

Bringing the solution to you.





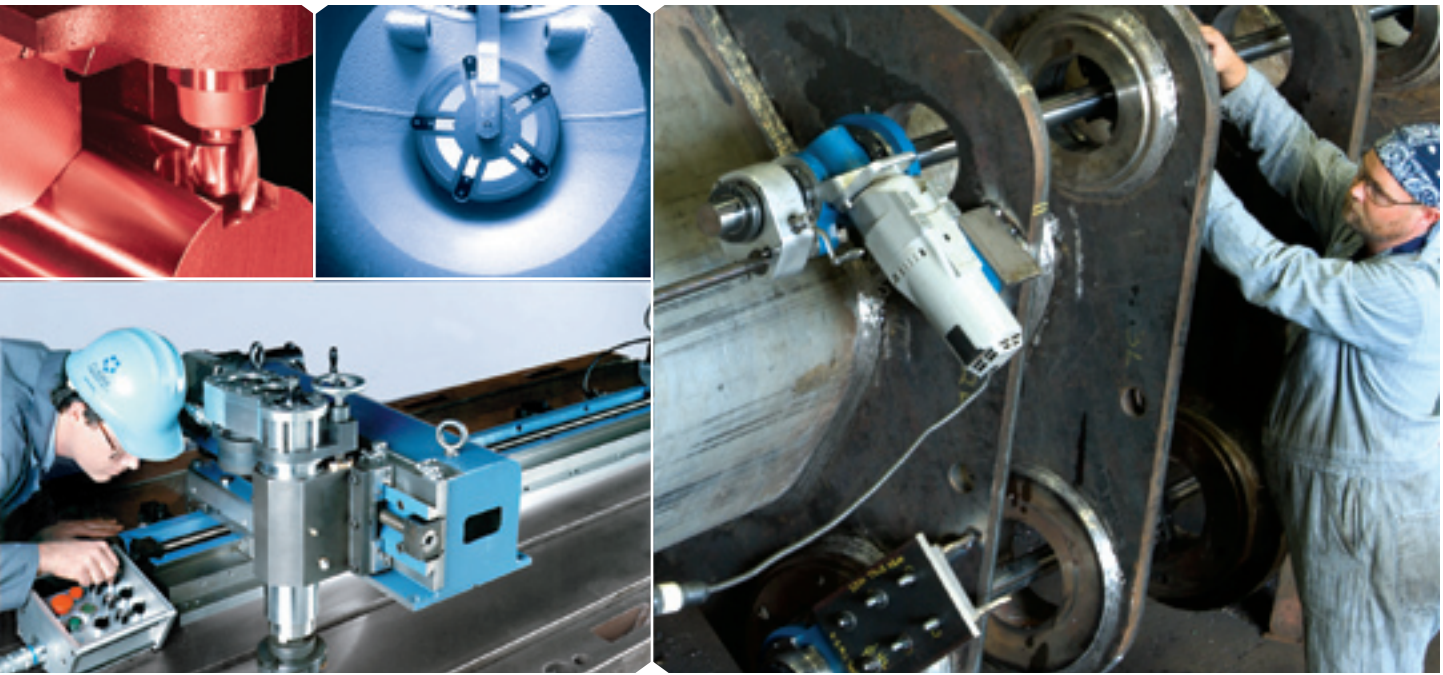
CLIMAX®
Portable Machine Tools, Inc.

Whatever the machining project,
Climax has the solution to help you build it. Fix it.
Maintain it. And make it more productive.

Construction. Mining. Power Generation.

Shipbuilding. Industrial Maintenance. In these and any other industry that depends on precise and powerful machining, Climax Portable Machine Tools is on-site with the leadership, innovation and expertise you need to solve the toughest jobs.

Climax is, in fact, the pioneer in portable machine tools. For over four decades, we've been the world's largest resource for on-site maintenance and repair, matching our tools to your tasks and minimizing typical machine shop turnaround by days and sometimes, by weeks. Our leadership is built not only on our innovative tools, but also on our experience in their application, our engineering and training expertise, and special services offered in support of our customers.



What's the problem?

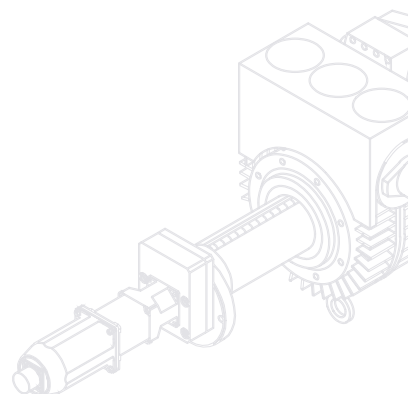
Unsure about the best way to tackle a particularly complex repair job? Searching for ways to complete routine machining tasks faster? Worried about falling behind on deadlines or determining the most cost effective maintenance schedules? It's our ability to provide solutions to the most critical machining problems like these that have made Climax a proven and trusted resource for customers worldwide.

The shortest distance between a repair problem and a machining solution is Climax.

Our team of application and design engineers have the brain power, and our family of standard and custom portable tools have the machining power and precision to make you more efficient, more productive, more competitive and finally, more profitable.

- **Time-tested solutions that set the standard for productivity.** Our 40-plus standard portable tools are the best in their class for your on-site machining tasks, bringing the solution to the workplace for enormous savings in time and money. Climax tools and fixtures are designed to allow work in tight spaces where other machines can't reach. Many of our tools can do two or more tasks at once with a single setup, further reducing hardware costs and work time.

Climax customers have found that for about the same cost as machining a keyway off-site, they can purchase a Climax Key Mill. Similarly, a Climax Valve Repair Machine can quickly pay for itself by reducing downtime, replacement valve inventory expense, and costly weld reinspection and recertification procedures.



For one customer installing a steam turbine's new rotor and steam nozzle, Climax built a special dual-spindle machine that not only performed three tasks with a single setup, but beat the 72-hour deadline for completing replacements – by a full 48 hours.

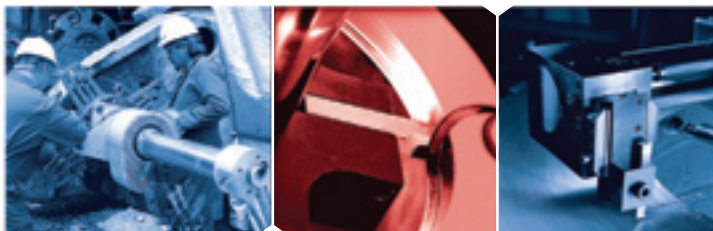
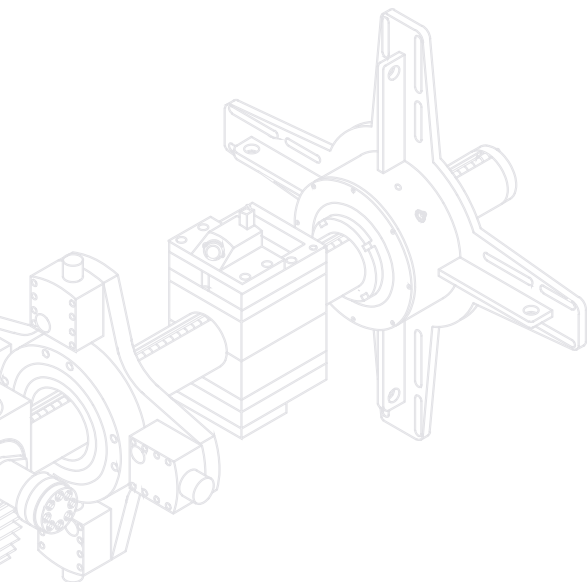
- **Custom capabilities to meet the most complex challenge.** With Climax, customers get the benefit of unmatched machine tool expertise, as well as extensive experience with the environments and applications in which those tools are used. That's the insight that makes Climax custom engineering possible – rather than force-fit a standard product to a unique problem, we can quickly and creatively modify a tool to a specific need and, when necessary, create entirely new tools to meet the most exacting specifications. We do whatever it takes to get the job done right and return the best value on your investment.

- **Sometimes buying a new portable tool – even ours – isn't the best solution.** Sometimes *renting* is – such as when you need a portable machine tool for a one-time job, for a test run prior to purchase, to add capacity during busy periods, or for backup on jobs where deadlines are critical. We reduce freight costs and expedite delivery by stocking most Climax rental tools at one of 10 different locations worldwide. We also offer a trade-in/trade-up program and a selection of Certified Pre-Owned (CPO) equipment available for purchase, supported by a 90-day warranty.

- **Training to keep your new and veteran machinists on the cutting edge.** There are no better machine tool trainers than the people who design and build them. The Climax Portable Machining Training Institute offers invaluable hands-on learning seminars guided by a team of experienced machinists and engineers. You can choose from a regular schedule of courses which cover tool setup and mounting as well as operation and safety measures, conducted at the Climax Training Institute near Portland, Oregon. Or you can arrange for training at your site anywhere in the world, customized to your specific Climax tools and applications.

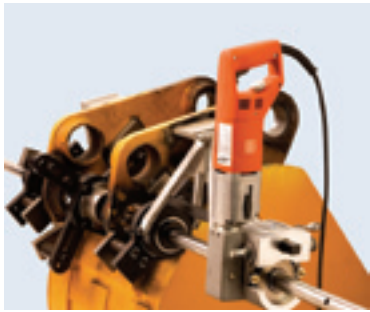
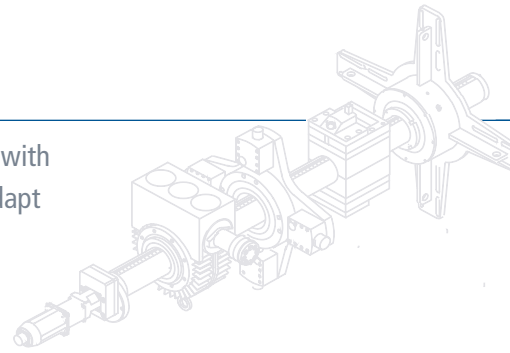
How can we help you?

To see how Climax experience and innovation brings time- and money-saving solutions to your operation, take a look at our portable machine tools introduced on these pages. With each product line, we include a Quik-Tech chart to help you compare key specifications and determine the right tool for each project. For even more detailed information, visit our website or give one of our representatives a call. You'll find that whatever the project, whatever the problem, Climax is the solution.



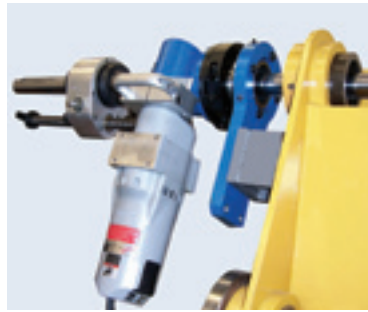
PORTABLE BORING MACHINES

Climax Boring Machines combine the convenience and economies of portability with the power, precision and speed of stationary machines. Several models easily adapt to Climax AutoBoreWelders, cutting bore/weld work time in half.



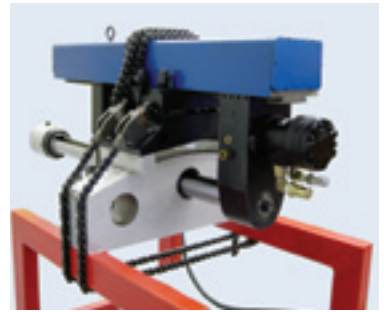
1 | **BB3000** Portable Boring Machine

Optimal power-to-weight ratio assures superior speed and performance. Compact design and mounting brackets easily adapt to a wide range of configurations to maximize application versatility. Boring diameters range from 1.5 to 5 inches (38.1 to 127 mm).



2 | **BB4500** Portable Boring Machine

An even more compact and affordable version of our top-selling BB5000 technology, with the mounting flexibility needed for work in restrictive spaces. A variety of motor and bar options add power to this outstanding value, offering boring diameters from 1.5 to 10 inches (38.1 to 254 mm).



3 | **BB5500** Portable Boring Machine

Designed to quickly bore precisely-aligned coupling bolt holes in turbine and other coupling applications. Fits into extremely confined spaces and allows measuring and inspection without the need to reset. Boring diameters range from 2 to 4.2 inches (50.8 to 106.7mm).



4 | **BB6000** Portable Boring Machine

The most compact in our line of traveling head portable boring machines. Combines powerful performance with flexible setup to meet an exceptionally wide range of application and boring diameter needs – from 6 to 36 inches (152.4 to 914.4 mm).



5 | **BB7000** Portable Boring Machine

Designed to enable boring strokes limited only by the length of the bar and with plenty of power to tackle big jobs. Three different bearing support assemblies maximize versatility, and boring diameters range from 8 to 50 inches (203.2 to 1270 mm), dependant on machining configuration.



6 | **BB8000** Portable Boring Machine

The model of versatility, offering easy, flexible setup, a high power-to-weight ratio and high-speed operation to boost productivity. Adaptable to a huge range of bore diameters, from 18 to 80 inches (457.2 to 2032 mm).

PORTABLE BORING MACHINES AND BORE WELDERS

APPLICATIONS Line boring of heavy construction equipment buckets and articulated joints • Drag line housing repair • Line boring of dam wicket gate bushings • Ship stern tube and rudder leaf boring • Re-boring of turbine shell housings • Turbine coupling boring

FEATURE PRODUCT



7 | **BB5000** Portable Boring Machine

The most compact, versatile and powerful tool in its class. Easy to set up, designed to make quick work of tough jobs in spaces too restrictive for most boring machines. Easily configured for difficult machining applications with boring diameter from 1.5 to 24 inches (38.1 to 609.6 mm).

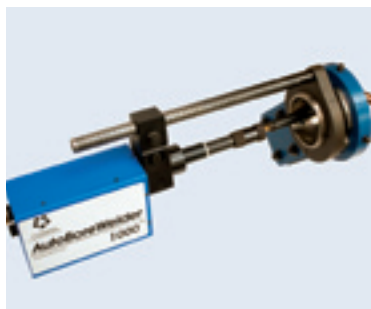
FEATURE PRODUCT



2 | **BW3000** AutoBoreWelder

The patented technology of this microprocessor-controlled step welding system dramatically decreases weld time and sets new standards in control and precision. Attaches to Climax boring machines to bore and weld simultaneously on in-line bores with a single setup. Optional accessories enhance capabilities to include face and OD welding. Standard unit handles ID welding diameters from 0.88 to 13 inches (22.4 to 330.2 mm); optional accessories extend welding range up to 54 inches (1371.6 mm) in diameter.

AUTOBOREWELDERS



1 | **BW1000** AutoBoreWelder

An automated spiral welding system for bore, flange and valve repair. Delivers the versatility, portability and ease of use needed to boost productivity by reducing repair time and cutting costs. Standard unit handles ID welding diameters from 2.75 to 12 inches (69.9 to 304.8 mm); optional accessories allow a welding range from 0.88 to 24 inches (22.4 to 609.6 mm) in diameter.

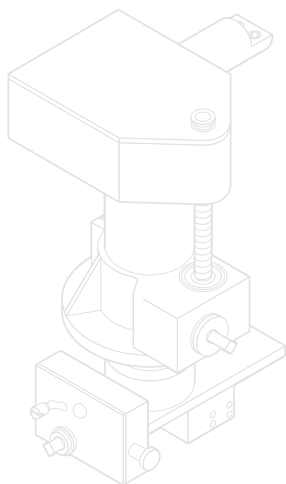
QUIK-TECH	BB3000	BB4500	BB5000	BB5500	BB6000	BB7000	BB8000
BORING DIAMETERS	1.5 – 5 inches (38.1 – 127 mm)	1.5 – 10 inches (38.1 – 254 mm)	1.5 – 24 inches (38.1 – 609.6 mm)	2 – 4.2 inches (50.8 – 106.7 mm)	6 – 36 inches (152.4 – 914.4 mm)	8 – 50 inches** (203.2 – 1270 mm)	18 – 80 inches (457.2 – 2032 mm)
BAR DIAMETERS	1.25 inches (31.8 mm)	1.75 inches (1.25 inches) optional (44.5, 31.8 mm) optional	2.25 inches (1.25 inches) optional (50.8, 31.8 mm) optional	2.5 inches (1.875 inches) optional (63.5, 47.6 mm) optional	3.5 inches (88.9 mm)	5 inches (127 mm)	6 & 8 inches (152.4 & 203.2 mm)
MAX. STROKE	10 inches (254 mm)	24 inches (609.6 mm)	36 inches (914.4 mm)	----- LENGTH OF BAR -----			
TORQUE@ BAR	40 ft-lb (54.2 N•m)	417 ft-lb (H*) (565.4 N•m)	417 ft-lb (H*) (565.4 N•m)	65 ft-lb (88.1 N•m)	1263 ft-lb (1712.4 N•m)	2230 ft-lb (3023.5 N•m)	2692 ft-lb (3649.9 N•m)
POWER OPTIONS*	E, P	E, P, H	E, P, H	P, H	H	H	H

* E = ELECTRIC, P = PNEUMATIC, H = HYDRAULIC

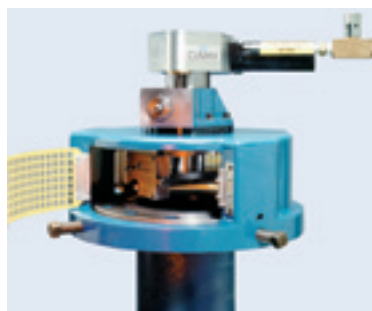
** DEPENDANT ON FINAL MACHINING CONFIGURATION

PORTABLE FLANGE FACERS

Climax Flange Facers, available in a wide range of facing diameters, combine easy setup, rugged durability and money-saving portability. Included are all the standard attachments essential for quick completion of your job.



FLANGE FACERS



1 | **FF1000** Flange Facer

This OD-mount machine features a low-profile power module and centering/leveling plate for fast and easy setup. Mounting bell with wide-access windows simplifies gearbox adjustments. Facing diameters range from 0 to 12 inches (0 to 304.8 mm).



2 | **FF3000** Flange Facer

One of the most compact and versatile tools of its kind. With its modular design, tool-less set up and a bi-directional, infinitely variable feed, it faces and bevels with remarkable speed and precision. Facing diameters range from 1.5 to 12 inches (38.1 to 304.8 mm).



3 | **FF4000** Flange Facer

Designed for machining mid-sized diameter raised face and flat pipe flanges or beveling pipe with optional beveling head. Sets up in less than 10 minutes and delivers enough power to remove one cubic inch of metal per minute. Facing diameters range from 3 to 19 inches (76.2 to 482.6 mm).



4 | **FF5000** Flange Facer

A two-piece mounting system makes this low profile unit easy to set up and align. Lightweight and simple to use whether you're facing, beveling or turning valve, pipe or pump flanges. Facing diameters range from 5 to 24 inches (127 to 609.6 mm).

PORTABLE FLANGE FACERS

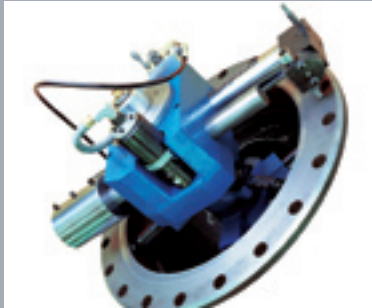
APPLICATIONS Re-facing of ship hatch sealing surfaces • Re-machining of rotary crane bearing surfaces

- Re-facing of main steam inlet flanges • Re-surfacing of large pump base housings • Re-facing of valve flanges • Heat exchange repair

FLANGE FACERS

FEATURE

PRODUCT



5

FF6000 Flange Facer

Rigid, versatile and fast. Delivers high-torque performance, quickly re-faces flanges and repairs seal and bearing fits without costly disassembly and needless downtime. Cuts angles, grooves, chamfers, RTJ, lens ring seals and weld preps and handles facing diameters from 14 to 60 inches (355.6 to 1524 mm).



6 | **FF8000** Flange Facer

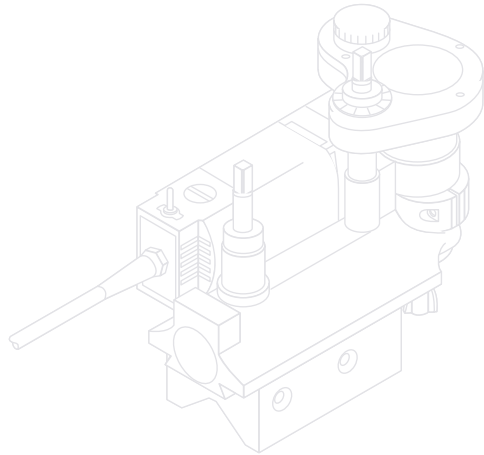
A true workhorse, with the size and muscle to machine large-diameter flange faces. It gives up nothing in accuracy thanks to its rigidity, easy positioning and uniform rotation rates, even when mounted in vertical flanges. Facing diameters range from 30 to 120 inches (762 to 3048 mm).

QUIK-TECH	FF1000	FF3000	FF4000	FF5000	FF6000	FF8000
FACING DIAMETERS	0 – 12 inches (0 – 304.8 mm)	1.5 – 12 inches (38.1 – 304.8 mm)	3 – 19 inches (76.2 – 482.6 mm)	5 – 24 inches (127 – 609.6 mm)	14 – 60 inches (355.6 – 1524 mm)	30 – 120 inches (762 – 3048 mm)
ID MOUNTING DIAMETERS	NA	1.5 – 6.75 inches (38.1 – 171.5 mm)	3 – 12.5 inches (76.2 – 317.5 mm)	5 – 18 inches (88.9 – 457.2 mm)	14 – 60 inches (355.6 – 1524 mm)	30 – 120 inches (762 – 3048 mm)
OD MOUNTING DIAMETERS	2 – 12 inches (50.8 – 304.8 mm)	NA	NA	NA	NA	41 – 133 inches (1041.4 – 3378.2 mm)
POWER OPTIONS*	P	P	P	P, H	P, H	P, H

* P = PNEUMATIC , H = HYDRAULIC

PORTABLE MILLS

Climax two- and three-axis mills are a cost-effective way to cut keyways, pockets, motor-mounts and more, right on-site.



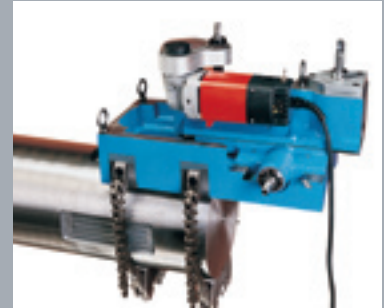
KEY MILLS



1 | **KM3000** Key Mill

A small but rugged machine able to cut full-depth keyways or mill flats quickly, without requiring extensive dismantling or costly set-up time. Designed for shaft diameters from 0.75 to 10.5 inches (19.1 to 266.7 mm).

FEATURE PRODUCT



2 | **KM4000** Key Mill

A rugged performer designed with a 2-inch (50.8 mm) sideshift to cut wide keyways at minimal cost. Versatile, smooth and precise, it mounts anywhere along a shaft, at any angle, and eliminates the need for a costly assortment of different size cutters. For shaft diameters ranging from 4 to 24 inches (101.6 to 609.6 mm).



1 | **PM2000, PM3000, PM4000** 3-Axis Mill

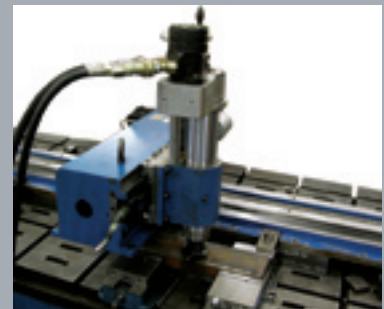
All three of these configurations feature longitudinal power feed with cross travel controlled manually or powered by a hand-type power drill. Attachable to the workpiece or to a frame beside it, these tools pay for themselves quickly in the downtime they save. Choose X-axis travel up to 20, 48 or 78 inches (508, 1219.2 or 1981.2 mm).



2 | **PM5000** 3-Axis Mill

As versatile as it is powerful. This hydraulically-powered unit can mill along either side and around the ends of its base, as well as vertically and on overhead surfaces. It offers X-axis travel up to 96 inches (2438.4 mm).

FEATURE PRODUCT



3 | **PM6000** 3-Axis Mill

Mill in nearly any position with this versatile system. Metal removal is fast and efficient thanks to its high spindle torque. Remote pendant control allows you to be where the cutting is taking place, and you can choose from three lengths of X-axis travel up to 120 inches (3048 mm).

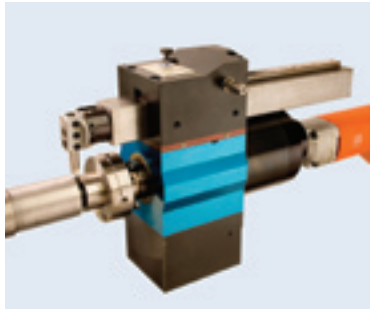
PORTABLE LATHES

KEY MILL APPLICATIONS Milling of keyways in motor shafts • Milling of stress relief slots in bridges • Milling of radius slots in turbine shafts • Machining of pipe ID flats

3-AXIS MILL APPLICATIONS Milling of base plates for mounting pumps and motors • Milling of platens of large die casting presses • Machining of lock and dam gates • Milling of vertical slides on steel rolling mills

LATHE APPLICATIONS Repairing of yoke assemblies on ship rudder control devices • Re-machining of rotor journal turbine shafts and fan shafts • Re-turning of elevator motor shafts • Re-machining of agitator journals • Re-machining of gearing journals on large shafts

LATHES



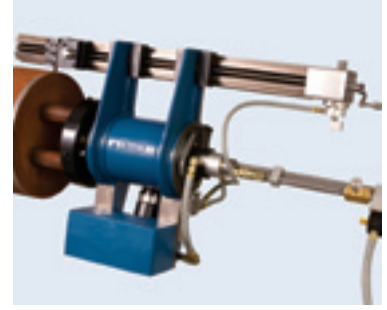
1 | PL2000 Lathe

Plenty of power in a compact package. Gets the job done with just 7 inches (177.8 mm) of radial clearance. Its simplified mounting, bolted directly to the end of the shaft, speeds setup and reduces costly downtime for work on shaft diameters from 1.5 to 9 inches (38.1 to 228.6 mm).



2 | PL3000 Lathe

Re-turns large shafts and roll journals by mounting directly to the work piece and rotating around the shaft. Ruggedly dependable, accurate and powerful, it can eliminate hours of equipment dismantling. Designed for shaft diameters from 4 to 11.25 inches (101.6 to 285.8 mm).



3 | PL4000 Lathe

Does big jobs in tight spots. Mounts to the end of the work piece, requires minimal clearance, and re-turns both straight and tapered shafts precisely. Its turning bar is easily adjusted for reach, turning radius and obstacle clearance on projects with shaft diameters ranging from 8 to 24 inches (203.2 to 609.6 mm).

PORTABLE KEY MILLS			PORTABLE LATHES			
	KM3000	KM4000		PL2000	PL3000	PL4000
SHAFT DIAMETERS	0.75 – 10.5 inches (19.1 – 266.7 mm)	4 – 24 inches (101.6 – 609.6 mm)	SHAFT DIAMETERS	1.5 – 9 inches (38.1 – 228.6 mm)	4 – 11.25 inches (101.6 – 285.8 mm)	8 – 24 inches (203.2 – 609.6 mm)
KEYWAY LENGTH	6 inches (152.4 mm)	8 inches (203.2 mm)	MAX. TURNING REACH	12.5 inches (317.5 mm)	22 inches (558.8 mm)	27 inches (685.8 mm)
KEYWAY WIDTH	1.25 inches (31.8 mm)	3.25 inches with 2 inch sideshift (82.6 mm with 50.8 mm sideshift)	POWER OPTIONS*	P, E	P, E	P
POWER OPTIONS*	E, P, H	E, P, H				

3-AXIS MILLS	PM2000	PM3000	PM4000	PM5000**	PM6000**
MAX. X-AXIS TRAVEL	20 inches (508 mm)	48 inches (1219.2 mm)	78 inches (1981.2 mm)	96 inches (2438.4 mm)	120 inches (3048 mm)
MAX. Y-AXIS TRAVEL	8 inches (203.2 mm)	8 inches (203.2 mm)	8 inches (203.2 mm)	14 inches (355.6 mm)	24 inches (609.6 mm)
MAX. VERTICAL TRAVEL	3 inches (76.2 mm)	3 inches (76.2 mm)	3 inches (76.2 mm)	6 inches (152.4 mm)	8 inches (203.2 mm)
SPINDLE SIZE	0.75 inches (20 mm)	0.75 inches (20 mm)	0.75 inches (20 mm)	#40	#40/#50
POWER OPTIONS*	E, P, H	E, P, H	E, P, H	H	H

* E = ELECTRIC
P = PNEUMATIC
H = HYDRAULIC

** PM5000 & PM6000:
ACTUAL MACHINING AREA
VARIES BY APPLICATION.

PORTABLE VALVE REPAIR

Climax Portable Valve Repair Machines make short work of machining, grinding or lapping of valve components compromised by stress, steam, physical damage or corrosion, and net huge savings with their on-site convenience.

VALVE REPAIR

FEATURE PRODUCT



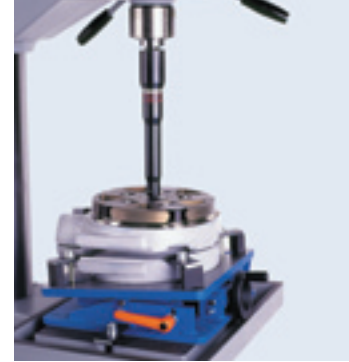
1 | VM1000 Series Gate Valve Repair

Available in six configurations, able to grind and lap gate and check valve seats and resurface seat areas to original manufacturer specifications or higher. A tilting adapter is included to assure quick and easy adjustment of grinding pressure.



2 | VM2000 Series Globe Valve Seat Grinding Safety Valve Repair

A series of five rugged yet compact configurations designed for fast, precise grinding and lapping of globe valves with flat or conical seats. All models offer a range of diameter configurations and the ability to easily and quickly change disks and adjust grinding pressure during operation.



3 | VM3000, VM4000 Gate Valve Repair

Mount the VM3000 accessory to any column drilling machine and use the VM1000/2000 tooling to grind or lap the seats of gate wedges, plugs, valve bodies and flanges. The VM4000 tilt table simplifies and speeds the grinding or lapping of gate valve bodies or wedge seats.



4 | VM5800 Stationary Gate Valve Repair Stationary Globe Valve Repair

This stand-alone stationary machine, suitable for service trucks as well as repair shops, offers a full range of grinding and lapping applications for globe and gate valves and gate valve wedges. Single point machining is also available with optional facing head.



5 | VM6000 Globe Valve Repair Safety Valve Repair Control Valve Repair

Mount this directly on valves to do in-line valve throat repair, bore inside diameters, turn outside diameters, machine weld preps or apply weld build-up, undercut, or cut recesses and grooves. It machines inside diameters from 2.5 to 13 inches (63.5 to 330.2 mm).



6 | VM7000 Safety Valve Repair

Designed specifically for mounting on Dresser Consolidated MaxiFlow® valves, Crosby relief valves and others of similar configuration. The VM7000 allows you to bore, turn and face safety valve nozzles up to 6 inches (152.4 mm) in diameter.

PORTABLE VALVE REPAIR

APPLICATIONS Repairing and refurbishing of MSIV valves • Grinding and lapping of globe, check and gate valve seats • Machining of ball valve seats • On-site re-machining of seat and seal areas on Fisher and Dresser control valves • In-place repair of safety valves

VALVE REPAIR



7 | VM8000 Globe Valve Repair Control Valve Repair

Designed to bore, face and thread Fisher and Dresser Masoneilan control valves or comparable configurations from 3 to 10 inches (76.2 to 254 mm) in diameter.



8 | VM9000 Globe Valve Repair

Designed for repair of Main Steam Isolation Valves (MSIV) and other large globe valves. A single setup is all that's required to perform both single-point machining and grinding of pressure-seal bores, guide ribs and seats.

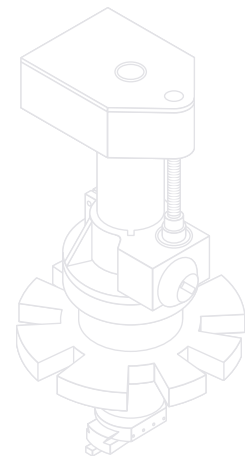


9 | BV3000, BV5000, BV7000 Ball Valve Repair

Lightweight and compact, these units were originally designed for the U.S. Navy for quick setup and use in extremely tight spaces. The family covers repair of welded-in ball valves from 3 to 8 inches (76.2 to 203.2 mm).

VALVE REPAIR	VM6000	VM7000	VM8000	VM9000
VALVE NOZZLE DIAMETERS	NA	1.5 – 6 inches (38.1 – 152.4 mm)	NA	NA
VALVE THROAT DIAMETERS	2.5 – 13 inches (63.5 – 330.2 mm)	NA	3 – 10 inches (76.2 – 254 mm)	16 – 28 inches (406.4 – 711.2 mm)
VALVE SEAT DIAMETERS	2.5 – 13 inches (63.5 – 330.2 mm)	NA	2.5 – 10 inches (63.5 – 254 mm)	16 – 28 inches (406.4 – 711.2 mm)
POWER OPTIONS*	P	P	P, H	P, H

BALL VALVE REPAIR	BV3000	BV5000	BV7000
APPLICATION RANGE	3- or 4-inch valve (76.2 or 101.6 mm)	5- or 6-inch valve (127 or 152.4 mm)	8-inch valve (203.2 mm)
SPINDLE SPEED	200 RPM	130 RPM	90 RPM
POWER OPTIONS*	P	P	P



VALVE GRINDING AND LAPPING MACHINES	VM1150 VM1200	VM1350 VM1500 VM1600	VM1700 VM1900	VM2050C VM2100C VM2150C VM2350C	VM2050S VM2150SV	VM2350 VM2500 VM2600	VM5800 (STATIONARY)
VALVE TYPE	GATE/ SWING CHECK	GATE/ SWING CHECK	GATE/ SWING CHECK	GLOBE (CONICAL SEATS)	GLOBE(FLAT SEATS)/ SAFETY	GLOBE (FLAT SEATS)	GATE/ GLOBE
SEAT DIAMETER RANGE	1.25 – 8 inches (32 – 200 mm)	1.5 – 24 inches (40 – 600 mm)	8 – 40 inches (200 – 1000 mm)	0.4 – 12 inches (10 – 305 mm)	0.4 – 6 inches (10 – 150 mm)	3 – 24 inches (80 – 600 mm)	0.4 – 13.8 inches (10 – 350 mm)
SUBMERGING DEPTH (MAX)	18 inches (450 mm)	40 inches (1000 mm)	55 inches (1400 mm)	24 inches (600 mm)	12 inches (300 mm)	31 inches (800 mm)	NA
POWER OPTIONS*	E, P	E, P	E, P	E, P	E, P	E, P	E

* E = ELECTRIC, P = PNEUMATIC, H = HYDRAULIC



Our most powerful tools are our innovation and custom engineering, our comprehensive training and global customer support.



- Rental Depot
- Manufacturing/Sales Facility
- ◐ International Distributor





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