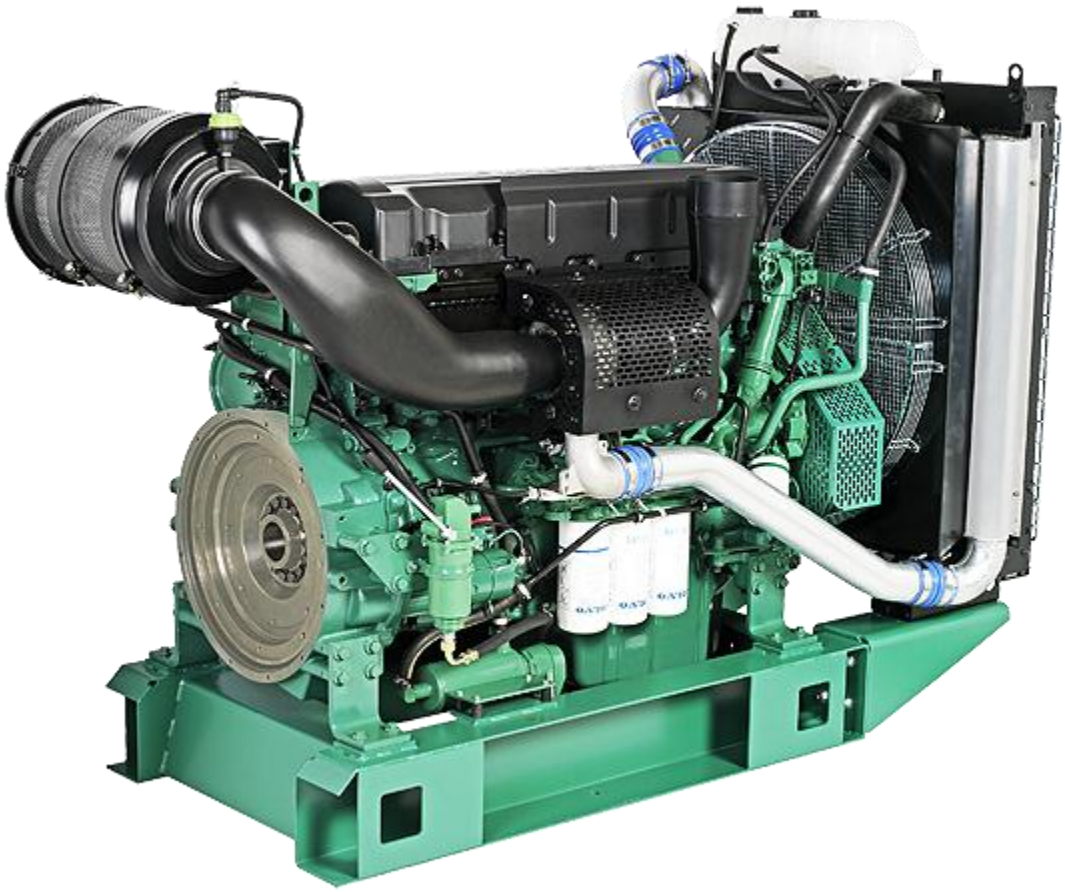
موتور دیزل : Volvo Penta	ژنراتور : Mecc Alte

	Prime		Standby	
	KW	KVA	KW	KVA
دیزل ژنراتور	-	451	-	501



VOLVO PENTA GENSET ENGINE

TAD1345GE

NEW!

441 kW (600 hp) at 1500 rpm, 449 kW (611 hp) at 1800 rpm, acc. ISO 3046

The TAD1345GE 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 TAD1345GE 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 unnessarily 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

- High power density
- 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 anolog 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

TAD1345GE

Technical Data

General

Engine designation	TAD1345GE
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 (in³)	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	388 (528)	392 (533)
Standby Power	431 (586)	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 %	217 (0.352)	229 (0.371)
50 %	199 (0.323)	205 (0.332)
75 %	197 (0.319)	200 (0.324)
100 %	196 (0.318)	201 (0.326)
Standby Power, g/kWh (lb/hph)		
25 %	211 (0.342)	225 (0.365)
50 %	198 (0.321)	204 (0.331)
75 %	197 (0.319)	201 (0.326)
100 %	196 (0.318)	202 (0.327)

Intake and exhaust system	**1500 rpm**	**1800 rpm**
Air consumption, m³/min (cfm) at:		
Prime Power	26.8 (946)	33.0 (1165)
Standby Power	27.6 (975)	33.0 (1165)
Max allowable air intake restriction, kPa (PSI)		5 (0.7)
Exhaust gas temperature after turbine, °C (°F) at:		
Prime Power	477 (891)	440 (824)
Standby Power	571 (1060)	490 (914)
Max allowable back-pressure in exhaust line, kPa (PSI)		10 (1.5)
Exhaust gas flow, m³/min (cfm) at:		
Prime power	56.8 (2006)	77.0 (2719)
Standby Power	58.3 (2059)	82.0 (2896)

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

Cooling system	**1500 rpm**	**1800 rpm**
AOT at max cooling air flow, °C (°F):		
Prime Power	59 (138)	63 (145)
Standby Power	55 (131)	60 (140)
Max cooling air flow, m³/s (cfs)	6.5 (230)	8.0 (283)

Standard equipment

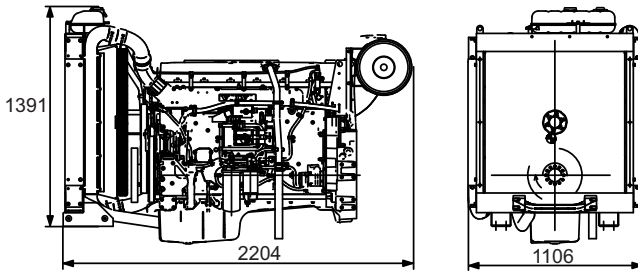
	Engine	Gen Pac
Engine		
Automatic belt tensioner	•	•
Lift eyelets	•	•
Flywheel		
Flywheel housing with conn. acc. to SAE 1	•	•
Flywheel for 14" flex. plate and flexible coupling	•	•
Engine suspension		
Fixed front suspension	•	•
Lubrication system		
Oil dipstick	•	•
Full-flow oil filter of spin-on type	•	•
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	•[1]	•
Coolant pump	•	•
Fan hub	•	•
Thrust fan	•[1]	•
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, se 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 TAD1345GE

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% att 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 govering 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

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

GENERATOR TYPE ECO 40-2S/4

Document : **DS023A/1**
issue 011 date 12/01/2015

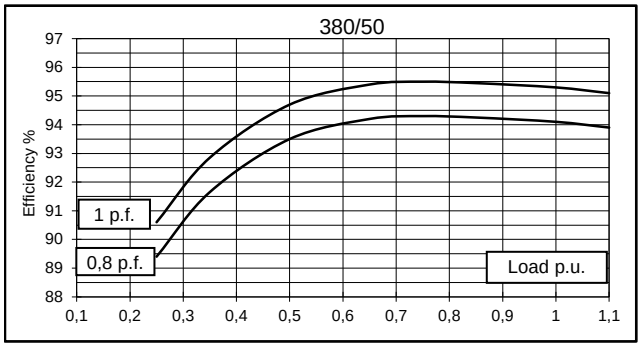
Electrical Characteristics										
Frequency		Hz	50				60			
Voltage (parallel star)		V	380	400	415	440	415	440	460	480
Rated power class H		kVA	450	450	450	360	480	510	540	540
		kW	360	360	360	288	384	408	432	432
Rated power class F		kVA	410	410	410	330	435	460	490	490
		kW	328	328	328	264	348	368	392	392
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	94,4	94,2	93,9	94,5	95	95,2	95,3
(see graph. for details)	3/4	%	94,3	94,6	94,5	94,1	94,6	95,1	95,3	95,5
	2/4	%	93,5	93,8	93,7	93,5	93,5	94	94,2	94,4
	1/4	%	89,4	89,5	89,4	89,2	90,6	90,9	91,1	91,2
Reactances (f. l.cl. F)	Xd	%	312	232	215	155	434	384	312	232
	Xd'	%	22,7	21,4	19,5	14,4	24,6	23,4	22,7	21,4
	Xd"	%	12,9	12,1	11	8,1	14,1	13,2	12,9	12,1
	Xq	%	122	107	101	71,7	147	132	122	107
	Xq'	%	122	107	101	71,7	147	132	122	107
	Xq"	%	29,1	27,4	25,2	18,4	31,7	30,2	29,1	27,4
	X_2	%	18,2	17,6	16,4	11,8	20,2	19,4	18,2	17,6
	X_0	%	3,6	3,1	2,9	2,1	4,1	3,9	3,6	3,1
Short Circuit Ratio	Kcc		0,32	0,43	0,46	0,64	0,23	0,26	0,32	0,43
Time Constants	Td'	sec.	0,13							
	Td"	sec.	0,019							
	Tdo'	sec.	2,70							
	Tα	sec.	0,03							
Short Circuit Current Capacity		%	>300				>350			
Excitation at no load		Amp.	0,4	0,6	0,8	1,6	0,3	0,4	0,5	0,6
Excitation at full load		Amp.	3,3	3,4	3,7	4,5	2,8	2,9	3	3,2
Overload (long-term)		%	1 hour in a 6 hours period 110% rated load							
Overload per 20 sec.		%	300							
Stator Winding Resistance (20°C)		Ω	0,013							
Rotor Winding Resistance (20°C)		Ω	4,881							
Exciter Resistance (20 °C)		Ω	Rotor : 0,317				Stator : 8,85			
Heat dissipation at f.l.cl.H		W	22572	21356	22166	18709	22349	21474	21782	21305
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 %	2,5 / 2,6							
Waveform Distors.(THD) at no load		LL/LN %	2,7 / 2,8							
Mechanical characteristics										
Protection			IP 21 (other protection on request)							
DE bearing			6322							
NDE bearing			6318.2RS							
Weight of wound stator assembly		kg	382							
Weight of wound rotor assembly		kg	245,8							
Weight of complete generator		kg	1118							
Maximun overspeed		rpm	2250							
Unbalanced magnetic pull at f.l.cl.F		kN/mm	5,9							
Cooling air requirement		m^3/min	54				64,8			
Inertia Constant (H)		sec.	0,177				0,213			
Noise level at 1m/7m		dB(A)	94 / 82				98 / 88			

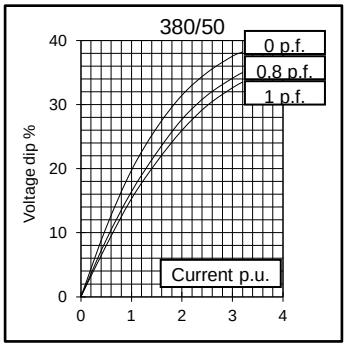
All technical data are to be considered as a reference and they can be modified without any notice.

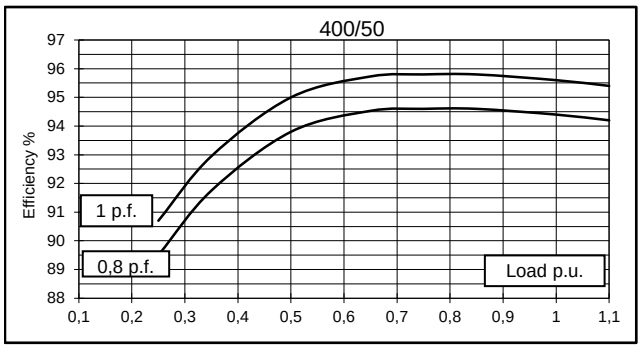
GENERATOR TYPE ECO 40-2S/4

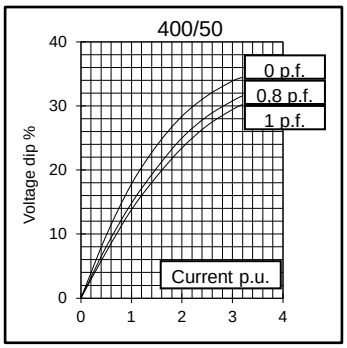
Document : **DS023A/2**
issue 011 date : 12/01/2015

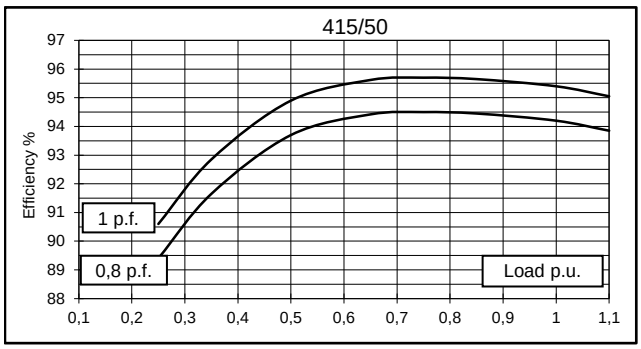
50 Hz

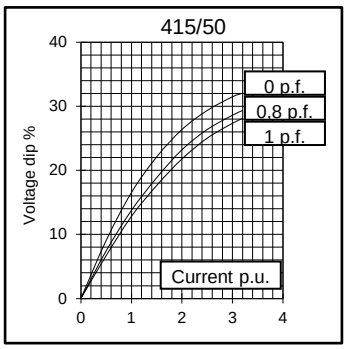


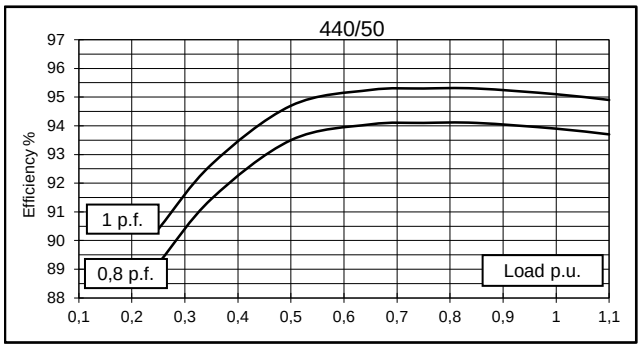


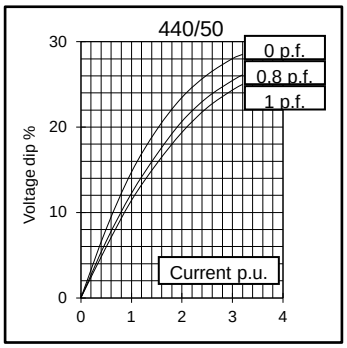


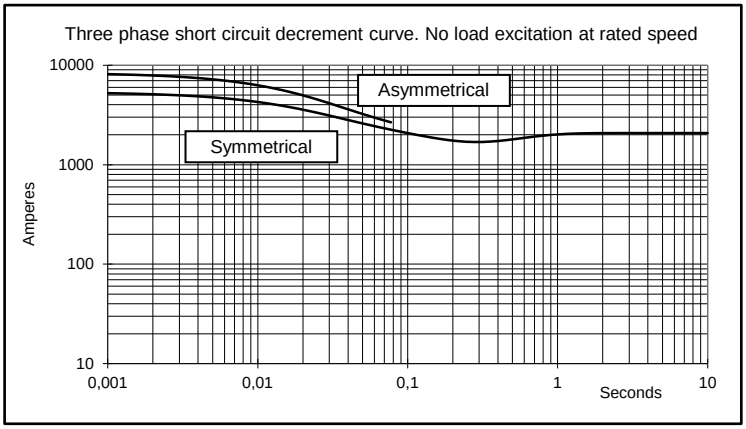






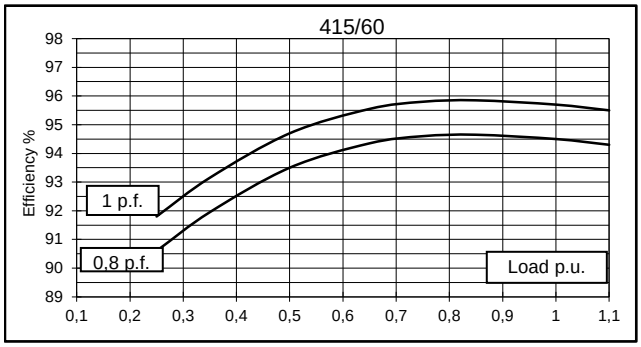


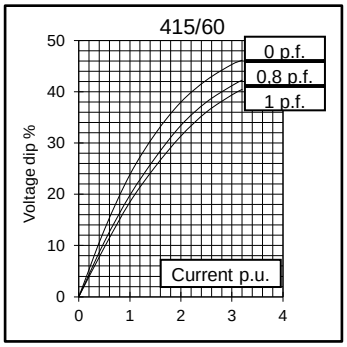


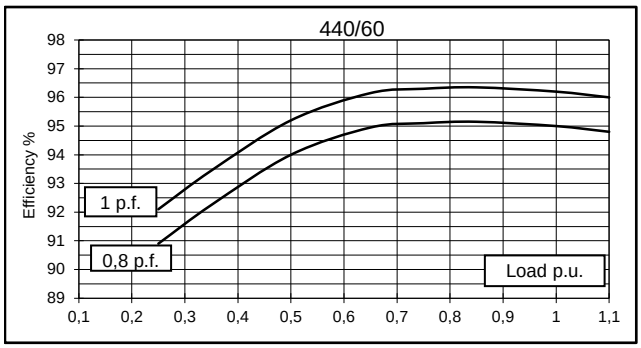


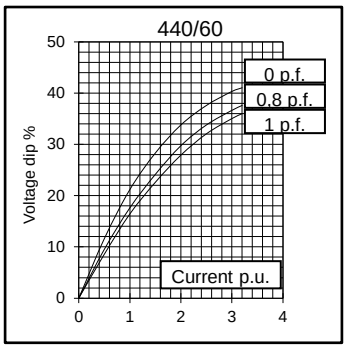
GENERATOR TYPE ECO 40-2S/4

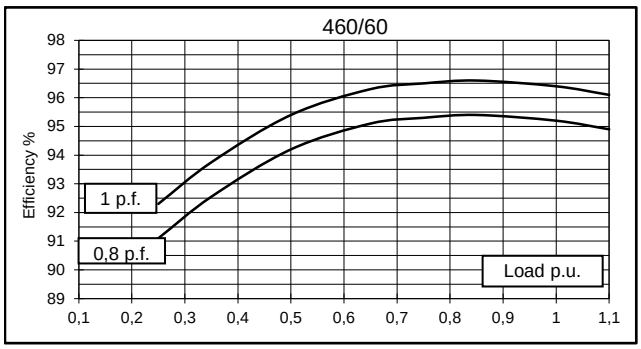
60 Hz

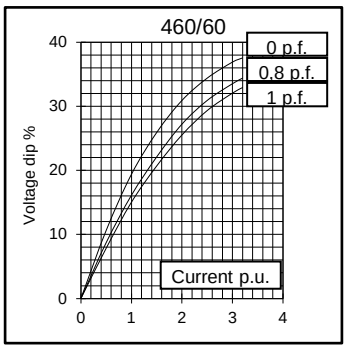


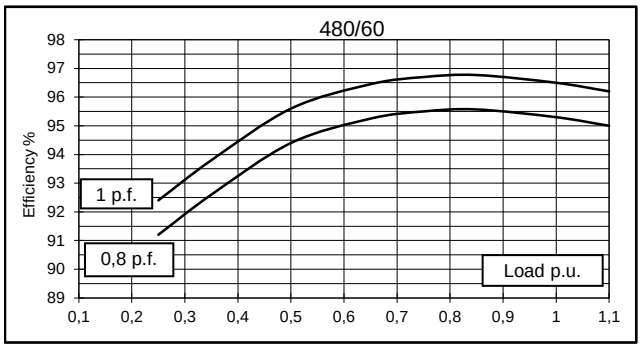


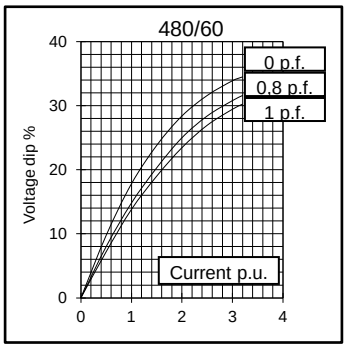


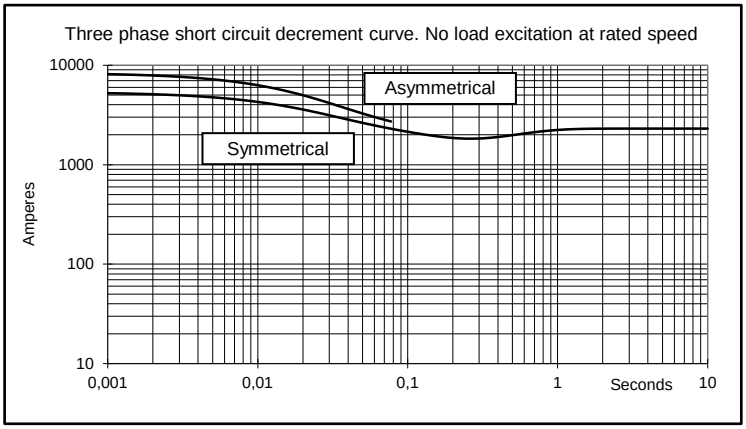




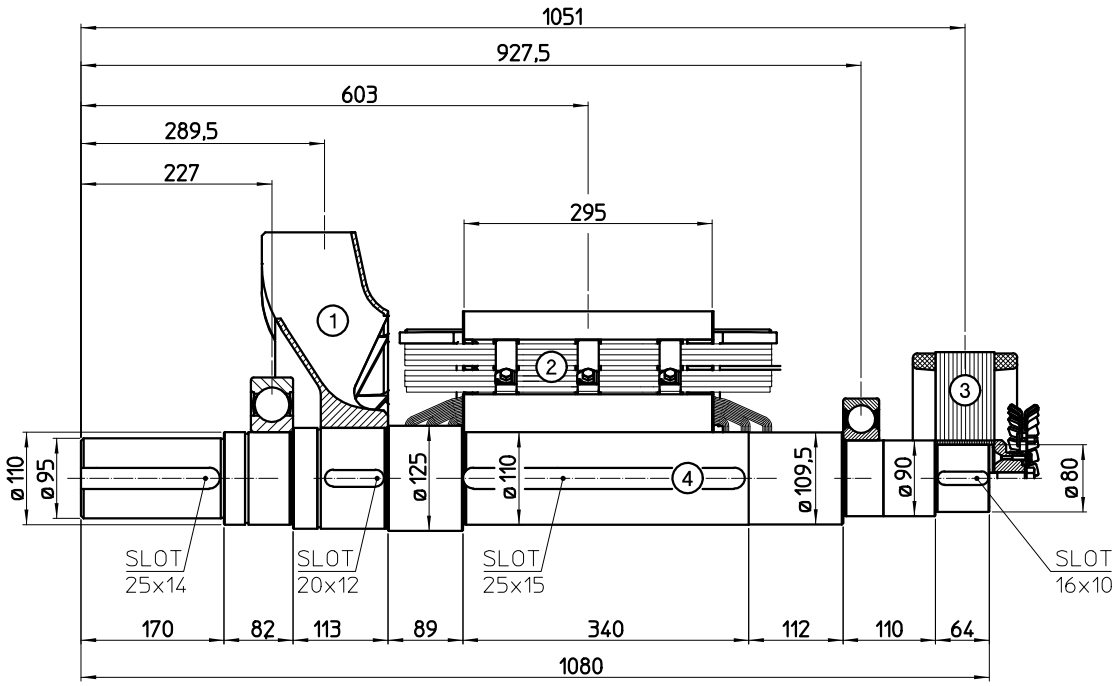






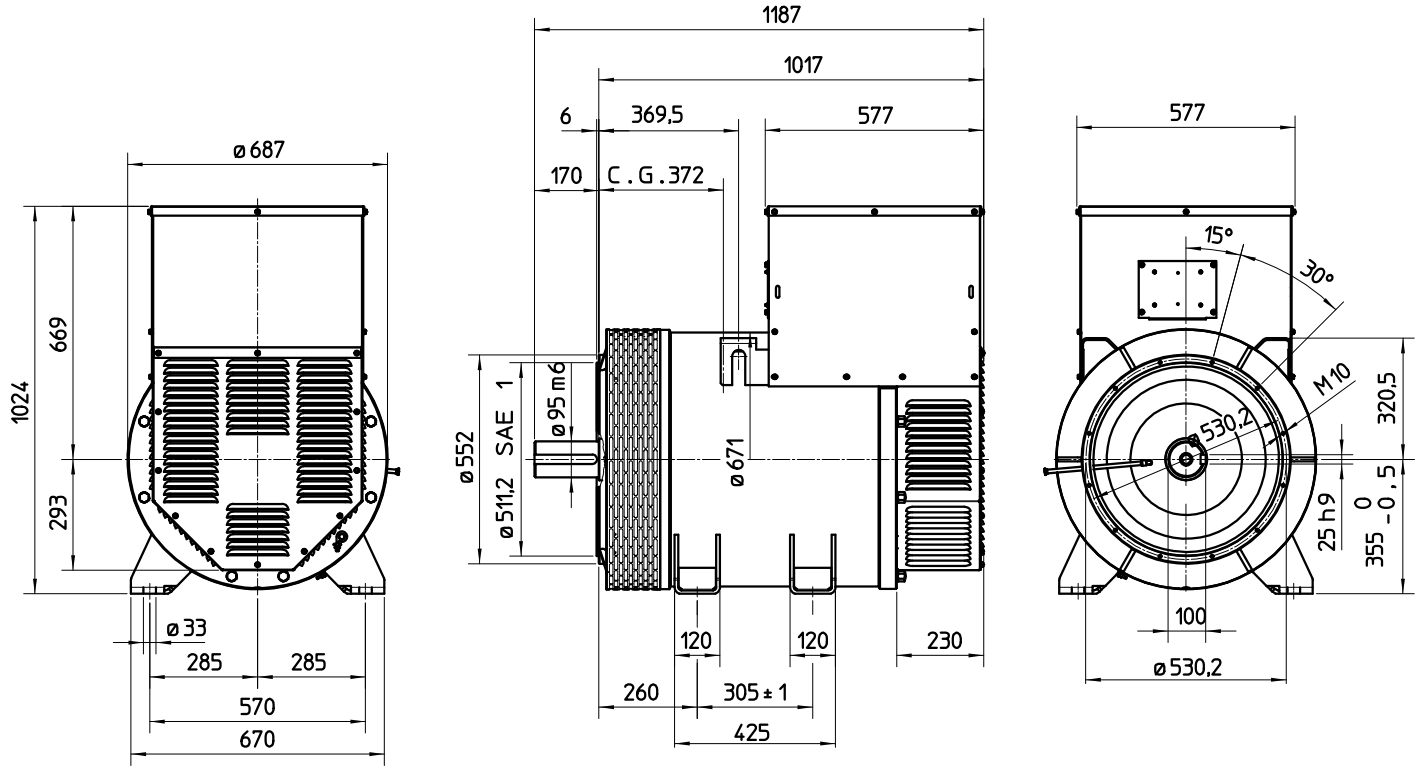


TWO BEARING MOMENTS OF INERTIA



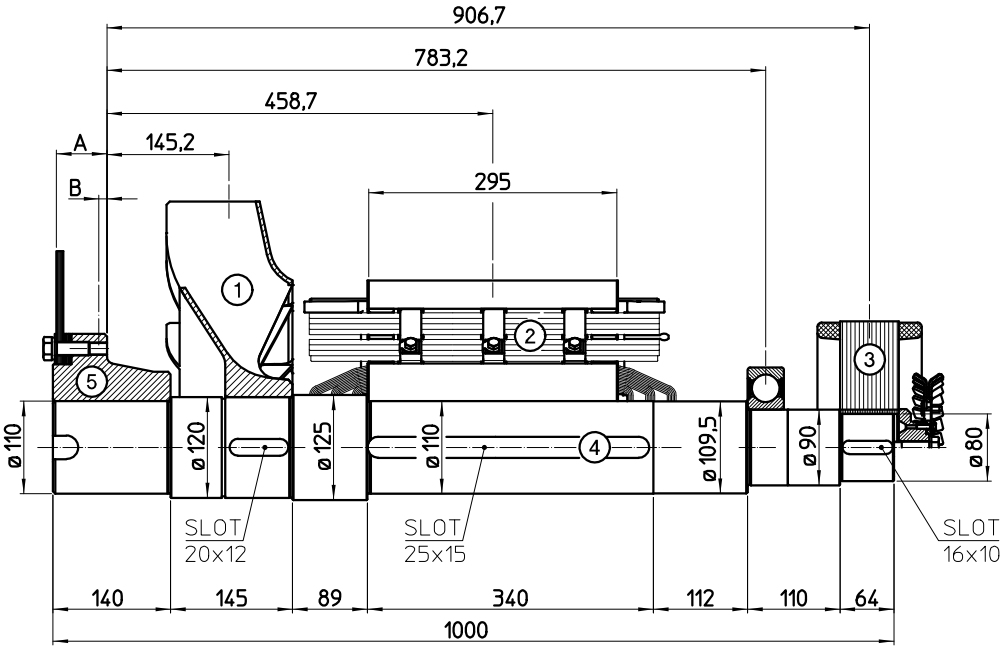
	COMPONENT	WEIGHT kg	J kgm ^{2}
1	FAN	10,2	0,335
2	MAIN ROTOR	245.8	5.234
3	EX. ROTOR	35	0,562
4	SHAFT	73.6	0.109
	TOTAL	364.6	6.24

TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

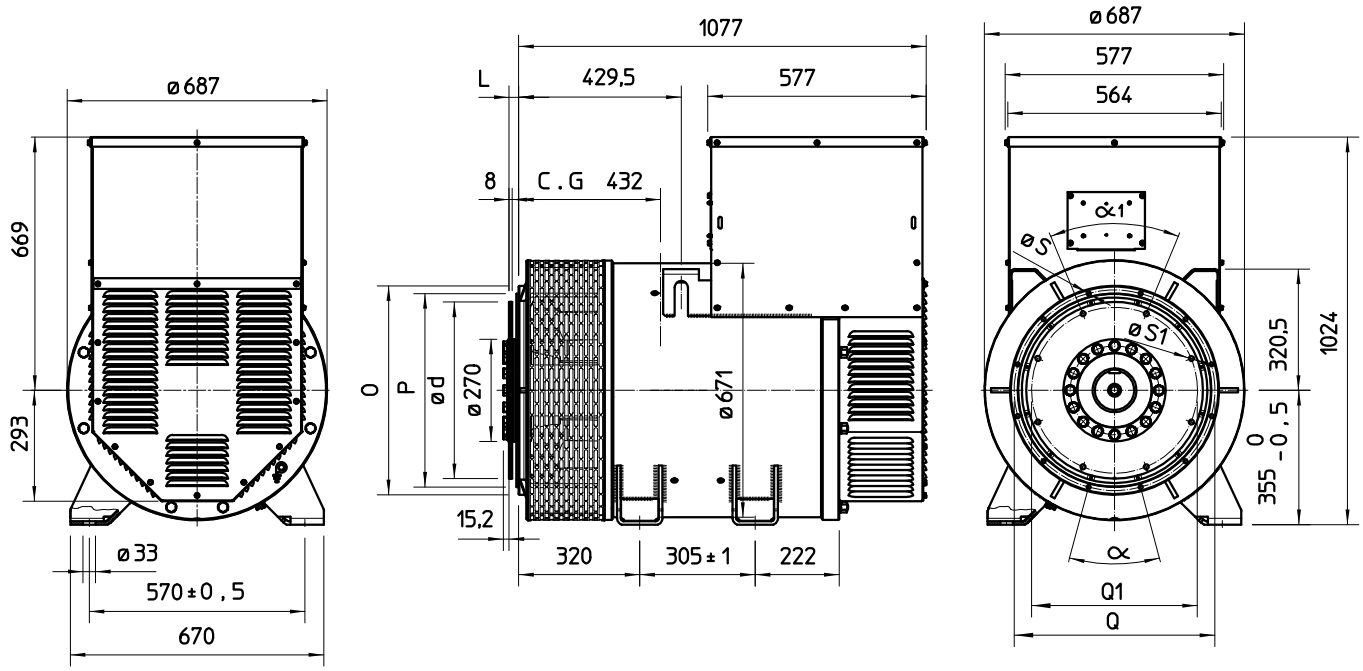
SINGLE BEARING MOMENTS OF INERTIA



	COMPONENT	WEIGHT kg	J kgm ^{2}
1	FAN	10,2	0,335
2	MAIN ROTOR	245.8	5.234
3	EX. ROTOR	35	0,562
4	SHAFT	72	0.111
	TOTAL	363	6.242

Sae No	⑤ SHAFTS COUPLING FLEX PLATE			
	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.	FLANGIA / FLANGE BRIDE / FLANSCH					
	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.	GIUNTI A DISCHI / DISC COUPLING DISCQUE DE MONOPALIER / SCHEIBENKUPPLUNG					
	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