

# 1 PERFORMANCE DATA (Calculated values)

## RATINGS

Output:	5238	kVA	Direction of rotation		
Duty:	S1		(Facing drive end):	CCW	
Voltage:	6600	V	Weight:	20000	kg
Current:	458	A	Inertia:	1140	kgm <sup>2</sup>
Power factor:	0,80		Protection by enclosure:	IP44	
Frequency:	60	Hz	Cooling method:	IC8A1W7	
Speed:	720	rpm	Mounting arrangement:	IM1101	
Overspeed:	864	rpm			

## STANDARDS

Applicable standard:	IEC
Marine classification:	DNV Offshore
Hazardous area classification:	None
Temperature rise stator / rotor:	F/F
Insulation class:	F

## ENVIRONMENTAL CONDITIONS (max. values)

Ambient temperature:	55	°C	Altitude:	1000	masl
Coolant temperature:	37	°C			

## ASSUMED DATA

Driving equipment:	Not Specified
Approx. mech. power:	4325 KW

## EFFICIENCY in %, not guaranteed values

	load:	110	%	100	%	75	%	50	%	25	%
Efficiency @ power factor	0,80	96,94		96,90		96,59		95,71		92,67	
Efficiency @ power factor	1,00	97,82		97,77		97,49		96,75		94,24	

## REACTANCES in %

XD (U):	143,9	XD' (S):	23,4	XQ'' (S):	16,1	X0 (U):	9,0
XQ (U):	77,9	XD'' (S):	14,2	X2 (S):	15,1	XP (S):	19,3
X1 (U):	11,3	(S) = Saturated value, (U) = Unsaturated value					

## TIME CONSTANTS (SEC.) AT 75 °C

TD0':	2,832	TD':	0,507	TQ0'':	0,1457	TA:	0,103
TD0'':	0,02871	TD'':	0,01815	TQ'':	0,0331		

## RESISTANCES AT 20 °C

Stator winding:	0,0293	Ω	Field winding:	0,5092	Ω
Excitation winding:	7,9	Ω			



## SHORT CIRCUIT

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Short circuit ratio:	0,79	
Sustained short circuit current:	1,8	p.u. (rated excitation)
	> 3.0	p.u. (voltage regulator)
Sudden short circuit current:	3250	A (symmetric RMS)
	8250	A (peak value)

## VOLTAGE VARIATION

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Maximum allowed amount of starting load:

Maximum voltage drop	Power factor	Load
15 %	0.1	3150 kVA
15 %	0.4	3400 kVA
15 %	0.8	5450 kVA
20 %	0.1	4400 kVA
20 %	0.4	4800 kVA

Voltage drop at sudden increase of rated load:	14	%
Voltage rise at sudden drop of rated load:	19	%

## REACTIVE LOADING

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Steady state reactive loading at rated excitation:	4250	KVAR (lagging)
Steady state reactive loading at zero excitation:	2850	KVAR (leading)

## TORQUE

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Rated load torque (Calculated of rated output in kVA):	69500	Nm
The peak values of sudden short circuit air gap torques:		
2-phase short circuit:	880 %	3-phase short circuit: 640 %

## BEARINGS

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D-end: Sleeve, flood lubricated, locked	N.D-end: Sleeve, flood lubricated, free
<i>Inclination</i>	
Fore-Aft static: 5 Degrees	Fore-Aft dynamic: 7,5 degrees
Athwards static: 15 Degrees	Athwards dynamic: 22,5 degrees
D-end bearing oil flow: 14,0 liter / min	N.D-end bearing oil flow: 4,5 liter / min
Oil viscosity: ISO VG 68	

## HEAT EXCHANGER

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Mounting: Top	Coolant inlet direction: Left
Coolant flow: 19 m <sup>3</sup> /hour	Heat dissipation in air: 7 kW
Coolant temperature rise: 7 K	Heat dissipation in coolant: 127 kW

## TERMINAL CONNECTIONS (Defined facing drive end)

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Direction of main connection:	Right down
Direction of zero connection:	Left down



## EXCITATION

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	Exciter field			
No load:	3,5	A	34,9	V
Rated load:	7,3	A	73,5	V

## OTHER

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Stored energy constant (rotational energy divided by rated effect):	0,62	s
Earth capacitance (1-phase):	0,11	$\mu\text{F}$

# 1 PERFORMANCE DATA (Calculated values)

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## RATINGS

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Output:	6984	kVA	Direction of rotation		
Duty:	S1		(Facing drive end):	CCW	
Voltage:	6600	V	Weight:	21250	kg
Current:	611	A	Inertia:	1380	kgm <sup>2</sup>
Power factor:	0.80		Protection by enclosure:	IP44	
Frequency:	60	Hz	Cooling method:	IC8A1W7	
Speed:	720	rpm	Mounting arrangement:	IM1101	
Overspeed:	864	rpm			

## STANDARDS

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Applicable standard:	IEC
Marine classification:	DNV Offshore
Hazardous area classification:	None
Temperature rise stator / rotor:	F/F
Insulation class:	F

## ENVIRONMENTAL CONDITIONS (max. values)

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Ambient temperature:	55	°C	Altitude:	1000	masl
Coolant temperature:	37	°C			

## ASSUMED DATA

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Driving equipment:	Not Specified
Approx. mech. power:	5755 KW

## EFFICIENCY in %

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	load:	110 %	100 %	75 %	50 %	25 %
Efficiency @ power factor 0.80		97.09	97.06	96.82	96.06	93.34
Efficiency @ power factor 1.00		97.92	97.88	97.66	97.02	94.78

## REACTANCES in %

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XD (U):	157.5	XD' (S):	25.0	XQ'' (S):	17.0	X0 (U):	9.4
XQ (U):	85.0	XD'' (S):	14.8	X2 (S):	15.9	XP (S):	20.6
X1 (U):	11.6	(S) = Saturated value, (U) = Unsaturated value					

## TIME CONSTANTS (SEC.) AT 75 °C

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TD0':	2.953	TD':	0.515	TQ0'':	0.1548	TA:	0.109
TD0'':	0.03034	TD'':	0.01888	TQ'':	0.0340		



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**RESISTANCES AT 20 °C**

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Stator winding: 0.0219  $\Omega$       Field winding: 0.6013  $\Omega$   
Excitation winding: 7.9  $\Omega$

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**SHORT CIRCUIT**

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Short circuit ratio: 0.72  
Sustained short circuit current: 1.7 p.u. (rated excitation)  
> 3.0 p.u. (voltage regulator)  
Sudden short circuit current: 4100 A (symmetric RMS)  
10500 A (peak value)

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**VOLTAGE VARIATION**

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Maximum allowed amount of starting load:

Maximum voltage drop	Power factor	Load
15 %	0.1	3900 kVA
15 %	0.4	4300 kVA
15 %	0.8	6900 kVA
20 %	0.1	5500 kVA
20 %	0.4	6000 kVA

Voltage drop at sudden increase of rated load: 15 %  
Voltage rise at sudden drop of rated load: 20 %

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**REACTIVE LOADING**

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Steady state reactive loading at rated excitation: 5700 KVAR (lagging)  
Steady state reactive loading at zero excitation: 3400 KVAR (leading)

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**TORQUE**

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Rated load torque (Calculated of rated output in kVA): 92600 Nm  
The peak values of sudden short circuit air gap torques:  
2-phase short circuit: 845 %      3-phase short circuit: 610 %

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**BEARINGS**

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D-end: Sleeve, flood lubricated, locked      N.D-end: Sleeve, flood lubricated, free  
Inclination  
Fore-Aft static: 5 Degrees      Fore-Aft dynamic: 7.5 degrees  
Athwards static: 15 Degrees      Athwards dynamic: 22.5 degrees  
D-end bearing oil flow: 14.3 liter / min      N.D-end bearing oil flow: 4.7 liter / min  
Oil viscosity: ISO VG 68

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**HEAT EXCHANGER**

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Mounting: Top      Coolant inlet direction: Left  
Coolant flow: 24 m<sup>3</sup>/hour      Heat dissipation in air: 8 kW  
Coolant temperature rise: 7 K      Heat dissipation in coolant: 161 kW

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## **TERMINAL CONNECTIONS (Defined facing drive end)**

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Direction of main connection: Right down  
Direction of zero connection: Left down

## **EXCITATION**

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	Exciter field			
No load:	3.7	A	37.5	V
Rated load:	8.3	A	83.7	V

## **OTHER**

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Stored energy constant (rotational energy divided by rated effect):	0.56	s
Earth capacitance (1-phase):	0.13	$\mu$ F