



## Marapco Brand Diesel Electric Generators

Designed, developed, manufactured and tested to the highest International Standards, these generators are assembled in UK.



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# PRODUCTION STANDARDS

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## **Applicable Standards: Electrical Machines**

BS EN 60034-1:2004 – Rotating electrical machines. Rating and performance.

BS EN 60034-5:2001 – Rotating electrical machines. Degrees of protection provided by the integral design of rotating electrical machines (IP code). Classification.

BS EN 60034-14:2004 – Rotating electrical machines. Mechanical vibration of certain machines with shaft heights of 56mm and higher. Measurements, evaluation and limits of vibration severity.

BS EN 60034-22:2009 – Rotating electrical machines. AC generators for reciprocating internal combustion (RIC) engine driven generating sets.

BS 4999-140:1987 – General requirements for rotating electrical machines. Specification for voltage regulation and parallel operation of a.c. synchronous generators.

## **Applicable Standards: Engines**

BS ISO 3046-1:2002 – Reciprocating internal combustion engines. Performance. Declarations of power, fuel and lubricating oil consumptions and test methods. Additional requirements for engines for general use.

## **Applicable Standards: Generating Sets**

BS ISO 8528-1:2005 – Reciprocating internal combustion engine driven alternating current generating sets. Application, ratings and performance.

BS ISO 8528-2:2005 – Reciprocating internal combustion engine driven alternating current generating sets. Engines.

BS ISO 8528-3:2005 – Reciprocating internal combustion engine driven alternating current generating sets. Alternating current generators for generating sets.

BS ISO 8528-4:2005 – Reciprocating internal combustion engine driven alternating current generating sets. Control gear and switchgear.

BS ISO 8528-5:2005 – Reciprocating internal combustion engine driven alternating current generating sets. Generating sets.

BS ISO 8528-6:2005 – Reciprocating internal combustion engine driven alternating current generating sets. Test methods.

ISO 8528-9:1995 (BS 7698-9:1996) – Reciprocating internal combustion engine driven alternating current generating sets. Measurement and evaluation of mechanical vibrations.

ISO 8258-10:1998 (BS 7698-10:1999) – Reciprocating internal combustion engine driven alternating current generating sets. Measurement of airborne noise by the enveloping surface method.

## **General Standards**

ISO 12100-1:2003 – Safety of machinery. Basic concepts, general principles for design. Basic terminology, methodology.

ISO12100-2:2003 – Safety of machinery. Basic concepts, general principles for design. Technical principles.

BS EN 60439-1:1999 – Low-voltage switchgear and control gear assemblies. Type-tested and partially type-tested assemblies.

BS EN 953:1997+A1:2009 – Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards.

BS EN 60529:1992 – Specification for degrees of protection provided by enclosures (IP code).

## **CE Marked Products**

All CE marked products are designed to comply with the requirements of Machinery Safety Directive (2006/42/EC), Low Voltage Directive (2006/95/EC) and Electromagnetic Compatibility Directive (2004/108/EC). SA canopied sets (rated at up to 400kW) are also be designed to comply with the Noise Directive for Equipment Used Outdoors (2000/14/EC). Such compliance is based on the following harmonised standards:

BS EN 12601:2010 – Reciprocating internal combustion engine driven generating sets. Safety.

BS EN 60204-1:2006 +A1:2009 – Safety of machinery. Electrical equipment of machines. General requirements.

BS EN 55011:2009 +A1:2010 – Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement.

BS EN 61000-6-2:2005 – Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments.

## **Management Systems**

BS EN ISO 9001:2008 – Quality management systems. Requirements.

BS EN ISO 14001:2004 – Environmental management systems. Requirements with guidance for use.

BS OHSAS 18001:2007 –Occupational health and safety management systems. Requirements.

## **Other Standards**

SON for Nigeria and GOST R for Russia.



**Marapco Ltd**

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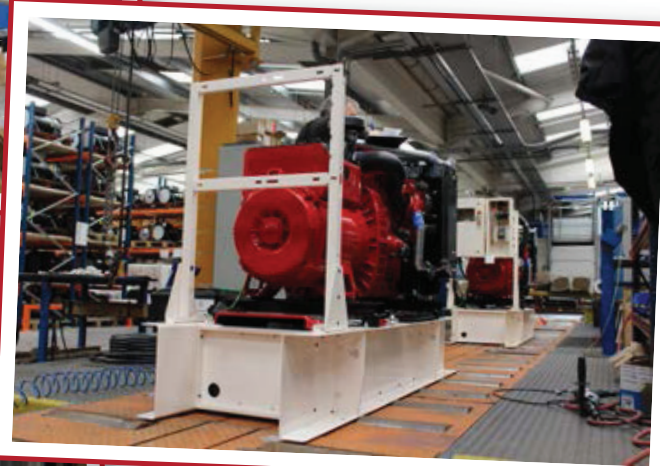
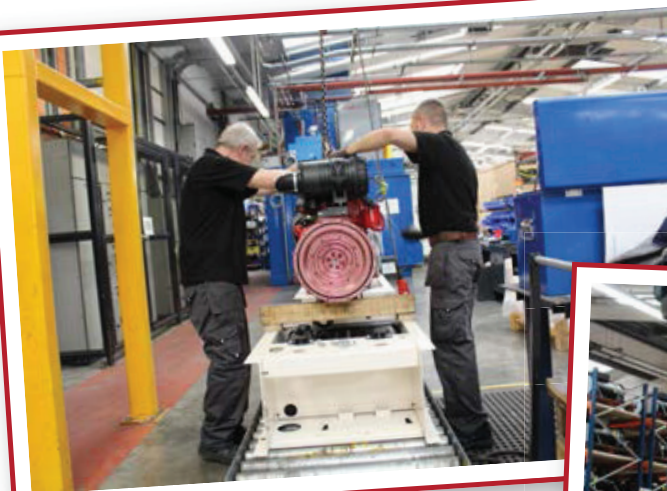
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## CERTIFICATES





# MARAPCO MANUFACTURING FACILITY





## TEST CERTIFICATES

# Test Report



Tested at BT63 5GA, United Kingdom, in accordance with  
ISO/IEC 17025:2005

Works Order Number	T0XXXX/007
Genset model	MP450E
Rated output (kVA)	450
Power factor	0.8
Rated voltage (V)	400/230
Rated frequency (Hz)	50
Rated current (A)	649.5
Test output (kW)	360.0
Test current (A)	519.6
Control Panel	DSE 6110

## Standard Tests:

<input checked="" type="checkbox"/>	CP Emergency Stop	Pass
<input checked="" type="checkbox"/>	Three attempt start	Pass
<input checked="" type="checkbox"/>	Remote Start	Pass
<input type="checkbox"/>	High water temperature shutdown (gauge)	
<input type="checkbox"/>	High water temperature shutdown (switch)	

<input type="checkbox"/>	Oil pressure shutdown (gauge)	
<input type="checkbox"/>	Oil pressure shutdown (switch)	
<input type="checkbox"/>	Volts bias	
<input type="checkbox"/>	Speed bias	
<input type="checkbox"/>	Panel is sync GMT	

## Optional Tests

<input type="checkbox"/>	Canopy Emergency Stop
<input type="checkbox"/>	16 Channel Remote Annunciator
<input type="checkbox"/>	3 Volts Free Contacts - GRR, NAR, GCA
<input type="checkbox"/>	4 Position Level Switch
<input type="checkbox"/>	4 Volts Free Contacts - GRR, NAR, GCS, GSA
<input type="checkbox"/>	Analogue Fuel Level Measurement
<input type="checkbox"/>	Anti-condensation Heater
<input type="checkbox"/>	Approaching High Coolant Temperature
<input type="checkbox"/>	Approaching Low Lube Oil Pressure Alarm
<input type="checkbox"/>	Automatic Fuel System
<input type="checkbox"/>	Auxiliary Contacts in Circuit Breaker
<input type="checkbox"/>	CEE Form Sock
<input type="checkbox"/>	Control Panel Heater
<input type="checkbox"/>	Coolant Heater

<input type="checkbox"/>	Earth Leakage Protection for Main Output	
<input type="checkbox"/>	Electronic Governor	
<input type="checkbox"/>	Expansion Module/Expansion Card	
<input type="checkbox"/>	Flow Valve Kit	
<input type="checkbox"/>	High Lube Oil Temp Shutdown	
<input checked="" type="checkbox"/>	Low Coolant Level Alarm	Pass
<input type="checkbox"/>	Low Coolant Temperature Alarm	
<input type="checkbox"/>	Low Fuel Level Alarm/Shutdown	
<input type="checkbox"/>	Motorised Kit for Circuit Breaker	
<input type="checkbox"/>	One Off Auxiliary Contact in Circuit Breaker	
<input type="checkbox"/>	Static Battery Charger	
<input type="checkbox"/>	Upgrade AVR from 1-phase to 3-phase sensing	
<input type="checkbox"/>	Voltage Adjustable Through Control Panel	
<input type="checkbox"/>	Other accessories (Write in comments)	

## Operational Checks

Voltage After AVR adjustment (V)	L1	L2	L3
	402	403	402
Frequency at output (Hz)	50		
Currents at test output (A)	L1	L2	L3
	520	520	520
100% Power at test output (kW)	360		

Water temp. at load test (°C)	89		
Oil pres. at load test (bar)	3		
Battery Voltages	Before test	Aux supply	At load test
	25.6	N/A	28.6
Maintenance call setting (h)	400		

☒ General check after 30 minutes at load test output.

Note: Load test carried out at 1.0pf and standard test conditions

Test outcome:

Engine serial number TGDF5136NXXXXX  
Alternator serial number 338XXXXX  
Control panel serial number 51XXXXX

**PASS**

Comments:

Tested By: M.ANDERSON  
(Tester)

Signed :

Date: 27/01/2017

**We Guarantee  
Power on Demand**





## Marapco Generating Set Ratings Summary: 12.5 - 2500 KVA

Perkins Powered - 3 Phase, 380 - 415 V. 50 Hz, Rating at 0.8 PF

Generating Set	Perkins Engine Model	Leroy Somer Alternator Model	RPM	Rating			
				KVA		KW	
				Prime	Standby	Prime	Standby
MP12.5-MP14E	403A-15G1	LSA40VS2	1500	12.5	14.0	10.0	11.2
MP15-MP16.5E	403A-15G2	LSA40S3	1500	15.0	16.5	12.0	13.2
MP20-MP22E	404A-22G1 / 404D-22G1	LSA40M5	1500	20.0	22.0	16.0	17.6
MP30-MP33E	1103A-33G	LSA42.3VS3	1500	30.0	33.0	24.0	26.4
MP45-MP50E	1103A-33TG1	LSA42.3M7	1500	45.0	50.0	36.0	40.0
MP60-MP66E	1103A-33TG2	LSA42.3L9	1500	60.0	66.0	48.0	52.8
MP80-MP88E	1104A-44TG2	LSA44.3S3	1500	80.0	88.0	64.0	70.4
MP100-MP110E	1104C-44TAG2	LSA44.3S5	1500	100.0	110.0	80.0	88.0
MP135-MP150E	1106A-70TG1	LSA44.3M8	1500	135.0	150.0	108.0	120.0
MP150-MP165E	1106A-70TAG2	LSA44.3L10	1500	150.0	165.0	120.0	132.0
MP180-MP200E	1106A-70TAG3	LSA46.2M3	1500	180.0	200.0	144.0	160.0
MP200-MP220E	1106A-70TAG4	LSA46.2M5 / LSA46.3S3	1500	200.0	220.0	160.0	176.0
MP200-MP220E	1506A-E88TAG1	LSA46.2M5 / LSA46.3S3	1500	200.0	220.0	160.0	176.0
MP230-MP250E	1506A-E88TAG2	LSA46.2L6 / LSA46.3S4	1500	230.0	250.0	184.0	200.0
MP250-MP275E	1506A-E88TAG3	LSA46.2L6 / LSA46.3S5	1500	250.0	275.0	200.0	220.0
MP275-MP300E	1506A-E88TAG4	LSA46.2L9 / LSA46.3M7	1500	275.0	300.0	220.0	240.0
MP300-MP330E	1506A-E88TAG5	LSA46.2VL12 / LSA46.3M8	1500	300.0	330.0	240.0	264.0
MP350-MP400E	2206A-E13TAG2	LSA47.2VS2 / LSA46.3L11	1500	350.0	400.0	280.0	320.0
MP400-MP450E	2206A-E13TAG3	LSA47.2S4	1500	400.0	450.0	320.0	360.0
MP450-MP500E	2506A-E15TAG1	LSA47.2S5	1500	450.0	500.0	360.0	400.0
MP500-MP550E	2506A-E15TAG2	LSA47.2M7	1500	500.0	550.0	400.0	440.0
MP600-MP660E	2806A-E18TAG1A	LSA47.2L9	1500	600.0	660.0	480.0	528.0
MP650-MP700E	2806A-E18TAG2	LSA49.1S4 / LSA49.3S4	1500	650.0	700.0	520.0	560.0
MP750-MP825E	4006-23TAG2A	LSA49.1M75 / LSA49.3M8	1500	750.0	825.0	600.0	660.0
MP800-MP880E	4006-23TAG3A	LSA49.1M75 / LSA49.3M8	1500	800.0	880.0	640.0	704.0
MP1000-MP1100E	4008TAG2A	LSA49.1L11 / LSA49.3L10	1500	1000.0	1100.0	800.0	880.0
MP1250-MP1375E	4012-46TWG2A	LSA50.2M6	1500	1250.0	1375.0	1000.0	1100.0
MP1500-MP1650E	4012-46TAG2A	LSA50.2L8	1500	1500.0	1650.0	1200.0	1320.0
MP1700-MP1875E	4012-46TAG3A	LSA51.2S55 / LSA52.3S5	1500	1710.0	1880.0	1368.0	1504.0
MP2000-MP2250E	4016TAG2A	LSA51.2M60 / LSA52.3S6	1500	2000.0	2250.0	1600.0	1800.0
MP2250-MP2500E	4016-61TRG3	LSA51.2VL90 / LSA52.3L9	1500	2250.0	2500.0	1800.0	2000.0

### Rating Definitions:

**Prime:** These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. 10% overload power is available for 1 hour in 12 hours continuous operation.

**Standby:** These ratings are applicable for supplying continuous electrical power (at variable load) in the event of utility power failure. No overload is permitted on these ratings.

**Note:** All ratings @ Factory Standard Conditions.

### Others

**Sound Attenuated Enclosures:** Developed by our special acoustic engineers and comply with the European Community regulations 2000/14/EC.

The fully weatherproof enclosures are extremely rugged to withstand the rough handling common on many construction sites.

**Control Panels:** Digital & Auto Synchronization Panels.

**Automatic Load Transfer Panels:** Electronically controlled panel provides 24 hours automatic control of standby generating sets, 365 days a year.





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**Distributed by**

