

ژنراتور : Mecc Alte

موتور دیزل : Volvo Penta

Standby		Prime		دیزل ژنراتور
KVA	KW	KVA	KW	
450	-	412	328	



VOLVO PENTA GENSET ENGINE

TAD1344GE

NEW!

399 kW (543 hp) at 1500 rpm, 449 kW (611 hp) at 1800 rpm, acc. ISO 3046

The TAD1344GE is a powerful, reliable and economical Generating Set Diesel Engine built on the dependable Volvo in-line six concept.

Durability & low noise

Designed for easy, fast and economical installation. Field tested to ensure highest standard of durability and long life. Well-balanced to produce smooth and vibration-free operation with low noise level.

To maintain a controlled working temperature in cylinders and combustion chambers, the engine is equipped with piston cooling. The engine is also fitted with replaceable cylinder liners and valve seats/guides to ensure maximum durability and service life of the engine.

Low exhaust & noise emission

The state of the art, high-tech injection and highly efficient charge air system with low internal losses contributes to excellent combustion and low fuel consumption.

The TAD1344GE is EU Stage 2 emission certified. An electronically controlled viscous fan drive is available giving substantially lower noise and fuel consumption.

Easy service & maintenance

Easily accessible service and maintenance points contribute to the ease of service of the engine.

Technical description

Engine and block

- Cast iron cylinder block with optimum distribution of forces without the block being unnecessarily heavy.
- Wet, replaceable cylinder liners
- Piston cooling for low piston temperature and reduced ring temperature
- Tapered connecting rods for increased piston lifetime
- Crankshaft induction hardened bearing surfaces and fillets with seven bearings for moderate load on main and high-end bearings
- Case hardened and Nitrocarburized transmission gears for heavy duty operation
- Keystone top compression rings for long service life
- Viscous type crankshaft vibration dampers to withstand single bearing alternator torsional vibrations
- Replaceable valve guides and valve seats
- Over head camshaft and four valves per cylinder



Features

- Excellent load acceptance
- Highly efficient cooling system
- Dual Speed 1500 / 1800 rpm
- EMS 2
- EU Stage 2 emission certified
- Wide range of optional equipment including visco fan.

Lubrication system

- Full flow oil cooler
- Full flow disposable spin-on oil filter, for extra high filtration
- The lubricating oil level can be measured during operation
- Gear type lubricating oil pump, gear driven by the transmission

Fuel system

- Electronic high pressure unit injectors
- Fuel prefilter with water separator and water-in-fuel indicator / alarm
- Gear driven low-pressure fuel pump
- Fine fuel filter with manual feed pump and fuel pressure switch

Cooling system

- Efficient cooling with accurate coolant control through a water distribution duct in the cylinder block. Reliable sleeve thermostat with minimum pressure drop
- Belt driven coolant pump with high degree of efficiency
- Electronically controlled viscous fan drive provides lower noise and fuel consumption (optional).
- Coolant filter as standard

Turbo charger

- Efficient and reliable turbo charger
- Electronically controlled Waste-gate
- Extra oil filter for the turbo charger

Electrical system

- Engine Management System 2 (EMS 2), an electronically controlled processing system which optimizes engine performance. It also includes advanced facilities for diagnostics and fault tracing.
- Possibility to perform a start battery test according to the NCPA requirements via CAN bus signals.
- The instruments and controls connect to the engine via the CAN SAE J1939 interface, either through the Control Interface Unit (CIU) or the Digital Control Unit (DCU). The CIU converts the digital CAN bus signal to an analog signal, making it possible to connect a variety of instruments. The DCU is a control panel with display, engine control, monitoring, alarm, parameter setting and diagnostic functions. The DCU also presents error codes in clear text.
- Sensors for oil pressure, oil temp, boost pressure, boost temp, coolant temp, fuel temp, water in fuel, fuel pressure and two speed sensors.

**VOLVO
PENTA**

TAD1344GE

Technical Data

General

Engine designation	TAD1344GE	
No. of cylinders and configuration	in-line 6	
Method of operation	4-stroke	
Bore, mm (in.)	131 (5.16)	
Stroke, mm (in.)	158 (6.22)	
Displacement, l (in ³)	12.78 (780)	
Compression ratio	18.1:1	
Wet weight, engine only, kg (lb)	1325 (2921)	
Wet weight with Gen Pac, kg (lb)	1790 (3946)	

Performance	1500 rpm	1800 rpm
with fan, kW (hp) at:		
Prime Power	354 (481)	392 (533)
Standby Power	389 (529)	431 (586)

Lubrication system	1500 rpm	1800 rpm
Oil consumption, liter/h (US gal/h) at:		
Prime Power	0.04 (0.011)	0.05 (0.013)
Standby Power	0.04 (0.011)	0.05 (0.013)
Oil system capacity incl filters, liter	36	

Fuel system	1500 rpm	1800 rpm
Specific fuel consumption at:		
Prime Power, g/kWh (lb/hph)		
25 %	219 (0.355)	229 (0.371)
50 %	200 (0.324)	205 (0.332)
75 %	197 (0.319)	200 (0.324)
100 %	194 (0.314)	201 (0.326)
Standby Power, g/kWh (lb/hph)		
25 %	215 (0.349)	225 (0.365)
50 %	199 (0.323)	204 (0.331)
75 %	198 (0.321)	201 (0.326)
100 %	195 (0.316)	202 (0.327)

Intake and exhaust system	1500 rpm	1800 rpm
Air consumption, m ³ /min (cfm) at:		
Prime Power	27 (954)	33 (1165)
Standby Power	28 (989)	33 (1165)
Max allowable air intake restriction, kPa (PSI)	5 (0.7)	
Exhaust gas temperature after turbine, °C (°F) at:		
Prime Power	440 (824)	440 (824)
Standby Power	465 (869)	490 (914)
Max allowable back-pressure in exhaust line, kPa (PSI)	10 (1.5)	
Exhaust gas flow, m ³ /min (cfm) at:		
Prime power	63.5 (2243)	77.0 (2719)
Standby Power	67.5 (2384)	82.0 (2896)

Cooling system	1500 rpm	1800 rpm
Fan power consumption, std ratio, kW (hp) 10 (14)		18 (24)

Cooling performance	1500 rpm	1800 rpm
AOT at max cooling air flow, °C (°F):		
Prime Power	63 (145)	63 (145)
Standby Power	59 (138)	60 (140)
Max cooling air flow, m ³ /s (cfs)	6.7 (237)	8.2 (290)

Standard equipment

Engine

- Automatic belt tensioner
- Lift eyelets

Flywheel

- Flywheel housing with conn. acc. to SAE 1
- Flywheel for 14" flex. plate and flexible coupling

Engine suspension

- Fixed front suspension

Lubrication system

- Oil dipstick
- Full-flow oil filter of spin-on type
- By-pass oil filter of spin-on type
- Oil cooler, side mounted
- Low noise oil sump

Fuel system

- Fuel filters of disposable type
- Electronic unit injectors
- Pre-filter with water separator

Intake and exhaust system

- Air filter with replaceable paper insert
- Air restriction indicator
- Air cooled exhaust manifold
- Connecting flange for exhaust pipe
- Exhaust flange
- Turbo charger, low right side

Cooling system

- Radiator incl intercooler
- Coolant pump
- Fan hub
- Thrust fan
- Fan guard
- Belt guard

Control system

- Engine Management System (EMS) with CAN-bus interface SAE J1939

Alternator

- Alternator 80 A

Starting system

- Starter motor
- Connection facility for extra starter motor

Instruments and senders

- Temp.- and oil pressure for automatic stop/alarm

Other equipment

- Expandable base frame

Engine Packing

- Plastic wrapping

1) must be ordered, see order specification

2) Available later

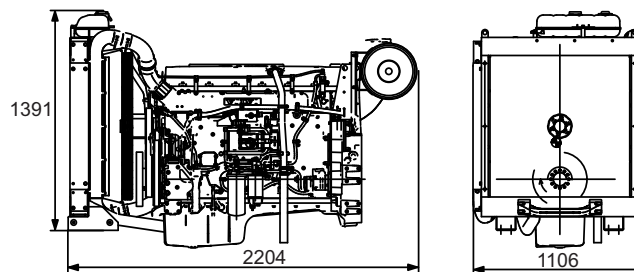
– optional equipment or not applicable

• included in standard specification

For our wide range of optional equipment, please see Order specification.

Dimensions TAD1344GE

Not for installation



Note! Not all models, standard equipment and accessories are available in all countries.

All specifications are subject to change without notice.

The engine illustrated may not be entirely identical to production standard engines.

Power Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. The technical data applies to an engine without cooling fan and operating on a fuel with calorific value of 42.7 MJ/kg (18360 BTU/lb) and a density of 0.84 kg/liter (7.01 lb/US gal), also where this involves a deviation from the standards. Power output guaranteed within 0 to +2% at rated ambient conditions at delivery. Ratings are based on ISO 8528. Engine speed governing in accordance with ISO 3046/IV, class A1 and ISO 8528-5 class G3

Exhaust emissions

The engine complies with EU stage 2 emission legislation according to the Non Road Directive EU 97/68/EEC. The engine also complies with TA-luft -50% exhaust emission regulations.

Rating Guidelines

PRIME POWER rating corresponds to ISO Standard Power for continuous operation. It is applicable for supplying electrical power at variable load for an unlimited number of hours instead of commercially purchased power. A10 % overload capability for governing purpose is available for this rating.

STANDBY POWER rating corresponds to ISO Standard Fuel Stop Power. It is applicable for supplying standby electrical power at variable load in areas with well established electrical networks in the event of normal utility power failure. No overload capability is available for this rating.

1 hp = 1 kW x 1.36

VOLVO PENTA

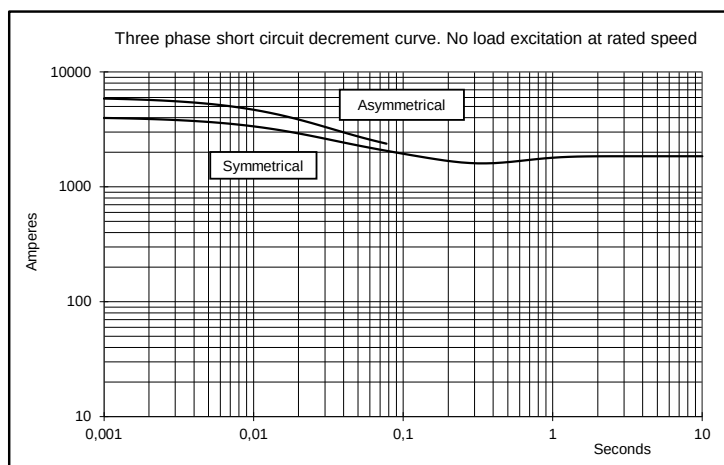
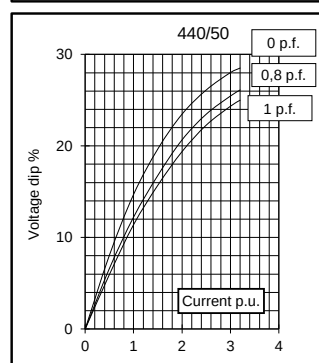
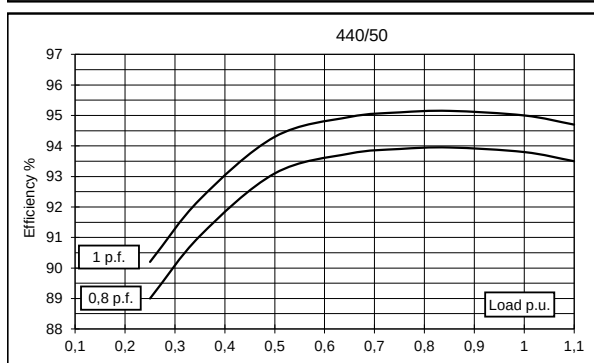
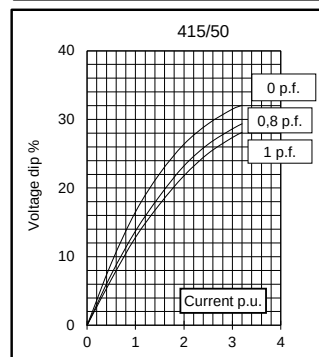
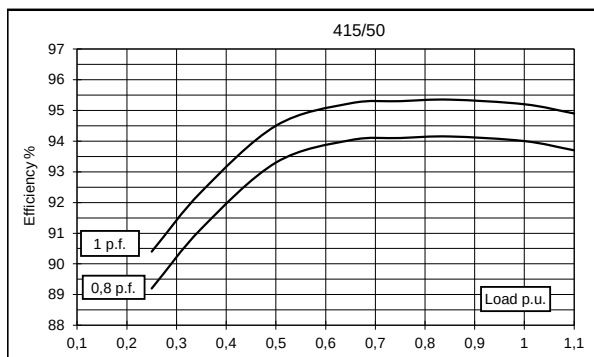
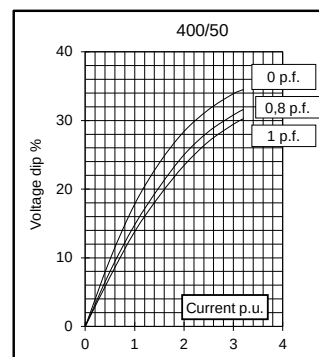
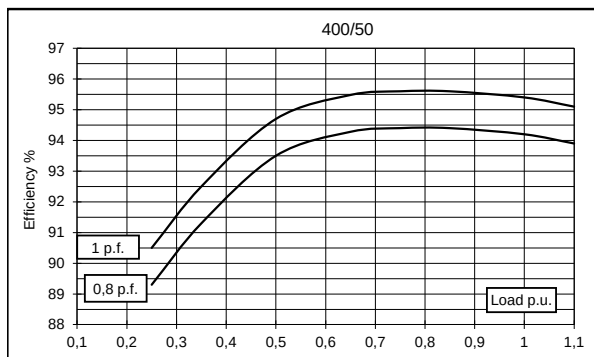
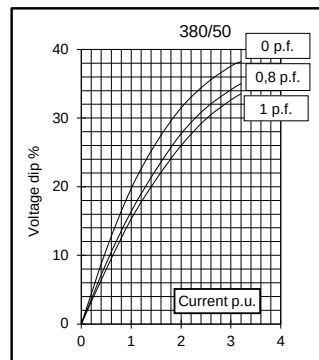
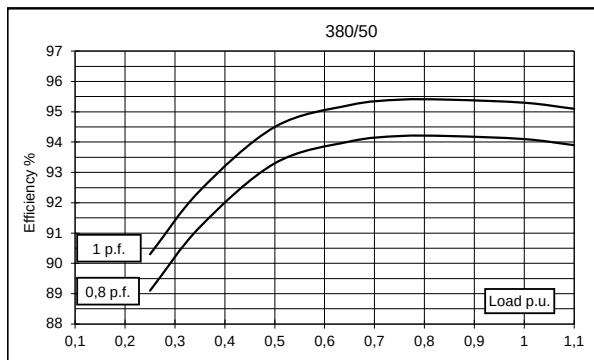
AB Volvo Penta
SE-405 08 Göteborg, Sweden
www.volvopenta.com

Electrical Characteristics										
Frequency		Hz	50				60			
Voltage (parallel star)		V	380	400	415	440	415	440	460	480
Rated power class H		kVA	400	400	400	370	420	450	480	480
		kW	320	320	320	296	336	360	384	384
Rated power class F		kVA	370	370	370	342	383	410	440	440
		kW	296	296	296	274	306	328	352	352
Regulation with		DER1	±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	%	94,1	94,2	94	93,8	94,4	94,8	95,1	95,2
(see graph. for details)	3/4	%	94,2	94,4	94,1	93,9	94,5	94,9	95,2	95,3
	2/4	%	93,3	93,5	93,3	93,1	93,3	93,8	94	94,2
	1/4	%	89,1	89,3	89,2	89	90,4	90,6	90,8	91
Reactances (f. l.cl. F)	Xd	%	333	277	185	115	406	365	333	277
	Xd'	%	27,4	22,5	20,4	18,6	29,7	28,5	27,4	22,5
	Xd"	%	16,2	14,2	12,1	10,4	19,2	18,1	16,2	14,2
	Xq	%	121	112	104	97	145	131	121	112
	Xq'	%	121	112	104	97	145	131	121	112
	Xq"	%	29,4	28,2	26,7	24,2	31,7	30,6	29,4	28,2
	X ₂	%	19,7	18,5	17,2	15,6	21,8	20,4	19,7	18,5
	X ₀	%	3,7	3,5	3,1	2,7	4,1	3,9	3,7	3,5
Short Circuit Ratio	Kcc		0,30	0,36	0,55	0,90	0,24	0,27	0,30	0,36
Time Constants	Td'	sec.	0,16							
	Td"	sec.	0,019							
	Tdo'	sec.	2,55							
	Tα	sec.	0,017							
Short Circuit Current Capacity		%	>300				>350			
Excitation at no load		Amp.	0,7	0,8	0,9	1,1	0,5	0,6	0,7	0,8
Excitation at full load		Amp.	3,4	3,6	3,7	3,8	3,1	3,3	3,4	3,5
Overload (long-term)		%	1 hour in a 6 hours period 110% rated load							
Overload per 20 sec.		%	300							
Stator Winding Resistance (20°C)		Ω	0,018							
Rotor Winding Resistance (20°C)		Ω	4,488							
Exciter Resistance (20 °C)		Ω	Rotor : 0,317				Stator : 8,85			
Heat dissipation at f.l.cl.H		W	20064	19703	20426	19565	19932	19747	19785	19361
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	%	2,6 / 2,6							
Waveform Distors.(THD) at no load	LL/LN	%	2,9 / 2,9							
Mechanical characteristics										
Protection			IP 21 (other protection on request)							
DE bearing			6322							
NDE bearing			6318.2RS							
Weight of wound stator assembly		kg	327							
Weight of wound rotor assembly		kg	211							
Weight of complete generator		kg	1040							
Maximun overspeed		rpm	2250							
Unbalanced magnetic pull at f.l.cl.F		kN/mm	5							
Cooling air requirement		m³/min	54				64,8			
Inertia Constant (H)		sec.	0,176				0,212			
Noise level at 1m/7m		dB(A)	94 / 82				98 / 88			

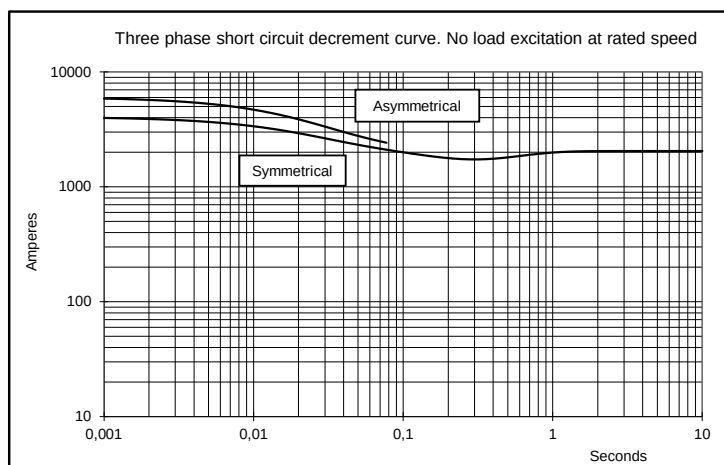
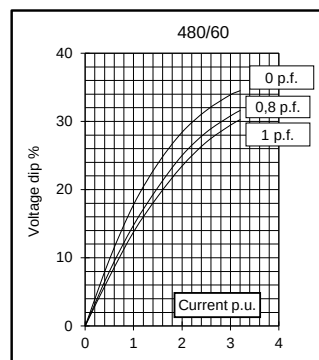
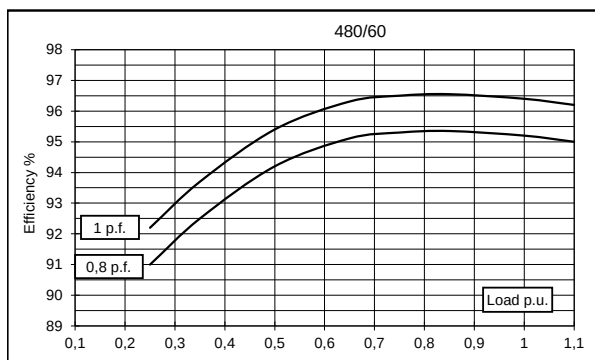
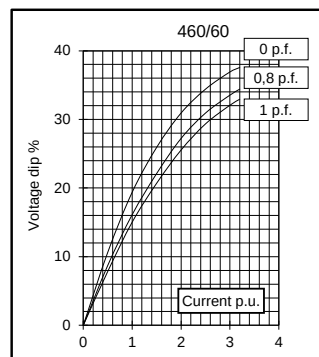
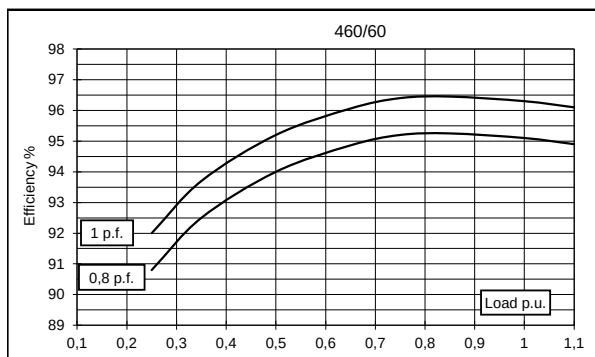
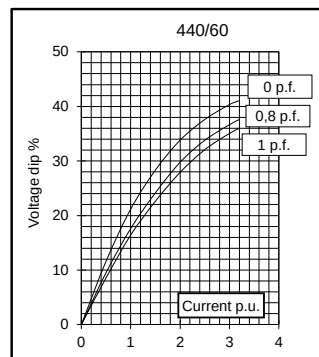
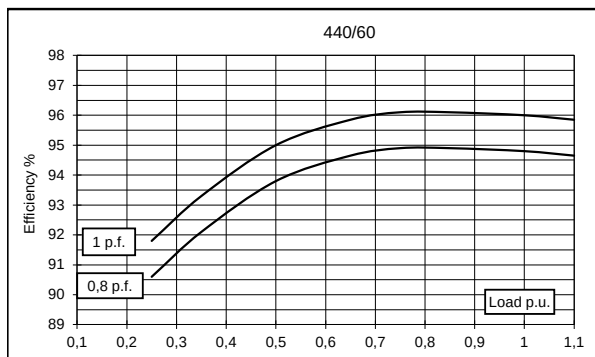
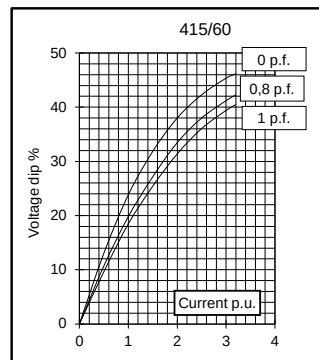
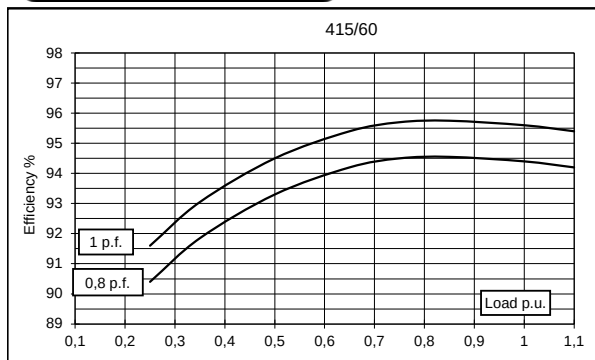
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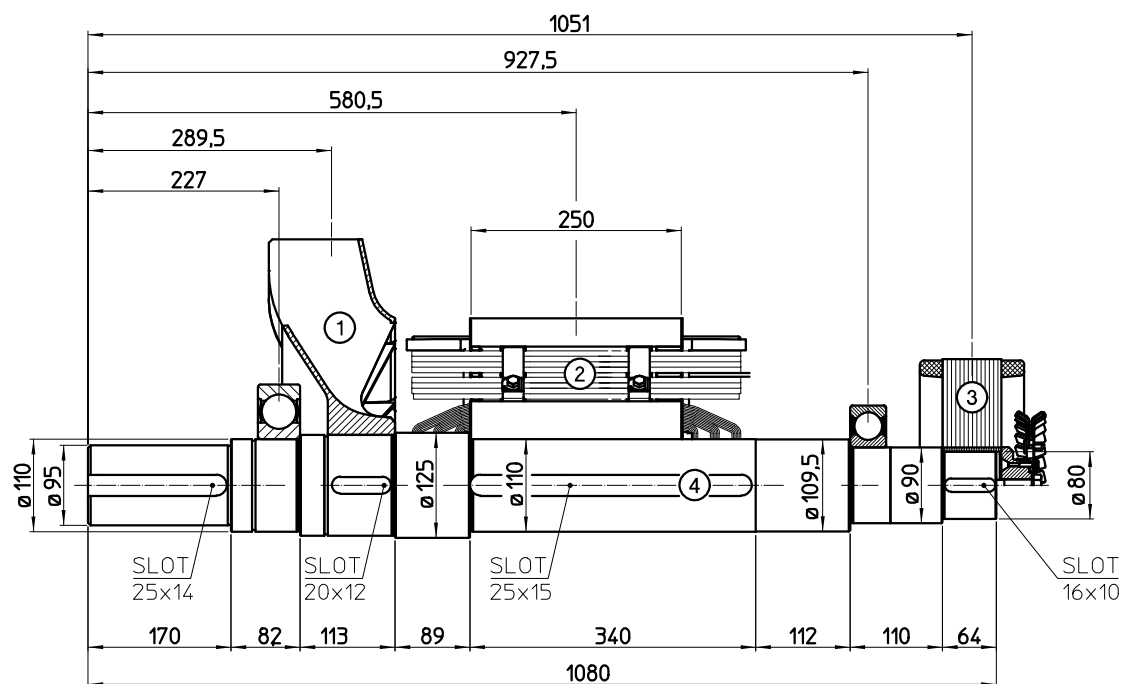
50 Hz



60 Hz

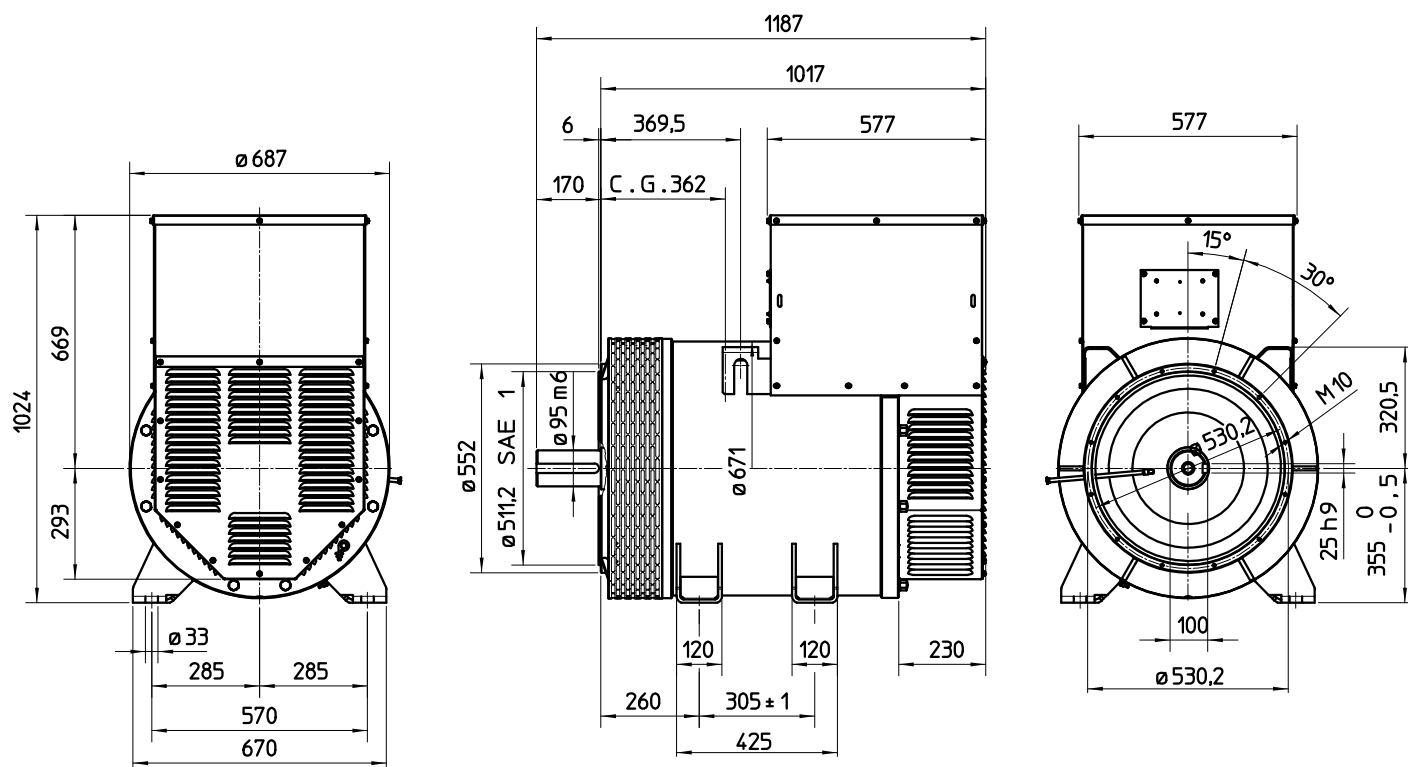


TWO BEARING MOMENTS OF INERTIA

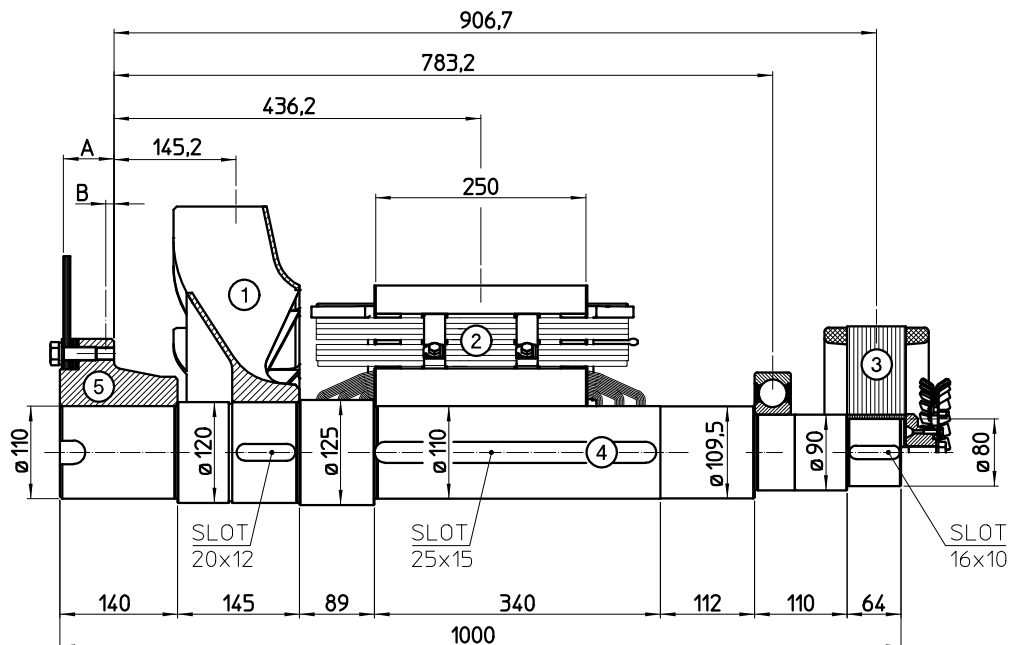


COMPONENT	WEIGHT kg	J kgm ²
1 FAN	10,2	0,335
2 MAIN ROTOR	211	4,498
3 EX. ROTOR	35	0,562
4 SHAFT	73,6	0,109
TOTAL	329,8	5,504

TWO BEARING DIMENSIONS



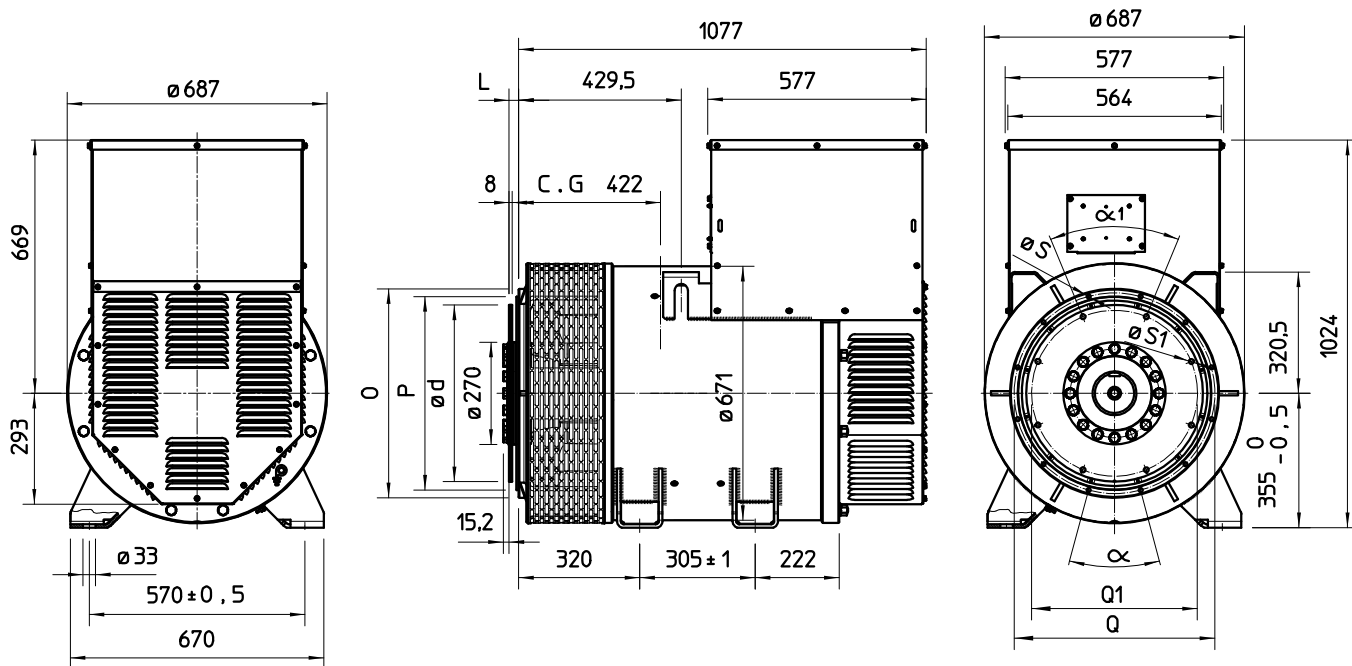
SINGLE BEARING MOMENTS OF INERTIA



COMPONENT	WEIGHT kg	J kgm ²
1 FAN	10,2	0,335
2 MAIN ROTOR	211	4,498
3 EX. ROTOR	35	0,562
4 SHAFT	72	0,111
TOTAL	328.2	5.506

Sae No	A	B	WEIGHT kg	J kgm ²
14	60	9,6	41,4	0,511
18	50	6,6	45,1	0,858

SINGLE BEARING DIMENSIONS



SAE N.	O	P	Q	N. FORI	S	α
1	552	511,2	530,2	12	11	30°
1/2	648	584,2	619,1	12	14	30°
0	711	647,7	679,5	16	14	22,5°
00	883	787,4	850,9	16	14	22,5°

VOL. N.	L	d	Q1	N. FORI	S1	α1
14	25,4	466,72	438,15	8	14	45°
18	15,7	571,5	542,92	6	17	60°

C.G.= GRAVITY CENTER