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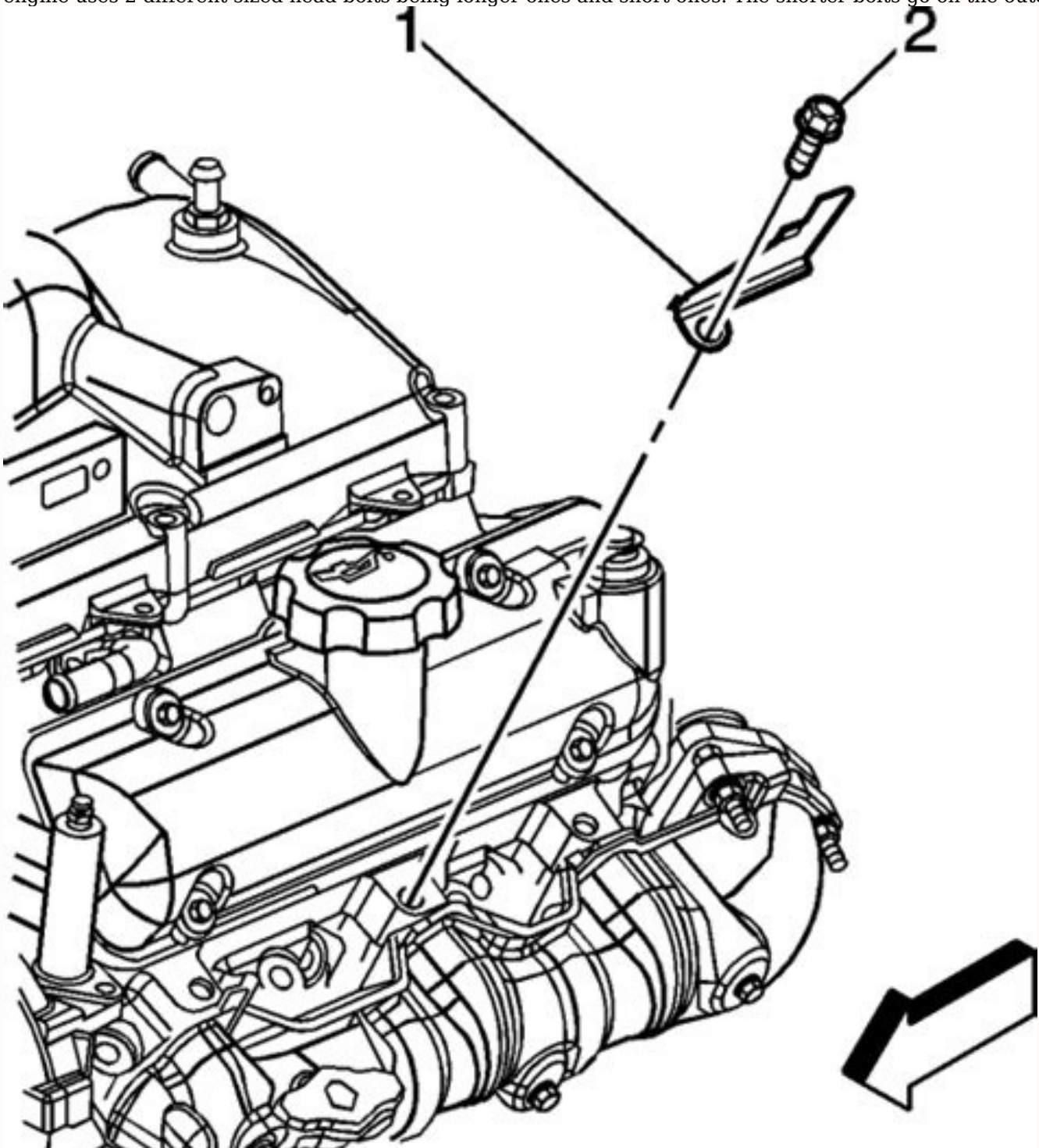
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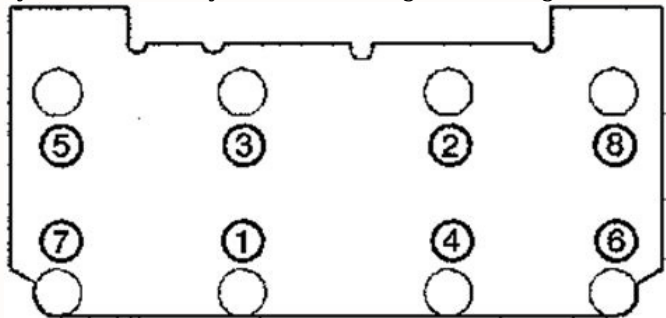
## 2012 chevy equinox 2.4 head bolt torque specs

Click the area you are looking for!Chevy Equinox 2.4L DOHC Engine Repair InformationHere you can find information regarding the assembly of the Chevy 2.4L DOHC engine. In this guide we will start from the inside of the engine including the crankshaft, connecting rods, and piston ring installation and then move outwards all the way to the pulley belt system. Along the way correct procedures and torque specs will be given to aid in the assembly of the engine. Feel free to start from the beginning and work your way outwards or skip ahead to your current position in the engine for what you may need.Crankshaft Main Caps InstallationThe 2.4L engine block main bearing caps should be inspected for any defects or flaws before installation. Be sure to lubricate the bearing surfaces prior to installation. Once prepared you can place the caps onto the crankshaft and begin tightening the bolts down in a multi stage process. The first being 10 ft-lbs starting from the middle and going outwards. The second time around you can go to 15 ft-lbs and then for the third time you turn each bolt an additional 70 degree turn. Be sure to go through each bolt during each step and work your way from the inside or middle caps to the outside or outwards bearing caps. Once finished you should be good to continue with the rest of the engine.Chevy Equinox 2.4L DOHC Main Cap Torque Specs : 15 ft-lbs + 70°Piston and Connecting Rod InstallationTo install the pistons and connecting rods you must first install the piston rings into each piston. Be careful not to stretch the rings or break them during installation. Make sure to put the correct rings in the correct positions, this can be determined by looking at the instructions given with the new rings. Each ring manufacturer is different so be sure to check for your specific rings. Once the rings have been installed you can now fit the connecting rod bearings into the end caps and lube them up with oil or lithium grease. The piston can now be lowered into the cylinder, make sure the dot or mark is facing the front of the engine and that you don't scratch the cylinder. Once installed you can match the connecting rod caps with the correct rods and start to torque the connecting rod bolts to 10 ft-lbs and then to 18 ft-lbs followed by an additional 100 degree turn for each bolt. After all are done rotate the crank to ensure all pistons move smoothly in and out of their cylinders and nothing binds.Chevy Equinox 2.4L DOHC Connecting Rod Torque Specs : 18 ft-lbs + 100°Oil Pump InstallationWhen installing the oil pump be sure to use the proper sealant around the pump base if necessary to ensure that oil pressure doesn't drop due to leakage. Both surfaces should be cleaned and prepped prior to installing. After preparing the contact surfaces carefully install the oil pump onto the timing cover and apply an ample amount of lubrication to the pumps gear and drive system. You want to ensure that when the engine first starts that there is plenty of lubrication already at the pump. Once lubed up you can install the oil pump cover to the timing cover and torque down the cover bolts to 8 ft-lbs. From here make sure that the pumps drive turns smoothly so that when it is installed onto the crankshaft there will not be any issues with alignment. I always put a little bit of oil on the crankshaft seal to ensure that when you install the timing cover it seats properly.Chevy Equinox 2.4L Oil Pump Cover Torque Specs : 8 ft-lbsCylinder Head InstallationThe first thing you must do when installing cylinder heads is to ensure both the block and head surfaces are completely clean from dust, oil, and any debris.

The next thing you must do is to set the camshafts to their correct positions to prevent any valves from hitting pistons during installation and torquing of the head bolts. Much the same you have to set the pistons to their correct locations, typically this means putting the #1 piston to TDC or Top Dead Center. Once everything is ready you can install the head gasket onto the engine block by aligning the alignment dowels. Something I usually do is spray down the head gasket with some engine copper spray from permatex which you can find here, this ensures that any gaps that could be present between the 2 surfaces gets filled with the spray. It also helps to transfer heat between the 2 metals. With the gasket in place you can set the cylinder head onto the gasket and block, if needed have someone assist with this process as the head can be heavy and you don't want to scratch anything or drop it! Once the head has been placed you will want to start installing the head bolts to make sure it doesn't move. Be sure to buy new head bolts as many manufacturers use TTY or Torque to Yield head bolts meaning they stretch during torquing and cannot be used twice. Also make sure to lubricate the bolts in clean engine oil before installing them into the head. On Chevy DOHC engines there is occasionally bolt holes on the engine block that cross into water passages. Any hole that does this should be installed with some silicon sealant. A little goes a long way in this step and you can check holes by shining a flashlight down them and looking in the water jackets. Once all the head bolts have been installed and finger tightened you can start the torquing process, almost all head bolts have a multi-step process for torquing. The 2.4L DOHC engine uses 2 different sized head bolts being longer ones and short ones. The shorter bolts go on the outer side of the cylinder head and get tightened down to 26 ft-lbs.

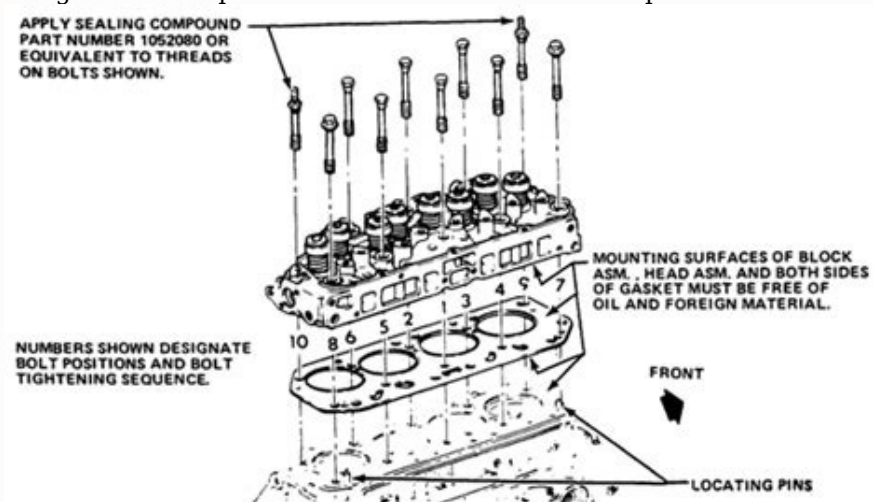


The long bolts go in the center of the cylinder head where the oil can access. If you are not sure where each bolt goes when you drop them into the holes they should all start out at around the same height. If one bolt is higher up than the others it is in the wrong hole. The longer bolts get tightened down to 22 ft-lbs and then a 155 degree turn. Be sure to tighten the right bolts to the right specs as this is a critical component of the engines functionality.Chevy Equinox 2.4L DOHC Cylinder Head Torque Specs (Short): 26 ft-lbsChevy Equinox 2.4L DOHC Cylinder Head Torque Specs (Long): 22 ft-lbs + 155°Balancer Shaft Timing InstallationOn the Chevy 2.4 DOHC engine the balancer shaft timing system is directly behind the engines timing chain and also runs the water pump. This timing chain system is rather large as shown in the picture and uses multiple timing chain guides. When removing the old chain and components simply just loosen up the chain guides and the balancer shaft sprockets and retaining bolts in order to pull them out.



When installing new parts be sure to install all sprockets before installing the guides and torquing them down. The balancer shaft retaining bolts can be torqued down to 8 ft-lbs. The balancer timing guides can all be torqued down to 8 ft-lbs along with the chain tensioner. The water pump itself is covered in another area of this webpage further below.

Once everything has been installed and torqued properly be sure to move to the camshaft timing procedures.Chevy Equinox 2.4L Balancer Timing Chain Guides Torque Spec: 8 ft-lbsChevy Equinox 2.4L Balancer Shaft Sprocket Bolt Torque Spec: 37 ft-lbsChevy Equinox 2.4L Balancer Shafts Retaining Bolts Torque Spec: 8 ft-lbsChevy Equinox 2.4L Balancer Timing Chain Tensioner Torque Spec : 8 ft-lbsTiming Chain and Camshaft InstallationOn the Chevy 2.4 DOHC engine the timing system is ran by the use of a chain. This chain system consists of a sprocket on each camshaft along with an externally installed tensioner, guides and a crankshaft sprocket. To remove the old timing chain system simply remove the side tensioner and remove the chain from the system along with the guides and corresponding sprockets. When installing a new timing chain start with ensuring that the balancer shaft timing system is installed and timed correctly. That portion is covered just below this section. Once confirmed you can start by installing the camshaft and crankshaft sprockets and torquing them down. Starting with the crankshaft sprocket you can slide it onto the crankshaft while aligning the woodruff key with the slot on the sprocket itself. Make sure that the timing dot is facing towards the 5 o'clock direction so that the No1 piston is at TDC or top dead center. Next we can begin to install the intake camshaft and its sprocket. When placing the intake camshaft into its position ensure that the INT diamond is facing towards the 2 o'clock position and the EXH diamond is facing towards the exhaust camshafts location. The timing chain should have yellow or black painted marks which will align directly to the dots on each sprocket. Be sure to have the chain around the sprocket as you drop it into place as this is the easiest way to get the chain into position. Once ready you can install the camshaft bearing caps and torque them down to 8 ft-lbs, be sure that the lifters and rockers are all in place as you torque the camshaft down this torque is the same for the exhaust camshafts bearing caps as well. Now that the camshaft is installed we can hand tighten down the sprocket bolt. Be sure to use new sprocket bolts for each camshaft as the old ones are TTY bolts and can only be used once. Next we can slide the timing chain tensioner down from the top of the engine and then torque its bolt down to 8 ft-lbs. From here we can bring the chain up to the exhaust camshaft and drop in the exhaust camshaft sprocket and wrap the timing chain around it while aligning the mark with the sprocket dot.



Once aligned hand tighten up the exhaust camshafts sprocket bolt to ensure it stays put.

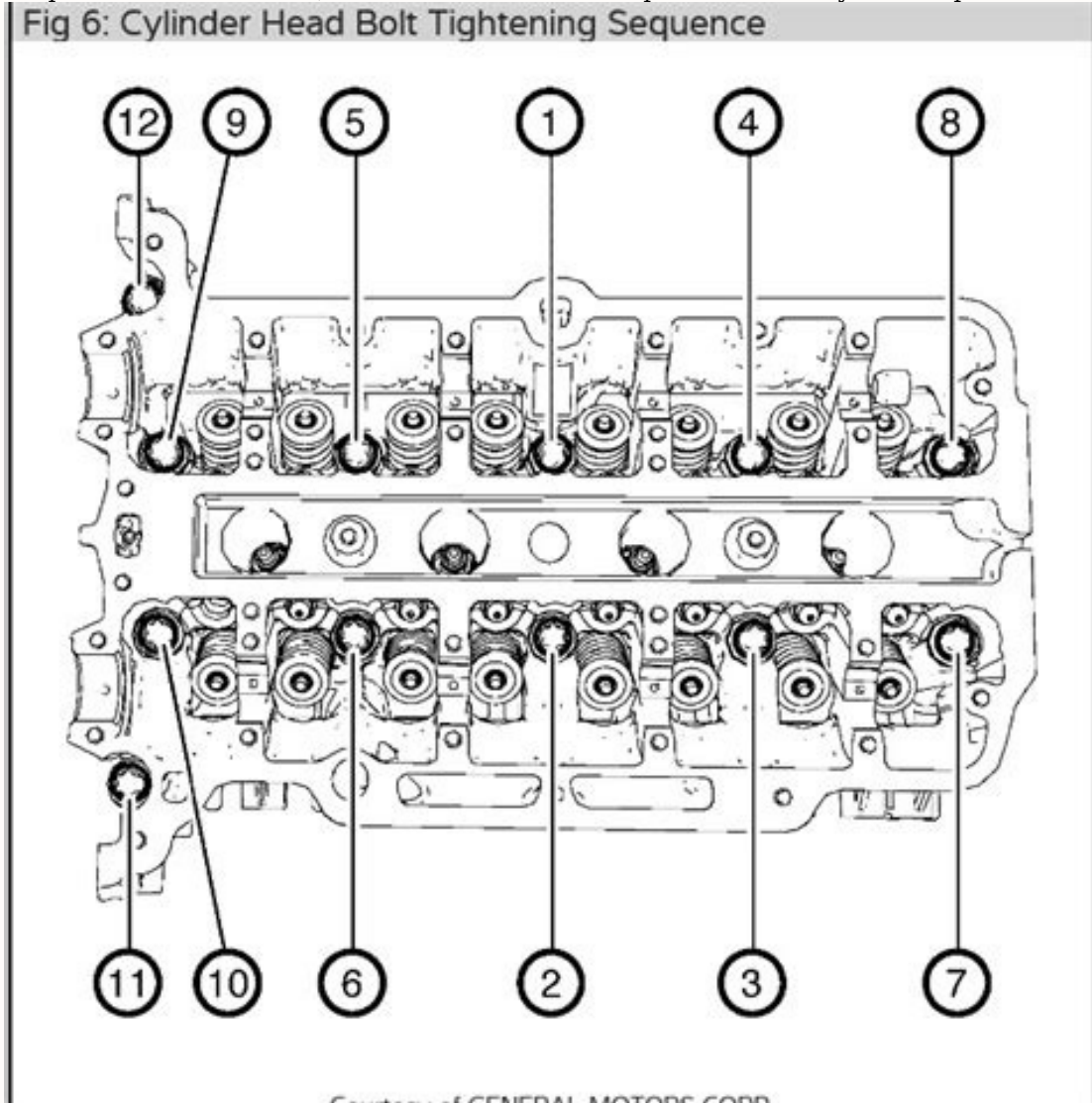
Item	Spec
Crankshaft Bearings - Lower Crankcase to Block - Bedplate	20 ft-lbs / 10 ft-lbs
Final Pin	70 Degree
Lower Crankcase Primer Bolt	25 ft-lbs / 10 ft-lbs

The right side timing chain guide can now be installed from the bottom and torqued down to 8 ft-lbs. Once you have tightened down the bolt through the access hole you can install the plug and torque it down to 66 ft-lbs. Now the timing chain primary tensioner can be installed into the rear side of the engine and torqued down to 55 ft-lbs. Once in you can activate it by pressing inwards on the plunger from the top of the engine. It should tighten up the chain and take out slack. You can also turn the engine slightly clockwise to help the tensioner tighten the chain.

Now that the timing chain is in place and tightened down we can torque the camshaft sprockets to specification. Be sure to hold each camshaft with a 24mm wrench as you torque on the sprocket bolt. The camshaft sprocket bolts can be torqued down to 62 ft-lbs and then an additional 30 degree turn. Once both have been tightened install the upper guide and torque it to 8 ft-lbs. From here the timing system has been installed and you can move onto the next step of the engine.Chevy Equinox 2.4L Camshaft Sprocket Bolt Torque Spec: 62 ft-lbs + 30°Chevy Equinox 2.4L Camshaft Bearing Cap Bolts Torque Spec: 8 ft-lbsChevy Equinox 2.4L Crankshaft Position Sensor Torque Spec: 8 ft-lbsChevy Equinox 2.4L Timing Chain Tensioner Guide Torque Spec : 8 ft-lbsChevy Equinox 2.4L Timing Chain Guide Bolts Torque Spec : 8 ft-lbsChevy Equinox 2.4L Timing Chain Tensioner Torque Spec : 55 ft-lbsChevy Equinox 2.4L Timing Guide Access Hole Plug Torque Spec : 66 ft-lbsTiming Cover InstallationThe timing cover on the 2.4L is used to cover up the internals of the engine and hold in massive amounts of oil. For this reason I recommend using some silicon sealant along with a new gasket during installation.

Be sure to clean all of the metal surfaces prior to installation and placing the silicon onto the metal. With everything ready to install be sure to double check your timing and engine internals before placing the cover in place. Another tip is to lube up the crankshaft seal with some oil so it seats better. If everything is good to go then place the cover onto the engine block and begin to tighten down the bolts hand tight. Once all of the bolts have been set in place be sure to follow your sealant's instructions by waiting the recommended time. Once ready the timing cover bolts can be tightened down to 18 ft-lbs. Be sure to not over tighten these bolts as it can be easy to do so.Chevy Equinox 2.4L Timing Cover Torque Specs : 18 ft-lbsOil Pan InstallationMuch like the timing cover on the 2.4L the oil pan plays an important role in keeping the engine oil inside the engine. For this reason I recommend using a new gasket as well as some silicone sealant during installation. Using the same technique as before with the cover you clean the surfaces of both the oil pan and the engine block and then install the new gasket onto the block and then follow it up with some silicone sealant.

Be sure to follow your sealant's instructions to ensure you get the best seal from your application. The oil pan bolts torque to 18 ft-lbs in a cross pattern design. Along with the pan is the oil pan drain plug, this gets removed and reinstalled quite frequently and can be torqued down to 18 ft-lbs.Chevy Equinox 2.4L Oil Pan Torque Specs : 18 ft-lbsChevy Equinox 2.4L Oil Drain Plug Torque Specs : 18 ft-lbsValve Covers InstallationThe valve cover installation is rather simple, there are rubber seals for each bolt hole and a silicone gasket that prevents oil from leaking out of the engine. It is recommended to replace both the seals and the gaskets although if they are in good condition you can reuse them. If you do choose to reuse them I would use some silicone sealant along with the silicon gasket to ensure it does not leak. The valve cover bolts torque down to 106 in-lbs or about 8 ft-lbs in a criss cross order. Be sure not to miss any bolts to avoid having oil leak out onto the exhaust pipes and cause a lot of smoking.Chevy Equinox 2.4L Valve Cover Torque Specs : 8 ft-lbsIntake Manifold and Fuel Rail InstallationWhen installing the intake manifold you want to make sure you have all the surfaces as well as intake holes cleaned out before placing the manifold into position. Once cleaned you can then place the intake manifold gaskets onto the alignment pins. If you want you can also use a little bit of sealant on the gaskets to help ensure there are no leaks. With the gaskets in place you can now put the manifold down onto the gaskets and begin to install the bolts. The intake manifold bolts torque to 8 ft-lbs and can be tightened in a cross pattern. The ignition coil assembly can be torqued down to 8 ft-lbs and the spark plugs themselves can be torqued down to 13 ft-lbs, be careful not to over torque these as they can snap and cause big problems.



When installing the throttle body make sure that all of the gaskets are in good condition and will hold a seal as you do not want to be leaking gas fumes around the engine. If everything looks good you can tighten the throttle body bolts down to 8 ft-lbs.Chevy Equinox 2.4L Intake Manifold Torque Specs : 8 ft-lbsChevy Equinox 2.4L Ignition Coil Assembly Torque Spec : 8 ft-lbsChevy Equinox 2.4L Spark Plug Torque Specs : 13 ft-lbsChevy Equinox 2.4L Throttle Body Torque Specs : 8 ft-lbsExhaust Manifold InstallationThe exhaust manifold can be installed by cleaning the surface areas on both the head and the manifold itself and then by using the exhaust manifold gasket and putting it in place.

Once the gasket is in its location you can put the manifold onto the heads and begin to torque it down to 10 ft-lbs. I always use some copper spray from permatex on the exhaust manifold gaskets to ensure I do not end up with any exhaust leaks once done. When you go to install the engine into the vehicle the torque specs for the exhaust manifold to the exhaust pipes or catalytic converter is 20 ft-lbs.Chevy Equinox 2.4L Exhaust Manifold Torque Spec : 10 ft-lbsChevy Equinox 2.4L Exhaust Pipe Torque Specs : 20 ft-lbsWater Pump and Thermostat InstallationThe water pump on the Chevy 2.4L engine should be installed prior to installing the timing chain and balancer timing chain as the pump itself is ran off of the balancer chain. When removing the old water pump be sure to remove the entire balancer shaft timing chain or to hold the chain as the pump is removed and replaced. Failure to do so will result in the timing to be off and catastrophic engine failure. This is why I always recommend removing the chain system to ensure further engine damage does not resolve. The pump itself has a giant metal pipe that connects to the rear end of it which is used to transport coolant throughout the engine.

It seals using an O ring that I recommend coating with some sealant to ensure that it seals properly and no leaks develop. The pump itself can be torqued down to the engine block using 18 ft-lbs of force. The water pumps sprocket can be torqued down to 8 ft-lbs and then the balancer timing chain can be installed and continued. On the other end of the pump the housing bolts can be torqued down to 8 ft-lbs. If you happen to access the pump through the access plate be sure to tighten up the plate bolts to 8 ft-lbs. Make sure you have a good gasket or some sealant as oil can leak through the plates sides if a leak occurs.Chevy Equinox 2.4L Water Pump to Block Torque Specs : 18 ft-lbsChevy Equinox 2.4L Water Pump Outlet Pipe Torque Specs : 8 ft-lbsChevy Equinox 2.4L Water Pump Access Plate Torque Specs : 8 ft-lbsChevy Equinox 2.4L Water Pump Sprocket Torque Specs : 8 ft-lbsFront Dress and Pulley belt InstallationMost of what is left on the engine is just place and tighten objects such as the belt pulleys, belt tensioner, throttle body, oil filter neck, crankshaft pulley, and motor mounts. If the items have a gasket and hold either oil or coolant inside the engine then feel free to add some sealant along with the gasket. Always be sure to inspect your gaskets and replace them if there is any deterioration or flaws with them.

For the belt system the crankshaft pulley gets tightened down to the crankshaft at 74 ft-lbs and then an additional 125 degree turn. The drive belt tensioner can be tightened to 33 ft-lbs and the idler pulley can be torqued down to 16 ft-lbs. When installing be sure they both turn smoothly and if they do not then replace them with new ones as the bearings can go bad. The engine motor mount can be installed onto the engine block if it hasn't been already, the torques for the mount to the block is 59 ft-lbs and then when installing the mount to the vehicle or frame it can be torqued to 35 ft-lbs. Finally the throttle body can be installed on top of the intake manifold with a good gasket and some added sealant using 7 ft-lbs in a criss cross pattern. For installing the belt you can use a tool to move the tensioner into its sprung state and install the belt as shown in the picture. The generator or alternator can be tightened down to the engine block using 17 ft-lbs of force. The power steering pump can be installed and torqued down to 18 ft-lbs and finally the A/C compressor can be torqued down to 15 ft-lbs of force.Chevy Equinox 2.4L Crankshaft Pulley Bolt Torque Specs : 74 ft-lbs + 125°Chevy Equinox 2.4L Idler Pulley Bolt Torque Spec : 16 ft-lbsChevy Equinox 2.4L Drive Belt Tensioner Torque Specs : 33 ft-lbsChevy Equinox 2.4L Motor Mount to Engine Torque Specs : 59 ft-lbsChevy Equinox 2.4L Motor Mount to Frame Torque Specs : 35 ft-lbsChevy Equinox 2.4L Alternator to Block Torque Specs : 17 ft-lbsChevy Equinox 2.4L Power Steering Pulley Torque Specs : 18 ft-lbsChevy Equinox 2.4L A/C Compressor to Block Torque Specs : 15 ft-lbs