

# Custom Tooling

## MMT Tools

Multi-stone mandrels provide superior speed and accuracy on applications using a variety of high-production machines, including the Sunnen ML, EC, and KGM Series machines plus other major brands. These mandrels are for bore diameters ranging from 3,8 to 31,7 mm (.150 in. to 1.250 in.). For sizes above 31,7 mm (1.250 in.) consult your Sunnen Field Engineer.

Using multi-stone mandrels can also save you money ... per-part honing costs can be reduced by 30 percent in some applications versus conventional honing tools.

- Available with high-quality metal-bonded CBN or diamond precision graded superabrasive stones.
- Can be used with either water or oil-based coolants depending on application.
- Manufactured from high-strength steel to ensure long life.
- Precision machined, ensuring proper fit of superabrasive stones and generating bore geometry to meet your close-tolerance demands.
- Faster honing cycle times and improved stone life.
- Superabrasive stones can be specified for optimization on any application.
- Superior bore geometry out of the box - no need for (truing) the stones.
- Superior performance in distorted parts from heat-treat operations.
- Available quick-change design minimizes tool changeover time (for Sunnen machines only).

## PH Tools

Ideal for diesel cylinder liners, automotive and light truck engine block cylinder bores, small engine cylinder bores, aircraft cylinder bores, gears, pump bodies and liners, hydraulic cylinders and other mid- to high-production applications of bore diameters ranging from 3.00 in. (76,2 mm) to 7.5 in. (190,5 mm).

## Key Features

- Integral air gage available for in-process measurement for optimum control of the bore diameter
- Uses superabrasives, conventional abrasives or plateau honing tools
- Can be customized for any application — can use various abrasive dimensions to meet the diameter and bore length requirements of specific applications
- Engineered with high-quality steel for extended operating life
- Ideal for blind bore applications
- Match ground internal components for the ultimate in precision operation
- Designed for fast changeover and ease of installation
- For optimum roundness and straightness, tool can hold up to 12 stones
- End cap designed to guide the tool into the bore to prevent tool damage
- Can be used with Sunnen SV-500, SV-310, SV-3/4 and CK-21 honing systems
- Can be adapted to use on many honing machines manufactured by others



HONING UNIT  
SELECTION GUIDE

PEDESTAL MACHINES  
(ML, EC, MBB, & LBB)

PLATED TOOLING  
(KGM & VSS MACHINES)

CYLINDER HONING  
(SV-410 & SV-10 MACHINES)

PORTABLE, MP3 & TUBE  
HONING ABRASIVES

CUSTOM ABRASIVES  
& TOOLING

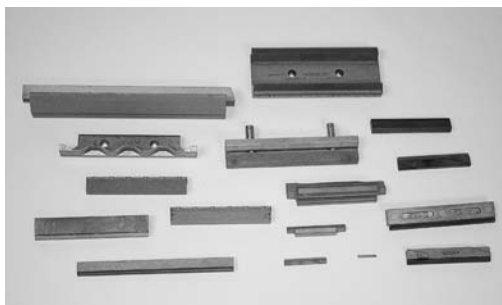
# Abrasives

## For Sunnen Machines and Others

HONING UNIT  
SELECTION GUIDE

### Abrasives for Sunnen Machines

Sunnen Products Company is the world's foremost authority on honing and has incorporated more than 85 years of experience into research and development of honing abrasives. Sunnen honing abrasives increase performance, whether you use a Sunnen system or other honing equipment. Sunnen's superior line of honing abrasives can be tailored to be compatible with any finishing tools or finishing equipment. Sunnen technicians grade and qualify all honing stones,



before shipping them, to ensure that industries receive honing stones of the most enduring and exacting quality standard in precision honing performance.

PEDESTAL MACHINES  
(ML, EC, MBB, & LBB)

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### Superabrasives for Sunnen Machines

Sunnen offers the widest range of superabrasive honing stones and diamond plated tools. They outperform ordinary abrasives and overcome the most difficult bore-sizing and finishing problems.

Sunnen offers two basic types of superabrasives:

- 1) Diamond—essential in the honing of glass, quartz, and the many varieties of tungsten carbide and ceramic material; cast iron
- 2) CBN (cubic boron nitride)—resists chemical attrition when honing steel. Essential in honing steel, hardened cast iron, inconel, stellite and titanium

Three types of superabrasive bonds are available: vitrified, metal, and resin. The many combinations of hardness and bond strength enable you to handle virtually any sizing or finishing application with extreme levels of precision and accuracy.

CYLINDER HONING  
(SV-410 & SV-10 MACHINES)

PORTABLE, MPS & TUBE  
HONE ABRASIVES

CUSTOM ABRASIVES  
& TOOLING

**Increase the quality and consistency of your honing and bore-sizing operations.**

### GSA Non-Captive Abrasive (Genuine Sunnen Abrasives)

**For many types of production honing machines...such as Nagel Barnes, Micromatic, Jones & Shipman, Gehring, Fuji, Kadia, Nissin, Engis, Accucut.**

This line includes unmounted stick abrasives as well as mounted abrasives compatible with non-Sunnen equipment, in a broad range of grit sizes, abrasive types and dimensions.

The GSA line complements our already broad range of honing abrasives—from aluminum oxide and silicon carbide to diamond and CBN. Sunnen offers the industry's largest variety of bond types, grain sizes, and stone configurations. You get exactly what you need, when you need it.

Sunnen has dedicated a 7900 square-meter (85000 sq. ft.) facility to the development, manufacture and distribution of abrasives. The facility provides production economies and the highest level of quality in the industry.

With Sunnen GSA Non-Captive Abrasives, your honing operation can achieve greater levels of precision...quality and consistency.

For more information on how Sunnen GSA Non-Captive Abrasives can help solve your bore-sizing operations, call your Sunnen sales and application engineer.

