



CAVAGNA group

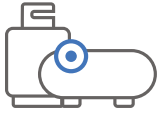
Wherever gas is used, we are there

Cylinder Bundle



SOLUTIONS

LPG SOLUTIONS



COMPRESSED GASES SOLUTIONS



HEALTHCARE SOLUTIONS



NATURAL GAS SOLUTIONS



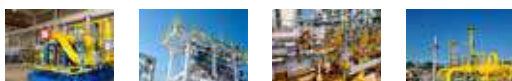
ALTERNATIVE FUEL SYSTEMS



GAS METERING SOLUTIONS



INDUSTRIAL PROCESS MANAGEMENT



About CAVAGNA GROUP

The Cavagna Group is a family-run concern founded in Lombardy, in northern Italy, in 1949.

It has always specialized in the manufacture of equipment for processing, distributing, controlling and measuring all kinds of gases at all stages in various supply chains.

Today, the group is international and comprises several companies all around the globe. Its huge wealth of skills and knowledge, combined with continuous investment in research and development, has enabled it to expand into different industries and apply its know-how:

- LPG
- Healthcare
- Compressed gases
- Natural gas
- Alternative fuel systems
- Gas metering
- Industrial process management

Considerable effort has been made in product development to achieve these results. The group has managed to adapt its products to all standards and the specific requirements of each country. This ensures total safety and efficiency in various different use contexts.

With a view to ongoing cooperation with industry players, Cavagna Group is an active member of national and international trade associations and takes part in important advocacy projects, which aim to promote the safe use of gases and the role they play in serving people and the environment.

Enthusiasm, innovation, commitment, and sustainability are some of the values that inspire the Cavagna Group's work. They also constitute the group's guiding principles in the face of future challenges in order to continue to provide the best, safest and highest quality equipment in all circumstances.

Wherever gas is used, we are there.

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CYLINDER BUNDLE EQUIPMENT



CYLINDER BUNDLE EQUIPMENT Pipings

EXAMPLES OF
INSTALLATIONS

PRESSURE
REGULATORS

CYLINDER BUNDLE
VALVES

CYLINDER BUNDLE
EQUIPMENT

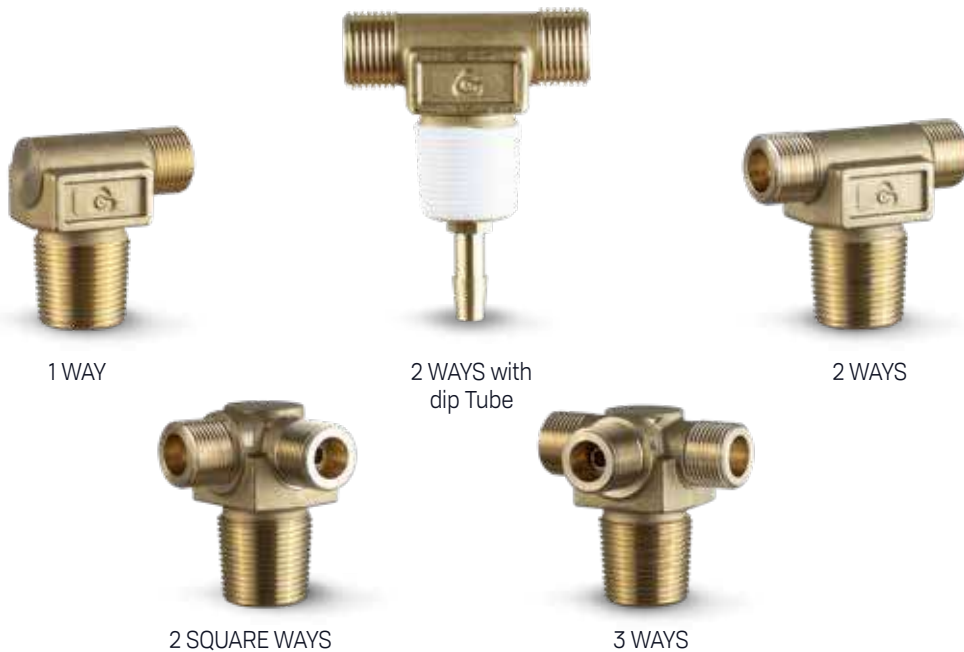


Part Number	Material	Thread	Diameter x Thickness mm	Tightness
2879500002	Copper	M20X1,5	10X2	Ferrule
2879500004	Copper	M20X1,5	10	Ferrule
2879500023	Copper	W21,7X1/14	8X2	O-ring
2879500024	Stainless steel	W21,7X1/14	8X1,5	O-ring
2879500025	Copper	W21,7X1/14	8X2	O-ring
2879500027	Copper	W21,7X1/14	8X2	O-ring
2879500029	Copper	W21,7X1/14	8X2	O-ring
2879500030	Stainless steel	W21,7X1/14	8X1,5	O-ring
2879500053	Copper	W 21,7X1/14	10X2	Metal to metal
2879500054	Copper	W 21,7X1/14	10X2	Metal to metal
2879500059	Copper	M18X1,5	8X2	Ferrule
2879500060	Copper	W21,7X1/14	8X2	O-ring
2879500066	Copper	M30X1,75	14X3,5	Metal to metal
2879500067	Copper	M20x1,5	10X2,5	Ferrule
2879500069	Copper	M20X1,5	10X2,5	Ferrule
2879500070	Copper	M20X1,5	10X2,5	Ferrule

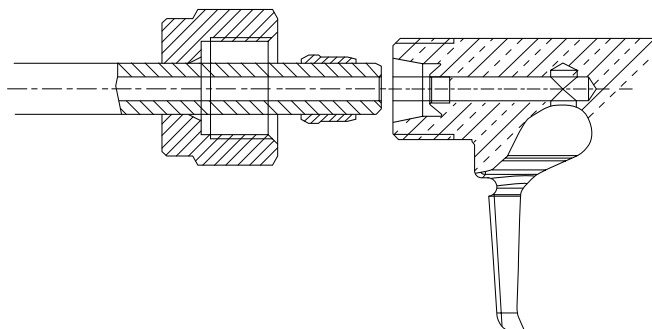
Working Pressure	300 bar
Test Pressure	450 bar



CYLINDER BUNDLE EQUIPMENT Fitting



FERRULE TYPE TIGHTNESS



Compatibility	Suitable for all non corrosive gases
Working Pressure	300 bar
Test Pressure	450 bar
Body Material	Brass alloy
Options	Available for ø 8 and 10 mm. pipes
Accessories	Nut for ø 8 and 10 mm. pipes Ferrule for ø 8 and 10 mm. copper pipes Ferrule for ø 8 and 10 mm. pipe connections

EXAMPLES OF
INSTALLATIONS

PRESSURE
REGULATORS

CYLINDER BUNDLE
VALVES

CYLINDER BUNDLE
EQUIPMENT



CYLINDER BUNDLE EQUIPMENT Fitting

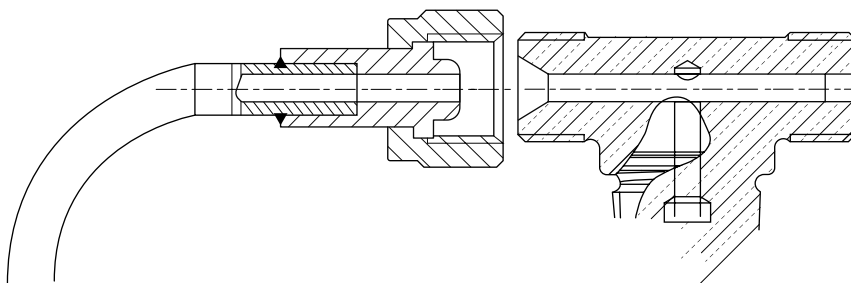


1 WAY



2 WAYS

METAL TO METAL TYPE TIGHTNESS



Compatibility	Suitable for all non corrosive gases
Working Pressure	300 bar
Test Pressure	450 bar
Body Material	Brass alloy
Accessories	Stainless steel or copper pigtails: various dimensions and thread specifications

EXAMPLES OF
INSTALLATIONS

PRESSURE
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CYLINDER BUNDLE
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CYLINDER BUNDLE EQUIPMENT Fitting

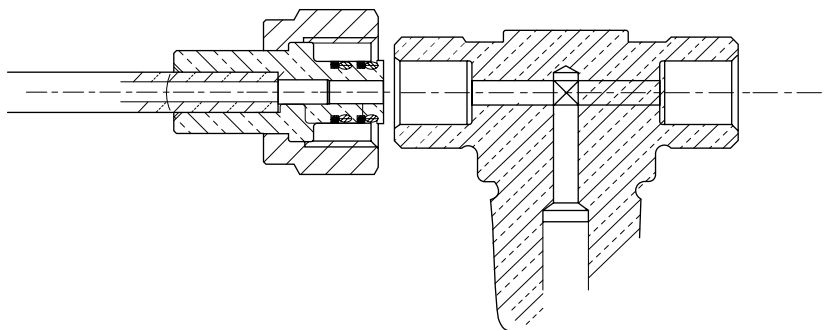


1 WAY



2 WAYS

O-RING TYPE TIGHTNESS



Compatibility	Suitable for all non corrosive gases
Working Pressure	300 bar
Test Pressure	450 bar
Body Material	Brass alloy
Accessories	Stainless steel or copper pigtails: various dimensions and thread specifications

EXAMPLES OF
INSTALLATIONS

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CYLINDER BUNDLE EQUIPMENT Fitting

EXAMPLES OF
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CYLINDER BUNDLE
EQUIPMENT



FERRULE

Series	Tightness	Orifice Ø	Type of Gas
ZZEMB002	Ferrule	10 mm	All non-corrosive gases

**Cavagna Group's wide range of fittings extends beyond the products shown*



TANG

Series	Tightness	Orifice Ø	Type of Gas
1601100627	O-ring	4.5 mm	All non-corrosive gases

**Cavagna Group's wide range of fittings extends beyond the products shown*



STEEL



BRASS

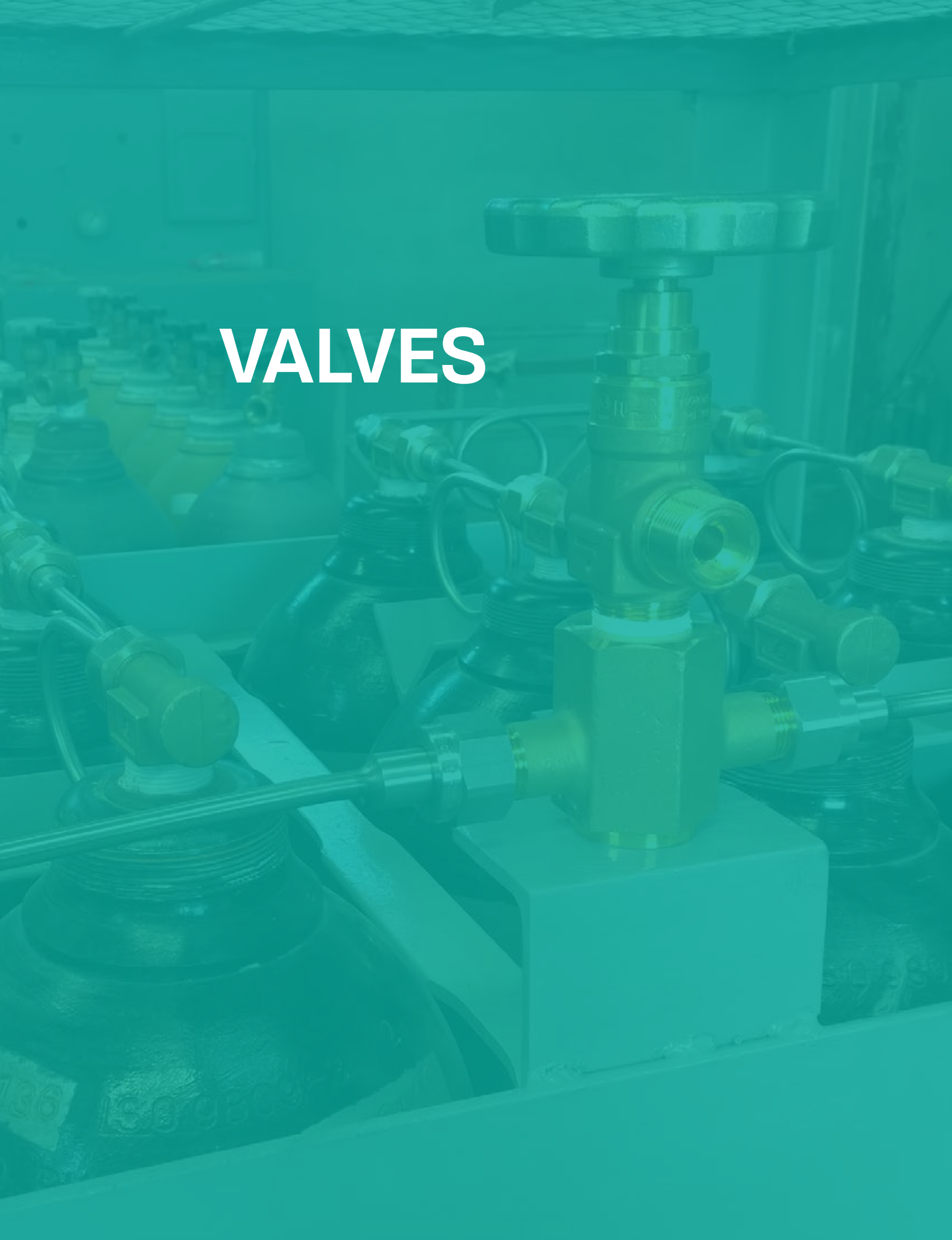


NUTS

Series	Tightness	Orifice Ø	Type of Gas
1071100111	Ferrule - Metal to Metal - O-ring	W21.7x1/14"	All non-corrosive gases
1071103325	Ferrule - Metal to Metal - O-ring	M20X1.5-6	All non-corrosive gases

**Cavagna Group's wide range of fittings extends beyond the products shown*

VALVES





VALVES Main Valve Holder

Technical Features

- Working pressure: 300 bar
- Test pressure: 360 bar
- Material: forged brass
- Suitable for several gases
- Cleaned for oxygen use

Options

- Available models:
- Two ways
- Different valve connection: 25E, W 21,7, W 20



Series	Tightness	Thread	Orifice Ø	Type of Gas
2879500006	Ferrule	W21,7x1/14	10.5 mm	All non-corrosive gases
2879500013	Ferrule	W20x1/14	10.5 mm	All non-corrosive gases
2879500019	Ferrule	25E	10.5 mm	All non-corrosive gases
2879500020	Ferrule	25E	8.5 mm	All non-corrosive gases
2879500051	O-ring	25E	12.5 mm	All non-corrosive gases

Pressure Gauge Holder

Series	Tightness	Thread	Orifice Ø	Type of Gas
0170906016	Ferrule	M20x1,5	10mm	All non-corrosive gases



MAIN VALVES High Flow

Technical Features

- Working pressure: 300 bar
- Test pressure: 360 bar
- Suitable for several gases

Options

- Available models:
One square way - Two ways

Requirements

- “π” marked in accordance with 2010/35/EU
- “p” marked in accordance with Statutory Instruments 2020 No.1111

Series	Orifice Ø	Temperature Range	Type of Gas
VIA1	7-10 mm	-20°C + 65°C	O ₂ - N ₂ O - N ₂ - Ar - He - CO ₂ - Air H ₂ - Mix
VIA2	10 mm	-40°C +65°C	N ₂ - Ar - He - H ₂ - CH ₄ - C ₂ H ₄



EXAMPLES OF
INSTALLATIONS

PRESSURE
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VALVES

CYLINDER BUNDLE
EQUIPMENT



MAIN VALVES RPV High Flow

EXAMPLES OF
INSTALLATIONS

PRESSURE
REGULATORS

CYLINDER BUNDLE
VALVES

CYLINDER BUNDLE
EQUIPMENT

Technical Features

- O-ring seal type for 230 bar working pressure
- Easy operation and long service life
- 100% leak test to 1.2 times working pressure
- Large orifice size provides faster vacuum and filling rates
- Hot forged brass body

Options

- Filling adaptor available separately
- Compatible with different adaptors with different nipples length
- Personalized handwheel logo cap
- Dip tube
- Bursting disc available in various settings
- Chrome or Nickel plating treatment
- Different bursting disk setting
- Filter
- Parallel thread
- Thread for dip tube installation

Requirements

- Inlets and outlets in accordance with all standards
- Conforming to EN ISO 10297 and EN ISO 15996
- “π” marked in accordance with 2010/35/EU



Series	Bursting Disk	Orifice Ø	Type of Gas
VGU1		8 mm	N2 - H2 - Ar - He - Air - CO Mix - OP<21%
VGZ1	X	8 mm	CO2 - SF6
VOS1		8 mm	O2 - N2O - Air - Mix OP>21%



MAIN VALVES RPV

Technical Features

- O-Ring technology provides superior leak integrity
- O-ring seal type up to 300 bar working pressure
- Easy operation and long service life
- 100% leak test to 1.2 times working pressure
- Large orifice size provides faster vacuum and filling rates

Options

- Filling adaptor available separately
- Compatible with different adaptors with different nipples length
- Personalized handwheel logo cap
- Dip tube
- Bursting disc available in various settings
- Chromed or Nickel plating treatment
- Filter
- Parallel thread
- Thread for dip tube installation

Requirements

- Inlets and outlets in accordance with all standards
- Conforming to EN ISO 10297 and EN ISO 15996
- “π” marked in accordance with 2010/35/EU



EXAMPLES OF
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CYLINDER BUNDLE
EQUIPMENT

	Series	Bursting Disk	Orifice Ø	Type of Gas
P1020	VOR8		4 mm	O ₂
	VGE8		4 mm	Ar/Mix - N ₂ /CO ₂ - H ₂
	VGf9	X	8mm	SF ₆ - CO ₂ + BD

	Series	Bursting Disk	Orifice Ø	Type of Gas
P2009	VGf8	X	8 mm	CO ₂ + BD
	VGB6		4 mm	Air - Ar/ CO ₂ Mix - N ₂
	VGM8		4 mm	H ₂ / CH ₄
	VOG7	X	4 mm	O ₂



VALVES Standard

EXAMPLES OF
INSTALLATIONS

PRESSURE
REGULATORS

CYLINDER BUNDLE
VALVES

CYLINDER BUNDLE
EQUIPMENT

Technical Features

- O-Ring technology provides superior leak integrity
- O-ring seal type up to 300 bar working pressure
- Easy operation and long service life
- 100% leak test to 1.2 times working pressure
- All markings are located on the valve neck to protect them from damage
- Large orifice size provides faster vacuum and filling rates
- Durable forged brass body manufactured by Cavagna Group
- Unique seat holder design



Options

- Personalized handwheel logo cap
- Chromed or Nickel plating treatment
- Different safety valve setting



Requirements

- Inlets and outlets in accordance with all standards
- Conforming to EN ISO 10297
- "π" marked in accordance with 2010/35/EU

Series	Bursting Disk		Orifice Ø	Type of Gas
VOA5	X		4 mm	O ₂ - N ₂ O - Air - Mix - OP > 21%
VGG5	X		8 mm	CO ₂ - SF ₆
VGA6	One way	X	4 mm	N ₂ - H ₂ - Ar - He - Air - CO - Mix SF ₆ - Ar - CO ₂ mix
	Two way			

PRESSURE REGULATORS





PRESSURE REGULATORS Type 5200 UHP

EXAMPLES OF
INSTALLATIONS

PRESSURE
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CYLINDER BUNDLE
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CYLINDER BUNDLE
EQUIPMENT

Technical Features

- Application fields where application with 200 bar output max of industrial purity grade gases is required.

Options

- Gauges ISO 5171 (rubber protection available)
- Different position/configuration available
- Additional inlet filter on demand
- Inlet&outlet per customer request
- Safety valve available on demand
- Panel mount thread available on demand
- Gauges ISO 5171 (rubber protection available)



Requirements

- AS4267:1995 / ISO 7291

Series	Inlet pressure	Delivery pressure range	Contents/Delivery pressure indicator	Operating Temperature Range
Type 5200	Up to 315 bar	0-200 bar	Gauge	-20°C to 65°C



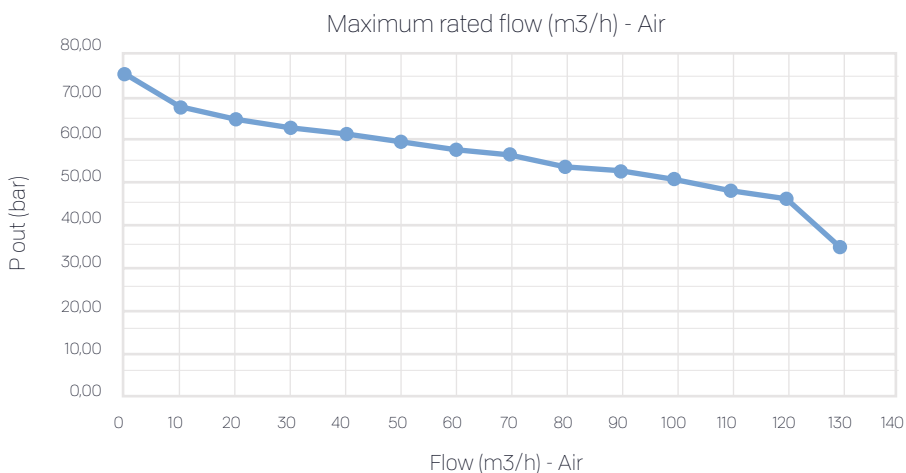
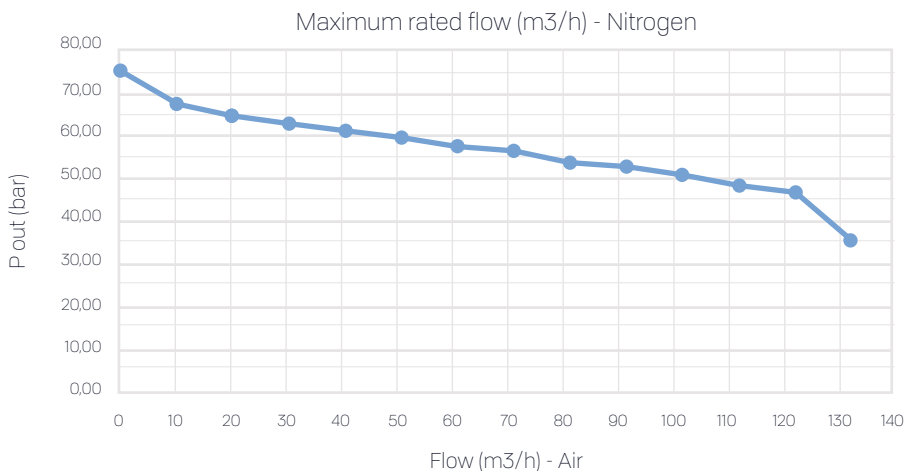
PRESSURE REGULATORS

S5200 60 bar
Pin = 2Pout+1 = 121 bar

Flow (m3/h) - Air	Flow (m3/h) - Nitrogen	Pout (bar)
0	0	75,20
10	10,2	67,60
20	20,4	64,80
30	30,6	62,95
40	40,8	61,50
50	51	59,65
60	61,2	57,70
70	71,4	56,60
80	81,6	53,90
90	91,8	52,90
100	102	51,10
110	112,2	48,50
120	122,4	46,75
130	132,6	35,50
140	142,8	

Conversion coefficient

Air	Nitrogen
1	1,02



EXAMPLES OF INSTALLATIONS

PRESSURE REGULATORS

CYLINDER BUNDLE VALVES

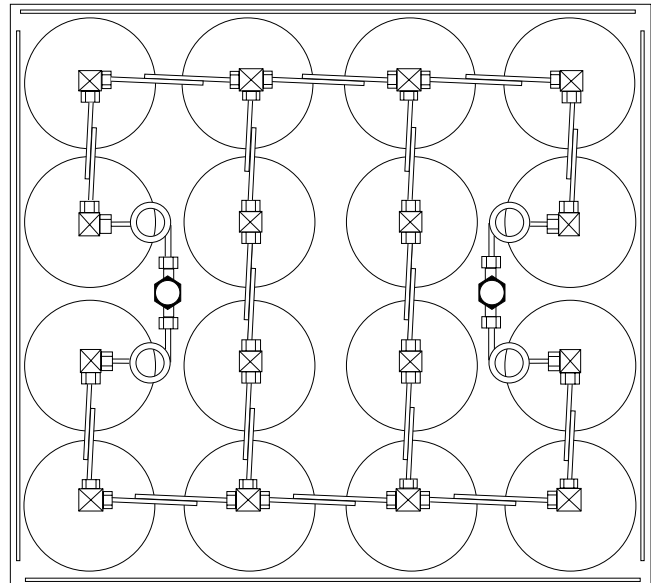
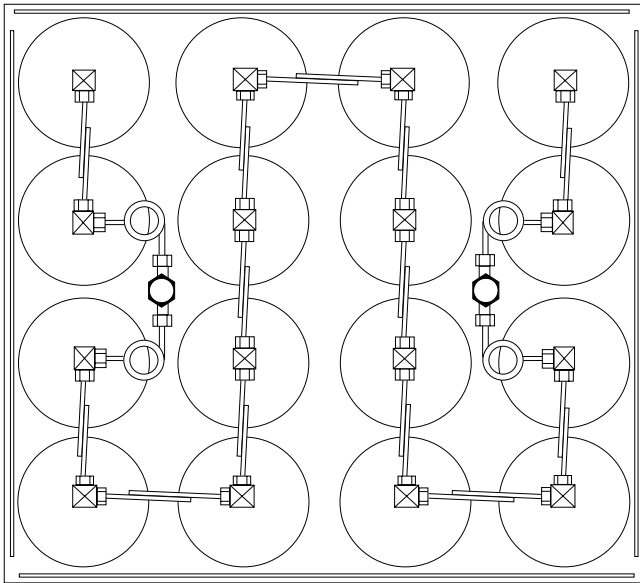
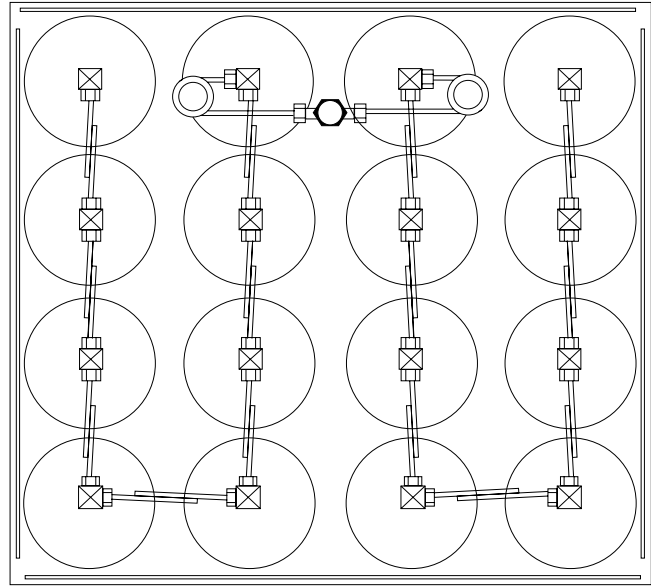
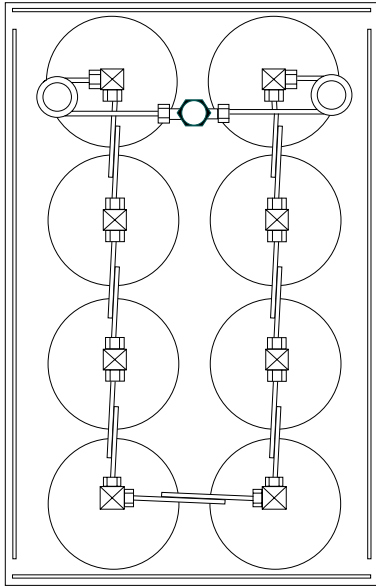
CYLINDER BUNDLE EQUIPMENT



EXAMPLES OF INSTALLATION



EXAMPLES OF INSTALLATION Render



"More solutions of cylinder bundle seen from above"

EXAMPLES OF
INSTALLATIONS

PRESSURE
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CYLINDER BUNDLE
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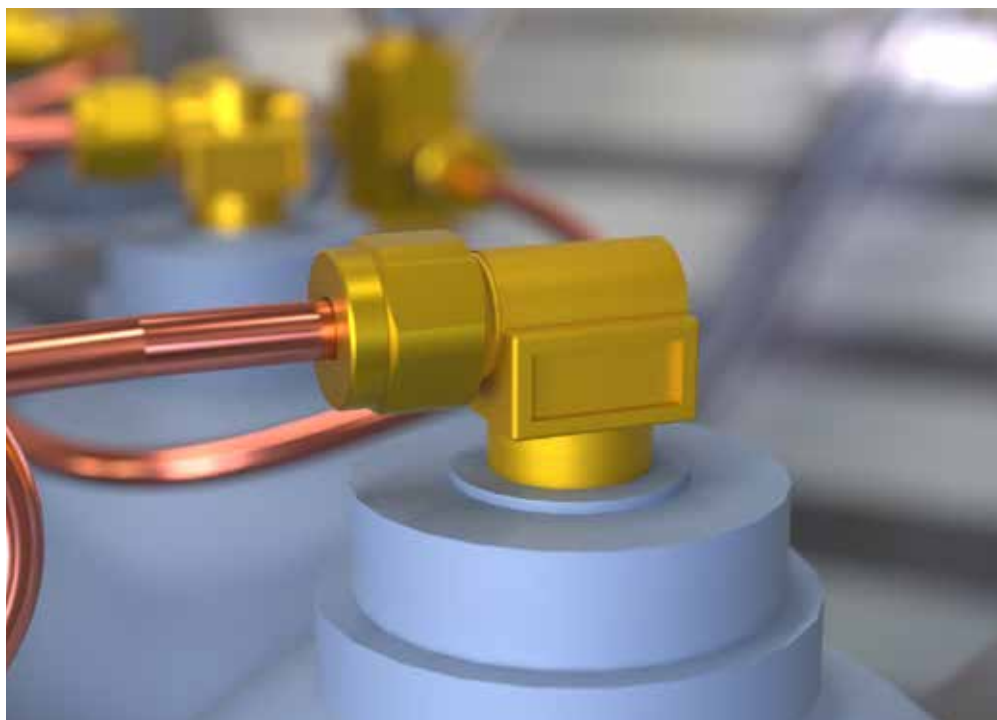
CYLINDER BUNDLE
EQUIPMENT



EXAMPLES OF INSTALLATION Render



"A two way fitting linked to a one way fitting through a copper pipeline"



"One way fitting connected to the cylinder"

EXAMPLES OF
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CYLINDER BUNDLE
EQUIPMENT



EXAMPLES OF INSTALLATION Render



"RPV High Flow valve connected to the valve holder"



"The copper pipelines link the cylinders to the main valve through fittings and the valve holder"

EXAMPLES OF
INSTALLATIONS

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CYLINDER BUNDLE
EQUIPMENT



WHAT'S IS A CYLINDER BUNDLE?

Is a group of cylinder connected by means of piping system and trasported as an unique non separable objects.

WHY?

One step forward from cylinder:

- More volume
- More autonomy
- Higer pressure (300 bar and more) and capacity (i.e. 16 cylinders) without the problem of weight;
- Alternative to cylinder and cryogenic bulk

WHERE ?

Where a cylinder is not enough and a criogenic tank too expensive:

- Cutting and welding
- Hospital as a second source for medical gas lines
- Ships yard
- Food packaging industries
- Working sites
- For medium and hifgh need gas consumers

PARTS OF A CYLINDER BUNDLE

- CYLINDERS
- STEEL STRUCTURE
- MANIFOLD
- PRESSURE REDUCER



INLET CONNECTION

Valves can be made with different inlet connections, depending on the customer's requirements and/or the application for which the valve is intended.

- 3/8" NGT
- 17E
- 1/2" NGT (08N)
- 25E-25T-28.8 NBN
- 28.8 NF E29-680
- 3/4" NGT (12N)
- 1" BS341
- 31.3 DIN
- 1" 11.5 NGT (16N)
- 34NF
- 1 1/4 - 11.5 NGT
- 34NF
- 1 1/4 - 11.5 NGT
- 1 1/2 - 11.5 NGT
- 39 JIS B8244
- M18 (18P)
- M25 (25P)
- M30 (30P)
- .750" - 16UNF (U12)
- 1.125" - 12 UNF (U18)



OUTLET CONNECTION

ABNT (Associação Brasileira de Normas Técnicas)

ABNT 172-1	3/8"-18 NGT INT	Toxic	Ammonia
ABNT 218-1	W 21.8 x1/14" INT	Oxidiser	Air, Oxygen, Oxygen Mix >20%
ABNT 218-2	W 21.8 x1/14" LH INT	Flammable	Hydrogen, Methane
ABNT 225-2	0.885" - 14 NGO LH	Flammable	Acetylene, Butane
ABNT 245-1	0.960" - 14 NGO	Inert	Argon, Helium, Nitrogen
ABNT 245-1	0.960" - 14 NGO	Inert	Inert Gases + Oxygen Mixture <20%
ABNT 245-2	0.960" - 14 NGO LH	Non Flammable	Sulphur Hexafluoride
ABNT 262-1	1.035" - 14 NGO INT	Toxic	Sulphur Dioxide, Chlorine
ABNT 209-1	0.830" - 14 NGO INT	Non Flammable	Carbon Dioxide
ABNT 209-2	0.830" - 14 NGO LH INT (Round Nipple)	Toxic, Flammable	Carbon Monoxide, Phosphine, Silane
ABNT 209-4	0.830" - 14 NGO LH INT (Flat Nipple)	Toxic	Hydrogen Chloride, Hydrogen Sulphide
ABNT 166-1	G 3/8" A - ISO 228-1	Oxidiser	Nitrous Oxide

AFNOR (Association Française de Normalisation)

Connector type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
NF B	W30 x 1.75	Oxidiser	Industrial Air
NF C	SI 21.7 x 1.814	Inert Gases	Argon, Helium, Nitrogen
NF E	SI 21.7 x 1.814 LH	Flammable	Hydrogen, Hydrogen mix >4%
NF F	SI 22.94 x 1.814 INT	Oxidiser	Oxygen
NF G	SI 26 x 1.5 INT	Oxidiser	Nitrous Oxide
NF H	W 22.91 x 1.814 LH INT	Flammable	Acetylene
NF J	W 25.4 x 3.175	Corrosive	Chlorine
NF K	W 27 x 2	Corrosive	Hydrogen Chloride
NF L	W 27 x 2	Oxidiser	Inert Gases + Oxygen Mix >21%
NF M	W 30 x 2	Oxidiser	Inert gases + Oxygen Mix >21% & CO ₂ <7%
NF P	W27 x 2	Oxidiser or Corrosive	Nitric Oxide, Nitrogen Dioxide

BS 341 (British Standard)

Connector type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
BS 341 No. 2	G 5/8" LH	Flammable	Acetylene
BS 341 No. 3	G 5/8" LH	Inert	Air, Argon, Neon, Nitrogen
BS 341 No. 3	G 5/8" LH	Oxidiser	Oxygen
BS 341 No. 4	G 5/8" LH INT	Flammable	Acetylene, Hydrogen
BS 341 No. 4	G 5/8" LH INT	Flammable	Carbon Monoxide, Methane, Natural Gas
BS 341 No. 6	G 5/8"	Toxic	Chlorine, Hydrogen Chloride
BS 341 No. 7	G 5/8" LH	Flammable Refrigerants	Flammable Refrigerants
BS 341 No. 8	W 0.860" x 14 TPI	Non Flammable	Carbon Dioxide
BS 341 No. 10	G 1/2"	Toxic	Ammonia
BS 341 No. 12	G 1/2"	Toxic	Sulphur Dioxide
BS 341 No. 13	W 11/16" - 20 TPI	Oxidiser	Nitrous Oxide
BS 341 No. 14	G 3/8"	Toxic	Hydrogen Cyanide, Nitric Oxide
BS 341 No. 15	G 3/8" LH	Toxic	Carbonyl Sulphide, Hydrogen Sulphide



OUTLET CONNECTION

CGA (US Compressed Gas Association)

Connector type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
CGA 110	0.3125" - 32 UNEF INT	Small Cylinders	All Gases
CGA 170	9/16" - 18 UNF INT	Non Corrosive, Small Cylinders	Argon Helium
CGA 180	5/8" - 18 UNF INT	Small Cylinders	All Gases
CGA 240	3/8" - 18 NPT	Toxic	Ammonia
CGA 296	0.803" - 14 UNS INT	Oxidising Mixtures	Oxygen Mix > 23%
CGA 300	0.825" - 14 NGO	Refrigerant	Ethyl Chloride
CGA 320	0.825" - 14 NGO	Non Flammable	Carbon Dioxide
CGA 326	0.825" - 14 NGO	Oxidiser	Air
CGA 330	0.825" - 14 NGO LH	Toxic	Hydrogen Chloride
CGA 346	0.825" - 14 NGO	Oxidiser	Air
CGA 350	0.825" - 14 NGO LH	Flammable	Hydrogen, Methane
CGA 510	0.825" - 14 NGO LH INT	Flammable	Propane
CGA 540	0.903" - 14 NGO	Oxidiser	Oxygen
CGA 580	0.965" - 14 NGO INT	Inert	Argon, Nitrogen
CGA 590	0.965" - 14 NGO LM INT	Oxidiser	Air
CGA 330	1.030" - 14 NGO	Toxic	Hydrogen Sulphide
CGA 679	1.030" - 14 NGO LH	High Pressure	Nitrogen
CGA 705	1.125" - 14 UNS LH	Toxic	Ammonia

DIN 477 (Deutsche Industrie Norm)

Connector type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
DIN 477 No. 1	W 21.8 x 1/14" LH	Flammable	Hydrogen, Propane
DIN 477 No. 2	W 21.8 x 1/14" LH	Flammable	Propane
DIN 477 No. 3	Yoke	Flammable	Acetylene
DIN 477 No. 3.1	M 24 x 2" LH	Flammable	Acetylene
DIN 477 No. 5	W 1" x 1/8" LH	Toxic	Carbon Monoxide
DIN 477 No. 6	W 21.8 x 1/14"	Various	Argon, Helium, Carbon Dioxide
DIN 477 No. 7	G 5/8"	Toxic	Sulphur Dioxide
DIN 477 No. 8	W 1" x 1/8"	Toxic	Boron Trichloride
DIN 477 No. 9	G 3/4"	Oxidiser	Oxygen
DIN 477 No. 10	W 24.32 x 1/14" RH	Inerts	Nitrogen
DIN 477 No. 11	G 3/8"	Oxidiser	Nitrous Oxide (>3 l size)
DIN 477 No. 12	G 3/4" INT	Oxidiser	Nitrous Oxide (<3 l size)
DIN 477 No. 13	G 5/8" INT	Non Flammable	Air
DIN 477 No. 14	M 19 x 1.5 LH	Various	Mixtures



OUTLET CONNECTION

IRAM 2539 (Instituto Argentino de Racionalización de Materiales)

Connector Type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
IRAM 2539 No.1	3/4" BSP x 1/14" - INT	Flammable	Acetylene
IRAM 2539 No.2	W 21.8 - 11/4	Various	Oxygen, Sulphur Hexafluoride
IRAM 2539 No.3	5/8" BSP - INT	Non Flammable	Argon, Nitrogen
IRAM 2539 No.4	W 21.8 - 1/4	Flammable	Ethane, Hydrogen
IRAM 2539 No.5	3/8" BSP - INT	Oxidiser	Nitrous Oxide

ISO 5145 (Provisional standard, previously NEVOC)

Connector Type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
ISO 5145 No.1	W 24 x 2 11,2 - 16,8 RH	Inert	Medical Helium & Xenon
ISO 5145 No.2	W 24 x 2 11,9 - 16,1 RH	Oxidiser	Oxygen
ISO 5145 No.4	W 24 x 2 13,3 - 14,7 RH	Inert	Inert gases & mixes, except He & Xe
ISO 5145 No.9	W 24 x 2 13,3 - 14,7 LH	Flammable	Mixes with a flammable gas, except Hydrogen
ISO 5145 No.10	W 24 x 2 14 - 14 LH	Flammable	Hydrogen
ISO 5145 No.11	W 27 x 2 11,8 - 20,2 RH	Inert	Nitrogen
ISO 5145 No.17	W 27 x 2 16 - 16 RH	Inert	Carbon Dioxide
ISO 5145 No.24	W 27 x 2 16 - 16 LH	Flammable	LPG
ISO 5145 No.30	W 30 x 2 15,9 - 20,1 RH	Inert	Helium, Argon, Nitrogen, inert mixes*
ISO 5145 No.32	W 30 x 2 17,3 - 18,7 RH	Oxidiser	Oxygen*
ISO 5145 No.38	W 30 x 2 15,2 - 20,8 LH	Flammable	Mixes with a flammable gas*
ISO 5145 No.41	W 30 x 2 17,3 - 18,7 LH	Refrigerants	Refrigerant gases**

* Working pressure above 250 bar in Europe and 182 bar in USA

** Flammable according to ISO 5145, for inert No. 4 can be used when FTSC codes fit with the mixture

ITC EP-6 (Instrucción Técnica Complementaria - Equipos Presión)

Connector Type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
TIPO B	M 30 x 1.75	Non Flammable	Air
TIPO C	W 21.7 x 1/14"	Inert	Argon, Helium, Nitrogen
TIPO E	W 21.7 x 1/14" LH	Flammable	Hydrogen, Methane, Propane
TIPO F	G 5/8" INT	Oxidiser	Oxygen
TIPO G	M 26 x 1.5 INT	Oxidising mixtures	Oxygen Mix > 23%
TIPO H	G 5/8" LH INT	Flammable	Acetylene
TIPO J	W 1"	Toxic and Corrosive	Hydrogen Chloride, Hydrogen Bromide
TIPO M	M 19 x 1.5 LH	Mixtures	Calibration Gas Mixtures
TIPO T	W 31.75 x 1/7" 237	Toxic or Corrosive	Chlorine Drum Tanks
TIPO U	G 3/8"	Oxidiser	Nitrous Oxide



OUTLET CONNECTION

NEN 3268 (Nederlandse Norm)

Connector Type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
LU 0	M 19 x 1.5 LH	Flammable Mixtures	Flammable Mixtures
LU 1	W 21.8 - 1/14" LH	Flammable	Hydrogen, Methane
LU 4	W 25.4 x 3.175" LH	Toxic	Hydrogen Cyanide
RI 2	G 22.91 x 1.814" RH	Oxidiser	Oxygen
RU 1	W 21.8 - 1/14"	Refrigerants	Ammonia, Carbon Dioxide
RU 3	W 24.32 - 1/14"	Inert	Argon, Helium, Nitrogen
RU 4	W 25.4 x 3.175" RH	Toxic	Chlorine, Hydrogen Chloride, Sulphur Dioxide
RU 6	W 28.81 x 1.814" RH	Oxidiser	Air

UNI (Ente Nazionale Italiano di Unificazione)

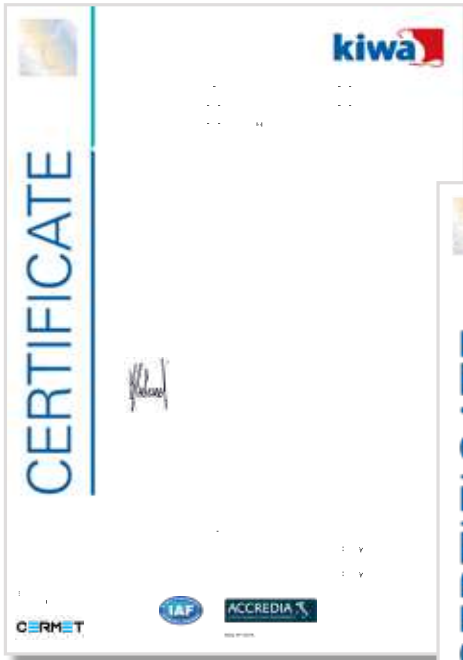
Connector Type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
UNI 11144 #1H	W 20 x 1/14" LH	Flammable	Hydrogen
UNI 11144 #1P	W 20 x 1/14" LH	Flammable	LPG
UNI 11144 #2	W 21.7 x 1/14"	Non Flammable	Oxidiser, Carbon Dioxide, Oxygen
UNI 11144 #3	W 30 x 1/14" LH	Toxic	Ammonia
UNI 11144 #4	W 1"x 1/8"	Toxic	Chlorine
UNI 11144 #5	W 21.7 x 1/14"	Inert Gases Mix	Nitrogen
UNI 11144 #6	W 30 x 1/14"	Non Flammable	Compressed Air
UNI 11144 #7 F	W 22.9 x 1/14" LH	Flammable	Acetylene
UNI 11144 #7 S	Ø 20 X Ø 10 Joke	Flammable	Acetylene
UNI 11144 #8	W 24.5 X 1/14"	Inert Argon	Helium
UNI 11144 #9	G 3/8" (Male)	Male	Oxidiser Nitrous Oxide

AS 2473.2 (Australian Standard)

Connector Type	Connector Description	Generic Gas Property	Example Gases or Mixtures Components
Type 10	G 5/8" RH INT	Non Flammable	Argon, Helium, Oxygen =< 20,000 kPa
Type 11	G 5/8" RH INT Extended nipple	Oxidiser	Oxygen >20,000 kPa, =< 25,000 kPa
Type 20	G 5/8" LH INT	Flammable	Acetylene, Hydrogen, Ethylene, Methane
Type 21	0.885" - 14 NGO LH INT	Flammable	LPG, Propane
Type 30	0.860" - 14 BSW RH EXT	Non Flammable / Oxidiser	Carbon Dioxide, Nitrous Oxide
Type 31	G 5/8"	Chemical Gases	Sulphur Hexafluoride, Phosgene, Methyl Bromide
Type 32	G 1/2"	Toxic	Ammonia, Sulphur Dioxide
Type 33	G 1/4"	Non Toxic, Non Flammable Mixtures	Small clys <4.5l water capacity
Type 34	G 3/4"	Refrigerants	R134a
Type 40	G 5/8" LH EXT	Toxic	Ethylene Oxide
Type 41	G 3/8" BSP LH EXT	Flammable	LPG, Propane
Type 42	G 1/2" LH EXT	Toxic	Methylamine
Type 43	0.825" - 14 NGO LH EXT	Toxic / Corrosive	Hydrogen Chloride, Hydrogen Sulphide
Type 44	G 3/8" BSP	Toxic, Non Flammable Mixtures	Calibration gas mixtures
Type 50	24x2 Whit	Inert	Nitrogen =<20,000 kPa
Type 51	1.045" - 14 NGO RH INT	Inert	Nitrogen >20,000 kPa
Type 60	27x2 Whit	Non Flammable	Air =<20,000 kPa
Type 61	0.825" - 14 NGO	Non Flammable	Air >20,000 kPa



Wherever gas is used, we are there



ISO-compliant Quality Management System

Quality: our priority!

Aiming to guarantee the utmost customers' satisfaction and to always be up to their expectations, the Cavagna Group focuses its efforts on the continuous improvement of its processes, by means of an effective and efficient Quality Management Systems.

Cavagna Group's Quality Management System conforms to ISO 9001 standards, and it is also ISO 13485 and MDSAP certified for processes concerning medical devices.

In addition, the Cavagna Group's Environment Management System complies with the international standard ISO 14001.

WARRANTY AND LIABILITY CONDITIONS (Not Valid for USA and Canada)

1 - Compliance of the brand new products

The original seller of the brand new product (hereinafter referred to as Product) hereby warrants that the Product corresponds in quantity, quality, and type as specified in the sales contract (or, if missing, in the order's confirmation) for the Product and that the Product is without defects that could render it unfit for the use to which it is intended. The original seller of the Product is identified on the invoice for the Product and is referred to herein as the "Warrantor."

2 - Extent of the guarantee

The warranty is limited only to defects in a) the design of the Product, b) the materials in the Product or c) the construction of the Product, which can be attributed to the Warrantor. The warranty does not apply in the case where the buyer is unable to prove correct storage and maintenance of the brand new products, or in the case the buyer has modified the Product without the prior written agreement of the Warrantor.

Furthermore, the Warrantor is not liable for defects in the brand new product due to the normal wear and deterioration of those parts of the Product, which by their nature, are subject to rapid and continuous wear and tear (e.g.: lining, etc.).

In general, in no case shall the Warrantor be liable for defects in compliance that arise after the transfer of risk or possession of the Product to the buyer has taken place.

The warranty is valid only when the brand new products are installed, used and maintained in conformity with the warnings and instructions provided by the Warrantor in the instruction manual or other Product literature and in conformity with the applicable laws, standards or regulations existing in the location where the brand new products are used or, in the absence of any applicable laws, standards or regulations, in conformity with the best practices in the applicable industry or trade.

3 - Claim

The buyer is required to check the compliance of the brand new Products and confirm the absence of flaws. The buyer should report any flaws or defects in brand new Products, in the following ways and time. Failure to properly and timely report a defect will void the warranty:

a) Claims for shortage or damages that could have been apparent from an examination of the exterior of the Product's packaging contents must be reported as soon as the brand new Products arrive at their place of destination or, in any event, no more than 5 days after that time.

b) Claims relevant to quantity, colour, quality flaws or defects or non-compliance that the buyer should have been able to identify as soon as it took possession of the Product, must be made shortly after the time when the brand new Product arrives at its place of destination or, in any event, no more than 15 days after that time;

c) Hidden flaws, defects or non-compliance (that is, those not identifiable according to the inspection imposed by law and by the preceding subparagraphs) must be reported within 30 days after the discovery or in any event, no more than 2 years from the delivery date.

Claims must be sent by registered letter, addressed to the head office of the Warrantor and must describe in detail the alleged defect, flaw or non-compliance.

In order to preserve this warranty, the buyer must not attempt any disassembly repairs or modifications on the brand new product without the Warrantor's prior written agreement.

The buyer forfeits and waives its rights under this

warranty if the buyer does not consent to every reasonable request of the Warrantor, or if after the Warrantor has requested the return of the defective brand new products at buyer's own expenses, the buyer fails to return the Product within 5 working days from the request.

In the event that the warranty claim is ultimately determined, in the sole discretion of Warrantor, to be unfounded, the buyer will reimburse the Warrantor all expenses incurred by Warrantor in evaluating the warranty claim (travel, expert valuations, transport expenses etc.).

4 - Remedies

Following a report by the buyer duly made in accordance with the previous point 3, the Warrantor, within a reasonable period depending on the type of claim, may, at Warrantor's sole reasonable discretion:

a) Supply to the buyer products of the same kind and quantity as those that have been proven to be defective or not in compliance with the contract: in such a case the Warrantor can require the return of the defective product, which becomes property of the Warrantor. Such products will be supplied FCA Warrantor's facility (Incoterms @ 2020);

b) Communicate in writing the cancellation of the contract and offering a refund of the amount paid for the replaced product;

c) Repair the products proven to be defective at its premises and supply the repaired products to the buyer FCA Warrantor's facility (Incoterms @ 2020).

No other cost (such as disassembling and/or reassembling of the products, transportation from/to the premises of buyer's customers, etc.) shall be charged to or paid by the Warrantor, unless previously expressly agreed in writing by the Warrantor.

5 - Limit of seller's liability

The Warranty provided herein supersedes all legal warranty for defects and compliance, and excludes any other possible liability of the Warrantor, however originating, from the brand new products supplied by Warrantor. In particular, the buyer cannot put forward another claim for compensation in respect of any further damages, request any reduction of the contract price or cancellation of the contract. Once the period of the Warranty has expired no claim can be made against the Warrantor.

In no event shall Warrantor be liable to buyer for any direct, incidental, indirect, consequential or exemplary damages, including without limitation any claim for damages based on lost revenues or profits, however caused.

No exceptions to or modification of this Warranty will be permitted unless expressly and specifically defined and accepted by the parties in writing.

6 - Technical regulations

As far as the brand new product characteristics and specifications are concerned, the Warrantor complies with the legislation and the technical regulations prevailing in Italy and the European Directives, unless otherwise specified in the contractual documentation (i.e. contract, order's confirmation, invoice, installation/fitting, use and maintenance manual); The buyer assumes the risk of any difference between the European Directives plus the Italian regulations and those of the country of destination, regarding the use or installation of the Products, and indemnifies the Warrantor for any such differences it. The Warrantor guarantees the performance of brand new products manufactured by Warrantor only and exclusively in relation to uses, destinations, applications, tolerances, capacities, etc. that have been expressly indicated

by Warrantor and that are incorporated in the contractual documentation (i.e. contract, order's confirmation, invoice, installation/fitting, use and maintenance manual).

The buyer is not authorised to dispose of the brand new Products supplied to him by the Warrantor in a way which does not conform to the indications described in the previous sub-paragraph and in the instructions given by Warrantor.

Where the buyer intends the said products to be resold, it shall be buyer's responsibility:

a) to inform the purchasers of the Product from buyer of the correct specifications and uses of the Product;

b) to grant any further periods or extended terms of any warranty provided by buyer only to buyer's purchasers that exceed the warranty granted to buyer by Warrantor according to paragraph 3.

c) the buyer shall not grant or extend any warranty on behalf of Warrantor to any third party.

7 - Personal injuries and property damages

Warrantor shall indemnify buyer from and against any and all claims, demands, losses, liabilities alleged by third parties relating to personal injuries and property damages suffered as a result of a defective product. In such event, Warrantor will exclusively be responsible within the limits (of deductible), terms and conditions of the product liability insurance policy held by it (a copy of the related insurance declaration is available upon request).

In case of potential damages to third parties that may arise from a defective brand new product, the buyer and Warrantor shall work together in good faith to determine the nature and extent of the appropriate measures to be taken, including recall operations. It is understood that the costs and expenses associated with the recall or other measures shall be paid by Warrantor within the limits, the terms and the conditions set forth in Warrantor's liability insurance policy, with the exclusion of the costs connected to the locating and retrieving the Products in the market, which will be paid by the Buyer.

OUR **GLOBAL** PRODUCT BRANDS



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cavagna group

Wherever gas is used, we are there

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