



# Specification for Embraco Scroll Compressor

MODEL: EAF187H-A1-NAAA

RECORD OF REVISIONS

| NO. | PAGE | DESCRIPTION | DATE | REVD. |
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## EAF187H-A1-NAAA Technical Specifications

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## 1. Specifications

| Model                                           | EAF187H-A1-NAAA                          | Power                            | 15HP  |
|-------------------------------------------------|------------------------------------------|----------------------------------|-------|
| Displacement(m <sup>3</sup> /h)                 | 29.4                                     | Refrigerant                      | R410A |
| Cooling Cap.(W) <sup>(a)</sup>                  | 45660                                    | Input Power(W) <sup>(a)</sup>    | 13894 |
| Rated Load Amps(A) <sup>(a)</sup>               | 25.6                                     | COP <sup>(a)</sup>               | 3.29  |
| Max. Vibration(mm) <sup>(a)</sup>               | <0.10                                    | Sound Level (dBA) <sup>(a)</sup> | 76    |
| Test Power Source <sup>(a)</sup>                | 50Hz-380V                                | Rated Speed (RPM) <sup>(a)</sup> | 2900  |
| Max. Moisture (mg)                              | < 500                                    | Max. Impurity (mg)               | < 100 |
| Oil Circulation (%) <sup>(a)</sup>              | <1%                                      | Weight (kg, With Oil)            | 59    |
| Electrical Specification                        | Power Source                             | 380V-420V 3~50Hz<br>460V 3~60Hz  |       |
|                                                 | Run Capacitor                            | /                                |       |
|                                                 | Min. Operation Voltage(V) <sup>(b)</sup> | 342                              |       |
|                                                 | Max. Operation Voltage(V)                | 462                              |       |
|                                                 | Min. Starting Voltage(V) <sup>(c)</sup>  | 323                              |       |
|                                                 | Lock Rotor Amps(A)                       | 148.50                           |       |
|                                                 | Max. Operation Current <sup>(d)</sup>    | 34.4 (A)                         |       |
| Terminal Resistance<br>(Ω) ( ± 10%)<br>At 25 °C | T1(C)-T2(S)                              | 0.84                             |       |
|                                                 | T2(S)-T3(R)                              | 0.81                             |       |
|                                                 | T3(R)-T1(C)                              | 0.81                             |       |
|                                                 |                                          |                                  |       |
| Lubrication                                     | Oil Type                                 | POE                              |       |
|                                                 | Initial Charge(L)                        | 3.5                              |       |
|                                                 | Recharge(L)                              | 3                                |       |
| Electrical Safety                               | Insulation Voltage(V)                    | 2500                             |       |
|                                                 | Leakage Current(mA)                      | ≤5                               |       |
|                                                 | Insulation Resistance(MΩ)                | >20                              |       |
|                                                 | Ground Resistance(Ω)                     | <0.1                             |       |
| Max. Operation Pressure                         | High Side(MPa)                           | 4.3                              |       |
|                                                 | Low Side(MPa)                            | 2                                |       |

Notes:

- a) Test Condition: Based On Test Power Voltage, First Rated Condition
- b) Test Condition: ET 13°C, CT 65°C, SH 11.1K
- c) Test Condition: Discharge/Suction Pressure Set To Refrigeration Saturation Pressure At 40°C
- d) Test Condition: ET 13°C, CT 65°C, SH11.1K, 90% Min. Rated Voltage

## 2. Configuration

| Suction/Discharge | Injection | Sight Glass | Thermal Tube |
|-------------------|-----------|-------------|--------------|
| Welded Fittings   | NONE      | NONE        | NONE         |

## 3. Certifications

| Certifications | Report N.O.    |
|----------------|----------------|
| CB             | CNCVC1177      |
| CE             | LVDJX23-0060   |
| CCC            | CVC23008010776 |
| PED            | /              |
| UL             | /              |
|                |                |
|                |                |
|                |                |
|                |                |
|                |                |
|                |                |
|                |                |

## 4. First Test Condition (°C)

Cooling Cap. and COP No Less Than 95% of Nominal Value, Power and Current No More Than 105% of Nominal Value (Performance And Sound Power Need 24hrs Break In At High Load Running Condition).

| Item | Parameter         | Value |
|------|-------------------|-------|
| 1    | Evaporating Temp. | 7.2   |

|   |                  |      |
|---|------------------|------|
| 2 | Condensing Temp. | 54.4 |
| 3 | Ambient Temp.    | 35.0 |
| 4 | Super Heat       | 11.1 |
| 5 | Sub Cooling      | 8.3  |

#### 5. Compressor Protection Parts

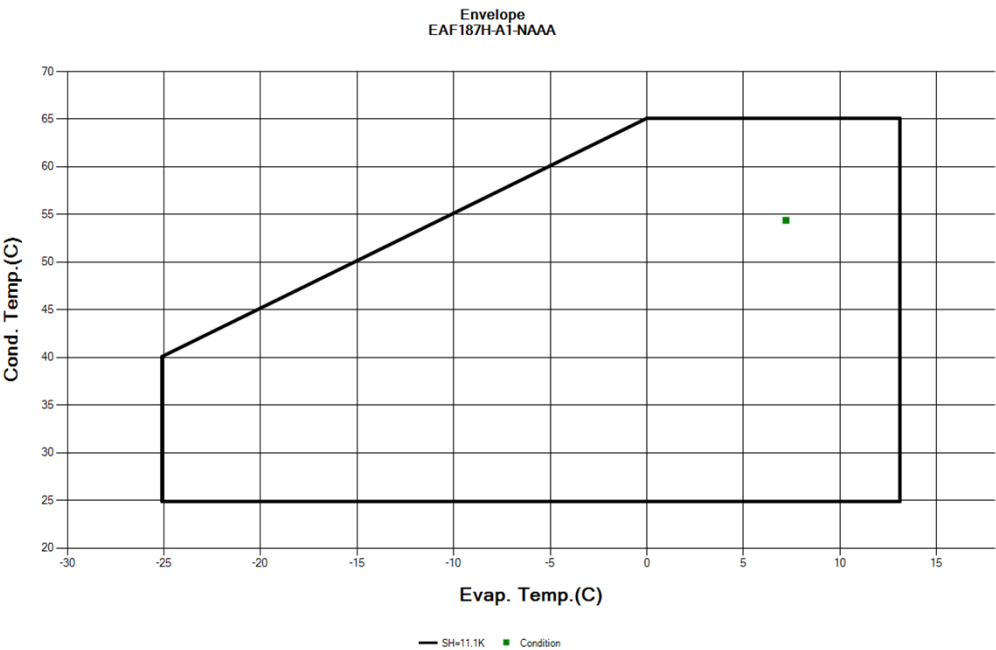
- a) Thermal Protection Inside:35HM578-60;  
b) Internal Pressure Release Valve, Open Range (Pressure Difference Between Discharge And Suction) : 3.96~4.31Mpa

#### 6. Performance Data- EAF187H-A1-NAAA

| kW           | Temp. Cond. (°C) | Temp. Evap. (°C) |       |       |       |       |       |       |       |       |
|--------------|------------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|              |                  | -25              | -20   | -15   | -10   | -5    | 0     | 5     | 10    | 13    |
| Cooling Cap. | 65               |                  |       |       |       |       | 28.40 | 34.52 | 41.67 | 46.64 |
|              | 60               |                  |       |       |       | 26.06 | 31.83 | 38.40 | 46.09 | 51.46 |
|              | 55               |                  |       |       | 23.33 | 28.79 | 34.88 | 41.83 | 50.02 | 55.77 |
|              | 50               |                  |       | 20.33 | 25.50 | 31.21 | 37.58 | 44.89 | 53.55 | 59.67 |
|              | 45               |                  | 17.22 | 22.09 | 27.46 | 33.38 | 40.02 | 47.67 | 56.81 | 63.32 |
|              | 40               | 14.12            | 18.68 | 23.72 | 29.26 | 35.40 | 42.30 | 50.31 | 59.98 | 66.91 |
|              | 35               | 15.35            | 20.06 | 25.27 | 31.00 | 37.36 | 44.56 | 52.99 | 63.26 | 70.67 |
|              | 30               | 16.58            | 21.45 | 26.84 | 32.78 | 39.41 | 46.97 | 55.90 | 66.90 | 74.89 |
|              | 25               | 17.85            | 22.91 | 28.51 | 34.72 | 41.68 | 49.71 | 59.28 | 71.17 | 79.87 |
| Input Power  | 65               |                  |       |       |       |       | 18.60 | 18.39 | 18.24 | 18.18 |
|              | 60               |                  |       |       |       | 16.49 | 16.26 | 16.09 | 15.97 | 15.93 |
|              | 55               |                  |       |       | 14.71 | 14.47 | 14.28 | 14.15 | 14.06 | 14.04 |
|              | 50               |                  |       | 13.19 | 12.96 | 12.77 | 12.62 | 12.51 | 12.46 | 12.46 |
|              | 45               |                  | 11.86 | 11.65 | 11.47 | 11.32 | 11.21 | 11.14 | 11.11 | 11.13 |
|              | 40               | 10.67            | 10.49 | 10.33 | 10.19 | 10.08 | 10.01 | 9.97  | 9.97  | 9.99  |
|              | 35               | 9.41             | 9.28  | 9.17  | 9.07  | 9.00  | 8.96  | 8.95  | 8.97  | 9.01  |
|              | 30               | 8.27             | 8.19  | 8.12  | 8.06  | 8.03  | 8.01  | 8.03  | 8.07  | 8.12  |
|              | 25               | 7.18             | 7.15  | 7.13  | 7.11  | 7.10  | 7.12  | 7.15  | 7.22  | 7.27  |

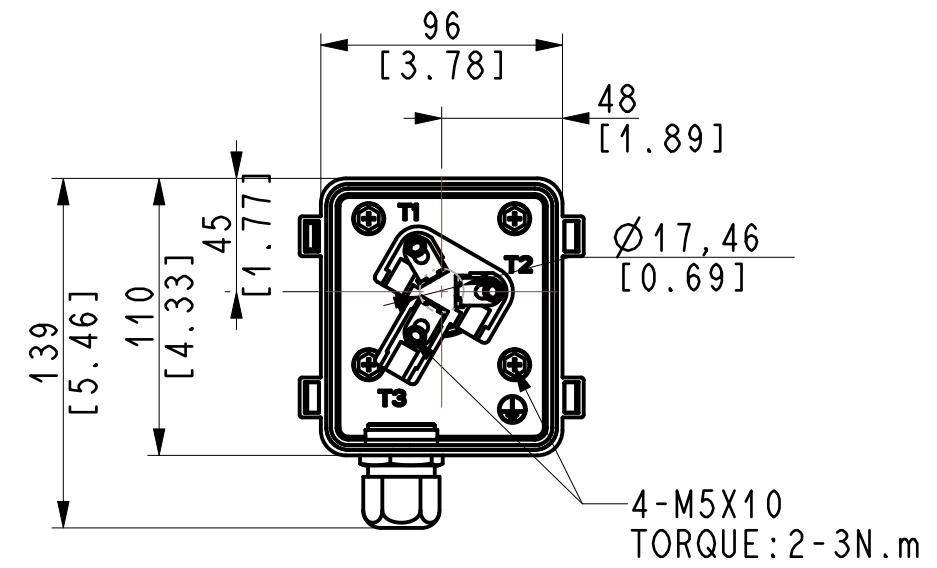
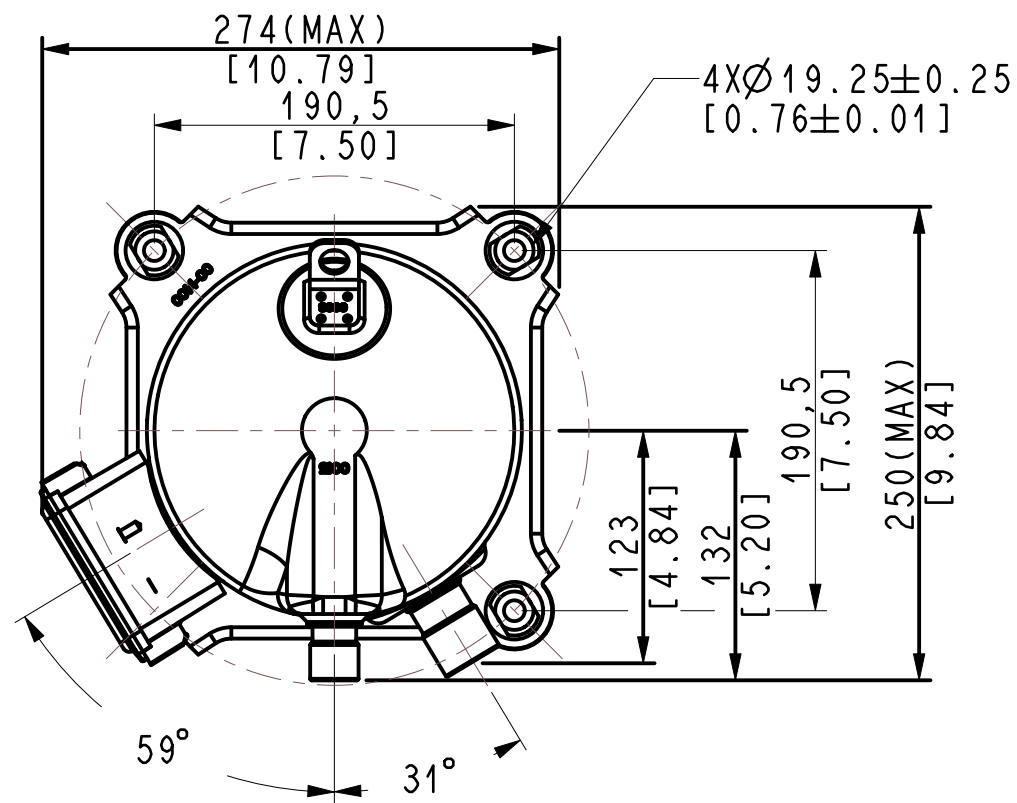
Notes: Capacity Calculation Based On SH=11.1K,SC=8.3K

7. Application Envelope

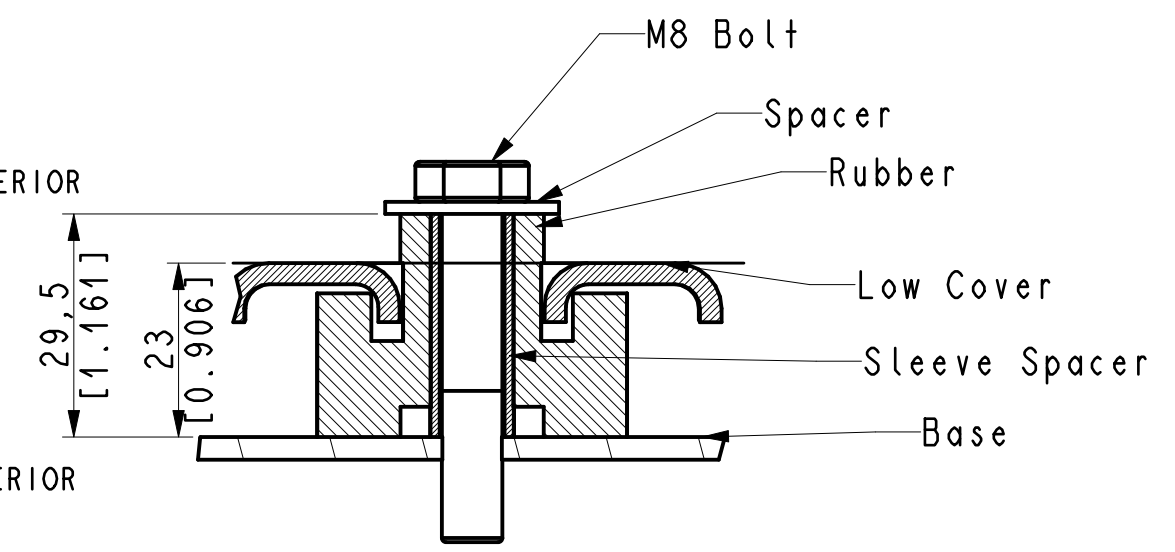
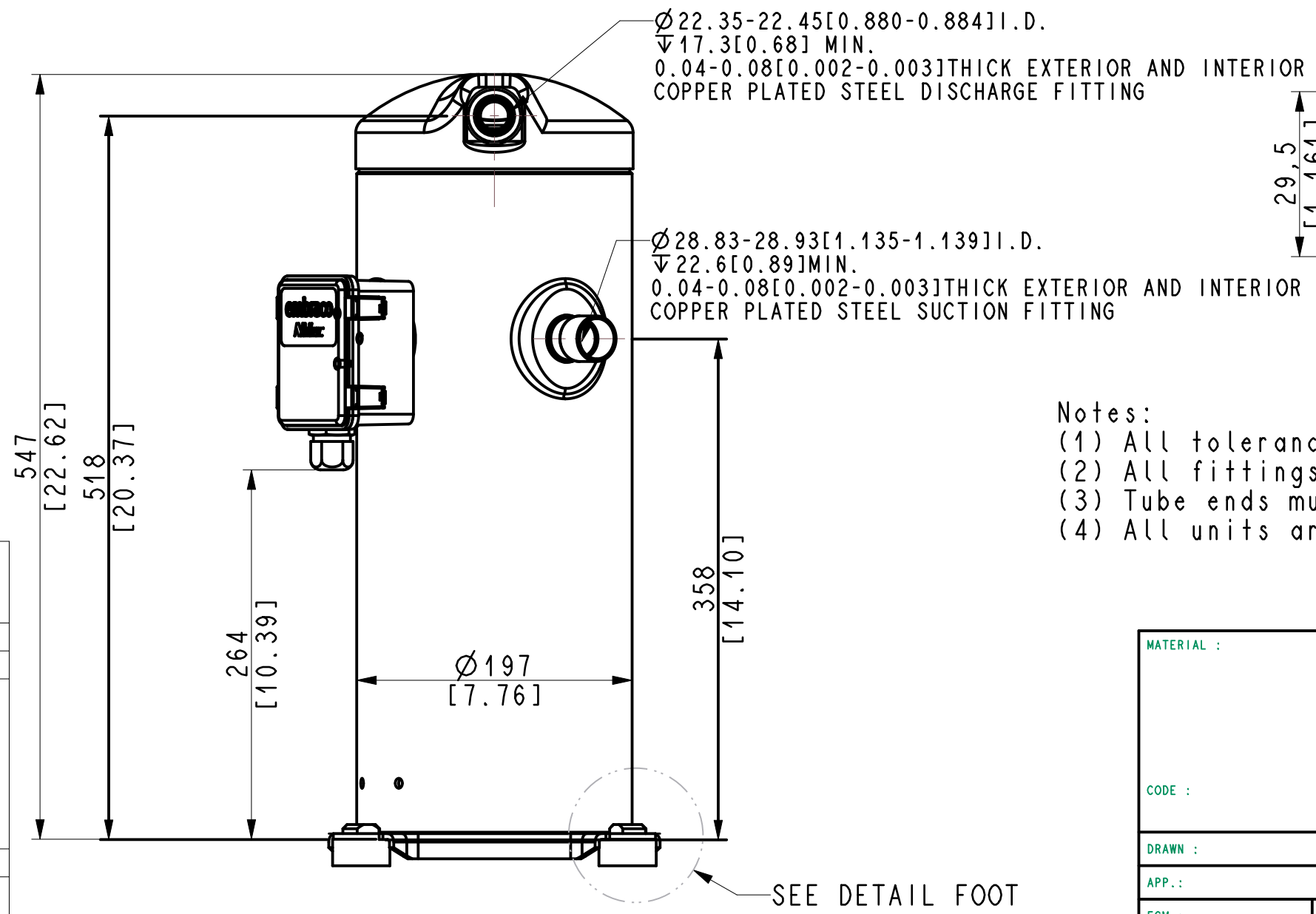


For compressor safety, shutdown compressor when DLT is above 125°C.  
Restart compressor when DLT is below 85°C.

8. Drawing



TERMINAL BOX LAYOUT  
SCALE 1:3



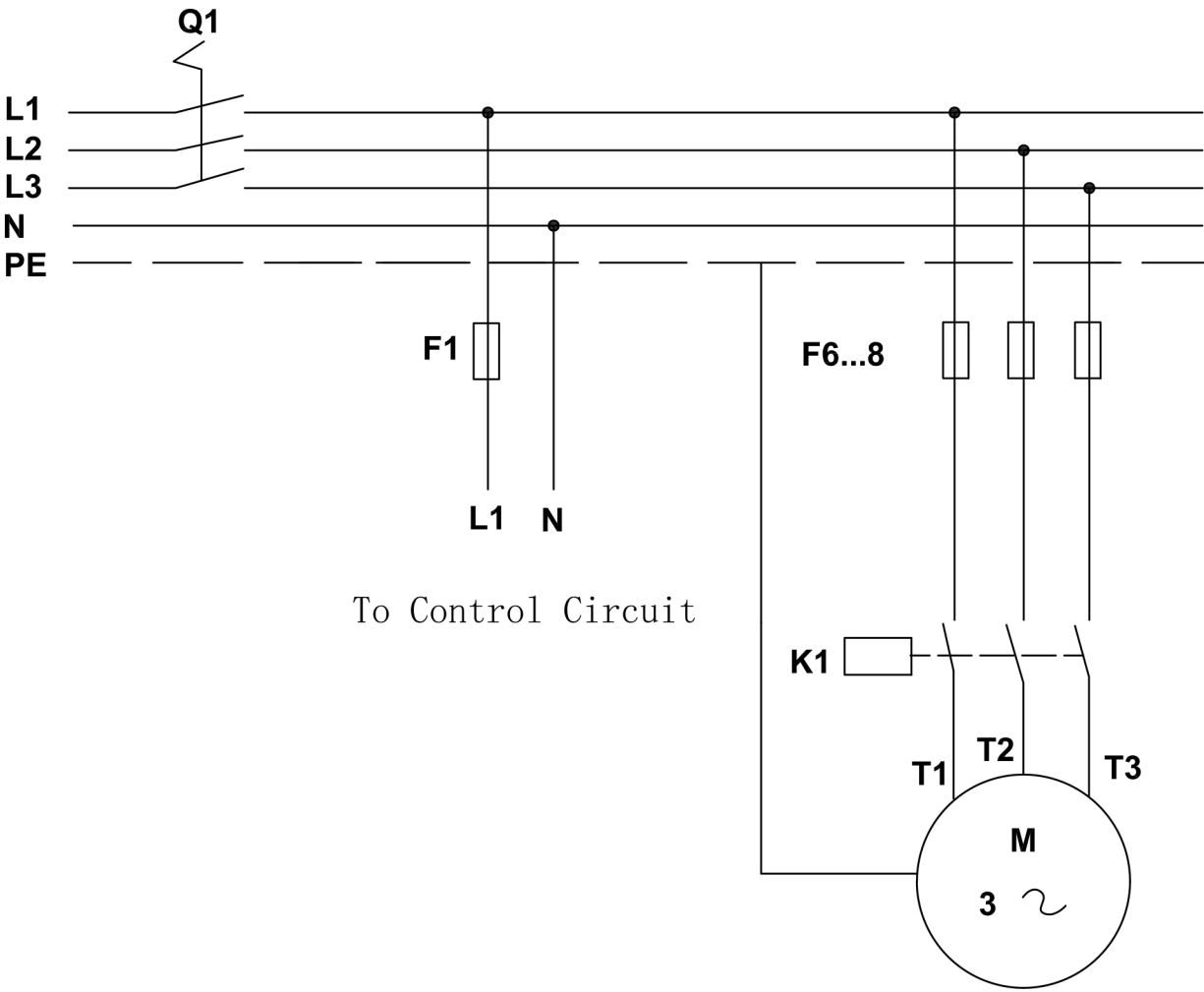
DETAIL FOOT

- Notes:
- (1) All tolerances  $\pm 1.5\text{mm}$  [0.06in] unless otherwise specified
  - (2) All fittings:  $\pm 3.0\text{mm}$  [0.12in]
  - (3) Tube ends must be plugged
  - (4) All units are in mm[inch]

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| ECM      |    |    |      |

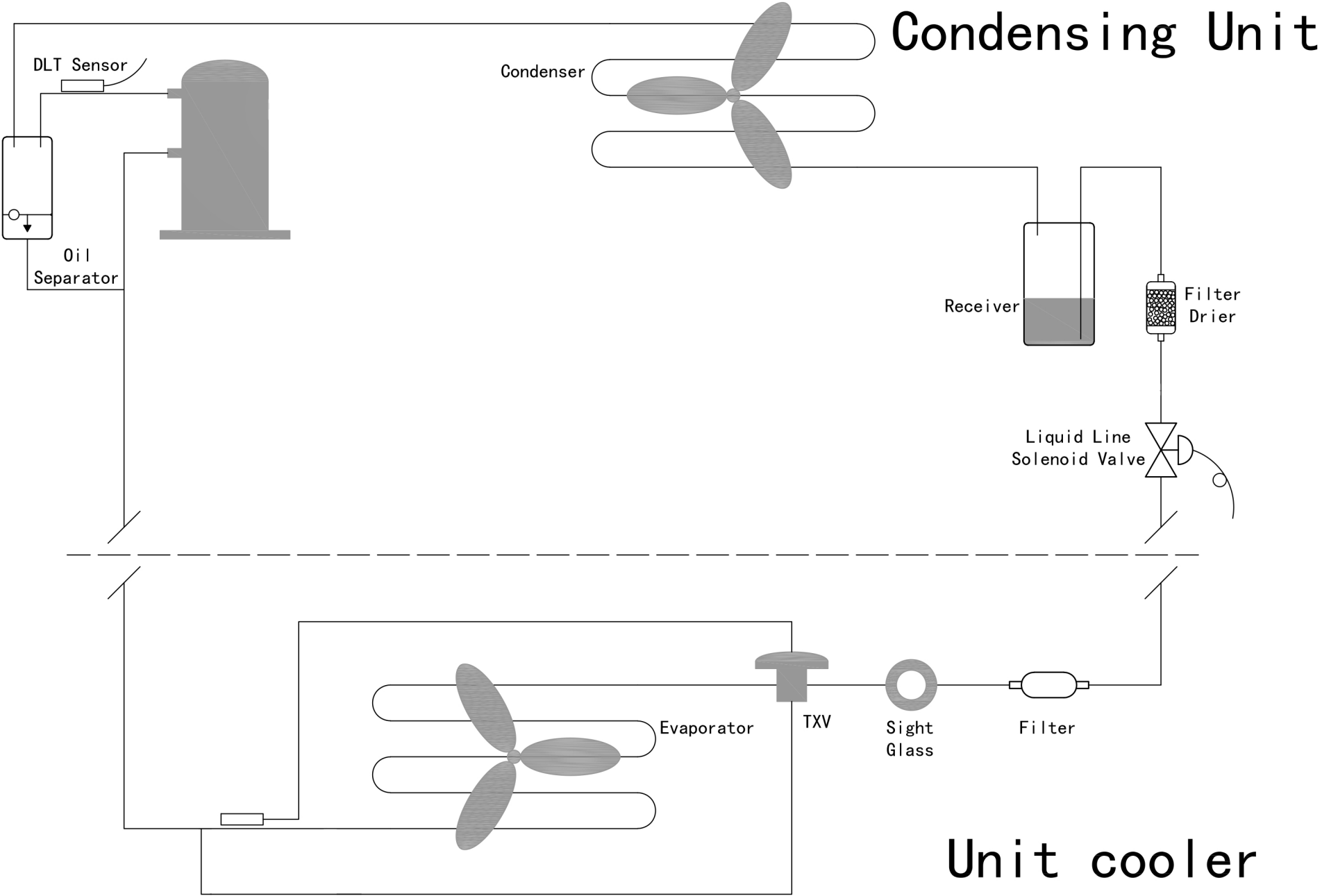
|            |        |                                                    |                                                                                                                                        |                                                                                          |
|------------|--------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| MATERIAL : |        | <div>embraco</div> <div>Nidec</div>                | GEN. TOL. :                                                                                                                            |                                                                                          |
|            |        |                                                    | ANG. TOL. :                                                                                                                            |                                                                                          |
|            |        |                                                    | SCALE : 0,333                                                                                                                          |                                                                                          |
|            |        |                                                    | UNIT: mm                                                                                                                               |  A3 |
| CODE :     |        | TITLE, DOCUMENT TYPE<br><br>190<br>(EAF, EWF, EDF) | REPLACE: V0                                                                                                                            |                                                                                          |
| DRAWN :    |        |                                                    | No. 801-0003-00                                                                                                                        |                                                                                          |
| APP.:      |        |                                                    |                                                                                                                                        |                                                                                          |
| ECM :      | DATE : |                                                    | THIS MATERIAL IS CONFIDENTIAL AND PROPRIETARY TO EMBRACO, AND MAY NOT BE REPRODUCED, DISCLOSED, DISTRIBUTED OR USED WITHOUT PERMISSION |                                                                                          |
|            |        |                                                    | SHEET NUMBER: 1 OF 1                                                                                                                   |                                                                                          |

SEE DETAIL FOOT



- Electrical Schematics
- L1/L2/L3/N/PE: 3 Phase Lines(line/neutral/ground)
- Q1: Manual Switch
- F1/F6...8: Fuse
- K1: Compressor Contactor
- M: Compressor Motor
- T1/T2/T3: Compressor Terminal

# General System Schematic



## Accessories List

| Part N.O.   | Specification | Part Name        | Description | Qty | Type     | Picture                                                                              |
|-------------|---------------|------------------|-------------|-----|----------|--------------------------------------------------------------------------------------|
| 019-0002-00 | 11.1*29.5     | Sleeve<br>Spacer |             | 4   | Standard |   |
| 200-0001-00 |               | Rubber           |             | 4   | Standard |   |
| 100-0006-00 | M5x8,GB/T5789 | Bolt             |             | 7   | Standard |  |

## Accessories List

|             |                             |               |  |   |          |                                                                                      |
|-------------|-----------------------------|---------------|--|---|----------|--------------------------------------------------------------------------------------|
| 034-0003-03 |                             | Sound Jacket  |  | 1 | Optional |   |
| 028-0003-00 | OD:197 90W<br>220V, L:618.6 | Crank Heater  |  | 1 | Optional |   |
| 017-0001-00 | IP54                        | Terminal Box  |  | 1 | Standard |   |
| 009-0025-00 |                             | Terminal Seal |  | 1 | Standard |  |

## Accessories List

|             |                |                       |  |   |          |                                                                                      |
|-------------|----------------|-----------------------|--|---|----------|--------------------------------------------------------------------------------------|
| 009-0023-00 |                | Terminal<br>Seal      |  | 1 | Standard |   |
| 016-0003-00 |                | T-Box                 |  | 1 | Standard |   |
| 017-0002-00 | IP54           | Terninal<br>Cover     |  | 1 | Standard |   |
| 031-0017-00 | 1-1/4"-12UNF-A | RotaLock<br>Connector |  | 1 | Optional |  |

Accessories List

|             |                |                       |  |   |          |                                                                                     |
|-------------|----------------|-----------------------|--|---|----------|-------------------------------------------------------------------------------------|
| 031-0018-00 | 1 3/4-12UNF 2A | RotaLock<br>Connector |  | 1 | Optional |  |
|-------------|----------------|-----------------------|--|---|----------|-------------------------------------------------------------------------------------|