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Characteristics of Transportation of Certain Types of Cargo and Examination of Vehicles Intended for Transportation of Perishable Cargo

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Abstract:

This article contains information and suggestions about refrigerated container equipment, refrigeration equipment, and inspection of motor vehicles intended for the transportation of perishable goods and their operational status.A refrigerated container is primarily a shipping container, but in Russia it is often used as a stationary refrigerated chamber.

Keywords: *cooling system, container, bags, code design, improvement of storage system.*

Refrigerated container can be transported by road, rail and sea. The refrigerator tank consists of 2 main parts: the body and the cooler.

Frame part. Refrigerated containers can come in different sizes: 10 feet, 20 feet, 40 feet, and 45 feet.

It is important to understand that the structure of the body can vary greatly depending on the size, manufacturer and year of manufacture of the refrigerator.

Body structure

Figure 11. 40ft Refrigerated Container Frame Structure.

For example, let's take the most popular size - 40 feet. The body of the container consists of a supporting frame (vertical and horizontal corner beams) with fittings at the corners (eyes for loading and unloading the container) and cross beams of the floor.

Walls

Figure 12. Wall structure of a 40-foot refrigerated container.

The wall of the refrigerator is a sandwich of 2-3 mm thick stainless steel (since 2000) or "riveted" aluminum (before 2000) polyurethane foam panels (thickness 100 mm). The inner lining is also made of 1 mm thick stainless steel (glossy walls) or aluminum (white walls).

Internal borders. They are also called reinforced boards. In some cases, refrigerated containers were ordered by the shipping line. They are designed to prevent "swelling" of the walls of the case. This happens when a loaded refrigerated container is placed on the ground.

As a result of the pressure of the load, the body swells. If you use the refrigerator as a stationary refrigerator and do not move it with a load, then you will not see any special advantages of this modification. A 0.6 cm thick metal layer is installed on the cross beams of the supporting frame. Next, a 10 cm thick foam, 3 cm plywood and a durable T-shaped aluminum profile can easily withstand a loader that regularly works with goods. A 45-foot refrigerated container has a flat floor.

Floor part

Figure 13. The floor structure of a 40-foot refrigerated container.

Ceiling part

Figure 14. Ceiling structure of a 40-foot refrigerated container.

The ceiling is the same sandwich with a thickness of 15 cm. 35-grade foam is used. The inner surface is aluminum (white color) or stainless steel (glossy ceiling). Externally, it is made of stainless steel.

Structure of doors

Figure 15. Door part structure of 40ft refrigerated container.

The doors are made of the same multilayer panels as the walls and ceilings of the housing. The doors open at an angle of 270 °, which ensures convenient loading and unloading of products.

The thickness of the sandwich is 10 cm. 50 brand foam is used. The interior is made of stainless steel. The exterior is often made of aluminum. Rarely is stainless steel.

The rubber seal comes from the end of the doors. Also, the doors are equipped with special locking valves that allow hermetically closing the cargo compartment of the refrigerator.

The doors of the refrigerator are one of its most important parts. It is very important to observe the maintenance of doors and rubber bands. The number of profiles is several hundred, which makes switching almost impossible. This element is very difficult to repair.

Additional items.

Figure 16. Hooks for meat products.

This supplement is sold separately. It is not in the factory version.

Figure 17. PVC curtains on the door.

Sold separately. The purchase is highly recommended as they allow you to avoid extreme temperature differences (inside and outside) if you are actively loading or unloading cargo into the container.

The cooling device of the refrigerated container "cassette" is a block with electronics and blocks installed. The composition and characteristics of the electronics can vary greatly depending on the container brand (Carrier Transcold, Daikin, ThermoKing, Sabroe, Seacold, Mitsubishi).

The most popular brands are Carrier Transcold and Thermo King.

Although there are differences between manufacturers, they are also very important among the models of these brands.

Figure 18. The structure of the cooling part of the refrigerated container.

The main elements of a container cooler:

- ✓ Compressor
- ✓ Condenser
- ✓ Condenser fan
- ✓ Evaporator (Isparitel)
- ✓ 2 evaporator fans
- ✓ Controller with multiple starters
- ✓ Receiver
- ✓ Dryer filter

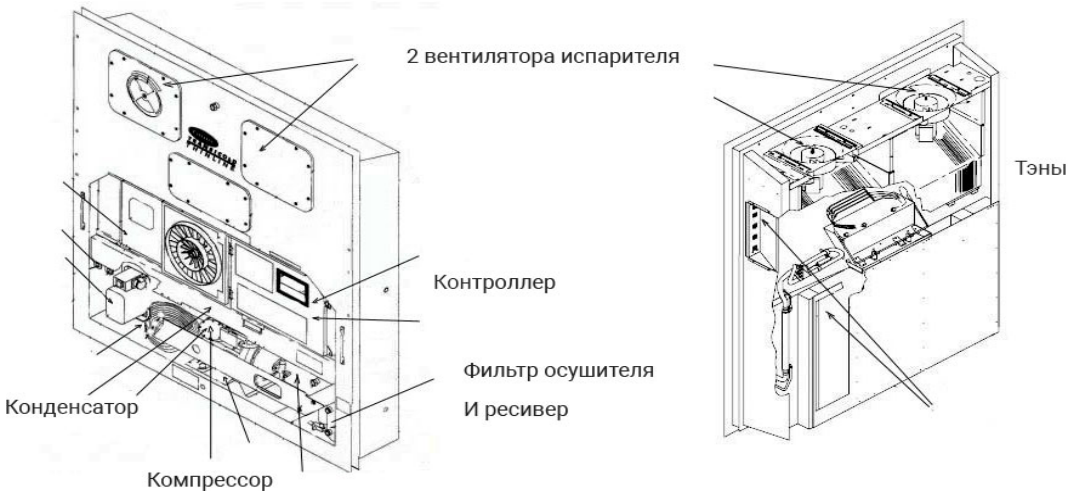
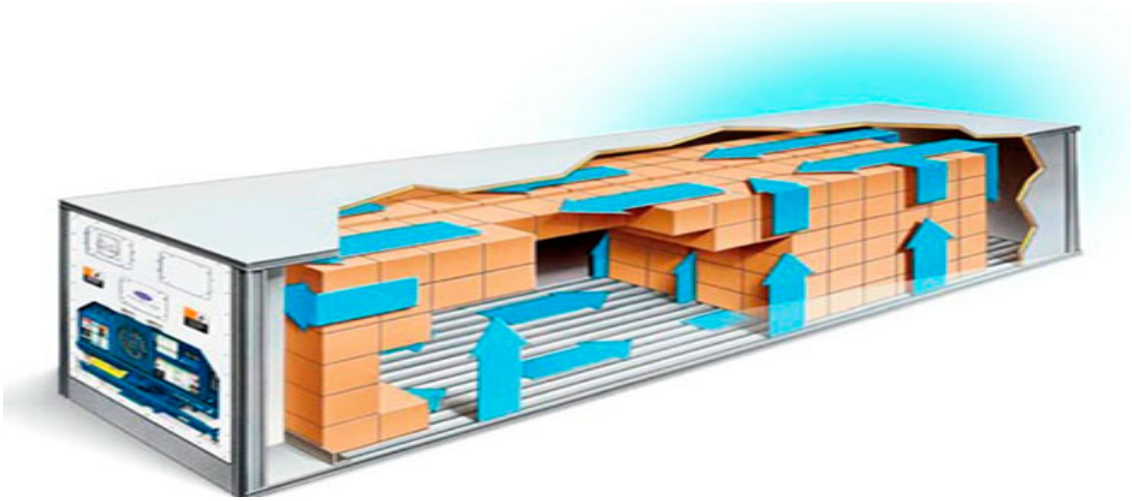


Figure 19. The structure of the cooling part of the refrigerated container.

The principle of operation of a refrigerator. The refrigerated container system is closed and sealed. It contains freon, a refrigerant gas.

In this case R-134



20-rasm. Refregiratorli konteynerning sovutish tizimining ishpah prinsipi.

Through the intake line, this gas enters the compressor. The compressor pressurizes this gas, and then it enters the condenser, where it boils and cools. Gas from the condenser enters the receiver. The receiver has the role of an expansion barrel. Additional pressure will fall there. Next, the gas passes through the drier filter, that is, the gas is dried and fed to the evaporator through the expansion valve. In addition, evaporator fans extract cold from the evaporator by blowing cold air from top to bottom. Air passes through the container, rotates, and returns to the top, becoming cooler with each circle. This causes the temperature to drop.

Operation of the refrigerating container in the heating mode.

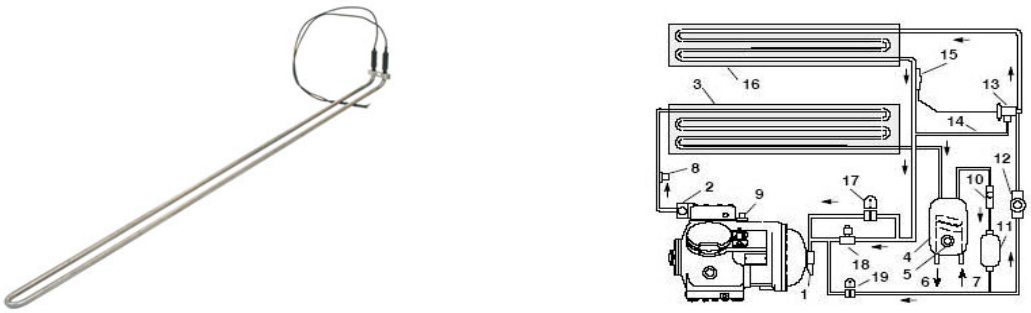


Figure 21. Structure of the heating mode of the refrigerated container.

When the container is working positively, the evaporator fans are started, only in this case they receive warm air from the heating elements - the awning.

The heaters are located under the container evaporator. The container takes in air from above and blows the warm air down. It warms the inside.

All processes are controlled by the controller. The controller opens and closes valves, monitors sensors, turns fans on and off, and ensures uninterrupted operation.

Conclusions

Efficient and safe transportation of goods each type of cargo requires special vehicles and equipment. The process of transportation of perishable goods is carried out under special conditions and equipment. Regular technical inspection of vehicles increases the efficiency of this process and ensures safe delivery of goods.

By following the requirements presented in our article, cargo transportation companies can provide their services more qualitatively and safely. This not only ensures customer satisfaction, but also increases the company's competitiveness.

REFERENCES

1. U.A.Ziyamuxamedova, M.A.Nurdinov, L.Y.Bakirov MASHINASOZLIKDA QO‘LLANILADIGAN POLIFUNKSIONAL GETEROKOMPOZIT POLIMER MATERIALLAR UCHUN BOG‘LOVCHI TO‘LDIRUVCHILARNI TANLASH VA ASOSLASH // ORIENSS. 2021. №4. URL: https://cyberleninka.ru/article/n/mash inasozlikda-qo-llaniladiganpolifunksional-geterokompozit-polimermateriallar-uchun-bog-lovchi-toldiruvchilarni-tanlash-va (дата обращения: 04.11.2022).
2. L.Y.Bakirov, G.I.Mamaev, A.B.Djumabayev Traffic safety in onstreet parking area босма ISSN: 2350- 0328 International Journal of Advanced Research in Science, Engineering and Technology Vol. 8, Issue 5 , May 2021
3. Ziyamukhamedova U. A., Bakirov L. Y., Makhsudova H. Anti-Corrosion Coatings for Large-Size Technological Equipment of Oil Refining and Cotton-Processing Production //International Journal of Advanced Research in Science, Engineering and Technology. – 2020. – Т. 7. – №. 5. – С. 13833-9.
4. Бакиров Л. Ю. ЭНЕРГЕТИК РЕСУРСЛАРДАН ФОЙДАЛАНИБ САМАРАЛИ ГЕТЕРОКОМПОЗИТ МАТЕРИАЛЛАР ВА УЛАР АСОСИДА ҚОПЛАМЛАР ОЛИШ //Международная научная конференция. Сборник научных статей “INNOVATION. – 2019.
5. Zokirov D. B. Reducing the overall dimensions of the CBD (crossing barrier device) to the maximum extent //ISJ Theoretical & Applied Science, 08 (88). – 2020. – С. 143-148.
6. Zokirov D. B. Manufacture of side insulation of rail joints on railway tracks from textolite //ISJ Theoretical & Applied Science, 08 (88). – 2020. – С. 155-160.
7. Zokirov D. B. Production of slats of the lower dimension of the railway from rubber //ISJ Theoretical & Applied Science, 08 (88). – 2020. – С. 149-154.
8. D. Zokirov, G. Ismoilova TRASSANING SUVGA TO’YINGAN UCHASTKALARIDA YOTQIZILADIGAN YER OSTI QUVURO‘TKAZGICHLARINI HISOBLASH // SAI. 2022. №A6. URL: https://cyberleninka.ru/article/n/trass aning-suvga-to-yingan-uchastkalaridayotqiziladigan-yer-osti-quvurotkazgichlarini-hisoblash (дата обращения: 04.11.2022).