

## Technical characteristics

### **Sinking equipment. Roadheader П110-01**

#### **Roadheader application**

Roadheader П110-01 is designed for mechanized breakage and loading of mined rock when developing of arched, trapezoidal and rectangular-shaped workings with cross sections from 9 to 33 m<sup>2</sup> while roadheading with  $\pm 12^\circ$  inclination angle in coal, rocks ( $f=6$ ) and combined face with maximum ultimate uniaxial compression strength  $\sigma_{\text{conpr}}=120\text{MPa}$  ( $f=8$ ) and abrasivity up to 18 mg in mines which are hazardous by gas and dust.

- High capacity.
- Breaking of rocks with hardness up to 120 MPa and more.
- Service life is up to the first overhaul - up to 150000 m<sup>3</sup> of broken rock.
- Optimal specific maintenance costs per 1 m of sinking.

#### **Advantages of roadheader П110-01.**

Roadheader П110-01 is produced on the basis of the basic model of the serial roadheader П110 and differs from it in augmented characteristics concerning productivity, breaking rock hardness, cross-section of performed workings and reliability.

Cutting technical performance is increased by a factor of 1,5 due to the increase in operating member drive power.

Roadheader application field is extended in accordance with:

- breaking rock strength (from 100 up to 120 MPa);
- cross sectional area of the workings made by one setup (from 25 up to 33 m<sup>2</sup>).

The two-speed gearbox of the operating member is equipped by two motors with capacity of 110 kW. This allows to choose the most productive modes depending on the strength of the breaking rocks. The transition to low speed during hard rock breakage reduces dynamic loads, dust emission and increases cutters life. The operation from two motors provides the highest cutting performance on rocks with the strength of up to 80 MPa. The operation at low speed from one motor is recommended for the breakage of rocks with the strength of more than 80 MPa.

The width of the chain-and-flight conveyor is increased (from 535 to 670 mm), which expands the throughput capacity and allows to transport the rock of increased lumpiness.

The width of the track chain and the length of the crawler truck are increased, which reduces the specific pressure on the soil.

The increased weight, low center of gravity, extended up to 2500 mm roadheader base increase its stability when processing the face.

The hydraulic drives of the crawler track and the feeder gathering arms (spinners) are unified and allow the operation in the watered workings.

The modernized scheme of the hydraulic equipment covers:

- separate hydraulic drive of end trucks;
- hydraulic drive of two rock-drilling machines for anchoring or other hydroficated tools;
- reduction of pressure losses in the hydraulic system of the roadheader due to the use of distribution equipment with increased consumption;
- improvement of the dynamic characteristics of the undercarriage (increased tractive effort), feeder (increased rotation frequency and effort of the gathering arms (spinners)), operating member (increased feeding speed).
- two speeds of movement of the crawler track: - working - 1,8 m/min and travelling - 5,2 m/min.

The additional control panel is inserted for the tail section of the conveyor.

High degree of unification with the roadheader П110.

The roadheader can be power supplied not only from the mains with a nominal voltage of 660 V but also of 1140 V.

The reloader, irrigation plant, dust collector can be powered from the roadheader.

The roadheader is controlled from a stationary panel and remotely: from the cable or radio panel.

The roadheader control system is built on the basis of a programmable controller that performs the functions of control, protection and signaling. This allowed to reduce the number of relay-contactor and protective equipment. The use of the RS 485 interface for communication between devices in the control system allowed to significantly reduce the number of cable routes on the roadheader. All of this together increased the reliability of the control system.

The instrumentation provides diagnostics of the roadheader electrical equipment with the output of information on the control panel liquid-crystal display.

The reliability and durability of all major units and mechanisms of the roadheader is improved.

Roadheader service life is up to the first overhaul:

- in coal and rock with the strength of up to 30 MPa - up to 150000 m<sup>3</sup>.

### Срп.3

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Table 1

Parameter name	Value
<b>Roadheader</b>	
Cutting technical performance, m <sup>3</sup> /min	0,3...3,0
Operating member electrical motors power, kW	2x110
Installed electrical motors total power, kW	305
Rated values of supply mains:	
- voltage, V	1140/660
- current frequency, Hz	50
Boom span, not less, mm:	
- over the width	7230
- over the height	5500
Overall dimensions in transport position, not more:	
length, mm:	
- with conveyor turning section	13300
- without conveyor turning section	11300
width, mm	2550
height, mm	
- over the operating member	1850
Minimum height of the working made by the roadheader, mm	2500
Weight, t	53
<b>Operating member</b>	
Type - boom-shaped telescopic with two axial cutting heads	
Type of the cutters - RG501D-16S, PT-3212, PIII32-85/16, PKC-2	
Maximum cutting heads diameter over the cutters, mm	950; 1100
Cutting head penetration beneath the crawlers supporting surface, mm	185; 245
Operating member extension, mm	590
<b>Feeder</b>	
Type - non-rotating, supporting with gathering arms (spinners)	
Width, mm	
- without reamers	2400
- with reamers 4000	4000
- with spinners	3630
Arms (spinners) oscillation frequency, rpm	
Feeder penetration beneath the crawlers supporting surface, mm	255
Feeder hoisting above the level of the crawlers supporting surface, mm	460
<b>Undercarriage</b>	
Type - crawler track, self-propelled with individual hydraulic drive of left and right trucks	
Width of track chain, mm	650

Technical characteristics

Table 1 continuation

Parameter name	Value
Specific ground pressure, MPa	0,13
Travel speed, m/min.:	
- working	1,8
- travelling	6,0
Conveyor	
Type - chain-and-flight, single-strand	
Channel width, mm	670
Flight chain travel speed, m/s	1,1
Hydraulic system	
Working fluid - oil ИГП-49	
Working pressure, MPa	16...18
Capacity of hydraulic system, l	800