

## Supplemental Information & Instructions for 328-876 Cylinder Head Stud, Nut & Washer Set, APR Austin Healey BN4 through BJ8 w/ 6 Port Heads

### **About These Studs...**

One of our customers, a noted Healey restorer, discovered that Automotive Racing Products (ARP) had cylinder head studs that are nearly identical in size to the studs used on the 6 cylinder Healeys with 6 port heads. He has been rebuilding engines using these studs for some time now, and suggested that we add them to the list of ARP studs and bolts we already offer for other applications. The engineering, metallurgy and manufacturing processes used by ARP produce studs that are superior to the original studs in every way, and they are suitable for use in any 6 cylinder Healey engine with 6 port heads up to and including an engine prepared for racing.

### **Why Use ARP Hardware?**

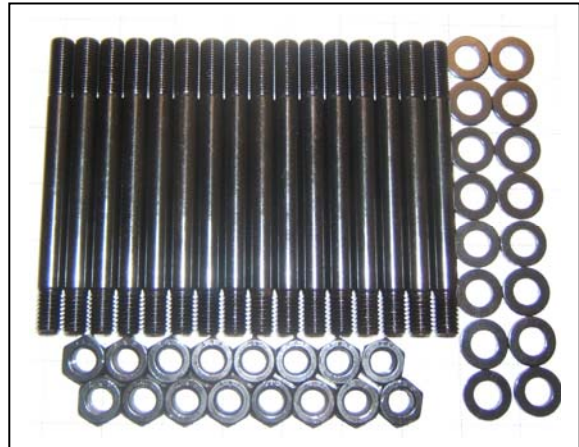
ARP uses a premium grade 8740 alloy that is rated far superior to the steel used to make standard cylinder head studs. Each blank stud (unthreaded) is placed vertically in special racks and precisely heat-treated. This procedure ensures complete heat penetration and better and more consistent results than other methods for heat treatment. The result are studs that are rated at 200,000 PSI. Following heat-treatment, each stud is centerless ground to make it as close to perfectly concentric as possible. This procedure involves about ten very slight cuts and results in an exceptionally straight part. Stock studs are not even centerless ground – the material is thread rolled in bar stock form (generally before heat-treatment, when the material is softer). Because ARP studs are manufactured to such exacting tolerances, you will find that gaskets and cylinder heads fit better, usually sliding into position smoothly and easily. Threads are rolled after heat treating. This process, which deforms the metal, produces a beneficial compressive stress in the root of the thread. It is beneficial because it counteracts the fluctuating tensile stresses that can cause fatigue cracking. If heat-treatment is done after rolling, which is not uncommon, the compressive stresses are eliminated. This reduces the fatigue resistance of the bolt. ARP studs are thread rolled after heat-treatment, which gives them about 1000% (that's ten times) better fatigue strength than those studs that are threaded prior to heat-treatment. It costs a lot more to do it this way because it's tough on tooling, but the results are well worth the extra effort. Premium quality heat-treated 8740 chrome moly steel head studs used in conjunction with quality head gaskets and properly prepared surfaces on the head and block minimize the chance of a blown head gasket. You won't find a better quality stud on the market from any other source. The ARP stamped on each stud is your assurance of quality.

### **Length**

When compared to three OE studs, it was first noted that the OE studs were all slightly different lengths, and the ARP studs are about 1/16" shorter than the OE studs. This is due in part to the fact that the OE stud has a domed end. Being a little shorter is an advantage, especially if the head has been milled because the original studs will actually hit the rockers at the end of the head in some cases.

### **What About the Pressure Relief Groove?**

Original studs and the 328-875 replacement studs we sell come with a pressure relief groove. This groove will allow any fluid (oil) trapped in the bottom of the threaded hole to escape as the stud is tightened. The groove will also collect any dirt in the threads as the stud is installed. We were concerned about this, so we discussed it with people who rebuild Healey engines professionally. It was pointed out that the holes in the block for the studs are deeper than required for the stud, and it would take a lot of oil in the hole to interfere with the stud. As a practical matter, the groove is not really necessary. Always run a tap loaded with grease down the holes to clean out the threads. Turn the block upside down on the engine stand and squirt a little carb cleaner in each hole to wash them out. Let them drain before installing the studs. By taking a little extra care, you gain all the benefits of using these studs, nuts and washers.



## Installation Notes

**The information presented here supplements the factory workshop manual. If you do not have a manual, obtain one. You cannot complete this procedure without it.**

**As with all instructions, read through these and the procedure in the workshop manual completely before you pick up a tool. If you have any doubts about your ability to complete this project, take it to a professional.**

Clean out the threaded holes in the block with a 7/16 – 14 tap. *A light coating of grease in the flutes of the tap will capture most of the dirt and metal particles knocked loose by the tap. You still need to turn the engine upside down and clean out the threaded holes when you are done.*

Coat the coarse threads with a light oil or ARP Assembly Lube for Threaded Fasteners (Moss 322-815) and install them in the block **finger tight**. *ARP studs have a hex recess in the top for an Allen wrench, which facilitates installation.*



**IMPORTANT! DO NOT TORQUE THESE STUDS INTO THE BLOCK AT 35 lbs-ft as specified in the workshop manual!** If you do, you will crack the block because there is a water gallery within a ½ inch of one of the studs, and the unthreaded section of the stud has a chamfered shoulder which acts like a wedge. **Install the studs into the block finger tight.**

Check the clearance between the top of the studs (especially at the front or back of the head) and the rockers during assembly and grind a little off the end of the studs if they touch the rockers.

Tighten the nuts on the studs following the procedure given in the factory workshop manual. Note that the upper end of the stud is left dry; the threads are not coated with oil or ARP Assembly Lube and therefore the torque specification in the workshop manual can be used.

### What About Alloy Cylinder Heads ?

Replace the washers in this kit with 328-877 Washers (also by ARP). These are 7/8" OD and 0.120" thick. They are chrome moly steel and they are parallel ground to ensure the surfaces are perfectly flat. These distribute the clamping pressure over a larger area and this is critical when using an alloy cylinder head.

*Although every effort has been made to ensure the accuracy and clarity of this information, any suggestions that you may have that will improve the information (especially detailed installation notes) are welcome. Please use the simple email form on the "Contact Us" page on the Moss website: <http://www.mossmotors.com/AboutMoss/ContactUs.aspx>  
If you prefer, you may call our Technical Services Department at 805-681-3411. So many people call us for help that we are often not able to answer the calls as fast as we'd like, and you may be asked to leave a message. We apologize in advance for the inconvenience. We will get back to you as quickly as we can, usually within 2 business days, but sometimes longer when it gets busy.*



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