

 **FELPRO**[®]

Torque Tables[™]



**Complete Cylinder Head Torque
Specifications for Domestic and
Imported Passenger Cars and
Light/Medium Duty Trucks**



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The torque specifications and sequences listed in this publication are considered accurate and reliable at the time of publication. However, since engine manufacturers may revise their specifications, FEL-PRO engineers suggest the installer consult the O.E. manufacturer for the latest information.

HOW TO USE THE FEL-PRO® Torque Tables™

1. Locate the vehicle manufacturer listing in the torque specification tables. All manufacturers are listed in alphabetical order. To save space in the listings, all Chrysler Products vehicles, all Ford Products vehicles, and all General Motors Products vehicles are each grouped together in a single section. Check the Table of Contents at the front of the book to find where each vehicle manufacturer is located. Each manufacturer section includes passenger cars, minivans, SUV's, light-duty and medium-duty trucks for that nameplate.
2. Within each vehicle manufacturer section, engines are arranged by number of cylinders (smallest to largest), then by engine size (CID or CC: smallest to largest), then by model years (newest year first). Check VIN codes carefully on domestic manufacturers, and engine codes carefully on imported manufacturers, to assure selecting the correct torquing information.
3. Special footnote symbols are included to show if a FEL-PRO PermaTorque® head gasket (●) or FEL-PRO head bolt set (○) is available for that engine application.
4. Locate the specific engine desired. Correct torque specifications are shown in foot-pounds in bold type.

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
FORD PRODUCTS 6 & V6			
183 OHV (3.0L) 12 Valve	2004-99 Truck ●○	1st 36-39 , 2nd loosen one turn, 3rd 20-24 , 4th turn 85-95 degrees, 5th turn 85-95 degrees	141
183 OHV (3.0L) 12 Valve	1998-91 Truck ●○	1st 59 , 2nd loosen one turn, 3rd 37 , 4th 68	141
183 OHV (3.0L) 12 Valve	1990-86 Truck ●○	1st 33-41 , 2nd 63-73	141

Torque specifications are shown either as an exact figure, or a specific range. Follow any special instructions or multi-step directions carefully to assure correct final torque. There may be different specifications for different size bolts, bolts in different positions, tightening bolts in several stages, or a cold engine vs. a warm engine. For example, in some cases bolts are first torqued to the figure for a cold engine and retorqued to the figure for a warm/hot engine. Remember that retorquing is NOT required when installing a FEL-PRO PermaTorque head gasket.

For torque-to-yield applications, head bolts are torqued additional partial turns (shown as "degrees" in the tables) after reaching a specified torque in foot-pounds. Please see the following Installation Tips for more information on torque-to-yield bolts.

5. The "Torque Sequence" column shows which diagram to use as the specific bolt torquing sequence for your engine. All diagrams can be found in numerical sequence at the back of this publication.

FEL-PRO® PermaTorque® CYLINDER HEAD GASKETS

The FEL-PRO PermaTorque/Blue Stripe® and PermaTorque/Printoseal® cylinder head gaskets do not need retorquing. They combine the proper amount of compressibility with torque-retaining materials for a long-lasting seal.

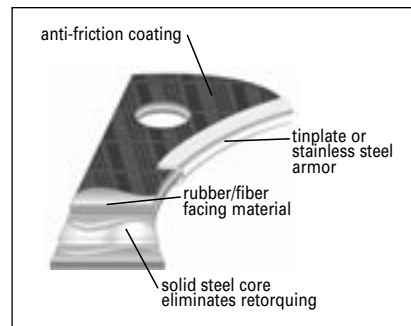
FEL-PRO cylinder head gaskets use a variety of gasket constructions and materials, carefully chosen by our engineers for each specific engine application and thoroughly tested. All FEL-PRO PermaTorque cylinder head gaskets consist of four basic parts – the core, the facing material, the coating, and the armor. Other special enhancements, such as elastomeric sealing beads, may be added to improve sealing even further.



Coatings can be either PTFE rubber or silicone-based. They help seal minor surface imperfections, resist sticking, and help the gasket resist the shearing action that occurs in bi-metal engines. Aluminum cylinder heads and cast iron engine blocks expand and contract at different rates during engine heating/cooling cycles. The anti-friction coatings used on PermaTorque head gaskets allow both the head and block to "slip" over the gasket surface and still maintain a good seal.

Formed metal armors are added to protect the gasket body at cylinder openings. Each armor is precision stamped and then formed to the gasket body. Engineers specify different armor materials, ranging from tinplate to stainless steel, depending on the specific engine application.

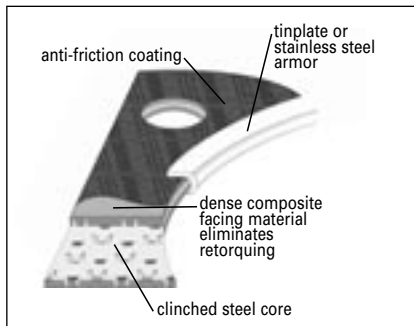
The most common PermaTorque/Blue Stripe design uses a solid steel core with rubber/fiber facing material. The solid steel core minimizes torque loss, while the soft facing conforms to seal minor surface irregularities.



PermaTorque/Blue Stripe Solid Core Design

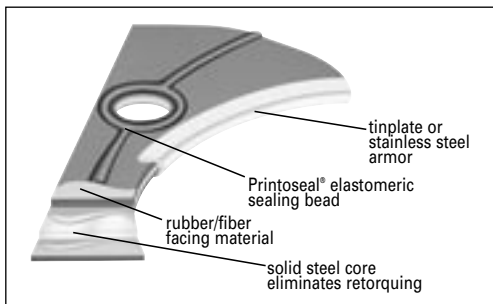
FEL-PRO® PermaTorque® CYLINDER HEAD GASKETS

Another popular PermaTorque/Blue Stripe design uses a clinched steel core construction, combined with either expanded graphite or dense composite facing material. The “S” shaped protrusions of the clinched core allow more uniform loading of the gasket than competitive designs. High-density expanded graphite is used for high-temperature applications where required. The composite facing material uses rubber/fiber design that is densified during the production process. This material is dense enough to help maintain torque, yet compressible enough to conform to minor surface irregularities.



PermaTorque/Blue Stripe Clinched Core Design

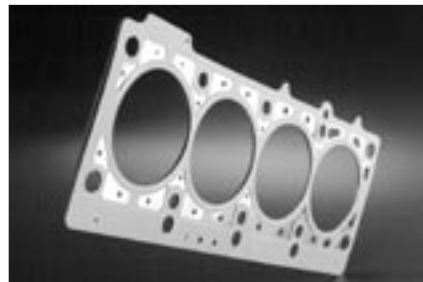
When the engine requires additional sealability, Printoseal® elastomeric sealing beads are applied around critical openings such as coolant and oil ports, to prevent oil and coolant leakage. On many current lightweight engines, the beads also help seal aluminum castings that have uneven clamping force across the gasket surface.



PermaTorque/Printoseal Solid Core Design

FEL-PRO® PermaTorque® CYLINDER HEAD GASKETS

The latest development in head gasket technology is the multi-layer steel (MLS) design. At first glance, these gaskets look like the old-style embossed steel shim gaskets, but they are radically different. First, a thin rubber coating is bonded to the stainless steel shim and, as required, multiple layers (up to five) of this rubber-coated steel shim are assembled into a single gasket. The high-temperature rubber coating provides excellent fluid sealability across the outer faces and between the individual layers, while also sealing minor head and block surface imperfections. MLS head gaskets provide the ultimate in torque retention and supply extra strength to support current lightweight aluminum casting designs. They are specified on most current domestic and imported engines in production.



Traditional original equipment manufacturer (OEM) type MLS head gaskets don't easily conform to surface irregularities, and require an incredibly smooth surface finish to provide a satisfactory seal. When the castings are new and the finish is fresh, most OEM-style MLS gaskets work quite well. But when the castings are old or resurfaced with a less than perfect finish, leaks usually result.

To seal under these adverse conditions, FEL-PRO® engineers have developed the exclusive PermaTorqueMLS® design. These newly redesigned MLS gaskets have many unique features that allow them to seal better than other MLS gaskets on the market today:

- Full-hard stainless steel maintains its shape despite thermal expansion, and resists the scrubbing action between head and block
- Precision-engineered embossed sealing beads placed at all critical sealing areas to eliminate leak paths
- An exclusive extra-strong “stopper” layer incorporated to provide a superior primary combustion seal
- Special rubber coating specifically formulated for the aftermarket repair environment, which is more forgiving of surface finish requirements

Remember that although PermaTorque MLS head gaskets are more forgiving than other designs, the finish on both the head and block must be flatter and smoother than what has been traditionally required for composite-type gaskets.

FEL-PRO® engineers determine which PermaTorque construction provides the best sealing for each individual engine design. Look for the “PT” suffix on the FEL-PRO part number for PermaTorque head gaskets, the most reliable no-retorque designs available on the market today.

CYLINDER HEAD GASKET INSTALLATION TIPS

Remove Cylinder Heads Carefully

Loosen the head bolts in stages, in the reverse order of the tightening sequence. On engines with aluminum cylinder heads, remove the head only after the engine has cooled completely and reverse EXACTLY the recommended torquing procedure. Failure to do so may result in head warpage.

Never Reuse Head Gaskets

When a new head gasket is installed, it conforms to the microscopic surface irregularities of the cylinder head and engine block. The gasket material is permanently compressed in that position. If you reuse the gasket, it is impossible to refit it in the exact same position and it will not have the "life" to readjust itself, so gasket failure may result.

Clean Mating Surfaces

Thoroughly clean the cylinder head, engine block, head bolts, and bolt holes. A dirty bolt can alter torque readings by as much as 20 foot-pounds, and can form pockets in the gasket allowing leakage and eventual gasket failure.

Check for Warpage and Distortion

Check for warpage of both head and block sealing surfaces with a straightedge and a feeler gauge. Out-of-flat along the length should not be more than 0.003" for three-cylinder applications, 0.004" for four-cylinder applications, and 0.006" for six-cylinder applications. Across the width should never exceed 0.002" out-of-flat. These are combined measurements for both the head and block together, and should not exceed the maximum amounts shown. There should be no sudden irregularities exceeding .001" and a maximum out-of-flat of $\pm .001$ " in any 3" diameter should not be exceeded. When necessary, machine surfaces to return them to flat.

Check Head and Block Finishes

Surface finish is critical for a good seal. FEL-PRO® engineers recommend a micro inch surface finish between 60 to 100 Ra (400 to 800 Rz) for cast iron heads and blocks, 50 to 60 Ra (200 to 600 Rz) for aluminum heads and blocks, and 10 to 30 Ra maximum (500 Rz maximum) for multi-layered steel (MLS) applications. Check the finishes with a profilometer or a FEL-PRO Surface Comparator (part number SC-1). Check for a preferred waviness height of .0004"/.0005" with a waviness peak spacing of .100" (these values are usually associated with milling machines). Always consult your manufacturer's service manual for surface finish requirements.

CYLINDER HEAD GASKET INSTALLATION TIPS

Use A Non-Hardening Gasket Sealer

Sealers are NOT required on FEL-PRO PermaTorque® head gaskets. However, embossed steel shim, copper-faced, or steel-faced gaskets should be coated with a non-hardening automotive gasket sealer as a supplemental seal.

Lightly coat bolt threads and the underside of the bolt heads with motor oil. When they enter the water jackets of an engine, bolt threads should be coated with a non-hardening automotive sealer to prevent leakage. Refer to the manufacturer's service manual or examine the engine to determine where the bolt holes lead.

Watch Bolt Lengths and Sizes

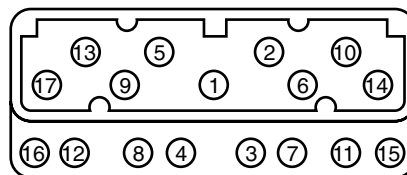
Head bolts on some engines may vary in length and size, and it is important that they be replaced in their original location. Either mark the bolts by position, or place them on a bench in the order you remove them.

Use A Torque Wrench

Uneven torque can cause block distortion and head warpage, resulting in coolant or combustion leaks. Use a good torque wrench, properly calibrated, and follow exact specifications for the proper torque. The basic tightening procedure is to first snug up bolts, then tighten in stages, and then complete with the final torque specified.

Following Torquing Sequences

Each manufacturer has an approved torquing sequence to follow for each engine, to insure the best possible seal and eliminate chances of distortion and warpage. In general, the sequence starts at the center and spirals out to the ends of the head.



Warm Engine and Retorque Head

Run the engine to normal operating temperature after torquing head bolts. Heat expansion and contraction can radically change the torque readings. Retorque all head bolts to the correct settings while the engine is still warm. If working with aluminum components, let the engine cool completely first. Remember that FEL-PRO® PermaTorque® designs do NOT require retorquing.

Retorque After 300 to 500 Miles

If retorque-type head gaskets are used, retorque after 300 to 500 miles.

CYLINDER HEAD GASKET INSTALLATION TIPS

Torque-To-Yield Head Bolts

Torque-to-yield is a method used by most current engine manufacturers to tighten head bolts. The head bolts are torqued to their yield point, which may permanently stretch the bolts. This results in a more even clamping force over the entire area of the gasket. Bolts should first be tightened to a specified torque (measured in foot-pounds), and then tightened an additional partial turn (measured in degrees) to the bolt yield point. The inexpensive FEL-PRO® Torque-to-Angle Indicator (part number TRQ-1) will help you accurately measure the required partial turn in degrees.

Because the head bolts may have stretched, the engine manufacturer may recommend against reusing them. Consult the OEM manual on head bolt reuse. Since you may not know how many times a T-T-Y bolt has been removed and reinstalled, FEL-PRO engineers suggest that it is always a good idea to use new bolts. FEL-PRO head bolt sets are available for many domestic and imported engines. The Torque Tables™ indicate which engines have bolt sets offered in the FEL-PRO product line.

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
FORD PRODUCTS 6 & V6 (CONT.)			
232 (3.8L)	2003-96 Truck ●○	1st 15 , 2nd 29 , 3rd 37 , PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 29-37 ; Short bolts 15-22 , 3) turn 175-185 degrees	94
232 (3.8L)	1995 Truck ●○	1st 15 , 2nd 30 , 3rd 37 , PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 11-19 ; Short bolts 7-15 , 3) turn 85-95 degrees	94
232 (3.8L)	2004-98 Car ●○	1st 15 , 2nd 30 , 3rd 37 , PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 29-37 ; Short bolts 15-22 , 3) turn 180 degrees	94
232 (3.8L)	1997-96 Car ●○	1st 15 , 2nd 30 , 3rd 37 , PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 30-37 ; Short bolts 15-22 , 3) turn 175-185 degrees	94
232 (3.8L)	1995-94 Car ●○	1st 15 , 2nd 30 , 3rd 37 , PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 11-19 ; Short bolts 10-15 , 3) turn 85-95 degrees	94

FEL-PRO® Engine\$aver® HARDWARE

Parts to Help Reduce Repair Costs

The FEL-PRO Engine\$aver Hardware line is a collection of “problem solvers” that provide cost-saving alternatives to engine component replacement. They bring engine components back to proper performance, at a fraction of their replacement cost.

Engine\$aver Hardware Is Cost Efficiency Without Compromise

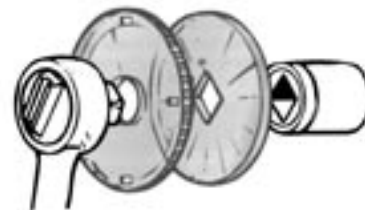
Cylinder Head Bolts

Help avoid the risks that go with reuse of head bolts on torque-to-yield applications.



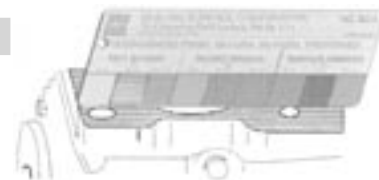
Torque-to-Angle Indicator TRQ-1

Assures that proper installation procedures are followed when using torque-to-angle cylinder head bolts.



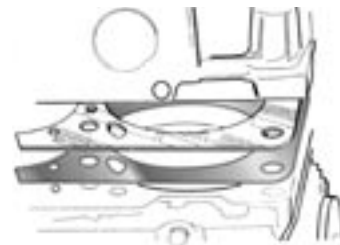
Surface Comparator SC-1

Helps ensure the proper surface finish is achieved for maximum cylinder head gasket sealing ability.



HeadSaver® Spacer Shims

Compensates for excess metal removed during machining operations, so you don't have to replace costly cylinder heads.



Cylinder Head Dowel Pins

Assure proper gasket and casting alignment for an accurate seal and correct head-to-block assembly.



Valve Cover Load Spreaders™

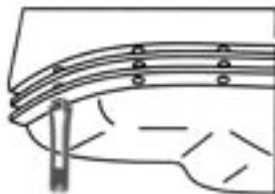
Evenly distribute the clamping force on the valve cover flange and allow a proper seal between the valve cover and the new gasket.



Oil Pan SnapUps™

Save time and prevent frustration by holding the pan and the gasket in place for quick convenient bolt installation.

ES 72863 for 5/16" applications
ES 72864 for 6mm applications
ES 72865 for 8mm applications



Sleeve 'N' Seal®

Repairs worn sealing surfaces and helps avoid replacement of costly harmonic balancers.



Exhaust Flange Bolt & Spring Kits

Quickly connect the exhaust manifold and exhaust pipe on FWD vehicles and assure correct clamping force.



Crankshaft Repair Sleeves

Repair worn sealing surfaces without costly crankshaft replacement.



Engine\$aver Hardware line products also appear in the FEL-PRO® Passenger Car/Light Truck and Heavy Duty master catalogs.



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
AC COBRA V8				
260 Ford	1964	●	65-70	70
289 Ford	1968-64	●	65-70	70
427 Ford	1966-64	●	100-105	70
428 Ford	1968-67	●	80-90	70
ACURA 4				
1590cc DOHC (D16A1) 16 Valve	1989-86	●	1st 22, 2nd 48	106
1678cc DOHC (B17A1) 16 Valve	1993-92		1st 22, 2nd 61	127
1797cc DOHC (B18C1, B18C5) 16 Valve	2001-94	●	1st 22, 2nd 63	127
1834cc DOHC (B18B1) 16 Valve	2001-94	●	1st 22, 2nd 63	128
1834cc DOHC (B18A1) 16 Valve	1993-92	●	1st 22, 2nd 63	106
1834cc DOHC (B18A1) 16 Valve	1991-90	●	1st 22, 2nd 61	106
1998cc DOHC (K20A2, K20A3) 16 Valve	2004-02		1st 29, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	106
2156cc SOHC (F22B1) 16 Valve	1997	●	1st 29, 2nd 51, 3rd 72.3	108
2254cc SOHC (F23A4) 16 Valve	2000-98	●	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	108
2354cc DOHC (K24A2) 16 Valve	2004		1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	106
ACURA 5				
2451cc SOHC (G25A4) 20 Valve	1998-95		1st 29, 2nd 51, 3rd 72.3	129
2451cc SOHC (G25A1) 20 Valve	1994-92		72 in three steps	78
ACURA V6				
2494cc SOHC (C25A1) 24 Valve	1987-86	●	1st 29, 2nd 56	89
2675cc SOHC (C27A1) 24 Valve	1990-87	●	1st 29, 2nd 56	107
2977cc DOHC (C30A1) 24 Valve	2003-91		Automatic trans. 56 in three steps; Manual trans. 71 in three steps	130
2997cc SOHC (J30A1) 24 Valve	2000-97		1st 29, 2nd 51, 3rd 72.3	131
3165cc SOHC (6VD1) 24 Valve	1997-96	●	M11 bolts 1-8 47; M8 bolts 9-11 15	132
3179cc DOHC (C32B1) 24 Valve	2003-97		Automatic trans. 56 in three steps; Manual trans. 71 in three steps	130
3206cc SOHC (C32A6) 24 Valve	1998-96	●	56 in three steps	130
3206cc SOHC (C32A1) 24 Valve	1995-91	●	56 in three steps	130
3210cc SOHC (J32A1, J32A2) 24 Valve	2003-99		1st 29, 2nd 51, 3rd 72.3	131
3471cc SOHC (J35A3, J35A5) 24 Valve	2003-01		1st 29, 2nd 29 again, 3rd 51, 4th 51 again, 5th 72.3, 6th 72.3 again	131
3474cc SOHC (C35A1) 24 Valve	2003-96		56 in three steps	133
3494cc DOHC (6VE1) 24 Valve	2000-98		1st 21, 2nd 47	134

● PermaTorque® Head Gasket available ○ Head Bolt Set available



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

AM GENERAL 4

121 SOHC (2.0L) Audi	1979	●	1st 20, 2nd 40, 3rd 65, 4th warm engine, 5th loosen 45 degrees, 6th 80	60
134F F-Head Jeep	1971-69		65-70	30
150 (2.5L) AMC	1984-83	●	Bolts 1-7, 9-10 85; Bolt 8 75	72
151 (2.5L) Pontiac	1983-80	●	92 in three steps	37

AM GENERAL 6

232 AMC	1978-73	●	105 in three steps	2
232 AMC	1972	●	80-85	2
258 (4.2L) AMC	1979-74	●	105 in three steps	2

AM GENERAL V8

350 (5.7L) Chevrolet Truck	1997 VIN D	●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	7
350 (5.7L) Chevrolet Truck	1996 VIN D	●○	1st 24, 2nd 45, 3rd 65	7
350 (5.7L) Chevrolet Truck	1995-94 VIN D	●○	65 in three steps	7
364 (6.0L) Chevrolet Truck	2004-03 VIN U	●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 90 degrees, 3rd M11 Bolts 1-8 turn 90 degrees, 4th M11 Bolts 9, 10 turn 50 degrees, 5th M8 Bolts 11-15 22	159
379 Diesel (6.2L) Chevrolet Truck	1993-92 VIN X	●○	1st 20, 2nd 50, 3rd turn 90 degrees	77
395 Diesel (6.5L) Chevrolet Truck	2000-94 VIN Y	●○	1st 20, 2nd 55, 3rd 55 again, 4th turn 90 degrees	77
395 Turbo Diesel (6.5L) Chevrolet Truck	2004-96 VIN Z	●○	1st 20, 2nd 55, 3rd 55 again, 4th turn 90 degrees	77
496 (8.1L) Chevrolet Truck	2003-02 VIN G	●○	1st 22, 2nd 22 again, 3rd turn 120 degrees, 4th Bolts 1, 2, 3, 6, 7, 8, 9, 10, 11, 14, 16, 17 turn 60 degrees, 5th Bolts 15, 18 turn 45 degrees, 6th Bolts 4, 5, 12, 13 turn 30 degrees	210

AMC SEE AMERICAN MOTORS

AMERICAN MOTORS 4

85.2 OHV (1.4L) Renault	1987-83	●	1st 41-44, 2nd warm engine & allow to cool, 3rd loosen 180 degrees, 4th 41-44 again	149
105.1 SOHC (1.7L) Renault	1987-85	●	1st 22, 2nd 52, 3rd loosen all bolts, 4th 15, 5th turn 123 degrees	149
120 SOHC (2.0L) Renault	1987	●	1st 22, 2nd 52, 3rd loosen all bolts, 4th 15, 5th turn 123 degrees	149
121 SOHC (2.0L) Audi	1979-77	●	1st 20, 2nd 40, 3rd 65, 4th warm engine, 5th loosen 45 degrees, 6th 80	60
150 (2.5L)	1988-83	●	Bolts 1-7, 9-10 85; Bolt 8 75	72
151 (2.5L) Pontiac	1983-80	●	92 in three steps	37

AMERICAN MOTORS 6

184 L-Head	1955-53		60	20
195.6 L-Head	1965-53		60	20
195.6 OHV Cast Iron	1965-56		60	21
195.6 OHV Aluminum	1964-61		50	21
199	1970-65	●	80-85	2
232	1979-73	●	105 in three steps	2
232	1972-64	●	80-85	2



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

AMERICAN MOTORS 6 (CONT.)

258 (4.2L)	1988-81	●	85 in three steps	2
258 (4.2L)	1980-73	●	105 in three steps	2
258 (4.2L)	1972-71	●	80-85	2
308 L-Head Hudson	1954-51		70	35

AMERICAN MOTORS V8

287	1966-63		58-62	22
290	1969-66	●	90-100	1
304	1979-70	●	1st 80, 2nd 110	1
327	1966-57		58-62	22
343	1969-67	●	90-100	1
360	1978-70	●	1st 80, 2nd 110	1
390	1970	●	1st 80, 2nd 110	1
390	1969-68	●	90-100	1
401	1976-71	●	1st 80, 2nd 110	1

APOLLO V8

215 Buick	1963-62	●	50-55	24
300 Buick	1965-64	●	65-70	4

AUDI 4

1471cc SOHC	1974-73		1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	60
1588cc SOHC	1980-75	●	12 point bolts 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	60
1588cc SOHC	1980-75	●	6 point bolts 1st 29, 2nd 43, 3rd 54, 4th warm engine, 5th 61, 6th retorquer after 1000 miles	60
1588cc Diesel	1983-82	●○	12 point M12 bolts 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	60
1588cc Diesel	1983-82	●○	6 point M11 bolts 1st 35, 2nd 50, 3rd 65, 4th warm engine, 5th 65 again, 6th after 1000 miles turn 90 degrees	60
1588cc Turbo Diesel	1983-82	●○	12 point M12 bolts 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	60
1715cc SOHC	1983-81	●	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	60
1760cc OHV	1972-70		1st 29, 2nd 43.5, 3rd 58, 4th 65	12
1780cc SOHC (8 Valve)	1987-84	●○	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	60
1780cc DOHC Turbo (20 Valve)	2003-97	●○	1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	60
1871cc OHV	1977-72		1st 29, 2nd 43.5, 3rd 58, 4th 65	12
1984cc SOHC (8 Valve)	1990-88	●	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	60

AUDI 5

1986cc Diesel	1982-81		12 point M12 bolts 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	78
1986cc Diesel	1981-79		6 point M11 bolts 1st 35, 2nd 50, 3rd 65, 4th warm engine, 5th 65 again, 6th after 1000 miles turn 90 degrees	78



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

AUDI 5 (CONT.)

1986cc Turbo Diesel	1985-82	12 point M12 bolts 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	78
2144cc SOHC (10 Valve)	1985-78	● 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2144cc SOHC Turbo (10 Valve)	1985-80	● 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2226cc SOHC (10 Valve)	1987-84	● 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2226cc SOHC Turbo (10 Valve)	1991-86	● 1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2226cc DOHC Turbo (20 Valve)	1997-91	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2309cc SOHC (10 Valve)	1992-88	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2309cc DOHC (20 Valve)	1992-89	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78

AUDI V6

2671cc DOHC Turbo (30 Valve)	2003-00	1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	135
2771cc SOHC (12 Valve)	1998-92	1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	135
2771cc DOHC (30 Valve)	2001-98	1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	135
2976cc DOHC (30 Valve)	2003-02	1st 30, 2nd turn 90 degrees, 3rd turn 90 degrees	135

AUDI V8

3562cc DOHC (32 Valve)	1991-90	1st 30, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	136
3697cc DOHC (32 Valve)	1999-97	1st 30, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	136
4172cc DOHC (32 Valve)	2003-97	1st 30, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	136
4172cc DOHC (32 Valve)	1994-92	1st 30, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	136
4172cc DOHC (40 Valve)	2003-00	1st 26, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	136

AUSTIN 4

803cc OHV	1956-52	40	54
848cc OHV	1974-59	40	54
948cc OHV	1962-56	40	54
997cc OHV	1969-61	40	54
998cc OHV	1974-61	40	54
1098cc OHV	1974-62	46	54
1198cc OHV	1957-54	45	182
1275cc OHV	1977-65	46 in three steps	54
1489cc OHV	1961-54	45	182
1622cc OHV	1966-61	45	182
1798cc OHV	1977-68	45-50 in three steps	55

AUSTIN-HEALEY 4

948cc OHV	1962-58	40	54
1098cc OHV	1966-63	46	54
1275cc OHV	1971-67	46 in three steps	54



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

AVANTI II V8

305 (5.0L) Chevrolet	1990-81	●○	65 in three steps	7
327 Chevrolet	1969-65	●○	65	7
350 (5.7L) Chevrolet	1980-69	●○	65 in three steps	7
400 Chevrolet	1978-73	●○	65 in three steps	7

BERTONE SEE FIAT

BMW 4

1766cc SOHC (M10B18)	1985-84	1st 25-29, 2nd 42-44, 3rd wait 15 minutes, 4th turn 30-36 degrees, 5th warm engine, 6th turn 20-30 degrees	65
1766cc SOHC (M10B18)	1983-80	1st 25-32, 2nd 49-52, 3rd 56-59, 4th warm engine, 5th 56-59 again, 6th retorquer after 600 miles	65
1796cc DOHC (M42B18) 16 Valve	1995-91	1st 24, 2nd turn 90-95 degrees, 3rd turn 90-95 degrees	137
1895cc DOHC (M44B19) 16 Valve	1999-96	1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	137
1990cc SOHC (M10B20, 121)	1979-66	1st 25-32, 2nd 49-52, 3rd 56-59, 4th warm engine, 5th 56-59 again, 6th retorquer after 600 miles	65
2302cc DOHC (S14B23) 16 Valve	1991-88	1st 35-37, 2nd 57-59, 3rd wait 15 minutes, 4th 71-73	137

BMW 6

2443cc Turbo Diesel (M21D24)	1986-85	1st 22-29, 2nd 50-60, 3rd wait 15 minutes, 4th 70-76, 5th warm engine, 6th turn 85-95 degrees	90
2494cc SOHC (M20B25) 12 Valve	1993-87	Hexagon bolts 1st 29-33, 2nd wait 20 minutes, 3rd 43-47, 4th warm engine, 5th turn 25-30 degrees; Torx bolts 1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2494cc DOHC (M54B25) 24 Valve	2003-01	1st 29.5, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2494cc DOHC (M52B25) 24 Valve	2000-98 Cast Iron block	1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2494cc DOHC (M52B25) 24 Valve	2000-98 Aluminum block	1st 29.5, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2494cc DOHC (M50B25) 24 Valve	1995-91	1st 24, 2nd turn 90-95 degrees, 3rd turn 90-95 degrees	84
2693cc SOHC (M20B27)	1988-82	1st 29-33, 2nd wait 20 minutes, 3rd 43-47, 4th warm engine, 5th turn 25-30 degrees	84
2788cc SOHC (M30B28, 128)	1981-79	1st 25-32, 2nd 49-52, 3rd 56-59, 4th warm engine, 5th 56-59 again, 6th retorquer after 600 miles	87
2793cc DOHC (M52B28) 24 Valve	2000-96 Cast Iron block	1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2793cc DOHC (M52B28) 24 Valve	2000-96 Aluminum block	1st 29.5, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2979cc DOHC (M54B30) 24 Valve	2003-01	1st 29.5, 2nd turn 90 degrees, 3rd turn 90 degrees	84
2985cc SOHC (M30B30)	1978-75	1st 25-32, 2nd 49-52, 3rd 56-59, 4th warm engine, 5th 56-59 again, 6th retorquer after 600 miles	87
2990cc DOHC (S50B30) 24 Valve	1995-94	1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	84
3152cc DOHC (S52B32) 24 Valve	2000-96	1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	84



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

BMW 6 (CONT.)

3210cc SOHC (M30B32)	1984-83	1st 25-29, 2nd 42-45, 3rd wait 20 minutes, 4th 56-59, 5th turn 20-30 degrees	87
3210cc SOHC (M30B32)	1982-78	1st 25-32, 2nd 49-52, 3rd 56-59, 4th warm engine, 5th 56-59 again, 6th retorque after 600 miles	87
3245cc DOHC (S54B32) 24 Valve	2003-01	1st 22.1, 2nd turn 90 degrees, 3rd turn 90 degrees	84
3430cc SOHC (M30B34) 12 Valve	1993-85	● 1st 25-29, 2nd 42-44, 3rd wait 20 minutes, 4th 57-59, 5th warm engine, 6th turn 30-40 degrees	84
3453cc DOHC (S38B35) 24 Valve	1988-87	1st 35-37, 2nd 57-59, 3rd wait 15 minutes, 4th 71-73	84
3535cc DOHC (S38B35) 24 Valve	1993-91	1st 43-46, 2nd wait 20 minutes, 3rd 58-60, 4th warm engine, 5th turn 30-40 degrees	84

BMW V8

2997cc DOHC (M60B30) 32 Valve	1995-94	1st 22.1, 2nd turn 80 degrees, 3rd turn 80 degrees	137
3982cc DOHC (M60B40) 32 Valve	1995-93	1st 22.1, 2nd turn 80 degrees, 3rd turn 80 degrees	137
4398cc DOHC (N62B44) 32 Valve	2003-02	1st 22.1, 2nd turn 80 degrees, 3rd turn 80 degrees	137
4398cc DOHC (M62B44) 32 Valve	2003-96	1st 22.1, 2nd turn 80 degrees, 3rd turn 80 degrees	137
4619cc DOHC (M62B46) 32 Valve	2003-02	1st 22.1, 2nd turn 80 degrees, 3rd turn 80 degrees	137
4941cc DOHC (S62B50) 32 Valve	2003-00	1st 22.1, 2nd turn 80 degrees, 3rd turn 80 degrees	137

BMW V12

4988cc SOHC (M70B50) 24 Valve	1994-88	1st 22.1, 2nd wait 15 minutes, 3rd turn 60 degrees, 4th turn 60 degrees	84
5379cc SOHC (M73B54) 24 Valve	2001-95	1st 22.1, 2nd turn 60 degrees, 3rd turn 60 degrees	84
5576cc SOHC (S70B56) 24 Valve	1995-94	1st 22.1, 2nd turn 60 degrees, 3rd turn 60 degrees	84

BRICKLIN V8

351M Ford	1975	● 95-105	70
360 AMC	1974	● 1st 80, 2nd 110	1

BUICK SEE GM PRODUCTS

CADILLAC SEE GM PRODUCTS

CHECKER 6 & V6

226 OHV Continental	1964-59	70-75	193
226L L-Head Continental	1964-47	30-35	18
229 (3.8L) Chevrolet	1982-80	● 65 in three steps	64
230 Chevrolet	1968-64	● 95	2
250 Chevrolet	1975-74	● Bolts 1-10, 12-14 95; Bolt 11 85	2
250 Chevrolet	1973-69	● 95	2

CHECKER V8

267 (4.4L) Chevrolet	1982-80	●○ 65 in three steps	7
283 Chevrolet	1967-64	●○ 65	7
305 (5.0L) Chevrolet	1982-77	●○ 65 in three steps	7
307 Chevrolet	1970-68	●○ 65	7
318 Chrysler	1966-64	● 95	12



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

CHECKER V8 (CONT.)

318 Chrysler	1963-59	●	85	12
327 Chevrolet	1969-64	●○	65	7
350 (5.7L) Chevrolet	1980-69	●○	65 in three steps	7

CHEVROLET SEE GM PRODUCTS

CHRYSLER SEE CHRYSLER PRODUCTS

CHRYSLER PRODUCTS 4

86 SOHC (1.4L) 8 Valve	1984-79	●	1st 25, 2nd 51-54	81
89.5 SOHC (1.5L) 12 Valve	1996-91	●	1st 25, 2nd 51-54	71
89.5 SOHC (1.5L) 8 Valve	1991-85	●	1st 25, 2nd 51-54	81
97.1 OHV (1.6L) 8 Valve	1986-83	●	52 in three steps	37
97.3 DOHC (1.6L) 16 Valve	1990-89	●	Cold 65-72, Warm 72-80	81
97.3 DOHC Turbo (1.6L) 16 Valve	1990-89	●	Cold 65-72, Warm 72-80	81
97.5 SOHC (1.6L) 8 Valve	1984-78	●	1st 25, 2nd 51-54	81
97.5 SOHC (1.6L) 8 Valve	1977-71	●	Bolts 1-10 1st 25, 2nd 51-54; Bolts 11 3rd 11-15	38
97.5 SOHC Turbo (1.6L) 8 Valve	1990-84	●	1st 25, 2nd 51-54	81
105 SOHC (1.7L) 8 Valve	1983-78	●	1st 29, 2nd 43, 3rd 54, 4th turn 90 degrees	60
107.1 SOHC (1.8L) 8 Valve	1994-89	●○	1st 25, 2nd 51-54	81
111.8 SOHC (1.8L) 16 Valve	1996-92	●	1st 54, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
121.7 SOHC (2.0L) 8 Valve	1982-74	●	Bolts 1-10 Cold 65-72, Hot 73-79; Bolts 11 11-15	38
122 SOHC (2.0L) 16 Valve	2003-95	●○	1st 25, 2nd 50, 3rd 50 again, 4th turn 90 degrees	37
122 SOHC (2.0L) 16 Valve	1993	●	1st 58, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
122 SOHC (2.0L) 8 Valve	1992-83	●	Cold 65-72, Warm 73-79	71
122 DOHC (2.0L) 16 Valve	2004-02	●○	1st Long bolts 25; Short bolts 20, 2nd Long bolts 50; Short bolts 20, 3rd Long bolts 50; Short bolts 20, 4th all bolts turn 90 degrees	37
122 DOHC (2.0L) 16 Valve	1999-95	●○	1st Long bolts 25; Short bolts 20, 2nd Long bolts 50; Short bolts 20, 3rd Long bolts 50; Short bolts 20, 4th all bolts turn 90 degrees	37
122 DOHC (2.0L) 16 Valve	1994-93	●○	1st 58, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
122 DOHC (2.0L) 16 Valve	1992-89	●○	Cold 65-72 in three steps	81
122 DOHC Turbo (2.0L) 16 Valve	1998-93	●○	1st 58, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
122 DOHC Turbo (2.0L) 16 Valve	1992-89	●○	Cold 65-72 in three steps	81
132 SOHC (2.2L) 8 Valve	1989-88 Medallion		1st 37, 2nd 59, 3rd loosen all bolts, 4th 64-72	149



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

CHRYSLER PRODUCTS 4 (CONT.)			
135 SOHC (2.2L) 8 Valve	1994-85 exc. Medallion ●○	M11 bolts: 1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	37
135 SOHC (2.2L) 8 Valve	1985-81 ●○	M10 bolts: 1st 30, 2nd 45, 3rd 45 again, 4th turn 90 degrees	37
135 DOHC (2.2L) 16 Valve	1991-88	M11 bolts: 1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	100
135 SOHC Turbo (2.2L) 8 Valve	1990-85 ●○	M11 bolts: 1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	37
135 SOHC Turbo (2.2L) 8 Valve	1985-84 ●○	M10 bolts: 1st 30, 2nd 45, 3rd 45 again, 4th turn 90 degrees	37
135 DOHC Turbo (2.2L) 16 Valve	1993-89	M11 bolts: 1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	100
143 Turbo Diesel (2.3L)	1986-83 ●	Cold 76-83, Warm 84-90	43
143.4 SOHC (2.4L) 16 Valve	2003-01 Car ●	1st 58, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
143.4 SOHC (2.4L) 16 Valve	1996-93 Car ●	1st 58, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
143.4 SOHC (2.4L) 8 Valve	1992 Car ●	Cold 65-72, Warm 73-79	71
143.4 SOHC (2.4L) 8 Valve	1993 Truck ●	1st 58, 2nd loosen all bolts, 3rd 15, 4th turn 90 degrees, 5th turn 90 degrees	71
143.4 SOHC (2.4L) 8 Valve	1992-90 Truck ●	Cold 65-72, Warm 73-79	71
148 DOHC (2.4L) 16 Valve	2004-95 ●○	1st 25, 2nd 50, 3rd 50 again, 4th turn 90 degrees	37
148 DOHC Turbo (2.4L) 16 Valve	2004-03 ●○	1st 25, 2nd 50, 3rd 50 again, 4th turn 90 degrees	37
150 OHV (2.5L) Jeep	2002-96 Truck ●○	1st 22, 2nd 45, 3rd 45 again, 4th Bolts 1-6, 8-10 110; Bolt 7 100	151
150 OHV (2.5L) AMC	1989-88 Premier ●	1st 22, 2nd 45, 3rd Bolts 1-7, 9-10 110; Bolt 8 100	72
153 SOHC (2.5L) 8 Valve	1995-86 ●○	1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	37
153 SOHC Turbo (2.5L) 8 Valve	1992-89 ●○	1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	37
156 SOHC (2.6L) 8 Valve	1989-78 ●○	Bolts 1-10 Cold 65-72, Warm 73-79; Bolts 11 11-15	38
156 SOHC Turbo (2.6L) 8 Valve	1989-84 ●○	Bolts 1-10 Cold 65-72, Warm 73-79; Bolts 11 11-15	38

CHRYSLER PRODUCTS 6 & V6			
152.2 SOHC (2.5L) 24 Valve	2000-95 ●○	Cold 80 in three steps	154
167 DOHC (2.7L) 24 Valve	2003-98 ●○	Bolts 1-8 1st 35, 2nd 55, 3rd 55 again, 4th turn 90 degrees; Bolts 9-11 5th 21	138
170	1971-60 ●	65-70	9
181 SOHC (3.0L) 12 Valve	1992-90 Monaco, Premier	1st 44, 2nd loosen all bolts, 3rd 30, 4th turn 180 degrees	221
181 SOHC (3.0L) 12 Valve	1989-88 Premier	1st 44, 2nd loosen all bolts, 3rd 15, 4th turn 104-108 degrees, 5th warm engine & allow to cool, 6th turn 45 degrees	221
181.1 SOHC (3.0L) 12 Valve	2000-92 exc. Stealth, Monaco, Premier ●○	Cold 80 in three steps	154



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

CHRYSLER PRODUCTS 6 & V6 (CONT.)			
181.1 SOHC (3.0L) 12 Valve	1991-87 exc. Stealth, Monaco, Premier ●○	Cold 70 in three steps	154
181.1 SOHC (3.0L) 12 Valve	1996-93 Stealth ●○	Cold 80 in three steps	154
181.1 SOHC (3.0L) 12 Valve	1992-91 Stealth ●○	Cold 70 in three steps	154
181.1 SOHC (3.0L) 24 Valve	2003-01 ●	1st 80 in three steps, 2nd loosen all bolts, 3rd 80 in three steps again	154
181.1 DOHC (3.0L) 24 Valve	1996-91 ●○	Cold 80 in three steps	154
181.1 DOHC Turbo (3.0L) 24 Valve	1996-91 ●○	Cold 90 in three steps	154
197 SOHC (3.2L) 24 Valve	2001-98 ●○	1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	49
198	1974-70 ●	65-70	9
201 OHV (3.3L) 12 Valve	2004-90 ●○	M11 Bolts 1-8 1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees; M8 Bolt 9 5th 25 in three steps	215
201.3 L-Head	1941-34	70	35
215 SOHC (3.5L) 24 Valve	2004-93 ●○	1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees	49
217.8 L-Head	1954-34	70	35
225 (3.7L)	1987-60 ●	70 in three steps	9
226 SOHC (3.7L) 12 Valve	2003-02	1st M11 Bolts 1-8 20, 2nd M11 Bolts 1-8 20 again, 3rd M8 Bolts 9-12 10, 4th M11 Bolts 1-8 turn 90 degrees, 5th M11 Bolts 1-8 turn 90 degrees, 6th M8 Bolts 9-12 19	204
228.1 L-Head	1954-37	70	35
230 L-Head	1960-42	70	35
231 OHV (3.8L) 12 Valve	2004-91 ●○	M11 Bolts 1-8 1st 45, 2nd 65, 3rd 65 again, 4th turn 90 degrees; M8 Bolt 9 5th 25 in three steps	215
236.6 L-Head	1953-42	70	35
239 OHV (3.9L) 12 Valve	2003-87 ●○	1st 50, 2nd 105, 3rd 105 again	94
241.5 L-Head	1941-38	70	35
251.6 L-Head	1968-42	70	35
265 L-Head	1960-52	70	35
359 Turbo Diesel (5.9L) 24 Valve	2003 VIN 6, 7 ●	1st 52, 2nd loosen one turn, 3rd 77, 4th 77 again, 5th turn 90 degrees	111
359 Turbo Diesel (5.9L) 24 Valve	2002-98 VIN 6, 7 ●	1st 59, 2nd 77, 3rd 77 again, 4th turn 90 degrees	111
359 Turbo Diesel (5.9L) 12 Valve	1998-91 VIN C, D ●	1st all bolts 66, 2nd Long bolts 89, 3rd all bolts turn 90 degrees	111
359 Turbo Diesel (5.9L) 12 Valve	1991-88 VIN 8 ●	1st 29, 2nd 62, 3rd 93	111

CHRYSLER PRODUCTS L8 & V8			
241.4 Dodge, Plymouth	1956-53	85	12
259 Dodge Truck	1956-55	85	12
260 Plymouth	1955	85	12
270 Dodge, Plymouth	1956-55 ●	85	12
273	1969-64 ●	85	12
276 DeSoto	1954-52	85	12
277 Plymouth	1957-56 ●	85	12



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

CHRYSLER PRODUCTS L8 & V8 (CONT.)				
287 SOHC (4.7L) 16 Valve	2003-00	●○	1st M11 Bolts 1-10 15 , 2nd M11 Bolts 1-10 35 , 3rd M8 Bolts 11-14 18 , 4th M11 Bolts 1-10 turn 90 degrees, 5th M8 Bolts 11-14 22	163
291 DeSoto	1955		85	12
301 Plymouth	1957	●	85	12
301 Chrysler	1955	●	85	12
303 Plymouth	1957-56	●	85	12
313 Plymouth	1964-57	●	85	12
315 Dodge	1959-56	●	85	12
318 (5.2L)	2003-85	●○	1st 50 , 2nd 105 , 3rd 105 again	12
318 (5.2L)	1984-80	●	95	12
318 (5.2L)	1979-78	●	105	12
318 (5.2L)	1977-64	●	95	12
318 (5.2L)	1963-57	●	85	12
323.5 L-Head Chrysler	1950-46		65-70	169
325 Dodge	1958-57	●	85	12
326 Dodge	1959	●	85	12
330 DeSoto	1956		85	12
331 Chrysler	1956-51	●	85	12
340	1973-68	●	95	12
341 DeSoto	1957-56	●	85	12
345 Hemi (5.7L)	2003		1st M12 Bolts 1-10 25 , 2nd M8 Bolts 11-15 15 , 3rd M12 Bolts 1-10 40 , 4th M8 Bolts 11-15 15 again, 5th M12 Bolts 1-10 turn 90 degrees, 6th M8 Bolts 11-15 25	216
345 DeSoto	1957	●	85	12
350	1958	●	70	11
353 Dodge Truck	1956-55		85	12
354 Chrysler	1959-56	●	85	12
360 (5.9L)	2003-85	●○	1st 50 , 2nd 105 , 3rd 105 again	12
360 (5.9L)	1984-78	●	105	12
360 (5.9L)	1977-71	●	95	12
361	1966-58 Car	●	70	11
361	1977-69 Truck		70	11
361	1968-60 Truck	●	70	11
383	1971-59	●	70	11
392 Chrysler	1958-57	●	85	12
400 (6.6L)	1980-72	●	70	11
413	1965-59 Car	●	70	11
413	1977-69 Truck		70	11
413	1968-60 Truck	●	70	11
426	1965-63 exc. Hemi	●	70	11
426	1971-66 Hemi		75	10
426	1965-64 Hemi		70	10
440 (7.2L)	1980-66	●	70	11

CHRYSLER PRODUCTS V10

488 (8.0L)	2002-92 Car		Bolts 1-12 1st 35 , 2nd 90 ; Bolts 13-20 3rd 9	201
488 (8.0L)	2004-94 Truck	●○	1st 43 , 2nd 105	155



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

DAEWOO 4				
1598cc DOHC (N) 16 Valve	2002-01		1st 18 , 2nd turn 70 degrees, 3rd turn 70 degrees, 4th turn 30 degrees	40
1598cc DOHC (N) 16 Valve	2000-98		1st 18 , 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th turn 10 degrees	40
1998cc DOHC (Z) 16 Valve	2002-98		1st 18 , 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees	100
2198cc DOHC (2) 16 Valve	2002-98		1st 18 , 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees	100

DAIHATSU 3

993cc SOHC (CB)	1992-88		40-47 in three steps	214
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DAIHATSU 4

1295cc SOHC (HCE) 16 Valve	1992-89		44-49 in three steps	147
1589cc SOHC (HDE) 16 Valve	1992-90		44-49 in three steps	147

DATSUN SEE NISSAN

DeLOREAN V6

2849cc SOHC Volvo	1983-81		1st 7 , 2nd 22 , 3rd 44 , 4th loosen all bolts, 5th 11-14 , 6th turn 116-120 degrees, 7th warm engine & allow to cool, 8th loosen all bolts, 9th 11-14 again, 10th turn 113-117 degrees	52
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DeSOTO SEE CHRYSLER PRODUCTS

DeTOMASO V8

302 Ford	1972-69 exc. Boss	●	65-72	70
302 Ford	1971-69 Boss	●	Upper 80 ; Lower 70	70
351C Ford	1974-71	●	95-105	70
351W (5.8L) Ford	1989-81	●	1st 85 , 2nd 95 , 3rd 105-112	70

DODGE SEE CHRYSLER PRODUCTS

EAGLE SEE CHRYSLER PRODUCTS

EDSEL SEE FORD PRODUCTS

EXCALIBUR V8

289 Studebaker	1965		55-65	170
305 (5.0L) Chevrolet	1990-80	●○	65 in three steps	7
327 Chevrolet	1969-65	●○	65	7
350 (5.7L) Chevrolet	1996	●○	1st all bolts 22 , 2nd Short bolts turn 67 degrees; Medium bolts & Long bolts turn 80 degrees	7
350 (5.7L) Chevrolet	1995-93	●○	65 in three steps	7
350 (5.7L) Chevrolet	1990-70	●○	65 in three steps	7
454 Chevrolet	1978-72	●	80 in three steps	8

FACEL VEGA 4

1780cc OHV Volvo	1964-63		61-69	110
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FACEL VEGA V8

276 DeSoto	1954		85	12
277 Plymouth	1958	●	85	12
291 DeSoto	1957-55		85	12
301 Plymouth	1958	●	85	12



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

FACEL VEGA V8 (CONT.)

330 DeSoto	1957-56		85	12
354 Chrysler	1958	●	85	12
383 Chrysler	1964-59	●	70	11

FARGO SEE CHRYSLER PRODUCTS

FIAT 4

817cc OHV	1969-68		29	41
843cc OHV	1968-65		29	41
903cc OHV	1973-70		36 in three steps	41
1116cc SOHC	1973-71		69 in three steps	41
1290cc SOHC	1979-72	●	69 in three steps	41
1438cc OHV	1973-70		56	41
1438cc DOHC	1971-68		54	41
1498cc SOHC	1988-79	●	M17 bolts 1st 15, 2nd 29, 3rd turn 90 degrees, 4th turn 90 degrees	41
1498cc SOHC	1988-79	●	M19 bolts 1st 29, 2nd 69, 3rd loosen 1/2 turn, 4th 29 again, 5th 69	41
1592cc DOHC	1978-72		61 in three steps	41
1608cc DOHC	1973-71		58 in three steps	41
1756cc DOHC	1978-74		61 in three steps	41
1995cc DOHC	1987-79		61 in three steps	41

FORD SEE FORD PRODUCTS

FORD PRODUCTS 4

80.8 SOHC (1.3L) 8 Valve	1997-88	●	1st 35-40, 2nd 56-60	150
97.5 SOHC (1.6L) 8 Valve	1989-87 Tracer	●	56-60 in three steps	150
97.5 DOHC (1.6L) 16 Valve	1994-91 Capri	●	56-60 in three steps	150
97.5 DOHC Turbo (1.6L) 16 Valve	1994-91 Capri	●	56-60 in three steps	150
98 OHV (1.6L)	1980-78	●	65-70	16
98 OHV (1.6L)	1973-71	●	65-70	16
98 SOHC (1.6L)	1985-81	●○	1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	36
98 SOHC Turbo (1.6L)	1985-84	●○	1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	36
109.6 SOHC (1.8L)	1978-72 Courier	●	Cold 63-68, Warm 69-73	150
112.2 DOHC (1.8L) 16 Valve	1996-91	●	56-60 in three steps	150
116 SOHC (1.9L) 8 Valve	1996-85	●○	1st 30, 2nd 44, 3rd loosen one turn, 4th 30 again, 5th 44, 6th turn 90 degrees, 7th turn 90 degrees	36
119.7 L-Head	1942-41		Stud Nuts 50-55; Bolts 65-70	194
120.2 SOHC (2.0L)	1982-79 Courier	●	Cold 59-64, Warm 69-72	150
121 SOHC (2.0L) 8 Valve	2003-00 Focus	●○	1st 37, 2nd loosen 1/2 turn, 3rd 37 again, 4th turn 90 degrees, 5th turn 90 degrees	36
121 SOHC (2.0L) 8 Valve	2001-97 Escort, Tracer	●○	1st 30-44, 2nd loosen 1/2 turn, 3rd 30-44 again, 4th turn 90 degrees, 5th turn 90 degrees	36
121 DOHC (2.0L) 16 Valve	2004-01 Zetec Escape	●○	1st 15, 2nd 30, 3rd turn 90 degrees	148
121 DOHC (2.0L) 16 Valve	2003-00 Zetec Focus	●○	1st 15, 2nd 30, 3rd turn 90 degrees	148
121 DOHC (2.0L) 16 Valve	2003-98 Zetec Escort, Tracer	●○	1st 12-18, 2nd 26-33, 3rd turn 105 degrees	148



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

FORD PRODUCTS 4 (CONT.)

121 DOHC (2.0L) 16 Valve	2002-98 Zetec Contour, Cougar, Mystique	●○	1st 18, 2nd 33, 3rd turn 105 degrees	148
121 DOHC (2.0L) 16 Valve	1997-95 Zetec	●○	1st 15-22, 2nd 30-37, 3rd turn 90 degrees	148
121.5 DOHC (2.0L) 16 Valve	1997-93 Probe	●○	1st 13-16, 2nd turn 90 degrees, 3rd turn 90 degrees	150
121.7 SOHC (2.0L)	1974-71	●	1st 14-29, 2nd 36-50, 3rd 65-80	17
122 SOHC (2.0L)	1988-83 Ranger	●	1st 50-60, 2nd 80-90	17
122 Diesel (2.0L)	1987-84	●	1st 21, 2nd turn 90 degrees, 3rd turn 90 degrees	150
133 SOHC (2.2L) 12 Valve	1992-89 Probe	●	1st 29-32, 2nd 59-64	37
133 SOHC Turbo (2.2L) 12 Valve	1992-89 Probe	●	1st 29-32, 2nd 59-64	37
134.8 Diesel (2.2L)	1984-83	●	1st 25, 2nd 45, 3rd 80-85, 4th warm engine, 5th 80-85 again	6
138 DOHC (2.3L)	2003-01 Zetec		1st 4, 2nd 11, 3rd 33, 4th turn 90 degrees, 5th turn 90 degrees	150
140 OHV (2.3L)	1994-84 HSC	●	1st 52-59, 2nd 70-76	37
140 SOHC (2.3L)	1997-93	●○	Bolts with 85mm long threads: 1st 51, 2nd 51 again, 3rd turn 90-100 degrees	17
140 SOHC (2.3L)	1993-91	●○	Bolts with 44mm long threads: 1st 50-60, 2nd 80-90	17
140 SOHC (2.3L)	1990-74	●○	1st 50-60, 2nd 80-90	17
140 SOHC Turbo (2.3L)	1989-79	●○	1st 50-60, 2nd 80-90	17
143 Turbo Diesel (2.3L)	1987-85	●	Cold 76-83, Warm 84-90	43
153 OHV (2.5L)	1991-86 HSC	●	1st 52-59, 2nd 70-76	37
153 SOHC (2.5L)	2001-98	●○	1st 51, 2nd 51 again, 3rd turn 90-100 degrees	17
177 L-Head Ford	1927-09 Model T		1st 50-55, 2nd warm engine, 3rd 60	195
200 L-Head Ford	1934-28 Models A, B		50	223
220 Diesel (3.6L)	1966-63 Dagenham		85-90	172

FORD PRODUCTS 6 & V6

144	1964-60	●	70-75	13
149 Turbo Diesel (2.4L)	1985-84		1st 22-29, 2nd 36-43, 3rd 65-69, 4th warm engine, 5th turn 85-95 degrees	90
152.4 DOHC (2.5L) 24 Valve	1997-93 Probe	●	1st 17-19, 2nd turn 90 degrees, 3rd turn 90 degrees	123
155 DOHC (2.5L) 24 Valve	2002-98 Duratec VIN G	●○	1st 28-31, 2nd turn 85-90 degrees, 3rd loosen one turn, 4th 28-31 again, 5th turn 85-90 degrees, 6th turn 85-90 degrees	139
155 DOHC (2.5L) 24 Valve	2002-98 Duratec VIN L	●○	1st 29, 2nd turn 90 degrees, 3rd loosen one turn, 4th 29 again, 5th turn 90 degrees, 6th turn 90 degrees	140
155 DOHC (2.5L) 24 Valve	1997 Duratec VIN L	●○	1st 28-31, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 28-31 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	140
155 DOHC (2.5L) 24 Valve	1996-95 Duratec VIN L	●○	1st 27-32, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 27-32 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	140



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
FORD PRODUCTS 6 & V6 (CONT.)			
155.6 OHV (2.6L)	1973-72	1st 29-40, 2nd 40-51, 3rd 65-80	31
170	1972-61	70-75	13
171 (2.8L)	1986-83 Truck ●	1st 29-40, 2nd 40-51, 3rd 70-85	57
171 (2.8L)	1979-75 Car ●	1st 29-40, 2nd 40-51, 3rd 65-80	57
171 (2.8L)	1974 Car ●	1st 29-40, 2nd 40-51, 3rd 65-80	31
177 (2.9L)	1992-86 ●○	1st 22, 2nd 51-55, 3rd turn 90 degrees	97
181 SOHC (3.0L) 12 Valve	1998-93 Villager ●	1st 22, 2nd 43, 3rd loosen all bolts, 4th 22 again, 5th 40-47; OR turn 60-65 degrees	85
181 DOHC (3.0L) 24 Valve	2004-01 Duratec VIN 1 ●○	1st 30, 2nd turn 90 degrees, 3rd loosen one turn, 4th 30 again, 5th turn 90 degrees, 6th turn 90 degrees	140
181 DOHC (3.0L) 24 Valve	2002-97 Duratec VIN S ●○	1st 28-31, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 28-31 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	139
181 DOHC (3.0L) 24 Valve	1996 Duratec VIN S ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 27-32 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	139
183 OHV (3.0L) 12 Valve	2004-99 Car ●○	1st 36-39, 2nd loosen one turn, 3rd 20-24, 4th turn 85-95 degrees, 5th turn 85-95 degrees	96
183 OHV (3.0L) 12 Valve	1998-91 Car ●○	1st 59, 2nd loosen one turn, 3rd 37, 4th 68	96
183 OHV (3.0L) 12 Valve	1990-86 Car ●○	1st 33-41, 2nd 63-73	96
183 OHV (3.0L) 12 Valve	2004-99 Truck ●○	1st 36-39, 2nd loosen one turn, 3rd 20-24, 4th turn 85-95 degrees, 5th turn 85-95 degrees	141
183 OHV (3.0L) 12 Valve	1998-91 Truck ●○	1st 59, 2nd loosen one turn, 3rd 37, 4th 68	141
183 OHV (3.0L) 12 Valve	1990-86 Truck ●○	1st 33-41, 2nd 63-73	141
183 DOHC (3.0L) 24 Valve	1995-89 SHO ●○	1st 37-51, 2nd 62-69	101
195 DOHC (3.2L) 24 Valve	1995-93 SHO ○	1st 37-51, 2nd 62-69	101
200 OHV (3.3L)	1983-78 ●	1st 50-55, 2nd 60-65, 3rd 70-75	51
200 OHV (3.3L)	1977-63 ●	1st 50-55, 2nd 60-65, 3rd 70-75	13
200 SOHC (3.3L) 12 Valve	2002-99 Villager	1st 22, 2nd 43, 3rd loosen all bolts, 4th 7, 5th 22, 6th 40-47; OR turn 60-65 degrees	162
215 OHV	1953-52 ●	65-75	28
223 OHV	1964-61 ●	105-115	28
223 OHV	1960-54 ●	65-75	28
226 L-Head	1951-49 95 HP Series H	65-75	15
226 L-Head	1948-47 95 HP Series H	50-60	15
226 L-Head	1947-41 90 HP Series G, GA	50-60	15
232 (3.8L)	2003-96 Truck ●○	1st 15, 2nd 29, 3rd 37, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 29-37; Short bolts 15-22, 3) turn 175-185 degrees	94



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
FORD PRODUCTS 6 & V6 (CONT.)			
232 (3.8L)	1995 Truck ●○	1st 15, 2nd 30, 3rd 37, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 11-19; Short bolts 7-15, 3) turn 85-95 degrees	94
232 (3.8L)	2004-98 Car ●○	1st 15, 2nd 30, 3rd 37, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 29-37; Short bolts 15-22, 3) turn 180 degrees	94
232 (3.8L)	1997-96 Car ●○	1st 15, 2nd 30, 3rd 37, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 30-37; Short bolts 15-22, 3) turn 175-185 degrees	94
232 (3.8L)	1995-94 Car ●○	1st 15, 2nd 30, 3rd 37, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 11-19; Short bolts 10-15, 3) turn 85-95 degrees	94
232 (3.8L)	1993-91 Car ●○	1st 37, 2nd 45, 3rd 52, 4th 59, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) 11-18, 3) Long bolts turn 85-105 degrees; Short bolts turn 65-85 degrees	94
232 (3.8L)	1990-84 Car ●○	Flanged Hex Head bolts : 1st 37, 2nd 45, 3rd 52, 4th 59, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) 11-18, 3) Long bolts turn 85-105 degrees; Short bolts turn 65-85 degrees	82
232 (3.8L)	1990-84 Car ●○	Standard Hex Head bolts : 1st 37, 2nd 45, 3rd 52, 4th 59, 5th loosen 2-3 turns, 6th repeat steps 1-4	82
232 (3.8L)	1983-82 Car, Truck ●○	1st 47, 2nd 55, 3rd 63, 4th 74, 5th loosen 2-3 turns, 6th repeat steps 1-4	82
232 Supercharged (3.8L)	1995-94 ●○	1st 37, 2nd 45, 3rd 52, 4th 59, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) 11-19, 3) turn 175-185 degrees	94
232 Supercharged (3.8L)	1993-89 ●○	1st 37, 2nd 45, 3rd 52, 4th 59, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) 48-55, 3) turn 90-110 degrees	94



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

FORD PRODUCTS 6 & V6 (CONT.)			
238 (3.9L)	2004 Truck ●○	1st 15, 2nd 29, 3rd 37. PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 29-37; Short bolts 15-22, 3) turn 175-185 degrees	94
240 (3.9L)	1974-65 ●	70-75	14
244 OHV (4.0L)	2001-95 ●○	1st 23, 2nd 53, 3rd turn 90 degrees	217
244 OHV (4.0L)	1994-90 ●○	INSTALL HEAD BOLTS AND LOWER INTAKE BOLTS TOGETHER (TORQUE ALTERNATELY) : Head bolts 1st 44, 2nd 59, 3rd turn 80-85 degrees; Lower intake bolts 1st 3-6, 2nd 6-11, 3rd 11-15, 4th 15-18	102
244 SOHC (4.0L)	2004-02 ●○	1st M12 Bolts 1-8 24, 2nd M8 Bolts 9-10 24, 3rd M12 Bolts 1-8 turn 80 degrees, 4th M12 Bolts 1-8 turn 80 degrees	218
244 SOHC (4.0L)	2001-00 ●○	1st M12 Bolts 1-8 28, 2nd M8 Bolts 9-10 28, 3rd M12 Bolts 1-8 turn 90 degrees, 4th M12 Bolts 1-8 turn 90 degrees	218
244 SOHC (4.0L)	1999-97 ●○	1st M12 Bolts 1-8 26, 2nd M8 Bolts 9-10 26, 3rd M12 Bolts 1-8 turn 90 degrees, 4th M12 Bolts 1-8 turn 90 degrees	218
250 (4.1L)	1980-78 ●	1st 50-55, 2nd 60-65, 3rd 70-75	51
250 (4.1L)	1977-69 ●	1st 50-55, 2nd 60-65, 3rd 70-75	13
254 L-Head	1953-49	65-75	15
254 L-Head	1948	50-60	15
256 OHV (4.2L)	2004-97 ●○	1st 14, 2nd 29, 3rd 36. PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen 2-3 turns, 2) Long bolts 30-36; Short bolts 15-22, 3) turn 175-185 degrees	94
262 OHV	1964-61 ●	105-115	28
300 (4.9L)	1997-95 ●	1st 45-55, 2nd turn 90 degrees	14
300 (4.9L)	1994-75 ●	1st 50-55, 2nd 60-65, 3rd 70-85	14
300 (4.9L)	1974-65 ●	70-75	14
330 Diesel (5.4L)	1966-62 Dagenham	85-90	173
359 Turbo Diesel (5.9L)	1997-92 ●	1st all bolts 66, 2nd Long bolts 89, 3rd all bolts turn 90 degrees	111
401 Turbo Diesel (6.6L)	1995-86 ●	1st 115, 2nd 140, 3rd 160	103
474 Turbo Diesel (7.8L)	1995-87 ●	1st 115, 2nd 140, 3rd 160	103

FORD PRODUCTS V8			
136 L-Head (60 HP 17 Stud head) Ford	1940-37 Cast Iron heads	50-60	32
136 L-Head (60 HP 17 Stud head) Ford	1940-37 Aluminum heads	35-40	32
207 DOHC (3.4L) 32 Valve	1999-96 SHO	1st 20-23, 2nd turn 85-95 degrees	143
221 OHV	1963-62	65-70	70
221 L-Head (85 HP 21 Stud head) Ford	1942-32 Car Cast Iron heads	50-60	32
221 L-Head (85 HP 21 Stud head) Ford	1942-32 Car Aluminum heads	35-40	32



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

FORD PRODUCTS V8 (CONT.)			
221 L-Head (90 HP 24 Stud head) Ford	1942-38 Truck Cast Iron heads	50-60	32
221 L-Head (90 HP 24 Stud head) Ford	1942-38 Truck Aluminum heads	35-40	32
221 L-Head (85 HP 21 Stud head) Ford	1937-32 Truck Cast Iron heads	50-60	32
221 L-Head (85 HP 21 Stud head) Ford	1937-32 Truck Aluminum heads	35-40	32
239 OHV Ford	1955-54 Truck ●	70	70
239 OHV Ford	1954 Car	70	70
239.4 L-Head Ford	1953-48 Truck	65-70	33
239.4 L-Head Ford	1953-49 Car	65-70	33
239.4 L-Head (90, 95, 100 HP 24 Stud head) Ford, Mercury	1948-39 Cast Iron heads	50-60	32
239.4 L-Head (90, 95, 100 HP 24 Stud head) Ford, Mercury	1948-39 Aluminum heads	35-40	32
241 DOHC (3.9L) 32 Valve	2002-00 LS, Thunderbird	M10 bolts 1st 15, 2nd 26, 3rd 33, 4th turn 90 degrees, 5th turn 90 degrees; M8 bolts 6th 15, 7th turn 90 degrees	68
255 OHV (4.2L)	1982-80 ●	65-72	70
255.4 L-Head Mercury	1954-48	65-70	33
256 OHV Mercury	1955-54 ●	75	70
260	1965-62 ●	65-70	70
272	1958-55 ●	70-75	70
279	1955-52 Truck ●	Exc. Bolts marked "FT" 90; Bolts marked "FT" 110	70
281 SOHC (4.6L) 16 Valve	2004-97 Truck Exc. Explorer, Mountaineer ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	144
281 SOHC (4.6L) 16 Valve	2004-02 Truck Explorer, Mountaineer ●○	1st 30, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 30 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	144
281 SOHC (4.6L) 16 Valve	2004-96 Car ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 27-32 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	124
281 SOHC (4.6L) 16 Valve	1995-93 Car ●○	1st 25-30, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	124
281 SOHC (4.6L) 16 Valve	1992-91 Car ●○	1st 15-22, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	124
281 DOHC (4.6L) 32 Valve	2004-03 Truck ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 27-32 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	144
281 DOHC (4.6L) 32 Valve	2004-96 Car ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 27-32 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	124
281 DOHC (4.6L) 32 Valve	1995-93 Car ●○	1st 25-30, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	124
281 DOHC Supercharged (4.6L) 32 Valve	2004-03 Car ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd loosen one turn, 4th 27-32 again, 5th turn 85-95 degrees, 6th turn 85-95 degrees	124
289	1968-63 ●	65-70	70
292	1964-55 ●	70-75	70



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
FORD PRODUCTS V8 (CONT.)			
302 (5.0L)	2001-96 Truck VIN P ●○	Flanged Hex Head bolts : 1st 30, 2nd 50, 3rd turn 90 degrees	70
302 (5.0L)	1996-92 Truck VIN N ●○	Flanged Hex Head bolts : 1st 25-35, 2nd 45-55, 3rd turn 85-95 degrees	70
302 (5.0L)	1995-92 Car ●○	Flanged Hex Head bolts : 1st 25-35, 2nd 45-55, 3rd turn 85-95 degrees	70
302 (5.0L)	1992-86 ●	Standard Hex Head bolts : 1st 55-65, 2nd 65-72	70
302 (5.0L)	1985-68 exc. Boss ●	65-72	70
302 (5.0L)	1971-69 Boss ●	Upper 80; Lower 70	70
302	1963-56 Truck ●	100-110	70
312	1960-56 ●	65-75	70
312 Supercharged	1957 ●	65-75	70
317	1955-52 Truck ●	Exc. Bolts marked "FT" 90; Bolts marked "FT" 110	70
317.5 Lincoln	1954-52 Car ●	80-90	70
330 OHV (5.4L)	1978-64 Truck ●	80-90	70
330 SOHC (5.4L) 16 Valve	2004-97 Truck ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	144
330 DOHC (5.4L) 32 Valve	2004-99 Truck ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	144
330 DOHC (5.4L) 32 Valve	2001-99 Car ●○	1st 30, 2nd turn 90 degrees, 3rd loosen one turn, 4th 30 again, 5th turn 90 degrees, 6th turn 90 degrees	124
330 SOHC Supercharged (5.4L) 16 Valve	2004-99 Truck ●○	1st 27-32, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	144
332	1964-56 Truck ●	100-110	70
332	1959-58 Car ●	80-90	70
333 Canadian	1964 Truck ●	100-110	70
336.7 L-Head Lincoln	1951-49	Nuts 50-55; Cap screws 65-70	224
341 Lincoln	1955	80-90	70
351C	1974-70 ●	95-105	70
351M (5.8L)	1982-75 ●	95-105	70
351W (5.8L)	1998-73 ●	1st 85, 2nd 95, 3rd 105-112	70
351W (5.8L)	1972-69 ●	95-100	70
352	1967-58 ●	80-90	70
359 (5.9L)	1978-73 Truck ●	90	70
360 (5.9L)	1976-68 ●	90	70
361 (5.9L)	1978-64 Truck ●	90	70
361 Edsel	1959-58 Car ●	80-90	70
368 Lincoln	1957-56	80-90	70
370 (6.1L)	1991-79 Truck ●	1st 80-90, 2nd 100-110, 3rd 130-140	70
383 Mercury	1960-58 ●	85-105	70
389 (6.4L)	1978-73 Truck ●	90	70
390 (6.4L)	1976-61 ●	90	70
391 (6.4L)	1978-64 Truck ●	90	70
400 (6.6L)	1982-71 ●	95-105	70
401	1978-64 Truck ●	170-180	70
401	1963-58 Truck ●	130-150	70
406	1963-62 ●	100-105	70
410 Mercury	1967-66 ●	80-90	70
410 Edsel	1958 ●	85-105	70
420 Diesel (6.9L)	1987-85 ●	1st 40, 2nd 70, 3rd 80, 4th 87	95
420 Diesel (6.9L)	1984-83 ●	1st 40, 2nd 70, 3rd 80, 4th 80 again	95
427	1968-63 ●	100-105	70
428	1970-66 ●	80-90	70



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
FORD PRODUCTS V8 (CONT.)			
429 (7.0L)	1999-87 Truck ●	1st 80-90, 2nd 100-110, 3rd 130-140	70
429 (7.0L)	1986-79 Truck ●	130-140	70
429 (7.0L)	1973-68 Car ●	130-140	70
430	1965-64 ●	125-135	70
430	1963-58 ●	85-105	70
444 Diesel (7.3L) IDI	1995-91 ●	1st 65, 2nd 90, 3rd 110, 4th 110 again	95
444 Diesel (7.3L) IDI	1990-88 ●	1st 65, 2nd 90, 3rd 100	95
444 Turbo Diesel (7.3L) DI	2003-00 ●○	1st 65, 2nd 85, 3rd 95, 4th 95 again	156
444 Turbo Diesel (7.3L) DI	1999-94 ●○	1st 65, 2nd 85, 3rd 105, 4th 105 again	156
444 Turbo Diesel (7.3L) IDI	1994-92 ●	1st 65, 2nd 90, 3rd 110, 4th 110 again	95
460 (7.5L)	1998-68 ●	1st 80-90, 2nd 100-110, 3rd 130-140	70
462 Lincoln	1968-66 ●	135-145	70
475 (7.8L)	1979-72 Truck ●	170-180	70
477 (7.8L)	1981-64 Truck ●	170-180	70
477 (7.8L)	1963-58 Truck ●	130-150	70
534 (8.8L)	1981-64 Truck ●	170-180	70
534 (8.8L)	1963-58 Truck ●	130-150	70
FORD PRODUCTS V10			
415 SOHC (6.8L) 20 Valve	2004-97 ●	1st 27-32, 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	145
FORD PRODUCTS V12			
267.3 L-Head Lincoln	1939-36 Cast Iron heads	50	171
267.3 L-Head Lincoln	1939-36 Aluminum heads	40	171
292 L-Head Lincoln	1948-40 Cast Iron heads	50	171
292 L-Head Lincoln	1948-40 Aluminum heads	40	171
305 L-Head Lincoln	1942 Cast Iron heads	50	171
305 L-Head Lincoln	1942 Aluminum heads	40	171
FRAZER..... SEE KAISER			
GEO..... SEE GM PRODUCTS			
GM PRODUCTS 3			
61 SOHC (1.0L)	2000-89 Metro VIN 6 ●○	54 in three steps	142
61 SOHC (1.0L)	1988-85 Sprint VIN M, 5 ●○	46-50 in three steps	142
61 SOHC Turbo (1.0L)	1991-89 Metro VIN 2 ●○	54 in three steps	142
61 SOHC Turbo (1.0L)	1988-87 Sprint VIN 2 ●○	46-50 in three steps	142
159 OHV Diesel (3-53) Detroit Diesel	1970-67	170-180	225
GM PRODUCTS 4			
81 SOHC (1.3L) 16 Valve	2001-98 Metro VIN 2 ●	49 in three steps	110
81 SOHC (1.3L) 8 Valve	1997-92 Metro VIN 9 ●	51-54 in three steps	59
85 SOHC (1.4L)	1977-76 Chevette VIN I ●	75 in three steps	37



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS 4 (CONT.)			
89.7 SOHC (1.5L)	1989-85 Spectrum VIN K, 7	1st 29, 2nd 58	37
89.7 SOHC Turbo (1.5L)	1989-87 Spectrum VIN 9	1st 29, 2nd 58	37
96.8 SOHC (1.6L) 8 Valve	1988-85 Nova VIN 4	43 in three steps	71
96.8 DOHC (1.6L) 16 Valve	1997-93 Prizm VIN 6	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	71
96.8 DOHC (1.6L) 16 Valve	1992-89 Prizm VIN 6	44 in three steps	99
96.8 DOHC (1.6L) 16 Valve	1992-90 Prizm VIN 5	44 in three steps	121
96.8 DOHC (1.6L) 16 Valve	1988 Nova VIN 5	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	121
96.9 SOHC (1.6L) 12 Valve	1993-90 Storm VIN 6	1st 29, 2nd 58	37
96.9 DOHC (1.6L) 16 Valve	1991-90 Storm VIN 8	1st 29, 2nd 58	100
97 SOHC (1.6L) 16 Valve	2000-99 Tracker VIN 6	1st 26, 2nd 41, 3rd loosen all bolts, 4th 26 again, 5th 52	110
97 SOHC (1.6L) 16 Valve	1998-94 Tracker VIN 6	1st 26, 2nd 41, 3rd 52	110
97 SOHC (1.6L) 8 Valve	1995-89 Tracker VIN U	51-54 in three steps	59
97.5 SOHC (1.6L) 8 Valve	1993-88 LeMans VIN 6	1st 18, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 30 degrees, 5th warm engine, 6th turn 30-50 degrees	151
98 SOHC (1.6L)	1987-76 Chevette, T1000	75 in three steps	37
107.5 DOHC (1.8L) 16 Valve	1997-93 Prizm VIN 8	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	71
109.4 DOHC (1.8L) 16 Valve	2003 Vibe VIN 8	1st 18, 2nd 36, 3rd 36 again, 4th turn 90 degrees	99
109.4 DOHC (1.8L) 16 Valve	2002-98 Prizm VIN 8	1st 18, 2nd 36, 3rd 36 again, 4th turn 90 degrees	99
109.5 SOHC (1.8L) 8 Valve	1986-82 VIN 0	1st 18, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th warm engine, 6th turn 30-50 degrees	151
109.5 SOHC Turbo (1.8L) 8 Valve	1986-84 VIN J	1st 18, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th warm engine, 6th turn 30-50 degrees	151
109.5 DOHC (1.8L) 16 Valve	2003 Vibe VIN L	1st 26, 2nd turn 90 degrees, 3rd turn 90 degrees	99
110.3 DOHC (1.8L) 16 Valve	1993-92 Storm VIN 8	1st 29, 2nd 58	100
110.8 SOHC (1.8L)	1982-76 LUV	1st 61, 2nd 72	37
110.8 SOHC (1.8L)	1975-72 LUV	1st 43, 2nd loosen all bolts, 3rd Bolts 1, 2, 3, 6 70; Bolts 4, 5, 7, 8, 9, 10 60	44
110.8 Diesel (1.8L)	1986-81 VIN D	1st 21-36, 2nd New bolts 83-98; Used bolts 90-105	75
112 OHV (1.8L) 8 Valve	1982 VIN G	65-75 in three steps	12
118.9 SOHC (1.9L)	1985-82 VIN A	72 in three steps	37
121 OHV (2.0L) 8 Valve	1989-87 VIN 1	Bolts 1, 4, 5, 8, 9 73-83; Bolts 2, 3, 6, 7, 10 62-70	149
121 OHV (2.0L) 8 Valve	1986-85 VIN P	Long bolts 73-85; Short bolts 62-70	12
121 OHV (2.0L) 8 Valve	1984-83 VIN B, P (Car)	65-75 in three steps	12



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS 4 (CONT.)			
121 OHV (2.0L) 8 Valve	1984-83 VIN Y (Truck)	65-75 in three steps	12
121.7 DOHC (2.0L) 16 Valve	2003-99 Tracker VIN C	Bolts 1-10 1st 38.5, 2nd 61, 3rd loosen all bolts, 4th 38.5 again, 5th 76; Bolt 11 6th 8	207
122 SOHC (2.0L) 8 Valve	1994-87 VIN H, K	1st 18, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th warm engine, 6th turn 30-50 degrees	151
122 SOHC Turbo (2.0L) 8 Valve	1990-87 VIN M	1st 18, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th warm engine, 6th turn 30-50 degrees	151
134 OHV (2.2L) 8 Valve	2003-92 VIN 4, 5	1st Long bolts 46; Short bolts 43, 2nd all bolts turn 90 degrees	149
134 OHV (2.2L) 8 Valve	1991 VIN G	Bolts 1, 4, 5, 8, 9 73-83; Bolts 2, 3, 6, 7, 10 62-70	149
134 OHV (2.2L) 8 Valve	1990 VIN G	1st Long bolts 46; Short bolts 43, 2nd all bolts turn 90 degrees	149
134.1 DOHC (2.2L) 16 Valve	2003-02 Ecotec VIN F, 6	Bolts 1-10 1st 22, 2nd turn 155 degrees; Bolts 11-14 3rd 26	199
136.5 Diesel (2.2L)	1985-81 VIN S	1st 40-47, 2nd New bolts 54-61; Used bolts 61-69	76
138 SOHC (2.3L) 8 Valve	1994 VIN 3	1st Long bolts 30; Short bolts 26, 2nd all bolts turn 90 degrees	98
138 SOHC (2.3L) 8 Valve	1993-92 VIN 3	1st Long bolts 30; Short bolts 26, 2nd all bolts turn 90 degrees	148
138 DOHC (2.3L) 16 Valve	1995-94 VIN A, D, G	1st Long bolts 30; Short bolts 26, 2nd all bolts turn 90 degrees	98
138 DOHC (2.3L) 16 Valve	1993-92 VIN A, D, G	1st Long bolts 30; Short bolts 26, 2nd all bolts turn 90 degrees	148
138 DOHC (2.3L) 16 Valve	1991-90 VIN A, D	1st Long bolts 1-8 26, 2nd Long bolts 1-8 turn 110 degrees, 3rd Short bolts 9-10 26, 4th Short bolts 9-10 turn 100 degrees	98
138 DOHC (2.3L) 16 Valve	1989-87 VIN A, D	1st Long bolts 1-8 26, 2nd Long bolts 1-8 turn 90 degrees, 3rd Short bolts 9-10 26, 4th Short bolts 9-10 turn 80 degrees	98
140 SOHC (2.3L) Chevrolet	1977-71	60 in three steps	37
146 DOHC (2.4L) 16 Valve	2002-96 VIN T	1st Long bolts 1-8 40; Short bolts 9-10 30, 2nd all bolts turn 90 degrees	98
151 (2.5L) Pontiac	1993-88 VIN A, E (Truck)	1st all bolts 18, 2nd Bolts 1-8, 10 26; Bolt 9 18, 3rd all bolts turn 90 degrees	72
151 (2.5L) Pontiac	1987 VIN E (Truck)	1st all bolts 18, 2nd Bolts 1-8, 10 26; Bolt 9 30, 3rd Bolts 1-8, 10 turn 120 degrees; Bolt 9 turn 90 degrees	72
151 (2.5L) Pontiac	1986-85 VIN E (Truck)	90 in three steps	72
151 (2.5L) Pontiac	1992-87 VIN R	1st all bolts 18, 2nd Bolts 1-8, 10 26; Bolt 9 18, 3rd all bolts turn 90 degrees	72
151 (2.5L) Pontiac	1986 VIN R, 2	1st all bolts 18, 2nd Bolts 1-8, 10 22; Bolt 9 29, 3rd Bolts 1-8, 10 turn 120 degrees; Bolt 9 turn 90 degrees	72
151 (2.5L) Pontiac	1985 VIN R, 2	92 in three steps	72



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

GM PRODUCTS 4 (CONT.)			
151 (2.5L) Pontiac	1991-87 VIN U ●○	1st all bolts 18 , 2nd Bolts 1-8, 10 26 ; Bolt 9 18 , 3rd all bolts turn 90 degrees	72
151 (2.5L) Pontiac	1986 VIN U ●○	1st all bolts 18 , 2nd Bolts 1-8, 10 22 ; Bolt 9 29 , 3rd Bolts 1-8, 10 turn 120 degrees; Bolt 9 turn 90 degrees	72
151 (2.5L) Pontiac	1985 VIN U ●○	92 in three steps	72
151 (2.5L) Pontiac	1984 ●	92 in three steps	72
151 (2.5L) Pontiac	1983-80 ●	85 in three steps	72
151 (2.5L) Pontiac	1979-77 ●	95 in three steps	72
153 Chevrolet	1970-62 ●	95	37
195 Pontiac	1963-61 ●	95	40
235 Diesel (3.8L) Isuzu	1988-87 ●	1st 50 , 2nd 65 , 3rd turn 60-90 degrees	180
235 Turbo Diesel (3.8L) Isuzu	1998-87 ●	1st 50 , 2nd 65 , 3rd turn 60-90 degrees	180

GM PRODUCTS 6 & H06 & V6

140 Chevrolet	1961-60 Corvair	27-33	27
145 Chevrolet	1963-61 Corvair	27-33	27
145 Turbo Chevrolet	1963-62 Corvair	27-33	27
152 DOHC (2.5L) 24 Valve	2003-01 Tracker VIN 4	Bolts 1-8 1st 38.5 , 2nd 61 , 3rd loosen all bolts, 4th 38.5 again, 5th 76 ; Bolt 9 6th 8	212
164 Chevrolet	1969-65 Corvair	40	27
164 Chevrolet	1964 Corvair	27-33	27
164 Turbo Chevrolet	1966-65 Corvair	40	27
164 Turbo Chevrolet	1964 Corvair	27-33	27
173 (2.8L) Chevrolet	1993-88 VIN R (Truck) ●○	1st 40 , 2nd turn 90 degrees	49
173 (2.8L) Chevrolet	1987-86 VIN R (Truck) ●○	70	49
173 (2.8L) Chevrolet	1985-82 VIN B (Truck) ●○	65-75	49
173 (2.8L) Chevrolet	1989-87 VIN W (FWD) ●○	1st 33 , 2nd turn 90 degrees	49
173 (2.8L) Chevrolet	1989-87 VIN S (RWD) ●○	1st 40 , 2nd turn 90 degrees	49
173 (2.8L) Chevrolet	1988-87 VIN 9 (Fiero) ●○	65-75	49
173 (2.8L) Chevrolet	1986-80 Car ●○	65-75	49
181 OHV (3.0L) 12 Valve Buick	1988-85 VIN L ●○	1st 25 , 2nd turn 90 degrees, 3rd turn 90 degrees	88
181 OHV (3.0L) 12 Valve Buick	1985-84 VIN E ●	80 in three steps	88
181 OHV (3.0L) 12 Valve Buick	1983-82 VIN E ●	80 in three steps	69
181 DOHC (3.0L) 24 Valve Opel	2002-01 VIN R ●○	1st 18.5 , 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees, 5th turn 15 degrees, 6th turn 15 degrees	49
181 DOHC (3.0L) 24 Valve Opel	2000-97 VIN R ●○	1st 18.5 , 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees, 5th turn 15 degrees	49
189 (3.1L) Chevrolet	2003-01 VIN J ●○	1st 44 , 2nd turn 95 degrees	196
189 (3.1L) Chevrolet	2000-99 VIN J ●○	1st 37 , 2nd turn 90 degrees	49
189 (3.1L) Chevrolet	1999-93 VIN M ●○	1st 33 , 2nd turn 90 degrees	49
189 (3.1L) Chevrolet	1994-88 VIN T (FWD) ●○	1st 33 , 2nd turn 90 degrees	49



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

GM PRODUCTS 6 & H06 & V6 (CONT.)			
189 (3.1L) Chevrolet	1992-90 VIN T (RWD) ●○	1st 40 , 2nd turn 90 degrees	49
189 (3.1L) Chevrolet	1993 VIN W (FWD) ●○	1st 33 , 2nd turn 90 degrees	49
189 (3.1L) Chevrolet	1995-90 VIN D (Truck) ●○	1st 40 , 2nd turn 90 degrees	49
189 Turbo (3.1L) Chevrolet	1990-89 VIN V ●○	1st 33 , 2nd turn 90 degrees	49
194 OHV Chevrolet	1967-62 ●	95	2
194 DOHC (3.2L) 24 Valve Opel	2003 VIN N	1st 18.5 , 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees, 5th turn 15 degrees, 6th turn 15 degrees	49
196 (3.2L) Buick	1979-78 VIN C ●	80 in three steps	69
198 Buick	1963-62 ●	65-70	19
200 (3.3L) Chevrolet	1979-78 VIN M ●	65 in three steps	64
204 (3.3L) Buick	1993-89 VIN N ●○	1st 35 , 2nd turn 130 degrees, 3rd Bolts 1-4 turn 30 degrees	88
206.8 OHV Chevrolet	1936-35	75-80	61
207 OHV (3.4L) 12 Valve Chevrolet	2004-01 VIN E ●○	1st 44 , 2nd turn 95 degrees	196
207 OHV (3.4L) 12 Valve Chevrolet	2000-96 VIN E ●○	1st 37 , 2nd turn 90 degrees	49
207 OHV (3.4L) 12 Valve Chevrolet	1995-93 VIN S ●○	1st 41 , 2nd turn 90 degrees	49
207 DOHC (3.4L) 24 Valve Chevrolet	1997-93 VIN X ●○	1st 44 , 2nd turn 90 degrees	49
207 DOHC (3.4L) 24 Valve Chevrolet	1992-91 VIN X ●○	1st 37 , 2nd turn 90 degrees	49
208 L-Head Pontiac	1936-35	60	174
214 DOHC (3.5L) 24 Valve Oldsmobile	2002-01 VIN H	1st M11 bolts 30 , 2nd M11 bolts turn 100 degrees, 3rd M11 bolts turn 100 degrees, 4th M6 long bolt 8.8 , 5th M6 short bolts 8.8	157
214 DOHC (3.5L) 24 Valve Oldsmobile	2000-99 VIN H	1st M11 bolts 30 , 2nd M11 bolts turn 60 degrees, 3rd M11 bolts turn 60 degrees, 4th M11 bolts turn 80 degrees, 5th M6 long bolt 8.8 , 6th M6 short bolts 8.8	157
215 OHV Pontiac	1965-64 ●	90-95	2
216.5 OHV Chevrolet	1953-37	75-80	61
219 L-Head Oldsmobile	1939-37	60-70	177
222.7 L-Head Pontiac	1940-37	60	174
225 Buick	1967-64 ●	65-70	19
228 GMC Truck	1953-39	90-100	61
229 (3.8L) Chevrolet	1984-80 VIN K, 9 ●	65 in three steps	64
229.7 L-Head Oldsmobile	1940-37	60-70	177
230 OHV Chevrolet	1970-63 ●	95	2
230 SOHC Pontiac	1967-66 ●	85-100	2
231 (3.8L) Buick	2003-01 VIN K (FWD) ●○	1st 37 , 2nd turn 120 degrees	88
231 (3.8L) Buick	2000-95 VIN K (FWD) ●○	1st 37 , 2nd turn 130 degrees, 3rd Bolts 1-4 turn 30 degrees	88
231 (3.8L) Buick	2002-98 VIN K (RWD) ●○	1st 37 , 2nd turn 120 degrees	88
231 (3.8L) Buick	1997-95 VIN K (RWD) ●○	1st 37 , 2nd turn 130 degrees, 3rd Bolts 1-4 turn 30 degrees	88



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS 6 & H06 & V6 (CONT.)			
231 (3.8L) Buick	1995-90 VIN L ●○	1st 35, 2nd turn 130 degrees, 3rd Bolts 1-4 turn 30 degrees	88
231 (3.8L) Buick	1991-88 VIN C ●○	1st 35, 2nd turn 130 degrees, 3rd turn 30 degrees	88
231 (3.8L) Buick	1988-86 VIN A, B, 3 ●○	1st 25, 2nd turn 90 degrees, 3rd turn 90 degrees	88
231 (3.8L) Buick	1985-78 ●	80 in three steps	88
231 (3.8L) Buick	1977-75 ●	80 in three steps	69
231 Supercharged (3.8L) Buick	2003-01 VIN 1 ●○	1st 37, 2nd turn 120 degrees	88
231 Supercharged (3.8L) Buick	2000-91 VIN 1 ●○	1st 37, 2nd turn 130 degrees, 3rd Bolts 1-4 turn 30 degrees	88
231 Turbo (3.8L) Buick	1989 VIN 7 ●○	1st 25, 2nd turn 90 degrees, 3rd turn 90 degrees	88
231 Turbo (3.8L) Buick	1987-86 VIN 7 ●○	1st 25, 2nd turn 90 degrees, 3rd turn 90 degrees	88
231 Turbo (3.8L) Buick	1985-84 ●	80 in three steps	88
231 Turbo (3.8L) Buick	1983-78 ●	80 in three steps	69
235 OHV Chevrolet	1963-53	90-95	25
235 OHV Chevrolet	1952-40	75-80	61
236 GMC Truck	1949-41	90-100	61
238 L-Head Oldsmobile	1948-41	60-70	177
239.2 L-Head Pontiac	1954-41	60	174
248 GMC Truck	1955-39	90-100	61
250 OHV (4.1L) Chevrolet	1984-74 VIN D, Q ●	Bolts 1-10, 12-14 95; Bolt 11 85	2
250 OHV (4.1L) Chevrolet	1973-65 ●	95	2
250 SOHC Pontiac	1969-68 ●	85-100	2
252 (4.1L) Buick	1985-84 VIN 4 ●	80 in three steps	88
252 (4.1L) Buick	1983-80 VIN 4 ●	80 in three steps	69
254 DOHC (4.2L) 24 Valve Chevrolet Truck	2003-02 VIN S	Bolts 1-14 1st 22, 2nd turn 90 degrees, 3rd turn 65 degrees; Bolt 15 4th 5.1, 5th turn 120 degrees; Bolts 16, 17 6th 5.1, 7th turn 60 degrees	211
261 OHV Chevrolet	1962-54	90-95	45
262 (4.3L) Chevrolet Truck	2004-02 VIN X ●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	64
262 (4.3L) Chevrolet Truck	1999-96 VIN X ●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	64
262 (4.3L) Chevrolet Truck	1995-94 VIN Z ●	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	64
262 (4.3L) Chevrolet Truck	1993-85 VIN B, N, Z ●	65 in three steps	64
262 H.O. (4.3L) Chevrolet Truck	2004-96 VIN W ●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	64
262 H.O. (4.3L) Chevrolet Truck	1995-92 VIN W ●	65 in three steps	64
262 Turbo (4.3L) Chevrolet Truck	1993-91 VIN Z	65 in three steps	64
262 Diesel (4.3L) Oldsmobile	1985-82 VIN T, V ●	Bolts 1, 2, 3, 4, 7, 8, 9, 10 142; Bolts 5, 6, 11, 12, 13, 14 59	73



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS 6 & H06 & V6 (CONT.)			
270 GMC Truck	1962-39	90-100	61
292 (4.8L) Chevrolet Truck	1989-74 VIN T ●	Bolts 1-10, 12-14 95; Bolt 11 85	2
292 (4.8L) Chevrolet Truck	1973-63 ●	95	2
302 GMC Truck	1959-52	90-100	61
305 GMC Truck	1974-60	65-72	67
351 GMC Truck	1973-60	65-72	67
D351 Diesel GMC Truck	1969-64	125-135	67
353 Turbo Diesel (5.8L) Isuzu	1995-87 ●	1st 50, 2nd 65, 3rd turn 60-90 degrees	181
379 GMC Truck	1974-73	7/16" bolts 60-65; 1/2" bolts 90-100	67
401 GMC Truck	1973-60	65-72	67
426 GMC Truck	1955-49	80-90	192
432 GMC Truck	1974-73	7/16" bolts 60-65; 1/2" bolts 90-100	67
478 GMC Truck	1974-62	65-72	67
D478 Diesel GMC Truck	1975-64	125-135	67
DH478 Diesel GMC Truck	1975-64	125-135	67
503 GMC Truck	1959-57	75-80	192
503 GMC Truck	1956-49	80-90	192
GM PRODUCTS L8 & V8			
215 Buick, Pontiac	1963-61 ●	50-55	24
215 Oldsmobile	1963-61 ●	45-55	176
215 Turbo Oldsmobile	1963-62 ●	45-55	176
223.4 L-Head Pontiac	1935-33	60	175
232.3 L-Head Pontiac	1936	60	175
244 DOHC (4.0L) 32 Valve Oldsmobile	2003-01 VIN C ●○	1st 30, 2nd turn 70 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th M6 bolts 8.8	198
244 DOHC (4.0L) 32 Valve Oldsmobile	1999-98 VIN C ●○	1st 30, 2nd turn 70 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th M6 bolts 8.8	158
244 DOHC (4.0L) 32 Valve Oldsmobile	1997 VIN C ●○	1st 22, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th M6 bolts 8.8	158
244 DOHC (4.0L) 32 Valve Oldsmobile	1996-95 VIN C ●○	1st 22, 2nd turn 90 degrees, 3rd turn 75 degrees, 4th M6 bolts 8.8	158
248 OHV Buick	1950-34	65-70	178
248.9 L-Head Pontiac	1949-37	60	175
250 (4.1L) Cadillac	1988-82 VIN 7, 8 ●	1st 38, 2nd 74, 3rd Bolts 1, 3, 4 90	74
260 (4.3L) Oldsmobile	1982-75 VIN F, 8 ●	1st 60, 2nd 85	3
260 Diesel (4.3L) Oldsmobile	1979 VIN P ●	1st 100, 2nd 130	3
262 Chevrolet	1976-75 VIN G ●○	65 in three steps	7
263 OHV Buick	1953-50	65-70	178
264 Buick	1955-54	65-75	34
265 (4.3L) Chevrolet	1996-95 VIN W ●○	1st all bolts 22, 2nd Long bolts turn 80 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	7
265 (4.3L) Chevrolet	1994 VIN W ●○	65 in three steps	7
265 (4.3L) Pontiac	1981-80 VIN S ●	95 in three steps	40
265 Chevrolet	1957-55 ●○	65	7



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS L8 & V8 (CONT.)			
267 (4.4L) Chevrolet	1982-79 VIN J ●○	65 in three steps	7
268.2 L-Head Pontiac	1954-50	60	175
273 (4.5L) Cadillac	1992-88 VIN 3, 5, 8 ●	1st 38, 2nd 68, 3rd Bolts 1, 3, 4 90	74
281 DOHC (4.6L) 32 Valve Cadillac	2003-00 VIN Y, 9 ●○	1st M11 bolts 30, 2nd turn 70 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th M6 bolts 8.8	198
281 DOHC (4.6L) 32 Valve Cadillac	1999-98 VIN Y, 9 ●○	1st M11 bolts 22, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th M6 bolts 8.8	197
281 DOHC (4.6L) 32 Valve Cadillac	1997-95 VIN Y, 9 ●○	1st M11 bolts 22, 2nd turn 60 degrees, 3rd turn 60 degrees, 4th turn 60 degrees, 5th M6 bolts 8.8	158
281 DOHC (4.6L) 32 Valve Cadillac	1994-93 VIN Y, 9 ●○	1st M11 bolts 22, 2nd turn 90 degrees, 3rd turn 90 degrees, 4th M6 bolts 10	158
283 Chevrolet	1967-57 ●○	65	7
287.2 Pontiac	1955	95	40
288 GMC Truck	1955	95	40
293 (4.8L) Chevrolet Truck	2004-99 VIN V ●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 90 degrees, 3rd M11 Bolts 1-8 turn 90 degrees, 4th M11 Bolts 9, 10 turn 50 degrees, 5th M8 Bolts 11-15 22	159
298 (4.5L) Cadillac	1995-91 VIN B ●	1st 38, 2nd 68, 3rd Bolts 1, 3, 4 90	74
300 Buick	1967-64 ●	65-70	4
301 (4.9L) Pontiac	1981-77 VIN W, Y ●	95 in three steps	40
301 Turbo (4.9L) Pontiac	1981-80 VIN T ●	95 in three steps	40
302 Chevrolet	1969-67 ●○	65	7
303 Oldsmobile	1953-49	65-70	29
305 (5.0L) Chevrolet	2002-97 VIN M ●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	7
305 (5.0L) Chevrolet	1996 VIN M ●○	1st 24, 2nd 45, 3rd 65	7
305 (5.0L) Chevrolet	1995-76 ●○	65 in three steps	7
307 (5.0L) Oldsmobile	1990-89 VIN Y, 9 ●	1st 40, 2nd Bolts 1-7, 9 turn 120 degrees, 3rd Bolts 8, 10 turn 95 degrees	3
307 (5.0L) Oldsmobile	1988-80 VIN Y, 9 ●	130 in three steps	3
307 Chevrolet	1973-68 ●○	65	7
316 Pontiac	1956	95	40
316 GMC Truck	1956-55	95	40
320.2 OHV Buick	1952-36	65-70	178
322 Buick	1956-53	65-75	34
324 Oldsmobile	1956-54	65-70	29
324 GMC Truck	1956-55	65-70	29
325 (5.3L) Chevrolet Truck	2004-99 VIN P, T, Z ●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 90 degrees, 3rd M11 Bolts 1-8 turn 90 degrees, 4th M11 Bolts 9, 10 turn 50 degrees, 5th M8 Bolts 11-15 22	159
326 Pontiac	1967-63 ●	95	40
327 Chevrolet	1969-62 ●○	65	7

● PermaTorque® Head Gasket available ○ Head Bolt Set available



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS L8 & V8 (CONT.)			
330 Oldsmobile	1967-64 ●	80	3
331 Cadillac	1955-49 ●	65-70	23
336.9 GMC Truck	1959-58	95	40
340 Buick	1967-66 ●	65-70	4
346 (5.7L) Chevrolet	2003-98 VIN G, S ●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 90 degrees, 3rd M11 Bolts 1-8 turn 90 degrees, 4th M11 Bolts 9, 10 turn 50 degrees, 5th M8 Bolts 11-15 22	159
346 (5.7L) Chevrolet	1997 VIN G ●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 76 degrees, 3rd M11 Bolts 1-8 turn 76 degrees, 4th M11 Bolts 9, 10 turn 34 degrees, 5th M8 Bolts 11-15 22	159
346 L-Head Cadillac	1948-37	70-75	179
347 Pontiac	1957	95	40
347 GMC Truck	1957	95	40
348 Chevrolet	1965-58 ●	65	26
350 (5.7L) Buick	1981-75 VIN B, H, J, X ●	80 in three steps	5
350 (5.7L) Buick	1974-73 ●	80 in three steps	5
350 (5.7L) Buick	1972-68 ●	65-75	4
350 (5.7L) Cadillac	1980-75 VIN B, R, 8 ●	130 in three steps	3
350 (5.7L) Chevrolet	1997-96 VIN P, 5 ●○	1st all bolts 22, 2nd Short bolts turn 67 degrees, 3rd Medium bolts & Long bolts turn 80 degrees	7
350 (5.7L) Chevrolet	1995-92 VIN P ●○	65 in three steps	7
350 (5.7L) Chevrolet	2002-97 VIN R ●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	7
350 (5.7L) Chevrolet	1996 VIN R ●○	1st 24, 2nd 45, 3rd 65	7
350 (5.7L) Chevrolet	1995-67 ●○	65 in three steps	7
350 (5.7L) Chevrolet	1991-86 ●○	Cast Iron heads exc. VIN P	7
350 (5.7L) Chevrolet	1991-86 ●○	Aluminum heads exc. VIN P	7
350 (5.7L) Oldsmobile	1980-77 VIN R ●	1st 100, 2nd 130	3
350 (5.7L) Oldsmobile	1976-68 ●	1st 60, 2nd 85	3
350 (5.7L) Pontiac	1977-76 VIN M, P ●	95 in three steps	40
350 (5.7L) Pontiac	1975-68 ●	95 in three steps	40
350 DOHC (5.7L) 32 Valve Chevrolet	1995-90 VIN J	1st 45, 2nd 74, 3rd 118	200
350 Diesel (5.7L) Oldsmobile	1985-78 VIN N, Z ●	1st 100, 2nd 130	3
364 (6.0L) Chevrolet Truck	2004-99 VIN N, U ●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 90 degrees, 3rd M11 Bolts 1-8 turn 90 degrees, 4th M11 Bolts 9, 10 turn 50 degrees, 5th M8 Bolts 11-15 22	159
364 Buick	1961-57 ●	65-75	34
365 Cadillac	1958-56 ●	65-70	23
366 (6.0L) Chevrolet Truck	1998-66 ●	80	8
368 (6.0L) Cadillac	1984-80 VIN 6, 9 ●	95 in three steps	37
370 Pontiac	1958 ●	95	40

● PermaTorque® Head Gasket available ○ Head Bolt Set available



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS L8 & V8 (CONT.)			
370 GMC Truck	1959-57	65-70	29
371 Oldsmobile	1960-59	60-80	29
371 Oldsmobile	1958-57	60-70	29
379 Diesel (6.2L) Chevrolet Truck	1993-87 VIN C, J	1st 20, 2nd 50, 3rd turn 90 degrees	77
379 Diesel (6.2L) Chevrolet Truck	1986-82 VIN C, J	95-105 in three steps	77
389 Pontiac	1966-59	95	40
390 Cadillac	1963	75	7
390 Cadillac	1962-61	75	23
390 Cadillac	1960-59	65-70	23
394 Oldsmobile	1964-59	60-80	29
395 Diesel (6.5L) Chevrolet Truck	1999-94 VIN P, Y	1st 20, 2nd 55, 3rd 55 again, 4th turn 90 degrees	77
395 Turbo Diesel (6.5L) Chevrolet Truck	2004-92 VIN F, S, Z	1st 20, 2nd 55, 3rd 55 again, 4th turn 90 degrees	77
396 Chevrolet	1969-65	80	8
400 Buick	1969-68	100	4
400 Buick	1967	100-120	4
400 Buick	1966-65	65-80	24
400 (6.6L) Chevrolet	1980-70	65 in three steps	7
400 Oldsmobile	1969-65	80	3
400 Pontiac	1979-67	95 in three steps	40
401 Buick	1966-62	65-80	24
401 Buick	1961-59	65-75	34
402 Chevrolet	1972-70	80	8
402 Turbo Diesel (6.6L) Isuzu	2003-01 DuraMax VIN 1	1st M12 bolts 37, 2nd M12 bolts 59, 3rd M12 bolts turn 90 degrees, 4th M12 bolts turn 75 degrees, 5th M8 bolts 18	213
403 Oldsmobile	1979-77 VIN K	1st 100, 2nd 130	3
409 Chevrolet	1965-61	65	26
421 Pontiac	1966-61	95	40
425 Buick	1966-63	65-80	24
425 Cadillac	1979-77 VIN S, T	95 in three steps	37
425 Oldsmobile	1967-65	80	3
427 (7.0L) Chevrolet Truck	1998-68	80	8
427 (7.0L) Chevrolet	1969-66 Cast Iron heads	80	8
427 (7.0L) Chevrolet	1969-67 Aluminum heads	Short bolts 65; Medium bolts 75; Long bolts 75	8
428 Pontiac	1969-67	95	40
429 Cadillac	1967-64	60	7
430 Buick	1969-68	100	4
430 Buick	1967	100-120	4
454 (7.4L) Chevrolet	2000-98 VIN J	1st 37, 2nd Bolts 1, 2, 3, 6, 7, 8, 9, 12, 13, 14, 15, 16 turn 150 degrees, 3rd Bolts 4, 5, 10, 11 turn 90 degrees	8
454 (7.4L) Chevrolet	1997-91 VIN J, N	1st 30, 2nd 60, 3rd 80	8
454 (7.4L) Chevrolet	1990-70 Cast Iron heads	80 in three steps	8
454 (7.4L) Chevrolet	1972-70 Aluminum heads	Short bolts 65; Medium bolts 75; Long bolts 75	8
455 Buick	1976-70	100	5
455 Oldsmobile	1976-68	85	3



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
GM PRODUCTS L8 & V8 (CONT.)			
455 Pontiac	1976-70	95	40
472 Cadillac	1974-68	115	37
496 (8.1L) Chevrolet Truck	2003-01 VIN G	1st 22, 2nd 22 again, 3rd turn 120 degrees, 4th Bolts 1, 2, 3, 6, 7, 8, 9, 10, 11, 14, 16, 17 turn 60 degrees, 5th Bolts 15, 18 turn 45 degrees, 6th Bolts 4, 5, 12, 13 turn 30 degrees	210
500 Cadillac	1976-70	115 in three steps	37
GM PRODUCTS V12			
702 GMC Truck	1965-60	65-72	67
GMC SEE GM PRODUCTS			
GRUMANN 4			
134 OHV (2.2L) Chevrolet	1995-94 VIN 4	1st Long bolts 46; Short bolts 43, 2nd all bolts turn 90 degrees	149
151 (2.5L) Pontiac	1993-88 VIN A, E	1st all bolts 18, 2nd Bolts 1-8, 10 26; Bolt 9 18, 3rd all bolts turn 90 degrees	72
151 (2.5L) Pontiac	1987 VIN E	1st all bolts 18, 2nd Bolts 1-8, 10 26; Bolt 9 30, 3rd Bolts 1-8, 10 turn 120 degrees; Bolt 9 turn 90 degrees	72
HENRY J. SEE KAISER			
HONDA 3			
995cc SOHC (ECA1) Hybrid	2003-00	Bolts 1-8 1st 29, 2nd turn 90 degrees; Bolts 9 3rd 8.7	202
HONDA 4			
1169cc SOHC (EB1)	1973	37-42 in two steps	153
1238cc SOHC (EB2, EB3)	1979-74	37-42 in two steps	153
1335cc SOHC (EJ1)	1983-80	1st 22, 2nd 43	60
1335cc SOHC (EN1)	1983-80	37-42 in two steps	153
1339cc SOHC (LDA1) Hybrid	2003	1st 22, 2nd turn 130 degrees	153
1342cc SOHC (D13A1, D13A2) 8 Valve	1987	1st 22, 2nd 43	37
1342cc SOHC (EV1, EV2) 8 Valve	1986-84	1st 22, 2nd 43	37
1488cc SOHC (D15A1, D15A2, D15A3) 12 Valve	1987	1st 22, 2nd 43	37
1488cc SOHC (EW1, EW2) 12 Valve	1986-84	1st 22, 2nd 43	37
1488cc SOHC (EW3, EW4) 12 Valve	1986-85	1st 22, 2nd 43	37
1488cc SOHC (D15A2) 8 Valve	1987	1st 22, 2nd 43	37
1488cc SOHC (EW1) 8 Valve	1986-85	1st 22, 2nd 43	37
1488cc SOHC (EM1) 8 Valve	1983-80	1st 22, 2nd 43	60
1488cc SOHC (EC, ED1, ED2, ED3, ED4) 8 Valve	1979-75	44 in two steps	60
1493cc SOHC (D15B7) 16 Valve	1995-92	1st 14, 2nd 36, 3rd 49, 4th Bolts 1, 2 49 again	108
1493cc SOHC (D15Z1) 16 Valve	1995-92	1st 14, 2nd 36, 3rd 49, 4th Bolts 1, 2 49 again	108



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
HONDA 4 (CONT.)			
1493cc SOHC (D15B1, D15B2) 16 Valve	1991-88	● 1st 22, 2nd 43	108
1493cc SOHC (D15B8) 8 Valve	1995-92	● 1st 14, 2nd 36, 3rd 49, 4th Bolts 1, 2 49 again	108
1493cc SOHC (D15B6) 8 Valve	1991-88	● 1st 22, 2nd 43	108
1590cc SOHC (D16B5) 16 Valve	2000-98	1st 13, 2nd 36, 3rd 49, 4th Bolts 1, 2 49 again	152
1590cc SOHC (D16Y5, D16Y7, D16Y8) 16 Valve	2000-96	● 1st 13, 2nd 36, 3rd 49, 4th Bolts 1, 2 49 again	36
1590cc SOHC (D16Z6) 16 Valve	1995-92	● 1st 14, 2nd 36, 3rd 49, 4th Bolts 1, 2 49 again	108
1590cc SOHC (D16A6) 16 Valve	1991-88	● 1st 22, 2nd 43	108
1595cc DOHC (B16A2, B16A3) 16 Valve	2000-94	● 1st 22, 2nd 61	152
1599cc SOHC (EF1, EF2, EG)	1979-76	● 44 in two steps	60
1601cc SOHC (EZ1)	1985-84	● 1st 22, 2nd 49	60
1601cc SOHC (EL)	1983-79	● 1st 22, 2nd 43	60
1668cc SOHC (D17A1, D17A2, D17A6, D17A7) 16 Valve	2003-01	1st 14, 2nd 36, 3rd 49	108
1751cc SOHC (EK1) 12 Valve	1983-79	● 1st 22, 2nd 43	60
1829cc SOHC (A18A1, A18A2) 12 Valve	1987	● 1st 22, 2nd 49	60
1829cc SOHC (ET1, ET2) 12 Valve	1986-84	● 1st 22, 2nd 49	60
1829cc SOHC (ES1, ES2, ES3) 12 Valve	1985-83	● 1st 22, 2nd 49	60
1955cc SOHC (A20A1, A20A2, A20A3, A20A4) 12 Valve	1989-87	● 1st 22, 2nd 49	60
1955cc SOHC (BS1, BS2) 12 Valve	1986	● 1st 22, 2nd 49	60
1955cc SOHC (BT1, BT2) 12 Valve	1986-85	● 1st 22, 2nd 49	60
1958cc SOHC (B20A3) 12 Valve	1990-88	● 1st 22, 2nd 49	108
1958cc DOHC (B20A5) 16 Valve	1991-88	● 1st 22, 2nd 49	108
1972cc DOHC (B20Z2) 16 Valve	2001-99	● 1st 22, 2nd 63	146
1972cc DOHC (B20B4) 16 Valve	1998-97	● 1st 22, 2nd 63	146
1997cc DOHC (F20C1) 16 Valve	2003-00	● Bolts 1-10 1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees; Bolts 11 4th 16	222
1998cc DOHC (K20A3) 16 Valve	2004-02	1st 29, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	106
2056cc DOHC (B21A1) 16 Valve	1991-90	● 1st 22, 2nd 49	108
2156cc SOHC (F22B1, F22B2, F22B6) 16 Valve	1997-94	● 1st 29, 2nd 51, 3rd 72.3	108
2156cc SOHC (F22A1, F22A6) 16 Valve	1996-92	● 1st 29, 2nd 51, 3rd 72.3	108



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
HONDA 4 (CONT.)			
2156cc SOHC (F22A1, F22A4, F22A6) 16 Valve	1991-90	● 1st 29, 2nd 51, 3rd 78	108
2157cc DOHC (H22A4) 16 Valve	2001-97	1st 29, 2nd 51, 3rd 72.3	152
2157cc DOHC (H22A1) 16 Valve	1996-93	1st 29, 2nd 51, 3rd 78	152
2254cc SOHC (F23A1, F23A4, F23A5, F23A7) 16 Valve	2002-98	● 1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	108
2259cc DOHC (H23A1) 16 Valve	1996-92	● 1st 29, 2nd 51, 3rd 78	152
2354cc DOHC (K24A1, K24A4) 16 Valve	2004-02	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	106
2559cc SOHC (4ZE1) 8 Valve	1997-94	● 1st 58, 2nd 72	79
HONDA V6			
2675cc SOHC (C27A4) 24 Valve	1997-95	1st 29, 2nd 56	107
2997cc SOHC (J30A1, J30A4) 24 Valve	2003-98	1st 29, 2nd 51, 3rd 72.3	131
3165cc SOHC (6VD1) 24 Valve	1997-96	● M11 Bolts 1-8 47; M8 Bolts 9-11 15	132
3165cc SOHC (6VD1) 24 Valve	1995-94	● M11 Bolts 1-8 47; M8 Bolts 9-10 15	160
3165cc DOHC (6VD2) 24 Valve	2002-98	● 1st 22, 2nd 47	134
3471cc SOHC (J35A1, J35A4) 24 Valve	2003-99	1st 29, 2nd 51, 3rd 72.3	131
HUDSON SEE AMERICAN MOTORS			
HUMMER (1992-2001) SEE AM GENERAL			
HUMMER (2002-2004) SEE GM PRODUCTS			
HYUNDAI 4			
1439cc OHV (4G33)	1987-84	● Bolts 1-10 1st 25, 2nd 51-54; Bolts 11 3rd 11-15	38
1468cc SOHC (G4AJ, G4DJ, G15B, G15) 8 Valve	1994-86	● Cold 51-54, Hot 58-61	81
1494cc SOHC (G4EK) 12 Valve	2002-00	● 1st 17-20, 2nd turn 60-62 degrees, 3rd turn 60-62 degrees	147
1494cc SOHC (G4EK) 12 Valve	1999-93	● Cold 51-54, Hot 58-61	147
1494cc DOHC (G4FK) 16 Valve	1998-96	● Cold 51-54, Hot 58-61	147
1494cc SOHC Turbo (G4EK-T) 12 Valve	1995-93	● Cold 51-54, Hot 58-61	147
1595cc DOHC (G4CR) 16 Valve	1995-92	● 76-83 in two steps	147
1597cc SOHC (G32B, G432) 8 Valve	1987-85	● Bolts 1-10 1st 25, 2nd 51-54; Bolts 11 3rd 11-15	38
1599cc DOHC (G4CR) 16 Valve	2003-01	1st 22, 2nd turn 90 degrees, 3rd loosen all bolts, 4th 22 again, 5th turn 90 degrees	121
1796cc DOHC (G4CN, G4DN) 16 Valve	1998-96	● M10 bolts 1st 22, 2nd turn 60-65 degrees, 3rd turn 60-65 degrees; M12 bolts 1st 26, 2nd turn 60-65 degrees, 3rd turn 60-65 degrees	121



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

HYUNDAI 4 (CONT.)				
1796cc DOHC (G4CN) 16 Valve	1995-93	●	76-83 in two steps	147
1975cc DOHC (G4CP) 16 Valve	2003-99	●	M10 bolts 1st 22, 2nd turn 60-65 degrees, 3rd turn 60-65 degrees; M12 bolts 1st 26, 2nd turn 60-65 degrees, 3rd turn 60-65 degrees	121
1975cc DOHC (G4CP) 16 Valve	1998-97	●	M10 bolts 1st 22, 2nd turn 60-65 degrees, 3rd turn 60-65 degrees; M12 bolts 1st 26, 2nd turn 60-65 degrees, 3rd turn 60-65 degrees	147
1997cc SOHC (G63B) 8 Valve	1988-87	●	Cold 65-72, Warm 73-79	71
1997cc DOHC (G4CP) 16 Valve	1998-95	●	Cold 65-72 in two steps	147
1997cc DOHC (G4CP) 16 Valve	1994-92	●	76-83 in two steps	147
2351cc SOHC (G4CS) 8 Valve	1991-89	●	Cold 65-72, Warm 73-79	71
2351cc DOHC (4G64) 16 Valve	2003-01 Truck		1st 46, 2nd loosen all bolts, 3rd 14, 4th turn 90 degrees, 5th turn 90 degrees	147
2351cc DOHC (4G64) 16 Valve	2003-99 Car		1st 14, 2nd turn 90 degrees, 3rd loosen all bolts, 4th 14 again, 5th turn 90 degrees, 6th turn 90 degrees	147

HYUNDAI V6				
2493cc DOHC (6G73) 24 Valve	2001-99		Cold 1st 18, 2nd turn 60-64 degrees, 3rd turn 45-49 degrees, 4th warm engine & allow to cool, 5th loosen all bolts, 6th 18 again, 7th turn 60-64 degrees, 8th turn 45-49 degrees	154
2656cc DOHC (G6BA) 24 Valve	2003-01		Cold 1st 18, 2nd turn 58-62 degrees, 3rd turn 43-47 degrees, 4th warm engine & allow to cool, 5th loosen all bolts, 6th 18 again, 7th turn 58-62 degrees, 8th turn 43-47 degrees	154
2972cc SOHC (G6AT) 12 Valve	1998-93	●○	76-83 in three steps	154
2972cc SOHC (G6AT) 12 Valve	1992-90	●○	Cold 65-72, Warm 72-80	154
2972cc DOHC (G6CT) 24 Valve	2001		Cold 1st 75-82 in three steps, 2nd warm engine & allow to cool, 3rd loosen all bolts, 4th 75-82 in three steps again	154
3497cc DOHC (G6CU) 24 Valve	2003-02		Cold 1st 75-82 in three steps, 2nd warm engine & allow to cool, 3rd loosen all bolts, 4th 75-82 in three steps again	154

INFINITI 4				
1998cc DOHC (SR20DE) 16 Valve	2002-99	●	1st 29, 2nd 58, 3rd loosen all bolts, 4th 25-33, 5th turn 90-95 degrees, 6th turn 90-95 degrees	109
1998cc DOHC (SR20DE) 16 Valve	1996-91	●	1st 29, 2nd 58, 3rd loosen all bolts, 4th 25-33, 5th turn 90-100 degrees, 6th turn 90-100 degrees	109



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

INFINITI V6				
2960cc SOHC (VG30E) 12 Valve	1992-90	●	1st 22, 2nd 43, 3rd loosen all bolts, 4th 22 again, 5th 40-47; OR turn 60-65 degrees	85
2960cc DOHC (VG30DE) 24 Valve	1997-93	●	1st 29, 2nd 90, 3rd loosen all bolts, 4th 25-33, 5th 90; OR turn 60-70 degrees	161
2988cc DOHC (VQ30DE) 24 Valve	2001-96	●○	1st 72, 2nd loosen all bolts, 3rd 25-33, 4th turn 90-95 degrees, 5th turn 90-95 degrees	161
3274cc SOHC (VG33E) 12 Valve	2000-97		1st 22, 2nd 43, 3rd loosen all bolts, 4th 7, 5th 22, 6th 40-47; OR turn 60-65 degrees	162
3498cc DOHC (VQ35DE) 24 Valve	2003-01		1st 72, 2nd loosen all bolts, 3rd 25-33, 4th turn 90-95 degrees, 5th turn 90-95 degrees	161

INFINITI V8				
4130cc DOHC (VH41DE) 32 Valve	2001-97		1st 22, 2nd 69, 3rd loosen all bolts, 4th 18-25, 5th turn 90-95 degrees	110
4494cc DOHC (VK45DE) 32 Valve	2003-02		1st 72, 2nd loosen all bolts, 3rd 29-36, 4th turn 60-65 degrees, 5th turn 60-65 degrees	203
4494cc DOHC (VH45DE) 32 Valve	1996-90	●	1st 22, 2nd 69, 3rd loosen all bolts, 4th 18-25, 5th 69-72; OR turn 90-95 degrees	110

INTERNATIONAL 4				
90.8 Austin	1963-58		45	182
152	1968-61	●	90-100	183
152 Turbo	1967-65	●	90-100	183
196 (3.2L)	1980-67	●	90-100	183

INTERNATIONAL 6				
220	1968-50		85-95	184
232 AMC	1972-69	●	80-85	2
240	1968-58		85-95	184
258 AMC	1974-73	●	105 in three steps	2
258 AMC	1972	●	80-85	2
264	1968-59		85-95	184

INTERNATIONAL V8				
266	1972-59	●	90-100	183
304 (5.0L)	1980-60	●	90-100	183
345 (5.6L)	1985-61	●	90-100	183
392 (6.4L)	1985-66	●	90-100	183
401 AMC	1974	●	1st 80, 2nd 110	1
420 Diesel (6.9L)	1988-85	●	1st 40, 2nd 70, 3rd 80, 4th 87	95
420 Diesel (6.9L)	1984-80	●	1st 40, 2nd 70, 3rd 80, 4th 80 again	95
444 Diesel (7.3L) IDI	1993-91	●	1st 65, 2nd 90, 3rd 110, 4th 110 again	95
444 Diesel (7.3L) IDI	1990-88	●	1st 65, 2nd 90, 3rd 100	95
444 Turbo Diesel (7.3L) IDI	1997-94	●○	1st 65, 2nd 85, 3rd 105, 4th 105 again	156
444 Turbo Diesel (7.3L) IDI	1994-93	●	1st 65, 2nd 90, 3rd 110, 4th 110 again	95

ISUZU 4				
1471cc SOHC (4XC1)	1989-85	●	1st 29, 2nd 58	37
1471cc SOHC Turbo (4XC1-T)	1989-87		1st 29, 2nd 58	37
1588cc SOHC (4XE1V) 12 Valve	1993-90	●	1st 29, 2nd 58	37



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
ISUZU 4 (CONT.)				
1588cc DOHC (4XE1W) 16 Valve	1992-89	●	1st 29, 2nd 58	100
1588cc DOHC Turbo (4XE1W-T) 16 Valve	1992-90	●	1st 29, 2nd 58	100
1808cc DOHC (4XF1) 16 Valve	1993-92	●	1st 29, 2nd 58	100
1817cc Gas (G180Z)	1985-81	●	72	37
1817cc Diesel (4FB1)	1985-81	●	New bolts 98; Used bolts 105	75
1949cc SOHC (G200Z)	1987-83	●	1st 61, 2nd 72	37
1994cc SOHC Turbo (4ZC1-T)	1989-85		1st 62, 2nd 72	12
2156cc SOHC (F22B6) 16 Valve	1997-96	●	1st 29, 2nd 51, 3rd 72.3	108
2189cc OHV (LN2) 8 Valve	2001-96	●○	1st Long bolts 46; Short bolts 43, 2nd all bolts turn 90 degrees	149
2198cc DOHC (X22SE) 16 Valve	2003-98		1st 18, 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees	109
2238cc Diesel (C223)	1987-81	●	1st 40-47, 2nd 54-61	76
2238cc Turbo Diesel (C223-T)	1987-86	●	1st 30-40, 2nd turn 120-150 degrees	76
2254cc SOHC (F23A7) 16 Valve	1999-98	●	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees NOTE: New bolts turn additional 90 degrees	108
2254cc SOHC (4ZD1) 8 Valve	1995-86	●	1st 58, 2nd 72	79
2559cc SOHC (4ZE1) 8 Valve	1997-88	●	1st 58, 2nd 72	79
3856cc Diesel (4BD1-N)	1988-85	●	1st 50, 2nd 65, 3rd turn 60-90 degrees	180
3856cc Turbo Diesel (4BD1-T, 4BD2-TC)	1998-85	●	1st 50, 2nd 65, 3rd turn 60-90 degrees	180
ISUZU 6 & V6				
2835cc OHV (LL2) 12 Valve	1991-89	●○	1st 40, 2nd turn 90 degrees	49
3136cc OHV (LG6) 12 Valve	1994-91	●○	1st 40, 2nd turn 90 degrees	49
3165cc SOHC (6VD1) 24 Valve	1997-96	●	M11 Bolts 1-8 47; M8 Bolts 9-11 15	132
3165cc SOHC (6VD1) 24 Valve	1995-92	●	M11 Bolts 1-8 47; M8 Bolts 9-10 15	160
3165cc DOHC (6VD2) 24 Valve	2003-98	●	1st 21, 2nd 47	134
3165cc DOHC (6VD2) 24 Valve	1995-92	●	M11 Bolts 1-8 47; M8 Bolts 9-10 15	160
3494cc DOHC (6VE1) 24 Valve	2003-98		1st 21, 2nd 47	134
4200cc DOHC (VIN S) 24 Valve	2003		Bolts 1-14 1st 22, 2nd turn 90 degrees, 3rd turn 65 degrees; Bolt 15 4th 5.1, 5th turn 120 degrees; Bolts 16, 17 6th 5.1, 7th turn 60 degrees	211
4293cc OHV (LB4, LF6) 12 Valve	2001-97	●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	64
5785cc Turbo Diesel (6BD1-T)	1995-87	●	1st 50, 2nd 65, 3rd turn 60-90 degrees	181



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
ISUZU V8				
5328cc OHV (VIN P)	2004-03	●○	1st M11 Bolts 1-10 22, 2nd M11 Bolts 1-10 turn 90 degrees, 3rd M11 Bolts 1-8 turn 90 degrees, 4th M11 Bolts 9, 10 turn 50 degrees, 5th M8 Bolts 11-15 22	159
5736cc OHV (CPC)	2000-97	●○	1st all bolts 22, 2nd Long bolts turn 75 degrees, 3rd Medium bolts turn 65 degrees, 4th Short bolts turn 55 degrees	7
5736cc OHV (CPC)	1996	●○	1st 24, 2nd 45, 3rd 65	7
5736cc OHV (CPC)	1995-93	●○	65 in three steps	7
JEEP 4				
126 Turbo Diesel (2.1L) Renault	1990-85		1st 22, 2nd 37, 3rd 73.5	93
134F F-Head	1973-50 Hurricane		65-70	30
134L L-Head	1966-39 Lightning		65-70	30
148 DOHC (2.4L) 16 Valve Dodge Truck	2003-02	●○	1st 25, 2nd 50, 3rd 50 again, 4th turn 90 degrees	37
150 OHV (2.5L)	2002-98	●○	1st 22, 2nd 45, 3rd 45 again, 4th Bolts 1-6, 8-10 110; Bolt 7 100	151
150 OHV (2.5L)	1997-91	●	1st 22, 2nd 45, 3rd Bolts 1-6, 8-10 110; Bolt 7 100	151
150 OHV (2.5L)	1990-89	●	1st 22, 2nd 45, 3rd Bolts 1-7, 9-10 110; Bolt 8 100	72
150 OHV (2.5L)	1988-83	●	Bolts 1-7, 9-10 85; Bolt 8 75	72
151 (2.5L) Pontiac	1983-80	●	92 in three steps	37
JEEP 6 & V6				
148L L-Head Willys	1951-47		60-65	185
161F F-Head Willys	1955-52		60-65	186
161L L-Head Willys	1955-50		60-65	185
173 (2.8L) Chevrolet Truck	1986-84	●○	70 in three steps	49
225 Buick	1971-66	●	65-70	19
226 SOHC (3.7L) 12 Valve Dodge Truck	2003-02		1st M11 Bolts 1-8 20, 2nd M11 Bolts 1-8 20 again, 3rd M8 Bolts 9-12 10, 4th M11 Bolts 1-8 turn 90 degrees, 5th M11 Bolts 1-8 turn 90 degrees, 6th M8 Bolts 9-12 19	204
226L L-Head Continental	1966-47		30-35	18
230 SOHC Continental	1965-62 Tornado	●	80-95	47
232	1979-73	●	105 in three steps	9
232	1972-65	●	80-85	2
242 (4.0L)	2003-91	●○	1st 22, 2nd 45, 3rd 45 again, 4th Bolts 1-10, 12-14 110; Bolt 11 100	2
242 (4.0L)	1990-87	●	1st 22, 2nd 45, 3rd Bolts 1-13 110; Bolt 14 100	9
258 (4.2L)	1990-81	●	85 in three steps	9
258 (4.2L)	1980-73	●	105 in three steps	9
258 (4.2L)	1972-71	●	80-85	2



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

JEEP V8

287 SOHC (4.7L) 16 Valve Dodge Truck	2003-99	●○	1st M11 Bolts 1-10 15 , 2nd M11 Bolts 1-10 35 , 3rd M8 Bolts 11-14 18 , 4th M11 Bolts 1-10 turn 90 degrees, 5th M8 Bolts 11-14 22	163
304 (5.0L)	1981-71	●	1st 80 , 2nd 110	1
318 (5.2L) Dodge Truck 327	1998-93	●○	1st 50 , 2nd 105 , 3rd 105 again	12
	1970-65 Vigilante		58-62	22
350 Buick	1971-68	●	65-75	4
360 (5.9L) Dodge Truck	1998	●○	1st 50 , 2nd 105 , 3rd 105 again	12
360 (5.9L)	1993-70	●	1st 80 , 2nd 110	1
401	1978-74	●	1st 80 , 2nd 110	1

JENSEN V8

383 Chrysler	1971-70	●	70	11
440 Chrysler	1976-72	●	70	11

KAISER 4

134L L-Head Jeep	1954-51		65-70	30
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KAISER 6

161L L-Head Willys	1954-51		60-65	185
226L L-Head Continental	1955-46		30-35	18

KIA 4

1493cc DOHC 16 Valve	2002-01		1st 36.1 , 2nd loosen all bolts, 3rd 18 , 4th turn 90 degrees, 5th turn 90 degrees	150
1594cc DOHC 16 Valve	2003		1st 36.1 , 2nd loosen all bolts, 3rd 18 , 4th turn 90 degrees, 5th turn 90 degrees	150
1597cc SOHC (B6) 8 Valve	1995-93	●	56-60 in three steps	150
1597cc SOHC (B6) 16 Valve	1995	●	56-60 in three steps	150
1597cc DOHC (B6-ZE) 16 Valve	1997-95	●	56-60 in three steps	150
1793cc DOHC (T8) 16 Valve	2003-98		1st 36.1 , 2nd loosen all bolts, 3rd 28.9 , 4th turn 90 degrees, 5th turn 90 degrees	37
1839cc DOHC (BP-ZE) 16 Valve	1997-95	●	56-60 in three steps	150
1998cc SOHC (FE) 8 Valve	1995	●	59-64	37
1998cc DOHC (FED) 16 Valve	2002-95	●	59-64	37
2351cc DOHC (4G64) 16 Valve	2003-01		1st 14 , 2nd turn 90 degrees, 3rd loosen all bolts, 4th 14 again, 5th turn 90 degrees, 6th turn 90 degrees	147

KIA V6

2493cc DOHC (6G73) 24 Valve	2001		1st 18 , 2nd turn 60-64 degrees, 3rd turn 45-49 degrees	154
2656cc DOHC (G6BA) 24 Valve	2003-02		1st 18 , 2nd turn 58-62 degrees, 3rd turn 43-47 degrees	154
3497cc DOHC (G6CU) 24 Valve	2003-02		Cold 1st 75-82 in three steps, 2nd warm engine & allow to cool, 3rd loosen all bolts, 4th 75-82 in three steps again	154

LANCIASEE FIAT



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

LEXUS 6 & V6

2507cc DOHC (2VZFE) 24 Valve	1991-90	●	1st 12 point bolts 25 , 2nd 12 point bolts turn 90 degrees, 3rd 12 point bolts turn 90 degrees, 4th recessed bolts 13	112
2958cc DOHC (3VZFE) 24 Valve	1993-92	●	1st 12 point bolts 25 , 2nd 12 point bolts turn 90 degrees, 3rd 12 point bolts turn 90 degrees, 4th recessed bolts 13	112
2995cc DOHC (1MZFE) 24 Valve	2003-94	●○	1st 12 point bolts 40 , 2nd 12 point bolts turn 90 degrees, 3rd recessed bolts 13	120
2997cc DOHC (2JZGE) 24 Valve	2003-92		1st 26 , 2nd turn 90 degrees, 3rd turn 90 degrees	92
4476cc DOHC (1FZFE) 24 Valve	1997-96		1st 29 , 2nd turn 90 degrees, 3rd turn 90 degrees	92

LEXUS V8

3968cc DOHC (1UZFE) 32 Valve	2000-90	●	1st 29 , 2nd turn 90 degrees	164
4293cc DOHC (3UZFE) 32 Valve	2003-01		1st 44 , 2nd turn 90 degrees	205
4664cc DOHC (2UZFE) 32 Valve	2003-98		1st 24 , 2nd turn 90 degrees, 3rd turn 90 degrees	164

LINCOLNSEE FORD PRODUCTS

MAZDA 4

1272cc SOHC (TC)	1978-76	●	Cold 47-51 , Warm 51-54	37
1415cc SOHC (UC)	1980-79		Cold 47-51 , Warm 51-54	149
1489cc DOHC (Z5-DE) 16 Valve	1998-95	●	1st 13-16 , 2nd turn 90 degrees, 3rd turn 90 degrees	150
1490cc SOHC (D5)	1985-81		56-59	150
1490cc SOHC (E5)	1985-81	●	56-59	150
1586cc SOHC (NA)	1977-70	●	1st 20 , 2nd 40 , 3rd 56-60 , 4th warm engine, 5th 69-72	37
1597cc SOHC (B6) 8 Valve	1994-86	●	56-60 in three steps	150
1597cc SOHC (B6) 16 Valve	1993-92	●	56-60 in three steps	150
1597cc DOHC (ZM-DE) 16 Valve	2003-99		1st 13-16 , 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	150
1597cc DOHC (B6-ZE) 16 Valve	1995-90	●	56-60 in three steps	150
1597cc DOHC Turbo (B6-T) 16 Valve	1989-88	●	56-60 in three steps	150
1796cc SOHC (VB)	1978-77	●	1st 20 , 2nd 40 , 3rd 56-60 , 4th warm engine, 5th 69-72	150
1796cc SOHC (VB)	1973-72	●	1st 20 , 2nd 40 , 3rd 56-60 , 4th warm engine, 5th 69-72	37
1839cc SOHC (BP-ZD) 16 Valve	1996-90	●	56-60 in three steps	150
1839cc DOHC (BP-4W, BP-Z3) 16 Valve	2003-99	●	56-60 in three steps	150
1839cc DOHC (FP-ZE) 16 Valve	2001-99	●	1st 13-16 , 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	150
1839cc DOHC (BP-ZE) 16 Valve	1998-90	●	56-60 in three steps	150
1970cc SOHC (MA)	1984-82	●	Cold 65-69 , Warm 69-72	150
1970cc SOHC (MA)	1981-79	●	Cold 59-64 , Warm 69-72	150
1988cc DOHC (YF) 16 Valve	2004-01 Zetec	●○	1st 15 , 2nd 30 , 3rd turn 90 degrees	148



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
MAZDA 4 (CONT.)				
1991cc DOHC (FS-DE) 16 Valve	2003-93	●○	1st 13-16 , 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	150
1991cc DOHC Turbo (FS-DET) 16 Valve	2003	●○	1st 13-16 , 2nd turn 85-95 degrees, 3rd turn 85-95 degrees	150
1998cc SOHC (FE, FEH1) 8 Valve	1987-83	●	59-64	37
1998cc SOHC Turbo (FE-T, FEH5) 8 Valve	1987-86	●	59-64	37
1998cc Diesel (RF)	1985-84	●	1st 21 , 2nd turn 90 degrees, 3rd turn 90 degrees	150
2184cc SOHC (F2G, F2L) 8 Valve	1993-87 Truck	●	59-64 in three steps	37
2184cc SOHC (F2) 12 Valve	1992-88 Car	●	59-64 in three steps	37
2184cc SOHC Turbo (F2-T) 12 Valve	1992-88	●	59-64 in three steps	37
2209cc Diesel (S2)	1984-82	●	1st 25 , 2nd 45 , 3rd 80-85 , 4th warm engine, 5th 80-85 again	91
2295cc DOHC (D) 16 Valve	2003-01 Zetec		1st 4 , 2nd 11 , 3rd 33 , 4th turn 90 degrees, 5th turn 90 degrees	150
2302cc SOHC (8A) 8 Valve	1997-94	●○	1st 51 , 2nd 51 again, 3rd turn 90-100 degrees	17
2503cc SOHC (C) 8 Valve	2001-98	●○	1st 51 , 2nd 51 again, 3rd turn 90-100 degrees	17
2555cc SOHC (AM1, G54B) 8 Valve	1988-87	●○	Bolts 1-10 Cold 65-72 , Warm 73-79 ; Bolts 11-12 11-15	105
2606cc SOHC (G6) 12 Valve	1994-89	●	Bolts 1-10 59-64 ; Bolts 11-12 12-17	104
MAZDA V6				
1844cc DOHC (K8-ZE) 24 Valve	1994-92		1st 17-19 , 2nd turn 90 degrees, 3rd turn 90 degrees	123
2254cc DOHC Supercharged (EJ) 24 Valve	2002-95		1st 17-19 , 2nd turn 90 degrees, 3rd turn 90 degrees	154
2497cc DOHC (KL-ZE) 24 Valve	2002-93	●	1st 17-19 , 2nd turn 90 degrees, 3rd turn 90 degrees	123
2544cc DOHC (GY) 24 Valve	2001-00 Duratec	●○	1st 28-31 , 2nd turn 90 degrees, 3rd loosen one turn, 4th 28-31 again, 5th turn 90 degrees, 6th turn 90 degrees	140
2954cc SOHC (JE, JE-E) 18 Valve	1999-92	●	1st 13-16 , 2nd turn 90 degrees, 3rd turn 90 degrees	123
2954cc SOHC (JE, JE-06, JE-07, JE-39) 18 Valve	1991-88	●	1st 14 , 2nd turn 90 degrees, 3rd turn 90 degrees	123
2954cc DOHC (JE-ZE, JE-48) 24 Valve	1995-92	●	1st 13-16 , 2nd turn 90 degrees, 3rd turn 90 degrees	123
2954cc DOHC (JE-ZE, JE-27) 24 Valve	1991-90	●	1st 14 , 2nd turn 90 degrees, 3rd turn 90 degrees	123
2966cc DOHC (ADJ, AJ) 24 Valve	2004-01 Duratec	●○	1st 30 , 2nd turn 90 degrees, 3rd loosen one turn, 4th 30 again, 5th turn 90 degrees, 6th turn 90 degrees	140
2982cc OHV (8U) 12 Valve	2004-99	●○	1st 36-39 , 2nd loosen one turn, 3rd 20-24 , 4th turn 85-95 degrees, 5th turn 85-95 degrees	141
2982cc OHV (8U) 12 Valve	1998-94	●○	1st 59 , 2nd loosen one turn, 3rd 37 , 4th 68	141
4015cc OHV (8X) 12 Valve	2000-95	●○	1st 23 , 2nd 53 , 3rd turn 90 degrees	217



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
MAZDA V6 (CONT.)				
4015cc OHV (ZYL, 8X) 12 Valve	1994-91	●○	INSTALL HEAD BOLTS AND LOWER INTAKE BOLTS TOGETHER (TORQUE ALTERNATELY) : Head bolts 1st 44 , 2nd 59 , 3rd turn 80-85 degrees; Lower intake bolts 1st 3-6 , 2nd 6-11 , 3rd 11-15 , 4th 15-18	102
4015cc SOHC (E) 12 Valve	2004-02	●○	1st M12 Bolts 1-8 24 , 2nd M8 Bolts 9-10 24 , 3rd M12 Bolts 1-8 turn 80 degrees, 4th M12 Bolts 1-8 turn 80 degrees	218
4015cc SOHC (E) 12 Valve	2001	●○	1st M12 Bolts 1-8 28 , 2nd M8 Bolts 9-10 28 , 3rd M12 Bolts 1-8 turn 90 degrees, 4th M12 Bolts 1-8 turn 90 degrees	218
MERCURYSEE FORD PRODUCTS				
MERKURSEE FORD PRODUCTS				
METROPOLITAN 4				
1198cc OHV	1955-54		45	182
1489cc OHV	1962-56		45	182
MG 4				
948cc OHV	1962-61		40	54
1098cc OHV	1968-62		46	54
1275cc OHV	1974-67		46 in three steps	54
1489cc OHV	1961-54		45	182
1493cc OHV	1979-75		46 in three steps	42
1588cc OHV	1961-59		45	182
1622cc OHV	1968-61		45	182
1798cc OHV	1980-61		45-50 in three steps	55
MITSUBISHI 4				
1468cc SOHC (G4DJ, 4G15) 8 Valve	1994-89	●	51-54 in three steps	81
1468cc SOHC (G4AJ, G15B) 8 Valve	1989-85	●	51-54 in three steps	81
1468cc SOHC (4G15) 12 Valve	2002-97	●	1st 36 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
1468cc SOHC (4G15) 12 Valve	1996-91	●	53 in three steps	71
1595cc DOHC (4G61) 16 Valve	1992-90	●	Cold 65-72 in three steps	81
1595cc DOHC Turbo (4G61-T) 16 Valve	1989	●	Cold 65-72 in three steps	81
1597cc SOHC Turbo (G32B-T) 8 Valve	1988-85	●	51-54 in three steps	81
1755cc SOHC (4G37) 8 Valve	1994-89	●○	53 in three steps	81
1795cc SOHC (G62B) 8 Valve	1983	●	Cold 65-72 , Warm 73-79	71
1795cc SOHC Turbo (G62B-T) 8 Valve	1988-84	●	Cold 65-72 , Warm 73-79	71
1834cc SOHC (4G93) 16 Valve	2002-97	●	1st 54 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
1834cc SOHC (4G93) 16 Valve	1996-93	●	1st 14.5 , 2nd turn 90 degrees, 3rd turn 90 degrees	71
1834cc SOHC (4G93) 16 Valve	1992	●	1st 54 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
MITSUBISHI 4 (CONT.)				
1996cc DOHC (A588, 420A) 16 Valve	1999-95	●○	1st Long bolts 25 ; Short bolts 20 , 2nd Long bolts 50 ; Short bolts 20 , 3rd Long bolts 50 ; Short bolts 20 , 4th all bolts turn 90 degrees	37
1997cc SOHC (4G63) 16 Valve	1993	●	1st 58 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
1997cc SOHC (G63B, 4G63) 8 Valve	1992-83	●	Cold 65-72 , Warm 73-79	71
1997cc DOHC (4G63) 16 Valve	1994-93	●○	1st 58 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
1997cc DOHC (4G63) 16 Valve	1992-89	●○	Cold 65-72 , Warm 73-79	81
1997cc DOHC Turbo (4G63-T) 16 Valve	1999-93	●○	1st 58 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
1997cc DOHC Turbo (4G63-T) 16 Valve	1992-89	●○	Cold 65-72 , Warm 73-79	81
1999cc SOHC (4G94) 16 Valve	2003-02		1st 54 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
1999cc DOHC Turbo (4G94-T) 16 Valve	2003		1st 54 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
2346cc Turbo Diesel (4D55-T)	1985-83	●	Cold 76-83 , Warm 84-90	43
2351cc SOHC (4G64) 8 Valve	1996-93	●	1st 58 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
2351cc SOHC (G64B, 4G64) 8 Valve	1992-85	●	Cold 65-72 , Warm 73-79	71
2351cc SOHC (4G64) 16 Valve	2003-93	●	1st 58 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
2351cc DOHC (4G64) 16 Valve	1997-94		1st 58 , 2nd loosen all bolts, 3rd 15 , 4th turn 90 degrees, 5th turn 90 degrees	71
2555cc SOHC (G54B) 8 Valve	1989-83	●○	Bolts 1-10 Cold 65-72 , Warm 73-79 ; Bolts 11 11-15	38
2555cc SOHC Turbo (G54B-T) 8 Valve	1989-83	●○	Bolts 1-10 Cold 65-72 , Warm 73-79 ; Bolts 11 11-15	38
3907cc Turbo Diesel (4D34-T, 4D34-T3)	1999-92	●	145	187
MITSUBISHI V6				
2497cc SOHC (6G73) 24 Valve	1998-95	●○	Cold 80 in three steps	154
2972cc SOHC (6G72) 12 Valve	1999-93	●○	1st 76-83 in three steps, 2nd loosen all bolts, 3rd 76-83 in three steps again	154
2972cc SOHC (6G72) 12 Valve	1992-88	●○	65-72 in three steps	154
2972cc SOHC (6G72) 24 Valve	2003-95	●	1st 76-83 in three steps, 2nd loosen all bolts, 3rd 76-83 in three steps again	154
2972cc DOHC (6G72) 24 Valve	1999-93	●○	1st 76-83 in three steps, 2nd loosen all bolts, 3rd 76-83 in three steps again	154
2972cc DOHC (6G72) 24 Valve	1992-91	●○	76-83 in three steps	154



TORQUE TABLES™

ENGINE	YEARS		FT.-LBS.	TORQ. SEQ.
MITSUBISHI V6 (CONT.)				
2972cc DOHC Turbo (6G72-T) 24 Valve	1999-93	●○	1st 87-94 in three steps, 2nd loosen all bolts, 3rd 87-94 in three steps again	154
2972cc DOHC Turbo (6G72-T) 24 Valve	1992-91	●○	87-94 in three steps	154
3497cc SOHC (6G74) 24 Valve	2003-97	●	76-83 in three steps	154
3497cc DOHC (6G74) 24 Valve	1996-94		76-83 in three steps	154
MORRIS 4				
803cc OHV	1956-52		40	54
948cc OHV	1962-56		40	54
1098cc OHV	1971-62		46	54
1489cc OHV	1961-54		45	182
1622cc OHV	1971-61		45	182
NASH SEE AMERICAN MOTORS				
NAVISTAR SEE INTERNATIONAL				
NISSAN 4				
988cc OHV (A10)	1971-65	●	35	40
1171cc OHV (A12)	1973	●	42	40
1171cc OHV (A12)	1972-71	●	35	40
1237cc OHV (A12A)	1982-80	●	53	40
1288cc OHV (A13)	1974-72	●	53	40
1397cc OHV (A14)	1982-75	●	53	40
1487cc OHV (A15)	1982-79	●	53	40
1487cc SOHC (E15)	1983-82	●	1st 29-33 , 2nd 51-54	42
1487cc SOHC Turbo (E15ET, E15T)	1984-83	●	1st 29-33 , 2nd 51-54	42
1595cc SOHC (L16)	1973-68	●	43	40
1597cc SOHC (E16I, E16S) 8 Valve	1988-86	●○	1st 22 , 2nd 51 , 3rd loosen all bolts, 4th 22 again, 5th 51-54	42
1597cc SOHC (E16) 8 Valve	1987-83	●	1st 22 , 2nd 51 , 3rd loosen all bolts, 4th 22 again, 5th 51-54	42
1597cc SOHC (GA16I) 12 Valve	1990-89	●○	1st Bolts 1-10 22 , 2nd Bolts 1-10 47 , 3rd loosen all bolts, 4th Bolts 1-10 22 again, 5th Bolt 1 turn 80-85 degrees; Bolts 2-10 turn 60-65 degrees, 6th Bolts 11-15 4.6-6.1	113
1597cc DOHC (GA16DE) 16 Valve	1999-91	●	1st Bolts 1-10 22 , 2nd Bolts 1-10 43 , 3rd loosen all bolts, 4th Bolts 1-10 22 again, 5th Bolts 1-10 turn 50-55 degrees, 6th Bolts 11-15 4.6-6.1	113
1598cc DOHC (CA16DE) 16 Valve	1987	●	1st 22 , 2nd 76 , 3rd loosen all bolts, 4th 22 again, 5th 76	36
1680cc Diesel (CD17)	1987-83		1st 43-51 , 2nd 72-80	36
1769cc DOHC (QG18DE) 16 Valve	2003-00		1st Bolts 1-10 22 , 2nd Bolts 1-10 43 , 3rd loosen all bolts, 4th Bolts 1-10 22 again, 5th Bolts 1-10 turn 50-55 degrees, 6th Bolts 11-14 4.6-6.1	206
1770cc SOHC (L18)	1974-73	●	54	40
1809cc DOHC (CA18DE) 16 Valve	1990-88	●	1st 22 , 2nd 76 , 3rd loosen all bolts, 4th 22 again, 5th 76	36
1809cc SOHC Turbo (CA18ET) 8 Valve	1987-84	●○	1st 22 , 2nd 58 , 3rd loosen all bolts, 4th 22 again, 5th 54-61	79



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

NISSAN 4 (CONT.)				
1952cc SOHC (Z20)	1987-83	●	1st 22, 2nd 58, 3rd loosen all bolts, 4th 22 again, 5th 54-61	79
1952cc SOHC (Z20E, Z20S)	1981-80	●	58	79
1952cc SOHC (L20B)	1980-74	●	54	40
1974cc SOHC (CA20E)	1989-84	●	1st 22, 2nd 58, 3rd loosen all bolts, 4th 22 again, 5th 54-61	79
1974cc SOHC (CA20S)	1986-82	●	1st 22, 2nd 58, 3rd loosen all bolts, 4th 22 again, 5th 54-61	79
1998cc DOHC (SR20DE) 16 Valve	2001-91	●	1st 29, 2nd 58, 3rd loosen all bolts, 4th 25-33, 5th turn 90-95 degrees, 6th turn 90-95 degrees	109
2164cc Diesel (SD22)	1983-81		Main bolts 87-108; Sub bolts 36-47	50
2187cc SOHC (Z22E, Z22S)	1983-81	●	58	79
2389cc SOHC (Z24, Z24I, Z24S) 8 Valve	1989-83	●○	1st 22, 2nd 58, 3rd loosen all bolts, 4th 22 again, 5th 54-61	79
2389cc SOHC (KA24E) 12 Valve	1997-89	●○	1st 22, 2nd 58, 3rd loosen all bolts, 4th 22 again, 5th 54-61; OR turn 80-85 degrees	80
2389cc DOHC (KA24DE) 16 Valve	2003-91	●	1st 22, 2nd 59, 3rd loosen all bolts, 4th 18-25, 5th turn 55-62; OR 86-91 degrees	80
2488cc DOHC (QR25DE) 16 Valve	2003-02		1st 72, 2nd loosen all bolts, 3rd 25-33, 4th turn 75-80 degrees, 5th turn 75-80 degrees	80
2488cc Diesel (SD25)	1986-83	●	Main bolts 87-94; Sub bolts 33-40	50

NISSAN 6 & V6

2393cc SOHC (L24E)	1984-83	●	62	39
2393cc SOHC (L24E)	1982-77	●	56	39
2393cc SOHC (L24)	1973-70	●	54	39
2565cc SOHC (L26)	1974	●	57	39
2753cc SOHC (L28E)	1983	●	62	39
2753cc SOHC (L28E)	1982-75	●	56	39
2753cc SOHC Turbo (L28ET)	1983	●	62	39
2753cc SOHC Turbo (L28ET)	1982-81	●	56	39
2793cc Diesel (LD28)	1983-81		1st 29, 2nd 43, 3rd 87-94, 4th warm engine, 5th 87-94 again	9
2960cc SOHC (V30E, VG30, VG30E) 12 Valve	1998-84	●	1st 22, 2nd 43, 3rd loosen all bolts, 4th 22 again, 5th 40-47; OR turn 60-65 degrees	85
2960cc DOHC (VG30D, VG30DE) 24 Valve	1996-92	●	1st 29, 2nd 90, 3rd loosen all bolts, 4th 25-33, 5th 90; OR turn 60-70 degrees	161
2960cc DOHC (VG30D, VG30DE) 24 Valve	1991-90	●	1st 29, 2nd 90, 3rd loosen all bolts, 4th 25-33, 5th 90; OR turn 60-70 degrees	114
2960cc DOHC (VE30DE) 24 Valve	1994-92		1st 29, 2nd 90, 3rd loosen all bolts, 4th 25-33, 5th 87-94	161
2960cc SOHC Turbo (V30ET, VG30T) 12 Valve	1989-84	●	1st 22, 2nd 43, 3rd loosen all bolts, 4th 22 again, 5th 40-47; OR turn 60-65 degrees	85
2960cc DOHC Turbo (VG30DETT, VG30DTT) 24 Valve	1996-92	●	1st 29, 2nd 90, 3rd loosen all bolts, 4th 25-33, 5th 90; OR turn 60-70 degrees	161
2960cc DOHC Turbo (VG30DETT, VG30DTT) 24 Valve	1991-90	●	1st 29, 2nd 90, 3rd loosen all bolts, 4th 25-33, 5th 90; OR turn 60-70 degrees	114



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

NISSAN 6 & V6 (CONT.)				
2988cc DOHC (VQ30DE) 24 Valve	2001-95	●○	1st 72, 2nd loosen all bolts, 3rd 25-33, 4th turn 90-95 degrees, 5th turn 90-95 degrees	161
3274cc SOHC (VG33E) 12 Valve	2003-96		1st 22, 2nd 43, 3rd loosen all bolts, 4th 7, 5th 22, 6th 40-47; OR turn 60-65 degrees	162
3274cc SOHC Supercharged (VG33ER) 12 Valve	2003-01		1st 22, 2nd 43, 3rd loosen all bolts, 4th 7, 5th 22, 6th 40-47; OR turn 60-65 degrees	162
3498cc DOHC (VQ35DE) 24 Valve	2003-01		1st 72, 2nd loosen all bolts, 3rd 25-33, 4th turn 90-95 degrees, 5th turn 90-95 degrees	161

OLDSMOBILE SEE GM PRODUCTS

OPEL 4

1817cc SOHC	1979-76	●	1st 61, 2nd 72	37
1897cc SOHC	1975-67	●	72	56

PACKARD L8

288 L-Head	1954-48		63	191
327 L-Head	1954-48		63	191

PEUGEOT 4

1905cc SOHC (XU-9J2) 8 Valve	1992-89		1st 44, 2nd loosen all bolts, 3rd 15, 4th turn 300 degrees	149
1905cc DOHC (XU-9J4) 16 Valve	1992-89		1st 44, 2nd loosen all bolts, 3rd 15, 4th turn 300 degrees	149
1971cc OHV (XN-1, XN-6)	1987-80		1st 36, PERFORM THE NEXT THREE STEPS ON EACH BOLT BEFORE MOVING TO NEXT BOLT IN SEQUENCE : 1) loosen completely, 2) 14, 3) turn 90 degrees	37
1971cc OHV (XN)	1979-71		1st 43, 2nd 60	37
2155cc SOHC Turbo (N9-T, N9-TE)	1992-85		1st 36, 2nd 62	149
2165cc SOHC (ZD-JL)	1992-87		1st 37, 2nd 59, 3rd loosen all bolts, 4th 64-72	149
2304cc Diesel (XD-2)	1983-77		1st 22, 2nd 47, 3rd loosen all bolts 90 degrees, 4th 22 again, 5th 47	165
2304cc Turbo Diesel (XD-2S)	1986-81		1st 22, 2nd 51, 3rd loosen all bolts 90 degrees, 4th 22 again, 5th 51	165
2498cc Turbo Diesel (XD-3T)	1988-85		1st 22, 2nd 51, 3rd loosen all bolts 90 degrees, 4th 22 again, 5th 51	165

PEUGEOT V6

2664cc SOHC (ZM)	1978-77		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 11-14, 6th turn 116-120 degrees, 7th warm engine & allow to cool, 8th loosen all bolts, 9th 11-14 again, 10th turn 113-117 degrees	52
2849cc SOHC (ZN, ZN-3J)	1990-79		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 15, 6th turn 106 degrees, 7th warm engine & allow to cool, 8th turn 45 degrees	52

PINNINFARINA SEE FIAT

PLYMOUTH SEE CHRYSLER PRODUCTS



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

PONTIAC SEE GM PRODUCTS

PORSCHE 4 & H04

1679cc OHV	1973-70	23 in three steps	166
1795cc OHV	1975-74	23 in three steps	166
1970cc OHV	1976-73	23 in three steps	166
1984cc SOHC	1982-77	● 1st 47, 2nd turn 90 degrees, 3rd turn 90 degrees	60
1984cc SOHC Turbo	1982-80	1st 47, 2nd turn 90 degrees, 3rd turn 90 degrees	60
2474cc SOHC	1988-83	1st 14, 2nd 36, 3rd 65	17
2474cc SOHC Turbo	1989-86	1st 14, 2nd 36, 3rd 65	17

PORSCHE H06

3164cc OHV	1989-84	1st 11, 2nd turn 90 degrees	167
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RAMBLER SEE AMERICAN MOTORS

RENAULT 4

1289cc OHV (810)	1979-70	1st 40, 2nd warm engine & allow to cool, 3rd 45	71
1397cc OHV (C3J, 847)	1987-80	● 1st 41-44, 2nd warm engine & allow to cool, 3rd loosen 180 degrees, 4th 41-44 again	149
1565cc OHV Turbo (A7L)	1984-82	1st 30, 2nd 57-61, 3rd warm engine & allow to cool, 4th 57-61 again	149
1647cc OHV (841, 843)	1983-81	1st 30, 2nd 57-61, 3rd warm engine & allow to cool, 4th 57-61 again	149
1721cc SOHC (F3N)	1987-85	● 1st 22, 2nd 52, 3rd loosen all bolts, 4th 15, 5th turn 123 degrees	149
1965cc SOHC (F3R)	1987	● 1st 22, 2nd 52, 3rd loosen all bolts, 4th 15, 5th turn 123 degrees	149
2165cc SOHC (J7T)	1989-84	1st 37, 2nd 59, 3rd loosen all bolts, 4th 64-72	149

SAAB 4

1985cc SOHC (B201, B201I) 8 Valve	1988-85	● 1st 44, 2nd 66, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 44 again, 6th 66, 7th turn 90 degrees	151
1985cc SOHC (B201, B201I) 8 Valve	1984-81	● 1st 45, 2nd 65, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 45 again, 6th 65, 7th turn 90 degrees	151
1985cc SOHC (B20) 8 Valve	1980-79	1st 44, 2nd 70	151
1985cc SOHC (B20) 8 Valve	1978-73	1st 44, 2nd 17mm bolts 70; 12mm & 15mm bolts 59, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 17mm bolts 70 again; 12mm & 15mm bolts 59 again, 6th 12mm & 15mm bolts turn 90 degrees	151
1985cc DOHC (B202I) 16 Valve	1990-86 900 Series	● 1st 45, 2nd 63, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 45 again, 6th 63, 7th turn 90 degrees	151
1985cc DOHC (B202I) 16 Valve	1990-87 9000 Series	● 1st 44, 2nd 66, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 44 again, 6th 66, 7th turn 90 degrees	151



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

SAAB 4 (CONT.)

1985cc SOHC Turbo (B201L) 8 Valve	1984-81	● 1st 45, 2nd 65, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 45 again, 6th 65, 7th turn 90 degrees	151
1985cc SOHC Turbo (B201L) 8 Valve	1980-78	1st 44, 2nd 70	151
1985cc DOHC Turbo (B205L, B205R) 16 Valve	2003-99	1st 30, 2nd 44, 3rd turn 90 degrees	151
1985cc DOHC Turbo (B204L) 16 Valve	1998-95	1st 44, 2nd 59, 3rd turn 90 degrees	151
1985cc DOHC Turbo (B202L) 16 Valve	1994-91 900 Series	● 1st 44, 2nd 59, 3rd turn 90 degrees	151
1985cc DOHC Turbo (B202L) 16 Valve	1990-85 900 Series	● 1st 44, 2nd 66, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 44 again, 6th 66, 7th turn 90 degrees	151
1985cc DOHC Turbo (B202L) 16 Valve	1990-86 9000 Series	● 1st 44, 2nd 66, 3rd warm engine & allow to cool, 4th loosen all bolts, 5th 44 again, 6th 66, 7th turn 90 degrees	151
2119cc DOHC (B212I) 16 Valve	1994-91	1st 44, 2nd 59, 3rd turn 90 degrees	151
2290cc DOHC (B234I) 16 Valve	1998-90	1st 44, 2nd 59, 3rd turn 90 degrees	151
2290cc DOHC Turbo (B235E, B235R) 16 Valve	2003-98	1st 30, 2nd 44, 3rd turn 90 degrees	151
2290cc DOHC Turbo (B234E, B234L, B234R) 16 Valve	1998-91	1st 44, 2nd 59, 3rd turn 90 degrees	151

SAAB V6

2498cc DOHC (B258I) 24 Valve	1997-94	1st 18.5, 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees	49
2962cc DOHC (B308I) 24 Valve	1998-95	●○ 1st 18.5, 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees	49
2962cc DOHC Turbo (B308E) 24 Valve	2003-98	●○ 1st 18.5, 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees	49

SATURN 4

1901cc SOHC (1.9L) 8 Valve	2002-91 VIN 8, 9	●○ 1st 22, 2nd 33, 3rd turn 90 degrees	151
1901cc DOHC (1.9L) 16 Valve	2002-91 VIN 7	●○ 1st 22, 2nd 37, 3rd turn 90 degrees	151
2198cc DOHC (2.2L) 16 Valve	2003-00 Ecotec VIN F	Bolts 1-10 1st 22, 2nd turn 155 degrees; Bolts 11-14 3rd 18	199

SATURN V6

2962cc DOHC (3.0L) 24 Valve Opel	2003-00 VIN R	●○ 1st 18.5, 2nd turn 90 degrees, 3rd turn 90 degrees, 4th turn 90 degrees, 5th turn 15 degrees	49
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SCION 4

1497cc DOHC (1NZFE) 16 Valve	2003	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	99
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TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

STERLING V6

2494cc SOHC (C25A1) 24 Valve	1988-87	●	1st 29, 2nd 56	89
2675cc SOHC (C27A1) 24 Valve	1991-89	●	1st 29, 2nd 56	107

STUDEBAKER 6

164.3 L-Head	1940-39		52	188
169.6 L-Head	1960-51		46-50	188
169.6 L-Head	1950-39		52	188
169.6 OHV	1964-61		46-50	189
185.6 L-Head	1960-55		46-50	188
194 OHV Chevrolet	1966-65	●	95	2
217.8 L-Head	1937-36		80-85	190
226.2 L-Head	1948-36		80-85	190
230 OHV Chevrolet	1966	●	95	2
245.6 L-Head	1960-55		55-65	190
245.6 L-Head	1954-36		80-85	190

STUDEBAKER V8

224	1955 Car		46-50	170
224	1956-55 Truck		55-65	170
232	1954-51		46-50	170
259	1964-56 Car		55-65	170
259	1955 Car		46-50	170
259	1964-55 Truck		55-65	170
283 Chevrolet	1966-65	●○	65	7
289	1964-56		55-65	170
289 Supercharged	1964-63		55-65	170
304	1964-63		55-65	170
304 Supercharged	1964-63		55-65	170

SUBARU 3

1189cc SOHC (EF12) 9 Valve	1994-89	●	1st 29, 2nd 54, 3rd loosen 90 degrees, 4th 54 again	116
1189cc SOHC (EF12) 9 Valve	1988-87	●	1st 29, 2nd 43, 3rd 51	116

SUBARU H04

1361cc OHV (EA63)	1976-73		Bolts 1-9 1st 14, 2nd 25-29, 3rd 37-43; Bolts 10-11 4th 6.5-8	122
1595cc OHV (EA71)	1988-82	●	1st 22, 2nd 43, 3rd 47	58
1595cc OHV (EA71)	1981-79	●	Bolts 1-9 1st 22, 2nd 43, 3rd 47; Bolts 10-11 4th 6.5-8	122
1595cc OHV (EA71)	1978-76	●	Bolts 1-9 1st 14, 2nd 25-29, 3rd 37-43; Bolts 10-11 4th 6.5-8	122
1781cc OHV (EA81)	1989-82	●	1st 22, 2nd 43, 3rd 47	58
1781cc OHV (EA81)	1981-80	●	Bolts 1-9 1st 22, 2nd 43, 3rd 47; Bolts 10-11 4th 6.5-8	122
1781cc SOHC (EA82)	1994-85	●	1st 22, 2nd 43, 3rd 47	58
1781cc OHV Turbo (EA81T)	1984-83	●	1st 22, 2nd 43, 3rd 47	58
1781cc SOHC Turbo (EA82T)	1990-85	●	1st 22, 2nd 43, 3rd 47	58
1820cc SOHC (EJ18E) 16 Valve	1997-93	●	1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th Bolts 1-2 25, 6th Bolts 3-6 11, 7th all bolts turn 80-90 degrees, 8th all bolts turn 80-90 degrees	117



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

SUBARU H04 (CONT.)

1994cc DOHC Turbo (EJ20T) 16 Valve	2003-02		1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th 29, 6th turn 80-90 degrees, 7th turn 40-45 degrees, 8th Bolts 1-2 turn 40-45 degrees	125
2212cc SOHC (EJ22E, EJ22EZ) 16 Valve	2001-90	●	1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th Bolts 1-2 25, 6th Bolts 3-6 11, 7th all bolts turn 80-90 degrees, 8th all bolts turn 80-90 degrees	125
2212cc SOHC Turbo (EJ22T) 16 Valve	1995-90	●	1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th Bolts 1-2 27, 6th Bolts 3-6 14, 7th all bolts turn 80-90 degrees, 8th all bolts turn 80-90 degrees	125
2457cc SOHC (EJ251, EJ252, EJ253) 16 Valve	2003-99	●○	1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th Bolts 1-2 25, 6th Bolts 3-6 11, 7th all bolts turn 80-90 degrees, 8th all bolts turn 80-90 degrees	125
2457cc DOHC (EJ25D) 16 Valve	1999-96	●○	1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th Bolts 1-2 25, 6th Bolts 3-6 11, 7th all bolts turn 80-90 degrees, 8th all bolts turn 80-90 degrees	125

SUBARU H06

2672cc SOHC (ER27) 12 Valve	1991-88	●	1st 29, 2nd 47, 3rd loosen 90 degrees, 4th 47 again	118
2999cc DOHC (EZ30D) 24 Valve	2003-01		1st 15, 2nd 37, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th 18.5, 6th 18.5 again, 7th turn 90 degrees, 8th Bolts 1-4 turn 90 degrees, 9th Bolts 5-8 turn 45 degrees	116
3318cc DOHC (EG33D) 24 Valve	1997-92		1st 22, 2nd 51, 3rd loosen 180 degrees, 4th loosen 180 degrees, 5th 20, 6th Bolts 1-4 33, 7th Bolts 1-4 turn 80-90 degrees, 8th Bolts 5-8 33, 9th Bolts 5-8 turn 80-90 degrees	219

SUNBEAM V8

260 Ford	1966-64	●	65-70	70
289 Ford	1968-66	●	65-70	70

SUZUKI 3

993cc SOHC (G10)	1994-92	●○	54 in three steps	142
993cc SOHC (G10)	1988-85	●○	46-50 in three steps	142
993cc SOHC Turbo (G10-T)	1988-85	●○	46-50 in three steps	142

SUZUKI 4

1298cc DOHC (G13B) 16 Valve	1994-89	●	47-50 in three steps	119
1324cc SOHC (SW413) 16 Valve	2001-98 Car	●	49 in three steps	110
1324cc SOHC (G13A) 8 Valve	1997-89 Car	●	51-54 in three steps	59
1324cc SOHC (G13A) 8 Valve	1995-89 Truck	●	51-54 in three steps	59
1324cc SOHC (G13A) 8 Valve	1988-85 Truck	●	46-50 in three steps	59
1590cc SOHC (G16KC) 8 Valve	1995-89	●	51-54 in three steps	59



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

SUZUKI 4 (CONT.)			
1590cc SOHC (G16KV) 16 Valve	1999-95 Car ●	49 in three steps	110
1590cc SOHC (G16KV) 16 Valve	2001-99 Truck ●	1st 26, 2nd 41, 3rd loosen all bolts, 4th 26 again, 5th 52	110
1590cc SOHC (G16KV) 16 Valve	1998-92 Truck ●	1st 26, 2nd 41, 3rd 52	110
1788cc DOHC (SY418) 16 Valve	2002-00 Car	Bolts 1-10 1st 38.5, 2nd 61, 3rd loosen all bolts, 4th 27, 5th 76; Bolt 11 6th 8	207
1788cc DOHC (G18KV) 16 Valve	1998-96 Truck	Bolts 1-10 1st 38.5, 2nd 61, 3rd loosen all bolts, 4th 27, 5th 76; Bolt 11 6th 8	207
1995cc DOHC (J20A) 16 Valve	2003-99	Bolts 1-10 1st 38.5, 2nd 61, 3rd loosen all bolts, 4th 38.5 again, 5th 76; Bolt 11 6th 8	207

SUZUKI V6			
2492cc DOHC (H25) 24 Valve	2003-99	Bolts 1-8 1st 38.5, 2nd 61, 3rd loosen all bolts, 4th 38.5 again, 5th 76; Bolt 9 6th 8	212
2736cc DOHC (H27) 24 Valve	2003-01	Bolts 1-8 1st 38.5, 2nd 61, 3rd loosen all bolts, 4th 38.5 again, 5th 76; Bolt 9 6th 8	212

TOYOTA 4			
1077cc OHV (KC)	1969-68 ●	39-48	71
1166cc OHV (3KC)	1979-69 ●	39-48	71
1290cc OHV (4KC, 4KE)	1984-81 ●	40-47	71
1452cc SOHC (1AC, 3AC)	1988-80 ●	40-47	71
1456cc SOHC (3E, 3EE) 12 Valve	1994-87 ●○	1st 22, 2nd 36, 3rd turn 90 degrees	80
1497cc DOHC (1NZFE) 16 Valve	2003-00	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	99
1497cc DOHC (5EFE) 16 Valve	1999-92 ●○	1st 33, 2nd turn 90 degrees	71
1497cc DOHC (1NZFXE) Hybrid	2003-01	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	99
1587cc SOHC (4AC, 4ALC) 8 Valve	1988-83 ●	40-47	71
1587cc DOHC (4AF) 16 Valve	1989-88 ●	40-47	99
1587cc DOHC (4AFE) 16 Valve	1997-93 ●	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	71
1587cc DOHC (4AFE) 16 Valve	1992-90 ●	44 in three steps	99
1587cc DOHC (4AFE) 16 Valve	1989-88 ●	40-47	99
1587cc DOHC (4AGE) 16 Valve	1991-88 ●	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	121
1587cc DOHC (4AGEC) 16 Valve	1987-85 ●	40-47	121
1587cc DOHC (4AGELC) 16 Valve	1989-85 ●	44 in three steps	121
1587cc DOHC Supercharged (4AGZE) 16 Valve	1989-88 ●	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	121
1588cc OHV (2T, 2TC)	1979-71 ●	62-68	80
1762cc DOHC (7AFE) 16 Valve	1997-93 ●	1st 22, 2nd turn 90 degrees, 3rd turn 90 degrees	71
1770cc OHV (3TC)	1982-80 ●	62-68	80
1794cc DOHC (1ZZFE) 16 Valve	2003-98 ●○	1st 36, 2nd turn 90 degrees	99



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

TOYOTA 4 (CONT.)			
1796cc DOHC (2ZZGE) 16 Valve	2003-00 ●○	1st 26, 2nd turn 90 degrees, 3rd turn 90 degrees	99
1839cc Diesel (1CLC)	1985-84 ●	62 in three steps	46
1839cc Turbo Diesel (1CTLC)	1985-84 ●	62 in three steps	46
1858cc SOHC (8R, 8RC)	1971-69 ●	75-85	59
1968cc SOHC (18RC)	1974-72 ●	75-85	59
1974cc Turbo Diesel (2CTLG)	1986 ●	1st 33, 2nd turn 90 degrees, 3rd turn 90 degrees	46
1995cc SOHC (2SELC) 8 Valve	1986-83 ●	47 in three steps	71
1998cc OHV (3YEC)	1985-84 ●	14mm bolts 65; 12mm bolts 14	86
1998cc DOHC (1AZFE) 16 Valve	2003-01 ●	1st 36, 2nd turn 90 degrees, 3rd turn 90 degrees	71
1998cc DOHC (3SFE) 16 Valve	2000-96 ●○	1st 36, 2nd turn 90 degrees, 3rd turn 90 degrees	71
1998cc DOHC (3SFE) 16 Valve	1991-90 ●○	1st 36, 2nd turn 90 degrees	71
1998cc DOHC (3SFE) 16 Valve	1989-87 ●○	47 in three steps	71
1998cc DOHC (3SGELC) 16 Valve	1989-86 ●	40 in three steps	71
1998cc DOHC Turbo (3SGTE) 16 Valve	1995-90 ●	1st 36, 2nd turn 90 degrees	71
1998cc DOHC Turbo (3SGTE) 16 Valve	1989-88 ●	40 in three steps	71
2164cc DOHC (5SFE) 16 Valve	2001-90 ●○	1st 36, 2nd turn 90 degrees	71
2188cc Diesel (L)	1983-81 ●	84-90 in three steps	46
2189cc SOHC (20R)	1980-75 ●	53-63 in three steps	53
2237cc OHV (4YEC)	1990-86 ●	14mm bolts 65; 12mm bolts 14	86
2362cc DOHC (2AZFE) 16 Valve	2003-01	1st 58, 2nd turn 90 degrees	71
2366cc SOHC (22R, 22RE, 22REC) 8 Valve	1995-81 ●○	58 in three steps	81
2366cc SOHC Turbo (22RTEC) 8 Valve	1989-85 ●○	58 in three steps	81
2438cc DOHC (2RZFE) 16 Valve	2003-95 ●○	1st 29, 2nd turn 90 degrees, 3rd turn 90 degrees	71
2438cc DOHC (2TZFE) 16 Valve	1996-91 ●	1st 29, 2nd turn 90 degrees, 3rd turn 90 degrees	71
2438cc DOHC Supercharged (2TZFE) 16 Valve	1997-94 ●	1st 29, 2nd turn 90 degrees, 3rd turn 90 degrees	71
2446cc Diesel (2L)	1987-84	84-90 in three steps	46
2446cc Turbo Diesel (2LT)	1987-84	84-90 in three steps	46
2693cc DOHC (3RZFE) 16 Valve	2003-94 ●○	1st 29, 2nd turn 90 degrees, 3rd turn 90 degrees	71

TOYOTA 6 & V6			
2253cc SOHC (2M)	1972-68	12mm bolts 54-61; 8mm bolts 11-16	83
2507cc DOHC (2VZFE) 24 Valve	1991-88 ●	1st 12 point bolts 25, 2nd 12 point bolts turn 90 degrees, 3rd 12 point bolts turn 90 degrees, 4th recessed bolts 13	112
2563cc SOHC (4M)	1979-71 ●	12mm bolts 54-61; 8mm bolts 11-16	83
2563cc SOHC (4ME)	1980-79 ●	12mm bolts 55-61; 8mm bolts 11-15	66



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
TOYOTA 6 & V6 (CONT.)			
2759cc SOHC (5ME) 12 Valve	1982-81	● 12mm bolts 55-61; 8mm bolts 11-15	66
2759cc DOHC (5MGE) 12 Valve	1988-82	● 58 in three steps	48
2954cc DOHC (7MGE) 24 Valve	1992-86	● 58 in three steps	92
2954cc DOHC Turbo (7MGTE) 24 Valve	1992-87	● 58 in three steps	92
2958cc SOHC (3VZE) 12 Valve	1995-88	●○ 1st Bolts 1-8 27 , 2nd Bolts 1-8 33 , 3rd Bolts 1-8 turn 90 degrees, 4th Bolts 1-8 turn 90 degrees, 5th Bolt 9 27	220
2958cc DOHC (3VZFE) 24 Valve	1993-92	● 1st 12 point bolts 25 , 2nd 12 point bolts turn 90 degrees, 3rd 12 point bolts turn 90 degrees, 4th recessed bolts 13	112
2995cc DOHC (1MZFE) 24 Valve	2003-94	●○ 1st 12 point bolts 40 , 2nd 12 point bolts turn 90 degrees, 3rd recessed bolts 13	120
2997cc DOHC (2JZGE) 24 Valve	1998-93	1st 25 , 2nd turn 90 degrees, 3rd turn 90 degrees	92
2997cc DOHC Turbo (2JZGTE) 24 Valve	1998-93	1st 25 , 2nd turn 90 degrees, 3rd turn 90 degrees	92
3378cc DOHC (5VZFE) 24 Valve	2003-95	●○ 1st 12 point bolts 25 , 2nd 12 point bolts turn 90 degrees, 3rd 12 point bolts turn 90 degrees, 4th recessed bolts 13	112
3878cc OHV (F)	1974-69	83-98 in three steps	61
3955cc OHV (3FE)	1992-88	● 90 in three steps	61
4230cc OHV (2F)	1987-75	● 83-98 in three steps	61
4476cc DOHC (1FZFE) 24 Valve	1997-93	1st 29 , 2nd turn 90 degrees, 3rd turn 90 degrees	92
TOYOTA V8			
4664cc DOHC (2UZFE) 32 Valve	2003-98	1st 24 , 2nd turn 90 degrees, 3rd turn 90 degrees	164
TRIUMPH 4			
1147cc OHV	1967-61	42-46	42
1296cc OHV	1972-67	42-46	42
1493cc OHV	1980-73	46 in three steps	42
1998cc SOHC	1981-75	55 in three steps	62
TRIUMPH 6			
1998cc OHV	1973-67	42-46	63
2498cc OHV	1976-67	80 in three steps	63
TRIUMPH V8			
3528cc OHV	1981-80	Bolts 1-10 65-70 ; Bolts 11-14 40-45	24
TVR 6 & V6			
2498cc OHV Triumph	1977-76	80 in three steps	63
2792cc OHV Ford	1986-82	● 1st 29-40 , 2nd 40-51 , 3rd 70-85	57
2935cc OHV Ford	1988-87	●○ 1st 22 , 2nd 51-55 , 3rd turn 90 degrees	97
VOLKSWAGEN 4 & H04			
1192cc OHV	1965-54	1st 7, 2nd 23	166
1285cc OHV	1966	1st 7, 2nd 23	166
1457cc SOHC	1980-78	● 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60



TORQUE TABLES™

ENGINE	YEARS	FT.-LBS.	TORQ. SEQ.
VOLKSWAGEN 4 & H04 (CONT.)			
1471cc SOHC	1975-74	1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1471cc Diesel	1980-77	12 point M12 bolts 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	60
1471cc Diesel	1980-77	6 point M11 bolts 1st 35 , 2nd 50 , 3rd 65 , 4th warm engine, 5th 65 again, 6th after 1000 miles turn 90 degrees	60
1493cc OHV	1969-63	1st 7, 2nd 23	166
1584cc OHV	1979-66	1st 11 , 2nd 23	166
1588cc SOHC	1980-75	● 12 point bolts 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1588cc SOHC	1980-75	● 6 point bolts 1st 29 , 2nd 43 , 3rd 54 , 4th warm engine, 5th 61 , 6th retorque after 1000 miles	60
1588cc Diesel	1992-82	●○ 12 point M12 bolts 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	60
1588cc Diesel	1984-81	●○ 6 point M11 bolts 1st 35 , 2nd 50 , 3rd 65 , 4th warm engine, 5th 65 again, 6th after 1000 miles turn 90 degrees	60
1588cc Turbo Diesel	1988-82	●○ 12 point M12 bolts 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	60
1679cc OHV	1974-71	1st 11 , 2nd 23	166
1715cc SOHC	1984-81	● 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1780cc SOHC (8 Valve)	1993-83	●○ 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1780cc DOHC (16 Valve)	1989-86	● 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1780cc SOHC Supercharged (8 Valve)	1994-90	1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1780cc DOHC Turbo (20 Valve)	2003-98	●○ 1st 44 , 2nd turn 90 degrees, 3rd turn 90 degrees	60
1795cc OHV	1975-74	1st 11 , 2nd 23	166
1896cc Diesel	1995-92	1st 30 , 2nd 44 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1896cc Turbo Diesel	2003-96	1st 30 , 2nd 44 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1915cc OHV	1985-83	26	166
1970cc OHV	1983-80	22	166
1970cc OHV	1979-76	1st 11 , 2nd 23	166
1984cc SOHC (AEG, AVH, AZG) (8 Valve)	2003-98	●○ 1st 30 , 2nd turn 90 degrees, 3rd turn 90 degrees	60
1984cc SOHC (ABA) (8 Valve)	2002-93	●○ 1st 30 , 2nd 44 , 3rd turn 90 degrees, 4th turn 90 degrees	60
1984cc DOHC (16 Valve)	1994-90	● 1st 29 , 2nd 43 , 3rd turn 90 degrees, 4th turn 90 degrees	60
2109cc OHV	1991-86	1st 7, 2nd 30 , 3rd 37	166



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

VOLKSWAGEN 5

2144cc SOHC (10 Valve)	1984-83	●	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2226cc SOHC (10 Valve)	1988-85	●	1st 29, 2nd 43, 3rd turn 90 degrees, 4th turn 90 degrees	78
2461cc SOHC (10 Valve)	1996-92		1st 30, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	78

VOLKSWAGEN V6

2771cc DOHC (30 Valve)	2003-98		1st 44, 2nd turn 90 degrees, 3rd turn 90 degrees	135
2792cc DOHC (AAA) (12 Valve)	2002-92		1st 30, 2nd 44, 3rd turn 90 degrees, 4th turn 90 degrees	168
2792cc DOHC (AES) (12 Valve)	2000-97		1st 30, 2nd 37, 3rd turn 90 degrees, 4th turn 90 degrees	168
2792cc DOHC (AFP) (24 Valve)	2003-01		1st 37, 2nd turn 90 degrees, 3rd turn 90 degrees	168
2792cc DOHC (AXK) (24 Valve)	2003-01		1st 22, 2nd 37, 3rd turn 90 degrees, 4th turn 90 degrees	168

VOLVO 4

1580cc OHV (B16A, B16B, B16D)	1961-57		61-69	110
1780cc OHV (B18A, B18B, B18D)	1968-61		61-69	110
1948cc DOHC Turbo (B4194T) 16 Valve	2003-00		1st Bolts 1-2 15, 2nd Bolts 3-10 44, 3rd turn all bolts 130 degrees	40
1986cc OHV (B20A, B20B)	1974-69		61-69	110
1986cc OHV (B20E, B20F)	1975-70		1st 29, 2nd 58, 3rd 65, 4th warm engine, 5th 65 again	110
2127cc SOHC (B21E, B21F)	1984-76	●	1st 43, 2nd 76-83, 3rd warm engine, 4th 76-83 again	110
2127cc SOHC Turbo (B21FT)	1985-81	●	1st 15, 2nd 44, 3rd turn 90 degrees	110
2316cc SOHC (B230F, B230FD, B230FS) 8 Valve	1995-85	●	1st 14, 2nd 43, 3rd turn 90 degrees	110
2316cc SOHC (B23E, B23F) 8 Valve	1984-81	●	1st 15, 2nd 44, 3rd turn 90 degrees	110
2316cc DOHC (B234F) 16 Valve	1991-89	●	1st 15, 2nd 30, 3rd turn 115 degrees	110
2316cc SOHC Turbo (B234T) 8 Valve	1996-91	●	1st 14, 2nd 43, 3rd turn 90 degrees	110
2316cc SOHC Turbo (B234FT) 8 Valve	1995-89	●	1st 14, 2nd 43, 3rd turn 90 degrees	110
2316cc SOHC Turbo (B230FT) 8 Valve	1995-85	●	1st 14, 2nd 43, 3rd turn 90 degrees	110
2316cc SOHC Turbo (B23FT) 8 Valve	1984	●	1st 15, 2nd 44, 3rd turn 90 degrees	110

VOLVO 5

2319cc DOHC Turbo (B5234FT, B5234T) 20 Valve	2003-94		1st 15, 2nd 44, 3rd turn 130 degrees	208
2435cc DOHC (B5254FS, B5254S) 20 Valve	2003-93	●○	1st 15, 2nd 44, 3rd turn 130 degrees	208
2435cc DOHC Turbo (B5254FT, B5254T) 20 Valve	2003-97	●○	1st 15, 2nd 44, 3rd turn 130 degrees	208
2521cc DOHC Turbo (B5254T2) 20 Valve	2003		1st 15, 2nd 44, 3rd turn 130 degrees	208



TORQUE TABLES™

ENGINE YEARS FT.-LBS. TORQ. SEQ.

VOLVO 6 & V6

2383cc Diesel (D24)	1985-81		12 point M12 bolts 1st 30, 2nd 44, 3rd 55, 4th turn 180 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	84
2383cc Diesel (D24)	1981-80		6 point M11 bolts 1st 35, 2nd 50, 3rd 65, 4th warm engine, 5th 65 again, 6th after 1000 miles turn 90 degrees	84
2383cc Turbo Diesel (D24T)	1986-83		12 point M12 bolts 1st 30, 2nd 44, 3rd 55, 4th turn 180 degrees, 5th warm engine, 6th turn 90 degrees, 7th after 1000 miles turn 90 degrees	84
2664cc SOHC (B27E, B27F)	1979-75		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 11-14, 6th turn 116-120 degrees, 7th warm engine & allow to cool, 8th loosen all bolts, 9th 11-14 again, 10th turn 113-117 degrees	52
2783cc DOHC Turbo (B6284T) 24 Valve	2003-99		1st 15, 2nd 44, 3rd turn 130 degrees	209
2849cc SOHC (B280F)	1991-90		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 30, 6th turn 160-180 degrees	52
2849cc SOHC (B280F)	1989-86		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 15, 6th turn 106 degrees, 7th warm engine & allow to cool, 8th turn 45 degrees	52
2849cc SOHC (B28F)	1986		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 15, 6th turn 106 degrees, 7th warm engine & allow to cool, 8th turn 45 degrees	52
2849cc SOHC (B28F)	1985-80		1st 7, 2nd 22, 3rd 44, 4th loosen all bolts, 5th 11-14, 6th turn 116-120 degrees, 7th warm engine & allow to cool, 8th loosen all bolts, 9th 11-14 again, 10th turn 113-117 degrees	52
2922cc DOHC (B6304S) 24 Valve	2003-92		1st 15, 2nd 44, 3rd turn 130 degrees	209
2922cc DOHC Turbo (B6304FT) 24 Valve	2003		1st 15, 2nd 44, 3rd turn 130 degrees	209
2980cc OHV (B30A)	1972-69		61-69	2
2980cc OHV (B30E, B30F)	1975-72		1st 29, 2nd 58, 3rd 65, 4th warm engine, 5th 65 again	2

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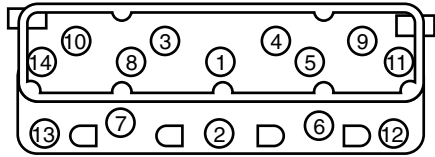
YUGO 4

1116cc SOHC (128A)	1989-86		1st 15, 2nd 30, 3rd 69	41
1290cc SOHC (128A1)	1992-87		1st 15, 2nd 30, 3rd 69	41



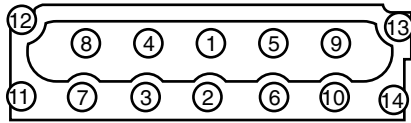
TORQUE TABLES™

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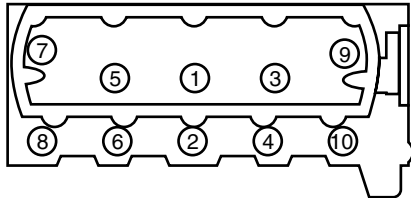


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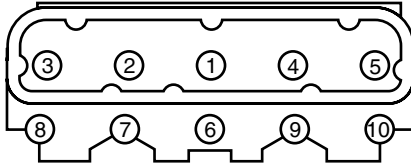
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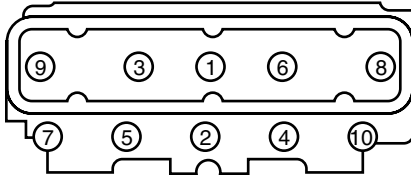
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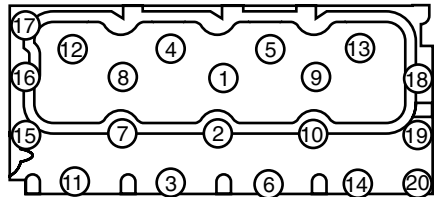


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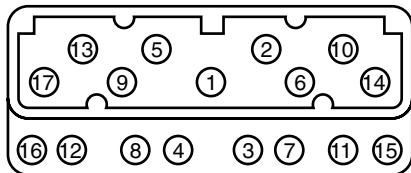


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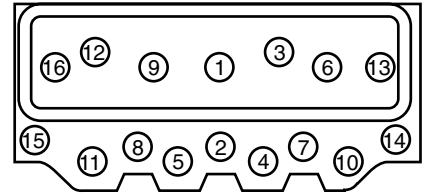


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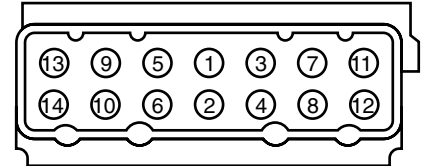


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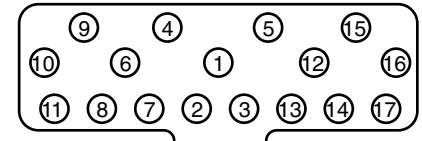
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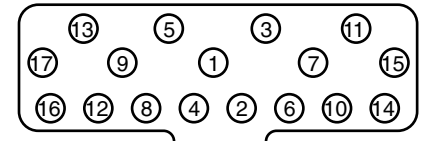
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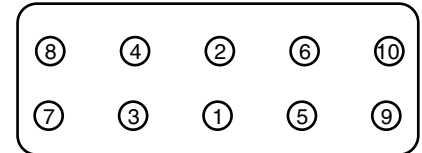
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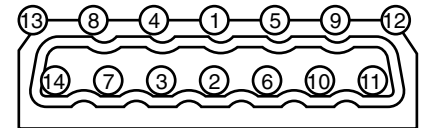
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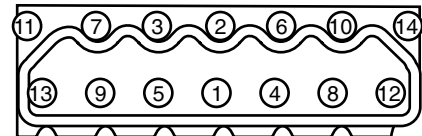


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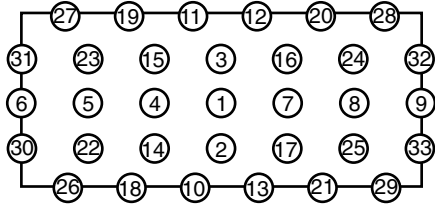
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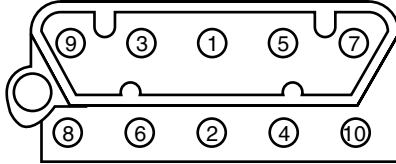


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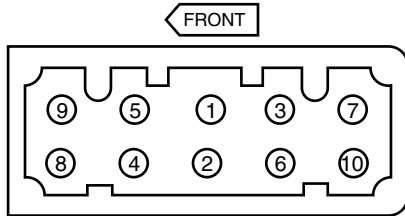
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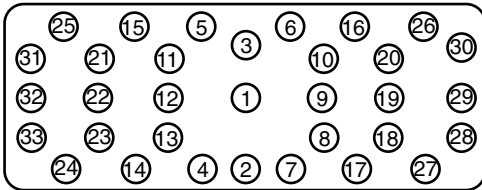
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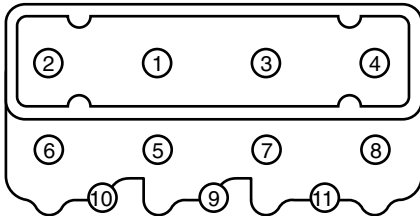
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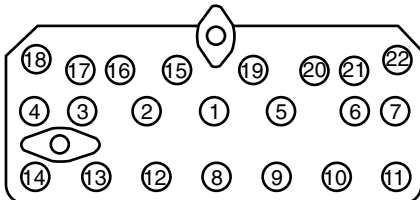
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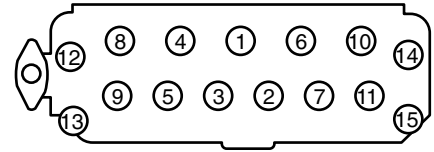


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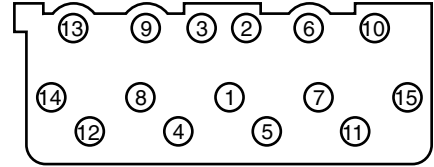


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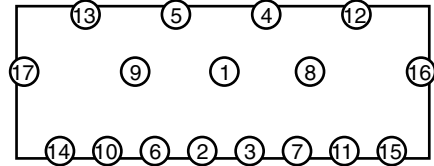
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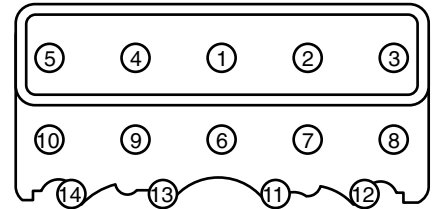
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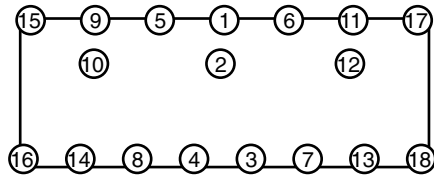
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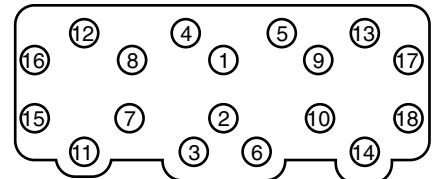
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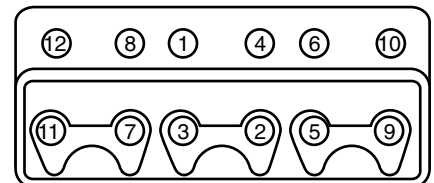
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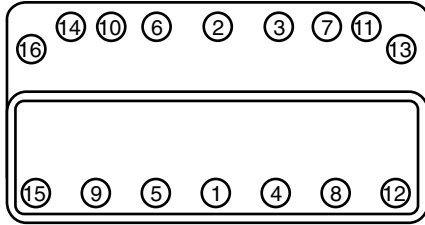


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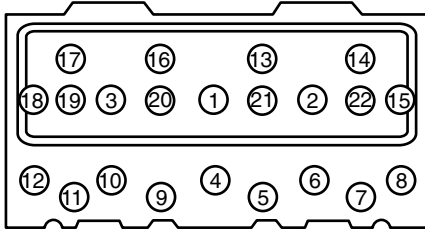




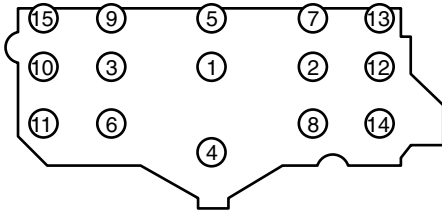
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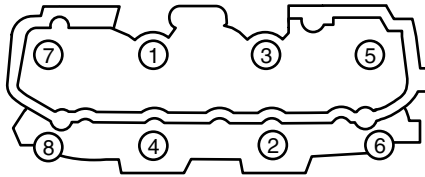
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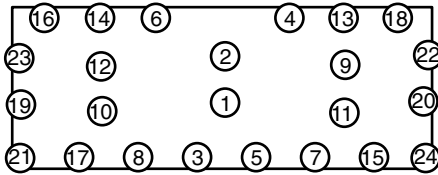
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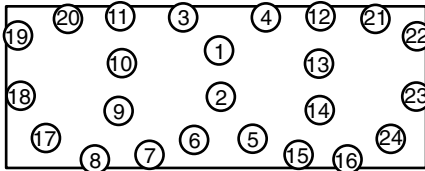
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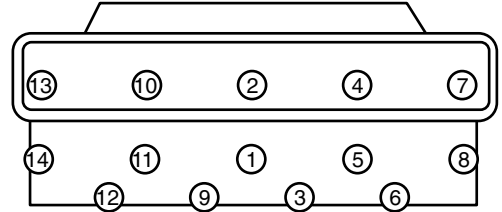
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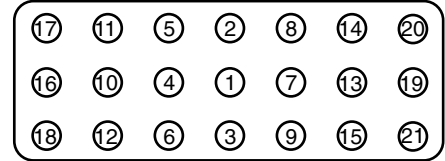
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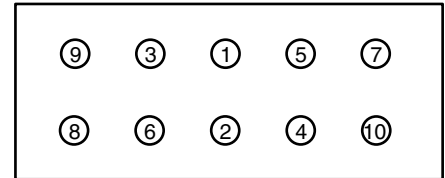
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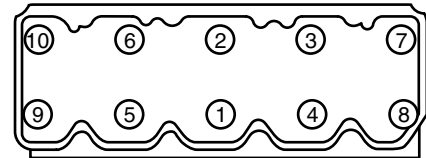
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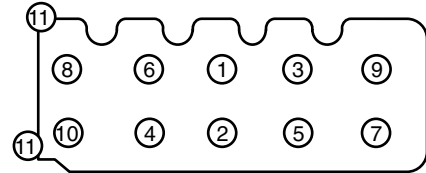
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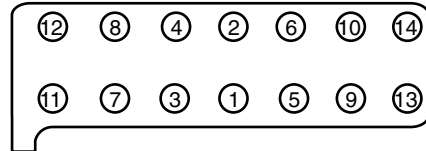
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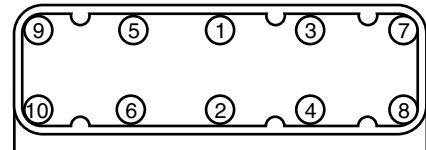
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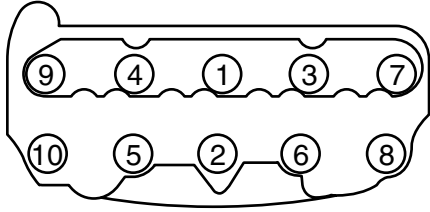


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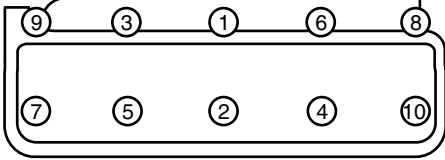




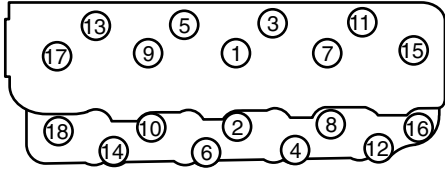
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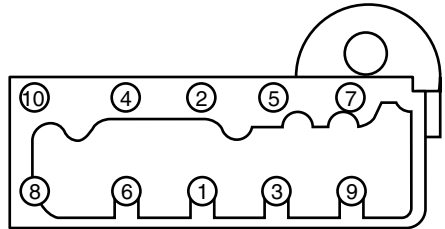
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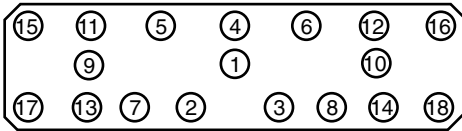
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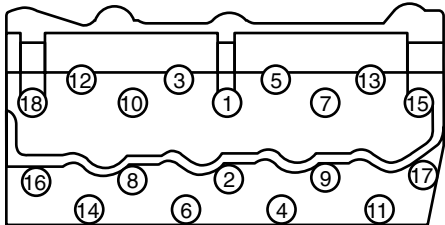
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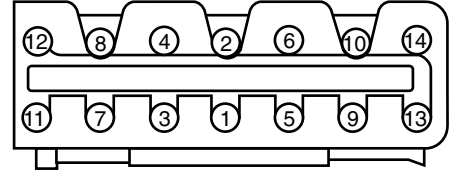
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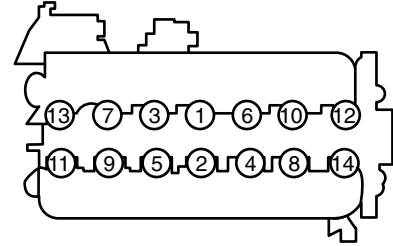
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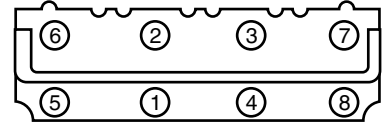
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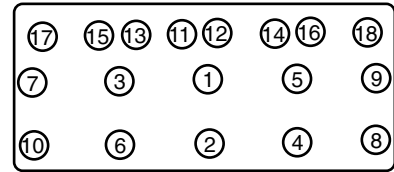
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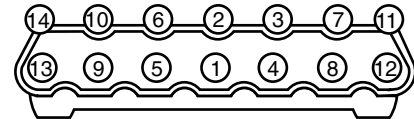
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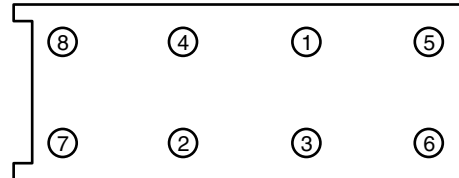
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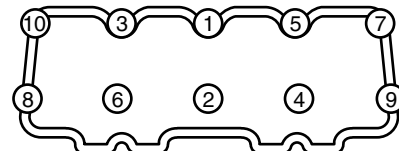
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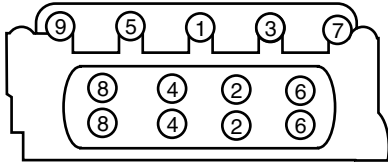


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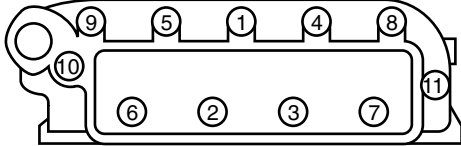




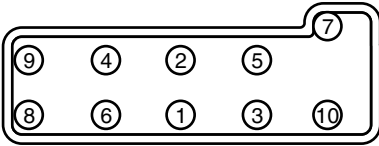
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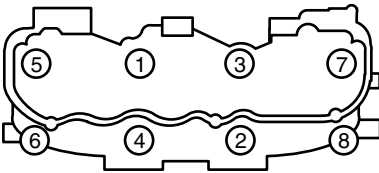
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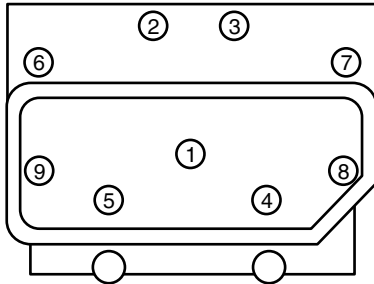
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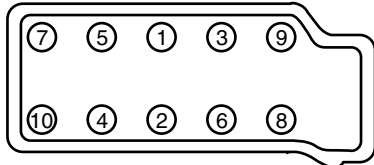
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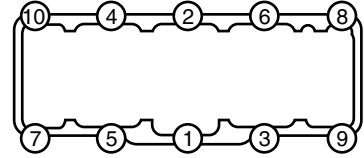
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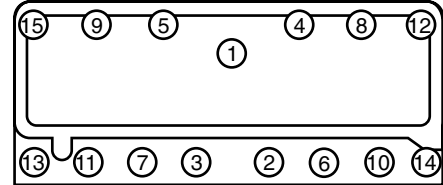
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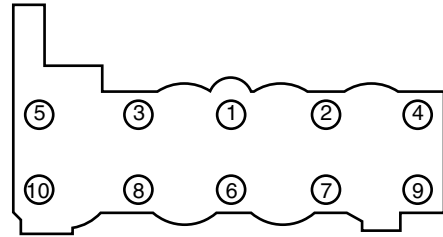
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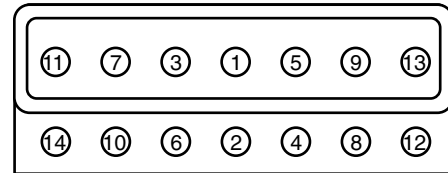
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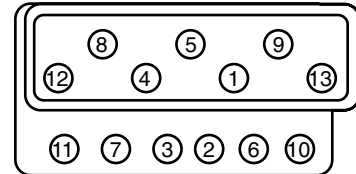
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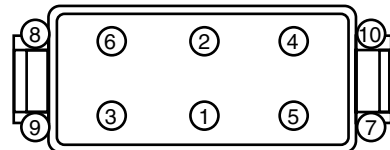
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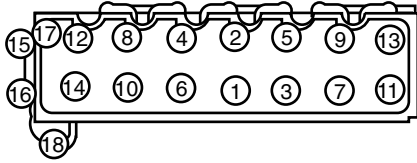
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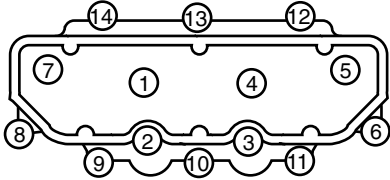


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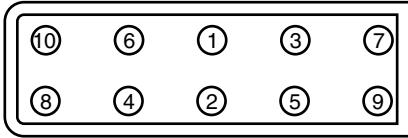
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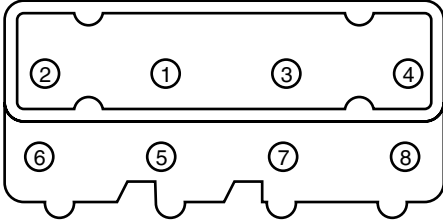
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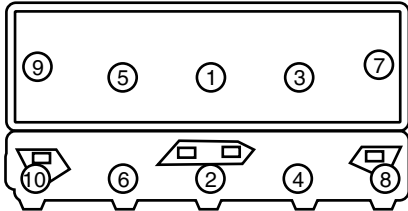
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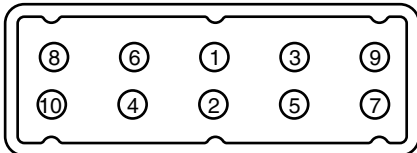
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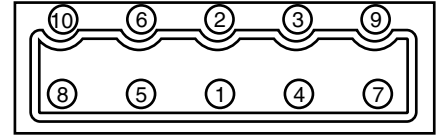


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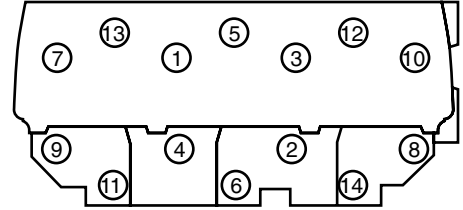


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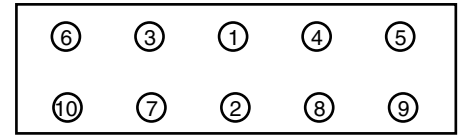
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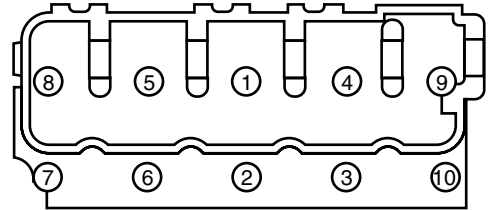
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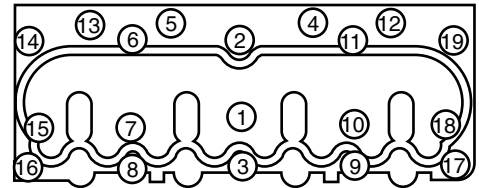
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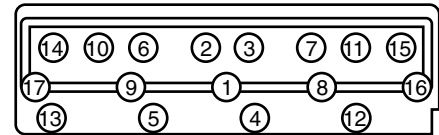
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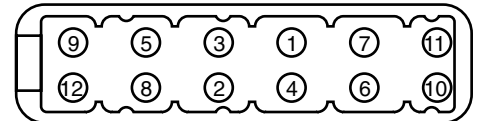
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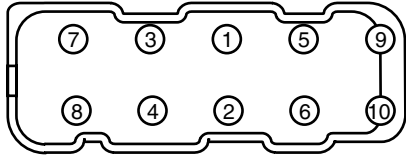


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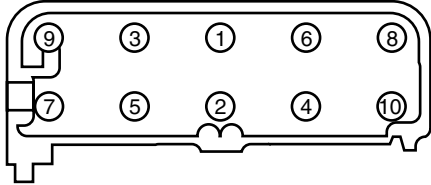




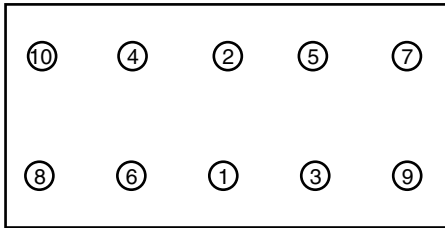
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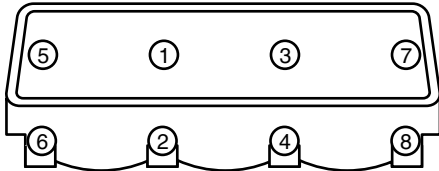
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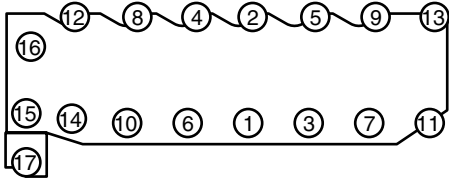
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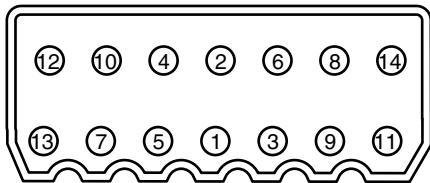
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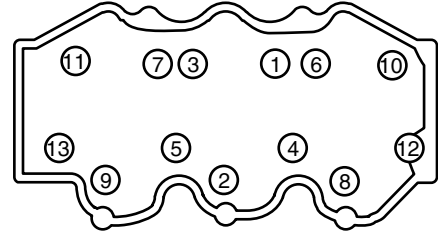
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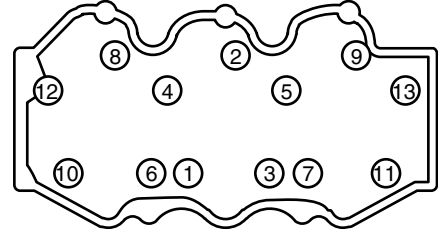
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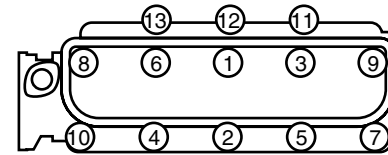


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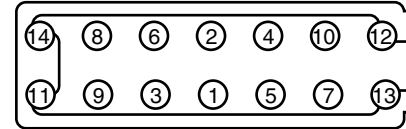


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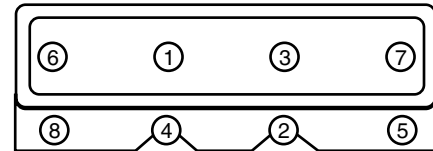
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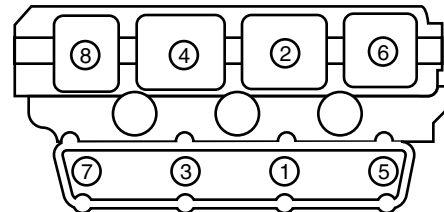
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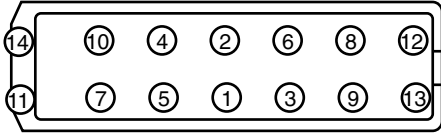
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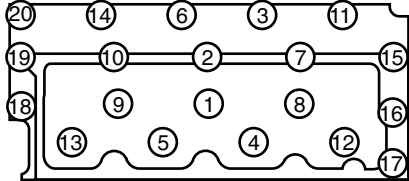


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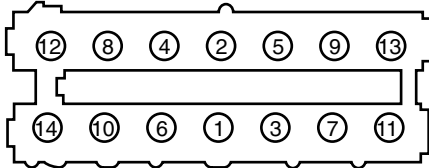
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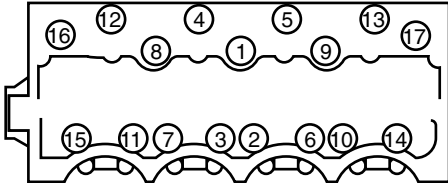
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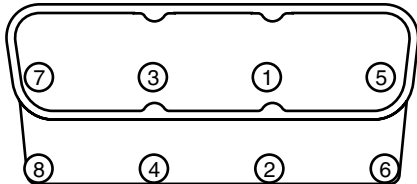
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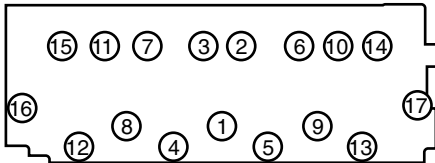
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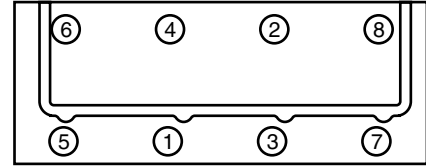


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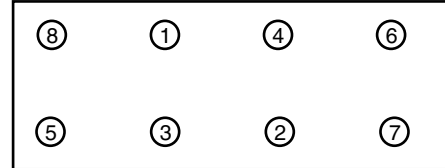


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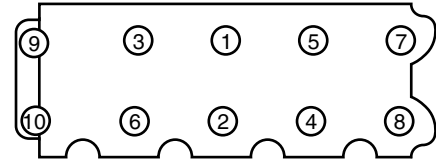
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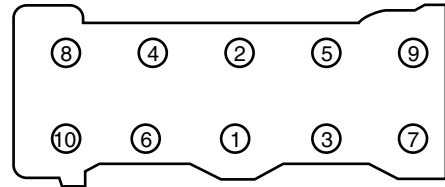
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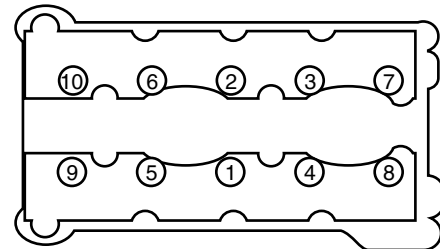
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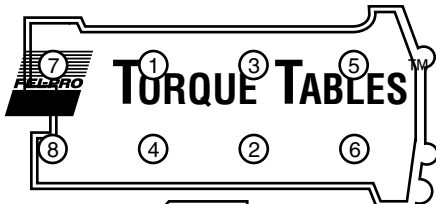


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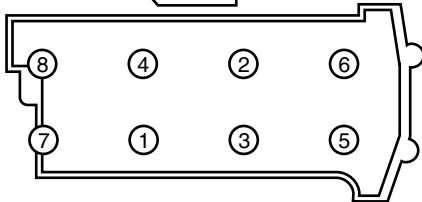


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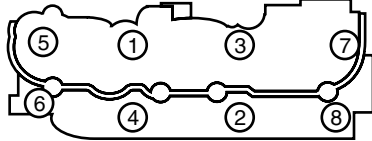




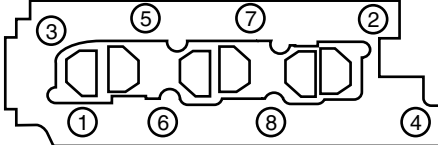
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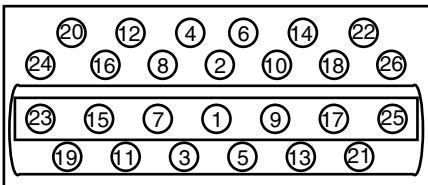
Cylinder Head Bolt Tightening Sequence



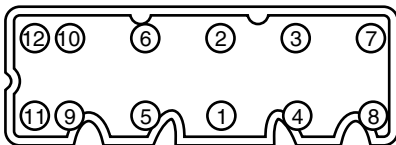
Lower Intake Manifold Bolt Tightening Sequence



102

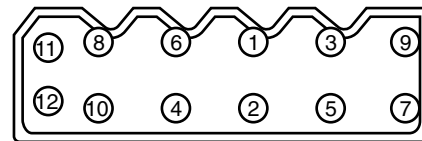


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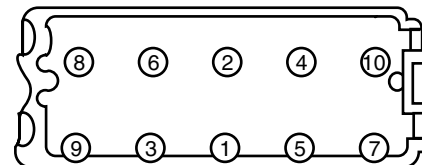


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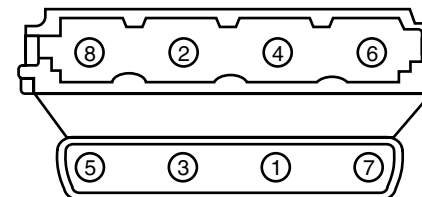
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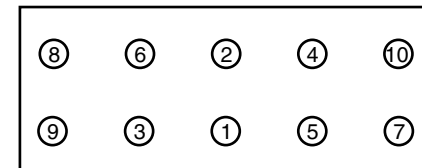
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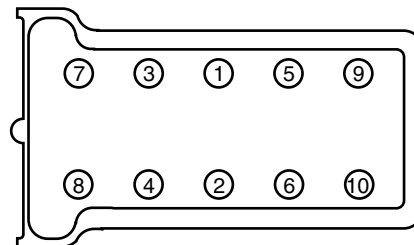
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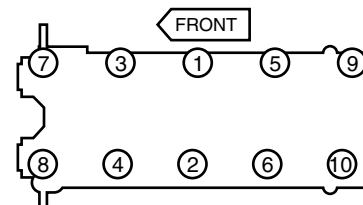
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109

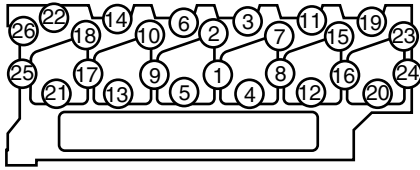


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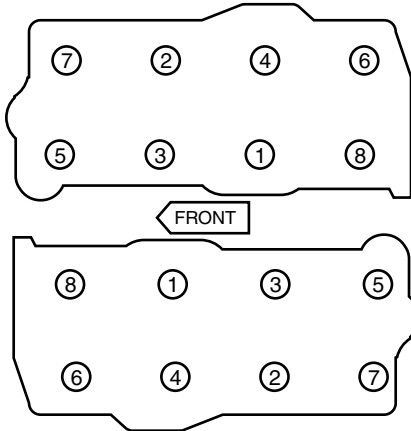


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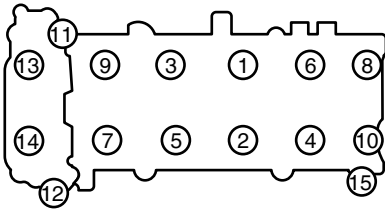
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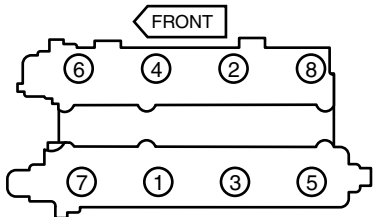
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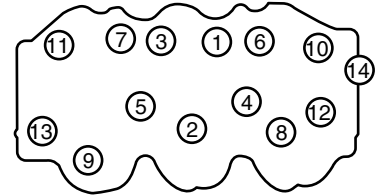


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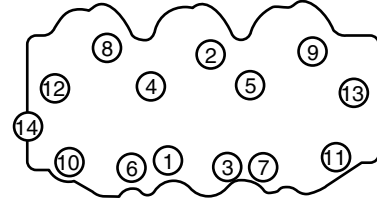


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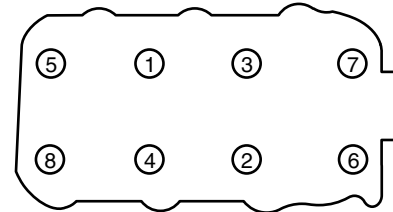


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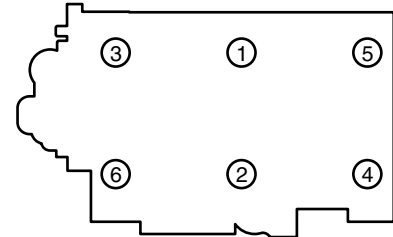


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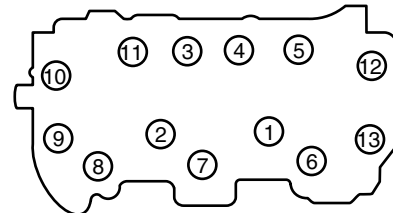
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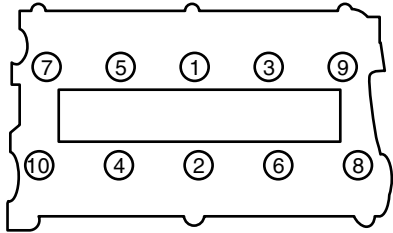
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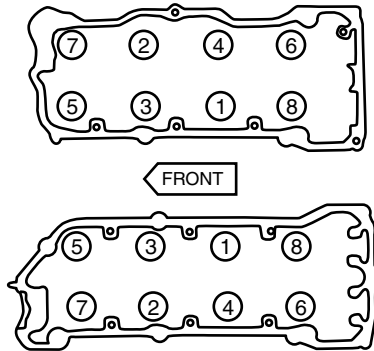


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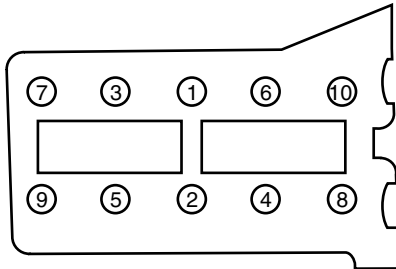
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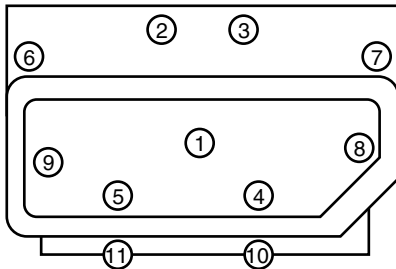
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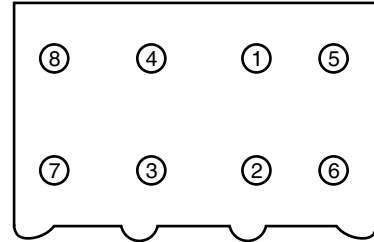


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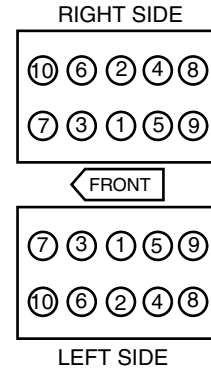


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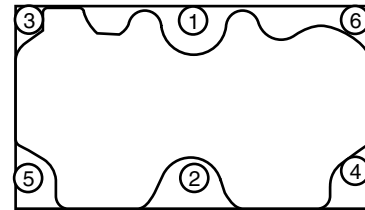
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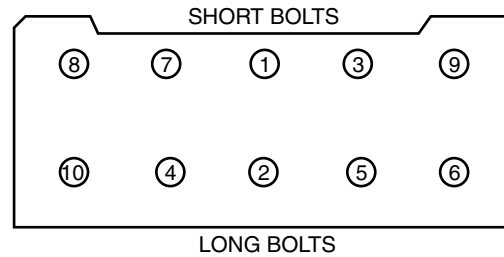
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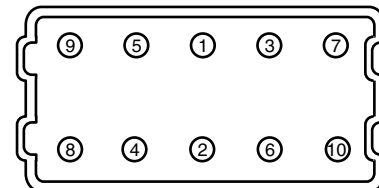
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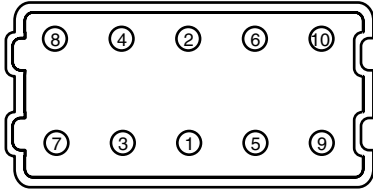


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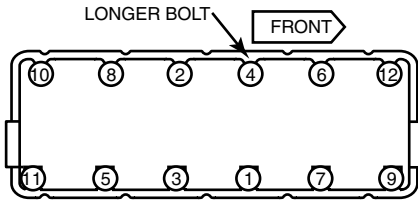




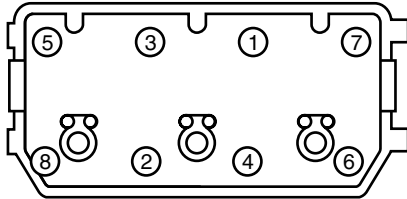
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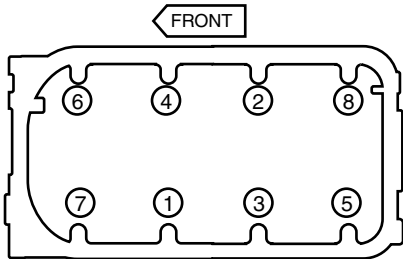
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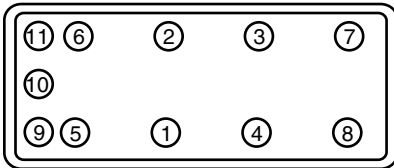
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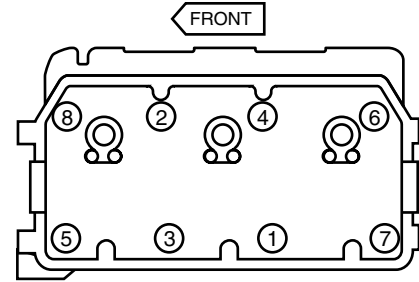
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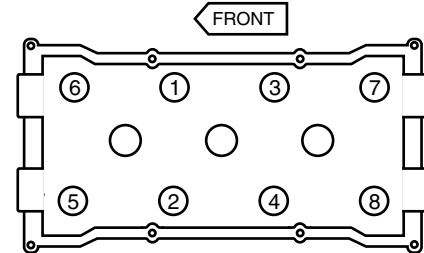
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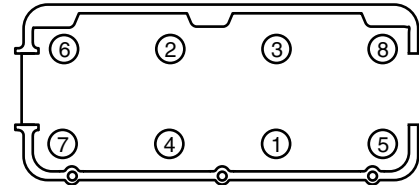
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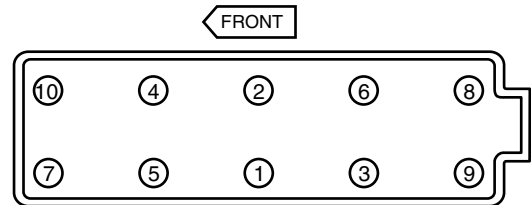
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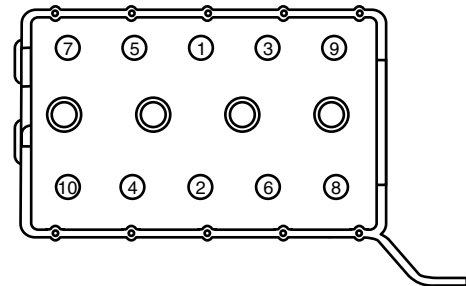
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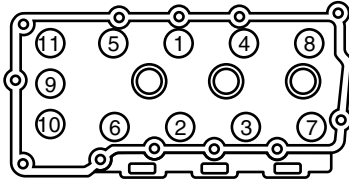
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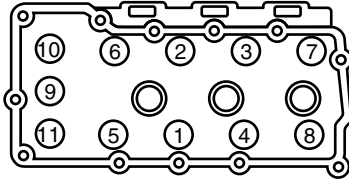


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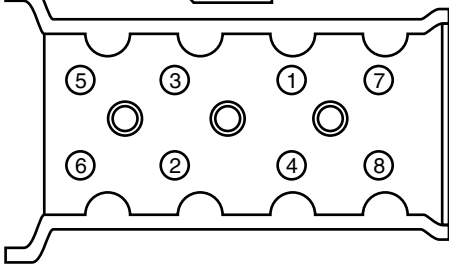


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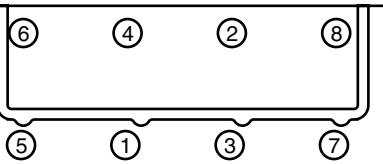
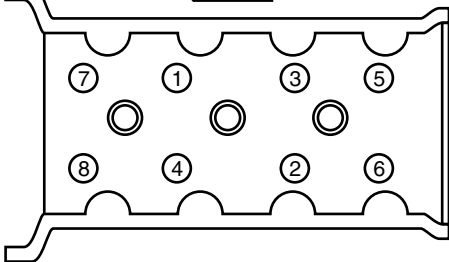


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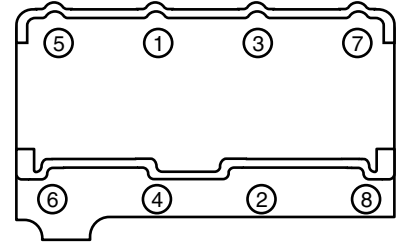


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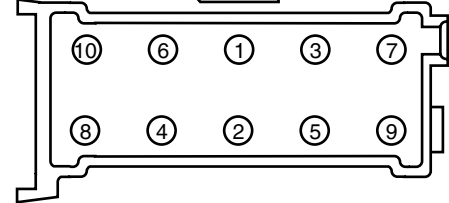


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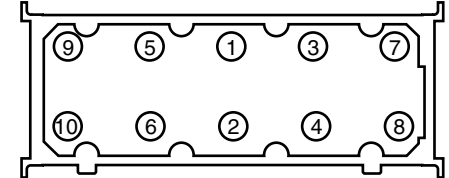
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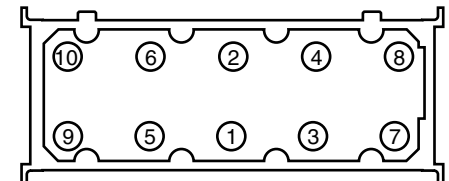
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RIGHT SIDE



FRONT



LEFT SIDE

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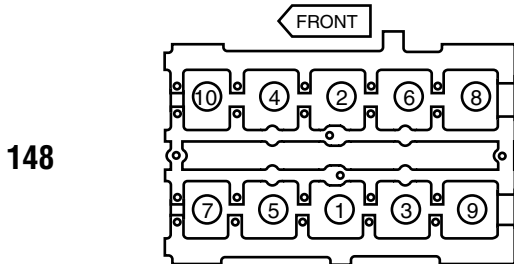
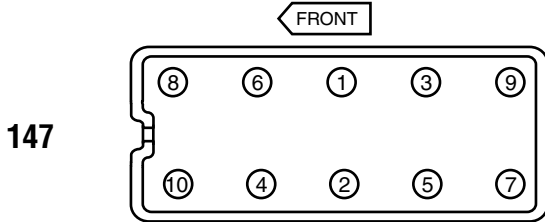
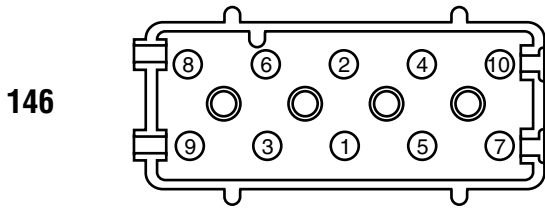
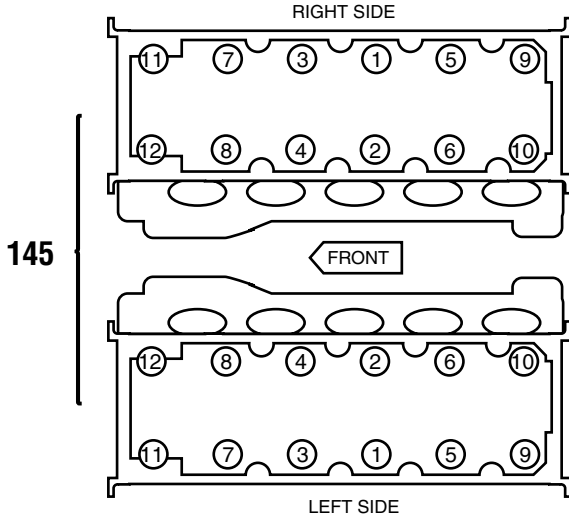
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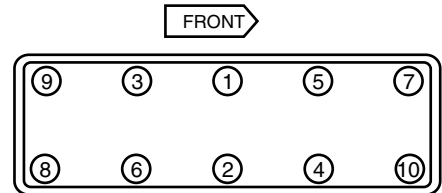
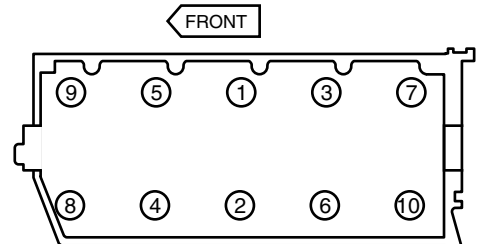
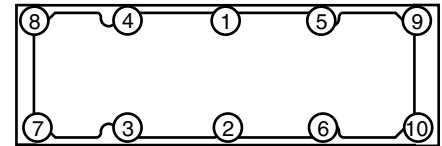
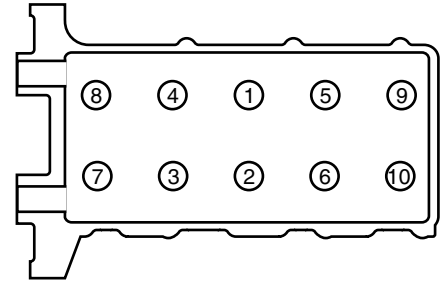
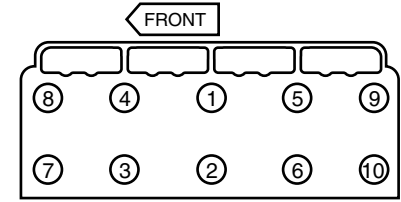
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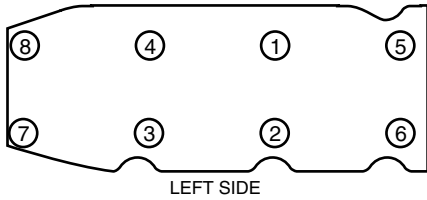
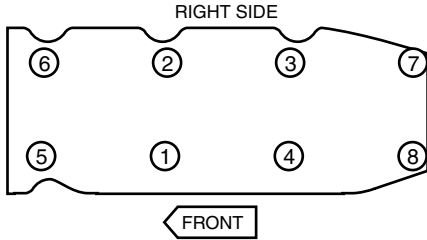
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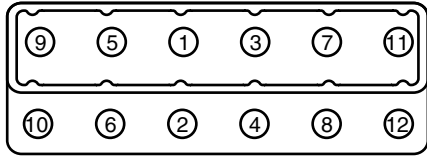


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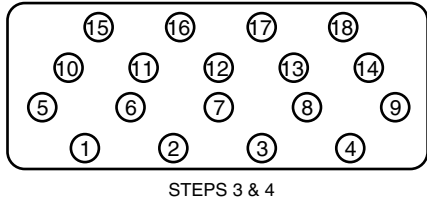
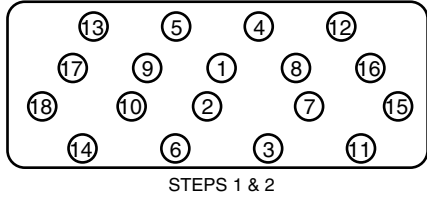
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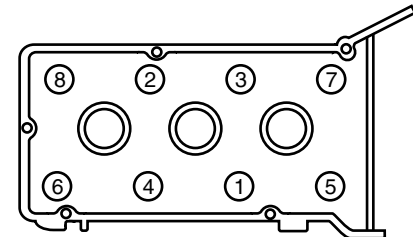
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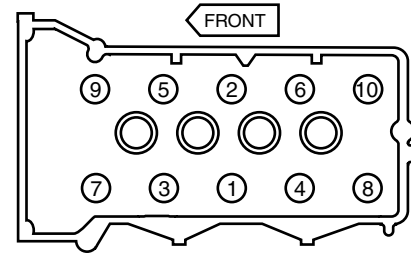


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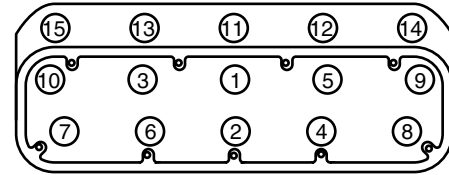


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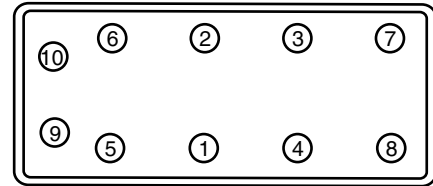
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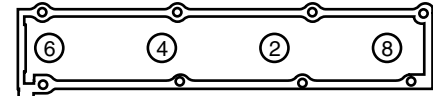
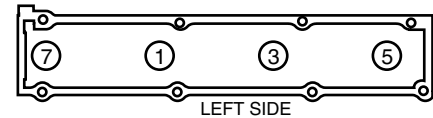
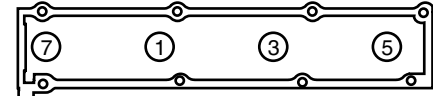
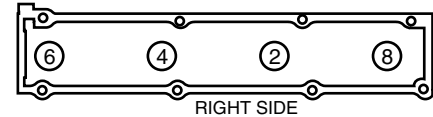
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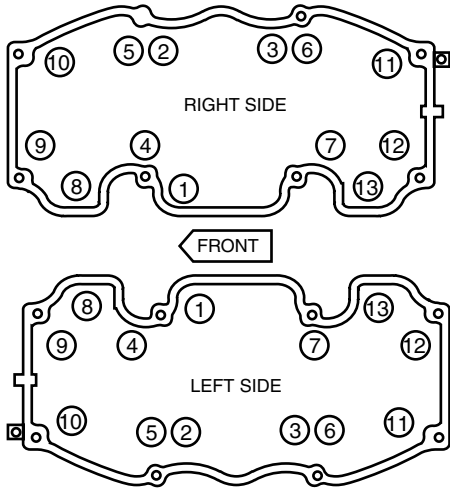


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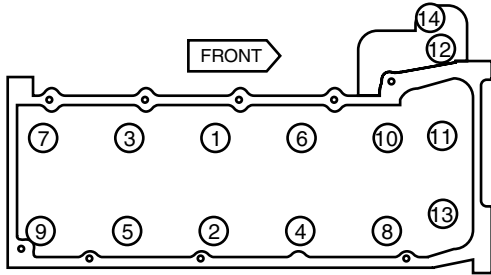




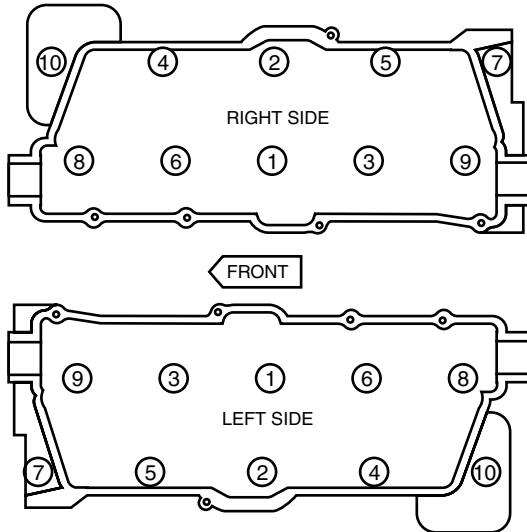
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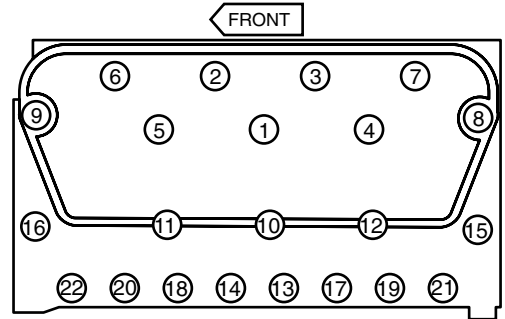
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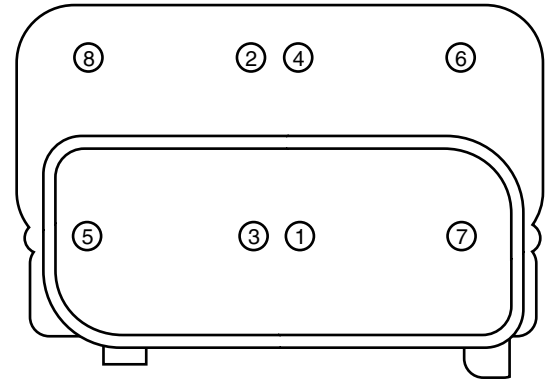
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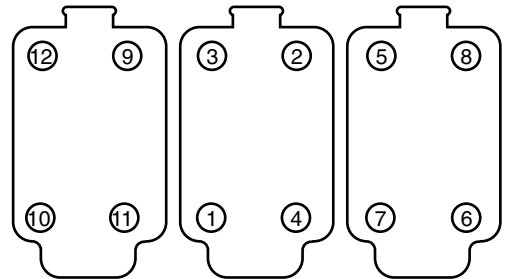
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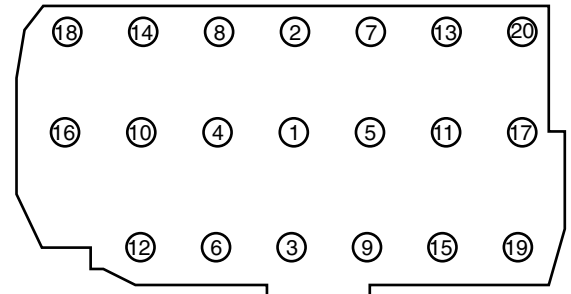
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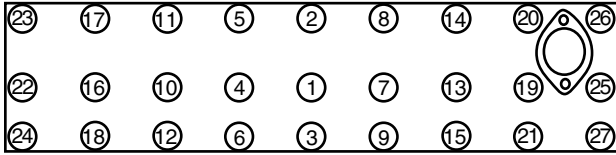
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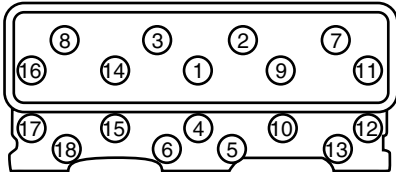


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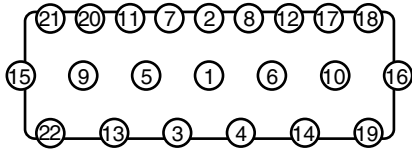
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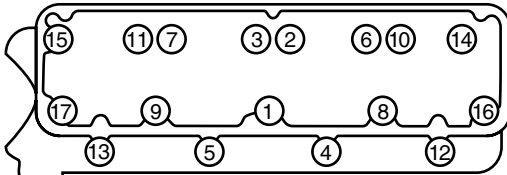
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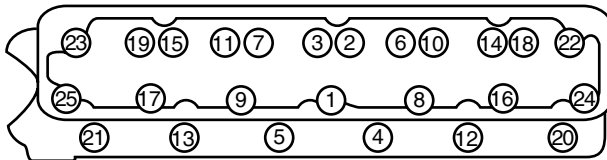
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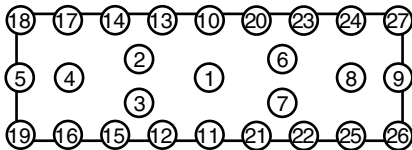
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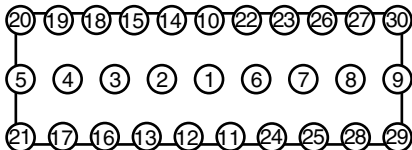
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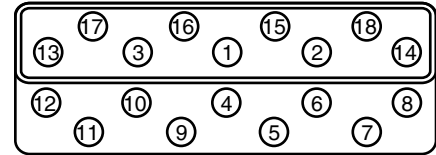


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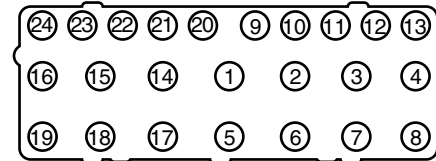


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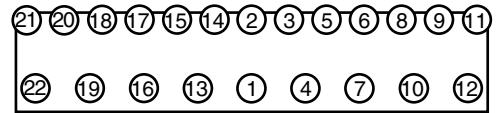
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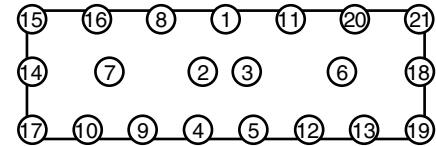
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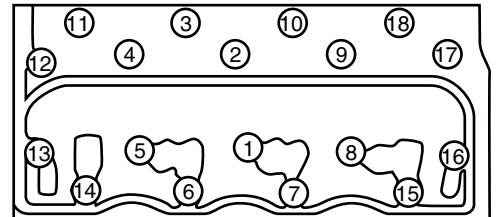
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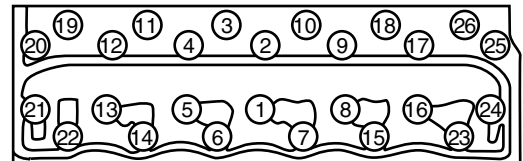
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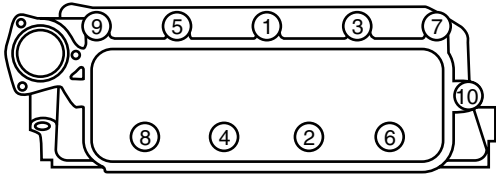


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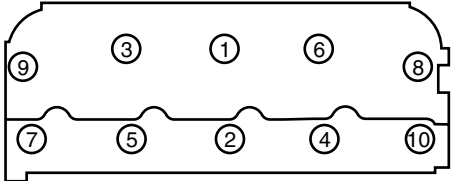




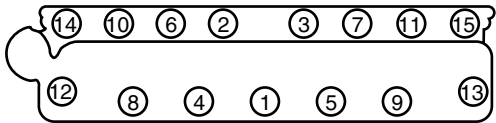
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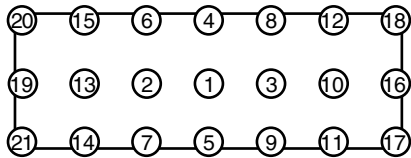
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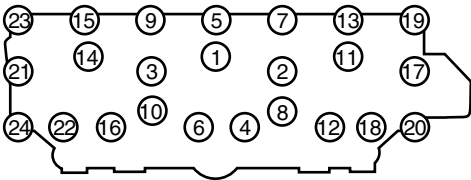
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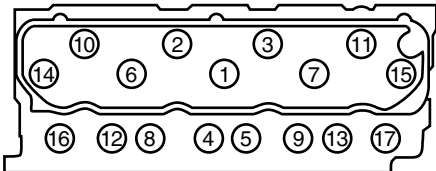
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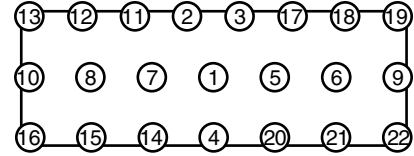
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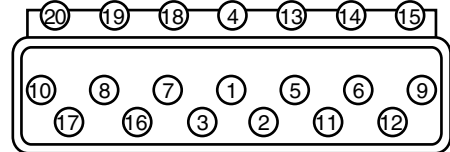
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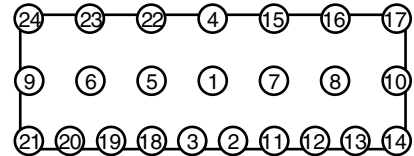
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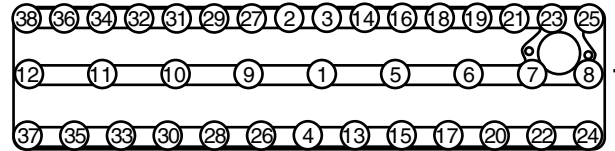
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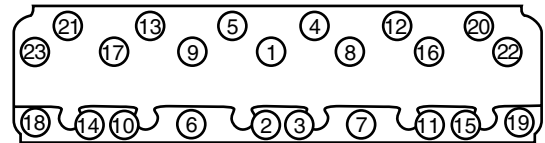
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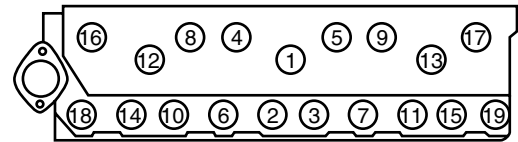
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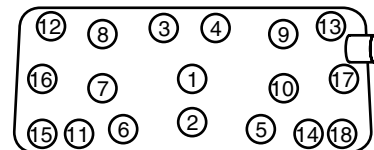
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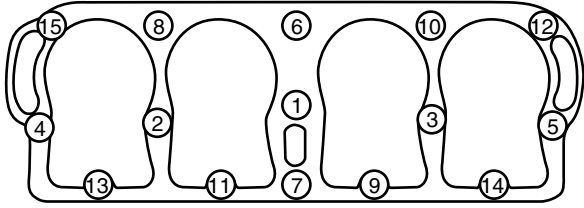
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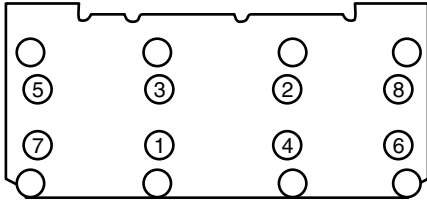


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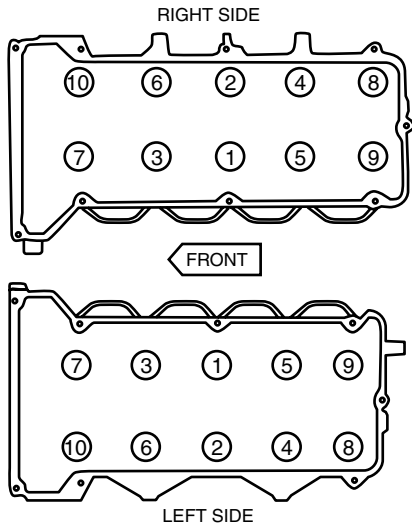
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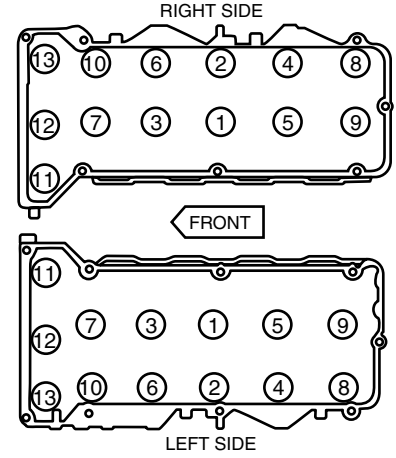


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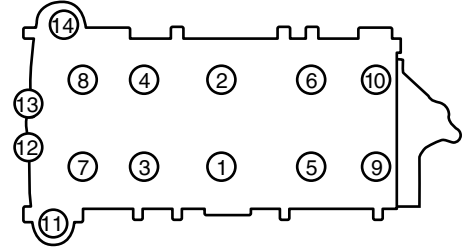


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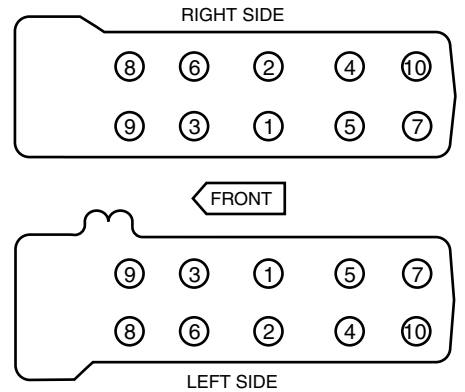
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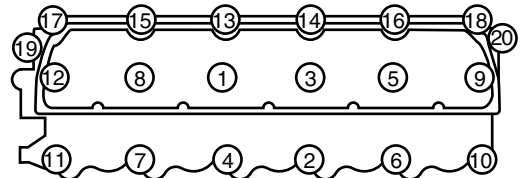
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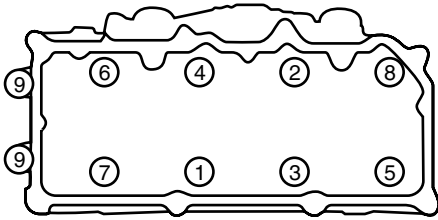
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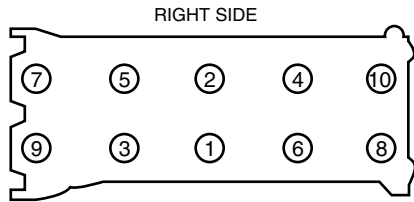


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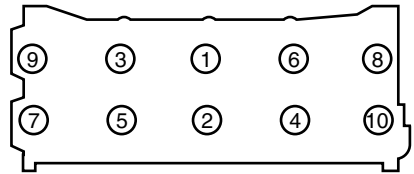
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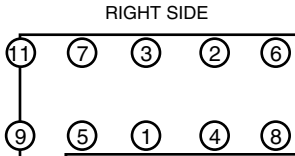


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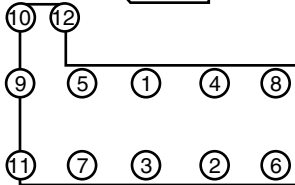


LEFT SIDE

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FRONT

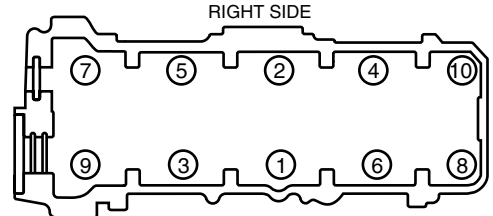


LEFT SIDE

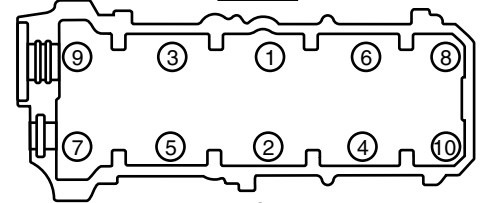


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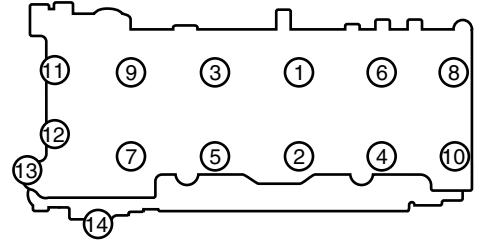


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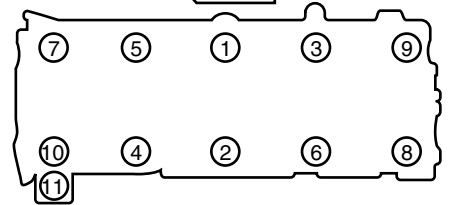
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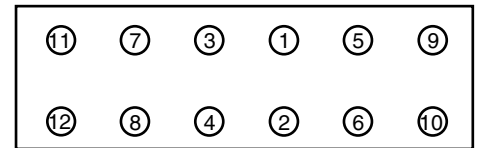
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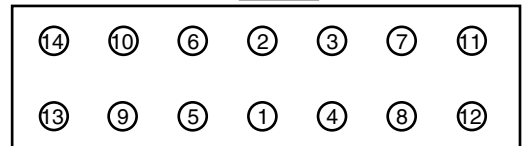
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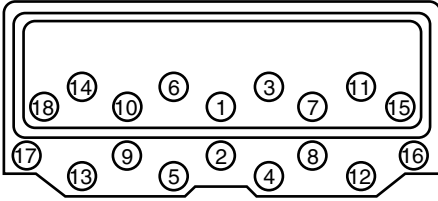
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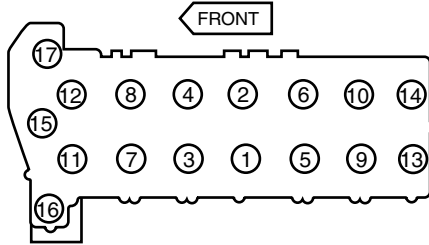




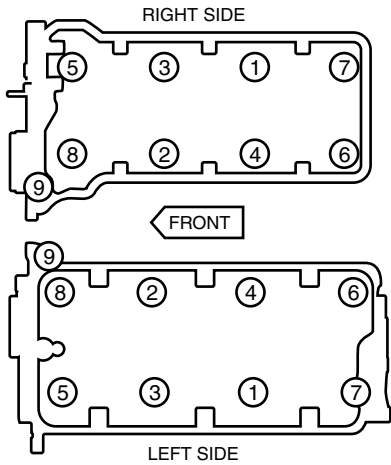
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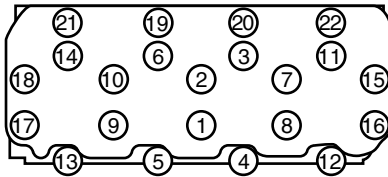
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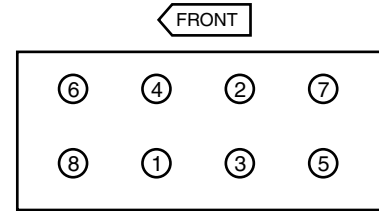
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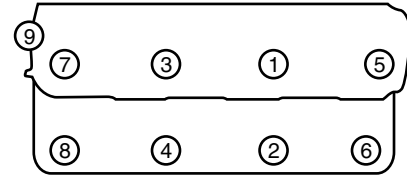
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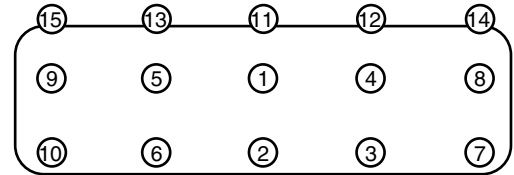
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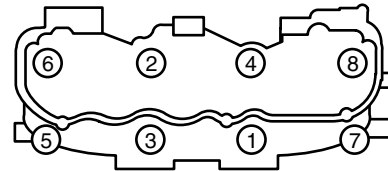
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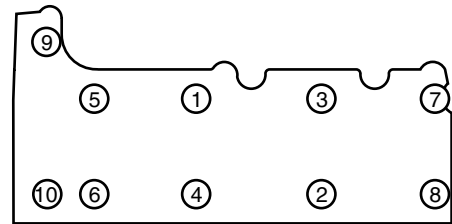
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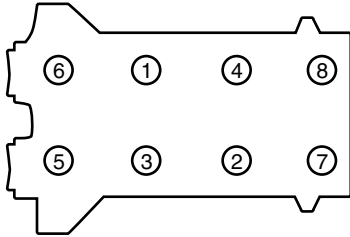
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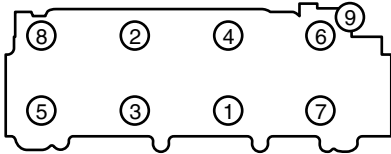


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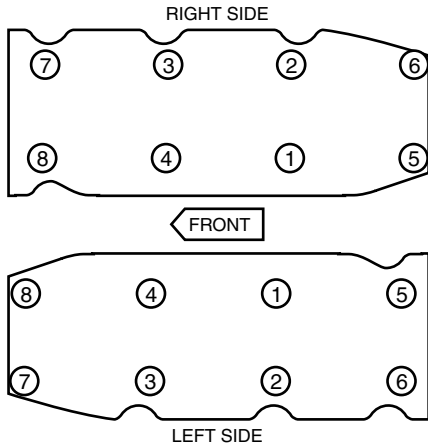
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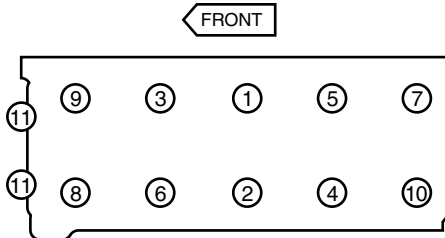
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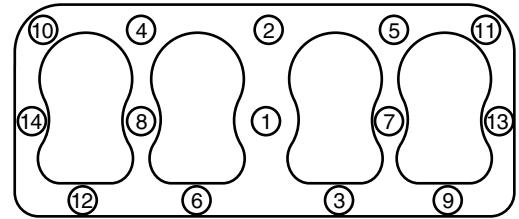


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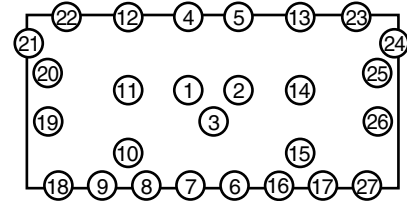


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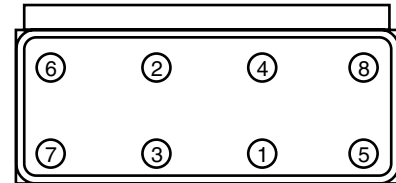
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