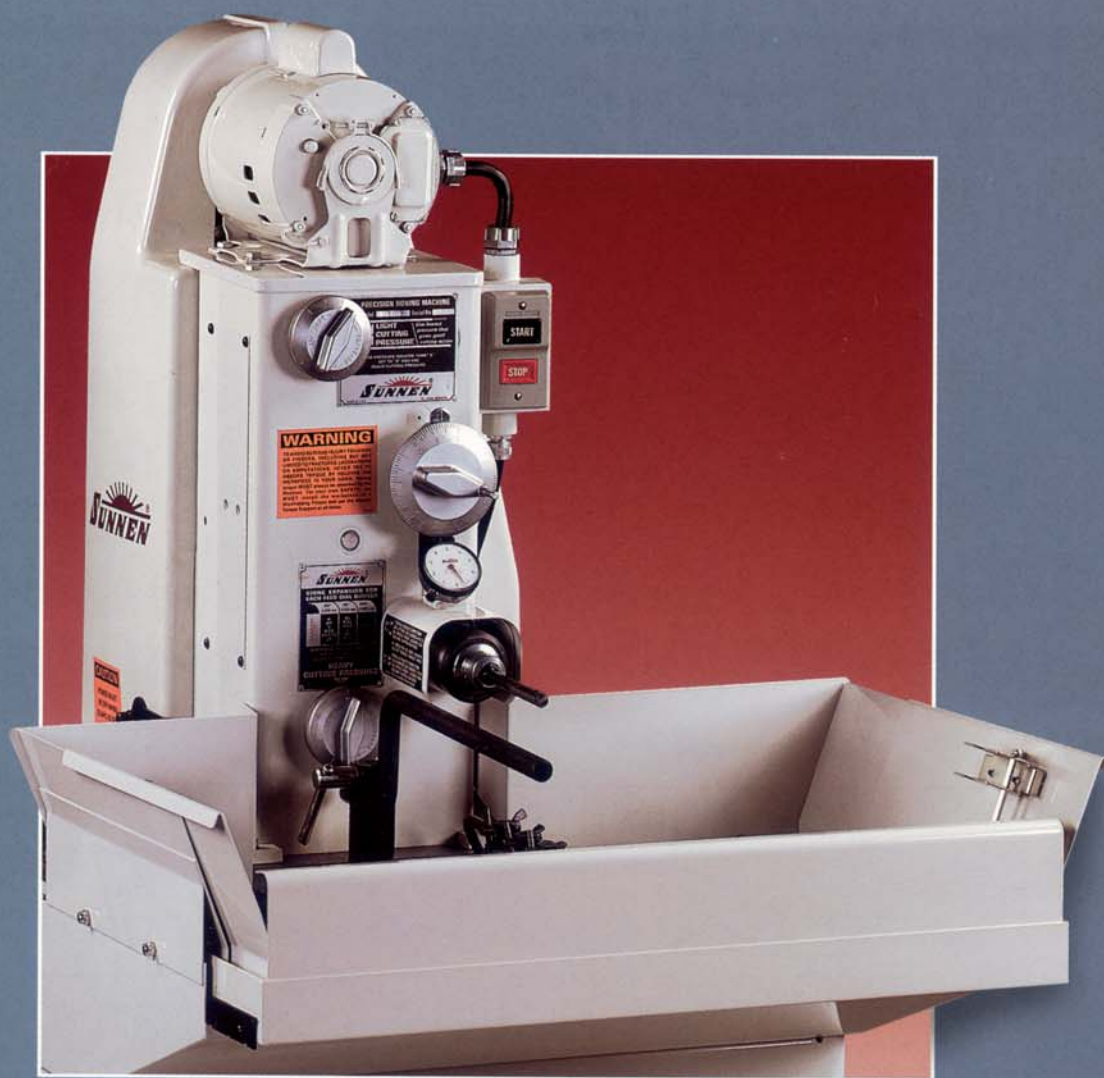


SUNNEN[®]

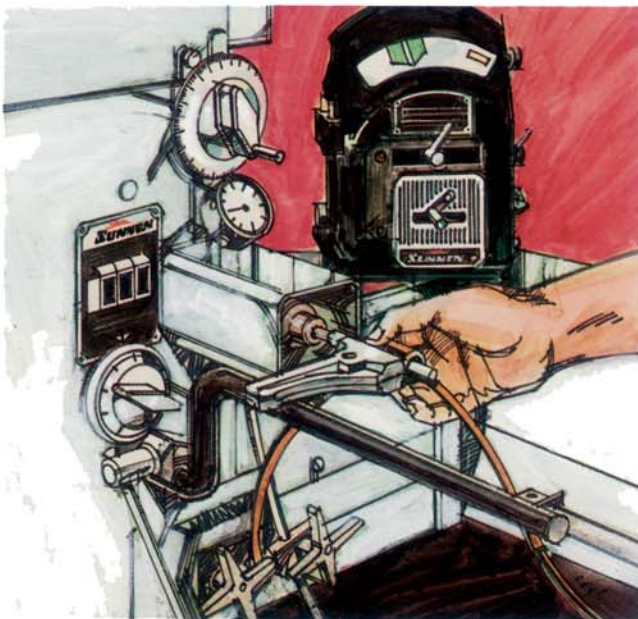
MBB-1660 BASIC HONING MACHINE



**SUNNEN**

Where Precision Starts

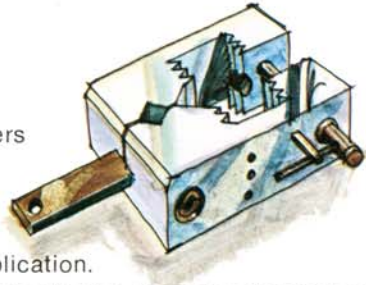
The Sunnen MBB-1660 hones bores of any configuration. .060" to 6.500" (1.5 to 165 mm) in diameter. 1/8" to 16" (3 to 400 mm) long. In regular or odd-shaped parts. Any material. It guarantees precision sizing, geometric accuracy, any surface finish you need. And it doesn't cost much! Add all these basics together and you have the most versatile, economical bore-sizing/finishing machine you can put in your shop!



With the MBB-1660 in your shop . . . you're ready for any kind of I.D. work that comes along. Half a dozen pieces or several hundred . . . a job you've never run before or a repeater . . . production or salvage. You can set up and get going right now without delay or a lot of expense. In many cases, this machine pays for itself on the first two or three jobs. It's the biggest bargain in metalworking!

External Hones

For honing external diameters from .120" to 4.500" (3 mm to 114 mm). Assures geometric roundness and straightness. Exact size duplication. Accuracy to .0001" (0.003 mm) or better. Removes "cloverleaf" patterns and produces fine finish after grinding. Many times faster than lapping. Ask for Bulletin X-MAN-5008.



LN-610 Stone Selection Kit

Complete assortment of 224 honing stones covers practically any honing job in the 1/8" to 6" (3 mm to 152 mm) diameter range. Stone Selection Tables on each drawer make it easy to pick right stone for each job. Buying kit saves you over 25% of list price of individual items. See Catalog X-SP-5500.



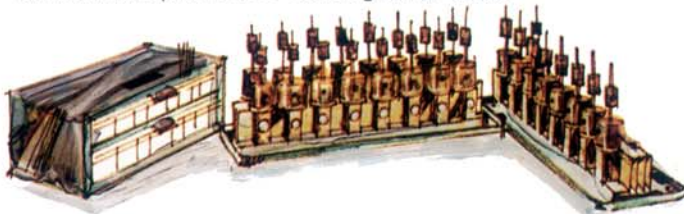
PF-150 Oil Filter

The Sunnen Grit Guard[®] provides a constant supply of clean oil. It removes all dirt, chips and grit before the oil comes to the workpiece. You never worry about dirty oil affecting the life of your tooling and stones or the quality of your work. Easy to install. All fittings included. Ask for Bulletin X-SP-5150.



Mandrel Sets

Buying in sets, using a single part number, simplifies ordering and assures having the right Honing Unit when you need it. Each set covers a specific size range. Saves you money, compared with buying individual items at list price. See Catalog X-SP-5500.



Honing Oil

Many honing problems are caused by use of improper coolants or substitute honing oils. Sunnen Industrial Honing Oils are specially formulated for faster cutting, maximum stone life, and finest finish with no scratches. See Catalog X-SP-5500.



Precision Gaging

A unique all-mechanical system. No ring gages, plug gages, mikes or jo blocks to buy or maintain. You just dial your size on the Setting Fixture and transfer it to the gage. Complete setup takes two minutes. Covers all diameters from .090" to 2.900" (2.29 mm to 74.3 mm) with two gages and two fixtures. Ask for Bulletin X-SP-9000.



Gage Mounting Brackets

For correct positioning of the Sunnen Bore Gage on a Sunnen Honing Machine. See Bulletin X-SP-9000.



MBC-200 Work Light

Incandescent light mounts on machine to put the lighting right on the work. Fully adjustable bracket.

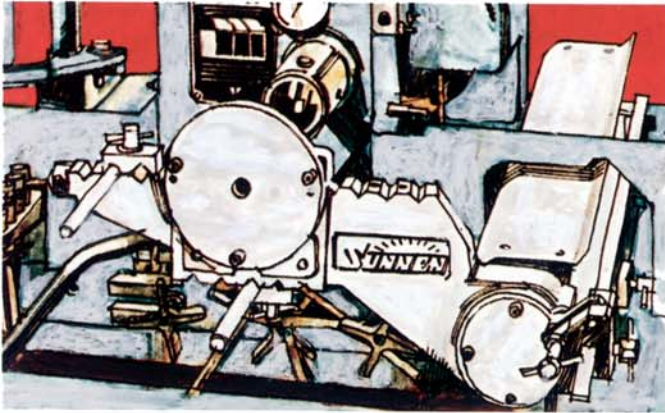


Sunnen Honing Accessories

make honing easier and more efficient

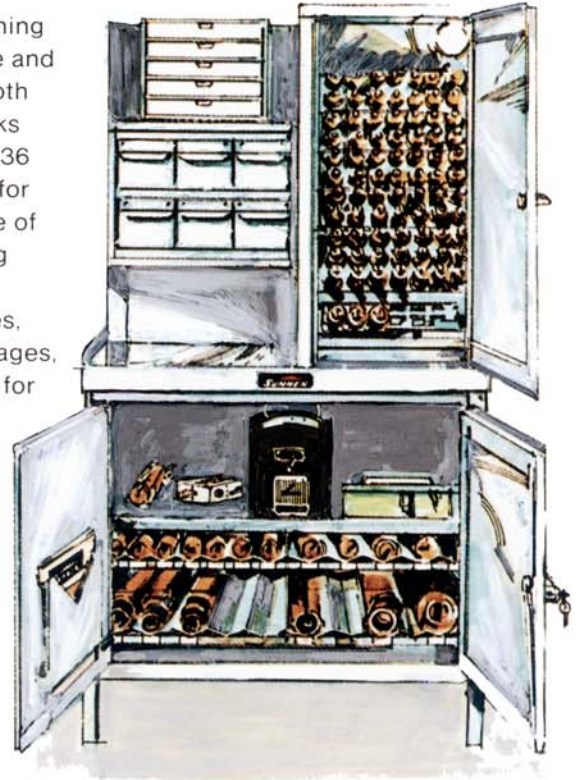
KKN-100 Fixture for Square Honing

You use this precision fixture for pieces with very short holes . . . where bore diameter is more than three times the length, and the piece has a flat face. It assures that the bore will be square with the locating face. See Catalog X-SP-5500.



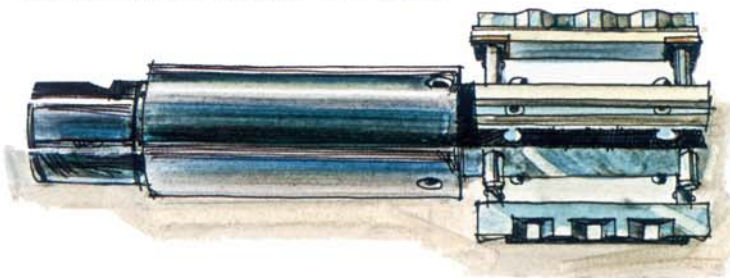
LN-650 Mandrel Cabinet

Keeps your honing equipment safe and easy to find. Both doors have locks and there are 136 compartments for complete range of Sunnen Honing units. Plenty of space for stones, workholders, gages, etc., Work area for assembling mandrels and setting gages. Shown with optional six-drawer LN-651 Accessory Unit. Ask for Bulletin X-SP-5065.



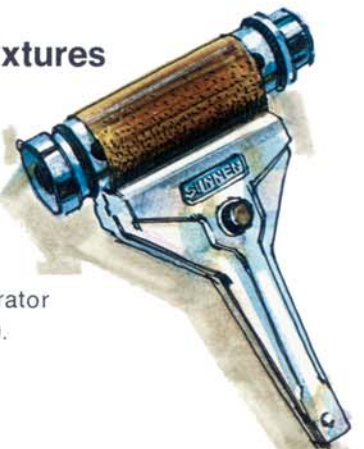
AN-600 Honing Head for Large Bores

You use the AN-600 for honing bores with diameters ranging from 2.500" to 6.500" (64 mm to 165 mm). Accuracy to .0005" (0.01 mm). Order stones separately. See Catalog X-SP-5500.



Loop-Grip Holding Fixtures

Especially useful for hard-to-hold pieces such as thinwalls, small parts with smooth surfaces and pieces with sharp projections. Handle rests on torque bar to absorb honing torque and reduce operator fatigue. See Catalog X-SP-5500.



MB-2410 Work Trays

Designed to mount on both sides of the machine. They provide a handy place to set parts or accessories while honing.



MAN-700 Diamond Dresser

When cutting action of stone slows, a light stroke with the Diamond Dresser breaks the glaze on the stone and restores honing efficiency. See Catalog X-SP-5500.



As simple as ONE-TWO-THREE.

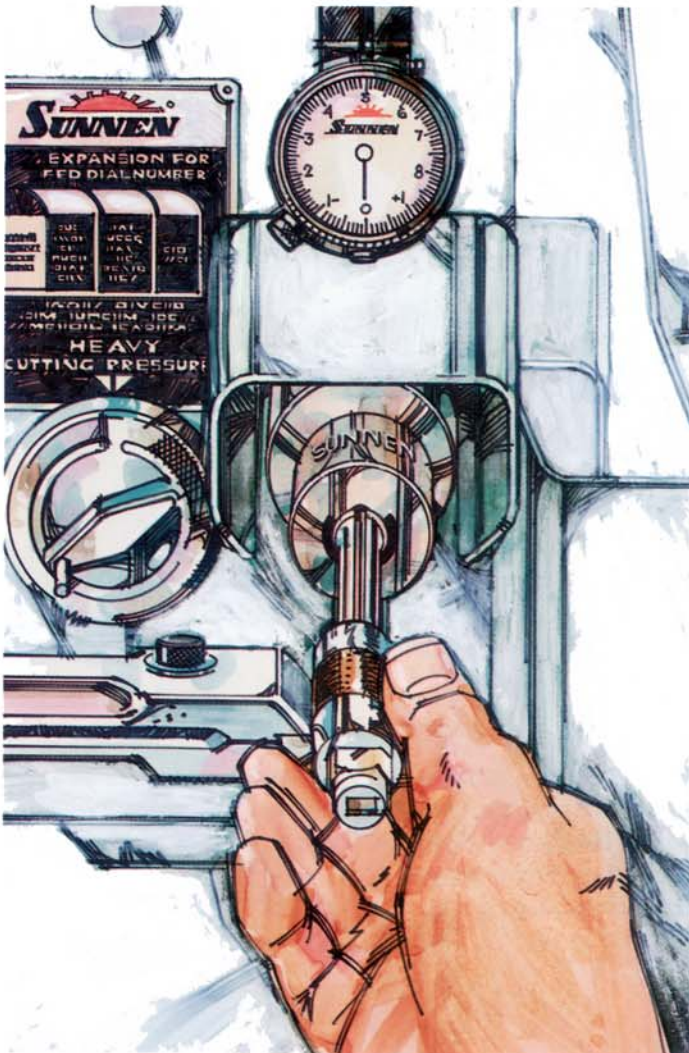
The Sunnen Hone is a simple machine.

The basic operation goes One-Two-Three, like this:

1. You gage the bore.
2. You set the honing dial for the amount of stock to be removed.
3. You hone till the dial says zero.

Setup takes only about ten minutes. You change from one job to another that quick. You don't have to worry about fixtures, indexing, special tooling or critical tool adjustments.

Easy-to-read charts and tables show you clearly and quickly which tooling, stones, speeds, and cutting pressures to use, too.



What about stock removal?

A lot of shops think Sunnen Honing is great for dusting out a tight bushing or taking the tool marks out of a few pieces for salvage. But there's more . . .

a lot more!

Faster spindle speeds, better controls and new abrasives have made the MBB-1660 far more versatile.

In many cases, it's now practical and economical to cut out grinding or boring and go right to the hone with the rough pieces. You size and finish the bores in one operation.

Sunnen accuracy

Sunnen Honing Machines have changed in many ways during the last few years.

But one thing that hasn't changed is their honing accuracy.

One basic reason is the unique three-point Sunnen mandrel design with one stone and two unevenly spaced guide shoes. This enables Sunnen tooling to make a bore round — really round — with the least possible stock removal.

Another Sunnen exclusive — extra-long stones. They not only remove taper and bellmouth, but take out "rainbow" or "banana shape" as well.

Eliminating taper and out-of-round makes bore sizing down to .0001" (.0025 mm) a routine matter.

Many shops are splitting tenths by honing the Sunnen way.

As always, Sunnen Honing gives you any finish you need down to two microinches and you get it consistently, piece after piece.

You control bore quality with Sunnen Honing because you control roundness, straightness, size, finish—the elements which make up bore quality.



Long, short, simple or complex— MBB-1660 hones them all.

No matter what kind of a piece comes along, run-of-the-mill or odd-ball...you're set to size and finish the bores without a lot of fuss and bother with a Sunnen Hone. This one machine hones pieces of almost any size or shape and bores of any configuration:

Hones Multiple Land and Tandem Bores without rainbow or washout.



Hones Bores with Keyways or Splines.

Specially designed stones and mandrels make honing keyways as easy as plain bores.

Hones Blind-End Holes. Sunnen tooling is easily adapted to hone clear to the bottom of blind bores and gives you better fits than any other process.

Hones Thinwall Parts to tight tolerances.

There are no chucks or clamps to distort or break delicate pieces.

Hones Heavy or Odd-Shaped Parts. They don't have to be chucked or swung or lined up "on the money." A simple, easy-to-make workholder does the trick in most cases.

It cleans up problems other operations leave.

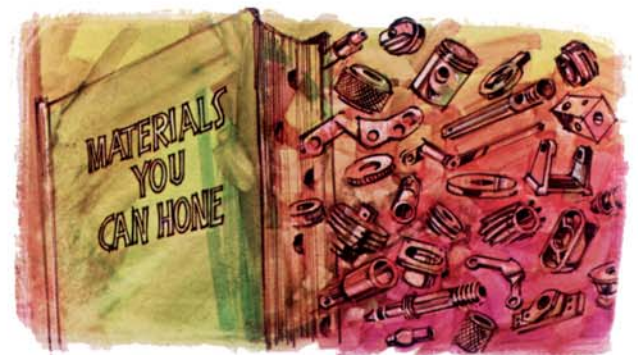
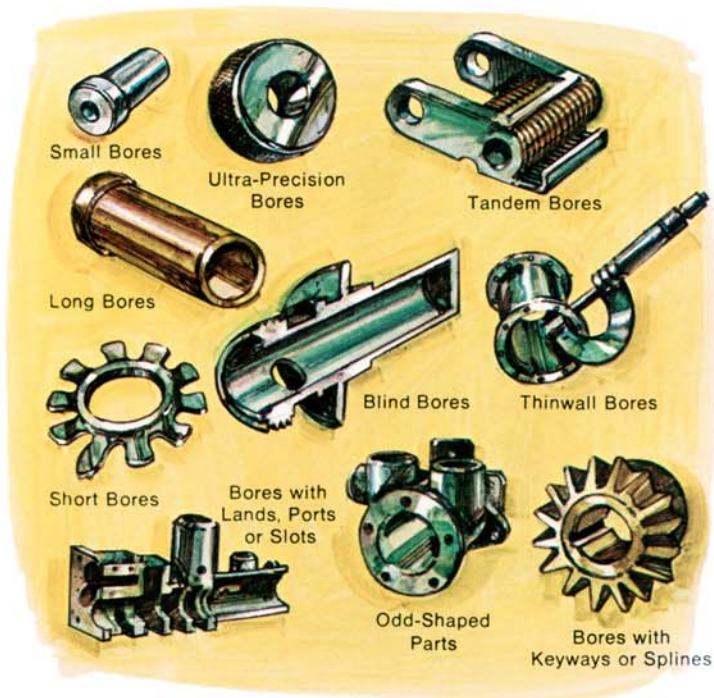
There are ten common bore errors that are caused by machining, heat treat or chucking. All of them can be corrected quickly and easily on a Sunnen Hone. The really important thing is that Sunnen Honing clears up these bore errors with the **least possible stock removal**. In many cases, this is the difference between scrapping or saving a run of expensive pieces.



It hones materials from A to Z.

From A to Z... Sunnen Honing cuts them fast and clean: Alnico, Aluminum, Carbide, Ceramics, Ferrite, Fiberglass, Gold, Graphite, Hasteloy, Invar, M2 Steel, Monel, Nylatron, Plexiglass, Porcelain, Quartz, Silicon, Stainless Steel, Tantalum, Zircaloy. And just about any other material you can name.

Yes. Sunnen hones them all. The basics and the "impossible" ones, too. And that's another reason a Sunnen Hone is one of the most useful machines you can have in your shop.



Sunnen MBB-1660 Honing Machine

Features and Specifications

I.D. Range:	.060" to 6.500" (1,50 mm to 165 mm)	Filter System:	Optional PF-150 Filter available
Length Range:	Hones bores up to 16" (400 mm) in length, depending on bore diameter	Floor Space:	30" (762 mm) wide 60" (1524 mm) deep 63" (1600 mm) high
Spindle Speeds:	200, 250, 320, 400, 500, 640, 800, 1000, 1270, 1600, 2000, 2500 rpm	Electrical System Options:	MBB-1660 , 1-phase—115/230V, 60 Hz or 220V, 50 Hz MBB-1660 , 3-phase—230/460V, 60 Hz or 220/380V, 50 Hz or 440V, 50 Hz (Can be supplied for any frequency or voltage for which motors are available.)
Setup Time:	10 minutes	Weight (with Honing Oil):	630 pounds (287 kilograms)
Spindle Motor:	1/2 HP (0,375 KW)	Color:	Pearl Gray (other colors available at extra costs)
Spindle Brake:	Self-energizing band-type		
Honing Oil Pump:	Utilizes spindle drive motor		
Honing Oil Capacity:	16 gallons (60 liters)		

NOTE: Sunnen reserves the right to change specifications and product design without notice. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment, supplies or accessories previously sold. The information contained herein is considered to be accurate based on information available at the time of printing. Should any discrepancy of information arise, Sunnen recommends that the user verify the discrepancy with Sunnen before proceeding in any machining operation.

Versions of this machine are available for sale worldwide. They are certified for the European Economic Community (EEC). These versions have been altered to be in accordance with safety directives enacted in the EEC and carries a "CE" mark. For further information call Sunnen Customer Service in St. Louis.



SUNNEN PRODUCTS COMPANY

7910 Manchester Ave., St. Louis, Missouri 63143 U.S.A., 314-781-2100

U.S.A. Toll-Free Industrial Sales and Service: 1-800-325-3670

Fax: 314-781-2268

International Division: Fax: 314-781-6128, Telex: 4312052 SUNNEN PRODSTL, Cable Address: "SUNPROCO" All Codes

SUNNEN PRODUCTS LIMITED

No. 1 Centro, Maxted Road
Hemel Hempstead, Herts HP2 7EF ENGLAND
Phone: ++44 1442 39 39 39
Fax: ++44 1442 39 12 12

HONE TECHNIQUE AG

A wholly owned subsidiary of Sunnen Products Limited
Fabrikstrasse 1
8586 Ennetaach-Erlen SWITZERLAND
Phone: ++41 71 648 16 16
Fax: ++41 71 648 31 31
(Responsible for sales and service in Eastern Europe)

SHANGHAI SUNNEN MECHANICAL CO., LTD.

Gaoxi Cun, Kangqiao Hengmian, Xiaoku, Pudong
Shanghai 201319 CHINA
Phone: 86-21-5-813-3322
Fax: 86-21-5-813-2299

Visit us at our web site: <http://www.sunnen.com>