Das Auto.

2014

Tiguan

Quick Reference Specification Book

2014 Volkswagen Tiguan
Quick Reference Specification Book
TABLE OF CONTENTS

ENGINES

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: kg·cm x 0.868 = lb·in • kg·cm x 9.81 = N·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.

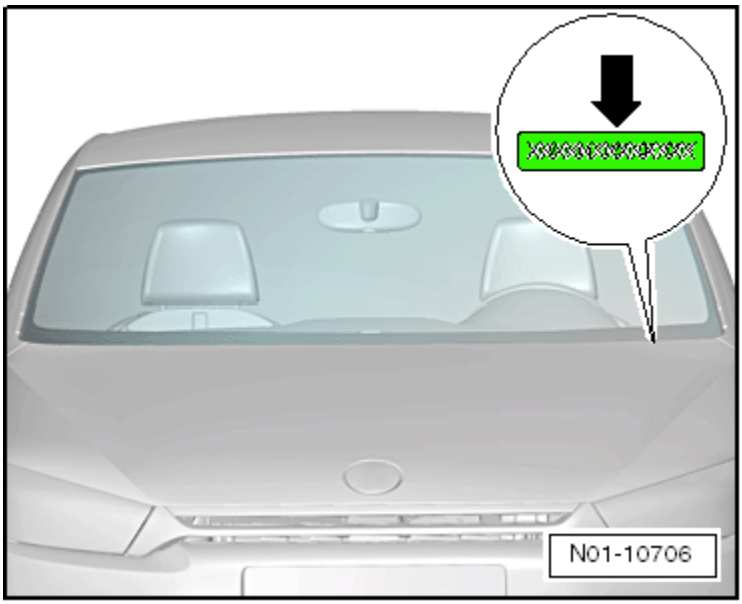
(CAUTIONS cont'd on next page)

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.

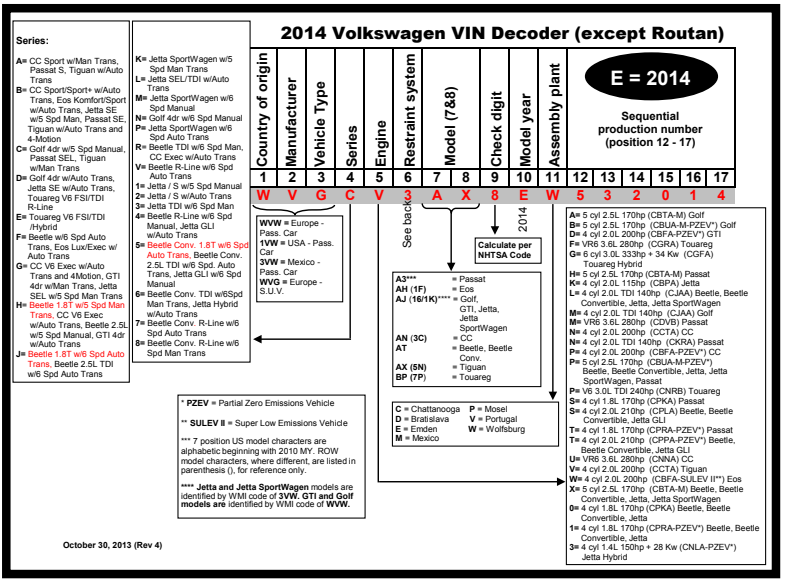
VEHICLE IDENTIFICATION

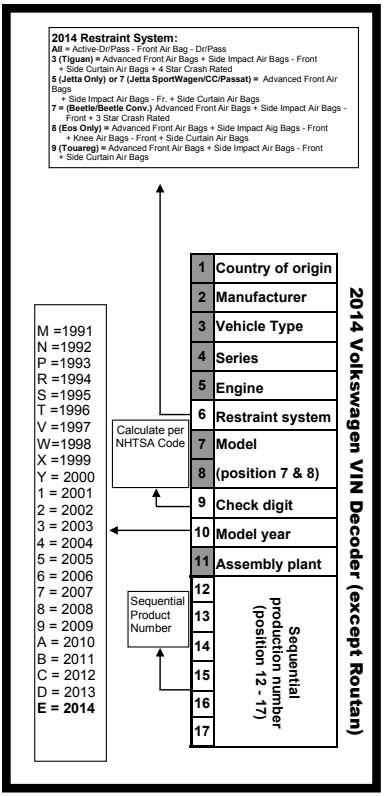
Vehicle Identification Number (VIN) Location



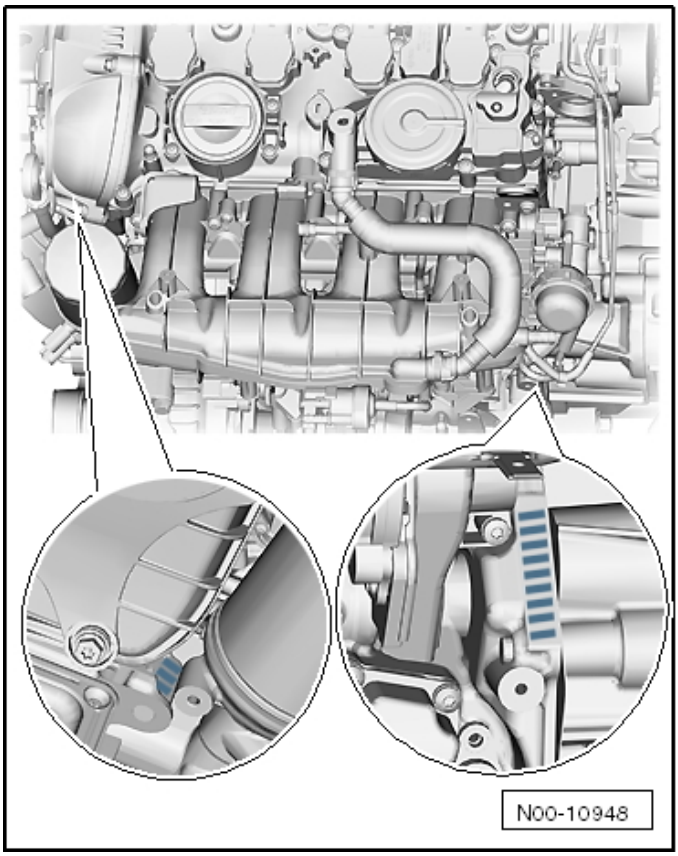
The VIN (➡) is on the left side of the vehicle in the area of the windshield wiper mount. It is visible from the outside (typical illustration shown).

VIN Decoder


2014 Volkswagen VIN Decoder (except Routan)
Series:
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 4-Motion
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 FSI/TDI R-Line
E= Touareg V6 FSI/TDI /Hybrid
F= Beetle w/6 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/6 Spd Auto Trans, Beetle 2.5L TDI w/6 Spd Auto Trans
K= Jetta SportWagen w/5 Spd Man Trans
L= Jetta SEL/TDI w/Auto Trans
M= Jetta SportWagen w/6 Spd Manual
N= Golf 4dr w/6 Spd Manual
P= Jetta SportWagen w/6 Spd Auto Trans
R= Beetle TDI w/6 Spd Man, CC Exec w/Auto Trans
V= Beetle R-Line w/6 Spd Auto Trans
1= Jetta / S w/5 Spd Manual
2= Jetta / S w/Auto Trans
3= Jetta TDI w/6 Spd Man
4= Beetle R-Line w/6 Spd Manual, Jetta GLI w/Auto Trans
5= Beetle Conv. 1.8T w/6 Spd Auto Trans, Beetle Conv. 2.5L TDI w/6 Spd. Auto Trans, Jetta GLI w/6 Spd Manual
6= Beetle Conv. TDI w/6Spd 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
Country of origin
Manufacturer
Vehicle Type
Series
Engine
Restraint system
Model (7&8)
Check digit
Model year
Assembly plant
E = 2014
Sequential production number (position 12 - 17)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
W V G C V 3 A X 8 E W 5 3 2 0 1 4
WVW = Europe - Pass. Car
1VW = USA - Pass. Car
3VW = Mexico - Pass. Car
WVG = Europe - S.U.V.
See back
Calculate per NHTSA Code
2014
A3*** = Passat
AH (1F) = Eos
AJ (16/1K)**** = Golf, GTI, Jetta, Jetta SportWagen
AN (3C) = CC
AT = Beetle, Beetle Conv.
AX (5N) = Tiguan
BP (7P) = Touareg
C = Chattanooga
D = Bratislava
E = Emden
M = Mexico
P = Mosel
V = Portugal
W = Wolfsburg
A= 5 cyl 2.5L 170hp (CBTA-M) Golf
B= 5 cyl 2.5L 170hp (CBUA-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, Jetta SportWagen
M= 4 cyl 2.0L TDI 140hp (CJAA) Golf
M= 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 (CPLA) Beetle, Beetle Convertible, Jetta GLI
T= 4 cyl 1.8L 170hp (CPRA-PZEV*) Passat
T= 4 cyl 2.0L 210hp (CPPA-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
0= 4 cyl 1.8L 170hp (CPKA) Beetle, Beetle Convertible, Jetta
1= 4 cyl 1.8L 170hp (CPRA-PZEV*) Beetle, Beetle Convertible, Jetta
3= 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 3VW. GTI and Golf models are identified by WMI code of WWW.
October 30, 2013 (Rev 4)


2014 Restraint System:
All = Active-Dr/Pass - Front Air Bag - Dr/Pass
3 (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 Aig 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
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 13 14 15 16 17
Sequential production number (position 12 - 17)
2014 Volkswagen VIN Decoder (except Routan)

Vehicle Identification Number (VIN)



The engine number “engine code” and “serial number” are located at the engine/transmission joint. The engine code is also printed behind the oil filter on the cylinder block.

Vehicles with Four Digit Engine Codes

Four digit engine codes beginning with the letter “C” are used. The first three digits describe the mechanical structure of the engine and are still stamped on the engine, as before. The fourth digit describes the engine output and torque and depends on the Engine Control Module -J623-. Four digit engine codes are found on the type plate and vehicle data label. It can also be read via the Engine Control Module -J623-.

SALES CODES

Engine Codes

CCTA	2.0L 4-cylinder

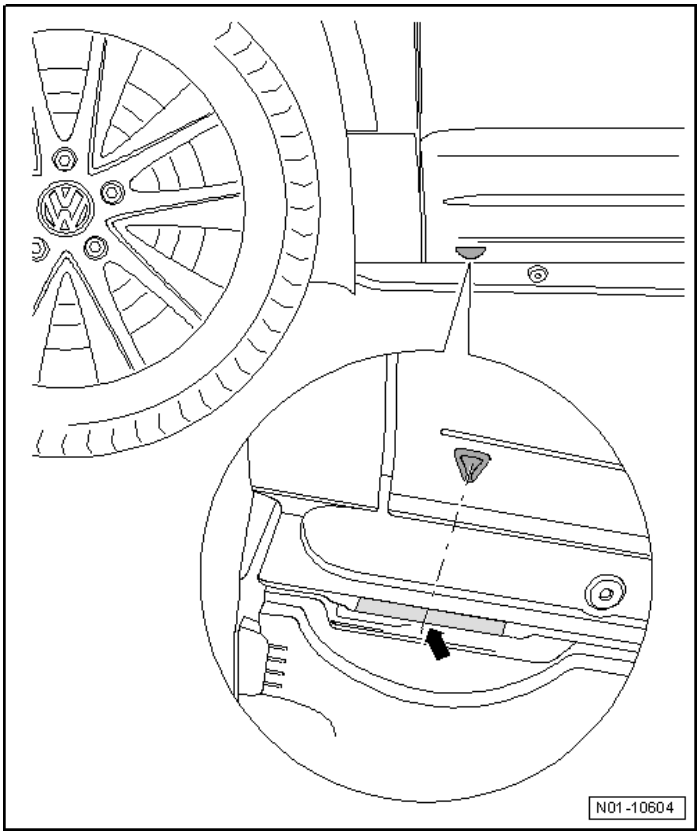
Transmission Codes

0A6	6-speed manual
09M	6-speed automatic

VEHICLE LIFTING

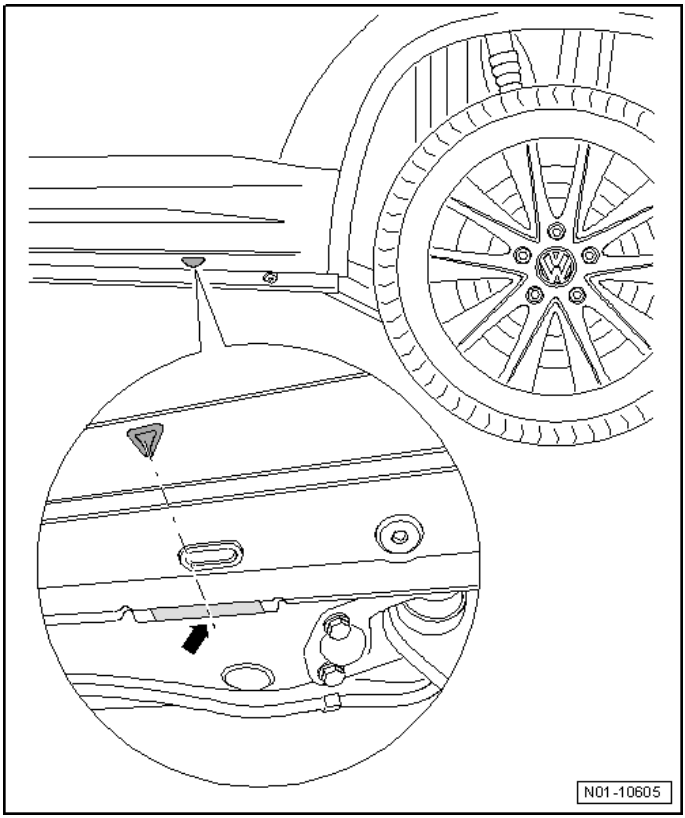
Hoist and Jack Mounting Points

Front



Position the support plate in the side member vertical reinforcement area (➡).

Rear

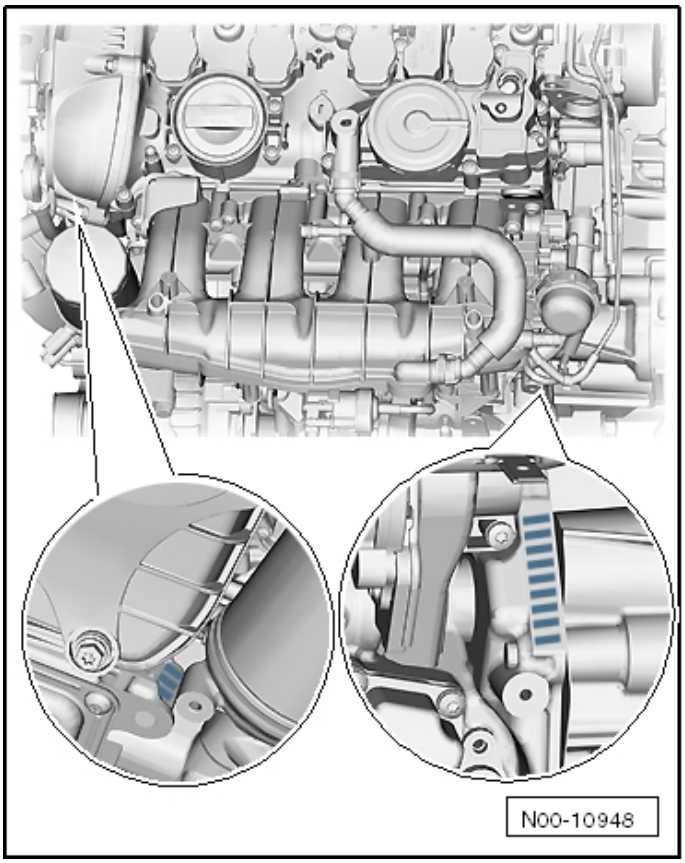


Position the support plate in the side member vertical reinforcement area (➡).

ENGINE MECHANICAL – 2.0L 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.

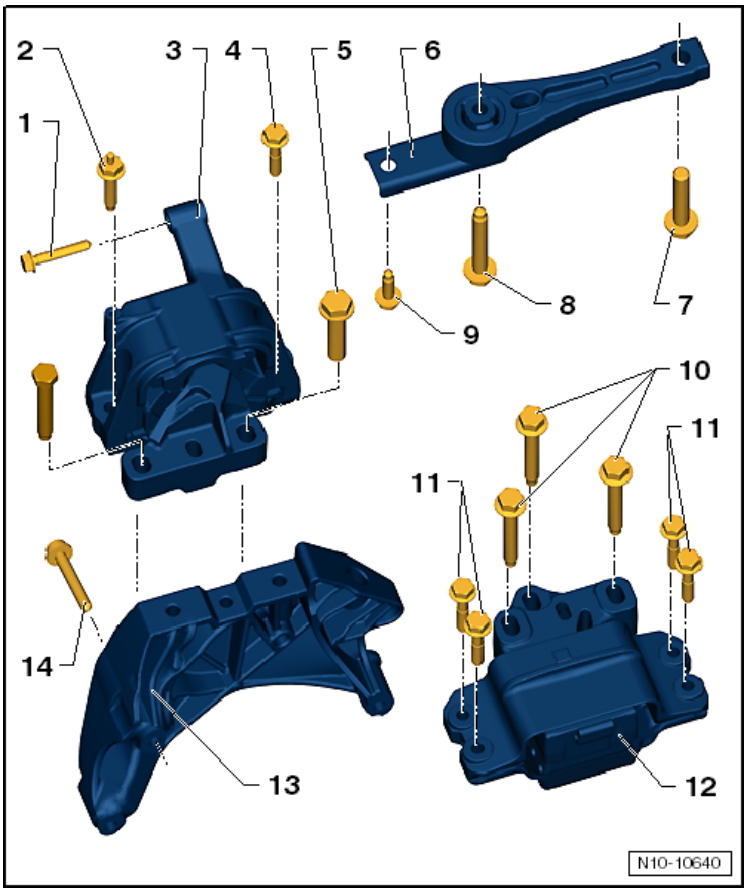
Engine Data

Code letters		**CCTA**
Manufactured from		from 01.08
Emissions values		ULEV 2 [1)]
Displacement	liter	2.0
Output	kW at RPM	147 @ 5100
Torque	Nm at RPM	280 @ 1700
Bore	diameter mm	82.5
Stroke	mm	92.8
Compression ratio		9.6:1
Research Octane Number (RON)		95
Injection system/ignition system		FSI
Ignition sequence		1-3-4-2
Turbocharger, Supercharger		Turbocharger
Variable valve timing		Yes
Secondary Air Injection (AIR)		No
Valves per cylinder		4
Oil pressure control		No

[1)] ULEV = Ultra Low Emissions Vehicle

Engine Assembly – 2.0L CCTA

Engine/Transmission Mount Overview



1 - Bolt
- ☐ 20 Nm + 90° turn
- ☐ Always replace

2 - Bolt
- ☐ 40 Nm + 90° turn
- ☐ Always replace

3 - Engine Mount

4 - Bolt
- ☐ 40 Nm + 90° turn
- ☐ Always replace

5 - Bolt
- ☐ 60 Nm + 90° turn
- ☐ Always replace

6 - Pendulum Support

7 - Bolt
- ☐ 100 Nm + 180° turn
- ☐ Always replace

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

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

10 - Bolt
- ☐ 60 Nm + 90° turn
- ☐ Always replace

11 - Bolt
- ☐ 40 Nm + 90° turn
- ☐ Always replace

12 - Transmission Mount

13 - Engine Mount Bracket

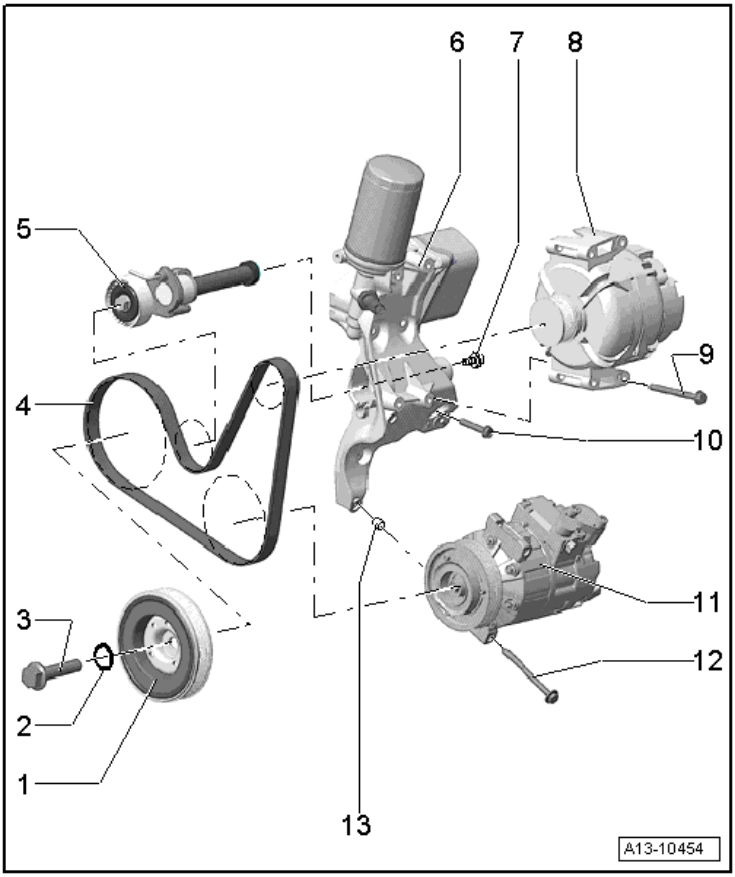
14 - Bolt
- ☐ 40 Nm + 180° turn
- ☐ Always replace

Fastener Tightening Specifications

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

Crankshaft, Cylinder Block – 2.0L 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

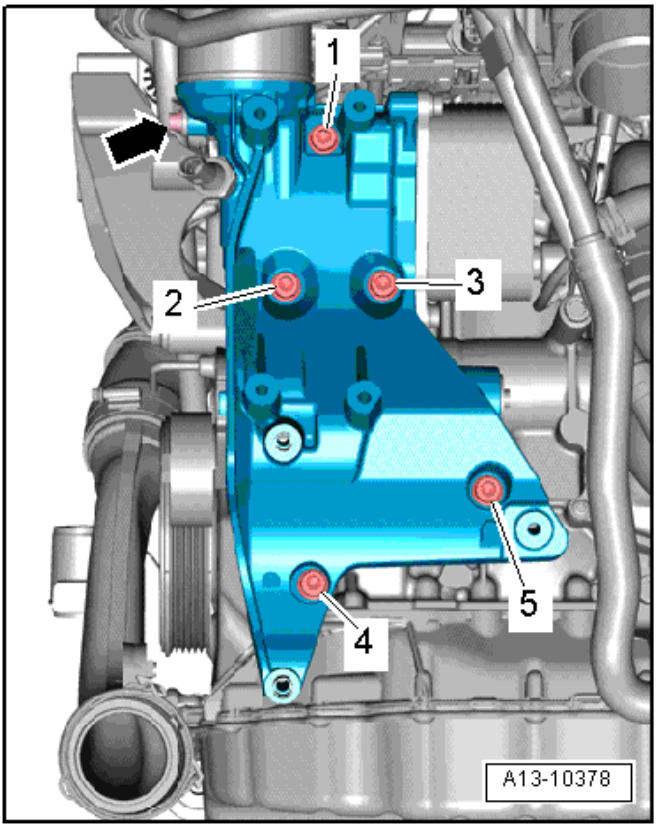
11 - Air Conditioning (A/C) Compressor

12 - Bolt

- ☐ 25 Nm

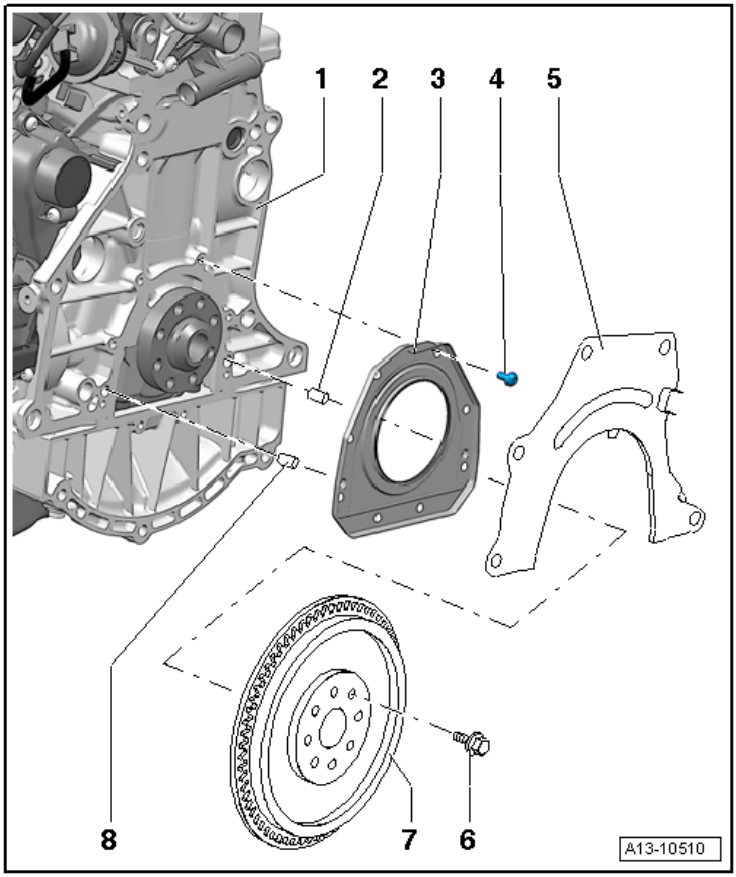
13 - Alignment Sleeve

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)

Sealing Flange and Dual Mass Flywheel/Drive Plate Overview

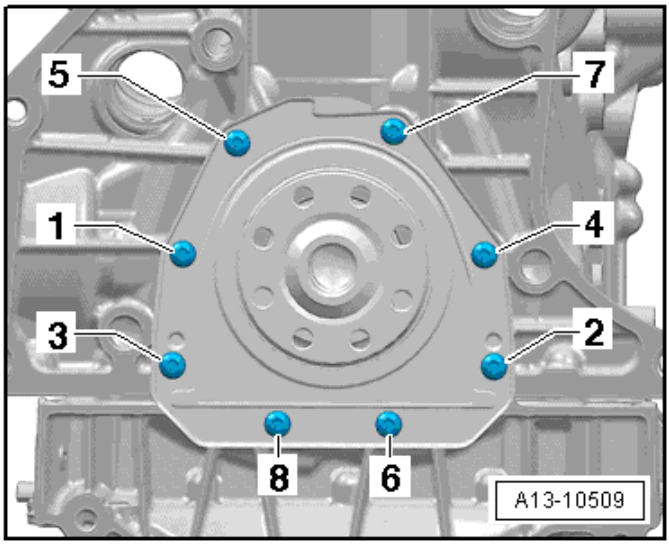


1 - Cylinder Block
2 - Alignment Pin
3 - Sealing Flange
4 - Bolt
- ☐ Tightening sequence, see Sealing Flange Bolt Tightening Sequence below

5 - Intermediate Plate
6 - Bolt
- ☐ 60 Nm + 90° turn
- ☐ Always replace

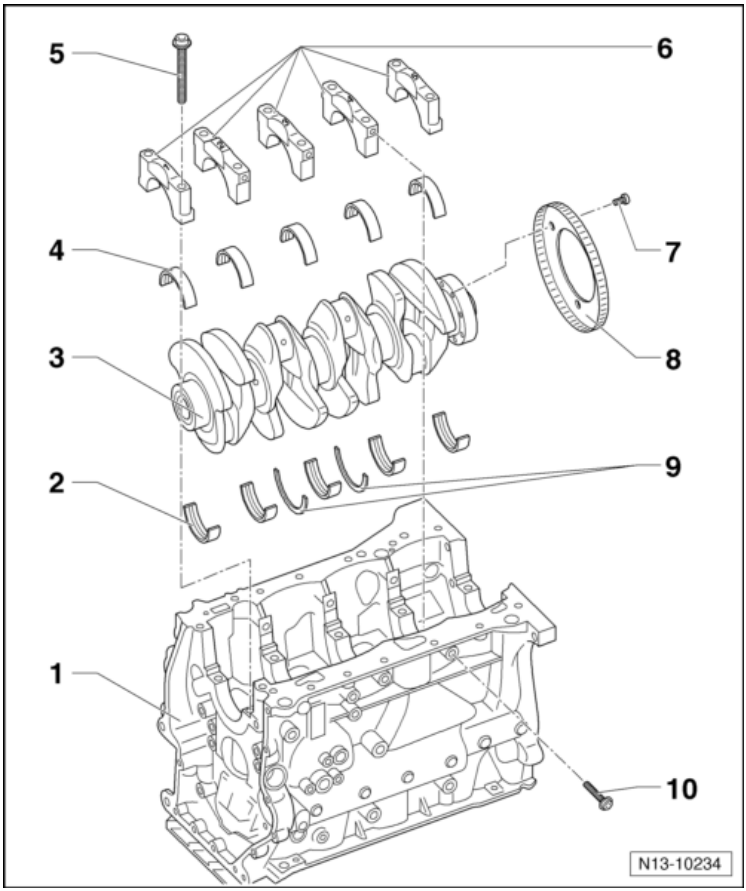
7 - Dual Mass Flywheel/Drive Plate
8 - Alignment Pin
- ☐ Not installed

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

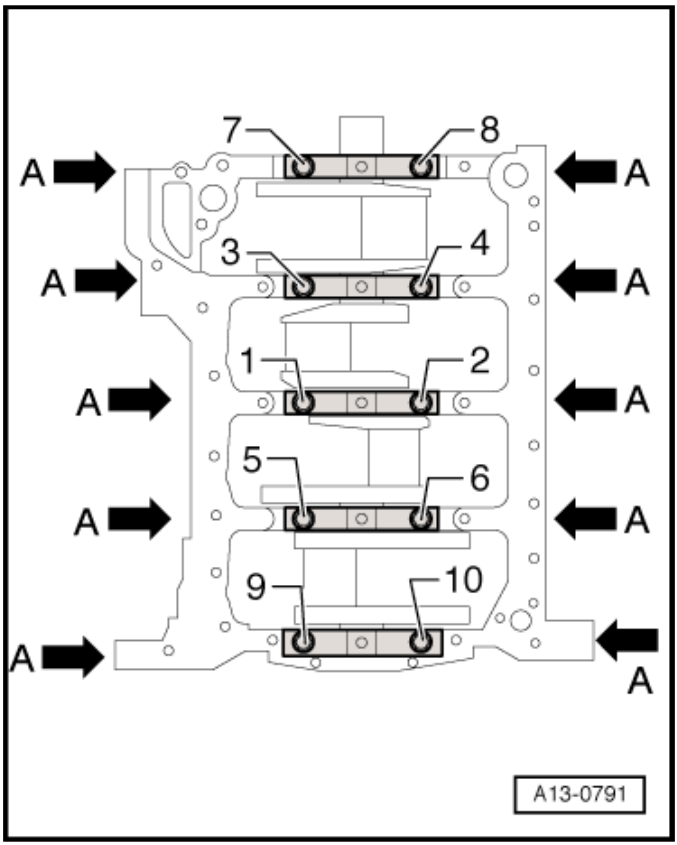


1 - Cylinder Block
2 - Bearing Shell, Lower
3 - Crankshaft
4 - Bearing Shell, Upper
5 - Bolt
- ☐ Tightening sequence, see Crankshaft Bolt Tightening Sequence below

6 - Bearing Cap
7 - Bolt
- ☐ 10 Nm + 90° turn
- ☐ Always replace

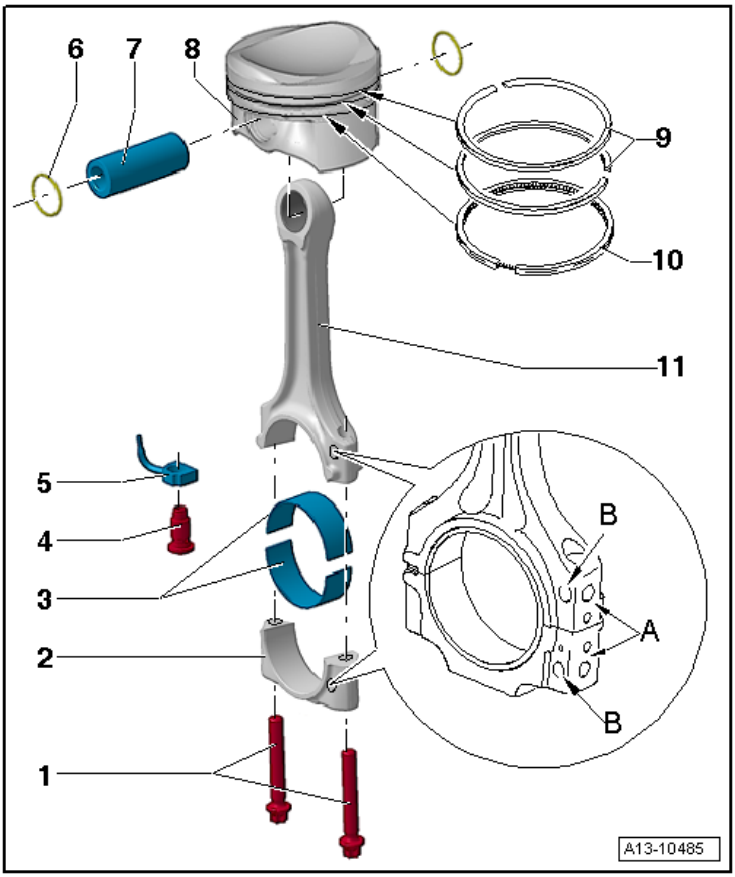
8 - Sensor Wheel
9 - Thrust Washers
10 - Bolt
- ☐ Tightening sequence, see Crankshaft Bolt Tightening Sequence below

Crankshaft Assembly Tightening Specifications



Step	Component	Nm
1	Tighten bolts 1 through 10 and 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 A	20
5	Tighten bolts A	an additional 90° (¼ turn)

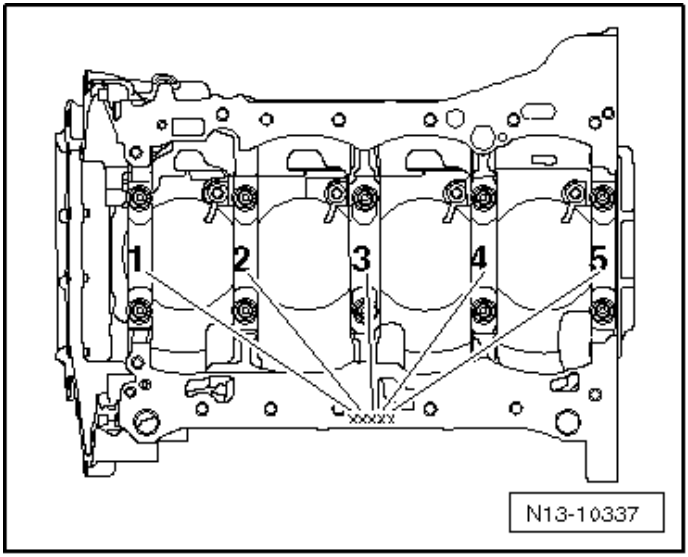
Piston and Connecting Rod Overview



1 - Bolt
- ☐ 45 Nm + 90° turn
- ☐ Always replace

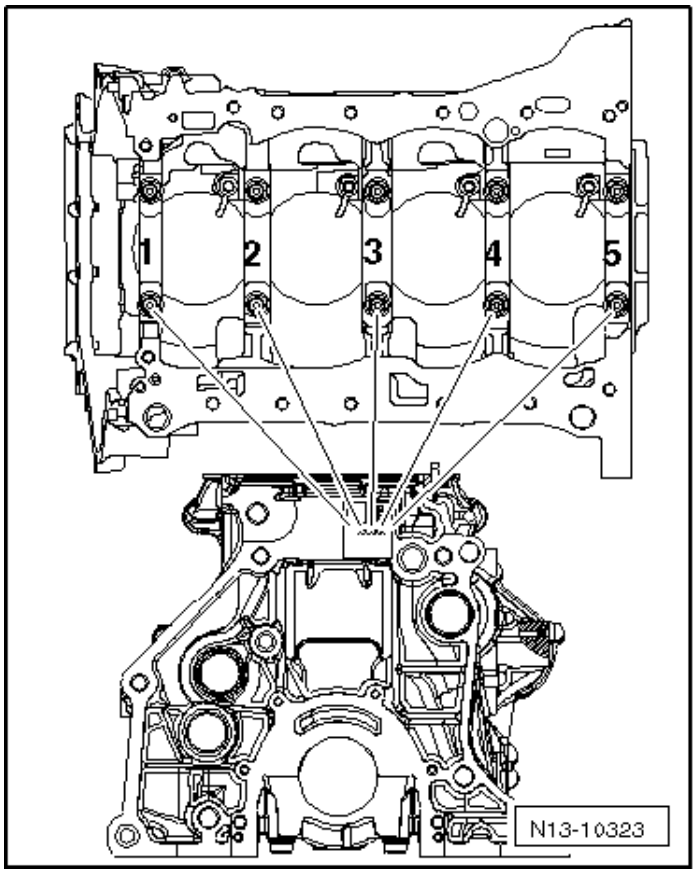
2 - Connecting Rod Bearing Cap
3 - Bearing Shell
4 - Pressure Relief Valve
5 - Oil Spray Jet
6 - Lock Ring
7 - Piston Pin
8 - Piston
9 - Compression Rings
10 - Oil Scraping Ring
11 - Connecting Rod

Cylinder Block Bearing Shell Identification



The cylinder block bearing shell identification is located either on the oil pan sealing surface or on the top (transmission side) of the cylinder block.

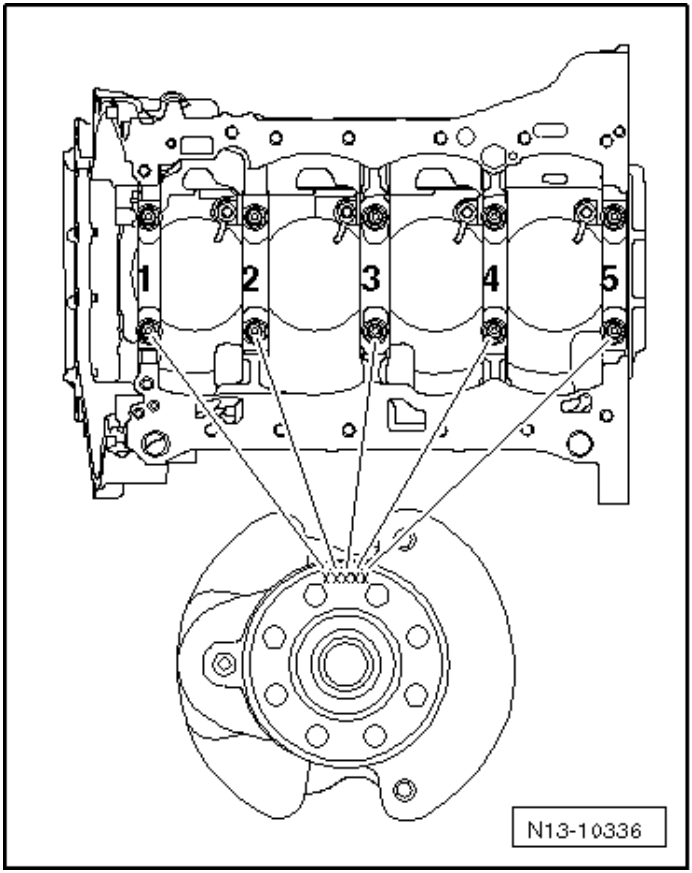
Cylinder Block Bearing Shell Identification *(cont'd)*



The identification on the cylinder block is for the upper bearing shell. Note the letter and match it to the color identification in the table.

Letter on cylinder block	Color of bearing
S	Black
R	Red
G	Yellow
B	Blue
W	White

Bearing Cap Bearing Shell Identification



The identification on the crankshaft is for the lower bearing shell. Note the letter and match it to the color identification in the table.

Letter on crankshaft	Color of bearing
S	Black
R	Red
G	Yellow
B	Blue
W	White

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
1st compression ring	0.06 to 0.09	0.20
2nd compression ring	0.03 to 0.06	0.15
Oil scraping rings	Cannot be measured	

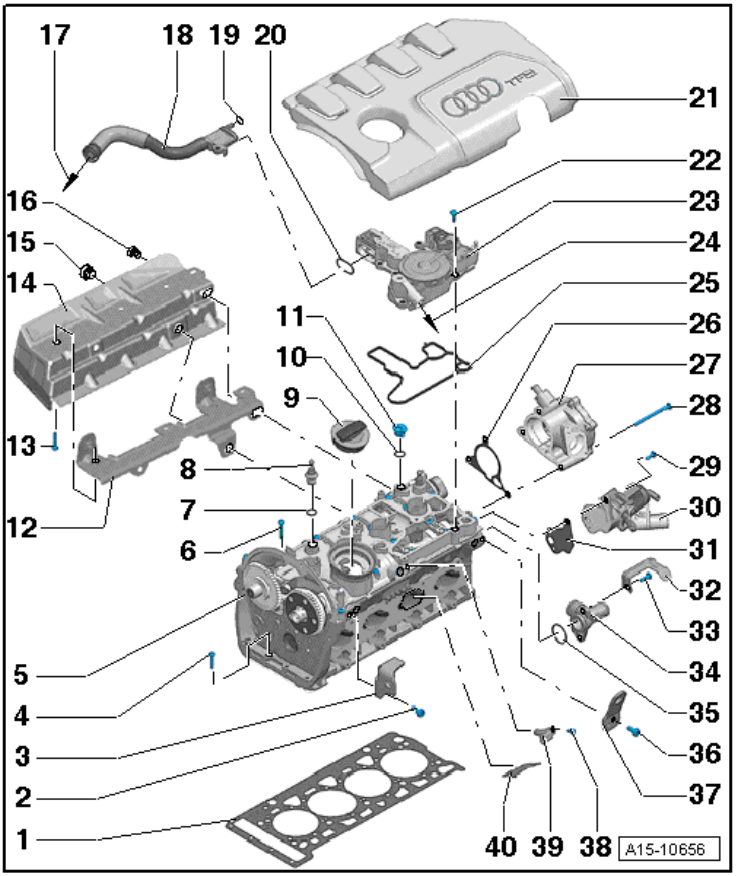
Piston and Cylinder Dimensions

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 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
- ☐ Always replace
- ☐ Lubricate with engine oil

8 - Ball Stud
- ☐ 5 Nm

9 - Cap

10 - O-ring
- ☐ Always replace
- ☐ Lubricate with engine oil

11 - Sealing Plug

12 - Bracket

13 - Bolt
- ☐ 9 Nm

14 - Heat Shield

15 - Bolt
- ☐ 20 Nm

16 - Bolt
- ☐ 20 Nm

17 - To the Intake Hose/Turbocharger

18 - Ventilation Pipe

19 - O-ring
- ☐ No replacement part

20 - Seal
- ☐ No replacement part

21 - Engine Cover

22 - Bolt
- ☐ Tightening sequence, se Crankcase Ventilation Bolt Tightening Sequence below

23 - Cap

24 - To the Intake Manifold

25 - Gasket
- ☐ No replacement part

26 - Gasket

27 - Vacuum Pump

28 - Bolt
- ☐ 9 Nm

29 - Bolt
- ☐ 9 Nm
- ☐ For engine code CBFA only

30 - Secondary Air Injection Solenoid Valve -N112-
- ☐ For engine code CBFA only

31 - Gasket
- ☐ Always replace
- ☐ For engine code CBFA only

32 - Mounting Plate

33 - Bolt
- ☐ 9 Nm

34 - Connection

35 - O-ring
- ☐ Always replace
- ☐ Coat with coolant

Cylinder Head Overview *(cont'd)*

36 - Bolt

- ☐ 25 Nm

37 - Transport Strap

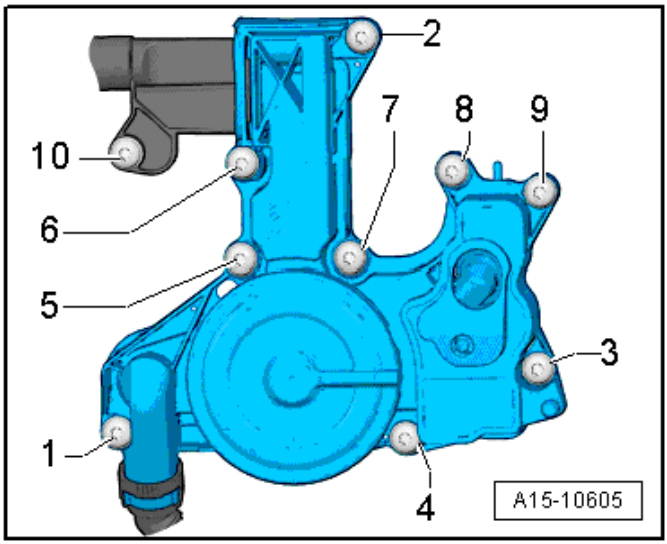
38 - Bolt

- ☐ 9 Nm

39 - Camshaft Position Sensor -G40-

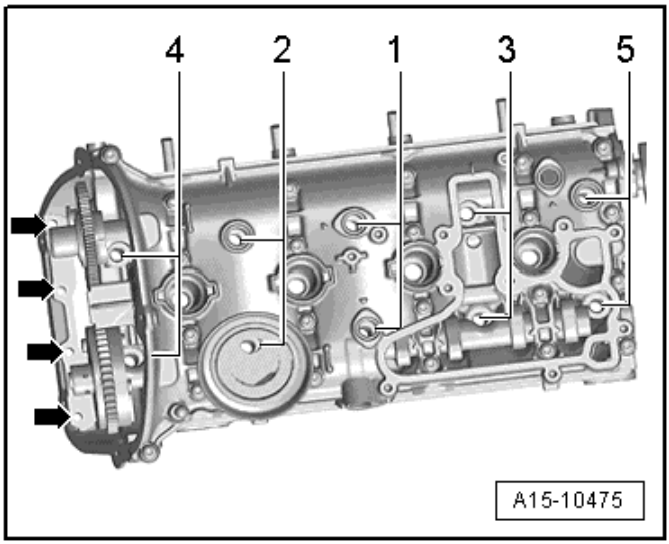
40 - Partition Plate

Crankcase Ventilation Tightening Specification



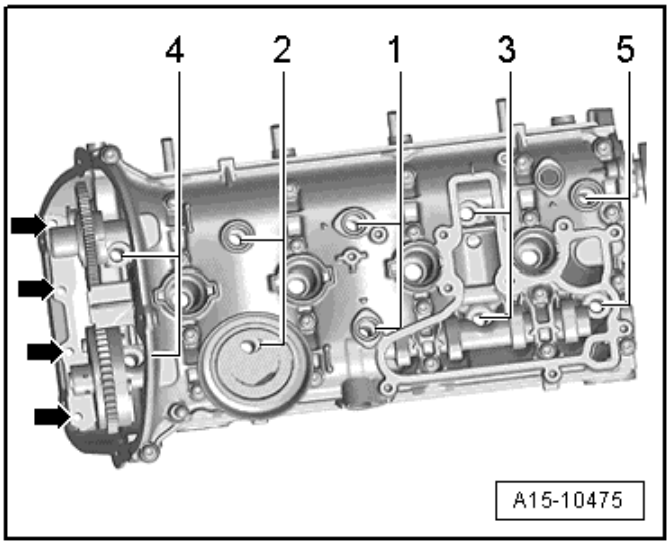
Step	Component	Nm
1	Tighten bolts 1 through 10 in sequence	11

Loosening the Cylinder Head Bolts



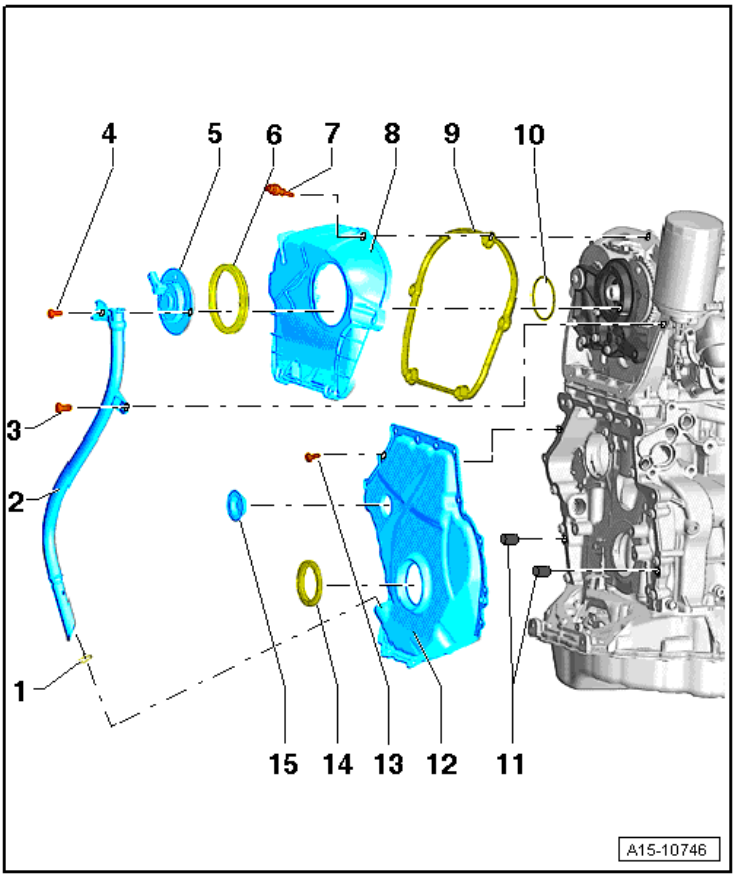
Step	Component
1	Remove bolts -arrows-.
2	Loosen cylinder head bolts in sequence -1 through 5-.

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 - Pendulum Support
- ☐ 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 - Seal

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

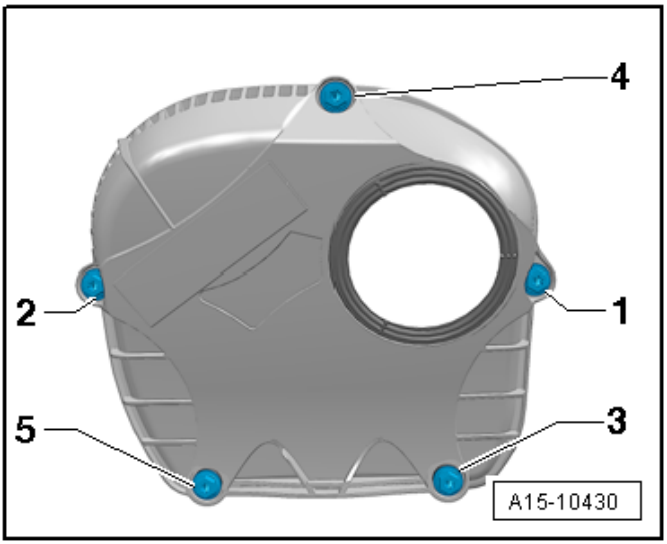
- ☐ Always replace

14 - Seal

15 - Sealing Plug

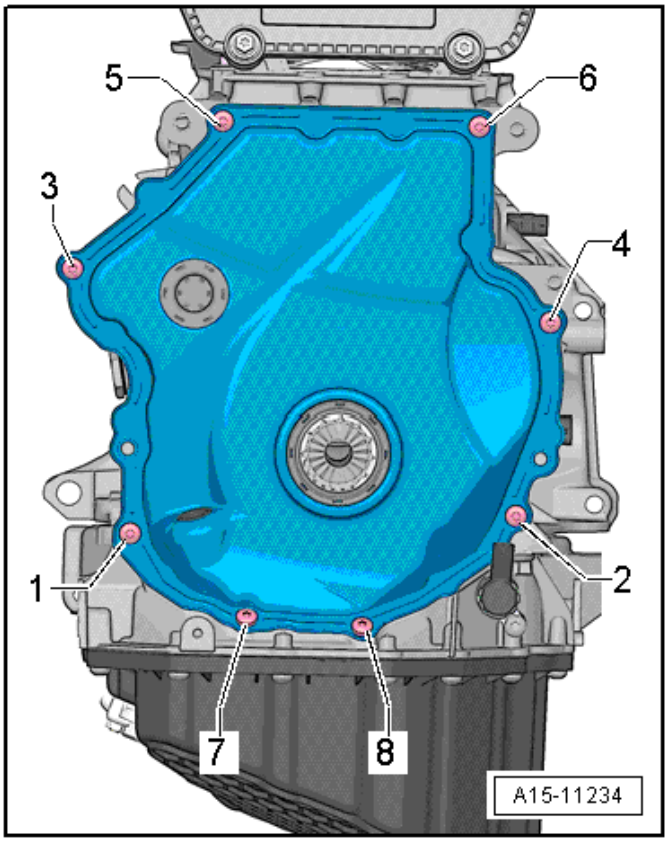
- ☐ Always replace

Upper Timing Chain Cover Tightening Specifications



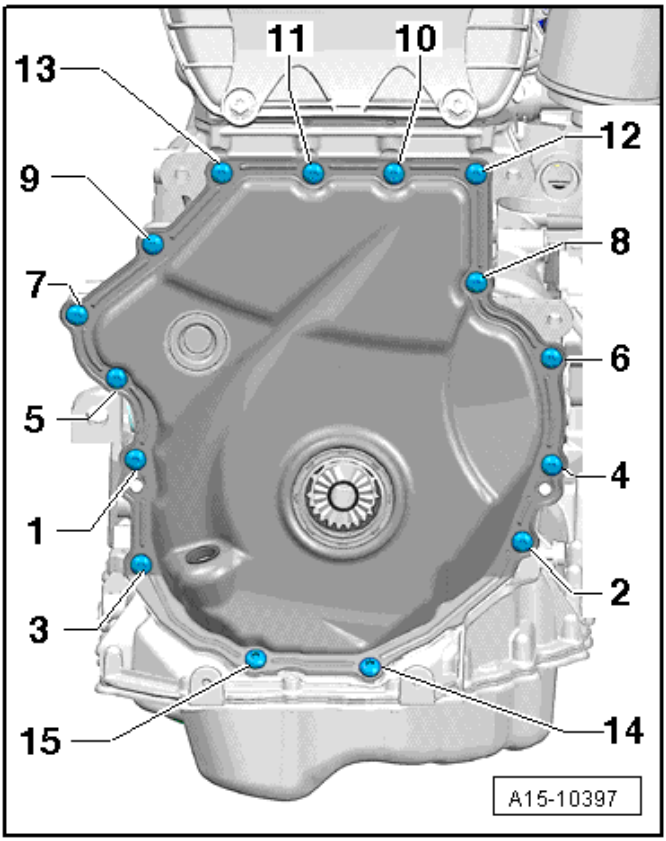
Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence in several stages	Hand-tighten
1	Tighten bolts 1 through 5 in sequence	9

Lower Timing Chain Cover with 8 Bolts Tightening Specifications



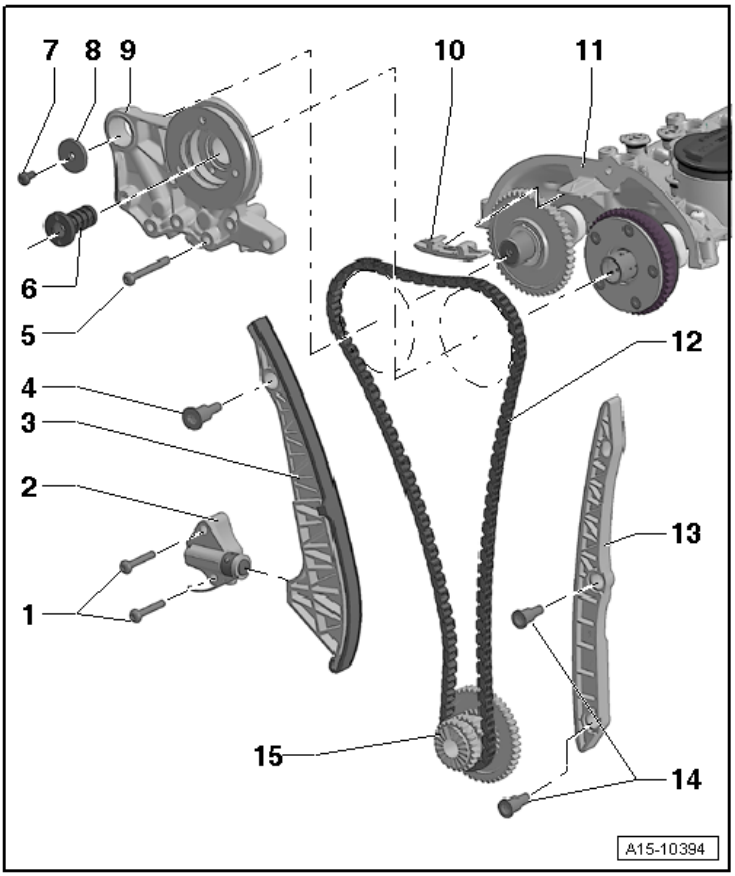
Step	Component	Nm
1	Tighten bolts 1 through 8 in sequence	4
2	Tighten bolts 1 through 15 in sequence	an additional 45° (⅛ turn)

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° (⅛ 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

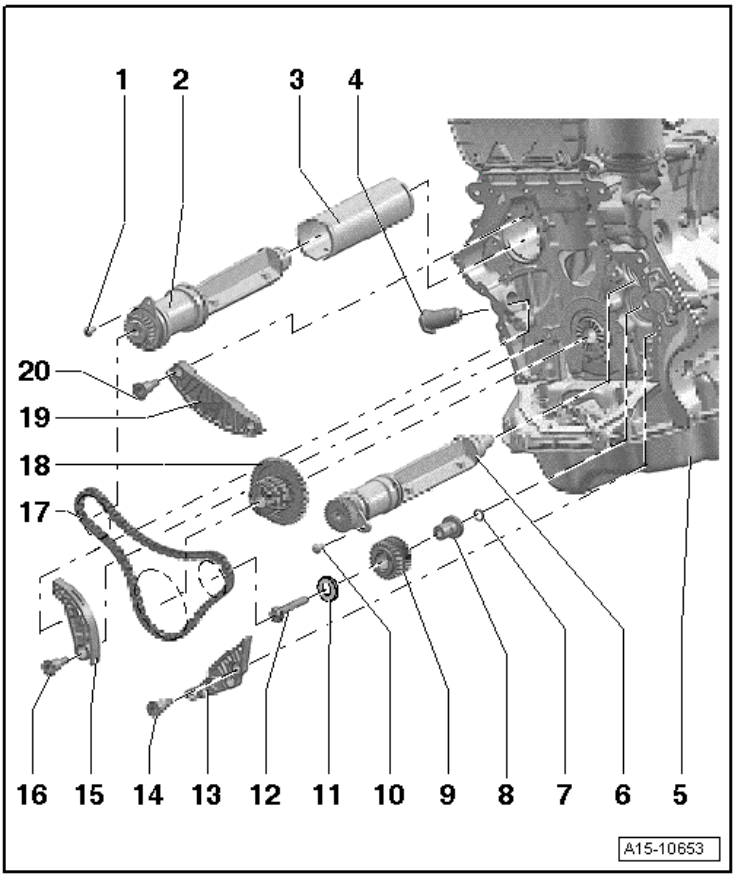
8 - Washer

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

Balance Shaft Timing Chain 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
- ☐ Lubricate with engine oil

9 - Intermediate Shaft Sprocket
10 - Bolt
- ☐ 9 Nm

11 - Washer

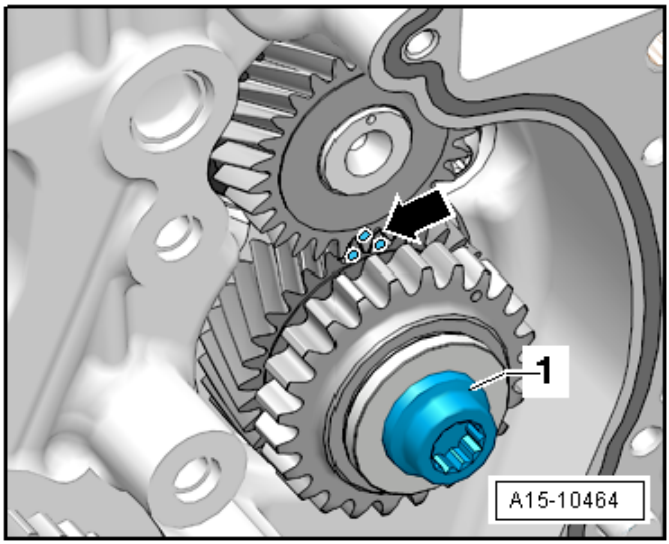
12 - Transmission Mount
- ☐ Tightening sequence, see Intermediate Sprocket Bolt Tightening Sequence below

13 - Guide Rail
14 - Guide Pin
- ☐ 20 Nm

15 - Tensioning Rail
16 - Guide Pin
- ☐ 20 Nm

17 - Timing Chain
18 - Crankshaft Chain Sprocket
19 - Guide Rail
20 - Guide Pin
- ☐ 20 Nm

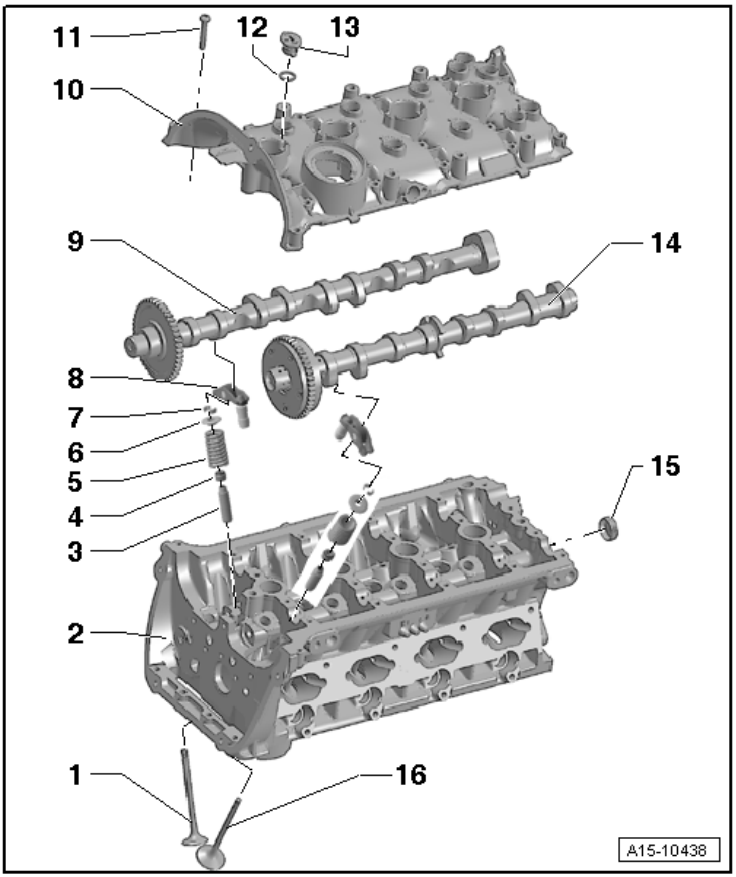
Intermediate Sprocket Bolt Tightening Sequence



Tighten the bolt -1- in four stages:

Step	Component	Nm
1	Tighten bolt -1-	10
2	Turn the sprocket.	
3	The sprocket must not have any play; if so, loosen and retighten again. Tighten bolt -1-	30
4	Tighten bolt -1-	additional 90° (1/4) turn.

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

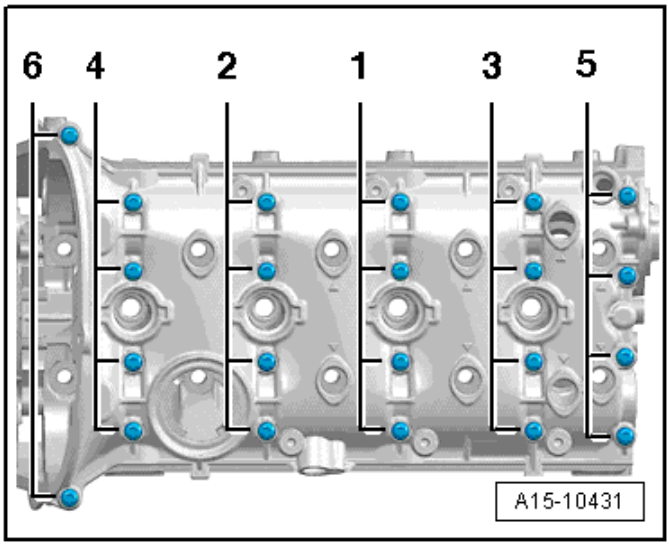
12 - O-ring
- ☐ Always replace

13 - Plug

14 - Intake Camshaft
15 - Cap
- ☐ Always replace

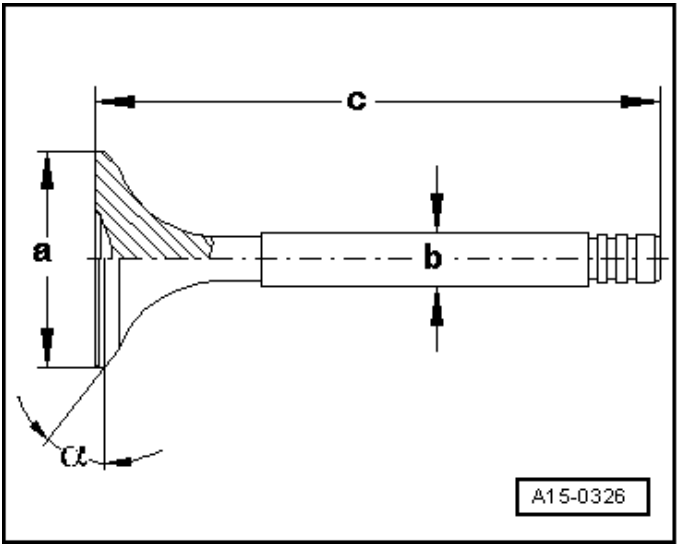
16 - Intake valve

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

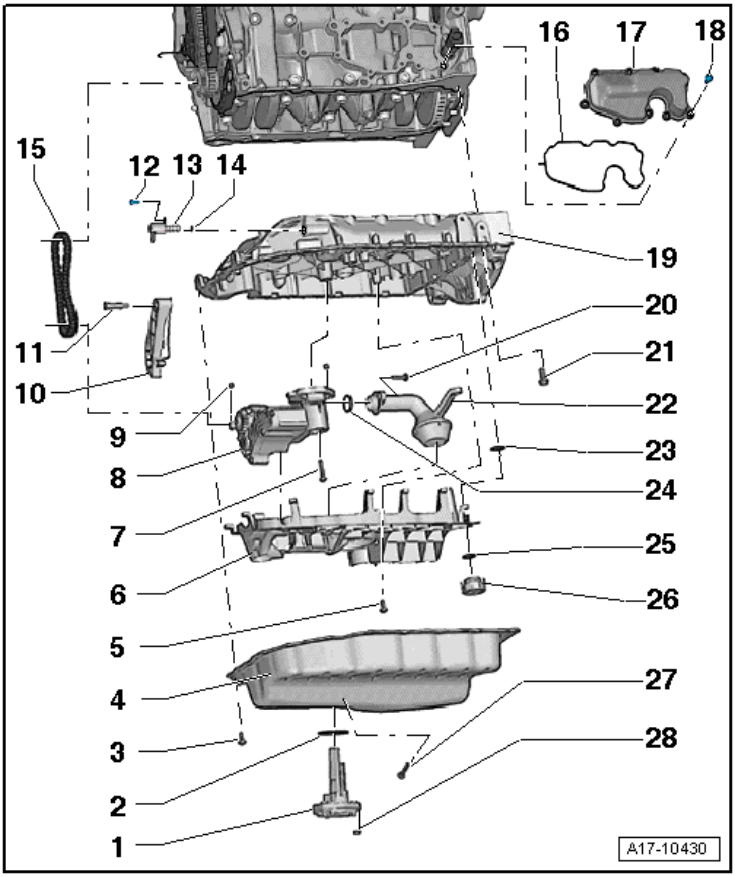
Note: Intake and exhaust valves must not be refaced by grinding. Only lapping is permitted.

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 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
- ☐ 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

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 Pane
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

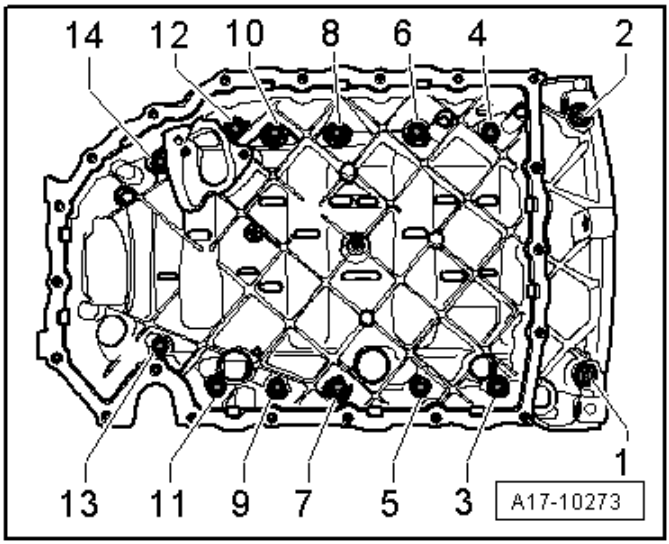
24 - O-ring
- ☐ Always replace

25 - O-ring
- ☐ Always replace

26 - Check Valve
27 - Oil Drain Plug
- ☐ 30 Nm
- ☐ Always replace.

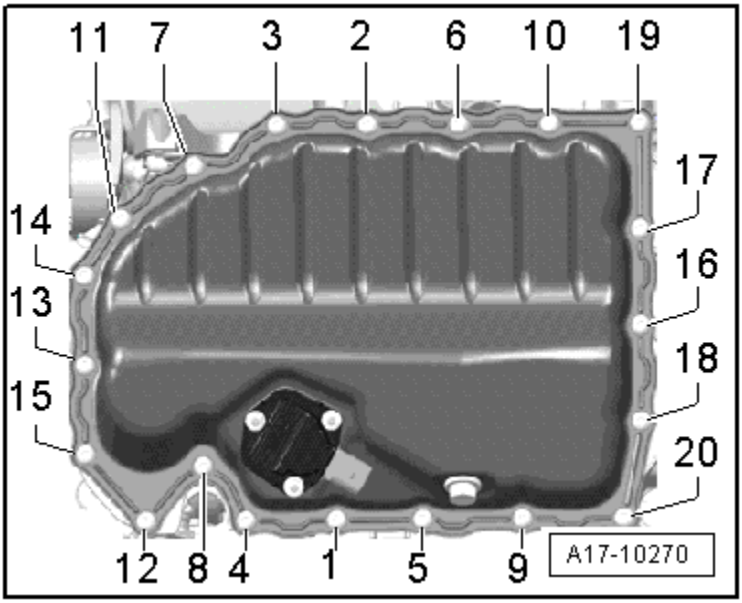
28 - Nut
- ☐ 9 Nm

Upper Oil Pan Tightening Specifications



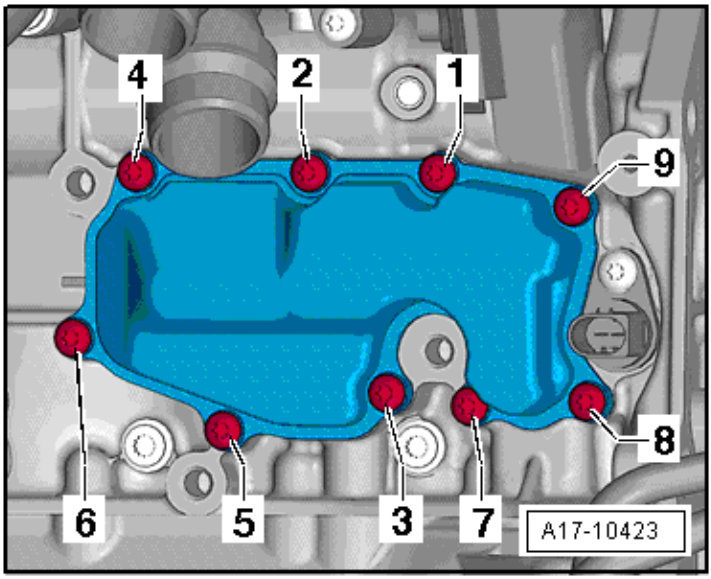
Step	Component	Nm
1	Tighten bolts 1 through 14 in sequence	Hand-tighten
2	Tighten bolts 1 through 14 in sequence	15
3	Tighten bolts 1 through 14 in sequence	an additional 90° (¼ turn)

Oil Pan Tightening Specifications



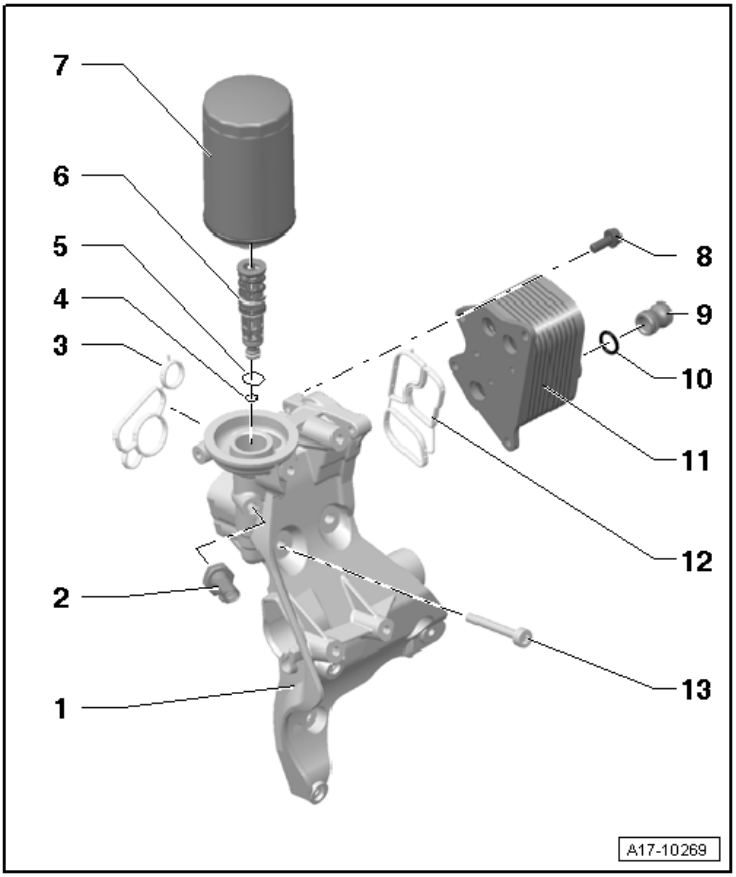
Step	Component	Nm
1	Tighten bolts 1 through 20 in sequence	Hand-tighten
2	Tighten bolts 1 through 20 in sequence	8
3	Tighten bolts 1 through 20 in sequence	an additional 45° (⅛ turn)

Oil Separator Tightening Specification



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

Oil Filter, Oil Cooler and Oil Pressure Switch Overview



1 - Accessory Bracket
2 - Oil Pressure Switch -F1-
- ☐ 20 Nm
- ☐ Always replace

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

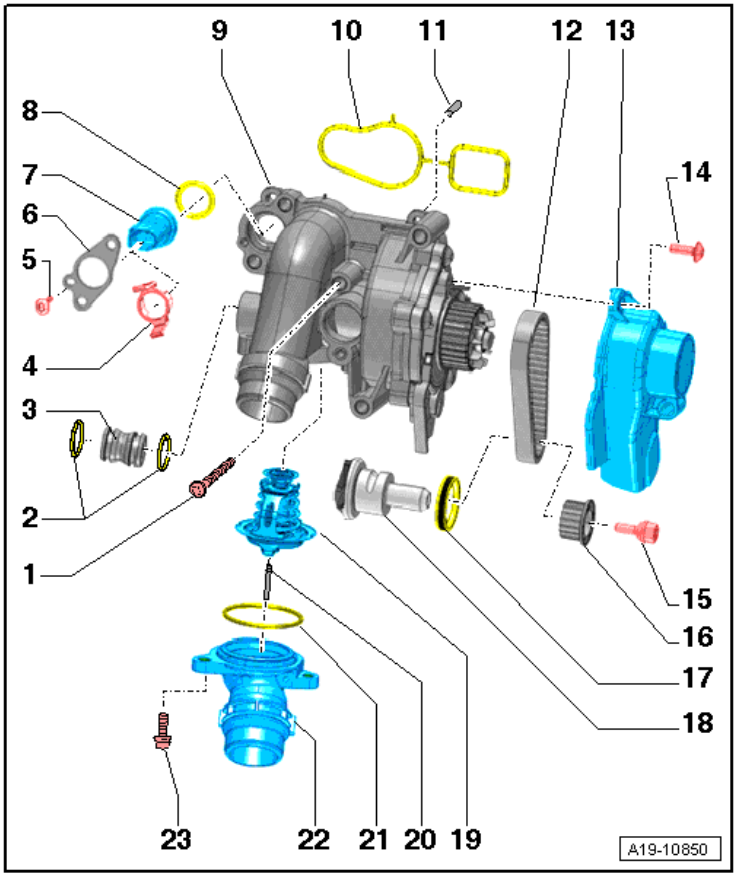
- ☐ Always replace

13 - Bolt

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

Cooling System – 2.0L 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 with the threaded version of the ECT sensor.

6 - Retaining Plate
- ☐ Only with the threaded version of the ECT 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

16 - thed Belt Drive Gear

17 - Shaft Seal

18 - Balance Shaft

19 - Coolant Thermostat

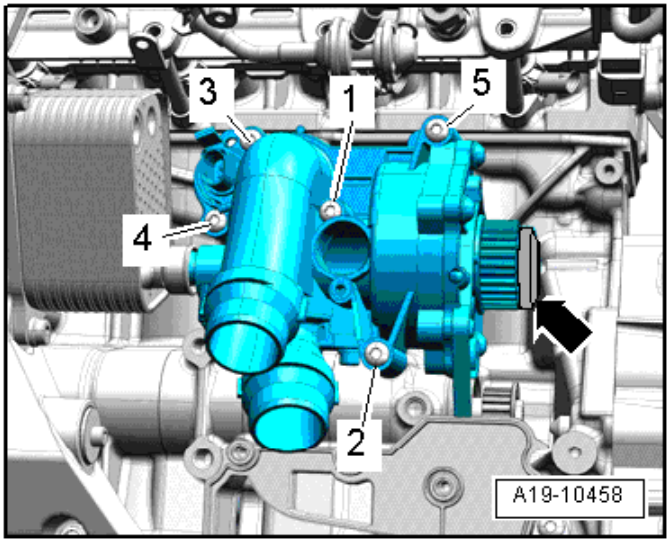
20 - Centering Pin

21 - O-ring
- ☐ Always replace

22 - Cover for Theremostat

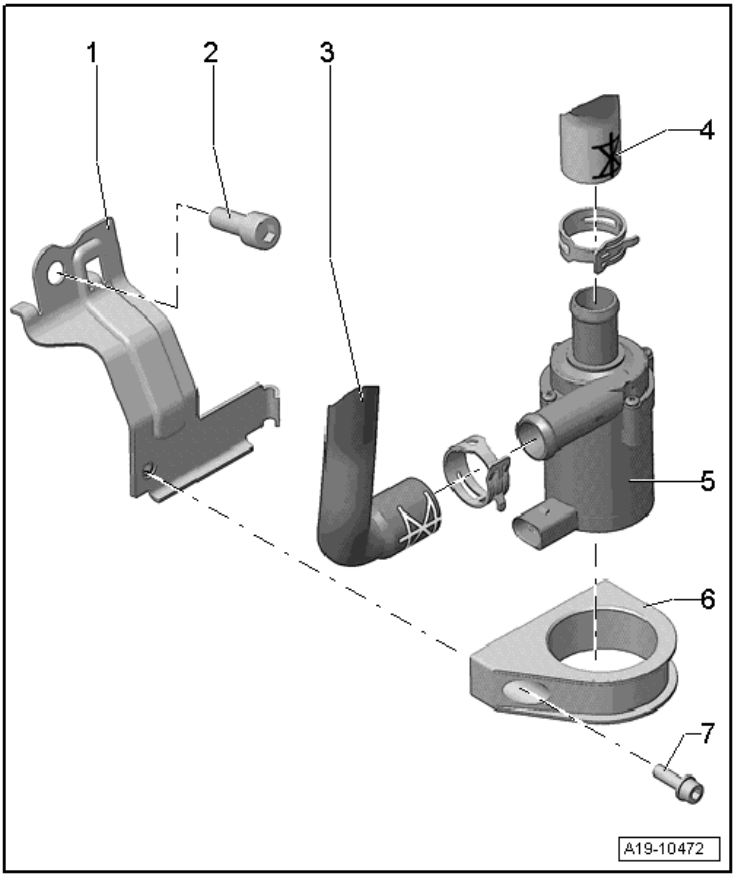
23 - Bolt
- ☐ 9 Nm

Coolant Pump Tightening Specification



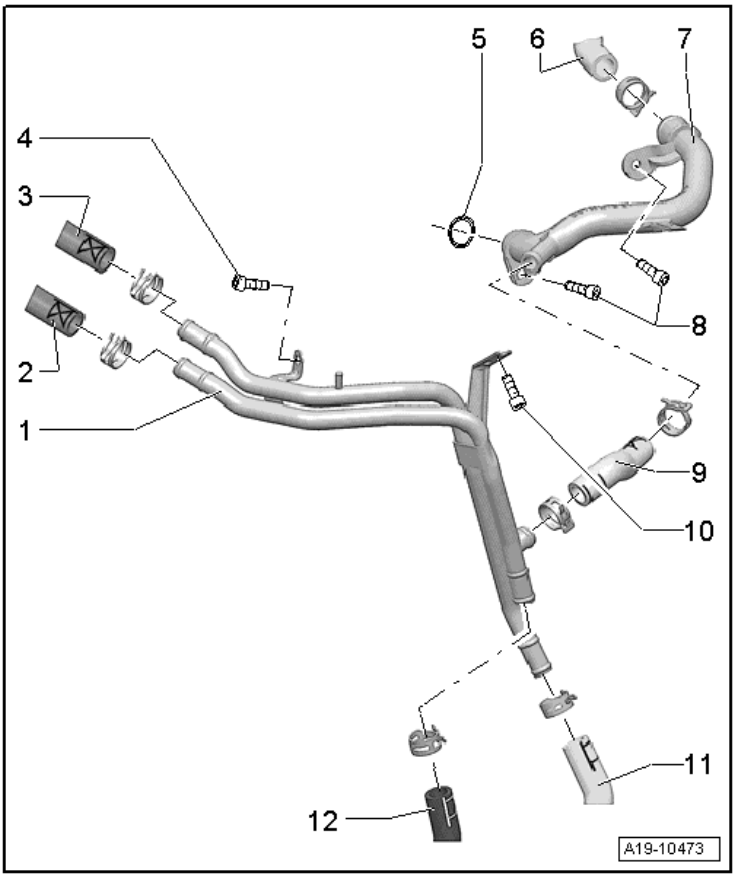
Step	Component	Nm
1	Tighten bolts 1 through 5 in sequence	9

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

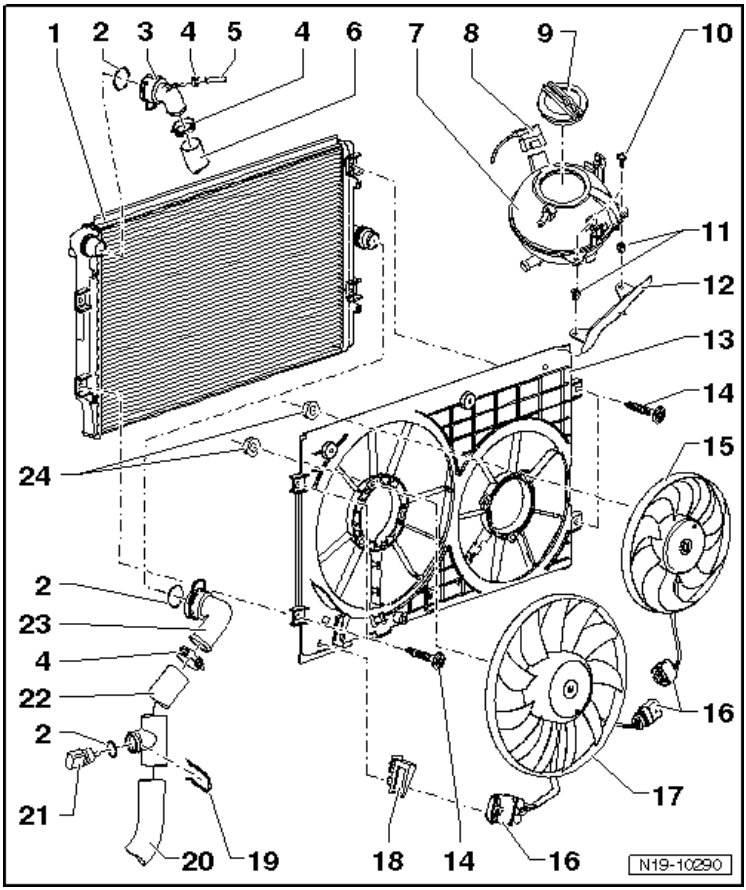
5 - O-ring
- ☐ Always replace

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

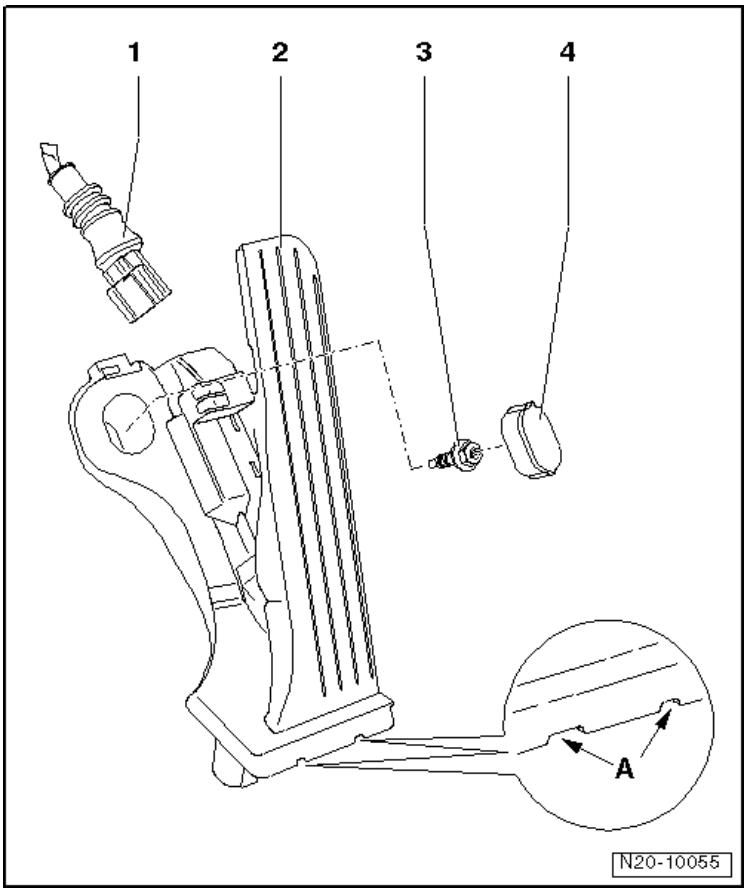


1 - Radiator
2 - O-ring
3 - Connecting Piece
4 - Spring Type Clip
5 - Coolant Hose
6 - Upper Coolant Hose
7 - Expansion Tank
8 - Connector
9 - Cap
10 - Bolt
☐ 5 Nm
11 - Plastic Inserts
12 - Bracket
13 - Fan Shroud
14 - Bolt
☐ 5 Nm
15 - Coolant Fan 2 -V177-

16 - Connector
17 - Coolant Fan -V7-
18 - Bracket
19 - Clip
20 - Lower Coolant Hose
21 - Engine Coolant Temperature Sensor on Radiator Outlet -G83-
22 - Lower Coolant Hose
23 - Connecting Piece
24 - Nut
- ☐ 10 Nm

Fuel Supply – 2.0L CCTA

Accelerator Pedal Module Overview



1 - Connector

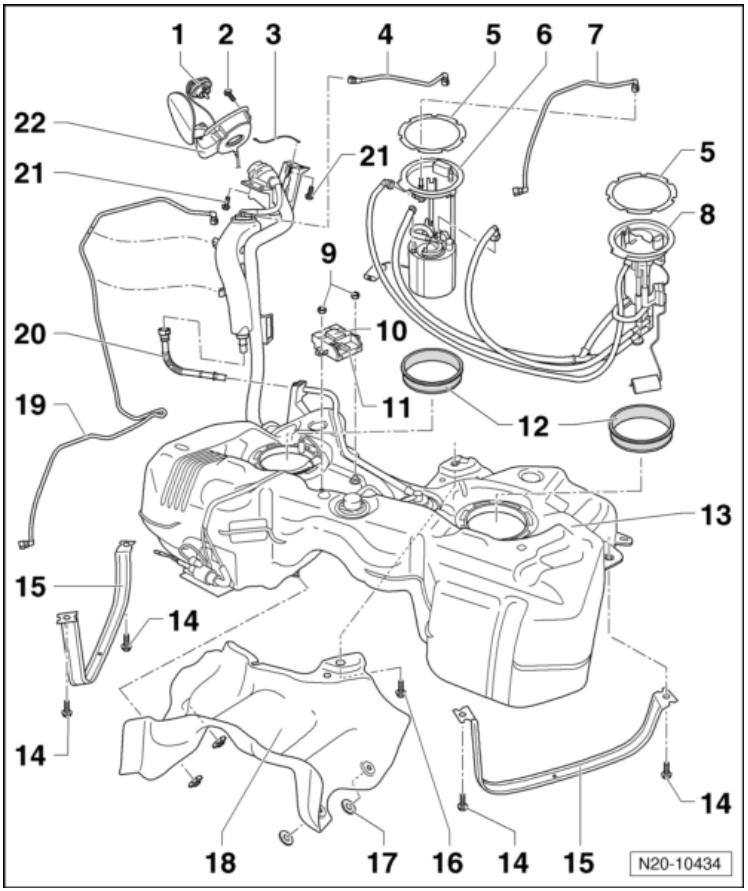
2 - Accelerator Pedal Position Sensor -G79- with Accelerator Pedal Position Sensor 2 -G185-

3 - Bolt

☐ 22 Nm

4 - Cap

Fuel Tank and Attachments Overview



1 - Cap
2 - Bolt
3 - Ground Connection
4 - Vent Line
5 - Lock Ring
☐ 110 Nm
6 - Fuel Delivery Unit -GX1-
7 - Supply Line
8 - Flange, Left Side
9 - Bolt
☐ 3.5 Nm
10 - Fuel Pump Control Module Bracket
11 - Fuel Pump Control Module -J538-
12 - Seal
13 - Fuel Tank

14 - Bolt
- ☐ 25 Nm
- ☐ Always replace

15 - Securing Strap

16 - Bolt
- ☐ 25 Nm
- ☐ Always replace

17 - Retainer

18 - Heat Shield

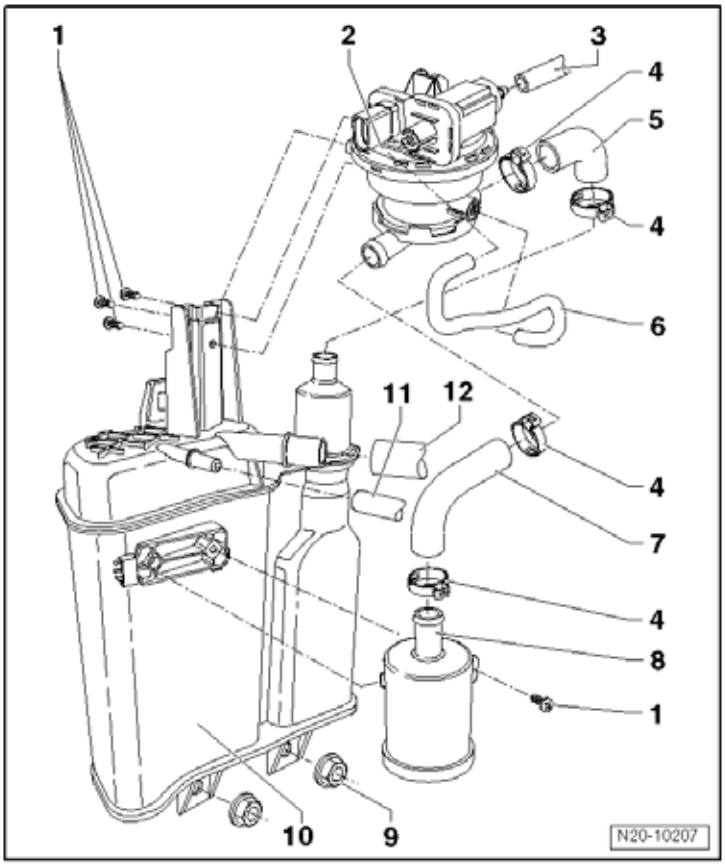
19 - Vent Line

20 - Vent Line

21 - Bolt
- ☐ 8 Nm 90° turn
- ☐ Always replace

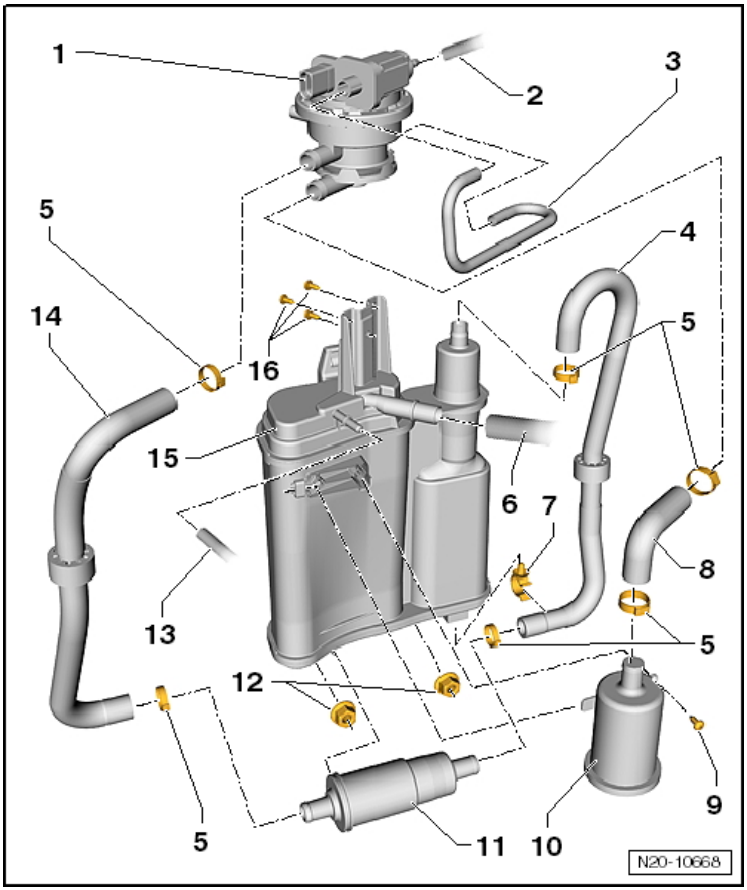
22 - Fuel Filler Door Unit

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 Housing
9 - Bolt
☐ 10 Nm
10 - P Canister
11 - Vent Line
12 - Vent Line

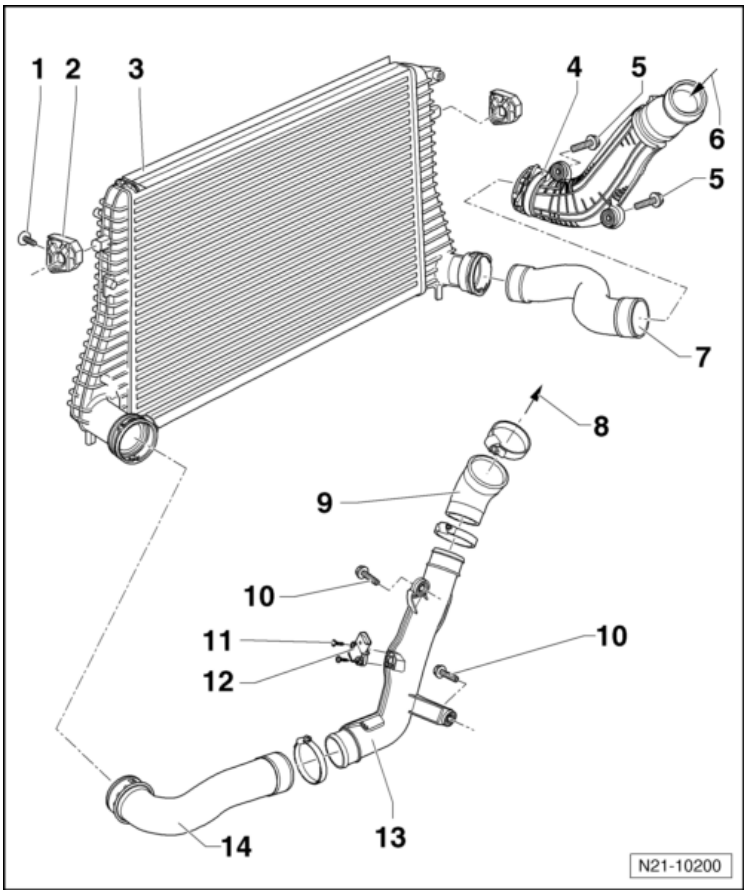
EVAP System Overview, with an Additional Filter



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 Housing
11 - Auxiliary Air Filter Housing
12 - Nut
☐ 10 Nm
13 - Vent Line
14 - Connecting Hose
15 - EVAP Canister
16 - Bolts

Turbocharger – 2.0L CCTA

Charge Air Cooler System Overview



1 - Bolt
- ☐ 5 Nm

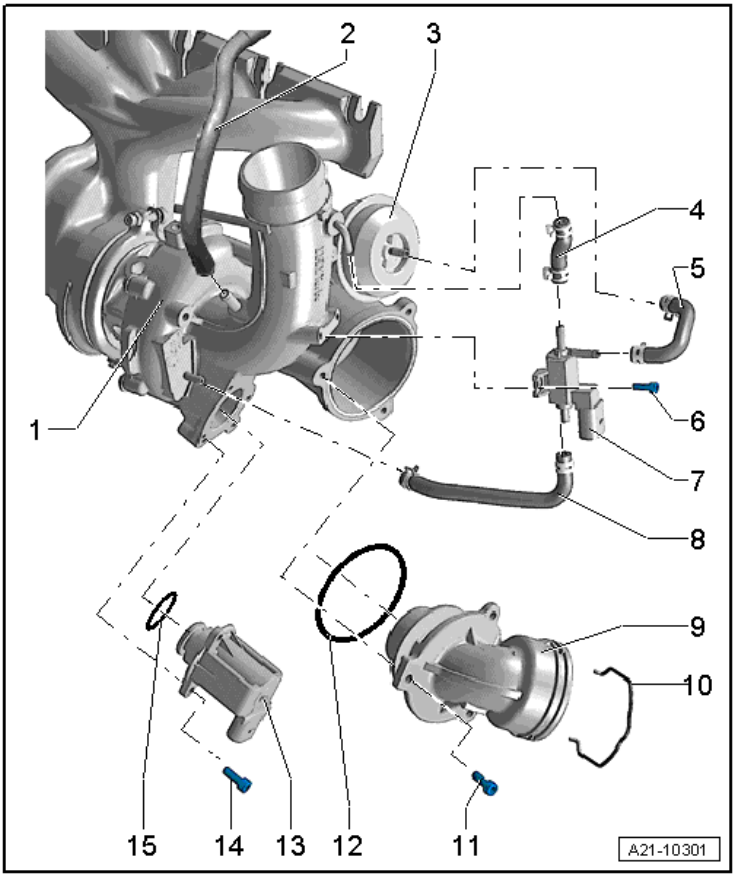
2 - Mount
3 - Charge Air Cooler
4 - Charge Air Pipe
5 - Bolt
- ☐ 10 Nm

6 - From Turbocharger
7 - Charge Air Hose
8 - To Throttle Valve Control Module -J338-
9 - Charge Air Hose
10 - Bolt
- ☐ 10 Nm

11 - Bolt
- ☐ 5 Nm

12 - Charge Air Pressure Sensor -G31-
13 - Charge Air Pipe
14 - Charge Air Hose

Wastegate Bypass Regulator Valve -N75- and Turbocharger Recirculation Valve -N249-



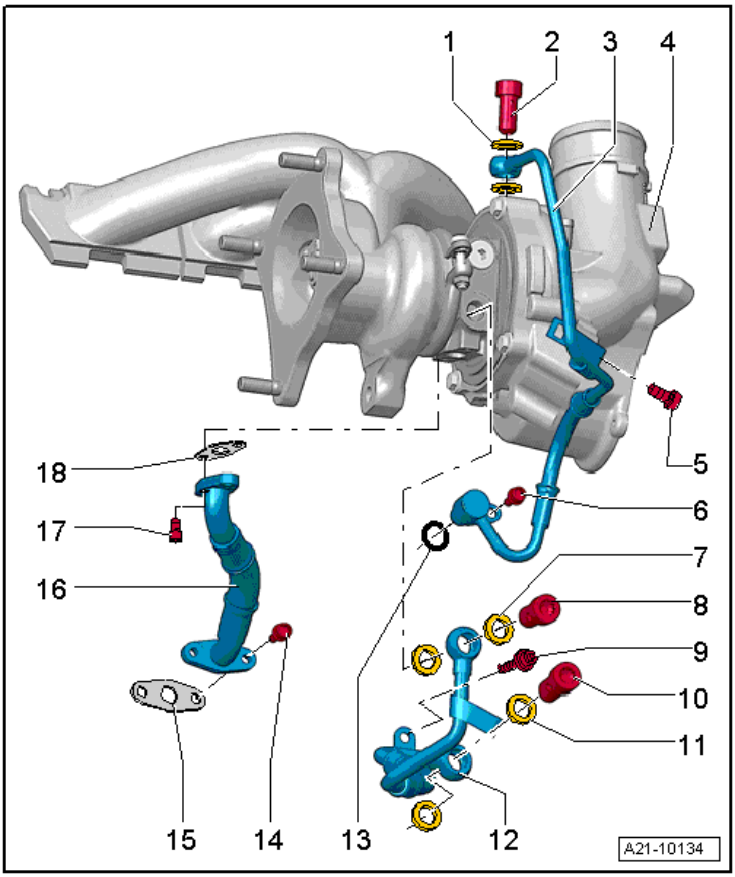
1 - Turbocharger
2 - To Evaporative Emission (EVAP) Canister
3 - Turbocharger Vacuum Diaphragm
4 - Hose
5 - Hose
6 - Bolt
☐ 3 Nm
7 - Wastegate Bypass Regulator Valve -N75-
8 - Hose
9 - Connection
10 - Clip
11 - Bolt
☐ 9 Nm
12 - Seal
13 - Turbocharger Recirculation Valve -N249-

14 - Bolt

☐ 7 Nm

15 - Seal

Coolant Supply and Oil Return 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 Pipee

13 - O-ring
- ☐ Always replace

14 - Bolt
- ☐ 9 Nm

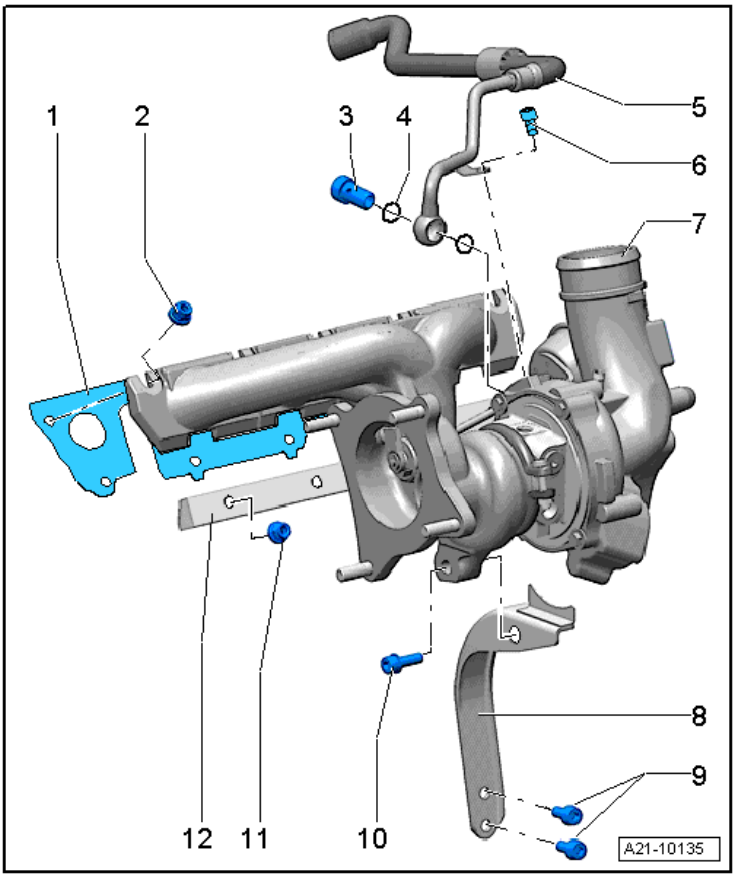
15 - Seal
- ☐ Always replace

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

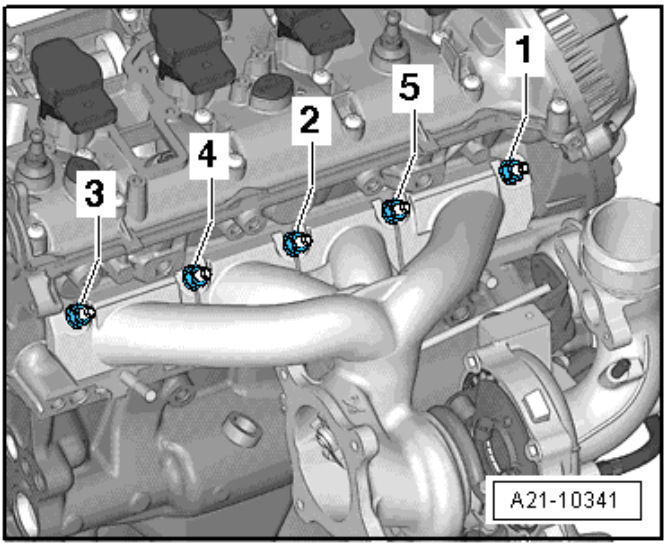
- ☐ 30 Nm
- ☐ Coat the bolt with Hot Bolt Paste -G 052 112 A3-.

11 - Nut

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

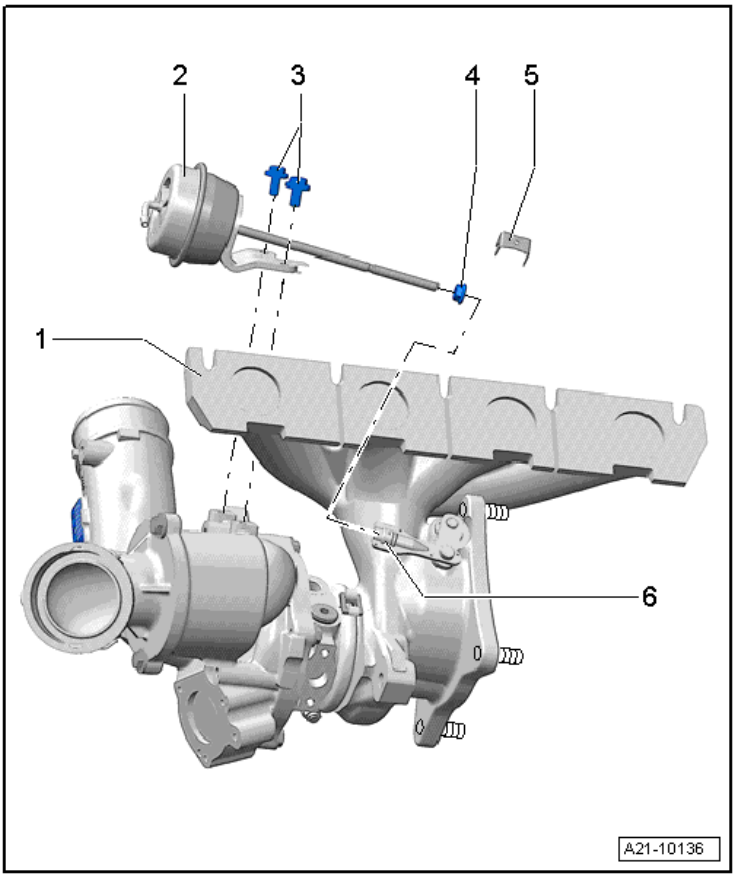
12 - Fastening Strip

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

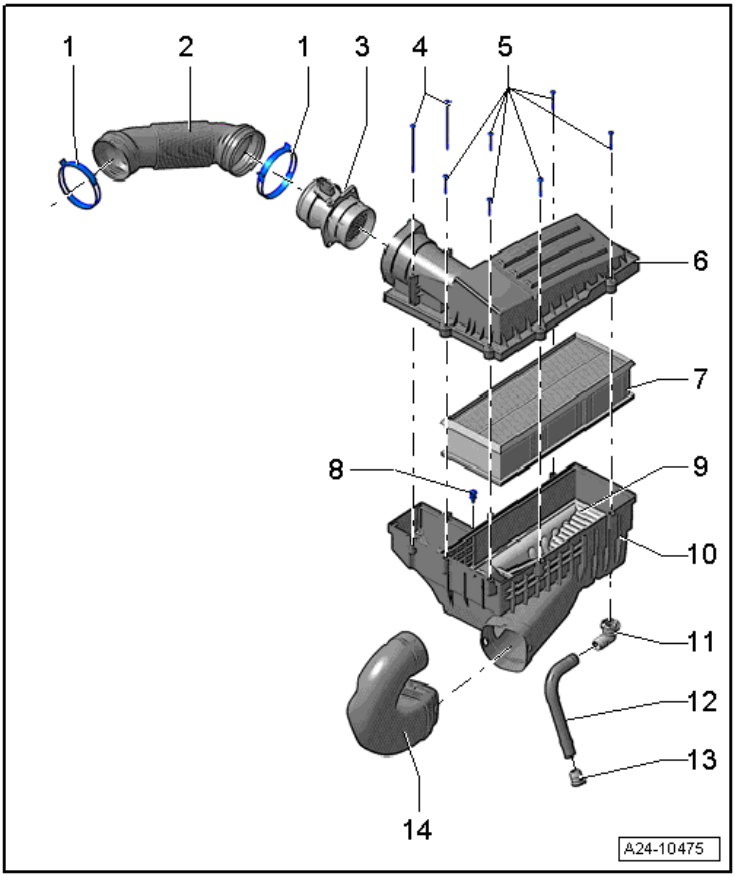
4 - Nut
- ☐ 9 Nm
- ☐ Not available with engine codes CCTA and CBFA.

5 - Securing Plate
- ☐ Not available with engine codes CCTA and CBFA.

6 - Knurled Nut
- ☐ Not available with engine codes CCTA and CBFA.

Multiport Fuel Injection – 2.0L 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

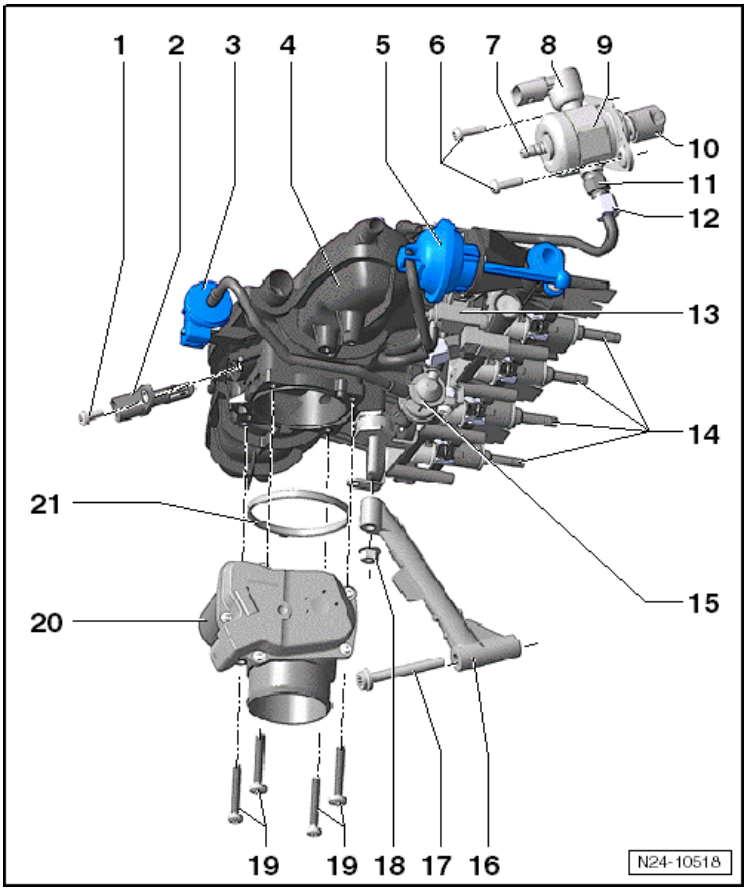
6 - Upper Air Filter Housing
7 - Air Filter Element
8 - Bolt
- ☐ 8 Nm

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 Diaphragm for the Channel Separating Plate
6 - Bolt
- ☐ M6 threads = 8 Nm + 90° turn
- ☐ M8 threads = 20 Nm
- ☐ Always replace

7 - Fuel Line Connection
8 - Fuel Pressure Regulator Valve -N276-
9 - High Pressure Pump
10 - Cam Follower
11 - High Pressure Fuel Line Connection
12 - Fuel Supply Line to High Pressure Fuel Pump
- ☐ 18 Nm

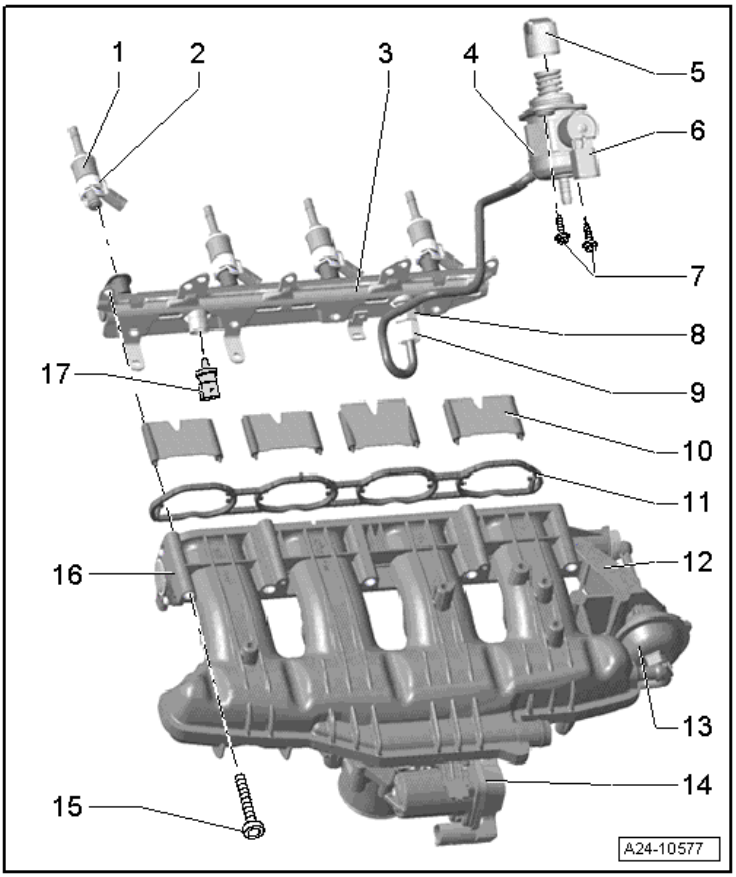
13 - Intake Manifold Runner Control Valve -N316-
14 -Fuel Injector
15 - Check Valve/Restrictor
16 - Intake Manifold Support
17 - Bolt
- ☐ 23 Nm

18 - Nut
- ☐ 10 Nm

19 - Bolt
- ☐ 5Nm

20 - Throttle Valve Control Module -J338-
21 - Seal
- ☐ 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 - Seal

- ☐ Always replace

12 - Intake Manifold

13 - Vacuum Diaphragm for the Channel Separating Plate

14 - Throttle Valve Control Module -J338-

15 - Bolt

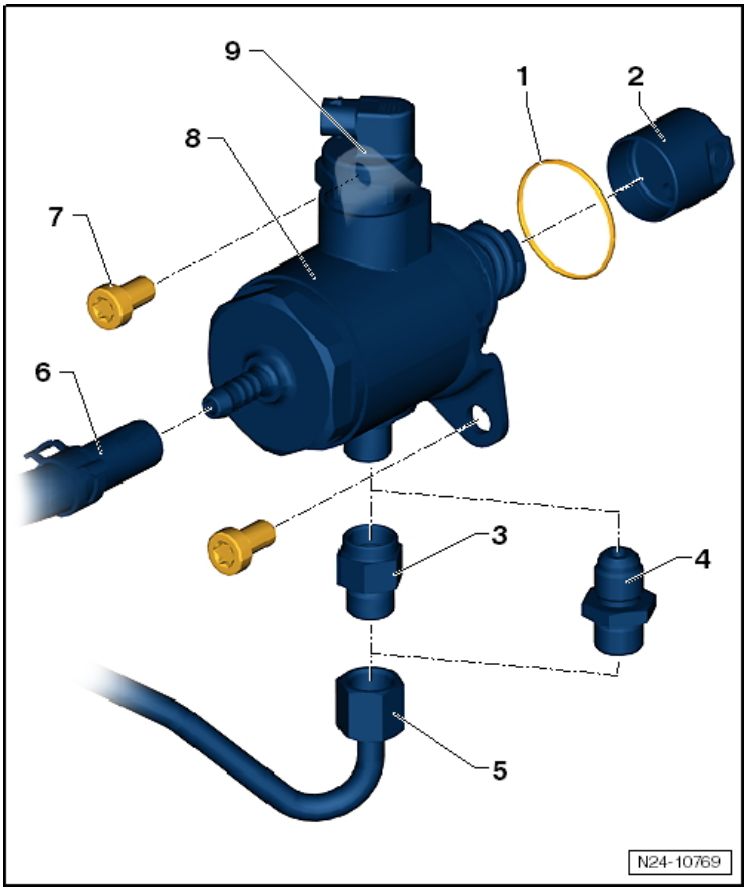
- ☐ Tighten to 3 Nm, and then tighten to 9 Nm.

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

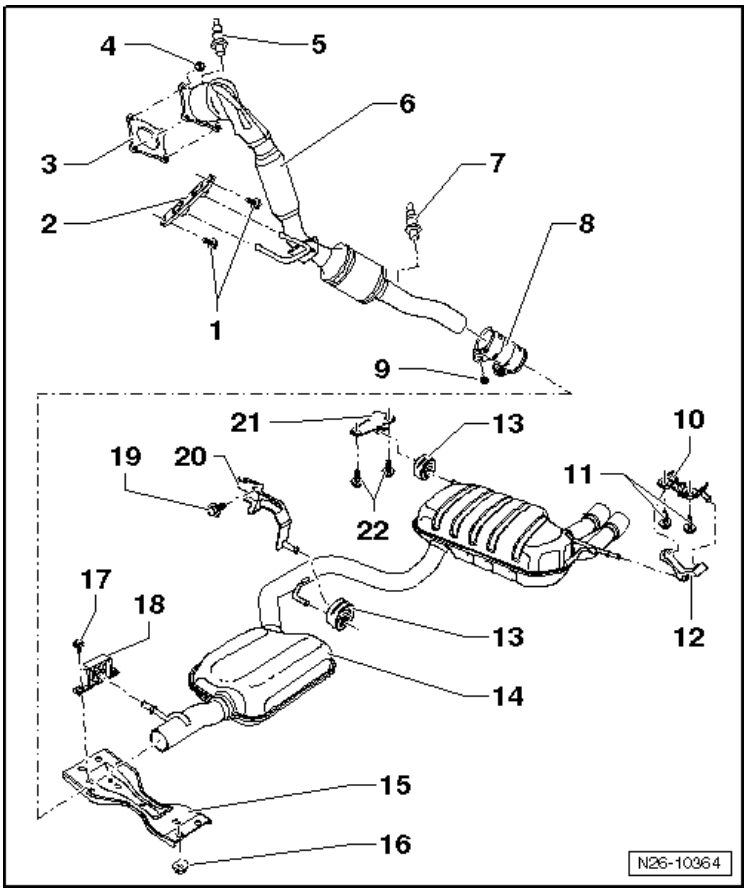
Technical Data

Engine codes	CCTA
Idle check	
Idle speed (RPM) [1)]	640 to 800
Engine speed (RPM) limitation	approximately 6500

[1)] If the Engine Control Module (ECM) voltage supply drops below 12 volts, the idle speed is increased in stages up to 990 RPM. Idle speed is not adjustable.

Exhaust System – 2.0L CCTA

Exhaust System Overview



1 - Bolt
- ☐ 25 Nm

2 - Suspended Mount

3 - Gasket
- ☐ Always replace

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

5 - Heated Oxygen Sensor -G39-
- ☐ 55 Nm
- ☐ When reusing the old Heated Oxygen Sensor -G39-, grease only the threads with Hot Bolt Paste -G 052 112 A3-, the paste must not get into the slots in the oxygen sensor body.

6 - Front Exhaust Pipe with Catalytic Converter

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

- ☐ 55 nm
- ☐ When reusing the old Oxygen Sensor after Three Way Catalytic Converter -G130-, grease only the threads with Hot Bolt Paste -G 052 112 A3-, the paste must not get into the slots in the oxygen sensor body.

8 - Front Clamping Sleeve

- ☐ Tighten evenly, see Tightening Torque and Installed Dimension of the Clamping Sleeve below

9 - Nut

- ☐ Tighten evenly, see Tightening Torque and Installed Dimension of the Clamping Sleeve below

10 - Bracket

11 - Bolt

- ☐ 25 Nm

12 - Suspended Mount

13 - Suspended Mount

14 - Exhaust Pipe with Center and Rear Mufflers

15 - Tunnel Brace

16 - Nut

- ☐ 25 Nm

17 - Bolt

- ☐ 25 Nm

18 - Suspended Mount

19 - Bolt

- ☐ 20 Nm

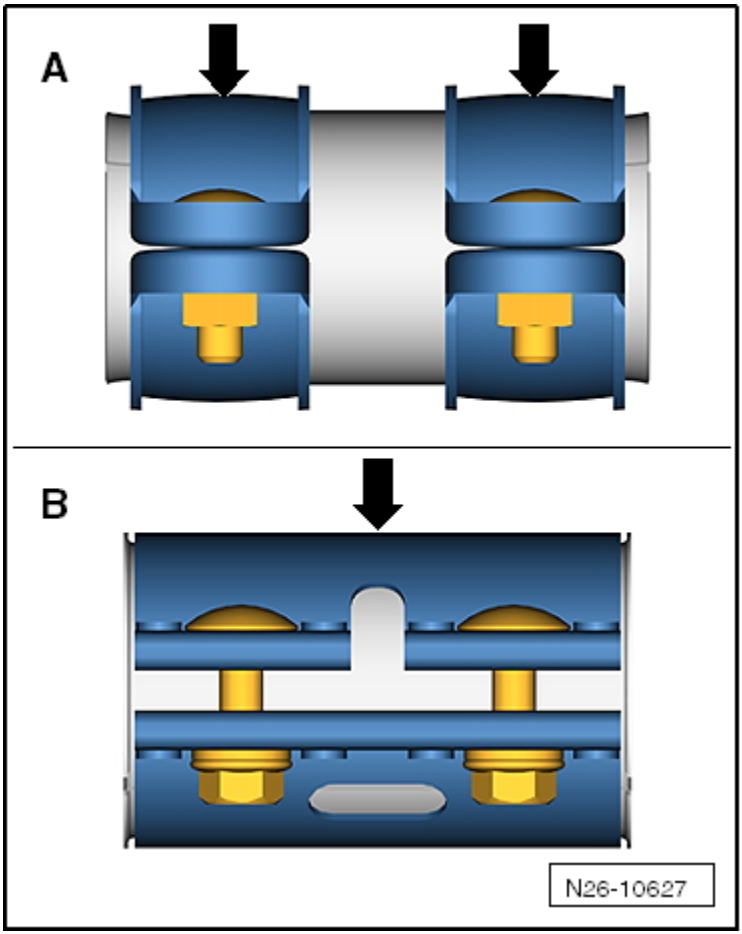
20 - Bracket

21 - Bracket

22 - Bolt

- ☐ 25 Nm

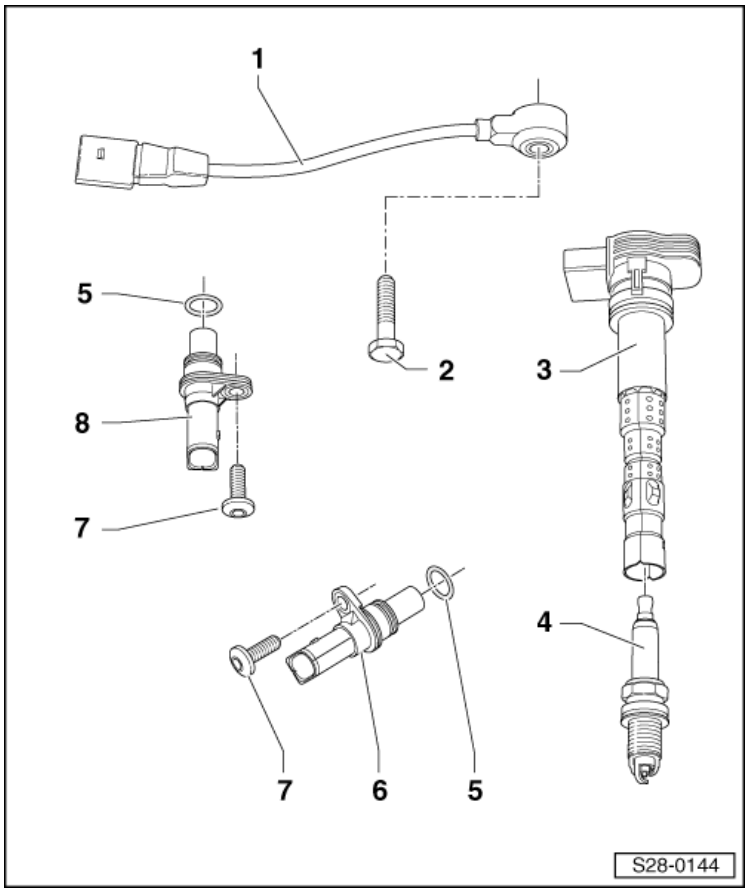
Tightening Torque and Installed Dimension of the Clamping Sleeve



-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 CCTA

Ignition System Component Overview



1 - Knock Sensor 1 -G61-
2 - Bolt
- ☐ 20 Nm

3 - Ignition Coil 1 with Power Output Stage -N70-, Ignition Coil 2 with Power Output Stage -N127-, Ignition Coil 3 with Power Output Stage -N291- and Ignition Coil 4 with Power Output Stage -N292-
4 -Spark Plug
- ☐ 5 Nm

5 - O-ring
- ☐ Always replace

6 - Engine Speed Sensor -G28-
7 - Bolt
- ☐ 10 Nm

8 - Camshaft Position Sensor -G40-

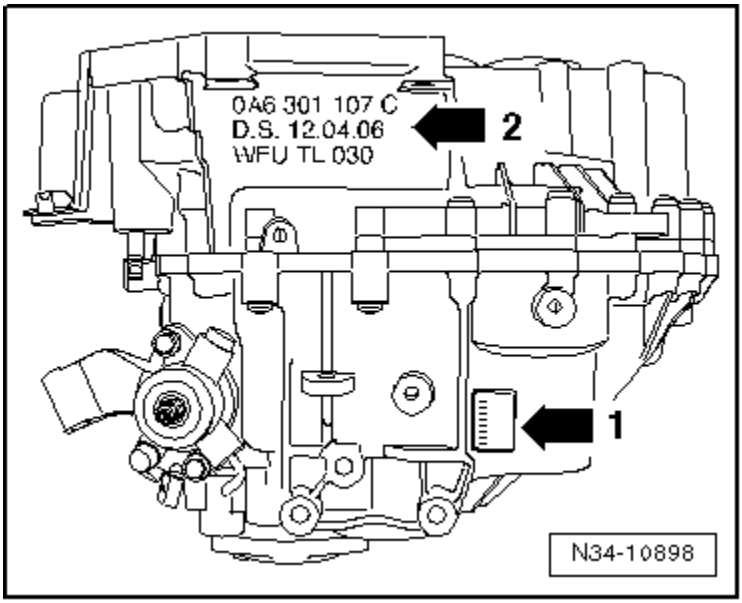
Technical Data

Engine codes	**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

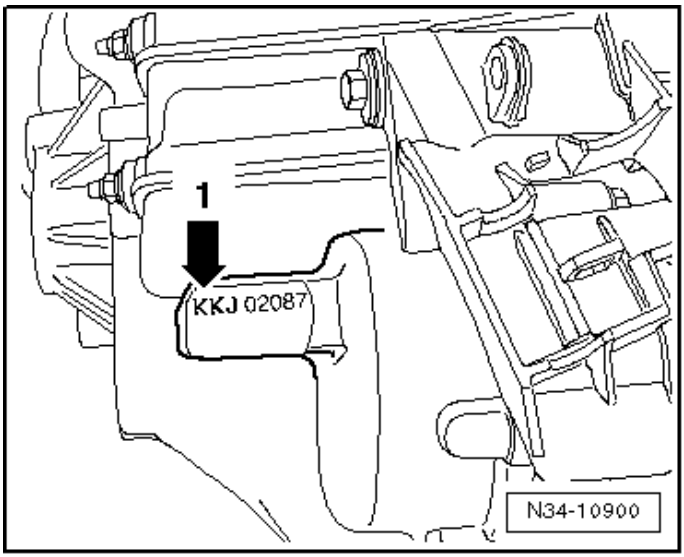
MANUAL TRANSMISSION – 0A6

General, Technical Data

Transmission Identification

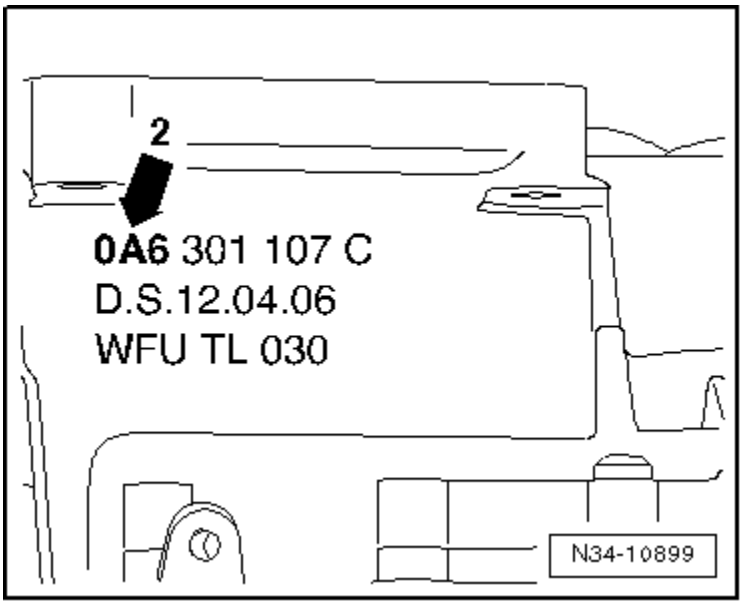


Location on the manual transmission (1) and (2).



Transmission Code Letters and Date of Manufacture (1).

Transmission Identification *(cont'd)*



Manual transmission 0A6 (2).

Example:

KKJ	02	08	7
Identification codes	Day	Month	Year (2007) of manufacture

Engine Codes, Transmission Allocation, Ratios and Capacities

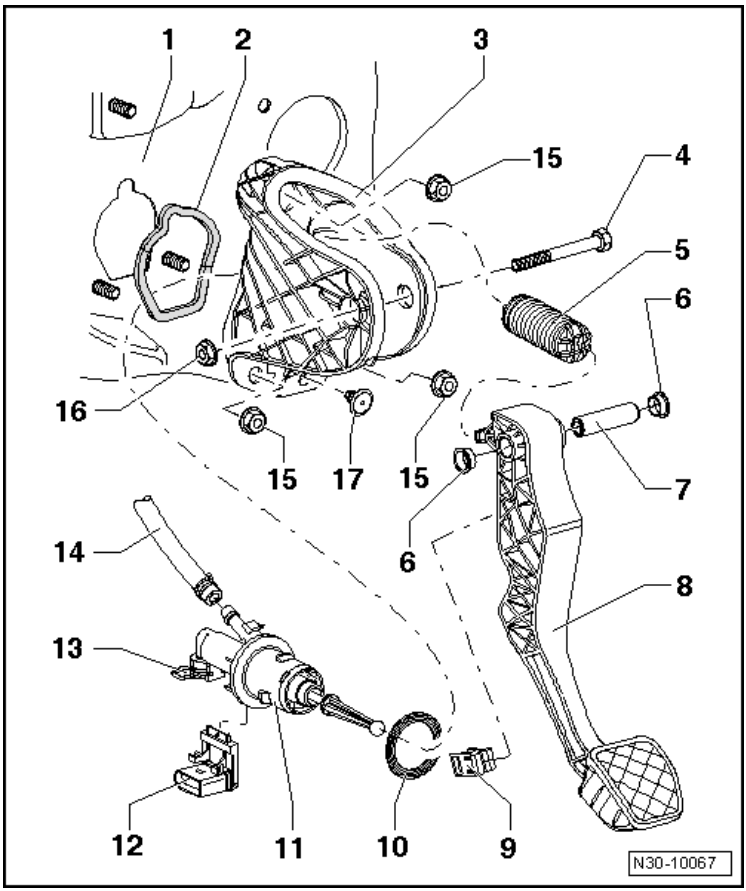
Manual transmission		**6-Speed 0A6**	
Identification codes		KHL	KLX
Manufactured	from through	10.2007 12.2007	12.2007 07.2008
Allocation	Engine	2.0L -147 kW	2.0L -147 kW
Ratio: $Z_2 : Z_1$	Final drive I	66:15 = 4.400	66:15 = 4.400
	Final drive II	66:20 = 3.300	66:20 = 3.300
	Final drive III	66:18 = 3.667	66:18 = 3.667

Manual transmission		**6-Speed 0A6**	
Identification codes		LJU	LMW
Manufactured	from through	12.2007 07.2008	06.2008
Allocation	Engine	2.0L -147 kW	2.0L - 147 kW
Ratio: $Z_2 : Z_1$	Final drive I	66:15 = 4.400	66:15 = 4.400
	Final drive II	66:20 = 3.300	66:20 = 3.300
	Final drive III	66:18 = 3.667	66:18 = 3.667

- Final drive I for 1st and 2nd gear
- Final drive II for 3rd and 4th gear
- Final drive III for reverse gear
- 5th gear and 6th gear are located on the input shaft

Refer to the Electronic Parts Catalog (ETKA) for the following:
- Individual gear ratios
- Transmission fluid specifications
- Clutch disc and pressure plate allocation

Clutch Pedal Overview



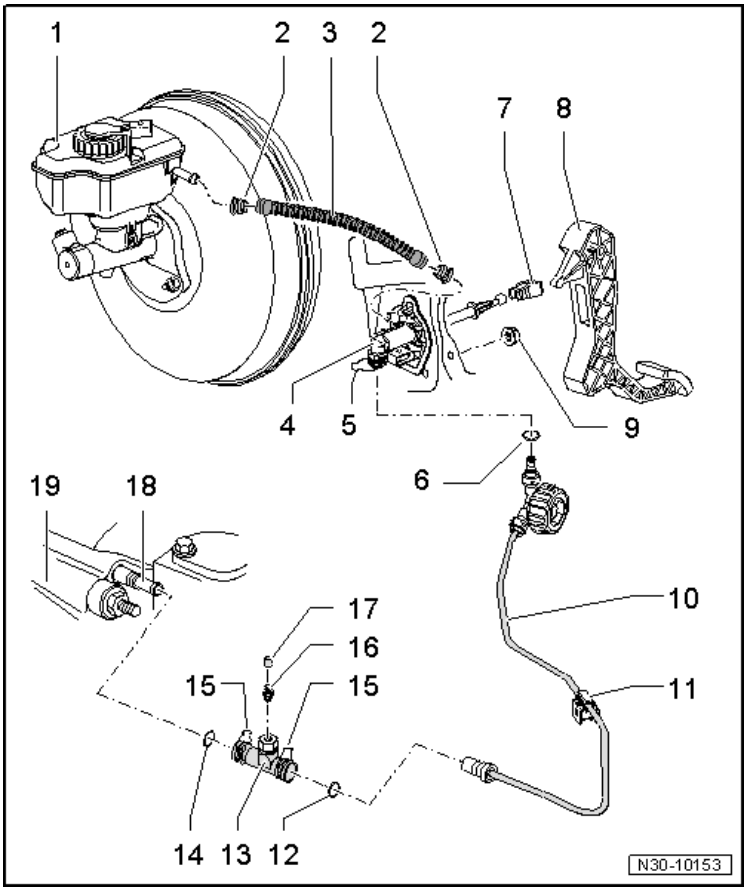
1 - Bulkhead
2 - Gasket
☐ Always replace
3 - Mounting Bracket
4 - Bolt
5 - Heated Oxygen Sensor -G39-
☐ 55 Nm
6 - Over-Center Spring
7 - Pin
8 - Clutch Pedal
9 - Mount
10 - Gasket
☐ Always replace
11 - Master Cylinder
12 - Clutch Position Sensor -G476-

13 - Circlip
14 - Supply Hose
15 - Nut, Self Locking
- ☐ 25 Nm
- ☐ Always replace

16 - Nut
- ☐ 25 Nm
- ☐ Always replace

17 - Jounce Bumper

Hydraulics Overview

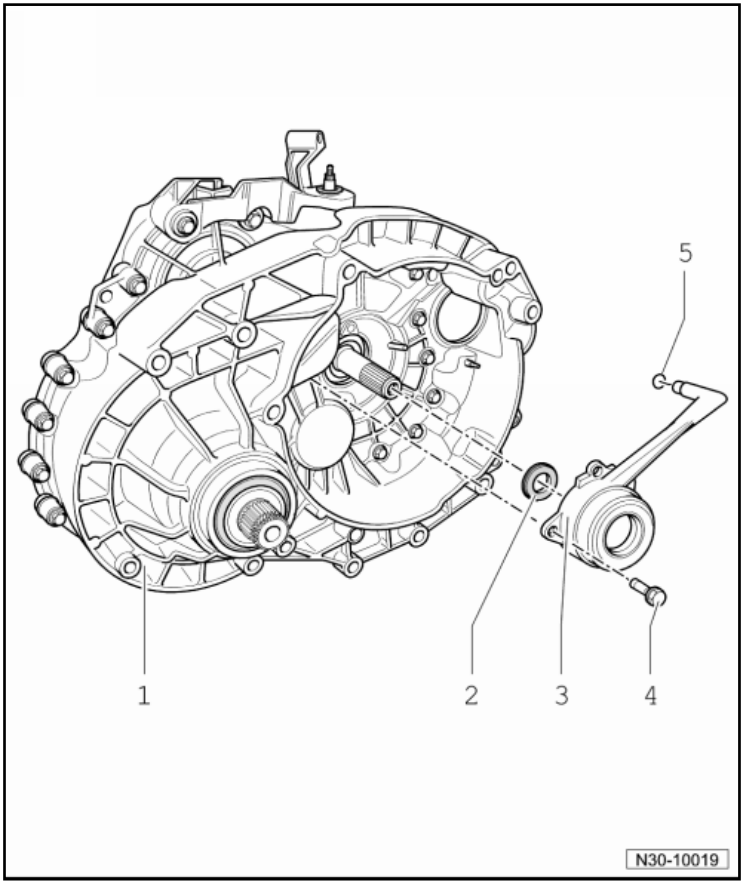


1 - Brake Fluid Reservoir
2 - Seal
3 - Supply Hose
4 - Master Cylinder
5 - Circlip
6 - Seal/O-ring
7 - Mounting
8 - Clutch Pedal
9 - Nut, Self Locking
- ☐ 25 Nm
- ☐ Always replace

10 - Pipe
11 - Clip
12 - Seal/O-ring
13 - Breather Assembly
14 - Seal/O-ring
15 - Circlip

16 - Vent Valve
17 - Cap
18 - Clutch Slave Cylinder
19 - Transmission

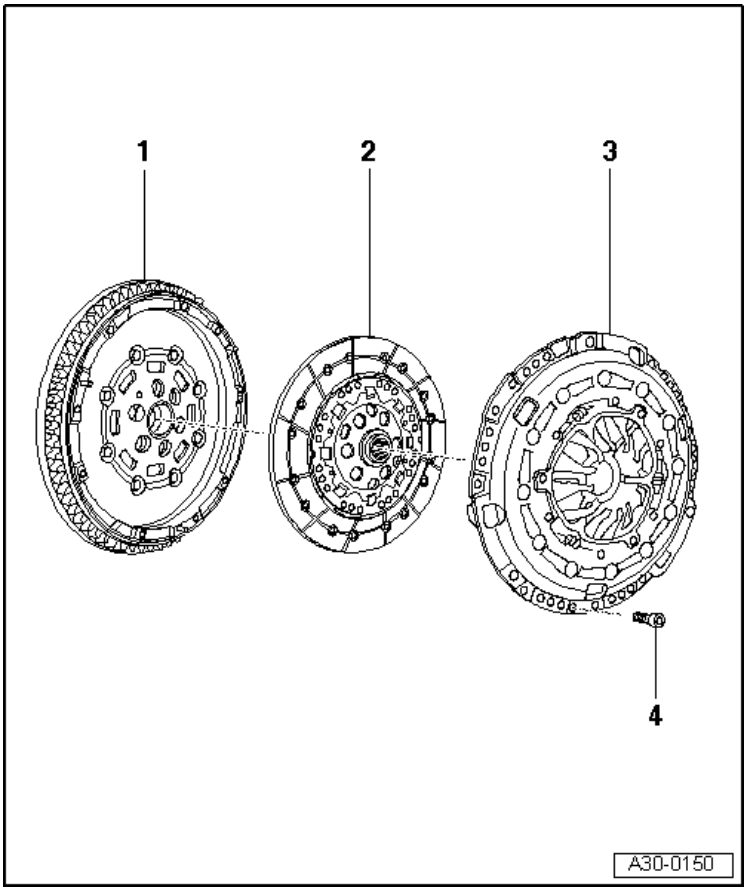
Clutch Release Mechanism Overview



1 - Transmission
2 - Input Shaft Seal
3 - Clutch Slave Cylinder with Release Bearing
4 - Bolt
- ☐ 15 Nm
- ☐ Always replace

5 - O-ring
- ☐ Install using brake fluid

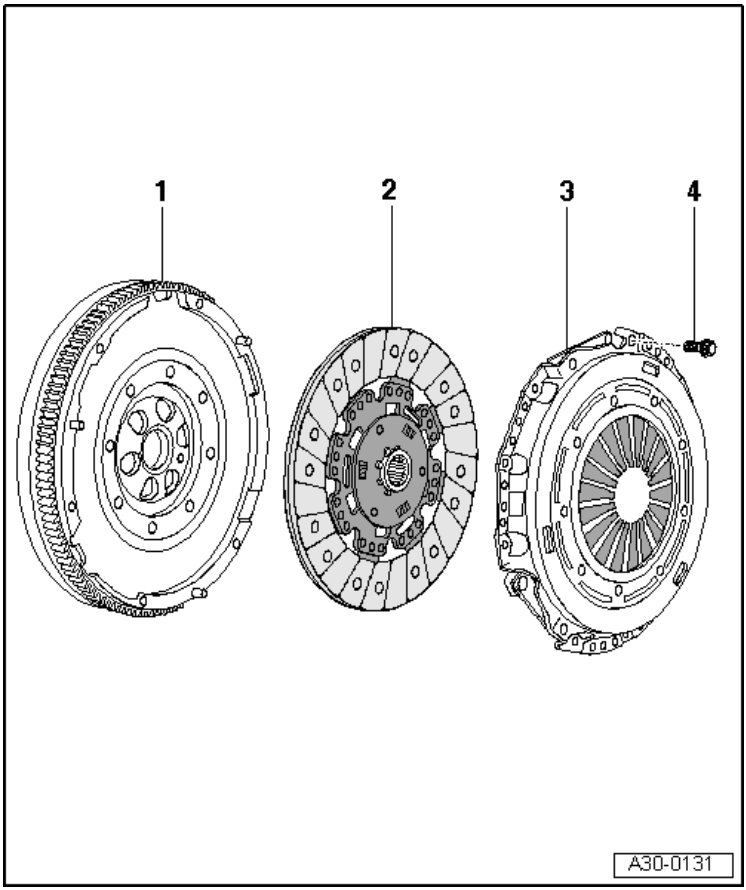
Luk Clutch Assembly Overview



1 - Dual Mass Flywheel
2 - Clutch Disc
3 - SAC Pressure Plate
4 - Bolt

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

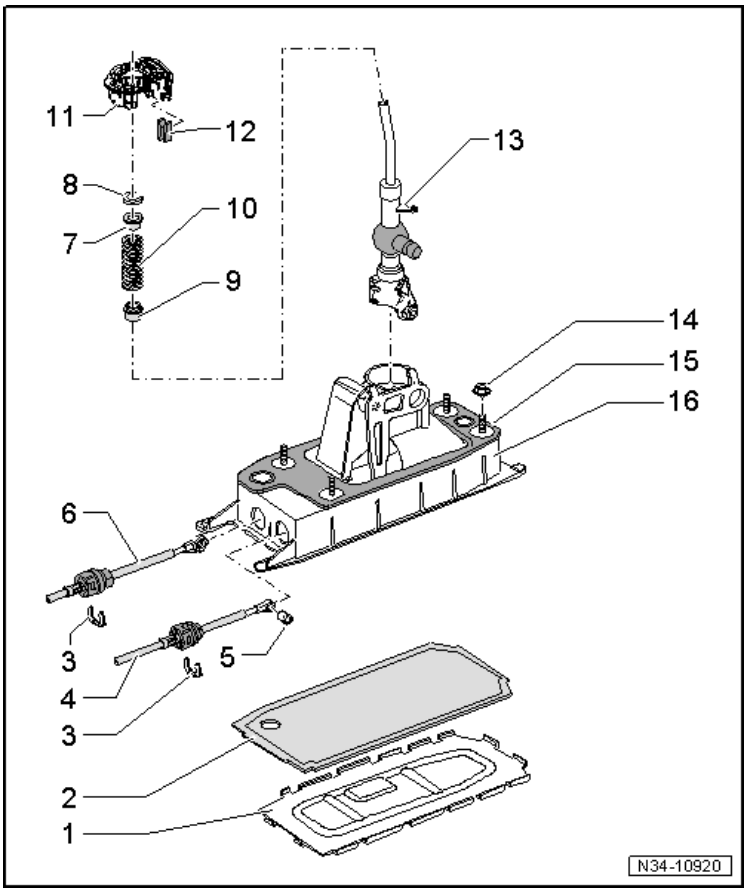
Sachs Clutch Assembly Overview



1 - Dual Mass Flywheel
2 - Clutch Disc
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 – 0A6

Shift Lever and Housing



1 - Base Plate
- ☐ Always replace

2 - Gasket
- ☐ Always replace

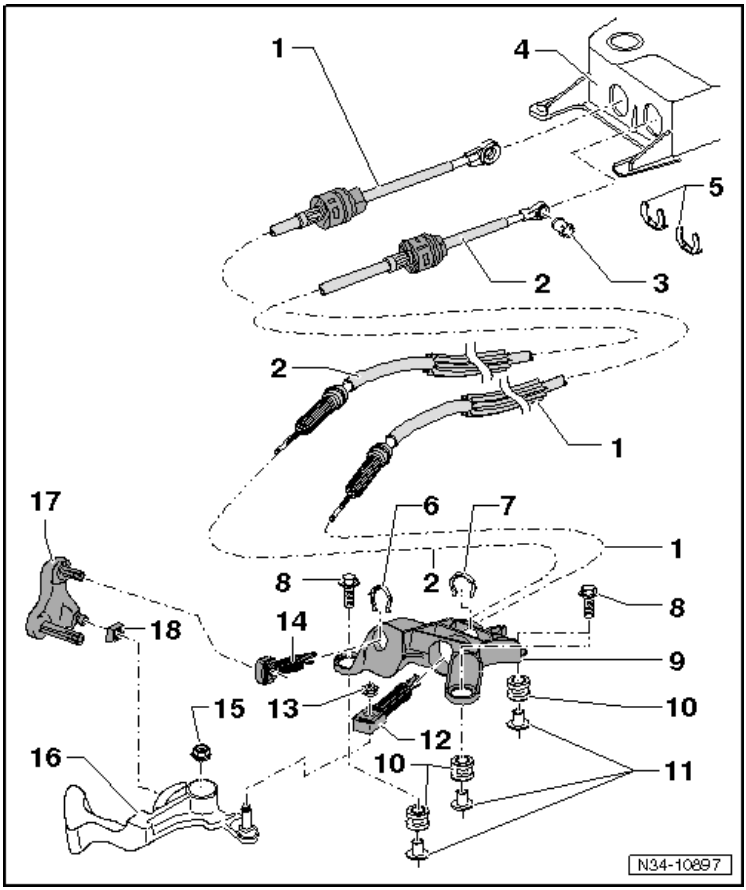
3 - Lock Washer
- ☐ Always replace

4 - Selector Cable
5 - Bushing
6 - Shift Cable
7 - Bushing
8 - Lock Washer
9 - Bushing
10 - Pressure Spring
11 - Bearing Shell
12 - Sound Absorber

13 - Shift Lever
14 - Nut
- ☐ 8 Nm

15 - Gasket
16 - Shift Housing

Shift and Selector Cables



1 - Shift Cable
2 - Selector Cable
3 - Bushing
4 - Shift Housing
5 - Lock Washer
- ☐ Always replace

6 - Lock Washer
- ☐ Always replace

7 - Lock Washer
- ☐ Always replace

8 - Bolt
- ☐ 20 Nm

9 - Cable Bracket
10 - Grommet
11 - Spacer
12 - Cable Retainer

13 - Lock Washer
- ☐ Always replace

14 - Cable Retainer

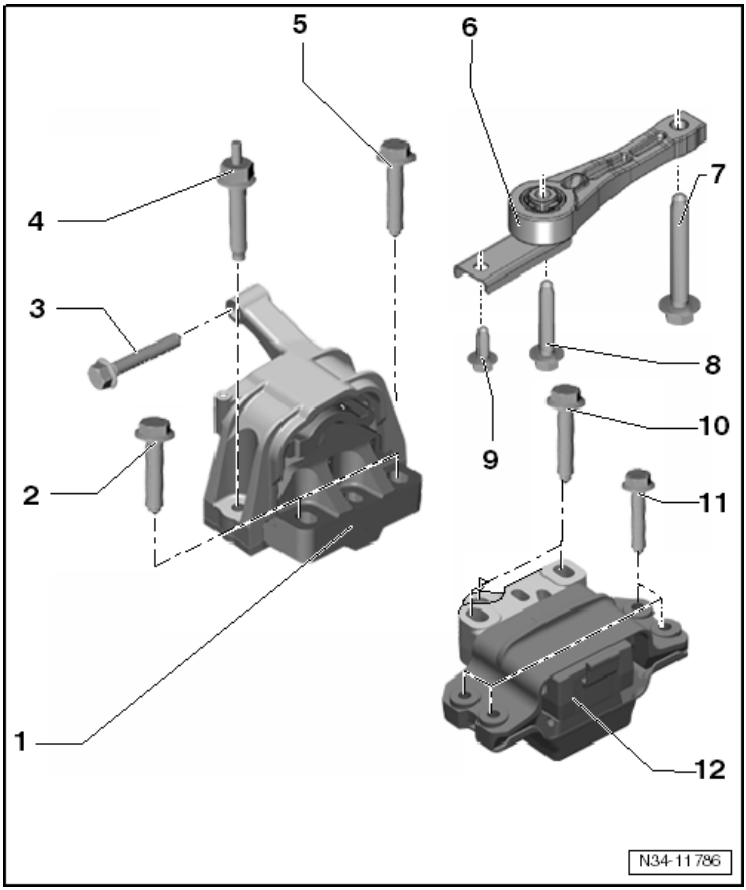
15 - Nut
- ☐ 23 Nm
- ☐ Always replace

16 - Shift Lever

17 - Relay Lever

18 - Sliding Shoe

Engine and Transmission Mount Overview



1 - Engine Mount

2 - Bolt

- ☐ Refer to Engine Mechanical, Fuel Injection and Ignition; Engine/ Transmission Mount Overview

3 - Bolt

- ☐ Refer to Engine Mechanical, Fuel Injection and Ignition; Engine/ Transmission Mount Overview

4 - Bolt

- ☐ Refer to Engine Mechanical, Fuel Injection and Ignition; Engine/ Transmission Mount Overview

5 - Bolt

- ☐ Refer to Engine Mechanical, Fuel Injection and Ignition; Engine/ Transmission Mount Overview

6 - Pendulum Support

7 - Bolt
- ☐ Refer to Suspension, Wheels and Steering; Subframe, Stabilizer Bar and Control Arms from MY 2011 Overview

8 - Bolt
- ☐ Refer to Suspension, Wheels and Steering; Subframe, Stabilizer Bar and Control Arms from MY 2011 Overview

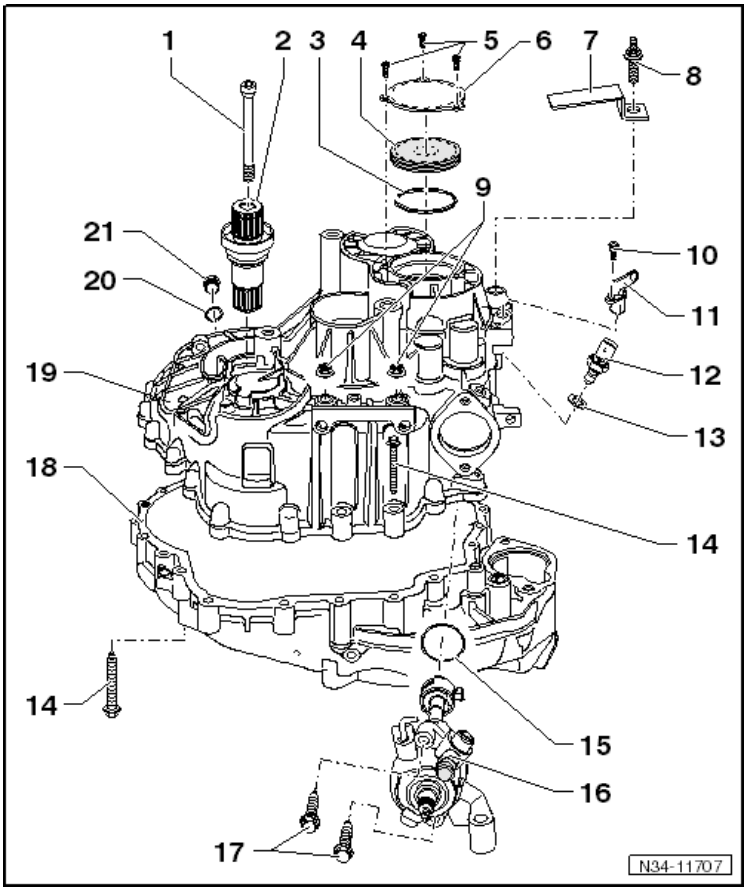
9 - Bolt
- ☐ Refer to Suspension, Wheels and Steering; Subframe, Stabilizer Bar and Control Arms from MY 2011 Overview

10 - Bolt
- ☐ 60 Nm + 90° turn
- ☐ Always replace

11 - Bolt
- ☐ Refer to Engine Mechanical, Fuel Injection and Ignition; Engine/ Transmission Mount Overview

12 - Transmission Mount

Transmission Housing and Shift Unit



1 - Bolt
- ☐ 35 Nm
- ☐ Always replace

2 - Left Stub Shaft with Spring

3 - Locking Ring

4 - Sealing Cap

5 - Bolt
- ☐ 5 Nm

6 - Retainer Plate

7 - Retaining Bracket

8 - Stud Bolt
- ☐ 20 Nm

9 - Nut
- ☐ 20 Nm + 90° turn
- ☐ Always replace

10 - Bolt
- ☐ Not available on US/Canadian vehicles.

11 - Transmission Neutral Position Sensor -G701-
- ☐ Not available on US/Canadian vehicles.

12 - Back-Up Lamp Switch -F4-
- ☐ 20 Nm

13 - Seal
- ☐ Not on all transmissions.

14 - Bolt
- ☐ There are different bolts and tightening specifications:
- ☐ Outer hex head = steel bolt = 15 Nm + 90° turn.
- ☐ Only on aluminum transmissions with M8 aluminum bolts = use steel bolts as a replacement part.
- ☐ Always replace, for the correct allocation refer to the Parts Catalog.

15 - O-ring
- ☐ Always replace

16 - Shift Unit

17 - Bolt
- ☐ 25 Nm
- ☐ Always replace

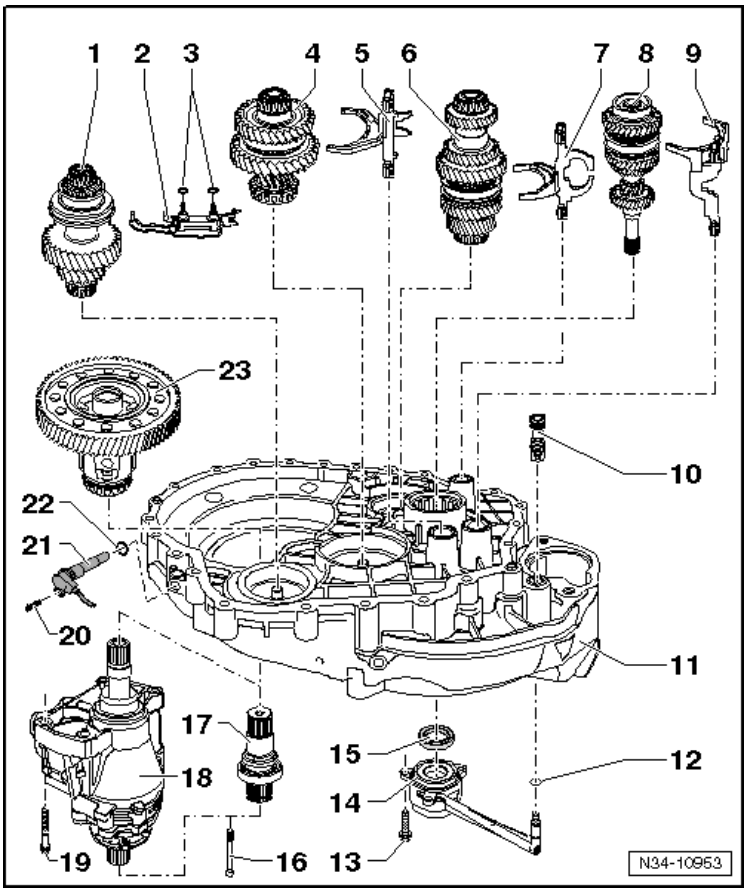
18 - Clutch Housing

19 - Transmission Housing

20 - Seal
- ☐ Always replace

21 - Oil Drain Plug
- ☐ 45 Nm

Input Shaft, Output Shafts, Differential, and Shift Rods



1 - Reverse Gear Output Shaft
2 - Reverse Gear Selector Fork
3 - O-ring
4 - 1st and 2nd Gear Output Shaft
5 - Selector Shaft with Selector Fork for 1st and 2nd Gear
6 - 3rd and 4th Gear Output Shaft
7 - Selector Shaft with Selector Fork for 3rd and 4th Gear
8 - Input Shaft
9 - Selector Shaft and Selector Fork for 5th and 6th Gear
10 - Breather Assembly
11 - Clutch Housing
12 - O-ring
13 - Bolt
- ☐ 15 Nm
- ☐ Always replace

14 - Clutch Slave Cylinder with Release Bearing
15 - Input Shaft Seal
16 - Bolt
- ☐ 35 Nm

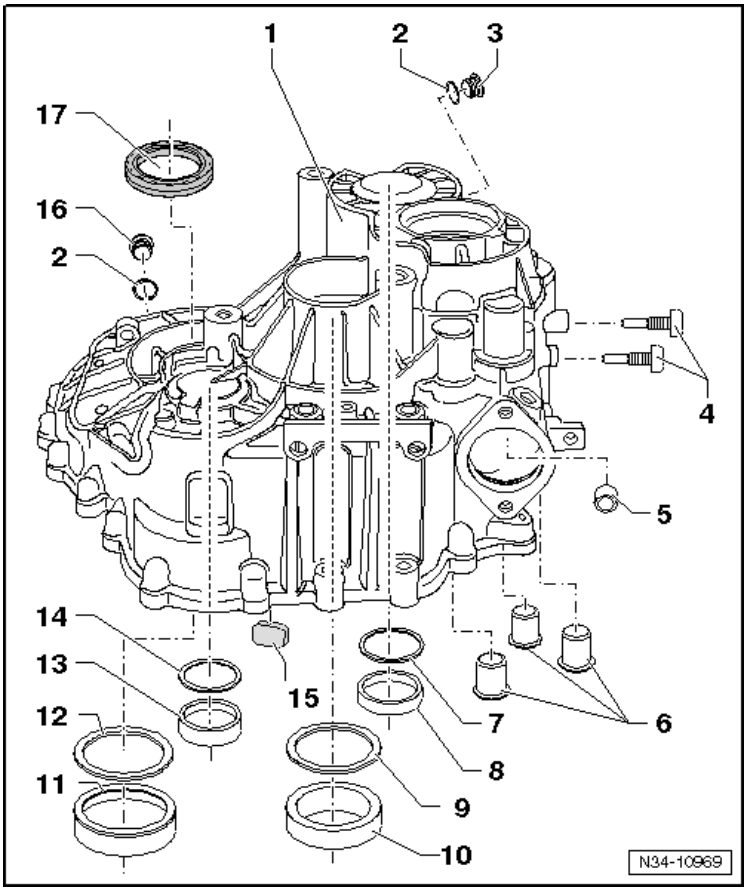
17 - Right Stub Shaft with Spring
- ☐ Not available in the US/Canadian market

18 - Bevel Box
19 - Bolt
- ☐ 40 Nm + 90° turn
- ☐ Always replace

20 - Bolt
- ☐ 12 Nm

21 - Trip Recorder Sensor -G75-
22 - O-ring
23 - Differential

Transmission Housing Overview



1 - Transmission Housing
2 - Seal
- ☐ Always replace

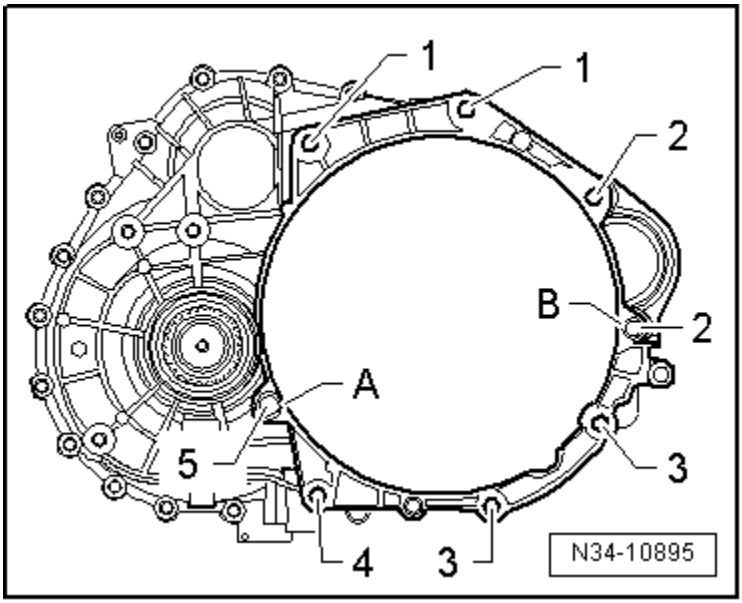
3 - Transmission Fluid Fill Plug
- ☐ 45 Nm
- ☐ With new seal

4 - Bolt
- ☐ 35 Nm

5 - Bushing
6 - Bushing
7 - Adjusting Shim
8 - Outer Race/Tapered Roller Bearing
9 - Adjusting Shim
10 - Outer Race/Tapered Roller Bearing
11 - Outer Race/Tapered Roller Bearing
12 - Adjusting Shim
13 - Outer Race/Tapered Roller Bearing

14 - Adjusting Shim
15 - Magnet
16 - Oil Drain Plug
☐ 45 Nm
17 - Seal

Transmission to Engine Tightening Specifications



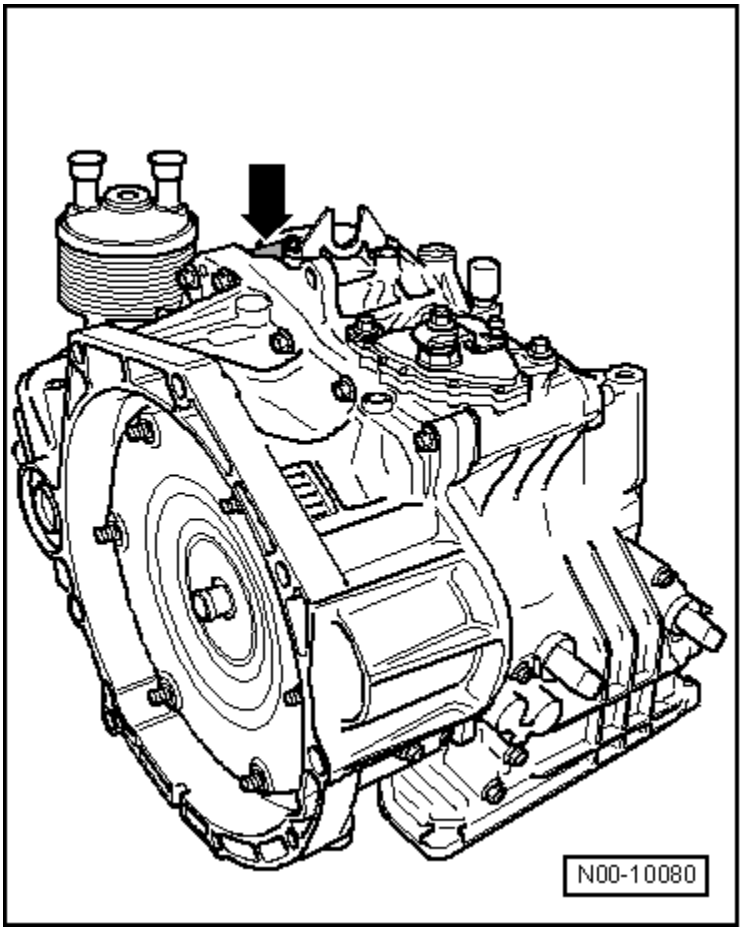
Item	Fastener size	Quantity	Nm
1	M12 x 50	2	80
2	M12 x 165	2	80
3	M10 x 50	2	40
4	M10 x 68	1	40
5	M12 x 65	1	80
A and B	Centering alignment pins		

Transmission Mount to Transmission Bolt
☐ 60 Nm + 90° turn
Ground Cable to Transmission Bolt/Nut
☐ 20 Nm

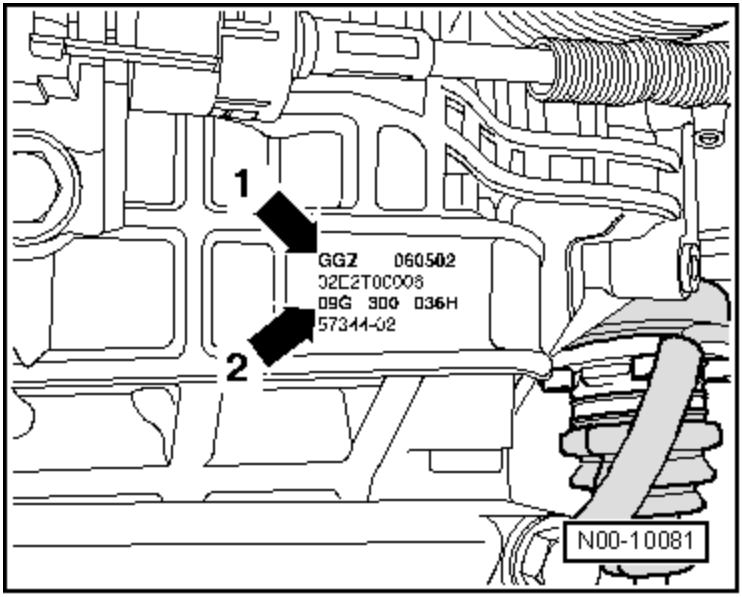
AUTOMATIC TRANSMISSION – 09M

General, Technical Data

Identification on Transmission



Code letters (➡).



(Identification of a 09G transmission shown – 09M similar)
(1) Code letter indicates 6-speed automatic transmission.
(2) 09G.

Example:

GGZ	06	05	02
Identification codes	Day	Month	Production year (2002)

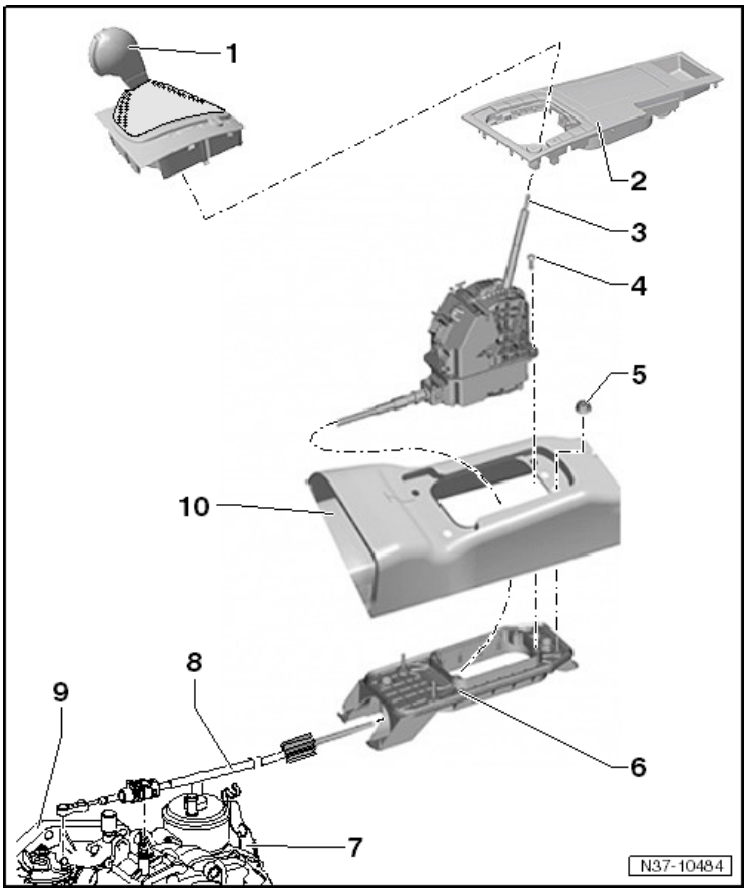
The transmission code letters are also included on the vehicle data labels.

Engine and Transmission Code Allocation

Engine	6 Speed Automatic Transmission (09M) Code	Bevel Box Code
2.0L - 147 kW TSFI	JVZ	KQP, KUJ, LGR and LGY
	MYZ	LGY

Controls, Housing – 09M

Selector Mechanism Overview

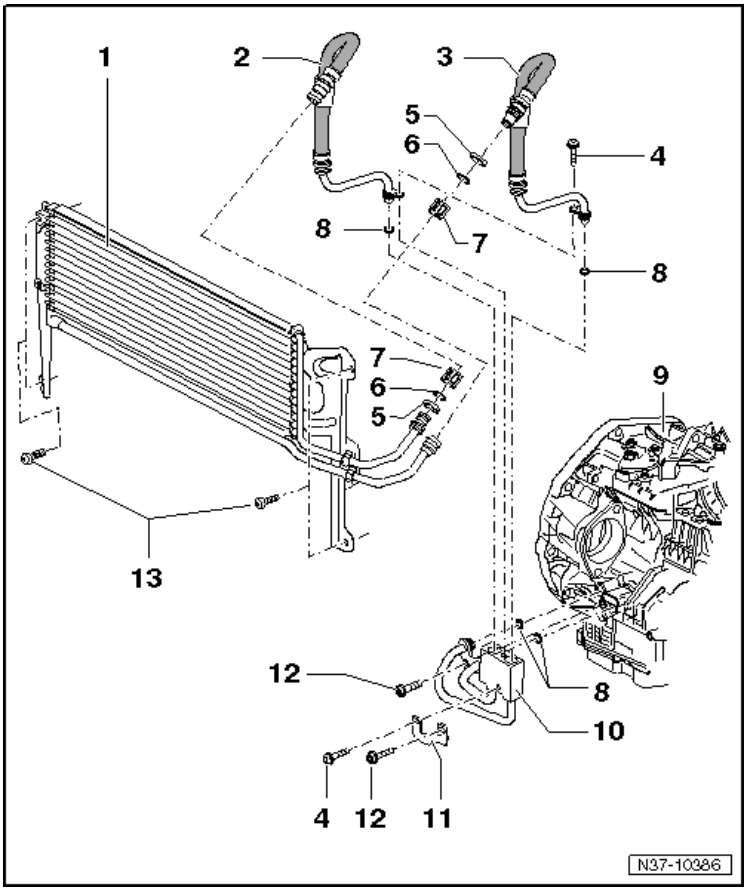


1 - Handle with Cover
2 - Center Console Cover
3 - Selector Mechanism with Selector Lever and Cable
4 - Bolt
- ☐ 8 Nm

5 - Nut
- ☐ M6 - 8 Nm
- ☐ M8 - 20 Nm

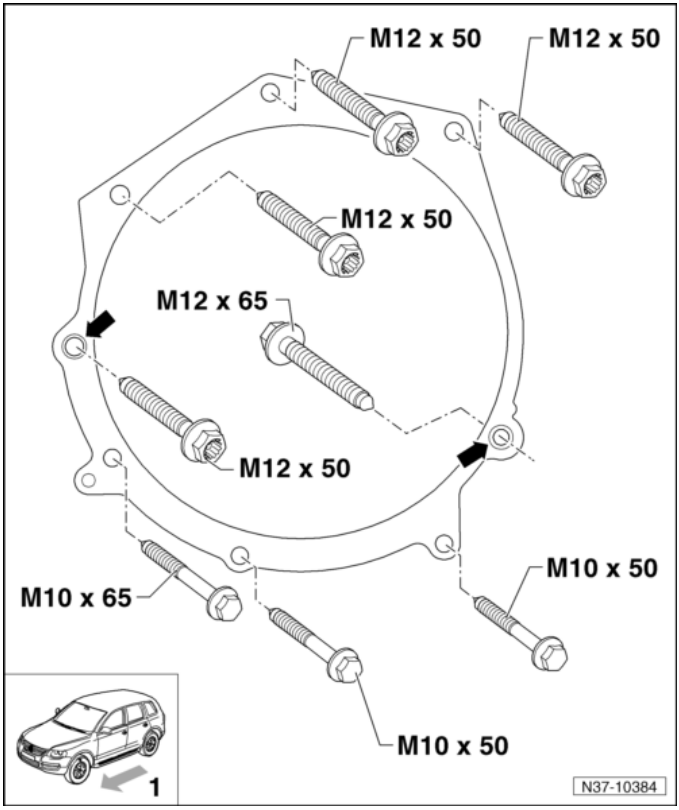
6 - Selector Housing
7 - Bracket
8 - Selector Lever Cable
9 - Transmission
10 - Tunnel/Body

Transmission Fluid Cooler Overview



1 - Transmission Fluid Cooler
2 - Supply Line
3 - Return Line
4 - Bolt
☐ 9 Nm
5 - Seal
6 - Seal
7 - Clamp
8 - Seal
9 - Transmission
10 - Thermostat
11 - Bracket
12 - Bolt
☐ 20 Nm
13 - Bolt
☐ 5 Nm

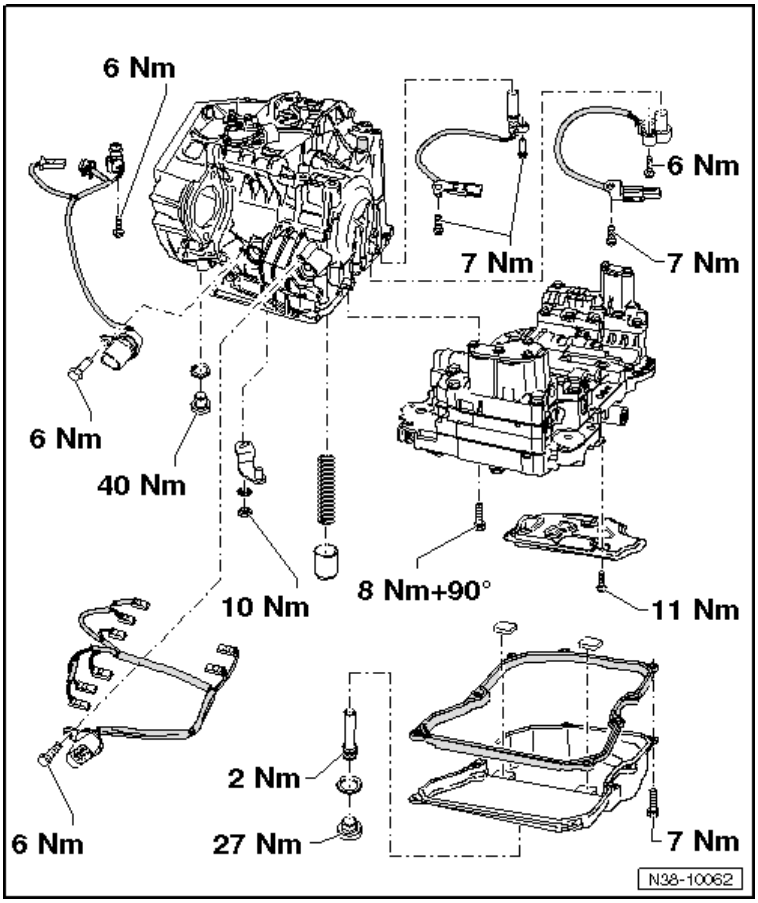
Transmission to Engine Tightening Specifications



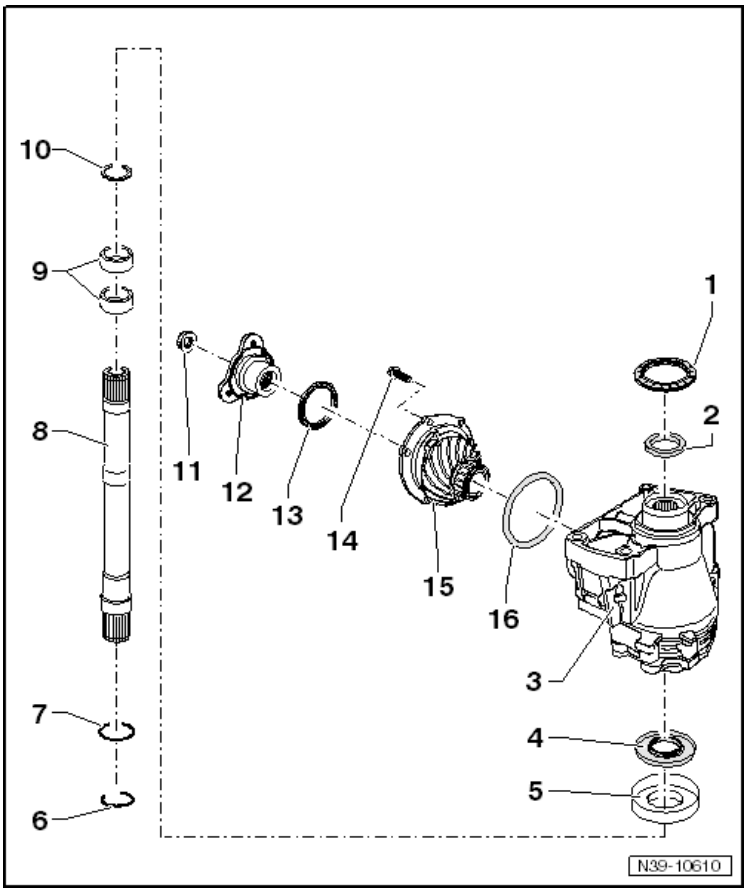
Component	Fastener size	Nm
Drive plate-to-converter	-	60
Bolts	M12	80
Bolts located in the lower flange	M10	40
➡ Alignment pins for centering		

Gears, Hydraulic Controls – 09M

Fastener Tightening Specifications



Bevel Box Overview



1 - Left Seal
2 - Left Seal
3 - Bevel Box
4 - Seal
5 - Protective Cap
6 - Circlip
☐ Always replace
7 - Seal
☐ Always replace
8 - Flange Shaft
9 - Needle Sleeve (Polygon Bearing)
10 - Circlip
☐ Always replace

11 - Nut
- ☐ 480 Nm
- ☐ Install using liquid locking fluid -D 000 600-.

12 - Output Flange

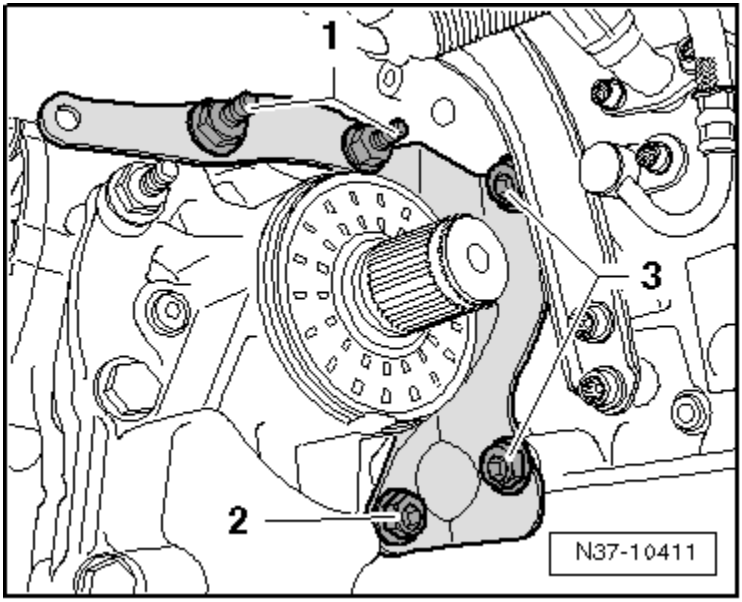
13 - Seal

14 - Bolt
- ☐ 25 Nm
- ☐ Tighten in a diagonal sequence.

15 - Pinion Housing

16 - Seal

Bevel Box to Transmission Bracket Stud/Nut Tightening Sequence and Specifications



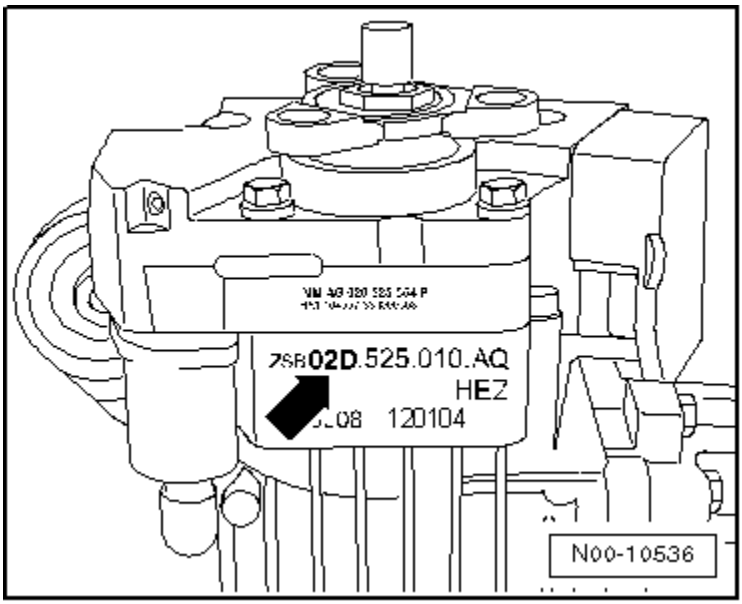
Sequence	Bolt/Stud Bolt/Nut	Tightening Specifications
1		Counter turn by hand
2		40
3	Tighten -1 and 2-	40
Drive axle heat shield		20
Flexible disc heat shield		9

A- Bevel box part number
B- Bevel box code letters
C- Bevel box 0AU

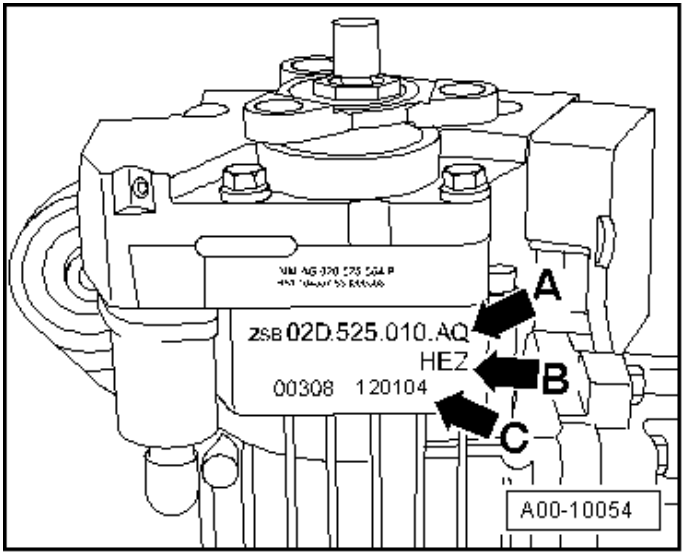
REAR FINAL DRIVE

General, Technical Data

Rear Final Drive Identification



The Identification (ID) -arrow- on the bottom side of the final drive identifies which final drive is installed. Example identification on an 02D final drive.



-Arrow A- final drive part number.

-Arrow B- final drive code letters.

-Arrow C- Final drive build date.

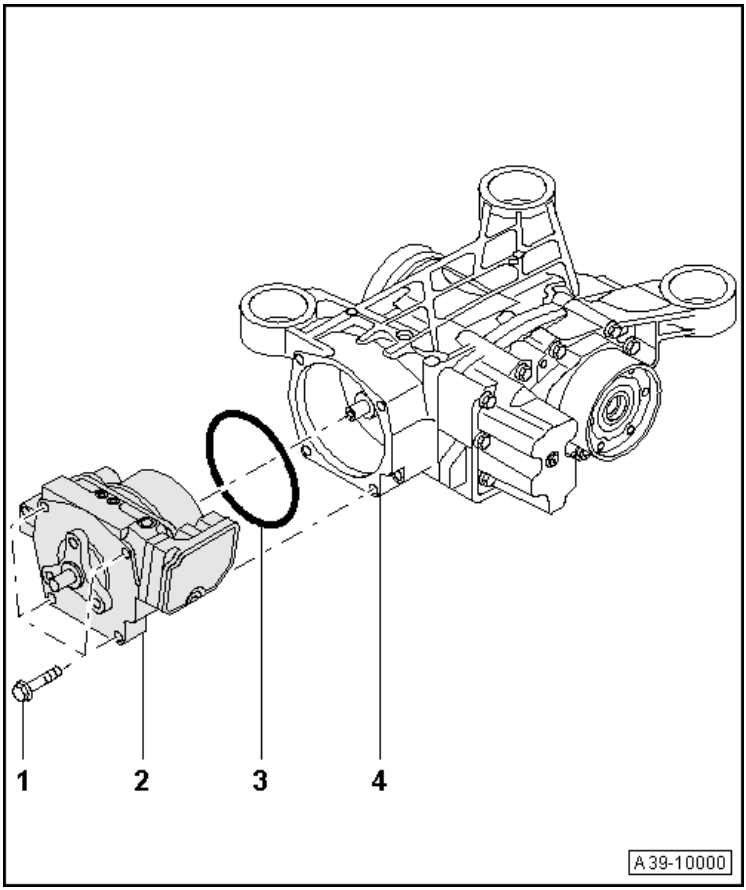
Example:

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

Code Letters and Transmission Allocation

Rear Final Drive - 0AY Generation IV Haldex Clutch)	
Transmission type	Automatic Transmission - 09M
Code letters	HPU, LGX, MBC and NWU
Engine	2.0L - 147 kW TFSI
Final drive capacity	Refer to the Fluid Capacity Tables, Rep. Gr. 03
Haldex clutch capacity	Refer to the Fluid Capacity Tables, Rep. Gr. 03
Replacement capacity in Haldex clutch. Change intervals, refer to Maintenance Intervals, Rep. Gr. 03	Refer to the Fluid Capacity Tables, Rep. Gr. 03
Driveshaft flange diameter	100 mm

Haldex Clutch Overview



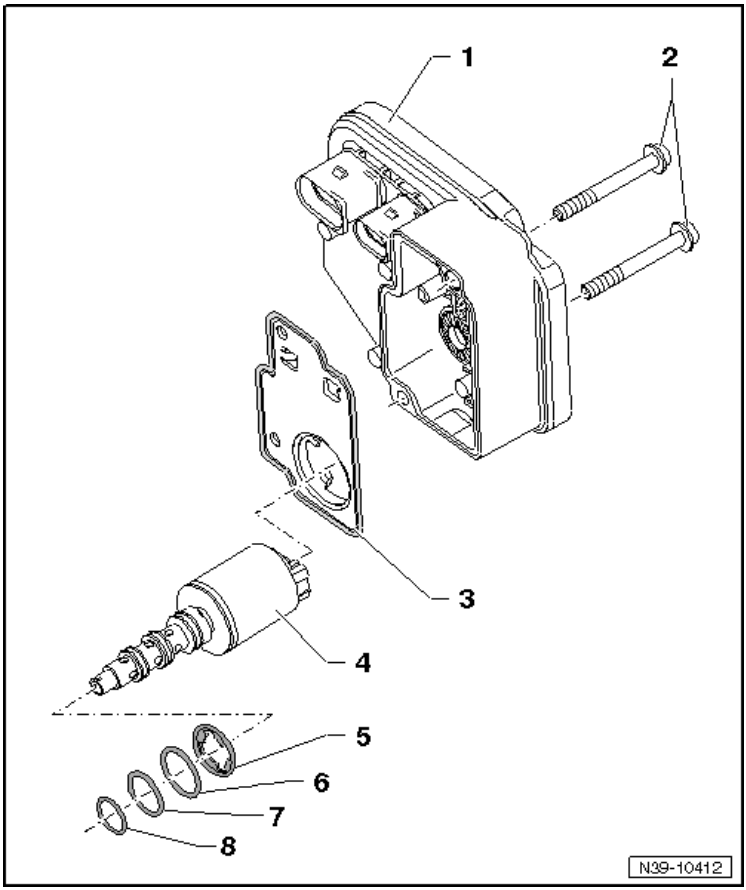
1 - Bolt
- ☐ 50 Nm

2 - Haldex Clutch

3 - O-ring
- ☐ Always replace
- ☐ Insert using high performance gear oil for Haldex coupling -052 175 A1-.

4 - Drive

All Wheel Drive Control Module J492 Overview



1 - All-Wheel Drive Control Module -J492-
2 - Bolt
- ☐ 6 Nm

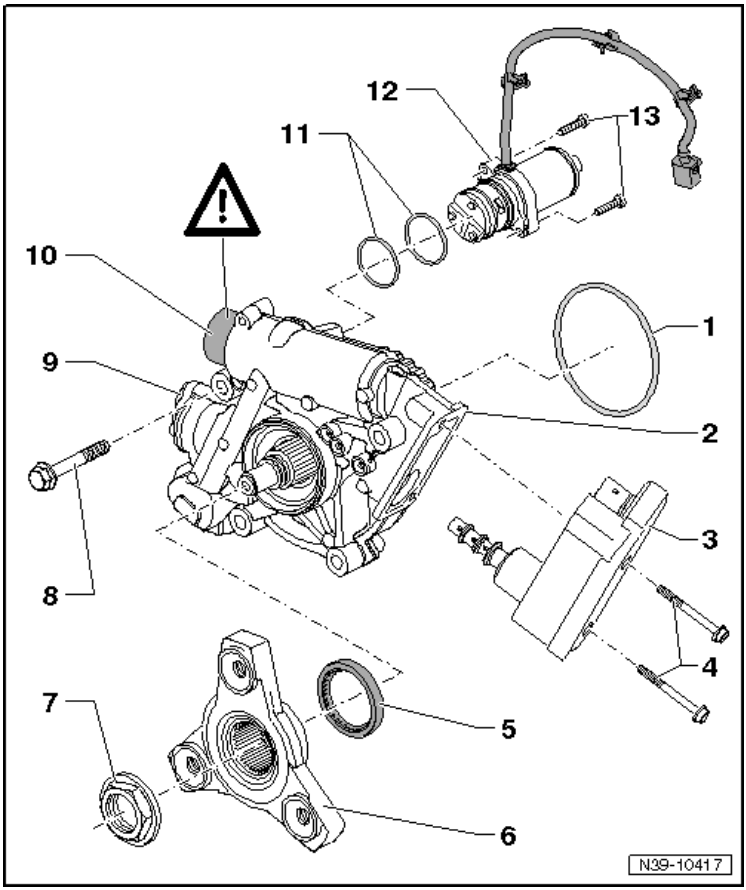
3 - Cover
4 - Haldex Clutch Control Valve -N373-
5 - Seal
- ☐ Always replace

6 - Seal
- ☐ Always replace

7 - Seal
- ☐ Always replace

8 - Seal
- ☐ Always replace

Haldex Clutch Components Overview



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

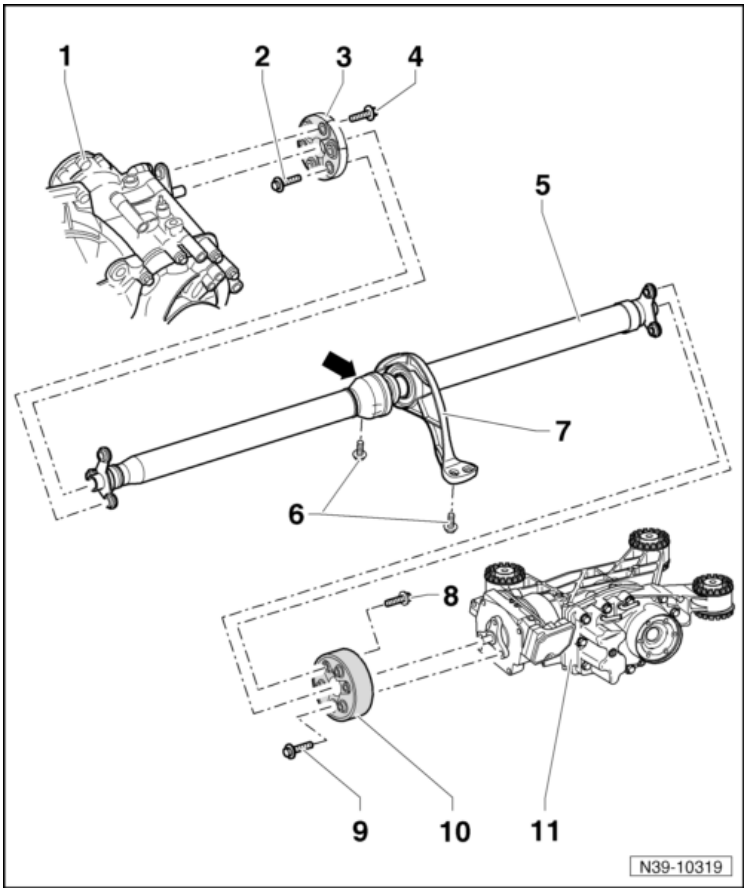
9 - Cover

10 - Cover

11 - Seal
- ☐ Always replace

12 - aldex Clutch Pump -V181-
13 - Bolt
- ☐ 6 Nm

Driveshaft Overview



1 - Transmission with Bevel Box

2 - 12 Point Bolt

- ☐ Do not loosen.

3 - Front Flexible Disc

4 - 12 Point Bolt

- ☐ 50 Nm + 90° turn
- ☐ M10 x 30
- ☐ Always replace

5 - Driveshaft

6 - Bolt

- ☐ 25 Nm

7 - Intermediate Bearing

8 - Bolt

- ☐ 50 Nm + 90° turn
- ☐ Always replace

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2014

Tiguan

Quick Reference Specification Book

Printed in the United States of America

February 2014

9 - Bolt

- ☐ 50 Nm + 90° turn
- ☐ Always replace

10 - Rear Flexible Disc with Vibration Damper

11 - Rear Final Drive