



Kit #: **256-4301**

ARP2000 Head Studs

Application: Ford Coyote 5.0L (2013), M11

Bolt/Stud Strength (nominal): 220,000 psi

These installation instructions apply **ONLY** to this kit. **DO NOT** use these steps for any other ARP kit.

KIT CONTENTS

20	studs	M11x1.5 x 7/16-20, 3/16" broach
20	washers	7/16 ID x 0.995 OD washers, patterned on one side
20	nuts	7/16-20, 12pt 5/8" wrenching
2	lubricant packets	1 oz. ARP Ultra-Torque fastener assembly lubricant

TOOLS NEEDED

5/8" 12pt socket
3/16" allen wrench
torque wrench periodic recalibration is necessary to maintain accuracy
M11 X 1.5 thread chaser if needed for cleaning block threads, ARP part #912-0005 or a tap of class H3 or H4

KIT REGISTRATION

Go to tech.arp-bolts.com/register to register your kit with ARP.

This will speed technical support and allow us to notify you of any changes related to your kit.

RELATED KITS

While you are working on your engine, here are some other ARP kits that might make sense to add at the same time.

156-5803	8740 Main Stud Kit
156-2502	8740 Harmonic Damper Bolt Kit
256-1003	8740 Cam Phaser Bolt Kit, 12 bolt kit
156-1006	8740 Cam Phaser Bolt Kit, 24 bolt kit
156-2801	8740 Flywheel Bolt Kit

BEFORE YOU START

Preparation

1 **Review these instructions completely.** Failure to follow these instructions completely will void product warranty. If you have any doubts about the correct fit or installation procedure, please contact ARP technical support at 800-826-3045.

2 **Check the parts in the kit** prior to beginning any work to:

- ensure all parts are included
- look for any shipping damage or obvious defects.

3 **Use ARP Ultra-Torque Fastener Assembly Lubricant.** ARP torque values are valid ONLY when using ARP Ultra-Torque Fastener Assembly Lubricant. Using other lubricants is NOT recommended.

4 **Make sure you have the correct tools.** The required socket/wrench sizes for this kit are listed above. Please make sure you have them on hand. Trying to use sockets that are not the correct size will damage the fasteners.

5 **Clean & inspect block threads and dry fit studs.** To ensure proper thread engagement and accurate torque readings, clean all threads in the block. Chase if necessary with ARP Thread Chaser, part number 912-0005 (M11 X 1.5) or a tap of class H3 or H4. Screw each stud in until it stops and threads are fully engaged. DO NOT APPLY ADDITIONAL TORQUE to tighten the stud. Each stud should be approximately the same height from the deck to the tip of the stud. If there is an issue, recheck the threads in the block and the threads on the stud. Remove studs after completing this step.



DO NOT SKIP THIS STEP

6 **Mockup Assembly** - to quote legendary engine builder Smokey Yunick, from his book *Power Secrets*:

"I don't care who you are or what kind of engine you're building, before you even consider the 'final assembly,' you should do a complete mock-up assembly of all the engine components. If you don't, you're going to wind up putting the engine together and taking it back apart at least five or six times when you find components that don't fit properly!"

This is especially true when you are adding aftermarket components into the mix. Install the gaskets, heads and studs, install washers and spin nuts down by hand. *No lubricant or torque should be used during this assembly.* Our bolt's head height and nut/washer combination are typically taller than OEM. In particular, check the following:

- valve cover clearance
- valve train component clearance
- exhaust manifold clearance
- any other components near the cylinder heads

FINAL ASSEMBLY INSTRUCTIONS

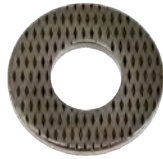
Installation Steps

7 **Clean spot faces on cylinder head.** The spot faces on the cylinder head where the washer seats MUST be completely free of oil residue. Use a clean, dry rag and a degreaser to remove all oil residue from the spot face.

8 **Remove rust-preventative oil from both sides of washers.** Use a clean, dry rag and a degreaser to remove all oil from both sides of each washer. The cylinder head and washer mating surfaces must be completely free of oil, grease and lubricant. This is to help prevent the washer from spinning during the torquing process, which will affect the final clamp load.

9 **Place the head gasket and cylinder head in position on the block.** If you cannot rotate the block on the engine stand so that the deck is horizontal, it is a good practice to use two studs to help align and secure the gasket and cylinder head.

10 **Install washers patterned side down on spot face.** Place the clean washers on the dry spot faces of the cylinder head with the *patterned side down*. The pattern grips the cylinder head – preventing the washer from spinning while the nut is being torqued. The result is accurate and consistent clamp load.



PATTERNED SIDE DOWN on dry spot face on the head

11 **Lubricate stud threads and bottom of nuts, then spin the nut onto the stud 4 or 5 turns.** With stud in hand, evenly lubricate the fine thread only and the bottom of the nut with ARP Ultra-Torque Fastener Assembly Lubricant – an acid brush works well. Spin the nuts onto the studs 4 to 5 turns leaving the nut so that there are 3 or 4 threads above the top of the stud.

12 **Screw the studs into the block hand tight. DO NOT APPLY TORQUE.** *IMPORTANT: the hex broach in the end of the stud is designed to assist with installing and removing the studs, not for applying torque.* Screw each stud in until the stud stops and threads are fully engaged. DO NOT APPLY ADDITIONAL TORQUE to tighten the stud. This puts undo stress on the block threads and the stud thread runout.

13 **Tighten the nut down onto the washer.** Using a socket with only an extension (no ratchet handle). Spin the nut down until it contacts the washer and tighten by hand until it is snug.



FINAL ASSEMBLY INSTRUCTIONS

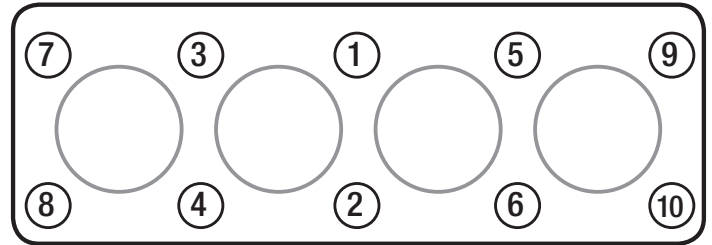
Torque Procedure

- 14a Using a calibrated torque wrench
Tighten nuts 1 through 10 to 35 ft-lbs (41 N-m)
using the sequence shown below



- 14b Starting back at the beginning of the sequence
Tighten nuts 1 through 10 to 70 ft-lbs (95 N-m)

- 14c Starting back at the beginning of the sequence
tighten nuts 1 through 10 to 100 ft-lbs (136 N-m)



CLEANUP & NOTES

- 15 Remove excess lubricant
Remove any excess ARP Ultra-Torque from the stud tips, nuts and washers using a clean, dry cloth.



- ARP head studs do not require a retorque, however, ARP considers it to be a good practice to do a cold retorque after a few heat cycles. Follow your head gasket manufacturer's recommendation for whether or not a retorque is mandatory.
Any retorquing of the head fasteners should be done on a completely cool engine.
- ARP head studs are designed to be reusable.
If any of the following conditions are noted, ARP recommends the fasteners be replaced:
 - galling on stud threads and/or nut threads is visible
 - corrosion or corrosion pitting
 - there are obvious signs the fastener has yielded - necking down or uneven threads.
 - the engine was subject to an extreme overheat