

DATE: 2013-2-20

GMCC HERMETIC COMPRESSOR
SPECIFICATION

Model: **PA290G2CS-4MU1**
(Issue NO.): GMCC—

FOR REFERENCE

This document will be effective with your authorized signature. Please return one (1) copy of this form, and keep the other two (2) copies for your records.

GUANGDONG MEIZHI COMPRESSOR LIMITED

Shunfengshan Industrial Development Zone
Shunde Foshan City, Guangdong Province, P.R. CHINA

1. SPECIFICATION

1-1 PRINCIPAL ITEMS OF COMPRESSOR

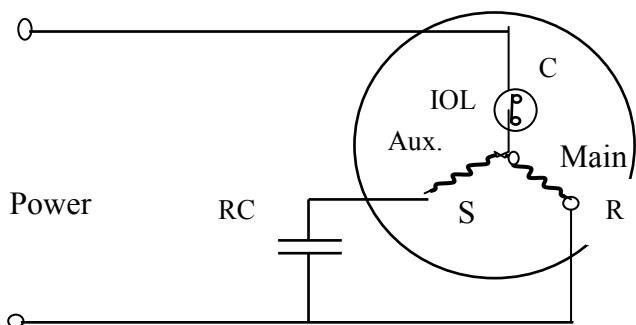
AIR CONDITIONER TYPE	COOLING & HEATING
COMPRESSOR TYPE	HERMETIC MOTOR COMPRESSOR
COMPRESSION TYPE	ROTARY
Safety Approval	TUV, CCC
REFRIGERANT	R410A
OIL·OIL CHARGE	VG74 · 850 ml
PAINTING	BLACK COLOR PAINT
NET MASS (OIL INCLUDED)	19.5 kg
DISPLACEMENT	28.7 cm ³ /rev
SUCTION TUBE(I.D)	16.2 mm
DISCHARGE TUBE(I.D)	9.8 mm

1-2 MOTOR

MOTOR TYPE·STARTING TYPE	SINGLE PHASE INDUCTION MOTOR · PSC
POLE	2 POLE
RATED VOLTAGE·FREQUENCY	1φ-50Hz-220/240V
RATED REVOLUTION	48.3±1% S-1
INSULATION GRADE	E GRADE
WINDING RESISTANCE(20℃)	Main: 1.17±5% Ω Aux.: 2.56±5% Ω
STARTING CURRENT	(at 1φ-50Hz-240V) 66+10% A

1-3 ELECTRICAL COMPONENT & WIRING DIAGRAM

PARTS NAME	SPECIFICATION
RUNNING CAPACITOR	Out of Supply Capacity : 50 μ F Withstanding Voltage: ≥400VAC
OVER LOAD PROTECTOR	INTERNAL (IOL)



S: START (AUX WINDING)
 R: RUN (MAIN WINDING)
 C: COMMON
 RC: RUNNING CAPACITOR
 IOL: Internal Overload Protector

2. COMPRESSOR & STANDARD ACCESSORY

PARTS NAME	TYPE (MODEL)	PIECES	DRAWING CODE	Note
DRAW EXTER	PA290G2CS-4MU1	1	1K329010Gr
RUBBER CUSHION	FOR BASE OF φ176-TYPE	3	1K22910410
TERMINAL COVER	FOR FIXED FREQUENCY MODELS	1	1K14720013
TERMINAL PACKING	FOR FIXED FREQUENCY MODELS	1	1K14720132
TERMINAL NUT	FOR FIXED FREQUENCY MODELS	1	1K14300711
EARTHING HEX BOLT	* NI-PLATED COPPER BOLT	1	1K14300210
WASHER FOR EARTHING BOLT	* NI-PLATED COPPER WASHER	1	1K14300310

USE COMPRESSOR PARTS AND ACCESSORIES SPECIFIED BY GMCC

*** !Attention:**

If the Earthing Hole on the Base of Compressor will have been connected with Earthing Wire, Please Remove and throw away the Antirust Steel Bolt and Washer which has been installed on Compressor, and Use the Copper Bolt and Washer listed above or Equivalent.

3. STANDARD OF PERFORMANCE

3 - 1 RATED PERFORMANCE

			GB AT GB STANDARD
CAPACITY	W	☆ 7295/7350 ± 5%	
MOTOR INPUT	W	☆ 2410/2580 ± 5%	
CURRENT	A	☆ 11.65/12.60 ± 5%	
COP	W/W %	☆ 303/285 ± 5%	
NOISE (Sound Power Level)	dB(A)	★ 76 MAX	
m/s ² VIBRATION		★ 3.3 MAX	

☆RATING CONDITIONS

- RATED VOLTAGE φ-50Hz-220/240V
- COND. TEMP. :54.4℃
- EVAP. TEMP :7.2℃
- RETURN GAS TEMP :35℃
- LIQUID TEMP. :46.1℃
- AMBIENT TEMP. :35℃

※

ACCORDING TO GMCC'S CALORIEMETER STANDARDS

★RATING CONDITIONS

- RATED VOLTAGE :1φ-50Hz-220/240V
- COND. TEMP. :54.4℃
- EVAP. TEMP :7.2℃
- RETURN GAS TEMP :18℃
- AMBIENT TEMP. :20.0℃

※

DISCHARGE TUBE TEMP IS CONTROLLED BY FLOOD BACK AMOUNT OF REFRIGERANT

B.D.V	V	198 MAX	Pd/Ps=4.15/1.15 MPa
STARTING VOLTAGE	V	187 MAX	Pd=Ps=1.57 ± 0.1 MPa Pd-Ps ≤ 0.05 MPa

3-2 CHARACTERISTICS

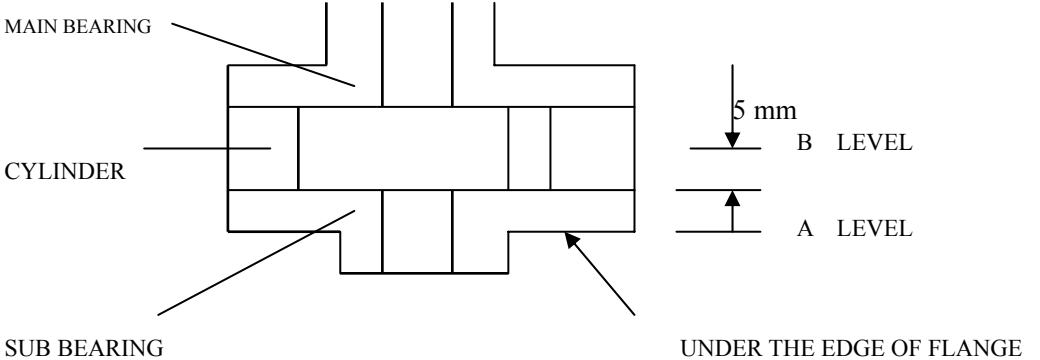
(AP) LEAK TIGHT PRESSURE	HIGHER PRESSURE SIDE	4.3 MPa
	LOWER PRESSURE SIDE	2.1 MPa
(TP) HYDROSTATIC STRENGTH PRESSURE	HIGHER PRESSURE SIDE	6.3 MPa
	LOWER PRESSURE SIDE	3.2 MPa
INSULATION RESISTANCE (FILLED WITH NITROGEN GAS)		20 MΩ MIN
WITHSTAND VOLTAGE/LEAKAGE CURRENT		AC1500V-1min /10 MA MAX
RESIDUAL MOISTURE	• RESIDUAL IMPURITIES	300mg • 45mg MAX • MAX
EARTHING RESISTANCE		0.1 Ω MAX

4 OPERATING CONDITIONS

ITENS	LOAD	STANDARD		MAX.	
DISCHARGE PRESSURE	MPa(G)	3.28	MAX	4.15	MAX
SUCTION PRESSURE	MPa(G)	0.89		0.23~1.15	
COMPRESSION RATIO		8	MAX	8	MAX
MOTOR COIL TEMP.	℃	100	MAX	125	MAX
DISCHARGE TUBE TEMP.	℃	100	MAX	115	MAX

※ SYSTEM DESIGN AND PROCESS LIMITATIONS

LIMIT OF REFRIGERANT AMOUNT	kg	2.10 kg	MAX
CONTINUOUS FLOOD BACK	CONTINUOUS FLUID BACK BEFORE THE ACCUMULATOR NOT BE MORE THAN 10% OF TOTAL CIRCULATION QUANTITY OF REFRIGERANT.		
ABNORMAL NOISE & CURRENT	KNOCKING NOISE OR OVERCURRENT SHOULD NOT OCCUR AT START-UP OR REVERSING CYCLE.		
TEMP.DIFFERENT℃ (T=CASE BOTTOM TEMP -CONDENSING TEMP	5 OR MORE: CONTINUOUS OPERATION 5 OR MORE: DEFROSTING OPERATION 5 OR MORE: DRY OPERATION 0 OR MORE: CONTROLLED INTERMITTENT OPERATION		
INTERMITTENT OPERATION TIMES	200000 CYCLES OR LESS, 5 MINUTES OR MORE (ON: 2MINUTES OR MORE, OFF: 2MINUTES MORE)		
SUPPLY VOLTAGE RANGE	220V-10%~240V+10%(198~264V)		
POWER FREQUENCY	THE POWER FREQUENCY SHOULD BE THE RATED VALUE ±2%		
PRESSURE DIFFERENCE AT START-UP	THE PRESSURE SHOULD BE BALANCED THE HIGH-PRESSURE AND LOW-PRESSURE SIDES AT START-UP		
TILT IN OPERATION	COMPRESSOR SHOULD BE RUN AT A GRADIENT OF UP TO 5°		

<p>LUBRICATION OIL LEVEL</p>	<p>THE LUBRICATION OIL LEVEL IN A COMPRESSOR SHOULD BE AS LISTED BELOW IF THE LUBRICATION OIL IS FOAMING FOAM SHOULD BE EXCLUDED FROM THE OIL LEVEL</p> <table border="1" data-bbox="405 344 1449 938"> <thead> <tr> <th colspan="2">OPERATING CONDITION</th> <th>OIL LEVEL</th> </tr> </thead> <tbody> <tr> <td colspan="2">IN CONTINUOUS OPERATION</td> <td>B LEVEL OR HIGHER</td> </tr> <tr> <td rowspan="2">WHEN STARTING</td> <td>CONTROLLED START</td> <td>B LEVEL OR HIGHER</td> </tr> <tr> <td>AFTER SOAKING</td> <td>B LEVEL OR HIGHER, A LEVEL OR HIGHER WITHIN 3MINUTES AFTER START-UP</td> </tr> <tr> <td rowspan="2">IN DEF-ROSTING</td> <td>DEFROSTING-HOT GAS</td> <td>B LEVEL OR HIGHER</td> </tr> <tr> <td>REVERSE CYCLE</td> <td>B LEVEL OR HIGHER</td> </tr> </tbody> </table> 	OPERATING CONDITION		OIL LEVEL	IN CONTINUOUS OPERATION		B LEVEL OR HIGHER	WHEN STARTING	CONTROLLED START	B LEVEL OR HIGHER	AFTER SOAKING	B LEVEL OR HIGHER, A LEVEL OR HIGHER WITHIN 3MINUTES AFTER START-UP	IN DEF-ROSTING	DEFROSTING-HOT GAS	B LEVEL OR HIGHER	REVERSE CYCLE	B LEVEL OR HIGHER
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	REVERSE CYCLE	B LEVEL OR HIGHER															
<p>TUBE STRESS</p>	<p>TUBE TO BE CONNECTED WITH A COMPRESSOR SHOULD BE FREE OF RESONANCE. THE TUBE STRESS SHOULD NOT EXCEED THE VALUES LISTED BELOW TUBE SHOULD NOT BREAK DURING OPERATION, AT START-UP, AND AT STOP</p> <table border="1" data-bbox="419 1574 1449 1951"> <thead> <tr> <th>VIBRATION MODE</th> <th colspan="2">ALLOWABLE TUBING STRESS (HALF AMPLITUDE)</th> </tr> </thead> <tbody> <tr> <td>OPERATING</td> <td>20N/mm²</td> <td>OR LESS</td> </tr> <tr> <td>START-UP STOP</td> <td>30N/mm²</td> <td>OR LESS</td> </tr> <tr> <td>IN TRANSIT</td> <td>30N/mm²</td> <td>OR LESS</td> </tr> </tbody> </table>	VIBRATION MODE	ALLOWABLE TUBING STRESS (HALF AMPLITUDE)		OPERATING	20N/mm ²	OR LESS	START-UP STOP	30N/mm ²	OR LESS	IN TRANSIT	30N/mm ²	OR LESS				
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OPERATING	20N/mm ²	OR LESS															
START-UP STOP	30N/mm ²	OR LESS															
IN TRANSIT	30N/mm ²	OR LESS															
<p>DO NOT PUT A COMPRESSOR ON ITS SIDE OR TURN OVER.</p>																	

AN IMPACT TO COMPRESSOR SHOULD BE LIMITED TO 590m/s^2 OR LESS ,NOT GIVE A SHOCK TO ACCESSORIES.

DO NOT LEAVE THE PLUGS OF THE COMPRESSOR IN THE ATMOSPHERE FOR MANY HOURS AFTER OPEN FOR PREVENTING WATER FROM GETTING INSIDE。

AVOID OPERATION WITH AIR FOR PREVENTING THE LUBRICATION OIL'S DETERIORATION FROM ACCELERATING。

REFRIGERANT MUST ALWAYS BE FILLED FROM THE HIGHER SIDE OF THE REFRIGERATION CYCLE

DO NOT REVERS COMPRESSOR OPERATION. DO NOT REUSE THE COMPRESSOR THAT ROTATED IN REVERS。

DO NOT ALLOW COMPRESSOR TO BE WEATHERED; STORE COMPRESSORS INDOOR AT $-10\sim+65^{\circ}\text{C}$

LEAD WIRE CONNECTED TO A COMPRESSOR SHOULD HAVE A SUFFICIENT ALLOWANCE AGAINST VIBRATIONS OF A COMPRESSOR。

SINCE THE COMPRESSOR TEMPERTURE MAY RISE AS HIGH AS 150°C , DO NOT ALLOW ELECTRIC CABLES OR THE LIKE TO DIRECTLY TOUCH COMPRESSORS。

TAKE PRORER MOISTURE-PROOF OR DUST-PROOF MEASURES FOR THE COMPRESSOR TERMINAL BOX IF WATER DROPLETS, DUST, OR THE LIKE MAY OTHERWISE ENTER。

TURN ATTENTION TO GATHERING RUST ON IT' S SHELL WHEN ALLOWED COMPRESSOR TO COME IN TOUCH WITH HYGROSCOPIC MATERIALS。 NOT BE EXPOSED TO CORROSIVE GASES OR ORGANIC SUBSTANCES。

FOR SPLIT TYPE AIR-CONDITIONERS, THE MAXIMUM PIPING LENGTH SHOULD BE 15m, AN ELEVATION DIFFERENCE SHOULD BE WITHIN 5m, ALSO THE REQUIREMENTS HEREIN SHOULD BE MET。

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 SEPERATOR, ADDITONAL ACCUMULATOR, ETC.)。

DO NOT MODIFY A COMPRESSOR WITHOUT GMCC'S AUTHORIZATION. DO NOT FILL THE REFRIGERATION CYCLES WITH GAS EXCEPT R410A, AS A COMPRESSOR MAY GO-UP IN A BLAST。(ESPECIALY COMPRESSING AIR IS NOT PERMITTED)

DO NOT PROVIDE ANY FORCE ON DISCHARGE TUBE WHEN COMPRESSOR IS MOVED AND TRANSFERRED

DO NOT TOUCH THE COMPRESSOR WITH BARE HANDS DURING OPERATION OR IMMEDIATELY AFTER STOPPAGE. THE COMPRESSOR IS AT A HIGH TEMPERATURE. THERE IS THE DANGER OF BURNS.

WEAR SAFETY GOGGLES WHEN SERVICING THE UNIT. WHEN REMOVING THE TUBES BY HEATING IT WITH A BURNER, THERE IS THE DANGER OF BURNS OR EYE INJURY IF THE REFRIGERANT AND/OR OIL REMAINING IN THE TUBES IS EMITTED.

5 THE OTHERS

5-1 SEALING WITH NITROGEN GAS.

THE ROTARY COMPRESSOR ARE SEALED WITH NITROGEN GAS FOR RUST PREVENTION WHEN REMOVING THE RUBBER CAP, IT SHALL BE MADE SURE AUDIBLY THAT THE NITROGEN GAS REMAINS.

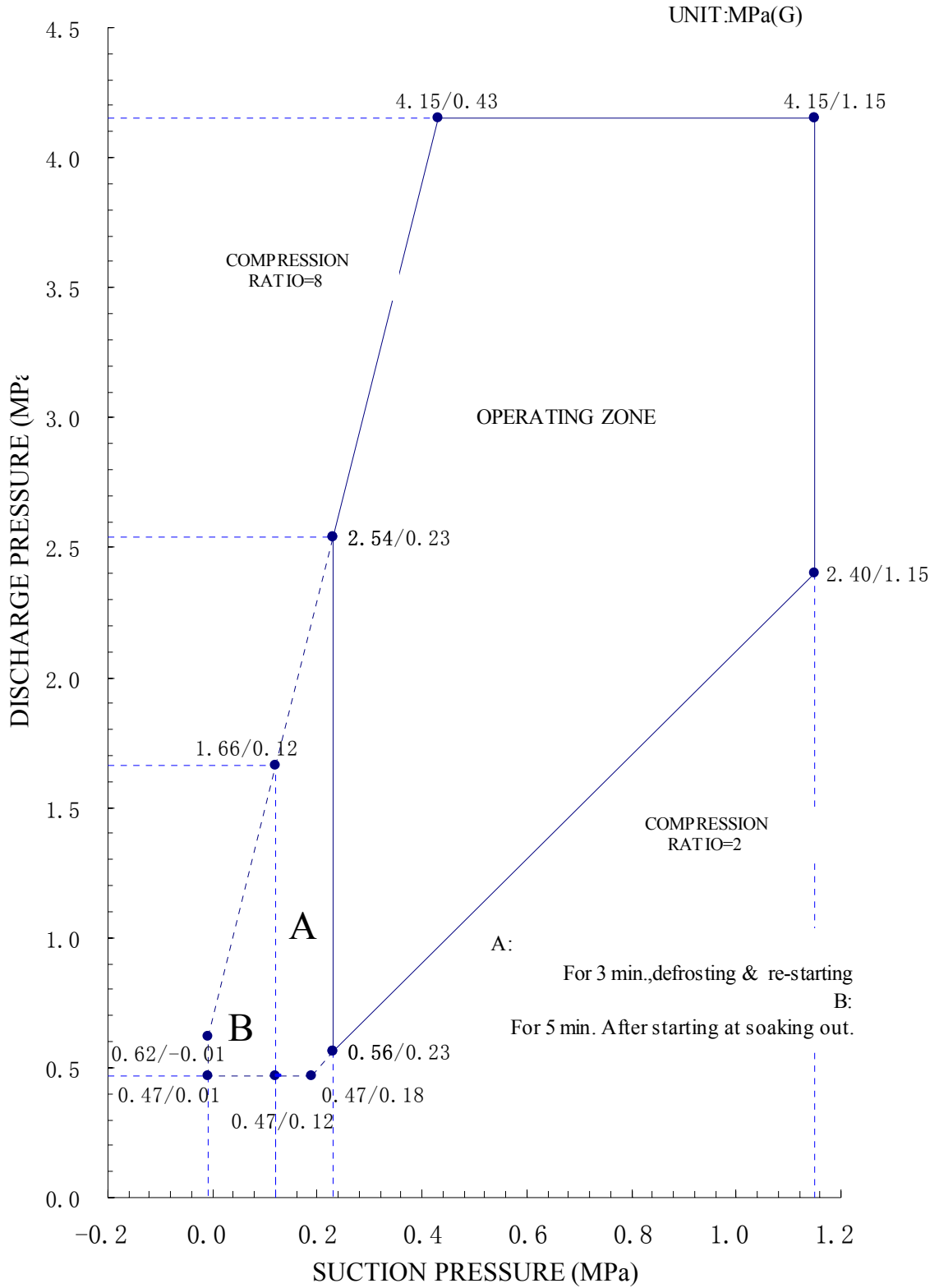
5-2 CONTAINER

A STANDARD CONTAINER SPECIFIED IN GMCC IS USED.

5-3

THIS DOCUMENT WILL BE EFFECTIVE AFTER GMCC'S RECEIPT WITH YOUR AUTHORIZED SIGNATURE WHEN DESIGN MODIFICATION IS APPROVED BY THE CUSTOMER, THE CURRENT DOCUMENT IS UNAVAILABLE.

R410A
OPERATING CONDITIONS OF R410A REFRIGERANT COMPRESSOR



MODEL: PA290G2CS-4MU1

R410A 1Φ — 220 V ~ 50 Hz

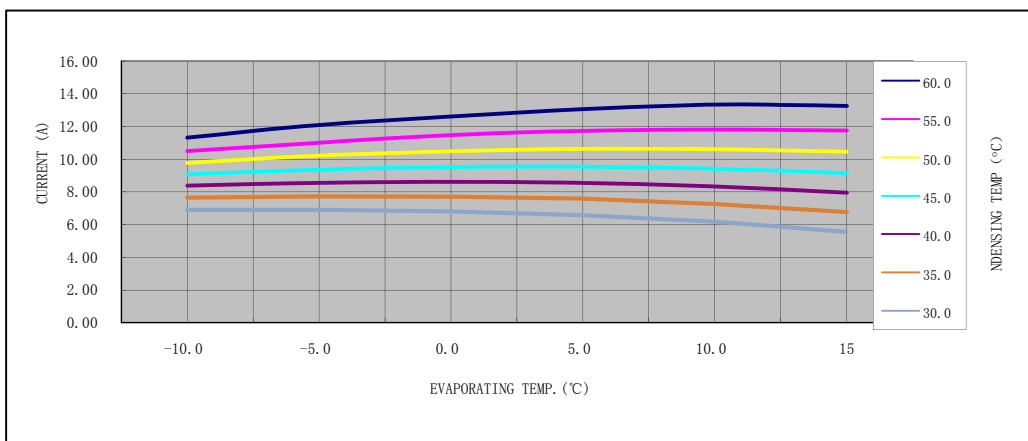
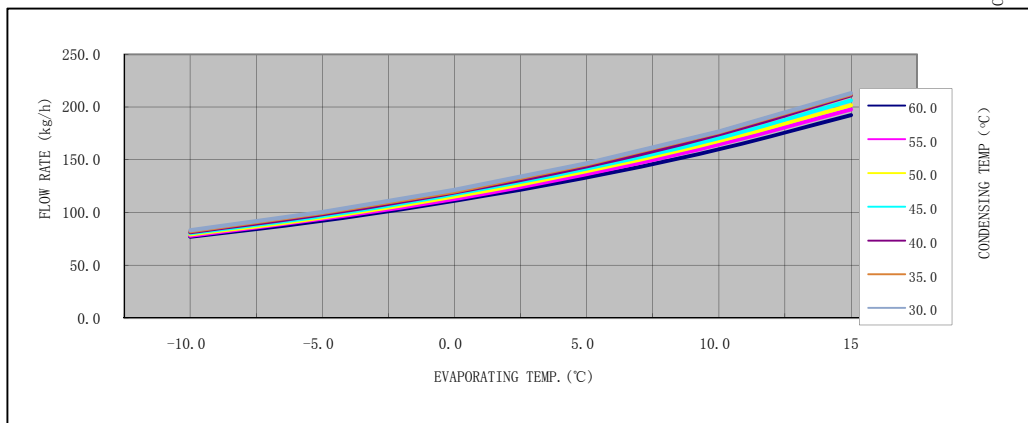
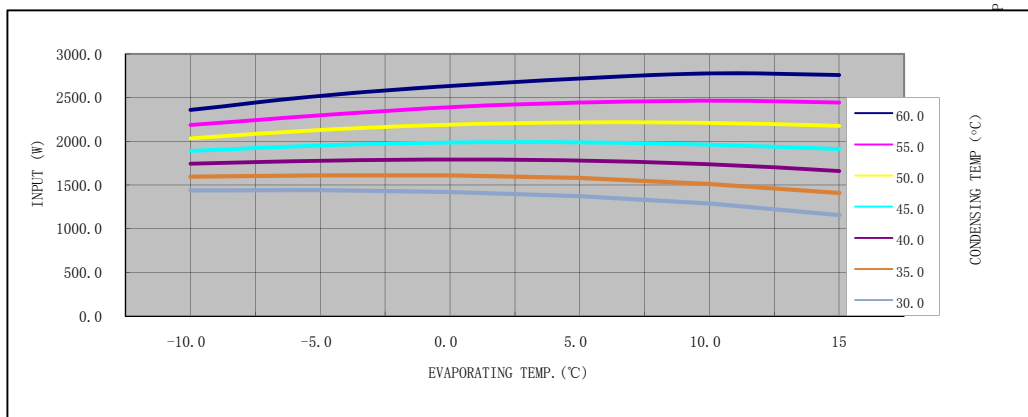
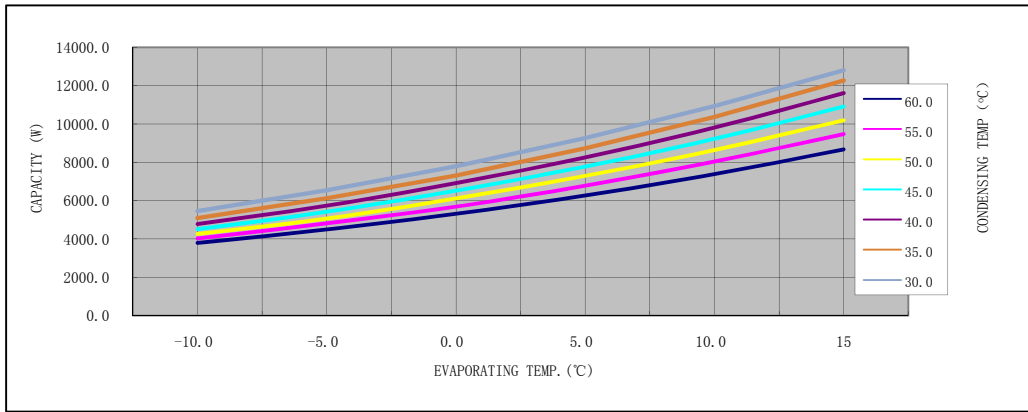
RETURN GAS TEMP. — 35 °C

SUBCOOLING — 8.3 °C

AMBIENT TEMP. — 35 °C

RUNNING CAPACITOR — 50 μF

PERFORMANCE CURVE (ASHRAE)



1、Rated condition data

Model	Displacement	Frequency	Power supply	Running capacitor	Capacity	Input power	Flow rate	Current
	cc	Hz	V	uF	W	W	kg/h	A
PA290G2CS-4MU1	29	50	220	50	7379.8	2419.5	148.4	11.61

2、Data under different condition

Capacity(W)		Evaporating Temp.(°C)					
		-10.0	-5.0	0.0	5.0	10.0	15
Condensing Temp.(°C)	60.0	3800.8	4496.6	5318.0	6267.2	7374.8	8664.7
	55.0	4028.4	4819.1	5687.1	6779.2	8040.0	9471.0
	50.0	4261.7	5055.7	6110.4	7288.8	8630.6	10183.6
	45.0	4512.7	5414.6	6521.0	7778.0	9224.0	10908.6
	40.0	4785.2	5741.6	6914.2	8254.1	9803.2	11604.9
	35.0	5097.5	6137.1	7316.2	8732.0	10363.0	12264.1
	30.0	5464.7	6545.2	7809.5	9270.3	10935.0	12809.4

Input Power(W)		Evaporating Temp.(°C)					
		-10.0	-5.0	0.0	5.0	10.0	15
Condensing Temp.(°C)	60.0	2358.6	2519.7	2632.0	2718.5	2777.2	2758.5
	55.0	2187.7	2296.7	2391.1	2442.3	2465.5	2444.4
	50.0	2033.3	2130.6	2190.1	2214.7	2213.0	2175.1
	45.0	1888.7	1952.4	1985.5	1988.9	1960.9	1909.4
	40.0	1745.3	1779.5	1793.2	1780.6	1737.9	1658.7
	35.0	1596.6	1611.7	1609.9	1581.7	1511.7	1408.5
	30.0	1440.1	1442.1	1421.2	1371.8	1287.1	1155.5

Flow Rate(kg/h)		Evaporating Temp.(°C)					
		-10.0	-5.0	0.0	5.0	10.0	15
Condensing Temp.(°C)	60.0	76.9	92.1	111.1	133.2	159.9	192.3
	55.0	77.9	94.0	112.7	136.3	164.4	197.8
	50.0	79.0	94.9	114.9	139.0	167.6	201.6
	45.0	80.2	96.5	117.1	141.5	170.4	206.3
	40.0	81.3	98.3	119.0	143.9	174.0	211.2
	35.0	82.4	99.6	120.0	145.8	175.9	212.1
	30.0	83.3	100.6	121.4	146.5	176.7	213.0

Current(A)		Evaporating Temp.(°C)					
		-10.0	-5.0	0.0	5.0	10.0	15
Condensing Temp.(°C)	60.0	11.31	12.10	12.61	13.06	13.34	13.27
	55.0	10.51	11.02	11.48	11.75	11.82	11.76
	50.0	9.77	10.23	10.48	10.64	10.62	10.46
	45.0	9.08	9.37	9.52	9.55	9.42	9.16
	40.0	8.39	8.55	8.62	8.54	8.34	7.96
	35.0	7.67	7.74	7.71	7.59	7.27	6.78
	30.0	6.91	6.92	6.82	6.58	6.18	5.56

3、Ten coefficient method

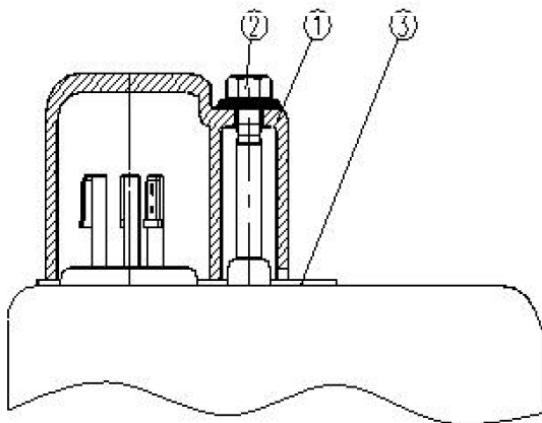
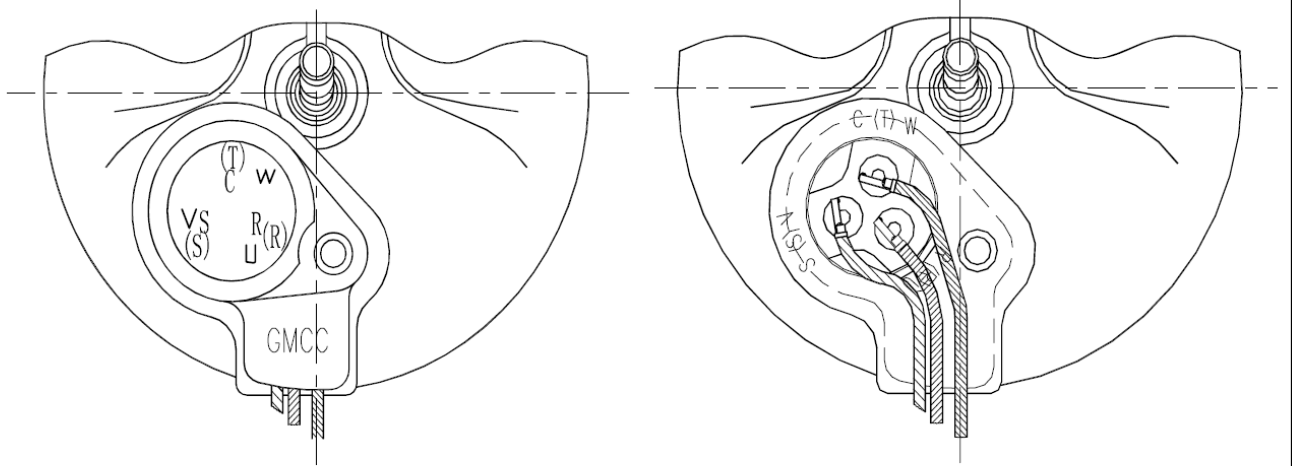
$$z = p_1 + p_2 * x + p_3 * y + p_4 * x^2 + p_5 * x * y + p_6 * y^2 + p_7 * x^3 + p_8 * x^2 * y + p_9 * x * y^2 + p_{10} * y^3$$

x——Evaporating Temp.(°C); y——Condensing Temp.(°C)

	Capacity(W)	Input Power(W)	Flow Rate(kg/h)	Current(A)
P1	1.13407423E+04	-3.35073802E+02	9.97491921E+01	-1.65907881E+00
P2	2.68494567E+02	-2.12104211E+01	3.85679761E+00	-9.18525918E-02
P3	-1.53233771E+02	8.58879487E+01	1.73604673E+00	4.15192786E-01
P4	5.37830290E+00	-4.13215783E-01	1.02744591E-01	-1.98769684E-03
P5	1.68183864E+00	2.28329221E-01	4.43651802E-02	6.34533121E-04
P6	1.44208758E+00	-1.22500706E+00	-4.24280067E-02	-5.93387363E-03
P7	1.98834344E-02	-5.79881962E-03	1.01062555E-03	-2.95406036E-05
P8	-4.00171729E-02	-4.29281493E-03	-4.06074826E-04	-1.87565816E-05
P9	-5.38233525E-02	7.75075315E-03	-6.88473786E-04	4.23877218E-05
P10	-9.42508737E-03	1.02900496E-02	2.76035618E-04	4.96829844E-05

ELE COMPONENTS

Drawing No. 1K14722114



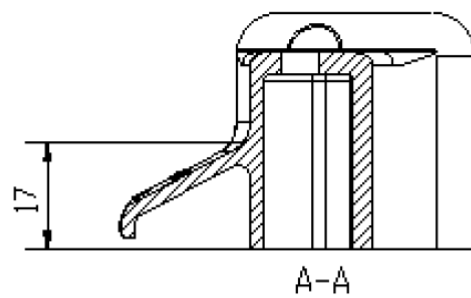
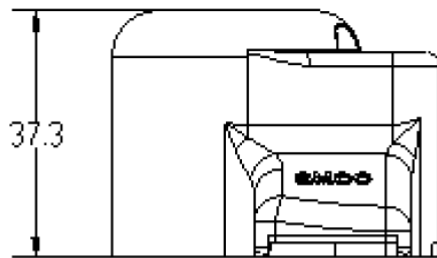
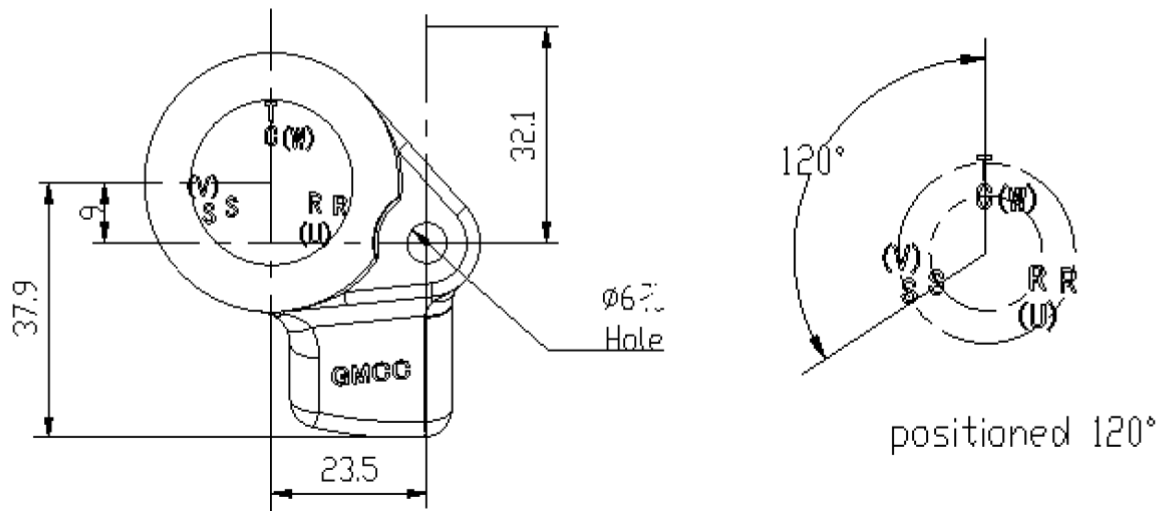
③	TERMINAL PACKING	1K14720132
②	TERMINAL NUT	1K14300711
①	TERMINAL COVER	1K14720013
PART NO	TITLE	DRAWN NO

NOTES

Tightening torque of terminal nut: $1.2 \pm 0.2 \text{ Nm}$

TERMINAL COVER

Drawing No. 1K14720013



NOTES

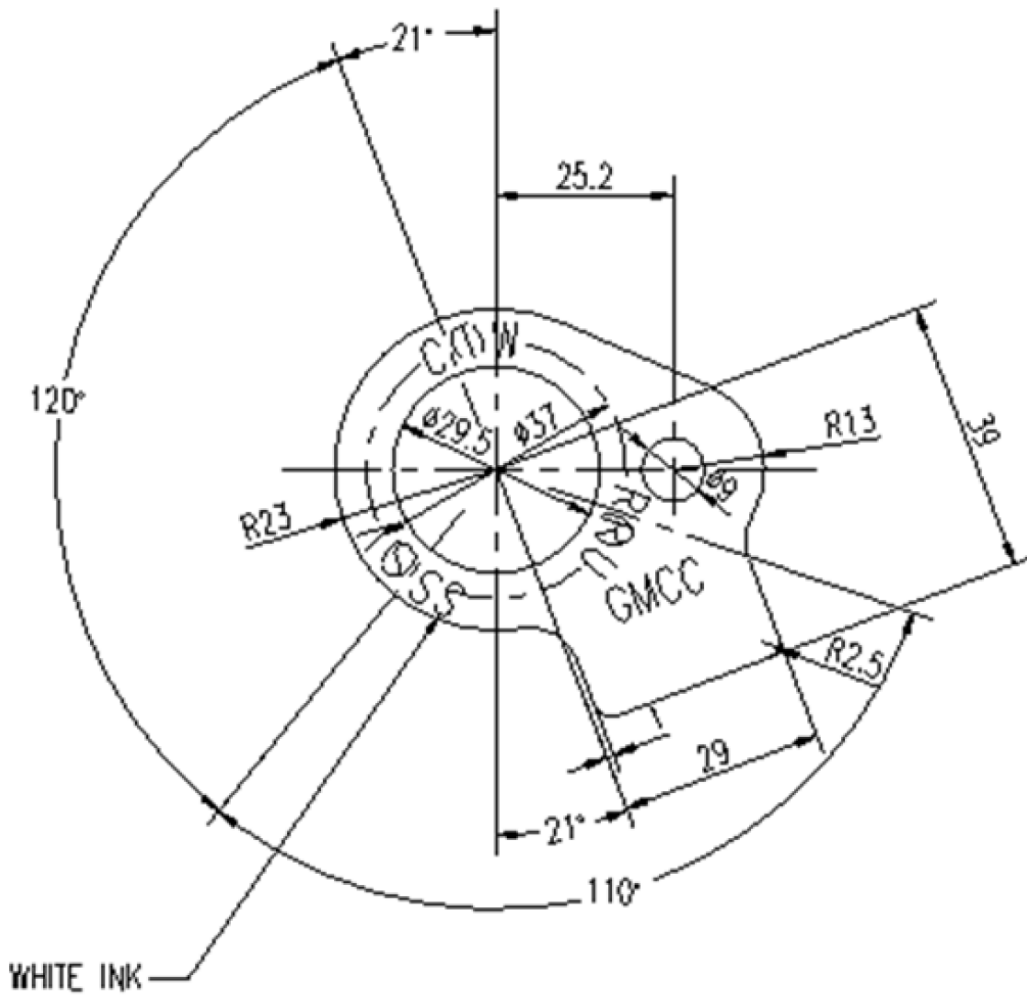
MATERIAL:POLYBUTYLENE TEREPHTHALATE or POLYCARBONATE or BULK MOLDING COMPOUND

COLOR:BLACK

TERMI PACKING

Drawing No.1K14720132

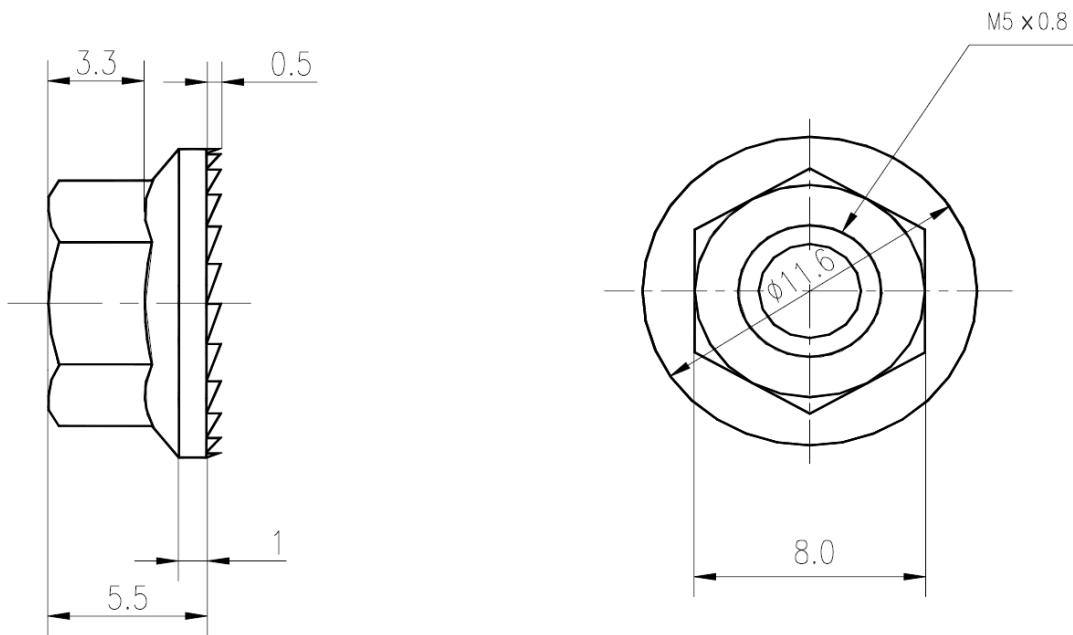
THICKNESS 1mm



NOTES
MATERIAL:SI
COLOR:BLACK

TERMINAL NUT

Drawing No. 1K14300711



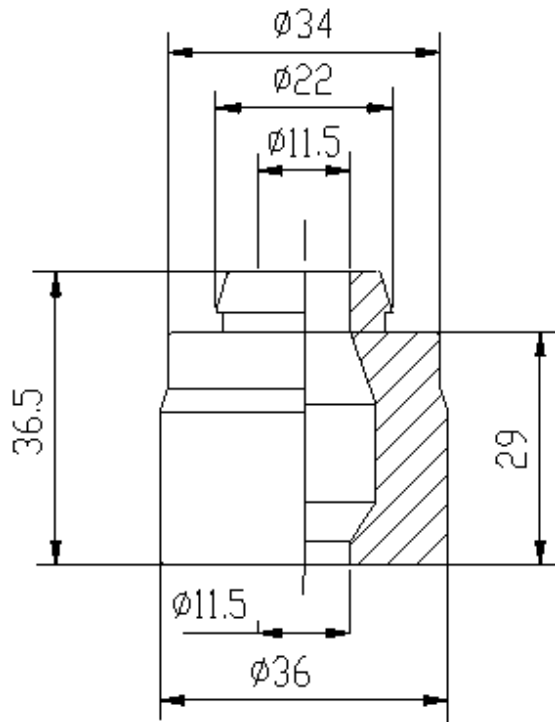
NOTES

MATERIAL:SWCH12A

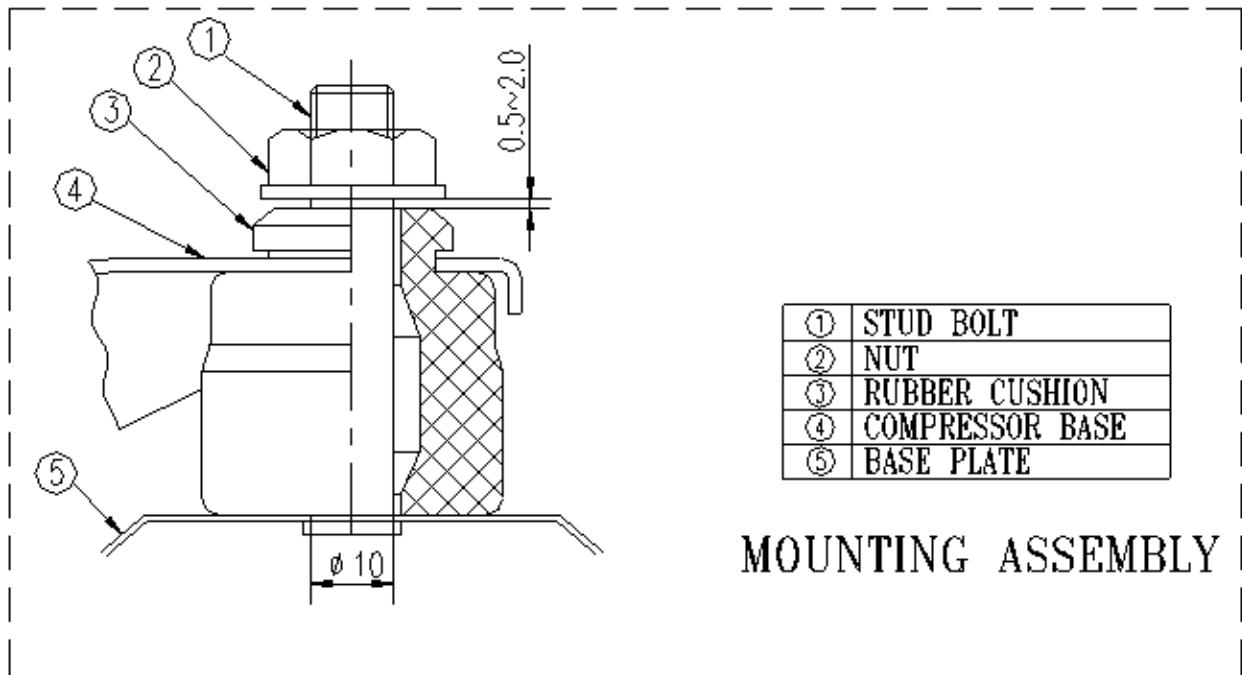
TREATMENT: WITHOUT HEXAVALENT CHROMIUM COMPOUNDS(Ep-Fe/Zn 2-CM 2镀锌处理)

RUBBER CUSHION

Drawing No. 1K22910410



NOTES
 MATERIAL:EPDM
 HARDNESS: HS=43±5



①	STUD BOLT
②	NUT
③	RUBBER CUSHION
④	COMPRESSOR BASE
⑤	BASE PLATE

MOUNTING ASSEMBLY

