

Technical Data D9-425

Rating 2

General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres	9,36
	in ³	571,4
Firing order		1-5-3-6-2-4
Rotational direction, viewed from the front		Clockwise
Bore	mm	120
	in	4,72
Stroke	mm	138
	in	5,43
Compression ratio		20,2 : 1
Max static forward inclination	°	5
Max static backward inclination	°	10
Max. intermittent forward tilt while running	°	23
Max. intermittent backward tilt while running	°	23
Max. intermittent side tilt while running	°	30
Idling speed	rpm	550 (- 50 / + 200)
Rated speed	rpm	2200
Propeller selection range	rpm	2150-2280
Dry weight engine BT	kg	1150
	lb	2535

Performance	Rating	r/min	600	800	1000	1200	1400	1600	1800	2000	2100	2200
Crankshaft power 1), 5)	2	kW	46	84	141	198	242	276,5	311	312,5	312,5	312,5
		hp	62,56	114,2	191,8	269,3	329,1	376	423	425	425	425
Propeller shaft power 1) (At full load)	2	kW	44,62	81,48	136,8	192,1	234,7	268,2	301,7	303,1	303,1	303,1
		hp	60,68	110,8	186	261,2	319,2	364,8	410,3	412,3	412,3	412,3
Propellershaft power at prop.load x ³	2	kW	6	15	28	49	78	117	166	228	264	303
		hp	8	20	38	67	106	159	226	310	359	412
Torque at crankshaft 2)	2	Nm	732,1	1003	1346	1576	1651	1650	1650	1492	1421	1356
		lbf ft	540	740	993	1162	1217	1217	1217	1100	1048	1000
Mean piston speed		m/s	2,8	3,7	4,6	5,5	6,4	7,4	8,3	9,2	9,7	10,1
		ft/s	9,1	12,1	15,1	18,1	21,1	24,1	27,2	30,2	31,7	33,2
Effective mean pressure 2)	2	MPa	0,98	1,35	1,81	2,11	2,22	2,21	2,21	2,00	1,91	1,82
		psi	142,5	195,2	262,1	306,7	321,3	321,2	321,1	290,4	276,6	264,0
Max combustion pressure 2)	2	MPa	13,1	15,4	16,2	17	18,4	18,5	18,5	18,7	18,6	18,5
		psi	1900	2234	2350	2466	2669	2683	2683	2712	2698	2683

Lubricating system

Specific lubricating oil consumption.		g/kWh	0,1
Max oil volume including filters for all allowed installation inclinations		litres	46
		US gal	12,15
Max oil volume excluding filters for all allowed installation inclination		litres	41
		US gal	10,83
Min oil volume excluding filters for all allowed installation inclinations		litres	29
		US gal	7,66

1) ISO 3046, fuel temp 40°C.

ISO 8665 (=SAE J 1228=ICOMIA 28-83)

2) At power according to 1).

3) If reverse gear is used, 4% in heat rejection will be added for its oil cooler.

4) Acc. to ISO 3744

5) At max permitted back pressure

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Fuel system	Rating	r/min	600	800	1000	1200	1400	1600	1800	2000	2100	2200
Specific fuel consumption 2)	2	g/kWh	252	237	216	204	197	200	209	213	217	222
		lb/hph	0,408	0,384	0,35	0,33	0,319	0,324	0,339	0,345	0,352	0,36
Fuel consumption at prop. load x ³	2	l/h	2,877	5,106	8,648	13,86	21,05	30,14	42,3	58,02	68,78	82,43
		US gal/h	0,8	1,3	2,3	3,7	5,6	8,0	11,2	15,3	18,2	21,8
Fuel consumption at full load	2	l/h	13,75	23,62	36,13	47,91	56,55	65,6	77,1	78,96	80,44	82,3
		US gal/h	3,6	6,2	9,5	12,7	14,9	17,3	20,4	20,9	21,3	21,7

Intake and exhaust system	Rating	r/min	600	800	1000	1200	1400	1600	1800	2000	2100	2200	
Specific exhaust heating effect in percent of crankshaft power	2	%	60,87	65,48	68,09	64,65	61,57	64,74	70,1	73,28	75,2	77,4	
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	2	°C	357	512	521	474	434	443	484	477	477	478	
		°F	675	954	970	885	813	829	903	891	891	892	
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa								Max	15		
		psi									2,2		
		kPa								Min	0		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	2	m³/min	2,9	4,8	7,9	11,5	15,1	18,4	20,9	22,2	22,8	23,3	
		cu.ft./min	102,4	169,5	279	406,1	533,3	649,8	738,1	784	805,2	822,8	
Turbo charge pressure.	2	kPa	19	47	95	136	169	188	192	183	178	173	
		psi	2,8	6,8	13,8	19,7	24,5	27,3	27,8	26,5	25,8	25,1	
Exhaust gas flow	2	m³/min	6,4	13,4	22,8	30,9	37,1	44,1	51	53,1	54,1	55,2	
		cu.ft./min	226	473,2	805,2	1091	1310	1557	1801	1875	1911	1949	

Cooling system	Rating	r/min	600	800	1000	1200	1400	1600	1800	2000	2100	2200	
Radiated heat in percent of crankshaft power.	2	%	12,8	7,2	4,4	3,2	2,7	2,4	2,2	2,2	2,3	2,3	
Heat rejection to after cooler in percent of crankshaft power.	2	%	4,9	10,1	11,4	15,6	17,5	20	21,4	22,3	23,5	23,9	
Coolant heat rejection to HE, incl. engine oil cooler, excl. after cooler, in percent of crankshaft power.	2	%	70,9	82,2	70,2	61,3	56,7	55,7	58,8	60,5	61,9	63,5	
Available pumphead of freshwater circulation pump. At least 70% must be utilized to get turbulent flow.	2	kPa	17	31	48	67	91	118	145	182	203	216	
		In H ₂ O	68	124	193	269	365	474	582	731	815	867	
Sea water pump flow.		m³/h	4,0	5,2	6,4	7,6	8,8	10,0	11,2	12,2	12,8	13,3	
		foot³/h	141	184	226	268	311	353	396	431	452	470	
Fresh water circulation pump flow		m³/h	9,2	12,3	15,3	18,5	21,8	24,9	28,2	31,4	32,6	33,7	
		foot³/h	325	434	540	653	770	879	996	1109	1151	1190	
Max permissible temperature on fresh water circulation outlet from the engine		°C								96			
		°F								205			
Coolant volume engine, incl. heat exchangers and air cooler		litres								39			
		U.S. gal.								10,30			
Maximum additional coolant for cabin heater etc. with std expansion tank		litres								40			
		U.S. gal.								10,57			
Thermostat, start open at		°C								86			
		°F								187			
Thermostat, fully open at		°C								96			
		°F								205			

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2 circuit keel cooling system	Rating	r/min	600	800	1000	1200	1400	1600	1800	2000	2100	2200
Maximum temperature to charge air cooler from external LT-cooling system circuit with 20% coolant and 80% water. See graph for more info	2	°C	18	19	23	26	30	32	33	34	34	35
		°F	64	66	73	79	86	90	91	93	93	95
Maximum cooling water flow through keel cooler LT-cooling system circuit		m³/h foot³/h	4,0 141	5,0 177	6,1 215	7,5 265	8,6 304	9,7 343	10,4 367	11,5 406	11,9 420	12,6 445
Maximum temperature increase over external LT-cooling system circuit		°C	1,0	1,0	2,0	3,0	4,0	4,0	4,0	4,0	4,0	4,0
		°F	2	2	4	5	7	7	7	7	7	7
Maximum pressure drop in external LT-cooling system circuit		kPa	7	14	20	28	37	47	58	70	75	75
		In H ₂ O	28	56	80	112	149	189	233	281	301	301
Available pumphead of seawater circulation pump. At least 70% must be utilized to get turbulent flow		kPa	10	19	26	37	49	61	74	89	98	105
		In H ₂ O	40	76	104	149	197	245	297	357	393	422
Maximum temperature to engine from external HT-cooling system circuit		°C	65	65	65	65	65	65	65	65	65	65
		°F	149	149	149	149	149	149	149	149	149	149
Coolant volume engine, excl. heat exchanger and charge air cooler		litres	33									
		U.S. gal.	8,72									
Maximum cooling water flow through keel cooler HT-cooling system circuit		m³/h	8,1	10,8	13,6	16,3	19,1	21,8	24,4	27,1	28,5	29,3
		foot³/h	286	381	480	576	675	770	862	957	1006	1035
Maximum temperature increase across external HT-cooling system circuit		°C	15,6	19,4	20,4	19,3	18,6	16,8	15,2	13,6	13,8	13,7
		°F	28	35	37	35	33	30	27	24	25	25
Maximum pressure drop in external HT-cooling system circuit		kPa	6,0	11,0	18,0	25,0	34,0	44	54	66	73	75
		In H ₂ O	24	44	72	100	137	177	217	265	293	301

Emissions	Rating	r/min	600	800	1000	1200	1400	1600	1800	2000	2100	2200
Smoke at prop. load x ³	2	*BSU	0,1	0,1	0,2	0,3	0,5	0,3	0,2	0,2	0,3	0,7
Noise at prop. load x ³ . 4)	2	dBA	100,5	102,6	105	106,4	108,1	110,4	113,4	114,8	116,6	116,6

*NB.! BSU are calculated values. Measured values are acc. to ISO 10054 in FSN units

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