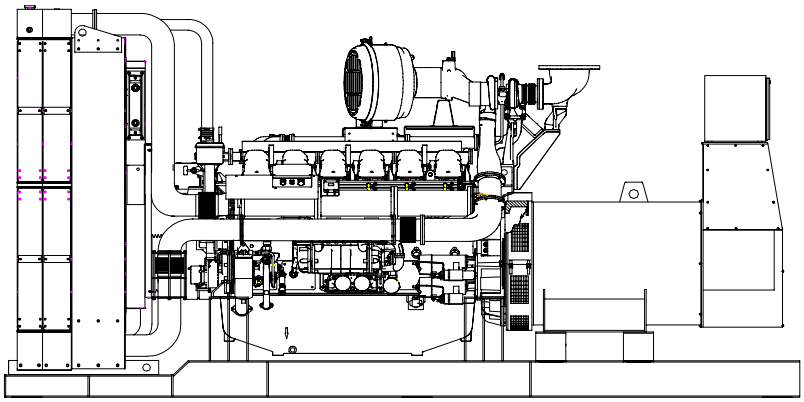
Perkins 4012-46TAG2A diesel engine

Newage/Stamford PI734C alternator



ISO 9001:2000

This generator is available with CE certification

Standard Generator Features

- AMF, Automatic mains failure unit
- Heavy duty type, 12 cylinder, water cooled engine
- 50°C tropical type radiator
- Starter motor
- Lead acid battery
- Charging alternator
- Battery charge redressor
- Heavy duty, brushless type alternator
- Base frame with anti-vibration units
- Industrial type silencers
- Flexible exhaust compensator
- Block water heater unit
- Control panel with digital-automatic main control module
- Fan, fan drive, charging alternator drive and all rotating parts covered
- Radiator matrix covered by metal mesh against the mechanical damages
- Fabricated and welded steel base frame
- Anti-vibration mountings
- Engine and alternator manufacturer test reports
- Factory load, performance and function tests

Optional Features

- Automatic load transfer panel
- Automatic syncronization and power sharing systems
- Soundproof canopy
- Container type enclosers
- Road trailer
- Job-site trailer
- Protection circuit breaker
- Air start
- Remote type radiator
- Base fuel tank
- External type fuel tank
- Automatic fuel transfer system
- Residential silencer

	Standby		Prime	
	kVA	kW	kVA	kW
	1658	**1326**	**1511**	**1208**

Perkins 4012-46TAG2A Engine

Standard Features

Economic power

- Individual four valve per cylinder heads give optimised gas flows, whilst digitally governed unit fuel injectors ensure ultra-fine fuel atomisation and hence controlled rapid combustion, for efficiency and economy
- Commonality of components with other engines in the 4000 Series family allows reduced parts stocking levels

Reliable power

- Developed and tested using latest engineering techniques
- Piston temperatures are controlled by an advanced gallery jet cooling sys.
- All engines are tolerant of a wide range of temperatures without derate
- Service is provided by the extensive Perkins network of over 4.000 distributers and dealers worldwide

Clean, efficient power

- New designed radiator assemblies with corrosion inhibiting powder coated finish; fewer pipe joints and easier access to reduce maintenance times
- Exceptional power to weight ratio and compact size for easier transportation and installation
- Designed to provide excellent service access for easy of maintenance
- Engines designed to comply with major international standards
- Low gaseous emissions that will satisfy the requirements of **1/2 TA Luft**

Standards

- UK MOD, BS5750, ISO9001, BS5514/1-1982, ISO 3046/1, ISO 8528/1

Technical Specifications

Manufacturer	PERKINS	تولید کننده
Model	4012-46TAG2A	مدل
Type	4 cycle, water-cooled, diesel engine	تیپ
Number of cylinders	12	تعداد سیلندرها
Cylinder arrangement	60° Vee	آرایش سیلندرها
Displacement, Liters	45.842	جا به جایی
Bore X Stroke, mm	160 X 190	قطر سیلندر X کورس پیستون
Compression Ratio	13.6:1	نسبت تراکم
Combustion System	Direct injection	سیستم احتراق
Aspiration	Turbocharge,air-to-air charge cooled	سیستم تنفس
Rotation	Anti-clockwise viewed on flywheel	چرخش
Gross engine power, kWb	1459	قدرت ناخالص موتور
Fan Power, kWm	64	قدرت فن
BMEP gross, bar	25.38	
Combustion air flow, m³ / min	128	جریان هوای احتراق
Exhaust gas temp.(after turbo),	455 °C	دمای گاز خروجی از اگزوز
Exhaust gas flow (after turbo),	320 m³ / min	جریان هوای خروجی از اگزوز
Mean piston speed, m / s	9,5	میانگین سرعت پیستون

Cooling System

Type	Tropical, heavy duty type
Ambient temperature, °C	50
Engine coolant capacity, Liters	73
Engine+Radiator coolant cap., Liters	210
Jacket coolant flow, Liters / sec	17
Cooling min airflow, m³ / min	1944

- System designed for ambients up to 50ºC
- Two twin thermostats
- Powder coated radiator comprising: water radiator; air charge cooled radiator; fuel oil cooling (optional); all pipes, hoses and clips; fan; pulleys; fan belts and safety guards

Model	Standby kWm		Prime kWm	
	Gross	Net	Gross	Net
4012-46TAG2A	**1459**	**1395**	**1331**	**1267**

Lubricating System

Type	Pressurized
Capacity, Liters	177
Lub oil temp. Max to bearings, °C	105
Lub oil pressure, kPa	400

- Wet sump with filler and dipstick
- Full flow spin on oil filters
- Engine jacket lub oil temperature stabilizer

Fuel System

Type of injection system	Direct injection
Fuel injection pump	Combined unit injector
Injector pressure, MPa	140
Delivery/hour at 1500rev/min, Liters	1020
Fuel lift pump	Tuthill TCH 1-089
Governor type	Electronic governor, ISO 8528-12 CLASS 3-4; ISO 8528-5 CLASS G2

- Direct fuel injection system with fuel lift pump
- Full flow spin-on fuel filters

Electrical System

Alternator	24 Volt with integral regulator
Starter motor (DC)	24 Volt
Starter motor power	16.4 kW

- Twin high coolant temperate shutdown switches
- Twin low oil pressure shutdown switches
- Overspeed switch and magnetic pick up
- Turbine inlet temperature shutdown switch

Fuel Consumption

liters per hour	%110 Load	329 L
	%100 Load	297,5 L
	%75 Load	226,4 L
	%50 Load	156,8 L
grams per kWh	%110 Load	196 g/kWh
	%100 Load	194 g/kWh
	%75 Load	194 g/kWh
	%50 Load	195 g/kWh

Optional Equipments

- Fuel oil cooler integral to the radiator assembly
- Immersion heater with thermostat

Newage/Stamford PI734C Alternator

Standard Features

Winding&Electrical Performance

All generator stators are wound to 2/3 pitch.This eliminates triplen (3rd, 9th, 15th...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads.The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains.A fully connected damper winding reduces oscillations during paralelling.This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

MX341-AVR

The PI range generators, complete with a PMG, are available with one of two AVRs.Each AVR has soft start voltage build up and built in protection against sustained over-excitation, which will de-excite the generator after a minimum of 8 seconds.

Underspeed protection (UFRO) is also provided on both AVRs. The UFRO will reduce the generator output voltage proportional to the speed of the generator below a pre-settable level.

The MX341 AVR is two phase sensed with a voltage regulation of ± 1 %.

Both the MX341 and MX321 need a generator mounted current transformer transformer to provide quadrature droop characteristics for load sharing during parallel operation.

Terminals&Terminal Box

Standard generators are 3-phase reconnectable with 12 ends brought out to the terminals, Which are mounted on a cover at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers wiring and gland arrangements.It has removable panels for easy access.

Shaft&Keys

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.

Insulation / Impregnation

The insulation system is class 'H'

All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

Standards

Newage Stamford industrial generators meet the requirements of **BS EN 60034** and the relevent section of other international standards such as **BS5000,VDE0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359**

Other standards and certifications can be considered on request

Quaility Assurance

Generators are manufactured using production procedures having a quaility assurance level to BS EN ISO 9001.

Model	Standby		Prime	
	kVA	kW	kVA	kW
PI734C	**1660**	**1328**	**1550**	**1240**

Technical Specifications

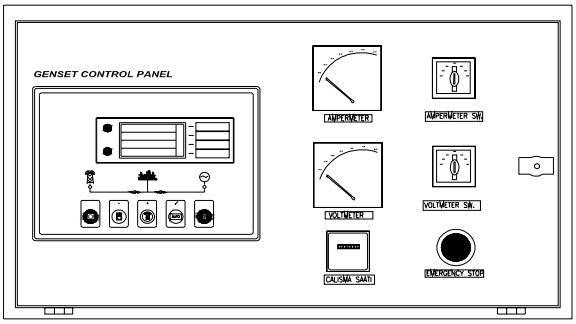
Manufacturer	NEWAGE / STAMFORD	تولید کننده
Model	PI734C	مدل
Type	4-Poles, Rotating Field, Brushless	تیپ
Standby power at rated voltage, kVA	1660	توان standby در ولتاژ نامی
Efficiency, %	95.1%	راندمان
Power factor	0.8	ضریب قدرت
Phase	3	فاز
Frequency, Hz	50	فرکانس
Speed, Rpm	1500	سرعت
Voltage, V	380/415	ولتاژ
Excitation	Self excited	سیستم تحریک
Stator windings	2/3 Pitch factor	
Regulation	AVR, Automatic Voltage Regulator	تنظیم ولتاژ
Voltage Regulator	MX341	رگولاتور ولتاژ
Voltage Regulation, %	± 1	درصد تنظیم ولتاژ
R.F.I Suppression	BS EN 61000-6-2 & BS EN 61000-6-4 VDE0875G, VDE 0875N	
Waveform distortion	No Load <1.5% Non distorting balanced linear load<5.0%	
Rotor	Dynamic balanced	روتور
Overspeed, Rpm	2250	حداکثر سرعت مجاز
Short circuit current	< 300%	جریان اتصال کوتاه
TIF	Less than 50	
Insultion class	H	کلاس عایق
Construction	Single bearing, direct coupled	نحوه کوپلینگ
Coupling	Flexible	کوپلینگ
Stator winding	Double layer concentric	
Connection	WYE	اتصال
Protection class	IP23	کلاس حفاظت
Cooling air volume,m³ / sec	2.69	دبی هوای خنک کننده

Optional Equipment

- Winding and bearings RTD's
- Winding Protection Thermistors
- Anti Condensation Heaters
- Air Filters
- Quadrature Droop kit for Parallel Operation
- Power Factor Controller
- Diode Failure Unit
- Excitation Loss Module
- Manuel Voltage Regulator
- Re-greased bearings
- MX321 AVR with 0.5% Regulation and 3 phase sensing

Control Panel

Standard Equipments



- Deeapse 5220 digital automatic control module
- Hourmeter
- Voltmeter
- Voltmeter commutator
- Ampermeter
- Ampermeter commutator
- Emergency stop button

Deepsea 5220 Control Module

Description

- The model 5220 is an Automatic Mains Failure Control module.
- The modul is used to monitor a mains supply and automaticlly start a standby generator set.
- The module also provides indication of operational status and fault conditions automaticly shutting down the genset and indicating failures by means of an LCD display, and appropriate flashing LED on the front panel.
- Selected timers and alarms can be altered by the user from the front panel.
- Alterations to the system are made using the 810 interface and a PC. This interface also provides real time diagnostic facilities

Specifications

- 240mm x 172mm dimensions
- 70mm x 40mm dimensions, 4 segment grafical LCD monitor
- Developed 16-bit Microprocessor design
- Easy comprehended display (Hid-Til-Lit SMD LED technology)
- LED mimic diagram
- SMS messaging capability with suitable GSM Modem
- PC software is MS Windows based and allows the operator to control the module from a remote location (P810 Software Kit necessary)
- Easy pushbutton controls
- System parameters can be adjusted manually from the front panel
- kVA,kW ve Cosφ measurements
- Communication with MODEM

Pushbutton Controls

STOP / START
AUTO, TEST, MANUAL
LCD PAGE

Input Functions display on LCD

Generator Volts	Volts L1-N, L2-N, L3-N
Generator Volts	Volts L1-L2, L2-L3, L3-L1
Generator Amps	Amps L1, L2, L3
Generator Frequency	Hz
Mains Volts	Volts L1-N, L2-N, L3-N
Mains Volts	Volts L1-L2, L2-L3, L3-L1
Mains Frequency	Hz
Engine Speed	RPM
Plant Battery Volts	Volts
Engine Hours Run	Hour
Generator total power	kVA L1, L2, L3,total
Generator total power	kW L1, L2, L3,total
Generator power factor	Cosφ L1, L2, L3,total

Optional Input Functions

Engine Oil pressure	kPa
Fuel level	%
Engine Temperature	°C

Alarm Channels

Under/over generator voltage
Over-current
Under/over generator frequency
Under/over speed
Charge fail
Emergency stop
Low oil pressure
High engine temperature
Fail to start
Low/high DC battery voltage
Reverse power
Generator phase rotation error
Generator short-circuit protection
Loss of speed sensing signal
Mains out of limits

Environmental Testing Standards

Electromagnetic Compatibility

BS EN 50081-2:1992 and EN 61000-6-4:2000 EMC, Emission Standards for the Industrial Environment

EN 61000-6-2:1999 EMC, Immunity Standards for the Industrial Environment

Vibration

BS EN 60068-2-6 Ten sweeps (up and back down) at 1 octave/minute in each of the three major axes.

5Hz to @ +/-7.5mm constant displacement.

8Hz to 500Hz 2gn constant acceleration.

Temperature

Cold : BS EN 60068-2-1 to -30°C

Hot : BS EN 60068-2-2 to 70°C

Humidity

BS EN 2011 part 2.1 93% RH @ 40° for 48 hours

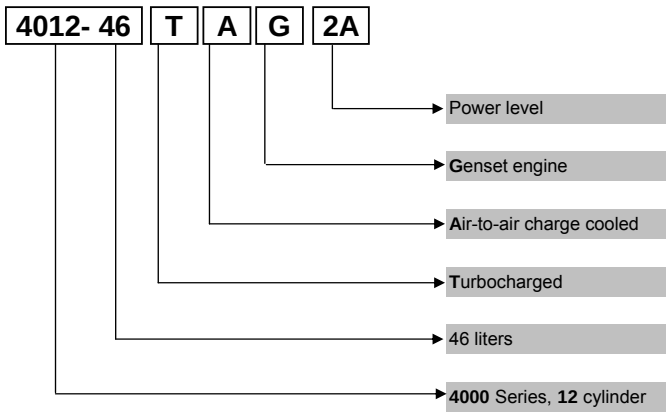
Shock

BS EN 6068-2-27 Three half sine shocks in each of the three major axes 15gn amplitude.11mS duration.

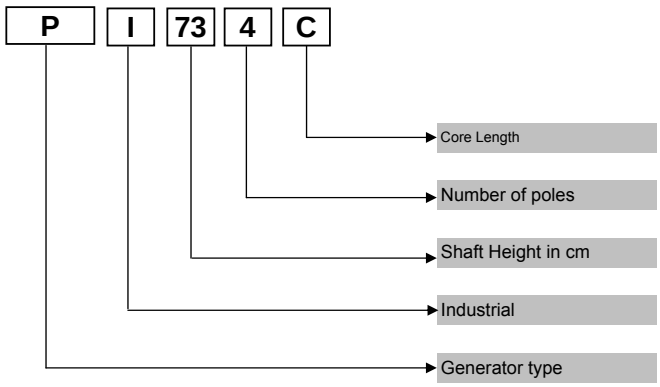
Electrical Safety

BS EN 60950 Low Voltage Dirctive/Safety of information technology equipments, including electrical business equipment

Perkins 4000 Series Diesel Engine



Newage/Stamford Alternator



Information

Power Ratings

Standby power rating is for the supply of emergency power at variable load for the duration of the non-avalaibality of the mains power supply.No overload capacity is available at this rating.A standby rated engine should be sized for an avarage load factor of 80% based on published standby rating for 500 operating hours per year.Standby ratings should never be applied except in true emergency power failure conditions.

Prime power rating is available for unlimited hours per year with a variable load of which the average engine load factor is 80% of the published power rating, incorporation of a 10% overload for 1 hour in every 12 hours of operation which permitted

Continuous power rating is available for continuous full load operation.No overload is permitted.

Acc. to 3046/1, BS 5514, DIN6271

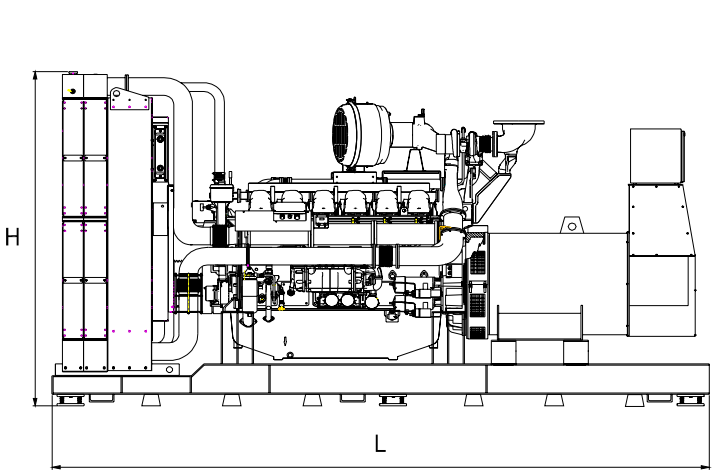
Electric Formulas

Values	Formula	
kWe	kWm X E	
kWe	(U x I x 1.73 x pf) / 1000	kVA x pf
kVA	(U x I x 1.73) / 1000	kWe / pf
I (Amp)	(kWe x 1000) / (U x 1.73 x pf)	(kVA x 1000) / (U x 1.73)
Frequency	(Rpm x N°Pole) / (2 x 60)	
Rpm	(2 x 60 x Frequency) / N°Pole	

kWm: Mechanical Power
kWe : Electrical Power
pf : Power factor
E : Alternator efficiency
I : Current (A)
U : Voltage (V)
kVA : Power
Rpm: Revolutions per minute

General Dimensions

Standard Generator



Length, L	5,1 m
Heigth, H	2,6 m
Width, W	2,3 m
Weight, Total	9200 kg

Generator Room Layout