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CADILLAC NORTHSTAR M11X1.5 HEAD BOLT THREAD REPAIR 93-2011 4.6L CADILLAC NORTHSTAR 95-99 4.0L OLDSMOBILE AURORA

(Please read instructions before purchasing head bolts for the 2004-2011 Northstar)

NOTE: THIS INSTRUCTIONS PACK WILL BE REFERENCED BY ALL OF OUR HEAD BOLT THREAD REPAIR KITS SINCE THE INSTALLATION COMPONENTS THEMSELVES, WITHOUT THE INSERTS ARE COMMON IN ALL KITS. ONLY THE INSERTS THEMSELVES DIFFER. THE MAIN DIFFERENCES WITH REGARDS TO THE INSTALLATION PROCESS WILL BE, THE DRILLING & TAPPING DEPTHS, AND INSERT INSTALLATION DEPTH, WHICH WILL BE SUPPLIED WITH EACH AVAILABLE KIT.

THE NS300L™ SYSTEM WAS DESIGNED NOT ONLY TO BE THE STRONGEST, MOST RELIABLE REPAIR ON THE MARKET, IT HAS ALSO BEEN DESIGNED FROM AN ECONOMICAL STAND POINT. 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. INSERT ARE CURRENTLY AVAILABLE IN M10X1.25, M10X1.5, M11X1.25, M11X1.5, M11X2.0, M12X1.5 AND 7/16-14.

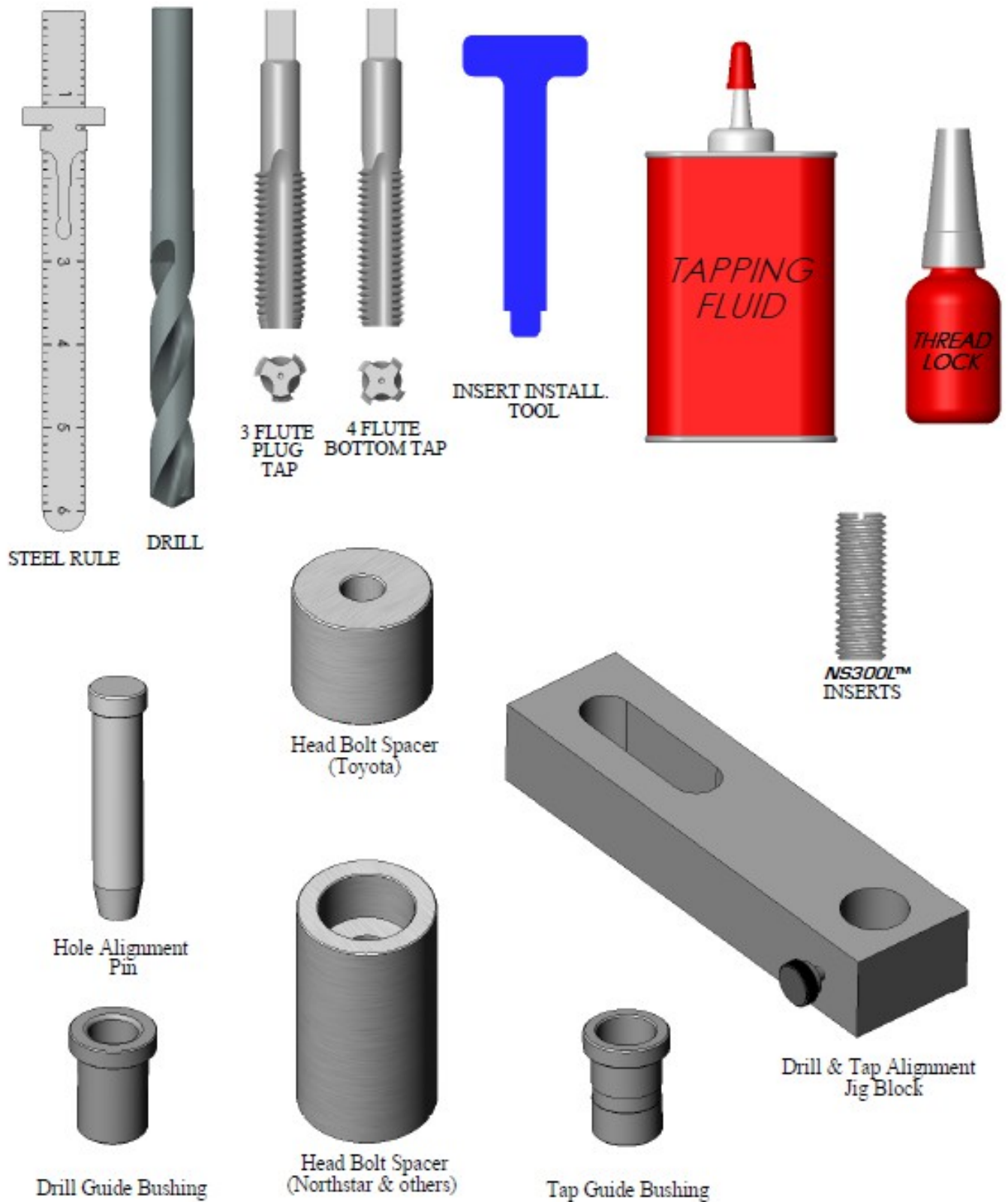
PLEASE VISIT US AT HuhnSolutions.com FOR ALL AVILABLE KITS

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KIT CONTENTS



NS300L™ INSERT SYSTEM

NORTHSTAR KIT INCLUDES:

- 21 **NS300L™** inserts
- 1 17/32" drill bit
- 1 5/8-11 three flute plug tap
- 1 5/8-11 four flute bottom hand tap
- 1 TAP® MAGIC tapping fluid
- 1 LOCTITE® 266 or Permatex® high temperature, high strength threadlock (10ml.)
- 1 Steel 6" ruler
- 1 Insert installation tool
- 1 Drill & tap alignment block
- 2 Head bolt spacers (one tall and one short)
- 1 Alignment pin
- 1 Drill guide bushing
- 1 Tap guide bushing

WARNING Safety glasses must be worn when drilling, tapping, or blowing chips from the holes. Cutting tools are made of hardened tool steel and may shatter. If removing chips with an air hose, wrap a rag around the air nozzle to help prevent chips from blowing back into your face.

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

*****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.**

*****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.**

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.**

INSTALLATION INSTRUCTIONS

WARNING! Safety glasses must be worn when drilling, tapping, or blowing chips from the holes. Cutting tools are made of hardened tool steel and may shatter. If removing chips with an air hose, wrap a rag around the air nozzle to help prevent chips from blowing back into your face.

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 and snug it in place with the thumb screw located on the side of the Jig. Make sure the deck surface is clean. Mount the Drill & Tap Jig with a good head bolt hole near the hole being repaired, using the tall Spacer (see note below) and one of the original head bolts, but do not tighten. 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 being repaired. Hold Locating Pin down firmly so that the tapered end of the pin centers itself into the top of the hole, then tighten the Jig in place being careful not to over tighten. Remove the Locating Pin.

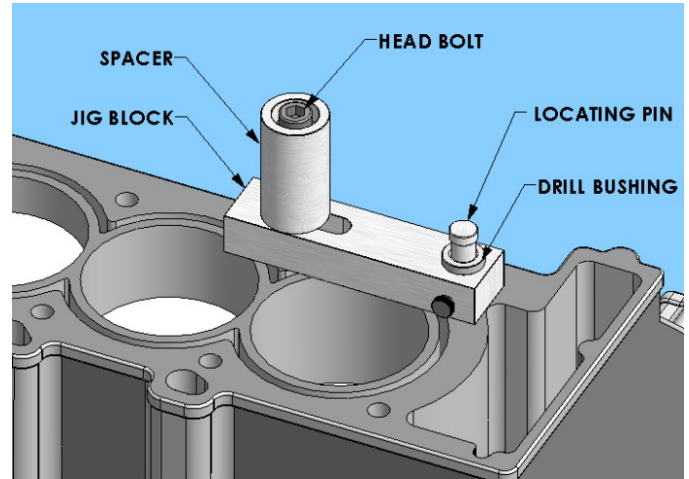


FIGURE 1A

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 2000-20011 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.

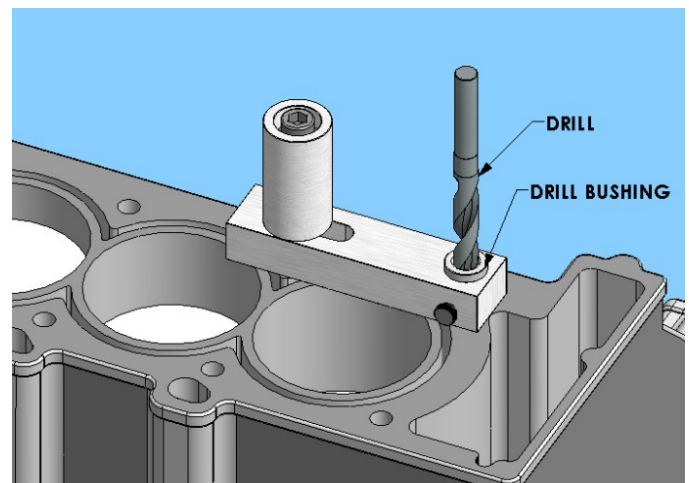


FIGURE 2A

4. Blow out the metal chips using a long air nozzle that will reach to the bottom of the holes. Wrap a rag around the air nozzle at the top of the hole to prevent chips from blowing back in 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 and TAP® MAGIC, thread the hole about 1½” deep. 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 blow out 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.

**Note: The tap will cut slightly into the diameter of the head alignment bushing seats, but not enough to effect the fit or alignment of the locating bushings when re-installed.*

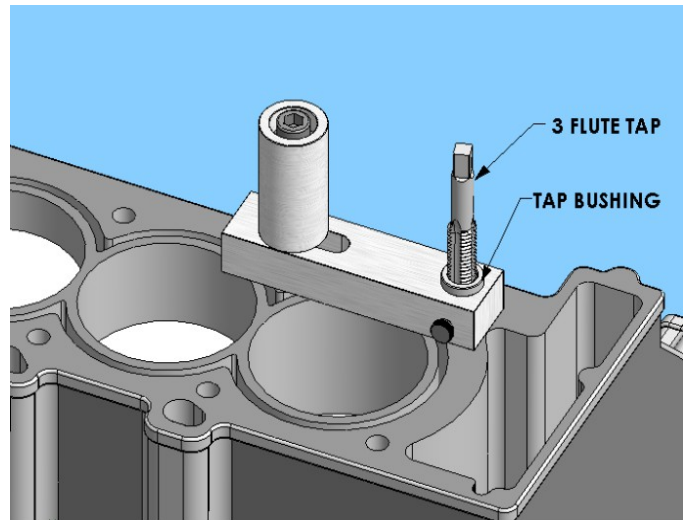


FIGURE 3A

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 it's 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. Blow all chips from newly threaded hole. Clean the threaded hole and insert with contact cleaner or brake cleaner. Check insert depth by installing an insert using using the “T” shaped Installation Tool provided in your kit *prior* to adding thread Threadlock. Measure from the top of the deck surface down to the top of the insert as shown in Figure 4. Insure that the top of the insert can be installed to the correct depth as listed below. Remove the insert. Add a couple drops of Threadlock to the newly threaded hole approximately ½” to ¾” from the deck surface. Add thread lock to the outside diameter of the insert. **DO NOT GET THREADLOCK ON THE INTERNAL THREADS OF THE INSERT.** Install the insert with the installation tool, making certain the top of the insert is installed to the correct depth as shown in figure 4. Allow Threadlock to set for 2-3 hours before installing the head bolts. Insure there are no sharp edges protruding up from the newly threaded holes before installing the head gaskets and alignment bushings.

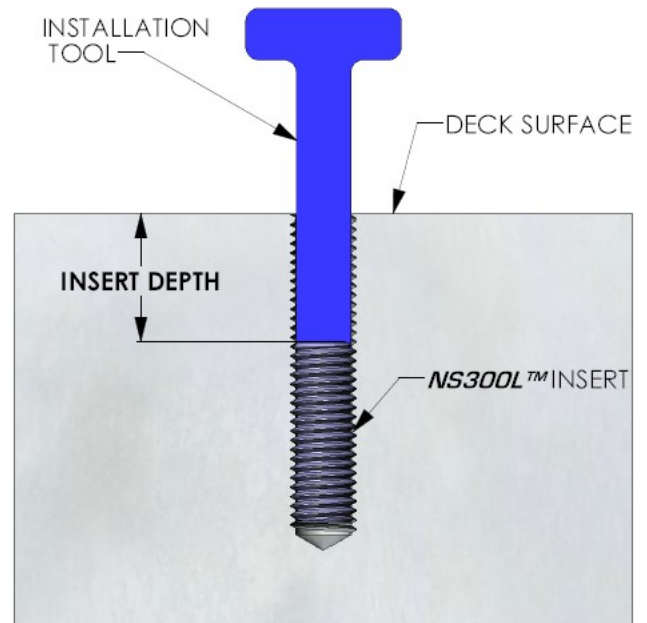


FIGURE 4

Note: When threading the lower bank holes in the 2000 – 2011 4.6L, it may be necessary to use an 11mm-12 point socket or a correct fitting 6 point socket to drive the taps to the correct depth.

INSERT DEPTHS FOR 4.0/4.6L NORTHSTARS:

1993-1999 UPPER AND LOWER BANK=1.125” (28.5mm)

2000-2005 UPPER BANK=.81 inch (20.5mm)

LOWER BANK= 1.5 inch (38mm)

***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)