

Bulletin | Danfoss Turboacor Compressors

Customer Notification

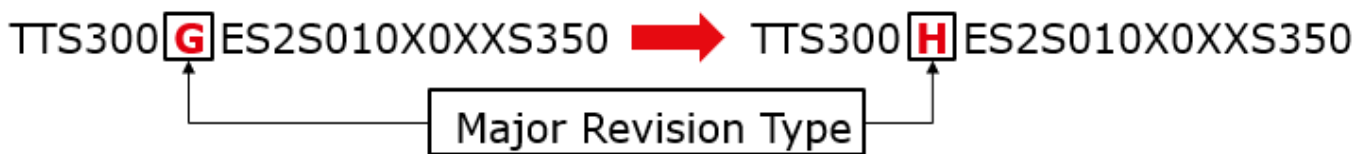
B-CN-221-EN REV A

4/27/2020

SUBJECT: Major Revision "H" Release Notification

Purpose

This is to inform our customers that all TTS/TGS/TTH/TGH series compressors will be moving to a **new Major Revision Level**.



The new Major Revision will be "H" for all TTS/TGS/TTH/TGH compressors. The Major Revision "H" Compressors will include a series of product changes aimed at improving overall reliability and quality. **This release is currently scheduled for all TTS/TGS/TTH/TGH models built in Tallahassee factory starting June 1st, 2020.** Current and future orders for new compressors with a confirm date of **June 3rd** or later will be manufactured as Major Revision "H". Your Danfoss Customer Service representative will contact you to identify any existing Major Revision "F" and "G" orders which will be converted to Major Revision "H". Compressors manufactured in Haiyan will be converted to Major Revision "H" effective **August 3rd, 2020.**

All Major Revision "H" compressors must be configured using the Turboacor Variant Configuration[®] system and new nomenclature. Several of the new components will have a backwards compatibility that will require new spare parts replacing the current spare part kit.

This bulletin details out the relevant changes and provide instructions to customers for actions that will be required to prevent disruptions in compressor deliveries and spare part purchases. The scope and timing outlined in this bulletin describes the current effectivity; however, there may be changes due to supply chain material disruptions as a result of COVID-19. Any changes will be communicated closer to the implementation date.

Summary

The changes included in this Major Revision are detailed below. Any backwards compatibility or spare part considerations are defined as well.

New compressors produced by Danfoss Turboacor in Tallahassee will move from Major Revision "F" and "G" to Major Revision "H". All new Major Revision "H" compressors will be made available using current production firmware.

This Major Revision change is required because **there are improvements that are not backwards compatible** with existing "F" and "G" revision compressors. When compressor models are converted to Major Revision "H", previous Major Revision "F" and "G" compressors will no longer be available for

purchase as new compressors. Replacement parts required to support “F” and “G” revision and earlier compressors will continue to be available.

The change to Major Revision “H” is associated with multiple improvements focused on reliability and maintainability, as well as other modifications required to enable future product releases.

ITEMS IN SCOPE

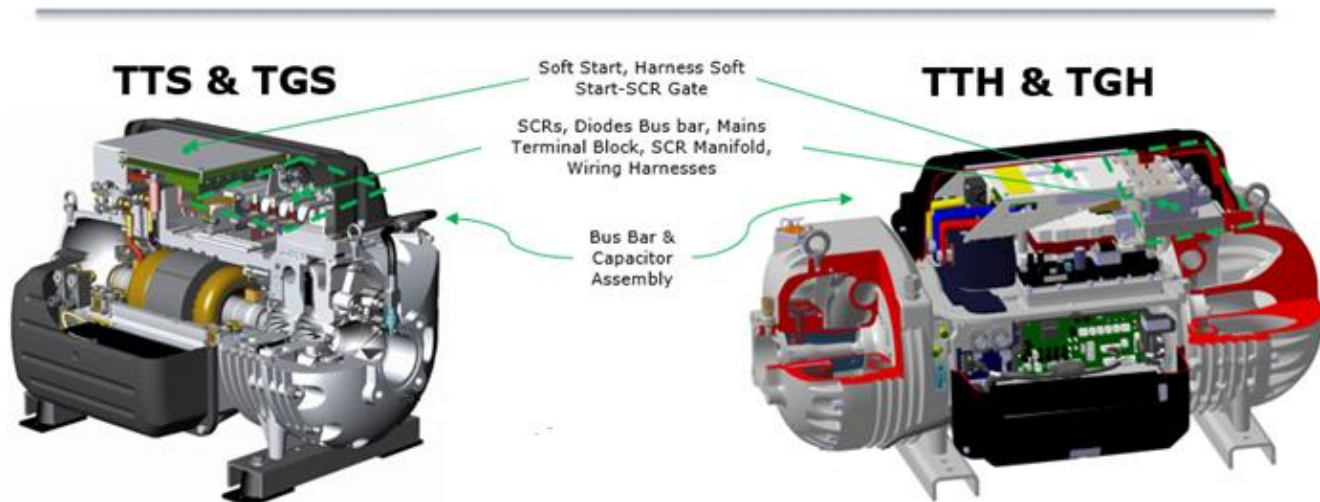


Figure 1 – Major Revision “H” Items in Scope

Soft Start Module

Description of Change:

Design of the soft start and mounting bracket has been changed significantly. The new design is common for all voltages, eliminating the need to have voltage-specific soft starts. The onboard control power supply is derived from the DC-bus by Switching Mode Power Supplies (SMPS), so the heavy and bulky line transformers have been removed. The fuses have been removed since the AC input Positive Temperature Coefficient thermistors (PTCs) operate as resettable fuses and DC input blocking diodes as well as SMPS with inherent over-current protection.

Reason for Changes:

This soft start will better withstand low-voltage sags that would cause the previous version of the soft start to lockout requiring a power-cycle to reset. This new soft start will not lockout in this condition but will be able to reset automatically without a power-cycle.

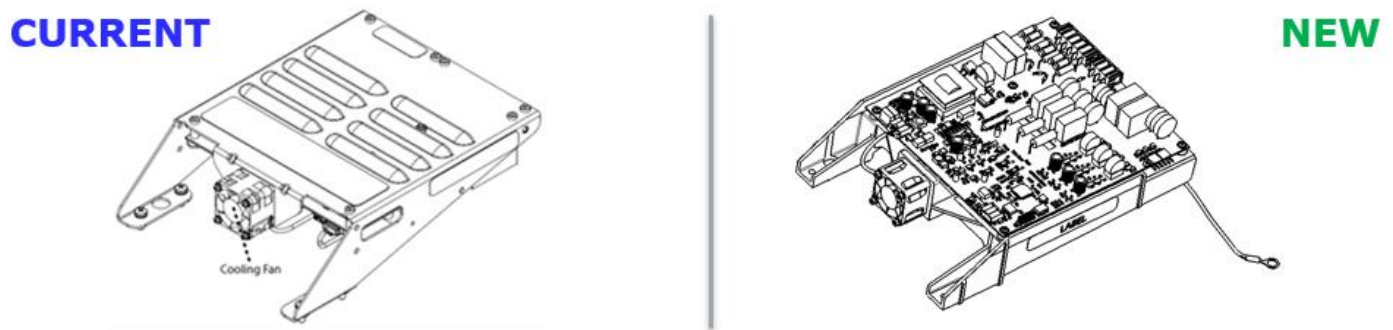


Figure 3 - Soft Start Board Comparison Major Revision "F" vs Major Revision "H"

Spare Part Impact:

There is a new spare part number for the soft start module.

The new soft start is not backwards compatible. Additionally, if replacing the soft start on a compressor that is prior to Major Revision "H", the DC/DC and associated wiring harnesses will also have to be upgraded. The soft start fan will have a three-wire harness instead of two. The new soft start fan has the same connector and is backwards compatible.

Existing Spare Parts Disposition:

The existing kits will be obsoleted and only the new soft start will be available for future spare part purchases.

There will be two kits available:

- 1 – Pre-Major Revision "H" compressor conversion kit including all the required components.
- 2 – Major Revision "H" and Later including only the Soft Start.

Existing inventory can continue to be used for the Major Revision "F" / "G" and earlier compressors. Conversion kit with new soft start will be required after existing inventory is exhausted.

Diode Rectifiers

Description of Change: The SCRs for the TTS300/TGS230 did not change; however, the SCRs will be procured from two different vendors. The TTS300/TGS230 SCR will be applied to the TTS400/TGS390.

A new rated SCR is being applied to the TTS350/TGS310, TTS700/TGS520, and TTH375/TGH285. It will be dual sourced. The size of the new SCR matches that of the TTS300/TGS230 compressors and requires relocation of the top-side electronics and other components.

Note that the color of the SCRs may vary between the two different sources. Each compressor built will only use SCRs from a single source and will not be mixed.

The SCRs should never be swapped to different compressors since they could differ in rating.

Reason for Changes:

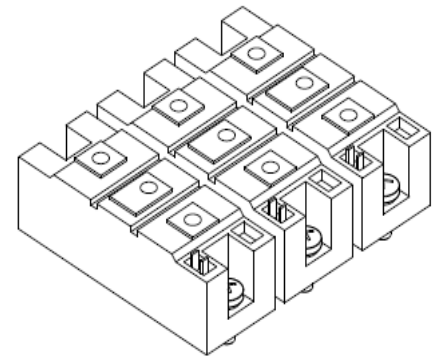
Prevent single source supply chain reliance for these components.

Spare Part Impact:

The spare part numbers for the SCRs will be new. The TTS300 does not change. The TTS400 will change the SCR type applied and will be the same spare part kit as the TTS300. New SCRs are not backwards compatible and will be available in a new spare part kit for all Major Revision "H" compressors.

Existing Spare Parts Disposition:

The existing kits will continue to be available to support previous major revision level models.



**Figure 4 – Diode Rectifiers
Major Revision "H"**

Terminal Block Assembly & Input Mains Bus Bars

Description of Change:

The terminal block is new for all compressors except TTS300/TGS230.

Reason for Changes:

New Mains Bus Bars are required to connect to terminal block and SCRs for all compressors except TTS300/TGS230 due to the relocation of the SCRs.

Spare Part Impact:

The spare part number for the terminal block assembly will be new.

All Major Revision "H" compressors will require the new Terminal Block except for the TTS300/TGS230 compressor. New bus bars are not backwards compatible.

Existing Spare Parts Disposition:

Existing kits will not be obsoleted and will continue to be available.

SCR Heatsink Assembly

Description of Change:

The design of the heatsink plate is changing for the new SCRs. This affects all models except the TTS300/TGS230. Additionally, the temperature sensor has been removed for all models as it is no longer required.

Reason for Changes:

SCR Heatsink is being modified to accommodate new SCR mounting.

Spare Part Impact:

The spare part number for the SCR Heatsink Assembly will be new.

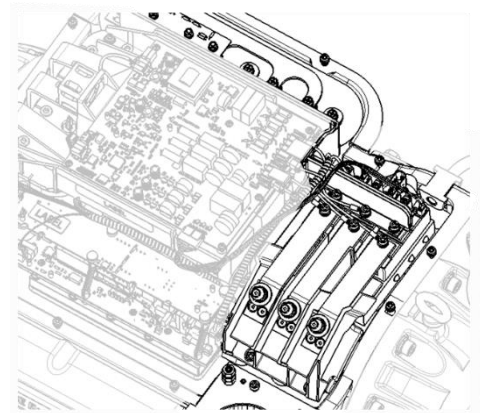


Figure 5 – Terminal Block Assembly & Mains Bus Bars Major Revision "H"

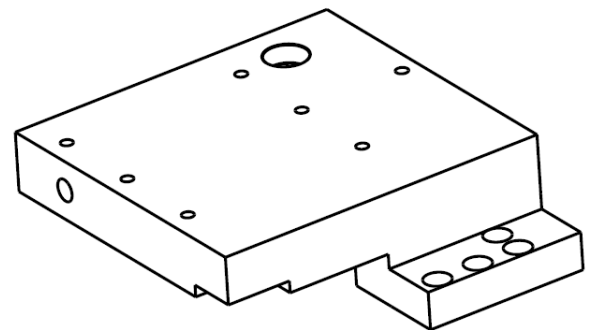


Figure 6 – SCR Heatsink Assembly

The new SCR heatsink is not backwards compatible with any previous revisions.

Existing Spare Parts Disposition:

The existing spare part kit will continue to be applicable to TTS300/TGS230 and will continue to be available for spare parts for all other previous revision models.

Bus Bar Assembly and Capacitors

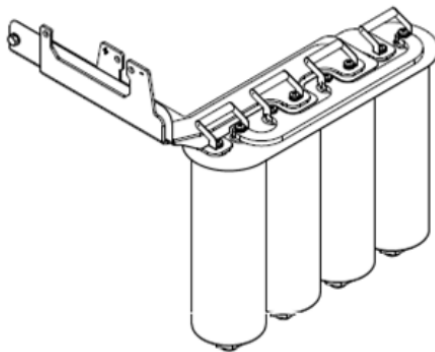
Description of Change:

Capacitor Bus Bar assembly has been modified and now includes a new balance board that replaces the bleed resistors. The bus bar is not changing on the TTS300/TGS230, but the assembly is changing to include an electronic balance board.

Reason for Changes:

The Bus Bar changed because the location of the SCRs has changed. The Balance board has been added to improve overall reliability and life of the capacitors. The new balance board will better improve capacitor charging as the capacitors age as well as reduce the heat generated in the top side that was caused by the bleed resistors.

CURRENT



NEW

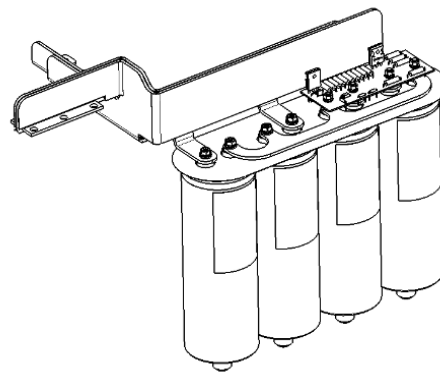


Figure 7 - Bus Bar Assembly & Capacitors Major Revision "H" Change

Spare Part Impact:

The spare part number for the bus bar assembly and capacitors will be new. The new Capacitor and Bus Bar assemblies will not be backwards compatible.

Existing Spare Parts Disposition:

Existing spare parts will continue to be available.

Capacitor Inverter Snubber**Description of Change:**

Snubber capacitors are new for all Major Revision "H" compressors except TTS300/TGS230.

Reason for Changes:

The re-arrangement of the top side components and change of the SCRs allows the integration of the new snubber capacitors with improved reliability.

Spare Part Impact:

The spare part number for the capacitor inverter snubber will be new.

All Major Revision "H" compressors will require the new capacitor inverter snubber except for the TTS300/TGS230 compressor. New snubber capacitors are not backwards compatible because they will not fit into the existing space. The new Capacitor and Bus Bar assembly is specifically designed to accommodate the new snubber capacitors.

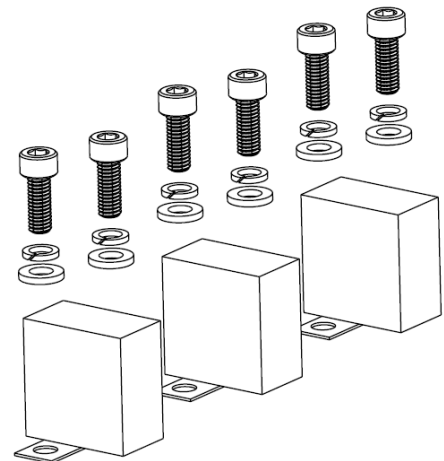


Figure 8 – Capacitor Inverter Snubber

Existing Spare Parts Disposition:

The existing spare part kit will continue to be applicable to TTS300/TGS230 and will continue to be available for spare parts for all other previous revision models.

DC Bus Test Harness**Description of Change:**

The changes to the connections on the Soft Start and the DC/DC will cause a need for a new DC bus test harness to be created.

Reason for Changes:

Connections on wiring harnesses are changing.

Spare Part Impact:

The spare part number for the bus DC Bus Test Harness will be new.

The new harness will apply only to Major Revision "H" and later.

Existing Spare Parts Disposition:

The existing test harness will continue to be available but will be specific for the older models.

Wiring Harnesses**Description of Change:**

The connectors on all the harnesses that mate with the soft start are changing.

Reason for Changes:

Update to soft start to prevent mis-installation and further help poke-yoke Major Revision "H" compressors.

Spare Part Impact:

The spare part numbers for the wiring harnesses will be new.

The new harness will apply only to Major Revision "H" and later.

Existing Spare Parts Disposition:

The existing wiring harnesses will continue to be available but will be specific for the older models.

Action Required

New Major Revision "H" compressors will be produced. The previous Major Revision ("G" for TTSS300/TGSS230 or "F" for all other models) will no longer be available as a new compressor.

Customers will need to update their ordering systems to use the new Type Code associated with the Major Revision "H" compressors. Your Danfoss Customer Service representative will contact you to identify any existing Major Revision "F" and "G" orders which may need to be converted to Major Revision "H".

As a result of the Major Revision "H" product launch, many of the manuals and guides provided by Danfoss LLC will be modified. The revised manuals will be released on June 1st.

For more information please contact your Key Account Manager or our Product Support group at turbocor.ps.na@danfoss.com or eu.support@danfoss.com for inquiries within Europe.