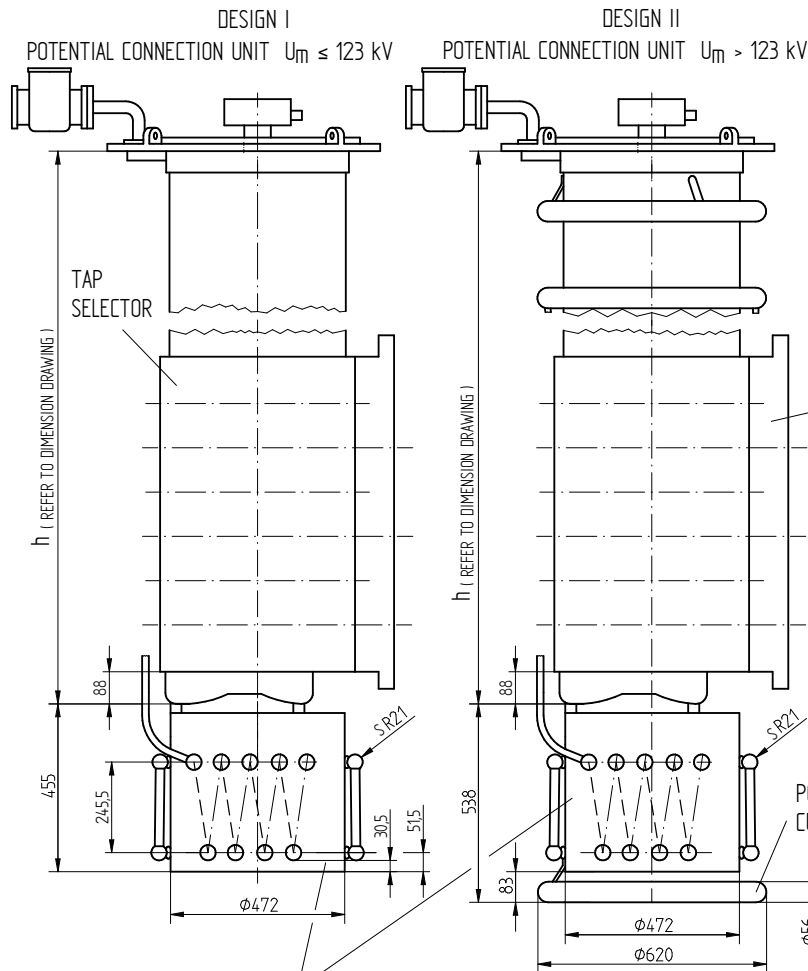
SERIAL NUMBER

MATERIAL NUMBER
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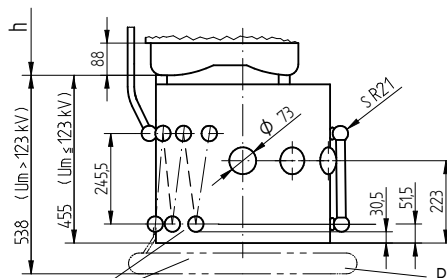
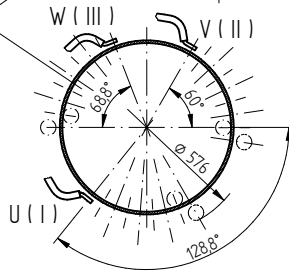
SHEET
 1/1

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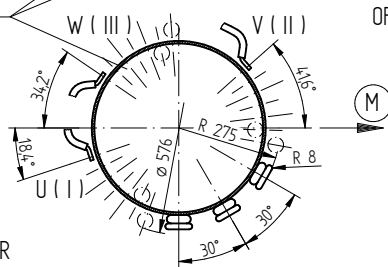
DATE	DOCUMENT NO.	NAME	SCALE
12.07.2018	SED 1665139 000 06	BUTERUS	1:10
CHKO. 16.07.2018	CHANGE NO.	WILHELM	
STAND. 16.07.2018	1086956	PRODASTSCHUK	



WITHOUT TIE-IN SWITCH
 FOR MAX. 8 RESISTOR
 ELEMENTS PER PHASE
 (AS SHOWN)



WITH TIE-IN SWITCH
 FOR MAX. 6 RESISTOR
 ELEMENTS PER PHASE
 (AS SHOWN)

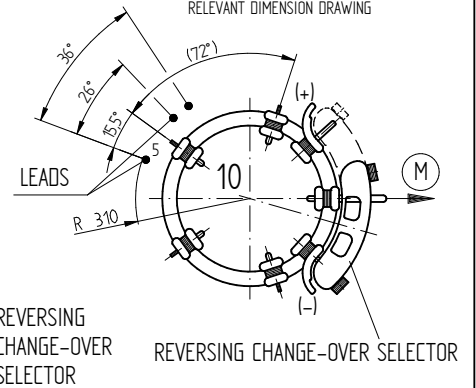


(M) DRIVE SIDE OF SELECTOR

THE DETAILED CONNECTION DIAGRAM IS BINDING FOR THE DESIGNATION OF THE CONNECTION CONTACTS AND PHASES
 CONNECTIONS FROM THE TIE-IN RESISTOR TO THE SELECTOR AND TO THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL ARE CARRIED OUT BY MR

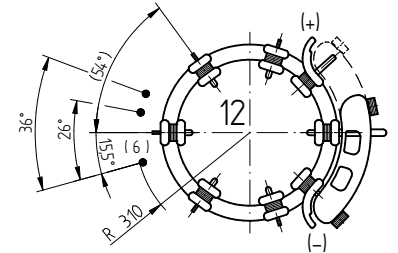
NOT APPLICABLE TO VMS III 400 Y - B

ARRANGEMENT OF LEADS
 TIE-IN RESISTOR - PHASE
 FOR CONTACT LOCATION REFER TO
 RELEVANT DIMENSION DRAWING

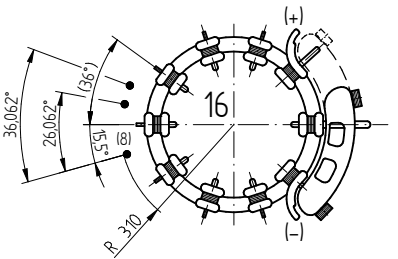
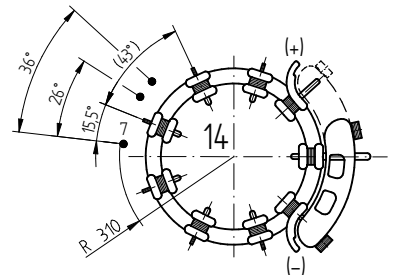


REVERSING
 CHANGE-OVER
 SELECTOR

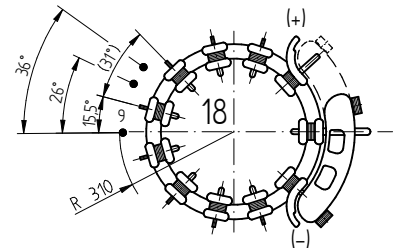
REVERSING CHANGE-OVER SELECTOR



POTENTIAL OF THE ON-LOAD TAP-CHANGER
 CURRENT TAKE-OFF TERMINAL



POTENTIAL OF THE MIDDLE
 OF THE TAP WINDING



DIMENSION
 IN mm
 EXCEPT AS
 NOTED



OLTC OILTAP® M, RM / VACUTAP® VM®, VMS®-C, VR®
 M/RM/VM/VMS/VRC/VRE/VRS/VRM III Y - REV. COS - M-SEL. SIZE B/C/D/DE
 TIE-IN RESISTORS WITH / WITHOUT TIE-IN SWITCH

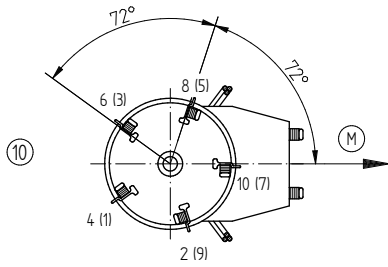
SERIAL NUMBER

MATERIAL NUMBER
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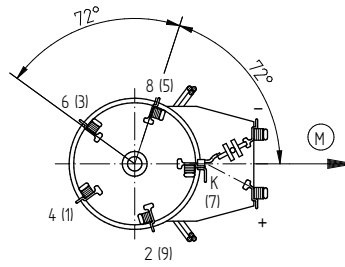
SHEET
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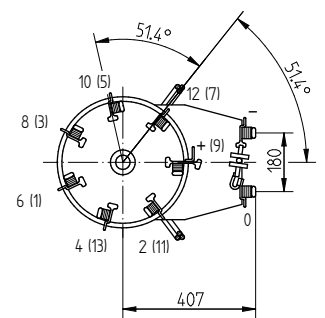
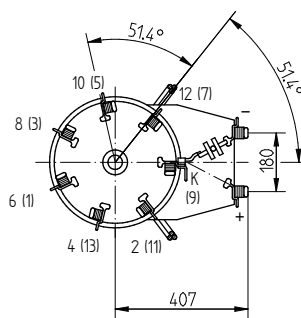
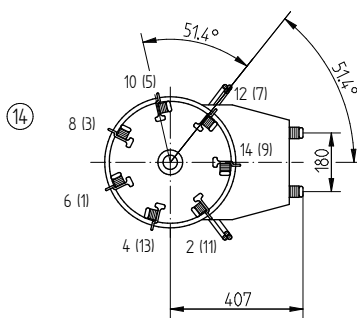
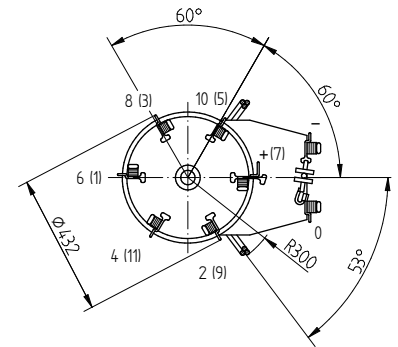
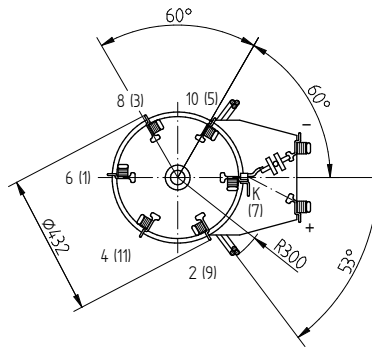
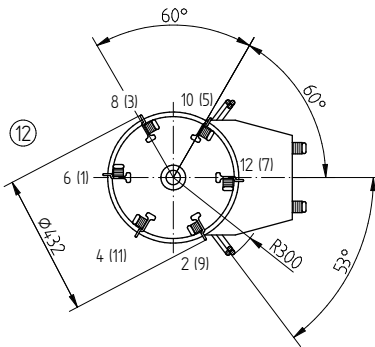
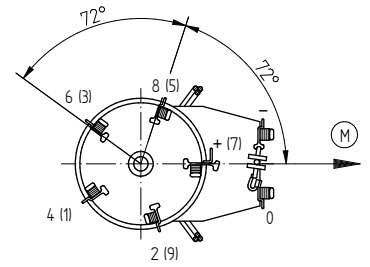
SELECTOR WITHOUT CHANGE-OVER SELECTOR



SELECTOR WITH REVERSING CHANGE-OVER SELECTOR



SELECTOR WITH COARSE CHANGE-OVER SELECTOR



DESIGNATION OF SELECTOR TERMINALS
 E. G.: 4 UPPER CONTACT PLANE
 (13) LOWER CONTACT PLANE

(M) DRIVE SIDE OF SELECTOR
 (10) (12) (14) SELECTOR PITCH

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

DATE	NAME	DOCUMENT NO.
DFTR. 11.07.2018	BUTERUS	SED 6181604-001 00
CHKD. 16.07.2018	WILHELM	SCALE
STAND. 16.07.2018	PRODASTSCHUK	1086956
		18

DIMENSION IN mm EXCEPT AS NOTED



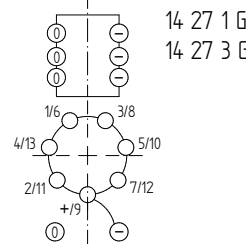
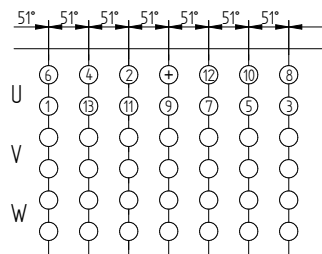
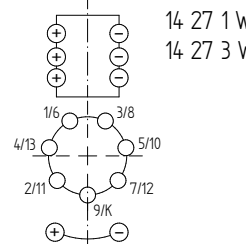
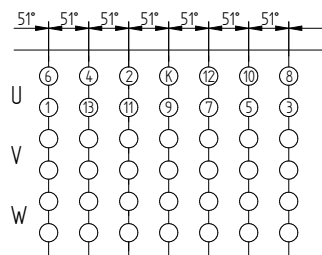
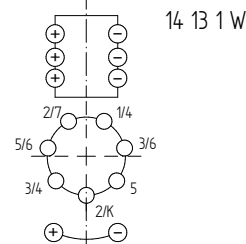
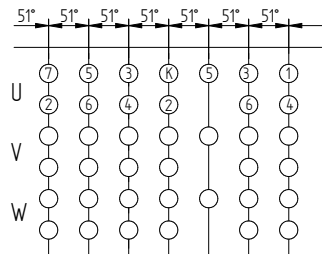
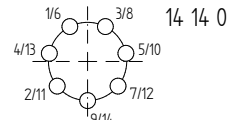
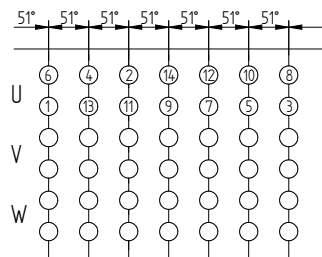
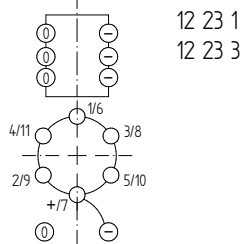
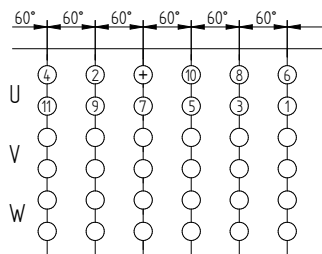
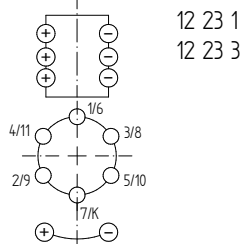
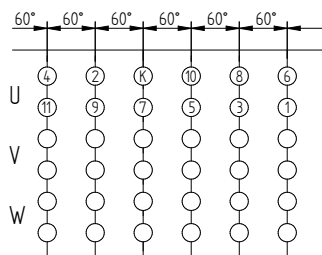
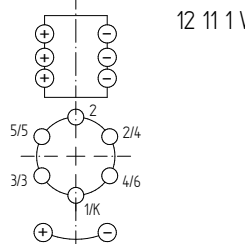
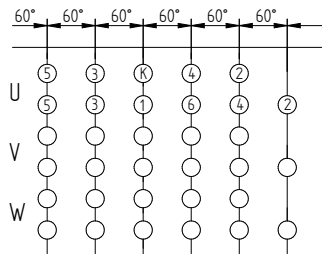
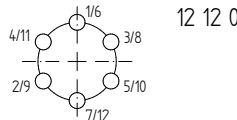
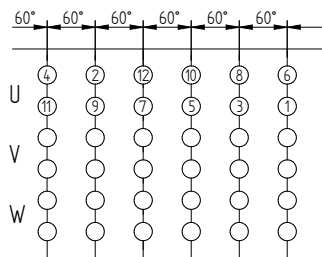
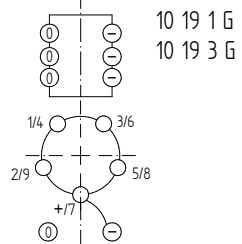
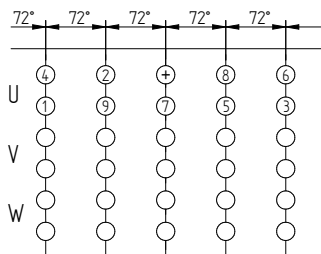
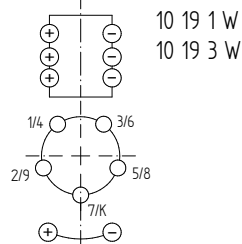
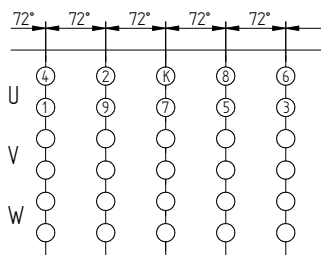
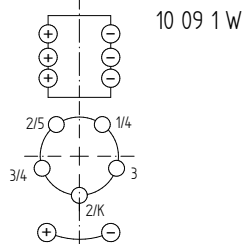
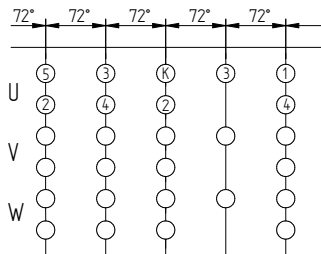
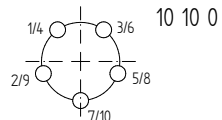
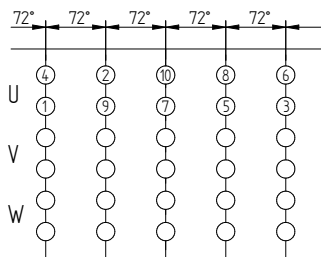
ON-LOAD TAP-CHANGER VACUTAP® VMS®
 ARRANGEMENT OF CONTACTS AT SELECTOR
 SELECTOR SIZE B

SERIAL NUMBER

MATERIAL NUMBER 101170250E
 SHEET 1/1

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DATE	NAME	DOCUMENT NO.
DFTR. 11.07.2018	BUTERUS	SED 6181620 001 00
CHKD. 16.07.2018	WILHELM	SCALE
STAND. 16.07.2018	PRODASTSCHUK	CHANGE NO. 1086956



DIMENSION
IN mm
EXCEPT AS
NOTED



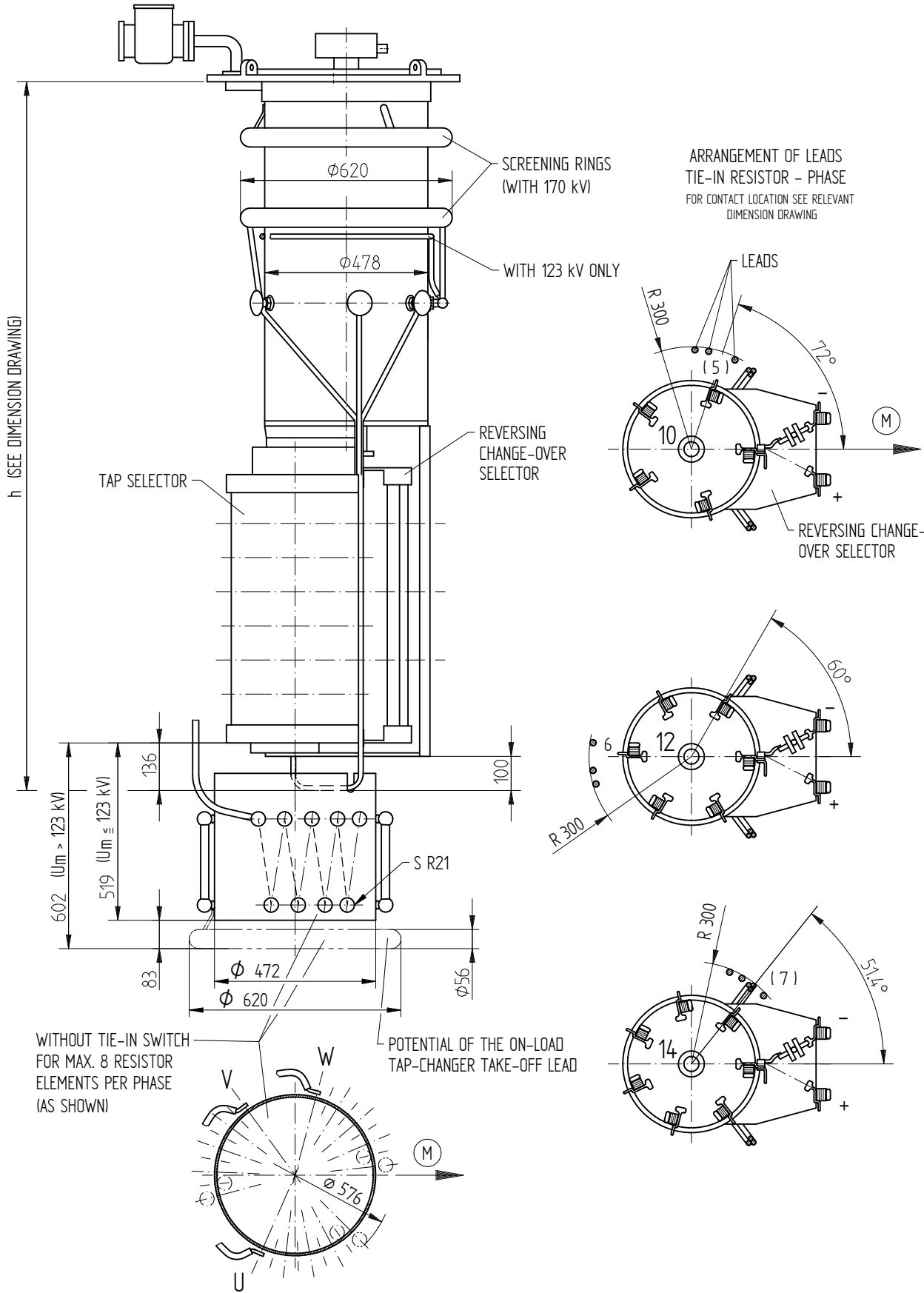
ON-LOAD TAP-CHANGER VACUTAP® VMS®
CONTACT ARRANGEMENT ON SELECTOR
SELECTOR SIZE B

SERIAL NUMBER

MATERIAL NUMBER
101170290E

SHEET
1/1

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(M) - DRIVE SIDE OF SELECTOR

THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER IS BINDING FOR THE DESIGNATION OF THE TERMINALS AND PHASES.

DATE	NAME	DOCUMENT NO.
11.07.2018	BUTERUS	SED 6011874 001 00
CHKD. 16.07.2018	WILHELM	CHANGE NO.
STAND. 16.07.2018	PRODASTSCHUK	1086956
		SCALE 1:8

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER VACUTAP® VMS®
 VMSIII400Y - B - TIE-IN RESISTORS WITHOUT TIE-IN SWITCH
 DIMENSION DRAWING

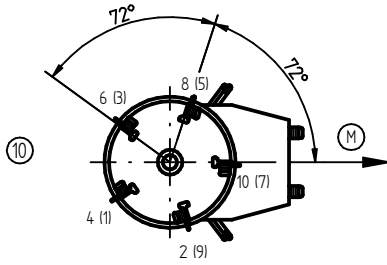
SERIAL NUMBER

MATERIAL NUMBER
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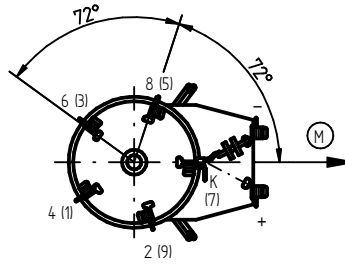
SHEET
 1/1

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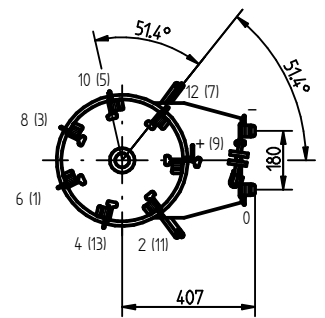
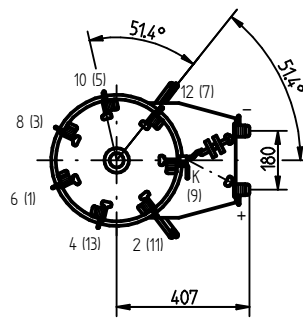
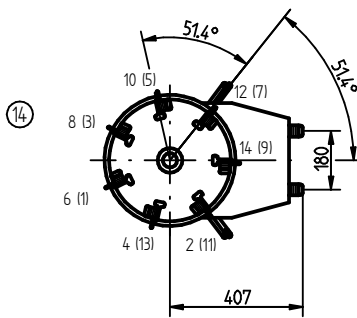
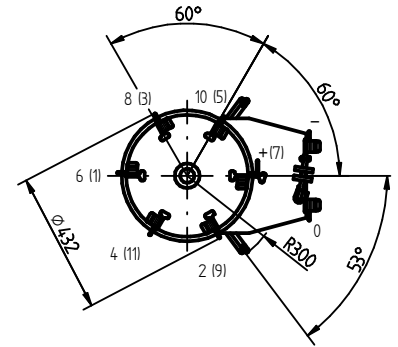
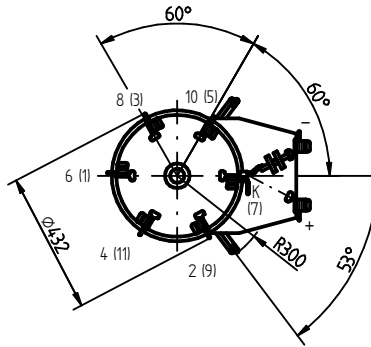
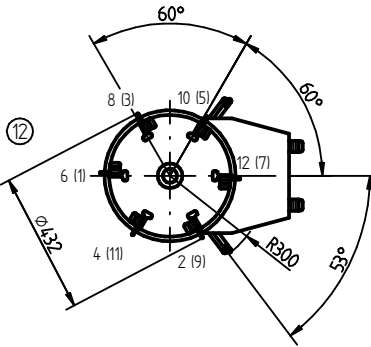
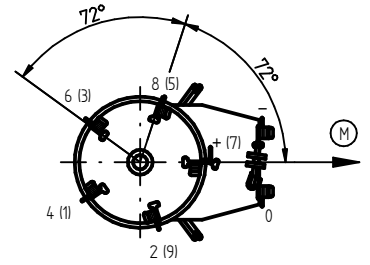
SELECTOR WITHOUT CHANGE-OVER SELECTOR



SELECTOR WITH REVERSING CHANGE-OVER SELECTOR



SELECTOR WITH COARSE CHANGE-OVER SELECTOR



DESIGNATION OF SELECTOR TERMINALS
 E. G.: 4 UPPER CONTACT PLANE
 (13) LOWER CONTACT PLANE

(M) DRIVE SIDE OF SELECTOR
 (10) (12) (14) SELECTOR PITCH

FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

DATE	NAME	DOCUMENT NO.
26.01.2016	RAEDLINGER	SED 1050454-001 02
CHKD.	TKBIRKMAN	SCALE
25.02.2016	PRODASTSCHUK	CHANGE NO. 1072100
25.02.2016		18

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



ON-LOAD TAP-CHANGER OILTAP® MS / VACUTAP® VM 300
 ARRANGEMENT OF CONTACTS AT SELECTOR
 SELECTOR SIZE B

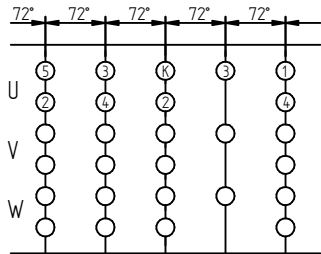
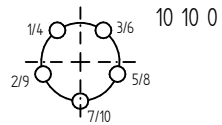
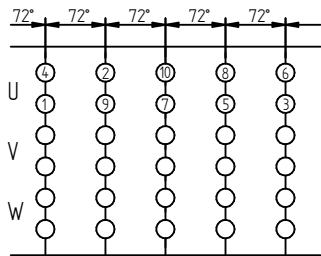
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MATERIAL NUMBER
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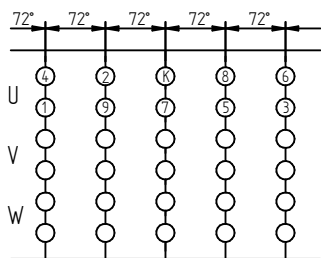
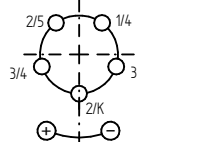
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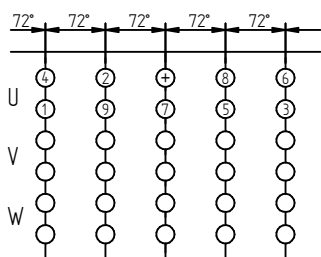
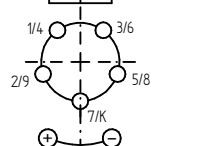
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25.02.2016	TKBIRKMAN	SCALE
25.02.2016	PRODASTSCHUK	CHANGE NO.
		1072100



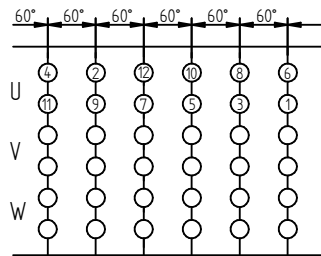
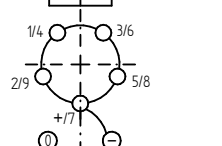
10 09 1 W



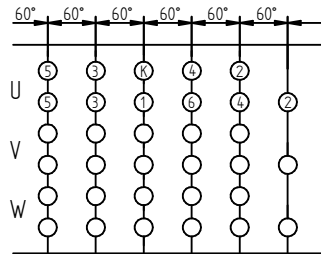
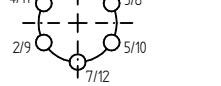
10 19 1 W
10 19 3 W



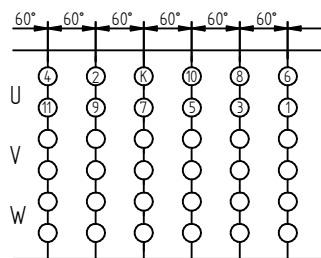
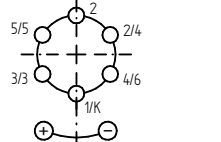
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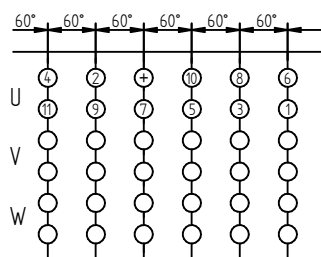
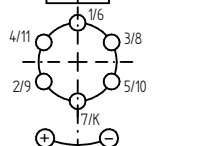
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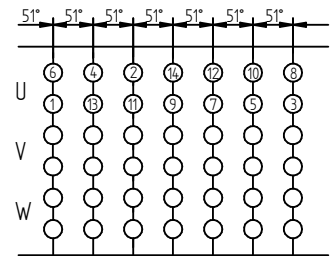
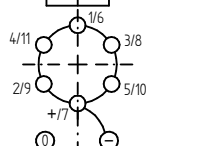
12 11 1 W



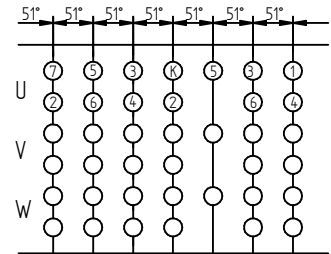
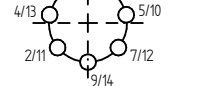
12 23 1 W
12 23 3 W



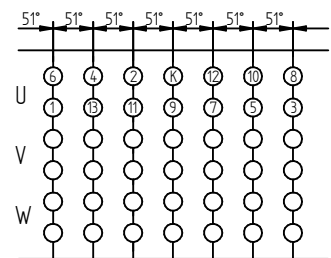
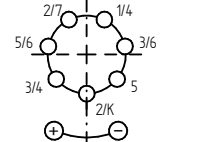
12 23 1 G
12 23 3 G



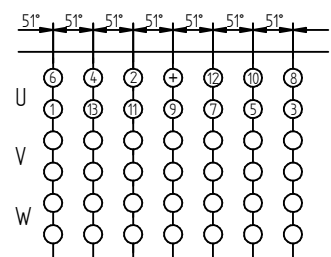
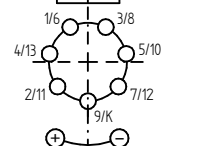
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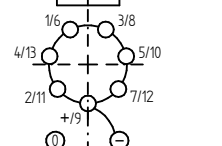
14 13 1 W



14 27 1 W
14 27 3 W



14 27 1 G
14 27 3 G



DIMENSION
IN mm
EXCEPT AS
NOTED



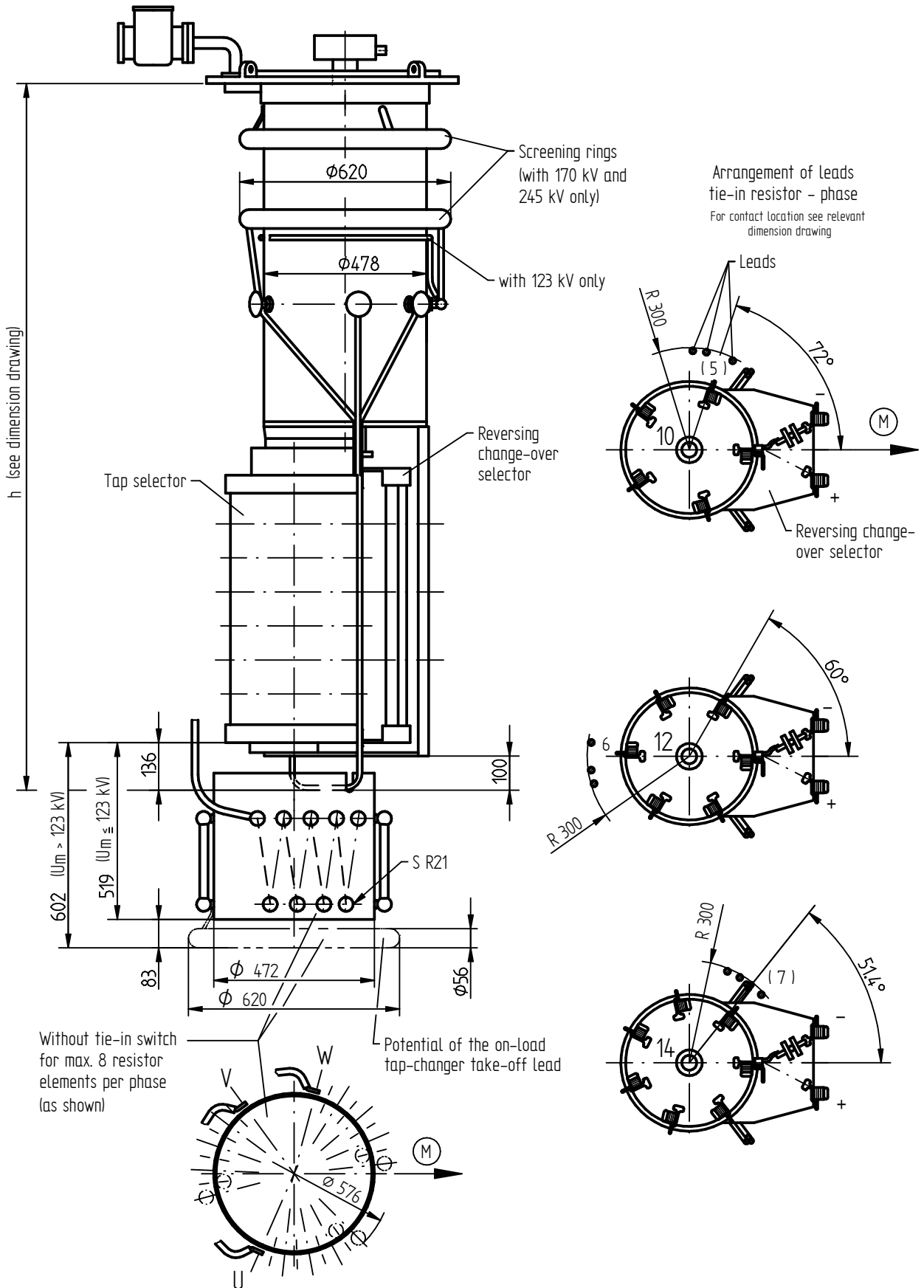
ON-LOAD TAP-CHANGER OILTAP® MS / VACUTAP® VM 300
CONTACT ARRANGEMENT ON SELECTOR FOR SELECTOR SIZE B

SERIAL NUMBER

MATERIAL NUMBER
8911145E

SHEET
1/1

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Without tie-in switch for max. 8 resistor elements per phase (as shown)

Potential of the on-load tap-changer take-off lead

(M) - Drive side of selector

The connection diagram of the on-load tap-changer is binding for the designation of the terminals and phases.

DATE	NAME	DOCUMENT NO.
23.03.2016	RAEDLINGER	SED 1050467 001 04
CHKD. 11.04.2016	MENZELS	CHANGE NO.
STAND. 11.04.2016	PRODASTSCHUK	1073378
		SCALE
		1:8

DIMENSION IN mm EXCEPT AS NOTED



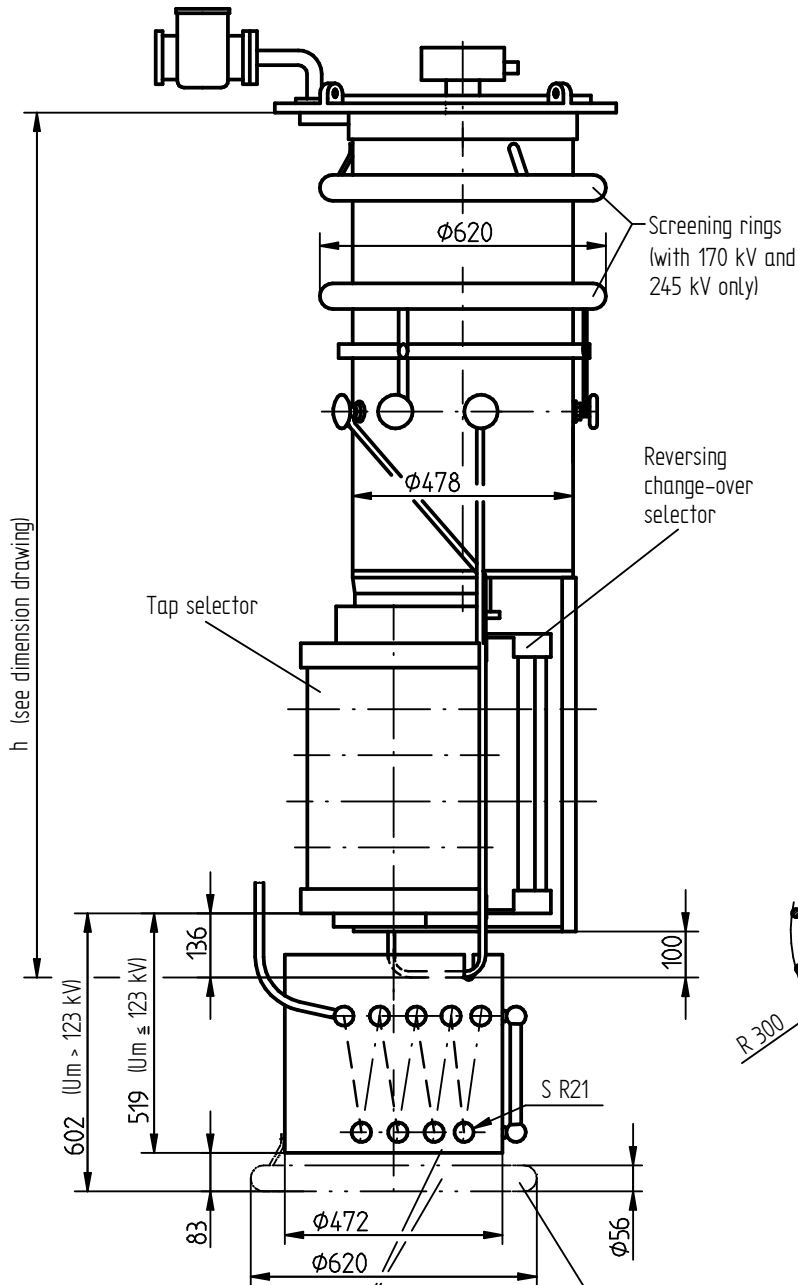
ON-LOAD TAP-CHANGER OILTAP® MS AND VACUTAP® VM®
 MS III / VM III 300 - SELECTOR SIZE B
 TIE-IN RESISTORS WITHOUT TIE-IN SWITCH

SERIAL NUMBER

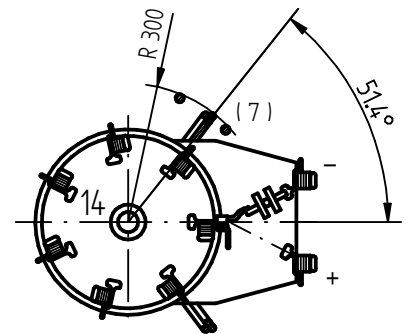
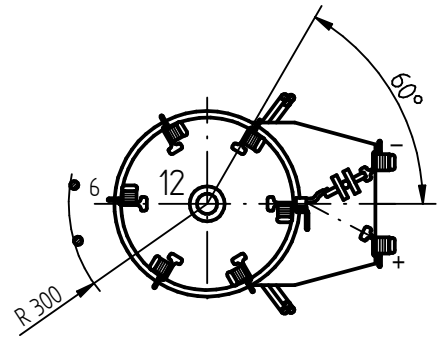
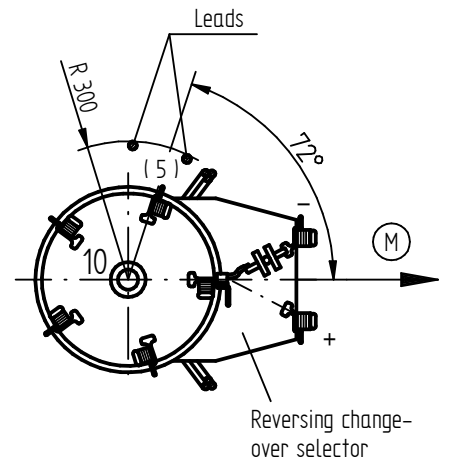
MATERIAL NUMBER
8986954E

SHEET
1/1

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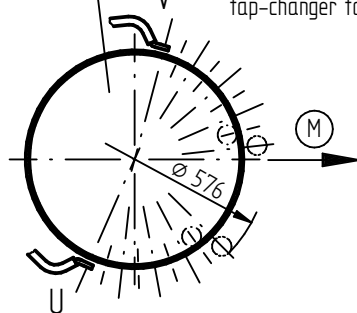


Arrangement of leads tie-in resistor - phase
 For contact location see relevant dimension drawing



Without tie-in switch for max. 8 resistor elements per phase (as shown)

Potential of the on-load tap-changer take-off terminal



(M) - Drive side of selector

The connection diagram of the on-load tap-changer is binding for the designation of the terminals and phases.

DATE	NAME	DOCUMENT NO.
23.03.2016	RAEDLINGER	SED 1050465 001 03
CHKO. 11.04.2016	MENZELS	CHANGE NO.
STAND. 11.04.2016	PRODASTSCHUK	1073378
		SCALE 1:8

DIMENSION IN mm EXCEPT AS NOTED



ON-LOAD TAP-CHANGER OILTAP® MS AND VACUTAP® VM®
 MS II / VM II 302 - SELECTOR SIZE B
 TIE-IN RESISTORS WITHOUT TIE-IN SWITCH

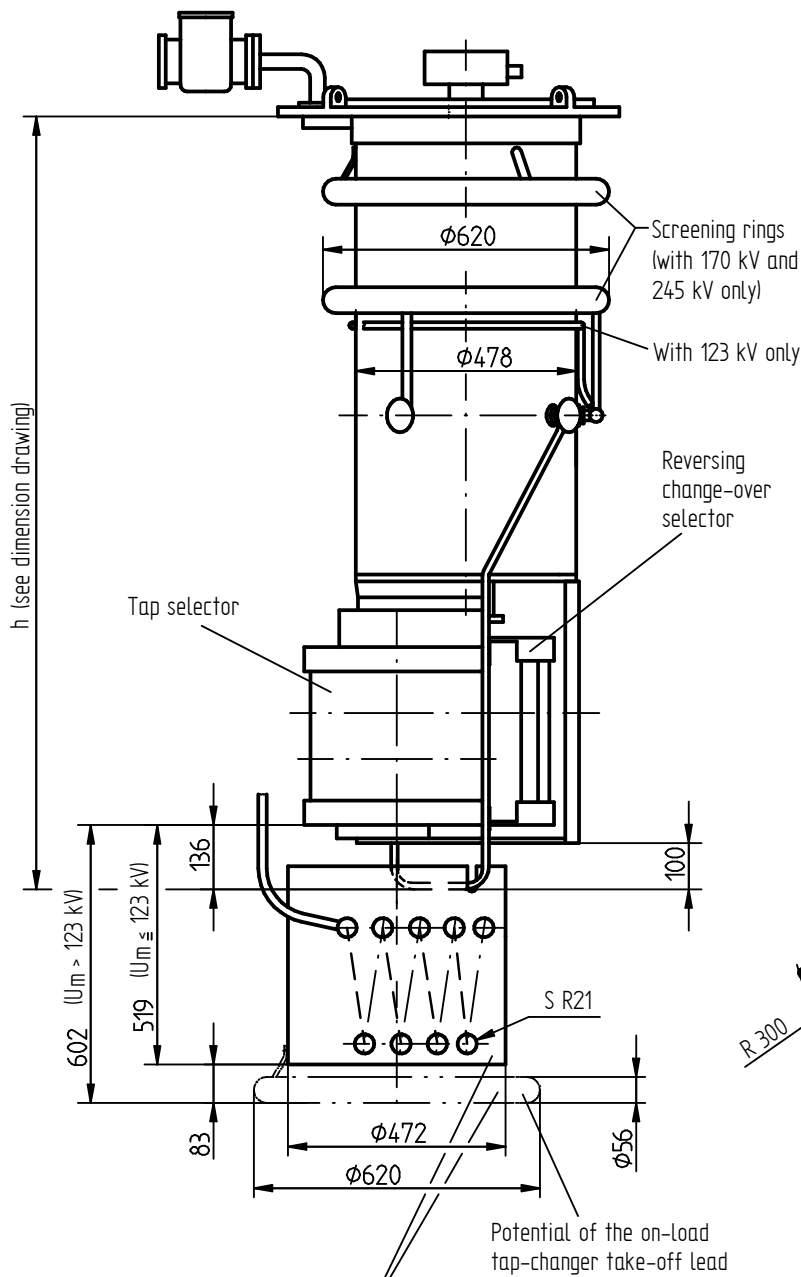
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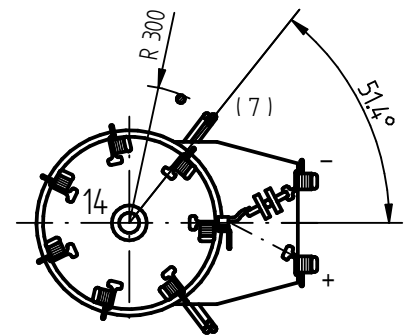
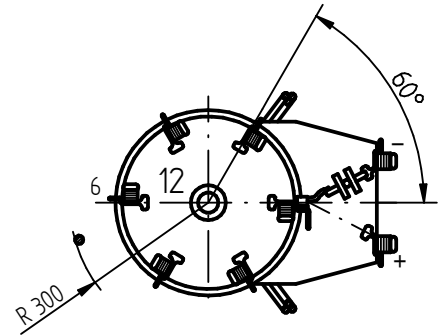
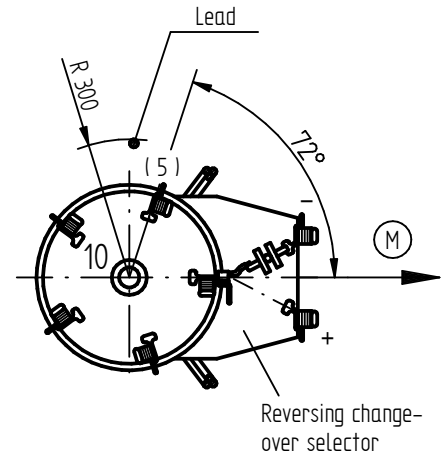
SHEET 1/1

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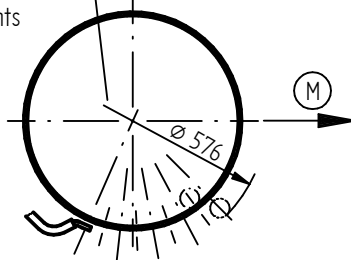
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CHKO. 11.04.2016	MENZELS	CHANGE NO.
STAND. 11.04.2016	PRODASTSCHUK	1073378
		SCALE
		1:8



Arrangement of leads tie-in resistor - selector
 For contact location see relevant dimension drawing



Without tie-in switch for max. 8 resistor elements (as shown)



(M) - Drive side of selector

The connection diagram of the on-load tap-changer is binding for the designation of the terminals.

DIMENSION IN mm EXCEPT AS NOTED



ON-LOAD TAP-CHANGER OILTAP® MS AND VACUTAP® VM®
 MS I / VM I 301 - SELECTOR SIZE B
 TIE-IN RESISTORS WITHOUT TIE-IN SWITCH

SERIAL NUMBER

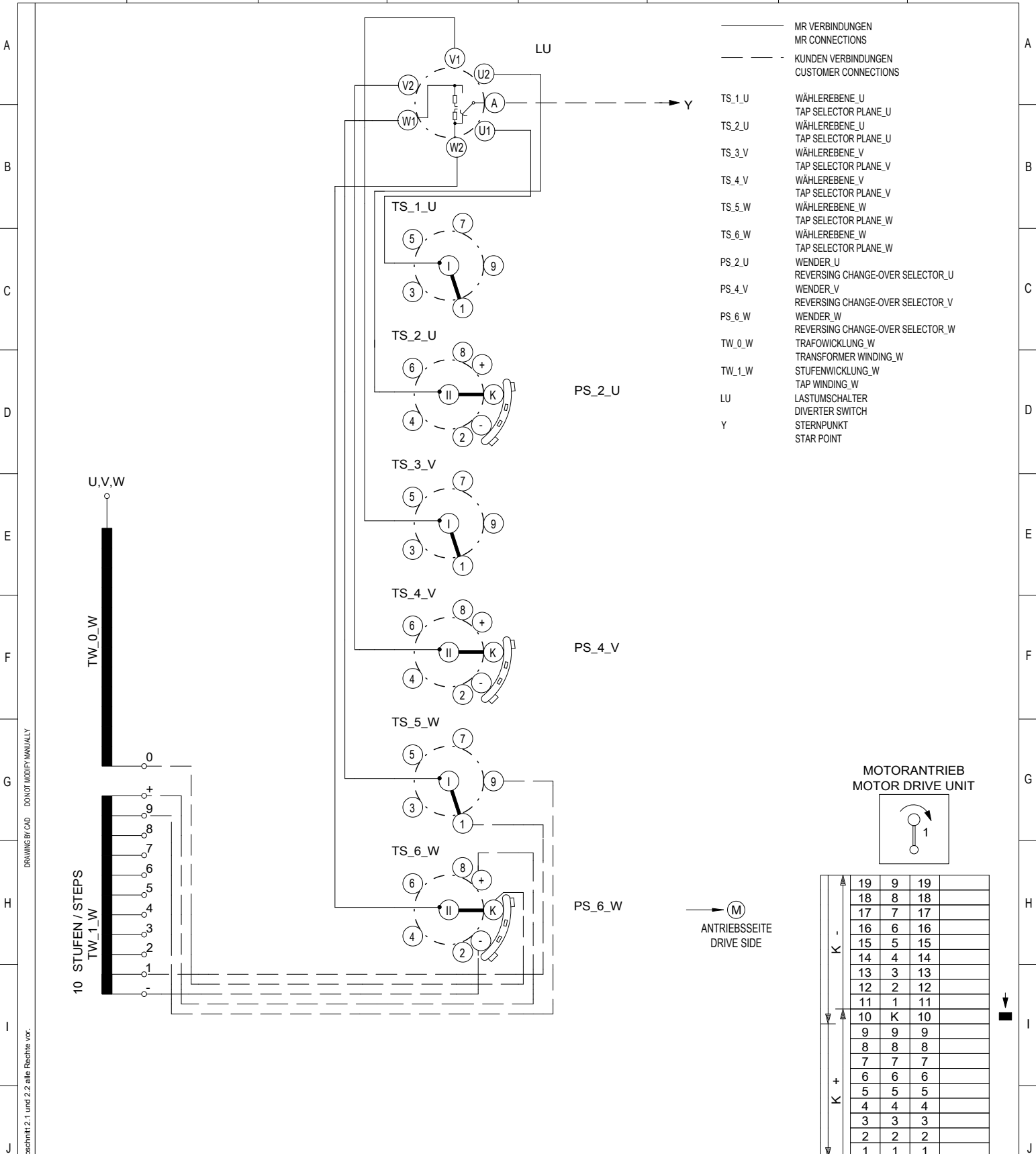
MATERIAL NUMBER 8986934E

SHEET 1/1

4.6 Schemi elettrici (esempi)

Di seguito sono riportati esempi di schemi elettrici

Lo schema elettrico specifico dell'ordine è compreso nella fornitura.



DRAWING BY CAD - DO NOT MODIFY MANUALLY

Für diese technische Unterlage behalten wir uns gemäss DIN 34 Abschnitt 2.1 und 2.2 alle Rechte vor.

BETRIEBSSTELLUNGEN SERVICE POSITIONS	19
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	19
JUSTIERSTELLUNG ADJUSTMENT POSITION	10

STELLUNG DES WENDERS POSITION OF REVERSING CHANGE-OVER SELECTOR	19
BETRIEBSSTELLUNG SERVICE POSITION	19
BEZEICHNUNG DER WÄHLERKONTAKTE DESIGNATION OF TAP SELECTOR CONTACTS	19
BEZEICHNUNG DER STELLUNGEN DESIGNATION OF POSITIONS	19
REGELBEREICH (kV) REGULATION RANGE (kV)	10

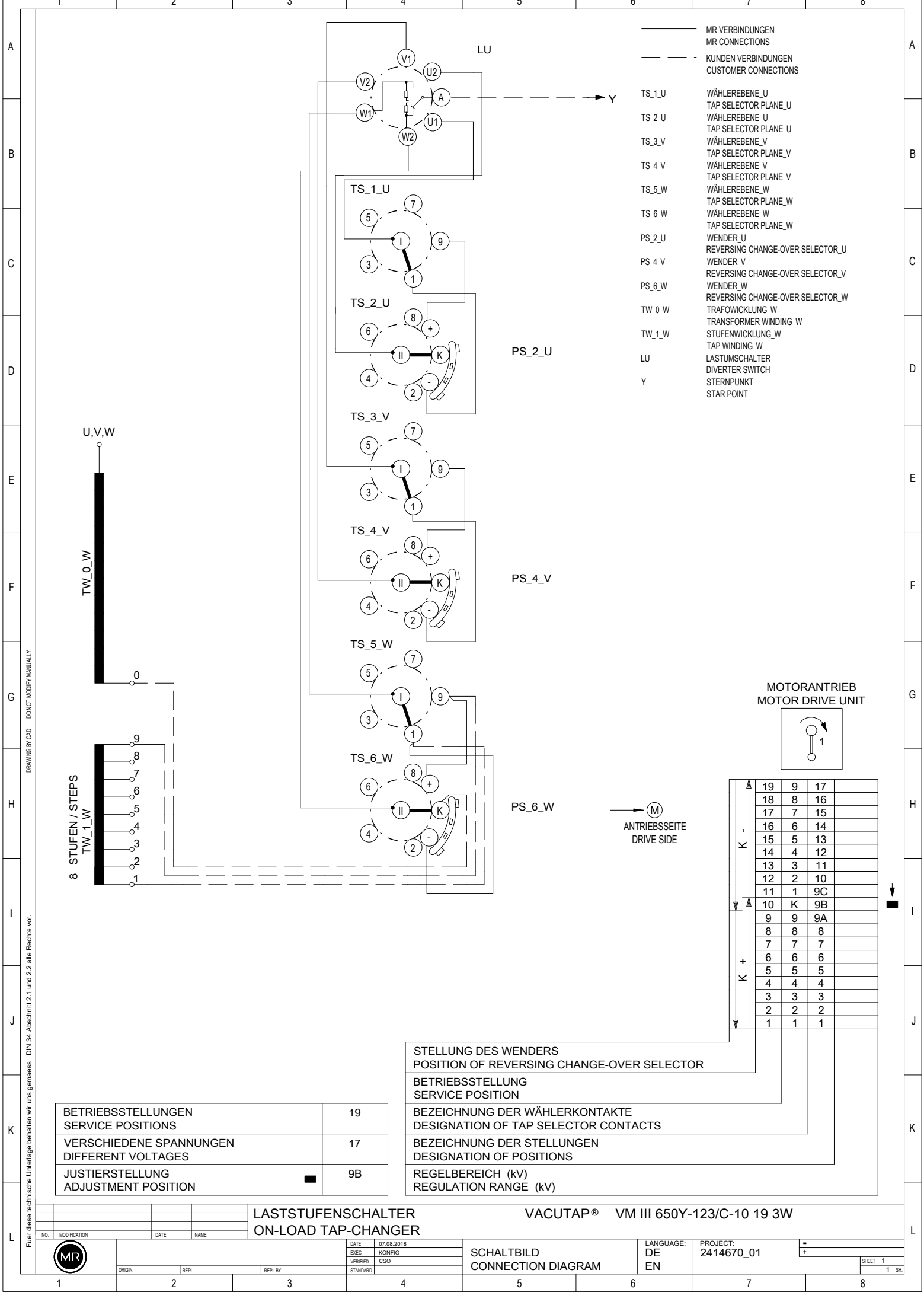
LASTSTUFENSCHALTER VACUTAP® VM III 650Y-123/C-10 19 1W
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME

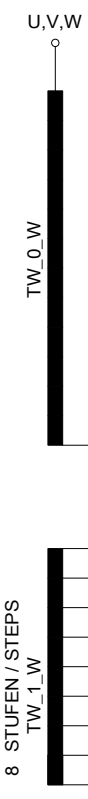
DATE	07.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

SCHALTBILD
CONNECTION DIAGRAM

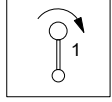
LANGUAGE:	DE
EN	
PROJECT:	2414658_01



- MR VERBINDUNGEN
MR CONNECTIONS
- KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS
- TS_1_U WÄHLEREBENE_U
TAP SELECTOR PLANE_U
- TS_2_U WÄHLEREBENE_U
TAP SELECTOR PLANE_U
- TS_3_V WÄHLEREBENE_V
TAP SELECTOR PLANE_V
- TS_4_V WÄHLEREBENE_V
TAP SELECTOR PLANE_V
- TS_5_W WÄHLEREBENE_W
TAP SELECTOR PLANE_W
- TS_6_W WÄHLEREBENE_W
TAP SELECTOR PLANE_W
- PS_2_U WENDER_U
REVERSING CHANGE-OVER SELECTOR_U
- PS_4_V WENDER_V
REVERSING CHANGE-OVER SELECTOR_V
- PS_6_W WENDER_W
REVERSING CHANGE-OVER SELECTOR_W
- TW_0_W TRAFOWICKLUNG_W
TRANSFORMER WINDING_W
- TW_1_W STUFENWICKLUNG_W
TAP WINDING_W
- LU LASTUMSCHALTER
DIVERTER SWITCH
- Y STERNPUNKT
STAR POINT



MOTORANTRIEB
MOTOR DRIVE UNIT



(M)
ANTRIEBSSEITE
DRIVE SIDE

19	9	17	
18	8	16	
17	7	15	
16	6	14	
15	5	13	
14	4	12	
13	3	11	
12	2	10	
11	1	9C	
10	K	9B	
9	9	9A	
8	8	8	
7	7	7	
6	6	6	
5	5	5	
4	4	4	
3	3	3	
2	2	2	
1	1	1	

STELLUNG DES WENDERS
POSITION OF REVERSING CHANGE-OVER SELECTOR

BETRIEBSSTELLUNG
SERVICE POSITION

BEZEICHNUNG DER WÄHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

BETRIEBSSTELLUNGEN SERVICE POSITIONS	19
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	17
JUSTIERSTELLUNG ADJUSTMENT POSITION	9B

LASTSTUFENSCHALTER VACUTAP® VM III 650Y-123/C-10 19 3W
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME



DATE	07.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

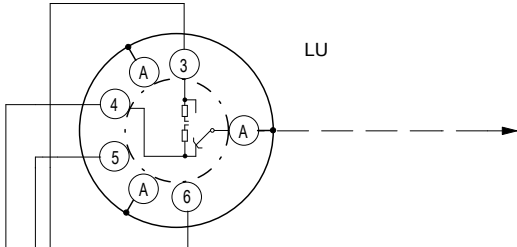
SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE:
DE PROJECT: 2414670_01
EN

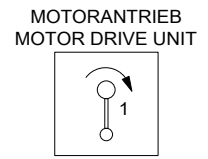
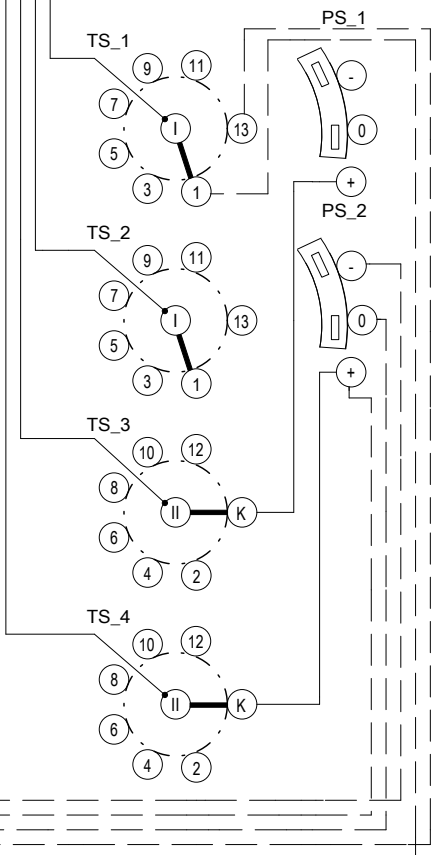
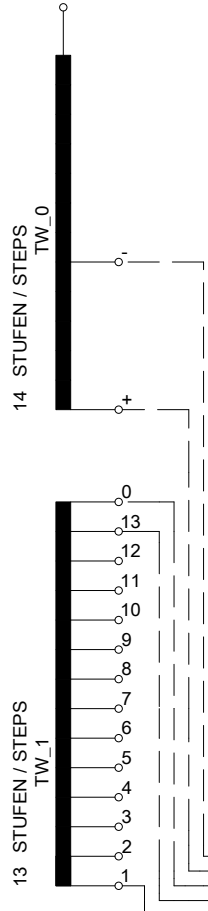
FÜR DIESE TECHNISCHE UNTERLAGE BEHALTEN WIR UNS GEMÄSS DIN 34 ABSCHNITT 2.1 UND 2.2 ALLE RECHTE VOR.
 DRAWING BY CAD DO NOT MODIFY MANUALLY

ACHTUNG
 PARALLELBRÜCKEN VON MR NICHT ANGEBAUT
 VON TS_1 (PS_1) NACH TS_2 (PS_2)
 VON TS_3 NACH TS_4

ATTENTION !
 PARALLEL BRIDGES ARE NOT INSTALLED BY MR
 FROM TS_1 (PS_1) TO TS_2 (PS_2)
 FROM TS_3 TO TS_4



- MR VERBINDUNGEN
MR CONNECTIONS
- - - KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS
- TS_1 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_2 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_3 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_4 WÄHLEREBENE
TAP SELECTOR PLANE
- PS_1 GROBWÄHLER
COARSE TAP SELECTOR
- PS_2 GROBWÄHLER
COARSE TAP SELECTOR
- TW_0 TRAFOWICKLUNG
TRANSFORMER WINDING
- TW_1 STUFENWICKLUNG
TAP WINDING
- LU LASTUMSCHALTER
DIVERTER SWITCH



27	13	27	
26	12	26	
25	11	25	
24	10	24	
23	9	23	
22	8	22	
21	7	21	
20	6	20	
19	5	19	
18	4	18	
17	3	17	
16	2	16	
15	1	15	
14	K	14	
13	13	13	
12	12	12	
11	11	11	
10	10	10	
9	9	9	
8	8	8	
7	7	7	
6	6	6	
5	5	5	
4	4	4	
3	3	3	
2	2	2	
1	1	1	

➔ (M)
 ANTRIEBSSEITE
 DRIVE SIDE

STELLUNG DES GROBWÄHLERS POSITION OF COARSE TAP SELECTOR
BETRIEBSSTELLUNG SERVICE POSITION
BEZEICHNUNG DER WÄHLERKONTAKTE DESIGNATION OF TAP SELECTOR CONTACTS
BEZEICHNUNG DER STELLUNGEN DESIGNATION OF POSITIONS
REGELBEREICH (kV) REGULATION RANGE (kV)

BETRIEBSSTELLUNGEN SERVICE POSITIONS	27
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	27
JUSTIERSTELLUNG ADJUSTMENT POSITION	14

LASTSTUFENSCHALTER VACUTAP® VM I 802-123/D-14 27 1G
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME



DATE	07.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

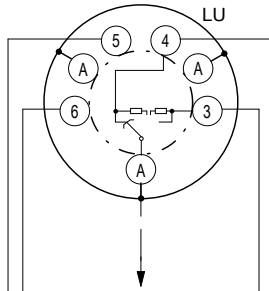
SCHALTBILD
 CONNECTION DIAGRAM

LANGUAGE:
 DE
 EN

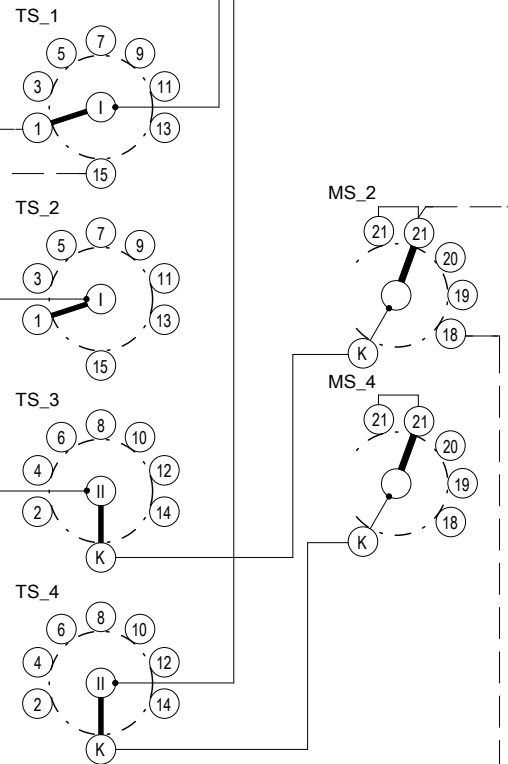
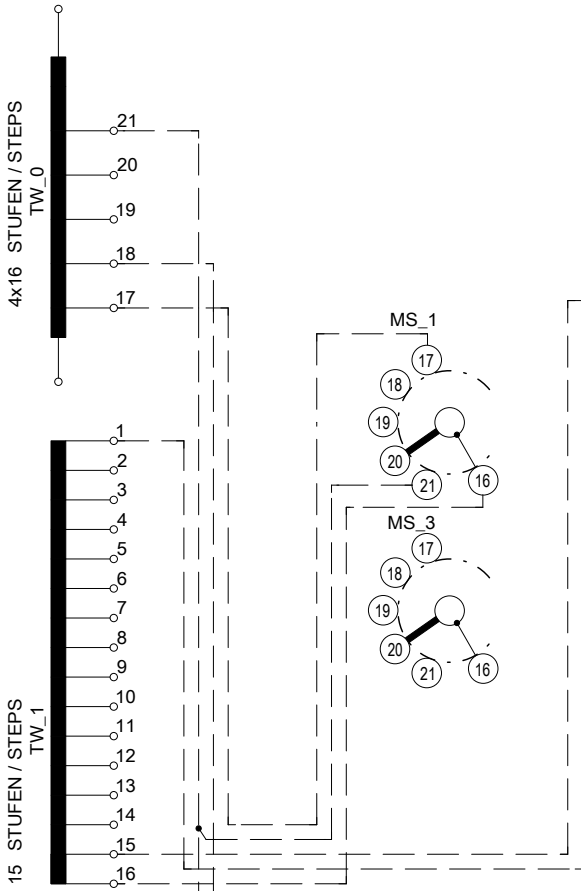
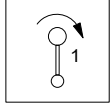
PROJECT:
 2414631_01

FÜR DIESE TECHNISCHE UNTERLAGE BEHALTEN WIR UNS GEMÄSS DIN 34 ABSCHNITT 2.1 UND 2.2 ALLE RECHTE VOR.
 DRAWING BY CAD DO NOT MODIFY MANUALLY

- MR VERBINDUNGEN
MR CONNECTIONS
- - - KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS
- TS_1 - TS_4 WÄHLEREbenen
TAP SELECTOR PLANES
- MS_1 - MS_4 MEHRFACHGROBWÄHLER
MULTIPLE COARSE TAP SELECTOR
- TW_0 TRAFOWICKLUNG
TRANSFORMER WINDING
- TW_1 STUFENWICKLUNG
TAP WINDING
- LU LASTUMSCHALTER
DIVERTER SWITCH



MOTORANTRIEB
MOTOR DRIVE UNIT



79	15	79
78	14	78
77	13	77
76	12	76
75	11	75
74	10	74
73	9	73
72	8	72
71	7	71
70	6	70
69	5	69
68	4	68
67	3	67
66	2	66
65	1	65
64	K	64
63	15	63
62	14	62
61	13	61
60	12	60
59	11	59
58	10	58
57	9	57
56	8	56
55	7	55
54	6	54
53	5	53
52	4	52
51	3	51
50	2	50
49	1	49
48	K	48
47	15	47
46	14	46
45	13	45
44	12	44
43	11	43
42	10	42
41	9	41
40	8	40
39	7	39
38	6	38
37	5	37
36	4	36
35	3	35
34	2	34
33	1	33
32	K	32
31	15	31
30	14	30
29	13	29
28	12	28
27	11	27
26	10	26
25	9	25
24	8	24
23	7	23
22	6	22
21	5	21
20	4	20
19	3	19
18	2	18
17	1	17
16	K	16
15	15	15
14	14	14
13	13	13
12	12	12
11	11	11
10	10	10
9	9	9
8	8	8
7	7	7
6	6	6
5	5	5
4	4	4
3	3	3
2	2	2
1	1	1

ACHTUNG
PARALLELBÜCKEN VON MR NICHT ANGEBAUT
VON TS_1 NACH TS_2
VON TS_3 NACH TS_4
VON MS_1 NACH MS_3
VON MS_2 NACH MS_4

ATTENTION !
PARALLEL BRIDGES ARE NOT INSTALLED BY MR
FROM TS_1 TO TS_2
FROM TS_3 TO TS_4
FROM MS_1 TO MS_3
FROM MS_2 TO MS_4

(M)
ANTRIEBSSEITE
DRIVE SIDE

STELLUNG DES GROBWÄHLERS
POSITION OF COARSE TAP SELECTOR

BETRIEBSSTELLUNG
SERVICE POSITION

BEZEICHNUNG DER WÄHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

BETRIEBSSTELLUNGEN SERVICE POSITIONS	79
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	79
JUSTIERSTELLUNG ADJUSTMENT POSITION	16

LASTSTUFENSCHALTER VACUTAP® VM I 802-123/C-16 79 1G
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME

ORIGIN	REPL.	REPL BY

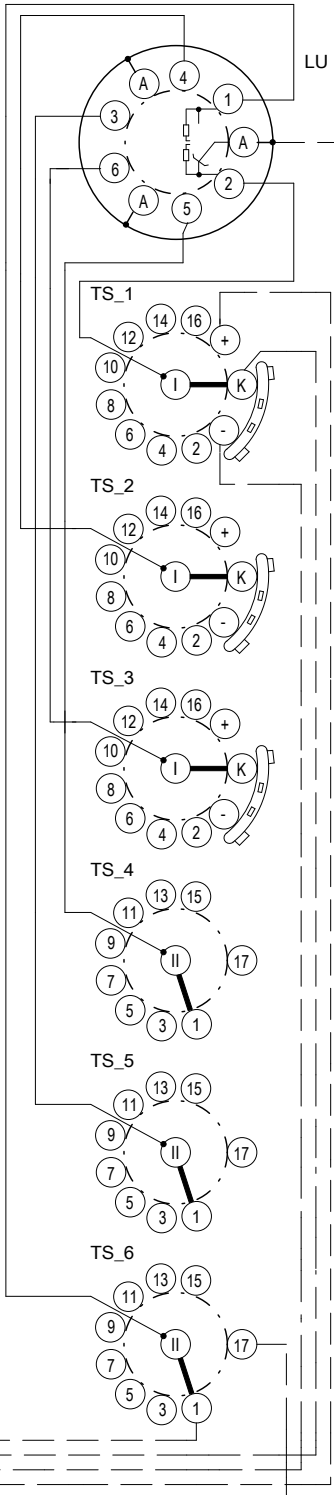
DATE	07.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

SCHALTBILD
CONNECTION DIAGRAM

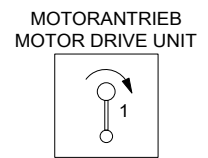
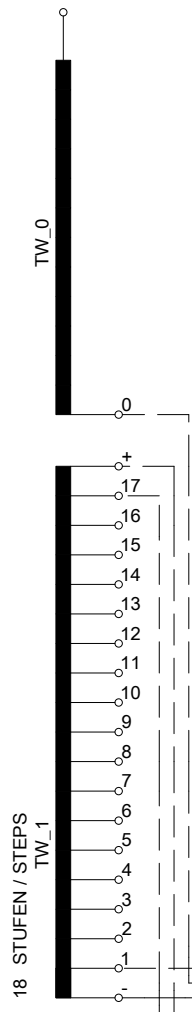
LANGUAGE:	DE
EN	
PROJECT:	2407535_01

ACHTUNG
 PARALLELBRÜCKEN VON MR NICHT ANGEBAUT
 VON TS_1 (PS_1) NACH TS_2 (PS_2) NACH TS_3 (PS_3)
 VON TS_4 NACH TS_5 NACH TS_6

ATTENTION !
 PARALLEL BRIDGES ARE NOT INSTALLED BY MR
 FROM TS_1 (PS_1) TO TS_2 (PS_2) TO TS_3 (PS_3)
 FROM TS_4 TO TS_5 TO TS_6



- MR VERBINDUNGEN
MR CONNECTIONS
- - - KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS
- TS_1 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_2 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_3 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_4 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_5 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_6 WÄHLEREBENE
TAP SELECTOR PLANE
- PS_1 WENDER
REVERSING CHANGE-OVER SELECTOR
- PS_2 WENDER
REVERSING CHANGE-OVER SELECTOR
- PS_3 WENDER
REVERSING CHANGE-OVER SELECTOR
- TW_0 TRAFOWICKLUNG
TRANSFORMER WINDING
- TW_1 STUFENWICKLUNG
TAP WINDING
- LU LASTUMSCHALTER
DIVERTER SWITCH



35	17	35
34	16	34
33	15	33
32	14	32
31	13	31
30	12	30
29	11	29
28	10	28
27	9	27
26	8	26
25	7	25
24	6	24
23	5	23
22	4	22
21	3	21
20	2	20
19	1	19
18	K	18
17	17	17
16	16	16
15	15	15
14	14	14
13	13	13
12	12	12
11	11	11
10	10	10
9	9	9
8	8	8
7	7	7
6	6	6
5	5	5
4	4	4
3	3	3
2	2	2
1	1	1

(M) ANTRIEBSSEITE
 DRIVE SIDE

STELLUNG DES WENDERS
 POSITION OF REVERSING CHANGE-OVER SELECTOR

BETRIEBSSTELLUNG
 SERVICE POSITION

BEZEICHNUNG DER WÄHLERKONTAKTE
 DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
 DESIGNATION OF POSITIONS

REGELBEREICH (kV)
 REGULATION RANGE (kV)

BETRIEBSSTELLUNGEN SERVICE POSITIONS	35
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	35
JUSTIERSTELLUNG ADJUSTMENT POSITION	18

LASTSTUFENSCHALTER VACUTAP® VM I 1203-123/C-18 35 1W
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME



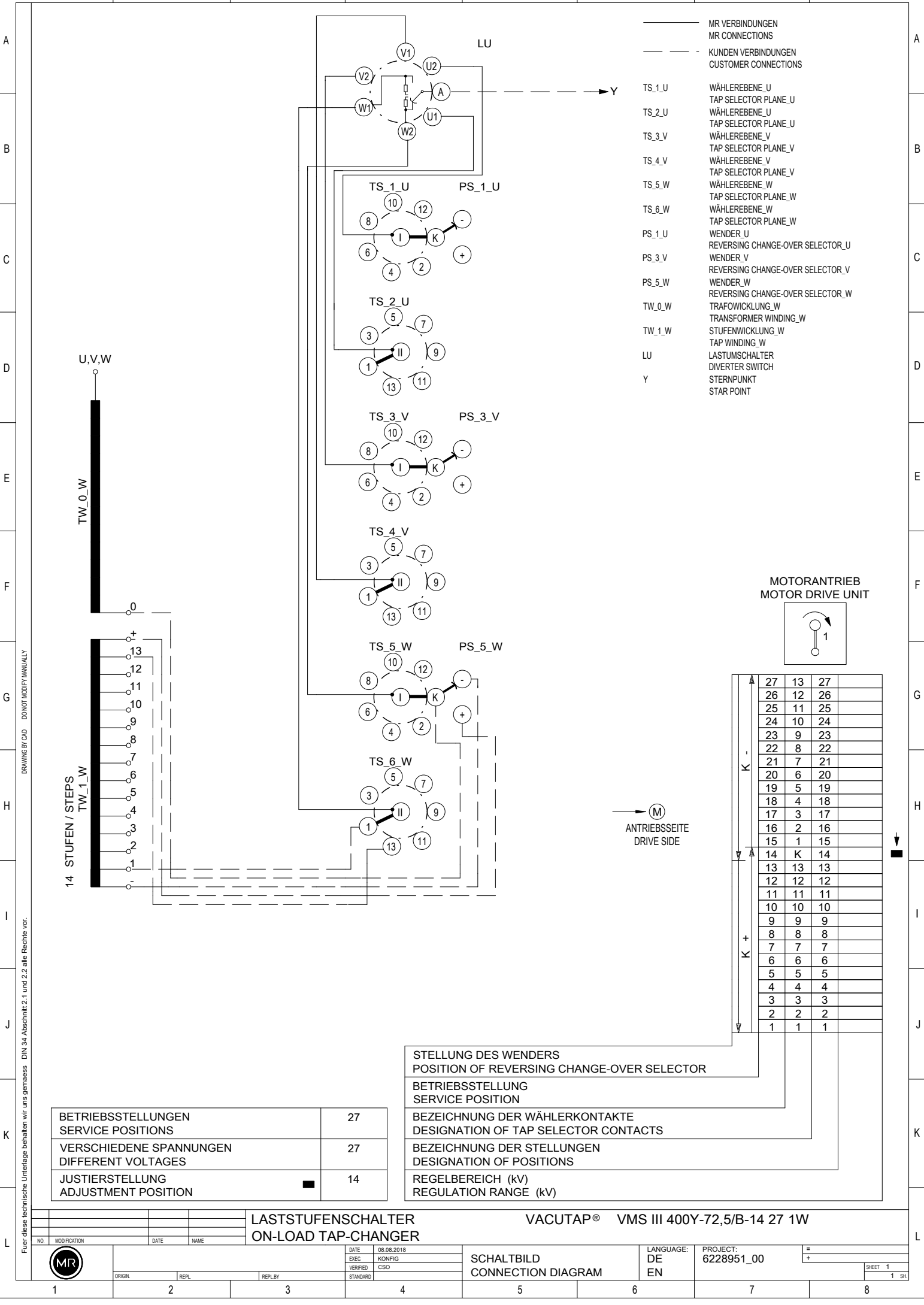
DATE	07.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

SCHALTBILD
 CONNECTION DIAGRAM

LANGUAGE:
 DE
 EN

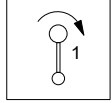
PROJECT:
 2414636_01

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 DRAWING BY CAD DO NOT MODIFY MANUALLY



- MR VERBINDUNGEN
MR CONNECTIONS
- - - KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS
- TS_1_U WÄHLEREBENE_U
TAP SELECTOR PLANE_U
- TS_2_U WÄHLEREBENE_U
TAP SELECTOR PLANE_U
- TS_3_V WÄHLEREBENE_V
TAP SELECTOR PLANE_V
- TS_4_V WÄHLEREBENE_V
TAP SELECTOR PLANE_V
- TS_5_W WÄHLEREBENE_W
TAP SELECTOR PLANE_W
- TS_6_W WÄHLEREBENE_W
TAP SELECTOR PLANE_W
- PS_1_U WENDER_U
REVERSING CHANGE-OVER SELECTOR_U
- PS_3_V WENDER_V
REVERSING CHANGE-OVER SELECTOR_V
- PS_5_W WENDER_W
REVERSING CHANGE-OVER SELECTOR_W
- TW_0_W TRAFOWICKLUNG_W
TRANSFORMER WINDING_W
- TW_1_W STUFENWICKLUNG_W
TAP WINDING_W
- LU LASTUMSCHALTER
DIVERTER SWITCH
- Y STERNPUNKT
STAR POINT

**MOTORANTRIEB
MOTOR DRIVE UNIT**



27	13	27	
26	12	26	
25	11	25	
24	10	24	
23	9	23	
22	8	22	
21	7	21	
20	6	20	
19	5	19	
18	4	18	
17	3	17	
16	2	16	
15	1	15	
14	K	14	
13	13	13	
12	12	12	
11	11	11	
10	10	10	
9	9	9	
8	8	8	
7	7	7	
6	6	6	
5	5	5	
4	4	4	
3	3	3	
2	2	2	
1	1	1	

→ (M)
ANTRIEBSSEITE
DRIVE SIDE

STELLUNG DES WENDERS
POSITION OF REVERSING CHANGE-OVER SELECTOR

BETRIEBSSTELLUNG
SERVICE POSITION

BEZEICHNUNG DER WÄHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

BETRIEBSSTELLUNGEN SERVICE POSITIONS	27
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	27
JUSTIERSTELLUNG ADJUSTMENT POSITION	14

LASTSTUFENSCHALTER VACUTAP® VMS III 400Y-72,5/B-14 27 1W
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME



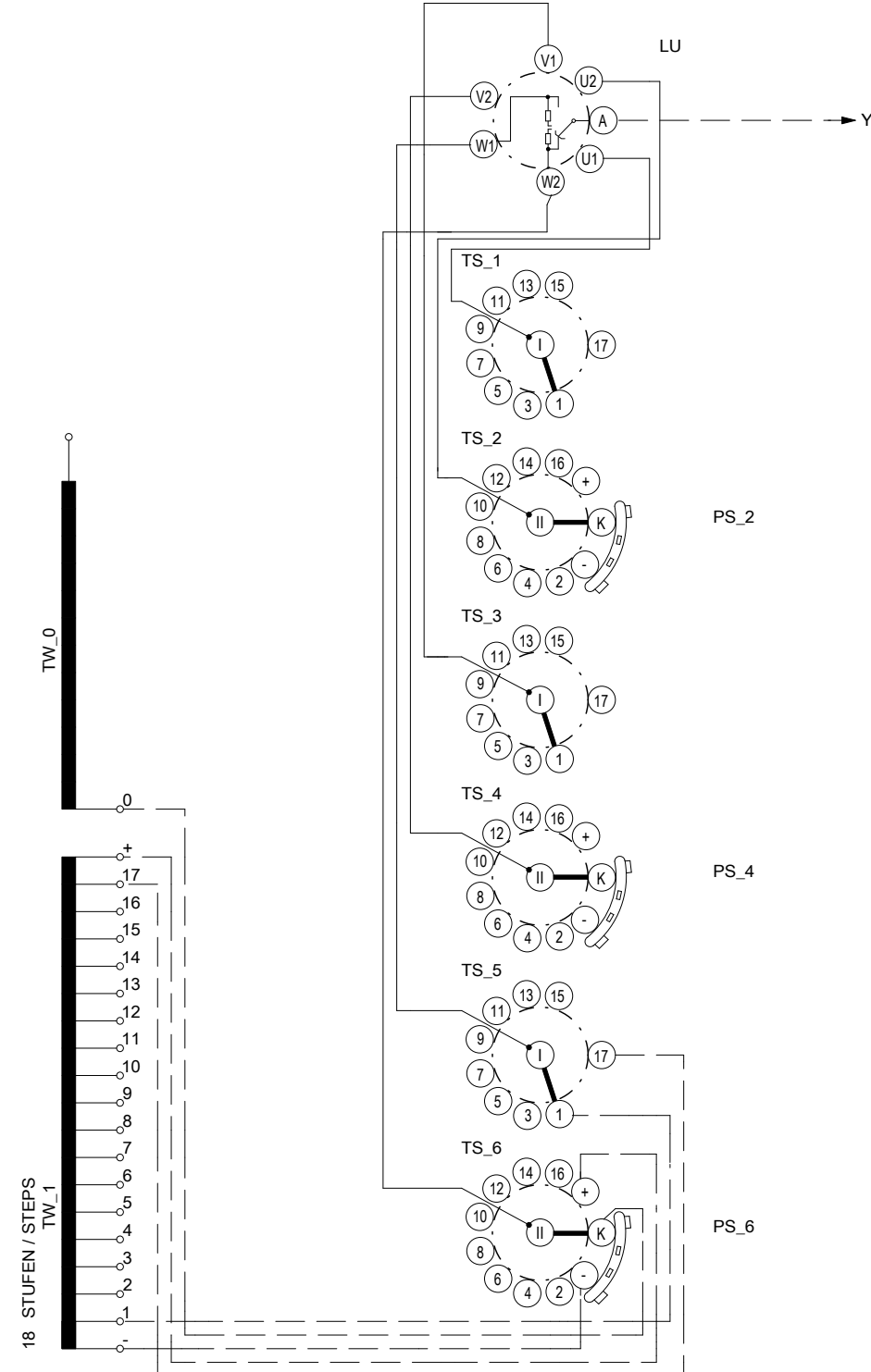
DATE	08.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE:
DE
EN

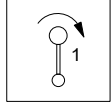
PROJECT:
6228951_00

FÜR DIESE TECHNISCHE UNTERLAGE BEHALTEN WIR UNS GEMÄSS DIN 34 ABSCHNITT 2.1 UND 2.2 ALLE RECHTE VOR.
 DRAWING BY CAD DO NOT MODIFY MANUALLY



- MR VERBINDUNGEN
MR CONNECTIONS
- KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS
- TS_1 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_2 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_3 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_4 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_5 WÄHLEREBENE
TAP SELECTOR PLANE
- TS_6 WÄHLEREBENE
TAP SELECTOR PLANE
- PS_2 WENDER
REVERSING CHANGE-OVER SELECTOR
- PS_4 WENDER
REVERSING CHANGE-OVER SELECTOR
- PS_6 WENDER
REVERSING CHANGE-OVER SELECTOR
- TW_0 TRAFOWICKLUNG
TRANSFORMER WINDING
- TW_1 STUFENWICKLUNG
TAP WINDING
- LU LASTUMSCHALTER
DIVERTER SWITCH
- Y STERNPUNKT
STAR POINT

MOTORANTRIEB
MOTOR DRIVE UNIT



35	17	35
34	16	34
33	15	33
32	14	32
31	13	31
30	12	30
29	11	29
28	10	28
27	9	27
26	8	26
25	7	25
24	6	24
23	5	23
22	4	22
21	3	21
20	2	20
19	1	19
18	K	18
17	17	17
16	16	16
15	15	15
14	14	14
13	13	13
12	12	12
11	11	11
10	10	10
9	9	9
8	8	8
7	7	7
6	6	6
5	5	5
4	4	4
3	3	3
2	2	2
1	1	1

(M)
ANTRIEBSSEITE
DRIVE SIDE

STELLUNG DES WENDERS
POSITION OF REVERSING CHANGE-OVER SELECTOR

BETRIEBSSTELLUNG
SERVICE POSITION

BEZEICHNUNG DER WÄHLERKONTAKTE
DESIGNATION OF TAP SELECTOR CONTACTS

BEZEICHNUNG DER STELLUNGEN
DESIGNATION OF POSITIONS

REGELBEREICH (kV)
REGULATION RANGE (kV)

BETRIEBSSTELLUNGEN SERVICE POSITIONS	35
VERSCHIEDENE SPANNUNGEN DIFFERENT VOLTAGES	35
JUSTIERSTELLUNG ADJUSTMENT POSITION	18

LASTSTUFENSCHALTER VACUTAP® VMS III 400Y-123/C-18 35 1W
ON-LOAD TAP-CHANGER

NO.	MODIFICATION	DATE	NAME



DATE	08.08.2018
ERIC	KONFIG
VERIFIED	CSO
STANDARD	

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE:
DE
EN

PROJECT:
6228952_00

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Für diese technische Unterlage behalten wir uns gemäss DIN 34 Abschnitt 2.1 und 2.2 alle Rechte vor.

Maschinenfabrik Reinhausen GmbH

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[reinhausen.com](https://www.reinhausen.com)

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