ENSET

Innovations come true

Catalog

Everything for cardan shaft repair workshop

Build a cardan repair workshop from A to Z

Tooling and fixtures for driveshaft repair

Consumables and spare parts supply

Balancing machines, welding machines, presses and much more

Russian Exporter

MADE IN RUSSIA

EAC

Demand for professional cardan shafts repairs increases by 20-40 % annually

Ordinary car repair shops cannot provide such services, so customers seek cardan repair specialists.

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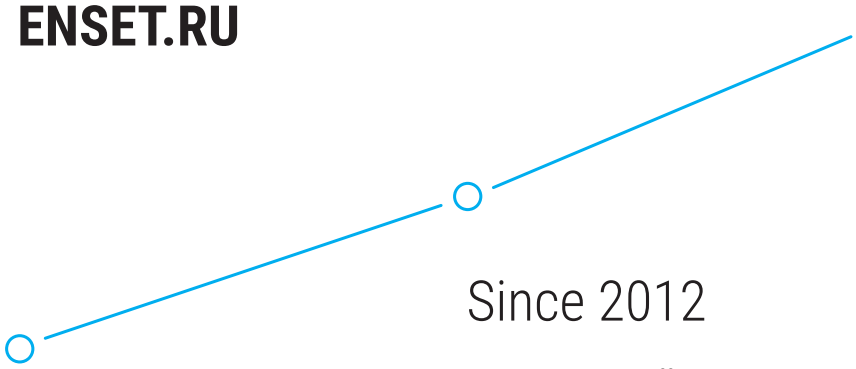


Since 2005

We at ENSET LLC have been engineering and manufacturing equipment for cardan shaft repairs since 2005.

Since 2012

Since 2012 we're offering an absolutely new line of machines, presses, fixtures and tooling, materials, CRM and business accounting software for cardan shaft repair shops.

We are also ready to provide you with cardan spare parts and consumables.

Innovation and Quality

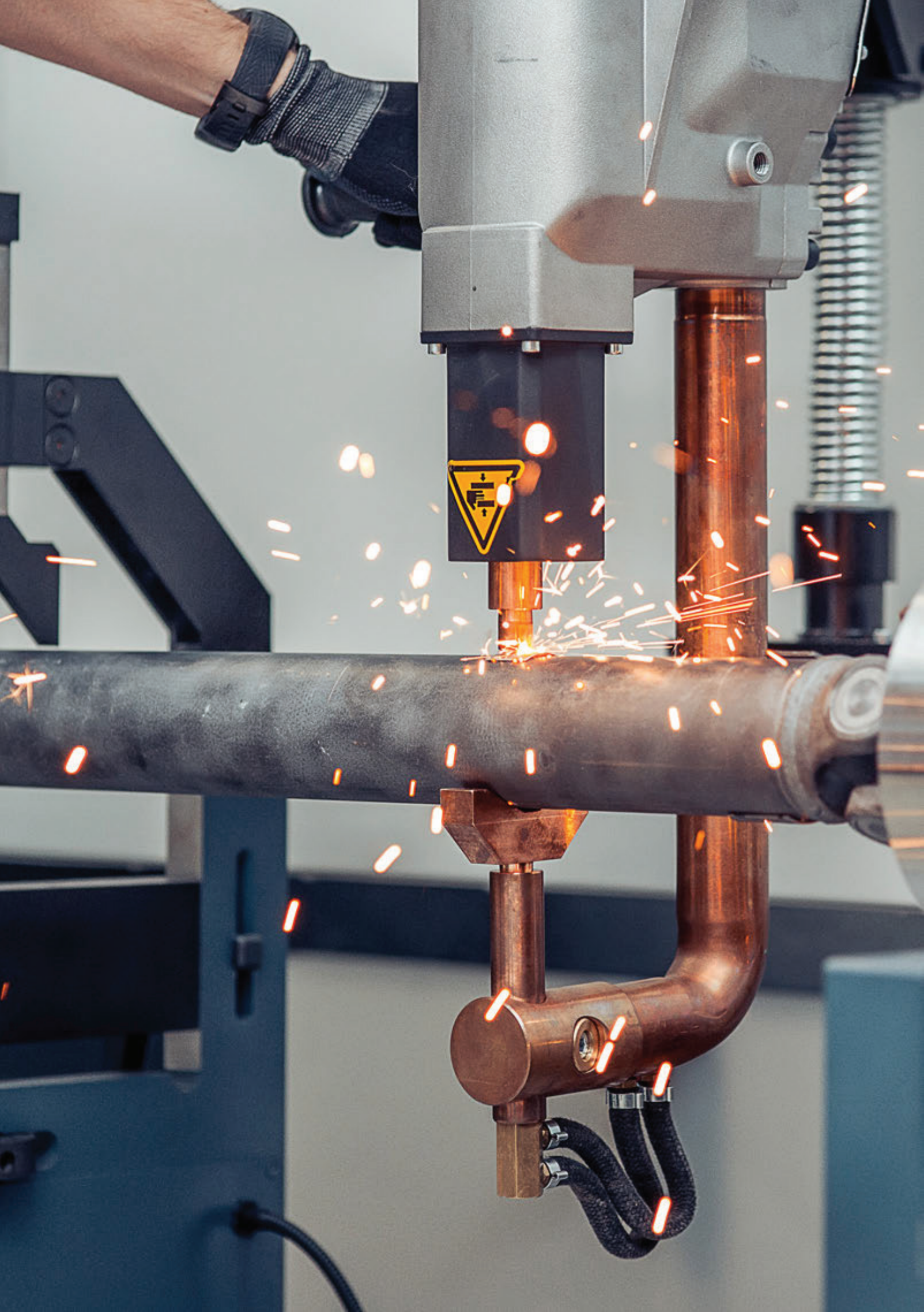
We use only high-quality components from the best European brands in our equipment. The hydraulic components and electric motors are of Italian origin only.

We are eager to implement innovations. However, prior to production, our equipment is thoroughly tested at our own cardan repair facilities.

Over 150 cardan service centers equipped with our machines.

Presently we have supplied our equipment to more than 150 cardan service centers and driveshaft manufacturers, both in Russia and abroad, including Welte, Cardyfren, Driveshaft Parts USA, HCT AUTOMOTIVE.

We are trusted to repairdriveshafts by such customers as UPS courier service, Russian Ministry of Emergency Situations and many others. We deliver balancing equipment to large companies in automotive, energy, and aerospace industries.



Balancing and welding equipment

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BALKAR Series balancing machines

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Welding gantry system for balancing masses

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SKV Series welding machines

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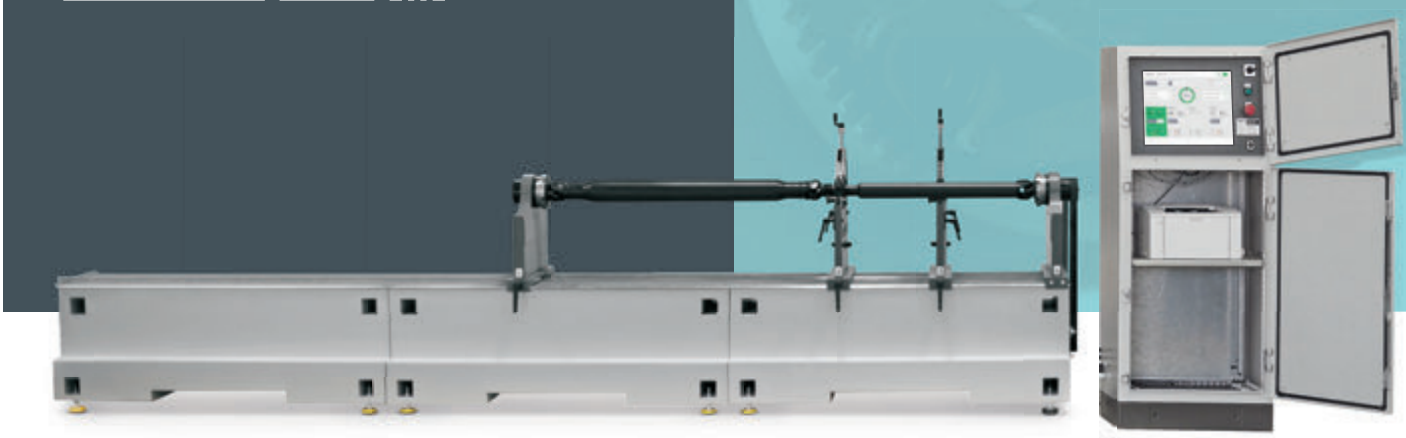
UNIKAR Series welding and balancing machines

BALKAR Series balancing machines

Horizontal hard-bearing modular balancing machines for cardan shafts and all types of rotors

Simple basement-free installation

MADE IN RUSSIA



max 6,060 mm

Balancing is the finishing operation in driveshaft repair. It is the most important one, because vibration, if balancing has been performed improperly, reduces the service life of components by 10 – 20 times and creates intense discomfort to the vehicle driver and passengers. To make this operation easier and faster, we have designed the BALKAR balancing machines.

BALKAR machines are multipurpose balancing tools

The supports move by light touch of hand, making the driveshaft installation on the machine comfortable as never before. Moreover, their original design enables balancing not only cardans, but also rotor parts of any type, including pulleys and flywheels, crankshafts, electric motor armatures, rotors of agricultural machines and many others, making BALKAR a truly universal balancing tool in your hands.

Modular bed

The BALKAR modular bed consists of sections 1.5 meters long, which makes it possible to assemble a machine of any required length. No basement is required to install the machine – it may be installed on any rigid floor.

Software and Electronics

VIBROLAB balancing and vibration measurement system is one of the main advantages of BALKAR machine. The system is intended to measure the amplitude of vibration displacement, with subsequent calculation of unbalance values, angles and correction weights. The system was designed and is produced by ENSET LLC. It is listed in the National Register of Measuring Instruments of the Russian Federation and delivered with the state-approved calibration certificate.

BALKAR Series general technical specifications:

Model	BALKAR-1500	BALKAR-3000	BALKAR-4500	BALKAR-6000
Machine Type	Horizontal, hard-bearing modular balancing machine			
Rotor Drive Type	End drive (belt drive — option)			
Number And Type Of Supports	2 pcs. – spindle type	4 pcs.: 2 — spindle type, 2 — intermediate type, adjustable heigh		
Rotor Weight	0.15 – 150 kg	0.15 – 300 kg		0.15 – 500 kg
Rotor Diameter	up to 800 mm (over the machine bed)			
Rotor Length	140 – 1,400 mm	140 – 2,700 mm	140 – 4,200 mm	140 – 5,700 mm
Balancing Quality Grade	G1 as per ISO 1940-1			
Power Supply	1 phase, 220 V AC, 50 Hz, 10 A, protective grounding is mandatory			
Rotor Drive	Variable frequency asynchronous motor, 400–2,000 rpm, 2.2 kW			
Rotor Turn To Correction Position	Manual or automatic (option)			
Rotor Drive Brake	Electromagnetic (option)			
Vibration Sensors	Piezoelectric force sensors built in the supports			
Protection Against Dust And Water	IP55			
Machine Dimensions (L x W x H)	1,590 x 620 x 1,180 mm	3,080 x 620 x 1,180 mm	4,570 x 620 x 1,180 mm	6,060 x 620 x 1,180 mm
Electric Cabinet Dimensions (L x W x H)	600 x 500 x 1,400 mm			
Machine Weight (With The Electric Cabinet)	1,190 kg	1,845 kg	2,542 kg	3,269 kg
Balancing Certificate Printout	Laser printer (option)			
User Interface	Color touch-screen, impact-, oil- and dirt-resistant			

The machine has a set of options and equipment available:

Mandrels for installing car and truck cardan shafts of all common standards onto the machine work spindles (see the Tooling section)

—

Electromagnetic brake of the driving spindle for automatic position turn of the rotor and retaining it during correction

—

Driveshaft for balancing end-driven rotors (cardan shaft with mandrel)

—

Belt drive system for balancing rotors (a set of belt drive and a laser keyphasor)

—

Fixtures for installing rotors on the machine supports (support rollers, slide bearings, etc.)

Tooling set for balancing crankshafts of inline engines

—

Tooling set for balancing V-engine crankshafts

—

Set of special chucks for rapid mounting and dismounting driveshafts during series production

—

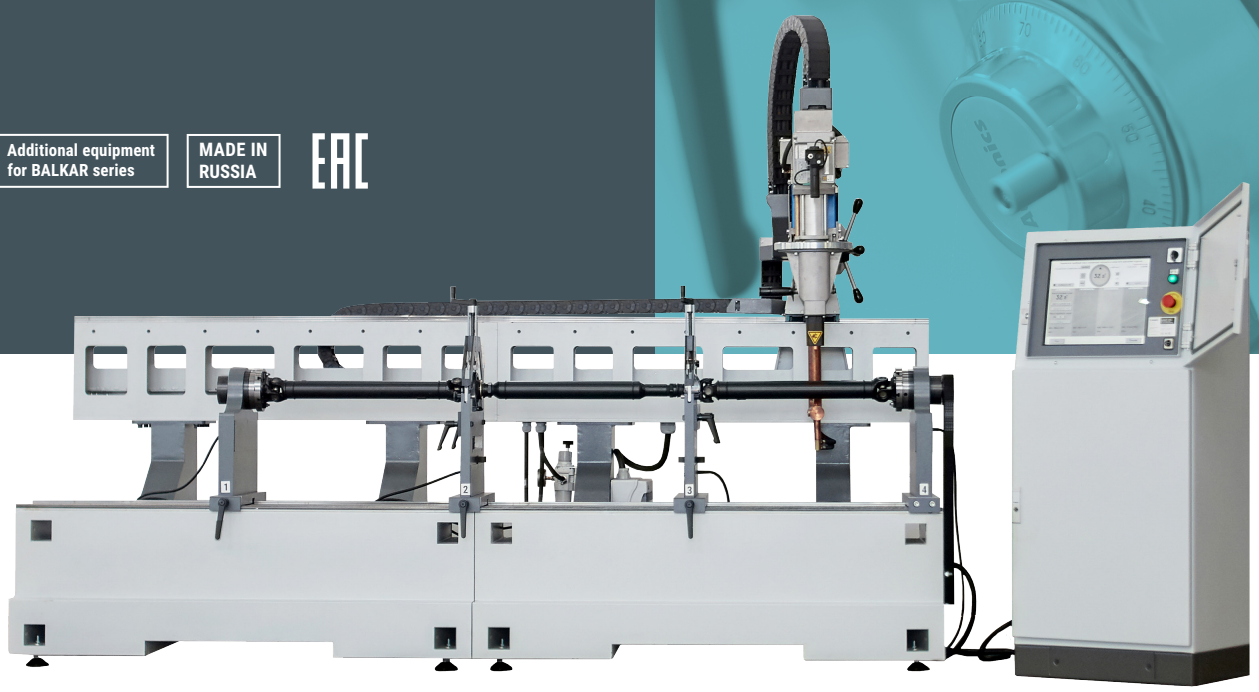
Spot welding gun with a transport system (for rapid welding of balance weights)

Welding gantry system for balancing masses

Spot welding gantry with transport system for rapid welding of balance masses

Additional equipment for BALKAR series

MADE IN RUSSIA



Spot welding gantry with a transport system for rapid welding of balance masses is an optional supplement to the BALKAR series machines. The gantry is used for automation of final correction of rotor unbalance by welding balancing masses. It is equipped with a high quality welding unit manufactured by TECNA, Italy. The operating algorithms are optimised to run the gantry and the balancing machine as a single unit.

Key features spot welding gantry

- High efficiency due to the short welding process
- Copper, fully cooled secondary circuit
- Simple and user-friendly interface
- Highly rigid linear guides
- Easy to move by hand
- Warranty Period — 12 months

Welding gantry technical specifications

Power Supply	2 phase, 400 V, 50 Hz, 10 A, protective grounding is required
Vertical Travel	160 mm
Welding Unit	TECNA-3024
Timer	Built-in
Capacity, max	115 kVA
Short Circuit Current	22,8 kA
Cable Cross Section, Length L=30 m	16 mm^2
Delayed Action Fuse	63 A
Number of Direct Call Programs	2 pcs
Secondary Circuit	Copper, fully cooled
Control	Welding unit handle
Basement	Not required

SKV Series welding machines

Machines for assembling and welding cardan shafts

Simple basement-free installation

MADE IN RUSSIA

max 6,050 mm

Welding of driveshaft elements is an extremely important process. It is not about weld seam aesthetics, but about elimination of incomplete fusion and hidden defects and providing proper overlapping as well. These things determine the strength of the cardan shaft and guarantee its reliability even under ultimate loads. We have taken care to make all embedded programs of SKV welding machine provide ideal results without demanding a highly skilled operator.

SKV machine is a CNC welding rotator/positioner

The machine bed is assembled from 1.5-meter long modules. The welding process is controlled using a convenient hand-held pendant. When driveshaft parts runout is adjusted, the machine allows placing preliminary tack welds in the location of the future weld seam. Then, a welding program is started after manual input of the thickness of metal parts and the diameter of the cardan shaft tube. All parameters of the MIG welding power unit, wire feed and the shaft rotation speed are set automatically. The start and end of welding process are synchronized with the driveshaft rotation.

MIG welding power unit

The SKV machine is supplied with a Swedish brand ESAB OrigoMig C340PRO 4WD sturdy and robust industrial-grade welding unit.

SKV Series general technical specifications:

Machine Type	CNC welding rotator/positioner
Part Drive	End drive
Part Diameter	Up to 350 mm (over the machine bed), up to 260 mm (over the support)
Cardan Tube Wall Thickness	0.5 – 12 mm
User Interface	Wired pendant with LCD display
Number And Type Of Supports	5 pcs.: 2 – spindle type, 2 – intermediate type, 1 for welding torch
Type Of Welding Power Unit	ESAB OrigoMig C340PRO 4WD
MIG Welding Process Control	Automatic adjustment of voltage, wire feed and part rotation speed

Welding Modes	Continuous circle welding, tack welding
Shielding Gas	Ar+CO_2 mix
Welding Unit Dimensions (L x W x H)	840 x 425 x 830 mm
Machine Basement	Not required
Power Supply	ⓘ 3 phase, 380 V AC, 50 Hz, 16 A, protective grounding is mandatory
Electric motor drive	Variable frequency asynchronous, 0,36 kW
Protection Against Dust And Water	IP20
Working Temperature	From -10°C up +40°C

	SKV-3000A	SKV-4500A	SKV-6000A
Maximum Part Weight	300 kg		500 kg
Part Length	50 – 2,650 mm	50 – 4,150 mm	50 – 5,650 mm
Machine Weight (With The Welding Unit)	945 kg	1,270 kg	1,595 kg
Machine Dimensions (L x W x H)	3,050 x 475 x 1,400 mm	4,550 x 475 x 1,400 mm	6,050 x 475 x 1,400 mm

The machine is offered with extra options:

Mandrels for installing car and truck cardan shafts of all common standards on the machine work spindles (see the Tooling section)

Set of special chucks for rapid mounting and dismounting driveshafts during series production

—

Air dust filter for the welding unit cooling system

UNIKAR Series welding and balancing machines

A single machine for assembling, welding and balancing cardan shafts

Simple basement-free installation

MADE IN RUSSIA

max 6,050 mm

UNIKAR combines functions of a balancing machine and of a welding unit. This yields triple economy:

saves time

Cuts down the driveshaft transition time from welding to balancing machine

saves space

Takes half the shop space of separate welding and balancing machines

saves money

UNIKAR costs 1.5 times less than a SKV + BALKAR set

The UNIKAR machine is an ideal solution for smaller workshops (up to 10 driveshafts repaired per working shift)

UNIKAR is designed for balancing cardan shafts only; the machine is not intended for balancing any other types of rotors.

We recommend the UNIKAR welding and balancing machine to workshops starting out in the driveshaft repair field, as well as to the large vehicle fleet owners that want to repair own cardan shafts at their premises.

UNIKAR series general technical specifications:

Machine Type	CNC welding rotator/positioner combined with horizontal, hard-bearing balancing machine
Welding Modes	Continuous circle welding, tack welding
Part Drive	End drive
Maximum Part Diameter	Up to 350 mm (above the machine bed), 260 mm (above the support)
Number Of Supports	5 pcs.: – 2 spindle-type, 2 – intermediate 1 – for welding torch
Cardan Tube Wall Thickness	0.5 – 12 mm
Balancing Quality Grade	G2.5 as per ISO 1940-1
Rotor Turn To Correction Position	Manual or automatic (option)
Power Supply	3-phase, 380 V, 50 Hz, 16 A, ⓘ protective grounding is mandatory
Balancing Electrical Drive	Variable frequency asynchronous motor, 400 – 2,000 rpm, 2.2 kW
Welding Electrical Drive	Variable frequency asynchronous motor, 0.36 kW
Type Of Welding Unit Included	Continuous girth weld, ESAB OrigoMig C340 PRO 4WD
Shielding Gas	Ar+CO_2 mix
MIG Welding Process Control	Automatic adjustment of voltage, wire feed and part rotation speed
Vibration Sensors	Piezoelectric force sensors built in the supports
Protection Of The Electric Cabinet Against Dust And Water	IP55
The electric cabinet overall dimensions (L x W x H)	600 x 500 x 1,400 mm
Welding Unit Overall Dimensions (L x W x H)	840 x 425 x 830 mm
Certificate Printout	Laser printer (option)
User Interface	Color touch-screen, impact-, oil- and dirt- resistant and pendant with LCD

	UNIKAR-3000	UNIKAR-4500	UNIKAR-6000
Part Weight	0.15 – 300 kg		0.15 – 500 kg
Part Length	50 – 2,650 mm	50 – 4,150 mm	50 – 5,650 mm
Machine Weight With Electric Cabinet And Welding Unit	1,055 kg	1,380 kg	1,705 kg
Overall Machine Dimensions (L x W x H)	3,050 x 475 x 1,400 mm	4,550 x 475 x 1,400 mm	6,050 x 475 x 1,400 mm

The machine is offered with additional options:

Mandrels for installing car and truck cardan shafts of all common standards onto the machine work spindles (see the Tooling section)

Set of special chucks for rapid mounting and dismounting driveshafts during series production

—

Air dust filter for the welding unit cooling system

Pressing and special equipment

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GOLIATH Special Press

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PR-6 Arbor press

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FREZER 3D CNC milling

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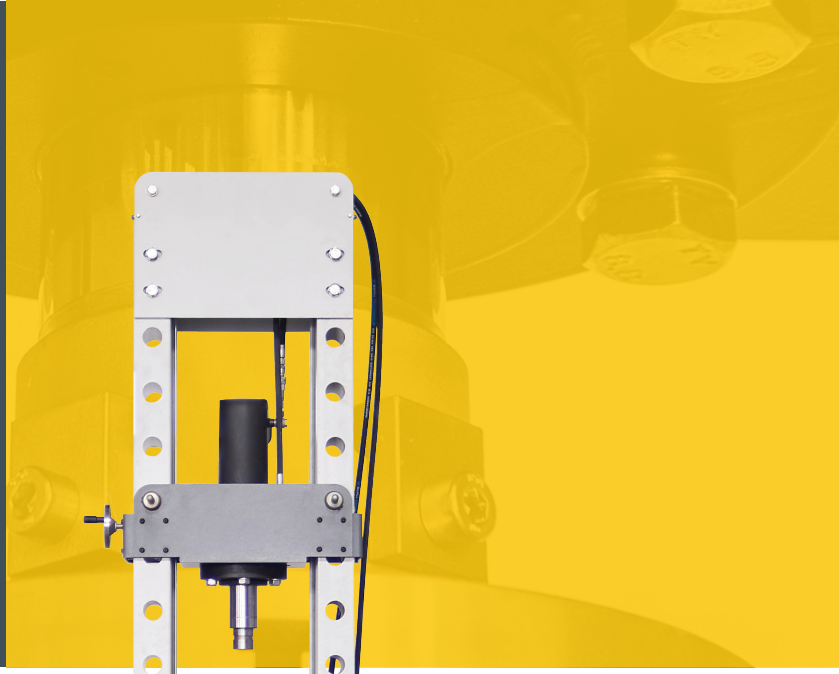
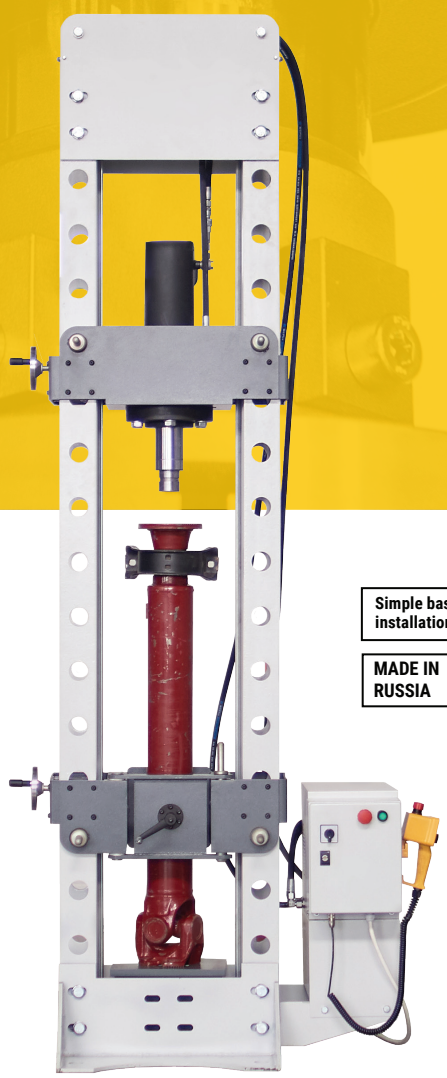
GPR-10 Manual Hydraulic Press

GOLIATH Large Vertical Press

Press for assembling cardan shafts and replacing intermediate bearings

Our system for quick installation and clamping of cardan tube doubles the shaft assembly productivity and prevents the risk of tube damage or skew





Simple basement-free installation

MADE IN RUSSIA

EAC

Universal powerful press for the workshop

The GOLIATH press is intended for pressing cardan shaft parts (yokes and splines) into the tube, it is also needed for dismantling and installing intermediate bearings and pinion yokes, and wherever a powerful general purpose press is required at the workshop.

A unique feature of GOLIATH is a vertically-movable hydraulic cylinder. The press makes work with shafts of standard length as convenient as on a common press, and to assemble a long shaft, it is necessary just to lift the cylinder to required height. The crossbars are moved along roller guideways by manual winches.

Technical characteristics:

Press Type	Vertical hydraulic press with proportional electronic control
Working Cylinder Maximal Force	30 t
Working Cylinder Maximal Stroke	300 mm
Maximum Part Diameter	180 mm
Part Maximal Length	2,100 mm
Movement Of The Upper And Lower Crossbar	Manual, with geared winches
Power Supply	3 phase, 380 V, 50 Hz, 16 A protective grounding required
Electric drive	Asynchronous, 1,480 rpm, 2,5 kW
Cardan Tube Clamp	Double-sided, manual screw clamp
Hydraulic Tank Volume	18 l
Weight Of The Press (With Hydraulic Station)	670 kg
User Interface	Wired remote control with display (option)
Press Overall Dimensions (L x W x H)	1,070 x 800 x 2,860 mm
Protection Against Dust And Water	IP54
Double-action device	Optional

Additional options

DAVID

Remote control for GOLIATH press with digital force indication

Provides highly precious electronic control of press force

Key features:

Option for GOLIATH press

Proportional press force control

Intuitive interface

Informative LCD display

Designed for convenient one hand use

IP54 compliant protection from dust and water ingress

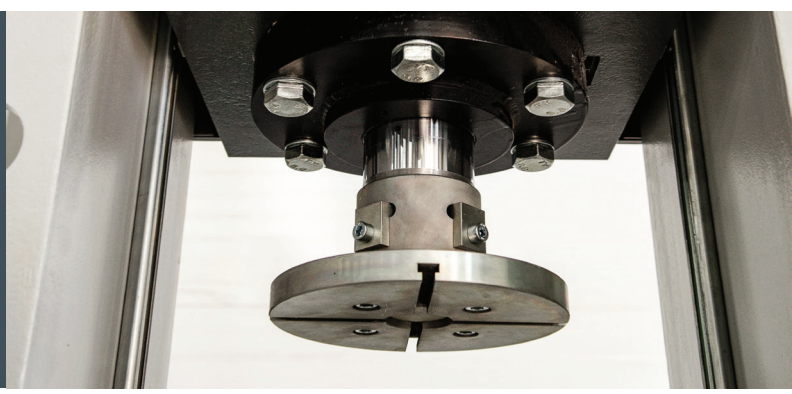
Technical characteristics:

Type	Wired, impact resistant remote control
Screen resolution	128 x 32
Wire length	up to 2 meters
User interface	LCD-display, button control, rotary encoder
Power Supply	5 V
Weight	0,5 kg

SAMSON

Double-action device for GOLIATH press

The option allows for easy and efficient disassembly and assembly of cardan shafts with yolks positioning relative to each other



Technical characteristics:

Universal adapters diameter	200 mm
Fixing screws	up to M8
Pulling force on the rod	130 kN
Maximal Stroke of the cylinder ram	300 mm
Weight	50 kg

The options are available for additional price

Pressing and special equipment

PR-6 — Manual arbor press

Press for staking in, out and punching of U-joints of cardan shafts

MADE IN RUSSIA

Staking out tooling set is included

Essential for fast and qualified assembling or disassembling of a cardan joint

The PR-6 workbench arbor press is characterized by very powerful and reliable design that guarantees long-term operation under high loads.

The press is very convenient for staking of universal joints. The manual force control allows the operator to feel the process of universal joint staking at the fingertips, excluding the possibility of damage to assembled parts. The press is also intended for disassembling cardan shafts (pressing out the universal joints).

The PR-6 press can be outfitted with an electronic depth gauge with digital display (precision — 0.1 mm) and a working area illumination system. This additional option significantly improves the precision and convenience of work. Also, the PR-6 press can be optionally supplied with a torque control system with digital display.

Technical characteristics of the press:

Press Type	Manual workbench a-bcr press
Maximal Force On The Press Rack	6.5 t
Maximal Stroke Of The Press Rack	380 mm
Size Of Mounting Plate	300 × 250 mm
Press Base Size	370 × 310 mm
Tooling For Pressing In And Out	Included
Press Weight	123 kg
Press Dimensions (L × W × H)	410 × 575 × 1035 mm

Additional options:

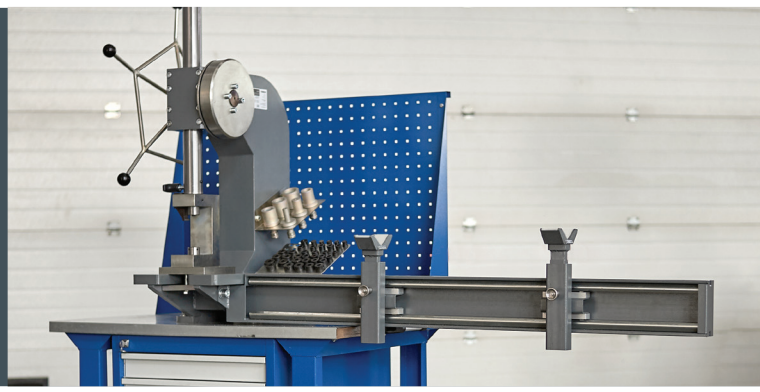
- Tooling for staking universal joints
- Digital depth gauge with LED indication
- Torque control system with digital display
- Beam for cardan shafts support

Additional options

Options available for additional price

Cardan shafts support beam

This option is used for reliable fixation of cardan shaft during pressing in and stacking of U-joints



Key features:

Option for PR-6

Two adjustable supports with polyamide inserts allow holding cardan shafts of different diameters

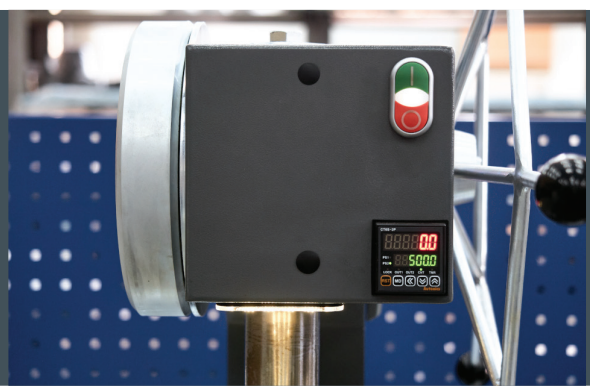
The option facilitates shafts operator work increase and improvement of works, performed by PR-6

Main technical characteristics of the option:

Fixture type	Screw connection	**Length**	1300 mm
Material	Steel	**Weight**	33 kg

Depth gauge

Depth gauge with digital indication and illumination of operating area used for part stacking depth measuring and control



Key features:

Option for PR-6 press

Measures are made by built-in encoder

Robust metal case

Dimensions are measured automatically, data indicated on electric display

Big LCD-display with clear indication, digits height 9.5 mm

Main technical characteristics of the option:

Depth gauge accuracy	0,1 mm	**Full set**	electric depth gauge with digital indication, with illumination of operating area
Operating principle	Electric		

Tooling

Full set of universal joint staking tools

Designed for PR-6 arbor press and used for staking in universal joints in driveshaft yokes.

Presently, most cardan shafts for cars and light commercial vehicles are produced with staked universal joints. To replace such U-joints, special toolingм is required in addition to PR-6 press.

We offer a set of tooling for PR-6 press, consisting of a base clamp and 22 sizes of center punches for all common U-joint types including steering shafts and U-joints of cars and light commercial vehicles. Each center punch is paired with a rest to retain the cardan shaft yoke.

All the parts of tooling for staking U-joints are manufactured from quality grade steel and hardened, which guarantees long-term service and proper retaining of the U-joints in the yokes.

In addition, the tooling can be resharpened up to 50 times.

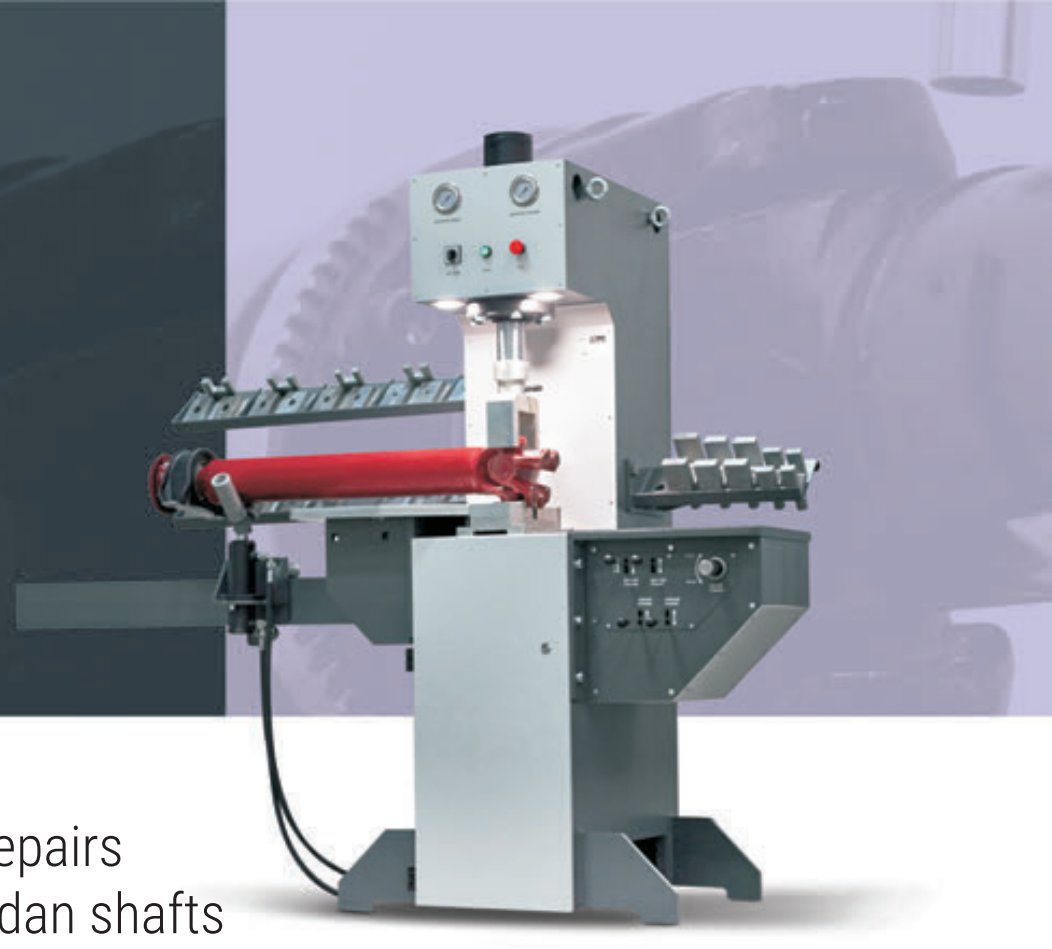
Technical specifications of the tooling:

Application	Cars and light commercial vehicles, steering U-joints
Order Code	STACK-IN_SET
Contents	Base clamp for staking U-joints, 22 center-punches and 22 corresponding rests
Diameter Of U-Joint Bushing, Mm x Number Of Beams	15x3, 15x4, 16x3, 16x4, 17x3, 17x4, 18x3, 18x4, 19x3, 19x4, 20x3, 20x4, 22x3, 22x4, 24x3, 24x4, 27x3, 27x4, 30x3, 30x4, 31x3, 31x4

TITAN Special Clamping Press

Press for disassembling and assembling cardan joints

MADE IN RUSSIA



Ultimate tool for repairs of heavy truck cardan shafts

All components of TITAN clamping press have been designed and manufactured with high quality and strength margin, which guarantees long-term service.

TITAN is equipped with 4 hydraulic cylinders — for exerting pressure on the universal joint yoke, for clamping, for pressing out the universal joint and for adjusting the cardan shaft support height. All these cylinders are powered by a motor-driven hydraulic station. With the tooling set and fixtures included, the TITAN press allows disassembling all existing types of cardan U-joints without damage.

Technical specifications of the press:

Press Type	Hydraulic clamping press with 4 working cylinders and clamping action
Upper Cylinder Maximal Force	25 t (250 kN)
Lower Cylinder Maximal Force	15 t (150 kN)
U-Joint Clamping Cylinder Force	1 – 9 t (10 – 90 kN)
Upper Cylinder Maximal Stroke	350 mm
Cardan Tube Support Displacement	Hydraulic, by a hydraulic cylinder

Tooling Included For U-Joints Clamping Diameter, Mm	27, 30.2, 35, 38, 39.7, 42, 44, 45, 47, 48, 50, 52, 53, 57, 59, 65, 68, 72
Power Supply	3-phase, 380 V, 50 Hz, 16 A, protective ground is mandatory
Electric Motor	Asynchronous, 1,480 rpm, 4.0 kW
Hydraulic Tank Volume	40 L
Weight Of The Press Together With The Hydraulic Station	1,390 kg
Press Dimensions (L x W x H)	2,400 x 1,000 x 2,100 mm
User Interface	Hydraulic distributor levers
Protection Against Dust And Water	IP55

FREZER 3D CNC milling machine

A machine for drilling, fine boring and grooving the U-joint yokes

Fixed workholding table

MADE IN RUSSIA

FREZER milling machine is designed for drilling the U-joint yokes after thermal spraying, fine boring and milling grooves for locking rings.
A complete CNC program set for all common types of U-joints is included in the package.

The coolant supply system integrated in the machine increases the tool durability and milling quality.
FREZER milling machine reliability is ensured by multistage quality control over the process of assembling.
Only high-quality ball screw units, drives, linear guideways and other components are used for this machine.

The complete set of FREZER 3D CNC machine includes:

A set of centering mandrels

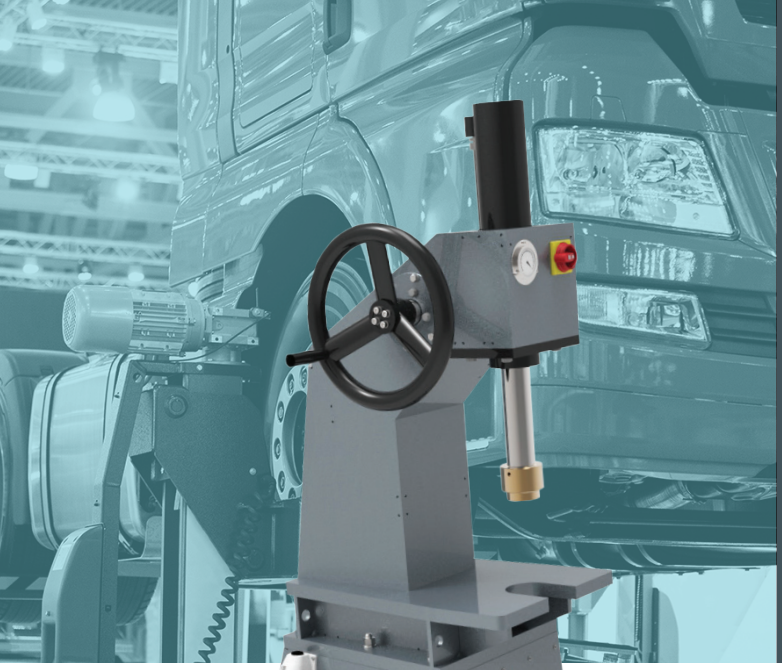
Chuck and collet set

A set of grooving mandrels with disk milling cutters

A CNC program set for all common types of universal joints

FREZER 3D CNC milling machine general technical specifications:

Machine Type	3-axis CNC milling machine with fixed working table
User interface	Color touch-screen, impact-, oil- and dirt- resistant
Electric Spindle Drive	Asynchronous, 1.1 kW
Maximum Spindle Rotation Speed	600 rpm
Rotor Drives Of Axes X, Y, Z Feed	Stepper, 0.16 kW
Rotor Drive Of The Coolant Supply System	Asynchronous, 0.12 kW
Power Supply	3-phase, 380 V, 50 Hz, 16 A, protective ground is mandatory
Minimum Distance From The Spindle End To The Table	219 mm
Maximum Distance From The Spindle End To The Table	469 mm
Axes X, Y Travel	200 mm
Axis Z Travel	250 mm
Travel Speed Along Axes X,Y	4,000 mm/min
Travel Speed Along Axis Z	3,000 mm/min
Spindle Taper	BT30
Collet Chuck Type	ER25
Maximum Diameter Of The End Milling Cutter	16 mm
Maximum Diameter Of The Face Milling Cutter	40 mm
Tool Change	Manual
Positioning Accuracy	0.02 mm
Work Table Size	320 x 615 mm
Quantity, Size And Spacing Of The Work Table T-Slots	5 pcs. / 14 mm / 50 mm
Machine Dimensions (L x W x H)	2,070 x 1,020 x 2,030 mm
Electric Cabinet Dimensions (L x W x H)	600 x 500 x 1,400 mm
Machine Weight Without The Electric Cabinet	740 kg

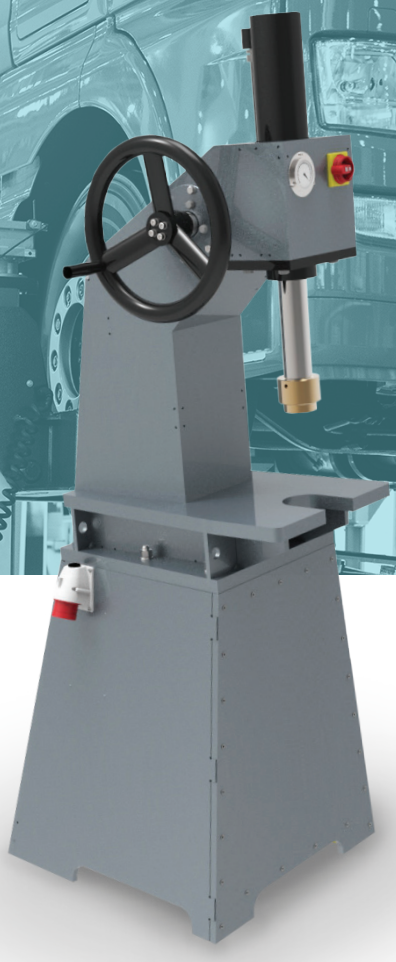


GPR-10 manual hydraulic press

Manual hydraulic press for alignment, bearings installation, pressing out, punching, cutting, bending, straightening and broaching

MADE IN RUSSIA

EAC



GPR-10 hydraulic press has no analogues on the market. This is the only press that allows the operator to feel pressing process and carry out works with pinpoint accuracy, which is available to no other press. GPR-10 is versatile — with appropriate tooling installed, it can easily cope with pressing, pressing out and straightening.

Key features:

- The press is designed for operator's convenience both in the automatic and manual modes
- Possibility of the frame or pressing parts deformation under operating conditions is excluded
- Speed and direction of the hydraulic cylinder is accurately controlled proportional to rotation of the control wheel
- Can be used with no power supply
- Sensitive feedback from the part under press to the control wheel
- A gauge for setting of the pressure
- A wide range of operations with the use of a corresponding tooling (bearings installation, pressing out, punching, cutting, bending, straightening and broaching and etc.)

Press technical characteristics:

Press Type	Hydraulic, single frame press
Pressure	0 – 160 Bar
Max height of the operation area	505 mm
Maximal Pressing Force	10 t
Maximal Stroke of the press ram	350 mm
Size of the Press Plate	430 x 320 mm
Power	2,2 kW
Power Supply	3 phase, 380 V, 50 Hz, or 1 phase, 220 V, 50 Hz (optional), protective grounding required
Press Weight	450 kg
Overall Dimensions (L x W x H)	630 x 880 x 1,900 mm

Tooling for balancing cardan shafts

For accurate centering and reliable retaining of driveshafts we offer a set of tooling. The set consists of 4 types of mandrels (for car and truck cardan shafts, half-round yoke type mandrels and universal mandrels), which provide retaining for over 98 % of car and truck driveshafts encountered in repair, as well as of special shafts.

All parts are precisely manufactured from fine grade steels, and the most wear-prone parts are hardened.

The main coupling size is engraved on all elements.

Pages 26-27

Mandrels for car and LCV cardan shafts

Pages 28

Mandrels for truck shafts

Pages 29

Half-round yoke mandrels

Pages 30

Universal balancing devices

Mandrels for car and LCV cardan shafts

Consists of 2 base faceplates and a set of replaceable mandrels that provides centering and reliable retaining for cardan shafts of cars and light commercial velocity joints vehicles as per DIN, SAE, CV (constant velocity joints), sliding yoke and guibo couplings

The set items can be also purchased separately.

A set of base faceplates for car driveshafts

Mounted on the spindle of BALKAR, SKV, UNIKAR machines and serves as a base for car and LCV drive shaft mandrels of all types

Order Code	**BASE_LCV_SET**
Standard	SAE, DIN, CV, guibo, sliding yoke

Application:
Cars and light commercial vehicles driveshafts

Contents:
Faceplate for the machine spindle — 2 pcs., all necessary fasteners

Coupling size, mm:
—

Compatibility with other tooling:
SAE_LCV_SET, DIN_LCV_SET, CV_LCV_SET, PIN_LCV_SET, BARREL_LCV_SET

Compatibility with equipment:
BALKAR, SKV, UNIKAR

A full set of car cardan shaft adapters as per SAE

Mounted on base faceplates BASE_LCV to align SAE cardan shafts of all types

Order Code	**SAE_LCV_SET**
Standard	SAE

Application:
Cars and light commercial vehicles driveshafts

Contents:
Mandrels for cardan shafts as per SAE standard — 54 pcs. (27 sets of 2 pcs.)

Coupling size, mm:
40, 42, 45, 46, 47, 50, 52, 54, 56, 57, 57.1, 60, 60.3, 64, 65, 65.3, 69.8, 70, 74, 75, 77.4, 78.7, 79, 80, 82.5, 95, 95.3

Compatibility with other tooling:
BASE_LCV_SET

Compatibility with equipment:
BALKAR, SKV, UNIKAR

A full set of car cardan shaft adapters as per DIN

Mounted on base faceplates BASE_LCV to align DIN cardan shafts

Order Code	**DIN_LCV_SET**
Standard	DIN

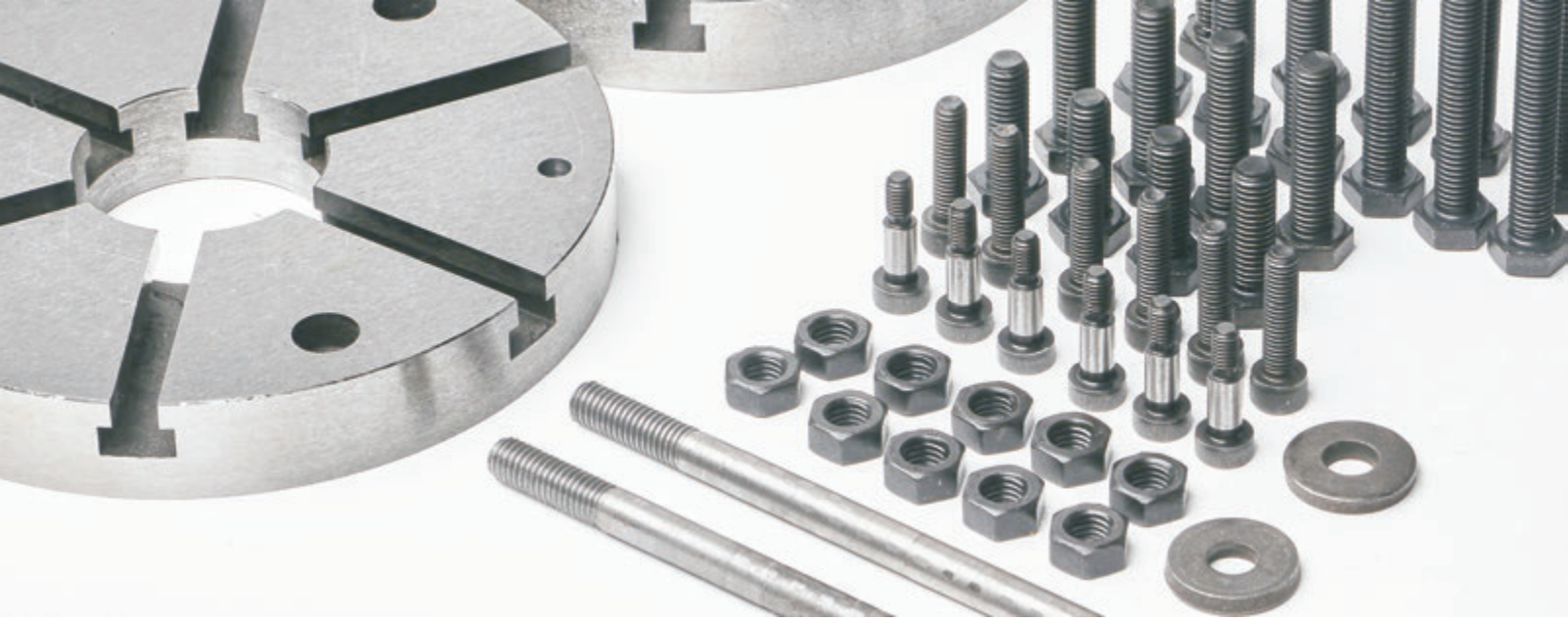
Application:
Cars and light commercial vehicles driveshafts

Contents:
Mandrels for cardan shafts as per DIN standard — 16 pcs. (8 sets of 2 pcs.)

Coupling size, mm:
45, 47, 50.8, 57, 65, 67, 75, 90

Compatibility with other tooling:
BASE_LCV_SET

Compatibility with equipment:
BALKAR, SKV, UNIKAR



A full set of car cardan shaft adapters as per CV standard

Mounted on base faceplates BASE_LCV to align cardan shafts of CV standard

Order Code	**CV_LCV_SET**
Standard	CV

Application:

Cars and light commercial vehicles

Contents:

Mandrels for cardan shaft as per CV — 17 pcs.

Coupling size, mm:

78, 83.6, 84, 85.2, 85.9, 92.2, 92.5, 93, 94, 96, 97, 98, 99.5, 99.8, 100, 104, 108

Compatibility with other tooling:

BASE_LCV_SET

Compatibility with equipment:

BALKAR, SKV, UNIKAR

A set of alignment pins for cardan shafts with guibos

Mounted on base faceplates BASE_LCV to align cardan shafts with guibos

Order Code	**PIN_LCV_SET**
Standard	Guibo

Application:

Cars and light commercial vehicles

Contents:

Alignment pin for cardan shafts with guibos (2 sets of 2 pcs.)

Coupling size, mm:

13.5 – 16, 15.5 – 18

Compatibility with other tooling:

BASE_LCV_SET

Compatibility with equipment:

BALKAR, SKV, UNIKAR

A full set of alignment barrels for cardan shafts with sliding yokes

Mounted on base faceplates BASE_LCV to align cardan shafts with sliding yokes

Order Code	**BARREL_LCV_SET**
Standard	Sliding yoke

Application:

Cars and light commercial vehicles

Contents:

Alignment barrels — 9 pcs., all necessary fasteners

Coupling size, mm:

28, 30.3, 32, 35, 38, 39.7, 40, 42, 42.7

Compatibility with other tooling:

BASE_LCV_SET

Compatibility with equipment:

BALKAR, SKV, UNIKAR

Mandrels for truck cardan shafts

Provide centering and reliable retaining for cardan shafts of truck, buses, and special vehicles of DIN, SAE, KV standards

The set items can be also purchased separately.

Full set of KV standard mandrels for trucks

Mounted on the spindle of BALKAR, SKV, UNIKAR machines to align KV standard cardan shafts

Order Code	**KV_SET**
Standard	KV

Application:
Commercial vehicles and trucks

Contents:
KV standard mandrels for truck cardan shafts — 4 pcs. (2 sets of 2 pcs.)
all necessary fasteners

Coupling size, mm:
120, 150, 165, 180, 200

Compatibility with equipment:
BALKAR, SKV, UNIKAR

Full set of SAE standard mandrels for trucks

Mounted on the spindle of BALKAR, SKV, UNIKAR machines to align SAE standard cardan shafts

Order Code	**SAE_SET**
Standard	SAE

Application:
Commercial vehicles and trucks

Contents:
SAE standard mandrels for truck cardan shafts — 14 pcs. (7 sets of 2 pcs.)
all necessary fasteners

Coupling size, mm:
90, 110, 95, 132, 160, 197, 198

Compatibility with equipment:
BALKAR, SKV, UNIKAR

Full set of DIN standard mandrels for trucks

Mounted on the spindle of BALKAR, SKV, UNIKAR machines to align DIN standard cardan shafts

Order Code	**DIN_SET**
Standard	DIN

Application:
Commercial vehicles and trucks

Contents:
DIN standard mandrels for truck cardan shafts — 6 pcs. (3 sets of 2 pcs.) all necessary fasteners

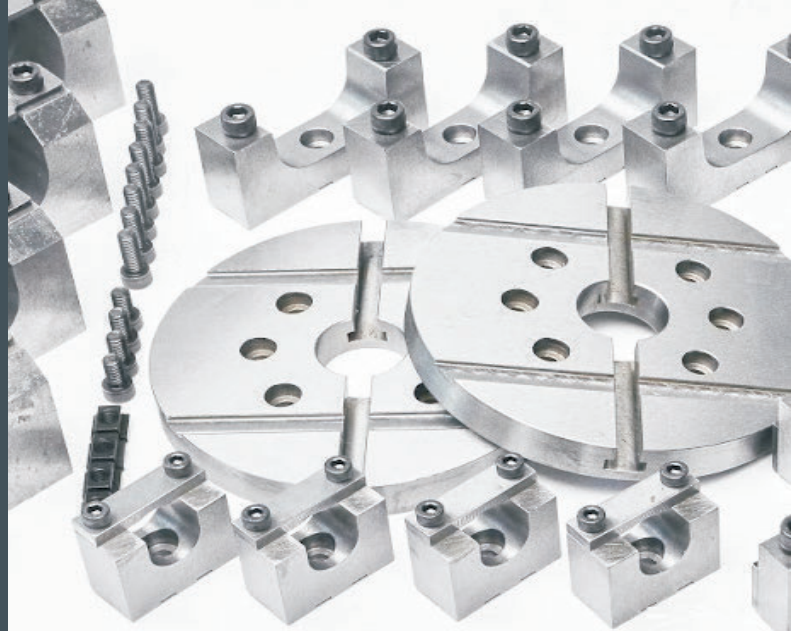
Coupling size, mm:
90, 95, 110

Compatibility with equipment:
BALKAR, SKV, UNIKAR

Half-round yoke mandrels

Provide centering and reliable retaining
for driveshafts of trucks and buses
manufactured by Scania, of special vehicles,
and USA-made cars and trucks

The set items can be also purchased separately.



A set of half-round yoke faceplates

Mounted on the spindle of BALKAR, SKV, UNIKAR and serve as a base for half-round yoke mandrels

Order Code	**BASE_BUGEL_SET**
Standard	Half-Round Yoke

Application:

Cars, commercial vehicles and trucks
with half-round yokes

Contents:

Base yoke-type faceplate BASE_BUGEL — 2 pcs.,
all necessary fasteners

Compatibility with equipment: BALKAR, SKV, UNIKAR

A full set of half-round yoke adapters

Mounted on the BASE BUGEL base faceplates and align half-round yoke drive shafts

Order Code	**BUGEL_SET**
Standard	Standard Half-Round Yoke

Application:

Cars, commercial vehicles and trucks
with half-round yokes

Contents:

9 sets of adapters, a set of base faceplates,
all necessary fasteners

Coupling size, mm:

27x81.8, 28.575x65, 30.2x106.3, 38x148, 48x161, 55x163.5,
57x164, 60x162.8, 65x190

Compatibility with equipment: BALKAR, SKV, UNIKAR

Universal balancing mandrels

Self-centering three-jaw chuck with inside and outside jaws (2 pcs.), and a set of supporting rollers for non-standard drive shafts.
These mandrels are necessary in case a shaft not corresponding to the abovementioned standards is encountered.

The set items can be also purchased separately.

A set of supporting rollers

Mounted on the intermediate supports of BALKAR, SKV, UNIKAR machines, and act as a support for cylindrical surfaces of the shafts

Order Code **ROLLER_SET**

Application:

Cardan shafts with joint-less ends, shafts with removed joints or intermediate bearings, shafts with slipping yokes, non-standard shafts, various rotors

Contents:

Roller mount with a holder — 2 pcs.,
all necessary fasteners

Compatibility with equipment: BALKAR, SKV, UNIKAR

A set of self-centering chucks

Mounted on spindles of BALKAR, SKV, UNIKAR machines to align cardan shafts with respect to cylindrical or splined surfaces

Order Code **CHUCK_SET**

Application:

Cardan shafts with joint-less ends, shafts with removed joints or intermediate bearings, shafts with sliding yokes, non-standard shafts

Contents:

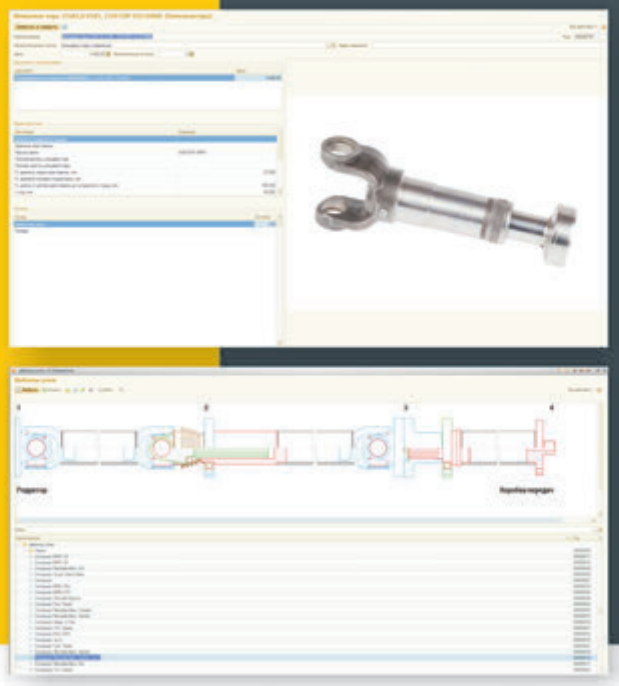
Self-centering three-jaw chuck made by BISON-BIAL on the spindle faceplate (2 pcs.), inside and outside jaws, all necessary fasteners

Compatibility with equipment: BALKAR, SKV, UNIKAR

CRM and accounting automation software

1C: Driveshaft Workshop

Our experience in cardan shaft repairing helped us to create a convenient functional tool for CRM and automation of all processes in the driveshaft repair shop.



This software automates part-by-part and step-by-step accounting of the whole cycle of driveshaft repairs and sales of cardan spare parts:

- keeps an inventory account of driveshaft spare parts
- prints service orders with counterfoil, service final acceptance forms
- has an embedded database of car and truck makes and models
- prints sticker-labels for the repaired part (e.g. drive shaft) that contain information on your company, as well as service order number and date
- forms invoices for selling spare parts from the warehouse
- keeps all service orders in the database
- assigns every operation performed to the relevant person
- has a Cardan Shaft Designer function that selects spare parts automatically by their parameters and availability
- maintains records of the working time
- runs payroll calculations consisting of piece-work payments and time wage
- prepares daily, weekly, monthly and annual reports on the workshop
- notifies customers via SMS on order readiness

The server part can be run on remote cloud.

Training your personnel

This training will be provided free-of-charge at purchase of equipment set

We provide a training course for your personnel at our premises

To perform repair and balancing properly, and to operate the provided equipment and software efficiently and correctly, we carry out training of your personnel at our company's cardan shaft repair facilities.

Your personnel can undergo 5 working days of training that includes: driveshaft assembling, welding, balancing. Also, we train workshop service advisors.

Chose your equipment set

The total cost of the set depends on selected equipment type, model and selected options

We offer 3 sets for equipping your driveshaft repair workshop

Minimal set

For a low-budget start. Workshop capacity – up to 10 cardan shafts per day.
Recommended workshop space: 50 – 70 m².
2 – 3 employees will be required

UNIKAR-4500 welding and balancing machine

Press PR-6

Optimal set of tooling for staking U-joints

Optimal set

Excellent combination of cost and productivity. Workshop capacity – up to 25 cardan shafts per day.
Required workshop space: 70 – 140 m².
3 – 5 employees will be required

BALKAR-4500 balancing machine

SKV-3000A welding machine

Press PR-6

Optimal set of tooling for staking U-joints

GOLIATH special press

Maximal set

High productivity for the full spectrum of services.
Up to 50 driveshafts a day.
Required workshop space: 150 – 250 m².
5 – 7 employees will be required.

BALKAR-6000 balancing machine

UNIKAR-4500 welding and balancing machine

Press PR-6

Optimal set of tooling for staking U-joints

GOLIATH special press

TITAN clamping press

Requirements for establishing a cardan shaft repair workshop

To set up a cardan shaft repair workshop, you will need a lathe (center distance at least 2,000 mm), drilling machine, grinding machine, various metalworking tools etc.

It is recommended to have a compressed air line (4 – 6 atm., up to 200 L/min). Compressed air is mainly used for manual pneumatic tools, such as: grinding machines, air wrenches, pneumatic hammers, paint-spray guns etc.

It is preferable to have load handling equipment, as the weight of a cardan shaft can reach 150 kg.
Therefore, a light crane system will be a good aid.

You will also need a fumes extraction system installed over the SKV and UNIKAR welding machines.

Warranty

Warranty terms for all equipment is 12 months since commissioning.

ENSET

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