

00 00 ... **Battery: Checking display. If necessary, recharging battery.**

Important!

Observe [safety informations for handling vehicle battery](#).

Vehicles with low-maintenance battery:

Check acid level, top up with distilled water if necessary

If level drops below Max. marking, top up distilled water to Max. marking.

Vehicles with maintenance-free battery:

[Check state of charge via the magic eye](#)

Important!

For information on how to proceed, refer to

Battery charge.

Issue a separate invoice if the battery is recharged.

00 00 262 BMW rapid inspection

1 – Carry out a quick inspection



NOTICE

A checklist can be printed off for quick inspection. See Additional Information.

- Print out document.
- Work through check list.
- Hand over the checklist to the customer.

Additional Information

Links

Technical service information	Used in step
BMW quick inspection	1
BMW i quick inspection	1
MINI quick inspection	1

00 00 ... Brake lines and connections: visual inspection for leaks, damage, attachment and correct position

Check brake lines and connections

- Visual inspection in visible area for:
 - Check brake fluid level in expansion tank
 - leaks
 - traces of fluid
 - damage
 - pinched areas
 - correct routing of brake lines
 - correct seating of brake lines in holders

Note:

Detected faults must urgently be repaired after consultation with the customer!

**Important!**

It is always recommended to reset the CBS jobs via the diagnosis system. The CBS service jobs can be reset in the vehicle with the on-board computer button on the turn signal/high beam switch. It is only possible to code the statutory intervals specific to individual countries with the diagnosis system.

**CBS reset with diagnosis system Important!**

To be able to check and/or correct the car's on-board date properly, the diagnosis system requires the correctly set tester system date!

The jobs may only be reset after the service measure has been completed.

The brake pads can only be reset with a new brake pad wear sensor.



The CBS jobs can be reset via the diagnosis system on the following path:=> Diagnosis =>> Function selection =>> Service functions =>> Maintenance =>> CBS reset

**CBS reset in the car**

On the vehicle, maintenance operations can be reset at the instrument panel. Here, the availability of a service job is reset to 100 % (corresponding to new part). The availability is an internal computing value (not visible to the operator).

Note:

A reset is only possible in the vehicle if there is no Check Control message and if the availability of the service job is below 80 %.

On-board date must be correctly set.

Resetting of a service job must always be carried out **after** a maintenance measure has been completed.

The resetting process is interrupted if the time is exceeded or if a terminal is changed.



Switch the ignition on.

Press and hold the trip distance recorder reset button for 10 seconds until the 1st scope of maintenance work appears in the LCD display.

The upper display in the speedometer is illuminated by a service symbol (e.g.: an oil can denotes an oil change).

The lower display in the speedometer indicates the time or distance remaining until the next service (e.g.: 25000).

Set desired maintenance scope with the rocker switch on the turn signal/high beam switch.



To reset, press the on-board computer button on the turn signal/high beam switch until the note "RESET" appears.

Resetting is confirmed by pressing the on-board computer button for a slightly longer period.



A clock is displayed during resetting.

A check/tick is displayed after "RESET" on successful resetting.

Repeat the procedure for each additional service which is to be reset.



The month and year are displayed in order to reset the statutory vehicle inspection.

Press on-board computer button.

Change month with rocker switch on turn signal/high beam switch.

Press on-board computer button to confirm.

Change year with rocker switch on turn signal/high beam switch.

Press on-board computer button to confirm.

00 00 ... Check horn, headlight flashers and hazard warning flashers

Horn

Check function.

Note:

In the case of twin-tone fanfares, make sure that both fanfares are working properly.

Headlight flasher

Activate headlight flashers, check high-beam headlights and blue indicator light in instrument panel for correct operation.

Hazard warning flashers

Check function.

Note:

After consultation with the customer, rectify faults and issue a separate invoice.

00 00 ... **Check windscreen wash/wipe system**

- Check wiper range for streaks; if necessary, replace [wiper blades](#) after consulting with customer
- The spray jet must emerge uniformly from the washer jet, replace [nozzle](#) if necessary and issue a separate invoice

00 00 ... Checking coolant level and concentration, correcting if necessary

- Check connections, hose clamps and hoses for coolant residues and damage such as e.g. cracks.
- Check coolant level in expansion tank. Coolant level must be between Min. and Max. marks. If necessary, top up coolant to max. fill level. If there is no coolant, also identify the cause and notify the customer.
- In event of topping up: Check concentration with antifreeze tester (special tools) in coolant expansion tank.

If necessary, drain off the difference quantity at the coolant drain plug and top up with recommended coolant (issue a separate invoice).

00 00 ... Checking instrument/inscription lighting, interior/luggage compartment/glove box lights and blower

Instrument lighting

Check function of instrument and indicator/warning lights.

Inscription lighting

Check function of light switches; dimmer; controls; heater/air conditioning; rear window demister; radio; (depending on equipment) on-board computer; power windows; electric slide/tilt sunroof; fog lamp.

Interior lighting, glove box light and luggage compartment lights

Check function of footwell lighting, front and rear reading lights, make-up mirror light, mood lighting (door handles, exit, etc.), glove box light, luggage compartment lights, etc..

Note: Lighting may vary, depending on the equipment specification.

Heating

Check function of all blower stages, air distribution and air outlet.

Note

After consultation with the customer, rectify faults and issue a separate invoice.

00 00 ... **Checking lighting system**

- Check lighting system for correct operation:
 - Check headlights, rear lights and associated indicator lights
 - Check headlight adjustment
 - Check side lights, parking lights, low-beam headlight and high-beam headlight for correct operation
 - Check headlight flasher for correct operation
 - Check left/right turn indicators and hazard warning flashers for correct operation
 - Check brake lights for correct operation
 - Check reversing lights and number plate lights for correct operation
 - Check front and rear fog lights for correct operation
 - If necessary ground lights of outside door handles

00 00 ... **Checking of road safety (test drive)**

- **Checking of road safety**
 - Take vehicle for a test drive, checking service and parking brakes in the process
 - Check steering for play, ease of movement and directional stability
 - Check clutch for problem-free disengagement and non-spasmodic driving off at normal operating temperature
 - Visually inspect shock absorbers for leaks
 - Check indicator/warning lamps and Check Control system for correct operation
 - Check due date for statutory roadworthiness and exhaust emission tests and advise customer of test dates

00 00 ... **Diagnostic brief test**

Connect diagnostic system to OBD socket.

Switch on ignition.

Carry out vehicle identification.

Click on Brief test.

The brief test is carried out.

Note:

For motor vehicle diagnostics, the brief test is essential for evaluating possible stored diagnostic trouble codes. In the brief test, the control units are physically identified in succession and their fault memories read out.

If the fault memory has been read out, the faults appear in the "Fault pattern selection" mask in the "Fault memory contents" field.

Check identified faults and if necessary rectify these faults after consulting with customer.

11 00 300 Engine oil consumption measurement

Attention!

This procedure for measuring oil consumption may not be used for the S 85 due to the oil pan design.

Many complaints about oil consumption are caused by the oil level being measured using the wrong method.

The oil consumption should be measured after a distance of 7,500 km at the earliest, as the process of running in the engine will not have been essentially completed and the engine oil consumption stabilised until this distance has been covered.

Engine oil consumption that may occur in an engine can only be determined by the customer on the basis of the refilled engine oil quantity. As soon as the engine oil level falls below the MAX mark on the dipstick, many customers top up the engine oil without paying attention to a number of basic rules, such as the vehicle must be standing on level ground, a certain period of time must be left to allow the oil to flow back to the sump. In such cases, the available container sizes (e. g. 1-litre can) make it easy to top up above the MAX mark. Too much added engine oil is damaging to the engine and is consumed more quickly due to the splash effect.

It is therefore recommended to allow the engine oil level to the MIN mark and only then to add the required engine oil quantity. The distance between the marks is equivalent to approx. 1.0 to 1.5 litres.

The procedure for checking the oil level is given in the Owner's Handbook for the vehicle concerned.

The service delegates will only deal with claims made under warranty if exact measurements by weighing are available (see below).

Measuring oil consumption by weighing:

To assess a warranty or goodwill claim, only the following oil consumption measurement method by weighing can be accepted (this must have been carried out by a BMW contractual partner):

Note:

The engine must not leak any oil.

Engine oil may only be drained off when the engine is at its normal operating temperature. The engine oil temperature must be at least 90 °C and read off on the diagnosis system.

Preparation:

1. Eliminate any leaks and traces of oil before measuring the engine oil consumption.
2. Allow the engine to run at idling speed for 5 minutes, during which the engine oil temperature must not drop below 90 °C.
3. Unscrew the main flow oil filter cover (the engine oil will flow back into the oil sump from the oil filter housing).
4. Unscrew the oil drain plug.
5. Allow the engine oil to drain off for 15 minutes.
If necessary, remove the fan/fan cowl.
6. Turn the engine once through 360 degrees by the vibration damper.
7. Allow the engine oil to drain off for 15 minutes.
8. Retighten the primary flow oil filter.
9. Pour in the specified engine oil quantity for the engine type in question (with filter change).
10. Drive the vehicle for a distance of at least 1,000 km/500 miles. Increasing the mileage will produce significantly better measuring results.

Measurement procedure:

11. Check the engine for leaks; if the engine is not tight, the examination will not be meaningful.
12. Prepare the measuring container to be able to capture the oil quantity.
13. Allow the engine to run at idling speed for 5 minutes, during which the engine oil temperature must not drop below 90 °C.
14. Unscrew the main flow oil filter cover (the engine oil will flow back into the oil sump from the oil filter housing).

15. Unscrew the oil drain plug.
16. Allow the engine oil to drain off for 15 minutes.
If necessary, remove the fan/fan cowl.
17. Turn the engine once through 360 degrees by the vibration damper.
18. Allow the engine oil to drain off for 15 minutes.
19. Weight the **amount of drained engine oil**. (Engine oil has a density of about 0.86 g/cm³ at room temperature.)

Amount of oil added (cm³) - amount of oil drained off (g) : 0.86 g/cm³

Engine oil consumption = _____
mileage reading when draining - mileage reading when adding engine oil

Example:

Volume of oil added at mileage reading 44,800: 4.000 cm³

Weight of oil added at mileage reading 45,900: 2.700 g

4.000 cm³ - 2.700 g : 0.86 g/cm³

Engine oil consumption = _____ = 0.78 cm³/km
45,900 km - 44,800 km

0.78 cm³/km = 0.78 l/1,000 km

Test certificate for engine oil consumption:

Vehicle data: _____

BMW (type): _____

Chassis number: _____

Added oil quantity (in ccm): _____ at kilometre reading: _____
ccm

less drained off oil quantity (in g) : 0.86 (g/ccm) _____ at kilometre reading: _____
ccm

=> oil consumption: _____ => mileage: _____
ccm km

Oil consumption [l/1000 km] =

_____ [ccm] oil consumption _____ [km] mileage

Oil consumption after balancing out: _____ l/1000 km

Oil grade: _____

Oil grade: _____

Viscosity: _____

Cause of damage: _____

Dealer address

Signature

00 00 604 Fuel filter service

- Fuel filter service
 - Replace [fuel filter](#)

00 00 009 Pre-delivery check

Quality assurance by BMW Service

Model:
Vehicle identification number:

(Please tick where appropriate)
If necessary Quick Reference Guide: Discussed and handed over

Included with the vehicle: Owner's Handbook(s)
 Service Record Booklet
 Vehicle key/remote key
 If necessary - spare key

The vehicle document case is left in
the vehicle:

 Glove box
 Storage box
 Luggage compartment

I hereby confirm that I have received the vehicle in perfect condition.

.....
Place and date Signature of vehicle owner

Pre-delivery check by BMW Service

The following work must be carried out on the vehicle by BMW Service prior to delivery.

Model:
Vehicle identification number:

* Denotes optional extra or national-market version. Observe possible changes in this regard.

Scopes of inspection: To be kept with the workshop documents			
Battery master switch*	O.K.	Not OK	not present
Remove and then carry out following scopes if necessary			
Power windows regulator*: Initialise system			
Slide/tilt sunroof/panorama glass roof*: Initialise system			

Accessory items	O.K.	Not OK	not present
Install other accessory items			
Using BMW Group diagnosis system	O.K.	Not OK	not present
Carry out "CBS pre-delivery check" in the Service Function path under Maintenance			
Deactivate transportation mode			
Perform the following additional work only with SA5GB : Activating stolen vehicle tracking*			
Reset average mileage/kilometres driven			
Enter first registration			
Set on-board date			
Set statutory inspection dates*			
Enter service telephone numbers			
BMW TeleServices*: Activation			
Navigation system*: Activate the roadmap. Check the up-to-dateness of the roadmap and update if necessary. Perform Update of navigation maps for Eastern Europe in the following countries: Bulgaria, Estonia, Latvia, Lithuania, Romania, Russia, Turkey, Ukraine, Belarus => Refer to Service Information (bulletin): Pre-delivery check - Update of navigation maps for Eastern Europe			
Check battery, observe notes in the diagnosis system, if applicable, charge battery			
Delete fault memory			
Carry out vehicle test, eliminate faults if necessary			
Engine compartment	O.K.	Not OK	not present
Check for cleanliness			
Fluid tank for washer fluid	O.K.	Not OK	not present
Check fluid level and top up if necessary, where required with antifreeze additive			
Labels	O.K.	Not OK	not present
Apply label for BMW Group Mobile Service			
Body, interior equipment, vehicle underbody	O.K.	Not OK	not present
Check for transportation damage			
Spring blocker*	O.K.	Not OK	not present
Remove			
Tyres	O.K.	Not OK	not present
Check tyre pressures; if provided, also compact or spare wheel Observe the information on tolerance compensation for RDC.			
Initialise Run Flat Indicator (RPA) or tyre pressure control			
For winter tyres* attach the label V-max.			
Service Record Booklet	O.K.	Not OK	not present

Stamp pre-delivery check / enter vehicle identification number			
Attach documentation (glove box/storage box/luggage compartment)	O.K.	Not OK	not present
Owner's Handbook			
Service Record Booklet			
Contact booklet			
BMW Group Mobile Service brochure			
Include key/remote control (make note of number)			
Indicator/warning lights and Check Control	O.K.	Not OK	not present
Check and remove fault if applicable			
Service and parking brake	O.K.	Not OK	not present
Transport and immobilisation periods of 3-6 weeks:			
Check for correct operation			
In event of transportation and immobilisation periods of more than 6 weeks:			
Brake in			
Interior mirror with digital compass*	O.K.	Not OK	not present
Calibrate system			
Transportation lock* and vehicle cleaning	O.K.	Not OK	not present
Remove the transportation protective film			
Clean inside and outside of vehicle			
Notes:			

.....

Date Mechanic Workshop Supervisor

00 00 ... Seat belts: Check condition of seat belt strap, check function of automatic reel, seat belt locking reel, seat belt buckle, seat belt clip and, if necessary, seat belt clasp

Seat belt strap, automatic reel, seat belt locking reel

Pull out seat belt strap and make sure it emerges without jerking.

Check seat belt strap for damage:

- folding
- unravelling
- pinches
- cracks and tears
- traces of melting

Check the seat belt clip (retaining button) and, if necessary, seat belt clasp of belt tongue on seat belt strap for damage and installation.

Retract seat belt strap; here the automatic reel must retract the seat belt strap automatically and without squeaking noises; the last section of the strap may have to be fed in.

Pull out seat belt strap in short tugs - seat belt locking reel must lock.

Seat belt buckle

The belt tongue on the seat belt strap must easily snap into place with an audible click.

When the "Press" button is pressed, the belt tongue must be ejected from the buckle under spring pressure.

Note:

If the seat belt is damaged, you must replace the seat belt completely after consulting the customer; issue a separate invoice for this work.

Instructions on how to proceed, refer to [Checking automatic seat belt](#).

00 00 602 Service - air filter element

- **Service - air filter element**
 - Replace [air filter element](#)
Shorten change intervals for vehicles operated in dusty regions

00 00 618 Service - brake fluid

- Service - brake fluid
 - [Changing brake fluid](#)
 - Reset [CBS display](#) according to factory specification

Important!

Read and comply with [general notes and information](#) on brakes

00 00 610 Service - engine oil

- Renew [engine oil and oil filter](#)
- [Reset](#) CBS display according to factory specification

Important!

The job items specified below always pertain to the maximum possible scope of an engine oil service. These job items are coupled to the engine oil service. The multipliers refer to the ECE standard intervals. Country specific deviations may apply.

The linked job items are not included in the engine oil service. Invoicing is separate from the engine oil service.

The change interval (motor oil change multiplier) can be taken from the following matrix: The vehicle-specific scope must be read out via ISPA (Key Reader) and printed out.

Component:	Microfilter	Air filter	Spark plugs	Fuel filter
Series/version	Multiplier Engine oil change	Multiplier Engine oil change	Multiplier Engine oil change	Multiplier Engine oil change
E84, E89	1	2	2	2
Petrol (incl. N20 UL and N20 OL from production date 03/2012) and diesel	(approx. 30 tkm)	(approx. 60 tkm)	(approx. 60 tkm)	(approx. 60 tkm)
E84, E89	1	2	1	---
Petrol (only with N20 OL) until production date 03/2012	(approx. 30 tkm)	(approx. 60 tkm)	(approx. 30 tkm)	
=> X1 28i, X1 28iX, Z4 28i				
Note: Interval change from 03/2012				

- Renew [microfilter](#)
- [Replace](#) air filter element
- **Petrol vehicles only:**
Replace [spark plugs](#)
- **Diesel vehicles only:**
- Replace [fuel filter](#)

00 00 612 Service - front brakes

- **Service - front brakes**
 - [Change brake pads](#)
 - Replace the brake pad wear sensor
 - Clean brake air ducts
 - Apply a thin coating of [grease](#) to wheel centring on light alloy wheels
 - [Brake discs](#)
 - Check surface and thickness
 - If necessary: Replace
 - Reset [CBS display](#) according to factory specification

Note:

- Replace brake discs if they are below the [minimum brake disc thickness](#) and if scoring, heat cracks or thickness difference are detected.
- Issue a separate invoice for replacing the brake discs.

00 00 616 Service - microfilter

- **Service - microfilter**
 - Replace [microfilter for interior ventilation](#)
 - For vehicles with CBS display **microfilter**:
Reset [CBS display](#) according to factory specification

00 00 614 Service - rear brakes

- **Service - rear brakes**
 - [Change brake pads](#)
 - Replace the brake pad wear sensor
 - Clean brake air ducts
 - Apply a thin coating of [grease](#) to wheel centring on light alloy wheels
 - [Brake discs](#)
 - Check surfaces and thickness.
 - If necessary: Replace
 - [Function check of parking brake](#) with roller dynamometer
 - If necessary: Charged for separately, removal of brake disc and parking brake repair
 - Reset [CBS display](#) according to factory specification

Note:

- Replace brake discs if they drop below [minimum thickness](#) (refer to Technical Data) and in event of scoring, heat cracks or thickness difference.
- Issue a separate invoice for replacing the brake discs and parking brake shoes.

- **Service - vehicle check**

Passenger compartment:

- Check [horn, headlight flashers and hazard warning flashers](#)
- Check [instrument and inscription lighting, passenger compartment and glovebox lighting, blower](#)
- Check [lighting system](#): if necessary, charge separately to adjust the headlights, function of front/rear and vehicle number plate lighting
- [Seat belts](#): Condition of seat belt strap, check function of automatic reel, check seat belt locking reel, seat belt buckle, seat belt clip and, if necessary, seat belt clasp for damage
- Check [windscreen wiper and washer system for function and setting](#)
- Convertible only:
[Activate the rollover protection system manually](#). **Note:** Open the soft top prior to the triggering process!

Rear/body/tyres:

- [Battery](#): Check display (magic eye), recharge if necessary (charged separately)
- Check [tyres](#) (incl. compact spare wheel if present):
 - Tread depth
 - Tread wear pattern
 - External condition
 - Check inflation pressure and correct if necessary.
[Observe the notes on tolerance compensation for RDC.](#)
- If fitted:
[BMW Mobility System](#): Check expiry date on sealant bottle. Replace sealant bottle if necessary (charge separately).
- Check that warning triangle, high-visibility jacket and first-aid kit are present. Check expiry date on first-aid kit (observe national legislation where applicable).
- Initialise [Run Flat Indicator](#) or tyre pressure control

Engine compartment:

- Check [coolant level and concentration](#), top up if necessary. Inform customer in event of incorrect fluid level and, if necessary, troubleshoot (charged separately).
- [Window glass and headlight cleaning system](#): checking fluid level, topping up if necessary
- If fitted:
[Steering fluid reservoir](#): Check oil level, top up if necessary. Inform customer in event of incorrect fluid level and, if necessary, troubleshoot (charged separately).

Underfloor:

- [Brake lines and connections](#): Check for tightness, damage, mounting and correct position
- [Vehicle underbody](#) including all visible components: Check for damage, correct position, tightness and corrosion
- [Steering components](#): Check for play, tightness is applicable, damage and wear

Test drive:

- [Check for road safety](#):
 - Brakes
 - Steering
 - Shock Absorbers
 - Transmission
- Reset [CBS display](#) according to factory specification

- **Service - vehicle check**

Passenger compartment:

- [Diagnosis brief test](#) (not US)
- Check [horn, headlight flashers and hazard warning flashers](#)
- Check [instrument and inscription lighting, passenger compartment and glovebox lighting, blower](#)
- Check [lighting system](#): if necessary, charge separately to adjust the headlights, function of front/rear and vehicle number plate lighting
- [Seat belts](#): Condition of seat belt strap, check function of automatic reel, check seat belt locking reel, seat belt buckle, seat belt clip and, if necessary, seat belt clasp for damage
- Check [windscreen wiper and washer system for function and setting](#)
- Convertible only:
[Activate the rollover protection system manually](#). **Note:** Open the soft top prior to the triggering process!

Rear/body/tyres:

- [Battery](#): Check display (magic eye), recharge if necessary (charged separately)
- Check [tyres](#) (incl. compact spare wheel if present):
 - Tread depth
 - Tread wear pattern
 - External condition
 - Check inflation pressure and correct if necessary.
- If fitted:
[BMW Mobility System](#): Check expiry date on sealant bottle. Replace sealant bottle if necessary (charge separately).
- Check that warning triangle, high-visibility jacket and first-aid kit are present. Check expiry date on first-aid kit (observe national legislation where applicable).
- Initialise [Run Flat Indicator](#)
- [Body: Check for corrosion](#) (except cavities)

Engine compartment:

- Check [coolant level and concentration](#), top up if necessary. Inform customer in event of incorrect fluid level and, if necessary, troubleshoot (charged separately).
- [Window glass and headlight cleaning system](#): checking fluid level, topping up if necessary
- If fitted:
[Steering fluid reservoir](#): Check oil level, top up if necessary. Inform customer in event of incorrect fluid level and, if necessary, troubleshoot (charged separately).

Underfloor:

- [Brake lines and connections](#): Check for tightness, damage, mounting and correct position
- [Vehicle underbody](#) including all visible components: Check for damage, correct position, tightness and corrosion
- [Steering components](#): Check for play, tightness is applicable, damage and wear

Test drive:

- [Check for road safety](#):
 - Brakes
 - Steering
 - Shock Absorbers
 - Transmission
- Reset [CBS display](#) according to factory specification

00 00 105 Standard scope of service

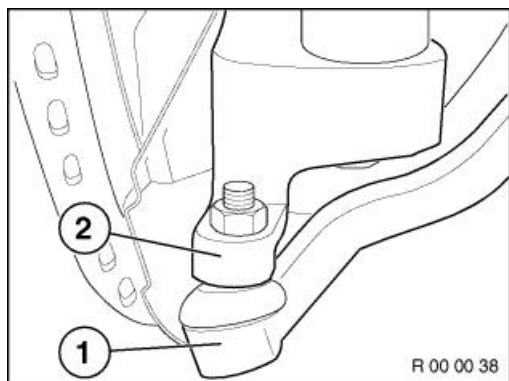
- **Standard scope of service**

- Function check of parking brake without roller dynamometer
- Check Check Control messages
- Check indicator and warning lights
- For vehicles with slide/tilt sunroof/panorama glass roof:
Check the slide/tilt sunroof guide rails for dirt contamination. Clean if necessary (charged separately).

Recommendation:

- Check [tyres](#) (incl. compact spare wheel if present):
 - Tread depth
 - Tread wear pattern
 - External condition
 - Check inflation pressure and correct if necessary.
- After correction of the tyre pressure: [Initialise Run Flat IndicatorÂ \(RPA\)](#) or [tyre pressure control \(RDC\)](#)

00 00 ... Steering components: Check for play, tightness, damage and wear

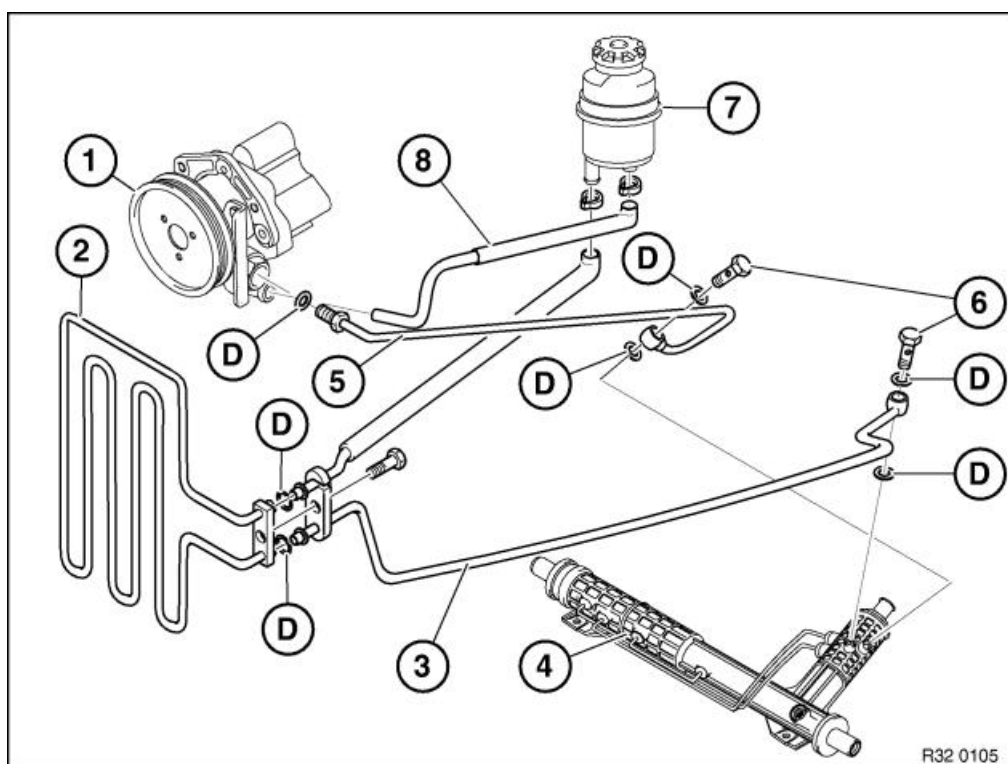


Checking play:

- For hydraulically assisted steering systems, the engine must be running
- For electrically steering servo, the ignition must be on
- Steering wheel: Move steering wheel back and forth and check for play
- Track rod joint: There must be no play between the track-rod arm (2) and track rod joint (1)

Checking for tightness:

The following illustration shows the arrangement of the hydraulic steering components and lines.



1	Pump	6	Hollow bolt
2	Power steering cooler	7	Container
3	Return line	8	Suction hose
4	Steering box	D	Sealing ring
5	Pressure line		



Check all visible connections, hoses, lines and steering box for traces of fluid.

Checking for damage and wear:

Check gaiters, flexible disc and axle and tie rod sleeves for damage (e.g. cracks, holes), for tightness or missing tensioning straps on gaiters.

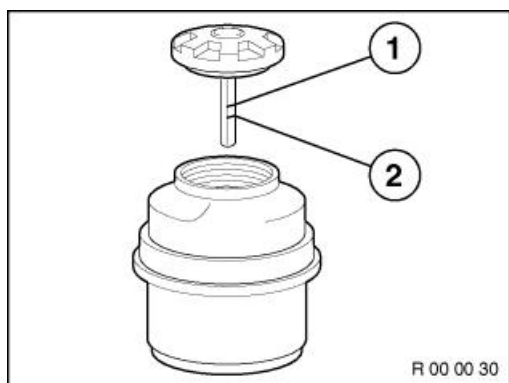
**Important!**

Adhere to the utmost cleanliness. Do not allow any dirt to enter the hydraulic system.

Using contaminated equipment to add fluid may introduce dirt particles into the fluid reservoir and significantly reduce the service life of the hydraulic steering system. Do not use any filler funnels or similar!

**Visual inspection and leak test**

Check connections, hoses and steering box for traces of fluid.

**Check the oil level:**

Check fluid level with engine switched off at expansion tank of power steering/ride height control system. The fluid temperature should be approx. 20 °C here.

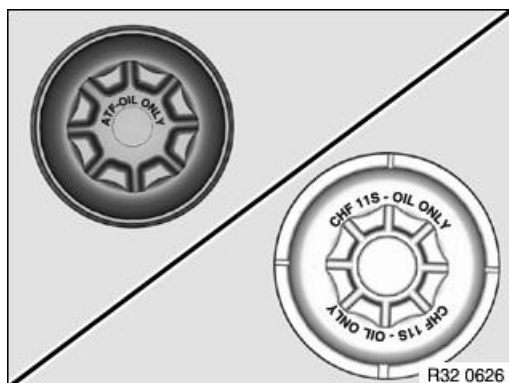
Ensure that the cap is fully screwed in prior to the fill level check.

If necessary, add hydraulic fluid (refer to Service Information Operating Fluids) up to Max. marking (1).

Important!

If the oil level has dropped to the min. marking (2), you must inform the customer and check the power steering and ride height control for leaks and issue a separate invoice for this work.

It is not enough merely to top up the fluid.

**Note:**

To avoid mix-ups when filling with hydraulic fluid, mark the fluid reservoirs or their caps with identification marks.

ATF	Automatic transmission fluid
CHF	Pentosin CHF11S

00 00 ... Tyres: checking and if necessary correcting inflation pressure, checking condition, tread depth and pattern

- **Check tyre pressure (also spare/compact spare wheel if present):**
 - Check tyre pressure in accordance with label on B-pillar
 - The tyre pressure in the spare wheel must be 0.5 bar higher than the maximum specified value on the label
- **Check tyre condition:**
 - Check tread depth of all tyres with tyre tread gauge
 - Check tyre tread surfaces and side walls for incisions and foreign particles such as nails or screws
 - Check tread wear pattern for localized flattening and wear on one side; if necessary, carry out wheel/chassis alignment after consulting with customer and issue a separate invoice for this work

Note:

- For details of approved wheel and tyre combinations, refer to KSD CD
- For reasons of driving safety, only use tyres of the same design and tyre tread on a single vehicle
- Inform customer of any incorrect or worn tyres

00 00 ... Underbody incl. all visible components: Check for damage, correct position, tightness, corrosion

- Visually inspect underbody:
 - For leaks (transmission, fuel system, brake components, steering)
 - For correct routing of electrical line (e.g. brake pad wear sensor, pulse sensor)
 - Check tightness of shock absorber, installation and spring corrosion - rebound
 - Damage to underbody
 - Corrosion on underbody
 - Complete mounting of add-on parts (e.g. underbody panelling)

Important!

If damage to the underbody is identified:

- If necessary, remove trim panels from underbody.
- Check brackets as well as brake- and fuel lines for damage and correct installation position.

Rectify identified faults after consulting with customer and issue a separate invoice.

00 00 ... Vehicle care measures for inventory vehicles (new and used vehicles) as well as vehicles to be taken off the road that are in the hands of customers

Action	Vehicles	Execution
Remove the protective transportation film	New vehicles	Do not remove the protective film if the vehicle is kept outdoors; Note the instructions on how to remove protective film
Release parking brake	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Engage gear or selector lever position "P" for automatic transmission	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Check the covers of the interior equipment	New vehicles	In general
Increase the tyre pressure to 3.5 bar	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Charge battery	New vehicles	See battery charging calendar
	Used vehicles	See battery charging calendar

	Customer vehicles to be taken off the road (note to customers)	Every 6 weeks; Every 12 weeks for vehicle batteries that have been disconnected from the vehicle electrical system; Notify customers of vehicle-specific procedures for electric or hybrid vehicles
Change the brake fluid and reset CBS	Used vehicles	Change before vehicle handover to customer if service is due shortly (see CBS display -> Brake fluid service)
Check convertible top for potential damage	New vehicles	Generally before handover to the customer
	Used vehicles	Generally before handover to the customer
If possible, keep convertibles in roofed areas	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Check for damage to paint, the exterior or interior	New vehicles	Generally before handover to the customer
	Used vehicles	Generally before handover to the customer
Change engine oil and oil filter at engine operating temperature	New vehicles	No change
	Used vehicles (not applicable to vehicles with Premium Selection certificate)	Prior to handover to customers as from a 12 month immobilisation period
	Customer vehicles to be taken off the road (note to customers)	Prior to handover to customers as from a 12 month immobilisation period

Check coolant composition	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Dry the parking brake and footbrake by applying the brake	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Apply surface protection: vehicle surface wash including interior vehicle cleaning and subsequent paint and chrome-part care. Clean the rubber seals of the flaps and doors and apply talc or rubber care product. Use materials approved by BMW for cleaning and vehicle preservation to recondition engines, engine compartments, vehicle underbodies, axles and assemblies.	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Switch on the air conditioning for approximately 10 min each month	New vehicles	Required to ensure circulation of the refrigerant oil
	Used vehicles	Required to ensure circulation of the refrigerant oil
	Customer vehicles to be taken off the road (note to customers)	Required to ensure circulation of the refrigerant oil

00 00 ... When driving on a race track

Caution!

The customer must be informed that, in particular, the brake pads, wear indicator and the flat tyre monitor installed as standard are not designed for race track operation. The vehicle is also not designed for motor sport competition racing.

Excessive loading of the vehicle, e.g. by operating it on a race track or in motor sport competition racing, is not covered by the warranty.

If the customer still wants to drive on a race track, the following aspects must be considered/checked, at least:

The vehicle, or rather the engine, should be carefully run in before operating it on the race track. A run in period of at least 2000 km.

Recommendation: Carry out an oil change after the run in period.

For driving on a race track, the following extensions must be considered and implemented on the vehicle.

Model:

Vehicle identification number:

Scope of checks before driving on the race track:		
Vehicle check	OK	Comment
Perform a comprehensive vehicle check service. -> Scope of the vehicle check service		
Engine	OK	Comment
Perform oil-level check.. -> If necessary, top up to the maximum level.		
Transfer box (affects only F39 X2 M35i / F40 M135i xDrive / F54 JCW ALL4 / F60 JCW ALL4)	OK	Comment
Perform transfer box oil change.		
Cooling	OK	Comment
Visual inspection of the radiator for contamination. -> Draw off contamination.		
Brake system	OK	Comment
Check the age of the brake fluid - see Service Booklet/Service history. -> The age of the brake fluid should not exceed 1 year.		
Check filling level in brake fluid expansion tank. -> If necessary, top up to the maximum level.		
Check the brake pad thickness on the front axle. -> Wear material thickness ≥ 9 mm -> Ideally, install new brake pads.		
Recommendation for M-vehicles: Use Sport brake pads, if available for that model.		
Check the brake pad thickness on the rear axle. -> Wear material thickness $\geq$ rear axle ≥ 8 mm -> Ideally, install new brake pads.		

Recommendation for M-vehicles: Use Sport brake pads, if available for that model.		
Check the brake disc thickness on the front axle. -> Minimum brake disc thickness: $\geq$ Minimum brake disc thickness + 1 mm -> Ideally, install new brake discs.		
Check the brake disc thickness on the rear axle. -> Minimum brake disc thickness: $\geq$ Minimum brake disc thickness + 1 mm -> Ideally, install new brake discs.		
Visual inspection of the brake line and brake hose for tightness, damage and porosity.		
Wheels / tyres	OK	Comment
Check wheels/tyres for suitability for operation on the race track -> Winter tyres, all-season tyres and tyres on steel rims are absolutely unsuitable. Recommendation: Use Sport tyres.		
Check the tyre pressure of all the tyres and adjust, if required. -> In order to increase the service life and tyre performance, a reduction in the tyre pressure is recommended for the race track. To do this, proceed as follows: 1. Drive the tyres warm. 2. Set the tyre pressure according to the prescribed value on the tyre pressure label for partial loads. 3. Initialise RDC. Note: The display of tyre inflation pressure is possible only up to an operating temperature of systems of 120 °C. At higher temperatures, which can be reached during racing operation, the display is suppressed and a CC message is issued. After cooling down, the system functions again without limitations.		
Background: The tyre pressure increases due to the increase in temperature in the tyre when operated on the race track. This reduces the contact surface of the tyre to the road, leading to an increased temperature load on the running surface. The adjustment of the tyre pressure in tyres that have been driven warm as opposed to tyres in a cold state leads to a reduction in the pressure and thus, due to an increased tyre contact area, to a more equal load on the tyre.		

Extensions when driving on a race track:		
Warm up	OK	Comment
Drive a warming up lap. > Bring the engine up to operating temperature. Fast driving at a medium rpm level and medium dynamics.		
Cool down	OK	Comment
Drive a cooling down lap. -> Fast driving at a medium rpm level and medium dynamics. Avoid brake load as far as possible.		

Scope of checks after driving on the race track:		
Engine	OK	Comment
Carry out an oil-level check according to the Owner's Handbook. -> If necessary, top up to the maximum oil level.		
Front axle transmission (only affects G15 with N63 engine)	OK	Comment
Perform oil change on front axle transmission.		

Transfer box (affects only F39 X2 M35i / F40 M135i xDrive / F54 JCW ALL4 / F60 JCW ALL4)	OK	Comment
Perform transfer box oil change.		
Rear axle differential (only affects G29 Z4 M40i / G20 M340i / G20 M340i xDrive)	OK	Comment
If an adjusted rear axle differential is installed. -> Perform oil change.		
Cooling	OK	Comment
Visual inspection of the radiator for contamination. -> Draw off contamination.		
Brake system	OK	Comment
Check filling level in brake fluid expansion tank. -> If necessary, top up to the maximum level.		
Check the brake pad thickness on the front axle. -> Replace brake pads when the remaining brake pad thickness is undershot (min. thickness 3.7 mm)		
Check the dust boots on the brake calipers of the front axle for damage.		
Check the brake pad thickness on the rear axle. -> Replace brake pads when the remaining brake pad thickness is undershot (min. thickness 3.7 mm)		
Check the dust boots on the brake calipers of the rear axle for damage.		
Check the brake disc thickness and their state on the front axle. -> Replace brake discs when: • Drop below the minimum brake disc thickness • Scoring • Heat cracks • Thickness difference		
Check the brake disc thickness and their state on the rear axle. -> Replace brake discs when: • Drop below the minimum brake disc thickness • Scoring • Heat cracks • Thickness difference		
Wheels / tyres	OK	Comment
Note to customer: Perform the following points for wheels/tyres immediately after the racing track operation and before driving on public streets.		
Check wheels/tyres for damage.		
Check wheels/tyres for minimum tread depth.		
Check the tyre pressure of all the tyres and adjust, if required. 1. Allow tyres to cool down. 2. Set the tyre pressure according to the prescribed value on the tyre pressure label. 3. Initialise RDC.		

Background: Adjustment of the tyre pressure in cold tyres, as otherwise it can lead to tyre pressure control warning messages due to the low pressure.

Vehicle check	OK	Comment
Perform a comprehensive vehicle check service. -> Scope of the vehicle check service		

.....
Date

.....
Mechanic

.....
Workshop Supervisor

00 00 ... **Windscreen washer system: checking fluid level, topping up if necessary**

- Top up windscreen washer fluid reservoir, if necessary rear window washer fluid reservoir and (depending on equipment specification) intensive cleaning reservoir up to edge or mark.

Important!

A pH-neutral BMW window cleaning agent (antifreeze in winter) must always be added to the water.

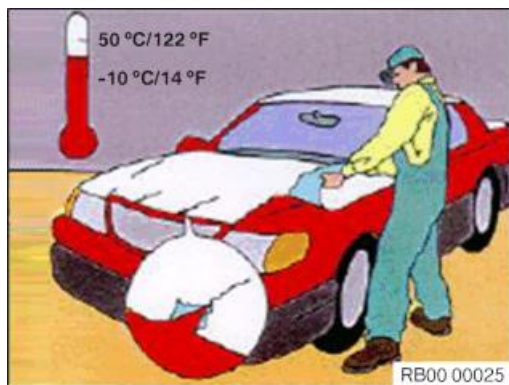
**Note:**

The protective film is applied to new vehicles at the works. The dealer must guarantee only expert removal of the protective film.

The protective film should be removed 48 hours before vehicle handover to the customer.

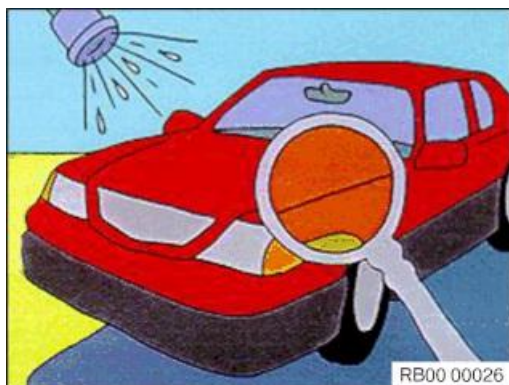
The protective film can be easily removed from the affected surfaces. Polishing is necessary only in exceptional cases.

Further information on the protective film is available in the document "[Frequently asked questions on surface protection](#)".

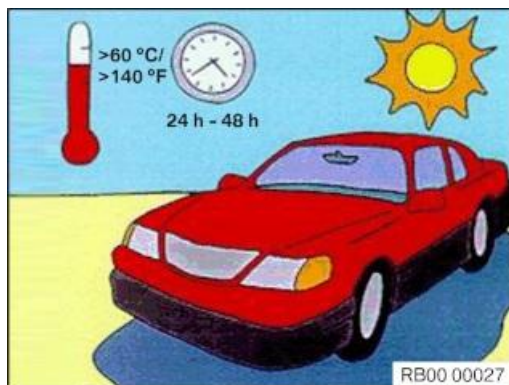
**Instructions for removing the protective film:**

- In order to reduce the amount of force required, the film can be torn at the edge and pulled off in narrower strips.
- Remove the film in a surface temperature range of -10 °C to +50 °C. Excessively high temperatures can lead to adhesive residue being left on the surface.

In order to achieve the recommended temperature for pulling off the adhesive film from the vehicle after direct exposure to the sun, it is possible to carry out a car wash with applied protective film in order to cool the vehicle down.

**Car wash and surface inspection:**

- Check vehicle surface after the car wash.
- Any adhesive residue left on the vehicle surface can be removed by rubbing by hand or using a cleaning agent R2 (part number 83 19 0 417 324) or stain remover (part number 83 11 9 407 816) and a lint-free cloth.

**Procedure in the event of paint swelling:**

- Any paint swelling normally disappears within 48 hours.
- Higher temperatures (infrared lamp) accelerate this process.
- Polishing of the surfaces is necessary only in rare cases if the heat treatment does not result in success.

**Danger of poisoning!**

Ingesting oil or absorbing through the skin may cause poisoning!

Possible symptoms are:

- Headaches
- Dizziness
- Stomach aches
- Vomiting
- Diarrhoea
- Cramps/fits
- Unconsciousness

**Protective measures/rules of conduct:**

- Pour oil only into appropriately marked containers
- Do not pour oil into drinking vessels (drinks bottles, glasses, cups or mugs)
- Observe country-specific safety regulations

**First aid measures:**

- Do not induce vomiting.

If the person affected is still conscious, he/she must rinse out their mouth with water, drink plenty of water and consult a doctor immediately.

If the person affected is unconscious, do not administer anything by mouth, place the person in the recovery position and seek immediate medical attention.

64 00 ... Information on using cleaning agent/paints (personal protection equipment)



Warning!

Use of cleaning agents/paints not compliant with instructions can cause serious injuries or burns!

Handling cleaning agents/paints can trigger allergic skin and respiratory reactions!



Important!

Observe following instructions:

- Store cleaning agents/paints only in a secure cabinet.
- Keep cleaning agents/paints away from naked flames and other sources of ignition.
- Protect cleaning agents/paints from high temperatures and direct sunlight.
- Always keep an eye douche on hand, change the water regularly (once a month).



Important!

Observe following instructions before use:

- Manufacturer's instructions (on container/packaging)
- Hazard warnings (on container/packaging)
- Manufacturer's instructions on package insert
- Material safety data sheet of manufacturer
- Product information in EPC
- National market regulations



Important!

Observe following instructions during use:

- Do not eat, drink or smoke while working with these products.
- Avoid direct contact with skin and eyes.
- Wear personal protective clothing/equipment.
- Ensure that all enclosed areas are well ventilated or extract fumes directly.
- Immediately change working clothes soiled with cleaning agent/paint.
- After finishing work, wash your hands and apply protective skin cream.



Important!

Follow hazard warnings and wear personal protection equipment!

**First Aid:**

- If product comes in contact with eyes, immediately flush with running water for about 10 - 15 minutes. Seek the advice of eye specialist.
- In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. Seek advice of physician.
- If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.
- After inhaling vapours ensure ample supply of fresh air. Keep calm, keep respiratory tracks clear and call doctor.

**Recycling:**

Dispose of cleaning agents/paints in a professional manner!
Observe national/country-specific disposal regulations.

64 53 ... Instructions for desiccant insert replacement



Special tools required:

- [32 1 270](#)

A desiccant insert that is in a correctly functioning, sealed heating and air conditioning system does **not** have to be changed at regular service-inspection intervals.

However, the dryer flask or desiccant insert must absolutely be replaced in the event of:

- contamination of the refrigerant with swarf (e.g. when the compressor is clamped).
- With depressurised and/or completely drained refrigerant circuit.
- With a refrigerant circuit, which was closed using special tool [32 1 270](#) but remains open for more than 24 hours.

The desiccant insert cannot be replaced in the following vehicles:

- 1-Series E8x, 3-Series E9x from 12/2008
- E84, E89
- 1-Series F2x, 3-Series F3x
- BMW i 01 without heat pump

In these vehicles, the condenser for the heating and air conditioning system must be replaced.

- BMW i 01 with heat pump

On this vehicle the low pressure battery must be replaced.

**Warning!**

Only used a high pressure cleaner approved by BMW!

Only specially trained persons of 16 years of age or older may work with the high pressure cleaner.

Check the high pressure cleaner and electrical wiring for visible damage.

Only use at a suitable location.

**Attention!**

Pay attention to following hazard warnings:

- Danger of injury due to water jet
- Contact with hazardous substances in spray
- Risk of skidding on wet floor
- Risk of stumbling due to hoses and cables
- Comply [with notes and instructions on handling cleaning agents](#) !
- Risk of scalding when cleaning with hot water.
- On electric or hybrid cars, the [safety instructions for handling with hybrid cars](#) are to be complied with.

**Warning!**

The following personal protective equipment is to be used:

- Safety goggles/face guard
- Suitable gloves
- Apron
- Rubber boots
- Ear protectors
- Safety shoes

**Attention!**

Notes on washing a vehicle with a high pressure cleaner:

- Do not wash directly on gaskets and control units during engine washes.
- A minimum distance of 30 cm must be adhered to for tyres and tyre valves.
- A minimum distance of 30 cm must be adhered to for the soft top and painted parts.
- Do not use if engine is still hot.
- Do not exceed maximum water temperature of 60°C degrees.
- Do not spray directly onto cameras/sensors.

**Attention!**

- For your own safety, we recommend that you do not wash on the high-voltage components in electric or hybrid vehicles.

00 Risk of injury if oil comes into contact with eyes and skin



Danger of injury!

Contact with eyes or skin may result in injury!

Possible symptoms are:

- Impaired sight
- Irritation of the eyes
- Reddening of the skin
- Rough and cracked skin



Protective measures/rules of conduct:

- Wear protective goggles
- Wear oil-resistant protective gloves
- Observe country-specific safety regulations



First aid measures:

- Eye contact: Rinse eyes immediately with plenty of water for at least 15 minutes; if available, use an eye-rinsing bottle. If irritation of the eyes persists, consult a doctor.
- Skin contact: Wash off with soap and water immediately. If irritation persists, consult a doctor.

Note: Do not use solvents/thinners.

00 Safety information for working on vehicles with automatic engine start-stop function (MSA)



Warning!

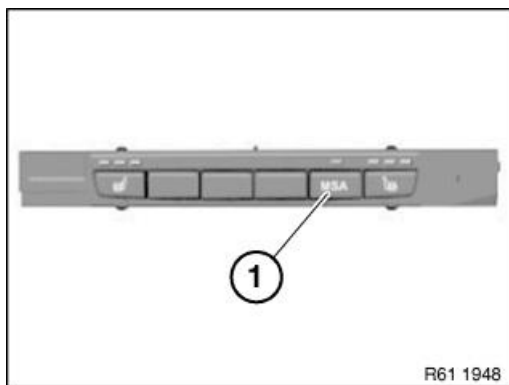
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

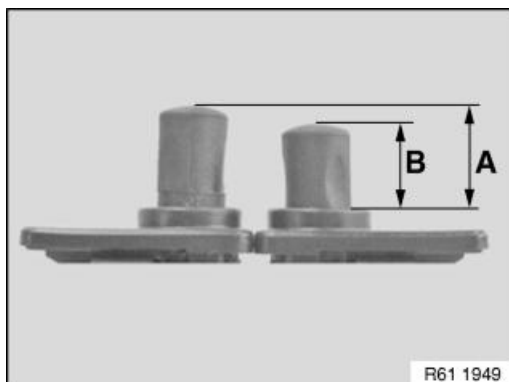
Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by:



- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door



- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
 - Workshop mode
 $A = 10 \text{ mm}$
 - Basic setting (engine hood/bonnet open)
 $B = 7 \text{ mm}$

To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.



When working with diagnosis tools:

- Observe instructions in diagnosis tool



Note:

For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) [Service Information \(bulletin\) 61 01 07 335](#)
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) [Service Information \(bulletin\) 61 01 10 629](#)

00 Safety instructions for handling oil



Warning!

[Danger of poisoning](#) if oil is ingested/absorbed through the skin!

[Risk of injury](#) if oil comes into contact with eyes and skin!



Recycling:

Observe country-specific waste-disposal regulations.



Measures if oil is unintentionally released:

- Personal precautionary measures: Danger of slipping! Keep non-involved persons away from the work area. Wear personal protective clothing/equipment.
- Environmental protection measures: Prevent oil from draining into drain channels, sewerage systems, pits, cellars, water and the ground.
- Limiting spread: Use oil blocks to prevent the surface spread of oil.
- Cleaning procedure: Bind and dispose of escaped oil with nonflammable absorbents.

Note: Do not flush oil away with water or aqueous cleaning agents.

**Warning!**

Precautionary rules and measures which protect mechanics and other personnel against injury (including life-threatening injuries).

For example: **Warning!**

Risk of scalding!

Only perform this work after engine has cooled down.

**Important!**

Specific instructions and precautionary measures which prevent damage to the vehicle or to vehicle parts. Failure to comply with the above will invalidate any warranty claims.

The caution symbol is used in all repair instructions.

However, use of the warning word "Caution!" is not binding in every case.

The notes, instructions and precautionary measures mentioned above retain their validity.

**Warning!**

High-voltage system - danger to life!

Before beginning work, follow the applicable safety rules and perform the necessary preliminary work.

Note:

High-voltage symbol for hybrid cars (electrically powered vehicles) E72 and MINI E.

**Warning!**

High-voltage system - danger to life!

Before beginning work, follow the applicable safety rules and perform the necessary preliminary work.

Note:

High-voltage symbol for hybrid car (electrically powered vehicle) from F04.

*Note:*

Particular information on improved procedures for operation, testing, adjustment and upkeep.

Also indicates the end of a repair section.

**Recycling:**

Observe country-specific waste disposal regulations



General information:

Refers to other instructions: such as e.g.:

Necessary preliminary tasks;

Further instructions: refer to operating instructions for balancing machine.



Replacement:

Carry out programming/encoding.

Note:

Many electronic control units must be programmed/coded (e.g. when replaced).



Note (symbol for diagnosis system):

- Connect BMW diagnosis system



Important!

Read and comply with notes on protection against damage from electrostatic discharge (ESD protection).

Note:

Electronic control units and other electronic components - if handled incorrectly - can be damaged or destroyed by electrostatic discharge.



Special tools required: *Note:*

List of special tools needed in these repair instructions.



Important!

Do not oil or grease component or tool.

Note:

Oil and grease will impair or damage the function of the component or tool.



Warning!

Laser beam!

For example:

Adjusting device emits laser beam. Do not look into the beam!

Note on laser class.



Important!

Use eye protection for the following operations.

For example:

Fuel can emerge spontaneously at high speed when the fuel delivery line is released!

**Important!**

Use ear protection for the following operations.

**Important!**

Use eye protection and ear protection for the following operations.

**Important!**

Use face protection for the following operations.

**Important!**

Use protective gloves for the following operations.

Avoid skin contact.

**Important!**

Use eye protection and protective gloves for the following operations.

Avoid eye contact and skin contact.

**Warning!**

Danger of explosion!

**First aid measures:**

Note on first aid measures that need to be administered immediately.

**Warning!**

Danger to life!

Read and follow operating instructions for vehicle hoist.

Do not exceed approved load-carrying capacity and load distribution of vehicle hoist.

Weight compensation may be necessary due to the loading situation of the vehicle.

This also applies in the event of considerable removal of parts or conversions on the vehicle.

Note:

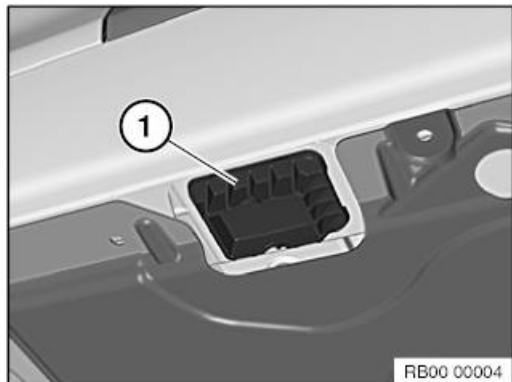
The vehicle hoist must comply with the relevant statutory/country-specific accident prevention regulations and be serviced according to the regulations.

**Caution!**

Risk of damage!

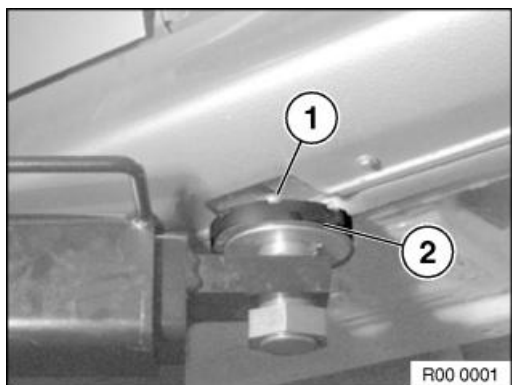
Before driving onto a vehicle hoist, make sure there is sufficient ground clearance between the vehicle hoist and the vehicle.

The vehicle may only be raised with the vehicle hoist at the four jacking points.

**Caution!**

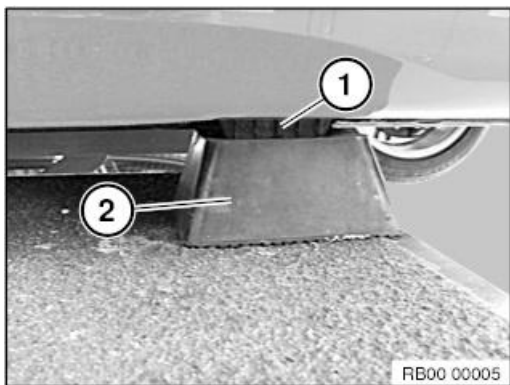
All four jacking points (1) must be available!

Never raise the vehicle without the jacking points (1)!

**Caution!**

Risk of damage!

Align support plates (2) of lifting platform arms to jacking points (1) in such a way that no adjoining components are touched and thereby damaged.



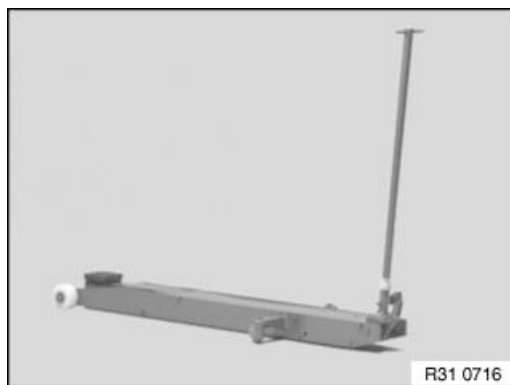
Caution!

Risk of damage!

Align the rubber block (2) with the jacking points (1) in such a way that no adjoining components are touched and thereby damaged.

Never raise the vehicle without rubber blocks (or rigid foam blocks)!

There is a major risk of damage to the vehicle underbody!



Observe the following trolley-jack-related notes:

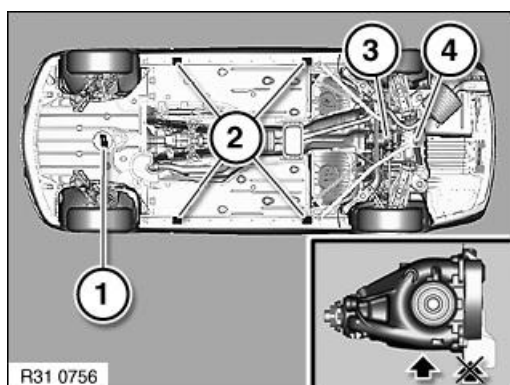
1. Only trolley jacks sold or approved by BMW, with a rubber plate on their mounting, may be used!
2. Trolley jacks must be regularly serviced and always checked for functional reliability before they are used!
3. Check the rubber plate on the trolley jack prior to each use, replacing if necessary.



Caution!

All-wheel drive vehicles may only be raised with the reinforcement plate fitted on the front axle!

Raising directly on the front axle support without reinforcement plate is not permissible!



Warning!

The vehicle may be raised with a trolley jack only at the following mounting point!

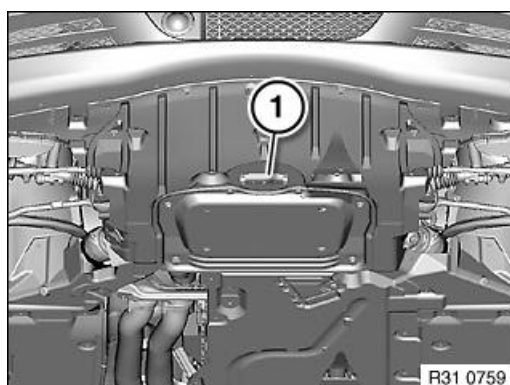
- 1 Jacking point on reinforcement strut (rear-wheel drive)

- 2 Side car jacking points

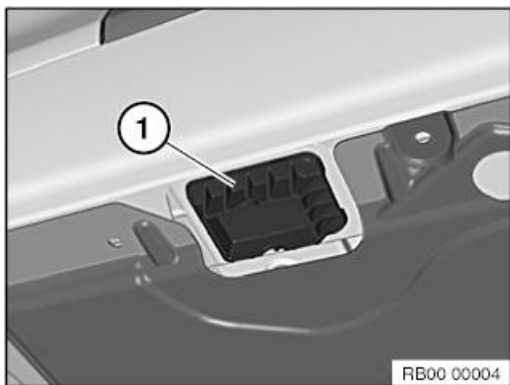
- 3 Rear axle final drive

Note: It is not permitted to raise the vehicle at the rear differential cover!

- 4 Bolting point for rear axle trailing links



- 1 Jacking point on front axle support (four-wheel drive)

**Risk of damage!**

Jacking point (1) must be present!

Align the rubber plate on the trolley jack to the jacking point (1) in such a way that there is no contact to adjacent components and that they are therefore not damaged.



Screw securing adhesive is a means of preventing a screwed connection from being loosened by external influences.

Once the screw has been coated with adhesive, the adhesive remains inactive until such time that it is activated by the encapsulation breaking when the screw is inserted and then cures (hardens) at room temperature.



Installation note:

- Screw connection must be completed within 20 mins. (start of curing)
- Microencapsulated screws must not be retightened
- Thread of nut must be cleaned beforehand in event of repeated use

61 12 ... Information on intelligent battery sensor (IBS)

Notice! Do not connect the charger to the 12 V charging socket

The 12 V charging socket is supplied with voltage by the rear power distribution box via relay. This relay drops out after terminal 15 OFF. This means that a trickle charger connected at the 12 V charging socket will be disconnected from the battery. Only charge the battery via the jump start terminal point. Only then can the voltage supply be registered by the vehicle.

Warning! Danger of destruction in event of mechanical strain

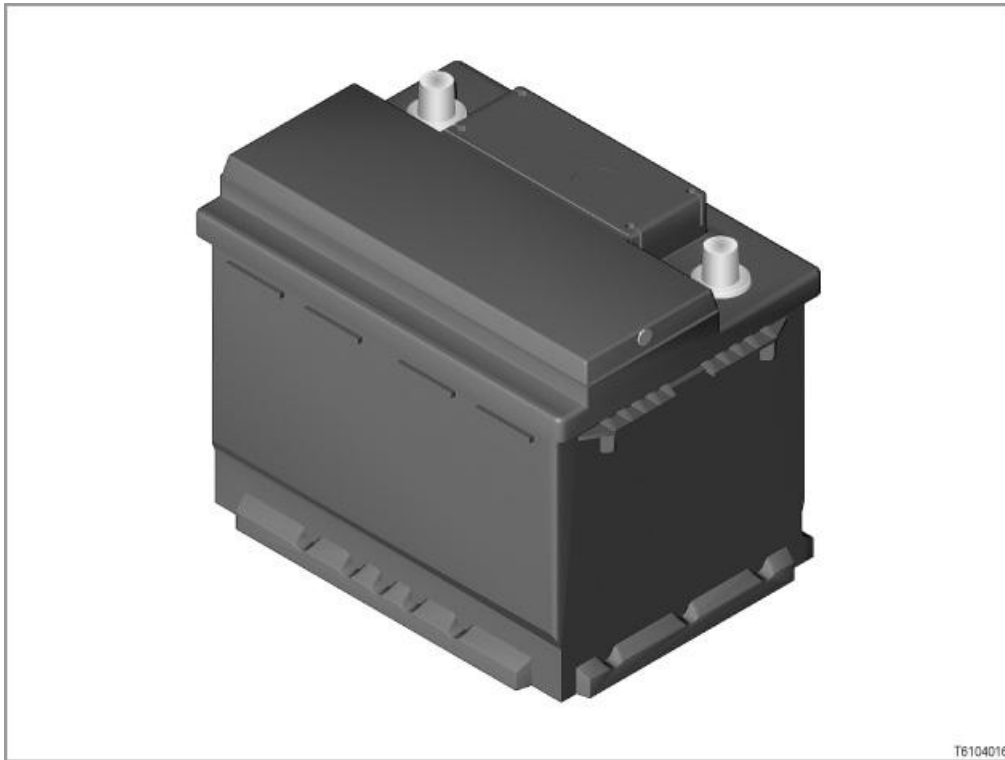
- Do not introduce any additional connections at the battery negative terminal.
- Do not modify the grounding cable. The ground cable also serves heat dissipation.
- Do not establish any connection between the IBS and the sensor screw.
- Do not use force when disconnecting the pole shoe from the battery terminal:
 - Do not pull on the ground cable.
 - Do not place any tools under the IBS to lever off the pole shoe.
- Do not use IBS connections as levers.
- Use a torque wrench and set tightening torque in accordance with repair instructions.
- Do not release or tighten down sensor screw (Torx screw).
- Avoid contact between IBS and ground.

Warning! Danger of destruction to IBS and wiring upon battery replacement

- The IBS and wiring can be destroyed by mechanical strain upon battery replacement. Therefore avoid mechanical strain.
- The size (capacity) of the battery required for the car is coded in the Car Access System (CAS).
- Use the battery size (capacity) installed as standard upon battery replacement.
- Recode the Car Access System (CAS) when installing a battery with a different capacity.
- Register battery replacement via Service functions in diagnosis system.
- Delete fault code entries in the Digital Engine Electronics (DME) associated with battery replacement.
- Always proceed in accordance with the repair instructions.

Note: Battery draining possible in spite of the intelligent battery sensor IBS being fault-free.

- A battery can be drained (e.g. with lights or radio switched on) even when the IBS functions perfectly in conjunction with power management.
- **For this reason, only exchange the IBS when there is a corresponding fault code entry!**



Introduction

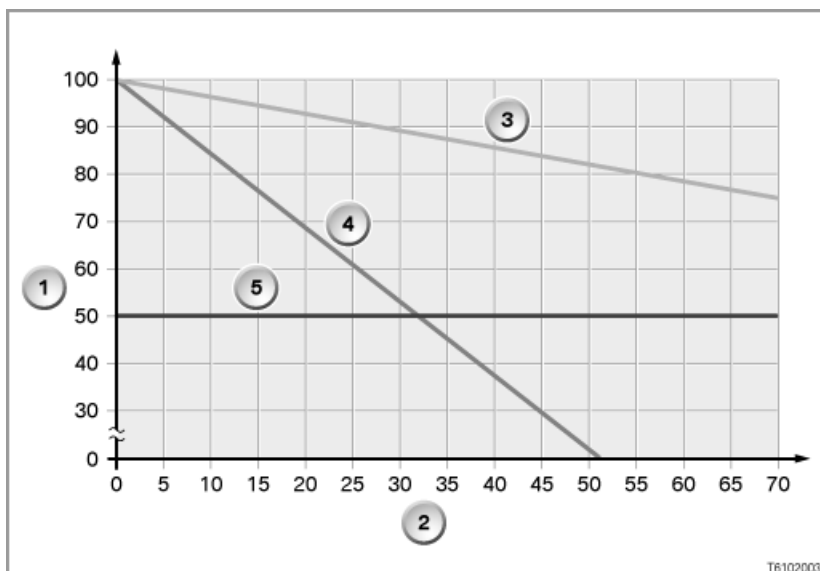
In September 2002, the first so-called VRLA batteries, better known as **AGM batteries** came into use. (VRLA stands for **V**alve **R**egulated **L**ead **A**cid, i.e. lead-acid battery with pressure relief valve; **AGM stands for** **A**bsorbent **G**lass **M**at, i.e. absorbent glass-fibre fleece).

The constantly increasing energy demand of modern vehicle electrical systems calls for ever more powerful battery solutions. A modern luxury-class vehicle has some 100 actuator motors that have to be fed with electrical current. Added to these are safety, environmental and comfort elements which are increasingly becoming standard features, such as e.g. Antilock Brake System (ABS), Dynamic Stability Control (DSC), steering assistance (EPS), electronic chassis and suspension control, air conditioning and navigation system. Current consumption is considerable even when the vehicle is not in use.

The somewhat higher price compared with a battery of similar size is fully balanced by the following benefits:

- greatly longer service life
- improved starting reliability at low temperatures
- reliable starting of engines with high starting current requirements, e.g. high-performance diesel engines
- 100 % freedom from maintenance
- low risk in the event of an accident (reduced environmental risk)

Service life of AGM batteries

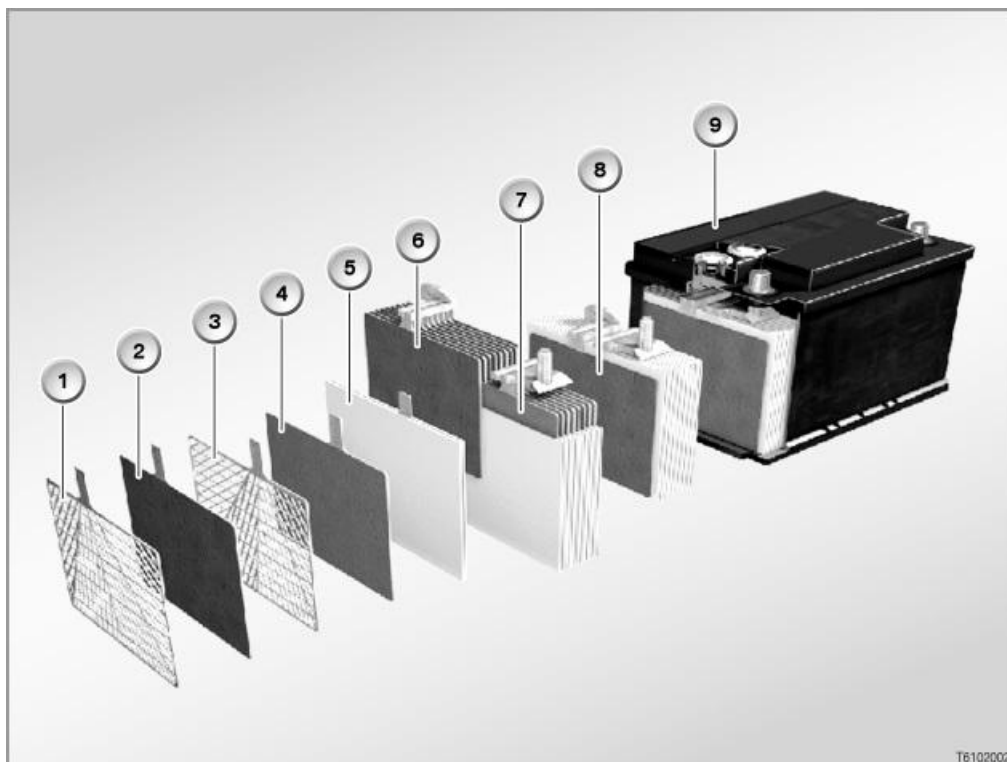


Item	Explanation	Item	Explanation
1	Available capacity [%]	2	Mileage [thousand km]
3	AGM battery	4	Lead-calcium battery
5	50 % capacity limit		

In contrast to conventional lead-calcium batteries, the sulphuric acid in a battery with fleece technology is not held freely in the battery housing. Rather, 100% of the sulphuric acid is bound into the mats of the glass-fibre fleece (separators). For this reason, no battery acid can escape if the battery housing is damaged. In addition, the AGM battery is sealed to be airtight. This is possible because the gases are converted back into water by the permeability of the separators.

Brief component description

The AGM battery has a black housing and the so-called "Magic Eye" is missing.



Item	Explanation	Item	Explanation
------	-------------	------	-------------

1	Positive grille with silver alloy	2	Positive plate
3	Negative grille	4	Negative plate
5	Separator made of glass-fibre fleece	6	Set of positive plates
7	Set of negative plates	8	Block of plates
9	Block box with base strips		

Construction

The AGM battery differs from the conventional lead calcium battery as follows:

- larger plates: Larger plates allow a 25% larger power density.
- Separators made of glass-fibre fleece: These can cause an up to 3-times higher cycle stability to be reached. This improves the cold starting capability, the power consumption and service life.
- Airtight housing with pressure relief valve (please refer to "How it works"):
The inspection plugs are sealed and can not be opened.
- Battery acid bound in glass-fibre fleece: Battery acid is not found free in the housing as before, but is rather bound 100% in the glass-fibre fleece. This gives increased security against the acid escaping and thus reduces the environmental risk.

How it works

The AGM battery differs from conventional batteries in its non-polluting and substance-retaining behaviour during charging.

When a battery is charged, the electrolysis process emits the gases oxygen and hydrogen.

- In a conventional wet lead calcium battery, the two gases hydrogen and oxygen are dissipated into the atmosphere.
- In an AGM battery, the two gases are converted back into water: The oxygen which is created at the positive electrode during charging passes through the permeable glass fibre fleece to the negative electrode. At the negative electrode the oxygen reacts with the arriving hydrogen ions in the electrolyte to form water (oxygen cycle).

In this manner, the gas and thus also the electrolyte are not lost.

Only in the event of an excessively heavy build-up of gas, i.e. excessively high pressure build-up (20 to 200 mbar), does the pressure relief valve discharge the gas. In this process, the pressure relief valve does not allow any oxygen in the air to enter. Because the pressure in the battery is regulated by a valve, the AGM battery is also known as the VRLA battery (valve-regulated lead acid).

Notes for Service department

It is necessary when handling an AGM battery to observe some particular points pertaining to battery changing and installation location.

Charging

Warning! Do not charge the AGM battery with > 14.8 V. Do not use rapid-charging programs!

When charging removed batteries (so-called stand-alone batteries), do not exceed the maximum charging voltage of 14.8 V at room temperature. Also, for charging via the external start connection point, the maximum charging voltage of 14.8 V at room temperature must not be exceeded. The battery can be damaged even if the AGM battery is only briefly charged with a charging voltage higher than 14.8 V. A charging voltage of more than 14.8 V is usually used in quick-charging routines.

Installation location

Warning! Do not install the AGM battery in the engine compartment.

The AGM battery must not be installed in the engine compartment on account of the high spatial temperature differences, otherwise its service life will be significantly shortened.

Housing

Warning! Do not open AGM batteries.

On no account may AGM batteries be opened, as the ingress of oxygen from the atmosphere would cause the battery to lose its chemical balance, rendering it unserviceable.

**Important!**

To avoid damage when handling optical fibres, comply with the following points:

- The minimum permitted bending radius is 25 mm
- Do not subject optical fibres to compressive and tensile load
- Protect optical fibres against the effects of heat $\geq 85^{\circ}\text{C}$ (e.g. during welding work, drying work with infrared heater or hot air blower)
- Fibre-optic cables are permitted to show only one junction point (bridge), replace fibre-optic cables if necessary

*Note:*

The optical fibres are coloured differently as follows:

- Green = **MOST** (**M**edia **O**riented **S**ystems **T**ransport) optical fibre
- Yellow = **ISIS** (**I**ntelligent **S**afety and **I**ntegration **S**ystem) fibre-optic cable
- Orange=repair fibre-optic cables

Follow instructions for [processing cables and optical fibres](#).



The following applies in general:

To avoid damage, observe the following instructions:

- Avoid compressive and tensile loads
- Make sure cables are laid without kinks or abrasions
- Ensure non-contacting routing at sharp-edged body parts; use edge protection if necessary
- Secure additionally laid cables/leads with cable ties

The following additionally applies:

Shielded lines

Interference radiation and interference resistance can lead to neutral zones at contact points in the shielding. Consequently, distinctions have to be drawn between the following types:

Coaxial lines

- Shielded coaxial cables RTK031 may only be repaired with special [crimping tool](#).
- For aerial lines only the bushing contact may be repaired.
- RG174 Lines and the bushing contact may not be repaired.

CVBS lines

- CVBS cables may not be repaired.
- CVBS cables must be replaced in their entirety.

HSD lines

- HSD cables may not be repaired.
- HSD cables must be replaced in their entirety.

Optical fibre cable:

Note:

Fibre-optic cables are coloured differently as follows:

- Green = **MOST** (Media Oriented Systems Transport) optical fibres
- Yellow = **ISIS** (Intelligent Safety and Integration System) optical fibres
- Orange=repair fibre-optic cables

Attention!

- Fibre-optic cables are permitted to show only one junction point (bridge), replace fibre-optic cables if necessary
- Smallest permissible bending radius is 25 mm
- Avoid effects of heat $\geq 85^\circ$

[Treating cables and optical fibres](#)

FlexRay (twisted cables)

It is possible to repair the FlexRay. In the event of damage, the cables can be joined with conventional [butt connectors](#).

Note:

- FlexRay lines may only reveal one separation point (bride); renew

complete line if necessary.

- If possible, maintain twisted cable after repair.
- After repairs, twist cables as close as possible to the connector/separation point.
- Twisting must be as symmetrical as possible.

Airbag lines:

[Repairing airbag cables](#)

Ribbon cables:

[Repairing ribbon cables](#)

Replacing wiring harnesses

Repair wiring harnesses mainly cover the full equipment of the vehicle. If certain optional equipment is not installed in the vehicle, note the following:

- If necessary, secure the remaining connectors.
- If necessary, seal the remaining connectors outside the vehicle interior, for example, with butyl tape in such a way that moisture ingress can be eliminated permanently.

Note:

Repair wiring harnesses can be equipped with an **additional socket housing** (e.g. 30-pin), **which was not provided on the previous vehicle-side wiring harness**. This socket housing also cannot be found in the wiring diagram.

Procedure

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **in the vehicle interior** (in the footwell, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- Alternatively, a suitable pin housing can be fitted on the vehicle-side wiring harness and connected to the additional socket housing.

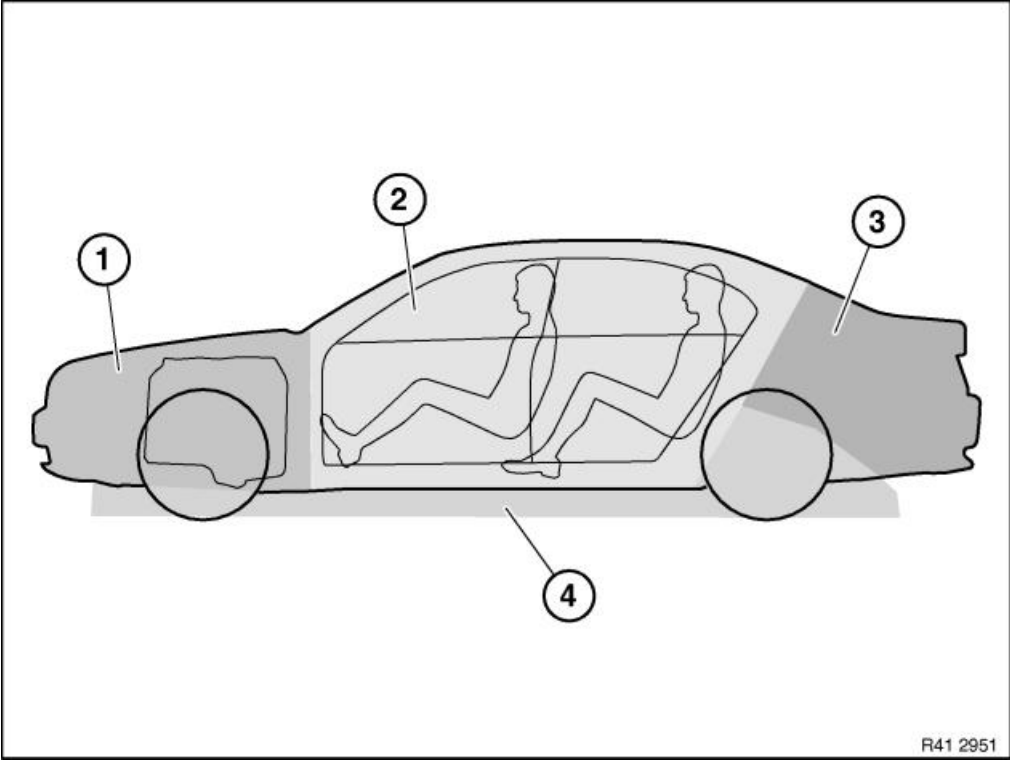
However, this is permitted only if the following conditions are met:

- Carpets must not protrude visibly or become deformed due to the installation of the additional plug connection.
- It must be possible to install the adjacent components (for example, trims, trim panels, etc.) correctly after installing the additional plug connection.
- All the attachment points of the adjacent components (for example, trims, trim panels, etc.) must engage correctly.
- There must be no rattling noise due to the installation of the additional plug connection.
- The additional plug connection must not damage the adjacent components/wiring harnesses, etc..

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **outside the vehicle interior** (in the wheel arch, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- **Using the additional socket housing is not permitted with a**

separation point outside the vehicle interior.



1	Engine compartment	3	Rear end
2	Interior	4	Underfloor

Location: Information/warning label: Country:

Various components	Replacement identification -spare parts-	US, CDN
Various components	Anti-theft protection	US, CDN

Engine compartment (1):		
Battery	Battery sticker	Gulf States
Electronics box cover	High-voltage identification	Worldwide
Headlights/engine compartment	Mercury (xenon headlights)	Worldwide
Engine compartment/raw air snorkel	Aluminium screws/bolts	Worldwide
Cylinder head cover	Ignition coil	Worldwide
Engine compartment/end panel	BMW High Performance Oil	US, not CDN
Engine compartment/end panel	Premair	US
Engine compartment	ICES CDN	CDN
Engine compartment/hood/bonnet	Refrigerant	Worldwide
Engine compartment/hood/bonnet	Production date	Australia, Great Britain
Engine compartment/hood/bonnet	Exhaust gas	Australia, US, CDN
Engine compartment/brake booster	Brake fluid	CDN
Engine compartment/hood/bonnet	Exterior paint	Worldwide
Engine compartment/hood/bonnet	BMW genuine spare parts	Worldwide

Interior (2):		
Windscreen, top right	Airbag -windscreen	Europe
Windscreen	CCC	China
Windscreen	Vehicle identification number	US, CDN, Gulf States, Great Britain & South Africa
I Drive	A/C menu	US, CDN
Passenger compartment/instrument panel	Airbag, instrument panel	US, CDN
Interior/sun visor	Airbag -sun visor	US, CDN
Steering wheel/speedometer	Top speed -210 km/h- Only with optional equipment and for car rental	Germany

Complete vehicle, bodyshell:		
B-pillar	Airbag symbol (front passenger)	Worldwide (not US and CDN)
B-pillar	Vehicle identification number	Brazil
B-pillar	Manufacturer's certificate	US, CDN, Gulf States
B-pillar	Tyre inflation pressure	Europe, US, CDN, Australia
B-pillar	Runflat indicator	Worldwide
B-pillar	Side airbag	Worldwide
B-pillar	Nameplate	China
B-pillar	EC type plate with model designation, vehicle identification number, colour code	Worldwide, not US, CDN, Japan, Australia, Gulf States
Door, driver's side	Towing	Worldwide

Rear end (3):		
Fuel cap/hood/bonnet	Independent heating	Europe
Filling area	Refuelling	US, CDN, Europe
Filling area, instrument cluster (plug)	OBD system	US, CDN
Trim, striker	Nose weight (only with optional equipment)	Worldwide
Trim, cross-member (through-loading)	Lock, through-loading (only with optional equipment)	Worldwide
Luggage compartment cover	Retractable hardtop	Worldwide
Luggage compartment trim panel on side panel	Retractable hardtop	Worldwide
Tool box lid (E60)	HWS fluid	US
Rear lid trim (E61)	HWS fluid	US

Underfloor (4):		
Vehicle jack	Vehicle jack	Australia
Front axle support	Airbag (basic setting)	Worldwide
Tension strut with hydro-mount	Do not lash down	Worldwide



Key:

US = United States

CDN = Canada

CCC = Car Communication Computer

OBD = On-Board Diagnosis

64 52 ... Instructions for opening and part replacement in refrigerant circuit



Special tools required:

- [00 9 030](#)
- [32 1 270](#)

Warning!

- Avoid contact with refrigerant and refrigerant oil
- Follow safety information for [handling R134a refrigerant](#)
- Follow safety information for [handling refrigerant oil](#)

Attention!

- Always use new O-rings each time A/C connections are opened (refer to Electronic Parts Catalogue). They must **not** be coated.
Use special tool [00 9 030](#) to install sealing rings without damaging them.
- Open the refrigerant circuit for as short of a period as possible.
- Close all components and lines in the refrigerant circuit and return parts **immediately** following the removals at openings with special tool [32 1 270](#) to prevent penetration of moisture or foreign objects.
- If the refrigerant circuit was closed at the openings with special tool [32 1 270](#) but it remains open for more than 24 hours, the dryer insert for the air conditioning must be replaced.

I. Part replacement as preliminary work for further repair work and part replacement based on gradual leakage.

(minor leak, e.g. hairline crack)

Procedure:

- [Draw off](#) heating and air conditioning system, then determine drawn-off amount of refrigerant
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
 - Compressor: refer to [Notes on compressor replacement](#)
 - Evaporator: 10 ml
 - Capacitor: 20 ml
 - Desiccant insert / dryer flask: 20 ml
 - Each replaced refrigerant line: 10 ml
 - Capacitor with integrated dryer: 40 ml
 - Safety pressure switch and gasket: no additional refrigerant oil
- [Evacuate and fill](#) A/C system

II. Part replacement due to sudden leakage

(major leak, e.g. pipe break due to accident)

Procedure:

- [Draw off](#) heating and air conditioning system, then determine drawn-off amount of refrigerant
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
 - Compressor: refer to [Notes on compressor replacement](#)
 - Evaporator: 35 ml
 - Capacitor: 35 ml
 - Desiccant insert / dryer flask: 55 ml
 - Each replaced refrigerant line: 35 ml
 - Capacitor with integrated dryer: 55 ml
 - Safety pressure switch and gasket: no additional refrigerant oil

- Evacuate and fill [A/C system](#)

64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

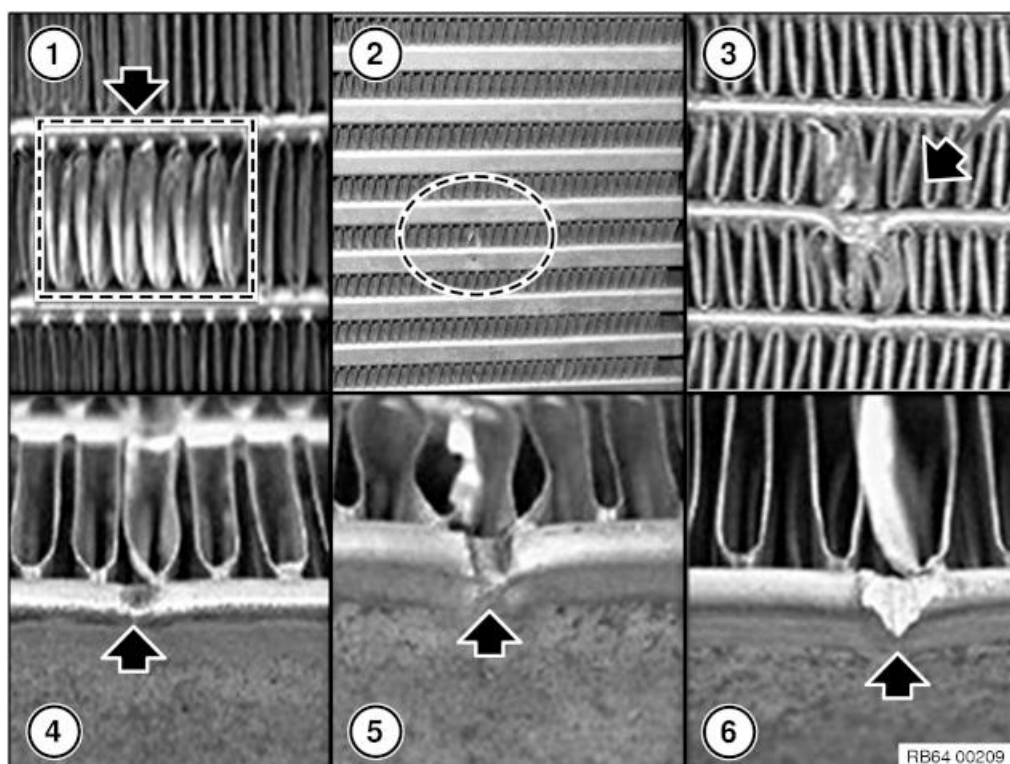
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig.Â (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.

64 50 ... Instructions for handling R1234yf refrigerant

Work on the refrigerant circuit may only be carried out by experts!

Avoid all contact with liquid or gaseous R1234yf. Wear protective goggles and gloves when working on the refrigerant circuit.

- [Follow safety information for handling refrigerant R1234yf!](#)

Warning!

Although R1234yf at normal temperature is non-toxic, non-flammable and not explosive in air in any mixture ratio, it is still essential to follow various safety precautions. **At higher temperatures, R1234yf is inflammable.**

As a gas, R1234yf is colourless, odourless and heavier than air. If it enters the atmosphere, this may result in an imperceptible danger of asphyxiation or in cardiac palpitations, especially in workshop pits. Ventilate rooms adequately; if necessary, turn on installed extractor systems.

Store filled refrigerant pressure flasks so that they are not subject to direct sunlight or other heat sources (at maximum 45 °C). Also avoid exposing them to mechanical stress (e.g. by dropping).

Do not weld or solder on to filled air conditioning systems or in rooms into which R1234yf may have leaked. Exposure to flames or high temperatures (≥ 50 °C) may give rise to toxic products of decomposition (hydrofluoric acid). For this reason, do not smoke either.

In the event of fire, carbon dioxide (CO₂), extinguishing powder and a sprayed water jet are deemed to be suitable extinguishing agents. Cool reservoirs at risk with a sprayed water jet (risk of bursting!).

If the protective caps on the filler valves are difficult to open, there is a risk of injury from leaking valve inserts (high pressure).

The filled refrigerant circuit of the A/C system is subject to excess pressure. Before carrying out repairs on the A/C system, it is absolutely essential to draw off the refrigerant.

- Before conducting repairs, check the actual pressure drop on the pressure gauge of the A/C service station

R1234yf must be drawn off, cleaned and returned to the A/C system using an A/C service station following the relevant operating instructions.

For a properly functioning A/C system, it is essential to have the greatest possible levels of cleanliness when working on the A/C system and the longest possible evacuation (at least 30 minutes dehumidification from refrigerant circuit) before each filling of the A/C system.

R1234yf easily absorbs moisture. Therefore, seal off opened pipes, air conditioning condenser, evaporator, air conditioning compressor and dryer flask immediately with seal plugs.

- If air conditioning has been completely drained by a leak, accident or repair, the [desiccant insert](#) must be replaced as excessive moisture may have entered the system.

With replacement parts, the plugs may only be removed immediately before the lines are connected. In the event of warranty claims, the old parts must be provided with plugs to be able to determine the cause of the damage.

Installation note:

After each refilling of an air conditioning, check that protective caps of filling valves are hand-tight. They serve as additional seals.

**Attention!**

Specific to the country, 2 different refrigerants (R134a, R1234yf) are used.

Specific to the country, the vehicle and the year of manufacture 2 different refrigerant oils (ND-8, Sanden SP-A2) are used.

Before carrying out repairs on the refrigerant circuit, always determine which refrigerant/refrigerant oil is used in the vehicle!

Refrigerant: This information can be found on the **type plate** on the bonnet.

Refrigerant oil: This information can be found on the **type plate** on the front flap in vehicles with a production date from 2013.



R1234yf refrigerant is used in the following countries:

[Observe notes on handling R1234yf refrigerant!](#)

Europe				Asia	America
Belgium	Great Britain	Malta	Sweden	Israel	USA
Bosnia and Herzegovina	Ireland	Macedonia	Switzerland	Turkey	Canada
Bulgaria	Iceland	The Netherlands	Slovakia	India*	
Denmark	Italy	Norway	Slovenia	South Korea	
Germany	Croatia	Austria	Spain		
Estonia	Latvia	Poland	Czech Republic		
Finland	Liechtenstein	Portugal	Hungary		
France	Lithuania	Romania	Cyprus		
Greece	Luxembourg	Serbia			

*Only applies to vehicle models with Europe version. All other vehicle models have R134a.

Introduction of R1234yf refrigerant:

European countries listed in the table, Turkey and Israel:

- BMW i as of 09/2013
- from 07/2016, BMW, MINI, RR

USA and Canada:

- from 07/2016 BMW, BMW i, MINI

South Korea:

- from 11/2018 BMW, BMW i, MINI

The introduction date may vary slightly according to the specific country and model.

The refrigerant R134a will continue to be used in all other countries.

[Observe notes on handling R134a refrigerant!](#)



Refrigerant oil Sanden **SP-A2** is used for both, R1234yf and R134a.

[Observe notes on handling refrigerant oil!](#)



Attention!

[I01, I12 with production date up to 08/2014:](#)

In the national-market version with R134a a wrong refrigerant oil is present on the type plate

Always use Sanden SP-A2

(Part number of Sanden SP-A2: 2 339 920)

Attention!

Only vehicles with a production date from 09/2013 and **R1234yf** refrigerant/Sanden **SP-A2** refrigerant oil can be filled using the A/C service station for **R1234yf**.

In addition to vehicles with a production date from 09/2013, also all previous vehicles **without the electric A/C compressor** with **R134a** refrigerant and both **ND-8** and Sanden **SP-A2** refrigerant oil can be filled using the A/C service station for **R134a**.

Exception:

BMW i and hybrid vehicles (with an electric A/C compressor) that are filled with **R134a** refrigerant/Sanden **SP-A2** refrigerant oil. These vehicles must be [injected](#) with Sanden **SP-A2** refrigerant oil.

When filling the refrigerant circuit with R134a, always ensure you use the correct, vehicle-specific refrigerant oil type!

The previous ND-8 refrigerant oil must not be mixed with Sanden SP-A2 refrigerant oil!

In other words, the refrigerant oil ND-8 must not be filled in refrigerant circuits which were filled with Sanden SP-A2 in the factory.

Sanden SP-A2 refrigerant oil may be mixed with ND-8 refrigerant oil in vehicles without an electric A/C compressor.

In other words, the refrigerant oil Sanden SP-A2 must be filled in refrigerant circuits which were filled with ND-8 in the factory.

However, this is permitted **only** in vehicles **starting from F-series**.

[Note the overview of the refrigerant oil to be filled.](#)

To prevent inadmissibly mixing the different refrigerant oil types, rinse the A/C service station hoses after each drawing off/filling procedure!

**Warning!**

Danger of injury!

Refrigerant circuit is under high pressure! Work on the refrigerant circuit may only be carried out by experts!

Draw off refrigerant without fail **BEFORE** all repair work on the refrigerant circuit.

The refrigerant circuit is depressurised **AFTER** drawing off.

- The pressure gauge on the A/C service unit must be checked for the actual pressure drop prior to repair work.

It is absolutely essential to read and observe the relevant operating instructions for the A/C service unit used!

At high temperatures, R1234yf is inflammable!

**Protective measures/rules of conduct:**

- Wear safety goggles
- Wear oil-resistant protective gloves
- Do not smoke!
- Observe country-specific safety regulations.

**First aid measures:**

- Eye contact: In the event of contact with the eyes, rinse immediately with plenty of running water and consult an ophthalmologist.
- Skin contact: In the event of contact with skin, remove affected clothing immediately and rinse with plenty of water.
- After inhalation: If refrigerant vapours are inhaled in greater concentrations, remove the person affected to an area of fresh air and keep them under supervision. Call for a doctor. If breathing problems are experienced, breathe additional oxygen. If the person affected is breathing with difficulty or has stopped breathing, incline the person's head at the neck and administer the kiss of life.

34 00 ... Testing of service brakes at the official periodic vehicle check according to EU Directive 2010/48/EU and Germany § 29_StVZO for vehicles with first registration beginning on July 28, 2010.

Series: 1: E81-E88; F20-F21 / 3: E90-E93; F30-F31 / 5: F07-F11; F18 / 6: F06,F12-F13 / 7: F01-F04; X1: E84 / X3: F25 / X5: E70 / X6: E71-E72 / Z4: E89 / MINI: R55-R61 / Rolls Royce

Situation:

For official periodic vehicle inspections according to EU Directive 2010/48/EU and § 29 of the German road traffic licensing regulations (StVZO) as per the revised directive, new inspection specifications apply beginning on 01.07.2012 for the functional test of the service brakes on EU Class M1 vehicles (passenger car up to 3.5 t permitted total weight) and first registered from 28.07.2010 onwards.

Prior the mechanical brake force measurement the electronic function check for the corresponding brake system must always be performed by way of evaluation of the system specific function control gauges in the instrument cluster and/or messages on the Check Control display (ABS, DSC, and brake pad wear and brake fluid display)!

Functional check of the service brake:

Prior to the brake test, the service brake must be conditioned by braking 2 or 3 times from increased walking speed to vehicle standstill.

For vehicles with combustion engines, the engine must run to maintain the vacuum for the power assistance of the service brake. For the same reason, the driving readiness ("ignition") must be switched on with electrical vehicles to ensure the electrical vacuum generation.

EU and Germany:

Vehicle braking (z) with the service brake **at least 58 % of the authorized vehicle total weight**, instead of the previous 50 %.

Reference value for this minimum braking action **is**, according to ECE Directive 13H, is a **brake pedal operating force of max. 500 N**.

Note: For M1 vehicles with a first registration date prior to July 28, 2010, a minimum brake force of 50% continues to be valid!

Braking according to the guidelines listed above is defined as:

$$z = \frac{\text{Total of brake forces of all wheels at the wheel output}}{\text{Weight force of the vehicle (zGG)}} \times 100 (\%)$$

Example: BMW X3 F25: approved total weight (zGG.): 2300 kg.

Measured brake force values on brake test stand:

Service brake	Front	Rear
Left	435 daN	335 daN
Right	434 daN	336 daN

Evaluation of service brake:

$$z = \frac{1540}{2300} \times 100 (\%) = 66.96 \% \text{ is OK because greater than } 58\%$$

Note:

Since the vehicles to be tested usually do not indicate the approved total weight at the time of the test, and the test stand rollers may prematurely switch off due to the lower axle weight before the possible higher brake

forces are reached as a result of the wheel roll slipping limit, the determined total brake force is often below the total brake force that is required to meet the statutory minimum braking.

This may result in a false evaluation (not OK) even though the brake system is intact.

To prevent such a "mis-evaluation" and eliminate the need for a general vehicle load to the approved total weight, the vehicle manufacturers will provide a **maximum pedal force as reference value for minimum brake action** type and/or series-specific in the future. See table in Appendix 1.

To correspond to the actual conditions especially when checking on the brake test stand, the vehicle manufactures are enhancing the series-specific input specification values, which means the brake pedal forces, with additional **"test stand suitable" brake pedal forces**, in which the actual measurements must be performed.

These are usually low brake pedal force reference values that are generally in front of the banding point of the brake servo reference line.

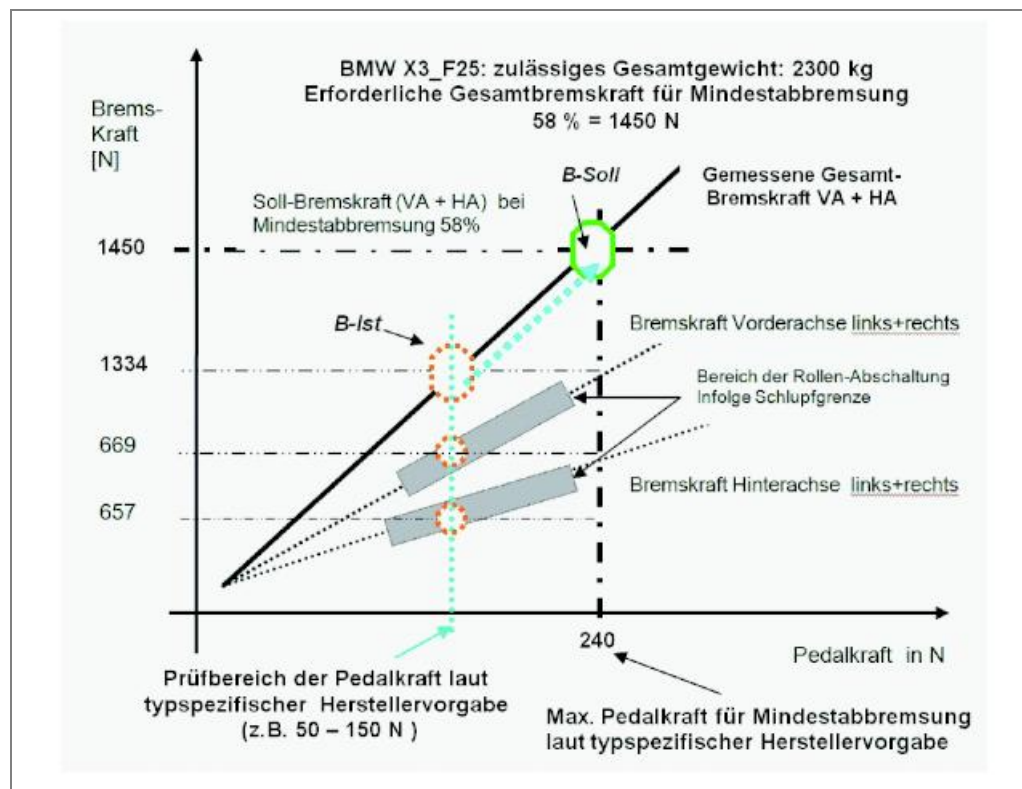
The brake force can thereby be measured in front of the blocking limit in most cases, which serves to preserve the tyres and provides a significantly more accurate approved right / left deviation in the upper test range.

In practice, this means:

When the measured total brake force "B Actual" is below the total value "B Target" for the required minimum braking due to premature shut down of the brake test stand or a vehicle test weight near the vehicle kerb weight, this actual value must be extrapolated on the line of the total brake force to the specified brake pedal force and then entered in reference to the approved total weight of the vehicle to be tested (see vehicle documentation). This new total value "B Target" will now be used to calculate the braking.

If this total brake value that was extrapolated to the specified maximum brake pedal force does not meet the required minimum brake force of 58%, the braking effect must be rated not OK.

The schematic graphic below clarifies this correlation:



Other statutory specifications EU and Germany:

Just as for vehicles first registered **before** 01.07.2012, the deviation of the wheel brake forces of each axle to each other may not exceed 25%.

Also valid for vehicles in Germany first registered from 01.07.2012 onwards:

Evaluation of the minimum brake force share of the front and rear axle in % to the total brake force of all wheels according to the vehicle manufacturer's specified values. See formulas below and type or series specific manufacturer values according the table in Appendix 1.

$$\text{1. Front axle share} = \frac{\text{Total front axle brake forces}}{\text{Total brake force of all axles}} \times 100 (\%)$$

Manufacturer specification:

The following calculation results from the previous example for the BMW X3:

$$\text{Front axle brake force share} = \frac{435 \text{ daN} + 434 \text{ daN}}{435 + 434 + 335 + 336 \text{ daN}} \times 100 (\%) = 56\% \text{ is OK because greater than } 51.3\%$$

$$\text{2. Rear axle brake share} = \frac{\text{Total rear axle brake forces}}{\text{Total brake force of all axles}} \times 100 (\%)$$

Manufacturer specification:

The following calculation results from the previous example for the BMW X3:

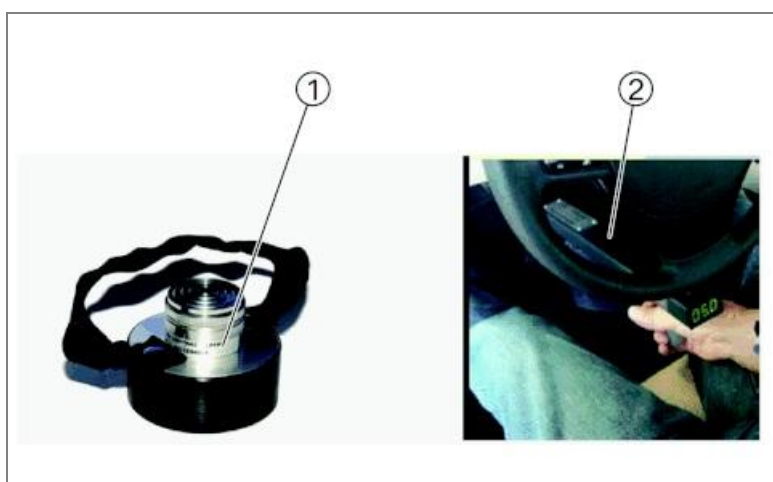
$$\text{Rear axle brake force share} = \frac{335 \text{ daN} + 336 \text{ daN}}{435 + 434 + 335 + 336 \text{ daN}} \times 100 (\%) = 44\% \text{ is OK because greater than } 21\%$$

General note:

This means that the official test of the service brake **absolutely requires the use of a brake pedal force measuring sensor**.

The manufacturers of brake test stands have been offering these items for many years as test stand accessory.

Examples are:



Position 1: MAHA, Haldenwang

Position 2: AHS, Bremen

02	02	0135/04000	210
- 04648		- 1881	
- 1661		01800 - 01800	
	00100		
147	002300	002300	
01080	01080		
01080	01280		
078	03000	074	
02400	0750	005	

The approved total weight of the vehicle must be derived from the registration Part 1 from column F1 or F2.

Since the law primarily requires that brake effect tests are performed on brake test stands, BMW Group vehicles **must be tested on roller test stands!**

Next, the statutory tolerance of the axle "right-left deviation, limit value max. 25%, must be determined in the upper range of the measured brake forces.

In addition, the minimum brake force shares must be determined separately for the front and rear axle in compliance with the additional German specifications and referenced to the manufacturer specifications.

General notes:

It is recommended to check the brakes as part of the manufacturer required vehicle inspection and **before** the official vehicle inspection according to the specified values indicated here.

To make work easier for the **referencing: Brake pedal force to brake force** we urgently recommend to have your test stand manufacturer set up an electronic measured value transmission from the brake pedal force measuring tool to the test stand computer.

The installation of a calculation program to determine the minimum total braking on the test stand computer to achieve the correct evaluation - especially when it is necessary to extrapolate the actual brake force in relation to the setpoint value at the corresponding brake pedal force - is also deemed absolutely necessary.

The integration of a database for the type specific vehicle specifications (brake pedal forces, front and rear axle brake shares) simplifies the overall brake test.

These specification will also be indicated in the technical data and/or repair instructions in the future as minimum values, which will only be updated and/or maintained model-specific there.

The test procedure for the mechanical or electrical operated parking brakes, and/or the regenerative valve for hybrid or electric vehicles are listed in the corresponding repair instructions.

In the event of specifications for the brake test that deviate from country authorities of EU states and/or newer issues of the German road traffic licensing regulations, or the application of manufacturer and/or type specific target data is prohibited, compliance with same is required.

In this case, we request that you will send the corresponding information to the publisher of this service information.

- Enclosure 1: [Type specific specifications to test the service brake](#)
- Enclosure 2: [Manual calculation of braking when this is not supported by the test stand.](#)

64 53 ... Instructions for desiccant insert replacement



Special tools required:

- [32 1 270](#)

A desiccant insert that is in a correctly functioning, sealed heating and air conditioning system does **not** have to be changed at regular service-inspection intervals.

However, the dryer flask or desiccant insert must absolutely be replaced in the event of:

- contamination of the refrigerant with swarf (e.g. when the compressor is clamped).
- With depressurised and/or completely drained refrigerant circuit.
- With a refrigerant circuit, which was closed using special tool [32 1 270](#) but remains open for more than 24 hours.

The desiccant insert cannot be replaced in the following vehicles:

- 1-Series E8x, 3-Series E9x from 12/2008
- E84, E89
- 1-Series F2x, 3-Series F3x
- BMW i 01 without heat pump

In these vehicles, the condenser for the heating and air conditioning system must be replaced.

- BMW i 01 with heat pump

On this vehicle the low pressure battery must be replaced.

64 50 ... Instructions for handling R1234yf refrigerant

Work on the refrigerant circuit may only be carried out by experts!

Avoid all contact with liquid or gaseous R1234yf. Wear protective goggles and gloves when working on the refrigerant circuit.

- [Follow safety information for handling refrigerant R1234yf!](#)

Warning!

Although R1234yf at normal temperature is non-toxic, non-flammable and not explosive in air in any mixture ratio, it is still essential to follow various safety precautions. **At higher temperatures, R1234yf is inflammable.**

As a gas, R1234yf is colourless, odourless and heavier than air. If it enters the atmosphere, this may result in an imperceptible danger of asphyxiation or in cardiac palpitations, especially in workshop pits. Ventilate rooms adequately; if necessary, turn on installed extractor systems.

Store filled refrigerant pressure flasks so that they are not subject to direct sunlight or other heat sources (at maximum 45 °C). Also avoid exposing them to mechanical stress (e.g. by dropping).

Do not weld or solder on to filled air conditioning systems or in rooms into which R1234yf may have leaked. Exposure to flames or high temperatures (≥ 50 °C) may give rise to toxic products of decomposition (hydrofluoric acid). For this reason, do not smoke either.

In the event of fire, carbon dioxide (CO₂), extinguishing powder and a sprayed water jet are deemed to be suitable extinguishing agents. Cool reservoirs at risk with a sprayed water jet (risk of bursting!).

If the protective caps on the filler valves are difficult to open, there is a risk of injury from leaking valve inserts (high pressure).

The filled refrigerant circuit of the A/C system is subject to excess pressure. Before carrying out repairs on the A/C system, it is absolutely essential to draw off the refrigerant.

- Before conducting repairs, check the actual pressure drop on the pressure gauge of the A/C service station

R1234yf must be drawn off, cleaned and returned to the A/C system using an A/C service station following the relevant operating instructions.

For a properly functioning A/C system, it is essential to have the greatest possible levels of cleanliness when working on the A/C system and the longest possible evacuation (at least 30 minutes dehumidification from refrigerant circuit) before each filling of the A/C system.

R1234yf easily absorbs moisture. Therefore, seal off opened pipes, air conditioning condenser, evaporator, air conditioning compressor and dryer flask immediately with seal plugs.

- If air conditioning has been completely drained by a leak, accident or repair, the [desiccant insert](#) must be replaced as excessive moisture may have entered the system.

With replacement parts, the plugs may only be removed immediately before the lines are connected. In the event of warranty claims, the old parts must be provided with plugs to be able to determine the cause of the damage.

Installation note:

After each refilling of an air conditioning, check that protective caps of filling valves are hand-tight. They serve as additional seals.

64 52 ... Instructions for opening and part replacement in refrigerant circuit



Special tools required:

- [00 9 030](#)
- [32 1 270](#)

Warning!

- Avoid contact with refrigerant and refrigerant oil
- Follow safety information for [handling R134a refrigerant](#)
- Follow safety information for [handling refrigerant oil](#)

Attention!

- Always use new O-rings each time A/C connections are opened (refer to Electronic Parts Catalogue). They must **not** be coated.
Use special tool [00 9 030](#) to install sealing rings without damaging them.
- Open the refrigerant circuit for as short of a period as possible.
- Close all components and lines in the refrigerant circuit and return parts **immediately** following the removals at openings with special tool [32 1 270](#) to prevent penetration of moisture or foreign objects.
- If the refrigerant circuit was closed at the openings with special tool [32 1 270](#) but it remains open for more than 24 hours, the dryer insert for the air conditioning must be replaced.

I. Part replacement as preliminary work for further repair work and part replacement based on gradual leakage.

(minor leak, e.g. hairline crack)

Procedure:

- [Draw off](#) heating and air conditioning system, then determine drawn-off amount of refrigerant
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
 - Compressor: refer to [Notes on compressor replacement](#)
 - Evaporator: 10 ml
 - Capacitor: 20 ml
 - Desiccant insert / dryer flask: 20 ml
 - Each replaced refrigerant line: 10 ml
 - Capacitor with integrated dryer: 40 ml
 - Safety pressure switch and gasket: no additional refrigerant oil
- [Evacuate and fill](#) A/C system

II. Part replacement due to sudden leakage

(major leak, e.g. pipe break due to accident)

Procedure:

- [Draw off](#) heating and air conditioning system, then determine drawn-off amount of refrigerant
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
 - Compressor: refer to [Notes on compressor replacement](#)
 - Evaporator: 35 ml
 - Capacitor: 35 ml
 - Desiccant insert / dryer flask: 55 ml
 - Each replaced refrigerant line: 35 ml
 - Capacitor with integrated dryer: 55 ml
 - Safety pressure switch and gasket: no additional refrigerant oil

- Evacuate and fill [A/C system](#)

64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

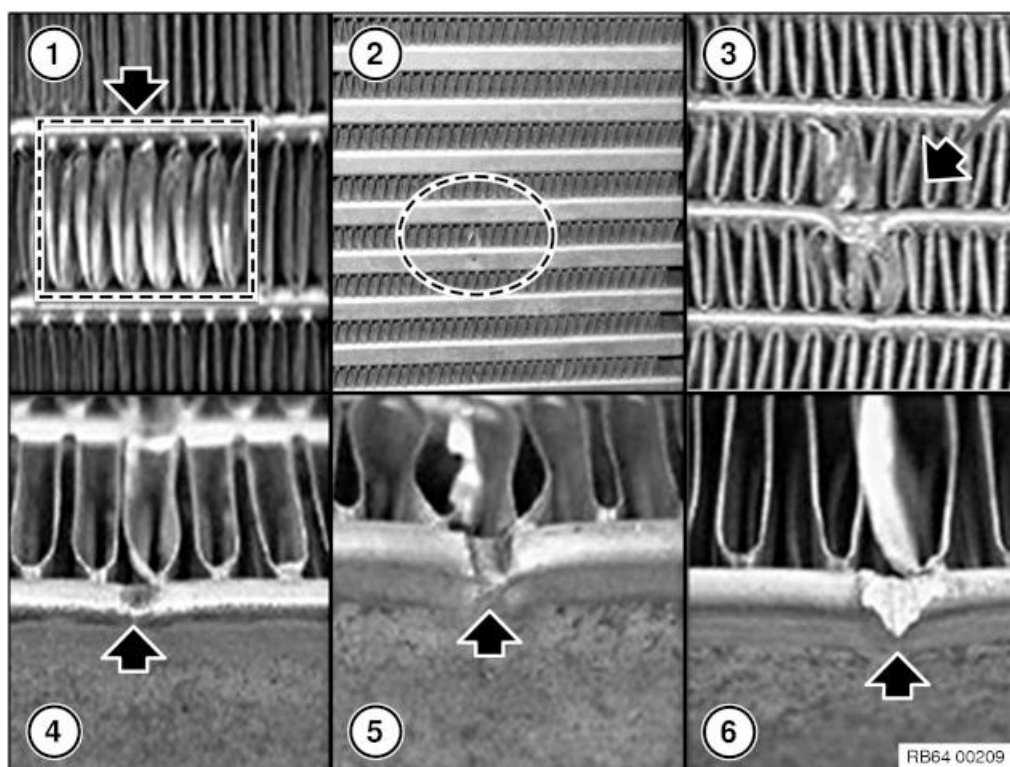
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig.Â (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.

64 52 ... Notes on changing the air conditioning compressor, determining the amount of refrigerant oil (amount of refrigerant oil of new air conditioning compressor not known)



Note:

This procedure only applies if the **new air conditioning compressor does not have a label with the amount of refrigerant oil**.

A [different procedure](#) applies for air conditioning compressors with a label indicating the amount of refrigerant oil.



Attention!

Risk of damage!

Remove the air conditioning compressor without damaging and without the use of force!

Air conditioning compressors with plastic belt pulleys:

- Avoid impacts/knocks to plastic belt pulley (caused by tools, contact with base).
- Return faulty air conditioning compressors in their original packaging only and with sealed connected branches.



Attention!

In the event of a mechanical air conditioning compressor failure and the resulting ingress of chips into the refrigerant circuit, replace the following parts:

- Air conditioning compressor
- Air conditioning condenser
- Desiccant insert
- Line to the air conditioning condenser
- Refrigerant oil



The new air conditioning compressor is filled at the factory with refrigerant oil.

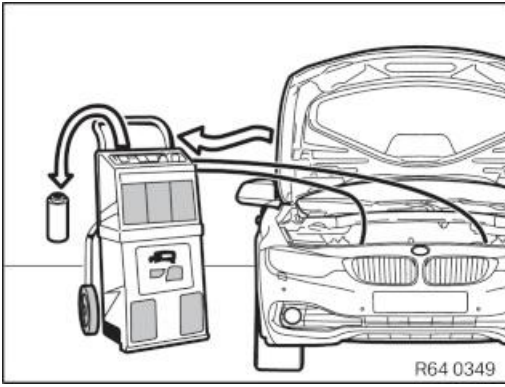
The amount of refrigerant oil in the new air conditioning compressor corresponds to the amount of refrigerant oil for the entire new and unfilled refrigerant circuit.



When replacing the air conditioning compressor it is absolutely essential to adapt the amount of refrigerant oil in accordance with the instructions below!

An adjustment of the amount of refrigerant oil is not required in the following case:

- Replacement of the complete refrigerant circuit.

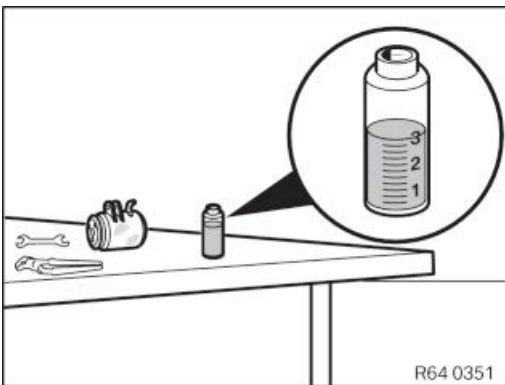


- [Draw off A/C system.](#)
- Note down the amount of refrigerant oil shown on the A/C service station display.

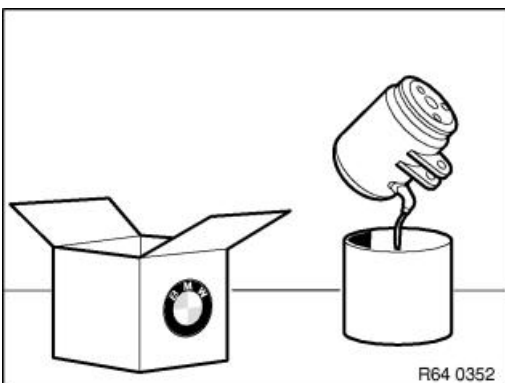
i When evacuating the air conditioning system, refrigerant oil is also extracted and collected in the oil separator of the A/C service station. This amount of refrigerant oil is displayed after the extraction of the air conditioning on the display of the A/C service station.



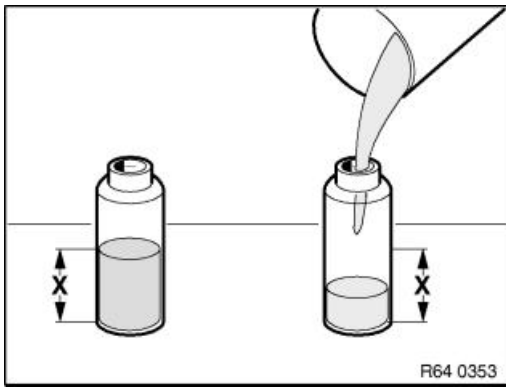
- Transfer all of the refrigerant oil remaining in the previous air conditioning compressor into a measuring cup via the oil filler plug.
- Turn the belt pulley during the filling process. This allows more refrigerant oil to flow out of the previous air conditioning compressor.



- Read the amount of refrigerant oil at the measuring cup.



- Open oil filler plug. Tightening torque [64 52 2AZ](#).
- Fill the entire contents of the new air conditioning compressor in a clean collecting vessel.



- Fill the same quantity of refrigerant oil (from the new air conditioning compressor), as was drained from the present air conditioning compressor, + **10 ml precautionary allowance** in a clean measuring cup and again fill it in the new air conditioning compressor . **At least but a total of 50 ml.**

Example:

20 ml read at measuring cup:

20 ml + 10 ml precautionary allowance = 30 ml < 50 ml

determined amount of refrigerant oil for new air conditioning compressor = 50 ml



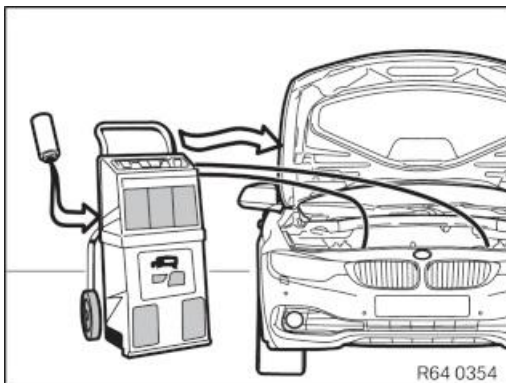
The drained new refrigerant oil can be filled into the expansion tank of the A/C service station after draining.



If the new, drained refrigerant oil is not filled straight away into the expansion tank of the A/C service station, it must be disposed of properly.



On account of its hygroscopic properties, refrigerant oil must not be stored in open collecting vessels.



- Reassemble the vehicle.
- [Evacuate Air conditioning.](#)
- Before filling the air conditioning with refrigerant, fill in the noted quantity of refrigerant oil previously drawn off, into the system.
- [Fill A/C system.](#)



Attention!

Risk of damage!

During initial operation of a new air conditioning compressor, it is absolutely essential to carry out the following breaking-in procedure.

Do not exceed idle speed.

Note:

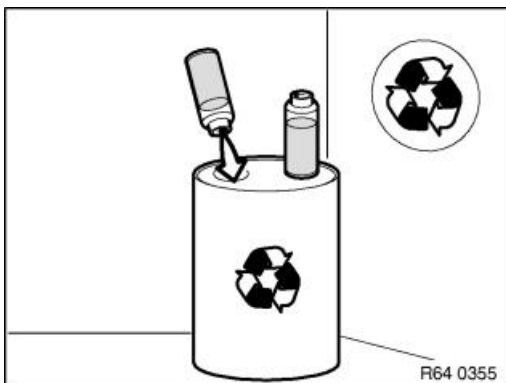
The breaking-in procedure for the new air conditioning compressor can be carried either manually or with the diagnosis system.

Manual:

- Switch off the air conditioning.
- Set all ventilation outlets in the instrument panel to "OPEN".
- Start engine and let it stabilise at idle speed.
- Set the blower output to a minimum of 75% of the maximum blower output.
- Switch on the air conditioning and allow the engine to run at idle speed for a minimum of 2 minutes.

Carry out the following service function with the diagnosis system:

- Body
- Heating and air conditioning functions
- Run-in protection for A/C compressor



- The refrigerant oil drawn off from the oil separator of the A/C service station and from the previous air conditioning compressor **must not be reused and must be correctly disposed of**.
- Observe country-specific waste disposal regulations.



Installation note:

If the refrigerant circuit is open for longer than 24 hours:

- [Replace desiccant insert](#)

**Attention!**

Specific to the country, 2 different refrigerants (R134a, R1234yf) are used.

Specific to the country, the vehicle and the year of manufacture 2 different refrigerant oils (ND-8, Sanden SP-A2) are used.

Before carrying out repairs on the refrigerant circuit, always determine which refrigerant/refrigerant oil is used in the vehicle!

Refrigerant: This information can be found on the **type plate** on the bonnet.

Refrigerant oil: This information can be found on the **type plate** on the front flap in vehicles with a production date from 2013.



R1234yf refrigerant is used in the following countries:

[Observe notes on handling R1234yf refrigerant!](#)

Europe				Asia	America
Belgium	Great Britain	Malta	Sweden	Israel	USA
Bosnia and Herzegovina	Ireland	Macedonia	Switzerland	Turkey	Canada
Bulgaria	Iceland	The Netherlands	Slovakia	India*	
Denmark	Italy	Norway	Slovenia	South Korea	
Germany	Croatia	Austria	Spain		
Estonia	Latvia	Poland	Czech Republic		
Finland	Liechtenstein	Portugal	Hungary		
France	Lithuania	Romania	Cyprus		
Greece	Luxembourg	Serbia			

*Only applies to vehicle models with Europe version. All other vehicle models have R134a.

Introduction of R1234yf refrigerant:

European countries listed in the table, Turkey and Israel:

- BMW i as of 09/2013
- from 07/2016, BMW, MINI, RR

USA and Canada:

- from 07/2016 BMW, BMW i, MINI

South Korea:

- from 11/2018 BMW, BMW i, MINI

The introduction date may vary slightly according to the specific country and model.

The refrigerant R134a will continue to be used in all other countries.

[Observe notes on handling R134a refrigerant!](#)



Refrigerant oil Sanden **SP-A2** is used for both, R1234yf and R134a.

[Observe notes on handling refrigerant oil!](#)



Attention!

[I01, I12 with production date up to 08/2014:](#)

In the national-market version with R134a a wrong refrigerant oil is present on the type plate

Always use Sanden SP-A2

(Part number of Sanden SP-A2: 2 339 920)

Attention!

Only vehicles with a production date from 09/2013 and **R1234yf** refrigerant/Sanden **SP-A2** refrigerant oil can be filled using the A/C service station for **R1234yf**.

In addition to vehicles with a production date from 09/2013, also all previous vehicles **without the electric A/C compressor** with **R134a** refrigerant and both **ND-8** and Sanden **SP-A2** refrigerant oil can be filled using the A/C service station for **R134a**.

Exception:

BMW i and hybrid vehicles (with an electric A/C compressor) that are filled with **R134a** refrigerant/Sanden **SP-A2** refrigerant oil. These vehicles must be [injected](#) with Sanden **SP-A2** refrigerant oil.

When filling the refrigerant circuit with R134a, always ensure you use the correct, vehicle-specific refrigerant oil type!

The previous ND-8 refrigerant oil must not be mixed with Sanden SP-A2 refrigerant oil!

In other words, the refrigerant oil ND-8 must not be filled in refrigerant circuits which were filled with Sanden SP-A2 in the factory.

Sanden SP-A2 refrigerant oil may be mixed with ND-8 refrigerant oil in vehicles without an electric A/C compressor.

In other words, the refrigerant oil Sanden SP-A2 must be filled in refrigerant circuits which were filled with ND-8 in the factory.

However, this is permitted **only** in vehicles **starting from F-series**.

[Note the overview of the refrigerant oil to be filled.](#)

To prevent inadmissibly mixing the different refrigerant oil types, rinse the A/C service station hoses after each drawing off/filling procedure!

**Warning!**

Danger of injury!

Refrigerant circuit is under high pressure! Work on the refrigerant circuit may only be carried out by experts!

Draw off refrigerant without fail **BEFORE** all repair work on the refrigerant circuit.

The refrigerant circuit is depressurised **AFTER** drawing off.

- The pressure gauge on the A/C service unit must be checked for the actual pressure drop prior to repair work.

It is absolutely essential to read and observe the relevant operating instructions for the A/C service unit used!

At high temperatures, R1234yf is inflammable!

**Protective measures/rules of conduct:**

- Wear safety goggles
- Wear oil-resistant protective gloves
- Do not smoke!
- Observe country-specific safety regulations.

**First aid measures:**

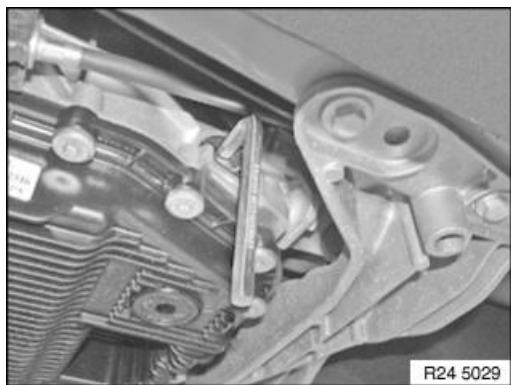
- Eye contact: In the event of contact with the eyes, rinse immediately with plenty of running water and consult an ophthalmologist.
- Skin contact: In the event of contact with skin, remove affected clothing immediately and rinse with plenty of water.
- After inhalation: If refrigerant vapours are inhaled in greater concentrations, remove the person affected to an area of fresh air and keep them under supervision. Call for a doctor. If breathing problems are experienced, breathe additional oxygen. If the person affected is breathing with difficulty or has stopped breathing, incline the person's head at the neck and administer the kiss of life.



Important!

Use only the approved [transmission oil](#).

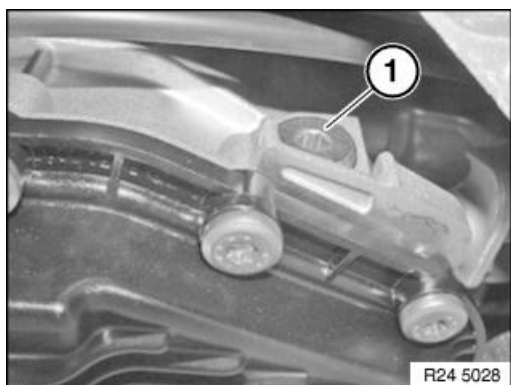
Failure to comply with this requirement will result in serious damage to the automatic transmission!



Installation note:

Tighten down oil filler plug using

1. Hexagon wrench AF 8
2. Torque wrench
3. Socket AF 8



Topping up transmission oil after a repair:

Stand vehicle on a level surface and secure against rolling off.

Undo oil filler plug (1).

Installation note:

Replace the sealing ring.

Top up automatic transmission fluid until it emerges from oil filler opening.

Start engine.

Top up automatic transmission fluid until it emerges from oil filler opening.

Screw in oil filler plug (1).

Tightening torque: [24 11 7AZ](#).

Press brake pedal to floor and shift through gears 1 to 6 several times at idle speed. Then shift to selector lever position "Park".

Then check oil level.



Note:

Start the engine before checking the oil level or opening the oil filler plug.

Checking oil level:

- Connect BMW Diagnosis and Information System (DIS) or BMW MoDiC to vehicle.
- Call up Service functions (drive).
- Carry out oil level check in accordance with instructions.



Special tools required:

- [2 405 614](#)



Important!

- Do not let skin come in contact with transmission oil and do not inhale fuel vapours.
- Wear protective gloves.
- Ensure adequate ventilation.



Important!

Use only the approved [transmission oil](#).

To set the correct level, it is **mandatory** that the service function "Transmission control unit: oil adjustment" is performed using the diagnosis system.

Failure to comply with this requirement will result in serious damage to the automatic transmission.

Conditions for oil level adjustment with BMW diagnosis system:

- Initial condition: Transmission oil temperature 30° to 40°C
- Final condition: Transmission oil temperature 40° to 50°C



Performing oil-level adjustment:

An oil-level adjustment is necessary for certain fault code entries in the automatic transmission and after repair (e. g. mechatronic replacement, converter replacement, transmission replacement).

- Connect diagnosis and information system.
- Open service function (powertrain)
- Carry out oil level check in accordance with instructions

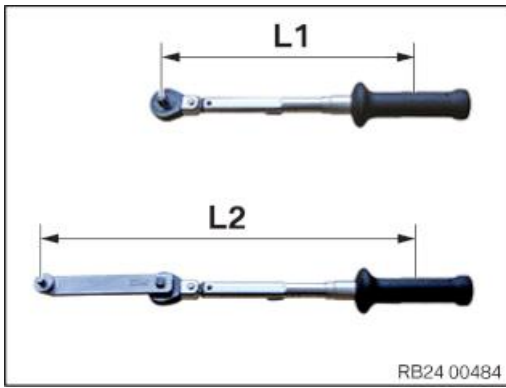


Adding transmission oil:

Stand vehicle on a level surface and secure against rolling off.

Release oil filler screw (1) by means of special tool [2 405 614](#).

Add automatic transmission fluid according to instructions in the BMW diagnosis system.



Important!

When using special tool [2 405 614](#), the setpoint torque deviates from the torque to be set.

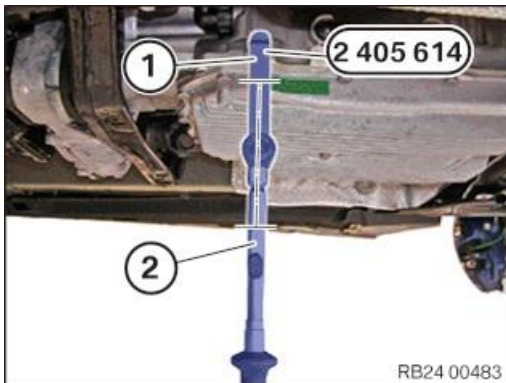
Conversion of setpoint torque -> torque to be set:

$(\text{setpoint torque} \times L1) : L2 = \text{torque to be set.}$

L1 = Length of handle centre to the ratchet head.

L2 = Length of the handle centre to the action point of special tool.

Desired tightening torque: [24 11 3AZ](#)



Parts: Replace oil filler plug and sealing ring.

Note: Special tool (1) and torque wrench must be aligned in a line at the time of tightening.

Tighten down oil filler plug using

1. Special tool [2 405 614](#).
2. Torque wrench

**Warning!**

[Danger of poisoning](#) if oil is ingested/absorbed through the skin!

[Risk of injury](#) if oil comes into contact with eyes and skin!

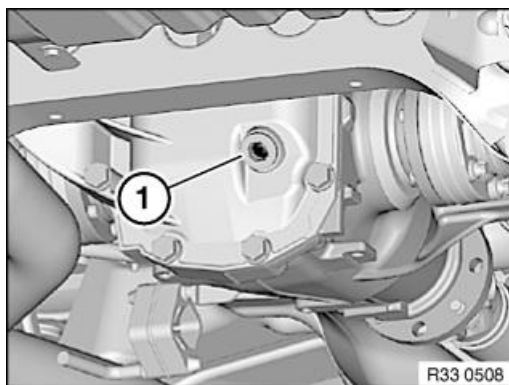
**Important!**

Risk of damage!

To avoid serious damage to the rear axle differential, it is essential to use only [approved transmission oils](#) in the rear axle differential.

Note:

The oil does not need to be changed in rear axle final drives carrying the "Life-Time-Oil" sticker.



Check/top up final drive oil.

Open plug (1).

Pour in final drive up to lower edge of opening for screw plug (1).

Replace screw plug (1).

Tightening torque [33 11 2AZ](#).

Note:

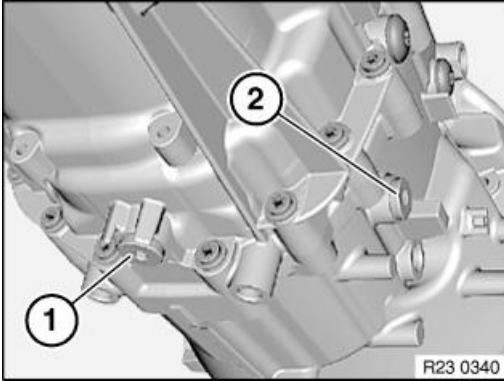
Transmission must be at operating temperature.

Transmission oil:

- refer to BMW Service [Operating Fluids](#).

Filling capacities:

- Refer to [Technical Data](#).



Draining transmission oil:

- Release oil drain plug (1) and filler plug (2).
- Clean oil drain plug (1) and screw in.

Tightening torque [23 00 4AZ](#).

Fill transmission with transmission oil.

- Pour in gear oil until overflowing.
- Screw in oil filler plug (2).

Tightening torque: [23 00 4AZ](#).

00 11 229 Oil change in manual transmission including used oil disposal

i

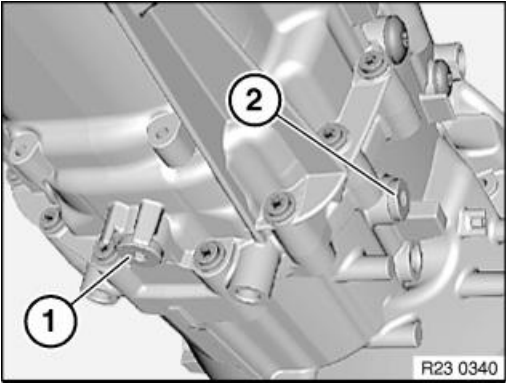
TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

1 – Draining transmission oil from the manual gearbox

Prerequisite

Transmission must be at operating temperature.



- Provide and position a collecting vessel.
- Open the oil filler plug (2).
- Loosen the oil drain plug (1) and collect the transmission oil.
- Clean the oil drain plug (1).
- Tighten oil drain plug (1).

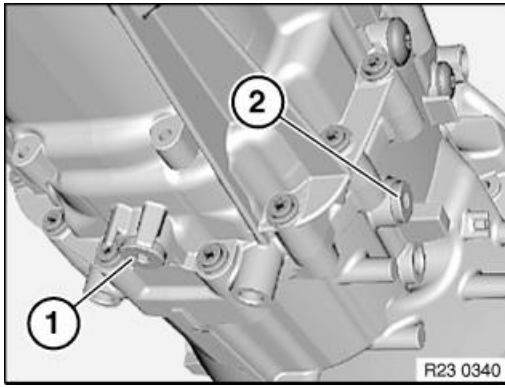
Oil drain plug/oil filler plug (GS6-17DG)

M12x1.5		Tightening torque	25 Nm
M18x1.5 steel screw without seal		Tightening torque	45 Nm

Oil drain plug/oil filler plug (GS6-37DG)

M12x1.5		Tightening torque	25 Nm
M18x1.5 hexagon socket		Tightening torque	35 Nm

2 – Filling/topping up transmission oil in the manual gearbox



TECHNICAL INFORMATION

Transmission oil: refer to BMW Service Operating Fluids
For more information see: Main group 23

- If necessary, loosen the oil filler plug (2).
- Check the oil drain plug (1) is positioned securely.
- Top up transmission oil until it escapes from the oil filler plug (2).
- Tighten the oil filler plug (2).

Oil drain plug/oil filler plug (GS6-17DG)

M12x1.5		Tightening torque	25 Nm
M18x1.5 steel screw without seal		Tightening torque	45 Nm

Oil drain plug/oil filler plug (GS6-37DG)

M12x1.5		Tightening torque	25 Nm
M18x1.5 hexagon socket		Tightening torque	35 Nm

Transmission filling capacities

Oil capacity	1,3 l
Oil capacity for refilling or exchange transmission	1,4 l

Transmission oil: Technically suitable manual gearbox oil

Additional Information

Overview of Tightening Torques

Oil drain plug/oil filler plug (GS6-17DG)

Used in step 1 2

M12x1.5		Tightening torque	25 Nm
M18x1.5 steel screw without seal		Tightening torque	45 Nm

Oil drain plug/oil filler plug (GS6-37DG)

Used in step 1 2

M12x1.5		Tightening torque	25 Nm
M18x1.5 hexagon socket		Tightening torque	35 Nm

Overview Technical Data

Transmission filling capacities

Used in step 2

Oil capacity	1,3 l
Oil capacity for refilling or exchange transmission	1,4 l

Transmission oil: Technically suitable manual gearbox oil

Links

Operating materials	Used in step
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