

FRIGOR  **TEC**
Cooling to the point 



**GRANIFRIGOR™ –
ecological grain conservation**

www.frigortec.com



GRANIFRIGOR™	KK 80 AHY with HYGROMAT™	KK 145 AHY with HYGROMAT™
Cooling performance in 24 hours ^{1) 2)} [t/day]	65 – 120	140 – 170
Chilled air fan		
Volume flow [m ³ / h] ³⁾	4.600	7.700
Pressure [Pa] maximum ⁵⁾	3.400	4.700
Refrigerating capacity compressor [kW] ^{6) 7)}	20	35
Electrical data		
Output (average) [kW]	9	17
Max. current consumption [A]	32	58
Electrical connection ⁴⁾ [A]	32	63
Connections		
Ø Connection cold air hose [mm]	300	300
Condensation water runoff average [l / h]	12	20
Ø Condensation water runoff hose [inch]	1/2	1/2
Dimensions [L x W x H in mm] / weight [kg]		
with tyres	3.388 x 1.330 x 1.754 / 600	3.611 x 1.336 x 2.215 / 930
with swivelling casters	-	2.488 x 1.126 x 2.032 / 850

All specifications are valid for 400 V-3 Ph-50 Hz

- 1) Grain cooling to 10 °C
- 2) At an average outside temperature (day's median) of 20 °C, an average relative air humidity (outside air) of 52 %, and an average grain moisture of 16 % up to maximum capacity under favourable conditions and at 1000 Pa counter pressure.
- 3) At 1000 Pa counterpressure
- 4) acc. CEE
- 5) Higher pressures are possible upon request
- 6) AHY versions at 0 °C evaporation temperature and 30 °C condensation temperature
- 7) Tropic versions at 10 °C evaporation temperature and 40 °C condensation temperature
- 8) HP version (high pressure)t

Subject to technical change.

GRANIVENT:

The GRANIVENT is ideal for aerating promptly after bringing in the harvest.

The subsequent cooling with a GRANIFRIGOR™ ensures that insects and fungi do not damage the grain.

- Humidistat and thermostat for safe and reliable aerating
- Robust and sound-proofed with broad-faced filters and filter monitoring
- BMEP models – Ideal for tower silos
- Swivelling casters and forklift slots for safe transport



Telescopic and static ventilation pipes for grain and rape seed.





KK 160 Tropic with HYGROMAT™

160 – 270

10.800

6.000

77

27

90

100

300

40

1/2

3.696 x 1.636 x 2.286 / 1.400

2.820 x 1.426 x 2.163 / 1.350

KK 200 AHY with HYGROMAT™

180 – 330

10.800

6.000 / 8.000⁹⁾

59

23

90

100

400

30

3/4

3.696 x 1.636 x 2.286 / 1.400

2.820 x 1.426 x 2.163 / 1.350

KK 280 AHY with HYGROMAT™

270 – 440

15.200

6.000

77

30

107

125

400

40

3/4

3.685 x 1.806 x 2.543 / 2.000

3.369 x 1.806 x 2.402 / 1.800

KK 200 AHY with HYGROMAT™

Technical characteristics GRANIFRIGOR™:

- Frequency controlled energy efficient version
- Fans and compressors in sound-optimized versions
- HYGROTHERM™-switch, HYGROMAT™-control capable for all climatic conditions (rain, fog, heat and cold) by modification of the air moisture content
- Effective large air-filters, easily to clean
- Filter monitoring
- Solid model for industrial application
- Total unit casing
- Silo counter-pressure indication
- Standard pressurised models for tower silos
- Cool stop
- Quality control during the test-run in our factory
- Fully automatic DDC/ MP control for different operation modes (quiet / quick cool-down / ventilation / normal) with timer

- Energy saving winter and summer thermostat
- Fully automatic use of cool climatic conditions by electric heating
- Air-cooler with sight glass
- Corrosion protected heat transformer by coating
- Large, TÜV-certified refrigerant collector and rotation-speed controlled condenser-fans for perfect start during low environmental temperatures
- Stainless steel condensate collector
- Ecological safety refrigerant without FCKWs and without H-FCKWs capable for high environmental temperatures
- Chassis with tyres, optional with castors
- Easy transport by forklift by forklift slots
- Indicator light
- Cable holder



280 Tropic with HYGROMAT™

280 – 470

15.200

6.000

146

47

120

125

400

60

³/₄

3.685 x 1.806 x 2.543 / 2.000

3.369 x 1.806 x 2.402 / 1.800

KK 400 AHY with HYGROMAT™

395 – 630

21.000

6.000

112

50

190

200

600

57

³/₄

3.871 x 1.980 x 2.910 / 2.630

3.678 x 1.980 x 2.717 / 2.500

KK 400 Tropic with HYGROMAT™

415 – 630

21.000

6.000

173

68

177

200

600

80

³/₄

3.751 x 1.980 x 2.910 / 2.650

3.558 x 1.980 x 2.717 / 2.550

FrigorTec GmbH is certified according to DIN EN ISO 9001 : 2008.

FrigorTec GmbH is member of:

- Society for the Support of the German Milling School Braunschweig e.V., Bonn / Germany
- Rationalisation Curatorship for Agriculture, Rendsburg / Germany
- School providing vocational education in Agribusiness Burg Warberg e.V., Warberg / Germany
- Corn exchange, Luzern / Swiss
- ALB, Stuttgart / Germany
- AGF, Detmold / Germany

TÜV acceptance testing in our factory.

An additional test at the installation site is usually not necessary for the GRANIFRIGOR™.



Prevent the spoiling of your harvest – the ecological and effective way!

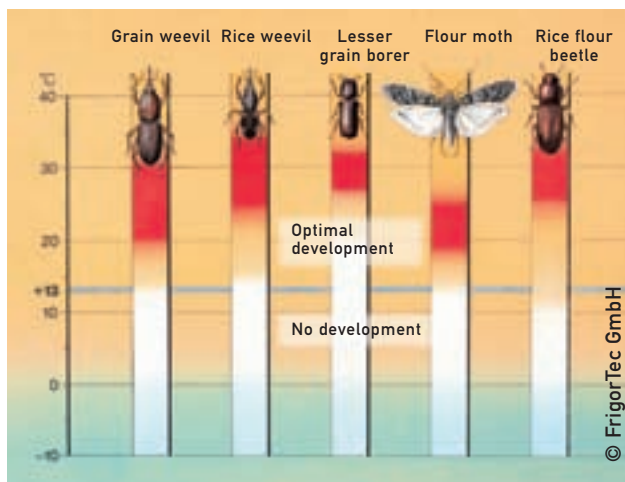
Spontaneous heating of the grain often causes great damage. Systematic hygiene regulations and the call for natural treatment of the produce grain without chemical substances are standards that must be attained. We have an answer for all these demands: GRANIFRIGOR™.

The GRANIFRIGOR™ cooling device is used to cool down grain immediately after the harvest, independent of the weather. This effective method prevents the spoiling of freshly harvested grains, which heats up spontaneously due to its cellular respiration.

Carbon dioxide, water and heat are released by this respiration – with extensive consequences: Loss of dry substance as well as the development of insects, microbes and mildew. Spontaneous heating depends on the grain's moisture and temperature. The principle is also valid for oil seeds such as rapeseed.

Since we know how grain “functions”, the GRANIFRIGOR™ operates according to two successful principles:

1. Prompt cooling to below +13 °C once the grain has been stored in: This puts insects into diapause so that they have no chance to multiply (see illustration below). Additionally the development of mildew is effectively prevented, respiration losses are minimised, and drying expenditures are also reduced by the drying effect of the cooling.

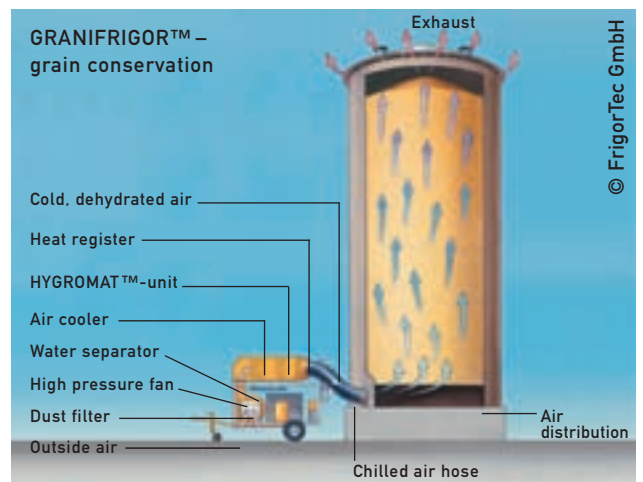


Insects that are dangerous to grain can develop at a temperature starting at 13 °C. GRANIFRIGOR™ cools the grain to below 13 °C and thereby ensures optimal freshness and quality of the harvest.

2. No ventilation with non-conditioned outside air: Grain seeds are hygroscopic. This means that depending on the temperature an equilibrium develops between the moisture content of the seeds and the relative humidity of the ambient air. Moisture develops if dry grain is exposed to humid air. The grain begins to spoil. Therefore aeration by fans is completely dependent on the weather. Furthermore, the ambient temperature during harvest time is usually much too high.

Mode of operation:

The fan of a GRANIFRIGOR™ grain cooler draws in the surrounding air (see illustration below). This air is cooled by an air conditioner (evaporator) to the desired temperature. The following HYGROMAT™ unit warms the cold air again automatically. This lowers the relative humidity and adapts to the conditions of the bulk grain. No moisturizing can occur, which would be rather damaging. This cooled and dried air is fed through the air distribution of the warehouse or the silo system and is forced through the grain. The air is then released to the outside through the exhaust vents of the storage facility. The outgoing air extracts the absorbed heat and moisture.



The GRANIFRIGOR™ process was developed by FrigorTec GmbH (formerly product division of Axima and Sulzer Escher Wyss) in co-operation with the Düsseldorf University and the Bundesforschungsanstalt für Getreide (Federal Grain Research Institute) in Detmold and since 1963 manufactured.

We pass on only what we have produced
by our own hands.



In the parent plant in Amtzell, Germany all products made by FrigorTec GmbH are developed, constructed and produced. Every device passes a quality inspection with test runs before delivery. We sell the FrigorTec solutions in over 80 countries through our worldwide distribution network.

SERVICE



Our service keeps the units maintained and ensures the spare parts supply - worldwide.
service@frigortec.de

Grain cooling units
GRANIFRIGOR™

Crane air conditioning
units **CRANEFRIGOR™**

Standard cooling units
STANDARDFRIGOR

Special solutions
SHELTERFRIGOR

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