



OIL & GAS DIVISION

YOUR CNG SOLUTION





GRAF OIL&GAS IS A GRAF GROUP DIVISION, TWENTY-YEARS EXPERIENCED IN OIL&GAS MARKET.

Thanks to its experience, GRAF SPA is able to provide turnkey station from engineering up to planned maintenance and aftersales service.

GRAF projects and offers solutions for complete CNG stations, realized with the latest technologies and in accordance with the valid regulations in order to guarantee the safety and performance of the equipment.

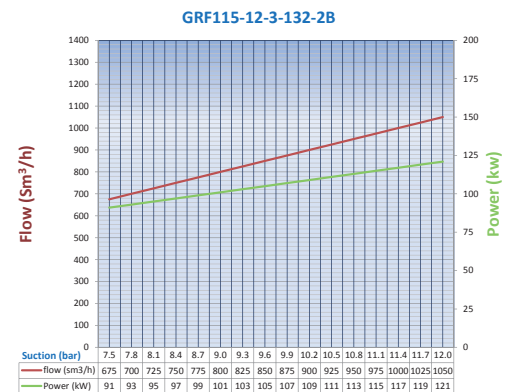
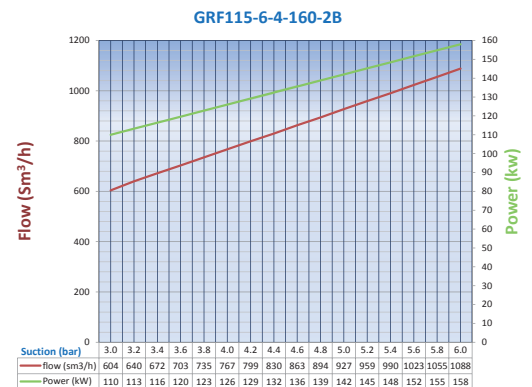
GRAF Group is composed of more than 200 employees, 14.000 m² of productive area and 2.000 m² of engineering offices. Graf includes different business units and it is specialized in automation and control systems and gas compression systems together with measurement and distribution systems.



Graf S.p.A. has a laboratory accredited by the Italian Ministry of Education and Research.



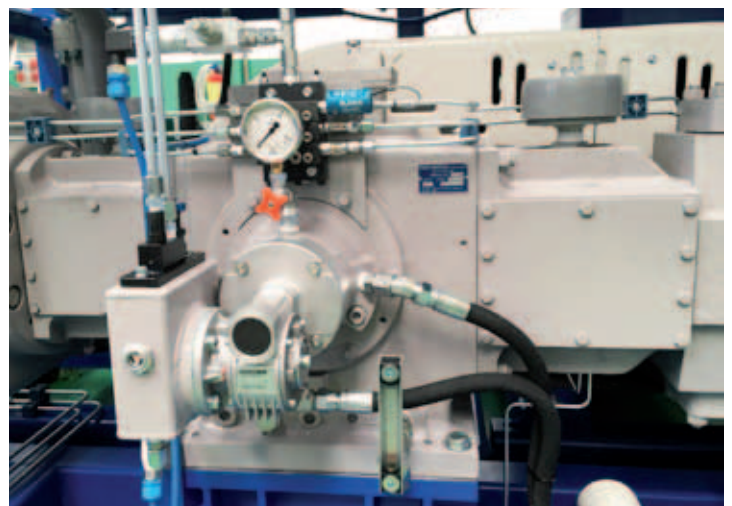
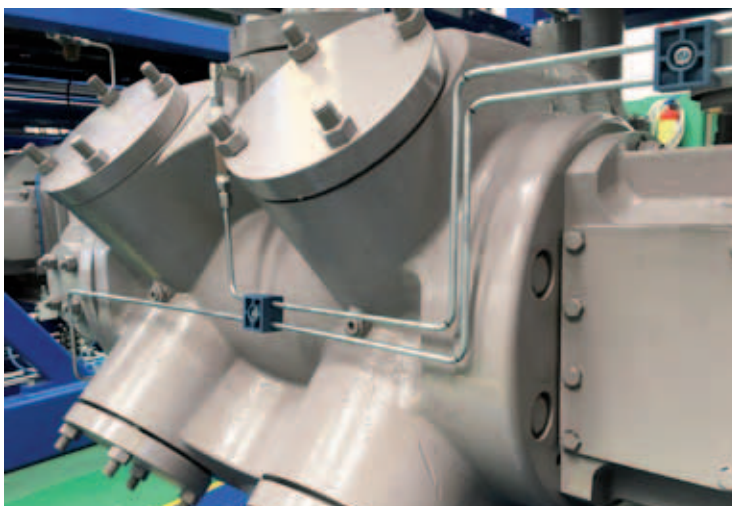
COMPRESSOR UNIT GRF70/115-2B



Compressor units series **GRF70/115-2B** are projected and realized with latest-generation technologies in order to achieve high efficiency and low energy consumption. This solution is good for little and medium gas station, moreover it was projected in order to reduce the ordinary and extraordinary maintenance costs and avoid unexpected machine stops.

Compressor units are realized with latest-generation components and European high technology for ensuring its safe use in accordance with the valid safety rules.

All the compressor units are available with a range of electric power from 15 up to 200 kWh with different inlet pressure, capacity and stages.



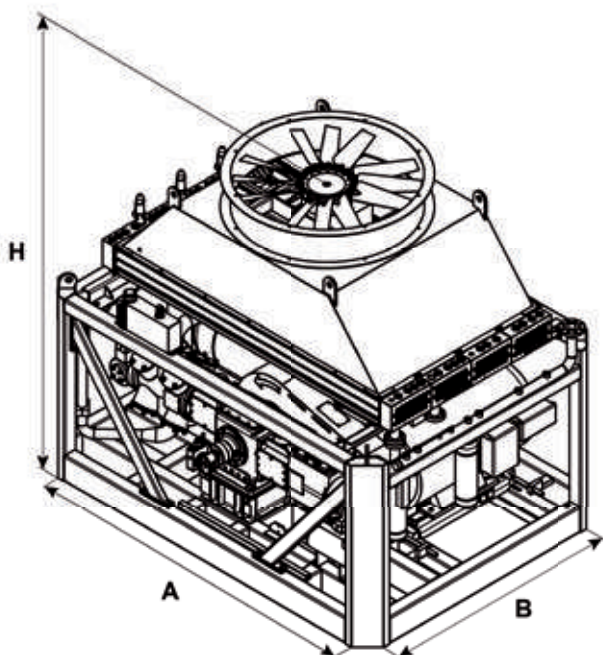
MAIN TECHNICAL FEATURES

Compression stages available	2 ÷ 4
Inlet pressure range	0,5 ÷ 60 bar
Outlet pressure	200 ÷ 300 bar
Number of connecting rod	2
Instant capacity	50 ÷ 2000 sm ³ /h
Motor power	15 ÷ 200 kWh
Type of cooling	AIR/GAS - WATER/GAS
Type of coupling	Belt or direct

EQUIPPED WITH:

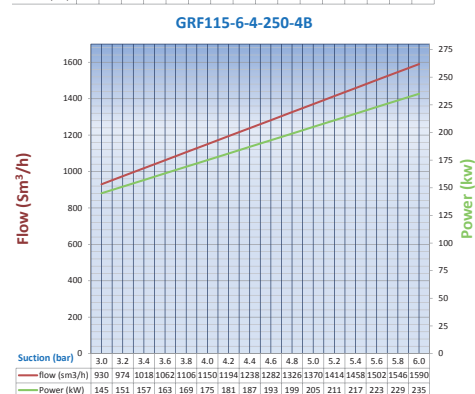
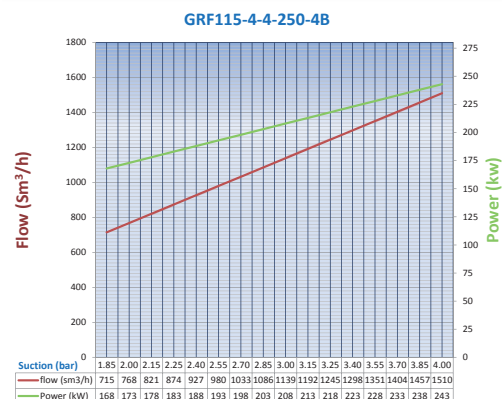
- Blow-Down system
- Interstage pressure and temperature sensors (optional)
- Instrument panel with emergency stop button
- Safety valves on every stage
- Coalescent filter in outlet gas line
- Knock-down tank
- Forced lubrication system (optional)
- Vibration sensors
- Interstage liquid separators

OVERALL DIMENSION



A	2100 mm
B	2900 mm
H	2455 mm
Weight	5700 ÷ 5900 Kg

COMPRESSOR UNIT GRF115-4B



GRAF S.p.A. compressor units series **GRF115-4B** come out from the growing need, arose from our customers, for more capacity with low inlet pressure.

These compressors are projected and realized in order to get high performances and to maintain low energy consumption, reducing the overall dimensions and then the installation of additional compressors, where high flow is requested (i.e. bus stations). They are designed in order to reduce the ordinary and extraordinary maintenance costs and avoid unexpected machine stops.

Compressor units are realized with latest-generation components and European high technology for ensuring its safe use in accordance with the valid safety rules. All the compressor units are available with a range of electric power from 90 up to 450 kWh with different inlet pressure, capacity and stages.



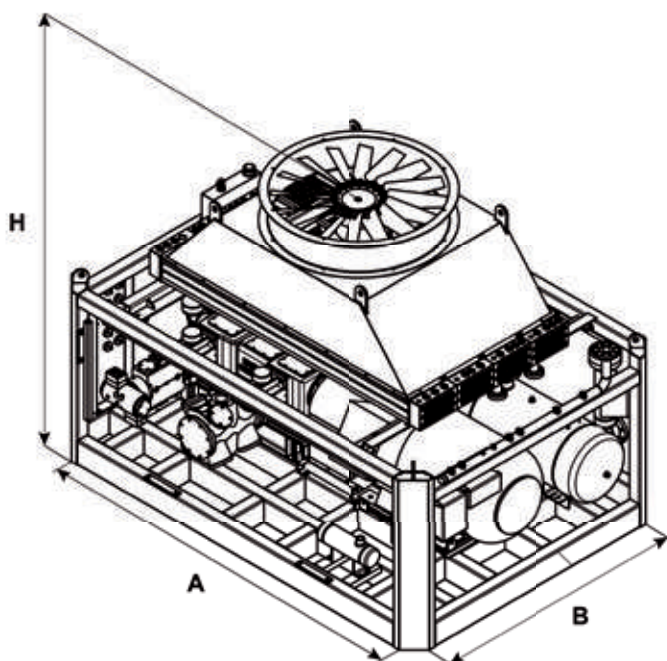
MAIN TECHNICAL FEATURES

Compression stages available	2 ÷ 5
Inlet pressure range	0,5 ÷ 25 bar
Outlet pressure	200 ÷ 300 bar
Number of connecting rods	4
Instant capacity	500 ÷ 3000 sm³/h
Motor power	90 ÷ 450 kWh
Type of cooling	AIR/GAS - WATER/GAS
Type of couplin	Direct

EQUIPPED WITH:

- Blow-Down system
- Interstage pressure and temperature sensors (optional)
- Instrument panel with emergency stop button
- Safety valves on every stage
- Coalescent filter in outlet gas line
- Knock-down tank
- Forced lubrication system (optional)
- Vibration sensors
- Interstage liquid separators

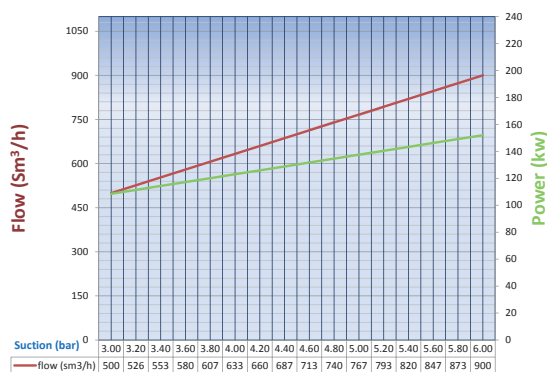
OVERALL DIMENSION



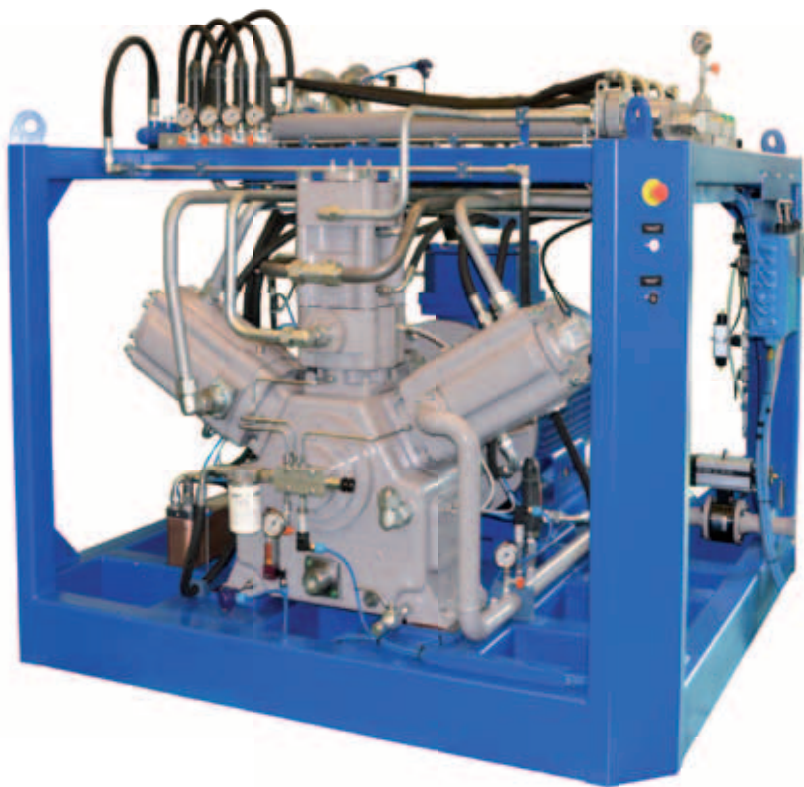
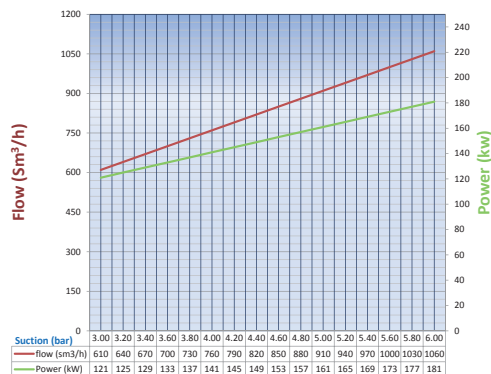
A	3400 mm
B	2350 mm
H	2455 mm
Weight	7100 ÷ 7300 Kg

COMPRESSOR UNIT GRF115-W

GRF115-6-4-160-W



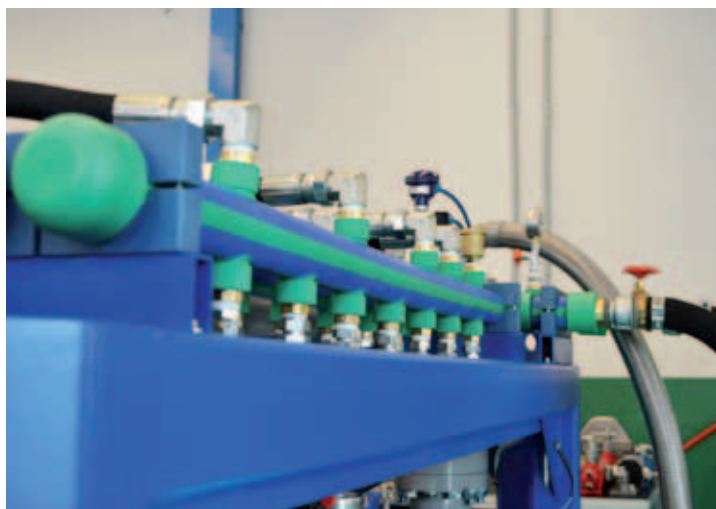
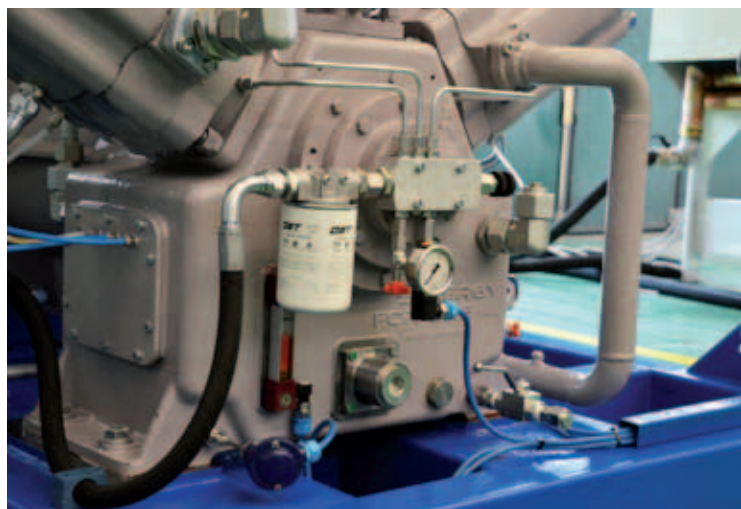
GRF115-6-4-200-W



The brand new product made by GRAF S.p.A. is the compressor unit series **GRF115-W**: this compressor is vertical-type, with three connecting rods and it is “oil-free” (without oil injection in the cylinders).

This model has small dimensions thanks to its closed loop water cooling circuit and its external exchanger. Thanks to this, it can be installed in every place.

Compressor units GRF115-W are designed with the latest technologies and they offer medium gas flow. They are available with a range of electric power from 55 up to 200 kWh with different inlet pressure, capacity and stages.



WATER COOLING

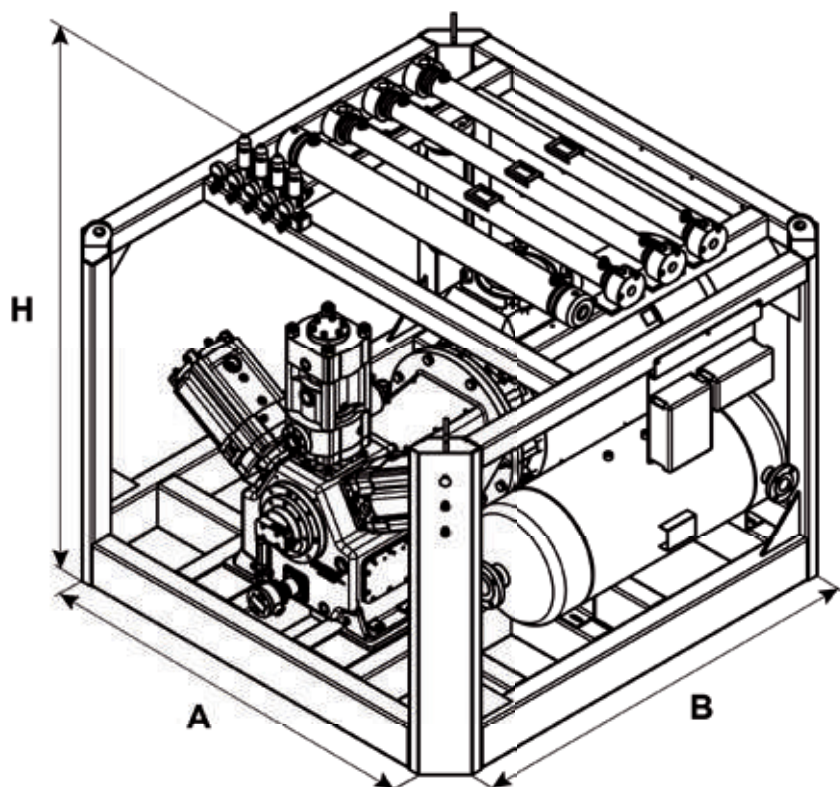
MAIN TECHNICAL FEATURES

Compression stages available	2 ÷ 4
Inlet pressure range	1 ÷ 60 bar
Outlet pressure	200 ÷ 300 bar
Number of connecting rods	3
Instant capacity	200 ÷ 2000 sm ³ /h
Motor power	55 ÷ 200 kWh
Type of cooling	WATER/GAS
Type of coupling	Direct

EQUIPPED WITH:

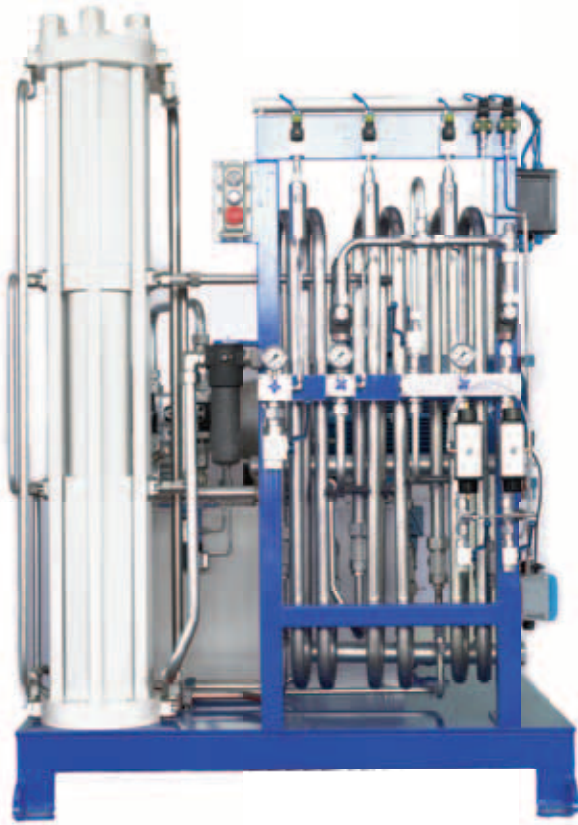
- ▶ Blow-down system
- ▶ Interstage pressure and temperature sensors (optional)
- ▶ Instrument panel with emergency stop button
- ▶ Safety valves on every stage
- ▶ Coalescent filter in outlet gas line

OVERALL DIMENSION



A	2100 mm
B	2300 mm
H	1800 mm
Weight	4100 ÷ 4400 Kg

COMPRESSOR UNIT GRF70-BOOSTER



Compressor units series **GRF70-BOOSTER** meet the demand for trailers filling and car filling from trailers. They can be installed on trailer board (mobile stations) or on the ground (daughter stations). This solution allows to make a real gas station where there is not a gas supply line.

The main characteristic of these compressors is its versatility: they have an inlet pressure range from 20 bar up to 200 bar and all the operations are automatic, without any external operation.

These compressor units are activated by an oil pump which moves vertical cylinders and fulfils the gas compression without having any rotative parts.

They are available in the following versions:

- One-stage or two-stages
- Electric power from 15 up to 75 kW
- Air cooling or liquid cooling with closed loop circuit

MOBILE OR DAUGHTER STATIONS

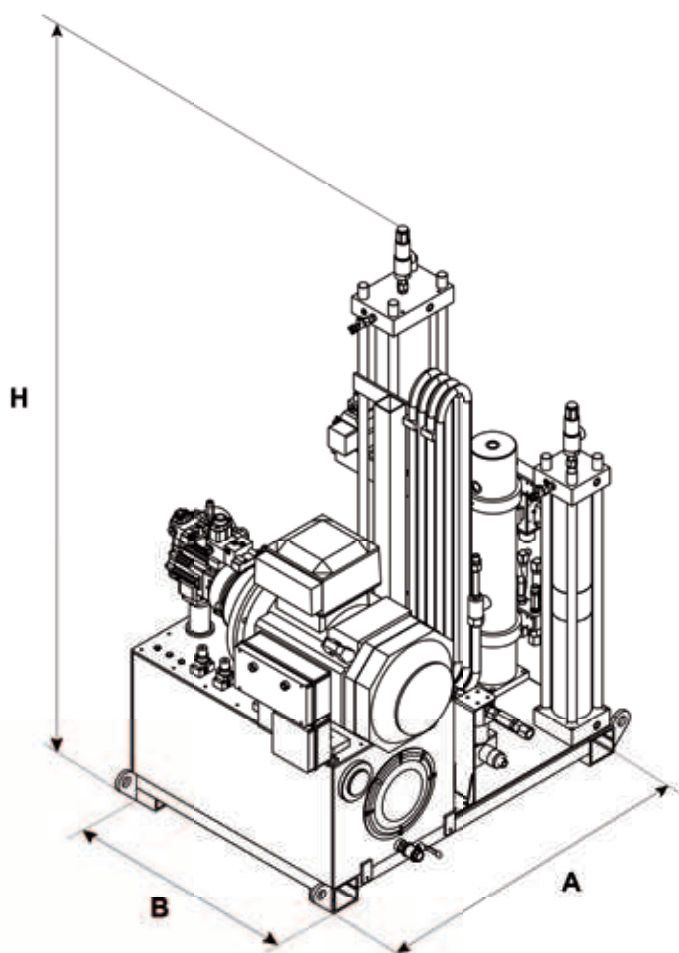
MAIN TECHNICAL FEATURES

Compression stages available	1 ÷ 2
Inlet pressure range	20 ÷ 200 bar
Outlet pressure range	200 ÷ 250 bar
Instant power	200 ÷ 1600 sm³/h
Motor power	Electric 15 ÷ 75 kWh / Gas engine
Type of cooling	AIR/GAS - WATER/GAS

EQUIPPED WITH:

- ▶ Interstage pressure and temperature sensors (optional)
- ▶ Instrument panel with emergency stop button
- ▶ Safety valves on every stage
- ▶ Coalescent filter in outlet gas line

OVERALL DIMENSIONS



A	1780 mm
B	1320 mm
H	1850 mm
Weight	1600 Kg

DISPENSER SERIES DNG



DNG22

DNG42



The DNG dispensers are run by a latest-generation electronic processor and supplied with a LCD backlight display or a red LED display. These dispensers are built and tested in accordance with the valid European standards and with ATEX directive.

DNG dispensers are the highest expression of GRAF know-how and experience gained in these years in CNG sector and electronic process. Processor and software are realized internally and are constantly updated; in this way DNG dispensers are able to work with every protocol, upon customer's request.

DNG dispensers: all our quality in a MADE IN GRAF product.

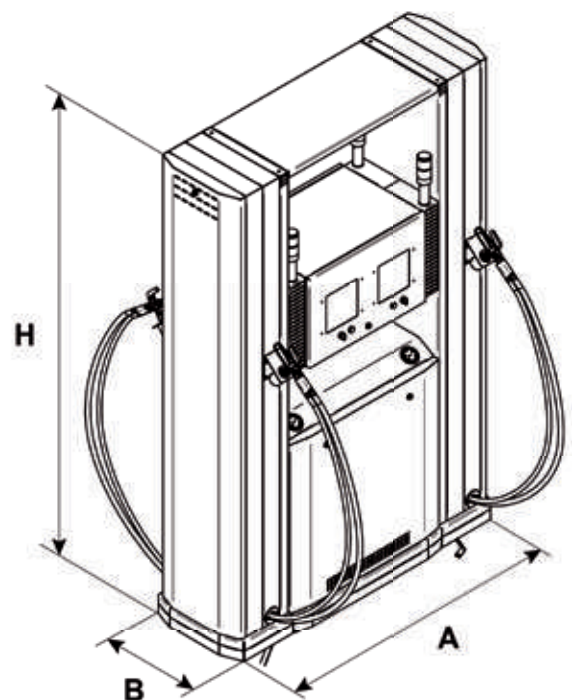
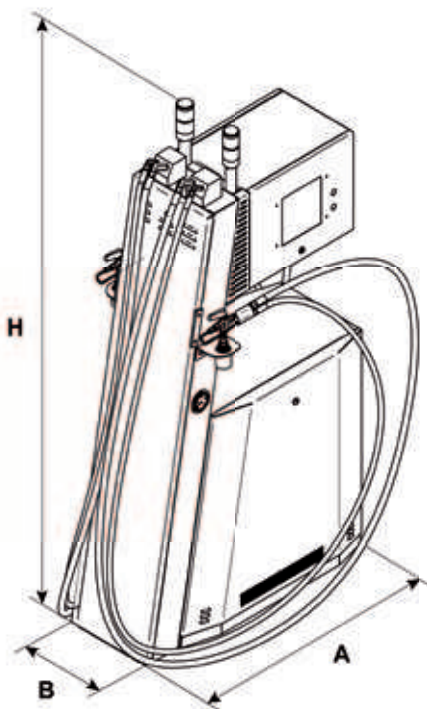


HIGH FLEXIBILITY

MAIN TECHNICAL FEATURES

Number of filling posts	1 - 2 - 3 - 4
Type of gas	CNG with a density of 0,65...0,87 Kg/m ³
Working temperature	-40 ÷ +55°C
Working filling pressure	220 bar
Max filling pressure	250 bar
Accuracy	≤ ± 1%
Voltage	230 Vac +/- 15% 50-60 Hz
Flow light vehicles version	Up to 60 Kg/min
Flow heavy vehicles version	Up to 100 kg/min
Structure	Painted steel or AISI 304
Colour	Standard or custom

OVERALL DIMENSION



Dispenser DNG22	
A	1030 mm
B	468 mm
H	1935 mm
Weight	200 Kg

Dispenser DNG42	
A	1560 mm
B	552 mm
H	2400 mm
Weight	420 Kg

DISPENSER SERIES DNG-T



Dispenser series DNG model T is GRAF S.p.A. solution for gas distribution from trailer. It can be installed on trailer board for filling vehicles where the gas supply line lacks.

Thanks to its small overall dimensions and specific design, dispenser DNG mod. T can be easily carried and installed on trailer board. It may include up to two filling posts totally independent and it can be customized.

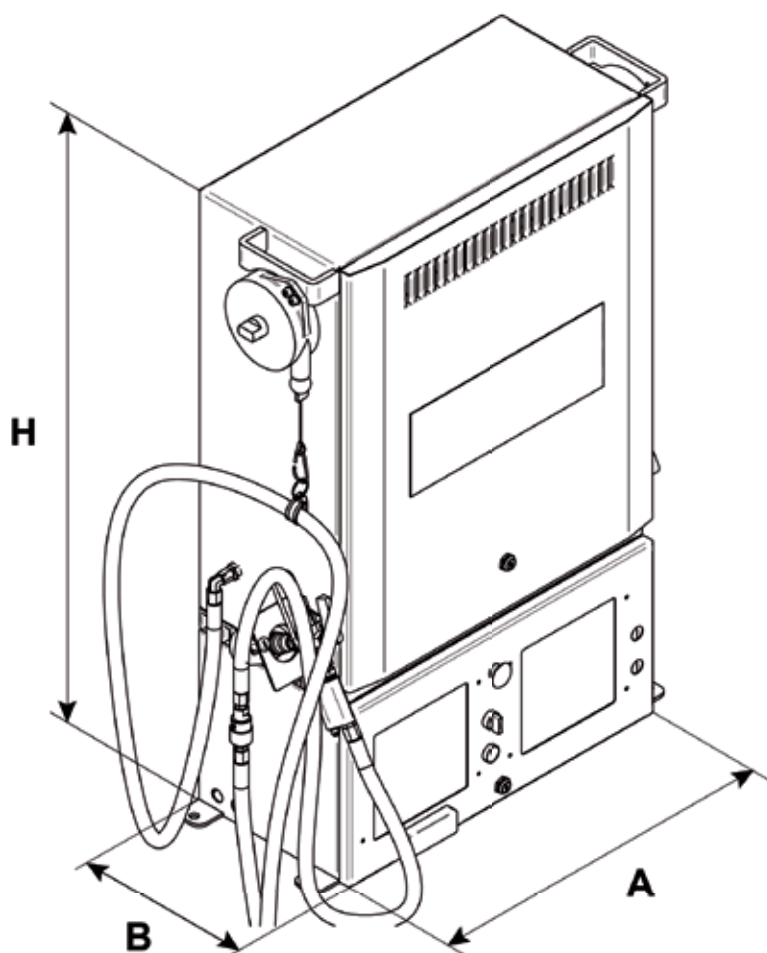


DISPENSER FOR TRAILERS

MAIN TECHNICAL FEATURES

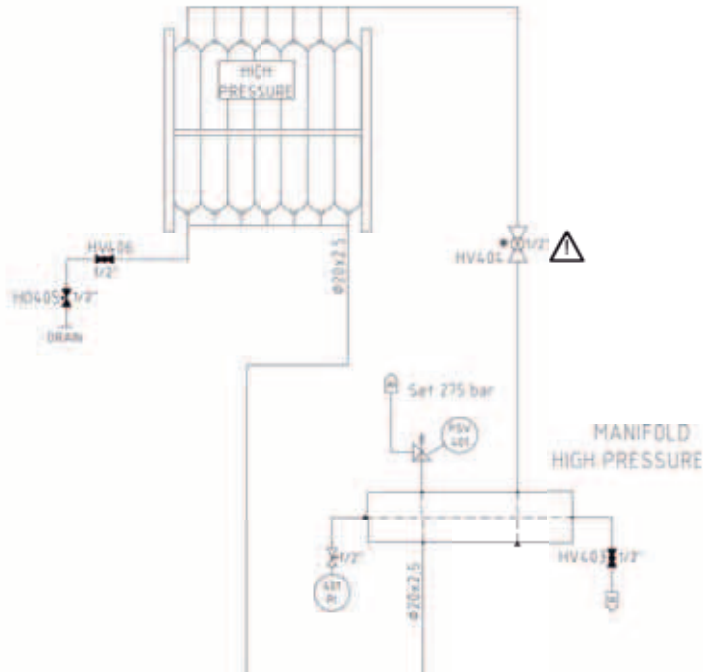
Number of filling posts	1 - 2
Type of gas	CNG with density of 0,65...0,87 Kg/m³
Working temperature	-25 ÷ 55°C (-40 ÷ 55°C by request)
Working pressure	220 bar
Max. working pressure	250 bar
Accuracy	≤ ± 1%
Voltage	230 Vac +/- 15% 50-60 Hz
Flow light vehicles version	Up to 25 Kg/min
Flow heavy vehicles version	Up to 60 kg/min
Structure	Painted steel or AISI 304

OVERALL DIMENSION



A	730 mm
B	340 mm
H	1100 mm
Weight	105 Kg

HIGH PRESSURE STORAGE



Graf S.p.A. designs and offers modular high pressure storage systems composed of metal cylinders manufactured in Europe.

Storage systems can be realized with single or double port cylinders, installed in vertical position in order to make the condensate drainage easier. The storage rack is composed of 7 cylinders with a capacity of 80 lt. for each. It is modular, in accordance with the customer's demands.

They are made with piping and fittings suitable for the capacity requested. They are also equipped with manifold groups, including certified safety valves.

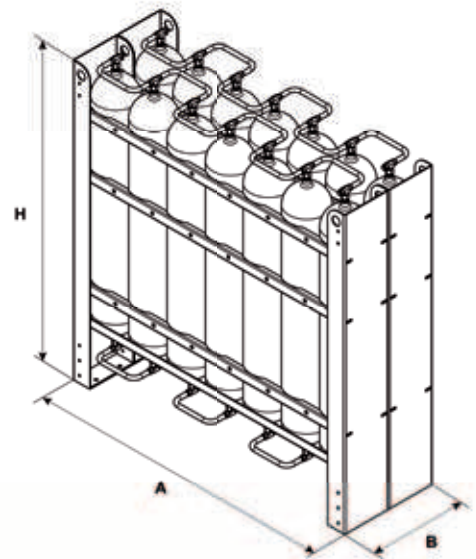


HIGH MODULARITY

DIMENSION STANDARD

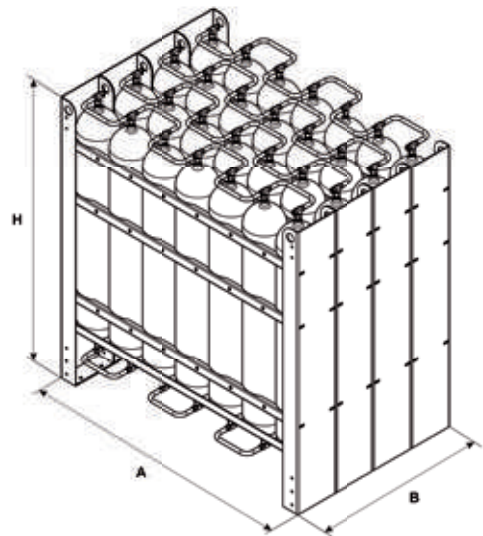
1120 Lt. storage

A	2063 mm
B	666 mm
H	2200 mm
Weight	1900 Kg



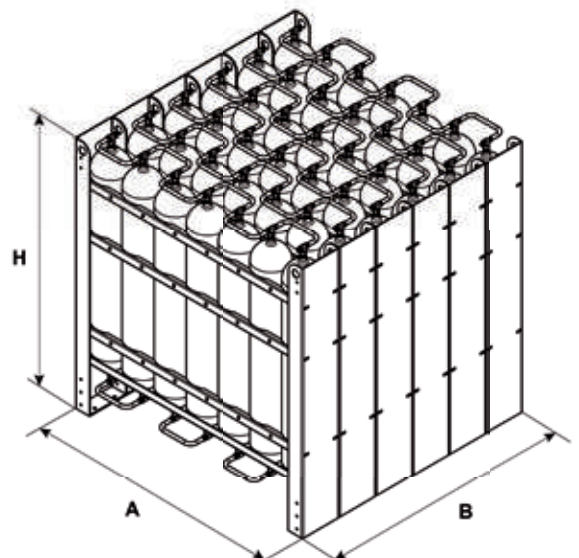
2240 Lt. storage

A	2063 mm
B	1665 mm
H	2200 mm
Weight	3800 Kg



3360 Lt. storage

A	2063 mm
B	2330 mm
H	2200 mm
Weight	5600 Kg

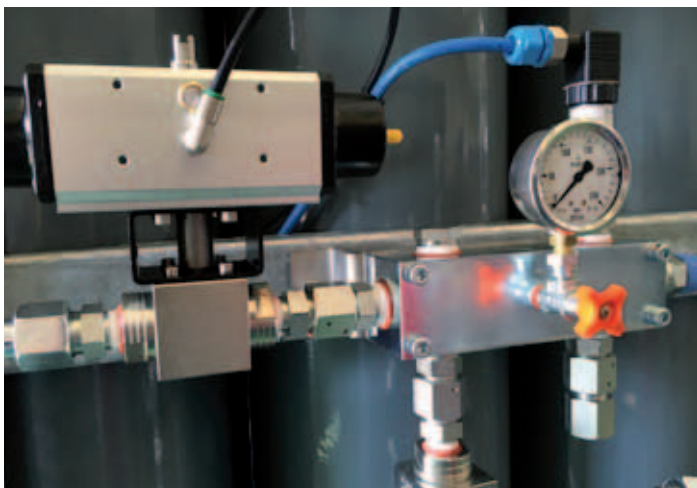


GAS PANEL AND PRIORITY PANEL



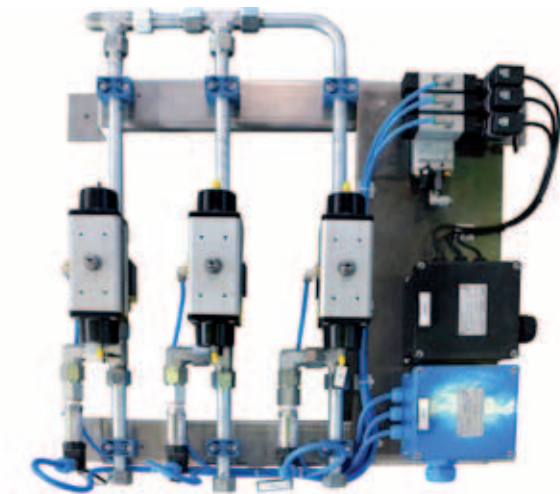
Gas panels are suitable for pressure regulation, storage protection, liquid drainage and security systems. Gas panels are also designed and built with certified components in compliance with the international safety standards.

Other configurations and functionality by request.



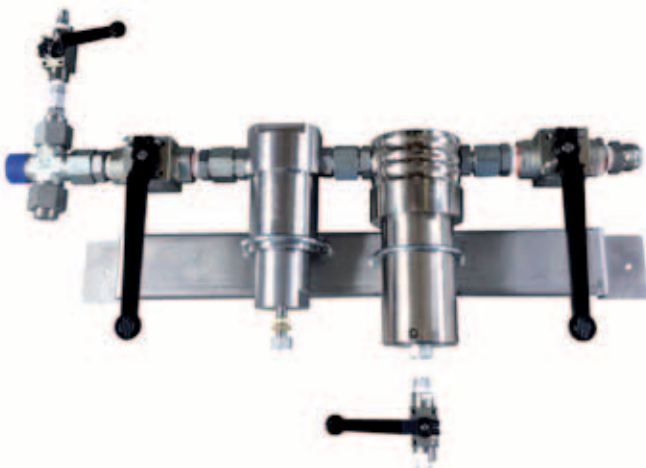
PRESSURE CONTROL LINE GROUP

Panel for excess flow pressure control in order to protect the gas distribution line from storage to dispensers. The panel is composed of pressure sensor and shut-off valve.



PRIORITY PANEL

Priority panel has the purpose to direct the gas flow to storage through gas pressure lines or directly to dispenser. It is composed of pneumatic automatic valves and pressure sensor which opens the valves. It is available in 2 versions: 2-line or 3-line (direct line by request).



PRESSURE REGULATION SYSTEM

Pressure regulation system helps to regulate the filling pressure to the set value. Thanks to it, storage may contain a higher quantity of gas since it is possible to compress the gas to a higher pressure.



MANIFOLD

Manifold is a safety device installed on storage frame and it help to keep the cylinders pressure under control. Manifold is composed of: safety valve, pressure transducer, pressure gauge and hand valve. Whenever the cylinders pressure is over the pressure set point, manifold automatically switches on and carries all gas contained in the cylinders on the vent line.

CONTROL BOARD



GRAF S.p.A. has its own division which is able to design and manufacture compressor control boards. All GRAF control boards are made with high quality components which guarantee the utmost safety and reliability.

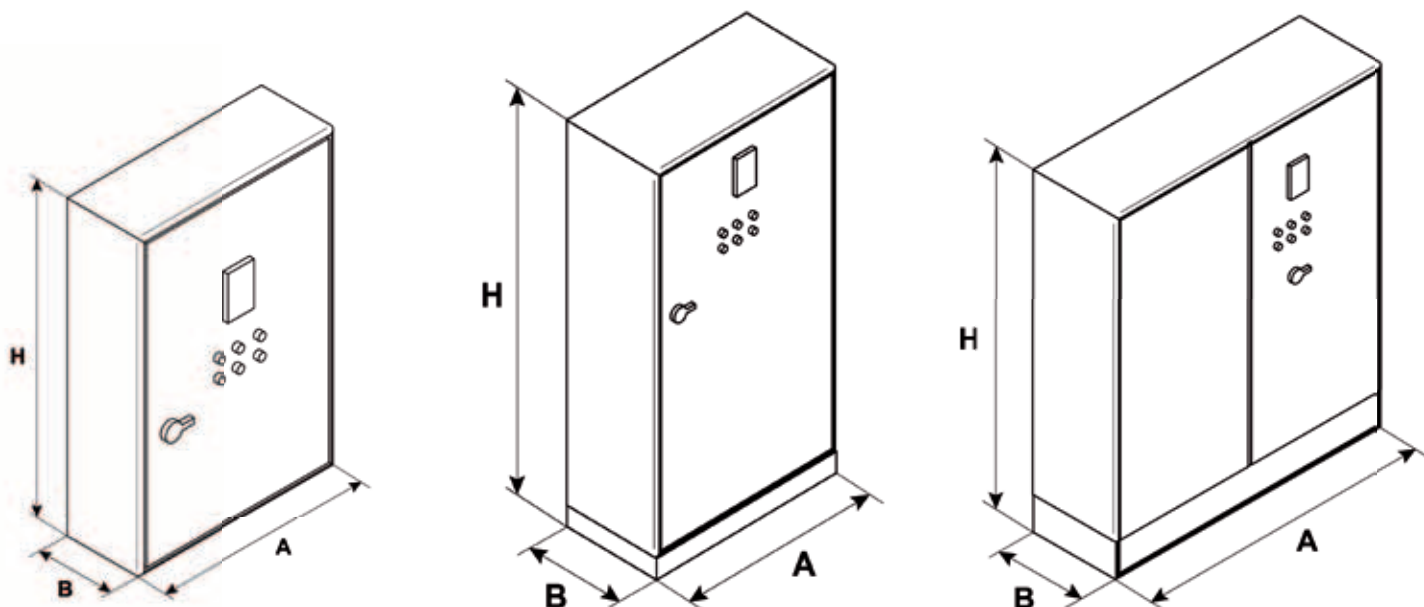
GRAF control boards are equipped with programmable controllers and latest-generation operator's panels; moreover, they are compliant with valid european directives and completely customized in accordance with customer's demands.



MAIN TECHNICAL FEATURES (standard versions)

Protection class	IP 54
Colour	RAL 7035
Voltage	400 V \pm 10%
Control system	PLC Siemens S7-300/S1500 (others by request)
Man-machine dialogue (HMI)	Colour display
Motor start-up	Soft Start / Inverter / Delta Star
Working temperature	0° ÷ 45° (others by request)
Reference	CEI EN 60204-1 (others by request)
Remote control	Ethernet or GSM

OVERALL DIMENSION

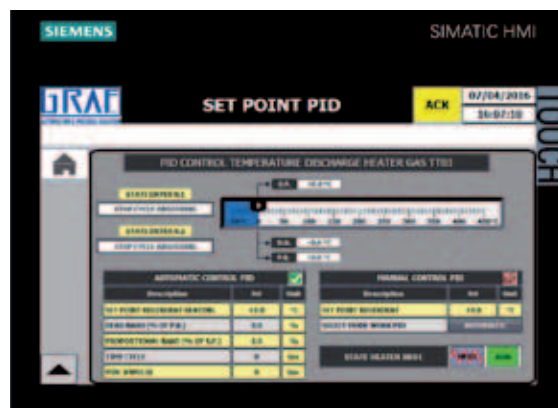
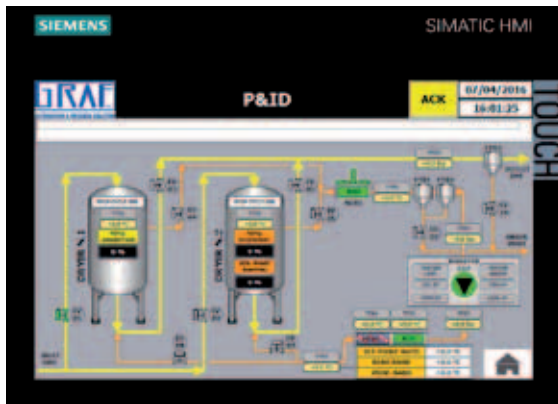


Control board 15 ÷ 55 kW	
A	1200 mm
B	300 mm
H	800 mm
Weight	90 Kg

Control board 55 ÷ 160 kW	
A	1000 mm
B	500 mm
H	2100 mm
Weight	255 Kg

Control board 200 ÷ 450 kW	
A	1600 mm
B	500 mm
H	2100 mm
Weight	430 Kg

DRYER SERIES GRGDR



GRAF **regenerative** type dryer series **GRGDR** is composed of two columns filled with molecular sieve and is completed with an automatic closed loop circuit regenerative system with no gas emission.

It is totally automatic and it is able to switch its work status without any intervention. The absorption phase is fulfilled with high-quality material that helps the gas to reach a dew point up to -80°C .

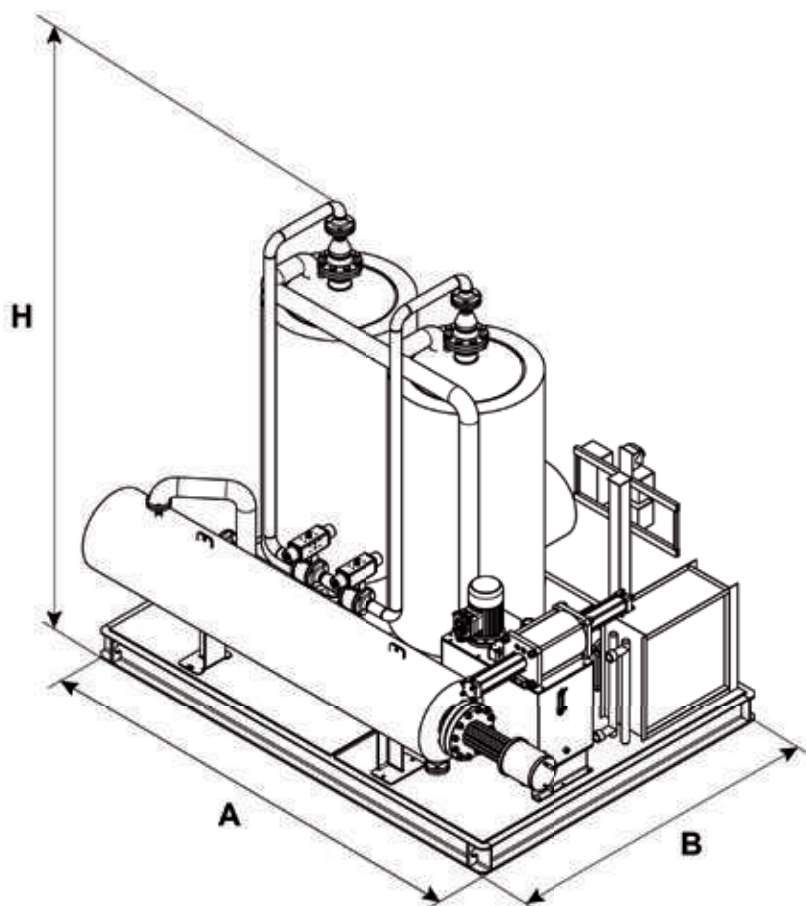


TECHNOLOGICALLY ADVANCED

MAIN TECHNICAL FEATURES

GRGDR VERSION	
Inlet pressure	2÷6 bar / 6÷12 bar / 12÷20 bar
Capacity	1500/2500 sm³/h
Number of columns	2 columns (1 on work phase and 1 on regeneration phase)
Quantity of absorbing material	150 kg for each column
Grade of gas filtration	Inlet filter 40 µ / Outlet filter 3 µ
Regeneration type	Closed loop circuit completely automatic
Voltage	400 V 50 Hz
Consumed power	18 ÷ 28 kW depending on model
Length of regeneration phase	7 ÷ 9 hours
Working temperature	-10° ÷ 50°C

OVERALL DIMENSION



A	3300 mm
B	2040 mm
H	2200 mm
Weight	2450 Kg

DRYER SERIES GRGDD



Non regenerative dryer series **GRGDD** is composed of two separate columns, filled with non regenerative material. When a column is in absorbing phase, the other one is in stand-by: in this way, it is possible to replace the absorbing material with total safety.

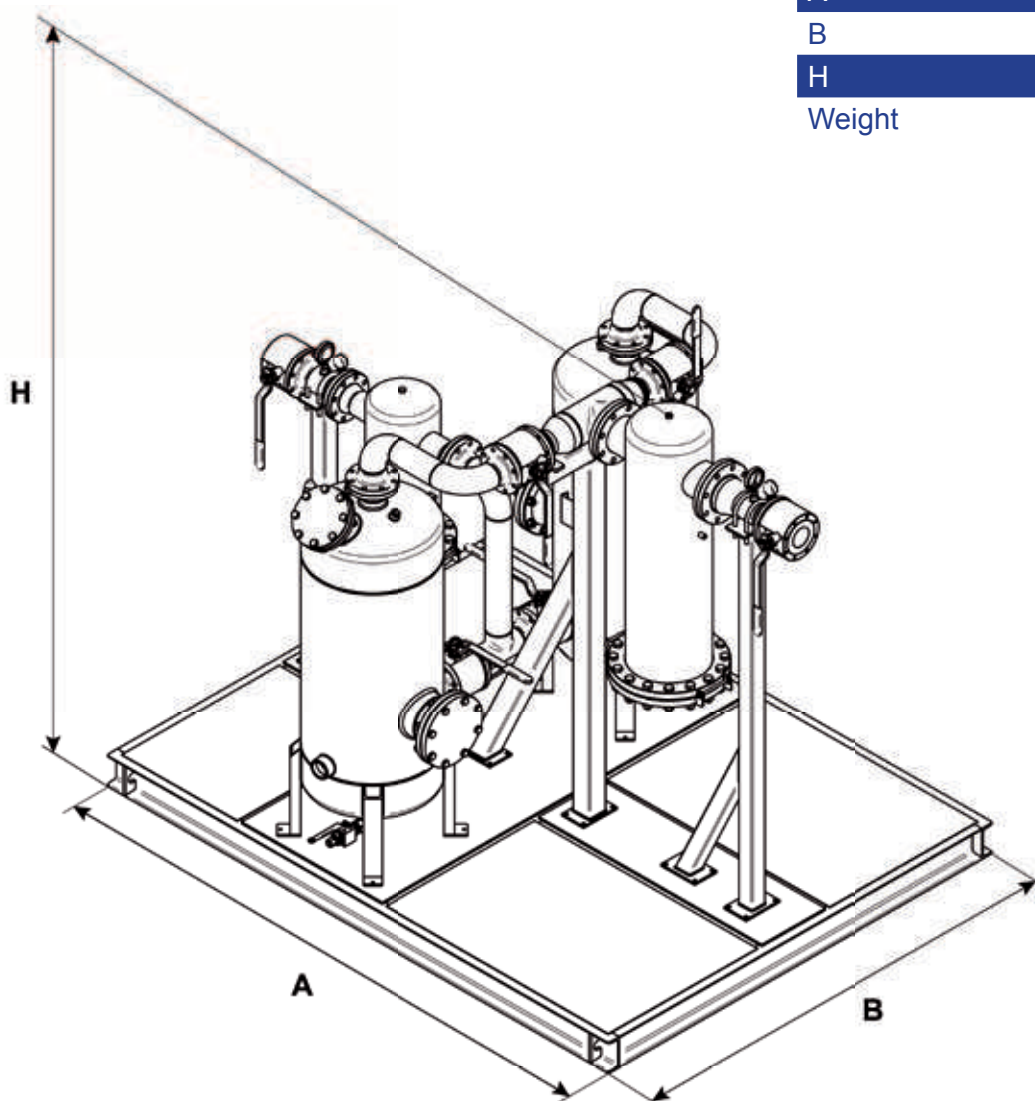
Work status change is made manually by the operator. Material used for absorption is of high-quality and helps the gas to reach a dew point up to -80°C .



MAIN TECHNICAL FEATURES

GRGDD VERSION	
Working pressure	2÷6 bar / 6÷12 bar / 12÷20 bar
Capacity	1500/2500 sm³/h
Number of columns	1 or 2 columns
Quantity of absorbing material	120 kg for each column
Filtration grade	Inlet filter 40 µ / Outlet filter 3 µ
Working temperature	-10° ÷ 50°C

OVERALL DIMENSION



A	3000 mm
B	2300 mm
H	2470 mm
Weight	2350 Kg

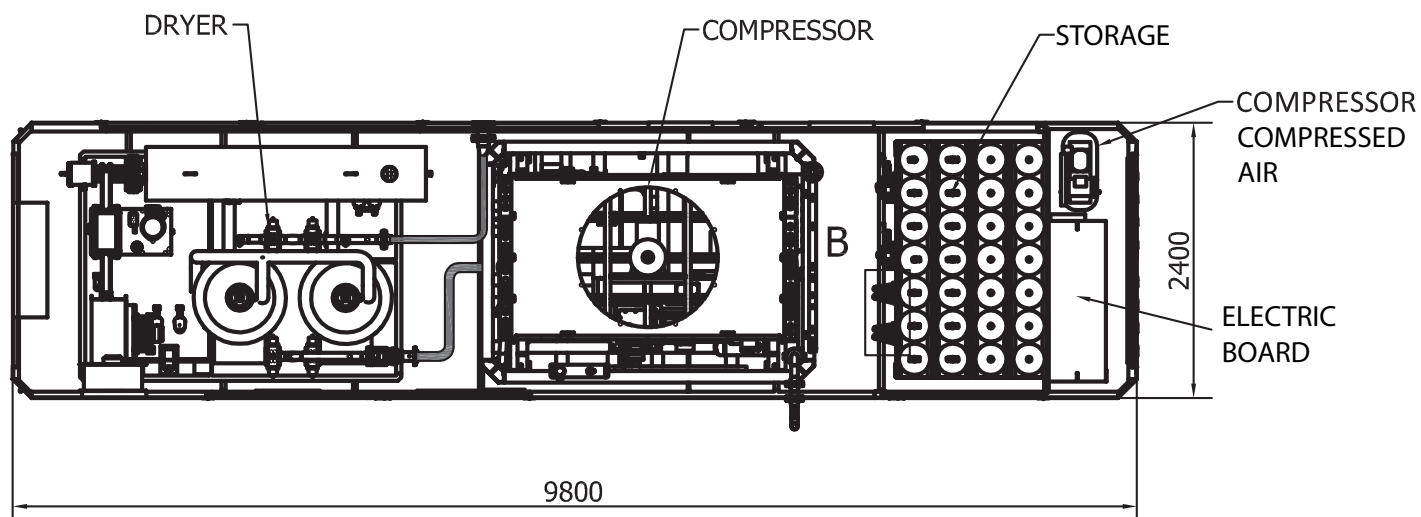
SMART BOX



GRAF S.p.A. is able to supply steel-made prefabricated solutions. These solutions allow to make complete stations composed of compressor and storage system under customer's request. **SMART BOX** is a turnkey solution and allows the customer to install and put into service the equipment with money saving.

All versions may be supplied with preassembled hydraulic and electric equipment.

STATION SAMPLE



MAIN TECHNICAL FEATURES

Single or double compressor room

Separate room for electric board

Additional room for storage

Lighting system and emergency lighting system

Cold kit for ambient temperature up to -40 °C

Additional gas chilling circuit

Soundproof version with sound pressure level up to 70 dB

Customized colour and finishes

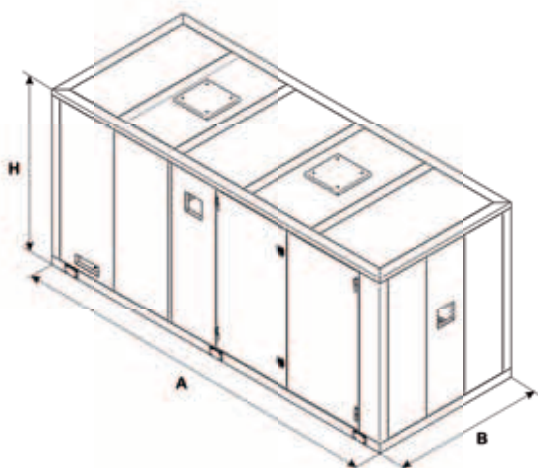
Condensate liquid drainage collector

Drainage collector

STANDARD CONFIGURATION (by request)

	2,5m (A) Mobile station	6m (A)	7m (A)	8m (A)	10m (A)
Compressor series W		•		• •	•
Compressor series 2B		•		• •	•
Compressor series 4B			•		
Compressor series 70-BOOSTER	•				
Storage (up to 2240Lt.)		•	•		•
Electric board (safe area)	•	•	•	• •	•
Dryer					•

OVERALL DIMENSION



A 2,5 / 6 / 7 / 8 / 10 m

B 2430 mm

H 2780 mm

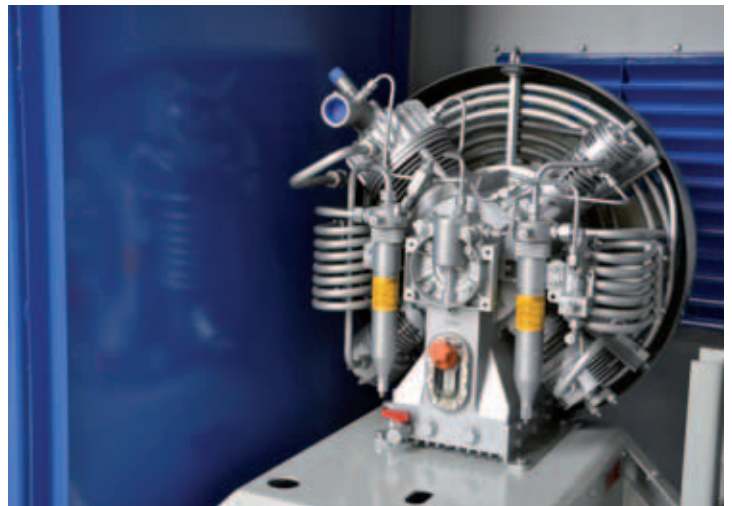
* Weight depends on station configuration.

EASYFILL CNG



EasyFill CNG is a compression and dispenser unit, suitable for every fast filling need. It is the best solution for private and/or corporate fleet. This compact unit is designed for multiple sequential filling, thanks to its integrated high pressure storage, that allows to fulfil an easy, fast and autonomous fill by the driver.

The installation is plug-and-play and requires very little space!



MAIN TECHNICAL FEATURES

	EasyFill CNG 17/8	EasyFill CNG 50/8	EasyFill CNG 100/8	EasyFill CNG 150/8
Type of gas	CNG			
Inlet pressure	0,02 ÷ 0,3 bar			0,3 ÷ 0,9 bar
Rotation speed	1'500 rpm			
Working temperature	-10°C a + 50°C			
Filling pressure	220 bar			
Compressor capacity	17 sm³/h	50 sm³/h	100 sm³/h	150 sm³/h
Electric power	5.5 kW	15 kW	30 kW	37 kW
Voltage	30 x 400 V 50 Hz			
Storage integrated capacity	560 lt.			

OPTIONAL

High pressure dryer

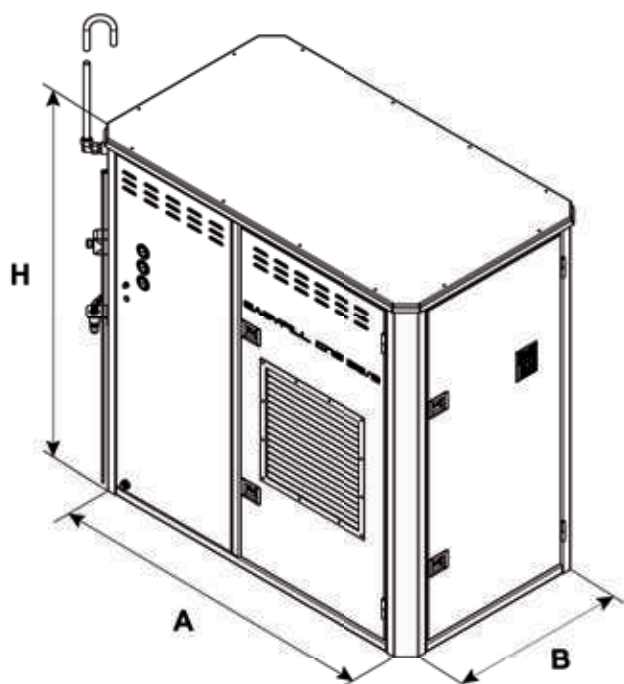
Filling nozzle

Mass flow meter

External display for visualization of filled quantity

Control system with private cards

OVERALL DIMENSION



EasyFill CNG 17/8 and 50/8

A	2500 mm
B	1400 mm
H	2258 mm
Weight	2300 Kg

EasyFill CNG 100/8 and 150/8

A	2800 mm
B	1800 mm
H	2258 mm
Weight	2400 Kg

FUEL HOST SYSTEM



Fuel Host system allows to keep a CNG station under control.

The system includes a PC, completed with keyboard, LCD monitor and a latest-generation OS which is able to show, through screen pages, the compressor and dispensers work status. With this system, the operator can get a detailed report of all the filling and transactions made. Moreover, Fuel Host system can preset the filling amount and change the unit price.

By request, a ticket print can be installed. This print, under operator's request, can print the filling operation details. In addition, Fuel host system can be linked to compressor electric boards in order to check compressor units working conditions.

Available in different languages. Customized by request.



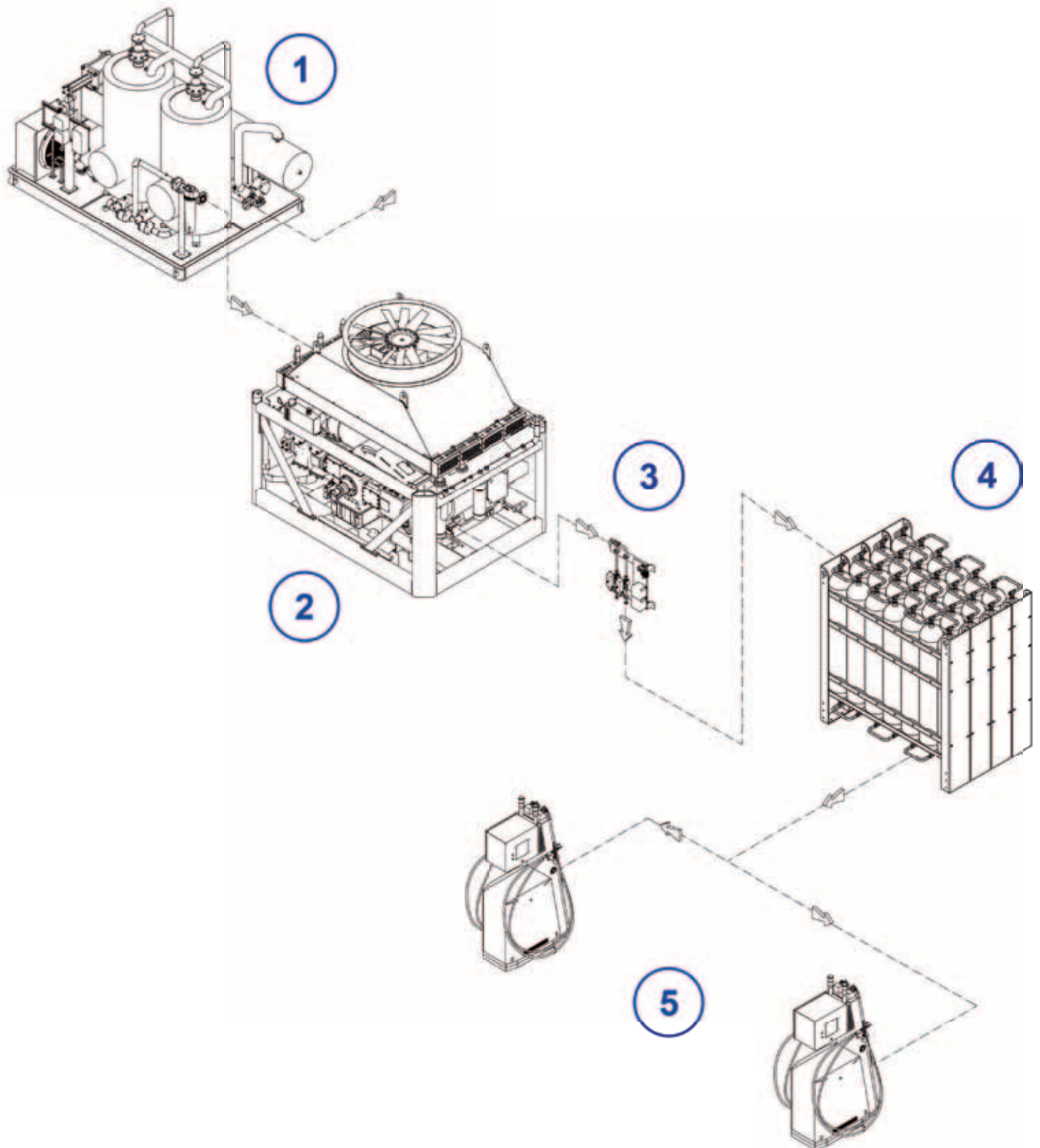
CONSTANT CONTROL

MAIN TECHNICAL FEATURES

Voltage	230 V - 50 Hz
Working temperature	+5 ÷ +30° C
Number of dispensers	Max. 10
Number of dryer	Max. 2 series GRGDR
Number of compressor	Max. 4
Remote control	Via Ethernet / Wi-Fi
Available languages	Italian / English / Russian



SAMPLE STATION WITH 2 DISPENSERS



SUGGESTED DESIGN

CNG STATION WITH INLET PRESSURE 1,5 ÷ 3 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 1000-3	1
2	Compressor GRF115-3-4-160-2B installed power 160 kW/h; capacity 930 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	1
5	Dispenser DNG22CDN	2

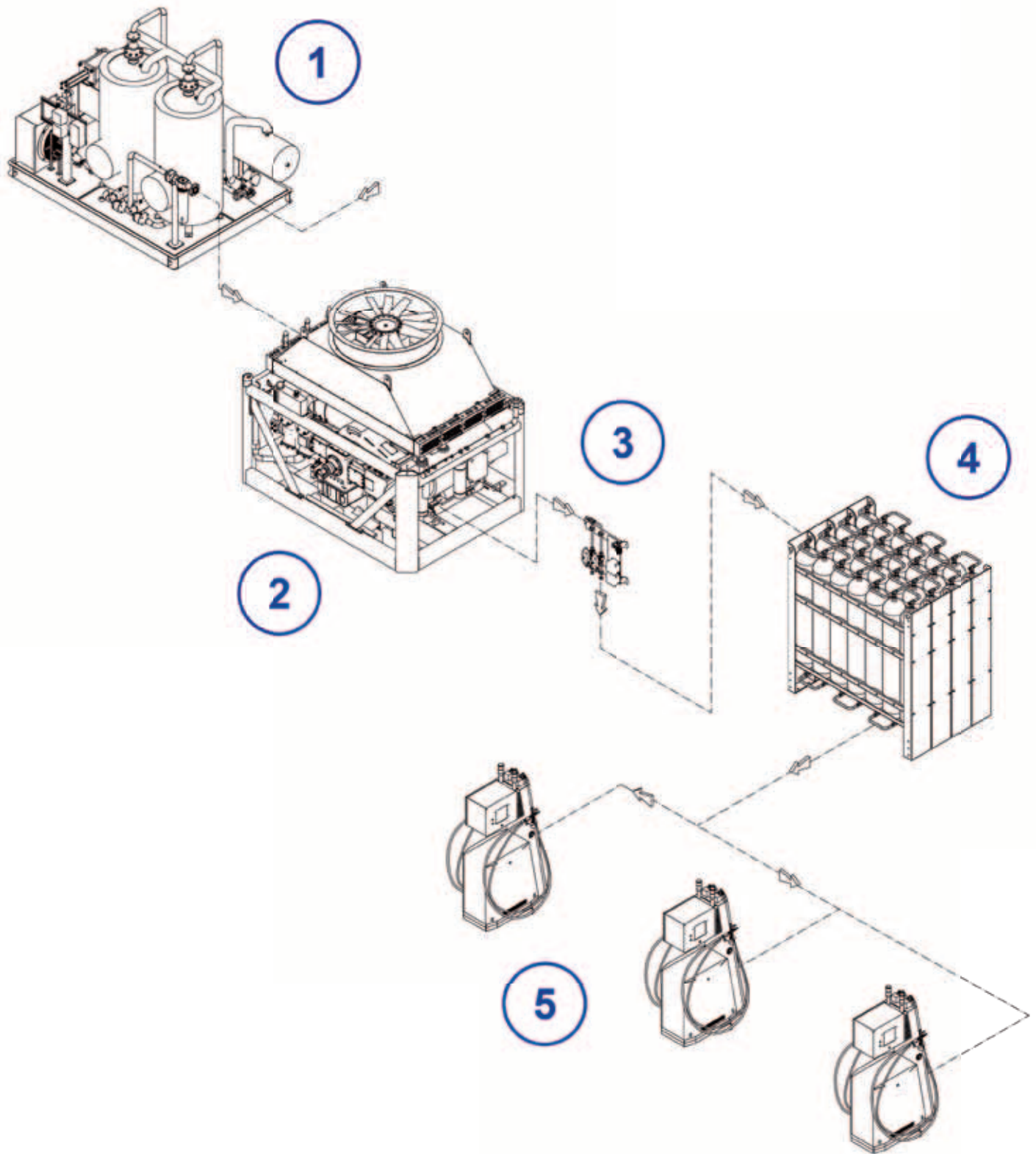
CNG STATION WITH INLET PRESSURE 3 ÷ 6 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 1500-6	1
2	Compressor GRF115-6-4-160-2B installed power 160 kW/h; capacity 1000 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	1
5	Dispenser DNG22CDN	2

CNG STATION WITH INLET PRESSURE 9 ÷ 12 bar

POSIZIONE	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 1500-12	1
2	Compressor GRF115-12-3-160-2B installed power 132 kW/h; capacity 1000 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	1
5	Dispenser DNG22CDN	2

SAMPLE STATION WITH 3 DISPENSERS



SUGGESTED DESIGN

CNG STATION WITH INLET PRESSURE 1,5 ÷ 3 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 1000-3	1
2	Compressor GRF115-3-4-200-2B installed power 200 kW/h; capacity 1180 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	1
5	Dispenser DNG22CDN	3

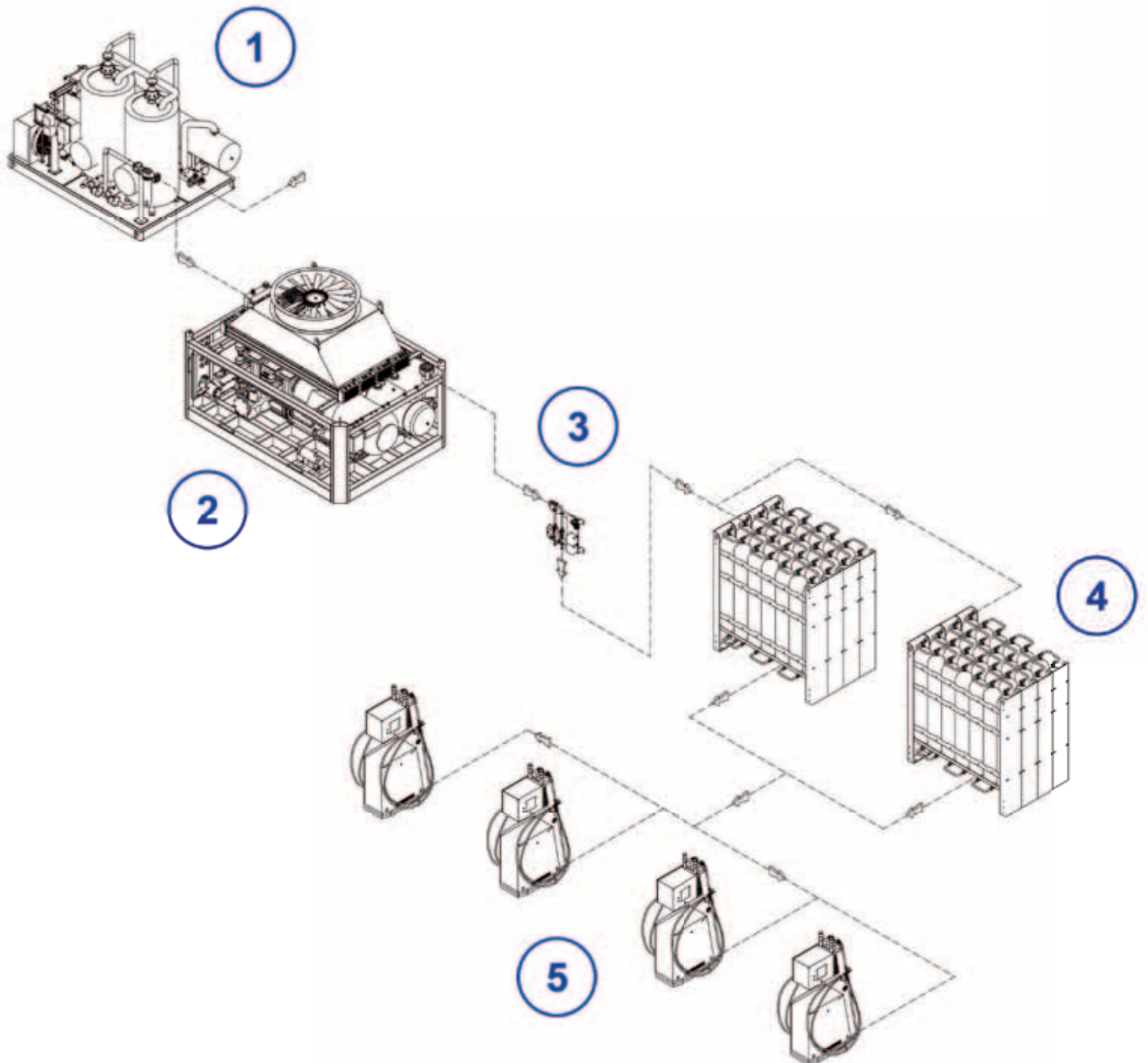
CNG STATION WITH INLET PRESSURE 3 ÷ 6 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 1500-6	1
2	Compressor GRF115-6-4-200-2B installed power 200 kW/h; capacity 1200 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	1
5	Dispenser DNG22CDN	3

CNG STATION WITH INLET PRESSURE 9 ÷ 12 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 1500-12	1
2	Compressor GRF115-12-3-160-2B installed power 160 kW/h; capacity 1200 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	1
5	Dispenser DNG22CDN	3

SAMPLE STATION WITH 4 DISPENSERS



SUGGESTED DESIGN

CNG STATION WITH INLET PRESSURE 1,5 ÷ 3 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 2000-3	1
2	Compressor GRF115-3-4-250-4B installed power 250 kW/h; capacity 1500 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	2
5	Dispenser DNG22CDN	4

CNG STATION WITH INLET PRESSURE 3 ÷ 6 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 2000-6	1
2	Compressor GRF115-6-4-250-4B installed power 250 kW/h; capacity 1600 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	2
5	Dispenser DNG22CDN	4

CNG STATION WITH INLET PRESSURE 9 ÷ 12 bar

ITEM	DESCRIPTION	QUANTITY
1	Dryer series GRGDR 2000-12	1
2	Compressor GRF115-12-3-200-4B installed power 200 kW/h; capacity 1580 sm ³ /h	1
3	Priority panel	1
4	Storage 2240 Lt.	2
5	Dispenser DNG22CDN	4

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