ENGINEERING TOMORROW

CCMS Toolkit Instructions- Revision C.1

Danfoss Turbocor® VTT and VTX Series Centrifugal Compressors

VT Series Compressors

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List of Changes

Revision	Date	Page	Description of Change
C	03-28-2022	-	Complete Update
C.1	7-19-2022	14	Added Figure 3-3 and Reset note.

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Proprietary Notice

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Encounter an error or see an opportunity for improvements while reading this manual? Email us at turbocor.contact@danfoss.com with a brief description.

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Chapter 1.0 Introduction

1.1 Purpose

The purpose of this document is to provide instructions on how to transfer firmware and configurations into the VT Series electronics via the Compressor Configuration Management System (CCMS) Toolkit.

The following tasks are described:

1. CCMS Toolkit initial setup
2. Transferring firmware and/or configuration to the electronics
3. Viewing History
4. Saving default actions
5. Restore default actions
6. Performing optional actions only

1.2 Scope

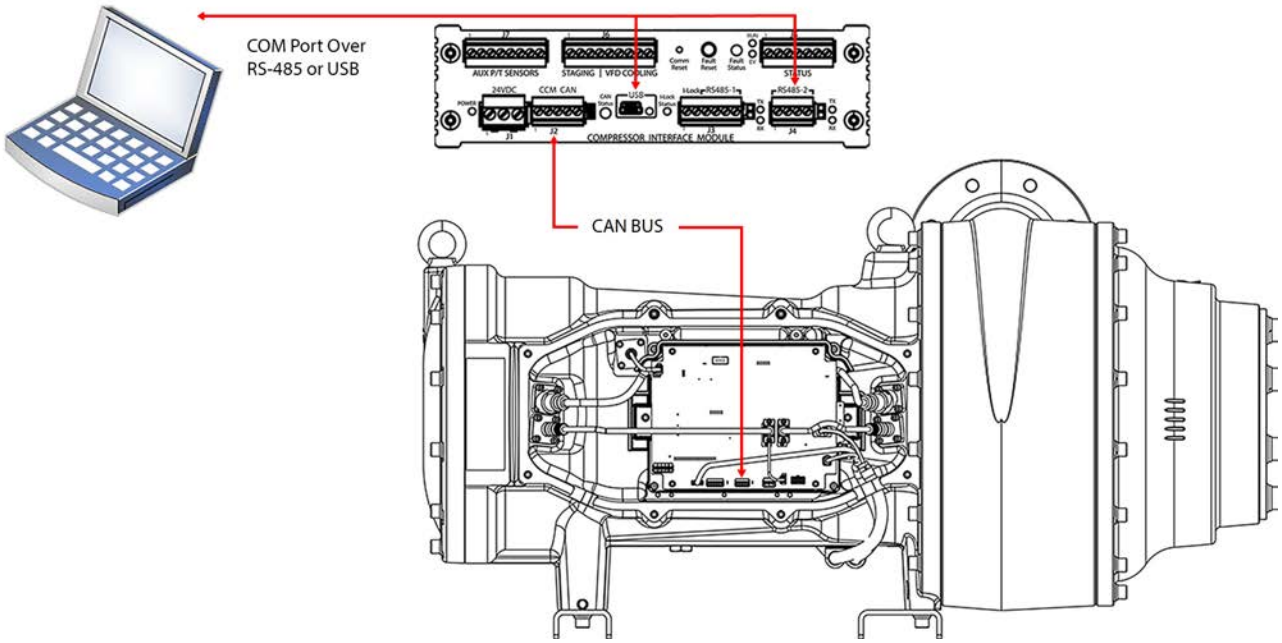
These procedures are applicable to the Danfoss Turbocor VT Series compressors.

The CCMS Toolkit is designed to support transfers via a PC COM Port connection (RS-485 or USB) to the electronics.

1.3 Connection Setup

- Programming PC or Laptop has a RS-485 or USB connection to the Compressor Interface Module (CIM) Board for 3G
- Danfoss Turbocor (DTC) CIM USB Driver installed (Required for USB connection only)
- Electronics boards are properly connected to power

Figure 1-1 Connection Setup



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Chapter 2.0 Computer Requirements

2.1 General Computer Requirements

- Framework: .NET Framework Version 4.0 or later
- Operating System: Microsoft Windows XP (32-bit or 64-bit) SP2 or later, Microsoft Windows Vista (32-bit or 64-bit) Basic or better, Microsoft Windows 7 (32-bit or 64-bit) Home Basic, or Windows 10 (32-bit or 64-bit)
- Hardware: 1.0 GHz or higher CPU, minimum OS-required RAM. Hard-disc needs to have 20 MB or more free space available
- For VTT/VTX CIM USB driver compatibility, the operating system must provide native support for USB serial driver (Usbser.sys)
- For optimal viewing, the minimum display resolution should be set at 1024x768 with 100% DPI, high-color display (or better)

2.2 Required Items Before Utilizing CCMS Toolkit

- Folder containing necessary (.dtcc) configuration packages provided by DTC Applications Engineering

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Chapter 3.0 Tasks

3.1 CCMS Toolkit Initial Setup

1. When the application is first loaded, the **Settings** tab is shown (if it hasn't been setup).
2. If settings have already been setup for a current user in this PC, then the **Program** tab is shown.
3. Under the **Settings** tab, choose the **Packages Directory** that contains the necessary dtcc configuration packages.
4. Select the **Modbus** port settings as per the connection setup to the electronics.
5. Click **Save** to save the current settings.

NOTE
This is an important step and must be completed.

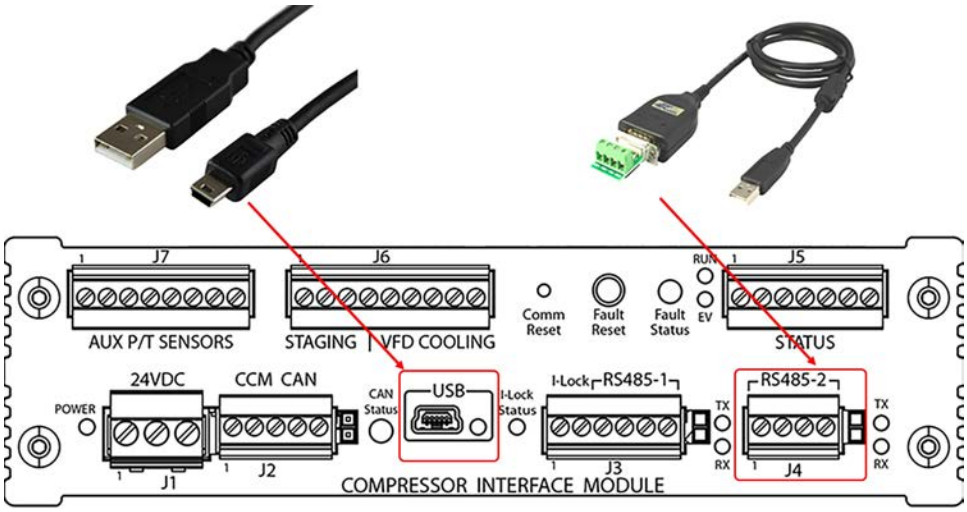
6. A dialog confirming the save is shown. Click **OK**.
7. CCMS Initial setup is now complete to perform actions.

NOTE
The settings need to be changed if the communication ports or settings change or if the packages are in a different directory.

3.2 Connecting to the VT Series Compressor to the CIM

1. Connect your laptop to the CIM using either the RS485-2 connection (via a RS485 to USB Type A adapter) or the USB port (using a USB Mini B to USB Type A cable) as seen below.

Figure 3-1 CIM Connection



2. Remove the Programmable Logic Controller (PLC) cable from the RS485-1 from the J3 connector on the CIM.

• • • CAUTION • • •
Failure to remove the PLC cable from J3 (Interlock and RS485-1) will result in data corruption!

3. Open the CCMS Toolkit by clicking on the CCMS Toolkit icon.

NOTE
You cannot have the SMT open at the same time as the CCMS Tool.

Figure 3-2 CCMS Toolkit Icon

3.3 Transferring firmware and/or configuration to the electronics

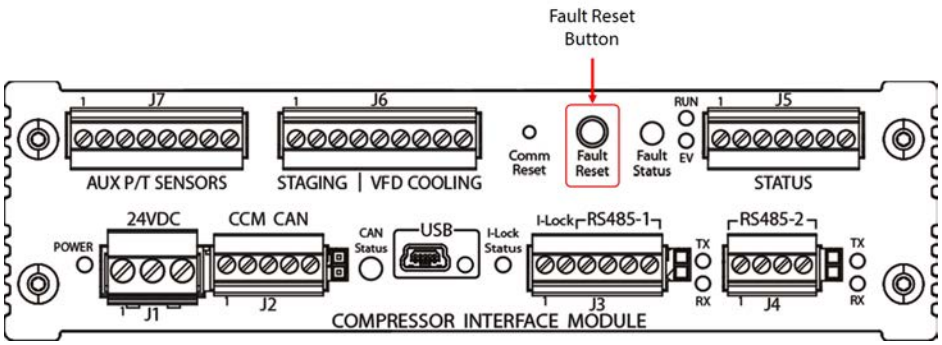
1. Select the **Program** tab.
2. On the **Enter Part Number** text field, enter the part number that you wish to configure on the electronics.
3. If a configuration file for the entered part number is found, the application will display the package information and clear selections on the Action section. “No Packages Found” text will be shown if a package for the part number cannot be found in the package’s directory.

NOTE
To change the search directory, go to the Settings tab.

4. Select an **Action** you wish to perform.
5. Click **Start** to begin the action.
6. A loader screen is shown with progress bar while the action is in progress, once the process completes a message box indicating the status is shown.
7. After the download has completed, cycle the power to the compressor. Power should not be reapplied to the compressor until all CIM LEDs are off.
8. Once power is reapplied, connect to the compressor using the SMT and validate the CCM and CIM Version as well as the Config Part Number.

NOTE
If there is a loss of communication between the laptop and CIM at any point in the download, the firmware can become locked. This will be evident by the inability to connect to the compressor via the SMT after the failed firmware update. In order to restart the download process, depress the Fault Reset button on the CIM 5 times in rapid succession. This action will place the electronics back into "boot mode" which will allow the firmware download process to be restarted.

Figure 3-3 CIM Reset

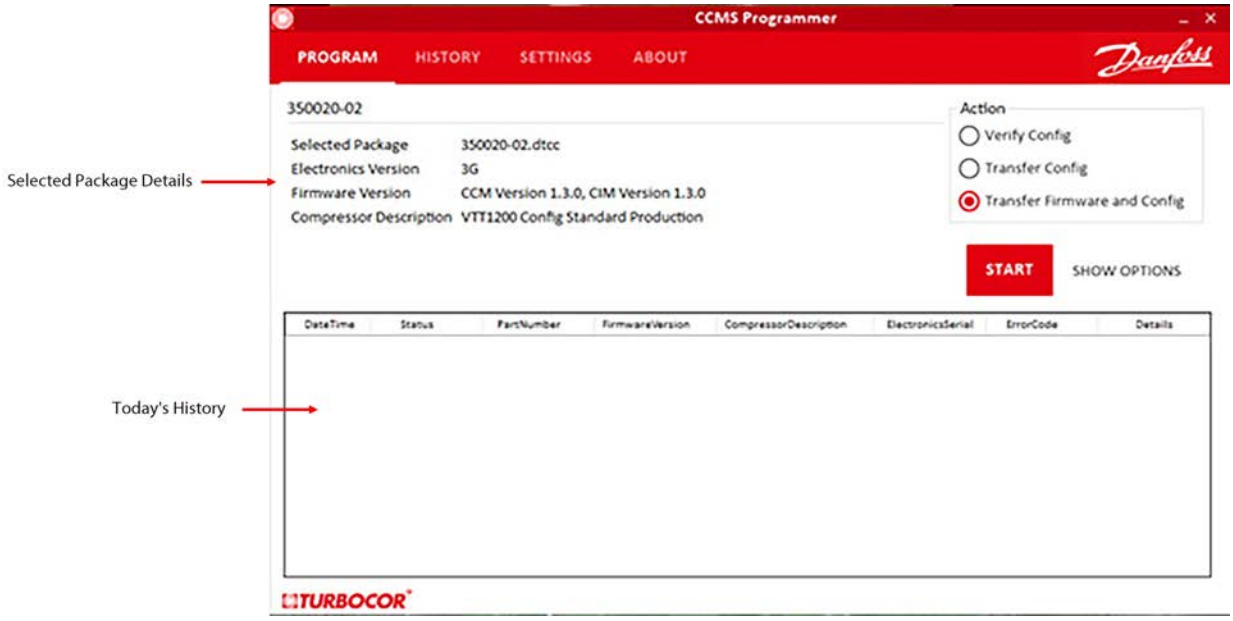


Chapter 4.0 User Interface

4.1 Program Tab

Main page of the application used to select a package and perform an action.

Figure 4-1 Program Tab



IMPORTANT NOTES:

- The part number text box will receive focus as soon as the user enters the part number, even if the focus is currently on a different tab or control.
- The application will start searching almost immediately for the part number in the Packages directory. The user can continue typing more characters to include the revision if necessary.
- User can either search using part number (######) or part number with revision (######-###). If only the part number is entered, the application will choose the latest revision for that part number in the packages directory.
- The part number text box will clear once the user hits **Start** button.

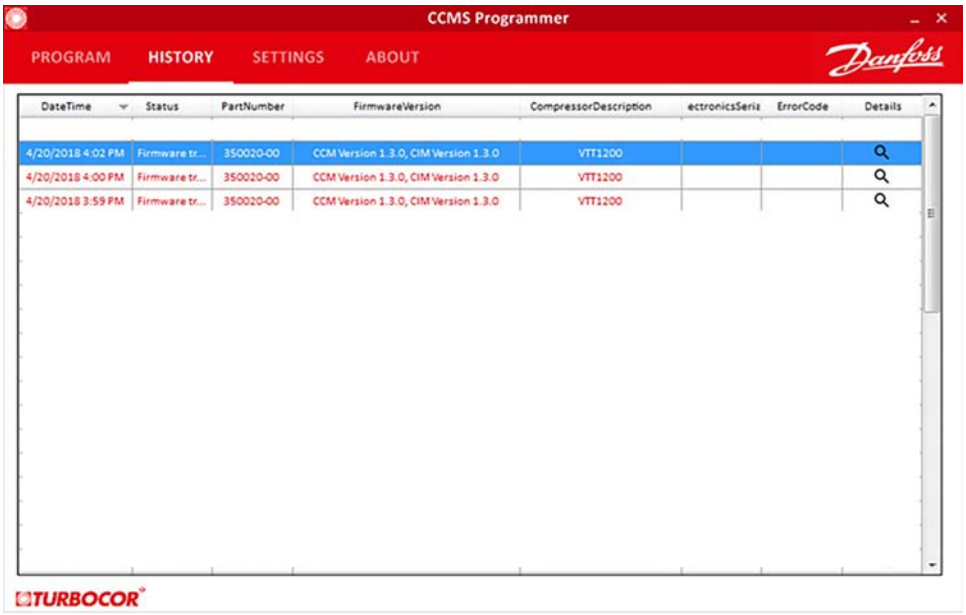
Action Definitions:

- **Verify Config** action is used to compare configuration in the electronics with the configuration package and any optional actions if set. No Default optional actions.
- **Transfer Config** action is used to transfer configuration from package to the electronics and any optional actions if set. Default Optional actions: Sync Clock.
- **Transfer Firmware and Config** is used to transfer firmware and configuration from package to the electronics and any optional actions if set. Note: This is only available on 3G electronics.
- Default Optional actions for 3G: Sync Clock.

4.2 History Tab

Shows history of actions performed in the past. It will retain information in logs even if application is restarted.

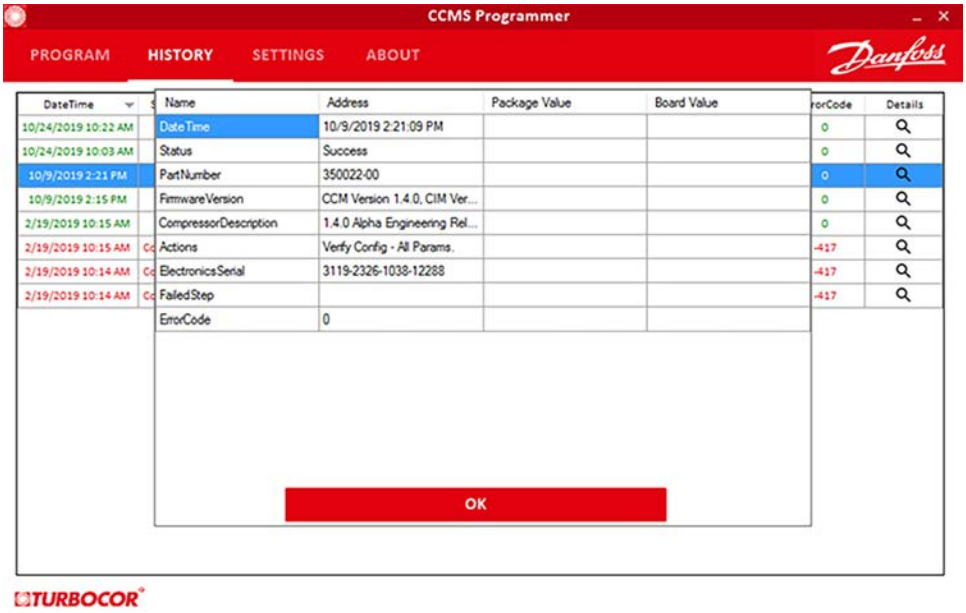
Figure 4-2 History Tab



NOTE
Electronics Serial is only shown for Verify Config, Transfer Config and Transfer Firmware and Config Actions.

A pop-up menu will appear when clicking on the **history details icon**. This will provide details and verification differences.

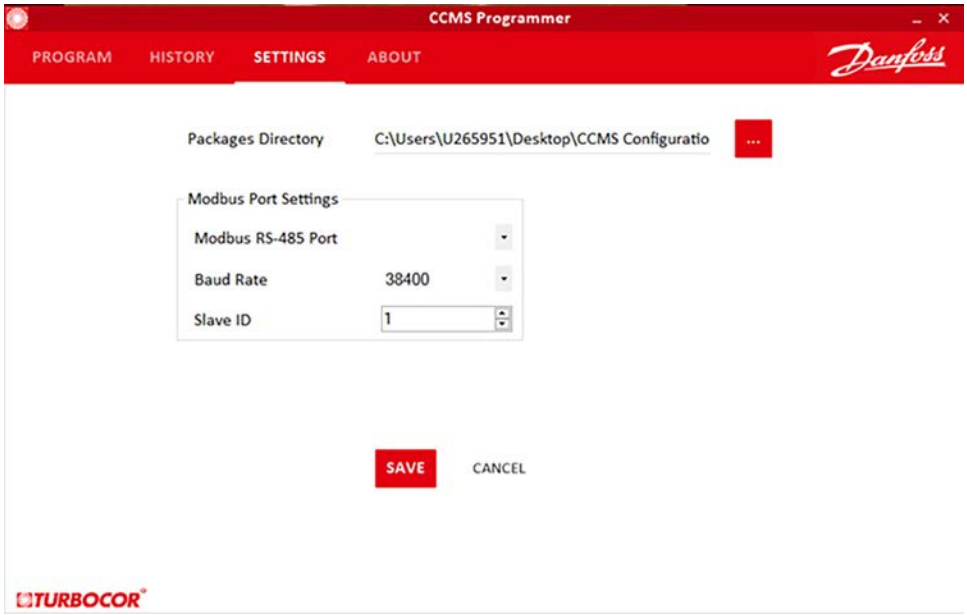
Figure 4-3 History Details



4.3 Settings Tab

Packages Directory and Communication settings can be updated using the Settings tab.

Figure 4-4 Setting Tab



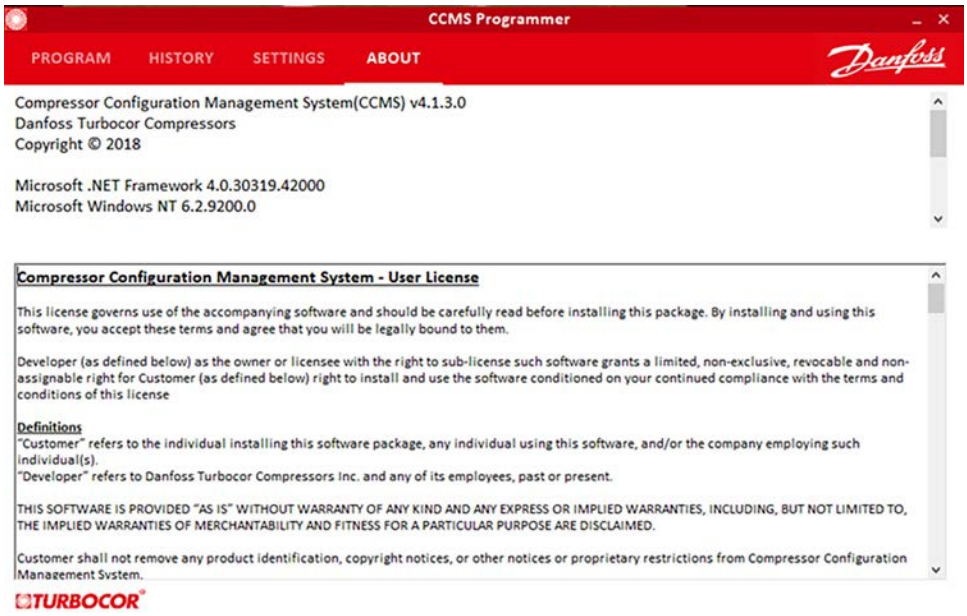
IMPORTANT NOTES:

- Only currently available COM Ports will show in the Modbus and Service port dropdowns
- A path to the directory can be entered via the text box, or the browse (…) button can be used to choose the directory
- The Toolkit will look up all (.dtcc) configuration package files in the selected directory and all its sub-directories

4.4 About Tab

CCMS Version and License information is shown here

Figure 4-5 About Tab



Appendix A Acronyms and Terms

Table A-1 Acronyms and Terms

Acronym/Term	Definition
CAN	Controller Area Network.
CCM	Compressor Control Module.
CCMS	Compressor Configuration Management System.
CIM	Compressor Interface Module; the part of the compressor electronics where the user connects all field connection wiring such as RS-485, EXV, and analog / digital wiring. Also known as the I/O board.
COM	Communication Port.
CPR	Compressor Performance Rating.
DTC	Danfoss Turbocor.
LED	Light-Emitting Diode.
LLC	Limited Liability Company.
Modbus	vwww.modbus.org, Modbus is a serial communications protocol published by Modicon in 1979 for use with its programmable logic controllers (PLCs). It has become a de facto standard communications protocol in industry, and is a commonly available means of connecting industrial electronic devices.
PC	Personal Computer.
PLC	Programmable Logic Controller.
SMT	Service Monitoring Tool.
USB	Universal Serial Bus.
VTT	Variable Twin Turbo.

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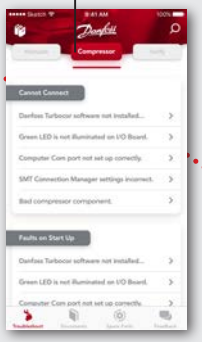
The user can select from a list of symptoms in the app that match the problems exhibited by the compressor being serviced. The app will then list potential causes, solutions to the problem, and service literature to reference for further information.

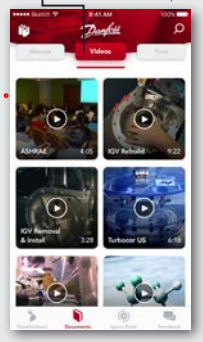


The app provides the correct operating parameters for key components: no need to keep reference documents on hand.

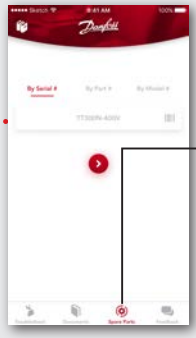
Documents & Video

You no longer need to keep hundreds of pages of parts catalogs and training manuals. With the app, all of this information is at your fingertips on your smart device.

With the app, you can access videos made by Danfoss Turbocor® that demonstrate how to remove, install, and rebuild key components on Danfoss Turbocor® compressors.



Spare Parts



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Highlift Compressors

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