zanardi

PERMANENT MAGNET GENERATOR

AND ELECTRONIC INVERTER

POWER FROM WITHIN

PMG

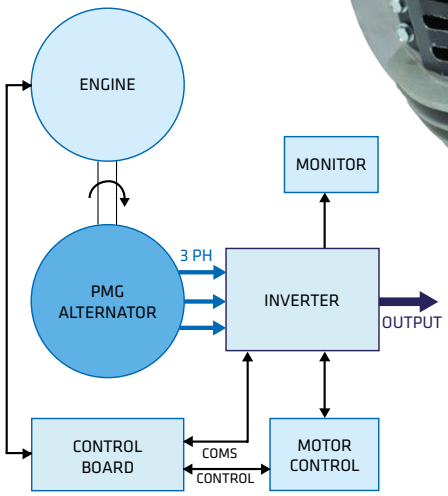
Permanent Magnet Generator
and Electronic Power Inverter

Unlike traditional AC alternator systems, a Permanent Magnet Generator allows considerable benefits. Physical benefits with reductions in weight and length, coupled with electronic benefits, ensure a superior technology devised to maximise efficiency of the complete power system.

Our Permanent Magnet Generator has an inbuilt EMC filter which works in a system with a single phase inverter. Harmonic Distortion is very low at <2% giving superior waveform, guaranteeing the safe operation of modern sensitive electronic equipment.

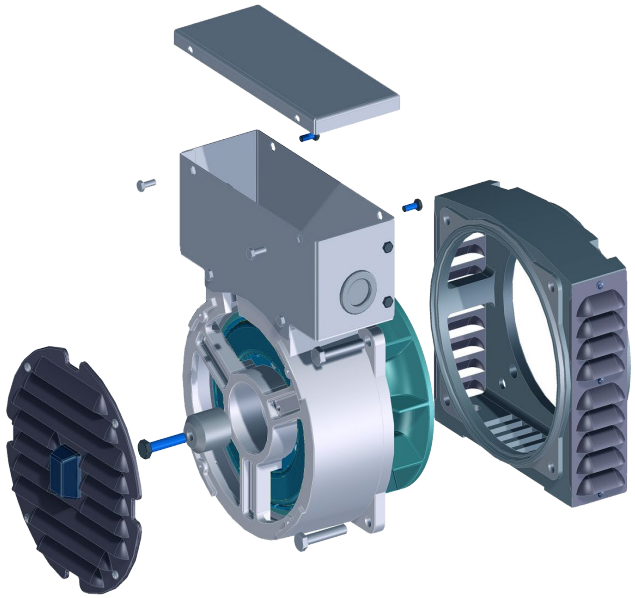
The power density is increased using inverter technology, where the traditional excitation winding systems are replaced and the stator is central with an external rotor. This maximises the potential of the magnets used.

The Inverter produces a pure sine wave inverter for sensitive electronics and is supplied with an optional remote display panel. The inverter has several inbuilt protections such as, short-circuit protection, overload protection, over-temperature protection and has a built-in servicer port and auxiliary connector with CAN support.



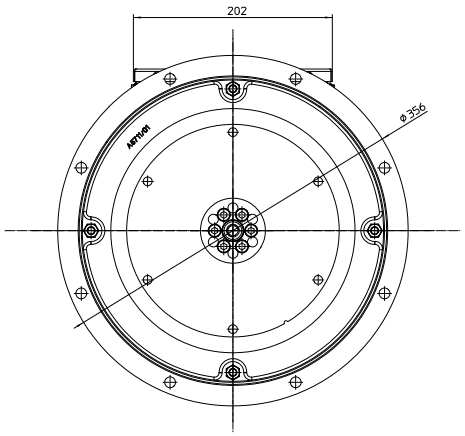
Model	PM3G Lento	PM3G Medio	PM5G 42 Lento	PM5G 42 Medio	PM5G 60 Lento	PM5G 60 Medio	PM5G 80 Lento	PM5G 80 Medio	PM5G 100 Lento	PM5G 100 Medio	PM7G 40 Lento	PM7G 40 Medio	PM7G 60 Lento	PM7G 60 Medio	PM7G 80 Lento	PM7G 80 Medio
Power (max rpm)	3	5,5	6	8	8	10	10	15	15	20	10	15	15	20	25	35
Speed Range [rpm]	1500 2500	2500 3600	1500 2500	2500 3600	1500 2500	2500 3600	1500 2500	2500 3600	2500 3600	2500 3600	2500 3600	2500 3600	2500 3600	2500 3600	2500 3600	2500 3600
Fixed Speed Alternative	Optional F [fixed speed DC without inverter]															
EC Directives	2006/42, 2014/35, 2014/30															
EMC Norms	EN61000-6-3, EN61000-6-2, EN61000 3-2/3-12, EN550002, EN1000 6-1															
Efficiency	80% to 94% (depending on model)															
Total Harmonic Distortion [THD]	<2%															
Voltage Regulation	+/-2%															
Ph / Voltage	1ph. 110 - 130Vac or 220 - 240Vac [from 3ph with inverter]															
Insulation	Class H															
Protection	IP23 (Alternator) / IP20 (Inverter)															
Poles	16	16	20	20	20	20	20	20	20	20	20	20	20	20	20	20

PM3G

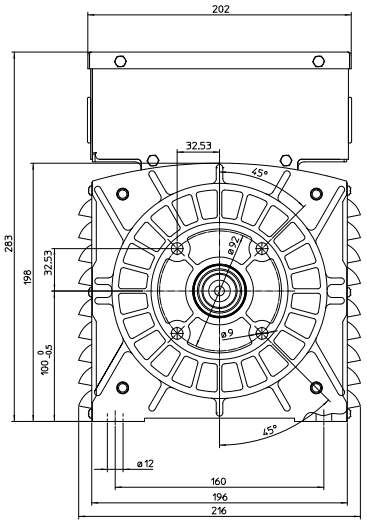


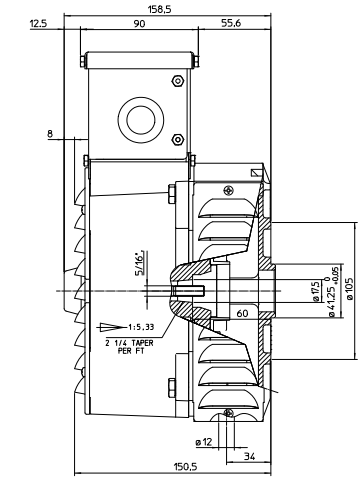
PM3G					
Taper Shaft				MD35	
C19	C23	C25.4	C30	SAE4	SAE5
●	●	●	●	-	●

MD35

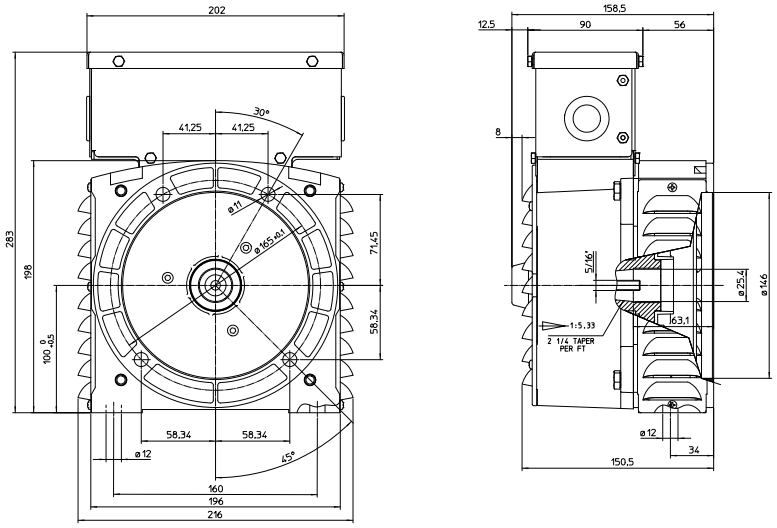


J609b C19

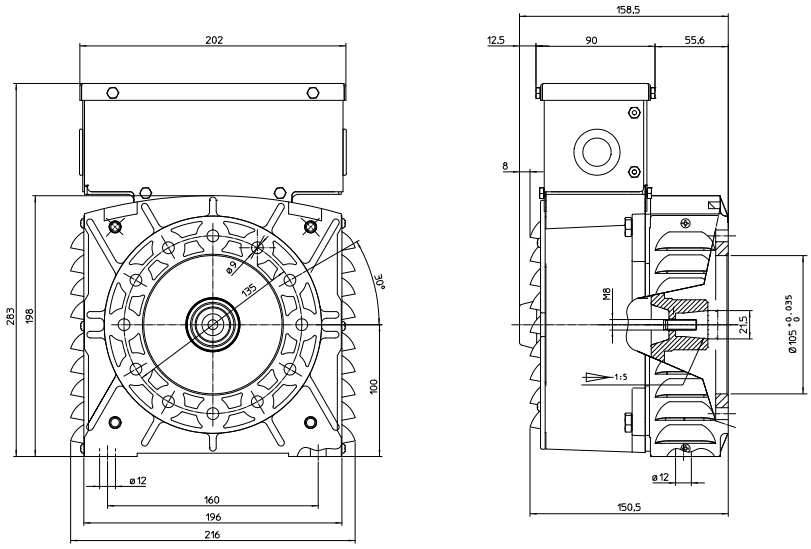




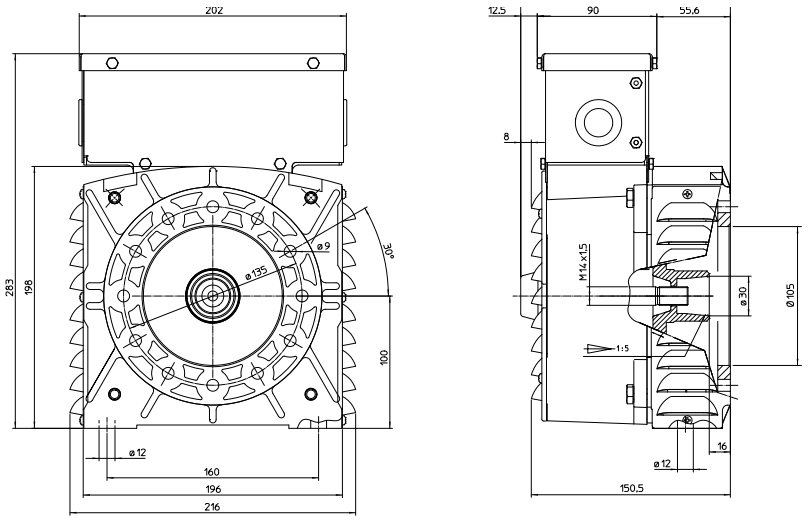
J609b C22,14



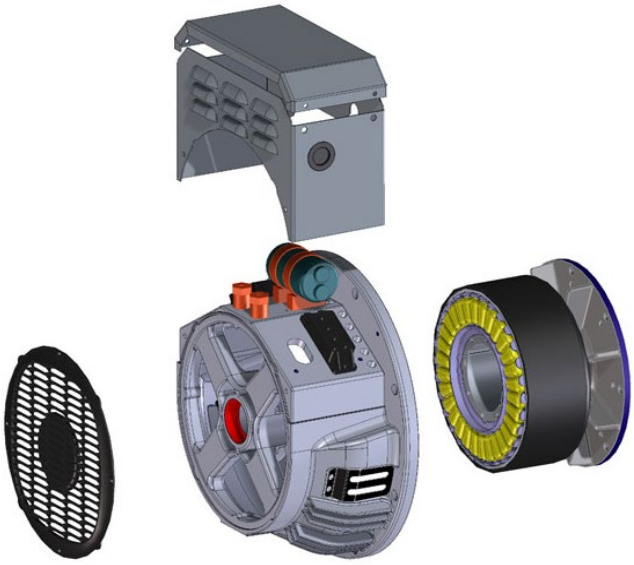
B9C23



B9C30

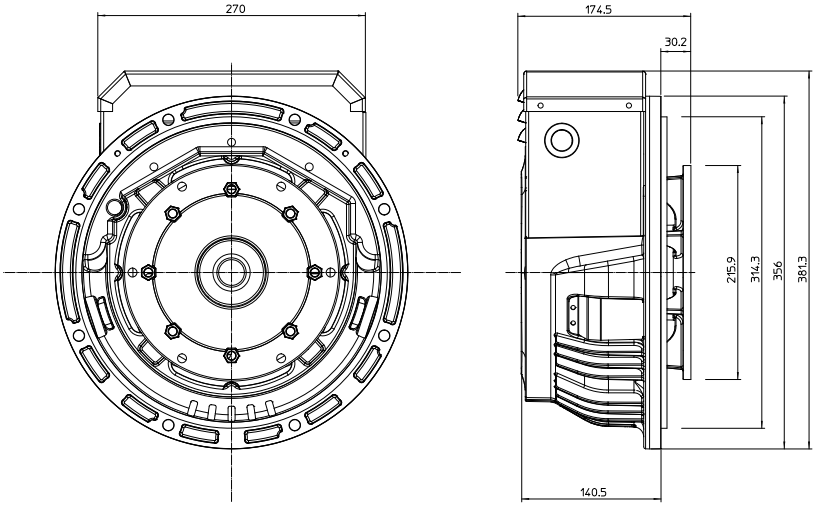


PM5G

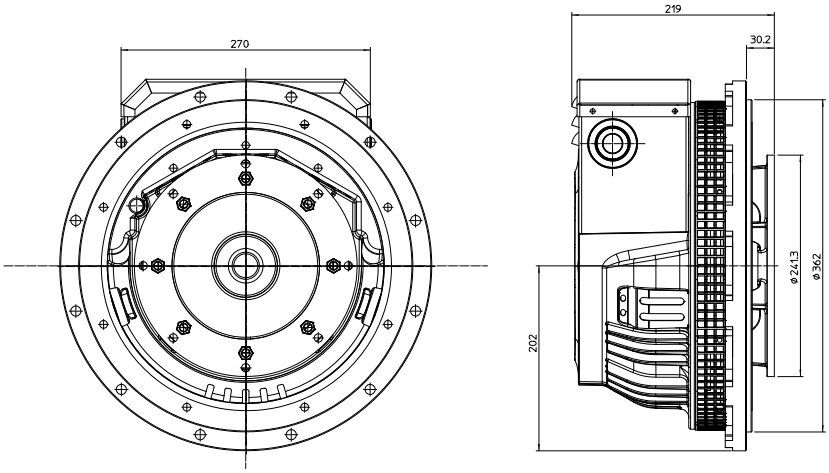


PM5G					
Taper Shaft				MD35	
C19	C23	C25.4	C30	SAE4	SAE5
-	-	●	-	●	●

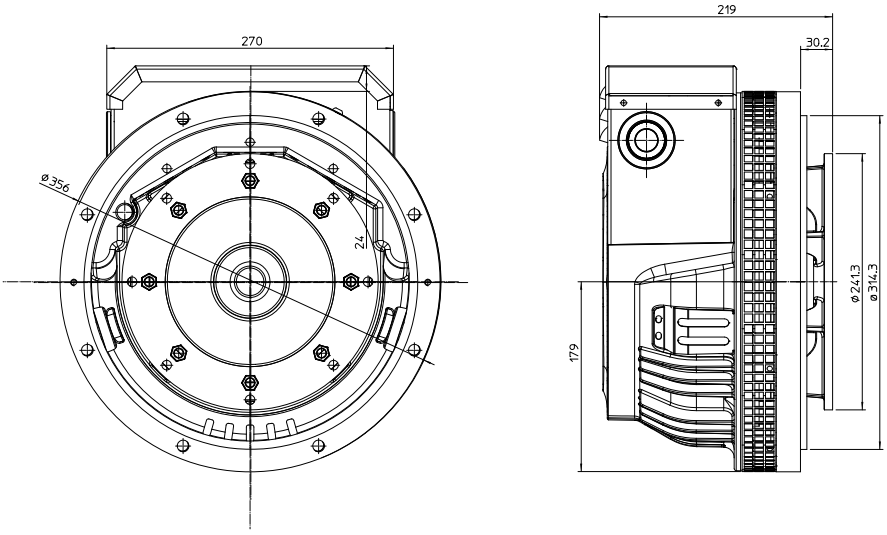
PM5G MD35 SAE5



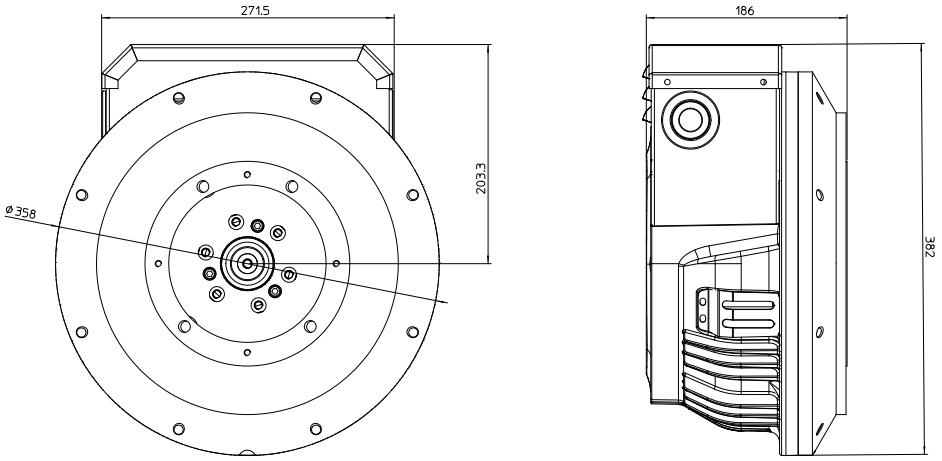
PM5G-100 MD35 SAE4



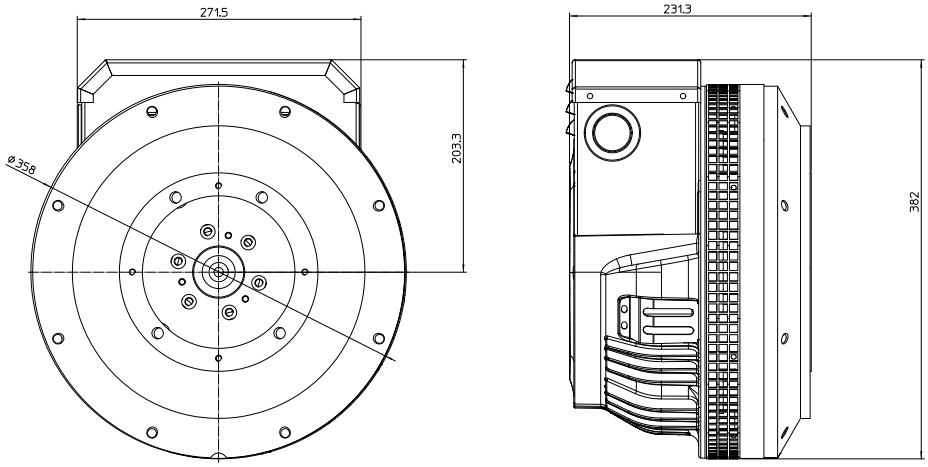
PM5G-100 MD35 SAE5



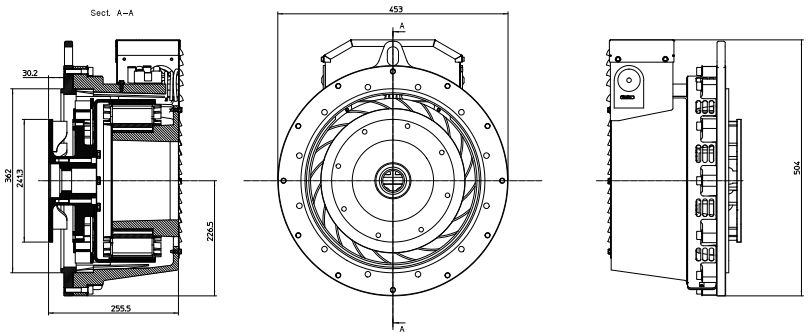
PM5G J609b



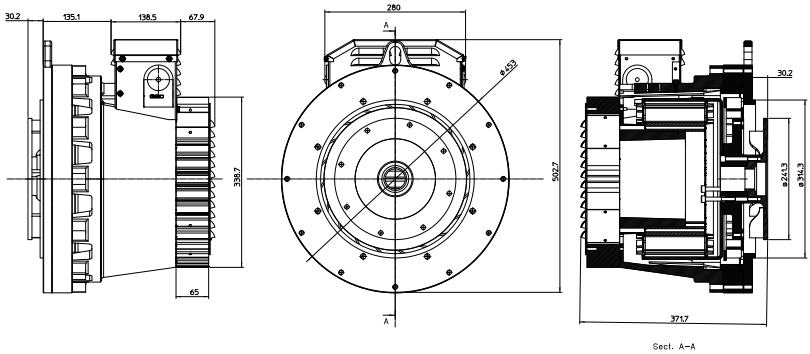
PM5G-100 J609b



PM7G-40/60 MD35

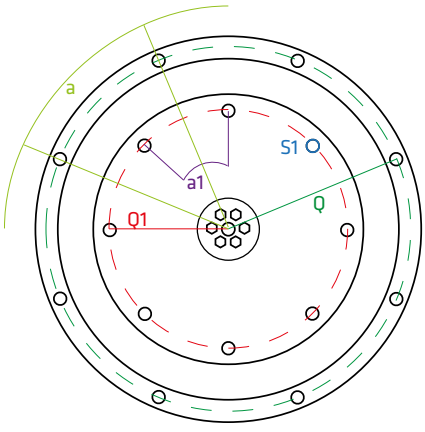


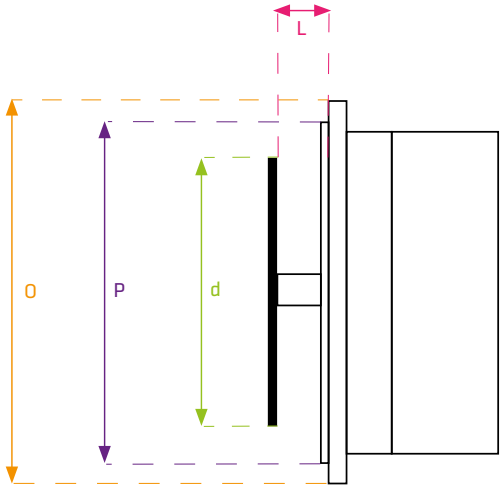
PM7G-80/120 MD35



PM7G	
MD35	
SAE3	SAE4
●	●

SAE Coupling Guide

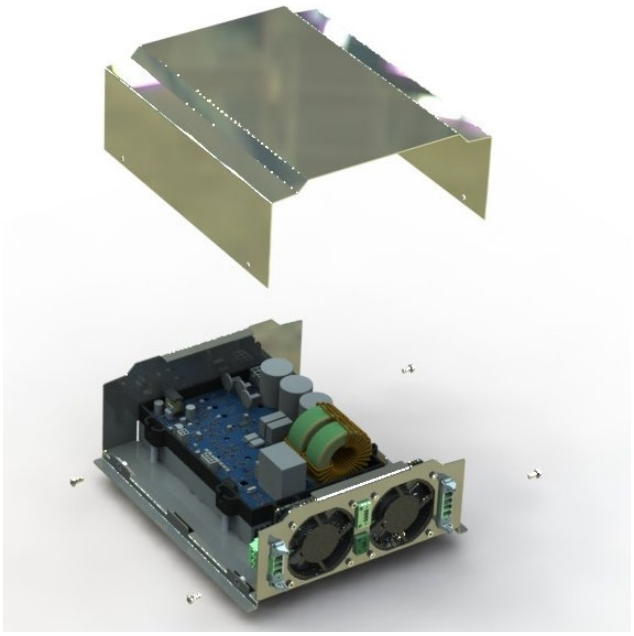


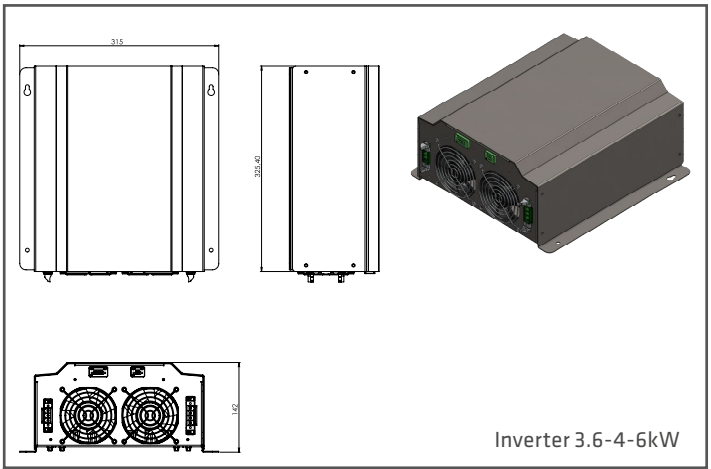


SAE NO.	FLANGE			
	O	P	Q	a
5	356	314.3	333.4	45°
4	403	362	381	30°
3	451	409.6	428.6	30°

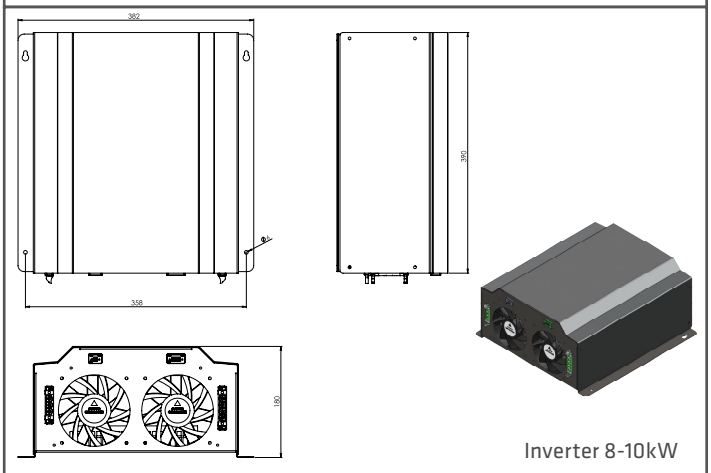
SAE NO.	DISC COUPLING				
	L	d	Q1	S1	a1
6 1/2	30.2	215.9	200	9	60°
7 1/2	30.2	241.3	222.25	9	45°

Inverter 3.6-4-6kW, 8-10kW & 15-20kW

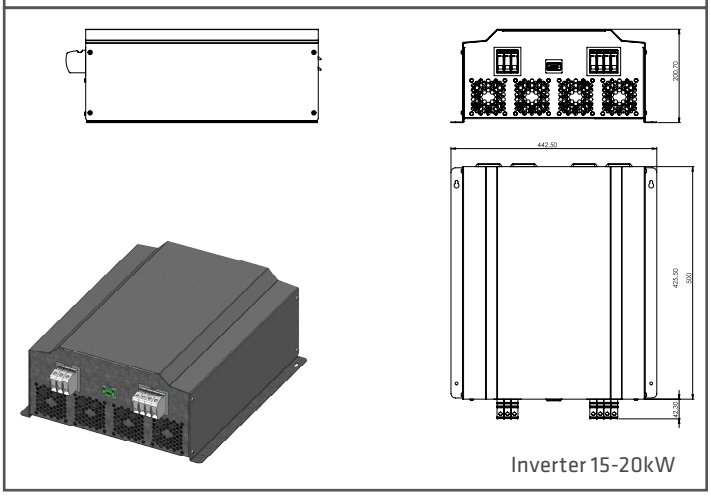




Inverter 3.6-4-6kW



Inverter 8-10kW



Inverter 15-20kW

Main Features:

- Pure sine wave inverter for sensitive electronics
- +/- 5% output voltage stability
- +/- 0,1Hz output frequency tolerance
- Short-circuit protection
- Over-temperature protection

Options:

- Stepper motor control (directly from main board or using an external board)
- External board (for stepper motor and / or actuators)
- Remote display panel (semplified or touch screen)
- Parallel operation with auto-balancing power
- Output voltage 120V – 60Hz

Typical Applications:

- Camper
- Boat
- Countryside house
- Service trucks

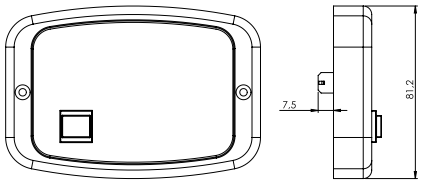
Benefits:

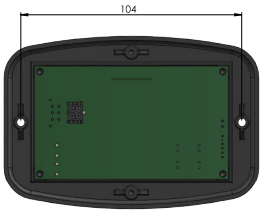
- Full autonomous system
- Auto-start with mains failure detection

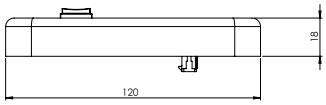
Model	Inverter 3.6kW	Inverter 4kW	Inverter 6kW	Inverter 8kW	Inverter 10kW	Inverter 15kW	Inverter 20kW
Output Power	4kW	4kW	6kW	8kW	10kW	15kW	20kW
Output Voltage	120V	230V	230V	230V	230V	230V	230V
Output Current	31Arms	17,4Arms	26Arms	34,7Arms	43,5Arms	65,2Arms	87Arms
Output Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Peak Current	70Apk	40Apk	60Apk	80Apk	100Apk	150Apk	200Apk
P.F.	1	1	1	1	1	1	1
Input Voltage	3phase 140 - 230Vac RMS	3phase 300 - 490Vac RMS	3phase 300 - 490Vac RMS	3phase 300 - 490Vac RMS	3phase 300 - 490Vac RMS	3phase 300 - 490Vac RMS	3phase 300 - 490Vac RMS
Input Frequency	200-500Hz	200-600Hz	200 – 600Hz	200 – 600Hz	200 – 600Hz	200-600Hz	200-600Hz
Power Supply	Directly from A.C.	Directly from A.C.	Directly from A.C.	Directly from A.C.	Directly from A.C.	Directly from A.C.	Directly from A.C.

Speed Control Module

An optional board made for the control of a diesel engine is able to handle the starting and stopping of the engine during normal operation. It can also control the engine speed by adjusting it according to operation intelligence (voltage outputs and current delivered) received from the inverter through a dedicated CAN communication line. The board handles the timing and sequence of the various outputs for the proper operation of the motor control. Through an interface with a dedicated user panel (by others), you can control the start of the driver motor (i.e. diesel engine) and, once you reach a stable rotation speed, enable the voltage generation of the inverter. It also controls the inverter and motor (engine) operation and, in case of problems or user requests, takes care to shut down the entire system and report any errors.





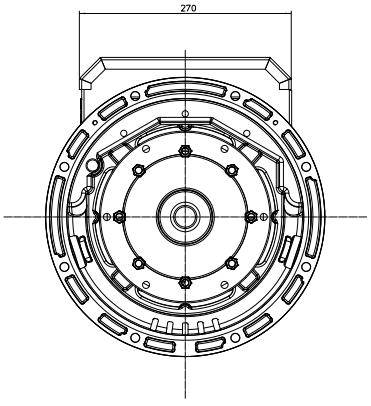


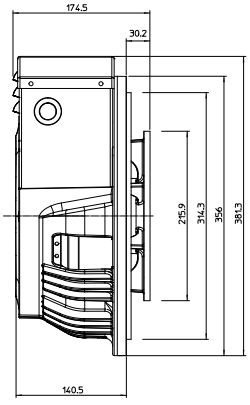
PMG-DC Fixed Speed

The Fisso DC Permanent Magnet Generator is designed to supply specialist lamps on lighting towers, such as high efficiency LEDs and have an in-built rectifier bridge.

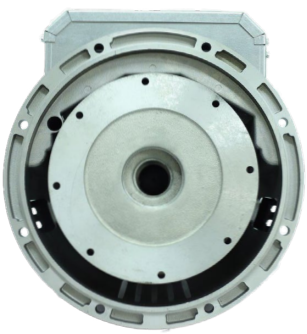
With a PMG system, there are several benefits to the more traditional AC systems:

- Smaller compact system
- Higher efficiency
- Speeds other than synchronous can be fixed to optimise engine power, fuel consumption and voltage output
- High power density reducing weight (both alternator and for the engine)
- Increased reliability of system removing traditional excitation windings





Model	PM3G-Fisso / PM5G-Fisso / PM7G-Fisso
rpm	Fixed speed (determinable)
Output Voltage	DC (various voltages and current levels are available depending on requirement)
Efficiency	Approx. 80% to 94% depending on model
Ripple	Up to 0.5% (depending on configuration)
Insulation	Class H
Protection	IP23



PMG-DC Variable Speed

The Speed Load Control Mecc Alte Engine Controller (MEC) 12-75 VDC quickly and accurately adjusts engine speed, controlling the generators electrical load by controlling generator voltage, not actual speed. This variable speed operation results in decreased noise, significantly reduces fuel consumption and increases engine life.

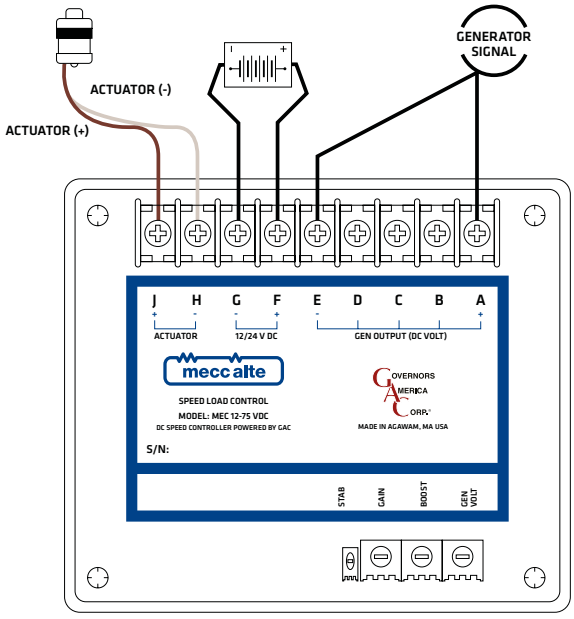
The MEC 12-75 VDC, when connected to a proportional actuator and supplied with voltage signal from a DC generator, uses DC voltage to control speed instead of actual engine speed. It supports a wide variety of small engines.

The MEC 12-75 VDC governor is easily paired with GAC ALN-, ALR-, or 120-Series actuators and supports both 12 and 24 V DC.

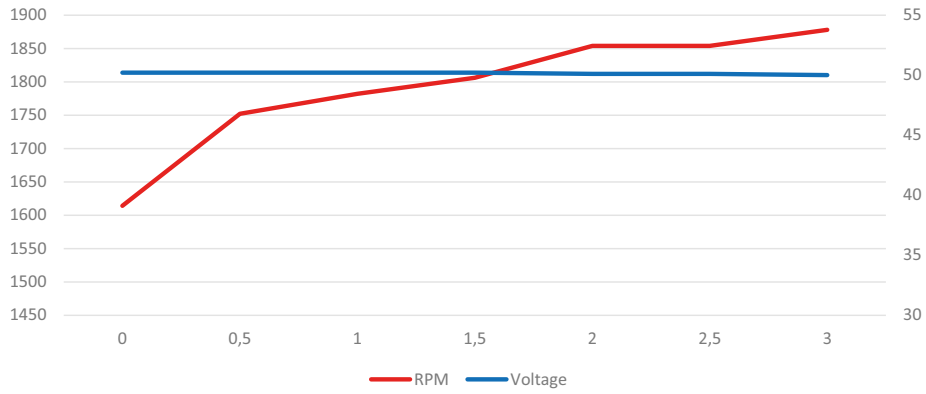
Variable speed benefits:

- PMG output voltage is stable across load range
- Full kW rating of PMG is available for use
- Engine kW rating can be optimised
- Higher Efficiency is obtained
- Risk of high no load voltage is reduced

Model	PM3G-Variabile / PM5G-Variabile / PM7G-Variabile
rpm	Variable speed (determinable)
Output Voltage	DC (various voltages and current levels are available depending on requirement)
Efficiency	Approx. 80% to 94% depending on model
Ripple	Up to 0.5% (depending on configuration)
Insulation	Class H
Protection	IP23



TERMINAL	CONNECTS TO
A	Generator Signal (+)
B	NA
C	NA
D	NA
E	Generator Signal (-)
F	Battery (+)
G	Battery (-)
H	Actuator (-)
J	Actuator (+)



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INSULATION SYSTEM

LISTED

MASPA: 05.2021 | V05