



LG Electronics Inc.

Ref. No.	LGETH -140905-062
Date	Sep. 08. 2014
Rev. No.	Rev.0
Rev. Date	-

SPECIFICATION SHEET for APPROVAL

MODEL : QK208PDB

CUSTOMER : PHU DAI HUNG

APPROVAL			
Name			
Date			
AIR CONDITIONER MODEL			

LG Electronics Inc.

	Designed	Checked	Approved
Name	Montri J.	Bampot J.	
Date	8 Sep 2014.	8 - sep - 2014	8 / 09 / 2014

ORIGINAL

10 8 SEP 2014

Please read this specification sheet thoroughly before installation or operating.

Please Return 1 Copy on Your Approval.

Air Conditioning Compressor Division LG Electronics Inc.
Tel : (+66)38 - 923 - 109 Fax : (+66)38 - 923 - 119

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0.Revision History

Data	Rev. No	Rev. description	Write

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1.Specification

1.1 Compressor

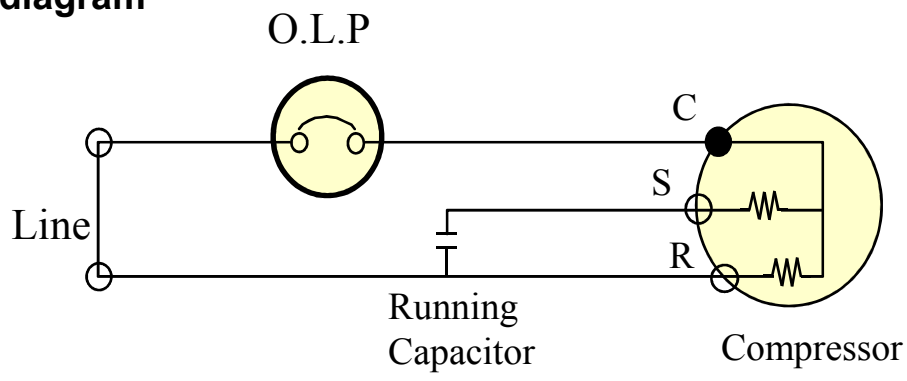
1	Model Name	QK208PDB
2	Compressor Type	Hermetic Motor Compressor
3	Compression Type	Rotary Type (Rolling Piston Type)
4	Application	Refrigeration system (Cooling & Heating)
5	Refrigerant	R-22
6	Safety Approval	-
7	Oil / Oil Charging Amount	SUNISO 4GSI or ATMOS NM56 / 380± 10cc
8	Displacement	20.8 cc. / rev
9	Painting	Black Color Paint
10	Net Weight (Including Oil)	11.9 kg
11	Suction Tube I.D	Ø 12.8 mm
12	Discharge Tube I.D	Ø 8.06 mm

1.2 Motor

Motor Type / Starting Type	Single Phase Induction Motor / PSC	
Pole / Rated Output	2 Pole / 920 Watts	
Power Source	1Ph – 220~240 Volts – 50Hz	
Rated Revolution	2,855 rpm	
Insulation Class	E Class	
Windings Resistance (at 25 °C)	Main	3.09 ± 7% Ohms
	Sub	3.87 ± 7% Ohms
Locked Rotor Ampere	24 A (at 240 V)	

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1.3 Wiring diagram



※ Make Sure to connect right way same with the wiring diagram.

1.4 Electrical Component

Running Capacitor	40 MFD / 370 VAC
Overload Protector	MRA12306-12057

1.5 Performance

Voltage		220 V	240V
Cooling Capacity (±5%)	[BTU/h]	12,000	12,200
	[W]	3,516	3,575
Power Input (±5%)	[Watts]	1,188	1,245
EER (±5%↑)	[BTU/w · hr]	10.1	9.8
	[W / W]	2.96	2.87
Running Current	[A]	5.4	5.2

☞ Rated Conditions (ASHRAE-T Condition)

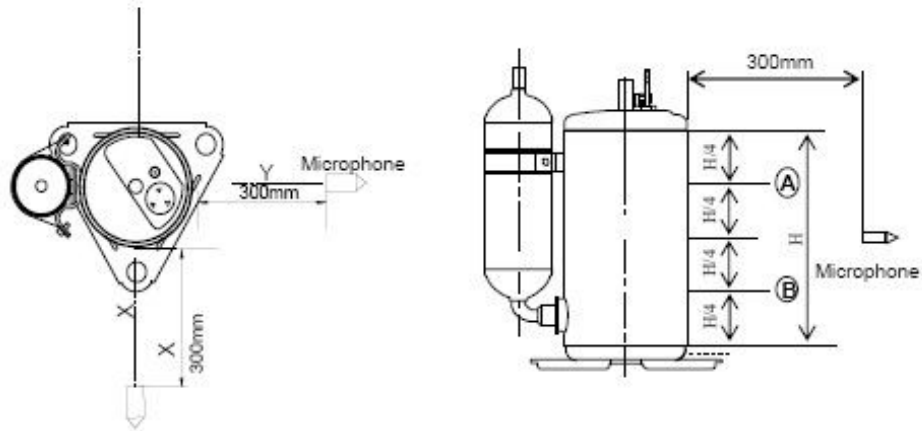
Cond. Temp. : 54.4 °C (130 °F)	Return Gas Temp. : 35.0 °C (95 °F)
Evap. Temp. : 7.2 °C (45 °F)	Liquid Temp. : 46.1 °C (115 °F)
	Ambient Temp. : 35.0 °C (95 °F)

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1.6 Noise & Vibration

Voltage		At 240 V
Sound Level	[dB(A)]	62 Max
Vibration	[gal]	2,300 Max

Noise & Vibration Measuring Points



- Measuring Points
 - Noise : 2 points (X,Y)
 - Vibration : 2 points (A, B)
- Compressor vibration is measured by a vibration meter which is contacted compressor (A) ~ (B)
- Test Condition :
 - Ps/Pd = 5.34 / 20.86 kg/cm²G
 - Suction Gas temp 18.3° C

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1.7 Minimum Starting Voltage

Cold Start - Temp. Condition : 35°C - Balanced pressure : $P_d - P_s \leq 0.5 \text{ kgf/cm}^2$	187 Volts Max
---	---------------

1.8 Voltage Range

at Standard Condition	187 ~ 264 Volts
at Overload Condition	198 ~ 264 Volts

☞ Test Conditions

	Standard Condition
Condensing Temperature (°C)	54.4
Evaporating Temperature (°C)	7.2
Return Gas. Temperature (°C)	35.0
Ambient Temperature (°C)	35.0

1.9 Others

Leak Tight Pressure	High Pressure Side	28 kgf / cm ² G
	Low Pressure Side	-
Hydrostatic strength Pressure	High Pressure Side	155 kgf / cm ² G
	Low Pressure Side	50.6kgf / cm ² G
Insulation Resistance (with 500V D.C Mega Tester)		50 MΩ Min.
Withstand Voltage		At 2,200 V / 1 Sec. Leakage Current is less than 5 mA
Residual Moisture (Karl Fisher Method)		150 mg Max.
* Residual Impurities		70 mg Max

*) Each part was measured separately

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2.Delivered Parts List

Parts Name	Type (Model)	EA	Parts Dwg. NO.	Supply	
			LG		
Compressor	QK208PDB	1	-	<input checked="" type="radio"/> YES	<input type="radio"/> NO
O.L.P	MRA12306-12057	1	EAF35764707	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Cover, Terminal	-	1	3550U-L004C (3550U-L004B)	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Gasket	-	1	4986UHL001G (4986U-L001G)	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Nut, Common	-	1	FAD30241201	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Washer, Customized	-	1	1WPZU-L001A	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Damper, Rubber	-	3	MCQ66473401	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Bolt, Stud	-	3	-	YES	<input checked="" type="radio"/> NO
Washer, Plain	-	3	-	YES	<input checked="" type="radio"/> NO
Nut, Hexagon	-	3	-	YES	<input checked="" type="radio"/> NO
Capacitor	-	1	-	YES	<input checked="" type="radio"/> NO

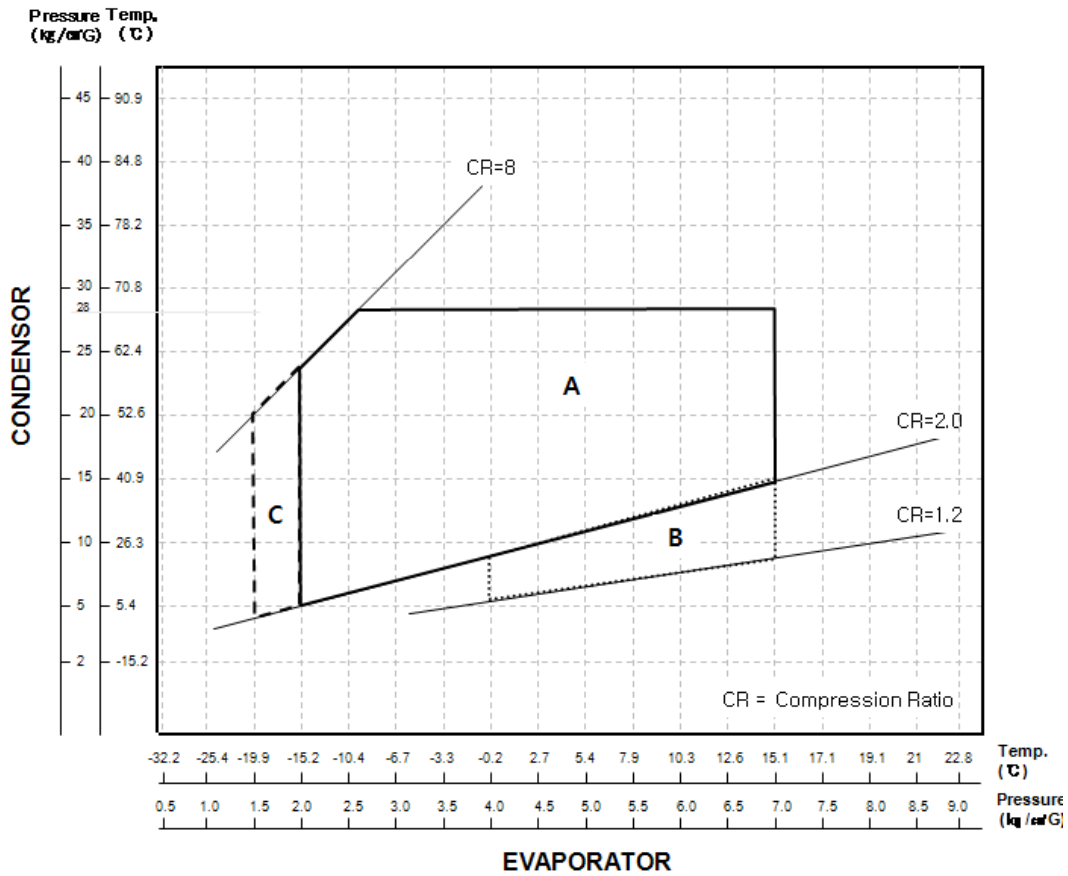
※) Refer to Attachments (Accessory Parts Drawings.)

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3.Operating Limit

3.1 Operation Range Standard Model Pressure & Temp. Limits

Discharge Pressure	[kgf / cm ² G]	28 Max
Suction Pressure	[kgf / cm ² G]	2.0 ~ 7.0
Discharge Pipe Temp.	[°C]	115 Max.
Motor Coil Temp.	[°C]	130 Max.



Area A : Normal Operating Zone

Area B : High Density Flow Zone
-During Starting within 3 minutes

Area C : Low Pressure (defrosting & re-starting)
-Running time within 3 minutes
-Should be checked liquid back

※ This guide contains many important safety messages. Always read and obey all safety messages.

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▲ WARNING You can be killed or seriously injured if you don't follow instructions.

3.2 Application Limit

Refrigerant Charge Limit	<p>[WRAC for Cooling Only] 1200g Max (*K≥0.3, **OIL Dilution Rate=0.2) [WRAC for Heat Pump] 930g Max (*K≥0.4, **OIL Dilution Rate=0.25)</p> <p>[SRAC for Cooling Only] 1000g Max (*K≥0.4, **OIL Dilution Rate=0.2) [SRAC for Heat Pump] 620g Max (*K≥0.6, **OIL Dilution Rate=0.25)</p>
Liquid Refrigerant Back	System should be designed not to allow the liquid to go back to compressor which cause knocking noise , current increase or undesirable vibration.
Δ T : Temp. Difference°C	Δ T = Case Bottom Temp. - Condensing Temp. It must be kept ΔT ≥ 5°C
Pressure Difference in Operating	The Pressure difference in operating shall be 5.0kgf/cm ² or more, but 3 minutes starting excluded.
ON/OFF Operation	Each cycle should be at least 6 minutes (ON Time : at least 3 minute , OFF Time : at least 3 minutes)
Pressure Difference at Starting	When starting, discharge pressure is balanced with suction pressure. (Pd – Ps ≤ 0.5 kgf/cm ²)
Tilt in Operation	The allowable tilt of the compressor in operation shall be 5° or less.
System Accumulator	<p>The Accumulator volume should be enough to cover 50% of maximum system refrigerant volume.</p> <p>Ratio coefficient 'K' should be over 0.6(heating system) or 0.4(cooling system)</p> $K = \frac{\text{Effective Volume of Accum.} \times \text{Specific gravity of Refrigerant}}{\text{Charged Weight of Refrigerant}}$ <p>※ Effective Volume of Accumulator = 305cm³ ※ Specific Gravity of Refrigerant (R22) = 1.25 g/cm³ (at 20°C)</p> <p>If coefficient "K" does not meet recommendation, refrigerant system must check liquid back phenomenon at accumulator.</p>
Protecting Reverse Operation	The compressor must be operated by proper voltage in accordance with the frequency without reverse revolution condition. The reverse revolution condition can be avoided by just keeping right order of phase supplied power source.

▲ WARNING

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3.2 Application Limit

Frequency Range	Rated Frequency $\pm 2\%$
Pipe Stress	Don't allow any force on discharge & suction pipe . The piping stress must be less than 300kgf/cm ² at starting and stopping. And less than 153kgf/cm ² at running.
Oil Level	It must be checked oil level by the compressor with sight glass we supply. And oil level must be kept over guide line level **note 2. at any condition.
Protection device	Refrigeration system must has the compressor protection device like over pressure, high temperature, sensing locked pump in the controller. When starting & running fail by abnormal overload, controller must be able to cut off power of compressor before motor burn out.
Pump down refrigerant	If pump down time is too long, compressor can be damaged due to excessive temperature increase or poor lubrication. Guideline of pump down process. - Time : less than 30 seconds - Suction Pressure : It should not run under below 1kgf/cm ² G. And before closing a service valve, compressor running for more than 5 minutes is recommended.

※ If gas charge amount of refrigerant specified is exceeded, both parties should discuss the matter to determine compressor specification. (accumulator volume, lubricating oil amount) and system specifications (crank case heater, oil separator , additional accumulator, etc)

▲ WARNING

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3.3 Process Limit

Use defined Refrigerant and oil	Any process in where the HCFC's refrigerant or the different kind of oil against the defined. Compressor oil are mixed should be avoided.
Avoid Damage running	The running operation that inspection and the protector inspection that affect a damage to the function and durability of the compressor should be avoided
Running dummy indoor	When the outdoor unit is operated with the indoor dummy unit, the discharged oil should be recovered enough
Prevent oxidation in pipe	Always purge the system and the compressor with the dry nitrogen in order to prevent oxidation of the piping
Charging Refrigerant	When charging refrigerant into the cycle, make sure that refrigerant always be filled from the higher pressure side (condenser exit) of the cycle. If liquid refrigerant is sucked in to the compressor liquid compression occurs, The discharge valve is damaged, lubrication effectiveness degenerates and reliability drops noticeably
Avoid Vacuum running	Do not operate the compressor in a vacuum state. Furthermore do not apply high voltage to a vacuum state compressor. There is a danger that insulation could degenerate, causing electric shock
Avoid Air compression	Do not compress the air including the case of leakage in the refrigeration cycle. If compressors run with air mixed, inside the compressor is heated and pressurized , which may cause an explosion
Promptly Assemble compressor in line	After removing rubber plugs from compressor tubes, Promptly use the compressor. And do not leave in the atmosphere for 10 minutes over. If Air gets into the compressor , accelerating degeneration of the inside of the cycle or compressor
Wiring	Wires connected to the compressor, follow the compressor specification manual and instructions
Storage temperature	-10°C ~ 65°C

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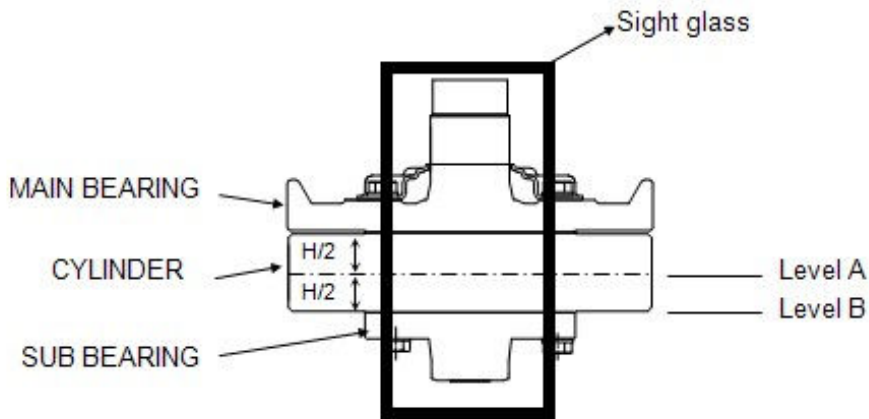
*** Note 1. OIL Dilution rate**

$\frac{\text{Oil Weight}}{\text{Refrigerant Weight} + \text{Oil Weight}} \geq 0.22(\text{Heating}) \text{ or } 0.20(\text{Cooling})$ <p>※ Specific Gravity of NM56 (4GSI) = 0.92 (at 20°C)</p>
--

[Unit]

- ☞ Oil Weight : [g]
- ☞ Refrigerant Weight : [g]

**** Note 2. Oil Level Guide Line**



Over Level A : Steady state at any condition.

Over Level B : Minimum level of transition period within 3minutes

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*** LABEL ***

[UNIT : mm]



All safety messages will identify the hazard, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed. You are strongly advised to follow these safety instructions.



This is the Safety alert symbol. It indicates a hazardous situation which, if not avoided, could result in death or serious injury.



This is the Electric shock hazard symbol. It indicates a hazardous situation which, if not avoided, could result in the electric shock.



This is the Getting burnt symbol. It indicates a hazardous situation which, if not avoided, could cause fire.



This is the Explosion or Fire symbol. . It indicates a hazardous situation which, if not avoided, could cause explosion or fire.

***1. Effective Period of This Document ***

This document will be effective after LG's receipt with your authorized signature. When design modification is approved by the customer , the current document is unavailable.

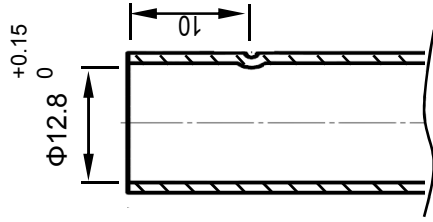
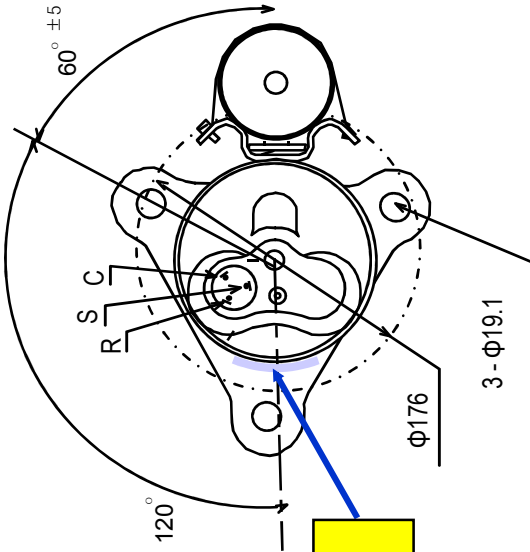
***2. Compressor operating range ***

The Compressor can operate within the limits of the outlined area. Outside these operating fields, the system cause early defects in the compressor. The compressor defects caused by applications operating outside the outlined area will not be considered under the warranty. If the appliance be operated out of the operating range, it must be agreed with the supplier.

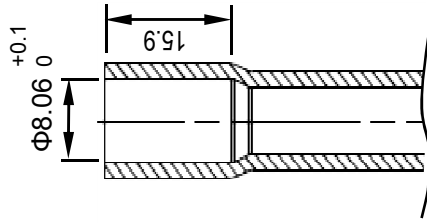
Attachment

	PAGE
1. Compressor Drawing	: A-1
2. Accessory Fitting	: A-2
3. Part Drawings	: A-3 ~ A8
4. OLP Characteristic curve	: A9

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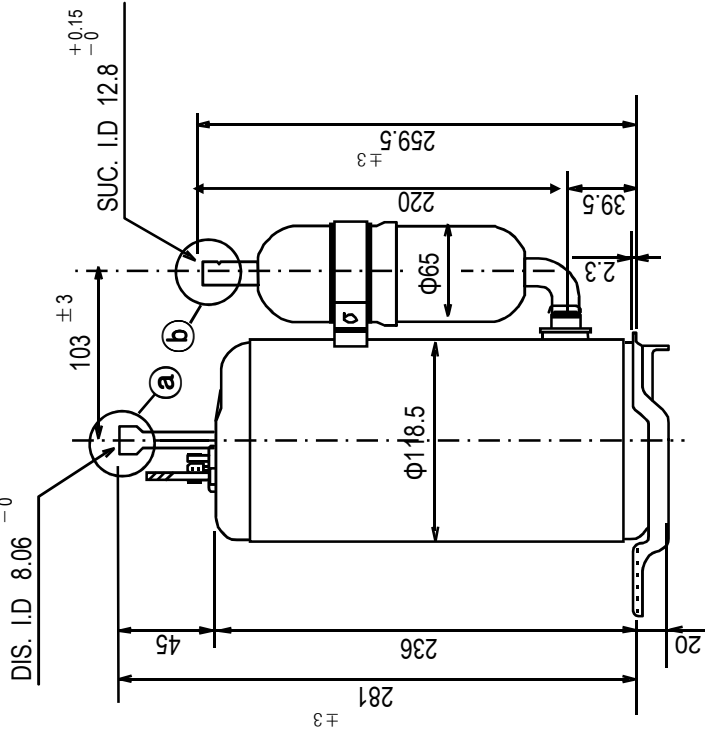
Detail of Suction Tube



Detail of Discharge Tube

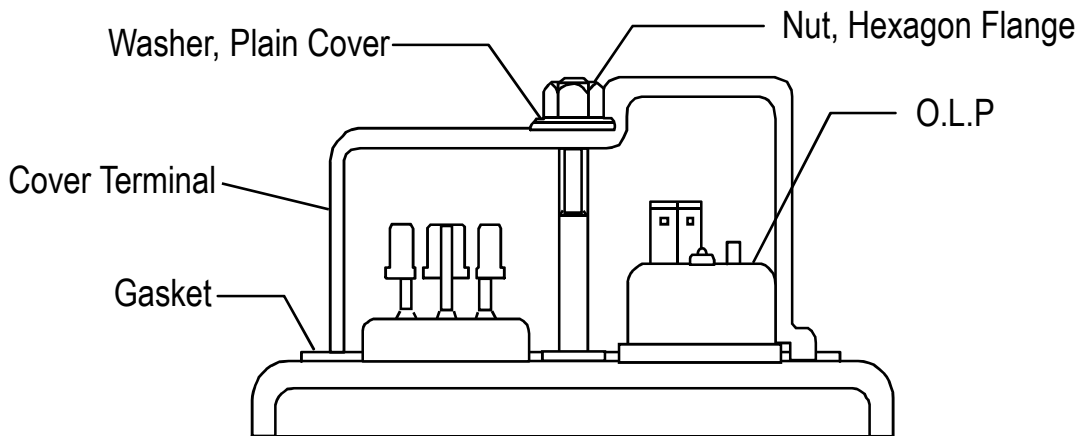
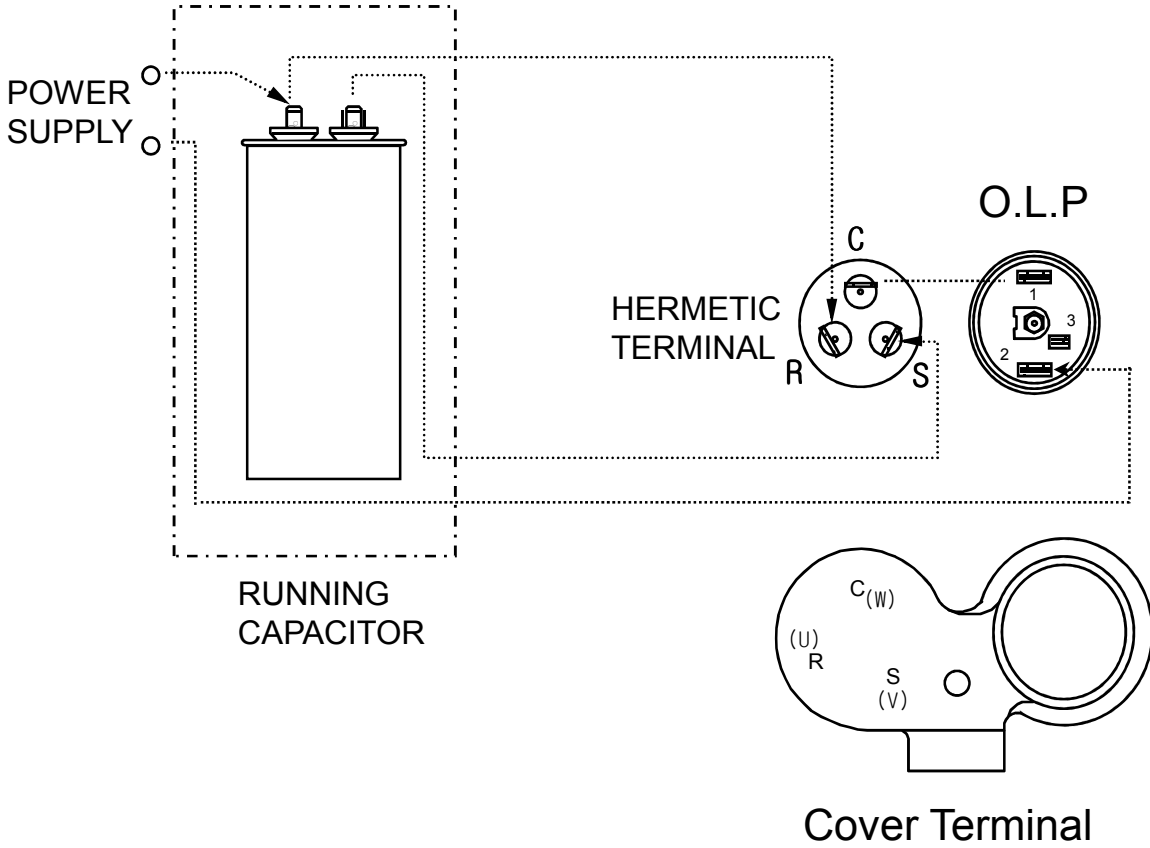
NOTES

1. PAINTING : BLACK PAINT (ELECTRO DEPOSITION)
2. OIL : SUNISO 4GSI OR ATMOS NM56
EQUIVALENT 380 ± 10 cc CHARGED
3. NITROGEN CHARGED AFTER DEHYDRATION



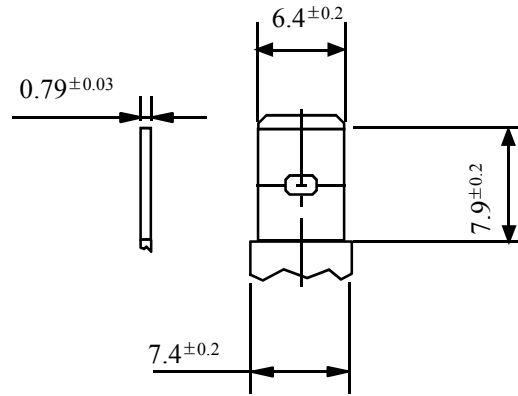
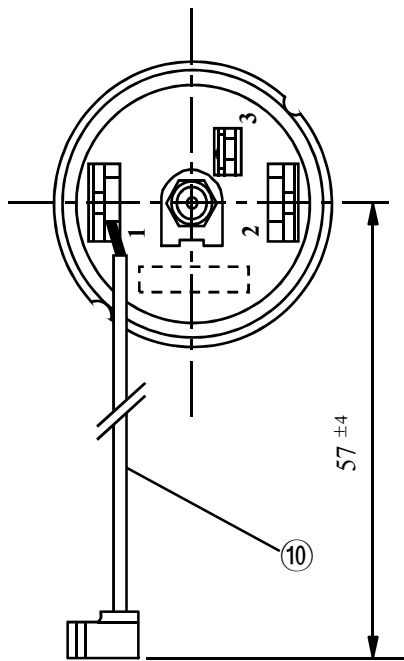
UNIT		inch(mm)	SCALE	N / S
DES. ENGR.		Montri J.	CHF. ENGR.	Apipol K.
Sep. 08 .2014		Sep. 08 .2014		CUSTOMER
LG Electronics Inc.		COMP. DIV.		PHU DAI HUNG
COMP. OUT LINE				
QK208PDB				

Accessory Fitting



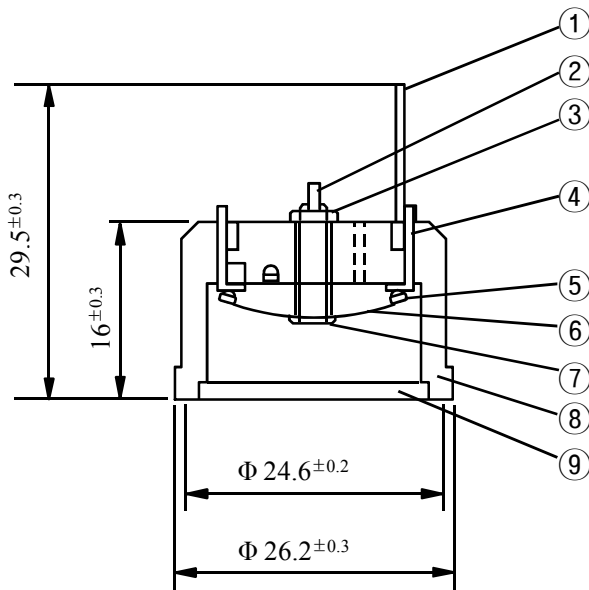
C,S,R Mark Embossed on Cover Terminal

※ Nut assembly torque range is 20 kgf.cm



TERMINAL ADAPTER

NO.	Q'TY	PART NAME	MATERIAL
1	1	TERMINAL ADAPTER	BRASS, TIN CLAD
2	1	ADJUST SCREW	BRASS
3	1	LOCK NUT	BRASS
4	2	TERMINAL (NO. 1,2)	Ag, Cu, STAINLESS CLAD
5	2	MOVABLE CONTACT	Ag-Ni ALLOY, Cu CLAD
6	1	BIMETAL DISC	INVAR Fe-Ni-Cr CLAD
7	1	DISC WASHER	BRASS
8	1	BASE	PHENOLIC RESIN
9	1	COVER	PHENOLIC RESIN 94V-0
10	1	Lead Wire	PVC-SUC-TIN-Cu

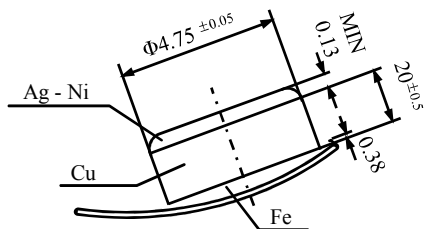


VENDER : TEXAS INSTRUMENT

VENDER PART No. : MRA12306-12057

SPECIFICATION

1. OPEN TEMP. : 155 ± 5 °C
2. CLOSE TEMP. : 60 ± 9 °C
3. SHORT TIME TRIP : 17.0 Amps., 11±5 sec. at 25°C
4. ULTIMATE TRIP CURRENT : 8.8 Amps., at 100°C



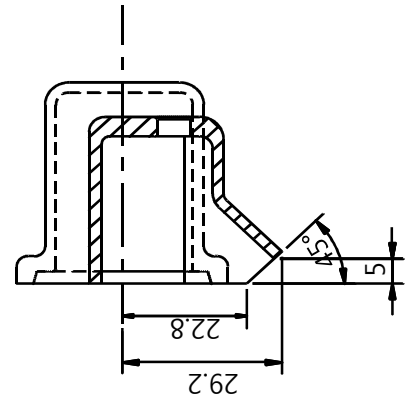
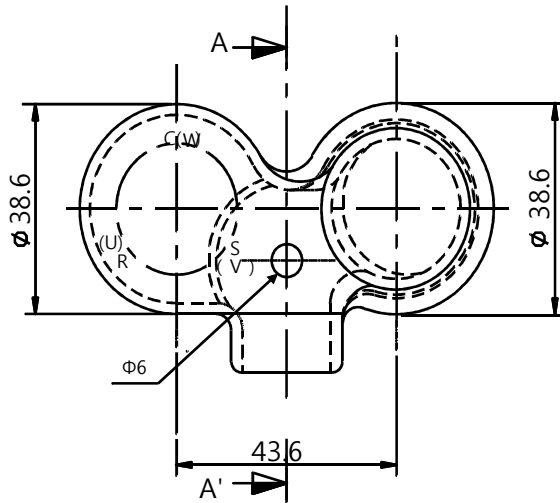
MOVABLE CONTACT

UNIT	mm	SCALE	N / S	PART NAME	OVERLOAD PROTECTOR
DES. ENG.		CHF. ENG.			
Nov 17. 1997		Nov 17. 1997		P/NO.	EAF35764707
Y. C. KO		H. W. LEE			
LG Electronics Inc.		Customer			
A/C COMP. DIVISION		Mitsubishi			

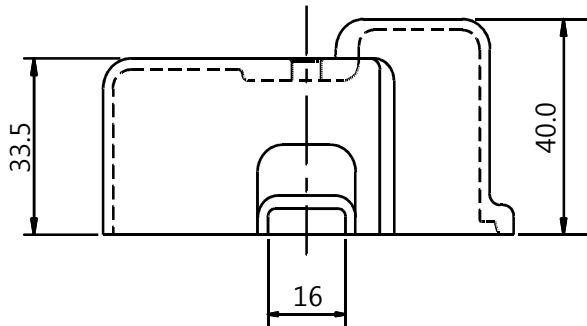
Cover, Terminal

Drawing No. 3550U-L004C,(3550U-L004B)

(UNIT : mm)



Section A-A'



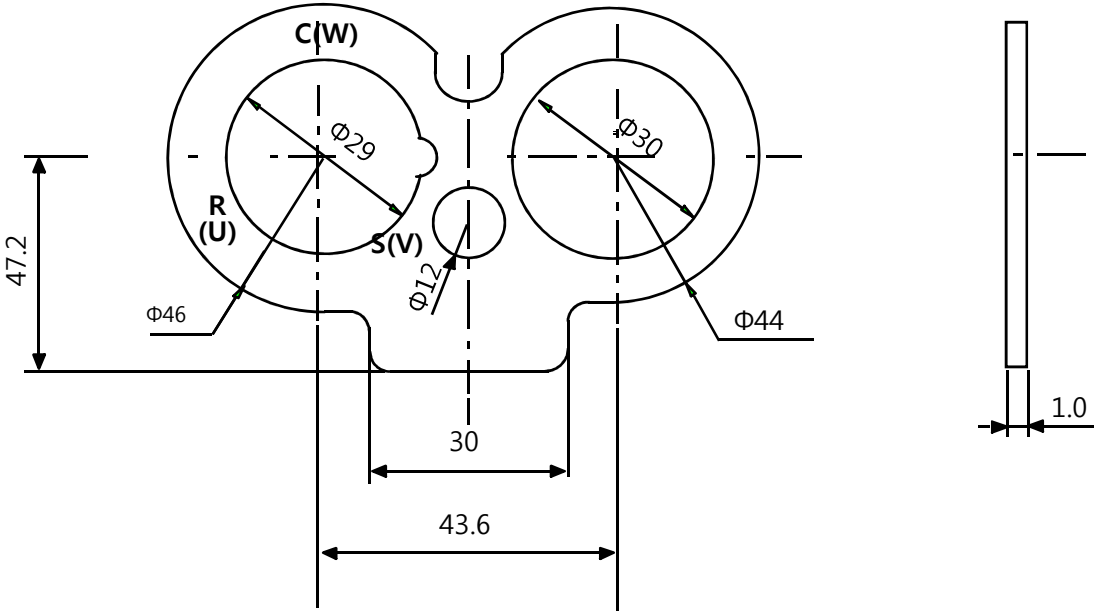
MATERIAL	COLOR	REMARK
LUPOX TE- 5006F	BLACK	MARKS(C(W),R(U),S(V))

LG Electronics Inc.

Gasket

Drawing No. 4986UHL001G ,(4986U-L001G)

(UNIT : mm)



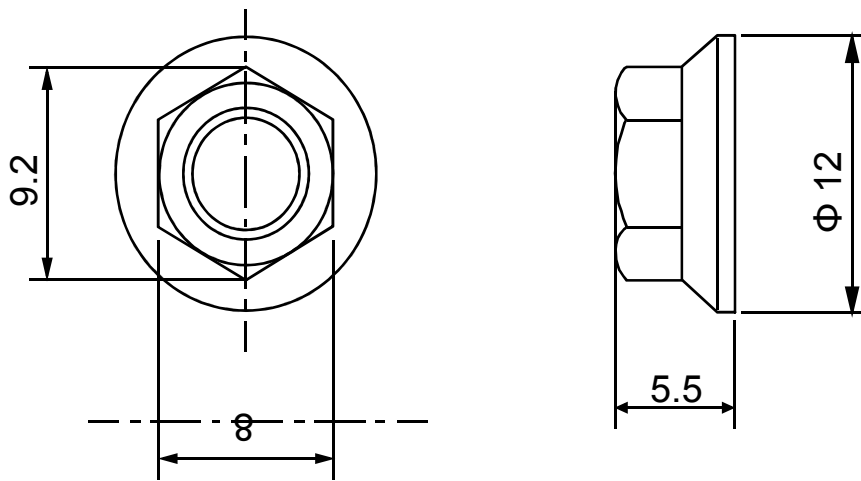
MATERIAL	REMARK
SILICONE	MARKS(C(W),R(U),S(V))

LG Electronics Inc.

Nut, Common

Drawing No. FAD30241201

(UNIT : mm)



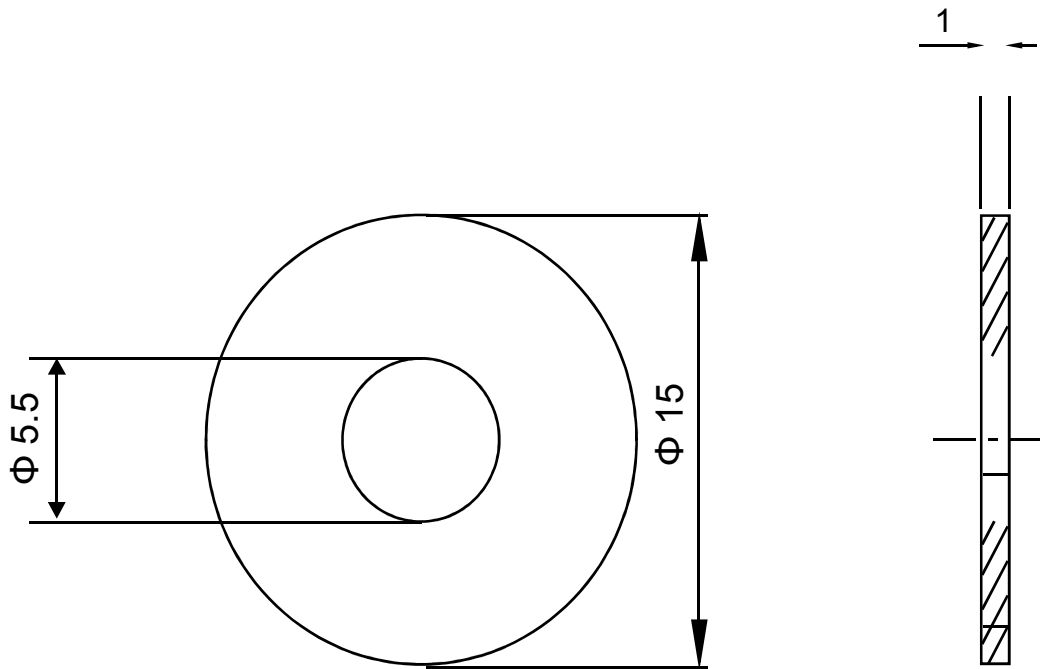
* MATERIAL : STEEL (ELECTRIC PLATING OF ZINC)

LG Electronics Inc.

Washer, Customized

Drawing No. 1WPZU-L001A

(UNIT : mm)



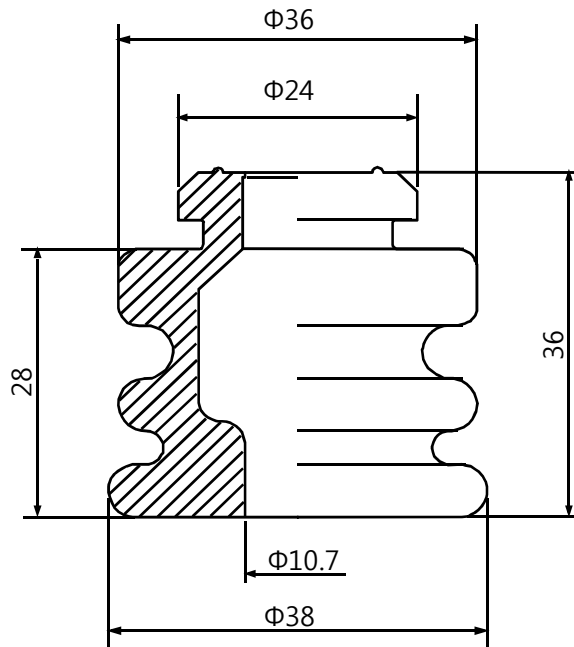
* MATERIAL : POLYAMIDE (NYLON)

LG Electronics Inc.

Damper, Rubber

Drawing NO. MCQ66473401

(UNIT : mm)

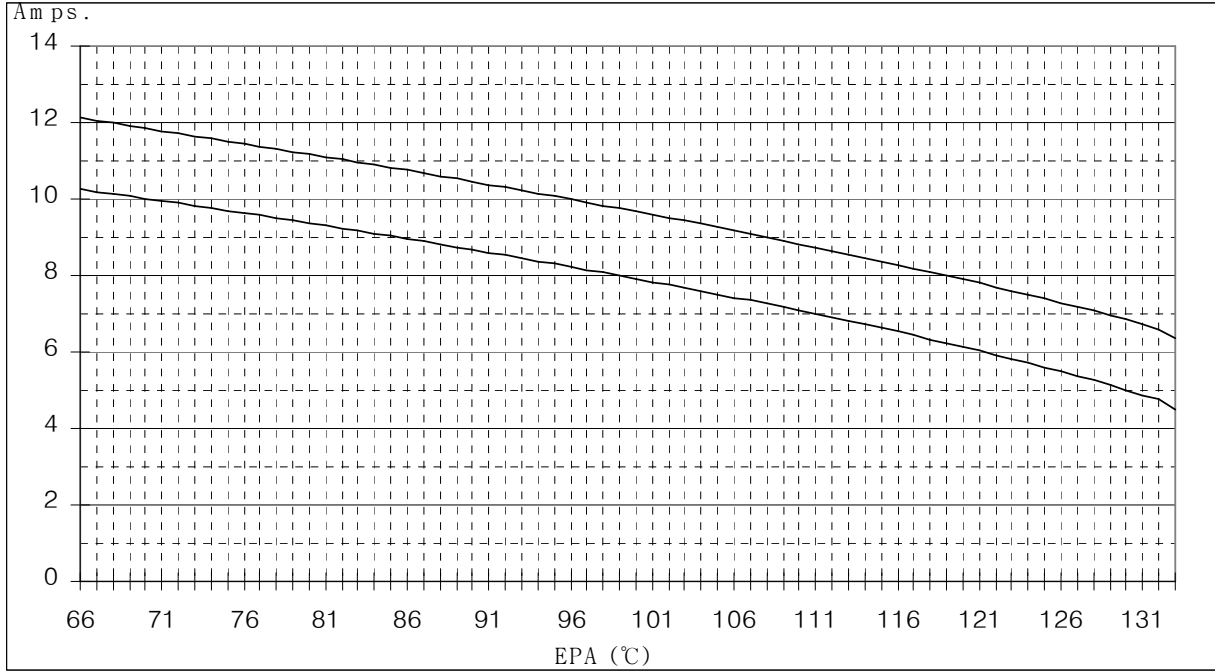


* MATERIAL : NATURAL RUBBER

O.L.P CHARACTERISTIC CURVE

LG P/No : EAF35764707
 VENDER :
 VENDER P/No : MRA12306-12057

OPEN TEMP : 155.0 ± 5 °C
 CLOSE TEMP : 60.0 ± 9 °C
 SHORT TIME TRIP : 17.0 A 11 ± 5 Sec, at 25 °C
 ULTIMATE TRIP CURF: 8.8 A , at 100 °C



1. EPA : Temperature (°C) , (FIG-1)

$$EPA = (A + B) / 2$$

A = Temp. of the inner space of Terminal Cover.

B = Temp. of the seat of O.L.P (the top of compressor)

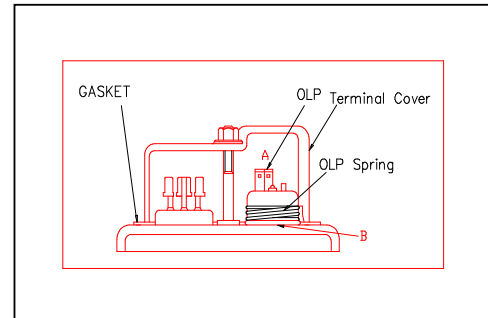


FIG-1

2. Reference (FIG-2)

Section A : O.L.P doesn't work.(Compressor run)

Section B : Uncertain section.

Section C : O.L.P work. (Compressor doesn't run)

* To run compressor, The Amp. & E.P.A must be in section-A.

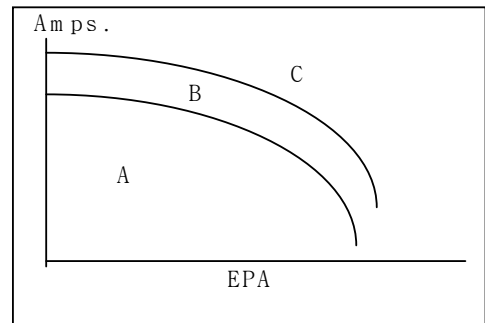


FIG-2