

**1996 Volkswagen Golf All Categories All Sections**

**Title List for Volkswagen Technical Site**

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**Friday, August 20, 1999 12:01AM**

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\* A/C-HEATER SYSTEM UNIFORM INSPECTION GUIDELINES \*

\* ANTI-LOCK BRAKES UNIFORM INSPECTION GUIDELINE \*

\* BRAKE SYSTEM UNIFORM INSPECTION GUIDELINES \*

\* ELECTRICAL SYSTEM UNIFORM INSPECTION GUIDELINES \*

\* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \*

\* EXHAUST SYSTEM UNIFORM INSPECTION GUIDELINES \*

\* STEERING UNIFORM INSPECTION GUIDELINES \*

\* SUSPENSION UNIFORM INSPECTION GUIDELINES \*

\* SYMPTOM CHECK LIST \*

A - ENGINE/VIN ID

A/C-HEATER SYSTEM - MANUAL

AA - USING THIS SECTION (GENERAL HELP INFORMATION)

ABBREVIATIONS

AIR BAG RESTRAINT SYSTEM

ALTERNATOR & REGULATOR

ANTI-LOCK BRAKE SAFETY PRECAUTIONS

ANTI-LOCK BRAKE SYSTEM & TRACTION CONTROL

AUTO TRANS DIAGNOSIS - 01M

AXLE SHAFT

B - EMISSION APPLICATION

BRAKE SYSTEM

C - SPECIFICATIONS

CLUTCH

COMPUTER RELEARN PROCEDURES

D - ADJUSTMENTS

E - THEORY/OPERATION - GASOLINE

ELECTRICAL COMPONENT LOCATOR - 2.0L 4-CYL

ELECTROSTATIC DISCHARGE WARNING - BASIC INFORMATION

ENGINE OVERHAUL PROCEDURES - GENERAL INFORMATION

F - BASIC TESTING - GASOLINE

FUSES & CIRCUIT BREAKERS

G - TESTS W/CODES - GASOLINE

GEAR TOOTH CONTACT PATTERNS

GENERAL COOLING SYSTEM SERVICING

H - TESTS W/O CODES - GASOLINE

HEATER SYSTEM

HOW TO USE SYSTEM WIRING DIAGRAMS

I - SYSTEM/COMPONENT TESTS - GASOLINE

INTERFERENCE VERIFICATION CHECK FOR OHC ENGINE

J - PIN VOLTAGE CHARTS

K - SENSOR RANGE CHARTS

L - WIRING DIAGRAMS  
M - VACUUM DIAGRAMS - GASOLINE  
MAINTENANCE INFORMATION  
MAINTENANCE REMINDER LIGHT RESET PROCEDURES  
METRIC CONVERSIONS  
N - REMOVE/INSTALL/OVERHAUL - GASOLINE  
SCHEDULED SERVICES  
STARTER  
STEERING COLUMN  
STEERING SYSTEM - POWER RACK & PINION  
SUSPENSION - FRONT  
SUSPENSION - REAR  
SYSTEM WIRING DIAGRAMS  
TRANSMISSION REMOVAL & INSTALLATION - A/T  
TRANSMISSION REMOVAL & INSTALLATION - M/T  
TRANSMISSION SERVICING - A/T  
TRANSMISSION SERVICING - M/T  
TROUBLE SHOOTING - BASIC PROCEDURES  
WAVEFORMS - INJECTOR PATTERN TUTORIAL  
WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES  
WHEEL ALIGNMENT THEORY/OPERATION

# POOR PERFORMANCE/EXHAUST SMOKE VISIBLE

## Article Text

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### ARTICLE BEGINNING

#### TECHNICAL SERVICE BULLETIN

#### POOR PERFORMANCE, EXHAUST SMOKE VISIBLE

Model(s): 1993-97 Volkswagen Golf, Jetta with (engine Code AAZ)  
1993 & 1995 Volkswagen Passat with (engine code AAZ)  
Group: 13 - Engine - Crankshaft/Crankcase  
Bulletin No. : 97-07  
Date: November 12, 1997

NOTE: This bulletin supersedes Technical Bulletin Group 13, No. 97-02 dated January 28, 1997.

### CONDITION

Poor performance, visible smoke from exhaust system

May be caused by the crankshaft sprocket bolt (M14 x 1.5 x 47) loosening.

### PRODUCTION

Crankshaft sprocket bolt tensile strength increased to 12.9.

### SERVICE

If this condition exists:

- Check injection pump timing.

If timing is incorrect:

- Turn crankshaft to TDC for No. 1 cyl.
- Remove crankshaft sprocket, see applicable Repair Manual for Models listed above.
- Check Crankshaft and sprocket for wear.

If crankshaft or crankshaft sprocket show signs of wear:

- Replace crankshaft, crankshaft sprocket and bolt. See applicable Repair Manual for Models listed.

### END OF ARTICLE

# NEW COOLANT G 012 A8D A1

## Article Text

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### ARTICLE BEGINNING

#### TECHNICAL SERVICE BULLETIN

#### NEW COOLANT

Model(s): Volkswagen, All Watercooled Models  
Group: 19 - Engine - Cooling System  
Bulletin No.: 96-01  
Date: October 30, 1996

### PRODUCTION

A new coolant, G 012 A8D A1 is being used in production as follows:

- \* German production: from 07.96
- \* Mexican production: running change scheduled for 01.97

Coolant G 012 A8D A1 is red in color.

This newly developed product permits a cooling system fill that lasts the service life of the engine and was designed with all-aluminum engines in mind.

### ADVANTAGES

- \* Improved corrosion protection
- \* Improved thermal stability
- \* Improved heat transfer/control
- \* Improved hard water tolerance
- \* Improved environmental protection

**CAUTION:** G 012 A8D A1 must NEVER be mixed with ANY other coolant.  
Engine damage will result!

Contamination of G 012 A8D A1 with other colored coolants is identifiable by discoloration (brown, purple etc.). This mixture causes a foamy deposit to appear in the expansion tank/radiator.

This mixture is to be drained immediately and the cooling system flushed as described below.

### FLUSHING PROCEDURE

Engine at operating temperature (older vehicles with heater valve: heater on).

- Drain coolant. See Repair Manual, General Engine, Repair Group 19.
- Apply compressed air to expansion tank or radiator to blow out remaining coolant.

## **NEW COOLANT G 012 A8D A1**

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- Close cooling system, fill with distilled water.
- Run engine for a minimum of 2 minutes.
- Drain water and apply compressed air to expansion tank as before.
- Close cooling system and fill with appropriate mixture ratio of G 012 A8D A1 and distilled water. See Repair Manual, General Engine, Repair Group 19.
- Test drive, check coolant level and add if necessary.

**NOTE:** Coolant G 012 A8D 01 may be used in older vehicles when the original coolant is drained and cooling system flushed as described above.

- Inform customer that a new coolant is used and that ONLY water or G 012 A8D A1 be used to replenish.

**CAUTION:** \* Never reuse old coolant when performing engine repairs.  
\* Dispose of old coolant properly.

Flushing as specified above, or engine damage resulting from the use of a mixture of G 012 A8D A1 and other coolants is not covered by the new vehicle warranty.

**CAUTION:** Part numbers are for reference only. Always check with your Parts Dept. for the latest parts information.

**END OF ARTICLE**

# MAIN BEARING CAP TIGHTENING TORQUE

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### ARTICLE BEGINNING

#### TECHNICAL SERVICE BULLETIN

#### MAIN BEARING CAP TIGHTENING TORQUE

Model(s): 1993- on Volkswagen Golf, GTI, Jetta, Cabrio  
with 2.0 liter engine code ABA  
Group: 13 - Engine - Crankshaft/Crankcase  
Bulletin No. : 96-01  
Date: July 1, 1996

File this Technical Bulletin in Repair Manual No. : W42 011 294 105.

### SERVICE INFORMATION

The following repair information includes a corrected tightening torque specification that will be integrated with the next Repair Manual update.

This information replace pages 13-2 and 13-26 in the current 04.94 edition Repair Manual 2.0 Liter General, Engine (W42 011 294 105).

#### CRANKSHAFT, REMOVING AND INSTALLING

Refer to Fig. 1.

- 1 - Main bearing shells 1, 2, 4, 5
  - \* Without oil groove: for main bearing caps 1, 2 and 5.
  - \* With oil groove: for main bearing cap 4 and cylinder block.
  - \* Do not interchange used main bearing shells.
- 2 - 65 N.m (48 ft-lb) plus additional 1/4-turn (90°)
- 3 - Main bearing caps
  - \* Main bearing cap 1: pulley side.
  - \* Main bearing cap 3 with recesses for thrust washers.
  - \* Holding tabs on cylinder block/main bearing cap, bearing shells must face each other.
- 4 - Main bearing shell 3
  - \* Without oil groove: for main bearing cap.
  - \* With oil groove: for cylinder block.
- 5 - Thrust washer
  - \* For main bearing cap 3.
  - \* Note installation positions.
- 6 - Sensor gear
  - \* For Engine Speed (RPM) Sensor -G28-.
  - \* Always replace.

## MAIN BEARING CAP TIGHTENING TORQUE

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7 - 10 N.m (7 ft-lb) plus 1/4 turn (90°)

\* Always replace.

8 - Crankshaft

\* Axial clearance new: 0.07 - 0.17 mm (0.0028 - 0.0067 in.)

\* Reconditioning limit: 0.25 mm (0.0098 in.).

\* Measure radial clearance with Plastigage.

- new: 0.02 - 0.06 mm (0.0008 - 0.0024 in.)

- wear limit: 0.17 mm (0.0067 in)

CAUTION: Do Not turn crankshaft when measuring radial clearance.

9 - Thrust washer

\* For cylinder block, main bearing 3.

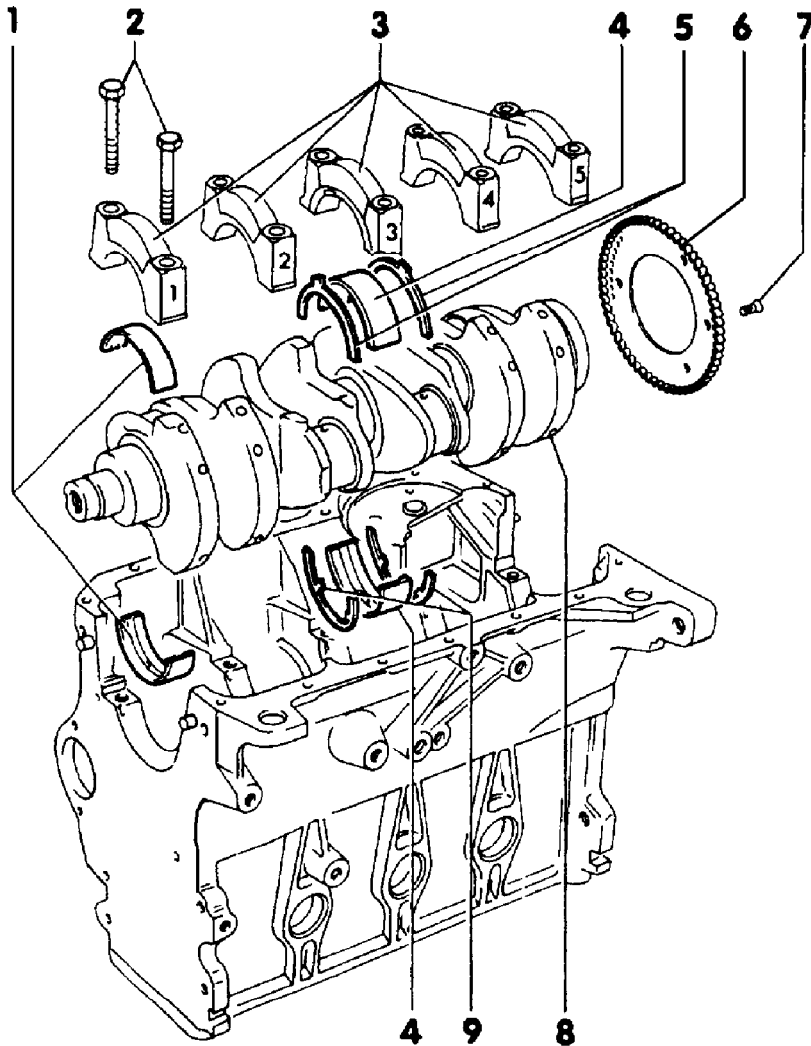


Fig. 1: Crankshaft & Main Bearings Assembly

95H55282

END OF ARTICLE

# FLUID CAPACITY CHART

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### ARTICLE BEGINNING

#### TECHNICAL SERVICE BULLETIN

#### FLUID CAPACITY CHART

Model(s): 1990- on Volkswagen, All Models  
Group: 00 - General  
Bulletin No. : 97-08  
Date: September 17, 1997

NOTE: This bulletin supersedes Technical Bulletin Group 00, No. 97-04 dated May 16, 1997.

#### SERVICE INFORMATION

The following fluid capacity information covers all vehicles from 1991 and some from 1990.

Retain the fluid chart, covering vehicles from 1980 through 1990, as a supplement for older vehicles.

CAUTION: Part numbers are for reference only. Always check with your Parts Department for latest information.

#### FLUID CAPACITY CHART

AA

#### JETTA/GOLF - 1991-95

AA

Engine Oil (1)..... 4 cyl. 4.0L (4.2 qt.)  
V6 5.0L (5.3 qt.)  
Diesel 4.5L (4.7 qt.)

Manual Trans. .... (1993-1995«)  
02A Trans. 2.0L (2.1 qt.)  
G50 synthetic oil, SAE 75W/90  
VR6 02A Trans. 2.0L (2.1 qt.)  
G 005 100 A1  
(1995«- 1997)  
020 Trans. 1.9L (2.0 qt.)  
G50 synthetic oil, SAE 75W/90  
VR6 020 Trans. 1.9L (2.0 qt.)  
G 005 100 A1

Auto Trans. .... (1993-1995«)  
096 tran. 3.0L (3.2 qt.)  
0.7L (0.74 qt.)  
Dexron II/III or  
VWATF G052 162 A2  
(1995«- 1997)  
01M Dry Fill 5.3L (5.5 qt.)  
Refill 3.0L (3.2 qt.)  
VWATF G052 162 A2 ONLY



# FLUID CAPACITY CHART

## Article Text (p. 2)

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Auto Diff. ....	(1993- 1995«) 0. 75L (0. 79 qt.) G052 145 A2 (Synthetic Oil) (1995«- 1997) 0. 75L (0. 79 qt.) G052 145 A2 (Synthetic Oil)
Cooling System (2) .....	1. 9 TD 6. 5L (6. 8 qt.) 1. 8 Gas 5. 5L (5. 8 qt.) 2L Eng. 5. 8L (6. 1 qt.) 2. 8 V6 10L (10. 6 qt.)
Power Steering (3).....	. 77L (. 85 qt.) ATF Dexron II
Windshield Washer (4).....	4. 2L (4. 5 qt.)
A/C Refrigerant R- 12/R- 134 (5) .	800 ñ 50 grams (28. 2 oz. ñ 1. 8 oz.)
A/C Refrigerant Oil .....	115 cc ñ 15cc (3. 9oz ñ 0. 5 oz.) Use PAG Oil With R 134a.
AA	
VANAGON 1991	
AA	
Engine Oil (1) .....	Water Cooled 4. 3L (4. 8 qt.)/Filter Diesel 3. 5L (3. 7 qt.) 3. 8L (4. 2 qt.)
Manual Trans. ....	Water Cooled - 3. 4L (3. 8 qt.) SAE 80/80W/90, MIL- L- 2105. API/GL- 4 or G50 Diesel - 3. 4L (3. 8 qt.) SAE 75W90, MIL- L- 2105, API/GL- 4 or G50
Auto Trans. ....	Dry Fill 6. 0L (6. 3 qt.) Refill: 3. 0L (3. 2 qt.) ATF Dexron II/III or VWATF G052 162 A2
Auto Diff. ....	1. 2L (1. 3 qt.) G052 145 A2 (Synthetic oil)
Cooling System (2) .....	16. 7L (18. 6 qt.)
Power Steering (3) .....	1. 2L (1. 3 qt.) ATF Dexron II
Windshield Washer (4) .....	3. 9L (4. 3 qt.) - Front 1. 0L (1. 1 qt.) - Rear
A/C Refrigerant R- 12/R- 134 (5)..	Gas Engine 1190 + 85 grams (42. 0 + 3. 0 oz.) Diesel Engine 1438 grams (50. 75 oz.)
A/C Refrigerant Oil .....	Gas Engine 135 cc (4. 7 oz.) Diesel Engine 237 cc (8. 0 oz.)
AA	
EUROVAN - 1992- 95	
AA	
Engine Oil (1) .....	Gas 5. 0L (5. 7 qt.) Diesel 5. 5 qt. (6. 0 qt.) (Canada) V6 W/FI. 5. 5L (5. 8 qt.)
Manual Trans. ....	2. 3L (2. 5 qt.) G50 Synthetic oil SAE 75W90 or GL4 SAE 75W90 (1992- 1995«)
Auto Trans. ....	098 tran. 3. 0L (3. 2 qt.) 0. 7L (0. 74 qt.)

## FLUID CAPACITY CHART

### Article Text (p. 3)

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**Dexron II/III or  
VWATF G052 162 A2  
(1992- 1995«)**

Auto Diff. .... 1. 15L (1.22 qt.)  
G052 145 A2 (Synthetic Oil)  
(1992- 1995«)  
Cooling System (2) ..... Diesel 11.5L (12.2 qt.)  
5 cyl. 9L (9.5 qt.)  
V6 1 heat/ex 9L (9.5 qt.)  
2 heat/ex 10.8L (11.4 qt.) (6)  
Power Steering (3) ..... 1L (1.05 qt.) P/N G 002 000  
Do not use ATF fluid  
Windshield Washer (4) ..... 7.0L (7.3 qt.)  
A/C Refrigerant R-12/R-134 (5).. 950 + 50 grams (33.25 + 1.75 oz.)  
One evaporator  
1350 + 50 grams (47.25 + 1.75 oz.)  
Two evaporators  
A/C Refrigerant Oil ..... 135 cm<sup>3</sup> 4.72 oz One evaporator  
240 cm<sup>3</sup> 8.4 oz Two evaporators  
Use PAG oil with R 134a.

AA  
EUROVAN - 1995-97  
AA

Engine Oil (1) ..... Gas 5.0L (5.7 qt.)  
Diesel 5.5 qt. (6.0 qt.) (Canada)  
V6 W/FI. 5.5L (5.8 qt.)  
Manual Trans. .... 2.3L (2.5 qt.)  
G50 SAE 75W90 (Synthetic) or  
GL4 SAE 75W90  
(1995«- 1997)  
02B 2.5L (2.7 qt) G50  
Auto Trans. .... 01P Dry Fill 5.3 (5.5 qt.)  
Refill 3.0L (3.2 qt.)  
VWATF G052 162 A3 ONLY  
(1995«- 1997)  
Auto Diff. .... 1. 15L (1.22 qt.)  
G052 145 A2 (Synthetic)  
(1995«- 1997)  
Cooling System (2) ..... Diesel 11.5L (12.2 qt.)  
5 cyl. 9L (9.5 qt.)  
V6 1 heat/ex 9L (9.5 qt.)  
2 heat/ex 10.8L (11.4 qt.) (6)  
Power Steering (3) ..... 1L (1.05 qt.) P/N G 002 000  
Do not use ATF fluid  
Windshield Washer (4) ..... 7.0L (7.3 qt.)  
A/C Refrigerant R-12/R-134 (5).. 950 + 50 grams (33.25 + 1.75 oz.)  
One evaporator  
1350 + 50 grams (47.25 + 1.75 oz.)  
Two evaporators  
A/C Refrigerant Oil ..... 135 cm<sup>3</sup> 4.72 oz One evaporator  
240 cm<sup>3</sup> 8.4 oz Two evaporators  
Use PAG oil with R 134a.

# FLUID CAPACITY CHART

## Article Text (p. 4)

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AA

### CABRIO 1995- 97

AA

Engine Oil (1) ..... 4 cyl. 4.0L (4.2 qt.)  
V6 5.0L (5.3 qt.)  
Diesel 4.5L (4.7 qt.)

Manual Trans. .... 020 Trans. 1.9L (2.0 qt.) 75W90.  
MIL-L-2105. API GL-4 or  
G50 synthetic 75W90  
020 Trans. 1.9L (2.0 qt.) 75W90.  
MIL-L-2105. API GL-4 or  
G50 synthetic 75W90  
(1995«- 1997)

Auto Trans. .... 096 tran. 3.0L (3.2 qt.)  
0.7L (0.74 qt.)  
Dexron II/III or  
VWATF G052 162 A2  
01M Dry Fill 5.3L (5.5 qt.)  
Refill 3.0L (3.2 qt.)  
VWATF G052 162 A2 ONLY  
(1995«- 1997)

Auto Diff. .... 0.75L (0.79 qt.)  
G052 145 A2 (Synthetic Oil)  
0.75L (0.79 qt.)  
G052 145 A2 (Synthetic Oil)  
(1995«- 1997)

Cooling System (2) ..... 1.9 TD 6.5L (6.8 qt.)  
1.8 Gas 5.5L (5.8 qt.)  
2L Eng. 5.8L (6.1 qt.)  
2.8 V6 10L (10.6 qt.)

Power Steering (3) ..... .77L (.85 qt.) ATF Dexron II

Windshield Washer (4) ..... 4.2L (4.5 qt.)

A/C Refrigerant R-12/R-134 (5) . 800 ñ 50 grams (28.2 oz. ñ 1.8 oz.)

A/C Refrigerant Oil ..... 115 cc ñ 15cc (3.9oz ñ 0.5 oz.)  
Use PAG Oil With R 134a.

AA

### CABRIOLET 1985- 94

AA

Engine Oil (1) ..... 3.5L (3.7 qt.) 4.0L (4.3 qt.)/Filter

Manual Trans. .... 020 Trans. 1.9L (2.0 qt.) 75W90.  
MIL-L-2105. API GL-4 or  
G50 synthetic 75W90

Auto Trans. .... ATF DexronII/III or VWATF G052 162 A2  
Dry Fill 6.0L (6.3 qt.)  
Refill 3.0L (3.1 qt.)

Auto Diff. .... .75L (.8 qt.)  
G052 145 A2 (synthetic oil)

Cooling System (2) ..... 4.6L (5.1 qt.)

Power Steering (3) ..... .77L (.85 qt.) ATF Dexron II

Windshield Washer (4) ..... 1.6L (1.8 qt.) Front

A/C Refrigerant R-12/R-134 (5) . 1134 ñ 56 grams (33.0 oz. ñ 3.0 oz.)

A/C Refrigerant Oil ..... 135 cc (4.75 oz )

# FLUID CAPACITY CHART

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Use PAG oil with R 134a.

AA

### PASSAT 1991-95

AA

Engine Oil (1) ..... 4 cyl. 3.5L (3.7 qt.) W/0 Filter,  
4.0L (4.3 qt.) W/Filter  
V6 5.0L (5.3 qt.) W/0 Filter,  
6.0L (6.3 qt.) W/Filter  
Manual Trans. .... (1990-1995«)  
02A Trans. 2.0L (2.1 qt.)  
02C Trans. 2.4L (2.5 qt.)  
API GL 4 MIL-L2105, SAE 75W/90 or  
G50 Synthetic SAE 75W/90  
Auto Trans. .... (1990-1995«)  
Dexron II/III or VWATF G052 162 A2  
Auto Diff. .... (1990-1995«)  
0.75L (0.79 qt.)  
G052 145 A2 (Synthetic Oil)  
Cooling System (2) ..... 4 cyl. 5.6L (5.9 qt.)  
V6 8.6L (9.1 qt.)  
Power Steering (3) ..... 07-0.9L (0.74-0.5 qt.)  
Windshield Washer (4) ..... 5.0L (5.3 qt.)  
A/C Refrigerant R-12/R-134 (5).. 1150 ñ 50 grams (40.25 oz. ñ 1.7 oz.)  
A/C Refrigerant Oil ..... 115 cc (4.02 oz.)

Use PAG oil with R-134-a.

AA

### PASSAT 1995-97

AA

Engine Oil (1) ..... 4 cyl. 3.5L (3.7 qt.) W/0 Filter,  
4.0L (4.3 qt.) W/Filter  
V6 5.0L (5.3 qt.) W/0 Filter,  
5.5L (5.7 qt.) W/Filter  
Diesel 4.5L (4.75 qt.)  
TDI N/A 1997  
Manual Trans. .... VR6 eng. G 005 100 A1  
02A Trans. 2.0L (2.1 qt.)  
02C Trans. 2.4L (2.5 qt.)  
API GL 4 Mil-L2105, or  
G50 Synthetic SAE 75W90  
(1995«-1997)  
02A Trans. 2.0L (2.1 qt.)  
G50 or GL4 (1997)  
Auto Trans. .... (1995«-1997)  
01M Dry Fill 5.3L (5.5 qt.)  
Refill 3.0L (3.2 qt.)  
VWATF G052 162 A2 ONLY  
(1995«-1997)  
Auto Diff. .... 0.75L (0.79 qt.) G052 145 A2  
(Synthetic Oil)  
(1995«-1997)  
Cooling System (2) ..... 4 cyl. W/Auto Tr. 6.2L (6.5 qt.)  
W/Std. Tr. 5.6L (5.8 qt.)

# FLUID CAPACITY CHART

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V6 10.0L (10.4 qt.)

1.9 TDI 6.5L (6.8 qt.)

Power Steering (3) ..... 07-0.9L (0.74-0.5 qt.)

Windshield Washer (4) ..... 5.0L (5.3 qt.)

A/C Refrigerant R-12/R-134 (5).. 950 + 50 grams (33.25 oz. + 1.75 oz.)

A/C Refrigerant Oil ..... 115 cc (4.02 oz.)

Use PAG oil with R-134-a.

AA

### CORRADO - 1991-94

AA

Engine Oil (1) ..... 4 cyl. 3.5L (3.7 qt.) W/O Filter,

4.0L (4.3 qt.) W/Filter

V6 5.0L (5.3 qt.) W/O Filter,

5.5L (5.7 qt.) W/Filter

Manual Trans. .... 02A Trans. 2.0L (2.1 qt.)

G50 Synthetic Gear Oil, 75W/90

VR6 Eng. G 005 100 A1

Auto Trans. .... 096 tran. 3.0L (3.2 qt.)

0.7L (0.74 qt.)

Dexron II/III or

VWATF G052 162 A2

Auto Diff. .... 0.75L (0.79 qt.)

G052 162 A2 (Synthetic Oil)

Cooling System (2) ..... 6.5L (1.7 gal.)

Power Steering (3) ..... .77L (.85 qt.) ATF Dexron II

Windshield Washer (4) ..... 4.2L (4.4 qt.)

A/C Refrigerant R-12/R-134 (5).. 850 + 50 grams (29.75 oz. ñ 1.7 oz.)

A/C Refrigerant Oil ..... 135 cc (4.7 oz.)

Use PAG oil with R-134-a.

AA

### FOX - 1991-93

AA

Engine Oil (1) ..... 3.0L (3.2 qt) W/O Filter

3.5L (3.7 qt.) W/ Filter

Manual Trans. .... 1.6L (1.8 qt) 75W90,

MIL-L-2105, API GL-4

Auto Trans. .... N/A

Auto Diff. .... N/A

Cooling System (2) ..... 6.2L (6.9 qt.) w/A/C

Power Steering (3) ..... N/A

Windshield Washer (4) ..... 2.5L (2.8 qt.) - Front

1.5L (1.7 qt.) - Rear

A/C Refrigerant R-12/R-134 (5).. 1134 + 50 grams (38.0 oz. ñ 1.7 oz.)

A/C Refrigerant Oil ..... 170cc (6.0 oz.)

AA

(1) = Use "API SERVICE SG or SH" for gasoline engines. Use "API SERVICE CF or CG4" for Diesel engines.

(2) = COOLANT: Use only phosphate free coolant ZVW 237 105 (G11) up to 10.96, from 10.96 use ZVW 237 (G12) DO NOT INTERCHANGE OR MIX G11 & G12.

(3) = POWER STEERING: Hydraulic oil G002 000 / G002 012 instead of ATF.

**FLUID CAPACITY CHART**

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(4) = WASHER SOLVENT: 9.0L (9.5 QT.) w/headlight washers. Concentrated ZVW 177 901/903/904/906.

(5) = A/C REFRIGERANT. Use R-12 through 1992, R 134a begins in 1993.

(6) = 2 heat/ex & aux. heater 11.4L (12.1 qt.)

AA

CAUTION: Part numbers are for reference only. Always check with your Parts Department or latest information.

END OF ARTICLE

# COOLING SYSTEM ANTI-FREEZE PROTECTION LEVEL CHECKING

## Article Text

1996 Volkswagen Golf  
For Volkswagen Technical Site  
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Friday, August 20, 1999 12:06AM

### ARTICLE BEGINNING

#### TECHNICAL SERVICE BULLETIN

#### COOLING SYSTEM ANTI-FREEZE PROTECTION LEVEL, CHECKING

Model(s): 1993-on Volkswagen Golf, GTI, Jetta, Cabrio  
Group: Maintenance Bulletin  
Bulletin No.: 96-04  
Date: November 9, 1996

File this Technical Bulletin in Repair Manual No.: W42 011 294 118.

#### COOLING SYSTEM ANTI-FREEZE PROTECTION LEVEL, CHECKING

Special tool CEN5021 (Fig. 1), Leica Hand-Held Refractometer, is available and recommended for use as the only accurate way of determining the anti-freeze protection of the new Volkswagen engine coolant G 012 A8D A1.

This tool automatically provides immediate temperature compensation and direct reading of the coolant with only a few drops of sample.

Check your test equipment inventory to make sure you have this minimum requirement tool. Special Tool CEN5021 can be ordered through Equipment Solutions at (800) 892-9650.

Refer to Technical Bulletin, GROUP 19, NO. 96-01, October 30, 1996, for information about Volkswagen coolant G 012 A8D A1.

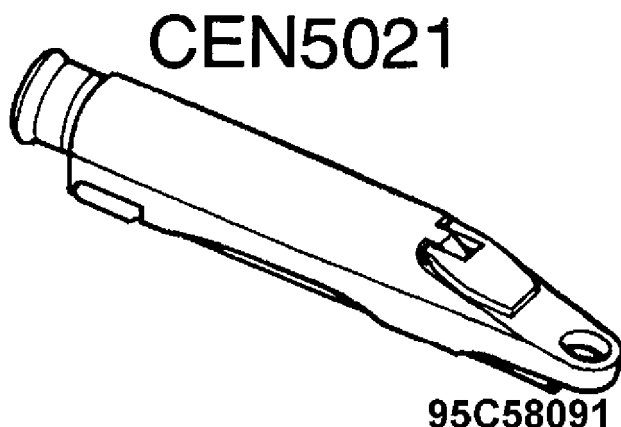


Fig. 1: Special Tool CEN5021

END OF ARTICLE

## 2.0L - METAL CYLINDER HEAD GASKET

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#### ARTICLE BEGINNING

#### TECHNICAL SERVICE BULLETIN

#### METAL CYLINDER HEAD GASKET

Model(s): 1995- on Volkswagen Golf, GTI, Jetta built from 03/95  
with 2.0 liter, engine code ABA  
Group: 15 - Engine - Cylinder Heads Valve Drive  
Bulletin No. : 96-03  
Date: May 15, 1996

File this Technical Bulletin in Repair Manual No. : W42 011 294 105.

#### SERVICE INFORMATION

The following Repair Manual information is new and will be integrated with the next Repair Manual update.

#### CYLINDER HEAD, REMOVING AND INSTALLING

Refer to Fig. 1.

- 11 - Cylinder head bolt
  - \* Always replace.
  - \* Different versions depending on cylinder head gasket type.
- 14 - Cylinder head gasket
  - \* Always replace.
  - \* New metal gasket from 03/95.
  - \* Installing replacement metal gasket requires different cylinder head bolts.
  - \* When replacing gasket, replace engine coolant.

#### CHECKING CYLINDER HEAD FOR DISTORTION

Maximum permissible distortion: 0.1 mm (0.004 in.) See Fig. 2.

#### CYLINDER HEAD BOLT IDENTIFYING FEATURES

See Fig. 3.

- A - Bolt with smooth head  
For previous version cylinder head gasket
- B - Bolt with raised markings on bolt head (arrows)  
For metal cylinder head gasket

#### CYLINDER HEAD, REMOVING AND INSTALLING

Special tools, testers and auxiliary items



## 2.0L - METAL CYLINDER HEAD GASKET

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- \* Guide pin 3070
- \* Torque wrench - 40-200 N.m (30-150 ft-lb)

#### Conditions

- \* Engine cold
- \* Pistons not at Top Dead Center (TDC)

- CAUTION:
- \* Only remove the new cylinder head gasket from its package immediately before installing.
  - \* Handle the new gasket with extreme care. Damage to the silicone coating or around the beading will lead to leaks.
  - \* If a metal gasket is being installed as a replacement for the previous softer gasket, new cylinder head bolts must also be installed.

#### REMOVING

- Follow sequence when loosening cylinder head. See Fig. 4.
- Carefully remove remains of gasket, making sure that no scoring or long scratches are formed (abrasive materials must be 100 grit minimum).
- Carefully remove metal particles and remains of abrasive materials.

#### INSTALLING

- To align cylinder head, install guide pins from 3070 into holes for cylinder head bolts -8- and -10-. See Fig. 5.
- Install cylinder head gasket.
  - \* Lettering (Part No.) faces up.
- Install cylinder head and 8 remaining bolts, and tighten by hand.
- Remove guide pins using removal tool from 3070, then install 2 remaining cylinder head bolts.
- Tighten cylinder head in sequence shown in Fig. 6, following same sequence for each of for stages.
- First pre-tighten with torque wrench.
  - \* Stage I = 40 N.m (30 ft-lb)
  - \* Stage II = 60 N.m (44 ft-lb)
- Turn further with standard wrench.
  - \* Stage III = 1/4 turn (90°)
  - \* Stage IV = 1/4 turn (90°)

# 2.0L - METAL CYLINDER HEAD GASKET

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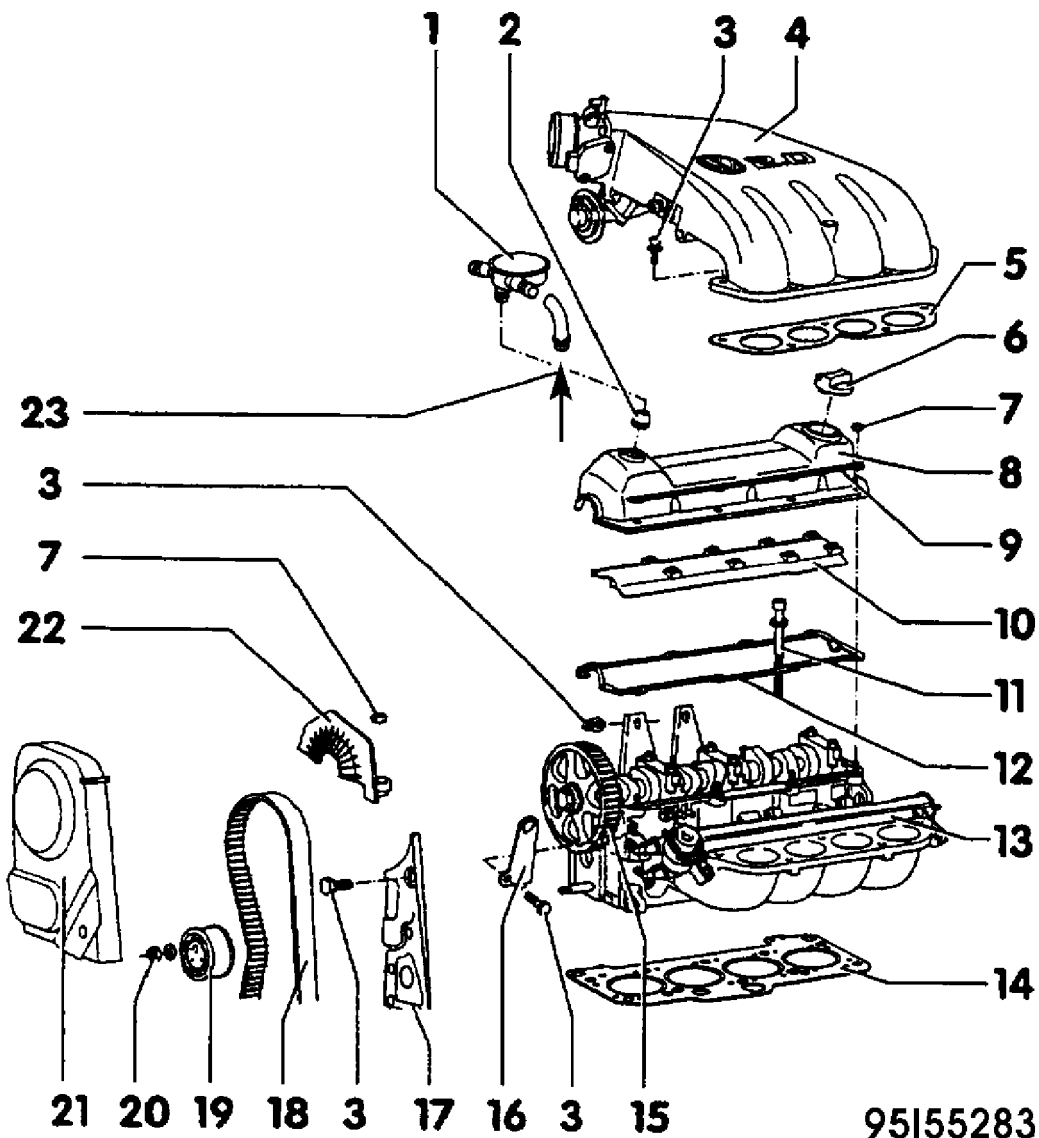


Fig. 1: Cylinder Head, Gaskets & Covers

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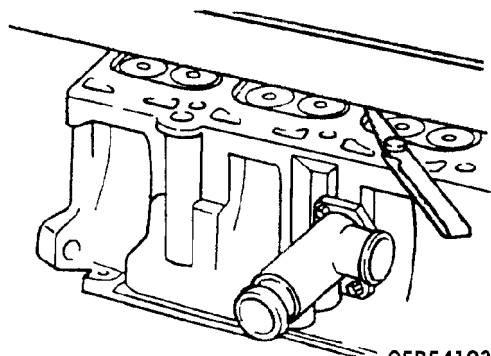


Fig. 2: Checking Cylinder Head Distortion

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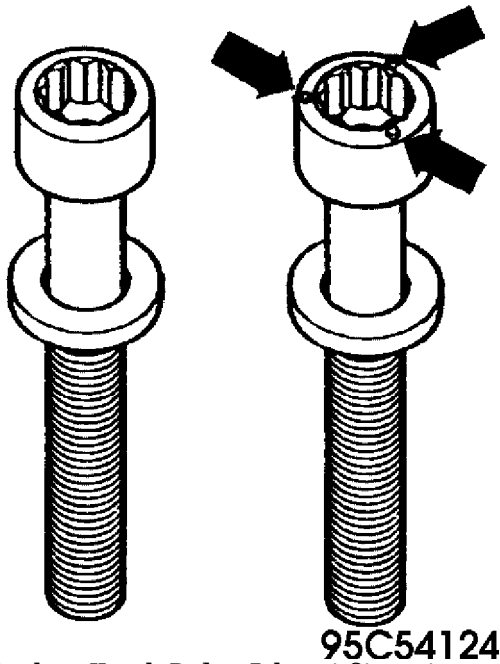


Fig. 3: Cylinder Head Bolt Identification

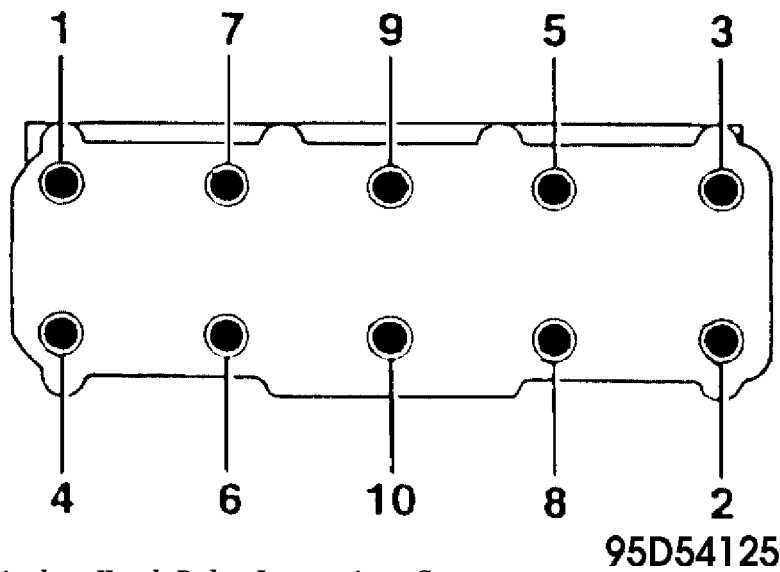


Fig. 4: Cylinder Head Bolt Loosening Sequence

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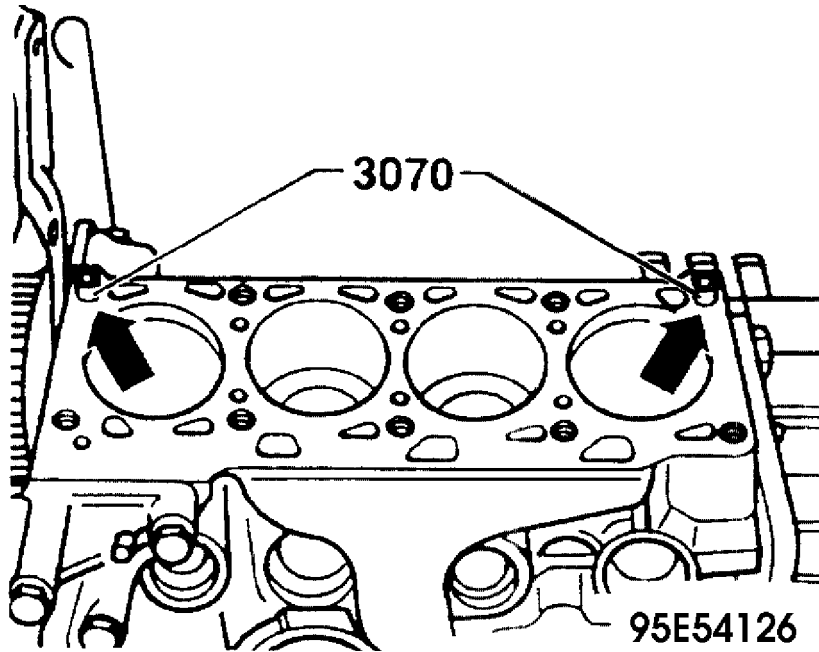


Fig. 5: Guide Pin Locations

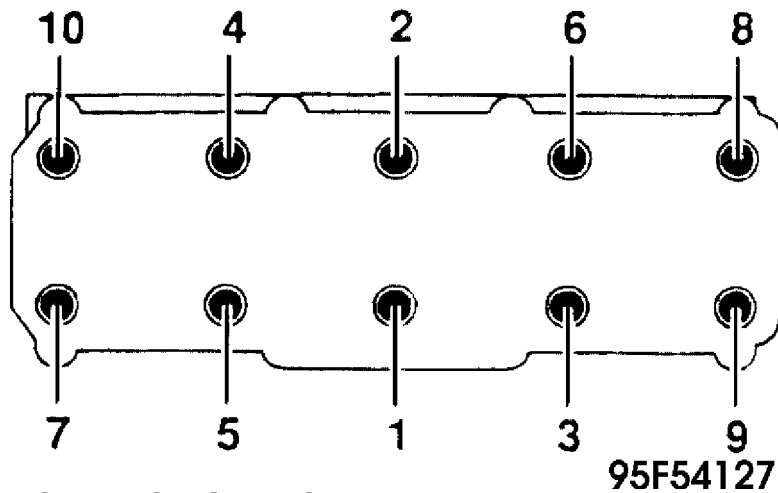


Fig. 6: Cylinder Head Bolt Tightening Sequence

END OF ARTICLE