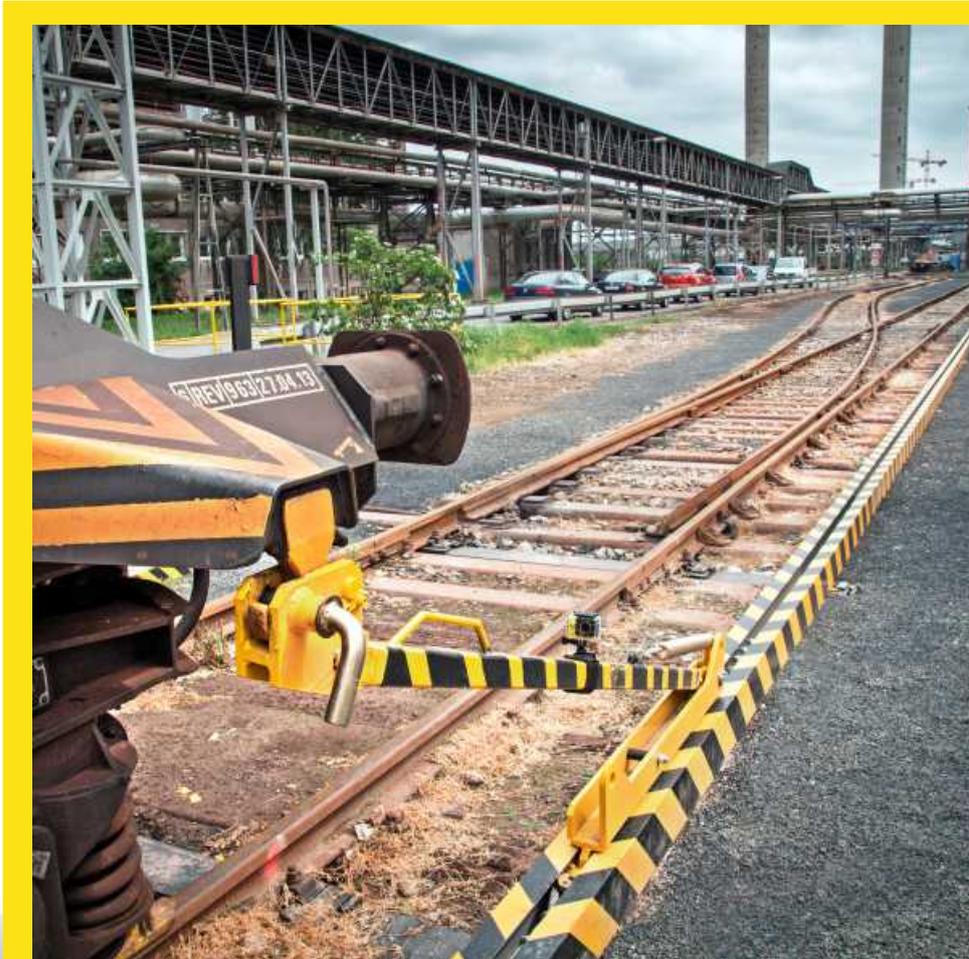


Rope Shunting Device **PZ-15**



Rope Shunting Devices PZ-15 and PZ-15-DUO

Place of Destination and Basic Description

The **PZ-15** cable shunting device is designed to shift railway wagons as they are loaded or unloaded on railway sidings, on liquid product bottlers and terminals. It is able to move and brake a set of wagons with a total weight of up to 500 t in both directions according to local conditions. The PZ-15 is suitable for operations with a lower frequency of shifts on the siding.

We offer two versions of the PZ-15: the basic version - for one track and the PZ-15-DUO, where the cars shift on one of the two parallel tracks. This device requires the presence of an operator near the manipulated wagons only to enable and disengage the pulling arm of the trolley.

The rope shunting device is made up of basic units and

this is a **drive station**, a **return station**, a **trolley** with a shoulder and a pin which is pulled along **driveway** outside the track by means of a **conveyor rope**. An integral part is an **electrical switchboard** with a control system and a **tensioning rope aggregate**.

The trolley's towing arm can be connected via a special pin to the side hook of any wagon in the train. The set's start and braking are controlled by a frequency converter. The programming machine in the technology switchboard allows logical links to the existing technology devices of the siding (feed nozzle and arms, rail weight, etc.).

The entire shunting device technology can be designed and implemented in potentially explosive environments if needed (Ex execution).



BASIC TECHNICAL DATA PZ-15:

The Maximum towing force*:	12 - 46 kN
The nominal outputs*:	5.5 kW / 7.5 kW / 11 kW
The maximum trolley speed with load / without load*:	0,4 m/s / 0,2 m/s
The maximum weight of the shifted set*:	up to 500 t
The track slope:	max.3 ‰
The track:	shifting in the arc and at the adjusted crossings
The operating:	from local box, operators panel or remote control

*Depending on the local conditions and needs of the user

Drive Station

It consists of a welded driveway frame which is anchored on a concrete base outside the track with anchor screws and in which the main drive runs. Inside the drive frame is a compact drive unit made up of a 3-phase air-cooled electric motor and a planetary gearbox with a drive rope disc mounted on the outlet flange.

There are pulleys on the concrete base of the drive station, guiding the powered rope to the return station and to the shunting trolley.

The tensioning of the towing rope is carried out by means of a hydraulic aggregate which is placed on the iron-concrete base of the driving station.

The layout of the main elements of the shunting device on the track always requires individual solutions and depends mainly on the availability of the track. A distributor with a control system can be located directly at the driving station on a reinforced concrete base, or in a substation off the track. At both ends of the driveway there are sensors for the safe and accurate function of the rope device.



Below are some examples of arrangements:

- 1) Drive station
- 2) Return station
- 3) Trolley
- 4) Driveway
- 5) Towing rope
- 6) Conversion pulleys
- 7) Conversion pulleys

Fig. 1) Arrangement diagram of rope shunting device PZ15: location in the arch.

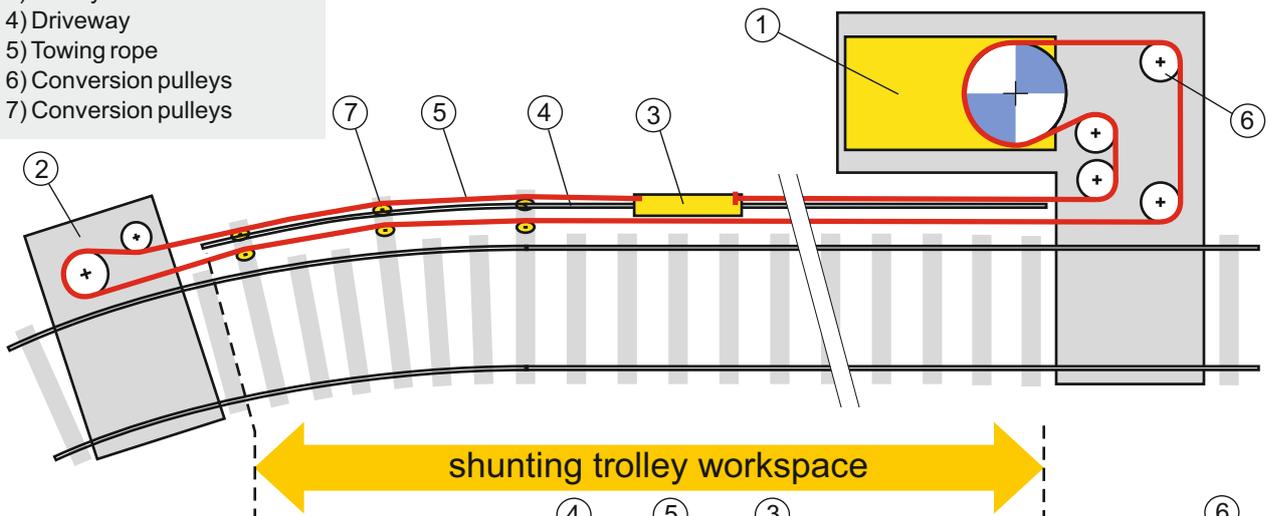
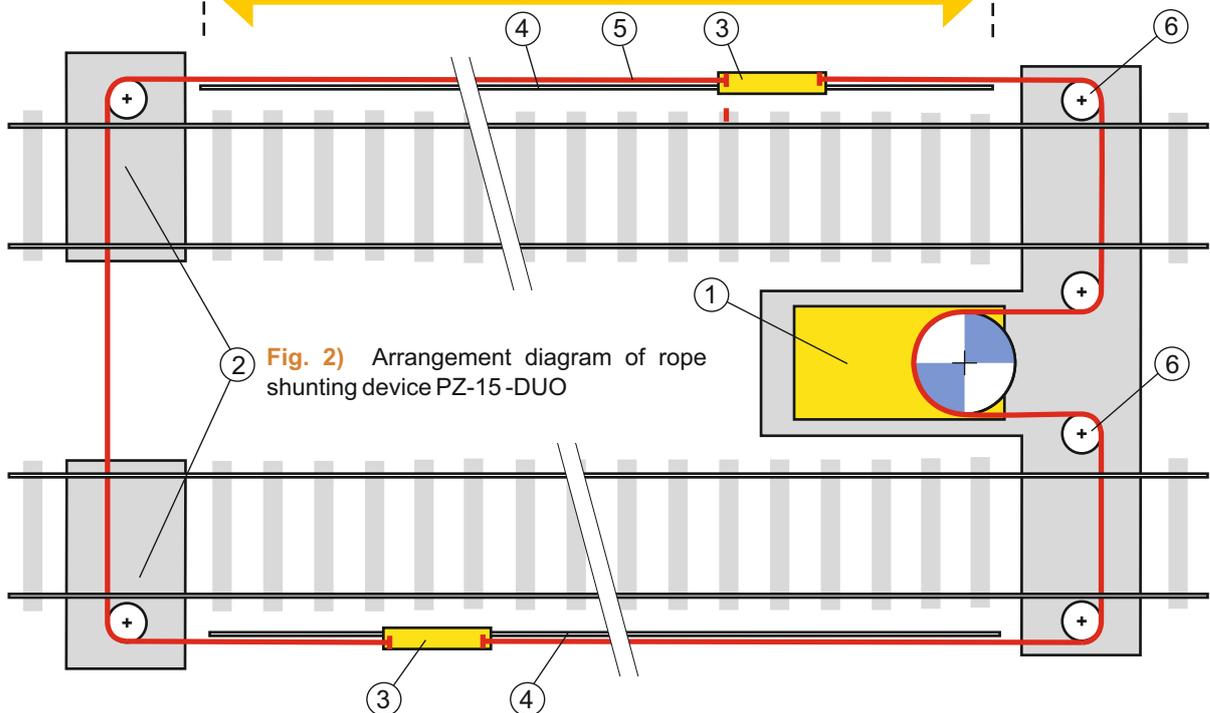


Fig. 2) Arrangement diagram of rope shunting device PZ-15-DUO



Return Station

The return station consists of two welded frames with deposited rope pulleys on a reinforced concrete base off the track. The pulleys provide guidance for the transport rope from the return station to the trolleys and the driving station. The construction of the returning station is protected by a steel cover.

The Driveway, Trolley and Towing Rope

The guide driveway consists of a steel profile at a distance of about 1400 mm from the centre of the track (according to the specification of the wagon types used) in which the trolley drives. This has a range of ± 100 mm from the axis of the guiding way for the attachment of the side hook of the wagon and is protected from going out of the guiding way in the end positions by the two end sensors. The trolley is a welded steel structure with a pulling arm, which is equipped with a strengthening spring for easy handling when the pin is fastened and undone.

The PZ-15 can also work in arcs and switches. The driveway can be hidden in the pavement of a loading dock or road crossing. The rope is fastened to the trolley using an orb and clamps. Steel tow rope not lubricated is designed according to STN EN 12385-4 with diameter according to the projected load. The moving rope is supported by plastic sliding elements which reduce wear and tear of the rope.

Control

The PZ-15 shunting device is operated by default using a portable radio set, which is necessary when the pin is switched on. The operator can then handle the railway wagons from any point on the line. Another way to control is from a local control box located in a clear spot next to the tracks. The service control point is the switchboard itself, which is used only for maintenance and repair purposes.

Offset Progress

- The shunting locomotive moves the wagon train into the shunting device area.
- The operator disconnects the train from the locomotive and it can perform other tasks.
- The operator uses a radio set to slide the trolley under the side hook of one of the shunted wagons. He grabs the towing arm by the bracket, picks it up, simultaneously micro-shifting the trolley right to the hook and switches on and secures the pin on the hook.
 - Moves a single wagon or the wagons set to a specified location using a rope shunting device.
 - After loading or unloading, the operator will transport the wagons to the place where the shunting locomotive will take over by the same procedure.

Advantages of PZ-15/PZ15DUO device:

- Low investment cost
- Simple operation
- Possibility to serve two parallel tracks (PZ-15DUO)
- Possibility to move the set or individual wagons

Limitations of PZ-15/PZ-15-DUO:

- Operator manipulation when switching on and off the arm
- Restrictions on the number of wagons in the train - wagon side hook stress limit.

