SPINNING LATHES
PREMO SERIES

PREMO 600


PREMO 1000 with full automation

PREMO 1200 gemini

INDUSTRY 4.0
MADE IN GERMANY

Abacus
MASCHINENBAU

Today, when everybody is already thinking about "metal spinning 4.0," there are still a number of businesses that manufacture products using traditional manual spinning processes.

"Metal spinning" has met with little enthusiasm today among younger generations, as is the case with a lot of other vocational professions. That means there will be a lack of skilled workers in this area for the foreseeable future, just as there is now.

Hydraulic spinning lathes will also have difficulties in the future given increasing demands on quality and the simultaneous increasing cut-throat competition.

So the metal spinning tradition, which was shaped by old methods that were long adequate, needed a makeover involving the "invention" of a pioneering state-of-the-art lathe...

METAL SPINNING 1.0, 2.0, 3.0

The **industry 1.0** era started at the beginning of the 18th century.

Water and steam power were the first primary energy sources that replaced human power. The steam-powered engine in particular shaped this era in industry. Clothing manufacturing, steam-engine shipping and heavy industry developed. The first mass-production using machines originated and created new jobs in Europe.

Metal spinning lathes were still unknown at the time.

Shortly before the end of the 19th century, **industry 2.0** began with the introduction of electricity as a form of power.

The automotive industry in particular moved toward automation. Piece-work and assembly-line work as well as modern communication by telephone accelerated the manufacturing processes. And globalization through shipping as well as aviation also began in this period.

In the middle of the 19th century, the first manual metal spinning lathes were built.

At the beginning of the 1970s, **industry 3.0** started.

Personal computers took over offices and households. Instead of huge calculating machines, which had existed in large businesses since the 1940s, the PC started a whole new branch of industry. Automation through electronics and IT meant a revolution in the industry.

In the 1960s, 70s and 80s metal spinning lathes were also automated. First with NC controls and then with PNC controls.

... That's precisely when Abacus Maschinenbau started in 2008 as a partner to a renowned metal spinning plant and developed a completely new lathe "out of the blue" so to speak, the PREMO 600. PREMO (Latin for "pressure") Multifunctional, compact, easy-to-use, precise.

After the PREMO 600 spinning lathe was introduced to the world for the first time in 2012 in Hanover at EuroBlech, numerous customers in Germany and Europe could optimally position themselves for the future market with this versatile machine.

Among the most famous companies was a thermos manufacturer that has been manufacturing their products with a PREMO 600 machine for years in multiple shifts.

One of the most effective clients today is an experienced metal spinning operation that mass produces its products today on 3 PREMO 600 machines, 2 of which are fully automated, with a level of productivity and quality that was previously unimaginable.

METAL SPINNING 4.0

Today we are on the way to **industry 4.0**, which had already begun at the end of the 20th century.

Digitalizing analog techniques and integrating cyber-physical systems are the main focus here. The working and manufacturing worlds are undergoing revolutionary changes in the wake of this global age. In the digital factory, you can react quickly and precisely to needs and trends, and small production series as well as individual pieces can be manufactured at low costs.

That's precisely where the PREMO series spinning lathes are used. The path to metal spinning 4.0 has been made possible by the use of state-of-the-art technologies.

Equipped with servomotors, modern PC technology and internet connectivity, the possibilities for industry 4.0 are endless with PREMO spinning lathes. Especially through the development of our own software, revolutionary ideas in metal-spinning technology can be put into practice.

A first successful milestone here was the "spinning to go" feature. Patterns and prototypes can be manufactured in a very short time on a PREMO spinning lathe.

And of course the PREMO series spinning lathes also feature robotic automation and use laser technology. These are essential options that are prerequisites for industry 4.0.

We want to be inspired by you and make your vision for industry 4.0 a reality.

METAL SPINNING FROM INDUSTRY 3.0 TO 4.0

With the development and construction of the PREMO lathe series, Abacus has met the demands of industry 3.0 and set the groundwork for industry 4.0.

Internet connectivity with messages sent to a smartphone, the team viewer for maintenance and service optimization, servo technology, automatic form measurement, force measurement, laser measurement and the highest safety technology are just a few of the standards that Abacus has successfully implemented with the PREMO series.

And additional innovative developments such as laser-supported metal spinning and the “gemini” (Latin for “twin”) option are also bringing additional technological advances.

Laser-supported metal spinning was integrated in the PREMO series together with the Fraunhofer Institute, which enabled completely new metal-spinning processes.

Materials for air and space, or materials that previously had to be annealed with great effort can now be manufactured in a process using laser technology.

The “gemini” feature, with two main tool turrets on both sides of the main spindle, which are slightly staggered in time during operation, enable perfect manufacturing. Significantly better manufacturing results in the metal-spinning process are achieved in particular for materials that are difficult to form as well as for large-diameter blanks.

INDUSTRY 4.0
MADE IN GERMANY

**Everyone is talking about industry 4.0 –
Abacus is already at the starting line**

PREMO 600
Automation

PREMO 1000
Laser

PREMO 1200
gemini

With the highly-qualified and highly-motivated engineers and technicians at Abacus Maschinenbau in construction, software development and control systems, we can already realize the demands of industry 4.0 according to customer requirements and easily integrate them into state-of-the-art PREMO series machines without extensive modifications.

TECHNICAL DATA SPINNING AT ITS BEST

	PREMO 600	PREMO 1000	PREMO 1200
Machine data			
Machine weight:	approx. 7,5t	approx. 18,0t	approx. 33,0t
	depending on features	depending on features	depending on features
Dimensions W / H / D:	3500 / 3400 / 1900 mm	4800 / 3600 / 2400 mm	6300 / 3800 / 3300 mm
* Connection data:	400V+/-5%, 50-60Hz./	400V+/-5%, 50-60Hz./	400V+/-5%, 50-60Hz./
	Fuse 80 A	Fuse 100 A	Fuse 125 A
* Max pressing force:	15 KN	30 KN	60 KN
Controls			
CNC control:	Beckhoff TwinCAT CNC	Beckhoff TwinCAT CNC	Beckhoff TwinCAT CNC
Programming System:	PREMO Compact	PREMO Compact	PREMO Compact
(optional)	PREMO AGENT	PREMO AGENT	PREMO AGENT
Softeware packages:	PREMO “turning techology”	PREMO “turning techology”	PREMO “turning techology”
	PREMO “create sickles”	PREMO “create sickles”	PREMO “create sickles”
	PREMO “Spinning to Go”	PREMO “Spinning to Go”	PREMO “Spinning to Go”
Main spindle			
* Motor power:	21 KW	31 KW	47 KW
Spindle head DIN 55027:	DN 6	DN 8	DN 11
Rotation range max. 1/min:	1650 or 3300	1100 oder 2200	switchable 400 / 1500
Spinning Form			
Jaw width:	800 mm	1000 mm	1100 mm
Form weight:	300 kg	600 kg	1200 kg
max. blank Ø:	600 mm	1000 mm	1200 mm
Outward path			
max. pressing force:	5 KN	10 KN	15 KN
extension path:	100 mm	100 mm	130 mm

Our PREMO-Maschines in ACTION – Scan and watch the Video or find more information on our homepage www.abacus-gmbh.de.

	PREMO 600	PREMO 1000	PREMO 1200
Main tool turret			
Movement range X:	350 mm	550 mm	650 mm
Movement range Z:	900 mm	900 mm	850 mm
Tool changer (optional):			
Number of rolls:	4 pieces up to Ø 180 mm	4 pieces up to Ø 180 mm	3 pieces up to Ø 320 mm
Additional tools:	0 - 3	0 - 3	0 - 3
Secondary tool turret			
Movement range U:	350 mm	550 mm	650 mm
Movement range W:	900 mm	900 mm	850 mm
Tool changer (optional):			
Number of tools:	8	8	8
powered tools:	0 - 8	0 - 8	0 - 8
Tailstock	**As an alternative to the secondary tool turret, all machines can be delivered with the "gemini" feature (with two main tool turrets).**		
outer tailstock			
Outward path:	500 mm	650 mm	850 mm
* Max. pressing force:	15 KN	30 KN	60 KN
Inner teilstock			
Outward path:	500 + 160 mm	650 + 160 mm	850 + 160 mm
* Max. pressing force:	15 KN	30 KN	60 KN
***HP (high pressure) design**			
Fuse	100 A	125 A	160 A
Max pressing force:	30 KN	60 KN	90 KN
Tailstock max pressing force:	30 KN	60 KN	90 KN
Spindle head DIN 55027:	DN 8	DN 11	DN 15
Motor power:	31 KW	47 KW	57 KW

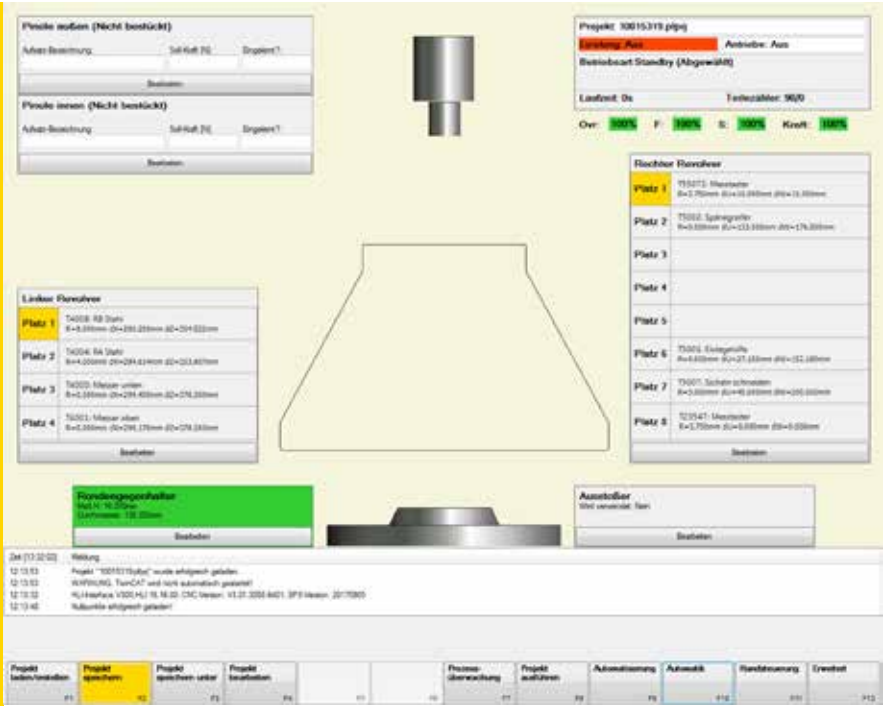
Due to the ongoing technical development and related improvements and changes to the PREMO spinning lathes, we reserve the right to make changes to the technical data and information provided here.

Do you have questions? Our PREMO-Team is here for you – or schedule a demonstration appointment directly!

Software that makes the Difference

The software developed in close collaboration with our customers ensures intuitive and practical operation. Individual features can be attached consecutively, individually configured and executed optionally for the various work steps. The innovative software features provide individual space for unlimited possibilities and make it easier to start using spinning lathes, especially for new customers with little programming experience.

The rapid prototyping of „Spinning to go“ ensures the rapid production of prototypes and samples. Small batch sizes, sample parts and demonstration pieces can be produced without long setup times.



Fast, faster, spinning to go

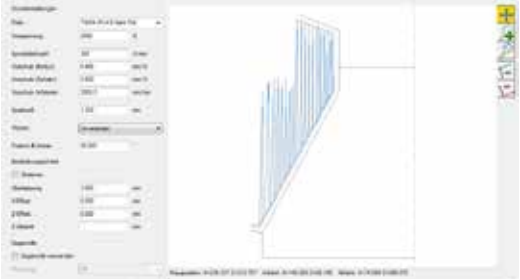
The rapid prototyping procedure “spinning lathe to go” covers the entire process for quickly manufacturing prototype components, starting with the design data. Existing CAD files are quickly turned into tools, with no need for manual diversions or intermediate steps.

In this process, the CAD file is loaded into the user interface in DXF format, and the travel paths for turning the mould are generated. Next, the mould is created internally on the spinning lathe using the auxiliary revolver. The spinning paths for the pressing roller movement are then generated automatically and the component is spun.

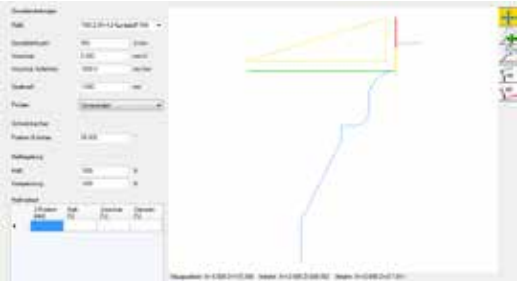
This makes it possible to produce small batches, prototype parts and display items at low cost and without long fitting times.

SPINNING PATH REWORKING/OPTIMIZING
All travel paths can be reworked for optimizing movement sequences after teach in. The re-entry into a teach-in spinning process is possible at each position.

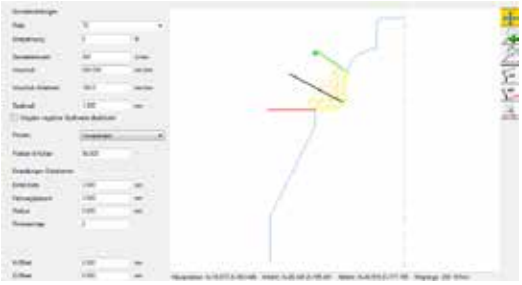
FREE-FORM SPINNING
Spinning without a form. To do this, a rotating cylinder can be mounted as a counterform on the side revolver. This travels synchronously to the movement of the spinning roller and creates the desired contour.



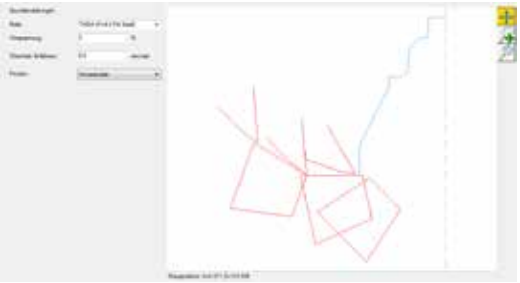
LIP SHAPING
With just a few parameters, you can easily create a vertical lip.



CORNER SHAPING
If a concave contour cannot be produced by sickling or levelling in one step, this area curved inward can then be clamped on the contour using the function.

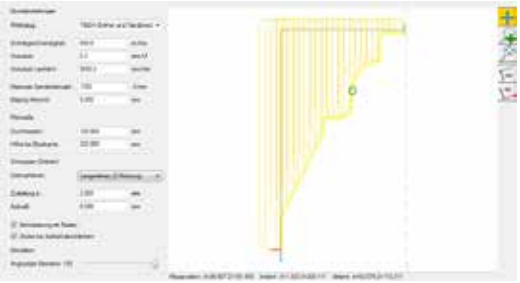


EDGE FOLDING
This function enables setting up or kinking the edge of the circular blank. This process is completely programmable via the software and requires no manual adjustment of the mechanics. Multiple kinked edges are also possible.

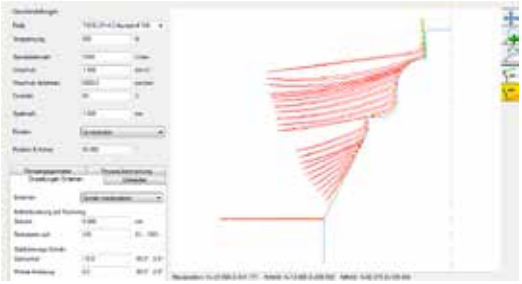


ENGRAVING
Serial numbers, labels or any graphics can be engraved on the top surface of the workpiece. Position and height are variable and independently adjustable.

TURNING TECHNOLOGY
This feature allows you to create the form directly on the PREMO spinning machine. Setup time is reduced.



AUTOMATIC SPINNG
Automatic spinning paths are generated controlled by parameters.



PREMO CONTROL FULL FUNCTIONAL OVERVIEW

	PREMO COMPACT	PREMO AGENT	PREMO PROFESSIONAL
PROGRAMMING IN CNC CODE			
PASSIVE CONTOUR	✓	✓	✓
SPINNING (TEACH-IN/PLAY BACK)	✓	✓	✓
SHEAR FORMING	✓	✓	✓
ALL AXES ARE FREELY PROGRAMMABLE	✓	✓	✓
PROGRAMMING VIA FEATURES			
INTERACTIVE CONTOUR		✓	✓
SPINNING PATH REWORKING/OPTIMIZING		✓	✓
SHEAR FORMING WITH PARAMETERS		✓	✓
LIP SHAPING		✓	✓
EDGE FOLDING		✓	✓
FREE-FORM SPINNING		✓	✓
CIRCULAR BLANK KINKING		✓	✓
CORNER SHAPING		✓	✓
THREAD CUTTING		✓	✓
EDGE TRIMMING		✓	✓
DRIVEN TOOLS			
CROSS HOLE/TAPPING			✓
ENGRAVING			✓
SPINNING TO GO			
TURNING TECHNOLOGY			✓
AUTOMATIC SPINNING			✓

State-of-the-art drive technology – servomotors for all axes

For highly precise positioning and repeatability. Prevents temperature-related fluctuations as occur in machines with hydraulic drives. Modern cabinets with active air-conditioning technology. Maintenance-free and energy-saving (up to 64% compared to hydraulic-operated machines).

Additional swivel axis on main tool turret – b-axes

For optimal power flow for the workpiece. Freely programmable angle, can even be swiveled during operation. Optimized operation of the sickle process. Higher speeds and feeds possible. Better surface quality for the whole form. Less wear on the spinning roller. Multiple radii can be used on one spinning roller.

„gemini light“

“gemini light”, a newly developed feature in the Abacus controller, makes it possible to move an opposing roller in parallel together with the auxiliary revolver. This makes it easy to reshape even the tiniest spinning chucks, the most demanding materials and the most complex shapes. The technology also makes free-form spinning child’s play.

Beading

In conjunction with a flanging roll on the secondary turret, the sheet metal can be shaped into a desired shape with a spinning roll on the main turret, freely programmable.

Multifunctional secondary tool turret

Offers versatile and almost unlimited possibilities for the inclusion of auxiliary loading devices, cutting knives, flanging, edging and embossing rollers and other auxiliary tools. Optionally, the Sauter tool turret can be equipped with motorized tools so that engravings, drilling and even complex milling operations can be performed with the PREMO spinning lathe. The “engraving and milling technology” software package can be customized to the requirements of our customers.

Defined force and laser measurement

Force measurement directly on the spinning rollers and laser measurement of spinning rollers (roller contours and wear corrections) are prerequisites for high-precision, consistent quality during production.

Programmable height adjustment and support roller

Works at any angle and in any position synchronously with the tool turret, and distance and force can be programmed. With this patented highlight, the term “sharp edged” reaches a new dimension for height adjustment – even to 90 degrees.

Automatic form measurement

This option enables our customers to continue to use existing and already processed forms optimally. Precise measurement of the form helps to optimize manufacturing processes but also increases the quality of products.

FULLY AUTOMATED METAL SPINNING

The logical next step for increasing productivity and plant efficiency and thereby significantly increasing value is automation of the PREMO series. Our often-used automation, which is implemented in our control system (PREMO Automation software package), guarantees optimum manufacturing. The key element is the perfect harmonization of individual manufacturing steps and the “choreography” of processes, maintenance and placement of the workpieces. Instant messages about errors in the system or excessive tolerance-deviations for workpieces can be sent by text message or e-mail, which ensures that the manufacturing process can be resumed as quickly as possible.

LASER-SUPPORTED METAL SPINNING

In 2016, the 25th anniversary for Abacus Maschinenbau, we successfully completed our elaborate project with the Frauenhofer Institute. As part of this research project, we integrated a laser into a mass-production machine so that even difficult-to-shape materials could be processed in a single operation. The software connection and extensive safety technology in particular were the biggest challenges.

Now the highly innovative “laser” option is available on the PREMO series spinning lathes.

Count on the best!

Abacus
MASCHINENBAU

SPINNING LATHE MANUFACTURER

SPECIALTY MACHINE ENGINEERING

CONSTRUCTION

SOFTWARE DEVELOPMENT

CONTRACT MANUFACTURING

INSTALLATION

You can download the brochure here as a PDF

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