



Remanufactured Machines



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You won't find any simple repairs, scrape and paint at Phoenix. That's because a machine remanufactured by Phoenix has all of the major systems and components replaced or restored to as-new condition. Phoenix stands behind its work by offering a complete machine runoff to new machine tolerances and a full one-year warranty, a warranty as good as or better than most offered on new machine purchases.

Regardless of the job at hand, Phoenix's performance driven process leaves absolutely nothing to chance. Combining three decades of engineering know-how with deep applications expertise, we produce the exact machine and specifications you need. Each remanufacturing assignment encompasses the replacement and/or restoration of all major systems and components to like-new condition - at a fraction of the cost of new. And the savings continue as you can utilize your existing foundation, tooling and fixturing.

If you are considering remanufacturing an existing machine tool, or are having a hard time justifying a new piece of equipment, give Phoenix a call. Our combination of experience, innovation and leading-edge engineering ensures the right solution for your application.



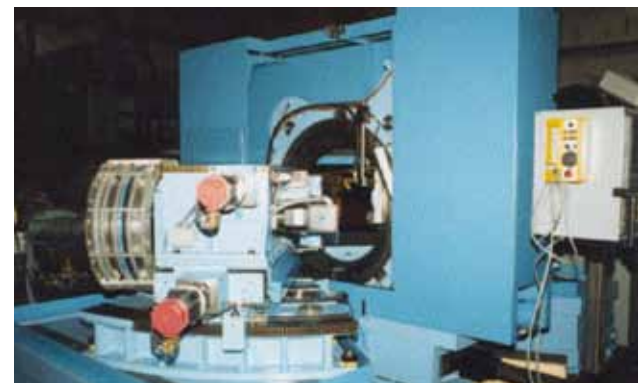
The Decision: Buy New or Remanufacture/Retrofit?

Faced with an aging machine, a daily loss in production, a maintenance nightmare, loss in downtime, more loss in scrap, what do you do? A new machine may have an extended leadtime and be technologically behind the times. Cost is prohibitive. You'll need a new foundation, time for debugging, more time to train operators. What do you do? You remanufacture/retrofit with Phoenix, Inc.

1 Remanufacturing will save anywhere from 40 to 70 percent of the cost of a new machine. You'll save months - months of profitable production. Remanufacture takes far less time than new machine delivery. You don't need a huge capital outlay in a period of rising interest costs. Instead, rebuilding costs can be written off as an in-house expense rather than a capital expenditure. Ask your comptroller.

2 Your old machine is still an asset. Older machines have bases of heavy castings rather than thin weldments or pre-stressed concrete. Your bases have aged and are already stabilized. No foundation or installation will be needed. This alone could save thousands. No training time will be needed. Your operators and maintenance people are already familiar with what you have. Use your existing inventory of spare parts.

3 Needless to say, the precision will be restored to "as new" or better. Working with our engineers you can retrofit to bring your machine into OSHA compliance with safer controls, guarding, and soundproofing. You can add automatic lubrication systems, CNC systems, change spindles, slides and drive systems to accommodate carbide and ceramic tooling. We don't just rebuild - we manufacture.



Is it New or Remanufactured?

Phoenix is unique among our competitors in remanufacturing in that we also build new machines of many types. Often we are able to use the knowledge gained in our new machine designs to improve your existing machine during the remanufacturing process. When the project is complete it is sometimes difficult to categorize the final product. Many parts of the machine are new while other are remanufactured, so which is it?

In the photograph at right, the entire front assembly (the "boat and cradle") was a new design produced by Phoenix and used on our new broaching machines. The cutting tool slide and back base as well as the front column were remanufactured. This process provides a machine with all of the capabilities and flexibility of a newly designed CNC broach while saving substantial cost by using the back end components and remanufacturing them. We have used this process to change broaching machines from blade style broaches to disk style broaches allowing customers to utilize machines that they thought had no value.



Another example is the large Vertical Boring Mill on the cover of this brochure. The entire ram assembly is new, in fact it is the design used in our new VTC machines. We also machined the columns and installed our rail levelling system in place of the original rail elevating assembly which did not level the cross rail. The machine on the cover was delivered to us as a manual machine with very limited capabilities and was returned to the customer as a full CNC VBM with a new ram, extended stroke, quick change tooling, automatic rail leveling, variable speed table control, precision scale feedback, automatic lubrication and more. It truly has all of the capability of our new VTC while saving the customer almost \$500,000.

The vertical grinder pictured on the next page was also substantially changed during remanufacture. The entire top end of the machine including the cross rail was replaced with new components of our design. The original lower base was reinforced and filled with polymer concrete to provide support for the new rail assembly. A new electro-magnetic chuck was also installed.

Phoenix can also provide special programs and other special software to make your machine more productive. For both the grinder and the broach described above we provided a full suite of macro programs where the customer just "filled in the blanks" and the machine then made the part from the data provided.

Grinding

Having developed "profit grind" single and twin wheel grinders, Phoenix is well versed in their re-engineer and remanufacture.

Creep Feed Grinders

- Blohm
- Elb
- Excello
- Nicco

Cylindrical Grinders

- Landis
- Norton
- Cincinnati

Vertical Grinders

- Campbell
- Control Co.
- Frauenthal
- Springfield



Lathes/Mills

Horizontal Lathes

- American
- G&L
- Leblond
- Lodge & Shipley
- Monarch
- Poreba
- Pratt & Whitney

Airfoil Turbine Blade Mills

- Rigid
- Cincinnati Milacron
- New England

Horizontal Boring Mills

- G&L
- Lucas
- Titan
- Scheiss

Vertical Boring Mills

- Bullard
- G&L
- Gray
- King
- Schiess
- Pietro Garnaghi
- Titan



Other Machines

Gear Hobbing/Gashing Machines

- Modul
- G&E (Gould & Eberhart)

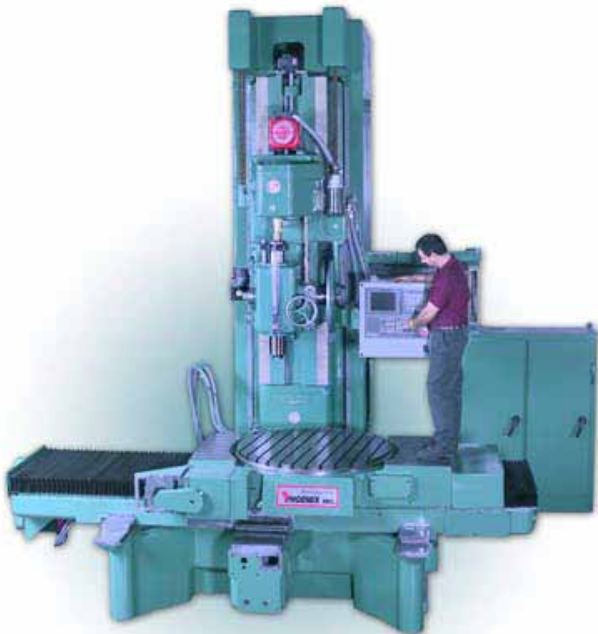
Bridge and Gantry Style Machines

- G&L
- Gray
- Rockford
- Titan



Special Metalworking Equipment

- 66" vertical super finishing machine
- 2-axis gun drill
- Morando rotor lathes
- Large rotor positioning lathe



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