

General

This section covers maintenance and replacement of the E46 automatic transmission. Internal repairs to the automatic transmission are not covered. Special tools and procedures are required to disassemble and service internal automatic transmission components.

Automatic transmissions are identified by code letters found on a data plate located on the side or rear of the transmission case. See ⇒ [200 Transmission-General](#) for application information. For gear ratio specifications, see ⇒ [Table a. Automatic transmission applications.](#)

CAUTION!

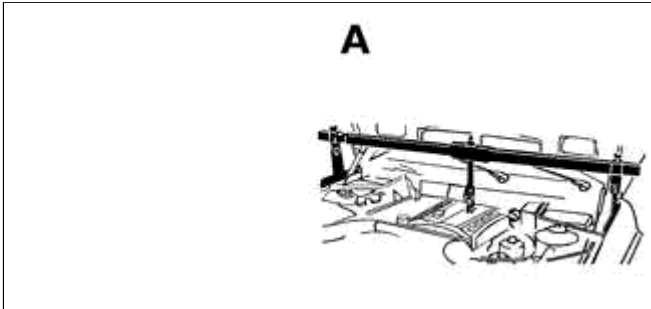
ATF does not circulate unless the engine is running. When towing an automatic transmission vehicle, use a flat-bed truck or raise the rear wheels off the ground. All wheel drive vehicles equipped with automatic transmissions must be towed using a flat-bed truck only.

The electronic transmission control module (TCM) monitors transmission operation for faults and alerts the driver by illuminating the transmission fault indicator on the instrument panel. On-board diagnostic codes stored in the TCM must be downloaded and interpreted by trained technicians using special BMW diagnostic equipment.

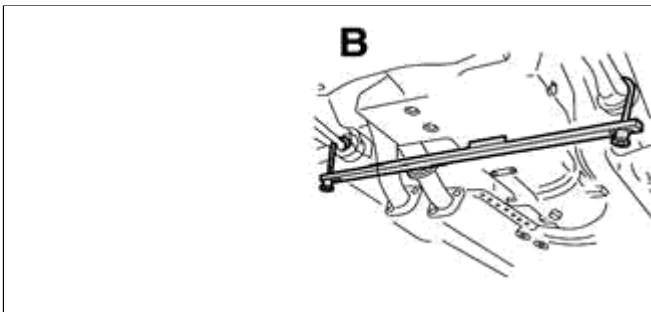
Special tools

Some special tools are required for the removal and installation of an automatic transmission on the E46 BMW models. While these tools are not

absolutely necessary, they are especially helpful when dealing with the removal and replacement of the torque converter.



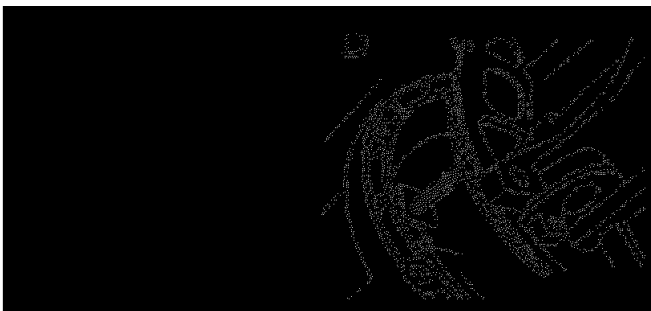
- ◀ Engine support bracket BMW 00 0 200 / 208



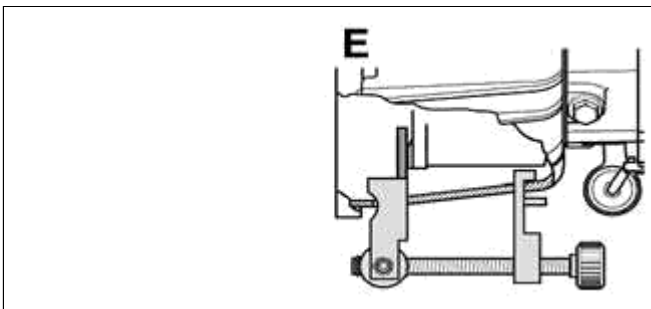
- ◀ Oil pan support bracket BMW 11 8 022



- ◀ Torque converter socket BMW 24 1 100



- ◀ Spline bore alignment tool BMW 24 2 300



- ◀ Torque converter clamp BMW 24 4 131 / 135

Internal repairs to the automatic transmission require special service equipment and knowledge. If it is determined that internal service is required, consult an authorized BMW

dealer about a factory reconditioned unit or a transmission rebuild.

323i/Ci and 328i/Ci models manufactured from 08/98 to 03/00 are equipped with the A5S 360R automatic transmission. Vehicles produced after 03/00 are equipped with the A5S 325Z transmission.

Table a. Automatic transmission applications

Model	Year	Engine	Transmission
323i/Ci 328i/Ci	1999 - 2000 2000 - 2001	M52TU	GM A5S 360R ZF A5S 325 Z
325i/Ci 330i/Ci	2000 - 2001	M54	ZF A5S 325 Z
325xi 330xi	2000 - 2001	M54	GM A5S 390R

Transmission Service



- 4 The automatic transmissions installed in the 3 Series are filled with either Dexron III ATF, or Texaco 8072B a special life-time oil.

CAUTION!

Mixing different types of transmission fluids will lead to transmission failure.

Note:

The transmission lubricant installed can be found on a sticker on the transmission pan. Dexron III ATF (black sticker) reads "ATF-Oil!". Special life-time oil (green sticker) reads "Life-Time Oil". In addition, a sticker may be located on the fluid sump indicating the type of transmission lubricant used. If in doubt, consult an authorized BMW dealer for alternate fluid use and current information regarding transmission operating fluids.

Automatic transmission fluid (ATF) level, checking

The automatic transmission is not equipped with a dipstick. Checking the ATF level requires measuring and maintaining a specified ATF temperature within a narrow range during the checking procedure. The checking temperature is not fully warm or cold (the ATF pan should be approximately warm to the touch).

- Raise and safely support vehicle to access ATF fill plug.

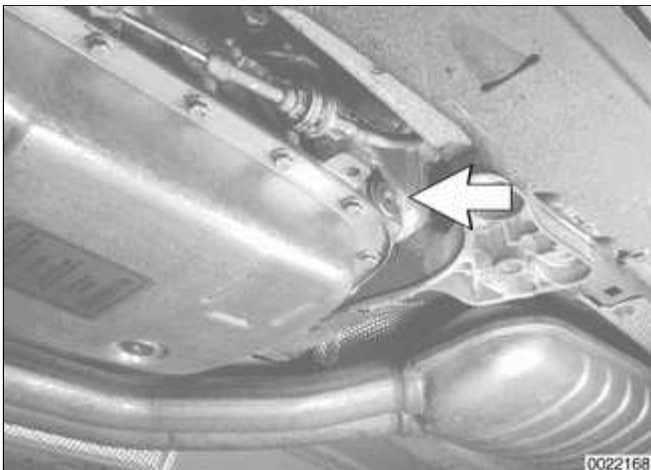
CAUTION!

Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.

- Warm up drivetrain by running engine until ATF reaches specified temperature. Apply brake and, while idling engine, shift through all gears several times. Turn engine off.

ATF level checking	
Fluid temperature	30° - 50°C (85° - 120°F)

- Connect vehicle to BMW diagnostic scan tool DIS or MoDiC using the Data Link Connector (DLC) in the engine compartment, or under driver's side of dash (model year 2000 and later cars) in order to read transmission temperature.



- 4 Remove ATF fill plug (**arrow**). Place transmission in neutral and restart engine. (A5S 360R transmission shown.)

Note:

Make sure ATF temperature is greater than 30°C, before releasing fill plug.

- With ATF between 30° - 50°C (85° - 120°F), add fluid until it spills from fill hole.

WARNING!

Hot ATF can scald. Wear eye protection and protective clothing and gloves during the check. If the transmission was overfilled, hot ATF

will spill from the filler hole when the fill plug is removed.

- Reinstall fill plug using new sealing ring.

Tightening torques	
ATF drain plug to ATF sump	
A5S 360R / A5S 390R (M14)	20 Nm (15 ft-lb)
A5S 325Z	35 Nm (26 ft-lb)
ATF fill plug to ATF sump	
A5S 360R / A5S 390R (M14)	20 Nm (15 ft-lb)
A5S 325Z	30 Nm (22 ft-lb)

ATF, draining and filling

The procedure given here includes removal and installation of the ATF fluid strainer (filter).

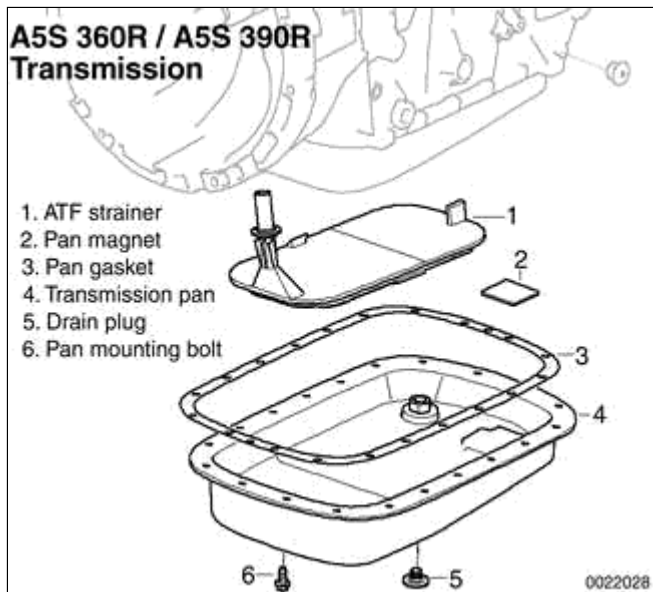
- Remove ATF drain plug (**arrow**) and drain fluid into container. (A5S 360R transmission shown.)

WARNING!

The ATF must not be hot when draining. Do not drain the ATF if the engine and/or transmission is hot. Hot ATF can scald. Wear eye protection, protective clothing and gloves.

- Remove transmission pan mounting bolts and remove pan.
- Remove pan gasket and clean gasket sealing surface.





Pull ATF fluid strainer from transmission pump housing. If strainer sealing ring remains in pump housing remove using a seal puller.

- Installation is reverse of removal.
- ◆ Always replace seal for drain plug and all gasket(s) and O-rings.
- ◆ Clean sump and sump magnet(s) using a lint-free cloth.
- ◆ Tighten transmission pan bolts in sequential order.
- ◆ Fill transmission with approved fluid.
- ◆ Check fluid level as described under ⇒ [Automatic transmission fluid \(ATF\) level, checking](#)

Note:

Use new sump bolts purchased from BMW. Alternatively, clean old bolts and coat with Loctite® thread locking compound or equivalent.

Automatic transmission fluid capacity	
A5S 360R / A5S 390R	
with torque converter	9 liters (9.5 qt)
without torque converter	4 liters (4.2 qt)
A5S 325Z (2.5 liter)	
with torque converter	8.9 liters (9.4 qt)

Automatic transmission fluid capacity	
without torque converter	6.2 liters (6.5 qt)
A5S 325Z (3.0 liter)	
with torque converter	8.7 liter (9.2 qt)
without torque converter	6.1 liter (6.4 qt)

Tightening torques	
ATF drain plug to ATF sump	
A5S 360R / A5S 390R (M14)	18 Nm (14 ft-lb)
A5S 325Z	35 Nm (26 ft-lb)
ATF fill plug to ATF sump	
A5S 360R / A5S 390R (M14)	18 Nm (14 ft-lb)
A5S 325Z	30 Nm (23 ft-lb)
ATF sump to transmission	
A5S 360R / A5S 390R (M14)	10 Nm (7 ft-lb)
A5S 325Z	6 Nm (4 ft-lb)

Transmission Removal and Installation

Removal and installation of the transmission is best accomplished on a lift using a transmission jack. Use caution and safe workshop practices when working beneath car and lowering transmission.

CAUTION!

- ♦ *Be sure the vehicle is properly supported. The removal of the transmission may upset the balance of the vehicle on a lift.*
- ♦ *Tilting the engine to remove the transmission can lead to damage to various components due to lack of clearance.*
- ♦ *On cars with AST remove throttle body.*
- ♦ *Remove brake fluid reservoir if necessary.*

Torx-head bolts are used to mount the transmission to the bellhousing. Be sure to have appropriate tools on hand before starting the job.

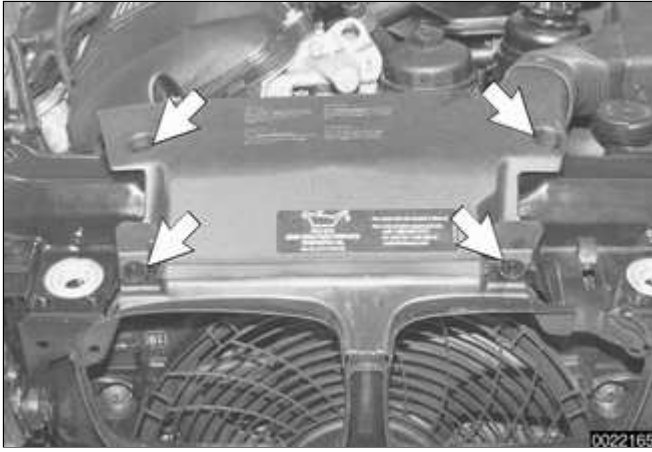
Transmission, removing and installing

- Disconnect negative (-) cable from battery.

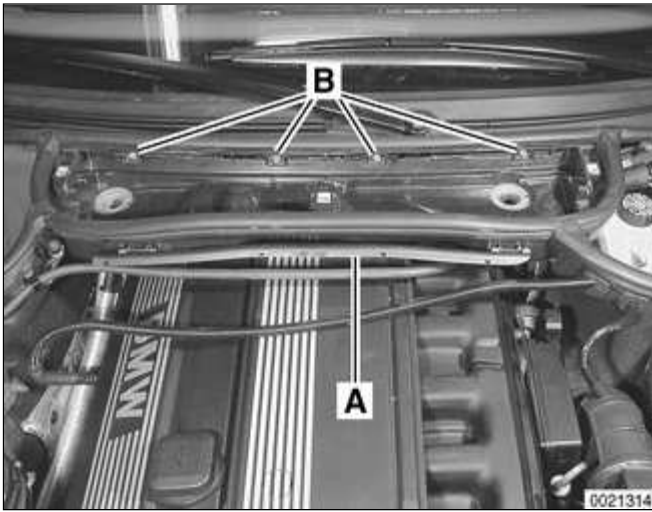
CAUTION!

Prior to disconnecting the battery,

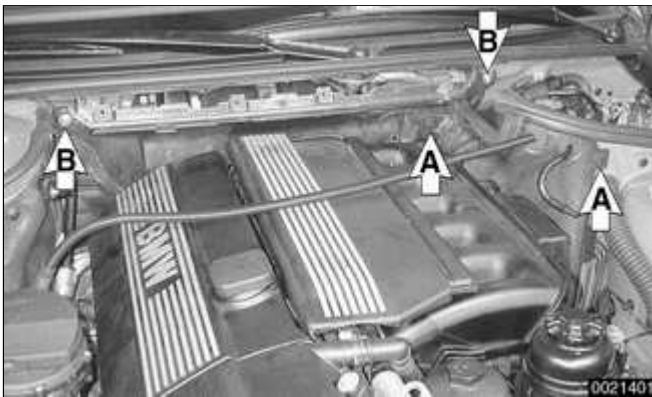
read the battery disconnection cautions given at the front of this manual on page viii.



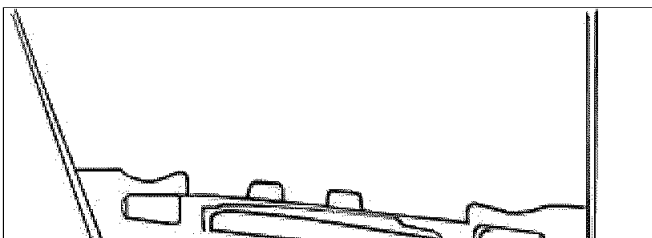
- Remove engine cooling intake hood fasteners (**arrows**) at front of engine compartment.
 - Remove engine driven cooling fan, unfasten cooling fan cowl and pull slightly upwards. See ⇒ [170 Radiator and Cooling System](#).



- Remove housing for interior ventilation microfilter.
 - ◆ Remove upper cover and microfilter.
 - ◆ Open wiring harness loom cover (**A**) and remove wires.
 - ◆ Unfasten screws (**B**) and remove lower microfilter housing.

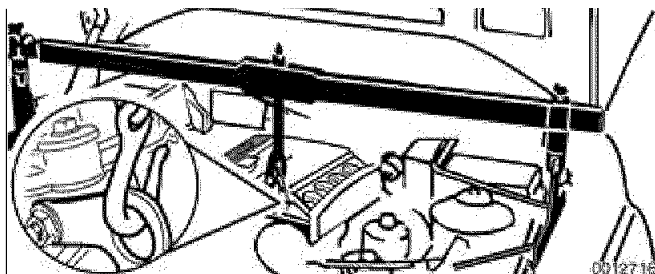


- Remove heater bulkhead cover.
 - ◆ Remove engine compartment side trim panel. Turn locking knobs (**A**) and slide trim panel from mounting lip.
 - ◆ Remove heater bulkhead cover mounting screws (**B**) and lift cover up and out from firewall.



- Install engine support across engine bay. Raise and safely support vehicle.

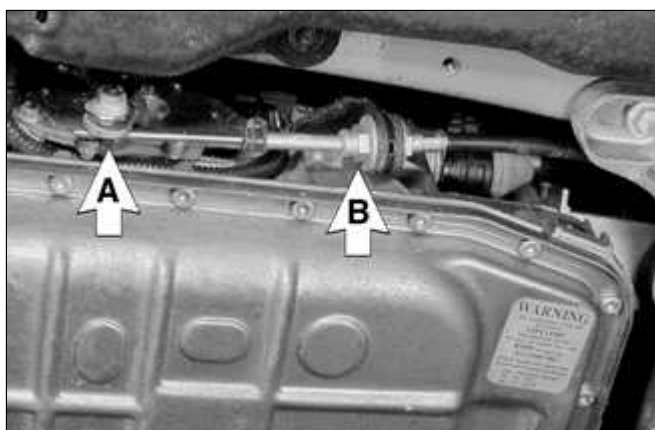
CAUTION!



- ♦ ***Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.***

- ♦ ***Removal of transmission will cause engine to tip unless engine support is used.***

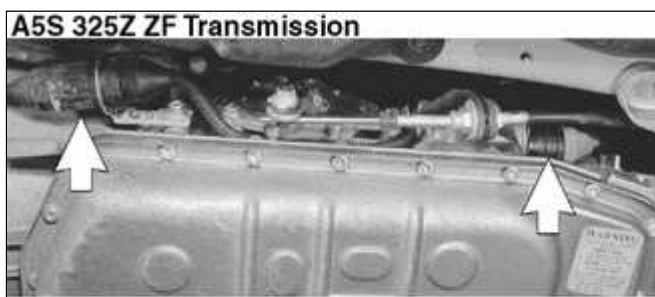
- Remove engine splash guard from underside of vehicle.
- Remove front suspension reinforcement at lower control arms and front subframe.
- Drain ATF from transmission as described earlier.
- Remove exhaust system and exhaust heat shield. See ⇒ [180 Exhaust System](#).
- Remove driveshaft(s). See ⇒ [260 Driveshaft](#).
- On all wheel drive equipped vehicles: Remove transfer case. See ⇒ [270 Transfer Case](#).



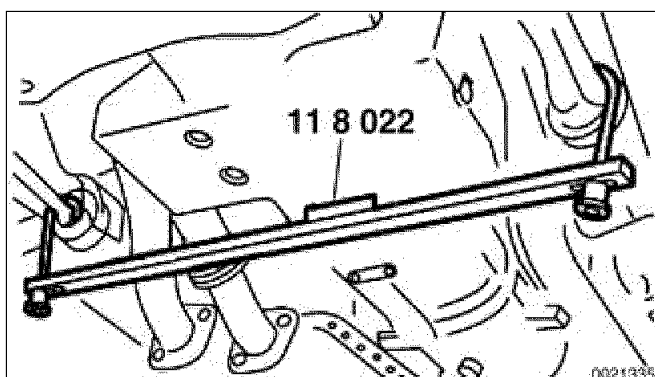
- ✦ With selector lever in Park, disconnect shift selector lever cable from lever and remove cable bracket.
- ♦ Hold linkage clamping bolt (A) stationary when loosening selector lever cable clamping nut (B).
- ♦ Loosen cable clamping nut and



remove cable from bracket. (A5S 325Z transmission shown.)



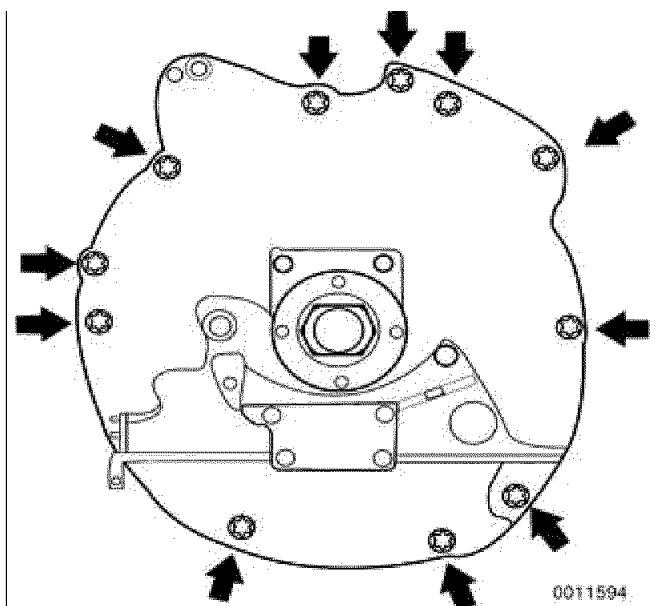
- ✦ Disconnect electrical harness connector(s) from transmission by turning bayonet lock ring(s) (**arrows**) counterclockwise.
 - ◆ On A5S 325Z disconnect two connectors on the left side of the transmission.
 - ◆ On A5S 360R / A5S 390R disconnect the harness connector at the right rear of the transmission.
 - ◆ Remove wiring harness(s) from transmission housing.
- Disconnect transmission cooler line clamps from engine. Disconnect cooler lines from transmission.



- ✦ Attach BMW special tool 11 8 022 to lower control arms.
 - Support transmission with transmission jack. Remove transmission support crossmember.
 - Lower transmission until engine cylinder head touches firewall. Tighten knurled screws of BMW special tool 11 8 022 until tool supports engine oil pan securely.



- ✦ Remove access plug in cover plate on right side of engine block and remove torque converter bolts. Turn crankshaft to access bolts.



Remove bellhousing-to-engine mounting bolts (**arrows**).

- Install BMW special tools 24 4 131 and 24 4 135 to secure torque converter in place during transmission removal.

CAUTION!

Do not allow the torque converter to fall off the transmission input shaft.

- Remove transmission by pulling back and down. Lower jack to allow transmission to clear vehicle.
- Installation is reverse of removal, noting the following:
 - ◆ Blow out oil cooler lines with low-pressure compressed air and flush cooler with clean ATF twice before reattaching lines to transmission.

CAUTION!

- ◆ **Wear safety glasses when working with compressed air.**
- ◆ **Do not reuse ATF after flushing.**
- ◆ Install new sealing washers on hollow bolts.

- ◆ Install new O-rings on transmission cooler lines, where applicable.
- ◆ Inspect engine drive plate for cracks or elongated holes. Replace if necessary.
- ◆ Check to be sure torque converter is seated correctly in transmission during final installation.
- ◆ When mounting transmission to engine, the three mounting tabs on torque converter must be aligned with indentations on drive plate. Use an alignment dowel to line up bolt holes, if necessary.
- ◆ Fill transmission with clean ATF until oil level is even with fill hole. Then check fluid level as described earlier.
- ◆ Adjust gearshift mechanism. See [⇒ 270 Transfer Case](#).

Note:

Torx-head mounting bolts should always be used with washers to prevent difficult removal in the future.

Tightening torques	
ATF drain plug to ATF sump	
A5S 325Z	35 Nm (26 ft-lb)
A5S 360R	20 Nm (15 ft-lb)
ATF fill plug to ATF sump	
A5S 325Z	30 Nm (22 ft-lb)
A5S 360R	20 Nm (15 ft-lb)

Tightening torques	
Front suspension reinforcement to chassis (M10)	42 Nm (30 ft-lb)
Torque converter to drive plate (M10)	45 Nm (33 ft-lb)
Transmission support crossmember to chassis	23 Nm (17 ft-lb)
Transmission to engine (Torx-head with washer)	
M8	21 Nm (15 ft-lb)
M10	42 Nm (31 ft-lb)
M12	72 Nm (53 ft-lb)