

**State of California
AIR RESOURCES BOARD**

EXECUTIVE ORDER DE-16-001-01

Pursuant to the authority vested in the California Air Resources Board (CARB) by Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code section 39515 and 39616 and Executive Order G-02-003;

Relating to Exemptions under section 27156 of the Vehicle Code and Verification under sections 2700 through 2711 of title 13 of the California Code of Regulations:

RYPOS DPF/ULETRU™

CARB has reviewed RYPOS's request for verification of the RYPOS DPF/ULETRU Active Diesel Particulate Filter System (DPF) for multi-temperature transport refrigeration units (TRUs). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of CARB hereby finds that the RYPOS DPF/ Ultra-Low-Emission Transport Refrigeration Unit (ULETRU) system reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to 85 percent reductions) (California Code of Regulations (CCR), title 13, sections 2702 (f) and (g) and section 2708(b)) and is compliant with the 20 percent nitrogen dioxide (NO₂) emissions limit for 2009 (13 CCR section 2706(a)) and as such merits designation as a "Level 3 Plus" system per section 2702(f).

This verification is subject to the following terms and conditions:

- The engine must be in its original configuration, manufactured from model year 2003 or newer, having one of the engine family names listed in the Attachment 1.
- The engine must be used in a Thermo King multi-temperature TRU.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter.
- The engine must be four-stroke.
- The engine must be naturally-aspirated.
- The engine must be well maintained and not consume lubricating oil at a rate greater than one quart per 50 engine hours.
- RYPOS, their distributors, or installers shall review actual operating conditions prior to retrofitting an engine with the RYPOS DPF/ULETRU to ensure compliance with the terms and conditions of this Executive Order. RYPOS shall supply a TRU engine inspection checklist and data sheet with each DPF, to ensure compatibility. Using the checklist, the installer shall review the DPF's candidate engine actual operating conditions

(e.g. lube oil consumption, injector service) prior to retrofitting the TRU with the RYPOS DPF/ULETRU, specifically, to determine if the candidate engine is suitable for installation of a RYPOS DPF/ULETRU System. RYPOS will also conduct training for installers, on an as-needed basis. The installer shall record the results on the data sheet, and the data sheet must be retained by the dealer point of sale for a minimum of four (4) years (warranty period).

- Lube oil, or other oil, must not be mixed with the fuel.
- The product must not be operated with fuel additives, as defined in section 2701 of title 13 of the CCR, unless explicitly verified for use with the fuel additive(s).
- The product must not be used with any other systems or engine modifications without CARB and manufacturer approval.
- The other terms and conditions specified below.

Table 1: Conditions for the RYPOS DPF

Parameter	Value
Application	Thermo King multi-temperature transport refrigeration units.
Engine Type	Diesel, four-stroke, direct injection, naturally aspirated, without exhaust-gas recirculation (EGR).
Engine lube oil consumption rate	Less than one quart per 50 engine hours. A high lube oil consumption rate may cause premature clogging of the filter.
Fuel injector service	Injectors must be serviced at time of RYPOS DPF/ULETRU installation if they have not been serviced within the past 3,000 engine hours.
Fuel	Commercially-available ultra-low sulfur diesel fuel (less than 15 ppm sulfur) or biodiesel blends. (See further fuel requirements below).
PM Verification Level	Level 3 Plus classification: At least 85 percent reduction of PM and no more than 20 percent NO ₂ increase from baseline.

The RYPOS DPF/ULETRU System consists of a Diesel Oxidation Catalyst (DOC), an active regeneration filter with backpressure control system, an exhaust system insulation package, a backpressure warning indicator, and a TK-MT kit. These components shall be installed exactly as described in RYPOS' Application for Verification of Level 3 Plus Filter. The parts list for the RYPOS DPF/ULETRU system is included in Attachment 2

This Executive Order is valid provided that the diesel fuel used in conjunction with the device complies with title 13, California Code of Regulations (CCR), sections 2281 and 2282, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the **American Society for Testing and Materials (ASTM)** specification D6751 applicable for 15 ppm sulfur content.
- The diesel fuel portion of the blend complies with title 13, CCR, sections 2281 and 2282.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

This Executive Order is valid provided that installation instructions for the **RYPOS DPF/ULETRU System** do not recommend tuning the engine to specifications different from those of the engine manufacturer.

IT IS ALSO ORDERED AND RESOLVED: CARB approved Rypos to make the following changes on the in-use filters:

1. Remove ½ NPT pipe coupling from housing welded assembly 503-0051-00-00. New part number will be 503-0051-00-01.
2. Remove ½ NPT square head plug from DPF top-level assembly 960-0045-00-00. New part number for DPF with housing less cleanout plug will be 960-0045-00-01.

CARB approved Rypos to entirely remove the ash-plug port on all new Thermo King filter housing without any adverse effects expected. Changes made to the design of the **RYPOS DPF System**, which adversely affect the performance of the engine's pollution control system, shall invalidate this Executive Order.

That installation of the **RYPOS DPF/ULETRU System** has been found not to reduce the effectiveness of the applicable engine pollution control system, and therefore, **RYPOS DPF/ULETRU System** is exempt from the prohibitions in section 27156 of the Vehicle Code for installation on the TRU engines listed in Attachment 1. This exemption is only valid provided the engines meet the aforementioned conditions. Changes made to the design or operating conditions of the **RYPOS DPF/ULETRU System**, as exempted by CARB, which adversely affect the performance of the engine's pollution control system, shall invalidate this Executive Order.

No changes are permitted to the design of the **RYPOS DPF/ULETRU System** unless approved by CARB. CARB must be notified in writing of any changes to any part of the **RYPOS DPF/ULETRU System**. Any changes to the system, components, applicable engine models, or software must be evaluated and approved in writing by CARB. Failure to do so shall invalidate this Executive Order.

No person shall alter, physically disable, disconnect, bypass, or tamper with an installed CARB verified diesel emission control strategy, as outlined in Title 13 CCR section 2711(e). Should CARB become aware that a design feature of a verified device is altered, physically disabled, disconnected, bypassed, or tampered on multiple units by independent persons, Rypos will be responsible to propose a design

modification and recall plan to the Executive Officer to minimize existing and potential for future tampering of the verified device.

Changes to the RYPOS DPF System are not permitted without CARB approval. CARB must be notified in writing of any changes to any part of the RYPOS DPF System. Any changes to the device must be evaluated and approved by CARB. Failure to do so shall invalidate this Executive Order.

Marketing of the RYPOS DPF/ULETRU System using identification other than that shown in this Executive Order or for an application or operating conditions other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from CARB.

This Executive Order shall not apply to any RYPOS DPF/ULETRU Systems advertised, offered for sale, sold with, or installed on a TRU prior to or concurrent with transfer to an ultimate purchaser.

As specified in the Diesel Emission Control Strategy Verification Procedure (title 13 CCR section 2706 (g)), CARB assigns each diesel emission control strategy a family name. The designated family name for the verification, as outlined above is:

CA/RYP/2016/PM3+/N00/TR/DPF01

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, RYPOS is responsible for honoring the required warranty (CCR, title 13, section 2707).

In addition, CARB reserves the right in the future to review this Executive Order, the exemption, and verification provided herein to assure that the exempted and verified add-on or modified part continues to meet the standards and procedures of CCR, title 13, section 2222, et seq. and CCR, title 13, sections 2700 through 2711.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

This Executive Order does not release RYPOS from complying with all other applicable regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executive Order DE-16-001 is hereby superseded and is of no further force and effect.

Executed at Sacramento, California, this 27 day of July, 2020.

Richard W. Corey
Executive Officer
by

A handwritten signature in black ink, appearing to read "Heather Arias". The signature is fluid and cursive, with a long horizontal stroke at the end.

Heather Arias, Chief
Transportation and Toxics Division

Attachment 1: RYPOS Engine Family List
Attachment 2: RYPOS Parts List (Confidential)