



CATALOGUE

ELECTROMOTIVE DRIVE

for indoor and outdoor MV switching devices

TYP SUP

Unser Handelspartner in Deutschland



ISO 9001:2009
ISO 14001:2005

ivep®

APPLICATION

The SUP electromagnetic drive is intended for use in independent control of outdoor switching devices, operated by power, in particular the disconnectors, switch disconnectors and MV earthing switches. It can be used for local, remote and emergency control. The drive output torque achieves a level that provides for reliable control of the switching devices even in heavy-duty conditions.

The drive is of simple and rugged structure, with only a minimum demand on maintenance.

The drive design ensures that the switching end positions are achieved with high reliability, and the ON-OFF switching position is signalized in a defect-free mode.

The SUP electromagnetic drive can be used also for the control of indoor disconnectors of all types, operating within the voltage range from 7.2 to 38.5 kV, and with rated currents from 400 to 4000 A. In such a case the drive is mounted on the front side of the switching cell and linked with the disconnector via adjustable connecting rod.

The whole electromagnetic drive assembly with switch disconnector of outdoor type, installed on the pole top, is shown in Fig. 2.

STANDARDS AND REGULATIONS

The SUP electromagnetic drive satisfies the following standards:

ČSN EN 60265; ČSN EN 62271
ČSN EN 60694; ČSN EN 60439-1

MAIN ENGINEERING DATA

Protection degree: at least IP 45
Weight: approx. 50 kg
(depending on the type and outfit)

Actuation period: breaking 2.2 secs.
making 2.2 secs.

Operating angle: 90° (adjusted at the manufacturer's)

Minimum control impulse: 0.15
Control voltages range: 0.85 to 1.1 x Un

Scope of operating temperatures:
designed for indoor use: - 25°C to + 40°C
designed for outdoor use: - 40°C to + 40°C (with heating)

Special operating conditions: - 55°C - + 55°C
(with heating)

Mechanical service life: 10 000
C-O cycles

Highest cross-section of connecting lead:
- power feeding max. 6 mm²
- control and indication 4 mm²

TABLE VARIOUS TYPES OF ELEKTROMOTIVE DRIVE UNITS

Table 1

Desing	Elektric drive	Rated voltage of motor (V)	Motor power output (W)	Rated current (A)	Highest current (A)	Rated output torque (Nm)	Highest breakaway torque (Nm)
SUP-CB 50-S1	SG 71 – 4B	3 PEN 50 Hz 400 V	370	1,1	4,09	280	560
SUP-CB 50-S2	Permanent magnet CC MP 55.15.6335	110 V DC	300	4,2	15,6	205	512
SUP-CB 50-S3	Permanent magnet CC MP 55.15.6335	220 V DC	300	2,1	8,2	205	512
SUP-CB 50-S4	SEK4 71-4B1F/1143	230 V AC, 50 Hz	370	3,1	9,9	272	500

Note:

The value of rated current applies for normal operating conditions (rated torque)
Highest current stands for the peak value of starting current.

OPERATING CONDITIONS

The electromagnetic drives are intended for mounting in both outdoor and indoor operating environments of „normal“ type, as defined by ČSN EN 60694 standard, part No. 2.

DESCRIPTION

The SUP – CB 50 ... electromotive drive unit consists of a few subassemblies – see Fig. 1.

- A. On a regular basis and by default the electric motor housing is made of steel sheets and painted with zinc-based coat against corrosion. The top coat consists of powder colour (the user can choose also from the RAL colour shades). On request the housing can be manufactured from stainless Fe material.

The drive housing is equipped with the following elements:

- grommets of optional sizes for LV cable entry
- two ventilation openings equipped with ventilation grid
- opening for the insertion of tools for emergency manual handling – covered with a plug
- M12 earthing screw
- four assembly feet for fastening the drive housing to drive holders, the latter fixed to the pole via sleeves – see Fig. 2.
- removable stainless steel cover with gaskets to seal-off the drive output shaft. After removing the cover the drive shaft operating angle can be adjusted using mechanical backstops
- lockable system to prevent the carrying through of handling operations by unauthorized persons
- light fitting, document holder and handle.

On request the drive casing may be equipped with a light fitting, document holder, emergency operation handle and swivelling internal doors providing for the increase of safety of operating personnel. Drives with the doors mentioned have circuit breakers mounted on the door surface, ON/OFF push buttons and a changeover switch for LOCAL-REMOTE control.

- B. Dismountable panel, equipped with its own drive unit of S1, S2, S3 and S4 type, depending on the electric motor powering voltage – see Table No. 1. The drive units of all designs are equipped with CB 50 gearbox of uniform shape. The gearbox is composed of warm-gear unit with a front-end spur gearing.

Furthermore, the drive units includes:

- The SQ1, SQ2 control end switches to provide for proper operation (reversal) of the electric motor. The switches encompass one making and one breaking contact. The switching can be adjusted also by cams.
- Indication block, equipped with the VS 10 (VS

- 16) auxiliary indication changeover switch, which can be delivered in various combinations of making, breaking and transition contacts (indication of intermediate position of the switching device).
- Friction bearing to support the drive output shaft, and a system of adjustable mechanical backstops. The stop (abutment) mechanism is fixed to a dismountable panel and adjusted at the manufacturer's shop (to operating angle of 90°). The adjustment of backstops, if any, can be done following the removal of cover.
 - Control, indication, protective and blocking elements
 - Input terminal board
 - Heating resistor controlled by thermostat
 - Blocking mechanism equipped with the SQ3 switch that interrupts the electric circuit of the motor still before the operating handle reaches the control hexagon. On request the motor unit can be equipped with adjustable clutch, installed in between the electric motor and the gearbox. The clutch protects the drive from overload.
 - Motor circuit breaker or current relay.

MANUAL EMERGENCY CONTROL

The emergency control is done by manual handle pulled on a hexagonal shaped output motor shaft end. The manual handle is equipped with a torque limiter to protect both the drive and the switching device from overloading. When slipping over the handle the SQ3 switch, incorporated in the motor powering circuit, becomes opened still before the handle reaches the hexagon. In such a way the operating staff is protected from accidents in case of faulty handling.

In case of emergency control a gearbox is inserted in the power circuit, in between the motor and the drive output shaft, to reduce the torque for handling to a minimum.

SENSE OF ROTATION OF THE DRIVE

The sense of rotation of the drive can be changed by reconnecting the powering conductors in accordance with the wiring diagrammes and by changing the sense of rotation of the emergency operation handle.

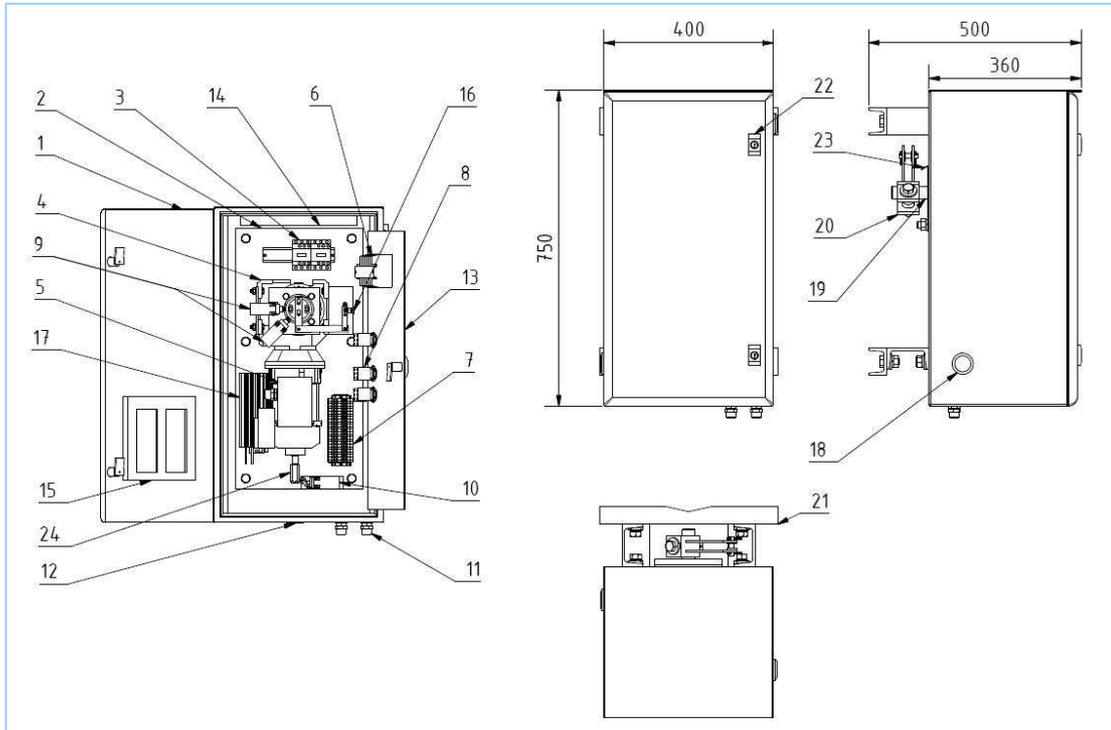
MAINTENANCE INSTRUCTIONS

The SUP – CB 50... electric motor drive is a maintenance-free device. The gearbox is filled with solid greasing agent that does not necessitate refilling or inspection during its whole service life, i.e. for the duration of either 20 years or 10.000 C-O operations.

ELECTROMOTIVE DRIVE, TYPE SUP – CB 50

Fig. 1

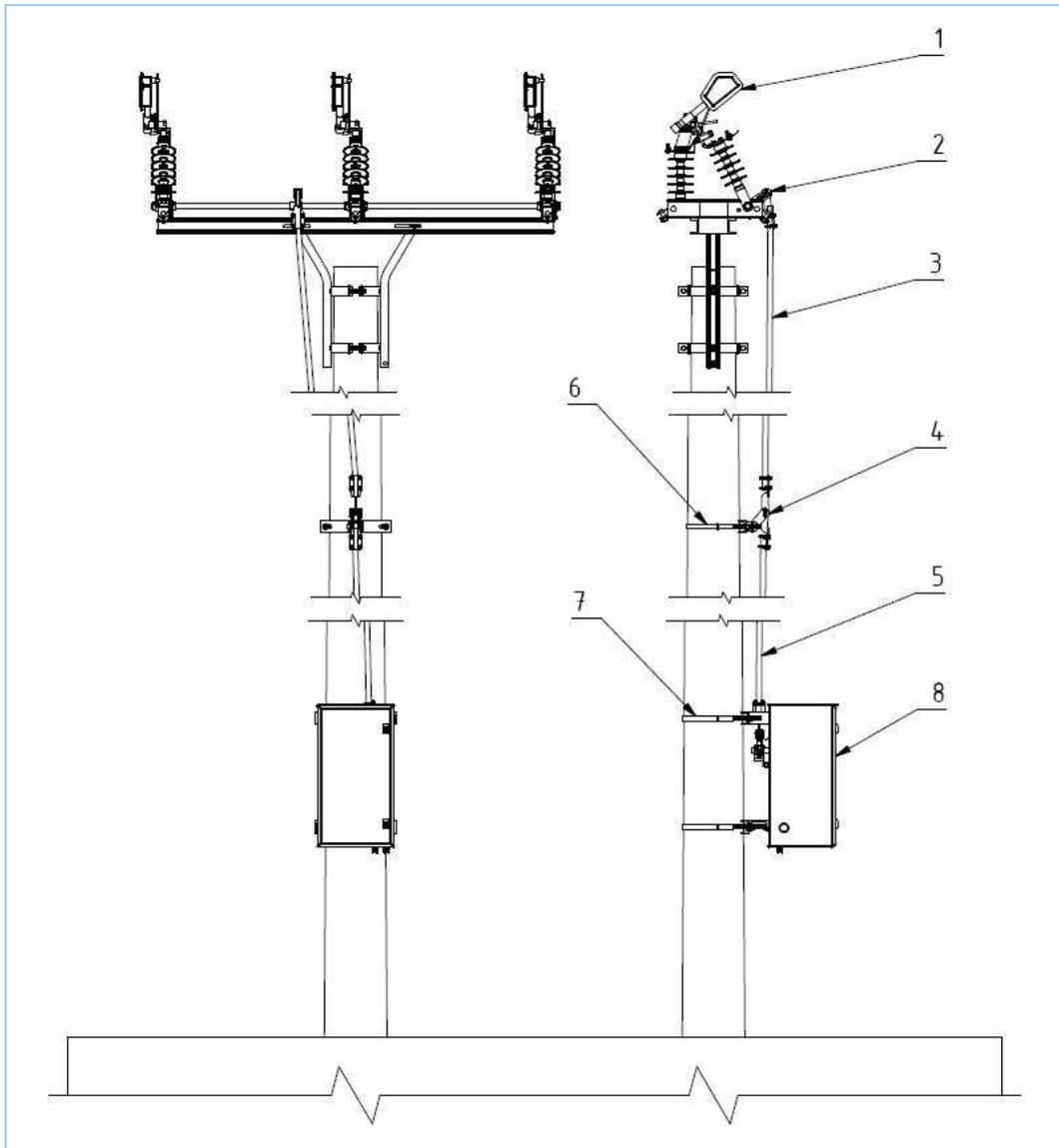
The drive design and the outfit level depends on the specific customer requirements



- 1 Cabinet, housing
- 2 Baseplate
- 3 Motor circuit breakers, relays
- 4 CB 50 Gearbox
- 5 Motor
- 6 Circuit breakers
- 7 Terminal board
- 8 Control pushbuttons
- 9 SQ1; SQ2 Backstop switches
- 10 SQ3 End switch
- 11 Grommets
- 12 Emergency drive cover
- 13 Internal doors
- 14 Lighting fitting
- 15 Document holder
- 16 Indication switch
- 17 Heater
- 18 Ventilation opening
- 19 Drive output shaft
- 20 Adjustable control handle
- 21 Support bracket
- 22 Cabinet lock
- 23 Cover of adjustable screws for the mechanical backstops
- 24 Manual emergency control shaft

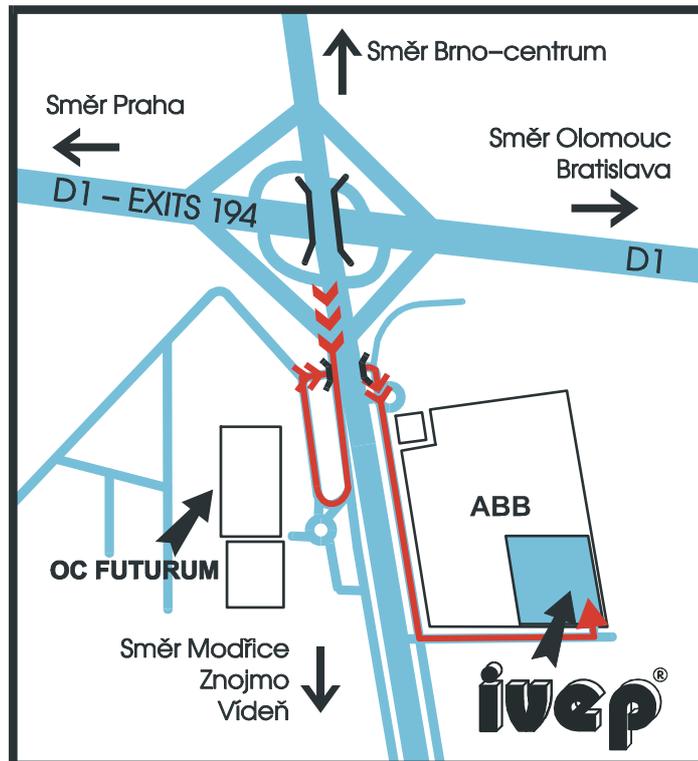
SWITCH DISCONNECTOR EQUIPPED WITH THE SUP ELECTROMOTIVE DRIVE

Fig. 2



1. Switch disconnector
2. Control handle of the switch disconnector
3. Upper connecting rod
4. Upper interbearing
5. Lower connecting rod
6. R 155 Sleeve
7. R 178 Sleeve
8. Housing with electric drive

Due to continuous development of the products some dimensions, weights, drawings and descriptions may differ from that shown in this data sheet. In order to satisfy the ever increasing needs of the customers the manufacturer reserves the right to provide modifications to the product described, without previous notice.



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