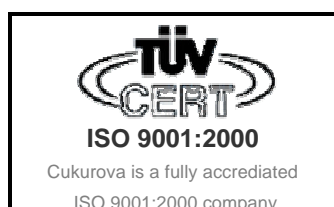
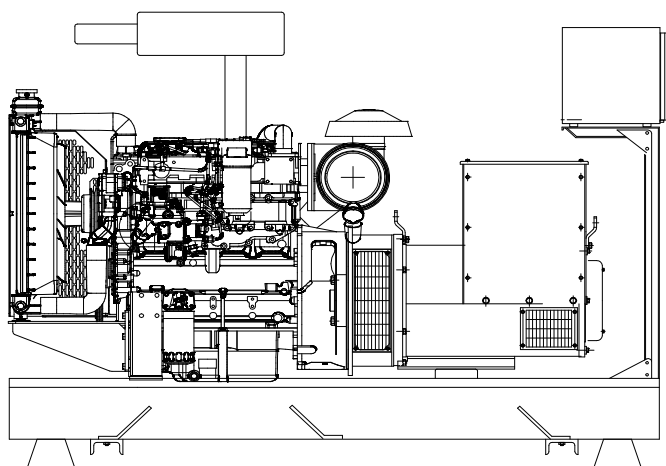


# CUKUROVA GENERATOR SYSTEMS

1500 Rpm, 50Hz, 400V

Perkins 1104A-44TG2 diesel engine

Newage/Stamford UCI224G alternator



## Standard Generator Features

- ◊ AMF, Automatic mains failure unit
- ◊ Heavy duty type, 4 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 synchronization and power sharing systems
- ◊ Soundproof canopy
- ◊ Container type enclosures
- ◊ 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

Model	Standby		Prime	
	kVA	kW	kVA	kW
<b>CJ90PN</b>	<b>90</b>	<b>72</b>	<b>81</b>	<b>65</b>

## APPLICATION DATA

### Perkins 1104A-44TG2 Engine

#### Standard Features

##### Compact, efficient power

- ◊1100 Series is the result of an intensive period of customer research that has guided the development of the range.
- ◊The new 4.4 litre cylinder block ensures bore roundness is maintained under the pressures of operation. It also ensures combustion and mechanical noise is lowered.
- ◊A new cylinder head has re-established Perkins mastery of air control.

##### Quality by Design

- ◊Product design and Class A manufacturing improvements enhance product reliability while maintaining Perkins legendary reputation for durability.

##### Cost Effective Power

- ◊Compact size and low noise.
- ◊Lower fuel consumption and oil use.
- ◊500 hour service intervals.

##### Product Support

- ◊Total worldwide service is provided through a network of 4,000 distributors and dealers.
- ◊TIPSS - The Integrated Parts and Support System enables customers to specify and order parts electronically as well as service engines with on-line guides and service tools.

Model	Standby kW		Prime kW	
	Gross	Net	Gross	Net
<b>1104A-44TG2</b>	<b>80.7</b>	<b>79.1</b>	<b>73.4</b>	<b>71.9</b>

#### Lubricating System

Type	Pressurized
Capacity, Liters	8
Lub oil pressure (min), kPa	415-470
◊Wet sump with filler and dipstick	
◊Spin-on full-flow lub oil filter	

#### Fuel System

Type of injection system	Direct injection
Fuel atomiser	Multi-hole
Fuel injection Pump	Rotary
Delivery/hour at 1500rev/min, Liters	120-150
Governor type	Electronic, Woodward LCG2
◊Electronic governor speed control to ISO8528-G3	
◊Rotary type pump	
◊Ecoplus fuel filter	

#### Technical Specifications

Manufacturer	PERKINS
Model	1104A-44TG2
Type	4 cycle, water-cooled, diesel engine
Number of cylinders	4
Cylinder arrangement	Vertical in-line
Displacement, Liters	4.4
Bore X Stroke, mm	105 X 127
Compression Ratio	17.25:1
Combustion System	Direct injection
Aspiration	Turbocharged
Rotation	Clockwise viewed from front
Gross engine power, kWb	80.7
Fan Power, kWm	1.6
BMEP gross, bar	14.67
Combustion air flow, m³ / min	5.14
Exhaust gas temp.(after turbo), °C	580
Exhaust gas flow (after turbo),m³ / min	13.3
Mean piston speed, m / s	6.35

#### Electrical System

Alternator	12 Volt, 65 Amp
Starter motor (DC)	12 Volt
Starter motor power	3 kW
◊12 volt shut off solenoid energised to run	

#### Fuel Consumption

liters per hour	%110 Load	20.5 L
	%100 Load	18.7 L
	%75 Load	14.0 L
	%50 Load	9.7 L
grams per kWh	%110 Load	213 g/kWh
	%100 Load	214 g/kWh
	%75 Load	214 g/kWh
	%50 Load	222 g/kWh

#### Cooling System

Type	Tropical, heavy duty type
Ambient temperature, °C	50
Engine+Radiator coolant cap., Liters	13
Pressure cap setting, kPa	107
◊Thermostatically-controlled system with belt driven circulating pump and pusher fan	
◊Mounted radiator piping and guards	

## Newage/Stamford UCI224G 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 paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

#### SX460 AVR

With this self excited control system the main stator supplies power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semiconductors of the AVR ensure positive build-up from initial low levels of residual voltage.

This exciter rotor output is fed to the main rotor through a three phase full wave bridge rectifier. This rectifier is protected by a surge suppressor against surges caused, for example, by short circuit.

#### 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 relevant 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.

#### Quality Assurance

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

Model	Standby		Prime	
	kVA	kW	kVA	kW
<b>UCI224G</b>	<b>90.8</b>	<b>72.6</b>	<b>85</b>	<b>68</b>

### Technical Specifications

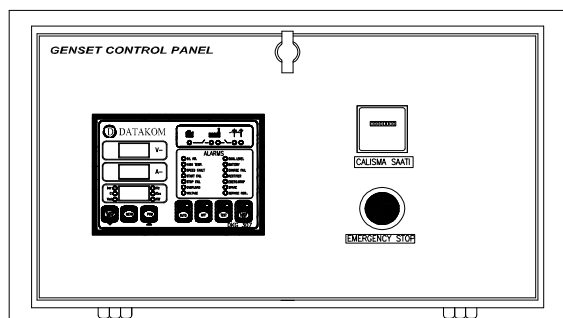
Manufacturer	NEWAGE / STAMFORD
Model	UCI224G
Type	4-Poles, Rotating Field, Brushless
Standby power at rated voltage, kVA	90.8
Efficiency, %	90
Power factor	0.8
Phase	3
Frequency, Hz	50
Speed, Rpm	1500
Voltage, V	380/415
Excitation	Self excited
Stator windings	2/3 Pitch factor
Regulation	AVR, Automatic Voltage Regulator
Voltage Regulator	SX460
Voltage Regulation, %	± 1.5
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
Overspeed, Rpm	2250
Short circuit current	< 300%
TIF	Less than 50
Insulation class	H
Construction	Single bearing, direct coupled
Coupling	Flexible
Stator winding	Double layer concentric
Connection	WYE
Protection class	IP23
Cooling air volume, m³ / sec	0.216

### Optional Equipment

- ◊Optional Permanent Magnet Generator (PMG) provides an isolated power supply to the excitation control system
- ◊Anti Condensation Heaters
- ◊Air Filters
- ◊Temperature Indication RTD's
- ◊Winding Protection Thermistors
- ◊Quadrature Droop kit for Parallel Operation
- ◊SX440 AVR with 1% Regulation and 2 Phase Sensing
- ◊SX421 AVR with 3 Phase Sensing and improved Regulation 0.5%
- ◊MX341 (PMG) 1% Regulation with 2 Phase Sensing
- ◊MX321 (PMG) with 3 Phase Sensing and improved Regulation 0.5%

## Control Panel

### Standard Equipments



- ◊Datakom DKG307 digital automatic control module
- ◊Hourmeter
- ◊Emergency stop button

## Datakom DKG307 Control Module

### Description

◊The DKG-307 is a comprehensive AMF unit for a single generating set operating in standby mode.

◊In AUTOMATIC position, DKG-307 monitors mains phase voltages and controls the automatic starting, stopping and load transfer of the generating set in case of a mains failure and once the generator is running, it monitors internal protections and external fault inputs. If a fault condition occurs, the unit shuts down the engine automatically and indicates the failure source with the corresponding red led lamp.

◊The DKG-307 provides a comprehensive set of digitally adjustable timers, threshold levels, input and output configurations and operating sequences. The unauthorized access to program parameters is prevented by the program lock input. All programs may be modified via front panel pushbuttons, and do not require an external unit.

◊The fault conditions are considered in 2 categories as Warnings and Alarms. Measured values have separate programmable limits for warning and alarm conditions.

◊The service request indicator lamp turns on at the expiration of either engine hours or time limits.

◊It is possible to monitor the operation of the system locally or remotely with the WINDOWS based PC utility program.

◊The unit is designed for front panel mounting. It is fitted into the cut-out with the steel spring removed. Connections are made with 2 part plug and socket connectors.

### Pushbutton Controls

STOP / START  
AUTO, TEST, MANUAL  
LCD PAGE

### Features

Automatic mains failure with genset control and protection  
Remote Start operation capability  
Analogue temperature and oil pressure inputs  
Genset KW and Power Factor measurement  
Engine hours run counter  
Periodic maintenance request display  
165 programmable parameters  
Battery backed-up real time clock  
Weekly operation schedule programs  
Daily, weekly, monthly exerciser  
Event logging with time stamp  
Statistical counters  
Serial RS-232 data output for telemetry on PC  
Free MS-Windows remote monitoring SW  
Configurable analogue inputs: 2  
Configurable digital inputs: 7  
Configurable relay outputs: 2  
Output expansion capability  
Small dimensions (155x115x48mm)

### 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

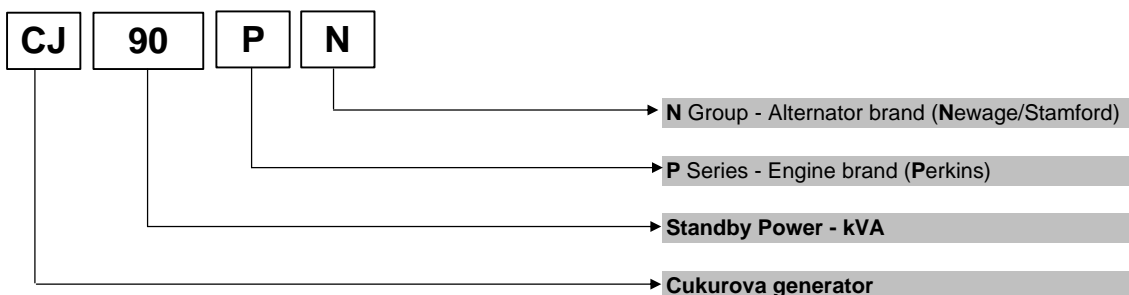
Engine Oil pressure	kPa
Fuel level	%
Engine Temperature	°C

### Alarm Channels

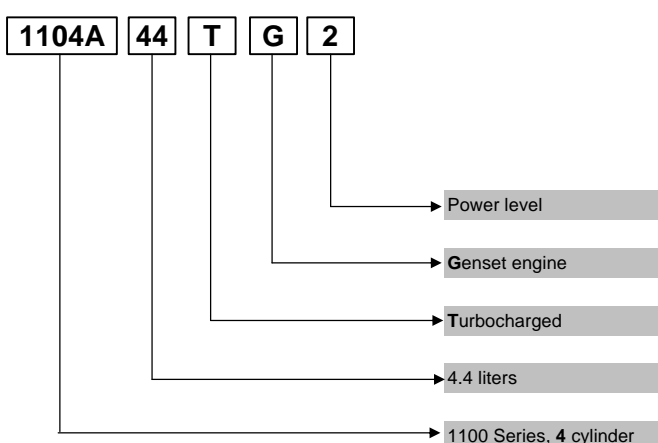
Under/over generator voltage  
Over-current  
Under/over generator frequency  
Under/over speed  
Charge fail  
Emergency stop  
Low oil pressure  
High engine temperature  
Fail to start  
Low/high DC battery voltage  
Reverse power  
Generator phase rotation error  
Generator short-circuit protection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

## Model Codes and General Information

### Cukurova Diesel Generator



### Perkins 1100 Series Diesel Engine



### Information

#### Power Ratings

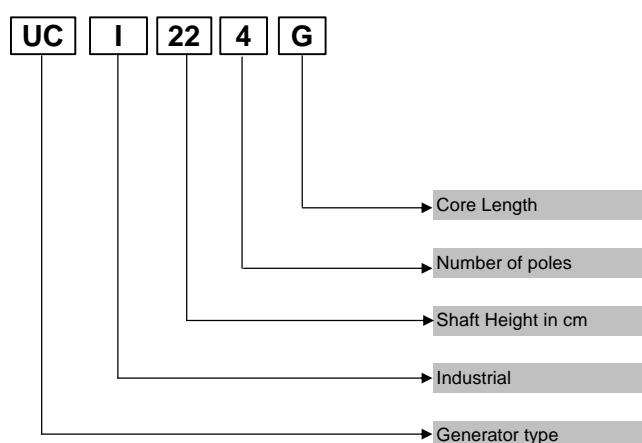
**Standby power rating** is for the supply of emergency power at variable load for the duration of the non-availability of the mains power supply. No overload capacity is available at this rating. A standby rated engine should be sized for an average load factor of 80% based on published standby rating 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 ISO 3046/1, BS 5514, DIN6271

### Newage / Stamford Alternator



### Electric Formulas

Values	Formula	
kWe	$kW_m \times E$	
kWe	$(U \times I \times 1.73 \times pf) / 1000$	$kVA \times pf$
kVA	$(U \times I \times 1.73) / 1000$	$kWe / pf$
I (Amp)	$(kWe \times 1000) / (U \times 1.73 \times pf)$	$(kVA \times 1000) / (U \times 1.73)$
Frequency	$(Rpm \times N^{\circ}Pole) / (2 \times 60)$	
Rpm	$(2 \times 60 \times Frequency) / N^{\circ}Pole$	

**kW<sub>m</sub>**: Mechanical Power

**kW<sub>e</sub>**: Electrical Power

**pf**: Power factor

**E**: Alternator efficiency

**I**: Current (A)

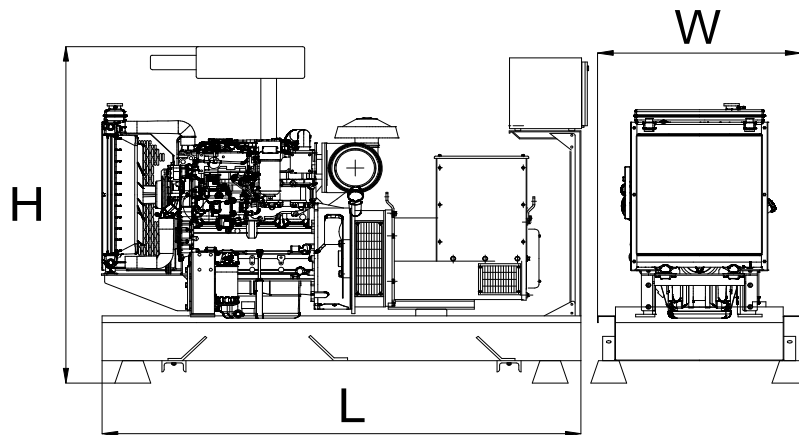
**U**: Voltage (V)

**kVA**: Power

**Rpm**: Revolutions per minute

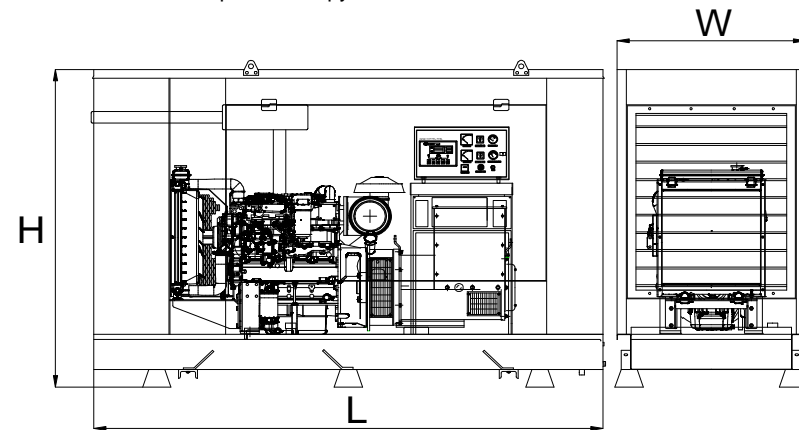
## General Dimensions

### Standard Generator



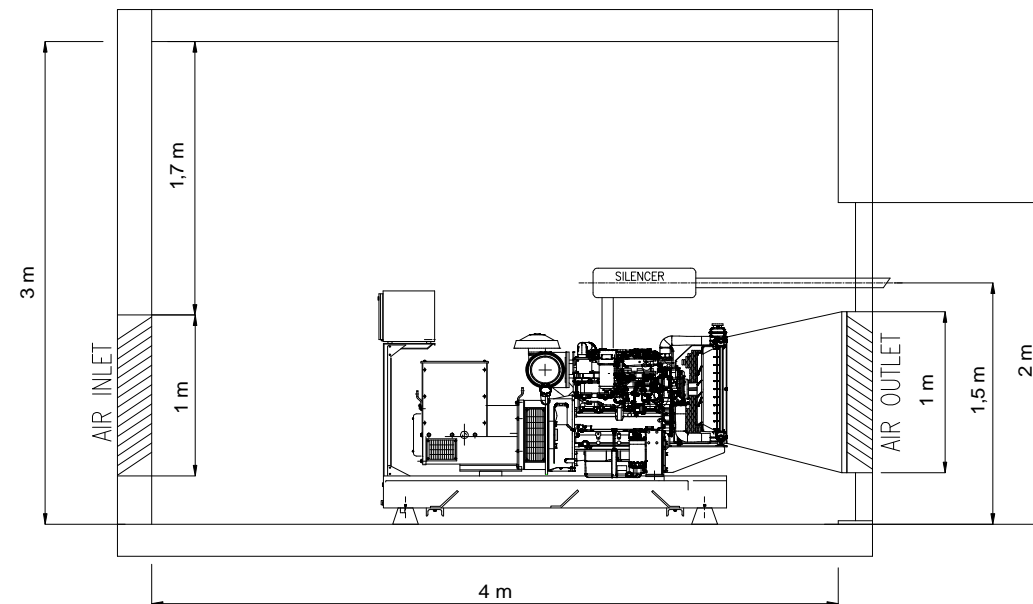
Length, L	2 m
Height, H	1,5 m
Width, W	0,85 m
Weight, Total	1200 kg

### Generator with Soundproof Canopy



Length, L	2,7 m
Height, H	1,85 m
Width, W	1 m
Weight, Total	1600 kg

### Generator Room Layout



Above drawings dimensions and weights are only for guidance. For installation design of your specific application, necessary certified drawings, at site consultancy service as well as maintenance and installations manuals will be provided by Cukurova without any charge.

Specifications may change without notice



İSTANBUL	Tel : (0212) 482 16 00 (30 hat)	Faks : (0212) 482 16 80
İSTANBUL	Tel : (0216) 396 34 60 (5 hat)	Faks : (0216) 395 23 75
ADANA	Tel : (0322) 436 11 47 (5 hat)	Faks : (0322) 436 16 59
ANKARA	Tel : (0312) 490 87 77 (5 hat)	Faks : (0312) 490 89 88
İZMİR	Tel : (0242) 478 18 70	Faks : (0242) 478 18 30
ANTALYA	Tel : (0242) 221 48 21	Faks : (0242) 221 48 72
BURSA	Tel : (0224) 441 84 77	Faks : (0224) 441 84 78
DIYARBAKIR	Tel : (0412) 251 21 90 (10 hat)	Faks : (0412) 251 21 88
KAYSERİ	Tel : (0352) 331 74 74	Faks : (0352) 331 74 23
TRABZON	Tel : (0462) 325 70 10 (pbx)	Faks : (0462) 325 77 67