Dados técnicos
VACUTAP® VM®, VM 300, VMS®. Comutador de derivação em carga

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Índice

1 Introdução

Esta documentação técnica contém informações detalhadas sobre as características técnicas do produto. Informações básicas podem ser encontradas nos Dados Técnicos TD 61 – Parte geral.

1.1 Designações do comutador de derivação em carga

Cada tipo de comutador de derivação em carga é fornecido com várias configurações, que variam conforme o número de fases, corrente transitória nominal máxima, corrente de passagem nominal máxima, tensão mais alta para componentes U_m, classe do seletor e esquema de circuito básico. Portanto, a designação de uma determinada variante do comutador de derivação em carga é feita de acordo com essas características. Com isso, o comutador de derivação em carga é identificado de forma inequívoca.

1.1.1 Exemplo de designação de comutador de derivação em carga

Comutador de derivação em carga VACUTAP® VM III 650 Y–72,5 / C–10 19 1W R.

Designação de modelo	VACUTAP® VM III 650 Y–72,5 / C–10 19 1W R
VACUTAP® VM®	Tipo de comutador de derivação em carga
III	Número de fases
650	Corrente transitória nominal máxima I_{rm} in A, assim como quantidade dos setores ocupados (último número) em comutadores de derivação em carga monofásicos.
Y	Utilização com ponto neutro
72,5	Tensão mais alta para componentes U_m em kV
C	Classe do seletor
10 19 1W R	Comutação básica

Tabela 1: Exemplo de designação de um comutador de derivação em carga

1.1.2 Número de taps e esquema básico de conexão

O seletor pode ser amplamente adaptado ao número de taps necessário e à comutação do enrolamento fino de tap. Os esquemas básicos de conexão variam conforme a divisão do seletor, número de posições de serviço, número de posições médias, variante do pré-seletor e tipo da conexão ao potencial.

Exemplo: 10 19 1 WR

Designação do esquema básico de conexão	10 19 1 WR
10	Número de contatos do seletor
19	Número das posições de serviço máximas
1	Número das posições médias

Designação do esquema básico de conexão	10 19 1 WR
W	Modelo com pré-seletor: W- Chave inversora G=Tap enrolamento grosso
R	Tipo da conexão ao potencial: R=Resistores de polarização instalados S=Interruptor de potencial e resistores de polarização em placa P=Interruptor de potencial com resistores de polarização montados

Tabela 2: Exemplo da designação de esquema básico de conexão

1.2 Variantes do comutador de derivação em carga

Na seção Visão geral de tipos [▶ Parágrafo 4.1, Página 30] pode ser encontrada uma visão geral das variantes do comutador de derivação em carga.

1.3 Comutações básicas

A seguir, são apresentados alguns exemplos dos esquemas básicos de conexão do comutador de derivação em carga com designação dos contatos de conexão do seletor segundo o padrão MR. As conexões que podem ser executadas de fato podem ser encontradas na seção “Esforços de tensão permitidos”.

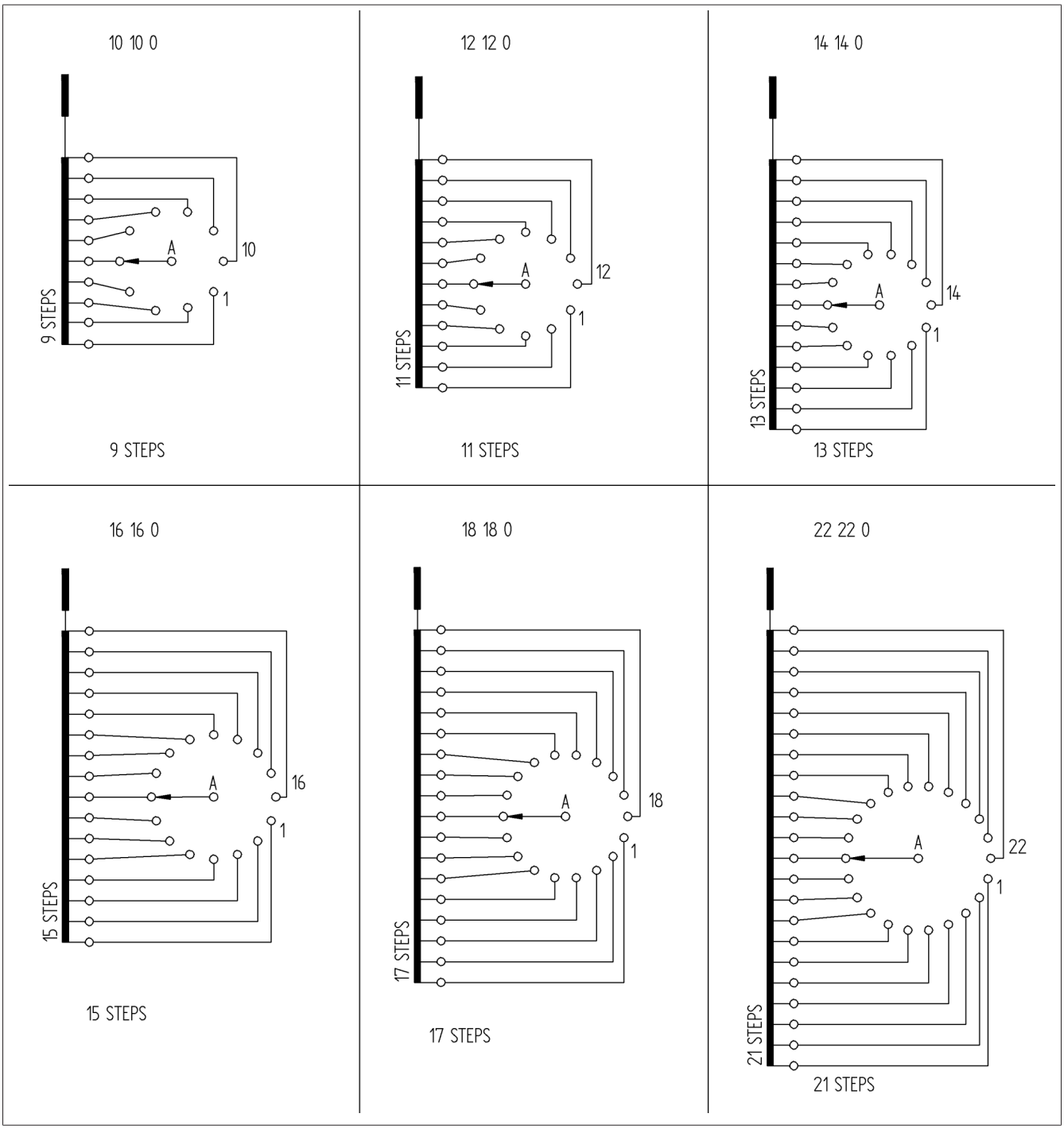


Figura 1: Esquemas básicos de conexão sem pré-seletor, VACUTAP® VM® I II III e VACUTAP® VMS® III, classe do seletor C

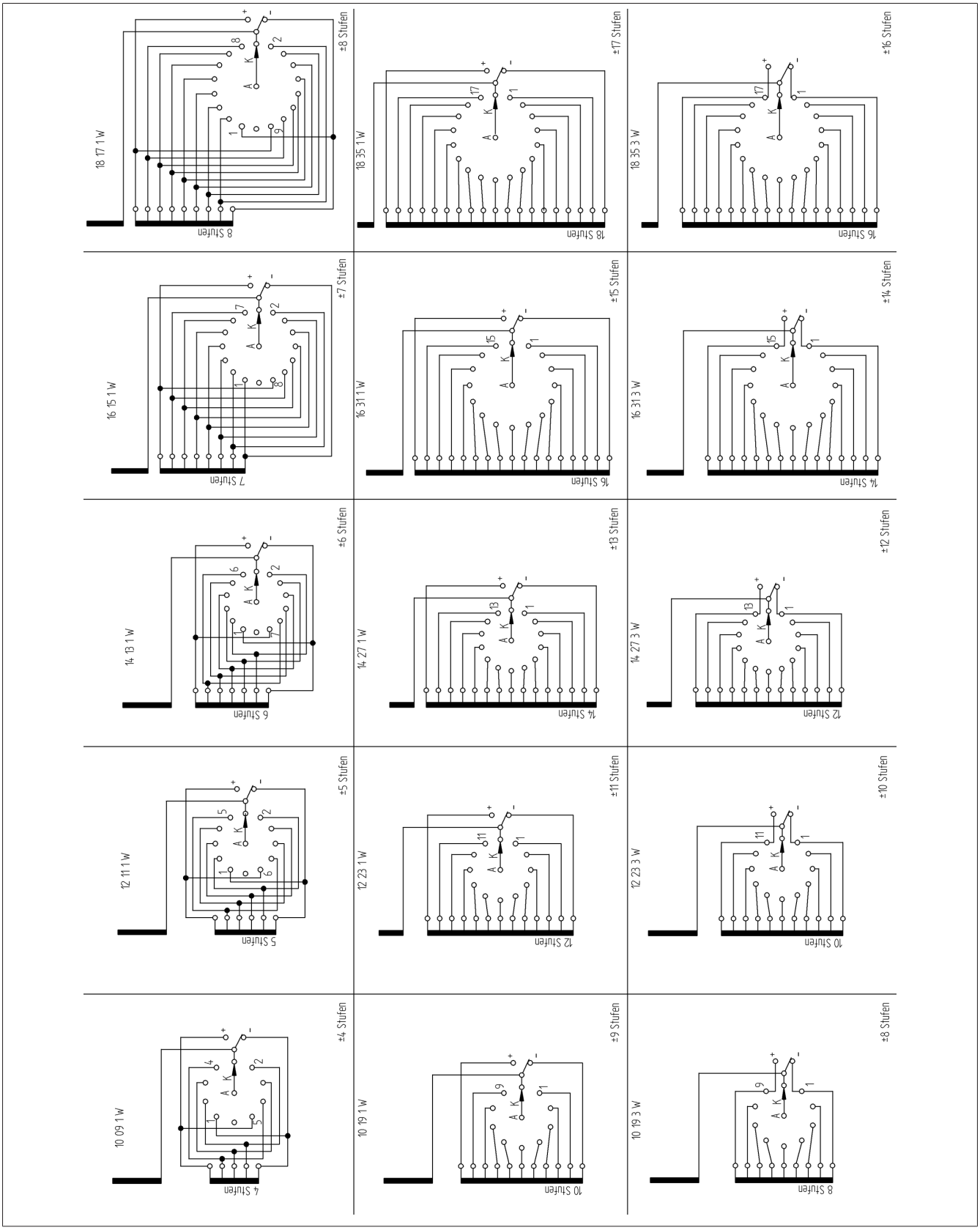


Figura 2: Esquemas básicos com comutação de chave inversora, VACUTAP® VM® I II III e VACUTAP® VMS® III, classe do seletor C

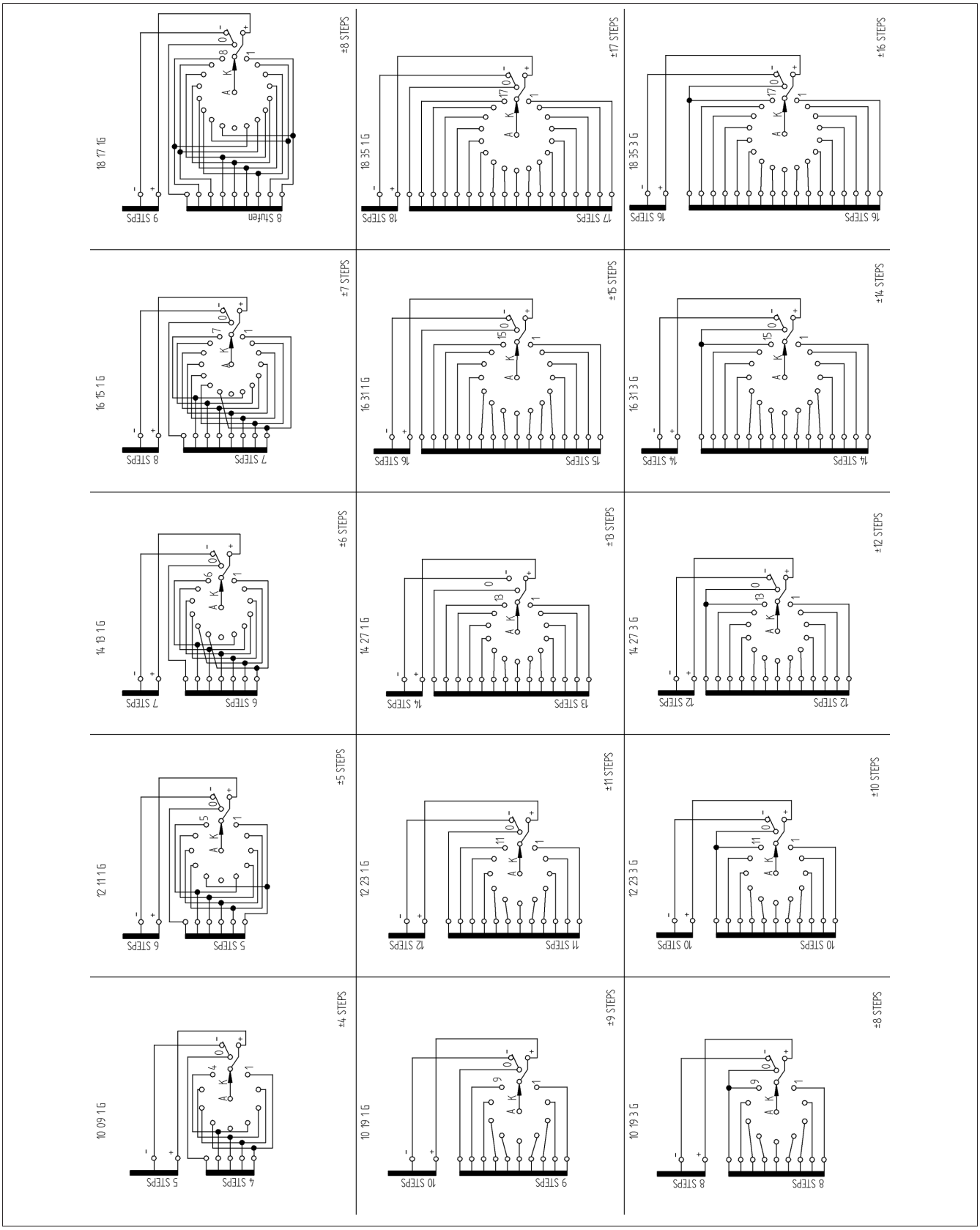


Figura 3: Esquemas básicos com comutação do seletor grosso, VACUTAP® VM® I II III e VACUTAP® VMS® III, classe do seletor C

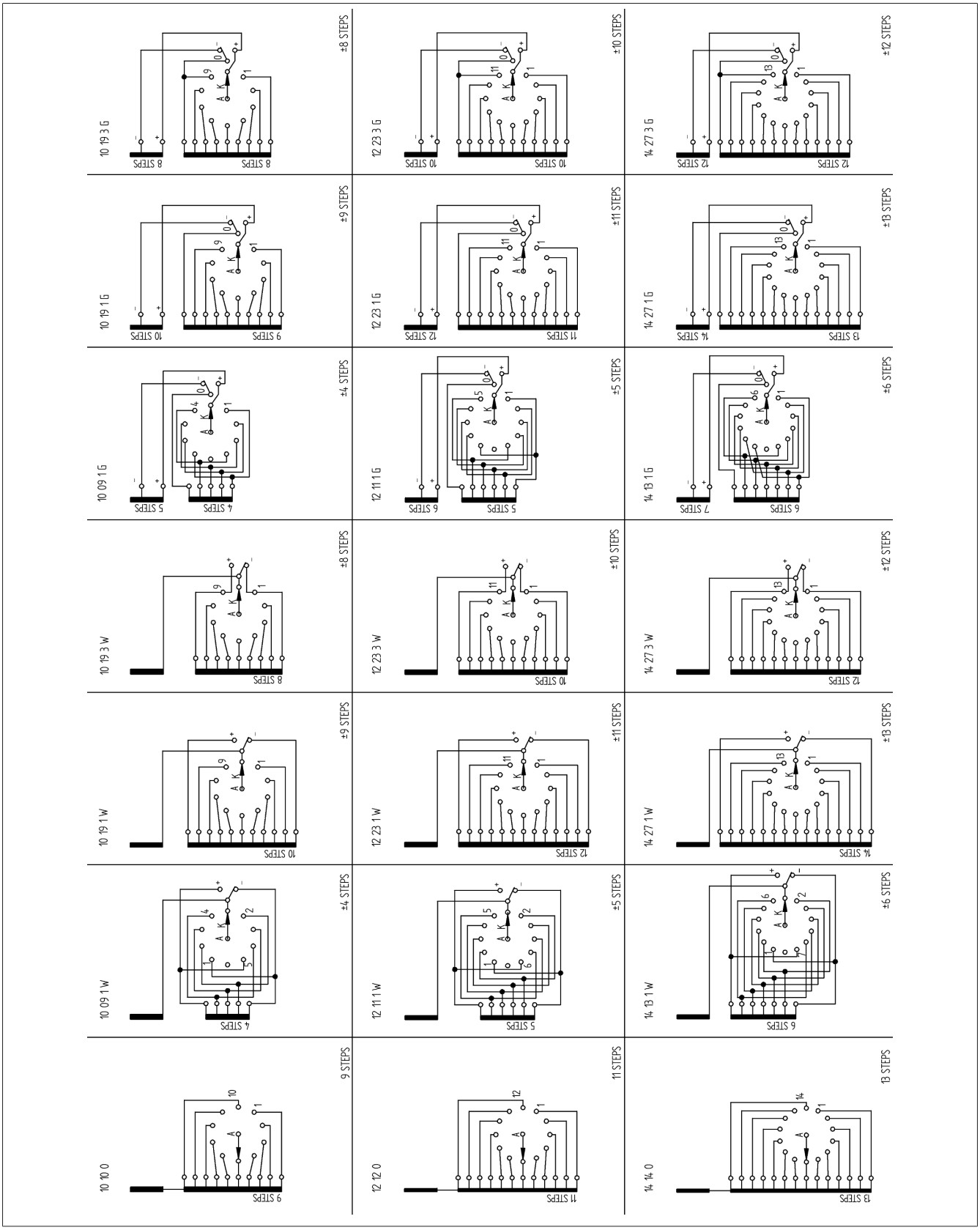


Figura 4: Esquemas básicos de conexão, VACUTAP® VM 300 e VACUTAP® VMS® III, classe do seletor B

2 Dados técnicos

2.1 Propriedades do comutador de derivação em carga

Dados elétricos – VACUTAP® VM

Comutador de derivação em carga	VM I 351	VM I 501	VM I 651	VM I 802	VM I 1002	VM I 1203	VM I 1503
Corrente transitória nominal máxima I_{rm} [A]	350	500	650	800	1 000	1 200	1 500
Corrente de curta duração nominal [kA]	4,2	5	6,5	8	10	12	15
Duração de curto-circuito nominal [s]	3						
Corrente de pico nominal [kA]	10,5	12,5	16,25	20	25	30	37,5
Tensão de taps nominal máxima U_{irm} [V][1)]	3 300						
Potência de taps P_{StN} [kVA]	1 155	1 625	1 625	2 600	2 600	3 500	3 500
Frequência de medição [Hz]	50...60						

Tabela 3: Dados elétricos – VACUTAP® VM I

Comutador de derivação em carga	VM II 352	VM II 502	VM II 652
Corrente transitória nominal máxima I_{rm} [A]	350	500	650
Corrente de curta duração nominal [kA]	4,2	5	6,5
Duração de curto-circuito nominal [s]	3		
Corrente de pico nominal [kA]	10,5	12,5	16,25
Tensão de taps nominal máxima U_{irm} [V][1)]	3 300		
Potência de taps P_{StN} [kVA]	1 155	1 625	1 625
Frequência de medição [Hz]	50...60		

Tabela 4: Dados elétricos – VACUTAP® VM II

Comutador de derivação em carga	VM III 350 Y	VM III 500 Y	VM III 650 Y
Corrente transitória nominal máxima I_{rm} [A]	350	500	650
Corrente de curta duração nominal [kA]	4,2	5	6,5
Duração de curto-circuito nominal [s]	3		
Corrente de pico nominal [kA]	10,5	12,5	16,25
Tensão de taps nominal máxima U_{irm} [V][1)]	3 300		
Potência de taps (P_{StN}) [kVA]	1 155	1 625	1 625
Frequência de medição [Hz]	50...60		

Tabela 5: Dados elétricos – VACUTAP® VM III

[1)] É permitida uma ultrapassagem de 10 % da tensão de taps nominal máxima causada pela sobre-excitação do transformador desde que a potência de taps não seja excedida nesse processo.

Dados elétricos – VACUTAP® VM 300

Comutador de derivação em carga	VM I 301 / VM II 302 / VM III 300 Y
Corrente transitória nominal máxima I_{rm} [A]	300
Corrente de curta duração nominal [kA]	4
Duração de curto-circuito nominal [s]	3
Corrente de pico nominal [kA]	10
Tensão de taps nominal máxima U_{irm} [V][1)]	3 300
Potência de taps P_{StN} [kVA]	990
Frequência de medição [Hz]	50...60

Tabela 6: Dados elétricos – VACUTAP® VM 300

[1)] É permitida uma ultrapassagem de 10 % da tensão de taps nominal máxima causada pela sobre-excitação do transformador desde que a potência de taps não seja excedida nesse processo.

Dados elétricos – VACUTAP® VMS®

Comutador de derivação em carga	VMS III 400 Y	VMS III 650 Y
Corrente transitória nominal máxima I_{rm} [A]	400	650
Corrente de curta duração nominal [kA]	4	6,5
Duração de curto-circuito nominal [s]	3	
Corrente de pico nominal [kA]	10	16,25
Tensão de taps nominal máxima U_{irm} [V][1)]	1 300	
Potência de taps (P_{StN}) [kVA]	520	845
Frequência de medição [Hz]	50...60	

Tabela 7: Dados elétricos – VACUTAP® VMS® III, classe do seletor C

Comutador de derivação em carga	VMS III 400 Y
Corrente transitória nominal máxima I_{rm} [A]	400
Corrente de curta duração nominal [kA]	4
Duração de curto-circuito nominal [s]	3
Corrente de pico nominal [kA]	10
Tensão de taps nominal máxima U_{irm} [V][1)]	1 300
Potência de taps (P_{StN}) [kVA]	520
Frequência de medição [Hz]	50...60

Tabela 8: Dados elétricos – VACUTAP® VMS® III, classe do seletor B

[1)] É permitida uma ultrapassagem de 10 % da tensão de taps nominal máxima causada pela sobre-excitação do transformador desde que a potência de taps não seja excedida nesse processo.

Dados mecânicos – VACUTAP® VM

Número das posições de serviço	sem pré-seletor: 18 no máximo com pré-seletor: 35 no máximo com seletor grosso múltiplo: 107 no máximo
Número dos setores ocupados	1...3
Classes do seletor	B, C, D, DE (não com seletor grosso múltiplo)
Dimensões	Ver desenhos cotados
Peso	
Volumes de deslocamento e teor de óleo	

Tabela 9: Dados mecânicos – VACUTAP® VM I II III

Dados mecânicos – VACUTAP® VM 300

Número das posições de serviço	sem pré-seletor: 14 no máximo com pré-seletor: 27 no máximo
Número dos setores ocupados	1...3
Classes do seletor	B
Dimensões	Ver desenhos cotados
Peso	
Volumes de deslocamento e teor de óleo	

Tabela 10: Dados mecânicos – VACUTAP® VM I 301 / VM II 302 / VM III 300 Y

Dados mecânicos – VACUTAP® VMS®

Número das posições de serviço	sem pré-seletor: 18 no máximo com pré-seletor: 35 no máximo
Número dos setores ocupados	3
Classes do seletor	C
Dimensões	Ver desenhos cotados
Peso	
Volumes de deslocamento e teor de óleo	

Tabela 11: Dados mecânicos – VACUTAP® VMS® III, classe do seletor C

Número das posições de serviço	sem pré-seletor: 14 no máximo com pré-seletor: 27 no máximo
Número dos setores ocupados	3
Classes do seletor	B
Dimensões	Ver desenhos cotados
Peso	
Volumes de deslocamento e teor de óleo	

Tabela 12: Dados mecânicos – VACUTAP® VMS® III, classe do seletor B

2.2 Condições ambientais admissíveis

Temperatura do ar na operação	-25 °C...+50 °C
Temperatura do fluido isolante na operação	-25 °C a +105 °C (com operação de emergência do transformador até +115 °C)
Temperatura de transporte, temperatura de armazenamento	-40 °C...+50 °C
Temperaturas de secagem	Ver capítulo "Montagem" do manual de montagem e colocação em funcionamento
Resistência à pressão	Ver Dados Técnicos TD 61 – Parte Geral
Fluido isolante	– Óleos isolantes novos à base de derivados de petróleo[1)] em conformidade com IEC60296 e ASTM D3487 (normas equivalentes sob consulta) – Óleos isolantes novos à base de outros hidrocarbonetos inalterados em conformidade com IEC60296, ou misturas desses óleos com derivados de petróleo[1)] em conformidade com IEC60296, ASTM D3487 ou normas equivalentes sob consulta – Fluidos isolantes alternativos, por exemplo ésteres naturais e sintéticos ou óleos de silicone, sob consulta [1)] Neste contexto, os óleos "gas to liquid" (óleos GTL) são entendidos como derivados de petróleo
Altura de instalação do conservador de óleo	Ver Dados Técnicos TD 61 – Parte Geral
Altura da instalação acima do nível do mar	Ver Dados Técnicos TD 61 – Parte Geral

Tabela 13: Condições ambientais permitidas

2.3 Diagramas de potência de tap

2.3.1 Diagrama de potência de taps com funcionamento de rede VACUTAP® VM® e VM 300

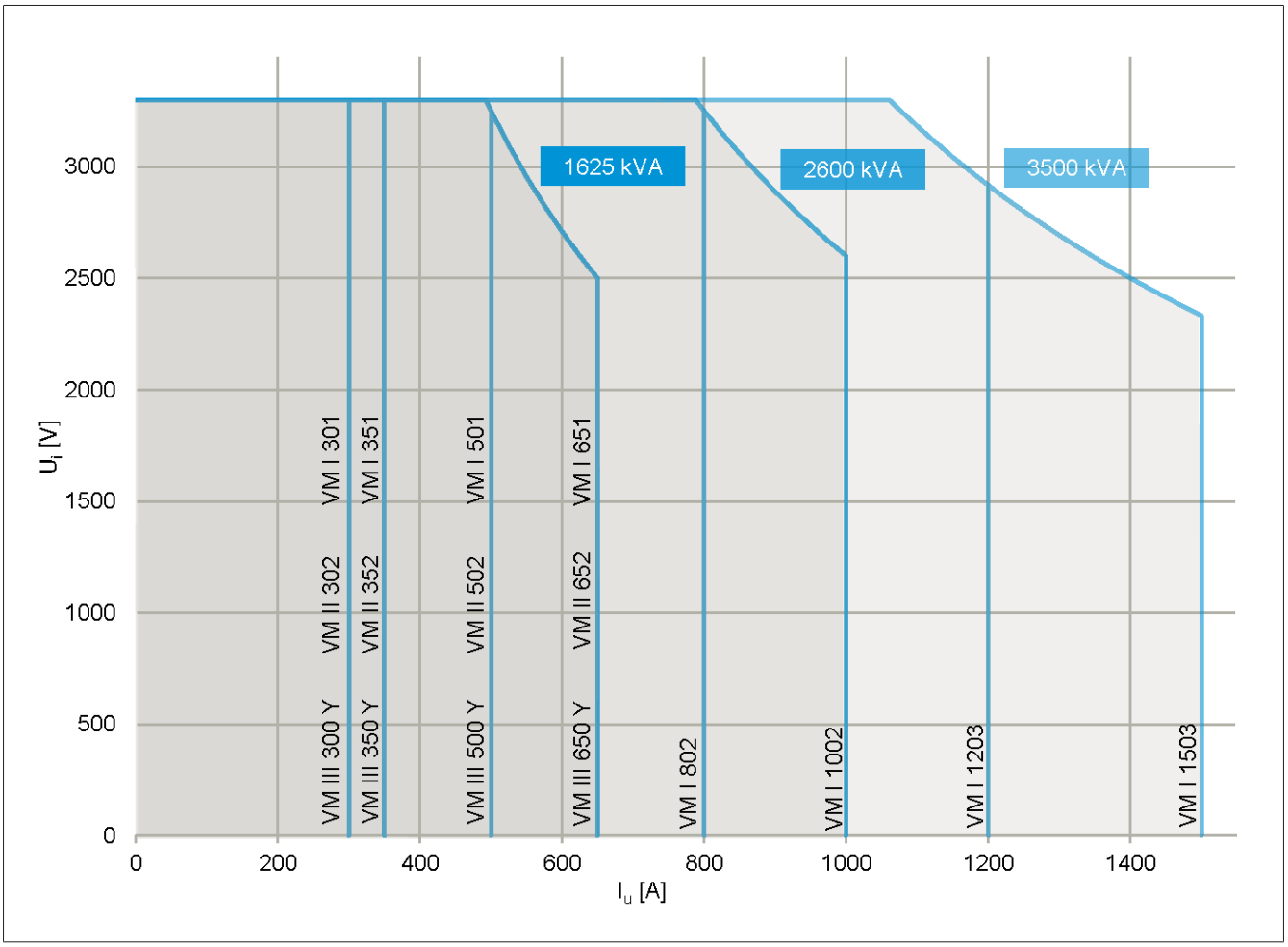


Figura 5: Potências de taps (tensão de taps nominal U_{ir} com corrente transitória nominal I_r)

2.3.2 Diagrama de potência de taps com operação com forno de arco voltaico VACUTAP® VM® e VM 300

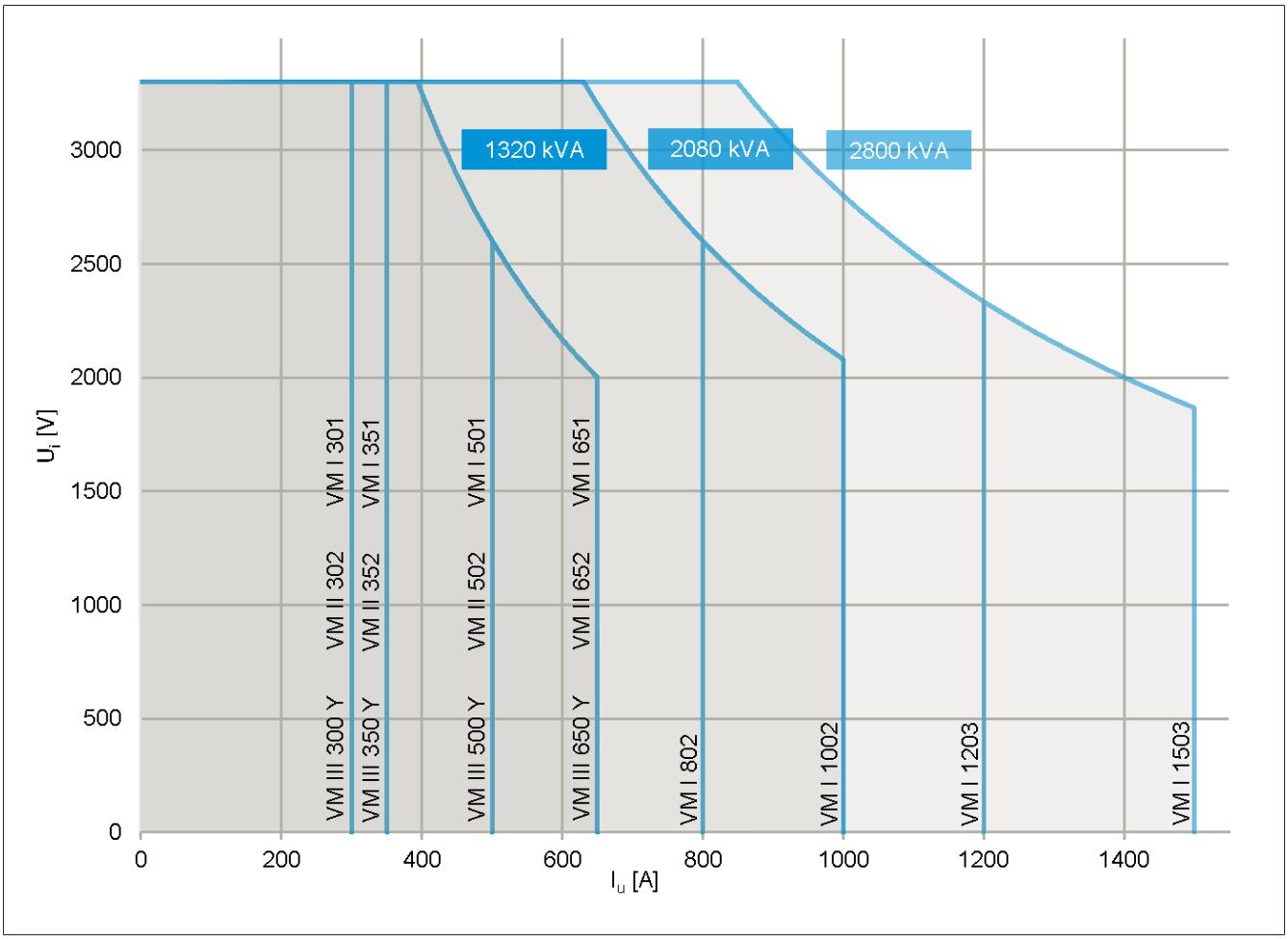


Figura 6: Potências de taps (tensão de taps nominal U_{ir} com corrente transitória nominal I_r)

2.3.3 Diagrama de potência de taps com funcionamento de rede VACUTAP® VMS® III

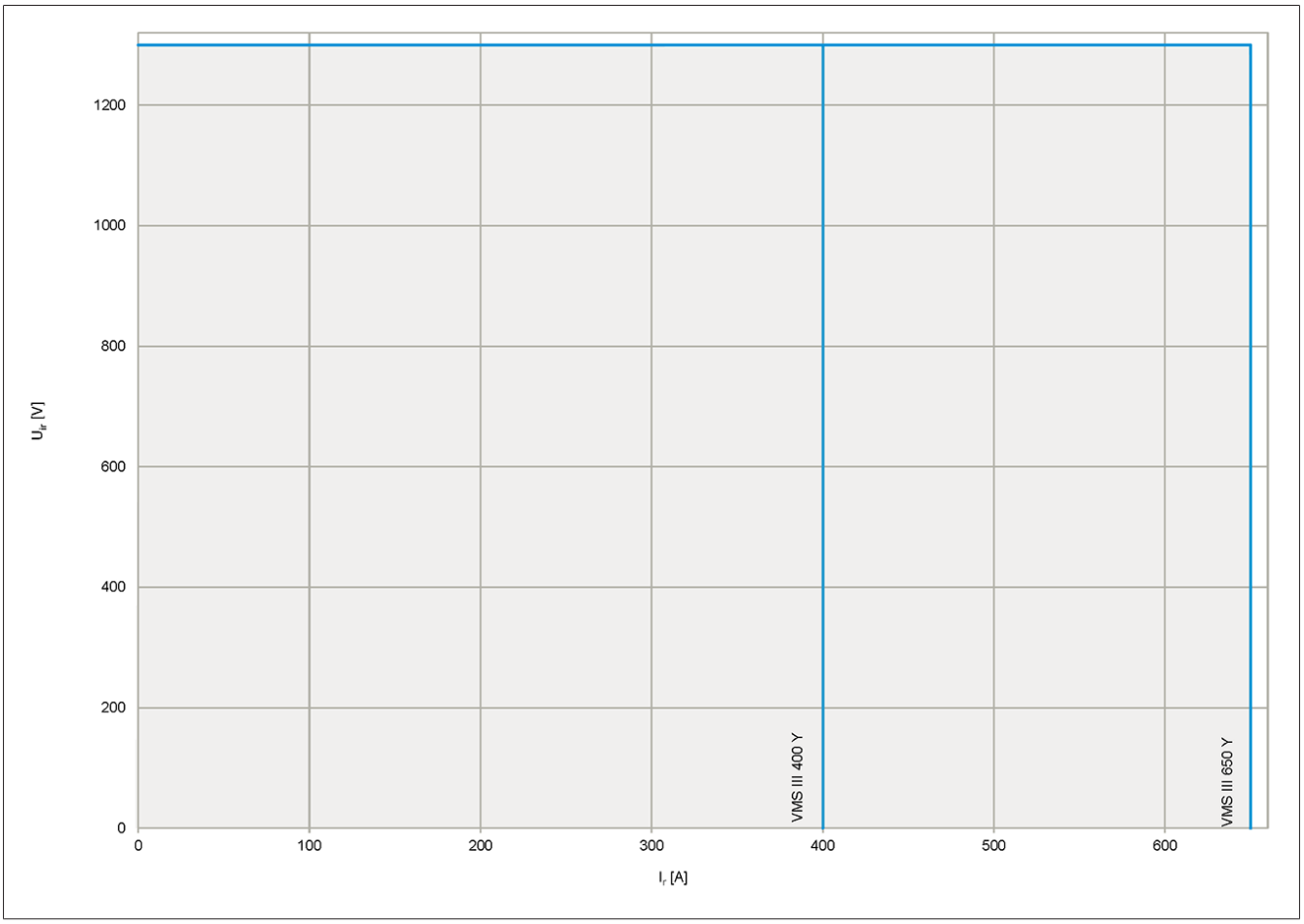


Figura 7: Potências de taps (tensão de taps nominal U_{ir} com corrente transitória nominal I_r)

2.4 Esforços de tensão permitidos

Esta seção descreve os esforços de tensão permitidos do comutador de derivação em carga.

Ao selecionar o comutador de derivação em carga, é necessário verificar se os esforços máximos que ocorrem nos trechos de isolamento não ultrapassam as tensões suportáveis nominais correspondentes.

2.4.1 Distâncias de isolamento sem seletor grosso múltiplo

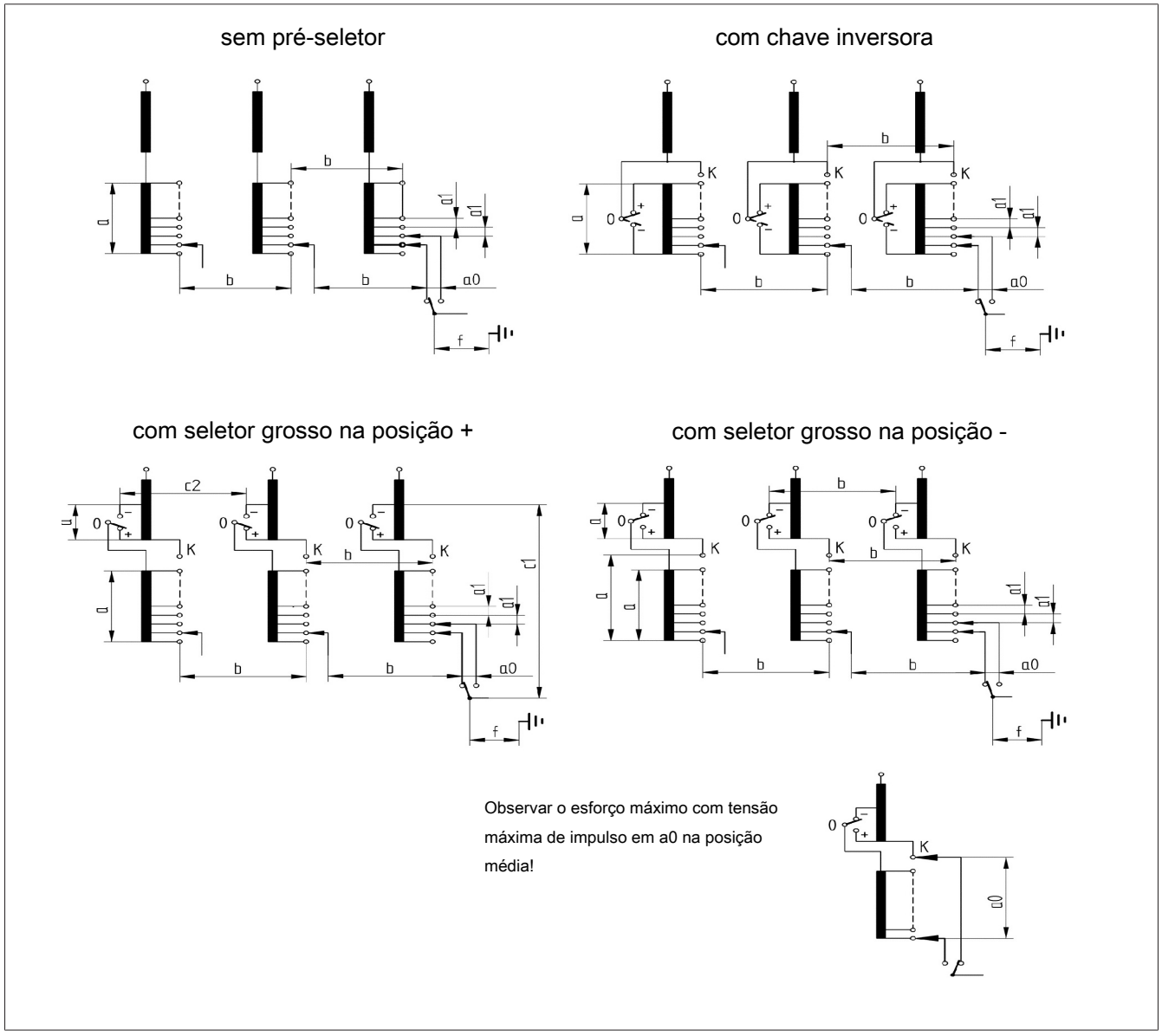


Figura 8: Distâncias de isolamento

a0	entre a derivação selecionada e pré-selecionada na chave de carga
a1	entre contatos do seletor de derivações do enrolamento de um tap (conectados ou não conectados)
a	entre o começo e o fim de um enrolamento fino de tap e no modelo com enrolamento grosso também entre o começo e o fim de um enrolamento grosso. Nota sobre a comutação do seletor grosso na posição (-) do pré-seletor: Principalmente no caso de esforço com tensão de impulso, é necessário respeitar a tensão suportável permitida "a" entre o fim ligado com o contato do seletor de derivações K de um enrolamento grosso e o contato do seletor de derivações no fim do enrolamento fino de tap da mesma fase.
b	entre os contatos do seletor de derivações fino de fases diferentes e entre os contatos do pré-seletor de fases diferentes que estão ligados com o começo/fim de um enrolamento fino de tap ou com um contato do seletor de derivações
f	entre o contato de saída da chave de carga e a terra
Adicionalmente em caso de comutação do seletor grosso na posição (+) do pré-seletor:	
c1	de um contato do pré-seletor (-) para o contato de saída da mesma fase
c2	entre os contatos do pré-seletor (-) de fases diferentes

Abreviaturas do nível de isolamento nominal:

LI	Tensão de impulso atmosférico pleno (kV, 1,2/50 µs)
LIC	Tensão de impulso atmosférico cortado (kV, 1,2/50/3 µs)
SI	Tensão de impulso de manobra (kV, 250/2500 µs)
AC	Tensão a frequência industrial (kV, 50 Hz, 1 min)

Nível de isolamento nominal na chave de carga

Trecho de isolamento f				
U_m [1)]	LI	LIC	SI	AC
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

Tabela 14: Nível de isolamento nominal na chave de carga

[1)] Em conformidade com a IEC 60214-1: o valor efetivo máximo de uma tensão entre duas fases em um sistema trifásico para o qual um comutador de derivação em carga foi concebido, com relação ao respectivo isolamento.

[2)] VACUTAP® VMS® apenas até U_m=170 kV

[3)] Apenas comutadores de derivação em carga monofásicos

Nível de isolamento nominal do isolamento interno no seletor, VACUTAP® VM® I II III, classes do seletor B, C, D, DE e VACUTAP® VMS® III, classe do seletor C, sem seletor grosso múltiplo

A tensão de serviço máxima permitida em cada distância do seletor corresponde à metade dos valores indicados em seguida para a tensão a frequência industrial (AC).

Trecho de isolamento		Classe do seletor			
		B	C	D	DE
a0	LI	150[2)]			150[2)]
	LIC	165[2)]			165[2)]
	SI	100[2)]			100[2)]
	AC	20			20
a1	LI	150			150
	LIC	165			165
	SI	100			100
	AC	30			30
a	LI	265	350	490	550
	LIC	295	385	540	605
	SI	175	230	320	360
	AC	50	82	105	120
b[1)]	LI	265	350	490	550
	LIC	295	385	540	605
	SI	175	230	320	360
	AC	50	82	146	160
c1	LI	485	545	590	660
	LIC	535	600	650	725
	SI	315	355	385	430
	AC	143	178	208	230
c2[1)]	LI	495	550	590	660
	LIC	545	605	650	725
	SI	325	360	385	430
	AC	150	182	225	250

Tabela 15: Nível de isolamento de medição do isolamento interno no seletor

[1)] Não aplicável em comutadores de derivação em carga monofásicos

[2)] Tensão de atuação do varistor com impulso de 1,2/50 µs: a partir de 45 kV ($U_{100\,\%}(t)_{normalizada} \neq U_{75\,\%}(t)_{normalizada}$) tensão residual com corrente de pico de 3 kA: 56 kV

Nível de isolamento nominal do isolamento interno no seletor, VACUTAP® VM 300 e VACUTAP® VMS® III, classe do seletor B, sem seletor grosso múltiplo

A tensão de serviço máxima permitida em cada distância do seletor corresponde à metade dos valores indicados em seguida para a tensão a frequência industrial (AC).

Trecho de isolamento		Classe do seletor B
a0	LI	150[1)]
	LIC	165[1)]
	SI	100[1)]
	AC	20
a	LI	300
	LIC	330
	SI	195
	AC	70
b	LI	300
	LIC	330
	SI	195
	AC	70
c1	LI	400
	LIC	440
	SI	260
	AC	120
C2	LI	400
	LIC	440
	SI	260
	AC	120

Tabela 16: Nível de isolamento de medição do isolamento interno no seletor

[1)] Tensão de atuação do varistor com impulso de 1,2/50 µs: a partir de 45 kV ($U_{100\,\%}(t)_{normalizada} \neq U_{75\,\%}(t)_{normalizada}$) tensão residual com corrente de pico de 3 kA: 56 kV

2.4.2 Distâncias de isolamento com seletor grosso múltiplo

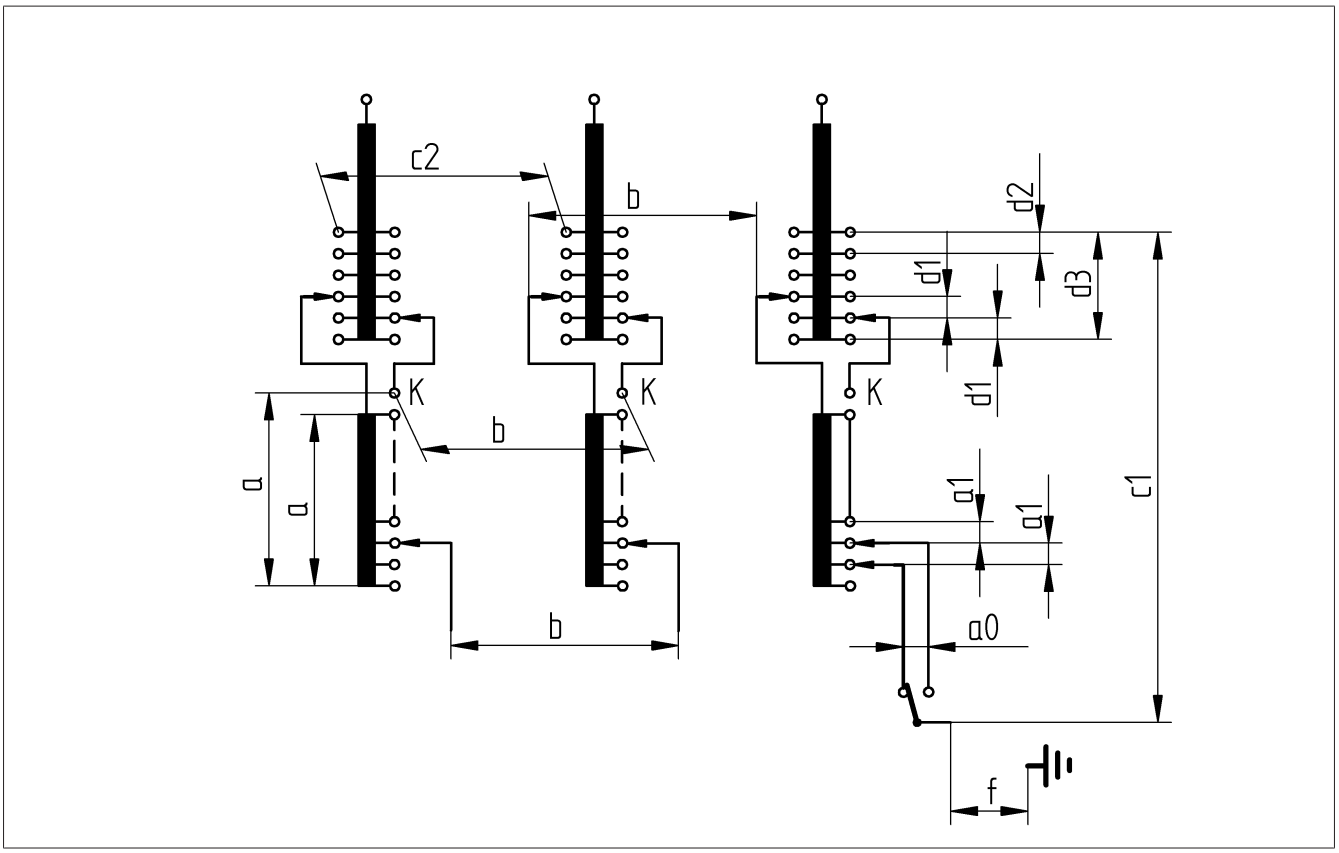


Figura 9: Distâncias de isolamento VACUTAP® VM® I II III, classes do seletor B, C, D com seletor grosso múltiplo

a0	entre a derivação selecionada e pré-selecionada na chave de carga
a1	entre contatos do seletor de derivações do enrolamento de um tap (conectados ou não conectados)
a	entre o começo e o fim de um enrolamento fino e entre o contato K conectado e quaisquer pontos do enrolamento fino de tap da mesma fase
b	entre os contatos do seletor de derivações de fases diferentes e entre o contato K conectado de uma fase e quaisquer pontos do enrolamento fino de tap de outra fase
c1	entre quaisquer derivações de tap enrolamento grosso de uma fase para o contato de saída da chave de carga da mesma fase
c2	entre derivações de taps enrolamento grosso não conectadas com o mesmo nome e de fases diferentes
d1	entre o contato do seletor grosso adjacente conectado em uma fase
d2	entre os contatos do seletor grosso adjacentes não conectados em uma fase
d3	entre o começo e o fim de todos os taps enrolamento grosso de uma fase
f	entre o contato de saída da chave de carga e a terra

Quanto ao trecho de isolamento f, veja Nível de isolamento nominal na chave de carga.

Nível de isolamento nominal do isolamento interno no seletor com seletor grosso múltiplo, VACUTAP® VM® I II III, classes do seletor B, C, D

A tensão de serviço máxima permitida em cada distância do seletor corresponde à metade dos valores indicados em seguida para a tensão a frequência industrial (AC).

Trecho de isolamento		Classe do seletor		
		B	C	D
a0	LI	150[2)]		
	LIC	165[2)]		
	SI	100[2)]		
	AC	20		
a1	LI	150		
	LIC, SI	Valores sob consulta		
	AC	30		
a	LI	265	350	450
	LIC, SI	Valores sob consulta		
	AC	50	82	105
b[1)]	LI	265	350	450
	LIC, SI	Valores sob consulta		
	AC	50	82	146
c1	LI	455	525	590
	LIC, SI	Valores sob consulta		
	AC	127	165	210
c2[1)]	LI	455	525	590
	LIC, SI	Valores sob consulta		
	AC	127	165	215
d1	LI	265	350	450
	LIC, SI	Valores sob consulta		
	AC	50	82	105
d2	LI	350	450	450
	LIC, SI	Valores sob consulta		
	AC	82	105	105
d3	LI	350	450	490
	LIC, SI	Valores sob consulta		
	AC	82	105	120

Tabela 17: Nível de isolamento de medição do isolamento interno no seletor com seletor grosso múltiplo

[1)] não aplicável em comutadores de derivação em carga monofásicos

[2)] Tensão de atuação do varistor com impulso de 1,2/50 µs: a partir de 45 kV ($U_{100\%}(t)_{normalizada} \neq U_{75\%}(t)_{normalizada}$) tensão residual com corrente de pico de 3 kA: 70 kV

2.4.3 Comutações executáveis

Comutações executáveis com as classes do seletor respectivas do VACUTAP® VM® I II III

As comutações executáveis a seguir também podem ser executadas com relação a pré-seletores com chave inversora e três posições médias (3W) e com relação a pré-seletores com tap enrolamento grosso e três posições médias (3G).

sem pré-seletor		com chave inversora		com seletor grosso	
Comutação	Classe do seletor	Comutação	Classe do seletor	Comutação	Classe do seletor
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

Tabela 18: Comutações executáveis VACUTAP® VM® I II III

Comutações executáveis VACUTAP® VMS® III, classe do seletor C

As comutações executáveis a seguir também podem ser executadas com relação a pré-seletores com chave inversora e três posições médias (3W) e com relação a pré-seletores com tap enrolamento grosso e três posições médias (3G).

Conexão sem pré-seletor	Conexão com chave inversora	Conexão com seletor grosso
10050	10071W	10071G
10060	10081W	10081G
10070	10091W	10091G
10080	12101W	12101G
10090	12111W	12111G

Conexão sem pré-seletor	Conexão com chave inversora	Conexão com seletor grosso
10100	14121W	14121G
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

Tabela 19: Comutações executáveis VACUTAP® VMS® III, classe do seletor C

Comutações executáveis VACUTAP® VM 300 e VACUTAP® VMS® III, classe do seletor B

As comutações executáveis indicadas com [1)] também podem ser executadas com relação a pré-seletores com chave inversora e três posições médias (3W) e com relação a pré-seletores com tap enrolamento grosso e três posições médias (3G).

Conexão sem pré-seletor	Conexão com chave inversora	Conexão com seletor grosso
10100	10091W	10091G
12120	12111W	12111G
14140	14131W	14131G
	10191W[1)]	10191G[1)]
	12231W[1)]	12231G[1)]
	14271W[1)]	14271G[1)]

Tabela 20: Comutações executáveis VACUTAP® VMS® III, classe do seletor B

3 Modelos especiais

3.1 Pontes para ligação em paralelo de níveis do seletor

Para a distribuição de corrente nos contatos de conexão de 2 níveis do seletor apenas para os comutadores de derivação em carga VACUTAP® VM I 802/1002 e de 3 níveis do seletor apenas para o comutador de derivação em carga VACUTAP® VM I 1203/1503.

As pontes nos contatos de conexão do seletor são obrigatórias se o enrolamento de tap tiver sido enrolado em dois ou mais condutores parciais e se cada uma dessas sessões de cabo for disposta como derivação para os contatos de conexão do seletor.

Esta medida impede que ocorra o seguinte:
- a transferência de correntes de compensação para os circuitos da corrente do seletor e da chave de carga
- um arco voltaico de comutação em pontes de contato deslocadas do seletor
- sobretensões entre os contatos de conexão do seletor adjacentes conectados em paralelo

3.2 Combinação de comutadores de derivação em carga para conexão delta

É possível combinar comutadores de derivação em carga monofásicos com comutadores de derivação em carga difásicos para ajustar a tensão de enrolamentos de transformador em uma conexão delta. Essa combinação de comutadores de derivação em carga de duas colunas é designada por "VM III K" (K indica combinação).

São possíveis as seguintes combinações de comutadores de derivação em carga:
- VM I 301 com VM II 302
- VM I 351 com VM II 352
- VM I 501 com VM II 502
- VM I 651 com VM II 652

Para isso, é necessário dispor os enrolamentos de tap de acordo com o seguinte gráfico:

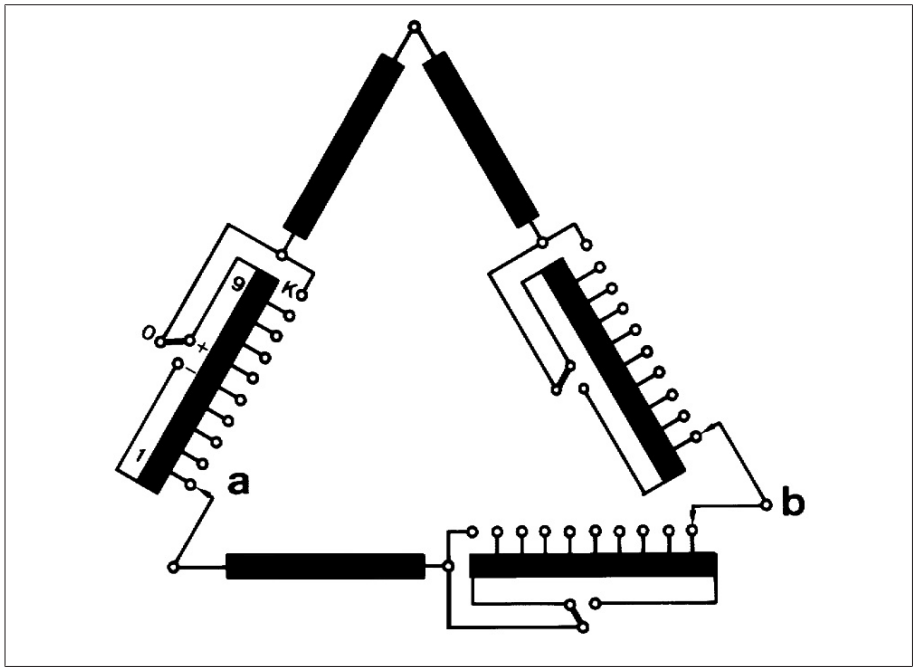


Figura 10: Combinação de comutadores de derivação em carga VM III K para conexão delta VM I 351/VM II 352 (a = VM I 351, b = VM II 352)

3.3 Comutadores de derivação em carga VACUTAP® VM III 650 Y...VM I 1503 com seletor grosso múltiplo (até 5 taps enrolamento grosso, no máximo)

Para uma regulação da tensão com alto nível de precisão é necessário um número elevado de posições de serviço que, sob determinadas circunstâncias, só podem se concretizado através de uma comutação do seletor grosso múltiplo.

Por exemplo, a utilização de um enrolamento grosso de 5 taps e um enrolamento fino com 18 derivações permite obter 107 posições de serviço.

O seletor de curso múltiplo está instalado em ambos os lados do seletor de derivações.

Os comutadores de derivação em carga podem ser fornecidos para U_m = 72,5 até 300 kV, no máximo, e para 2...5 taps enrolamento grosso (classes do seletor B, C e D).

3.4 Comutadores de derivação em carga difásicos VACUTAP® VM II 302/352/502/652

O comutador de derivação em carga VM II 302/352/502/652 é fornecido como comutador de derivação em carga difásico para comutação central monofásica com os mesmos dados técnicos correspondentes que o comutador de derivação em carga VM III 300 Y, VM III 350 Y, VM III 500 Y ou VM III 650 Y.

3.5 Comutadores de derivação em carga para ligação em estrela com ponto neutro aberto

A comutadores de derivação em carga com ponto neutro aberto podem ser conectados **somente transformadores de corrente** ao ponto neutro aberto, caso contrário ocorrem sobretensões não permitidas no ponto neutro.

> Não é permitido conectar reatores de barramento.

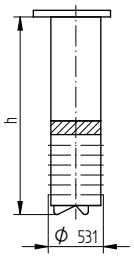
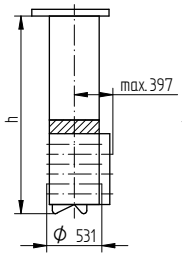
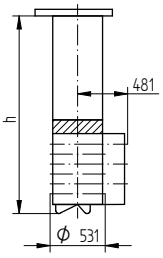
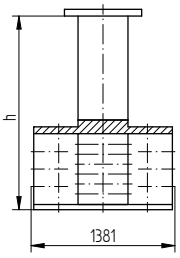
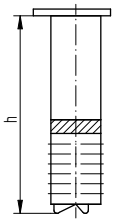
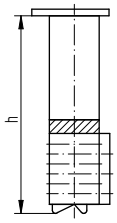
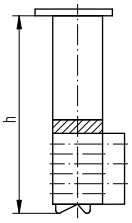
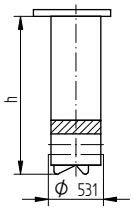
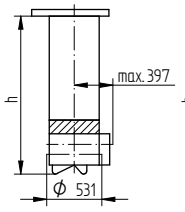
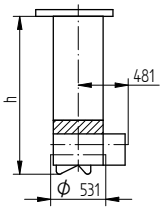
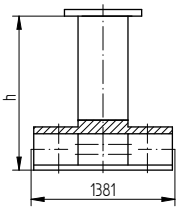
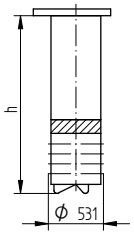
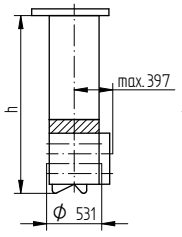
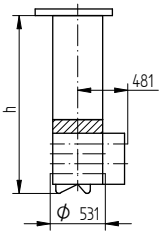
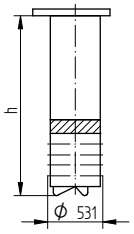
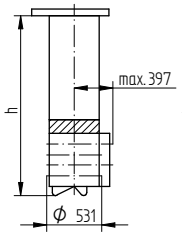
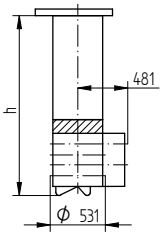
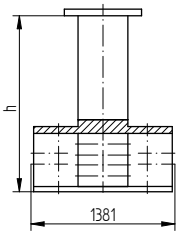
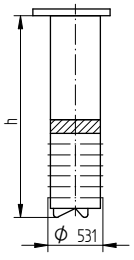
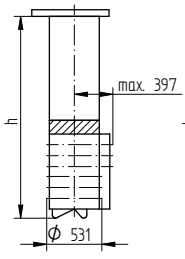
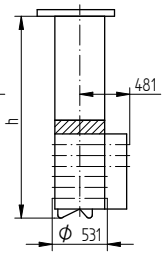
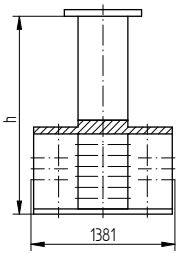
Conexão das três derivações do compartimento de óleo (= ponto neutro aberto)	VACUTAP VM III 300/350/500/650 Y	
Conexão do transformador de corrente e formação de ponto neutro fora do comutador de derivação em carga	A) Tensões de teste permitidas entre os contatos de derivação do compartimento de óleo	
	– Tensão máxima de impulso	< 140 kV (1,2/50 µS)[1)]
	– Tensão nominal de corrente alternada	1 kV (50 Hz, 1 min.)
	B) Tensão de serviço máxima permitida entre os contatos de derivação do compartimento de óleo	1 kV (50...60 Hz)
[1)] Tensão de atuação do varistor com impulso de 1,2/50 µs: > 1,4 kV, tensão residual com corrente de pico de 1000 A (8/20 µs): < 3 kV, carga energética máxima do varistor permitida < 100 J		

Tabela 21: Tensões de teste e tensões de serviço permitidas para o VACUTAP® VM III 300/350/500/650 Y

4 Desenhos

4.1 Vista geral de tipos

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

	WITHOUT CHANGE-OVER SELECTOR	WITH REVERSING CHANGE-OVER SELECTOR	WITH COARSE CHANGE-OVER SELECTOR	WITH MULTIPLE COARSE CHANGE-OVER SELECTOR (MG) ONLY SIZE B, C AND D
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	SELECTOR SIZE B		C		D/DE	D
[kV]	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	SELECTOR SIZE C
[kV]	0/W/G
72,5	2069
123	2199
170	2329

U_m	SELECTOR SIZE B		C		D/DE	D
[kV]	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	SELECTOR SIZE B	C	D/DE
[kV]	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	SELECTOR SIZE B		C		D/DE	D
[kV]	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	SELECTOR SIZE B		C		D/DE	D
[kV]	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

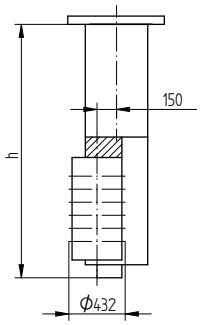
ON-LOAD TAP-CHANGER OILTAP® M / VACUTAP® VM®, VMS®-C
M-SELECTOR SIZE B/C/D/DE
SURVEY OF MODELS

SERIAL NUMBER

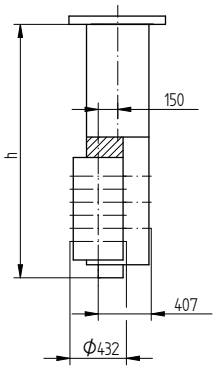
MATERIAL NUMBER 8997404E

SHEET 1/1

WITHOUT
CHANGE-OVER SELECTOR



WITH
CHANGE-OVER SELECTOR



INSTALLATION LENGHT h IN MM

VMS III 400 Y

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

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

DIMENSION IN mm EXCEPT AS NOTED

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

SERIAL NUMBER

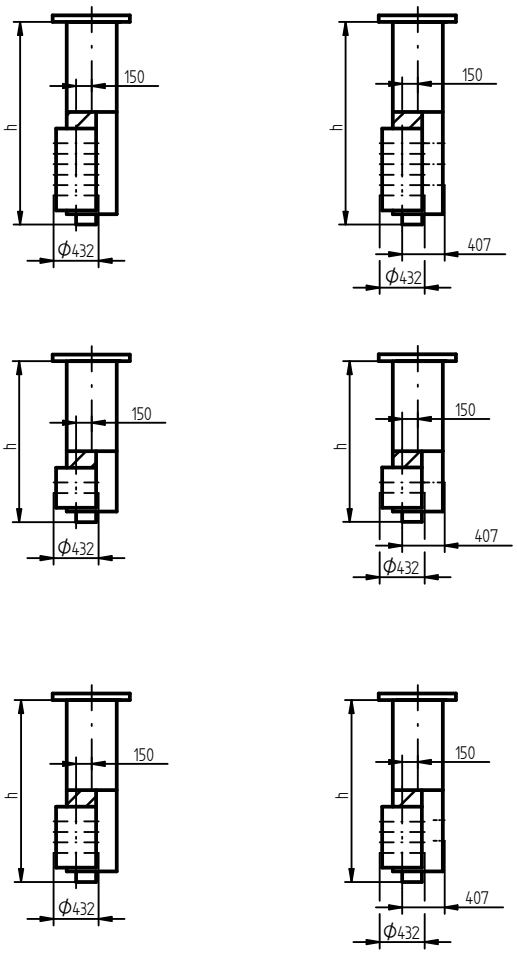
MATERIAL NUMBER 101170260E

SHEET 1/1

	DATE	NAME	DOCUMENT NO.
DFTR.	22.01.2016	RAEDLINGER	SED 2416819 001 01
EHKO.	25.02.2016	TKBIRKMANN	CHANGE NO. / SCALE
STAND.	25.02.2016	PRODASTSCHUK	1072100 / -

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

DIMENSION IN mm EXCEPT AS NOTED

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

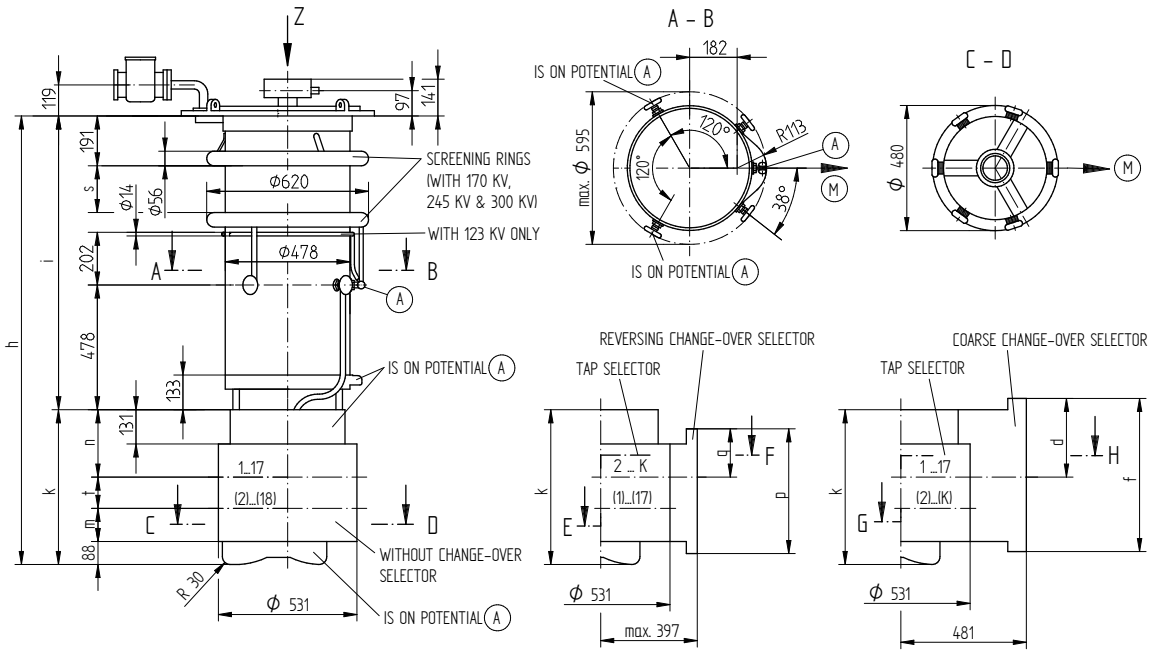
SERIAL NUMBER

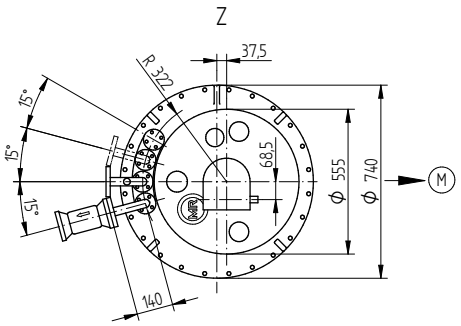
MATERIAL NUMBER 7658351E

SHEET 1/1

A1

4.2 Desenhos cotados





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					301.5					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.
DFTR.	18.11.2015	RAEDLINGER	SED 2312716 001 01
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO. / SCALE 1:10
STAND.	01.12.2015	PRODASTSCHUK	1069171

DIMENSION IN mm EXCEPT AS NOTED

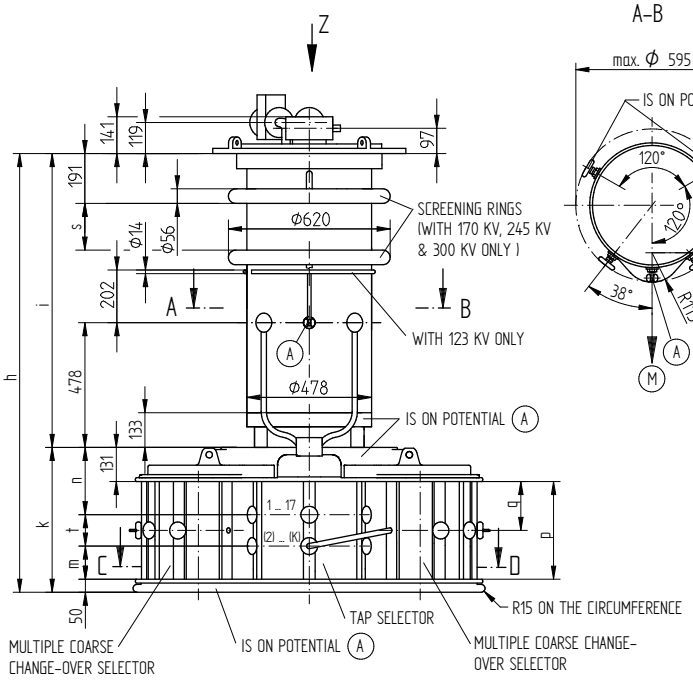
ON-LOAD TAP-CHANGER VACUTAP® VM
VM I 351/501/651 – B/C/D/DE – 0/W/G
DIMENSION DRAWING

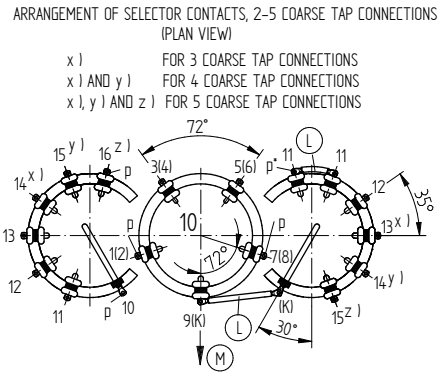
SERIAL NUMBER

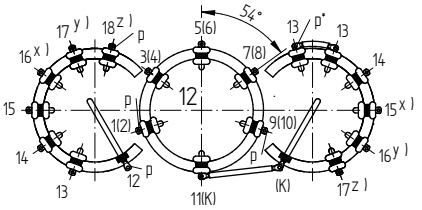
MATERIAL NUMBER 7462211E

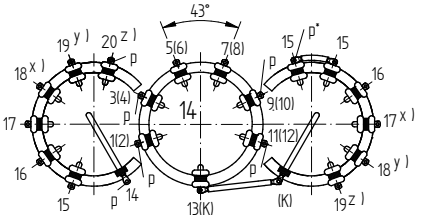
SHEET 1/1

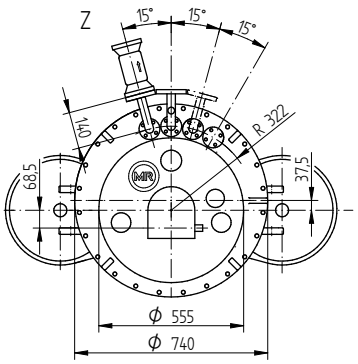
A1

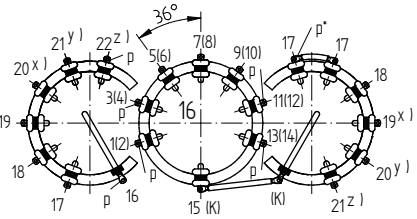


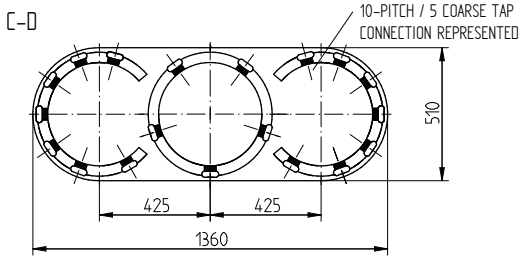


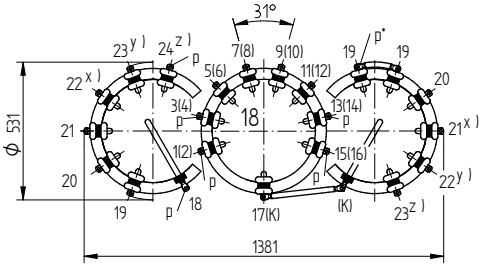












p = CONNECTION MIN. 3 MM PAPER INSULATED
p* = CONNECTION ALREADY 3 MM PAPER INSULATED BY MR

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 LEAD
(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	1476	1606	1736	1836	1988	1551	1681	1811	1911	2063	1746	1876	2006	2106	2258
	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	480					555					750				
	n	233					258					323				
	m	102					127					192				
	t	95					120					185				
	q	149,5					187					284,5				
	p	299					374					569				
OIL VOLUME [DM³]		130	150	170	190	210	130	150	170	190	210	130	150	170	190	210
DISPLACEMENT [DM³]		198	223	243	263	283	198	223	243	263	283	203	223	248	268	288
WEIGHT [KG]		370	375	380	385	390	380	385	390	395	400	390	395	400	405	410

	DATE	NAME	DOCUMENT NO.
DFTR.	18.11.2015	RAEDLINGER	SED 2315140 001 02
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO. / SCALE 1:10
STAND.	01.12.2015	PRODASTSCHUK	1069171

DIMENSION IN mm EXCEPT AS NOTED

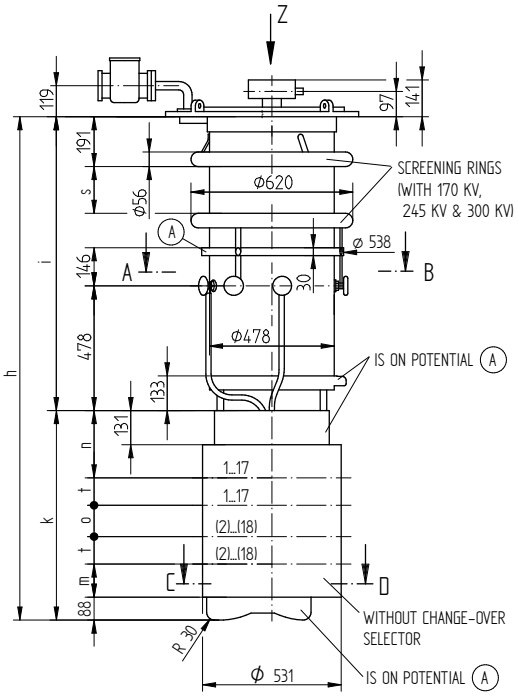
ON-LOAD TAP-CHANGER VACUTAP® VM
VM I 651 – B/C/D WITH MULTIPLE COARSE CHANGE-OVER SELECTOR DIMENSION DRAWING

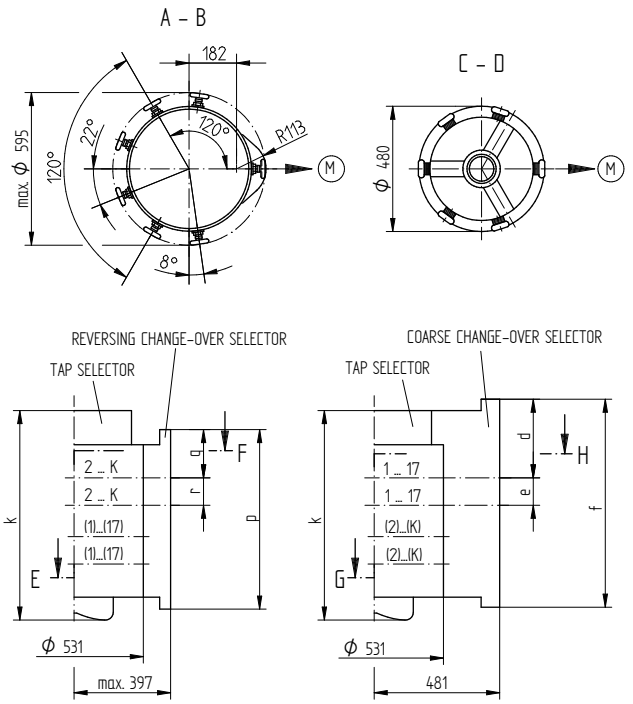
SERIAL NUMBER

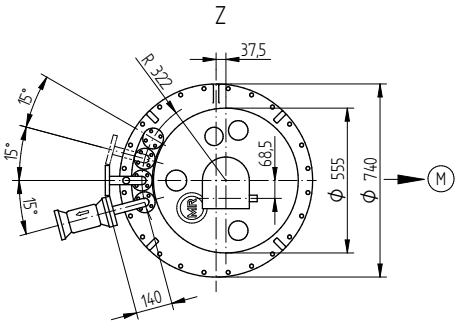
MATERIAL NUMBER 7462271E

SHEET 1/1

A1







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
DIMENSIONS [MM]	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	728					803					998				
	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	613					688					883				
	e	105					105					105				
	d	276.5					301.5					366.5				
	f	722					797					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.	
DFTR.	18.11.2015	RAEDLINGER	SED 2312691 001 02	
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	01.12.2015	PRODASTSCHUK	1069171	1:10

DIMENSION IN mm EXCEPT AS NOTED

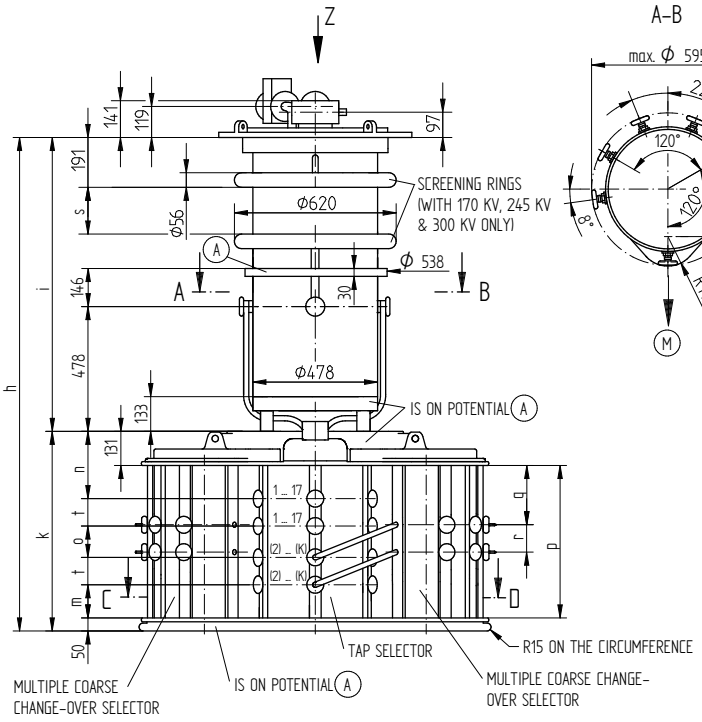
ON-LOAD TAP-CHANGER VACUTAP® VM
VM I 802/1002 – B/C/D/DE – O/W/G
DIMENSION DRAWING

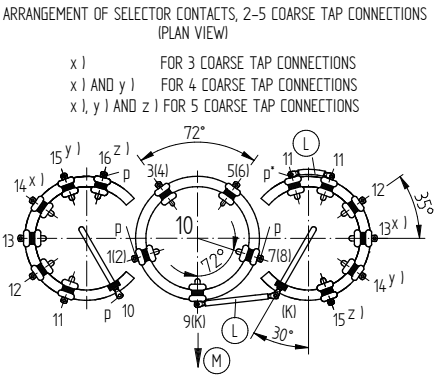
SERIAL NUMBER

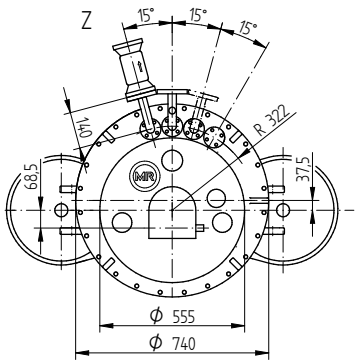
MATERIAL NUMBER 7462222E

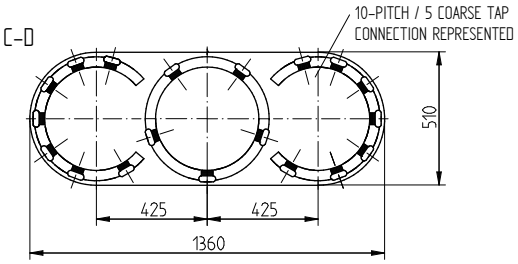
SHEET 1/1

A1









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

	DATE	NAME	DOCUMENT NO.
DFTR.	18.11.2015	RAEDLINGER	SED 2315141 001 02
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO. / SCALE 1:10
STAND.	01.12.2015	PRODASTSCHUK	1069171

DIMENSION IN mm EXCEPT AS NOTED

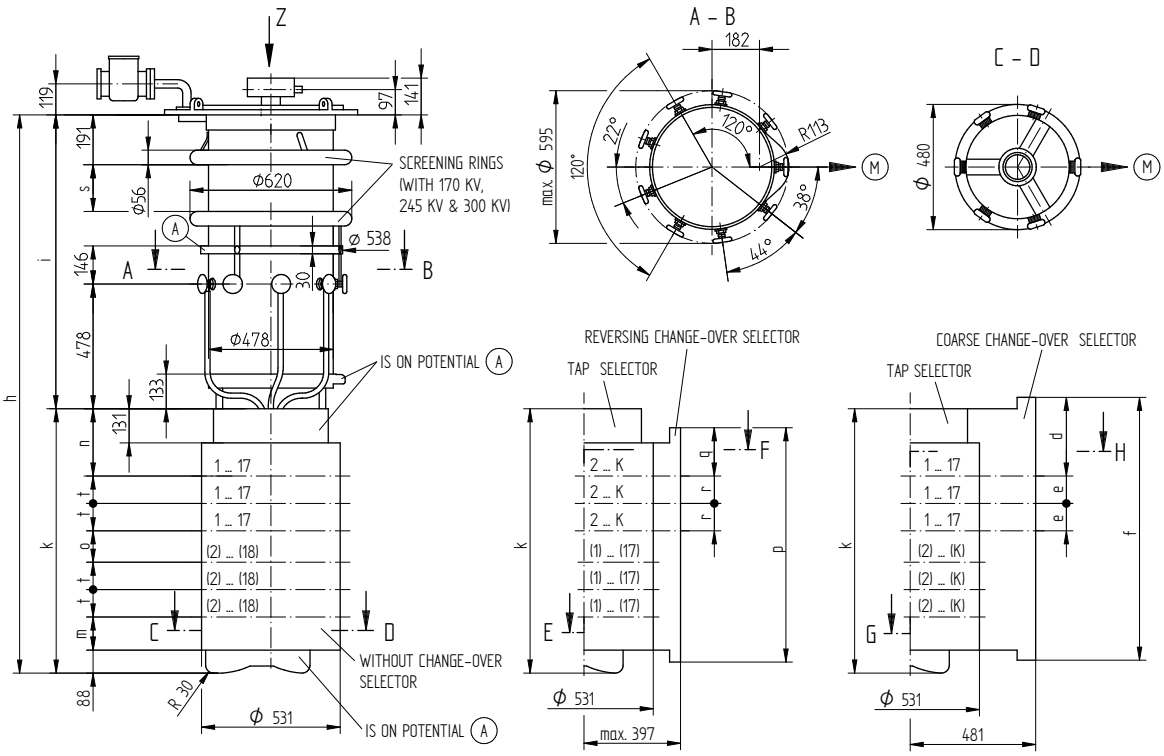
ON-LOAD TAP-CHANGER VACUTAP® VM
VM I 802/1002 – B/C/D WITH MULTIPLE COARSE C.–O. SELECTOR
DIMENSION DRAWING

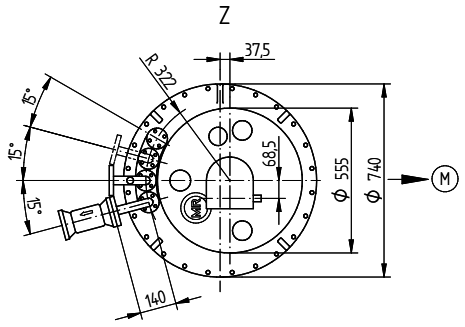
SERIAL NUMBER

MATERIAL NUMBER 7462282E

SHEET 1/1

A1





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
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	520	–		267	367	520	–		267	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.	
DFTR.	18.11.2015	RAEDLINGER	SED 2313229 001 01	
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	01.12.2015	PRODASTSCHUK	1069171	1:10

DIMENSION IN mm EXCEPT AS NOTED

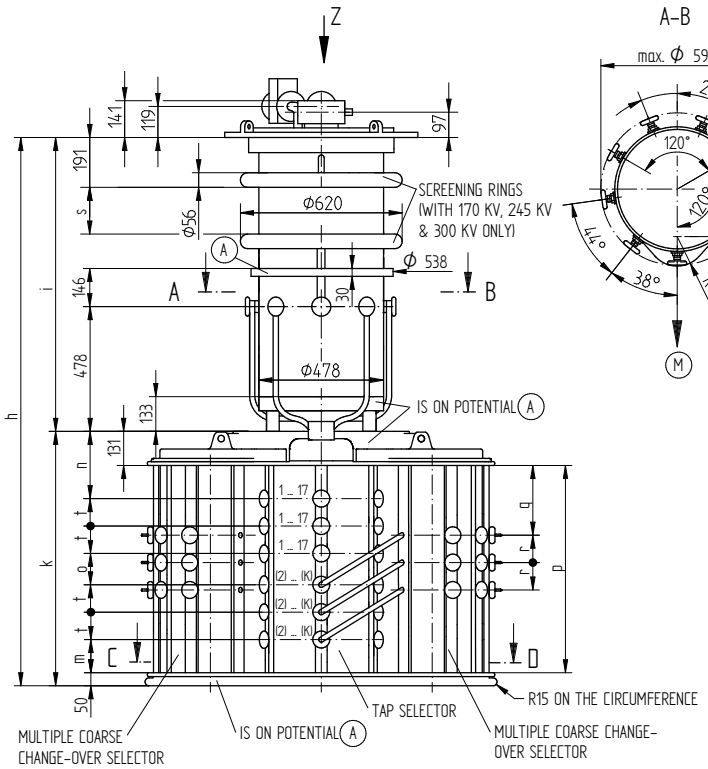
ON-LOAD TAP-CHANGER VACUTAP® VM
VM I 1203/1503 – B/C/D/DE – O/W/G
DIMENSION DRAWING

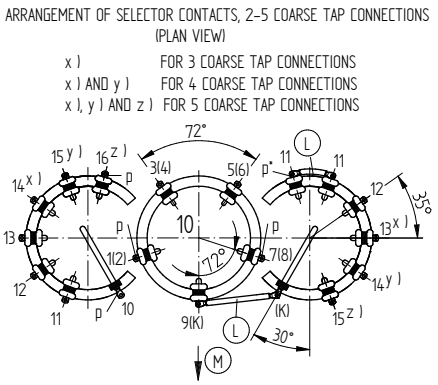
SERIAL NUMBER

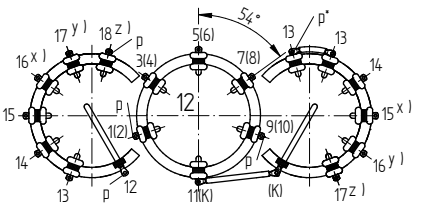
MATERIAL NUMBER 7462231E

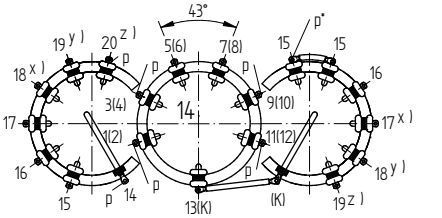
SHEET 1/1

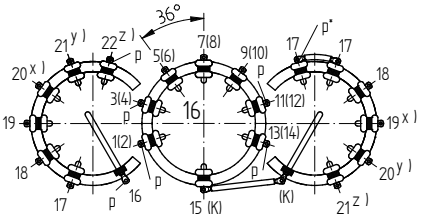
A1

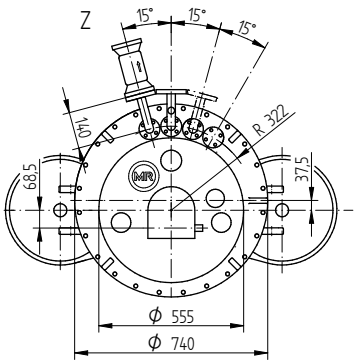


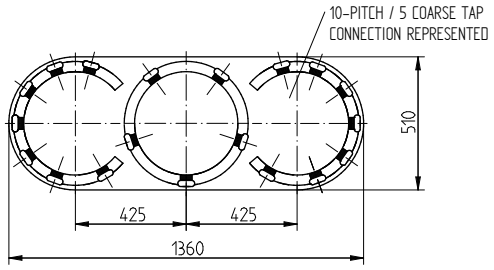


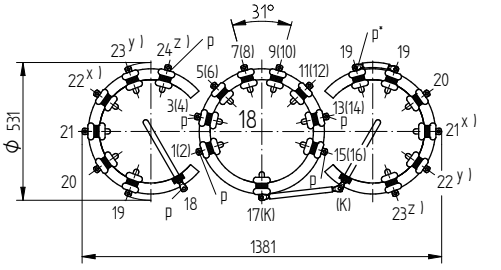












p = CONNECTION MIN. 3 MM PAPER INSULATED
p* = CONNECTION ALREADY 3 MM PAPER INSULATED BY MR

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	1896	2026	2156	2256	2408	1971	2101	2231	2331	2483	2166	2296	2426	2526	2678
	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	900					975					1170				
	n	233					258					323				
	o	95					120					185				
	m	102					127					192				
	t	105					105					105				
	r	105					105					105				
	q	229,5					267					364,5				
	p	719					794					989				
OIL VOLUME [DM³]		130	150	170	190	210	130	150	170	190	210	130	150	170	190	210
DISPLACEMENT [DM³]		320	345	365	385	405	320	345	365	385	405	331	351	373	393	413
WEIGHT [KG]		460	465	470	475	480	470	475	480	485	490	485	490	495	500	505

	DATE	NAME	DOCUMENT NO.
DFTR.	18.11.2015	RAEDLINGER	SED 2315890 001 02
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO. / SCALE 1:10
STAND.	01.12.2015	PRODASTSCHUK	1069171

DIMENSION IN mm EXCEPT AS NOTED

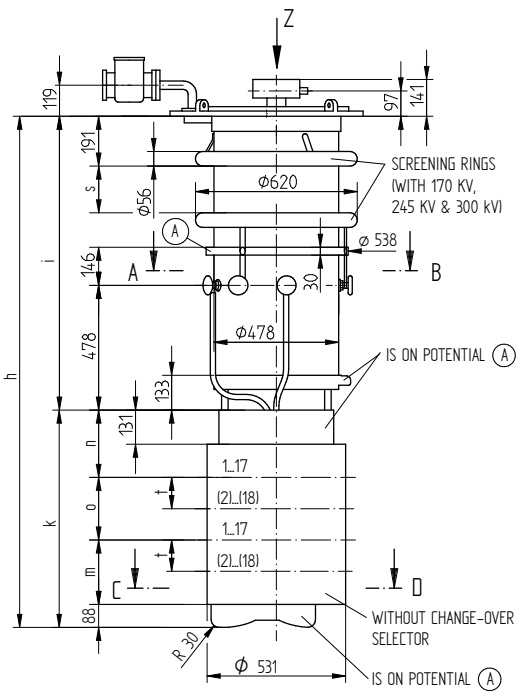
ON-LOAD TAP-CHANGER VACUTAP® VM
VM I 1203/1503 – B/C/D WITH MULTIPLE COARSE C.–O. SELECTOR
DIMENSION DRAWING

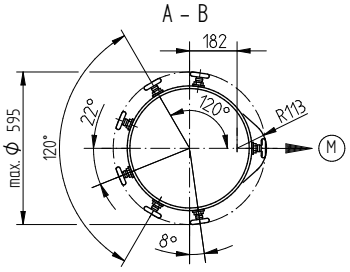
SERIAL NUMBER

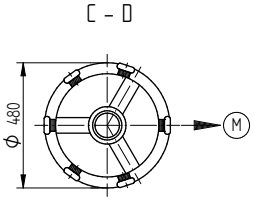
MATERIAL NUMBER 7462291E

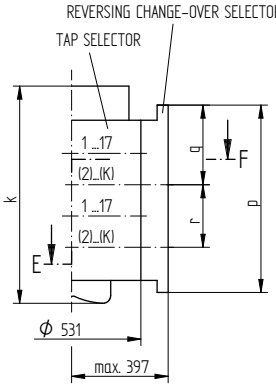
SHEET 1/1

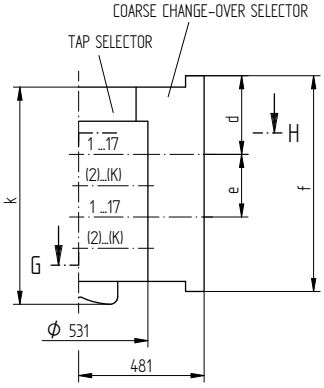
A1

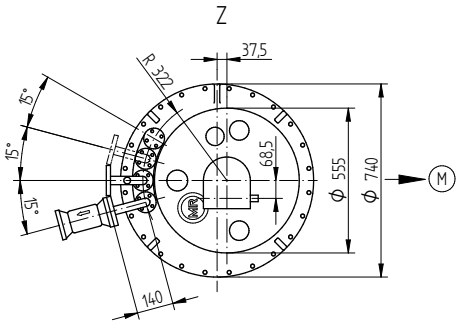












E – F
REFER TO 723590

G – H
REFER TO 723590

FOR INHERENT DRAWINGS REFER TO 898012

(A) ON-LOAD TAP-CHANGER TAKE-OFF TERMINAL (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					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	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
	k	708					833					1158				
	n	233					258					323				
	o	190					240					370				
	m	197					247					377				
	t	95					120					185				
	r	190					240					370				
	q	255					305					435				
	p	593					718					1043				
	e	190					240					370				
	d	276.5					301.5					366.5				
	f	702					827					1152				
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
MAX. WEIGHT [KG]		310	315	320	325	330	320	325	330	335	340	330	335	340	345	350

	DATE	NAME	DOCUMENT NO.
DFTR.	18.11.2015	RAEDLINGER	SED 2310512 001 01
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO. / SCALE 1:10
STAND.	01.12.2015	PRODASTSCHUK	1069171

DIMENSION IN mm EXCEPT AS NOTED

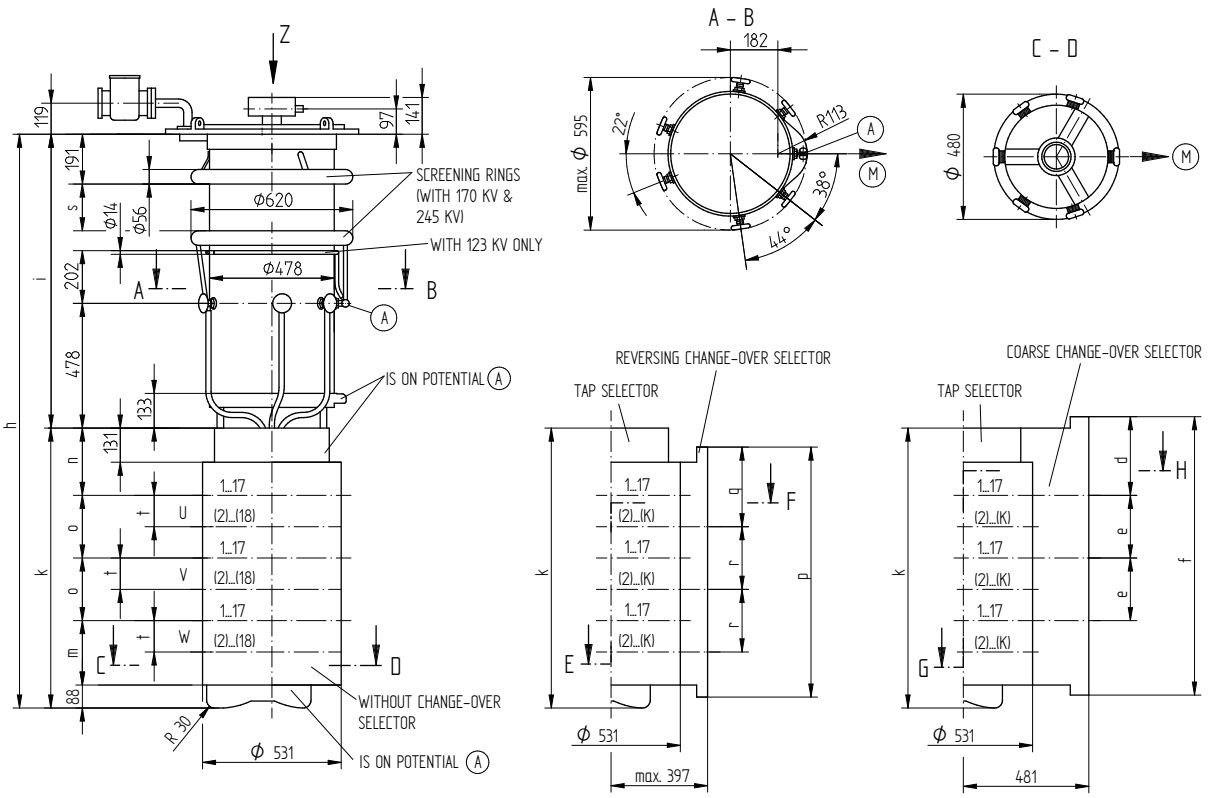
ON-LOAD TAP-CHANGER VACUTAP® VM
VM II 352/502/652 – B/C/D/DE – O/W/G
DIMENSION DRAWING

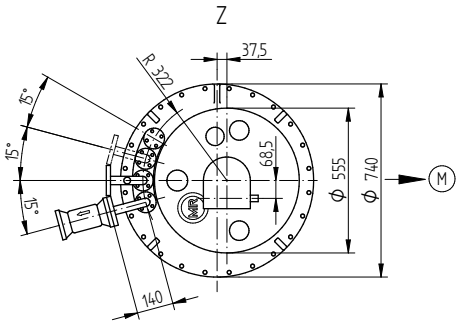
SERIAL NUMBER

MATERIAL NUMBER 7462201E

SHEET 1/1

A1





E – F
REFER TO 723590

G – H
REFER TO 723590

FOR INHERENT DRAWINGS REFER TO 898012

(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				C *)				D / DE			
U_m [kV]		72,5	123	170	245	72,5*)	123*)	170*)	245	72,5	123	170	245
DIMENSIONS [MM]	h	1894	2024	2154	2254	2069	2199	2329	2429	2524	2654	2784	2884
	i	996	1126	1256	1356	996	1126	1256	1356	996	1126	1256	1356
	s	–		267	367	–		267	367	–		267	367
	k	898				1073				1528			
	n	233				258				323			
	o	190				240				370			
	m	197				247				377			
	t	95				120				185			
	r	190				240				370			
	q	255				305				435			
	p	783				958				1413			
	d	276.5				301.5				366.5			
	e	190				240				370			
	f	892				1067				1522			
OIL VOLUME [DM ³]		130	150	170	190	130	150	170	190	130	150	170	190
DISPLACEMENT [DM ³]		199	224	244	264	199	224	244	264	207	232	252	272
MAX. WEIGHT [KG]		350	355	360	365	360	365	370	375	375	380	385	390

*) VMS® AVAILABLE ONLY IN THESE VERSIONS

	DATE	NAME	DOCUMENT NO.	
DFTR.	12.07.2018	BUTERUS	SED 2310153 001 02	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE 1:10
STAND.	16.07.2018	PRODASTSCHUK	1086956	

DIMENSION IN mm EXCEPT AS NOTED

ON-LOAD TAP-CHANGER VACUTAP® VM®, VMS® – DIMENSION DRAWING
VM III 350/500/650 Y – B/C/D/DE – 0/W/G
VMS III 400/650 Y – C – 0/W/G

SERIAL NUMBER

MATERIAL NUMBER 7462192E

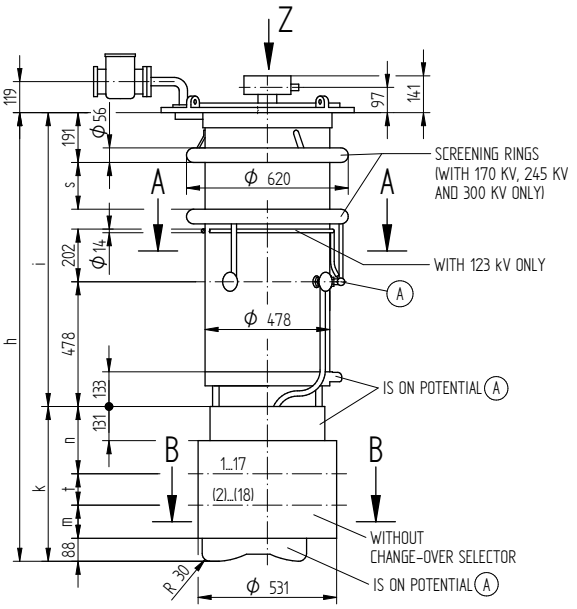
SHEET 1/1

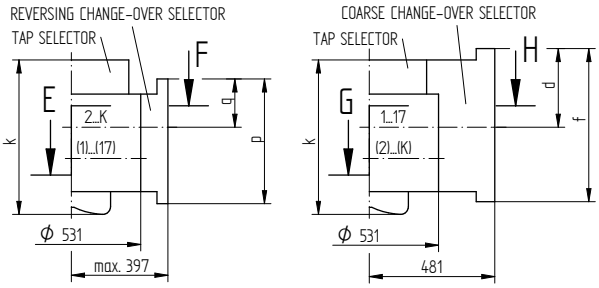
VM I 351 / 501 / 651 – 0 / W / G

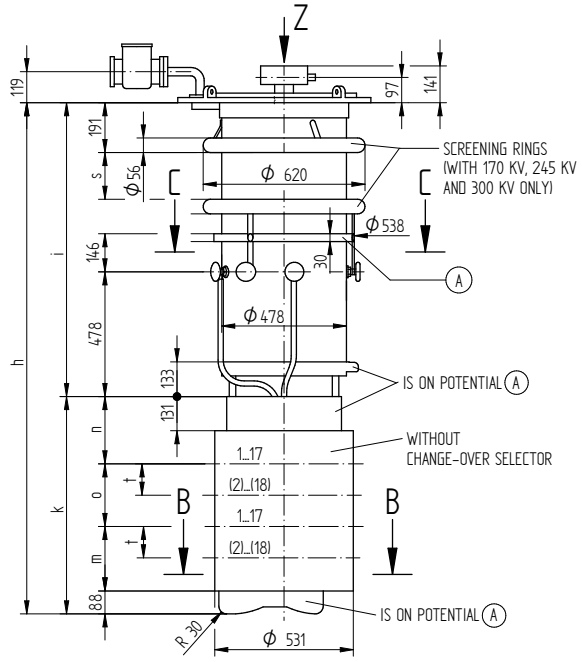
SELECTOR SIZE		B					C					D/DE				
Um IN KV		72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300
DIMENSIONS IN MM	h	1514	1644	1774	1874	2026	1589	1719	1849	1949	2101	1784	1914	2044	2144	2296
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508
	s	–		267	367	520	–		267	367	520	–		267	367	520
	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					301,5					366,5				
	f	512					587					782				
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

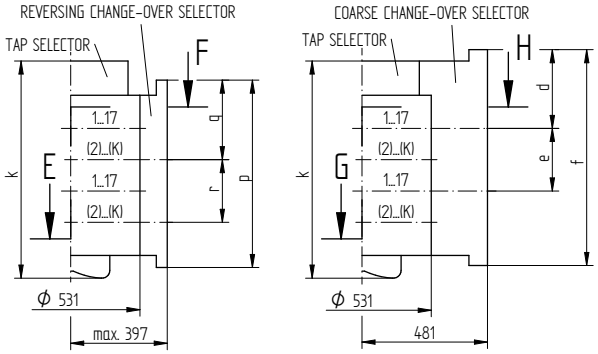
VM II 352 / 502 / 652 – 0 / W / G

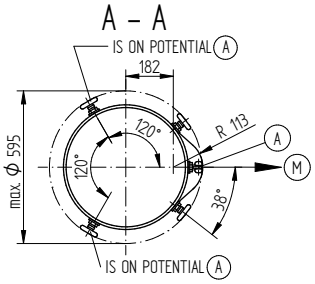
SELECTOR SIZE		B					C					D/DE				
Um IN KV		72,5	123	170	245	300	72,5	123	170	245	300	72,5	123	170	245	300
DIMENSIONS IN MM	h	1704	1834	1964	2064	2216	1829	1959	2089	2189	2341	2154	2284	2414	2514	2666
	i	996	1126	1256	1356	1508	996	1126	1256	1356	1508	996	1126	1256	1356	1508
	s	–		267	367	520	–		267	367	520	–		267	367	520
	k	708					833					1158				
	n	233					258					323				
	o	190					240					370				
	m	197					247					377				
	t	95					120					185				
	r	190					240					370				
	q	255					305					435				
	p	593					718					1043				
	e	190					240					370				
	d	276,5					301,5					366,5				
	f	702					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

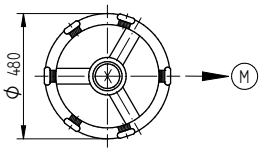


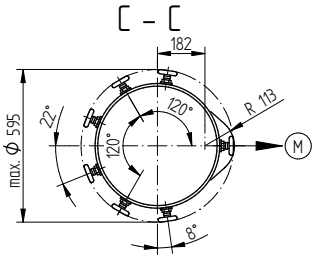


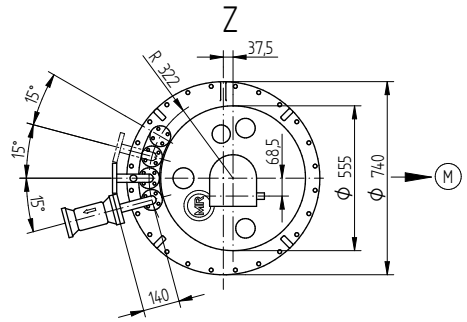












FOR INHERENT DRAWINGS REFER TO 898012

(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.

E – F / G – H

REFER TO 723590

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

DIMENSION IN mm EXCEPT AS NOTED

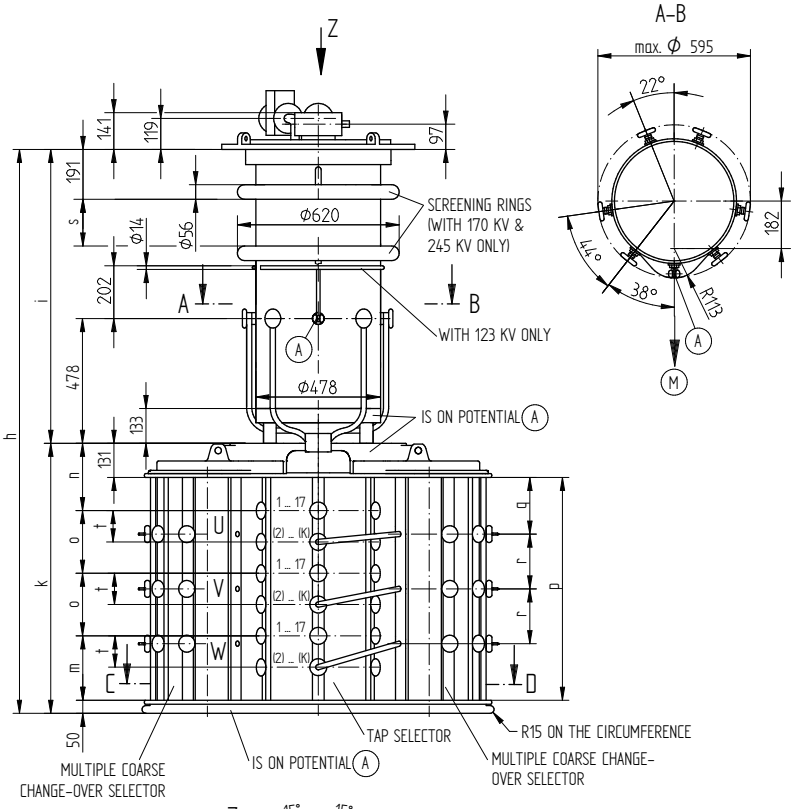
ON-LOAD TAP-CHANGER VACUTAP® VM
VM III 350/500/650 K-B/C/D/DE-0/W/G
DIMENSION DRAWING

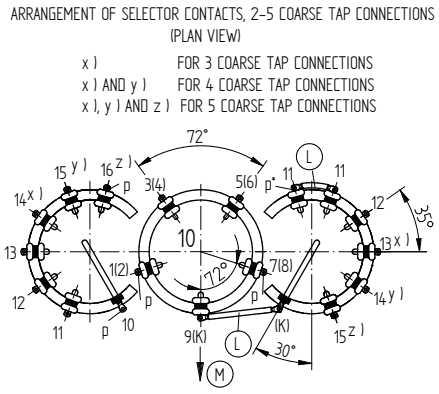
SERIAL NUMBER

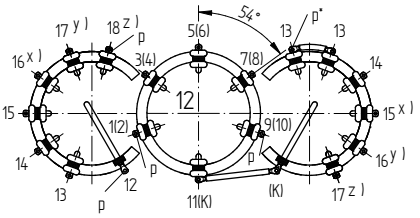
MATERIAL NUMBER 7462242E

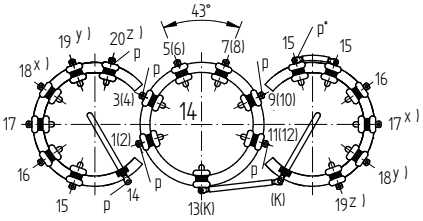
SHEET 1/1

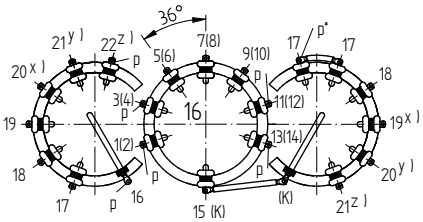
A1

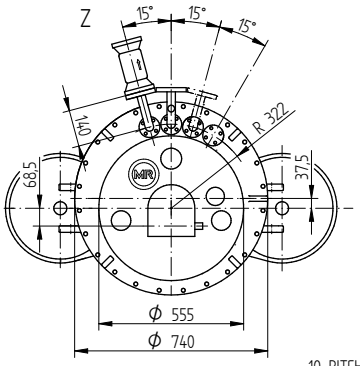


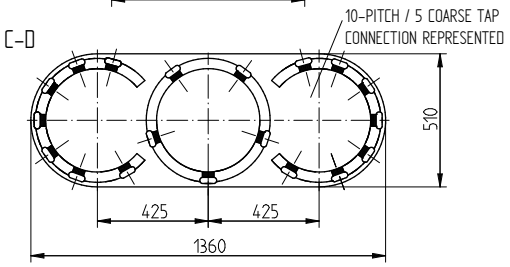


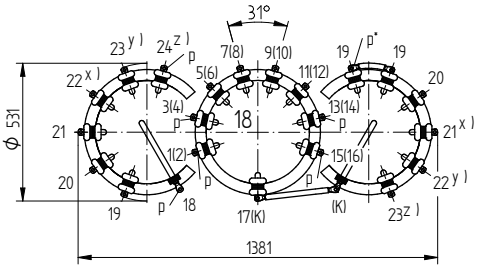












p = CONNECTION MIN. 3 MM PAPER INSULATED
p* = CONNECTION ALREADY 3 MM PAPER INSULATED BY MR

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 LEAD
(L) CONNECTING LEAD
(M) DRIVE SIDE OF SELECTOR

SELECTOR SIZE		B				C				D			
U_M [KV]		72,5	123	170	245	72,5	123	170	245	72,5	123	170	245
DIMENSIONS [MM]	h	1856	1986	2116	2216	2031	2161	2291	2391	2486	2616	2746	2846
	i	996	1126	1256	1356	996	1126	1256	1356	996	1126	1256	1356
	s	–		267	367	–		267	367	–		267	367
	k	860				1035				1490			
	n	233				258				323			
	o	190				240				370			
	m	197				247				377			
	t	95				120				185			
	r	166,5				210				327			
	q	173				217				327,5			
	p	679				854				1309			
OIL VOLUME [DM³]		130	150	170	190	130	150	170	190	130	150	170	190
DISPLACEMENT [DM³]		321	346	366	386	321	346	366	386	333	353	375	395
WEIGHT [KG]		460	465	470	475	470	475	480	485	485	490	495	500

	DATE	NAME	DOCUMENT NO.	
DFTR.	18.11.2015	RAEDLINGER	SED 2315094 001 02	
CHKD.	01.12.2015	TKBIRKMANN	CHANGE NO.	SCALE 1:10
STAND.	01.12.2015	PRODASTSCHUK	1069171	

DIMENSION IN mm EXCEPT AS NOTED

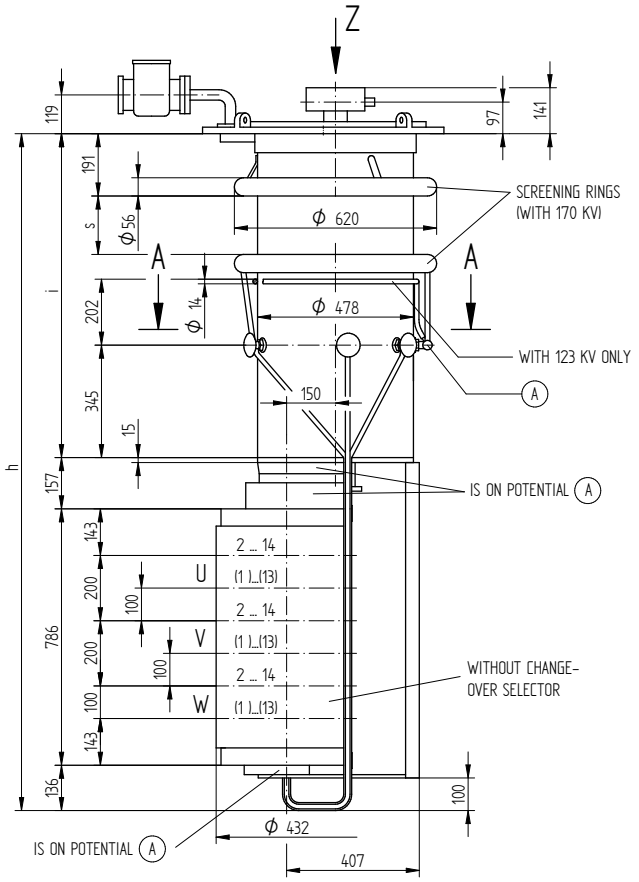
ON-LOAD TAP-CHANGER VACUTAP® VM
VM III 650 Y – B/C/D WITH MULTIPLE COARSE C.-O. SELECTOR
DIMENSION DRAWING

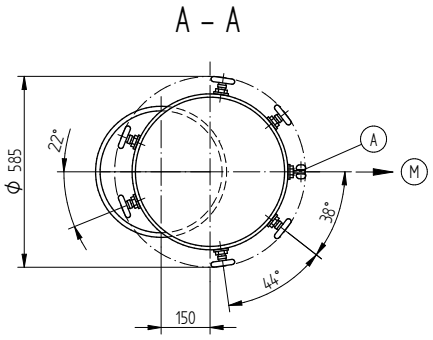
SERIAL NUMBER

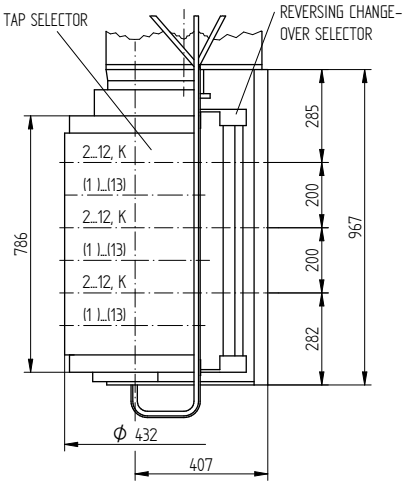
MATERIAL NUMBER 7462261E

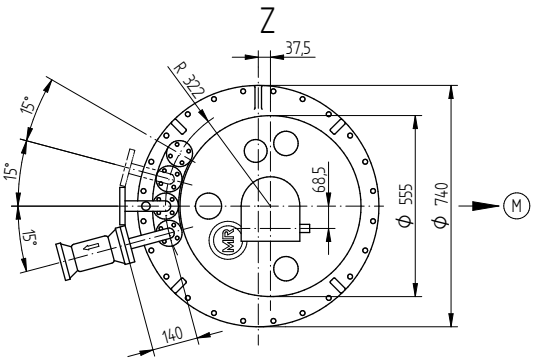
SHEET 1/1

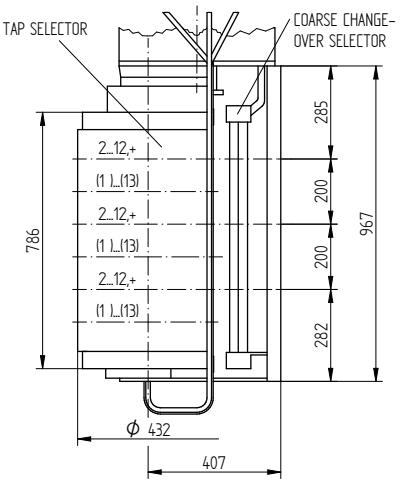
A1











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	2202
	i	863	993	1123
	s	–		267
OIL VOLUME [DM³]		130	150	170
DISPLACEMENT [DM³]		190	220	240
MAX. WEIGHT [KG]		280	285	290

	DATE	NAME	DOCUMENT NO.	
DFTR.	11.07.2018	BUTERUS	SED 6011085 001 00	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE 1:8
STAND.	16.07.2018	PRODASTSCHUK	1086956	

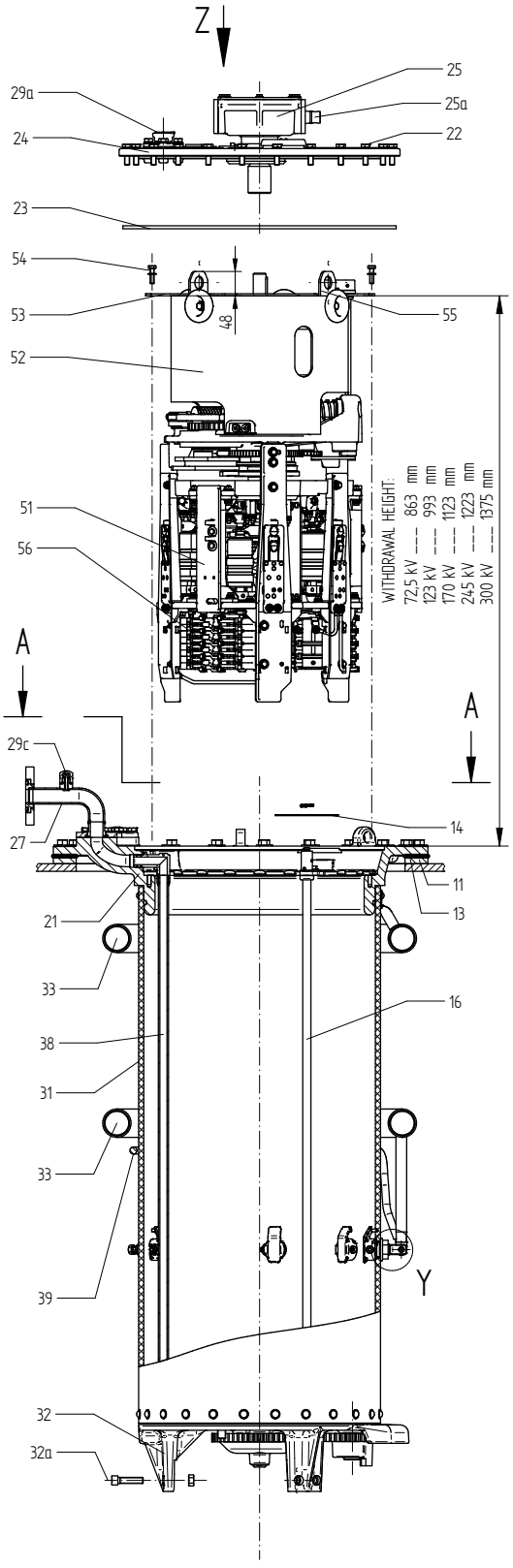
DIMENSION IN mm EXCEPT AS NOTED

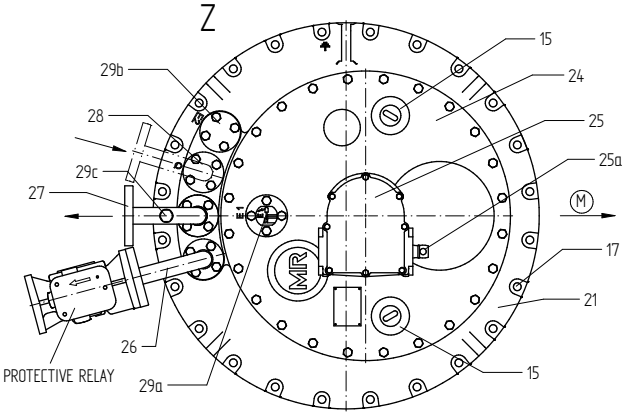
ON-LOAD TAP-CHANGER VACUTAP® VMS®
VMS III 400 Y – B – O/W/G
DIMENSION DRAWING

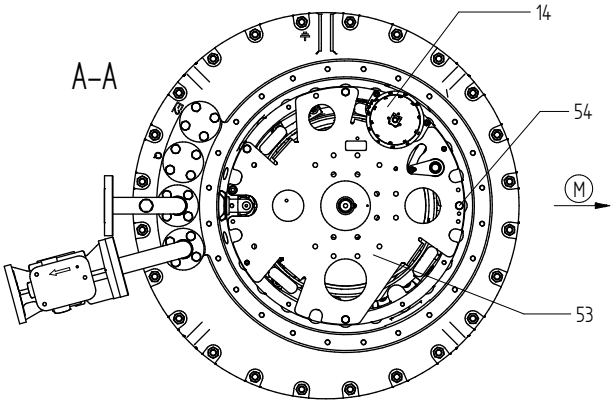
SERIAL NUMBER

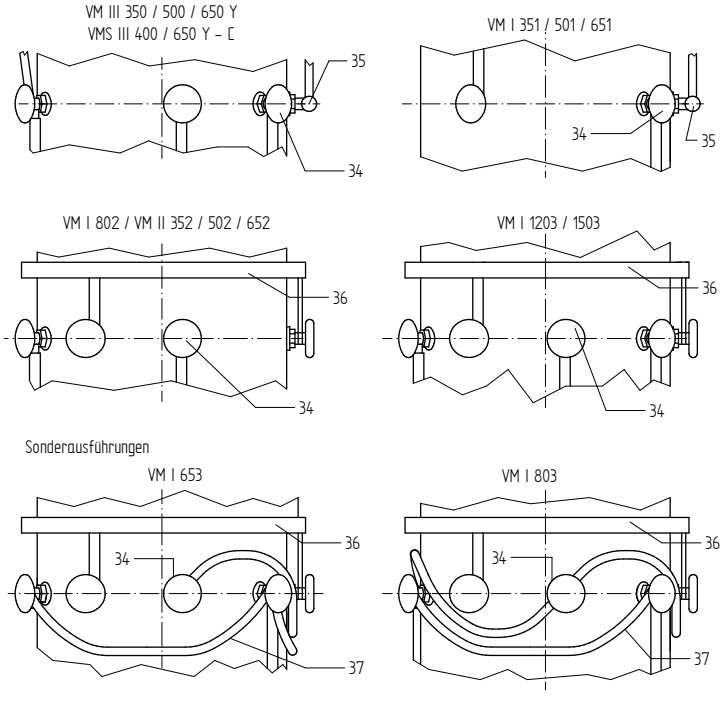
MATERIAL NUMBER 101165600E

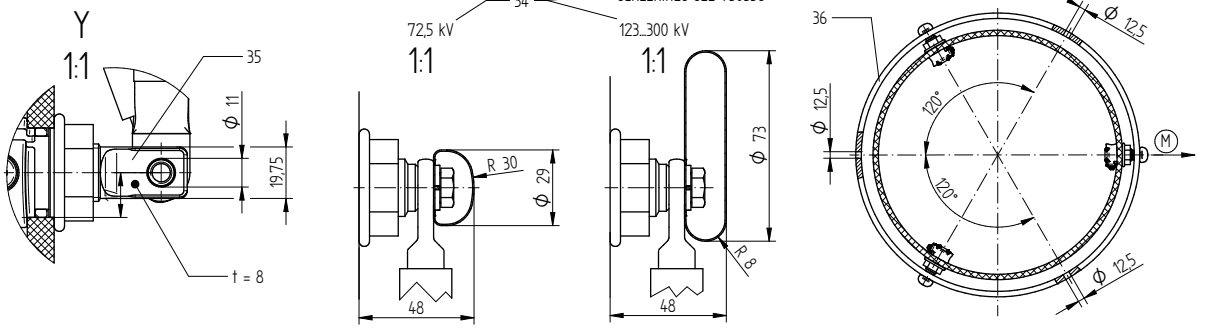
SHEET 1/1











	Datum	Name	Dokumentnummer	
Gez.	13.07.2018	BUTERUS	SED 2317110 001 03	
Gepr.	16.07.2018	WILHELM	Änderungsnummer	Maßstab
Norm.	16.07.2018	PRODASTSCHUK	1086956	1:5

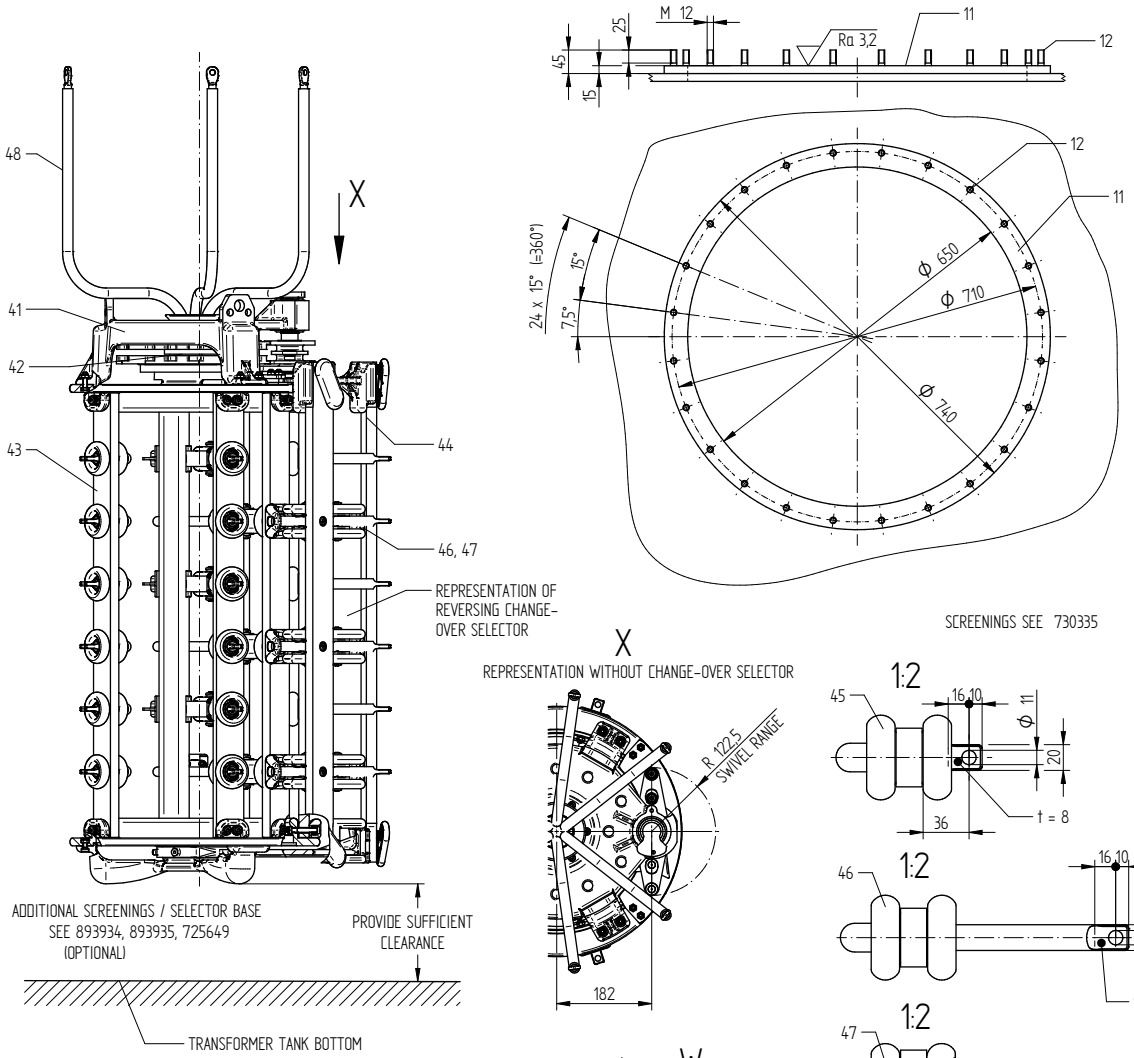
Maßangaben in mm, soweit nicht anders angegeben

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

Serialnummer

Materialnummer 7462303E

Blatt 1/2



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 15mm 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 CONNECTING R FOR PROTECTIVE RELAY
27 PIPE CONNECTING S FOR SUCTION PIPE
28 PIPE CONNECTING Q FOR OIL RETURN PIPE (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

(M) DRIVE SIDE OF SELECTOR

** NOT WITH MULTIPLE COARSE CHANGE-OVER SELECTOR

31 DIVERTER SWITCH OIL COMPARTMENT
32 OIL COMPARTMENT BASE WITH SUPPORTING BOLT 32a
33 SCREENING RINGS (WITH Um = 170 kV; 245 kV; 300 kV ONLY)
34 OIL COMPARTMENT CONNECTION TERMINAL
35 TERMINAL:
VM III 350/500/650, VMS III 400/650: NEUTRAL CONNECTION
VM I 351/501/651: TAKE-OFF TERMINAL
36 ON-LOAD TAP-CHANGER TAKE-OFF RING
(ONLY VM I 802/803/1203/1503)
37 CONNECTING LEAD (ONLY VM I 653/803)
38 SUCTION PIPE
39 SCREENING RING (WITH Um = 123 kV ONLY)

41 SELECTOR SUSPENSION
42 SELECTOR GEAR
43 TAP SELECTOR
44 CHANGE- OVER SELECTOR
45 SELECTOR CONNECTION CONTACT (SEE CORRESPONDING DIMENSION DRAWING)
46 CHANGE- OVER SELECTOR CONNECTION CONTACT "K" OR "0" **
47 CHANGE- OVER SELECTOR CONNECTION CONTACT "+" OR "-" **
48 SELECTOR CONNECTING LEAD

51 DIVERTER SWITCH INSERT
52 SUPPORTING CYLINDER
53 BASE PLATE
54 FIXING BOLT
55 EYEBOLT WITH THROUGH-HOLE 25 mm IN DIAMETER
56 TRANSITION RESISTORS

	Datum	Name	Dokumentnummer	
Gez.	13.07.2018	BUTERUS	SED 2317110 001 03	
Gepr.	16.07.2018	WILHELM	Änderungsnummer	Maßstab
Norm.	16.07.2018	PRODASTSCHUK	1086956	1:5

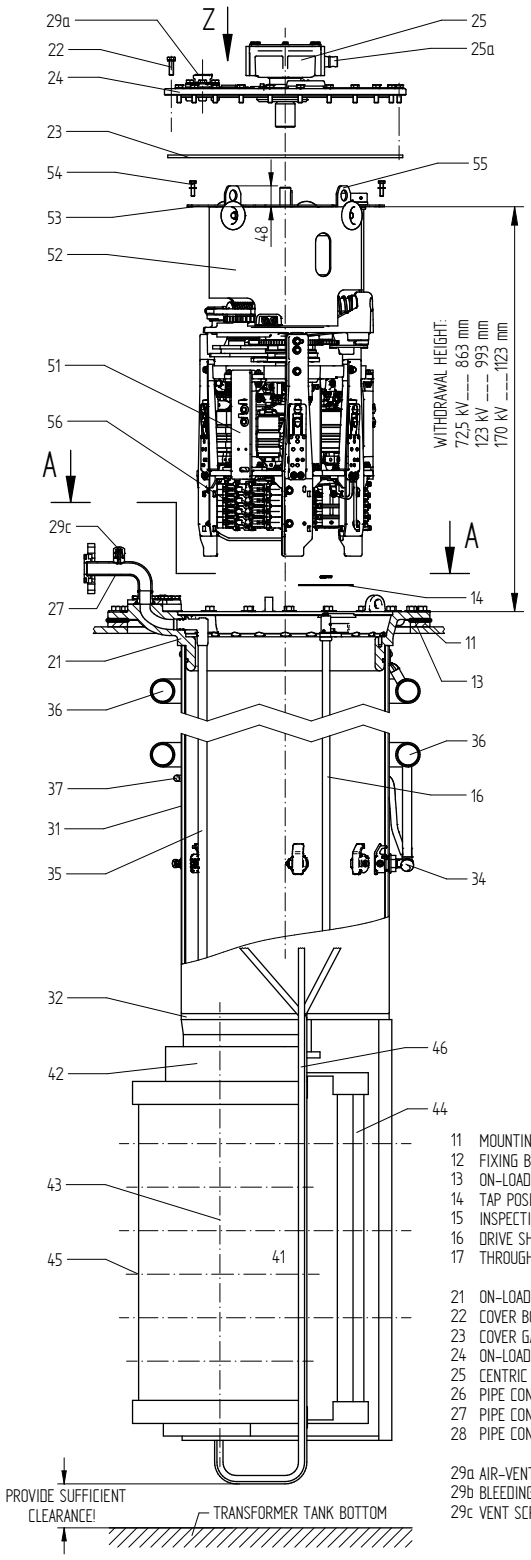
Maßangaben in mm, soweit nicht anders angegeben

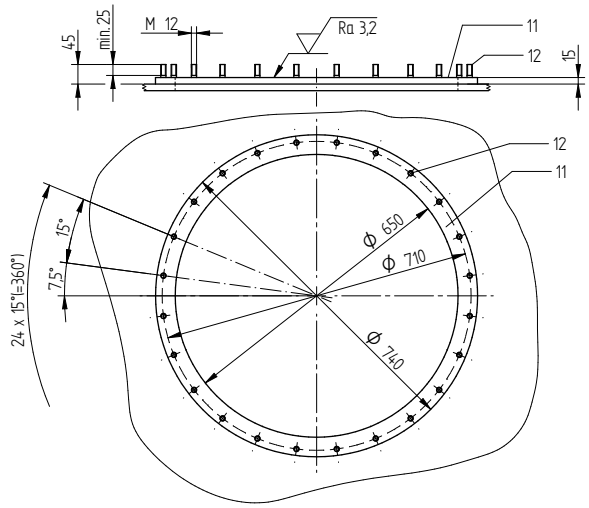
ON-LOAD TAP-CHANGER VACUTAP® VM®, VMS®-C
M-SELECTOR SIZE B/C/D/DE (CENTRIC DRIVE)
INSTALLATION DRAWING

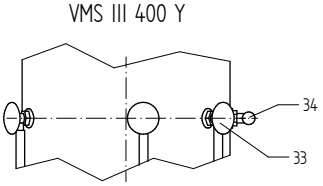
Serialnummer

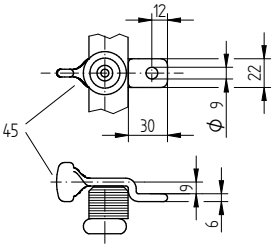
Materialnummer 7462303E

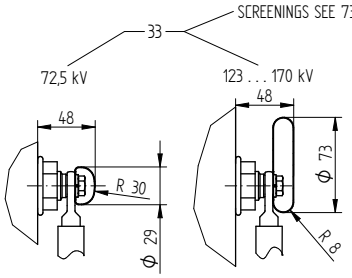
Blatt 2/2

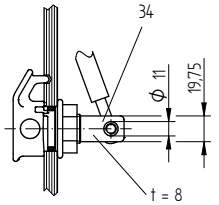












11 MOUNTING FLANGE ON TRANSFORMER COVER
12 FIXING BOLT M12
13 ON-LOAD TAP-CHANGER HEAD GASKET
14 TAP POSITION INDICATOR
15 INSPECTION WINDOW
16 DRIVE SHAFT FOR TAP POSITION INDICATOR
17 THROUGH-HOLES 15 mm IN DIAMETER

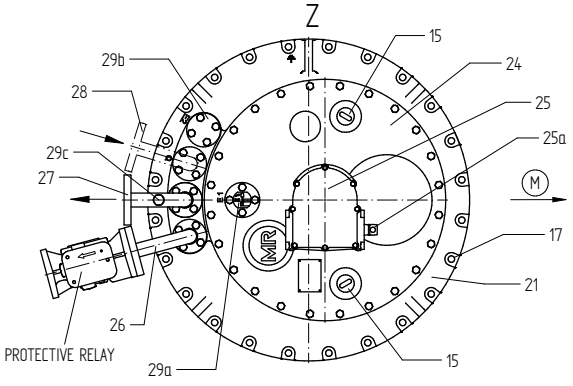
21 ON-LOAD TAP-CHANGER HEAD
22 COVER BOLT
23 COVER GASKET
24 ON-LOAD TAP-CHANGER HEAD COVER
25 CENTRIC GEAR UNIT WITH DRIVE SHAFT 25a
26 PIPE CONNECTION R FOR PROTECTIVE RELAY
27 PIPE CONNECTION S FOR SUCTION PIPE
28 PIPE CONNECTION Q FOR OIL RETURN (WITH OIL FILTER ONLY)

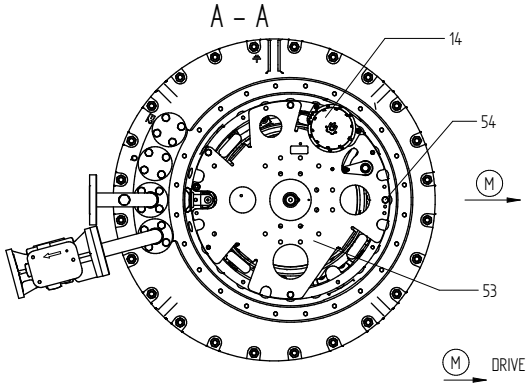
29a AIR-VENT VALVE OF ON-LOAD TAP-CHANGER HEAD COVER
29b BLEEDING FACILITY FOR TRANSFORMER OIL COMPARTMENT
29c VENT SCREW FOR SUCTION PIPE

31 DIVERTER SWITCH OIL COMPARTMENT
32 OIL COMPARTMENT BASE WITH SCREW FOR SELECTOR BRAKET
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





M DRIVE SIDE OF SELECTOR

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

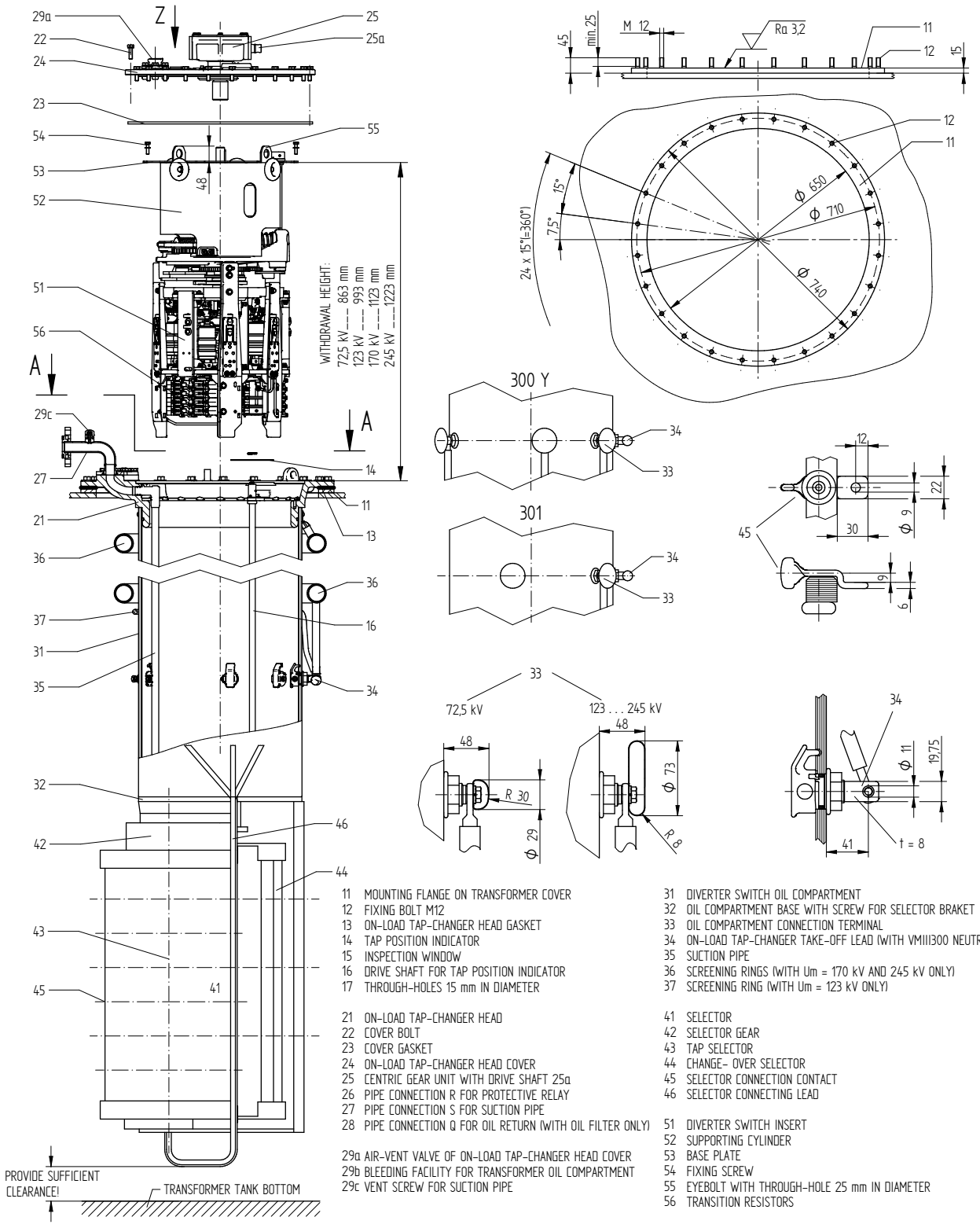
DIMENSION IN mm EXCEPT AS NOTED

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

SERIAL NUMBER

MATERIAL NUMBER 101170220E

SHEET 1/1



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

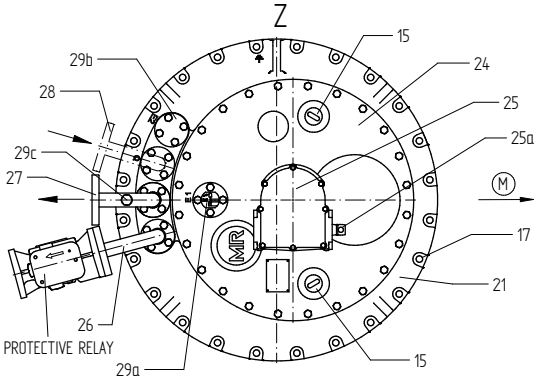
21 ON-LOAD TAP-CHANGER HEAD
22 COVER BOLT
23 COVER GASKET
24 ON-LOAD TAP-CHANGER HEAD COVER
25 CENTRIC GEAR UNIT WITH DRIVE SHAFT 25a
26 PIPE CONNECTION R FOR PROTECTIVE RELAY
27 PIPE CONNECTION S FOR SUCTION PIPE
28 PIPE CONNECTION Q FOR OIL RETURN (WITH OIL FILTER ONLY)

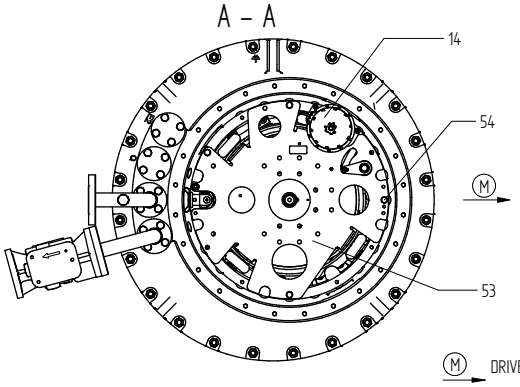
29a AIR-VENT VALVE OF ON-LOAD TAP-CHANGER HEAD COVER
29b BLEEDING FACILITY FOR TRANSFORMER OIL COMPARTMENT
29c VENT SCREW FOR SUCTION PIPE

31 DIVERTER SWITCH OIL COMPARTMENT
32 OIL COMPARTMENT BASE WITH SCREW FOR SELECTOR BRAKET
33 OIL COMPARTMENT CONNECTION TERMINAL
34 ON-LOAD TAP-CHANGER TAKE-OFF LEAD (WITH VMIII300 NEUTRAL)
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





M DRIVE SIDE OF SELECTOR

	DATE	NAME	DOCUMENT NO.	
DFTR.	10.02.2017	RAEDLINGER	SED 2416809 001 02	
CHKD.	29.03.2017	HAUER	CHANGE NO.	SCALE
STAND.	29.03.2017	PRODASTSCHUK	1079192	-

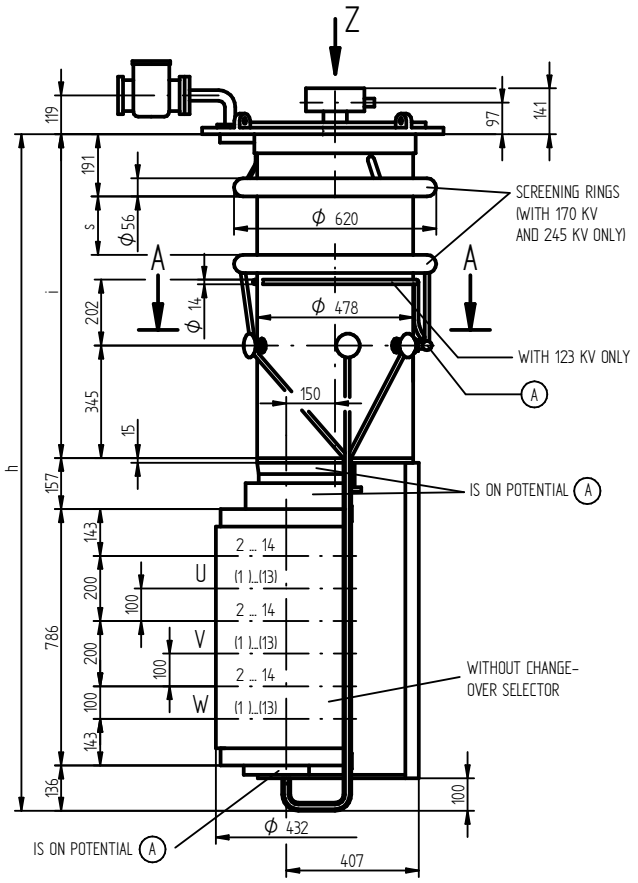
DIMENSION IN mm EXCEPT AS NOTED

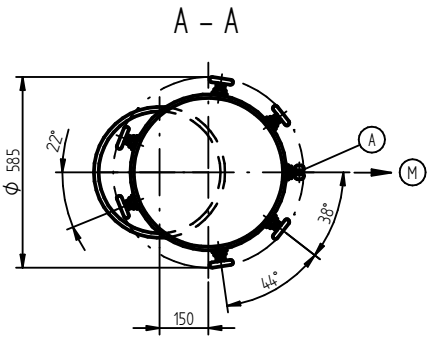
ON-LOAD TAP-CHANGER VACUTAP® VM 300
SELECTOR SIZE B (CENTRIC DRIVE)
INSTALLATION DRAWING

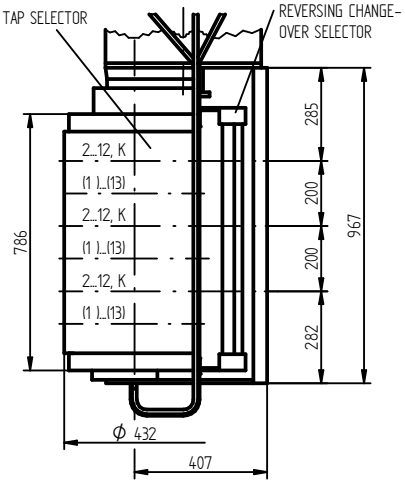
SERIAL NUMBER

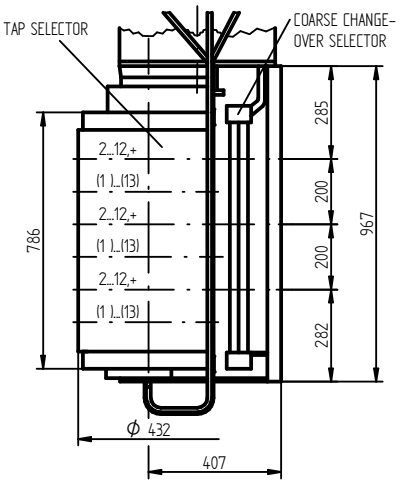
MATERIAL NUMBER 7651922E

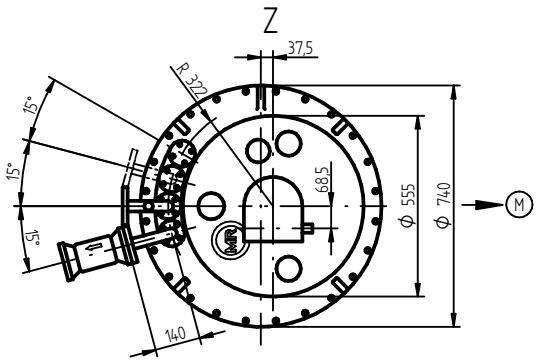
SHEET 1/1











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	2302
	i	863	993	1123	1223
	s	–		267	367
OIL VOLUME [DM³]		130	150	170	190
DISPLACEMENT [DM³]		190	220	240	260
MAX. WEIGHT [KG]		280	285	290	295

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

DIMENSION IN mm EXCEPT AS NOTED

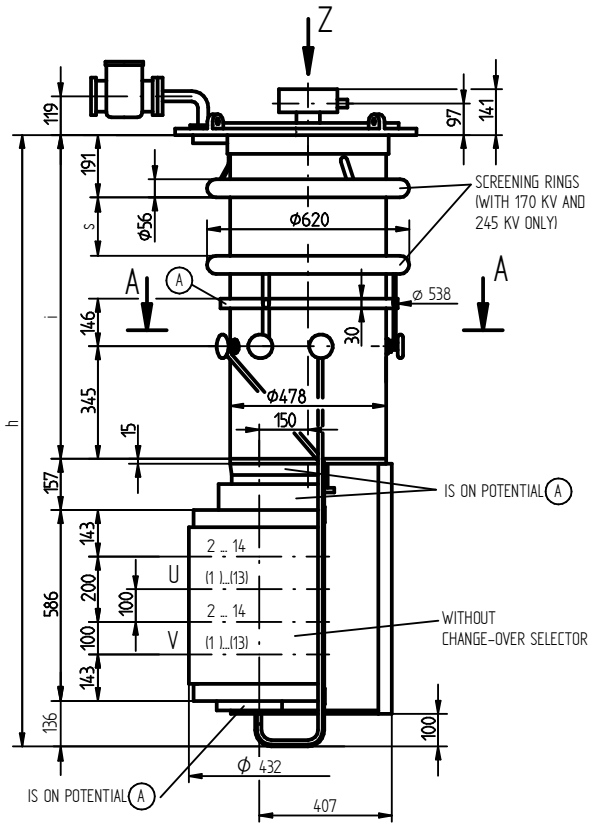
ON-LOAD TAP-CHANGER VACUTAP® VM®
VM III 300 Y – B– 0/W/G
DIMENSION DRAWING

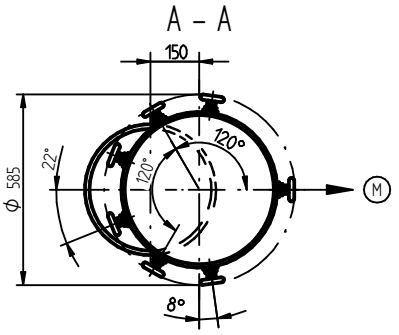
SERIAL NUMBER

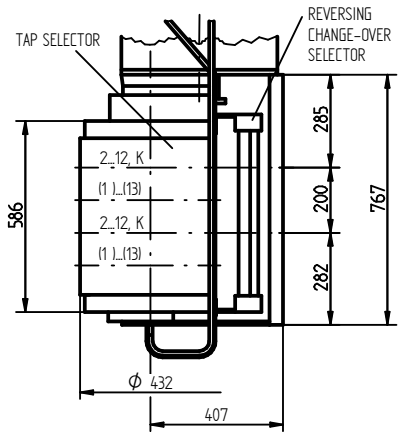
MATERIAL NUMBER 7686982E

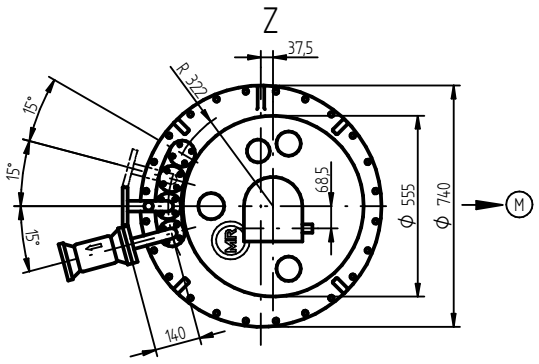
SHEET 1/1

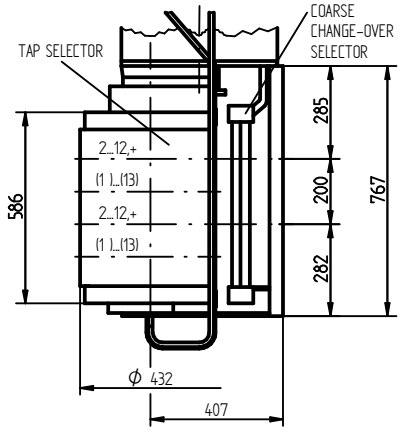
A1











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	2102
	i	863	993	1123	1223
	s	–		267	367
OIL VOLUME [DM³]		130	150	170	190
DISPLACEMENT [DM³]		180	210	230	250
MAX. WEIGHT [KG]		260	265	270	275

	DATE	NAME	DOCUMENT NO.	
DFTR.	01.04.2016	RAEDLINGER	SED 2742981 001 02	
EHKO.	11.04.2016	MENZELS	CHANGE NO.	SCALE
STAND.	11.04.2016	PRODASTSCHUK	1073378	1:8

DIMENSION IN mm EXCEPT AS NOTED

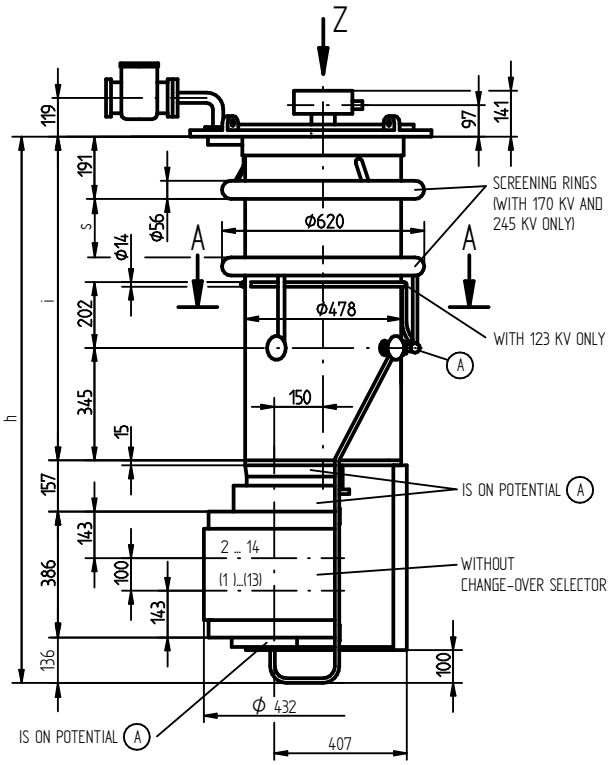
ON-LOAD TAP-CHANGER VACUTAP® VM®
VM II 302 – B – 0/W/G
DIMENSION DRAWING

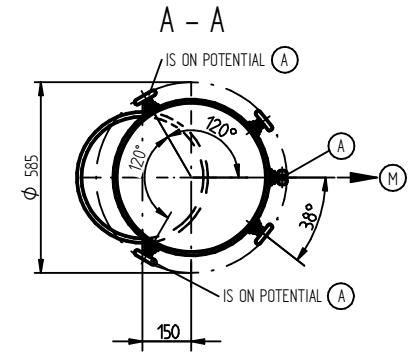
SERIAL NUMBER

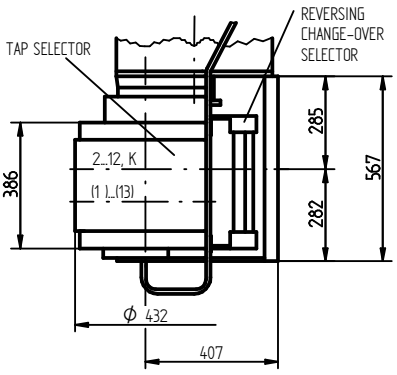
MATERIAL NUMBER 7692252E

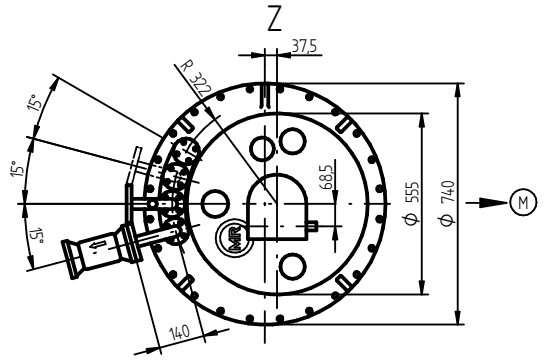
SHEET 1/1

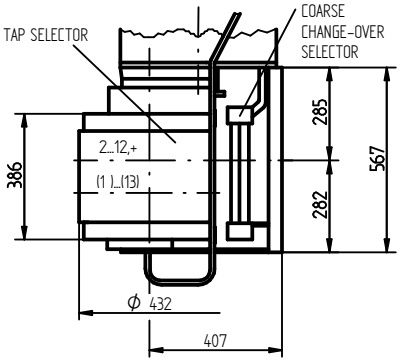
A1











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.

SELECTOR SIZE		B			
U_M [KV]		72,5	123	170	245
DIMENSIONS [MM]	h	1542	1672	1802	1902
	i	863	993	1123	1223
	s	–		267	367
OIL VOLUME [DM³]		130	150	170	190
DISPLACEMENT [DM³]		160	190	210	230
MAX. WEIGHT [KG]		240	245	250	255

	DATE	NAME	DOCUMENT NO.
DFTR.	18.11.2015	RAEDLINGER	SED 2743003 001 01
EHKO.	01.12.2015	TKBIRKMANN	CHANGE NO. / SCALE 1:8
STAND.	01.12.2015	PRODASTSCHUK	1069171

DIMENSION IN mm EXCEPT AS NOTED

ON-LOAD TAP-CHANGER VACUTAP® VM®
VM I 301 – B – 0/W/G
DIMENSION DRAWING

SERIAL NUMBER

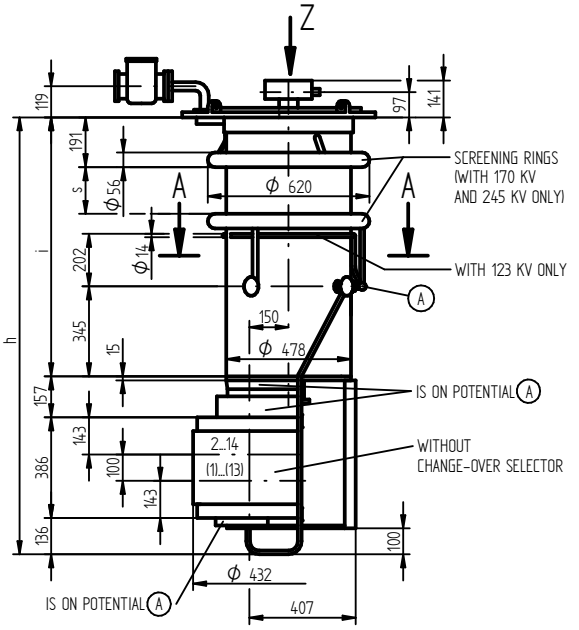
MATERIAL NUMBER 7692261E

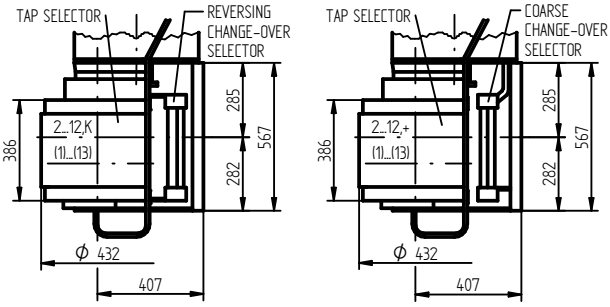
SHEET 1/1

A1

VM I 301 – 0 / W / G

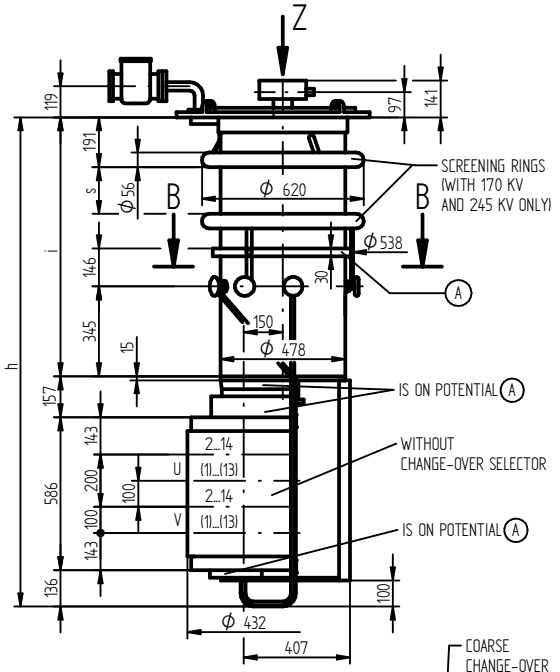
SELECTOR SIDE		B			
Um [kV]		72,5	123	170	245
DIMENSIONS [MM]	h	1542	1672	1802	1902
	i	863	993	1123	1223
	s	–		267	367
OIL VOLUME [DM³]		130	150	170	190
DISPLACEMENT [DM³]		160	190	210	230
MAX. WEIGHT [KG]		240	245	250	255

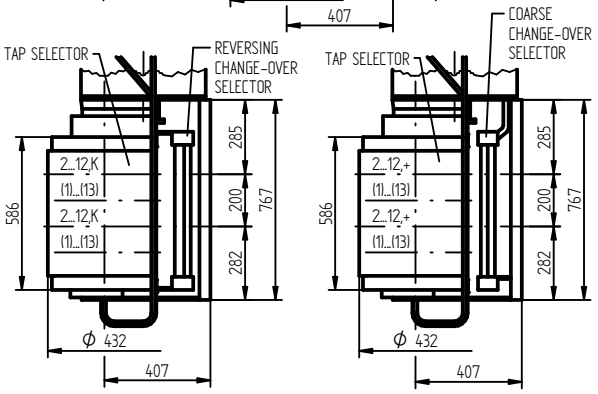


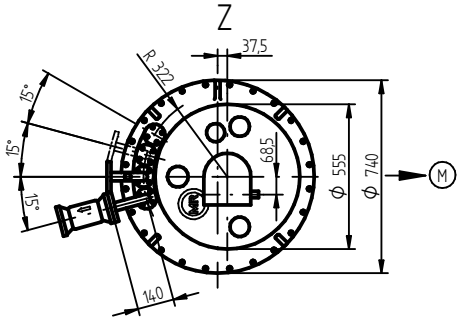


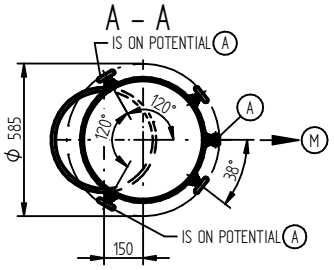
VM II 302 – 0 / W / G

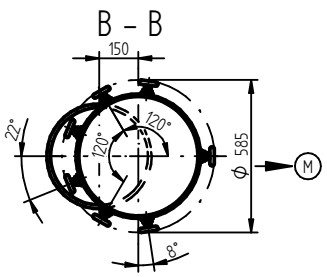
SELECTOR SIDE		B			
Um [kV]		72,5	123	170	245
DIMENSIONS [MM]	h	1742	1872	2002	2102
	i	863	993	1123	1223
	s	–		267	367
OIL VOLUME [DM³]		130	150	170	190
DISPLACEMENT [DM³]		180	210	230	250
MAX. WEIGHT [KG]		260	265	270	275











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.	
DFTR.	18.11.2015	RAEDLINGER	SED 2559763 001 02	
EHKO.	01.12.2015	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	01.12.2015	PRODASTSCHUK	1069171	1:10

DIMENSION IN mm EXCEPT AS NOTED

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

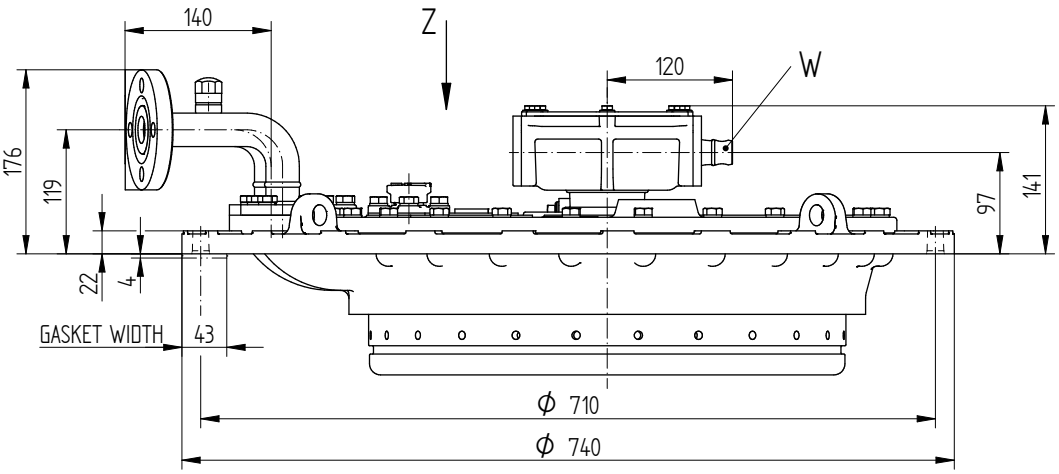
SERIAL NUMBER

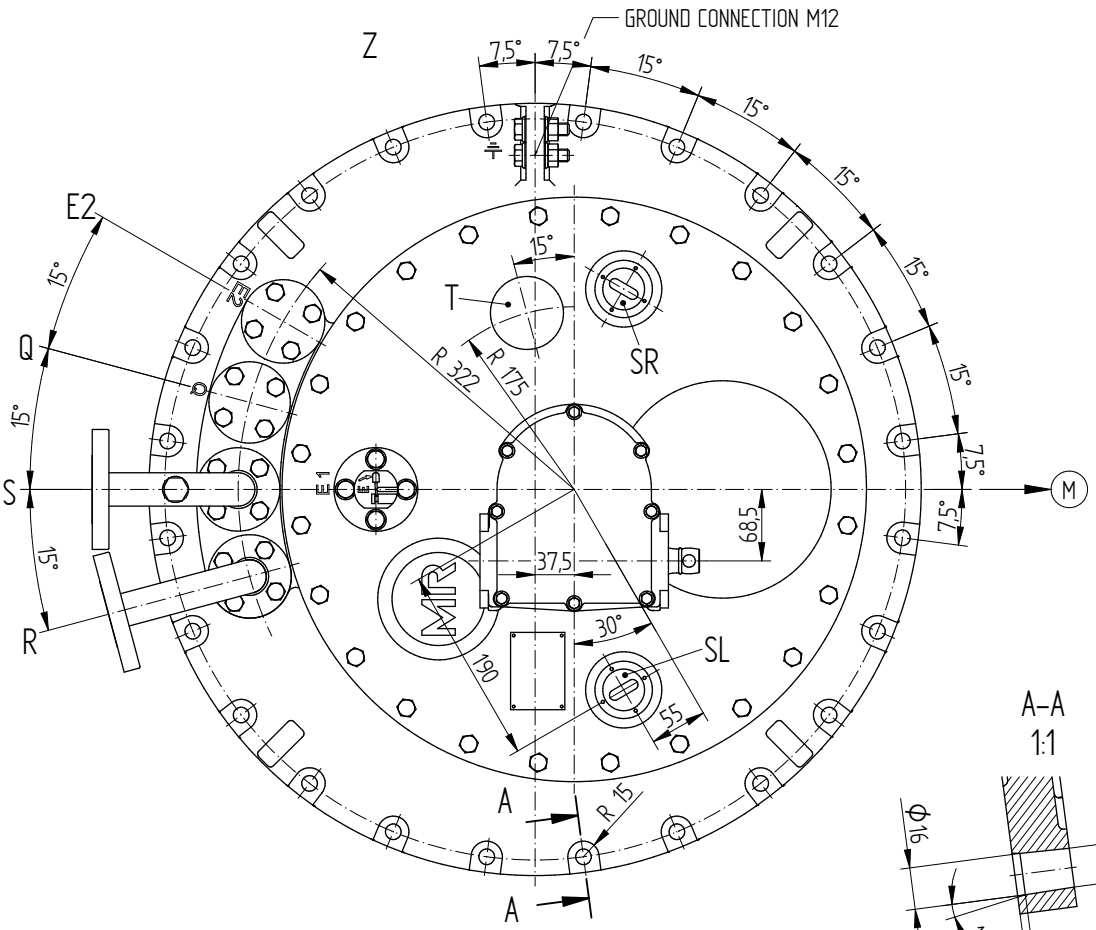
MATERIAL NUMBER 7688512E

SHEET 1/1

A1

4.3 Cabeçote do comutador de derivação em carga





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)
CONNECTIONS SWIVELING
DIMENSIONS AND SELECTION 899496: / 899497:
T = THERMOMETER BAG / TEMPERATURE SENSOR (OPTIONALLY)
SR = INSPECTION WINDOW, RIGHT
SL = INSPECTION WINDOW, LEFT
W = DRIVE SHAFT
(M) DRIVE SIDE OF SELECTOR

	DATE	NAME	DOCUMENT NO.	
DFTR.	11.07.2018	BUTERUS	SED 1661272 001 04	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	1:2.5

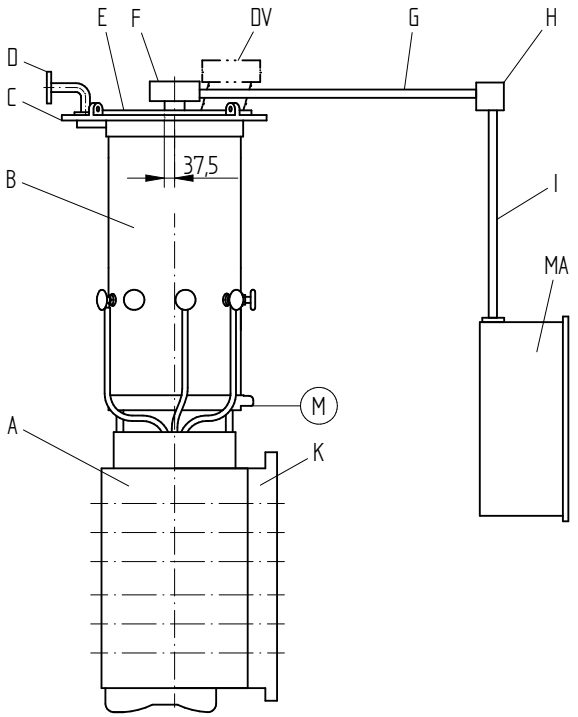
DIMENSION IN mm EXCEPT AS NOTED

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

SERIAL NUMBER

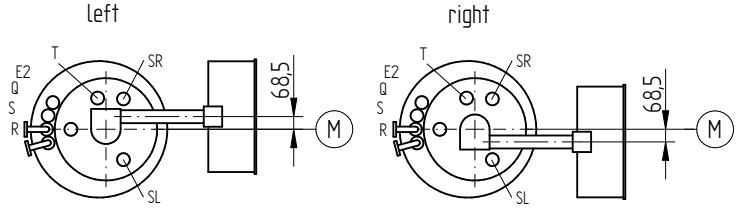
MATERIAL NUMBER 893899FE

SHEET 1/1

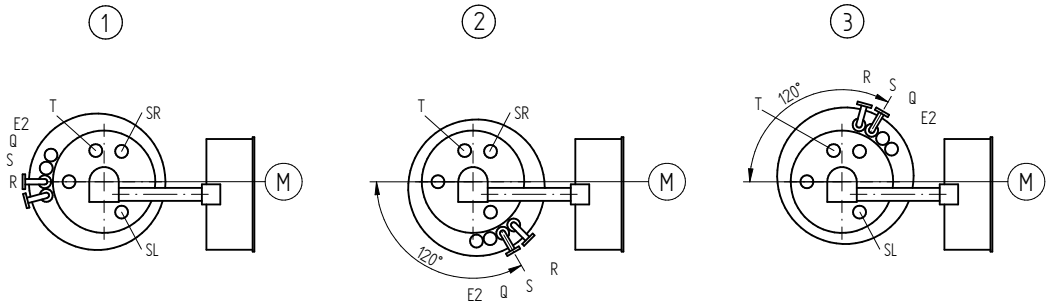


A = selector } represented
K = change-over selector } version
B = diverter switch oil compartment } type M
C = on-load tap-changer head
D = pipe connections (R, S, Q, E2)
DV = pressure relief device
E = on-load tap-changer head cover
F = upper gear unit
G = drive shaft, horizontal
H = bevel gear
I = 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

Position of drive shaft of gear unit



Head variants



Swivel ranges

A considerabel 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 angel specifications refer to the center of rotation of the gear unit. Pay particular attention to the offset of the drive shaft.

	DATE	NAME	DOCUMENT NO.	
DFTR.	11.07.2018	BUTERUS	SED 1063796 001 05	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	-

DIMENSION IN mm EXCEPT AS NOTED

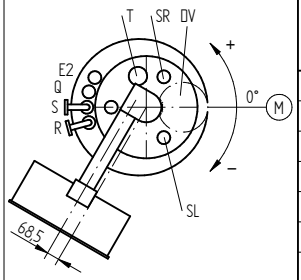
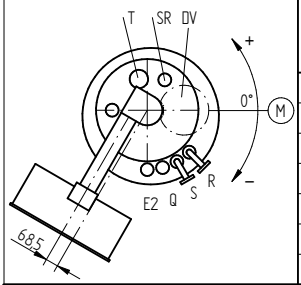
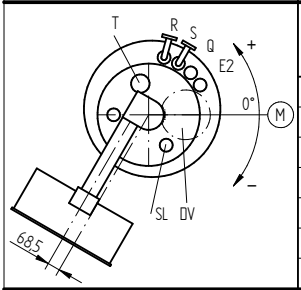
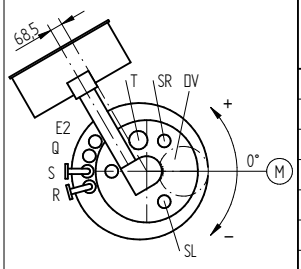
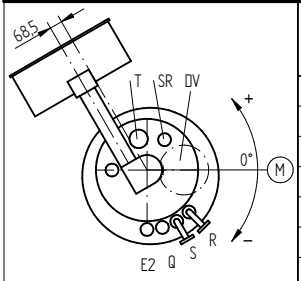
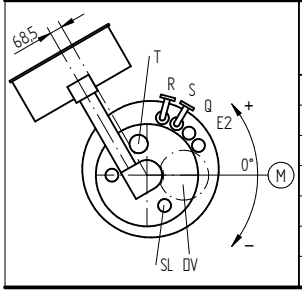
ON-LOAD TAP-CHANGER
OILTAP® MS, M, RM, R AND VACUTAP® VR®, VM®, VMS®
VARIANTS OF THE ON-LOAD TAP-CHANGER HEAD

SERIAL NUMBER

MATERIAL NUMBER 7200264E

SHEET 1/1

A2

SKETCH	HEAD VERSION COMPONENTS USED	LIMITATION OF THE SWIVEL RANGE
	DRIVE SHAFT RIGHT HEAD VERSION 1	–180° 0° 180°
	PIPE CONNECTION R	–168° –140°
	PIPE CONNECTION S	–155° 177°
	PIPE CONNECTION Q	–171° 162°
	PIPE CONNECTION E2	147° 174°
	PRESSURE RELIEF DEVICE DV	–150° –35°
	TEMPERATURE SENSOR T	96° 175°
	INSPECTION WINDOW SL / SR	–64° SL –8° 56° SR 112°
	DRIVE SHAFT RIGHT HEAD VERSION 2	–180° 0° 180°
	PIPE CONNECTION R	–48° –21°
	PIPE CONNECTION S	–63° –36°
	PIPE CONNECTION Q	–78° –51°
	PIPE CONNECTION E2	–93° –66°
	PRESSURE RELIEF DEVICE DV	–150° –35°
	TEMPERATURE SENSOR T	96° 175°
	INSPECTION WINDOW SR	56° SR 112°
	DRIVE SHAFT RIGHT HEAD VERSION 3	–180° 0° 180°
	PIPE CONNECTION R	72° 99°
	PIPE CONNECTION S	57° 84°
	PIPE CONNECTION Q	42° 69°
	PIPE CONNECTION E2	27° 54°
	PRESSURE RELIEF DEVICE DV	–150° –35°
	TEMPERATURE SENSOR T	96° 175°
	INSPECTION WINDOW SL	–64° SL –8°
	DRIVE SHAFT LEFT HEAD VERSION 1	–180° 0° 180°
	PIPE CONNECTION R	–162° 171°
	PIPE CONNECTION S	–177° 156°
	PIPE CONNECTION Q	141° 168°
	PIPE CONNECTION E2	126° 153°
	PRESSURE RELIEF DEVICE DV	35° 150°
	TEMPERATURE SENSOR T	34° 114°
	INSPECTION WINDOW SL / SR	–112° SL –56° 8° SR 64°
	DRIVE SHAFT LEFT HEAD VERSION 2	–180° 0° 180°
	PIPE CONNECTION R	–69° –42°
	PIPE CONNECTION S	–84° –57°
	PIPE CONNECTION Q	–99° –72°
	PIPE CONNECTION E2	–114° –87°
	PRESSURE RELIEF DEVICE DV	35° 150°
	TEMPERATURE SENSOR T	34° 114°
	INSPECTION WINDOW SR	8° SR 64°
	DRIVE SHAFT LEFT HEAD VERSION 3	–180° 0° 180°
	PIPE CONNECTION R	50° 78°
	PIPE CONNECTION S	35° 62°
	PIPE CONNECTION Q	21° 48°
	PIPE CONNECTION E2	6° 33°
	PRESSURE RELIEF DEVICE DV	35° 150°
	TEMPERATURE SENSOR T	34° 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

	DATE	NAME	DOCUMENT NO.	
DFTR.	11.07.2018	BUTERUS	SED 1664686 001 04	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	-

DIMENSION IN mm EXCEPT AS NOTED

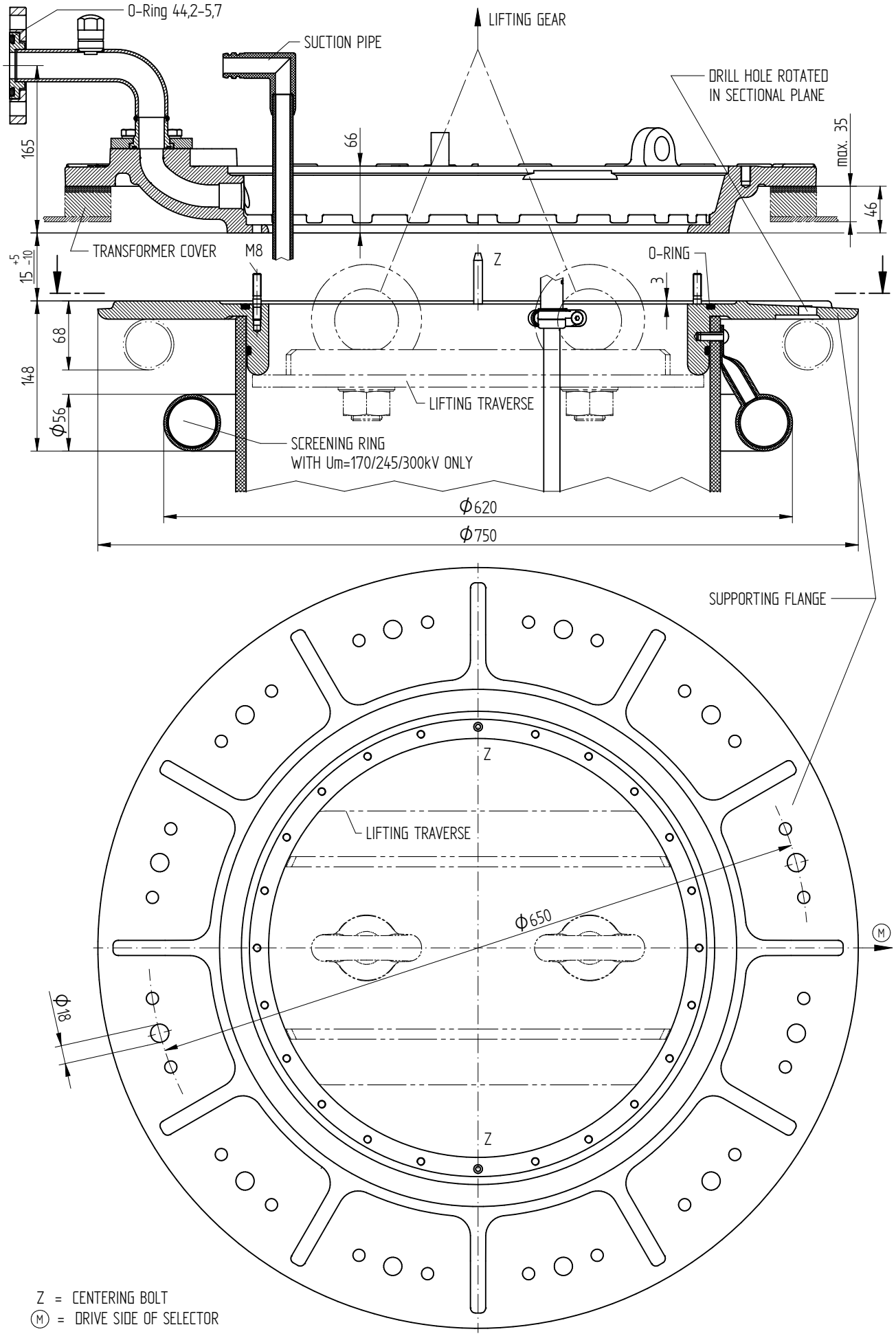
ON-LOAD TAP-CHANGER
OILTAP® MS, M, RM, R AND VACUTAP® VR®, VM®, VMS® SWIVEL RANGE OF THE GEAR UNIT

SERIAL NUMBER

MATERIAL NUMBER 7200276E

SHEET 1/1

A2



Z = CENTERING BOLT
Ⓜ = DRIVE SIDE OF SELECTOR

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

DIMENSION IN mm EXCEPT AS NOTED

MR

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

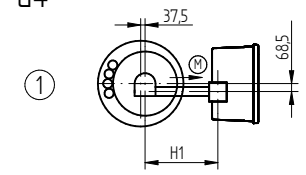
SERIAL NUMBER

MATERIAL NUMBER 896762CE

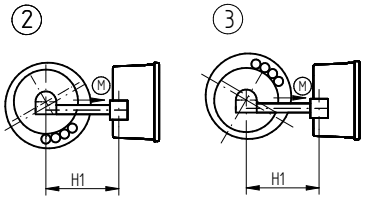
SHEET 1/1

AZ

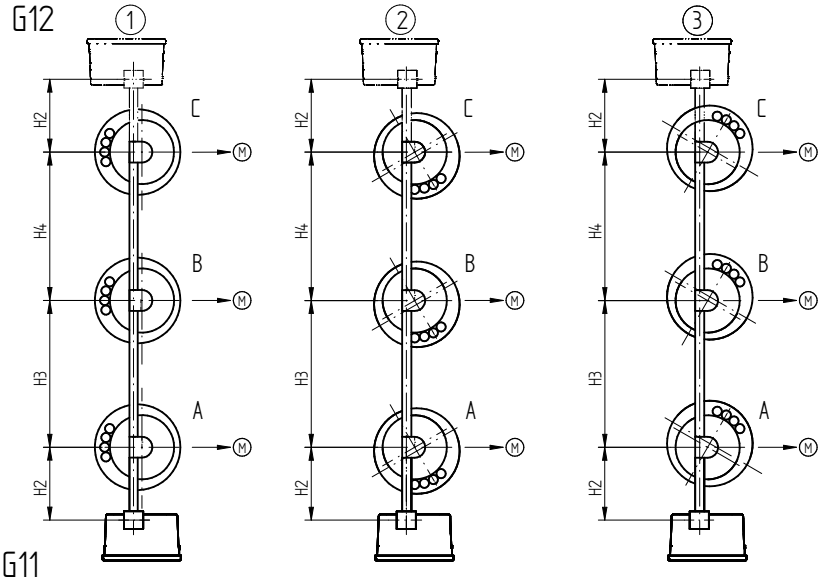
G4



SWIVEL RANGE SEE 720027:

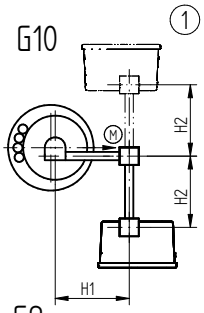


G12

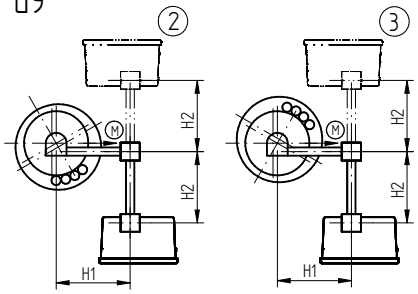


G11

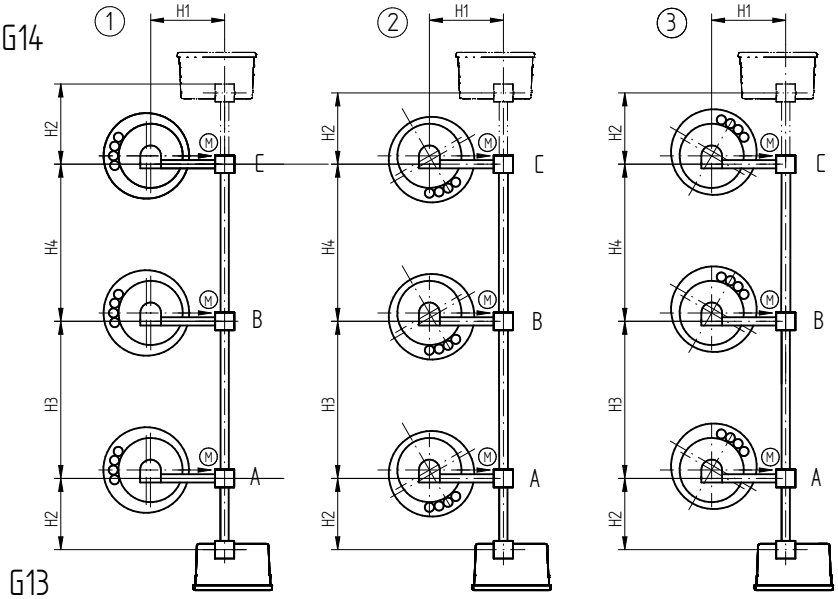
G10



G9



G14



G13

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
INTERMEDIATE BEARING FOR	H1 >	2254	2309	–	2309
	H2 >	–	2259	2254	2259
	H3 >	–	–	2249	2259
	H4 >	–	–	2249	2259

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.

① ② ③ – HEAD VERSION
→ Ⓜ – DRIVE SIDE OF SELECTOR

	DATE	NAME	DOCUMENT NO.	
DFTR.	13.07.2018	BUTERUS	SED 1706827 001 05	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	-

DIMENSION IN mm EXCEPT AS NOTED

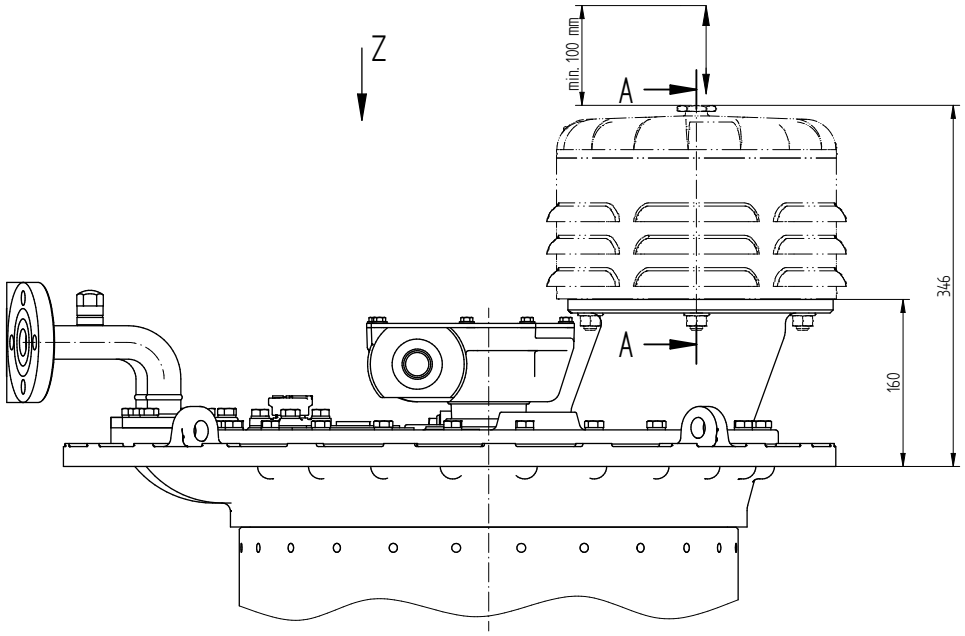
OLTC OILTAP® M, MS, RM, R / VACUTAP® VR®, VM®, VMS®
HORIZONTAL DRIVE SHAFT, CENTRIC DRIVE (LIMIT DIMENSIONS)
SELECTOR SIZE B/C/D/RC/RD/RDE

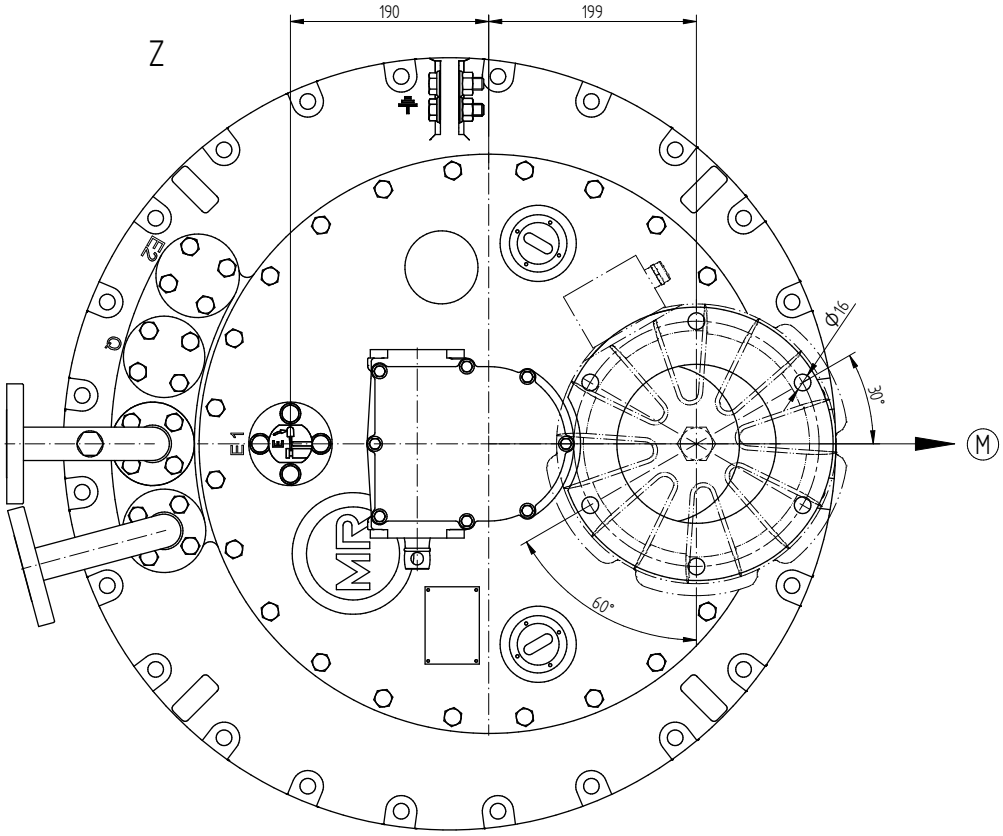
SERIAL NUMBER

MATERIAL NUMBER 893896DE

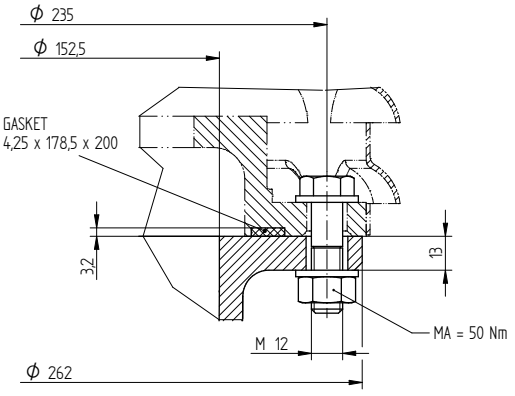
SHEET 1/1

A2





A–A
1:1



(M) DRIVE SIDE OF SELECTOR

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

DIMENSION IN mm EXCEPT AS NOTED

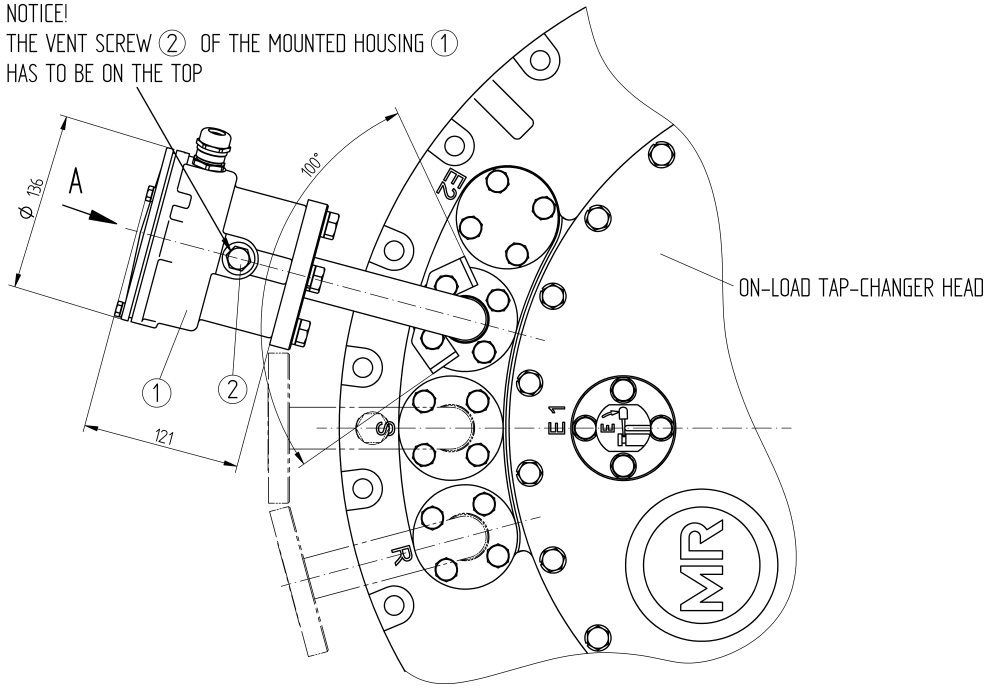
ON-LOAD TAP-CHANGER
OILTAP® M, MS, R, RM AND VACUTAP® VR®, VM®, VMS® WITH MOUNTING FLANGE FOR PRESSURE RELIEF DEVICE

SERIAL NUMBER

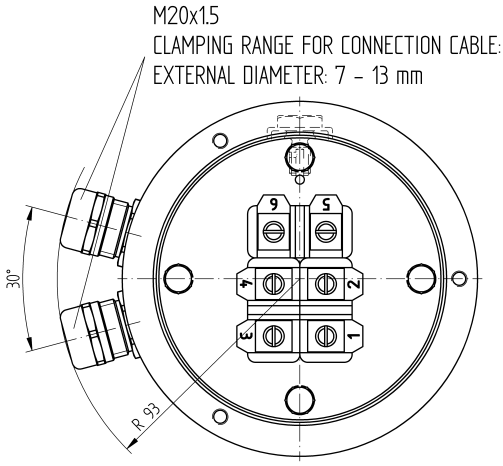
MATERIAL NUMBER 8951689E

SHEET 1/1

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



A 1:1
REPRESENTED WITHOUT COVER



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 CONTINOUS 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.	
DFTR.	03.11.2016	RAEDLINGER	SED 2425358 001 02	
CHKD.	04.11.2016	NERRETER	CHANGE NO.	SCALE
STAND.	04.11.2016	PRODASTSCHUK	1078202	1:2

DIMENSION IN mm EXCEPT AS NOTED

MR

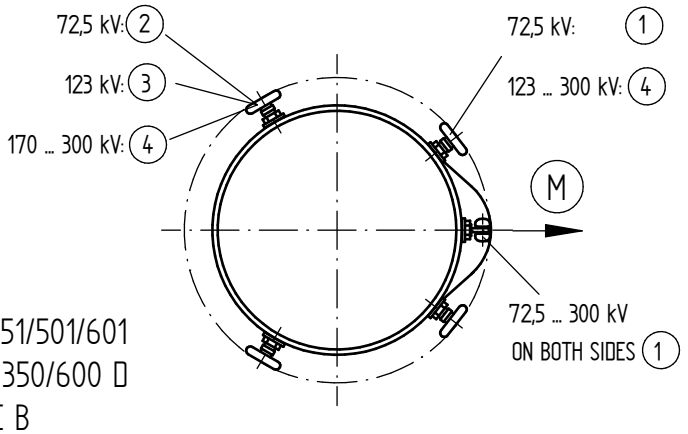
ON-LOAD TAP-CHANGER VACUTAP® VM, VR
PIPE CONNECTION WITH TAP-CHANGE SUPERVISORY CONTROL

SERIAL NUMBER

MATERIAL NUMBER 7661612E

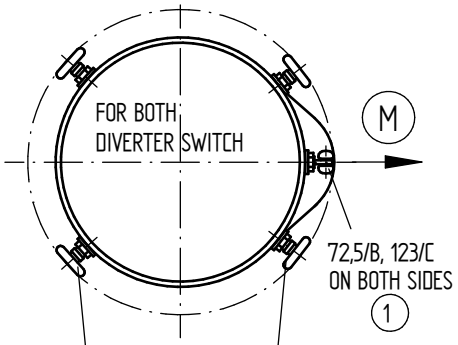
SHEET 1/1

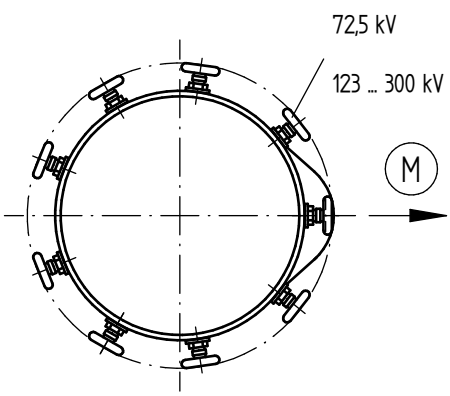
4.4 Compartimento de óleo



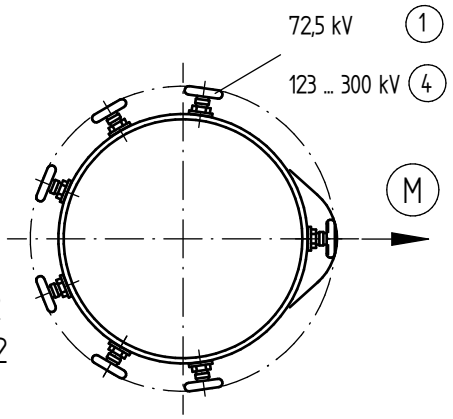
MI 351/501/601
MIII 350/600 D
POLE B
VMI 351/501/651

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

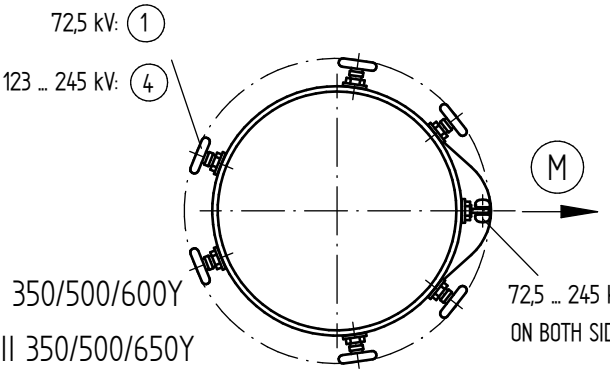




MI 603/803
MI 1203/1503
VMI 653/803
VMI 1203/1503

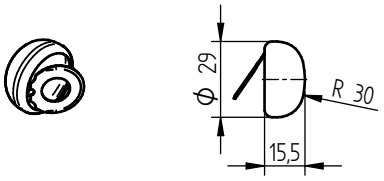


MI 502/602/802
MII 352/502/602
VMI 502/652/802
VMII 352/502/652

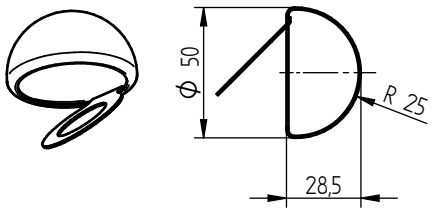


MIII 350/500/600Y
VMIII 350/500/650Y
VMSIII 400/650Y

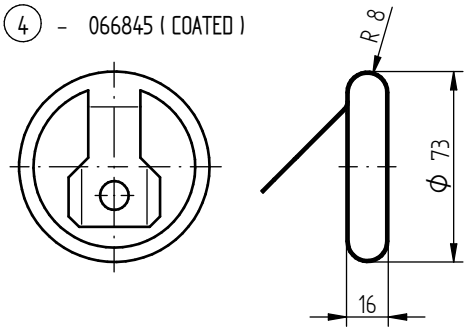
(1) – 056919 (UNCOATED)



(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)

	DATE	NAME	DOCUMENT NO.	
DFTR.	13.07.2018	BUTERUS	SED 1668294 001 02	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND	16.07.2018	PRODASTSCHUK	1086956	-

DIMENSION IN mm EXCEPT AS NOTED

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

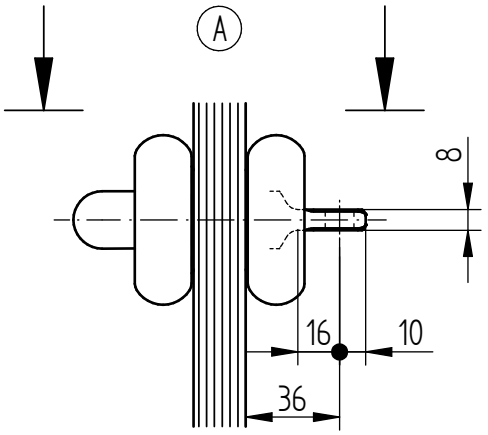
SERIAL NUMBER

MATERIAL NUMBER 7303362E

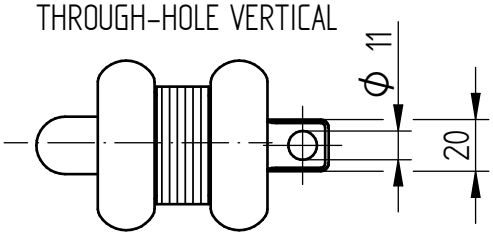
SHEET 1 / 1

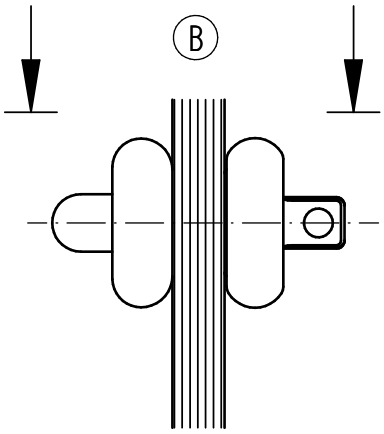
A3

4.5 Seletor

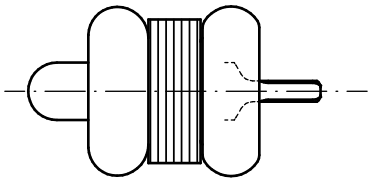


THROUGH-HOLE VERTICAL

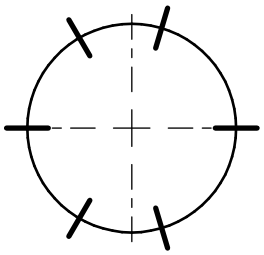




THROUGH-HOLE HORIZONTAL



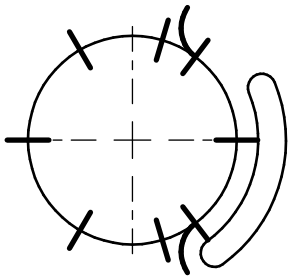
A



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

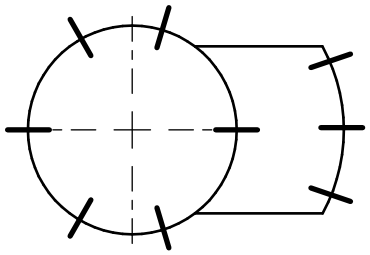
M I 351 / 501 / 601 – 0
VM I 351 / 501 / 651 – 0



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

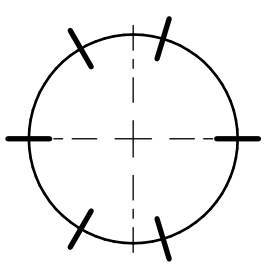


M III 350 / 500 / 600Y – G
VM III 350 / 500 / 650Y – G
VMS III 400 / 650Y – C – G

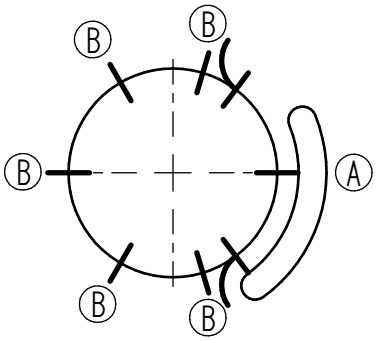
M II 352 / 502 / 602 – G
VM II 352 / 502 / 652 – G

M I 351 / 501 / 601 – G
VM I 351 / 501 / 651 – G

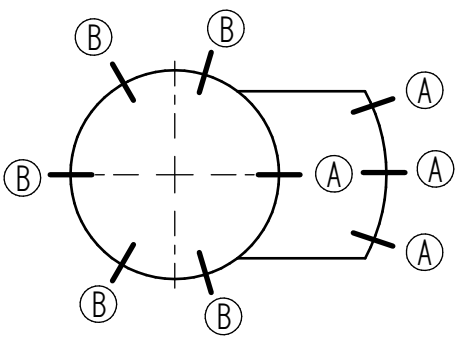
B



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.	
DFTR.	13.07.2018	BUTERUS	SED 1706800 000 03	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND	16.07.2018	PRODASTSCHUK	1086956	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/DE

SERIAL NUMBER

MATERIAL NUMBER 890477BE

SHEET 1 / 1

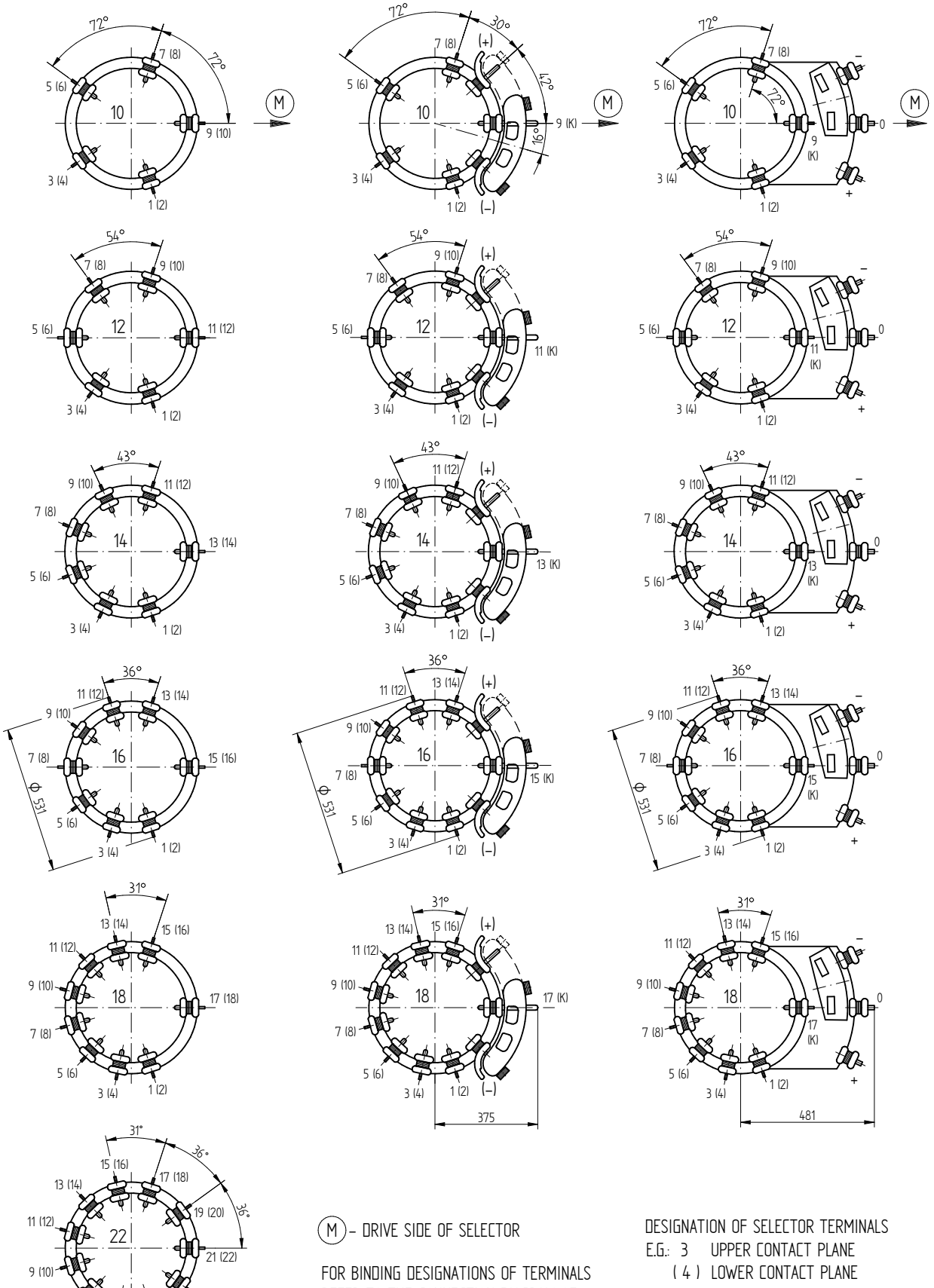
A3

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

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

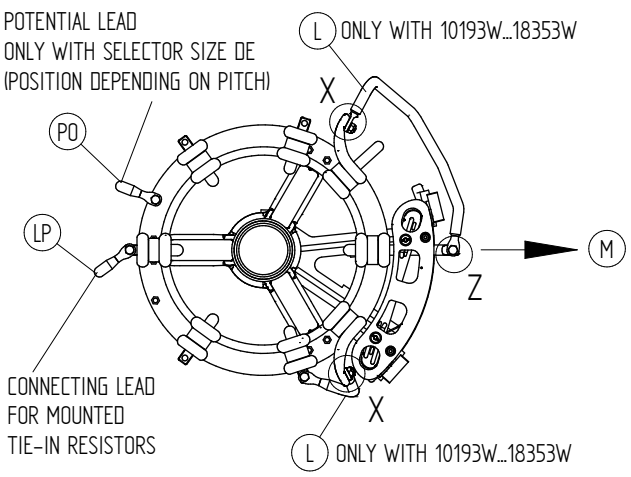
MATERIAL NUMBER 8980136E

SHEET 1/1

AZ

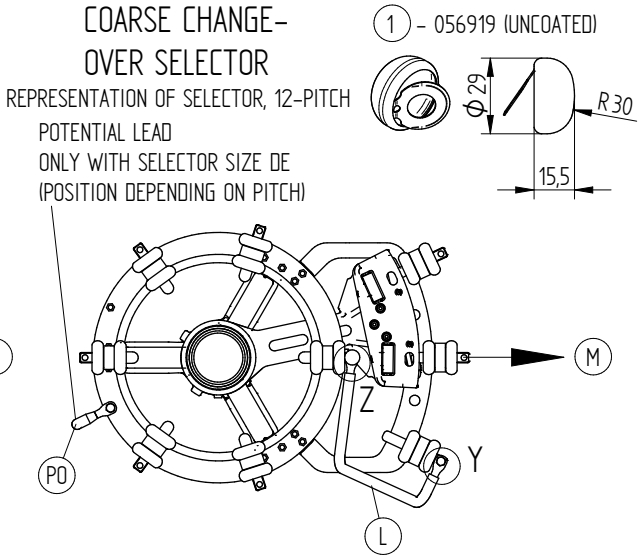
REVERSING CHANGE-OVER SELECTOR

REPRESENTATION OF SELECTOR, 12-PITCH

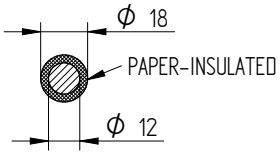


COARSE CHANGE-OVER SELECTOR

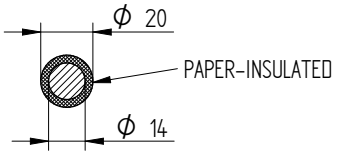
REPRESENTATION OF SELECTOR, 12-PITCH



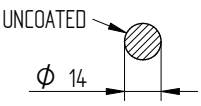
LEAD PROFILE (LP)



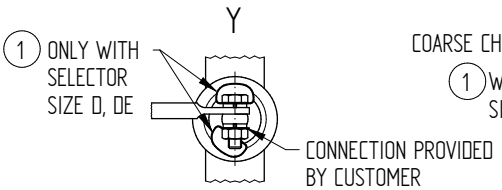
LEAD PROFILE (PO) , (L) ONLY WITH SELECTOR SIZE DE



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

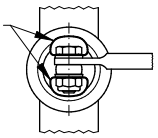


Y



Z

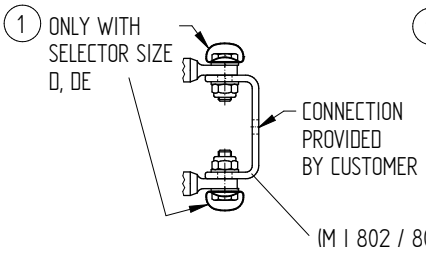
COARSE CHANGE-OVER SELECTOR LEAD AT (K)



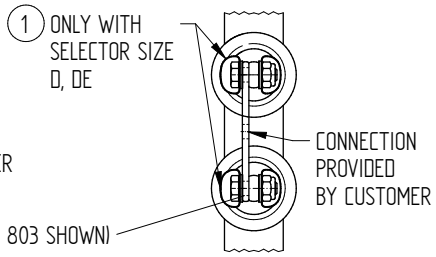
Y

3W-LEAD AT + / - CONTACT

PARALLEL BRIDGES
ARRANGEMENT OF CONTACTS A

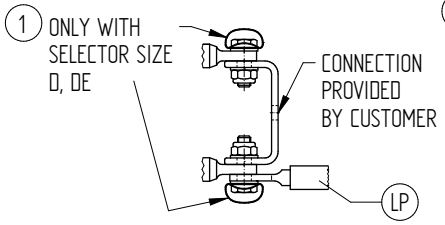


PARALLEL BRIDGES
ARRANGEMENT OF CONTACTS B

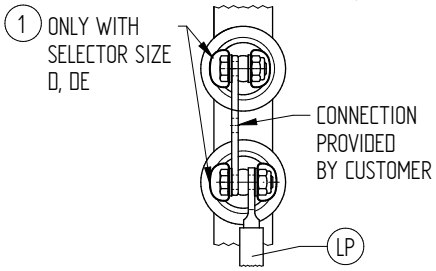


PARALLEL BRIDGES AT + / - CONTACT
(WITH REVERSING CHANGE-OVER SLECTOR)

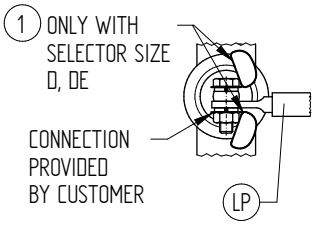
PARALLEL BRIDGES
ARRANGEMENT OF CONTACTS A WITH (LP)



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.

	DATE	NAME	DOCUMENT NO.	
DFTR.	13.07.2018	BUTERUS	SED 1668279 001 03	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	-

DIMENSION IN mm EXCEPT AS NOTED

MR

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

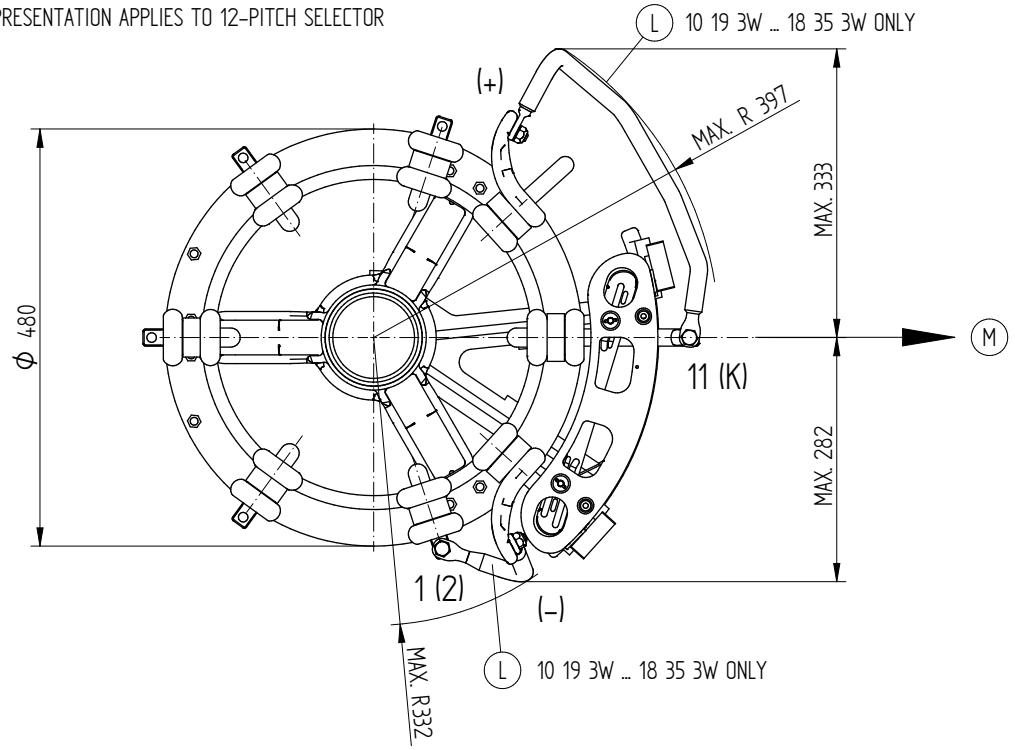
MATERIAL NUMBER 7303353E

SHEET 1/1

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)

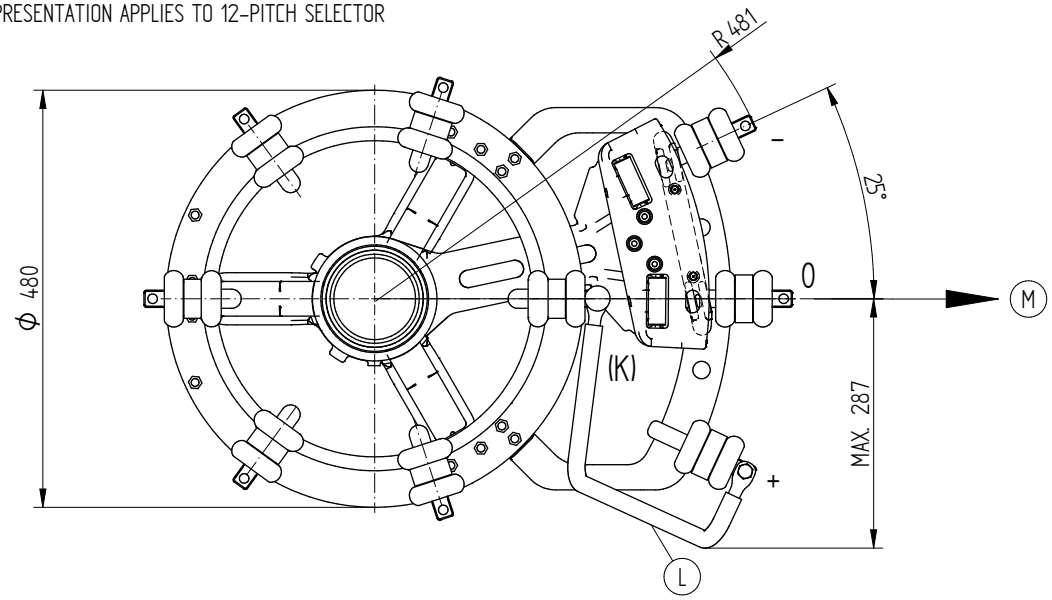
REPRESENTATION APPLIES TO 12-PITCH SELECTOR



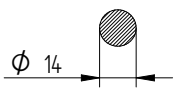
COARSE CHANGE-OVER SELECTOR

G – H (TYPE M / VM / VMS-C) AND E – E (TYPE VRC / VRE / VRC I HD / VRE I HD / VRS / VRM)

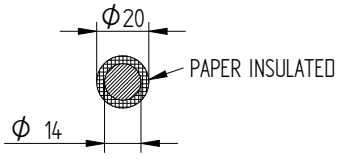
REPRESENTATION APPLIES TO 12-PITCH SELECTOR



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

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

DIMENSION IN mm EXCEPT AS NOTED

OLTC 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

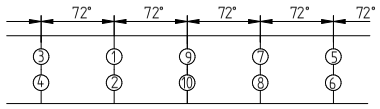
MATERIAL NUMBER 7235904E

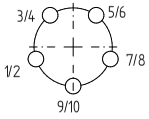
SHEET 1/1

	DATE	NAME	DOCUMENT NO.	
DFTR.	19.08.2015	RAEDLINGER	SED 2613347 001 01	
CHKD.	21.08.2015	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	24.08.2015	KLEYN	1066507	-

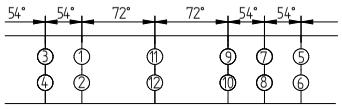
DIMENSION IN mm EXCEPT AS NOTED

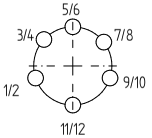
OLTC OILTAP® M I 351/501/601, RM I 601
OLTC VACUTAP® VM I 351/501/651, VRE I 401/551/701, VRE I 701
CONTACT ARRANGEMENT ON SELECTOR FOR SELECTOR SIZE B,C,D,DE



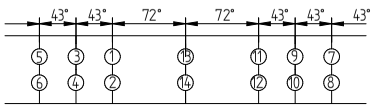


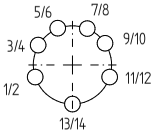
10 10 0



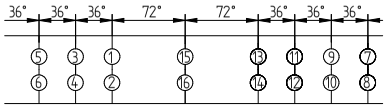


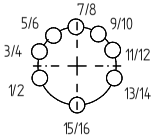
12 12 0



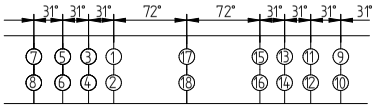


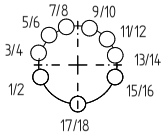
14 14 0



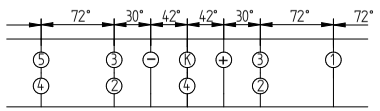


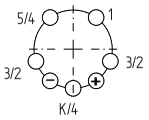
16 16 0



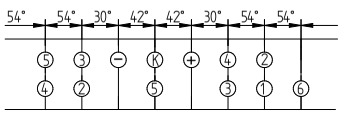


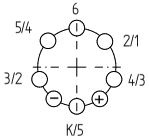
18 18 0



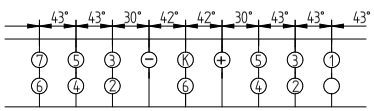


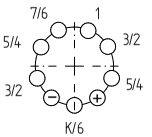
10 09 1 W



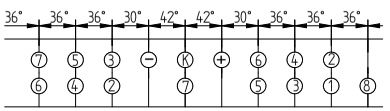


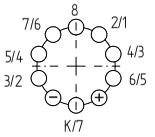
12 11 1 W



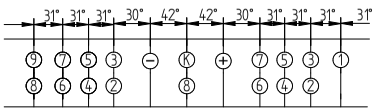


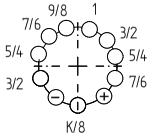
14 13 1 W



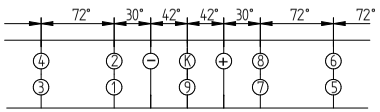


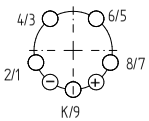
16 15 1 W



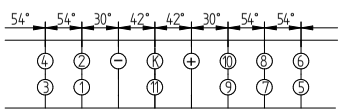


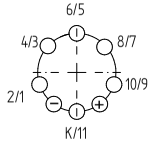
18 17 1 W



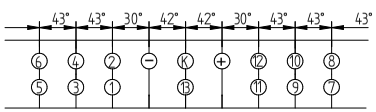


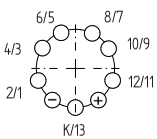
10 19 1 W
10 19 3 W



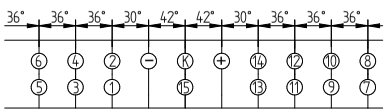


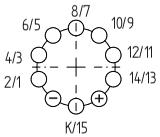
12 23 1 W
12 23 3 W



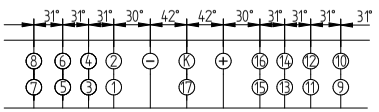


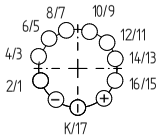
14 27 1 W
14 27 3 W



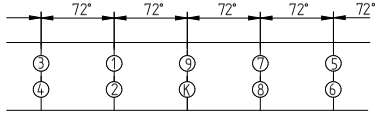


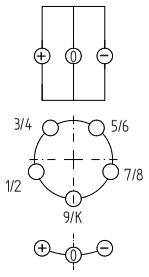
16 31 1 W
16 31 3 W



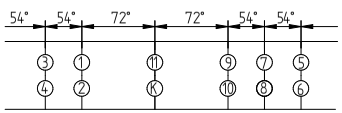


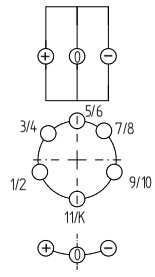
18 35 1 W
18 35 3 W



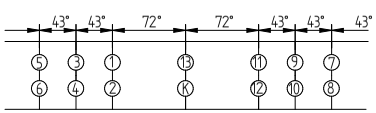


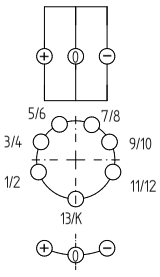
10 19 1 G
10 19 3 G



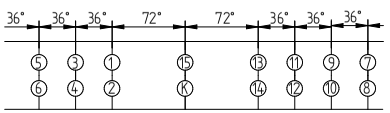


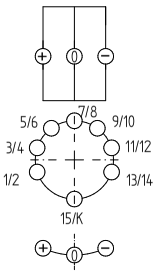
12 23 1 G
12 23 3 G



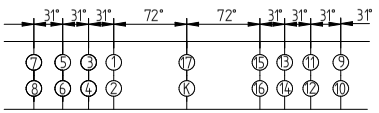


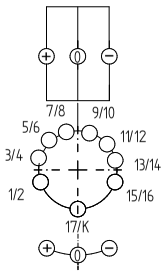
14 27 1 G
14 27 3 G





16 31 1 G
16 31 3 G





18 35 1 G
18 35 3 G

SERIAL NUMBER	
MATERIAL NUMBER	8911088E
SHEET	1/1

A1

	DATE	NAME	DOCUMENT NO.	
DFTR.	19.08.2015	RAEDLINGER	SED 2613129 001 01	
CHKD.	21.08.2015	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	24.08.2015	KLEYN	1066507	-

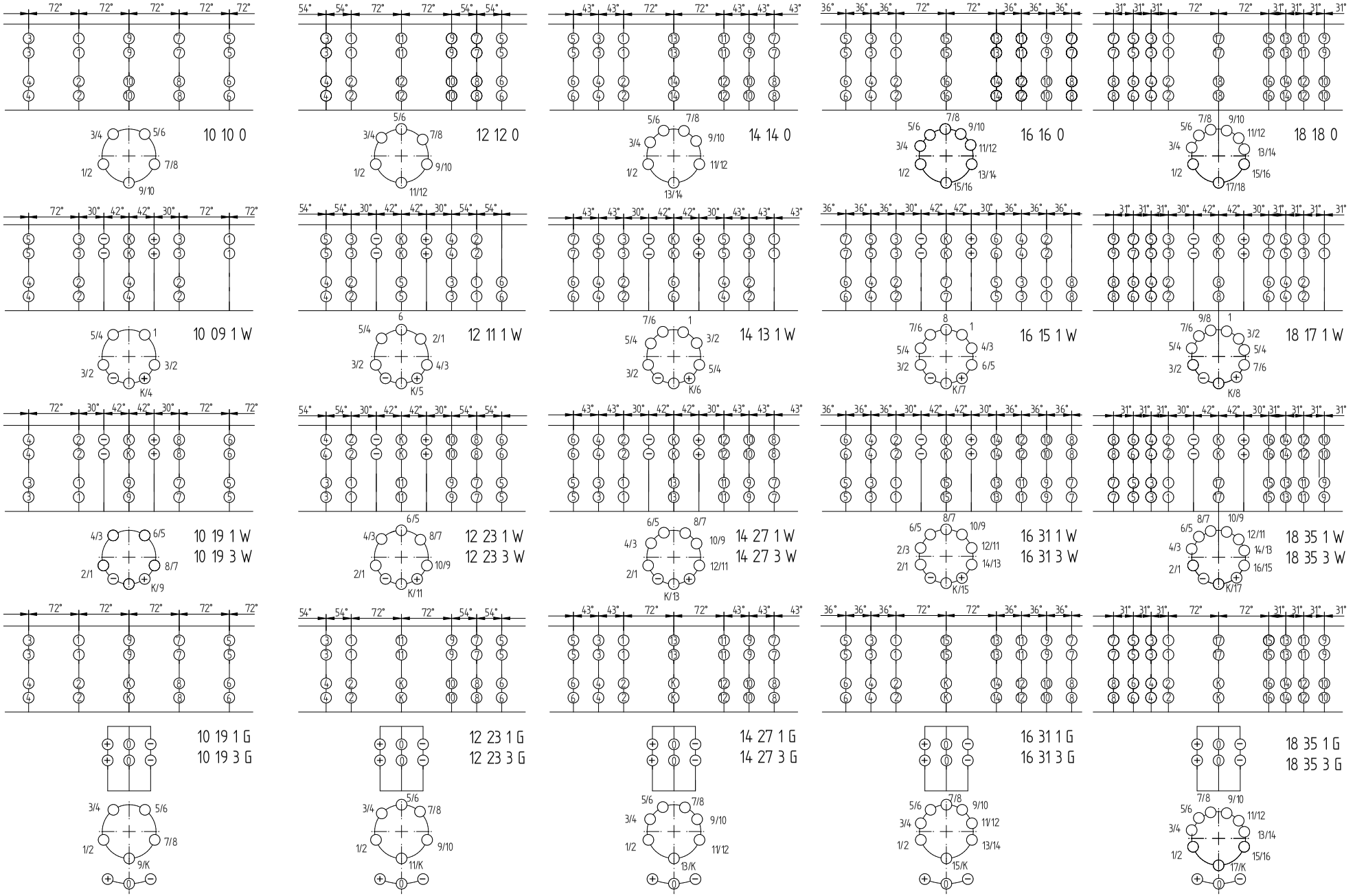
DIMENSION IN mm EXCEPT AS NOTED

ON-LOAD TAP-CHANGER OILTAP® M I 802

ON-LOAD TAP-CHANGER VACUTAP® VM I 802/1002, VRC I 1001, VRE I 1001

CONTACT ARRANGEMENT ON SELECTOR FOR SELECTOR SIZE B,C,D,DE

SERIAL NUMBER	
MATERIAL NUMBER	8911105E
SHEET	1/1



	DATE	NAME	DOCUMENT NO.	
DFTR.	19.08.2015	RAEDLINGER	SED 2615953 001 01	
CHKD.	21.08.2015	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	24.08.2015	KLEYN	1066507	-

DIMENSION IN mm EXCEPT AS NOTED

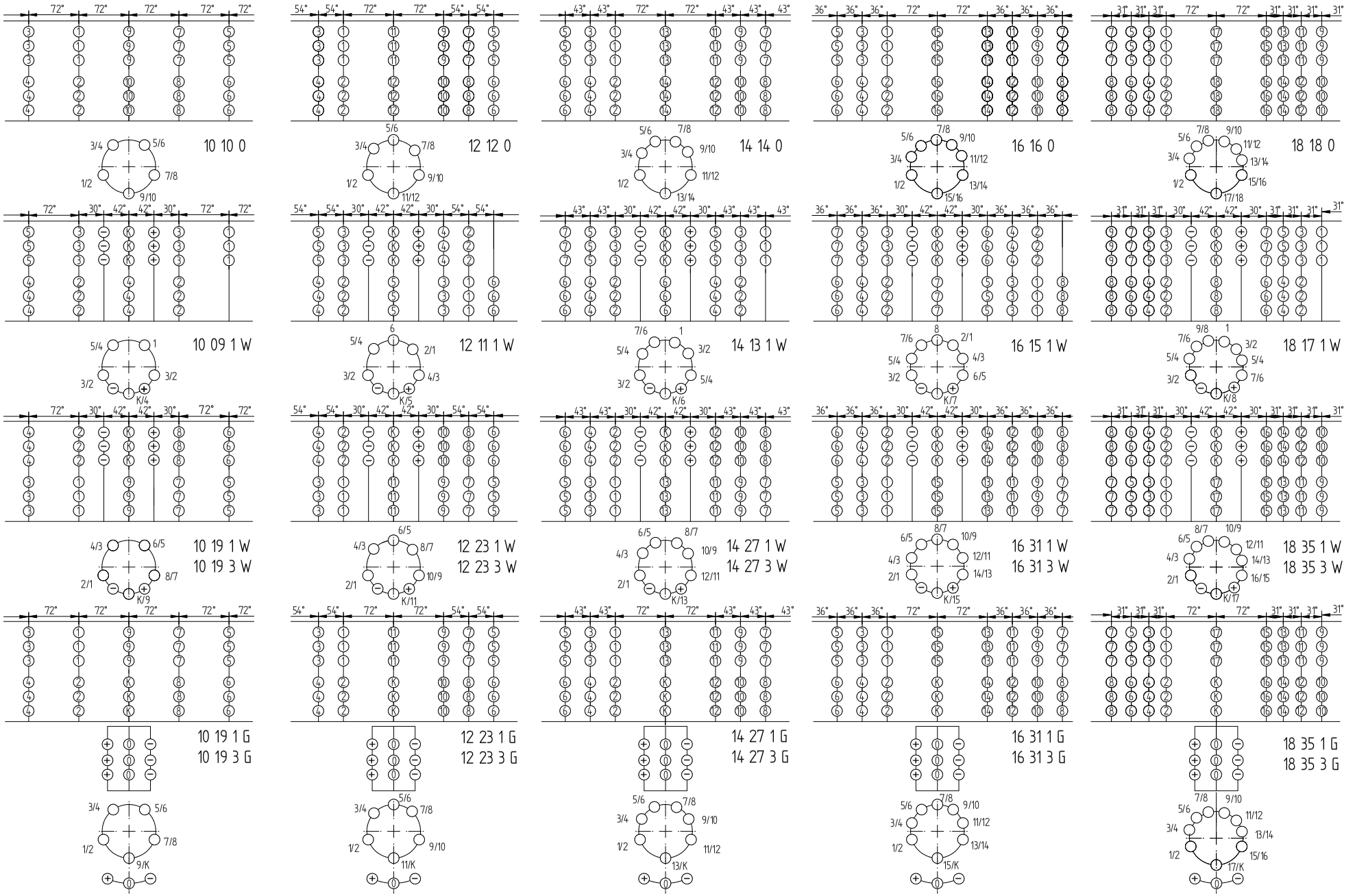
ON-LOAD TAP-CHANGER OILTAP® M I 1203/1503, RM I 1201/1502
ON-LOAD TAP-CHANGER VACUTAP® VM I 1203/1503, VRC I 1301, VRE I 1301
CONTACT ARRANGEMENT ON SELECTOR FOR SELECTOR SIZE B,C,D,DE

SERIAL NUMBER

MATERIAL NUMBER 8911096E

SHEET 1/1

A1

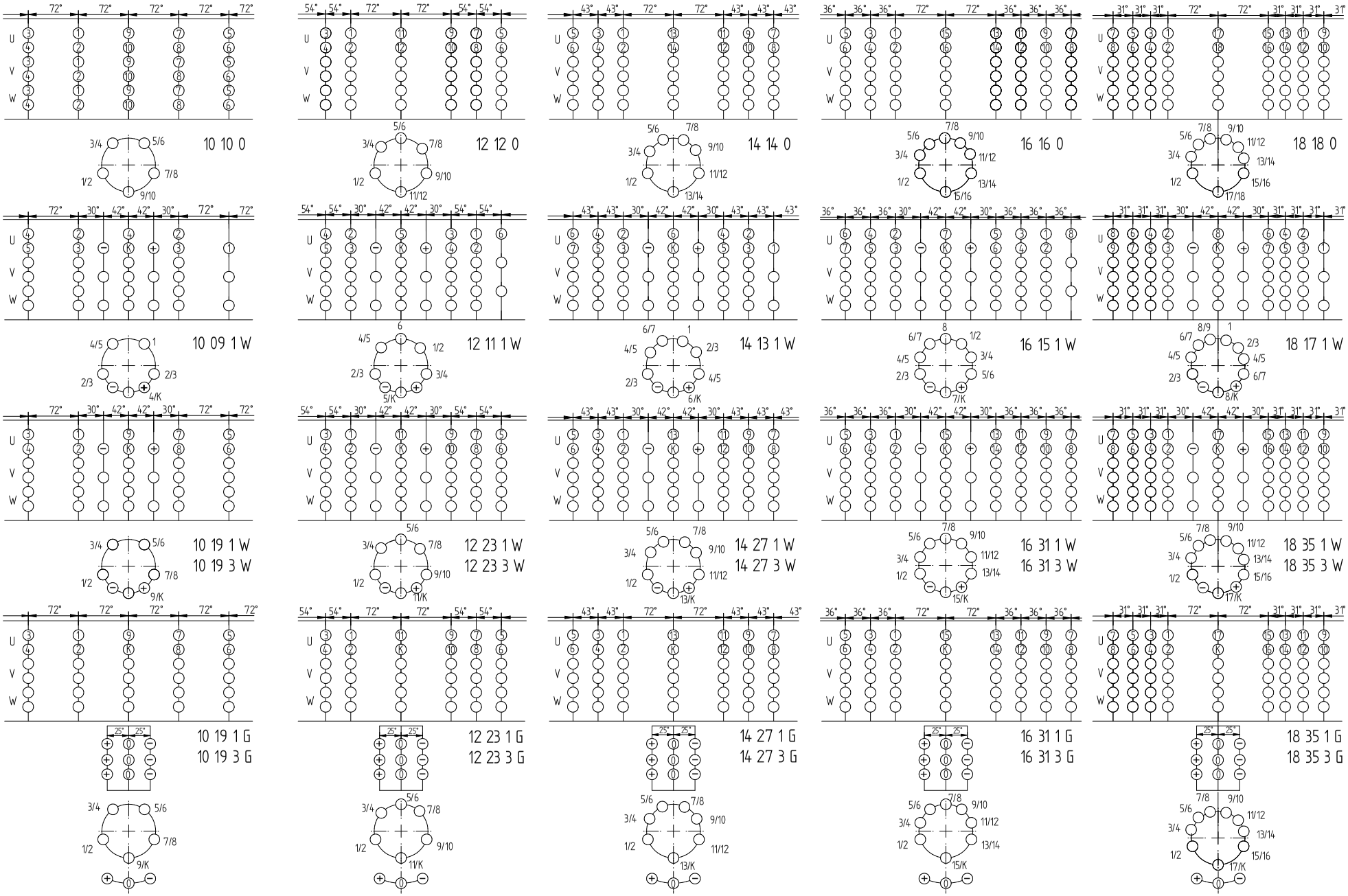


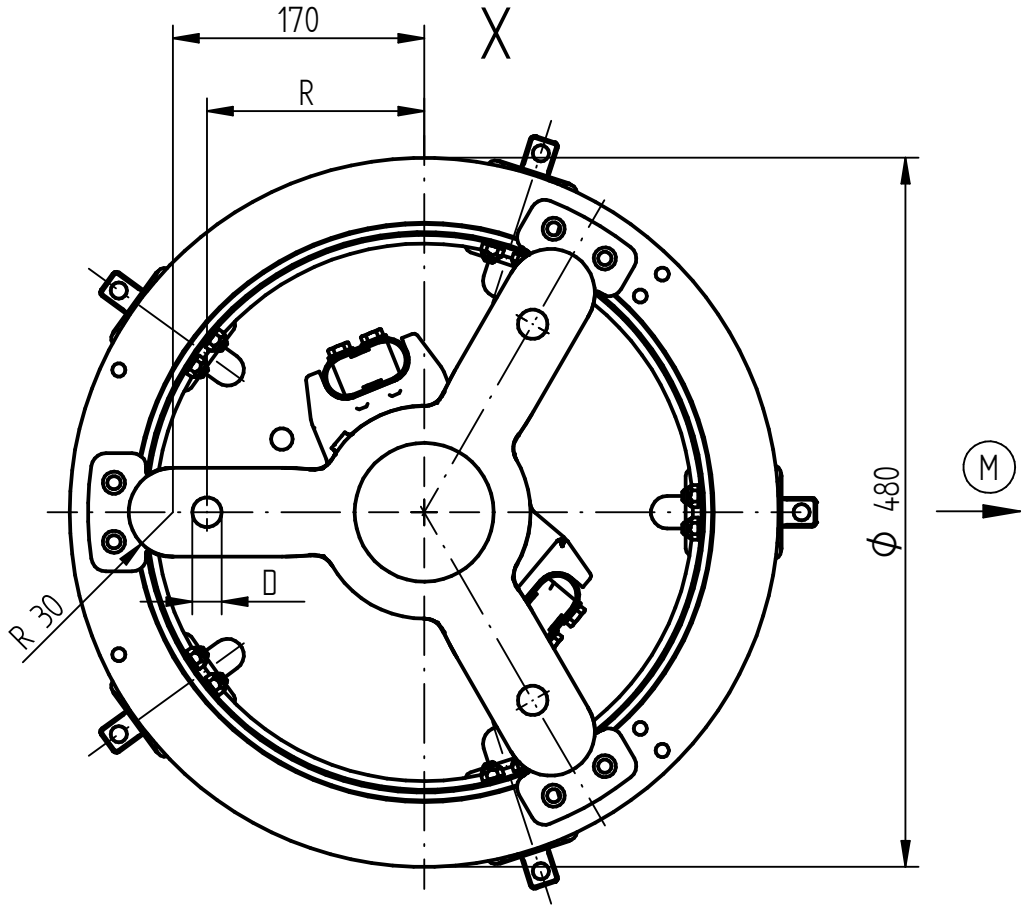
	DATE	NAME	DOCUMENT NO.	
DFTR.	13.07.2018	BUTERUS	SED 2611976 001 02	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	-

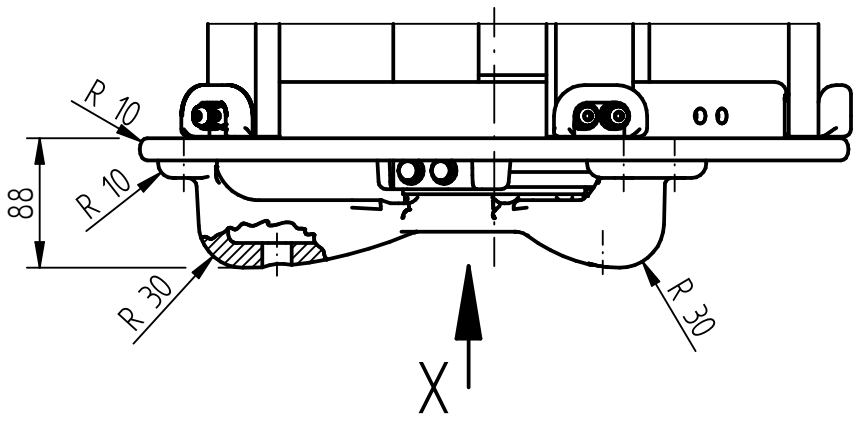
DIMENSION IN mm EXCEPT AS NOTED

OLTC VACUTAP® VM® III 350/500/650, VMS® III 400/650 - C
VRE 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	8911076E
SHEET	1/1







R	D	SELECTOR BASE
147	20	097251
160	13	097252

(M) DRIVE SIDE OF SELECTOR

	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	1:5

DIMENSION IN mm EXCEPT AS NOTED

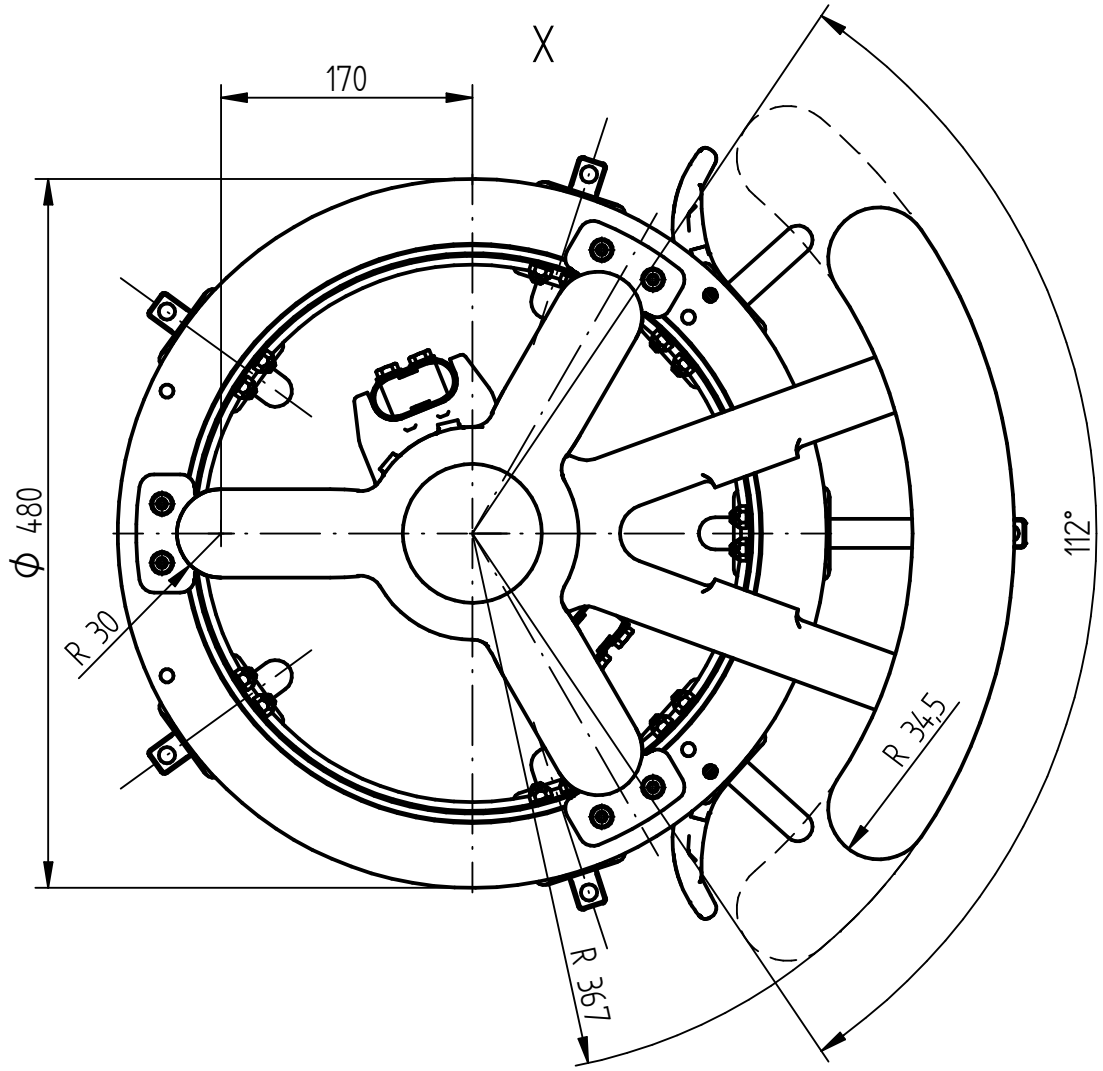
ON-LOAD TAP-CHANGER OILTAP® M / VACUTAP® VM®, VMS®-C
SELECTOR BASE WITH HOLE D20 AND D13
M-SELECTOR SIZE B/C/D/DE

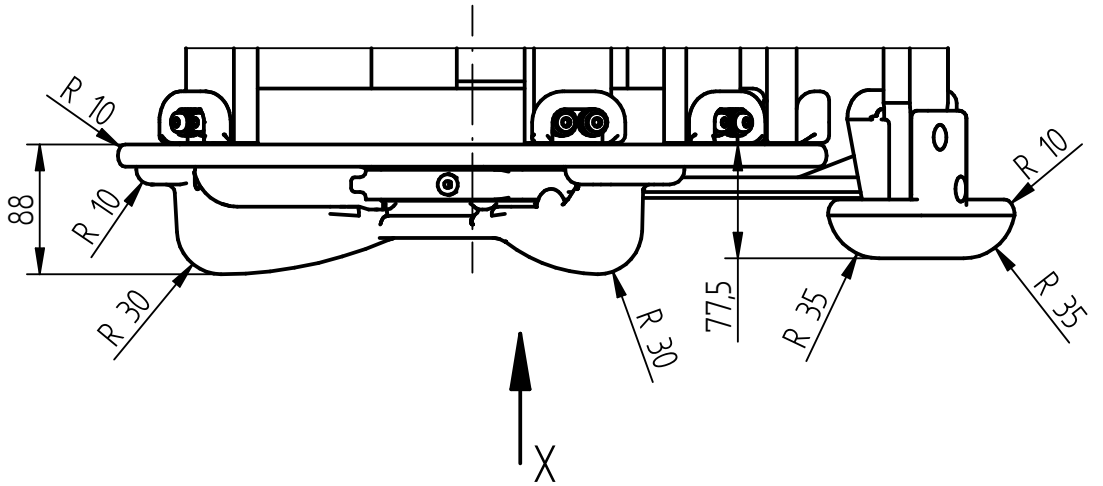
SERIAL NUMBER

MATERIAL NUMBER 7256494E

SHEET 1 / 1

A4





	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	1:5

DIMENSION IN mm EXCEPT AS NOTED

MR

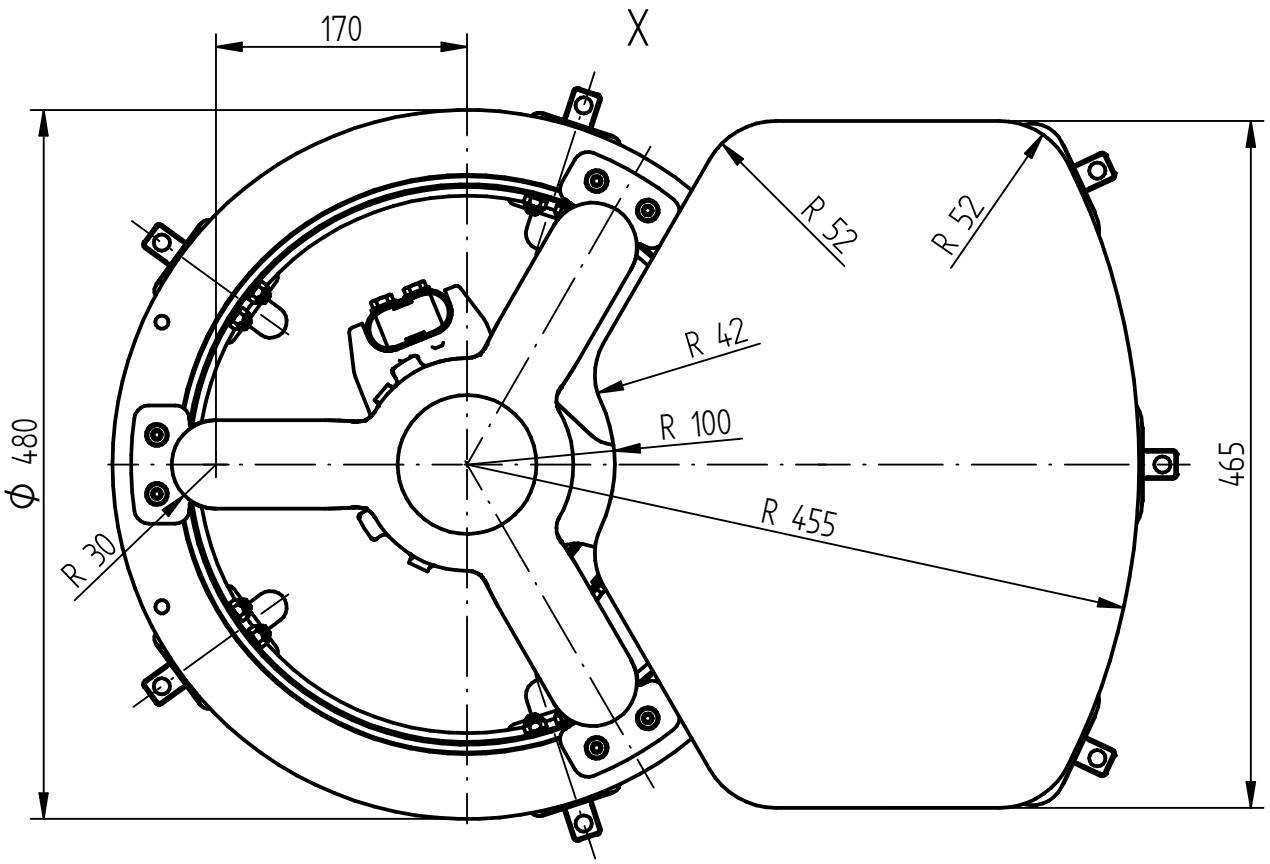
OLTC OILTAP® M / VACUTAP® VM®, VMS®-C, VRC, VRE
ADDITIONAL SCREENING ON SELECT OR BASE - REVERSING COS
M-SELECTOR SIZE B/C/D/DE

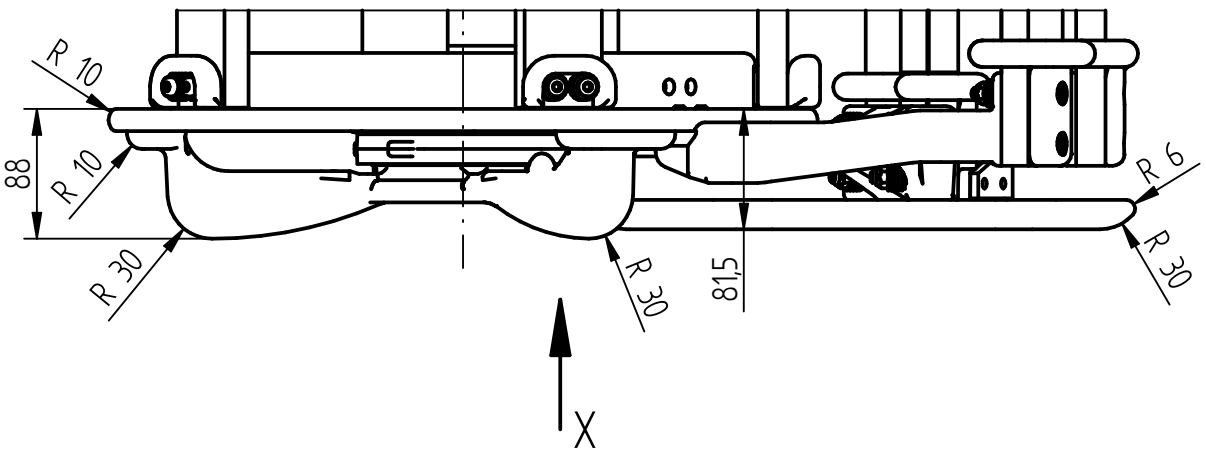
SERIAL NUMBER

MATERIAL NUMBER 8939344E

SHEET 1/ 1

A4





	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	1:5

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

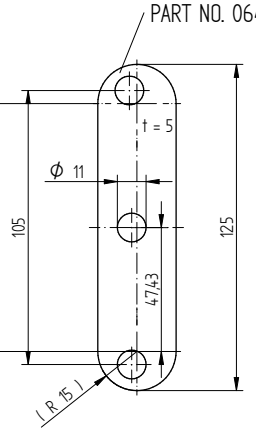
MATERIAL NUMBER 8939354E

SHEET 1/ 1

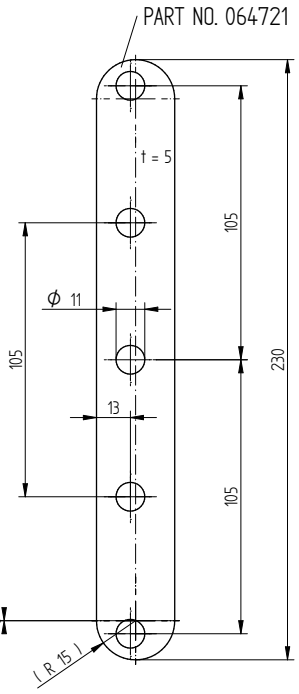
A4

ARRANGEMENT OF CONTACT B

M I 802 / 803
VM I 802 / 1002

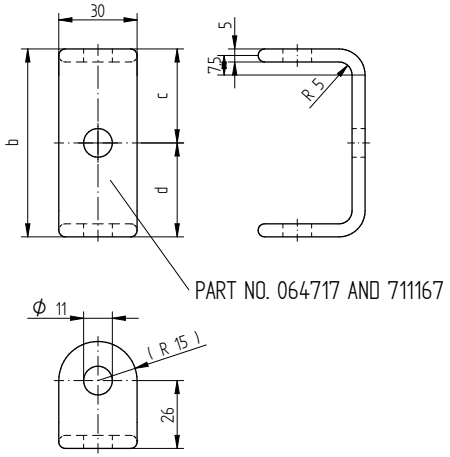


M I 1203 / 1503
VM I 1203 / 1503



ARRANGEMENT OF CONTACT A

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

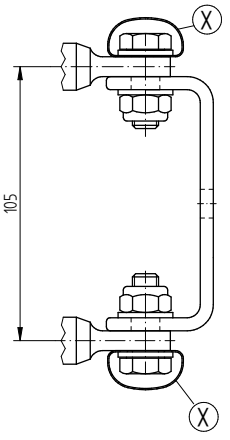


ARRANGEMENT OF CONTACT (see 890477:)	PART NO.	DIMENSION b	DIMENSION c	DIMENSION d
A WITHOUT CONNECTING LEAD	064717	97	48,5	48,5
A WITH CONNECTING LEAD	711167	91	48,5	42,5

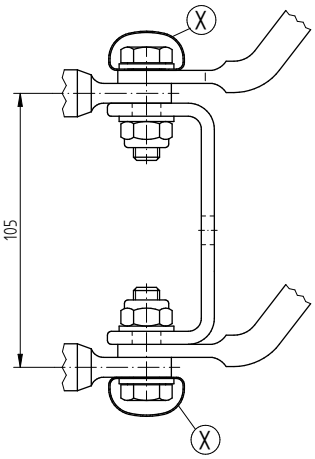
INSTALLATION OF PARALLEL BRIDGES FOR ARRANGEMENT OF CONTACT A WITHOUT AND WITH CONNECTING LEAD FOR 3W CONNECTION

M I 802 / 803
VM I 802 / 1002

WITHOUT CONNECTING LEAD

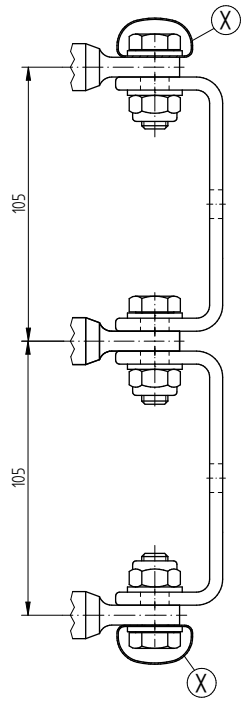


WITH CONNECTING LEAD

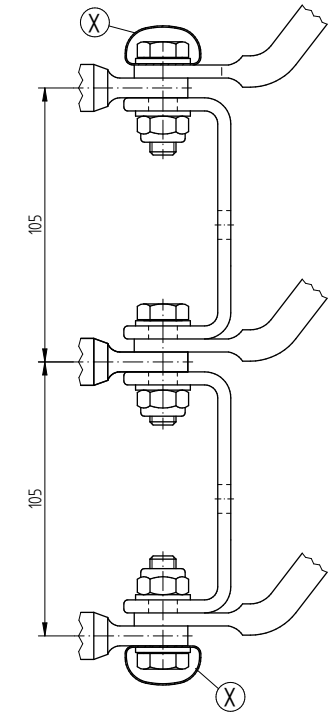


M I 1203 / 1503
VM I 1203 / 1503

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.	
DFTR.	18.01.2016	RAEDLINGER	SED 1050471 000 05	
CHKD.	25.02.2016	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	25.02.2016	PRODASTSCHUK	1072100	1:1

DIMENSION IN mm EXCEPT AS NOTED

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

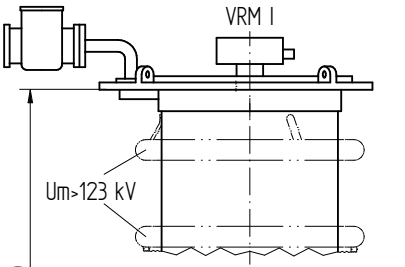
SERIAL NUMBER

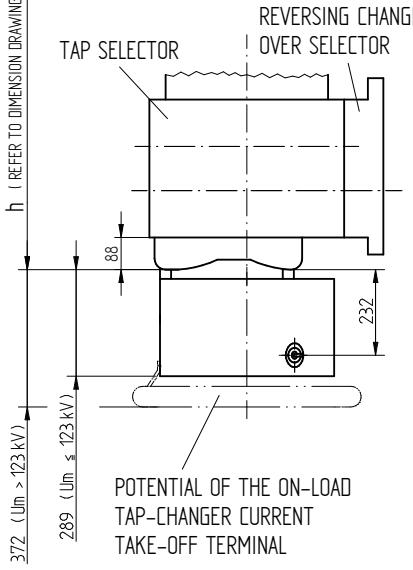
MATERIAL NUMBER 8995984E

SHEET 1/1

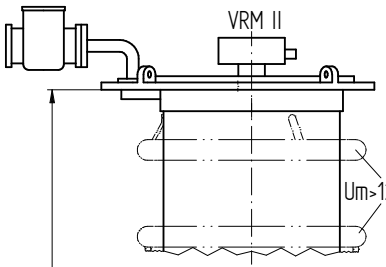
A1

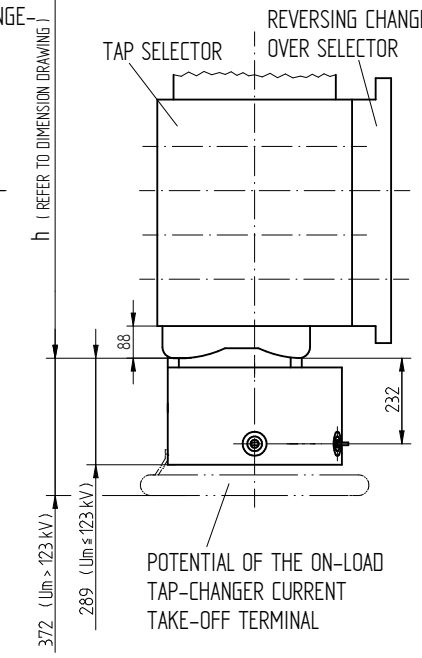
DESIGN:
M I
RM I
VM I
VRC I
VRE I
VRS I
VRM I



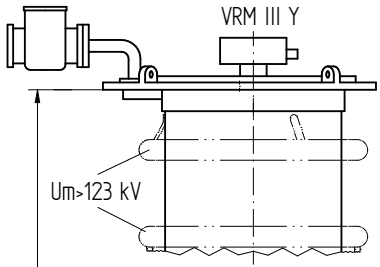


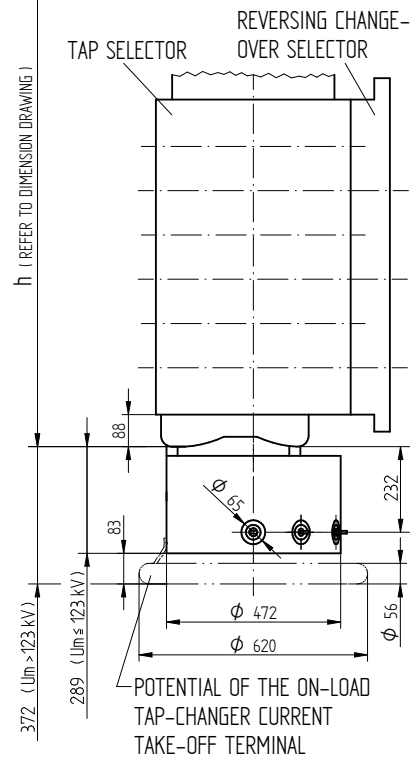
DESIGN:
M II
RM II
VM II
VRC II
VRE II
VRS II
VRM II

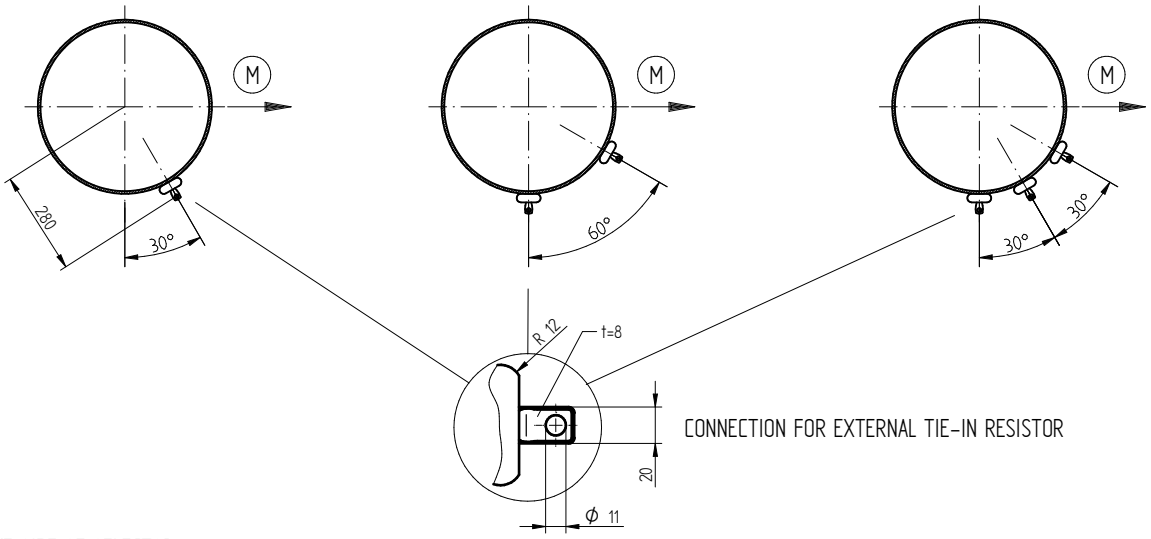




DESIGN:
M III Y
RM III Y
VM III Y
VRC III Y
VRE III Y
VRS III Y
VRM III Y







(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

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

DIMENSION IN mm EXCEPT AS NOTED

MR

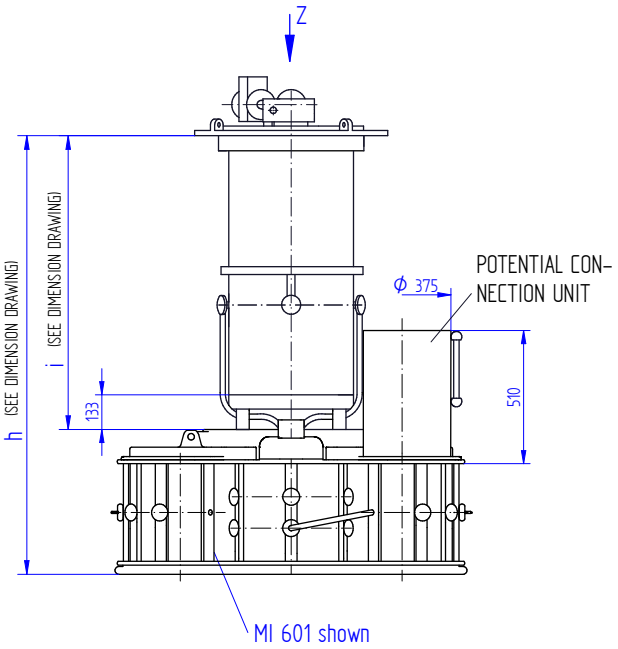
ON-LOAD TAP-CHANGER OILTAP®M, RM / VACUTAP® VM, VR
M/RM/VM/VRC/VRE/VRS/VRM - REVERSING CANGE-OVER SEL. - SIZE B/C/D/DE
POTENTIAL CONNECTION UNIT WITH TIE-IN SWITCH WITHOUT TIE-IN RESISTORS

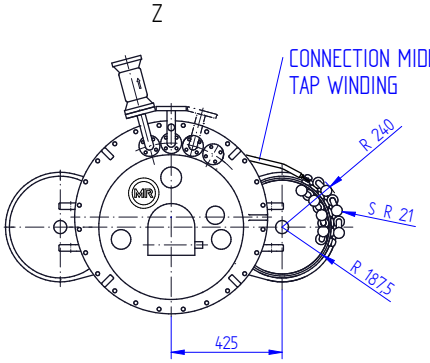
SERIAL NUMBER

MATERIAL NUMBER 8988046E

SHEET 1/1

A2





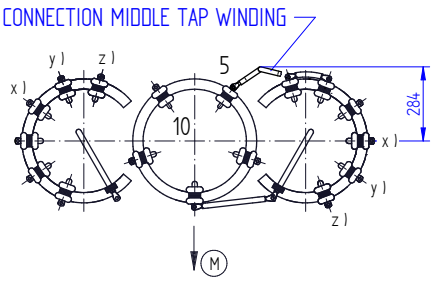
MAX. 7 RESISTOR ELEMENTS
(AS SHOWN)

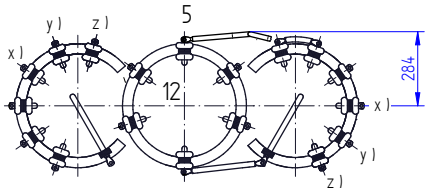
FOR BINDING DESIGNATIONS OF TERMINALS AND PHASES REFER TO THE CONNECTION DIAGRAM OF THE ON-LOAD TAP-CHANGER.

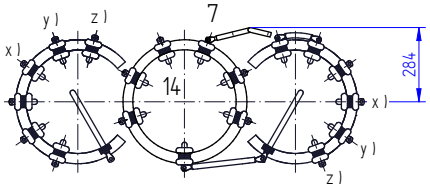
Ⓜ DRIVE SIDE OF SELECTOR

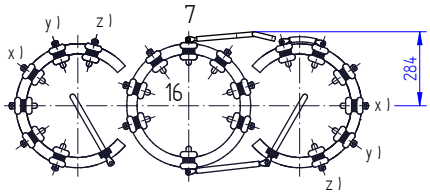
ARRANGEMENT OF SELECTOR CONTACTS,
2-5 COARSE TAP CONNECTIONS
(PLAN VIEW)

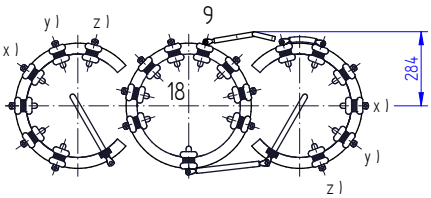
x) FOR 3 COARSE TAP CONNECTIONS
x) AND y) FOR 4 COARSE TAP CONNECTIONS
x), y) AND z) FOR 5 COARSE TAP CONNECTIONS











	DATE	NAME	DOCUMENT NO.	
DFTR.	19.04.2018	RAEDLINGER	SED 1062821 000 07	
CHKD.	25.04.2018	HAUER	CHANGE NO.	SCALE 1:10
STAND.	25.04.2018	PRODASTSCHUK	1087395	

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

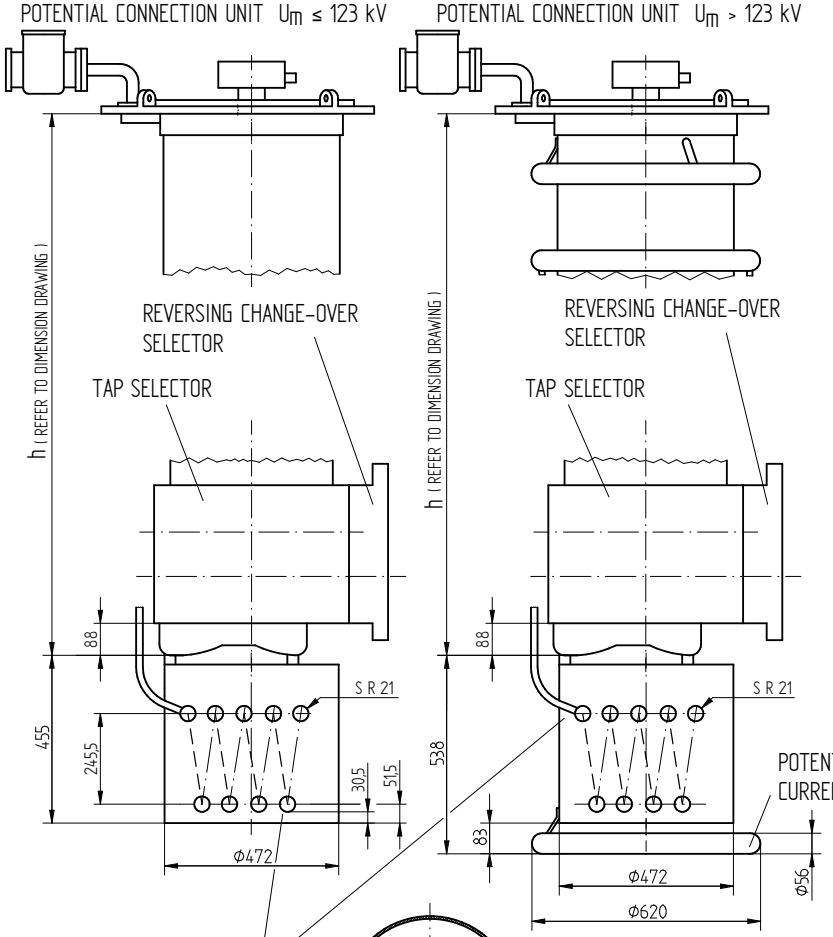
SERIAL NUMBER

MATERIAL NUMBER 7197337E

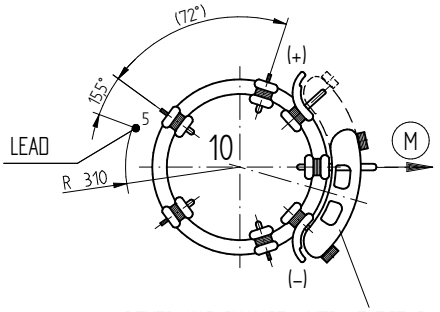
SHEET 1/1

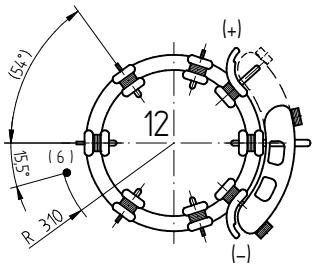
DESIGN I
POTENTIAL CONNECTION UNIT $U_m \leq 123$ kV

DESIGN II
POTENTIAL CONNECTION UNIT $U_m > 123$ kV



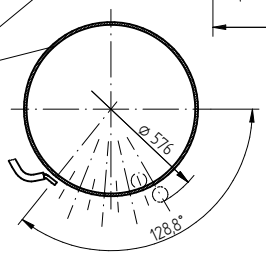
ARRANGEMENT OF LEADS
TIE-IN RESISTOR – SELECTOR
FOR CONTACT LOCATION REFER TO RELEVANT DIMENSION DRAWING

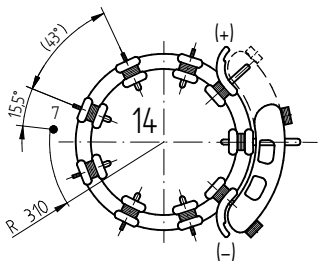


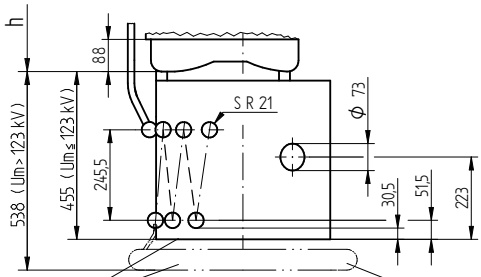


POTENTIAL OF THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL

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

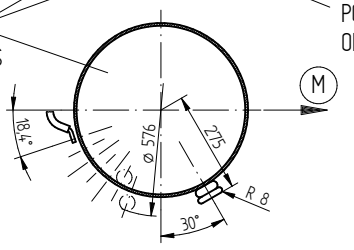


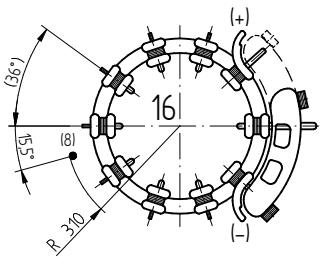


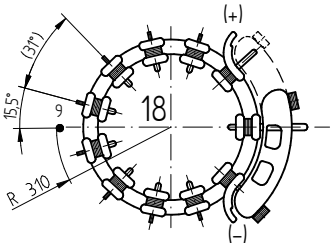


WITH TIE-IN SWITCH
FOR MAX. 6 RESISTOR ELEMENTS
(AS SHOWN)

POTENTIAL OF THE MIDDLE OF THE TAP WINDING







(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 I 301

	DATE	NAME	DOCUMENT NO.	
DFTR.	18.10.2016	CTETPRAKTIK2	SED 1665234 000 05	
CHKD.	19.10.2016	HILTNER	CHANGE NO.	SCALE
STAND.	20.10.2016	PRODASTSCHUK	1077668	1:10

DIMENSION IN mm EXCEPT AS NOTED

MR

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

SERIAL NUMBER

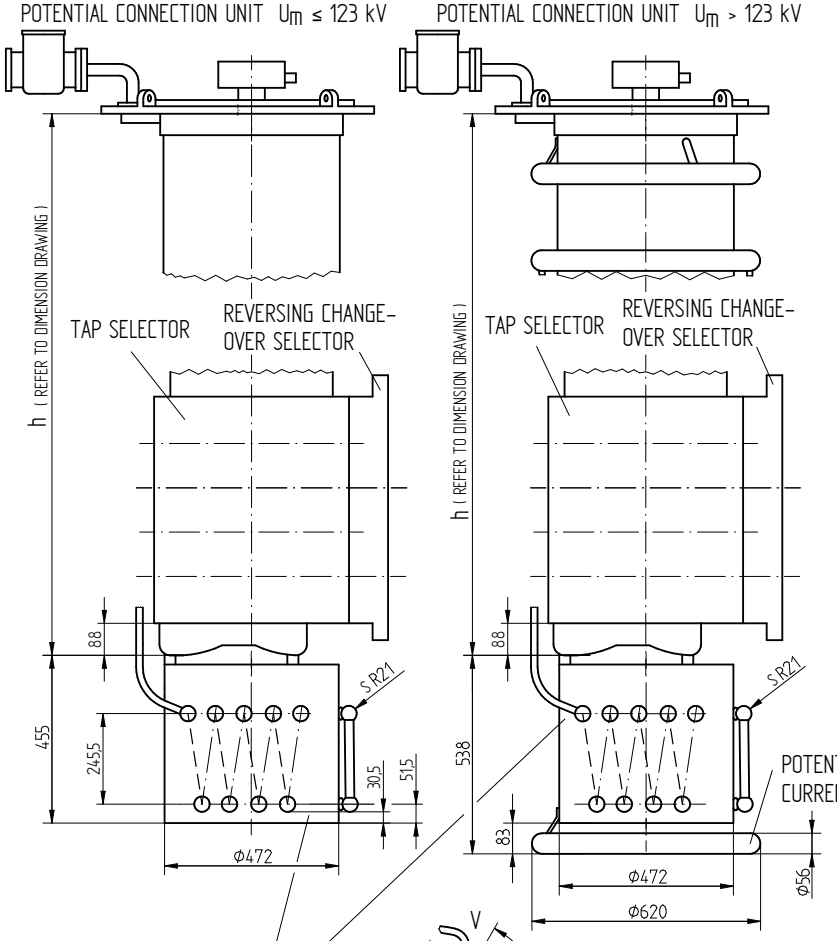
MATERIAL NUMBER 8986905E

SHEET 1/1

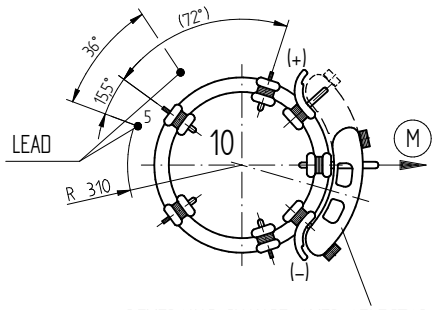
A2

DESIGN I
POTENTIAL CONNECTION UNIT $U_m \leq 123$ kV

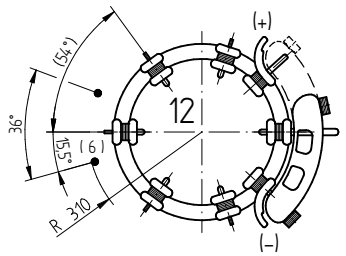
DESIGN II
POTENTIAL CONNECTION UNIT $U_m > 123$ kV



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

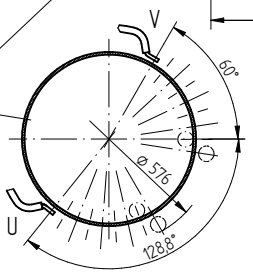


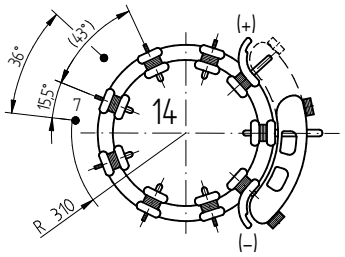
REVERSING CHANGE-OVER SELECTOR

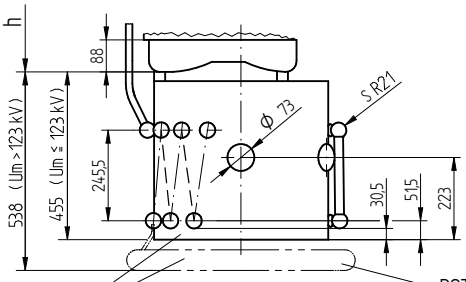


POTENTIAL OF THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL

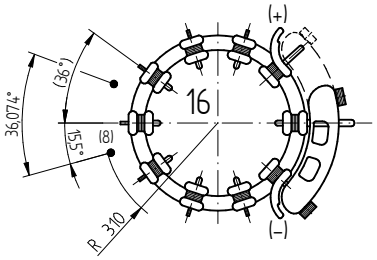
WITHOUT TIE-IN SWITCH
FOR MAX. 8 RESISTOR ELEMENTS PER PHASE
(AS SHOWN)



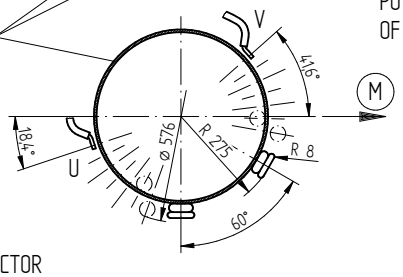


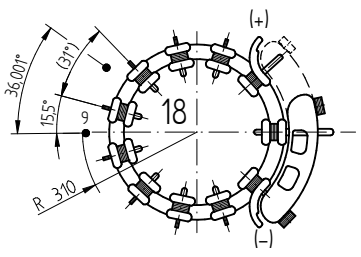


POTENTIAL OF THE MIDDLE OF THE TAP WINDING



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

	DATE	NAME	DOCUMENT NO.
DFTR.	20.10.2016	CTETPRAKTIK2	SED 1665189 000 05
CHKD.	20.10.2016	HILTNER	CHANGE NO. / SCALE
STAND.	20.10.2016	PRODASTSCHUK	1077668 / 1:10

DIMENSION IN mm EXCEPT AS NOTED

MR

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

SERIAL NUMBER

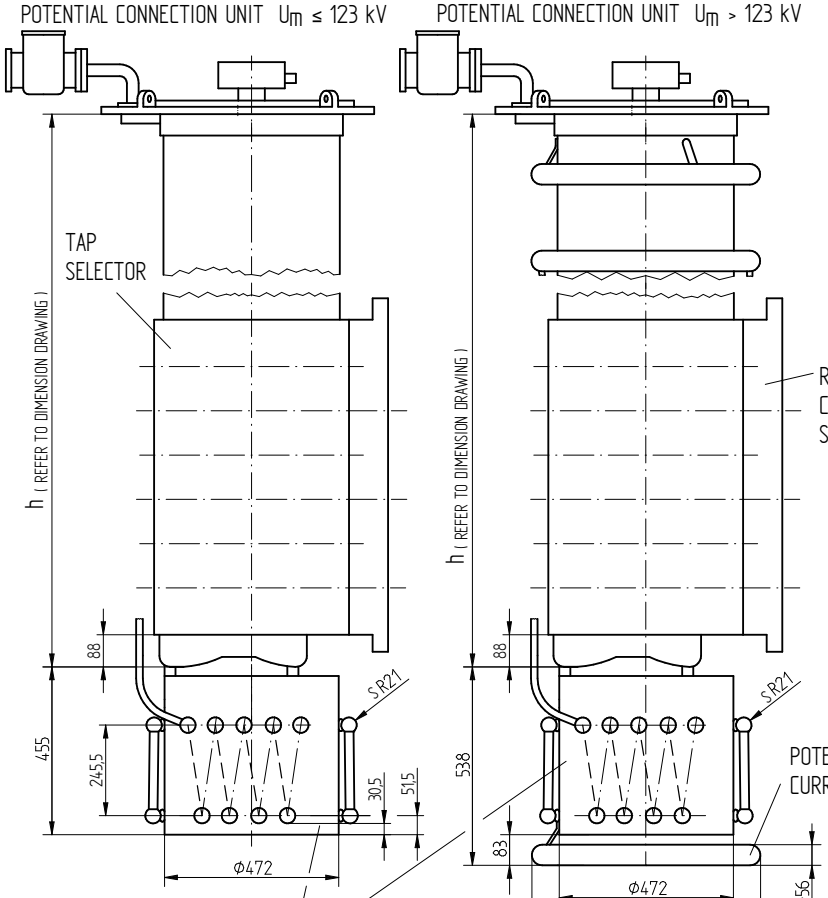
MATERIAL NUMBER 8986915E

SHEET 1/1

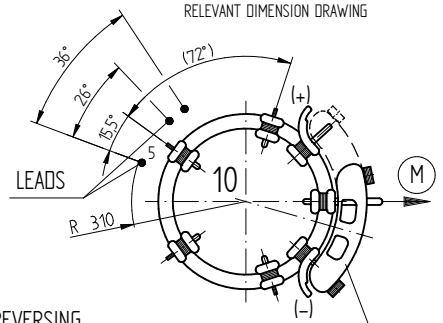
A2

DESIGN I
POTENTIAL CONNECTION UNIT $U_m \leq 123$ kV

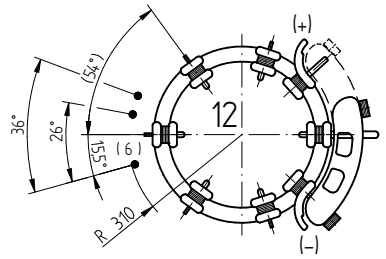
DESIGN II
POTENTIAL CONNECTION UNIT $U_m > 123$ kV



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

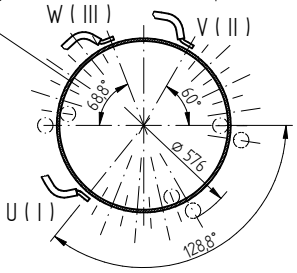


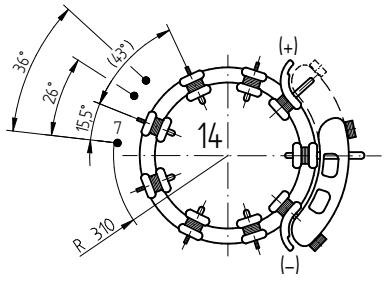
REVERSING CHANGE-OVER SELECTOR

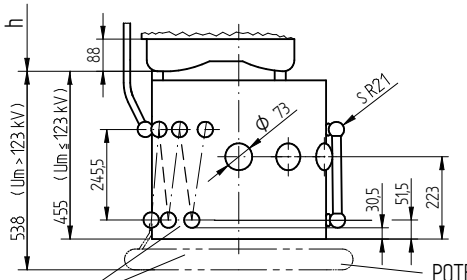


POTENTIAL OF THE ON-LOAD TAP-CHANGER CURRENT TAKE-OFF TERMINAL

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

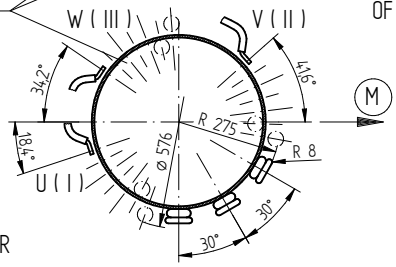


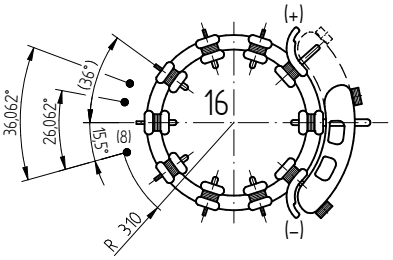


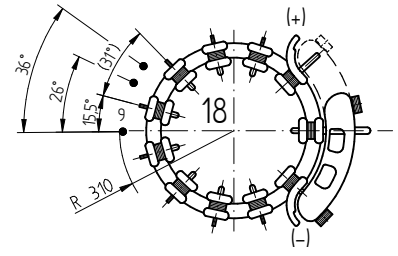


POTENTIAL OF THE MIDDLE OF THE TAP WINDING

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

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

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 8986926E

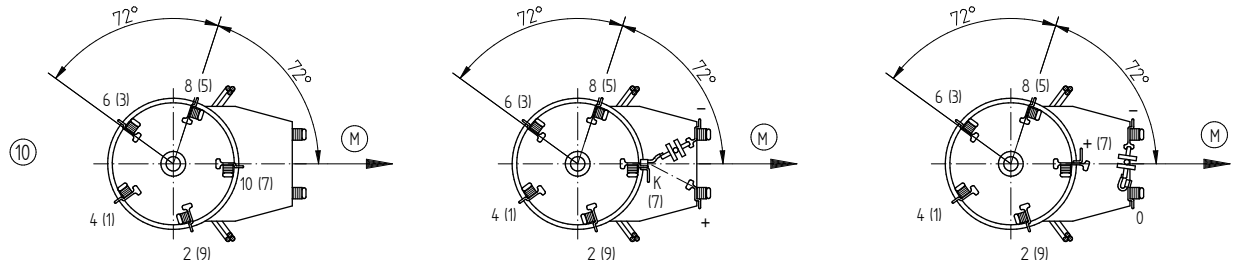
SHEET 1/1

A2

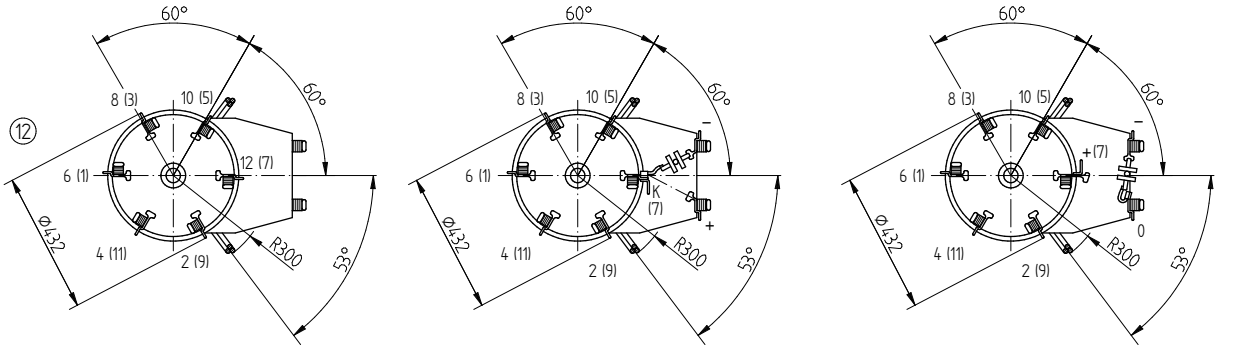
SELECTOR WITHOUT CHANGE-OVER SELECTOR

SELECTOR WITH REVERSING CHANGE-OVER SELECTOR

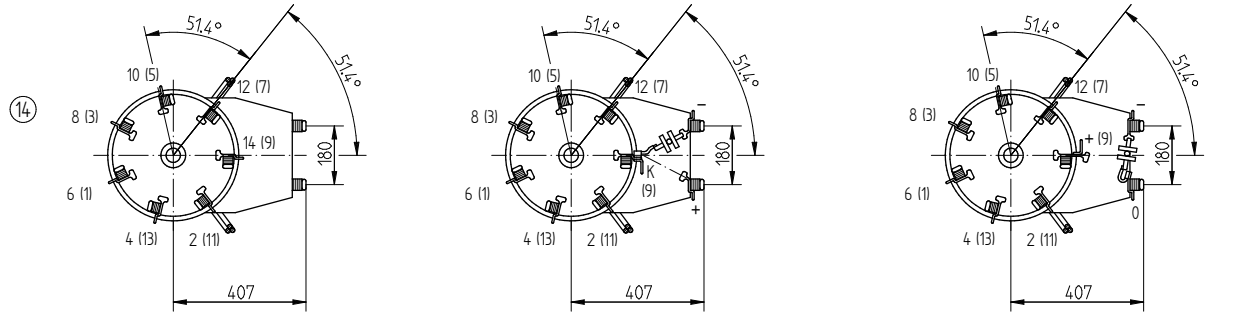
SELECTOR WITH COARSE CHANGE-OVER SELECTOR



⑩



⑫



⑭

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

Ⓜ 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	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	1:8

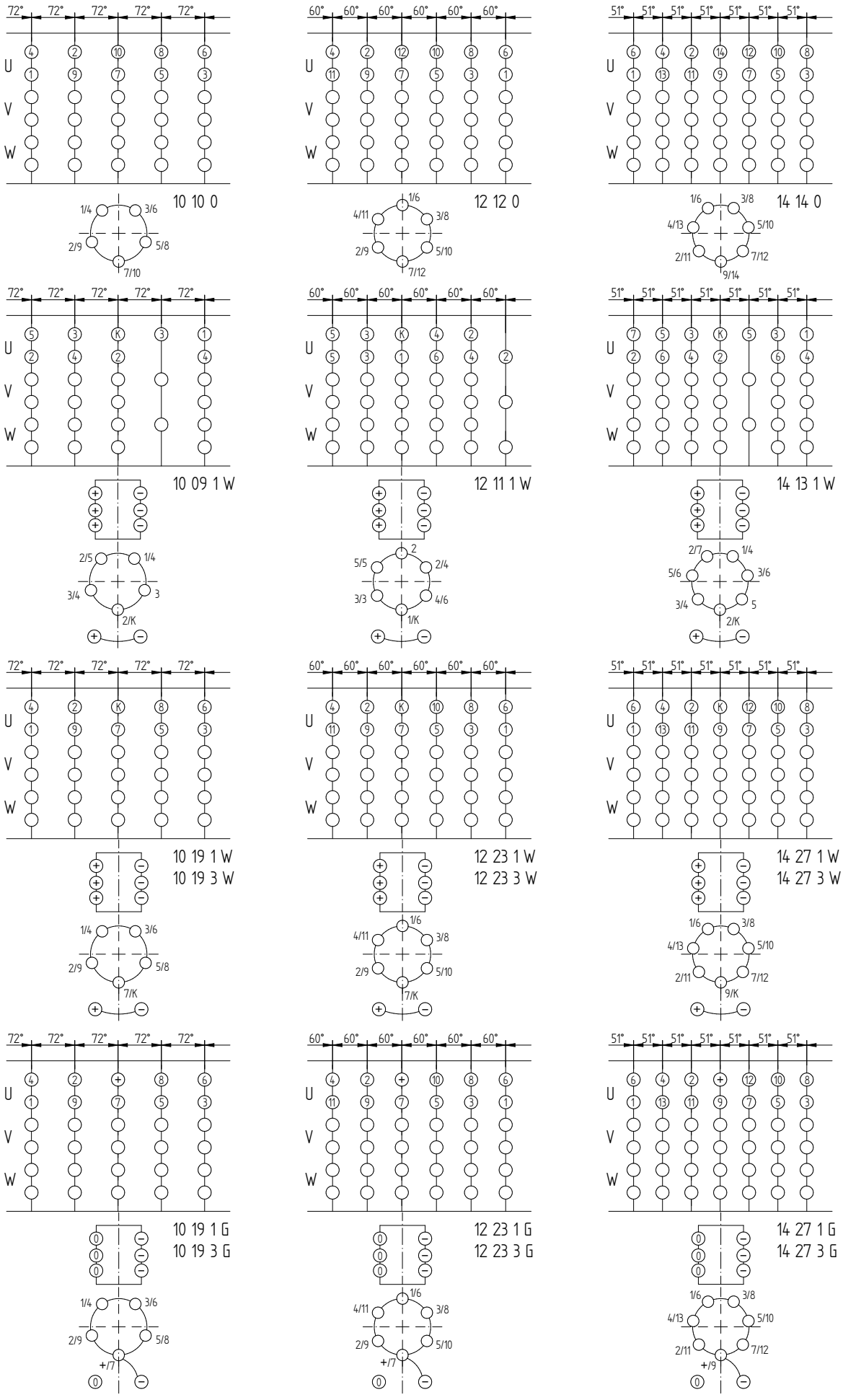
DIMENSION IN mm EXCEPT AS NOTED

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

SERIAL NUMBER

MATERIAL NUMBER 101170250E

SHEET 1/1



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

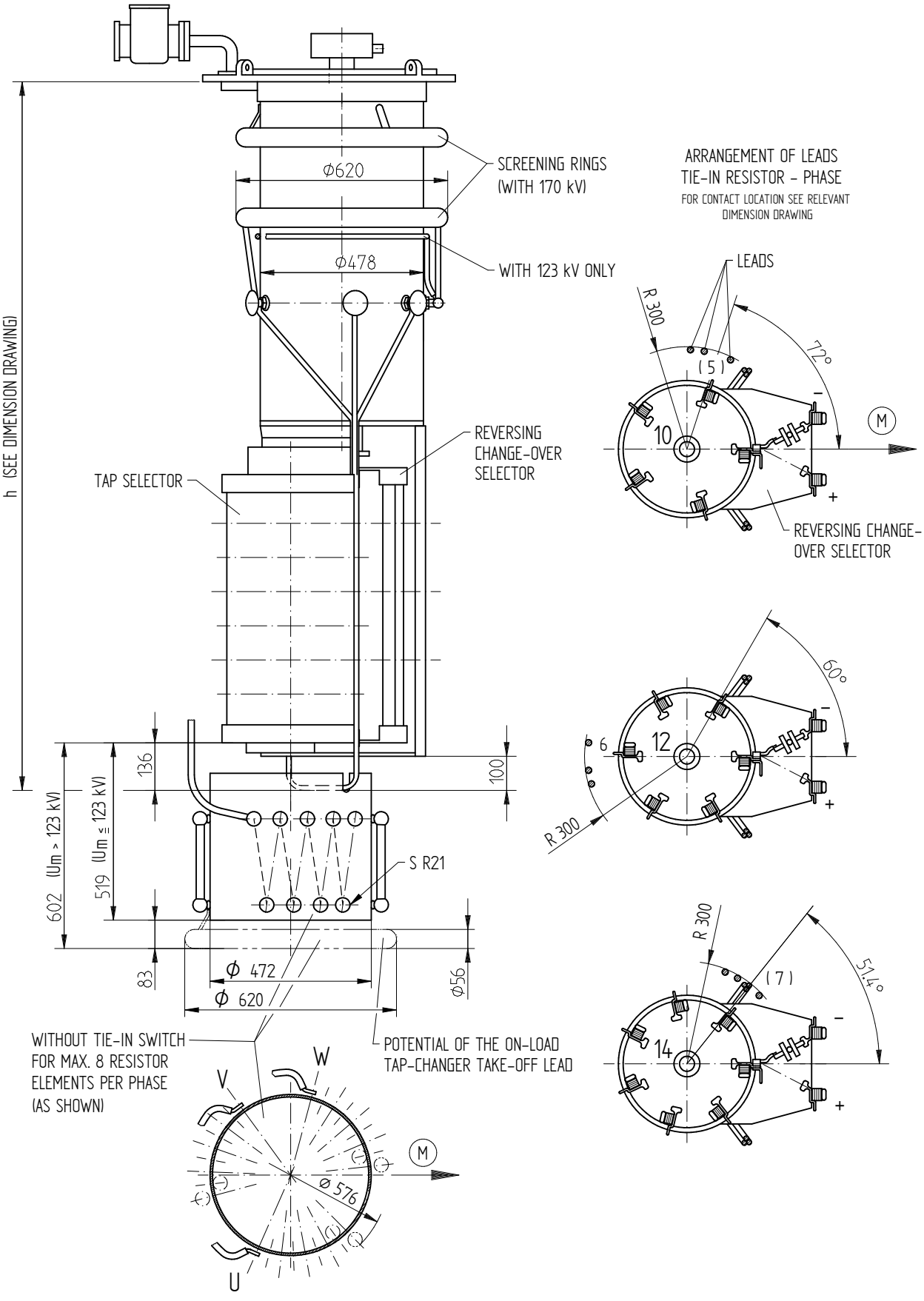
DIMENSION IN mm EXCEPT AS NOTED

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

SERIAL NUMBER

MATERIAL NUMBER 101170290E

SHEET 1/1



(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.	
DFTR.	11.07.2018	BUTERUS	SED 6011874 001 00	
CHKD.	16.07.2018	WILHELM	CHANGE NO.	SCALE
STAND.	16.07.2018	PRODASTSCHUK	1086956	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 101165630E

SHEET 1/1

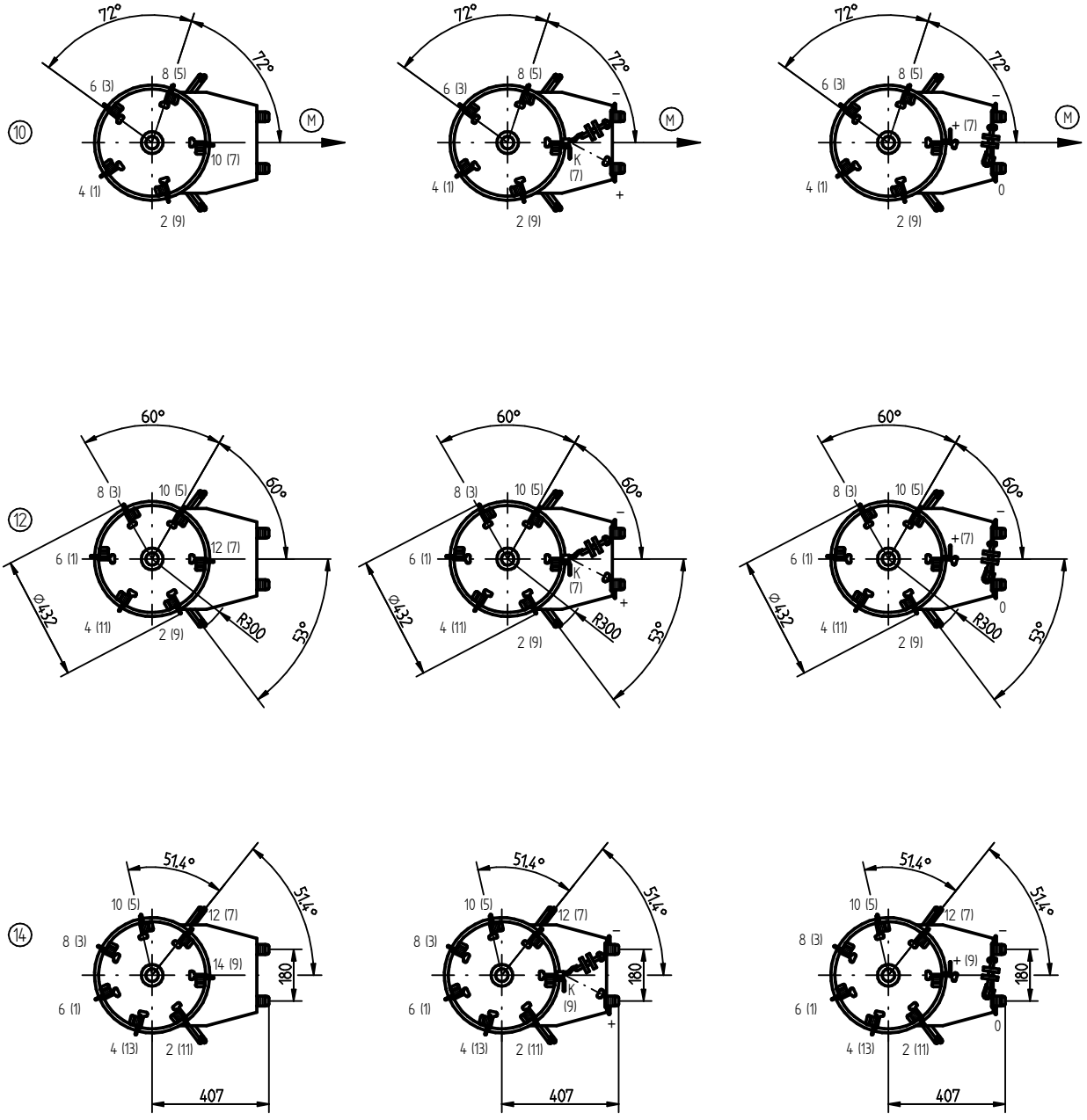
A2

	DATE	NAME	DOCUMENT NO.	
DFTR.	26.01.2016	RAEDLINGER	SED 1050454 001 02	
EHKO.	25.02.2016	TKBIRKMANN	CHANGE NO.	SCALE
STAND.	25.02.2016	PRODASTSCHUK	1072100	1:8

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.

DIMENSION IN mm EXCEPT AS NOTED

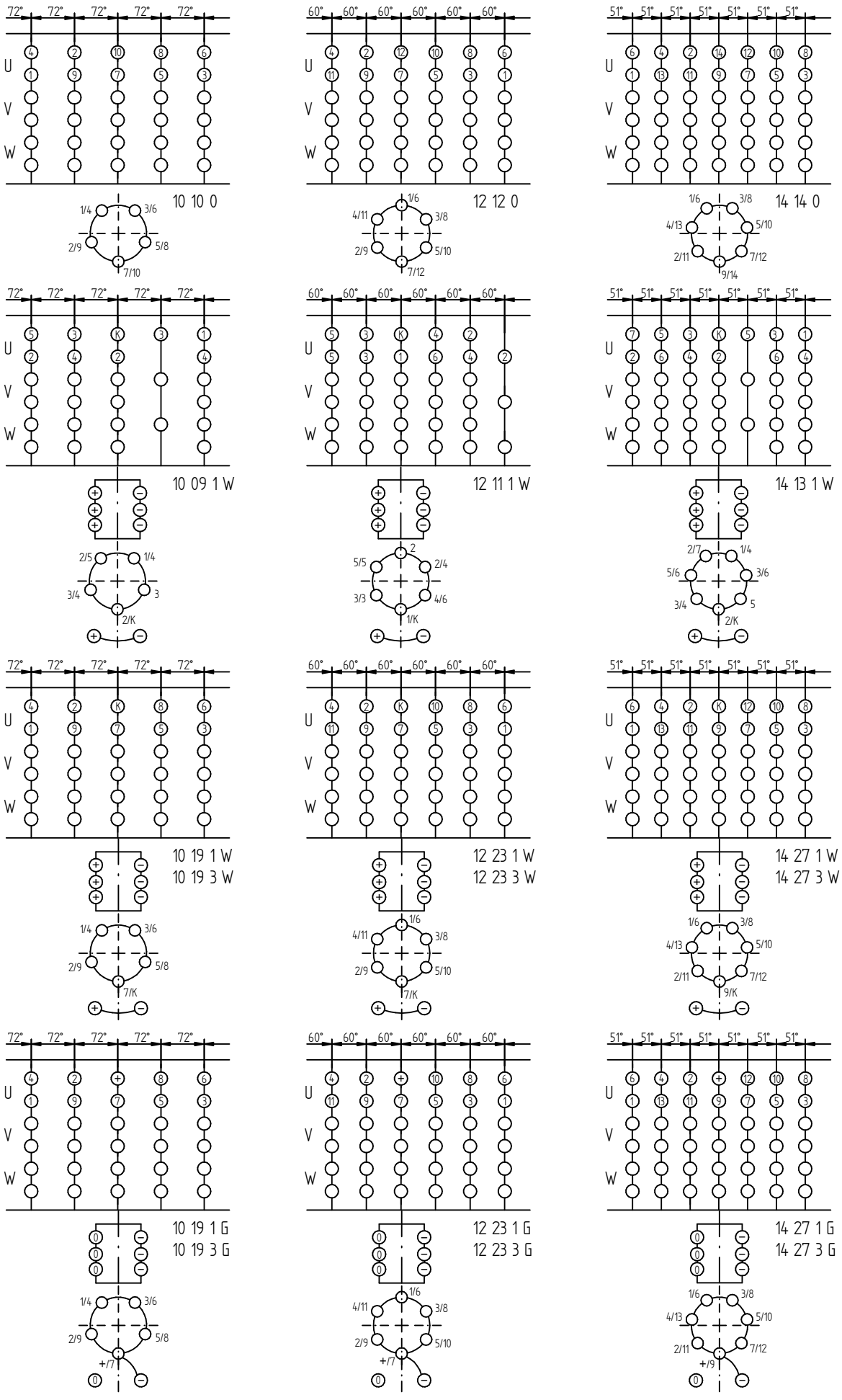
ON-LOAD TAP-CHANGER OILTAP® MS / VACUTAP® VM 300
ARRANGEMENT OF CONTACTS AT SELECTOR
SELECTOR SIZE B

SERIAL NUMBER

MATERIAL NUMBER 8980414E

SHEET 1/1

A1



	DATE	NAME	DOCUMENT NO.
DFTR.	26.01.2016	RAEDLINGER	SED 2617011 001 01
EHKO.	25.02.2016	TKBIRKMANN	CHANGE NO. / SCALE
STAND.	25.02.2016	PRODASTSCHUK	1072100 / -

DIMENSION IN mm EXCEPT AS NOTED

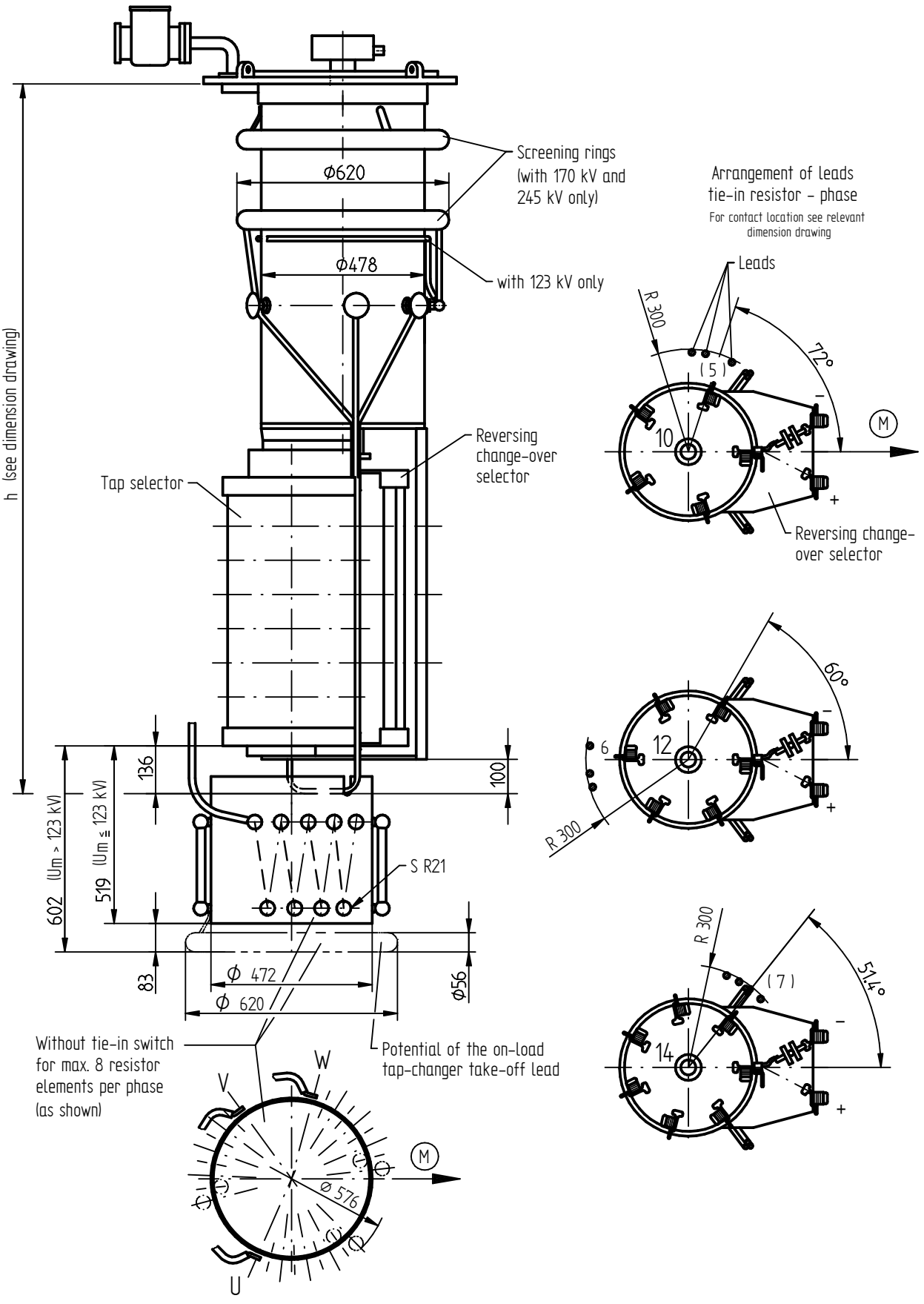
ON-LOAD TAP-CHANGER OILTAP® MS / VACUTAP® VM 300
CONTACT ARRANGEMENT ON SELECTOR FOR SELECTOR SIZE B

SERIAL NUMBER

MATERIAL NUMBER 8911145E

SHEET 1/1

A1



Arrangement of leads
tie-in resistor – phase

For contact location see relevant dimension drawing

Ⓜ – 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.	
DFTR.	23.03.2016	RAEDLINGER	SED 1050467 001 04	SCALE
CHKD.	11.04.2016	MENZELS	CHANGE NO.	
STAND.	11.04.2016	PRODASTSCHUK	1073378	1:8

DIMENSION IN mm EXCEPT AS NOTED

MR

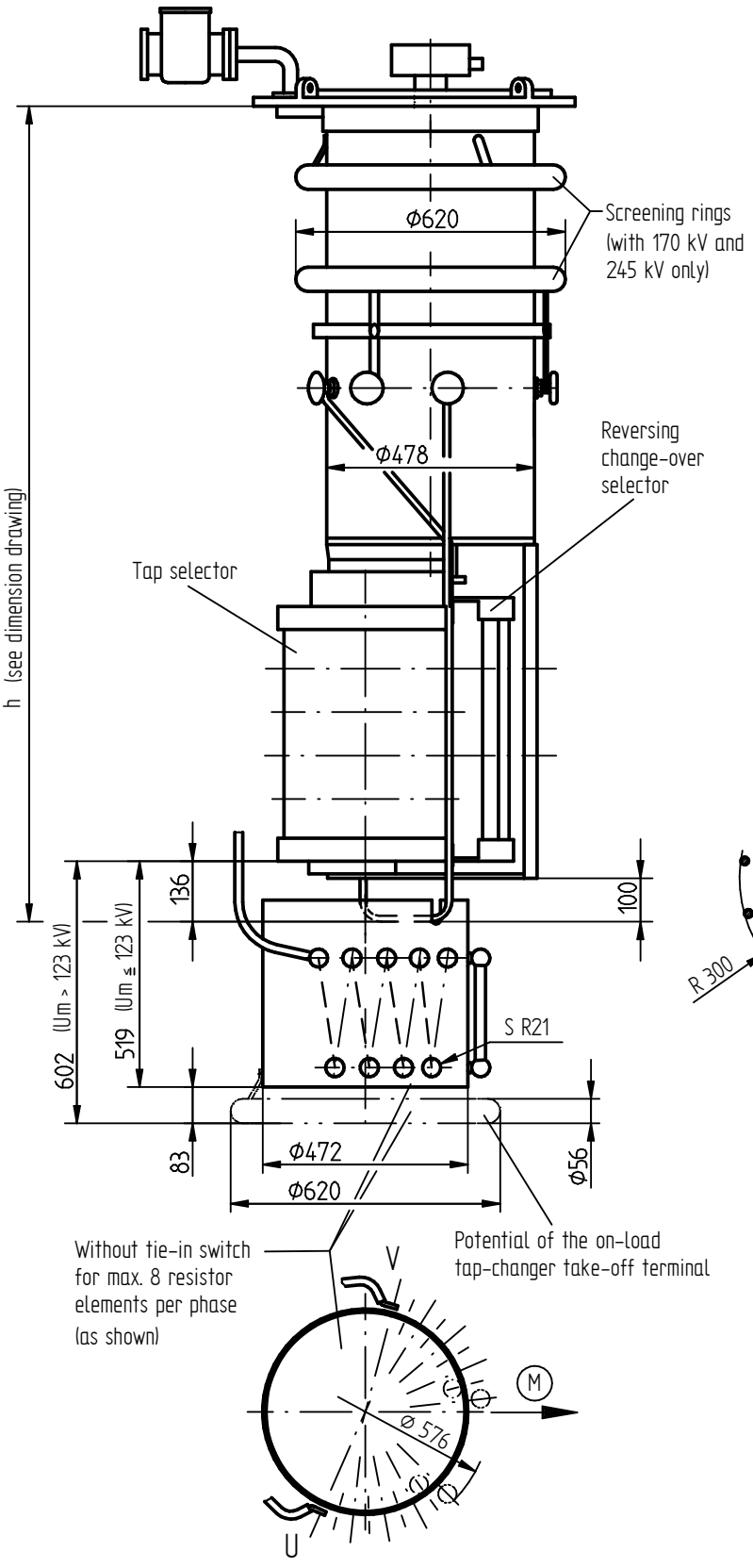
ON-LOAD TAP-CHANGER OILTAP® MS AND VACUTAP® VM®
MS III / VM III 300 – SELECTOR SIZE B
TIE-IN RESISTORS WITHOUT TIE-IN SWITCH

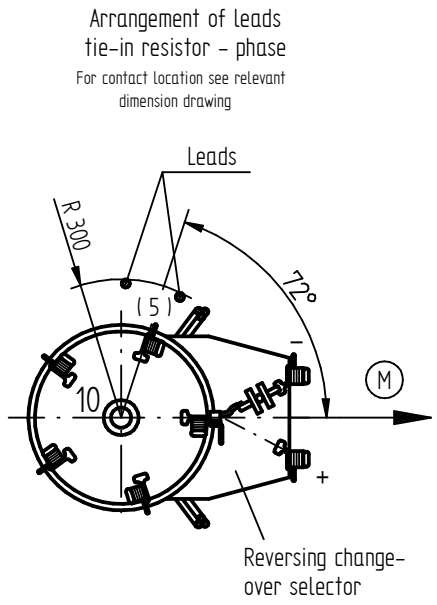
SERIAL NUMBER

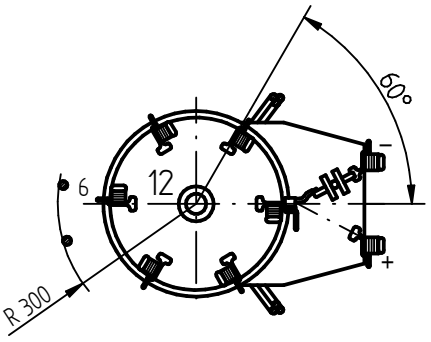
MATERIAL NUMBER 8986954E

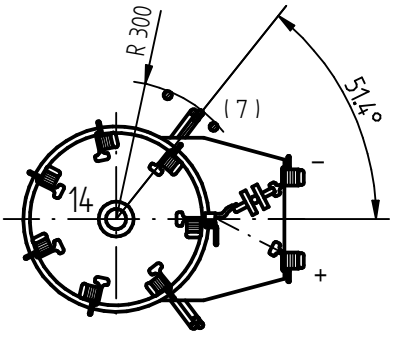
SHEET 1/1

A2









(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.
DFTR.	23.03.2016	RAEDLINGER	SED 1050465 001 03
CHKD.	11.04.2016	MENZELS	CHANGE NO. / SCALE
STAND.	11.04.2016	PRODASTSCHUK	1073378 / 1:8

DIMENSION IN mm EXCEPT AS NOTED

MR

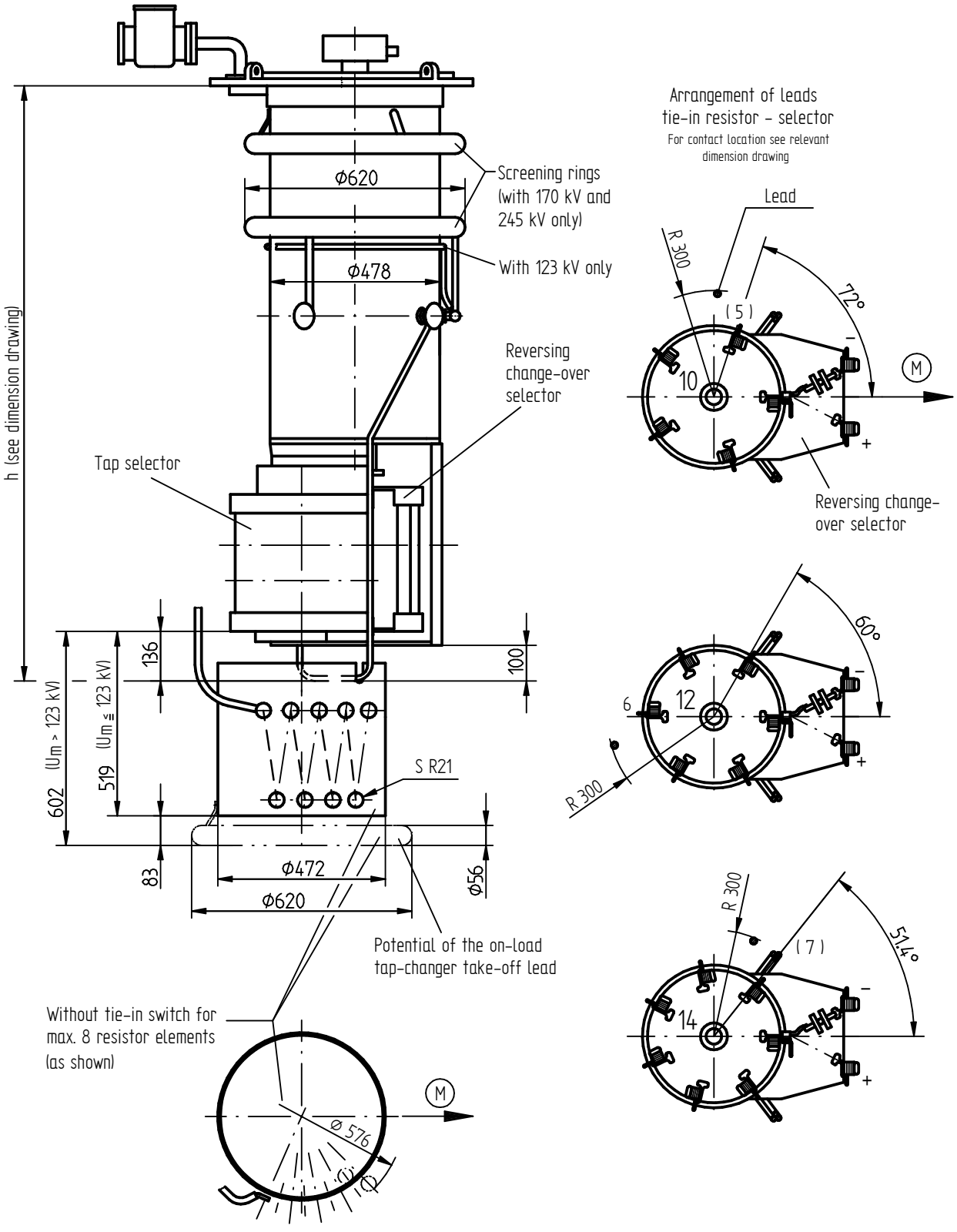
ON-LOAD TAP-CHANGER OILTAP® MS AND VACUTAP® VM®
MS II / VM II 302 – SELECTOR SIZE B
TIE-IN RESISTORS WITHOUT TIE-IN SWITCH

SERIAL NUMBER

MATERIAL NUMBER 8986944E

SHEET 1/1

A2



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

M – Drive side of selector

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

	DATE	NAME	DOCUMENT NO.
DFTR.	22.03.2016	RAEDLINGER	SED 1050463 001 03
CHKD.	11.04.2016	MENZELS	CHANGE NO. / SCALE
STAND.	11.04.2016	PRODASTSCHUK	1073378 / 1:8

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

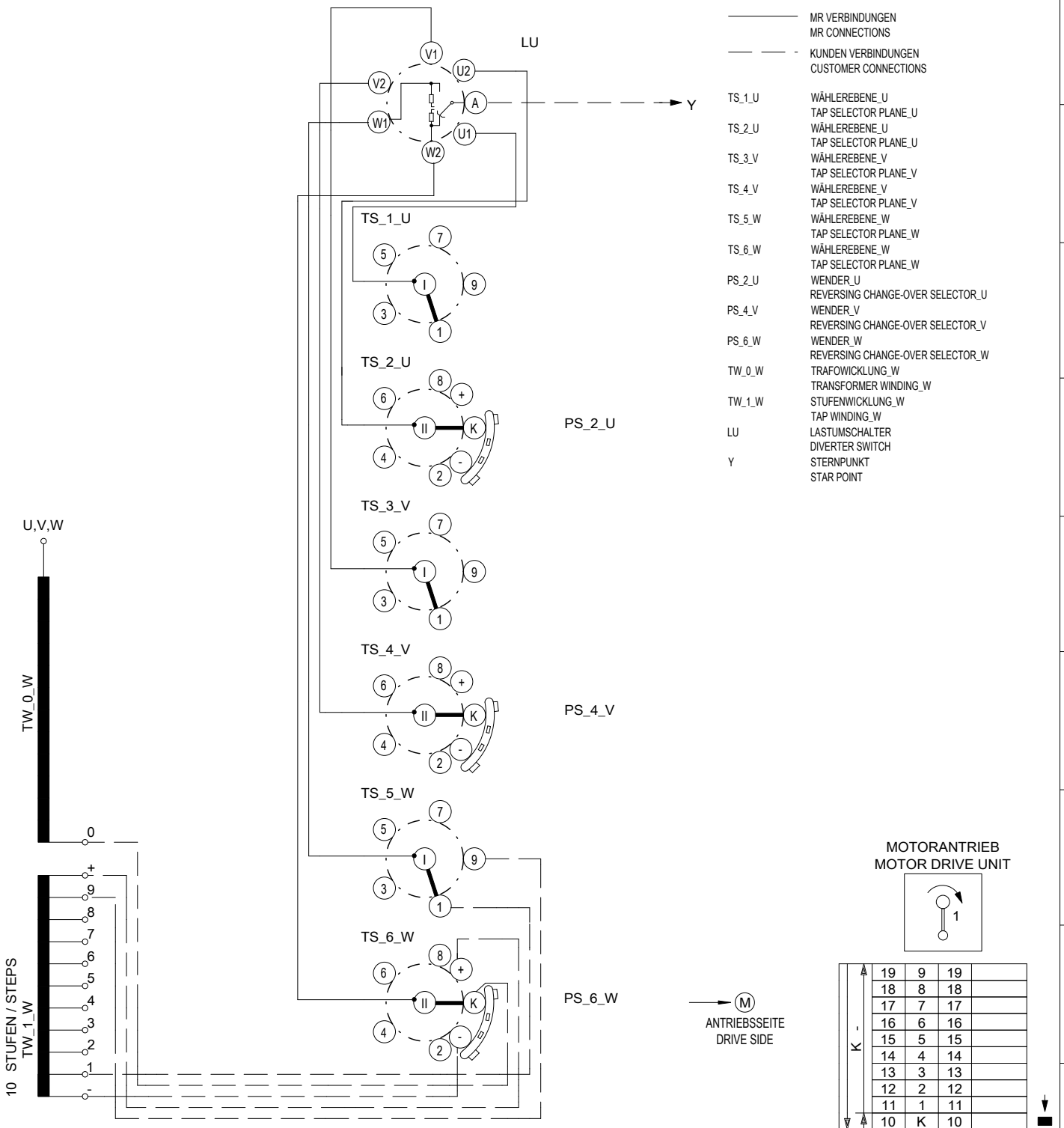
SHEET 1/1

A2

4.6 Esquemas de ligação (exemplos)

Em seguida encontram-se exemplos dos esquemas de ligação.

O esquema de ligação específico ao pedido é fornecido na entrega do produto.



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

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)

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VM III 650Y-123/C-10 19 1W

NO.	MODIFICATION	DATE	NAME

ORIGIN:	REPL.	REPL.BY	

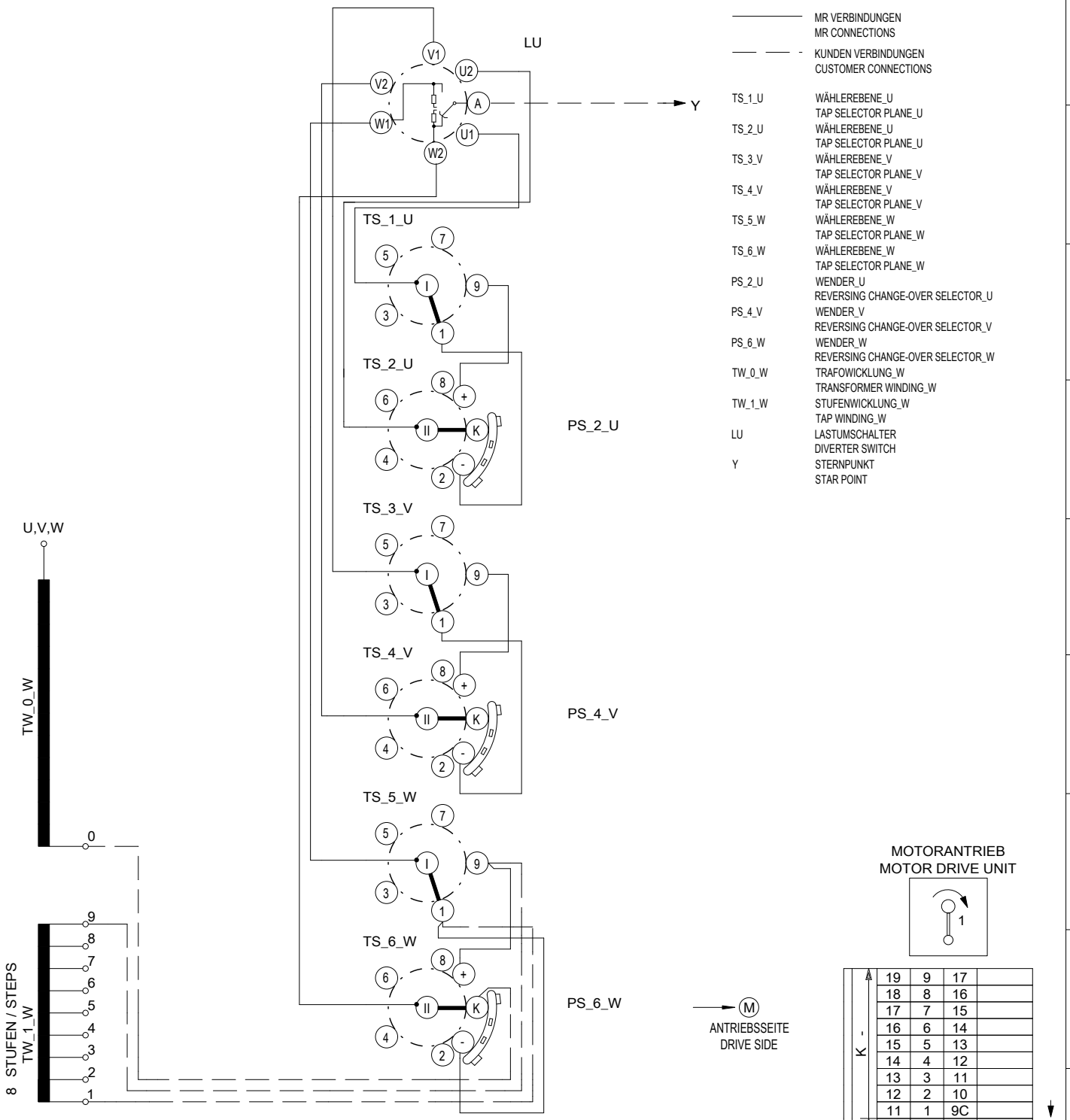
DATE	07.08.2018
EXEC.	KONFIG
VERIFIED	CSO
STANDARD	

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE: DE EN

PROJECT: 2414658_01

SHEET 1
1 SH.



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

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)

NO. | MODIFICATION | DATE | NAME

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VM III 650Y-123/C-10 19 3W

ORIGIN:	REPL.	REPL.BY	
DATE	07.08.2018		
EXEC.	KONFIG		
VERIFIED	CSO		
STANDARD			

SCHALTBILD
CONNECTION DIAGRAM

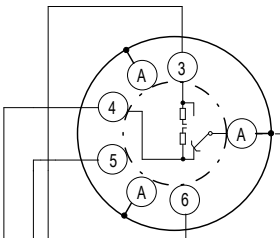
LANGUAGE: DE EN

PROJECT: 2414670_01

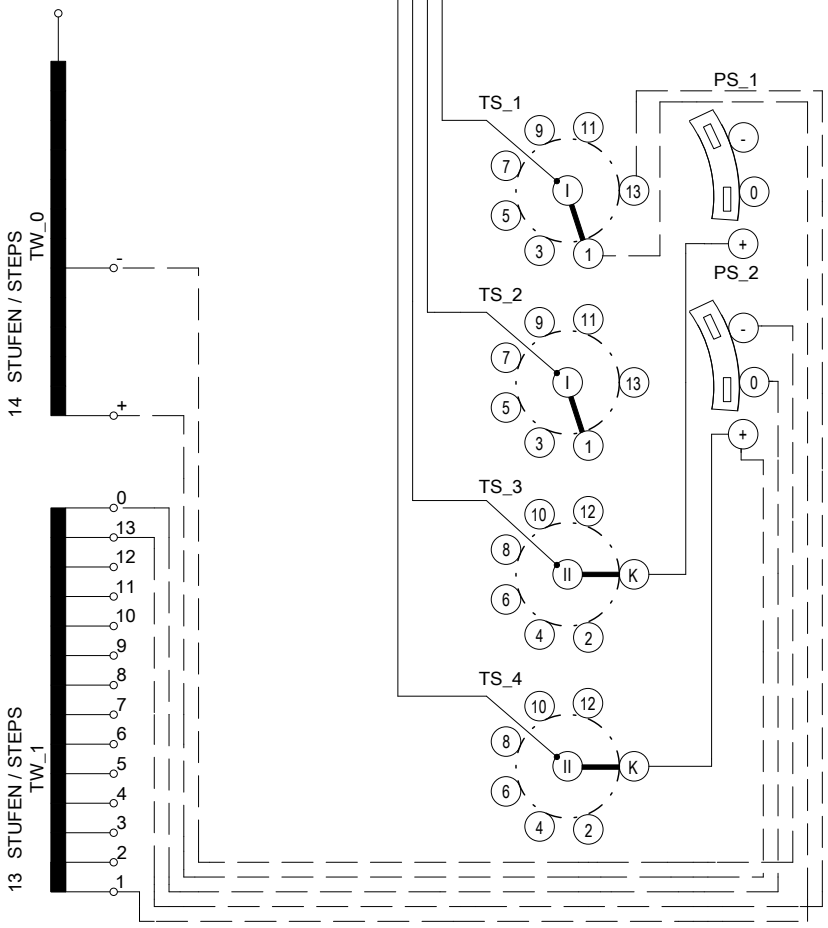
SHEET 1
1 SH.

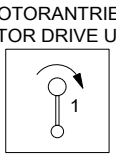
ACHTUNG
PARALLELBRÜCKEN VON MR NICHT ANGEBAUT
VON TS_1 (PS_1) NACH TS_2 (PS_2)
VON TS_3 NACH TS_4

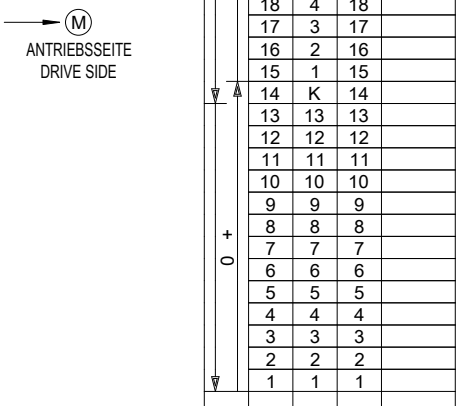
ATTENTION !
PARALLEL BRIDGES ARE NOT INSTALLED BY MR
FROM TS_1 (PS_1) TO TS_2 (PS_2)
FROM TS_3 TO TS_4



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







0 -			
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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	

0 +

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

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)

NO. | MODIFICATION | DATE | NAME

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VM I 802-123/D-14 27 1G

ORIGIN.	REPL.	REPL.BY
DATE	07.08.2018	
EXEC.	KONFIG	
VERIFIED	CSO	
STANDARD		

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE: DE EN

PROJECT: 2414631_01

SHEET 1
1 SH.

MR VERBINDUNGEN
MR CONNECTIONS

KUNDEN VERBINDUNGEN
CUSTOMER CONNECTIONS

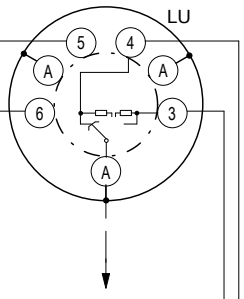
TS_1 - TS_4 WÄHLEREBENEN
TAP SELECTOR PLANES

MS_1 - MS_4 MEHRFACHGROBWÄHLER
MULTIPLE COARSE TAP SELECTOR

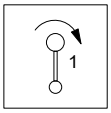
TW_0 TRAFOWICKLUNG
TRANSFORMER WINDING

TW_1 STUFENWICKLUNG
TAP WINDING

LU LASTUMSCHALTER
DIVERTER SWITCH

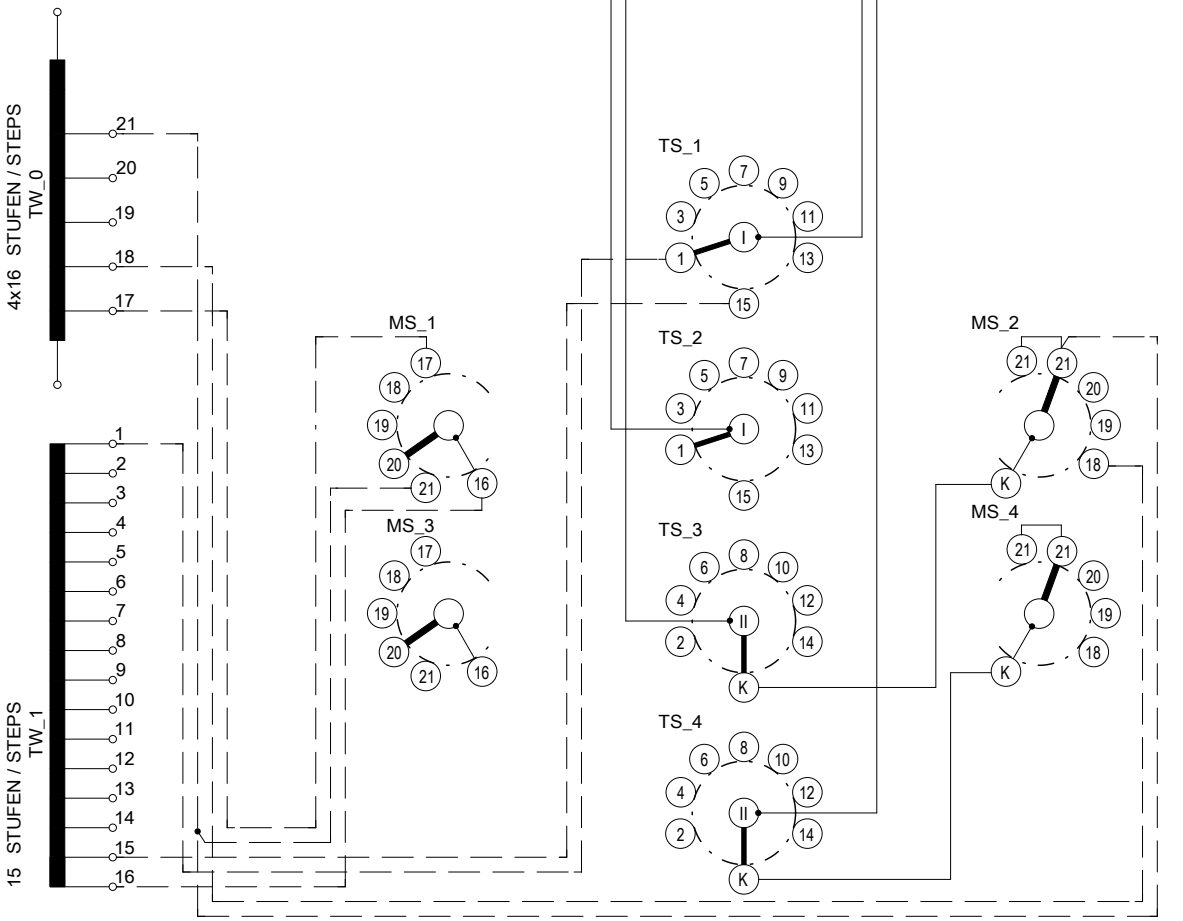


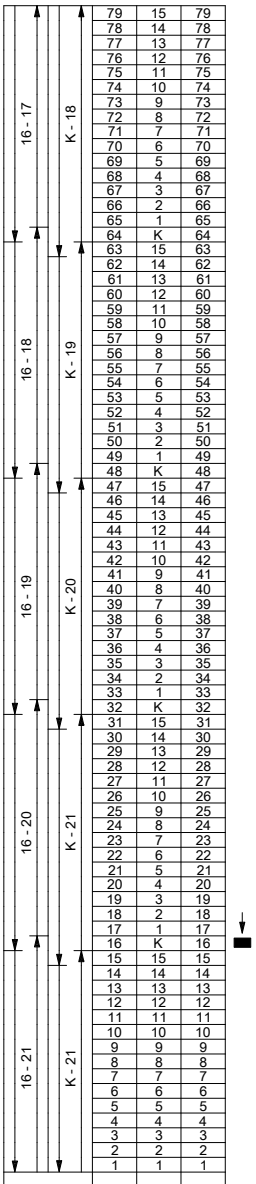
MOTORANTRIEB
MOTOR DRIVE UNIT



4x16 STUFEN / STEPS TW_0

15 STUFEN / STEPS TW_1





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61	13	61
60	12	60
59	11	59
58	10	58
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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
PARALLELBRÜCKEN 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

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

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

NO.	MODIFICATION	DATE	NAME

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VM I 802-123/C-16 79 1G

ORIGIN.	REPL.	REPL.BY	
DATE	07.08.2018		
EXEC.	KONFIG		
VERIFIED	CSO		
STANDARD			

SCHALTBILD
CONNECTION DIAGRAM

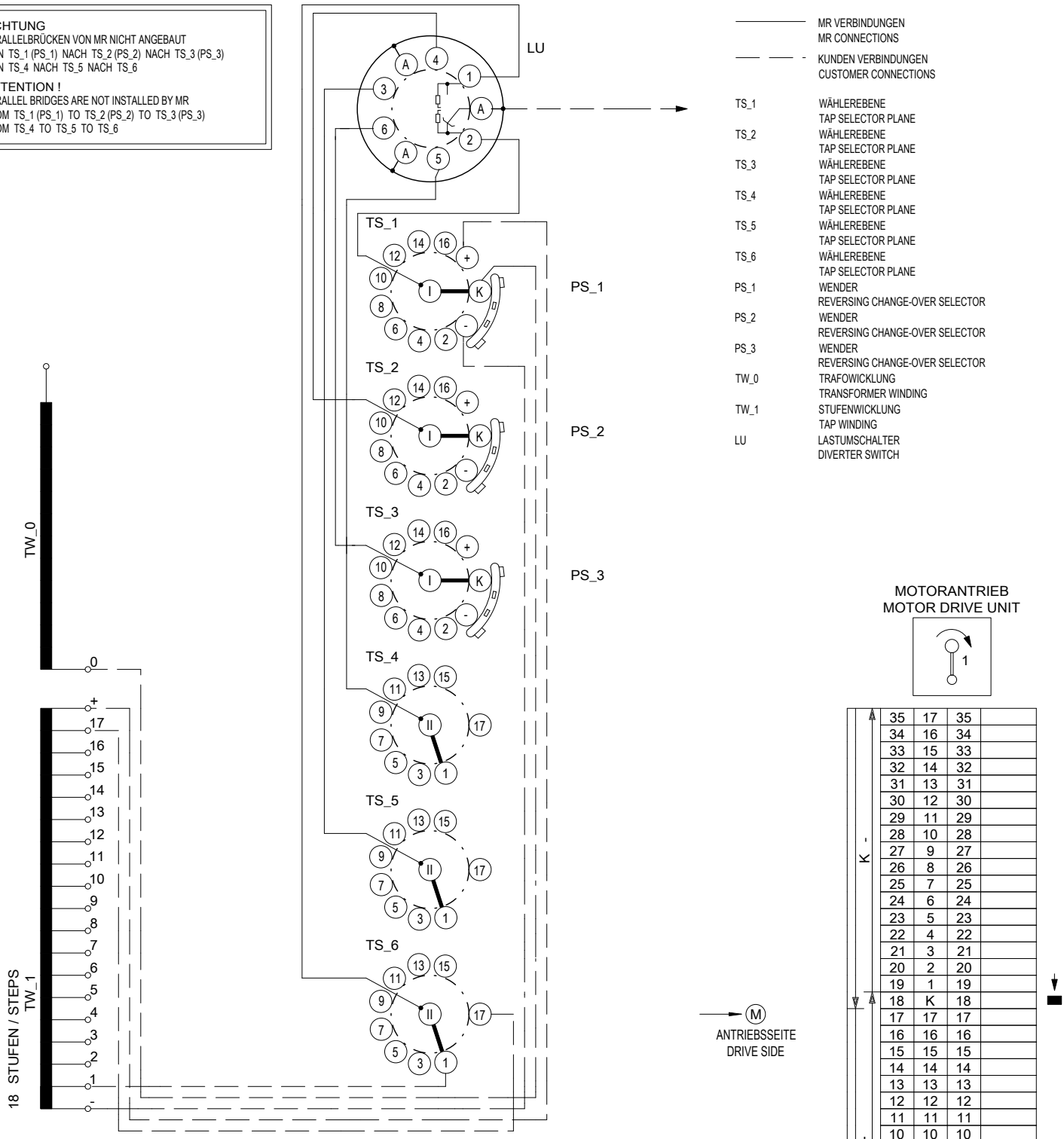
LANGUAGE: DE EN

PROJECT: 2407535_01

SHEET 1
1 SH.

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	

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

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)

DRAWING BY CAD DO NOT MODIFY MANUALLY

NO. | MODIFICATION | DATE | NAME

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VM I 1203-123/C-18 35 1W

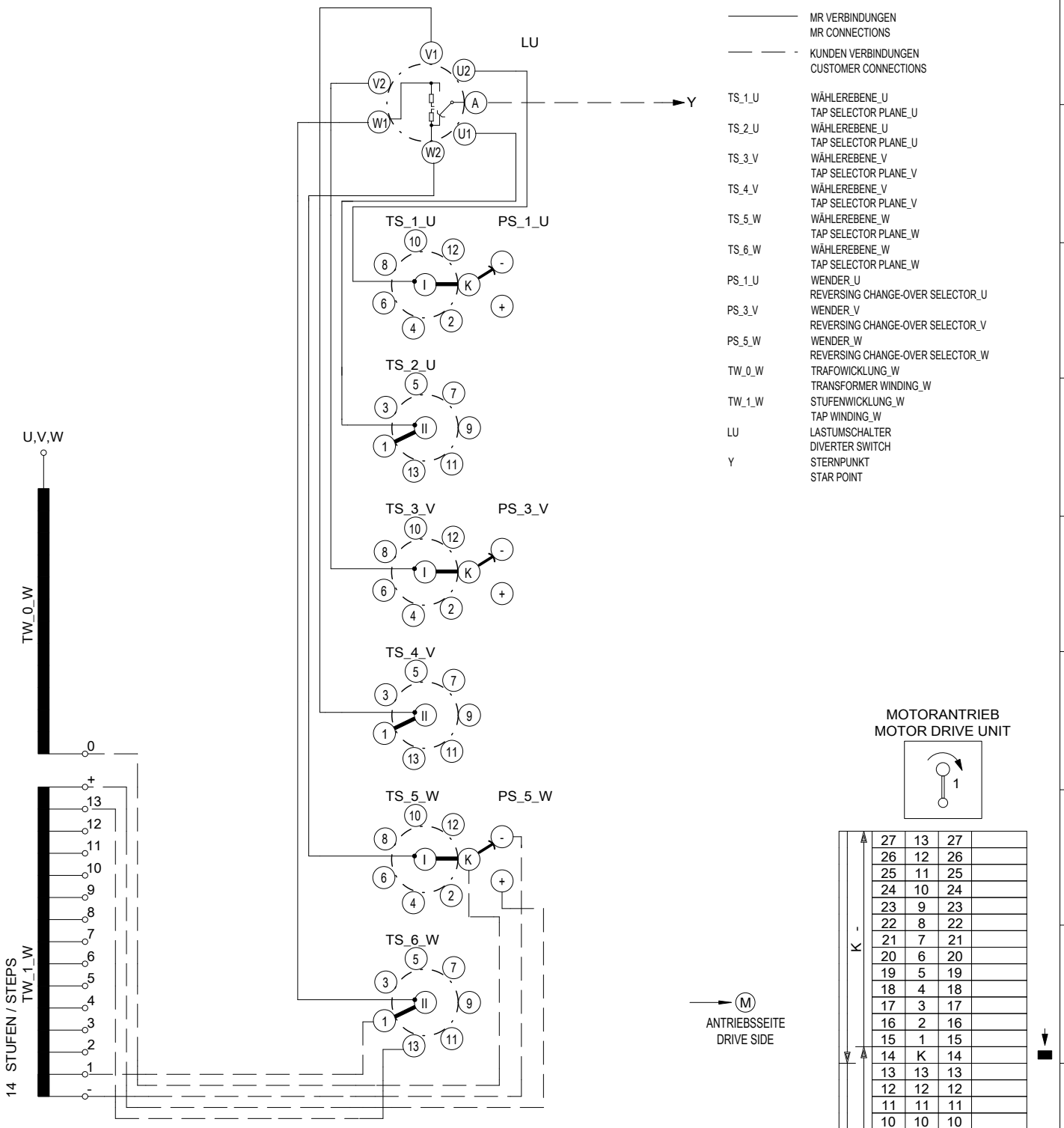
ORIGIN.	REPL.	REPL.BY	
DATE	07.08.2018		
EXEC.	KONFIG		
VERIFIED	CSO		
STANDARD			

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE: DE EN

PROJECT: 2414636_01

SHEET 1
1 SH.



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

STELLUNG DES WENDERS POSITION OF REVERSING CHANGE-OVER SELECTOR	27	13	27
BETRIEBSSTELLUNG SERVICE POSITION	26	12	26
BEZEICHNUNG DER WÄHLERKONTAKTE DESIGNATION OF TAP SELECTOR CONTACTS	25	11	25
BEZEICHNUNG DER STELLUNGEN DESIGNATION OF POSITIONS	24	10	24
REGELBEREICH (kV) REGULATION RANGE (kV)	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
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	12	12	12
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	7	7	7
	6	6	6
	5	5	5
	4	4	4
	3	3	3
	2	2	2
	1	1	1

NO. | MODIFICATION | DATE | NAME

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VMS III 400Y-72,5/B-14 27 1W

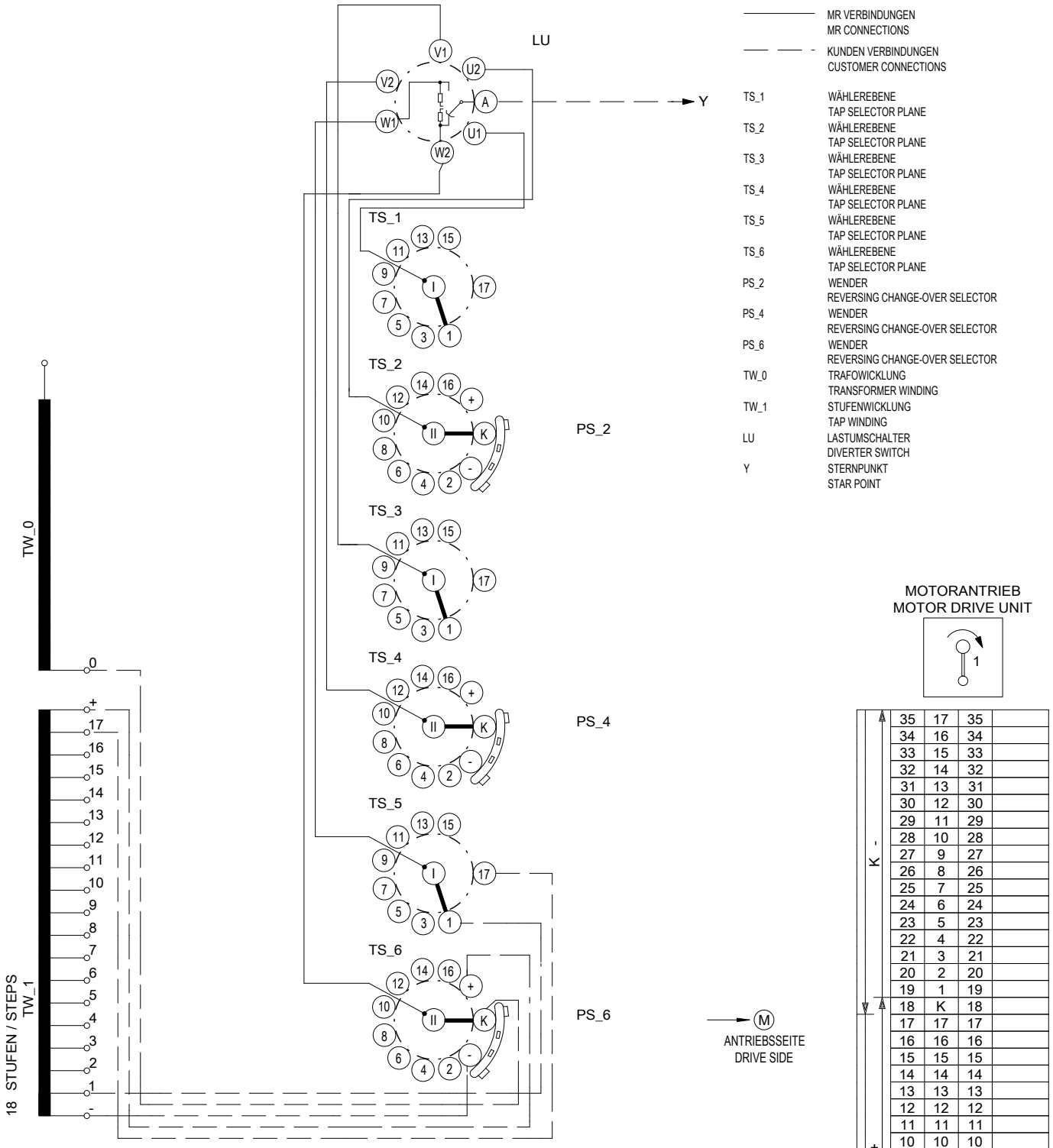
DATE	08.08.2018
EXEC.	KONFIG
VERIFIED	CSO
STANDARD	
ORIGIN.	REPL.	REPL.BY

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE: DE EN

PROJECT: 6228951_00

SHEET 1
1 SH.



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

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

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)

LASTSTUFENSCHALTER
ON-LOAD TAP-CHANGER

VACUTAP® VMS III 400Y-123/C-18 35 1W

NO.	MODIFICATION	DATE	NAME

DATE	08.08.2018		
EXEC.	KONFIG		
VERIFIED	CSO		
STANDARD			

ORIGIN. | REPL. | REPL.BY

SCHALTBILD
CONNECTION DIAGRAM

LANGUAGE: DE EN

PROJECT: 6228952_00

SHEET 1
1 SH.

Maschinenfabrik Reinhausen GmbH
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info@reinhausen.com
reinhausen.com

2332907/06 PT - VACUTAP® VM®, VM 300, VMS® Dados técnicos -
F0307403 - 07/23

THE POWER BEHIND POWER.