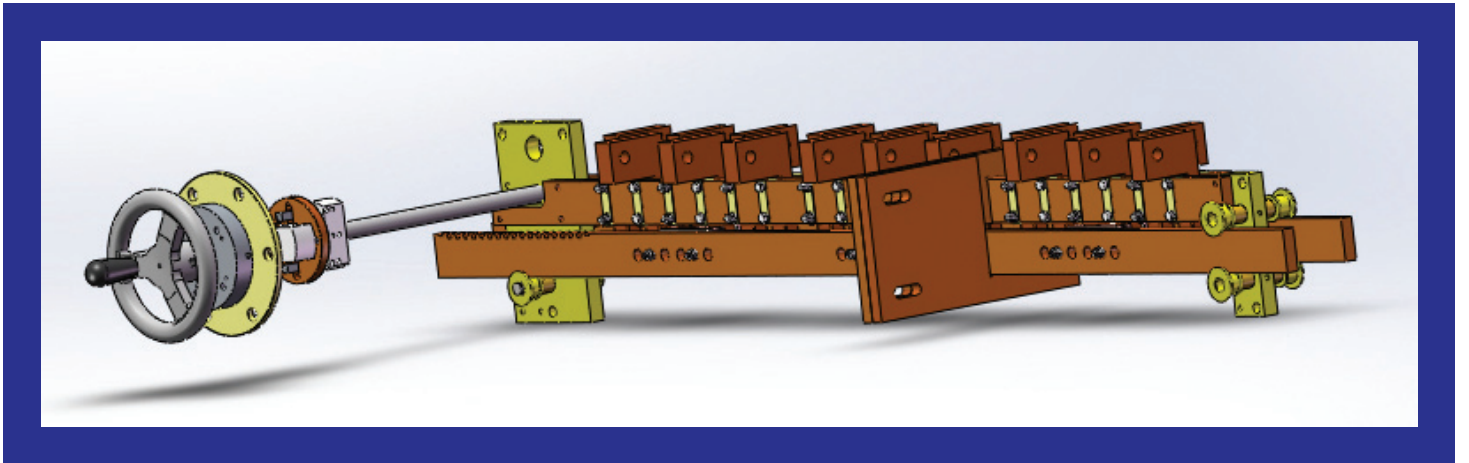


# ER KAR

Transformer  
Accessories and Equipments



***EKF III***

**GENERAL SPECIFICATION**

These tap changers are available in one two or three phase applications.

The shaft length is variable.

Connection diagrams in page EKFIII 2 can be applied in any variation to all types.

These tap changers are bolted on to the supports, welded under transformer cover and allow strong construction.

**ASSEMBLY**

A fraction of turn on the control head is necessary to switch from one position to another. A notch is provided to mark each position precisely. For each operation, the notch must first be released by pulling the padlockable pul rod. After being turned to the desired position, the device locks into the respective notch under the action of a spring. Refer to page EKFIII 11 for the choice of an operating device matching the tap changer fitting.

The numbering of the positions is engraved on the repeater disc of the control head.

See page EKFIII 12 for the various directions of numbering.

**MATERIALS**

**Steel Parts:** These parts can be stainless or mild steel. Mild steel parts are cadmium or zinc plated. Upon request galvanizing is also available.

**Aluminum Parts :** GAISi12Cu

**BrassParts :** Cu ZN40Pb2 Ms 60 F34 DIN 17 673

**Copper Parts :** E - Cu F25 DIN 40 500

**Insulator Parts :** Paper phenol - plastic resin based laminates, HP 2061.5 class of DIN 7735.

**ON REQUEST**

The aluminum parts can be protected by anodic oxidation.

The mild steel parts can be supplied in stainless steel.

The brass and copper parts can be tin, silver or cadmium plated.

**CURRENT**

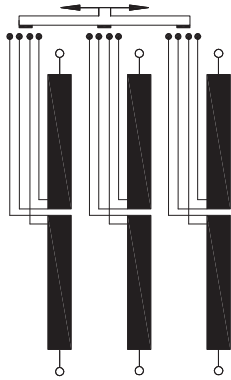
Up to 800A.

See page EKFIII 10 for the types and dimensions of the contacts.

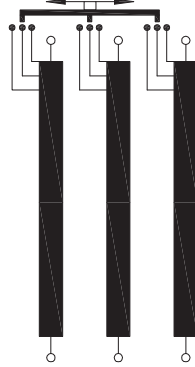
**VOLTAGE CLASS**

| VOLTAGE CLASS | B. I. L. |
|---------------|----------|
| 20 kV         | 125 kV   |
| 30 kV         | 170 kV   |

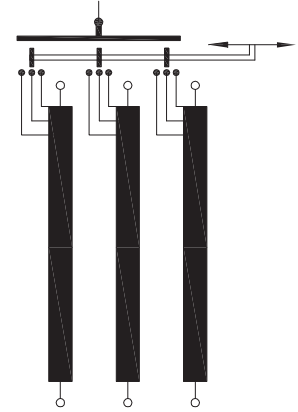
Other B. I. L. values are also available upon customer request.



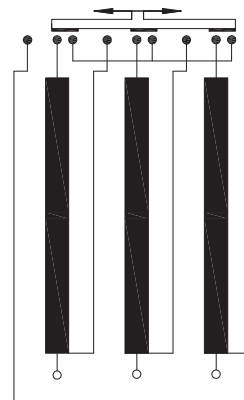
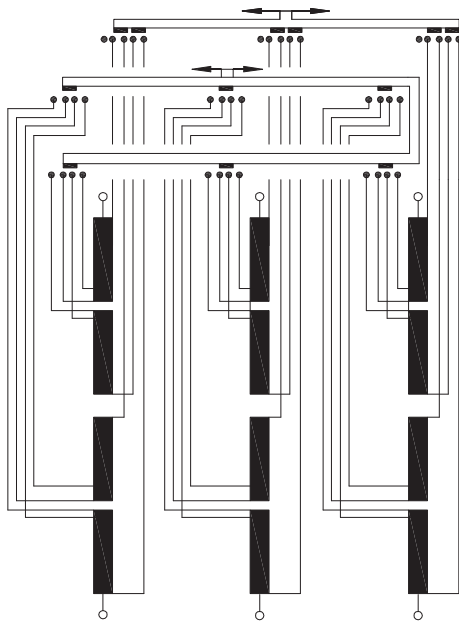
setting for delta transformer



setting for star transformer

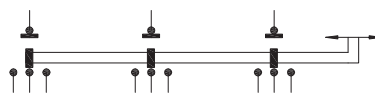


setting for star with outer - earthed conductor transformer



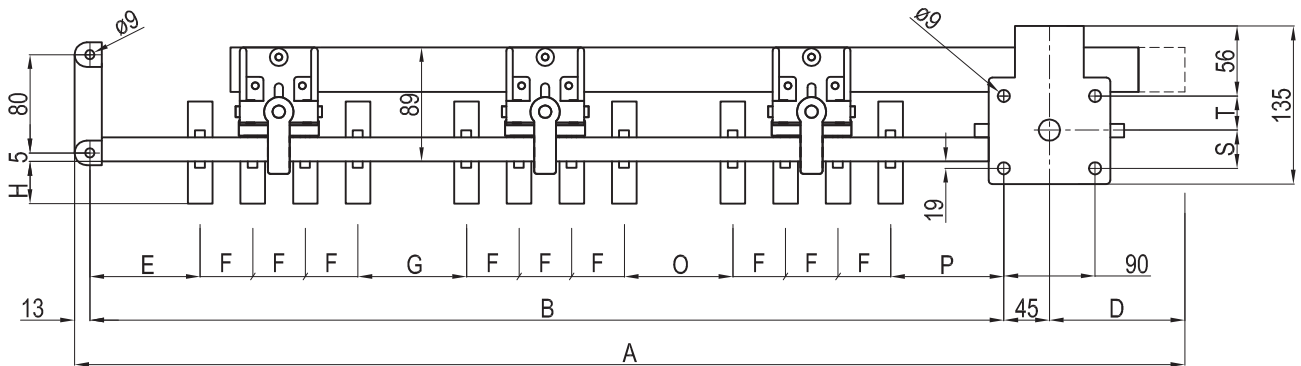
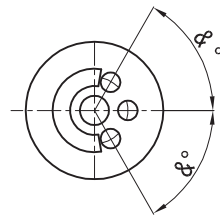
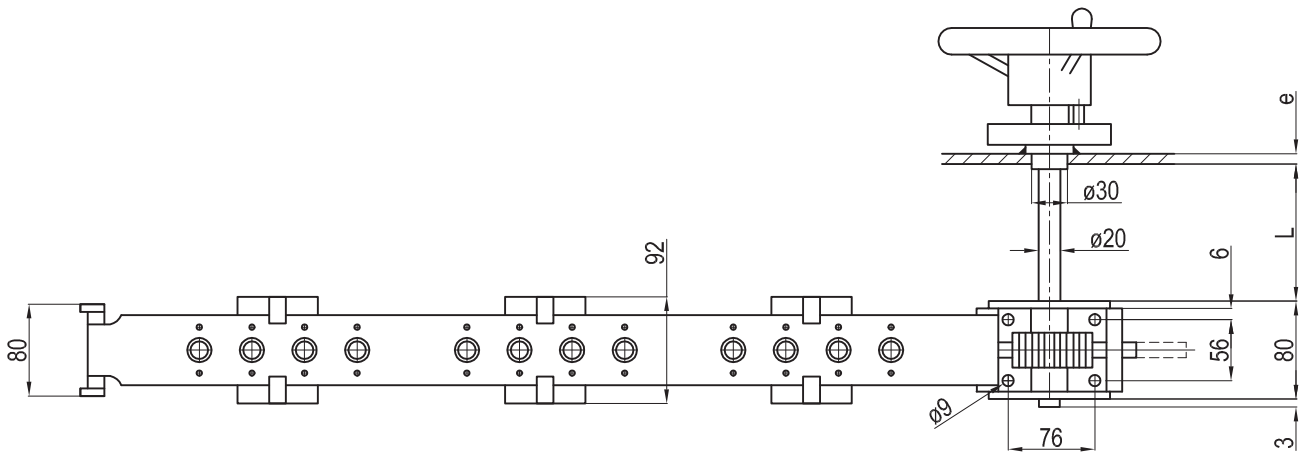
star - delta coupling

Typical combination :  
 -1 stage, series - parallel coupling  
 - 2 stages, delta diagram - setting  $\pm 2,5\%$  .



common output per phase

Off-circuit operation can be used in oil Delta diagram 20-30kV  
400-800A 3-6 positions Setting 2.5 % per position (With Aluminium Support)

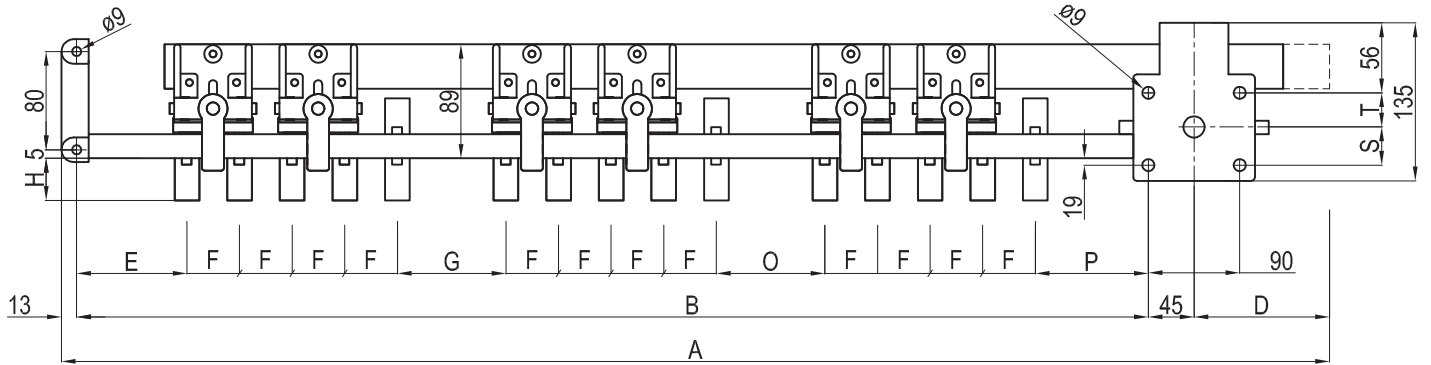
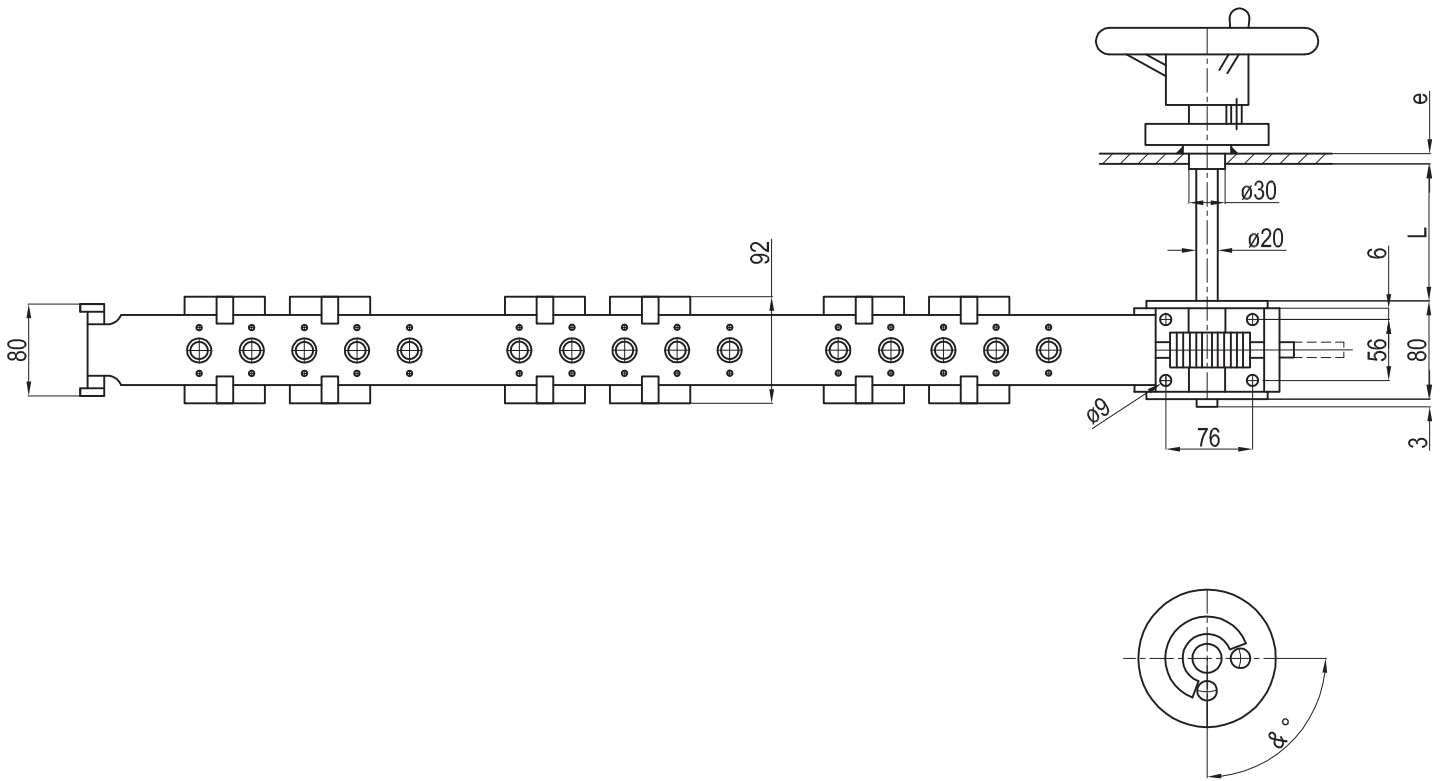


| Voltage class kV | Number of Positions | A    | B    | D   | E   | F  | G   | F                           | O   | P   | S  | T  | $\alpha^\circ$ | L                          | e | Unit No   |
|------------------|---------------------|------|------|-----|-----|----|-----|-----------------------------|-----|-----|----|----|----------------|----------------------------|---|-----------|
| 20               | 3                   | 1018 | 830  | 130 | 90  | 50 | 90  | Depending on fixed contacts | 90  | 110 | 32 | 32 | 67°            | Please quote when ordering |   | E 43147D3 |
|                  | 4                   | 1218 | 980  | 180 | 90  | 50 | 90  |                             | 90  | 110 | 32 | 32 | 67°            |                            |   | E 43147D4 |
|                  | 5                   | 1418 | 1130 | 230 | 90  | 50 | 90  |                             | 90  | 110 | 32 | 32 | 67°            |                            |   | E 43147D5 |
|                  | 6                   | 1618 | 1280 | 280 | 90  | 50 | 90  |                             | 90  | 110 | 30 | 34 | 64°            |                            |   | E 43147D6 |
| 30               | 3                   | 1138 | 950  | 130 | 120 | 50 | 120 | Depending on fixed contacts | 120 | 140 | 32 | 32 | 67°            | Please quote when ordering |   | E 43157D3 |
|                  | 4                   | 1338 | 1100 | 180 | 120 | 50 | 120 |                             | 120 | 140 | 32 | 32 | 67°            |                            |   | E 43157D4 |
|                  | 5                   | 1538 | 1250 | 230 | 120 | 50 | 120 |                             | 120 | 140 | 32 | 32 | 67°            |                            |   | E 43157D5 |
|                  | 6                   | 1738 | 1400 | 280 | 120 | 50 | 120 |                             | 120 | 140 | 30 | 34 | 64°            |                            |   | E 43157D6 |

\* L min 95 for E50320 control device

\* L min 170 for E50330 control device

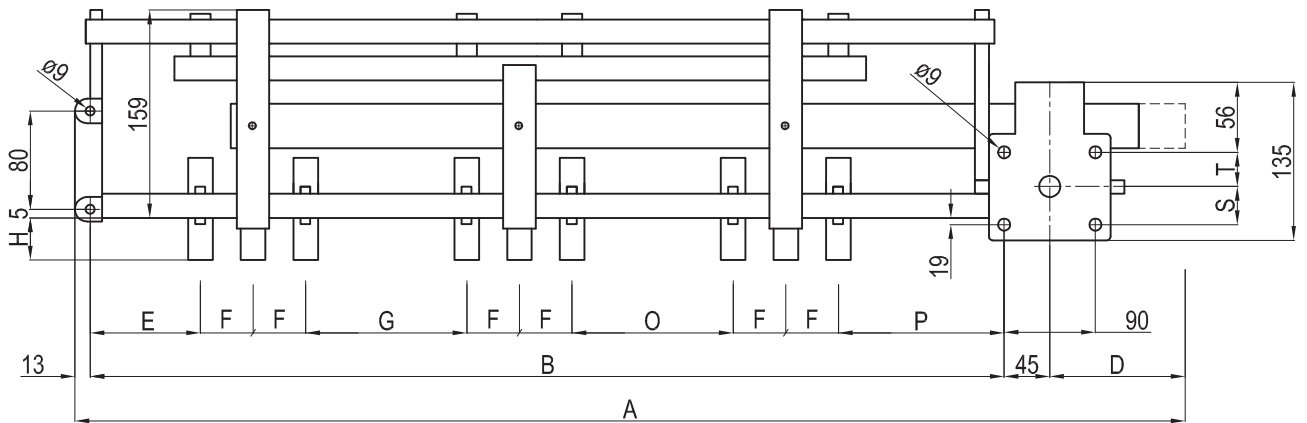
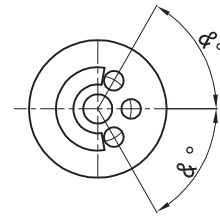
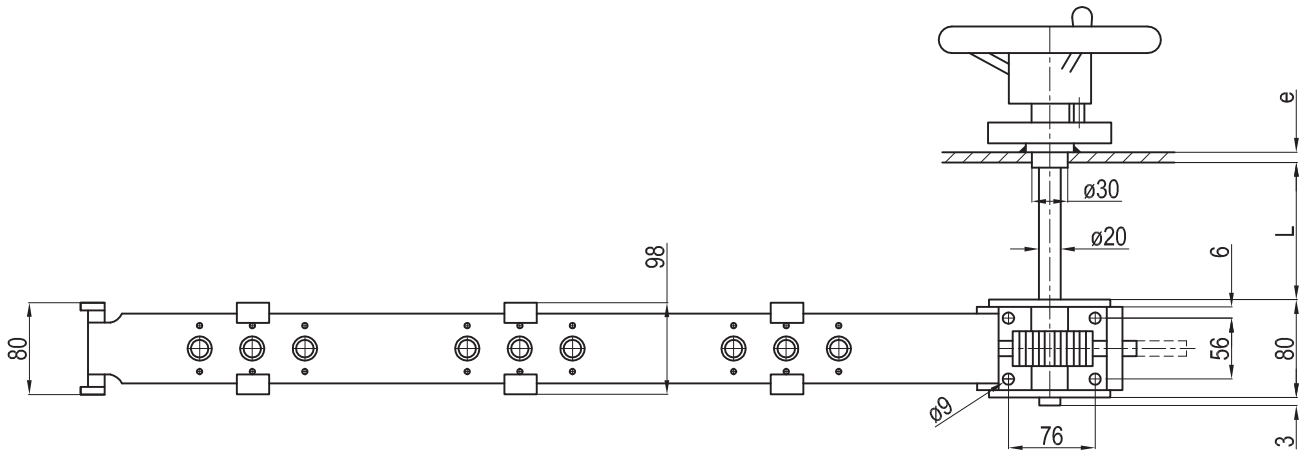
Off-circuit operation can be used in oil askarel  
 Series parallel coupling 20-30kV 400-800A (With Aluminium Support)



| Voltage class kV | A    | B    | D  | E   | F  | G   | H                           | O   | P   | S  | T  | & ° | L                          | e | Unit No   |
|------------------|------|------|----|-----|----|-----|-----------------------------|-----|-----|----|----|-----|----------------------------|---|-----------|
| 10 - 20          | 1352 | 1196 | 98 | 90  | 68 | 90  | Depending on fixed contacts | 90  | 110 | 32 | 32 | 93° | Please quote when ordering |   | E 43177P2 |
| 15 - 30          | 1472 | 1316 | 98 | 120 | 68 | 120 |                             | 120 | 140 | 32 | 32 | 93° |                            |   | E 43187P2 |

\* L min 95 for E50320 control device  
 \* L min 170 for E50330 control device

Off-circuit operation can be used in oil askarel Star diagram 20-30kV  
400-800A 3-6P Setting 2.5% per position. (With Aluminium Support)

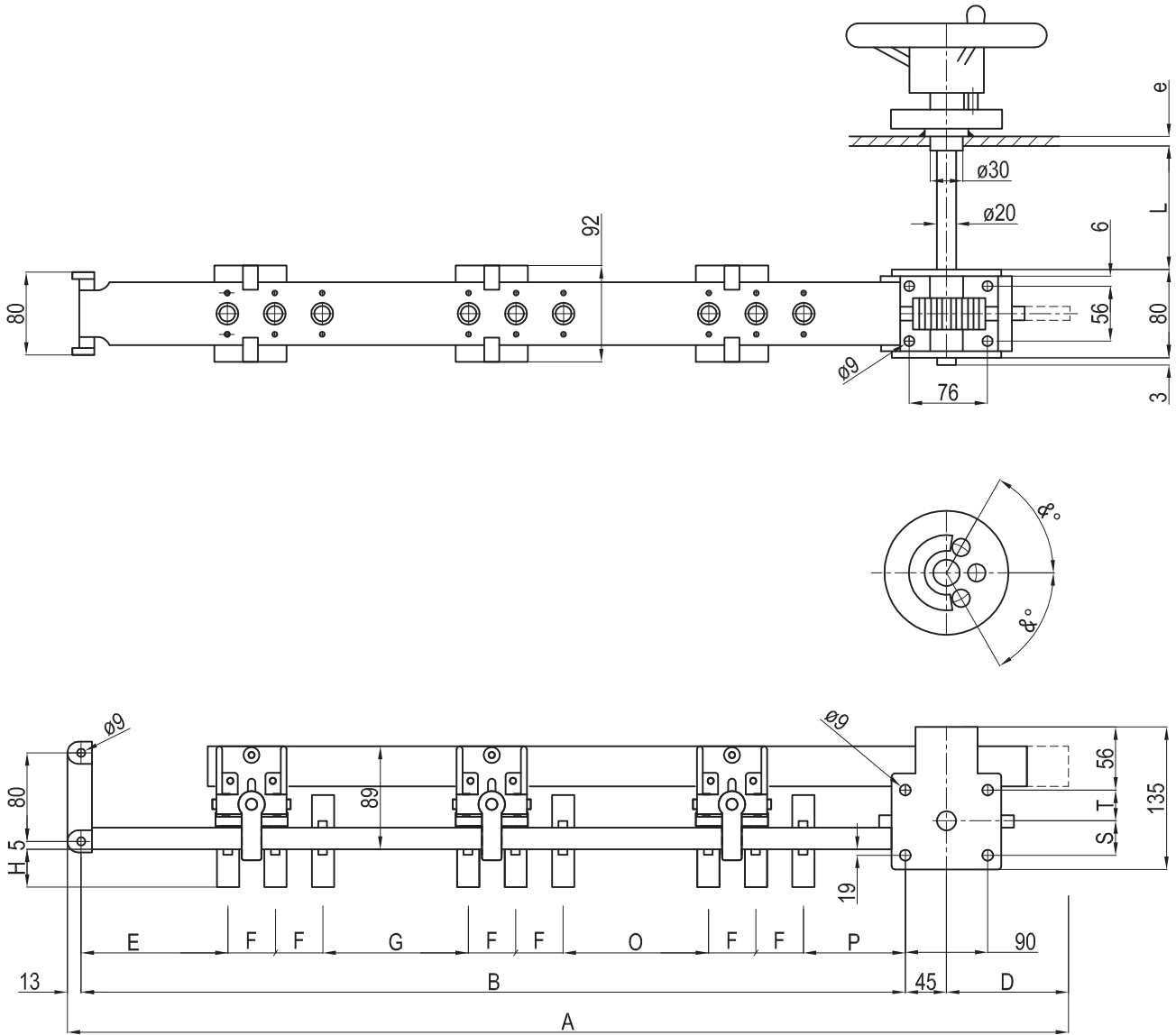


| Voltage class kV | Number of Positions | A    | B    | D   | E   | F  | G  | H                           | O  | P   | S  | T  | & ° | L                          | e | Unit No   |
|------------------|---------------------|------|------|-----|-----|----|----|-----------------------------|----|-----|----|----|-----|----------------------------|---|-----------|
| 20               | 3                   | 788  | 600  | 130 | 90  | 50 | 50 | Depending on fixed contacts | 50 | 110 | 32 | 32 | 68° | Please quote when ordering |   | E 43147S3 |
|                  | 4                   | 988  | 750  | 180 | 90  | 50 | 50 |                             | 50 | 110 | 32 | 32 | 68° |                            |   | E 43147S4 |
|                  | 5                   | 1188 | 900  | 230 | 90  | 50 | 50 |                             | 50 | 110 | 32 | 32 | 68° |                            |   | E 43147S5 |
|                  | 6                   | 1388 | 1050 | 280 | 90  | 50 | 50 |                             | 50 | 110 | 30 | 34 | 64° |                            |   | E 43147S6 |
| 30               | 3                   | 848  | 660  | 130 | 120 | 50 | 50 |                             | 50 | 140 | 32 | 32 | 68° |                            |   | E 43157S3 |
|                  | 4                   | 1048 | 810  | 180 | 120 | 50 | 50 |                             | 50 | 140 | 32 | 32 | 68° |                            |   | E 43157S4 |
|                  | 5                   | 1248 | 960  | 230 | 120 | 50 | 50 |                             | 50 | 140 | 32 | 32 | 68° |                            |   | E 43157S5 |
|                  | 6                   | 1448 | 1110 | 280 | 120 | 50 | 50 |                             | 50 | 140 | 30 | 34 | 64° |                            |   | E 43157S6 |

\* L min 95 for E50320 control device

\* L min 170 for E50330 control device

Off-circuit operation can be used in oil Star-delta coupling  
20-30kV 400-800A (With Aluminium Support)

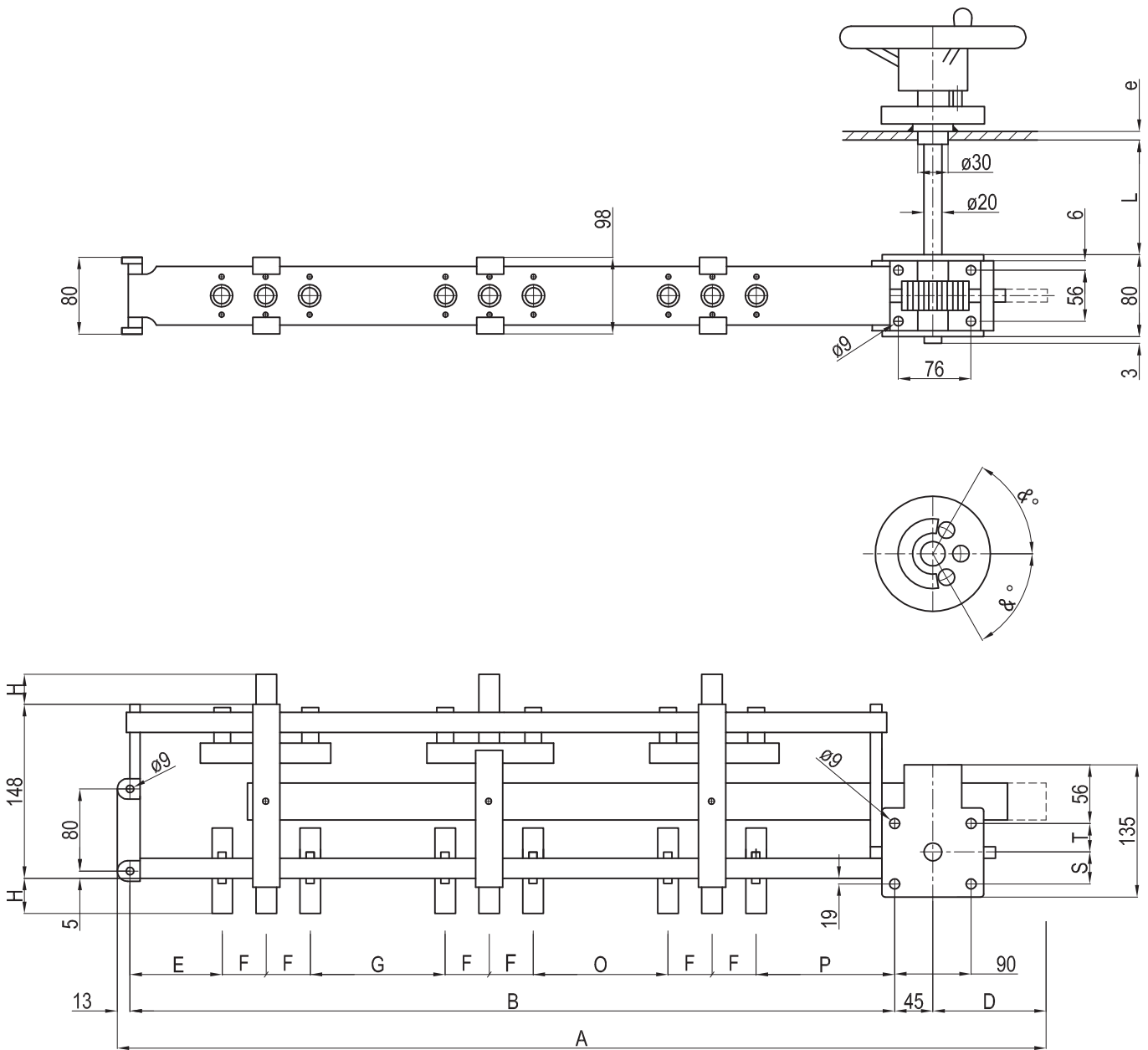


| Voltage class<br>kV | A    | B    | D   | E   | F  | G   | H                              | O   | P   | S  | T  | & °  | L                             | e | Unit No   |
|---------------------|------|------|-----|-----|----|-----|--------------------------------|-----|-----|----|----|------|-------------------------------|---|-----------|
| 20                  | 944  | 788  | 98  | 90  | 68 | 90  | Depending on<br>fixed contacts | 90  | 110 | 32 | 32 | 93°  | Please quote<br>when ordering |   | E 43147R2 |
| 30                  | 1246 | 1064 | 124 | 120 | 94 | 120 |                                | 120 | 140 | 32 | 32 | 126° |                               |   | E 43157R2 |

\* L min 95 for E50320 control device

\* L min 170 for E50330 control device

Off-circuit operation can be used in oil askarel Common output per phase  
20-30kV 400-800A 3-6 P. Setting 2.5 % per position (With Aluminium Support)



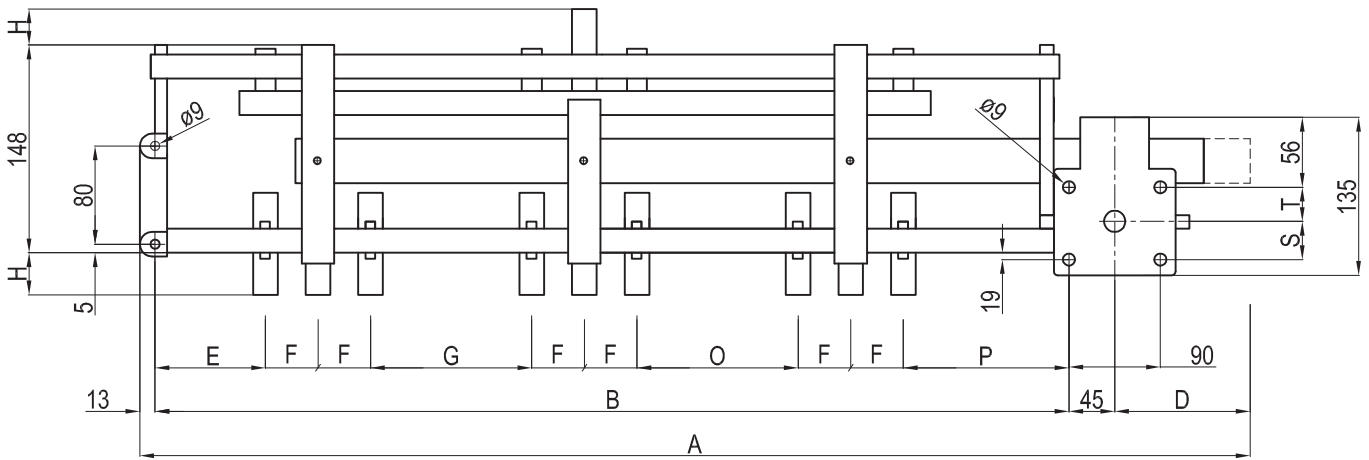
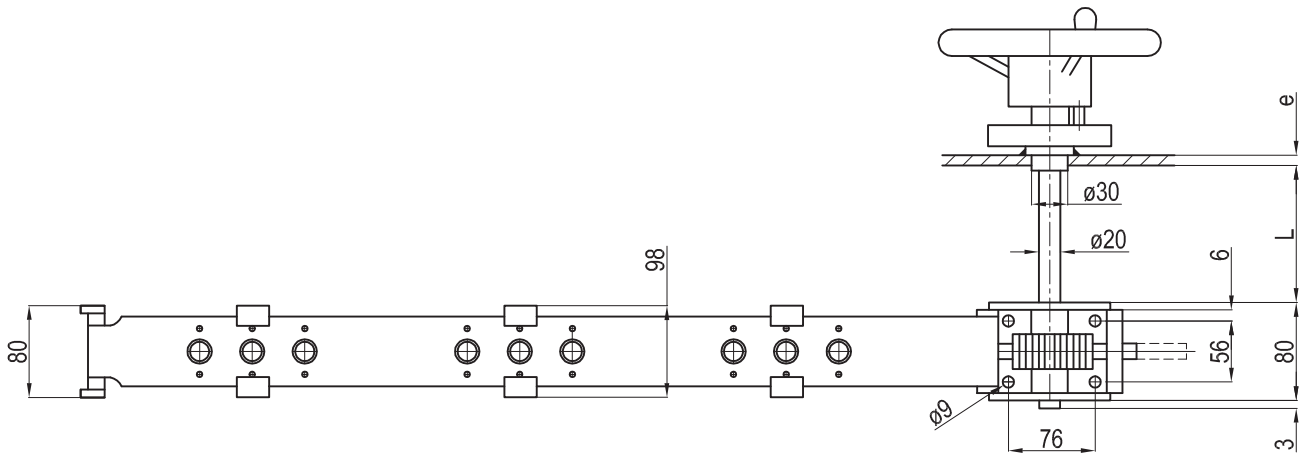
| Voltage class kV | Number of Positions | A    | B    | D   | E   | F  | G   | H                           | O   | P   | S  | T  | &°  | L                          | e         | Unit No   |
|------------------|---------------------|------|------|-----|-----|----|-----|-----------------------------|-----|-----|----|----|-----|----------------------------|-----------|-----------|
| 20               | 3                   | 868  | 680  | 130 | 90  | 50 | 90  | Depending on fixed contacts | 90  | 110 | 32 | 32 | 68° | Please quote when ordering |           | E 43147C3 |
|                  | 4                   | 1068 | 830  | 180 | 90  | 50 | 90  |                             | 90  | 110 | 32 | 32 | 68° |                            | E 43147C4 |           |
|                  | 5                   | 1268 | 980  | 230 | 90  | 50 | 90  |                             | 90  | 110 | 32 | 32 | 68° |                            | E 43147C5 |           |
|                  | 6                   | 1468 | 1130 | 280 | 90  | 50 | 90  |                             | 90  | 110 | 30 | 34 | 64° |                            | E 43147C6 |           |
| 30               | 3                   | 988  | 800  | 130 | 120 | 50 | 120 |                             | 120 | 140 | 32 | 32 | 68° |                            | E 43157C3 |           |
|                  | 4                   | 1188 | 950  | 180 | 120 | 50 | 120 |                             | 120 | 140 | 32 | 32 | 68° |                            | E 43157C4 |           |
|                  | 5                   | 1388 | 1100 | 230 | 120 | 50 | 120 |                             | 120 | 140 | 32 | 32 | 68° |                            | E 43157C5 |           |
|                  | 6                   | 1588 | 1250 | 280 | 120 | 50 | 120 |                             | 120 | 140 | 30 | 34 | 64° |                            | E 43157C6 |           |

\* L min 95 for E50320 control device

\* L min 170 for E50330 control device



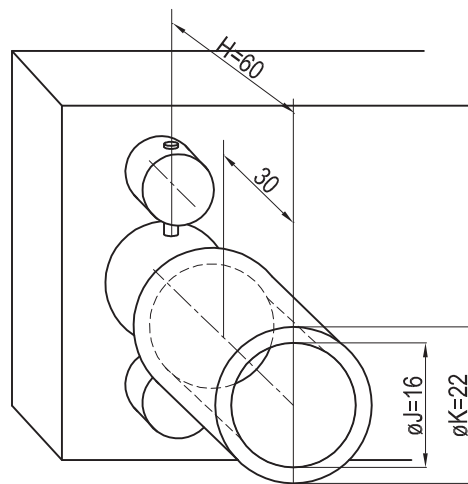
Off-circuit operation can be used in oil askarel  
 Star diagram whit outer-earthed conductor 20-30kV  
 400-800A 3-6 P. Setting 2.5 % per position (With Aluminium Support)



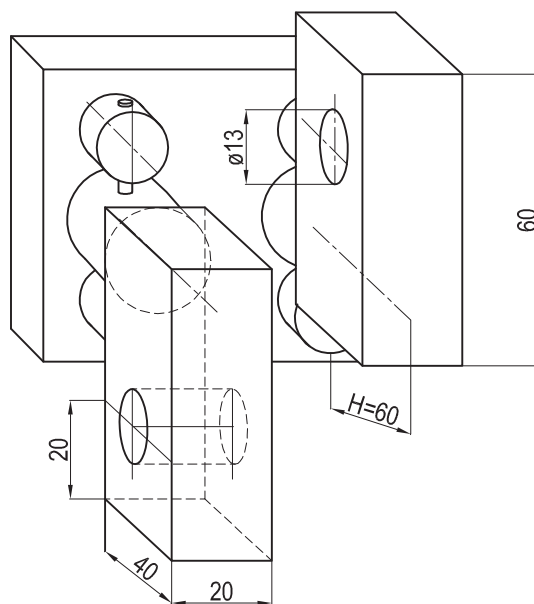
| Voltage class kV | Number of Positions | A    | B    | D   | E   | F  | G  | H                           | O   | P   | S  | T   | & °       | L                          | e | Unit No   |
|------------------|---------------------|------|------|-----|-----|----|----|-----------------------------|-----|-----|----|-----|-----------|----------------------------|---|-----------|
| 20               | 3                   | 788  | 600  | 130 | 90  | 50 | 50 | Depending on fixed contacts | 50  | 110 | 32 | 32  | 68°       | Please quote when ordering |   | E 43147F3 |
|                  | 4                   | 988  | 750  | 180 | 90  | 50 | 50 |                             | 50  | 110 | 32 | 32  | 68°       |                            |   | E 43147F4 |
|                  | 5                   | 1188 | 900  | 230 | 90  | 50 | 50 |                             | 50  | 110 | 32 | 32  | 68°       |                            |   | E 43147F5 |
|                  | 6                   | 1388 | 1050 | 280 | 90  | 50 | 50 |                             | 50  | 110 | 30 | 34  | 64°       |                            |   | E 43147F6 |
| 30               | 3                   | 848  | 660  | 130 | 120 | 50 | 50 | 50                          | 140 | 32  | 32 | 68° | E 43157F3 |                            |   |           |
|                  | 4                   | 1048 | 810  | 180 | 120 | 50 | 50 | 50                          | 140 | 32  | 32 | 68° | E 43157F4 |                            |   |           |
|                  | 5                   | 1248 | 960  | 230 | 120 | 50 | 50 | 50                          | 140 | 32  | 32 | 68° | E 43157F5 |                            |   |           |
|                  | 6                   | 1448 | 1110 | 280 | 120 | 50 | 50 | 50                          | 140 | 30  | 34 | 64° | E 43157F6 |                            |   |           |

\* L min 95 for E50320 control device  
 \* L min 170 for E50330 control device

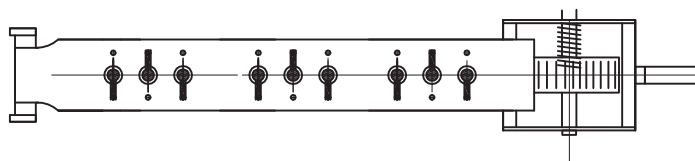




Tubular contact  
**E44375**



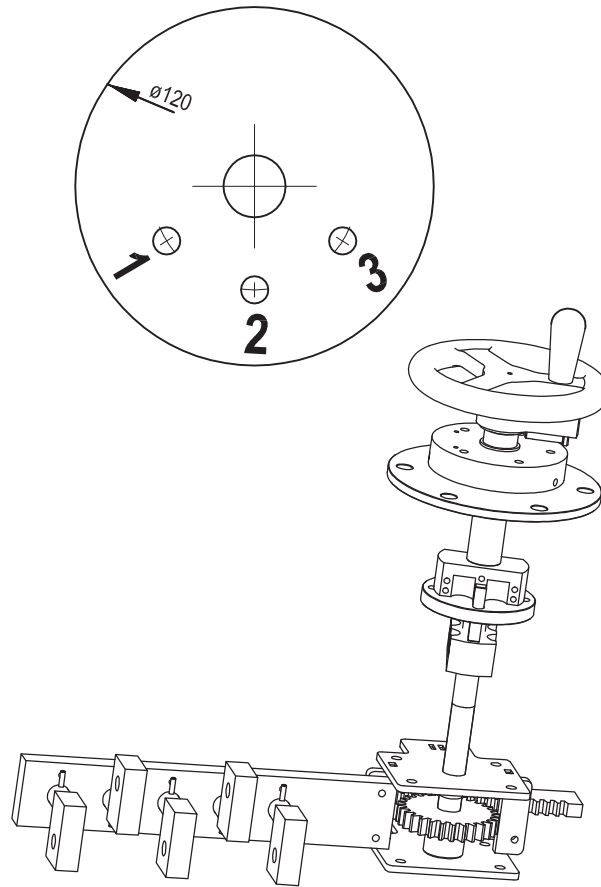
Flag type contact  
**E44374**



Unless otherwise specified by the customer, flag type contacts faced as shown in the above diagram.  
The contact situated near the operating device is face downwards.

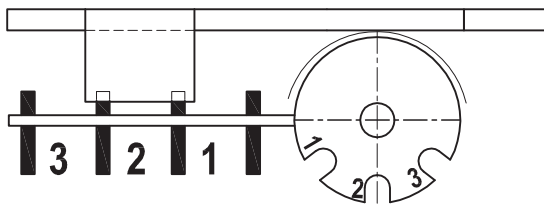


Repeaters for rack and pinion drive

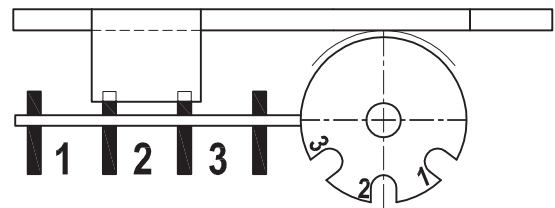


Numbering of the repeaters for rack and pinion drive

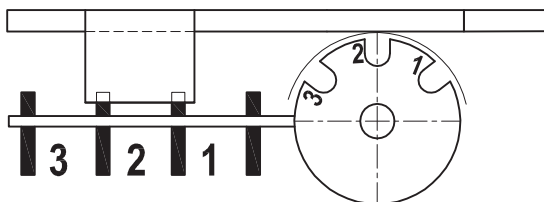
**A1**



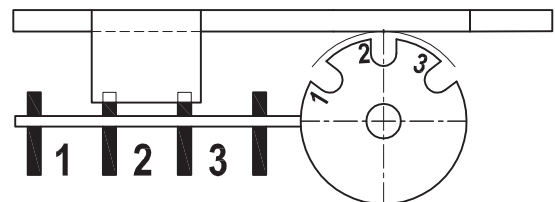
**B1**

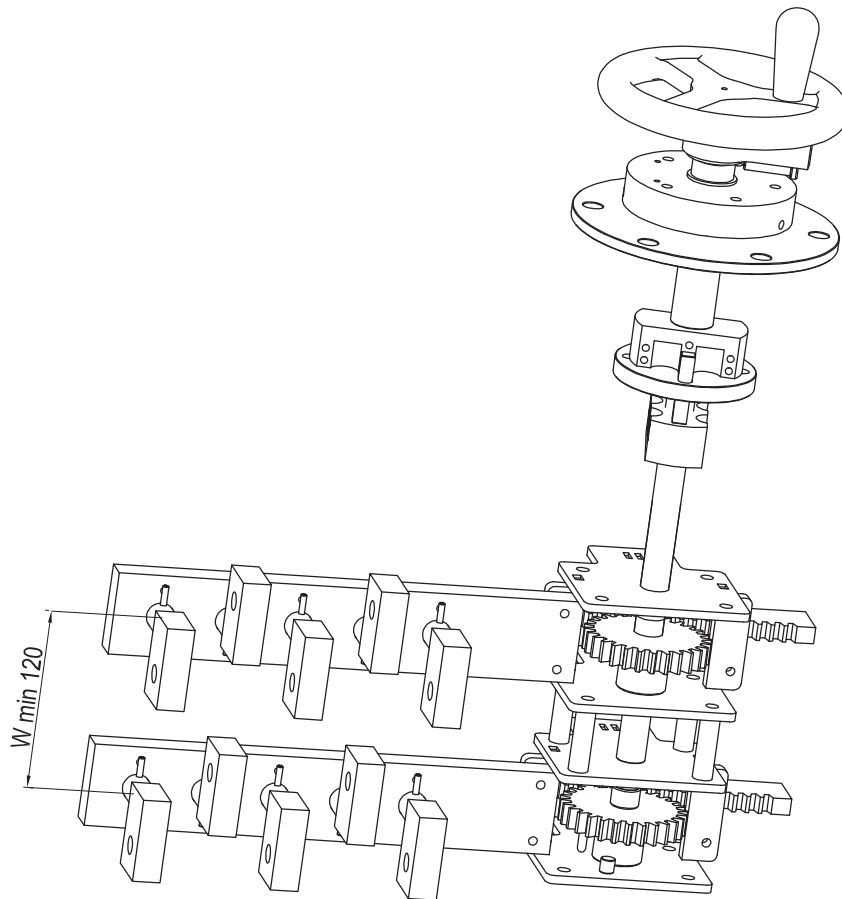


**D1**



**C1**





All type EKFIII tap changers may be paired by superimposing several tap changers whose purpose - built steel brackets are assembled by nuts and bolts.

According to the diagram adopted, the user can:

- either operate the tap changers with one shaft
- or operate part of the tap changers with one shaft and the other part with another shaft.

In this case, please quote the position of the coupling shaft and the setting shaft.

Note : It is essential to quote dimension "W" in the order. The minimum value of this dimension to be set in each case depends on the insulation conditions and on the position of the different tap changers.

#### WHEN ORDERING PLEASE QUOTE:

- 1 - The tap changer unit no.
- 2 - The voltage class current and type of setting or coupling.
- 3 - Control device no.
- 4 - The language on the control device.
- 5 - Number of positions.
- 6 - The indication of the repeater disc ( A1, B1, C1, D1 )
- 7 - Dimensions of the fixed contacts (  $\varnothing J$  and  $\varnothing K$  )
- 8 - L, e, W dimensions from the tables.

For special setups not shown in the catalogue please consult us.