



**Individual Model
Specifications**

Reciprocating Compressor

[Model No. CB90H]

APPROVED

CHECKED & DRAWN

DATE Apr. 2006

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| MARK | REV. NO. | DATE | CHKD |

MITSUBISHI HEAVY INDUSTRIES, LTD.

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|--------------------------|----------|-------------|--------------|----------------|
| SPEC. NO. ESP-PA-6214 | REV. | PAGE 1/5 | DISTR. XX | SIZE A4=1-5 |
|--------------------------|----------|-------------|--------------|----------------|



1. Scope

This INDIVIDUAL MODEL SPECIFICATIONS applies to model **CB90H**
(3-Ph, 346-415V~ 50Hz, 380-440V~ 60Hz) of M.H.I Hermetic reciprocating Compressors.
The general matter and the application standards of all reciprocating compressors comply with the CB series application standard. (ESP-PA-6214 5/5)

2. Range of Production

The products are as shown below.

(1) Compressor

| Part Name | No. Req | Part No. | Drw. No. |
|------------|---------|--------------|-------------|
| Compressor | 1 | AAD201A016HG | AAD000Z082A |

(2) Electrical Parts

| Part Name | No. Req | Part No. | Drw. No. | Application |
|--------------------|---------|-------------|------------|----------------|
| Over Current Relay | 1 | SSA522B006 | ASA000Z111 | 346-415V~ 50Hz |
| Over Current Relay | 1 | SSA522B043A | ASA000Z147 | 380-440V~ 60Hz |
| Crank Case Heater | 1 | ASA541B019A | ASA000Z277 | Optional Part |

(3) Accessory Parts

| Part Name | No. Req | Part No. | Drw. No. |
|------------------------|---------|-------------|-------------|
| Terminal Cover | 1 | AAD947K004 | AAD000Z045 |
| Screw (Terminal Cover) | 1 | H051D05X008 | AAC000Z046A |
| Rubber Cushion | 4 | SSA941C103A | ASA000Z149 |
| Edging | 1 | SSA947H010 | AAC000Z042 |
| Terminal Brock | 1 | ASA561B002 | ASA000Z063 |
| Screw (Terminal Brock) | 3 | SSA912A001 | AAA000Z359 |

(4) Wiring Diagram and Performance Curve

| Part Name | Drw. No. |
|---------------------------------|------------|
| Wiring Diagram | AAD000Z085 |
| Performance Curve of Compressor | AAD000Z183 |

(5) Comp. Mounting Detail

| Part Name | No. Req | Part No. | Drw. No. |
|-----------------------|---------|----------|------------|
| Comp. Mounting Detail | — | — | AAD000Z075 |



3. Individual Specifications 【 Model No.CB90H 】

(1) Compressor Data

| | | | |
|--------------------|----------------------|--------------------|-----------------------|
| No. of Cylinder | 4 | Cylinder Diameter | 55 mm |
| Stroke | 18.82 mm | Displacement | 178.9 cm ³ |
| Refrigerant | R 407C | Refrigerant Charge | 4 kg(max) |
| Oil | DIAMOND FREEZE MA32R | Oil Charge | 4400 cm ³ |
| Weight (incl. oil) | 68 kg | Compressor Cooling | Natural Air Draft |

(2) Rated Performance * 1

| Power Source | 3-Ph 415V 50Hz | 3-Ph 440V 60Hz |
|---------------------------|----------------|----------------|
| Capacity (±8%) | 26140 W | 31040 W |
| Motor Input (±8%) | 8310 W | 10130 W |
| Rated Load Amperes (±10%) | 14.0 A | 14.6 A |
| C.O.P (±8%) | 3.15 | 3.07 |

*1 Rated Conditions:ASHRAE-T

| | |
|-------------------|--------|
| Evaporating temp. | 7.2°C |
| Condensing temp. | 54.4°C |
| Suction gas temp. | 35.0°C |
| Liquid temp. | 46.1°C |
| Ambient temp. | 35.0°C |

(3) Motor Data

| | |
|--|--------------------------------------|
| Motor Type | 3-Ph, 2-Pole, Induction Motor |
| Starting Method | IR |
| Rated Power Supply | 3-Ph, 346-415V 50Hz~, 380-440V~ 60Hz |
| Rated Output | 6.5 Kw |
| Insulation Class Rating | Class-E |
| Resistance of Winding [at.20°C] | 1.163 Ω |
| Starting Current [415V 50Hz/440V 60Hz] | 129 / 123 A |



(4) Over Current Relay Data

[Region of 50Hz]

| | |
|------------------|--------|
| Trip Current | 30.0 A |
| Non Trip Current | 26.0 A |

[Region of 60Hz]

| | |
|------------------|--------|
| Trip Current | 37.5 A |
| Non Trip Current | 33.0 A |

(5) Crank Case Heater Data

| | |
|--------------------|---------|
| Rated Power Supply | 440 VAC |
| Rated Output | 70 W |



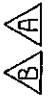
CB Series Application Standard

When using the compressor, the following standards should be followed.

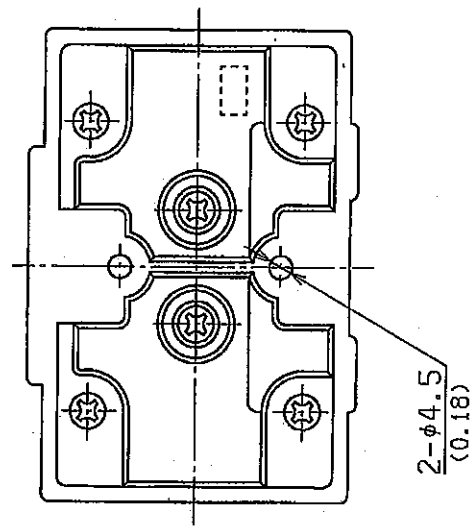
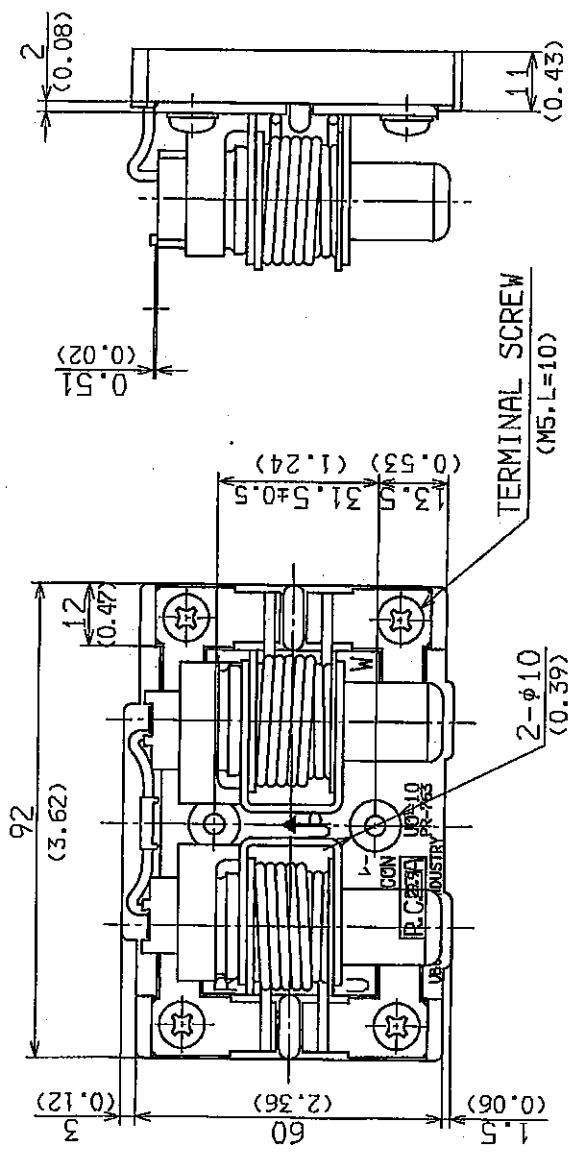
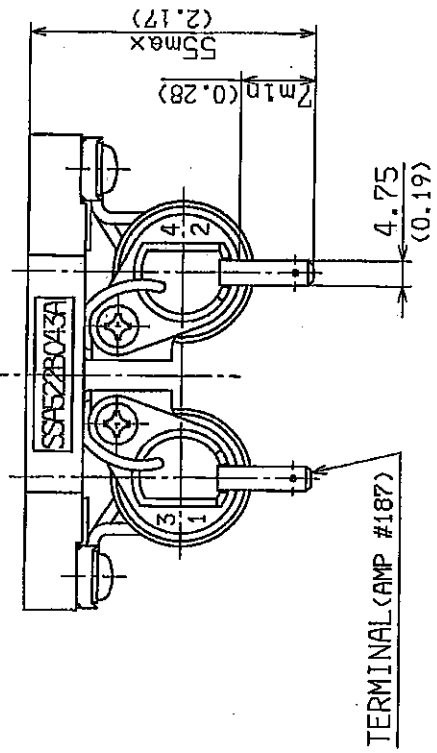
| | Item | Limits |
|----|-------------------------------------|---|
| 1 | Refrigerant | R407C |
| 2 | Evaporating temp. | -30°C~12°C(0.07~0.65MPa). |
| 3 | Condensing temp. | 30°C~68°C(1.17~3.03MPa). |
| 4 | Compression ratio | 8 max. |
| 5 | Motor winding temp. | 105°C max. in resistance method. (It becomes less than 105°C by internal thermostat.) |
| 6 | Shell bottom temp. | 90°C max. Saturated temp. of evaporating pressure plus 20degC min. |
| 7 | Discharge gas temp. | 140°C max. |
| 8 | Voltage (running) | Within $\pm 10\%$ of the rating at compressor terminal. |
| 9 | Start up voltage | Starting voltage shall be more than 85% of rated voltage measured at compressor terminal. |
| 10 | On-Off cycle | 12 minutes min./cycle. Off time should be more than 3 minutes. Start-up should be at balanced pressure on high-low pres. sides, but 0.79MPa max. high-low pressure difference is allowed. |
| 11 | Refrigerant charge limitation | 4kg max. In this case have no use crankcase heater and accumulator. When charging above this limit, crankcase heater and accumulator must be used. The accumulator volume should be equal to the unit charging volume. |
| 12 | On-Off frequency | Less than 100,000 times. |
| 13 | Oil hold limit | 940 cm ³ (Lower limit at running condition) |
| 14 | Electrical components ambient temp. | 55°C max. |
| 15 | Tilt angle of comp. | 5 degrees max. in any direction. |
| 16 | Moisture content | Moisture content of the compressor is controlled at 300mg max. when shipped from the factory. However, Moisture content circuit shall be 80ppm max. at 60°C ambient temperature. |
| 17 | Contaminants content | Contaminants content of the compressor is kept under 50mg when shipped from the factory. Contaminants content (metal particles, lint, sand, flux, etc.) should not exceed 0.2g/m ² in the refrigerant system. |
| 18 | Non-condensable gas content | The non-condensables that are extracted from the gas phase of the low pressure side should be held to the ratio 1% or less in terms of volume. To achieve such a state the vacuuming of ref. circuit should be done to about 26.7Pa(0.2 mm Hg). |

General Cautions

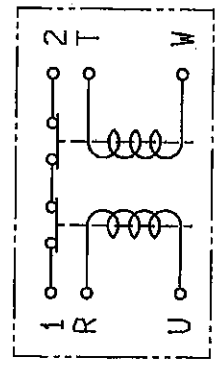
- (1) Do not keep the compressor open for more than fifteen minutes.
- (2) Do not use the compressor for the vacuum evacuation of the refrigerant circuit.
- (3) Do not allow compressor to suck in and compress air.
- (4) Do not apply current to the compressor in a vacuum condition.
- (5) Do not tilt or drop compressor during transportation.
- (6) Do not damage the compressor paint coating.



MODEL : U0-10-29.9A
 MAKER : UBUKATA INDUSTRY
 RATED CURRENT : 29.9A
 PART NO. : SSA522B043A



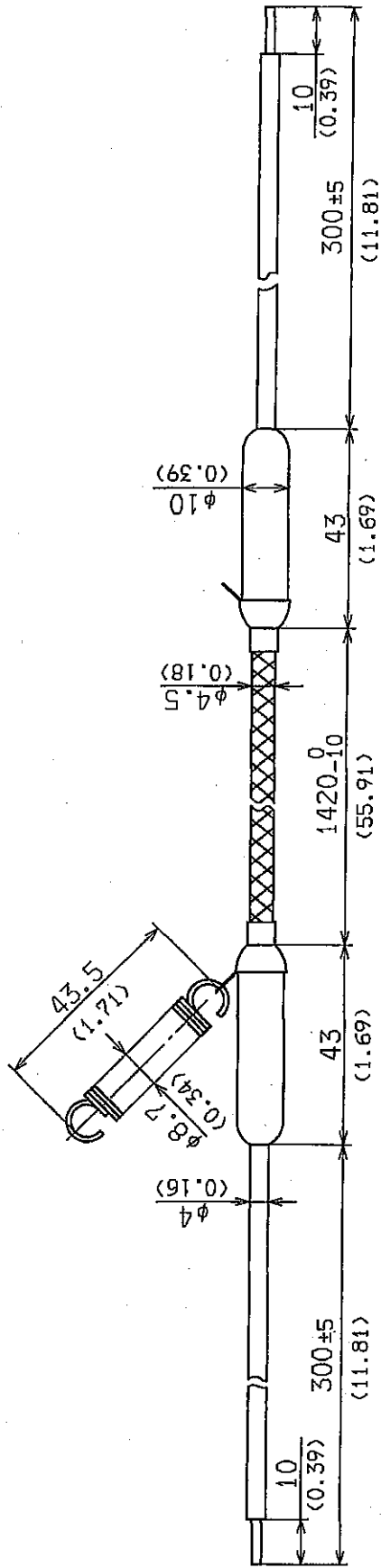
DIMENSION: mm (in)



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|---------|----------|------|---------------|---------------------|-------|
| ASAI168 | 98/10/30 | ◎分注 | 形式 MODEL | 1:1 | CB100 |
| ASAI130 | 95.1.23 | 分井 | 縮小率 NEXT ASSY | | |
| 訂 番 | 年 月 日 | 点 検 | 名 称 | オ-バカレントリレ- | |
| MARK | REV. NO. | DATE | NAME | RELAY, OVER CURRENT | |
| 認 可 | 検 査 | 日 付 | 製 図 者 | S. Yoshida | |
| APPD | CHKD | DATE | 製 図 部 | S. Yoshida | |
| | | | 製 図 者 | M. Hirose | |
| | | | 製 図 部 | H. Honda | |
| | | | 製 図 日 | 85.6.4 | |
| | | | 製 図 用 番 | DNG NO. | |
| | | | 製 図 用 番 | ZASA000Z147 | |
| | | | 製 図 用 番 | B | |
| | | | 製 図 用 番 | 1/1 | |
| | | | 製 図 用 番 | XX | |
| | | | 製 図 用 番 | E | |
| | | | 製 図 用 番 | A3 | |

三菱重工業株式会社 工コン製作所
 MITSUBISHI HEAVY INDUSTRIES, LTD.

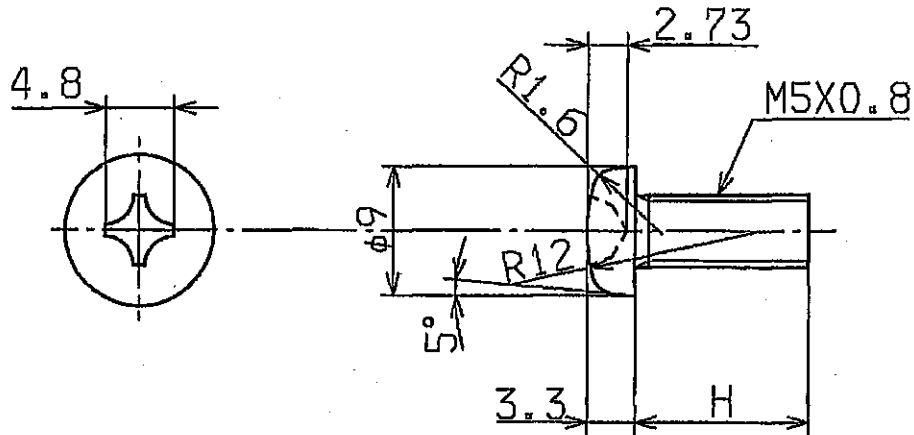
A



MANUFACTURER : KURABE INDUSTRIES CO., LTD.
 RATED VOLTAGE : 440V AC
 CAPACITY : 70W
 PART NO. : ASA541B019A

DIMENSION : mm(in)

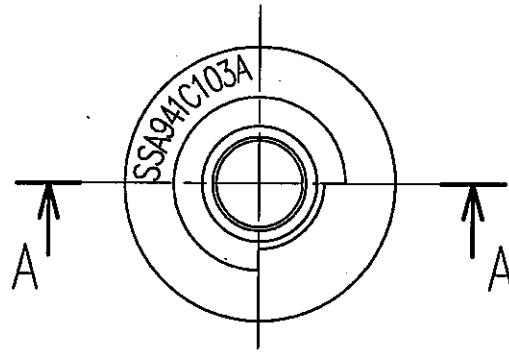
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| ASAS1168 | 98.10.30 | Yoshida | 87-227 | ZASA000Z277 | HEATER (CRANK CASE) | CAD | 1:1 | 1:1 | ISS-1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A3 | |
| 訂特 MARK | 日 DATE | 氏 CHKD | 秘 REPPD | 名 NAME | 品 SUFX | 製 ST. INSTL | 製 NEXT ASSY | 製 MODEL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A3 | |
| T. Itoh | H. Honda M. Hirase | S. Yoshida | | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) | HEATER (CRANK CASE) |



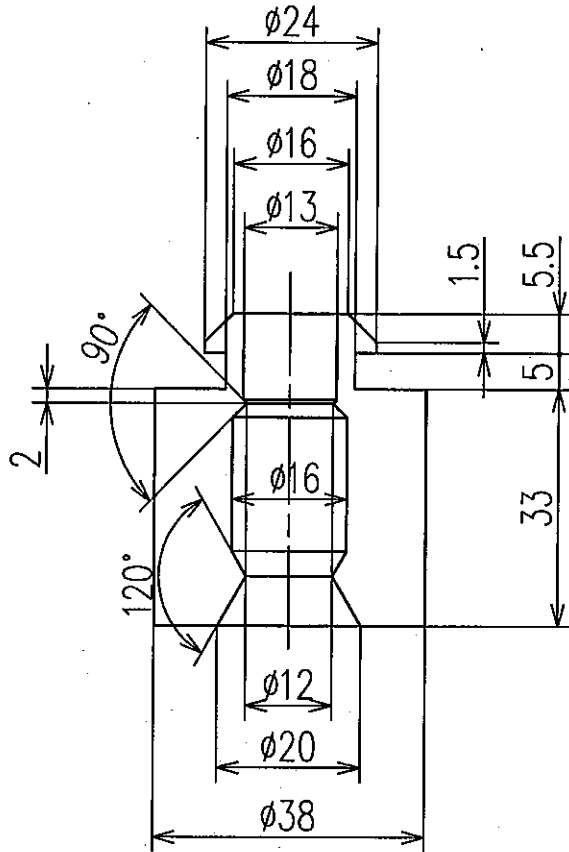
| 図番 DWG. NO. | H | 材料 MATERIAL | 部品番号 PART NO. |
|----------------|------|--------------------------------------|------------------|
| AAC000Z046 | 12 | SWRM10~15 又は (OR) | H051D05X012 |
| | A 8 | SS41, S10C~S20C | H051D05X008 |
| | B 8 | C3604B 又は (OR) C2700W-1/2H | H051E05X008 |
| | C 20 | SWRM10~15 又は (OR) SS41, S10C~S20C | H051D05X020 |

特別図サイズ

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| 訂符 MARK | | 訂番 REV. NO. | 年月日 DATE | 点検 CHKD | 名称 NAME | 形式 MODEL | 編部番 NEXT ASSY | 特別配布先 |
| A | | AAC1007 | 98.10.30 | 吉田 | ターミナル スクリュー | 2=1 CA | | 1 S, S, 1 |
| 訂可 APPD | | 森 | 西本 広 | 吉田 | SCREW, TERMINAL | | | 2 A, C, 1 |
| 検図 CHKD | | 森 | 西本 広 | 吉田 | | | | 3 |
| 製図 DRAWN | | 森 | 西本 広 | 吉田 | | | | 4 |
| 図番 DWG NO. | | 570629 | | ZAAC000Z046 ~ C/A | | | | 5 |
| 品別 SUFFIX | | 訂入符 REV. MARK | | 業別 PAGE | | 標準配布 ST. or STR. | | 6 |
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A-A



△A

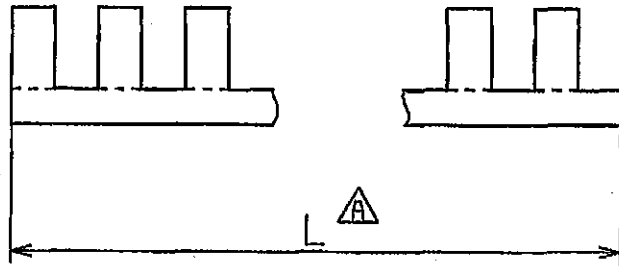
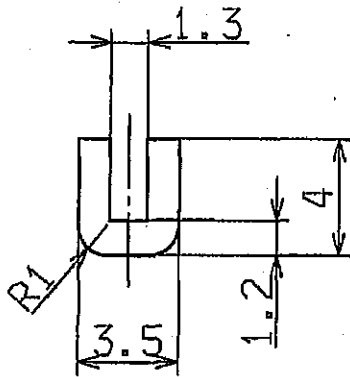
| | |
|------------------|--|
| 部品番号 PART NO. | SSA941C103A |
| 材料 MATERIAL | クロロプレンゴム (RBC5105B14C12G21) △B CHLOROPRENE RUBBER |

寸法
DIMENSION : mm

業別毎サイズ

| | | | | | | | |
|-----------------------|---------------------|------------------------|---------|-----------------|---------------|-----------|-----------------|
| B ASA1245 05.12.27 町田 | | 尺度 SCALE 形式 MODEL X CB | | 親部番 NEXT ASSY | | 特別配布先 | |
| A ASA1244 05.12.13 町田 | | 名称 ラバークッション | | AUT | | 1 SS,1 △A | |
| 訂符 MARK | 訂番 REV. NO. | 年月日 DATE | 点検 CHKD | CUSHION, RUBBER | | 2 SN,1 △A | |
| 認可 APPD | 検図 CHKD | 製図 DRAWN | | 図種 図番 DWG NO. | | 3 | |
| T.ITOH | M.Hirose H.Honda | S.Yoshida 85.6.4 | | ZASA000Z149~ | | 4 | |
| | | | | 品別 SUFFIX | 訂入符 REV. MARK | 業別 PAGE | 標準配布 ST. DISTR. |
| | | | | | B | 1/1 | XX |
| | | | | | | 12 | E |
| | | | | | | 翻訳 | A4 |

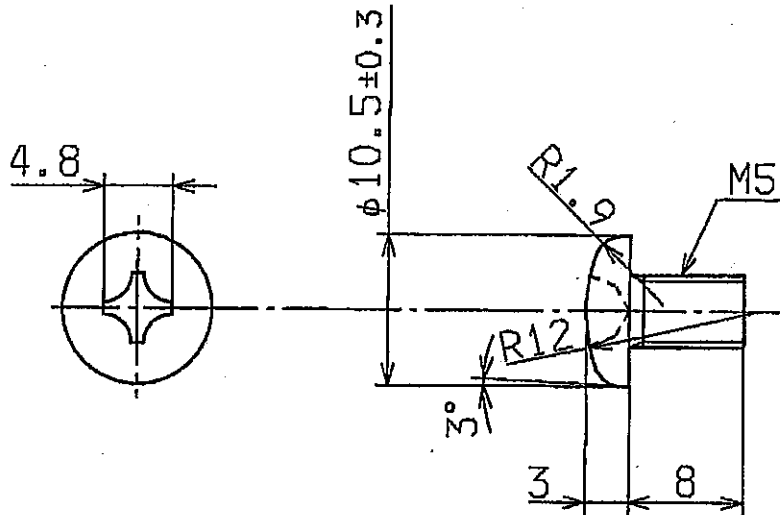
△C



| △A | 図番 DWG. NO. | L | 部品番号 PART NO. | 材料 MATERIAL | |
|----|----------------|-------|------------------|---------------------|---|
| | AAC000Z042 | 99 | SSA947H010 | 6-ナイロン (6-NYLON) | |
| | ↓ | A 139 | ↓ | | D |
| △A | ↓ | B 105 | ↓ | | J |

葉別毎サイズ

| | | | | | | | |
|------------|----------------|-------------|------------|---------|-------------|---------------------------|-----------|
| △C | AAC1007 | 98.10.30 | 西浦 | 尺度SCALE | 形式MODEL | 組部番 NEXT ASSY | 特別配布先 |
| △B | 品別追加の為 | 930629 | 西浦 | 4:1 | CA | | 1 S, S, 1 |
| △A | 品別追加の為 | 590625 | いいお | 名称 | エッジング | | 2 A, C, 1 |
| 訂符 MARK | 訂番 REV. NO. | 年月日 DATE | 点検 CHKD | 名称 | EDGING | | 3 |
| 認可 APPD | 検図 CHKD | 製図 DRAWN | 製図 | 図番 | 図番 DWG NO. | 品別 SUFFIX | 4 |
| 森 | 西本 | 田 | 広瀬 | 570731 | ZAAC000Z042 | 訂入符 REV. MARK | 5 |
| | | | | | | 葉別標準配布 PAGE ST. DISTR. | 6 |
| | | | | | | 1/1 | 7 |
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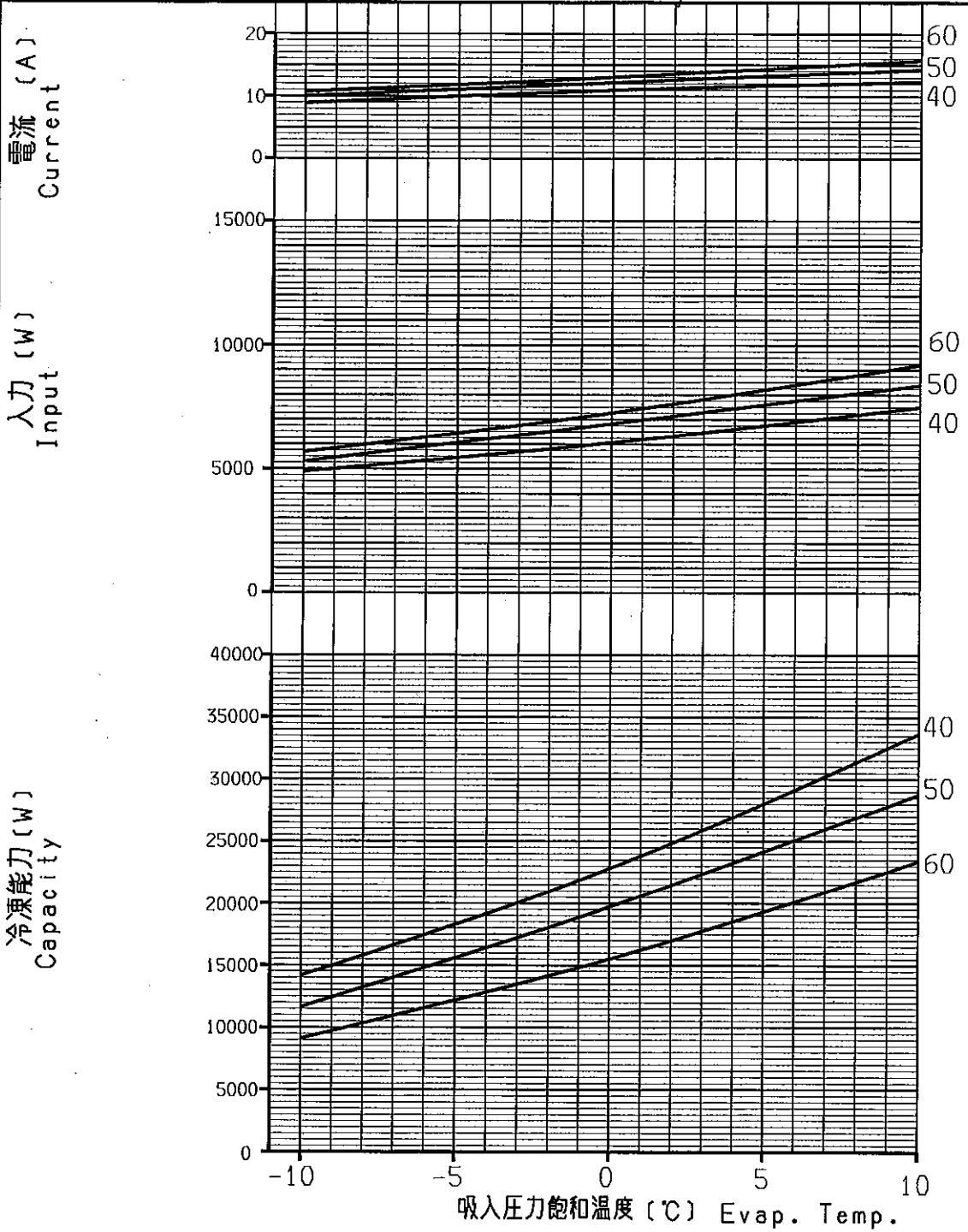
材料 : C2700W-1/2H
MATERIAL

部品番号 : SSA912A001
PART NO.

業別図サイズ

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| 訂符 MARK | | 訂 番 REV. NO. | | 年 月 日 DATE | | 点 検 CHKD | | 名 称 NAME | | 尺 度 SCALE | | 形 式 MODEL | | 組 番 NEXT ASSY | | 特 配 先 | |
| A | | AAA1033 | | 98.10.30 | | @社務 | | ターミナル スクリュー | | 2=1 | | JCL | | | | 1 S, S, I | |
| 認 可 APPD | | 検 図 CHKD | | 製 図 DRAWN | | 図 番 DWG NO. | | 品 別 SUFFIX | | 訂 符 REV. MARK | | 葉 別 PAGE | | 標 準 記 号 ST. DISTR. | | 2 A, C, I | |
| 森 | | 本 田 | | 広 瀬 | | 570628 | | ZAAA000Z359 | | / A | | 1 / 1 | | XX | | 3 | |
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| 三菱重工業株式会社 エアコン製作所 MITSUBISHI HEAVY INDUSTRIES, LTD. | | | | | | | | | | | | 15 | | E | | A4 | |

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|-------------------------------|----------------------|-----------------------|
| 壓縮機形式 Compressor Model No. | CB90H | R407C |
| 定格電源 Power Source | 3Ph, 415 V, 50Hz | 過冷却 Sub Cooling |
| 過熱度 Super Heat | 10 degC | 0 degC |
| 壓縮機冷却 Compressor Cooling | ファン通風 Fan Cooling | 周囲温度 Ambient Temp. |
| | | 35 °C |



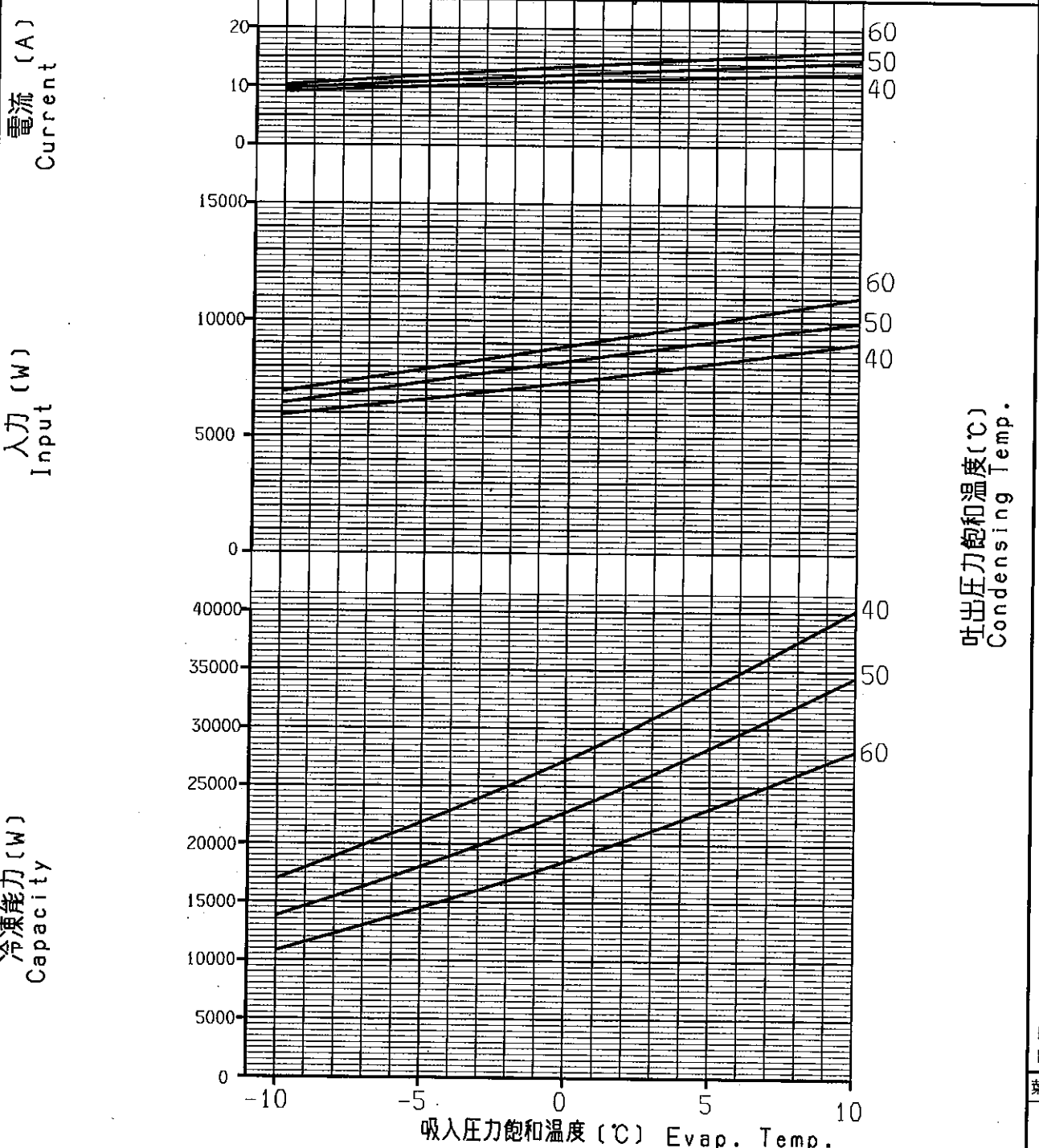
吐出圧力飽和温度(°C)
Condensing Temp.

MERO3
HIRO

葉別毎サイズ
A4=1.2

| | | | | | | | |
|---------|-------------|----------|---------|--------------|-----------|---------------|-----------|
| 訂符 MARK | 訂番 REV. NO. | 年月日 DATE | 点検 CHKD | 尺度 SCALE | 形式 MODEL | 親部番 NEXT ASSY | 特別配布先 |
| | | | | X | CB90H | | 1 S, S, 1 |
| 認可 APPD | 検図 CHKD | 製図 DRAWN | 図種 | 図番 DWG NO. | 品別 SUFFIX | 訂入符 REV. MARK | 葉別 PAGE |
| 廣田 | | 景弘 | 製図 | ZAAD000Z183~ | | | 1/2 |
| | | 山 | | | | | XX |
| | | 02.9.17 | | | | | 17 |

| | | | | |
|-------------------------------|----------------------|-----------------------|-------|------|
| 壓縮機形式 Compressor Model No. | CB90H | | R407C | |
| 定格電源 Power Source | 3Ph, 440V, 60Hz | 過冷却 Sub Cooling | 0 | degC |
| 過熱度 Super Heat | 10 degC | 周囲温度 Ambient Temp. | 35 | °C |
| 壓縮機冷却 Compressor Cooling | ファン通風 Fan Cooling | | | |



吐出圧力飽和温度(°C)
Condensing Temp.

MER03
HIRO

葉別毎サイズ

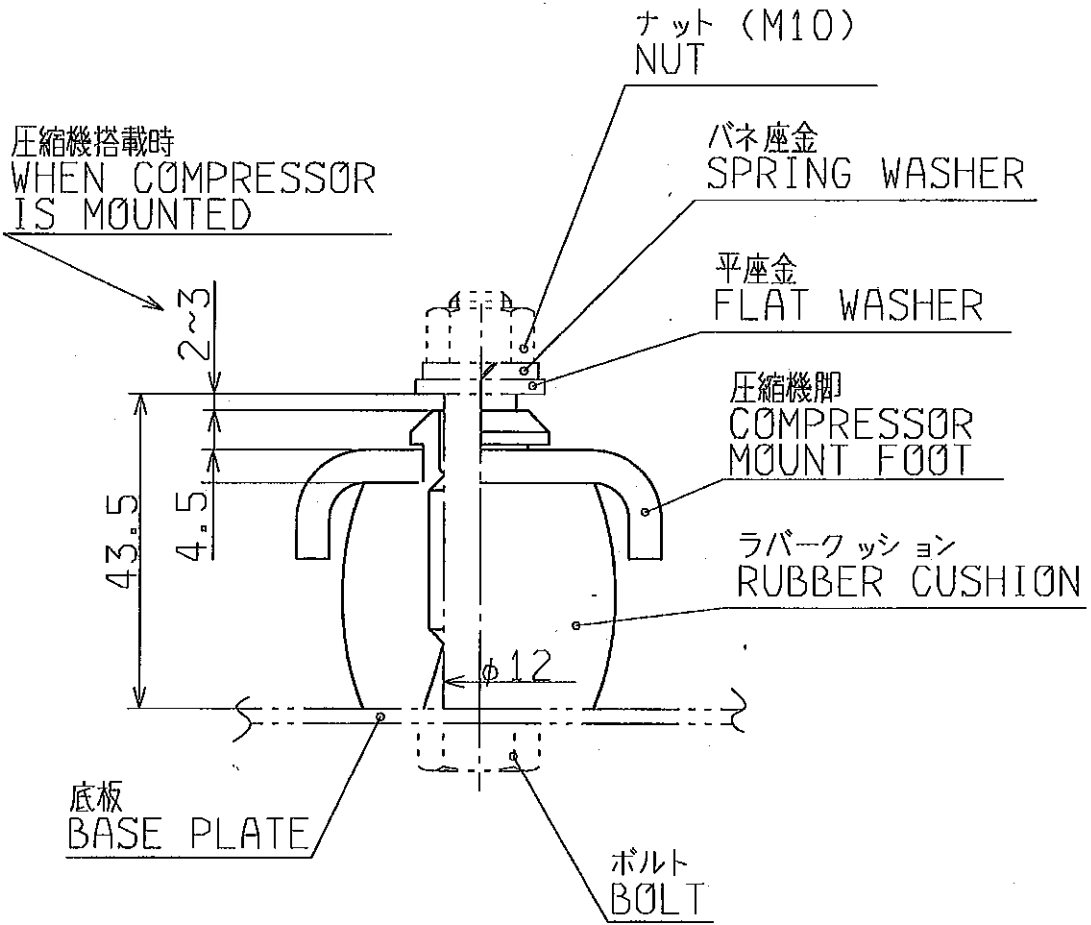
特別配布先

| | |
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| 訂符 MARK | | 訂番 REV. NO. | 年月日 DATE | 点検 CHKD | 名称 NAME | 親部番 NEXT ASSY | |
| 認可 APPD | | 検図 CHKD | 製図 DRAWN | | 図種 図番 DWG NO. | 品別 SUFFIX | 訂入符 REV. MARK |
| | | | | | 業別 PAGE | | 標準配布 ST. DISTR. |
| | | | | | 2/2 | | |

ZAAD000Z183~

A



葉別毎サイズ

| | | | | | | | | | | | | | |
|---------|-------------|----------|---------|---------|---|-----------|---------------|---------|-----------------|---------------|-----------|-------|--|
| A | | AAD1463 | | 021118 | | 原山 | | X CB | | 親部番 NEXT ASSY | | 特別配布先 | |
| 訂符 MARK | 訂番 REV. NO. | 年月日 DATE | 点検 CHKD | 名称 NAME | コンプ マウンティング デテール MOUNTING DETAIL, COMP | | | | CAD | | 1 S, N, 1 | | |
| 認可 APPD | 検図 CHKD | 製図 DRAWN | | 図種 | 図番 DWG NO. | 品別 SUFFIX | 訂入符 REV. MARK | 葉別 PAGE | 標準配布 ST. DISTR. | 2 S, S, 1 | | 3 | |
| 伊藤 | 本 田 | 広 瀬 | 吉 田 | 60.123 | ZAAD000Z075 | /A | 1/1 | 1 | XX | 4 | | 5 | |
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