



**Caution!**

**If there is damage on the exhaust turbocharger:**

- **Complaint:**

Power loss, malfunction indicator lamp on

Damage to the exhaust turbocharger.

After damage to the exhaust turbochargers, the oil supply lines are often not replaced and the oil is not changed, this can lead to damage to the exhaust turbocharger again.

Further, fault code entries in the preheating system or to the charging pressure controller (variable turbine geometry) are not considered.

For N57X, additionally the following faults can be stored: 292200 Charging pressure controller (variable turbine geometry): Position sensor in charging pressure controller faulty or undervoltage 48F6 in charging pressure controller (variable turbine geometry)

Attention: Subsequent damage is not covered by the warranty!

- **Cause**

The oil supply lines for the exhaust turbocharger are clogged or blocked by oil sludge/coking. Due to that, oil supply to the exhaust turbocharger may be inadequate and can cause damage to the exhaust turbocharger again.

Malfunctions in the preheating system can lead to clogging of the diesel particulate filter and thus to problems with the charging pressure control or the charging pressure build-up. Consequence: Problems at cold start or the engine does not start due to a faulty preheating system. Power loss or overheating of the exhaust branch.

If the new exhaust turbocharger is not filled with enough oil prior to installation, the shaft bearings can be damaged at the first starting operation itself.

- **Solution**

**Proceed as follows in response to a customer complaint:**

If fault code entries are available for the preheating system, the preheating system must be repaired. Then delete the fault memory.

Caution!

If the engine does not heat up or only heats up very slowly because of a defective thermostat, this can result in premature or repeated damage to the exhaust turbocharger. **Always** check the coolant thermostat and thermostat for the EGR cooling if there is a complaint, and repair if applicable.

**Engine oil and filter exchange must be carried out on the engine absolutely, so as to guarantee operation of the changed exhaust turbocharger with fresh oil!**

Since the oil feed line as well as the oil return line may coke with increased mileage especially in the cable connection area of the exhaust turbocharger, the followings rules are applicable:

**Engines with one exhaust turbocharger:**

- Exhaust turbocharger exchange due to electrical fault on the exhaust turbocharger (vehicle mileage/km up to 100,000

km):

- Check the oil feed line, oil return line and the associated banjo bolts for coking, **replace if applicable**.
- If the oil return line is replaced, the connecting pipe on the crankcase must **always** be cleaned, as it is also subject to coking!
- If a replacement is not necessary: If the exhaust turbocharger is offered only along with the oil return line and oil feed line in the Electronic Parts Catalogue (EPC), it can be removed from the order list again.
- Exhaust turbocharger exchange due to electrical fault on the exhaust turbocharger (vehicle mileage/km starting at 100,000 km):
  - Replace the oil feed line, oil return line and the associated banjo bolts.
  - If the oil return line is replaced, the connecting pipe on the crankcase must **always** be cleaned, as it is also subject to coking!
- Exchanging the exhaust turbocharger if there is mechanical damage on the exhaust turbocharger:
  - Always replace the oil feed line, oil return line and the associated banjo bolts.
  - If the oil return line is replaced, the connecting pipe on the crankcase must **always** be cleaned, as it is also subject to coking!

#### **Engines with several exhaust turbochargers:**

- Exchanging one or several exhaust turbochargers due to electrical faults on the exhaust turbocharger (vehicle mileage/km up to 100,000 km):
  - Check the oil feed lines, oil return lines and the associated banjo bolts of **all** exhaust turbochargers (including the intact exhaust turbocharger) for coking, **replace if applicable**.
  - If all the oil return lines are replaced, all the connecting pipes on the crankcase must **always** be cleaned, as they are also subject to coking!
  - If a replacement is not necessary: If the exhaust turbocharger is offered only along with the oil return line and oil feed line in the Electronic Parts Catalogue (EPC), it can be removed from the order list again.
- Exchanging one or several exhaust turbochargers due to electrical faults on the exhaust turbocharger (vehicle mileage/km starting at 100,000 km):
  - Replace the oil feed lines, oil return lines and the associated banjo bolts of **all** exhaust turbochargers (including the intact exhaust turbocharger).
  - If all the oil return lines are replaced, all the connecting pipes on the crankcase must **always** be cleaned, as they are also subject to coking!
- Exchanging one or several exhaust turbochargers if there is mechanical damage on the exhaust turbocharger:
  - Always replace the oil feed lines, oil return lines and the associated banjo bolts of **all** exhaust turbochargers (including the intact exhaust turbocharger).
  - If all the oil return lines are replaced, all the connecting pipes on the crankcase must **always** be cleaned, as they are also subject to coking!

In case the diesel particulate filter is foul with oil, clean or replace it, if necessary.

In order to exclude that the oil supply to the exhaust turbocharger is

not impaired due to faulty crankcase ventilation, carry out a function check of the crankcase ventilation in this regard. The corresponding test module can be found in ISTA at:

- Power train
- Digital Diesel Electronics
- Engine ventilation
- Internal engine pressure

**When installing the exhaust turbocharger, the exhaust turbocharger itself needs to be filled to capacity with fresh engine oil through the oil intake hole before the oil feed line is mounted.** Important: Never use liquid sealing compounds when connecting the engine oil pipe as they can block the oil ducts.

After installing the exhaust turbocharger, start the engine and let it run at idle for 2 to 3 minutes before increasing the speed.

If required, initiate a regeneration of the diesel particulate filter

Important: For vehicles with N57x engines that have fault memory entries that are at the top, a successful diesel particulate filter regeneration must be carried out.

Then delete the fault memory.

cardiagn.com

## 11 65 045 Removing and installing / replacing low pressure exhaust turbocharger (large exhaust turbocharger) (N57 D30 T 1)



### Warning!

#### Risk of burning!

Only perform this repair work on an engine that has cooled down.



### Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.



### Note:

[Troubleshooting on exhaust turbocharger.](#)



### Attention!

#### For exhaust turbocharger damage:

[It is mandatory to follow the instructions.](#)

- Pressure pipes
- Charge air cooler
- Intake plenum

- check the above for foreign bodies, damage and correct operation, replacing if necessary.



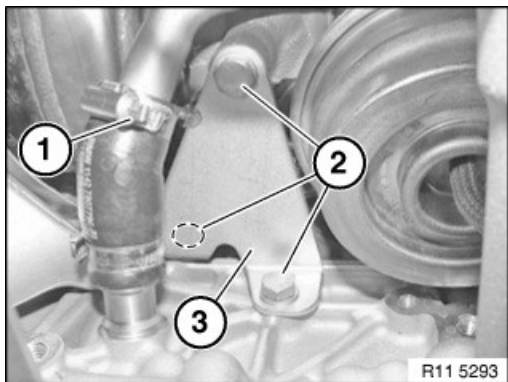
### Necessary preliminary tasks:

- Drain [coolant](#).
- Remove middle bulkhead [sound insulation](#).
- Remove [diesel particulate filter](#).
- Remove [high pressure exhaust turbocharger](#).
- Remove right [pressure pipe](#).



### Note:

Low pressure charger can only be removed together with exhaust manifold.



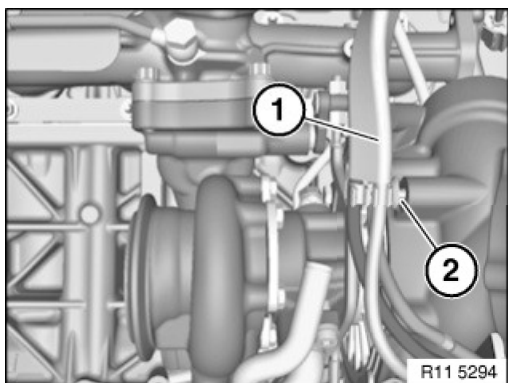
Release the clamp (1) on the oil return line.

Tightening torque [11 65 5AZ](#)

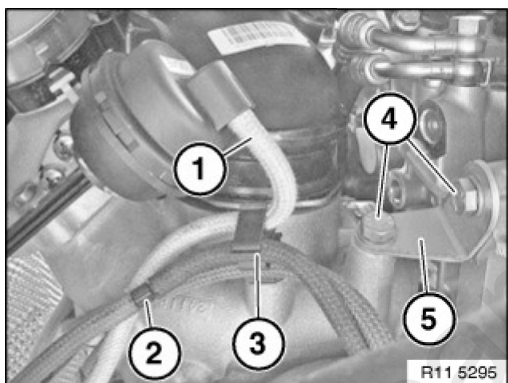
Unfasten screws (2).

Tightening torque [11 65 7AZ](#)

Remove bracket (3).



Release vacuum lines (1) of turbocharger at clamp (2).



Disconnect white vacuum line (1) from vacuum unit.

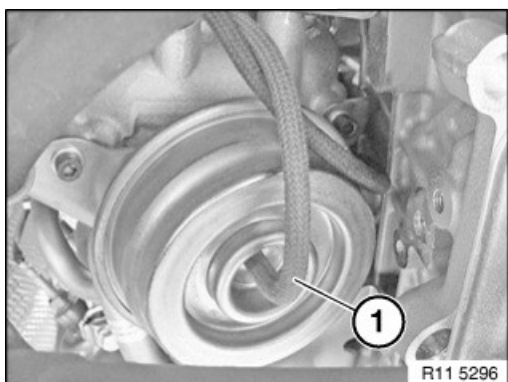
Disconnect red vacuum line at separation point (2) from black vacuum line.

Release vacuum lines from clamp (3).

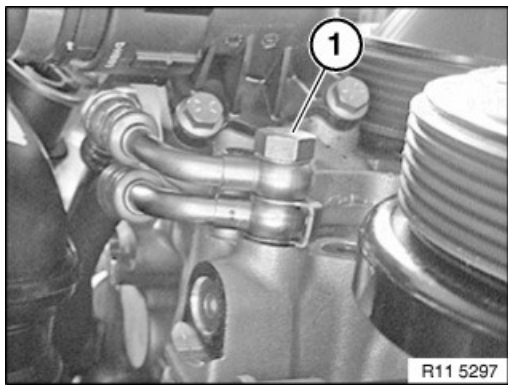
Release screws (4).

Tightening torque [11 65 7AZ](#)

Remove bracket (5).



Disconnect blue vacuum hose from vacuum unit (wastegate valve).



Release banjo bolt (1).

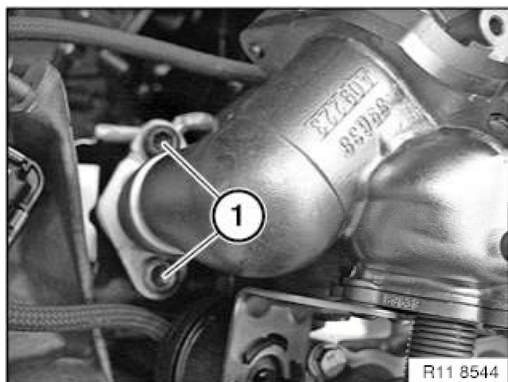
Tightening torque [11 42 2AZ](#)

*Note:*

Catch escaping engine oil with suitable auxiliary materials.

Renew sealing rings.

Disconnect oil lines from engine block.



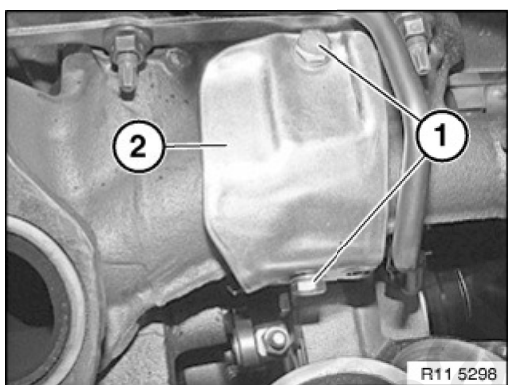
Loosen screws (1) on exhaust manifold.

Disconnect exhaust-gas recirculation pipe from exhaust manifold.

*Installation note:*

Grease screws with [assembly paste 4.2](#).

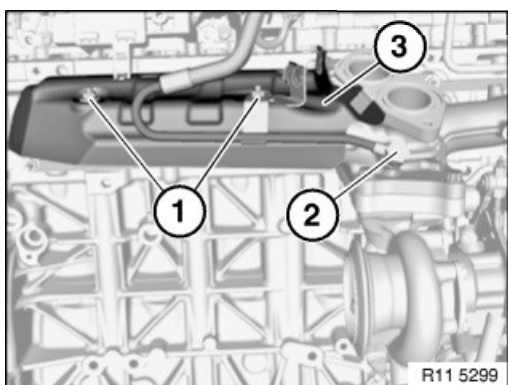
Tightening torque: [11 71 1AZ](#)



Release screws (1).

Tightening torque [18 31 7AZ](#)

Remove heat shield (2).



Unscrew nuts (1).

Tightening torque [18 31 7AZ](#)

Unfasten banjo bolt (2).

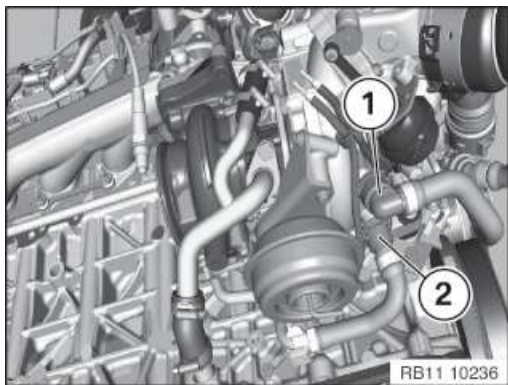
Tightening torque [18 31 6AZ](#)

Renew sealing rings.

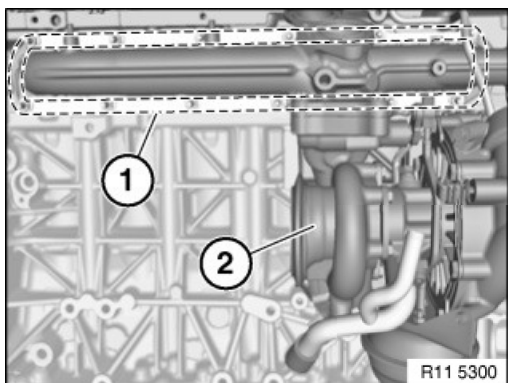
To ensure operational reliability, use stainless steel sealing washers.

Remove exhaust backpressure pipe from exhaust manifold.

Remove heat shield (3).



Unlock and pull off the coolant line (1 and 2) from the low pressure turbocharger.



Release all nuts along dashed line (1).

Tightening torque [18 31 3AZ](#)

*Installation note:*

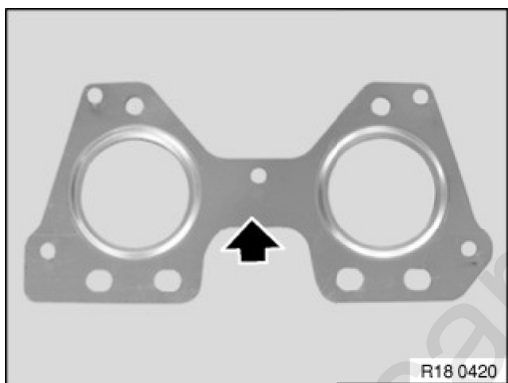
Replace self-locking nuts.

Clean sealing surfaces of exhaust manifold.

Renew gaskets.

Reinstall reinforcement plates.

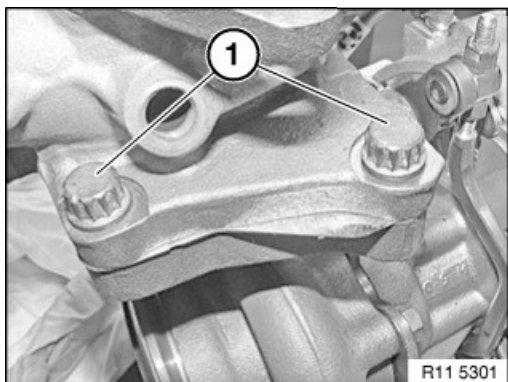
Release exhaust manifold (1) from engine block together with the exhaust turbocharger (2). Feed out and remove exhaust manifold (1) with exhaust turbocharger (2) toward the top.



### Attention!

Manifold gaskets are graphite-coated on one side!

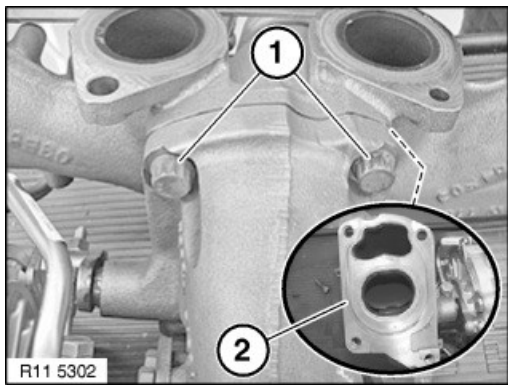
The graphite coating must be fitted on the manifold side.



**Only when exhaust turbocharger is in use:**

Release screw (1) from exhaust turbocharger.

Tightening torque [11 65 2AZ](#)

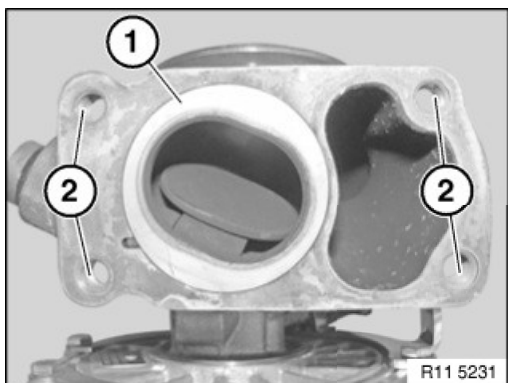


Release screws (1) beneath exhaust manifold.

Tightening torque [11 65 2AZ](#)

Release exhaust turbocharger from exhaust manifold.

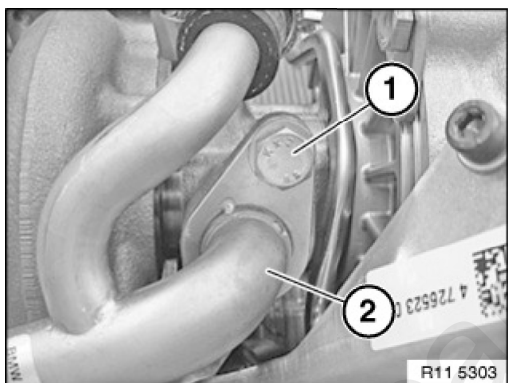
Replace gasket (2) between turbocharger and exhaust manifold.



### Attention!

Spacer ring (1) must be fitted without fail.

Clean threads (2) with thread cutter.

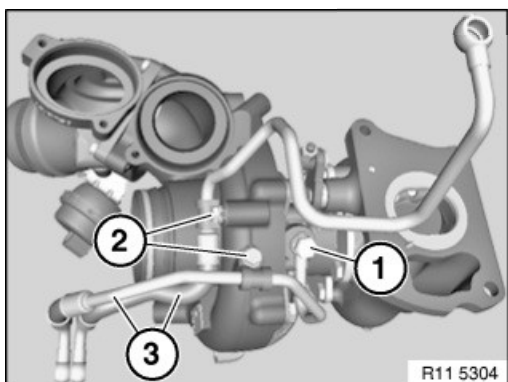


Release screw (1).

Tightening torque [11 42 8AZ](#)

Renew gasket.

Disconnect the oil return line from the exhaust turbocharger and remount it on the new exhaust turbocharger.



Release banjo bolt (1).

Tightening torque [11 42 6AZ](#)

Renew sealing rings.

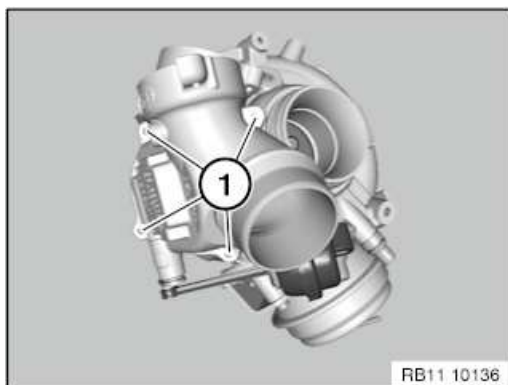
Unfasten screws (2).

Tightening torque [11 42 9AZ](#)

Detach the oil lines (3) from the exhaust turbocharger and remount them on the new exhaust turbocharger.

### Installation note:

Make sure oil lines are in correct installation positions.



Release screw (1).

Tightening torque [11 65 3AZ](#)

Remove bypass from low-pressure turbocharger.



Assemble engine.

**Observe bleeding instructions without fail.**

[Fill and bleed cooling system.](#)

Visual inspection of cooling system for tightness.

cardiagn.com

## 11 65 721 Removing and installing / replacing vacuum control unit for turbine control flap (N57 D30 T0)



### Warning!

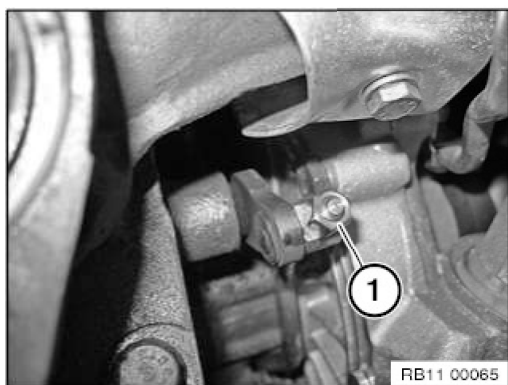
#### Risk of burning!

Only perform this repair work on an engine that has cooled down.

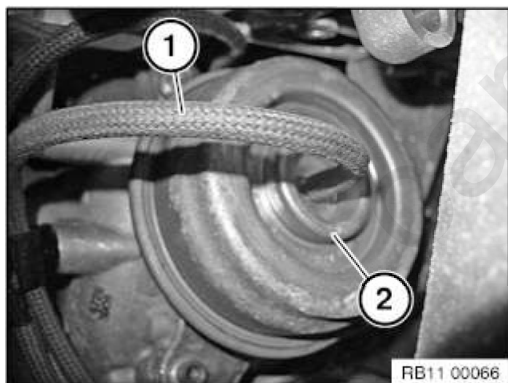


### Necessary preliminary tasks:

- Refer to [functional description](#)
- Perform functional check of turbine control flap, refer to Test module, turbine control flap.
- Remove [high pressure exhaust turbocharger](#).



Slacken nut (1).

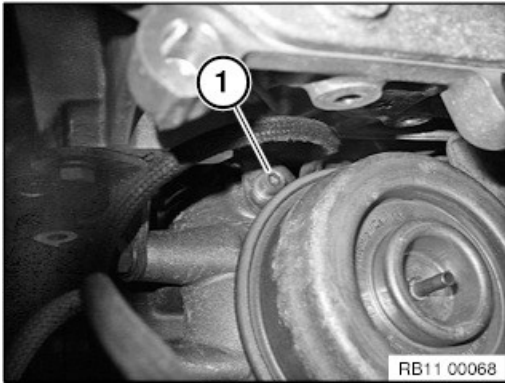


Release blue vacuum line (1) from vacuum unit (2).



Release screws (1).

Tightening torque: [11 00 2AZ](#).



**Important!**

**Risk of damage!** At screw connection with exhaust turbocharger.

When fixing screw (1) on exhaust turbocharger, ensure that screw (1) is correctly mounted.

Release screw (1).

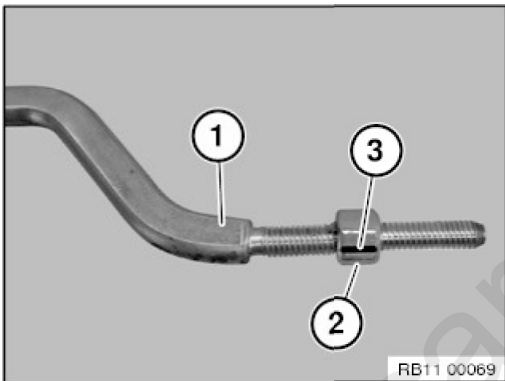
Tightening torque: [11 00 2AZ](#).



Position [engine in installation position](#).

Dimension (A) approx. 25 mm

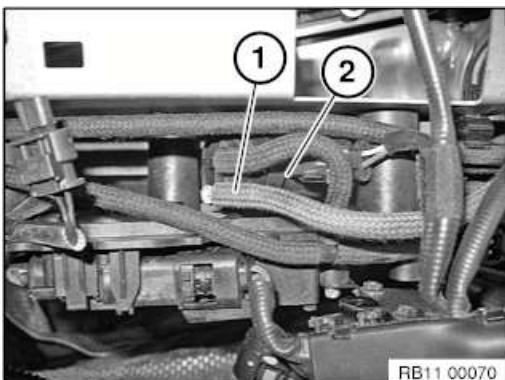
Remove vacuum unit with linkage.



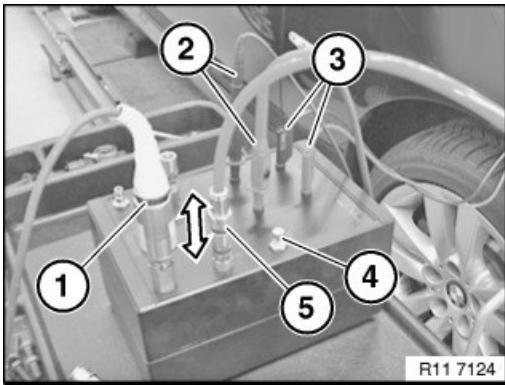
Use setting dimension of adjusting nut (2) of installed vacuum unit.

Mark adjusting nut (2) with a coloured mark (3).

Install vacuum unit and connect vacuum line.



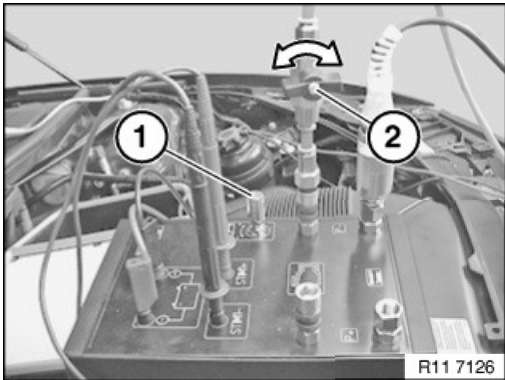
Release blue vacuum line (1) from pressure converter (2).



### Vacuum pressure measurement:

Prepare diagnosis tester on vacuum diagnosis unit.

1. Screw in pressure sensor 25 bar.
2. Connect 12V battery cables (3) to vehicle battery positive and negative.
3. Connect Stimuli (2) connection to plus and minus (vacuum pump running).
4. Controller for vacuum connection.
5. Vacuum connection (Red).



### Calibration for vacuum pressure measurement:

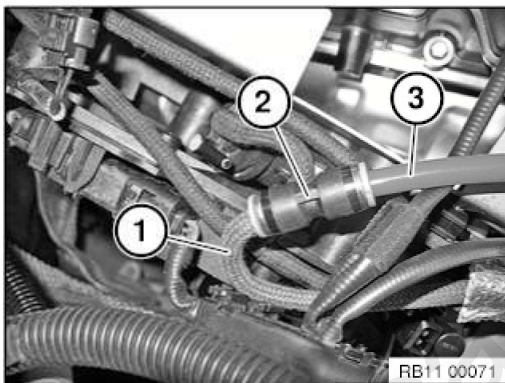
Seal stop cock (2) in direction of arrow.

Release lock nut on controller (1).

Carry out vacuum setting [500 mbar](#) according to BMW diagnosis instructions (IMIB).

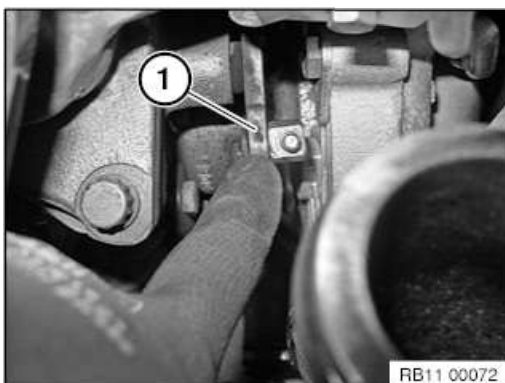
Secure controller (1) hand-tight against turning.

Open stop cock (2) again.



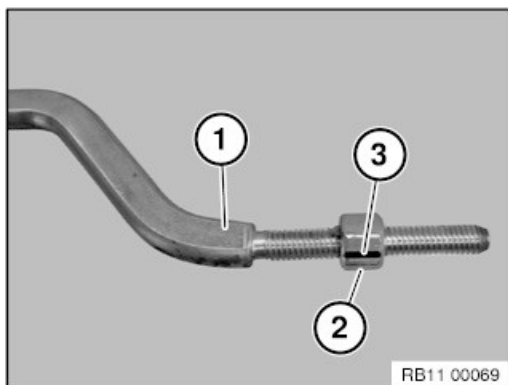
Connect blue vacuum line (1) with connecting element (2) and the vacuum line (3).

The linkage on the vacuum control unit is now tightened.

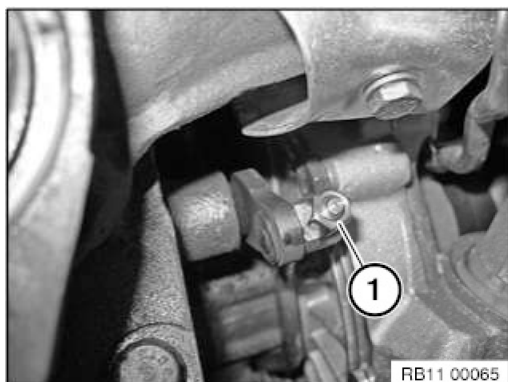


Folding lever (1) must be pressed to the closed position by hand. *Installation note:*

Ensure that the turbine control flap is closed.



Move adjusting nut (2) on linkage (1) to the point where it is in contact with adjustment lever. *Installation note:*  
To ensure that enough adjustment travel is available, adjusting nut (2) **must** be loosened.  
Turn adjusting nut (2) by **three rotations** toward vacuum unit, note colour coding (3).



Attach lock nut (1) to linkage.  
Tightening torque: [11 00 2AZ](#).



Assemble engine.  
Functional check of turbine control flap, refer to Test module, turbine control flap.  
Check function of DDE.

## 11 65 040 Removing and installing/replacing high-pressure exhaust turbocharger (small exhaust turbocharger) (N57D30T1)



### Warning!

#### Risk of burning!

Only perform this repair work on an engine that has cooled down.



### Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.



### Note:

[Troubleshooting on exhaust turbocharger.](#)



### Attention!

#### For exhaust turbocharger damage:

[Always follow the notes.](#)

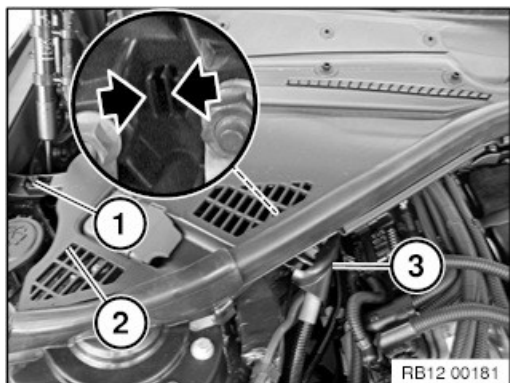
- Pressure pipes
- Charge air cooler
- Intake plenum

- check the above for foreign bodies, damage and correct operation, replacing if necessary.



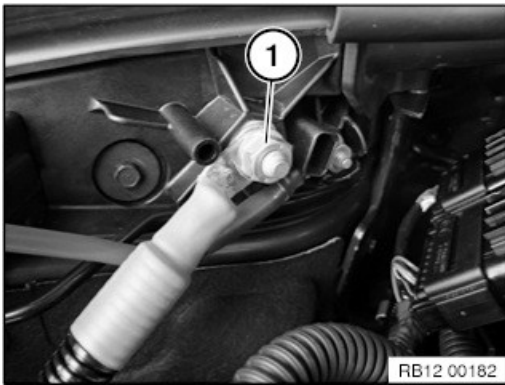
### Necessary preliminary tasks:

- [Disconnect battery.](#)
- Remove [acoustic cover](#) at rear.
- Remove [intake silencer housing](#).
- Remove [clean air pipe](#).
- Remove front [underbody protection](#).



Unlock lock (1) and slightly raise service cover (2) until lock of cover (3) is accessible.

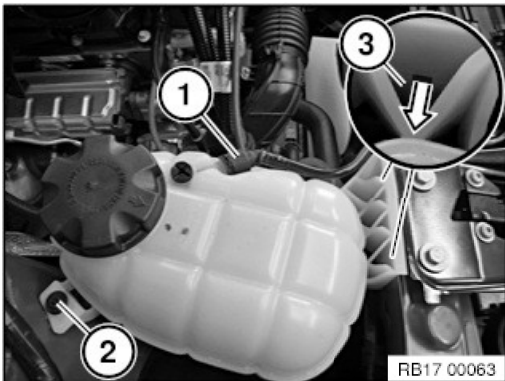
Unlock lock and remove cover (3).



Slacken nut (1).

Tightening torque [12 52 4AZ](#)

Remove positive battery cable from positive battery connection point.



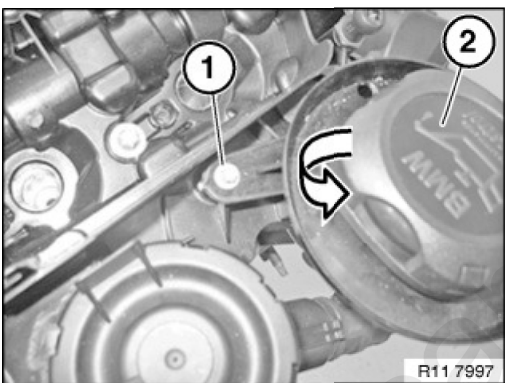
Release expansion tank but do not remove it.

Release screw (2).

Tightening torque [17 10 5AZ](#)

Unlock locks (3) in the direction of the arrow.

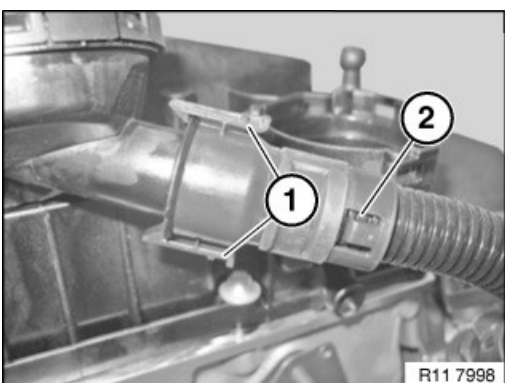
Lay expansion tank to one side.



Release screw (1).

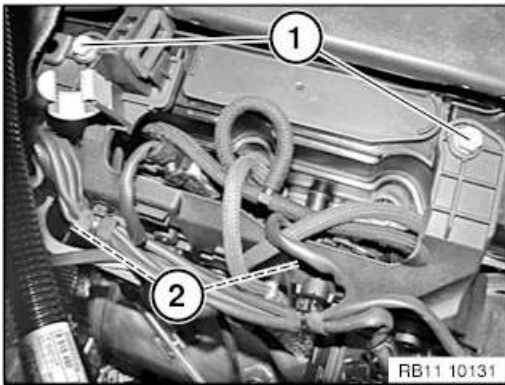
Turn oil filler neck (2) in the direction of the arrow to stop.

Remove oil filler neck (2) towards top.

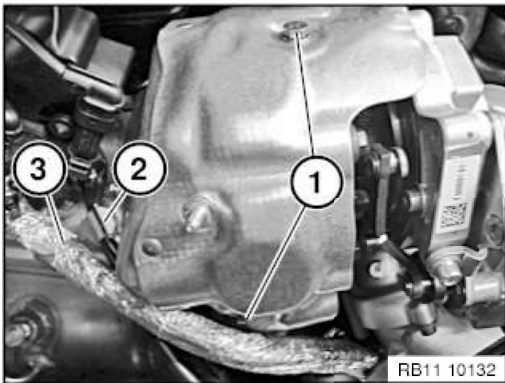


Press locking hooks (1) down.

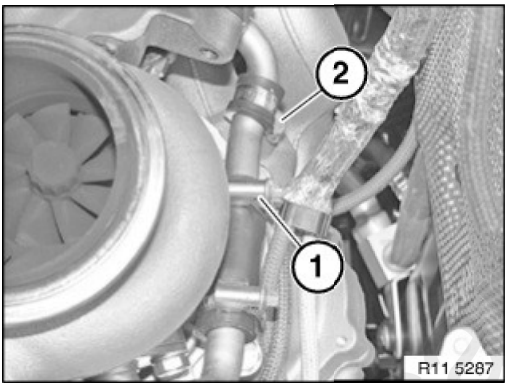
Remove hose (2) for engine ventilation.



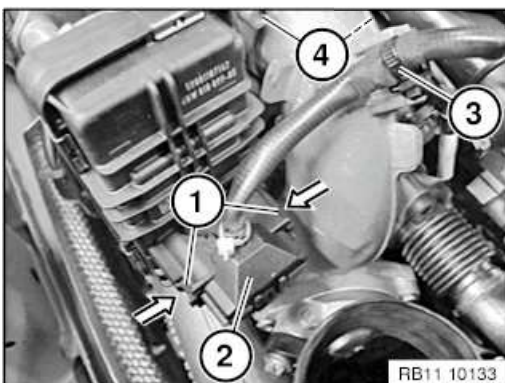
Release screws (1) on top of carrier plate.  
Release screws (2, Torx) on bottom of carrier plate.  
If necessary, detach cable from clamps.  
Lay carrier plate to one side.



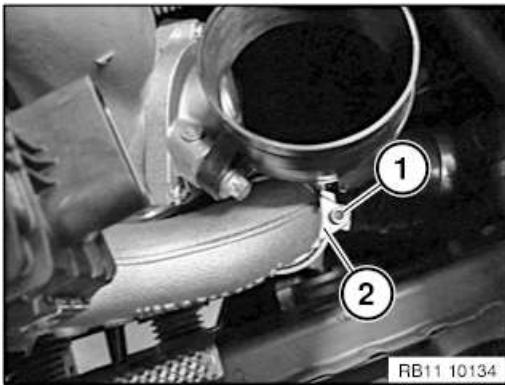
Release screws (1) on top and bottom of heat shield.  
Tightening torque [11 65 4AZ](#)  
Release cable (2,3) from holder.  
Feed out heat shield towards rear and remove by pulling upwards.



Release hose clamp (1) on the oil return line.  
Tightening torque [11 65 5AZ](#)  
Release screw (2).  
Tightening torque [11 65 6AZ](#)  
Release oil return line from exhaust turbocharger.



Press locks (1) together in direction of arrow.  
Disconnect plug (2) from exhaust turbocharger.  
Detach cable clip (3) from connecting pipe.  
Release screws (4) on connecting pipe.  
Remove mounting plate.  
Tightening torque [11 65 8AZ](#)  
*Installation note:*  
Check sealing rings for damage. Replace damaged sealing rings.



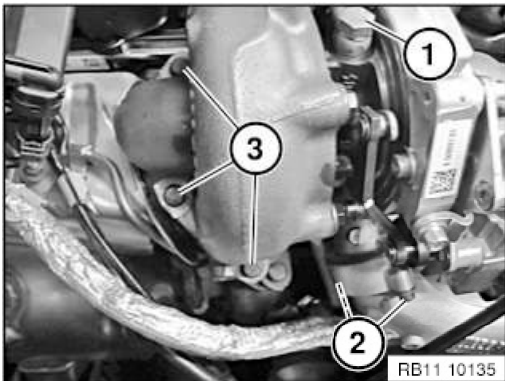
Release screw (1) on bottom of connecting pipe to low-pressure exhaust turbocharger.

Tightening torque [11 65 9AZ](#).

Remove mounting plate (2).

*Installation note:*

Check sealing rings for damage. Replace damaged sealing rings.



Release banjo bolt (1).

Tightening torque [11 42 6AZ](#)

Lay engine oil pipe to one side, do **not** bend engine oil pipe!

Catch any leaking oil with appropriate means and dispose.

Renew sealing rings.

Release screws (2) on top of connecting pipe.

Tightening torque [11 65 9AZ](#)

Remove mounting plate.

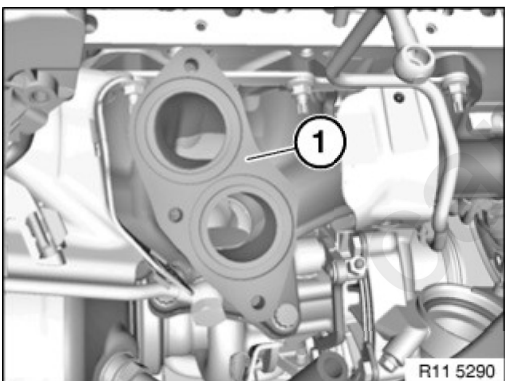
*Installation note:*

Check sealing rings for damage. Replace damaged sealing rings.

Loosen screws (3).

Tightening torque [11 65 1AZ](#).

Pull exhaust turbocharger up and remove.

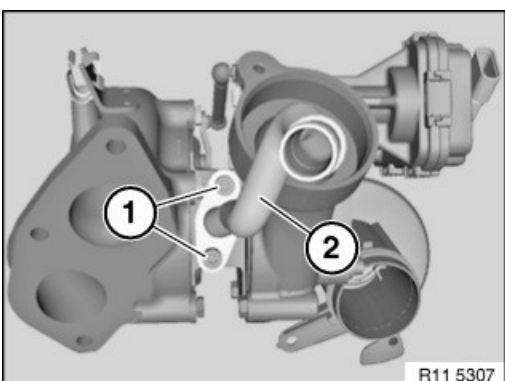


*Installation note:*

Clean sealing surfaces (1) and replace seals.

Apply a thin coating of copper paste to bolt thread.

To avoid damaging the threads and prevent exhaust turbocharger leaks, insert mounting bolts in 1/2 turns simultaneously.



**only if exhaust turbocharger is applied:**

Release screws (1).

Tightening torque [11 42 7AZ](#)

Detach oil return line (2) from exhaust turbocharger and remount on new exhaust turbocharger.

Renew gasket.



Assemble engine.

cardiagn.com

## 11 42 230 Removing and installing/replacing oil feed line for high-pressure exhaust turbocharger (N57T1)



### Warning!

#### Risk of burning!

Only perform this repair work on an engine that has cooled down.



### Recycling:

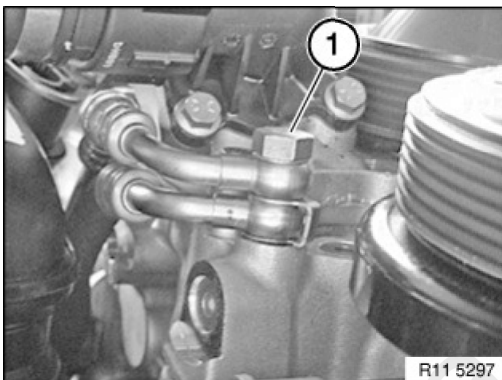
Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.



### Necessary preliminary tasks:

- Remove [diesel particulate filter](#).
- Remove [high-pressure exhaust turbocharger](#).
- Remove right [pressure pipe](#).
- Remove [electronics box](#).



Release banjo bolt (1).

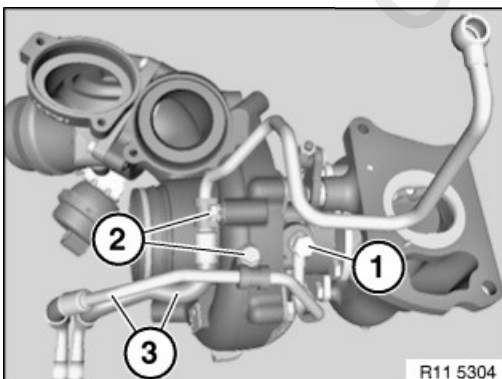
Tightening torque [11 42 2AZ](#).

#### Note:

Catch escaping engine oil with suitable auxiliary materials.

Replace sealing rings.

Disconnect engine oil pipes from engine block.



Release screws (2) at oil feed line (3) of high-pressure exhaust turbocharger.

Tightening torque [11 42 9AZ](#).

#### Installation note:

Make sure engine oil pipe is in correct installation position.

Graphic shows removed low-pressure exhaust turbocharger.



Assemble engine.

## 11 42 235 Removing and installing/replacing oil feed line of low-pressure exhaust turbocharger (N57T1)



### Warning!

#### Risk of burning!

Only perform this repair work on an engine that has cooled down.



### Recycling:

Catch escaping engine oil with suitable auxiliary materials.

Observe country-specific waste disposal regulations.



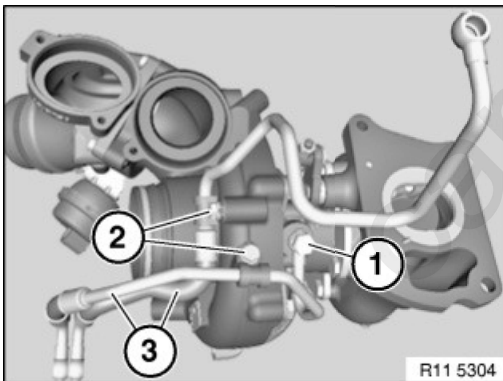
### Necessary preliminary tasks:

- Remove [diesel particulate filter](#).
- Remove [high pressure exhaust turbocharger](#).
- Remove right [pressure pipe](#).
- Remove [electronics box](#).



### Note:

[Low pressure charger](#) can only be removed together with exhaust manifold.



Release banjo bolt (1).

Tightening torque [11 42 6AZ](#).

Replace sealing rings.

Unfasten screws (2).

Tightening torque [11 42 9AZ](#).

Detach engine oil pipe (3) from exhaust turbocharger and remount on new exhaust turbocharger.

### Installation note:

Make sure engine oil pipe is in correct installation position.



Assemble engine.

**Attention!**

The following components must always be checked for foreign bodies, damage and function before installing the new turbocharger.

- Pressure pipe and hoses
- Charge air cooler
- Intake plenum
- If the oil return line is exchanged, then the connecting pipe to the oil sump must ALWAYS be cleaned, as this can even coke!

cardiagn.com



**Important!**

Before beginning work, fully press the brake pedal several times to reduce the vacuum pressure in the brake servo. This makes it easier to remove the vacuum hose.

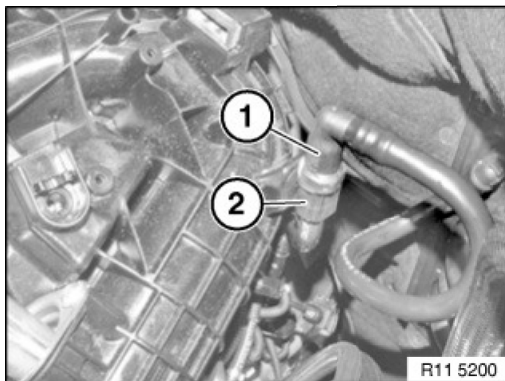


**Necessary preliminary tasks:**

- Read and comply with [General Information](#).
- Remove [acoustic cover](#) at rear.

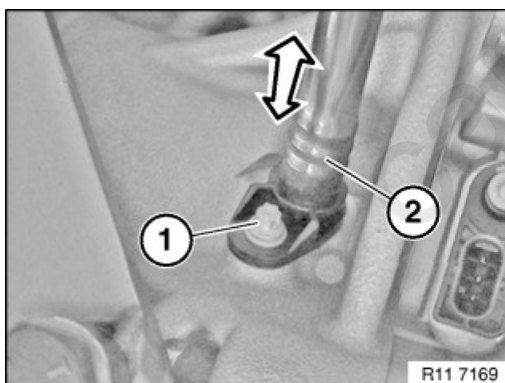
**Important!**

Do not kink vacuum line.



Unlock vacuum line (1).

Release clip (2).

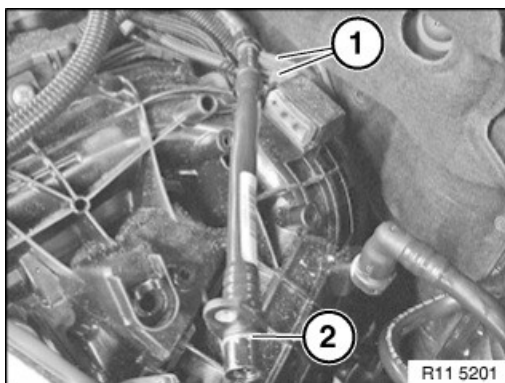


Release screw (1).

*Installation note:*

Tightening torque [11 00 1AZ](#).

Detach vacuum line (2) in upward direction.



Disconnect vacuum lines (1). *Installation note:*

Replace sealing ring (2).