



Das Auto.

2014

CC

**Quick Reference
Specification Book**

2014 Volkswagen CC

Quick Reference Specification Book

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GENERAL INFORMATION

Decimal and Metric Equivalents

Distance/Length

To calculate: mm x 0.03937 = in.

mm	in.	mm	in.	mm	in.	mm	in.
0.002	0.00008	0.01	0.0004	0.1	0.004	1	0.04
0.004	0.00016	0.02	0.0008	0.2	0.008	2	0.08
0.006	0.00024	0.03	0.0012	0.3	0.012	3	0.12
0.008	0.00031	0.04	0.0016	0.4	0.016	4	0.16
0.010	0.00039	0.05	0.0020	0.5	0.020	5	0.20
0.020	0.00079	0.06	0.0024	0.6	0.024	6	0.24
0.030	0.00118	0.07	0.0028	0.7	0.028	7	0.28
0.040	0.00157	0.08	0.0031	0.8	0.031	8	0.31
0.050	0.00197	0.09	0.0035	0.9	0.035	9	0.35
0.060	0.00236	0.10	0.0039	1.0	0.039	10	0.39
0.070	0.00276	0.20	0.0079	2.0	0.079	20	0.79
0.080	0.00315	0.30	0.0118	3.0	0.118	30	1.18
0.090	0.00354	0.40	0.0157	4.0	0.157	40	1.57
0.100	0.00394	0.50	0.0197	5.0	0.197	50	1.97
0.200	0.00787	0.60	0.0236	6.0	0.236	60	2.36
0.300	0.01181	0.70	0.0276	7.0	0.276	70	2.76
0.400	0.01575	0.80	0.0315	8.0	0.315	80	3.15
0.500	0.01969	0.90	0.0354	9.0	0.354	90	3.54
0.600	0.02362	1.00	0.0394	10.0	0.394	100	3.94
0.700	0.02756	2.00	0.0787	20.0	0.787		
0.800	0.03150	3.00	0.1181	30.0	1.181		
0.900	0.03543	4.00	0.1575	40.0	1.575		
1.000	0.03937	5.00	0.1969	50.0	1.969		
2.000	0.07874	6.00	0.2362	60.0	2.362		
3.000	0.11811	7.00	0.2756	70.0	2.756		
4.000	0.15748	8.00	0.3150	80.0	3.150		
5.000	0.19685	9.00	0.3543	90.0	3.543		
6.000	0.23622	10.00	0.3937	100.0	3.937		
7.000	0.27559	20.00	0.7874				
8.000	0.31496	30.00	1.1811				
9.000	0.35433	40.00	1.5748				
10.000	0.39370	50.00	1.9685				
20.000	0.78740	60.00	2.3622				
30.000	1.18110	70.00	2.7559				
40.000	1.57480	80.00	3.1496				
50.000	1.96850	90.00	3.5433				
60.000	2.36220	100.00	3.9370				
70.000	2.75591						
80.000	3.14961						
90.000	3.54331						
100.000	3.93701						

Tightening Torque

Nm-to-lb·ft (ft·lb)

To calculate: Nm x 0.738 = lb·ft

Nm	lb·ft (ft·lb)	Nm	lb·ft (ft·lb)	Nm	lb·ft (ft·lb)
10	7	55	41	100	74
11	8	56	41	105	77
12	9	57	42	110	81
13	10	58	43	115	85
14	10	59	44	120	89
15	11	60	44	125	92
16	12	61	45	130	96
17	13	62	46	135	100
18	13	63	46	140	103
19	14	64	47	145	107
20	15	65	48	150	111
21	15	66	49	155	114
22	16	67	49	160	118
23	17	68	50	165	122
24	18	69	51	170	125
25	18	70	52	175	129
26	19	71	52	180	133
27	20	72	53	185	136
28	21	73	54	190	140
29	21	74	55	195	144
30	22	75	55	200	148
31	23	76	56	205	151
32	24	77	57	210	155
33	24	78	58	215	159
34	25	79	58	220	162
35	26	80	59	225	166
36	27	81	60	230	170
37	27	82	60	235	173
38	28	83	61	240	177
39	29	84	62	245	181
40	30	85	63	250	184
41	30	86	63	260	192
42	31	87	64	270	199
43	32	88	65	280	207
44	32	89	66	290	214
45	33	90	66	300	221
46	34	91	67	310	229
47	35	92	68	320	236
48	35	93	69	330	243
49	36	94	69	340	251
50	37	95	70	350	258
51	38	96	71	360	266
52	38	97	72	370	273
53	39	98	72	380	280
54	40	99	73	390	288
55	41	100	74	400	295

Nm-to-lb-in (in·lb) kg·cm

To calculate: Nm x 8.85 = lb-in • Nm x 10.20 = kg·cm

Nm	lb-in (in·lb)	kg·cm	Nm	lb-in (in·lb)	kg·cm
1	9	10	26	230	265
2	18	20	27	239	275
3	27	31	28	248	286
4	35	41	29	257	296
5	44	51	30	266	306
6	53	61	31	274	316
7	62	71	32	283	326
8	71	82	33	292	337
9	80	92	34	301	347
10	89	102	35	310	357
11	97	112	36	319	367
12	106	122	37	327	377
13	115	133	38	336	387
14	124	143	39	345	398
15	133	153	40	354	408
16	142	163	41	363	418
17	150	173	42	372	428
18	159	184	43	381	438
19	168	194	44	389	449
20	177	204	45	398	459
21	186	214	46	407	469
22	195	224	47	416	479
23	204	235	48	425	489
24	212	245	49	434	500
25	221	255	50	443	510

N·cm-to-lb-in (in·lb) kg·cm

To calculate: N·cm x 0.089 = lb-in • N·cm x 0.102 = kg·cm

N·cm	lb-in (in·lb)	kg·cm	N·cm	lb-in (in·lb)	kg·cm
50	4	5	250	22	25
60	5	6	300	27	31
70	6	7	350	31	36
80	7	8	400	35	41
90	8	9	450	40	46
100	9	10	500	44	51
110	10	11	550	49	56
120	11	12	600	53	61
130	12	13	650	58	66
140	12	14	700	62	71
150	13	15	750	66	76
160	14	16	800	71	82
170	15	17	850	75	87
180	16	18	900	80	92
190	17	19	950	84	97
200	18	20	1000	89	102

kg·cm-to-lb·in (in·lb) N·cm

To calculate: $\text{kg}\cdot\text{cm} \times 0.868 = \text{lb}\cdot\text{in}$ • $\text{kg}\cdot\text{cm} \times 9.81 = \text{N}\cdot\text{cm}$

kg·cm	lb·in (in·lb)	N·cm		kg·cm	lb·in (in·lb)	N·cm
5	4	49		110	95	1079
6	5	59		120	104	1177
7	6	69		130	113	1275
8	7	78		140	122	1373
9	8	88		150	130	1471
10	9	98		160	139	1569
20	17	196		170	148	1667
30	26	294		180	156	1765
40	35	392		190	165	1863
50	43	490		200	174	1961
60	52	588		210	182	2059
70	61	686		220	191	2157
80	69	785		230	200	2256
90	78	883		240	208	2354
100	87	981		250	217	2452

Warnings and Cautions

WARNINGS

- Some repairs may be beyond your capability. If you lack the skills, tools and equipment, or a suitable workplace for any procedure described in this manual, we suggest you leave such repairs to an authorized dealer service department or other qualified shop.
- Do not reuse any fasteners that have become worn or deformed during normal use. Many fasteners are designed to be used only once and become unreliable and may fail when used a second time. This includes, but is not limited to, nuts, bolts, washers, self-locking nuts or bolts, circlips and cotter pins. Always replace these fasteners with new parts.
- Never work under a lifted car unless it is solidly supported on stands designed for the purpose. Do not support a car on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a car that is supported solely by a jack. Never work under the car while the engine is running.
- If you are going to work under a car on the ground, make sure the ground is level. Block the wheels to keep the car from rolling. Disconnect the battery negative (-) terminal (ground strap) to prevent others from starting the car while you are under it.

- Never run the engine unless the work area is well ventilated. Carbon monoxide kills.
- Remove rings, bracelets and other jewelry so they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Tie back long hair. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not attempt to work on your car if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset, or have taken medication or any other substance that may keep you from being fully alert.
- Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the car. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel, vapors or oil.
- Use a suitable container to catch draining fuel, oil, or brake fluid. Do not use food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store oily rags which can ignite and burn spontaneously.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with battery acid. Wear gloves or other protective clothing whenever the job requires working with harmful substances.
- Greases, lubricants and other automotive chemicals contain toxic substances, many of which are absorbed directly through the skin. Read the manufacturer's instructions and warnings carefully. Use hand and eye protection. Avoid direct skin contact
- Disconnect the battery negative (-) terminal (ground strap) whenever you work on the fuel or electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Friction materials (such as brake pads or shoes or clutch discs) contain asbestos fibers or other friction materials. Do not create dust by grinding, sanding, or cleaning with compressed air. Avoid breathing dust. Breathing any friction material dust can lead to serious diseases and may result in death.

(WARNINGS cont'd on next page)

WARNINGS *(cont'd)*

- Batteries give off explosive hydrogen gas during charging. Keep sparks, lighted matches and open flame away from the top of the battery. If hydrogen gas escaping from the cap vents is ignited, it ignites the gas trapped in the cells and causes the battery to explode.
- Connect and disconnect battery cables, jumper cables or a battery charger only with the ignition off. Do not disconnect the battery while the engine is running.
- Do not quick-charge the battery (for boost starting) for longer than one minute. Wait at least one minute before boosting the battery a second time.
- Do not allow battery charging voltage to exceed 16.5 volts. If the battery begins producing gas or boiling violently, reduce the charging rate. Boosting a sulfated battery at a high charging rate can cause an explosion.
- The A/C system is filled with chemical refrigerant, which is hazardous. The A/C system should be serviced only by trained technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat increases system pressure and may cause the system to burst.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- Some cars are equipped with a Supplemental Restraint System (SRS) that automatically deploys airbags and pyrotechnic seat belt tensioners in the event of a frontal or side impact. These are explosive devices. Handled improperly or without adequate safeguards, they can be accidentally activated and cause serious injury.
- The ignition system produces high voltages that can be fatal. Avoid contact with exposed terminals and use extreme care when working on a car with the engine running or the ignition on.

- Place jack stands only at locations specified by manufacturer. The vehicle lifting jack supplied with the vehicle is intended for tire changes only. Use a heavy duty floor jack to lift the vehicle before installing jack stands.
- Battery acid (electrolyte) can cause severe burns. Flush contact area with water, seek medical attention.
- Aerosol cleaners and solvents may contain hazardous or deadly vapors and are highly flammable. Use only in a well ventilated area. Do not use on hot surfaces (such as engines or brakes).
- Do not remove coolant reservoir or radiator cap with the engine hot. Burns and engine damage may occur.

CAUTIONS

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized dealer or other qualified shop.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly and do not attempt shortcuts. Use tools appropriate to the work and use only replacement parts meeting original specifications. Makeshift tools, parts and procedures will not make good repairs.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque specification listed.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond or lake. Dispose of in accordance with Federal, State and Local laws.
- The control module for the Anti-lock Brake System (ABS) cannot withstand temperatures from a paint-drying booth or a heat lamp in excess of 95°C (203°F) and should not be subjected to temperatures exceeding 85°C (185°F) for more than two hours.
- Before doing any electrical welding on cars equipped with ABS, disconnect the battery negative (-) terminal (ground strap) and the ABS control module connector.
- Always make sure the ignition is off before disconnecting battery.

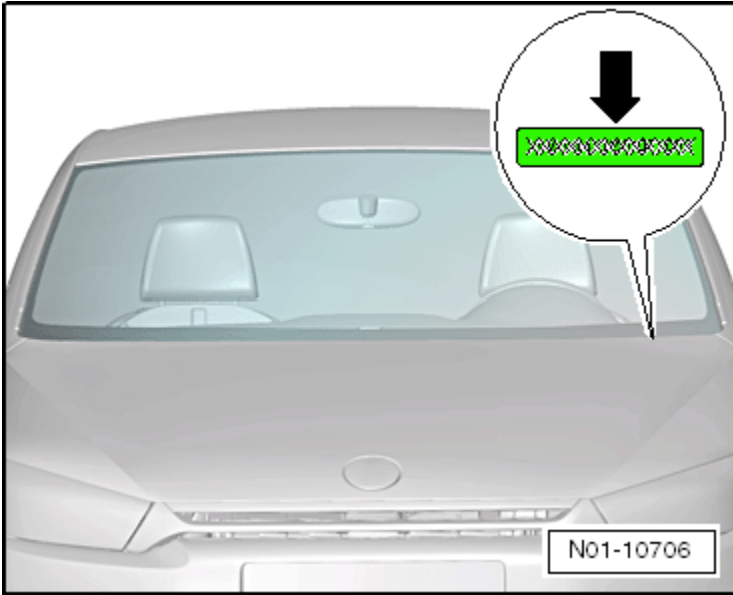
(CAUTIONS cont'd on next page)

CAUTIONS *(cont'd)*

- Label battery cables before disconnecting. On some models, battery cables are not color coded.
- Disconnecting the battery may erase fault code(s) stored in control module memory. Check for fault codes prior to disconnecting the battery cables.
- If a normal or rapid charger is used to charge the battery, disconnect the battery and remove it from the vehicle to avoid damaging paint and upholstery.
- Do not quick-charge the battery (for boost starting) for longer than one minute. Wait at least one minute before boosting the battery a second time.
- Connect and disconnect a battery charger only with the battery charger switched off.
- Sealed or “maintenance free” batteries should be slow-charged only, at an amperage rate that is approximately 10% of the battery’s ampere-hour (Ah) rating.
- Do not allow battery charging voltage to exceed 16.5 volts. If the battery begins producing gas or boiling violently, reduce the charging rate. Boosting a sulfated battery at a high charging rate can cause an explosion.

VEHICLE IDENTIFICATION

Vehicle Identification Number (VIN) Location



Vehicle
Identification

The VIN (➔) is on the left side of the vehicle in the area of the windshield wiper mount. It is visible from the outside.
(Typical illustration shown).

VIN Decoder

2014 Volkswagen VIN Decoder (except Routan)

Series:	Country of origin	Manufacturer	Vehicle Type	Series	Engine	Restraint system	Model (7 & 8)	Check digit	Model year	Assembly plant	Sequential production number (position 12 - 17)							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
A = CC Sport w/Man Trans, Passat S, Tiguan w/Auto Trans B = CC Sport/Sport w/Auto Trans, Eos Komfort/Sport w/Auto Trans, Jetta SE w/5 Spd Man, Passat SE Tiguan w/Auto Trans and 4Motion C = Golf 4dr w/5 Spd Manual, Passat SEL, Tiguan w/Man Trans D = Golf 4dr w/Auto Trans, Jetta SE w/Auto Trans, Touareg V6 FSU/TDI R-Line E = Touareg V6 FSU/TDI Hybrid F = Beetle w/5 Spd Auto Trans, Eos Lux/Exec w/Auto Trans G = CC V6 Exec w/Auto Trans and 4Motion, GTI 4dr w/Man Trans, Jetta SEL w/5 Spd Man Trans H = Beetle 1.8T w/5 Spd Man Trans, CC V6 Exec w/Auto Trans, Beetle 2.5L w/5 Spd Manual, GTI 4dr w/Auto Trans J = Beetle 1.8T w/5 Spd Auto Trans, Beetle 2.5L TDI w/5 Spd Auto Trans K = Jetta SportWagen w/5 Spd Man Trans L = Jetta SEL/TDI w/Auto Trans M = Jetta SportWagen w/5 Spd Manual N = Golf 4dr w/5 Spd Manual P = Jetta SportWagen w/5 Spd Auto Trans R = Beetle TDI w/5 Spd Man, CC Exec w/Auto Trans V = Beetle R-Line w/5 Spd Auto Trans 1 = Jetta / S w/5 Spd Manual 2 = Jetta / S w/Auto Trans 3 = Jetta TDI w/5 Spd Man 4 = Beetle R-Line w/5 Spd Manual, Jetta GLI w/Auto Trans 5 = Beetle Conv. 1.8T w/5 Spd Auto Trans, Beetle Conv. 2.5L TDI w/5 Spd Auto Trans, Jetta GLI w/5 Spd Manual 6 = Beetle Conv. TDI w/5 Spd Man Trans, Jetta Hybrid w/Auto Trans 7 = Beetle Conv. R-Line w/6 Spd Auto Trans 8 = Beetle Conv. R-Line w/6 Spd Man Trans	W	W	V	G	V	C	V	3	X	8	E	W	5	3	2	0	1	4
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	W	W	V	G	V	C	V	3	X	8	E	W	5	3	2	0	1	4

E = 2014

Sequential production number (position 12 - 17)

Country of origin

Manufacturer

Vehicle Type

Series

Engine

Restraint system

Model (7 & 8)

Check digit

Model year

Assembly plant

W = Europe - Pass. Car
1W = USA - Pass.
3W = Mexico - Pass. Car
WVG = Europe - S.U.V.

A3*** = Passat
AH (1F) = Eos
AJ (161K)** = Golf, Jetta, Jetta SportWagen
AN (3C) = CC
AT = Beetle, Beetle Conv.
AX (5N) = Tiguan
BP (7P) = Touareg

C = Chattanooga **P** = Mosel
D = Bratislava **V** = Portugal
E = Emsen **W** = Wolfsburg
M = Mexico

A = 5 cyl 2.5L 170hp (CBTA-M) Golf
B = 5 cyl 2.5L 170hp (CBTA-M/PZEV)* Golf
D = 4 cyl 2.0L 200hp (CBFA-PZEV)* GTI
F = VR6 3.6L 280hp (CGRA) Touareg
G = 6 cyl 3.0L 333hp + 34 Kw (CGFA) Touareg Hybrid
H = 5 cyl 2.5L 170hp (CBTA-M) Passat
K = 4 cyl 2.0L 115hp (CBPA) Jetta
L = 4 cyl 2.0L TDI 140hp (CJAA) Beetle, Beetle Convertible, Jetta SportWagen
M = 4 cyl 2.0L TDI 140hp (CJAA) Golf
N = VR6 3.6L 280hp (CDVB) Passat
N = 4 cyl 2.0L 200hp (CCTA) CC
N = 4 cyl 2.0L TDI 140hp (CKRA) Passat
P = 4 cyl 2.0L 200hp (CBFA-PZEV)* CC
P = 5 cyl 2.5L 170hp (CBUA-M/PZEV)* Beetle, Beetle Convertible, Jetta, Jetta SportWagen, Passat
P = V6 3.0L TDI 240hp (CNRB) Touareg
S = 4 cyl 1.8L 170hp (CPKA) Passat
S = 4 cyl 2.0L 210hp (CPJA) Beetle, Beetle Convertible, Jetta GLI
T = 4 cyl 1.8L 170hp (CPRA-PZEV)* Passat
T = 4 cyl 2.0L 210hp (CPJA-PZEV)* Beetle, Beetle Convertible, Jetta GLI
U = VR6 3.6L 280hp (CNNA) CC
V = 4 cyl 2.0L 200hp (CCTA) Tiguan
W = 4 cyl 2.0L 200hp (CBFA-SULEV II)** Eos
X = 5 cyl 2.5L 170hp (CBTA-M) Beetle, Beetle Convertible, Jetta, Jetta SportWagen
1 = 4 cyl 1.8L 170hp (CPKA) Beetle, Beetle Convertible, Jetta
1 = 4 cyl 1.8L 170hp (CPRA-PZEV)* Beetle, Beetle Convertible, Jetta
1 = 4 cyl 1.4L 150hp + 28 Kw (CNLA-PZEV)* Jetta Hybrid

*** PZEV** = Partial Zero Emissions Vehicle
**** SULEV II** = Super Low Emissions Vehicle

******* 7 position US model characters are alphabetic beginning with 2010 MY. ROW model characters, where different, are listed in parenthesis (), for reference only.

******** Jetta and Jetta SportWagen models are identified by WMI code of 3WV. GTI and Golf models are identified by WMI code of WWV.

October 30, 2013 (Rev 4)

2014 Restraint System:

All = Active-Dir/Pass - Front Air Bag - Dir/Pass
1 (Tiguan) = Advanced Front Air Bags + Side Impact Air Bags - Front + Side Curtain Air Bags + 4 Star Crash Rated
5 (Jetta Only) or **7** (Jetta SportWagen/CC/Passat) = Advanced Front Air Bags + Side Impact Air Bags - Fr. + Side Curtain Air Bags
7 (Beetle/Beetle Conv.) = Advanced Front Air Bags + Side Impact Air Bags - Front + 3 Star Crash Rated
8 (Eos Only) = Advanced Front Air Bags + Side Impact Air Bags - Front + Knee Air Bags - Front + Side Curtain Air Bags
9 (Touareg) = Advanced Front Air Bags + Side Impact Air Bags - Front + Side Curtain Air Bags

M = 1991
N = 1992
P = 1993
R = 1994
S = 1995
T = 1996
V = 1997
W = 1998
X = 1999
Y = 2000
1 = 2001
2 = 2002
3 = 2003
4 = 2004
5 = 2005
6 = 2006
7 = 2007
8 = 2008
9 = 2009
A = 2010
B = 2011
C = 2012
D = 2013
E = 2014

Calculate per NHTSA Code

↑

Sequential Product Number

↑

2014 Volkswagen VIN Decoder (except Routan)

1	Country of origin
2	Manufacturer
3	Vehicle Type
4	Series
5	Engine
6	Restraint system
7	Model
8	(position 7 & 8)
9	Check digit
10	Model year
11	Assembly plant
12	Sequential production number (position 12 - 17)
13	Sequential production number (position 12 - 17)
14	Sequential production number (position 12 - 17)
15	Sequential production number (position 12 - 17)
16	Sequential production number (position 12 - 17)
17	Sequential production number (position 12 - 17)

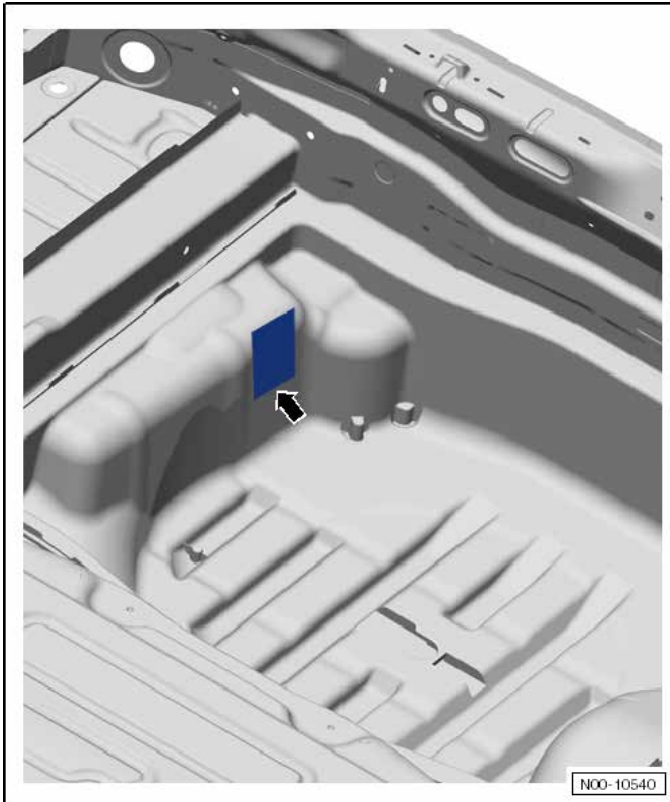
VIN on Longitudinal Member Extension



Vehicle
Identification

The Vehicle Identification Number (VIN) (➔) is located above the right wheel housing on the fender mount upper longitudinal member.

Vehicle Data Label



Vehicle data plate (➡) is secured in the right spare wheel well in the direction of travel.

SALES CODES

Engine Codes

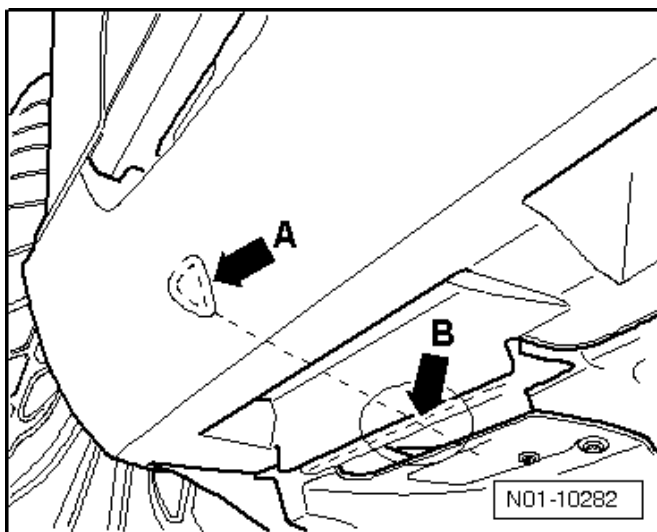
CBFA, CCTA	2.0L 4-cylinder
CNNA	3.6L 6-cylinder

Transmission Codes

02Q	6-speed manual
02E	6-speed Direct Shift Gearbox (DSG)
09M	6-speed automatic

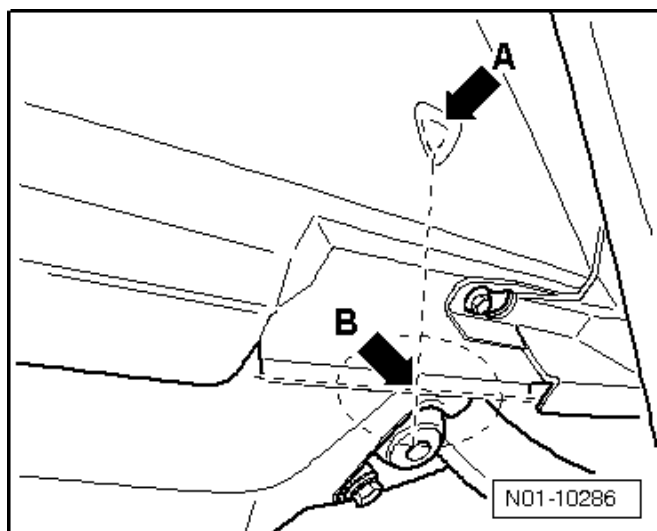
VEHICLE LIFTING

Hoist and Jack Mounting Points Front



Position the support plate in the area of the side member marking (A) on the vertical stiffener of the floor plate (B).

Rear

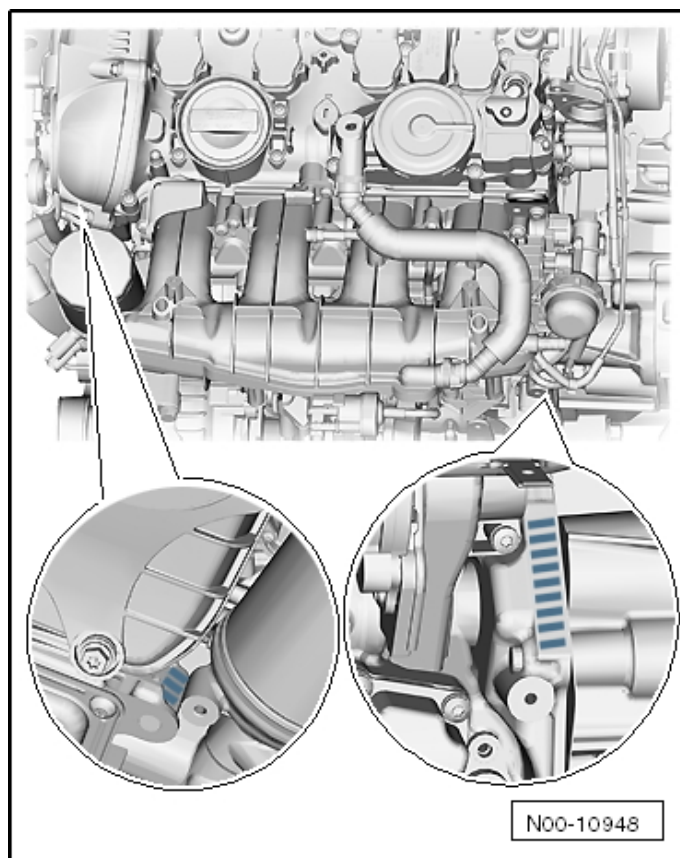


Position the support plate in the area of the side member marking (A) on the vertical stiffener of the floor plate (B).

ENGINE MECHANICAL – 2.0L CBFA AND CCTA

General, Technical Data

Engine Number Location



The engine number (engine code and serial number) is located at the engine/transmission joint.

The engine code is also printed on the cylinder block behind the oil filter.

Engine Data

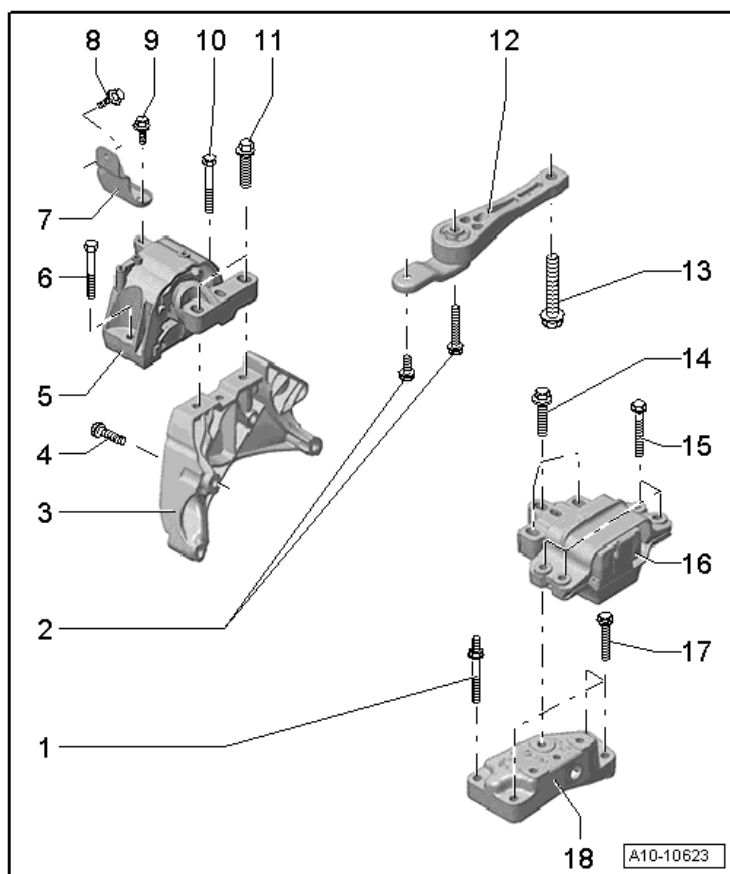
Code letters		CBFA	CCTA
Manufactured from		from 11.11	from 11.11
Emissions values		SULEV ¹⁾	ULEV 2 ²⁾
Displacement	liter	2.0	2.0
Output	kW at RPM	147 @ 5100	147 @ 5100
Torque	Nm at RPM	280 @ 1700	280 @ 1700
Bore	diameter mm	82.5	82.5
Stroke	mm	92.8	92.8
Compression ratio		9.6:1	9.6:1
Research Octane Number (RON)		95	95
Injection system/ignition system		FSI	FSI
Ignition sequence		1-3-4-2	1-3-4-2
Turbocharger, Supercharger		Turbocharger	Turbocharger
Variable valve timing		Yes	Yes
Secondary Air Injection (AIR)		Yes	No
Valves per cylinder		4	4
Oil pressure control		No	No

¹⁾ SULEV = Super Ultra Low Emissions Vehicle

²⁾ ULEV = Ultra Low Emissions Vehicle

Engine Assembly – 2.0L CBFA and CCTA

Engine/Transmission Mount Overview



1 - Bolt

- Tightening specifications, refer to the correct transmission.

2 - Bolt

- Tightening specification, refer to Suspension, Wheels and Steering; Front Suspension

3 - Engine Mount Bracket

4 - Bolt

- 40 Nm + 180° turn
- Always replace

5 - Engine Mount

6 - Bolt

- 40 Nm + 90° turn
- Always replace

7 - Support

8 - Bolt

- 20 Nm + 90° turn
- Always replace

9 - Bolt

- 20 Nm + 90° turn
- Always replace

10 - Bolt

- 40 Nm + 90° turn
- Always replace

11 - Bolt

- 60 Nm + 90° turn
- Always replace

12 - Pendulum Support**13 - Bolt**

- 100 Nm + 90° turn
- Always replace

14 - Bolt

- 60 Nm + 90° turn
- Always replace

15 - Bolt

- 40 Nm + 90° turn
- Always replace

16 - Transmission Mount

- The illustration shows the DSG® version.

17 - Bolt

- Tightening specifications, refer to the correct transmission.

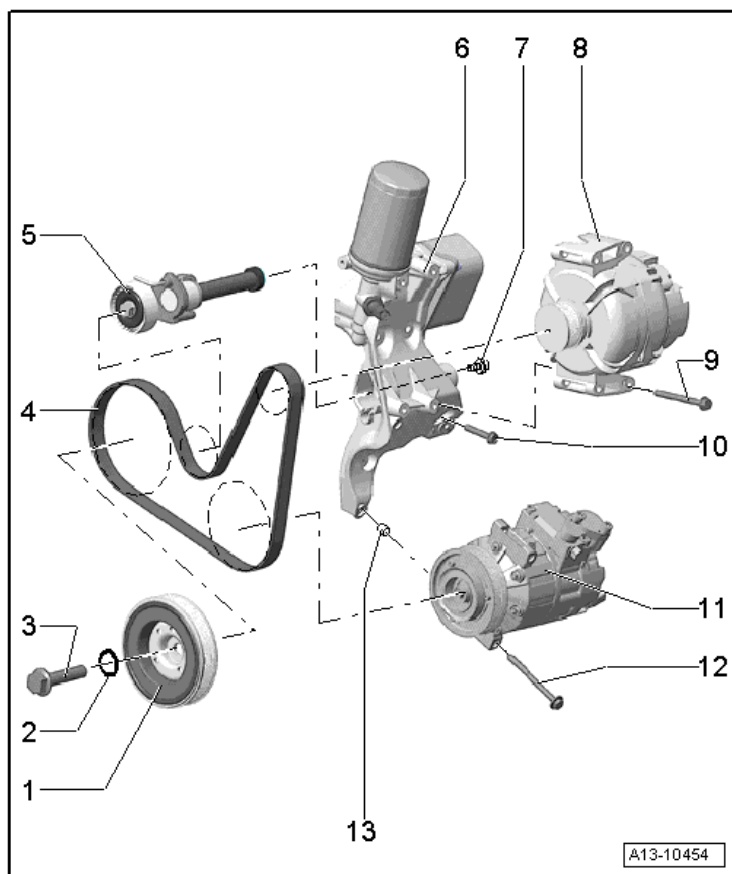
18 - Transmission Mount Bracket

Fastener Tightening Specifications

Component	Fastener size	Nm
Bolts and nuts	M6	10
	M7	15
	M8	25
	M10	40
	M12	60

Crankshaft, Cylinder Block – 2.0L CBFA and CCTA

Ribbed Belt Drive Overview



1 - Vibration Damper

2 - O-ring

Always replace

3 - Bolt

150 Nm + 90° turn

Always replace

4 - Ribbed Belt

5 - Belt Tensioner

6 - Accessory Bracket

7 - Bolt

10 Nm

8 - Generator

9 - Bolt

- 23 Nm

10 - Bolt

- Tightening sequence, see Accessory Bracket Bolt Tightening Sequence below

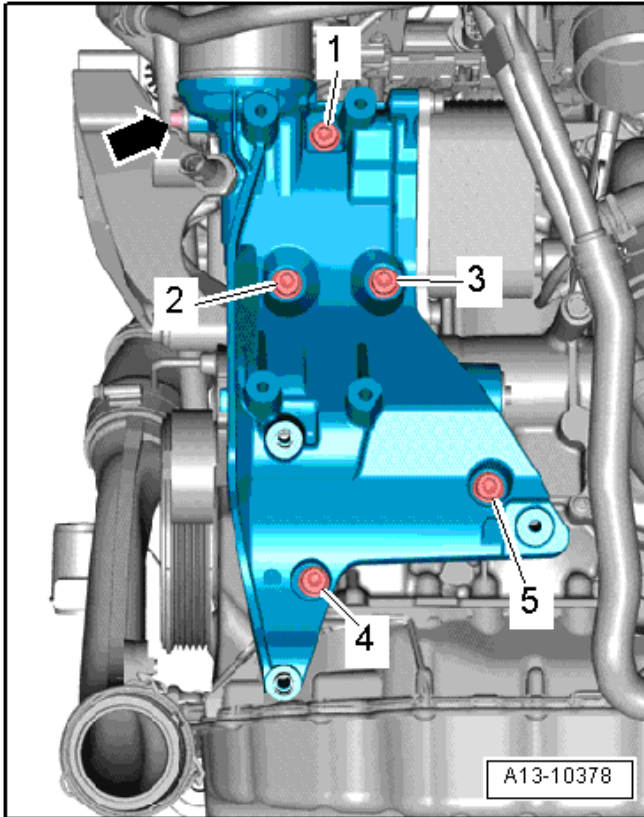
11 - Air Conditioning (A/C) Compressor

12 - Bolt

- 25 Nm

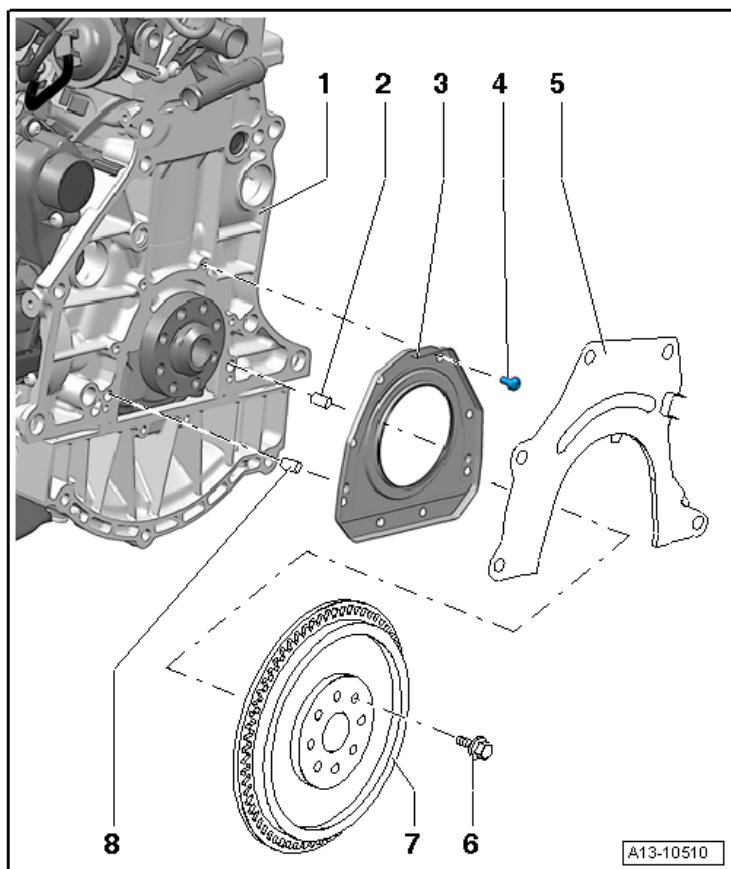
13 - Alignment Sleeve

Accessory Bracket Bolt Tightening Sequence



Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence	Hand-tighten
2	Tighten bolts 1 through 5 in sequence	20
3	Tighten bolts 1 through 5 in sequence	an additional 90° (¼ turn)

Cylinder Block Overview, Transmission Side



1 - Cylinder Block

2 - Alignment Pin

3 - Sealing Flange

4 - Bolt

- Tightening sequence, see Sealing Flange Bolt Tightening Sequence below

5 - Intermediate Plate

6 - Bolt

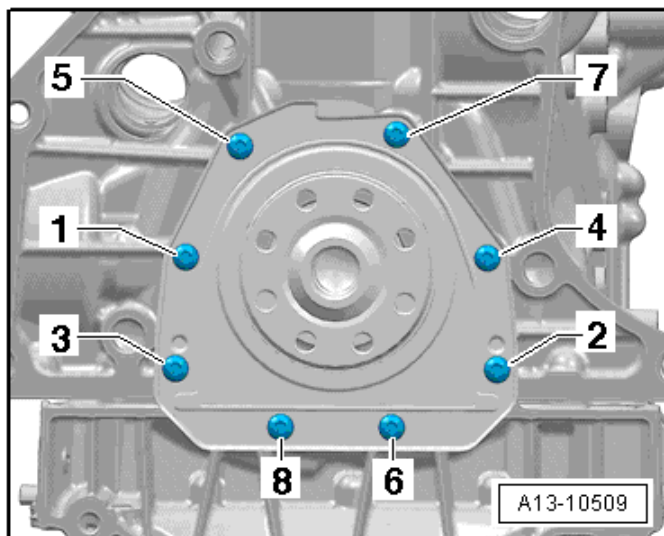
- 60 Nm + 90° turn
- Always replace

7 - Flywheel

8 - Alignment Pin

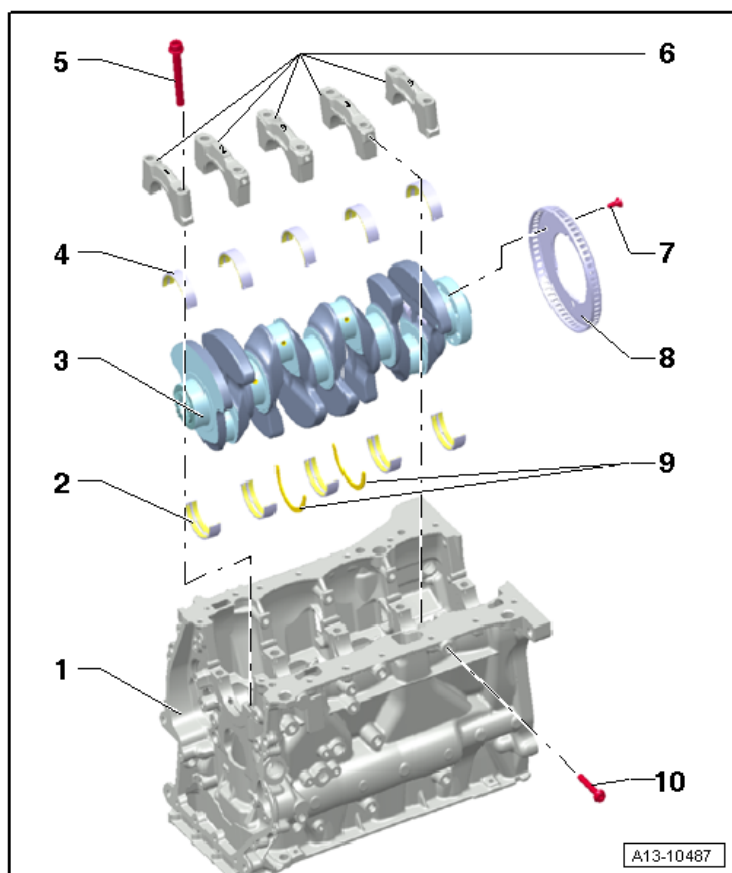
- Not installed

Sealing Flange Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 8 in sequence	Hand-tighten
2	Tighten bolts 1 through 8 in sequence	9

Crankshaft Overview



1 - Cylinder Block

2 - Bearing Shell, for the Cylinder Block

3 - Crankshaft

4 - Bearing Shell

5 - Bolt

- Tightening sequence, see Crankshaft Bolt Tightening Sequence below

6 - Bearing Cap

7 - Bolt

- 10 Nm + 90° turn
- Always replace

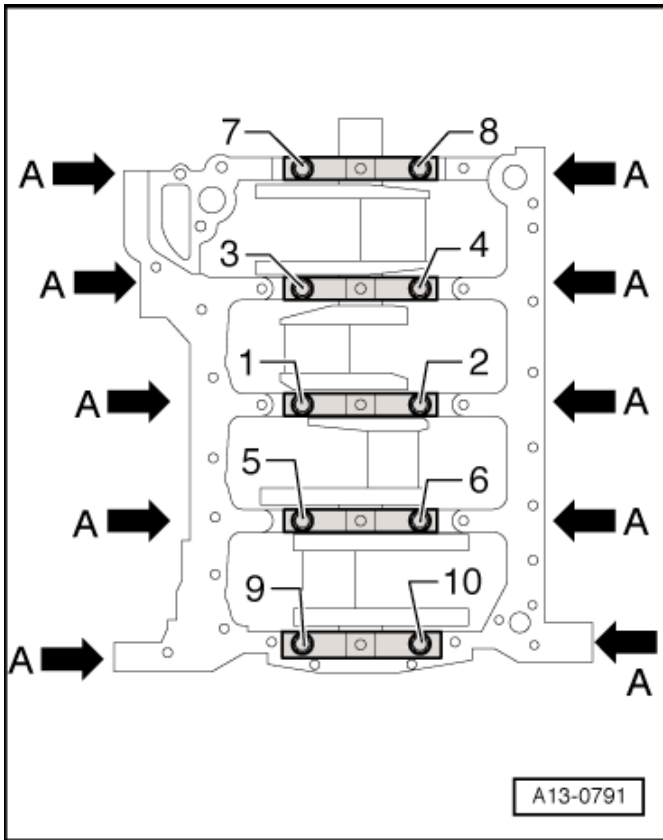
8 - Sensor Wheel

9 - Thrust Washers

10 - Bolt

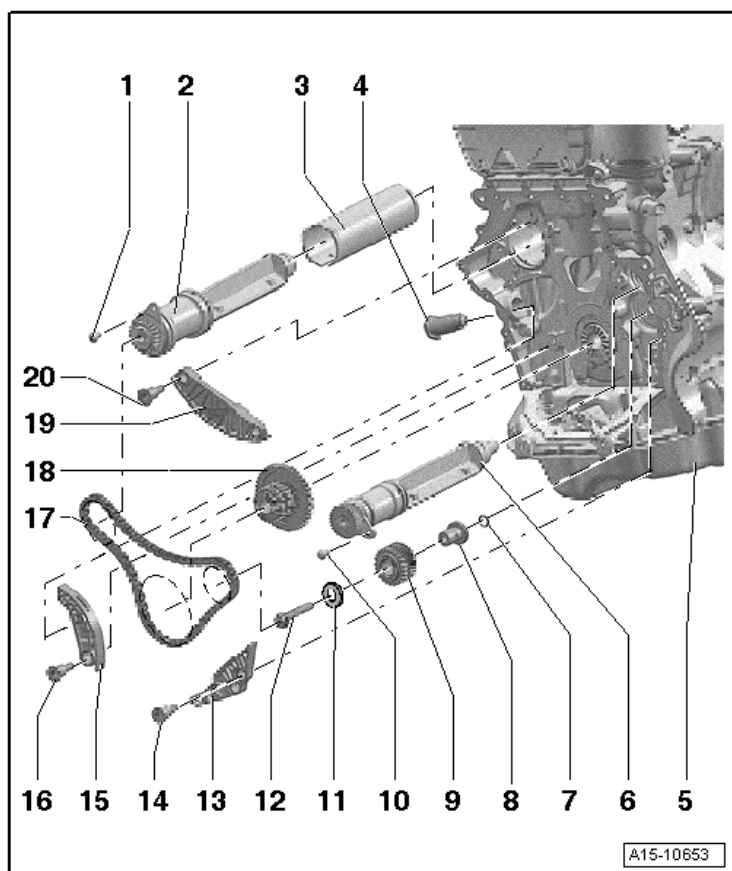
- Tightening sequence, see Crankshaft Bolt Tightening Sequence below

Crankshaft Assembly Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 10 and arrows A in sequence	Hand-tighten
2	Tighten bolts 1 through 10 in sequence	65
3	Tighten bolts 1 through 10 in sequence	an additional 90° (¼ turn)
4	Tighten bolts arrows A	20
5	Tighten bolts arrows A	an additional 90° (¼ turn)

Balance Shaft Overview



- 1 - Bolt**
 - 9 Nm
- 2 - Balance Shaft**
- 3 - Balance Shaft Tube**
- 4 - Chain Tensioner**
 - 85 Nm
- 5 - Cylinder Block**
- 6 - Balance Shaft**
- 7 - O-ring**
 - Lubricate with engine oil.
- 8 - Bearing Pin**
- 9 - Intermediate Shaft Sprocket**
- 10 - Bolt**
 - 9 Nm
- 11 - Washer**

12 - Bolt

- Tightening sequence, see Sprocket Bolt Tightening Sequence below

13 - Guide Rail

14 - Guide Pin

- 20 Nm

15 - Tensioning Rail

16 - Guide Pin

- 20 Nm

17 - Balance Shaft Timing Chain

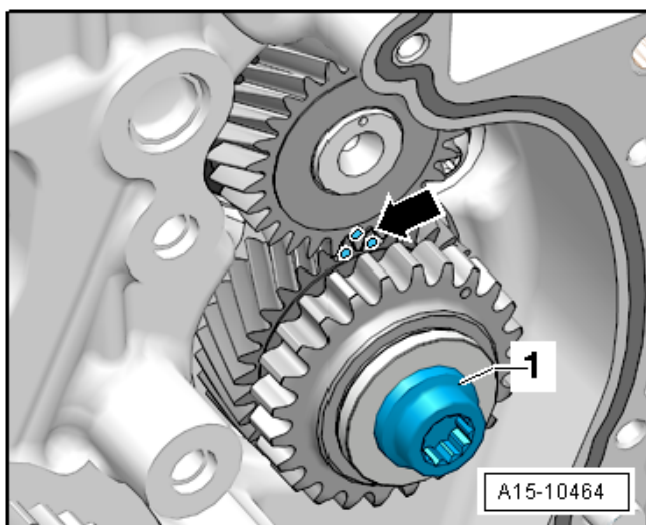
18 - Sprocket

19 - Guide Rail

20 - Guide Pin

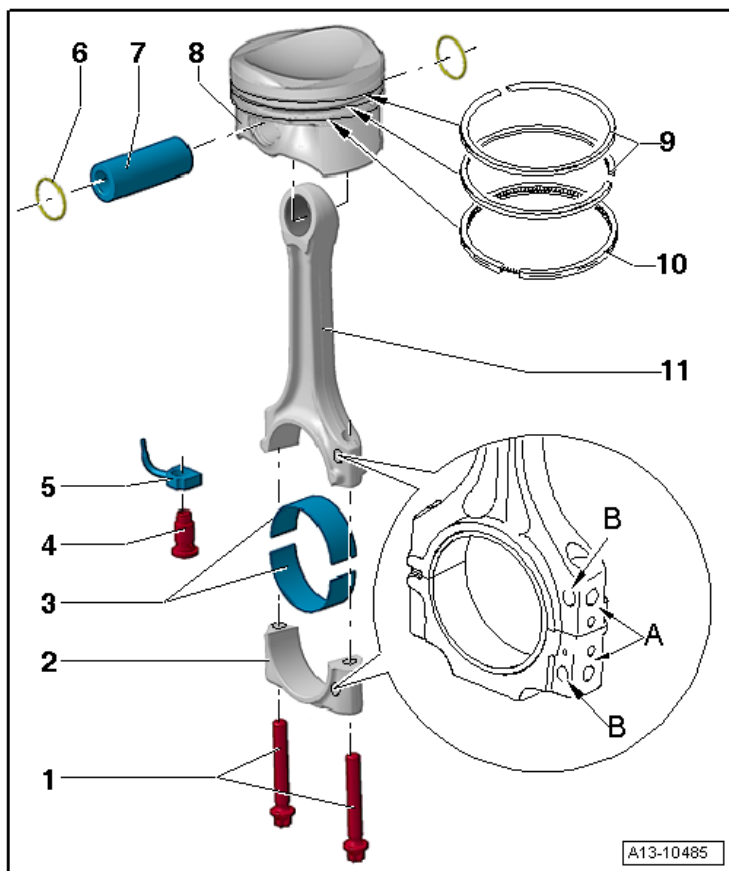
- 20 Nm

Sprocket Bolt Tightening Sequence



Step	Component	Nm
1	Tighten the bolt	10
2	Turn the sprocket. The sprocket may not have any play, if so, loosen the bolt and retighten it again.	
3	Tighten the bolt using a torque wrench.	30
4	Tighten bolt	an additional 90° (¼ turn)

Piston and Connecting Rod Overview



- 1 - Bolt
 - 45 Nm + 90° turn
 - Always replace
- 2 - Connecting Rod Bearing Cap
- 3 - Bearing Shell
- 4 - Pressure Relief Valve
 - 27 Nm
- 5 - Oil Spray Jet
- 6 - Lock Ring
- 7 - Piston Pin
- 8 - Piston
- 9 - Compression Rings
- 10 - Oil Scraping Ring
- 11 - Connecting Rod

Crankshaft Dimensions

Reconditioning dimension in mm ¹⁾	Crankshaft bearing pin diameter	Connecting rod bearing pin diameter
Basic dimension	58.00	47.80

¹⁾ The preparation of worn crankshafts is not provided.

Piston Ring End Gaps

Piston ring dimensions in mm	New	Wear limit
Compression ring	0.20 to 0.40	0.8
Oil scraping ring	0.25 to 0.50	0.8

Piston Ring Clearance

Piston ring dimensions in mm	New	Wear limit
1 st compression ring	0.06 to 0.09	0.20
2 nd compression ring	0.03 to 0.06	0.15
Oil scraping rings	Cannot be measured	

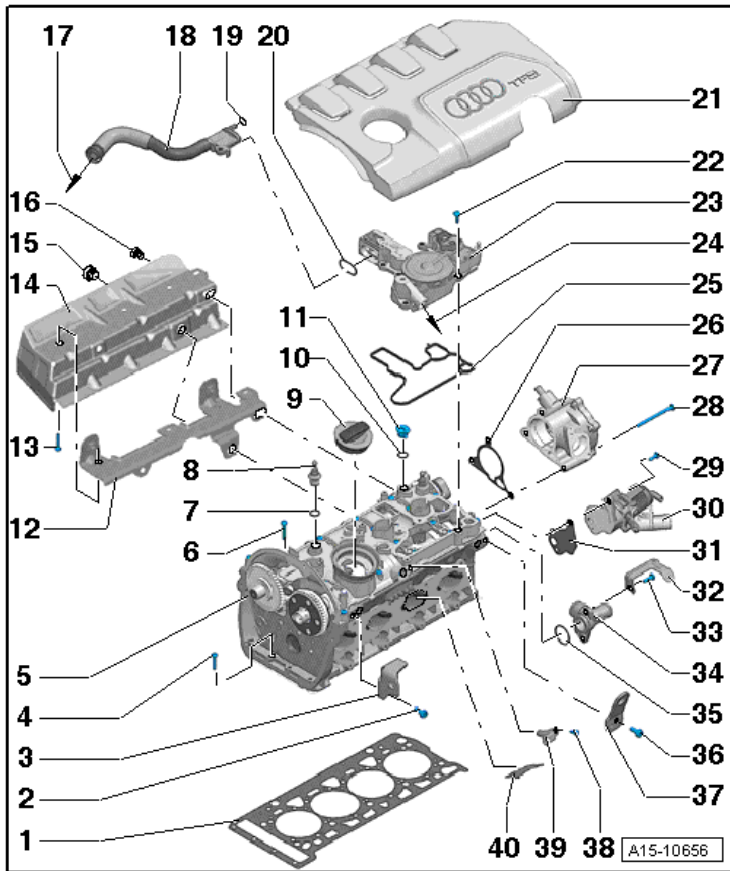
Piston and Cylinder Dimensions

Honing dimension in mm	Piston diameter	Cylinder bore diameter
Basic dimension	82.465 ¹⁾	82.51

¹⁾ Measurements without graphite coating (thickness = 0.02 mm). The graphite coating wears off.

Cylinder Head, Valvetrain – 2.0L CBFA and CCTA

Cylinder Head Overview



1 - Cylinder Head Gasket

- Always replace

2 - Bolt

- 25 Nm

3 - Transport Strap

4 - Bolt

- Tightening sequence, see Cylinder Head Bolt Tightening Sequence below

5 - Cylinder Head

6 - Bolt

- Tightening sequence, see Cylinder Head Bolt Tightening Sequence below

- 7 - O-ring**
 - Lubricate with engine oil
- 8 - Ball Stud**
 - 5 Nm
 - Always replace
- 9 - Cap**
- 10 - O-ring**
 - Lubricate with engine oil
- 11 - Plug**
 - Always replace
- 12 - Bracket**
- 13 - Bolt**
 - 9 Nm
- 14 - Heat Shield**
- 15 - Bolt**
 - 20 Nm
- 16 - Bolt**
 - 20 Nm
- 17 - To Intake Hose/Turbocharger**
- 18 - Ventilation Pipe**
- 19 - O-ring**
 - No replacement part
- 20 - Seal**
 - No replacement part
- 21 - Engine Cover**
- 22 - Bolt**
 - Tightening sequence, see Crankcase Ventilation Bolt Tightening Sequence below
- 23 - Crankcase Ventilation**
- 24 - To Intake Manifold**
- 25 - Gasket**
 - No replacement part
- 26 - Gasket**
 - Replace if damaged
- 27 - Vacuum Pump**
- 28 - Bolt**
 - 9 Nm
- 29 - Not Installed**
- 30 - Not Installed**
- 31 - Not Installed**
- 32 - Retaining Plate**
- 33 - Bolt**
 - 9 Nm
- 34 - Water Connection**
- 35 - O-ring**
 - Always replace
 - Coat with coolant
- 36 - Bolt**
 - 25 Nm

Cylinder Head Overview (cont'd)

37 - Transport Strap

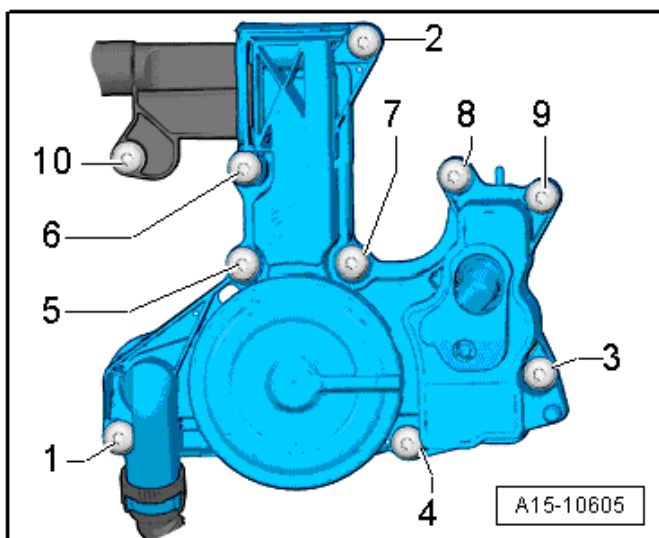
38 - Bolt

□ 9 Nm

39 - Camshaft Position Sensor -G40-

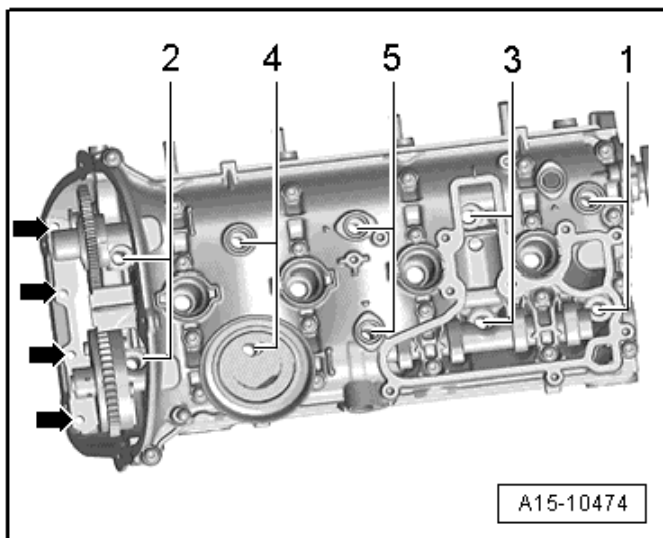
40 - Partition Plate

Crankcase Ventilation Tightening Specification



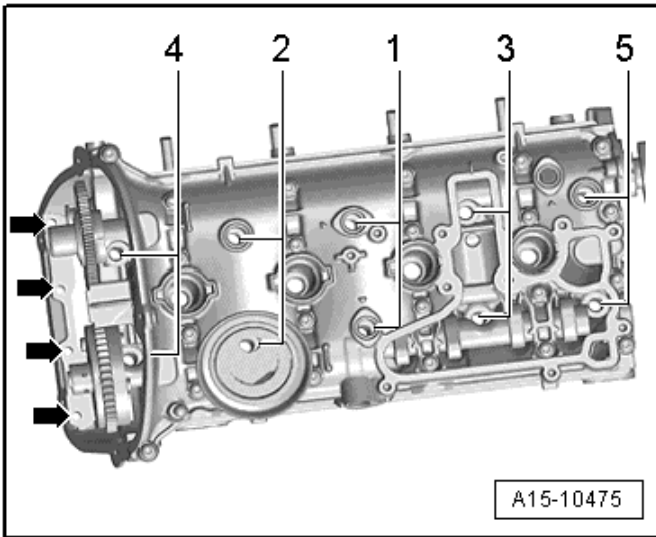
Step	Component	Nm
1	Tighten bolts 1 through 10 in sequence	11

Loosening the Cylinder Head Bolts



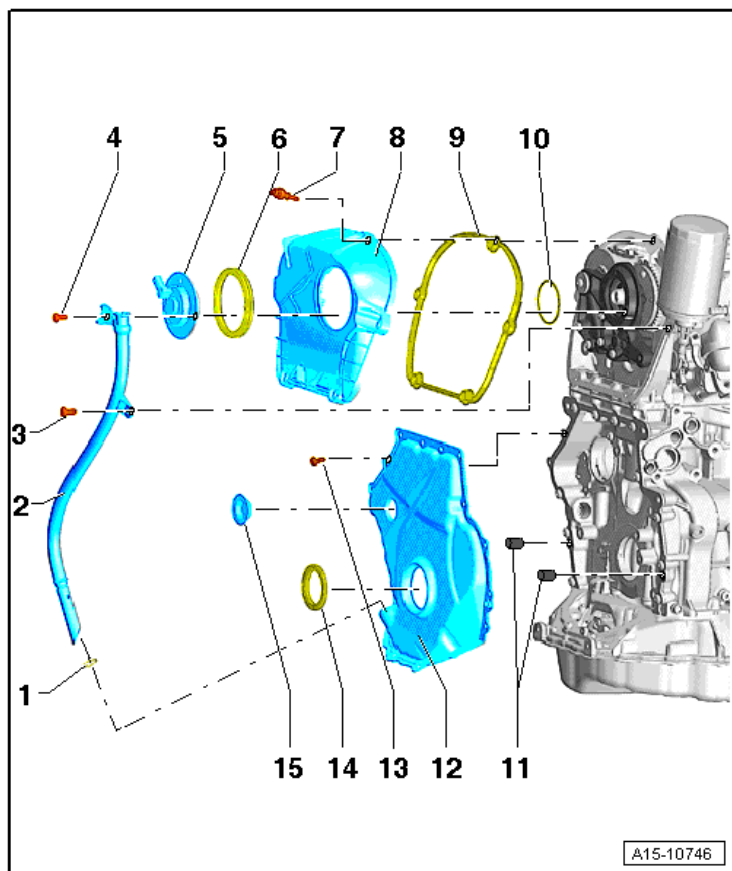
Step	Component
1	Remove bolts -arrows-
2	Loosen cylinder head bolts in sequence -1 through 5-

Cylinder Head Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence	40
2	Tighten bolts 1 through 5 in sequence	an additional 90° (¼ turn)
3	Tighten bolts 1 through 5 in sequence	an additional 90° (¼ turn)
4	Tighten bolts (➔)	8
5	Tighten bolts (➔)	an additional 90° (¼ turn)

Timing Chain Cover Overview



1 - O-ring

- Always replace
- Coat with oil before installing

2 - Oil Dipstick Guide Tube

3 - Bolt

- 9 Nm

4 - Bolt

- 9 Nm

5 - Camshaft Adjustment Valve 1 -N205-

6 - Seal

- Coat with oil before installing

7 - Bolt

- Tightening sequence, see Upper Timing Chain Cover below

8 - Upper Timing Chain Cover

- Tightening sequence, see Upper Timing Chain Cover Bolt Tightening Sequence below

9 - Gasket

10 - O-ring

- Always replace
- Coat with oil before installing

11 - Alignment Sleeves

12 - Lower Timing Chain Cover

- Tightening sequence with 15 bolts, see Lower Timing Chain Cover Bolt Tightening Sequence, with 15 Bolts below
- Tightening sequence with 8 bolts, see Lower Timing Chain Cover Bolt Tightening Sequence, with 8 Bolts below

13 - Bolt

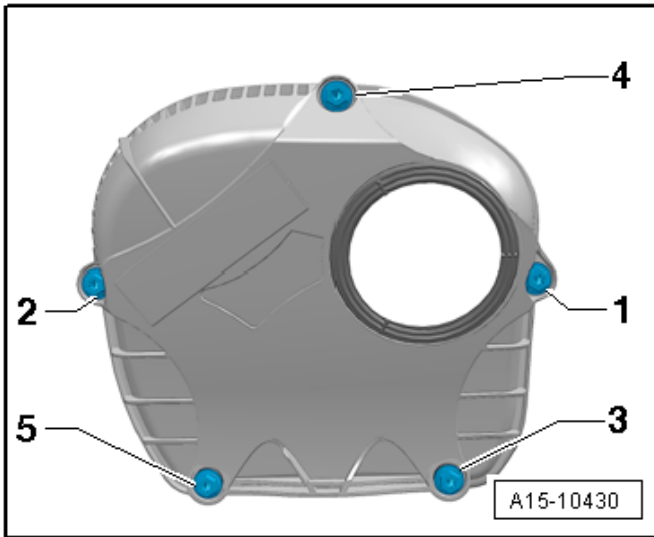
- Always replace

14 - Seal

15 - Plug

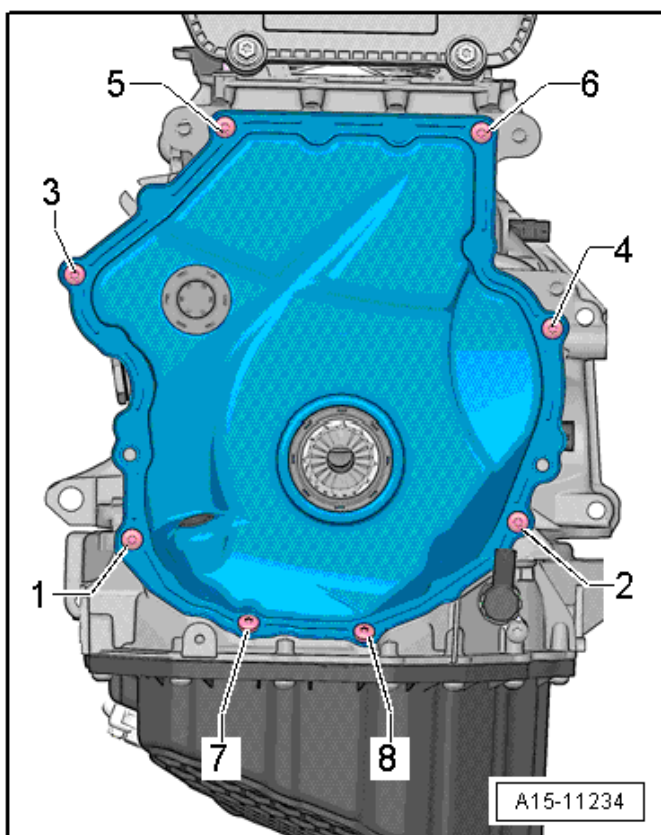
- Always replace

Upper Timing Chain Cover Tightening Specifications



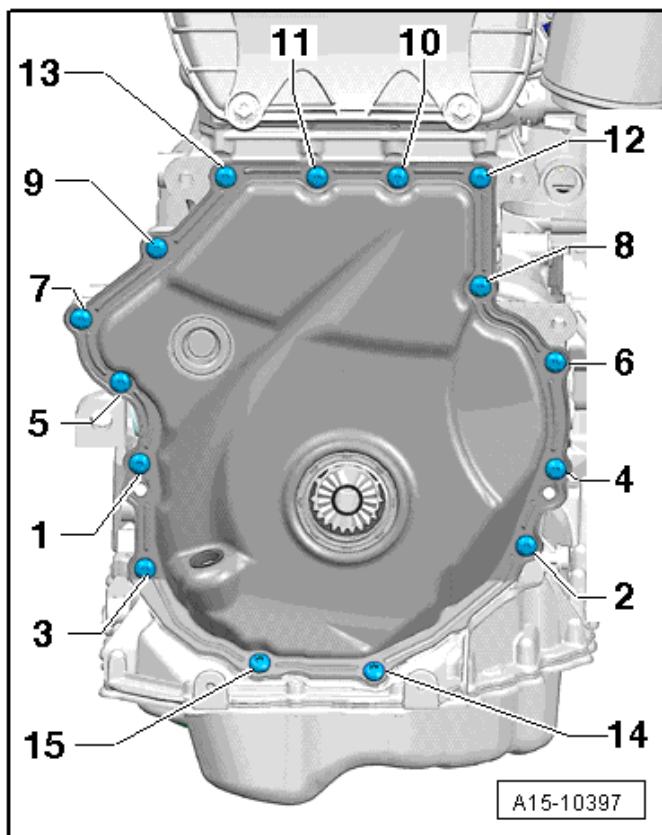
Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence	Hand-tighten
2	Tighten bolts 1 through 5 in sequence	9

Lower Timing Chain Cover with 8 Bolts Tightening Specifications



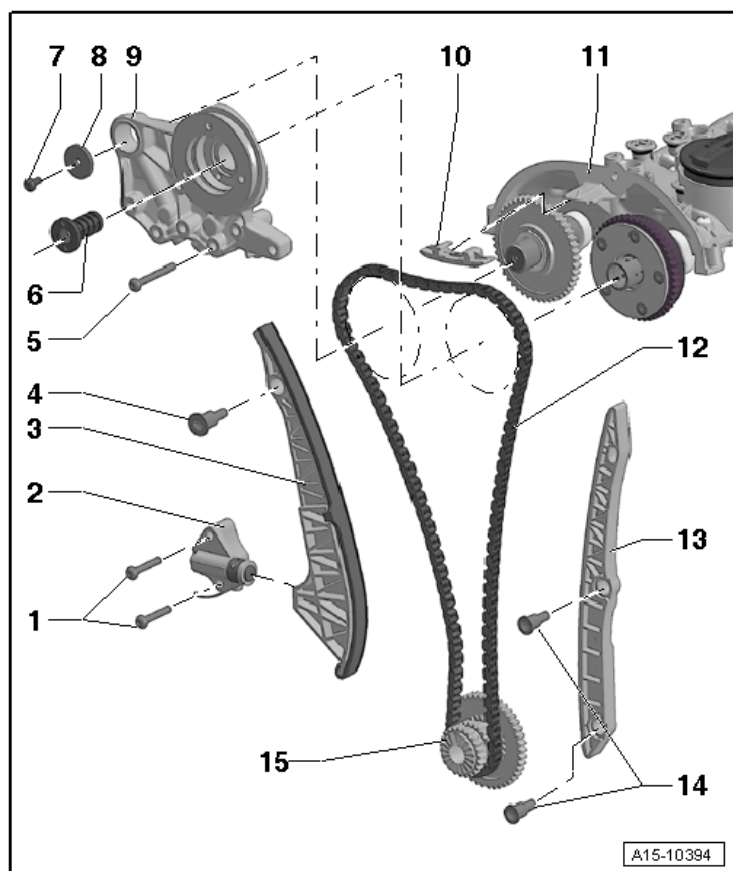
Step	Component	Nm
1	Tighten bolts 1 through 8 in sequence	4
2	Tighten bolts 1 through 15 in sequence	an additional 45° (1/8 turn)

Lower Timing Chain Cover with 15 Bolts Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 15 in sequence	8
2	Tighten bolts 1 through 15 in sequence	an additional 45° (1/8 turn)

Camshaft Timing Chain Overview



1 - Bolt

- 9 Nm

2 - Chain Tensioner

3 - Timing Chain Tensioning Rail

4 - Guide Pin

- 20 Nm

5 - Bolt

- 9 Nm

6 - Control Valve

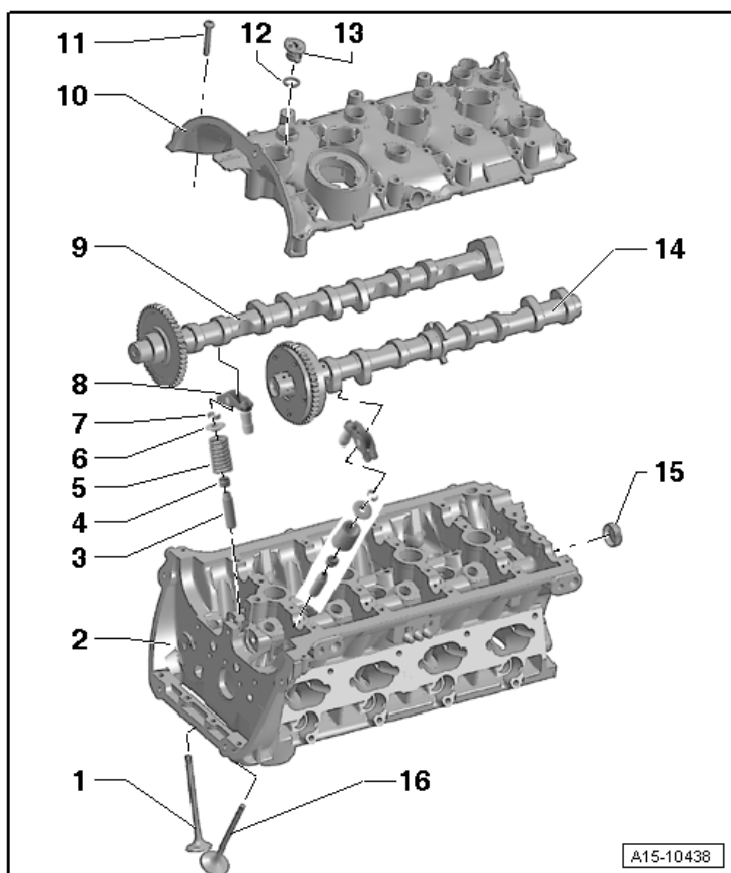
- 35 Nm
- Left hand threads

7 - Bolt

- M6 - 8 Nm + 90° turn
- M8 - 20 Nm + 90° turn
- Always replace

- 8 - Washer**
- 9 - Bearing Bracket**
- 10 - Camshaft Timing Chain Guide Rail**
- 11 - Camshaft Housing**
- 12 - Camshaft Timing Chain**
- 13 - Camshaft Timing Chain Guide Rail**
- 14 - Guide Pin**
 - 20 Nm
- 15 - Chain Sprocket**

Valvetrain Overview



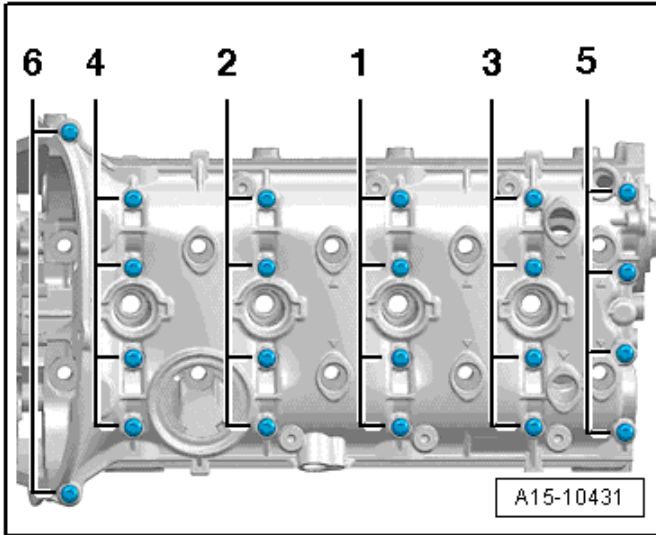
- 1 - Exhaust Valve
- 2 - Cylinder Head
- 3 - Valve Guide
- 4 - Valve Stem Seal
- 5 - Valve Spring
- 6 - Valve Spring Plate
- 7 - Valve Retainers
- 8 - Roller Rocker Arm with Hydraulic Lash Adjuster
- 9 - Exhaust Camshaft
- 10 - Cylinder Head Cover
- 11 - Bolt
 - Tightening sequence, see Cylinder Head Cover Bolt Tightening Sequence below
- 12 - O-ring
 - Always replace
- 13 - Plug
- 14 - Intake Camshaft

15 - Cap

Always replace

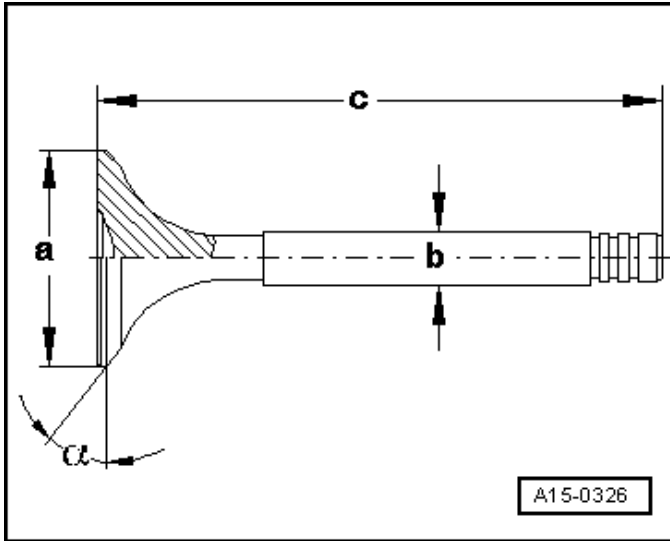
16 - Intake valve

Cylinder Head Cover Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 6 in sequence in several stages	Hand-tighten
2	Tighten bolts 1 through 6 in sequence	8
3	Tighten bolts 1 through 6 in sequence	an additional 90° (¼ turn)

Valve Dimensions



Dimension		Intake valve	Exhaust valve
Diameter a	mm	33.85 ± 0.10	28.0 ± 0.1
Diameter b	mm	5.98 ± 0.007	5.955 ± 0.007
c	mm	103.97	101.87
α	∠°	45	45

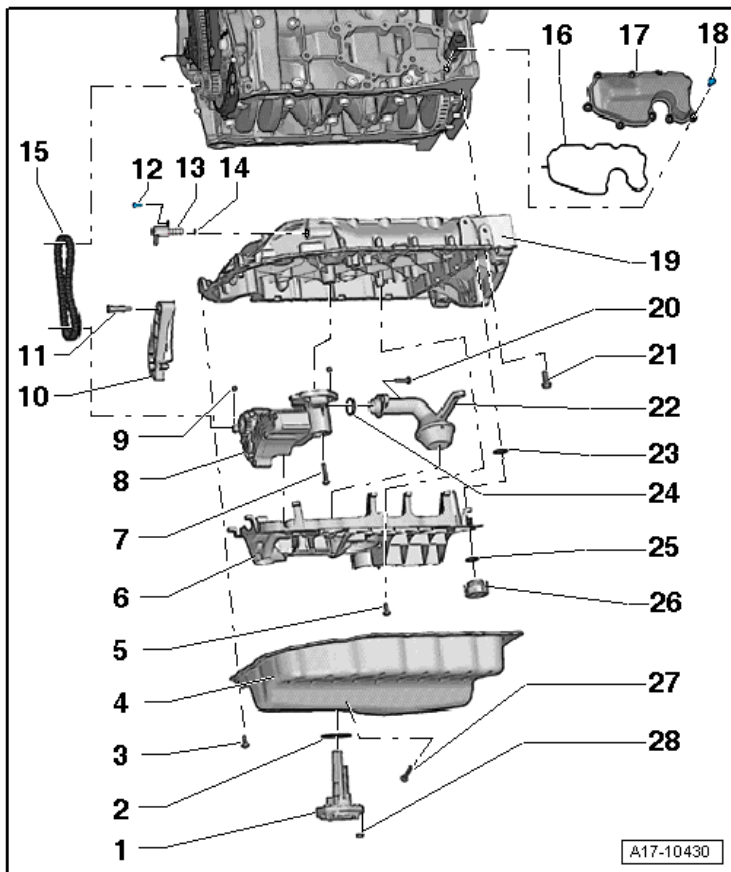
Note: Intake and exhaust valves must not be refaced by grinding. Only lapping is permitted.

Compression Pressures

New Bar positive pressure	Wear limit Bar positive pressure	Difference between cylinders Bar positive pressure
11.0 to 14.0	7.0	Max. 3.0

Lubrication – 2.0L CBFA and CCTA

Oil Pan and Oil Pump Overview



1 - Oil Level Thermal Sensor -G266-

- Not available in the US/Canadian market

2 - Gasket

- Always replace
- Not available in the US/Canadian market

3 - Bolt

- Always replace
- Tightening sequence, see Lower Oil Bolt Tightening Sequence below

4 - Lower Oil Pan

5 - Bolt

- 9 Nm

6 - Oil Baffle

- Always replace

7 - Bolt

- M6 - 9 Nm
- M8 - 20 Nm

8 - Oil Pump

9 - Centering Sleeve

10 - Chain Tensioner

11 - Guide Pin

- 9 Nm

12 - Bolt

- 9 Nm
- Not available in the US/Canadian market.

13 - Oil Pressure Regulation Valve -N428-

- Not available in the US/Canadian market.

14 - O-ring

- Always replace
- Not available in the US/Canadian market

15 - Oil Pump Drive Chain

16 - Gasket

- Always replace

17 - Oil Separator

18 - Bolt

- Tightening sequence, see Oil Separator Bolt Tightening Sequence, below

19 - Upper Oil Pan

20 - Bolt

- 9 Nm

21 - Bolt

- Always replace
- Tightening sequence, see Upper Oil Pan Bolt Tightening Sequence below

22 - Oil Suction Pipe

23 - O-ring

- Always replace

24 - O-ring

- Always replace

25 - O-ring

- Always replace

26 - Check Valve

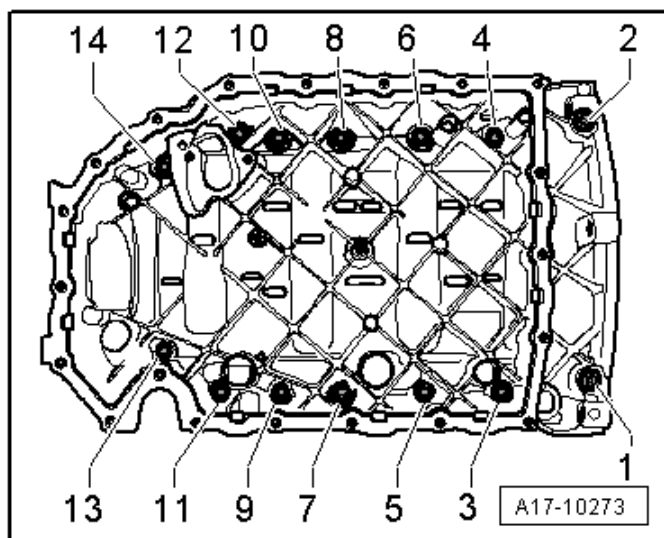
27 - Oil Drain Plug

- 30 Nm
- Always replace

28 - Nut

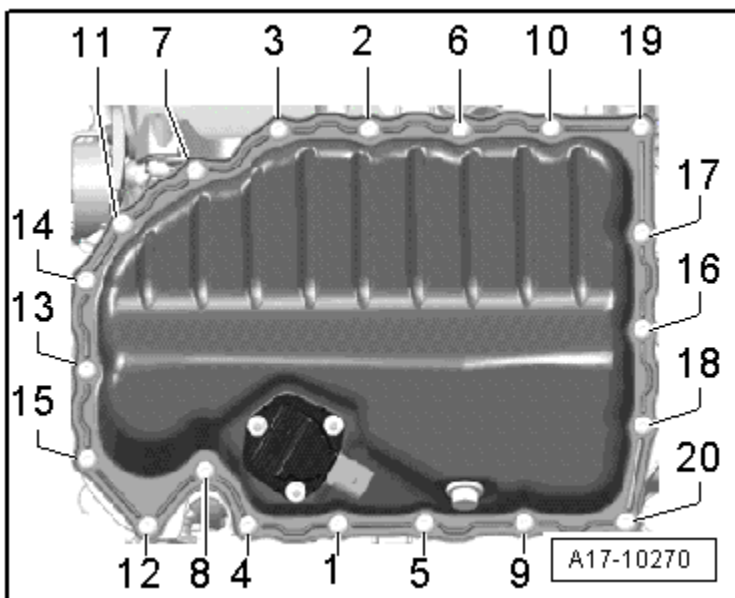
- 9 Nm
- Not available in the US/Canadian market

Upper Oil Pan Tightening Specifications



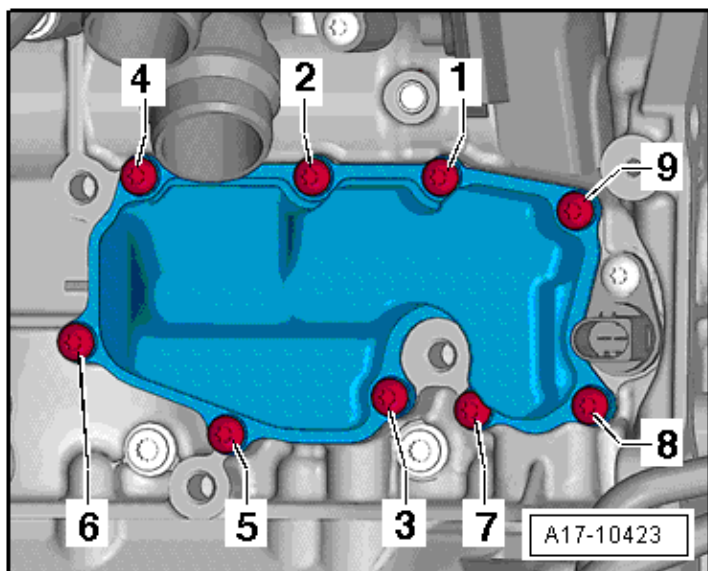
Step	Component	Nm
1	Tighten bolts 1 through 14 in sequence	Hand-tighten
2	Tighten bolts 1 through 14 in sequence	15
3	Tighten bolts 1 through 14 in sequence	an additional 90° (¼ turn)

Oil Pan Tightening Specifications



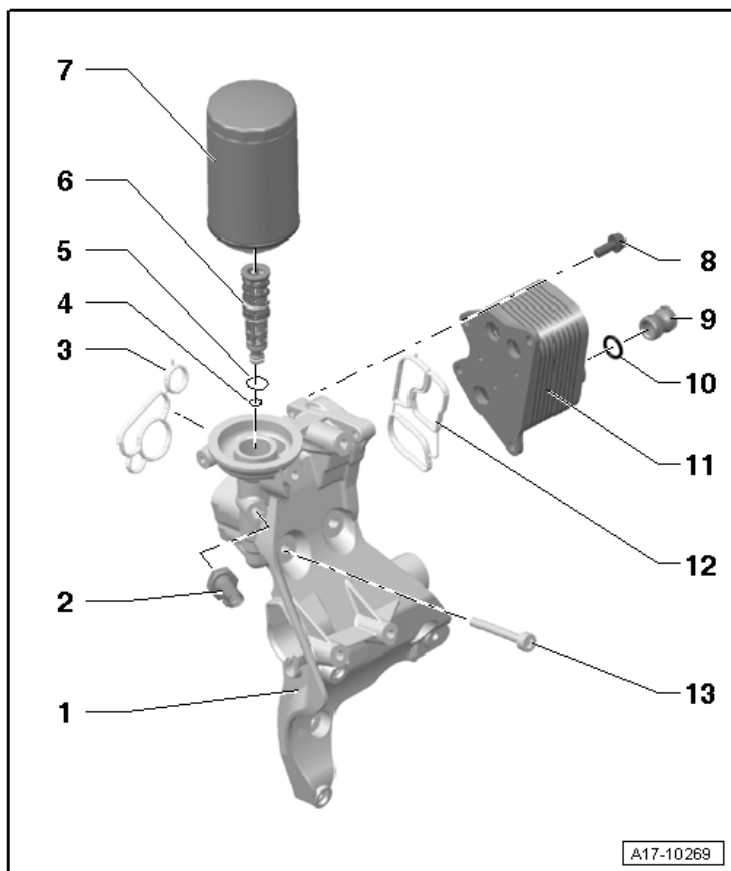
Step	Component	Nm
1	Tighten bolts 1 through 20 in sequence	Hand-tighten
2	Tighten bolts 1 through 20 in sequence	8
3	Tighten bolts 1 through 20 in sequence	an additional 45° (1/8 turn)

Oil Separator Tightening Specification



Step	Component	Nm
1	Tighten bolts 1 through 9 in sequence	9

Oil Filter/Oil Pressure Switch Overview



- 1 - Accessory Bracket**
- 2 - Oil Pressure Switch -F1-**
 - 20 Nm
- 3 - Gasket**
 - Always replace
- 4 - O-ring**
 - Always replace
- 5 - O-ring**
 - Always replace
- 6 - Valve Unit**
- 7 - Oil Filter Element**
 - 22 Nm
- 8 - Bolt**
 - 15 Nm
- 9 - Connection**

10 - Seal

- Always replace

11 - Engine Oil Cooler

12 - Gasket

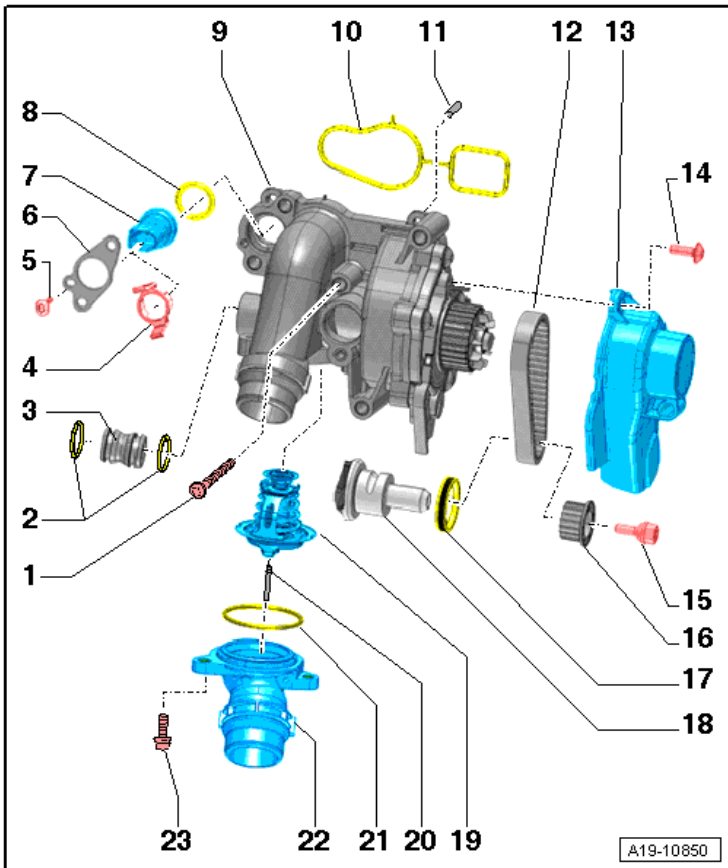
- Always replace

13 - Bolt

- Tightening sequence, refer to Ribbed Belt Drive Overview; Accessory Bracket Bolt Tightening Sequence

Cooling System – 2.0L CBFA and CCTA

Coolant Pump and Thermostat Overview



1 - Bolt

- 9 Nm
- Tightening sequence, see Coolant Pump Bolt Tightening Sequence below

2 - O-ring

- Always replace

3 - Connection

4 - Clip

5 - Bolt

- 4 Nm
- Only for the threaded version of the engine coolant temperature sensor.

6 - Retaining Plate

- Only for the threaded version of the engine coolant temperature sensor.

7 - Engine Coolant Temperature Sensor -G62-

8 - O-ring

- Always replace

9 - Coolant Pump

10 - Gasket

- Always replace

11 - Centering Pin

12 - Toothed Belt

13 - Toothed Belt Cover

14 - Bolt

- 9 Nm

15 - Bolt

- 10 Nm + 90° turn
- Always replace
- Left hand threads

16 - Toothed Belt Drive Gear

17 - Shaft Seal

18 - Balance Shaft

19 - Coolant Thermostat

20 - Centering Pin

21 - O-ring

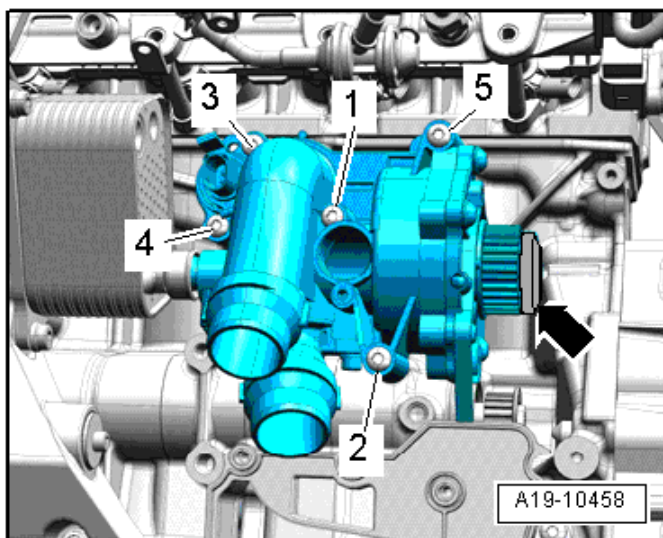
- Always replace

22 - Cover for Theremostat

23 - Bolt

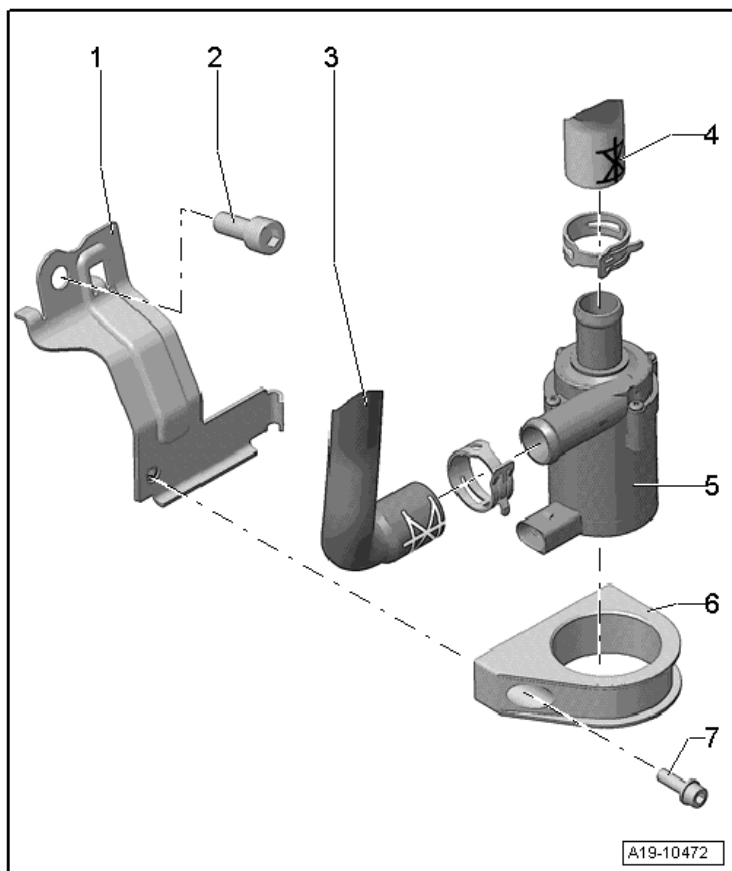
- 9 Nm

Coolant Pump Tightening Specification



Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence	9

After-Run Coolant Pump -V51- Overview



1 - Bracket

2 - Bolt

□ 40 Nm

3 - Coolant Hose

4 - Coolant Hose

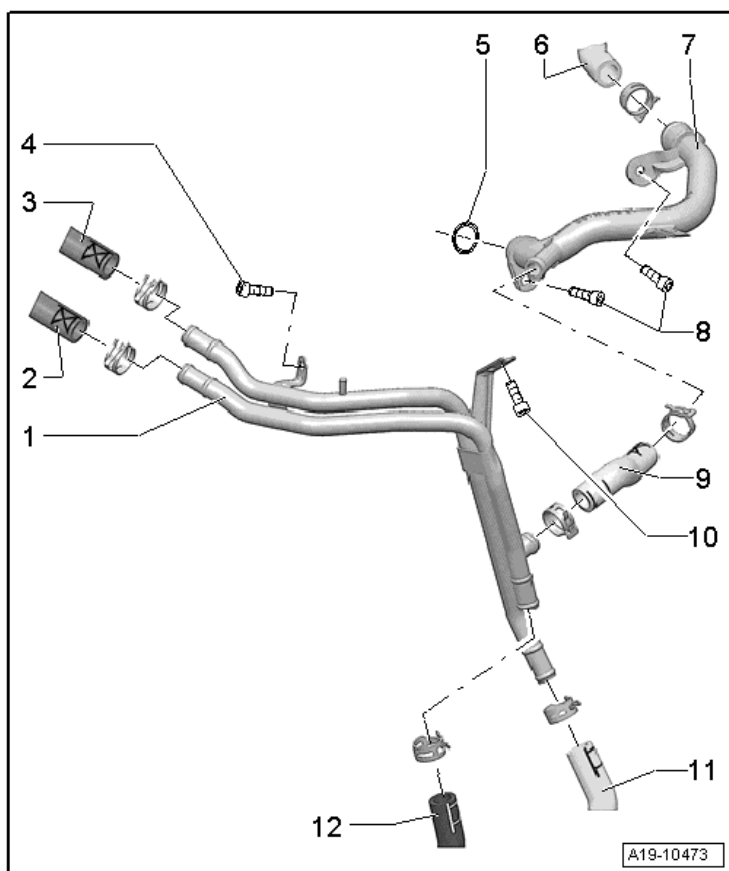
5 - After-Run Coolant Pump -V51-

6 - Bracket

7 - Bolt

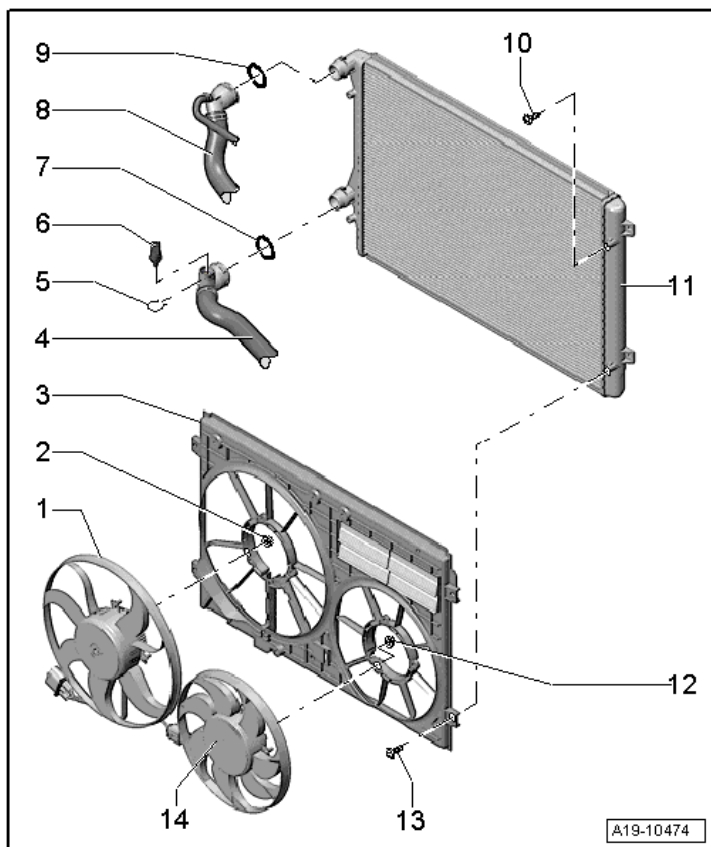
□ 8 Nm

Coolant Pipes Overview



- 1 - Front Coolant Pipes**
- 2 - Coolant Hose**
- 3 - Coolant Hose**
- 4 - Bolt**
 - 3.5 Nm
- 5 - O-ring**
 - Always replace
- 6 - Coolant Hose**
- 7 - Small Coolant Pipe**
- 8 - Bolt**
 - 9 Nm
- 9 - Coolant Hose**
- 10 - Bolt**
 - 3.5 Nm
- 11 - Coolant Hose**
- 12 - Coolant Hose**

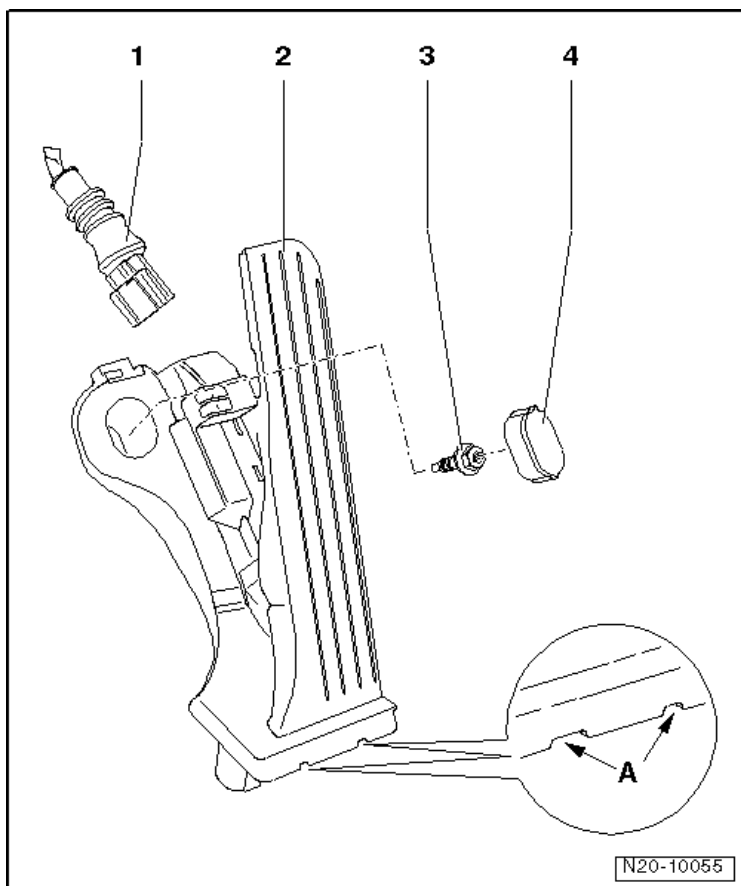
Radiator, Fan Shroud and Fan Overview



- 1 - Coolant Fan -V7-**
- 2 - Nut**
 - 10 Nm
- 3 - Fan Shroud**
- 4 - Lower Coolant Hose**
- 5 - Clip**
- 6 - Engine Coolant Temperature Sensor on Radiator Outlet -G83-**
- 7 - O-ring**
- 8 - Upper Coolant Hose**
- 9 - O-ring**
- 10 - Bolt**
 - 5 Nm
- 11 - Radiator**
- 12 - Nut**
 - 10 Nm
- 13 - Bolt**
 - 5 Nm
- 14 - Coolant Fan 2 -V177-**

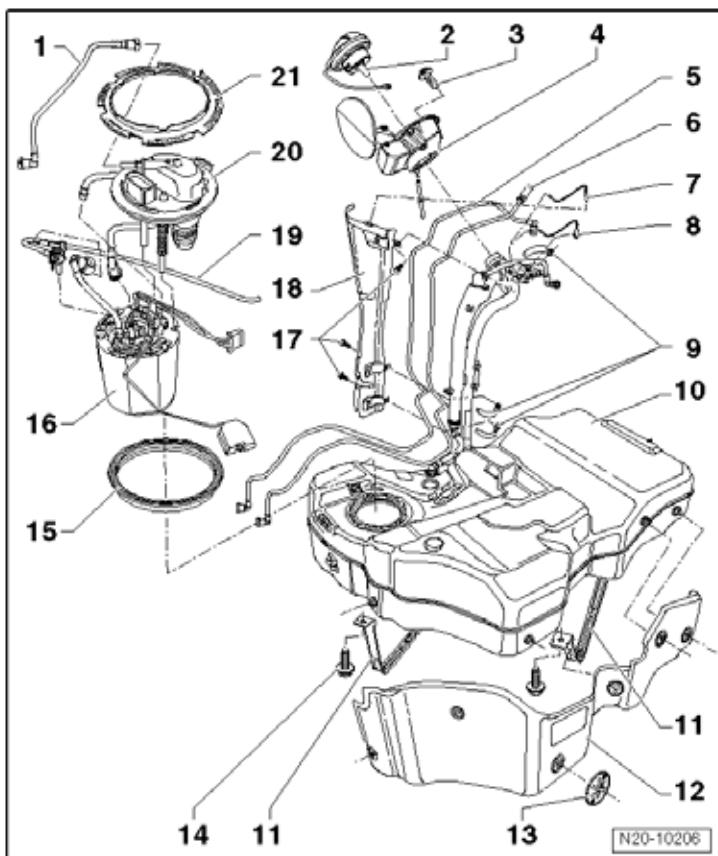
Fuel Supply – 2.0L CBFA and CCTA

Accelerator Pedal Module Overview



- 1 - Connector
- 2 - Accelerator Pedal Position Sensor -G79- with Accelerator Pedal Position Sensor 2 -G185-
- 3 - Bolt
 - 10 Nm
- 4 - Cap

Fuel Tank and Attachments Overview



- 1 - Fuel Line**
- 2 - Cap**
- 3 - Bolt**
 - 1.5 Nm
- 4 - Fuel Filler Door Unit**
- 5 - Vent Line**
- 6 - Vacuum Line**
- 7 - Ground Connection**
- 8 - Ground Connection**
- 9 - Clip**
- 10 - Fuel Tank**
- 11 - Securing Straps**
- 12 - Heat Shield**
- 13 - Retainer**
- 14 - Bolt**
 - 25 Nm
 - Always replace

15 - Seal

- Always replace

16 - Fuel Delivery Unit

17 - Rivets

18 - Protective Plate

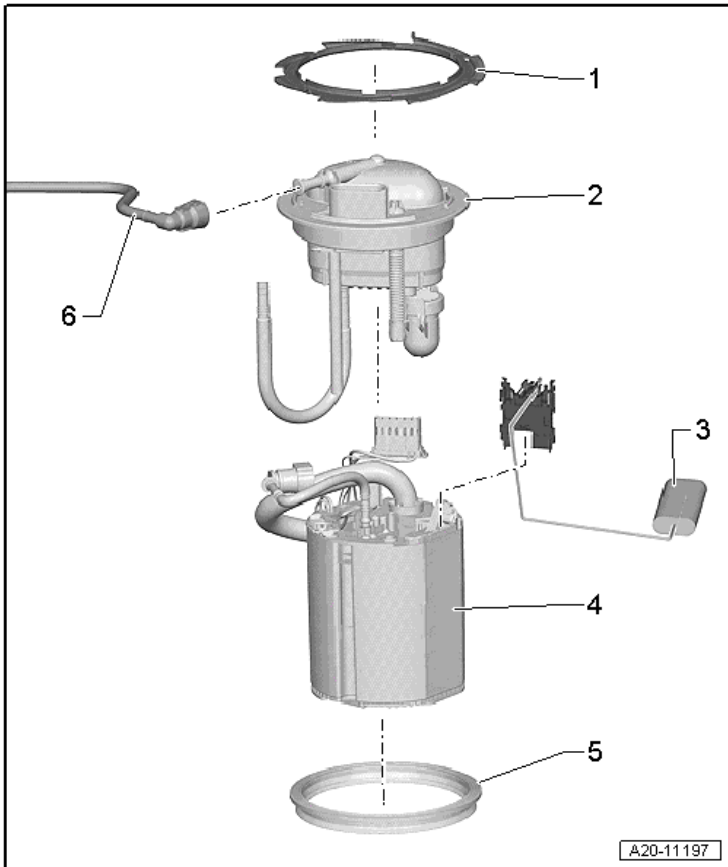
19 - Suction Jet Pump

20 - Flange with Fuel Filter

21 - Lock Ring

- 110 Nm

Fuel Delivery Unit/Fuel Level Sensor Overview



1 - Lock Ring

- 110 Nm

2 - Flange

3 - Fuel Level Sensor -G-

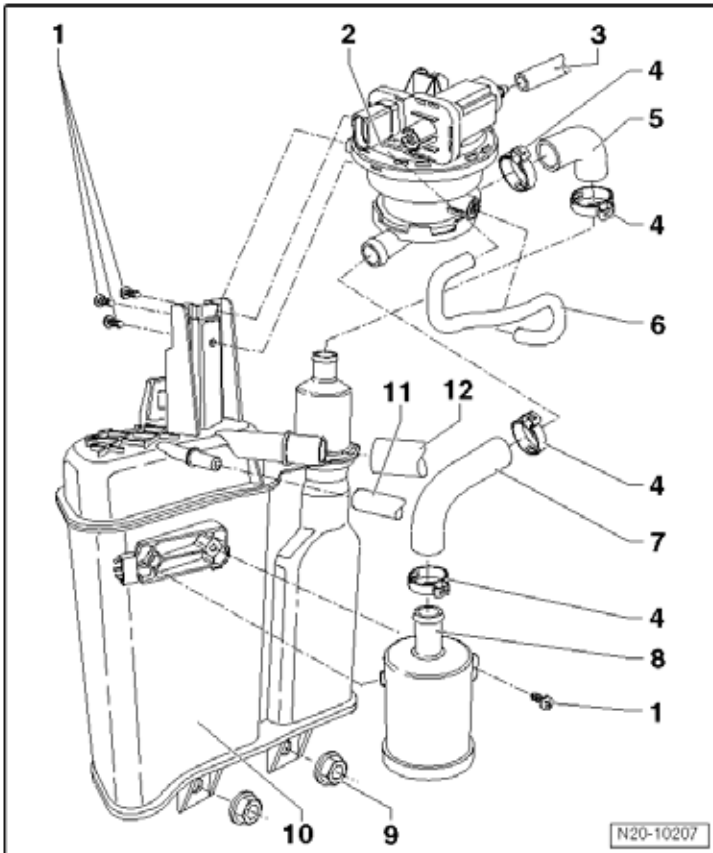
4 - Fuel Delivery Unit

5 - Seal

- Always replace
- Lubricate with fuel only when installing the flange

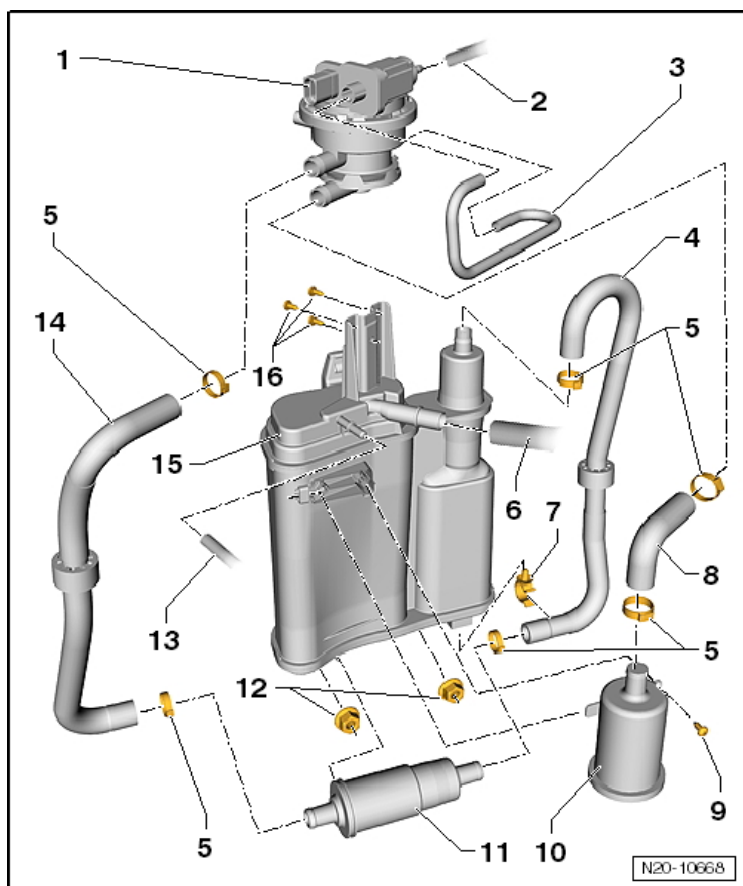
6 - Fuel Line

EVAP System Overview



- 1 - Bolts
- 2 - Leak Detection Pump -V144-
- 3 - Vacuum Line
- 4 - Clamp
- 5 - Connecting Hose
- 6 - Vacuum Hose
- 7 - Connecting Hose
- 8 - Air Filter
- 9 - Nut
 - 10 Nm
- 10 - EVAP Canister
- 11 - Vent Line
- 12 - Vent Line

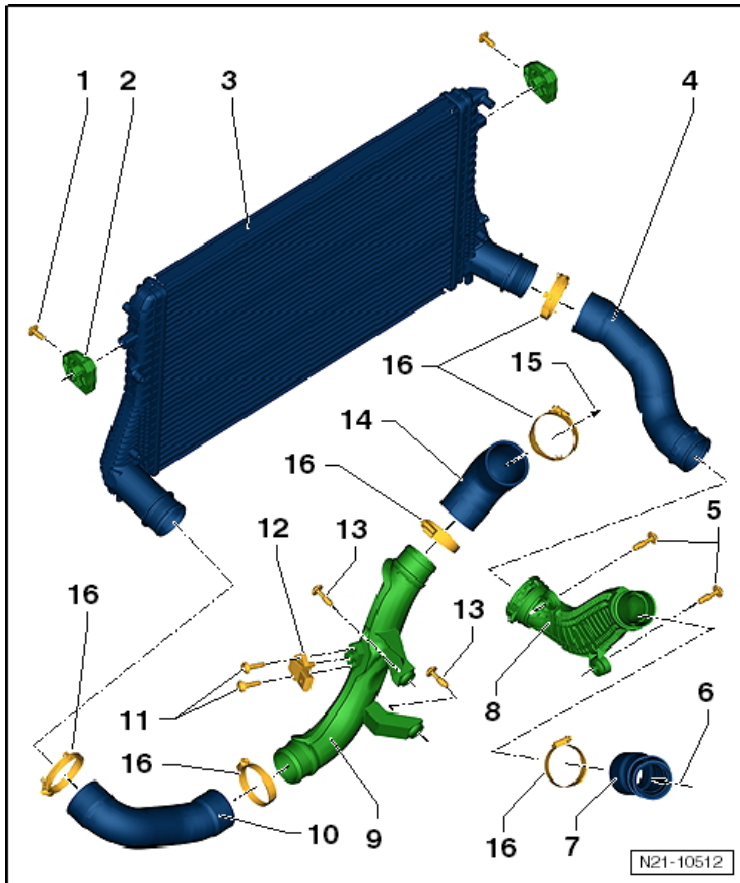
EVAP System Overview, with an Additional Filter



- 1 - Leak Detection Pump -V144-
- 2 - Vacuum Line
- 3 - Vacuum Hose
- 4 - Connecting Hose
- 5 - Clamp
- 6 - Vent Line
- 7 - Clip
- 8 - Connecting Hose
- 9 - Bolt
- 10 - Air Filter
- 11 - Auxiliary Air Filter
- 12 - Nut
 - 10 Nm
- 13 - Vent Line
- 14 - Connecting Hose
- 15 - Evaporative Emission (EVAP) Canister
- 16 - Bolt

Turbocharger – 2.0L CBFA and CCTA

Charge Air Cooler System Overview



- 1 - Bolt
□ 5 Nm
- 2 - Bracket
- 3 - Charge Air Cooler
- 4 - Charge Air Hose
- 5 - Bolt
□ 10 Nm
- 6 - From Turbocharger
- 7 - Charge Air Hose
- 8 - Right Charge Air Pipe
- 9 - Front Charge Air Pipe
- 10 - Charge Air Hose
- 11 - Bolt
□ 5 Nm
- 12 - Charge Air Pressure Sensor -G31-

13 - Bolt

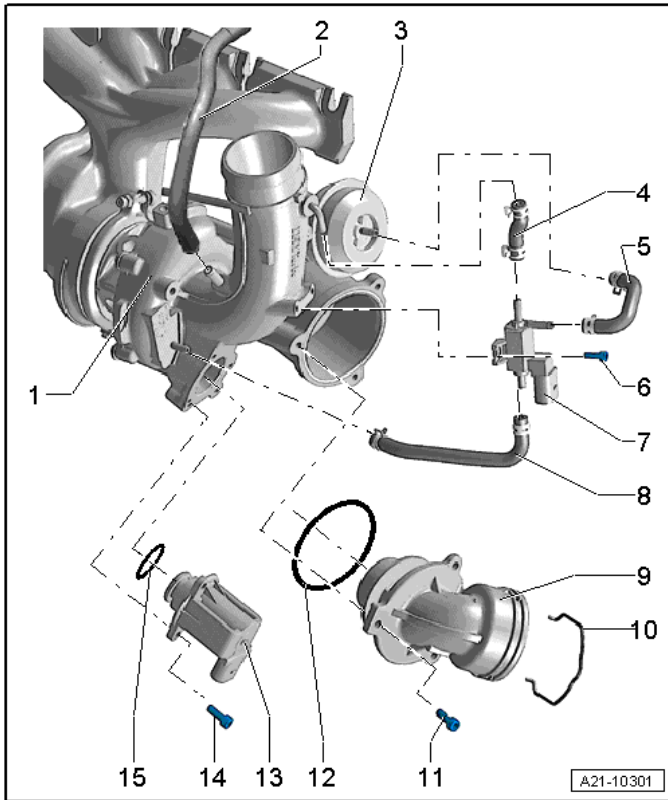
10 Nm

14 - Charge Air Hose

15 - to Throttle Valve Control Module

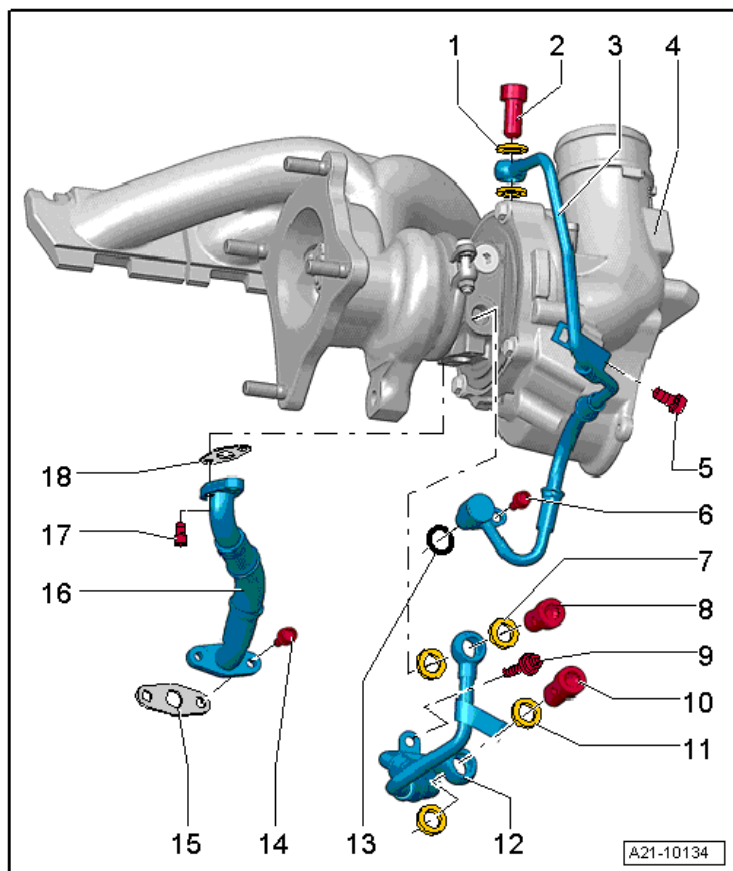
16 - Screw Type Clamp

Wastegate Bypass Regulator Valve/ Recirculation Valve Overview



- 1 - Turbocharger
- 2 - To Evaporative Emission (EVAP) Canister
- 3 - Turbocharger Vacuum Diaphragm
- 4 - Hose
- 5 - Hose
- 6 - Bolt
 - 3 Nm
- 7 - Wastegate Bypass Regulator Valve -N75-
- 8 - Hose
- 9 - Connection
- 10 - Clip
- 11 - Bolt
 - 9 Nm
- 12 - Seal
- 13 - Turbocharger Recirculation Valve -N249-
- 14 - Bolt
 - 7 Nm
- 15 - Seal

Turbocharger Coolant Supply/Oil Pipes Overview



1 - Seal

- Always replace

2 - Banjo Bolt

- 33 Nm

3 - Oil Supply Pipe

4 - Turbocharger

5 - Bolt

- 9 Nm

6 - Bolt

- 9 Nm

7 - Seal

- Always replace

8 - Banjo Bolt

- 38 Nm

9 - Bolt

- 9 Nm

10 - Banjo Bolt

- 38 Nm

11 - Seal

- Always replace

12 - Coolant Supply Pipe

13 - O-ring

- Always replace

14 - Bolt

- 9 Nm

15 - Gasket

- Always replace

16 - Oil Return Pipe

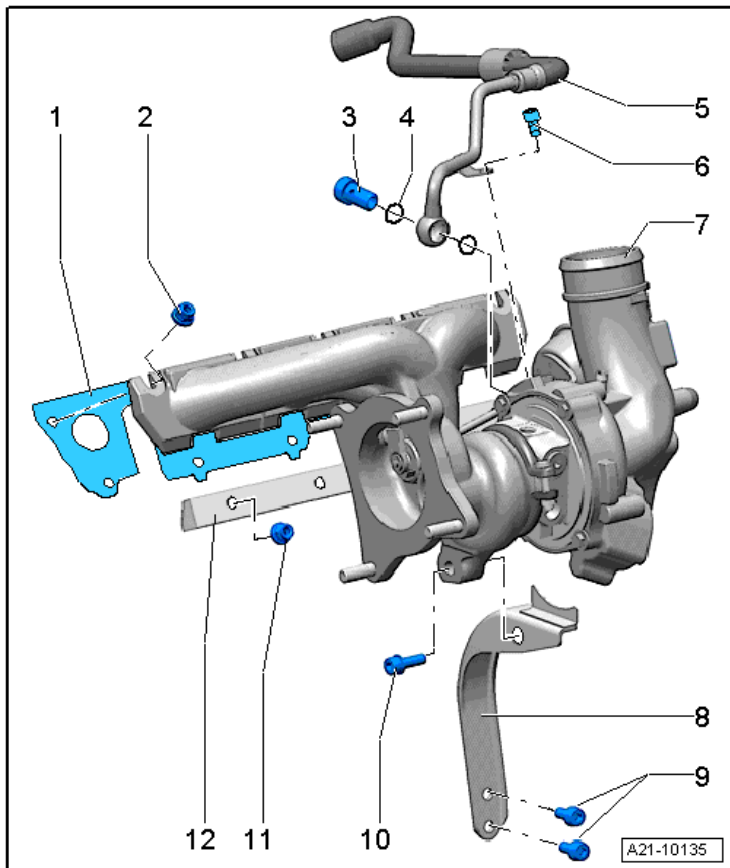
17 - Bolt

- 9 Nm

18 - Seal

- Always replace

Turbocharger and Coolant Return Pipe Overview



1 - Gasket

- Always replace

2 - Nut

- Tightening sequence, see Turbocharger Nut Tightening Sequence below
- Always replace
- Coat exhaust manifold stud bolts with Hot Bolt Paste -G 052 112 A3-

3 - Banjo Bolt

- 38 Nm

4 - Seal

- Always replace

5 - Coolant Return Pipe

6 - Bolt

- 9 Nm

7 - Turbocharger

8 - Bracket

9 - Bolt

- 30 Nm
- Coat the bolt with Hot Bolt Paste -G 052 112 A3-.

10 - Bolt

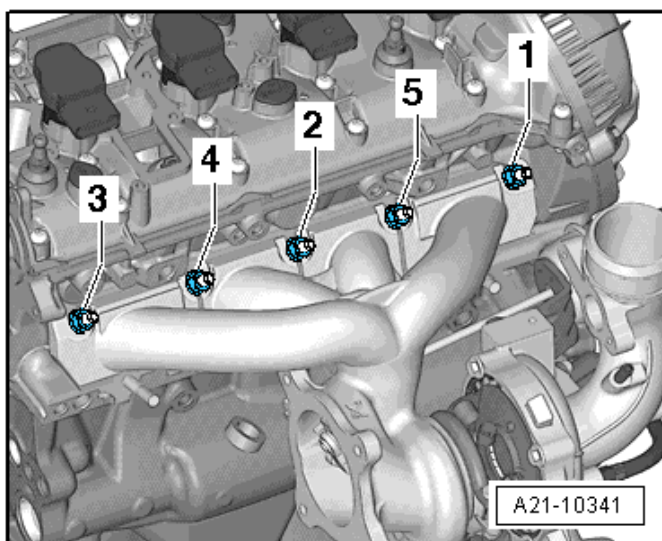
- 30 Nm
- Coat the bolt with Hot Bolt Paste -G 052 112 A3-.

11 - Nut

- 30 Nm
- Always replace
- Coat the exhaust manifold stud bolts with Hot Bolt Paste -G 052 112 A3-.

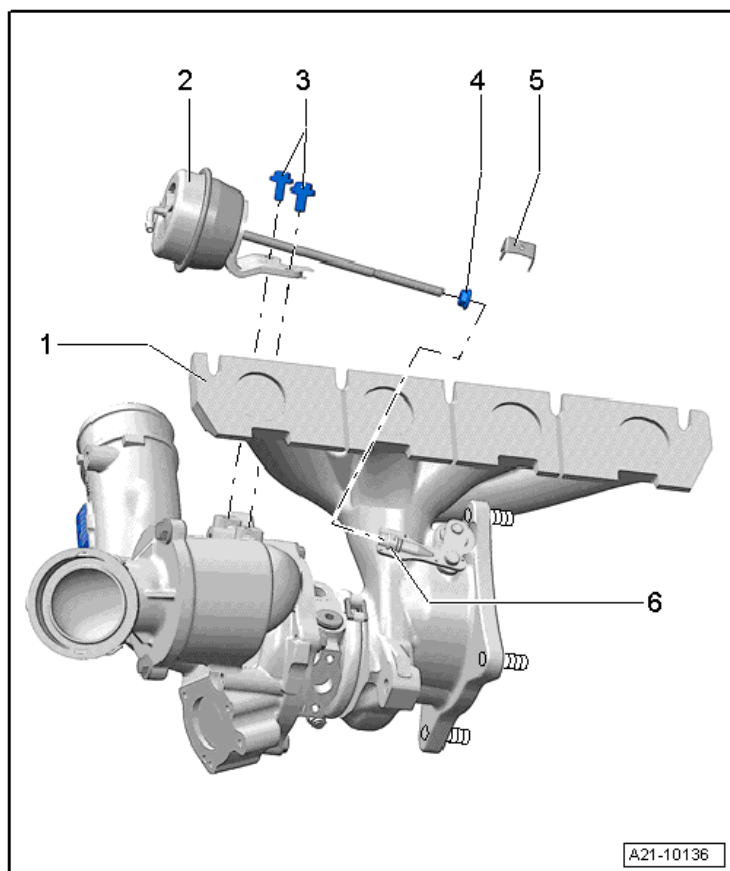
12 - Fastening Strip

Turbocharger Nut Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence	5
2	Tighten bolts 1 through 5 in sequence	12
3	Tighten bolts 1 through 5 in sequence	16
4	Tighten bolts 1 through 5 in sequence	25

Vacuum Diaphragm Overview



1 - Turbocharger

2 - Vacuum Diaphragm

3 - Bolt

10 Nm

4 - Nut

9 Nm

Not serviceable in the US/Canadian market.

5 - Locking Plate

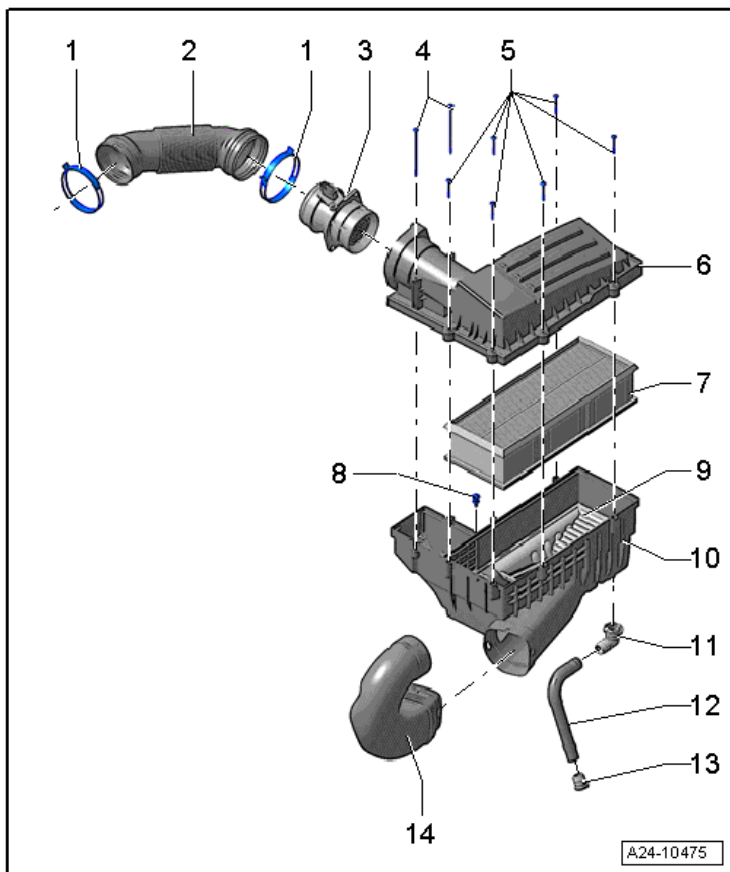
Not serviceable in the US/Canadian market.

6 - Knurled Nut

Not serviceable in the US/Canadian market.

Multiport Fuel Injection – 2.0L CBFA and CCTA

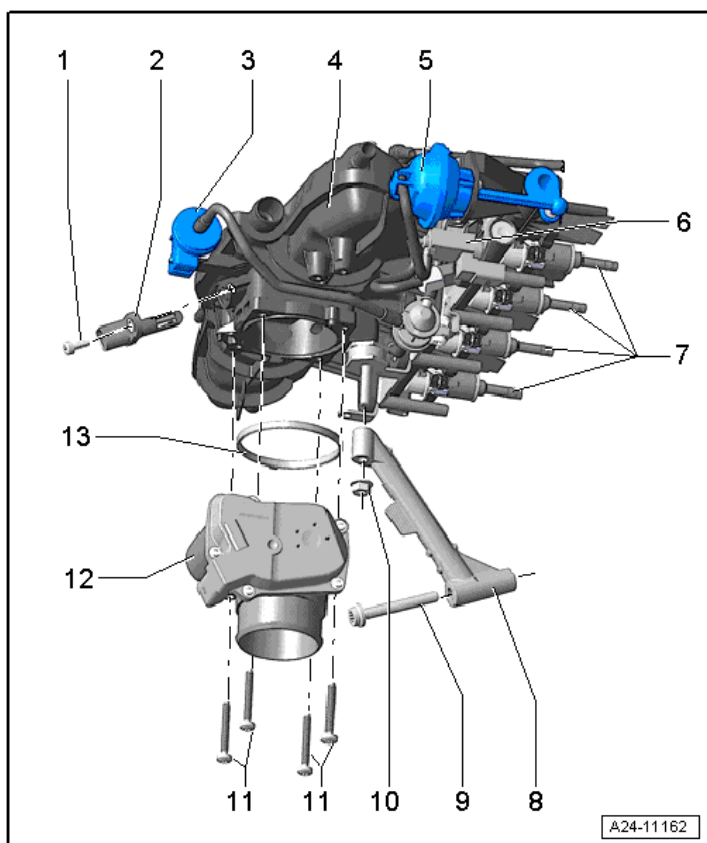
Air Filter Housing Overview



- 1 - Spring Clamp**
- 2 - Connecting Pipe**
- 3 - Mass Airflow Sensor -G70-**
- 4 - Bolt**
 - 1.5 Nm
- 5 - Bolt**
 - 1.5 Nm
- 6 - Upper Air Filter Housing**
- 7 - Air Filter Element**
- 8 - Bolt**
 - 8 Nm
- 9 - Snow Screen**
 - Not installed on all vehicles.

- 10 - Lower Air Filter Housing**
- 11 - Water Drain Hose Connection**
- 12 - Water Drain Hose**
- 13 - Shutter Valve**
- 14 - Intake Air Duct**

Intake Manifold Overview



1 - Bolt

- 5 Nm

2 - Intake Air Temperature Sensor -G42-

3 - EVAP Canister Purge Regulator Valve 1 -N80-

4 - Intake Manifold

5 - Vacuum Actuator For Intake Manifold Flaps

6 - Intake Manifold Runner Control Valve -N316-

7 - Fuel Injectors

8 - Intake Manifold Support

9 - Bolt

- 23 Nm

10 - Nut

- 10 Nm

11 - Bolt

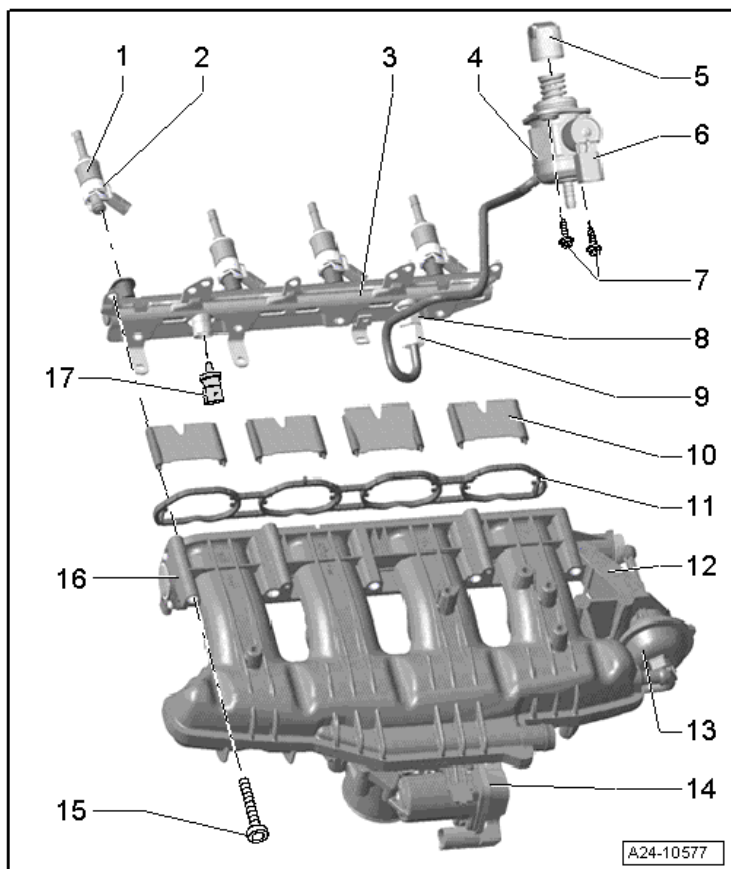
- 5 Nm

12 - Throttle Valve Control Module -J338-

13 - Gasket

- Always replace

Fuel Rail and Injector Overview



1 - Fuel Injector

2 - Support Ring

3 - Fuel Rail

4 - High Pressure Pump

5 - Cam Follower

6 - Fuel Pressure Regulator Valve -N276-

7 - Bolt

M6 threads = 8 Nm + 90° turn

M8 threads = 20 Nm

Always replace

8 - Fuel Supply Line Connection

22 Nm

Always replace

9 - Fuel Supply Line to Fuel Rail

18 Nm

10 - Channel Separating Plates

11 - Gasket

- Always replace

12 - Intake Manifold

13 - Vacuum Diaphragm for the Channel Separating Plate

14 - Throttle Valve Control Module -J338-

15 - Bolt

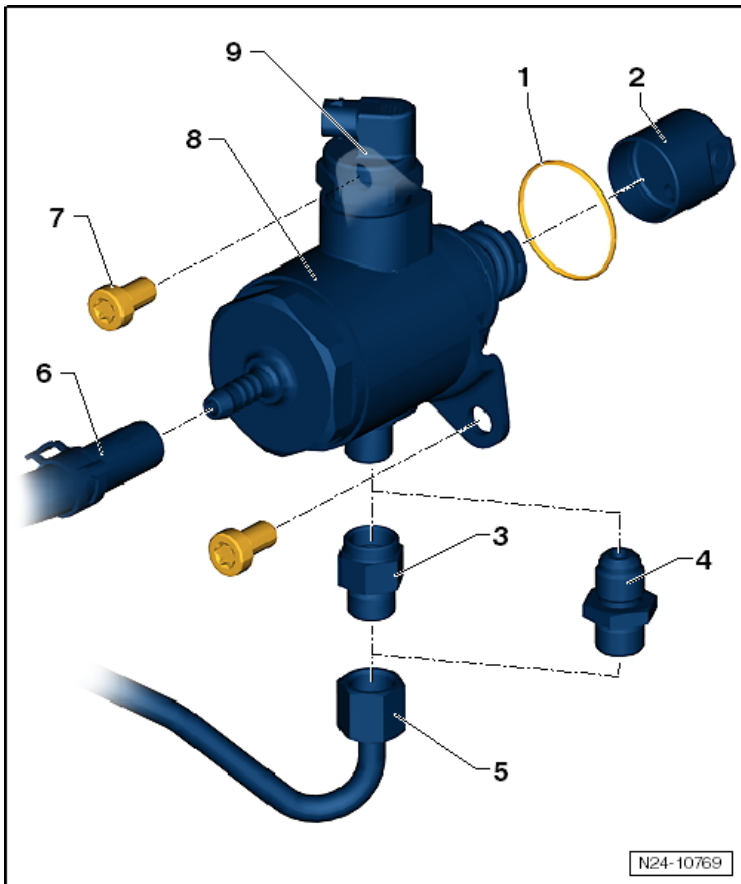
- Tighten to 3 Nm, and then tighten to 9 Nm.

16 - Intake Manifold Runner Position Sensor -G336-

17 - Fuel Pressure Sensor -G247-

- 27 Nm
- Coat threads with clean engine oil.

High Pressure Pump Overview



1 - O-ring

- Always replace

2 - Cam Follower

3 - High Pressure Fuel Line Connection (with Inner Threads)

- 40 Nm
- Always replace

4 - High Pressure Fuel Line Connection (with Outer Threads)

- 25 Nm
- Always replace

5 - High Pressure Fuel Line Union Nut

- 18 Nm

6 - Fuel Supply Line from the Fuel Tank

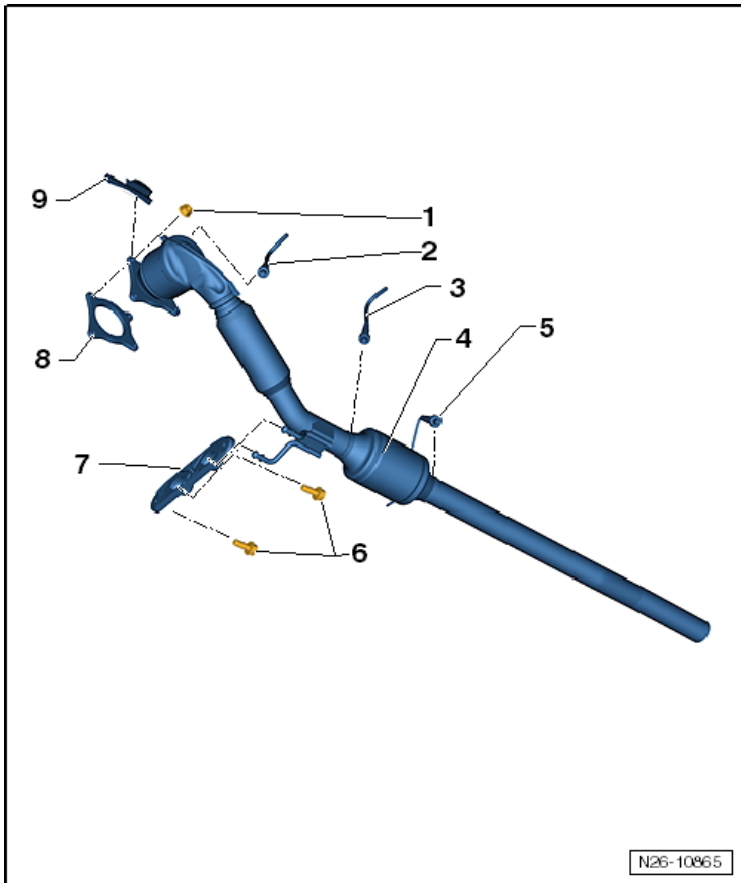
7 - Bolt

- M6 threads = 8 Nm + 90° turn
- M8 threads = 20 Nm
- Always replace

8 - High Pressure Pump

Exhaust System – 2.0L CBFA and CCTA

Exhaust Pipe with Catalytic Converter Overview



1 - Nut

- 40 Nm
- Always replace.
- Coat the stud bolts on the exhaust manifold with Hot Bolt Paste -G 052 112 A3-.

2 - Heated Oxygen Sensor -G39-

- 55 Nm
- When reusing the old oxygen sensor, grease only the threads with hot bolt paste, the paste must not get into the slots in the oxygen sensor body. The threads of the new oxygen sensor are coated with hot bolt paste -G 052 112 A3-.

3 - Heated Oxygen Sensor 2 -G108-

- 55 Nm
- For engine code CBFA only.
- When reusing the old oxygen sensor, grease only the threads with hot bolt paste, the paste must not get into the slots in the oxygen sensor body. The threads of the new oxygen sensor are coated with hot bolt paste -G 052 112 A3-

4 - Exhaust Pipe with Catalytic Converter

5 - Oxygen Sensor after Three Way Catalytic Converter -G130-

- 55 Nm
- Bank 1, sensor 2
- When reusing the old oxygen sensor, grease only the threads with hot bolt paste, the paste must not get into the slots in the oxygen sensor body. The threads of the new oxygen sensor are coated with hot bolt paste -G 052 112 A3

6 - Bolt

- 25 Nm

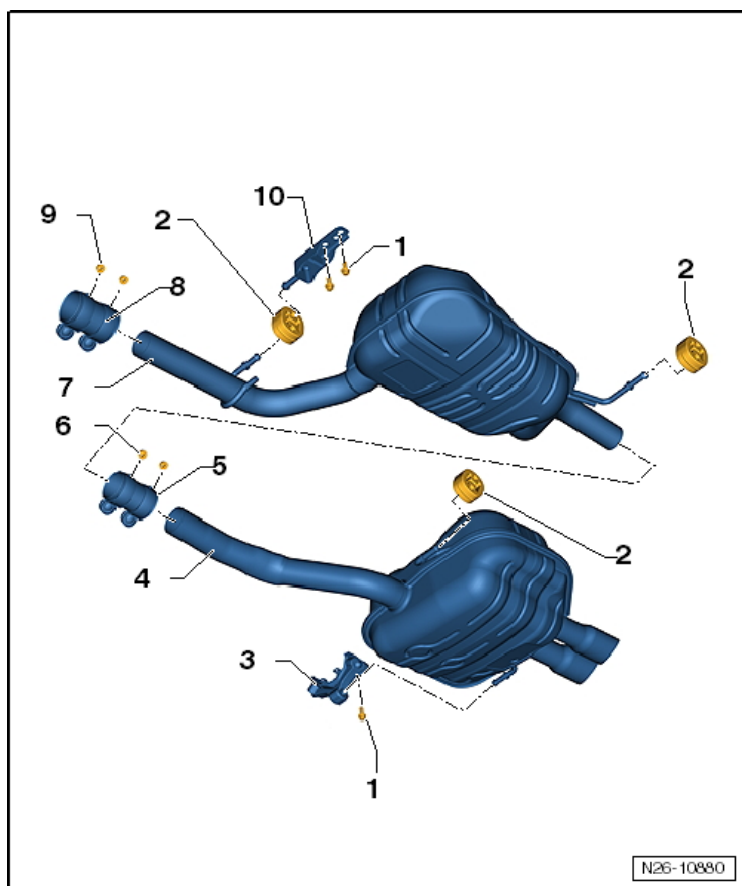
7 - Suspended Mount

8 - Gasket

- Always replace

9 - Heat Shield

Muffler Overview



1 - Bolt

- 25 Nm

2 - Retaining Ring

3 - Suspended Mount

4 - Rear Muffler

5 - Rear Clamping Sleeve

6 - Nut

- Tightening specification and installed position, see Clamping Sleeve Locations below

7 - Center Muffler

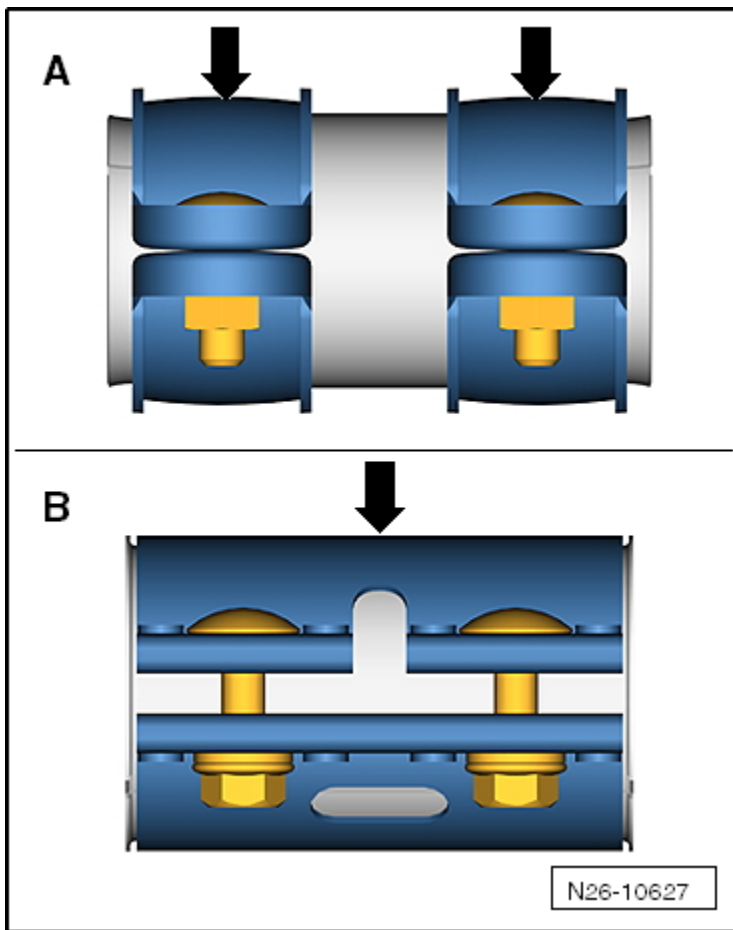
8 - Front Clamping Sleeve

9 - Nut

- Tightening specification and installed position, see Clamping Sleeve Locations below

10 - Suspended Mount

Tightening Torque and Installed Dimension of the Clamping Sleeve



-A- Clamping sleeve with two individual clamps.

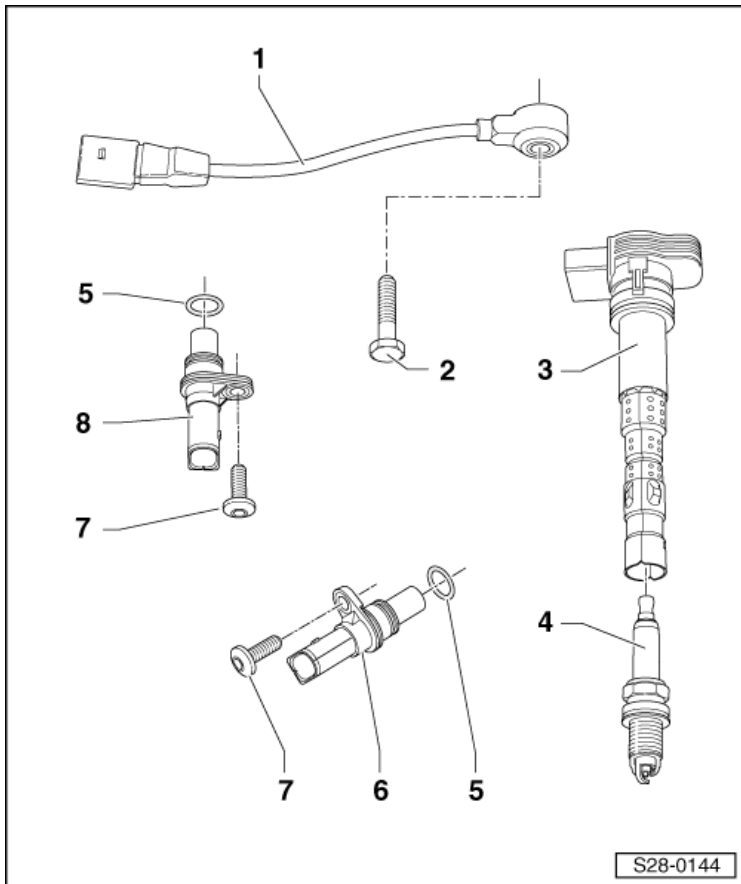
- | | |
|---|--|
| 1 | Tightening specification: 25 Nm |
| 2 | Installed dimension -a-: 5 mm (only for the front clamping sleeve) |

-B- Clamping sleeve with a continuous clamp.

- | | |
|---|--|
| 1 | Tightening specification: 35 Nm |
| 2 | Installed dimension -a-: 8.5 mm (only for front clamping sleeve) |

Ignition – 2.0L CBFA and CCTA

Ignition System Component Overview



1 - Knock Sensor 1 -G61-

2 - Bolt

20 Nm

3 - Ignition Coil with Power Output Stage -N70, N127, N291, N292-

4 - Spark Plug

5 Nm

5 - O-ring

6 - Engine Speed Sensor -G28-

7 - Bolt

10 Nm

8 - Camshaft Position Sensor -G40-

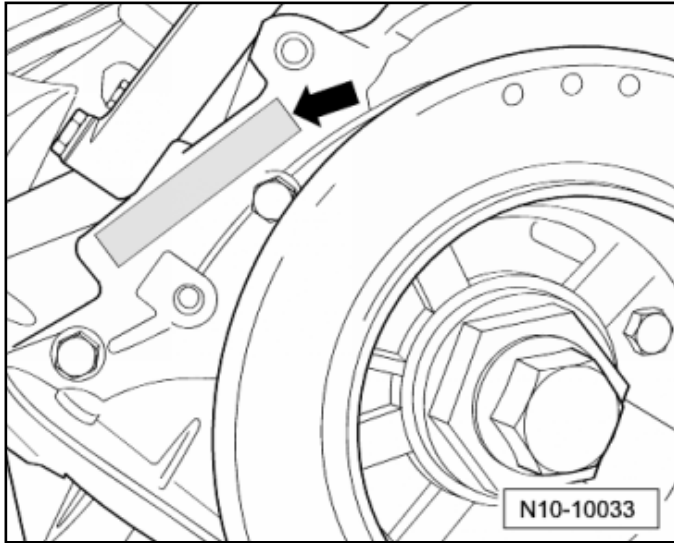
Technical Data

Engine codes	CBFA and CCTA
Ignition sequence	1-3-4-2
Spark plugs	
VW/Audi	101 905 631 H
Electrode gap	1.0 to 1.1 mm
Tightening specifications	25 Nm
Change intervals	Refer to Maintenance Intervals Rep. Gr. 03

ENGINE MECHANICAL – 3.6L CNNA

General, Technical Data

Engine Number Location



The engine number (engine code and serial number) (➡) is located on the cylinder block next to the vibration damper.

Engine Data

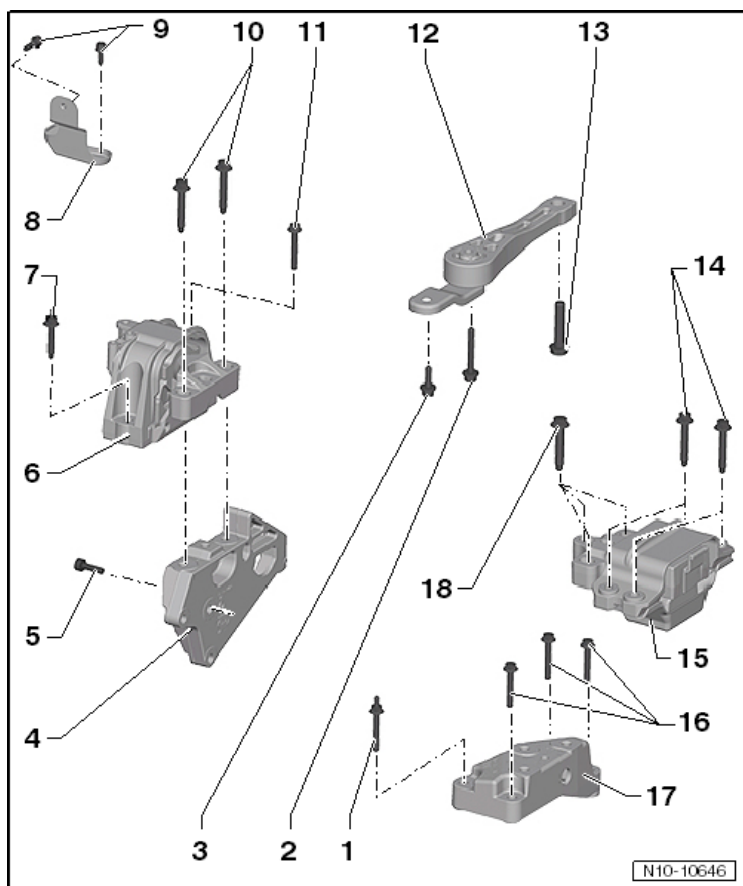
Identification Code		CNNA
Manufactured		from 05.11
Emission values in accordance with		ULEV 2 ¹⁾
Displacement	cm ³	3580
Output	kW at ¹ /min	206 @ 6200
Torque	Nm at ¹ /min	360 @ 2800
Bore	diameter mm	89.0
Stroke	mm	95.9
Cylinder angle		10.6°
Compression ratio		11.4
Valves per cylinder		4
Research Octane Number (RON)	minimum	98 unleaded ²⁾
Fuel injection, ignition		Motronic MED 9.1
Knock control		2 knock sensors
Oxygen Sensor (O2S) regulation		4 sensors
Catalytic converter		Yes
Leak detection system		Yes
Exhaust Gas Recirculation (EGR)		Internal

¹⁾ ULEV 2 = Ultra Low Emissions Vehicle 2.

²⁾ In exceptional circumstances a minimum 95 RON, however with reduced performance

Engine Assembly – 3.6L CNNA

Engine/Transmission Mount Overview



1 - Bolt

- Tightening specifications, refer to Automatic Transmission.

2 - Bolt

- 50 Nm + 90° turn
- Always replace

3 - Bolt

- 50 Nm + 90° turn
- Always replace

4 - Engine Mount Bracket

5 - Bolt

- 40 Nm + 180° turn
- Always replace

6 - Engine Mount

7 - Bolt

- 40 Nm + 90° turn
- Always replace

8 - Support

9 - Bolt

- 20 Nm + 90° turn
- Always replace

10 - Bolt

- 60 Nm + 90° turn
- Always replace

11 - Bolt

- 40 Nm + 90° turn
- Always replace

12 - Pendulum Support

13 - Bolt

- 100 Nm + 90° turn
- Always replace

14 - Bolt

- 40 Nm + 90° turn
- Always replace

15 - Transmission Mount

16 - Bolt

- Tightening specifications, refer to Automatic Transmission

17 - Transmission Mount Bracket

18 - Bolt

- 60 Nm + 90° turn
- Always replace

Fastener Tightening Specifications

Component	Fastener size	Nm
Bolts and nuts	M6	10
	M7	15
	M8	25
	M10	40
	M12	60

Crankshaft, Cylinder Block – 3.6L CNNA

Allocation of Crankshaft Bearing Shells for Cylinder Block

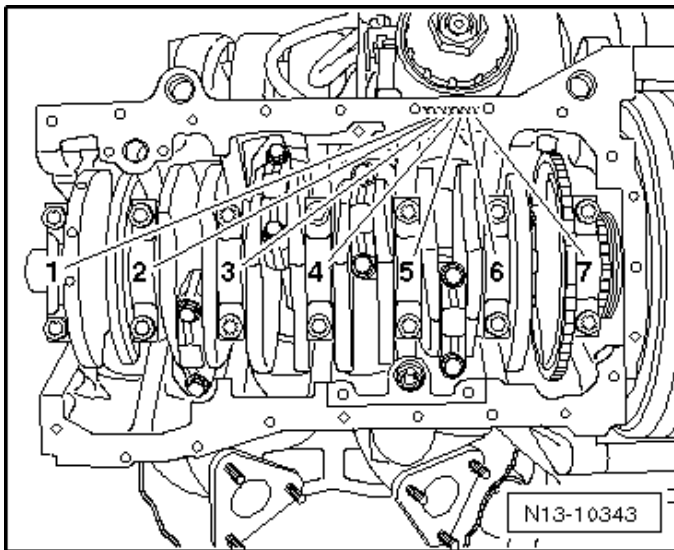
The main bearing shells are allocated to the cylinder block and crankshaft with the correct thickness by the factory. Colored dots identify the bearing thickness.

If the cylinder block or crankshaft are being replaced, the bearing shells must be allocated.

The bearing shell for the cylinder block (upper bearing shell) is always marked with a yellow dot.

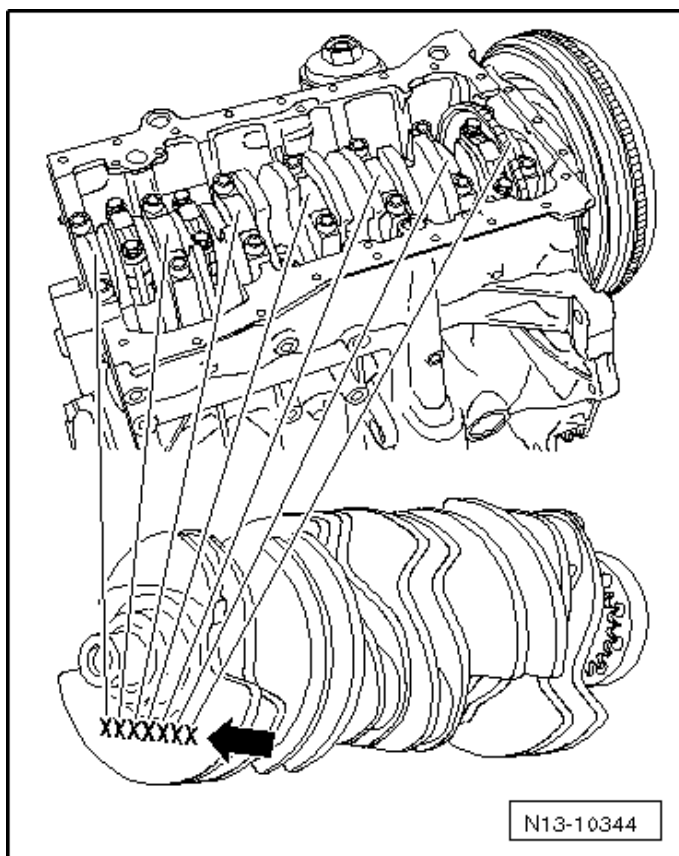
Using the letters on the cylinder block and crankshaft, determine the correct color identification for the bearing shell in the bearing cap (lower bearing shell). The first letter is for bearing cap one, the second for bearing cap two, etc.

Cylinder Block Identification



The letters are located on the oil pan sealing surface.

Crankshaft Identification



The letters are located on the outer crankshaft counterweight for cylinder 1.

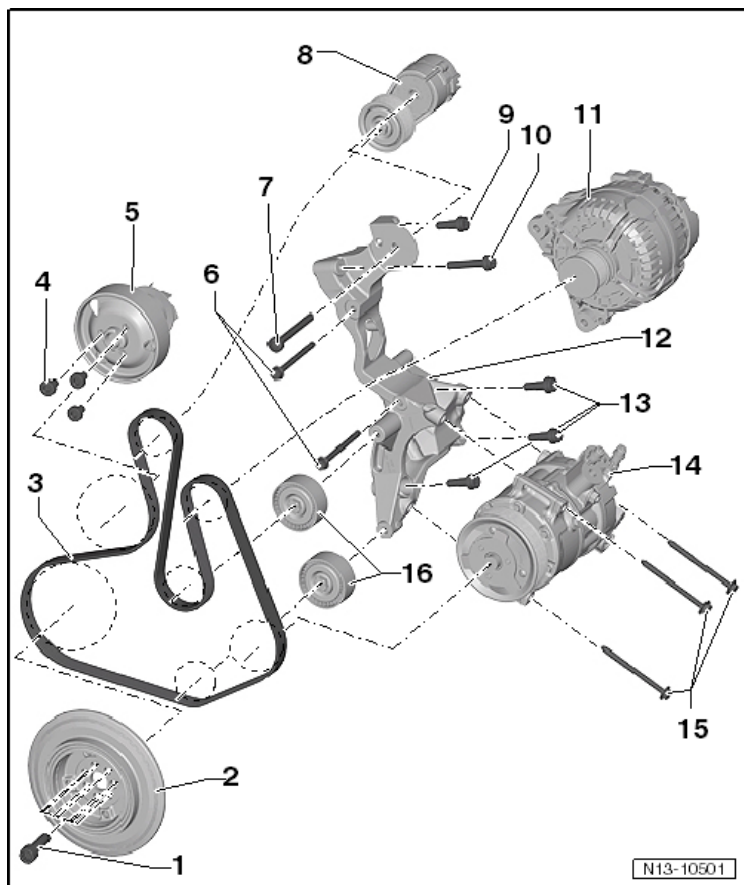
Note the letters and then match it to the color identification in the table.

Letter on the cylinder block	Letter on the crankshaft counterweight	Bearing shell color identification for the bearing cap	Bearing shell color identification for the cylinder block
A, B, C	F	Red	Red
A, B, C	E	Yellow	Red
A, B, C	D	Yellow	Yellow
A, B, C	C	Blue	Yellow
A, B, C	B	Blue	Blue
A, B, C	A	Purple	Blue
D, E, G	F	Yellow	Red
D, E, G	E	Yellow	Yellow
D, E, G	D	Blue	Yellow
D, E, G	C	Blue	Blue
D, E, G	B	Purple	Blue
D, E, G	A	Purple	Purple
H, I, K	F	Yellow	Red
H, I, K	E	Yellow	Yellow
H, I, K	D	Blue	Yellow
H, I, K	C	Blue	Blue
H, I, K	B	Purple	Blue
H, I, K	A	Purple	Purple
L, M	F	Yellow	Red
L, M	E	Blue	Yellow
L, M	D	Blue	Yellow
L, M	C	Purple	Blue
L, M	B	Purple	Purple
L, M	A	Purple	Purple

Example:

Bearing Cap	1	2	3	4	5	6	7
Letter on the cylinder block	G	H	H	H	G	E	G
Letter on the crankshaft counterweight	A	B	A	C	C	A	B
bearing shell for cylinder block color code (upper bearing shell)	Purple	Purple	Purple	Blue	Blue	Purple	Purple
Bearing cap bearing shell color code (lower bearing shell)	Purple	Blue	Purple	Blue	Blue	Purple	Blue

Ribbed Belt Drive Overview



1 - Bolt

- 60 Nm + 180° turn
- Always replace

2 - Vibration Damper

3 - Ribbed Belt

4 - Bolt

- 20 Nm

5 - Coolant Pump/Coolant Pump Pulley

6 - Bolt

- 25 Nm

7 - Bolt

- 50 Nm

8 - Ribbed Belt Tensioner

9 - Bolt

- 25 Nm

10 - Bolt

- 25 Nm

11 - Generator

12 - Accessory Bracket

13 - Bolt

- 25 Nm

14 - Air Conditioning (A/C) Compressor

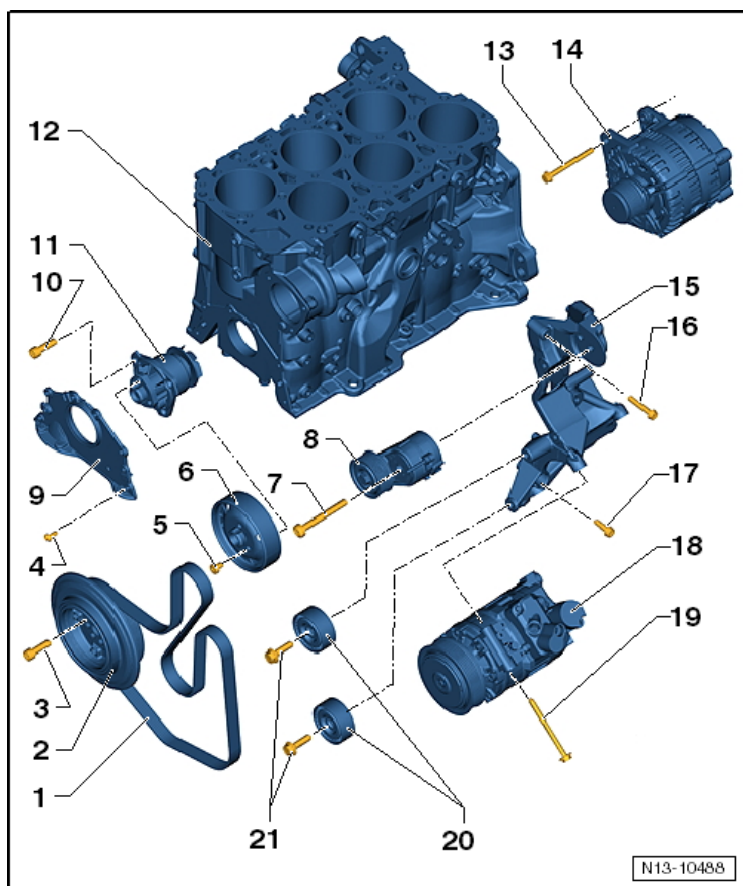
15 - Bolt

- 23 Nm
- M8 x 100

16 - Idler Roller

- 40 Nm

Cylinder Block Overview, Belt Pulley Side



- 1 - Ribbed Belt
- 2 - Vibration Damper
- 3 - Bolt
- 4 - Bolt
 - 10 Nm
- 5 - Bolt
 - 20 Nm
- 6 - Coolant Pump Pulley
- 7 - Bolt
 - 50 Nm
- 8 - Ribbed Belt Tensioner
- 9 - Sealing Flange, Belt Pulley Side
- 10 - Bolt
 - 8 Nm
- 11 - Coolant Pump
- 12 - Cylinder Block

13 - Bolt

- 25 Nm

14 - Generator

15 - Accessory Bracket

16 - Bolt

- 25 Nm

17 - Bolt

- 25 Nm

18 - A/C Compressor

19 - Bolt

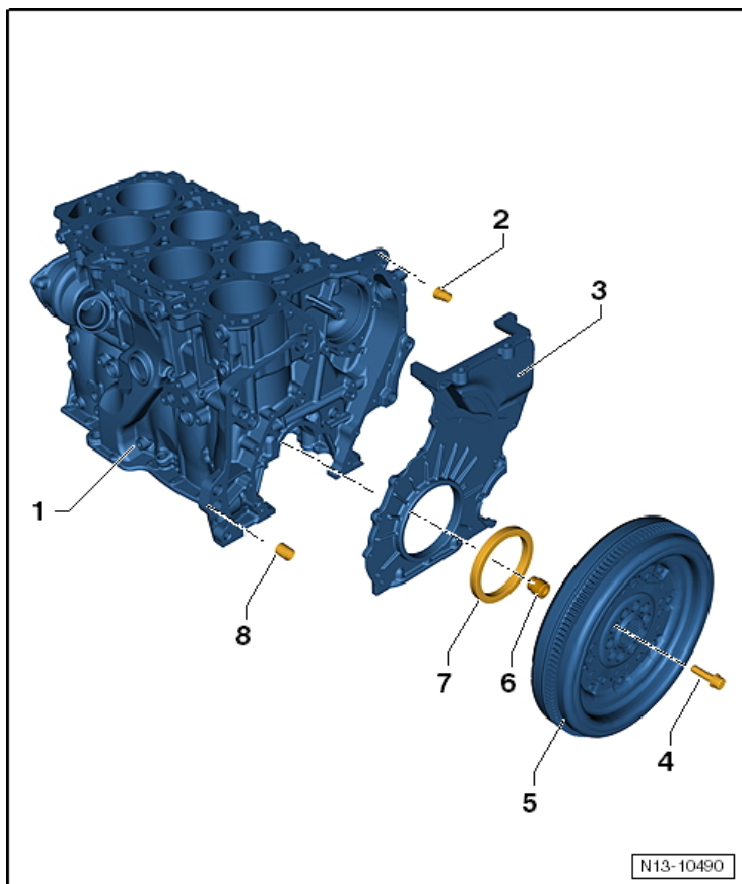
- Tightening specifications, refer to Heating, Ventilation and Air Conditioning

20 - Idler Roller

21 - Bolt

- 40 Nm

Cylinder Block Overview, Transmission Side



1 - Cylinder Block

2 - Alignment Pin

3 - Timing Chain Cover

4 - Bolt

60 Nm + 90° turn

Always replace

5 - Flywheel

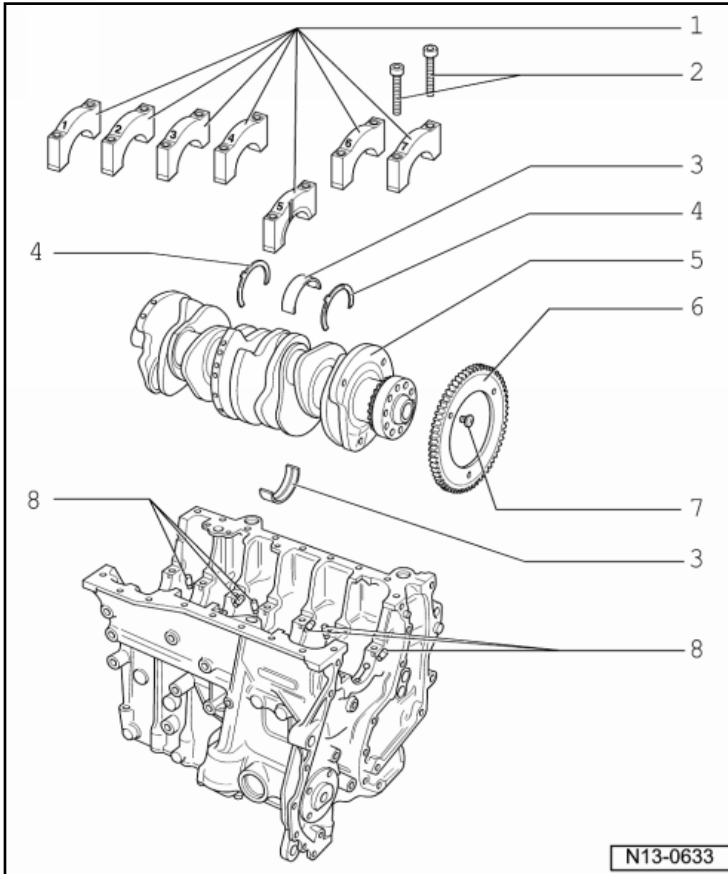
Not available in the US/Canadian market.

6 - Needle Bearing

7 - Seal

8 - Alignment Sleeve

Crankshaft Overview



1 - Bearing Cap

2 - Bolt

- 30 Nm + 180° turn
- Always replace
- 2 additional 90° (1/4) turns is permitted

3 - Bearing Shells, 1 through 7

4 - Thrust Washer

5 - Crankshaft

6 - Sensor Wheel

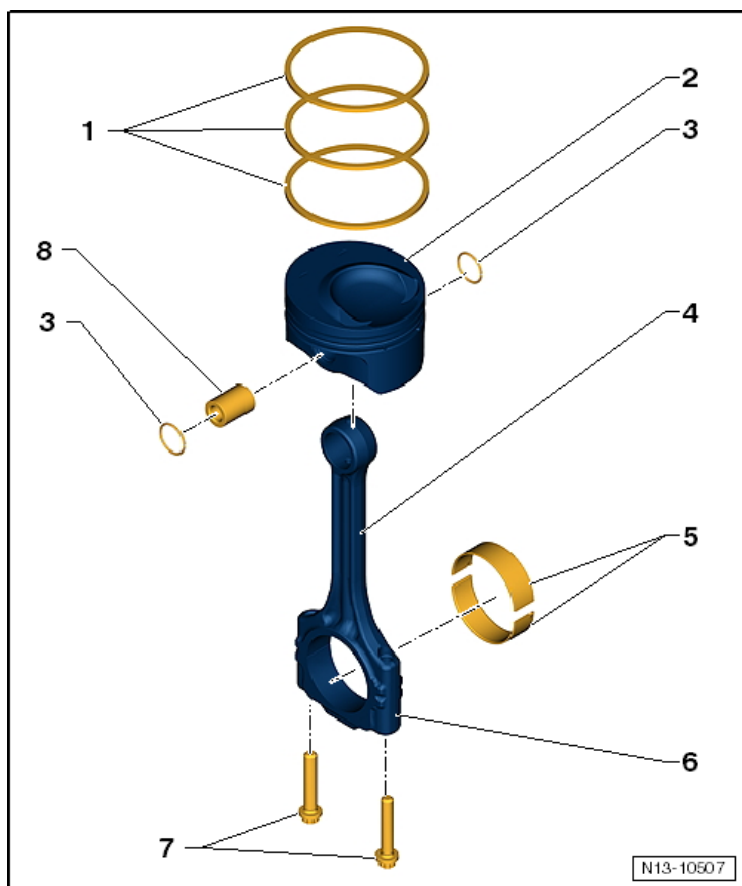
- Always replace

7 - Bolt

- 10 Nm + 90° turn
- Always replace

8 - Oil Spray Jet

Piston and Connecting Rod Overview



1 - Piston Ring

2 - Piston

3 - Circlip

4 - Connecting Rod

5 - Bearing Shell

6 - Connecting Rod Bearing Cap

7 - Bolt

45 Nm + 90° turn

Always replace

8 - Piston Pin

Crankshaft Dimensions

Reworking the crankshaft is not permitted.

Crankshaft bearing journal diameter	Connecting rod bearing journal diameter
59.958 to 59.978 mm	53.958 to 53.978 mm

Piston Ring End Gaps

Piston ring dimension in mm	Gap	
	New	Wear limit
Compression ring	0.30 to 0.45	1.0
Stepped compression ring	0.30 to 0.50	1.0
Oil scraping ring	0.20 to 0.90	1.2

Piston Ring Clearance

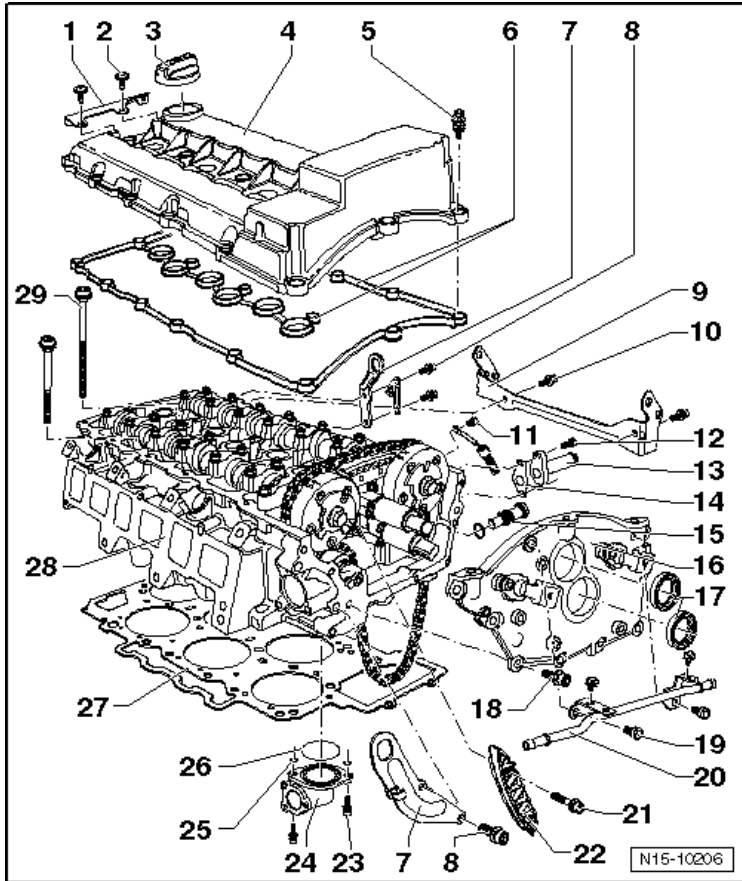
Piston ring dimension in mm	Ring to groove clearance	
	New	Wear limit
Compression ring	0.04 to 0.06	0.12
Stepped compression ring	0.03 to 0.06	0.15
Oil scraping ring	0.02 to 0.06	0.15

Piston and Cylinder Dimensions

Honing dimension in mm	Piston diameter	Cylinder bore diameter
Basic dimension	88.945	89.010

Cylinder Head, Valvetrain – 3.6L CNNA

Cylinder Head and Cover Overview



- 1 - Bracket
- 2 - Bolt
 - 10 Nm
- 3 - Cap
- 4 - Cylinder Head Cover
- 5 - Bolt
 - 10 Nm
- 6 - Cylinder Head Cover Gasket
- 7 - Lifting Eye
- 8 - Bolt
 - 23 Nm
- 9 - Intake Manifold Support
- 10 - Bolt
 - 23 Nm

11 - Bolt

- 10 Nm

12 - Bolt

- 10 Nm

13 - Water Connection

14 - Seal Ring

- Always replace

15 - Chain Tensioner

- 50 Nm

16 - Cover

- Coat the sealing surface with silicone adhesive sealant -D 176 501 A1-.

17 - Seal

18 - Bolt

- 8 Nm

19 - Bolt

- 8 Nm

20 - Coolant Pipe

21 - Bolt

- 23 Nm

22 - Guide Rail

23 - Bolt

- 23 Nm
- Install using liquid locking fluid -D 000 600 A2-.

24 - Water Connection

25 - O-ring

- Always replace

26 - Seal

- Always replace

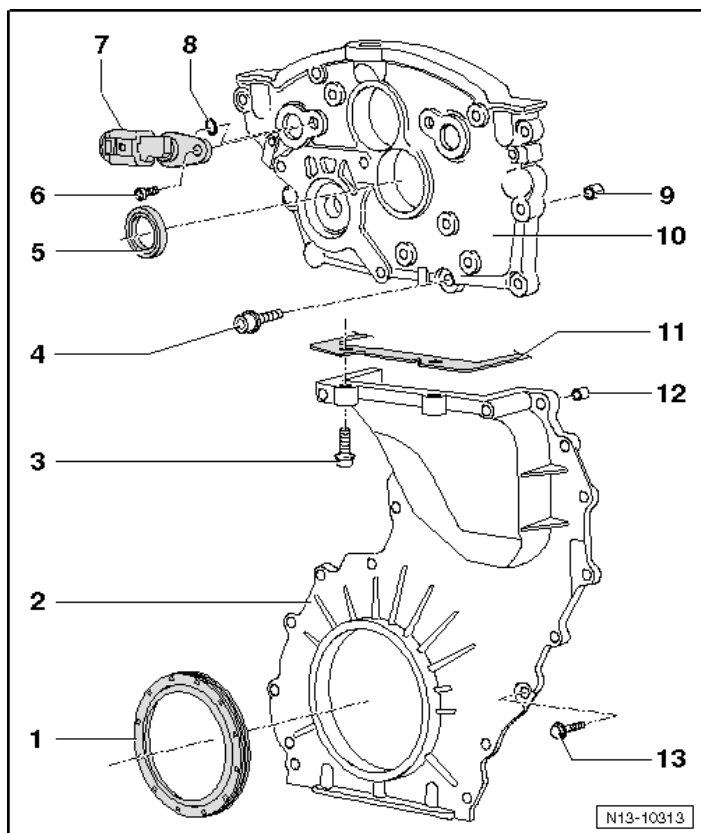
27 - Cylinder Head Gasket

28 - Cylinder Head

29 - Bolt

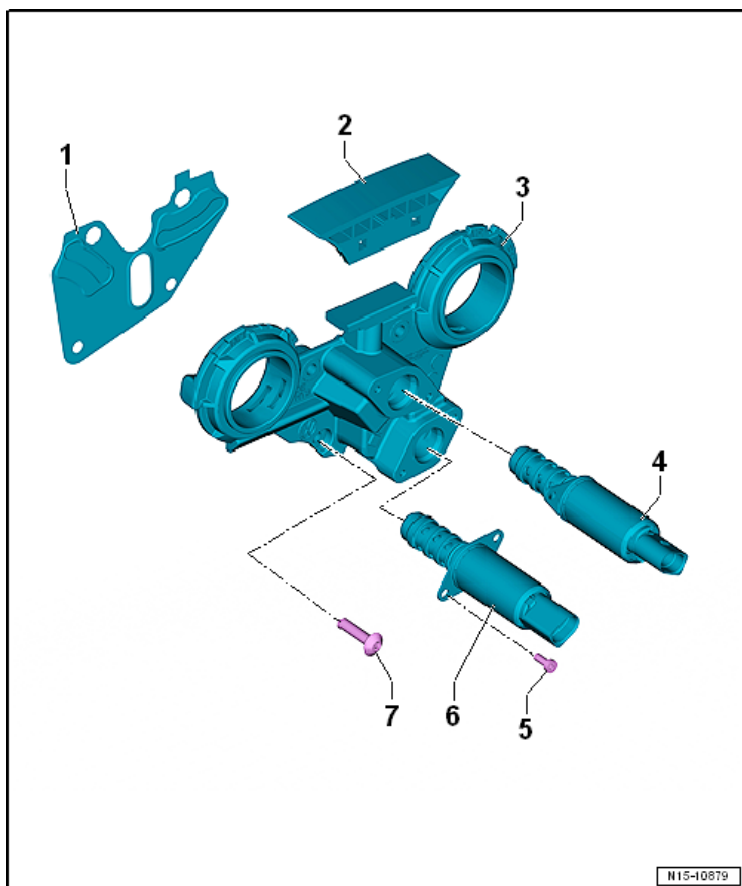
- Always replace
- Before installing, coat the bolt with liquid locking fluid -D 197 300 A2
- Follow the installation instructions and sequence when tightening. Refer to Cylinder Head Bolt Tightening Sequence and Specification below.

Cover and Sealing Flange Overview



- 1 - Seal
- 2 - Sealing Flange
- 3 - Bolt
 - 23 Nm
- 4 - Bolt
 - 8 Nm
- 5 - Seal
- 6 - Bolt
 - 8 Nm
- 7 - Camshaft Position Sensor -G40-/Camshaft Position Sensor 2 -G163-
- 8 - O-ring
 - Always replace
- 9 - Alignment Pins
- 10 - Cover
- 11 - Cylinder Head Gasket
- 12 - Alignment Pins
- 13 - Bolt
 - 10 Nm

Control Housing Overview



N15-10879

1 - Gasket

- Replace

2 - Guide Rail

3 - Control Housing

4 - Camshaft Adjustment Valve 1 -N205-

5 - Bolt

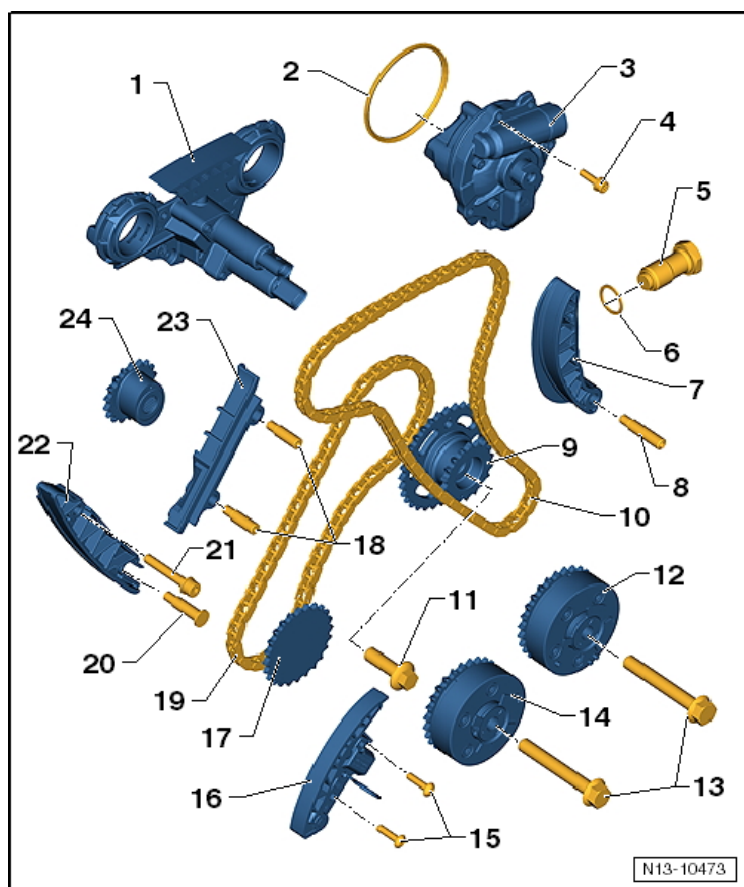
- 3.8 Nm

6 - Exhaust Camshaft Adjustment Valve 1 -N318-

7 - Bolt

- 8 Nm + 180° turn
- Always replace

Camshaft Timing Chain Overview



1 - Control Housing

2 - Seal

- Always replace

3 - Oil Pump

4 - Bolt

- 8 Nm
- Install using liquid locking fluid -D 000 600 A2-

5 - Chain Tensioner

- 50 Nm

6 - Seal

7 - Tensioning Rail

8 - Pin

- 10 Nm

9 - Sprocket

10 - Camshaft Timing Chain

11 - Bolt

- 60 Nm + 90° turn
- Always replace

12 - Exhaust Camshaft Adjuster

13 - Intake Camshaft Adjuster

14 - Intake Camshaft Adjuster

15 - Bolt

- 10 Nm

16 - Chain Tensioner with Tensioning Rail

17 - Sprocket

18 - Pin

- 10 Nm

19 - Oil Pump Timing Chain

20 - Pin

- 10 Nm

21 - Pin

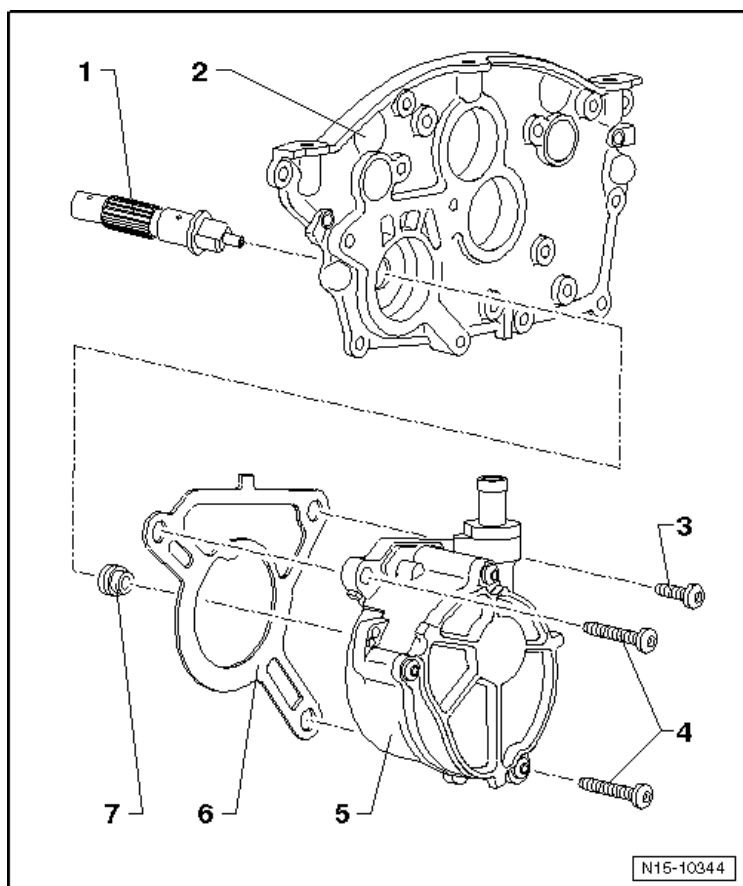
- 23 Nm

22 - Guide Rail

23 - Guide Rail

24 - High Pressure Pump Chain Sprocket

Vacuum Pump Overview



1 - Drive Shaft

2 - Cover

3 - Bolt, Short

8 Nm

4 - Bolt, Long

8 Nm

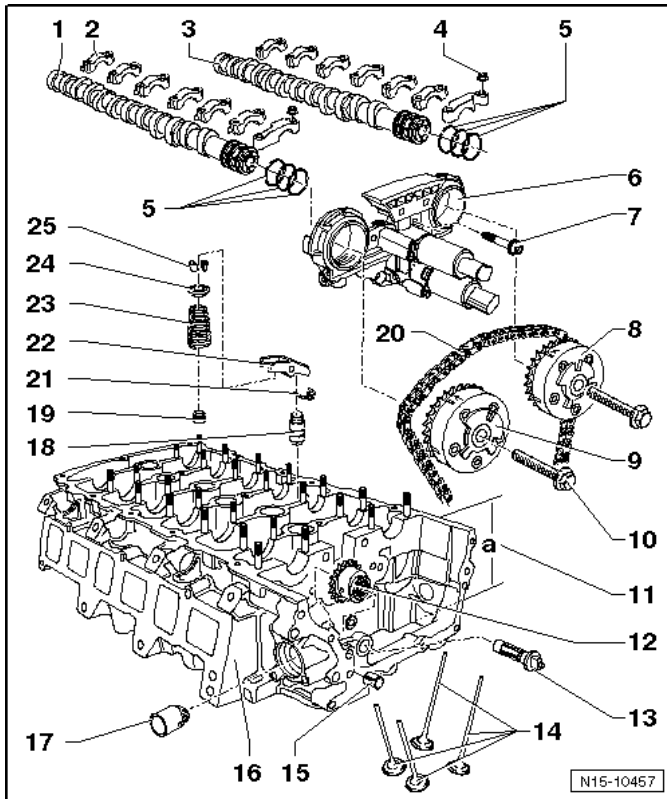
5 - Vacuum Pump

6 - Gasket

Always replace

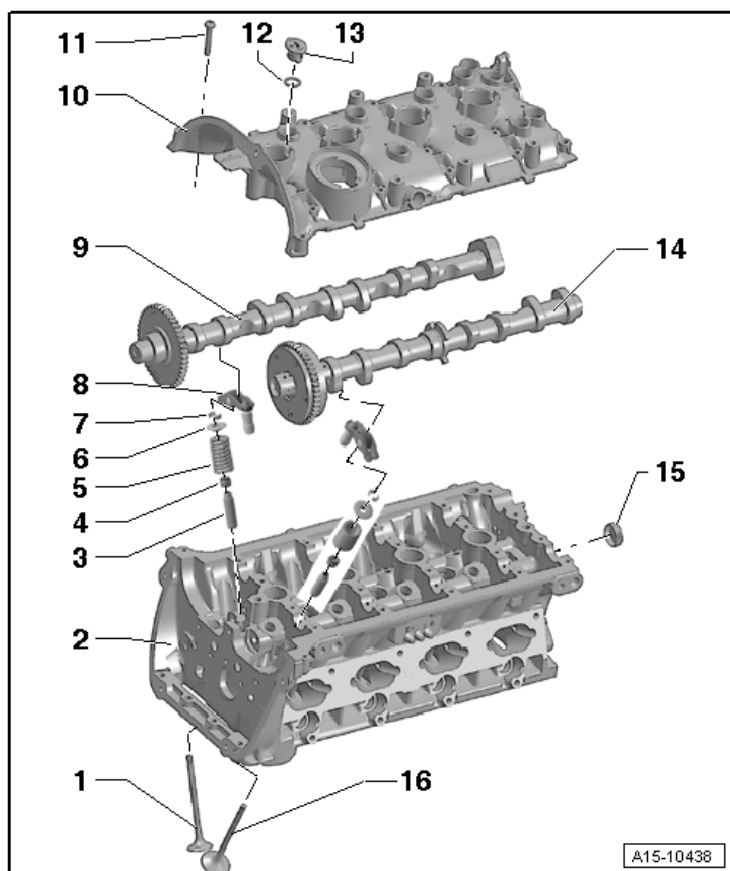
7 - Seal

Valvetrain Overview



- 1 - Exhaust Valve**
- 2 - Cylinder Head**
- 3 - Valve Guide**
- 4 - Valve Stem Seal**
- 5 - Valve Spring**
- 6 - Valve Spring Plate**
- 7 - Valve Retainers**
- 8 - Roller Rocker Arm with Hydraulic Lash Adjuster**
- 9 - Exhaust Camshaft**
- 10 - Cylinder Head Cover**
- 11 - Bolt**
 - Tightening sequence, see Cylinder Head Cover Bolt Tightening Sequence below
- 12 - O-ring**
 - Always replace
- 13 - Plug**
- 14 - Intake Camshaft**
- 15 - Cap**
 - Always replace
- 16 - Intake valve**

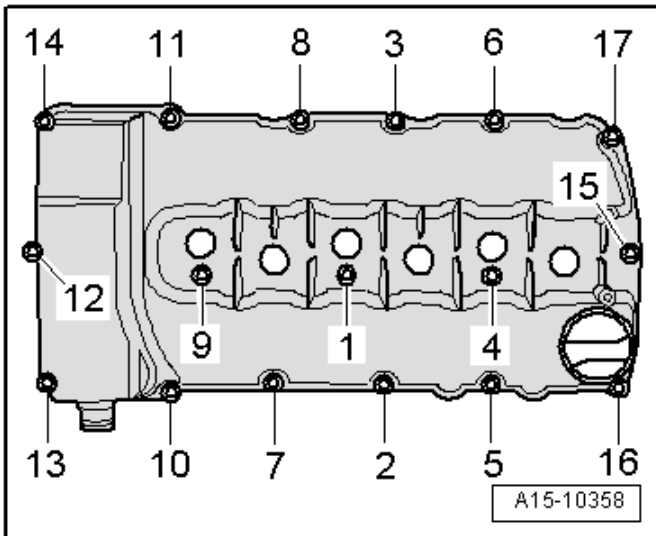
Valvetrain Overview



- 1 - Intake Camshaft**
- 2 - Camshaft Bearing Cap**
- 3 - Exhaust Camshaft**
- 4 - Nut**
 - 5 Nm + 45° turn
- 5 - Seal**
- 6 - Control Housing**
- 7 - Bolt**
 - 8 Nm + 180° turn
- 8 - Exhaust Camshaft Adjuster**
- 9 - Intake Camshaft Adjuster**
- 10 - Bolt**
 - 60 Nm + 90° turn
 - Always replace
- 11 - Cylinder Head Height**
- 12 - High Pressure Pump Chain Sprocket**
- 13 - Drive Shaft**

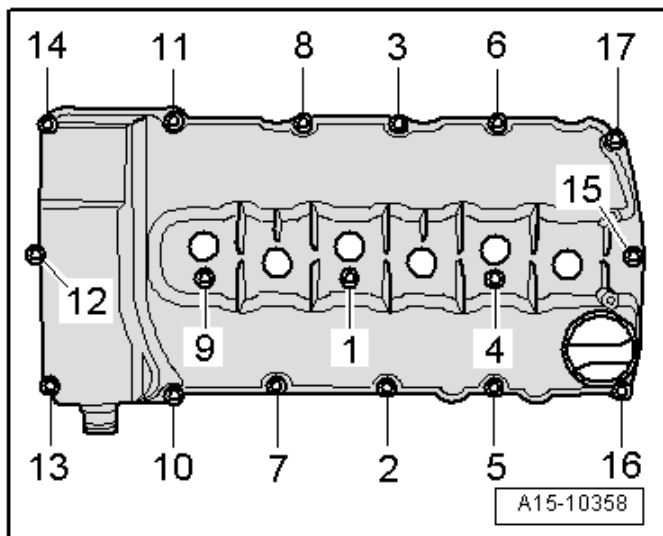
- 14 - Valves
- 15 - Alignment Sleeve
- 16 - Cylinder Head
- 17 - Cam Follower
- 18 - Hydraulic Lash Adjuster
- 19 - Valve Stem Seal
- 20 - Camshaft Timing Chain
- 21 - Clip
- 22 - Roller Rocker Arm
- 23 - Valve Spring
- 24 - Valve Spring Retainer
- 25 - Valve Retainer

Cylinder Head Cover Loosening



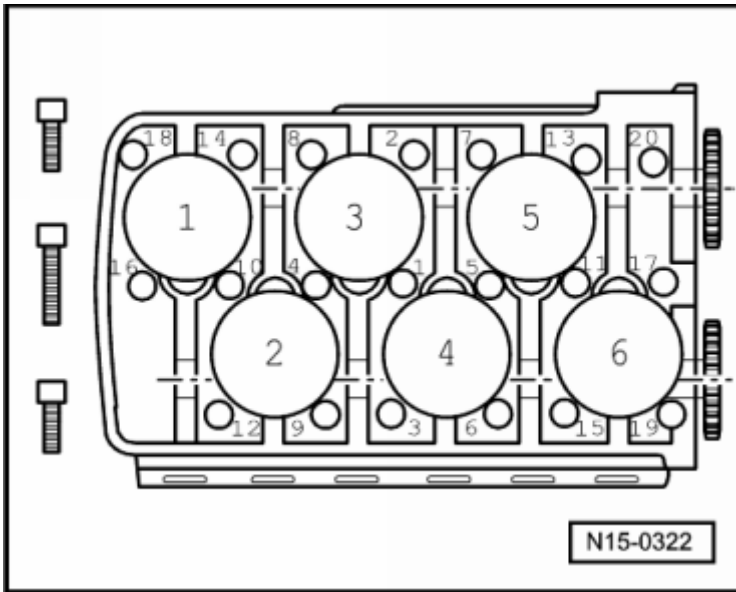
Step	Component
1	Loosen the cylinder head cover bolts starting from the inside and working toward the outside -17 through 1-.

Cylinder Head Cover Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 17 tighten the bolts working from the inside toward the outside	10

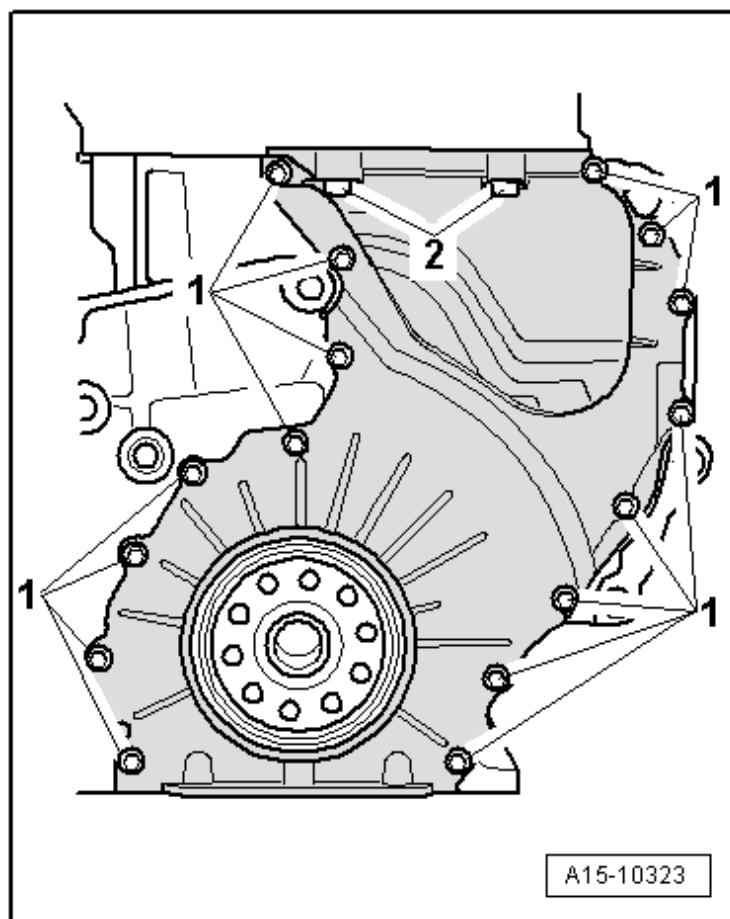
Cylinder Head Tightening Specifications



Engine –
3.6L CNNA

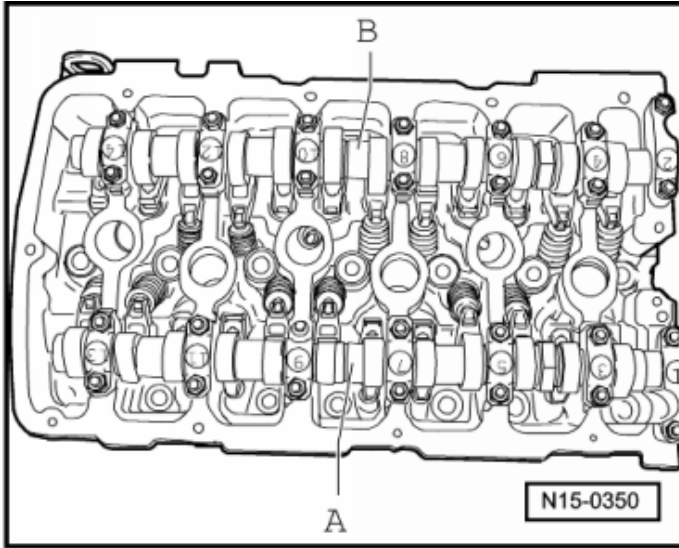
Step	Component	Nm
1	Tighten the cylinder head bolts in the specified sequence, starting from the inside and working toward outside, as follows	15
2	Tighten bolts	30
3	Tighten bolts	an additional 90° (¼ turn)
4	Tighten bolts	an additional 90° (¼ turn)

Sealing Flange to Cylinder Block Bolt Tightening Sequence and Specifications



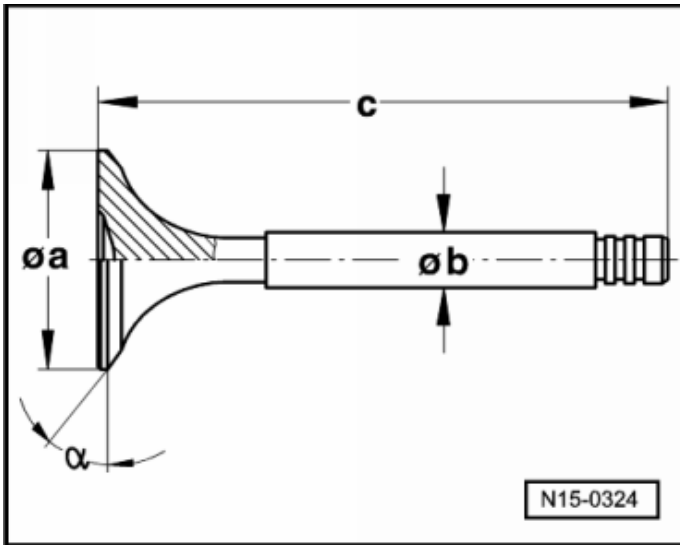
Step	Component	Nm
1	Tighten bolts 1	5
2	Tighten bolts 2	23
3	Tighten bolts 1	10

Camshaft Bearing Cap Tightening Specifications



Step	Component	Nm
A - Intake Camshaft		-
1	Alternately tighten bearing caps 5 and 9 and in a diagonal sequence	5 plus an additional 45° (1/8 turn)
2	Alternately tighten bearing caps 1 and 13 and in a diagonal sequence	5 plus an additional 45° (1/8 turn)
3	Tighten bearing cap 7	5 plus an additional 45° (1/8 turn)
4	Alternately tighten bearing caps 3 and 11 and in a diagonal sequence	5 plus an additional 45° (1/8 turn)
B - Exhaust Camshaft		-
1	Alternately tighten bearing caps 6 and 10 and in a diagonal sequence	5 plus an additional 45° (1/8 turn)
2	Alternately tighten bearing caps 2 and 14 and in a diagonal sequence	5 plus an additional 45° (1/8 turn)
3	Tighten bearing cap 8	5 plus an additional 45° (1/8 turn)
4	Alternately tighten bearing caps 4 and 12 and in a diagonal sequence	5 plus an additional 45° (1/8 turn)

Valve Dimensions



Intake Valve

Dimension		Short valve	Long valve
Diameter a	mm	33.20	33.20
Diameter b	mm	5.98	5.98
c	mm	102.46	136.36
α	$^{\circ}$	44° 40'	44° 40'

Exhaust Valve

Dimension		Short valve	Long valve
Diameter a	mm	30.20	30.20
Diameter b	mm	5.97	5.97
c	mm	102.20	136.20
α	$^{\circ}$	44° 40'	44° 40'

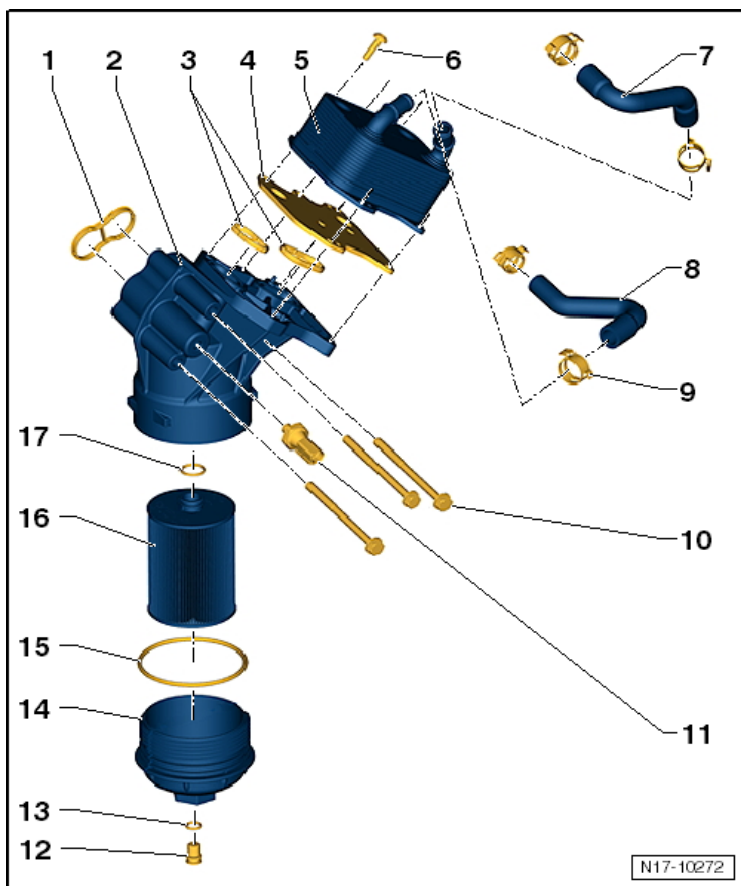
NOTE: Intake and exhaust valves must not be refaced by grinding. Only lapping is permitted.

Compression Pressures

New bar positive pressure	Wear limit bar positive pressure	Difference between cylinders bar positive pressure
11.0 to 13.0	8.0	Max. 3.0

Lubrication – 3.6L CNNA

Oil Filter Housing/Oil Pressure Switch Overview



- 1 - Seal
 - Always replace
- 2 - Oil Filter Housing
- 3 - Seal
 - Always replace
- 4 - Plate
- 5 - Engine Oil Cooler
- 6 - Bolt
 - 8 Nm
- 7 - Coolant Hose
- 8 - Coolant Hose
- 9 - Clamp
- 10 - Bolt
 - 23 Nm
- 11 - Bolt
- 12 - Bolt
- 13 - Seal
- 14 - Plate
- 15 - Seal
- 16 - Oil Filter
- 17 - Seal

11 - Oil Pressure Switch -F1-

- 20 Nm

12 - Oil Drain Plug

- 10 Nm

13 - O-ring

- Always replace

14 - Cap

- 25 Nm

15 - O-ring

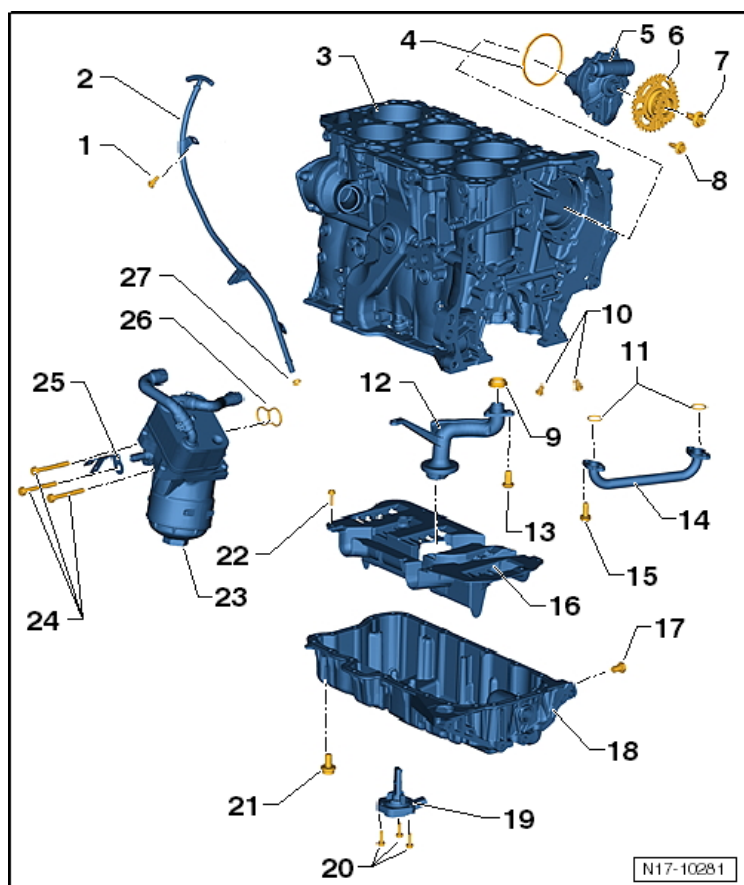
- Always replace

16 - Oil Filter

17 - O-ring

- Always replace

Oil Pan and Oil Pump Overview



1 - Bolt

- 6 Nm

2 - Guide Tube

3 - Cylinder Block

4 - O-ring

- Always replace
- Coat with oil before installing

5 - Oil Pump

6 - Sprocket

7 - Bolt

- 60 Nm + 90° (turn)
- Always replace

8 - Bolt

- 8 Nm

9 - Seal

- Always replace

10 - Oil Spray Jet

11 - Seal

- Coat with oil before installing

12 - Oil Suction Pipe

13 - Bolt

- 8 Nm
- Install using liquid locking fluid

14 - Oil Pipe

15 - Bolt

- 8 Nm
- Install using liquid locking fluid

16 - Baffle Plate

17 - Oil Drain Plug

- 30 Nm
- Always replace

18 - Oil Pan

19 - Oil Level Thermal Sensor -G266-

20 - Bolt

- 10 Nm

21 - Bolt

- 12 Nm

22 - Bolt

- 10 Nm

23 - Oil Filter Housing

24 - Bolt

- 23 Nm

25 - Oil Pressure Switch

26 - Seal

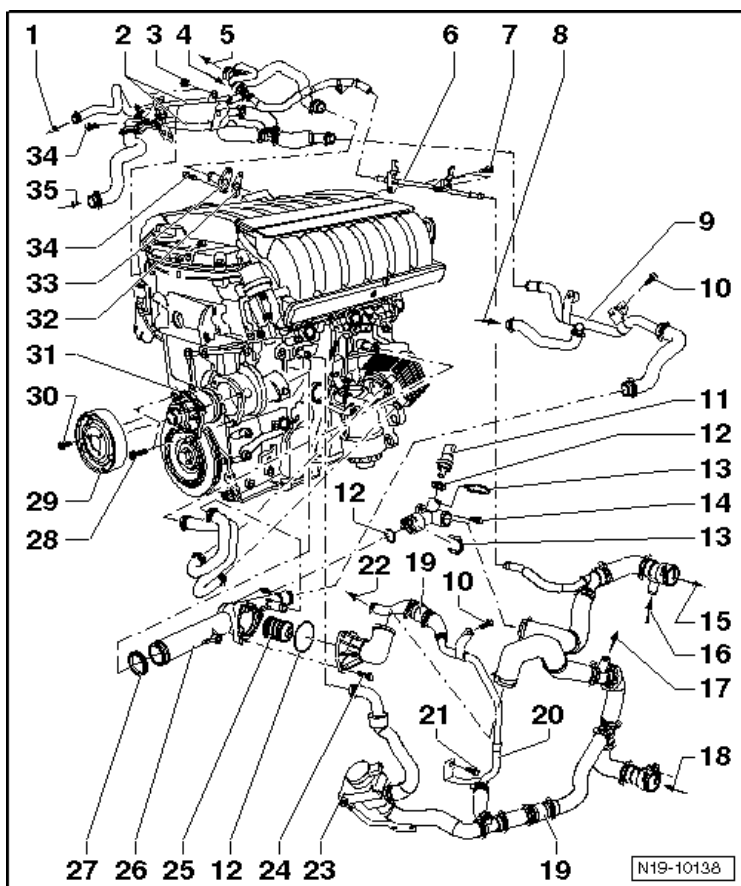
- Always replace
- Coat with oil before installing

27 - Seal

- Always replace
- Coat with oil before installing

Cooling System – 3.6L CNNA

Coolant Pump and Thermostat Overview



- 1 - To Expansion Tank Upper Connection
- 2 - Rear Coolant Pipe
- 3 - Nut
 - 20 Nm
- 4 - From Heater Core
- 5 - To Heater Core
- 6 - Coolant Pipe
- 7 - Bolt
 - 10 Nm
- 8 - From Transmission Oil Cooler
- 9 - Coolant Pipe, Side, Top
- 10 - Bolt
 - 10 Nm
- 11 - Engine Coolant Temperature Sensor -G62-

12 - O-ring

- Always replace

13 - Clip

- Always replace

14 - Bolt

- 10 Nm

15 - To Radiator Upper Connection

16 - From Auxiliary Cooler

- Not installed for the US/Canadian market.

17 - To Auxiliary Cooler

- Not installed for the US/Canadian market.

18 - From Radiator Lower Connection

19 - Check Valve

20 - Coolant Pipe, Side, Lower

21 - Bolt

- 25 Nm

22 - To Transmission Fluid Cooler

23 - After-Run Coolant Pump -V51-

24 - Bolt

- 8 Nm

25 - Coolant Thermostat

26 - Coolant Pipe

27 - Seal

- Always replace

28 - Bolt

- 8 Nm

29 - Coolant Pump Pulley

30 - Bolt

- 20 Nm

31 - Coolant Pump

32 - Seal

- Always replace

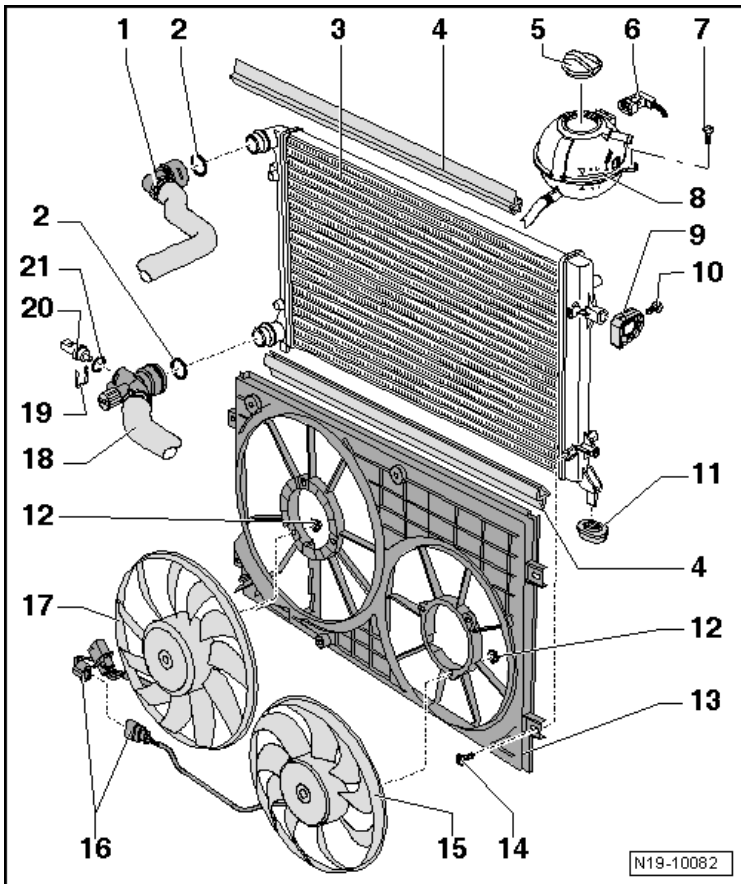
33 - Water Connection

34 - Bolt

- 10 Nm

35 - From Coolant Expansion Tank Lower Connection

Radiator/Coolant Fan Overview



- 1 - Upper Coolant Hose
- 2 - O-ring
- 3 - Radiator
- 4 - Seal
- 5 - Cap
- 6 - Connector
- 7 - Bolt
 - 5 Nm
- 8 - Expansion Tank
- 9 - Bracket
- 10 - Bolt
 - 5 Nm
- 11 - Mount
- 12 - Nut
 - 10 Nm
- 13 - Fan Shroud

14 - Bolt

- 5 Nm

15 - Coolant Fan 2 -V177-

16 - Connector

17 - Coolant Fan -V7-

18 - Lower Coolant Hose

19 - Clip

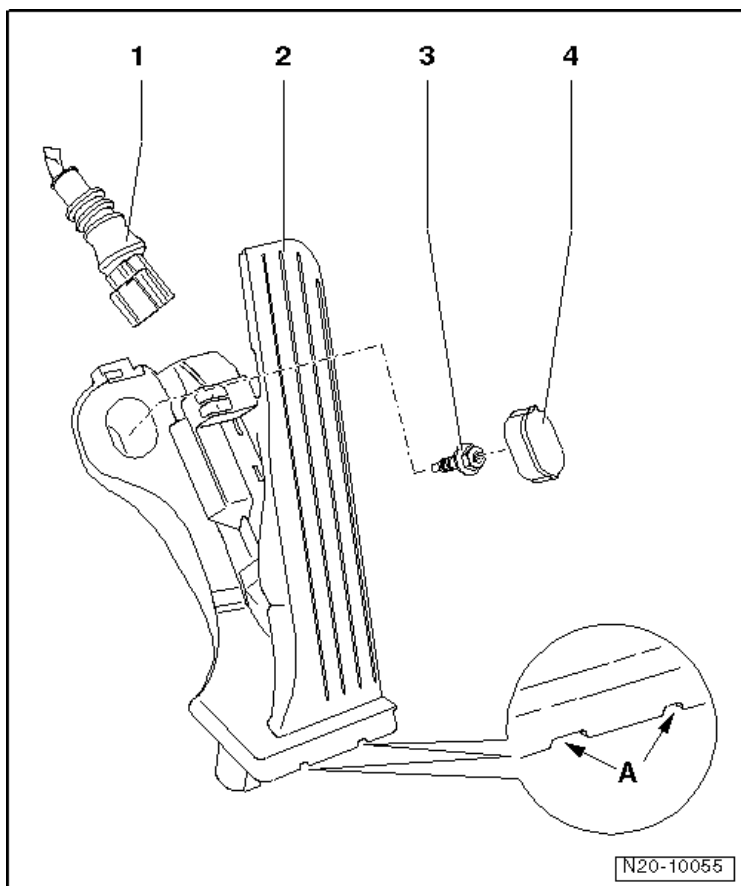
20 - Engine Coolant Temperature Sensor on Radiator Outlet -G83-

21 - O-ring

- Always replace

Fuel Supply – 3.6L CNNA

Accelerator Pedal Module Overview



1 - Connector

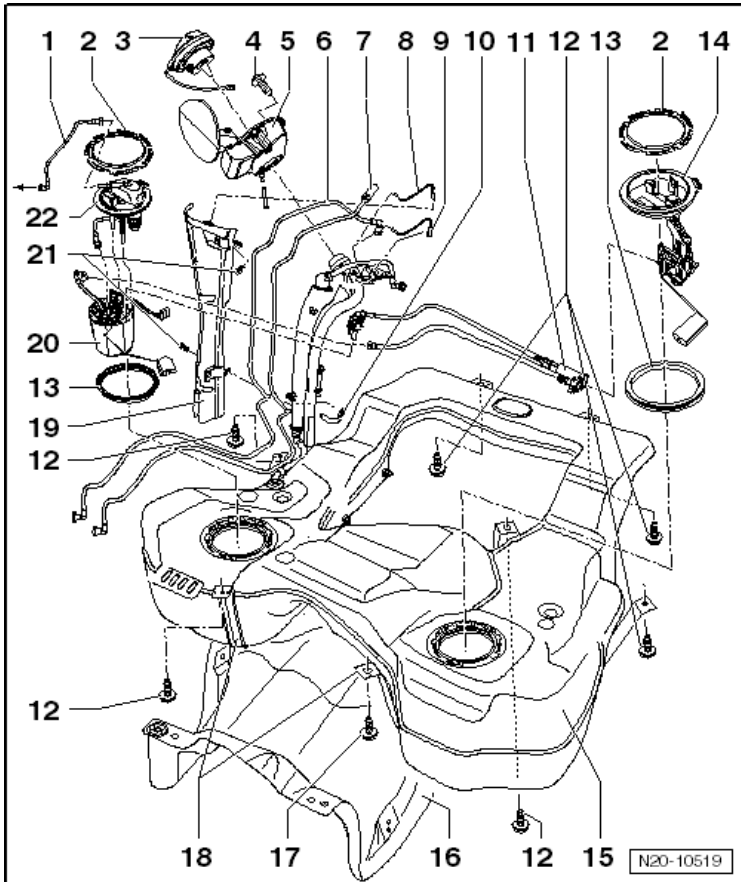
2 - Accelerator Pedal Position Sensor -G79- with Accelerator Pedal Position Sensor 2 -G185-

3 - Bolt

□ 10 Nm

4 - Cap

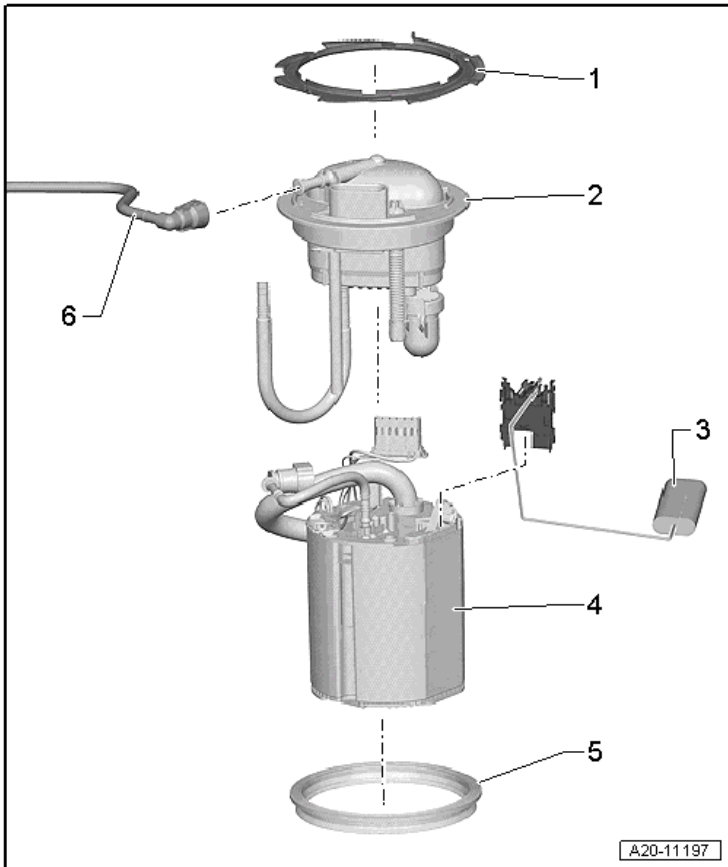
Fuel Tank and Attachments Overview



- 1 - Supply Line**
- 2 - Lock Ring**
 - 110 Nm
- 3 - Cap**
- 4 - Bolt**
 - 1.5 Nm
- 5 - Fuel Filler Door Unit**
- 6 - Vent Line**
- 7 - Vacuum Line**
- 8 - Ground Connection**
- 9 - Ground Connection**
- 10 - Clip**
- 11 - Suction Jet Pump**
- 12 - Bolt**
 - 25 Nm
- 13 - Seal**
 - Always replace

- 14 - Fuel Level Sensor 2 -G169-**
- 15 - Fuel Tank**
- 16 - Heat Shield**
- 17 - Bolt**
 - 25 Nm
- 18 - Securing Strap**
- 19 - Protective Plate**
- 20 - Fuel Delivery Unit**
- 21 - Rivets**
- 22 - Flange With Fuel Filter**

Fuel Delivery Unit/Fuel Level Sensor Overview



1 - Lock Ring

- 110 Nm

2 - Flange

3 - Fuel Level Sensor -G-

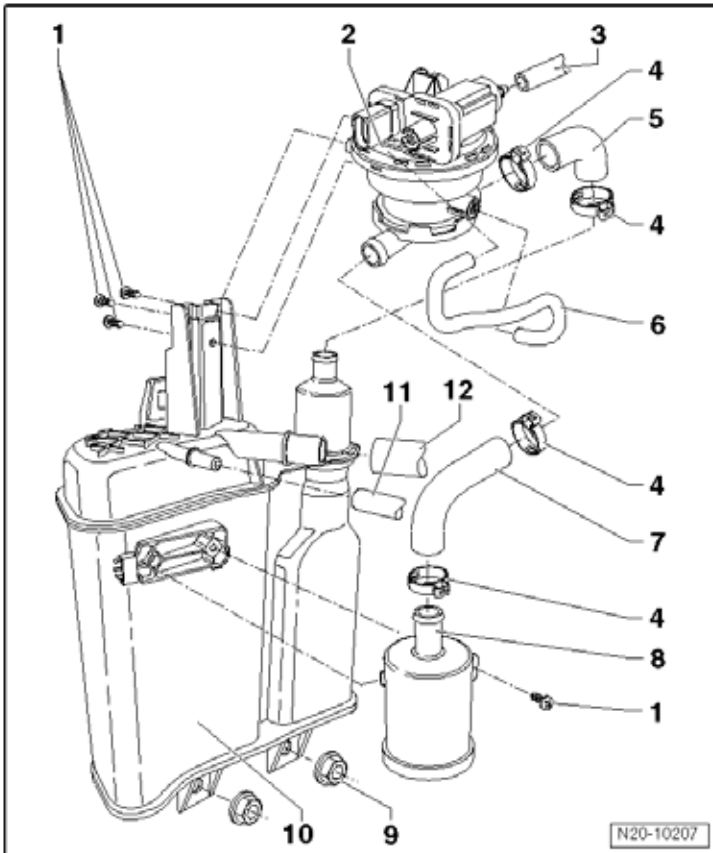
4 - Fuel Delivery Unit

5 - Seal

- Always replace
- Lubricate with fuel only when installing the flange

6 - Fuel Line

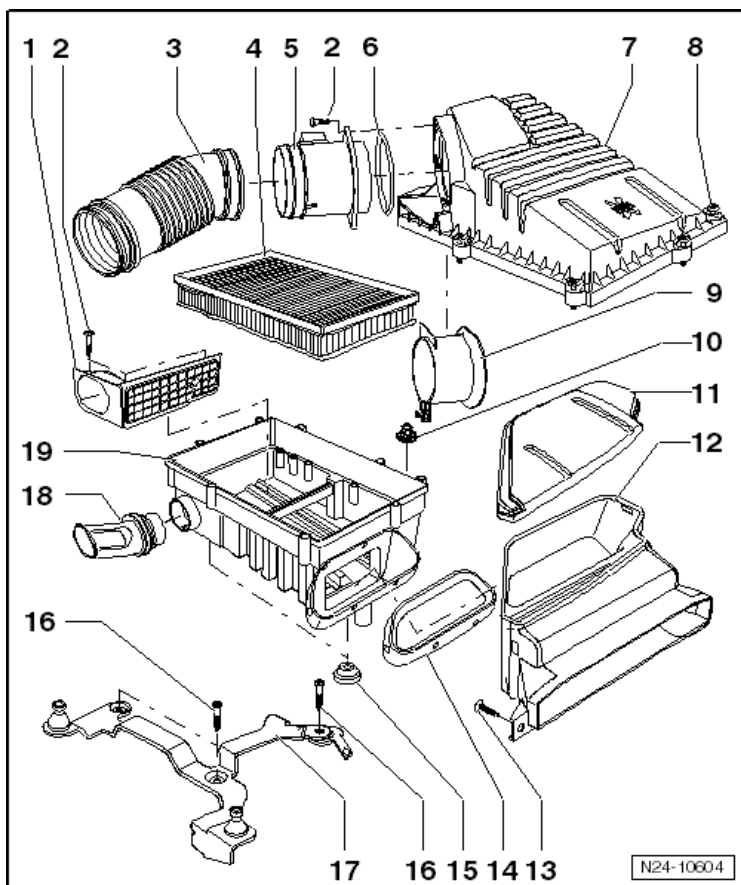
EVAP System Overview



- 1 - Bolts
- 2 - Leak Detection Pump -V144-
- 3 - Vacuum Line
- 4 - Clamp
- 5 - Connecting Hose
- 6 - Vacuum Hose
- 7 - Connecting Hose
- 8 - Air Filter
- 9 - Nut
 - 10 Nm
- 10 - EVAP Canister
- 11 - Vent Line
- 12 - Vent Line

Multiport Fuel Injection – 3.6L CNNA

Air Filter Housing Overview



- 1 - Regulator Door
- 2 - Screw
 - 2 Nm
- 3 - Connecting Pipe
- 4 - Air Filter Element
- 5 - Mass Airflow Sensor -G70-
- 6 - Seal
- 7 - Upper Air Filter Housing
- 8 - Bolt
 - 2 Nm
- 9 - Connection
- 10 - Nut
 - 8 Nm
- 11 - Cover
- 12 - Air Duct

13 - Screw

5 Nm

14 - Seal

15 - Rubber Bushing

16 - Bolt

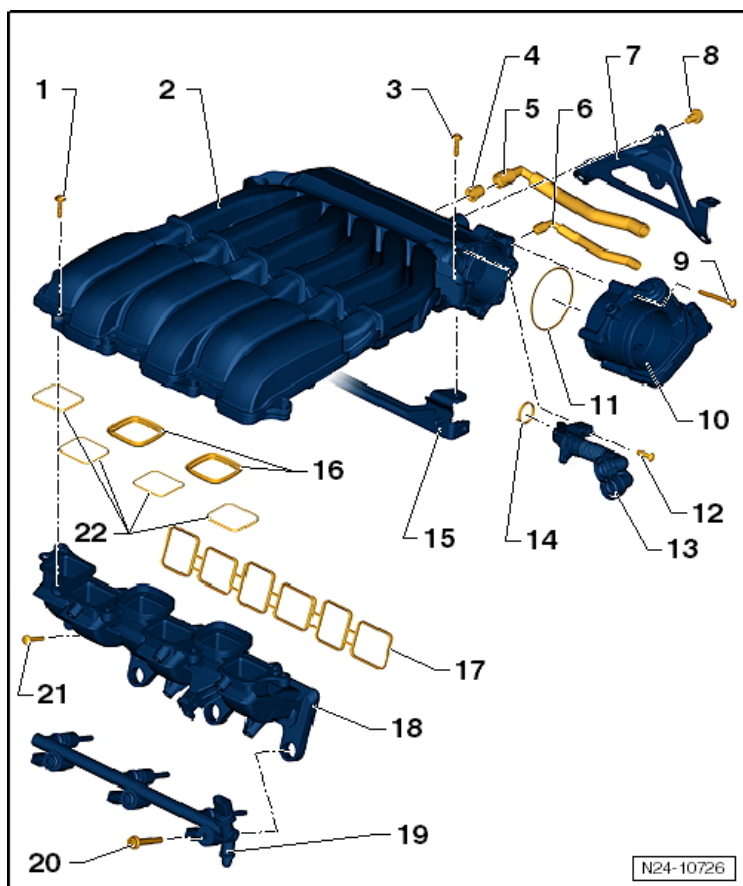
10 Nm

17 - Bracket

18 - Connection

19 - Lower Air Filter Housing

Intake Manifold Overview



1 - Bolt

- 10 Nm

2 - Upper Intake Manifold

3 - Bolt

- 10 Nm

4 - Grommet

5 - To Brake Booster

6 - From EVAP Canister Purge Regulator Valve 1

7 - Fuel Injectors

8 - Bolt

- 20 Nm

9 - Bolt

- 7 Nm

10 - Throttle Valve Control Module -J338-

11 - Gasket

- Always replace

12 - Bolt

- 3.5 Nm

13 - Vent Hose

14 - Gasket

- Always replace

15 - Intake Manifold Front Support

16 - Gasket

17 - Gasket

- Always replace

18 - Lower Intake Manifold

19 - Fuel Rail

20 - Bolt

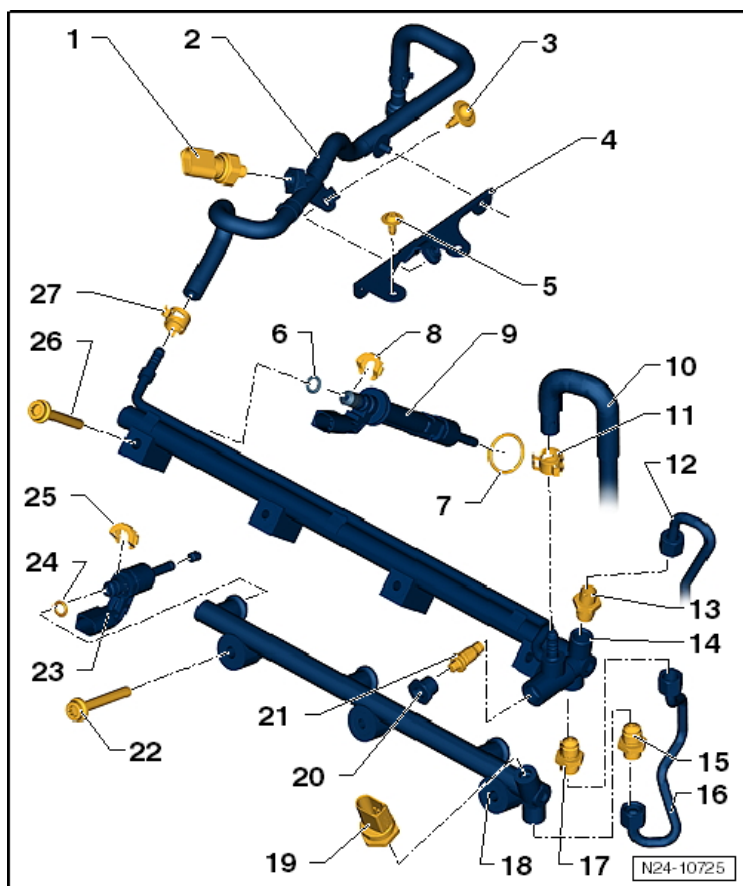
- 30 Nm + 90° turn
- Always replace

21 - Bolt

- 8 Nm

22 - Seal

Fuel Rail and Injector Overview



1 - Low Fuel Pressure Sensor -G410-

- 15 Nm

2 - Fuel Supply Hose

3 - Bolt

- 8 Nm

4 - Bracket

5 - Bolt

- 8 Nm

6 - O-ring

- Always replace

7 - Seal

- Always replace
- Lubricate with clean engine oil

8 - Spring

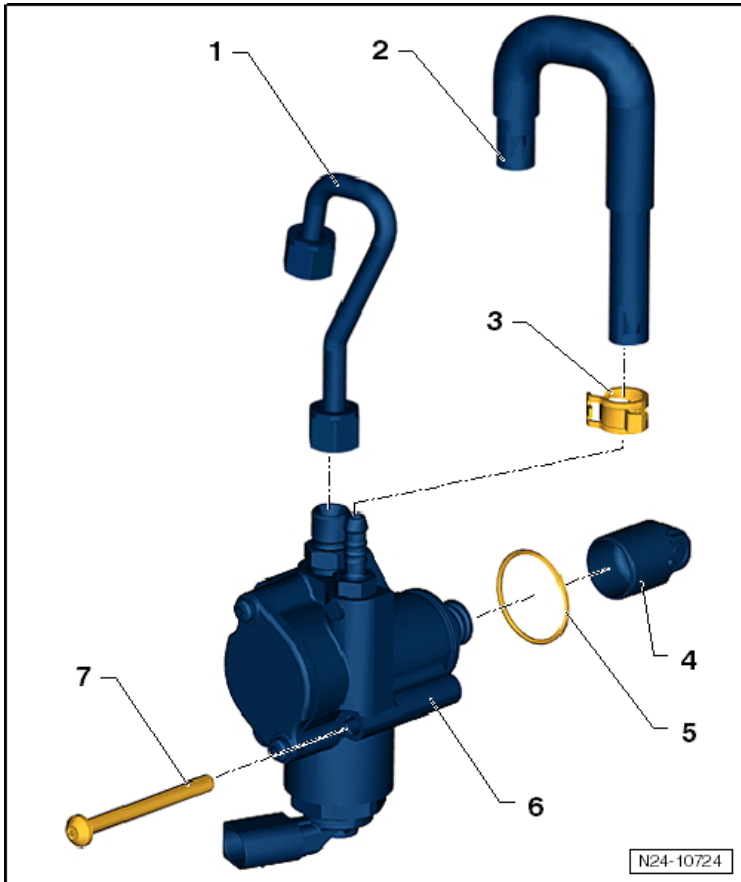
- Replace each time the fuel rail is removed.

9 - Cylinder 1 Fuel Injector -N30-

10 - Low Pressure Fuel Hose

- 11 - Spring Clamp**
- 12 - High Pressure Fuel Pipe**
 - 28 Nm
- 13 - Pressure Relief Valve**
- 14 - Fuel Rail**
- 15 - Pressure Relief Valve**
- 16 - Connecting Pipe**
 - 28 Nm
- 17 - Pressure Relief Valve**
- 18 - Fuel Rail**
- 19 - Fuel Pressure Sensor -G247-**
 - 22 Nm
- 20 - Cap**
- 21 - Gasket**
 - Always replace
- 22 - Bolt**
 - 30 Nm + 90° turn
 - Always replace
- 23 - Cylinder 2 Fuel Injector -N31-**
- 24 - Support Washer**
- 25 - Spring**
 - Replace each time the fuel rail is removed
- 26 - Bolt**
 - 30 Nm + 90° turn
 - Always replace
- 27 - Spring Clamp**

High Pressure Pump Overview



1 - High Pressure Pipe

- 28 Nm

2 - Low Pressure Hose

3 - Spring Clamp

4 - Cam Follower

5 - O-ring

- Always replace
- Lightly coat with clean engine oil

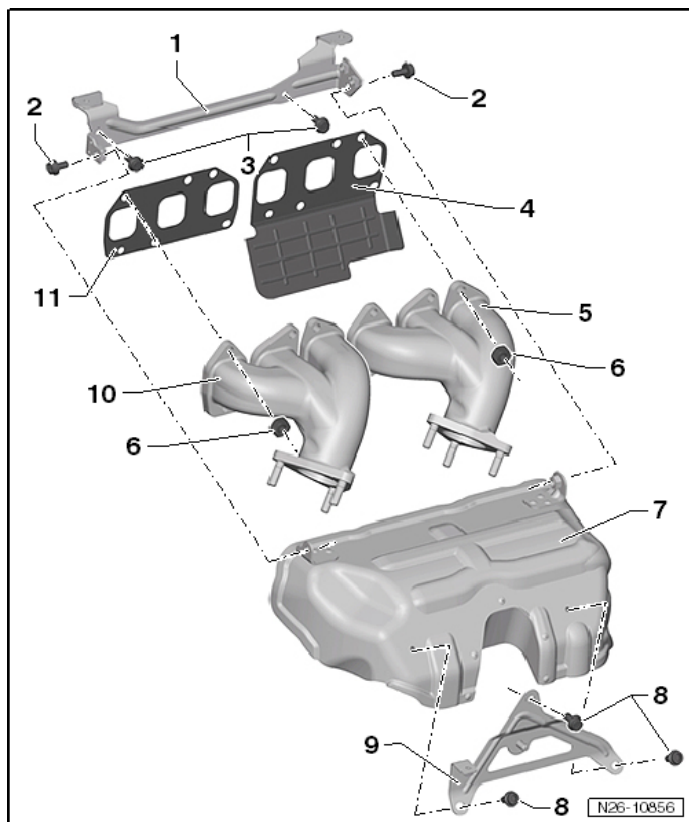
6 - High Pressure Pump

7 - Bolt

- 10 Nm

Exhaust System, Emission Controls – 3.6L CNNA

Exhaust Manifold Overview



1 - Intake Manifold Support

2 - Bolt

20 Nm

3 - Bolt

20 Nm

4 - Gasket

5 - Exhaust Manifold

6 - Nut

25 Nm

Always replace

7 - Heat Shield

8 - Bolt

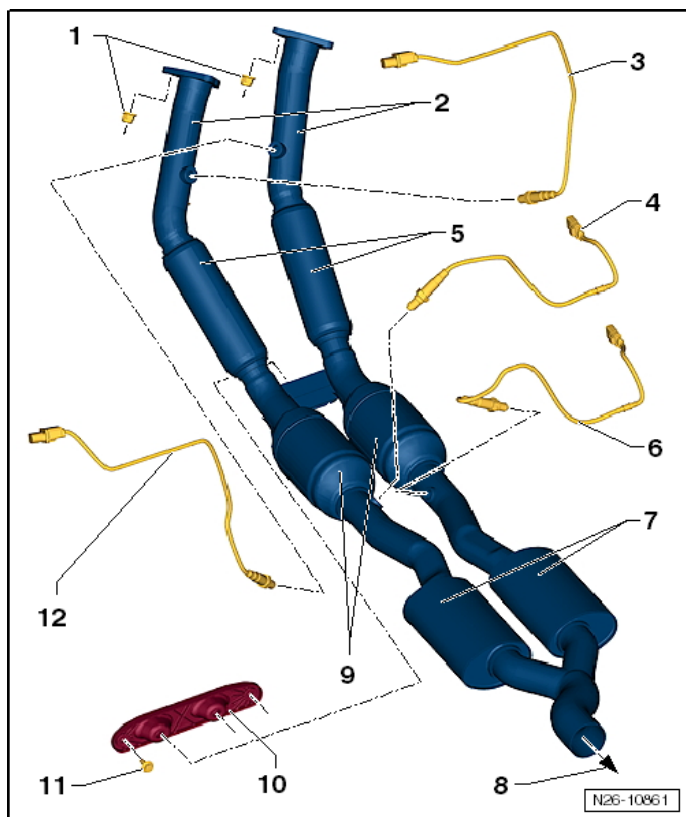
20 Nm

9 - Intake Manifold Support

10 - Exhaust Manifold

11 - Gasket

Exhaust Pipe with Catalytic Converter Overview



1 - Nuts

- M8: 25 Nm
- M10: 40 Nm
- Always replace

2 - Exhaust Pipe

3 - Heated Oxygen Sensor 2 -G108-

- 50 Nm

4 - Oxygen Sensor 2 after Catalytic Converter -G131-

- 50 Nm

5 - Coupling Element

6 - Oxygen Sensor after Three Way Catalytic Converter -G130-

- 50 Nm

7 - Front Muffler

8 - To Center Muffler

9 - Catalytic Converters

10 - Suspended Mount

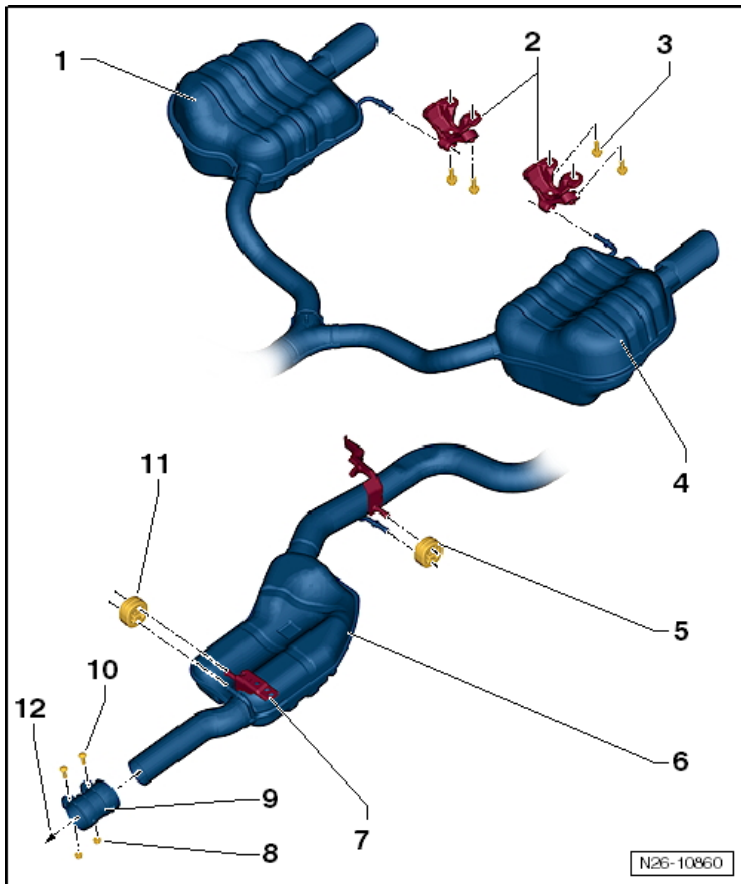
11 - Bolt

- 20 Nm

12 - Heated Oxygen Sensor -G39-

- 50 Nm

Muffler Overview



1 - Right Rear Muffler

2 - Suspended Mount

3 - Bolt

25 Nm

4 - Left Rear Muffler

5 - Retaining Loop

6 - Center Muffler

7 - Suspended Mount

8 - Nuts

M8: 25 Nm

M10: 40 Nm

9 - Clamping Sleeve

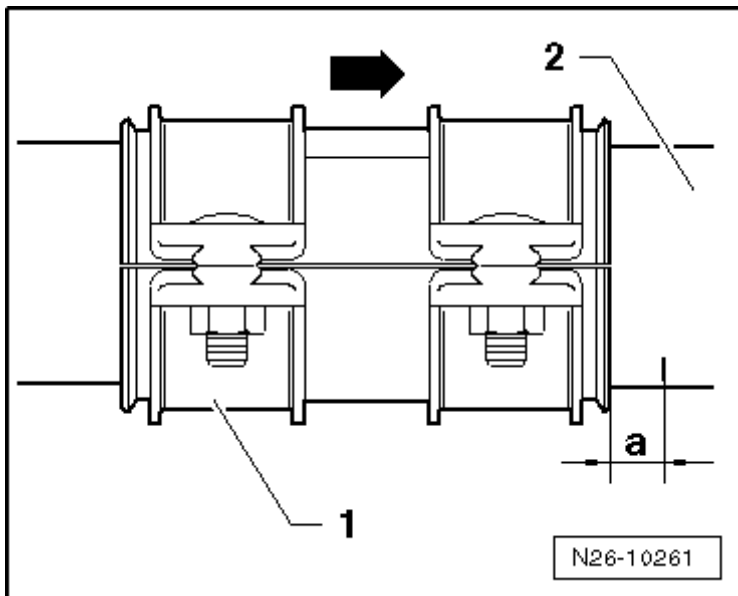
See tightening specifications below

10 - Bolt

11 - Retaining Loop

12 - To Front Muffler

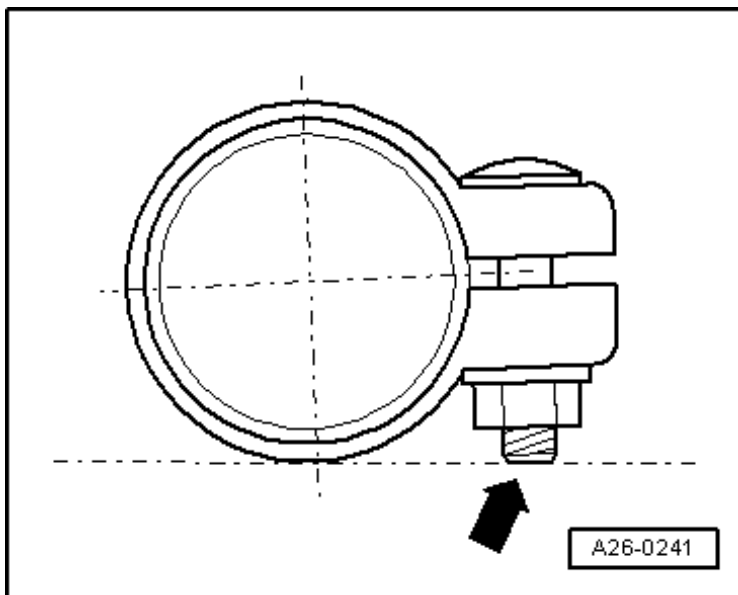
Front Clamping Sleeve



- Bolt

□ 25 Nm

Rear Clamping Sleeve

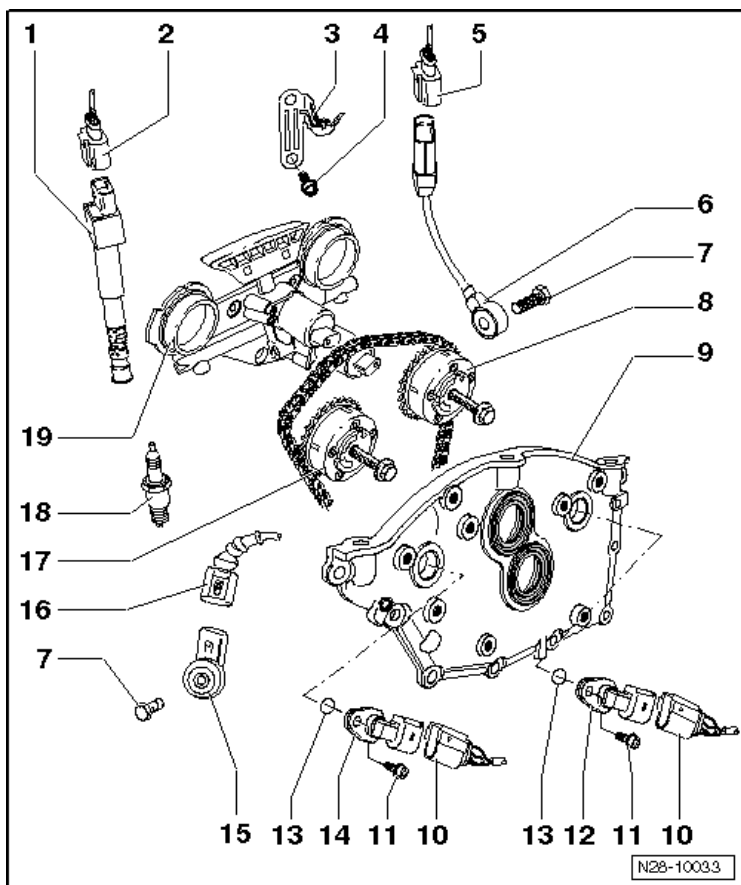


- Bolt

□ 25 Nm

Ignition – 3.6L CNNA

Ignition System Overview



- 1 - Ignition Coil with Power Output Stage -N70, N127, N291, N292, N323, N324-
- 2 - Connector
- 3 - Bracket
- 4 - Bolt
 - 20 Nm
- 5 - Connector
- 6 - Knock Sensor 1 -G61-
- 7 - Bolt
 - 20 Nm
- 8 - Exhaust Camshaft Adjuster
- 9 - Cover
- 10 - Connector
- 11 - Bolt
 - 10 Nm

12 - Camshaft Position Sensor 2 -G163-

13 - Seal

- Always replace

14 - Camshaft Position Sensor -G40-

15 - Knock Sensor 2 -G66-

16 - Connector

17 - Intake Camshaft Adjuster

18 - Spark Plug

- 18 Nm

19 - Control Housing

Ignition Technical Data

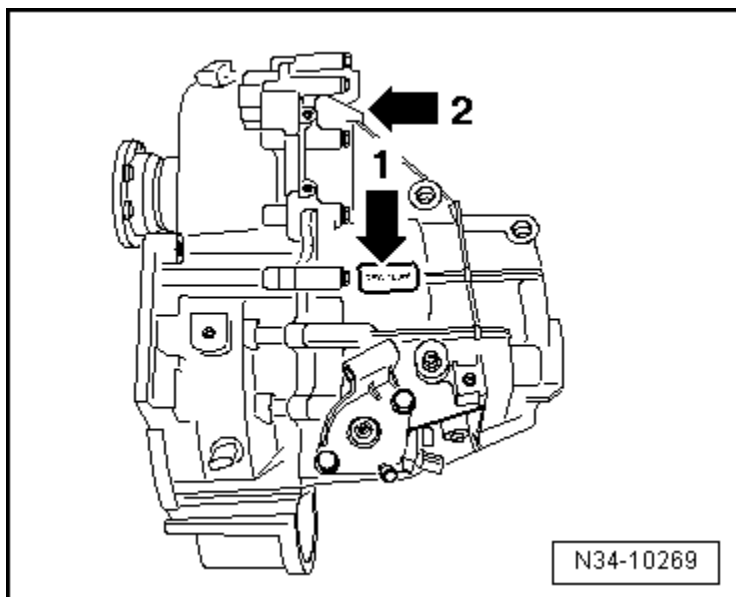
Engine code	BLV
Ignition sequence	1-5-3-6-2-4
Spark plugs ¹⁾	
VW/Audi	101 905 622 A
Electrode gap	0.7 to 0.8 mm
Tightening specification	18 Nm
Change intervals	Refer to Maintenance Procedures Rep. Gr. 03 Maintenance Procedures

¹⁾ For the current spark plugs, refer to the Parts Catalog

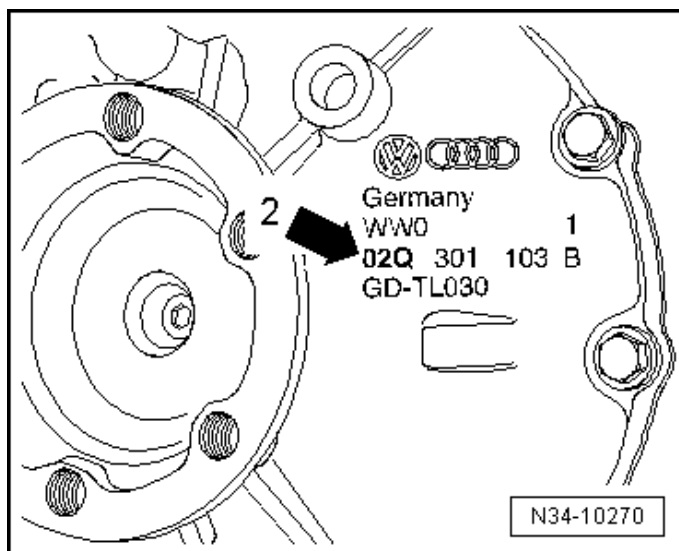
MANUAL TRANSMISSION – 02Q

General, Technical Data

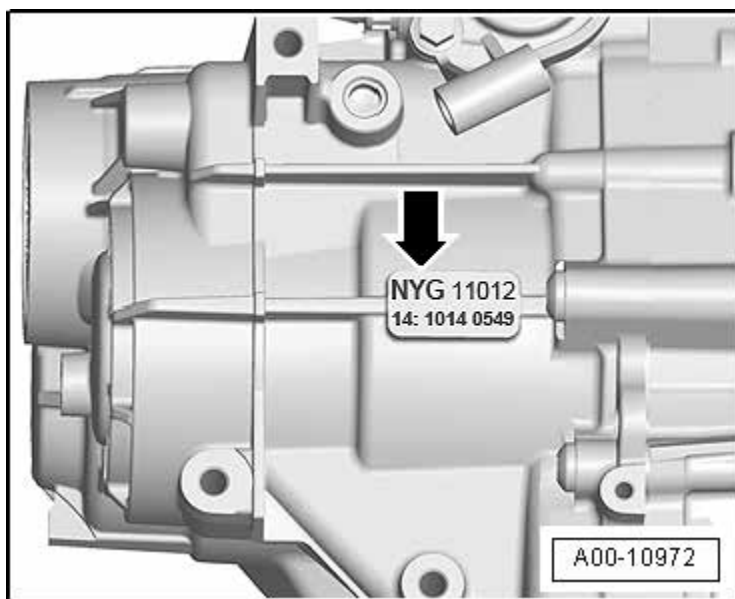
Transmission Identification



Code letters and build date -arrow 1- manual
transmission 02Q -arrow 2-



Manual Transmission 02Q -arrow 2-



Engine Code and Build Date -arrow-

Example:

NYG	11	01	2
Identification codes	Day	Month	Year (2012) of manufacture

Engine Codes, Transmission Allocation, Ratios and Capacities

Manual transmission		6-Speed 02Q	
Identification codes		KZS	MDL
Manufactured	from through	11.2011	11.2011
Allocation	Engine	2.0 L - 147 KW	2.0 L - 147 KW 2.0 L - 155 KW
Ratio: $Z_1 : Z_2$	Final drive I	71:18 = 3.944	70:19 = 3.684
	Final drive II	71:23 = 3.087	70:24 = 2.917
Drive axle flange diameter		107 mm	107 mm

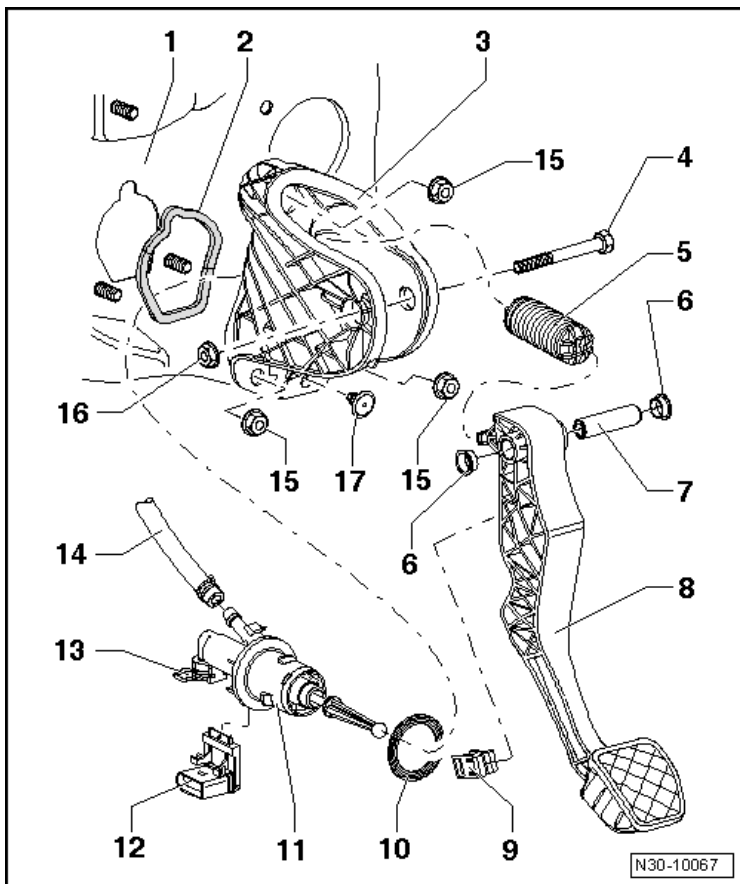
- Final drive I for "1st" to "4th" gear
- Final drive II for "5th", "6th" and reverse gears

Refer to the Electronic Parts Catalog (ETKA) for the following:

- Individual gear ratios
- Transmission fluid
- Clutch allocation

Clutch – 02Q

Clutch Pedal Overview



1 - Bulkhead

2 - Gasket

Always replace

3 - Mounting Bracket

4 - Bolt

5 - Over-Center Spring

6 - Bearing Bushing

7 - Mounting Pin

8 - Clutch Pedal

9 - Mount

10 - Gasket

Always replace

11 - Clutch Master Cylinder

12 - Clutch Position Sensor -G476-

13 - Circlip

14 - Supply Hose

15 - Nut, Self Locking

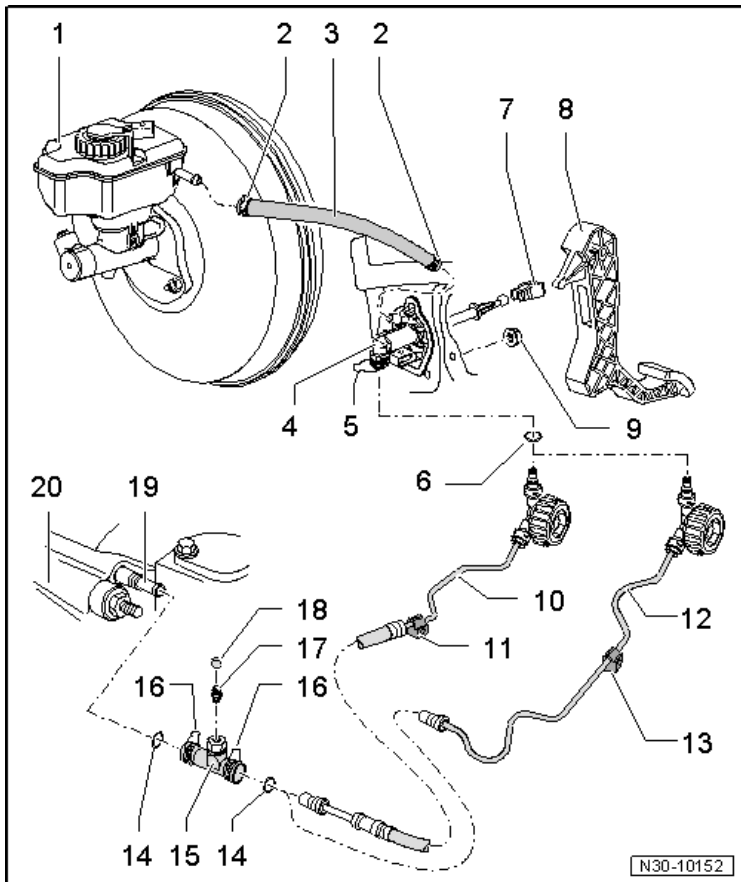
- 25 Nm
- Always replace

16 - Nut

- 25 Nm
- Always replace

17 - Stop

Clutch Hydraulics Overview



1 - Brake Fluid Reservoir

2 - Spring Clamp

Not installed on all vehicles.

3 - Supply Hose

4 - Master Cylinder

5 - Clamp

6 - Seal/O-ring

7 - Mount

8 - Clutch Pedal

9 - Nut

Refer to Clutch Pedal Assembly Overview

10 - Hose/Line Assembly

11 - Bracket

12 - Pipe

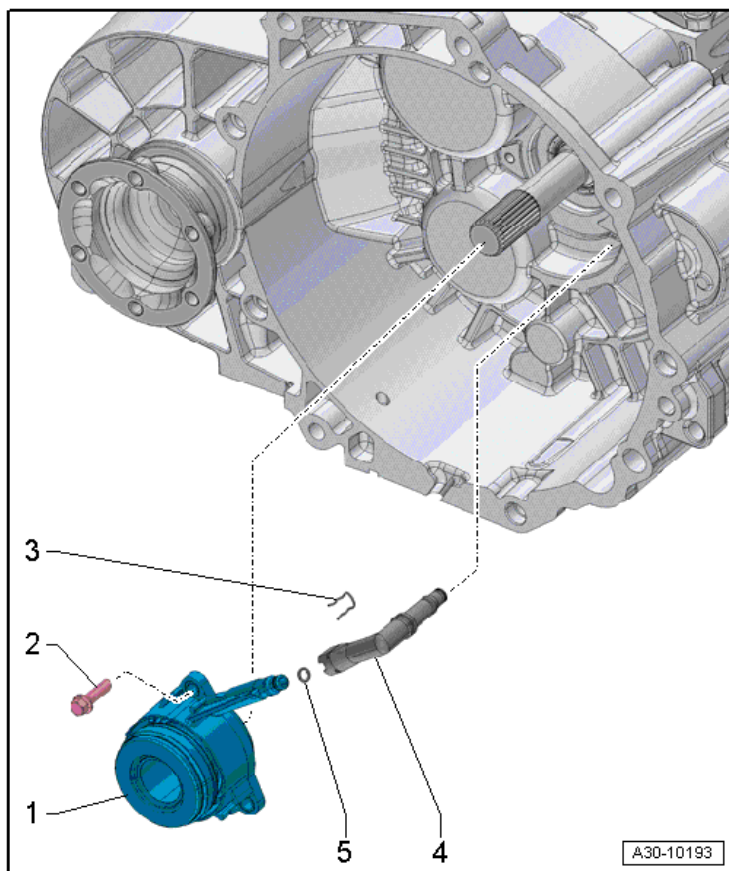
13 - Bracket

14 - Seal/O-ring

15 - Bleeder

- 16 - Clip**
- 17 - Bleed Valve**
- 18 - Cap**
- 19 - Clutch Slave Cylinder**
- 20 - Transmission**

Clutch Release Mechanism Overview



1 - Clutch Slave Cylinder with Release Bearing

2 - Bolt

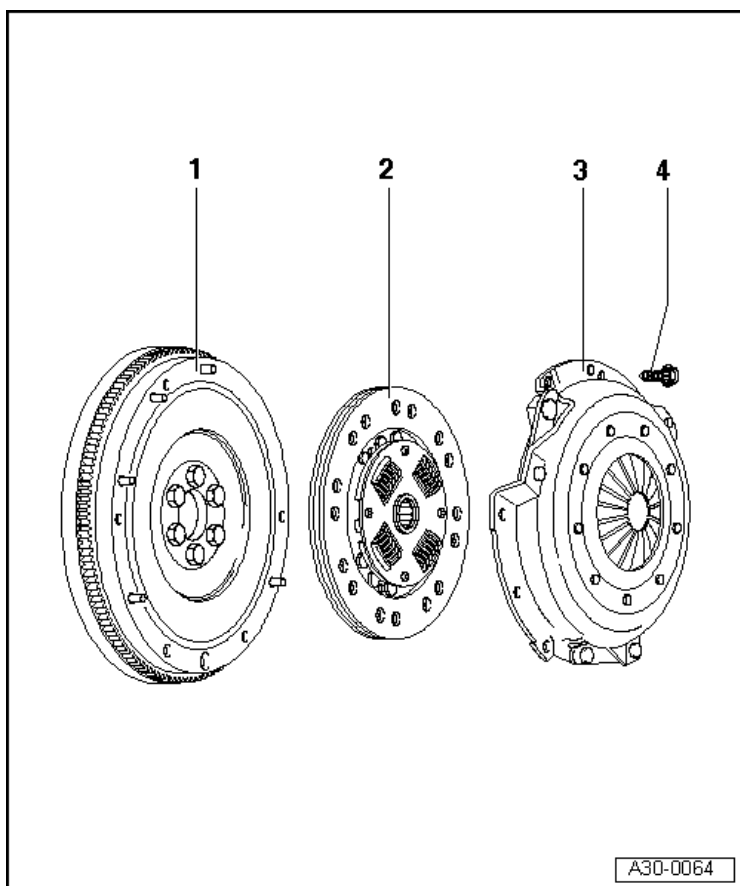
- 12 Nm for metal clutch slave cylinder (without locking fluid)
- 15 Nm for plastic clutch slave cylinder (with locking fluid)
- Always replace

3 - Clamp

4 - Line

5 - O-ring

Clutch Assembly Overview



1 - Flywheel

2 - Clutch Plate

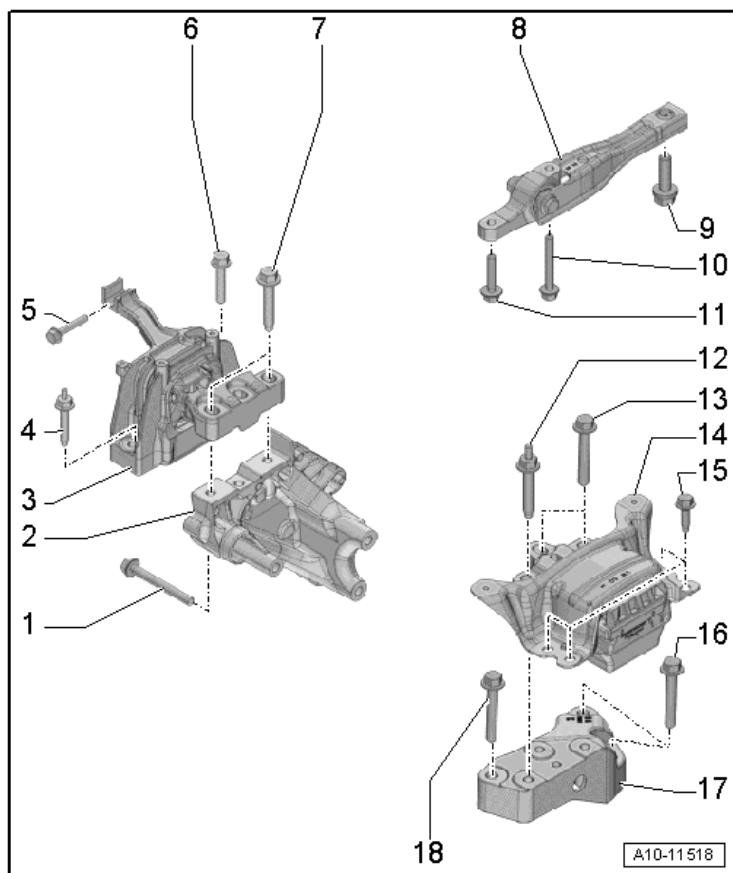
3 - Pressure Plate

4 - Bolt

- M6 bolt: 13 Nm
- M7 bolt: 20 Nm
- Loosen and tighten in small steps and in a diagonal sequence.

Controls, Housing – 02Q

Assembly Mounts Overview



1 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly

2 - Engine Support

3 - Engine Mount

4 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly

5 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly

6 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly

7 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly

8 - Pendulum Support**9 - Bolt**

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly or Suspension, Wheels, Steering; Front Suspension

10 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly or Suspension, Wheels, Steering; Front Suspension

11 - Bolt

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly or Suspension, Wheels, Steering; Front Suspension

12 - Bolt

- 60 Nm + 90° turn
- Always replace

13 - Bolt

- 60 Nm + 90° turn
- Always replace

14 - Transmission Mount**15 - Bolt**

- Tightening Specifications, refer to Engine Mechanical, Fuel Injection and Ignition; Engine Assembly

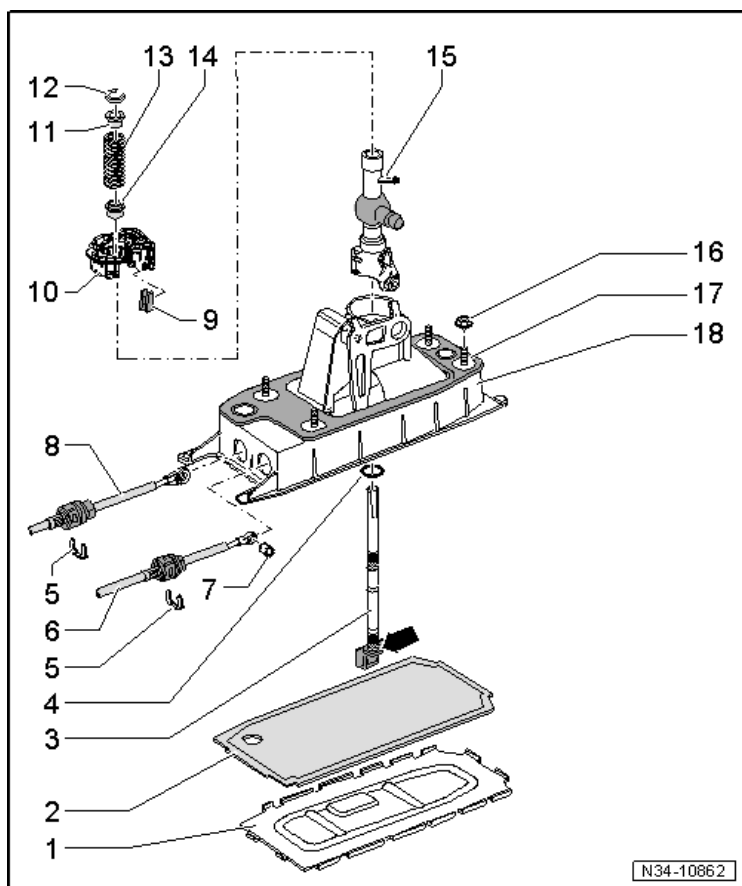
16 - Bolt

- 60 Nm + 90° turn
- Always replace

17 - Transmission Bracket**18 - Bolt**

- 60 Nm + 90° turn
- Always replace

Gearshift Lever and Gearshift Housing Overview



- 1 - Base Plate
- 2 - Gasket
- 3 - Selector Lever
- 4 - Washer
- 5 - Lock Washer
- 6 - Selector Cable
- 7 - Bushing
- 8 - Gearshift Cable
- 9 - Insulation
- 10 - Bearing Shell
- 11 - Bushing
- 12 - Lock Washer
- 13 - Pressure Spring
- 14 - Bushing
- 15 - Gearshift Lever Guide

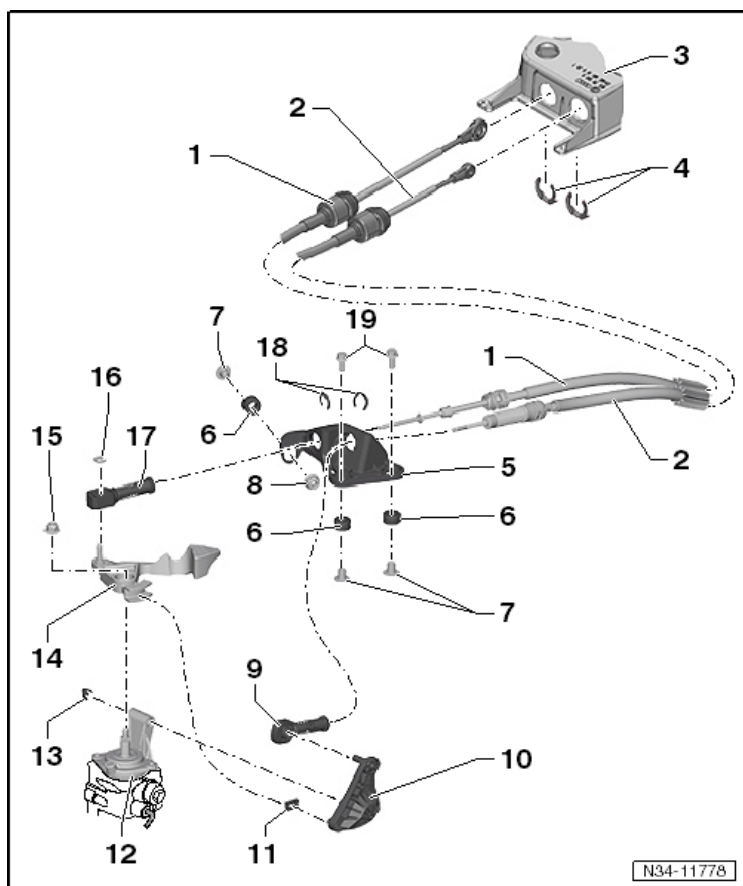
16 - Nut

- M6: 8 Nm
- M8: 25 Nm

17 - Gasket

18 - Selector Housing

Operating Cables Overview



- 1 - Gearshift Cable
- 2 - Selector Cable
- 3 - Selector Housing
- 4 - Lock Washer
 - Always replace
- 5 - Cable Mounting Bracket
- 6 - Grommet
- 7 - Spacer
- 8 - Nut
 - 20 Nm
- 9 - Cable Retainer
- 10 - Selector Relay Lever
- 11 - Sliding Shoe
- 12 - Gearshift Shaft with Gearshift Cover
- 13 - Clip

14 - Selector Lever

15 - Nut

- 25 Nm
- Always replace

16 - Lock Washer

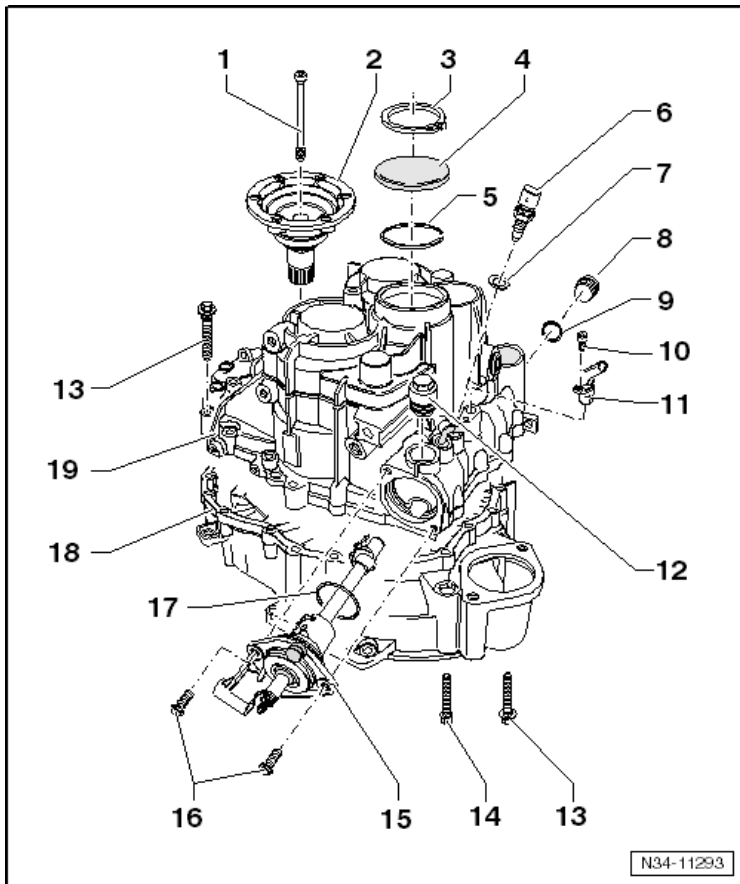
17 - Cable Retainer

18 - Lock Washer

19 - Nut

- 20 Nm

Transmission Housing and Gear Shift Unit Overview



1 - Countersunk Bolt

2 - Flange Shaft with Pressure Spring

3 - Lock Ring

4 - Cover

5 - Lock Ring

6 - Back-up Lamp Switch -F4-

20 Nm

7 - Seal

8 - Drain Plug

Tightening specification, see Different Versions of the Oil Fill and Drain Plugs below

9 - Seal

Always replace

10 - Bolt

6 Nm

11 - Transmission Neutral Position Sensor -G701-

12 - Locking Bolt

- Metal: 45 Nm
- Plastic: 30 Nm
- Always replace

13 - Bolt

- 15 Nm + 180° turn
- M9 aluminum bolt
- Replace after removing

14 - Bolt

- 15 Nm + 180° turn
- M9 aluminum bolt
- Replace after removing

15 - Gear Shift Unit

16 - Bolt

- 20 Nm
- Always replace

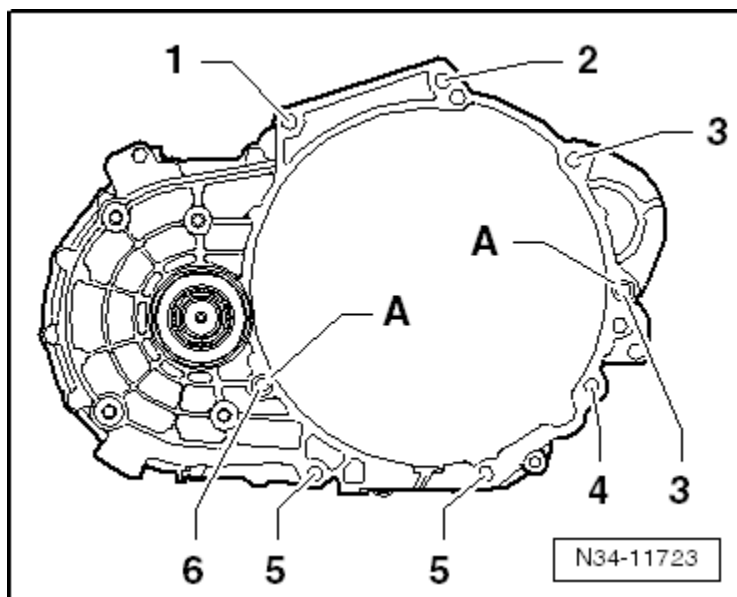
17 - O-ring

- Always replace

18 - Clutch Housing

19 - Transmission Housing

Transmission to Engine Tightening Specifications

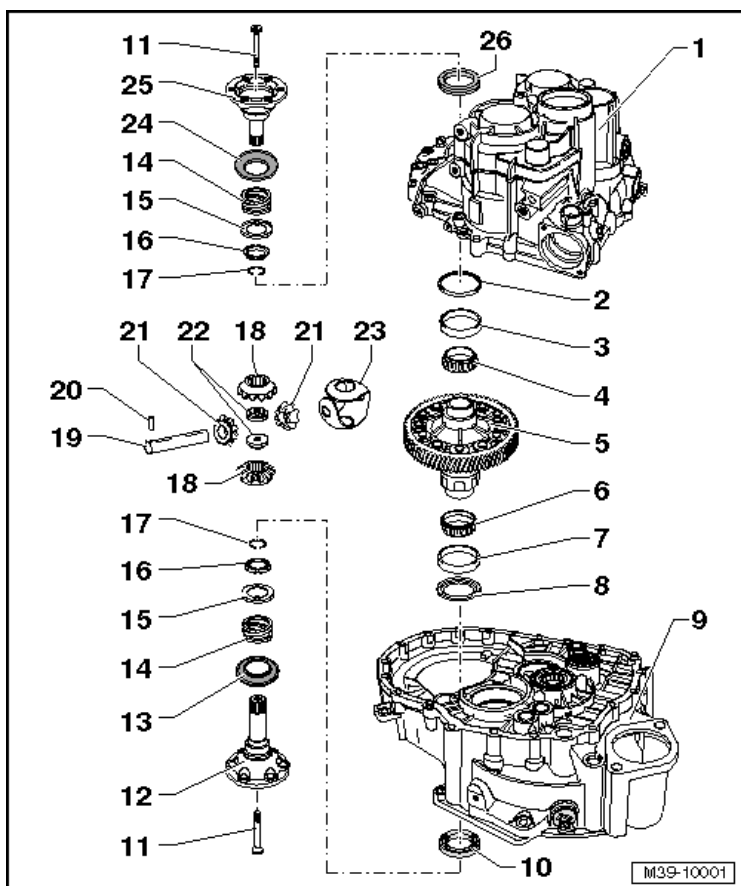


Item	Fastener size	Quantity	Nm
1	M12 x 55 With a long M8 threaded pin	1	80
2	M12 x 55 With a short M8 threaded pin or M12 x 50 Without threaded pin	1	80
3	M12 x 165 With an M8 threaded pin Also starter to transmission	2	80
4	M10 x 105	1	40
5	M10 x 50	2	80
6	M12 x 70 or M12 x 65	1	80
	M6 x 8 Small flywheel cover plate (not present here)	1	10

-A-: Alignment sleeve for centering

Rear Final Drive, Differential – 02Q

Differential Overview



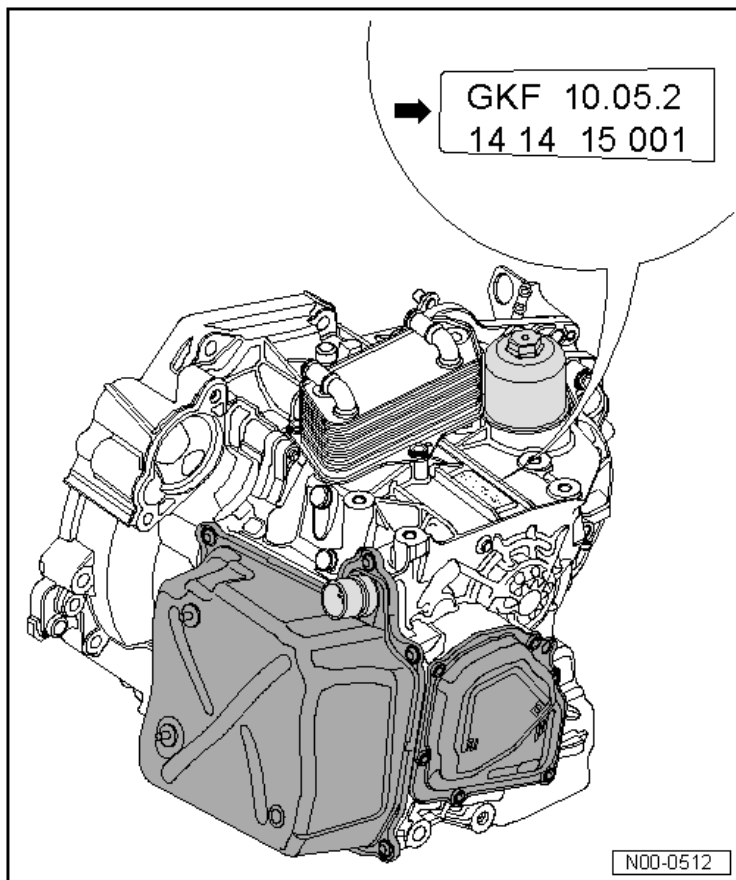
- 1 - Transmission Housing
- 2 - Shim
- 3 - Outer Race/Tapered Roller Bearing
- 4 - Bearing Inner Race/Taper Roller Bearing
- 5 - Differential Housing
- 6 - Bearing Inner Race/Taper Roller Bearing
- 7 - Outer Race/Tapered Roller Bearing
- 8 - Washer
- 9 - Clutch Housing
- 10 - Seal
- 11 - Bolt
 - 33 Nm
- 12 - Right Flange Shaft
- 13 - Ring

- 14 - Flange Shaft Pressure Spring
- 15 - Thrust Washer
- 16 - Tapered Ring
- 17 - Locking Ring
- 18 - Large Differential Bevel Gear
- 19 - Differential Taper Axle
- 20 - Adapter Sleeve
- 21 - Small Differential Bevel Gear
- 22 - Threaded Piece
- 23 - Thrust Washer Union
- 24 - Ring
- 25 - Left Flange Shaft
- 26 - Seal

DIRECT SHIFT GEARBOX (DSG®) TRANSMISSION – 02E

General, Technical Data

Identification on Transmission

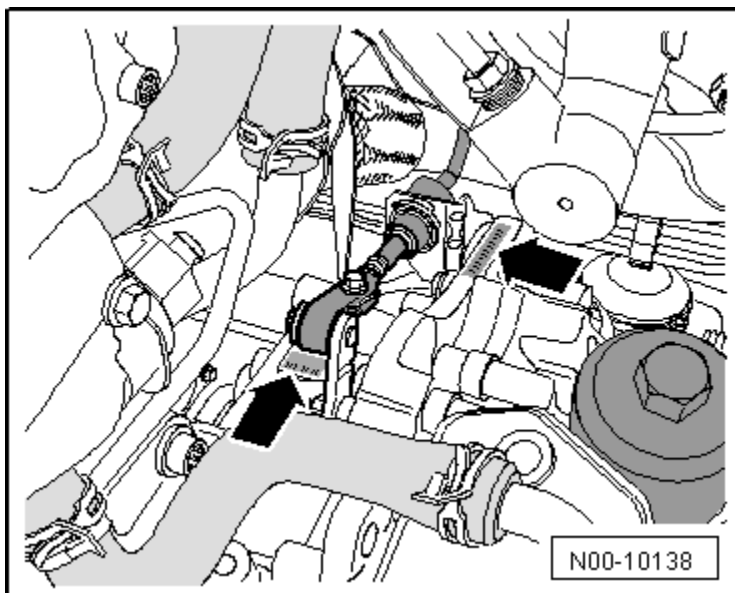


Example:

GKF	10	05	02
Identification codes	Day	Month	Production year (2002)
Plant Code	Time		Serial Number
14	14 15		001

The transmission code letters are also included on the vehicle data labels.

Transmission Code Letter



The transmission code letters are on the transmission in at least in two different locations. On the transmission near the selector lever cable two -arrows-.

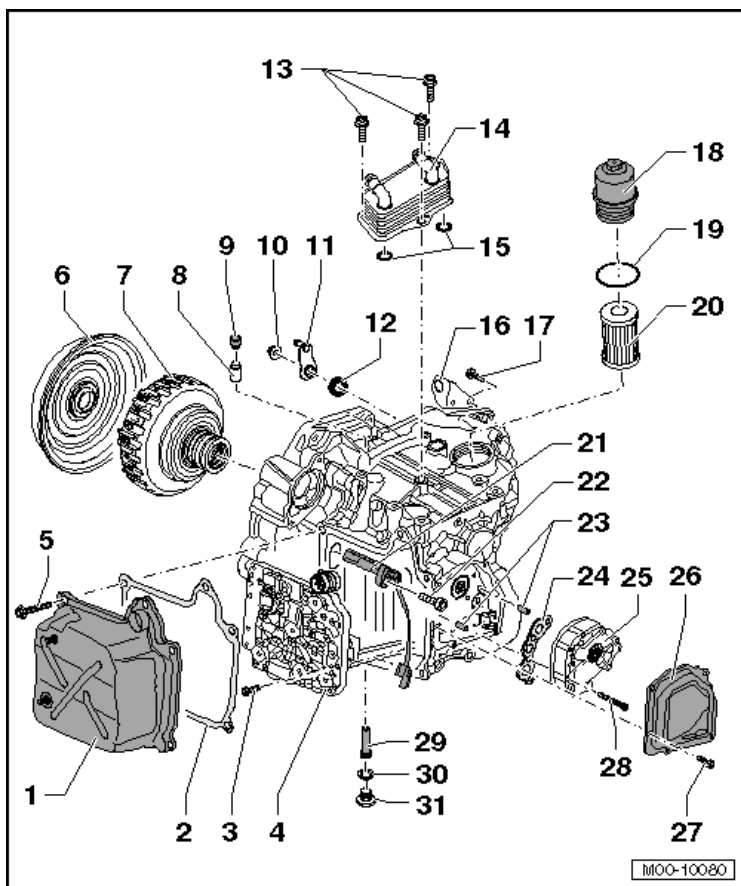
Transmission Allocation Codes

Direct Shift Gearbox (DSG®) Transmission 02E
NJM, NLQ, NNU and PBG
2.0L - 147 kW FSI-Turbo

Direct Shift (DSG)
Trans. - 02E

Controls, Housing – 02E

Direct Shift Gearbox (DSG®) Overview



- 1 - Transmission Cover**
- 2 - Gasket**
 - Always replace
- 3 - Bolt**
 - 5 Nm + 90° turn
 - Always replace
- 4 - DSG® Transmission Mechatronic -J743-**
- 5 - Bolt**
 - 10 Nm
 - Always replace
- 6 - Clutch End Cover**
- 7 - Clutch**
- 8 - Vent Tube**
- 9 - Cover**

10 - Nut

- 20 Nm

11 - Selector Lever

12 - Seal

13 - Bolt

- 20 Nm + 90° turn
- Always replace

14 - Transmission Oil Cooler

15 - O-ring

- Always replace

16 - Cable Bracket

17 - Bolt

- 20 Nm + 90° turn
- Always replace

18 - Filter Housing

- 20 Nm

19 - O-ring

- Always replace

20 - Oil Filter Element

21 - Transmission Input Speed Sensor -G182- and Clutch Oil Temperature Sensor -G509-

22 - Bolt

- 10 Nm
- Always replace

23 - Alignment Pin

24 - Gasket

- Always replace

25 - Transmission Oil Pump

26 - Transmission Oil Pump Cover

- Always replace

27 - Bolt

- 8 Nm
- Always replace

28 - Bolt

- Always replace

29 - Overflow Tube

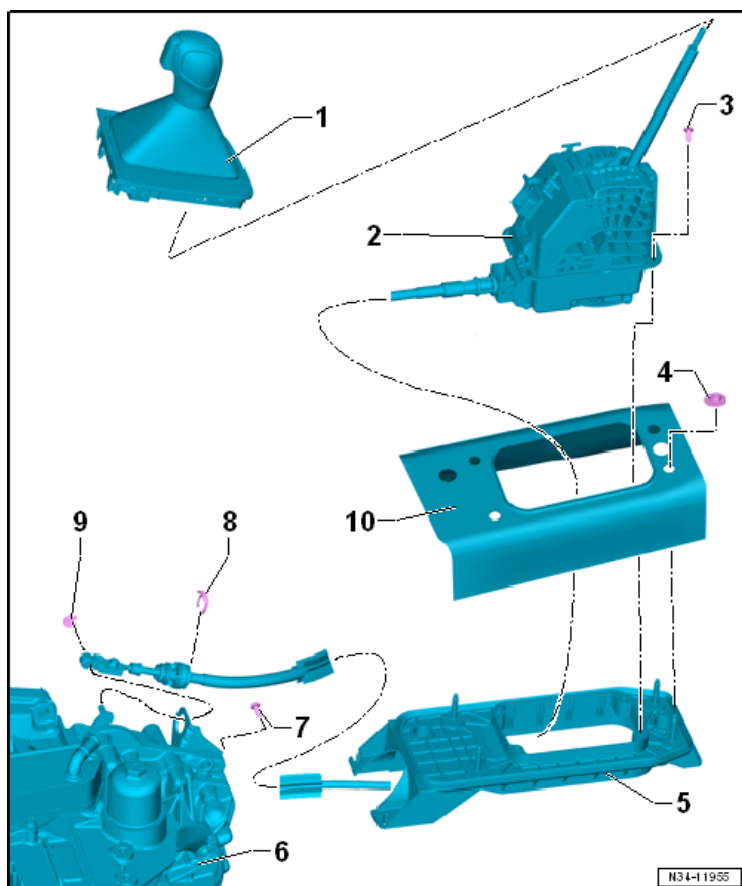
30 - Seal

- Always replace

31 - Plug

- 45 Nm

Selector Mechanism Overview



1 - Selector Handle with Cover

2 - Selector Mechanism with Selector Lever Cable

3 - Bolt

8 Nm

4 - Nut

8 Nm

5 - Selector Mechanism Housing

6 - Transmission

7 - Bolt

20 Nm + 90° turn

Always replace

8 - Lock Washer

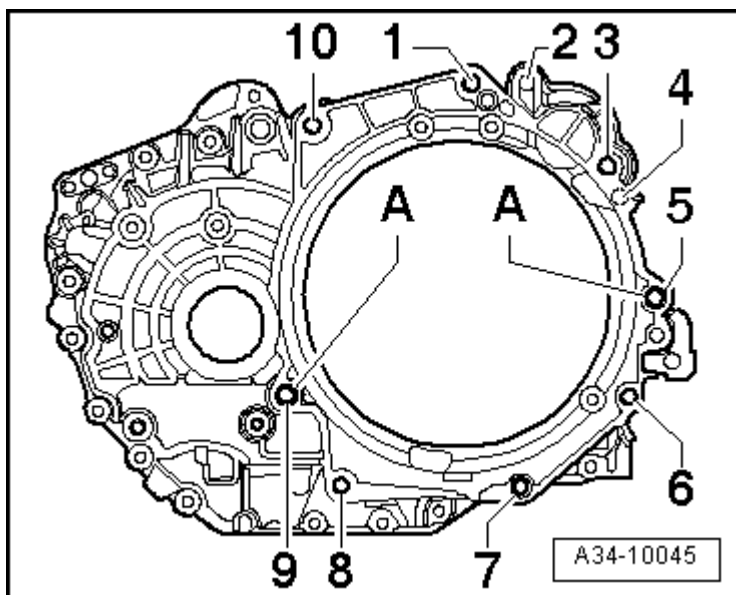
Always replace

9 - Lock Washer

Always replace

10 - Underbody Tunnel

Transmission to Engine Tightening Specifications



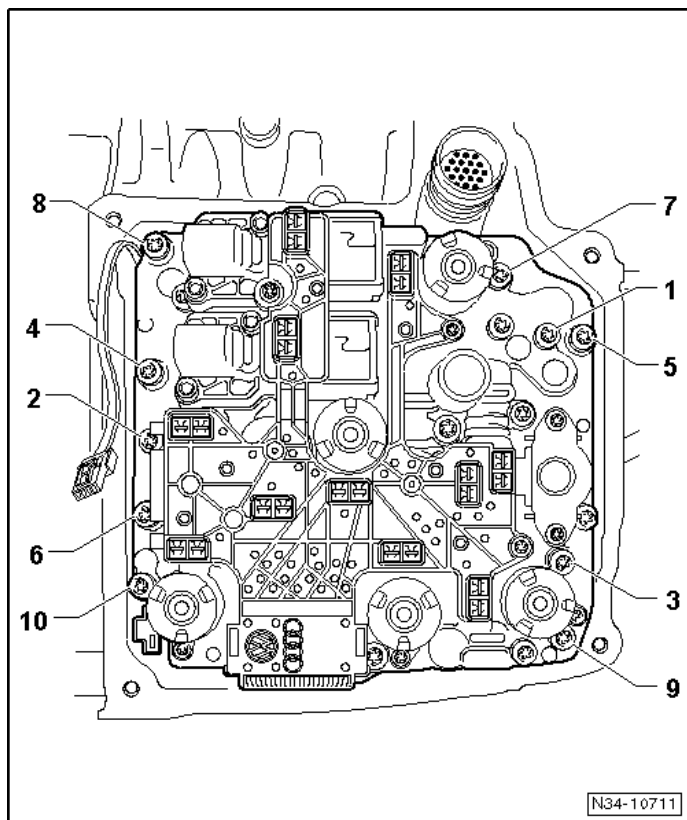
Item	Fastener size	Nm
1	M12 x 55	80 • 65 Nm, if using the insert tool 18 mm -T10179-
2	M10 x 45 • Starter to transmission	40
3	M12 x 55 • Is accessible only through the opening for the starter	80
4	M10 x 45 or M10 x 40 • Starter to transmission	40
5	M12 x 65 or M12 x 70	80
6	M10 x 50	40
7	M10 x 50	40
8	M10 x 50	40
9	M12 x 65 or M12 x 70 or M12 x 80	80
10	M12 x 55	80 • 65 Nm, if using the insert tool 18 mm -T10179-
A	Alignment sleeves for centering	

Direct Shift (DSG)
Trans. – 02E

Fastener Tightening Specifications

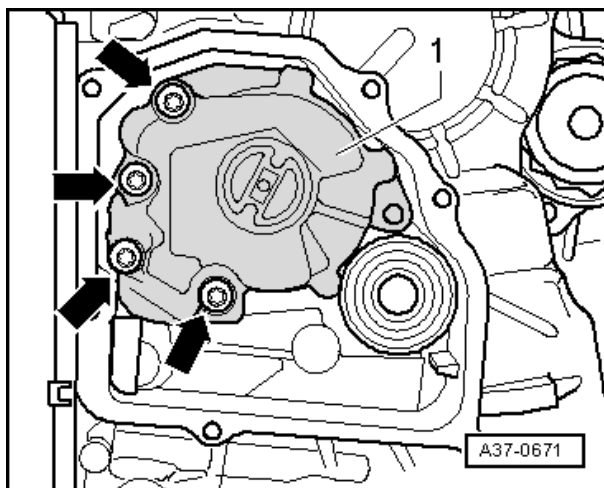
Component	Nm
Cable bracket to the transmission cover	10
Intermediate flange to right flange shaft	70

Mechatronic Unit Bolt Tightening Sequence and Specification



Step	Component	Nm
Install new bolts -1 through 10- hand tight.		
1	Tighten bolts -1 through 10-	5 Nm + 90° (1/4) additional turn

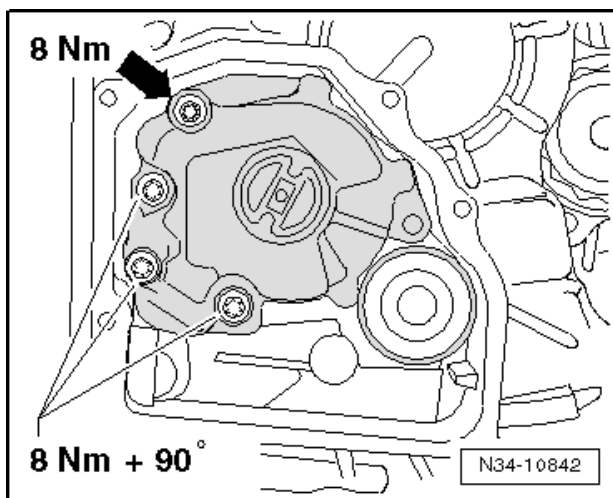
Oil Pump Tightening Specification 4 Bolts with a Flat Heads



Component	Nm
Oil pump bolts (➔) with flat heads	5 plus an additional 90° (¼ turn)

Direct Shift (DSG)
Trans. – 02E

3 Bolts with Flat heads, Upper Bolt is Countersunk

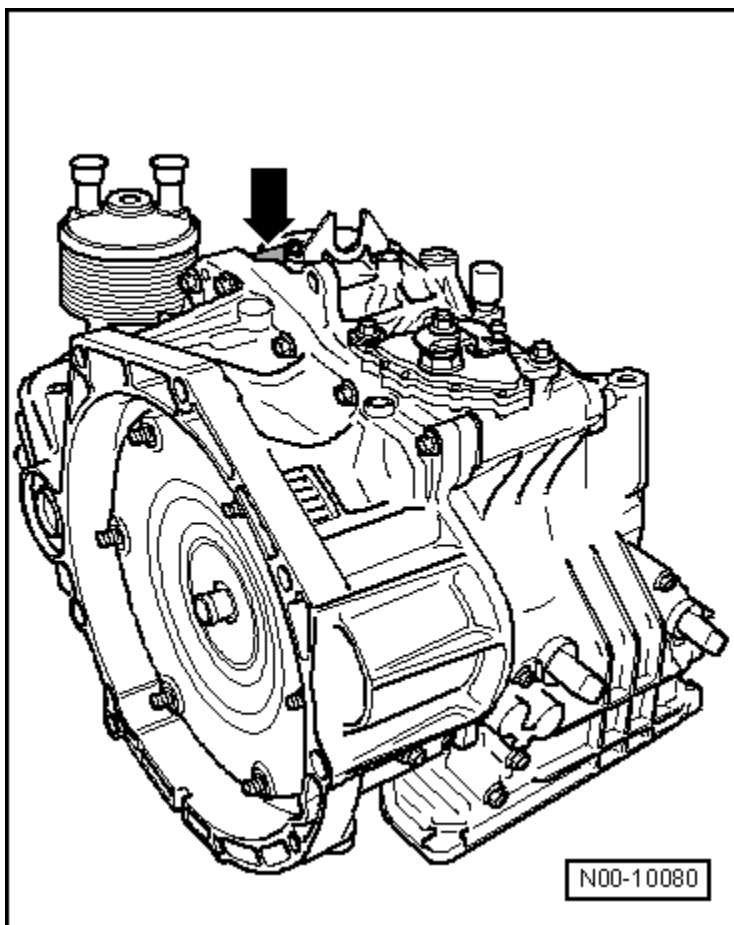


Component	Nm
Countersunk bolt without a torque angle (tighten using the special wrench, long reach -T10054-)	8
Flat head bolts	8 plus an additional 90° (¼ turn)

AUTOMATIC TRANSMISSION – 09M

General, Technical Data

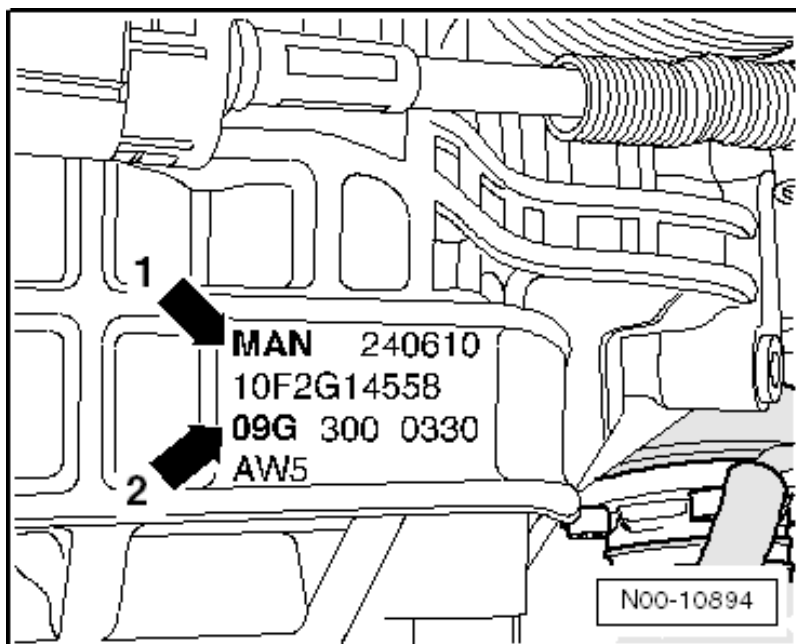
Identification on Transmission



Code letters (➡).

Automatic
Trans. – 09M

Identification on Transmission (cont'd)



(1) Code letter indicates 6-speed automatic transmission.

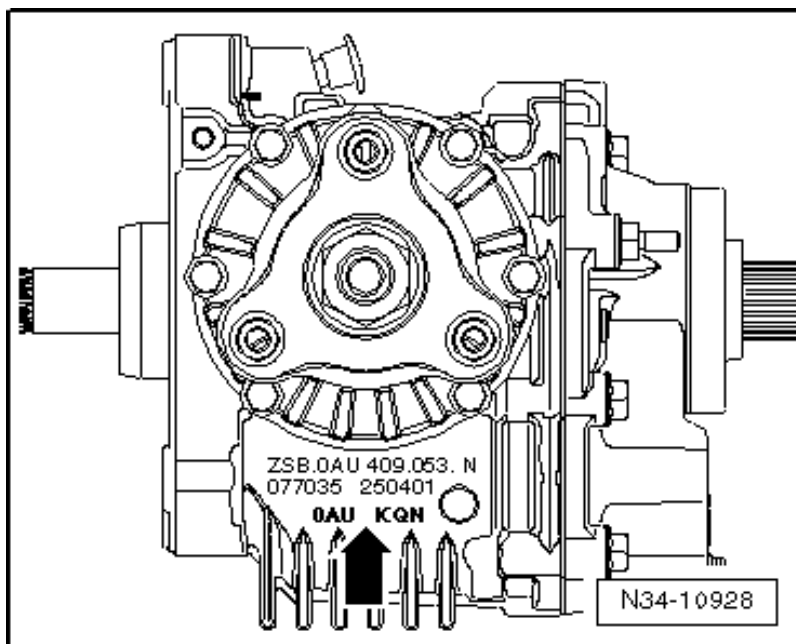
(2) 09G.

Example:

MAN	24	06	10
Identification codes	Day	Month	Year (2010) of manufacture

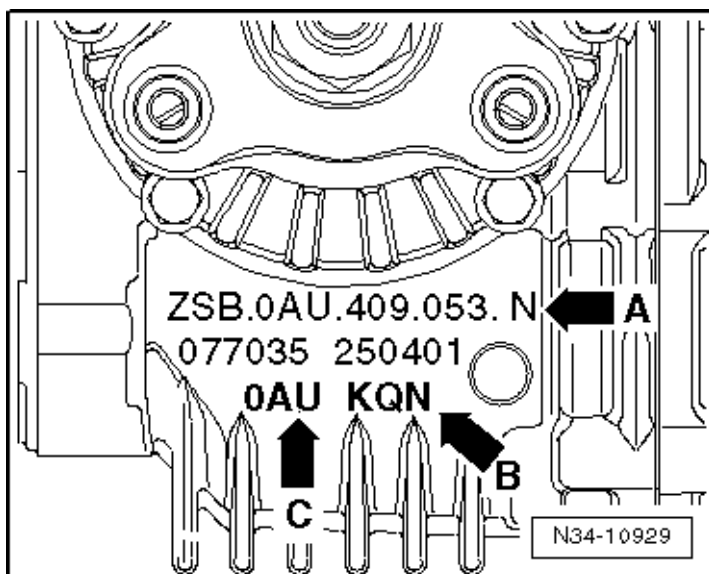
The transmission code letters are also listed on the vehicle data labels.

Bevel Box Identification



The identification -arrow- is located under the output flange.

Bevel Box Identification (cont'd)



Bevel Box Code Letters	
Arrow A	Bevel box part number
Arrow B	Bevel box code letters
Arrow C	Bevel box "0AU"

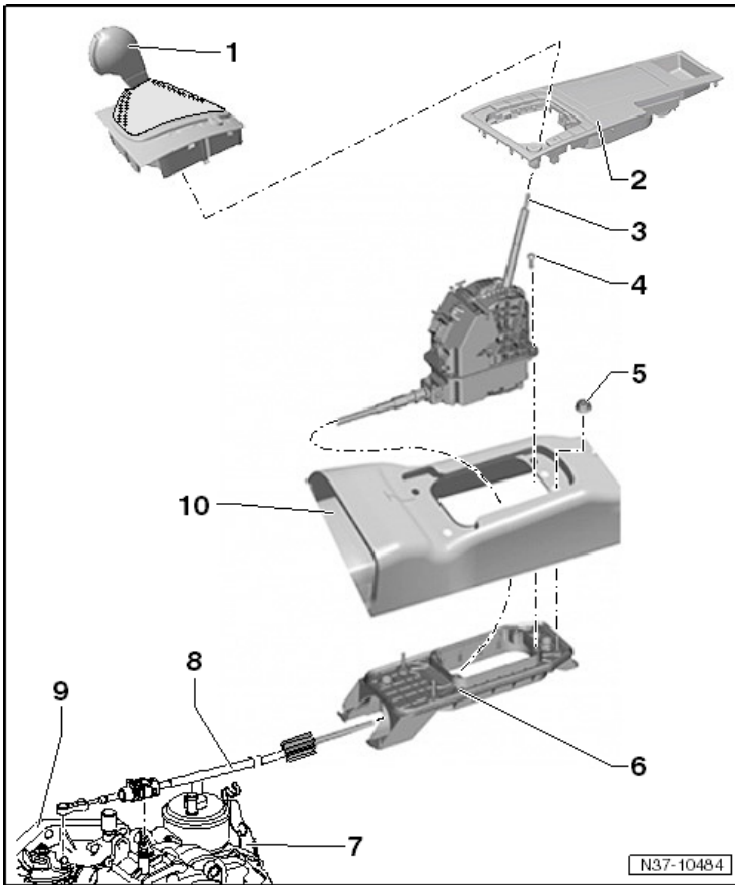
Engine and Transmission Code Allocation

6 Speed Automatic Transmission 09M - Front Wheel Drive (FWD)	
Transmission code	KFE
Engine	3.6L - 206 kW

6 Speed Automatic Transmission 09M - All Wheel Drive (AWD)	
Transmission code	KFD
Engine	3.6L - 206 kW

Controls, Housing – 09M

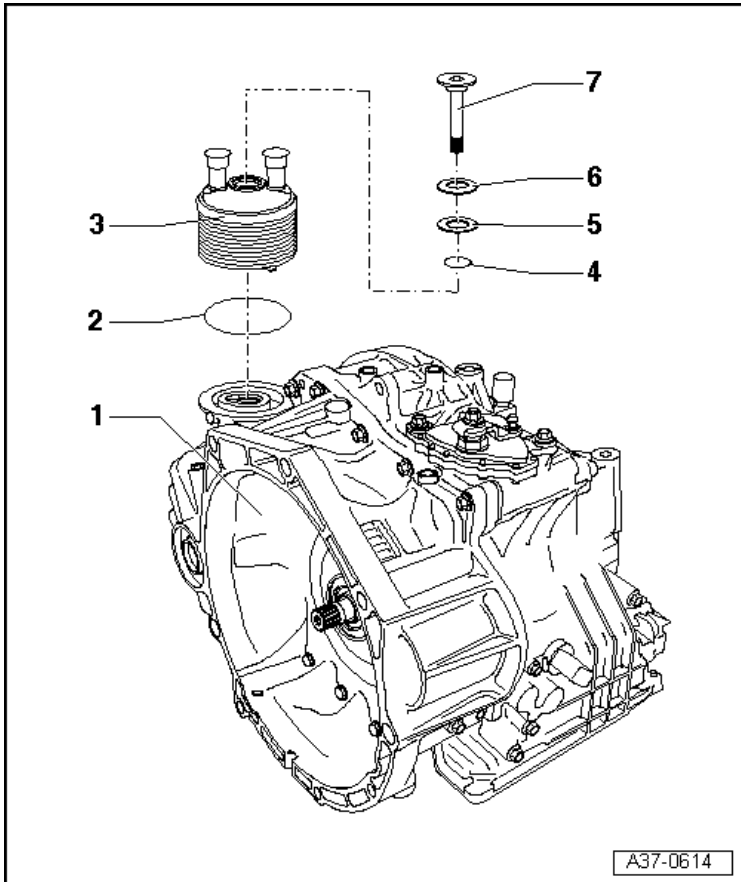
Selector Mechanism Overview



- 1 - Selector Handle with Cover
- 2 - Center Console Cover
- 3 - Selector Mechanism with Selector Lever Cable
- 4 - Bolt
 - 8 Nm
- 5 - Nut
 - M6 - 8 Nm
 - M8 - 20 Nm
- 6 - Selector Housing
- 7 - Bracket
- 8 - Selector Lever Cable
- 9 - Transmission
- 10 - Tunnel/Body

Automatic
Trans. – 09M

Automatic Transmission Fluid Cooler Overview



1 - Transmission Housing

2 - O-ring

Always replace

3 - Automatic Transmission Fluid (ATF) Cooler

4 - O-ring

Always replace

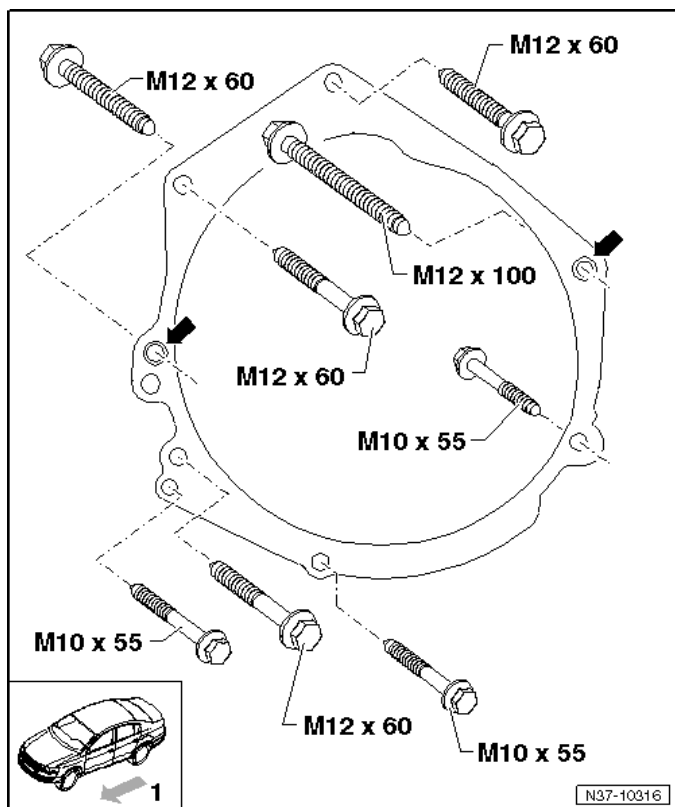
5 - Washer

6 - Spring Washer

7 - Bolt

36 Nm

Transmission to Engine Tightening Specifications



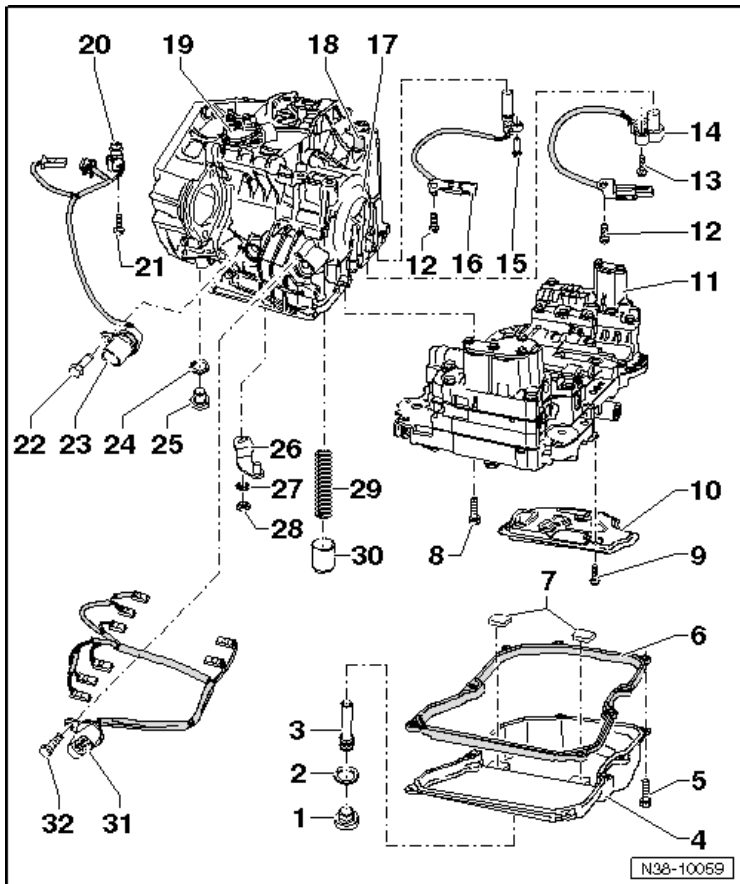
Component	Fastener size	Nm
Drive plate-to-converter	-	60
Bolts	M12	80
Bolts located in the lower flange	M10	40

➡ Alignment sleeves for the engine.

Automatic
Trans. – 09M

Gears, Hydraulic Controls – 09M

Transmission and Valve Body Component Overview



1 - Transmission Fluid Inspection Plug

2 - Seal

Always replace

3 - Overflow Tube

4 - Transmission Fluid Pan

5 - Bolt

See Tightening Specifications below

6 - Gasket

7 - Magnet

8 - Bolt

Different lengths, see Tightening Specifications below

9 - Bolt

See Tightening Specifications below

10 - Transmission Fluid Filter

11 - Valve Body

12 - Bolt

- See Tightening Specifications below

13 - Bolt

- See Tightening Specifications below

14 - Transmission Input Speed Sensor -G182-

15 - Bolt

- See Tightening Specifications below

16 - Transmission Output Speed Sensor -G195-

17 - Transmission Housing

18 - Vent Cap

19 - Multifunction Transmission Range Switch -F125-

20 - Transmission Fluid Temperature Sensor -G93-

21 - Bolt

- See Tightening Specifications below

22 - Bolt

- See Tightening Specifications below

23 - Sensor Wiring Harness

24 - Seal

- Always replace

25 - Transmission Fluid Drain Plug

26 - Selector Lever

27 - Washer

28 - Nut

- See Tightening Specifications below

29 - Spring

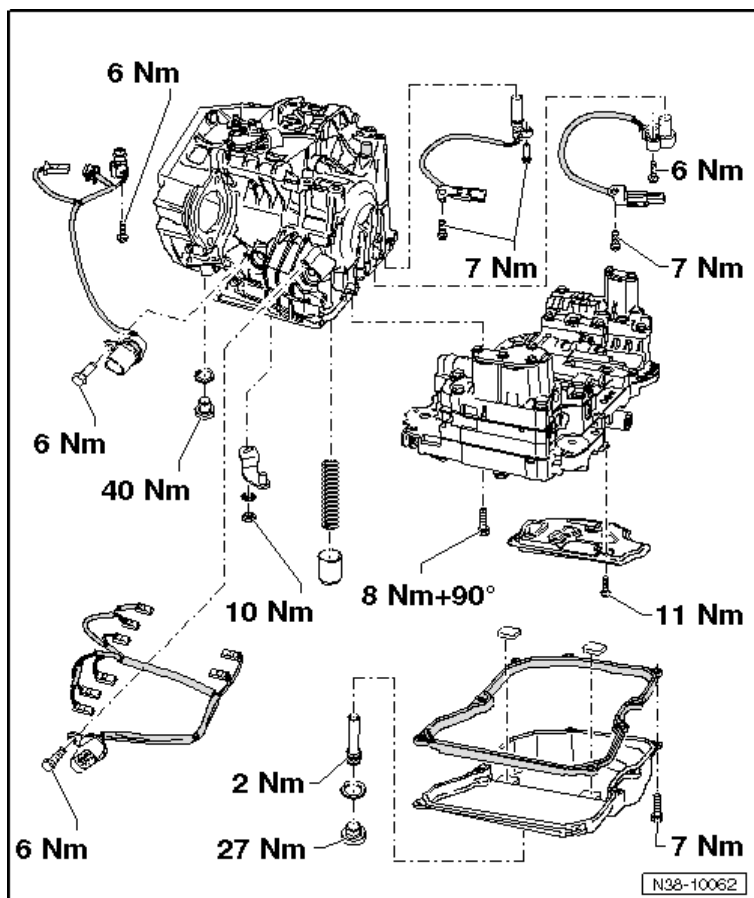
30 - Piston

31 - Solenoid Valve Wiring Harness

32 - Bolt

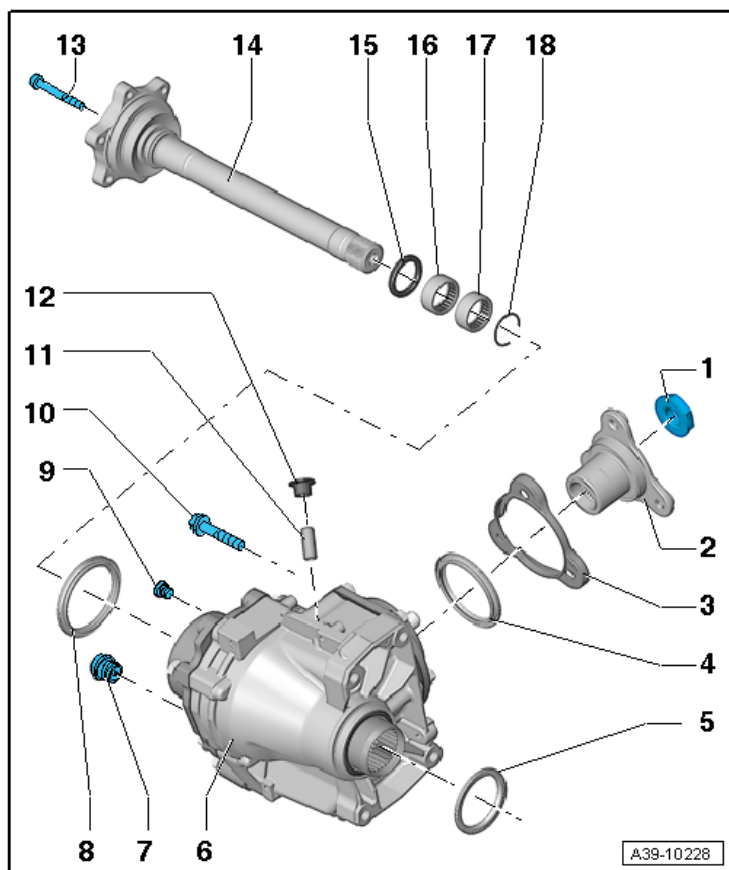
- See Tightening Specifications below

Fastener Tightening Specifications



Rear Final Drive, Differential – 09M

Bevel Box Overview



1 - Nut

- 480 Nm
- Always replace

2 - Output Flange

3 - Cap

4 - Seal

5 - Seal

6 - Bevel Box

7 - Drain Plug

- M6 bolt: 15 Nm
- M8 bolt: 60 Nm

8 - Seal

9 - Fill and Inspection Plug

- 15 Nm

10 - Bolt

- 30 Nm

11 - Vent Pipe

12 - Vent Cap

13 - Bolt

- 30 Nm
- Always replace

14 - Right Flange Shaft

15 - Seal

16 - Bearings

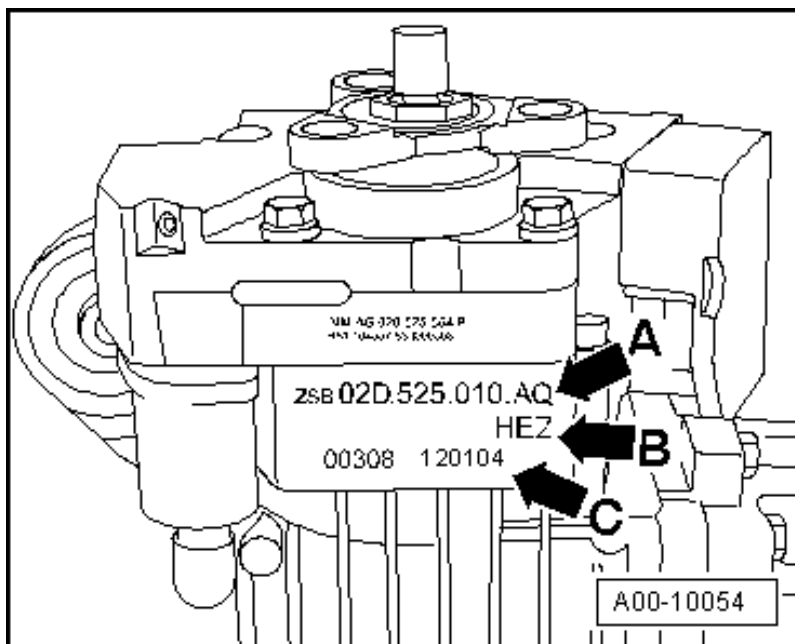
17 - Bearings

18 - Circlip

- Always replace

REAR FINAL DRIVE

Rear Final Drive 02D Identification

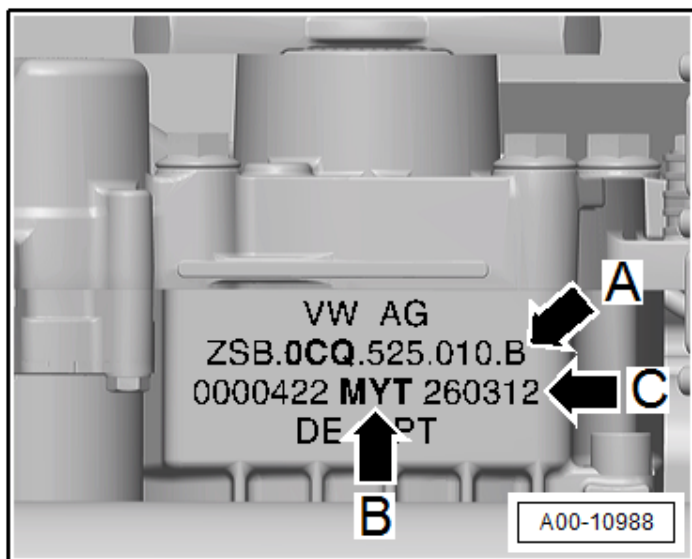


The identification (➔) on the bottom side of the rear final drive identifies which final drive is installed.
Example identification on an 02D rear final drive

Rear Final Drive Code Letters	
Arrow A	Final drive part number
Arrow B	Finaldrive code letters
Arrow C	Final drive build date

HEZ	12	01	04
Identification codes	Day	Month	Year (2004) of manufacture

Rear Final Drive 0CQ Identification



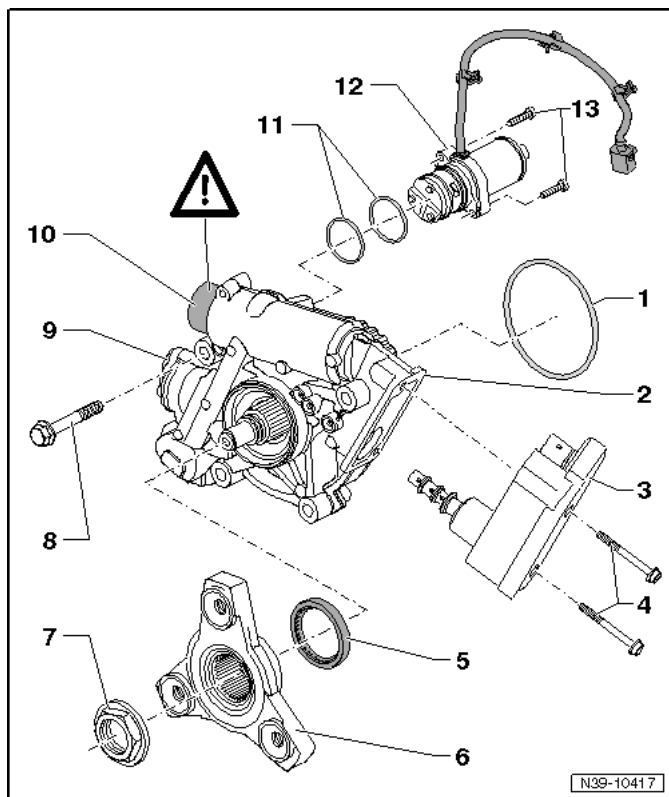
Rear Final Drive Code Letters	
Arrow A	Final drive part number
Arrow B	Finaldrive code letters
Arrow C	Final drive build date

MYT	26	03	12
Identification codes	Day	Month	Year (2012) of manufacture

Engine-Transmission Allocation

Rear Final Drive	0BS (Haldex clutch generation IV)
Transmission type	6 speed automative transmission 09M
Code letters	MBD
Engine	3.6L 206 kW FSI
Driveshaft flange diameter	100 mm

Haldex Clutch Assembly Overview, Generation IV



1 - Seal

- Always replace

2 - Haldex Clutch Housing

3 - All Wheel Drive Control Module -J492-

4 - Bolt

- 6 Nm

5 - Input Flange Seal

6 - Input Flange

7 - Nut

- 210 Nm
- Secure using liquid locking fluid -D 000 600-.

8 - Bolt

- 50 Nm

9 - Cover

10 - Cover

11 - Seal

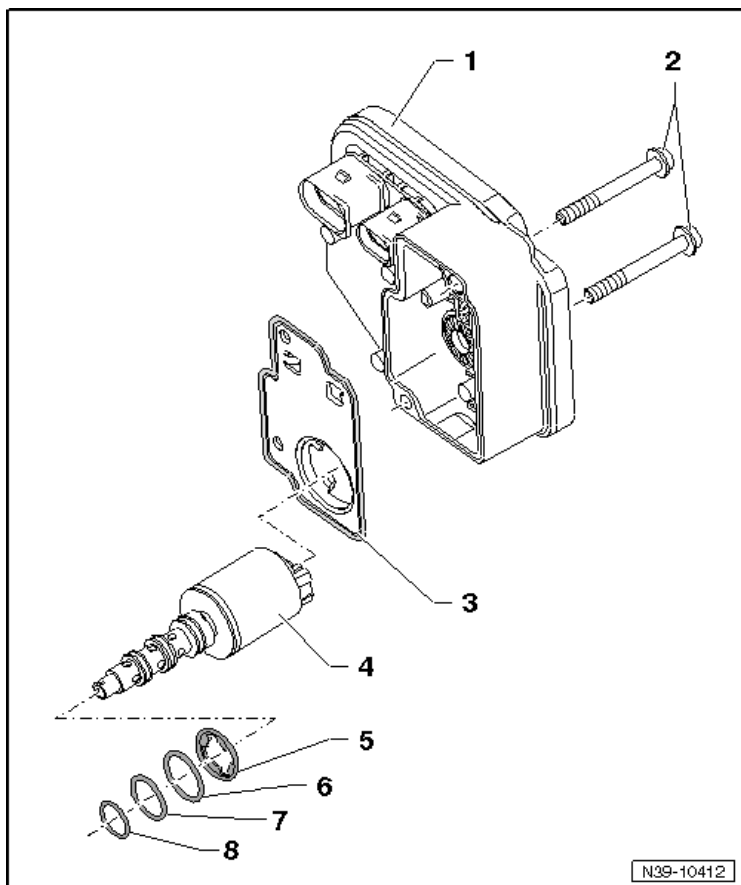
- Always replace

12 - Haldex Clutch Pump -V181-

13 - Bolt

- 6 Nm

Control Module Assembly Overview, Generation IV



1 - All Wheel Drive Control Module -J492-

- Always replace with the valve.

2 - Bolt

- 6 Nm

3 - Cover

- Always replace

4 - Haldex Clutch Control Valve -N373-

- Always replace together with control module.

5 - Seal

- Always replace

6 - Seal

- Always replace

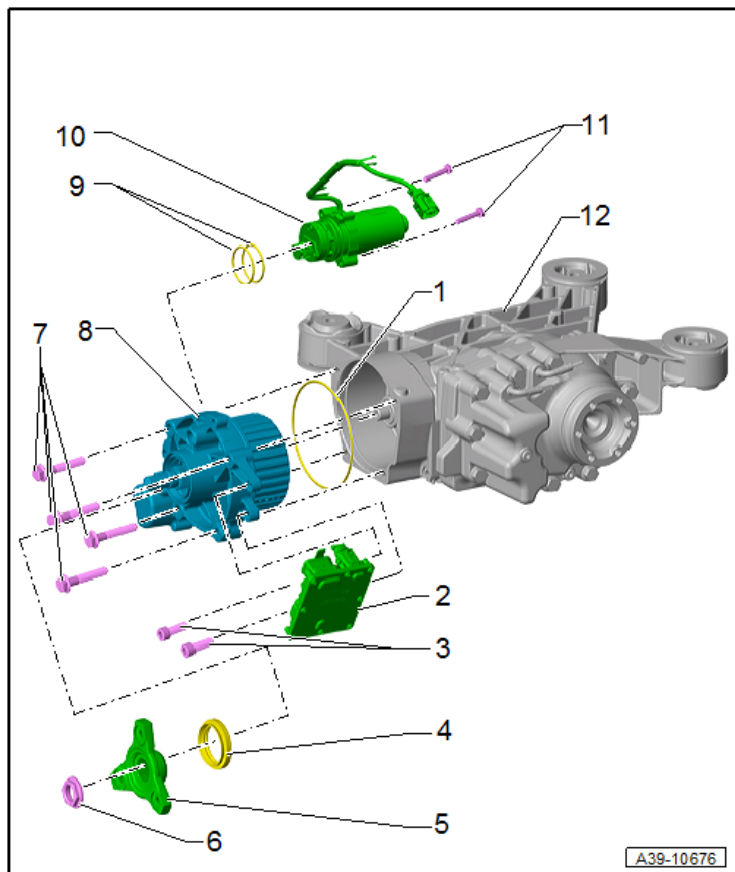
7 - Seal

- Always replace

8 - Seal

- Always replace

Haldex Clutch Assembly Overview, Generation V



1 - O-ring

- Coat with High Performance Haldex Clutch Oil and insert

2 - All Wheel Drive Control Module -J492-

3 - Bolt

- 9.5 ± 0.5 Nm

4 - Flange Driveshaft Seal

5 - Flange Driveshaft

6 - Nut

- 210 Nm
- Secure using liquid locking fluid -D 000 600-.
- Replace after removing

7 - Nut

- 50 Nm

8 - Haldex Clutch Housing

9 - O-ring

- Coat with High Performance Haldex Clutch Oil and insert

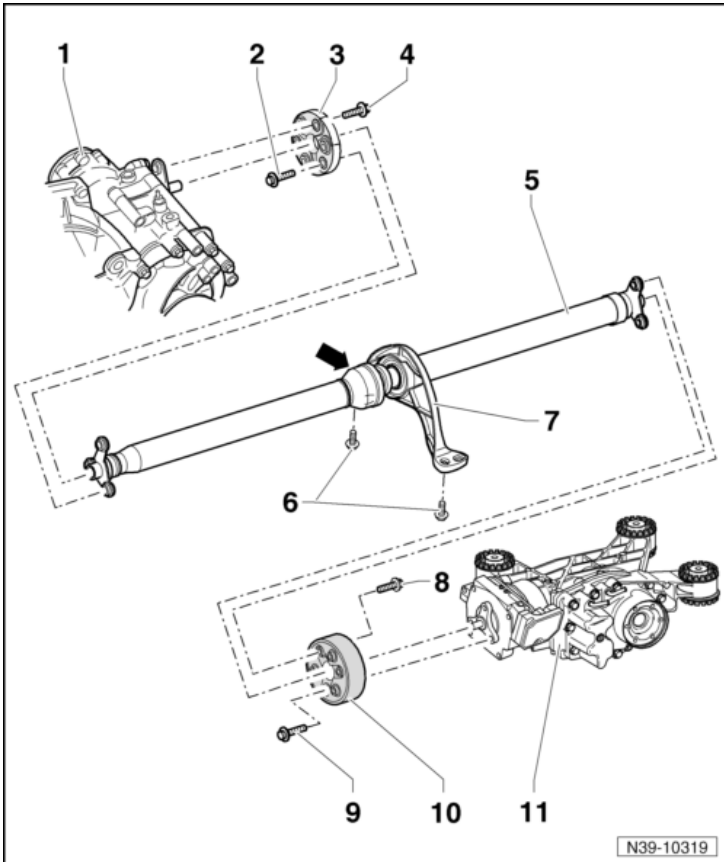
10 - Haldex Clutch Pump -V181-

11 - Bolt

$9.5 \pm 0.5 \text{ Nm}$

12 - Rear Final Drive

Driveshaft Overview



1 - Transmission with Bevel Box

2 - Bolt

- 50 Nm + 90° turn
- Always replace

3 - Front Flexible Disc

4 - Bolt

- 60 Nm

5 - Driveshaft

6 - Bolt

- 25 Nm

7 - Intermediate Bearing

8 - Bolt

- 50 Nm + 90° turn
- Always replace

9 - Bolt

- 60 Nm

10 - Flexible Disc with Vibration Damper

11 - Rear Final Drive