LG
Life's Good

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LG
Life's Good

It thinks.
It acts.

LG SMART COMPRESSOR

Pioneering technology
in refrigerator compressor

MILESTONES

Factory Establishment

1973 Started Compressor Production in LG Korea

1997 Established Compressor factory in China

2003 Established Compressor factory in India

Milestones LGEIL

2005 Commercial Application Compressors Launched

2006 Launched 1st Dual Freq. Compressor (50/60 Hz)

2007 Launched LVS Compressor for Stabilizer free Operation of Refrigerator

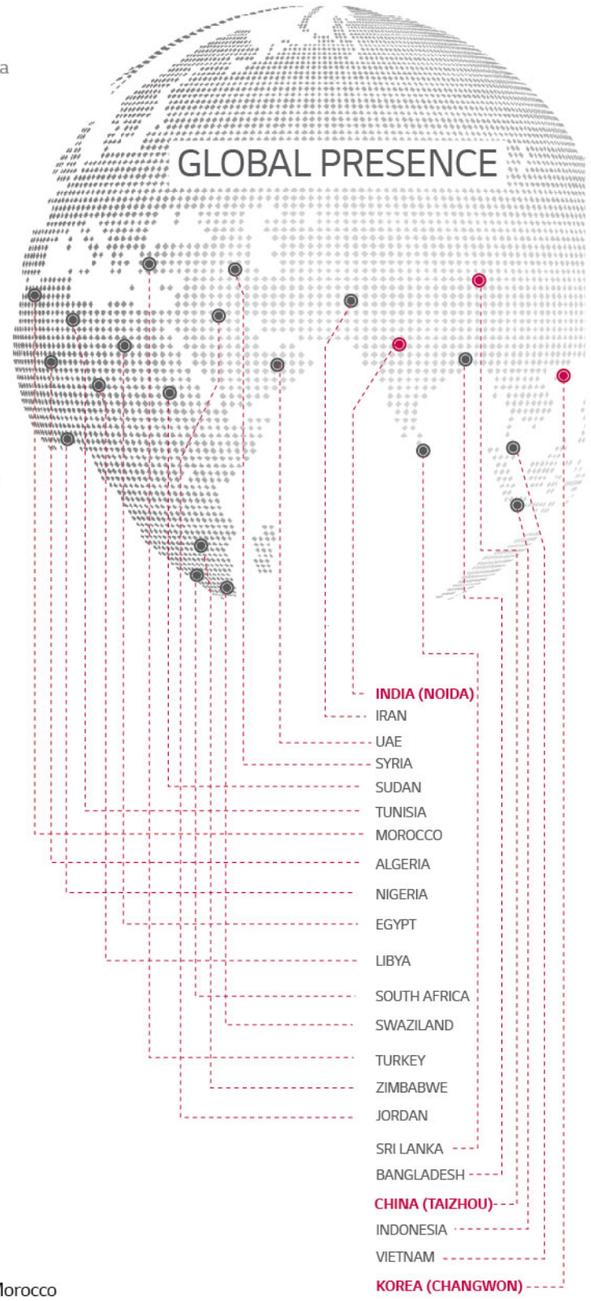
2008 Started High Efficiency Compressor, MC Series

2010 Launched Al winding Compressor

2011 R-600a Compressor Development

2014 Launched Inverter Compressor BMG Series

2014 Launched compact High efficiency CMA Compressor



- MIDDLE EAST : Iran, Jordan, UAE, Turkey, Syria
- AFRICA : Sudan, Egypt, Nigeria, South Africa, Libya, Zimbabwe,Algeria, Tunisia, Morocco
- ASIA : Bangladesh, Srilanka, Indonesia, Vietnam, China

- Represents sales location
- Represents manufacturing location

TECHNOLOGY

Our LG compressors are high-precision machines with assembled technologies from different accumulated techniques. These compressors are continuously evolved to become sustainable and world best compressors which has low noise, LVS operation, Reliability,super EER

We enable to give our customers technical support in order to provide best performance compressor through design mechanism and produce smart technology compressor, inverter motor drive that gives you technologically advanced products.

QUALITY

Our stringent quality policies and evaluation system produces best quality products at every production stage. Under the quality gate system, all our products undergo a safety check at each quality gate based on a checklist, preventing shipments of products with quality or safety issues. This has resulted in achieving recognition in our quality and sustainability globally

CUSTOMER SUPPORT

LG compressors promise to deliver a satisfaction level for all your business stage from research, development to the spec-in that exceeds our customer expectations. We strive to provide the highest value to our customers through a fast, accurate and differentiated service & solution as your business partner.

COMPRESSOR NOMENCLATURE

Model identification

XMY 069 L A E G

Series name
MA
MB
MC
MQ
CMA
BMG

Displacement
Ex) 69 = 6.9cc/rev
069 = 6.9cc/rev

Application category
L : R134a, LBP
H : R134a, HBP
N : R600a, LBP

Improvement order
A
B
C
D
E
F
H,J,M – (Al-Wire)

Rated voltage & Frequency

A : 110V 50/60Hz	P : 110V 50Hz
B : 220V 50/60Hz	Q : 110-115V 60Hz
C : 115V 60Hz	S : 200-220V 50Hz 200V 60Hz
D : 220V 60Hz	T : 220-240V 50Hz 220V 60Hz
E : 220-240V 50Hz	U : 110-127V 60Hz
F : 127V 60Hz	M : 220-240V / 50/60Hz
J : 220V 50Hz	
K : 110V 60Hz	

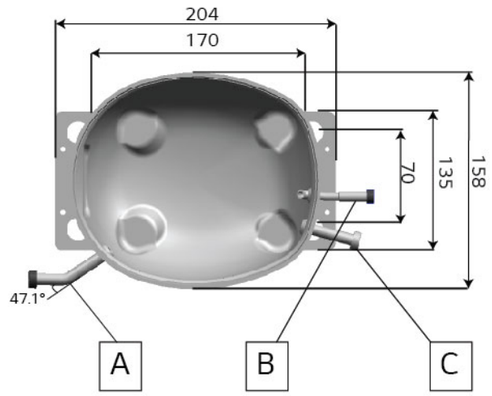
Motor type
G : RSIR, PTC
F : CSIR, PTC
M : RSCR, PTC
H : CSR, PTC
P : CSIR, RELAY
V: Inverter

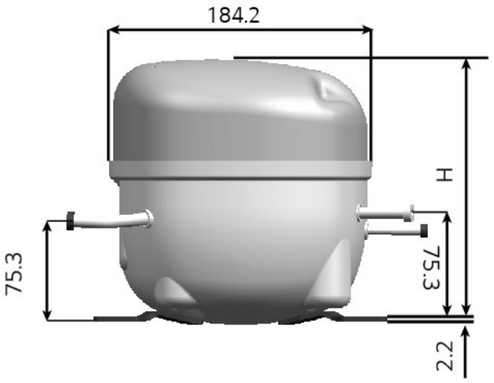
Serial number

69 LAEG 9 11 007201 EJ

Displacement
Model Name
Year of Mfg.
Month of Mfg.
Serial Number
Buyer Code

COMPRESSOR DIMENSIONS





Compressor Pipe Dimensions

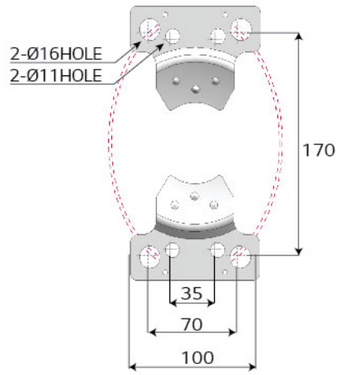
Pipe	OD (mm)	ID (mm)	T(mm)
Suction (A)	7.94	6.54	0.7
		6.1	0.9
Discharge (B)	6.70	5.0	0.85
		6.54	0.7
Process (C)	7.94	6.54	0.7
		6.1	0.9
Oil Cooling	6.35	4.95	0.7

Compressor Height

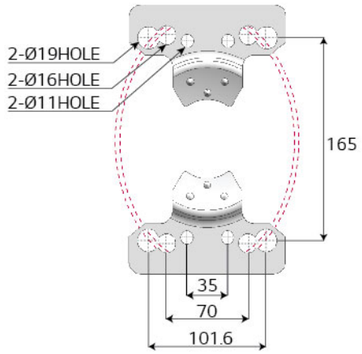
Series	Height (H) (mm)
MA42/45/53	172
MA57/62/69/72/88 MA42LH/MA53LH/ MA45LH"	177
MC53/57/MA62LH/ MA69LH/MA72LH"	180

COMPRESSOR MOUNTING DETAILS

Type A

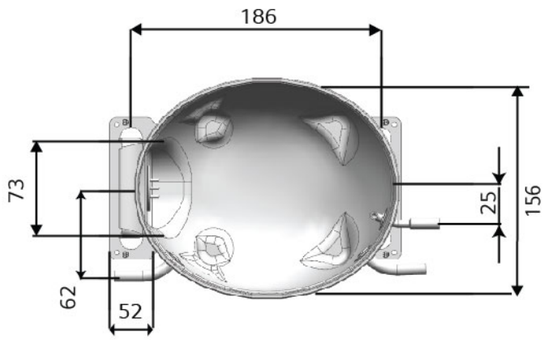


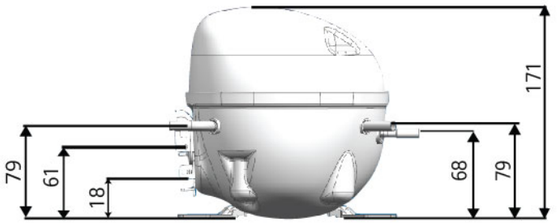
Type B



M* Series:

COMPRESSOR DIMENSIONS

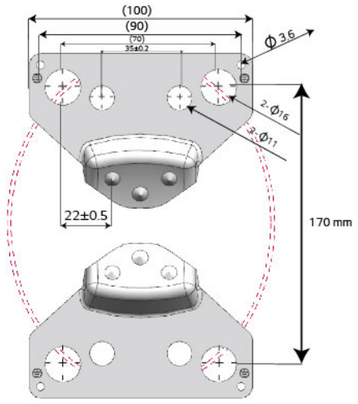




Compressor Pipe Dimensions- CMA Series:

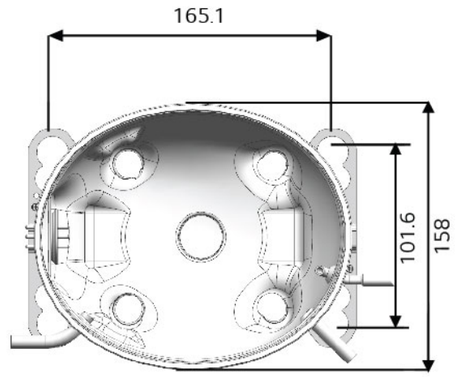
Pipe	OD (mm)	ID (mm)	T(mm)
Suction	7.94	6.54	0.7
		6.10	0.9
Discharge	6.70	5.0	0.85
Process	7.94	6.54	0.7
		6.1	0.9

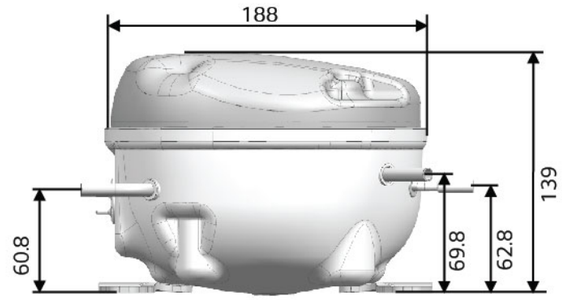
MOUNTING DETAILS



CMA -Series

COMPRESSOR DIMENSIONS

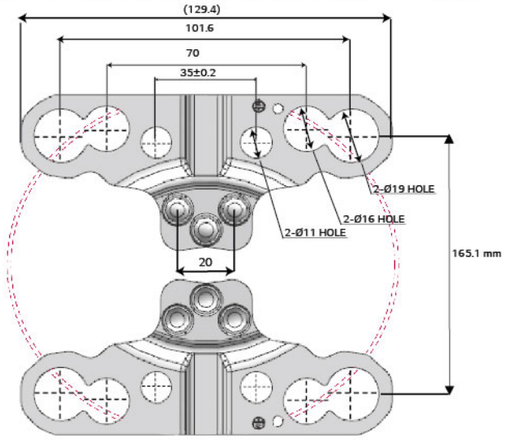




Compressor Pipe Dimensions- BMG Series:

Pipe	OD (mm)	ID (mm)	T(mm)
Suction	7.94	6.54	0.7
Discharge	6.8	5	0.9
Process	7.94	6.54	0.7

MOUNTING DETAILS



BMG -Series

SPECIFICATIONS: MA Series

Refrigerant	Application	Voltage (V)	Freq (Hz)	Model	Displacement (CC)	PERFORMANCE (ASHRAE -23.3°C/54.4°C @ 50 Hz)							PERFORMANCE (ASHRAE -23.3°C/54.4°C @ 60 Hz)					
						Cooling Capacity				Input Power (W)	COP W/W	EER Btu/Wh	Cooling Capacity			Input Power (W)	COP W/W	EER Btu/Wh
						kcal/h	W	Btu/h	HP				kcal/h	W	Btu/h			
R134a	LBP	220	50	MA42LPJG	4.2	92	107	365	1/7	96	1.1	3.80	-	-	-	-	-	-
				MA42LMJM	4.2	92	107	365	1/7	91	1.2	4.00	-	-	-	-	-	-
				MA42LMJG	4.2	92	107	365	1/7	96	1.1	3.80	-	-	-	-	-	-
				MA42LHJM	4.2	92	107	365	1/7	97	1.1	3.77	-	-	-	-	-	-
				MA45LDJG	4.5	99	115	393	1/7+	104	1.1	3.78	-	-	-	-	-	-
				MA45LCJG	4.5	99	115	393	1/7+	104	1.1	3.78	-	-	-	-	-	-
				MA45LJJM	4.5	102	119	405	1/7+	94	1.3	4.31	-	-	-	-	-	-
				MA45LHJM	4.5	102	119	405	1/7+	94	1.3	4.31	-	-	-	-	-	-
				MA53LAJM	5.3	125	145	496	1/5	118	1.2	4.21	-	-	-	-	-	-
				MA53LJJG	5.3	125	145	496	1/5	118	1.2	4.21	-	-	-	-	-	-
				MA53LBJG	5.3	125	145	496	1/5	118	1.2	4.10	-	-	-	-	-	-
				MA57LBJG	5.7	138	160	548	1/5+	130	1.2	4.21	-	-	-	-	-	-
				MA57LJJG	5.7	138	160	548	1/5+	130	1.2	4.21	-	-	-	-	-	-
				MA57LDJM	5.7	145	169	576	1/5+	125	1.3	4.61	-	-	-	-	-	-
				MA62LBJG	6.2	150	174	596	1/5+	134	1.3	4.44	-	-	-	-	-	-
				MA62LJJG	6.2	150	174	596	1/5+	134	1.3	4.44	-	-	-	-	-	-
				MA62LDJM	6.2	150	174	596	1/5+	122	1.4	4.88	-	-	-	-	-	-
		220-240		MA62LBEG	6.2	150	174	596	1/5+	127	1.4	4.69	-	-	-	-	-	-
				MA62LCEG	6.2	150	174	596	1/5+	127	1.4	4.69	-	-	-	-	-	-
				MA69LAEM	6.9	172	200	683	1/4+	148	1.4	4.61	-	-	-	-	-	-
				MA69LHEP	6.9	170	198	675	1/4+	159	1.2	4.24	-	-	-	-	-	-
				MA69LKEM	6.9	169	197	671	1/4+	135	1.5	4.97	-	-	-	-	-	-
				MA69LJEG	6.9	169	197	671	1/4+	152	1.3	4.41	-	-	-	-	-	-
				MA69LJEP	6.9	169	197	671	1/4+	152	1.3	4.41	-	-	-	-	-	-
				MA69LHEM	6.9	169	197	671	1/4+	146	1.4	4.61	-	-	-	-	-	-
				MA69LHEG	6.9	169	197	671	1/4+	152	1.3	4.41	-	-	-	-	-	-
		220		MA72LBJG	7.2	180	209	715	1/4+	162	1.3	4.41	-	-	-	-	-	-
		220-240		MA72LHEM	7.2	180	209	715	1/4+	155	1.4	4.61	-	-	-	-	-	-
				MA72LKEM	7.2	180	209	715	1/4+	144	1.5	4.96	-	-	-	-	-	-
				MA72LBEM	7.2	180	209	715	1/4+	155	1.4	4.61	-	-	-	-	-	-
				MA72LJEP *	7.2	180	209	715	1/4+	162	1.3	4.41	-	-	-	-	-	-
				MA72LJEG *	7.2	180	209	715	1/4+	162	1.3	4.41	-	-	-	-	-	-
				MA72LHEG	7.2	180	209	715	1/4+	162	1.3	4.41	-	-	-	-	-	-
				MA88LAEP	8.8	235	273	933	1/3+	227	1.2	4.11	-	-	-	-	-	-
		220-240 220	50 60	MA53LATG	5.3	124	144	492	1/6+	123	1.2	4.00	146	169	580	132	1	4.4
		220-240	50	MA53LHEM	5.3	140	163	556	1/5+	104	1.6	5.34	-	-	-	-	-	-
				MC53LBEM	5.3	139	162	552	1/5+	105	1.5	5.26	-	-	-	-	-	-
				MC57LAEM	5.7	147	171	584	1/5+	106	1.6	5.50	-	-	-	-	-	-
				MC57LBEM	5.7	147	171	584	1/5+	106	1.6	5.50	-	-	-	-	-	-
		220	50	MA57LBJM	5.7	145	169	576	1/5+	109	1.5	5.28	-	-	-	-	-	-
	HBP	220-240	50	MA53HAEF	5.3	440	512	1747	1/5+	233	2.2	7.50	-	-	-	-	-	-
				MA42HJEP	4.2	355	413	1409	1/7	180	2.3	7.83	-	-	-	-	-	-
				MA62HAEG	6.2	520	605	2064	1/5+	275	2.2	7.51	-	-	-	-	-	-
				MA62HAEF	6.2	520	605	2064	1/5+	275	2.2	7.51	-	-	-	-	-	-
				MA53HJEF	5.3	440	512	1747	1/5	233	2.2	7.50	-	-	-	-	-	-
				MA72HAEP	7.2	630	733	2501	1/4+	355	2.1	7.05	-	-	-	-	-	-

ELECTRICAL PARTS					OIL		Cooling Type	Compressor Height (mm)	Net Weight (kg)
Motor Type	Starting Device (PTC)	Motor Protector (OLP)	Capacitor		Viscosity (cst)	Qty (cc)			
			Starting (µF/ Surge Voltage)	Running (µF/Surge Voltage)					
RSIR-PTC	P220MC1	DRB17R61A1	-	-	22	220	ST	169	8.0
RSCR-PTC	QP2-33MD2	4TM166LFB	-	5/400	22	220	ST	169	7.2
RSIR-PTC	QP1-33MC1	DRB19T61A1	-	-	22	220	ST	172	8.2
RSCR-PTC	QP2-33MD2	4TM166LFB	-	5/400	22	220	ST	177	7.5
RSIR-PTC	QP2-33MC1	4TM213SFB	-		22	220	ST	172	8.3
RSIR-PTC	QP2-33MC1	4TM213SFB	-	-	22	220	ST	172	8.3
RSCR-PTC	QP2-33MD2	DRB17R61A1	-	5/400	22	220	ST	177	8.8
RSCR-PTC	QP2-33MD2	DRB17R61A1	-	5/400	22	220	ST	177	8.8
RSCR-PTC	QP2-33MD2	4TM213SFB	-	5/400	22	220	ST	177	8.2
RSIR-PTC	P220MC	DRB20T61A1	-	-	22	220	ST	177	8.9
RSIR-PTC	QP2-33MC1	4TM213SFB	-	-	22	220	ST	172	8.2
RSIR-PTC	QP2-33MC1	4TM232TFB	-	-	22	220	ST	172	9.1
RSIR-PTC	P220MC	4TM213SFB	-	-	22	220	ST	172	9.0
RSCR-PTC	QP2-33MD2	4TM213SFB	-	5/400	22	220	ST	177	8.5
RSIR-PTC	QP2-33MC1	DRB24S61A1	-	-	22	220	ST/OC	177	9.2
RSIR-PTC	P220MC	DRB24S61A1	-	-	22	220	ST	177	9.1
RSCR-PTC	QP2-33MD2	DRB17R61A1	-	5/400	22	220	ST/OC	177	9.2
RSIR-PTC	QP2-33MC1	4TM213SFB	-	-	22	220	ST/OC	177	9.1
RSIR-PTC	QP2-33MC1	4TM213SFB	-	-	22	220	ST/OC	177	9.1
RSCR-PTC	QP2-33MD2	4TM213SFB	-	5/400	22	220	ST/OC	177	9.1
CSIR-Relay	QL2-3.3B3	4TM232TFB	50/275	-	22	220	FC	180	8.2
RSCR-PTC	QP2-33MD2	DRB24S61A1	-	5/400	10	220	ST	180	9.0
RSIR-PTC	P330MC	4TM232NFB	-	-	10	220	ST	180	8.4
CSIR-Relay	QL2-3.3B3	4TM232NFB	50/330	-	10	220	ST	180	8.4
RSCR-PTC	QP2-33MD2	4TM213SFB	-	5/400	22	220	ST	180	9.0
RSIR-PTC	QP2-33MC1	4TM232TFB	-	-	22	220	ST	180	9.5
RSIR-PTC	QP2-33MC1	4TM232TFB	-	-	22	220	ST/OC	177	9.2
RSCR-PTC	QP2-33MD2	4TM213SFB	-	5/400	22	220	ST	177	9.2
RSCR-PTC	QP2-33MD2	DRB24S61A1	-	5/400	10	220	ST	180	9.2
RSCR-PTC	QP2-33MD2	DRB24S61A1	-	5/400	22	220	ST	177	9.0
RSIR-PTC	TBD	TBD	-	-	22	220	ST	180	9.5
RSIR-PTC	TBD	TBD	-	-	22	220	ST	180	9.5
RSIR-PTC	QP2-33MC1	4TM232TFB	-	-	22	220	ST	180	9.5
CSIR-Relay	QL2-5.55	4TM314TFB	50/275	-	22	220	FC	177	9.3
RSIR-PTC	QP2-33MC1	DRB26T61A1	-	-	22	220	ST	172	8.4
RSCR-PTC	QP2-33MD2	DRB19T61A1	5/400	-	22	220	ST	177	9.0
RSCR-PTC	QP2-33MD2	4TM158RFB	-	5/400	10	220	ST	180	8.1
RSCR-PTC	QP2-33MD2	4TM158RFB	-	5/400	10	220	ST	180	9.5
RSCR-PTC	QP-33MD2	4TM1166LFB	-	5/400	10	220	ST	180	9.0
RSCR-PTC	QP2-33MD2	4TM158RFB	-	5/400	22	220	ST	177	9.1
CSIR-PTC	P220	4TM213SFB	50/275	-	22	220	FC	172	8.6
CSIR-Relay	QL2-3.30B3	DRB24S61A1	50/330	-	22	220	FC	177	8.6
RSIR-PTC	P330	4TM283RFB	-	-	22	220	FC	172	9.3
CSIR-PTC	QP2-33MB3	4TM283RFB	40-60/230	-	22	220	FC	177	8.2
CSIR-PTC	QP2-22MA2	4TM213SFB	50/330	-	22	220	FC	177	8.2
CSIR-Relay	QL2-5.55B3	4TM314TFB	50/275	-	22	220	FC	177	8.3

SPECIFICATIONS: MQ/MB Series

Refrigerant	Application	Voltage (V)	Freq (Hz)	Model	Displacement (CC)	PERFORMANCE (ASHRAE -23.3°C/54.4°C @ 50 Hz)							PERFORMANCE (CECOMAF -25°C/55°C @ 50 Hz)					
						Cooling Capacity				Input Power (W)	COP W/W	EER Btu/Wh	Cooling Capacity			Input Power (W)	COP W/W	EER Btu/Wh
						kcal/h	W	Btu/h	HP				kcal/h	W	Btu/h			
R600a	LBP	220	50	MQ98NAJH	9.8	150	174	596	1/5+	100.0	1.7	5.96	112.5	131	447	97	1.3	4.6
		220-240		MQ98NAEM	9.8	150	174	596	1/5+	94.5	1.8	6.30	112.5	131	447	92	1.4	4.9
				MQ88NAEM	9.0	141	164	560	1/5+	89.0	1.8	6.29	106	123	420	86	1.4	4.9
				MB82NAEM	8.2	123	143	488	1/6+	89.0	1.6	5.49	92.25	107	366	86	1.2	4.2
				MB62NJEG	6.2	89	103	353	1/7	88	1.2	4.02	66.75	77	265	85	0.9	3.1
				MB82NJEG	8.2	123	143	488	1/6+	105.0	1.4	4.65	92.25	107	366	102	1.1	3.6
				MB82NJEM	8.2	123	143	488	1/6+	99.8	1.4	4.89	92.25	107	366	97	1.1	3.8
				MB98NJEG	9.8	145	168	576	1/5+	125.0	1.3	4.61	108.75	126	432	121	1.0	3.6

ELECTRICAL PARTS					OIL		Cooling Type	Compressor Height (mm)	Net Weight (kg)
Motor Type	Starting Device (PTC)	Motor Protector (OLP)	Capacitor		Viscosity (cst)	Qty (cc)			
			Starting (µF/ Surge Voltage)	Running (µF/Surge Voltage)					
CSCR-PTC	P330MB	4TM149NFB	30/300	5/400	10	220	ST	180	9.5
RSCR-PTC	QP2-33MD2	4TM149NFB	-	5/400	10	220	ST	180	9.5
RSCR-EPTC	PTHTM470MD2	4TM149NFB	-	5/400	10	220	ST	180	9.5
RSCR-PTC	220MD2	4TM149NFB	-	5/400	10	220	ST	177	9.0
RSIR-PTC	QP2-33MC1	DRB17R61A1	-	-	10	220	ST	169	7.5
RSIR-PTC	QP2-33MC1	DRB19T61A1	-	-	10	220	ST	177	8.5
RSCR-PTC	QP2-33MD2	DRB17R61A1	-	5/400	10	220	ST	177	8.5
RSIR-PTC	QP2-33MC1	DRB19T61A1	-	-	10	220	ST	177	8.5

COOLING TYPE
- FC: Fan Cooling
- OC: Oil Cooling
- ST: Static

MOTOR TYPE
- RSIR: Resistance Start Induction Run
- RSCR: Resistance Start Capacitor Run
- CSIR: Capacitor Start Induction Run
- CSR: Capacitor Start Capacitor Run

ASHRAE CONDITIONS (HBP)

Evaporating Temp.	7.2°C (45°F)
Condensing Temp.	54.4°C (130°F)
Gas Superheated to	35.0°C (95°F)
Liquid Subcooled to	46.1°C (115°F)
Ambient Temp.	35.0°C (95°F)

UNIT CONVERSION
- 1 watt = 3.41 Btu/Hr
- 1 watt = 0.86 Kcal/Hr
- 1 Kcal/Hr = 3.97 Btu/Hr

Note 1: Figures in the table are subject to change without prior notice for performance improvement.

Note 2: Models marked (*) are in development stage

COOLING TYPE
- FC: Fan Cooling
- OC: Oil Cooling
- ST: Static

MOTOR TYPE
- RSIR: Resistance Start Induction Run
- RSCR: Resistance Start Capacitor Run
- CSIR: Capacitor Start Induction Run
- CSR: Capacitor Start Capacitor Run

ASHRAE CONDITIONS (HBP)

Evaporating Temp.	7.2°C (45°F)
Condensing Temp.	54.4°C (130°F)
Gas Superheated to	35.0°C (95°F)
Liquid Subcooled to	46.1°C (115°F)
Ambient Temp.	35.0°C (95°F)

UNIT CONVERSION
- 1 watt = 3.41 Btu/Hr
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- 1 Kcal/Hr = 3.97 Btu/Hr

Note 1: Figures in the table are subject to change without prior notice for performance improvement.

Note 2: Models marked (*) are in development stage

SPECIFICATIONS: CMA Series

Refrigerant	Application	Voltage (V)	Freq (Hz)	Model	Displacement (CC)	PERFORMANCE (ASHRAE -23.3°C/54.4°C @ 50 Hz)							PERFORMANCE (ASHRAE -23.3°C/54.4°C @ 60 Hz)			
						Cooling Capacity				Input Power (W)	COP W/W	EER Btu/Wh	Cooling Capacity			
						kcal/h	W	Btu/h	HP				kcal/h	W	Btu/h	HP
R134a	LBP	220~240	50	CMA042LJEG *	4.2	92	107	365	1/7	87	1.23	4.20	-	-	-	-
				CMA053LJEG *	5.3	125	145	496	1/5	118	1.23	4.21	-	-	-	-
				CMA057LJEG *	5.7	138	160	548	1/5+	130	1.23	4.21	-	-	-	-
				CMA062LHEG *	6.2	150	174	596	1/5+	134	1.30	4.44	-	-	-	-
				CMA069LHEM *	6.9	169	197	671	1/4+	152	1.29	4.41	-	-	-	-
				CMA069LHEP *	6.9	170	198	675	1/4+	159	1.24	4.24	-	-	-	-
				CMA075LHEG *	7.2	180	209	715	1/4+	162	1.29	4.41	-	-	-	-
				CMA075LHEP *	7.2	190	221	754	1/4+	165	1.34	4.57	-	-	-	-
R600a	LBP	220~240	50	CMA042NAEM	4.2	62	72	246	1/10+	42	1.70	5.80				
				CMA057NHEM *	5.7	84	98	335	1/9+	54	1.80	6.20	-	-	-	-
				CMA062NHEM *	6.2	97	113	386	1/7+	61	1.85	6.31	-	-	-	-
				CMA069NJEM *	6.9	120	103	475	1/7	86	1.19	5.50	-	-	-	-
				CMA069NBEM *	6.9	105	122	417	1/7+	68	1.80	6.15				
				CMA075NHEM *	7.5	120	139	476	1/6+	75	1.85	6.11	-	-	-	-
				CMA082NHEM *	8.2	125	145	496	1/5	83	1.23	5.98	-	-	-	-
				CMA089NBEM *	8.9	141	164	560	1/5+	88	1.87	6.37	-	-	-	-
				CMA089NHEM *	8.9	141	164	560	1/5+	91	1.80	6.15	-	-	-	-
				CMA098NHEM *	9.8	156	181	619	1/5+	101	1.80	6.15	-	-	-	-
				CMA110NAEM *	11.0	176	205	700	1/4+	114	1.81	6.17	-	-	-	-
				CMA121NAEM *	12.1	192	223	772	1/3+	124	1.80	6.22	-	-	-	-

Refrigerant	Application	Voltage (V)	Freq (Hz)	Model	Displacement (CC)	ELECTRICAL PARTS							OIL		Cooling Type	Compressor Height (mm)	Net Weight (kg)
						Input Power (W)	COP W/W	EER Btu/Wh	Motor Type	Starting Device (PTC)	Motor Protector (OLP)	Capacitor					
												Starting (μF/ Surge Voltage)	Running (μF/Surge Voltage)	Viscosity (cst)	Qty (cc)		
R134a	LBP	220~240	50	CMA042LJEG *	4.2	-	-	-	-	-	-	-	-	8	150	ST	164	6.9
				CMA053LJEG *	5.3	-	-	-	-	-	-	-	-	8	150	ST	164	7.2
				CMA057LJEG *	5.7	-	-	-	-	-	-	-	-	8	150	ST	171	7.4
				CMA062LHEG *	6.2	-	-	-	-	-	-	-	-	8	150	ST	171	8.4
				CMA069LHEM *	6.9	-	-	-	-	-	-	-	-	8	150	ST	171	8.4
				CMA069LHEP *	6.9	-	-	-	-	-	-	-	-	8	150	ST	171	8.6
				CMA075LHEG *	7.2	-	-	-	-	-	-	-	-	8	150	ST	171	8.6
				CMA075LHEP *	7.2	-	-	-	-	-	-	-	-	8	150	ST	171	8.6
R600a	LBP	220~240	50	CMA042NAEM	4.2									5	150	ST	171	7.5
				CMA057NHEM *	5.7	-	-	-	-	-	-	-	-	5	150	ST	171	7.6
				CMA062NHEM *	6.2	-	-	-	-	-	-	-	-	5	150	ST	171	7.6
				CMA069NJEM *	6.9	-	-	-	-	-	-	-	-	5	150	ST	171	8.2
				CMA069NBEM *	6.9									5	150	ST	171	7.8
				CMA075NHEM *	7.5	-	-	-	-	-	-	-	-	5	150	ST	171	8.1
				CMA082NHEM *	8.2	-	-	-	-	-	-	-	-	5	150	ST	171	8.0
				CMA089NBEM *	8.9	-	-	-	-	-	-	-	-	5	150	ST	171	7.9
				CMA089NHEM *	8.9	-	-	-	-	-	-	-	-	5	150	ST	171	8.2
				CMA098NHEM *	9.8	-	-	-	-	-	-	-	-	5	150	ST	171	8.4
				CMA110NAEM *	11.0	-	-	-	-	-	-	-	-	5	150	ST	171	8.1
				CMA121NAEM *	12.1	-	-	-	-	-	-	-	-	5	150	ST	171	8.2

SPECIFICATIONS: BMG Series

Refrigerant	Application	Voltage (V)	Freq (Hz)	Model	Displacement (CC)	Running Speed	PERFORMANCE (ASHRAE -23.3°C/54.4°C)							PERFORMANCE (ISO -29°C/31°C)			
							Cooling Capacity				Input Power (W)	COP W/W	EER Btu/Wh	Cooling Capacity			
						RPM	kcal/h	W	Btu/h	HP				kcal/h	W	Btu/h	HP
R600a	LBP	240	60-225	BMG089NAMV	8.9	4,500	184	214	731	1/4+	-	-	-	168	195	666	1/4+
						3000	144	167	570	1/5+	80	2.08	7.10	146	170	580	1/5+
						1,800	86	100	341	1/8	46	2.18	7.43	76	88	300	1/9+
						1500	72	84	287	1/9	39	2.16	7.37	63	73	249	1/10+
		240	60-225	BMG089NHMV	8.9	4,500	184	214	731	1/4+	-	-	-	187	218	744	1/4+
						3000	144	167	571	1/5+	89	1.87	6.39	163	190	649	1/4
						1,800	86	100	343	1/7	51	1.96	6.71	76	88	300	1/9+
						1500	72	84	285	1/9	43	1.94	6.63	63	73	249	1/10+

Refrigerant	Application	Voltage (V)	Freq (Hz)	Model	Displacement (CC)	ELECTRICAL PARTS							OIL		Cooling Type	Compressor Height (mm)	Net Weight (kg)
						Input Power (W)	COP W/W	EER Btu/h	Motor Type	Starting Device (PTC)	Motor Protector (OLP)	Capacitor					
												Starting (μF/ Surge Voltage)	Running (μF/Surge Voltage)	Viscosity (cst)	Qty (cc)		
R600a	LBP	240	60-225	BMG089NAMV	8.9	97.9	1.99	6.8	CDB0080Y1S	-	MRA12091	-	-	5	165	FC	139	6.9
						78	2.17	7.4				-	-					
						35.3	2.49	8.5				-	-					
						29	2.49	8.5				-	-					
		240	60-225	BMG089NHMV	8.9	109.5	1.99	6.8	CDB0084Y1S			-	-	5	165	FC	139	6.5
						85	2.23	7.6				-	-					
						39	2.26	7.7				-	-					
						33	2.20	7.5				-	-					

COOLING TYPE
FC: Fan Cooling
OC: Oil Cooling
ST: Static

MOTOR TYPE
RSIR: Resistance Start Induction Run
RSCR: Resistance Start Capacitor Run
CSIR: Capacitor Start Induction Run
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UNIT CONVERSION
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1 Kcal/Hr = 3.97 Btu/Hr

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Note 2: Models marked (*) are in development stage

APPLICATIONS

Appli	Ambient Temperature	Evaporating Temperature	Condensing Temperature	Sub cooled Liquid Temp Expansion Device	Suction Gas Temperature	Suction Pressure				Discharge Pressure			
						R134a		R600a		R134a		R600a	
	°C	°C	°C	°C	°C	kg/cm²(g)	Psi(g)	kg/cm²(g)	Psi(g)	kg/cm²(g)	Psi(g)	kg/cm²(g)	Psi(g)
LBP	32	-23.3	54.4	32	32	0.14	1.99	-0.389	-5.53	13.96	198.55	6.726	95.66
HBP	35	7.2	54.4	32	35	2.82	40.1			13.96	198.55		

Evaporating Temperature Range

LBP	-30°C to -5°C
HBP	-5°C to +15°C

Oil types:

All the compressors are charged with moisture free oil.

R 134a	Polyol ester Oil
R 600a	Mineral Oil

WARNINGS

☞ Install the refrigerator, lubricant oil and electrical component (Capacitor and Controller) specified by compressor manufacturer.
It can cause fire or electrical shock

☞ Connect the electrical wiring correctly in accordance with manufacturer's instructions.
It can cause fire or electrical shock

☞ Compressor must be grounded whenever power is supplied.
It can cause electrical shock

☞ Before servicing, always remove the power plug from the outlet.
It can cause electrical shock

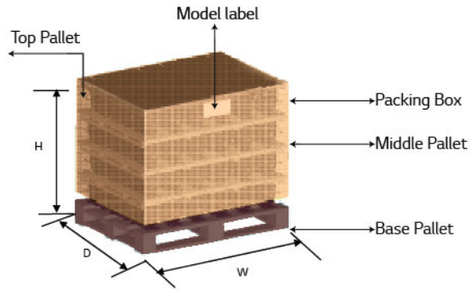
☞ Before welding, always remove refrigerant in the compressor.
Do not operate compressor in the air or vacuum status.
It can cause explosion.

☞ Do not touch the compressor with bare hands during operation or after stopping instantly.
It can cause burning

SAFETY CERTIFICATIONS

PACKING & STUFFING QUANTITY

PALLET PACKING

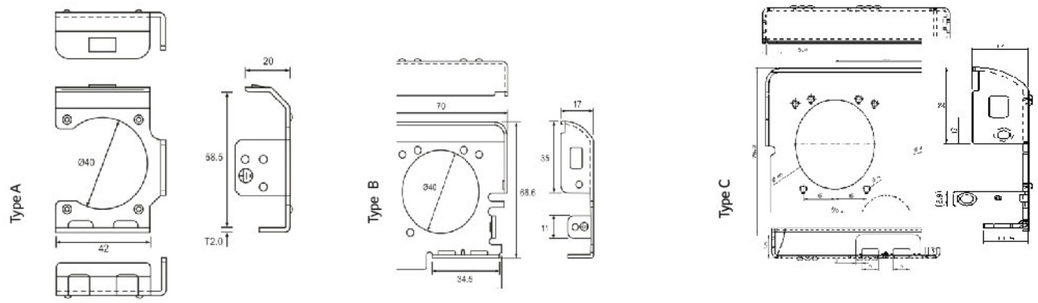


RETAIL PACKING

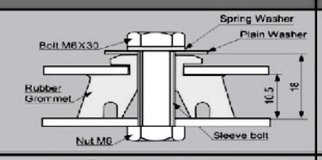
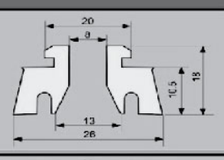
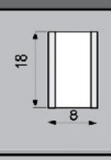
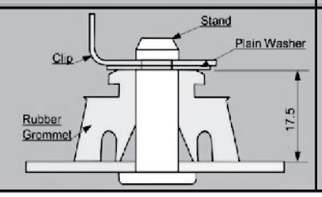
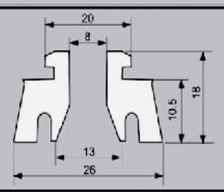
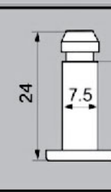
Model	Carton					Container (20Ft,32Ft,40Ft - Below 22 Ton)			Packing Type
	Qty	Array	Dimension			Stuffing Qty	No. of pallets	Container	
	(EA)	(WxDxH)	W(mm)	D(mm)	H(mm)	(EA)		Weight (Ton)	
MA53, MA62, MA72, MA88	52	Ttl layer-4 13 EA/layer	285	205	236	1456	28	14	Retail
MA42LP, MA57,MA62,MA69, MA72, MA88	60	Ttl layer-4 15 EA/layer	270	195	236	1680	28	16	Retail
MA42LM, MA42LP, MA53LJ, MA62, MA72, MA88	90	6X3X5	1100	800	700	2070	23	21	Pallet
MA42LM, MA42LP, MA53LJ, MA62, MA72, MA88	90	6X3X5	1100	800	700	2160	24	22	Pallet
MQ98,MQ88	90	6X3X5	1100	800	700	1800	20	19	Pallet
MB62,MB82,MB98	90	6X3X5	1100	800	700	1800	20	19	Pallet
CMA069,CMA089	90	6X3X5	1100	800	700	1620	18	17	Pallet
BMG089	90	6X3X5	1100	800	700	1620	18	17	Pallet
MA42, MA57, MA72	90	6X3X5	1100	800	700	1440	16	15	Pallet
MA53, MA57, MA88	72	6X3X4	1100	800	700	1300	18	13	Pallet

Note: Packing Conditions are subjected to change without prior notice for customer's convenience

TERMINAL PROTECTOR



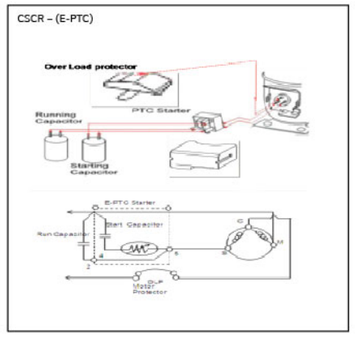
MOUNTING ACCESSORIES

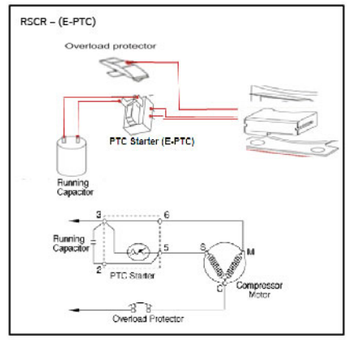
Type	Grommet	Sleeve Bolt
4A (10) type 		
4A snap on type 		

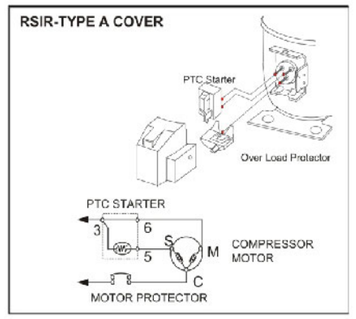
MOTOR TYPES

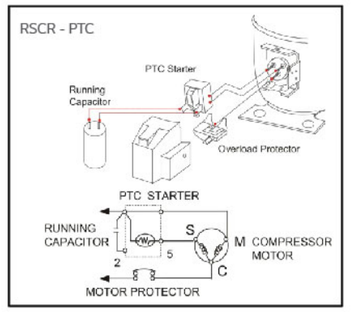
Motor Type	Overload Protector	Starting Device		Capacitors	
		PTC Starter	Current Relay	Starting	Running
RSIR	Yes	Yes			
RSCR	Yes	Yes			Yes
CSIR	Yes	Yes	Yes	Yes	
CSCR	Yes	Yes		Yes	Yes

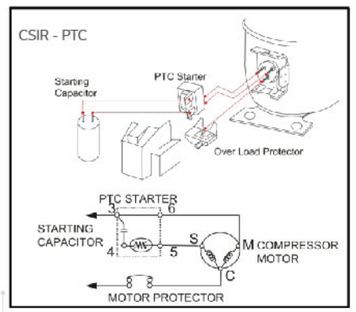
ELECTRICAL WIRING DIAGRAMS

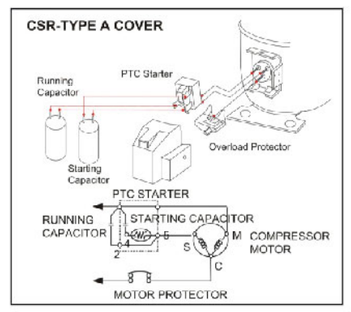


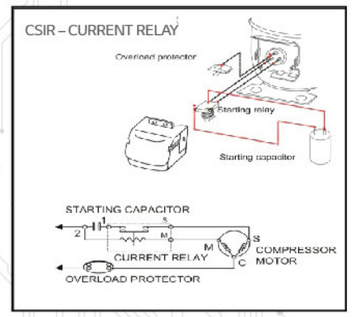


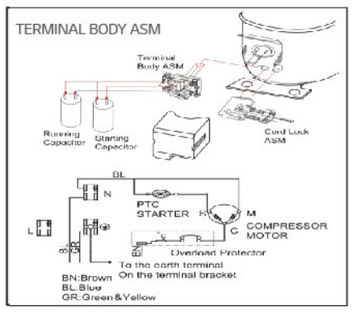












1. Compressor Application Range

1-1. Refrigerant

Due to high flammability of R600a refrigerant, full understanding and proper installation of safety equipment must be completed in advance of compressor installation to refrigeration cycle.

1-2, Evaporator temperature

Temperature of evaporator should be in the range between -30°C (-22°F) and -5°C (23°F).

In case that evaporator temperature goes down much lower than -30 (-22°F), motor is overheated and the temperature of discharge gas and lubricating oil increases, finally the life of compressor can be possibly affected.

If evaporator temperature is higher than -5°C (23°F), discharge pressure increases, so compressor is under overload, which acceleates wears of the compressor components and eventually shortens the life of compressor.

<Relationship between temperature and pressure>

Temperature	Pressure
— 30°C (—22 °F)	— 0.55 kg/cm³G (- 7.89 psig)
— 25°C (—13 °F)	— 0.43 kg/cm³G (—6.18 psig)
- 20°C (—4°F)	—0.29 kg/cm³G (—4.15 psig)
— 15°C (5°F)	— 0.12 kg/cm³G (—1.76 psig)
— 10°C (14°F)	0.07 kg/cm³G (1.03 psig)
— 5°C (23 °F)	0.30 kg/cm³G (4.28 psig)

1-3. Condensing temperature

Temperature and pressure of condenser in continuous operation mode at the ambient temperature of 43°C (110 °F) should not exceed 60°C (140°F) and 7.82 kg/cm³G (111psig), and also instant peak load should not exceed 70°C (158°F) and 10.1 kg/cm³G (143 psig) during the pull down period. This is because shortage of compressor life possibly occurs and electricity consumption increases, if condenser temperature exceed 60°C (140°F). In case that condenser temperature exceed 60°C (140°F) on the design base of refrigeration system, the decline of life and the increase of electricity consumption can be prevented by applying an appropriate oil cooling or fan cooling device to the system.

1-4. Motor winding temperature

Winding temperature of motor at the ambient temperature of 43°C(110°F) must be lower than 120°C (248°F), if exceeds this temperature, motor is overloaded, which causes shortage of motor life. Winding temperature of motor is calculated using the winding resistance as is shown in the equation below. After compressor is stopped, resistances of main winding and supplementary winding should be measured as soon as possible, which results in exact winding temperatures of motor.

<Winding temperature calculation equation>

$$T_2 = (R_2 \,I\, R_1)(234.5 + T_1) - 234.5$$

T_2 = the winding temperature at the end of test

T_2 = the room temperature at the beginning of the test

R_2 = the resistance at the end of the test

R_1 = the resistance at the beginning of the test

1-5. Discharge Gas temperature.

Discharge gas temperature at the ambient temperature of 43°C (110°F) should be such that the temperature of discharge tube about 50mm

(2 inch) apart from compressor surface should be kept lower than 120°C (248°F).

Discharge gas temperature is kept as low as possible to prevent thermal degradation of oil and preserve compressor life in long term. If it

exceeds 120°C (248°F), harmful sludge is accumulated on the periphery of the valves.

1-6. Compressor Shell Temperature

Compressor shell temperature, if winding temperature of motor and discharge gas temperature are kept in the range allowed, is free from regulation. When shell temperature of compressor is required, the temperature of top position of compressor is measured.

1-7. Suction Gas Temperature

Suction gas temperature should be such that the temperature at periphery of suction tube about 150mm (6 inches) apart from compressor surface be maintained at the similar range of super-heating with the ambient temperature.

Especially, winding temperature of motor and discharge gas temperature are kept within the temperature range allowed.

2. Compatibility of Compressor with Refrigeration System.

2-1. Supply Voltage.

Electric circuit is made such that supplying voltage to refrigeration system matches the value listed on the name plate of the compressor under working, and supplying voltage should be kept more than 90% of the listed value at start-up and also during operation.

If there is some problem in keeping the supplying voltage more than 90% of the listed value, the alternative design can be negotiated between customer and LG.

2-2. Electric Components of Compressor.

Electric components such as OLP, PTC, Capacitor of compressor should be selected inevitably according to the specification provided to the corresponding compressor.

2-3. ON-OFF Cycle of the Refrigeration System.

When compressor equipped in refrigeration system is under ON/OFF cycle so that operation and stop are controlled by control apparatus such as thermostat, compressor ON and OFF period per cycle should last more than 5minutes at least, and design that cycle period can be possibly maximized.

2-4. The amount of Refrigerant Charge

The amount of refrigerant charge is recommended minimal as the proper amount, and when refrigerant amount exceeds or lacks compared to the proper amount range, which results in loss of cooling capacity, compressor inefficiency and also damage to compressor life, it is strongly recommended to charge refrigerant with the proper amount. And according to the European Standard EN60335-2-24 the refrigerant charge must not exceed 150g. R600a is charged 50% of R12 but compressor displacement is increase to 100% of R12 compared with R12 refrigeration cycle.

2-5. The amount of Oil Charge

In case of no extra negotiation, compressor is supplied to customers with oil charge with the proper amount.

3. Notices in Handling Refrigeration System and Compressor.

3-1. When vacuumizing the whole cycle system, for air or other hazardous gases not to contaminate the cycle,evacuate it sufficiently using the high efficient vacuum pump. The refrigerant must be charged in state of compressor OFF.

3-2. Cleanness of the each components of refrigeration system be kept.

3-3. Maximum water content in refrigeration system must be under control. As molecular sieve, drier exclusively used to R600a such as XH-7 be prepared separately. Excessive water content generates acid or sludge in the system that can cause blockage in capillary tube.

3-4. Due to high flammability of R600a, refrigeration system welded securely not to occur leakage.and leakage test equipment exclsively designed for R600a application should be prepared separately.

3-5. When compressor is attached to refrigeration system, give attention to the following notices.

1) Nitrogen is charged and sealed before compressor is shipped.
A compressor should be handled carefully not to be unplugged or damage sealing caps during transportation or in warehouse.
2) Compressor with rubber cap removed must be attached to the cycle as soon as possible.
3) Purchased compressor with oil charged and sealed be used within 6 months from the production date shown on the name plate.
4) During deposition or transportation, keep compressors in upright position and be cautious not to drop it.
5) When compressor is attached to cycle, clean and ventilate the vicinity so that pollutants such as dust, steel tip or flux are not included. If pollutants exist inside compressor, excessive wear on compressor bearing, damage to the valves, and blockage in refrigeration system can be occurred, be cautious for pollutant not to penetrate through the compressor tube.
6) Since the paint of compressor is made of epoxy polyamid resin, when the paint peels off, by accident repaint it using the similar one.

3-7. In case of change in cycle construction or parts related to compressor or compressor specification without agreement of LGE, please notify that the responsibility for all case of problem issues is to the customer.

R134a Guide Line

1-1. Refrigerant

R(or HFC) 134a (CF_3CH_2F) is exclusively used as the refrigerant of which the purity shall be more than 99.95%.

1-2, Evaporator temperature and pressure.

Temperature of evaporator must be in the range between -30˚C (-22˚F) and -5˚C (23˚F). In case that evaporator temperature goes down much lower than -30˚C (-22˚F), motor is overheated and the temperature of discharge gas and lubricating oil increases, finally the life of compressor can be possibly affected. If evaporator temperature is higher than -5˚C (23˚F), discharge pressure increases, so compressor is under overload, which accelerates wears of the compressor components and eventually shortens the life of compressor.

<Relationship between temperature and pressure>

Temperature	Pressure
-30 ˚C (-22 ˚F)	-0.17 kg/cm²G (-2.39 psig)
-25 ˚C (-13 ˚F)	0.06 kg/cm²G (0.81 psig)
-20 ˚C (- 4 ˚F)	0.33 kg/cm²G (4.62 psig)
-15 ˚C (5 ˚F)	0.64 kg/cm²G (9.15 psig)
-10 ˚C (14 ˚F)	1.02 kg/cm²G (14.47 psig)
- 5 ˚C (23 ˚F)	1.45 kg/cm²G (20.67 psig)

1-3. Condensing temperature and Pressure

Temperature and pressure of condenser in continuous operation mode at the ambient temperature of 43˚C (110˚F) should not exceed 55˚C (131˚F) and 14.2kg/cm²G (202 psig), and also instant peak load should not exceed 65˚C (149˚F) and 18.2kg/cm²G (259 psig) during the pull down period.

This is because shortage of compressor life possibly occurs and electricity consumption increases, if condenser temperature exceed 55˚C (131˚F). In case that condenser temperature exceed 55˚C (131˚F) on the design base of refrigeration system, the decline of life and the increase of electricity consumption can be prevented by applying an appropriate oil cooling or fan cooling device to the system.

1-4. Winding Temperature of Motor.

Winding temperature of motor at the ambient temperature of 43˚C (110˚F) must be lower than 120˚C (240˚F), if exceeds this temperature, motor is overloaded, which causes shortage of motor life. Winding temperature of motor is calculated using the winding resistance as is shown in the equation below. After compressor is stopped, resistances of main winding and supplementary winding should be measured as soon as possible, which results in exact winding temperatures of motor.

* Winding temperature calculation equation.

$$T_2 = (R_2 / R_1)(234.5 + T_1) - 234.5$$

T_2 = the winding temperature at the end of test

T_1 = the room temperature at the beginning of the test

R_2 = the resistance at the end of the test

R_1 = the resistance at the beginning of the test

1-5. Discharge Gas temperature.

Discharge gas temperature at the ambient temperature of 43˚C (110˚F) should be such that the temperature of discharge tube about 50mm (2 inches) apart from compressor surface should be kept lower than 120˚C (248˚F). Discharge gas temperature is kept as low as possible to prevent thermal degradation of oil and preserve compressor life in long term. If it exceeds 110˚C (230˚F), harmful sludge is accumulated on the periphery of the valves.

1-6. Compressor Shell Temperature

Compressor shell temperature, if winding temperature of motor and discharge gas temperature are kept in the range allowed, is free from regulation.

When shell temperature of compressor is required, the temperature of top position of compressor is measured.

1-7. Suction Gas Temperature

Suction gas temperature should be such that the temperature at periphery of suction tube about 150mm (6 inches) apart from compressor surface be maintained at the similar range of super-heating with the ambient temperature. Especially, winding temperature of motor and discharge gas temperature are kept within the temperature range allowed.

2. Compatibility of Compressor with Refrigeration System.

2-1. Supply Voltage.

Electric circuit is made such that supplying voltage to refrigeration system matches the value listed on the name plate of the compressor under working, and supplying voltage should be kept more than 90% of the listed value at start-up and also during operation.

If there is some problem in keeping the supplying voltage more than 90% of the listed value, the alternative design can be negotiated between customer and LG.

2-2. Electric Components of Compressor.

Electric components such as OLP, PTC, Capacitor of compressor should be selected inevitably according to the specification provided to the corresponding compressor.

2-3. ON-OFF Cycle of the Refrigeration System.

When compressor equipped in refrigeration system is under ON/OFF cycle so that operation and stop are controlled by control apparatus such as thermostat, compressor ON and OFF period per cycle should last more than 5minutes at least, and design that cycle period can be possibly maximized.

2-4. The amount of Refrigerant Charge

The amount of refrigerant charge is recommended minimal as the proper amount, and when refrigerant amount exceeds or lacks compared to the proper amount range, which results in loss of cooling capacity, compressor inefficiency and also damage to compressor life, it is strongly recommended to charge refrigerant with the proper amount.

2-5. The amount of Oil Charge

In case of no extra negotiation, compressor is supplied to customers with oil charge with the proper amount.

3. Notices in Handling Refrigeration System and Compressor.

3-1. Materials compatible to R134a should be used in refrigeration system.

3-2. Equipments for refrigerant charging and vacuuming exclusively designed for R134a application should be needed.

3-3. Leakage test equipment exclusively designed for R134a application should be prepared separately.

In order not to mix-up other refrigerants such as R12 with R134a, charging equipment exclusively designed for R134a application must be prepared separately. When vacuum zing the whole cycle system, for air or other hazardous gases not to contaminate the cycle, evacuate it sufficiently using the high efficient vacuum pump and manage to keep the final vacuum level less than 0.5 Torr

3-4. Cleanness of the each components of refrigeration system be kept higher than the cleanness level of R12 system.

(It is recommended the total allowable dirt shall be kept less than 50% of that of R12 system.)

3-5. Maximum water content in refrigeration system must not exceed 150mg. As molecular sieve, drier exclusively used to R134a such as XH-7 or XH-9 be prepared separately. Excessive water content generates acid or sludge in the system that can cause blockage in capillary tube.

The weight of molecular sieve when R134a is used is 10~15% more than that R12 is used in the same cooling system.

The filter dryer must be protected by suitable method to keep from absorbing water in the process of welding.

The filter without cap could never be used and must be kept in the box to keep away from water before welding.

The molecular sieve will absorb water not absolutely when low-absorbing ability dryer is used, the water will cycle inside the system as a result, these will be phenomena given below:

ICE BUILD UP Any breakage in capillary tube or expansion valve will interrupt the cooling ability

3-6. When compressor is attached to refrigeration system, give attention to the following notices.

1) Nitrogen is charged and sealed before compressor is shipped. A compressor should be handled carefully not to be unplugged or damage sealing caps during transportation or in warehouse.
2) Compressor with rubber cap removed must not be left in the air more than 5 minutes and be attached to the cycle as soon as possible.
3) Purchased compressor with oil charged and sealed be used within 6 months from the production date shown on the name plate.
4) During deposition or transportation, keep compressors in upright position and be cautious not to drop it.
5) When compressor is attached to cycle, clean and ventilate the vicinity so that pollutants such as dust, steel tip or flux are not included. If pollutants exist inside compressor, excessive wear on compressor bearing, damage to the valves, and blockage in refrigeration system can be occurred, be cautious for pollutant not to penetrate through the compressor tube.
6) Since the paint of compressor is made of epoxy polyamide resin, when the paint peels off, by accident repaint it using the similar on