



CO₂ SOLUTIONS

FOR REMOTE COOLING SYSTEMS



UPRIGHT
STORAGE
CABINETS



STORAGE
COUNTERS



BLAST CHILLERS/
FREEZERS



HOSHIZAKI

GRAM

A portrait of Rasmus Munk, a man with short brown hair and a beard, wearing a blue button-down shirt. He is looking directly at the camera with a neutral expression. The background is a soft, out-of-focus grey.

Rasmus Munk

Co-owner & head Chef

Restaurant Alchemist, Copenhagen

"AS A CHEF I HAVE THE RESPONSIBILITY TO CHOOSE MY EQUIPMENT AND MACHINES WITH THE SAME CARE AND FOCUS AS WHEN I SELECT MY VEGETABLES, FISH AND MEAT. HAVING THE LATEST, SMARTEST AND MOST ENERGY-EFFICIENT TECHNOLOGY IN OUR KITCHENS MAKES A HUGE IMPACT ON OUR CO₂ FOOTPRINT AND OUR PARTNERSHIP WITH HOSHIZAKI-GRAM CONTRIBUTES A GREAT AMOUNT TO THAT EQUATION".



"MOST IMPORTANT FOR US IS TO EASE THE JOB OF THE COOLING ENGINEER. THIS GOES FROM PRE-PLANNING OVER UNCOMPLICATED INSTALLATION TO EASY MAINTENANCE AND AFTERSALES SERVICE. PROBABLY OUR GRAM IC SOLUTIONS ARE AS CLOSE TO **PLUG AND PLAY** AS IT GETS".

Flemming Tind Velling
Product Manager at Hoshizaki-Gram

DEMAND FOR FUTURE PROOF SOLUTIONS

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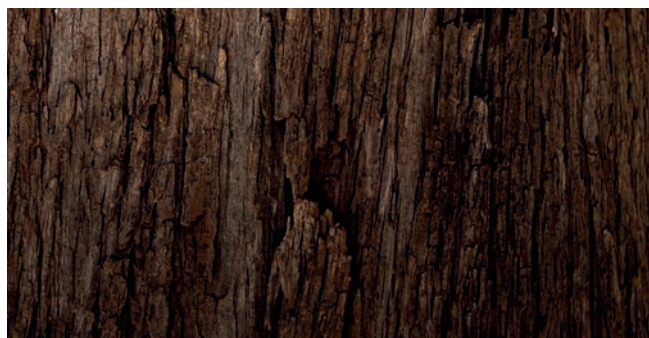
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CO₂, THE NATURAL REFRIGERANT OF TODAY AND TOMORROW

GET READY FOR FUTURE-PROOF REFRIGERANTS

CO₂ has become increasingly popular worldwide, proving to be one of the most reliable, efficient and environmentally friendly refrigerants. In northern countries with lower ambient temperatures, remote CO₂ solutions are often more sustainable and provide higher energy efficiency.



BAN ON HIGH GWP REFRIGERANTS

From 1st January 2020 the EU F-gas regulation bans the sale of new refrigeration equipment that use F-gases with a Global Warming Potential (GWP) of 2500 or above.

The next phase down that takes effect 1st January 2022 bans refrigerants with a GWP above 150.

REFRIGERANTS AND THEIR PROPERTIES

	R-134a	R404A	CO ₂	HFOs	R290	R600a
Natural substance	NO	NO	YES	NO	YES	YES
Ozone Depletion Potential (ODP)	0	0	0	0	0	0
Global Warming Potential (GWP)	1430	3922	1	<150	3	3
Flammable	NO	NO	NO	MILDLY	YES	YES
Phase out due to F-gas regulation	1/1-2022	1/1-2020	N/A	N/A	N/A	N/A
Applicable for remote installations	YES	YES	YES	YES	NO*	NO*

*Only currently allowed in some countries for small remote DX installations. High skill level and safety level needed.

SUPERIOR CO₂ PROPERTIES - IMPORTANT ADVANTAGES

POSITIVE CLIMATE IMPACT

CO₂ is a natural substance that plays an important role in many natural and industrial processes. However, the most widely used refrigerants in commercial refrigeration today are HFCs. Compared to CO₂, the GWP of HFC is up to 4000 times higher.

Therefore replacing HFCs with CO₂ accelerates a positive climate impact, also due to the fact that traditional remote cooling systems often leak a considerable part of their refrigerant charge, resulting in harmful gas escaping into the atmosphere.

NATURAL EFFICIENCY PAIRED WITH COST SAVINGS

With high volumetric efficiency, low power consumption and a reduced refrigerant charge, CO₂ cooling systems offer low cost of ownership.

By replacing a HFC system with a CO₂ based system, studies show a 20% energy saving potential.

CREATING A PLEASANT WORKING ENVIRONMENT

With a remote cooling system, noise and heat emission occurs outside of the typical working area, which helps to create a comfortable working environment.

CO₂ CENTRAL COOLING SYSTEMS ARE IDEAL FOR:



GRAM CO₂ STORAGE SOLUTIONS

GET MORE & SAVE TIME

IC – INTEGRATED CONTROLLER SOLUTIONS

Ready-to-install upright cabinets and blast chiller with factory fitted controller



UPRIGHT CABINETS & BLAST CHILLER KPS 60

Degree of completion:

Upright cabinets

Integrated controllers available are Danfoss AKCC 550A or Carel MPXPro

KPS 60 BLAST CHILLER

The master controller is the standard Gram blast chiller controller. The slave controller is a fitted Carel super heat controller.

IC solutions are ready-to-install solutions that come very close to 'plug and play'. They come with factory fitted controller solutions and are prepared for fast pipe connection.

VC – VARIABLE CONTROLLER SOLUTIONS

Upright cabinets for easy integration of installer's preferred controller



UPRIGHT CABINETS

Degree of completion:

The VC range allows for easy integration of your own preferred controller. It does not include factory fitted controller or pressure transmitter. These are the installer's choice. Combine this product with a controller from alternative controller manufacturers.

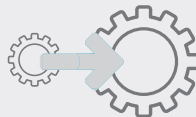
Standard controller display cut-out, size H29 x W71 mm. Customized controller display cut-out in the control box available on request. Internal wiring done and ends in a connection plinth inside the controller box.

INTEGRATED OR WITHOUT FACTORY FITTED CONTROLLER



EASY PRE-PLANNING

Easy pre-planning with detailed documentation offering wiring and piping diagrams as well as technical installation manuals.



EASY TO INTEGRATE

Uncomplicated to include in a refrigeration system thanks to our comprehensive documentation and easy pipe connections.



EASY INSTALLATION

The market standard today has a low degree of completion which leaves a lot of work to the installer. With our solutions the degree of completion depends on the controller choice.



PIC – PARTLY INTEGRATED CONTROLLER SOLUTIONS

Blast chillers and blast freezers with factory fitted master controller, but without slave controller



KPS 42, KPS 120, KPS 180

Degree of completion:

Master controller: Gram

The PIC range comes with factory fitted master controller and allows for integration of your own preferred slave controller. Combine this product with the super heat controller of your choice. Super heat controller, expansion valve and coil, pressure transmitter, super heat sensor etc. are not included.

KD – KNOCKDOWN

Counters without controller and controller box.



COUNTERS

Degree of completion:

Comes with factory fitted sensors PT 1000 (labelled according to Danfoss) and pressure tested evaporator.

Control box, controller, electronic expansion valve, pressure transmitter and external wiring to be provided, connected and built by the installation company.

All internal wiring ends in the empty compressor compartment. Standard controller display cut-out, size H29 x W71 mm. Customised controller display cut-out in the control panel available on request.



EASY EXTERNAL MONITORING

Prepared for easy external monitoring (*Danfoss and Carel controller*). This is optional and provided by cooling contractor.



QUICK TECHNICAL SUPPORT

Preventive service measures as well as quick and responsive technical support thanks to external monitoring.¹ This presupposes that the controller is connected.



EASY MAINTENANCE

With external monitoring it is possible to conduct preventive and cost saving service on your GRAM CO₂ products.¹ This presupposes that the controller is connected.

IC

IC

IC

¹ Provided by cooling contractor

ULTIMATE FLEXIBILITY WITH GRAM CO₂

IC

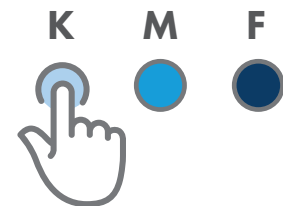
VC

ULTIMATE FLEXIBILITY WITH 'U' TYPE CABINETS

The **GRAM ECO** range with its **PLUS, TWIN, EURO** and **MIDI** series offers the ultimate flexibility.

All models **with an insulated door** are defined as **U-type** cabinets.

As default they come as freezers but the controller can be set to run as a refrigerator with K or M temperature range. This means it can be decided at site what purpose the cabinet has to serve. The cabinet is then set to suit the refrigeration system that it is connected to.



This provides maximum flexibility at time of installation.

K +2/+12°C	M -5/+12°C	F -25/-5°C
Refrigerator	Fresh meat cabinet	Freezer

Default setting (pointing to the M column)

GRAM STORAGE CABINETS, MODEL OVERVIEW AND SPECIFICATIONS:

	ECO PLUS 70	ECO TWIN 82	ECO EURO 60	ECO MIDI 82
U models: Insulated door	●	●	●	●
KG models: Glass door refrigerator (+2 to +12°C)	●	●	●	●
FG models: Glass door freezer (-5 to -20°C)	●	●	●	●
Standard shelf sizes	2/1 GN Deep	2/1 GN Wide	40 x 60 cm	2/1 GN Wide
Material: Exterior / Interior	Stainless/Stainless			
Connection	230V/50Hz			
Pipe connection: Liquid / Suction	3/8" / 3/8"			
Re-evaporation of defrost water *	Yes			
Orifice in AKVP valve	10-1			

● available ● not available

* The electrical re-evaporation system is easy to remove if the defrost water pipe can be connected to an external drain (recommended if possible). As a positive side effect this will also lower the energy consumption.



OUR SOLUTIONS - SERIES BY SERIES

IC - INTEGRATED CONTROLLER SOLUTIONS



GRAM ECO Cabinets - Ready-to-install

READY TO INSTALL SOLUTIONS

IC solutions have the highest degree of completion and are as close to plug and play as it gets.

Degree of completion				
Upright storage series	PLUS	TWIN	EURO	MIDI 82
Controller options. Parameters are pre-set in factory		Danfoss AKCC 550A		Carel MPXPro
PACKAGE INCLUDES				
Pressure tested evaporator PS 60 bar Pressure test documentation supplied.	Yes		Yes	
Sensors, 3 pcs PT 1000. for: Room, Evaporator, Superheat	Yes		Yes	
Electrical box mounted with pre-programmed DIN controller. Electrical components are all connected inside the controller box (EMC & LVD tested).	Yes		Yes	
Injection valve (AKVP with EEV coil) for maximum opening torque	Yes		Yes	
Re-evaporation of defrost water. (connection to external drain is optional)	Yes		Yes	
Pressure transmitter (0-45 bar gauge)	Yes		Yes	
EXTENDED OPTIONS (not factory fitted) *				
Monitoring	Yes, through DanBus and more. Additional LON Card not included			

* This options can be considered at the site of installation. Installation by cooling contractor.

SERIES LINE-UP



ECO PLUS



ECO TWIN



ECO EURO



ECO MIDI 82



VC - VARIABLE CONTROLLER SOLUTIONS

FOR EASY INTEGRATION OF YOUR PREFERRED CONTROLLER

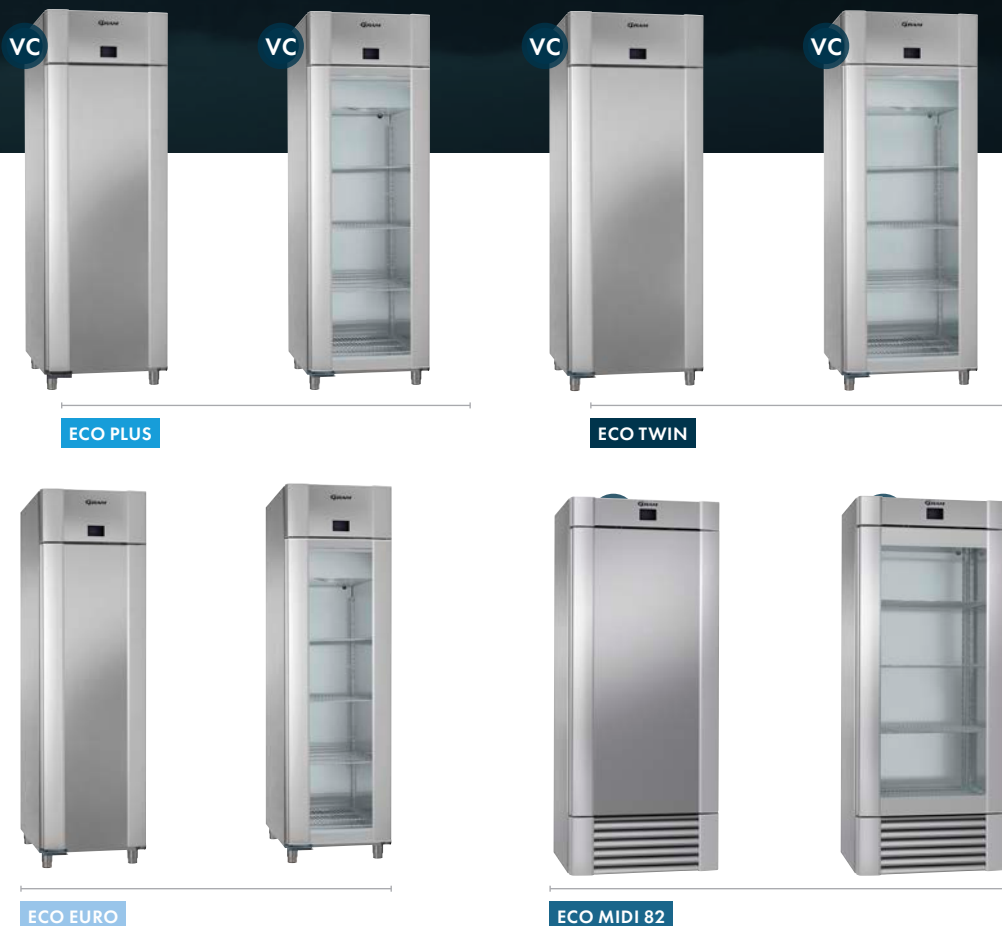
The VC range allows for easy integration of your own preferred controller. It does not include factory fitted controller. Combine this product with an alternative controller of your choice.

GRAM ECO cabinets -

For easy integration with your preferred controller

Degree of completion				
Upright storage series	ECO PLUS	TWIN	EURO	MIDI 82
PACKAGE INCLUDES				
Pressure tested evaporator PS 60 bar (test documentation supplied)	Yes			
Sensors, 3 pcs PT 1000. For: Room, Evaporator, Superheat	Yes			
Electrical Box prepared for mounting of DIN controller. Standard electrical components are connected to a plinth inside the controller box for easy fitting of an alternative controller.	Yes			
Injection valve (AKVP with EEV coil) for maximum opening torque	Yes			
Re-evaporation of defrost water. (connection to external drain is optional)	Yes			
Standard controller display cut-out, size H29 x W71 mm	Yes (default)			
Customized controller display cut-out in the control box	On request			
PROVIDED BY COOLING CONTRACTOR *				
Controller	Not factory fitted – Installer's choice			
Pressure transmitter	Not factory fitted – Installer's choice			

SERIES LINE-UP



KD - KNOCKDOWN SOLUTIONS



GRAM GASTRO counters

Degree of completion



Counter series

GASTRO 07

1407

1807

2207

PACKAGE INCLUDES

PT 1000 sensors

Labelled according to Danfoss standard

Included

Pressure tested evaporator (60 bar).

Documentation supplied

Included

PROVIDED BY COOLING CONTRACTOR

Controller

Not factory fitted –
Installer's choice

Super heat controller

Not factory fitted –
Installer's choice

Expansion valve

Not factory fitted –
Installer's choice

Pressure transmitter

Not factory fitted –
Installer's choice

Electrical box

Not factory fitted –
Installer's choice

KNOCK-DOWN COUNTERS

The Knock-Down range has the lowest degree of completion compared to the IC, VC and PIC ranges.

SERIES LINE-UP



KD

GASTRO 07 - 1407



KD

GASTRO 07 - 1807

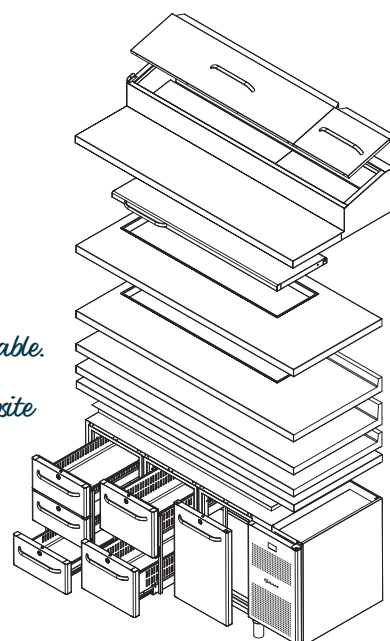


KD

GASTRO 07 - 2207

A wide variety of configurations available.

See more on our website or contact your sales support at Hoshizaki.





IC - INTEGRATED CONTROLLER SOLUTIONS

IC solutions include our KPS 60 blast chiller.

IC solutions have the highest degree of completion and are as close to plug and play as it gets.

GRAM Roll-in Blast Chiller - Ready-to-install

Degree of completion



Blast Chiller model

KPS 60

Controller

Gram blast chiller/freezer controller.

PACKAGE INCLUDES

Superheat controller (slave)

Yes

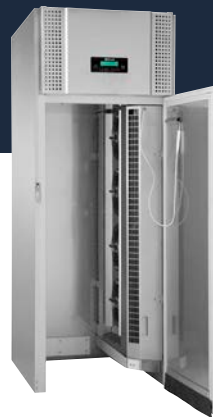
Expansion valve

Yes

Pressure transmitter

Yes

SERIES LINE-UP



KPS 60



PIC - PARTLY INTEGRATED CONTROLLER



BLAST CHILLERS/FREEZERS

Degree of completion		
Models	KPS 120	KPS 180
Chilling capacities (CF Models)	120Kg	180Kg
Freezing capacities (SF Models)	120Kg	180Kg
PACKAGE INCLUDES		
Master Controller	Gram blast chiller/freezer controller	
Module 1: No Room	Gram controller and evaporator unit	
Module 2: Extended package incl. room	Includes a Gram room which ensures full compatibility with the evaporator unit	
Module 3: Full package	This option also includes the refrigeration unit and assembly*	
PROVIDED BY COOLING CONTRACTOR *		
Super heat controller (slave)	Not factory fitted – Installer’s choice	
Expansion valve and coil	Not factory fitted – Installer’s choice	
Pressure transmitter and super heat sensor	Not factory fitted – Installer’s choice	

* These options can be considered at the site of installation. Installation by cooling contractor.

SERIES LINE-UP



KPS 120 White or stainless exterior

KPS 180 White or stainless exterior



PIC - PARTLY INTEGRATED CONTROLLER

Configuration possibilities KPS 120/180 'With Room' solutions'

Code	Description	CF	SF
LS	White, outside	○	○
CS	Stainless, outside	○	○
D	Pass-through	○	○
U	No floor	●	○
B	With heated floor (different models available)	○	●
MI	Mirrored (complete unit mirrored)	○	○
DL	Door left	○	○

Configuration possibilities KPS 120/180 'No Room' solutions'

Code	Description	CF	SF
LS	White controller box	○	○
CS	Stainless controller box	○	○
D	Pass-through (with additional door switch)	○	○

● standard equipment ○ optional

GRAM Reach-in Blast Chiller/Freezer

Degree of completion	
Blast Chiller/Freezer model	KPS 42
Chilling capacities (CF Models)	45Kg
Freezing capacities (SF Models)	27Kg
PACKAGE INCLUDES	
Master Controller	Gram blast chiller/freezer controller
PROVIDED BY COOLING CONTRACTOR *	
Super heat controller (slave)	Not factory fitted – Installer's choice
Expansion valve and coil	Not factory fitted – Installer's choice
Pressure transmitter and super heat sensor	Not factory fitted – Installer's choice

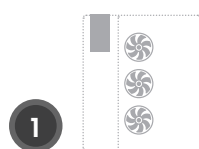
* These options can be considered at the site of installation. Installation by cooling contractor.

SERIES LINE-UP



MODULARITY FOR INDIVIDUAL NEEDS

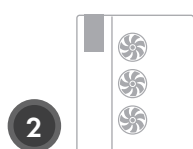
The largest blast chillers/freezers KPS 120 and 180 are available as modules to suit individual needs:



1

MODULE 1: NO ROOM

Includes electronic controller and the evaporator unit.



2

MODULE 2: EXTENDED PACKAGE INCL. ROOM

This option includes a Gram room which ensures full compatibility with the evaporator unit.



3

MODULE 3: FULL PACKAGE

This option also includes the refrigeration unit and assembly.

* Module 3 is not available for all markets. Please contact our customer service.



HOSHIZAKI

GRAM



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Ref.: NL-2020-05-CO2 brochure v1.2

