

# DATASHEET ALTERNATOR

Alternator ref. KH01421T  
Alternator type KH01421TN4N



## -GENERAL CHARACTERISTICS-

Voltage Type (V)	400/230	Altitude (m)	0-1000
Number of Phase	Three phase	AVR Regulation	Yes
Number of pole	4	Indication of protection	IP23
Capacity for maintaining short circuit at 3 In for 10 s		No	
Winding type		Standard	

### Efficiency & Power

Frequency (Hz) 50 Hz Nominal voltage (V) 400

	Class H				Class F	Class B
	125°C/ 40°C continuous	130°C/ 25°C standby	150°C/ 40°C standby	163°C/ 27°C standby	105°C/ 40°C continuous	80°C/ 40°C continuous
Nominal Rating(Kva)	250	250	265	275	228	200
Nominal Rating(KW)	200	200	212	220	182.4	160
Efficiency 100%	92.7	92.7	92.5	92.4	93	93.3

## -ELECTRICAL CHARACTERISTICS-

Voltage regulation at established rating (+/- %)	0.5
Insulation class	H
T° class (H/125°), continuous 40°C	H / 125°K
T° class (H/163°C), standby 27°C	H / 163°K
Wave form : NEMA=TIF	<50
Unbalanced load acceptance ratio (%)	100
Number of wires	12
Total Harmonic Distortion in no-load DHT (%)	<2.5
Wave form : CEI=FHT	<2
Total Harmonic Distortion, on linear load DHT (%)	<2.5
Technology	Without collar or brush
L-L Harmonic Maximum - Single (%)	18
Deviation Factor (%)	3
Shaft Current	
Main Stator Capacitance to ground (mfd)	

### Reactances

Direct axis synchro reactance unsaturated (Xd) (%)	369
Direct axis transient reactance saturated (X'd) (%)	15
Direct axis subtransient reactance saturated (X''d) (%)	12
Quadra axis synchro reactance unsaturated (Xq) (%)	188
Quadra axis subtransient reactance saturated (X''q) (%)	15.9
Zero sequence reactance unsaturated (Xo) (%)	0.6
Negative sequence reactance saturated (X2) (%)	13.98

### Short circuit ratio

Short circuit ratio (Kcc)	0.364
Subtransient time constant (T''d) (ms)	10

3.351411E+10-A

The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever

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Short circuit transient time constant (T'd) (ms)	100
Open circuit time constant (T'do) (ms)	2452
Subtransient time constant (T''q) (ms)	10
Leakage stator reactance (Xa)(%)	0.75
Stator Resistance (Ra)(%)	0.025
Armature time constant (Ta) (ms)	15
No load excitation current (io) (A)	0.78
Full load excitation current (ic) (A)	3.32
Full load excitation voltage (uc) (V)	44.6
Heat rejection (W)	15628.55
No load losses (W)	3658.3
Stator resistance (for 20°C ambient) (Ω)	0.01622
Rotor resistance (for 20°C ambient) (Ω)	0.29272
Exciter resistance - stator/inductor (for 20° ambient) (Ω)	14.42
Exciter resistance - rotor/armature (for 20° ambient) (Ω)	0.032
Recovery time (Delta U = 20% transient) (ms)	500
Engine start (Delta U = 20% perm. or 30% trans.) (kVA)	561.56
Transient dip (4/4 load) - PF : 0,8 AR (%)	13

## Additional electrical characteristics-

Winding X1, X2 auxiliary resistance (for 20° ambient) (Ω)	0
Auxiliary winding X1, X2 excitation voltage at no load (V)	0
Auxiliary winding X1, X2 excitation voltage on load (V)	
Winding Z1, Z2 auxiliary resistance (for 20° ambient) (Ω)	0
Auxiliary winding Z1, Z2 excitation voltage at no load (V)	0
Auxiliary winding Z1, Z2 excitation voltage on load (V)	

## -MECHANICAL CHARACTERISTICS-

Number of bearing	1
Overspeed (rpm)	2250
Coupling	Direct

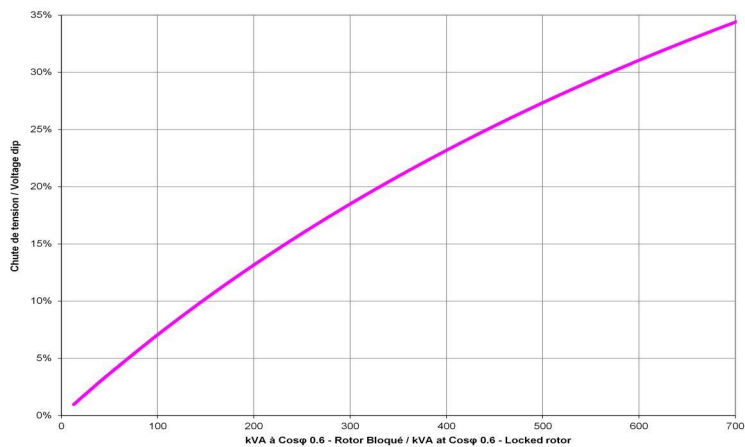
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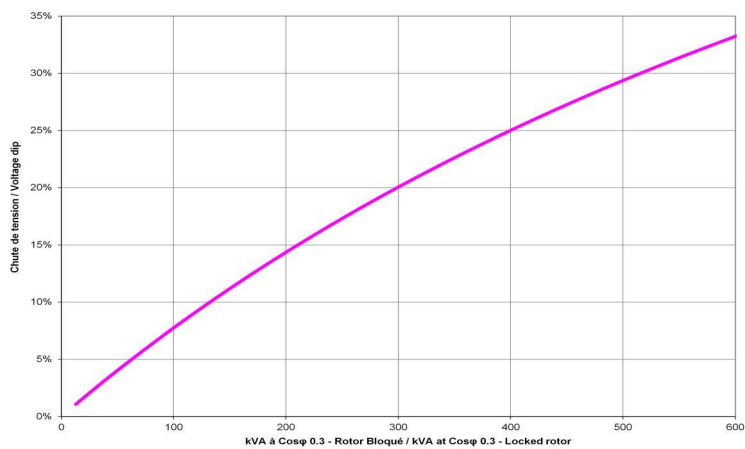


## -TECHNICAL CURVES-

### Motor starting curve locked rotor (0,6PF)



### Motor starting curve locked rotor (0,3PF)

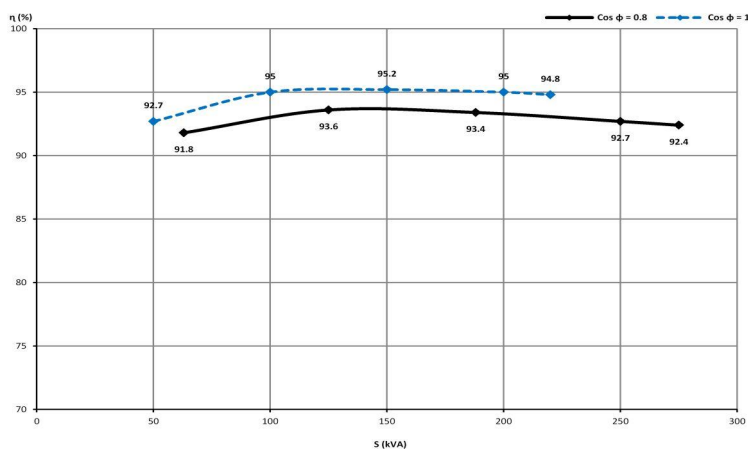


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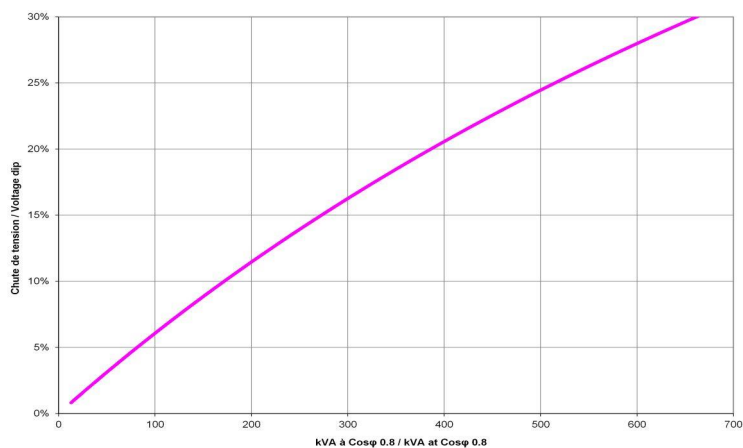
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## Efficiencies curve (by excitation system)



## Loading curve (by excitation system)



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## Short circuit curve at no load and rated speed

### Influence due to connection

Curves shown are for star (Y) connection

For other connections, use the following multiplication factors :

- Series delta : current value x 1.732
- Parallel star : current value x 2

### Influence due to short-circuit

Curves are based on a three-phase short-circuit. For the other types of short-circuit, use the following multiplication factors :

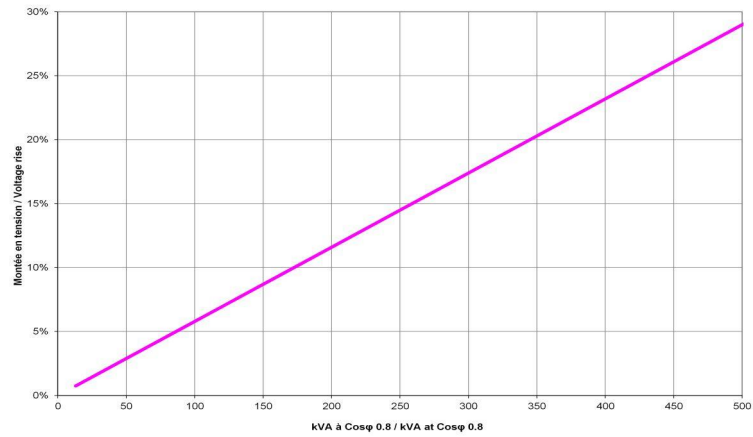
(\*) Capacity for maintaining short circuit at  $3 I_n$  for 10 s = YES

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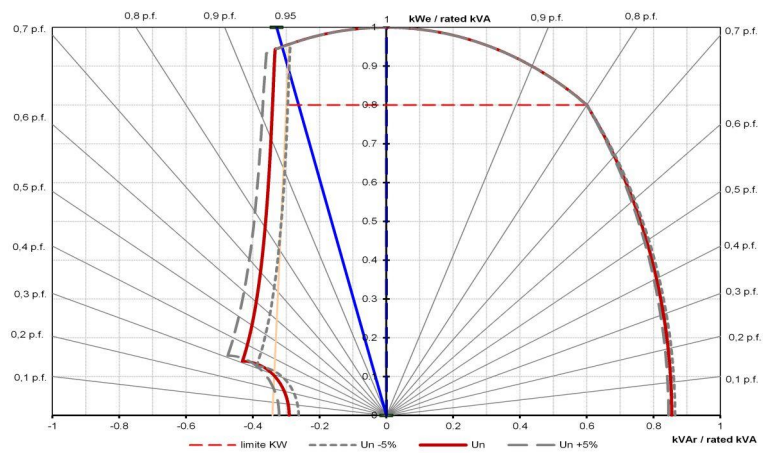
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## Rejection curve (by excitation system)



## Capability curve (PQ diagram)



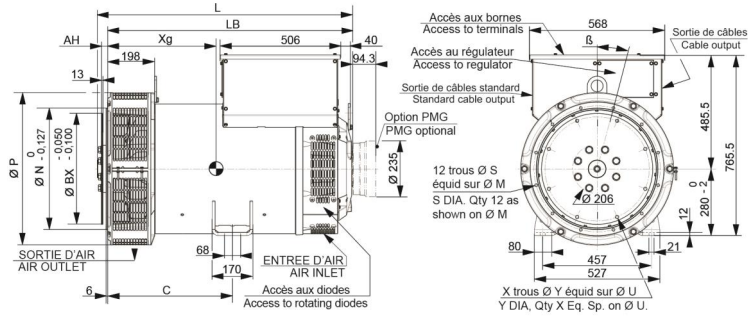
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## DIMENSIONS-

### Overall dimension drawing (Single bearing)



Dimensions (mm)							Accouplement / Coupling			
Type	L sans/without PMG	LB	Xg	C	Masse/Weight (kg)	Disque / Flex plate	11	1/2	14	18
ALT -KH01100	944**/935	892	408	429	569	Bride/Flange S.A.E 3	X			
ALT -KH01220	944**/935	892	414	429	599	Bride/Flange S.A.E 2	X			
ALT -KH01420	944**/935	892	423	429	674	Bride/Flange S.A.E 1	X	X		
ALT -KH01421	944**/935	892	423	429	682	Bride/Flange S.A.E 1/2	X			
ALT -KH01640	989**/980	937	445	429	754	Bride/Flange S.A.E 0	X	X		
ALT -KH01641	989**/980	937	445	429	754					
ALT -KH02100*	1084**/1075	1032	493	525	888					
ALT -KH02101*	1084**/1075	1032	493	525	888					

Bride / Flange (mm)						Disque / Flex plate (mm)					
S.A.E.	P	N	M	S	β°	S.A.E.	BX	U	X	Y	AH
3	600**/641	409.575	428.625	11	15°	11 1/2	352.42	333.38	8	11	39.6
2	600**/641	447.675	466.725	11	15°	14	466.72	438.15	8	14	25.4
1	600**/641	511.175	530.225	12	15°	18****	571.5	542.92	6	17	15.7
1/2	713	584.2	619.125	14	15°						
0	713	647.7	679.45	14	11° 15'						

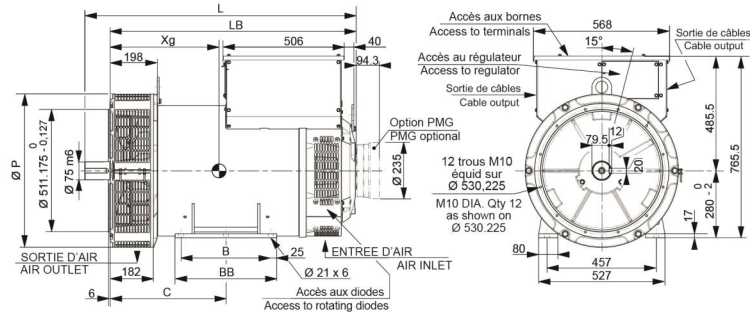
\* Hauteur d'axe = 355 mm disponible en option \*\* Dimensions avec SAE 11.5 \*\*\* Dimension spécifique LSA 463 S2/S3/S4 \*\*\*\* Option  
 \* Shaft height = 355 mm optional \*\* Dimensions with SAE 11.5 \*\*\* Specific dimension LSA 463 S2/S3/S4 \*\*\*\* Optional

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## Overall dimension drawing (Two bearings)



Dimensions (mm)								
Type	L sans/without PMG	LB	C	BB	B	P	Xg	Masse/Weight (kg)
ALT -KH01100	997	892	389	368	318	600	413	569
ALT -KH01220	997	892	389	368	318	600	418	599
ALT -KH01420	997	892	389	368	318	600	427	674
ALT -KH01421	997	892	389	368	318	640	427	682
ALT -KH01640	1042	937	389	368	318	640	449	754
ALT -KH01641	1042	937	389	368	318	640	449	754
ALT -KH02100	1137	1032	485	424	374	640	496	888
ALT -KH02101	1137	1032	485	424	374	640	496	888



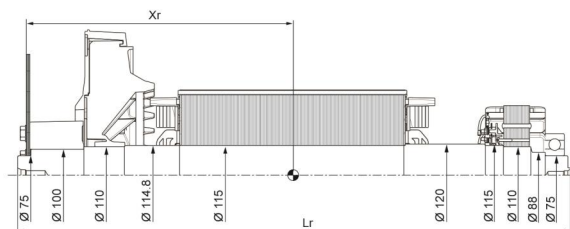
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## -TORSIONAL ANALYSIS DATA-

### Rotation part drawing for torsional vibration calculation (Single bearing)



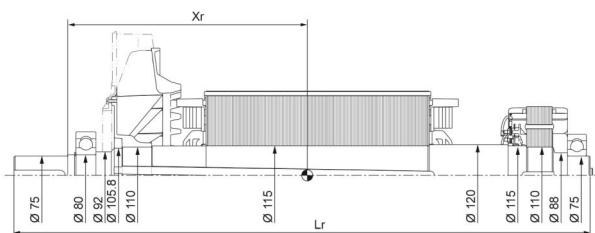
Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm2); (4J = MD2)								
Centre de gravité : Xr (mm), Longueur du rotor Lr (mm), Masse : M (kg), Moment d'inertie : J (kgm2); (4J = MD2)								
Type	Flex plate - Disque S.A.E. 11 1/2				Flex plate - Disque S.A.E. 14			
	Xr	Lr	M	J	Xr	Lr	M	J
ALT - KH01100	386	928	245	2.45	372	928	245	2.61
ALT - KH01220	394	928	257	2.69	380	928	257	2.85
ALT - KH01420	405	928	277	2.98	391	928	277	3.14
ALT - KH01421	405	928	278	3.05	391	928	278	3.21
ALT - KH01640	433	973	308	3.35	419	973	308	3.51
ALT - KH01641	433	973	308	3.35	419	973	308	3.51
ALT - KH02100	481	1068	363	4.08	467	1068	363	4.24
ALT - KH02101	481	1068	363	4.08	467	1068	363	4.24

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## Rotation part drawing for torsional vibration calculation (Two bearings)



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm <sup>2</sup> ): (4J = MD <sup>2</sup> )				
Centre de gravité : Xr (mm), Longueur du rotor Lr (mm), Masse : M (kg), Moment d'inertie : J (kgm <sup>2</sup> ): (4J = MD <sup>2</sup> )				
Type	Xr	Lr	M	J
ALT -KH01100	415	990	218	2.28
ALT -KH01220	421	990	230	2.52
ALT -KH01420	430	990	250	2.81
ALT -KH01421	430	990	251	2.88
ALT -KH01640	456	1035	281	3.18
ALT -KH01641	456	1035	281	3.18
ALT -KH02100	503	1130	337	3.91
ALT -KH02101	503	1130	337	3.91