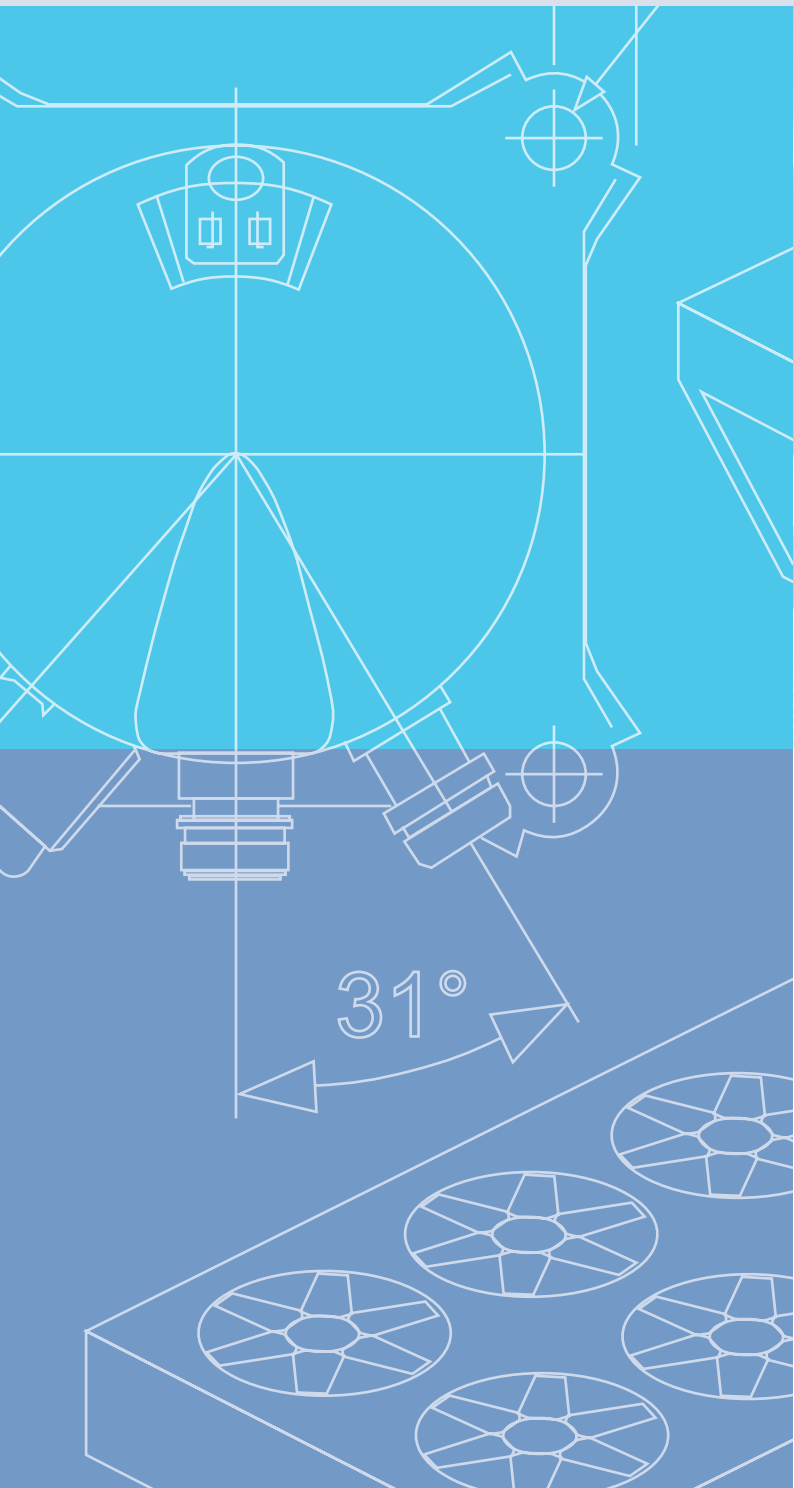




# Replacement Guidelines for Scroll Compressors

ZR90K3\*, ZR11M3\*, ZR12M3\*, ZR16M3\* and ZR19M3\*



|          |   |          |
|----------|---|----------|
| <b>1</b> | <b>Introduction .....</b>   | <b>1</b> |
| <b>2</b> | <b>Nomenclature .....</b>   | <b>1</b> |
| <b>3</b> | <b>Bill of material .....</b>   | <b>1</b> |
|          | 3.1 New bill of material for service compressors .....                  | 1        |
|          | 3.2 Old bill of material .....  | 1        |
| <b>4</b> | <b>Replacement of single compressors .....</b>                          | <b>2</b> |
|          | 4.1 Rotalock version .....  | 2        |
|          | 4.2 Brazing version .....   | 2        |
| <b>5</b> | <b>Tandem .....</b>   | <b>3</b> |
|          | 5.1 Compressor replacement on Tandems produced since 2004 .....         | 3        |
|          | 5.2 Compressor replacement on Tandems produced before 2004 .....        | 4        |
|          | 5.2.1 <i>Kits description</i> .....                                     | 5        |
|          | 5.2.2 <i>Complete kit with adaptors and oil equalisation line</i> ..... | 5        |
|          | 5.2.3 <i>ZZ Tandem - Replacement of one compressor</i> .....            | 5        |
| <b>6</b> | <b>OEM assembly.....</b>  | <b>6</b> |
| <b>7</b> | <b>Other variations and exceptions .....</b>                            | <b>6</b> |



## 1 Introduction

The purpose of this Replacement Guideline is to help customers in replacing the phase-out model A/C compressor range (ZR90K3\*, ZR11M3\*, ZR12M3\*, ZR16M3\* and ZR19M3\*) with the special produced replacement compressor range.

The replacement range of compressors has the same size, weight and sound as previous models. These compressors are designed for use with R407C, R22, R134a refrigerants.

The bill of material has been configured to facilitate the selection, to reduce the inventory and to have an easier replacement in the field.

## 2 Nomenclature

### ZR 90K 3 E - TWD - 522

|     |  |
|-----|--|
| Z   | Bill of material number  |
| R   | Motor version  |
| 90K | Oil type:<br>E = POE oil<br>Blank = mineral oil  |
| 3   | Model variation  |
| E   | Nominal capacity [BTU/h] @ 60 Hz and ARI conditions<br>Capacity multiplier: K = x 1000, M = x 10 000 |
| TWD | Application range temperature:<br>R = high/medium  |
| 522 | Compressor family: Z = Scroll  |

## 3 Bill of material

### 3.1 New bill of material for service compressors

One new BOM **961** will replace all the previous BOMs. The service compressor BOM **961** consists of:

- Rotalock compressor
- Single packaging
- Rubber mounting part for single use purpose
- Kriwan 120-240V INT69SC2 module mounted on the compressor
- Extra spare 24V AC INT69SC2 module delivered loose
- Full set of Rotalock adapter kits for replacement of brazed version in the field (suction + discharge)
- Ester oil charge for operation with R407C, R134a and R22 (no mineral oil available)

### 3.2 Old bill of material

The bill of material depends on the compressor fittings (Rotalock, brazing or for Tandem application) and the motor protection voltage:

|                                     | Single operation and Tandem ready since 2004 |                  | Tandem operation before 2004 |                  |
|-------------------------------------|--|------------------|------------------------------|------------------|
|                                     | Brazing version                              | Rotalock version | Brazing version              | Rotalock version |
| Motor protection<br><b>120-240V</b> | 522  | 551              | 572                          | 570              |
| Motor protection<br><b>24V AC</b>   | 568  | 561              | 542                          | 540              |

Table 1: Bill of material

## 4 Replacement of single compressors

Compressors used for single usage were available in Rotalock version or brazing version.

### 4.1 Rotalock version

| Discontinued model |                 | Replacement compressor  |
|--------------------|-----------------|-------------------------|
| ZR90K3E ... 551    | ZR90K3E ... 561 | ZR90K3E-TWD- <b>961</b> |
| ZR11M3E ... 551    | ZR11M3E ... 561 | ZR11M3E-TWD- <b>961</b> |
| ZR12M3E ... 551    | ZR12M3E ... 561 | ZR12M3E-TWD- <b>961</b> |
| ZR16M3E ... 551    | ZR16M3E ... 561 | ZR16M3E-TWD- <b>961</b> |
| ZR19M3E ... 551    | ZR19M3E ... 561 | ZR19M3E-TWD- <b>961</b> |

**Table 2: Cross-reference for Rotalock version compressors**

Replacement of 551: compressors are interchangeable.

Replacement of 561: compressors are interchangeable, motor protection has to be replaced with the extra spare 24V one.

### 4.2 Brazing version

| Discontinued model |                 | Replacement compressor  |
|--------------------|-----------------|-------------------------|
| ZR90K3E ... 522    | ZR90K3E ... 568 | ZR90K3E-TWD- <b>961</b> |
| ZR11M3E ... 522    | ZR11M3E ... 568 | ZR11M3E-TWD- <b>961</b> |
| ZR12M3E ... 522    | ZR12M3E ... 568 | ZR12M3E-TWD- <b>961</b> |
| ZR16M3E ... 522    | ZR16M3E ... 568 | ZR16M3E-TWD- <b>961</b> |
| ZR19M3E ... 522    | ZR19M3E ... 568 | ZR19M3E-TWD- <b>961</b> |

**Table 3: Cross-reference for brazed version Compressors**

When replacing a brazing model with a replacement model version 961 the adaptors (Rotalock to brazing) will have to be fitted on the compressor to allow the tube brazing.

Replacement of 522: use suction/discharge adaptors.

Replacement of 568: use suction/discharge adaptors; the motor protection has to be replaced with the extra 24V spare one.

## 5 Tandem

### 5.1 Compressor replacement on Tandems produced since 2004

Since 2004 Tandem are made with 2 standard single Rotalock compressors (see chapter 4.1 for replacement).

|                      | ZRT/U Tandem BOM |                 |
|----------------------|------------------|-----------------|
|                      | 24V Module       | 120/240V Module |
| Rotalock valve       | 840              | 870             |
| Rotalock adapter     | 841              | 871             |
| Made with compressor | 561              | 551             |

**Table 4: BOM for Tandems delivered since 2004**

The Tandem assembly has its own nameplate, with the Tandem designation:

| Tandem    | Compressor 1 | Compressor 2 |
|-----------|--------------|--------------|
| ZRT180K3E | ZR90K3E      | ZR90K3E      |
| ZRU210K3E | ZR90K3E      | ZR12M3E      |
| ZRT220K3E | ZR11M3E      | ZR11M3E      |
| ZRT240K3E | ZR12M3E      | ZR12M3E      |
| ZRU250K3E | ZR90K3E      | ZR16M3E      |
| ZRU280K3E | ZR12M3E      | ZR16M3E      |
| ZRT320K3E | ZR16M3E      | ZR16M3E      |
| ZRU310K3E | ZR19M3E      | ZR12M3E      |
| ZRU350K3E | ZR19M3E      | ZR16M3E      |
| ZRT380K3E | ZR19M3E      | ZR19M3E      |

**Table 5: Qualified Tandem combinations**

Service compressors version 591 are interchangeable with the compressors fitted on the Tandem.

When replacing a compressor on a Tandem, keep the mounting parts that were used on the replaced compressor.

## 5.2 Compressor replacement on Tandems produced before 2004

Tandems built before 2004 were made with Rotalock or brazing version compressors. Their designation starts with ZZ.

|                      | ZZ Tandem BOM         |                           |
|----------------------|-----------------------|---------------------------|
|                      | 24V Module            | 120/240V Module           |
| Rotalock valve       | 840 (540/640/740)     | 870 (570/670/770)         |
| Rotalock adapter     | 841 (541/641/741/441) | 871 (571/671/771/471/871) |
| Brazing version      | 542/642/742           | 572/672/772               |
| Made with compressor | 540 or 542            | 571 or 572                |

Table 6: BOM for Tandems produced before 2004

ZZ Tandems were built with a gas equalisation line and an oil equalisation line. This means that the single “Tandem ready” compressors were fitted with 2 extra connections (for gas and oil equalisation). Therefore an additional kit must be ordered with the BOM 961 service compressor.

| Tandem model | Discontinued model |              |                 | Replacement model BOM                            |
|--------------|--------------------|--------------|-----------------|--|
|              | Compressor 1       | Compressor 2 | Compressor BOM  |  |
| ZZ18M3E      | ZR90K3E            | ZR90K3E      | 570/572/540/542 | <b>BOM 961</b><br><b>+</b><br><b>Kit 8548206</b> |
| ZZ21M3E      | ZR90K3E            | ZR12M3E      |                 |  |
| ZZ22M3E      | ZR11M3E            | ZR11M3E      |                 |  |
| ZZ24M3E      | ZR12M3E            | ZR12M3E      |                 |  |
| ZZ25M3E      | ZR90K3E            | ZR16M3E      |                 |  |
| ZZ28M3E      | ZR12M3E            | ZR16M3E      |                 |  |
| ZZ32M3E      | ZR16M3E            | ZR16M3E      |                 |  |
| ZZ31M3E      | ZR19M3E            | ZR12M3E      |                 |  |
| ZZ35M3E      | ZR19M3E            | ZR16M3E      |                 |  |
| ZZ38M3E      | ZR19M3E            | ZR19M3E      |                 |  |

Table 7: Adapter kit for Tandems produced before 2004

ZZ Tandem design



Separate connections for oil and gas equalisation

ZRT Tandem design



Common equalisation line

Figure 1: Oil and gas equalisation – ZZ – before 2004, ZRT – since 2004

### 5.2.1 Kits description

| Number  | Description  | Content   | Quantity       |
|---------|--|---|----------------|
| 8548206 | Adapter kit for the common oil and gas equalization line, including the complete equalization line and parts for closing gas/oil equalization rotalock ports | Gaskets, cap nuts, blanking caps, adapters, complete equalization line 425 mm | 1 x per Tandem |
| 8548217 |  | Gaskets, cap nuts, blanking caps, adapters, complete equalization line 455 mm | 1 x per Tandem |

Table 8: Tandem kit description

### 5.2.2 Complete kit with adaptors and oil equalisation line

ZZ18M3E to ZZ28M3E, ZZ32M3E - Ident number 8548206

ZZ31M3E, ZZ35M3E, ZZ38M3E - Ident number 8548217

Installation of the oil and gas equalisation line via the oil sight glass connection of the compressor.



Figure 2: Tandem replacement kit

### 5.2.3 ZZ Tandem - Replacement of one compressor

For the replacement of one compressor from a ZZ Tandem, Emerson Climate Technologies recommends the following procedure:

- Replace the faulty tandem version compressor with a suitable single compressor (see replacement **Table 2** in chap. 4.1).
- Remove the present gas equalisation and the oil equalisation lines.
- Use the Copeland® brand products adapter kit to install the equalisation lines (see the following pages).
- Shut-off the connection for the gas equalisation at the remaining compressor with the blanking cap (**Figure 3**) or crimp and braze the tube.
- Shut-off the connection for the oil equalization at the remaining compressor with the blanking cap (**Figure 4**).

*Blanking cap - Ident number 8545003 to shut-off the compressor connection for the gas equalisation.*

*Blanking cap - Ident number 8502420 to shut-off the compressor connection for the oil equalisation.*



Figure 3: Blanking cap – gas equalisation



Figure 4: Blanking cap – oil equalisation



- Assemble the common gas and oil equalization line:
  - Remove the oil sight glasses out of both compressors.
  - Install the adapter (**Figure 5**) and the O-ring on the oil sight glass connection of the compressors.
  - Use the Teflon gasket to install the common equalization line (**Figure 6**) on the Rotalock connection of the adapter (**Figure 5**).
  - The common equalisation line (**Figure 6**) is available in two different lengths.



Figure 5: Adapter



Figure 6: Common equalisation line

## 6 OEM assembly

For OEM-made Tandem and Trio assemblies using the former design of gas and oil equalization, an additional kit must be ordered as per **Table 7** in chapter 5.2. This applies to compressor BOM listed in **Table 9** hereunder.

| Connection | Module | Discontinued model BOM | Replacement model BOM |
|------------|--------|------------------------|-----------------------|
| Rotalock   | 24 V   | 540                    | 961                   |
|            | 230 V  | 570                    |                       |
| Braze      | 24 V   | 542                    |                       |
|            | 230 V  | 572                    |                       |

Table 9: Bill of material for OEM assembly

## 7 Other variations and exceptions

| BOM  | Description                               | Special action  |
|------|---|---|
| 591  | Rotalock compressor with INT69SC2 -24V DC | Module Ident 8558536 to be ordered separately with service compressor BOM 961 |
| 651  | Identical to 551                          | None  |
| A674 | Identical to 551                          | None  |

Table 10: Other variations and exceptions

#### BENELUX

Deltakade 7  
NL-5928 PX Venlo  
Tel. +31 77 324 02 34  
Fax +31 77 324 02 35  
benelux.sales@emerson.com

#### UK & IRELAND

Unit 17, Theale Lakes Business Park  
Reading, Berks RG7 4GB  
Tel: +44 1189 83 80 00  
Fax: +44 1189 83 80 01  
uk.sales@emerson.com

#### BALKAN

Selska cesta 93  
HR-10 000 Zagreb  
Tel. +385 1 560 38 75  
Fax +385 1 560 38 79  
balkan.sales@emerson.com

#### GERMANY, AUSTRIA & SWITZERLAND

Senefelder Str. 3  
DE-63477 Maintal  
Tel. +49 6109 605 90  
Fax +49 6109 60 59 40  
ECTGermany.sales@emerson.com

#### SWEDEN, DENMARK, NORWAY & FINLAND

Pascalstr. 65  
DE-52076 Aachen  
Tel. +49 2408 929 0  
Fax +49 2408 92 95 28  
nordic.sales@emerson.com

#### UKRAINE

Turgenevskaya Str. 15, office 33  
UA-01054, Kiev  
Tel. +38 - 44 - 4 92 99 24  
Fax. +38 - 44 - 4 92 99 28  
Andrey.Gladchenko@emerson.com

#### FRANCE, GREECE & MAGHREB

8, Allée du Moulin Berger  
FR-69130 Ecully Cédex  
Tel. +33 4 78 66 85 70  
Fax +33 4 78 66 85 71  
mediterranean.sales@emerson.com

#### EASTERN EUROPE & TURKEY

Pascalstr. 65  
DE-52076 Aachen  
Tel. +49 2408 929 0  
Fax +49 2408 929 525  
easterneurope.sales@emerson.com

#### ROMANIA

Tel. +40 - 364 - 73 11 72  
Fax. +40 - 364 - 73 12 98  
Camelia.Tiru@emerson.com

#### ITALY

Via Ramazzotti, 26  
IT-21047 Saronno (VA)  
Tel. +39 02 96 17 81  
Fax +39 02 96 17 88 88  
italy.sales@emerson.com

#### POLAND

Szturmowa 2  
PL-02678 Warsaw  
Tel. +48 22 458 92 05  
Fax +48 22 458 92 55  
poland.sales@emerson.com

#### MIDDLE EAST & AFRICA

PO Box 26382  
Jebel Ali Free Zone - South, Dubai - UAE  
Tel. +971 4 811 81 00  
Fax +971 4 886 54 65  
mea.sales@emerson.com

#### SPAIN & PORTUGAL

C/ LLull, 321 (Edifici CINC)  
ES-08019 Barcelona  
Tel. +34 93 412 37 52  
Fax +34 93 412 42 15  
iberica.sales@emerson.com

#### RUSSIA & CIS

Letnikovskaya 10, Bld. 2, floor 5  
RU-115114 Moscow  
Tel. +7 495 981 98 11  
Fax +7 495 981 98 16  
ECT.Holod@emerson.com

For more details, see [www.emersonclimate.eu](http://www.emersonclimate.eu)

Emerson Climate Technologies - European Headquarters - Pascalstrasse 65 - 52076 Aachen, Germany  
Phone: +49 (0) 2408 929 0 - Fax: +49 (0) 2408 929 570 - Internet: [www.emersonclimate.eu](http://www.emersonclimate.eu)

The Emerson Climate Technologies logo is a trademark and service mark of Emerson Electric Co. Emerson Climate Technologies Inc. is a subsidiary of Emerson Electric Co. Copeland is a registered trademark and Copeland Scroll is a trademark of Emerson Climate Technologies Inc. All other trademarks are property of their respective owners. Information contained in this brochure is subject to change without notification.

© 2011 Emerson Climate Technologies, Inc.



**EMERSON**  
Climate Technologies

**EMERSON. CONSIDER IT SOLVED.™**