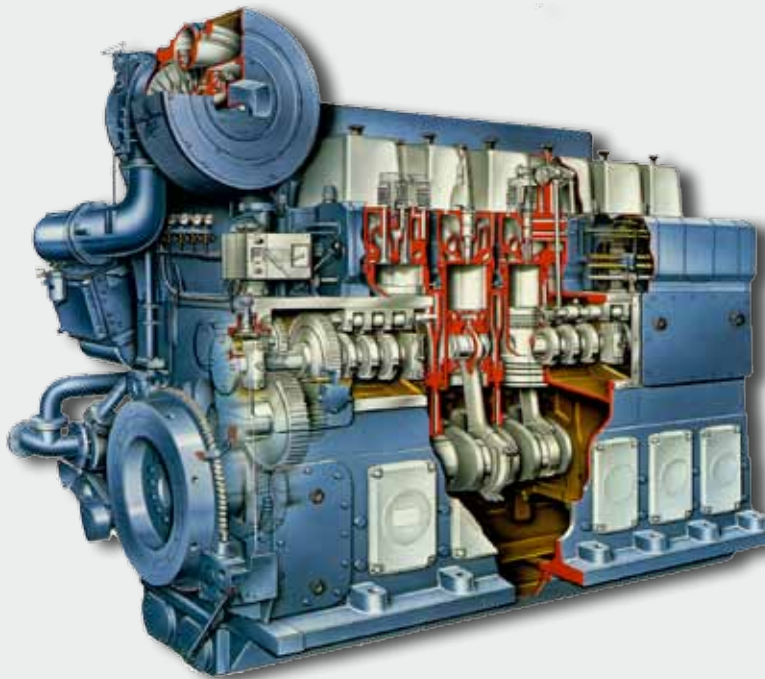


SW280

1560-5400 kW at 720-1000 min⁻¹

TOTAL SERVICE



WÄRTSILÄ ENGINES

CHARACTERISTICS

- Water-cooled 6-, 8- and 9-cylinder in-line engines and 12-, 16-, and 18-cylinder 50° V-engines.
- Four stroke direct fuel injection.
- Cylinder heads with 4 valve technology.
- Turbocharger(s) and charge air coolers.
- Designed for operation on heavy fuel with specifications meeting CIMAC: 1990 H55, K55; BSMA 100: 1989 class M9 and ISO 8217:2005(E), ISO-F-RMH 700.

BENEFITS

- Reliable engine technology.
- Low fuel and lubricating oil consumption.
- Long maintenance intervals.
- Easy maintenance and therefore low operational costs.



ENGINE DESCRIPTION

Engine block	The one-piece engine block is made of nodular cast iron. Due to compact design and integrated functions the engine block is very rigid, torsional and bending stiff. The oil sump is of a light welded design and mounted below the engine block. The oil sump can be a wet or a dry sump depending on the application.
Crankshaft	The one-piece crankshaft is made of alloyed forging steel and is mounted in the engine block in underslung arrangement. The main bearings and the crankshaft bearings are of an optimized modern design. Full power take off is possible at both ends.
Torsional vibration damper	The engine has a viscous fluid vibration damper.
Cylinder liner	The cylinder liner is centrifugally cast of special cast iron and is provided with an anti-bore polishing grooves or an anti polishing ring.
Connecting rod	The connecting rod is forged of alloyed steel. The big end is split diagonally to allow removal of piston and connecting rod parts upwards via the cylinder liner. Lubricating oil is supplied to the piston pin bearing and piston via a bore in the connecting rod.
Piston	The piston is of the composite type with a steel crown and an aluminium skirt. Piston cooling by supplying lubricating oil to the piston crown is assured by the 'cocktail shaker' principle. The piston ring grooves in the steel crown are hardened. The piston has two compression rings, one combined compression/oil scraper ring and one spring-loaded, oil scraper ring. The piston rings are chrome plated.
Cylinder head	The triple deck cylinder head is made of alloyed cast iron and contains two inlet valves, two exhaust valves, valve rotators, a starting air valve and a safety valve. The cylinder head is mounted on the engine block with four hydraulically tensioned cylinder head studs only, in order to carry out quick maintenance. All valve seats are renewable; the exhaust valve seats are water cooled.
Camshaft	The one-piece camshaft has hydraulic shrink fitted cams. This allows the cams to be re-adjusted when necessary.
Injection pump	Each cylinder has a separate high-pressure fuel pump.
Governor	The engine is normally provided with a mechanical-hydraulic governor prepared for pneumatic or electric remote control.
Fuel system	The fuel system consists of a fuel feed pump (MDO only), duplex fuel filter, high-pressure fuel pumps and an fuel injector.
Lubricating oil system	The system is provided with one or two engine driven lubricating oil pump(s) of own design that secures trouble free operation, oil cooler (in line engines), change-over filter and a centrifugal filter. A build on lubricating oil cooler is optional.
Lubricating oil filter	The lubricating oil filter is a full flow filter unit consisting of 5 compartments with one chamber stand by.
Starting system	The engine starts by means of compressed air.
Cooling water system	The cooling water system comprises a low-temperature (LT) circuit and a high-temperature (HT) circuit. The LT-circuit includes the second stage charge air cooler and lubricating oil cooler. The HT circuit includes the cylinders and turbocharger and the HT-stage of the charge air cooler. The LT and HT cooling water pumps can be engine driven or electrically powered.
Exhaust gas system	The exhaust pipes of engine type SW280 are heat insulated. The exhaust pipes on engine type SW28 are fully enclosed by an elastically supported heat insulated box.
Charge air system	The engine has a charge air cooler and one or two turbochargers.
Turbocharging	SW280: the turbochargers are arranged at the flywheel end. SW28: the turbochargers are arranged transverse at non-flywheel side.
Classification	The engine can be classified by all established classification societies.
EIAPP	The engine can be provided with an EIAPP certificate if it complies with the NO _x Technical Code according IMO regulations MARPOL 73/78 - Annex VI.

TECHNICAL DATA

TECHNICAL DATA							
Engine type		6SW28(0)	8SW28(0)	9SW28(0)	12SW28(0)	16SW28(0)	18SW28(0)
Model		in-line	in-line	in-line	50° V	50° V	50° V
Number of cylinders		6	8	9	12	16	18
Bore / stroke	mm	280 / 300	280 / 300	280 / 300	280 / 300	280 / 300	280 / 300
Displacement	l	110.82	147.76	166.3	221.64	295.52	332.46
Compression ratio		13	13	13	13	13	13
Direction of rotation		Clockwise or counter-clockwise					
Maximum power ratings							
Engine speed	min ⁻¹	720 - 1000	720 - 1000	720 - 1000	720 - 1000	720 - 1000	720 - 1000
Engine output ¹⁾	kW	1560 - 1800	2080 - 2400	2340 - 2700	3120 - 3600	4160 - 4800	4680 - 5400
Mean effective pressure	bar	19.5 - 23.4	19.5 - 23.4	19.5 - 23.4	19.5 - 23.4	19.5 - 23.4	19.5 - 23.4
Specific fuel consumption ²⁾							
for LFO	g/kWh	190.5 - 194.5	190.5 - 194.5	190.5 - 194.5	189.5 - 193.5	187.5 - 191.5	189.5 - 193.5
for HFO	g/kWh	194.0 - 202.5	194.0 - 202.5	194.0 - 202.5	193.0 - 201.5	191.0 - 199.5	193.0 - 201.5
Lubrication oil consumption ³⁾	l/h	1.45 - 1.73	1.93 - 2.31	2.17 - 2.60	2.89 - 3.47	3.86 - 4.62	4.34 - 5.20
Idling speed	min ⁻¹	300	300	300	300	300	300

1) Maximum Continuous Rating. Engines for heavy continuous duty (fishing, towing, dredging) will be rated at 95% of MCR.

The reference conditions of the maximum continuous output are in accordance with ISO 3046/1-1986, i.e.

total barometric pressure 1.0 bar
 air temperature 25 °C
 relative humidity 30%
 charge air coolant temperature 25 °C
 lower calorific value of the fuel 42,700 kJ/kg

The maximum continuous output is also available at

- air temperature 45 °C
- charge air coolant temperature 38 °C

For higher temperatures, the output has to be reduced in accordance with the rules stated in ISO 3046/1.

Relation engine speed and output:

- 260 kW/cylinder at 720 min⁻¹
- 270 kW/cylinder at 750 min⁻¹
- 300 kW/cylinder at 900 or 1000 min⁻¹

2) Fuel consumption at 100% load.

According to ISO 3046/1, lower calorific value 42,700 kJ/kg, at constant engine speed, without engine driven pumps.

Tolerance +5%.

3) Oil consumption at 100% load, approximately (tolerance 10%)

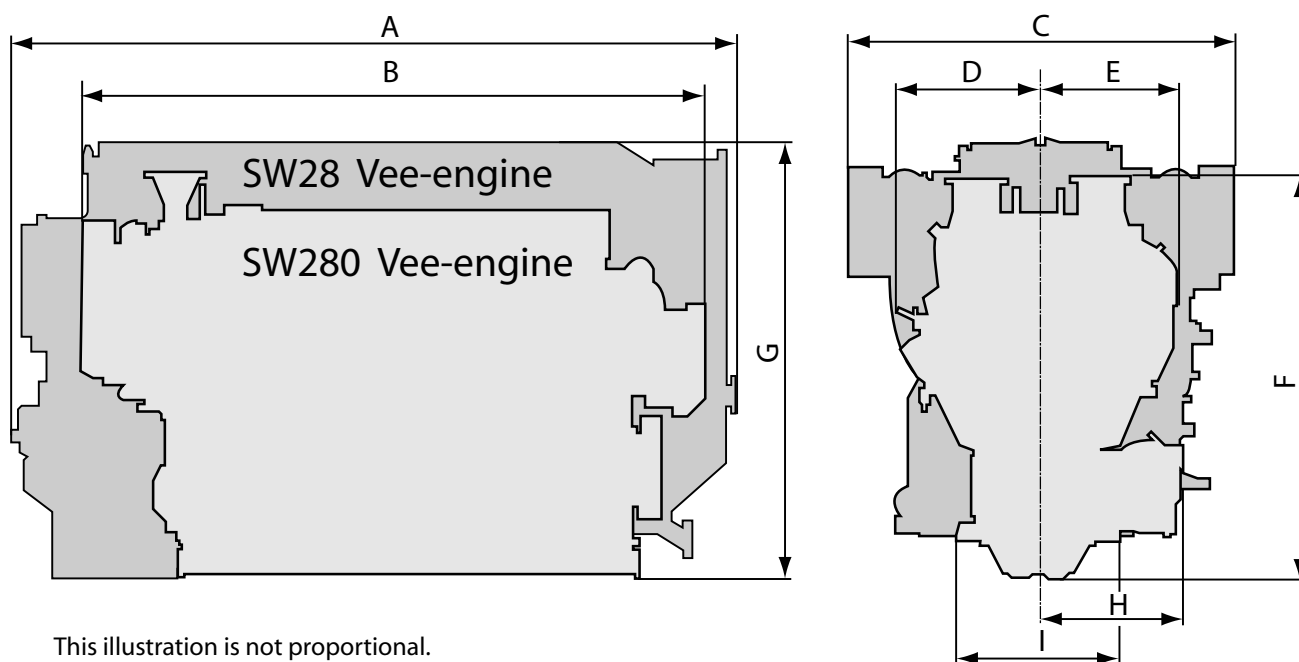
Note:

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

The data provided in the offer is decisive.



DIMENSIONS



PRINCIPAL ENGINE DIMENSIONS (mm) AND WEIGHTS (t)

Engine type	A	B	C	D	E	F	G	H	I	Weight
6SW280	-	4002	-	N.A.	1110	3123	-	1150	1260	18.4
8SW280	-	5180	-	N.A.	1110	3240	-	1150	1260	22.9
9SW280	-	5650	-	N.A.	1110	3240	-	1150	1260	25.3
12SW280	-	4837	-	1095	1076	3078	-	1150	1260	25.7
16SW280	-	6082	-	1095	1500	3405	-	1150	1260	32.9
18SW280	-	6552	-	1095	1500	3405	-	1150	1260	35.8
6SW28	4002	-	-	N.A.	1110	-	3123	-	1260	18.4
8SW28	5180	-	-	N.A.	1110	-	3240	-	1260	22.9
9SW28	5650	-	-	N.A.	1110	-	3240	-	1260	25.3
12SW28	4937	-	2814	-	1570	-	2985	-	1260	26.0
16SW28	6030	-	2983	-	1800	-	3184	-	1260	34.0
18SW28	6500	-	2983	-	1800	-	3184	-	1260	36.0

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