

# NEWS AND MODIFICATIONS

TAP CHANGERS SERIES 085



MEMBER OF REINHAUSEN GROUP

# SUMMARY

## TAP CHANGERS TYPE 085

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# INTRODUCTION

## TAP CHANGERS TYPE 085

### MAIN CHARACTERISTIC

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

In the catalogue are performed the standard appliances and devices.

On request is possible to satisfy special requirements as:

- Single-phase
- multi-stage tap changers.

### 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:

Polyamide with fiber-glass for the 3 boards and epoxy fiberglass pipe for shaft drive.

### 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  $-25^{\circ}\text{C}$  and  $+105^{\circ}\text{C}$  and in air at temperatures between  $-25^{\circ}\text{C}$  and  $+40^{\circ}\text{C}$ .

On request, depending on the conditions of use C.A.P.T. can provide gaskets suitable for lower temperatures up to  $-60^{\circ}\text{C}$  or higher up to  $+200^{\circ}\text{C}$ .

### MECHANICAL CHARACTERISTICS

On this rotary tap-changer type 085 fixed contacts are mounted in three insulating boards, parallel to the drive shaft; moving contacts are installed on the cylindrical drive shaft. The three boards are fixed to the base steel support.

### CHANGING OVER

A numbering disk is provided to mark each position with precision. For any operation is necessary to lift the blocking pin and turn the knob to the new position; after that once the knob is facing its new one position, it drops automatically into the respective hole by the action of a spring. The control knob is marked with the inscription:

"WARNING: DO NOT OPERATE WHILE THE TRANSFORMER IS ENERGIZED".

### POSITION:

Standard from 2 to 6 positions

### VOLTAGES

Voltage classes are allowed:

Voltage class	Earth withstand voltage	
	Industrial frequency 50 Hz	Impulse 1/50
kV	kV	kV
24	50	125



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# INTRODUCTION

## TAP CHANGERS TYPE 085

### **CURRENT**

100 A.

### **METALLIC PARTS**

The metal components of drive can be supplied on request with GEOMET® treatment.

### **FIXED CONTACTS**

Brass fixed contacts type M6 for 100 A.

On request contacts can be silver-plated.

### **MOVING CONTACTS**

They are made of copper. On request, contacts can be supplied silver plated.

### **CODES**

To identify tap changer type by series and code, proceed like example below reported:

SERIES: 085 CODE: 04.90.205

<b>085-</b>	<b>.04</b>	<b>.90</b>	<b>.2</b>	<b>0</b>	<b>5</b>
Family	Type	Distance between phases	Voltage 24 kV	Current 100 A	Number of positions N°5

L = has to be determined with order

Please also specify type of control knob.

### **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 for 24-36 hours.

### **WHEN CONTACT C.A.P.T.**

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

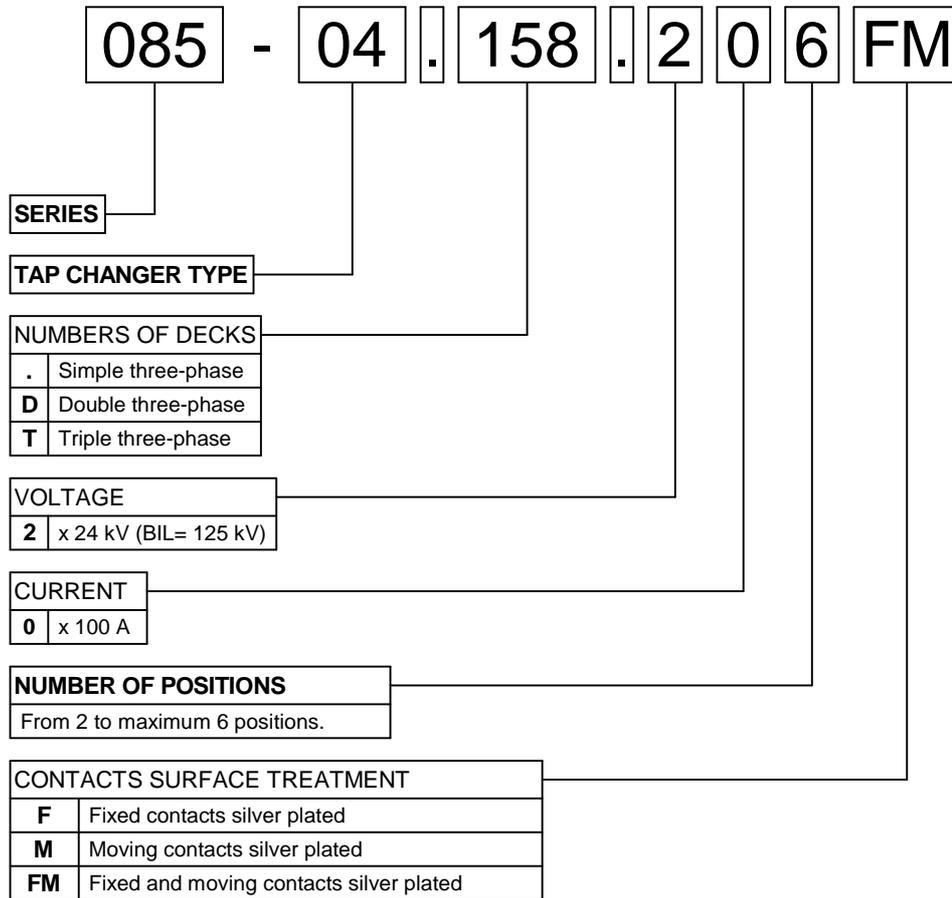
- for temperature condition higher/lower then suggest
- for hard environment conditions, with possibility of snow or sand storming, or in potential seismic area.



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# DETC THREE-PHASE TAP CHANGERS SERIES 085

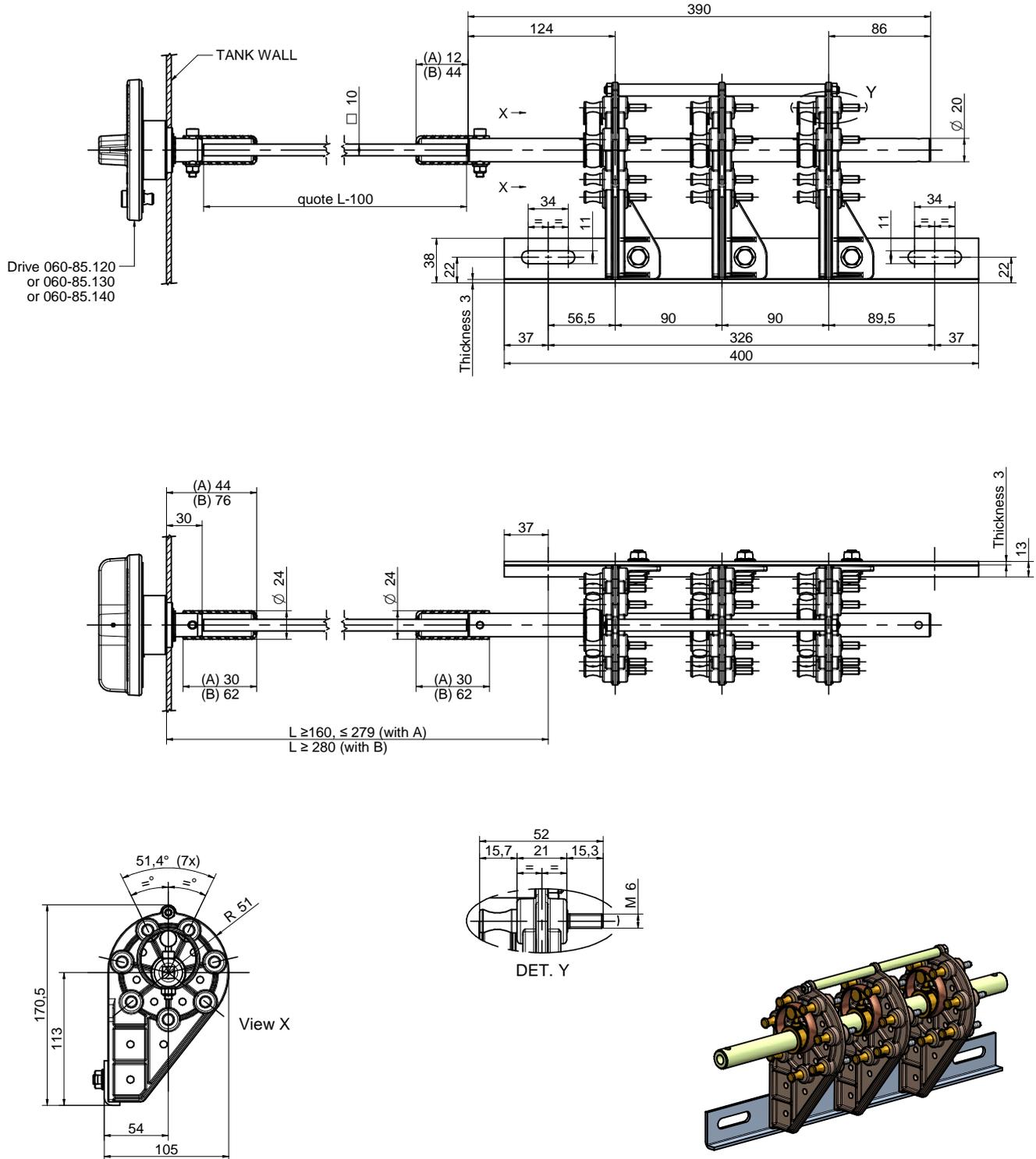
- CODE CONSTRUCTION



# DETC ROTARY THREE-PHASE TAP CHANGERS SERIES 085 TYPE 04

- De-energized operation
- For oil immersed transformer
- Bridge connection
- 24 kV
- 100 A
- From 2 to 6 positions
- Regulation 2,5% per position

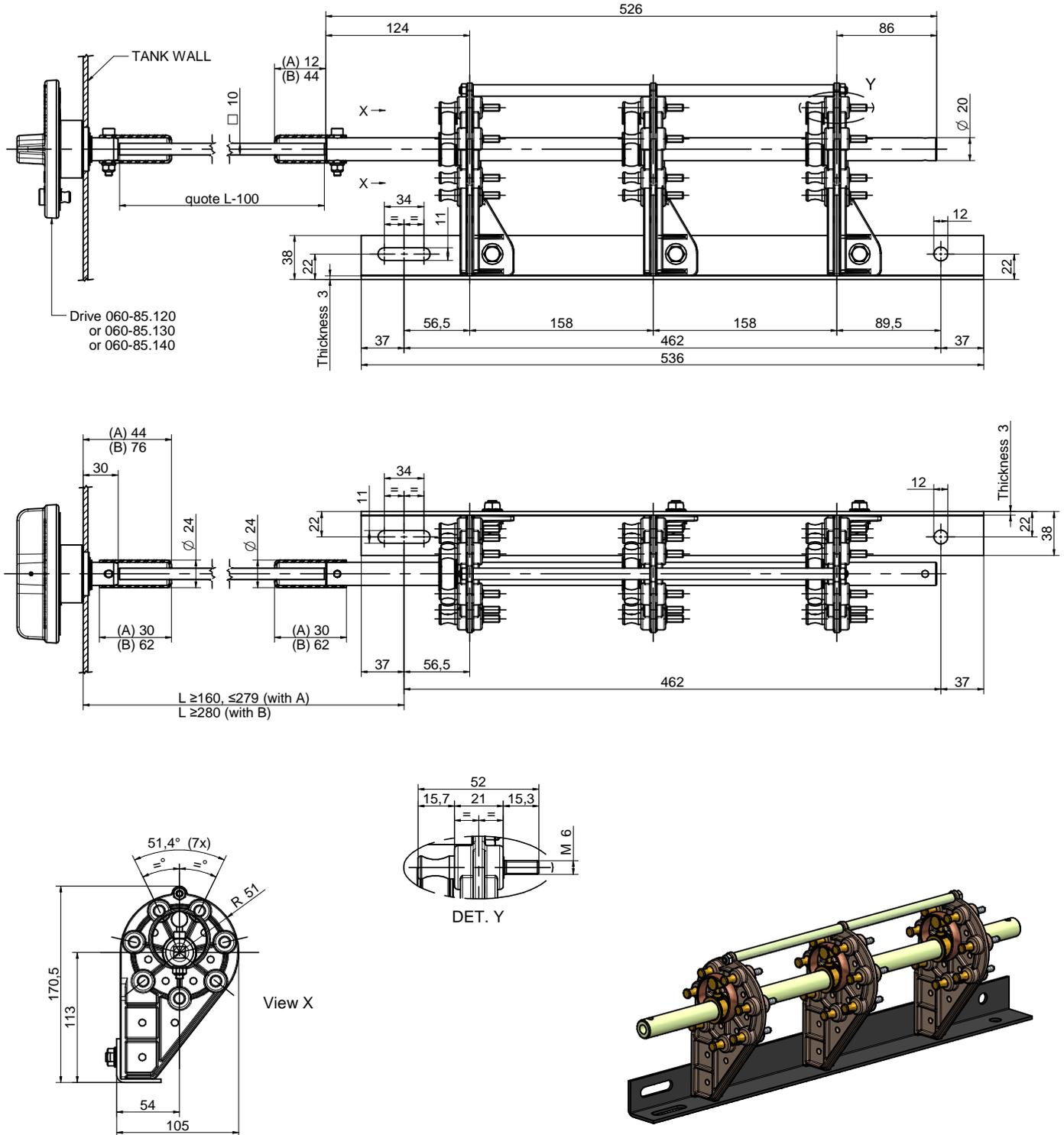
Dimension in mm



# DETC ROTARY THREE-PHASE TAP CHANGERS SERIES 085 TYPE 04

- De-energized operation
- For oil immersed transformer
- Bridge connection
- 24 kV
- 100 A
- From 2 to 6 positions
- Regulation 2,5% per position

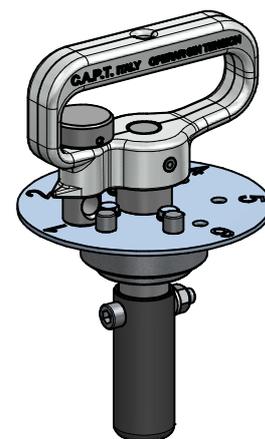
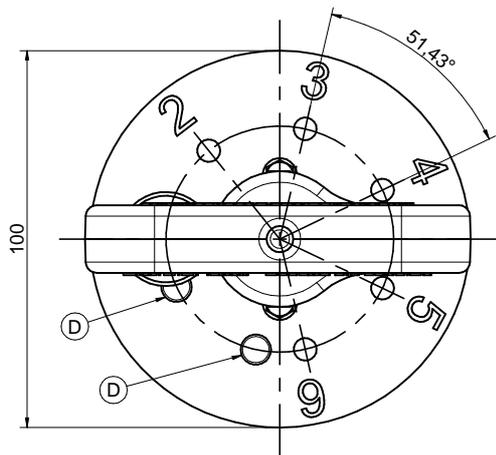
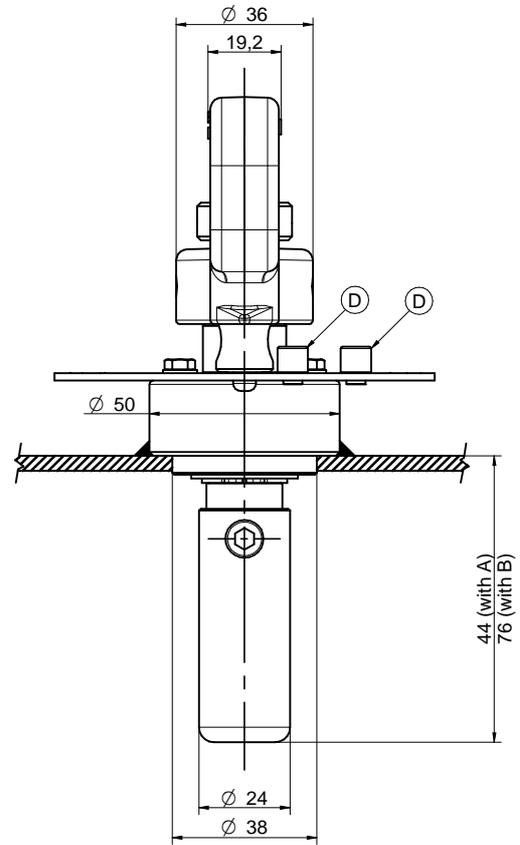
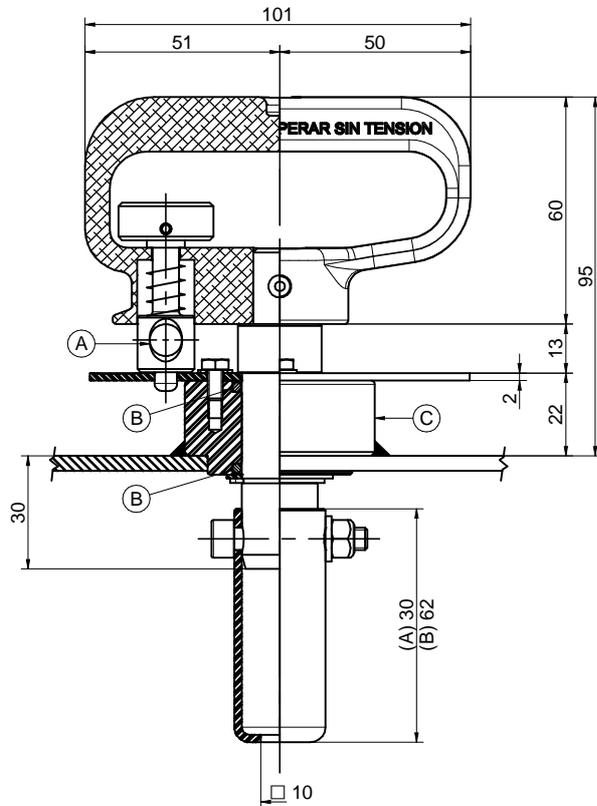
Dimension in mm



## DRIVE TYPE 060-85.120

- Drive handle on tank wall
- From 2 to 6 positions

Dimension in mm



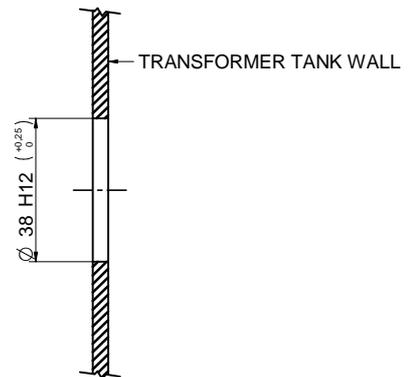
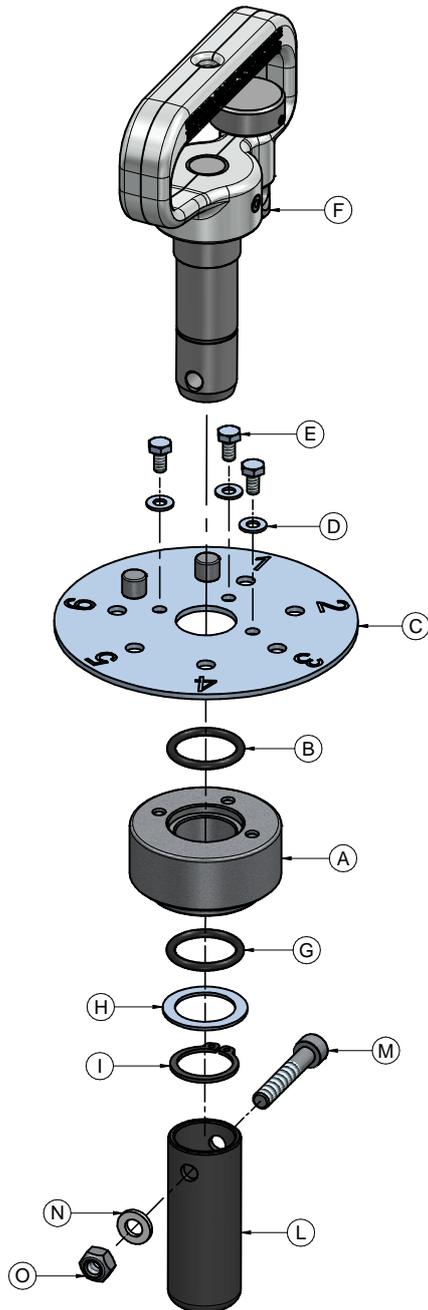
- A) Hole  $\varnothing 8,5$  for padlock.
- B) N°2 gasket OR 3081
- C) Steel 11SMnPb37 stuffing box to be welded to the transformer tank wall.
- D) N°2 Pin stopper

- Handle is composed by stuffing box, inox-steel index disc and aluminium handle with mechanical block on the position.

## DRIVE TYPE 060-85.120

- Assembling sequence diagram
- Drive handle on tank wall
- From 2 to 6 positions

Dimension in mm



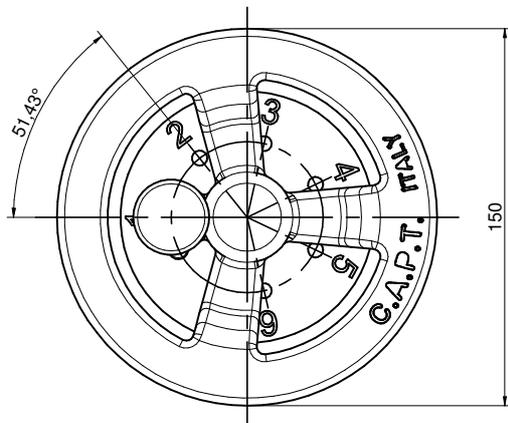
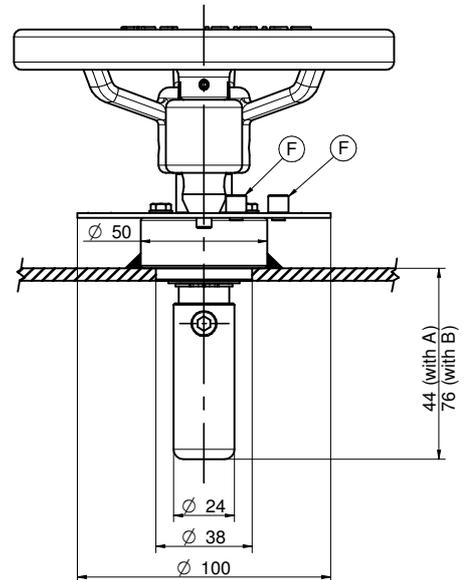
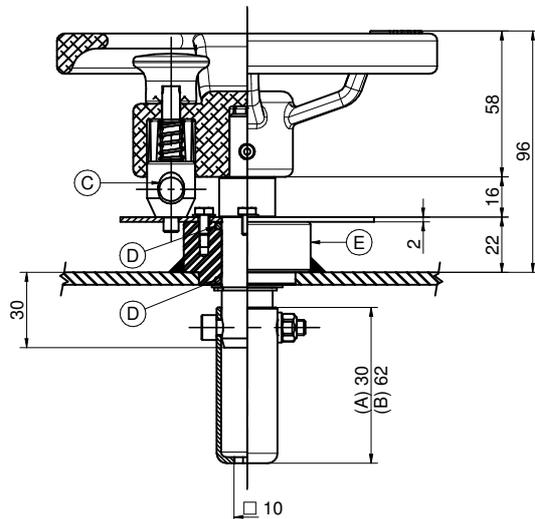
### LIST COMPONENTS IN THE ASSEMBLY ORDER

- A) Stuffing box to be welded on the transformer tank wall. Made in steel 11SMnPb37
- B) N°1 O-ring 3081
- C) Stainless steel numbering disk with N°2 pin stopper
- D) N° 3 stainless steel washers M4 ISO7089
- E) N° 3 stainless steel screws M4x8 ISO4017
- F) Knob group supplied already assembled
- G) N°1 O-ring 3081
- H) Washer for shaft  $\varnothing 20$  DIN 988
- I) Seeger for shaft  $\varnothing 20$  UNI 7435
- L) Joint for connection of the square shaft
- M) N°1 stainless steel screw M6x35 ISO4762
- N) N°1 stainless steel washer M6 ISO7089
- O) N°1 metal-block nut M6 DIN 980V

## DRIVE TYPE 060-85.130

- DRIVE WHEEL ON TANK WALL
- FROM 2 TO 6 POSITIONS

Dimension in mm



- C) Hole  $\varnothing 9,5$  for padlock with shackle thickness  $\varnothing$  min: 5,  $\varnothing$  Max: 9.
- D) N°2 gasket OR 3081
- E) Steel 11SMnPb37 stuffing box to be welded to the transformer tank wall.
- F) N°2 Pin stopper

- Handle is composed by stuffing box, inox-steel index disc and aluminium handle with mechanical block on the position.



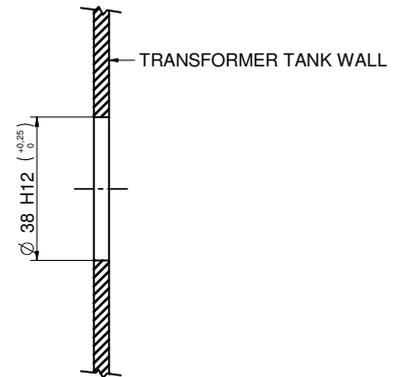
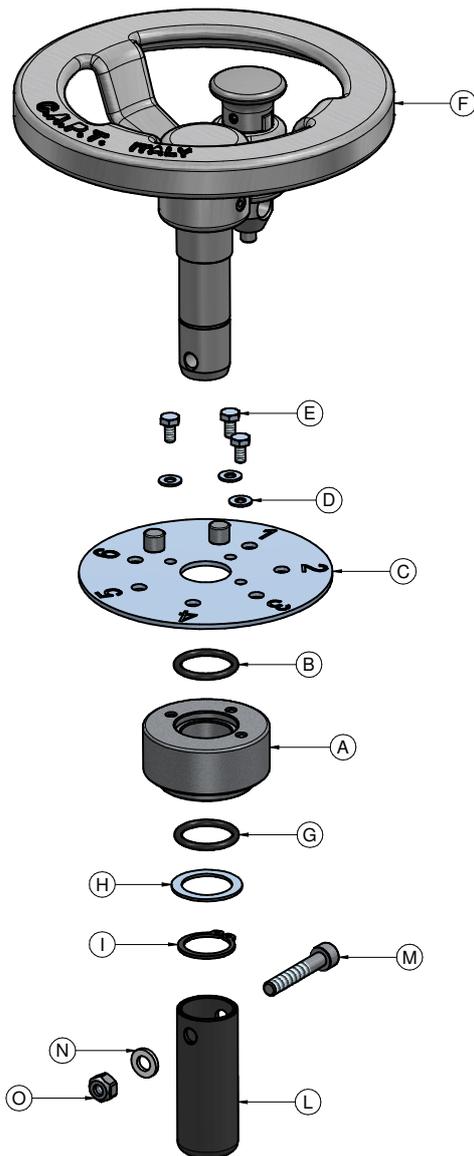
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085-130-01  
Rev. 03 - 13/05/2019

## DRIVE TYPE 060-85.130

- ASSEMBLING SEQUENCE DIAGRAM
- DRIVE WHEEL ON TANK WALL
- FROM 2 TO 6 POSITIONS

Dimension in mm



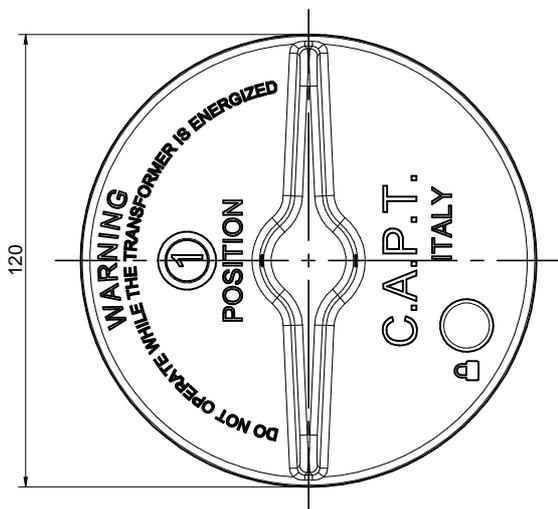
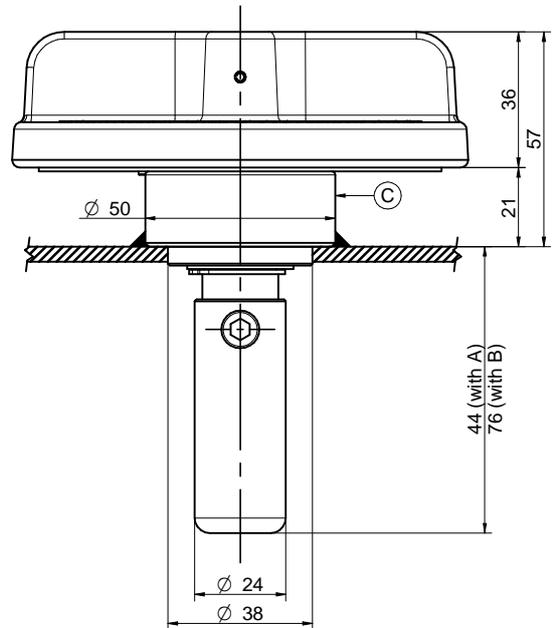
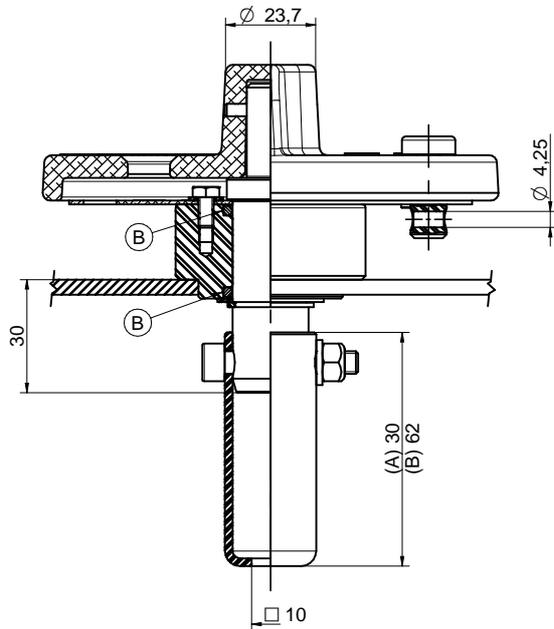
### LIST COMPONENTS IN THE ASSEMBLY ORDER

- A)** Stuffing box to be welded on the transformer tank wall. Made in steel 11SMnPb37
- B)** N°1 O-ring 3081
- C)** Stainless steel numbering disk with N°2 pin stopper
- D)** N° 3 stainless steel washers M4 ISO7089
- E)** N° 3 stainless steel screws M4x8 ISO4017
- F)** Knob group supplied already assembled
- G)** N°1 O-ring 3081
- H)** Washer for shaft  $\varnothing 20$  DIN 988
- I)** Seeger for shaft  $\varnothing 20$  UNI 7435
- L)** Joint for connection of the square shaft
- M)** N°1 stainless steel screw M6x35 ISO4762
- N)** N°1 stainless steel washer M6 ISO7089
- O)** N°1 metal-block nut M6 DIN 980V

## DRIVE TYPE 060-85.140

- Drive handle on tank wall
- From 2 to 6 positions

Dimension in mm



**B)** N°2 gasket OR 3081

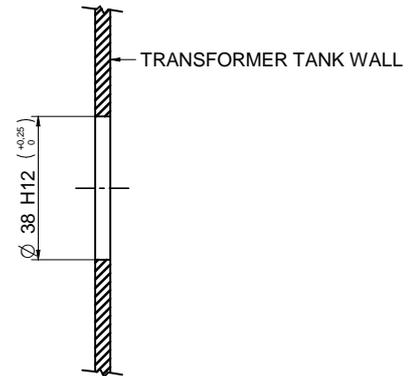
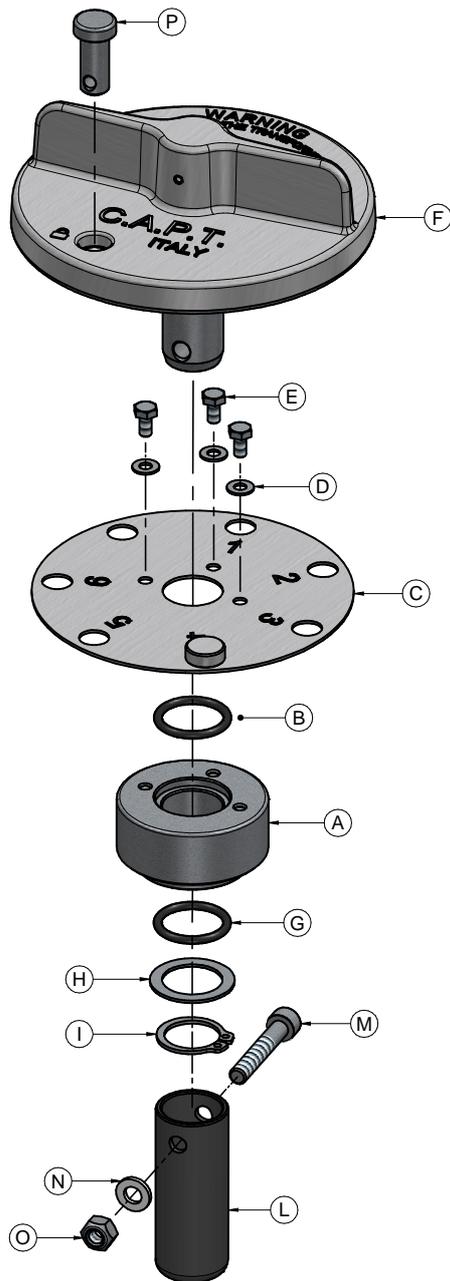
**C)** Steel stuffing box to be welded to the transformer tank wall.

- Handle is composed by stuffing box, aluminium index disc and aluminium handle with mechanical block on the position.

## DRIVE TYPE 060-85.140

- Assembling sequence diagram
- Drive handle on tank wall
- From 2 to 6 positions

Dimension in mm



### LIST COMPONENTS IN THE ASSEMBLY ORDER

- A) Stuffing box to be welded on the transformer tank wall. Made in steel 11SMnPb37
- B) N°1 O-ring 3081
- C) Aluminium numbering disk with N°2 pin stopper
- D) N° 3 stainless steel washers M4 ISO7089
- E) N° 3 stainless steel screws M4x8 ISO4017
- F) Knob group supplied already assembled
- G) N°1 O-ring 3081
- H) Washer for shaft  $\varnothing 20$  DIN 988
- I) Seeger for shaft  $\varnothing 20$  UNI 7435
- L) Joint for connection of the square shaft
- M) N°1 stainless steel screw M6x35 ISO4762
- N) N°1 stainless steel washer M6 ISO7089
- O) N°1 metal-block nut M6 DIN 980V
- P) Stainless steel lock pin