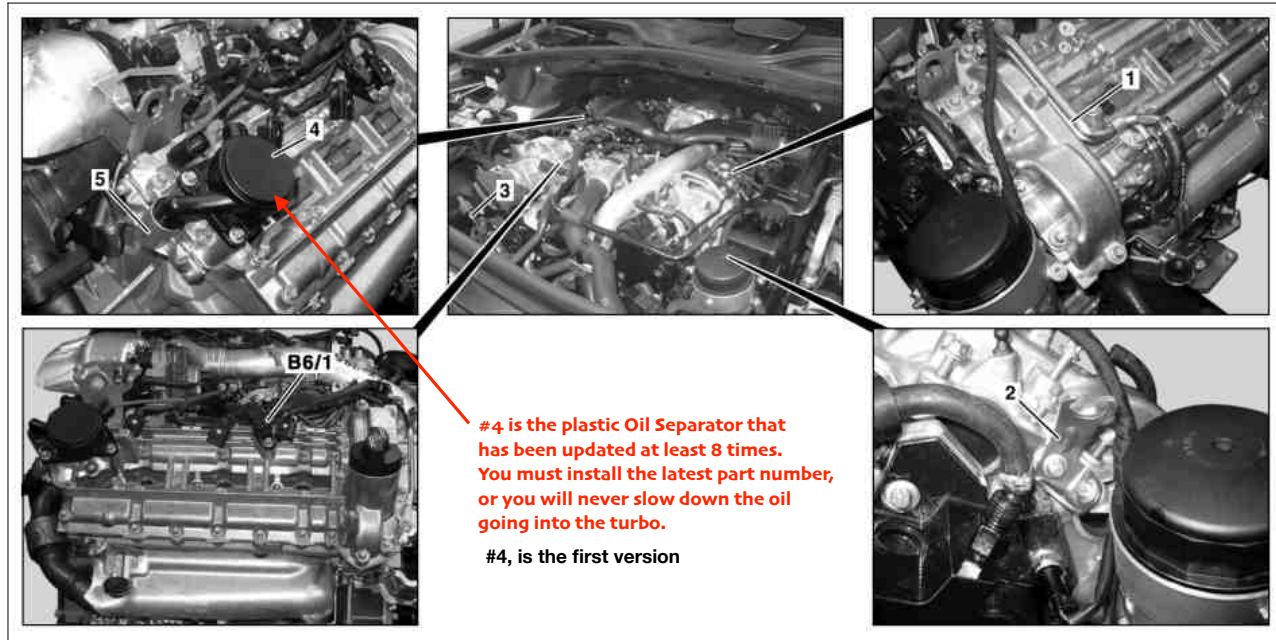


**ENGINES OM642 in all BlueTec diesel models** *The Oil Separator should be one of the first things you replace. This lets to much oil enter the Turbo & clog the Intake system. Up until 2016, they are all bad.*



**#4 is the plastic Oil Separator that has been updated at least 8 times. You must install the latest part number, or you will never slow down the oil going into the turbo.**  
**#4, is the first version**

P01.20-2163-09

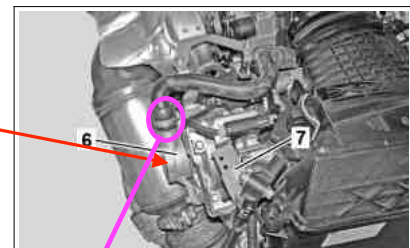
- |             |                           |                                        |
|-------------|---------------------------|----------------------------------------|
| 1 Fuel pipe | 3 Oil dipstick guide tube | 5 Connection fitting for oil separator |
| 2 Bracket   | 4 Oil separator           | B6/1 Camshaft Hall sensor              |

**Shown on engine 642.872**

- |                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| 6 Vent valve                                 | #6 is the second version metal Oil Separator |
| 7 Pressure differential sensor bracket (DPF) |                                              |

*The second version metal Oil Separator was phased in to production around 2015. There were 2 versions of the metal oil separator. The Oil Separator should be the first thing you replace. Give your VIN number to your dealer & they can look up the latest one for your engine. The metal oil separator is not interchangeable with the plastic version. This is a good time to consider a Catch Tank. It will prevent any oil from entering the Turbo & intake system.*

*This is also a good way to find out if your dealer actually knows about BlueTec diesels. Ask the parts man how many Oil Separators they have sold. If they haven't sold very many, they don't know what they are doing.*



*This is where you would attach the hose going to the Catch Tank. Disconnect the existing hose. You will plug the existing hose with a 14mm wooden dowel & clamp the hose to the dowel. There were two versions of the Oil Separator. This is the later metal version. You'll mount the Catch tank someplace on the passenger side fender or the fire wall. If you ever want to put everything back to the way it was, just remove the wooden plug from the hose and reattach it to the Oil Separator.*

	Remove/install		
	<b>Danger!</b>	<b>Risk of explosion</b> caused by fuel igniting, <b>risk of poisoning</b> caused by inhaling and swallowing fuel and <b>risk of injury</b> to eyes and skin caused by contact with fuel	No fire, sparks, open flames or smoking. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing when handling fuel.
	<b>Danger!</b>	<b>Risk of explosion</b> from fuel igniting. <b>Risk of injury</b> to skin and eyes caused by fuel spraying out at high pressure	Keep all ignition sources out of hazard area. Do not carry out any work on systems when they are under pressure
		Notes on self-locking nuts and bolts	
	<b>Danger!</b>	<b>Risk of injury</b> caused by <b>fingers being pinched or crushed</b> when removing, installing or aligning hoods, doors, trunk lids, liftgates or sliding roof	Keep body parts and limbs well clear of moving parts.
1.1	Removes strut tower brace	Model 164.8 only Remove strut tower brace from strut tower mounts.	AR62.30-P-2500GY
1.2	Remove partition wall between wheel wells	Model 251 only	AR62.30-P-2400RT
2	Remove engine air intake duct downstream of air filter		AR09.10-P-8130GZB
3	Remove engine charge air duct on turbocharger	<b>Check for a melted hole on the bottom of the air duct.</b>	AR09.41-P-8622GZB
4	Remove exhaust gas recirculation positioner	When removing left cylinder head cover	AR14.20-P-1020GZB
5	Remove injectors		AR07.16-P-1000GZB
6	Remove rail		AR07.03-P-1010GZB

**Mercedes originally said the metal oil separator only came on the 13 quart oil pan engines. Several owners have found the metal oil separator on their 8.5 quart oil pans. The metal oil separator is the better part.**

7	Remove power steering expansion reservoir	On left cylinder head cover.	
8	Detach fuel line (1)	On left cylinder head cover. The fuel line (1) must be removed with the flexible feed and return hose so that expansion reservoir for the power steering can be placed to one side.	
9	Unscrew bracket (2) for vacuum line	On left cylinder head cover.  	*BA01.20-P-1003-01P *BA01.20-P-1004-01P
10	Loosen cylinder head cover bolt in stages and remove  <b>Mercedes designed the OM642 with only one oil separator. To properly vent the crankcase vapors, a V6 engine needs a oil separator on both cylinder heads. This is why Mercedes has redesigned this one oil separator 14 times. A Catch Tank compensates for the poor design. You still need to install the latest oil separator for your engine.</b>	On left cylinder head cover. Slacken cylinder head bolts in the reverse sequence of the tightening procedure when the engine has cooled down so that the cylinder head cover is not warped. ↓ Bolt tightening procedure for cylinder head cover <b>Installation:</b> Pay attention to the tightening procedure and the tightening instructions for the cylinder head bolts so that the cylinder head cover is not warped and the camshafts are not damaged. ↓ Bolt tightening procedure for cylinder head cover Bolt connecting cylinder head cover to cylinder head	AR01.20-P-5014-03TI  AR01.20-P-5014-03TI *BA01.20-P-1001-01P
11	Remove left cylinder head cover  Notes on sealant path for cylinder head cover	Detach left cylinder head cover with impact extractor and threaded stud, then remove.  Threaded stud Impact extractor Loctite 5970 sealant	AH01.30-P-1000-08PI  *102589003400 *116589203300 *BR00.45-Z-1013-01A
12	Remove vacuum pump	On right cylinder head cover.	AR43.05-P-1320GZ
13	Remove oil separator (4) from right cylinder head cover	Vehicles up to model year 2009:  	*BA01.20-P-1005-01P
14	<b>Remove oil separator connection fittings (5) from right cylinder head cover</b>	Vehicles up to model year 2009:  <b>Installation:</b> Replace O-ring and radial shaft sealing ring.	
15	Remove pressure differential sensor bracket (DPF) (7) from right cylinder head cover	Vehicles as of model year 2009  	*BA07.04-P-1010-01G
16	Remove vent valve (6)	<b>Vehicles as of model year 2009</b>  <b>Installation:</b> Replace O-ring and radial shaft sealing ring.	
17	Detach electrical connector from camshaft Hall sensor (B6/1)	On right cylinder head cover.	
18	Loosen cylinder head cover bolt in stages and remove	On right cylinder head cover.  Loosen cylinder head cover bolts in reverse order of the tightening procedure on a cooled off engine so that the cylinder head cover does not shift, see: ↓ Bolt tightening procedure for cylinder head cover <b>Installation:</b> Observe tightening procedure and tightening instructions for cylinder head cover bolts so that the cylinder head cover does not shift and leads to damage to the camshaft, see: ↓ Bolt tightening procedure for cylinder head cover Bolt connecting cylinder head cover to cylinder head	AR01.20-P-5014-03TI  AR01.20-P-5014-03TI *BA01.20-P-1001-01P
19	Remove right cylinder head cover  Notes on sealant path for cylinder head cover	Detach cylinder head cover using impact extractor and threaded studs, then remove.	AH01.30-P-1000-08PI

		Threaded stud Impact extractor Loctite 5970 sealant	*102589003400 *116589203300 *BR00.45-Z-1013-01A
	<b>Clean</b>		
20	Clean sealing surface on cylinder head covers and cylinder heads	Do not use any sharp-edged tools or abrasive paper as this will damage the sealing surfaces. Loctite 7200 Loctite 7063 cleaning spray (150 ml)	AR01.00-P-0050-01A *BR00.45-Z-1038-04A *BR00.45-Z-1046-04A
21	Install in the reverse order		
	<b>Checking</b>		
22	Check engine oil level	In order to avoid measurement errors, vehicle must be parked on an even surface. Inspect engine oil level about 5 min. after switching off warm engine Without particulate filter With code 474 Particulate filter	AR18.00-P-3035-01PI *BF18.00-P-1001-01A *BF18.00-P-1001-01S
<b>Danger!</b>	<b>Risk of accident</b> caused by vehicle starting off by itself when engine is running. <b>Risk of injury</b> caused by contusions and burns during starting procedure or when working near the engine as it is running Check for oil leaks with engine running	Secure vehicle to prevent it from moving by itself. Wear closed and snug-fitting work clothes. Do not touch hot or rotating parts.	AS00.00-Z-0005-01A
23			
24	Check fuel system for leaks with engine running		

#### Crankcase ventilation, cylinder head cover

Number	Designation	Engine 642		
	Make sure the air filters are new. These diesel air filters get dirty very fast. Replace every 20000 miles.			
BA01.20-P-1001-01P	Bolt, cylinder head cover to cylinder head	Stage 1, apply	Nm	4
		Stage 2, initial torque	Nm	6
		Stage 3, final torque	Nm	9
BA01.20-P-1003-01P	Bolt, bracket to cylinder head	M6×12	Nm	9
BA01.20-P-1004-01P	Bolt, bracket to cylinder head cover	M6×12	Nm	9
BA01.20-P-1005-01P	Bolt, bracket to cylinder head cover	M6×12	Nm	9
<p>The wrong oil from Mobil One ESP is a big reason so much oil is sucked out of the Oil Separator. But the Oil Separator itself is a problem. You can't ignore either. A new Catch Tank is the final step. If your engine burns oil, that's also called "Blow-by". The oil coming out of the Oil Separator will slow down as you reduce the oil consumption. The cleaner the EGR and intake system, the less Blow-by you'll have. If you don't delete the emission system, you should also replace the DPF pressure sensor and its lines. They will be full of oil sludge. They have also been updated. If you have regeneration fault codes for the DPF, the DPF pressure sensor and hoses will need to be replaced.</p>				
BA07.04-P-1010-01G	Bolt, pressure differential sensor bracket to cylinder head cover and cylinder head	Nm	14	

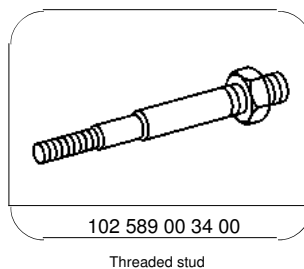
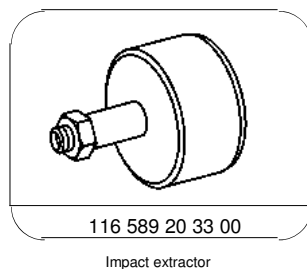
#### Engine lubrication system

Number	Designation	Engine 642.940/950 without particulate filter	Engine 642.820/822/870 / 872 without particulate filter

BF18.00-P-1001-01A	Engine oil	Filling capacity (oil and filter change)	Liters	8.5	8.5
	Specifications for Operating Fluids		Sheet	BB00.40-P-0228-03A	BB00.40-P-0228-03A
			Sheet	BB00.40-P-0228-05A	BB00.40-P-0228-05A
			Sheet	BB00.40-P-0228-51A	BB00.40-P-0228-51A
			Sheet	BB00.40-P-0229-03A	BB00.40-P-0229-03A
			Sheet	BB00.40-P-0229-31A	BB00.40-P-0229-31A
			Sheet	BB00.40-P-0229-05A	BB00.40-P-0229-05A
			Sheet	BB00.40-P-0229-51A	BB00.40-P-0229-51A

### Engine lubrication system

Number	Designation		Engine 642.940/950 with particulate filter	Engine 642.820/822/870 /872 with particulate filter	
BF18.00-P-1001-01S	Engine oil	Filling capacity (oil and filter change)	Liters	8.5	8.5
		Specifications for Operating Fluids	Sheet	BB00.40-P-0228-51A	BB00.40-P-0228-51A
			Sheet	BB00.40-P-0229-31A	BB00.40-P-0229-31A
			Sheet	BB00.40-P-0229-51A	BB00.40-P-0229-51A



**When the crankcase has excess fuel dilution, hot fuel and oil vapors will leave the crankcase via the Oil Separator / PCV valve. In addition to the slugging problems, the Air Mass Meter senses the fuel vapors and thinks the engine is running Rich. The AMM signals the ECU to Lean the fuel mixture. The Oil Separator must be replaced with the latest version. Most ECU's need to be updated with improved software to address this problem. All of these various parts of the emission system work hand in hand. All of the various updated parts must be replaced for the emission system to work properly. You can't just replace one or two parts and think it will fix the entire system. It may seem like it's working, but later on, more problems will appear.**







### Repair materials

Number	Designation	Order number
BR00.45-Z-1013-01A	Loctite 5970 sealant	A 003 989 98 20
BR00.45-Z-1038-04A	Loctite 7200	Henkel Loctite Deutschland GmbH Arabellastrasse 17 81925 München Germany Tel. +49 899268-0 Fax + 49 899101978 www.Loctite.de
BR00.45-Z-1046-04A	Loctite 7063 cleaning spray (150 ml)	A 001 986 71 71 10

This is the part that is allowing too much oil to escape from the engine & into the turbo. It needs to be replaced on every 2015 & older OM642 diesel. This is the part that causes the DPF & the EGR to clog up.

## Parts list -

<b>Mod. des. overview</b>	E SEDAN
<b>Catalog</b>	63H
<b>Major assembly:</b>	M - Engine
<b>Major assembly MD</b>	642920
<b>Assortment class</b>	Car
<b>Group</b>	01 - ENGINE HOUSING
<b>Market</b>	All
<b>Subgroup</b>	130 - ENGINE BREATHING

Item no.	Part number	Designation/description	Quantity	Version
10	A 642 010 01 91	<b>VALVE</b> (PRESSURE CONTROL VALVE) <b>Replaced by:</b> A 642 010 03 91 +001 A 642 016 08 81  [036] To Engine: 40003397 To Date: 25/10/2005	001	
10	A 642 010 03 91	<b>VALVE</b> (PRESSURE CONTROL VALVE) <b>Replaced by:</b> A 642 010 05 91  [037] From Engine: 40003398 From Date: 25/10/2005	001	
10	A 642 010 05 91	<b>VALVE</b> (PRESSURE CONTROL VALVE) <b>Replaced by:</b> A 642 010 18 91  [037] From Engine: 40003398 From Date: 25/10/2005	001	
10	A 642 010 18 91	<b>BLEEDER VALVE</b> (PRESSURE CONTROL VALVE)  [037] From Engine: 40003398 From Date: 25/10/2005	001	
10	A 642 010 06 91	<b>VALVE</b> (PRESSURE CONTROL VALVE) <b>Replaced by:</b> A 642 010 08 91 Code: 494/U43/U83  [038] From Engine: 40495171 From Date: 16/07/2007	001	
10	A 642 010 08 91 <b>A 642 010 18 91</b>	<b>VALVE</b> (PRESSURE CONTROL VALVE) Code: 494/U43/U83  [038] From Engine: 40495171 From Date: 16/07/2007	001	(Plastic Style)

This is a screen shot from the Mercedes-Benz electronic parts catalog. The parts catalog can tell an experienced mechanic many things that Mercedes doesn't issue a service bulletin or have any workshop instructions about. This page is the Oil Separator for a OM642 diesel. As you can see, item no. 10 has many different part numbers. Mercedes is calling the Oil Separator a "Pressure Control Valve". This is quite common. The workshop description & the parts department description are different. This is often due to the translation from German to English. Why does item no. 10 have so many different part numbers? It has been update from the original part. If Mercedes had trouble with a part, they do one of two things. If it's a minor problem & a small change to the part, Mercedes will leave the part number alone. If however, they made a big change in the part, they change the part number. When you look up the part number in the Electronic Parts Catalog (EPC), you will see a box with the "+" symbol. If you click on the "+", a list of previous part numbers will appear. The more updates to the part number, the more trouble Mercedes has been having with the part. 99.9% of the parts never have a update. Of the .1% that have been updated, 99% of those have just one part number change. When you see 6 part number changes, it tells you Mercedes is really having a problem with this part. Why doesn't Mercedes send out a service bulletin & explain the problem? This part is part of the emission system. If they send out a bulletin, they have to re-certify the engine with the EPA. This would cost millions. Mercedes is already up to its arm pits in lawsuits over this engine. So what have they done to clarify this problem? Mercedes has done away with the "+" symbol. They don't want anyone seeing all the updates to problem parts. This is a old screen shot before the stopped showing the updates. This Oil Separator has been updated 2 more times since this was published. Mercedes stamps the part number in most of its parts. If you order the part number on the part you have, Mercedes will automatically update the part to the latest part number. They just won't tell you how many times that have already changed the number.





This missing bolt is common. It causes the air intake tubes to get loose and cause the engine to go into limp home.





This is the newest metal style oil separator. It goes in all of the 2013 & newer BlueTec OM642 engines. Order by your VIN number. The parts department calls this a Vent Valve. MB will automatically update the order to the latest part number.

Mercedes didn't publish service bulletins about this, because it's an important part of the emission system. They don't want the EPA to know they keep updating this part, because they would have to recall every BlueTec they have made. Mercedes is trying to reduce the oil vapor that's going into the Turbo & then into the rest of the intake system. MB has updated this part more than 14 times. If your engine was built in 2018 or older, it needs this Oil Separator.

When you install a Catch Tank, you can cut the metal clamps at "X" and install the hoses to and from the Catch Tank here. Dirty air comes out of the hose marked "A" and clean air is returned into the hose marked "B".