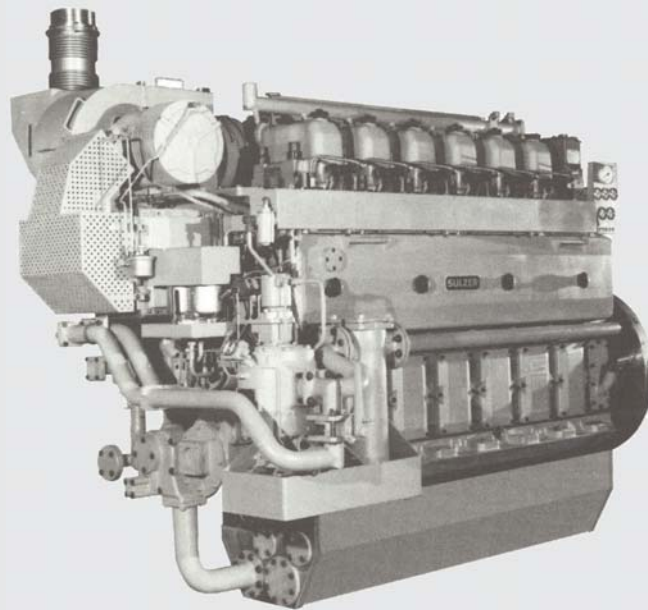


# S20 / S20U

420 -1575 kW at 720-1000 min<sup>-1</sup>

## TOTAL SERVICE



## SULZER 4-stroke ENGINES

### CHARACTERISTICS

- Water-cooled 4-, 6-, 8- and 9-cylinder in-line-engines.
- Four stroke, direct fuel injection.
- Underslung crankshaft.
- Single pipe exhaust system
- Highly efficient load-adaptable turbocharging system and charge air cooling.
- Cylinder heads with 4-valve technology.
- Power take-off on both ends of crankshaft.
- Engine driven pumps on free end of crankshaft.

### BENEFITS

- High reliability of the engine.
- Low operational costs due to easy maintenance and long maintenance intervals.
- Low fuel and lubricating oil consumption.
- Uni-fuel ship, starting and stopping on HFO.



## ENGINE DESCRIPTION

<b>Crankcase</b>	The crankcase is rigid cast-iron. Drillings in the block for water and oil distribution.
<b>Crankshaft</b>	The crankshaft is forged in one piece and fully machined. Large journal diameters for high torsional rigidity. Underslung crankshaft.
<b>Main bearings</b>	The main bearings are of bimetal type with an aluminium running layer. The bearing next to the flywheel acts as a thrust bearing and is large enough to take the rotor of a single bearing generator.
<b>Connecting rods</b>	The connecting rods are drop-forged from chrome-nickel steel and fully machined. The big and small end bearings are force-lubricated through oil drillways in the crankshaft. The big end is split diagonally.
<b>Big end bearings</b>	The big end bearings are of bimetal type with an aluminium running layer.
<b>Pistons</b>	The pistons are 2-piece pistons, with aluminium skirt and steel crown.
<b>Cylinder heads</b>	The cylinder heads are made of special cast iron and are fitted with two inlet and two exhaust valves. The fuel injector is arranged centrally and bore cooled.
<b>Camshaft</b>	The camshaft consists of individual segments, two parts or is single piece. The driving pinion of the camshaft can be adjusted at will in order to vary the ignition timing.
<b>Fuel injection pumps</b>	The fuel injection pumps are of sunk type, the roller guide being combined with the pump body. Injected fuel quantity is regulated according to the Bosch-principle.
<b>Governor</b>	The governor is of Woodward UG8 type. As an additional safeguard a safety governor is fitted to the camshaft.
<b>Turbocharger</b>	The turbocharger is mounted on the front end. Make ABB or Holset KBB.
<b>Pump drive</b>	The oil pump, cooling water pump and fuel booster pump are mounted on the front end. Provision is made for driving an extra cooling water pump.
<b>Fuel system</b>	The fuel system is pressurized by a built-on feed pump. Fuel circulates over the fuel day tank. Optionally, external fuel supply is possible.
<b>Lubricating oil system</b>	A built-on gear pump supplies oil flow and pressure. Oil flows through a cooler and filter before entering the engine. Optionally, a centrifugal filter is installed.
<b>Starting air system</b>	The engine is started by means of direct air starting. The system supplies starting air to the individual cylinder heads via the main starting valve. Control air derived from the starting air is used to control the individual starting valves. An air driven startermotor is optional.
<b>Cooling water system</b>	The cooling water system is divided in a high temperature and a low temperature system. High temperature cooling water is used for jacket cooling, low temperature is used for charge air cooling and lubricating oil cooling.
<b>Exhaust gas system</b>	Single Piece Exhaust System (SPES).
<b>Classification</b>	Classification performed by engine manufacturer.
<b>Emission regulations</b>	Engines built after 2000 fulfill IMO I regulations.

## TECHNICAL DATA

TECHNICAL DATA					
Engine type		S20 / S20U			
Model		4S20/U	6S20/U	8S20/U	9S20/U
Number of cylinders		4	6	8	9
Bore / stroke	mm	200 / 300			
Displacement	l	38	57	76	85
MEP	bar	S20: 18.46 / S20U: 22.3			
Direction of rotation		Clockwise or counter-clockwise, non-reversible			
S20 Power ratings for marine propulsion units / generating sets					
HFO					
at 720 min <sup>-1</sup>	kW	420	630	840	945
at 750 min <sup>-1</sup>	kW	440	660	880	990
at 900 min <sup>-1</sup>	kW	520	780	1040	1170
at 1000 min <sup>-1</sup>	kW	580	870	1160	1305
MDO					
at 720 min <sup>-1</sup>	kW	460	690	920	1035
at 750 min <sup>-1</sup>	kW	480	720	960	1030
at 900 min <sup>-1</sup>	kW	580	870	1160	1305
at 1000 min <sup>-1</sup>	kW	640	960	1280	1440
S20U Power ratings for marine propulsion units / generating sets					
MDO / HFO					
at 900 min <sup>-1</sup>	kW	640	960	1280	1440
at 1000 min <sup>-1</sup>	kW	700	1050	1400	1575
General data					
Specific fuel consumption <sup>1)</sup>					
at 900 min <sup>-1</sup>	g/kWh	200		195	
at 1000 min <sup>-1</sup>	g/kWh	203		198	

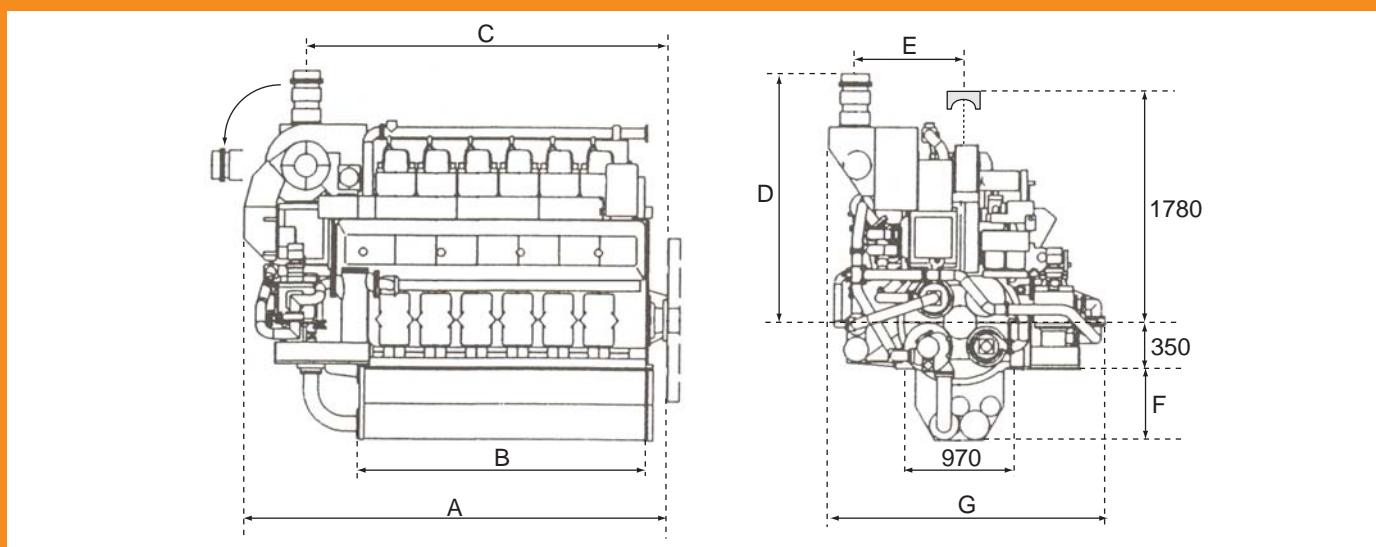
<sup>1)</sup> For net calorific value 42 707 kJ/kg (10 200 kcal/kg) and ISO-standard reference condition.

Power declarations based on the following ISO standard reference conditions:  
27 °C intake air temperature, 27 °C charge air coolant temperature, barometric pressure 1000 mbar, relative humidity 60%.

**Note:** The values given in this document are for information purposes only and not binding.



## DIMENSIONS



PRINCIPAL ENGINE DIMENSIONS (mm) AND WEIGHTS (t)

Engine type	A	B	C	D	E	F	G*	Weight
4S20/U	2560	1550	2149	1870	808	650	1115	7.7
6S20/U	3182	2170	2769	1870	808	540	1115	9.5
8S20/U	3803/3850	2790	3454	1980	882	540	1220	12
9S20/U	4160	3100	3764	1980	882	540	1220	13

\* With automatic oil filter

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