DATASHEET ALTERNATOR

Alternator ref.   KH00771T
Alternator type   KH00771TO4N

KOHLER®

-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   Yes
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)	63		65.5	71	60	50
Nominal Rating(KW)	50		52.4	56.8	48	40
Efficiency 100%	90		89.9	89.5	90.2	90.6

-ELECTRICAL CHARACTERISTICS-

Voltage regulation at established rating (+/- %)	1
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	<45
Unbalanced load acceptance ratio (%)	100
Number of wires	12
Total Harmonic Distortion in no-load DHT (%)	30
Wave form : CEI=FHT	<2
Total Harmonic Distortion, on linear load DHT (%)	18
Technology	Without collar or brush
L-L Harmonic Maximum - Single (%)	<3
Deviation Factor (%)	6
Shaft Current	<80
Main Stator Capacitance to ground (mdf)	

Reactances

Direct axis synchro reactance unsaturated (Xd) (%)	293.1
Direct axis transcient reactance saturated (X'd) (%)	12.4
Direct axis subtranscient reactance saturated (X''d) (%)	7.3
Quadra axis synchro reactance unsaturated (Xq) (%)	120.7
Quadra axis subtranscient reactance saturated (X"q) (%)	30.5
Zero sequence reactance unsaturated (Xo) (%)	3.41
Negative sequence reactance saturated (X2) (%)	21.5

Short circuit ratio

Short circuit ratio (Kcc)	0.35

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Subtranscient time constant (T"d) (ms)	12
Short circuit transcient time constant (T'd) (ms)	58
Open circuit time constant (T'do) (ms)	1300
Subtranscient time constant (T"q) (ms)	15
Leakage stator reactance (Xa)(%)	6.7
Stator Resistance (Ra)(%)	0.03
Armature time constant (Ta) (ms)	29
No load excitation current (io) (A)	0.81
Full load excitation current (ic) (A)	2.11
Full load excitation voltage (uc) (V)	22.4
Heat rejection (W)	5600
No load losses (W)	1248
Stator resistance (for 20°C ambient) (Ω)	0.038
Rotor resistance (for 20°C ambient) (Ω)	2.778
Exciter resistance - stator/inductor (for 20° ambient) (Ω)	10.6
Exciter resistance - rotor/armature (for 20° ambient) (Ω)	0.417
Recovery time (Delta U = 20% transcient) (ms)	200
Engine start (Delta U = 20% perm. or 30% trans.) (kVA)	180
Transcient dip (4/4 load) - PF : 0,8 AR (%)	14.07

Additional electrical characteristics-

Winding X1, X2 auxiliary resistance (for 20° ambient) (Ω)	0.914
Auxiliary winding X1, X2 excitation voltage at no load (V)	194.8
Auxiliary winding X1, X2 excitation voltage on load (V)	204.8

-MECHANICAL CHARACTERISTICS-

Number of bearing	1
Overspeed (rpm)	2250
Coupling	Direct

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-TECHNICAL CURVES-

Motor starting curve locked rotor (0,6PF)
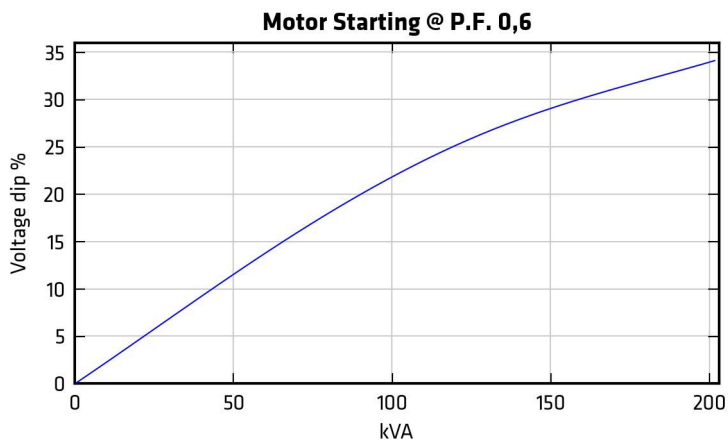
Motor Starting @ P.F. 0,6
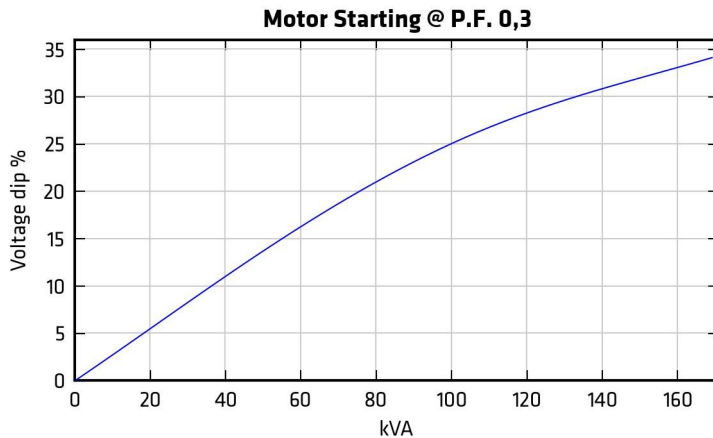
(Voltage dip % vs kVA)

Motor starting curve locked rotor (0,3PF)

Motor Starting @ P.F. 0,3

(Voltage dip % vs kVA)

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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Efficiencies curve (by excitation system)

400/230 50Hz

Efficiency % vs Load p.u.

- cos φ 0.8
- cos φ 1

cos φ 1 values: 87.8, 91.3, 92.5, 92.0, 91.6
cos φ 0.8 values: 85.8, 89.3, 90.5, 90.0, 89.6
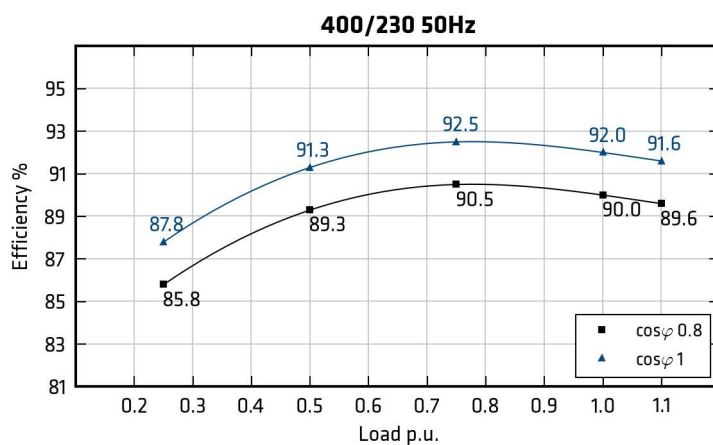
Loading curve (by excitation system)

Phase Loading @ P.F. 0,8

Voltage dip % vs kVA
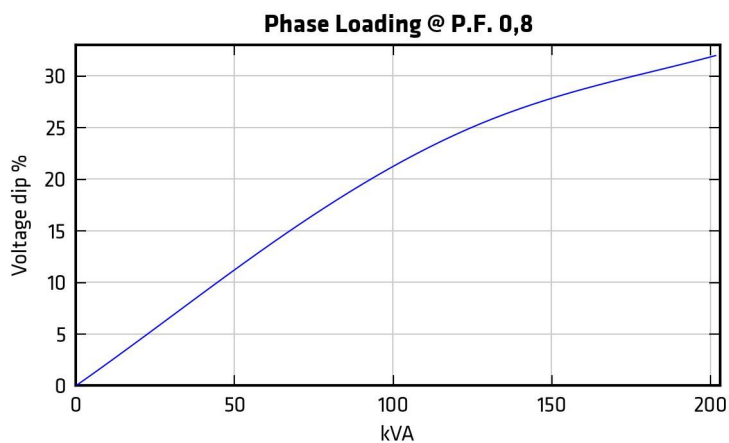
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Short circuit curve at no load and rated speed

Influence due to connection
Curves shown are for star (Y) connection
For other connections, use the following multiplication factors :
- Series to Parallel star : current value x 2
- Series to Series delta : current value x 1.72
- Series star to Parallel delta : current value x 3.44
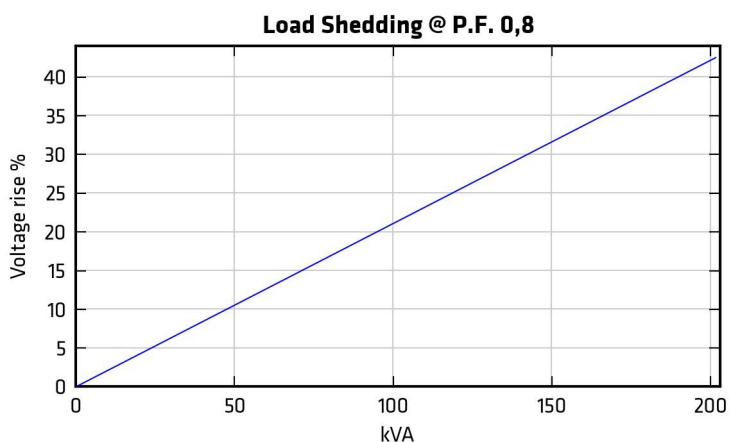
Influence due to short-circuit
The indicated coefficient have to be used to correct the three phase short circuit curves values as a function of the type of short circuit voltage.
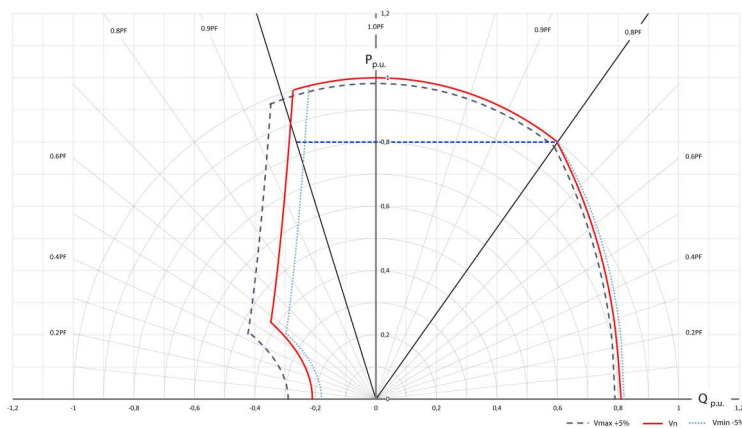
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Rejection curve (by excitation system)

Load Shedding @ P.F. 0,8

Capability curve (PQ diagram)

DIMENSIONS-

Overall dimension drawing (Single bearing)
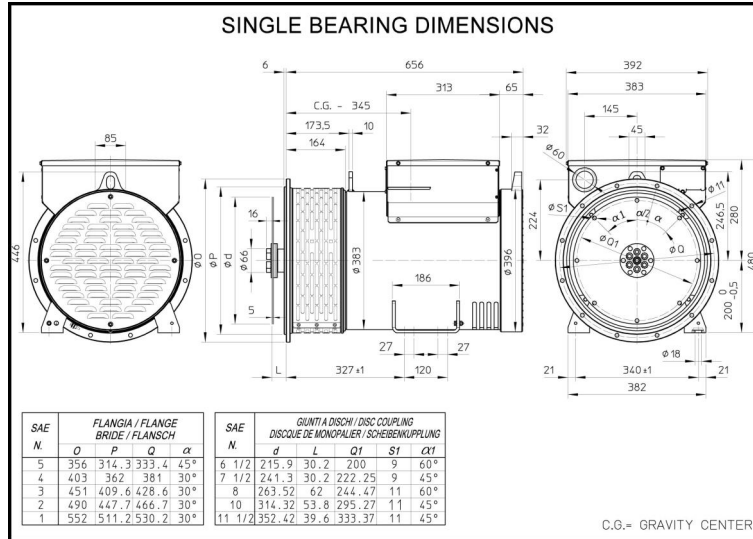
SINGLE BEARING DIMENSIONS

SAE N.	FLANGIA / FLANGE BRIDE / FLANSCH				SAE N.	GIUNTI A DISCHI / DISC COUPLING DISCQUE DE MONOPALIER / SCHEIBENKUPPLUNG				
	O	P	Q	α		d	L	Q1	S1	α1
5	356	314.3	333.4	45°	6 1/2	215.9	30.2	200	9	60°
4	403	362	381	30°	7 1/2	241.3	30.2	222.25	9	45°
3	451	409.6	428.6	30°	8	263.52	62	244.47	11	60°
2	490	447.7	466.7	30°	10	314.32	53.8	295.27	11	45°
1	552	511.2	530.2	30°	11 1/2	352.42	39.6	333.37	11	45°

C.G.= GRAVITY CENTER

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Overall dimension drawing (Two bearings)
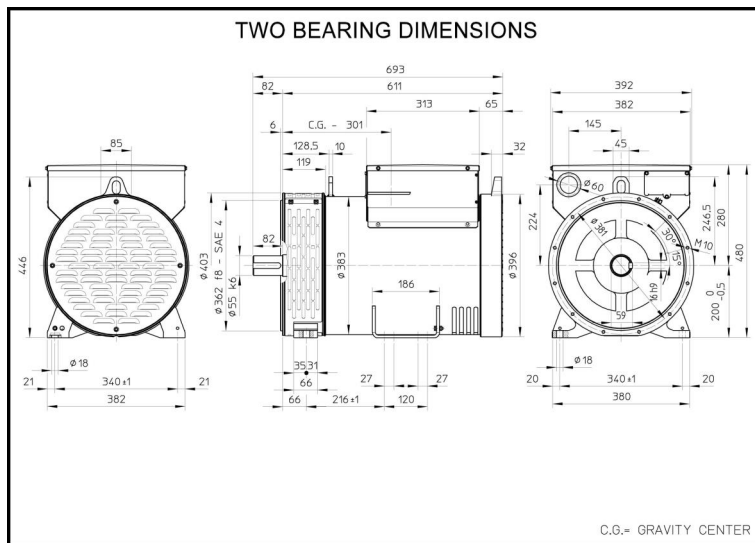
TWO BEARING DIMENSIONS

C.G.= GRAVITY CENTER

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-TORSIONAL ANALYSIS DATA-

Rotation part drawing for torsional vibration calculation (Single bearing)
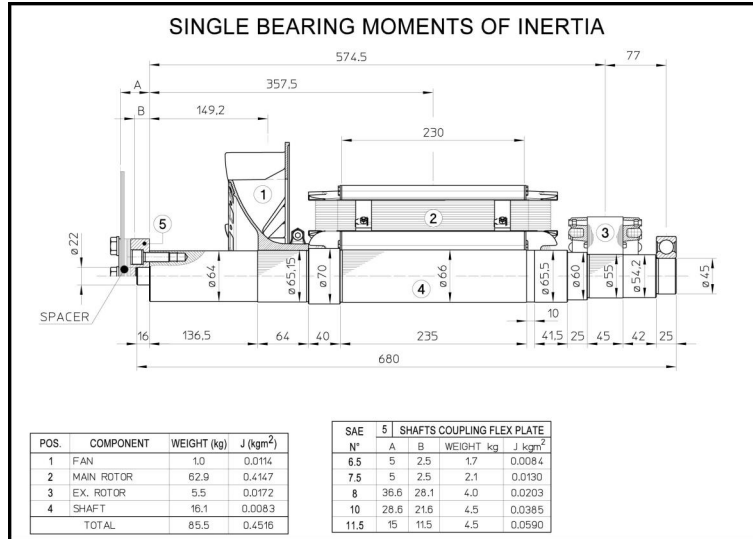
SINGLE BEARING MOMENTS OF INERTIA

POS.	COMPONENT	WEIGHT (kg)	J (kgm²)
1	FAN	1.0	0.0114
2	MAIN ROTOR	62.9	0.4147
3	EX. ROTOR	5.5	0.0172
4	SHAFT	16.1	0.0083
	TOTAL	85.5	0.4516

SAE N°	5 SHAFTS COUPLING FLEX PLATE			
	A	B	WEIGHT kg	J kgm²
6.5	5	2.5	1.7	0.0084
7.5	5	2.5	2.1	0.0130
8	36.6	28.1	4.0	0.0203
10	28.6	21.6	4.5	0.0385
11.5	15	11.5	4.5	0.0590

Rotation part drawing for torsional vibration calculation (Two bearings)

TWO BEARING MOMENTS OF INERTIA

POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	1.0	0.0114
2	MAIN ROTOR	62.9	0.4147
3	EX. ROTOR	5.5	0.0172
4	SHAFT	15.7	0.0079
	TOTAL	85.1	0.4512