

WARRANTY GUIDE

- GXE series natural gas gensets

Product Warranty Card (For Factory)

NO. :

End User Info.

Customer Name:
Location:
Contact Person:
Tel:

Distributor Info.

Distributor:
Address:
Contact Person:
Tel:

Genset Info.

Genset Model:
Series No.:
Engine Model:
Series No.:
Alternator Model:
Series No.:
Control Panel Model:
Series No.:

Relevant Products

ATS Model:
Series No.:
Control Panel Model:
Series No.:
Quantity of Gensets:
Other Gensets Series No:

Service

The date of claiming:	
The date of repairing:	
Test Engineer Signature:	

Acceptance Check

(Stamp)
User: _____ Date: _____

Attention:

- 1.This card is the evidential document for warranty, please keep it well.
- 2.The signature of test engineer is necessary to make this card effective. The genset cannot be started if the genset is not tested or showed that it is in order.
- 3.The warranty period bases on signing time of this card. If POWERLINK does not receive this card in the coverage, the warranty period will be deemed to be abandoned or timed from the ex-factory date.

Note: This card should be finished by the distributor and mailed back to POWERLINK.



Product Warranty Card (For User)

NO. :

End User Info.

Customer Name:
Location:
Contact Person:
Tel:

Distributor Info.

Distributor:
Address:
Contact Person:
Tel:

Genset Info.

Genset Model:
Series No.:
Engine Model:
Series No.:
Alternator Model:
Series No.:
Control Panel Model:
Series No.:

Relevant Products

ATS Model:
Series No.:
Control Panel Model:
Series No.:
Quantity of Gensets:
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Service

The date of claiming:	
The date of repairing:	
Test Engineer Signature:	

Acceptance Check

(Stamp)
User: _____ Date: _____

Attention:

1. This card is the evidential document for warranty, please keep it well.
2. The signature of test engineer is necessary to make this card effective. The genset cannot be started if the genset is not tested or showed that it is in order.
3. The warranty period bases on signing time of this card. If POWERLINK does not receive this card in the coverage, the warranty period will be deemed to be abandoned or timed from the ex-factory date.

Note: Please do NOT tear this card off the manual.

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1. Special Statement

The gas gensets or CHP units manufactured by POWERLINK are exclusively distributed by POWERLINK, and sold to the end users through the authorized distributors by POWERLINK. Specialized service and genuine spare parts are provided by After-sales Service Department of POWERLINK and authorized after-sales service centers by POWERLINK.

Exempt Responsibilities

POWERLINK only take the responsibilities of the quality problems of the gas gensets or CHP units in themselves manufactured and sold by POWERLINK, but not of the other loss caused by malfunctions in operation including production stagnation, chained equipment damage and so on.

2. Important Information

Knowledge of Correct operation and maintenance is very important to you after purchasing POWERLINK products, which adopt many advanced technologies. You must make sure that you have read WARRANTY GUIDE carefully and use the equipment according to the manual. If you have any questions regarding to operation, maintenance and repair, please contact the After-sales Service Department of POWERLINK or your local distributors. They will provide comprehensive and polite answers to any question on your POWERLINK products.

You must keep your maintenance and repair records carefully. In analyzing whether the failure is due to improper maintenance, or material quality, or craft defect, the maintenance and repair records will play an important role for you as an evidence supplied to the after-sales service center authorized by POWERLINK or your local distributor.

Customer Support

POWERLINK After-sales Department, authorized after-sales service centers and your local distributor are committed to providing you with efficient superb service. If you have any problem about POWERLINK gas gensets or CHP units, please contact the local agent in time. For more help, please contact After-sales Service Department of POWERLINK by:

Tel:+86-21-57858485

E-mail : service@powerlinkworld.com

3. Limited Quality Warranty and User's Obligations

POWERLINK provides warranty for POWERLINK products in warranty period according to the following clauses.

Warranty Explanation

Any defect of gas gensets and CHP units can only be eliminated through repairing or replacing accessories and parts, unless it is regulated by laws or specific regulations. The warranty stated in this manual by POWERLINK is the only legitimate warranty applying to POWERLINK products. WARRANTY GUIDE and OPERATOR'S MANUAL define the responsibilities and rights between the users and POWERLINK regarding to product warranty, services and the agreement validity conditions. Please make sure you have read carefully WARRANTY GUIDE and OPERATOR'S MANUAL before using POWERLINK products. If your gas gensets or CHP units are damaged by abuse, neglect, improper operation, insufficient maintenance, or unauthorized remodel, your claim for compensation or any direct or indirect claim for warranty repair will not be accepted by POWERLINK After-sales Service Department, nor the authorized after-sales service centers.

Warranty Limitation

The gas gensets or CHP units must be operated, maintained by the staff having experience of operating a genset or CHP unit or similar machine. Regular maintenance is the main factor that guarantees normal operation. If you do not maintain your machines as required, your claim for quality warranty might be not accepted.

Warranty Definition

Warranty includes repairing or replacing defect accessories and parts. Principally the trouble is eliminated by repairing the defect accessories and parts. Only when the trouble is identified by POWERLINK, or the suppliers of POWERLINK, or a legitimate third-party quality supervision organization as the trouble that cannot be eliminated completely by repairing, can replacing accessories and parts be adopted.

User's Obligations

As a user, you should install, operate and maintain the machines correctly:

1. You should operate and maintain your POWERLINK gas gensets or CHP units as required in WARRANTY GUIDE and OPERATOR'S MANUAL. All the records of maintenance and repair including replacing the lubricant oil and filter should be well kept. When the user changes, intact records of maintenance and repair is the basic requirement that guarantees the new user get the remaining time of the warranty.
2. You should establish a scientific operation and maintenance plan, which should include usage of fuel, oil, lubricating oil, etc. In addition, you should replace genuine accessories and parts in the right way.
3. You should mail the warranty card and relevant documents to the manufacturer within ten (10) days after first start of your machine or within thirty (30) days after the purchasing days. The time which is due first is used as the criterion.

You should report the defects in time:

1. It is the customer's obligation to report any product defect to POWERLINK, distributor, dealers or repair workshop. The report should be delivered as soon as the defects are found. In any cases, the report should not be delivered later than the fourteenth days after the expiration of warranty. At least a general description of the defects should be included in the report.
2. We strongly recommend you keep evidence indicating the delivery date of the report, for example, copy of letters.
3. User must provide all the necessary files to prove the validity of the warranty.

4. Requirements of Fuel, Lubricant and Coolant

4.1 Fuel

General

POWERLINK gas products can be powered by different kinds of combustible gases as fuel, such as natural gas, landfill gas, sewage gas and fermentation gas. All of the above gases contain methane, ethane, senior alkenes and inert gases (carbon dioxide and nitrogen). The chemical parameters and physical parameters of these combustible gases are different from each others for their different compositions.

Methane Number

One major parameter of the combustible gases is the methane number (MN), which represents the gases' feature of knock prevention in the engine.

We suggest that you analyze the gas at regular intervals. Once the compositions of the gases fluctuate, you should analyze the gases and oil regularly so as to insure the machines can operate safely. If the analysis result is out of the limit value, you should immediately shut down your machines and contact POWERLINK.

Gas Limitations

POWERLINK has no responsibility for the defects and/or damages (corrosion, contamination, abrasion and so forth) caused by gases and substance which are not known at the time of establishing the contract or not defined in writing.

Our gas products can only use the special gases which are in accordance with the following requirements as fuels. Any other kinds of combustible gases cannot be used without the written approval of POWERLINK.

The following table shows the lowest requirements of natural gas:

Parameter	Symbol	Limit value	Remarks
Methane number	MN	> 80	Lower value consult POWERLINK
Calorific value	H_u, N	> 5 kWh / Nm ³	
Chlorine	Cl	< 80 mg / Nm ³ CH ₄	
Fluoride	F	< 40 mg / Nm ³ CH ₄	
Total-chlorine-fluoride	$\Sigma(Cl,F)$	< 80 mg / Nm ³ CH ₄	
Dust < 5 μ m		< 10 mg / Nm ³ CH ₄	
Oil vapor		< 400 mg / Nm ³ CH ₄	No condensation may occur in the mixture section
Silicon	Si	< 2 mg / Nm ³ CH ₄	Higher value consult POWERLINK
Sulphur	S	< 200 mg / Nm ³	
Hydrogen sulphide	H ₂ S	< 150 ppm 或 < 228 mg / Nm ³	Higher value consult POWERLINK
Ammonia	NH ₃	< 40 ppm 或 < 30 mg / Nm ³	

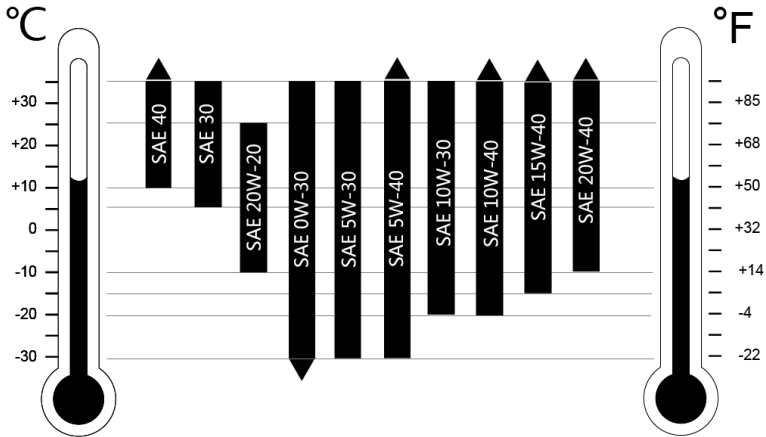
The following table shows the supply status requirement of special gas:

Gas pressure range	10kPa~20kPa
Max. gas temperature	30°C
Relative humidity	≤80%

4.2 Lubricant

Lubrication Oil Viscosity Grade

Please choose the oil corresponding viscosity according to the operating temperature of the machines (as the following figure):



Note: Single-grade SAE 40 oils must not be used unless cold-starting can be avoided, i.e. where ambient temperatures under +10°C do not occur.

Allowed Oil

POWERLINK gas products must employ the authorized special oil. In some countries, if there is no oil authorized by POWERLINK, the substitute products must be approved by POWERLINK.

Oil Additives

Correct using oil authorized by POWERLINK and changing according to the prescribed interval time can assure the machines' normal operation. Any additional additive can cause the quality change of the oil, which is uncountable, and the machines' damages and failures caused by this are not under the warranty of POWERLINK.

Recommended Oil

Oil Type	Viscosity	Manufacturer
Addinol Gasmotorenöl MG 40 ExtraPlus	SAE 40	Addinol Lube Oil GmbH
AUTOL Gasmotorenöl BGJ 40	SAE 40	Eni Schmiertechnik GmbH
AVIA Gasmotorenöl HA 40	SAE 40	AVIA Mineralöl-AG
Castrol Duratec MX	SAE 40	Castrol Ltd.
EUROLUB HGM Plus SAE 40	SAE 40	EUROLUB GmbH
Fuchs TITAN Ganymet	SAE 40	FUCHS Petrolub AG
Fuchs Titan Ganymet Plus LA-D 40	SAE 40	FUCHS Petrolub AG
Fuchs Titan Ganymet Ultra	SAE 40	FUCHS Petrolub AG
Gas Engine Oil MA 40	SAE 40	PHI OIL GmbH
Mobil Pegasus 610	SAE 40	Exxon Mobil Corporation
Mobil Pegasus 710	SAE 40	Exxon Mobil Corporation
NILS BURIAN	SAE 40	NILS AG
Oilfino Famagas HA 40	SAE 40	Carl Harms Mineralöle
OMV gas HD SAE 40	SAE 40	Lukoil Lubricants Austria GmbH
Petro-Canada Sentron CG 40	SAE 40	Petro-Canada
Q8 Mahler G8	SAE 40	Kuwait Petroleum Research & Technology B.V.
Q8 Mahler HA	SAE 40	Kuwait Petroleum Research & Technology B.V.
Roloil Mahler G8	SAE 40	Kuwait Petroleum Research & Technology B.V.
Roloil Mahler HA SAE 40	SAE 40	Kuwait Petroleum Research & Technology B.V.
Roloil Mogas G8	SAE 40	Kuwait Petroleum Research & Technology B.V.
Roloil Mogas-AC/40	SAE 40	Kuwait Petroleum Research & Technology B.V.
Shell Mysella S3 S 40	SAE 40	Shell International Petroleum Company
SRS Mihagrün 30 / 40	SAE 30, SAE 40	SRS Schmierstoff Vertrieb GmbH
TECTROL MethaFlexx D	SAE 40	BayWa AG
TECTROL MethaFlexx D Plus	SAE 40	BayWa AG
TECTROL METHAFLEXX GE-M	SAE 40	BayWa AG
TECTROL MethaFlexx HC Premium	SAE 40	BayWa AG
TECTROL MethaFlexx HC-M Plus	SAE 40	BayWa AG
TECTROL MethaFlexx MD	SAE 40	BayWa AG
TECTROL MethaFlexx ZS Plus	SAE 40	BayWa AG
Texaco Geotex LF 40	SAE 40	Chevron Technology
Total Nateria MJ 40	SAE 40	Total
Total Nateria MP 40	SAE 40	Total

Oil Analysis and Change Intervals

After the engine commissioning, please take oil samples at prescribed intervals and invite the oil supplier to analyze. Intervals should get the approval of the oil supplier and POWERLINK. The analysis results will help decide the permissible oil service time and interval. Please see the table below about the sampling period:

Mineral oil	Partial or full synthetic oil	
50	50	Oil change
350	500	Oil change with oil analysis
The oil service life can be increased in stages by analysing the oil(in stages up to a max. 100 operating hours with POWERLINK approval)		

Please compare analysis result with the limit values of the oil features in the table below to determine whether the oil can still be used:

Parameter	Symbol	Limit value	Unit	Test Standard
Viscosity 40°C		90%~115% of fresh oil value		DIN 51 562-1
Viscosity 100°C		No change		DIN 51 562-1
Total base		Min. 3	mg KOH/g	DIN ISO 3771
Total acid		Increase max. 2.5	mg KOH/g	ASTM D 664
pH value		Min. 4		See 1)
Water		Max. 0.1	%	EN ISO 12 937
1 , 2- Ethandiol		Max. 0.1	%	DIN 51 375-1
Oxidation at		Max. 20	A/cm	See 2)
Nitration at		Max. 20	A/cm	See 2)
Iron	Fe	Max. 15/1000 oper. hours	mg/kg	DIN 51 396-2
Copper*	Cu	Max. 10/1000 oper. hours	mg/kg	DIN 51 396-2
Lead	Pb	Max. 10/1000 oper. hours	mg/kg	DIN 51 396-2
Tin	Sn	Max. 5/1000 oper. hours	mg/kg	DIN 51 396-2
Aluminum	Al	Max. 10/1000 oper. hours	mg/kg	DIN 51 396-2
Chromium	Cr	Max. 10/1000 oper. hours	mg/kg	DIN 51 396-2
Silicon	Si	Max. 10/1000 oper. hours	mg/kg	DIN 51 396-2
Sodium	Na	> > fresh oil	mg/kg	DIN 51 396-2

* The copper content can be higher during the first 2000 operating hours.

1) pH value : 5g engine oil is added to 125 ml of solvent and mixed. The pH is then measured after mixing. If the pH is under 4, strong acids are present. Solvent mixture: 500 ml Toluene (for analysis) + 5 ml distilled water + 495 ml Isopropyl alcohol (for analysis).

2) Infrared spectrum (oxidation, nitration): Oxidation: 1710 E/cm;
Nitration: 1630 E/cm. Differential spectrum of fresh and used oil as per DIN 51 453.

Used Oil Disposal

- Only delivery the used oil to the waste oil disposal company is allowed.
- Please make sure that the oil hasn't leek into the sewage systems or on the ground.
- The used filter core and filters cartridge should be disposed as wastes.

Note: Please prevent polluting drinking water when disposing the used oil.

4.3 Coolant

General

The cooling system can function properly only when coolant runs under positive pressure, so it's very important to keep the cooling system clean and watertight and radiator's shutoff valve and operating valve in normal condition as well as the prescribed coolant level. Antifreeze approved by POWERLINK can not only sufficiently prevent frost, corrosion and cavitations, but also avoid damaging seal rings, hosepipes and foaming the antifreeze. The cooling system of engine must be fully with the mixture of 60% water and 40% antifreeze all the year and frost-preventive from at least -27°C..

Coolant with improper antifreeze or not disposed fully or improperly may cause the failure of the engine or assembly units in the cooling circuit for the reasons of cavitations and corrosion. Furthermore, heat may accumulate on heat transferring units, which will eventually cause overheat or failure of the engine. In order to ensure the reliability service of the machines, coolant is usually mixed with water and antifreeze, which will guarantee sufficient anticorrosive protection. In special conditions, In special cases, corrosion inhibitors (chemicals) according to MAN 248 may be used. As a matter of fundamental principle, emulsive anticorrosion protection oils are not permitted.

Requirements of The Coolant Contents

1)Water

Potable tap water with the following restricted analytical data may be used to our machines:

Appearance	colourless, transparent, free of mechanical contaminants
Hardness	Max. 20° German total hardness*
Chlorides	Max. 100 ppm
Sulphates	Max. 150 ppm
pH value@20°C	6.5~ 8.5

* 20° German total hardness≈35,6° French hardness≈25° British hardness≈358 ppm
USA hardness

Information about the analysis of water quality, please consult the local water supply companies, agricultural agents or laboratories. Where no such tap water is available, mix demineralised water or distillate or condensate until the analytic values are reached.

2) Antifreeze with Corrosion Inhibitor

Only approved antifreeze can be used to POWERLINK machines. The antifreeze content is at least 40%, otherwise the coolant can not offer sufficient corrosion protection to the cooling system. At the beginning of the cold weather months the antifreeze content of the coolant may have to be increased for the outside temperatures to be expected (see mixing table).

Lowest outdoor temperature	Water	Antifreeze
-27°C	60%	40%
-31°C	55%	45%
-37°C	50%	50%

Ready-made antifreeze-water mixtures with at least 40 % b.v. of an approved antifreeze agent in deionised water are permitted.

Check and Replace Coolant

- The concentration should be checked once every three months by means of a hydrometer or refractometer.
- Always supplement incorrect coolant amounts with a mixture of water and a minimum of 40–50% b.v. (-37°C) antifreeze agent to that there is a reserve if only water needs to be topped up.
- Never allow antifreeze concentration to drop below 40% by volume. A concentration of more than 50% b.v. is to be avoided because an increased proportion of antifreeze agent leads to a temperature increase in the coolant.
- Renew complete coolant after 4 years at the latest. Independent of these intervals, the coolant must be replaced if it turns brown or becomes cloudy.

Recommended Coolants

Coolant Type	Manufacturer
Alpine C 48 Langzeitkühlerfrostschutz	Mitan Mineralöl GmbH
Aral Antifreeze Extra	Aral AG
AVIA Antifreeze APN	AVIA Mineralöl-AG
AWM 11	OOO TOSOL-SINTEZ
AWM G11	OOO TOSOL-SINTEZ
BP Isocool CT	BP Southern Africa (Pty) Ltd.
Caltex CX Antifreeze Coolant	Caltex Oil SA (Pty) Ltd.
Castrol Antifreeze NF	Castrol Ltd.
Castrol Radicool NF	Castrol Ltd.
CLASSIC KOLDA UE G48	CLASSIC Schmierstoff GmbH & Co. KG
Engen Antifreeze and Summer Coolant	Engen Petroleum Limited
Engmans Super Antifreeze & Coolant	Unico Manufacturing Co.(PE) (Pty) Ltd.
EURPLUB Kühlerschutz D-48 Extra	EUROLUB GmbH
Fuchs MAINTAIN FRICOFIN	FUCHS Petrolub AG
GENOL Antifreeze Premium	GENOL Gesellschaft m.b.H. & Co.KG
GLIXOL EXTRA PLUS	ORGANIKA SA
Glysantin G 48	BASF SA
INA Antifriz AI Super	INA MAZIVA Ltd.
Mobil Antifreeze Extra	Mobil Oil SA (Pty) Ltd.
MOFIN Langzeit Kühlerschutz Premium Protect M 48	BVG Blume GmbH
Motorex Coolant G48	Bucher AG
Nalcool NF 48	Nalco Australia Pty Ltd.
OMV coolant plus	Lukoil Lubricants Austria GmbH
PO Ozel Antifriz	OMV Petrol Ofisi A.S.
PROCAR Kühlerschutz Extra	EUROLUB GmbH
Sasol Coolant Conc 100	Sasol Oil Ltd.
TECTROL COOLPROTECT	BayWa AG
Total Antifreeze and Summer Coolant	TOTAL South Africa (Pty.) Ltd.
Total GLACELF MDX	Total
Zerex G 48	Valvoline

Corrosion Inhibitor

For certain applications, where the use of antifreeze agents is not mandatory (e.g. tropical climate), corrosion inhibitors according to the requirements must be used.

1) Attentions :

- Change all the coolant after one year or after 1500 operating hours, whichever period ends earlier.
- Independent of these intervals, the coolant must be replaced if it turns brown or be-comes cloudy.
- When antifreeze agent is to be replaced with another anticorrosive agent or vice versa, the entire coolant is to be drained off. It is not necessary to flush the system.

Notes : Undiluted antifreeze and corrosion inhibitors are to be treated as special waste. Regarding the disposal of used-up coolants (mixture of anti-freezing compound with water) the regulations of the competent local authorities have to be observed.

5. Maintenance Schedule and Records

In order to ensure the normal operation of the machines and to prolong its service life, please make sure that only personnel authorized and trained can operate the gensets and check, adjust and clean every system according to the maintenance schedule. Regular maintenance and service can effectively prevent your machine and other accessories corroding too fast and reduce the possibilities of failures.

Intact maintenance records are necessary to get the warranty, so it's essential to conduct the maintenance regularly and keep the accurate service records. The following maintenance intervals are dependent on the service conditions and the gas quality.

M1 Maintenance Package	
<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter 	<ul style="list-style-type: none"> - Check the condition of smoke exhaustion - Check the condition of coolant liquid

*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M1 Maintenance Records			
Operating hours	Date	Responsible person	Remarks
20-50			

M2 Maintenance Package	
<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter - Change spark plug 	<ul style="list-style-type: none"> - Check the condition of smoke exhaustion - Check the condition of coolant liquid - Change air/oil separator element

*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M2 Maintenance Records							
Operating hours	Date	Responsible person	Remarks	Operating hours	Date	Responsible person	Remarks
500				4500			
1000				5000			
1500				5500			
2000				6000			
2500				6500			
3000				7000			
3500				7500			
4000				8000			

M3 Maintenance Package	
<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter - Change spark plug - Check the condition of smoke exhaustion 	<ul style="list-style-type: none"> - Check the condition of coolant liquid - Change air/oil separator element - Change air filter element -Change fan belt -Change generator belt

*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M3 Maintenance Records							
Operating hours	Date	Responsible person	Remarks	Operating hours	Date	Responsible person	Remarks
1000				9000			
2000				10000			
3000				11000			

4000				12000			
5000				13000			
6000				14000			
7000				15000			
8000				16000			

M4 Maintenance Package

<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter - Change spark plug - Check the ignition coils, change it if necessary - Check the high voltage cable, change it if necessary - Check the condition of smoke exhaustion 	<ul style="list-style-type: none"> - Check the condition of coolant liquid - Change air/oil separator element - Change air filter element - Check engine intake air pressure, clean the intercooler if the data is abnormal - Check engine exhaust back pressure, clean the exhaust/water heat exchanger and muffle if the data is abnormal -Change fan belt -Change generator belt
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*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M4 Maintenance Records

Operating hours	Date	Responsible person	Remarks	Operating hours	Date	Responsible person	Remarks
2000				18000			
4000				20000			
6000				22000			
8000				24000			
10000				26000			

12000				28000			
14000				30000			
16000				32000			

M5 Maintenance Package

<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter - Change spark plug - Check the ignition coils, change it if necessary - Check the high voltage cable, change it if necessary - Change gas filter element - Check the condition of smoke exhaustion 	<ul style="list-style-type: none"> - Check the condition of coolant liquid - Change air/oil separator element - Change air filter element - Check engine intake air pressure, clean the intercooler if the data is abnormal - Check engine exhaust back pressure, clean the exhaust/water heat exchanger and muffle if the data is abnormal -Change fan belt -Change generator belt
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*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M5 Maintenance Records

Operating hours	Date	Responsible person	Remarks	Operating hours	Date	Responsible person	Remarks
4000				20000			
8000				24000			
12000				28000			
16000				32000			

M6 Maintenance Package	
<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter - Change spark plug - Check the ignition coils, change it if necessary - Check the high voltage cable, change it if necessary - Change gas filter element - Check and adjust the ignition order - Check the condition of smoke exhaustion - Check the condition of coolant liquid 	<ul style="list-style-type: none"> - Change air/oil separator element - Change air filter element - Check engine intake air pressure, clean the intercooler if the data is abnormal - Check engine exhaust back pressure, clean the exhaust/water heat exchanger and muffle if the data is abnormal - Change safety valve - Change cylinder head assembly - Change cylinder head bolt - Change cylinder head gasket - Change fan belt - Change generator belt

*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M6 Maintenance Records							
Operating hours	Date	Responsible person	Remarks	Operating hours	Date	Responsible person	Remarks
8000				24000			
16000				32000			

M7 Maintenance Package	
<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter 	<ul style="list-style-type: none"> - Check engine intake air pressure, clean the intercooler if the data is abnormal - Check engine exhaust back

<ul style="list-style-type: none"> - Change spark plug - Check the ignition coils, change it if necessary - Check the high voltage cable, change it if necessary - Change gas filter element - Check and adjust the ignition order - Check the condition of smoke exhaustion - Check the condition of coolant liquid - Change air/oil separator element - Change air filter element 	<p>pressure, clean the exhaust/water heat exchanger and muffle if the data is abnormal</p> <ul style="list-style-type: none"> - Change safety valve - Change cylinder head assembly - Change cylinder head bolt - Change cylinder head gasket -Clean the mixer -Change turbine supercharger -Check cylinder sleeve gasket -Change cylinder sleeve -Change piston, piston ring -Change connecting rod bearing -Change exhaust pipe -Change fan belt -Change generator belt
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*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M7 Maintenance Records			
Operating hours	Date	Responsible person	Remarks
16000			
32000			

M8 Maintenance Package	
<ul style="list-style-type: none"> - Check engine control system - Sampling analysis on engine oil (change) - Change engine oil's filter 	<ul style="list-style-type: none"> - Change cylinder head assembly - Change cylinder head bolt - Change cylinder head gasket

<ul style="list-style-type: none"> - Change spark plug - Check the ignition coils, change it if necessary - Check the high voltage cable, change it if necessary - Change gas filter element - Check and adjust the ignition order - Check the condition of smoke exhaustion - Check the condition of coolant liquid - Change air/oil separator element - Change air filter element - Check engine intake air pressure, clean the intercooler if the data is abnormal - Check engine exhaust back pressure, clean the exhaust/water heat exchanger and muffle if the data is abnormal - Change safety valve 	<ul style="list-style-type: none"> -Clean the mixer -Change turbine supercharger -Check cylinder sleeve gasket -Change cylinder sleeve -Change piston, piston ring -Change connecting rod bearing -Change exhaust pipe -Change oil pump, camshaft, camshaft bushing, Camshaft follower -Change jacket water pump -Change intercooler water pump -Change heating water pump -Change connecting rod -Change start motor -Change cylinder head -Change main shaft bush -Change AVR -Change diode -Change fan belt -Change generator belt
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*The service life of the oil depends on the analysis results of the regular oil sample. Sampling intervals vary from different service conditions and the types of oil used. For details, please see the oil analysis in the 4th part.

M8 Maintenance Records			
Operating hours	Date	Responsible person	Remarks
32000			

In the warranty period, the customer can enjoy the warranty provided by POWERLINK and the agents in accordance with the following articles.

6. Warranty Period

Whole Set Warranty Period

The whole set warranty period is based on the delivery date and commissioning date. The one which is due first is used as the criterion, unless different specific regulations are made in this manual or in relevant commercial contracts.

Limited Warranty for New Gas Gensets or CHP Units

Base Warranty Coverage Duration (Whichever occurs first)

Time definition	Time horizon	Illustration
Delivery time	18 months	Time horizon are reckoned from the date of leaving the factory
Receive the gensets or installation and adjustment	12 months	Time horizon are reckoned from the date of installation debugging If you have report feedback for installation debugging. If not, reckoned from the date of receiving the gensets.
Commissioning time	5000h	Gensets run total hours

Repaired Parts Warranty Period

If the repaired or replaced accessories and parts are POWERLINK genuine accessories and parts, six months warranty is provided. If not, no warranty is provided.

All the repaired or replaced accessories and parts or gas gensets and CHP units can only enjoy the remaining time of warranty period of the original accessories, parts or gas gensets and CHP units.

7. Warranty Coverage

Repair Range

Repair range in warranty coverage covers the repair of damages caused by materials or craftworks. Damages are repaired through using new accessories and parts or re-manufactured accessories and parts.

Repair Fee

The fee (including spare parts and labor work) caused by repairing damages in warranty coverage will be not charged on the user.

Repair Time

POWERLINK, or authorized distributors, or authorized service centers will respond quickly to your requirement for repairing damages under warranty and reasonable time is needed to repair the damages.

8. Damages Not in Warranty Coverage

Damages Caused by Accidents, Improper Operation or Modification

Damages caused by any of the following are not in the warranty coverage:

- Damages caused by accidental collision, burning, theft, freezing, devastation, prang, or natural disasters such as earthquake, lightning strike, fire, flood, etc, or other force majeure (for example, war);
- Damages caused by remodeling on the final assembled gas gensets and CHP units, replacing parts, including changing the canopy, engine, alternator, base frame and parts;
- The time cannot be read due to time calculator is not powered for work or the time is purposely changed.

Damages and Erosion Caused by Environment or Chemical Treatment

Damages caused by radioactive air (chemistry, serum, etc), acid rain, stone, hailstone, earthquake, hurricane, lightning, chemistry, etc, are not in the coverage.

Damages Caused by Improper Operation, Insufficient Maintenance or Improper Repair

- 1 . Damages caused by transportation, improper installation, or repair unrecognized by POWERLINK;
- 2 . Accessories or products are used in violation of the law or for obvious vicious purpose;
- 3 . Damages caused by man-made improper operation, insufficient maintenance, not maintaining the machine regularly as regulated in this manual and OPERATOR'S MANUAL, or not using the liquid, fuel, lubricant and coolant recommended in the warranty coverage. For example, the damages to the engines caused by not using proper fuel according to the environmental temperature are not in the warranty coverage.
- 4 . Damages directly or indirectly caused by improper repair and consequent malfunctions and damages are not in the warranty coverage.

Failure to Provide Required Documents

Those who are not able to provide POWERLINK with required documents or some provided documents are invalid

- Product Warranty Card is valid within three months after the products leave the factory
- The original records of maintenance and repair (when reporting troubles or if required by POWERLINK or suppliers of POWERLINK).

Vulnerable Parts and Spare Parts

- Vulnerable parts, daily used spare parts (for example oil cleaner, bypass oil filter, coolant cleaner, belt, battery, oil, antifreeze, anti-corrosion, spark plug washer etc) are not in the warranty coverage.

Parts Specified or Provided by Customer

- Parts (not including engine and alternator) specified by the customer but not covered by the standard parts range provided by POWERLINK are not in the warranty coverage.
- Accessories or spare parts provided by the customer are not in the coverage.

Not Using POWERLINK Genuine Spare Parts

- Damages caused directly or indirectly by not using POWERLINK genuine spare parts or using spare parts not recognized by POWERLINK are not in the warranty coverage.

Extra Expenditure

Warranty does not include the economic loss or extra expenditure due to downtime, for example:

- Economic loss and time loss due to unable to use your machines
- Expenditure for storing your machines
- Loss due to inconvenience

9. Other Warranty Regulations

Repairing and Replacing Accessories and Parts

POWERLINK provides services of repairing or replacing some accessories and parts. The warranty period of the repaired or replaced accessories and parts is subject to warranty period for accessories and parts as described above.

Anti-corrosion Maintenance (Mainly Container and Canopy)

POWERLINK gas gensets and CHP units are specially treated against corrosion. Additional maintenance against corrosion is unnecessary; moreover it may decrease the anti-corrosion performance of your machine. The damages caused by anti-corrosion products are not the warranty coverage.

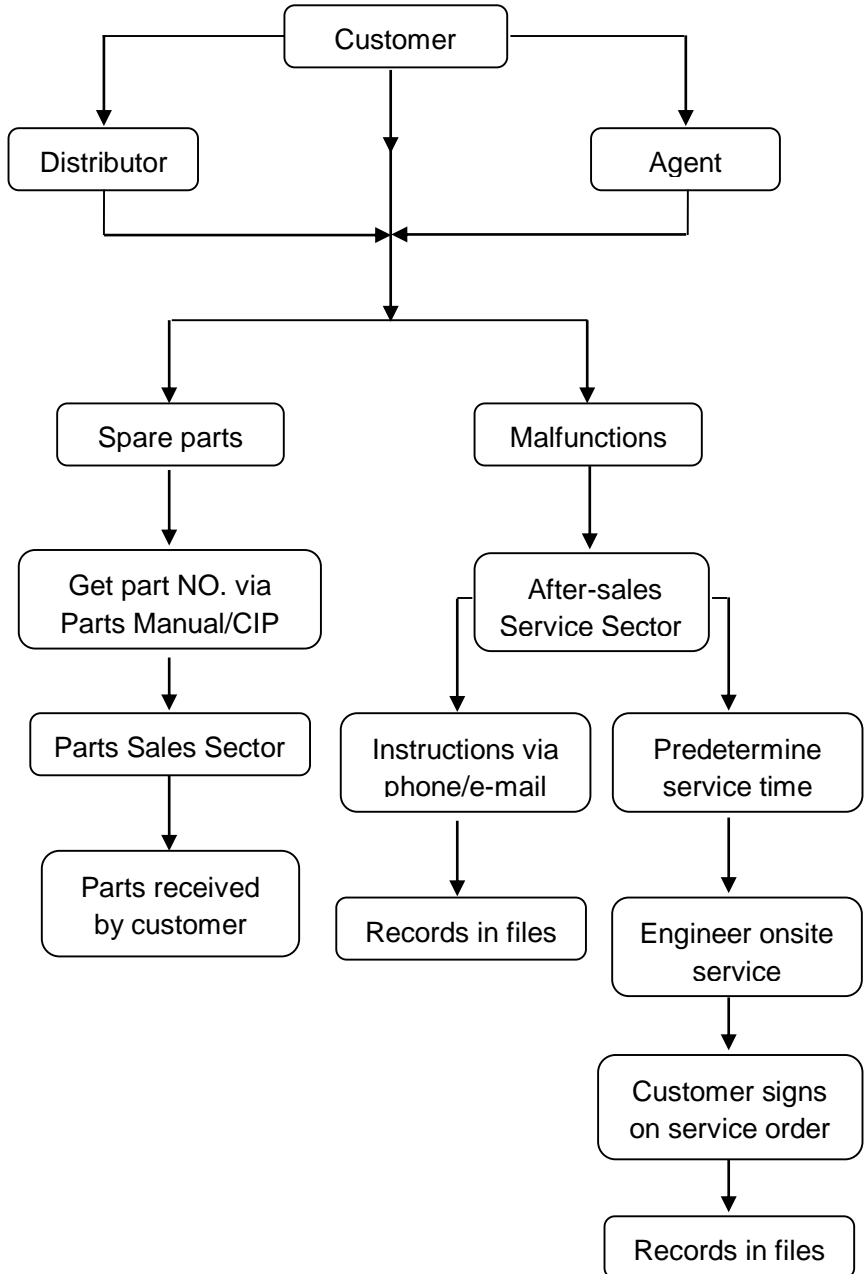
Painting and Appearance

The items concerning painting and appearance are generally well finished. Additional anti-corrosive product is not necessary or recommendatory as these products may destroy anti-corrosive performance of the machines. Damages caused by using these products are not in the warranty coverage. Please refer to Operator's Manual for maintenance guide of painting and other appearance items.

Remodeling of Original Equipments

The damages or failure caused by remodeling or changing the original equipments are not in the warranty coverage. For example, damages or failure caused by installing or using any accessories, or parts or materials not from POWERLINK; or remodeling, cutting, welding or removing the original components or parts are not in the warranty coverage.

10. Service Steps



User Information

Username: _____

Address: _____

Telephone: _____

Other Contacts: _____

Genset Model: _____

Serial No.: _____

Engine Model: _____

Serial No.: _____

Alternator Model: _____

Serial No.: _____

Date of Sales: _____

Customer Signature: _____

Date of First Use: _____

Engineer Signature: _____

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