

 **ENSD500-1 (BF6M1015C-G2)**

**DEUTZ** Generating set

*Technical Data Sheet*



★ Pictures are for your reference:

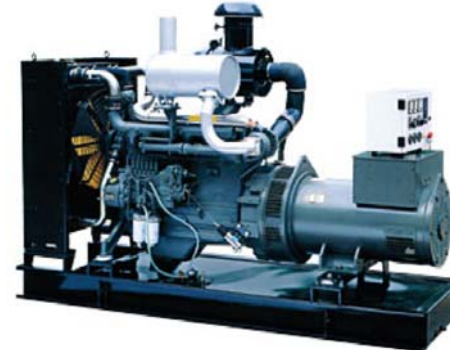

Features, Specifications and accessories are subject to changes without prior notice.



*Cooperator:*



## Standard Specification

<p><b>General features:</b></p> <ul style="list-style-type: none"> <li>• Composed of DEUTZ diesel engine and Stamford or ENMC alternator</li> <li>• 24V DC start motor and storage battery</li> <li>• Brushless, Self-excited, IP23, insulation class H alternator</li> <li>• Engine cooling system: water-cooled</li> <li>● Key start panel control system as standard, digital auto-start panel is optional</li> <li>• 8-hour operation base tank</li> <li>• Optional open type or silent type</li> <li>● All generator sets are gone through rigorous testing before being released to the market place, including 50% load, 75load, 100% load , 110% load and all protection function (overspeed stop, high water temperature, low oil pressure, battery charging fail, emergency stop)</li> </ul>	  
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## Engine Specification

**3-PH, 50Hz@1500RPM, 400/230V** (Also Can Be Made According To Customers' Special Requirements)

Genset Model	Genset Specification					Engine Specification				Alternator Model
	KVA		Cons.100% (L/H)	dB(A)@7m	Tank (L)	Model	Cyl.	G ov	Asp.	
	ESP	PRP								
ENSD500B	550	500	127	N/A	1524	BF6M1015C-G 2	4	M	TC	HCI 544D
ENSD500S-1B	550	500	127	70	1524	BF6M1015C-G 2	4	M	TC	HCI 544D
ENSD500-1B	550	500	127	N/A	1524	BF6M1015C-G 2	4	M	TC	ENI 544D
ENSD500S-1B	550	500	127	70	1524	BF6M1015C-G 2	4	M	TC	ENI 544D

- 1) Available in various voltages
- 2) To show ENEC Generating Sets Model  
For example: ENM38-1A, it is the open generation set.  
ENM38S-1A, it is the silent generating set.
- 3) ESP=Standby power standby duty, operation under variable load, without overload.
- 4) E=Electronic speed governor;  
PRP=Prime power continuous duty operation, under variable load, 10% overload permissible 1/12hr.

Page 2/5



### FUZHOU EN E&M CO.,LTD

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product development,we reserve the right to change specification without notice

## DEUTZ Diesel Engine Technical Data

Engine Model	BF6M1015C-G1
Number of Cylinders	4
Cylinder arrangement	Vertical in-line
Cycle	Four stroke
Aspiration	Turbocharged
Bore×Stroke (mm×mm)	105x 120
Displacement (Liter)	4
Compression Ratio	17:1
Prime Power/Speed (kW/rpm)	60/1500
Standby Power/Speed (kW/rpm)	66/1500
Speed Governor	Mechanical
Cooling System	water-cooled
Fuel Consumption at 100% Load (g/kWh)	288 (at 1500RPM)
Starter Motor	24V
Alternator	24V

## Alternator Specification

### Stamford Alternator (Standard)

Alternator Model	HCI 544C(Stamford) EN544C(ENEC) Please Refer To The“ Genset Main Technical Data”
Phase/Connect	3-phase 4-wire ,Y type connection
Excitation Model	Self-excite,automatic voltage regulation,Insulation:H,Bruhless,Enclosure:IP21—IP23
Power Factor	0.8
The regulating rate of instantaneous voltage:	-15%~ +20%
The time of steady voltage:	≤1.5sec
The waving rate of voltage:	≤1.0%
The regulating rate of steady frequency:	≤5%
regulating rate of instantaneous frequency:	≤±10%
The time of steady frequency:	3sec
The waving rate of frequency:	≤1%

### ENE A Alternator (Option) Technical Data



**Cooperator:**



## Reliable Performance

### Voltage regulation

Voltage regulation maintained within  $\pm 0.5\%$  as follow:

- Power factor Between 0.8~1.0 lag
- From no load to full load, any steady load
- Speed droop variation under 4.5%

### Frequency/Speed undulation

- Change load from 0-100%, Frequency/Speed Droop Ratio within 5% .
- Load from 25-100%, any steady load Frequency/Speed undulation within 0.25%

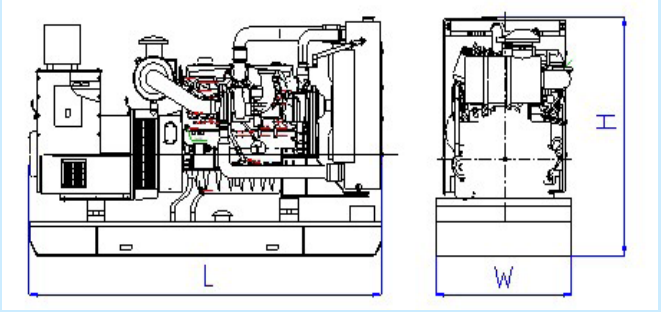
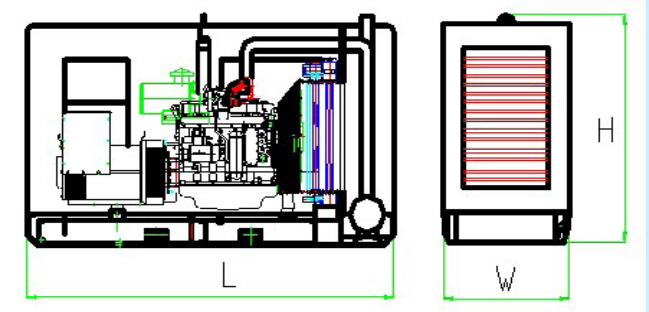
### Effect factor of telecom

- TIF( MA MG1-22) better than 50
- THF( BS EN60034) better than 2%

## Criterion

- ISO8528, GB/T2820
- EN12601:2001, EN60034-22:1997, EN60204-1:2006
- ISO9001:2000 Quality Control System

## Dimension and Weight

	<p><b>Open Type</b></p> <p>Overall size (L*W*H) 3100×1900×2100 Weight: 2000kg</p>
	<p><b>Silent Type</b></p> <p>Overall size (L*W*H) 3600×2000×2200 Weight: 3200kg</p>

Page 4/5



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## Control System

### 1. Standard: EN170HC Key Start

Providing the standard functions as follows:  
(Also can be made according to the customers' special requirements)

- \* Start/Stop controller
- \* Ampere meter
- \* Voltmeter and selector switch
- \* Frequency meter/ Water temperature gauge/ Oil pressure gauge/ Hour counter/ Battery voltage meter
- \* Emergency stop pushbutton
- \* Alarm System: Over speed、High Engine Temperature Low Oil Pressure、Charge Fail
- \* Protection System: Over speed、High Engine Temperature、Low Oil Pressure、Emergency Stop. And the other protection function pre-setting

### 2. Option: Smartgen HGM6110 Digital Auto Start

### 3. Option: Smartgen HGM6120 Digital Auto Start (Option assembled with the ATS)

### 4. Option: Deep Sea DSE5210 Digital Auto Start

### 5. Option: Deep Sea DSE5220 Digital Auto Start (Option assembled with the ATS)

Digital Auto-start Generator controller integrating digital, intelligent and network techniques is used for automatic control system of diesel generator. It can carry out functions including automatic start/stop, data measure and alarming. Optionally assembled with the ATS, it can carry out auto-switching between the outer power and generating set power. (AMF)

#### Functions:

- \* Automatic Start/Stop
- \* 3 start attempts failure and Automatic Crank Disconnect
- \* Parameters display (V/A/Hz/Hour)
- \* Engine monitoring and protection
- \* Charge alternator exciting and Charge alternator fail alarm
- \* Running hour counting
- \* Settings can be adjustable via key buttons on front panel

### 6. option: BGC-L (Main used in Multiple gen-sets, load sharing)



(1)



(2)



(3)



(4)



(5)



(6)



#### Cooperator:





**GENERATOR TYPE ECO 38-3LN/4**

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<b>Electrical Characteristics</b>										
Frequency	Hz	50				60				
Voltage (series star)	V	380	400	415	440	415	440	460	480	
Rated power class H	kVA	350	350	350	340	380	420	420	420	
	kW	280	280	280	272	304	336	336	336	
Rated power class F	kVA	320	320	320	310	350	385	385	385	
	kW	256	256	256	248	280	308	308	308	
Regulation with DSR		±1 % with any power factor and speed variations between -5% +30%								
Insulation class		H								
Execution		Brushless								
Stator winding		12 ends								
Rotor		with damping cage								
Efficiencies class H	4/4	%	93,4	93,5	93,2	93	93,6	94,1	94,2	94,3
(see graph. for details)	3/4	%	93,4	93,7	93,6	93,3	93,9	94,1	94,3	94,5
	2/4	%	92,5	92,6	92,6	92,4	93	93,1	93,2	93,3
	1/4	%	90,1	89,9	89,7	89,5	90,6	90,6	90,6	90,4
Reactances (f. l.cl. F)	Xd	%	238,2	215	199,7	172,6	260,2	255,9	234,1	215
	Xd'	%	19,1	17,2	16,0	13,8	20,8	20,5	18,7	17,2
	Xd''	%	10,4	9,4	8,7	7,5	11,4	11,2	10,2	9,4
	Xq	%	139,6	126	117,1	101,2	152,5	150,0	137,2	126
	Xq'	%	139,6	126	117,1	101,2	152,5	150,0	137,2	126
	Xq''	%	22,3	20,1	18,7	16,1	24,3	23,9	21,9	20,1
	X <sub>2</sub>	%	17,4	15,7	14,6	12,6	19,0	18,7	17,1	15,7
	X <sub>0</sub>	%	2,4	2,2	2,0	1,8	2,7	2,6	2,4	2,2
Short Circuit Ratio	Kcc		0,37	0,42	0,57	0,92	0,24	0,32	0,37	0,42
Time Constants	Td'	sec.	0,099							
	Td''	sec.	0,0127							
	Tdo'	sec.	1,50							
	Tα	sec.	0,013							
Short Circuit Current Capacity		%	>300				>350			
Excitation at no load	Amp.		0,55	0,72	0,95	1,2	0,35	0,35	0,6	0,7
Excitation at full load	Amp.		3,5	3,9	4,1	4,3	3,3	3,5	3,7	3,9
Overload (long-term)		%	1 hour in a 6 hours period 110% rated load							
Overload per 20 sec.		%	300							
Stator Winding Resistance (20 °C)		Ω	0,0042							
Rotor Winding Resistance (20 °C)		Ω	6,780							
Exciter Resistance (20 °C)		Ω	Rotor : 0,685				Stator : 15,28			
Heat dissipation at f.l.cl.H	W		19786	19465	20429	20473	20786	21067	20688	20310
Telephone Interference			THF < 2%				TIF < 40			
Radio interference			EN61000-6-3, EN61000-6-2. For others standards apply to factory							
Waveform Distors.(THD) at f. load	LL/LN %		3,1 / 2,9							
Waveform Distors.(THD) at no load	LL/LN %		2,7 / 2,7							
<b>Mechanical characteristics</b>										
Protection			IP 21 (other protection on request )							
DE bearing			6318.2RS							
NDE bearing			6314.2RS							
Weight of wound stator assembly	kg		347							
Weight of wound rotor assembly	kg		230							
Weight of complete generator	kg		905							
Maximun overspeed	rpm		2250							
Unbalanced magnetic pull at f.l.cl.F	kN/mm		6,2							
Cooling air requirement	m <sup>3</sup> /min		32				39			
Inertia Constant (H)	sec.		0,123				0,147			
Noise level at 1m/7m	dB(A)		82 / 69				86 / 73			

All technical data are to be considered as a reference and they can be modified without any notice.

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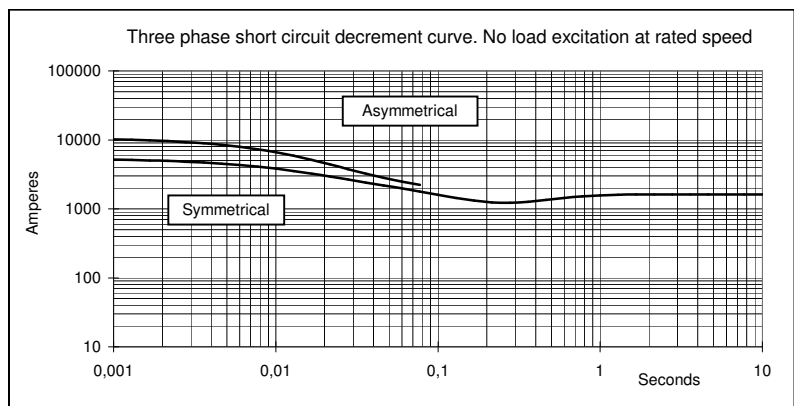
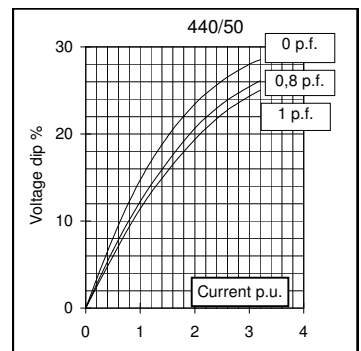
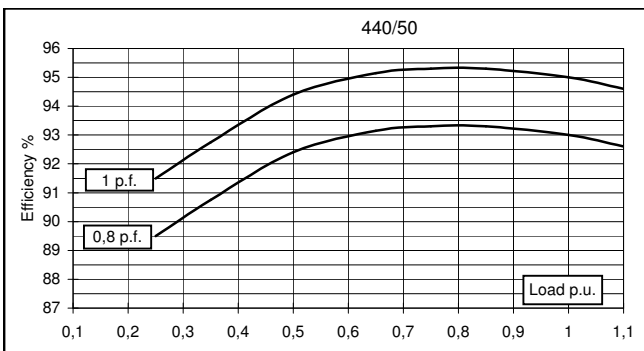
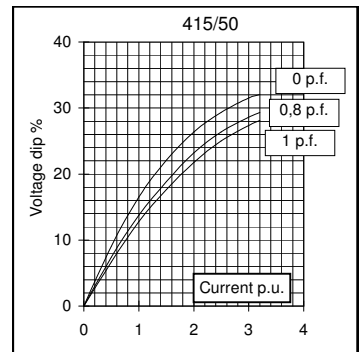
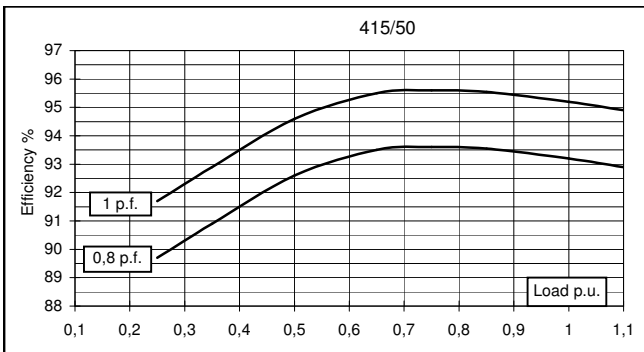
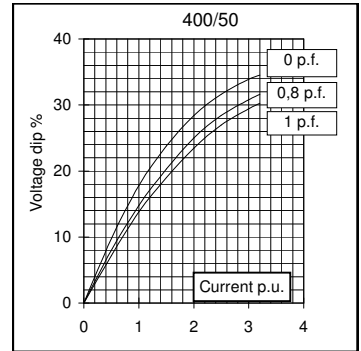
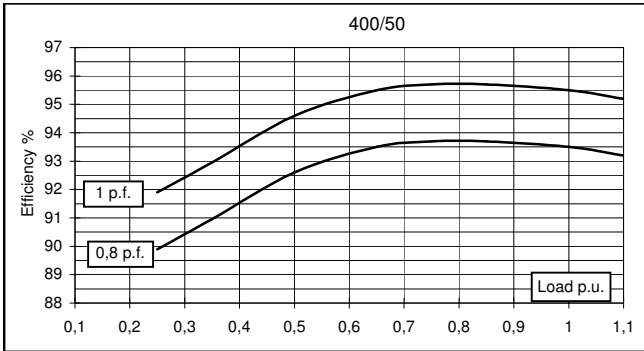
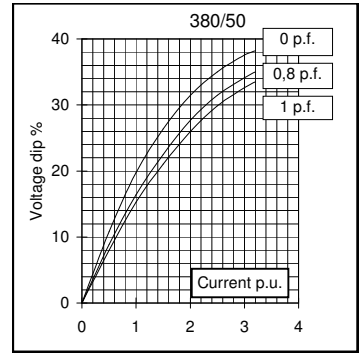
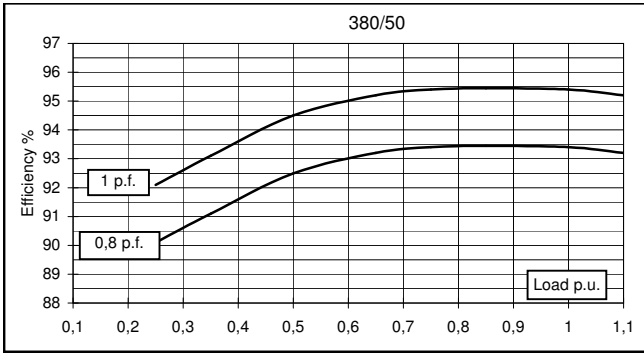


# GENERATOR TYPE ECO 38-3LN/4

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## 50 Hz



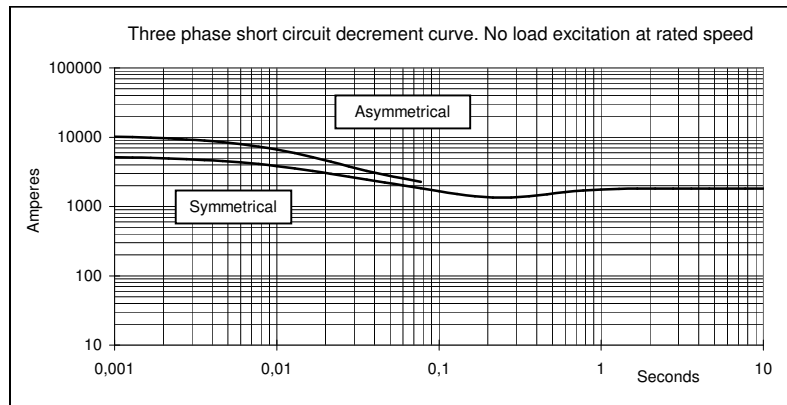
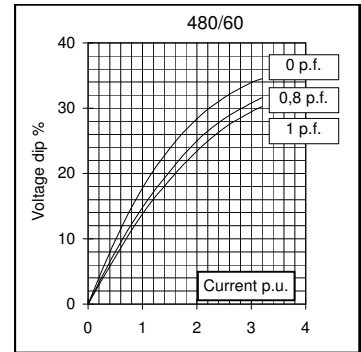
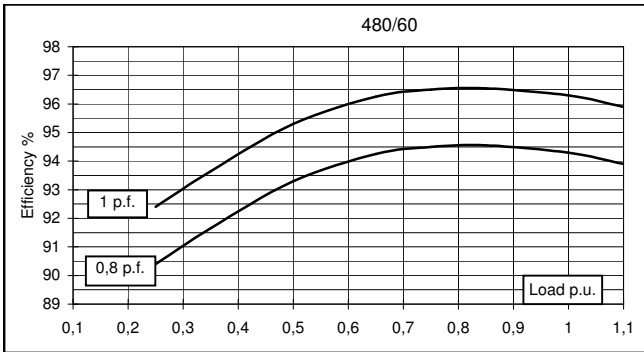
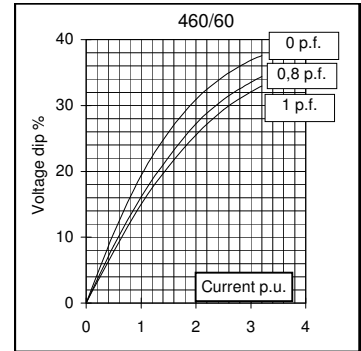
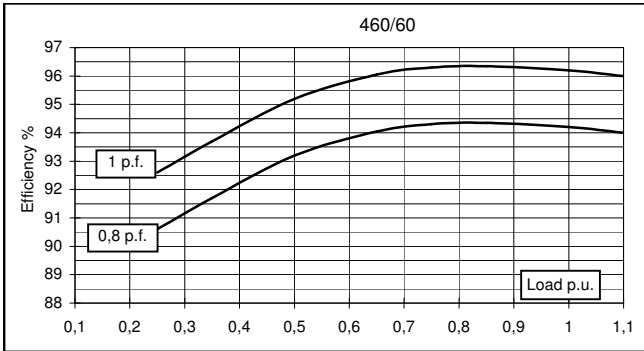
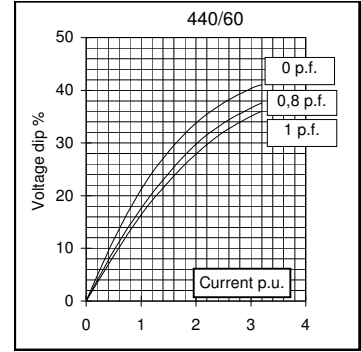
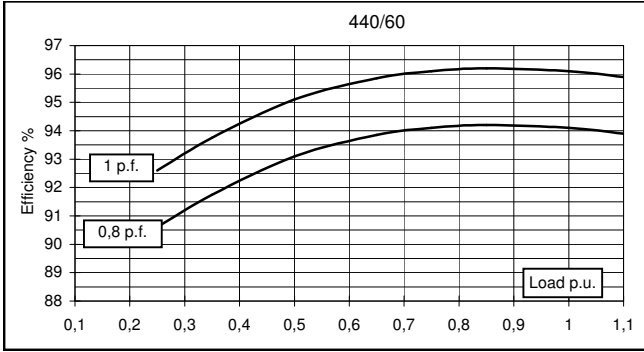
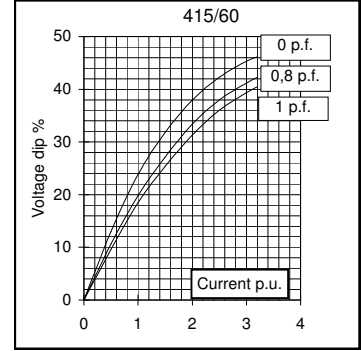
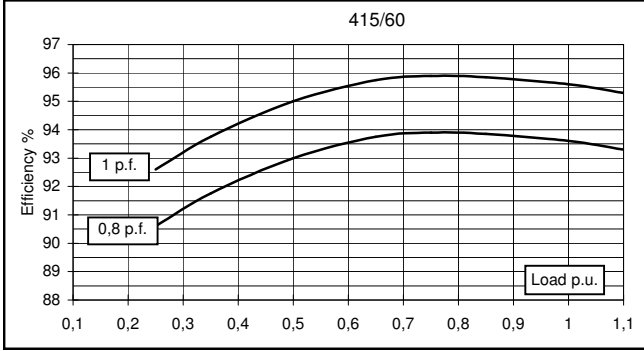


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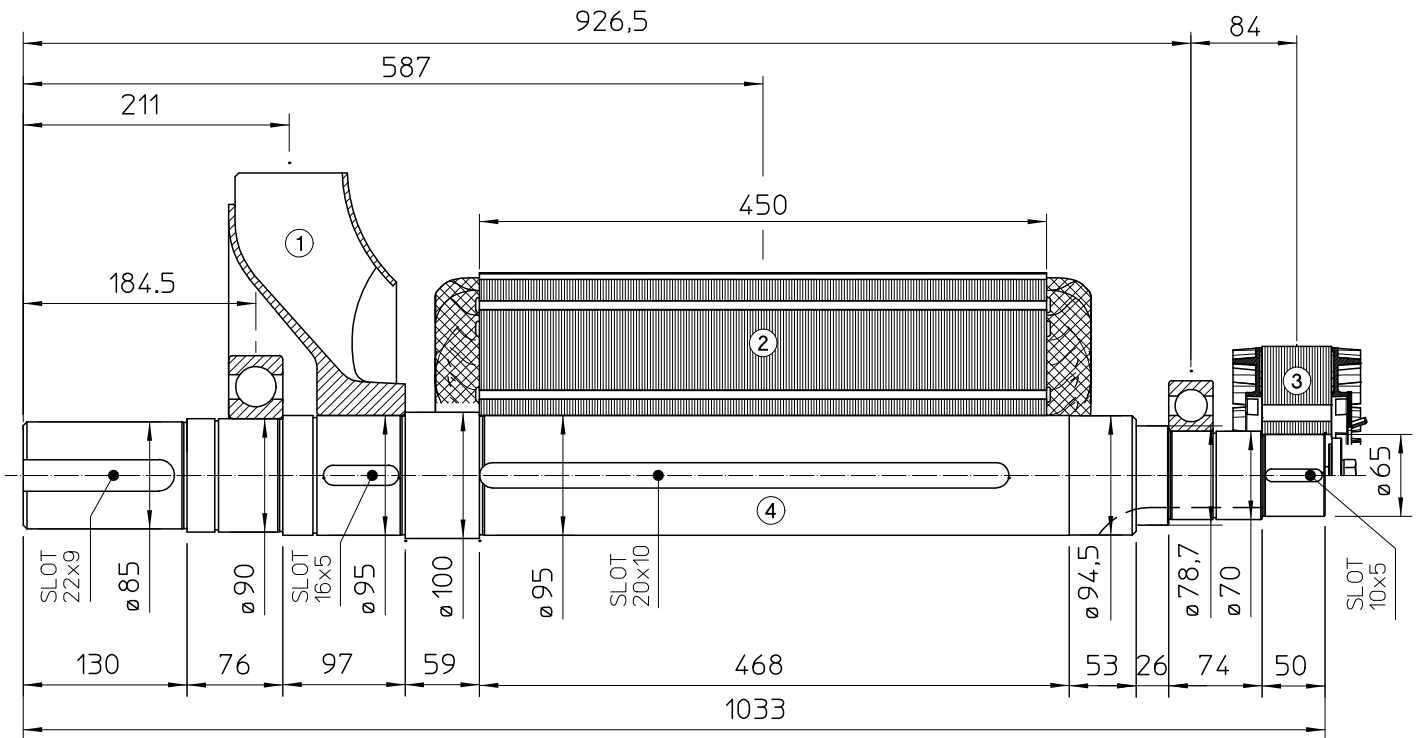
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## 60 Hz

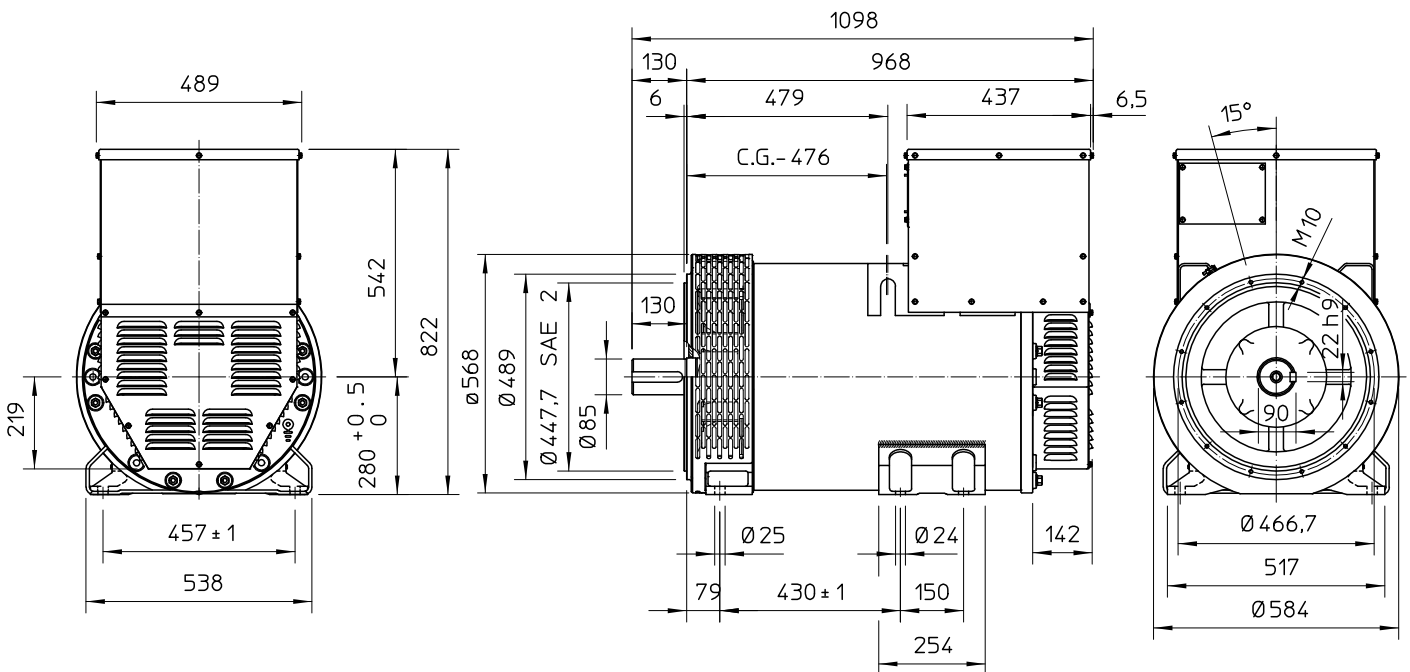




### TWO BEARING MOMENTS OF INERTIA

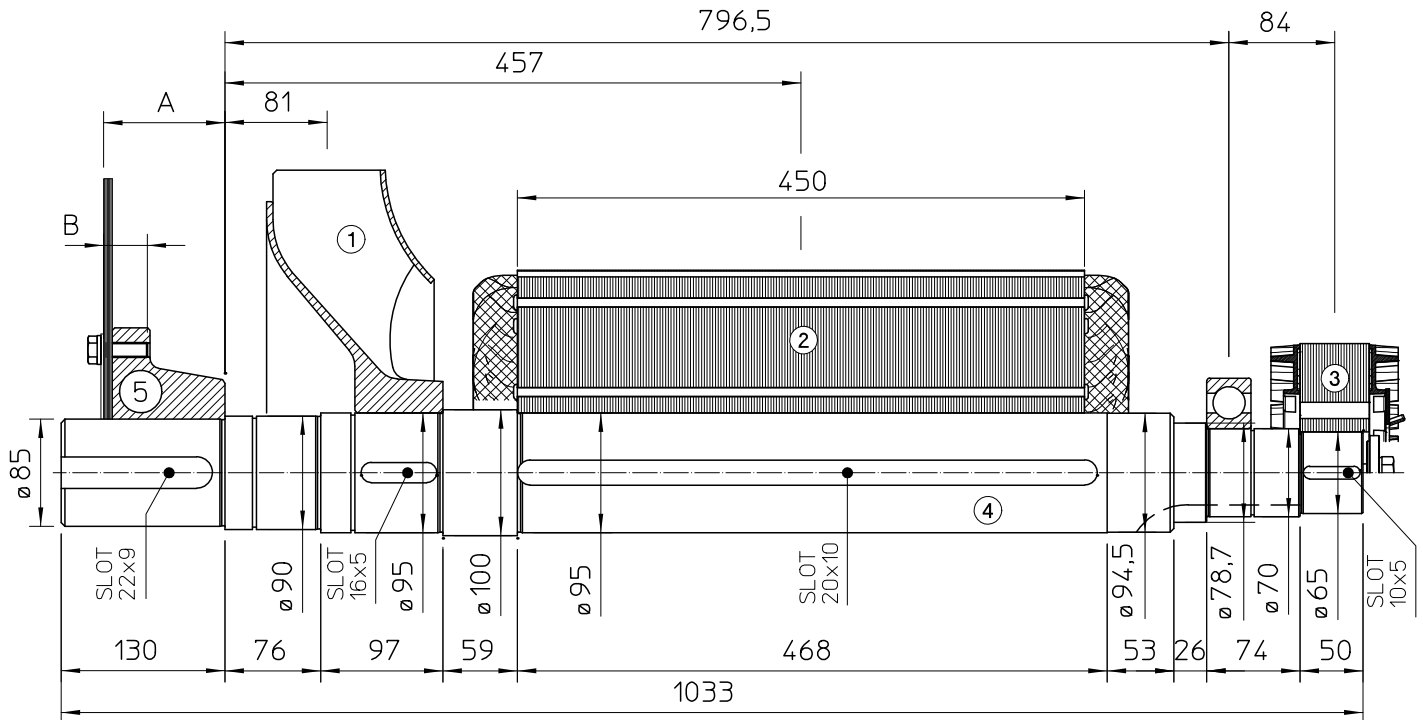


### TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

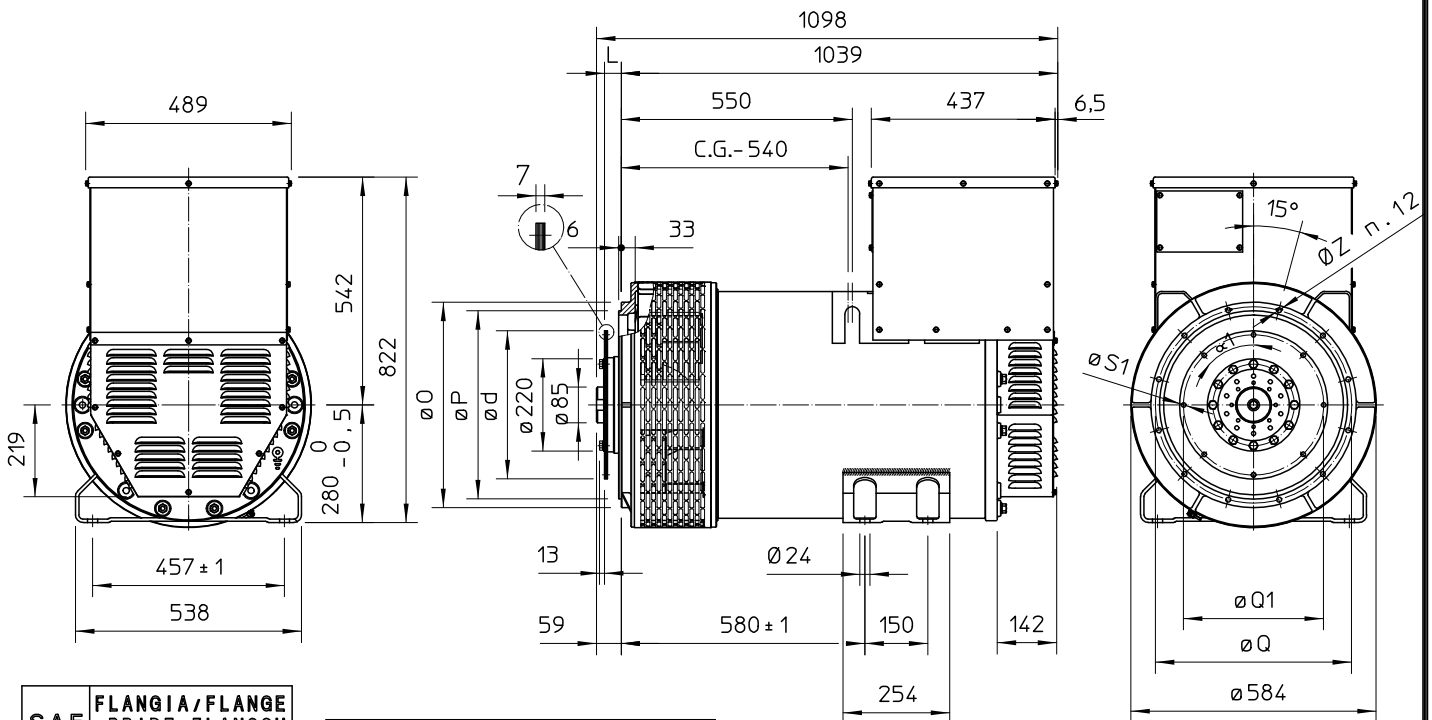
### SINGLE BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm <sup>2</sup> )
1	FAN	6.1	0.1887
2	MAIN ROTOR	230	3.1461
3	EX. ROTOR	14.5	0.0874
4	SHAFT	49.9	0.0525
TOTAL		300.5	3.4747

SAE N°	5		SHAFTS COUPLING FLEX PLATE	
	A	B	WEIGHT kg	J kgm <sup>2</sup>
11.5	110.4	41.1	20.5	0.174
14	96.4	34.7	23.5	0.275

### SINGLE BEARING DIMENSIONS



SAE N.	FLANGIA/FLANGE BRIDE/FLANSCH		
	O	P	Q
3	451	409,6	428,6
2	489	447,7	466,7
1	552	511,2	530,2
1/2	648	584,2	619,1

SAE N.	GIUNTI A DISCHI DISC COUPLING DISQUE DE MONOPALIER SCHEIBENKUPPLUNG					
	L	d	Q1	n <sub>fori</sub>	S1	α1
11 1/2	39,6	352,42	333,37	8	11	45°
14	25,4	466,72	438,15	8	14	45°

C.G.= GRAVITY CENTER