



### Application

Low-speed drum winder WBW 45T is used for shaft and out-shaft works. In case of shaft works, the winder can be used to transport: suspended platforms, tensioning frames, steel sliding formwork, devices during works related to construction and reconstruction of shafts as well as to any installation, auxiliary and other works in the shafts. In case of out-shaft works, it can be used to transport and lift elements as well as to wind and unwind rope.

Low-speed drum winder WBW 45T has been designed to allow:

- winding (unwinding) one rope of max diameter 65 mm onto the drum,
- presence of force up to 450 kN in the rope fed directly to the drum jacket (in the first winding layer),
- in case of rope 60 mm, loading the winder drum with torque up to 392 kNm (product of winding radius of rope on drum and static force in rope),
- winding and unwinding of rope on winder drum maintaining fleet angle in vertical plane within  $+70^\circ$  to  $-10^\circ$  (in case of winding from top) and  $+10^\circ$  to  $-4^\circ$  (in case of winding from bottom),
- rate of wound or unwound rope from the winder drum during shaft works up to 0.25 m/s,

- rate of wound or unwound rope from the winder drum during out-shaft works with unloaded end of rope up to 0.6 m/s,
- during shaft works, winding the rope up to maximum winding diameter  $D1 = 2615$  mm, which in case of rope rated diameter 60 mm provides drum capacity ca. 1500 m, depending on actual rope diameter.

The low-speed drum winder WBW 45 T control system allows for smooth controlling of rate within the range  $-100\% - 0 - +100\%$ . The winder can be controlled locally, from the panel installed directly within the area of winder drive or remotely, from any place determined by user. The winder control system is adapted for remote control in individual control mode (single winder) or in centralized mode (set of up to 4 winders) using remote control device for low-speed drum winders - ZUSWBWz.

### Design

The winder is of compact design where mechanical part elements and local control panel are installed on rigid frame. The remaining elements of the winder equipment are installed in dedicated container or other adapted room. The winder may be anchored to a foundation by means of the frame.

The main elements of the mechanical parts:

- drum,
- axle with two bearings,
- open gear,
- ratchet mechanisms,
- toothed clutch,
- cylindrical toothed gear,
- flexible coupling,
- AC driving motor,
- disk brake system with hydraulic supply.

The main elements of the electrical parts:

- inverter type driving system,
- control and adjustment systems,
- protection system.

The whole control, adjustment and protection systems are designed based on PLC controllers.

## Specifications

type	WBW 45T
location	on surface, horst or on support structure outside shaft zone
type of control	local and remote control; centralized control, from outside system
operation modes	shaft works; out-shaft works
admissible rate of rope	0.25 m/s in case of shaft works; 0.6 m/s in case of out-shaft works
method of rope winding	from top; from bottom
maximum rope diameter	65 mm
maximum static force in the rope on drum jacket (1st layer)	450 kN
maximum torque of loading the winder drum:	392 kNm (for rope 60 mm)
outer diameter of drum jacket	1650 mm
maximum winding diameter of the top layer of rope	2615 mm
environmental conditions for use	-40°C to +50°C
protection degree	IP43 for supply and control cabinet and IP54 for the remaining devices
power supply	500 VAC, 400 VAC, 230 VAC
supply of the control circuits	24 VDC
total weight of winder	approx. 65 000 kg