

# DATASHEET ALTERNATOR

Alternator ref. KH06550T  
Alternator type KH06550TO4D

**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<br>continuous | 130°C/ 25°C<br>standby | 150°C/ 40°C<br>standby | 163°C/ 27°C<br>standby | 105°C/ 40°C<br>continuous | 80°C/ 40°C<br>continuous |
| Nominal Rating(Kva) | 3000                      | 3030                   | 3150                   | 3300                   | 2733                      | 2310                     |
| Nominal Rating(KW)  | 2400                      | 2424                   | 2520                   | 2640                   | 2186.4                    | 1848                     |
| Efficiency 100%     | 96.2                      | 96.1                   | 96.1                   | 96                     | 96.4                      | 96.7                     |

## -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 (%)              | 8         |
| Number of wires                                   | 6         |
| Total Harmonic Distortion in no-load DHT (%)      | <3.5      |
| Wave form : CEI=FHT                               | <2        |
| Total Harmonic Distortion, on linear load DHT (%) | <3.5      |
| Technology                                        | Brushless |
| L-L Harmonic Maximum - Single (%)                 | 3         |
| Deviation Factor (%)                              | 2         |
| Shaft Current                                     |           |
| Main Stator Capacitance to ground (mdf)           | 0.0004    |

### Reactances

|                                                         |       |
|---------------------------------------------------------|-------|
| Direct axis synchro reactance unsaturated (Xd) (%)      | 343.2 |
| Direct axis transient reactance saturated (X'd) (%)     | 32.6  |
| Direct axis subtransient reactance saturated (X''d) (%) | 18.7  |
| Quadra axis synchro reactance unsaturated (Xq) (%)      | 203.8 |
| Quadra axis subtransient reactance saturated (X''q) (%) | 19.55 |
| Zero sequence reactance unsaturated (Xo) (%)            | 3.8   |
| Negative sequence reactance saturated (X2) (%)          | 19.12 |

### Short circuit ratio

|                                        |        |
|----------------------------------------|--------|
| Short circuit ratio (Kcc)              | 0.363  |
| Subtransient time constant (T''d) (ms) | 21.995 |

3.351412E+10-E

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)            | 348.788  |
| Open circuit time constant (T'do) (ms)                      | 3189.65  |
| Subtransient time constant (T''q) (ms)                      | 24.4     |
| Leakage stator reactance (Xa)(%)                            | 14.61    |
| Stator Resistance (Ra)(%)                                   | 0.827    |
| Armature time constant (Ta) (ms)                            | 43.455   |
| No load excitation current (io) (A)                         | 1.28     |
| Full load excitation current (ic) (A)                       | 5.22     |
| Full load excitation voltage (uc) (V)                       | 61.5     |
| Heat rejection (W)                                          | 95748.64 |
| No load losses (W)                                          | 25141.86 |
| Stator resistance (for 20°C ambient ) (Ω)                   | 0.00044  |
| Rotor resistance (for 20°C ambient ) (Ω)                    | 0.39151  |
| Exciter resistance - stator/inductor (for 20° ambient ) (Ω) | 9.693    |
| Exciter resistance - rotor/armature (for 20° ambient ) (Ω)  | 0.012    |
| Recovery time (Delta U = 20% transient) (ms)                | 500      |
| Engine start (Delta U = 20% perm. or 30% trans.) (kVA)      | 2265.98  |
| Transient dip (4/4 load) - PF : 0,8 AR (%)                  | 21.58    |

## Additional electrical characteristics-

|                                                            |       |
|------------------------------------------------------------|-------|
| Winding X1, X2 auxiliary resistance (for 20° ambient ) (Ω) | 0.112 |
| Auxiliary winding X1, X2 excitation voltage at no load (V) | 104   |
| Auxiliary winding X1, X2 excitation voltage on load (V)    | 104   |
| Winding Z1, Z2 auxiliary resistance (for 20° ambient ) (Ω) | 0.157 |
| Auxiliary winding Z1, Z2 excitation voltage at no load (V) | 0     |
| Auxiliary winding Z1, Z2 excitation voltage on load (V)    | 0     |

## -MECHANICAL CHARACTERISTICS-

|                   |        |
|-------------------|--------|
| Number of bearing | 1      |
| Overspeed (rpm)   | 2250   |
| Coupling          | Direct |

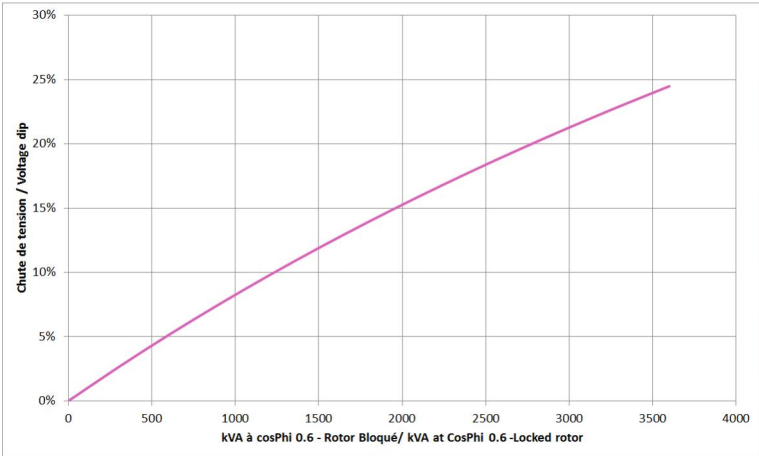
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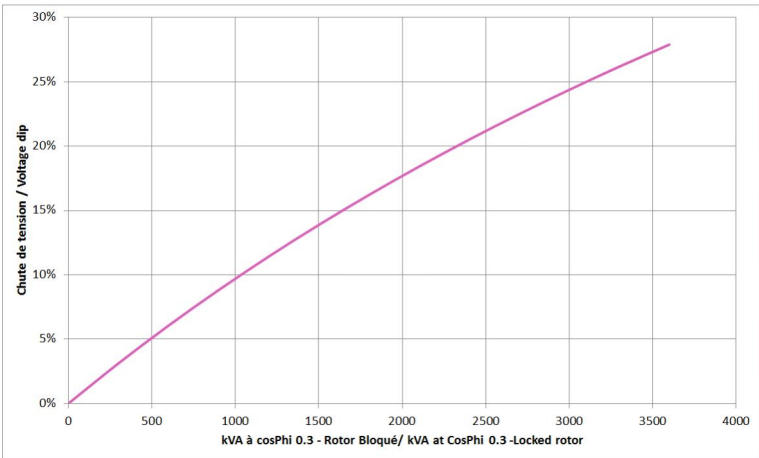


## -TECHNICAL CURVES-

Motor starting curve locked rotor (0,6PF)



Motor starting curve locked rotor (0,3PF)

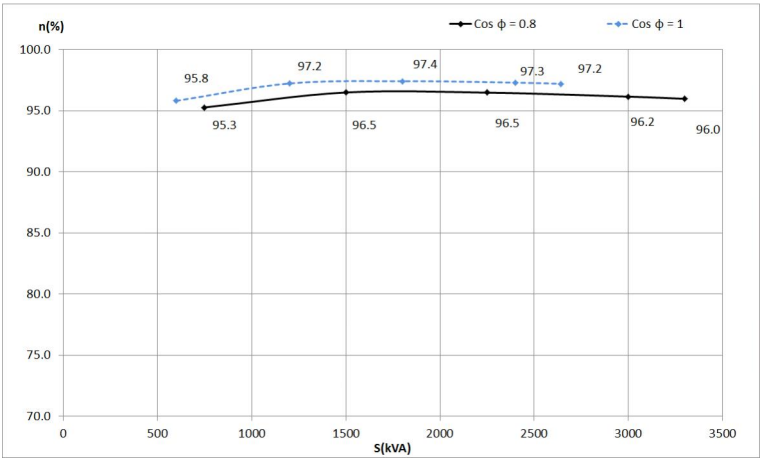


# DATASHEET ALTERNATOR

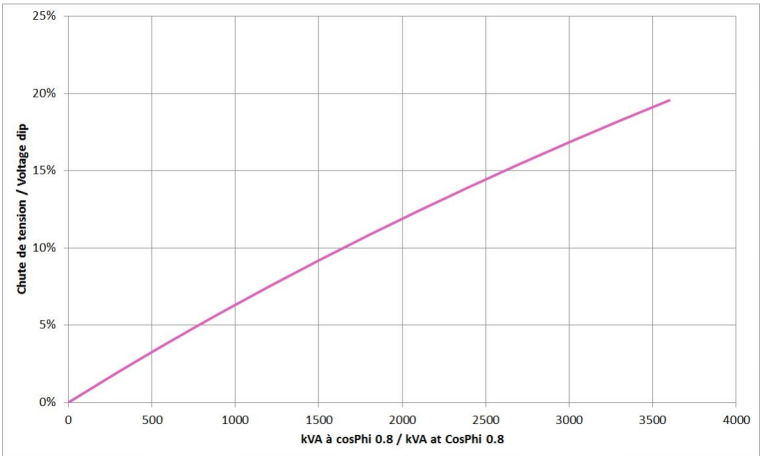
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## Efficiencies curve (by excitation system)



## 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 :

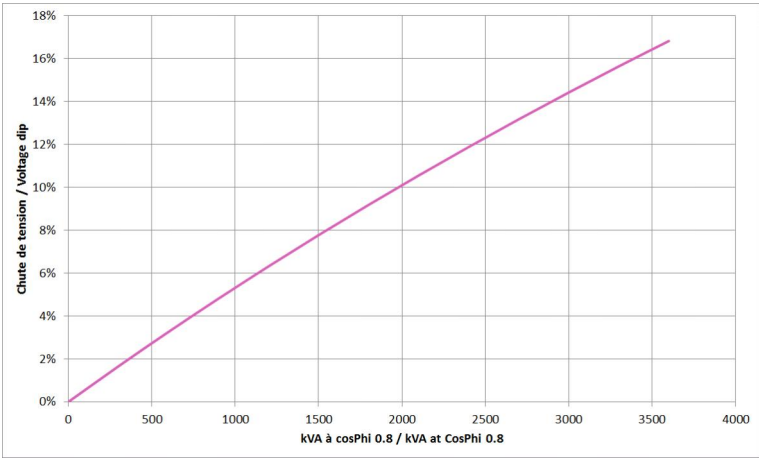
(\*) Capacity for maintaining short circuit at  $3 I_n$  for 10 s = YES

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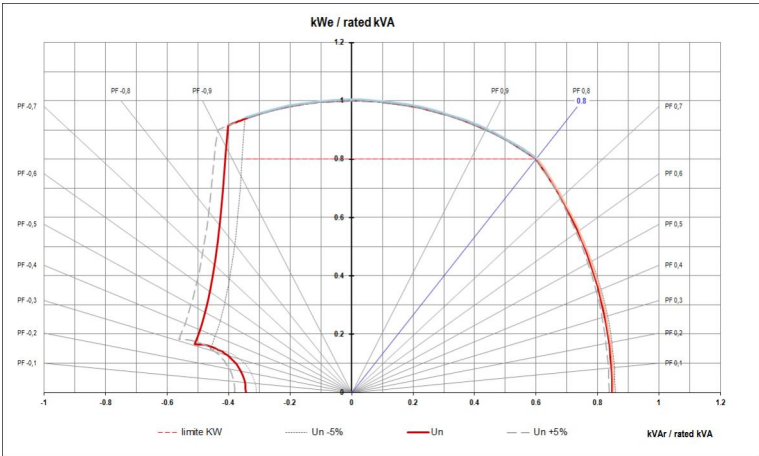
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## Rejection curve (by excitation system)



## Capability curve (PQ diagram)



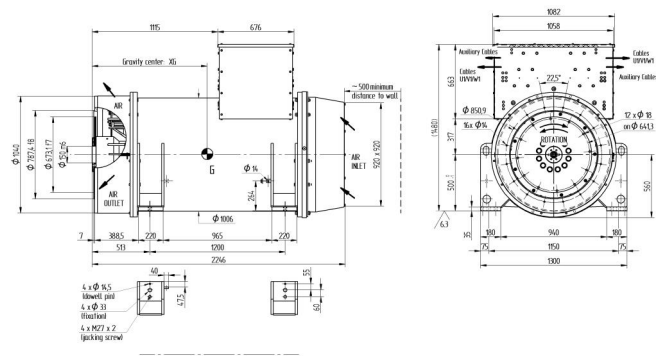
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## DIMENSIONS-

Overall dimension drawing (Single bearing)



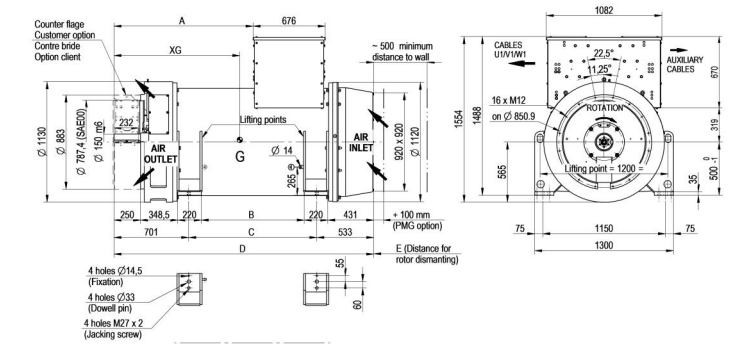
| Type    | Weight (kg) | Stator Length (mm) | XG (mm) |
|---------|-------------|--------------------|---------|
| KH05640 | 5250        | 1500               | 942     |
| KH06550 | 5700        | 1500               | 969     |
| KH07830 | 6300        | 1500               | 1010    |

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## Overall dimension drawing (Two bearings)



| Type    | A (mm) | B (mm) | C (mm) | Stator length (mm) | D (mm) | E (mm) | XG (mm) | Weight (kg) |
|---------|--------|--------|--------|--------------------|--------|--------|---------|-------------|
| KH05640 | 1303   | 965    | 1200   | 1500               | 2434   | 1841   | 1123    | 5320        |
| KH06550 | 1303   | 965    | 1200   | 1500               | 2434   | 1841   | 1150    | 5770        |
| KH07830 | 1303   | 965    | 1200   | 1500               | 2434   | 1841   | 1192    | 6420        |



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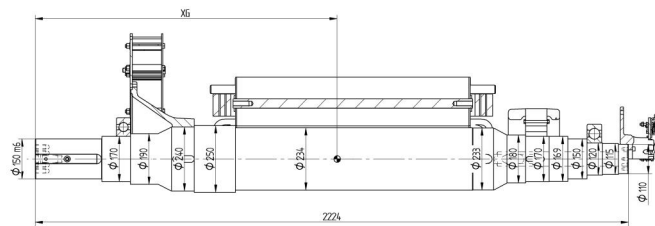
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### Rotation part drawing for torsional vibration calculation (Two bearings)



| Type    | XG (mm) | Weight (kg) | MR2 (kg.m <sup>2</sup> ) |
|---------|---------|-------------|--------------------------|
| KH05640 | 1072    | 1906        | 75.3                     |
| KH06550 | 1103    | 2069        | 84.0                     |
| KH07830 | 1152    | 2297        | 96.2                     |