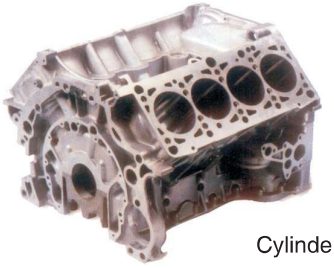
Solar
DIAMOND

Honing Stones & Tools

Diamond & CBN Honing Stones

Our Solution - Diamond & CBN Honing Stones

Due to growing ecological requirements, there is a growing demand for bores that can be manufactured in high quantities and with a high precision in terms of surface quality and bore geometry.



Cylinder block

Faced with today's ecological and economic changes, honing with Diamond or CBN is a must in any modern manufacturing environment.

Connecting rod

In modern manufacturing, Diamond & CBN honing stones represent the most cost effective and best technological solution. The extreme hardness of Diamond and CBN guarantees long lifetime cycles for the honing stones, a basic requirement for a production facility with a high degree of automation and multi shift operation.

Components of an injection pump

On account of the particular hardness of the abrasive material, honing stones of Diamond or CBN stones have an excellent accuracy of form. This has an impact on the process reliability and the precision of the honed bore. The honing of very small bores can often only be carried out by Diamond or CBN.

Transmission Gear

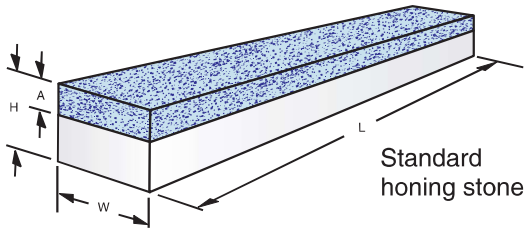
Diamond & CBN Honing Stones

Geometry of Honing Stone

The dimension of the honing stone depends on the design of the honing holder/mandrel. In particular, the height of the abrasive layer is defined by the possible infeed path of the holder. For the sake of clarity, some type of honing stones are given as below:

Standard Honing Stone

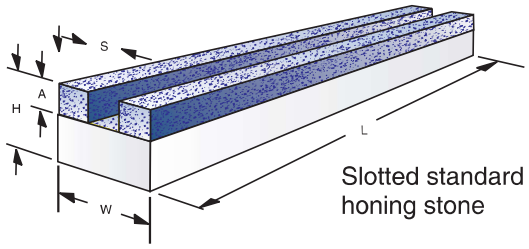
Honing stones having abrasive layer on steel base.
Honing stone is soldered on honing shoe /carrier.
To write dimension: W X H X L X A



Standard honing stone

Slotted Standard Honing Stone

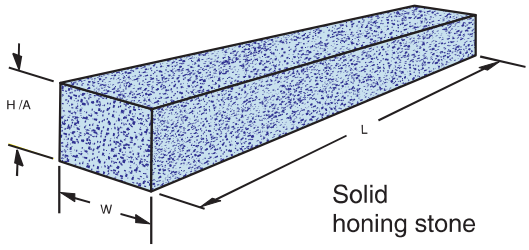
Same as standard honing stone but with a slot longitudinally for better cutting, cooling and chip removal.
To write dimension: W X H X L X A S



Slotted standard honing stone

Solid Honing Stone

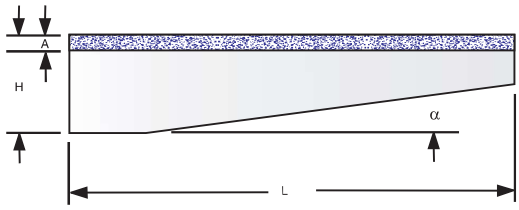
This stone consists only the abrasive (No steel base) and is also soldered on the honing shoe/carrier or holder segment.
To write dimension: W X H X L X A



Solid honing stone

Compact Honing Stone

Honing stones for direct fitting into the body of the honing holder. this type of stone is generally used for very small bore honing.
To write dimension: W X H X L X A



Compact honing stone

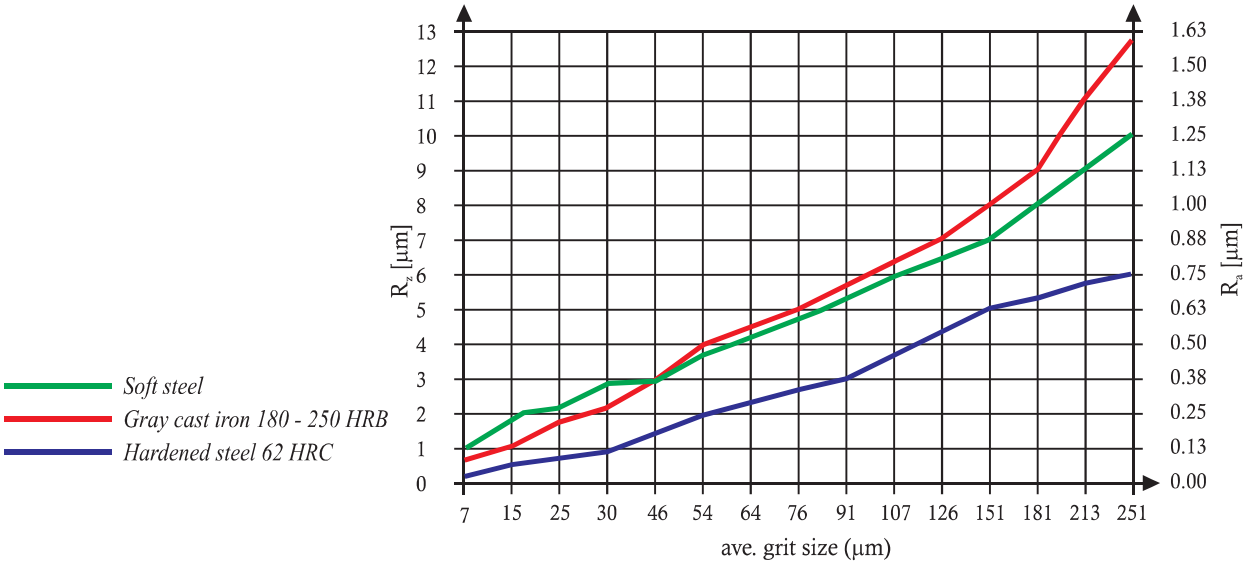
Drawing of the stone required for manufacturing.
W = Width (mm) H = Height (mm)
L = Length (mm) A = Abrasive height (mm)
S = Slot width (mm)

Solutions for Top Quality

Various influences determine the result of the honing The characteristics of a honing stone as well as a fine tuning of all different parameters make it possible to achieve the required result. In addition to high quality in manufacturing. both a short processing time and a long life of the stones can be achieved. The selection of the appropriate abrasive is the task of highly experienced experts.

Grit Size

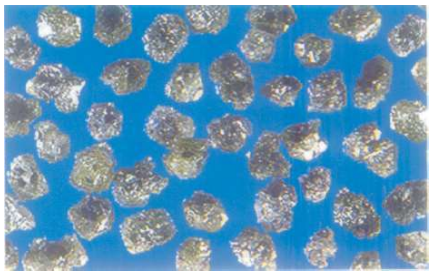
The grit size generally determines the achievable surface profile and is also responsible for the stock removal capacity of the honing stone. The bigger the grit size, the rougher the surface finish and higher the stock removal rate will be.



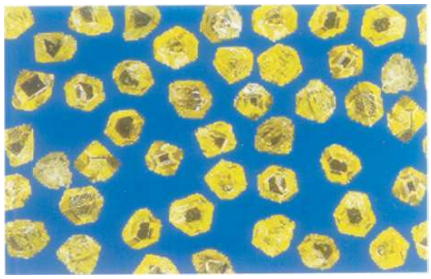
Diamond & CBN Honing Stones

Type of Crystal

Depending upon the process parameters for the diamond synthesis, various types of crystals are available. These differ in colour, hardness, from, structure and stability. These characteristics also determine the cutting behavior of the respective crystal. Diamond crystals are generally preferred for machining cast iron and soft steel whereas CBN crystals are used for the machining of hardened or high Alloy steel.



Diamond grit splintering in the microrange with low impact strenght



Diamond grit splintering in the microrange with high impact strenght

With the kind permission Diamond Innovation

Type of Bond

The firm hold of the cutting crystal, the stability of shape, hardness and the wear performance characterize the bond. The hardness, toughness and brittleness of the bond is determined by the material which is to be honed. Basically metallic bonds with different alloying constituents are used. In addition to this, ceramic or synthetic bonds can also be used.

Bonding material under the electron microscope

Concentration

It describes the number of carats of Diamond or Cubic Boron Nitride (CBN) crystal per cm^3 of abrasive layer. Basic rule: the smaller the grit size, the lower the concentration. Abrasive layer with a low concentration are also used with “coarse” grit sizes if this is requied for the machining task.

Grit size	Concentration	Carats / cm3
< 046	15 - 50	1.1 - 2.2
046 - 091	35 - 75	1.5 - 3.3
107 - 181	50 - 100	2.2 - 4.4
> 181	75 - 150	3.3 - 6.6

Honing Tools

Abrasive Honing Stones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