

01 Main Data, Operating Data and General Design

01.1 Main data for Vasa 22

Cylinder bore 220 mm
 Stroke 240 mm
 Piston displacement per cylinder 9.12 l

Firing order		
Engine type	Clockwise rotation	Counter-clockwise rotation
4R22	1-3-4-2	1-2-4-3
6R22	1-5-3-6-2-4	1-4-2-6-3-5
8R22	1-3-7-4-8-6-2-5	1-5-2-6-8-4-7-3
12V22	A1-B1-A5-B5-A3-B3-A6-B6-A2-B2-A4-B4	A1-B4-A4-B2-A2-B6-A6-B3-A3-B5-A5-B1
16V22	A1-B1-A3-B3-A7-B7-A4-B4-A8-B8-A6-B6-A2-B2-A5-B5	A1-B5-A5-B2-A2-B6-A6-B8-A8-B4-A4-B7-A7-B3-A3-B1

Normally, the engine rotates clockwise.

Lubricating oil volume in the engine					
Engine type	4R22	6R22	8R22	12V22	16V22
Appr. oil volume in litres	320	450	580	670	870
Oil volume between max. and min. marks, appr. litres	60	100	125	150	195
Anti corrosive oil, appr. litres	65	90	110	130	160
Appr. cooling water volume in the engine in litres					
Engine type	4R22	6R22	8R22	12V22	16V22
Engine and inverse cooling system	95	130	170	270	350

01.2 Recommended operating data

Apply to normal operation at nominal speed.

	Normal values		Alarm (stop) limits	
Load	100 %	30 %	30...100%	30 %
Temperatures, (°C)				
Lube oil before engine	62...70	73...80	80	90
Lube oil after engine	10...18 higher	5...8 higher		
HT water after engine	90...95		95(105)	
HT water before engine	5...8 lower	2...3 lower		
HT water rise over turbocharger	8...12(15)	6...10		
LT water before engine	28...38	65...70		
Charge air in air receiver	40...60	60...70	75	-
Exhaust gas after cylinder	See test records		50 higher ^{x)}	
Preheating of HT and LT water	70			
Gauge pressures (bar)				
Lube oil before engine at a speed of 900 RPM	3.5...4.0	3	3.0(2.0)	
1100 RPM	4.0...4.5	3.5		
1100 RPM	4.5...5.0	4.0		
1200 RPM	4.5...5.0	4.0		
LT and HT water before pumps (=static)	0.7...1.5			

HT water before engine	2.0...4.5 ^{xx)}	xxx)
LT water before charge air cooler	2.0...4.5 ^{xx)}	xxx)
Fuel before engine	5...7	4
Starting air	max. 30	18
Charge air	See test records	
Other pressures (bar)		
Firing pressure	See test records	
Opening pressure of safety valve on lube oil pump	6...8	
Visual indicator and electronic transducer for high pressure drop over lube oil filter and fuel filter	1.2...1.8	

01.3 Reference conditions

Reference conditions according to ISO 3046/I (1986):

Air pressure 100 kPa (1.0 bar)
Ambient temperature 298 K (25°C)
Relative air humidity 30 %
Cooling water temperature of charge air cooler 298 K (25°C)

In case the engine power can be utilized under more difficult conditions than those mentioned above it will be stated in the sales documents.

Otherwise, the engine manufacturer can give advice about the correct output reduction.

As a guideline additional reduction may be calculated as follows:

$$\text{Reduction factor} = (a + b + c) \%$$