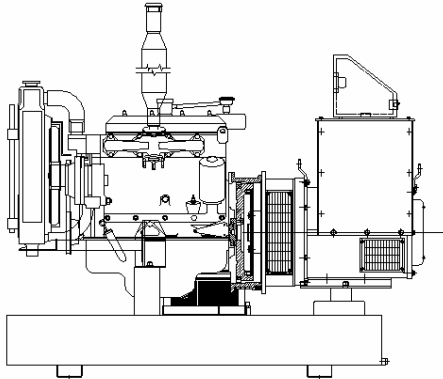




MAQUINARIA IGSA POWER GENERATION SYSTEMS



MODEL: GSIV00040M
DIESEL ENGINE: IVECO
MODEL: 804Ii06
CAPACITY: 40 kW; 1800 RPM

RATINGS RANGE	
PRIME hp (kW)	STANDBY hp (kW)
58 (43)	64 (48)

Ratings in accordance with ISO 8528-standard reference conditions:

Air inlet temperature	25°C (77°F)
Pressure	1000 mbar (14.5psi)
Relative humidity	30%
Power factor	0.8

STANDARD FEATURES

Complete system designed and built at ISO9001 certified facility

- Factory tested to design specifications at full load conditions.
- Fully engineered with a range of options and accessories.

1 IGSA Genset's are composed of 4 cylinders in line and four strokes diesel engine for industrial stationary applications. Those equipments are fully factory tested using a resistive load. (1) Hour ramp 100% load test.

2 The controls and accessories are selected to work together to achieve the maximum operational performance and security.

3 Exhaust gases silencer, and a section of flexible tube for connection purposes.

4 Engine **IVECO, 804Ii06**

5 Marathon or Stamford Alternator.

6 Control MEC 310 (panel USC300).

7 Radiator

8 Base of structural steel.

General Features

- IGSA GENSET of, **40 kW to 480V, 440V, 380V, 220V, 208V, 190VAC**, 3 Phase, 4 Wire, 60 Hertz, is composed by an internal engine four strokes coupling with the alternator, controls and accessories totally assembled and tested in factory.
- The controls and accessories of the Genset are selected to provide the maximum in efficiency and Security.
- The generator set its components are tested factory-built, and production-tested.

ENGINE SPECIFICATION DATA MODEL 804li06 Weight 415 Kg (915 Lb)

General Data	
Model	804li06
Diesel 4 Stroke-Injection type	direct
Number of Cylinders	4 in line
Total Displacement-- gl (L)	0.858 (3.9)
Bore x Stroke--in.(mm)	(104 x 115) 4.1x4.5 in
Compression Ratio	17:01
Aspiration	natural
Cooling system	liquid (water + 50% Parafllu I I) ACEA E3-API CF4/MILL2104E/F
Lube oil specifications	CF4/MILL2104E/F
Lube oil consumption	< 0.3% of fuel consumption
Fuel specification	EN 590
Speed governor	mechanical (G2 class)
Engine rotating mass	
moment of inertia-- kg.m ²	0.967 (22.9 lbf ²)
Flywheel housing / Flywheel	SAE/11" ½
Physical Data	
Length--in.(mm)	43.1 (1094)
Width--in.(mm)	26.8 (680)
Height--in.(mm)	34.8 (885)
Weight, dry--lb (kg)	915.3 (415)
Fuel Consumption at 1800 RPM -- gl/hr (l/hr)	
BMEP	726
100 % Power	3.1 (11.9)
75 % Power	2.4 (9.0)
50 % Power	1.6 (6.2)
Air Induction System	
Intake air Flow m ³ /h	195 (6886.36 ft ³ /h)
Maximum suggested intake restrictions:	
with clean air filter kPa	2.45 (0.355psi)
with dirty air filter kPa	4.9 (0.711psi)
Injection	
Injection System	mechanical
Max speed drop steady conditions.	4%
Max fuel feed pump suction head--m	0.8 (2.62 ft)

Exhaust System	
Exhaust gas flow-- kg/h	(235) 518.1 lb/h
Max exhaust temperature at full load (at 25°C - after turbine)-- °C	550 (1022°F)
Max allowable exhaust backpressure-- kPa	14.7 (2.13 psi)
Cooling System	
Cooling System:	
engine only-- gl (L)	1.9 (7)
engine + Radiator-- gl (L)	3.7 (14)
Cooling water flow rate--(l/min)	(107) 28.27 gal/min
Max allowable pressure drop on external water circuit.--Pa	9.8
Max head of cooling radiator-- m	(3) (9.84 ft)
Pusher fan air flow-- m ³ /s	1 (35.31 ft ³ /s)
Pusher fan head (static)-- Pa	294 (0.043 psi)
Pusher fan absorbed power-- kW	0.55 (0.738 hp)
Max engine outlet water temp. (Alarm)-- °C	100 (212°F)
ATB (without canopy)- nominal rating-- °C	50 (122°F)
Lubrication System	
Lube oil total system incl. Sump, filters etc.-- kg(l)	7.7 (8.5)
Oil capacity of standard sump:	
at min. Level-- kg(l)	4.7 (5.2)
at max. -- kg(l)	6.7 (7.4)
Maximum oil temperature--(°C)	(120) 248°F
Oil pressure (min/max)--(kPa)	(196) 28.4 psi
Heat Rejection (at full load conditions)	
Engine to coolant (Water + oil)-- kcal/kWh	610
Engine to exhaust-- kcal/kWh	710
Radiated to ambient-- kcal/kWh	190
Electrical Starting System	
Cranking motor rating-- kW	3 (4hp)
Auxiliary voltage-- Vcc	12
Battery-charge alternator-- A	45
Starting batteries:	
Recommended capacity-- Ah	100
Discharge current-- A	650



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MARATHON ELECTRIC ALTERNATOR MODEL 284CSL1508

Weight 183.6 Kg (405 Lb)

Kilowatt ratings at		1800 RPM			60 Hertz			12 Leads standard 3 phase		
kW (kVA)		3 Phase			0.8 Power Factor			Dripproof or Open Enclosure		
Voltage	Class B		Class F				Class H			
	80° C, 176°F (1)	90° C, 194°F (1)	95° C, 203°F (1)	105° C 221°F British †	105° C, 221°F (1)	130° C, 266°F (1)	125° C 257°F British †	125° C, 257°F (1)	150° C, 302°F (1)	
	Continuous	Lloyds	ABS	Standard	Continuous	Standby	Standard	Continuous	Standby	
240/480	30 (37.5)	31 (38.8)	31 (38.8)	36 (45)	36 (45)	40 (50)	40 (50)	40 (50)	42 (52.5)	
230/460	30 (37.5)	31 (38.8)	31 (38.8)	36 (45)	36 (45)	39 (48.8)	39 (48.8)	39 (48.8)	41 (51.3)	
220/440	30 (37.5)	31 (38.8)	31 (38.8)	35 (43.8)	35 (43.8)	39 (48.8)	39 (48.8)	39 (48.8)	41 (51.3)	
208/416	30 (37.5)	31 (38.8)	31 (38.8)	35 (43.8)	35 (43.8)	38 (47.5)	38 (47.5)	38 (47.5)	40 (50)	
190/380	27 (33.8)	28 (35)	28 (35)	32 (40)	32 (40)	35 (43.8)	35 (43.8)	35 (43.8)	36 (45)	

□ Rise by resistance method, Mil-Std-705, Method 680.1b.

† Rating per BS 5000.

Submittal Data: 480 Volts, 43.75 kVA, 1800 RPM, 60 Hz, 3 Phase					
Mil-Std-705C			Mil-Std-705C		
Method	Description	Value	Method	Description	Value
301.1b	Insulation Resistance	> 1.5 Meg	505.3b	Overspeed	2250 RPM
302.1a	High Potential Test		507.1c	Phase Sequence CCW-ODE	ABC
	Main Stator	2000 Volts	601.4a	L-L Harmonic Maximum - Total	3.0%
	Main Rotor	1500 Volts		(Distortion Factor)	
	Exciter Stator	1500 Volts	601.4a	L-L Harmonic Maximum - Single	2.5%
	Exciter Rotor	1500 Volts	601.1c	Deviation Factor	6.0%
401.1a	Stator Resistance, Line to Line		--	TIF (1960 Weightings)	<50
	High Wye Connection	0.286 Ohms	Additional Prototype Mil-Std Methods are Available on Request.		
	Rotor Resistance	1.355 Ohms			
	Exciter Stator	18.44 Ohms			
	Exciter Rotor	0.137 Ohms			
410.1a	No Load Exciter Field Amps at 480 Volts Line to Line	0.54 A DC	--	Generator Frame	280
420.1a	Short Circuit Ratio	0.915	--	Type	Ext. Voltage Regulated, Brushless
421.1a	Xd Synchronous Reactance	1.676 pu	--	Insulation	Class H
422.1a	X2 Negative Sequence	0.189 pu	--	Coupling - Single Bearing	Flexible
423.1a	X0 Zero Sequence Reactance	0.0353 pu	--	Amortisseur Windings	Full
425.1a	X'd Transient Reactance	0.073 pu	--	Cooling Air Volume	250 CFM
426.1a	X''d Subtransient Reactance	0.0624 pu	--	Exciter	Rotating
427.1a	T'd Transient Short Circuit		--	Voltage Regulator	SE350
	Time Constant	0.0284 sec.	--	Voltage Regulation	1%
428.1a	T''d Subtransient Short Circuit				
	Time Constant	0.0081 sec.			
430.1a	T'do Transient Open Circuit				
	Time Constant	0.983 sec.			
432.1a	Ta Short Circuit Time				
	Constant of Armature Winding	0.009 sec.			

* Voltage refers to wye (star) connection, unless otherwise specified



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STAMFORD ELECTRIC ALTERNATOR MODEL UC1224C

Weight 271 Kg (550 Lb)

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX321	MX341	
VOLTAGE REGULATION	(+/- 0.5%)	(+/- 1.0%)	WITH 4 ENINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFERENT TO SHOT CIRCUIT DECREMENT CURRENT		

INSULATION SYSTEM PROTECTION	CLASS H IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER CONCENTRIC							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	12							
STATOR WDG. RESISTANCE	0.181 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED							
ROTOR WDG. RESISTANCE	0.59 Ohms at 22°C (71.6°F)							
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. refer to factory for others							
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
MAXIMUM OVERSPEED	2250 Rev/Min							
BEARING DRIVE END	BALL. 6312 - 2RS. (ISO)							
BEARING NON-DRIVE END	BALL. 6309 - 2RS. (ISO)							
WEIGHT COMP. GENERATOR	1 BEARING				2 BEARING			
WEIGHT WOUND STATOR	271 kg	597.4lb	271 kg	597.4lb	75 kg	165.3lb	75 kg	165.3lb
WEIGHT WOUND ROTOR	78.95 Kg	167.5lb	78.95 Kg	174.1lb	78.95 Kg	174.1lb	78.95 Kg	174.1lb
WR ² INERTIA	0.3987 kgm ²	9.5 lbft ²	0.3987 kgm ²	9.5 lbft ²	0.3987 kgm ²	9.5 lbft ²	0.3987 kgm ²	9.5 lbft ²
SHIPPING WEIGHTS in a crate	294 kg	648.2lb	294 kg	648.2lb	294 kg	648.2lb	294 kg	648.2lb
PACKING CRATE SIZE	97 x 57 x 96 (cm)	38.2x22.4x37.8 (in)	97 x 57 x 96 (cm)	38.2x22.4x37.8(in)	97 x 57 x 96 (cm)	38.2x22.4x37.8(in)	97 x 57 x 96 (cm)	38.2x22.4x37.8(in)
TELEPHONE INTERFERENCE	50 Hz				60 Hz			
COOLING AIR	THF<2%				TIF<50			
	0.216 m ³ /sec 458 cfm				0.281 m ³ /sec 595 cfm			
VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
KVA BASE RATING FOR	42.5	42.5	42.5	40	50	52.5	52.5	55
REACTANCE VALUES								
Xd DIR. AXIS SYNCHRONOUS	2.42	2.19	2.03	1.70	0.03	2.84	2.60	2.50
X'd DIR. AXIS TRANSIENT	0.19	0.17	0.16	0.13	0.22	0.21	0.19	0.18
X" d DIR. AXIS SUBTRANSIENT	0.12	0.11	0.10	0.08	0.15	0.14	0.13	0.12
Xq QUAD. AXIS REACTANCE	1.12	1.01	0.94	0.79	1.40	1.31	1.20	1.16
X" q QUAD. AXIS SUBTRANSIENT	0.16	0.14	0.13	0.11	0.14	0.13	0.12	0.12
XL LEAKAGE REACTANCE	0.08	0.08	0.07	0.06	0.10	0.09	0.09	0.08
X2 NEGATIVE SEQUENCE	0.14	0.13	0.12	0.10	0.14	0.13	0.12	0.12
X0 ZERO SEQUENCE	0.10	0.09	0.08	0.07	0.10	0.09	0.09	0.08
REACTANCES ARE SATURATED				VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED				
T'd TRANSIENT TIME CONST.	0.025 s							
T" d SUB-TRANSTIME CONST.	0.006 s							
T'do O.C. FIELD TIME CONST.	0.65 s							
Ta ARMATURE TIME CONST.	0.005 s							
SHORT CIRCUIT RATIO	1/Xd							

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. Standby Ratings: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS5514, AS2789, and DIN 6271. Prime Power Ratings: Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for a 12 hours period. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. **GENERAL GUIDELINES FOR DERATION:** Altitude: Derate 1.3% per 100 m (328 ft.) elevation above 1500 m (4920 ft.). Temperature: Derate 1.0% per 10°C (18°F) temperature above 25°C (77°F).



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CONTROLLER FOR GENSET: CONTROL MEC 310 PANEL USC300

The Generator Controller MEC 310 is a microprocessor-based control unit containing all necessary functions for protection and control of a power generator. Besides the control and protection of the diesel engine it contains a full 3-phase AC voltage and current measuring circuit. The unit is equipped with an LCD display presenting all values and alarms.



- USC 300C Unit Mount Control Panel, Black Nema 1 enclosure c/w rubber mounts
 - MEC 310 Microprocessor Based Engine Generator Controller
 - Graphic Display 128 X 64 pixels (STN) Super Twisted Nematic
 - Digital AC Metering:
 - 3-Phase Volts (Phase to Phase and Phase to Neutral),
 - 3-Phase Amps
 - Frequency
 - kW, kVAR, KVA, pF, kWhr
- AC Protective Relaying:
 - 27/59 Under/Over Voltage
 - 32 Reverse Power
 - 51 Time Overcurrent
 - 81 O/U Under/Over Frequency
 - Digital gauge display:
 - Oil Pressure (sender required by others)
 - Coolant Temperature (sender required by others)
 - Fuel Level (sender required by others)
 - Hourmeter
 - Tachometer
- 5 digital inputs for alarms / shutdowns
 - Dedicated Output Contacts - Engine Crank; Run (30 VDC / 6 Amps)
 - Three Programmable Output Contacts (30 VDC / 1 Amps)
 - Event Logging (30 events)
 - Pushbuttons:
 - Emergency Stop
 - Manual Start and Stop
 - Manual/Auto/Test
 - Lamp Test
 - Horn Silence
 - Indicating Lights:
 - Common Alarm
 - Generator Ready (Voltage and Frequency Normal)

FEATURES

- Electrical Rating:**
- Single or three phase, 600VAC maximum, 50/60HZ, 4 wire
 - 12 or 24Vdc (nominal) supply, negative ground.
 - Dedicated Output Contacts - Engine Crank; Run (30 VDC / 6 Amps)
 - Three Programmable Output Contacts (30 VDC / 1 Amps)
- Enclosure:**
- Black Nema 1 enclosure c/w rubber mounts
- Engine Senders:**
- Oil pressure (1/8" NPT), Temperature (1/4"NPT) (Supplied loose for engine mounting).
- Requirements:**
- Exceeds requirements of CSA 282 and NFPA 110 Level



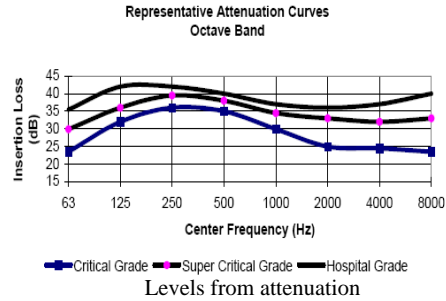
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OPTIONAL SILENCER ACCORDING TO THE APPLICATION

Silencer with different levels from attenuation

- Critical Grade
- Super Critical Grade
- Hospital Grade



DOCUMENTATION AND OTHERS

- Manual of operation and maintenance
- Spare parts
- Maintenance
- Consulting

MISCELLANEOUS EQUIPMENT

- Batteries of 12 VDC with cables for battery connection with the Engine.

GENSET OPTIONS

Control Panel

USC 300C Control Panel is standard on all units see page 4 of spec sheet for standard features.

Another Type _____

Fuel system

- Fuel Water Separator
- Day tank
- Auxiliary fuel pump
- Sub Base mounted Fuel Tank
 - Single Wall
 - Double Wall
 - UL listed
 - 150 L (39.6 gal)
 - 250 L (66 gal)

Diesel Fuel Tank

- 500 L (132 gal)
- 1000 L (264.1 gal)
- 5000 L (1320.8 gal)

Exhaust System

- Critical Grade
- Super Critical Grade
- Hospital Grade

Engine Electrical system

- Battery
 - Lead-Acid
 - NiCad
- Battery Rack
- Battery Charger Automatic

Generator

- Breaker in the alternator

OPTIONAL ACCESSORIES AVAILABLE FOR THE EQUIPMENT

Vibration isolation

- Rigid Spring Mounting
- Resilient Mounting

Filters

- Air Filter for Medium Dust Environments
- Air Filter of Heavy Dust Environments

Drain

- Oil drain Extension

Enclosures

- Sound Attenuated
- Weather Proof
- Stainless steel cover
- Trailer Mounting
- Interior lights Ac or DC

Heaters

- Jacket Water Heater
- Crankcase Oil Heater

Insulation Blankets

- Features:
(Temperature to 1260°C (2300°F), Non-Combustible, Highly Resistant to Vibration, Oil, Fuel, Grease, and Moisture Resistant Exterior, Personal Protection

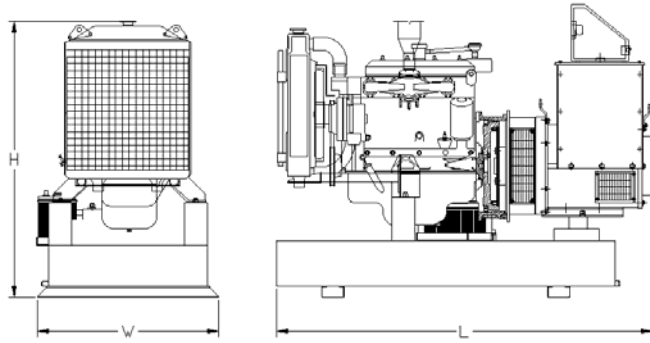
Notes



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DIMENSIONS



LENGTH	WIDTH	HEIGHT
mm (in)	mm (in)	mm (in)
1800 (70.8)	800 (31.5)	1300 (51.2)

NOTE: General configuration not to be used for installation. See general dimension drawing for detail.

SERVICES

- Development of the project.
- Development of engineering.
- Equipment's Installation
- Engineering for special applications.
- Synchronies with utility network or more Gensets.
- Attention and technical support

INSTALLATION OPTIONS OF THE GENSET

- On-Site
- Acoustic Enclosure
- ISO Container
- Trailer