

# 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										horizontal													
	Bore	mm	70	75		82		90		95		95		95		82		98		V - Form					
	Stroke	mm	60	55		66		74		74		100		100		82		90							
	Total displacement	cm <sup>3</sup>	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	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 <sup>-1</sup>	3600										3000		3000/2500		3000		2500						
	Oilsump capacity *	q	685	880	1100	880	1100	1300	1380	1380	1860	1860	2020	1690	2230	1690/2230									
Flywheel dia	mm	222	3600										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	---	---	17	---	---	---	28	---	21/24	31	15	10/12	10	12/10								
		1800	mm	---	---	18	---	---	---	---	---	24/27	32	18/17	15/17	14/15	17/15								
		2000	mm	---	---	18	---	---	---	---	---	26/29	33	22/18	22/24	20/22	24/22								
		2500	mm	---	---	19	---	---	---	---	---	32/35	36	26/20	30/32	25/28	32/28								
		2800	mm	---	---	21	---	---	---	---	---	35/38	38	28/---	33/37	27/30	---								
		3000	mm	---	---	22	---	---	---	---	---	37/40	39	32/---	37/42	30/32	---								
	Begin of delivery ** of injection pump PFE1Q65/42 with control edge located below	1500	mm	36-38	---	---	---	---	45	42	---	---	---	---	---	---	---								
		1800	mm	36-38	---	---	---	---	45	42	---	---	---	---	---	---	---								
		3000	mm	50	36	---	39	---	63	60	---	---	---	---	---	---	---								
	Nozzle opening pressure	bar	200	200		200		73		175		250		175/200		175									
		mm	0,25	0,1	0,2	0,1	0,2	0,1	0,1	0,2	0,1	0,2	0,1	0,1	0,2	0,1	0,2	0,1	0,2	0,1	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	---	---	---	---	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	0,6/0,8	---	---	---	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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
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	---	---	---	---	---	---	---	---	---	---	0,12			
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	tightening torque	Nm	20-25	31		54		59		52-56		54		59										
		spanner size	mm	13	13		17		15		78		17		78										
	Rocker bracket	tightening torque	Nm	---	---	---	---	---	---	---	---	42-46	---	---	---	---	---	---	---	---	---				
		spanner size	mm	---	---	---	---	---	---	---	---	17	---	---	---	---	---	---	---	---	---				
	Main bearing plate	tightening torque	Nm	20-25	29-34		34		13		42-46		29		44		44								
		spanner size	mm	13	13		13		13		17		13		17		17								
	Connecting rod	tightening torque	Nm	20-25	27-31		54		14		58-62		---		59		64		74						
		spanner size	mm	11	13		14		14		Inbus 10		---		17		17		17						
	Injector clamp	tightening torque	Nm	8-12	8-12		20		---		20-23		---		---		---		---						
		spanner size	mm	10	10		---		---		---		---		---		---		---						
	Delivery valve	tightening torque	Nm	---	---		---		---		---		---		13		20								
		spanner size	mm	14	14		---		---		---		22		34 - 39		---		---						
	Injection pump	tightening torque	Nm	30-33	28-34		28-34		20-23		---		---		20		---		19		25-29				
		spanner size	mm	13	13		---		---		---		---		---		---		---						
	Flywheel	tightening torque	Nm	100-105	216-226		32		---		---		390 - 410		46		490-510		680-710						
spanner size		mm	32	36		---		---		---		---		---		---		---							
Speed governor	tightening torque	Nm	---	---		---		---		---		55 - 60		---		---		---							
	spanner size	mm	---	---		---		---		---		---		---		---		---							

\* oil filter change : 1 - Cyl. - Engines + 90 g

\*\* Engines for generator- and pump drive

\*\*\* cold engine, valve seat 45°

\*\*\*\* at 100 °C oiltemperature

903.53.84/01.2000