Engine 157, 278 in model 212, 218

Engine 278 in model 207

#### **Modification notes**

05.04.2013	Tightening procedure for housing of the fuel system high pressure pump, added	Operation step 22	
04.07.2016	Überwurfmutter Kraftstoffleitung an Kraftstoffverteiler		BA07.03-P-1001-01E
04.07.2016	Überwurfmutter Kraftstoffleitung an Hochdruckpumpe		BA07.03-P-1002-01E

#### Shown on model 218.373

1/	Left high-pressure pump
1r	Right high-pressure pump

1s Screw/bolts

2 High-pressure pump housing

2a Screw/bolts
3 Sealing ring
4 Tappet elements
7 Vacuum line

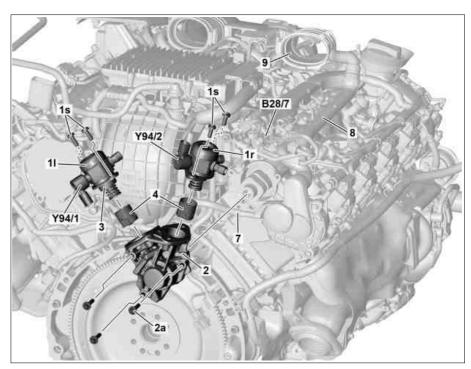
8 Crankcase breather line

9 Boot

B28/7 Pressure sensor downstream of

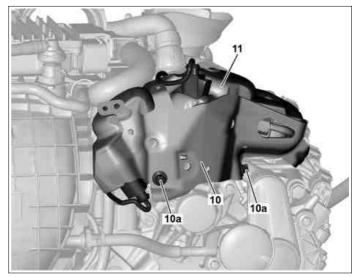
throttle valve

Y94/1 Left quantity control valveY94/2 Right quantity control valve



P07.02-2136-06

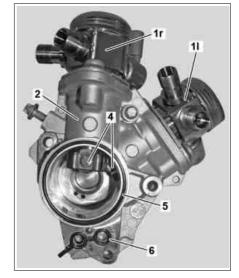
10 Crash plate10a Screw/bolts11 Insulation



P07.02-2137-11

- 11
- Left high-pressure pump Right high-pressure pump High-pressure pump housing Tappet elements Seal

- 1r 2 4 5 6 Seal



P07.02-2133-02

XX	Remove/install		
⚠ Warning	or aligning hoods, doors, trunk lid/rear-end door or sliding roof.	No parts of the body or limbs should be within the operating area when the components are moving.	AS00.00-Z-0011-01A
	<b>Risk of explosion</b> caused by fuel igniting, risk of poisoning caused by inhaling and swallowing fuel as well as risk of injury to eyes and skin caused by contactwith fuel.	Pour fuels into suitable and appropriately	AS47.00-Z-0001-01A
	General information on work on gasoline direct injection system		AH07.00-P-2000-01A
1	Detach ground line from battery Notes on battery		AR54.10-P-0003EW AH54.10-P-0001-01A
2	Remove both air filter housings		
3	Remove ME-SFI [ME] control unit		AR07.08-P-7008ELB
4	Remove insulation on rails		
5	Remove crankcase breather line (8) and boot (9)	The crankcase breather line (8) and boot (9) <b>not</b> must not be separated from each other.	
6	Detach engine wiring harness on intake manifold and cylinder head covers		AR01.00-P-2410-02ELB
7	Disconnect electrical connections on right quantity control valve (Y94/2) and pressure sensor downstream of throttle valve (B287)		
8	Detach starter wiring harness from crash plate (10)		
9	Unscrew screw/bolts (10a) and remove crash plate (10)	Bolt, shield to housing for high-pressure pump drive/bracket	*BA07.02-P-1003-01C
10	Remove insulation (11) on high-pressure pumps (1I, 1r)		
11	Remove lower engine compartment paneling		AR61.20-P-1105EW
12	Rotate engine at crankshaft center bolt in direction of engine rotation to a 40°crank angle (CKA) after top dead center (TDC) on cylinder 1 (ignition TDC)		AR05.10-P-7620-04MM
13	Relieve fuel pressure through service valve	Open tank filler cap for a short time in order to remove the overpressure in the fuel tank.  Protective cap on service valve	*BA07.03-P-1007-01E
		Pressure hose	*119589046300
14	Remove high-pressure lines which are mounted on the high-pressure pumps	Do not kink or bend high-pressure lines. Do this to avoid leaks and damage. The sealing cone for high-pressure lines must	
		be checked before assembly. The work instructions absolutely must be observed for assembly work. Checking of fuel high-pressure circuit must be carried out after assembly:	
		$\downarrow$	

		Check high-pressure lines	AR07.03-P-1010-03MM
		Mount high-pressure lines.	AR07.03-P-1010-02MMB
		Check fuel high pressure circuit.	AR07.03-P-1010-04MM
			*BA07.03-P-1001-01E
		Union nut, fuel line to fuel distributor Union nut, fuel line to high-pressure pump	+B • • • • • • • • • • • • • •
		Bolt, fuel line service valve to cylinder head cover	*BA07.03-P-1003-01E
		Mm Bolt, right bracket for fuel line clamp to high pressure pump drive housing/cylinder	*BA07.03-P-1004-01E
		head    Mm   Bolt, left bracket for high pressure line	*BA07.03-P-1005-01E
		clamp to cylinder head cover/cylinder crankcase	
		Bolt, fuel line clamp to charge air distribution line	*BA07.03-P-1006-01E
15	Remove screw/bolts (1s) for high-pressure	Assembly cleaner	*BR00.45-Z-1028-04A
15	pump(s) (1r, 1l)	Screw/bolts (1s) <b>must</b> be screwed in and out by half a revolution alternately for removal or installation of the high-pressure pump(s) (1r, 1l).	
		Damage can occur to the high-pressure pump(n) (1r, 1l) otherwise.	
		installation: The high-pressure pump(s) (1r, 1l) must lie flat on the high pressure pump housing (2) after tightening the screw/	
		bolts (1s) under the screw/bolts (1s)	*B. *
		Bolt, high-pressure pump to high-pressure pump drive housing	*BA07.02-P-1001-01C
16	Raise high-pressure pump on the left (1I) somewhat and disconnect electrical connection on left quantity control valve (Y94/1)	When removing left high-pressure pump (1I)	
17	Remove high-pressure pump(s) (1r, 1l)	Installation: Dry green sealing ring (3) coated with low-friction paint and insert the black sealing ring	
		(3) wet with oil into the high pressure pump housing (2). Leakage can occur otherwise.	
		<b>i</b> Installation: Clean mount(s) for the high-pressure pump(s).	
		Installation: Replace sealing ring (3). There are two variants of the sealing rings (3) which can be differentiated between based on their color.	
18	Pull tappet elements (4) out of the high- pressure pump housing (2)	Installation: The tappet elements (4) must be installed in such a way that the drive rollers for the tappet	
		elements (4) sit on the camshaft.  Damage can occur to the camshaft otherwise.	
10	Check		
19	Check tappet elements (4) for wear, check for damage and replace if necessary		
	Only perform operation steps 20 to 23 to remove the high-pressure pump housing (2)		
20	Remove centrifuge vacuum line (7) on intake manifold		
21	Remove bracket for high-pressure pump housing (2) on cylinder head cover		
22	Remove screw/bolts (2a) for high-pressure pump housing (2)		AR07.02-P-1020-02MM
		Observe assembly specification and tightening	
		sequence.  Damage can occur otherwise to the camshaft and cylinder head.	
		Bolt, high-pressure pump drive housing to cylinder head/cylinder head cover	*BA07.02-P-1002-01C
23	Take out high-pressure pump housing (2) upwards	i Installation: Replace seals (5, 6).	
24	Install in the reverse order		

25	Switch on ignition	(3)	
		The ignition <b>must</b> be switched on for 5 s before the engine start in order to fill the high-pressure pump (1I, 1r) with fuel.  Damage can occur to the high-pressure pumps (1r, 1l) otherwise.	
⚠ Warning	Risk of accident from vehicle starting off by itself when engine running. Risk of injury (bruises and burns) resulting from working on the engine while it is being started or when it is running.		
26	Perform an engine test run and check fuel system for proper operation and leaktightness		AR07.03-P-1010-04MM

#### Nm High pressure pump

Number	Designation		Engine 157	Engine 278
BA07.02-P-1001-01C	Bolt, high-pressure pump to high-pressure pump drive housing	Nm	14	14

# Nm High pressure pump

Number	Designation			Engine 157	Engine 278
	Bolt, high-pressure pump drive housing to cylinder head/cylinder head cover	Stage 1	Nm	1	1
		Stage 2	Nm	14	14

# Nm High pressure pump

Number	Designation		Engine 157	Engine 278
BA07.02-P-1003-01C	Bolt, shield to housing for high-pressure pump drive/bracket	٧m	14	14

### $\overline{\text{Nm}}$ Injection nozzles, injection valves, lines

Number	Designation				Engine 157	Engine 278
BA07.03-P-1001-01E	Union nut, fuel line to fuel distributor	fuel In case of reusability Nm			22	22
		For new lines	Stage 1	Nm	15	15
			Stage 2	۷°	90	90

# Nm Injection nozzles, injection valves, lines

Number	Designation				Engine 157	Engine 278
BA07.03-P-1002-01E	Union nut, fuel line to high-pressure pump	In case of reusability		Nm	22	22
		For new lines	Stage 1	Nm	15	15
			Stage 2	∡°	90	90

# Nm Injection nozzles, injection valves, lines

Number	Designation	Engine 157	Engine 278
BA07.03-P-1003-01E	Bolt, fuel line service valve to cylinder head cover Nm	9	9

### $\overline{\text{Nm}}$ Injection nozzles, injection valves, lines

Number	Designation	Engine 157	Engine 278
BA07.03-P-1004-01E	Bolt, right bracket for fuel line clamp to high pressure pump drive Nm	14	14
	housing/cylinder head		

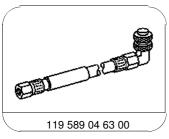
Number	Designation		Engine 157	Engine 278
BA07.03-P-1005-01E	Bolt, left bracket for high pressure line clamp to cylinder head cover/cylinder crankcase	Nm	9	9

# Nm Injection nozzles, injection valves, lines

Number	Designation		Engine 157	Engine 278
BA07.03-P-1006-01E	Bolt, fuel line clamp to charge air distribution line	١m	5	5

### $\overline{\mbox{Nm}}$ Injection nozzles, injection valves, lines

Number	Designation			Engine 157	Engine 278
BA07.03-P-1007-01E	Protective cap on service valve	Plastic	Nm	2	2
		Metal	Nm	15	15



Pressure hose

#### Repair materials

Number	Designation	Order number
BR00.45-Z-1028-04A	Assembly cleaner	Adolf Würth GmbH & Co. KG
		Reinhold-Würth-Str. 12-17 74653 Künzelsau-Gaisbach
		Germany
		Tel. +49 7940 15-0
		Fax +49 7940 15-1000
		http://www.wuerth.de