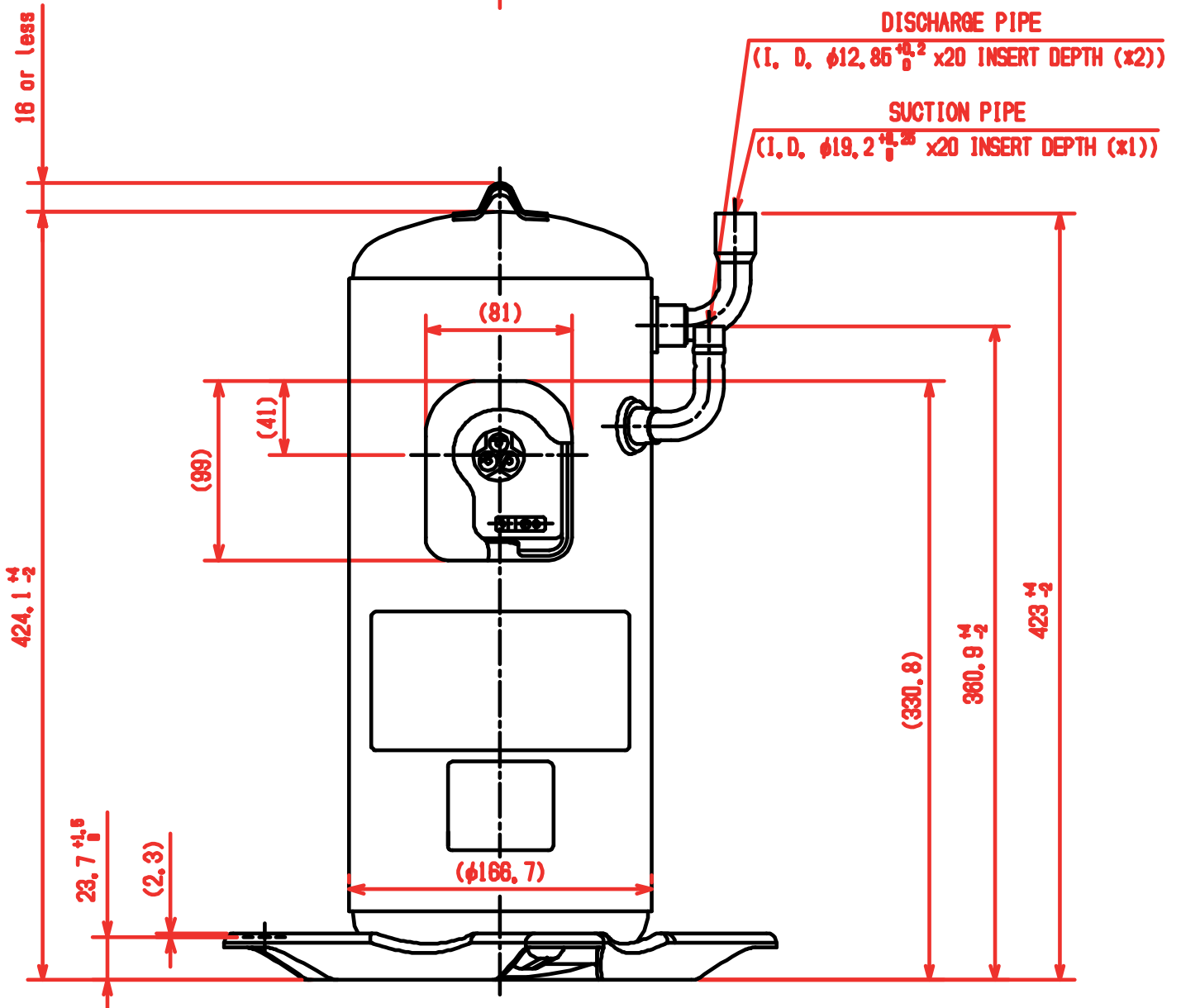
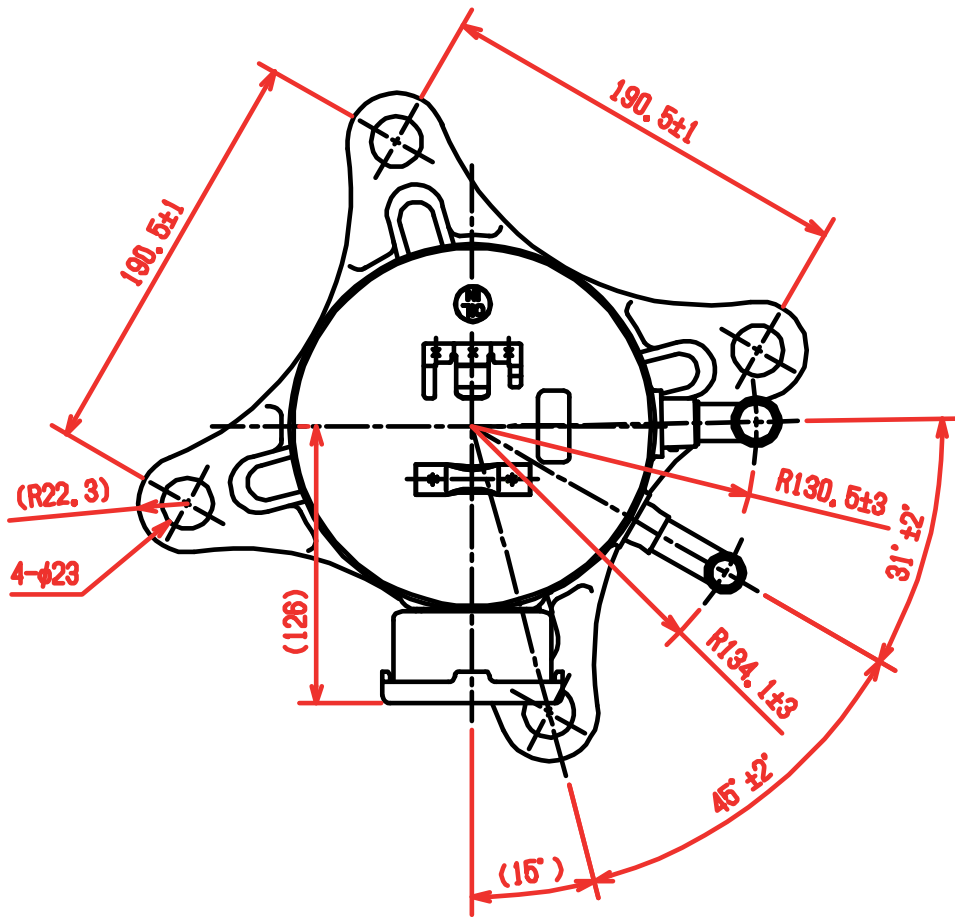


# R-32 & R-290 Inverter Scroll for HVAC Application Specifications

## APB Inverter Scroll Compressor for R-290

| Models                         | Capacity Range |         |        |        |       |        | Performance at 60 rps |        |       |            |      |       | Weight (kgs.) | Oil (cc.) | Drawing Number |
|--------------------------------|----------------|---------|--------|--------|-------|--------|-----------------------|--------|-------|------------|------|-------|---------------|-----------|----------------|
|                                | (min ~ max)    |         |        |        |       |        | Capacity              |        | Input |            | COP. | EER.  |               |           |                |
|                                | Watt           | Kcal/hr | BTU/hr |        | W     | BTU/hr | Watt                  | Amps   | (w/w) | (Btu/hr*w) |      |       |               |           |                |
| <b>a) DC Inverter 200 Volt</b> |                |         |        |        |       |        |                       |        |       |            |      |       |               |           |                |
| Horizontal Suction             | Min            | Max     | Min    | Max    | Min   | Max    |                       |        |       |            |      |       |               |           |                |
| APB33FABMT(15-120 RPS)         | 1,500          | 10,500  | 1,290  | 9,028  | 5,118 | 35,826 | 5,100                 | 17,401 | 1,650 | 5.90       | 3.09 | 10.55 | 30.4          | 900       | 14             |
| APB42FABMT(15-120 RPS)         | 2,000          | 14,100  | 1,720  | 12,123 | 6,824 | 48,109 | 6,200                 | 21,154 | 2,200 | 8.70       | 2.82 | 9.62  | 30.3          | 900       | 14             |
| APB52FABMT(15-120 RPS)         | 2,500          | 17,500  | 2,150  | 15,047 | 8,530 | 59,710 | 8,300                 | 28,320 | 2,620 | 9.20       | 3.17 | 10.81 | 30.5          | 900       | 14             |
| <b>b) DC Inverter 400 Volt</b> |                |         |        |        |       |        |                       |        |       |            |      |       |               |           |                |
| Horizontal Suction             | Min            | Max     | Min    | Max    | Min   | Max    |                       |        |       |            |      |       |               |           |                |
| APB33FAAMT(15-120 RPS)         | 1,500          | 10,500  | 1,290  | 9,028  | 5,118 | 35,826 | 5,100                 | 17,401 | 1,720 | 4.00       | 2.97 | 10.12 | 31.0          | 900       | 14             |
| APB42FAAMT(15-120 RPS)         | 2,000          | 14,100  | 1,720  | 12,123 | 6,824 | 48,109 | 6,200                 | 21,154 | 2,200 | 4.70       | 2.82 | 9.62  | 30.7          | 900       | 14             |
| APB52FAAMT(15-120 RPS)         | 2,500          | 17,500  | 2,150  | 15,047 | 8,530 | 59,710 | 7,800                 | 26,614 | 2,620 | 5.60       | 2.98 | 10.16 | 31.0          | 900       | 14             |

Heat pump Condition





# SIAM COMPRESSOR INDUSTRY

|   |                       |  |                      |              |
|---|-----------------------|--|----------------------|--------------|
| Classification : Specification for Compressor                   | Written By            |  | Wanmongkol Marathong |              |
|   | Approved By           |  | Korakot Intraratat   |              |
| Subject : APB52FAAMT  | Issued Date           |  | 2021-07-25           | Revised<br>E |
|   | Document No.          |  | SPC18O2050.02        |              |
| 1.Compressor data   |                       |  |                      |              |
| Type  |                       | Scroll                                 |                      |              |
| Displacement  | cm <sup>3</sup> /rev. | 52.0                                   |                      |              |
|   | in <sup>3</sup> /rev. | 3.2                                    |                      |              |
| 2.Motor data  |                       |  |                      |              |
| Motor type  |                       | BLDCM                                  |                      |              |
| Motor protection  |                       | External                               |                      |              |
| Nominal output  | W                     | 2500                                   |                      |              |
| Number of pole  |                       | 6                                      |                      |              |
| Nominal revolution  | rpm                   | 3600 (at 60rps)                        |                      |              |
| Insulation class  |                       | E                                      |                      |              |
| Motor resistance (20 °C)  | Ohm                   | 1.21                                   |                      |              |
| 3.Refrigerant   |                       |  |                      |              |
| Type  |                       | R-290                                  |                      |              |
| 4.Oil   |                       |  |                      |              |
| Type  |                       | PZ46M                                  |                      |              |
| Charge amount   | L (in <sup>3</sup> )  | 1.40 (85.4)                            |                      |              |
| 5.Mass (include.oil)  | kg (lbs)              | 30.9 (68.1)                            |                      |              |
| 6.Compressor power source                                       |                       |  |                      |              |
| Rated voltage   | V                     | 103-415                                |                      |              |
| Rated frequency   | Hz                    | 180 (60rps)                            |                      |              |
| Running frequency   | Hz                    | 45-360 (15-120rps)                     |                      |              |
| Phase   | Ø                     | 3                                      |                      |              |
| 7.Performance   |                       |  |                      |              |
| Refrigerating capacity (±5%)                                    | W                     | 9800                                   | 7800                 |              |
|   | BTU/hr                | 33438                                  | 26614                |              |
| Motor input (±5%)   | W                     | 2800                                   | 2620                 |              |
| COP   | W/W                   | 3.50                                   | 2.98                 |              |
| EER   | BTU/hr.W              | 11.94                                  | 10.16                |              |
| Current   | A                     | 5.4                                    | 5.6                  |              |
| Note: Conditions  | °C (°F)               | ARI                                    | Heat Pump            |              |
| Evaporating temp.   | °C (°F)               | 7.2 (45.0)                             | -7.0 (19.4)          |              |
| Condensing temp.  | °C (°F)               | 54.4 (129.9)                           | 50.0 (122.0)         |              |
| Return gas temp.  | °C (°F)               | 18.3 (64.9)                            | -2.0 (28.4)          |              |
| Ambient temp.   | °C (°F)               | 35.0 (95.0)                            | 0.0 (32.0)           |              |
| Liquid temp.  | °C (°F)               | 46.1 (115.0)                           | 46.0 (114.8)         |              |
| Power source  | rps/Hz                | 60/180                                 | 60/180               |              |
| Modulation  |                       | PWM(Sine wave), carrier frequency 4kHz |                      |              |
| Cooling performance curve                                       |                       | SCI-CPDA159                            |                      |              |
| Cooling performance injection curve                             |                       | -                                      |                      |              |
| Heating performance curve                                       |                       | SCI-HPDA080                            |                      |              |
| Heating performance injection curve                             |                       | -                                      |                      |              |
| -Performance data are base on SCI's calculation at oil 900 cc.  |                       |  |                      |              |
| Please follow to the general specification for APB (TDRD13F039) |                       |  |                      |              |



# SIAM COMPRESSOR INDUSTRY

|   |              |               |
|---|--------------|---------------|
| Classification : Specification for Compressor | Issued Date  | 2021-07-25    |
| Subject : APB52FAAMT                          | Document No. | SPC18O2050.02 |
| Compressor data                               | SC01F135     |               |
| Wiring diagram                                | CS01D584     |               |
| Crank case heater                             |              | 38 W or more  |
| Terminal parts accessories                    |              |               |
| Terminal parts assy                           | CS01F449     |               |
| Terminal cover                                | SC25C057H01  | 1 pce.        |
| Mounting accessories                          |              |               |
| Mounting parts                                | SC01D525     |               |
| Rubber mount                                  | SC31D009H01  | 4 pce.        |
| Spacer (Optional)                             | SC10D377H01  | 4 pcs.        |

REFERENCE

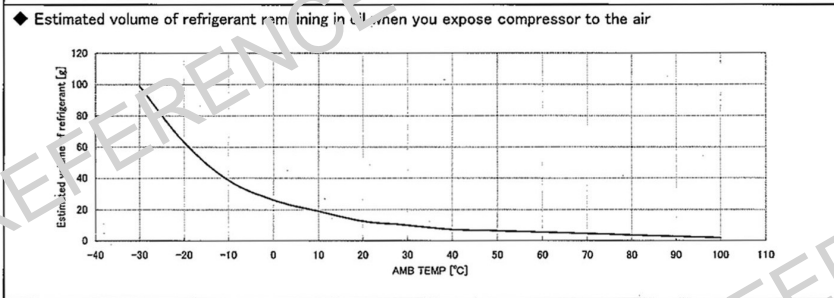
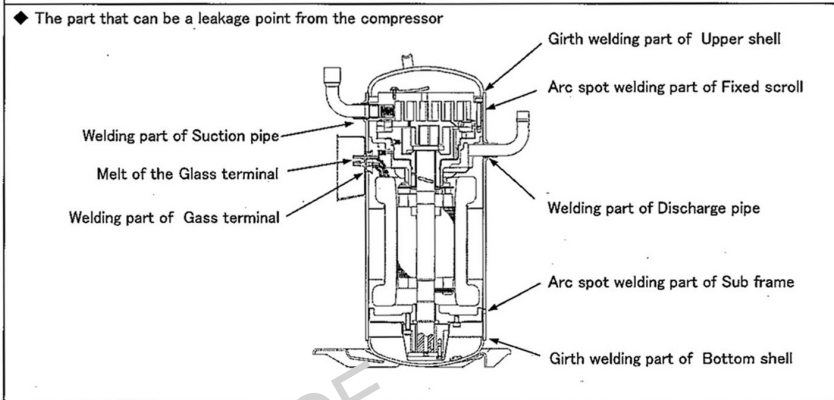
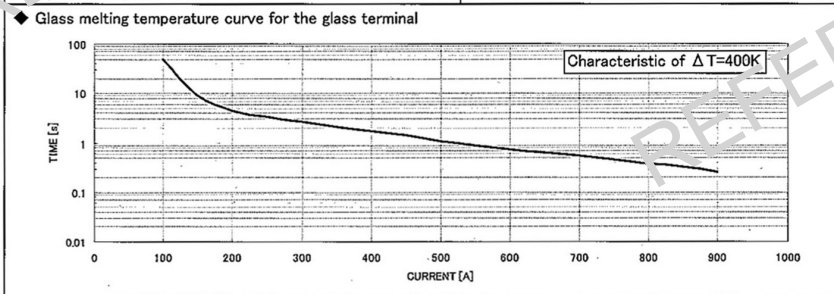
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|   |              |               |
|---|--------------|---------------|
| Classification : Specification for Compressor | Issued Date  | 2021-07-25    |
| Subject : APB52FAAMT                          | Document No. | SPC18O2050.02 |

**THE DATA ON COMPRESSOR SAFETY**

|   |  |
|---|--|
| <p>◆ Specifications of compressor protector (for fixed speed)</p> <p>Ultimate trip current characteristic</p> <p>Amb temp</p> <p>Current</p> <p>Operating temp</p> <p>Open</p> <p>Close</p> | <p>130°C</p> <p>22.4~30.6A</p> <p>170±5°C</p> <p>90±10°C</p> |
| <p>◆ Abnormally over current and input of compressor (at 198V)</p> <p>Current</p> <p>Input</p>  | <p>19.4A</p> <p>3690W</p>                                    |
| <p>◆ Destructive pressure of compressor shell (hydrostatic pressure)</p>  | <p>13.7MPa</p>   |



VM-CZC21



# SIAM COMPRESSOR INDUSTRY

|   |              |  |
|---|--------------|--|
| Classification : Specification for Compressor | Issued Date  | 2021-07-25   |
| Subject : APB52FAAMT                          | Document No. | SPC18O2050.02  |
| Pressure                                      |              |  |
| Condensing                                    |              | 3.15 MPaG [457 psiG] or less   |
| Evaporating                                   |              | 0.07 ~ 0.69 MPaG [10.2~100.1 psiG]   |
| Compression ratio                             |              | Follow pressure operating envelop  |
| Abnormal rise in pressure                     |              | -  |
| Temperature                                   |              |  |
| Condensing temperature                        |              | Under 82 °C  |
| Evaporating temperature                       |              | -30 ~ 18 °C  |
| Discharge gas (max)                           |              | -30 ~ 18 °C  |
| Suction gas superheat                         |              | Must be more than 0 °C - No liquid-back  |
| Discharge gas superheat                       |              | 10 °C or more  |
| Outdoor ambient temp.                         |              | -  |
| Electrical                                    |              |  |
| Reverse phase (rotation)                      |              | Not possible   |
| ON / OFF                                      |              |  |
| ON/OFF frequency                              |              | Less than 250,000 cycles   |
| ON/OFF cycle                                  |              | -The ON/OFF cycle shall be a maximum of 10 times/hour.<br>-OFF time shall be the time until the high side and low side pressure reach to balance pressure (more than 3 minutes)      |
| Piping stress                                 |              | 34.3 N/mm <sup>2</sup> or less at start and stop condition (17.7 N/mm <sup>2</sup> during operation)   |
| Refrigerant circuit                           |              |  |
| Maximum refrigerant charge                    |              | Amount of refrigerant [g] < or = Amount of oil [g] x 4 (the relative density of oil : 1[g/cm <sup>3</sup> ]).<br>Regarding operation which exceeds the above limit, consult with us. |
| Piping vibration                              |              | Maximum 0.8 mm.  |
| Inclination of compressor                     |              | Within 5°  |
| Piping  |              | Suction & Discharge pipes are sealed with rubber plugs.  |
| Discharge gas temp. measurement               |              | Discharge gas temperature sensor at 340mm distance from the shell is acceptable by the test result.  |
| Discharge gas temp. measurement               |              | Discharge gas temperature sensor at 340mm distance from the shell is acceptable by the test result.  |
| Accumulator installation                      |              | In case of 1.1kg refrigerant amount usage, it is not necessary to install accumulator in the circuit by the soaking start test result of sightglass compressor.                      |