Technical Data

				14D	15D15B	15W (K34)	18D/18B (K64)	18W	21A	29C	32A	32W	37E/43E	43F	25E/28E (L20/L28)	36A/38A (A10/A12)	36E/38E (A20/A22)	41A/41E (A14/A24)	71A/75A R10/R12)	71W/75W R30/R32)	95A (S10)	95W (S30)
● Available ○ No longer available				○	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○
Characteristics	Cooling system			Air		Wasser	Luft	Water		Air		Water	Air							Water	Air	Water
	Number of cylinder			1																		
	Configuration			vertical						vertical			horizontal			vertical	horizontal	vert./hor.	V - Form			
	Bore		mm	70	75			82		90	95		95	95				98				
	Stroke		mm	60	55				66	74			100	100		82		90				
	Total displacement		cm^3	231	242		290		348	470	524		708	708	421/465	582/618	582/618	678				
	max. Output ref.		kW	2,98	3,9	4,3	4,7	4,3/5,2	5,6	7,35	7,9	8,8	8,3/9,7	11,0	5,8/5,7	7,7/8,8	7,7/8,8	8,5				
	DIN 6271, IFN-ISO		PS	4,00	5,3	5,9	6,4	5,9/7,1	7,6	10,00	10,7	12,0	11,3/13,2	15,0	8,0/7,8	10,5/12,0	10,5/12,0	11,5				
	max. Speed		min^{-1}	3600						3600			3000		3000/2500	3000		2500				
	Oilsump capacity *		g	685	880	1100	880	1100	1300	1380			1860	1860	2020	1690	2230	1690/2230				
	Flywheel dia		mm	222	258					308			310									
Timing	Valves	Intake opens	mm before TDC	29	20-25/28-32	12-17	20-25/28-32	12-17	25-30	24-30		14-20	103-114	103-114	30-35	35-45	45-55	35-45/45-55				
		Exhaust closes	mm after TDC	29	15-20	10-15	15-20	10-15	15-20	18-24		12-18	135-148	135-148	25-30		30-40					
	End of delivery of injection pump with control edge located above	1500	mm before TDC +/- 1 mm	---	---				---	28			21/24	31	15	10/12	10	12/10				
		1800		---	17				18				24/27	32	18/17	15/17	14/15	17/15				
		2000		---	18				18				26/29	33	22/18	22/24	20/22	24/22				
		2500		---	19				20	32			32/35	36	26/20	30/32	25/28	32/28				
		2800		---	21				20	36			35/38	38	28/---	33/37	27/30	---				
		3000		---	22				22	40			37/40	39	32/---	37/42	30/32	---				
		3300		---	25				23	40			---	---	---	---	---	---				
		3600		---	28				25	46			---	---	---	---	---	---				
	Begin of delivery ** of injection pump PFE1Q65/42 with control edge located below	1500	mm before TDC +/- 1 mm	36-38	---				---	45	42		---	---	---	---	---	---				
		1800		36-38					---	45	42		---	---	---	---	---	---				
		3000		50	36		39		---	63	60		---	---	---	---	---	---				
		3600		50	39		50		---	73			---	---	---	---	---	---				
	Nozzle opening pressure		bar	200	200					175				250	175/200	0.1			175			
	Valve clearance (intake + exhaust valve)		mm	0.25	0.1	0.2	0.1	0.2	0.1	0.1		0.2								0.2	0.1	0.2
Repair figures	Intake valve	protrudes	mm	---	---					---			---	---	---	1,0-1,1/---	0,8-0,9/---	---	---	---	---	---
		in recess	mm	0,7-1,1	0,1-0,2					0,1-0,2			0-0,1	2,5-2,6	1,1-1,2	---/0,9	---/0,9	1,0/1,2	1,0-1,1			
	Exhaust valve	protrudes	mm	---	---					---			---	---	---	1,3-1,4/---	1,3-1,4/---	---	---	---	---	---
		in recess	mm	0,7-1,1	0,1-0,2					0,1-0,2			0-0,1	2,5-2,6	0,6-0,7	---/0,7	---/0,7	0,6/0,8	1,0-1,1			
	piston	protrudes	mm	0,7-0,9	---	0,63-0,93	0,68-0,98	0,63-0,93	0,68-0,98	0,65-0,98			0,635-0,90	0,635-0,90	0,7-1,0	0,80-1,05		0,65/0,90	0,78-1,05	0,75-1,05	0,58-0,88	0,78-1,03
		in recess	mm	---	0,48-0,78	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Gap measurement		mm	0,7-0,8	0,48-0,78	0,58-0,92	0,47-0,82	0,52-0,87	0,47-0,82	0,47-0,85	0,43-0,85		0,55-0,865	0,55-0,865	0,4-0,8	0,35-0,85		0,5-0,85	0,35-0,72	0,35-0,75	0,52-0,92	0,37-0,72
	Ring end gap		mm	0,4-1,0	0,2-0,8					0,2-0,8			0,4-1,0		0,3-1,0	0,4-1,0			0,4-1,0		0,5-1,5	
	Compression pressure		bar	30 - 33, wear limit = 27 (cold engine, run up to 350 rpm)																		
	Crankshaft sliding clearance	new condition	mm	---	0,02-0,05					0,02-0,06			0,03-0,07		---	---	---	---	0,03-0,08			
		wear limit	mm	---	0,08					0,09			0,1		---	---	---	---	0,12			
	Connecting rod sliding clearance	new condition	mm	0,04-0,1	0,03-0,06					0,03-0,08			0,03-0,07		---	---	---	---	0,03-0,08			
		wear limit	mm	0.15	0,11					0,12			0,13		---	---	---	---	0,12			
	Oil pressure ****	max	bar	---	4					5			5		---	---	---	---	6			
		min	bar	---	1,8					2			2		---	---	---	---	3			
	Crankshaft end play		mm	0,03-0,04	0,05 - 0,15																	
Tightening torque	Cylinderhead	tighening torque	Nm	20-25	31					54	59		52-56		54	59						
		spanner size	mm	13	13					17		15	17									
	Rocker bracket	tighening torque	Nm	---	---					---		78	42-46	---	78							
		spanner size	mm	---	---					---		22	17	---	22							
	Main bearing plate	tighening torque	Nm	20-25	29-34					34			42-46		29	44			44			
		spanner size	mm	13	13					13			17		13	17			17			
	Connecting rod	tighening torque	Nm	20-25	27-31					54			58-62		---	59			64		74	
		spanner size	mm	11	13					14			Inbus 10		---	17			17		17	
	Injector clamp	tighening torque	Nm	8-12	8-12					20			20-23		20							
		spanner size	mm	10	10					13												
	Delivery valve	tighening torque	Nm							34 - 39												
		spanner size	mm	14	14					22									19			
	Injection pump	tighening torque	Nm	30-33	28-34					28-34			20-23		20				25-29			
		spanner size	mm	13	13					13												
	Flywheel	tighening torque	Nm	100-105	216-226					390 - 410									490-510		680-710	
		spanner size	mm	32	36					46												
	Speed governor	tighening torque	Nm	---	55 - 60																	
		spanner size	mm	---	14																	

* oil filter change : 1 - Cyl. - Engines + 90 g ** Engines for generator- and pump drive *** cold engine, valve seat 45° **** at 100 °C oiltemperature