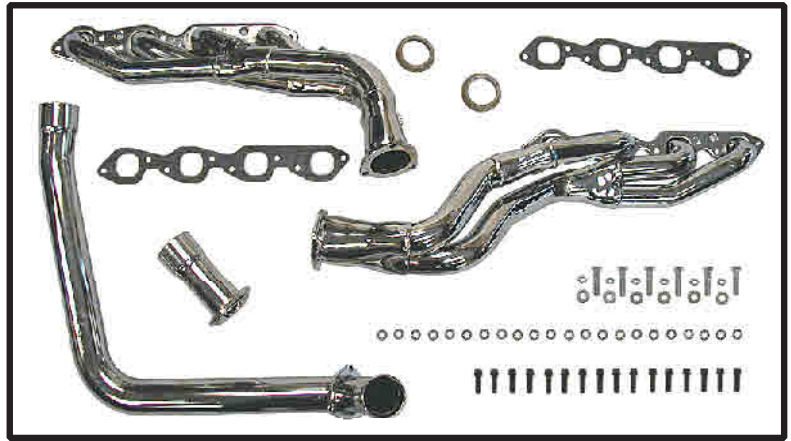


DOUG THORLEY HEADERS

BY SUMMIT INDUSTRIES

THY-397Y

CHEVROLET 454 VORTEC
96-98 4WD PICKUP



PARTS INCLUDED

- 1 - Right side header
- 1 - Left side header
- 2 - Connector pipes
- 2 - Header gaskets
- 2 - Conical gaskets

HARDWARE INCLUDED

- 16 - 3/8"-16 x 1" Header bolts
- 22 - 3/8" Star lock washers
- 6 - 3/8"-16 x 1-3/4" Hex head bolts
- 6 - 3/8"-16 Hex nuts
- 6 - 3/8" Flat washers

TOOLS REQUIRED

- Heating torch
- Mig welder
- Cut-off saw
- Sawzall
- 3/8", 7/16", 9/16", 1/2", 3/4", 7/8" Wrenches
- 10mm, 13mm Wrenches
- 9/16" Line (flare nut) wrench
- 5/16", 7/16", 1/2", 9/16" Sockets
- 3/8", 7/16" Deep sockets
- 15mm Deep socket
- 5/8" Spark plug socket
- Ratchet and extensions
- Pliers
- Crescent wrench
- Torque wrench
- Rust penetrant
- High-temp sensor-safe silicon sealer (rated at 600 degrees+)

WARRANTY NOTES

- 1) The utmost care is taken at Thorley Headers to maintain the highest standards of quality. However, Thorley Headers cannot control the installation of the product. For this reason, the Thorley Headers warranty covers only the replacement of the components - not the labor for the installation.
- 2) The use of any type of "header wrapping" voids the warranty. Using any sort of wrapping material on the headers destroys the tubing's ability to dissipate heat, causing very rapid deterioration of the metal and the subsequent failure of the headers.
- 3) The chrome plating applied to all Thorley headers is a high-nickel chrome finish applied to retard corrosion. This is a "heat" chrome to preserve the metal. This finish is not "show chrome" intended for the sake of appearance. This high-nickel chrome turns colors and approaches black as it cooks into the metal. The brilliance of the chrome finish is not covered under the warranty. Contamination of the surface by foreign substances may produce other color patterns. This can be prevented by routine cleaning.

THY-397Y

CHEVROLET 454 VORTEC
96-98 4WD PICKUP

WARRANTY NOTES

- 4) Retain all paperwork pertaining to the purchase of your Thorley product. Save your receipt!
Your limited warranty is not valid without a receipt of purchase.

LEGALITY NOTE

The installation of headers onto any vehicle must be performed in accordance with all governmental regulations that might pertain to the particular vehicle receiving the headers. Please call your Thorley Headers distributor if there are any questions regarding the legality of the installation. **The Executive Order (“E.O.”) number for this part number is D-540.**

INSTALLATION NOTES

- 1) It is important that you read the entire instruction sheet before initiating any installation.
- 2) Thorley headers are designed to fit only factory installed engine and transmission combinations. We cannot guarantee that Thorley headers will fit in the case of “engine swaps” or “transmission swaps”.
- 3) Due to restricted room in the engine compartment, your headers may come close to certain body and chassis components. This is normal for an installation of this type. However, a careful inspection must be completed to insure that the distances and placement are reasonable and logical, especially with regard to electrical, fuel, and brake components.
- 4) Because of the requirement to raise the engine to facilitate header installation, the engine mounts should be carefully inspected at that point of the installation. It is highly recommended that questionable or deteriorated engine mounts be replaced during the installation of the headers. In some cases, the engine mounts need to be loosened and repositioned to provide optimum header clearance from some components.
- 5) Because of car-to-car variations, Thorley Headers strongly recommends that these headers be installed by a competent exhaust shop that has welding and fabrication capabilities.

INSTALLATION PROCEDURES

WARNING! - Do not rely on bumper jacks or chassis jacks for support during header installation. The subject vehicle should be raised and supported with jacking equipment and jackstands or ramps intended for undercarriage auto maintenance. It is extremely dangerous to work under an improperly raised and/or supported vehicle.

WARNING! - Make certain there is ample clearance around components such as brake lines, brake proportioning valves, fuel lines, hoses and pumps, and electrical components and wires. In some cases it may be necessary to relocate items that may be adversely affected by exhaust system heat.

NOTE: These procedures are documented on factory standard-equipped vehicles with original configuration compliance. Any modification of the subject vehicle may dictate modification to these procedures.

- 1) Disconnect the battery.
- 2) Raise the front of the vehicle approximately 24 inches and support it with jack stands or other suitable supports. (**WARNING!** - Do not rely on bumper jacks or chassis jacks for support during header installation. The subject vehicle should be raised and supported with jacking equipment and jackstands or ramps intended for undercarriage auto maintenance. It is extremely dangerous to work under an improperly raised and/or supported vehicle.)
- 3) Spray all exhaust component fasteners with rust penetrant and allow it to soak. (Note: High-mileage vehicles may require soaking overnight and/or multiple doses of penetrant.)
- 4) Remove the air cleaner and ducting. It is recommended that you cover the throttle body air intake to prevent contamination.
- 5) Locate the oxygen sensors in front of the catalytic converters. Disconnect the oxygen sensor wiring at the wiring loom end, and remove the wiring from any tie-downs that are present so that the wiring is free to rotate with the oxygen sensor. (Note: The wiring does not come off at the oxygen sensor itself.) Remove the oxygen sensors.
- 6) Cut the stock driver side head pipe approximately 1" in front of the forward catalytic converter body weld. Disconnect the fasteners at the bottom of the stock driver side exhaust manifold and remove the head pipe.

**CHEVROLET 454 VORTEC
96-98 4WD PICKUP**

- 7) Locate the dimple, or flat spot, on the stock passenger side head pipe. Cut the stock passenger side head pipe approximately $\frac{3}{4}$ " in front of the dimple (well into the round section). Disconnect the passenger side fasteners and remove the stock passenger side head pipe.
- 8) Remove the spark plug wires, noting their locations for reinstallation.
- 9) Remove the spark plug wiring looms and the dipstick tube bracket bolt. Unplug any temperature sensor wiring that may be associated with the spark plug wiring. Lay the spark plug wiring harness back out of the way to prevent possible damage.
- 10) Remove the top row of exhaust manifold-to-head bolts. Remove the spark plugs and heat shields. Pay close attention to the stud that secures the top half of a two-piece dipstick (if applicable), as this stud will be re-used with the headers. Remove the top half of the two-piece dipstick, if applicable.
- 11) Loosen the air injection harnesses (smog fittings) at the exhaust manifolds and disconnect the hoses. (Note: It is not necessary to remove the harnesses until the exhaust manifolds are off the vehicle.) Remove the driver side EGR feed tube.
- 12) Using a twisting motion, pull the engine oil dipstick out of the block and set it aside. Ensure that the dipstick tube O-ring is retained (it is frequently found sitting in the top half of the dipstick tube hole in the engine block after the tube is removed).
- 13) Remove the remaining exhaust manifold bolts and remove the stock exhaust manifolds.
- 14) Clean all traces of carbon deposits from the cylinder head exhaust port surfaces.
- 15) Trial fit the air injection harnesses onto the headers with the headers off the vehicle, and make any necessary adjustments or modifications. Do not install the harnesses on the headers at this time.
- 16) (Note: The use of high-temp sensor-safe silicon sealer between the header flange and header gasket is highly recommended.) Install the driver side header and supplied header gasket from below the vehicle using the supplied $\frac{3}{8}$ "-16 x 1" header bolts and star lock washers. Do not tighten at this time.
- 17) With the header loosely in place, install the EGR feed tube onto the fitting on the header.

THY-397Y

**CHEVROLET 454 VORTEC
96-98 4WD PICKUP**

- 18) Tighten all driver side header bolts to 35 ft/lbs.
- 19) Reinstall the driver side spark plugs, wiring, and looms.
- 20) Reinstall the driver side air injection harness and tighten. Reconnect the feed hose and reinstall any clamps (if applicable).
- 21) (Note: The use of high-temp sensor-safe silicon sealer between the header flange and header gasket is highly recommended.) Install the passenger side header and supplied header gasket from below the vehicle, using the supplied 3/8"-16 x 1" header bolts and star lock washers. Tighten all passenger side header bolts to 35 ft/lbs.
- 22) Place the dipstick tube O-ring onto the bottom of the dipstick tube, and reinstall the dipstick.
- 23) Replace the passenger side spark plugs, wiring, and looms. Reinstall the dipstick mounting hardware. (Note: The dipstick tube may require careful, slight bending to conform to its new location. Allow at least 1/4" of space between the dipstick and headers.)
- 24) Replace the passenger side air injection harness and reconnect the feed hose.
- 25) Snap the steel flanged end of the supplied conical gaskets into the header collectors.
- 26) Attach the supplied connector pipes to the appropriate collectors using the supplied conical gaskets, 3/8"-16 x 1-3/4" hex head bolts, nuts, and washers. (See Illustrations, Figure 1 for a view of the assembled system.) The exhaust system should be hanging centered or slightly forward on the hangers at this point. Ensure there is adequate room for travel on the hangers, as the exhaust system will increase in length as it heats up and expands. If necessary, make a second adjustment cut on one or both stock head pipes.
- 27) With the connector pipes in place appropriately, weld the supplied connector pipes to the catalytic converters. Weld as far as possible around the junction, then disconnect the catalytic converters from their hangers to complete welding the full circle.
- 28) Reinstall the oxygen sensors. Remove any covering placed over the air intake in Step 4 and reinstall the air cleaner and ducting.
- 29) Reconnect the battery. Start the engine and check for leaks.

THY-397Y

**CHEVROLET 454 VORTEC
96-98 4WD PICKUP**

- 30) Because the header bolts will initially stretch when hot, we recommend adhering to the following steps:
- a) Retighten the header bolts to 35 ft/lbs after approximately twenty minutes of operation.
(Note: Remember the engine will be hot at this time. Protect yourself accordingly.)
 - b) Check and retighten the header bolts to 35 ft/lbs after the first month of operation.

ILLUSTRATIONS

FIGURE 1

