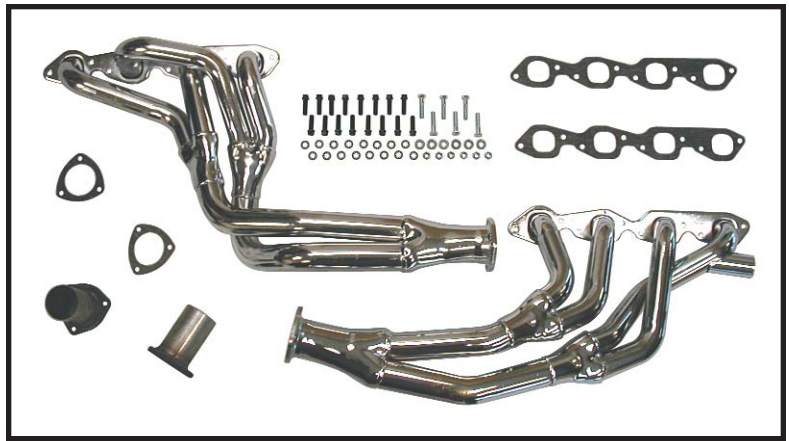


DOUG THORLEY HEADERS

BY SUMMIT INDUSTRIES

THY-304Y / THY-304Y-S

CHEVROLET 366-502
73-87 4WD PICKUP, SUBURBAN,
BLAZER, JIMMY



PARTS INCLUDED

- 1 - Right side header
- 1 - Left side header
- 2 - Reducers
- 2 - Header gaskets
- 2 - Collector flange gaskets (2-1/2" I.D.)

HARDWARE INCLUDED

- 16 - 3/8"-16 x 1" Header bolts
- 16 - 3/8" Star lockwashers
- 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.

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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. This part number is considered a legal replacement part on vehicles that do not have a catalytic converter, as long as all original emission control devices are connected and functioning properly. As a result, **this part number does not require an Executive Order (“E.O.”) number.**

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.

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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.

NOTE: All Thorley headers featuring air injection options are designed to accept the most readily available original equipment manufacturer's looms. Should your stock looms not match the fittings on the headers, or should you suspect that your original looms will not survive the re-installation onto the Thorley headers, your local GM parts department may be able to provide replacements using these part numbers:

THY-304Y-S driver side - 333827, passenger side - 357106.

- 1) Raise the vehicle at least 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.)
- 2) Disconnect the battery.
- 3) Remove the air cleaner assembly.
- 4) Remove the engine oil dipstick.
- 5) Remove the stock head pipes from the exhaust manifolds. Check for a heat riser valve attached to the bottom of the stock manifold.

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- 6) If the vehicle is equipped with a two-piece engine oil dipstick tube, remove the bolt that secures the bottom half to the engine block.
- 7) If the vehicle is equipped with a one-piece oil dipstick tube, carefully thread a ¼” bolt (of at least 1” in length) into the top of the tube to prevent it from being crushed during removal. Then twist the tube with a pair of pliers (affixed to the part of the tube with the bolt in it) to remove it.
- 8) Remove the bottom row of valve cover stud nuts (or bolts) in order to free up the spark plug wire looms.
- 9) Note the spark plug wire locations and disconnect them from the spark plugs.
- 10) Leaving the spark plug wires in their stock looms, slide the looms up and off the valve cover studs, and secure the wires out of the way.
- 11) Remove the top row of exhaust manifold-to-head bolts. Mark and remove the spark plug heat shields. (If applicable, pay close attention to the stud that secures the top half of the two-piece oil dipstick tube. This stud will be re-used with the new headers. Remove the top half of the two-piece dipstick tube at this time.)
- 12) Remove the spark plugs.
- 13) If applicable, remove the A.I.R. harnesses (smog pump fittings) from the stock exhaust manifolds.
- 14) Remove the bottom row of exhaust manifold bolts, and remove both stock exhaust manifolds.
- 15) Separate the stock head pipes from the remainder of the exhaust system.
- 16) Clean all traces of carbon deposits from the exhaust port surfaces of the cylinder heads.
- 17) If applicable, trial fit the A.I.R. harnesses to the headers before installing the headers. Make any necessary modifications or adjustments, then remove the harnesses before installing the headers.

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- 18) (Note: The use of high-temp sensor-safe silicon sealer between the header flanges and header gaskets is highly recommended.) Place the headers and supplied header gaskets into position from below the vehicle using the supplied 3/8"-16 x 1" header bolts and star lock washers. Snug down, but do not fully tighten at this time. (Note: In some cases the header gaskets must be notched to clear air conditioning brackets.)
- 19) If applicable, loosely trial fit the A.I.R. harnesses on the headers. Do not tighten.
- 20) Check all components for proper orientation and alignment.
- 21) Cut the existing exhaust system so that it is **slightly longer than necessary** at this point. (Note: Ensure there is adequate clearance for all fuel, brake, and/or electrical lines.)
- 22) On vehicles with a two-piece dipstick tube, install the lower half of the tube into the oil pan. Install the dipstick tube bracket bolt and tighten.
- 23) On vehicles with a one-piece dipstick tube, install the dipstick tube at this time. (Note: Care should be exercised to prevent crimping of the dipstick tube during re-installation.)
- 24) Tighten all header bolts to 35 ft/lbs.
- 25) If applicable, securely tighten all A.I.R. harness hardware.
- 26) On vehicles with a two-piece dipstick tube, install the top half of the tube into the bottom half.
- 27) Reinstall the spark plugs.
- 28) These headers have been designed so that use of the stock spark plug heat shields is optional. (Note: Stock heat shields will not fit 1993 and later models with these headers installed.) If you choose to use the stock heat shields, remove the upper header-to-head bolts and install the stock spark plug heat shields.
- 29) Reinstall all emission hoses and clamps.
- 30) Reinstall the spark plug wires and wiring harnesses. (Note: Tie back any wire that comes within one inch of any header tube or A.I.R. harness.)

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- 31) Reinstall the air cleaner and engine oil dipstick.
- 32) Snap the steel-flanged end of the supplied conical gaskets into the collector flanges of the headers. Attach the supplied reducers to the header collectors using the supplied 3/8"-16 x 1-3/4" hex head bolts, nuts, and washers. (Note: The use of high-temp sensor-safe silicon sealer is highly recommended.)
- 33) Weld the reducers to the exhaust system.
- 34) Reconnect the battery. Start the engine and check for leaks.
- 35) 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.

Heat Riser Information

What is a heat riser?

The heat riser is a valve that closes off the exhaust on one bank of a V8's cylinders when the engine is cold. This routes the hot exhaust gases from the closed-off bank through the exhaust cross-over at the center of the intake manifold, and out through the exhaust manifold on the "open" side. The exhaust heat helps the gasoline in the cold intake manifold reach evaporation temperature more quickly, eliminating "puddling" of raw gasoline in the intake manifold and making the vehicle much more driveable when it is cold. As the engine warms up, the valve opens, allowing the exhaust to flow out through both headers.

What is an "E.F.E. valve"?

"E.F.E." stands for Early Fuel Evaporation, and "E.F.E. valve" is often considered to be another name for the heat riser. However, some vehicles have what is referred to as an "E.F.E. *system*". An E.F.E. system might include both a heat riser in the exhaust manifold, and a hot air pickup that draws the engine's intake air across one of the exhaust manifolds to preheat it during cold start conditions. Whatever combination your vehicle came equipped with in its stock configuration is what must be reinstalled and reconnected when Thorley headers are installed in order for your vehicle to be smog legal. If in doubt, consult your new-car dealership parts department or an authorized smog inspection/maintenance station.

What controls the operation of the heat riser?

There are two types of heat risers: mechanical and vacuum. The mechanical types use a bi-metallic strip which works like a heat-sensitive spring, opening the valve when it gets hot enough. The vacuum type uses a vacuum canister similar to the vacuum advance on an ignition distributor. Vacuum routed through a heat-sensitive switch (usually monitoring engine coolant temperature) pulls the valve closed when the engine is cold, and then allows it to open by shutting off the vacuum supply when normal operating temperature is reached.

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Heat Riser Installation Variations

