

NEWS AND MODIFICATIONS

TAP CHANGERS SERIES 025

EDITION SPT_025_2021_Rev_00

General catalog update



MEMBER OF REINHAUSEN GROUP

SUMMARY

TAP CHANGERS SERIES 025

REF.	REV.	DESCRIPTION	CONNECTION	CURRENT	VOLTAGE	N° POS.	PAG.
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025-MTV-01	02	Single phase tap changers type MTV	Bridge	180 - 600 A	72,5/100/123/145/170 kV	2 - 12	6
025-MTV-02	03	Single phase tap changers type MTVA	Bridge	180 - 600 A	72,5/100/123/145/170 kV	2 - 12	7
025-MTV-03	01	Double stage tap changers type MTV	Bridge	180 - 600 A	72,5/100/123/145/170 kV	2 - 12	8
025-MTV-04	01	Double stage tap changers type MTVA	Bridge	180 - 600 A	72,5/100/123/145/170 kV	2 - 12	9
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025-MTVS-01	00	Single phase tap changers type MTVS	Delta / Star	180 - 600 A	72,5/100/123/145/170 kV	2	11
025-MTVS-02	00	Single phase tap changers type MTVSA	Delta / Star	180 - 600 A	72,5/100/123/145/170 kV	2	12
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025-MTVP-01	00	Single phase tap changers type MTVP	Series parallel	180 - 600 A	72,5/100/123/145/170 kV	2	14
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025-MTVC-03	00	Dimension table type MTVC / MTVCA	Exclusion of turns	180 - 600 A	72,5/100/123/145/170 kV	2	25
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INTRODUCTION

TAP CHANGERS SERIES 025

MAIN CHARACTERISTIC

This is a de-energized tap changer. It means all switching manoeuvres must be performed after disconnecting transformer by the electrical net opening the sectionalising switches, both HV and LV side, so transformer becomes off-circuit.

These tap selectors meet the needs of the transformer manufactures who require a compact transformer design. They are placed between two phases of transformer and operated by the handle assembly or by the motor drive mechanism.

DIMENSION

All dimension reported in the following pages are in millimeters (mm).

MODIFICATIONS

In case we need to modify some particulars, in order to improve the quality of our products, C.A.P.T. firma reserve an option to change without a previous warning. Substantial modification will be surely communicated.

TRANSFORMER OIL

All our tap changers are suitable to work in oil immersed transformers according to standard IEC 60296.

In case user need to use specific oil (silicon, synthetic or vegetal) it is necessary consulted C.A.P.T. technical office who verify the functionality of tap in all the mechanicals, electrical and chemical characteristics.

INSULATION MATERIAL

The insulating materials used are bakelite (paper laminates and phenoplastic resin) of "E" thermal class

GASKET

The standard gaskets supplied by C.A.P.T. for all drives are suitable for use in mineral oil according to IEC 60296 at operating temperatures between -25°C and +105°C and in air at temperatures between -25°C and +40°C.

On request, depending on the conditions of use C.A.P.T. can provide gaskets suitable for lower temperatures up to -55°C or higher up to +200°C.

DRIVE HANDLE

Tap-changers can be controlled by manual drive at man's height, motor drive, or with manual drive type on the cover of the transformer.

The pad lockable control boxes with or without electric contacts are of sturdy aluminum casting.

One or more full turn of the wheel is required to switch from one position to the order.

POSITION RANGE

POSITIONS: from 2 to 12 with possibility to arrive to 20.

VOLTAGES RATING

72,5 – 100 – 123 -145 -170 KV.

CURRENT RATING

200 A – 400 A – 600 A available each for cable type connectors on the threaded fixed contacts.

180 A – 330 A – 420 A with a choice of crimped, soldered or brazed type connectors or the copper tubular fixed contacts.

400 A – 600 A available on flag fixed contacts.

SHIELDING RINGS

They are supplied for 145 or 170 KV on request for lower class voltage.

TYPE OF TAP- CHANGERS

MTV: the tap changers regulation is bridge connection type.

MRV: the tap changers regulation is common output for phase connection type.

The equipment shown in details of the next sheets are few of many arrangements provided for these tap selectors.

Other arrangements can be found out from these detail or available on request to meet the transformer design needs.



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INTRODUCTION

TAP CHANGERS SERIES 025

MOVING CONTACTS

They are made of copper.

On request, contacts can be supplied silver plated (from 600A all moving and fixed contacts are silver plated).

DRYING PROCESS

Different drying treatment can be process by customer: oven, in a vacuum autoclave, vapour-phase or other. In this process is normally included tap changer too. The maximum temperature suggested by CAPT for our tap changers is 100°C-120°C

DRYING PROCESS IN CASE OF BEVEL GEAR AND DRIVE HANDLE

It is better to leave out from drying treatment the drive handle and bevel gear. In case it is impossible to leave them out, we suggest to strictly respect the temperature recommended.

When you need drive handle with micro switch for electrical lock or electrical position transmitter it is recommended to do the treatment without the drive.

WHEN CONTACT C.A.P.T.

In the following cases please contact C.A.P.T.

- *for temperature condition higher/lower then suggest*
- *for hard environment conditions, with possibility of snow or sand storming, or in potential seismic area.*



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CODE CONSTRUCTION OF DETC SERIES 025

- De-energized operation
- For oil immersed transformer
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm

025 - MTV B 5 145 . C300 FM - 3 .08

Connection	
MTV	Bridge
MTVS	Delta-star
MTVP	Series-parallel
MTVD	Split series-parallel
MTVG	Y/D with excl. of turns
MTVC	Exclusion of turns
MRV	Linear

Bevel gear on support	
	Without bevel gear
A	Fixed contacts 90° turned
B	With 90° bevel gear
E	With 90° bevel gear and fixed contacts 90° turned

Number of positions	
2	2 positions
3	3 positions
4	4 positions
5	5 positions
...
12	12 positions

Voltage class	
72,5	72,5 kV
100	100 kV
123	123 kV
145	145 kV
170	170 kV

Number of stage	
.	1 stage per column
D	2 stages per column
T	3 stages per column
Q	4 stages per column
I	2 stages inversion of polarity

Pitch between contacts	
	60 mm
.07	70 mm
.08	80 mm
.120	120 mm
.180	180 mm

Number of columns	
1	1 column
2	2 columns
3	3 columns
6	6 columns

Contacts treatment	
	Without treatment
FM	Fixed and movable silver plated
T	Fixed, movable and common silver plated

Type of contacts	
CAP200	200 A
CAP400	400 A
CAP600	600 A
B30	400 A
B40	400 A
B60	600 A
SAL180	180 A
SAL330	330 A
SAL420	420 A



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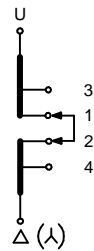
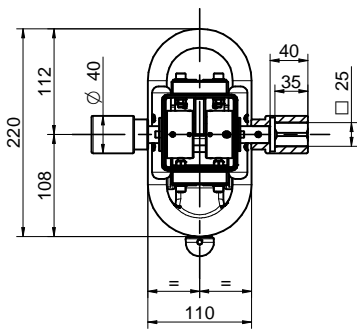
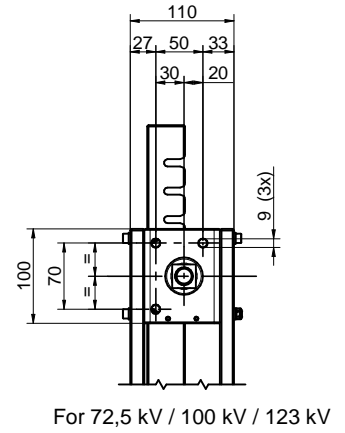
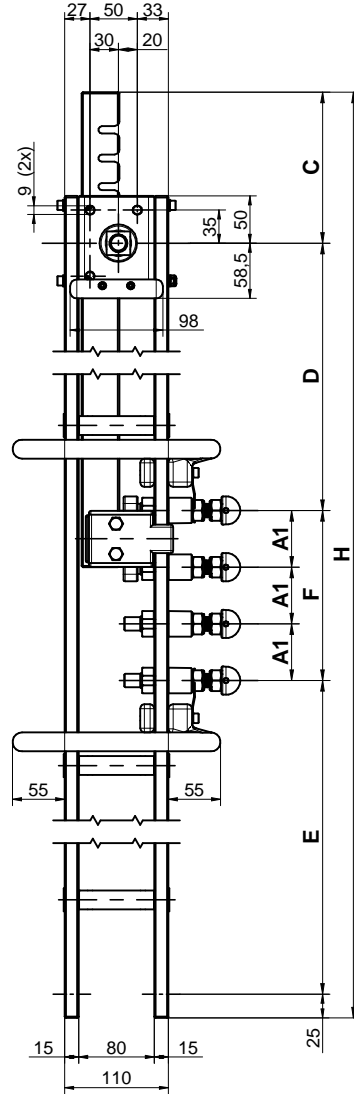
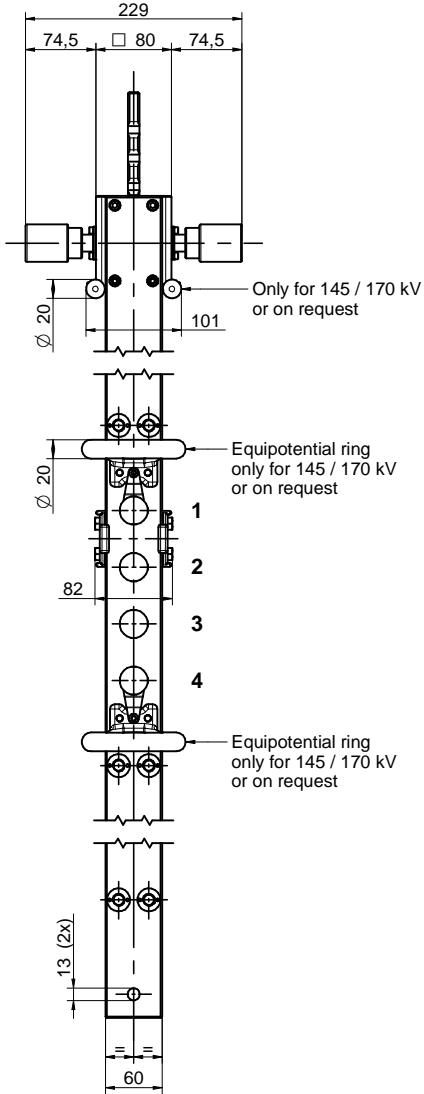
025-25

Rev. 00 - 04/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTV

- De-energized operation
- For oil immersed transformer
- Bridge connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm

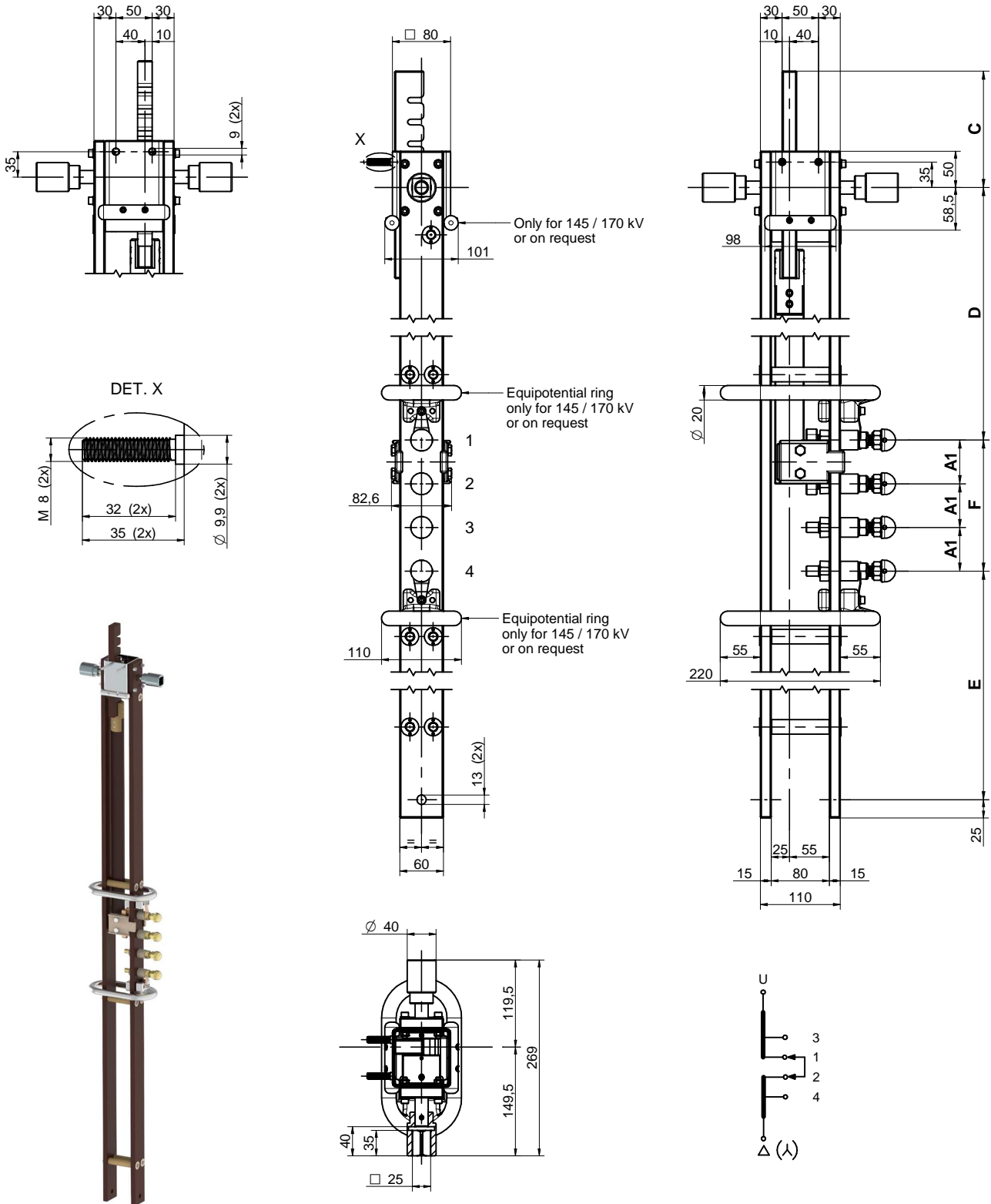


025-MTV-01
Rev. 02 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Bridge connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm



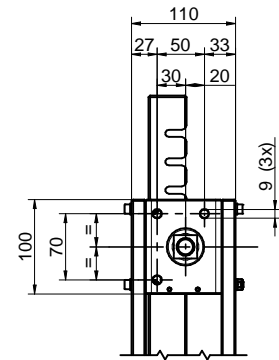
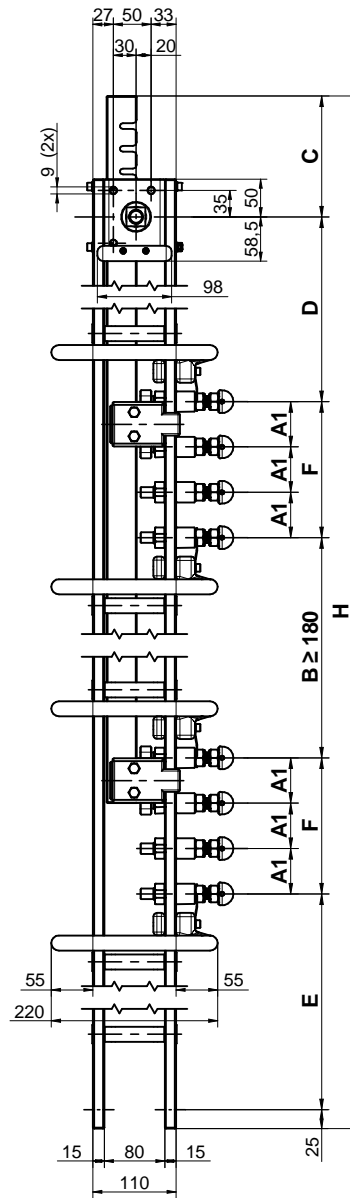
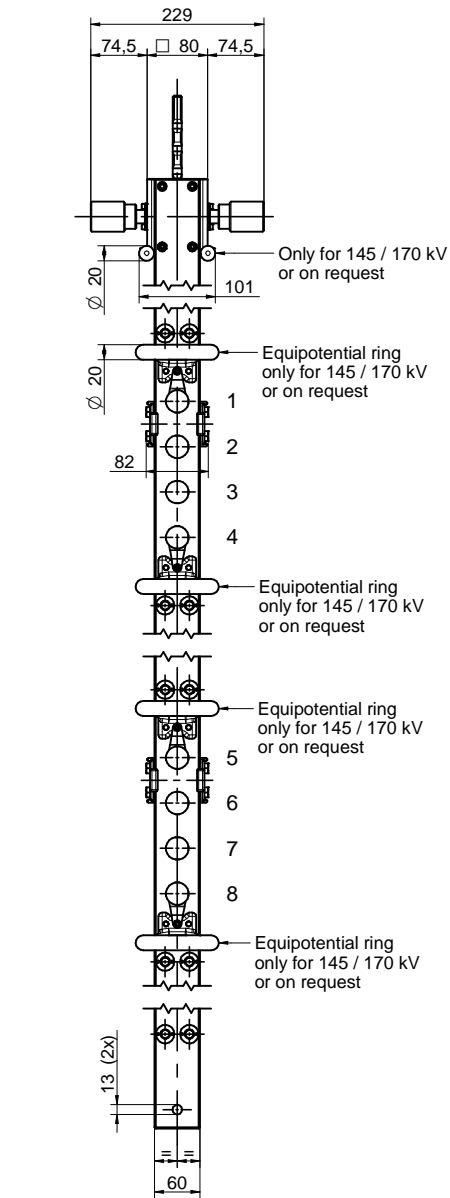
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025-MTV-02
Rev. 03 - 09/12/2020

DETC DOUBLE STAGE SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTV

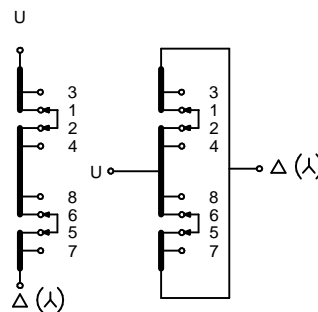
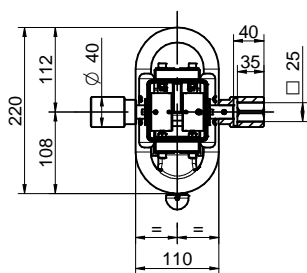
- De-energized operation
- For oil immersed transformer
- Bridge connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm



For 72,5 kV / 100 kV / 123 kV

B = 180 mm
Minimum mechanical distance between two stages

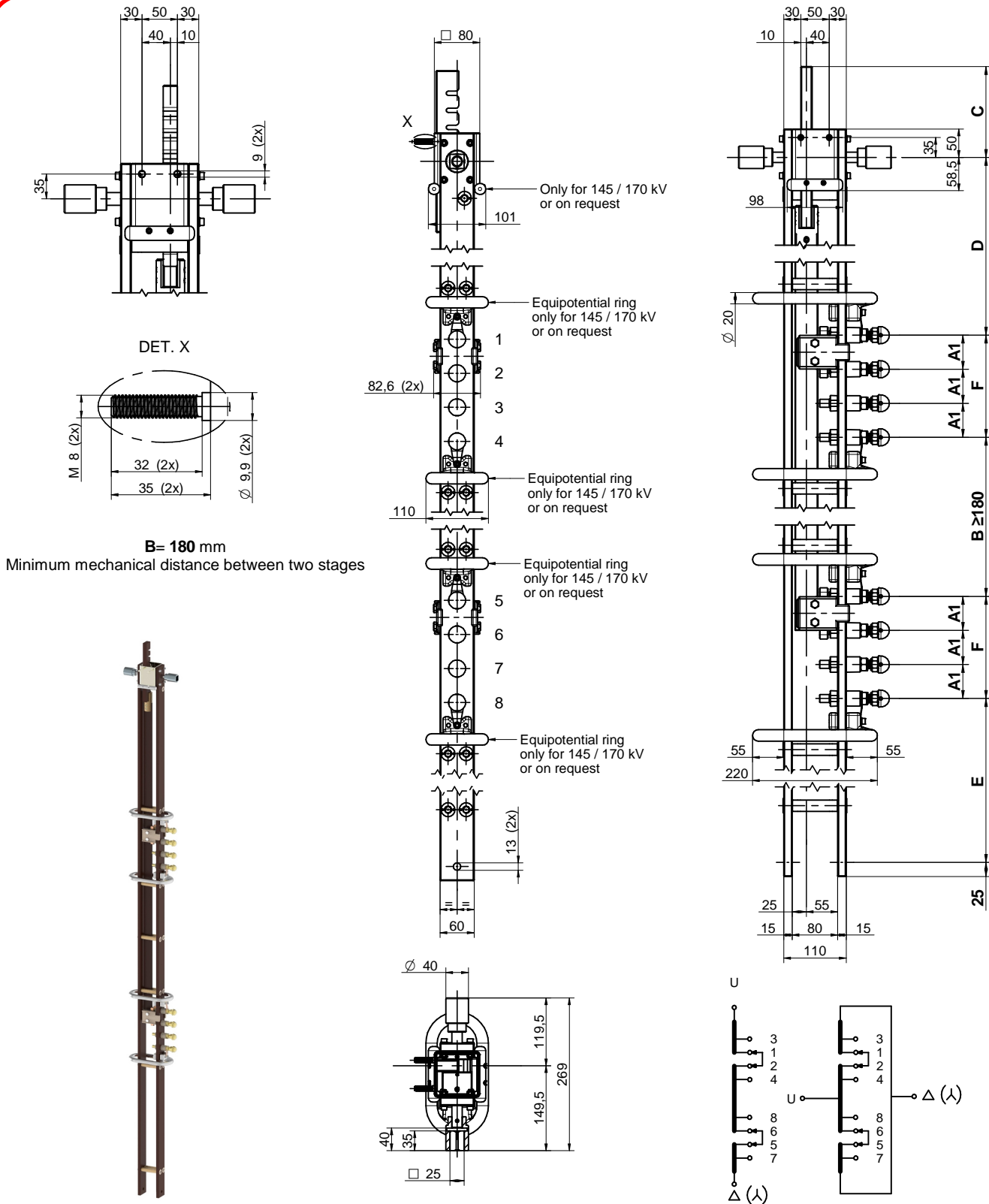


025-MTV-03
Rev. 01 - 09/12/2020

DETC DOUBLE STAGE SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Bridge connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm



025-MTV-04
Rev. 01 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTV/MTVA

- De-energized operation
- For oil immersed transformer
- Bridge connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm

INSULATION DIMENSION TABLE MINIMUM							
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE			APPLIED VOLTAGE (AV)		LIGHTNING IMPULSE (LI)	
	D (mm)	E (mm)	A1 (mm)	To earth (kV)	Between adjoining contacts A1(kV)	To earth (kV)	Between adjoining contacts A1(kV)
72,5	350	315	60	140	65	350	200
100	550	510	60	185	65	450	200
123	640	600	60	230	65	550	200
145	740	700	60	275	65	650	200
170	850	810	60	325	65	750	200

OUTLINE DIMENSION TABLE							
N° POSITIONS	C (mm)	F (mm)	H (mm)				
			72,5 kV	100 kV	123 kV	145 kV	170 kV
2	100	120	910	1305	1485	1685	1905
3	160	180	1030	1425	1605	1805	2025
4	220	240	1150	1545	1725	1925	2145
5	280	300	1270	1665	1845	2045	2265
6	340	360	1390	1785	1965	2165	2385
7	400	420	1510	1905	2085	2285	2505
8	460	480	1630	2025	2205	2405	2625
9	520	540	1750	2145	2325	2525	2745
10	580	600	1870	2265	2445	2645	2865
11	640	660	1990	2385	2565	2765	2985
12	700	720	2110	2505	2685	2885	3105

REFERENCE DATA					
N° POSITIONS	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MTV2725	MTV2100	MTV2123	MTV2145	MTV2170
3	MTV3725	MTV3100	MTV3123	MTV3145	MTV3170
4	MTV4725	MTV4100	MTV4123	MTV4145	MTV4170
5	MTV5725	MTV5100	MTV5123	MTV5145	MTV5170
6	MTV6725	MTV6100	MTV6123	MTV6145	MTV6170
7	MTV7725	MTV7100	MTV7123	MTV7145	MTV7170
8	MTV8725	MTV8100	MTV8123	MTV8145	MTV8170
9	MTV9725	MTV9100	MTV9123	MTV9145	MTV9170
10	MTV10725	MTV10100	MTV10123	MTV10145	MTV10170
11	MTV11725	MTV11100	MTV11123	MTV11145	MTV11170
12	MTV12725	MTV12100	MTV12123	MTV12145	MTV12170

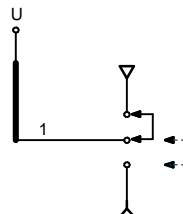
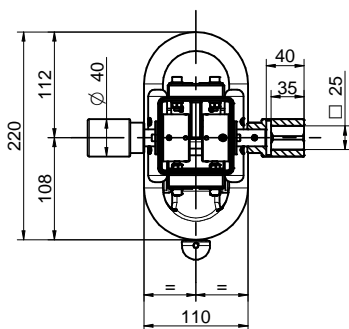
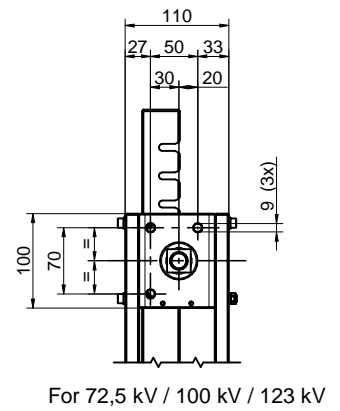
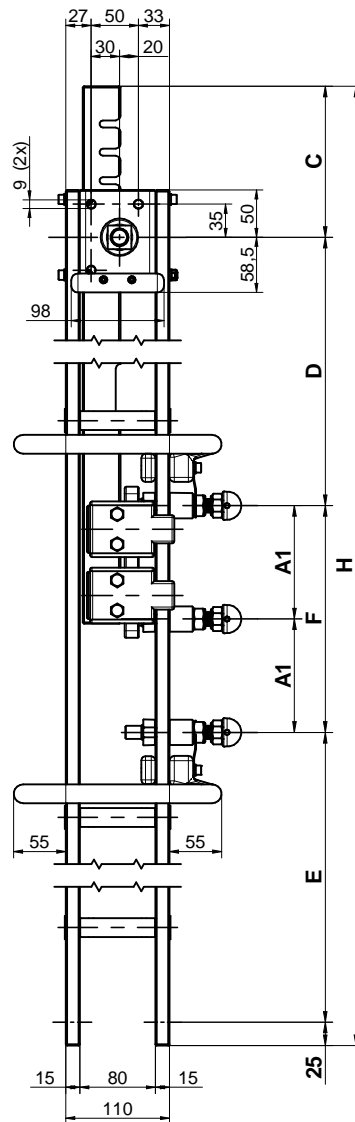
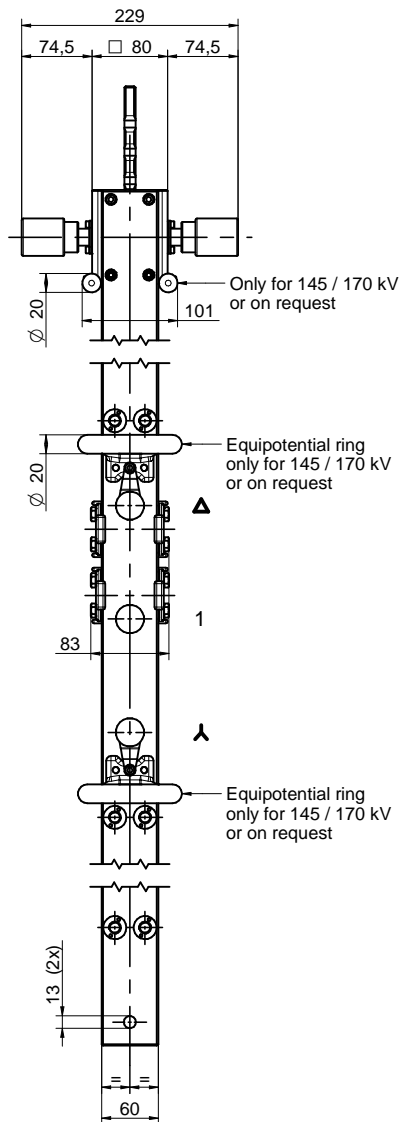


025-MTV-05
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVS

- De-energized operation
- For oil immersed transformer
- Delta / star connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

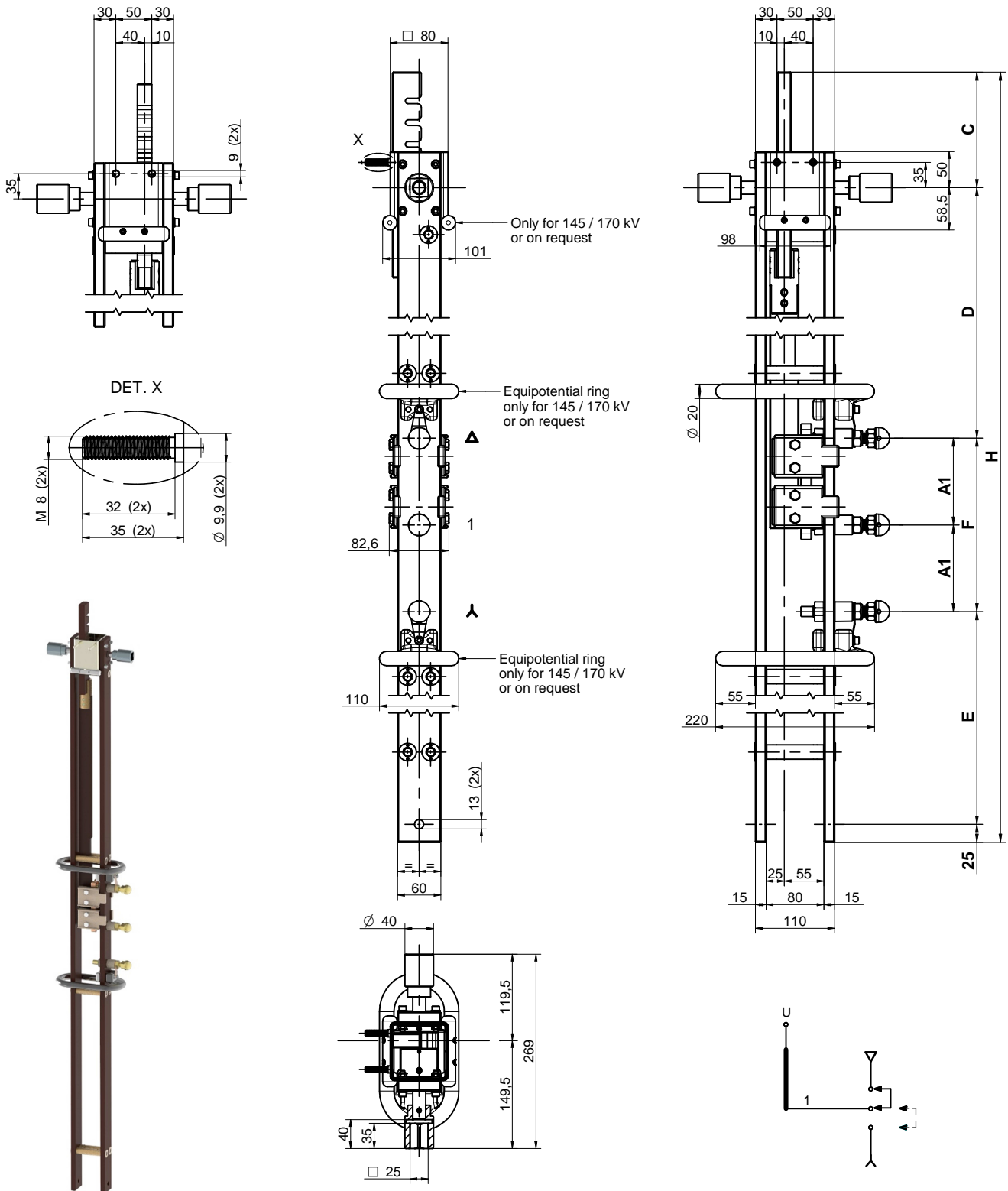


025-MTVS-01
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVSA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Delta / star connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm



025-MTVS-02
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVS

- De-energized operation
- For oil immersed transformer
- Delta / star connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mmm

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV
	D (mm)	E (mm)	To earth (kV)	To earth (kV)
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

INSULATION DIMENSION TABLE MINIMUM			
A1 (mm)	APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV	MAXIMUM RATED STEP VOLTAGE (Uirm) kV
60	45	110	23
120	65	160	32
180	95	240	50

OUTLINE DIMENSION TABLE								
N° POSIZIONI	A1 (mm)	F (mm)	C (mm)	H (mm)				
				72,5 kV	100 kV	123 kV	145 kV	170 kV
2	60	120	100	910	1305	1485	1685	1905
	120	240	160	1090	1485	1665	1865	2085
	180	360	220	1270	1665	1845	2045	2265

REFERENCE DATA					
N° POSITIONS	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MTVS2725	MTVS2100	MTVS2123	MTVS2145	MTVS2170

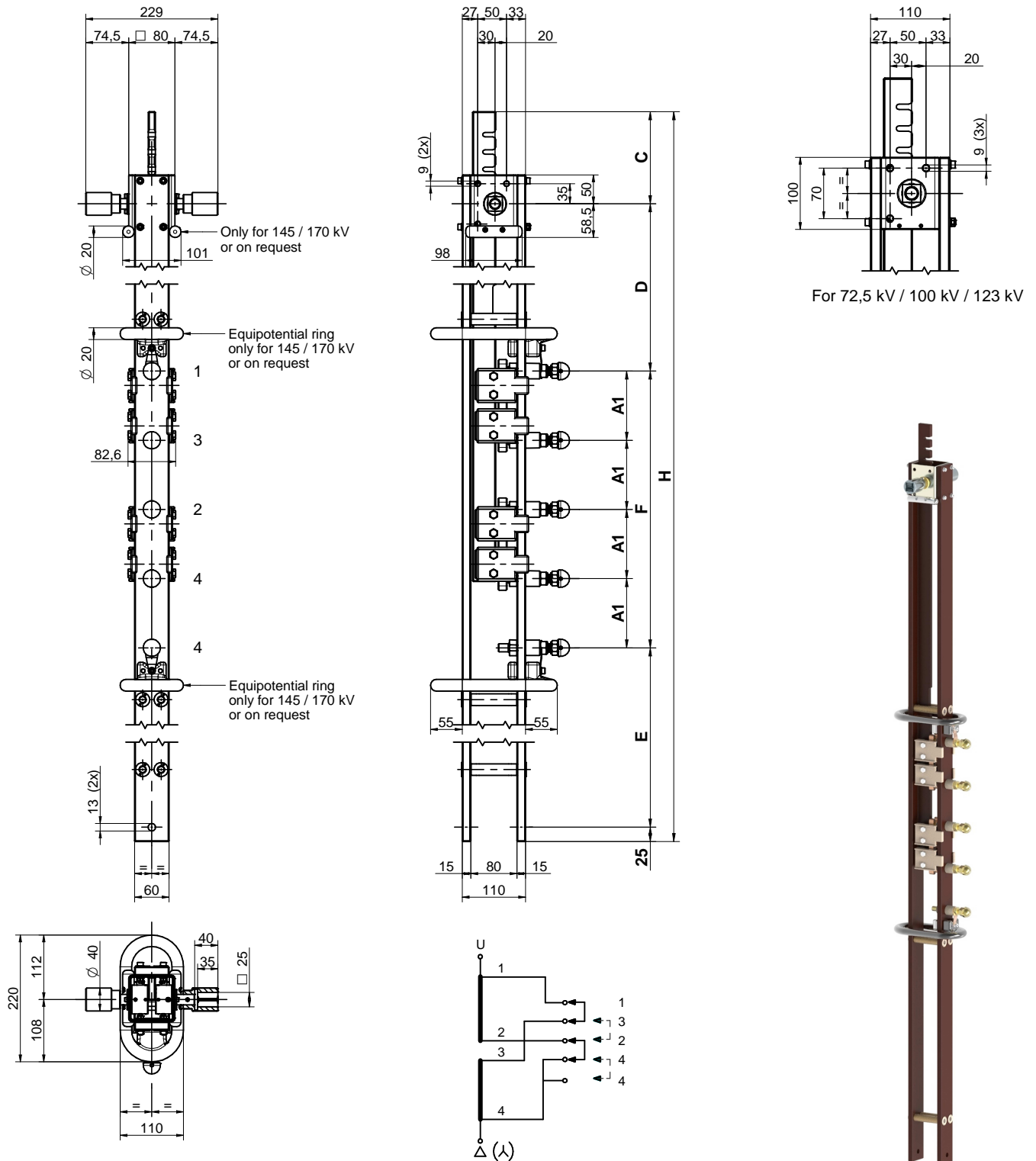


025-MTVS-03
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVP

- De-energized operation
- For oil immersed transformer
- Series parallel connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

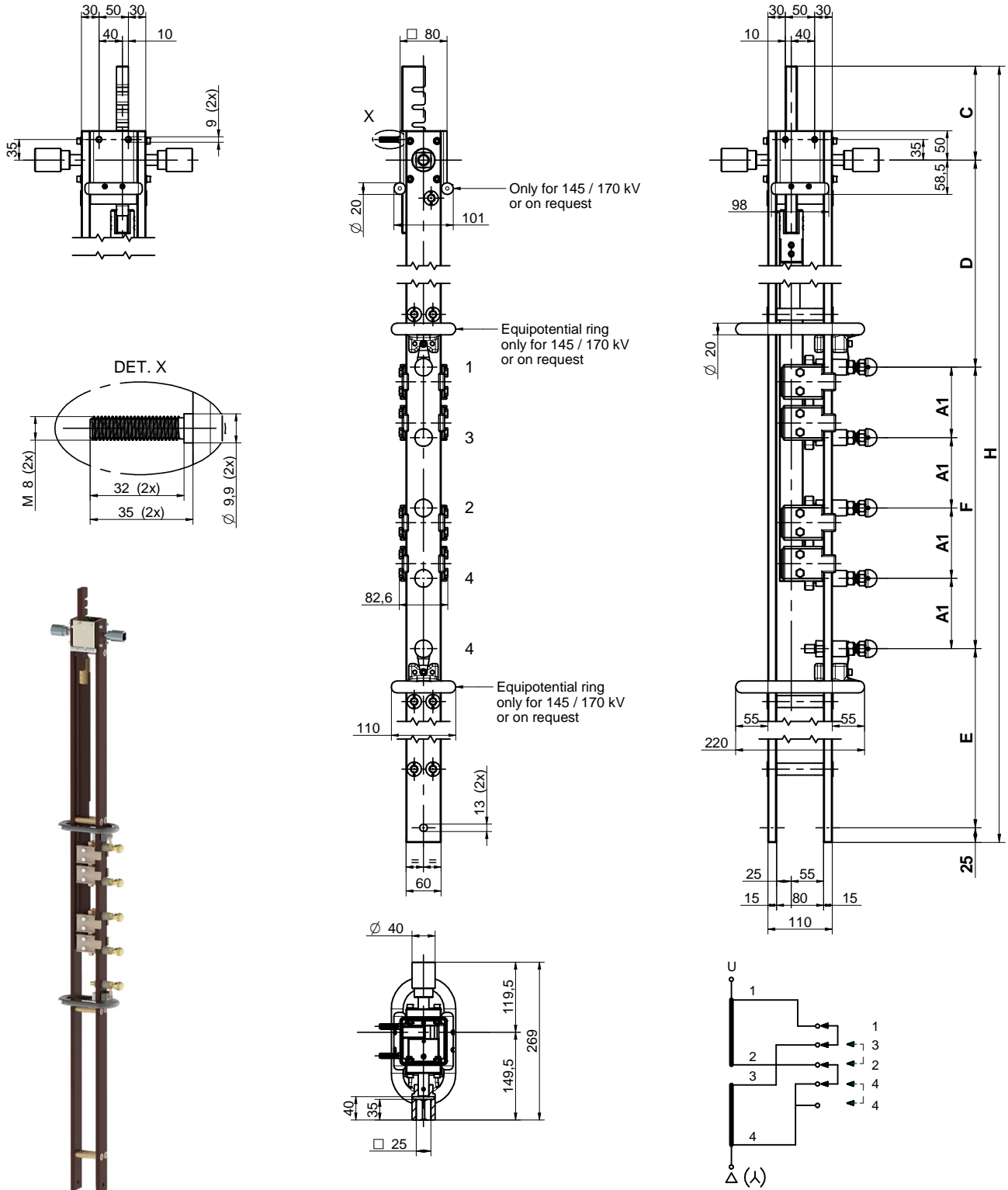


025-MTVP-01
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVPA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Series parallel connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm



025-MTVP-02
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVP

- De-energized operation
- For oil immersed transformer
- Series parallel connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV
	D (mm)	E (mm)	To earth (kV)	To earth (kV)
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

INSULATION DIMENSION TABLE MINIMUM			
A1 (mm)	APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV	MAXIMUM RATED STEP VOLTAGE (U _{irm}) kV
60	45	110	23
120	65	160	32
180	95	240	50

OUTLINE DIMENSION TABLE								
N° POSIZIONI	A1 (mm)	F (mm)	C (mm)	H (mm)				
				72,5 kV	100 kV	123 kV	145 kV	170 kV
2	60	240	100	1030	1425	1605	1805	2025
	120	480	160	1330	1725	1905	2105	2325
	180	720	220	1630	2025	2205	2405	2625

REFERENCE DATA					
N° POSITIONS	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MTVP2725	MTVP2100	MTVP2123	MTVP2145	MTVP2170



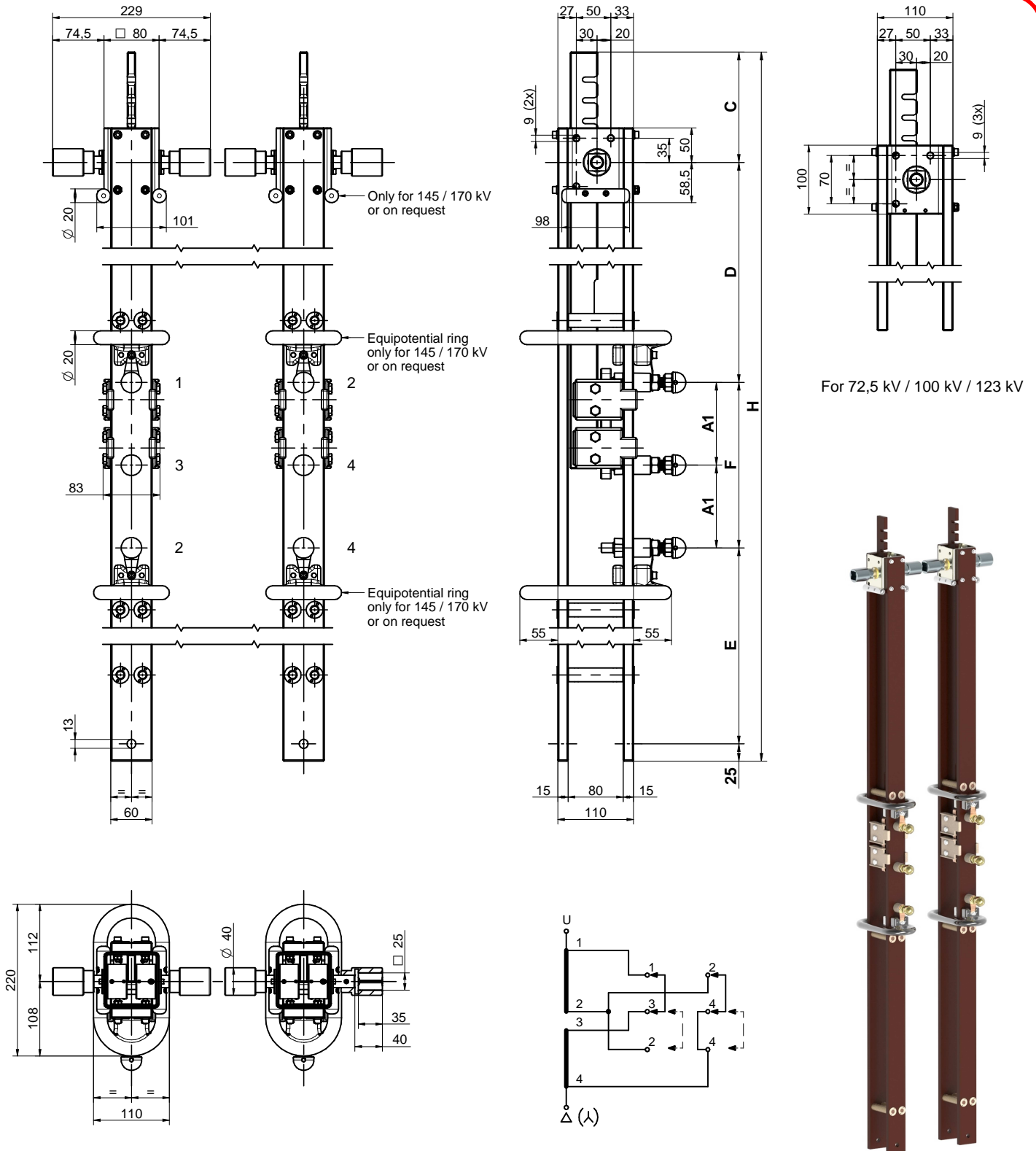
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025-MTVP-03
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVD

- De-energized operation
- For oil immersed transformer
- Split series parallel connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

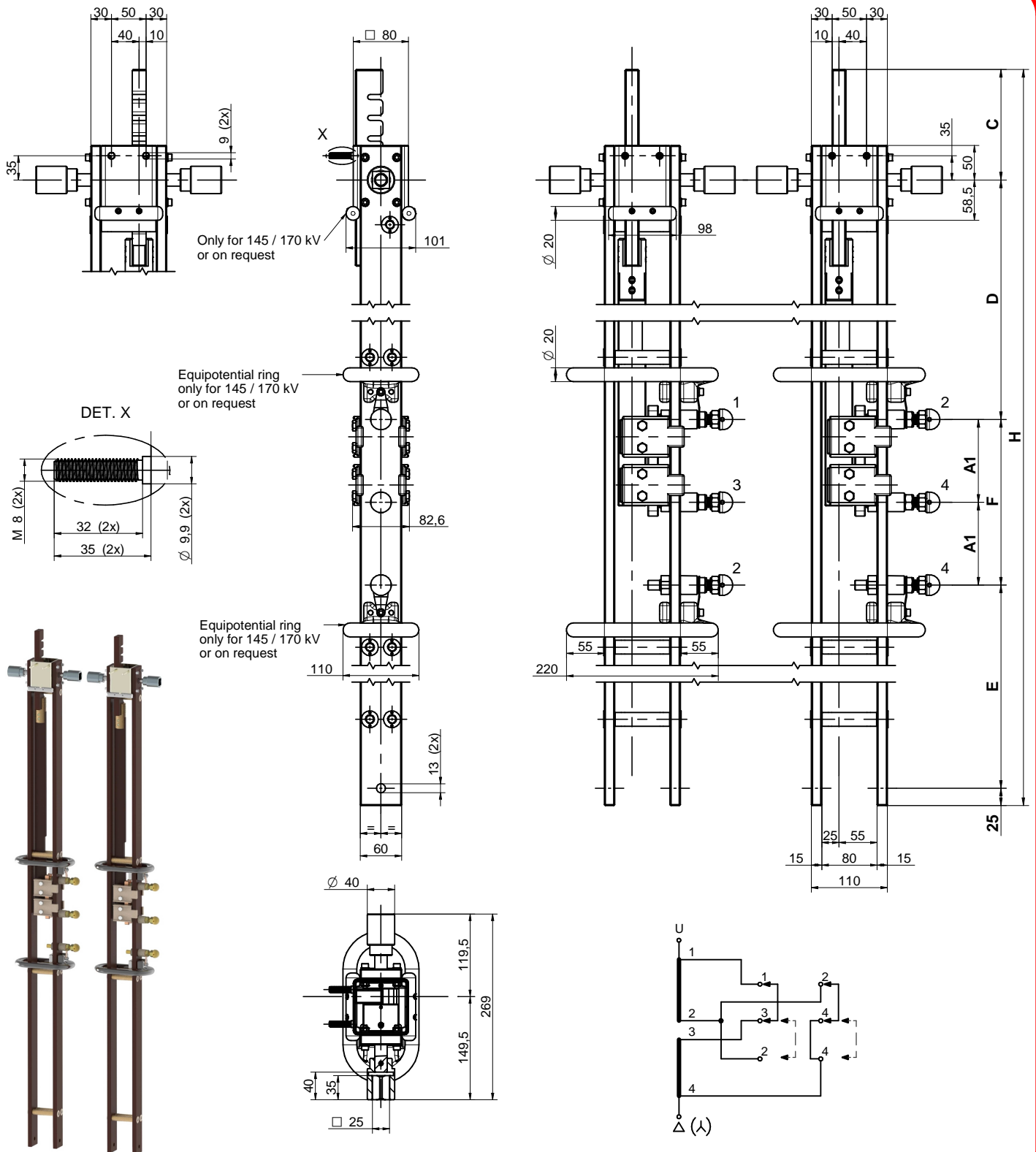


025-MTVD-01
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVDA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Split series parallel connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm



025-MTVD-02
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVD

- De-energized operation
- For oil immersed transformer
- Split series parallel connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV
	D (mm)	E (mm)	To earth (kV)	To earth (kV)
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

INSULATION DIMENSION TABLE MINIMUM			
A1 (mm)	APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV	MAXIMUM RATED STEP VOLTAGE (Uirm) kV
60	45	110	23
120	65	160	32
180	95	240	50

OUTLINE DIMENSION TABLE								
N° POSIZIONI	A1 (mm)	F (mm)	C (mm)	H (mm)				
				72,5 kV	100 kV	123 kV	145 kV	170 kV
2	60	120	100	910	1305	1485	1685	1905
	120	240	160	1090	1485	1665	1865	2085
	180	360	220	1270	1665	1845	2045	2265

REFERENCE DATA					
N° POSIZIONI	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MTVD2725	MTVD2100	MTVD2123	MTVD2145	MTVD2170



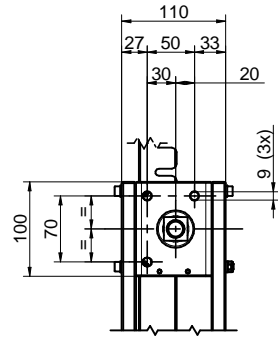
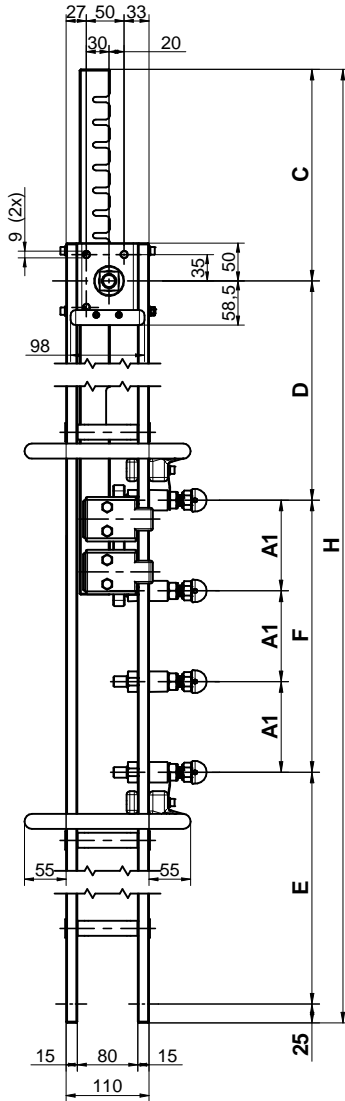
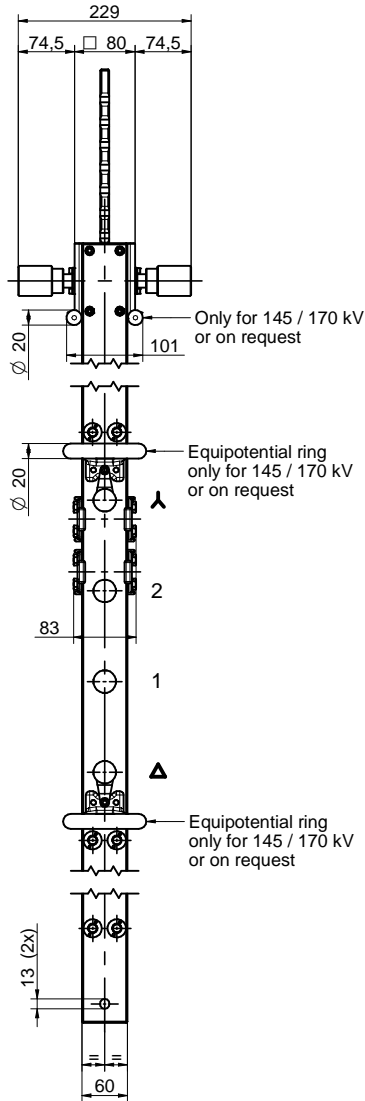
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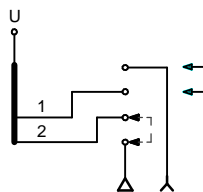
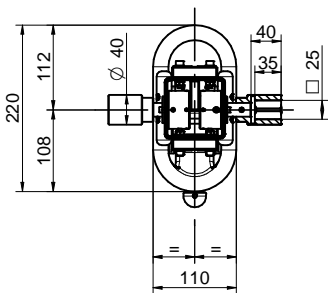
DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVG

- De-energized operation
- For oil immersed transformer
- Delta / star connection with exclusion of turns
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm



For 72,5 kV / 100 kV / 123 kV

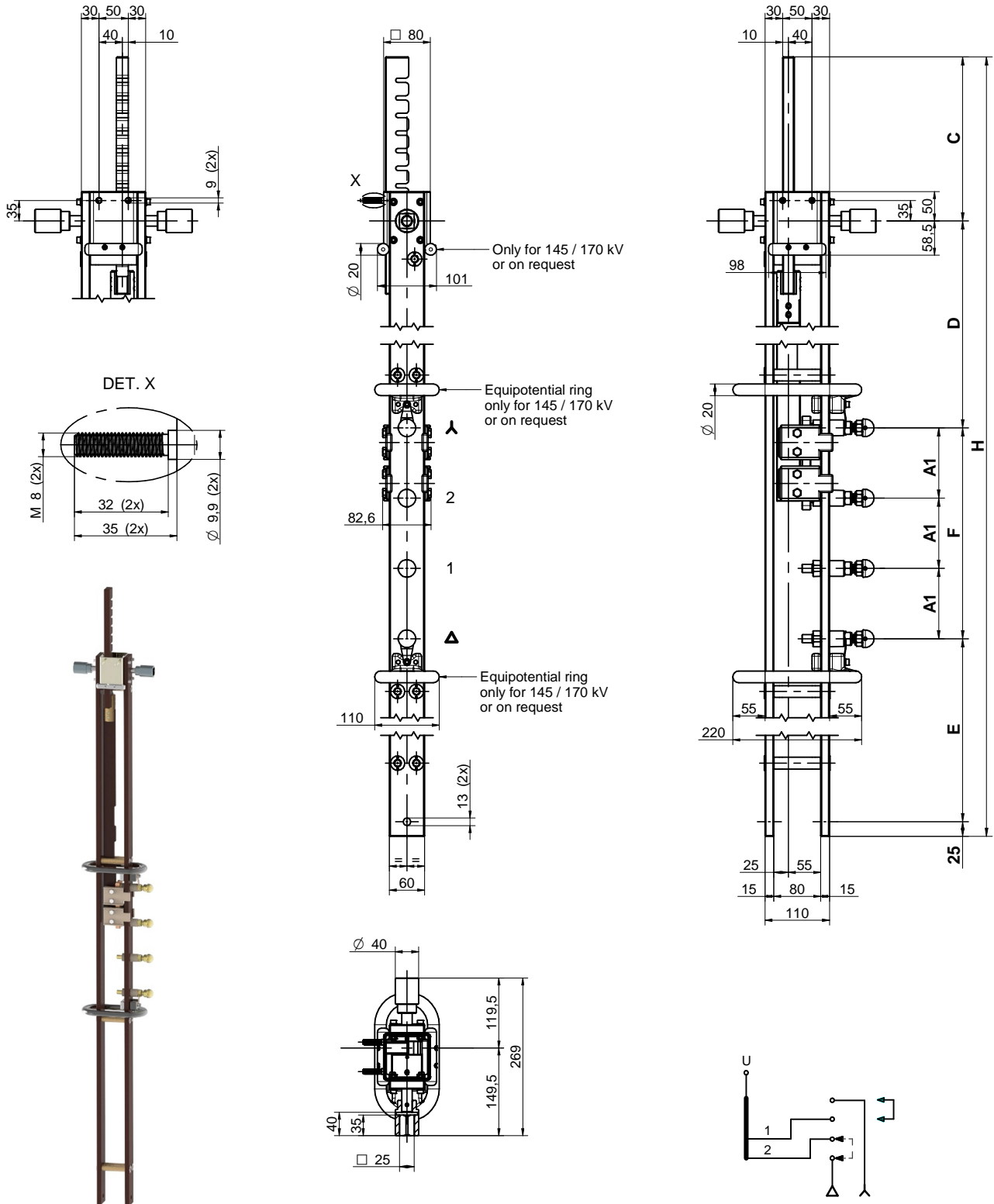


025-MTVG-01
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVGA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Delta / star connection with exclusion of turns
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm



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025-MTVG-02
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVG

- De-energized operation
- For oil immersed transformer
- Delta / star connection with exclusion of turns
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV
	D (mm)	E (mm)	To earth (kV)	To earth (kV)
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

INSULATION DIMENSION TABLE MINIMUM			
A1 (mm)	APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV	MAXIMUM RATED STEP VOLTAGE (Uirm) kV
60	45	110	23
120	65	160	32
180	95	240	50

OUTLINE DIMENSION TABLE								
N° POSIZIONI	A1 (mm)	F (mm)	C (mm)	H (mm)				
				72,5 kV	100 kV	123 kV	145 kV	170 kV
2	60	180	160	1030	1425	1605	1805	2025
	120	360	280	1330	1725	1905	2105	2325
	180	540	400	1570	2025	2205	2405	2625

REFERENCE DATA					
N° POSIZIONI	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MTVG2725	MTVG2100	MTVG2123	MTVG2145	MTVG2170



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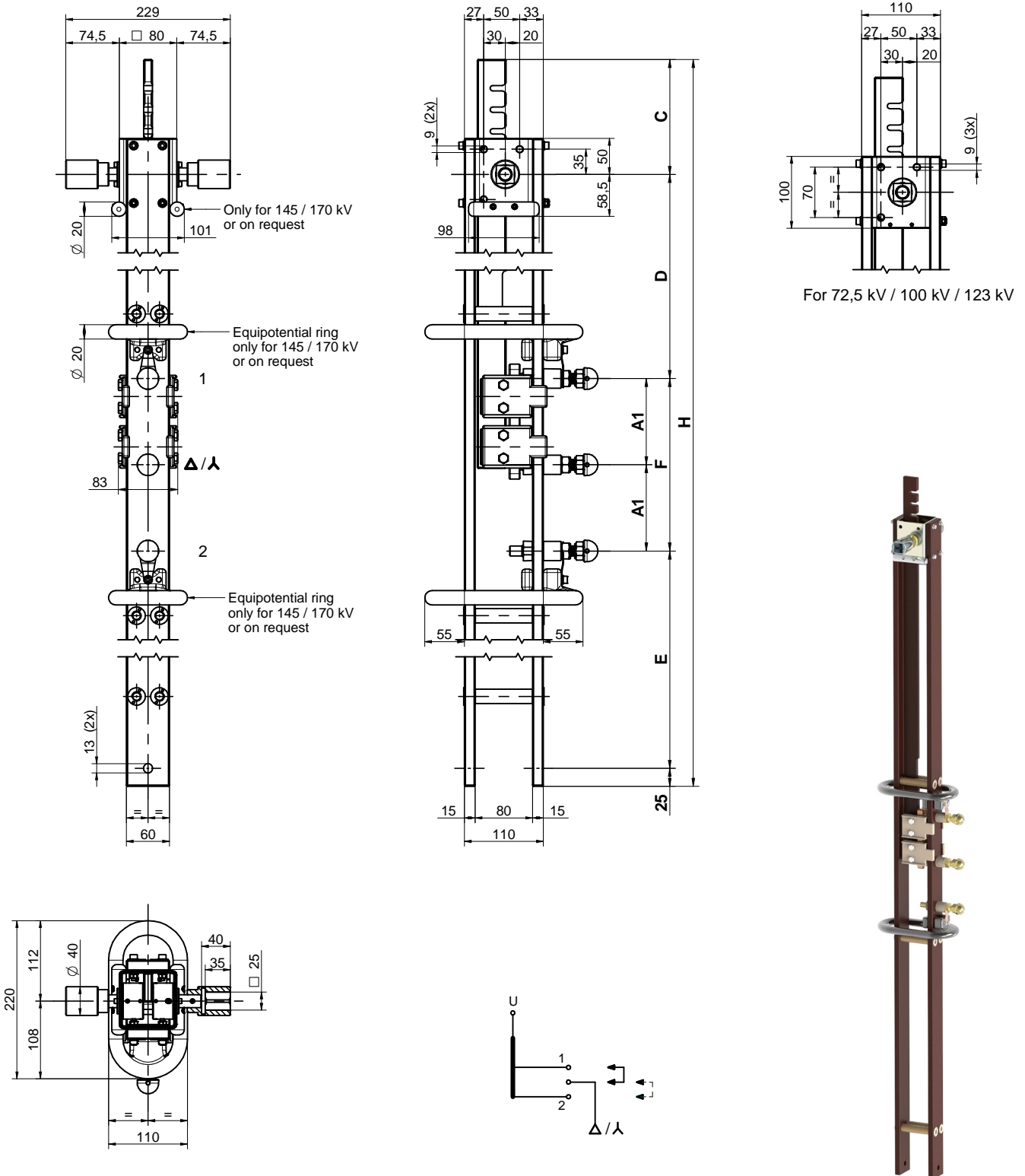
025-MTVG-03

Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVC

- De-energized operation
- For oil immersed transformer
- Exclusion of turns connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

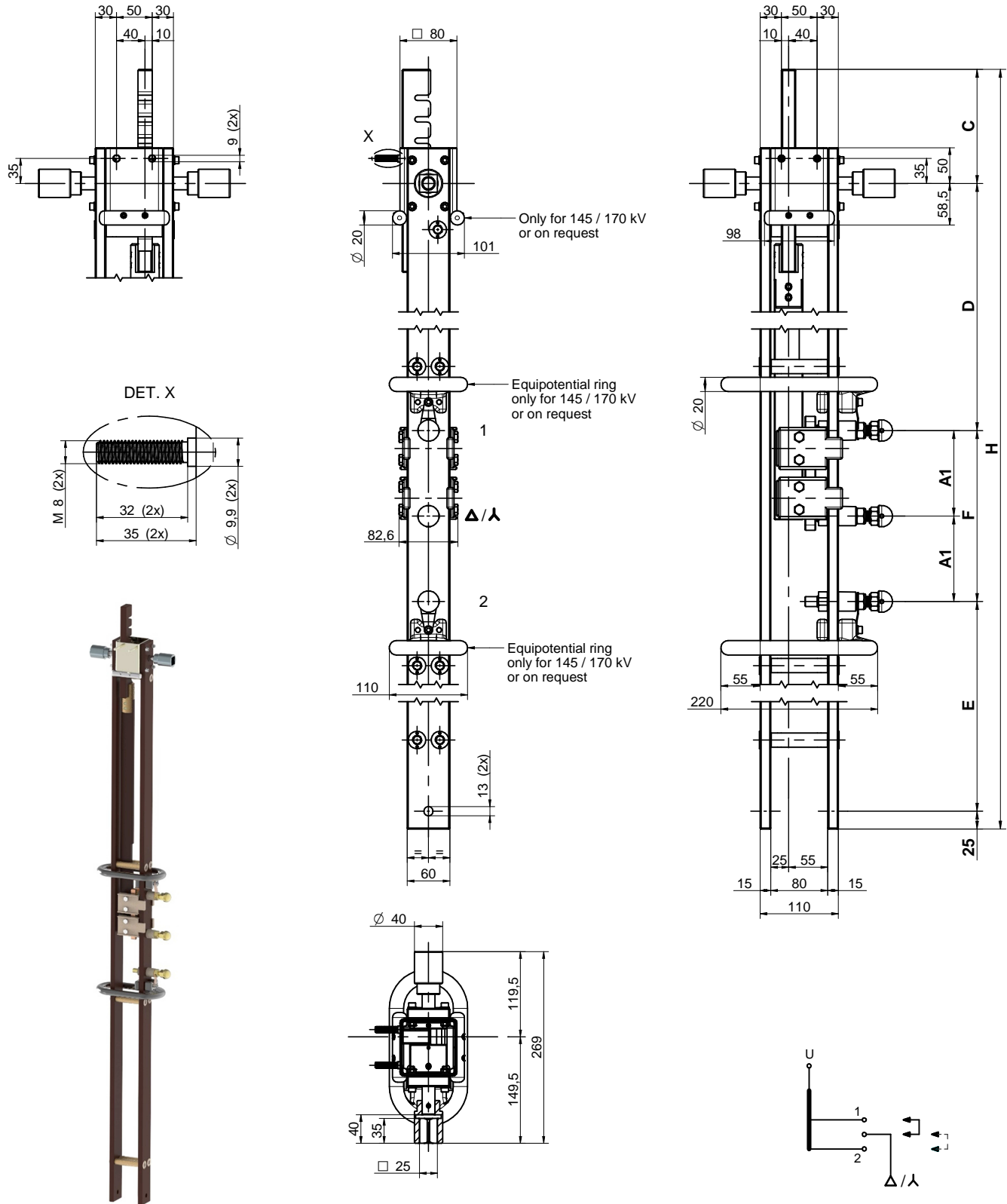
Dimension in mm



DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVCA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Exclusion of turns connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm



025-MTVC-02
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MTVC

- De-energized operation
- For oil immersed transformer
- Exclusion of turns connection
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- 2 positions

Dimension in mm

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV
	D (mm)	E (mm)	To earth (kV)	To earth (kV)
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

INSULATION DIMENSION TABLE MINIMUM			
A1 (mm)	APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV	MAXIMUM RATED STEP VOLTAGE (Uirm) kV
60	45	110	23
120	65	160	32
180	95	240	50

OUTLINE DIMENSION TABLE								
N° POSIZIONI	A1 (mm)	F (mm)	C (mm)	H (mm)				
				72,5 kV	100 kV	123 kV	145 kV	170 kV
2	60	120	100	910	910	1485	1685	1905
	120	240	160	1090	1485	1665	1865	2085
	180	360	220	1270	1665	1845	2045	2265

REFERENCE DATA					
N° POSIZIONI	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MTVC2725	MTVC2100	MTVC2123	MTVC2145	MTVC2170



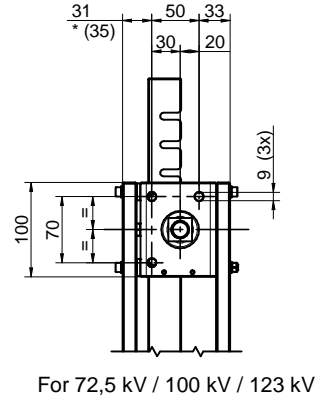
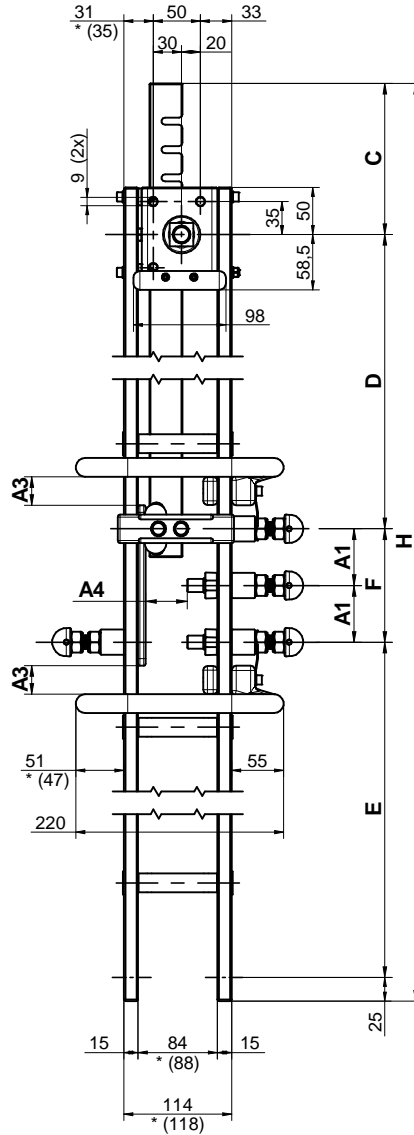
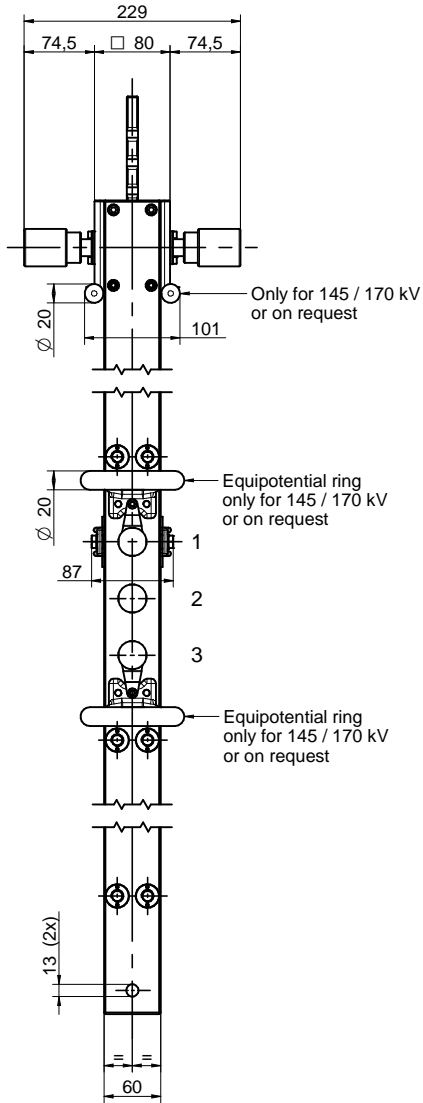
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025-MTVC-03
Rev. 00 - 09/12/2020

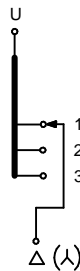
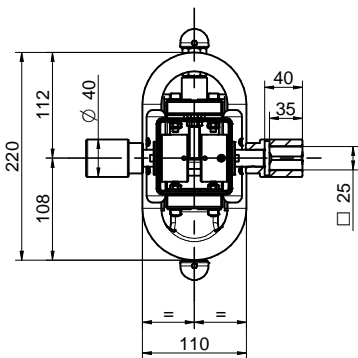
DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRV

- De-energized operation
- For oil immersed transformer
- Linear connection with a common for each phase
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm



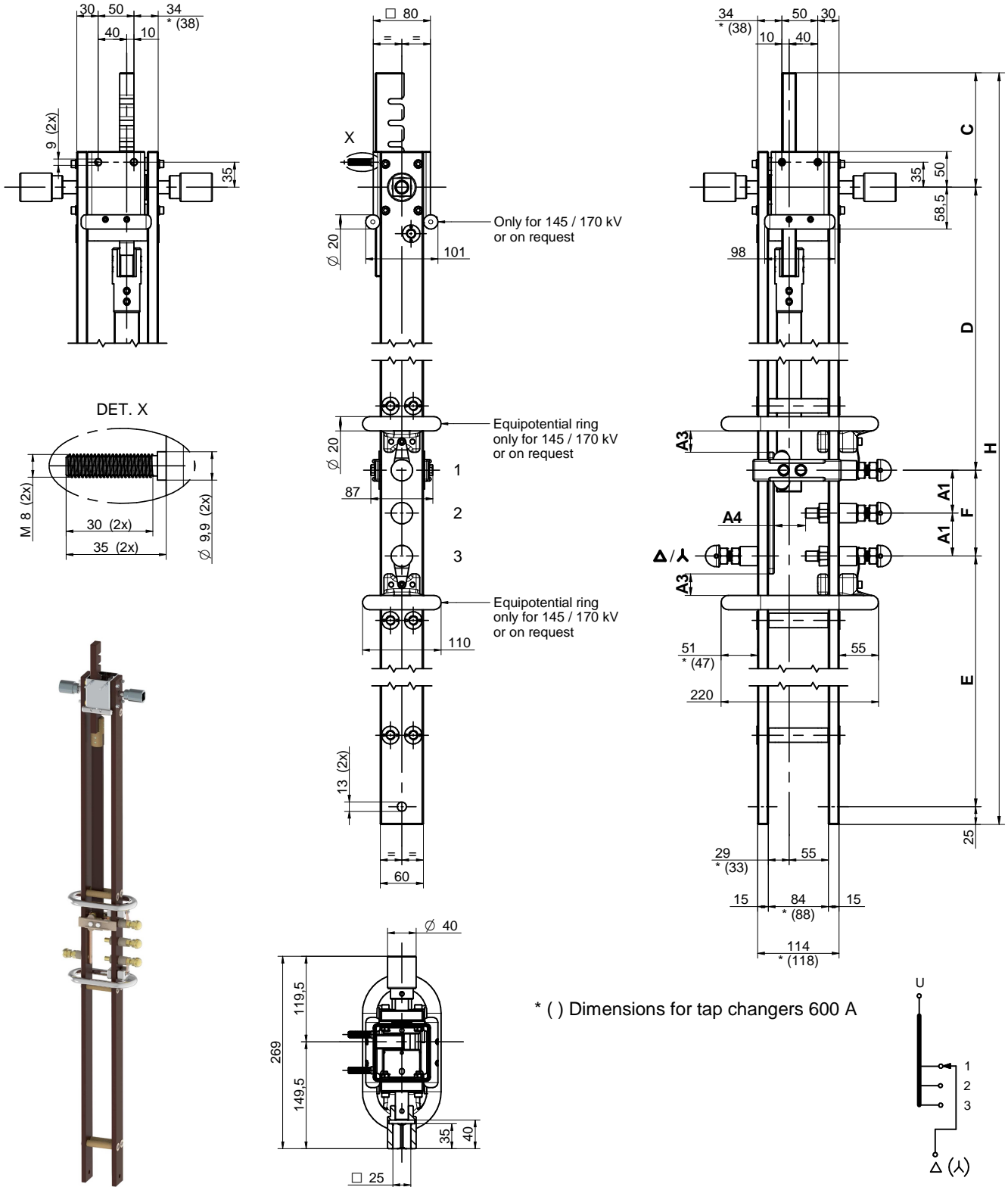
* () Dimensions for tap changers 600 A



DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRVA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Linear connection with a common for each phase
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm



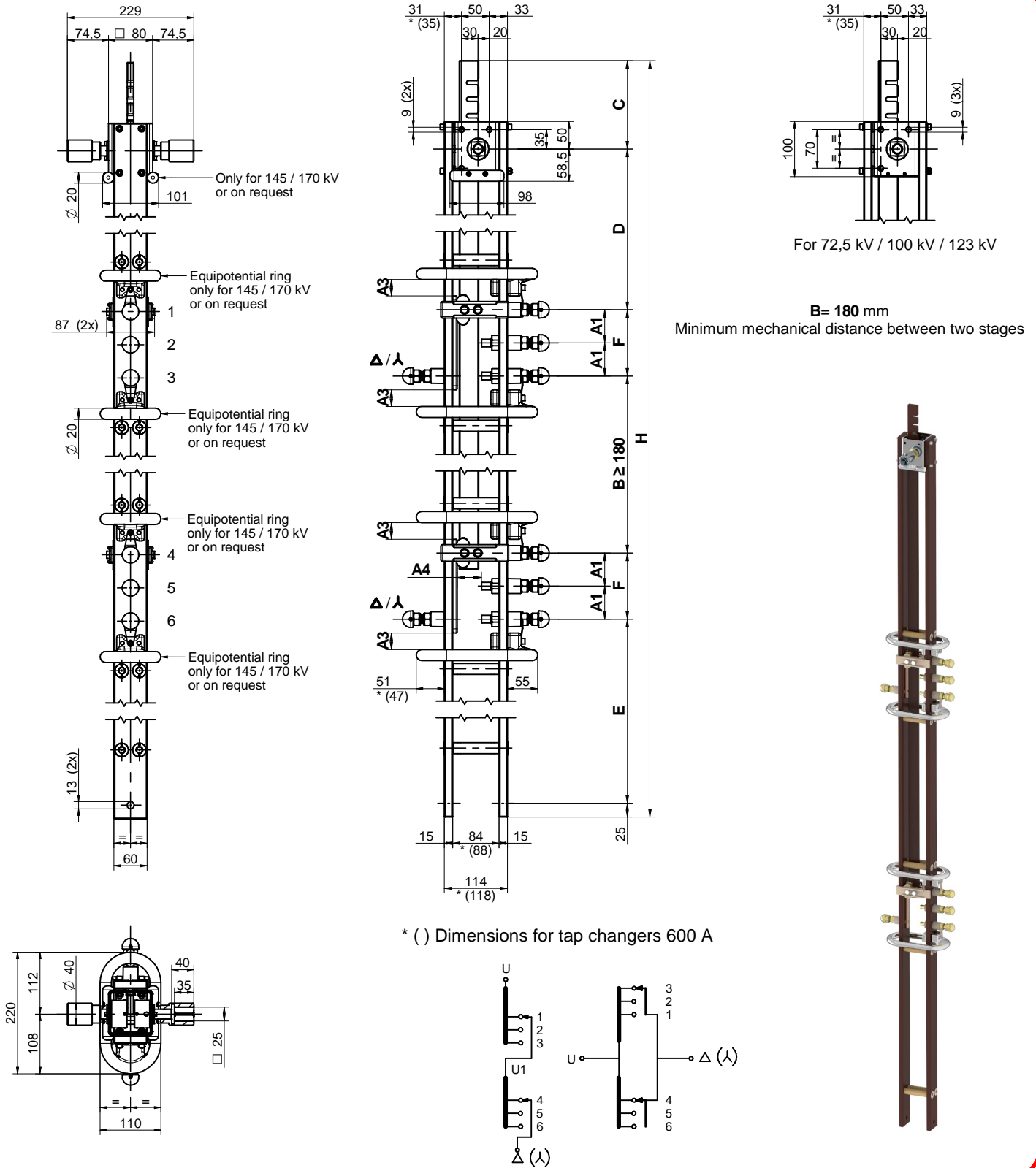
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025-MRV-02
Rev. 03 - 09/12/2020

DETC DOUBLE STAGES SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRV

- De-energized operation
- For oil immersed transformer
- Linear connection with a common for each phase
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm

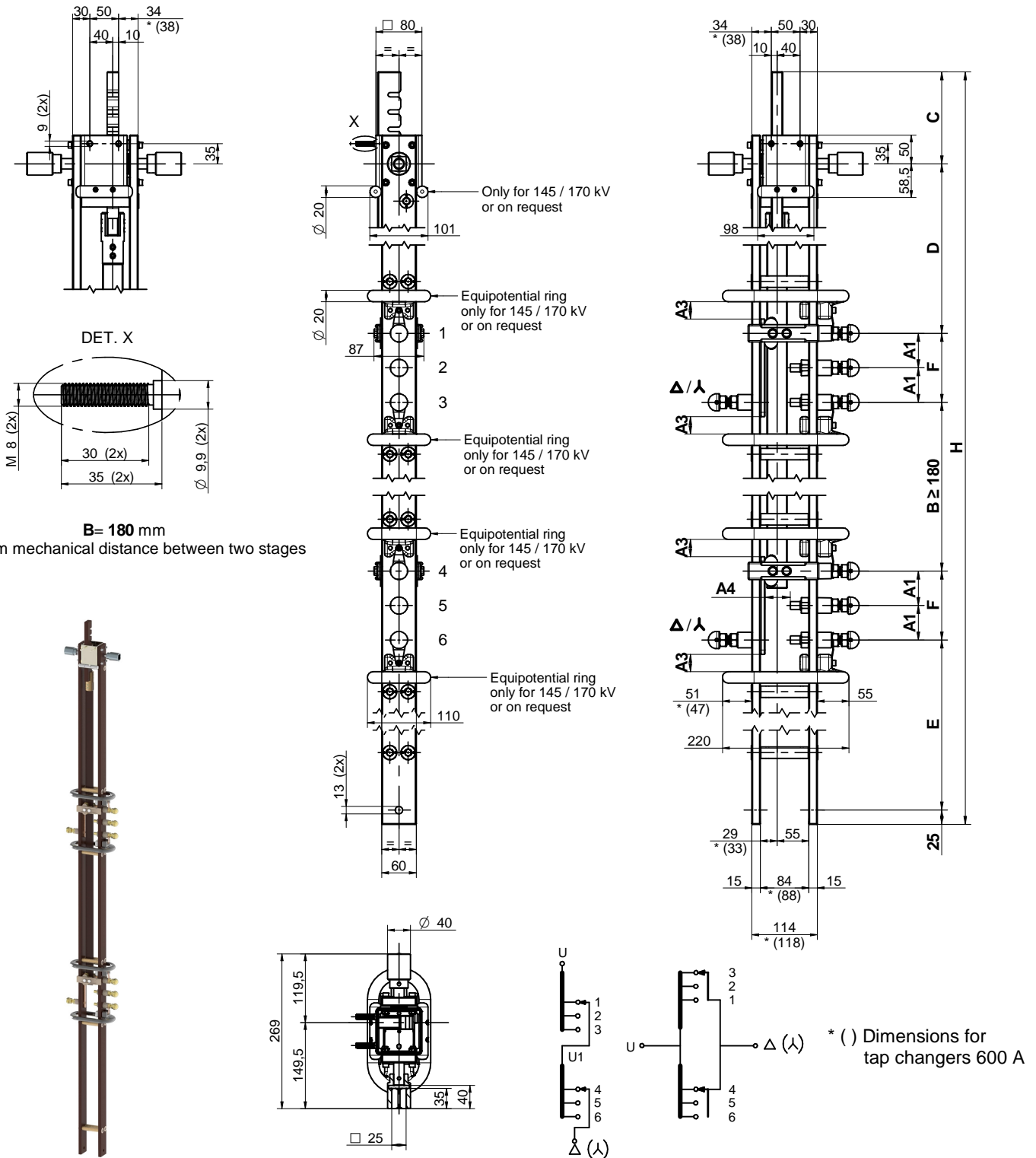


025-MRV-04
Rev. 01 - 09/12/2020

DETC DOUBLE STAGE SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRVA (CONTACTS 90° TURNED)

- De-energized operation
- For oil immersed transformer
- Linear connection with a common for each phase
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in mm



025-MRV-05
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRV

- De-energized operation
- For oil immersed transformer
- Linear connection with a common for each phase
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- From 2 to 12 positions

Dimension in m

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) To earth (kV)	LIGHTNING IMPULSE (LI)
	D (mm)	E (mm)		
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

MINIMUM INSULATION DISTANCE (mm)	APPLIED VOLTAGE (AV) kV	LIGHTNING IMPULSE (LI) kV	MAX. RATED (Uirm) kV
A1	60	200	32
A3	30	60	12
A4	44	160	32

OUTLINE DIMENSION TABLE							
N° POSITIONS	C (mm)	F (mm)	H (mm)				
			72,5 kV	100 kV	123 kV	145 kV	170 kV
2	100	60	850	1245	1425	1625	1845
3	160	120	970	1365	1545	1745	1965
4	220	180	1090	1485	1665	1865	2085
5	280	240	1210	1605	1785	1985	2205
6	340	300	1330	1725	1905	2105	2325
7	400	360	1450	1845	2025	2225	2445
8	460	420	1570	1965	2145	2345	2565
9	520	480	1690	2085	2265	2465	2685
10	580	540	1810	2205	2385	2585	2805
11	640	600	1930	2325	2505	2705	2925
12	700	660	2050	2445	2625	2825	3045

REFERENCE DATA					
N° POSITIONS	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
2	MRV2725	MRV2100	MRV2123	MRV2145	MRV2170
3	MRV3725	MRV3100	MRV3123	MRV3145	MRV3170
4	MRV4725	MRV4100	MRV4123	MRV4145	MRV4170
5	MRV5725	MRV5100	MRV5123	MRV5145	MRV5170
6	MRV6725	MRV6100	MRV6123	MRV6145	MRV6170
7	MRV7725	MRV7100	MRV7123	MRV7145	MRV7170
8	MRV8725	MRV8100	MRV8123	MRV8145	MRV8170
9	MRV9725	MRV9100	MRV9123	MRV9145	MRV9170
10	MRV10725	MRV10100	MRV10123	MRV10145	MRV10170
11	MRV11725	MRV11100	MRV11123	MRV11145	MRV11170
12	MRV12725	MRV12100	MRV12123	MRV12145	MRV12170

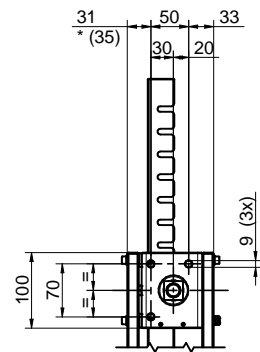
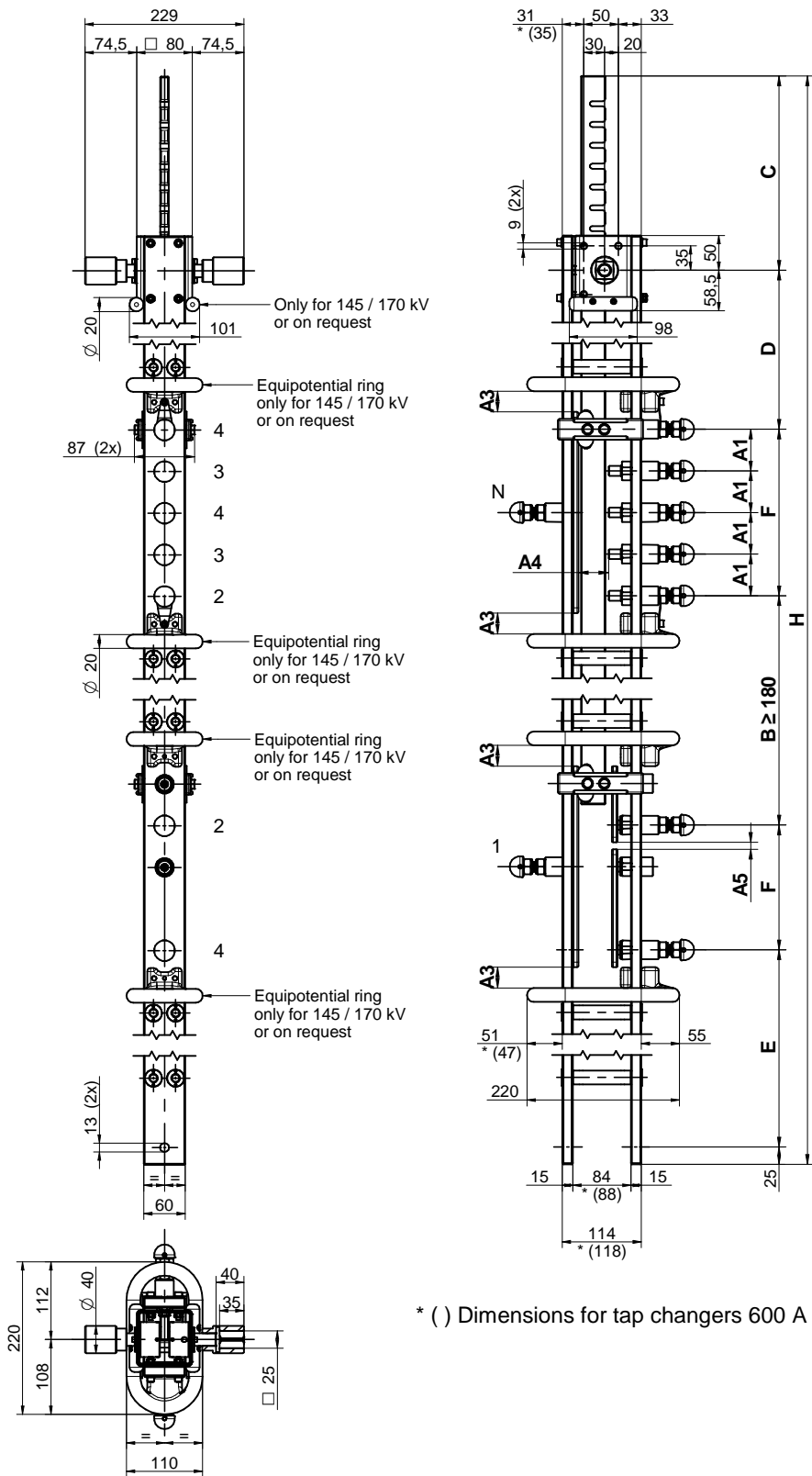


025-MRV-06
Rev. 00 - 09/12/2020

DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRV

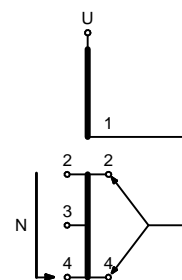
- De-energized operation
- For oil immersed transformer
- Linear connection with inversion of polarity
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 200 A / 400 A / 600 A
- For 3 / 5 / 7 / 9 / 11 positions

Dimension in mm



B = 180 mm

Minimum mechanical distance between two stages



* () Dimensions for tap changers 600 A



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DETC SINGLE-PHASE TAP CHANGERS SERIES 025 TYPE MRV

- De-energized operation
- For oil immersed transformer
- Linear connection with inversion of polarity
- 72,5 kV / 100 kV / 123 kV / 145 kV / 170 kV
- 180 A / 200 A / 330 A / 400 A / 420 A / 600 A
- For 3 / 5 / 7 / 9 / 11 positions

Dimension in m

INSULATION DIMENSION TABLE MINIMUM				
CLASS VOLTAGE (kV)	MINIMUM INSULATION DISTANCE		APPLIED VOLTAGE (AV) To earth (kV)	LIGHTNING IMPULSE (LI)
	D (mm)	E (mm)		
72,5	350	315	140	350
100	550	510	185	450
123	640	600	230	550
145	740	700	275	650
170	850	810	325	750

MINIMUM INSULATION DISTANCE (mm)	APPLIED VOLTAGE (AV) KV	LIGHTNING IMPULSE (LI) KV	MAX. RATED (Uirm) kV
A1	60	65	32
A3	30	24	12
A4	44	65	32
A5	30	45	22

REFERENCE DATA					
N° POSITIONS	CLASS VOLTAGE				
	72,5 kV	100 kV	123 kV	145 kV	170 kV
3	MRV3725I	MRV3100I	MRV3123I	MRV3145I	MRV3170I
5	MRV5725I	MRV5100I	MRV5123I	MRV5145I	MRV5170I
7	MRV7725I	MRV7100I	MRV7123I	MRV7145I	MRV7170I
9	MRV9725I	MRV9100I	MRV9123I	MRV9145I	MRV9170I
11	MRV11725I	MRV11100I	MRV11123I	MRV11145I	MRV11170I

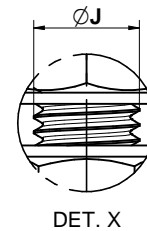
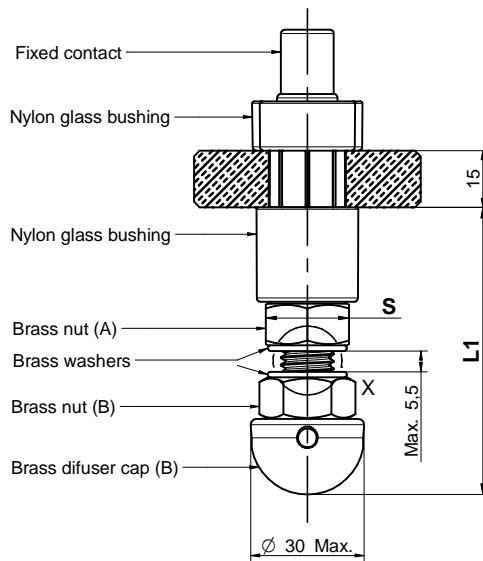


025-MRV-07
Rev. 00 - 09/12/2020

FIXED CONTACTS SERIES 025 - 200 A / 400 A / 600 A

Dimension in mm

TYPE	MAX. RATED THROUGH-CURRENT	RATED SHORT-CIRCUIT CURRENT	RATED SHORT-CIRCUIT DURATION
CAP200	200 A	3,3 kA	2 S
CAP400	400 A	4 kA	2 S
CAP600	600 A	6 kA	2 S



TYPE	MATERIAL	SURFACE TREATMENT	Ø J	S	L1	TIGHTENING TORQUE (A) (Max.)	TIGHTENING TORQUE (B) (Max.)
CAP200	Brass	On request silver plated	M10	17	69	25 Nm	25 Nm
CAP400	Brass	On request silver plated	M14	22	76	45 Nm	45 Nm
CAP600	Copper	Silver plated	M16	24	82	60 Nm	60 Nm

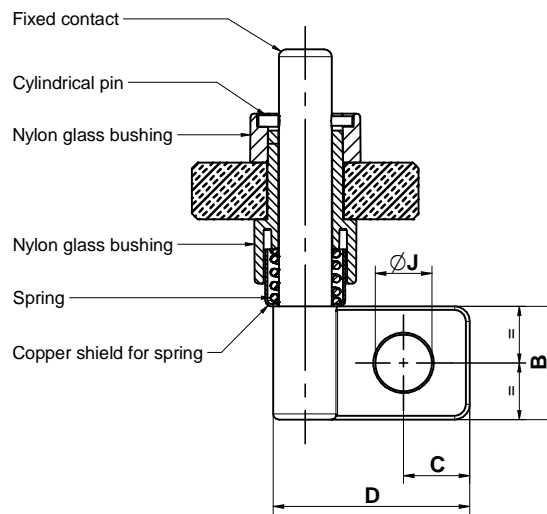
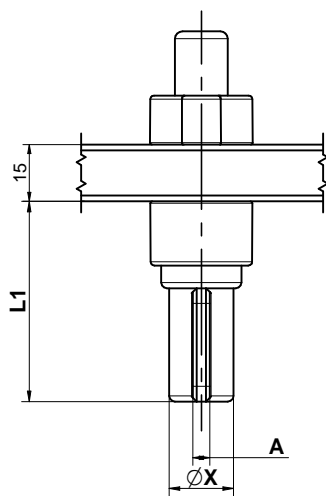
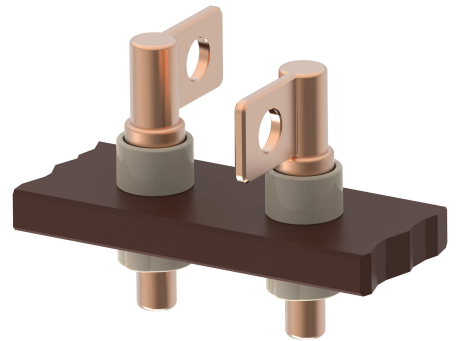


025-02
Rev. 03 - 09/12/2020

FLAG CONTACTS SERIES 025 - 400 A / 600 A

Dimension in mm

TYPE	MAX. RATED THROUGH-CURRENT	RATED SHORT-CIRCUIT CURRENT	RATED SHORT-CIRCUIT DURATION
B30	400 A	4 kA	2 S
B40	400 A	4 kA	2 S
B60	600 A	6 kA	2 S



TYPE	MATERIAL	SURFACE TREATMENT	A	B	C	D	L1	ØJ	ØX
B30	Copper	On request silver plated	4,5	30	17,5	52	53	13	17
B40	Copper	On request silver plated	4,5	30	17,5	52	53	15	17
B60	Copper	Silver plated	10	40	20	61	64	13	18



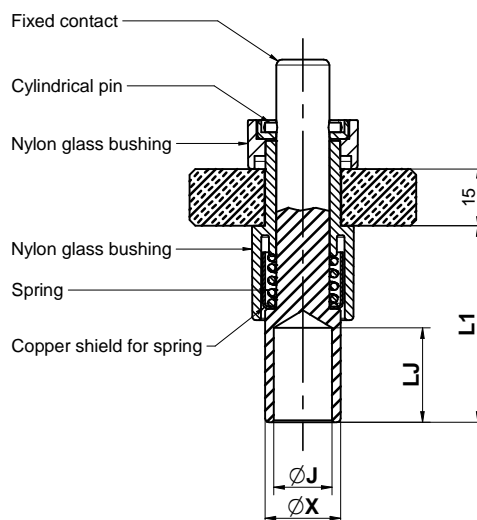
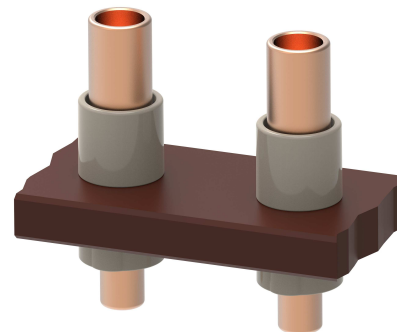
025-03
Rev. 03 - 10/12/2020

**FIXED CONTACTS FOR SOLDERING (or BRAZING)
or FOR CRIMPING SERIES 025 - 180 A / 330 A / 420 A**

Dimension in mm

The fixed contacts are removable for soldering (or brazing). To remove the contacts push them one at the time, while removing the pin which secures each of them in place.

TYPE	MAX. RATED THROUGH-CURRENT	RATED SHORT-CIRCUIT CURRENT	RATED SHORT-CIRCUIT DURATION
SAL180	180 A	3,1 kA	2 S
SAL330	330 A	4 kA	2 S
SAL420	420 A	4,2 kA	2 S



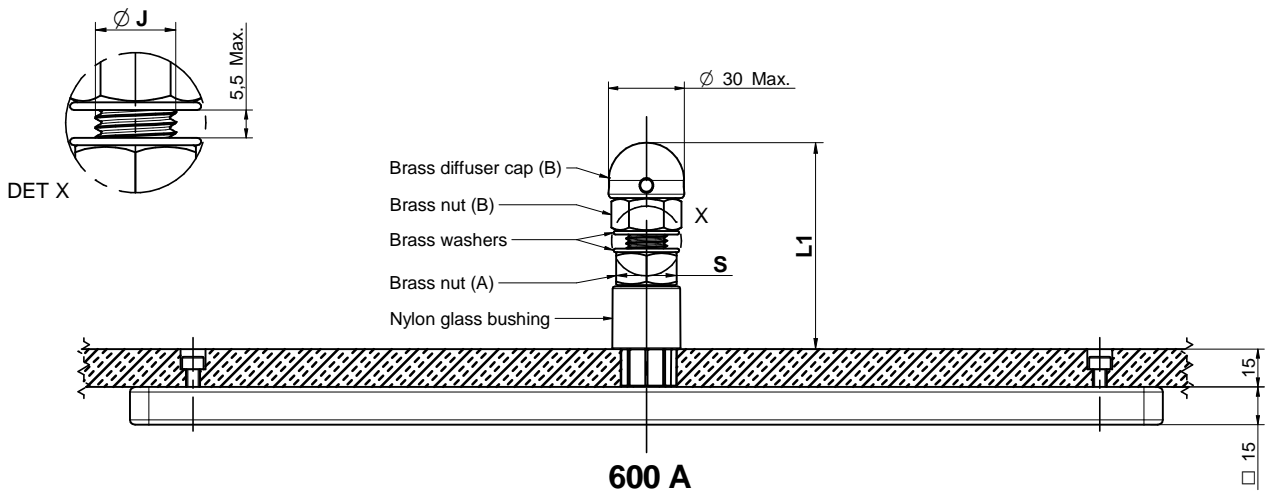
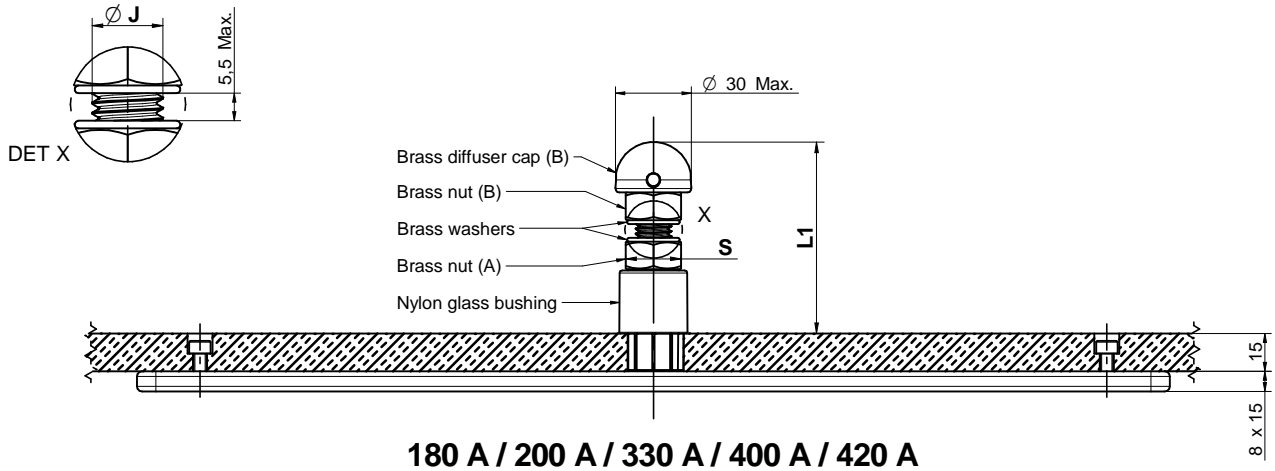
TYPE	MATERIAL	SURFACE TREATMENT	ØJ	ØX	L2	L1
SAL180	Copper	On request silver plated	11	14	25	52
SAL330	Copper	On request silver plated	13,5	18	25	52
SAL420	Copper	On request silver plated	15,5	20	25	52



025-04
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TORQUE FOR COMMON CONTACTS SERIES 025

Dimension in mm



CONTACT TYPE	MATERIAL	SURFACE TREATMENT	MAX. CURRENT Amp.	Ø J	S	L1	TIGHTENING TORQUE (A) Nm (Max.)	TIGHTENING TORQUE (B) Nm (Max.)
CAP200	Brass	On request silver plated	200	M10	17	69	15	25
CAP400 - B30 - B40	Brass	On request silver plated	400	M14	22	76	15	45
CAP600 - B60	Copper	On request silver plated	600	M16	24	82	30	60
SAL 180	Brass	On request silver plated	180	M10	17	69	15	25
SAL 330	Brass	On request silver plated	330	M12	19	73	15	35
SAL 420	Brass	On request silver plated	420	M14	22	76	15	45



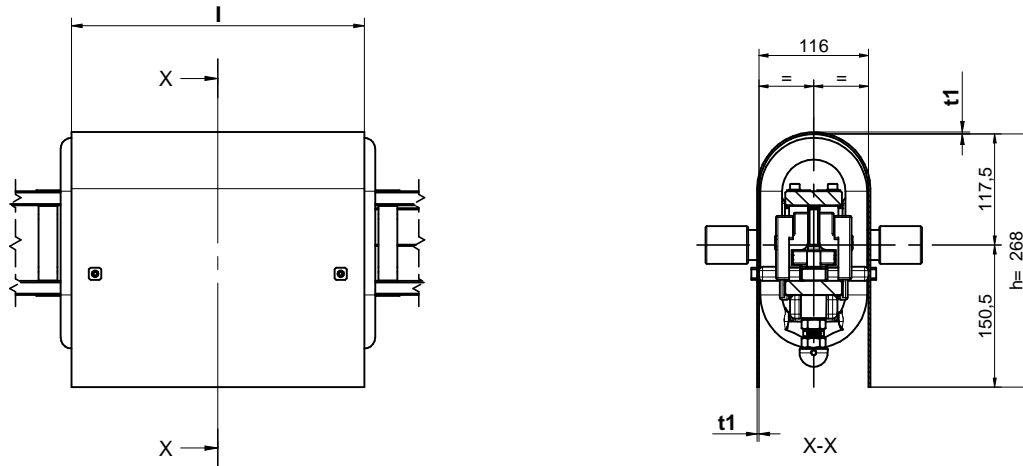
025-05
Rev. 03 - 11/12/2020

Dimension in mm

PROTECTIVE PRESSBOARD BOX SHIELD

Material : TIV type B 3.1

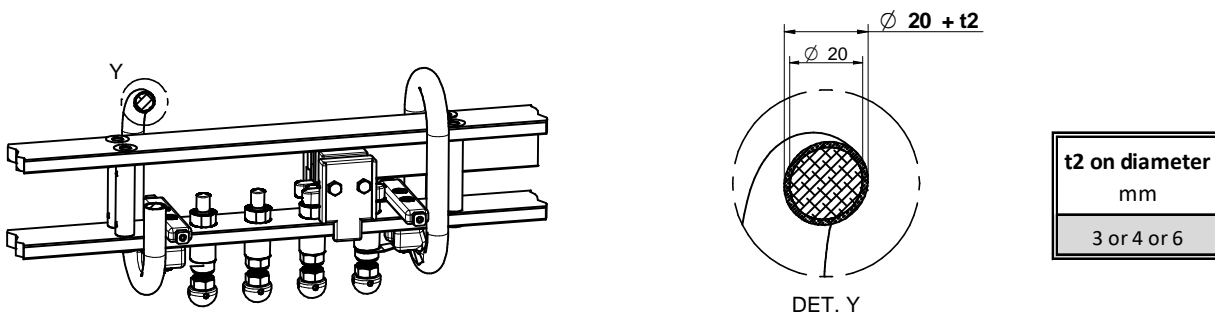
NOT supplied for model: MRV



l	t1 mm
A1 x n° positions + 130 mm	1,5 or 2 or 3

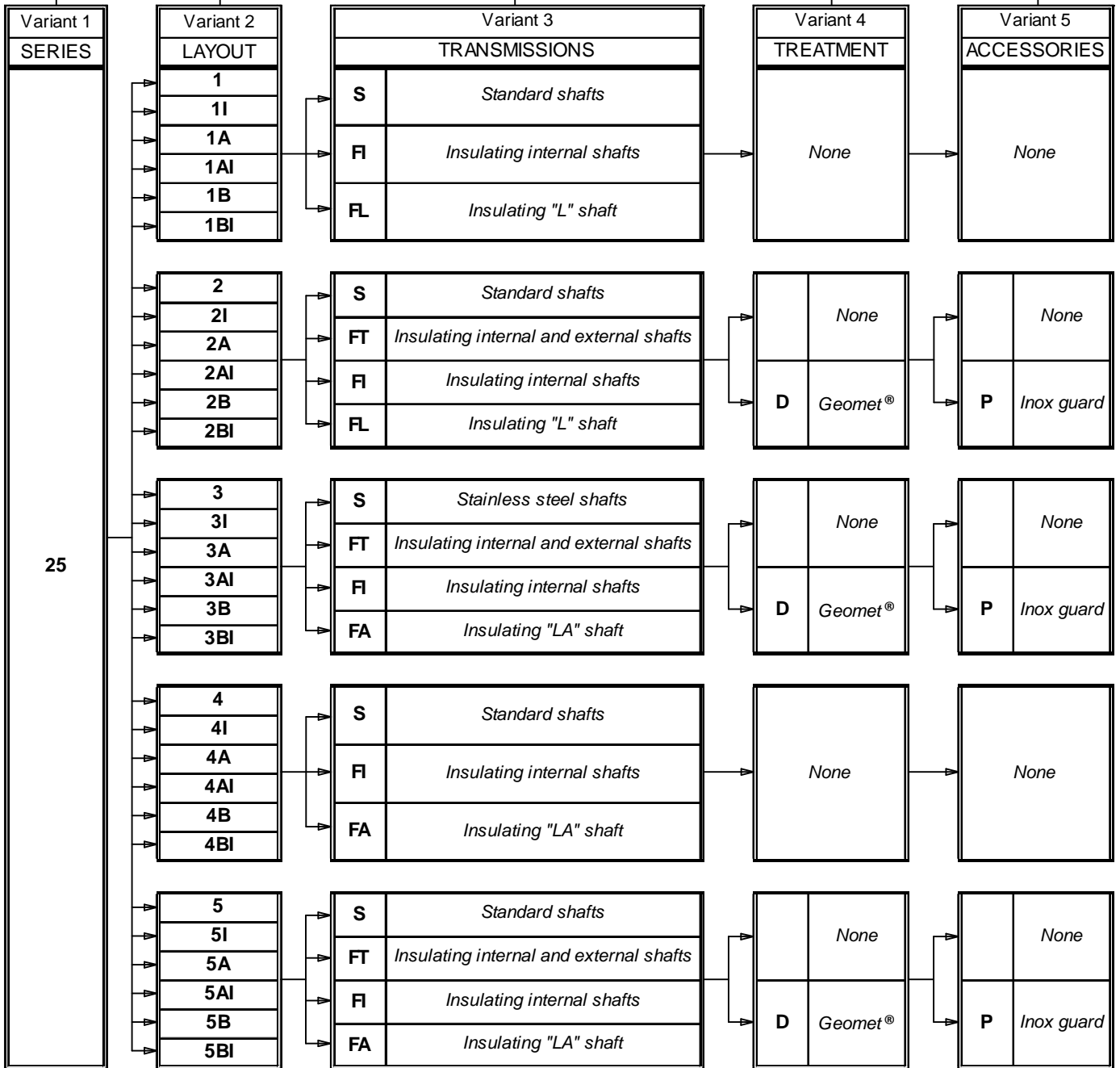
A1: pitch between fixed contacts

EQUIPOTENTIAL RINGS WRAPPED WITH PAPPER KRAFT



t2 on diameter mm
3 or 4 or 6

Example: 070 - 25 . LAYOUT 2AI . FI - DP



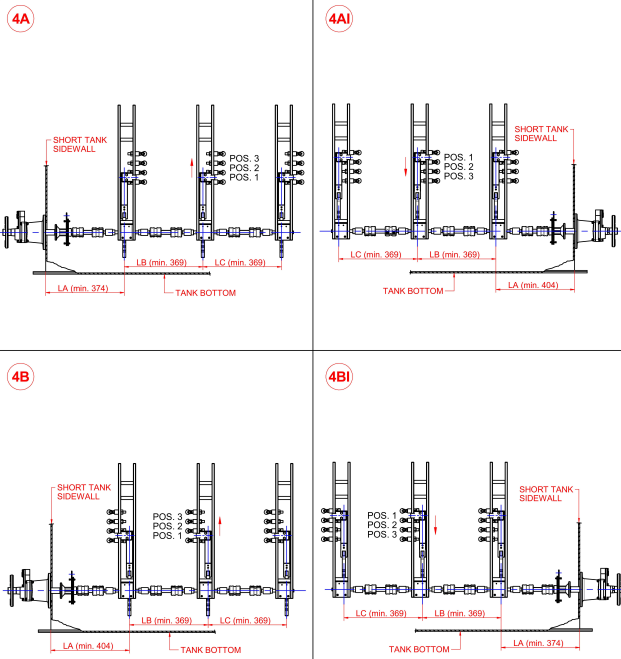
DETC TAP CHANGERS SERIES 025

- CHOICE OF POSITIONS NUMBERING

Dimension in mm

ASSEMBLY DIAGRAM 070-25.LAYOUT4

Dimension in mm



de-energized tap changers

SPT-025

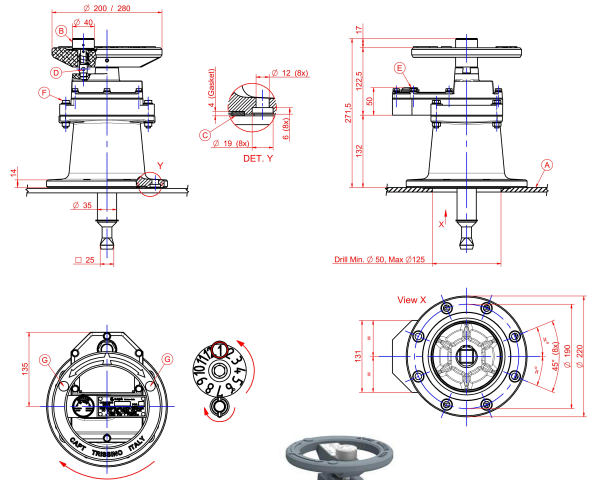
025-14
Rev. 01 - 20/02/2017

Pag. 24/27

DRIVE TYPE 070-1.12.208

- CONTROL BOX DETAIL LOCATED ON TRANSFORMER TANK WALL

Dimension in mm



- Standard drive can be used at max. 12 positions.
- Standard type with 1 turn of 360° for each position.
- Special type with 2 or more turns.
- Standard paint RAL 7031.

- A) Transformer tank wall.
- B) Mechanical block with padlock.
- C) Flat gasket 4 mm thickness.
- D) Hole ø6 for padlock.
- E) Numbering window.
- F) Transformer active part can be removed after unscrewing the M8 four bolts "E" and pulling out, for 120 mm, wheel and numbering box.
- G) Signs +/- (or others) for raising and lowering tap position have to be engraved by transformer manufacturer.



de-energized tap changers

070

070-1.12.208
Rev. 05 - 07/02/2017

Pag. 14/31

The STANDARD positions numbering on each assembly diagram corresponds to the standard numbering on drives and bevel gears catalogue pages.

Numerations different from those on the catalogue must be expressly specify with the quotation request.

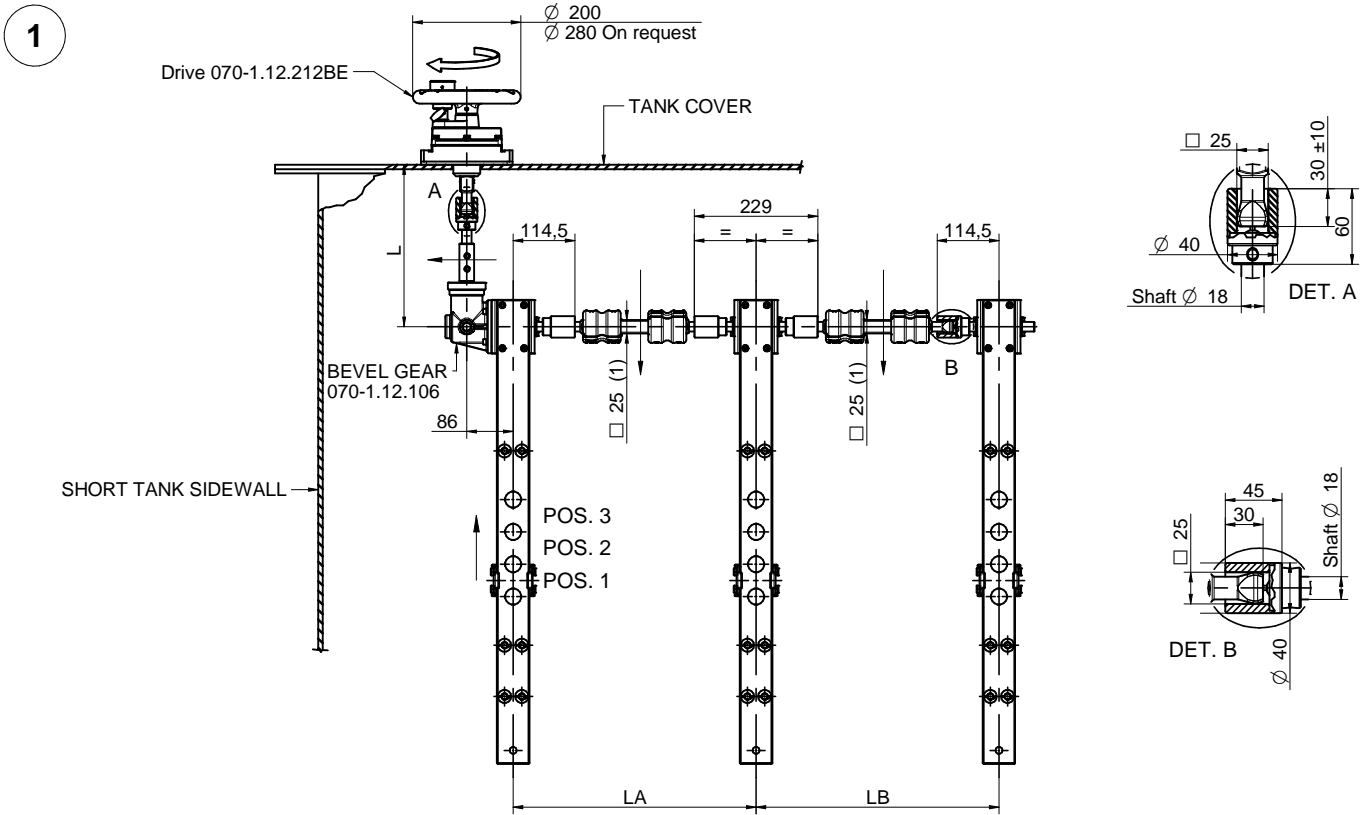


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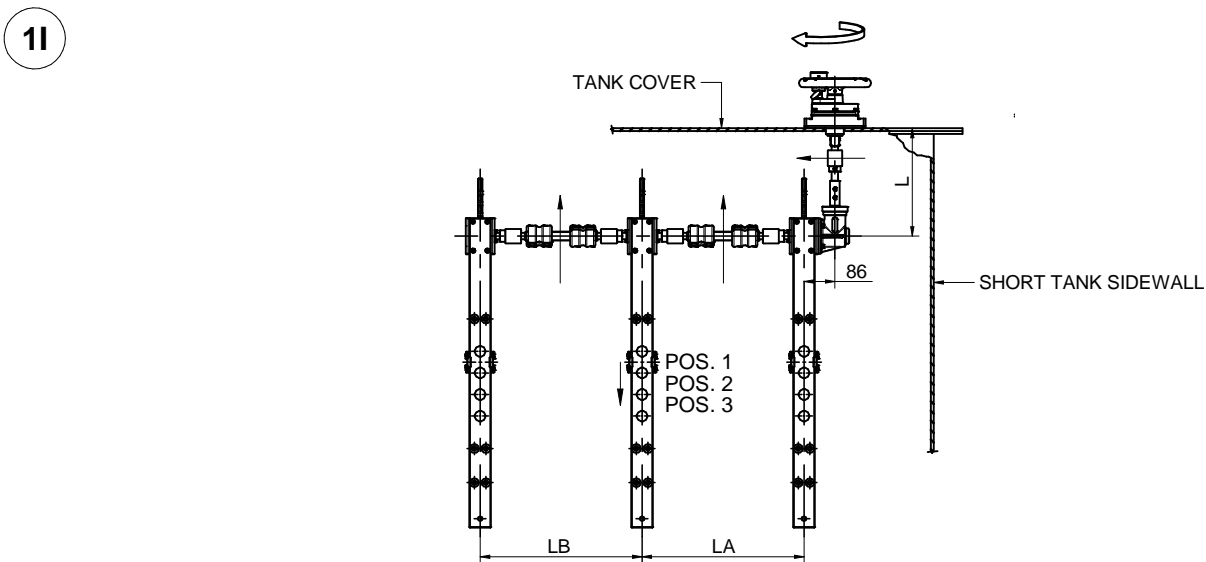
025-18
Rev. 01 - 11/12/2020

ASSEMBLY DIAGRAM 070-25.LAYOUT1

Dimension in mm



(1) Stainless steel squared pipe; insulating squared shaft only on request, Max. inclination 8°.



← Shaft direction of rotation

For dimensions L, LA, LB see page 50 ref. 025-19

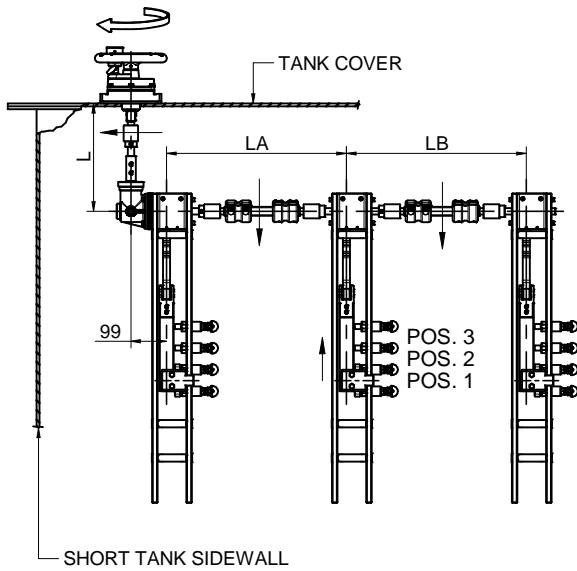


025-07
Rev. 02 - 21/06/2021

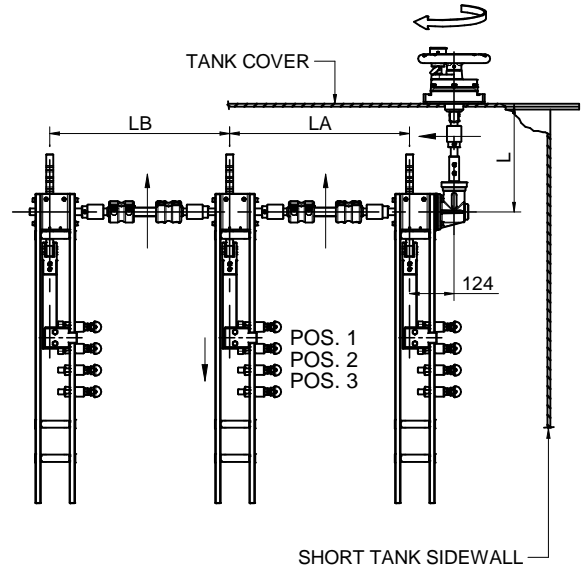
ASSEMBLY DIAGRAM 070-25.LAYOUT1

Dimension in mm

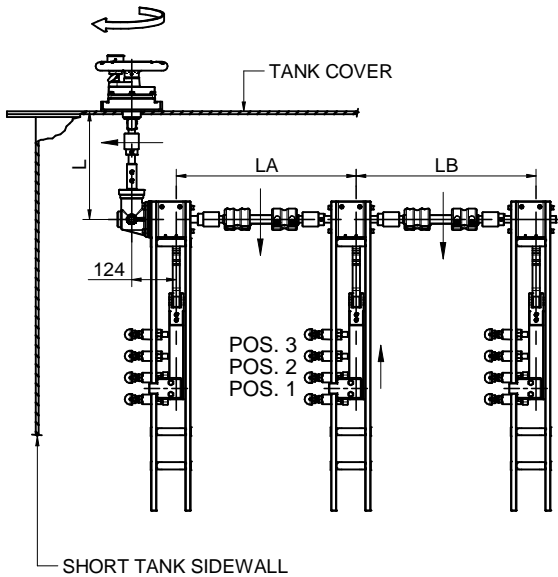
1A



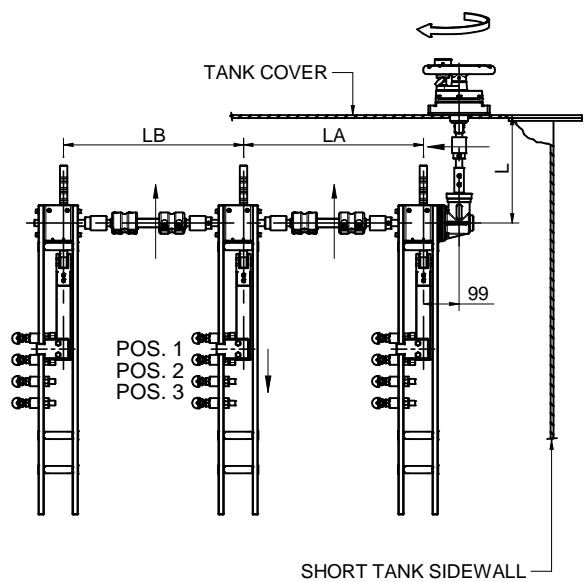
1AI



1B



1BI



← Shaft direction of rotation

For dimensions L, LA, LB see page 50 ref. 025-19



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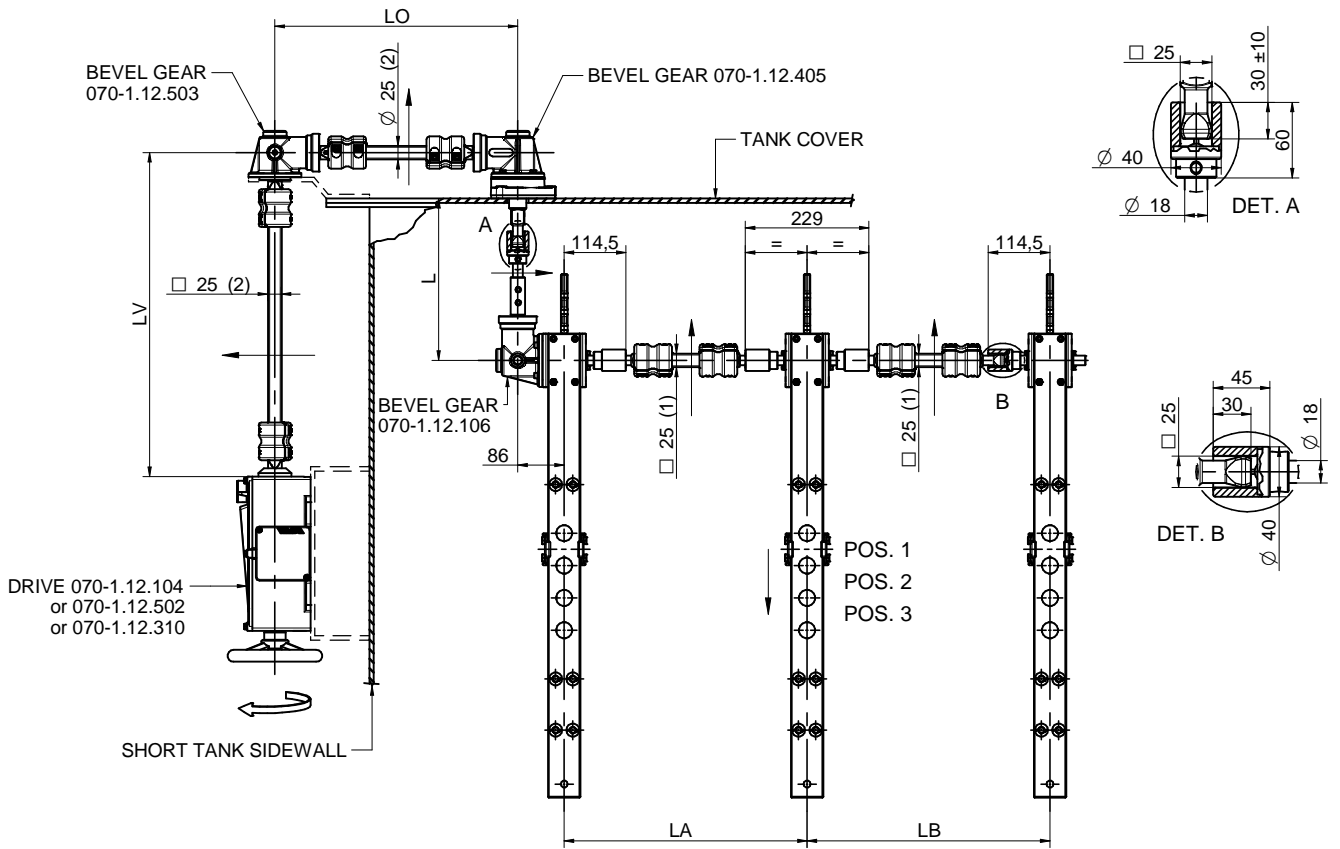
025-08

Rev. 03 - 22/06/2021

ASSEMBLY DIAGRAM 070-25.LAYOUT2

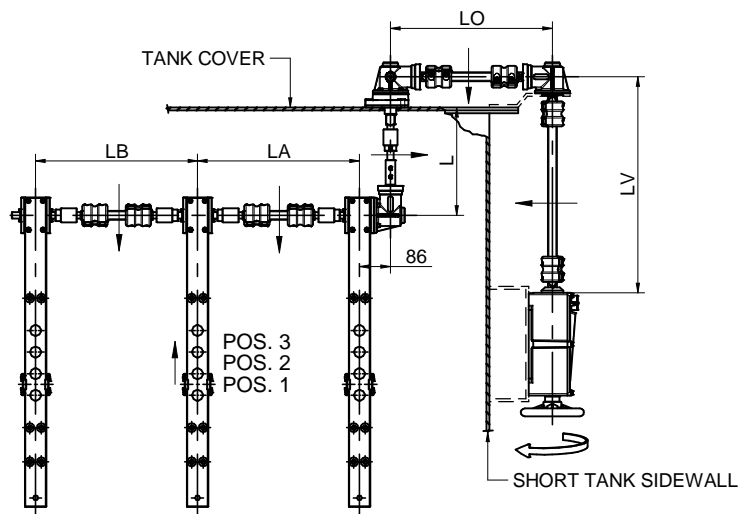
Dimension in mm

2



- (1) Stainless steel squared pipe; insulating squared shaft only on request
Max. inclination 8°.
- (2) Stainless steel squared pipe.

2I



← Shaft direction of rotation

For dimensions L, LA, LB see page 50 ref. 025-19
For dimension LO, LV see page 51 ref. 025-20

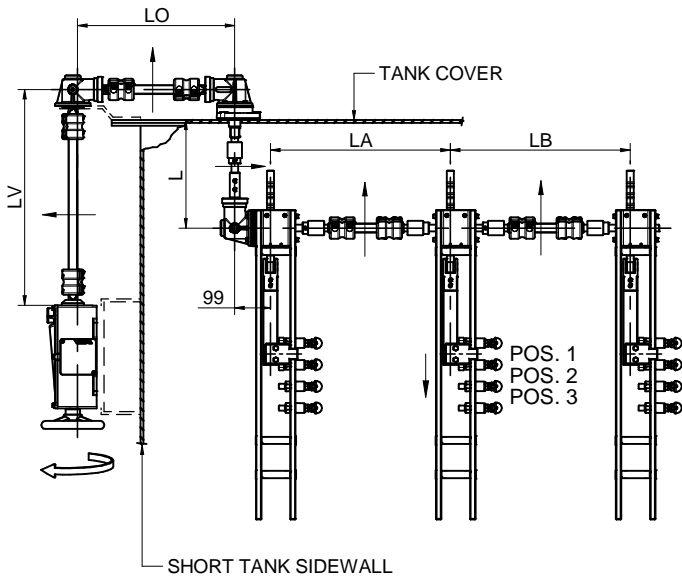


025-09
Rev. 03 - 22/06/2021

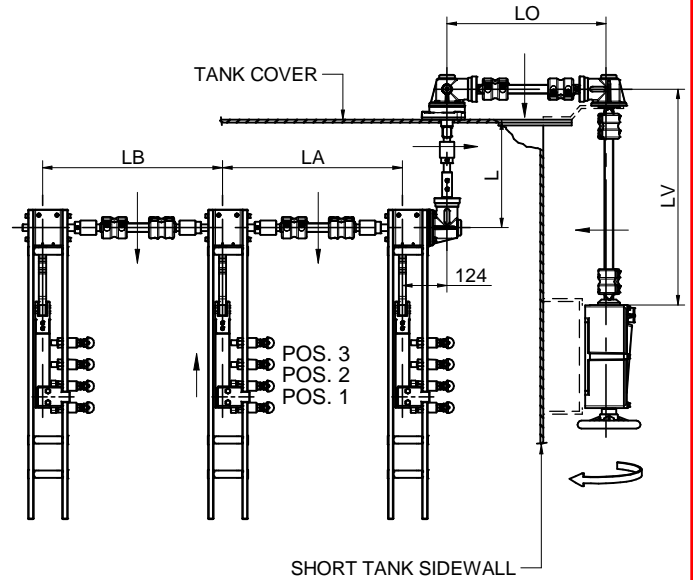
ASSEMBLY DIAGRAM 070-25.LAYOUT2

Dimension in mm

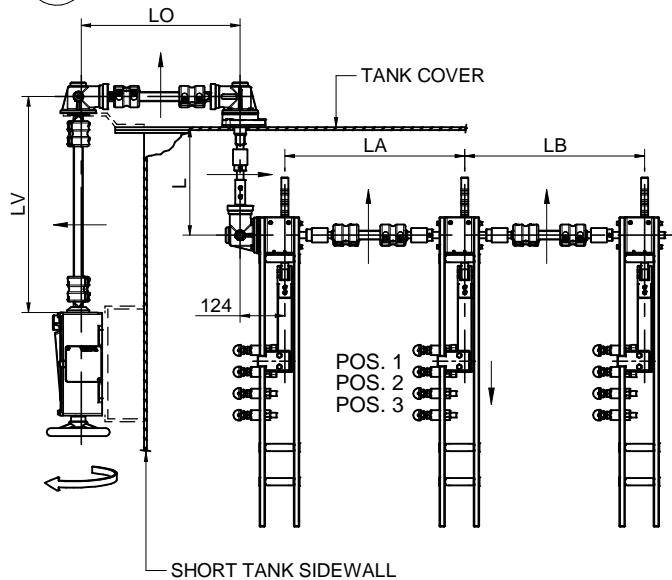
2A



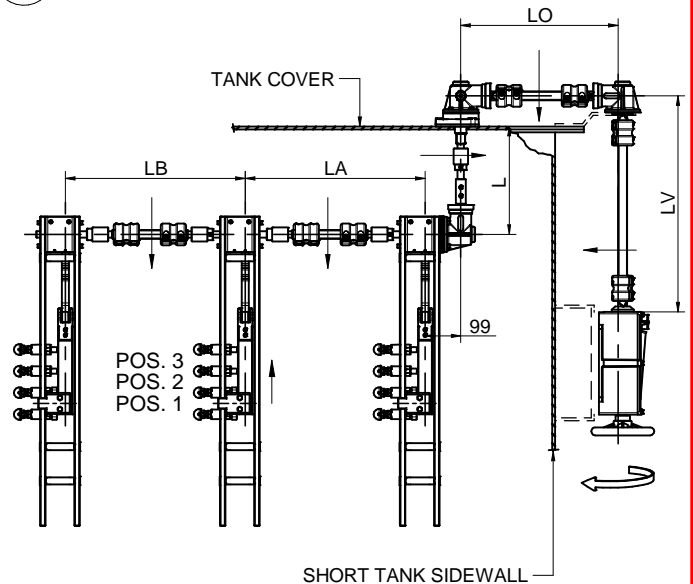
2AI



2B



2BI



← Shaft direction of rotation

For dimensions L, LA, LB see page 50 ref. 025-19
For dimension LO, LV see page 51 ref. 025-20



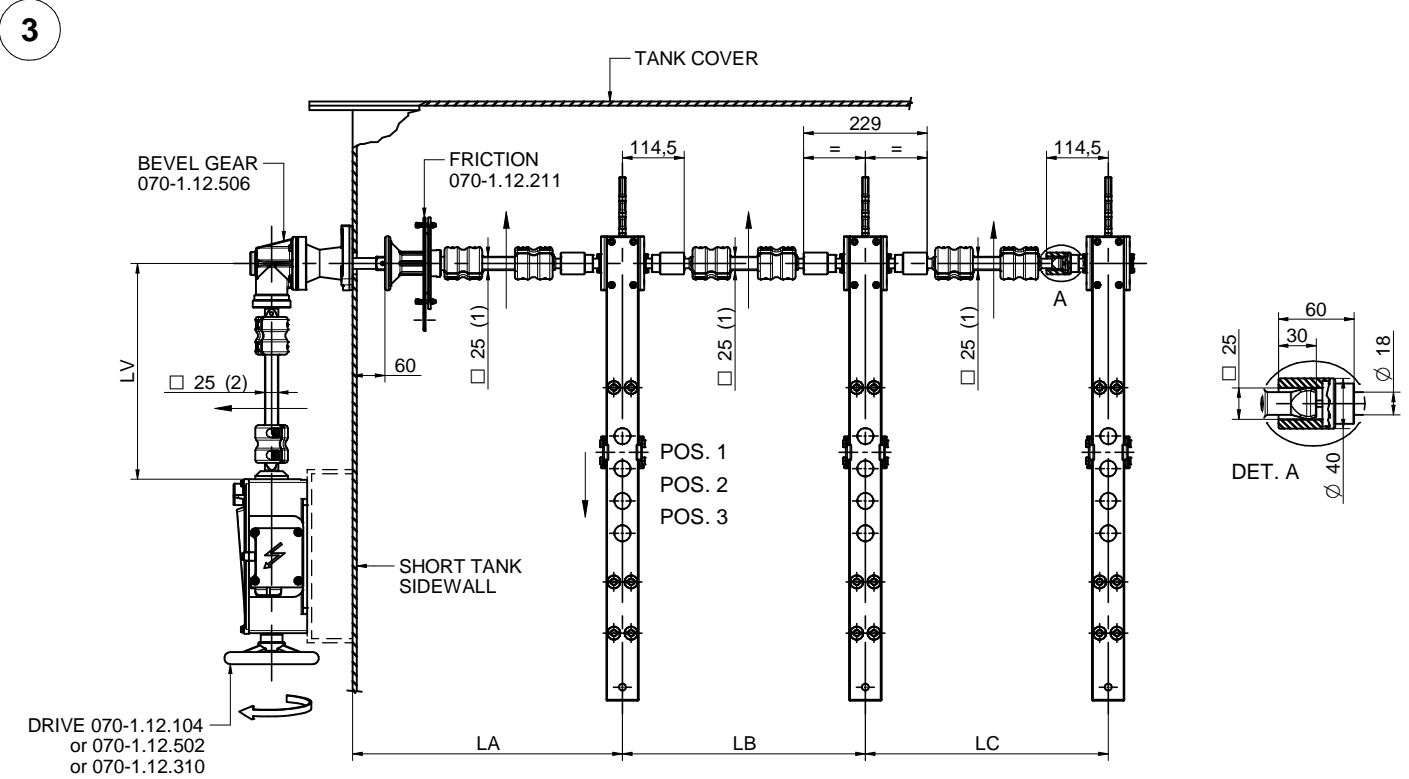
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025-10

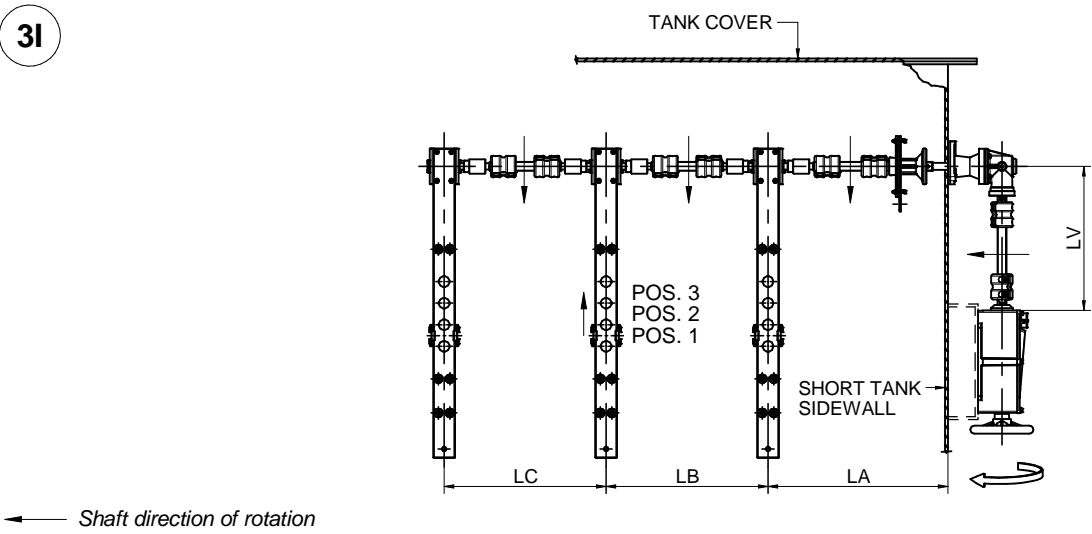
Rev. 02 - 23/06/2021

ASSEMBLY DIAGRAM 070-25.LAYOUT3

Dimension in mm



- (1) Stainless steel squared pipe; insulating squared shaft only on request
Max. inclination 8°.
- (2) Stainless steel squared pipe.



← Shaft direction of rotation
 For dimensions LA, LB, LC see page 50 ref. 025-19
 For dimension LV see page 51 ref. 025-20

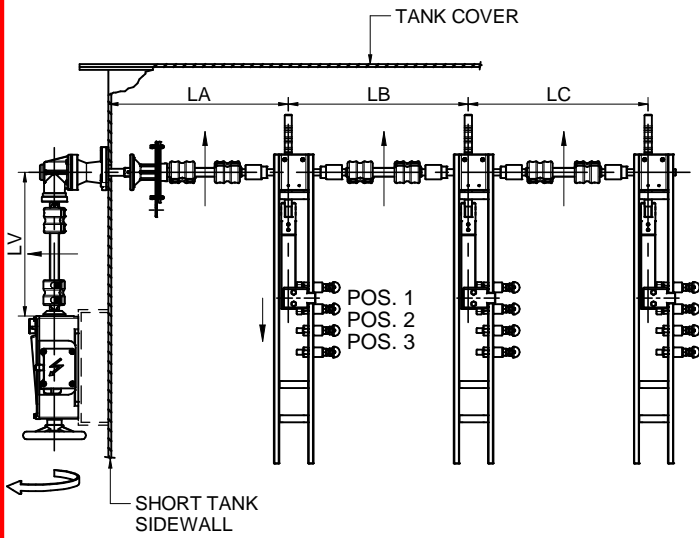


025-11
 Rev. 02 - 11/12/2020

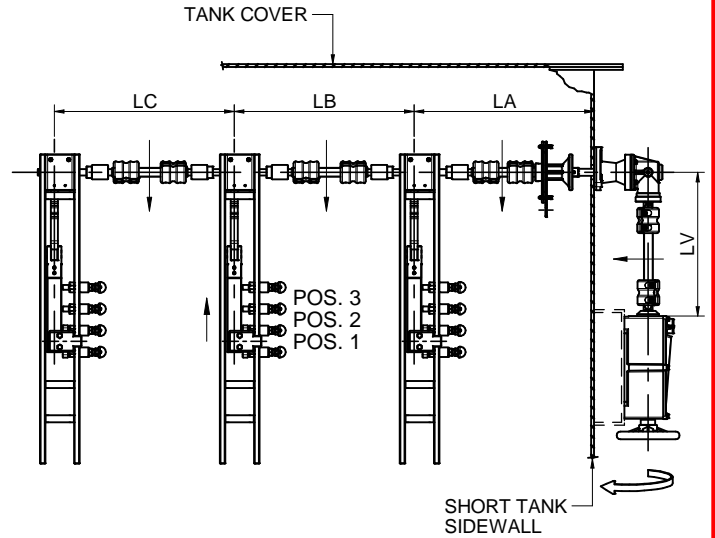
ASSEMBLY DIAGRAM 070-25.LAYOUT3

Dimension in mm

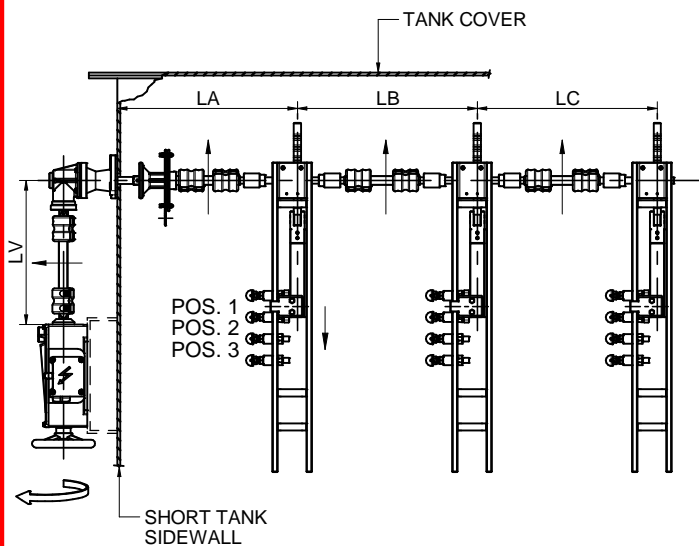
3A



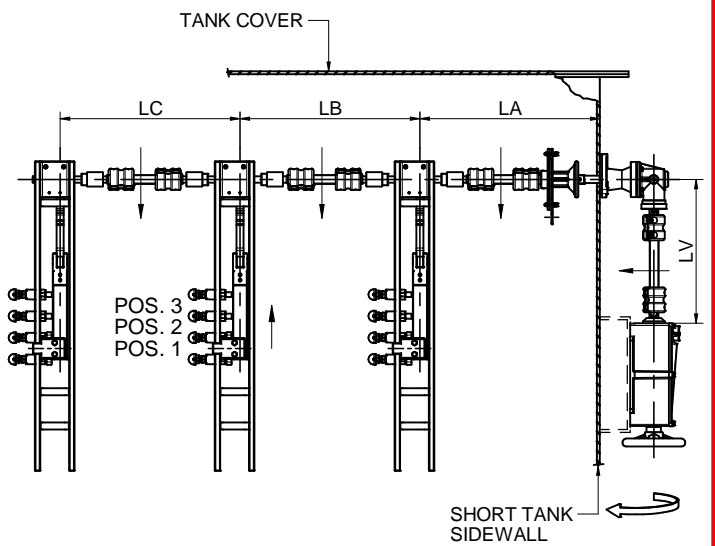
3AI



3B



3BI



← Shaft direction of rotation

For dimensions LA, LB, LC see page 50 ref. 025-19
 For dimension LV see page 51 ref. 025-20



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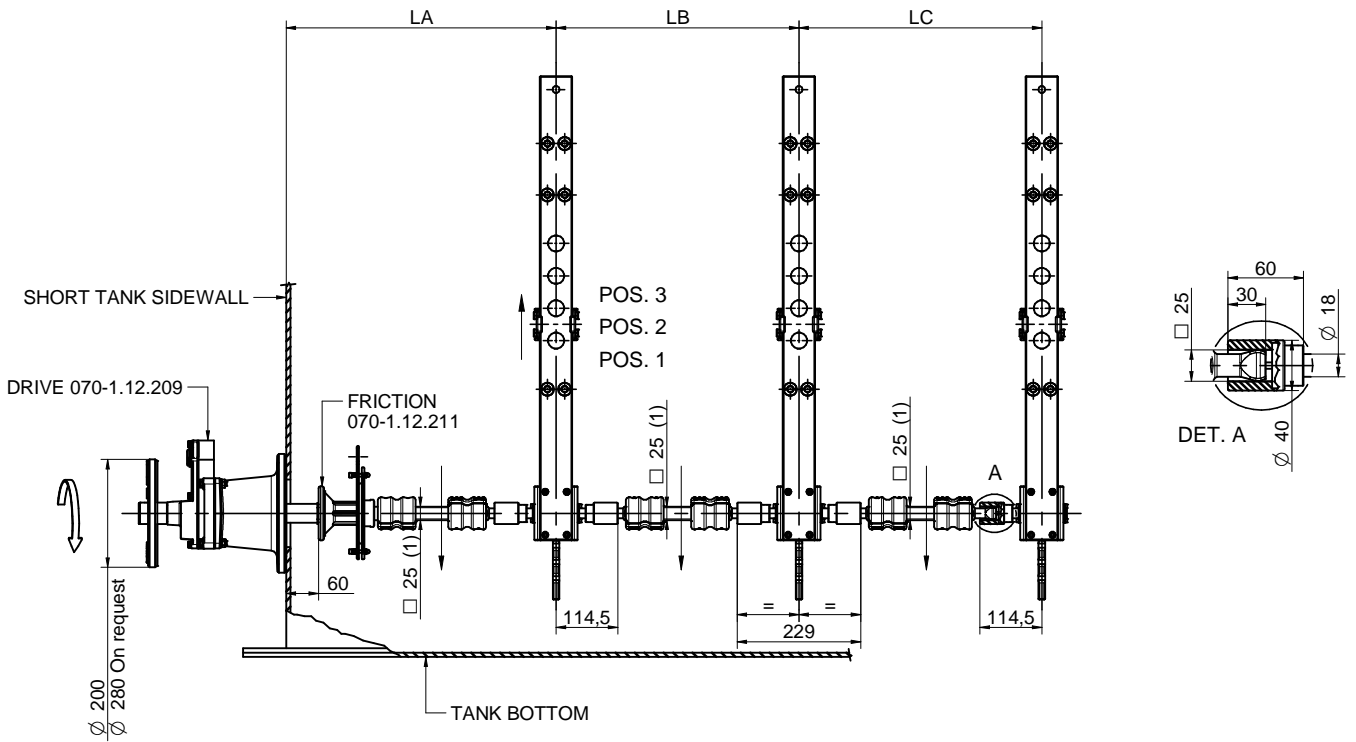
025-12

Rev. 02 - 27/04/2020

ASSEMBLY DIAGRAM 070-25.LAYOUT4

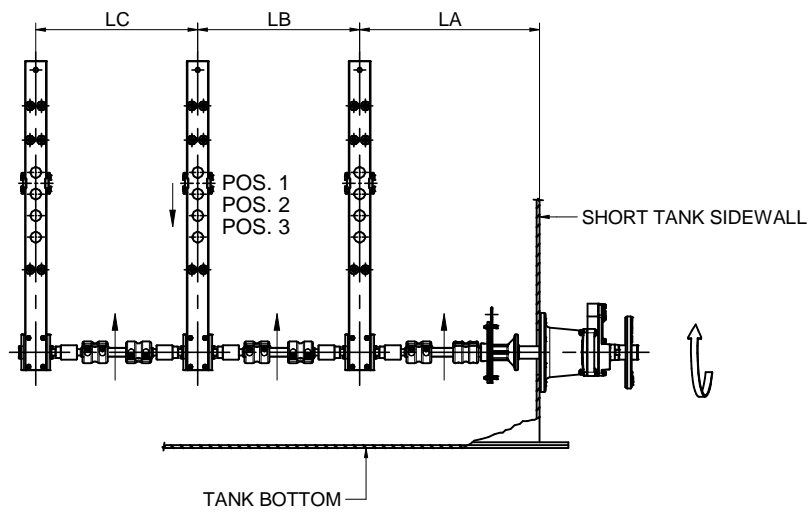
Dimension in mm

4



(1) Stainless steel squared pipe; insulating squared shaft only on request
Max. inclination 8°.

4I



← Shaft direction of rotation

For dimensions LA, LB, LC see page 50 ref. 025-19

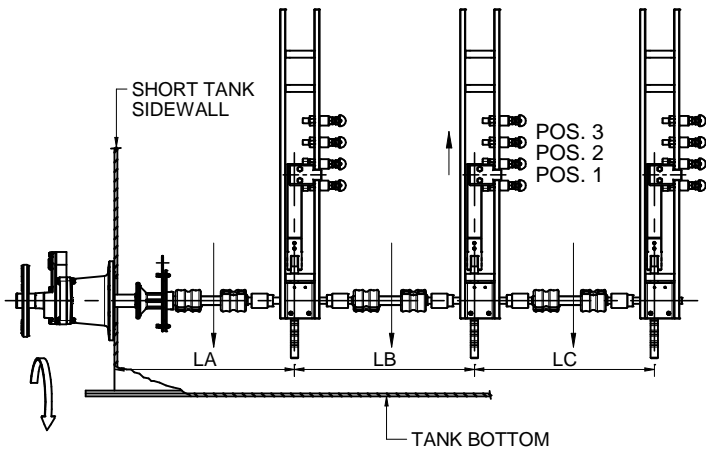


025-13
Rev. 02 - 11/12/2020

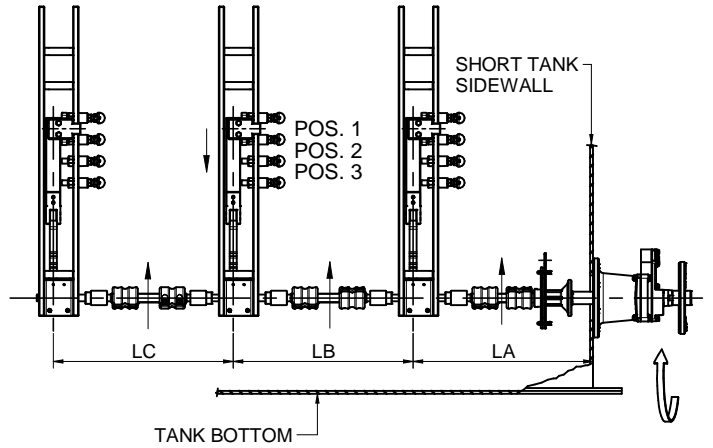
ASSEMBLY DIAGRAM 070-25.LAYOUT4

Dimension in mm

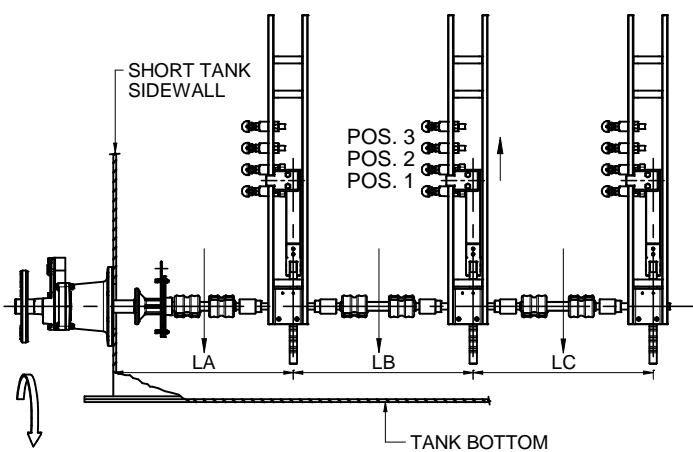
4A



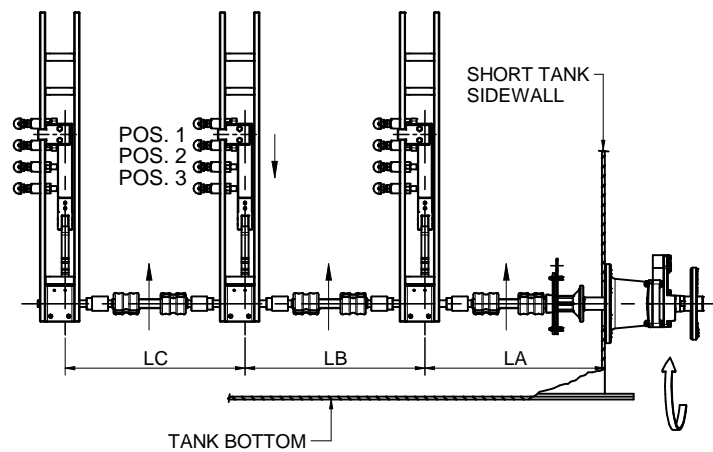
4AI



4B



4BI



← Shaft direction of rotation

For dimensions LA, LB, LC see page 50 ref. 025-19



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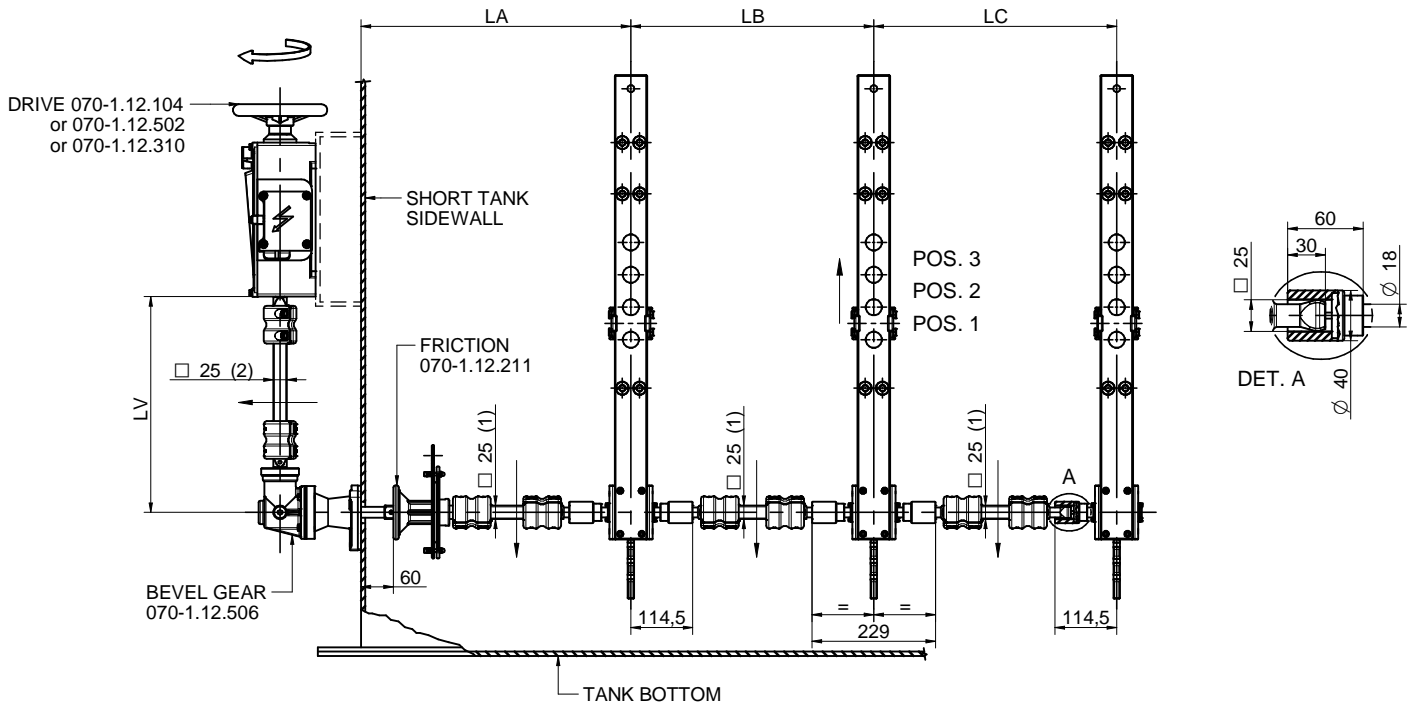
025-14

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ASSEMBLY DIAGRAM 070-25.LAYOUT5

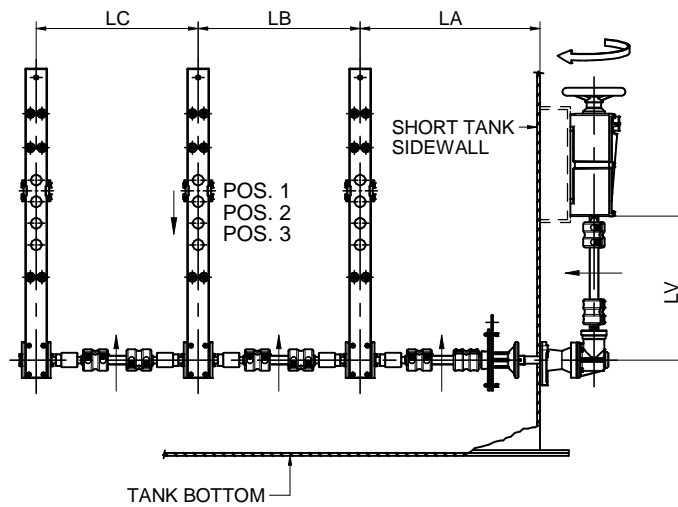
Dimension in mm

5



- (1) Stainless steel squared pipe; insulating squared shaft only on request
Max. inclination 8°.
- (2) Stainless steel squared pipe.

5I



← Shaft direction of rotation

For dimensions LA, LB, LC see page 50 ref. 025-19
For dimension LV see page 51 ref. 025-20

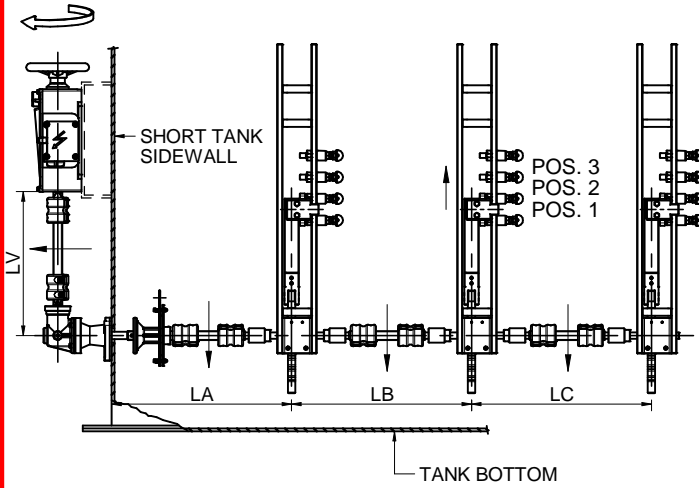


025-15
Rev. 02 - 11/12/2020

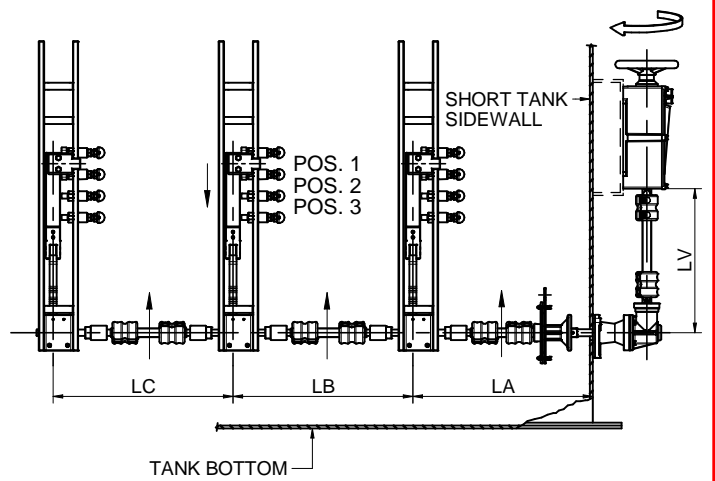
ASSEMBLY DIAGRAM 070-25.LAYOUT5

Dimension in mm

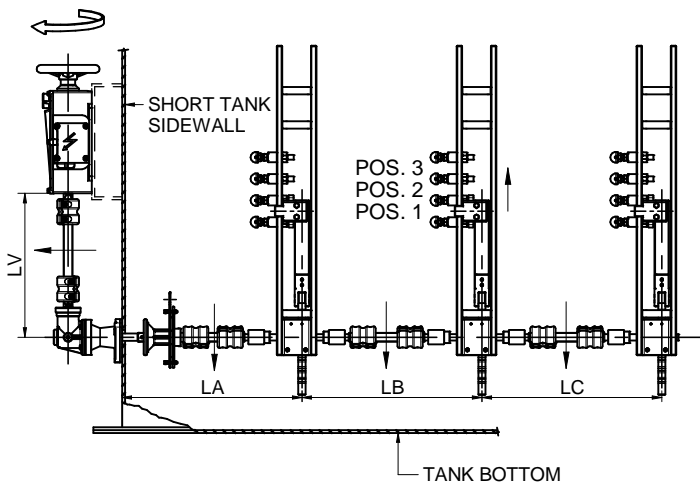
5A



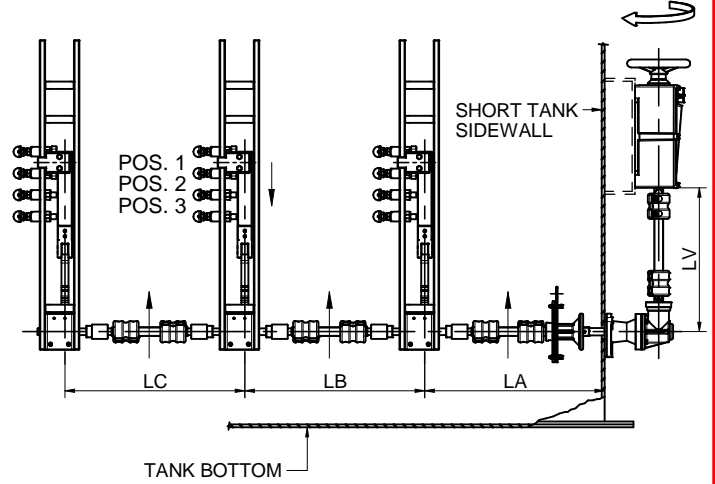
5AI



5B



5BI



← Shaft direction of rotation

For dimensions LA, LB, LC see page 50 ref. 025-19

For dimension LV see page 51 ref. 025-20



025-16

Rev. 02 - 11/12/2020

DIMENSIONS DRIVE SHAFTS FOR ASSEMBLY DIAGRAMS

Dimension in mm

REFERENCE LAYOUT	INTERNAL SHAFTS							
	METALLIC SHAFT				INSULATED SHAFT			
	L MIN.	LA MIN.	LB MIN.	LC MIN.	L MIN.	LA MIN.	LB MIN.	LC MIN.
070-25.LAYOUT1	220 with C* ≤160	329	329	X	345 with C* ≤280	405	405	X
070-25.LAYOUT1I	220 with C* ≤160	329	329	X	345 with C* ≤280	405	405	X
070-25.LAYOUT1A	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT1AI	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT1B	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT1BI	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT2	220 with C* ≤160	329	329	X	345 with C* ≤280	405	405	X
070-25.LAYOUT2I	220 with C* ≤160	329	329	X	345 with C* ≤280	405	405	X
070-25.LAYOUT2A	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT2AI	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT2B	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT2BI	220 with C* ≤160	329	329	X	345 with C* ≤280	445	445	X
070-25.LAYOUT3	X	370	329	329	X	370	405	405
070-25.LAYOUT3I	X	370	329	329	X	370	405	405
070-25.LAYOUT3A	X	374	369	369	X	374	445	445
070-25.LAYOUT3AI	X	404	369	369	X	404	445	445
070-25.LAYOUT3B	X	404	369	369	X	404	445	445
070-25.LAYOUT3BI	X	374	369	369	X	374	445	445
070-25.LAYOUT4	X	370	329	329	X	370	405	405
070-25.LAYOUT4I	X	370	329	329	X	370	405	405
070-25.LAYOUT4A	X	374	369	369	X	374	445	445
070-25.LAYOUT4AI	X	404	369	369	X	404	445	445
070-25.LAYOUT4B	X	404	369	369	X	404	445	445
070-25.LAYOUT4BI	X	374	369	369	X	374	445	445
070-25.LAYOUT5	X	370	329	329	X	370	405	405
070-25.LAYOUT5I	X	370	329	329	X	370	405	405
070-25.LAYOUT5A	X	374	369	369	X	374	445	445
070-25.LAYOUT5AI	X	404	369	369	X	404	445	445
070-25.LAYOUT5B	X	404	369	369	X	404	445	445
070-25.LAYOUT5BI	X	374	369	369	X	374	445	445

DIMENSIONS DRIVE SHAFTS FOR ASSEMBLY DIAGRAMS

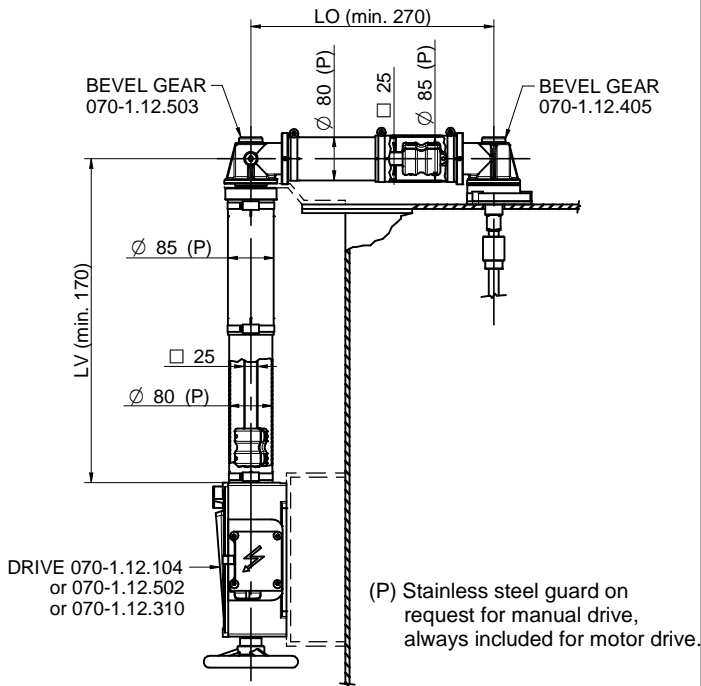
Dimension in mm

REFERENCE LAYOUT	EXTERNAL SHAFTS			
	LO MIN. METALLIC SHAFT	LV MIN. METALLIC SHAFT		
		With 070-1.12.104	With 070-1.12.502	With 070-1.12.310
070-25.LAYOUT2	270	170	175	330
070-25.LAYOUT2I	270	170	175	330
070-25.LAYOUT2A	270	170	175	330
070-25.LAYOUT2AI	270	170	175	330
070-25.LAYOUT2B	270	170	175	330
070-25.LAYOUT2BI	270	170	175	330
070-25.LAYOUT3	X	200	205	360
070-25.LAYOUT3I	X	200	205	360
070-25.LAYOUT3A	X	200	205	360
070-25.LAYOUT3AI	X	200	205	360
070-25.LAYOUT3B	X	200	205	360
070-25.LAYOUT3BI	X	200	205	360
070-25.LAYOUT5	X	185	182	360
070-25.LAYOUT5I	X	185	182	360
070-25.LAYOUT5A	X	185	182	360
070-25.LAYOUT5AI	X	185	182	360
070-25.LAYOUT5B	X	185	182	360
070-25.LAYOUT5BI	X	185	182	360

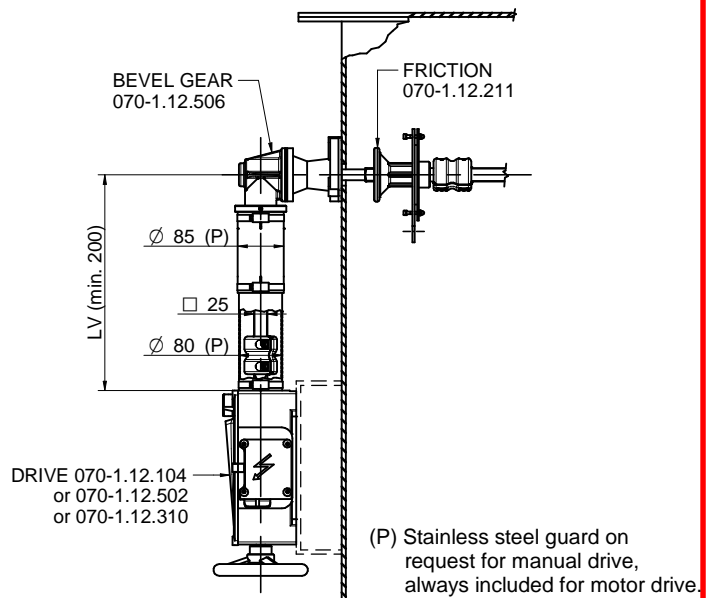
ACCESSORIES

Dimension in mm

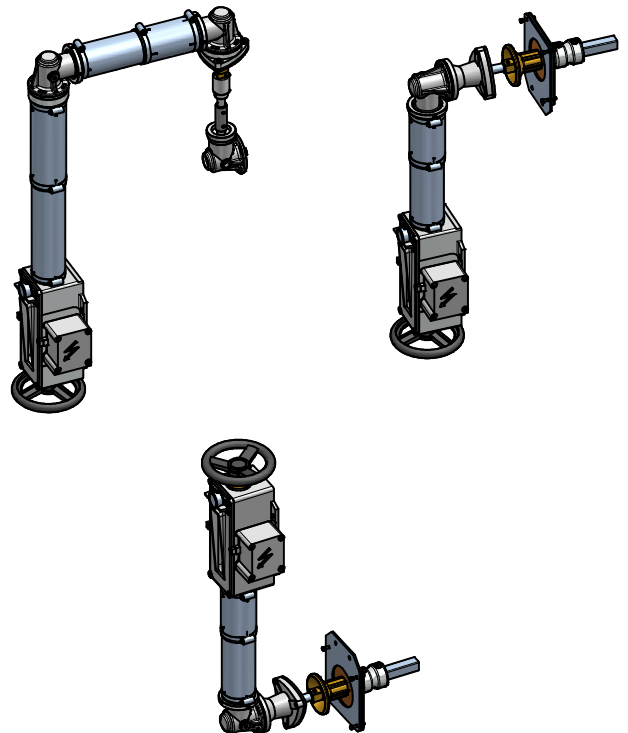
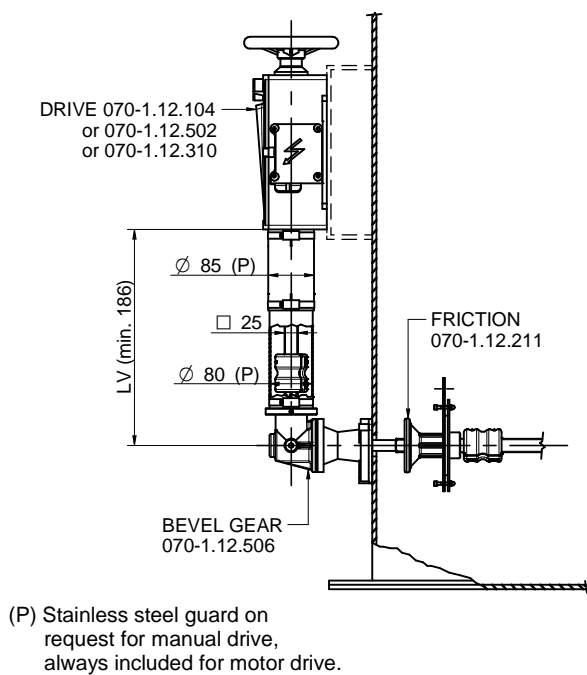
2A 2AI 2B 2BI



3A 3AI 3B 3BI



5A 5AI 5B 5BI



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Rev. 01 - 11/12/2020