

ENGINEERING  
TOMORROW



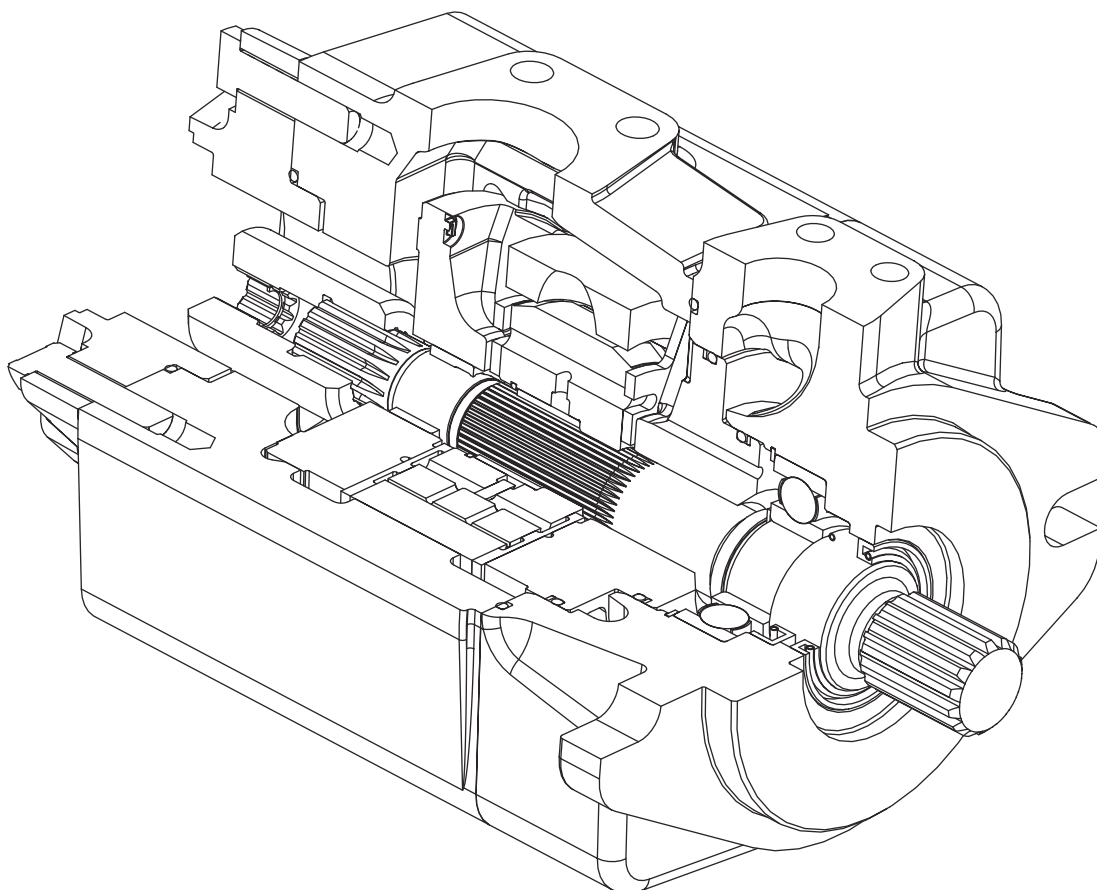
**Vickers**<sup>®</sup> by Danfoss

## High Pressure, High Performance Vane Pumps

Parts and Service Manual

AX438767438858en-000101

VMQ135T Series  
– 32 Design



**VICKERS**<sup>®</sup>

**Note** Lubricate all parts and seals with a thin coat of oil at assembly.

- Included in Cartridge Kit (see table 4)
- ▲ Included in 02-334692 STD Seal Kit, Single Shaft Seal or 02-334693 VitonSeal Kit, Single Shaft Seal.
- △ Included in 02-334694 STD Seal Kit, Double Shaft Seal or 02-334695 VitonSeal Kit, Double Shaft Seal.
- \* See Table X1 and X2 for Kit Rotation Information

998898A' SAE Inlet Housing  
998899 'B' ISO Inlet Housing

▲ △ Adapter/Housing  
O-Ring (see table 3)

Adapter  
(see table 3)

Thru Drive Coupling  
(see table 3)

87642 SAE A or B Adapter  
937117 SAE C Adapter  
Torque oiled = 229 +/- 23 Nm (169 +/- 17 ft\*lb)  
Screw, 4 Req'd - Torque dry = 305 +/- 31 Nm  
(225 +/- 23 ft\*lb)

▲ △ Adapter Bolt (see table 3)

Mounting pad O-Ring (see table 3)

131812 Bearing

102949 External Snap Ring

158630 Internal Spiralox

Key (see table 1)

▲ • 579377 OD O-ring Buna-N  
579392 OD O-ring Viton

△ 429282 Shaft Seal — Viton  
(double shaft seal only)

Outlet Body  
(see table 2)

▲ △ 394974 Shaft Seal Buna-N  
429285 Shaft Seal Viton

▲ △ 200176 Hsg/Body O-ring Buna-N  
262435 Hsg/Body O-ring Viton

Shaft (see table 1)

**TABLE X1**

**Cartridge Kit Rotation for Right Hand Rotation Pump**

| R= Right Hand Rotation |                           | L=Left Hand Rotation   |                           |
|------------------------|---------------------------|------------------------|---------------------------|
| PUMP<br>ROTATION       | SHAFT END<br>KIT ROTATION | CENTER<br>KIT ROTATION | COVER END<br>KIT ROTATION |
| Single & Thru (R)      | (R)                       | -                      | -                         |

- \*Notes:
- A right hand rotation pump has the shaft turning clockwise when viewed from the input shaft end
  - When ordering a right hand rotation kit, the part number will not have a suffix

**TABLE X2**

**Cartridge Kit Rotation for Left Hand Rotation Pump**

| R= Right Hand Rotation |                           | L=Left Hand Rotation   |                           |
|------------------------|---------------------------|------------------------|---------------------------|
| PUMP<br>ROTATION       | SHAFT END<br>KIT ROTATION | CENTER<br>KIT ROTATION | COVER END<br>KIT ROTATION |
| Single & Thru (L)      | (L)                       | -                      | -                         |

- \*Notes:
- A left hand rotation pump has the shaft turning counterclockwise when viewed from the input shaft end
  - When ordering a left hand rotation kit, the part number will have a suffix of '-L'

**TABLE 3**

| MODEL CODE<br>THRU DRIVE<br>COMPONENTS | OUTLET<br>SPLINE<br>SIZE | ADAPTER<br>MOUNTING<br>PAD SIZE | ADAPTER<br>BUNA N | ADAPTER/ HOUSING<br>O-RING<br>VITON | BUNA N | MOUNTING PAD<br>O-RING<br>VITON | ASSEMBLY<br>BOLT | COUPLING<br>DRY | ADAPTER<br>OILED | ADAPTER BOLT<br>TORQUE NM (FT . LB) |               |
|----------------------------------------|--------------------------|---------------------------------|-------------------|-------------------------------------|--------|---------------------------------|------------------|-----------------|------------------|-------------------------------------|---------------|
| VMQ135T-***-**-16                      | SAE A                    | SAE A                           | 937081            | 200159                              | 262418 | 353409                          | 576601           | 02-315059       | 1315             | 153±16 (113±11)                     | 115±12 (85±9) |
| VMQ135T-***-**-22                      | SAE B                    | SAE B                           | 998588            | 200159                              | 262418 | 375422                          | 401525           | 02-315058       | 1315             | 153±16 (113±11)                     | 115±12 (85±9) |
| VMQ135T-***-**-25                      | SAE B-B                  | SAE B                           | 998588            | 200159                              | 262418 | 375422                          | 401525           | 02-315057       | 1315             | 153±16 (113±11)                     | 115±12 (85±9) |
| VMQ135T-***-**-32                      | SAE C                    | SAE C                           | 998589            | 200159                              | 262418 | 312092                          | 353264           | 02-315056       | -                | 305±31(225±23)                      | 169±17(125±9) |

**TABLE 1**

| MODEL CODE        | SHAFT  | KEY    |
|-------------------|--------|--------|
| VMQ135T-***-**-01 | 937103 | 928541 |
| VMQ135T-***-**-02 | 937104 | —      |
| VMQ135T-***-**-03 | 937105 | 928546 |
| VMQ135T-***-**-04 | 937106 | 928564 |
| VMQ135T-***-**-05 | 937107 | 928542 |
| VMQ135T-***-**-06 | 937108 | —      |
| VMQ135T-***-**-07 | 937109 | 928547 |
| VMQ135T-***-**-08 | 937110 | 928565 |

**TABLE 2**

| OUTLET BODY                 |                                           |                        |                                           |                        |
|-----------------------------|-------------------------------------------|------------------------|-------------------------------------------|------------------------|
| Flange<br>Mounting<br>Style | Single Shaft Seal<br>Inch Port<br>Threads | Metric Port<br>Threads | Double Shaft Seal<br>Inch Port<br>Threads | Metric Port<br>Threads |
| SAE C                       | 998732                                    | 998734                 | 998733                                    | 998735                 |
| ISO 125                     | —                                         | 998736                 | —                                         | 998737                 |

**TABLE 4**

| MODEL CODE | * • CARTRIDGE<br>KIT (BUNA-N) | * • CARTRIDGE<br>KIT (VITON<br>' ) |
|------------|-------------------------------|------------------------------------|
| VMQ135*090 | 02-346986                     | 02-346987                          |
| VMQ135*100 | 02-346984                     | 02-346985                          |
| VMQ135*112 | 02-346982                     | 02-346983                          |
| VMQ135*125 | 02-346980                     | 02-346981                          |
| VMQ135*135 | 02-346978                     | 02-346979                          |
| VMQ135*140 | 02-348374                     | 02-348376                          |
| VMQ135*158 | 02-348181                     | 02-348180                          |

Viton® is a registered trademark of E.I. DuPont Co.

## Model Code

```
VMQ1  ** * *** * * ** ** * * * * * 00 * 0 32
```

**1 2 3 4 Series designation**  
VMQ1 – Vane pump single series

|            |                                                             |
|------------|-------------------------------------------------------------|
| <b>5 6</b> | <b>Frame size</b>                                           |
| 35 –       | 90-158 cm <sup>3</sup> /r<br>(5.49-9.64 in <sup>3</sup> /r) |

**7 Pump type**  
T – Thru-drive  
(Options at model codes **12** and **15 16** must be specified for thru-drive units)

| 8             | 9 | 10  | Displacement                                 |
|---------------|---|-----|----------------------------------------------|
| Frame size 35 |   |     |                                              |
| 090           | – | 90  | cm <sup>3</sup> /r (5.49 in <sup>3</sup> /r) |
| 100           | – | 100 | cm <sup>3</sup> /r (6.10 in <sup>3</sup> /r) |
| 112           | – | 112 | cm <sup>3</sup> /r (6.83 in <sup>3</sup> /r) |
| 125           | – | 125 | cm <sup>3</sup> /r (7.63 in <sup>3</sup> /r) |
| 135           | – | 135 | cm <sup>3</sup> /r (8.24 in <sup>3</sup> /r) |
| 140           | – | 140 | cm <sup>3</sup> /r (8.54 in <sup>3</sup> /r) |
| 158           | – | 158 | cm <sup>3</sup> /r (9.64 in <sup>3</sup> /r) |

|           |                                    |                                                                                                                          |
|-----------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>11</b> | <b>Front flange mounting style</b> |                                                                                                                          |
| <b>B</b>  | –                                  | SAE C 2-bolt<br>127,00 (5.000) x 12,4<br>(0.49) pilot<br>17,6 (0.69) slots on<br>181,0 (7.13) bolt circle                |
| <b>D</b>  | –                                  | ISO 3019/2 125A2HW<br>2-bolt<br>125,00 (4.921) x 9,2<br>(0.36) pilot<br>18,1 (0.71) slots on<br>180,0 (7.09) bolt circle |

12 **Rear mounting flange and orientation**  
Viewed from adapter end of pump

|       |   |                              |
|-------|---|------------------------------|
| SAE A |   |                              |
| C     | – | 45° CCW to mounting flange   |
| D     | – | 45° CW to mounting flange    |
| SAE B |   |                              |
| G     | – | 45° CCW to mounting flange   |
| H     | – | 45° CW to mounting flange    |
| SAE C |   |                              |
| J     | – | In-line with mounting flange |
| K     | – | 90° to mounting flange       |

| 13 | 14 | Input shaft type*                                   |
|----|----|-----------------------------------------------------|
| 01 | –  | SAE J744 keyed<br>Frame size 35:<br>31,75 (1.250)   |
| 02 | –  | SAE J744 splined<br>Frame size 35: C                |
| 03 | –  | ISO 3019/2 keyed<br>Frame size 35:<br>32,00 (1.260) |
| 05 | –  | SAE J744 keyed<br>Frame size 35:<br>38,10 (1.500)   |
| 06 | –  | SAE J744 splined<br>Frame size 35: C-C              |
| 07 | –  | ISO 3019/2 keyed<br>Frame size 35: 40,00 (1.575)    |

| 15 16                        | Output shaft coupling |                                                         |
|------------------------------|-----------------------|---------------------------------------------------------|
| Thru-drive units, model code |                       |                                                         |
| 7                            | = T                   |                                                         |
| 16                           | -                     | SAE J744 16-4 A-spline shaft                            |
| 22                           | -                     | SAE J744 22-4 B-spline shaft                            |
| 25                           | -                     | SAE J744 25-4 B-B-spline shaft                          |
| 32                           | -                     | SAE J744 32-4 C-spline shaft (frame sizes 35 & 45 only) |

|    |                                |
|----|--------------------------------|
| 17 | <b>Inlet port type</b>         |
| A  | – SAE J518 4-bolt split flange |
| B  | – ISO 6162 4-bolt split flange |

|    |                          |
|----|--------------------------|
| 18 | <b>Outlet port type</b>  |
| A  | – SAE J518 4-bolt flange |
| B  | – ISO 6162 4-bolt flange |

| 19 Outlet port position         |                           |
|---------------------------------|---------------------------|
| Viewed from adapter end of pump |                           |
| A                               | – Opposite inlet port     |
| B                               | – 90° CCW to inlet port   |
| C                               | – In-line with inlet port |
| D                               | – 90° CW to inlet port    |

|           |                                                                                     |
|-----------|-------------------------------------------------------------------------------------|
| <b>20</b> | <b>Shaft seal</b>                                                                   |
| A         | Single, primary                                                                     |
| B         | Double, secondary<br>(spring side out)<br>Recommended for wet<br>mount applications |

| 21 |   | Seal type                       |
|----|---|---------------------------------|
| N  | – | Buna N                          |
| V  | – | Viton                           |
| W  | – | Buna N with Viton shaft seal(s) |

**22**      **Shaft rotation**  
 Viewed from shaft end  
 of pump  
 L      –      Left hand (CCW)  
 R      –      Right hand (CW)

|       |                  |
|-------|------------------|
| 23 24 | Special features |
| 00 -  | None             |

|    |       |
|----|-------|
| 25 | Paint |
| 0  | None  |
| A  | Blue  |

26 Customer identification

|              |                                                                                 |
|--------------|---------------------------------------------------------------------------------|
| <b>27 28</b> | <b>Design code</b>                                                              |
| 32 –         | 32 design                                                                       |
|              | Installation dimensions remain unchanged for design numbers 30 to 39 inclusive. |



**Products we offer:**

- Cartridge valves
- DCV directional control valves
- Electric converters
- Electric machines
- Electric motors
- Gear motors
- Gear pumps
- Hydraulic integrated circuits (HICs)
- Hydrostatic motors
- Hydrostatic pumps
- Orbital motors
- PLUS+1® controllers
- PLUS+1® displays
- PLUS+1® joysticks and pedals
- PLUS+1® operator interfaces
- PLUS+1® sensors
- PLUS+1® software
- PLUS+1® software services, support and training
- Position controls and sensors
- PVG proportional valves
- Steering components and systems
- Telematics

**Danfoss Power Solutions** is a global manufacturer and supplier of high-quality hydraulic and electric components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market as well as the marine sector. Building on our extensive applications expertise, we work closely with you to ensure exceptional performance for a broad range of applications. We help you and other customers around the world speed up system development, reduce costs and bring vehicles and vessels to market faster.

Danfoss Power Solutions – your strongest partner in mobile hydraulics and mobile electrification.

**Go to [www.danfoss.com](http://www.danfoss.com) for further product information.**

We offer you expert worldwide support for ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide you with comprehensive global service for all of our components.

Local address:

**Hydro-Gear**

[www.hydro-gear.com](http://www.hydro-gear.com)

**Daikin-Sauer-Danfoss**

[www.daikin-sauer-danfoss.com](http://www.daikin-sauer-danfoss.com)

**Danfoss  
Power Solutions (US) Company**  
2800 East 13th Street  
Ames, IA 50010, USA  
Phone: +1 515 239 6000

**Danfoss  
Power Solutions GmbH & Co. OHG**  
Krokamp 35  
D-24539 Neumünster, Germany  
Phone: +49 4321 871 0

**Danfoss  
Power Solutions ApS**  
Nordborgvej 81  
DK-6430 Nordborg, Denmark  
Phone: +45 7488 2222

**Danfoss  
Power Solutions Trading  
(Shanghai) Co., Ltd.**  
Building #22, No. 1000 Jin Hai Rd  
Jin Qiao, Pudong New District  
Shanghai, China 201206  
Phone: +86 21 2080 6201