



DESIGNED WITH INTEGRITY

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CADILLAC NORTHSTAR 4.6/4.0 M11X1.5 HEAD BOLT THREAD REPAIR KIT

THE *NS300L™* SYSTEM WAS DESIGNED TO NOT ONLY TO BE THE STRONGEST, MOST RELIABLE REPAIR ON THE MARKET, IT HAS ALSO BEEN DESIGNED FROM AN ECONOMICAL STAND POINT AS WELL. THIS WAS ACCOMPLISHED BY STANDARDIZING THE OUTSIDE THREAD OF ALL THE INSERTS WE HAVE AVAILABLE, ELIMINATING THE NEED TO PURCHASE A SEPARATE KIT FOR EVERY HEAD BOLT THREAD SIZE.

INSERTS ARE CURRENTLY AVAILABLE IN THE FOLLOWING THREAD SIZES:

M10X1.25, M10X1.5, M11X1.25, M11X1.5, M11X2.0, M12x1.25, M12X1.5, M12X1.75 AND 7/16-14.

PLEASE VISIT US AT HuhnSolutions.com FOR ALL AVILABLE KITS

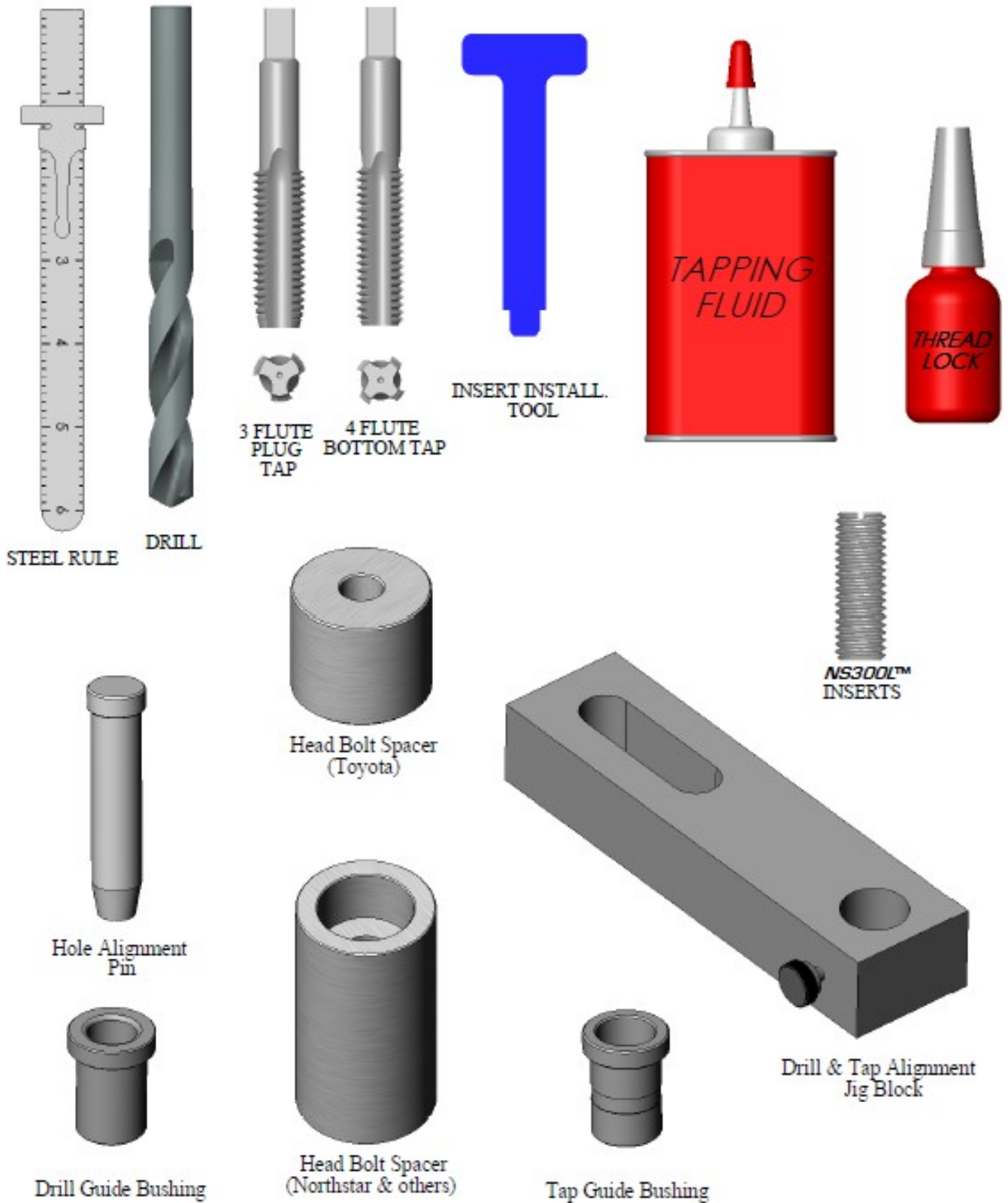
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KIT CONTENTS



NS300L™ INSERT SYSTEM

WARNING Safety glasses must be worn when drilling, tapping, or removing chips from the holes. Cutting tools are made of hardened tool steel and may shatter. If removing chips with an air hose is your only option, wrap a rag around the air nozzle to help prevent chips from blowing back into your face. NEVER use power tools to drive taps in or out of a hole! Doing so may cause the tap to grab or gall up and break, severely damaging the newly cut threads!

Caution: Many metal chips are created from the installation process. Make sure to take precautions to prevent metal chips from entering the engines coolant and oil passages.

BEFORE STARTING, PLEASE READ THE INSTALLATION INSTRUCTIONS IN THEIR ENTIRETY.

Important: All measurements are taken from the deck surface, not from the top of the jig.

******IT IS HIGHLY RECOMMENDED THAT GENUINE FACTORY OEM HEAD BOLTS BE USED WITH THE NS300L™ REPAIR, AS SOME LOW PRICED AFTERMARKET HEAD BOLTS ARE NOT THE SAME QUALITY. SOME AFTERMARKET HEAD BOLTS ARE MANUFACTURED WITH POORLY FORMED THREADS WHICH CAN CAUSE THEM TO SEIZE IN THE INSERT. OCCASIONALLY THEY ARE TEMPERED IMPROPERLY ALSO, CAUSING THEM TO PREMATURELY REACH THEIR YIELD POINT.***

******NEVER INSTALL HEAD BOLTS BY POWER DRIVING THEM WITH POWER TOOLS OR FORCING TIGHT FITTING BOLTS WITH HAND TOOLS.***

93-2011 4.6L CADILLAC NORTHSTAR 95-99 4.0L OLDSMOBILE AURORA

******Please read before repairing the 2004-2011 Northstar: Although the M11x1.5 is the preferred thread for torquing, in 2004 GM went to a M11x2.0 head bolt thread in an attempt to fix the issue of the threads stripping from the block. The NS300L™ Insert System will work very well in the 2004-2011 4.6L engine, but must be used in conjunction with the head bolts made for a 2001 Northstar. The head bolts for the 2001 Northstar are the same length and diameter as the 2004-2011 head bolts, the difference is, the 2001 Northstar has the M11x1.5 thread...the same as the NS300L™ insert. For this reason, the head bolts must be torqued to the latest specs required for the 2001 Northstar. We also have M11x2.0x1½” inserts available if you prefer staying with the factory thread size.***

Success of the NS300L™ insert kit is based on the inserts being installed correctly and square to the deck surface. Stability of the aluminum engine block can also play an important part for a successful repair. It is recommended that the inserts be installed by someone experienced in drilling and tapping holes. When installed correctly, customers have found that the NS300L™ insert system has exceeded their expectations.

***Please check for the latest GM-suggested torque specifications before tightening head bolts.**

WARNING Safety glasses must be worn when drilling, tapping, or removing chips from the holes. Cutting tools are made of hardened tool steel and may shatter. If removing chips with an air hose is your only option, wrap a rag around the air nozzle to help prevent chips from blowing back into your face. NEVER use power tools to drive taps in or out of a hole! Doing so may cause the tap to grab or gall up and break, severely damaging the newly cut threads!

Caution: Many metal chips are created from the installation process. Make sure to take precautions to prevent metal chips from entering the engines coolant and oil passages.

1. After removing the heads, remove the cylinder head alignment bushings from block (2 for each head).

2. **Figure 1A** – Install the Drill Bushing into the Jig Block, then snug it in place with the thumb screw located on the side of the Jig. Make sure the deck surface is clean. Mount the Jig Block in a good head bolt hole near the hole being repaired, using the tall Spacer (see note below), along with a **NEW** head bolt (**old head bolt threads are normally stretched out of pitch, causing them to seize in the new insert**). With the jig loose, center the Drill Bushing over the hole being repaired by install the Locating Pin through the Drill Bushing and into the top of the hole. Hold Locating Pin down firmly so that the tapered end of the pin centers itself into the top of the hole. Tighten the Jig in place, being careful not to over tighten. Remove the Locating Pin.

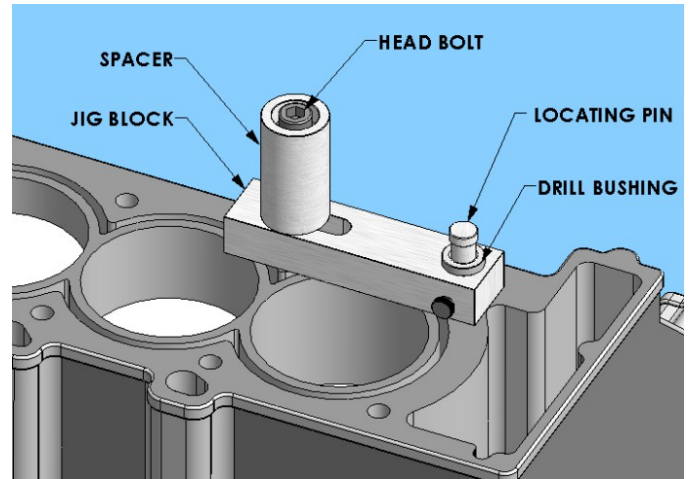


FIGURE 1A

Note: The tall spacer is designed to be used either with the recessed end facing up, or facing down depending on the engine being repaired. For 93-99 Northstars, the recessed end should be facing up for all holes. Since the 2000-2001 Northstars have two different depth holes, the recessed end should be facing up for the lower bank holes, and facing down for the upper bank holes.

Important: All measurements are taken from the deck surface, not from the top of the jig.

3. **Figure 2A**- Drill the holes using the 17/32" Drill Bit that comes in the kit. Use light penetrating oil to keep the drill lubricated. Retract the drill several times to help clear the chips from the Drill Bits flutes. After you have drilled about 2" deep, you can remove the Drill Bushing from the Jig, then drill the remainder of the hole without it. This will allow for more chip clearance. Drill to the same depth as the original holes. Do not force the drill after it reaches the bottom of the original hole.

Note: The Drill Bits cutting edges are ground to a neutral angle to help prevent it from grabbing when drilling. The tip of the Drill Bit is ground off to prevent it from drilling deeper than the original hole.

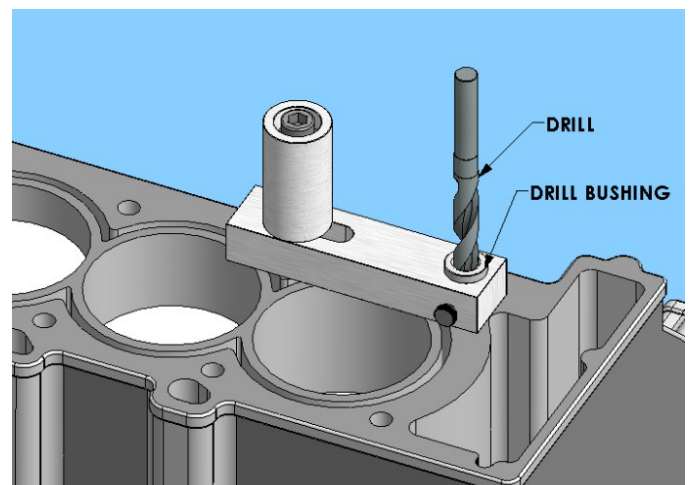


FIGURE 2A

4. Remove the metal chips from the holes. If using an air nozzle, wrap a rag around the air nozzle at the top of the hole to prevent chips from blowing back into your face.

5. **Figure 3A-** Loosen the thumb screw and replace the Drill Bushing with the Tap Bushing. Using the 5/8-11 three-flute Plug Tap, TAP MAGIC® and the proper tap wrench, thread the hole about 1½” deep. **NEVER use power tools or ratchet and socket to drive the taps! This will put unbalanced pressure on the tap causing it to break. Proper tap wrenches apply balanced pressure to the tap.** Then you can remove the jig. This will make it easier to clean out the chips when threading the remainder of the hole. You should back out the tap often and remove the chips created by the tap so that the tap will not jam them into the bottom of the hole. Failure to do so could cause the tap to break.

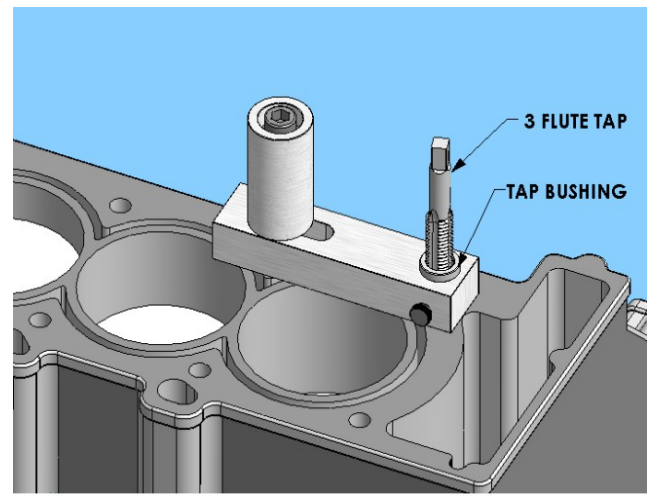


FIGURE 3A

6. The 5/8-11 four-flute Bottom Tap is only used to form the last couple of threads that the three-flute plug tap did not completely form due to its tapered end. ***The Four flute tap is not designed for heavy cutting!*** This allows the insert to be installed about ¼” deeper. Be careful not to over-tighten and break the tap at the bottom of the hole.
7. Thoroughly clean the newly threaded hole of any metal chips. Next, check to make sure the inserts will install to the correct depths (see below), ***prior*** to adding Threadlock (Figure 4).

Note! Add a light coating of penetrating oil to the outside of the insert prior to making sure the insert will screw in to the correct depths. This will help prevent the soft aluminum from fusing to the steel insert, helping to prevent the insert from seizing up, due to any left over debris in the hole, or a possible burr on the insert. Never force an insert!

8. After insert depth is confirmed, remove the insert. Clean the threaded hole and outside thread of the insert with Brake Cleaner to remove all oil residue. After the Brake Cleaner evaporates, add a couple drops of Threadlock to the newly threaded hole, approximately 1” from the deck surface. Add a bead of Threadlock around the outside of the insert about half way down the length of the insert. **DO NOT GET THREADLOCK ON THE INTERNAL THREADS OF THE INSERT.** Install the insert with the installation tool, until the insert is installed to the correct depth. ***Caution! Threadlock sets up fast! Once you start installing the insert, continue until it is installed to its final depth!*** Allow Threadlock to set for 1-2 hours before installing the head bolts. Make sure there are no sharp edges protruding up from the newly threaded holes before installing the head gaskets and alignment bushings.

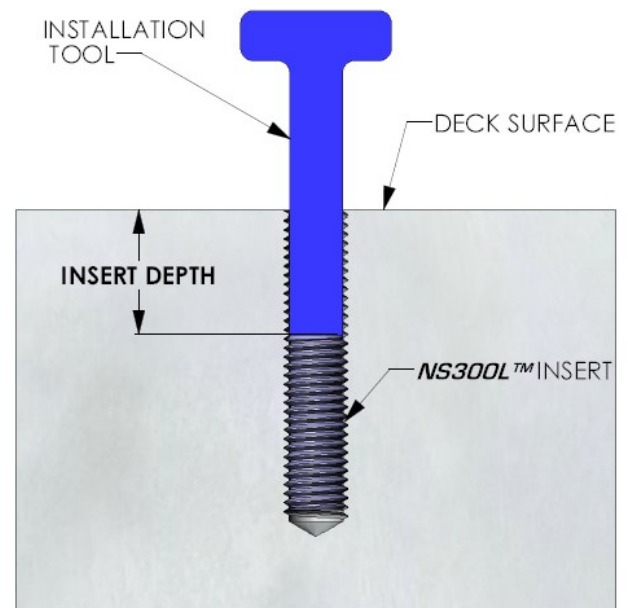


FIGURE 4

INSERT DEPTHS FOR 4.0/4.6L NORTHSTARS WHEN USING FACTORY HEAD BOLTS:

1993-1999 UPPER AND LOWER BANK= .826” (21mm).

2000-2011 UPPER BANK=.826 inch (21mm) & LOWER BANK= 1.460 inch (37mm).

If using studs such as ARP®, please contact us prior to installing inserts as modified inserts will be required and will need to be installed at different depths. We will also help you determine the correct ARP® stud kit for your application.

****Time saving tip:*** After the first insert has been installed to the correct depth, take a permanent marker and make a mark on the Installation Tool, flush with the deck surface (**2000 - 2011 Northstars have two different insert depths**). This will save time when installing the remainder of the Inserts to their correct depth(s)