

MANUFACTURING

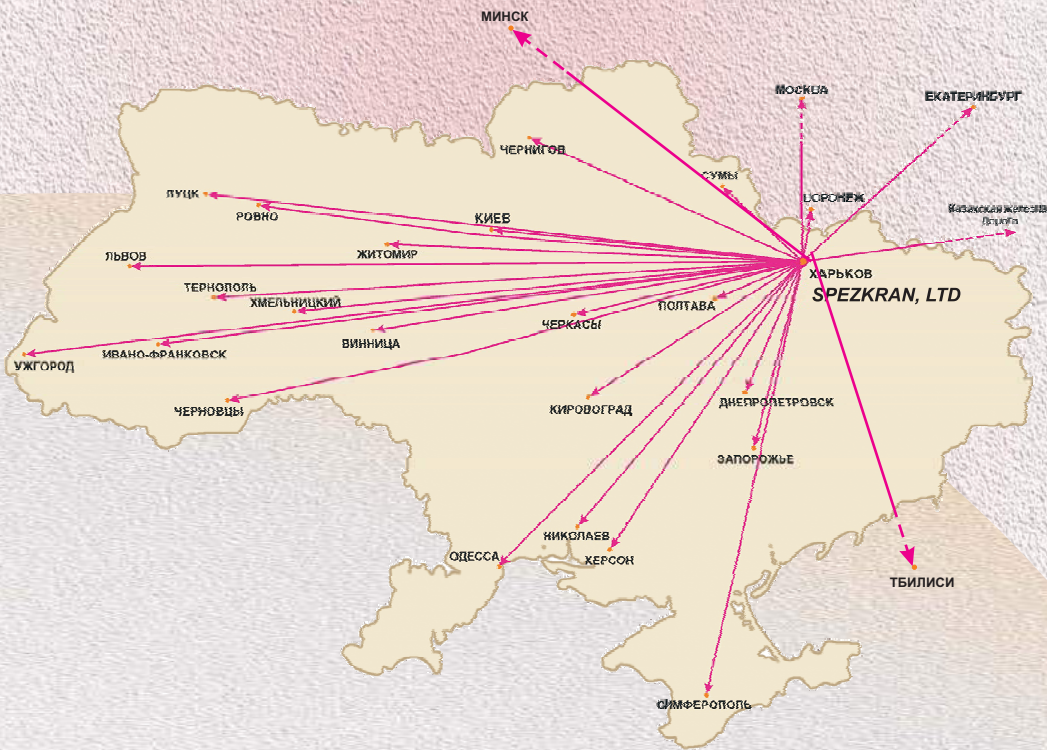


ENTERPRISE

SPEZKRAN

*Development and production of railway equipment,
track tools, and appliances*

SHUNTING VEHICLE MMT-2 (4X4) based on Tractor HTZ



Kharkiv

DESCRIPTION

As a base for shunting tractor MMT-2 we adopted a modern tractor HTZ with the wheel formula 4x4. The tractor is equipped with skeleton cabin that meets modern safety standards, fitted out with air conditioning, steering column, adjustable by angle and height, car radio and comfortable workplace with a good driver's visibility.

With a combined course (pneumatic tire rollers and carrying rollers) shunting vehicle MMT-2 quickly and safely arrives at its destination, and always the shortest way. To set shunting tractor MMT-2 on the rails, a small 5-meter section of the railway crossing is enough, and given that the tractor is equipped with MMT-2 video cameras to facilitate setting guide rollers on the rails, the driver will require up to three minutes of time to do that.

Equipping of shunting tractor MMT-2 with compressor unit and the brake system makes it easy to cope with heavy shunting operations.

PURPOSE

The main purpose of MMT-2 can be considered as a replacement of the middle class shunting vehicle operated on large enterprises with advanced railroad tracks on their own territory.

USERS

Enterprises of metallurgy, engineering, construction, energy, agriculture, coal, chemical industry, sea and river ports, warehouses, elevators, timber industry, small and medium-sized enterprises in various fields.

Shunting vehicle can be widely used in the units of Ukrzaliznytsia instead of shunting locomotives type TGM on locomotive and passenger depots, materials and machinery storages, workshops of the track, signal centers, energy divisions, treating plants, reinforced concrete plants, quarries, bridge construction trains, production capacities of the track maintenance train and other structural units.



CONTACT INFORMATION

SPEZKRAN LTD

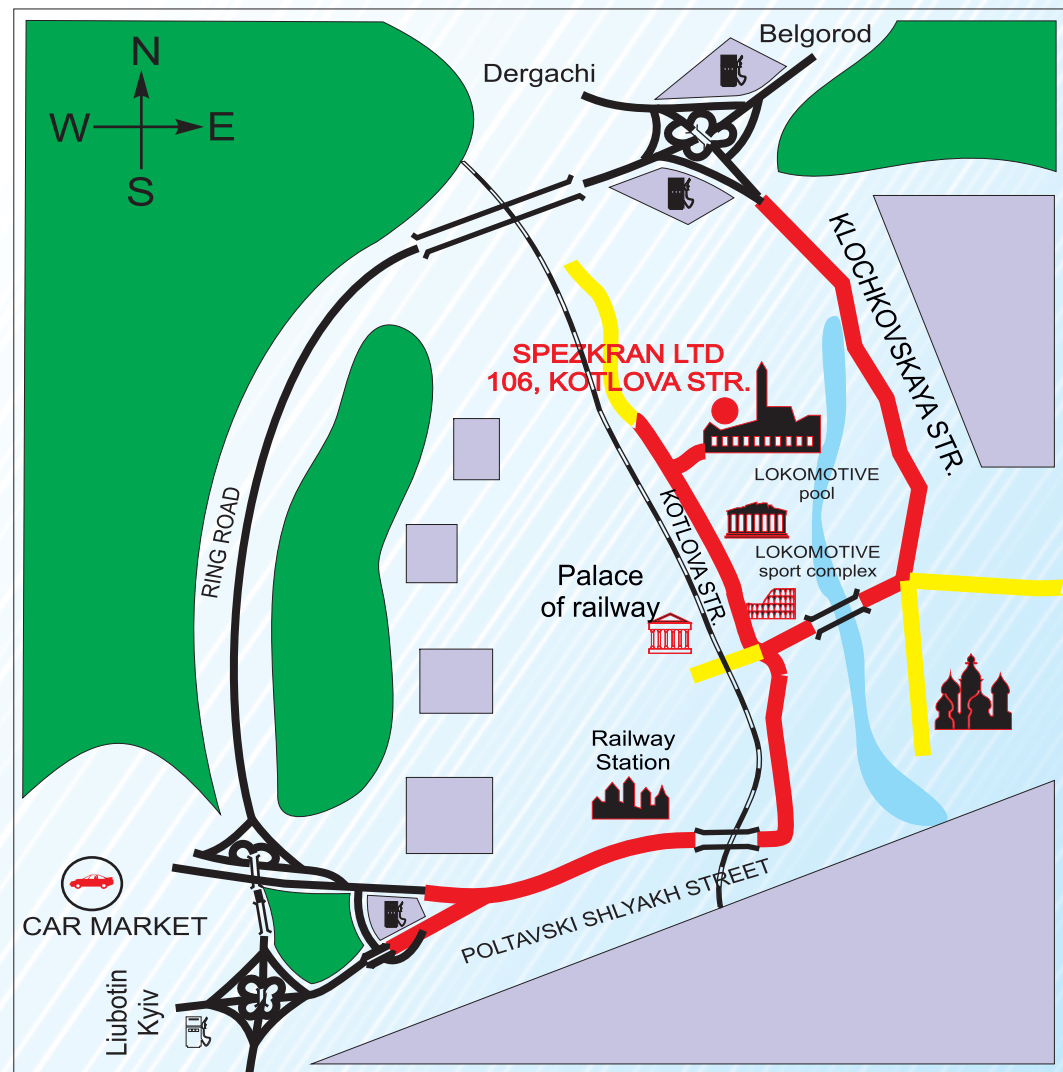
Address: 106 Kotlova Street, Kharkiv, 61017, Ukraine

telephone: +38 (057) 761-40-34; 761-43-31

telephone/fax: +38 (057) 724-45-38; 731-69-22

Website: www.spezkran.com

e-mail: office@spezkran.com, spezkran@mail.ru



ABOUT US



SPEZKRAN LTD was established in 2001.

The main activities of the Company – production of railway destination, special equipment for the Ministry of Emergency Situations, hydraulic cylinders, as well as products for the needs of agriculture (vacuum pumps, units based on them used in animal husbandry and other industries, and hydraulic drives for agricultural machinery), and the non-standard equipment. During eight years of the enterprise activity we developed and put into production more than 30 kinds of products.

All products are in quality to the best world standards and much more accessible to the consumer price indices.

Particular attention is given to the development and output of products for the railways of Ukraine, as SPEZKRAN LTD has become one of the leading manufacturers of the manual and motorized hydraulic tools for the repair, maintenance and construction of railways.

Close partnership with all six Ukrainian railways provide prospects of the young Kharkov enterprise. One can judge on the potential of the company by the sustainable development of its productive capacity. Modern high-precision processing equipment allows you to quickly respond to the needs and requests of customers associated with the development of a new product range.

The high quality of the SPEZKRAN LTD production is confirmed by multiple participations in international exhibitions and tenders.

Our Company's administration is doing everything necessary for stable operation of our team, knowing that qualified personnel and the properly chosen technical policy will allow it to maintain a stable position in the market.

SPEZKRAN LTD is open to mutually beneficial cooperation with business partners in Ukraine, CIS and foreign countries and ensures the accurate and timely fulfillment of its contractual obligations.



FEATURES

Features of shunting tractor MMT-2 are:

- the ability to develop a sufficiently large driving force that provides full service production of facilities with traffic volumes up to 35 to 50 wagons per day;
- the ability to move on the motor roads of the enterprise, and quickly jump on the course of rail for shunting operations with wagons. This speeds up the shunting work, provides the flexibility of transport services, and allows you to use them for normal transport functions as a wheeled tractor.

ADVANTAGES

The main advantage of shunting vehicle MMT-2 is that having the mass of 10 to 12 tons and power of 200 hp it is able to develop a rail mounted traction for moving loaded wagons in the amount of 6 to 8 units on slopes up to 8 ‰, in areas with a slope of zero to 1,000 tons, while retaining the ability of the locomotive as a towing vehicle to transport operations.

The use of shunting locomotive MMT-2 allows the Company to find fundamentally new way to solve the issue of transport services, significantly improve the technology of shunting, provide timely delivery of large-nomenclature and small-nomenclature of goods, as well as significantly reduce the consumption of energy resources.

In comparison to the existing analogues, the domestic locomotive MMT-2 is much cheaper (3 to 4 times), and its specifications are not inferior to the famous foreign models – "Loctrac" 82S and "Loctrac" 100S of Unimog Company of Mercedes-Benz Concern (Germany).



MACHINE DATA

Name	Value
Basic tractor	HTZ-150K, T-156B
Wheel formula	4x4
Served gauge width (with changeover), mm	1520 and 1435
Number of seats in the cabin, including the driver's seat	2
Maintenance staff of the shunting vehicle on railway lines, persons	2
Time of setting (descent) of the shunting vehicle on railway line, min	до 3
Power supply of on-board network:	
- power, kW	1,4
- voltage, V	24
Hydraulic fluid:	
- in winter: motor oil M8B2 GOST 8581-78 Standard	
- in summer: motor oil M10B2 GOST 8581-78 Standard	
Hydraulic tank capacity, liters:	
- standard	70
- auxiliary	70
Suspension of guide rollers of combined course	hydraulic with shock absorbers with adjustable spring
Angles of descent of shunting vehicle in transport position of combined course, degrees:	
- front (on the bumper),	20
- rear (on the guide rollers),	25
Guiding slope when driving on the rail track, ‰,	not more than 8
Automatic couplers:	
- brand:	SA-3
- quantity	2
Compressor:	
- brand:	PK-1,75
- capacity, m ³ /min	1,75
- rated pressure, kgf/cm ²	7...9
- consumed power, kW	11.6
Receiver:	
- brand:	R270-500
- quantity	2
- total volume, m ³ (liters)	0,54 (540)
Base of guide rollers, mm	4910
Diameter of guide rollers rolling circle, mm	350
Minimum ground clearance of the locomotive with a combined course, mm:	
- on the front suspension	445
- on the rear suspension	400
Minimum railway curve radius, m	50

Expected annual economic effect of the use of shunting vehicle MMT-2 is up to 200 – 250 thousand UAH per year. The major part of the economic effect is achieved due to energy savings (fuel economy for one car is in the range of 20 to 35 tons per year).

At the same time, the absolute value of the economic benefit depends primarily on the power of replaced locomotive, as well as on the operating conditions of the use of shunting locomotive (the number of edges of loading and unloading, the number of days, and the arrival of wagons per year).

WARRANTY

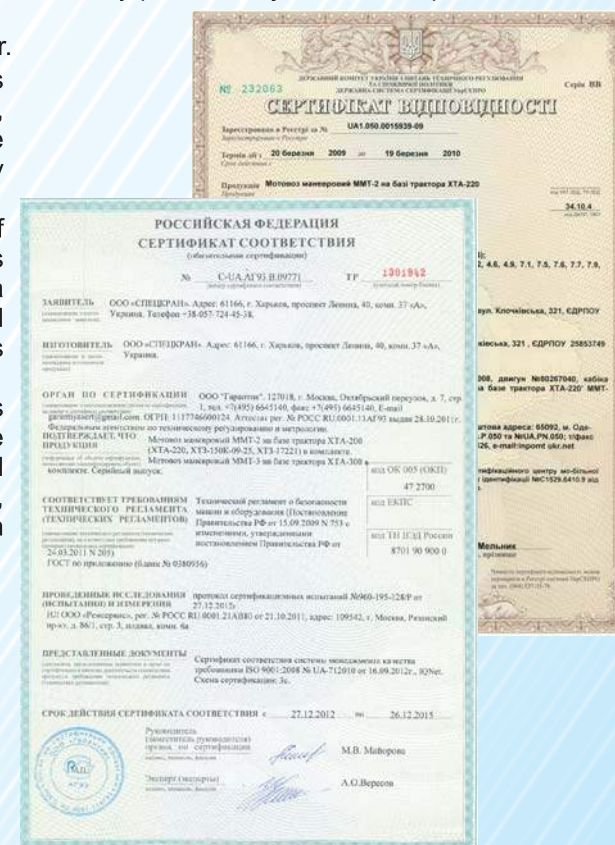
SPEZKRAN LTD guarantees the reliable operation of shunting vehicle MMT-2 and removal of faults occurring during the warranty period, subject to the requirements of the operating instructions.

The warranty period is of 1 year.

With the qualified staff, means of transport and enough spare parts, the Company will quickly eliminate any malfunction during the warranty period.

Experience in the market of special tools and technology has allowed us to obtain the status of a reliable partner in terms of punctual delivery and performance of its commitments.

Shunting vehicle MMT-2 has been certified by the State Committee of Ukraine for Technical Regulation and Consumer Policy, and the State Certification System UkrSePro.



OUR CAPABILITIES

Depending on your application and wishes, MMT-2 may be different from that set out a complete set.

ECONOMY

75% of the industry of Ukraine make up small productivity enterprises, transport service of which is associated only with the feeding and cleaning of the external fleet of wagons that performed by the rail transport. They are characterized by the limited traffic flows (up to 0.25 million tons per year) and the volume of transport activity (up to 30 wagons per day).

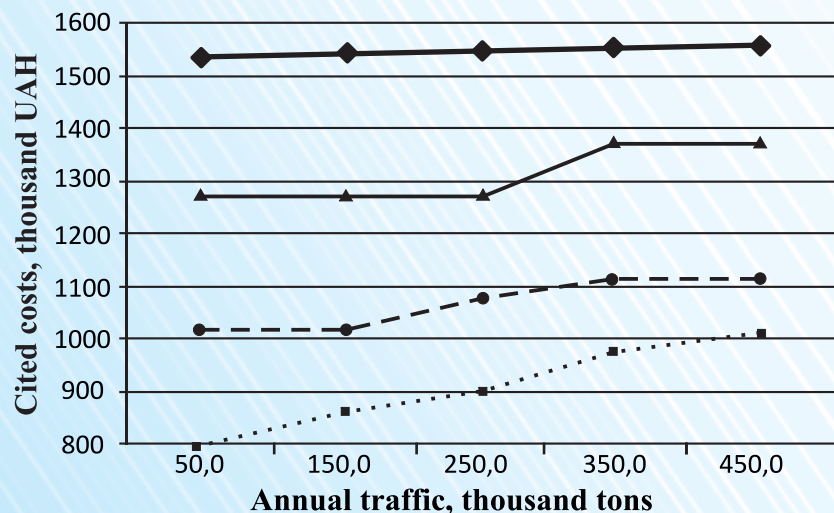
In addition, large enterprises have geographically separate production and storage facilities, in which traffic volumes and wagon traffic volumes are similar.

However, under these conditions they widely use traditional transport technologies of large enterprises with costly and energy-intensive means of traction (locomotives) up to 1200 horsepower and towing up to 100 tons.

The studies found that for companies with limited volumes of transport work are characterized by the extremely low utilization of powerful locomotives: by weight of the trailer - at 12 to 15%; in power - by 12 to 16%; at a daily time – by 23 to 28%. Under these conditions, the annual volume of work on one locomotive is 16 to 47 thousand tons, while in large enterprises it reaches 300 thousand tons.

Using locomotives of 800 to 1200 horsepower (the locomotives dominate the locomotive fleet of Ukrainian enterprises) in areas with limited wagon traffic volumes results in high transport costs, as part of which the cost of energy (up to 70%) is dominated.

Technical and economic calculations established that at the traffic flow of up to 500 thousand tons per year (25 to 30 wagons per day) the use of shunting locomotive MMT-2 will significantly (1.5 to 2 times) reduce operating costs for recycling wagons..



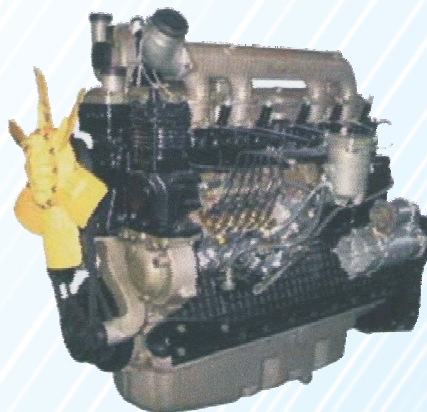
—◆— Powerful locomotive —▲— Locomotive of an average power
 -.-.- Locomotive of a low power ····· Shunting vehicle MMT-2

Name	Value
Gearbox	mechanical, with the rapid reversal
Mass of shunting vehicle, kg, not more	10270
Shunting vehicle dimensions, mm:	
- length	6800
- width	2500
- height on the motor road	3310
- height on the rails of railway	3320

CHARACTERISTICS OF THE POWER AGGREGATE

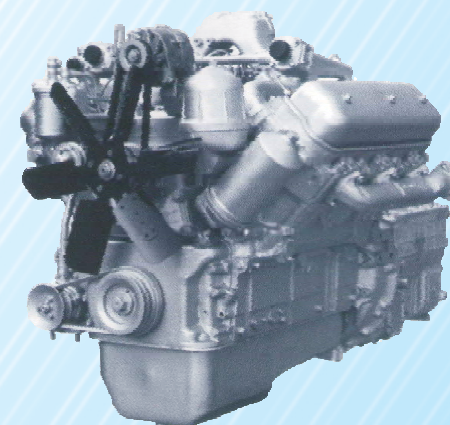
Upon customer request shunting locomotive MMT-2 comes with two models of diesel engines D-260.4, production of Minsk Motor Plant Production Republican Unitary Enterprise (PRUP) (Belarus) and JaMZ-236M2, production of Autodiesel Yaroslavl JSC (Russia).

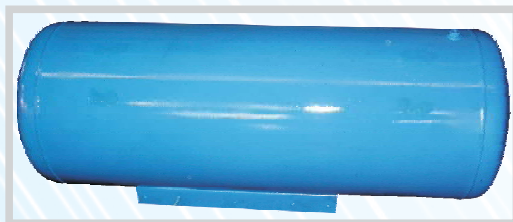
Engine model	D 260.4	JaMZ-236M2
Power, kW (hp)	147 (200)	127 (175)
Specific fuel consumption, g/kW h (g/hp h)	215 (158)	258 (189)
Speed of rotation, r/min	2100	
Clutch	dry single-disc LuK" (Germany)	dry double-disc JaMZ (Russia)
Gearbox	mechanical with hydroficated shifting in motion without interrupting the flow of power	



◁ D 260.4 (Belarus)

JaMZ-236M2 (Russia) ▷





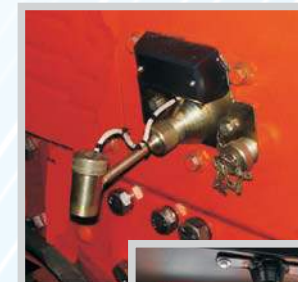
Receiver R270.500-01 of air compressor unit



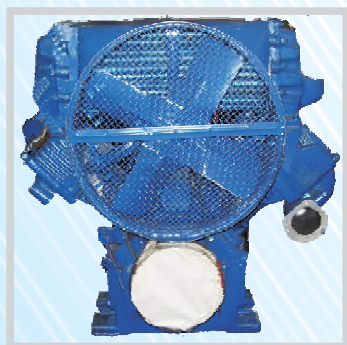
Audible alarm: a typhon and a whistle



The instrument panel of display and control systems of locomotive



Camcorder with the LCD monitor for control of setting on the railroad track and control of passage of turnouts



Compressor PK-1.75-stage piston with V-shaped arrangement of cylinders, air-cooled



**SHUNTING VEHICLE
MMT-2**

**SHUNTING VEHICLE
MMT-2P**



Pneumatic actuator of automatic disconnection of the automatic coupler



Automatic coupler CA-3



Operator crane No. 374



Guiding rollers of combined course with shock absorbers with adjustable spring