

Precision Engineered Honing Plates



BHJ manufactures Honing Plates to fit more than 400 engine applications in all sizes, from single-cylinder to V-12s and is recognized worldwide as the authority in Honing Plate development and production today. Since the conception of the initial Honing Plate designs that were introduced by BHJ Products in early 1975, continued research and development has brought numerous design improvements that bring us to the models available today.

Head-bolt torque can dramatically distort cylinders and cylinders can not be bored or honed accurately if cylinder dimensions change so significantly after assembly. Rings won't seal well and scuffing is likely to occur if the engine overheats. Use of BHJ Honing Plates rectifies all of these problems, leading to more consistent tolerances, better sealing and more power.

Honing Plate Standard Features:

1-3/4" thick Meehanite Cast Iron or Cast Aluminum give maximum rigidity and resistance to permanent distortion and most closely simulate the stresses induced on the cylinder wall by the cylinder head when it is torqued in place. In addition, these materials have essentially the same coefficient of expansion as cylinder heads, important to those honing at operating temperature.

Cast Iron Plates are Blanchard Ground on both sides flat and parallel within precision commercial tolerances.

Aluminum R Model Plates are supplied with heat-treated Steel Inserts (T-Washers) in all bolt holes standard.

Plates are manufactured with .090"-.095" larger bore size than the largest standard engine bore diameter found in the applicable engine family in most applications, allowing the Plate to accommodate .060" over-bore. This maintains full gasket firing ring compression, thus further enhancing bore distortion. Special bore diameters are available upon request.

Head-bolt holes are precision machined to factory tolerances and special bolt hole sizes are also available.

Clearance holes for locating dowels are machined over-size to allow visual alignment before torquing. Indexed or "Dialed In" dowel holes are also available upon request. (See DID description in Options section on page 19.)

All Honing Plates are shipped in a durable, protective Wooden Case.

R Model High Performance Plates



The R Model Honing Plate is the established standard for duplicating cylinder bore distortion and is a must for any high performance engine application. Used by top machine shops, racing teams and racers alike, the R Model is acknowledged to be the finest, most accurate honing plate on the market today.

The R Model incorporates all of the standard features listed above, plus is specially machined, and in most cases, supplied with D.O.M. steel Spacers and Washers, to duplicate cylinder head height and facilitate the use of the OEM-length head bolts or aftermarket studs during the honing operation. Optional machining is also available for Hot-Hone applications.



In order to maintain the closest possible block distortion, it is necessary to use the same type of cylinder head gasket, as well as the same type of bolt or stud set that will be used during final engine assembly during the honing operation when using the R Model Honing Plate. Some engines require that both cylinder banks be torqued to better simulate final assembly conditions during honing. Additionally, industry tradition dictates that the Honing Plate should be of a similar material as the heads being used in final assembly, thus a cast iron Honing Plate is preferred when using cast iron heads in final assembly and an aluminum Plate used when aluminum heads will be installed.

Cylinder Head Model High Performance Plates



When a cylinder head is installed on the block, substantial valve seat distortion can be measured from the stresses induced upon the head, thus compromising the valve seal. Having the ability to grind or cut the valve seats in this distorted condition is advantageous to proper valve-to-seat sealing.

The Cylinder Head Model (H) plate is drilled and tapped to accept the installation of the cylinder head to the plate using O.E.M. length cylinder head bolts or aftermarket studs and the proper gasket. With the head installed on the plate, valve seat distortion is duplicated during the machining process, producing a substantially more efficient valve seal. Many cylinder heads show a 5-10% improvement in leak down when valve seats are machined in this manner.



Some clearancing of the sidewall of the plate may be necessary to fit large grinding stones or cutters into the combustion chamber on some applications. Optional threaded Steel Inserts can be installed on any Head Plate by request.

Counterbore Model Plates



The Counterbored (CB) Model Honing Plate is popular with machinists who want to bore with the Honing Plate installed, using an existing portable, or deck-mounted type boring bar.

The CB Honing Plate incorporates all of the standard features, plus, has counterbores machined on its top surface at the head-bolt hole locations, providing a flat deck surface when used with the Bolts and Washers provided.



In order to maintain the closest possible block distortion, it is necessary to use the same type of cylinder head gasket that will be used during final engine assembly when conducting the honing operation using the CB Model Honing Plate.

Production Model Plates



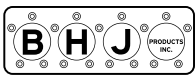
The Production (PM) Model Honing Plate is designed specifically for high-volume engine rebuilding shops, which must use a honing plate on the ever-increasing number of ultra-lightweight cylinder blocks being produced today. On many of these blocks, the factory used a honing plate during machining and mandates the use of a Honing Plate when rebuilding.

The PM Plate incorporates all of the standard features, plus is specially machined to work without a cylinder head gasket installed, thus eliminating additional cost in parts inventory and assembly time during installation.

Heat-treated Steel Inserts (T-Washers) are installed in the top surface of the Plate at the head bolt hole locations for increased durability and longevity when used in a production environment. Also, a set of equal-length O.E.M. style Head Bolts and Washers are included. These special features combine to make the Production Model the easiest, most cost-effective and durable Honing Plate available.



While the Production Model honing plate is not intended for high performance use, it is designed to exceed all O.E.M. honing plate requirements. PM Honing Plates are available in cast iron and billet steel only.



Harley Davidson Honing Plates



Honing Plate Kits are available for the Harley Davidson Shovel Head, Evolution and Twin-Cam engines. Kits are supplied with a Base Plate, which features side clamping of the spigot area on the Jug to address the recurring problem of spigot deflection during honing. This is especially prevalent in large-bore applications and will eliminate additional clearance that would be necessary to achieve correct piston to cylinder wall clearance.

The Plate allows the user to hone straight, round bores through the full length of the Jug. The Plate also has tapped holes in the bottom surface to facilitate clamping onto most honing machines.

The Shovel/Evolution Kit is supplied with the above Base Plate machined with a dual bolt pattern to accept both Shovel Head and Evolution Jugs. Two Honing Plates are included, to accommodate each engine type. A Hardware Kit containing all the fasteners needed to simulate the assembled engine condition for both setups is also included.

The Twin-Cam Kit is supplied with the above Base Plate machined with the bolt pattern to accept the Twin-Cam Jug and one Honing Plate. A Hardware Kit containing all the fasteners needed to simulate the assembled engine condition is also included.

Small Engine Honing Plates



Honing Plates are also available for all small engine applications including Briggs & Stratton, Honda, Kohler, Tecumseh and many others. The cylinders in these engines undergo the same distortions as other applications and require the same degree of accuracy during honing for performance applications such as racing and sled pulling.

Plates are machined from 1" thick, 6061T6 billet aluminum, and fit all specific combustion chambers exactly. Head-bolt spacer tubes are supplied as necessary to allow the use of the OEM head bolts to give proper depth of penetration into the threaded head-bolt holes.

Kits include one precision honing plate per cylinder and the appropriate number of head bolt Spacers for any given application.

Heat Treated Steel Inserts



For years B H J has supplied heat-treated alloy Steel Inserts (T-Washers) as an installed option in our honing plates. These high-quality, precision-machined Inserts are also available separately for installation in aluminum cylinder heads to prevent galling and deterioration of the head under the stud or head-bolt washer while increasing longevity of the seating surface.

Inserts are available for 3/8" (10mm), 7/16" (11mm), 1/2" (12mm) and 9/16" (14mm) diameter head bolts or studs in bulk quantities.

Head Bolt Washers

The same high quality Washers that are supplied with B H J Honing Plates are also available separately for use as a head bolt or stud washer. The durability of these Washers has been proven by their daily, repeated use on honing plates by some of the largest production engine rebuilders in the country. Washers are manufactured from C1050 high carbon steel and heat-treated to HRC 45-50 making them stronger than competitive brands and an excellent choice for use in your engine assembly.

These Washers are available in sizes to suit 3/8" (10mm), 7/16" (11mm), 1/2" (12mm) and 9/16" (14mm) diameter head bolts or studs in bulk quantities.

Honing Plate Options

The following Options can be ordered with virtually any BHJ Honing Plate:

Special Bore Diameters: Part number suffix – S

Standard bore diameter for most Honing Plates is .090”-.095” over the largest standard engine bore diameter found in the specific engine family. Any special diameter may be machined in the Plate (may void warranty in some extreme big-bore applications).

Heat-Treated Inserts Installed: Part number suffix – T

Heat-treated Steel Inserts (T-washers) can be installed in the top surface of the Plate for each head bolt hole, resulting in increased durability and longevity. Included as standard equipment in aluminum and Production Model plates, Inserts are also beneficial in cast iron R and CB Model plates.

Threaded Steel Inserts: Part number suffix – TI

Threaded Steel Inserts are available for added durability in aluminum or cast iron Plates with threaded holes.

Heat Treated Spacers: Part number suffix – HT

D.O.M. Steel Spacers, as supplied with most R Model plates, may be heat-treated for increased durability.

O-Ring and Receiver Grooves: Part number suffix – O

O-Ring or receiver grooves are available in the deck surface of the Honing Plate, to more closely simulate the bore distortion induced by a cylinder head with similar machining. Customer must supply O-Ring groove outside diameter, width and depth when ordering.

Dialed In Dowels: Part number suffix – DID

All standard honing plates are machined with oversized locator dowel-pin holes to allow for Honing Plate bore-alignment over the typically misaligned bores of any given factory block. The Dialed In Dowel option includes dowel pin locator holes which are on-size to the dowel pin and in the exact relationship to the bores, as per the factory specifications. This option allows the plate to be used for bore layout during the boring operation. It is important to realize that bores located in this manner will only be as correct as the dowel pin location they are referenced from in any given block.

Rocker Stud Extractors



BHJ's Rocker Stud Extractors remove press-in rocker arm studs with ease and are designed to meet the most severe demands imposed upon them.

The SP-1 Stud Extractor (right) works with a 1/2” drive air impact wrench (not included) and is manufactured from heat-treated alloy steel for maximum durability. The unit is strong enough for use in a high-performance head shop where 16 studs may be removed in succession, yet economical enough to be in a machinist's toolbox for extracting the occasional worn stud. The threaded Center Stud is reversible for use on either 3/8” or 5/16” rocker studs.



The SP-3 Hydraulic Rocker Stud Extractor (left) further streamlines the stud-removal process. When tied into a hydraulic power unit, such as the piston pin press found in most shops (not included), the SP-3 is capable of removing eight studs in a little over five minutes with no operator effort. A hard-anodized aluminum housing, combined with heat-treated steel for all wear and high-stress parts makes the SP-3 light and incredibly durable. One 3/8” and one 5/16” Collet are supplied, as well as a 36” High-pressure Hose with No-bleed Quick Coupler.

Head Bolt Hole Spotface Cutter

BHJ's Head Bolt Spotface Cutter helps restore parallelism between head-bolt seating surfaces and the deck surface after cylinder heads are angle milled. Utilizing a top quality high-speed steel Cutter and a specially-machined Pilot, the Tool is guided by the existing bolt hole, to quickly and accurately re-machine the bolt boss surface.



Honing Plates & Heads