

Dynatech[®]

Competition Exhaust Systems

INSTALLATION INSTRUCTIONS

LIT-1005, REV 7



SHELBY MUSTANG GT 500

STAINLESS STEEL HEADERS

Note: We do our best to ensure the instructions in the box are the latest version. However in some cases where the system does not change for a new model year, inventory on the shelf may not have the latest version of the instruction manual. If you do not see your model or application listed above, please feel free to contact us at 800-848-5850 or sales@dynatechheaders.com for an updated instruction manual. We assure you the parts in the box are correct. The instructions may have added notes for a specific model year update.

'07 - '14

5.4 & 5.8 LITER ENGINE

PART NUMBERS

722-64310

722-64320

722-64330

722-84310

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These products are intended for racing and off-road applications. Not legal for sale or use in the state of California, nor in states which have adopted California emission standards.

Installation Instructions

Congratulations on your purchase of the Dynatech system for the Shelby Mustang GT 500. This system is second to none in quality, performance, and fit. Please read and understand each of the steps involved with the removal of your old system and the installation of your new header system prior to getting started. While slight variations in either the header or the vehicle may cause minor differences in the exact order of steps or the exact positions of components listed in this document, the following narrative and pictorial information should guide you during the removal and installation process to a completely satisfactory install of your new header system.

Dynatech highly recommends hiring a professional installer, one that is familiar with the installation of off-road exhaust products. Headers are designed to increase the performance of your vehicle, and as such are designed differently than your stock exhaust system. Extra care must be taken to ensure that hoses, cables, electrical lines, fuel lines, hydraulic lines, or any other objects are not in contact with, or located too close to your installed system. (Nothing should be allowed to touch or be located close to the header/exhaust system.)

Dynatech will repair or replace any products found upon our inspection to be defective in workmanship or material within 12 months from date of purchase for the original purchaser.

The Dynatech Team takes pride in providing the utmost in quality and performance. Should you have a concern about the product you receive, please contact Dynatech Customer Service at dynatechcs@dynatechheaders.com.

Dynatech is not responsible for any exhaust product that has been improperly installed, crashed, welded to, or modified in any way. Dynatech does not cover damage to any related components. Neither the seller nor Dynatech will be responsible or liable for any loss, damage, or injury resulting from the direct or indirect use of this product or inability by the purchaser to determine proper use or application of this product.

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What's in your new header kit?

Your exhaust system should contain all of the following parts. Please inventory each part prior to proceeding with the installation. **The system will fit up to the factory Cat-back system on 2011-2014 models. This system must be used in conjunction with an aftermarket Cat-Back system from any one of several manufacturers. Additional fabrication may be required and the owner would assume all responsibility for any fitment issues encountered. On 2007-2010 models, this system must be used.**

Parts Inventory List:

Header:

- 1 ea. Left Side (driver side) Header
- 1 ea. Right Side (passenger side) Header
- 1 ea. 18mm Tuning Bung Plug & Copper Gasket Skin Card
- 2 ea. O2 Extension Cables
- 2 ea. Cable Ties
- 1 ea. Header Gasket / Header Bolts Skin Card Includes
 - 2 ea. OEM Style Stainless Steel Header Gaskets
 - 16 ea. 8mm Header Bolts

3.0" X-Pipe Option for 2007-2010 models:

- 2 ea. PowerCATs - 3.0" x 3.0" Hi-Flow Catalytic Converters
- 1 ea. Donut Gasket Skin Card
 - 2 ea. 3" Graphite Donut Gaskets
 - 8 ea. 5/16" x 18 x 1 3/4" Cap Screws
 - 8 ea. 5/16" x 18 Top Lock Hex Nuts
- 1 ea. Left (driver side) 3.0" Interim Tube
- 1 ea. Right (passenger side) 3.0" Interim Tube
- 1 ea. 3.0" X - Pipe Section
- 6 ea. 3.0" Stainless Steel Band Clamps

3.0" X-Pipe Option for 2010-2014 models:

- 2 ea. PowerCat elbow assemblies
- 1 ea. Donut Gasket Skin Card
 - 2 ea. 3" Graphite Donut Gaskets
 - 8 ea. 5/16" x 18 x 1 3/4" Cap Screws
 - 8 ea. 5/16" x 18 Top Lock Hex Nuts
- 1 ea. 3.0" X - Pipe Section
- 2 ea. 3.0" Stainless Steel Band Clamps

Safety Notes:

While this installation could possibly be done on the floor with the use of jack stands we strongly recommend that this job be completed utilizing a hydraulic lift or have the system installed by a professional mechanic. The K-member will have to be lowered and the left (driver side) motor mount will need to be removed to facilitate tightening of the two center bolts on the left side header.

For your safety, please allow the engine to cool for a minimum of 90 minutes before starting the removal/ installation steps.

The use of safety goggles is strongly recommended, as debris may be dislodged from beneath your vehicle while removing or installing parts.

While not required, the use of cotton gloves are recommended to protect not only your hands from sharp objects under the hood and chassis of your vehicle but also keeps the oils and grease off the header's stainless steel surface possibly preventing permanent stains on the headers.

Required and Optional Tools:

Miscellaneous hand tools are required for proper installation of these headers. We have listed a few of the required and optional tools to help with your installation.

- 7/8" open end wrench or O2 Sensor Socket.
- Assorted metric sockets and wrenches (8mm – 16mm)
- Ratchet and extensions
- Torque wrench
- Rubber Mallet or Dead Blow Hammer
- Floor jack and safety stands or a hydraulic lift
- Safety glasses or goggles
- Small bottle of Anti-seize Penetrating Fluid (optional)
- Cotton Gloves (optional)

Before You Get Started:

- Take inventory of all the parts in your new system.
- Look at the tool and supply list to make sure you have all the needed tools and supplies.

Stock System Removal:

(2007-2014) Shelby Mustang GT 500 w/5.4L & 5.8L engine)

Note: The pictures in this manual are meant to draw attention to specific points and as such may or may not be exactly as they appear on your vehicle.



Under the Hood:

- Begin the removal process by removing the battery terminals.
Always disconnect the Negative terminal first and the Positive terminal last. When reinstalling – reverse this procedure – Positive first and Negative last



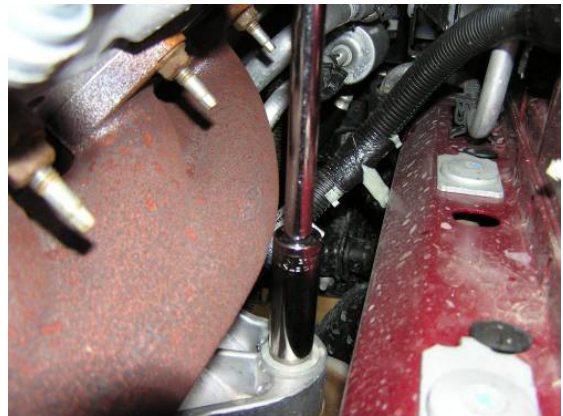
- Removal of the battery and tray provides more room to get to the manifold bolts during a later step. Remove the battery cover and tie-down, the battery, and finally remove the battery tray by removing the 3 bolts holding the tray in position.



- Slide the red retainer clip out on the MAF (Mass Air Flow) sensor and disconnect the harness.



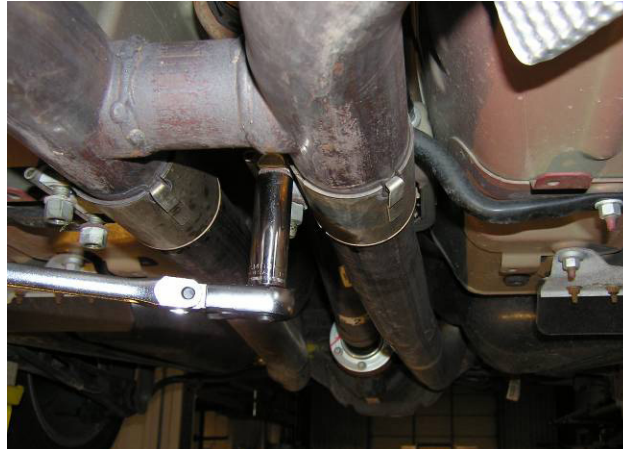
- Loosen the band clamp around the throttle body and remove the rubber tube and air cleaner box lid. Then remove the air cleaner box that is held in by one bolt.
- Remove the oil dipstick then loosen and remove the bolt holding the oil dipstick tube to the engine and finally remove the dipstick tube itself. **Use precautions to ensure no dirt or debris gets into the open hole to the oil pan.**
- While the vehicle is still on the ground, remove the top cast manifold fasteners. Loosen and remove all the nuts and studs that you can get to from the top side of the engine at this time.
- In addition, this is best time to gain access to the nuts that hold the motor mounts to vehicle frame. Remove these nuts from both the left and right sides of the engine.



Under the Vehicle:

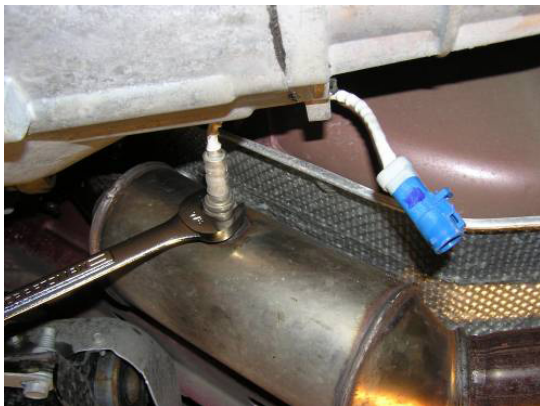
The use of penetrating oil is recommended to aid in the removal of stubborn bolts and nuts. **Do not use penetrating oil on any of the sensors throughout the system particularly the O2 sensors.**

- Raise the vehicle off the ground using a floor jack and jack stands or use a hydraulic lift. (We strongly recommend the use of a hydraulic lift.)
- Begin the under – vehicle procedures by loosening the band clamps securing the “H”-pipe to the tail pipes. Do not remove the clamps at this time.



Note: O2 sensors are delicate electronic components and should be handled very carefully. Take extra care in not contaminating the sensing end with shop towel lint, finger prints, oil, etc.

- At this time, mark their location and disconnect the 2 rear O2 sensor wires located on the lower transmission (blue connectors) and the right front (passenger side) O2 sensor located on the top of the bell housing.
- Loosen and remove the 2 rear O2 sensors from the “H”-pipe. Be sure to mark the sensors so that they can be put back in the same relative positions in the new system. The front right (passenger side) O2 sensor will have to be removed after the “H”-pipe is removed from the vehicle.



- Remove the K-Member stiffener cross brace by loosening and removing the four (4) nuts and bolts. Set the brace aside for reinstallation later.



- Remove the 2 bolts holding the down tube / “H”-pipe to the left (driver side) stock manifold. Likewise, remove the 2 bolts holding the down tube / “H”-pipe to the right (passenger side) stock manifold.
- Remove the rear tailpipe couplers that were loosened in an earlier step by inserting the flat of a screwdriver under the spring tab and twisting to release while sliding the couplers rearward. Be sure to save these couplers, they will be reused if you ever reinstall the stock system.



- The “H”-pipe assembly should be completely free to remove at this point. Do this by lowering the rear of the unit and sliding the entire assembly rearward out of the rubber hanger brackets. Lower the rear of the unit to the ground.

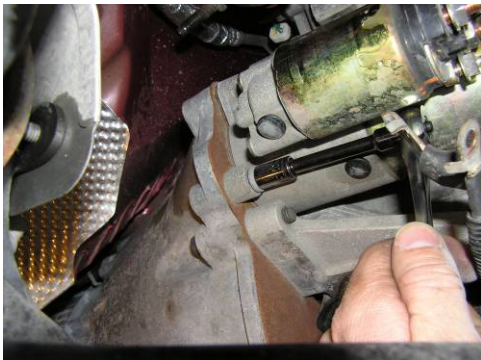


- Complete the removal of the “H”-pipe assembly by removing the unit from beneath the vehicle and then removing the right (passenger side) O2 sensor utilizing the same precautions and procedures as the other sensors list above.
- Remove the “H”-pipe assembly from beneath the vehicle, it will not be needed in your system.

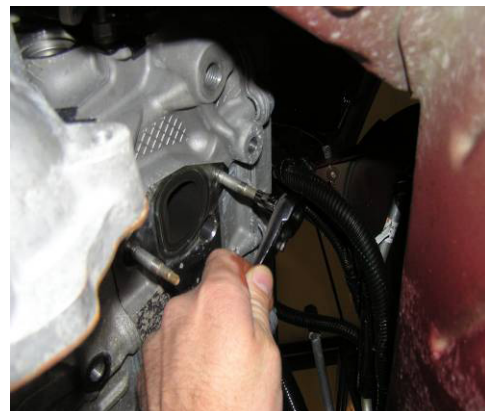
Removing the Stock Cast Manifolds

The upper manifold nuts and studs can be removed from under the hood. The bottom nuts and studs can be removed easier for beneath the vehicle. Most of these vehicles utilize 13mm nuts. The studs can be removed using a 6 point 3/16” or 5mm x 1/4” drive socket and ratchet. The 3/16” socket seems to fit a little tighter on the stubborn studs. Jamming two nuts together on a stud can help on a stud that has been rounded off. The use of a stud remover can also be of help.

- From the top side of the vehicle, disconnect the EGR nut and line from the right hand cast manifold.
- Back underneath the vehicle, remove the red plastic cap protecting the starter terminals and disconnect the wiring from the terminals.
- Loosen and remove the bolts holding the starter in position. Remove the starter. **Two of the bolts are visible; the third bolt is a blind bolt. All three must be removed to get the starter off of the vehicle.**



- Remove all of the nuts and studs holding the cast manifolds to the head on both the left and right sides of the engine. Remove the left (driver side) O2 sensor from the cast manifold utilizing the same precautions and procedures as the other sensors listed above. As all the nuts and studs are removed from the manifolds and block, lower the manifolds out of the engine bay. They will not be needed in your new system.
- Proceed to – Installing Your New Header System.



K-Member Removal Preparation

- Begin the removal process by straightening the front wheels. This positions the steering shaft for separation from the steering rack universal joint. Turn the wheels left or right enough to align the steering shaft bolt for easy removal. Remove the bolt and pull the square portion of the shaft out of the universal joint. Be careful not to turn either the wheels or the steering shaft. They must be aligned the same during reinstallation. If not, the steering wheel may have to be “re-locked” in order to function properly. With the steering shaft separated from the universal joint, lay the shaft up on the left side frame rail out of the way for the present time.
- Next remove the clamps holding the power steering rack hydraulic lines to the K-Member, the alternator, the block, and any other clamping point. Remove the clamps holding the wiring harness to the block and related engine components.
- Support the engine by placing a block across the oil pan bolt heads just behind the crankshaft pulley at the front of the engine.
- Place supports under the K-Member near the lower A-frame mounts on both ends of the K-Member. Loosen and remove the four (4) K-Member rear-most bolts (2 on each side). Next alternate side to side loosening the remaining four (4) nuts at the front of the K-Member.
- If not already complete, remove all of the K-Member bolts & nuts. Lower the K-Member down so that it is as low as possible without letting it hang on the struts.
- Locate, loosen, and remove the four (4) bolts holding the left (driver) side motor mount in position. Remove the motor mount from the left side. The right (passenger) side motor mount will be left in place.



Installing Your New Header System

Overview

While this is not an impossible install, it is somewhat more difficult than a typical Dynatech system install. Please read the instructions carefully before proceeding to get an idea of the steps involved. The vehicle K-Member will have to be lowered to get to some of the bolts on the left (driver) side header. The steps involved will be detailed as the installation proceeds.

Header Installation:

- Install the supplied O2 extensions while they can be reached before installing the headers. Plug the extension into the OEM wiring harness on either side of transmission near the top.
- Prepare all 16 header bolts with a small amount of anti-seize.
- Hold a supplied OEM style stainless steel gasket against the head and start the four (4) bottom bolts in the heads on both sides of the engine. Turn these in by hand so that there is approximately 7/16" between the underside of the bolt head and the face of the gasket as it is held against the head. (This makes tightening the bolts after the header installation easier.)
- Slip the left (driver) side header up from the bottom of the vehicle and hang it on the four (4) bottom bolts. Insert the balance of the bolts, starting them by hand to prevent cross-threading. (The second bolt back from the front can be left out at this time. It is easier to install from above.) Securely tighten all the bolts that are accessible from the bottom of the vehicle. This includes the four (4) bottom bolts and the front top bolt as well as the two (2) rear top bolts.

Note: Use of an extension, appropriate socket, and a ratchet allows access to the front bottom bolts and several of the top bolts. The bottom rear three bolts are not accessible for use with a socket. You must use a 12 point box end or open end wrench. It may be necessary to grind some of the wrench away to allow it to slip on the bolt head depending on how thick the material is around the 12 point opening.

- With all reachable bolts securely tightened, reinstall the left motor mount using the bolts previously removed. Tighten them securely.
- Raise the K-Member up into position. Reinstall the bolts & nuts. Before tightening them securely, ensure that the K-Member is positioned as far forward and to the right as the bolts will allow. Then securely tighten all of the bolts & nuts on both sides of the vehicle.

Note: Front end alignment should not have changed, however you should watch for abnormal tire wear and/or steering anomalies. Realign the front end if necessary.

- Reattach all of the clamps on the power steering rack and wiring harness.

Note: The motor and K-Member supports can be removed at this time.

- Push the motor as far to the right as possible, then install and tighten the right (passenger) side motor mount nut. Do this prior to installing the right side header. This gives maximum clearance between the left side header and the steering shaft.
- Ensure that the OEM style gasket and bolts were installed in the lower bolt holes of the right (passenger) side of the engine as instructed in an earlier step. Slip the right side header up from beneath the vehicle and let it hang on the installed bolts.
- Install any of the upper bolts that you can get to from underneath. Screw them in by hand to prevent cross-threading.

- Lower the vehicle to install the balance of the bolts on both the left and right sides. Tighten bolts alternating top and bottom until all bolts on both sides are secure.

Note: Use of an extension, appropriate socket, and a ratchet allows access to the front bottom bolt and several of the top bolts. Some of the bottom bolts will probably require a 12 point box end or ratchet wrench or an open end wrench.

- With both headers installed and fully tightened, begin reinstalling the removed components.

Left Side of Vehicle

- Reinstall the oil dip stick tube. Slip the tube down between the header flange and the header tubes into the hole in the block. A little motor oil on the oil tube o-ring will ease the insertion into the block. Make sure that the tube is fully seated, and then install the bolt through the bracket and into the head. Fully tighten the bolt. Insert the dipstick into the tube. This can be challenging, but it will fit. (Note: removing the shock tower cross-brace may provide a little extra wiggle room to help with dip stick tube installation). Replace the shock tower cross-brace if it was removed.
- Install the motor mount nut on the left motor mount and tighten securely.
- Reinstall the air box using the bolt removed earlier. Reinstall the rubber tube over the throttle body inlet, tighten the clamp, and replace the cover over the air box, and then snap the retainers in place. Reinstall the MAS connector and push in red retaining clip to secure the connection.

Right Side of Vehicle

- Connect the EGR nut to the fitting at the rear of the right side header and tighten securely. A 1-1/16" open end wrench fits.
- Raise the vehicle to begin replacing the starter. Position the starter in place and install the three (3) bolts. Use a socket and extension to install the blind bolt.
- Replace starter battery lead and control wiring on the appropriate studs and securely tighten the nuts. Replace the red plastic stud cover over the end of the wiring.
- Reinstall the K-Member cross brace. Install the four (4) nuts. Securely tighten. Lower the vehicle to install the battery.
- Install the battery box with the bolts removed earlier and tighten
- Set the battery in place, and then place the padded skirt around the battery. Install the battery hold down strap and tighten the hold down bolt to secure the battery.
- Connect the positive (red) lead to the positive battery terminal and tighten.

- Connect the negative (black) lead to the negative battery terminal and tighten.
- This completes the installation of the headers. Proceed to the Installation of the Dynatech X-pipe.

Installing The Dynatech X-Pipe

Clamp Note: In some cases it may be decided to disassemble a band clamp to relocate the heads of the bolts in a different direction. While doing this, be sure to correctly orient the center part of the clamp. If it is oriented incorrectly it will cause an exhaust leak. (See photos below)

Correct



Incorrect



- Begin by installing the “Donut Gaskets”. Slip one (1) ea. over the end of each collector.
- Apply a small amount of anti-seize on each of the eight (8) 5/16-18 x 1.75” hex head cap screws.
- Position the PowerCat inlet or PowerCat elbow assembly end over the donut gasket. Install four (4) of the hex head cap screws from the previous step through the slip ring on both the collector and the converter. The bolt heads should face forward. Install top-lock nuts on each of the bolts. Tighten two (2) adjacent bolts so that approximately ½” of thread protrudes beyond the end of the nut. Swivel the slip rings around so that the two (2) tightened bolts/nuts are on top of the collector. Tighten the remaining two (2) bolts. The converter should still have a small amount of movement for adjustment during a later step. Perform the same procedures on the opposite side.

For 2011-2014 models.

- With the PowerCat elbows assemblies installed, slide the band clamps on the elbows and install the x-pipe. Support the center of the x-pipe and raise it into position to line up with the factory cat back. Install the x-pipe into the factory cat backs band clamps.
- Align the system and tighten all of the cat bolts to the headers and then tighten the factory band clamps.
- Install the front O2 sensors in the collector bungs. Be sure to observe the front/rear and side to side relationships as marked when they were removed from the stock system. Place the front, right O2 sensor in the front bung of the collector.

- Install the supplied 18mm bung and copper gasket in the rear tuning bung of the right side collector.
- Route the wiring away from hot or moving components. Use tie wraps to secure the wiring.
- Connect the wiring harness to the O2 sensor cables. (The main connecting clip properly aligns the male and female plug. The secondary keys on the plug may have to be clipped or filed off for the connectors to mate properly.)
- This completes the installation of your new exhaust system. Proceed to “Final Checks”

For 2007-2010 models.

- Locate the interim tubes, two (2) each, a left and a right. With the system lying flat, identify the interim tubes from viewing the X-pipe and interim tube from the rear of the part. The interim tubes should have the 3/8" rod hangers welded on the bottom of the elbow rod bent upward and forward.
- Insert the interim tubes or PowerCat elbow assembly into the X-pipe. Apply a small amount of white grease or oil to hanger rods to lubricate the rods, thereby easing the insertion into the rubber hangers on the transmission cross-member. Insert the interim tubes to the back of the converters and the hanger rods into the rubber hanger on the transmission cross-member. If necessary reform the two hangers to align with the outlets of the PowerCats and the rubber support hangers. Support the rear of the X-pipe until the balance of the system is installed.
- Install the tailpipe and muffler sections of the aftermarket system. Do not install the tubes between the x-pipe outlets and the over the axle tubes at this time.
- In all likelihood you will need to fabricate the connection between the x-pipe and the over the axle tubes. Hold the tube that connects between the x-pipe and the mating part in the rear. Mark the cut-off point. Make sure you mark it so that the cut end will extend completely into the expansion on the x-pipe outlet. Cut appropriately.
- Likewise mark the other side and cut it appropriately.
- Install all of the tubular and muffler components.
- Begin at the back of system. Align the mufflers and tailpipe tips and tighten the clamps. Be sure that the muffler hanger rods are forward enough in their rubber grommets to prevent rattling on the body.
- Install the stainless band clamps at each of the six (6) joints. (2 ea. at the rear of the converters, 2 ea at the x-pipe inlets, and 2 ea. at the x-pipe outlets.) Level the x-pipe in the vehicle. Be sure to orient the “step” properly. Orient the bolts of the clamp to provide maximum ground and frame clearance. Tighten these clamps securely.
- Install the rear O2 sensors in the x-pipe bungs. Be sure to observe the front/rear and side to side relationships as marked when they were removed from the stock system.

- Install the front O2 sensors in the collector bungs. Be sure to observe the front/rear and side to side relationships as marked when they were removed from the stock system. Place the front, right O2 sensor in the front bung of the collector.
- Install the supplied 18mm bung and copper gasket in the rear tuning bung of the right side collector.
- Route the wiring away from hot or moving components. Use tie wraps to secure the wiring.
- Connect the wiring harness to the O2 sensor cables. (The main connecting clip properly aligns the male and female plug. The secondary keys on the plug may have to be clipped or filed off for the connectors to mate properly.)
- This completes the installation of your new exhaust system. Proceed to “Final Checks”

Final Checks:

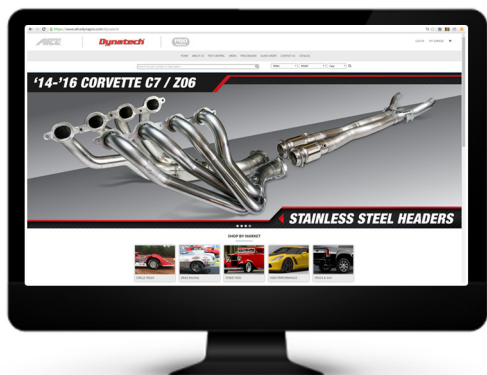
- Check all work for completeness, bolts tightened, connectors connected, lines replaced and clamped etc. Check that no wires or lines are close to the headers where heat damage could occur or near moving parts where they could be pinched or cut. Check for misplaced tools and rags and check for oil leaks etc.
- Once again, verify that all hoses, cables, electrical lines, fuel lines, hydraulic lines, or any other objects are not in contact with, or located too closely to your installed system. (Nothing should be allowed to touch or be located close to the header/exhaust system.)
- Start the engine. Observe the “Check Engine Light”.

Note: In some instances you may experience a check engine light after the installation of an aftermarket exhaust system. If this occurs please contact Dynatech at 1-800-848-5850 and ask for customer service or e-mail dynatechcs@dynatechheaders.com.

- Listen for any exhaust leak “ticking” sounds. Check around each clamp and gasketed joint for leaks. If any are found, check to see that the gasket is properly installed and the joint or clamp is tightened properly.

This completes the installation of your system. Go back over all the connections to check tightness, tube clearances, and brackets before starting the vehicle. Once you are satisfied that the system is correctly aligned and tightened, start the engine and check for leaks. If any are found, retighten the fasteners around the clamp at issue. All fasteners should be rechecked after the system has gone through several thermal cycles.

We make every effort to build our products to the highest standards of workmanship and materials possible. This also applies to our documentation. If you find points in our instruction manual that you feel need to be clarified or changed, please e-mail us your comments at dynatechcs@dynatechheaders.com. We will use them to enhance our documentation.



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