

- 9.1 Engine and setting data**
- 9.2 Screw tightening torques**
- 9.3 Tools**

Engine type		TDC 2012 L04 V4	TDC 2012 L06 V4
Number of cylinders		4	6
Cyl. arrangement		In-line	
Bore	[mm]	101	
Stroke	[mm]	126	
Total displacement	[cm ³]	4038	6057
Compression ratio	[κ]	18	
Working principle / combustion procedure		Four stroke diesel with charging and direct injection	
Charge air cooler		with	with
Charge air cooler temperature outlet at rated power	[°C]	50	
Direction of rotation		rotation to left	
injection system			
Deutz Common Rail (DCR)	[kPa/bar]	140000/1400	
Engine type EP18		PF 45 K	
Weight TDC 2012 without cooling system according to DIN 70020-A	[approx.kg]	450	570
Engine power	[kW]	1) ¹ .	
Speed max.	[rpm]	3000	
Valve clearance inlet / exhaust, see 6.6.1	[mm]	0.4/0.5 ± 0.05/ angle degree 160/195	
Setting with special tool			
Ignition pressure	[kPa/bar]	1.6000.000/160	
Start of pumping	[°KW before TDC]	1) ¹ .	
Engine ignition sequence		1-3-4-2	1-5-3-6-2-4
V-rib belt tension :		Spring-loaded tension pulley	

¹⁾ Engine power, speed and start of pumping, among other things, are stamped on the engine company plate, see also 2.1.

9.1 Engine and setting data

Technical data

		TDC 2012 L04 V4	TDC 2012 L06 V4
Engine type		Liquid-cooled / cooling system protection	
Cooling			
Coolant quantity (only engine content without cooler)[approx.ltr.]		5.6	7.3
Permissible continuous coolant temperature engine outlet[°C]		max.110	
Temperature difference between			
Coolant inlet/outlet	[°C]	4 to 8	
Start of thermostat opening at Bus	[°C]	86 (75)	
Thermostat fully open at	[°C]	102	
Coolant pre-heating		⁽⁴⁾ .	
Lubrication		Forced feed lubrication	
Oil SAE		see chap. 4	
Maximum oil temperature in oil tray	[°C]	125	
Minimum oil pressure in warm state (114 °C) and low idling	[kPa/bar]	8,000/0.8	
Initial oil filling quantity without filter max.	[approx.ltr.]	8.5 ³⁾	12.5 ³⁾
min.	[approx.ltr.]	5 ³⁾	9.5 ³⁾
Initial oil filling quantity with filter max.	[approx.ltr.]	10 ³⁾	14 ³⁾
min.	[approx.ltr.]	7 ³⁾	11 ³⁾

³⁾ Approximate values can vary depending on version The upper oil dipstick marking is always decisive.

⁴⁾ Only necessary for winter operation, see 3.5.1.

Engine type		TDC 2013 L04 V4	TDC 2013 L06 V4
Number of cylinders		4	6
Cyl. arrangement		In-line	
Bore	[mm]	108	
Stroke	[mm]	130	
Total displacement	[cm³]	4761	7142
Compression ratio	[κ]	18	
Working principle / combustion procedure		Four stroke diesel with charging and direct injection	
Charge air cooler (optional)		without	without
Charge air cooler temperature outlet at rated power/ (at max. power)	[°C]	42/ (max. 50°C)	
Direction of rotation		rotation to left	
injection system			
Deutz Common Rail (DCR)	[kPa/bar]	160000/1600	
Engine type		PF 45	
Weight TDC 2013 without cooling system according to DIN 70020-A	[approx.kg]	530	620
Engine power	[kW]	1).	
Speed max.	[rpm]	3220	
Valve clearance inlet / exhaust, see 6.6.1	[mm]	0.35/0.45 ± 0,05.	
Setting with special tool			
Ignition pressure	[kPa/bar]	17500/175	
Start of pumping	[°KW before TDC]	1).	
Engine ignition sequence		1-3-4-2	1-5-3-6-2-4
V-belt tension:			
Generator	[N]	550 / 300 ± 50.	
Fuel pump - coolant pump	[N]	550 / 300 ± 50.	
Compressor	[N]	650 / 400 ± 50.	
V-rib belt tension			
Oil cooler plate cooling share::		Spring-loaded tension pulley	

1) Engine power, speed and start of pumping, among other things, are stamped on the engine company plate, see also 2.1.

9.1 Engine and setting data

Technical data

		TDC 2013 L04 V4	TDC 2013 L06 V4
Engine type		Liquid-cooled / cooling system protection	
Cooling			
Coolant quantity (only engine content without cooler)[approx.ltr.]		5.0	6.6
Permissible continuous coolant temperature engine outlet [°C]		max.110	
Temperature difference between Coolant inlet/outlet [°C]		4 to 8	
Start of thermostat opening at (Bus) [°C]		83(75)	
Thermostat fully open at [°C]		110	
Coolant pre-heating		(4)	
Cooling water pump amount [dm³/min]		295	
Delivery pressure in [kPa/bar]		120000/1.2	
Lubrication		Forced feed lubrication	
Oil SAE		15 W 40 /15 W 30	
Maximum oil temperature in oil tray [°C]		125	
Minimum oil pressure in warm state (114 °C) and low idling [kPa/bar]		150000/1,5	
Initial oil filling quantity without filter max.[approx.ltr.]		10 ³⁾	24 ³⁾
min. [approx.ltr.]		6.5 ³⁾	19 ³⁾
Initial oil filling quantity with filter max.[approx.ltr.]		13.5 ³⁾	27.5 ³⁾
min. [approx.ltr.]		9.5 ³⁾	22.5 ³⁾
Oil cooler plate cooling share:			
Water [Quant.]		10	11
Oil [Quant.]		9	10

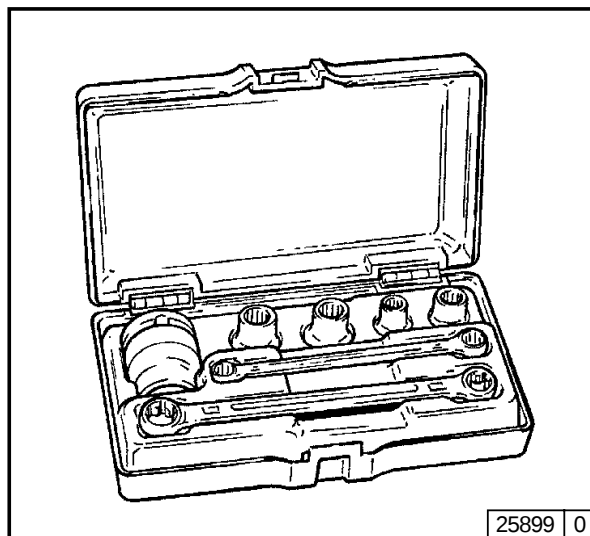
³⁾ Approximate values can vary depending on version The upper oil dipstick marking is always decisive.

⁴⁾ Only necessary for winter operation, see 3.5.1.

Installation	Pre-tightening [Nm]	Re-tightening				Total	Comments
		1st step	2nd step	3rd step	4th step		
Valve mechanism cover	–	–	–	–	–	11 ± 1 Nm	M6
Rocker arm setting screw	–	–	–	–	–	20 ± 2 Nm	Nut with inner square
Front face mounting foot	–	–	–	–	–	260 Nm	M16 x 85 –10.9
	–	–	–	–	–	260 Nm	M16 x 40 –10.9
Oil drain screw aluminium tray	–	–	–	–	–	55 Nm	M 18x 1.5 with Cu ring
Oil drain screw sheet metal oil tray	–	–	–	–	–	55Nm	M 18x 1.5 with Cu ring

9.3 Tools

TORX



For engines of series 2012/2013, the TORX screw system BN. 8189, amongst others, is used.

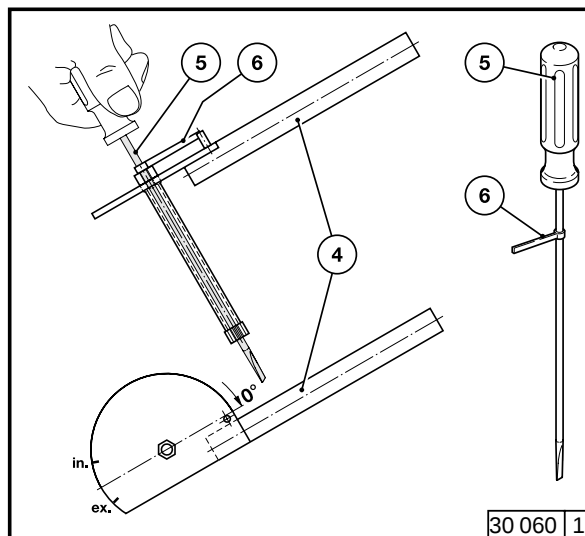
This system was introduced due to its many advantages:

- Excellent screw accessibility.
- High transfer of force when loosening and tightening.
- Slipping or broken wrenches and the risk of injury associated with this is practically impossible.

TORX tools can be obtained from:

WILBÄR
Postfach 14 05 80
D-42826 Remscheid

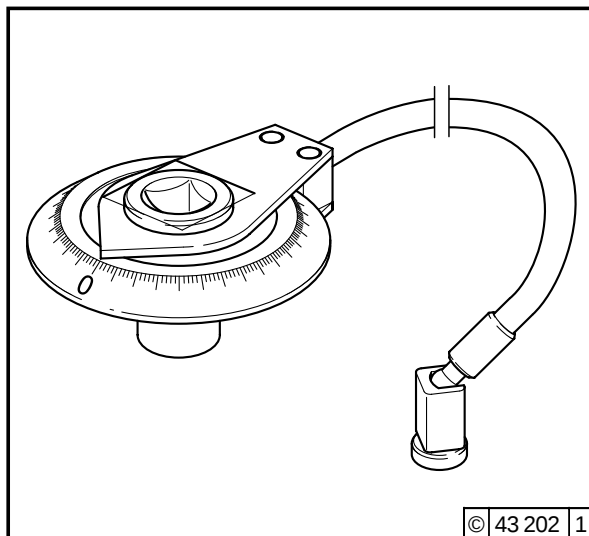
Valve clearance



Special tool part no. 8190 can be obtained from:

WILBÄR
Postfach 14 05 80
D-42826 Remscheid

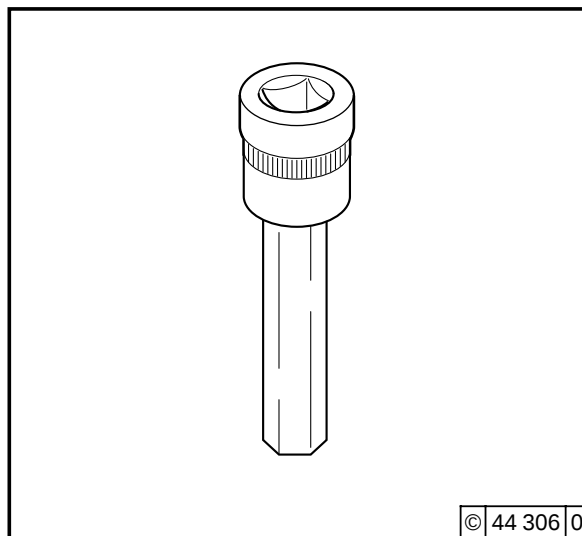
Rotation angle disc



Order No. 8190

Rotation angle disc for setting the valve/ control piston clearance.

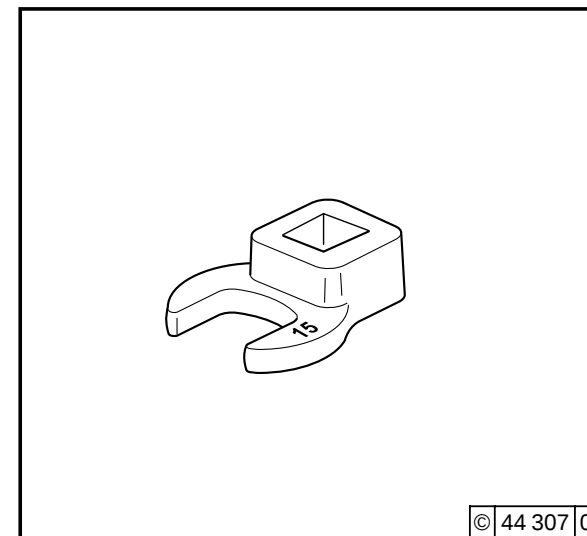
Socket wrench insert



Order No. 8193 (5 mm) valve clearance

Order No. 8194 (4 mm) control piston clearance. Wrench inserts for rotation angle disc.

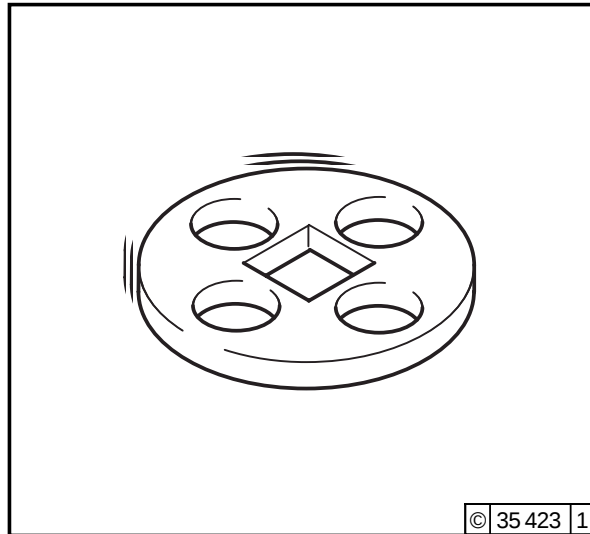
Crow's foot wrench



Order No. 8199

Crow's foot wrench for rotation angle disc 8190 in connection with commercially available square bar extension.

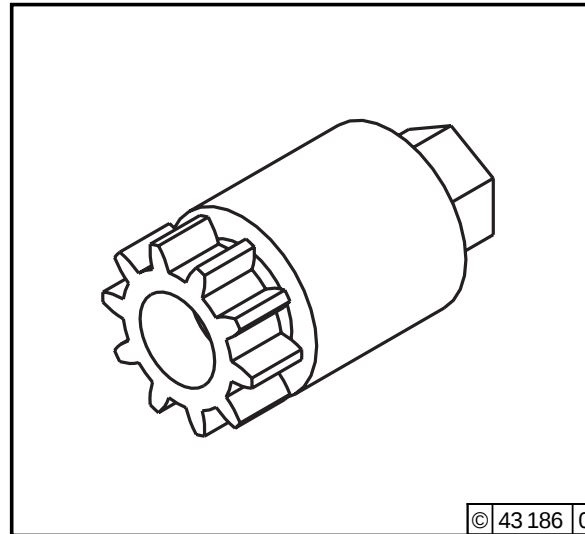
Turning gear



Order No. 100 330

For turning over the engine (as add-on on the torsional vibration damper).

Turning gear for valve clearance setting



Order No. 100 330

To turn over the engine on the SAE housing (Remove cap from SAE housing and mount turning gear).

