

Engine, removing and installing

WARNING!

- ◆ *Do not re-use any fasteners that are worn or deformed in normal use.*
- ◆ *Some fasteners are designed to be used only once, and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual-replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.*

CAUTION!

Before disconnecting the battery, determine the correct coding for the anti-theft radio.

Special tools, testers and auxiliary items

- ◆ VAG1921 spring clip pliers
- ◆ 2024A engine sling

- ◆ G 000 100 grease (vehicles with manual transmission)
- ◆ VAG1331 torque wrench, 5 to 50 Nm range
- ◆ VAG1332 torque wrench, 40 to 200 Nm range
- ◆ Cable ties



Removing

- Switch ignition off.
- Disconnect battery Ground (GND) strap.

Notes:

- ◆ *Remove engine and transmission (as an assembly) in a forward direction.*
- ◆ *When re-installing the engine, replace or re-install all cable ties (in original position) which were loosened or cut during engine removal.*
- Remove air cleaner housing complete with intake hoses.
- Loosen power steering reservoir hose clamp.
- Disconnect power steering hydraulic lines from engine carrier and transmission.
- Disconnect power steering pump with bracket and move to one side.

⇒ *Repair Manual, Suspension, Wheel, Brakes, Steering, Repair Group 48*

CAUTION!

DO NOT disconnect power steering hoses

⇒ *Repair Manual, Suspension, Wheels, Brakes, Steering, Repair Group 48* .

- Drain engine coolant ⇒ Page 19-10 .



Engine code AAZ

- Disconnect accelerator pedal cable at injection pump lever, remove mounting clip on support bracket and release cable.
- Disconnect cold start accelerator cable.

Engine codes 1Z, AHU

- Remove connecting line between charge air cooler and intake manifold pressure line.

All engines

- Disconnect fuel supply and return lines from fuel pump.
- Disconnect all wiring harness connectors and other electrical connections from engine as required.
- Remove lock carrier with attachments.

⇒ [*Repair Manual, Body Exterior, Interior Golf.*](#)

GTI, Jetta, Repair Group 50

- Remove coolant fan and shroud.



Vehicles with A/C

CAUTION!

- ◆ *Disconnect A/C refrigerant line brackets and support points only.*
- ◆ *DO NOT open the air conditioning refrigerant circuit.*
- ◆ *Avoid damage from bending. Refrigerant lines kink easily.*
- Observe additional information and removal instructions ⇒ [Page 10-19](#) .

Vehicles with manual transmission

Depending on engine type:

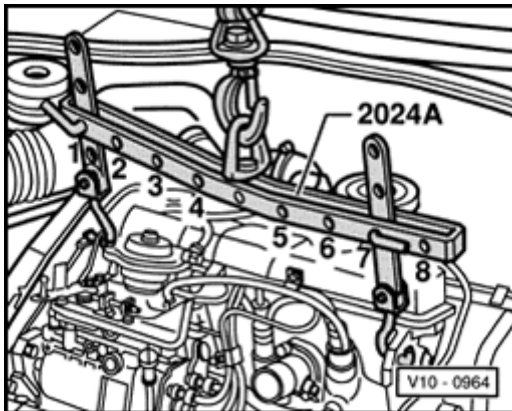
- Disconnect clutch cable (engine code AAZ).
- Remove hydraulic clutch slave cylinder (engine codes 1Z, AHU).

⇒ *Repair Manual, 5 Spd. Manual Transmission
02A, Repair Group 30*



All vehicles

- Disconnect shift linkage from transmission.
- Disconnect drive axles from transmission drive flanges.
- Disconnect exhaust from turbocharger.



A

- Attach engine sling 2024A as follows and lift slightly using workshop crane (remove slack).
 - ◆ Pulley end: 2nd hole in hook at position 1
 - ◆ Flywheel end: 2nd hole in hook at position 7

CAUTION!

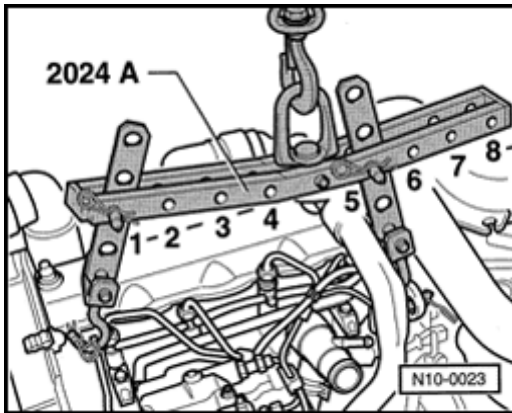
Secure all 2024A engine sling hooks and locating pins using lock pins.

Notes:

- ◆ The end of the cross bar marked with installation positions 1-4 points toward drive belt.
- ◆ Holes in the hooks are counted from the hook end.



Vehicles with automatic transmission

**A**

- Attach engine sling 2024A as follows and lift slightly using workshop crane (remove slack).
 - ◆ Pulley end: 2nd hole in hook at position 1
 - ◆ Flywheel end: 2nd hole in hook at position 5

CAUTION!

Secure all 2024A engine sling hooks and locating pins using lock pins.

Notes:

- ◆ *The end of the cross bar marked with installation positions 1-4 points toward drive belt.*
- ◆ *Holes in the hooks are counted from the hook end.*



All vehicles

- Remove front engine mount as an assembly.
- Lift engine/transmission assembly out toward front.

CAUTION!

When lifting engine/transmission assembly, carefully guide the assembly out to avoid damage to body.

Note:

When working on the engine, secure the block to an engine stand using the VW540 holding fixture.

Installing

Engine installation is the reverse of removal.
When installing, note the following:

- Check clutch release bearing for wear, replace if necessary.
- Lightly grease clutch release bearing, release bearing guide sleeve and splines on input shaft

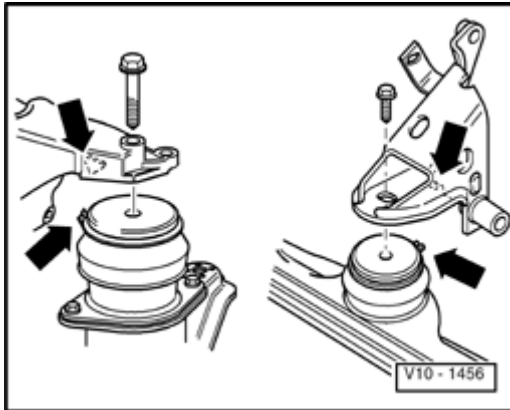
using G 000 100 grease.

- Make sure alignment dowels for centering engine to transmission are installed in cylinder block; install if necessary.
- When lowering engine/transmission assembly, make sure that there is sufficient clearance between engine/transmission and drive shafts.



Engine code AAZ

- First tighten right rear engine mount, then left rear engine mount.



A

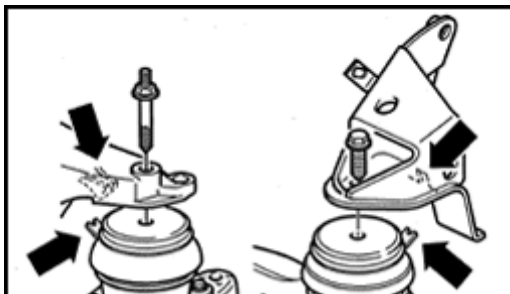
When installing the engine mounts, the recesses on the right rear engine mount bracket and front engine mount must engage in the guide pins of the bonded rubber mounts (arrows).

- Loosen front engine mount on carrier, align stress-free by rocking engine/transmission assembly and then re-tighten.

CAUTION!

- ♦ **Do not interchange the hollow banjo bolts for the fuel supply and return line fittings.**
- ♦ **The return line has a smaller diameter bore and has an "OUT" marking on the bolt head.**

Engine codes 1Z, AHU



A

- When installing engine mounts, make sure that recesses on front and rear engine mount brackets locate on engine mount lugs (arrows).
- Align engine mounts so that they are free of stress by rocking power train.
- Install hydraulic clutch slave cylinder.

⇒ [Repair Manual, 5 Spd. Manual Transmission 02A, Repair Group 30](#)



All engines

- Install shift linkage to transmission.
- Install power steering pump.

⇒ *Repair Manual, Suspension, Wheel, Brakes, Steering, Repair Group 48*

- Install lock carrier with attachments.

⇒ *Repair Manual, Body Exterior, Interior Golf, GTI, Jetta, Repair Group 50*

- Install A/C compressor.

⇒ *Repair Manual, Heating & Air Conditioning, Repair Group 87*



Engines with ribbed belt without tensioner

- Install ribbed belt ⇒ [Page 13-14](#) .
- Fill cooling system with coolant ⇒ [Page 19-10](#) .
- Connect harness connectors.
- Check headlight alignment and adjust as necessary.

⇒ [Repair Manual, Maintenance](#)

- Adjust shift linkage (if necessary) ⇒ Repair Manual.

⇒ *Repair Manual, Manual Transmission, Repair Group 34*

Engine code AAZ

- Adjust Cold Start Accelerator (CSA) cable ⇒

[Page 20-12](#) .

- Adjust accelerator cable ⇒ [Page 20-9](#) .



Tightening torques

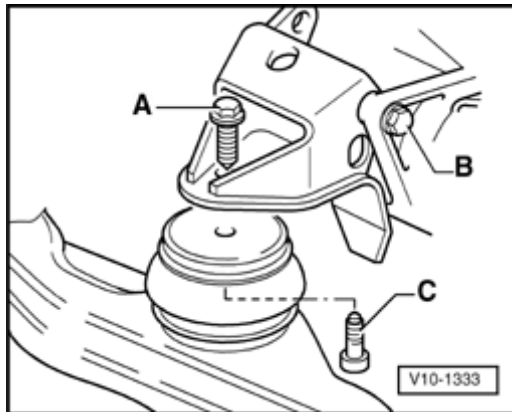
Mounting point		Tightening torque
Engine to transmission	M10	60 Nm (44 ft lb)
	M12	80 Nm (59 ft lb)
Drive shafts to drive flanges		45 Nm (33 ft lb)
Front exhaust pipe to manifold		25 Nm (18 ft lb)
Engine carrier mount to body		80 Nm (59 ft lb)



Engine and transmission mounts, tightening torques

Engine code AAZ

(Bolts lubricated)



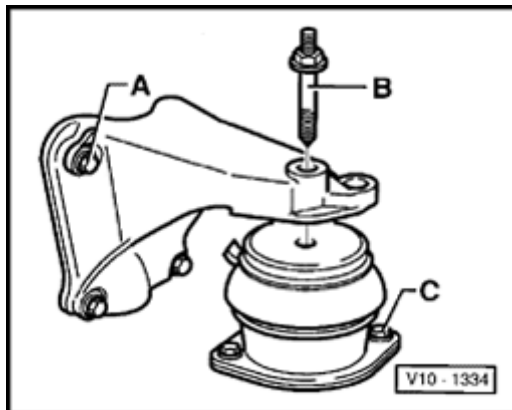
A

Front engine/transmission mount

A - 50 Nm (37 ft lb)

B - 55 Nm (41 ft lb)

C - 50 Nm (37 ft lb)



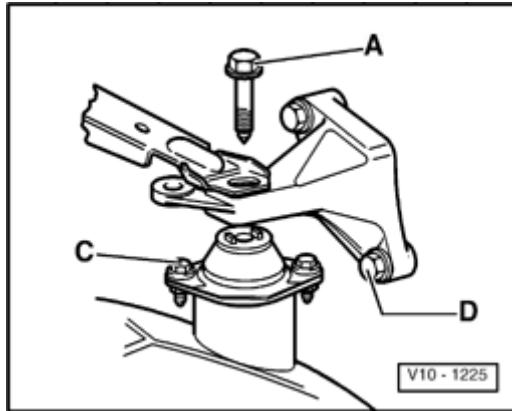
A

Right rear engine mount

A - 25 Nm (18 ft lb)

B - 50 Nm (37 ft lb)

C - 25 Nm (18 ft lb)



A Left rear engine/transmission mount

A - 50 Nm (37 ft lb)

C - 25 Nm (18 ft lb)

D - 25 Nm (18 ft lb)



Engine codes 1Z, AHU

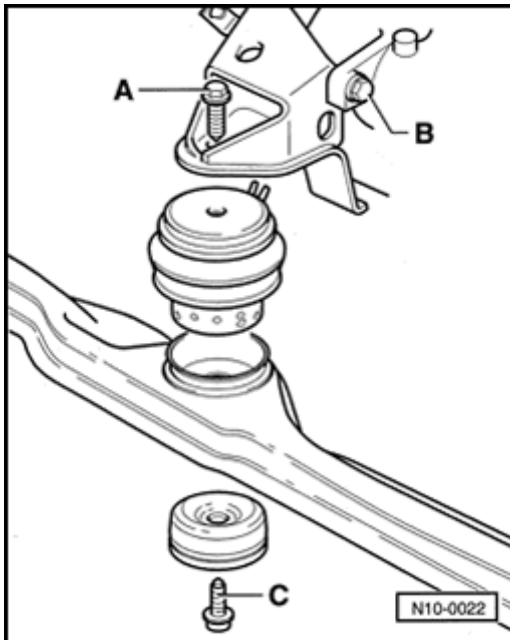
(Bolts lubricated)

A Front engine mount

A - 60 Nm (44 ft lb)

B - 60 Nm (44 ft lb)

C - 55 Nm (41 ft lb)

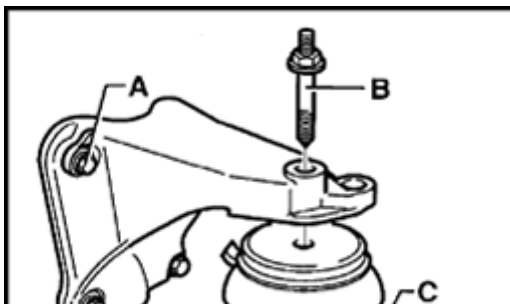


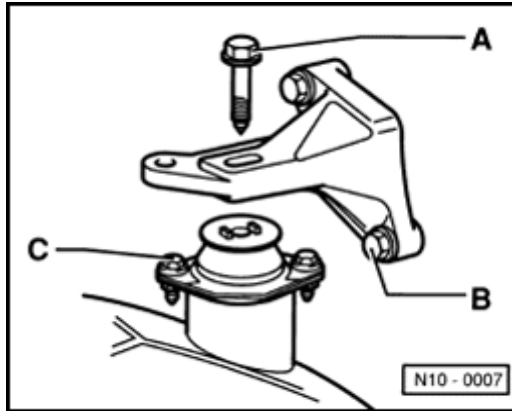
A Right rear engine mount

A - 60 Nm (44 ft lb)

B - 60 Nm (44 ft lb)

C - 25 Nm (18 ft lb)



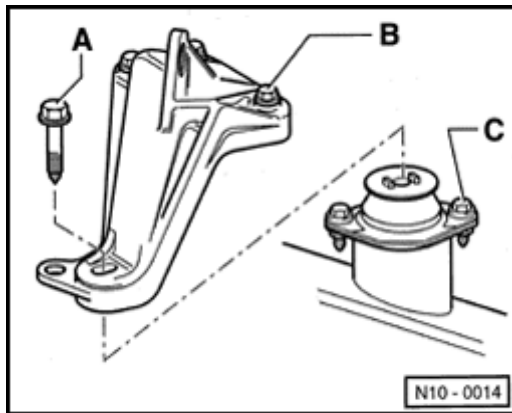


A Left rear engine mount-Manual transmission

A - 60 Nm (44 ft lb)

B - 30 Nm (22 ft lb)

C - 25 Nm (18 ft lb)



A Left rear engine mount-Automatic transmission

A - 60 Nm (44 ft lb)

B - 30 Nm (22 ft lb)

C - 25 Nm (18 ft lb)



Engine and transmission, aligning

Alignment is only necessary when the engine and transmission have been removed, and in addition sub-frame and engine mounts have been loosened.

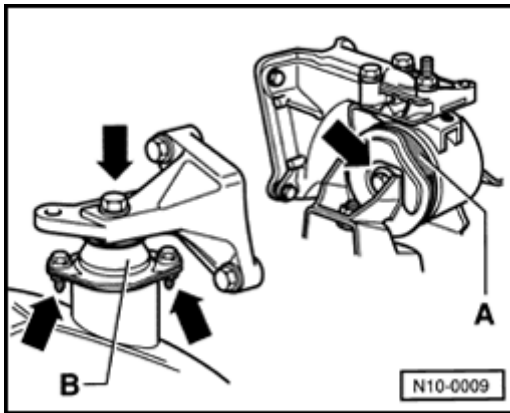
Special tools, testers and auxiliary items

- ◆ VAG1331 torque wrench, 5 to 50 Nm range
- ◆ VAG1332 torque wrench, 40 to 200 Nm range

Engine code AAZ

A

- Loosen engine mount center bolt -A-.
- Loosen transmission mount -B- (on transmission and sub-frame).



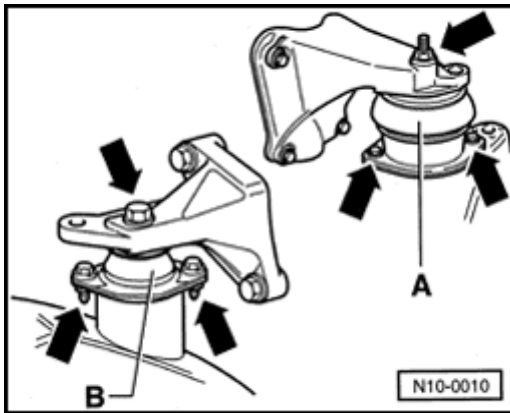
A

- Loosen front engine mount on engine carrier and bracket.
- Align assembly free of stress by rocking power train.
- Tighten bolts again in same sequence.

Tightening torques ⇒ [Page 10-12](#)

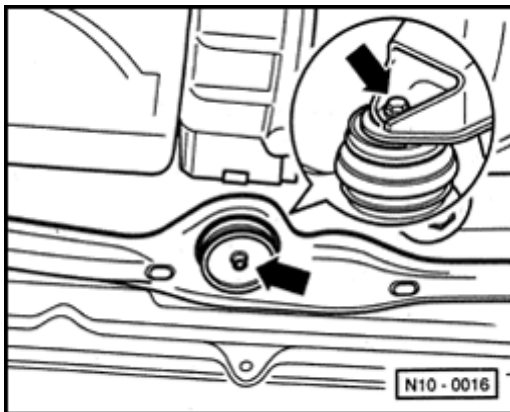


Engine codes 1Z, AHU



A

- Loosen engine mount -A- (engine carrier mount) on sub-frame and bracket.
- Loosen transmission mount -B- on transmission and sub-frame.



A

- Loosen front engine mount (on engine carrier and bracket).
- Align assembly free of stress by rocking power train.
- Tighten bolts again in same sequence.

Tightening torques ⇒ [Page 10-12](#)



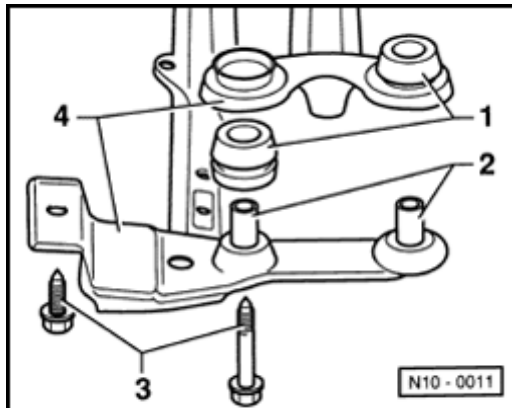
Engine carrier rubber mounts, replacing

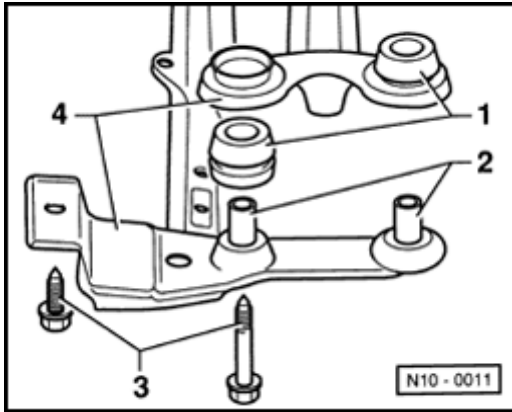
Special tools, testers and auxiliary items

- ◆ 10-222A engine support bridge
- ◆ 10-222A/1 bracket for engine

Work sequence

- Assemble 10-222A engine support bridge using bracket 10-222A/1.
- Connect support bridge to lifting eye on left side of cylinder head and remove slack in lifting apparatus and remove engine carrier.
- Pry spacer bracket -2- out from engine mount.
- Press out rubber bushing from mount -1-.

**A**



A

Note installed position of rubber bushing in mount -1-.

- Install new rubber bushing.
- Press engine spacer bracket into rubber bushing.
- Install engine mount -4- and tighten mounting bolts -3-.

Tightening torque: 80 Nm (59 ft lb)



Vehicles with A/C, additional information and removal instructions

CAUTION!

- ◆ **Disconnect A/C refrigerant line brackets and support points only.**
- ◆ **DO NOT open air conditioning refrigerant circuit.**
- ◆ **Avoid damage from bending. Refrigerant lines kink easily.**

Note:

To prevent condenser and refrigerant line damage, make sure that the A/C lines and hoses are not stretched, kinked or bent.

To remove and install the engine without opening refrigerant circuit:

- Unbolt A/C fluid reservoir and allow to hang free.
- Remove retaining clamp(s) from refrigerant

lines.

- Remove ribbed belt ⇒ [Page 13-14](#) .

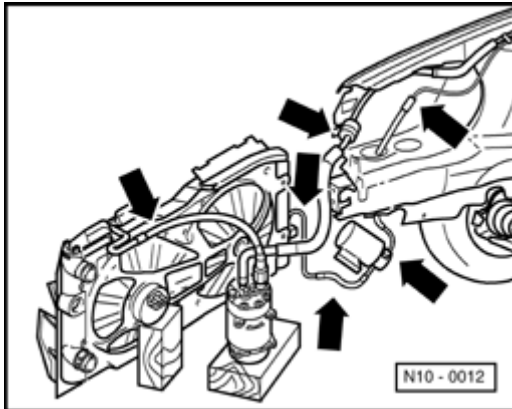


- Remove hood lock carrier assembly.

⇒ [Repair Manual, Body Exterior, Interior Golf, GTI, Jetta, Repair Group 50](#)

-
Remove
A/C
compressor
bracket

⇒ [Repair Manual, Heating & Air Conditioning, Repair Group 87](#).



A

- Remove A/C compressor and lay to side with hood lock carrier in a way that refrigerant lines (arrows) are not stressed.