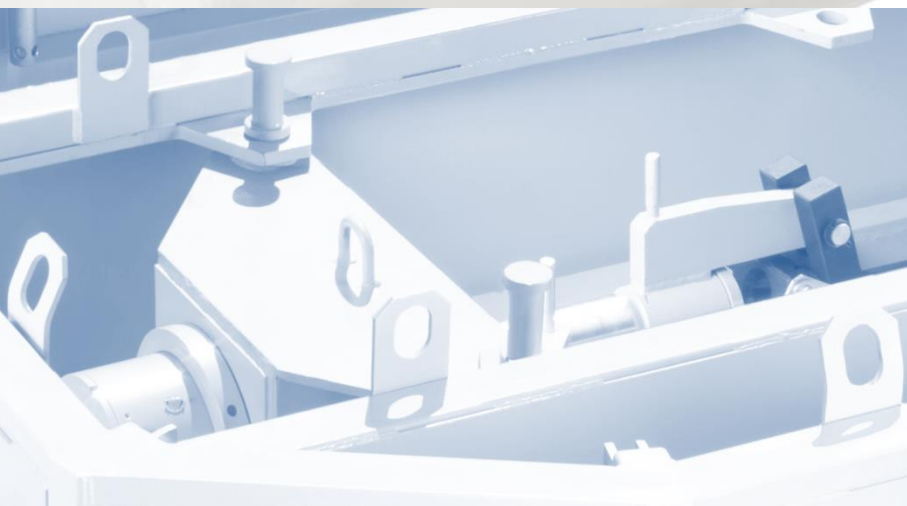


MEMPEX LTD
TRENCHLESS
TECHNOLOGIES

220004 Minsk, Belarus, ul. Rakovskaya, 34
Tax ID 100944009, OKPO 37328184

Hydraulic equipment

FOR TRENCHLESS TECHNOLOGIES



Hydraulic equipment for trenchless technologies

MEMPEX is a leading trenchless construction company in Belarus since 1994 and a manufacturer of equipment for trenchless technologies. Most of our equipment can be used for both the installation of new pipelines and replacement of old pipes (pipe-bursting).

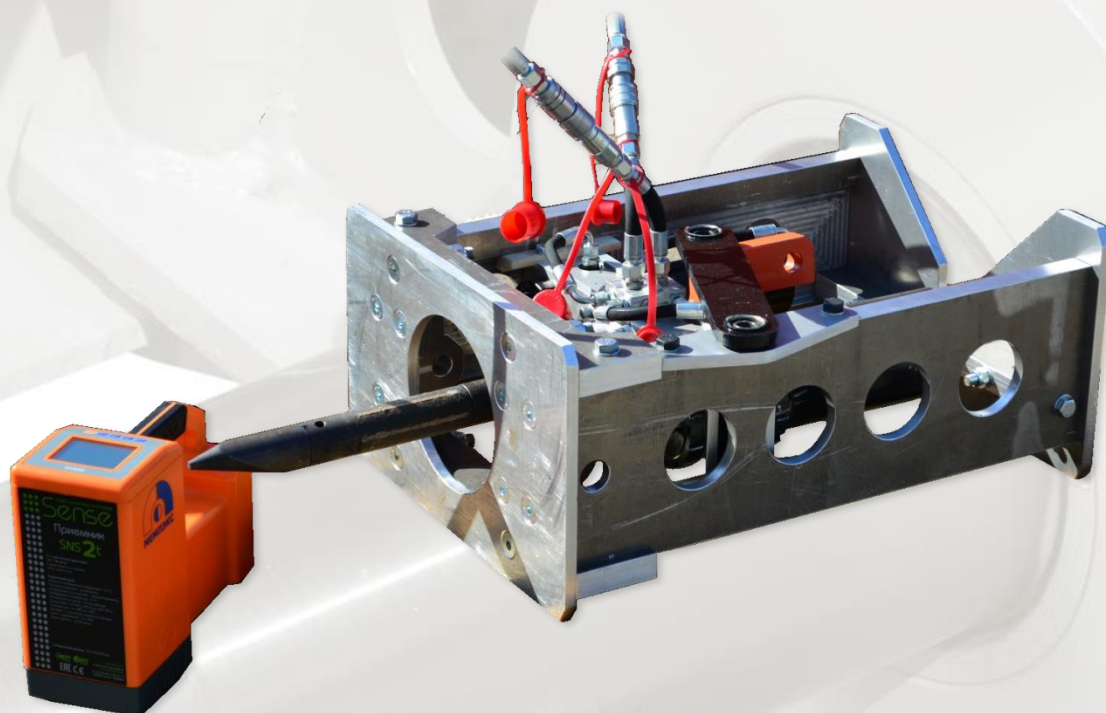
We also manufacture precision auger boring machines with our own laser guidance system for installation of gravity-flow pipelines with set slope.

MEMPEX provides innovative, cost-effective solutions tailored for modern construction companies operating in the branch of underground construction and trenchless technologies.

The following table will help you compare the characteristics of our equipment.

Model	Diameter of installed pipes	Diameter of replaced (burst) pipes	Max. pipe length	Pushing /pulling force	Guidance system	Features
UM-20	up to Ø160 mm	up to Ø160 mm	60 m	15/20 t	radiolocation	<ul style="list-style-type: none"> the smallest MEMPEX machine extremely compact and portable
UM-20 Price range: starting with EUR 18,000.00 up to EUR 26,000.00 depending on specification.						
UNB-20	up to Ø160 mm	up to Ø160 mm	60 m	15/20 t	radiolocation	<ul style="list-style-type: none"> drilling from the surface drilling from a pit high mobility
UNB-20 Price range: starting with EUR 24,000.00 up to EUR 35,000.00 depending on specification.						
UNB-40	up to Ø315 mm	up to Ø315 mm	120 m	24/38 t	radiolocation	<ul style="list-style-type: none"> more powerful, but less mobile version of UNB-20
UNB-40 Price range: starting with EUR 36,000.00 up to EUR 48,000.00 depending on Specification.						
MNB-50	up to Ø315 mm	up to Ø315 mm	150 m	37/50 t	radiolocation	<ul style="list-style-type: none"> small size can fit into a 1500 mm well integrates with OR-1,5 shoring system
MNB-50 Price range: starting with EUR 30,000.00 up to EUR 45,000.00 depending on Specification.						
MNB-125	up to Ø500 mm	up to Ø600 mm	150 m	80/125 t	radiolocation	<ul style="list-style-type: none"> automatic rod feeding system
MNB-125 Price range: starting with EUR 80,000.00 up to EUR 110,000.00 depending on Specification.						
MNBS-600	up to Ø600 mm	up to Ø400 mm	80 m	100/83 t	laser guidance, radiolocation	<ul style="list-style-type: none"> high precision of drilling
MNBL-70	up to Ø400 mm	up to Ø400 mm	60 m	62/77 t	laser guidance, radiolocation	<ul style="list-style-type: none"> high precision of drilling small size integrates with OR-1.5 shoring system
ST-40	–	up to Ø315 mm	150 m	– /40+ t – /40+ t	–	<ul style="list-style-type: none"> the machine can be operated in a Ø1000 mm well the machine is operated automatically without the need to have personnel present inside the well

UM-20 / Ultra-Light Hydraulic Ground Piercing Machine



An extremely lightweight and small-sized but powerful machine capable of directional drilling at distances up to 60 meters. The use of 43,7 mm rods and simple torque transmission allowed us to reduce the dimensions of the machine to **750×500×315 mm** (L×W×H) and its weight to **90 kg**.

The hydraulic power pack is equally compact and lightweight with overall dimensions of 1060×600×720 mm (L×W×H) and weight of 105 kg.



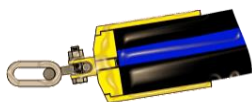
SNS
Location
System

8,2 kW
Hydraulic
Power Pack



The UM-20 has a full directional control capability thanks to radiolocation navigation system. This means the user can control and change the direction of drilling at any time, which allows to install pipes along straight or curved paths and to go around any obstacles.

Applications:



Installation of new pipes of diameters from 32 mm to 160 mm. Sections of up to 60 m can be installed by pulling a reamer along the path created by pilot drilling. The machine can be placed in basements, wells, pits, etc.



Static pipe bursting: replacing an existing pipe with a new pipe. The old pipe is expanded by the bursting head and the new pipe is being pulled in with the force of 20 tons. In practice, 20 t is enough to pull in a pipe of 160 mm diameter, depending on the soil conditions.

UM-20 / Ultra-Light Hydraulic Ground Piercing Machine

UM-20 Specification

1. UM-20 Mini Rod Pusher
2. 8.2 kW Hydraulic power pack with hoses
3. SNS-1t or SNS-2t Radio guidance system
4. Pilot rods $\varnothing 40 \times 437$ mm
5. Reamers, pullers, bursting heads for diameters: 32 mm – 160 mm

Distinctive features

- ✓ Extremely small size
- ✓ Budget friendly (can be used with existing power pack and guidance system)
- ✓ Reliable, low-maintenance design

The distinctive feature of UM-20 is its compact size allowing it to be used in very confined spaces such as basements, wells, pits, ducts (for installing or replacing laterals). It is probably the strongest machine of this size available on the market.

Capacity to install 32 mm – 160 mm pipes makes UM-20 an ideal choice for natural gas and telecom contractors who need to install pipes along and under roads, railways and other structures.

UM-20 a great solution for real estate contractors who install house laterals (water, sewer, gas) from existing basements and wells. **The machine is designed to fit into a 600 mm manhole**, so there is no need to remove the entire cover of the well.

UNB-20 can be transported with light-duty motor vehicles. No cranes or excavators are required to assemble the machine at the construction site. This is useful in extremely confined spaces, in remote areas and in areas of limited accessibility.



UNB-20 / Directional Drilling Machine



A lightweight and portable hydraulic underground piercing unit. UNB-20 has a full steering capability thanks to radiolocation navigation system. UNB-20 is a multifunctional unit designed for drilling in areas with limited accessibility and in confined urban spaces.



**SNS-2t
Location
System**

**8,2 kW
Hydraulic
Power Pack**



The works are accomplished in two steps:

- 1) Drilling a pilot bore with directional guidance,
- 2) Pulling a reamer and expanding the hole by means of dry compaction.

After that a new pipe is pulled into the expanded hole.

Application

- Installation of pipelines up to 160 mm in diameter at the distances of up to 60 meters
- Replacement of old pipes up to 160 mm in diameter using the method of static pipe-bursting



**New pipes
up to 160
mm**

**Pipe
bursting up
to 160 mm**



UNB-20 / Directional Drilling Machine

Price list

1. UNB-20 Directional drilling machine with trench box
2. 8.2 kW Hydraulic power pack with 10 m hose set
3. SNS-200 Radio guidance system (emitter + detector)
4. Pilot rods Ø48×600 mm
5. Reamers, pullers, bursting heads for all diameters: 32 mm – 160 mm

The number of rods can be selected according to the needs of the Customer.

The type and size of pullers and reamers can be selected according to the needs of the customer. The full set contains all sizes and diameters of tools that can be used with the machine.

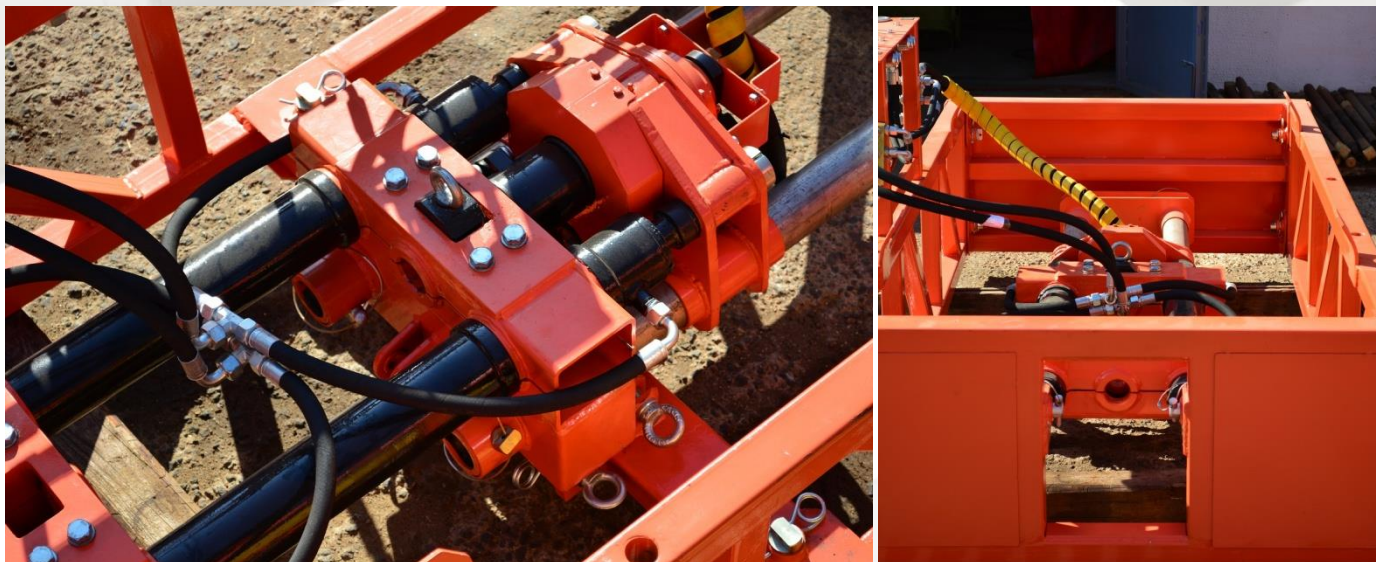
Distinctive features

The principal competitive advantage of UNB-20 is its mobility. The equipment set consists of easy assembly modules. A crew of two persons without any lifting equipment can assemble the machine at construction site and start works within 20-30 minutes.

UNB-20 can be transported with light-duty motor vehicles. No cranes or excavators are required to assemble the machine at the construction site. This is very important for the construction of pipelines in remote areas or in areas of limited accessibility.

This unit can be safely recommended for specialized construction companies with significant experience and a fleet of drilling equipment, and as well as for the companies who are new to trenchless technologies.

Images



MNB-50 / Directional Hydraulic Ground Piercing Machine



Simple, versatile and reliable ground-piercing tool with the pulling power of 50 tons. Modular mounting system enables operation in standard rectangular trench box or a special OR-1.5 shoring system for depths up to 5.5 meters, as well as directly in a 1500 mm well.

MNB-50 equipment set is provided with hydraulic power pack with connections for the machine's hydraulic power cylinder, as well as various hydraulic instruments (such as jackhammer, pump, circular saw, chain saw, jig saw, drill, nut runner or valve rotation device).

Application

- Installation of new pipes up to 315 mm in diameter at the distance of up to 150 m
- Trenchless replacement of old pipelines up to 315 mm in diameter by means of static pipe bursting

Distinctive features

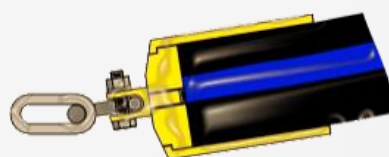
The MNB-50 unit's principal competitive advantage is its wide range of functions. Minimal excavations for pits, with the minimal disruption of surrounding areas, make the MNB-50 unit particularly useful in confined urban conditions.

MNB-50 works reliably under severe winter conditions in Russia, Belarus, Ukraine and Kazakhstan. MNB-50 is the most popular unit in its class due to its good combination of price, versatility, scope of applications and small size.

Features

- ✓ Versatility
- ✓ Easy operation
- ✓ Reliability
- ✓ Small size
- ✓ Low cost

Pipe bursting
up to 315 mm



New pipes
up to 315 mm

MNB-50 / Directional Hydraulic Ground Piercing Machine

Typical specification

1. MNB-50 Directional drilling machine with trench box
2. 17.7 kW Hydraulic power pack with 10 m hose set
3. SNS-200 Radio guidance system (emitter + detector)
4. Pilot rods $\varnothing 48 \times 1020$ mm (60 pcs. = 60 meters*)
5. Pilot head with a slot for the SNS emitter
6. Pullers and reamers for all diameters: 32 mm – 315 mm (full set**)

Optional accessories:

Instruments for **bursting and upsizing fracturable pipes**

Hydraulic tensioning device

OR-1.5 modular shoring system (H-4,5 m)

Short trench box $2000 \times 1000 \times 1020$ mm (compatible with $\varnothing 48 \times 600$ mm rods)

Super short trench box $1500 \times 1000 \times 700$ mm (compatible with $\varnothing 48 \times 600$ mm rods)

Assembly for working inside 1500 mm wells

* The number of rods can be selected according to the needs of the Customer.

**The type and size of pullers and reamers can be selected according to the needs of the customer. The full set contains all sizes and diameters of tools that can be used with the machine.

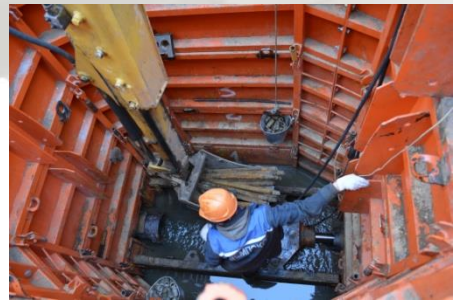
Images



MNB-50 machine used for installing and replacing pipes under roads, with trench box and with modular shoring system.



*Assembly for working
inside 1500 mm wells.*

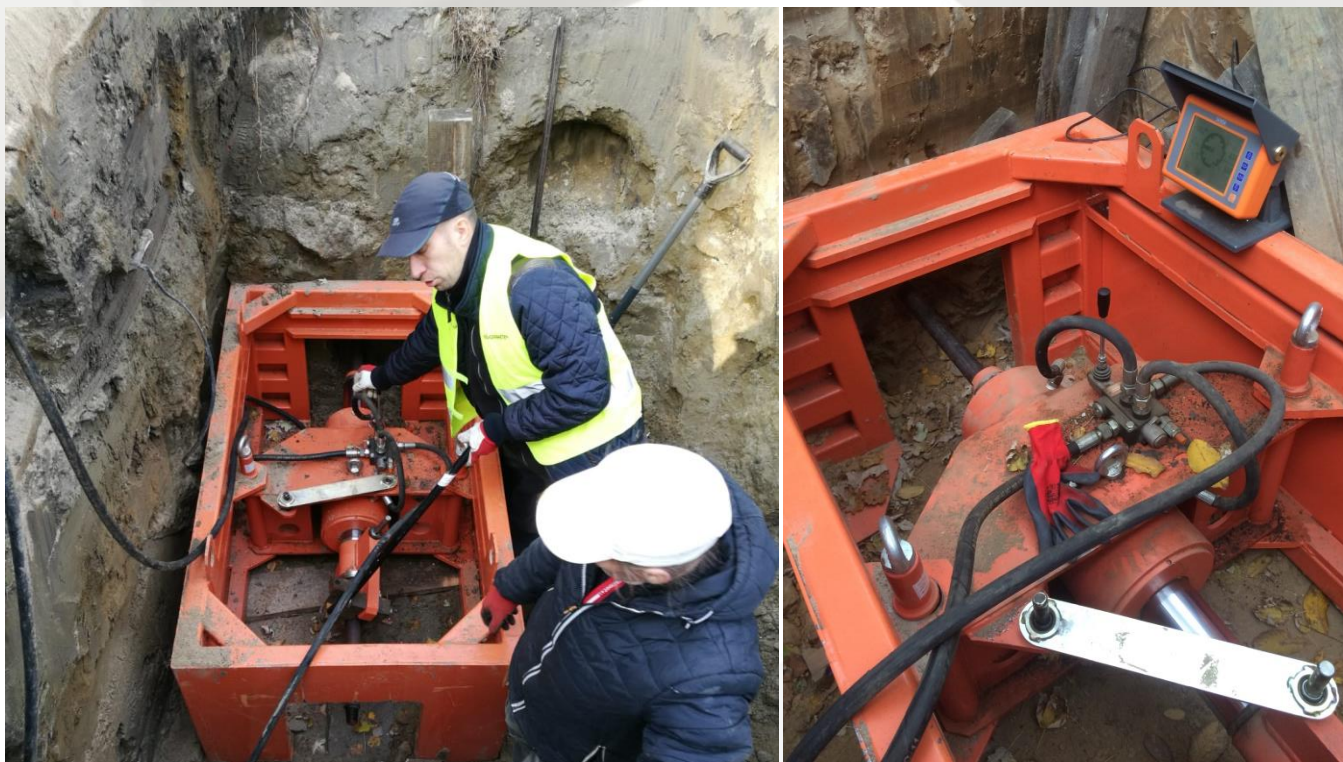


29 November 2019 – WŁODAWA/Okuninka (Poland) – 110 meters long pilot drilling.



Successful pilot drilling and pulling a 220 mm reamer + 160 mm PE pipe in hard sand.

October 2019 – WARSAW (Poland) – several jobs in hard soil executed with an MNB-50 with super short (1500 mm) trench box. Installing cast iron water pipe.



MNB-125 / Heavy-duty unit for installation and replacement of large pipes



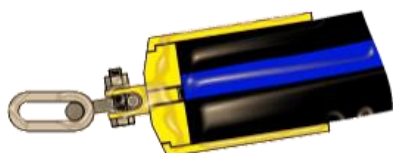
Hydraulic trenchless piercing unit with full steering capability and a pulling force of 125 tons. MNB-125 is capable of installing pipes as large as 500 mm in diameter at the distances of up to 150 m. MNB-125 is also used for trenchless replacement of old pipelines up to 600 mm in diameter by means of static pipe bursting.

Application

The MNB-125 heavy-duty rod pusher is designed for tasks that require a large pulling force. It is perfect for directional underground piercing and pipe-pulling under roads, railway tracks and other obstacles, in particular at large distances. MNB-125 is used for installing new pipes and for replacing old pipes made of cast iron, ductile iron, concrete, ceramics and other materials.

Distinctive features

- ✓ Hydraulics in impact-resistant casing for improved safety
- ✓ Automated rod feeding system
- ✓ Modular shoring system for depths up to 4,5 m



New pipes
up to 630
mm

Pipe
bursting up
to 630 mm



MNB-125 / Heavy-duty unit for installation and replacement of large pipes

Specification

1. MNB-125 Directional drilling machine
2. 35.4 kW Hydraulic power pack with 10 m hose set
3. SNS-200 Radio guidance system (emitter + detector)
4. Pilot rods $\varnothing 82 \times 640$ mm (100 pcs. = 64 meters*)
5. Pilot head with a slot for the SNS emitter
6. Pullers and reamers for all diameters: 160 mm – 630 mm (full set**)

Optional accessories:

Instruments for bursting and upsizing fracturable pipes: 300 mm – 630 mm

Hydraulic tightening device

MNB-125 modular shoring system (H-4,5 m)

* The number of rods can be selected according to the needs of the Customer.

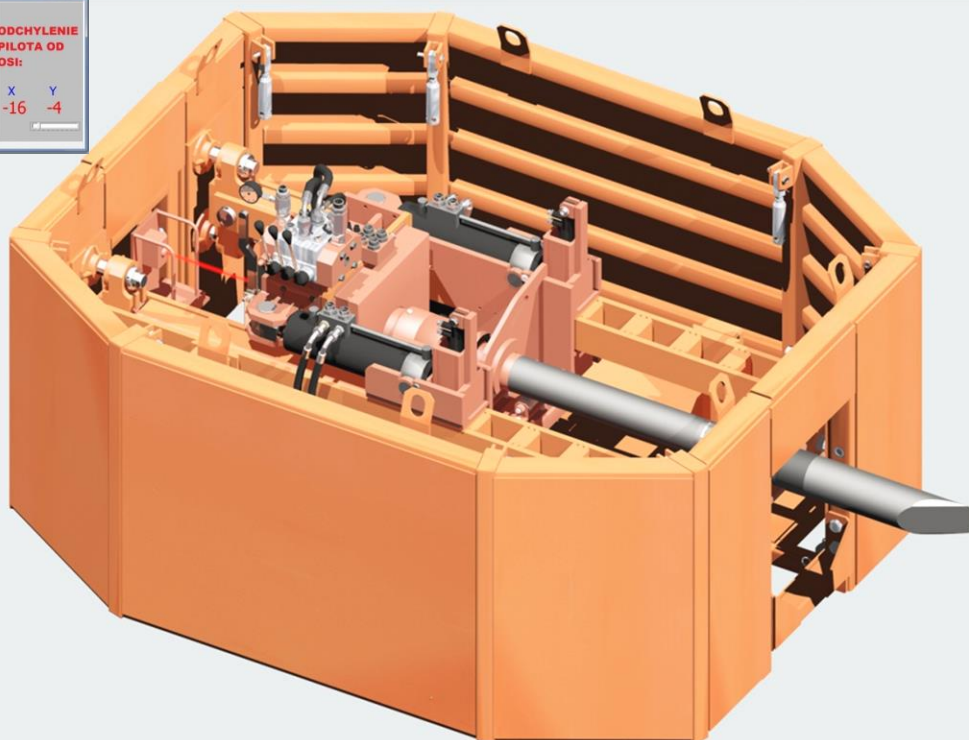
**The type and size of pullers and reamers can be selected according to the needs of the customer.

The full set contains all sizes and diameters of tools that can be used with the machine.

Images



MNBL-70 / New generation drilling rig with laser guidance system



Our newest drilling rig for precision drilling with laser guidance. Small size of the rig creates new possibilities of application. MNBL-70 machine is integrable with our OR-1.5 modular shoring system. Pulling force: 70 t, allows installing and replacing pipes up to Ø400 mm.

Application

- Straight, laser-guided drilling with precise slope control **suitable for gravity sewers**
- Curvilinear drilling with radio navigation
- Static pipe bursting

Compatible with:

MEMPEX SLK-03
Laser Guidance
System.



SNS radio
guidance
system.



MEMPEX OR-1.5
Modular Shoring
System



MNBL-70 / New generation drilling rig with laser guidance system

Specification

1. MNBL-70 Laser-guided drilling machine with trench box
2. 17.7 kW Hydraulic power pack with 10 m hose set
3. Laser guidance system
4. Hollow pilot rods $\varnothing 118 \times 895$ mm
5. Pilot head
6. Pullers and reamers for all diameters: 110 mm – 350 mm

Optional accessories:

Standard set for bursting and upsizing fracturable pipes: 150 mm – 400 mm

Hydraulic tightening device

OR-1.5 shoring system for MNBL-70

For curvilinear drilling with SNS-2t radio guidance system, see rods and accessories as for MNB-50.

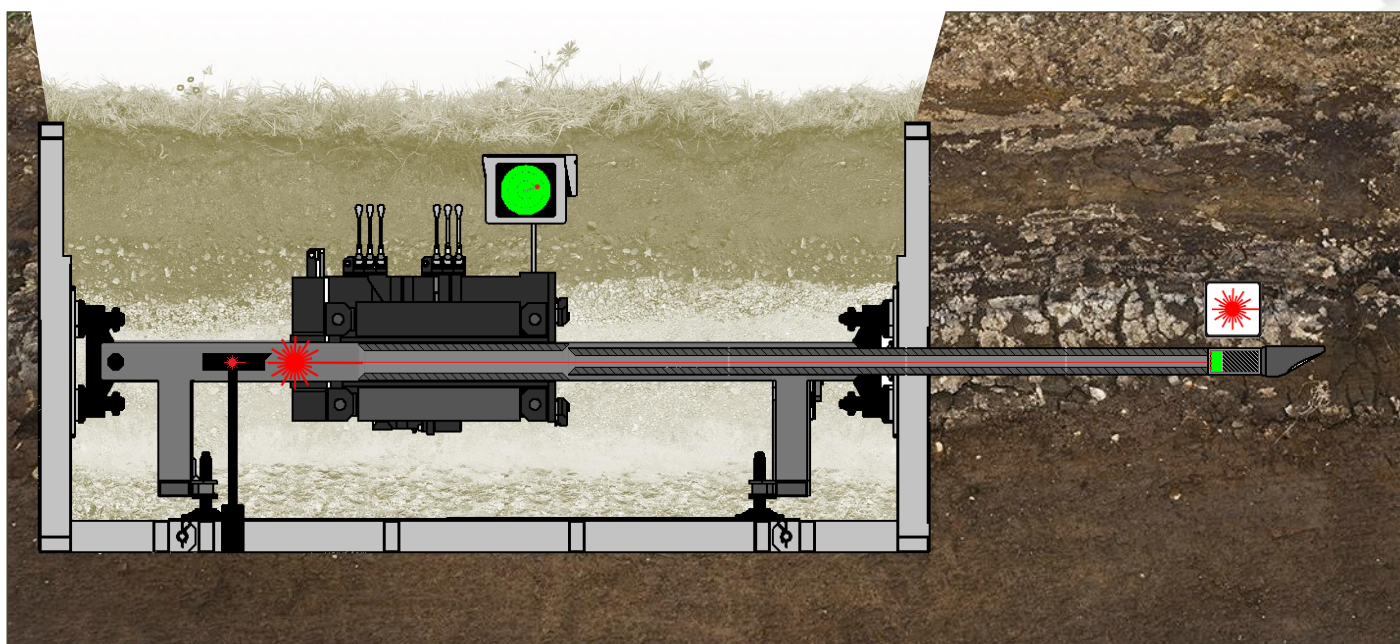
***The type and size of pullers and reamers can be selected according to the needs of the customer.
The full set contains all sizes and diameters of tools that can be used with the machine.*

Distinctive features

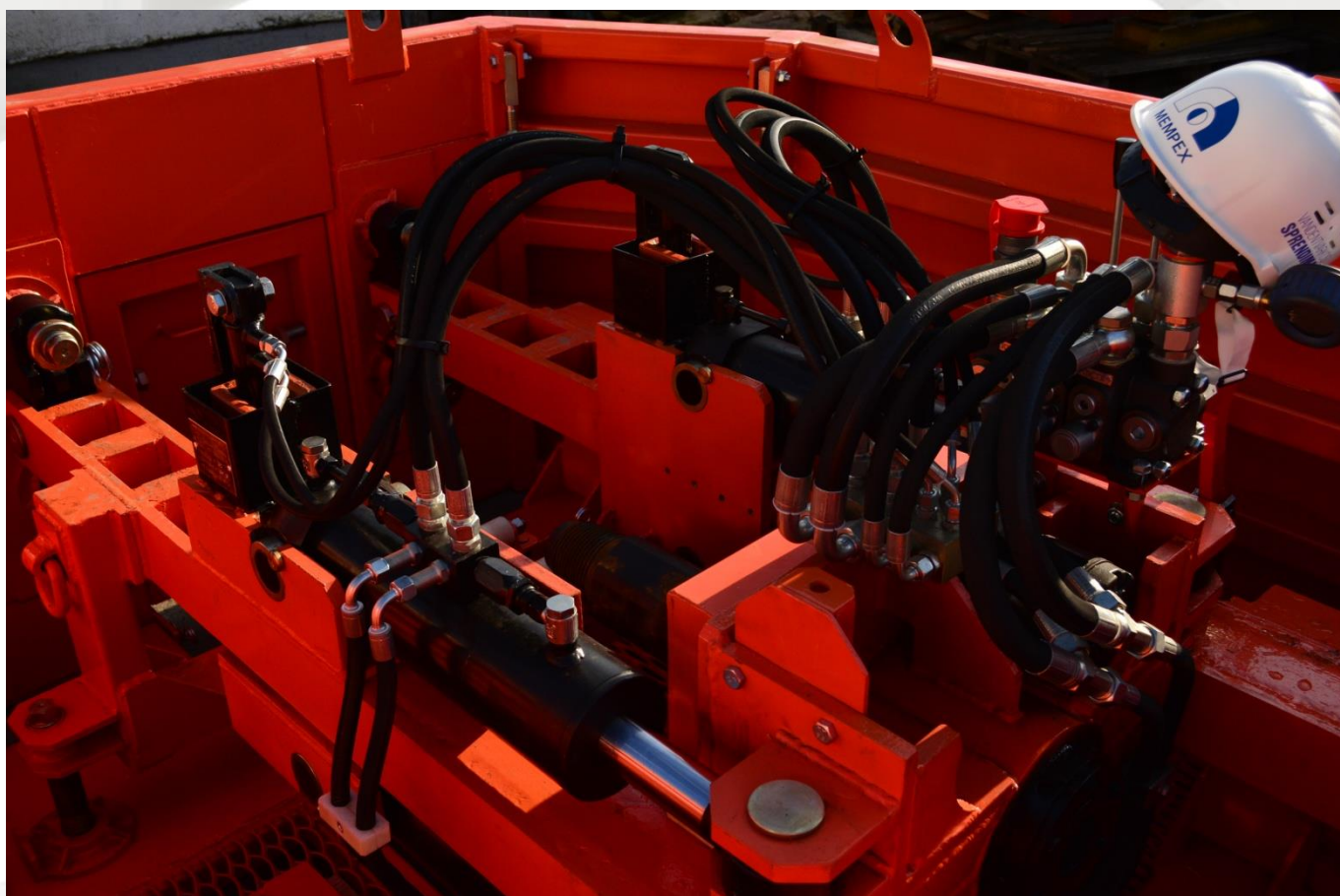
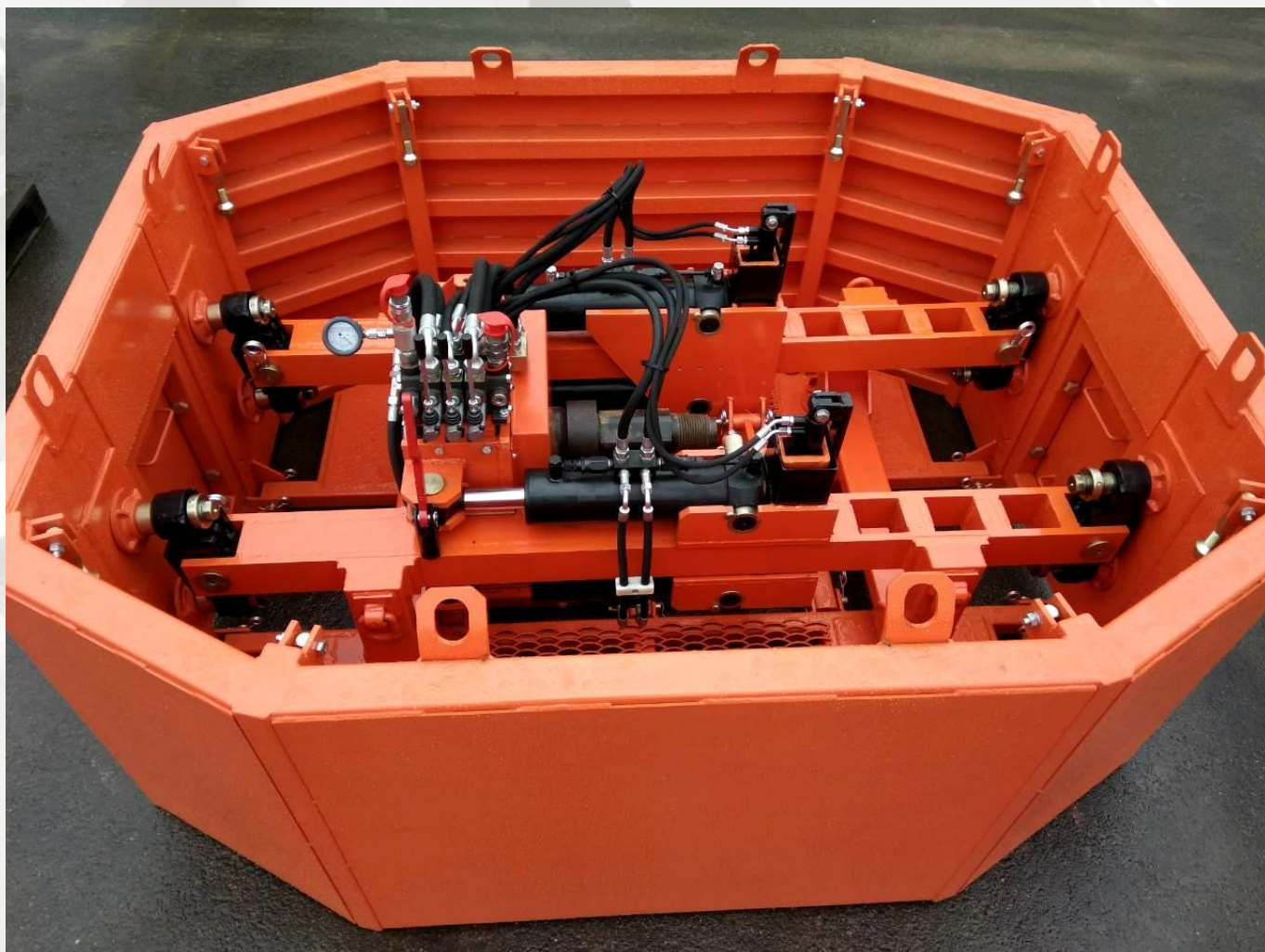
- ✓ Multifunctional machine designed for maximum usability in trenchless applications
- ✓ Equipped with cutting edge laser guidance system that allows performing pilot bores with precise slope control.
- ✓ Safe and innovative modular shoring system
- ✓ Relatively compact size, easy handling

Working principle of SLK-03 laser guidance system

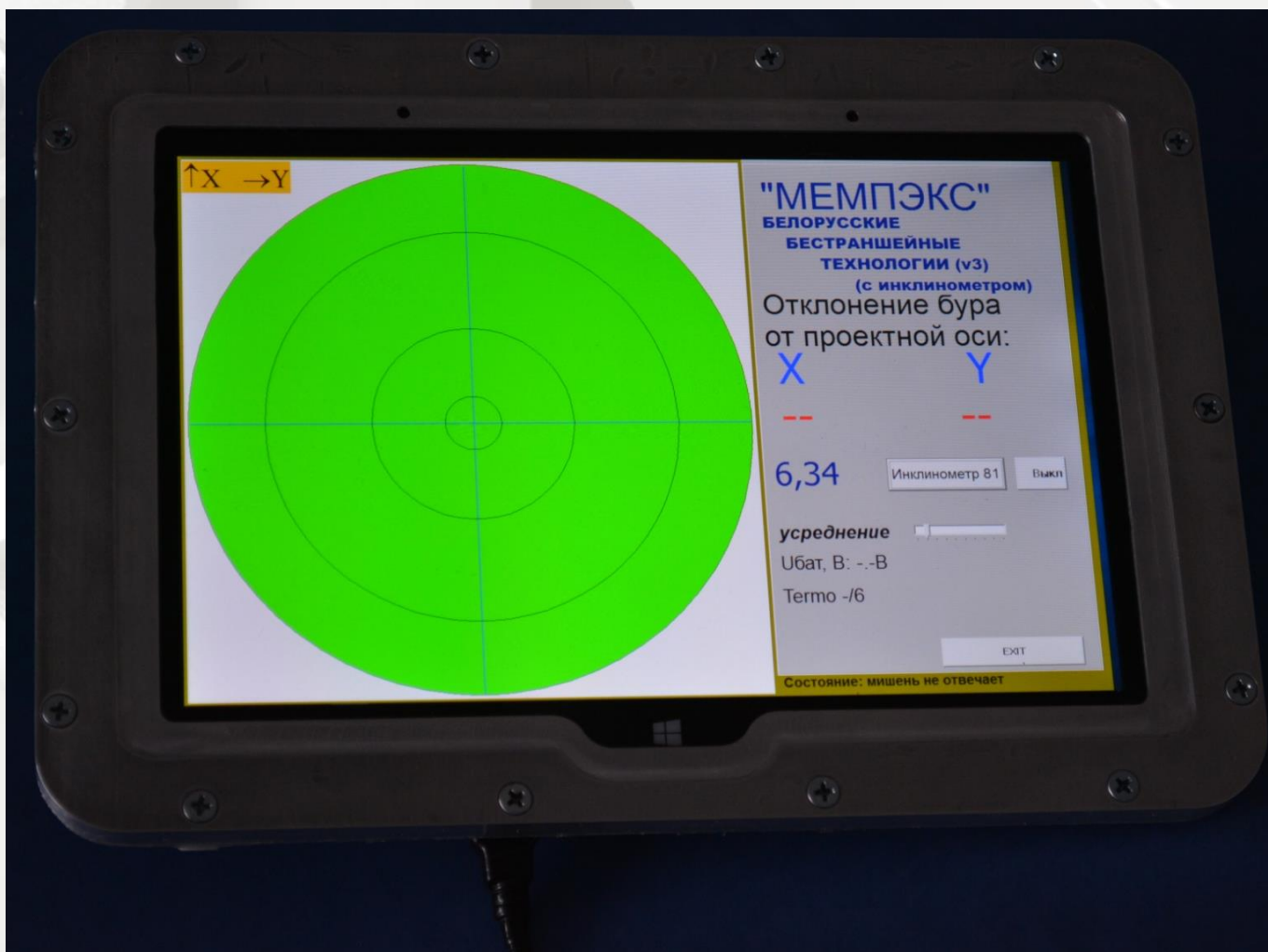
The **laser beam emitter** is placed and aligned to the drilling trajectory **in the launch pit** on an inert stand. The receiver is placed inside the drilling head. The laser beam comes through the hollow rods and hits the receiver. The receiver provides information about relative position of the drilling head. The coordinates of the drilling head are displayed on the monitor in real time.



MNBL-70 / New generation drilling rig with laser guidance system



MNBL-70 / New generation drilling rig with laser guidance system



MNBS-600 / Auger drilling machine with laser guidance system



MNBS-600 drilling machine is designed for precision drilling with laser guidance. The power characteristics of this machine allow installing and replacing pipes up to Ø630 mm, especially gravity-flow pipelines. Laser guidance system ensures the capability to accurately control the direction and the slope of the bore path. MNBS-600 drilling rig has its own shoring system for depths of up to 5 m.

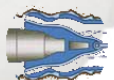
Application



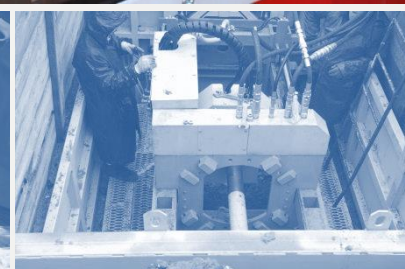
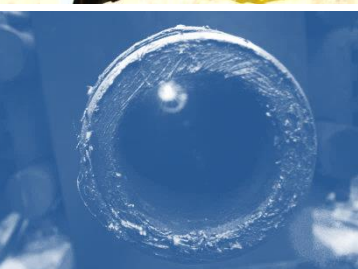
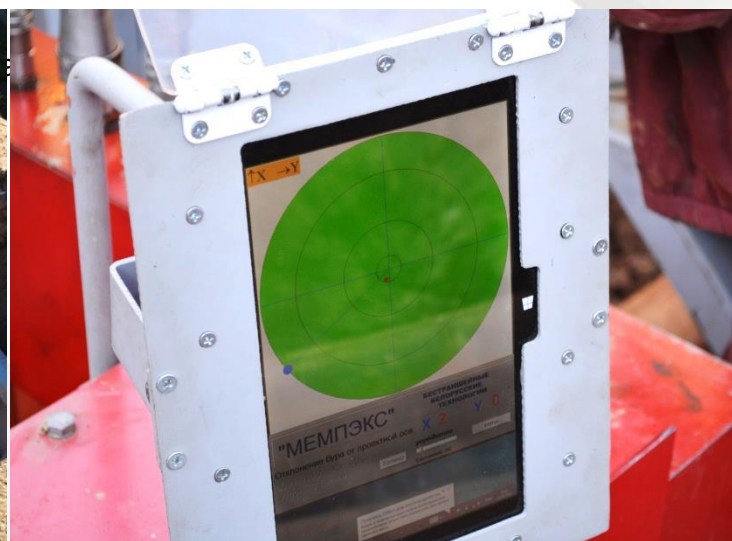
Straight, laser-guided drilling with precise slope control **suitable for gravity sewers**.
Diameters up to Ø630 mm.



Curvilinear drilling with radio navigation.
Diameters up to 400 mm.



Pipe bursting.
Diameters up to 530 mm.



MNBS-600 / Auger drilling machine with laser guidance system

Specification

1. MNBS-600 Laser-guided drilling machine
2. 35,4 kW Hydraulic power pack with 10 m hose set
3. Laser guidance system
4. Hollow pilot rods $\text{Ø}118 \times 1000 \text{ mm}$
5. Pilot head
6. Augers
7. Drilling Heads

Optional accessories:

Standard set for bursting and upsizing fracturable pipes: 150 mm – 400 mm

Hydraulic tightening device

Modular shoring system for MNBS-600 (L=3m, H=4,5m)

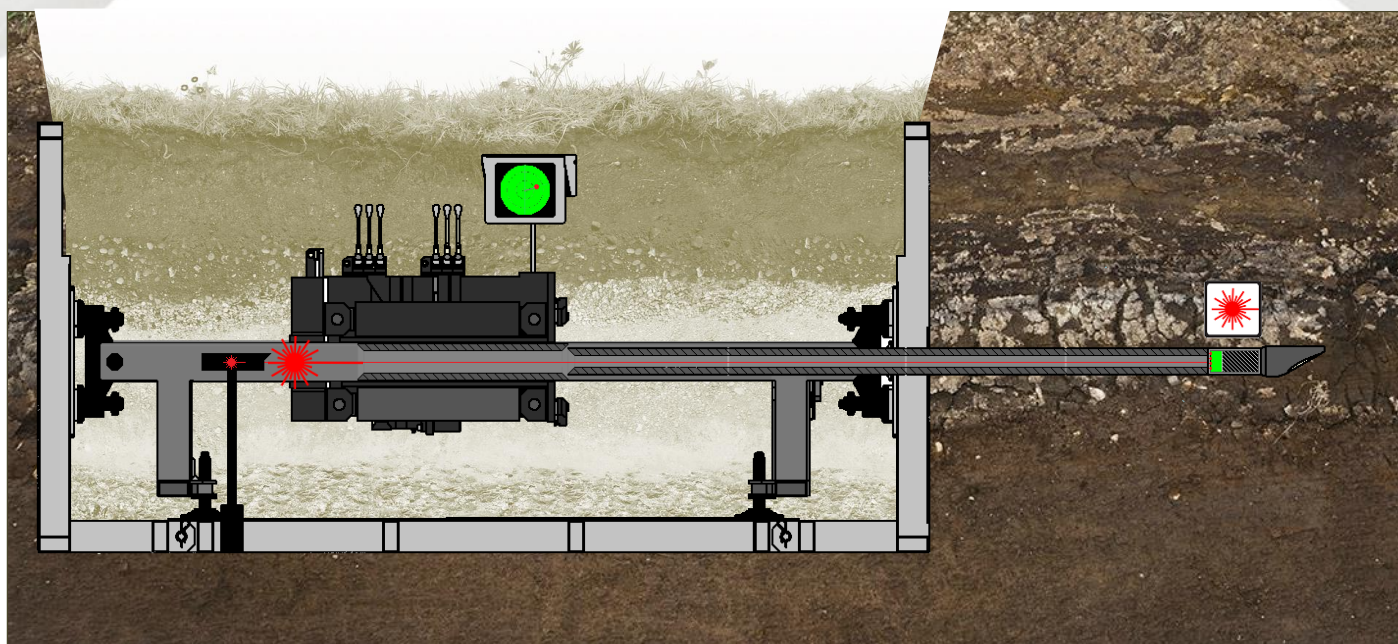
The modular shoring system is adjusted for installation of 1 m long pipes.

Distinctive features

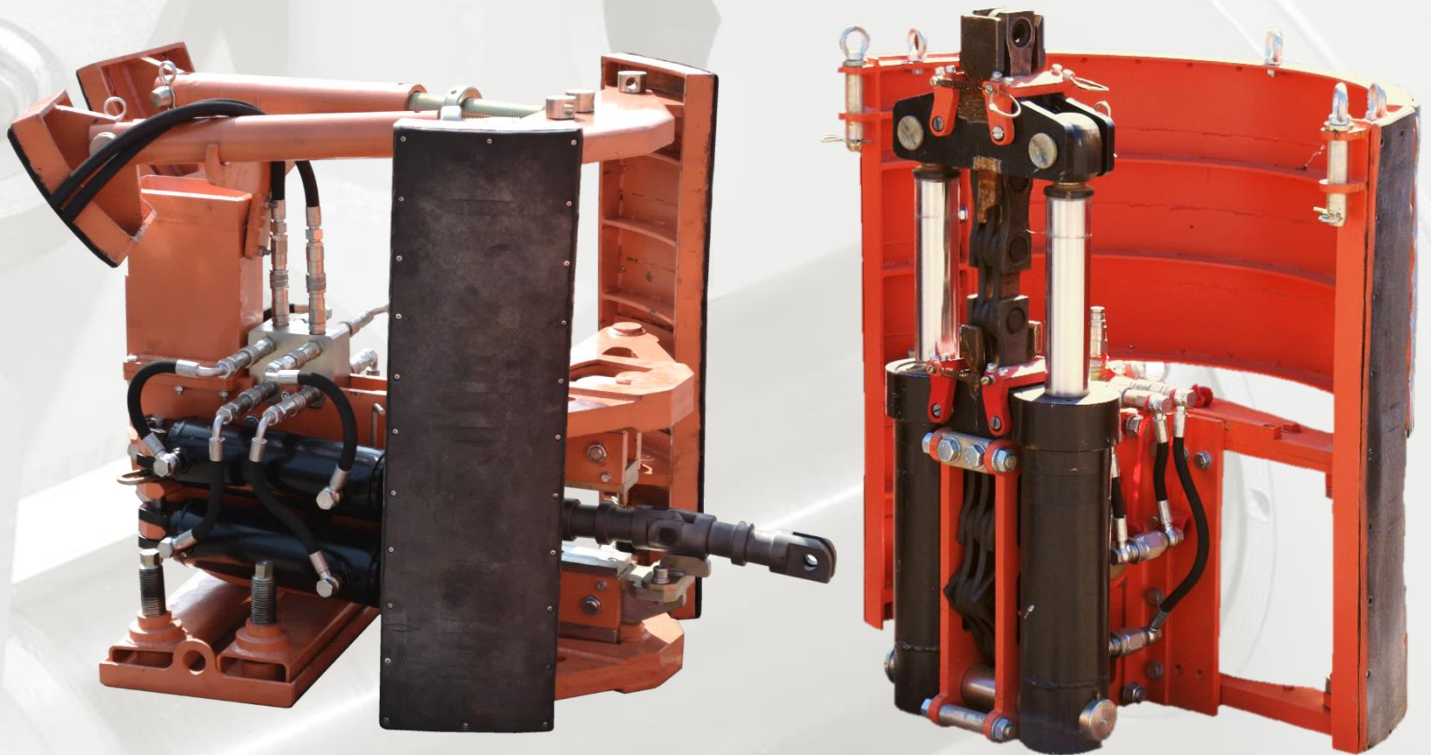
The key advantage of MNBS-600 is its durable, well-designed frame capable of not only pushing the pipe during auger boring but also of pulling the expander/pipe assembly up to $\text{Ø}400 \text{ mm}$ in diameter if the pipe-pulling process with dry compaction is the preferred method of trenchless installation. Threaded connections of pilot rods allow pulling an expander or a pipe-bursting head.

Working principle of SLK-03 laser guidance system

The **laser beam emitter** is placed and aligned to the drilling trajectory **in the launch pit** on an inert stand. The receiver is placed inside the drilling head. The laser beam comes through the hollow rods and hits the receiver. The receiver provides information about relative position of the drilling head. The coordinates of the drilling head are displayed on the monitor in real time.



ST-40 / Pipe-bursting machine



The main purpose of these innovative devices is trenchless replacement of cast iron, ductile iron, concrete, ceramic and other pipes by means of static pipe bursting. It is possible to keep the same diameter as the old pipe or to increase it by some amount, depending on the soil conditions.

One of the advantages of ST-40 and is its compact size, allowing it to be operated in extremely confined spaces, such as Ø1000 mm wells.

Powerful transmission chain can safely pull the bursting head through the old pipe and replace pipes of up to Ø315 mm internal diameter while pulling a new pipeline of up to Ø 350 mm ID.

High degree of automation reduces the crew number and increases the safety level at the construction site: in particular, the presence of personnel inside the well is not required during the pipe-bursting process.

Maximum dimensions of ST-40V machine	990 × 960 × 935 mm
Weight of the set	300 kg (heaviest element: 120 kg)
Weight and dimensions of 17.7 kW Power Pack	270 kg, 1500 × 630 × 790 mm
Pulling force	400 kN
Typical diameters of pipelines to be replaced	110 – 315 mm
<i>non-reinforced fracturable materials, e.g. concrete</i>	up to 315 mm with upsizing to 350 mm
<i>cast iron</i>	up to 250 mm with upsizing to 315 mm
<i>steel</i>	up to 250 mm with upsizing to 315 mm
Maximum length of pipe section to be replaced	60 m with short modules, (120 m if PE pipe)
Environmental conditions	sewers (also underwater), -20°C / +40°C

Features

- ✓ Automated rod-feeding and automated pulling of the bursting head
- ✓ Innovative system of rods with pivot joints
- ✓ Ergonomic tightening device for short pipe modules
- ✓ High safety
- ✓ Small size and weight

ST-40 / Pipe Bursting Machine: How it works?



1. The ST-40 Pipe-burster is placed inside the well.
2. The machine pushes a Ø60 mm **sectional pilot rod assembly** through the old pipeline from well "A" to well "B". The pilot rod is composed of small sections, each of them equipped with pivot joint that can rotate by 90°. The pilot rod is fed through the ST-40 Pipe-burster and inserted into the old pipe until the end of the pilot rod reaches well "B".
3. In well "B" a bursting tool (expander) is attached at the end of the pilot rod. The ST-40 Pipe-burster pulls the rod backwards, dragging the bursting tool through the pipe towards well "A".
4. Four hydraulic cylinders provide a pull force of over 40 tons, which is converted to fracturing force at the bursting tool. The bursting tool fractures the old pipe and expands the channel, pushing the pipe debris into the surrounding soil.
5. Simultaneously, a new pipe is being pulled into the expanded cavity behind the bursting tool.

© MEMPEX, 2016

ST-40 and ST-40V / Pipe-bursting machines

Specification

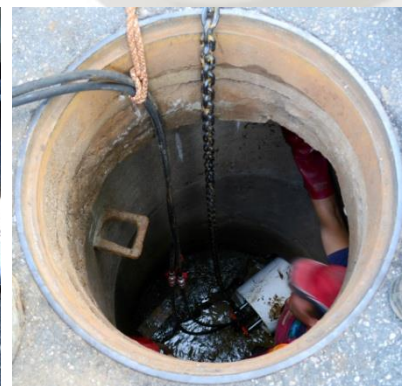
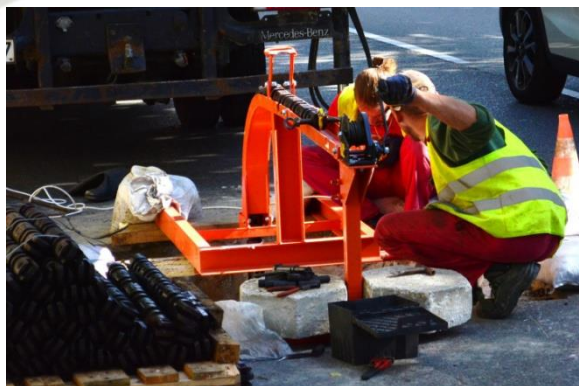
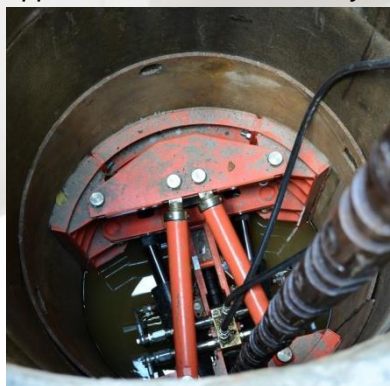
№	Name and description	Part No.
1.	ST-40V Pipe Bursting Machine A complete machine with all the necessary keys, frontal and side bumpers (301400.013), hydraulic cylinders and hoses, rod clamps and technical maintenance set. The set includes technical documentation (incl. CE DoC) and manual in the language of the user.	CT40B-00.100
2.	17.7 kW Hydraulic power pack with 10 m hoses Equipped with 17.7 kW Honda GX690 patrol engine. Includes spare filters, first inspection kit and user manual in English. The power pack is equipped with additional couplings for hydraulic equipment such as hydraulic cutter, jackhammer or wrench.	1.H2001-01
3.	Pilot rods (250 pcs. = 50 m) The rods are assembled on the surface and lowered through the rod guide (304100.013) without the need for the crew's presence inside the well.	303600.001
4.	Rod rail with winch The rod rail is placed over the manhole and is used to mount the rods and to lower them to the well. The lock prevents the rods from free-falling into the well.	CT40B-30.000
5.	Hydraulic tightening device for modular pipes Hydraulic tightening device keeps the modular pipes together during the pulling process. Tightening strength 10 t. The set includes tightening flange, hand pump with manometer, hydraulic hose set and 60 meters of chain.	H2001-31.00.000-01
6.	Bursting heads for fracturable pipes Bursting heads for pipes made of fracturable materials (cast iron, asbestos, concrete, ceramic):	
6.1.	Flow-through bursting heads (most common sizes): 6.1.1. Bursting head Ø150/225 mm 6.1.2. Bursting head Ø200/315 mm <i>Other types and sizes are available!</i>	ГРЦП150/225 ГРЦП200/315
6.2.	Pre-bursting heads: 6.2.1. Pre-bursting head Ø225 mm 6.2.2. Pre-bursting head Ø250 mm	НЦ225-00.000 НЦ250-00.000

ST-40 Pipe Bursting Machine



Upper: ST-40V before delivery to Lithuania, 2018.

Lower: ST-40 at work in Poland, 2017.



Hydraulic Power Packs

MEMPEX manufactures its own power packs with HONDA engines. Power packs can be customized for individual needs of the customer. Customer's logotype can be placed on the housing.

Our power packs can be adapted to be used with other hydraulic equipment, and our equipment can be adapted to be used with other power packs.



Standard output of our power packs:

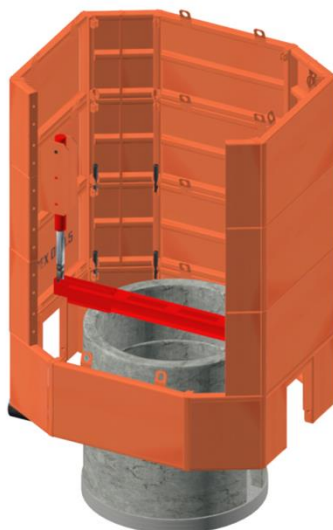
8.2 kW, 17.7 kW, 35.4 kW



Custom and modular shoring systems

We design and manufacture reliable shoring systems that are "tailor-made" for our machines. Advantages of using a shoring system:

- ✓ Safety at the construction site
- ✓ Quick deployment of machines
- ✓ Excavation size reduced to minimum



Technical documentation in all languages



Each product comes with user manual, CE certificate and safety manual prepared in the language of the customer. Navigation systems and other electronic devices have software available in Russian, English, Polish, Ukrainian and other languages as requested by customers.

Training and commissioning

We want to make sure that our customers use our equipment safely and efficiently. We provide free training at our office in Belarus, and we also send our engineer to do the first job with the customer at the construction site.



Guarantee, spare parts and technical support

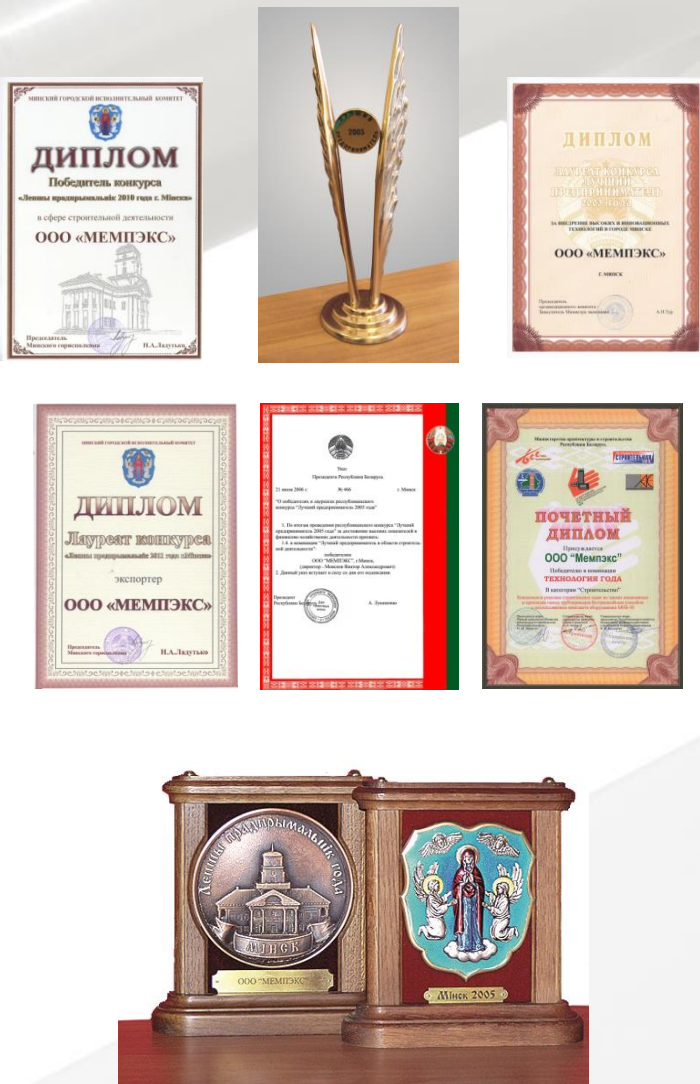
We provide full after-sale support to our customers. This includes:

- ✓ 12 or 24 month guarantee
- ✓ Guarantee and post-guarantee service
- ✓ Availability of spare parts, including. spare parts for legacy units
- ✓ Education and training
- ✓ On-site commissioning of new and used equipment
- ✓ Providing information on new machines and accessories

Awards and reviews

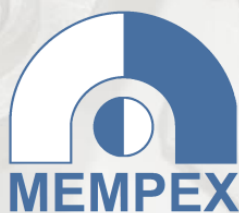
MEMPEX has won numerous awards in Belarus and abroad and can be considered the No. 1 manufacturer of equipment for trenchless technologies in Belarus. We are a member of Belarusian Water Society (AQUABEL) and we cooperate with trenchless and water societies in other countries.

If you want to read reviews of our customers using particular equipment, please contact us or one of our dealers.



Service and technical maintenance

We ensure availability of instruments, trainings, guarantee service and post-guarantee maintenance.



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