

MSK-01ST ROAD/RAIL TRUCK-BASED RAIL WELDING SYSTEM



At railways with intensive rail traffic and, therefore, subject to faster wear, it is necessary to carry out track maintenance more often and during extremely limited time intervals in order not to interfere with the traffic.

A currently common challenge of the railways sector is to considerably reduce the time of track works, and when using standard rail-bound machinery that also results in increasing costs. In this connection, more efficient and flexible track machines and methods of works are becoming more and more in demand.

In this presentation we would like to bring to your attention a road-rail welding vehicle based on a specialized truck chassis.







The vehicle is equipped with:

- box-van for flash-butt welding equipment;
- welding manipulator (lifting unit);
- hydraulic supports in the rear part of the vehicle;
- diesel generator;
- inductive heating unit;
- welding machine MSR-120.02 or MSP-60.









THE ROAD-RAIL WELDING VEHICLE MSK-01 ON THE RAIL WAYS







Welding a rail joint with the suspended rail welding machine MSR-120.02





Welding a rail joint when the vehicle MSK-01ST is positioned on the adjoining to the track territory and is not rail-bound



- 1. The vehicle moves backwards to the track and stops when the rear railway bogie is directly above the track.
- 2. The rear railway bogie is lowered onto the track, after that the rear part of the vehicle is lifted by means of hydraulic cylinders.
- 3. Afterwards by means of hydraulic drives of the rear railway bogie the vehicle moves on the rails in the reverse direction until the front railway bogie is positioned directly above the track.
- 4. The operator lowers the front railway bogie down, and the front part of the vehicle is also lifted. The vehicle now is completely track-bound.





Advantages

- The road-rail welding system MSK-01ST allows accessing the site of welding works by automotive roads as close as possible, thus considerably minimizing travelling time of the vehicle in general, and specifically travelling time of the vehicle on railway track. Due to this, the effective working time of the welding vehicle is notably increased.

- The road-rail welding vehicle can stay at the site of welding works considerably longer than standard rail-bound machinery due to the fact that the travelled by the vehicle distance to the site is notably shorter than that of a rail-bound vehicle.

- The road-rail vehicle can be loaded at the depot and transport material by automotive roads, drive up onto the track and continue to the work site without having to reload these materials.



Advantages of the Road-Rail Welding Vehicle in Comparison with Rail-Bound Welding Machinery

- The road-rail vehicle is built up on a special-purpose truck chassis that decreases the initial cost of the vehicle and ensures good availability for maintenance and servicing via authorized workshops. The total initial cost of the road-rail welding vehicle is considerably lower than that of a track-bound vehicle.
- The vehicle is highly mechanized and can be equipped with an automated control system, thus reducing the number of operators and minimizing operating costs.



The system consists of two railway bogies, the rear bogie is the driving one. The driving bogie turn angle is $+/-100^{\circ}$ for easy driving of the vehicle on and off track. It is possible to enter and leave the track at almost any railway crossing that has a width of approximately half the vehicle length.

When travelling by public automotive roads, the front and rear railway bogies are raised and locked in position with air operated mechanical locks. Only one operator is required for road/rail transfer operations and handling the driving bogie.



Basic parameters of the vehicle on MAN chassis:	
Overall dimensions of the vehicle with box van (L x W x H), mm	11 440 × 2 550 × 4 150
Mass, kg	32 000
Maximum speed on automotive road, km/h	80
Axle configuration	8 x 2
Fuel tank capacity, l	560
Basic parameters of the vehicle performing track works:	
Time required for driving the vehicle onto the track, min., not more	10
Maximum speed on straight-line sections of railway track, km/h:	
- forward	30
- backward	20
Maximum speed passing switches, special railway track sections and curved track with	
radius less than 200m, km/h	5
Maximum down grade of the track, %	20
Time required for opening box van and positioning welding head on a joint, min., not	
more	10



Manipulator (welding lift) parameters		
Rotation angle of welding head, deg.	<u>+</u> 60	
Lifting capacity, kg	4500	
Lifting height of welding head above the track, mm	550	
Boom length of lifting device, mm	4000	
Welding parameters		
Machine welding time of rail R65 joint, sec., not more	240	
Capacity at duty cycle = 50%, kVA, not less	262	
Nominal upsetting force, t	120	
Maximum upsetting speed, mm/sec., not less	30	
Welded joint heat treatment parameters		
Heating temperature, ^o C	850÷900	
Heating time, ⁰ C, not more	240	
Cooling time, ^o C, not less	180	
Diesel generator AC 400		
Capacity, kVA	400	
Fuel tank capacity, l	350	



TECHNICAL PARAMETERS	MSR-120.02	MSP-60
Supply mains rated voltage, V	380	380
Capacity at duty cycle=50% , kVA	240	240
Maximum secondary current, kA	72	72
Rated continuous secondary current, kA	21,4	21,4
Rated upsetting force, kN	1200	600
Maximum clamping force, kN	2900	1600
Adjustment range of flashing speed, mm/sec.	0,2-2	0,2-2
Machine welding time of rail, sec.	240	240
Overall dimensions, mm (length x width x height)		
- welding device	1876x1170x1130	1790x1145x1220
- hydraulic drive station	1021x662x1630	1021x662x1630
- electrical equipment unit	1090x550x1670	1090x550x1670
Weight, kg		
- welding device	3 750	3100
- hydraulic drive station	1 000	1000
- electrical equipment unit	650	650







THANK YOU FOR ATTENTION

LLC R&D "WELDING TECHNOLOGIES" 58, Dekabristov Str., Pskov, Russia, 180004 Tel.: (8112) 46-20-02 www. weldtechpskov.ru info@weldtechpskov.ru