



WARNING



Never attempt to disassemble or reassemble a firearm unless you are absolutely certain that it is empty and unloaded. Visually inspect the chamber, the magazine and firing mechanism to be absolutely certain that no ammunition remains in the firearm. Disassembly and reassembly should follow the manufacturer's instructions. If such instructions are not immediately available, contact the manufacturer to see if they are available. If they are not available at all, then you should consult other reference sources such as reference books or persons with sufficient knowledge. If such alternative sources are not available and you have a need to disassemble or reassemble the firearm, you should proceed basing your procedures on common sense and experience with similarly constructed firearms.

With regard to the use of these tools, the advice of Brownells Incorporated is general. If there is any question as to a specific application it would be best to seek out specific advice from other sources and not solely rely on the general advice and warnings given.

SPECIAL NOTE

If high pressure or maximum pressure loads are to be used in any rifle you are considering using Brownells Flex-Hone Polishing System on, care must be taken to avoid enlarging the chamber past SAAMI "Maximum" dimensions and to prevent "too smooth" a finish. Too bright a finish on the chamber walls can prevent the cartridge case from gripping the chamber wall properly on firing, leading to an increase in case thrust against the bolt or breech block. In an extreme case, slick chamber wall and over maximum pressure ammunition can lead to premature wear or failure of locking systems.

REVOLVERS

Many current revolver manufacturers have been shortcutting their production processes when reaming cylinder chambers, leaving the internal finish rougher than was acceptable in years past. The careful use of Cylinder Flex-Hone[®]s can correct this situation, and can also go a long way toward smoothing chambers roughened from light rust pitting. This will allow much easier extraction of the fired cases - a "must" for duty-type revolvers.

HOW TO USE - CYLINDERS

Remove the cylinder from the revolver and disassemble it completely. Clamp the cylinder (with double action revolvers, leave the extractor in place) vertically in a padded bench vise, extractor end facing up. Chuck the appropriate Flex-Hone into a variable-speed hand drill that can be regulated to a speed of 750 RPM (maximum). Lubricate the abrasive balls of the Flex-Hone and the cylinder chamber walls with Flex-Hone Oil. Note: Use only Flex-Hone Oil - use of other oils may destroy the abrasive balls. Insert the Flex-Hone into the chamber and start rotation at a low RPM. Slowly increase the speed to a maximum of 750 RPM. Keep the Flex-Hone moving up and down in the chamber, but do not allow the hone to exit the chamber fully at either the front or rear. Try to keep the hone only in the case area of the chamber, you do not want to alter the forward (throat) section of the chamber's dimensions at all. If the chamber is very rough or pitted at all, start with the Medium grit Flex-Hone (yellow paint on the Hone tip) and then go to the Fine (blue paint).

The Flex-Hone Oil will form a slurry with the abrasive from the balls, cushioning the steel from excessive cutting action, and leaving a very fine surface finish. The Flex-Hone must NOT be allowed to cut only in one area - it must be kept moving up and down in the chamber to avoid over-cutting in one area. The extractor must be in place in the chamber to prevent rounding or undercutting the chamber wall at the extractor chamber interface.

When one chamber is finished with the Medium grit, go on to the next until all chambers in the cylinder have the same surface finish. Clean the cylinder completely with a good grade of solvent (TCE Cleaner Degreaser works well for this) and re-oil the chambers with Flex-Hone Oil. Put the Fine grit Flex-Hone in the drill's chuck, and repeat the process.

When the cylinder's chambers have been polished to as smooth a finish as possible, completely disassemble the cylinder and clean it thoroughly. Lubricate the parts with a good grade of gun oil and reassemble the revolver following the manufacturer's instructions.

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POLISHING SYSTEM

READ & FOLLOW THESE
INSTRUCTIONS

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SPECIAL NOTES

If the cylinder had any chambers that were heavily scored or had excessively deep rust pits which were removed with the Flex-Hone Handgun Polishing System, make a chamber cast of the chambers involved. Use Brownells Cerrosafe[™] chamber casting metal, and compare the dimensions of the chamber with the SAAMI specifications for "maximum" chambers. These specifications can be obtained directly from SAAMI (Sporting Arms & Ammunition Manufacturer's Institute, Inc.) 1075 Post Rd., Riverside, CT 06878. If any chamber's diameter exceeds the maximum diameter shown in the SAAMI specifications for that caliber, it can lead to bulged or burst cartridge cases, which may cause damage to the revolver and personal injury to the shooter or bystanders.

AUTO-LOADING PISTOLS

The area within the slide where the barrel fits on such pistols as the Colt 1911 series, S&W 9mm and .40 caliber, Beretta and Sig 9mm, usually has a fairly rough finish because the barrel rubs against the slide in cycling. Careful use of the appropriate hone will reduce the friction created, allowing easier cycling of the pistol with light, "target" loads.

Colt 1911 Auto pistols have a mainspring that moves in a drilled hole in a steel housing. Polishing this hole with first Medium and then Fine Flex-Hones will reduce friction, allowing the use of a lighter mainspring for lighter trigger pulls with virtually no decrease in lock time.

HOW TO USE - SLIDES

Remove the slide from the pistol and strip it completely. Clamp it horizontally, upside-down in a padded bench vise. Fit the appropriate Flex-Hone to a variable speed electric drill's chuck. Lubricate the internal portion of the slide and the abrasive balls of the Flex-Hone with Flex-Hone Oil. Note: Use only Flex-Hone Oil - use of other oils may destroy the abrasive balls. Insert the Flex-Hone into the slide and begin rotation at low RPM. Slowly increase

the speed to a MAXIMUM of 750 RPM. Keep the Flex-Hone moving back and forth in the slide. Allow only VERY LIGHT contact of the Flex-Hone on the tops of the slide's locking lug areas. You only want to deburr them, not round the edges over. Note: There's no need to try to remove any deep reamer marks. Minimize barrel-to-slide friction by polishing just the high spots... there's no need to get the inside of the slide totally glass-smooth.

SPECIAL JOBS

Some slides have a permanent bushing at the front of the slide. With these models, you will have to run the Flex-Hone shaft through the bushing before it is chucked into the variable speed electric drill. When the job is finished on these pistols, stop the drill and loosen the chuck, removing the Flex-Hone through the open bottom of the slide. Trying to force the Hone through the bushing may damage the abrasive balls of the Flex-Hone, cause excessive wear to the nylon stems the balls are attached to, or damage the bushing.

Clean all traces of abrasive and Flex-Hone Oil from the slide with a good solvent, such as TCE, and lubricate the parts with gun oil.

HOWTO USE - MAINSPRING HOUSINGS

Remove the mainspring housing from the pistol and strip all parts from the inside and clean it with solvent. Clamp it vertically in a padded bench vise. Chuck the appropriate Flex-Hone into a variable speed electric drill. Lubricate the abrasive balls and the interior of the mainspring housing with Flex-Hone Oil. Note: Use only Flex-Hone Oil - use of other oils may destroy the abrasive balls. Start the Flex-Hone into the mainspring housing at low RPM, and increase the speed to a MAXIMUM of 750 RPM. Keep the Flex-Hone moving up and down in the mainspring housing - do not allow it to hone only one area for more than a moment. When the rough spots have been honed with the Medium grit Flex-Hone, clean the mainspring housing thoroughly with a good solvent, such as TCE, and repeat the process with the Fine Flex-Hone. When the honing is complete, clean the parts completely of all abrasive compound and Flex-Hone Oil, again using TCE, and lubricate with a good gun oil.

LEVER ACTION and SINGLE SHOT RIFLES

The sport of Cowboy Action Shooting has brought with it an increase in the use and production of lever action rifles in revolver calibers. Some "stages" and "side matches" involve single shot rifles in revolver calibers. One problem faced by Cowboy Action competitive shooters is that many of the older guns, and some of the new ones as well, have rough chambers. This can cause problems with both feeding of fresh ammo and extraction of empty cases. To overcome these difficulties, Brownells Rifle Polishing Flex-Hones have extra-long shafts so chambers can be polished to an optimum level of smoothness, without having to remove the barrel from the action.

HOWTO USE - RIFLES

Disassemble the rifle to the point where the chamber is accessible from the rear. This will usually require that the buttstock, breech bolt, fire control components, and feeding components be removed from the action. It is not usually necessary to remove the forend and tubular magazine from lever action rifles. If the magazine is not removed, plug the breech end of the magazine tube with paper towels or cleaning patches to prevent oil contamination of the interior of the tube.

Determine the location of the front of the chamber compared to the exterior of the barrel. Lay the Flex-Hone against the exterior of the barrel, with the front of the Flex-Hone at the location of the front of the chamber, and note where a reference point, such as the rear of the action or the action's top tang, is in relation to the Flex-Hone's shaft. Mark the shaft at that point with masking or duct tape. This tool is not intended to polish the throat ahead of the rifle's chamber. Special care must be taken to prevent the Flex-Hone from entering this section of the chamber. Failure to do so may result in damage to the throat, leading to bore leading and/or inaccuracy.

Clamp the rifle barrel horizontally, upside down, in a padded bench vise. Use only Flex-Hone Oil - use of other oils may destroy the abrasive balls. Start the Flex-Hone into the chamber at low RPM, and increase the speed to a MAXIMUM of 750 RPM. Keep the Flex-Hone moving back and forth in the chamber. Do not allow the Flex-Hone to enter the throat section of the chamber. The tape on the Flex-Hone's shaft will give you a visible reference to prevent this.

The Flex-Hone oil will form a slurry with the abrasive from the balls, cushioning the steel from excessive cutting action, and leaving a very fine surface finish. The Flex-Hone must NOT be allowed to cut only in one area

- it must be kept moving back and forth in the bolt to avoid over-cutting in one area.

Depending on the original roughness of the chamber, polish from one to three minutes. Slow the drill down to where it is barely turning and remove the Flex-Hone from the chamber. Clean the chamber with Brownells TCE, or other good quality solvent, and examine the chamber. Continue polishing if it is still excessively rough, remembering to re-lubricate the chamber and Flex-Hone with Flex-Hone Oil. When it is visually "OK", thoroughly clean the action and chamber. (NOTE: If excessive roughness or pitting was present, you may have to stop before it is all removed. You must not enlarge the chamber past SAAMI maximum dimensions. You may wish to make a chamber cast using Brownells Cerrosafe to check chamber dimensions after polishing. If roughness or pitting is still present, it may not be possible to make a chamber cast and remove the cast from the chamber.) Lubricate the parts with a good grade of gun oil; if you plugged the tube magazine with paper towels or cleaning patches, remove the plug. Reassemble the firearm, following the manufacturer's instructions. (See the note on REASSEMBLY at the end of these instructions.)

BOLT ACTION RIFLE BOLTS

Many modern and some military surplus bolt action rifle bolts have been made with the interior of the bolt body rough enough internally that the striker spring will rub on the bolt walls as the striker moves forward. This may cause the striker to lose enough energy that misfires will result. The Flex-Hone is sized specifically for the interior of Remington M-700 rifle bolts, but can be used on many bolts with similar interior dimensions.

HOWTO USE

Remove the bolt from the rifle and remove the firing pin assembly from the bolt. Clean the interior of the bolt with a good solvent, such as Brownells TCE Cleaner-Degreaser (#080-060-024) and allow the solvent to evaporate. Determine the depth of the bolt's interior, and lay the Flex-Hone against the side of the bolt, with the front of the hone $\frac{1}{8}$ " behind the forward interior wall's position. Mark the shaft of the Flex-Hone with masking or duct tape at the rear edge of the bolt body. Care should be taken when polishing the bolt's interior to avoid striking the front wall of the bolt body with the Flex-Hone, mainly to avoid damage to the hone.

Clamp the bolt body horizontally in a padded bench vise. Use only Flex-hone Oil - use of other oils may destroy the abrasive balls. Chuck the Flex-Hone into an electric hand drill that will run up to 750 rpm. Start the Flex-Hone into the bolt with the drill's motor barely turning. When the abrasive balls are forward of the bolt's internal threads, allow the speed to climb to no higher than 750 rpm. Move the Flex-Hone back and forth inside the bolt body, keeping it moving while the motor is running. The tape on the shaft will give visual reference to prevent running the hone into the front wall of the bolt.

The Flex-Hone oil will form a slurry with the abrasive from the balls, cushioning the steel from excessive cutting action, and leaving a very fine surface finish. The Flex-Hone must NOT be allowed to cut only in one area - it must be kept moving back and forth in the bolt to avoid over-cutting in one area.

Depending on the original roughness of the bolt's interior, polish from one to five minutes. Slow the drill down to where it is barely turning and remove the Flex-Hone from the bolt. Clean the bolt with Brownells TCE, or other good quality solvent, and examine the interior. Continue polishing if it is excessively rough, remembering to re-lubricate the bolt and Flex-Hone with Flex-Hone Oil. When it is visually "OK", thoroughly clean the bolt both internally and externally, and apply a light coat of lubricant.

Reassemble the firearm according to the manufacturer's instructions. Check for proper functioning using **ACTION PROVING DUMMIES**. Make sure **ALL SAFETY MECHANISMS** are fully functional as designed and approved by the manufacturer. If these tests prove satisfactory, test-fire the firearm with live ammunition in a **SAFE** and **APPROPRIATE** manner. **IMPORTANT!** Start the live ammunition tests by first loading an **ACTION PROVING DUMMY**, then a live round, into the magazine. Only after several tests have been conducted in this manner should additional rounds be placed in the magazine and fired.