

Extinguishing Catalogue 2011

Last Update: December 2011

THE VALUE OF EXPERIENCE





The value of experience

LPG Técnicas en Extinción de Incendios, S.L., founded in 1985, is devoted to research, design, manufacturing and marketing of fixed fire extinguishing systems for the protection of goods and people.

LPG holds a position of leadership in the Spanish market and a high penetration into the international market, sustained by:

- In-house technology and proven quality.
- Ability to adapt to market needs and changes, and in-depth knowledge of the sector.

Through its network of distributors and sales agents, **LPG** has subsidiaries in Portugal, France, the United Kingdom, Uruguay and Turkey, as well as a presence in over 70 countries.

LPG has new facilities, over 4500 m2, fully equipped with the latest means of specialized production and research in fire fighting systems. The company's network of subsidiaries also has the facilities and production means appropriate to each country in order to better serve their market.



Product approvals



UL (USA):
DuPont™ FM 200®



VdS Schadensverhütung (Vertrauen durch Sicherheit, Germany):
CO₂ - LPG INERT® - LPG AQUAFOG®- iFlow® Systems



LPCB (Loss Prevention Certification Board de U.K.):
**DuPont™ FE-13™ - LPG INERT® - DuPont™ FM 200® -
HFC 125 DEPT (For all LPG valves)**



CNPP (Centre National de Prevention et protection, France):
DuPont™ FE-13™ - LPG INERT® - LPG AQUAFOG®



VNIPO (Russian Certification Body):
**CO₂ - DuPont™ FE-13™ - LPG INERT® - Weighing device HFC-125 - DuPont™
FM 200®**



APCI (Agencia Protección Contra Incendios Ministerio del Interior de Cuba):
Hose reels- DuPont™ FE-13™ -DuPont™ FM 200®-HFC 125 -LPG INERT®-CO₂



IMO (International Maritime Organization):
DuPont™ FE-13™ - LPG AQUAFOG®



LGAi Technological Center (Laboratori General d'Assaigs i Investigacions, SPAIN):
Weighing device (Electromagnetic Compatibility and Electric Security)



LPCB (Loss Prevention Council Board, U.K.):
ISO 9001 : 2000



FM (Factory Mutual USA):
LPG AQUAFOG®-

Index Software

Flame 6

FireNet 7

Gas Extinguishing

DuPont™ FE-13™ 9

Properties 10

Modular Systems 11

Modular Systems with weighing device 12

Centralized Systems 13

Centralized Systems with weighing device 14

DuPont™ FE-13™ Pressurized with N₂

Properties 18

Modular Systems 19

Centralized Systems 20

HFC 125® 23

Properties 24

Modular Systems 25

Centralized Systems 26

DuPont™ FM 200® 29

Properties 30

Modular Systems 31

Centralized Systems 32

DuPont™ FM 200® UL

Properties 34

Modular Systems 35

Centralized Systems 36

CO₂ 39

Properties 40

Modular Systems 41

Centralized Systems 42

Modular Systems with weighing device 45

Centralized Systems with weighing device 46

LPG Inert® 51

Properties 52

Modular Systems 53

IG-01 Centralized Systems 54

IG-55 Centralized Systems 58

IG-100 Centralized Systems 62

IG-541 Centralized Systems 66

iFlow® Technology

Constant flow technology 70

Modular Systems **iFlow®** 73

IG-01 iFlow® Matrix Centralized Systems 74

IG-55 iFlow® Matrix Centralized Systems 78

IG-100 iFlow® Matrix Centralized Systems 82

IG-541 iFlow® Matrix Centralized Systems 86

LPG AQUAFOG®

Properties 92

High pressure Systems 93

Selector & Alarm Valves 94

Pump systems 96

Wet pipe system with cylinder bank 99

Total and local flooding applications 100

Low pressure systems 101

Prevention System

LPG LOXIC 107

Oxygen Reduction Systems 108

Calculation methodology 111

Accessories

Accessories 113

Nozzles 114

Components of systems 119

LPG Brackets 124

iFlow® Matrix Brackets 130

Special Systems

Solutions for commercial kitchens

- **LPG-Protek** 134

- **LPG AQUAFOG®** 140

- **CO₂** 141

Foam Equipment for Service Stations 142

Powder Tanks 143

LPG PoinTtech® 144

Pre-installed Piping Kits 146

Selector valves 148

After-sales service 151

Technical assistance, commissioning and auditing 152

RETROTEC EQUIPMENT sealing test 153

PERCO EQUIPMENT concentration test 153

Additional Information 155

Systems methodology for the price calculation 156

Dimensions and weights 160

ø Manifolds 162

General Terms & Sales Conditions 164

We innovate in service, we provide solutions

LPG continues to progress in the field of technology by developing its own software, Flame and FireNet, to provide the best service to its customers. It is, thus, important to inform you about their

advantages. Following is a brief description of both software products and its advantages. However, for further information contact your sales manager in the area.

Flame

FLAME is a computer program designed and developed from the need for a calculation system integrated into our ERP management program. This not only allows a better communication between Offers processes but also the possibility of monitoring and keeping control of them through automated reports.

FLAME

- A computer program for the management and implementation of Offers through LPG systems
- Performs design calculations of local and network systems
- Provides the management of Offers by checking lists
- Enables online updating of the program
- Database online updating
- Allows to make Offers through a list of products by code or through type of risk entries
- Provides different alternatives for the same risk
- You can perform a calculation of needs with the different current standards.

Easy navigation by Flame with three main parts:

- Title bar. Appears at the top of the program, indicating the name and the version running
- Shortcut Menus. Appear below the title bar and from there you can access all the program features
- Status / connection. Appears at the bottom of the screen (the type of connection that is active in this case is "Server", the name of the user who is using the system and the company you are working for).

Flame Report Model

Each Offer is accompanied by a detailed report with which you can check that all items within the offer are correct and that it is a safe purchase.



We innovate in service, we provide solutions

LPG continues to progress in the field of technology by developing its own software, Flame and FireNet, to provide the best service to its customers. It is, thus, important to inform you about their advantages.

Following is a brief description of both software products and its advantages. However, for further information contact your sales manager in the area.

FireNet®

FireNet® allows the design and calculation of fire fighting networks. Including the agents listed below and it is specifically customized for the components and configurations used in LPG.

Its use for other components not specifically provided may lead to incorrect results:

- Water Mist
- FE-13
- HFC-125 (25/42 bar)
- FM-200 (25/42 bar)
- Inert Gases (200/300 bar)

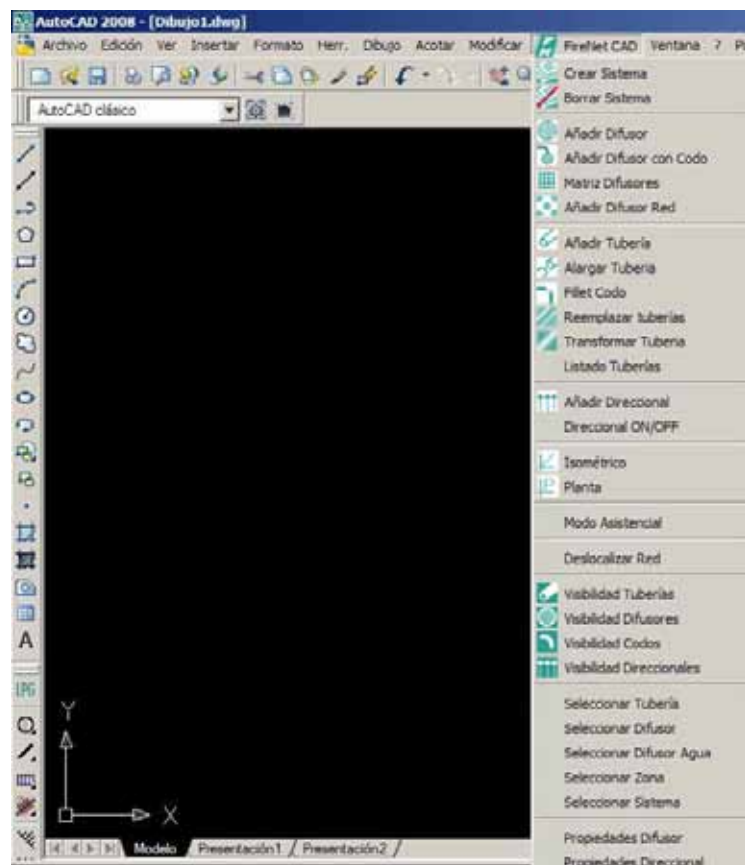
The contents for these networks is done with AutoCad to obtain a series of files in .Xml format that should be sent to LPG through its website so as to proceed with the calculation. For this, you should get a user number (Contact LPG).

Once you have done the calculations, LPG automatically sends an e-mail notifying that the results can be downloaded through the website where you will find the following files:

- Report. in Pdf format (Adobe Acrobat version 6.0 or higher is required)
- "_Setres" file in Lsp format that allows users to update data in AutoCAD.
- "_undo" file in Lsp format that allows the user to undo the update
- Xml file that contains the description of the network.

FireNet® 3.3 currently supports these languages: Spanish, English and French. Depending on the language selected when logging as a user in LPG website, the report will be generated either Spanish, English or French. In the case of Inert Gases, the report will always generate in English.

- | | |
|-----------------------|---------------------------|
| Create System | Water Nozzle Selection |
| Erase System | Zone selection |
| Add Nozzle | System Selection |
| Add Nozzle with elbow | Nozzle properties |
| Matrix Nozzle | Selector valve properties |
| Add red nozzle | Load XML |
| Add pipe | Standard configuration |
| Extend Pipe | Copy Attributes |
| Elbow steak | Create XML |
| Transform Pipe | Selector valves ON/OFF |
| List of pipes | Nozzles ON/OFF |
| Add selector valve | Sclae |
| Selector Valve ON/OFF | iFlame |
| Isometric | Moving Nozzle |
| Plant | Moving Selector valve |
| Care Mode | Moving Pipe |
| Red Relocate | Pipe properties |
| Pipe Visibility | Replace Pipe |
| Nozzle Visibility | Request Report |
| Elbow Visibility | Selector valve visibility |
| | Pipe selection |
| | Nozzle selection |



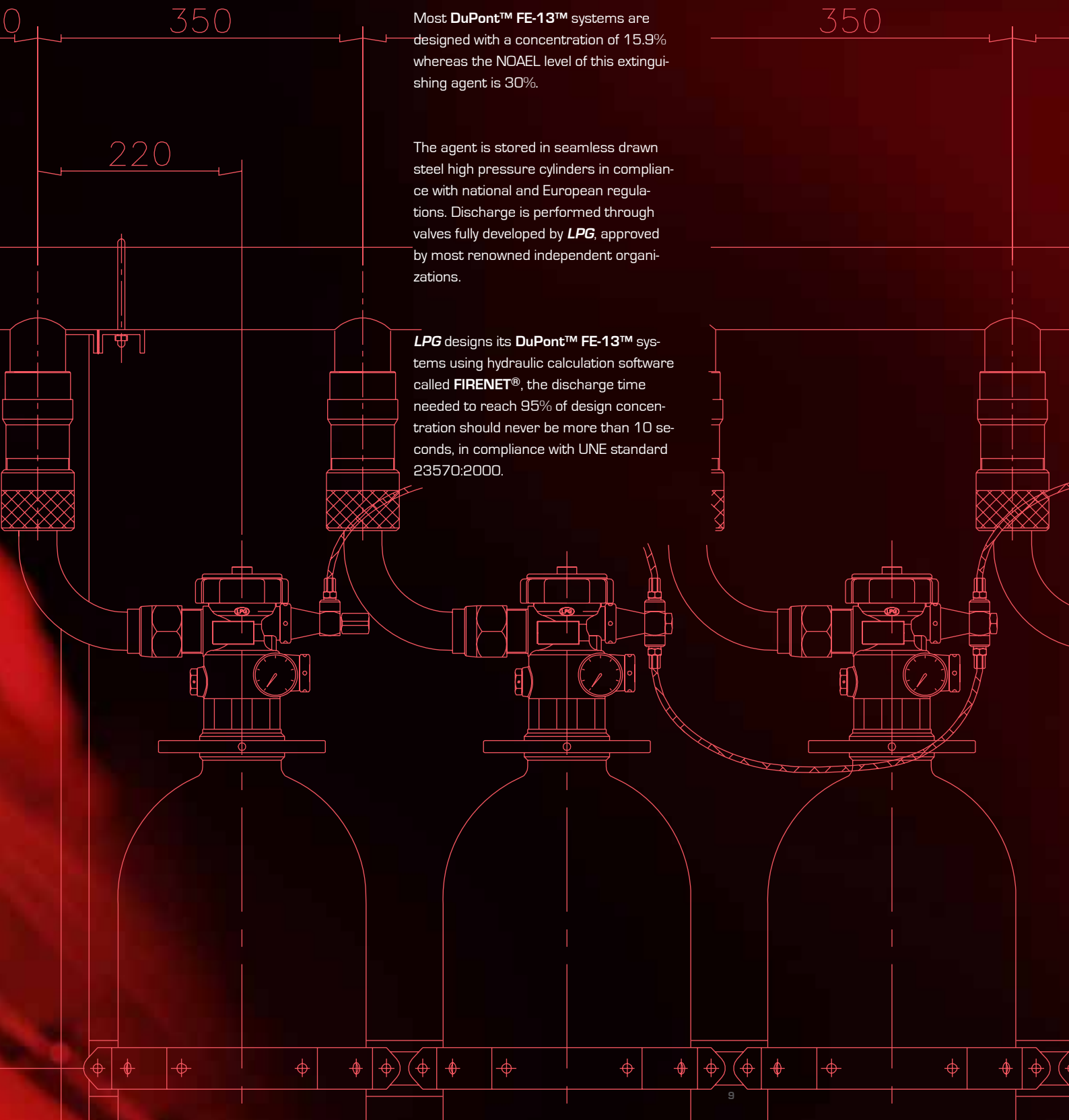
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LPG Systems with FE-13™

Most DuPont™ FE-13™ systems are designed with a concentration of 15.9% whereas the NOAEL level of this extinguishing agent is 30%.

The agent is stored in seamless drawn steel high pressure cylinders in compliance with national and European regulations. Discharge is performed through valves fully developed by **LPG**, approved by most renowned independent organizations.

LPG designs its DuPont™ FE-13™ systems using hydraulic calculation software called **FIRENET®**, the discharge time needed to reach 95% of design concentration should never be more than 10 seconds, in compliance with UNE standard 23570:2000.



Properties

DuPont™ FE-13™ is a high pressure clean extinguishing agent certified by UL (Underwriters Laboratories). is particularly safe for applications in occupied areas and leaves no residue to clean up after the discharge, neither in an accidental discharge nor in the event of fire.

Most DuPont™ FE-13™ systems are designed to a concentration of 15.9%. As all fluoride agents that substitute Halon 1301, FE-13™ extinguishes fire primarily by absorbing heat.

MAIN ADVANTAGES:

- Suitable for high ceilings (up to 7.5 m)
- Suitable for low temperatures (-40° C)
- Discharge in 10 seconds
- Wide safety margin in occupied areas (NOAEL 30%)
- Non conductive
- Leaves no residue

STANDARDS:

- NFPA 2001
- ISO 14520-10
- ISO 14520-1
- UNE-EN 15004-1

Characteristics

Chemical name	Trifluoromethane
Chemical formula	CHF3
Denomination according to ISO 14520, UNE-EN 15004-1 & NFPA 2001	HFC 23
Molecular weight	70,01
Boiling point at 1.013 bar	-82,1°C
Density of the liquid at 20° C	807 kg/m³
Critical temperature	25,9° C
Critical pressure	48,36 bar
Vapour pressure at 20° C	41,83 bar
Relative electrical resistance at 1 atm. 25° C (N2=1.0)	1,04
Maximum filling density	0,85 kg/l
NOAEL	30%
LOAEL	>50%
Maximum concentration in a 5' exposure	30%
Ozone depletion potential	0
Greenhouse effect potential	11.700
Approvals and recognitions	EPA-NFPA, UL-FM
Improvement factor	s/hydraulic calculation ± 20%

Certifications



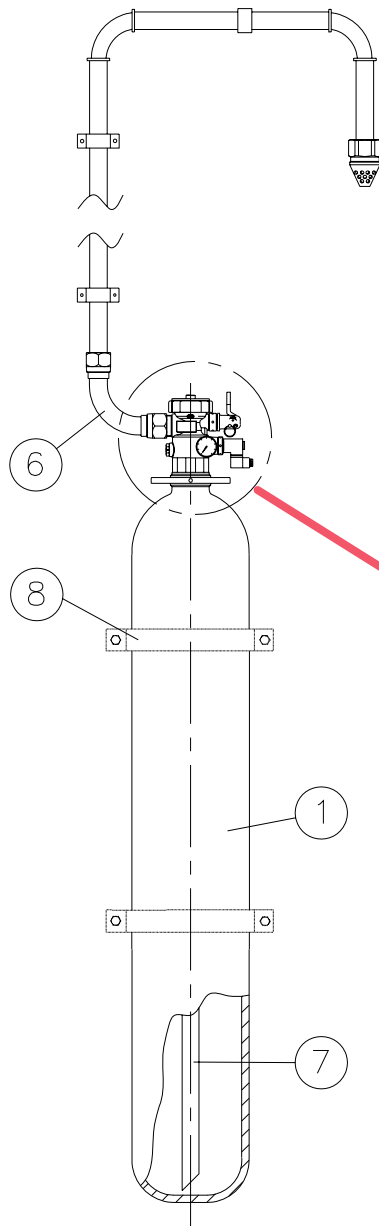
LPG systems and components for DuPont™ FE-13™ are certified by the LPCB (Loss Prevention Certification Board) of England No.: **446b/01 (system), 446a (components)**, by CNPP (Centre National de Prévention et Protection) of France N° PV/MM 01 07 390, by VNIPO of Russia under **NPB-51-96 (gas) y NPB-54-96 (hardware)** and by APCI of Cuba N° **SE 416424**. IMO protocol MSC/Circ. 848.

Notes to consider

The maximum working pressure in the pipes is 137 bar (UNE-EN 15004). Use of pipes compliant with standard ASTM / ANSI B.36.10-XS or equivalent is recommended. Up to 3/4" Sch.40, for larger diameters,

Sch.80. Up to 2", pipes should be threaded, with forged accessories up to 3000 lb. ANSI B.16.11, and from 2 1/2" pipes should be welded, and ANSI B.16.9 and B.16.28 accessories used.

Modular systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories (see page 111)
- Diaphragm and embellishment plate (see page 112)
- Nozzles (see page 112)

List of materials included in the price

- 1 Cylinder
- 2 Manual release
- 3 Solenoid valve
- 4 LPG valve
- 5 Flange
- 6 Discharge hose
- 7 Syphon tube
- 8 Bracket

Set of labels and protector cap for cylinder are included.

Modular systems

DESCRIPTION	MAX. KILOS	P.NUMBER
Cylinder 120 litres	102	CC720FE930
Cylinder 100 litres	85	CC795FE930
Cylinder 75 litres	63	CC775FE930
Cylinder 67 litres	56	CC767FE130
Cylinder 40 litres	34	CC740FE130
Cylinder 26 litres	22	CC726FE130
Cylinder 13 litres	11	CC713FE130
Cylinder 5 litres	4	CC705FE130

Gas

NAME	P.NUMBER
Kilo Dupont™ FE-13™	400FE130

Modular systems optional accessories

MORE INFORMATION PAGE 113

Gooseneck wrench for the manual lever release

Pressure switch

Modular Systems with weighing device

Components for the calculation of a quotation

- Cylinder
- Gas

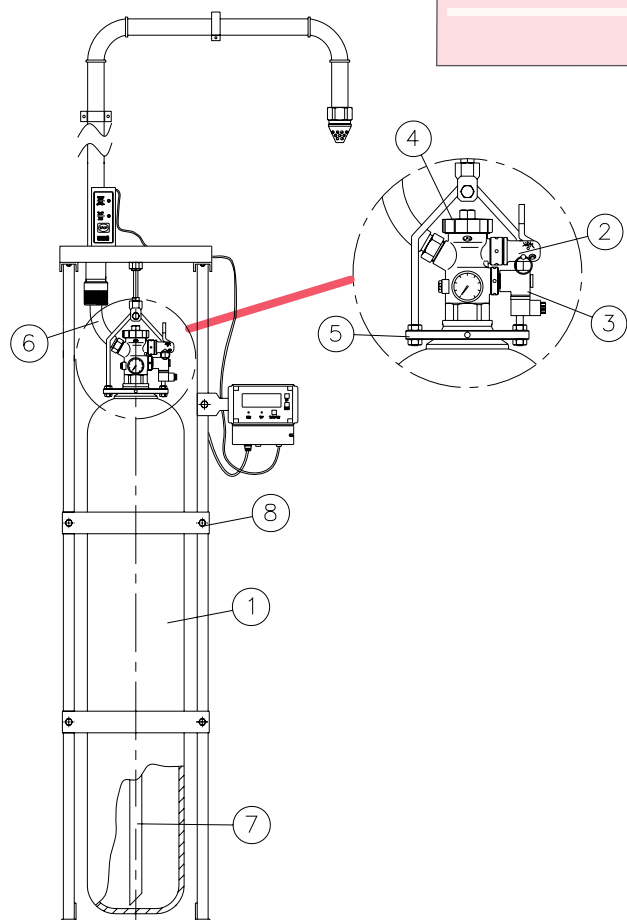
- Accessories (see page 113)
- Nozzles (see page 114)

- Weighing device
- Diaphragm and embellishment plate (see page 114)

List of materials included in the price

- | | |
|------------------|------------------|
| 1 Cylinder | 5 Flange |
| 2 Manual lever | 6 Discharge hose |
| 3 Solenoid valve | 7 Syphon tube |
| 4 LPG Valve | 8 Bracket |

Set of labels and protector cap cylinder are included.



Modular Systems

CYLINDERS	MAX. KG	P.NUMBER
Cylinder 120 litres	102	CCP720FE930
Cylinder 100 litres	-	-
Cylinder 75 litres	63	CCP775FE930
Cylinder 67 litres	56	CCP767FE130
Cylinder 40 litres	34	CCP740FE130

Load cell weighing device

DESCRIPTION	P.NUMBER
WEIGHING CONTROL PANEL C 110 V (one per centralized system, max. 31 cylinders.)	30332110
WEIGHING CONTROL PANEL 230 V (one per centralized system, max. 31 cylinders.)	30332230
Bracket for CONTROL PANEL (only one per control panel)	30312000
Load Cell Weighing Unit ED.2004 (13-75 Lts.) W/Fork	30116000
Load Cell Weighing Unit with fork (one per cylinder 100 and 120 l.)	37116000

For more information on load cell weighing device systems see page 13.

Gas

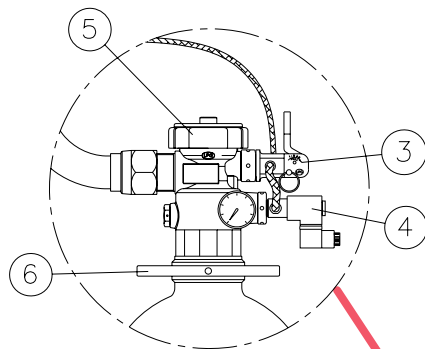
NAME	P. NUMBER
Kilo Dupont™ FE-13™	400FE130

Mechanical weighing device

DESCRIPTION	P.NUMBER
1 ST OPTION: Photo electrical detector with a reflector for a length of 10 metres. For double row systems, count 2 units	30331014
2 ND OPTION: Micro switch – end of the line (Count 1 per cylinder if photoelectric detector is not used)	30331000
Mechanical weighing unit with fork for 40 / 67 litres	30331006
Mechanical weighing unit with fork for 75 litres	30331007
Mechanical weighing unit with fork for 100 and 120 litres	30331008

For more information on mechanical weighing device systems see page 13.

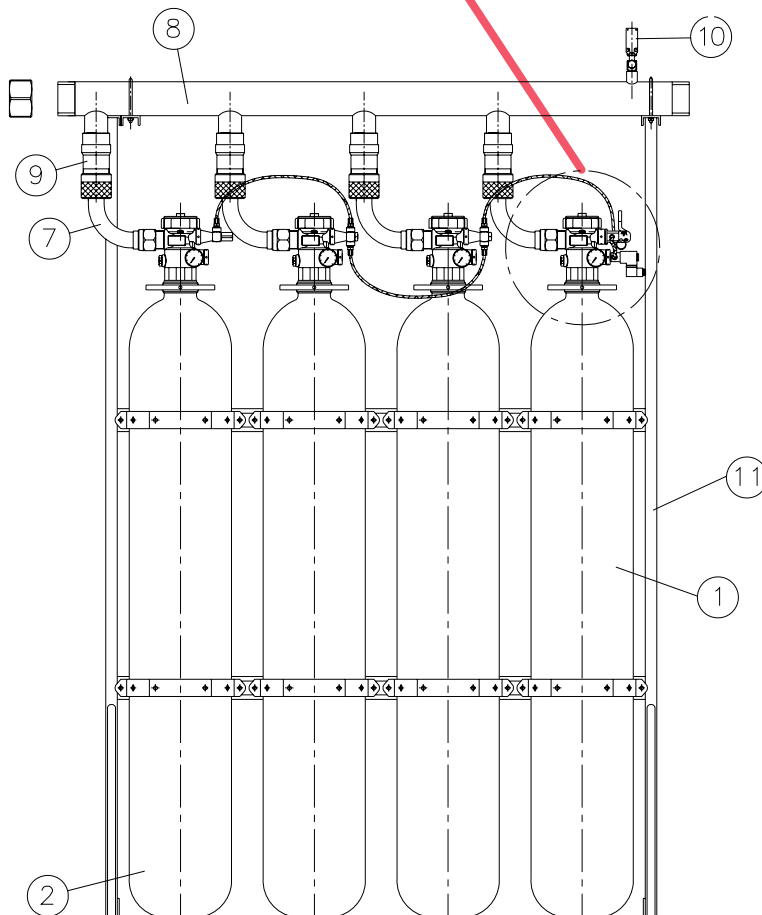
Centralized Systems



Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories (see page 111)
- Nozzles (see page 112)
- Diaphragm and embellishment plate (see page 112)

List of materials included in the price



- 1 Cylinder
- 2 Auxiliary cylinder
- 3 Double manual pneumatic discharge
- 4 Solenoid valve coupling $\frac{1}{8}$ "
- 5 LPG valve
- 6 Flange
- 7 Discharge hose
- 8 Manifold
- 9 Retention valve
- 10 Pressure switch with locking device
- 11 Bracket

Set of labels and protector cap are included.

Notes to consider:

In a **bank that contains 9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

Gas

NAME	P.NUMBER
Kilo Dupont™ FE-13™	400FE130

Cylinder bank of 120 litres

N CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	204	2 1/2"	CC57021206
3	306	3"	CC57031206
4	408	3"	CC57041206
5	510	4"	CC57051206
6	612	4"	CC57061206
7	714	4"	CC57071206
8	816	4"	CC57081206
9	918	4"	CC57091206
10	1020	4"	CC57101206

Centralized systems

Cylinder bank of 100 litres			
N CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	170	2"	CC57021007
3	255	2 1/2"	CC57031007
4	340	3"	CC57041007
5	425	3"	CC57051007
6	510	4"	CC57061007
7	595	4"	CC57071007
8	680	4"	CC57081007
9	765	4"	CC57091007
10	850	4"	CC57101007

Cylinder bank of 75 litres			
N CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	126	2"	CC57020758
3	189	2"	CC57030758
4	252	2 1/2"	CC57040758
5	315	3"	CC57050758
6	378	3"	CC57060758
7	441	3"	CC57070758
8	504	4"	CC57080758
9	567	4"	CC57090758
10	630	4"	CC57100758

Cylinder bank of 67 litres			
N CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	112	1 1/2"	CC54020676
3	168	2"	CC54030676
4	224	2 1/2"	CC54040676
5	280	2 1/2"	CC54050676
6	336	3"	CC54060676
7	392	3"	CC54070676
8	448	3"	CC54080676
9	504	4"	CC54090676
10	560	4"	CC54100676

Centralized systems optional accessories

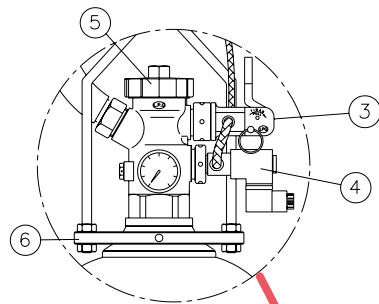
MORE INFORMATION PAGE 111

Gooseneck wrench for the manual lever release

Zinc coated joint

Pressure switch

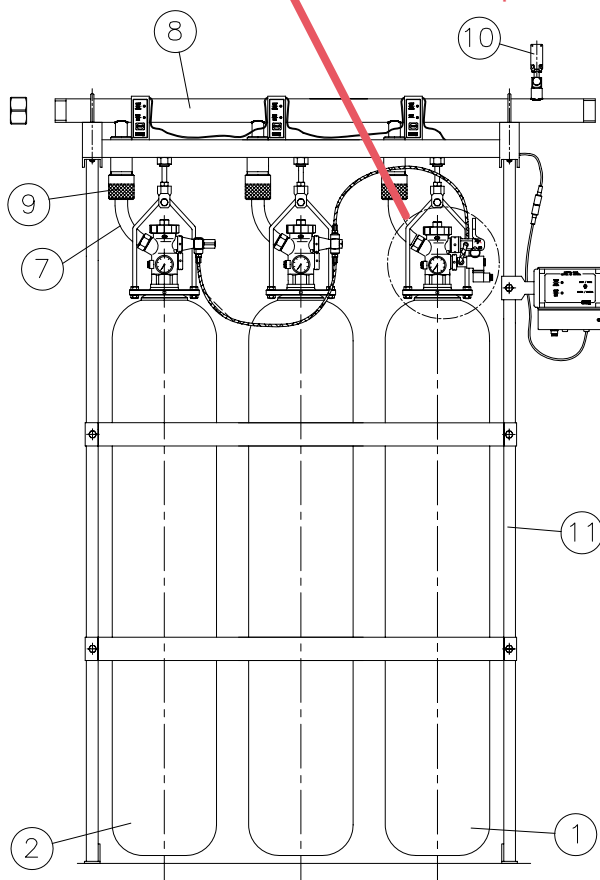
Centralized systems with weighing device



Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)
- Weighing device

List of materials included in the price



- 1 Cylinder
- 2 Auxiliary cylinder
- 3 Double manual pneumatic discharge
- 4 Solenoid valve coupling $\frac{1}{8}$ "
- 5 LPG valve
- 6 Flange
- 7 Discharge hose
- 8 Manifold
- 9 Retention valve
- 10 Pressure switch with locking device
- 11 Bracket

Set of labels and protector cap are included.

Notes to consider:

In a **bank that contains 9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

The bank includes the necessary items on which to mount the weighing device.

Cylinder bank of 120 litres

N. CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	204	2 1/2"	CCP5702120P
3	306	3"	CCP5703120P
4	408	3"	CCP5704120P
5	510	4"	CCP5705120P
6	612	4"	CCP5706120P
7	714	4"	CCP5707120P
8	816	4"	CCP5708120P
9	918	4"	CCP5709120P
10	1020	4"	CCP5710120P

Gas

NAME	P.NUMBER
Kilo Dupont™ FE-13™	400FE130

Centralized systems with weighing device

Cylinder Bank of 100 litres			
N CYL.	MAX.KILOS	Ø MAN.	P.NUMBER
2	170	2"	CCP5702100P
3	255	2 1/2"	CCP5703100P
4	340	3"	CCP5704100P
5	425	3"	CCP5705100P
6	510	4"	CCP5706100P
7	595	4"	CCP5707100P
8	680	4"	CCP5708100P
9	765	4"	CCP5709100P
10	850	4"	CCP5710100P

Cylinder bank of 75 litres			
N CYL.	MAX. KILOS	Ø MANIFOLD	P.NUMBER
2	126	2"	CCP5702075P
3	189	2"	CCP5703075P
4	252	2 1/2"	CCP5704075P
5	315	3"	CCP5705075P
6	378	3"	CCP5706075P
7	441	3"	CCP5707075P
8	504	4"	CCP5708075P
9	567	4"	CCP5709075P
10	630	4"	CCP5710075P

Notes to consider:

In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

The bank includes the necessary items on which to mount the weighing device.

Cylinder bank of 67 litres			
N CYL.	MAX. KILOS	Ø MANIFOLD	P.NUMBER
2	112	1 1/2"	CCP5402067C
3	168	2"	CCP5403067C
4	224	2 1/2"	CCP5404067C
5	280	2 1/2"	CCP5405067C
6	336	3"	CCP5406067C
7	392	3"	CCP5407067C
8	448	3"	CCP5408067C
9	504	4"	CCP5409067C
10	560	4"	CCP5410067C

Centralized systems optional accessories

MORE INFORMATION PAGE 111

Gooseneck wrench for the manual lever release

Zinc coated joint

Pressure switch

Centralized systems with weighing device



Load cell system

It is thought to allow the continuous control of the cylinder charge in modular or centralized systems. Following standards of electromagnetic compatibility are fulfilled: EN 50081-1 / EN 50130-4 / EN 61000-3-2 / EN 61000-3-3 and with CEI 60950 of electric security. The equipment gives an alarm signal when the gas loss in the cylinders exceeds 5% of the initial charge. All the systems are equipped with a weighing con-

trol panel connected to the fire detection and extinguishing control panel and there are as many weighing units by load cell as cylinders to be monitored. The system allows controlling the loss with a precision of 1 kg. All the weighing units by load cell are connected to the weighing control panel unit by means of a unique monitorized line (BUS). **Each control panel is designed to monitor a maximum of 31 control units.**

Load cell weighing device

DESCRIPTION	P.NUMBER
WEIGHING CONTROL PANEL C 110 V (one per centralized system, max. 31 cylinders.)	30332110
WEIGHING CONTROL PANEL 230 V (one per centralized system, max. 31 cylinders.)	30332230
Bracket for CONTROL PANEL (only one per control panel)	30312000
Load Cell Weighing Unit ED.2004 (13-75 Lts.) W/Fork	30116000
Load Cell Weighing Unit with fork (one per cylinder 100 and/or 120 l.)	37116000

Mechanical system

It is thought to allow the **continuous control of the cylinder charge** in modular or centralized systems. The systems consist of control modules working mechanically. The commissioning for each cylinder is easy. If there is a loss of charge, the mobile part falls down. Optionally, they can have an electrical sur-

veillance system such as an electrical micro switch for each module or a photoelectrical detector able to control module rows of up to 10 metres.



Mechanical weighing device

DESCRIPTION	P.NUMBER
1 ST OPTION: Photoelectrical detector with a reflector for a length of 10 metres. For double row systems, count 2 units	30331014
2 ND OPTION: Micro switch – end of the line (Count 1 per cylinder if photoelectric detector is not used)	30331000
Mechanical weighing unit with fork for 40 / 67 litres	30331006
Mechanical weighing unit with fork for 75 litres	30331007
Mechanical weighing unit with fork for 100 / 120 litres	30331008

Properties

LPG has introduced the pressurization with nitrogen in the **DuPont™ FE-13™** systems. In this way, it is possible to control the cylinders load by reading the pressure gauge and/or pressure switch in compliance with regulations for the leakage control of fluorinated gases 842/2006/CE. **LPG** offers this

system for the control of leakage online and permanently in order to reduce costs as we can get rid of the mechanical systems, or through cell, of the load control. The new regulation for systems with HFC gases requires a certificate of accredited training to perform the installations. **LPG** offers

training courses for installers to ensure the environmental manipulation of the systems.

The use of nitrogen to pressurize these systems is patented by **LPG**.

Comply with the regulations!

Once again **LPG** cleverly adapts to the new market demands, particularly, the new regulations on fluorinated gases 842/2006/CE for leakage control. The aim of such proposal is to reduce emissions of fluorinated greenhouse gases and, in turn, to improve containment and control.

MAIN ADVANTAGES:

- Suitable for high ceilings (up to 7.5 m)
- Suitable for low temperatures (-40° C)
- Discharge in 10 seconds
- Wide safety margin in occupied areas (NOAEL 30%)
- Non conductive
- Leaves no residue

STANDARDS:

- NFPA 2001
- ISO 14520-10
- ISO 14520-1
- UNE-EN 15004-6

Characteristics

Chemical name	Trifluoromethane
Chemical formula	CHF ₃
Denomination according to ISO 14520 and NFPA 2001	HFC 23
Molecular weight	70,01
Boiling point at 1.013 bar	-82,1°C
Density of the liquid at 20° C	807 kg/m ³
Critical temperature	25,9° C
Critical pressure	48,36 bar
Vapour pressure at 20° C	41,83 bar
Relative electrical resistance at 1 atm. 25° C (N ₂ =1.0)	1,04
Maximum filling density	0,85 kg/l
NOAEL	30%
LOAEL	>50%
Maximum concentration in a 5' exposure	30%
Ozone depletion potential	0
Greenhouse effect potential	11.700
Approvals and recognitions	EPA-NFPA, UL-FM
Improvement factor	s/hydraulic calculation ± 20%

Certifications



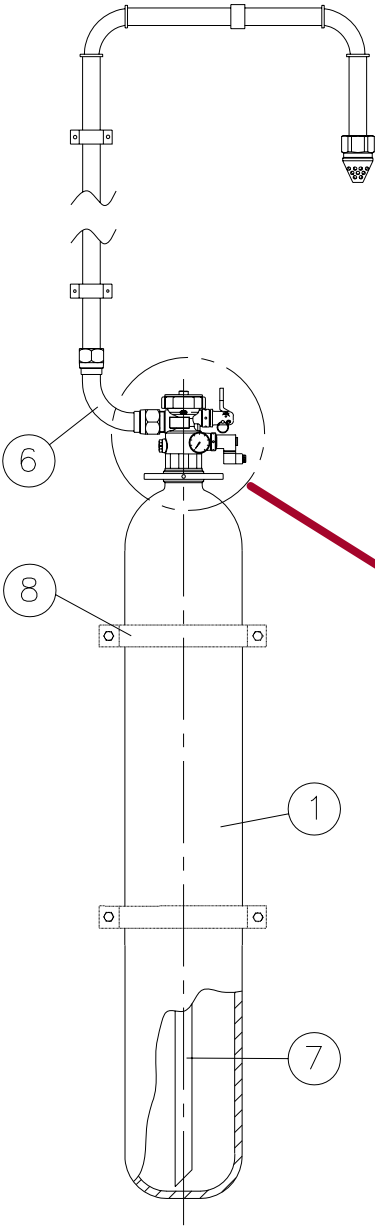
LPG systems and components for **DuPont™ FE-13™** pressurized with Nitrogen are certified by **CNPP** (Centre National de Prevention and Protection) in France N° PV/MM 01 07 390 and by **IMO** certificate number 14374/B0 EC (Bureau Veritas).

Notes to consider

The maximum working pressure for the piping is 165 bars. (UNE-EN 15004). We recommend using the pipe Sch. 80 according to standard ASTM / ANSI B.36.10-XS or

equivalent. Up to 2" we recommend threading the pipe with forged fittings of 3000 lb. ANSI B.16.11, and from 2" ½ we suggest welding the pipe with fittings and ANSI

Modular systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories (see page 113)
- Diaphragm and embellishment plate (see page 114)
- Nozzles (see page 114)

List of materials included in the price

- 1 Cylinder
- 2 Manual release
- 3 Solenoid valve
- 4 LPG valve
- 5 Flange
- 6 Discharge hose
- 7 Syphon tube
- 8 Bracket

Set of labels and protector cap for cylinder are included.

Modular systems

DESCRIPTION	MAX. KILOS	P. NUMBER
Cylinder 120 litres	102	CC75100000
Cylinder 100 litres	85	CC74100000
Cylinder 75 litres (On Demand)	63	CC72100000
Cylinder 67 litres	56	CC71100001
Cylinder 40,2 litres.	34	CC70100011
Cylinder 26,8 litres	22	CC70100010
Cylinder 13,4 litres	11	CC70100008
Cylinder 5 litres	4	CC70100006

Gas

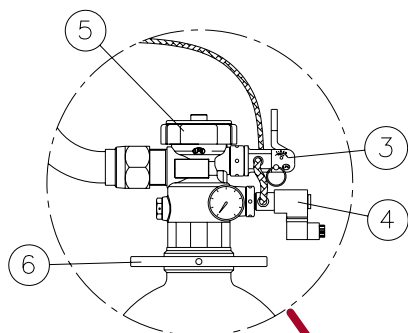
NAME	P. NUMBER
Kilo Dupont™ FE-13™	400FE130

Modular systems optional accessories

MORE INFORMATION PAGE 113

Gooseneck wrench for the manual lever release

Centralized Systems



Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)

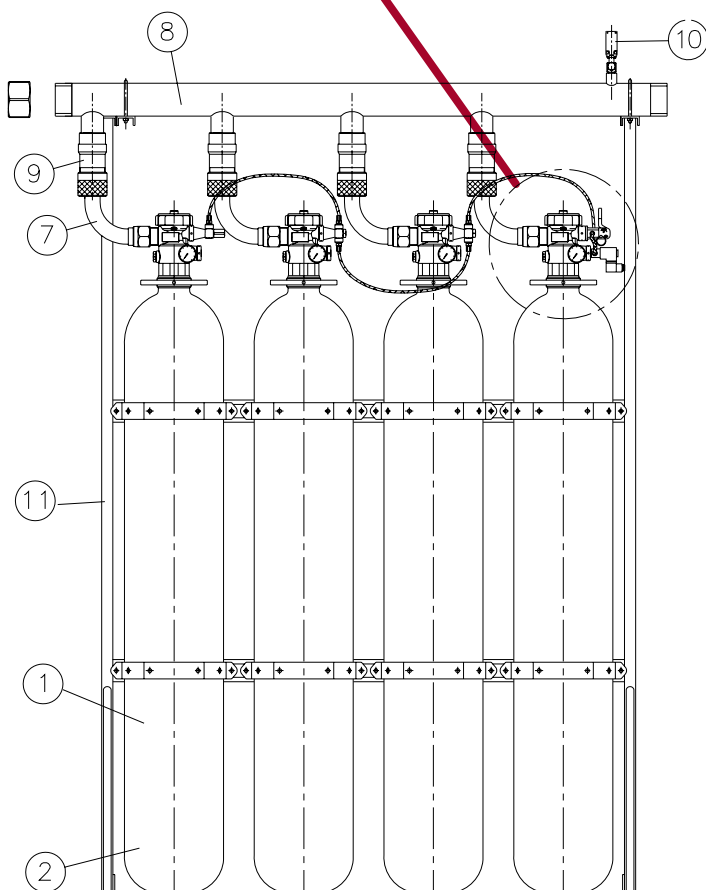
List of materials included in the price

- 1 Cylinder
- 2 Auxiliary cylinder
- 3 Double manual pneumatic discharge
- 4 Solenoid valve coupling 1/8"
- 5 LPG valve
- 6 Flange
- 7 Discharge hose
- 8 Manifold
- 9 Retention valve
- 10 Pressure switch with locking device
- 11 Bracket

Set of labels and protector cap for cylinder are included.

Notes to consider:

In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



Gas

NAME	P. NUMBER
Kilo Dupont™ FE-13™	400FE130

Cylinder bank of 120 litres

N CYL.	MAX. KILOS	Ø MAN.	P. NUMBER
2	204	2 1/2"	CC55100015
3	306	3"	CC55100016
4	408	3"	CC55100017
5	510	4"	CC55100018
6	612	4"	CC55100019
7	714	4"	CC55100020
8	816	4"	CC55100021
9	918	4"	CC55100022
10	1020	4"	CC55100023

Centralized systems

Cylinder bank of 75 litres			
N CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	126	2"	CC52100014
3	189	2"	CC52100015
4	252	2 1/2"	CC52100016
5	315	3"	CC52100017
6	378	3"	CC52100018
7	441	3"	CC52100019
8	504	4"	CC52100020
9	567	4"	CC52100021
10	630	4"	CC52100022

Cylinder bank of 67 litres			
N CYL.	MAX. KILOS	Ø MAN.	P.NUMBER
2	112	1 1/2"	CC51100014
3	168	2"	CC51100015
4	224	2 1/2"	CC51100016
5	280	2 1/2"	CC51100017
6	336	3"	CC51100018
7	392	3"	CC51100019
8	448	3"	CC51100020
9	504	4"	CC51100021
10	560	4"	CC51100022

Centralized systems optional accessories

MORE INFORMATION AND PRICES PAGE 113

Gooseneck wrench for the manual lever release

Zinc coated joint

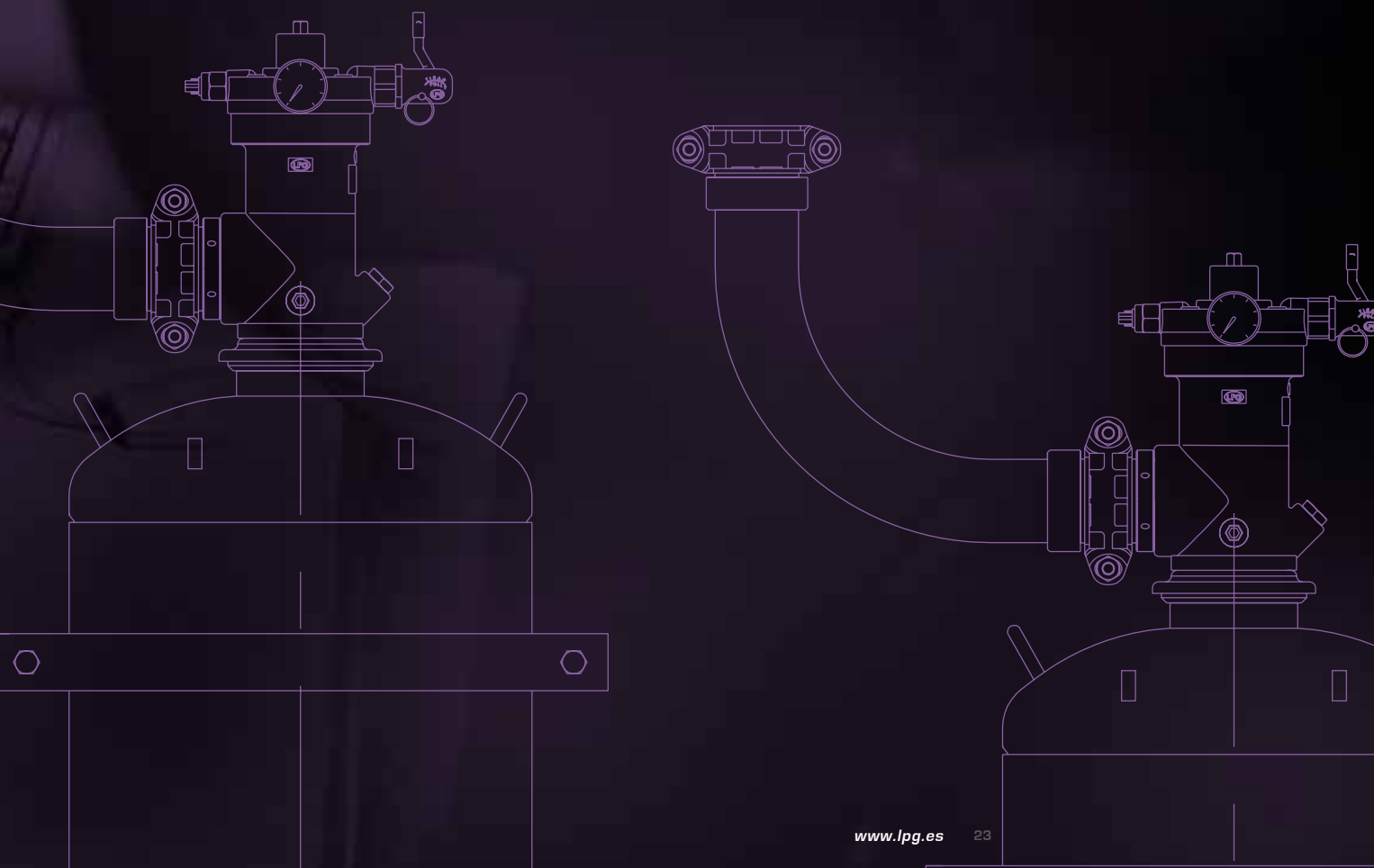


LPG Systems with HFC-125

HFC-125 is a colourless gas, almost odourless and electrically non-conductive. It extinguishes fires by absorbing heat and does not leave residue to clean up after the discharge. **LPG's** design concentration for **HFC-125** systems is 8% for NFPA and 8.7% for ISO 14520. Discharge takes 10 seconds. It is performed through valves fully developed by **LPG** approved by the most renowned independent organizations.

They are highly adaptable to all actuation and release systems currently on the market, even allowing combinations of several of them. The design of the system protects against accidental actuation due to micro-leakages.

They also allow control and maintenance of all critical elements contained in a fixed extinguishing system, at the time of commissioning and later for system preventive maintenance, thus preventing the risk of accidental discharge.



Properties

HFC-125 is a high pressure clean extinguishing agent certified by UL (Underwriters Laboratories). It is a suitable extinguishing agent for total flooding systems in occupied areas for the protection of property such as: computers, archives, electrical equipment and telecommunication equipment, among

others. Studies carried out in accordance with the PBPK model have shown that persons exposed to **HFC-125** for a maximum period of 5 minutes and concentrations up to 11,5% v/v, do not produce a blood level associated with cardiac sensitization.

MAIN ADVANTAGES:

- A single 120 litres. cylinder containing 112 kg protects risks up to 253 m³.
- It is the most profitable HFC agent on the market.
- Effective under low temperatures (-20° C).
- Leaves no residue.
- Quick reduction of by-products upon contact with the flames thanks to the additive d-limonene.
- Discharge in 10 seconds.
- Good rapport price/efficacy.

STANDARDS:

- UL 2166
- NFPA 2001
- ISO 14520-8
- ISO 14520-1
- UNE 23570
- UNE 23571
- EN 15004 - 4

Characteristics

Chemical name	Pentafluoroethane
Chemical formula	CF ₃ CHF ₂
Designation according to ISO 14520 and NFPA 2001	HFC -125
Molecular weight	120,0
Boiling point at 1.013 bar	-48,3° C
Density of the liquid at 25° C	1189,7 kg/m³
Critical temperature	66,3° C
Critical pressure	35,95 bar
Vapour pressure at 20° C	12,09 bar
Relative electrical resistance at 1 atm. 21° C (N ₂ =1.0)	0,955
Maximum filling density	0,93 kg/l
NOAEL	7,5%
LOAEL	10%
PBPK (5' exposure)	11,5%
Ozone depletion potential	0
Greenhouse effect potential	2800
Compliance and recognitions	EPA, NFPA

HFC-125 has a concentration of 0,15% on the d-limonene weight.

Certifications



The **UL** is an independent non profit-making organization which guarantees the safety of systems and components. To the traditional

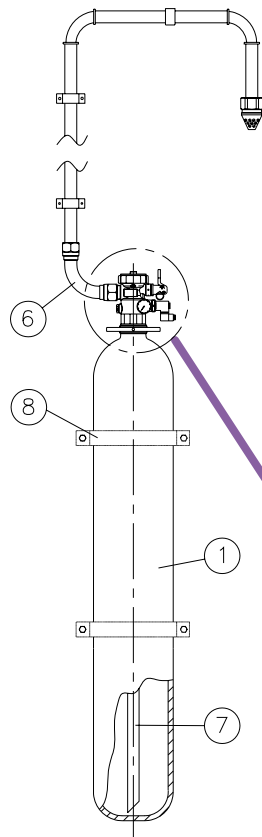
quality system (ISO 9001:2000) **LPG** now adds the quality stamp of UL which guarantees the design of the systems (extinguishing concentrations and net calculation software), the components' reliability and the production quality, for both the components and the extinguishing agent.

Notes to consider

In **low pressure (24 bar)** systems the maximum working pressure is 40 bar and for **high pressure (42 bar)** systems, it is 75 bar (UNE-EN 15004). It is recommended that the pipes to be used comply with ASTM/ ANSI B.36.10-XS standard (Sch. 40) in the whole distribution piping. For both pressures,

use 300 psi. accessories for 3" or less and 1000 psi. accessories for larger diameters. For **low pressure (24 bar)** 300 psi. flanged connectors, for **high pressure (42 bar)** 600 psi. flanged connectors.

Modular systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Diaphragm and embellishment plate [see page 114]

List of materials included in the price

- | | |
|--|----------------|
| 1 | Cylinder |
| 2 | Manual release |
| 3 | Solenoid valve |
| 4 | LPG valve |
| 5 | Flange |
| 6 | Discharge hose |
| 7 | Syphon tube |
| 8 | Bracket |
| Set of labels and protector cap for cylinder are included. | |

Modular systems

DESCRIPTION	RECOM. FILLING*	PRODUCT NUMBER
Cylinder 240 litres	223	CC70025402
Cylinder 175 litres	162	CC70025401
Cylinder 120 litres	112	CC7201300M
Cylinder 100 litres	93	CC7100130M
Cylinder 75 litres	69	CC7751300M
Cylinder 67,5 litres	62	CC7670100C
Cylinder 40 litres	37	CC7400100C
Cylinder 26 litres	25	CC7260200C
Cylinder 13 litres	12	CC7130200C
Cylinder 5 litres	4	CC7050200C

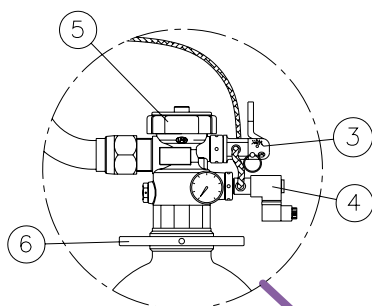
Modular systems optional accessories

MORE INFORMATION PAGE 113

- Gooseneck wrench for the manual lever release
- Pressure switch
- Connection pressure elbow

* These are the **maximum filling quantities** for every bank size. **LPG** recommends them in order to reduce problems with discharge after the hydraulic calculations for the selected bank have been completed. However, there may be cases in which a bank is able to discharge using a higher filling quantity or, on the contrary, is not able to discharge with a lower quantity due to size and length of the piping connected to the bank.

Centralized systems



Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Diaphragm and embellishment plate [see page 114]

List of materials included in the price

- 1 Cylinder
- 2 Auxiliary cylinder
- 3 Double manual pneumatic discharge
- 4 Solenoid valve coupling G 1/8"
- 5 LPG valve
- 6 Flange
- 7 Discharge hose
- 8 Manifold
- 9 Retention valve
- 10 Pressure switch with locking device
- 11 Bracket

Set of labels and protector cap for cylinders are included.

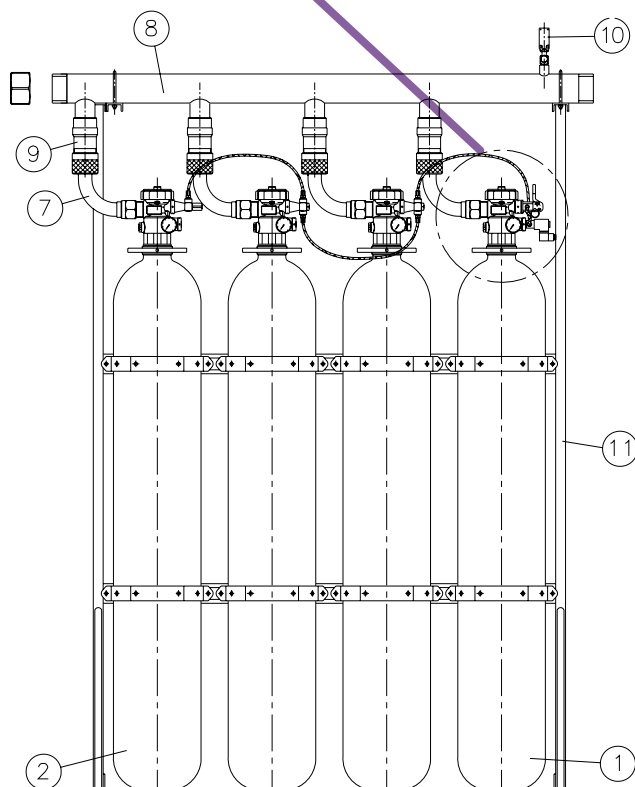
Notes to consider:

In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder.

Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

Gas

NAME	P. NUMBER
Kilo HFC - 125	40012500



Cylinder bank of 120 litres

N.CYL.	RECOM. FILLING*	Ø MAN.	P. NUMBER
2	209	2 1/2"	CC59021203
3	313	3"	CC59031203
4	418	3"	CC59041203
5	522	4"	CC59051203
6	626	4"	CC59061203
7	731	4"	CC59071203
8	811	4"	CC59081203
9	886	4"	CC59091203
10	954	4"	CC59101203

Centralized systems

Cylinder bank of 100 litres

N CYL.	MAX KILOS*	Ø MAN.	P. NUMBER
2	162	2"	CC59021003
3	242	2 1/2"	CC59031003
4	323	3"	CC59041003
5	404	3"	CC59051003
6	485	4"	CC59061003
7	566	4"	CC59071003
8	626	4"	CC59081003
9	682	4"	CC59091003
10	733	4"	CC59101003

Cylinder bank of 75 litres

N.CYL.	RECOM. FILLING*	Ø MAN.	P.NUMBER
2	131	2 1/2"	CC59020753
3	196	2 1/2"	CC59030753
4	261	3"	CC59040753
5	326	3"	CC59050753
6	392	3"	CC59060753
7	457	4"	CC59070753
8	522	4"	CC59080753
9	587	4"	CC59090753
10	634	4"	CC59100753

* These are the **maximum filling quantities** for every bank size. **LPG** recommends them in order to reduce problems with discharge after the hydraulic calculations for the selected bank have been completed. However, there may be cases in which a bank is able to discharge using a higher filling quantity or, on the contrary, is not able to discharge with a lower quantity due to size and length of the piping connected to the bank.

Cylinder bank of 67 litres

N.CYL.	RECOM. FILLING*	Ø MAN.	P.NUMBER
2	117	2"	CC59020671
3	175	2 1/2"	CC59030671
4	233	2 1/2"	CC59040671
5	291	3"	CC59050671
6	350	3"	CC59060671
7	408	4"	CC59070671
8	466	4"	CC59080671
9	525	4"	CC59090671
10	583	4"	CC59100671

Centralized systems optional accessories

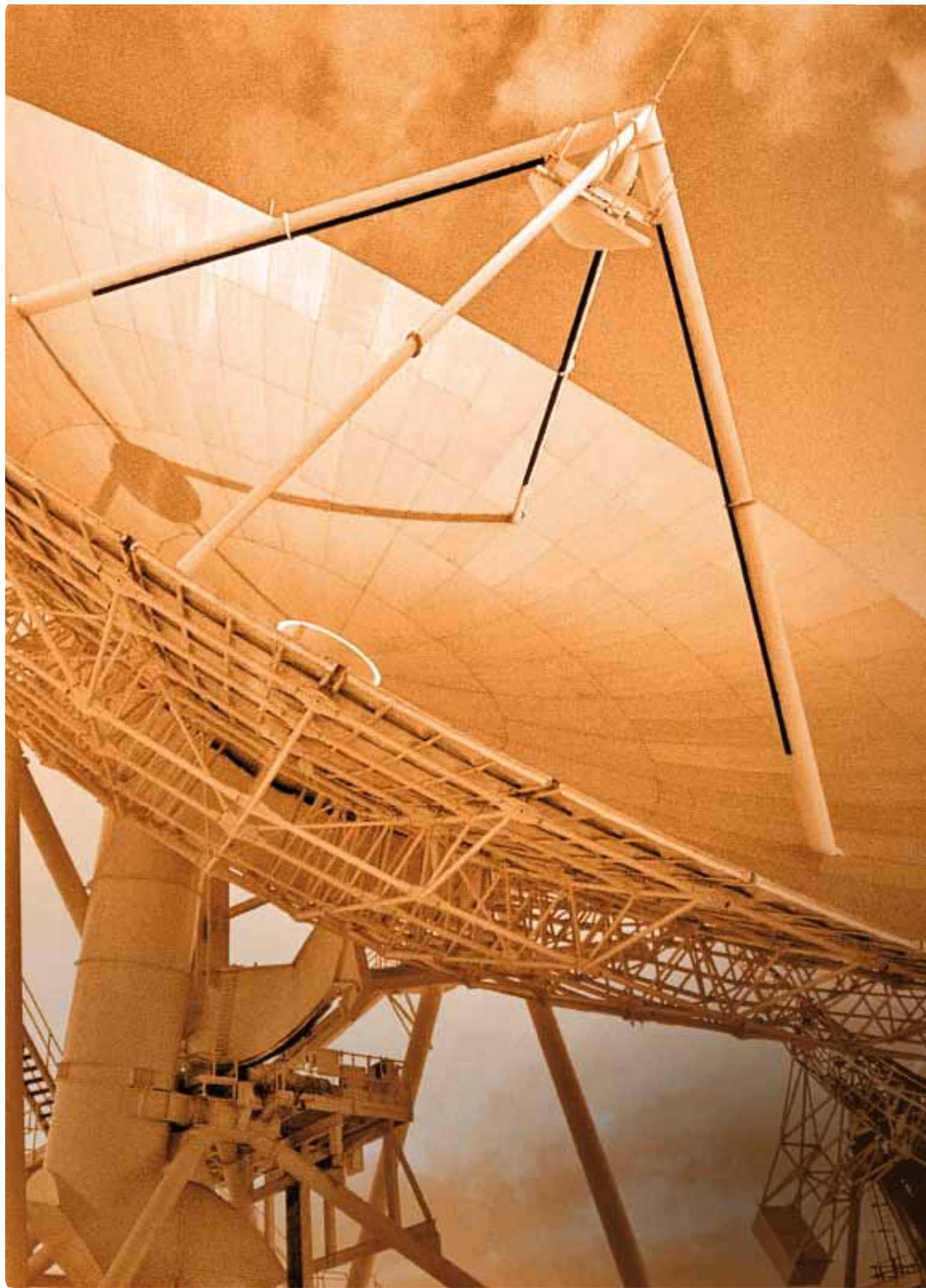
MORE INFORMATION PAGE 113

Gooseneck wrench for the manual lever release

Zinc coated joint

Pressure switch

Connection pressure elbow



LPG Systems with FM 200®

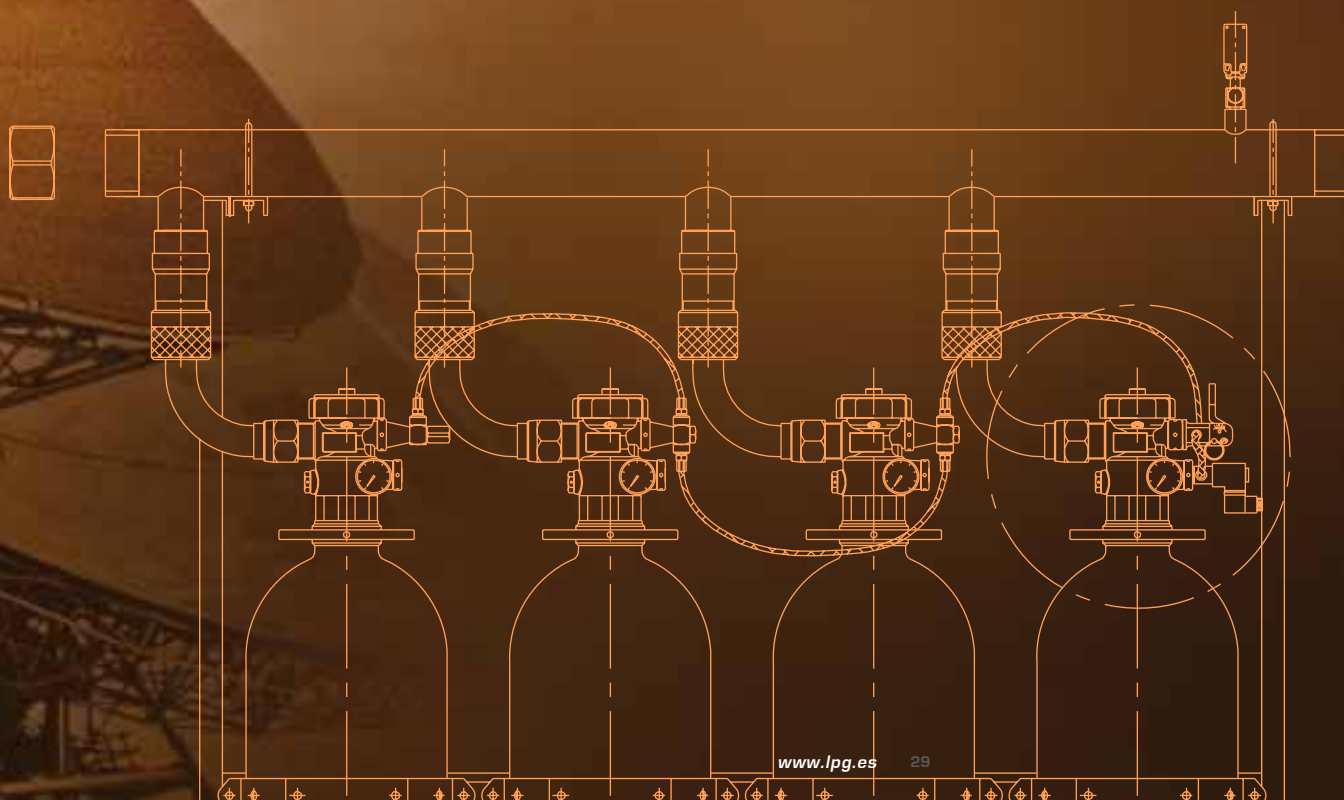
The extinguishing agent **DuPont™**

FM 200® is electrically non-conductive and has a density approximately 6 times higher than air. **DuPont™ FM 200®** extinguishes the fire mainly by physical means. It has a cooling effect due to its absorption capacity.

Not only does **DuPont™ FM 200®** avoid extensive fire damage, it also causes practically no collateral damage. It is a clean gaseous agent that does not contain macro particles or oily residue.

LPG's DuPont™ FM 200® extinguishing systems are used for total flooding applications. They offer an effective protection for a big variety of fires, e.g. class A fires (solid materials) and class B fires (flammable liquids).

LPG systems with **DuPont™ FM 200®** are designed for a discharge of 10 seconds. The agent is compressed with dry nitrogen at 42 bars and stored in steel cylinders equipped with certified valves.



Properties

DuPont™ FM-200® is a high pressure clean extinguishing agent certified by **UL®** (Underwriters Laboratories). **DuPont™ FM-200®** extinguishes fires mainly by physical means, weakening and extinguishing the fire by absorbing heat. Once discharged, **DuPont™**

FM-200® extinguishes the fire quickly, reducing damages to property and valuable equipment to a minimum, likewise ensuring total safety to persons. It is suitable for the protection of occupied areas, electronic systems, files, museums...

MAIN ADVANTAGES:

- Cylinders up to 240 l. in capacity.
- Discharge in 10 seconds.
- Widely applicable.
- Leaves no residue.
- Pressurization with dry nitrogen at 24 and 42 bar.
- Systems with certified valves.
- The most used gas worldwide.

STANDARDS:

- UL 2166
- NFPA 2001
- ISO 14520-9
- ISO 14520-1
- UNE-EN 150014-5

Characteristics

Chemical name	Heptafluoropropane
Chemical formula	CF ₃ CHF ₂ CF ₃
Designation according to ISO 14520 and NFPA 23570	HFC-227ea
Molecular weight	170
Boiling point at 1.013 bar	-16,4° C
Density of the liquid at 25° C	1407 kg/m ³
Critical temperature	101,7° C
Critical pressure	29,12 bar
Vapour pressure at 20 °C	3,91 bar
Relative electrical resistance at 1 atm. 21° C (N ₂ =1.0)	2,0
Maximum filling density	1,15 kg/l
NOAEL	9%
LOAEL	10,5%
PBPK (5' exposure)	10,5%
Ozone depletion potential	0
Greenhouse effect potential	2900

Certifications

LPG systems and components for **DuPont™ FM-200®** are certified by the LPCB (Loss Prevention Certification Board) of England Nr.: 446a, APCI (Asociación de Protección

Contra Incendios de Cuba) N° SS 4004041-1102, by the CNPP (Centre National de Prevention et Protection) of France.

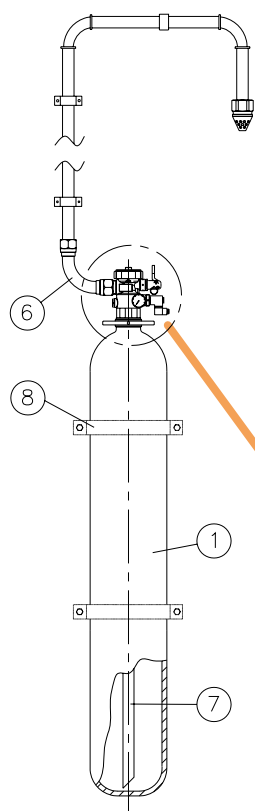


Notes to consider

In **low pressure (24 bar)** systems the maximum working pressure is 40 bar and for **high pressure (42 bar)** systems, it is 75 bar (UNE-EN 15004). It is recommended that the pipes to be used comply with ASTM/ANSI B.36.10-XS standard (Sch. 40) in the whole distribution piping. For both pressures, use 300 psi. accessories for 3" or less and

1000 psi. accessories for larger diameters. For **low pressure (24 bar)** 300 psi. flanged connectors, for **high pressure (42 bar)** 600psi. flanged connectors.

Modular systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Diaphragm and embellishment plate [see page 114]

List of materials included in the price

- 1 Cylinder
- 2 Manual release
- 3 Solenoid valve
- 4 LPG valve
- 5 Flange
- 6 Discharge hose
- 7 Syphon tube
- 8 Bracket

Set of labels and protector cap for cylinders are included.

Gas

NAME	P. NUMBER
Kilo DuPont™FM 200®	40022700

Modular Systems

DESCRIPTION	RECOMANDED FILLING*	P. NUMBER
Cylinder 240 litres**	276	CC72307020
Cylinder 175 litres**	201	CC72307022
Cylinder 120 litres	138	CC7201300N
Cylinder 100 litres	115	CC7100130N
Cylinder 75 litres (On Demand)	86	CC7751300N
Cylinder 67 litres	77	CC7670100H
Cylinder 40 litres	46	CC7400100H
Cylinder 26 litres	30	CC7260200H
Cylinder 13 litres	15	CC7130200H
Cylinder 5 litres	5	CC7050200H

** These cylinders can only be pressurized at 24 bar

*These are the **maximum filling quantities** for every bank size. **LPG** recommends them in order to reduce problems with discharge after the hydraulic calculations for the selected bank have been completed. However, there may be cases in which a bank is able to discharge using a higher filling quantity or on the contrary, is not able to discharge with a lower quantity due to size and length of the piping connected to the bank.

Centralized systems optional accessories

MORE INFORMATION PAGE 113

- Gooseneck wrench for the manual lever release
- Zinc coated joint
- Pressure switch
- Connection pressure elbow

Centralized Systems

Components for the calculation of a quotation

- Centralized system
- Gas

- Accessories (see page 113)

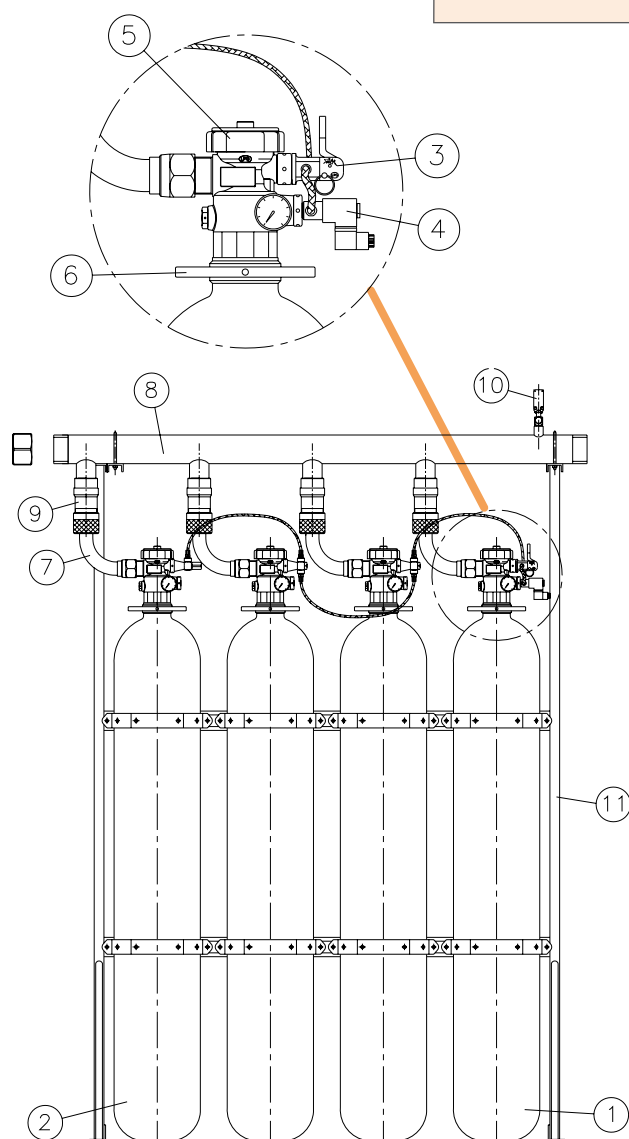
- Nozzles (see page 114)

- Diaphragm and embellishment plate (see page 114)

List of materials included in the price

1 Cylinder	7 Discharge hose
2 Auxiliary cylinder	8 Manifold
3 Double manual pneumatic discharge	9 Retention valve
4 Solenoid valve coupling G. 1/8	10 Pressure switch with locking device
5 LPG valve	11 Bracket
6 Flange	

Set of labels and protector cap for cylinders are included.



Notes to consider:

In a bank that contains **9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

Gas

NAME	P.NUMBER
Kilo DuPont™ FM 200®	40022700

Cylinder bank of 120 litres

N. CYL.	RECOM. FILLING* Ø	MAN.	P.NUMBER
2	240	2"	CC59021204
3	360	2 1/2"	CC59031204
4	480	3"	CC59041204
5	600	3"	CC59051204
6	720	4"	CC59061204
7	840	4"	CC59071204
8	936	4"	CC59081204
9	1026	4"	CC59091204
10	1110	4"	CC59101204

Centralized Systems

Cylinder bank of 100 litres			
N CYL.	MAX.KILOS*	Ø MAN.	P.NUMBER
2	200	2"	CC59021004
3	300	2 1/2"	CC59031004
4	400	3"	CC59041004
5	500	3"	CC59051004
6	600	4"	CC59061004
7	700	4"	CC59071004
8	780	4"	CC59081004
9	855	4"	CC59091004
10	925	4"	CC59101004

Cylinder bank of 75 litres			
N. CYL.	RECOM. FILLING*	Ø MAN.	P.NUMBER
2	150	2"	CC59020754
3	225	2"	CC59030754
4	300	2 1/2"	CC59040754
5	375	2 1/2"	CC59050754
6	450	3"	CC59060754
7	525	3"	CC59070754
8	600	4"	CC59080754
9	675	4"	CC59090754
10	731	4"	CC59100754

Cylinder bank of 67 litres			
N. CYL.	RECOM. FILLING*	Ø MAN.	P.NUMBER
2	134	1 1/2"	CC59020675
3	201	2"	CC59030675
4	268	2"	CC59040675
5	335	2 1/2"	CC59050675
6	402	2 1/2"	CC59060675
7	469	3"	CC59070675
8	536	3"	CC59080675
9	603	4"	CC59090675
10	670	4"	CC59100675

*These are the **maximum filling quantities** for every bank size. **LPG** recommends them in order to reduce problems with discharge after the hydraulic calculations for the selected bank have been completed. However, there may be cases in which a bank is able to discharge using a higher filling quantity or on the contrary, is not able to discharge with a lower quantity due to size and length of the piping connected to the bank.

Centralized systems optional accessories

MORE INFORMATION PAGE 113

Gooseneck wrench for the manual lever release

Zinc coated joint

Pressure switch

Connection pressure Elbow

Properties

DuPont™ FM-200® is a high pressure clean extinguishing agent certified by UL® (Underwriters Laboratories). DuPont™ FM-200® extinguishes fires mainly by physical means, weakening and extinguishing the fire by absorbing heat. Once discharged, DuPont™ FM-200® extinguishes the fire quickly, re-

ducing damages to property and valuable equipment to a minimum, likewise ensuring total safety to persons. It is suitable for the protection of occupied areas, electronic systems, files, museums...

MAIN ADVANTAGES			NORMATIVA:
<ul style="list-style-type: none"> • Cylinders up to 240 l. in capacity • Discharge in 10 seconds • Widely applicable 	<ul style="list-style-type: none"> • Pressurization with dry nitrogen at 24 and 42 bar • Systems with certified valves • Leaves no residue 	<ul style="list-style-type: none"> • The most used gas worldwide • UL Certification (Underwriters Laboratories) • It can be designed using a lower concentration 	<ul style="list-style-type: none"> • UL 2166 • NFPA 2001

Characteristics

Chemical name	Heptafluoropropano
Chemical formula	CF ₃ CHFCF ₃
Designation according to NFPA 2001	HFC-227ea
Molecular weight	170
Boiling point at 1.013 bar	-16,4° C
Density of the liquid at 25° C	1407 kg/m³
Critical temperature	101,7° C
Critical pressure	29,12 bar
Vapour pressure at 20 °C	3,91 bar
Relative electrical resistance at 1 atm. 21° C (N2=1.0)	2,0
Maximum filling density	1,15 kg./l
NOAEL	9%
LOAEL	10,5%
PBPK (5' exposure)	10,5%
Ozone depletion potential	0
Greenhouse effect potential	2900

Certificados



LPG systems and components for DuPont™ FM-200® are certified by UL (Underwriters

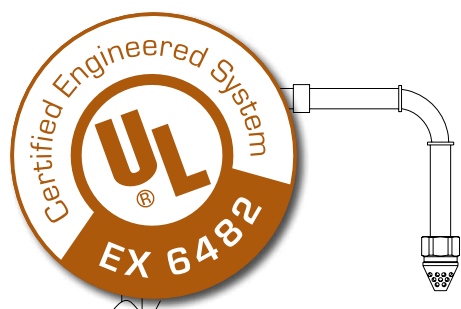
Laboratories) Certification.

Notas a considerar

In **low pressure (24 bar)** systems the maximum working pressure is 34 bar and for **high pressure (42 bar)** systems, it is 53 bar (UNE-EN 15004). It is recommended that the pipes to be used comply with ASTM/ANSI B.36.10-XS standard (Sch. 40) in the

whole distribution piping. For both pressures, use 300 psi. accessories for 3" or less and 1000 psi. accessories for larger diameters. For **low pressure (24 bar)** 300 psi. flanged connectors, for **high pressure (42 bar)** 600 psi. flanged connectors.

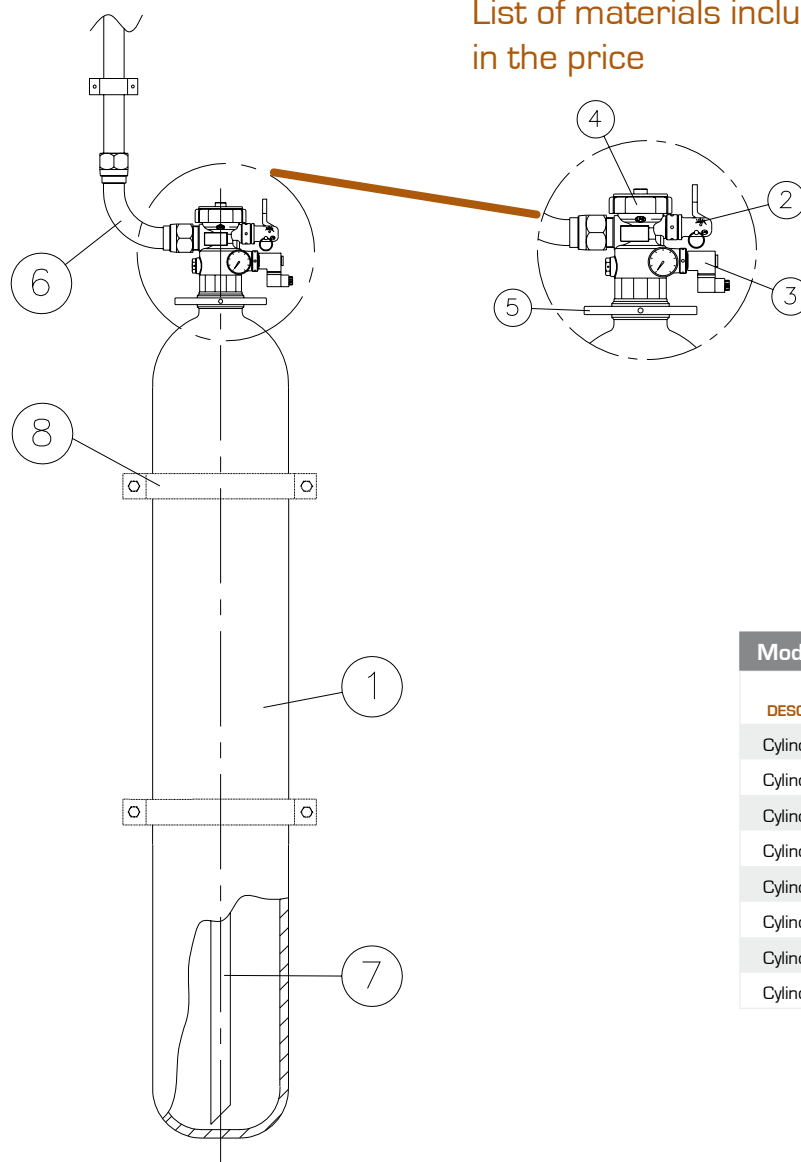
Modular Systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Diaphragm and embellishment plate [see page 114]

List of materials included in the price



- 1 Cylinder
- 2 Manual release
- 3 Solenoid valve
- 4 LPG valve
- 5 Flange
- 6 Discharge hose
- 7 Syphon tube
- 8 Bracket

Set of labels and protector cap for cylinders are included.

Gas

NAME	P. NUMBER
Kilo DuPont™FM 200®	40022700

Modular System HIGH PRESSURE (42 BAR)

DESCRIPTION	*RECOMANDED FILLING	P. NUMBER
Cylinder de 5 litres	5,00	CC70025434
Cylinder 13,4 litres	15,40	CC70025433
Cylinder 26,8 litres	30,80	CC70025439
Cylinder 40 litres	46,00	CC70025437
Cylinder 67 litres	77,00	CC71025417
Cylinder 75 litres	86,00	CC70025429
Cylinder 100 litres	115,00	CC74025420
Cylinder 120 litres	138,00	CC70025430

*These are the **maximum filling quantities** for every bank size. **LPG** recommends them in order to reduce problems with discharge after the hydraulic calculations for the selected bank have been completed. However, there may be cases in which a bank is able to discharge using a higher filling quantity or on the contrary, is not able to discharge with a lower quantity due to size and length of the piping connected to the bank.

Centralized systems optional accessories

MORE INFORMATION PAGE 113

- Gooseneck wrench for the manual lever release
- Zinc coated joint
- Pressure switch
- Connection pressure elbow

Centralized Systems

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)

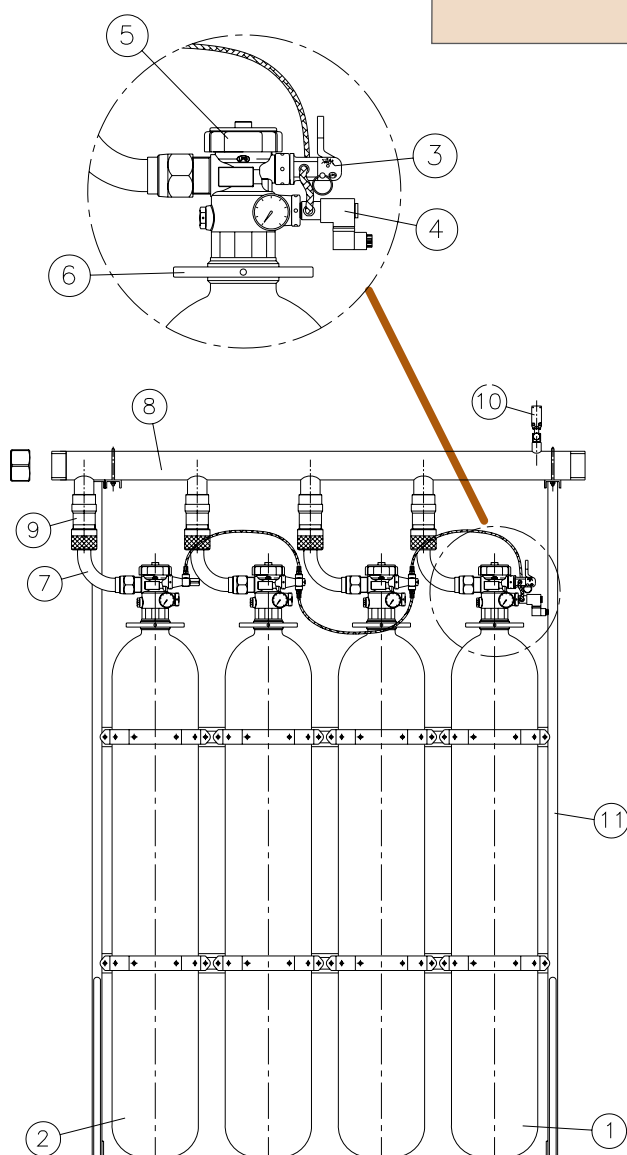
List of materials included in the price

- | | |
|-------------------------------------|--|
| 1 Cylinder | 7 Discharge hose |
| 2 Auxiliary cylinder | 8 Manifold |
| 3 Double manual pneumatic discharge | 9 Retention valve |
| 4 Solenoid valve coupling G. 1/8 | 10 Pressure switch with locking device |
| 5 LPG valve | 11 Bracket |
| 6 Flange | |

Set of labels and protector cap for cylinders are included.

Notes to consider:

In a bank that contains **9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



Cylinder bank of 120 Litres FM 200 UL

N. CYL.	*RECOM. FILL. kg	Ø MAN.	P. NUMBER
2	240,00	2"	CC55025012
3	360,00	2 1/4"	CC55025013
4	480,00	2 1/2"	CC55025014
5	600,00	3"	CC55025015
6	720,00	4"	CC55025016
7	840,00	4"	CC55025017
8	936,00	4"	CC55025018
9	1026,00	4"	CC55025019
10	1110,00	4"	CC55025020

Gas

NAME	P. NUMBER
Kilo DuPont™ FM 200®	40022700

Centralized Systems

Cylinder bank of 100 Litres FM 200® UL

N CYL.	MAX KILOS*	Ø MAN.	P. NUMBER
2	200	2"	CC54025012
3	300	2 1/2"	CC54025013
4	400	3"	CC54025014
5	500	3"	CC54025015
6	600	4"	CC54025016
7	700	4"	CC54025017
8	780	4"	CC54025018
9	855	4"	CC54025019
10	925	4"	CC54025020

Cylinder bank of 75 Litres FM 200® UL

N. CYL.	*RECOM. FILL. kg	Ø MAN.	P. NUMBER
2	150,00	2"	CC52025012
3	225,00	2"	CC52025013
4	300,00	2 1/2"	CC52025014
5	375,00	2 1/2"	CC52025015
6	450,00	3"	CC52025016
7	525,00	3"	CC52025017
8	600,00	4"	CC52025018
9	675,00	4"	CC52025019
10	731,00	4"	CC52025020

*These are the **maximum filling quantities** for every bank size. **LPG** recommends them in order to reduce problems with discharge after the hydraulic calculations for the selected bank have been completed. However, there may be cases in which a bank is able to discharge using a higher filling quantity or on the contrary, is not able to discharge with a lower quantity due to size and length of the piping connected to the bank.

Cylinder bank of 67 Litres FM 200® UL

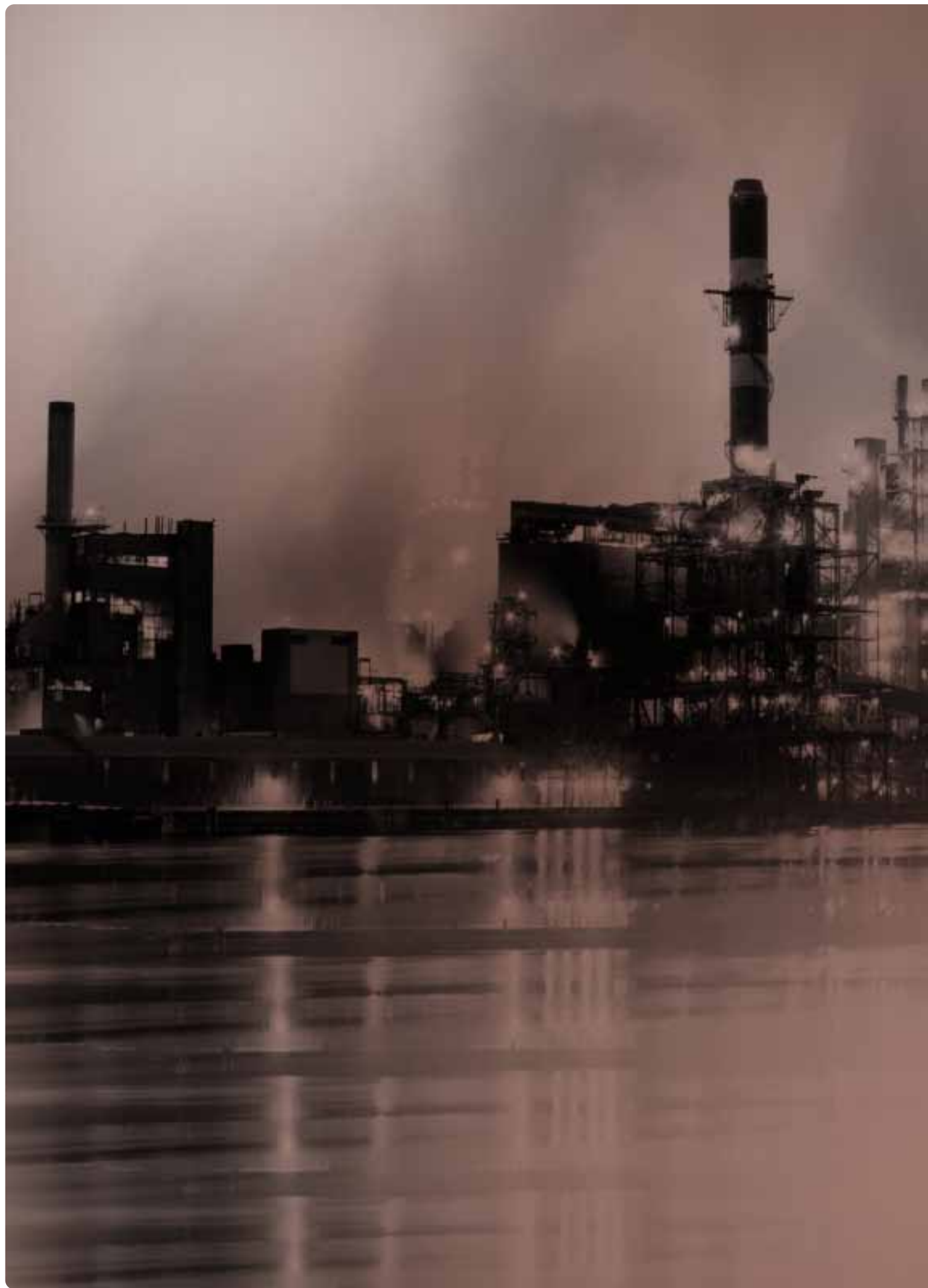
N. CYL.	*RECOM. FILL. kg	Ø MAN.	P. NUMBER
2	134,00	1 1/2"	CC51025012
3	201,00	2"	CC51025013
4	268,00	2"	CC51025014
5	335,00	2 1/2"	CC51025015
6	402,00	2 1/2"	CC51025016
7	469,00	3"	CC51025017
8	536,00	3"	CC51025018
9	603,00	4"	CC51025019
10	670,00	4"	CC51025020

Centralized systems optional accessories

MORE INFORMATION PAGE 113

Gooseneck wrench for the manual lever release
 Zinc coated joint
 Pressure switch
 Connection pressure Elbow





LPG Systems with CO₂

At atmospheric pressures carbon dioxide (CO₂) is a colourless, odourless and non-conductive gas capable of penetrating quickly and efficiently into the protected area.

Its density is approximately 50% greater than the density of air.

When dealing with the protection of occupied areas, consideration shall be given to the fact that if CO₂ is inhaled, even in low concentrations, because it represents a danger for people. In some countries, regulations ban automatic control of CO₂ systems for the protection of occupied areas. In other countries they are allowed, as long as the systems and protected area have the relevant safety devices.

Thanks to their experience in the field of fire protection gained through CO₂ systems, **LPG** fire extinguishing systems are now installed in more than 70 countries in Europe, America, Asia and Africa.

LPG's range of CO₂ systems includes two types of valves fully developed by **LPG**, approved by the most renowned independent organizations. **LPG 128** valve is fitted on the pilot or master cylinder and allows electrical actuation using a solenoid or pyrotechnical charge.

Properties

CO₂ extinguishes fire through physical means by two main mechanisms. Firstly, by reducing the oxygen concentration inside the enclosure from 21% to a level below 15% at which most fires are unable to maintain combustion. The second mechanism is by cooling and heat absorption.

Under the necessary safety precautions, CO₂ has been effectively applied to protect areas such as transformers, archives, electrical hazards, record stores and computer rooms.

MAIN ADVANTAGES:

- Leaves no residue after use.
- Generates no decomposition by-products when in contact with flame.
- Effective on deep-seated fires.
- Easy to reload.
- Very economic.

STANDARDS:

- NFPA 12
- CEA 4007
- CEPREVEN R.T.4. CO₂

Characteristics

Chemical name	Carbon Dioxide
Chemical formula	CO ₂
Molecular weight	44,01
Triple point temperature	-55,6° C
Triple point pressure	517,8 kPa
Density of the liquid at 20° C	777 kg/m ³
Critical temperature	31,0° C
Critical pressure	73,82 bar
Pressure at 21° C	58,8 bar
Vapour pressure at 20° C	57,2 bar
Maximum filling density	0,75 kg/l
Air relative density	1,5
Deep seated electrical fire concentration Vol<57m3	1,6 kg/m ³
Deep seated electrical fire concentration Vol>57m3	1,33 kg/m ³
Archive extinguishing concentration	65% [2,0 kg/m ³]
Concentration for superficial fires	34%
Ozone depletion potential	0
Greenhouse effect potential	1

Certifications



The **LPG** systems and components for CO₂ are certified by VdS (Verband der Schadenversicherer) of Germany N°: G300012 and G300020, by VNIPO of Russia as per NPB-54-96 (hardware) and

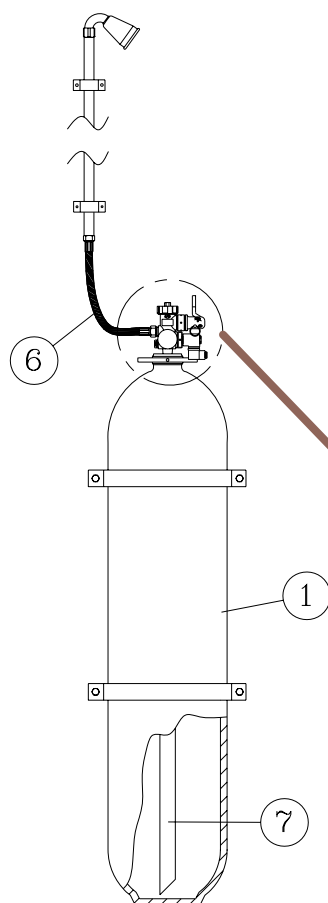
by APCI (Agencia de Protección Contra Incendios de Cuba) No. SS 4004038-1102.

Notes to consider

The maximum working density in the pipes is 175 bar (for a fill density of 0.75 kg/l) and 138 bar (for a fill pressure of 0.67 kg/l). Use of pipes compliant with standard ASTM / ANSI B.36.10-XS or equivalent is recommended. Up to 3/4" Sch.40, for

larger diameters, Sch.80. Up to 2", pipes should be threaded, with forged accessories up to 3000 lb. ANSI B.16.11, and from 2 1/2" pipes should be welded, and ANSI B.16.9 and B.16.28 accessories used.

Modular systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Brackets [see page 114]

List of materials included in the price

- 1 Cylinder
- 2 Manual release
- 3 Solenoid valve
- 4 LPG valve
- 5 Flange
- 6 Discharge hose
- 7 Syphon tube

Set of labels and protector cap for cylinders are included.

Gas

NAME	P.NUMBER
Kilo CO ₂	40010000

Modular systems

DESCRIPTION	STANDARD FILLING kg*	P.NUMBER
Cylinder 67 litres	45	CC76702400
Cylinder 40 litres	27	CC74002400
Cylinder 26 litres	18	CC72602400
Cylinder 13 litres	9	CC71302400
Cylinder 5 litres	3	CC70502400

* If the filling density of 0,75 kg/l. is used as allowed by CEA, each cylinder could be filled with 5 additional kg (50 kg per cylinder) and each of the 40 l. cylinders could be filled with 3 additional kg (30 kg per cylinder).

Modular systems optional accessories

MORE INFORMATION PAGE 113

Gooseneck wrench for the manual lever release

Pressure switch

Centralized systems 67 litres

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Brackets [see page 124]

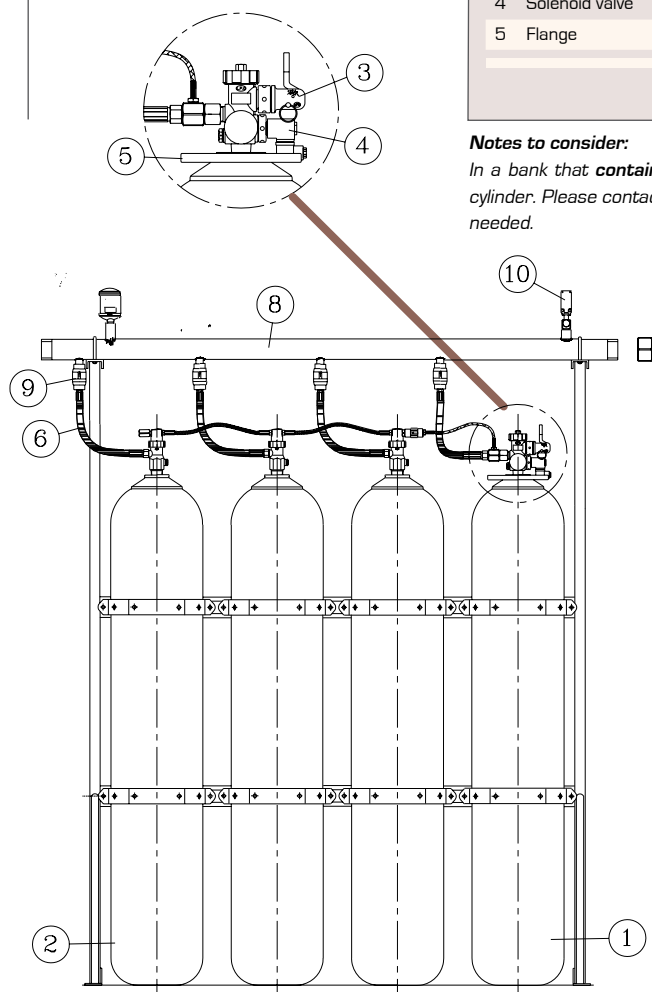
List of materials included in the price

- | | |
|----------------------|--|
| 1 Cylinder | 6 Discharge hose |
| 2 Auxiliary cylinder | 8 Manifold |
| 3 Manual lever | 9 Retention valve 1/2" |
| 4 Solenoid valve | 10 Pressure switch with locking device |
| 5 Flange | |

Set of labels and protector cap cylinders are included.

Notes to consider:

In a bank that **contains 9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



SINGLE ROW

67 litres SINGLE ROW Bank

N.CYL	STANDARD FILLING kg *	Ø MAN.	P.NUMBER
2	90	3/4"	CC50020676
3	135	3/4"	CC50030676
4	180	1"	CC50040676
5	225	1"	CC50050676
6	270	1"	CC50060676
7	315	1 1/4"	CC50070676
8	360	1 1/4"	CC50080676
9	405	1 1/2"	CC50090676
10	450	1 1/2"	CC50100676
11	495	1 1/2"	CC50110676
12	540	1 1/2"	CC50120676
13	585	2"	CC50130676
14	630	2"	CC50140676
15	675	2"	CC50150676
16	720	2"	CC50160676
17	765	2"	CC50170676
18	810	2"	CC50180676
19	855	2"	CC50190676
20	900	2"	CC50200676
21	945	2"	CC50210676
22	990	2 1/2"	CC50220676
23	1035	2 1/2"	CC50230676
24	1080	2 1/2"	CC50240676
25	1125	2 1/2"	CC50250676
26	1170	2 1/2"	CC50260676
27	1215	2 1/2"	CC50270676
28	1260	2 1/2"	CC50280676
29	1305	2 1/2"	CC50290676

Gas

NAME	P.NUMBER
Kilo CO ₂	40010000

Centralized systems 67 litres

Gas	
NAME	P.NUMBER
Kilo CO ₂	40010000

Required elements for centralized systems
MORE INFORMATION ON PAGES 124-126
Bracket
Manifold support
U - bracket

Centralized systems optional accessories
MORE INFORMATION ON PAGES 113-130
Zinc coated joint
Gooseneck wrench for lever manual release
Dampers
Pneumatic odorizer
CUT-OFF micro switch valve
Pneumatic delay kit

DOUBLE ROW

67 litres DOUBLE ROW Bank			
N.CYL	STANDARD FILLING kg *	Ø MAN.	P.NUMBER
3	135	3/4"	CC5003067D
4	180	1"	CC5004067D
5	225	1"	CC5005067D
6	270	1"	CC5006067D
7	315	1 1/4"	CC5007067D
8	360	1 1/4"	CC5008067D
9	405	1 1/2"	CC5009067D
10	450	1 1/2"	CC5010067D
11	495	1 1/2"	CC5011067D
12	540	1 1/2"	CC5012067D
13	585	2"	CC5013067D
14	630	2"	CC5014067D
15	675	2"	CC5015067D
16	720	2"	CC5016067D
17	765	2"	CC5017067D
18	810	2"	CC5018067D
19	855	2"	CC5019067D
20	900	2"	CC5020067D
21	945	2"	CC5021067D
22	990	2 1/2"	CC5022067D
23	1035	2 1/2"	CC5023067D
24	1080	2 1/2"	CC5024067D
25	1125	2 1/2"	CC5025067D
26	1170	2 1/2"	CC5026067D
27	1215	2 1/2"	CC5027067D
28	1260	2 1/2"	CC5028067D
29	1305	2 1/2"	CC5029067D
30	1350	3"	CC5030067D

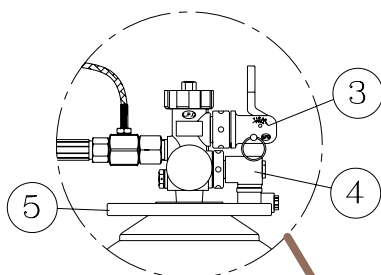
* If the filling density of 0,75 kg/l is used as allowed by CEA, each cylinder could be filled with 5 additional kg (50 kg per cylinder) and each of the 40 l. cylinders could be filled with 3 additional kg (30 kg per cylinder).

Centralized systems **40 litres**

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Brackets [see page 124]

List of materials included in the price

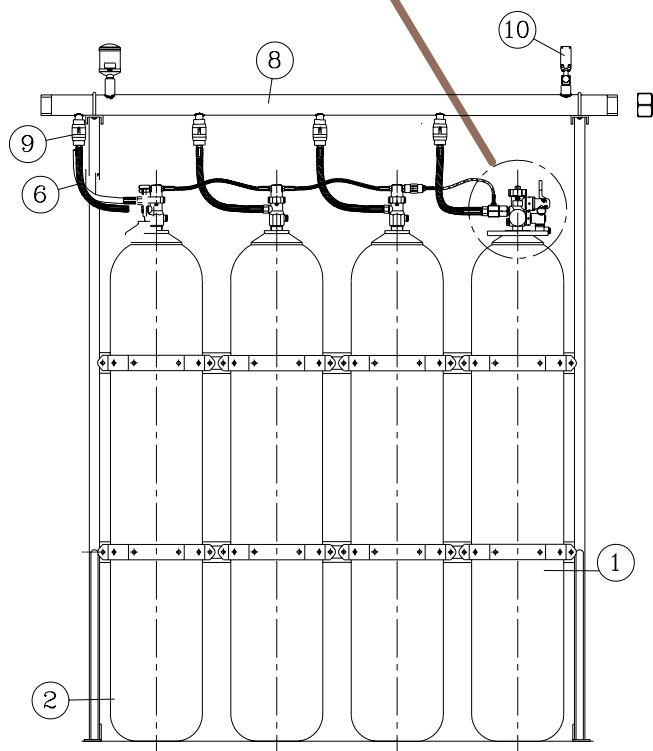


- | | |
|----------------------|--|
| 1 Master cylinder | 6 Discharge hose |
| 2 Auxiliary cylinder | 8 Manifold |
| 3 Manual lever | 9 Retention valve 1/2" |
| 4 Solenoid valve | 10 Pressure switch with locking device |
| 5 Flange | |

Set of labels and protector cap for cylinders are included. **Brackets are NOT included.**

Notes to consider:

In a bank that **contains 9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



SINGLE ROW

40 litres SINGLE ROW Bank 2 bindings

N.CYL	STANDARD FILLING kg*	Ø MAN.	P.NUMBER
2	54	3/4"	CC50020406
3	81	3/4"	CC50030406
4	108	1"	CC50040406
5	135	1"	CC50050406
6	162	1"	CC50060406
7	189	1 1/4"	CC50070406
8	216	1 1/4"	CC50080406
9	243	1 1/2"	CC50090406
10	270	1 1/2"	CC50100406

Gas

NAME	P.NUMBER
Kilo CO ₂	40010000

* If the filling density of 0,75 kg/l is used as allowed by CEA, each 67 l. cylinder could be filled with 5 additional kg (50 kg per cylinder) and each of the 40 l. cylinders could be filled with 3 additional kg (30 kg per cylinder).

Modular systems with weighing device

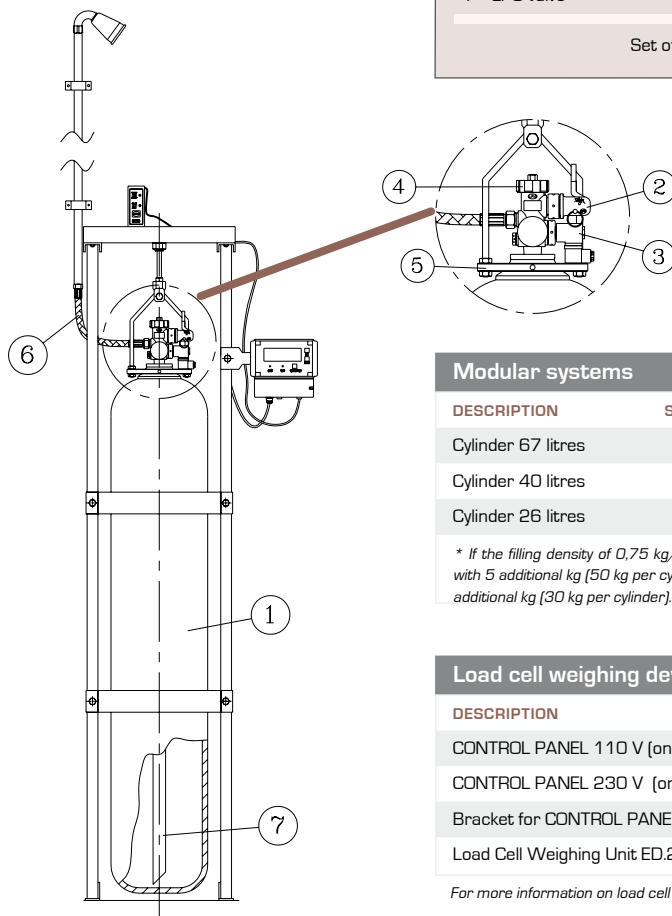
Components for the calculation of a quotation

- Battery
- Gas
- Accessories [see page 113]
- Weighing device
- Nozzles [see page 114]
- Brackets [see page 124]

List of materials included in the price

- | | |
|------------------|---------------|
| 1 Cylinder | 5 Flange |
| 2 Manual lever | 6 Hose |
| 3 Solenoid valve | 7 Syphon tube |
| 4 LPG valve | |

Set of labels and protector cap for cylinders are included.



Modular systems

DESCRIPTION	STANDARD FILLING kg *	P.NUMBER
Cylinder 67 litres	45	CCP76702400
Cylinder 40 litres	27	CCP74002400
Cylinder 26 litres	18	CCP72602400

* If the filling density of 0,75 kg/l is used as allowed by CEA, each cylinder could be filled with 5 additional kg (50 kg per cylinder) and each of the 40 l. cylinders could be filled with 3 additional kg (30 kg per cylinder).

Load cell weighing device

DESCRIPTION	P.NUMBER
CONTROL PANEL 110 V (one per centralised system, max. 31 cylinders)	30332110
CONTROL PANEL 230 V (one per centralised system, max. 31 cylinders)	30332230
Bracket for CONTROL PANEL (only one per control panel)	30312000
Load Cell Weighing Unit ED.2004 (13-75 Lts.) W/Fork	30116000

For more information on load cell weighing device systems see page 39.

Gas

NAME	P.NUMBER
Kilo CO ₂	40010000

Mechanical weighing device

DESCRIPTION	P.NUMBER
1st OPTION: Photoelectric detector with reflector and bearings, for a 10 meter length. For double row systems, count 2 units.	30331014
2nd OPTION: Microswitch end of line (Count 1 per cylinder if photoelectric detector is not used)	30331000
Mechanical weighing unit fork for 40/67 litres	30331004
Mechanical weighing unit with fork for 26 litres	30331005

For more information on mechanical weighing device systems see page 39.

Modular systems optional accessories

MORE INFORMATION PAGE 113

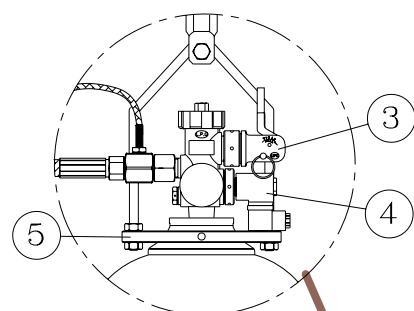
Gooseneck wrench for the manual lever release

Centralized systems with weighing device **67 litres**

Components for the calculation of a quotation

- Centralized system
- Accessories [see page 113]
- Nozzles [see page 114]
- Brackets [see page 124]
- Weighing device
- Gas

List of materials included in the price



- | | |
|----------------------|--|
| 1 Cylinder | 6 Discharge hose |
| 2 Auxiliary cylinder | 8 Manifold |
| 3 Manual lever | 9 Retention valve 1/2" |
| 4 Solenoid valve | 10 Pressure switch with locking device |
| 5 Flange | |

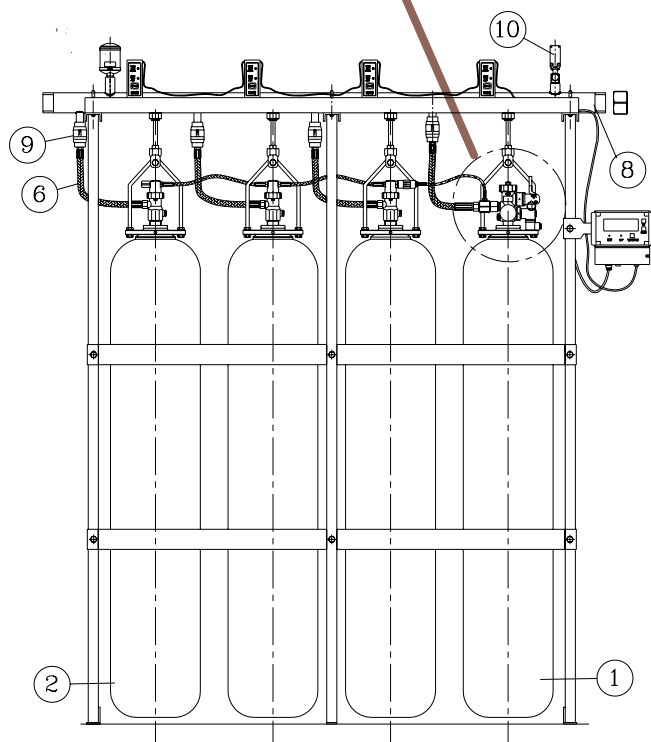
Set of labels and protector cap for cylinders are included.

Notes to consider:

In a bank that **contains 9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

Gas

NAME	P.NUMBER
Kilo CO ₂	40010000



SINGLE ROW

67 litres SINGLE ROW Bank

N.CYL	STANDARD FILLING kg *	Ø MAN.	P.NUMBER
2	90	3/4"	CCP5102067N
3	135	3/4"	CCP5103067N
4	180	1"	CCP5104067N
5	225	1"	CCP5105067N
6	270	1"	CCP5106067N
7	315	1 1/4"	CCP5107067N
8	360	1 1/4"	CCP5108067N
9	405	1 1/2"	CCP5109067N
10	450	1 1/2"	CCP5110067N
11	495	1 1/2"	CCP5111067N
12	540	1 1/2"	CCP5112067N
13	585	2"	CCP5113067N
14	630	2"	CCP5114067N
15	675	2"	CCP5115067N
16	720	2"	CCP5116067N
17	765	2"	CCP5117067N
18	810	2"	CCP5118067N
19	855	2"	CCP5119067N
20	900	2"	CCP5120067N

Centralized systems with weighing device **67 litres**

DOUBLE ROW

67 litres DOUBLE ROW Bank			
N.CYL	STANDARD FILLING kg *	Ø MAN.	P.NUMBER
3	135	3/4"	CCP5003067N
4	180	1"	CCP5004067N
5	225	1"	CCP5005067N
6	270	1"	CCP5006067N
7	315	1 1/4"	CCP5007067N
8	360	1 1/4"	CCP5008067N
9	405	1 1/2"	CCP5009067N
10	450	1 1/2"	CCP5010067N
11	495	1 1/2"	CCP5011067N
12	540	1 1/2"	CCP5012067N
13	585	2"	CCP5013067N
14	630	2"	CCP5014067N
15	675	2"	CCP5015067N
16	720	2"	CCP5016067N
17	765	2"	CCP5017067N
18	810	2"	CCP5018067N
19	855	2"	CCP5019067N
20	900	2"	CCP5020067N
21	945	2"	CCP5021067N
22	990	2 1/2"	CCP5022067N
23	1035	2 1/2"	CCP5023067N
24	1080	2 1/2"	CCP5024067N
25	1125	2 1/2"	CCP5025067N
26	1170	2 1/2"	CCP5026067N
27	1215	2 1/2"	CCP5027067N
28	1260	2 1/2"	CCP5028067N
29	1305	2 1/2"	CCP5029067N
30	1350	3"	CCP5030067N

* If the filling density of 0,75 kg/l is used as allowed by CEA, each cylinder could be filled with 5 additional kg (50 kg per cylinder) and each of the 40 l. cylinders could be filled with 3 additional kg (30 kg per cylinder).

Load cell weighing device

DESCRIPTION	P.NUMBER
CONTROL PANEL 110 V (one per bank, max. 31 cylinders.)	30332110
Control panel 230 V (one per bank, max. 31 cylinders.)	30332230
Bracket for CONTROL PANEL (only one per control panel)	30312000
Cell Weighing Unit (one per cylinder from 40 to 67 l.)	30116000

For more information on load cell weighing device systems see page 47.

Mechanical weighing device

DESCRIPTION	P.NUMBER
1st OPTION: Photoelectric detector with reflector and bearings, for a 10 meter length. For double row systems, count 2 units.	30331014
2nd OPTION: Microswitch end of line (Count 1 per cylinder if photoelectric detector is not used)	30331000
Mechanical weighing unit w/ fork for 40/67 litres	30331006

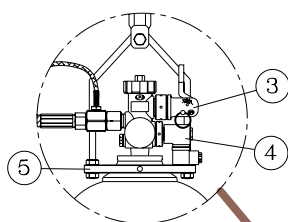
For more information on mechanical weighing device systems see page 47.

Centralized systems with weighing device **40 litres**

Components for the calculation of a quotation

- Centralized system
- Accessories (see page 113)
- Nozzles (see page 114)
- Brackets (see page 124)
- Weighing device • Gas

List of materials included in the price

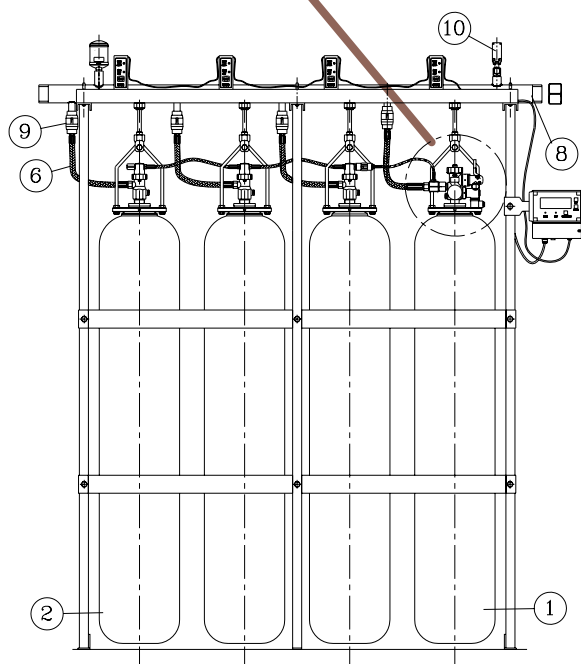


- | | |
|----------------------|--|
| 1 Cylinder | 6 Discharge hose |
| 2 Auxiliary cylinder | 8 Manifold |
| 3 Manual lever | 9 Retention valve 1/2" |
| 4 Solenoid valve | 10 Pressure switch with locking device |
| 5 Flange | |

Set of labels and protector cap for cylinders are included. **Brackets are NOT included.**

Notes to consider:

In a bank that **contains 9 or more cylinders**, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



SINGLE ROW

40 litre Bank SINGLE ROW WEIGHING DEVICE

N.CYL	STANDARD FILLING kg*	Ø MAN.	P.NUMBER
2	54	3/4"	CCP5102040N
3	81	3/4"	CCP5103040N
4	108	1"	CCP5104040N
5	135	1"	CCP5105040N
6	162	1"	CCP5106040N
7	189	1 1/4"	CCP5107040N
8	216	1 1/4"	CCP5108040N
9	243	1 1/2"	CCP5109040N
10	270	1 1/2"	CCP5110040N

Required elements for centralized systems

MORE INFORMATION PAGES 123-126

Bracket

Manifold support

U - bracket

* If the filling density of 0,75 kg/l is used as allowed by CEA, each 67 l. cylinder could be filled with 5 additional kg (50 kg per cylinder) and each of the 40 l. cylinders could be filled with 3 additional kg (30 kg per cylinder).

Centralized systems optional accessories

MORE INFORMATION PAGE 113

Zinc coated Joint

Gooseneck wrench for the manual lever release

Dampers

Pneumatic odorizer

CUT-OFF micro switch valve

Pneumatic Delay Kit

Centralized systems with weighing device

Load cell system

It is thought to allow the continuous control of the cylinder charge in modular or centralized systems. Following standards of electromagnetic compatibility are fulfilled: EN 50081-1 / EN 50130-4 / EN 61000-3-2 / EN 61000-3-3 and with CEI 60950 of electric security. The equipment gives an alarm signal when the gas loss in the cylinders exceeds 5% of the initial charge. All the systems are equipped with a weighing control panel connected to the fire detection and

extinguishing control panel and there are as many weighing units by load cell as cylinders to be monitored. The system allows to control the loss with a precision of 1 kg. All the weighing units by load cell are connected to the weighing control panel unit by means of a unique monitorized line (BUS).

Each control panel is designed to monitor a maximum of 31 control units.



Load cell weighing device	
DESCRIPTION	P.NUMBER
WEIGHING CONTROL PANEL C 110 V (one per centralized system, max. 31 cylinders)	30332110
WEIGHING CONTROL PANEL 230 V (one per centralized system, max. 31 cylinders)	30332230
Bracket for CONTROL PANEL (only one per control panel)	30312000
Load Cell Weighing Unit with fork (one per cylinder 40 to 67 litres)	30116000

Mechanical system

It is thought to allow the **continuous control of the cylinder charge** in modular or centralized systems. The systems consist of control modules working mechanically. The commissioning for each cylinder is easy. If there is a loss of charge, the mobile part falls down.

Optionally, they can have an electrical surveillance system such as an electrical micro switch for each module or a photoelectrical detector able to control module rows of up to 10 metres.



Mechanical weighing device	
DESCRIPTION	P.NUMBER
1 ST OPTION: Photoelectrical detector with a reflector for a length of 10 metres. For double row systems, count 2 units	30331014
2 ND OPTION: Micro switch – end of the line (Count 1 per cylinder if photoelectric detector is not used)	30331000
Mechanical weighing unit with fork for 40 / 67 litres (one for cylinders of 40 or 67 lts.)	30331006



Systems with **LPG INERT[®]**

Inert gases do not leave residues after their application and they do not generate decomposition products in contact with the flames. Their ozone layer depletion potential is zero. Furthermore, they are easy to recharge.

Discharge is performed through valves fully developed by **LPG** and approved by the most renowned independent organizations. They are highly adaptable to all actuation and release systems currently on the market, even allowing combinations of several of them.

The design of the system protects against accidental actuation due to micro-leakages. They also allow control and maintenance of all critical elements contained in a fixed extinguishing system at the time of commissioning.

LPG INERT[®] is stored in high pressure cylinders as pressurized gas. Therefore, the necessary space for the cylinders depends on their pressure and volume.



Properties

LPG INERT® extinguishants are considered eco-friendly, because inert gases are naturally present in the atmosphere, do not leave residues after their application and do not generate decomposition products in contact with the flames. Their ozone layer depletion potential is zero and their greenhouse effect is nil. LPG INERT® extinguishants are ideal

for the protection of archives, museums, libraries and any other area of risk containing goods of high value. It may also be used for the protection of computer rooms, telephone exchange equipment or any other electrical facility. It is safe to use in occupied areas, when properly measured. During discharge an excellent visibility can be maintained.

Standards

LPG INERT® IG-01 (ARGON)	LPG INERT® IG-55 (ARGON/NITROGEN)	LPG INERT® IG-100 (NITROGEN)	LPG INERT® IG-541 (ARGON/N ₂ /CO ₂)
NFPA 2001 ISO 14520-14 ISO 14520-1	NFPA 2001 ISO 14520-12 ISO 14520-1	NFPA 2001 ISO 14520-13 ISO 14520-1	NFPA 2001 ISO 14520-15 ISO 14520-1

Characteristics

Designation according to NFPA 2001 and ISO 14520	IG-01	IG-55	IG-100	IG-541
Chemical name	Argon	Nitrogen, Argon	Nitrogen	Nitrogen, Argon, Carbon dioxide
Chemical formula	Ar	N ₂ /Ar	N ₂	N ₂ - 52% (V), AR - 40% (V), CO ₂ - 8% (V)
Molecular weight	39,9	33,95	28,02	34,0
Boiling point at a 1.013 bar	-185,9°C	-196°C	-195,8°C	-196°C
Critical temperature	-122,3°C	—	146,9°C	N/A
Critical pressure	49 bar	—	34 bar	N/A
Maximum filling pressure	300 bar	300 bar	300 bar	N/A
NOAEL	43%	43%	43%	43%
LOAEL	52%	52%	52%	52%
Maximum concentration in a 5' exposure	43%	43%	43%	43%
Ozone depletion potential	0	0	0	0
Greenhouse effect potential	0	0	0	0

Certifications

LPG systems and components for inert gases are certified by VdS Schadensverhütung (Vertrauen durch Sicherheit) of Germany **No. G300018, G300020, G302018 and**

G302017, by the LPCB (Loss Prevention Certification Board) of England **No. 446a/01 and 446a/02** by the CNPP (Centre National de Prévention et de Protection) of France **(in process)**, by the VNIPO of Russia as per **NPB-54-96 (hardware)** and by the APCI (Asociación de Protección contra Incendios) of Cuba **Nº SS 4004039-1102**.



Notes to consider

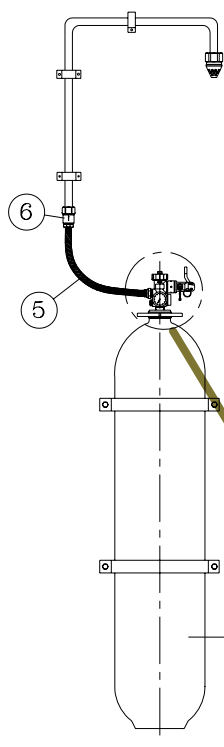
* It is essential to consider the overpressure against the protected areas walls (LPG has software - Firenet.web - to know the pressure relief opening).

* **Pipes:** The maximum working pressure in the pipes following the restrictor is 60 bar @20°C for the systems at 200 bar and 300 bar. The maximum working pressure ahead of the restrictor is 225 bar for systems

at 200 bar and 384 bar for the 300 bar systems (UNE-EN15004). According to the ASTM/ANSI standard Sch.40 pipes are recommended for the piping following the restrictor.

Up to 2", they can be threaded with forged accessories up to 3000 lb. ANSI B.16.11; from 2 1/2" and up they shall be welded with accessories ANSI B.16.9 and B.16.28.

Modular Systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accessories [see page 113]
- Nozzles [see page 114]
- Diaphragm and embellishment plate [see page 114]
- Brackets [see page 124]

List of materials included in the price

1 Cylinder	4 Pneumatic manual lever with metron
2 Flange	5 Hose
3 LPG 128 valve 3/4" outlet	6 Drilled restrictor

Set of labels and protector cap for cylinders are included.

IG-01

IG-01 300 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	41,7 m³	CC74030001
80 litres	23,8 m³	CC78030001

IG-01 200 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	29,2 m³	CC74013001
80 litres	16,7 m³	CC78013001

IG-55

IG-55 300 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	39,1 m³	CC76120000
80 litres	22,3 m³	CC73120000

IG-55 200 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	27,8 m³	CC76119000
80 litres	15,9 m³	CC73119000

IG-100

IG-100 300 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	36,7 m³	CC76122000
80 litres	21,0 m³	CC73122000

IG-100 200 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	26,4 m³	CC76121000
80 litres	15,1 m³	CC73121000

IG-541

IG-541 300 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	40,24 m³	CC76130000
80 litres	23,00 m³	CC73130000

IG-541 200 BAR @ 15°C

CAPACITY	FILLING DENSITY	P.NUMBER
140 litres	29 m³	CC76131000
80 litres	16,60 m³	CC73130000

Optional components for modular systems

FOR MORE INFORMATION SEE PAGE 113

Pressure switch

Elbow

Gooseneck wrench for triple discharge assemblage

INVERTER circuit

Gas

DESCRIPTION	P.NUMBER
IG-01	400ARGFR
IG-55	400IG550
IG-100	400IG100
IG-541	40130000

IG-01 300 bar. Centralized Systems

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories [see page 113]
- Diaphragm and embellishment plate [see page 114]
- Nozzles [see page 114]
- Brackets [see page 124]

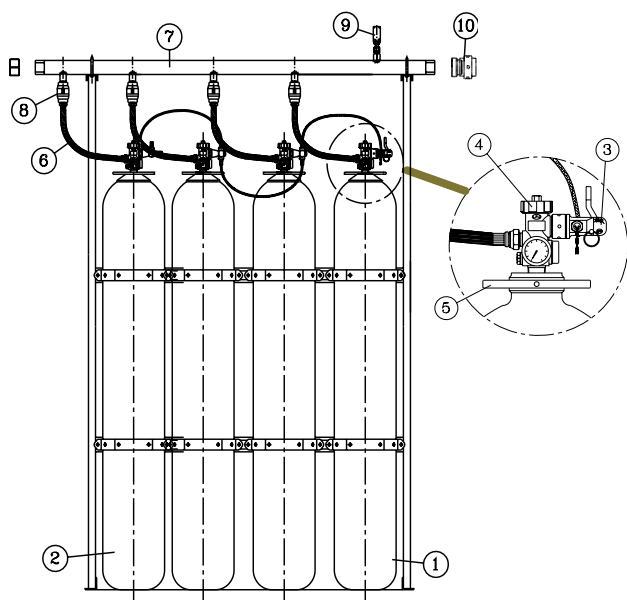
List of materials included in the price

1	Cylinder master	6	Hose
2	Slave cylinder	7	Manifold
3	Pneumatic manual lever with metron	8	Retention valve
4	LPG valve-128	9	Pressure switch with locking device
5	Flange	10	Drilled restrictor

Set of labels and protector cap for cylinders are included.

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact LPG if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



IG-01 SINGLE ROW banks with 80 l. 300 bar

N. CYL. RECOM. FILL. (m³)* Ø MAN.	P. NUMBER
2 47,60 3/4"	CC530028AR
3 71,40 3/4"	CC530038AR
4 95,20 1 1/4"	CC530048AR
5 119,00 1 1/4"	CC530058AR
6 142,80 1 1/4"	CC530068AR
7 166,60 1 1/4"	CC530078AR
8 190,40 1 1/4"	CC530088AR
9 214,20 1 1/4"	CC530098AR
10 238,00 1 1/4"	CC530108AR
11 261,80 1 1/4"	CC530118AR
12 285,60 1 1/4"	CC530128AR
13 309,40 1 1/2"	CC530138AR
14 333,20 1 1/2"	CC530148AR
15 357,00 1 1/2"	CC530158AR

IG-01 DOUBLE ROW banks with 80 l. 300 bar

N. CYL. RECOM. FILL. (m³)* Ø MAN.	P. NUMBER
3 71,40 1 1/4"	CC530038AD
4 95,20 1 1/4"	CC530048AD
5 119,00 1 1/4"	CC530058AD
6 142,80 1 1/4"	CC530068AD
7 166,60 1 1/4"	CC530078AD
8 190,40 1 1/4"	CC530088AD
9 214,20 1 1/4"	CC530098AD
10 238,00 1 1/4"	CC530108AD
11 261,80 1 1/4"	CC530118AD
12 285,60 1 1/4"	CC530128AD
13 309,40 1 1/2"	CC530138AD
14 333,20 1 1/2"	CC530148AD
15 357,00 1 1/2"	CC530158AD
16 380,80 1 1/2"	CC530168AD
17 404,60 2"	CC530178AD
18 428,40 2"	CC530188AD
19 452,20 2"	CC530198AD
20 476,00 2"	CC530208AD
21 499,80 2 1/2"	CC530218AD
22 523,60 2 1/2"	CC530228AD
23 547,40 2 1/2"	CC530238AD
24 571,20 2 1/2"	CC530248AD
25 595,00 2 1/2"	CC530258AD
26 618,80 2 1/2"	CC530268AD
27 642,60 2 1/2"	CC530278AD
28 666,40 2 1/2"	CC530288AD
29 690,20 2 1/2"	CC530298AD
30 714,00 2 1/2"	CC530308AD

IG-01 300 bar. Centralized Systems

IG-01 SINGLE ROW banks with 140 l. 300 bar			
N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
2	83,40	1 1/4"	CC50026402
3	125,10	1 1/4"	CC50026403
4	166,80	1 1/4"	CC50026404
5	208,50	1 1/4"	CC50026405
6	250,20	1 1/4"	CC50026406
7	291,90	1 1/4"	CC50026407
8	333,60	1 1/2"	CC50026408
9	375,30	1 1/2"	CC50026409
10	417,00	2"	CC50026410
11	548,70	2"	CC50026411
12	500,40	2"	CC50026412
13	542,10	2 1/2"	CC50026413
14	583,80	2 1/2"	CC50026414
15	625,50	2 1/2"	CC50026415

Required elements for centralized systems

FOR MORE INFO. PAGES 124-129

Bracket

Manifold support

U - Bracket

Optional components for centralized systems

FOR MORE INFO. PAGE 113

Gooseneck wrench for the manual triple release

Dampers

Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-01 DOUBLE ROW banks with 140 l. 300 bar			
N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
3	125,10	1 1/4"	CC530034AD
4	166,80	1 1/4"	CC530044AD
5	208,50	1 1/4"	CC530054AD
6	250,20	1 1/4"	CC530064AD
7	291,90	1 1/4"	CC530074AD
8	333,60	1 1/2"	CC530084AD
9	375,30	2"	CC530094AD
10	417,00	2"	CC530104AD
11	458,70	2"	CC530114AD
12	500,40	2"	CC530124AD
13	542,10	2 1/2"	CC530134AD
14	583,80	2 1/2"	CC530144AD
15	625,50	2 1/2"	CC530154AD
16	667,20	2 1/2"	CC530164AD
17	708,90	3"	CC530174AD
18	750,60	3"	CC530184AD
19	792,30	3"	CC530194AD
20	834,00	3"	CC530204AD
21	875,70	3"	CC530214AD
22	917,40	3"	CC530224AD
23	959,10	3"	CC530234AD
24	1000,80	3"	CC530244AD
25	1042,50	4"	CC530254AD
26	1084,20	4"	CC530264AD
27	1125,90	4"	CC530274AD
28	1167,60	4"	CC530284AD
29	1209,30	4"	CC530294AD
30	1251,00	4"	CC530304AD

IG-01 200 bar. Centralized Systems

Required elements for centralized

FOR MORE INFORMATION SEE PAGES 124-129

Bracket

Manifold support

U - Bracket

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

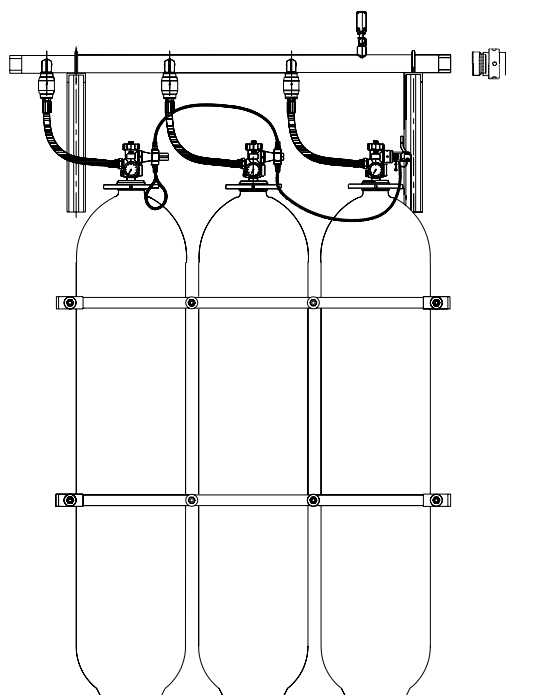
Gooseneck wrench

Dampers

Pneumatic Delay Kit

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve



IG-01 SINGLE ROW banks with 80 l. 200 bar

N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
2	33,40	3/4"	CC520028AR
3	50,10	3/4"	CC520038AR
4	66,80	3/4"	CC520048AR
5	83,50	3/4"	CC520058AR
6	100,20	1 1/4"	CC520068AR
7	116,90	1 1/4"	CC520078AR
8	133,60	1 1/4"	CC520088AR
9	150,30	1 1/4"	CC520098AR
10	167,00	1 1/4"	CC520108AR
11	183,70	1 1/4"	CC520118AR
12	200,40	1 1/4"	CC520128AR
13	217,10	1 1/2"	CC520138AR
14	233,80	1 1/2"	CC520148AR
15	250,50	1 1/2"	CC520158AR

* Standard height cylinders

IG-01 DOUBLE ROW banks * with 80 l. 200 bar

N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
3	50,10	3/4"	CC520038AD
4	66,80	3/4"	CC520048AD
5	83,50	1 1/4"	CC520058AD
6	100,20	1 1/4"	CC520068AD
7	116,90	1 1/4"	CC520078AD
8	133,60	1 1/4"	CC520088AD
9	150,30	1 1/4"	CC520098AD
10	167,00	1 1/4"	CC520108AD
11	183,70	1 1/4"	CC520118AD
12	200,40	1 1/4"	CC520128AD
13	217,10	1 1/2"	CC520138AD
14	233,80	1 1/2"	CC520148AD
15	250,50	1 1/2"	CC520158AD
16	267,20	1 1/2"	CC520168AD
17	283,90	2"	CC520178AD
18	300,60	2"	CC520188AD
19	317,30	2"	CC520198AD
20	334,00	2"	CC520208AD
21	350,70	2"	CC520218AD
22	367,40	2"	CC520228AD
23	384,10	2"	CC520238AD
24	400,80	2"	CC520248AD
25	417,50	2"	CC520258AD
26	434,20	2"	CC520268AD
27	450,90	2"	CC520278AD
28	467,60	2"	CC520288AD
29	484,30	2 1/2"	CC520298AD
30	501,00	2 1/2"	CC520308AD

* Standard height cylinders

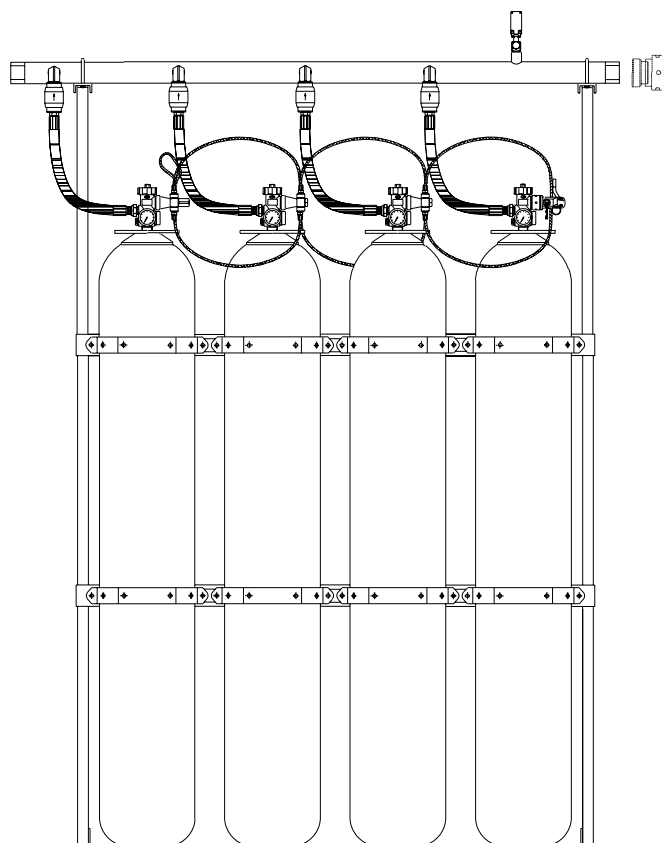
IG-01 200 bar. Centralized Systems

IG-01 SINGLE ROW banks with 140 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
2	58,40	3/4"	CC520024AR
3	87,60	3/4"	CC520034AR
4	116,80	1 1/4"	CC520044AR
5	146,80	1 1/4"	CC520054AR
6	175,20	1 1/4"	CC520064AR
7	204,40	1 1/4"	CC520074AR
8	233,60	1 1/2"	CC520084AR
9	262,80	1 1/2"	CC520094AR
10	292,00	1 1/2"	CC520104AR
11	321,20	2"	CC520114AR
12	350,40	2"	CC520124AR
13	379,60	2"	CC520134AR
14	408,80	2"	CC520144AR
15	438,00	2"	CC520154AR

IG-01 DOUBLE ROW banks with 140 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
3	87,60	1 1/4"	CC520034AD
4	116,80	1 1/4"	CC520044AD
5	146,80	1 1/4"	CC520054AD
6	175,20	1 1/4"	CC520064AD
7	204,40	1 1/2"	CC520074AD
8	233,60	1 1/2"	CC520084AD
9	262,80	1 1/2"	CC520094AD
10	292,00	1 1/2"	CC520104AD
11	321,20	2"	CC520114AD
12	350,40	2"	CC520124AD
13	379,60	2"	CC520134AD
14	408,80	2"	CC520144AD
15	438,00	2"	CC520154AD
16	467,20	2"	CC520164AD
17	496,40	2 1/2"	CC520174AD
18	525,60	2 1/2"	CC520184AD
19	554,80	2 1/2"	CC520194AD
20	584,00	2 1/2"	CC520204AD
21	613,20	2 1/2"	CC520214AD
22	642,40	2 1/2"	CC520224AD
23	671,60	2 1/2"	CC520234AD
24	700,80	2 1/2"	CC520244AD
25	730,00	2 1/2"	CC520254AD
26	759,20	2 1/2"	CC520264AD
27	788,40	3"	CC520274AD
28	817,60	3"	CC520284AD
29	846,80	3"	CC520294AD
30	876,00	3"	CC520304AD

**Notes to consider:**

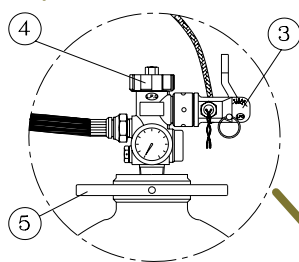
In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact LPG if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

IG-55 300 bar. Centralized Systems

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories [see page 113]
- Diaphragm and embellishment plate [see page 114]
- Nozzles [see page 114]
- Brackets [see page 124]

List of materials included in the price

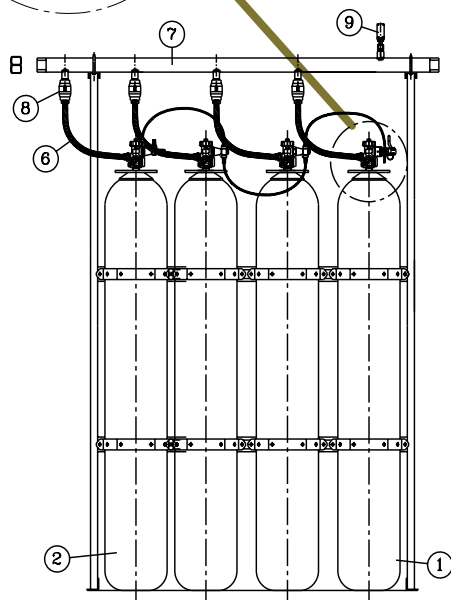


- | | | | |
|---|------------------------------------|----|-------------------------------------|
| 1 | Cylinder master | 6 | Hose |
| 2 | Slave cylinder | 7 | Manifold |
| 3 | Pneumatic manual lever with metron | 8 | Retention valve |
| 4 | LPG valve-128 | 9 | Pressure switch with locking device |
| 5 | Flange | 10 | Drilled restrictor |

Set of labels and protector cap for cylinders are included.

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



IG-55 SINGLE ROW banks with 80 l. 300 bar

N. CYL. RECOM. FILL. (m³)* Ø MAN.	P. NUMBER
2 44,60 3/4"	CC53120002
3 66,90 3/4"	CC53120003
4 89,20 1 1/4"	CC53120004
5 111,50 1 1/4"	CC53120005
6 133,80 1 1/4"	CC53120006
7 156,10 1 1/4"	CC53120007
8 178,40 1 1/4"	CC53120008
9 200,70 1 1/4"	CC53120009
10 223,00 1 1/4"	CC53120010
11 245,30 1 1/4"	CC53120011
12 267,60 1 1/4"	CC53120012
13 289,90 1 1/2"	CC53120013
14 312,20 1 1/2"	CC53120014
15 334,50 1 1/2"	CC53120015

IG-55 DOUBLE ROW banks with 80 l. 300 bar

N. CYL. RECOM. FILL. (m³)* Ø MAN.	P. NUMBER
3 66,90 1 1/4"	CC53120103
4 89,20 1 1/4"	CC53120104
5 111,50 1 1/4"	CC53120105
6 133,80 1 1/4"	CC53120106
7 156,10 1 1/4"	CC53120107
8 178,40 1 1/4"	CC53120108
9 200,70 1 1/4"	CC53120109
10 223,00 1 1/4"	CC53120110
11 245,30 1 1/4"	CC53120111
12 267,60 1 1/4"	CC53120112
13 289,90 1 1/2"	CC53120113
14 312,20 1 1/2"	CC53120114
15 334,50 1 1/2"	CC53120115
16 356,80 1 1/2"	CC53120116
17 379,10 2"	CC53120117
18 401,40 2"	CC53120118
19 423,70 2"	CC53120119
20 446,00 2"	CC53120120
21 468,30 2 1/2"	CC53120121
22 490,60 2 1/2"	CC53120122
23 512,90 2 1/2"	CC53120123
24 535,20 2 1/2"	CC53120124
25 557,50 2 1/2"	CC53120125
26 579,80 2 1/2"	CC53120126
27 602,10 2 1/2"	CC53120127
28 624,40 2 1/2"	CC53120128
29 646,70 2 1/2"	CC53120129
30 669,00 2 1/2"	CC53120130

IG-55 300 bar. Centralized Systems

IG-55 SINGLE ROW banks with 140 l. 300 bar			
N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
2	78,20	1 1/4"	CC56120002
3	117,30	1 1/4"	CC56120003
4	156,40	1 1/4"	CC56120004
5	195,50	1 1/4"	CC56120005
6	234,60	1 1/4"	CC56120006
7	273,70	1 1/4"	CC56120007
8	312,80	1 1/2"	CC56120008
9	351,90	1 1/2"	CC56120009
10	391,00	2"	CC56120010
11	430,10	2"	CC56120011
12	469,20	2"	CC56120012
13	508,30	2 1/2"	CC56120013
14	547,40	2 1/2"	CC56120014
15	586,50	2 1/2"	CC56120015

Required elements for centralized systems

FOR MORE INFO, PAGES 124-129

Bracket

Manifold support

U - Bracket

Optional components for centralized systems

FOR MORE INFO, SEE PAGE 113

Gooseneck wrench for the manual triple release

Dampers

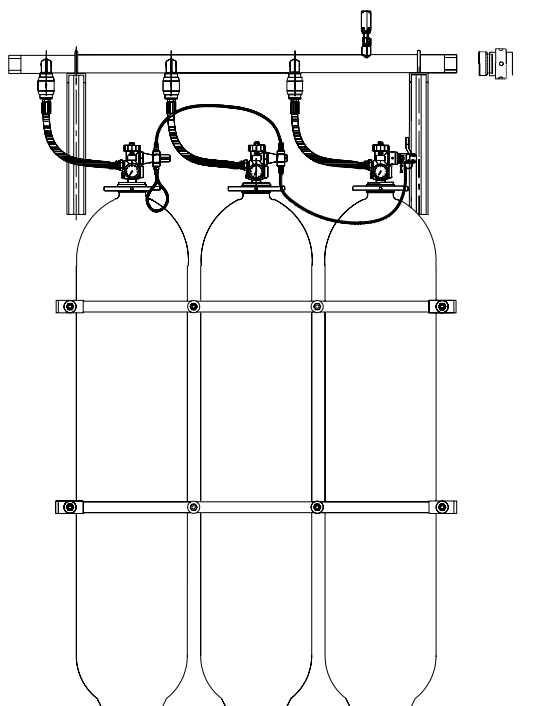
Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-55 DOUBLE ROW banks with 140 l. 300 bar			
N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
3	117,30	1 1/4"	CC56120103
4	156,40	1 1/4"	CC56120104
5	195,50	1 1/4"	CC56120105
6	234,60	1 1/4"	CC56120106
7	273,70	1 1/4"	CC56120107
8	312,80	1 1/2"	CC56120108
9	351,90	2"	CC56120109
10	391,00	2"	CC56120110
11	430,10	2"	CC56120111
12	469,20	2"	CC56120112
13	508,30	2 1/2"	CC56120113
14	547,40	2 1/2"	CC56120114
15	586,50	2 1/2"	CC56120115
16	625,60	2 1/2"	CC56120116
17	664,70	3"	CC56120117
18	703,80	3"	CC56120118
19	742,90	3"	CC56120119
20	782,00	3"	CC56120120
21	821,10	3"	CC56120121
22	860,20	3"	CC56120122
23	899,30	3"	CC56120123
24	938,40	3"	CC56120124
25	977,50	4"	CC56120125
26	1016,60	4"	CC56120126
27	1055,70	4"	CC56120127
28	1094,80	4"	CC56120128
29	1133,90	4"	CC56120129
30	1173,00	4"	CC56120130

IG-55 200 bar. Centralized Systems



Required elements for centralized systems

MORE INFORMATION ON PAGES 124-129

Bracket

Manifold support

U - bracket

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGES 113

Gooseneck wrench for the manual triple release

Dampers

Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-55 SINGLE ROW banks* with 80 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
2	31,80	3/4"	CC53119002
3	47,70	3/4"	CC53119003
4	63,60	3/4"	CC53119004
5	79,50	3/4"	CC53119005
6	95,40	1 1/4"	CC53119006
7	111,30	1 1/4"	CC53119007
8	127,20	1 1/4"	CC53119008
9	143,10	1 1/4"	CC53119009
10	159,00	1 1/4"	CC53119010
11	174,90	1 1/4"	CC53119011
12	190,80	1 1/4"	CC53119012
13	206,70	1 1/2"	CC53119013
14	222,60	1 1/2"	CC53119014
15	238,50	1 1/2"	CC53119015

* Standard height cylinders

IG-55 DOUBLE ROW banks* with 80 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
3	47,70	3/4"	CC53119103
4	63,60	3/4"	CC53119104
5	79,50	1 1/4"	CC53119105
6	95,40	1 1/4"	CC53119106
7	111,30	1 1/4"	CC53119107
8	127,20	1 1/4"	CC53119108
9	143,10	1 1/4"	CC53119109
10	159,00	1 1/4"	CC53119110
11	174,90	1 1/4"	CC53119111
12	190,80	1 1/4"	CC53119112
13	206,70	1 1/2"	CC53119113
14	222,60	1 1/2"	CC53119114
15	238,50	1 1/2"	CC53119115
16	254,40	1 1/2"	CC53119116
17	270,30	2"	CC53119117
18	286,20	2"	CC53119118
19	302,10	2"	CC53119119
20	318,00	2"	CC53119120
21	333,90	2"	CC53119121
22	349,80	2"	CC53119122
23	365,70	2"	CC53119123
24	381,60	2"	CC53119124
25	397,50	2"	CC53119125
26	413,40	2"	CC53119126
27	429,30	2"	CC53119127
28	445,20	2"	CC53119128
29	461,10	2 1/2"	CC53119129
30	477,00	2 1/2"	CC53119130

* Standard height cylinders

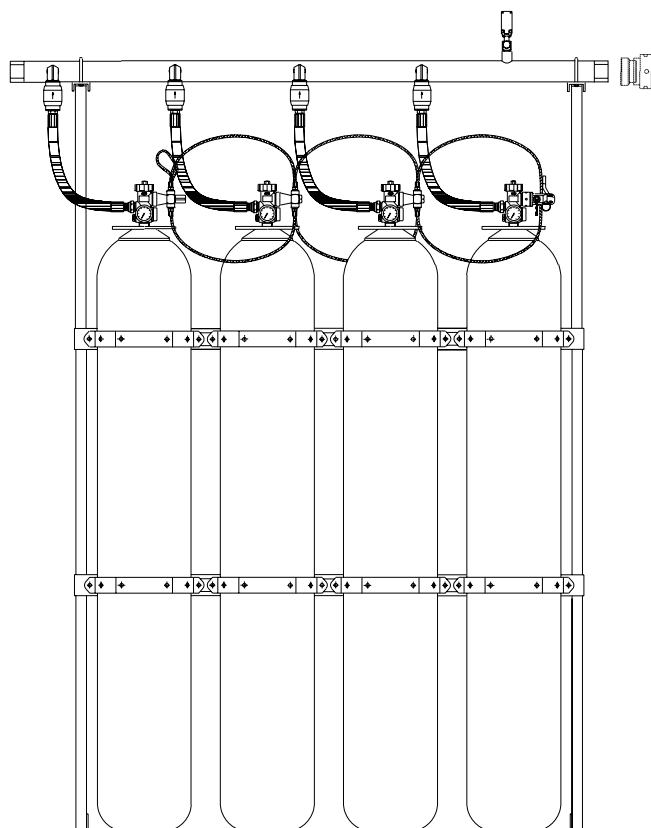
IG-55 200 bar. Centralized Systems

IG-55 SINGLE ROW banks with 140 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
2	55,60	3/4"	CC56119002
3	83,40	3/4"	CC56119003
4	111,20	1 1/4"	CC56119004
5	139,00	1 1/4"	CC56119005
6	166,80	1 1/4"	CC56119006
7	194,60	1 1/4"	CC56119007
8	222,40	1 1/2"	CC56119008
9	250,20	1 1/2"	CC56119009
10	278,00	1 1/2"	CC56119010
11	305,80	2"	CC56119011
12	333,60	2"	CC56119012
13	361,40	2"	CC56119013
14	389,20	2"	CC56119014
15	417,00	2"	CC56119015

IG-55 DOUBLE ROW banks with 140 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
3	83,40	1 1/4"	CC56119103
4	111,20	1 1/4"	CC56119104
5	139,00	1 1/4"	CC56119105
6	166,80	1 1/4"	CC56119106
7	194,60	1 1/4"	CC56119107
8	222,40	1 1/2"	CC56119108
9	250,20	1 1/2"	CC56119109
10	278,00	1 1/2"	CC56119110
11	305,80	2"	CC56119111
12	333,60	2"	CC56119112
13	361,40	2"	CC56119113
14	389,20	2"	CC56119114
15	417,00	2"	CC56119115
16	444,80	2"	CC56119116
17	472,60	2 1/2"	CC56119117
18	500,40	2 1/2"	CC56119118
19	528,20	2 1/2"	CC56119119
20	556,00	2 1/2"	CC56119120
21	583,80	2 1/2"	CC56119121
22	611,60	2 1/2"	CC56119122
23	639,40	2 1/2"	CC56119123
24	667,20	2 1/2"	CC56119124
25	695,00	2 1/2"	CC56119125
26	722,80	2 1/2"	CC56119126
27	750,60	3"	CC56119127
28	778,40	3"	CC56119128
29	806,20	3"	CC56119129
30	834,00	3"	CC56119130

**Notes to consider:**

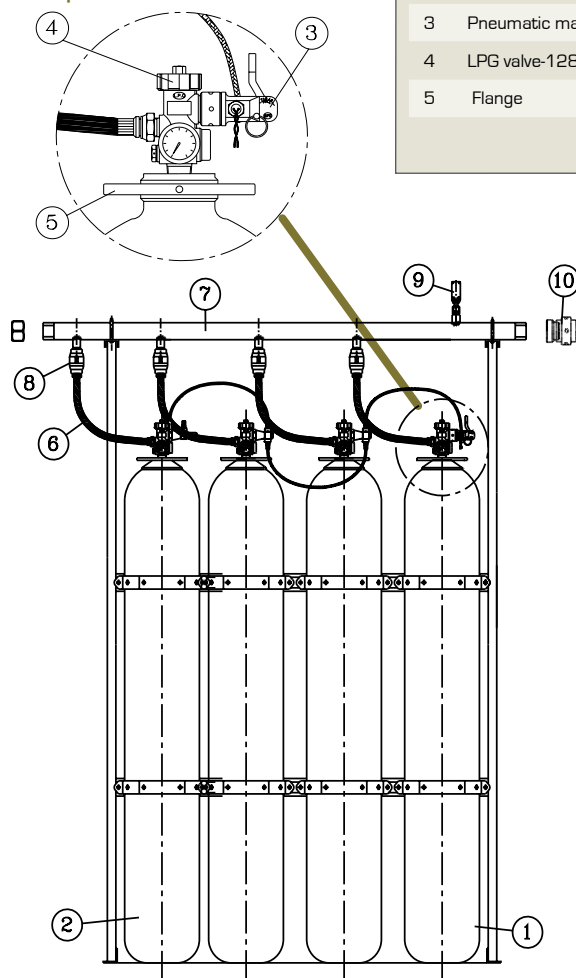
In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact LPG if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

IG-100 300 bar. Centralized Systems

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories (see page 113)
- Diaphragm and embellishment plate (see page 114)
- Nozzles (see page 114)
- Brackets (see page 124)

List of materials included in the price



- | | | | |
|---|------------------------------------|----|-------------------------------------|
| 1 | Cylinder master | 6 | Hose |
| 2 | Slave cylinder | 7 | Manifold |
| 3 | Pneumatic manual lever with metron | 8 | Retention valve |
| 4 | LPG valve-128 | 9 | Pressure switch with locking device |
| 5 | Flange | 10 | Drilled restrictor |

Set of labels and protector cap for cylinders are included.

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

IG-100 SINGLE ROW banks with 80 l. 300 bar

N. CYL.	FILLING (m³)	Ø MAN.	P.NUMBER
2	42	3/4"	CC53122002
3	63	3/4"	CC53122003
4	84	1 1/4"	CC53122004
5	105	1 1/4"	CC53122005
6	126	1 1/4"	CC53122006
7	147	1 1/4"	CC53122007
8	168	1 1/4"	CC53122008
9	189	1 1/4"	CC53122009
10	210	1 1/4"	CC53122010

IG-100 DOUBLE ROW banks with 80 l. 300 bar

N. CYL.	FILLING (m³)	Ø MAN.	P.NUMBER
3	63	1 1/4"	CC53122103
4	84	1 1/4"	CC53122104
5	105	1 1/4"	CC53122105
6	126	1 1/4"	CC53122106
7	147	1 1/4"	CC53122107
8	168	1 1/4"	CC53122108
9	189	1 1/4"	CC53122109
10	210	1 1/4"	CC53122110
11	231	1 1/4"	CC53122111
12	252	1 1/4"	CC53122112
13	273	1 1/2"	CC53122113
14	294	1 1/2"	CC53122114
15	315	1 1/2"	CC53122115
16	336	1 1/2"	CC53122116
17	357	2"	CC53122117
18	378	2"	CC53122118
19	399	2"	CC53122119
20	420	2"	CC53122120

IG-100 300 bar. Centralized Systems

IG-100 SINGLE ROW banks with 140 l. 300 bar			
N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
2	73,40	1 1/4"	CC56122002
3	110,10	1 1/4"	CC56122003
4	146,80	1 1/4"	CC56122004
5	183,50	1 1/4"	CC56122005
6	220,20	1 1/4"	CC56122006
7	256,90	1 1/4"	CC56122007
8	293,60	1 1/2"	CC56122008
9	330,30	1 1/2"	CC56122009
10	367,00	2"	CC56122010

IG-100 DOUBLE ROW banks with 140 l. 300 bar			
N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
3	125,10	1 1/4"	CC56122103
4	166,80	1 1/4"	CC56122104
5	208,50	1 1/4"	CC56122105
6	250,20	1 1/4"	CC56122106
7	291,90	1 1/4"	CC56122107
8	333,60	1 1/2"	CC56122108
9	375,30	2"	CC56122109
10	417,00	2"	CC56122110
11	458,70	2"	CC56122111
12	500,40	2"	CC56122112
13	542,10	2 1/2"	CC56122113
14	583,80	2 1/2"	CC56122114
15	625,50	2 1/2"	CC56122115
16	667,20	2 1/2"	CC56122116
17	708,90	3"	CC56122117
18	750,60	3"	CC56122118
19	792,30	3"	CC56122119
20	834,00	3"	CC56122120

Required elements for centralized systems

FOR MORE INFO. PAGES 124-129

Bracket

Manifold support

U - Bracket

Optional components for centralized systems

FOR MORE INFO. SEE PAGE 113

Gooseneck wrench for the manual triple release

Dampers

Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-100 200 bar. Centralized Systems

Required elements for centralized systems

FOR MORE INFO. PAGES 124-129

Bracket

Manifold support

U - Bracket

Optional components for centralized systems

FOR MORE INFO. SEE PAGE 113

Gooseneck wrench for the manual triple release

Dampers

Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-100 SINGLE ROW banks * with 80 l. 200 bar

N. CYL.	FILLING (m³)	Ø MAN.	P.NUMBER
2	30,20	3/4"	CC53121002
3	45,30	3/4"	CC53121003
4	60,40	3/4"	CC53121004
5	75,50	3/4"	CC53121005
6	90,60	1 1/4"	CC53121006
7	105,70	1 1/4"	CC53121007
8	120,80	1 1/4"	CC53121008
9	135,90	1 1/4"	CC53121009
10	151,00	1 1/4"	CC53121010

IG-100 DOUBLE ROW banks * with 80 l. 200 bar

N. CYL.	FILLING (m³)	Ø MAN.	P.NUMBER
3	45,30	3/4"	CC53121103
4	60,40	3/4"	CC53121104
5	75,50	1 1/4"	CC53121105
6	90,60	1 1/4"	CC53121106
7	105,70	1 1/4"	CC53121107
8	120,80	1 1/4"	CC53121108
9	135,90	1 1/4"	CC53121109
10	151,00	1 1/4"	CC53121110
11	166,10	1 1/4"	CC53121111
12	181,20	1 1/4"	CC53121112
13	196,30	1 1/2"	CC53121113
14	211,40	1 1/2"	CC53121114
15	226,50	1 1/2"	CC53121115
16	241,60	1 1/2"	CC53121116

IG-100 200 bar. Centralized Systems

IG-100 SINGLE ROW banks with 140 l. 200 bar

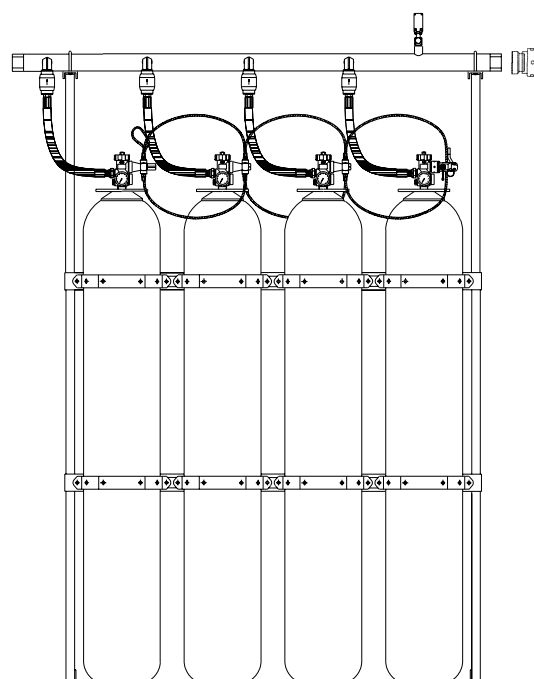
N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
2	52,80	3/4"	CC56121002
3	79,20	3/4"	CC56121003
4	105,60	1 1/4"	CC56121004
5	132,00	1 1/4"	CC56121005
6	158,40	1 1/4"	CC56121006
7	184,80	1 1/4"	CC56121007
8	211,20	1 1/2"	CC56121008
9	237,60	1 1/2"	CC56121009
10	264,00	1 1/2"	CC56121010

IG-100 DOUBLE ROW banks with 140 l. 200 bar

N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
3	87,60	1 1/4"	CC56121103
4	116,80	1 1/4"	CC56121104
5	146,80	1 1/4"	CC56121105
6	175,20	1 1/4"	CC56121106
7	204,40	1 1/2"	CC56121107
8	233,60	1 1/2"	CC56121108
9	262,80	1 1/2"	CC56121109
10	292,00	1 1/2"	CC56121110
11	321,20	2"	CC56121111
12	350,40	2"	CC56121112
13	379,60	2"	CC56121113
14	408,80	2"	CC56121114
15	438,00	2"	CC56121115
16	467,20	2"	CC56121116

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

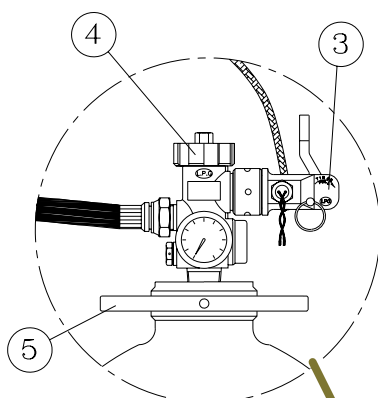


IG-541 300 bar. Centralized Systems

Components for the calculation of a quotation

- Centralized system
- Gas
- Accessories [see page 113]
- Diaphragm and embellishment plate [see page 114]
- Nozzles [see page 114]
- Brackets [see page 124]

List of materials included in the price

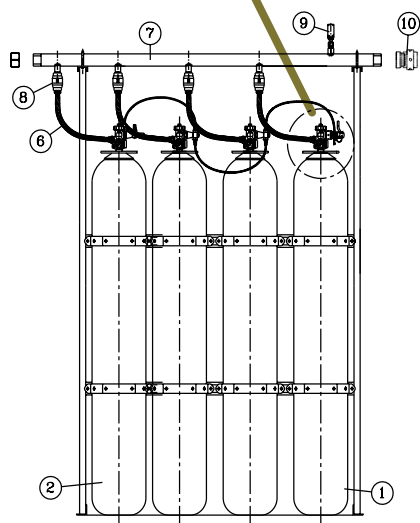


1	Cylinder master	6	Hose
2	Slave cylinder	7	Manifold
3	Pneumatic manual lever with explosor	8	Retention valve
4	LPG valve-128	9	Pressure switch with locking device
5	Flange	10	Drilled restrictor

Set of labels and protector cap for cylinders are included. **Brackets are NOT included.**

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



IG-541 SINGLE ROW banks with 80 l. 300 bar

N. CYL.	FILLING [m³]	Ø MAN.	P.NUMBER
2	46,00	3/4"	CC53130002
3	69,00	3/4"	CC53130003
4	92,00	1 1/4"	CC53130004
5	115,00	1 1/4"	CC53130005
6	138,00	1 1/4"	CC53130006
7	161,00	1 1/4"	CC53130007
8	184,00	1 1/4"	CC53130008
9	207,00	1 1/4"	CC53130009
10	230,00	1 1/4"	CC53130010

IG-541 DOUBLE ROW banks with 80 l. 300 bar

N. CYL.	FILLING [m³]	Ø MAN.	P.NUMBER
3	69,00	1 1/4"	CC53130103
4	92,00	1 1/4"	CC53130104
5	115,00	1 1/4"	CC53130105
6	138,00	1 1/4"	CC53130106
7	161,00	1 1/4"	CC53130107
8	184,00	1 1/4"	CC53130108
9	207,00	1 1/4"	CC53130109
10	230,00	1 1/4"	CC53130110
11	253,00	1 1/4"	CC53130111
12	276,00	1 1/4"	CC53130112
13	299,00	1 1/2"	CC53130113
14	322,00	1 1/2"	CC53130114
15	345,00	1 1/2"	CC53130115
16	368,00	1 1/2"	CC53130116
17	391,00	2"	CC53130117
18	414,00	2"	CC53130118
19	432,00	2"	CC53130119
20	460,00	2"	CC53130120

IG-541 300 bar. Centralized Systems

IG-541 SINGLE ROW banks with 140 l. 300 bar

N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
2	73,40	1 1/4"	CC56130002
3	110,10	1 1/4"	CC56130003
4	146,80	1 1/4"	CC56130004
5	183,50	1 1/4"	CC56130005
6	220,20	1 1/4"	CC56130006
7	256,90	1 1/4"	CC56130007
8	293,60	1 1/2"	CC56130008
9	330,30	1 1/2"	CC56130009
10	367,00	2"	CC56130010

IG-541 DOUBLE ROW banks with 140 l. 300 bar

N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
3	125,10	1 1/4"	CC56130103
4	166,80	1 1/4"	CC56130104
5	208,50	1 1/4"	CC56130105
6	250,20	1 1/4"	CC56130106
7	291,90	1 1/4"	CC56130107
8	333,60	1 1/2"	CC56130108
9	375,30	2"	CC56130109
10	417,00	2"	CC56130110
11	458,70	2"	CC56130111
12	500,40	2"	CC56130112
13	542,10	2 1/2"	CC56130113
14	583,80	2 1/2"	CC56130114
15	625,50	2 1/2"	CC56130115
16	667,20	2 1/2"	CC56130116
17	708,90	3"	CC56130117
18	750,60	3"	CC56130118
19	792,30	3"	CC56130119
20	834,00	3"	CC56130120

Required elements for centralized systems

FOR MORE INFO. PAGES 124-129

Bracket

Manifold support

U - Bracket

Optional components for centralized systems

FOR MORE INFO. SEE PAGE 113

Gooseneck wrench for the manual triple release

Dampers

Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-541

IG-541 200 bar. Centralized Systems

Required elements for centralized systems

FOR MORE INFO. AND PRICES PAGES 124-129

Bracket

Manifold support

U - Bracket

IG-541 SINGLE ROW banks * with 80 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
2	33,00	3/4"	CC53131002
3	50,00	3/4"	CC53131003
4	66,00	3/4"	CC53131004
5	83,00	3/4"	CC53131005
6	100,00	1 1/4"	CC53131006
7	116,00	1 1/4"	CC53131007
8	133,00	1 1/4"	CC53131008
9	149,00	1 1/4"	CC53131009
10	166,00	1 1/4"	CC53131010

Optional components for centralized systems

FOR MORE INFO. SEE PAGE 113

Gooseneck wrench for the manual triple release

Dampers

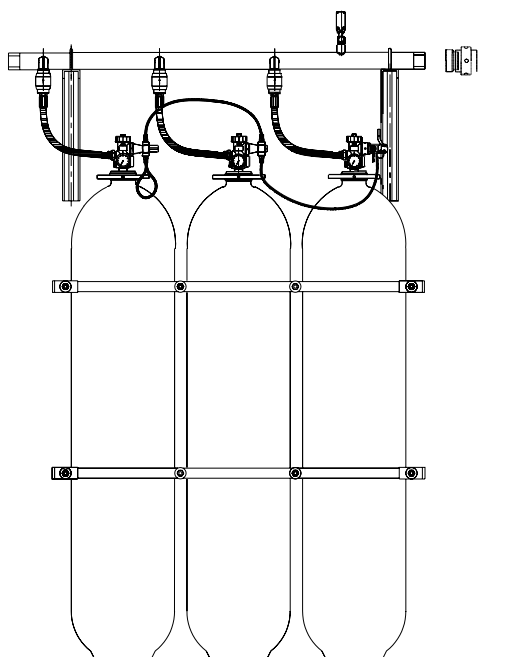
Pneumatic Delay Kit (until 8 cylinders)

Pneumatic Delay Kit (more than 8 cylinders)

CUT-OFF micro switch valve

IG-541 DOUBLE ROW banks * with 80 l. 200 bar

N. CYL.	RECOM. FILL. (m³)*	Ø MAN.	P. NUMBER
3	50,00	3/4"	CC53131103
4	67,00	3/4"	CC53131104
5	83,00	1 1/4"	CC53131105
6	100,00	1 1/4"	CC53131106
7	116,00	1 1/4"	CC53131107
8	133,00	1 1/4"	CC53131108
9	150,00	1 1/4"	CC53131109
10	166,00	1 1/4"	CC53131110
11	183,00	1 1/4"	CC53131111
12	199,00	1 1/4"	CC53131112
13	216,00	1 1/2"	CC53131113
14	232,00	1 1/2"	CC53131114
15	249,00	1 1/2"	CC53131115
16	266,00	1 1/2"	CC53131116



IG-541 200 bar. Centralized Systems

IG-541 SINGLE ROW banks with 140 l. 200 bar

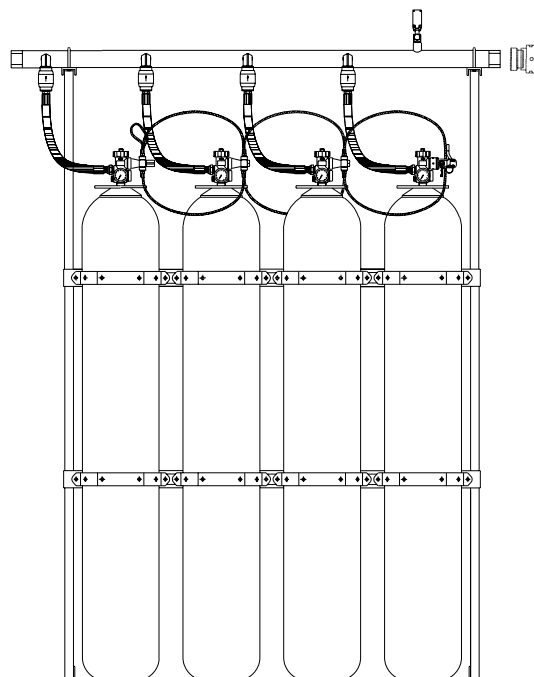
N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
2	52,80	3/4"	CC56131002
3	79,20	3/4"	CC56131003
4	105,60	1 1/4"	CC56131004
5	132,00	1 1/4"	CC56131005
6	158,40	1 1/4"	CC56131006
7	184,80	1 1/4"	CC56131007
8	211,20	1 1/2"	CC56131008
9	237,60	1 1/2"	CC56131009
10	264,00	1 1/2"	CC56131010

IG-541 DOUBLE ROW banks with 140 l. 200 bar

N. CYL.	RECOM. FILL. (m³) *	Ø MAN.	P. NUMBER
3	87,60	1 1/4"	CC56131103
4	116,80	1 1/4"	CC56131104
5	146,80	1 1/4"	CC56131105
6	175,20	1 1/4"	CC56131106
7	204,40	1 1/2"	CC56131107
8	233,60	1 1/2"	CC56131108
9	262,80	1 1/2"	CC56131109
10	292,00	1 1/2"	CC56131110
11	321,20	2"	CC56131111
12	350,40	2"	CC56131112
13	379,60	2"	CC56131113
14	408,80	2"	CC56131114
15	438,00	2"	CC56131115
16	467,20	2"	CC56131116

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



iFlow® Constant flow technology

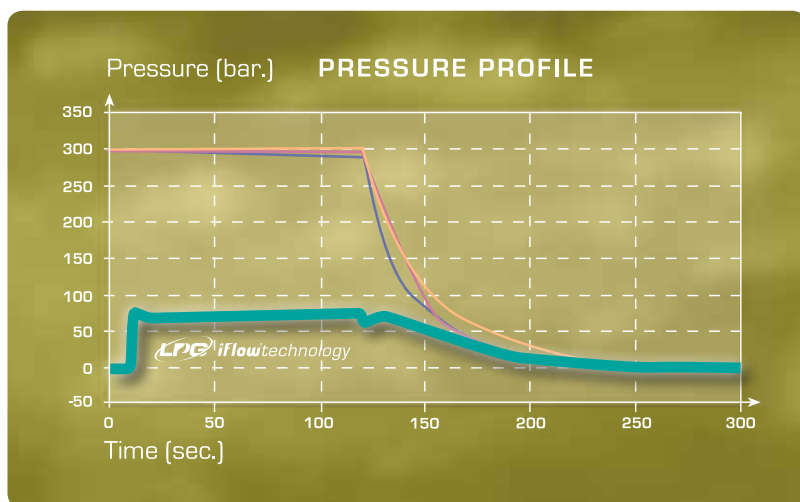
Inert systems have existed for decades and have proven to be **100% reliable**. They are present in the natural air and are the most environmentally friendly systems for extinguishing fire.

Most inert systems are discharged directly from the cylinder at a filling pressure of 200 or 300 bars. This leads to an increase of pressure in the rooms. The placement of vent panels will offset the pressure but at a higher cost.

Our new **iFlow®** system is a technological advance with respect to other systems as not only do they **limit the overpressure** (the main obstacle of these systems) but also they considerably improve the use of space.

Reducing and controlling the release at a lower flow than 60 bar means cost savings and reducing the level of turbulences while discharging.

Inert systems are the most natural gas extinguishing option.



iFlow® systems eliminate the peak pressure point to achieve a more balanced flow along the actual release time. This patented technological innovation is based on three main elements:

- **iFlow® valve**: Regulates the flow release by eliminating the peak pressure (**patented**)
- The **iFlow® check valve**: Connects elements of the system and ensures a safety role by preventing leakage (**patented**)
- The **Matrix design concept**: Offers design flexibility and adaptation to complex architectural spaces (**patented**)

iFlow® Eco - Technology

What could be greener than taking air, filtering it, bottling it and release it in a room space? Why conforming with a vaguely tested low GWP that may lead to future environmental problems? iFlow® Technology with LPG Inert® ensures a 100% safe and environmentally friendly system.

1. Green Gas. It is an inert gas naturally present in air. After release, it returns to its birthplace.

2. Environmentally friendly. Inert gases have **zero GWP (Global Warming Potential)** and **zero ODP (Ozone Depletion Power)**.

3. It is safe for people. It is ideal for busy areas due to its not harmful effects. When released, an excellent visibility remains.

4. It does not generate decomposition products.

5. It does not react with common metals as it is a chemically inert agent and thermally stable. It does not require cleaning after use.

6. Excellent visibility while release.



iFlow® Constant flow technology

MAIN ADVANTAGES:

1. Reduced Installation cost:

- Piping lower pressure
- Minimal venting area
- Less manifolds required

2. Reduced maintenance cost

- Minimal assembly and disassembly work
- Less refilling cost

3. Less storage space:

- Matrix Design system adapting better to architectural needs

- LPG is the only company that has reduced 80 l. cylinders height for smaller spaces

4. Adapts better to any risk:

- 4 types of gas with different air density
- Excellent extinguishing holding time response
- Flexible Matrix design adapting better to architectural needs
- Different type of chassis adapting to customer needs.

5. Real-live test checking: iFlow® valve

- iFlow® valve allows a functional test without discharge
- Inert gas is the less costly refilling gas so it is feasible to perform real-life test at low cost

6. 100% Eco-friendly:

- It's a unique 100% Environmental non-impact extinguishing solution

7. No reactivity with metals or other elements. No cleaning up is required after the use

iFlow® valve: The safest valve in the market

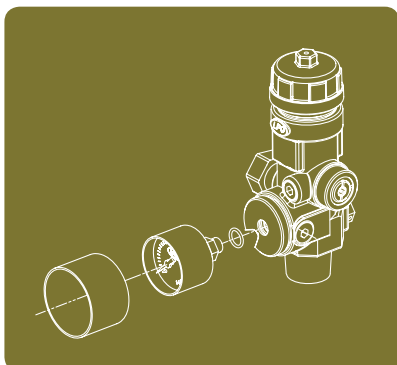


The **iFlow®** valve with the ongoing flow technology monitors the flow release to keep a constant flow and a pressure of 60 bar. In this way, we reduce the amount of combustion products, we extinguish even faster and we prevent fire from growing.

Moreover, we comply with the current applicable law based on 95% release of the extinguishing agent in 60 seconds.



We can say that it is the safest valve in the market worldwide thanks to its newly incorporated safe devices:



- **Depressurization screw** To ease maintenance works with the cylinder under pressure and with the right tools, the valve allows for the extraction of each element of control and discharge (all release devices, manometer/gauge and pressure switch) with no relevant waste of extinguishing agent..



- The manometer has a **screw plug** prevents from leakage of gas under high pressure in case of breakage of the manometer
- It has a **safety disk** to avoid over temperature pressure
- In case of leakage it has **special relief devices** that prevents from accidental releases.

iFlow® Constant flow technology

Unique horizontal non return valve iFlow®.

The cylinders of the **iFlow®** systems feature a horizontal check valve (patented) inserted between the release hose and the manifold

pipe. These devices prevent the return of gas from the manifold pipe to the cylinders.

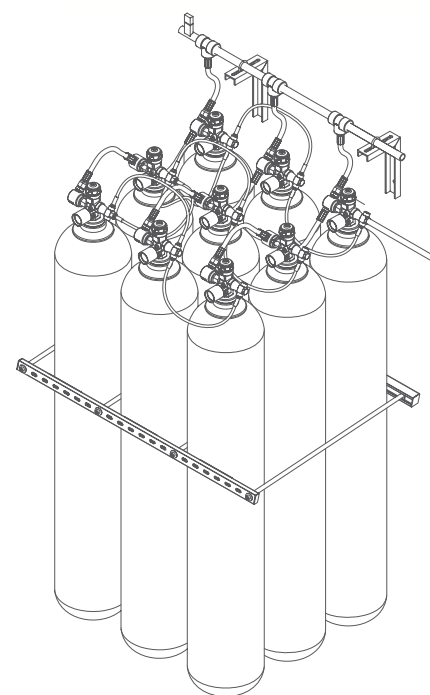
The horizontal non return **iFlow®** valves have double function:

- **As a connection element:** allows connection with other cylinders and reduce length and manifold's thickness.
- **As a security element:** avoids gas return from the manifold towards the cylinders, avoids leakage and eases maintenance and installation.

One of the main advantages of the iFlow® check valve is its variability in position, contrary to the standard valve which can only be placed vertically. Furthermore, not only has it been developed with the **latest technology** but also it has been made from leading materials, not previously used.

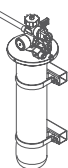


i Flow® Matrix Design



MAIN ADVANTAGES iFLOW® MATRIX DESIGN

- We can minimize the number of manifolds by offering an ease of maintenance.
- Uses a unique hose model with a smaller diameter and more flexible material.
- Design of a distinctive bracket adapted to the system that helps
- disassemble the minimum amount of bottles, in contrast with traditional systems.
- The horizontal retention valve allows matrix distribution of systems => exclusive connection among bottles.
- Design system that adapts better to architectural need.



LPG's ability for research and technological development has enabled to arrange the bank of cylinders in an **innovative way** which, in turn, solves space problems so far encountered in projects. It is an exclusive feature of **LPG** and currently in the process of obtaining the patent.

We have defined it as the **Matrix design**.

The new design allows new positioning of cylinders in rows and columns joining cylinders with hoses.

Protection of multiple rooms with a single iFlow® system

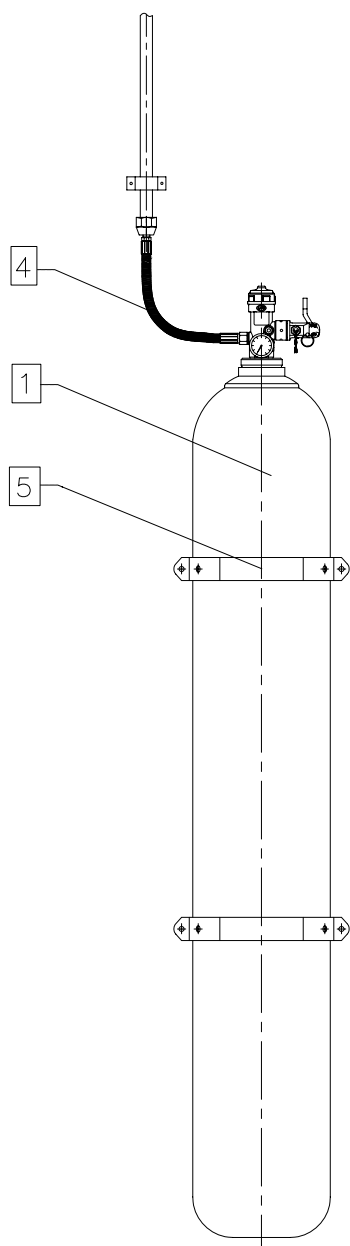
iFlow® Inert gas systems are designed to **protect multiple areas with a single battery** using directional valves to lead gas to the indicated area.

Applications of iFlow® systems

The **iFlow®** systems with inert gas are ideal where an **environmentally friendly** agent is required. They are safe for use in **occupied areas** and excellent visibility is kept during discharge. They are effective for the protection of **archives, museums, libraries** and any other

hazard including valuable or unique property and goods. Likewise, this kind of systems is suitable for the protection of **computer rooms, telephone exchange equipment** and any other electrical installation with potential for a fire hazard.

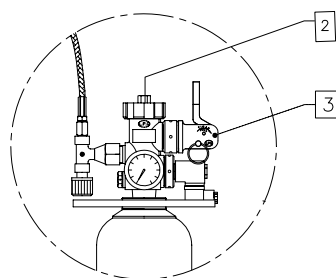
iFlow® Modular Systems



Components for the calculation of a quotation

- Cylinder
- Gas
- Accesories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)
- Pressure gauge

List of materials included in the price



- 1 Cylinder
- 2 iFLOW® valve
- 3 Manual pneumatic-explosor release
- 4 Hose
- 5 Bracket

Set of labels and protector cap for cylinders are included.

Gas

DESCRIPTION	P. NUMBER
IG-01	400ARGFR
IG-55	400IG550
IG-100	400IG100
IG-541	40130000

Optional components for modular systems

FOR MORE INFORMATION SEE PAGE 113

Gooseneck wrench for triple discharge assemblage

INVERTER circuit

Necessary components for modular systems

FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact	42116056
Pressure Gauge (300 bar) with contact CP/C	42116057
Protector for Pressure Gauge (300 bar)	61110006

iFlow® Auxiliar Modular Systems

DESCRIPTION	P. NUMBER
80 l. with iFlow® valve for inerts IG-01 300 bar.	CC73107002
80 l. with iFlow® valve for inerts IG-55 300 bar.	CC73120007
80 l. with iFlow® valve for inerts IG-100 300 bar.	CC73122004
80 l. with iFlow® valve for inerts IG-541 300 bar.	CC73130001

Tubing:

The working pressure is 60 bar at 20 ° C. We recommend using pipe sch 40 ASTM / ANSI B.36.10-XS. Up to 2 "can be threaded with 3000lb forged accessories. ANSI B.16.11, from 2 1 / 2 will be welded with ANSI B.16.9 y B.16.28 accessories

Centralized Systems IG-01 200 bar. with iFlow® Matrix System

Components for the calculation of a quotation

- Battery
- Gas
- Accessories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)
- Brackets (see pages 130)
- Pressure gauge

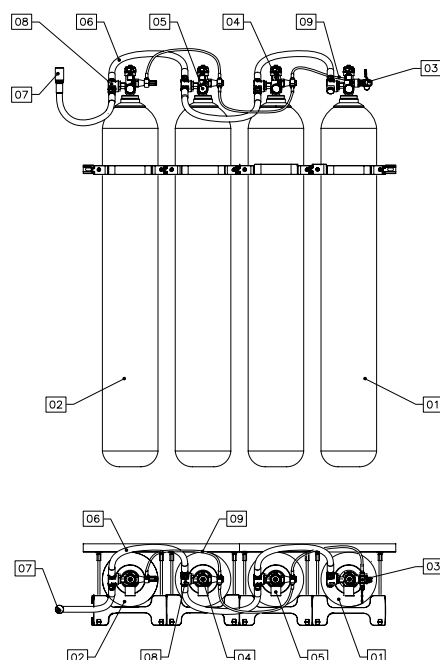
List of materials included in the price

- | | |
|-------------------------------------|---|
| 1 Master Cylinder | 6 Flexible release hose |
| 2 Slave cylinder | 7 Manifold and "U" brackets (only in systems which required it) |
| 3 Manual pneumatic-explosor release | 8 Horizontal non return iFlow® valve |
| 4 LPG iFlow® Valve | 9 Latching (discharge) pressure switch |
| 5 Pressure gauge | |

Set of labels and protector cap for cylinders are included. **Brackets are not included.**

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact LPG if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



IG-01 SINGLE ROW banks with 80 l. 200 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	33.40	NOT REQUIRED	CC53106022
3	50.10	NOT REQUIRED	CC53106023
4	66.80	NOT REQUIRED	CC53106024

IG-01 DOUBLE ROW banks with 80 l. 200 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	50.10	NOT REQUIRED	CC53106108
4	66.80	NOT REQUIRED	CC53106109
5	83.50	NOT REQUIRED	CC53106110
6	100.20	NOT REQUIRED	CC53106111
7	116.90	NOT REQUIRED	CC53106112
8	133.60	NOT REQUIRED	CC53106113

Centralized Systems IG-01 200 bar. with iFlow® Matrix System

IG-01 TRIPLE ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	150.30	2"	CC53106400
10	167.00	2"	CC53106401
11	183.70	2"	CC53106402
12	200.40	2"	CC53106403
13	217.10	2"	CC53106404
14	233.80	2"	CC53106405
15	250.50	2"	CC53106406
16	267.20	2"	CC53106407
17	283.90	2"	CC53106408
18	300.60	2"	CC53106409

IG-01 FOUR ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
12	200.40	2"	CC53106500
13	217.10	2"	CC53106501
14	233.80	2"	CC53106502
15	250.50	2"	CC53106503
16	267.20	2"	CC53106504
17	283.90	2"	CC53106505
18	300.60	2"	CC53106506
19	317.30	2"	CC53106507
20	334.00	2"	CC53106508
21	350.70	2"	CC53106509
22	367.40	3"	CC53106510
23	384.10	3"	CC53106511
24	400.80	3"	CC53106512

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Gooseneck wrench for the manual triple release

Overpressure dampers

Pneumatic delay iFlow® kit (until 8 cylinders)

Pneumatic delay iFlow® kit (+ more than 8 cylinders)

Cut-off valve

Necessary components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact 42116056

Pressure Gauge (300 bar) with contact CP/C 42116057

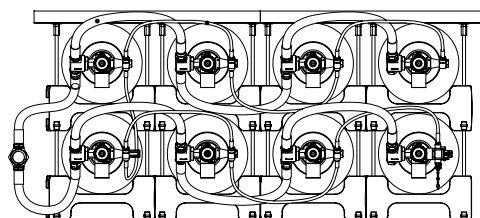
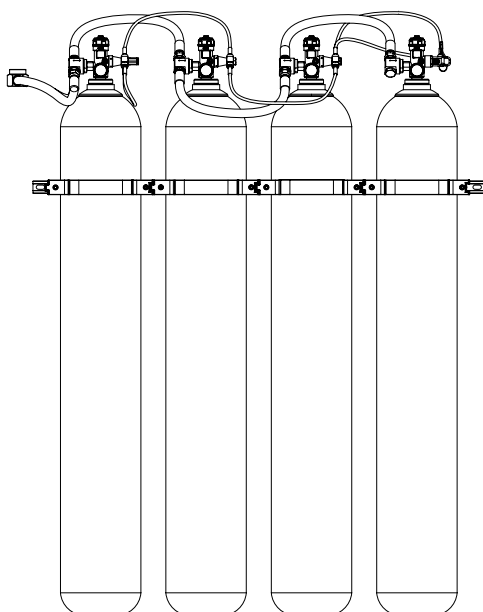
Protector for Pressure Gauge (300 bar) 61110006

Centralized Systems **IG-01 300 bar.** with *iFlow® Matrix System*

IG-01 SINGLE ROW banks with 80 l. 300 bar <i>iFlow® Matrix System</i>			
NºCYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	47,60	NOT REQUIRED	CC53107027
3	71,40	NOT REQUIRED	CC53107028
4	95,25	NOT REQUIRED	CC53107029

IG-01 DOUBLE ROW banks with 80 l. 300 bar <i>iFlow® Matrix System</i>			
NºCYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	71,40	NOT REQUIRED	CC53107128
4	95,25	NOT REQUIRED	CC53107129
5	119,00	NOT REQUIRED	CC53107030
6	142,80	NOT REQUIRED	CC53107031
7	166,60	NOT REQUIRED	CC53107032
8	190,40	NOT REQUIRED	CC53107033

Example DOUBLE ROW *iFlow® Matrix System*



Centralized Systems **IG-01 300 bar.** with *iFlow® Matrix System*

IG-01 TRIPLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	214,20	2"	CC53107400
10	238,00	2"	CC53107401
11	261,00	2"	CC53107402
12	285,60	2"	CC53107403
13	309,40	2"	CC53107404
14	333,20	2"	CC53107405
15	357,00	2"	CC53107406
16	380,80	2"	CC53107407
17	404,60	2"	CC53107408
18	428,40	2"	CC53107409

IG-01 FOUR ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
8	190,40	2"	CC53107513
12	285,60	2"	CC53107500
13	309,40	2"	CC53107501
14	333,20	2"	CC53107502
15	357,00	2"	CC53107503
16	380,80	2"	CC53107504
17	404,60	2"	CC53107505
18	428,40	2"	CC53107506
19	452,20	2"	CC53107507
20	476,00	2"	CC53107508
21	499,80	2"	CC53107509
22	523,60	3"	CC53107510
23	547,40	3"	CC53107511
24	571,20	3"	CC53107512

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Gooseneck wrench for the manual triple release

Overpressure dampers

Pneumatic delay iFlow® kit (until 8 cylinders)

Pneumatic delay iFlow® kit (+ than 8 cylinders)

Cut-off valve

Necessary components for centralized systems

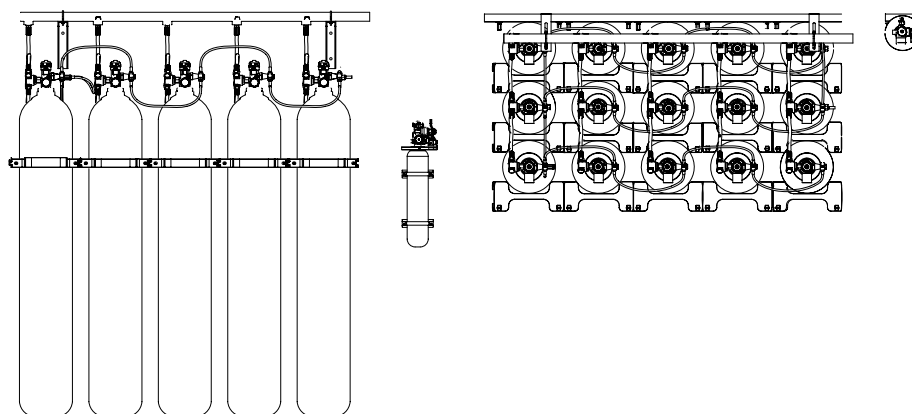
FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact 42116056

Pressure Gauge (300 bar) with contact CP/C 42116057

Protector for Pressure Gauge (300 bar) 61110006

Example TRIPLE ROW iFlow® Matrix System

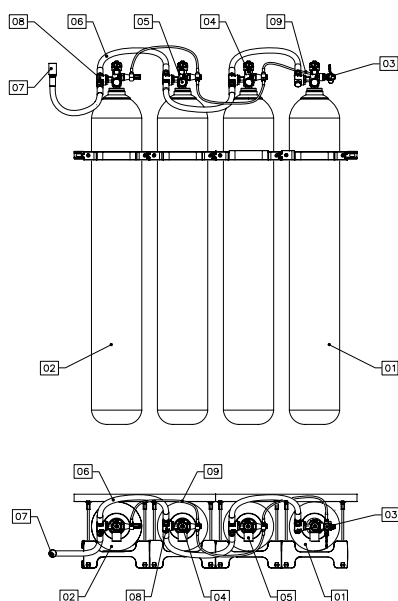


Centralized Systems **IG-55 200 bar.** with **iFlow® Matrix System**

Components for the calculation of
a quotation

- Battery
- Gas
- Accessories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)
- Brackets (see page 130)
- Pressure gauge

List of materials included in the price



1	Master Cylinder	6	Flexible release hose
2	Slave cylinder	7	Manifold and "U" brackets (only in systems which required it)
3	Manual pneumatic-explosor release	8	Horizontal non return iFlow® valve
4	LPG iFlow® Valve	9	Latching (discharge) pressure switch
5	Pressure gauge		

Set of labels and protector cap for cylinders are included.
Brackets are not included.

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.

IG-55 SINGLE ROW banks with 80 l. 200 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	31.80	NOT REQUIRED	CC53119037
3	47.70	NOT REQUIRED	CC53119038
4	63.60	NOT REQUIRED	CC53119039

IG-55 DOUBLE ROW banks with 80 l. 200 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	47.70	NOT REQUIRED	CC53119151
4	63.60	NOT REQUIRED	CC53119152
5	79.50	NOT REQUIRED	CC53119153
6	95.40	NOT REQUIRED	CC53119154
7	111.30	NOT REQUIRED	CC53119155
8	127.20	NOT REQUIRED	CC53119156

Centralized Systems **IG-55 200 bar** with *iFlow® Matrix System*

IG-55 TRIPLE ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	143.10	2"	CC53119400
10	159.00	2"	CC53119401
11	174.90	2"	CC53119402
12	190.80	2"	CC53119403
13	206.70	2"	CC53119404
14	222.60	2"	CC53119405
15	238.50	2"	CC53119406
16	254.40	2"	CC53119407
17	270.30	2"	CC53119408
18	286.20	2"	CC53119409

IG-55 FOUR ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
12	190.80	2"	CC53119500
13	206.70	2"	CC53119501
14	222.60	2"	CC53119502
15	238.50	2"	CC53119503
16	254.40	2"	CC53119504
17	270.30	2"	CC53119505
18	286.20	2"	CC53119506
19	302.10	2"	CC53119507
20	318.00	2"	CC53119508
21	333.90	2"	CC53119509
22	349.80	3"	CC53119510
23	365.70	3"	CC53119511
24	381.60	3"	CC53119512

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Gooseneck wrench for the manual triple release

Overpressure dampers

Pneumatic delay *iFlow®* kit (until 8 cylinders)

Pneumatic delay *iFlow®* kit (+ than 8 cylinders)

Cut-off valve

Necessary components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact 42116056

Pressure Gauge (300 bar) with contact CP/C 42116057

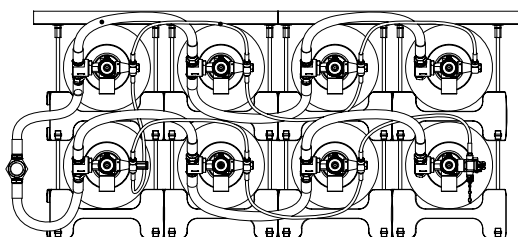
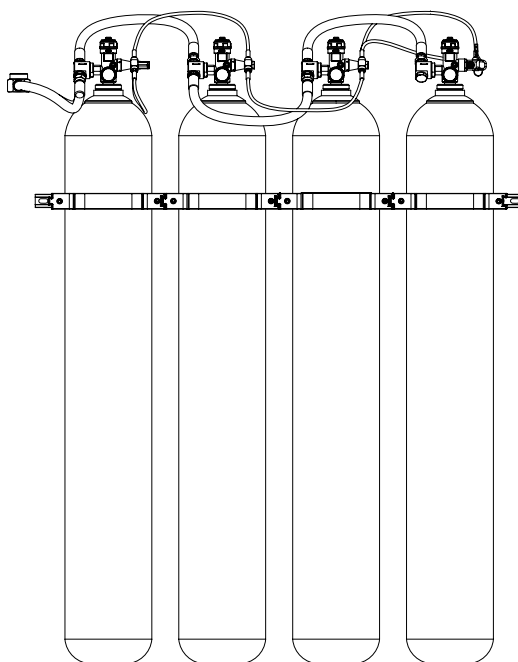
Protector for Pressure Gauge (300 bar) 61110006

Centralized Systems **IG-55 300 bar.** with *iFlow® Matrix System*

IG-55 SINGLE ROW banks with 80 l. 300 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	44,60	NOT REQUIRED	CC53120044
3	66,90	NOT REQUIRED	CC53120045
4	89,20	NOT REQUIRED	CC53120046

IG-55 DOUBLE ROW banks with 80 l. 300 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	66,90	NOT REQUIRED	CC53120164
4	89,20	NOT REQUIRED	CC53120165
5	111,50	NOT REQUIRED	CC53120166
6	133,60	NOT REQUIRED	CC53120167
7	156,10	NOT REQUIRED	CC53120168
8	178,40	NOT REQUIRED	CC53120169

Example DOUBLE ROW
iFlow® Matrix System



Centralized Systems **IG-55 300 bar** with *iFlow® Matrix System*

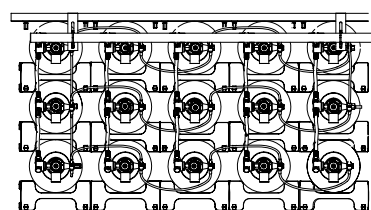
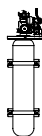
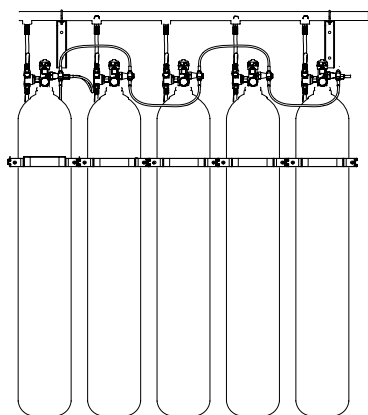
IG-55 TRIPLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	200,70	2"	CC53120400
10	223,00	2"	CC53120401
11	245,30	2"	CC53120402
12	267,60	2"	CC53120403
13	289,90	2"	CC53120404
14	312,20	2"	CC53120405
15	334,50	2"	CC53120406
16	356,80	2"	CC53120407
17	379,10	2"	CC53120408
18	401,40	2"	CC53120409

IG-55 FOUR ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
8	178,40	2"	CC53120513
12	267,60	2"	CC53120500
13	289,90	2"	CC53120501
14	312,20	2"	CC53120502
15	334,50	2"	CC53120503
16	356,80	2"	CC53120504
17	379,10	2"	CC53120505
18	401,40	2"	CC53120506
19	423,70	2"	CC53120507
20	446,00	2"	CC53120508
21	468,30	2"	CC53120509
22	490,60	3"	CC53120510
23	512,90	3"	CC53120511
24	535,20	3"	CC53120512

Example
TRIPLE ROW
iFlow®
Matrix
System



Centralized Systems IG-100 200 bar. with iFlow® Matrix System

Components for the calculation of a quotation

- Battery
- Gas
- Accessories (see page 113)
- Diaphragm and embellishment plate (see page 114)
- Nozzles (ver página 114)
- Brackets (see page 130)
- Pressure gauge

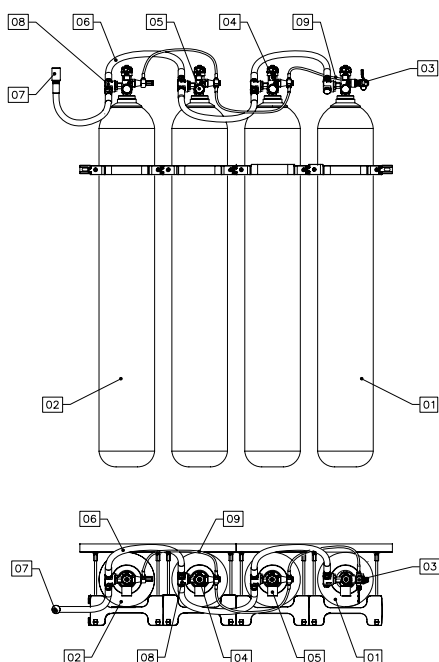
List of materials included in the price

- | | |
|-------------------------------------|---|
| 1 Master Cylinder | 6 Flexible release hose |
| 2 Slave cylinder | 7 Manifold and "U" brackets (only in systems which required it) |
| 3 Manual pneumatic-explosor release | 8 Horizontal non return iFlow® valve |
| 4 LPG iFlow® Valve | 9 Latching (discharge) pressure switch |
| 5 Pressure gauge | |

Set of labels and protector cap for cylinders are included. **Brackets are not included.**

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact **LPG** if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



IG-100 SINGLE ROW banks with 80 l. 200 bar iFlow® Matrix System

NºCYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	30.20	NOT REQUIRED	CC53121022
3	45.30	NOT REQUIRED	CC53121019
4	60.40	NOT REQUIRED	CC53121020

IG-100 DOUBLE ROW banks with 80 l. 200 bar iFlow® Matrix System

NºCYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	45.30	NOT REQUIRED	CC53121147
4	60.40	NOT REQUIRED	CC53121148
5	75.50	NOT REQUIRED	CC53121149
6	90.60	NOT REQUIRED	CC53121150
7	105.70	NOT REQUIRED	CC53121151
8	120.80	NOT REQUIRED	CC53121152

Centralized Systems **IG-100 200 bar.** with **iFlow® Matrix System**

IG-100 TRIPLE ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	135.90	2"	CC53121400
10	151.00	2"	CC53121401
11	166.10	2"	CC53121402
12	181.20	2"	CC53121403
13	196.30	2"	CC53121404
14	211.40	2"	CC53121405
15	226.50	2"	CC53121406
16	241.60	2"	CC53121407
17	256.70	2"	CC53121408
18	271.80	2"	CC53121409

IG-100 FOUR ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
12	181.20	2"	CC53121500
13	196.30	2"	CC53121501
14	211.40	2"	CC53121502
15	226.50	2"	CC53121503
16	241.60	2"	CC53121504
17	256.70	2"	CC53121505
18	271.80	2"	CC53121506
19	286.90	2"	CC53121507
20	302.00	2"	CC53121508
21	317.10	2"	CC53121509
22	332.20	3"	CC53121510
23	347.30	3"	CC53121511
24	362.40	3"	CC53121512

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Gooseneck wrench

Overpressure dampers

Pneumatic delay iFlow® kit

Pneumatic delay iFlow® kit (+ than 8 cylinders)

Cut-off valve

Necessary components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact 42116056

Pressure Gauge (300 bar) with contact CP/C 42116057

Protector for Pressure Gauge (300 bar) 61110006

Centralized Systems **IG-100 300 bar.** with *iFlow® Matrix System*

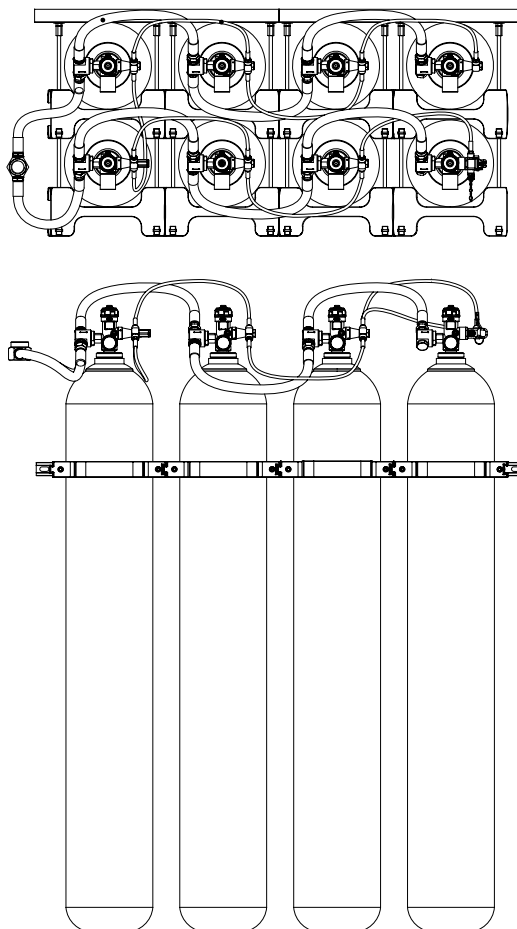
IG-100 SINGLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	42,00	NOT REQUIRED	CC53122032
3	63,00	NOT REQUIRED	CC53122033
4	84,00	NOT REQUIRED	CC53122034

IG-100 DOUBLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	63,00	NOT REQUIRED	CC53122149
4	84,00	NOT REQUIRED	CC53122150
5	105,00	NOT REQUIRED	CC53122151
6	126,00	NOT REQUIRED	CC53122152
7	147,00	NOT REQUIRED	CC53122153
8	168,00	NOT REQUIRED	CC53122154

Example DOUBLE ROW
iFlow® Matrix System



Centralized Systems IG-100 300 bar.

with iFlow® Matrix System

IG-100 TRIPLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	189,00	2"	CC53122400
10	210,00	2"	CC53122401
11	231,00	2"	CC53122402
12	252,00	2"	CC53122403
13	273,00	2"	CC53122404
14	294,00	2"	CC53122405
15	315,00	2"	CC53122406
16	336,00	2"	CC53122407
17	357,00	2"	CC53122408
18	378,00	2"	CC53122409

IG-100 FOUR ROW banks with 80 l. 300 bar iFlow® Matrix System

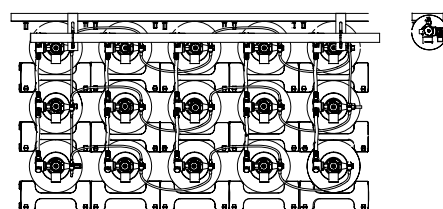
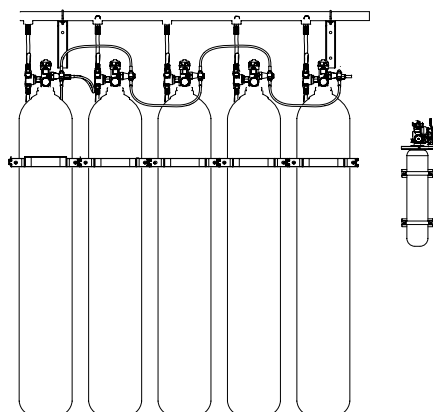
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
8	168,00	2"	CC53122513
12	252,00	2"	CC53122500
13	273,00	2"	CC53122501
14	294,00	2"	CC53122502
15	315,00	2"	CC53122503
16	336,00	2"	CC53122504
17	357,00	2"	CC53122505
18	378,00	2"	CC53122506
19	399,00	2"	CC53122507
20	420,00	2"	CC53122508
21	441,00	2"	CC53122509
22	462,00	3"	CC53122510
23	483,00	3"	CC53122511
24	504,00	3"	CC53122512

Necessary components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact	42116056
Pressure Gauge (300 bar) with contact CP/C	42116057
Protector for Pressure Gauge (300 bar)	61110006

Example
TRIPLE ROW
iFlow®
Matrix
System

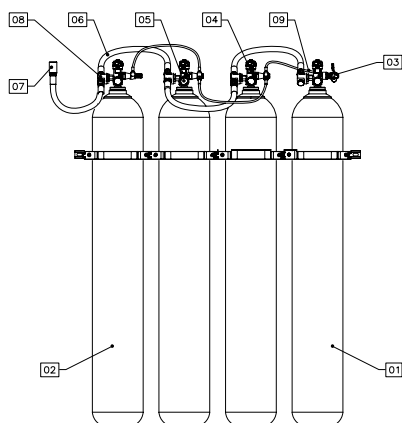


Centralized Systems IG-541 200 bar. with iFlow® Matrix System

Components for the calculation of a quotation

- Battery
- Gas
- Accessories (see page 113)
- Nozzles (see page 114)
- Diaphragm and embellishment plate (see page 114)
- Brackets (see pages 130)
- Pressure gauge

List of materials included in the price



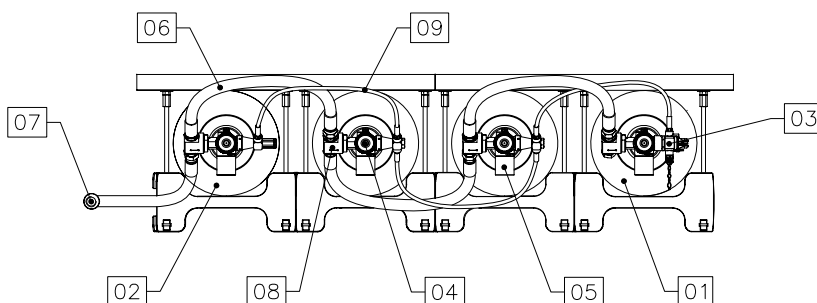
- | | | | |
|---|-----------------------------------|---|---|
| 1 | Master Cylinder | 6 | Flexible release hose |
| 2 | Slave cylinder | 7 | Manifold and "U" brackets (only in systems which required it) |
| 3 | Manual pneumatic-explosor release | 8 | Horizontal non return iFlow® valve |
| 4 | LPG iFlow® Valve | 9 | Latching (discharge) pressure switch |
| 5 | Pressure gauge | | |

Set of labels and protector cap for cylinders are included.

Brackets are not included.

Notes to consider:

In banks containing less than 9 cylinders, activation will occur by pilot cylinder with triple release pneumatic hand lever explosor. In a bank that contains 9 or more cylinders, activation will occur by a 3 litre nitrogen-filled pilot cylinder. Please contact LPG if a bank activated by pilot cylinder with less than 9 cylinders should be needed.



IG-541 SINGLE ROW banks with 80 l. 200 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	33.14	NOT REQUIRED	CC53131026
3	49.71	NOT REQUIRED	CC53131027
4	66.28	NOT REQUIRED	CC53131028

IG-541 DOUBLE ROW banks with 80 l. 200 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	49.71	NOT REQUIRED	CC53131130
4	48.71	NOT REQUIRED	CC53131131
5	82.85	NOT REQUIRED	CC53131132
6	99.42	NOT REQUIRED	CC53131133
7	115.99	NOT REQUIRED	CC53131134
8	132.56	NOT REQUIRED	CC53131134

Centralized Systems IG-541 200 bar. with iFlow® Matrix System

IG-541 TRIPLE ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	149.13	2"	CC53131400
10	165.70	2"	CC53131401
11	182.27	2"	CC53131402
12	198.84	2"	CC53131403
13	215.41	2"	CC53131404
14	321.98	2"	CC53131405
15	248.55	2"	CC53131406
16	265.12	2"	CC53131407
17	CUANTO	2"	CC53131408
18	CUANTO	2"	CC53131409

IG-541 FOUR ROW banks with 80 l. 200 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
12	198.84	2"	CC53131500
13	215.41	2"	CC53131501
14	231.98	2"	CC53131502
15	248.55	2"	CC53131503
16	265.12	2"	CC53131504
17	281.69	2"	CC53131505
18	298.26	2"	CC53131506
19	314.83	2"	CC53131507
20	331.40	2"	CC53131508
21	347.97	2"	CC53131509
22	364.54	3"	CC53131510
23	381.11	3"	CC53131511
24	397.68	3"	CC53131512

Optional components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Gooseneck wrench for the manual triple release

Overpressure dampers

Pneumatic delay iFlow® kit (until 8 cylinders)

Pneumatic delay iFlow® kit (+ than 8 cylinders)

Cut-off valve

Necessary components for centralized systems

FOR MORE INFORMATION SEE PAGE 113

Pressure Gauge (300 bar) without contact 42116056

Pressure Gauge (300 bar) with contact CP/C 42116057

Protector for Pressure Gauge (300 bar) 61110006

Centralized Systems **IG-541 300 bar.** with *iFlow® Matrix System*

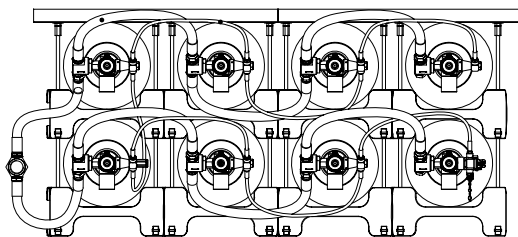
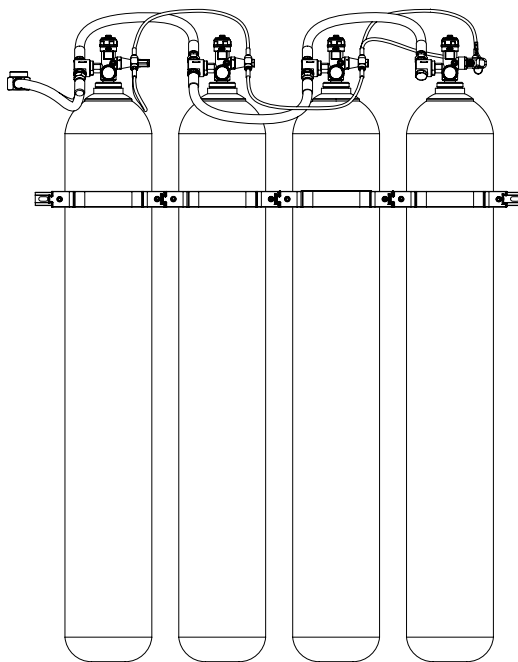
IG-541 SINGLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
2	45,98	NOT REQUIRED	CC53130032
3	68,97	NOT REQUIRED	CC53130033
4	91,96	NOT REQUIRED	CC53130034

IG-541 DOUBLE ROW banks with 80 l. 300 bar iFlow® Matrix System

N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
3	68,97	NOT REQUIRED	CC53130155
4	91,96	NOT REQUIRED	CC53130156
5	114,95	NOT REQUIRED	CC53130157
6	137,94	NOT REQUIRED	CC53130158
7	160,93	NOT REQUIRED	CC53130159
8	183,92	NOT REQUIRED	CC53130160

Example DOUBLE ROW
iFlow® Matrix System

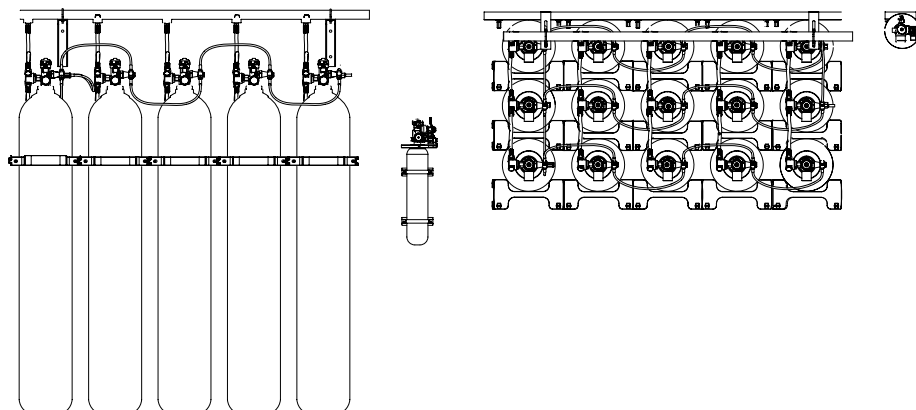


Centralized Systems **IG-541 300 bar.** with *iFlow® Matrix System*

IG-541 TRIPLE ROW banks with 80 l. 300 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
9	206,91	2"	CC53130400
10	229,90	2"	CC53130401
11	252,89	2"	CC53130402
12	275,88	2"	CC53130403
13	298,87	2"	CC53130404
14	321,86	2"	CC53130405
15	344,85	2"	CC53130406
16	367,84	2"	CC53130407
17	390,83	2"	CC53130408
18	413,82	2"	CC53130409

IG-541 FOUR ROW banks with 80 l. 300 bar iFlow® Matrix System			
N°CYL.	FILLING (m³)	Ø MANIFOLD	P. NUMBER
8	183,92	2"	CC53130513
12	275,88	2"	CC53130500
13	298,87	2"	CC53130501
14	321,86	2"	CC53130502
15	344,85	2"	CC53130503
16	367,84	2"	CC53130504
17	390,83	2"	CC53130505
18	413,82	2"	CC53130506
19	431,81	2"	CC53130507
20	459,80	2"	CC53130508
21	482,79	2"	CC53130509
22	505,78	3"	CC53130510
23	528,77	3"	CC53130511
24	551,76	3"	CC53130512

Example
TRIPLE ROW
iFlow®
Matrix
System





Systems with **LPG AQUAFOG®**

The water mist protection system optimizes the used quantity of water, maximizing the effective water volume through the distribution of droplets of very small size. This method produces a cooling effect for a determined amount of water, reducing the necessary volume. Therefore, damages caused by conventional systems that use water as an extinguishing agent are minimized.

The **LPG AQUAFOG®** has a working pressure from 4 to 200 bar, generating droplets of very small diameter at very high speed. Spray heads are designed to discharge water in the form of water mist.

Water mist systems provide a fast and efficient protection for class A, B, C and F fires, eliminating the risk of re-ignition (offering an incomparable capacity of suppression of deep seated fires). One of their most outstanding features is the use of very small quantities of water.

Properties

LPG AQUAFOG® is a safe extinguishing system for the protection of equipment and occupied areas.

Currently, the water mist systems are being used in the protection of civil and military ships, Machine rooms and machinery spa-

ces, generator rooms and crew cabinets, while its application is also increasing in the protection of turbine rooms, data process centres, archives and hazards inside underground public transport.

MAIN ADVANTAGES:		STANDARD:
<ul style="list-style-type: none"> • Quick temperature reduction of the protected hazard. • Effective on deep-seated fires. • Easy refilling. 	<ul style="list-style-type: none"> • Effective in flammable liquid fires eliminating the risk of re-ignition. • Minimal water damage (a very small amount of water is used). 	<ul style="list-style-type: none"> • NFPA - 750 • CEN TS 14 972 • IMO

The water mist owes its extinguishing efficiency to the joint action of **3 main effects:**

Smothering

The generated vapour displaces an equivalent volume of oxygen, thus producing a smothering effect.

Cooling

The atomization of water to droplets of microscopic size produces a large heat collector surface, which becomes steam once it comes in contact with hot bodies or gases,

absorbing a quantity of steam equivalent to 540 calories/gr.

Attenuation

The mist generated in the enclosure absorbs a great amount of the radiant heat, thus protecting adjacent objects.

A dilution effect is also observed. The water mist contributes to decrease the concentration of flammable vapour to levels below flammability limits.

Certificates



LPG water mist components are certified by VdS Schadenverhütung (Vertrauen durch Sicherheit) of Germany and Factory Mutual (5560). DNV Approved

Notes to consider

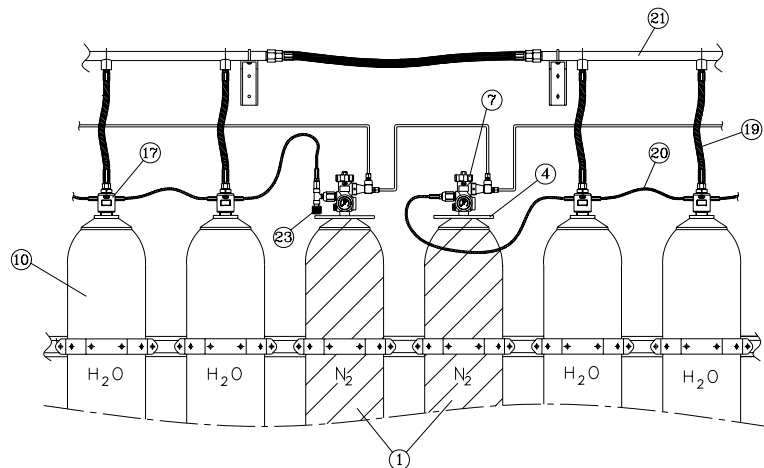
The working pressure in the pipes is 240 bar (NFPA 750). The use of stainless steel pipes, AISI 316L, and stainless steel

closing accessories by bicone metal ring is recommended.

High pressure water mist system

N₂ PILOT CYLINDER SYSTEM

Components



- 1 Pilot cylinder for N₂
 - 4 Flange and protector cap
 - 7 LPG valve
 - 10 H₂O Cylinder
 - 17 Valve
 - 19 Discharge hose
 - 20 1/4" Teflon hose
 - 21 Discharge MANIFOLD with 3/4"
 - 23 De-pressurization valve
- Set of labels and protector cap are included.

Sets

DESCRIPTION	LITRES	P.NUMBER
2 Water Cylinders 26 l. + 1 N ₂	52	H200231N
2 Water Cylinders 80 l. + 1 N ₂	160	H200281N
3 Water Cylinders 80 l. + 1 N ₂	240	H200381N
4 Water Cylinders 80 l. + 2 N ₂	320	H200482D
5 Water Cylinders 80 l. + 2 N ₂	400	H200582D
6 Water Cylinders 80 l. + 2 N ₂	480	H200682N
7 Water Cylinders 80 l. + 3 N ₂	560	H200783D
8 Water Cylinders 80 l. + 3 N ₂	640	H200883D
9 Water Cylinders 80 l. + 3 N ₂	720	H200983D
10 Water Cylinders 80 l. + 4 N ₂	800	H201084D
11 Water Cylinders 80 l. + 4 N ₂	880	H201184D

Optional accessories

DESCRIPTION	P.NUMBER
Pressure switch	30330010
Reduction from 3/4" a 1/2" (with pressure switch)	H2000025

Selector valves

It may be necessary to protect several rooms at once. The installation of selector valves enables **LPG AQUAFOG®** to direct the water to the selected hazard.

The normally closed selector valves are activated electrically by a signal of 24 Vdc to the control panel.

Selector valves

DESCRIPTION	P.NUMBER
Selector valve 60 lpm	62108026
Selector valve 120 lpm	62108027
Selector valve 150 lpm with by-pass	62108242

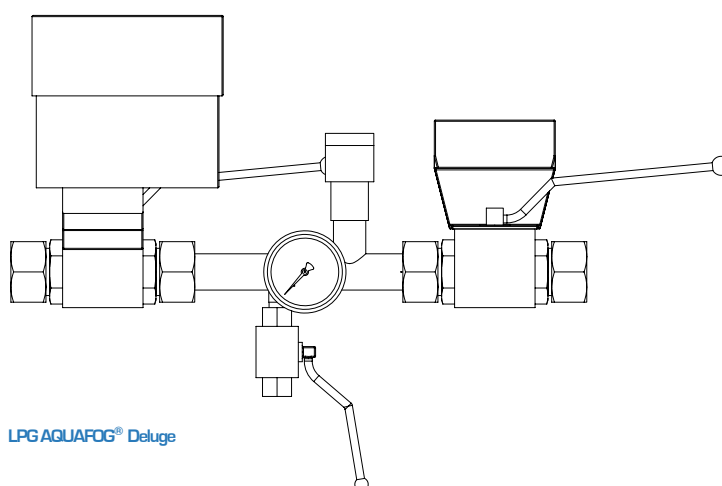
New range LPG AQUAFOG® valves

LPG Técnicas en Extinción S.L. has developed a new range of **selector valves and alarm valves** for all the high pressure **LPG AQUAFOG®** systems.

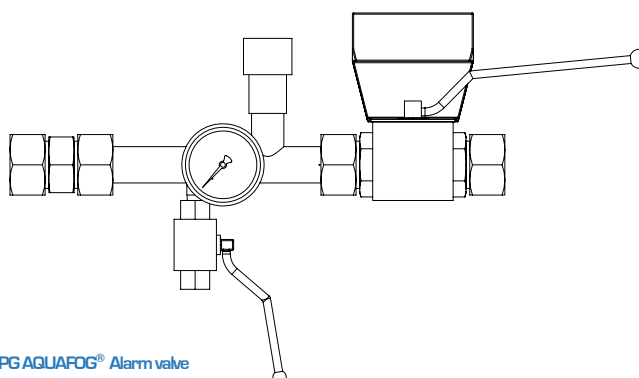
The **LPG AQUAFOG®** alarm valves are a new product characterized by the **exact localization of the sector under discharge** by means of flow detection. These valves include a monitored manual shut off for isolating a sector for maintenance services. They also **include test devices** so as to check that the system is working satisfactorily.

The new **LPG AQUAFOG®** deluge valves **replace and improve** the current. Our valves are better than those of the rest of the manufacturers because they don't close under electricity failure. They also allow the remotely sectoring of the risks, flow control and system testing. As a standard **LPG** offers two unified sizes of **LPG AQUAFOG®** valves for Ø20 pipes or for Ø30 pipes to be selected depending on the necessities of each case.

Valves			
VALVE	CHARACTERISTICS	SIZE	P. NUMBER
Alarm AQUAFOG	- Ball valve with switch box	Ø20S	62108473
	- Flow sensor	Ø30S	62108474
	- Pressure gauge		
Deluge AQUAFOG	- Motorized ball valve	Ø20S	62108471
	- Ball valve with switch box	Ø30S	62108472
	- Flow sensor		
	- Pressure gauge		
	- Test connection		



LPG AQUAFOG® Deluge



LPG AQUAFOG® Alarm valve

High pressure water mist system certified by Factory Mutual

LPG AQUAFOG® also has Factory Mutual approval for risks in equipment rooms, equipment special rooms including turbines thermally insulated up to 260 m³ with a maximum height of 5 m according to the protocol FM5560 Annexes D, E and F with a protection time of 10 minutes.

To ensure the success of re-ignition system and minimize the rooms should be equipped with:

- Automatic closing starts
- Automatic power off
- Automatic closing of fuel supply and / or lubricant
- Automatic shutdown system ventilation

Sets		
DESCRIPTION	FILLING LTS.	P. NUMBER
3 cylinders of 80 l H ₂ O + 2 N ₂ 200 bar	240	53108006
4 cylinders of 80 l H ₂ O + 2 of N ₂ 200 bar	320	53108007
5 cylinders of 80 l H ₂ O + 3 N ₂ 200 bar	400	53108008

Note:

For rooms smaller than 80 m³ the amount of N₂ discharged could be dangerous for people and therefore this N₂ is replaced with compressed air as follows :

Sets		
DESCRIPTION	FILLING LTS.	P. NUMBER
3 cylinders H ₂ O 80 l + 2 of air 200 bar	240	53108009
4 cylinders H ₂ O 80 l + 2 of air 200 bar	320	53108010
5 cylinders H ₂ O 80 l + 3 of air 200 bar	400	53108011

Nozzles Heads		
MODEL	UBICATION	K FACTOR
81400040	Roof	0.44
81100050	Doors	0.11



Pump systems

The **AQUAFOG®** water mist pumping systems have been developed as an alternative for the water mist centralised systems in cases where the required quantity of water for the protection of the installation does not allow the use of centralised systems. **LPG** offers electrical or diesel pump systems.

The **AQUAFOG®** water mist pumping systems can be used in installations for "Total flooding systems" or "Wet pipe systems". In the first case, the system allows the discharge of the extinguishing agent through all the water mist nozzle heads which are connected to the piping net. Normally, the detection of the

fire is independent from the extinction. In the second case, the system maintains a water pressure in the net of around 20-30 bar in normal working conditions (without fire). The nozzle heads connected to the net include a fire detection element that once activated, allows the discharge of the pressurized water. A pressure drop in the net activates the extinction system. Consequently, discharge takes place through the activated nozzle heads. In this case, a jockey pump is incorporated into the main pumping equipment. In systems with jockey pump the k-factor for each nozzle head shall be higher than 0.39 l/(min. bar 0.5).

Components

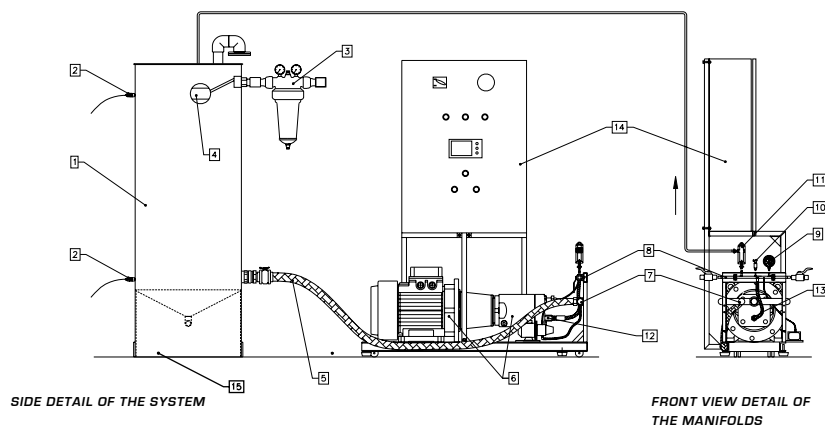
SYSTEM AND WATER SUPPLY

- 1 Polypropylene tank
- 2 Water level detector
- 3 Filter with centrifugal pre-filtration
- 4 Stainless steel ball cock valve
- 5 Galvanized steel plaited hose M-H 1 1/2" <2m

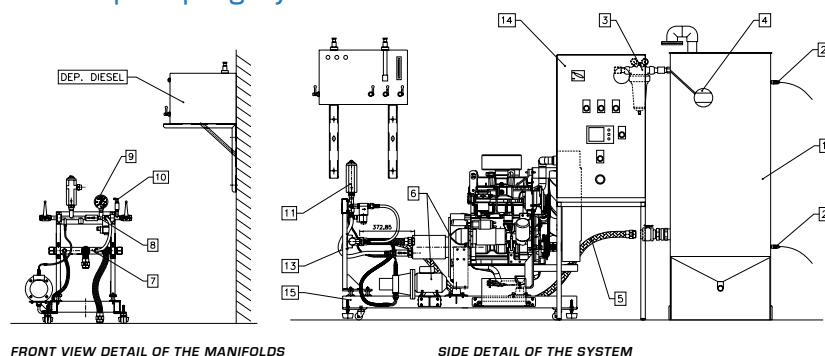
PUMPING GROUP AND CONTROL PANEL

- 6 Group pump-engine
- 7 Air intake MANIFOLD 1 1/2"
- 8 Propulsion MANIFOLD 3/4"
- 9 Pressure gauge 0-315 bar
- 10 Pressure transducer 0-250 bar
- 11 Overpressure valve
- 12 Stainless steel non return valve
- 13 Hose R2 AP M-H 3/4"
- 14 Control Panel
- 15 Work surface

Electrical pumping systems



Diesel pumping systems



NOTE:

Selector Valves information page 92

Pumping groups and control panels

Electrical pumping group

MAX. FLOW UNIT PUMP (LPM)	MAX. FLOW TOTAL PUMP (LPM)	ENGINE POWER (KW)	MAX. FLOW OVERPRESSURE VALVE (LPM)	JOCKEY PUMP	P.NUMBER
44	44	15	60		62108009
86	86	30	120		62108010
112	112	30	120		62108011
86	172	60	172		62108104
112	224	60	240		62108012
44	44	15	60	X	62108013
86	86	30	120	X	62108014
112	112	30	120	X	62108015
86	172	60	172	X	62108105
112	224	60	240	X	62108016

Diesel pumping group

DESCRIPTION	P.NUMBER
Diesel Pumping group; max. pressure flow 86 lpm	62108254
Diesel Pumping group; max. pressure flow 86 lpm with jockey	62108255
Diesel Pumping group; max. pressure flow 112 lpm	62108256
Diesel Pumping group; max. pressure flow 112 lpm with jockey	62108257
Diesel Pumping group; max. pressure flow 172 lpm (two 86 lpm pumps)	62108258
Diesel Pumping group; max. pressure flow 172 lpm (two 86 lpm) with jockey.	62108259
Diesel Pumping group; max. pressure flow 224 lpm (two 112 lpm pumps)	62108260
Diesel Pumping group; max. pressure flow 224 lpm (two 112 lpm pumps) with jockey.	62108261
Diesel Pumping group; max. pressure flow 258 lpm (three 86 lpm pumps)	62108262
Diesel Pumping group; max. pressure flow 258 lpm (three 86 lpm pumps) with jockey	62108263

System Supply

DESCRIPTION	P.NUMBER
Cylindrical tank in upright position of 300 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 1323 mm x 637 mm. Weight: 17 kg.	62108106
Cylindrical tank in upright position of 600 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 1950 mm x 700 mm. Weight: 83 kg.	62108028
Cylindrical tank in upright position of 1.000 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 2000 mm x 955 mm. Weight: 55 kg.	62108030
Depósito Cylindrical tank in upright position of 3.000 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 2410 mm x 1430 mm.	62108107

Water supply

DESCRIPTION	P.NUMBER
Water supply system equipped with centrifugal pre-filtration and mechanical float valve for the filling control of the tank, suitable for flow outlets up to 112 lpm. To be installed on the supply tank of the water mist pumping group.	62108108
Water supply system equipped with centrifugal pre-filtration and mechanical float valve for the filling control of the tank, suitable for flow outlets up to 333 lpm. To be installed on the supply tank of the water mist pumping group.	62108109
Water supply system equipped with centrifugal pre-filtration and mechanical float valve for the filling control of the tank, suitable for flow outlets up to 416 lpm. To be installed on the supply tank of the water mist pumping group.	62108202

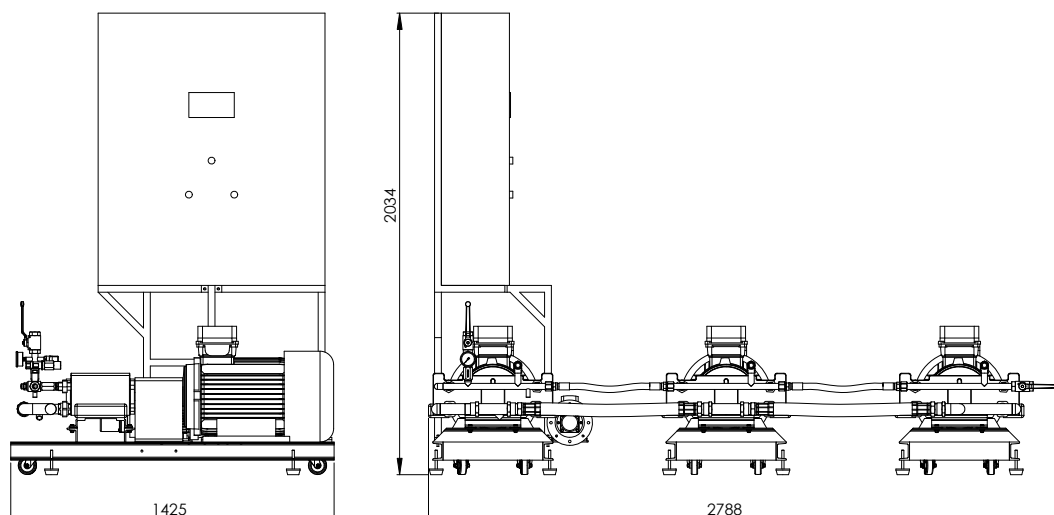
New Range Pump Systems

LPG Técnicas en Extinción S.L. has developed a new range of electrical pump skids in brass in addition to the stainless steel pump range. This new range offers larger flow rates in order to maximize **LPG AQUAFOG®** systems design. *LPG* offer, as standard, pump skids ranging from one to three pumps with or without a jockey pump. Multi-pump skids are designed to start pumps sequentially providing the required system flow rate whilst reducing peak electrical power requirement. These pump skids are suitable to be installed at industrial facilities except those with high corrosive atmospheres where *LPG* still recommends the use of stainless steel pump skids.



Max Flow Total (lpm)	Nº Pumps	Engine Power (kW)	Jockey	Reference
122	1	30		62108386
244	2	60		62108431
366	3	90		62108445
122	1	30	X	62108409
244	2	60	X	62108419
366	3	90	X	62108438

Note: Groups of more than 3 pumps please contact LPG.



Wet pipe system with cylinder bank

The **AQUAFOG®** cylinder bank for wet pipe systems is to be installed together with water mist nozzles.

The cylinder bank is assembled with a single master cylinder (N2 at 200 bar) equipped with a pneumatic valve and several slave

cylinders (N2 at 200 bar) and several H2O cylinders with 50 l. and 80 l. capacity.

In case of installation of open nozzle heads it will be necessary to equip the system with selector valves.

Operational description

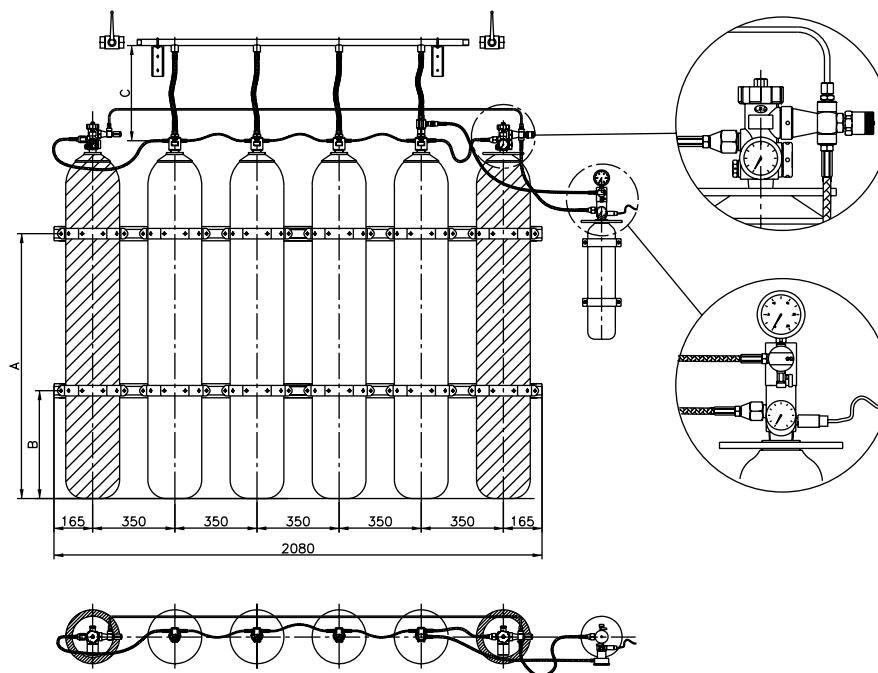
This system has been designed to guarantee a continuous hydraulic pressure of 15 bar in the piping network. In case of the activation of a closed nozzle all N2 cylinders will be activated to start water mist discharge. In case of small leakages in the piping network the N2 master cylinder will compensate the lost pressure. In case that leakage persists

an alarm signal will be given when the pressure on the master cylinder drops below 170 bar.

The k-factor for each nozzle connected to this system shall be higher than 0.38 l/(min bar 0.5).

Preaction kits

CYLINDER SETS	LITERS	P. NUMBER
2 Water Cylinders 50 l. + 1 N ₂	100	H200251P
2 Water Cylinders 80 l. + 1 N ₂	160	H200281P
3 Water Cylinders 80 l. + 1 N ₂	240	H200381P
4 Water Cylinders 80 l. + 2 N ₂	320	H200482P
5 Water Cylinders 80 l. + 2 N ₂	400	H200582P
6 Water Cylinders 80 l. + 2 N ₂	480	H200682P
7 Water Cylinders 80 l. + 3 N ₂	560	H200783D



Total flooding applications

Machine rooms

LPG is certified by IMO (International Maritime Organization) for the protection of machine rooms on ships. The fire tests have been described in the IMO MSC/Circ.

1165. They have taken place in the technical investigation centre VTT in Finland. DNV approved [1165]

There are two possible configurations

	Model (A)	Model (B)
Reference Nozzle	86500040	87500040
k	0,62	1,00
Coverage	9m ²	12m ²
Minimum pressure	100 bar	100 bar
Q (Flow at 100 bar)	6,21 l/min	10 l/min
Water consumption	0,69 l/min m ²	0,83 l/min m ²

The fire extinction tests are done for a maximum enclosure volume of 2.000 m³ and a height of 5 m. The two configurations allow **LPG** to offer several solutions changing the number of nozzles and the flow, always considering the protection of the same area to offer the most appropriate system.

LPG designs water mist systems that ensure the protection of machine rooms on ships that do not surpass the indicated size.

It shall be emphasized that the discharge time as defined in the leaflet is 30 minutes, regardless of the extinction time obtained during the fire testing.

This design is also suitable for the protection of technical rooms on land (generator rooms, pumps, transformers, etc...) where the risk lies in the protection of leakages and combustible liquid sprays. The tests are run with a 2 x 2 m door open wide during the

whole discharge. This indicates that water mist systems are effective even in non-airtight rooms.

LPG recommends:

- To not make designs for under 30 minutes
- To use automatic door closing systems

Local applications

Machinery

LPG is certified by IMO (International Maritime Organization) for the local protection of machinery on ships. The fire tests have been described in the IMO MSC/Circ.

1165. They have taken place in the technical investigation centre SINTEF NBL Norway.

In this case the evaluated configuration is the following

Reference Nozzle	87400040
k	0,8
Coverage	9m ²
Minimum pressure	100 bar
Q (Flow at 100 bar)	8,0 l/min
Water consumption	0,88 l/min m ²

The fire extinction tests are done for a height of 1 m to 13 m above the protected objects. The discharge time, regardless of the extinction time obtained during the fire testing is 20 minutes, as defined in the leaflet.

This design is also suitable for the protection of technical rooms on land (generator rooms, pumps, transformers, etc...) where the risk lies in the protection of spills or sprays of combustion liquids in the machinery. The duration of protection should be 20 minutes. However, shorter protection periods can be designed.

LPG recommends:

- To not make designs for under 20 minutes

Low pressure water mist systems

The **AQUAFOG®** protection system is a new low pressure water mist system for the protection of ordinary class 1 risks according to UNE EN 12845. This type of risk includes among others:

- Offices
- Hospitals
- Schools
- Museums
- Residences
- Hotels

The **AQUAFOG®** protection system has been successfully tested as an alternative to sprinklers on ships according to MSC/Circ., A800/265

Advantages

The low pressure water mist offers several advantages compared to high pressure water mist systems and the traditional sprinklers.

Advantages over traditional sprinklers

Less water required

The water used by the water mist systems is less than a third than that required by traditional sprinklers.

Smaller piping

Due to a smaller need of water flow, it is possible to install piping with smaller diameters for the protection of the same kind of risk.

Faster to install

The handling of piping with smaller size allows a faster assemblage.

Minimum water damage

Water can damage goods due to its physical and chemical qualities. Some surfaces should not get wet. Water damages materials such as paper, paint, etc.

On the other hand water is an electrical conductor due to its electrolytes. Water can cause damage to electrical circuits. The smaller the amount of water applied to the risk, the smaller the possibility of damage to the electrical circuits.

Fewer nozzles required

The **AQUAFOG®** system uses nozzles with a larger coverage than traditional sprinklers. It uses nozzles with coverage of up to 25 cm².

Esthetics

The **AQUAFOG®** nozzles can be installed in false ceilings and include embellishers. They are apt for spaces where aesthetics have a priority.

Other advantages

- Does not generate decomposition products IN CONTACT WITH FIRE.
- Low sensitivity to the air tightness of the room.
- Less space and maintenance required.

Another of the advantages of **AQUAFOG®** is its functional design. While systems that use gas or foam need an important amount of space, **AQUAFOG®** uses water that can be stored in any tank. No special rooms are needed for the installation of the system.

On the other hand, less maintenance is required compared to systems that use gases, where the weight needs to be checked periodically and thus, less time is spent on maintenance.

Low pressure water mist systems

Description of the main components

Pump

Pumping system composed by main centrifugal pump, jockey pump and control panel with self-starter by pressure loss in the net. Has to be stopped manually through a selector installed in the front part of the control panel.

The system includes a jockey pump able to maintain a constant pressure in the circuit in the event of small leaks.



Pumping equipment according to UNE-2350090 standard

PRESSURE (BAR)	FLOW (L/MIN)	HP	ASPIRATION Diameter	IMPELLER Diameter	DIESEL GROUP	ELECTRICAL	ELECTRICAL AUXILIARY	P.NUMBER
7.6	500	7.5	3"	2"	No	Yes	No	62108185
10	500	15	3"	2"	No	Yes	No	62108186
14	333	50	DN65	DN40	No	Yes	No	62108332
7.6	500	7.5	3"	2"	Yes	No	No	62108327
10	500	15	3"	2"	Yes	No	No	62108329
14	333	50	DN65	DN40	Yes	No	No	62108334
7.6	500	12.2	3"	2"	Yes	Yes	No	62108189
10	500	13.6	3"	2"	Yes	Yes	No	62108190
14	333	50	DN65	DN40	Yes	Yes	No	62108333

Pumping equipment according to EN-12845 standard

PRESSURE (BAR)	FLOW (L/MIN)	HP	ASPIRATION Diameter	IMPELLER Diameter	DIESEL GROUP	ELECTRICAL	ELECTRICAL AUXILIARY	P.NUMBER
7.6	500	7.5	3"	2"	No	Yes	Yes	62108328
10	500	15	3"	2"	No	Yes	Yes	62108330
14	333	50	DN65	DN40	No	Yes	Yes	62108335

System Supply

DESCRIPTION	P.NUMBER
Cylindrical tank in upright position of 300 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 1323 mm x 637 mm. Weight: 17 Kg.	62108106
Cylindrical tank in upright position of 600 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 1950 mm x 700 mm. Weight: 83 Kg.	62108028
Cylindrical tank in upright position of 1.000 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 2000 mm x 955 mm. Weight: 55 Kg.	62108030
Cylindrical tank in upright position of 3.000 litre capacity made of polypropylene and equipped with fitting cover, outlet for the pump intake through a galvanized steel braided hose, drainage outlet, elbow air vent, water level control probes and ball valves. Size: 2410 mm x 1430 mm.	62108107

Water supply

DESCRIPTION	P.NUMBER
Water supply system equipped with centrifugal pre-filtration and mechanical float valve for the filling control of the tank, suitable for flow outlets up to 112 lpm. To be installed on the supply tank of the water mist pumping group.	62108108
Water supply system equipped with centrifugal pre-filtration and mechanical float valve for the filling control of the tank, suitable for flow outlets up to 224 lpm. To be installed on the supply tank of the water mist pumping group.	62108109

Low pressure water mist systems

Alarm valve

By detecting the water flow, this valve allows detecting in which area a water mist discharge has taken place, or is taking place. It is an optional accessory.

Alarm valves are made with a diameter of DN 65. Little space is required for their installation. They are compatible with wet pipe systems.

Their maximum working pressure is 16 bar. All the valves are pressure tested.

Technical data

DIAMETER	DN 65
Max. Working Pressure	16 bar
Max. Testing Pressure	24 bar
Pressure Loss	0,5 bar/400 l/min

DIMENSIONS:	DN 65
Long	106 mm
High	130 mm
Weight	4 kg
Reference	62108337

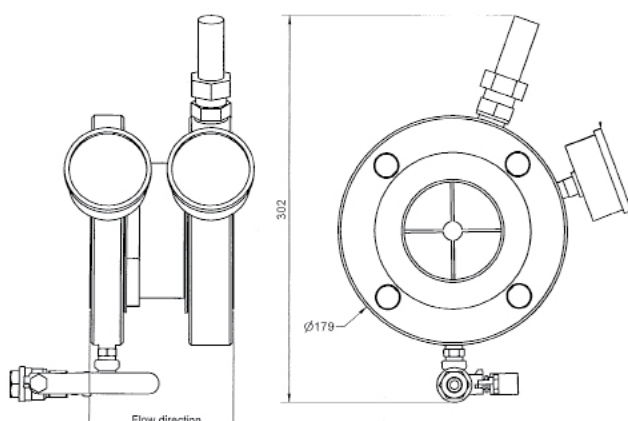
Electrical data

CONTACT: usually closed
MAX. CURRENT: 2A

MAX. VOLTAGE: 230V AC
MAX. POWER: 40 W, 40 VA
CABLE: 1,5m

Piping

The **AQUAFOG®** systems shall be installed with AISI 316 EU 10088 1.4401 stainless steel piping, DIN 2440 ISO 65 galvanized steel and EN 1057 copper or PVC.



Low pressure water mist systems

OTHER APPLICATIONS

Road tunnels

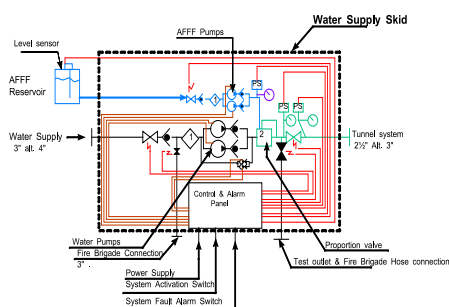
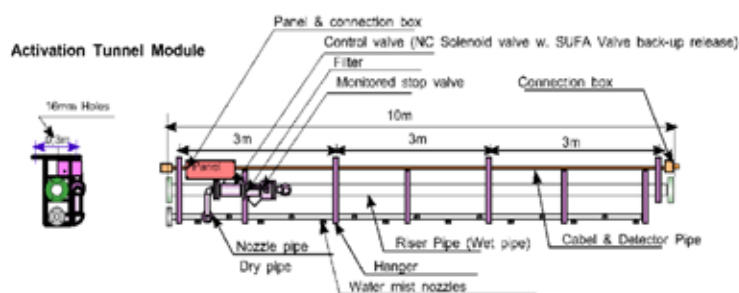
The **AQUAFOG®** system for the protection of tunnels consists in a low pressure water mist system with 1% AFFF. It has been successfully tested under the European programme UPTUN. Minimum pressure in the nozzles is 8 bar and minimum discharge density on the floor is 1.6 mm/min.

The tunnels are divided in zones (generally 20m to 30 m). Each zone is protected by nozzle heads that operate simultaneously. The pumping system is dimensioned for the simultaneous protection of up to three zones.

The system consists in lengths of stainless steel piping with completely integrated nozzle heads for an easy installation. The system includes electrically operated control valves. Optionally, the valves can also incorporate thermal and manual actuators.

Note:

LPG offers alternative systems with the use of 1% AFFF



- Low pressure system that allows the use of traditional pumping equipment
- Tested single system with no additives which is safer for people
- Less power consumption, ease of installation and a few technical stops
- Pre-assembled modules supply with the same degree of protection

• **PRODUCT APPROVALS:**

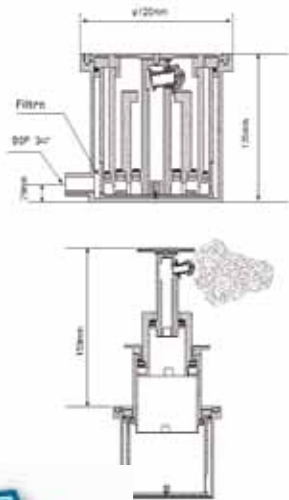
- * Tested under real fire under UPTUN project
- * Independent tests with the Norwegian laboratory SINTEF



Low pressure water mist systems

OTHER APPLICATIONS

Hangars



The **AQUAFOG®** system for the protection of hangars is made to discharge at level with the floor where pools of combustible liquid can be generated.

Discharge takes place through nozzle heads located on the floor level that guarantee a uniform discharge of water mist without additives.

When the nozzle heads are pressurized at 8 bar they will emerge from the floor automatically to a height of 15 cm.

The nozzle heads are fabricated with AISI316 stainless steel with a k-factor of 10 l/min bar 0.5.

This system can be completed by nozzle heads located in the ceiling to protect other areas of the hangar.



High pressure water mist systems

AQUAFOG® system manufactured by LPG has been successfully tested accordingly to **TS14972:2011 Ordinary Hazard Class 1**. During these tests **AQUAFOG®** systems have proved their equivalency to Sprinklers since damages after **AQUAFOG®** system release are smaller when compared to traditional Sprinklers.

Use of active fire protection systems in this kind of applications has an impact on the **aesthetics** of buildings. Sometimes is important to find equilibrium between aesthetics and safety. LPG has design a new **nozzle specific for this application** that guarantees building protection and at the same time minimize aesthetic impact [small size and improved external design]. The new **AQUAFOG®** nozzle (k-factor:4.8) can be installed up to 4 m height with 4.25 m spacing with a minimum working pressure of 70 bar.

AQUAFOG® system is a suitable solution for fire protection of following risks:

- Offices,
- Hotels,
- Hospitals,
- Data Centres

Main advantages using **AQUAFOG®** compared to traditional Sprinklers are:

- **Minimize water consumption** and therefore water damages, which makes **AQUAFOG®** an optimal solution to protect risks where water damages are a concern.
- **Minimize water reservoir** needs and dimensions.
- **Minimize amount of pipe** due to increase of spacing between nozzles.
- **Minimize pipe diameters** and therefore reducing aesthetical impact.

Note: Some buildings may contain other risk type (ex. Machinery Spaces,...) in combination with Ordinary Hazard areas. **Full protection is possible** using Deluge Valves. Refer to appropriate **LPG design guidelines**.

High Pressure Nozzle

DESCRIPTION	P.NUMBER
High Pressure Nozzle LPG AQUAFOG®	81105789



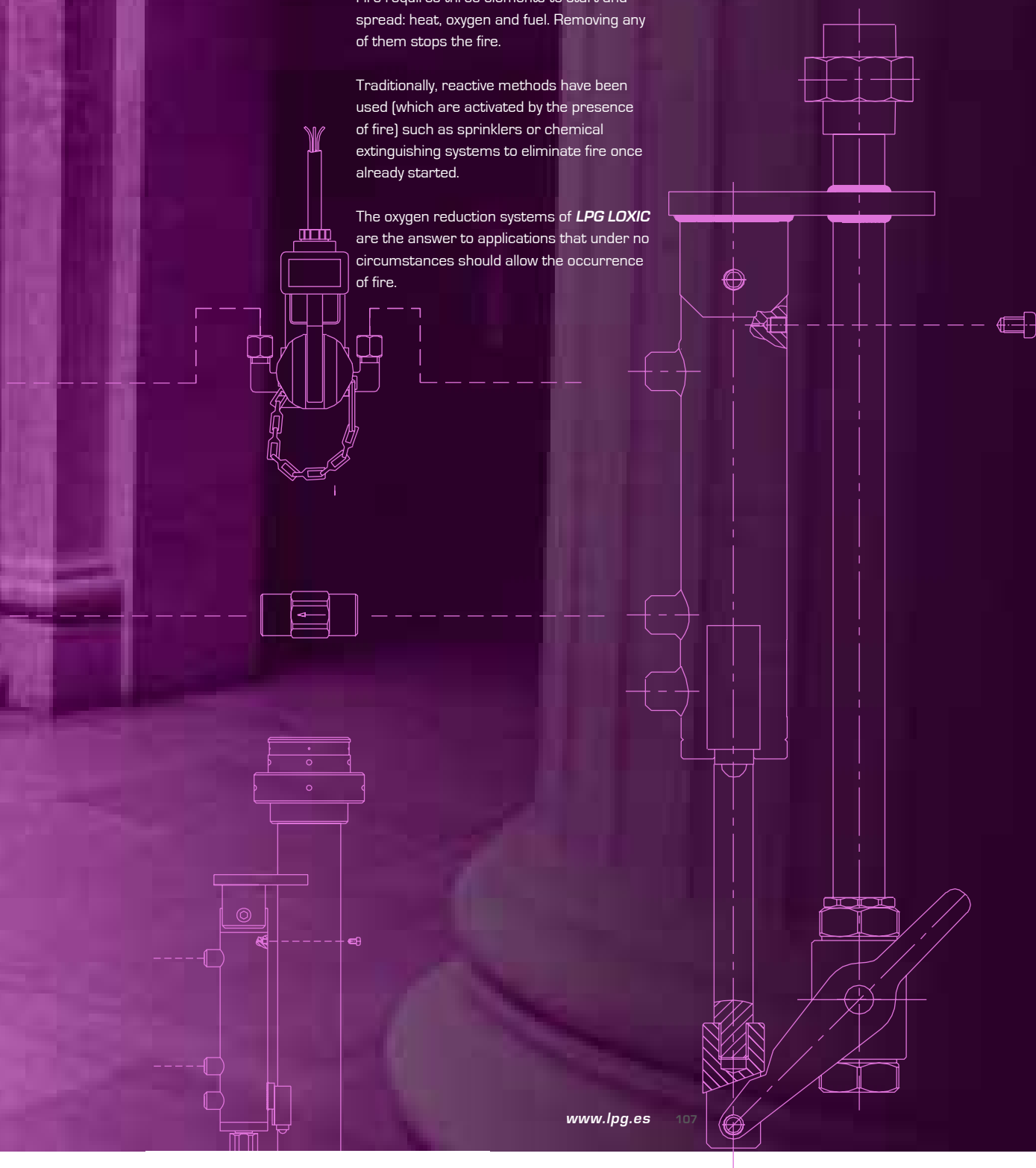


Systems with **LPG LOXIC**

Fire requires three elements to start and spread: heat, oxygen and fuel. Removing any of them stops the fire.

Traditionally, reactive methods have been used (which are activated by the presence of fire) such as sprinklers or chemical extinguishing systems to eliminate fire once already started.

The oxygen reduction systems of **LPG LOXIC** are the answer to applications that under no circumstances should allow the occurrence of fire.



Oxygen Reduction Systems

What would happen if instead of extinguishing a fire we prevented it from starting at all? Is it possible?

With **LPG LOXIC** it is possible as it acts by reducing the oxygen levels at a concentration below the ignition point, and thus avoids the starting of fire.

This product is particularly recommended for risks where the consequences of a fire starting are irreparable, or where the size of the building to protect does not allow the use of gas.

Using **LPG LOXIC** also entails additional benefits derived from having an atmosphere with a low concentration of oxygen and moisture.

LPG LOXIC is the only system to use Dual Flow® patented technology so that it manages to always work above the minimum levels for the environment to be breathable.

Functioning

With the **LPG LOXIC** system oxygen molecules are replaced by nitrogen ones. The increase in nitrogen molecules serves as a 'fire blanket' around each oxygen molecule, preventing combustion.

The hypoxic air current is generated by a simple on-site process through preferential separation of oxygen molecules.

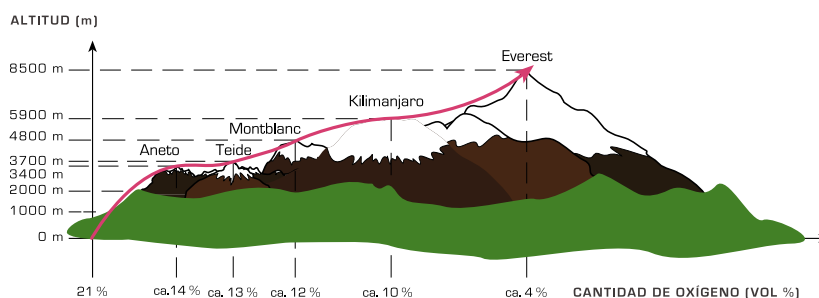
The CO₂ molecules are also filtered, as well as particles and odours. This creates a high quality air.

The system is designed to function in a cycle, within an oxygen concentration range determined by specific sensors installed inside the protected room.

When the system starts to operate, the oxygen concentration is reduced to the lowest configured rate. However, due to the fact that no building is 100% airtight, the oxygen concentration will increase again gradually.

When the highest acceptable value is attained, the system will start off again, decreasing the concentration of oxygen to the lowest value and in a cyclical manner.

Oxygen concentration equivalent to sea level



Safety

FOR PEOPLE

The oxygen level generated by the oxygen reduction systems under ordinary employment is equivalent to altitudes of 2000-3000 metres, where people can breathe perfectly. These values match the conditions in an airplane cabin. The only difference is that oxygen reduction systems do not lower the atmospheric pressure. Oxygen reduction systems are increasingly used in **gyms and sports centres for the training of athletes**.

The exposure to atmospheres with a low oxygen level is also used in **health treatments** for the alleviation of different pathologies

or states of fatigue, as well as in **anti-aging treatments**.

The working conditions exclusive to the oxygen reduction systems of **LPG** ensure that concentrations lower than 10% (characteristic value of oxygen concentration in the output flow of the unit) cannot be obtained in any part of the protected area, not even due to a malfunction of the oxygen sensors.

Oxygen Reduction Systems

MAIN ADVANTAGES

• DEMONSTRABLE RELIABILITY

To prove that the system operates correctly is as easy as verifying the concentration of oxygen in the room.

• LASTING PROTECTION

The system operates 24 hours a day under the set conditions. No risk of unexpected activation of extinguishers.

• LESS SPACE REQUIRED

In comparison with traditional systems, the space required for storage is much smaller, particularly regarding the protection of big spaces.

• ELIMINATES ANY POSSIBILITY OF FIRE

This is an active prevention system not an extinguishing one. It is, therefore, impossible for a fire to break out.

• NO NEED FOR PRESSURE RELIEF ELEMENTS

Due to the limited flow of hypoxic air, the installation of pressure relief dampers is not necessary.

• REDUCES OXIDATION

The system helps to preserve protected goods as these are stored in an oxygen reduced environment, thus reducing the processes of oxidation and metabolic activity of germs and parasites.

• EASY TO ASSEMBLE

The system contains few elements to assemble and the distribution of hypoxic current does not, generally, require the installation of flow separation Ts which eases assemblage.

• EASY MAINTENANCE

Maintenance cost is low due to the simplicity of the equipment with few elements to be controlled during the preventive maintenance.

• SAFE FOR PEOPLE AND THE ENVIRONMENT

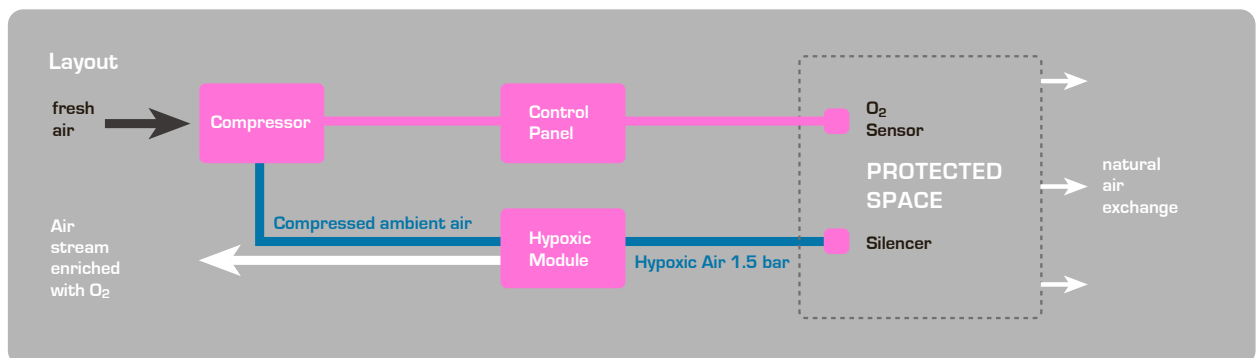
It allows for an optimal atmosphere for people to breathe properly. No chemicals are bound to generate any type of reaction in contact with air so it does not affect the environment.

Configuration of the System

The following chart shows how the equipment operates. Functionally, all equipments consist of three elements:

- Air compression system
- Oxygen separation System (hypoxic module)
- Control panel

The compressor feeds air to the hypoxic module at a pressure of 8 bar. The hypoxic module separates the oxygen at the design level. The hypoxic air (with low level of oxygen) is led to the protected space. The entire operation is managed by the control panel, which receives continuous information on the level of oxygen in the room.



You can protect multiple rooms with the same equipment as well as incorporating elements that control the temperature and humidity by incorporating the suitable sensors and humidity and air conditioning units.

Applications

Automated parking lots

- Optimal systems for the protection of areas with complex and changing geometries
- Flexible to changes of volume
- Simple appliance that does not interfere with mobile devices for the placement of vehicles



Cold storage rooms

- Airtight rooms for maximum energetic efficiency
- Good homogenization of the environment
- Flexible to variations in the amount and placement of volume
- No temperature limits for the protected room



Data centres

- Non-invasive installation into the protected space
- Does not create overpressure on glass or any other fragile surfaces
- No produce choque térmico.

Storage Areas

- Adaptable to changes in location
- Applicable to different types of combustible material
- Flexible to variable amounts of content

Archives, museums

- Protection of unique and irreplaceable elements
- Configured to maintain the humidity of the atmosphere
- The low oxygen concentration helps preserve the protected elements



Hypoxic systems vs. nitrogen injection

Hypoxic Systems are radically different to Nitrogen Injection systems available in the market.

Nitrogen injection systems use almost pure nitrogen to reduce the oxygen level in a room to around 15%, at which point they shut down. However, should there be a major control system problem or mechanical valve failure that results in the system not shutting down, nitrogen will continue to be injected, resulting eventually in a lethal atmosphere being created.

Equally, anyone breathing very close to the injection point could be subjected to a harmful or even lethal level of nitrogen.

LPG LOXIC hypoxic system do not suffer from these potential problems. Hypoxic Systems only ever produce air that is at all

times fire preventing as well as being safe for people. **Nitrogen is never present anywhere in the system** and there is no failure mechanism that would give rise to a lethal atmosphere being created.

As a result, Hypoxic Systems can be used in occupied spaces, where they can deliver a continuous stream of ultra filtered, fresh hypoxic air.

Calculation methodology

The following starting point data are required to evaluate the needs of a Loxic oxygen reduction system:

- Volume of risk to protect

- Level of oxygen concentrations in which you want to work
- Quantification of incoming fresh air in the protected room either in % volume per hour or directly in flow

Por otro lado se tienen que fijar las siguientes condiciones:

- Concentración de oxígeno en la corriente hipóxica
- Caudal de aire hipóxico hacia la sala.

Range of products



Standard Models (Lox Ss)

In this case, the three elements (compressor, module and hypoxic panel) are supplied separately. The maximum separation between the compressor and the hypoxic module is 50 feet, allowing you to put items in the most suitable place for each of them (for example, the compressor can be placed outside).

The compressors are lubricated with oil and so the systems are supplied with a water/oil separator so that the condensed water can be led to a drain point or directly to the earth or within a container (not supplied). It is estimated that the condensation of water varies between 0.25-2 litres per hour, depending on the environmental conditions of temperature and humidity.



Compact Models (Lox Cs)

The compact systems include the compressor, the hypoxic module and the control panel into a single unit. They do not include an air tank. The unit is mounted onto wheels for easy transport to the operation place. The compressors are oil-free and the compression condensation evaporates into

the air, so it is not necessary to incorporate drainages. The Systems are supplied in working conditions with a calibrated oxygen sensor.

Modular Models

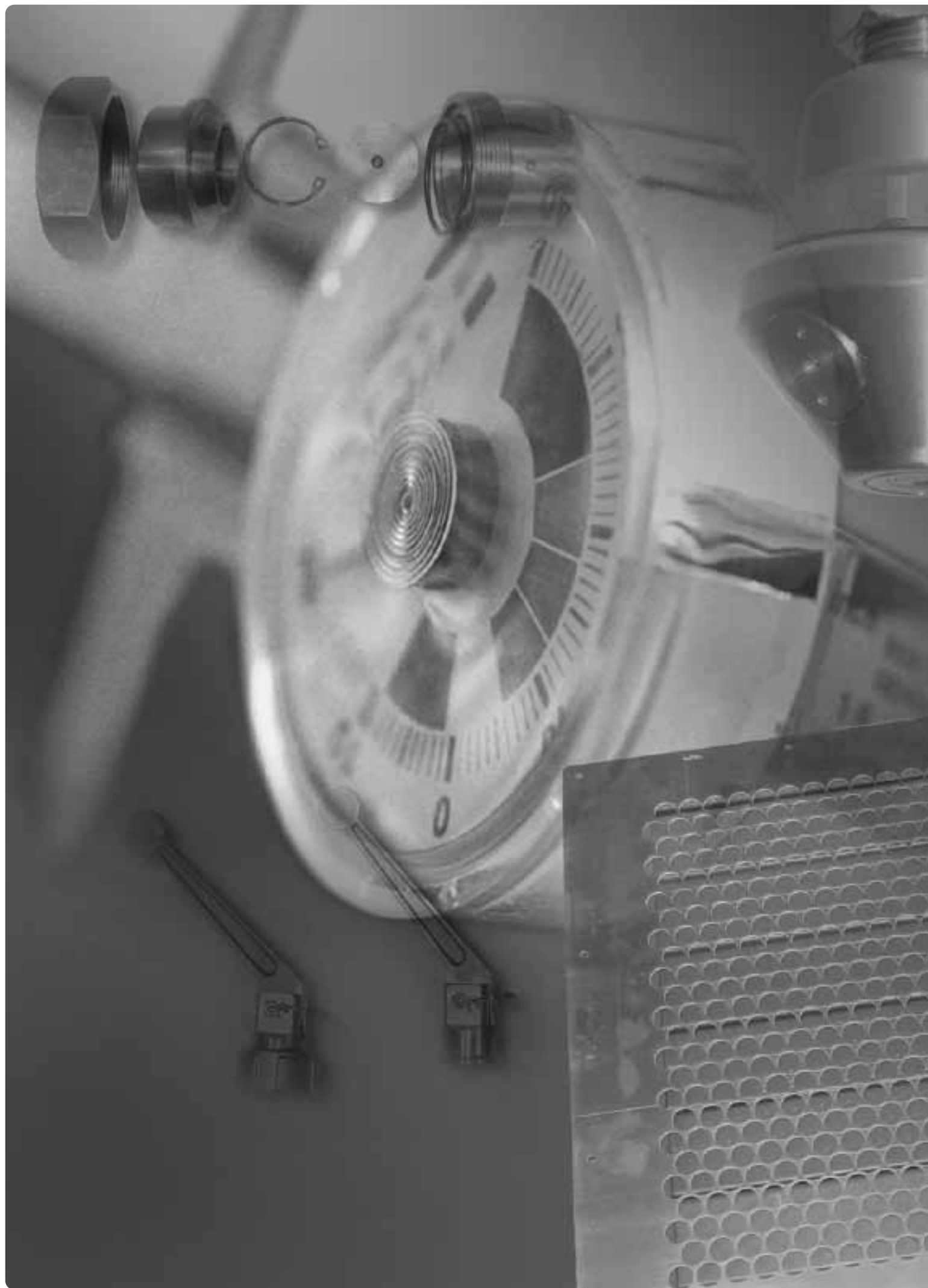
Modular systems are equivalent to standard systems, which, because of its larger size, the hypoxic module is not mounted on a cabinet but on a bench where the control is also mounted. The bench has adjustable feet and metal jigs in which one could fit the forks of a bull.

In this case, the air tank is also independent and is supplied to reduce vertical space.

Keep in mind that the weights of these equipments are heavy (depending on the model, weights between 1.000 and 2.500 kg are bound to be moved).



For information on prices check with LPG.



Accessories

LPG considers the quality and security of its components and accessories a requirement. All accessories are designed and developed according to the most demanding applicable standards and certifications, by the most renowned laboratories and organizations.

Due to this, *LPG* maintains its **privileged position with regard to the keeping of the standards**. This refers to national as well as international standards of the sector.

All our components and accessories constitute an essential part of our systems and are adapted to the hydraulic calculations that are necessary for the good functioning of the end product.

The optional elements of our systems as well as the fixed accessories provide the product with a greater efficiency and guaranteed quality.

Nozzles for systems with gases

Nozzles with multiple drillings



The **LPG** nozzles are designed to break the reaction strength during discharge allowing a **better discharge flow**. The angle of the holes is designed to obtain the lowest volume level during discharge of the extinguishing agent.

They are fabricated with material that is resistant to industrial environments. They are appropriate for installation in environments where design is important, because of their pleasant and functional design. They are made with 360° and 180° coverage in order to obtain a faster **diffusion of the gas**. They are manufactured with female thread. This allows the client to spend less on installation accessories.

Multiple drilling nozzles are **compatible with the majority of gaseous extinguishants (FE-13™, HFC 125®, FM-200®, and LPG INERT®)** and can be calibrated adjusting the measure of one single opening [diaphragm screwed into the interior of the nozzle].

Nozzle	360° (Ceiling)	180° (Wall)
Ø	P.NUMBER	P.NUMBER
3/8"	30400000	30400007
1/2"	30400001	30400008
3/4"	30400002	30400009
1"	30400003	30400010
1 1/4"	30400004	30400011
1 1/2"	30400005	30400012
2"	30400006	30400013

Nozzle	Drilled Diaphragm	No Drilled Diaphragm	Embellishment Plate
Ø	P.NUMBER	P.NUMBER	P.NUMBER
3/8"	30440032	30440003	30410320
1/2"	30440042	30440004	30410420
3/4"	30440052	30440005	30410520
1"	30440062	30440006	30410620
1 1/4"	30440072	30440007	30410720
1 1/2"	30440082	30440008	30410820
2"	30440092	30440009	30410920

Nozzles for CO₂ systems



LPG for total flooding CO₂ nozzles are fabricated with materials that are resistant to industrial environments, such as brass. They are appropriate for installation in environments where design is important, because of their pleasant and functional design. The nozzle of the hood has been designed to adapt to the characteristics of dispersion of CO₂ and are fabricated with female thread to economize accessories.

Notes to consider:

For drilled nozzles of less than 3 mm. include filters:

3/8" = 30210838

1/2" = 30210812₁₄ www.lpg.es

Nozzles with cone (local application)

DESCRIPTION	DRILLED	NO DRILLED	FOR DRILLED*
Ø	P.NUMBER	P.NUMBER	P.NUMBER
3/8"	30460130	30460016	30460038
1/2"	30460031	30460014	30460012
3/4"	30460013	30460015	30460034

* According hydraulic calculations

Nozzles without cone (total flooding)

DESCRIPTION	DRILLED	NO DRILLED
Ø	P.NUMBER	P.NUMBER
3/8"	30460000	30460139
1/2"	30460001	30460140
3/4"	30460002	30460135

Nozzle heads for high pressure water mist systems

LPG has different models of nozzle heads available that are suitable for the hazard to be protected. The nozzle head is made of stainless steel for a better adjustment to the inox tube, with housing for a maximum of 5 micro-nozzles.

The head is formed by 2 bodies to make maintenance operations easy. The micro-nozzles will properly spray the water mist with a working pressure of 200 bar.

The opened nozzle discharges at the same time the discharge of the system occurs. **The closed nozzle head** only discharges when its thermal detection bulb breaks. The flow of the heads depends on the model of micro nozzles which offers a wide range of flows, reaching from **1.26 l/min up to 40 l/min at 120 bar**. The atomization grade of the nozzle heads is approximately 50 microns. All nozzle heads have a FB 85 filter to prevent the obstruction of particles.

Open nozzle heads

They are the most suitable for total flooding systems. They can be equipped with up to five micro nozzles depending on the design needs, offering a big versatility of flows. The nozzle head is made of stainless steel for a better adjustment to the inox. tube.

The head is formed by two bodies to make maintenance operations easier. The micro nozzles properly spray the water with a working pressure of 200 bar.



Nozzle head	Ambient	False ceiling
K	P.NUMBER	P.NUMBER
0,33	81300040	81300041
0,44	81400040	81400041
0,55	81500040	81500041
0,62	86500040	86500041
0,8	87400040	87400041
0,81	82300040	82300041
1	87500040	87500041
1,08	82400040	82400041
1,35	82500040	82500041
1,38	83300040	83300041
1,84	83400040	83400041
2,3	83500040	83500041
2,28	84300040	84300041
3,04	84400040	84400041
3,8	84500040	84500041

Bulb / mechanic nozzle heads



A mixture of the above-mentioned nozzle heads. When connected to wet pipe, they allow the detection of the fire by means of a bulb (same RTI), allowing activation also when the pressure in the pipe exceeds a minimum value (60 bar). This way it is possible to design total flooding systems that include detection. Just as closed heads, they can be equipped with up to four micro nozzles depending on the necessity.

Nozzle head	Ambient	False ceiling
K	P.NUMBER	P.NUMBER
0,44	81405760	81405761
1,08	82405760	82405761
1,84	83405760	83405761
3,04	84405760	84405761

Nozzle heads for high pressure water mist systems

Bulb / mechanic nozzle heads



A mixture of the above-mentioned nozzle heads. When connected to wet pipe, they allow the detection of the fire by means of a bulb (same RTI), allowing activation also when the pressure in the pipe exceeds a minimum value (60 bar). This way it is possible to design total flooding systems that include detection. Just as closed heads, they can be equipped with up to four micro nozzles depending on the necessity.

Nozzle head	Ambient	False ceiling
K	P.NUMBER	P.NUMBER
0,44	81405730	81405731
1,08	82405730	82405731
1,84	83405730	83405731
3,04	84405730	84405731

"T" nozzle heads to pipe



They are the most economical heads of the whole **LPG** range. They allow reducing costs by connection of a single micro nozzle. This head is assembled directly onto a TE or an ELBOW by means of a nozzle joint bicone nut with a Ø of 12 or 15 already included in the price. This is most suitable for applications in kitchens, escalators and false floors/ceilings.

Nozzle head	WITH Ø 12 JOINT	WITH Ø 15 JOINT
K	P.NUMBER	P.NUMBER
0,11	81100052	81100055
0,27	82100052	82100055
0,46	83100052	83100055
0,76	84100052	84100055

Accessories for assembly	Ø 12 TUBE	Ø 15 TUBE
DESCRIPTION	P.NUMBER	P.NUMBER
Stainless "T" PN.315 / 50712 L	H20ATIT1	H20ATIT2
Stainless ELBOW PN.315 / 50612 L	H20ATIC1	H20ATIC2
Stainless. TUBE S/S AISI 316 L	H20T1201	H20T1515

Nozzle heads for low pressure water mist systems

NHP 18A Nozzle



Nozzle material

MS58/NiSn brass

Flow

$$Q = k \sqrt{\text{Working pressure}}$$

NHP 18A is a low pressure water mist nozzle of quick response, designed for the control and extinction of fire with a minimum water pressure of 4 bar. The nozzle is designed for wet pipe systems.

The NHP 18A automatic nozzle is activated once the fire reaches a certain level. The nozzle is installed into the ceiling, covered by a protector. The nozzle only emerges when the protector is liberated. The protector is designed to protect the nozzle from vandalism acts and accidents. Certified by DNV (circ. IMO A800)

Technical data

Model	NHP 18A
Working pressure (bar)	4
K-Factor (l/min x bar)	20
Max. Space between nozzles (m x m)	5 x 5
Density of coverage (l/min x m ²)	1,6

Components

Protection diameter	48 mm
Diameter of false ceiling orifice	35 a 40 mm
Diameter of nozzle	M32x1 - 32
Diameter of superior axle	40 mm
Diameter of superior plate	50 mm
Protection length	10 mm
Thickness of false ceiling	0 - 18 mm
Length of superior axle	18 mm
Length of the rod	50 mm
R 1/2" BSPT / ISO 7 / 1 Length of the screw	18 mm
Max. Heigh (m)	5 m

NHP 18A Nozzle

WORKING TEMPERATURE	P.NUMBER
57 °C	80000002
68 °C	80000003
93 °C	80000004
141 °C	80000005

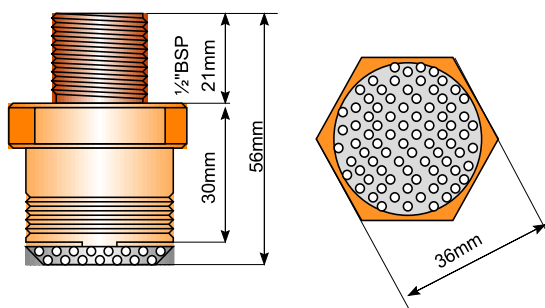
Nozzle heads for water mist systems

LPG P05 and S02 Nozzles

The **P05** and **S02** water mist nozzles are for low pressure systems with quick response. They are designed to control and extinguish the fire with a minimum water pressure of 6 bar and to be installed in wet pipe systems.

These nozzles are activated once the fire reaches a certain level. The **LPG P05** nozzle is installed in the ceiling, covered by a protector. The nozzle only emerges when the protector is released. The protector is designed to shield the nozzle from any act of vandalism acts and accidents. Tested nozzles by IMO 265

The **LPG S02** (sidewall) model is for wall adjustment.



Technical data

Model	LPG P05	LPG S02
Working pressure (bar)	6	6
K-Factor (l/min x bar)	14,3	12,5
Max. space between nozzles (m x m)	4 x 4	3,7 x 3,7
Density of coverage (l/min x m2)	2,2	2,24
Max Height (m)	5	2,5

Nozzle material

MS58/NiSn brass

Flow

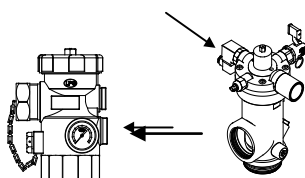
$$Q = k \sqrt{\text{Working pressure}}$$

WORKING TEMPERATURE °C	P.NUMBER	P.NUMBER
57 °C	80000009	80000013
68 °C	80000010	80000014
93 °C	80000011	80000015
141 °C	80000012	80000016



Components of the systems

Electrical release



The electrical release activates the discharge of the modular cylinder. All of them are installed in the position as shown in the drawing. They allow electrical activation. The blind tap closes the valve connection. An articulated hook wrench with 35-50 mm diameter shall be used to assemble it.

The manual release lever of the BP-230 valve is on the right while in the **LPG-190** it is positioned on the left.



Elements of the manual/pneumatic release

DESCRIPTION	FE-13®	NAFS125®	FM-200®	LPG INERT®	CO ₂	P. NUMBER
Solenoid 13 W -24V. AP threaded	X	X	X	-	X	3023024B
Solenoid 13 W -220V. CA, threaded	X	X	X	-	X	30230250
Solenoid 24 V EEXIIMT4 threaded	X	X	X	-	X	30131210
Solenoid 220 V EEXIIMT4 threaded	X	X	X	-	X	30131211
Solenoid 110 V. CA. threaded seating	X	X	X	-	X	30230111
Blind solenoid cover	X	X	X	-	X	30850002

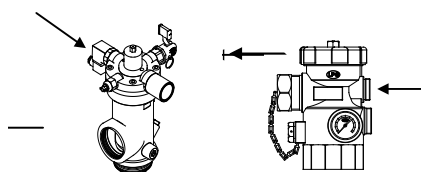
Manual pneumatic release



They activate the discharge of the modular cylinder and allow the possibility of manual, electrical and/or pneumatic activation. Its use requires changing an internal disk before refilling the cylinder. The blind tap closes the valve connection. An articulated hook wrench with 35-50 mm diameter shall be used to assemble it.

Elements of the manual/pneumatic release

DESCRIPTION	FE-13®	HFC 125®	FM-200®	LPG INERT®	CO ₂	P. NUMBER
Single HP manual release	X	X	X	-	X	30180APB
Double manual pneumatic release with explosive	-	-	-	X	-	30150020
Cone with explosive 4501.01 4 HL	X	X	X	X	X	30110604
Blind cap cover	X	X	X	-	X	3087008B



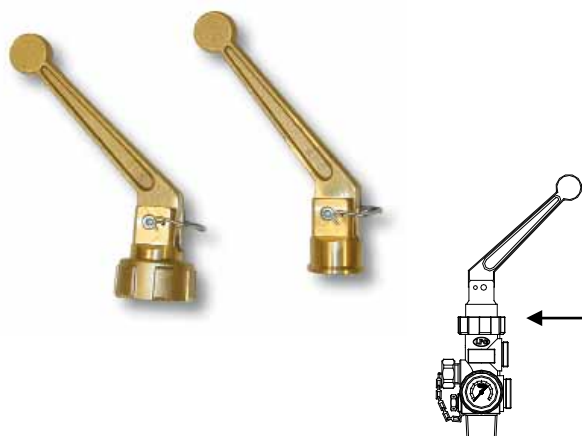
THE MANUAL RELEASE LEVER OF THE BP-230 VALVE IS ON THE RIGHT WHILE IN THE LPG-190 IT IS POSITIONED ON THE LEFT.



Components of the systems

Release group by **LPG-110 or LPG-128** valve head

They activate the discharge of the modular cylinder. They are installed on the valve head as shown in the drawing. They allow manual and/or pneumatic activation.



Heads

DESCRIPTION	P.NUMBER
LPG-128 manual head lever	30150601
LPG-110 manual head lever	30150300
LPG-128 pneumatic (1 way) and manual head lever	30407714
LPG-128 pneumatic (2 ways) and manual head lever	30407724

Hoses

They connect the discharge valve outlet to the distribution pipes of the extinguishing agent. Depending on the cylinder's valve, they may be rigid or flexible.



Hoses and accessories for assembly

DESCRIPTION	VALVE	FE-13®	NAFS125®	FM-200®	LPG INERT®	CO ₂	P.NUMBER
Hose/4SH 3/4 x 420mm HG 3/4"-MF 3/4" NPT	LPG 128	-	-	-	X	-	30522010
Hose, R2 Ø 3/4 HG/HF 400mm	LPG 128	X	X	X	-	-	30506070
Hose, CO2 /R2 ½ - 21,7 MF/HG* 350	LPG 128/110	-	-	-	-	X	30521041
Hose, R2 Ø 3/4 HG/HF 400mm	LPG 145	X	X	X	-	-	30502140
Rigid modular hose, 1 1/2" LPG-190	LPG 190	X	X	X	-	-	30508080
Rigid modular hose, V 2 1/2" - 3"	LPG BP230	-	X	X	-	-	23070204
Flexible coupling, E-77 VICT/PINT 3"	LPG BP230	-	X	X	-	-	9FK30VIC

Components of the systems

Pressure switch



Remote control pressure switch device. An electrical contact is opened or closed when the pressure of the cylinder reaches the set value of the pressure switch. Double switched electrical contact. To be assembled directly on the valve.

Presostatos								
DESCRIPTION	VÁLVULA	FE-13®	NAFS125®	FM-200®	LPG INERT®	CO ₂	N ₂	P.NUMBER
PMN50 T20 Double contact M10	128, 145*, 190	-	X	41 bar	-	-	-	30310016
PMN80 T25 Double contact M10	128, 145*, 190	X	-	-	-	X	-	3031003C
PMN150 T80 Double contact M10	128** pinto cylinder	-	-	-	-	-	X	30308010
PMN300 T170 Double contact 1/4" only for systems at 200 bar	128**	-	-	-	X	-	-	303152AR
PMN50 T18 Double contact 1/4"	BP-230	-	X	24 bar	-	-	-	30310040

* Elbow always to be included for 40 and/or 67 lt. cylinders (35100000)

** Elbow 1/4" optional (35106000)

Drilled restrictor LPG INERT®

This is a device that controls the flow and discharge in inert systems. It consists of a 3/4" NPT HH coupling and includes a thin solid wall where a hole is mechanised according to the diameter shown in the hydraulic calculations. The restrictor outlet pressure is 60 bar.



Restrictor	
DESCRIPTION	P.NUMBER
Calibrado Ø 3/4"	61300505

Gooseneck wrench

It is a tool that allows the correct installation and removal of the LPG valve release items and manifold NPT joints.



Gooseneck wrench	
DESCRIPTION	P.NUMBER
Release elements and 3/4"-1" link screw	35017401
1 1/4"- 2" link screw	35017402
2"-2 1/2" link screw	35017403
2 1/2"-4" link screw	35017404

Components of the systems

Pressure switch with locking device



Discharge pressure remote control device. An electric contact is opened or closed when pressure is detected on the manifold. It is provided with an open or close switch. It is assembled directly to the manifold. The locking device system requires manual resetting.

Pressure switch

DESCRIPTION	P.NUMBER
Pressure switch with locking device	30330010

Joint

These are high pressure accessories to join pipe sections. It includes an O-ring to ensure air tightness/water tightness. It can lodge a restrictor. As a standard **LPG** supplies joining nuts with inlet and outlet NPT thread. Optionally, connections can be converted for welding.



Joint

DESCRIPTION	P.NUMBER
3/4" NPT Joint	30888001
1" NPT Joint	30888002
1 1/4" NPT Joint	30888003
1 1/2" NPT Joint	30888004
2" NPT Joint	30888005
2 1/2" NPT Joint	30888006
3" NPT Joint	30888007
4" NPT Joint	30888008
Conversion to welded connections	61027100

For proper installation requires the use of articulated Gooseneck wrench

Manifold "U" fixation



They fix the manifold to the brackets and are chosen according to the Ø of the manifold. The quantity of "U" fixations is indicated in the table of codes for brackets.

Manifold "U" fixation

DESCRIPTION	P.NUMBER
3/4" Manifold "U" fixation	30600050
1" Manifold "U" fixation	30600060
1 1/4" Manifold "U" fixation	30600070
1 1/2" Manifold "U" fixation	30600080
2" Manifold "U" fixation	30600090
1 1/2" Manifold "U" fixation	30600100
3" Manifold "U" fixation	30600110
4" Manifold "U" fixation	30600120

Restrictors

It is a device that controls the flow and discharge in Inert gas systems. It is provided with a high pressure joining nut with NPT threaded connections and an internal hole plate mechanized according to the diameter shown in the hydraulic calculations. The restrictor outlet pressure is 60 bar.



For INERT gas systems (without selector valves)

DESCRIPTION	P.NUMBER
Ø 3/4" drilled restrictor	61350005
Ø 1" drilled restrictor	61350006
Ø 1 1/4" drilled restrictor	61350007
Ø 1 1/2" drilled restrictor	61350008
Ø 2" drilled restrictor	61350009
Ø 2 1/2" drilled restrictor	61350012
Ø 3" drilled restrictor	61350013
Ø 4" drilled restrictor	61350014

For proper installation requires the use of articulated Gooseneck wrench

Components of the systems

Delay kit / pilot cylinder

The delay and alarm kit is a system designed to obtain a delay time in the centralized extinguishing system release. This system allows a delay of 30 seconds until activation of the bank. The delay and alarm system is equipped with a delay cylinder, pneumatic delay device, retarder, manual release, 1/4" copper 6 mm coupling, copper tube, deviator with 1/2" female outlet, discharge hose and pneumatic siren. For information on 300 bar delay kit contact **LPG**.



Kits for CO₂ and Inert

DESCRIPTION	P.NUMBER
Delay kit (for CO ₂ banks up to 8 cylinders)	60901094
Delay kit (for CO ₂ banks with more than 8 cyl.)	60901093
Delay kit (for inert 200 bar banks up to 8 cyl.)	22106001
Delay kit (for inert 200 bar banks with more than 8 cyl.)	22104003

Odorizer



Odorizer for CO₂ and Inert

DESCRIPTION	P.NUMBER
1/2" pneumatic odorizer	30350020

It provides an essence which is mixed with CO₂ during discharge. The odour of this essence alerts occupants of the risk to the presence of CO₂. It is installed vertically, directly in the manifold or in the gas distribution line.

Cut-off valve

Three way valve with monitoring contact which allows the pilot pressure to be derived towards the auxiliary cylinders or to the outside, avoiding accidental discharges during maintenance of the system. It is assembled between the pilot or master and the auxiliary cylinders.



Cut-off for CO₂ and Inert

DESCRIPTION	P.NUMBER
Cut-off valve	62114001

Relief damper for CO₂ and LPG INERT® gas systems

The discharge of a fixed gas fire extinguishing system generates a pressure increase in the room, depending on flow, concentration or leaking area, which can make structural damages in the room to be protected.

Several standards provide the need for the installation of main relief areas to decrease the value of overpressure to be reached

(ISO 14520, UNE-EN 15004, CEA 4007 and 4008). **LPG** has tested and developed the methods for the main relief areas to be calculated to avoid damages to the room without decreasing, in any way, the capacity of maintaining the extinguishing agent during a period of time long enough to extinguish the fire.

EVO and PRO Relief dampers

These calculation methods are related to an automatic relief damper with the following features:



Relief dampers EVO

DESCRIPCIÓN	CÓDIGO
Damper for 30 cm x 30 cm	12090003
Damper for 50 cm x 50 cm	12090004
Damper for 70 cm x 70 cm	37116002
Damper for 1m x 1 m	37116003

- Calculation methods according to UNE, ISO, NFPA and CEA standards.
- Temperature resistance up to 1000° C during 2 hours; certified by the British Standard.
- Simplicity of the system.
- Adjustable to walls of different thickness.
- Easy installation.
- Low cost checking and maintenance.
- Automatic performance mechanism.
- Good tightness.

For further information consult **LPG**.

LPG Brackets

LPG's telescopic brackets allow an easy installation while offering maximum stability. They have been developed exclusively by LPG and their characteristics are:

Quicker adjustment

There is an exclusive bracket design for each bank. Measures are made with great accuracy for quick adjustment. The stand and manifold support are both unique on the market. They help establish the distance to the hose, so that it is the same for each cylinder. This avoids errors in the assemblage of the elements and assures their fitting.

Easy to install

Assembly is possible with a minimum of tools.

Self-supporting

They can be adapted directly to the floor. No wall is needed for fixation.

Anticorrosive treatment

They have a black finish with epoxy coating that guarantees maximum protection against corrosion.

Exclusive design

The hexagonal shape systems without weighing device makes them unique and distinguishes them from other brackets currently on the market.

They are delivered with the required fittings to adjust them to the wall.

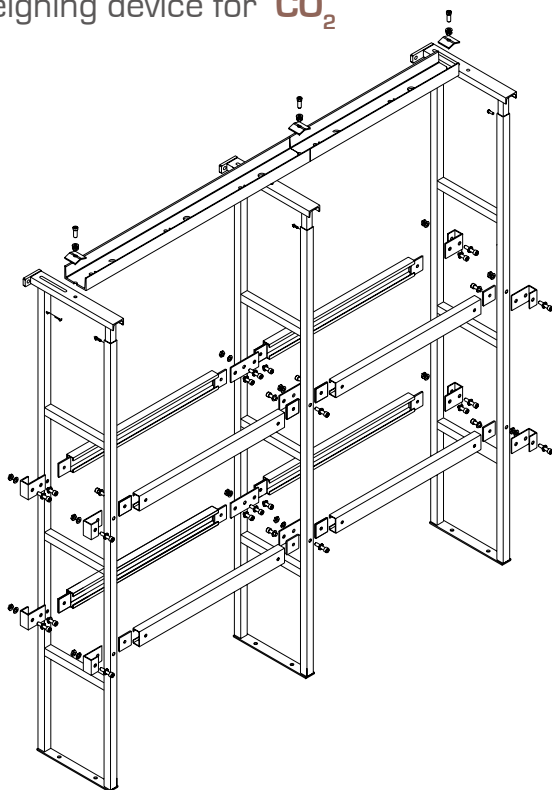
Functional for systems with weighing device

The bracket supports the weight of the suspended cylinders. External elements are not necessary.

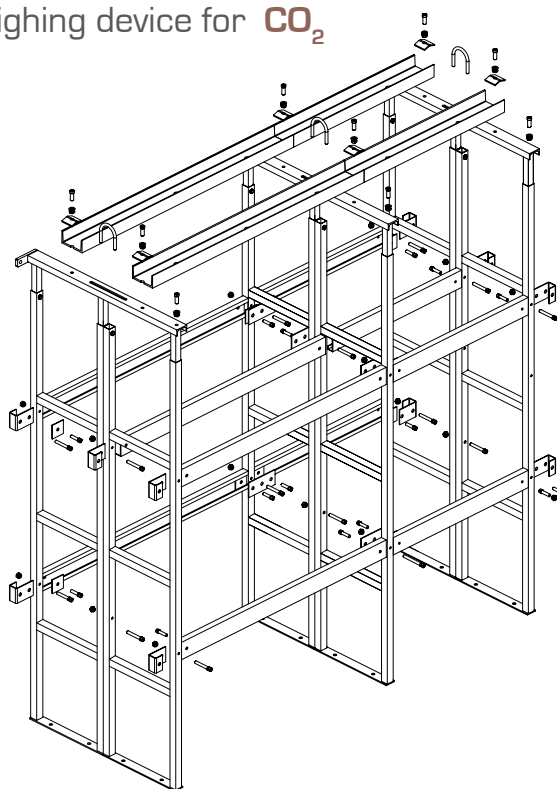
Solid and stable construction

They withstand the position, grip and weight of the cylinders

SINGLE ROW telescopic bracket with weighing device for **CO₂**



DOUBLE ROW telescopic bracket with weighing device for **CO₂**



LPG Brackets

Telescopic bracket with weighing device for **CO₂** (40 l. and 67 l.).

SINGLE ROW telescopic br. with weighing device CO₂ 40 l.

N. CYL.	TELESCOPIC BRACKET		MANIFOLD SUPPORT	
	UNIT	P. NUMBER	UNIT	P. NUMBER
2	1	306024SP	2	94116002
3	1	306034SP	2	94116002
4	1	306044SP	3	94116002
5	1	306054SP	3	94116002
6	1	306064SP	3	94116002
7	1	306074SP	4	94116002
8	1	306084SP	4	94116002
9	1	306094SP	4	94116002
10	1	306104SP	5	94116002

SINGLE ROW telescopic br. with weighing device CO₂ 67 l.

N. CYL.	TELESCOPIC BRACKET		MANIFOLD SUPPORT	
	UNIT	P. NUMBER	UNIT	P. NUMBER
2	1	36116069	2	94116002
3	1	36116070	2	94116002
4	1	36116071	3	94116002
5	1	36116072	3	94116002
6	1	36116073	3	94116002
7	1	36116074	4	94116002
8	1	36116075	4	94116002
9	1	36116076	4	94116002
10	1	36116077	5	94116002
11	1	36116078	5	94116002
12	1	36116079	5	94116002
13	1	36116080	6	94116002
14	1	36116081	6	94116002
15	1	36116082	6	94116002
16	1	36116083	7	94116002
17	1	36116084	7	94116002
18	1	36116085	7	94116002
19	1	36116086	8	94116002
20	1	36116087	8	94116002

DOUBLE ROW telescopic br. with weighing device CO₂ 67 l.

N. CYL.	TELESCOPIC BRACKET		MANIFOLD SUPPORT	
	UNIT	P. NUMBER	UNIT	P. NUMBER
3	1	36116100	2	94116010
4	1	36116100	2	94116010
5	1	36116101	2	94116010
6	1	36116101	2	94116010
7	1	36116102	2	94116010
8	1	36116102	3	94116010
9	1	36116103	3	94116010
10	1	36116103	3	94116010
11	1	36116104	3	94116010
12	1	36116104	3	94116010
13	1	36116105	4	94116010
14	1	36116105	4	94116010
15	1	36116106	4	94116010
16	1	36116106	4	94116010
17	1	36116107	4	94116010
18	1	36116107	4	94116010
19	1	36116108	5	94116010
20	1	36116108	5	94116010
21	1	36116109	5	94116010
22	1	36116109	5	94116010
23	1	36116110	5	94116010
24	1	36116110	5	94116010
25	1	36116111	6	94116010
26	1	36116111	6	94116010
27	1	36116112	6	94116010
28	1	36116112	6	94116010
29	1	36116113	6	94116010
30	1	36116113	6	94116010

LPG Brackets

Bracket without weighing device for CO₂ (40 l. and 67 l.)

Bracket without weighing device 40 l. 1 BINDING

N.CYL.	UNIT	P.NUMBER
2	1	30602C04
3	1	30603C04
4	1	30604C04
5	1	30605C04
6	1	30606C04
7	1	30607C04
8	1	30608C04
9	1	30609C04
10	1	30610C04

P.Number (non telescopic). Manifold support included

Bracket without weighing device 67 l. 1 BINDING

N.CYL.	UNIT	P.NUMBER
2	1	30602C02
3	1	30603C02
4	1	30604C02
5	1	30605C02
6	1	30606C02
7	1	30607C02
8	1	30608C02
9	1	30609C02
10	1	30610C02

P.Number (non telescopic). Manifold support included

SINGLE ROW Telescopic br. without weighing device 40 l.

TELESCOPIC BRACKET			MANIFOLD SUPPORT	
N.CYL.	UNIT	P.NUMBER	UNIT	P.NUMBER
2	1	306024SN	2	94116000
3	1	306034SN	2	94116000
4	1	306044SN	2	94116000
5	1	306054SN	2	94116000
6	1	306064SN	2	94116000
7	1	36116119	3	94116000
8	1	306084SN	3	94116000
9	1	306094SN	3	94116000
10	1	306104SN	3	94116000

SINGLE ROW Telescopic br. without weighing device 67 l.

TELESCOPIC BRACKET			MANIFOLD SUPPORT	
N.CYL.	UNIT	P.NUMBER	UNIT	P.NUMBER
2	1	36116031	2	94116000
3	1	36116032	2	94116000
4	1	36116033	2	94116000
5	1	36116034	2	94116000
6	1	36116035	2	94116000
7	1	36116036	3	94116000
8	1	36116037	3	94116000
9	1	36116038	3	94116000
10	1	36116039	3	94116000

DOUBLE ROW Telescopic br. without weighing device 67 l.

TELESCOPIC BRACKET			MANIFOLD SUPPORT	
N.CYL.	UNIT	P.NUMBER	UNIT	P.NUMBER
3 or 4	1	36116050	2	94116001
5 or 6	1	36116052	2	94116001
7 or 8	1	36116054	2	94116001
9 or 10	1	36116056	2	94116001
11 or 12	1	36116058	2	94116001
13 or 14	1	36116060	3	94116001
15 or 16	1	36116062	3	94116001
17 or 18	1	36116064	3	94116001
19 or 20	1	36116066	3	94116001
21 or 22	1	36116051	3	94116001
23 or 24	1	36116053	3	94116001
25 or 26	1	36116055	4	94116001
27 or 28	1	36116057	4	94116001
29 or 30	1	36116059	4	94116001

LPG Brackets

Brackets for **LPG INERT®** 80 l or CO₂ systems without weighing devices

SINGLE ROW telescopic bracket for LPG Inert®				
TELESCOPIC BRACKET			MANIFOLD SUPPORT	
N. CYL.	UNIT	P. NUMBER	UNIT	P. NUMBER
2	1	36116031	2	94116000
3	1	36116032	2	94116000
4	1	36116033	2	94116000
5	1	36116034	2	94116000
6	1	36116035	2	94116000
7	1	36116036	3	94116000
8	1	36116037	3	94116000
9	1	36116038	3	94116000
10	1	36116039	3	94116000
11	1	36116040	3	94116000
12	1	36116041	3	94116000
13	1	36116042	4	94116000
14	1	36116043	4	94116000
15	1	36116044	4	94116000
16	1	36116045	4	94116000
17	1	36116046	4	94116000
18	1	36116047	4	94116000
19	1	36116048	5	94116000
20	1	36116049	5	94116000

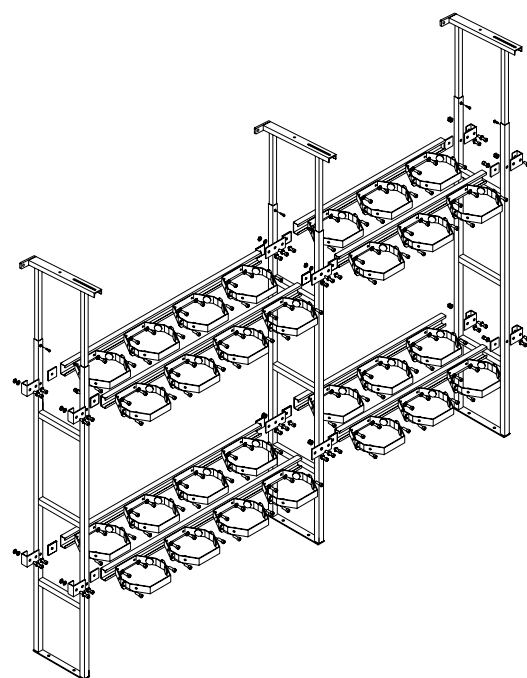
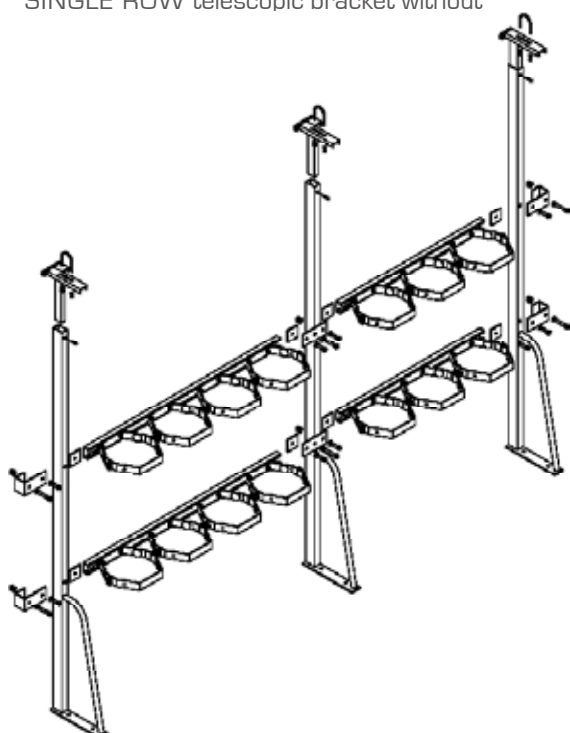
DOUBLE ROW telescopic bracket for LPG Inert®				
TELESCOPIC BRACKET			MANIFOLD SUPPORT	
N. CYL.	UNIT	P. NUMBER	UNIT	P. NUMBER
3 or 4	1	36116050	2	94116001
5 or 6	1	36116052	2	94116001
7 or 8	1	36116054	2	94116001
9 or 10	1	36116056	2	94116001
11 or 12	1	36116058	2	94116001
13 or 14	1	36116060	3	94116001
15 or 16	1	36116062	3	94116001
17 or 18	1	36116064	3	94116001
19 or 20	1	36116066	3	94116001
21 or 22	1	36116051	3	94116001
23 or 24	1	36116053	3	94116001
25 or 26	1	36116055	4	94116001
27 or 28	1	36116057	4	94116001
29 or 30	1	36116059	4	94116001

Example:

DOUBLE ROW telescopic bracket for CO₂

Example:

SINGLE ROW telescopic bracket without



LPG Brackets

SINGLE and DOUBLE ROW brackets without weighing device for

LPG INERT® 140 l.

There are different wall brackets without stand for inert gas systems with a 140 l. capacity, single (brackets of 2 & 3 cylinders) and double row (brackets of 4 & 6 cylinders):

Depending on the number of cylinders, combinations of the two models are possible.
The number of manifold supports depends on the number of cylinders in the bank.

EXAMPLE:

For a bank of 12 SINGLE ROW cylinders of 140 l.: 4 bracket units for 3 cylinders (p. number 30603100)



EXAMPLE:

For a bank of 17 SINGLE ROW cylinders of 140 l.: 5 bracket units for 3 cylinders (p. number 30603100) + 1 bracket unit for 2 cylinders (p. number 30602100)



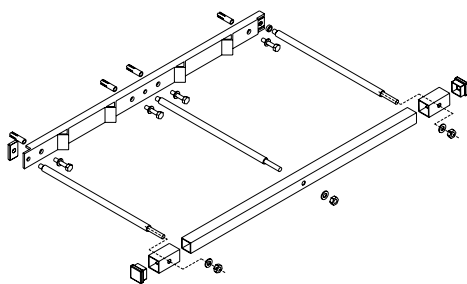
SINGLE ROW brackets

DESCRIPTION	P.NUMBER
Bracket for 2 cylinders	30602100
Bracket for 3 cylinders	30603100

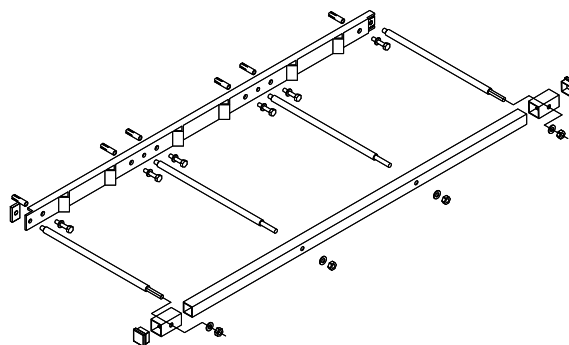
DOUBLE ROW brackets

DESCRIPTION	P.NUMBER
Bracket for 4 cylinders	30604100
Bracket for 6 cylinders	30606100

SINGLE ROW bracket for 2 cylinders (30602100)



SINGLE ROW bracket for 3 cylinders (30603100)



SINGLE ROW Manifold support for banks

DESCRIPTION	UNIT	P.NUMBER
From 2 to 4 cyl.	2	30680006
From 5 to 8 cyl.	3	30680006
From 9 to 12 cyl.	4	30680006
From 13 to 16 cyl.	5	30680006
From 17 to 20 cyl.	6	30680006
From 21 to 24 cyl.	7	30680006
From 25 to 28 cyl.	8	30680006

DOUBLE ROW Manifold support for banks

DESCRIPTION	UNIT	P.NUMBER
From 2 to 8 cyl.	2	30009200
From 9 to 16 cyl.	3	30009200
From 17 to 24 cyl.	4	30009200
From 25 to 32 cyl.	5	30009200

LPG Brackets

PEC Brackets

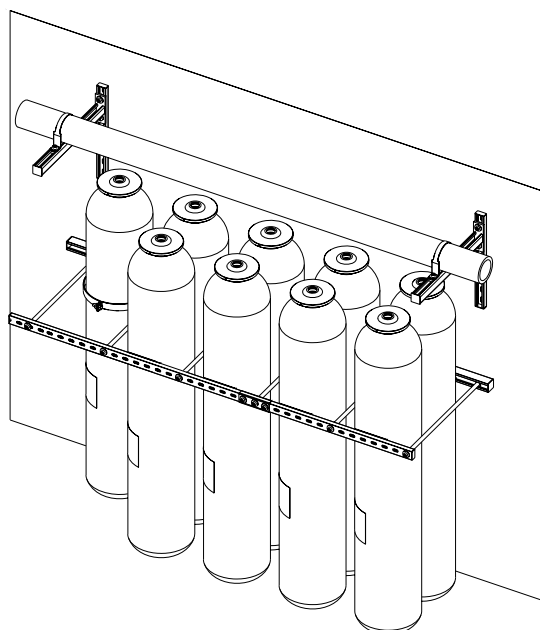
LPG has designed a new line of economical brackets fabricated with steel.

They are supplied for single and double row cylinders of 67 l. and 80 l. without weighing device for **LPG INERT®** and **CO₂**.

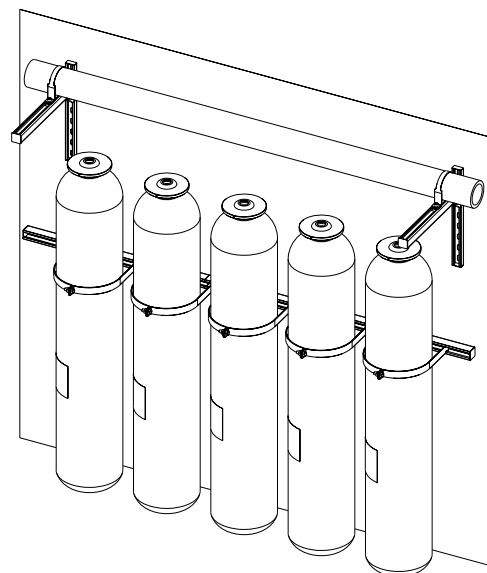
PEC Brackets	
DESCRIPTION	P.NUMBER
SINGLE ROW PEC Bracket Kit for 3 cylinders	36116152
SINGLE ROW PEC Bracket Kit for 2 cylinders	36116151
SINGLE ROW PEC Bracket Kit for 5 or 6 cyl.	36116165
SINGLE ROW PEC Bracket Kit for 3 or 4 cyl.	36116273
SINGLE & DOUBLE ROW 2 Manifold Support Kit	36116193

"U" Brackets for PEC Brackets	
DESCRIPTION	P.NUMBER
Bracket Ø 3/4" (20-27mm)	36116250
Bracket Ø 1" (25-34mm)	36116251
Bracket Ø 1 1/2" (40-48mm)	36116253
Bracket Ø 2" (50-60mm)	36116254
Bracket Ø 3" (80-90mm)	36116256
Bracket Ø 4" (100-115mm)	36116258

Example of a 9 cylinder DOUBLE ROW combination:
 PEC bracket kit for 5 or 6 cylinders (36116165) +
 PEC bracket kit for 3 or 4 cylinders (36116273) +
 double row manifold support kit



Example of a 5 cylinder SINGLE ROW combination:
 PEC bracket kit for 3 cylinders (36116152) + PEC
 bracket kit for 2 cylinders (36116151) + single row
 manifold support kit



Notes to consider:

- For both SINGLE and DOUBLE ROW, at least one wall fixed manifold support shall be installed for every 6 cylinders.
- For each manifold support kit, and depending on the manifold's diameter, two brackets shall be ordered.

iFlow® Matrix bracket fittings

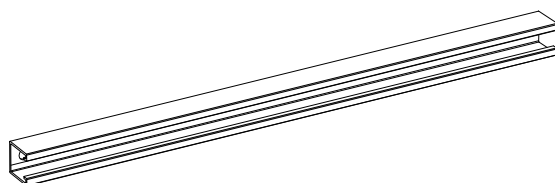
We have designed a distinctive bracket fitting adapted to the matrix system, which allows **removing the minimum number of bottles**, unlike traditional systems.

The matrix bracket fitting consists of Kits which, in simple combinations, are useful for the 67 & 80 litres batteries for the **iFlow®** system.

Matrix iFlow® bracket fittings	
DESCRIPTION	P. NUMBER
2 cylinder rail	36116274
3 cylinder rail	36116200
Rail set for iFlow® matrix fittings	36116291
Kit Matrix screw Bracket iFlow®	36116292
Matrix Bracket iFlow®	36116293
Simple Row manifold Support	30640006

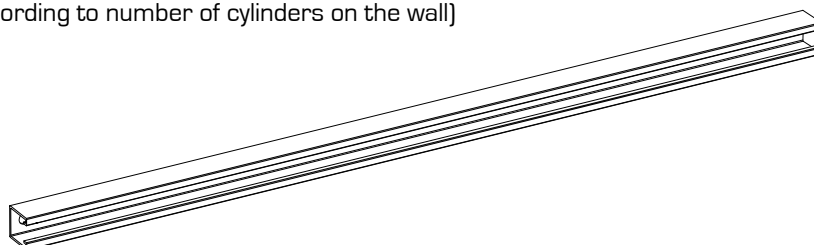
2 cylinder rail

(According to number of cylinders on the wall)



3 cylinder rail

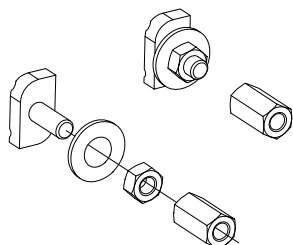
(According to number of cylinders on the wall)



iFlow[®] Matrix bracket fittings

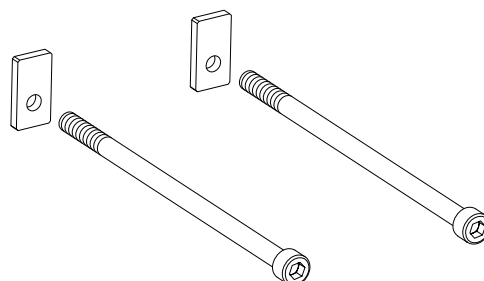
Rail set for *iFlow*[®] matrix fittings

[3 per rail 2 cylinders & 4 per rail 3 cylinders.]



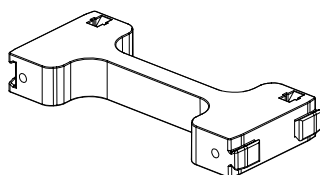
Kit Matrix screw Bracket *iFlow*[®]

[1 for cylinder.]



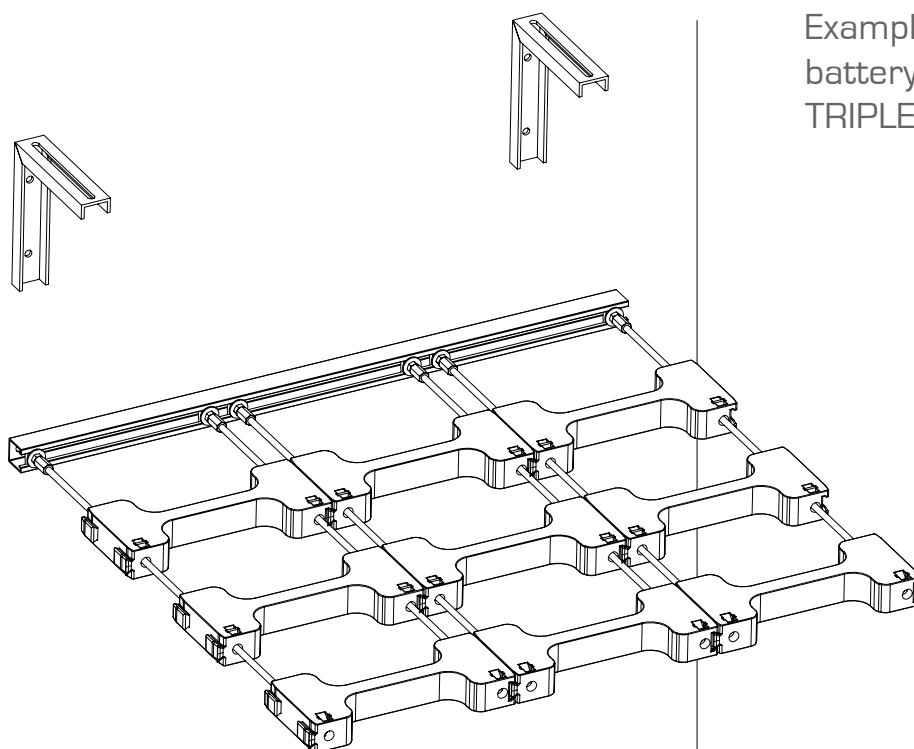
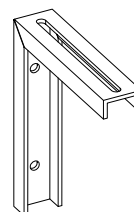
Matrix Bracket *iFlow*[®]

[1 for cylinder]



SIMPLE ROW manifold Support

[1 for 6 cylinders]



Example 9-cylinder
battery Inert 80 liters of
TRIPLE ROW



Special systems

LPG has several different extinguishing agents for specific applications. This broadens its complete product range and offers its clients more specific solutions. Among these, it should be highlighted **LPG's** highly efficient fire extinguishing system for the **protection of gas stations** in case of fires generated by leaks of flammable liquids during re-fuelling of vehicles.

The **foam or dust deposits** are independent extinguishing equipments, easy to install, use and give maintenance to. They are designed for the extinction of fires in risks that require important amounts of foaming agent or extinguishing powder (such as open spaces and class B or C fires).

Finally, it shall be mentioned that the selector valves allow the protection of several different risks using one single centralized system (bank). It is therefore vital that an outbreak of fire in two of the protected risks be difficult to take place at the same time.

Solutions for commercial kitchens: **LPG ProteK**

LPG has designed an automatic extinguishing system for industrial kitchen hoods, based on an effective foam solution.

LPG ProteK systems are activated electrically as well as manually.

A control panel, **LPG ArtDetec**, which activates the electrical discharge on receiving the confirmation of fire detection through the thermal probes, controls the equipment.

When kitchen devices start to burn, there is a sudden increase of the temperature in-

side the kitchen hood. The thermal sensors detect it and start the extinguishing process. The process ends with the electrical activation of the valve and the discharge of the extinguishing agent through the discharge pipe network and the nozzles.

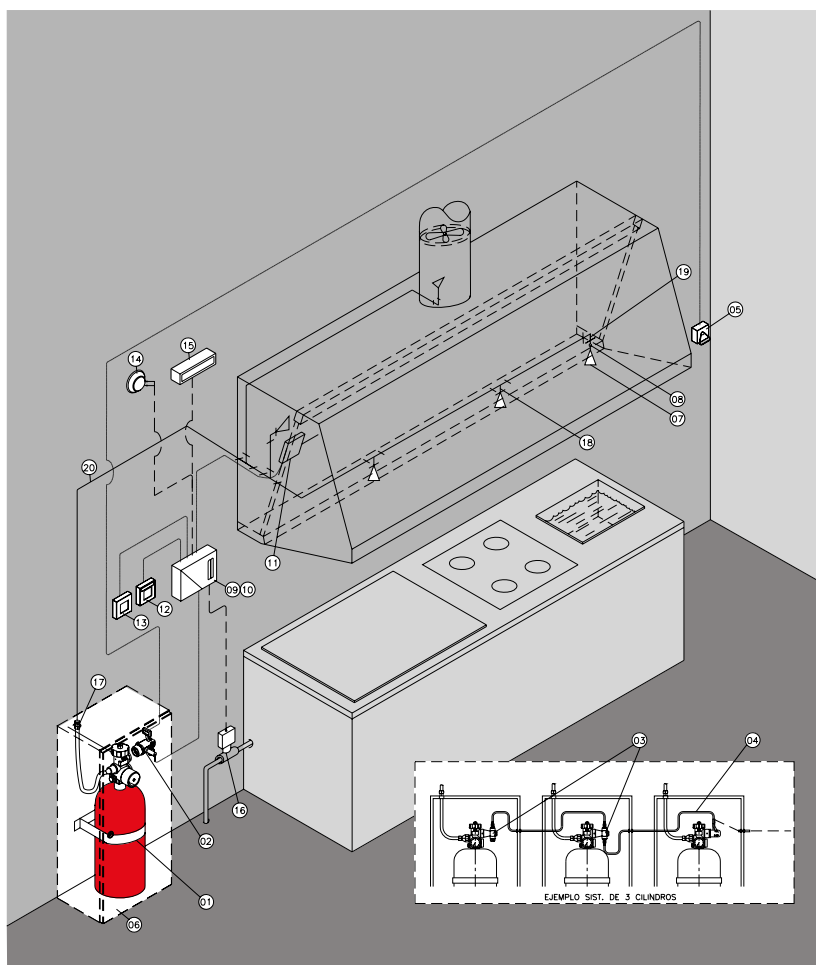
The foamy solution used by **LPG ProteK** extinguishes the flames efficiently and isolates the burning grease particles from air. This protective coating allows the area to cool down and avoids re-ignition.

MAIN ADVANTAGES:

- *Faster and easier to install*
- *Non-corrosive extinguishing agent*
- *Electrical and manual activation*
- *Most cost-efficient product on the market*
- *Rapid re-utilisation*
- *Flexibility of design*

Elements of the system

- 1 Extinguishing agent cylinder
- 2 Triple manual release
- 3 Cone
- 4 Nickel-plated duct
- 5 Remote manual release
- 6 Cabinet
- 7 Nozzle
- 8 Articulate Adaptor
- 9 Control panel
- 10 Bank
- 11 Thermal Probes
- 12 Discharge Button
- 13 Stop Button
- 14 Siren
- 15 Illuminated warning sign
- 16 Valve
- 17 Straight coupling
- 18 T
- 19 Elbow
- 20 Stainless Pipe



Solutions for commercial kitchens: **LPG ProteK**

There is a high fire risk for kitchen hoods as fire is part of the kitchen environment. A good protection not only should entail the extinction of the fire but also cooling the oil down to avoid re-ignition. The scope of protection should involve fryers, hobs, extraction hood filters and fume extract ducts.

The new **LPG ProteK** system is a good solution for this type of appliances. Following we will describe the advantages compared to other kitchen hood fire detection and extinction systems.

Faster and easier to install

Fire is detected by thermal probes. Fuse boards, pulleys or metal guide tube for cable shot are not necessary. Only one thermal sensor for every three linear metres of kitchen is required, in contrast with the use of fuse boards where you need one per appliance to protect.

Most cost-effective product on the market

LPG is the first Spanish company with its own technology and development. This allows us to offer you more economical solutions than any existing products in other countries.

Non-corrosive extinguishing agent

In contrast to other extinguishing agents, **LPG ProteK** uses an aqueous solution with a neutral pH. Therefore, it does not corrode metals in a kitchen.

Rapid re-utilisation

Extinguishing agent is easy to clean, allowing the kitchen to be re-utilised within minutes.

Electrical and manual activation

The manual release allows an activation of the system at the first sign of fire, even before it is automatically released.

Safety and quality guarantee

The **LPG** valves are 100% tested and offer a reliable and safe performance in all their functions.

They are designed and manufactured by **LPG** and they incorporate protection against accidental discharge due to any possible micro-leakage.

Flexibility of design

The pipe network can be designed in such a manner that it does not interfere with the workflow in the kitchen.

The **LPG ProteK** system is available in two cylinder sizes (12 l. and 25 l.) and can be adapted to fit any kind of kitchen structure or placement of kitchen appliances. Subsequent changes in the placement of the appliances are possible.

It is capable of activating remote visual or acoustic alarms. One single release signal can trigger several cylinders.

Reduced size

It needs less space due to its reduced size compared to CO₂ systems.

Permanently active

Many fires start in empty premises due to hot coals, fryers still on, etc... Consequently, the detection and extinguishing system must function 24 hours a day, 365 days a year, with or without personnel.

Non-toxic

The extinguishant is non-toxic and does not release toxic vapours during discharge.

Complete extinction in multiple appliances

The protected range includes hobs, hood and plenum and fume extract ducts.

Solutions for commercial kitchens: **LPG ProteK**

Calculation method

System description

LPG ProteK systems are composed of a storage system, a distribution system and discharge nozzles. All are associated to a detection and actuation system that shall not be included in the present manual.

The configuration of the systems has been

standardised to a maximum in order to facilitate the design and assemblage of the systems as well as to minimize the possibility of error in the placing of the nozzles into the distribution net.

ELEMENTS AT DISPOSAL:

- Storage system: Cylinders of 12 or 25 litre capacity assembled with a discharge valve and charged with the extinguishing agent. Pressurized at 15 bars 20°C.
- Discharge nozzles: There are five models available (1A, 1B, 2A, 2B and 2C) for the specific characteristics of the kitchen to be protected. The cylinder size shall be chosen according to the number and type of the required nozzle.

Design procedure

The following describes the recommended procedure to determine the requirements for a kitchen protection system:

- | | |
|--------|---|
| STEP 1 | To determine the required number of points, based on the calculation norms for the protection of the extraction duct, hood and cooking devices. |
| STEP 2 | To determine the cylinder number and model, in relation to the maximum number of flow points per cylinder. |
| STEP 3 | To make a sketch of the nozzles, piping net and cylinder location. To determine the pipe's length is as accurate as possible. To verify the maximum number of elbows does not exceed. |
| STEP 4 | To sum up all the tube lengths and multiply them with the ml/m. If the result is within an acceptable amount, the section of the selected tube is correct. If, on the other hand, the permitted value exceeds, the volume should be recalculated using the ml/m of a section of the smaller pipe. |
| STEP 5 | To check the calculation of the volumes is correct and that the maximum volume between the first and the last nozzle is not exceeded. |

Selection of the cylinder

Once the number of nozzles, its model and distribution has been decided, the necessary flow points for the specific kitchen shall be determined, adding up the total flow points and determining the adequate cylinder for the mentioned value. In no case shall the number of flow points required be bigger than the number of flow points the chosen cylinder contains, according to the following chart:

CYLINDER SIZE	FLOW POINTS
12 litres	8
25 litres	18

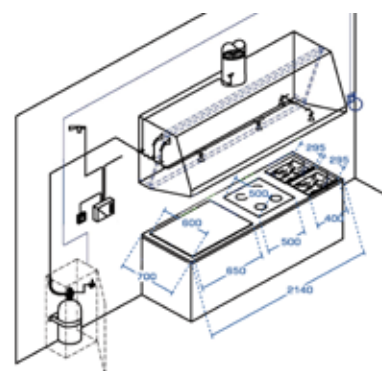
Solutions for commercial kitchens: **LPG ProteK****Design
criteria**

COOKING DEVICE	COVERAGE LIMITATIONS	HEIGHT RANGE	NOZZLE TYPE	NR OF FLOW POINTS
Deep fryer without drainer	48 x 49.5 cm max.	33-122 cm	2A	2
Deep fryer with drainer	45.7 x 70.5 cm ² max.	61 - 122 cm.	2A	2
Tilt frying pan	49.5 x 64.5 cm ² max.	33 - 61 cm.	2B	
Kitchen with small hobs	30.5 x 71.1 cm ²	102 - 127 cm.	1A	1
		33 - 61 cm.	1B	
Kitchen with large hobs	71.1 x 71.1 cm ²	86 - 122 cm.	2B	2
Small wok	Max. diameter 61 cm, 15 cm deep	61 - 122 cm. 15 cm deep	1A 1B	1
Large wok	Max. diameter 76.2 cm 20 cm deep	61 - 122 cm. 33 - 61 cm.	2A 2B	2
Small griddle	Max. area 6968 cm ² Max. length 91 cm.	61 - 122 cm. 25 - 61 cm.	1A 1B	1
Large griddle	Max. area 9290 cm ² Max. length 122 cm	61 - 122 cm. 25 - 61 cm.	2A 2B	2
Small Gas Grill	Max. area 4026 cm ² Max. length 66 cm	61 - 122 cm. 33 - 61 cm.	1A 1B	1
Large Gas Grill	Max. area 5574 cm ² Max. length 91.4 cm	91 - 122 cm. 33 - 91 cm.	2A 2B	2
Lava Grill	Max. area 4026 cm ² Max. length 66 cm	38 - 89cm.	2B	2
Coal Grill	Max. area 3097 cm ² Max. length 61 cm	61 - 89 cm. 38 - 61 cm.	1A 1B	1
Salamander Grill	Max. area 6865 cm ² Max. length 91 cm	N/A	1B	1
Chain Grill	Max. area 6619 cm ² Max. length 97 cm	N/A	1B	1
Ventilation ducts	Max. diameter 81 cm Max. length 86.4 cm Max. perimeter 254 cm	N/A	2C	2
Hood (fan)	Range 3.1 m Filtering body 1.2 m wide	N/A	1A	1

Calculation example of LPG ProteK Solution

First, decide on the required number and type of nozzles, assuming that the nozzles line will be placed at 1 m far:

Calculo de puntos de flujo		
ELEMENT	NOZZLE	FLOW POINTS
Hob 50 x 50	2B (1 unit)	2
Small Griddle 80 x 60	1A (1 unit)	1
Fryer 40 x 30	2A (2 unit)	4
Hood	1A (1 unit)	1
Plenum	1A (1 unit)	1
Duct	2C (1 unit)	2

**Offer components**

DESCRIPTION	P. NUMBER	DESCRIPTION	P. NUMBER
Cylinder set 25 l. comprised of an extincitor, brackets, hose and extincitor agent	50113004	Articulate Adaptor	32116005
Triple manual discharge / explosor	26116017	Central ARTDETEC	W03502EX
Remote manual release	50113006	2 banks	00001180
Cabinet (optional)	50113008	Thermal Probe	60800030
1 Nozzle ProteK 2B	32116002	Stop button (optional)	W1000008
3 Nozzles ProteK 1 ^a	32116001	Release button	W1000007
1 Nozzle ProteK 2 ^a	32116003	Illuminated warning sign	00007600
1 Nozzle ProteK 2C	32116004	Siren (optional)	01000015

Solutions for commercial kitchens: **LPG ProteK**

Components of the extinguishing system



System per litres

DESCRIPTION	P.NUMBER
Cylinder set 12 l. comprises extinguisher of 12l., brackets and hose of Ø 1/2". WITH extintor agent	50113002
Cylinder set 12 l. comprises extinguisher of 12l., brackets and hose of Ø 1/2". WITHOUT extintor agent	50113003
Cylinder set 25 l. comprises an extintor of 25l., brackets and hose of Ø 1/2". WITH extintor agent	50113004
Cylinder set 25 l. comprises an extintor de 25l., brackets and hose de Ø 1/2". WITHOUT extintor agent	50113005

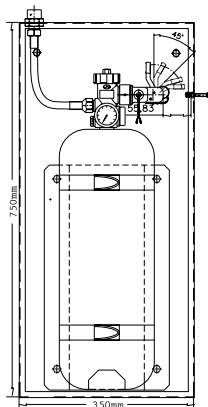
Cylinder release elements

DESCRIPTION	P.NUMBER
Triple manual discharge / explosor: for 1st cyl.	26116017
Cone set of 1 or 2 rails for middle and final cyl. For pneumatically release cyl.	26116015
Copper pipe 4 x 6 nickel-plated to join discharge elements pneumatically. Price per metre.	30804061

Remote Manual Release

DESCRIPTION	P.NUMBER
Remote Manual Release. Includes kit of 10 m steel cable with housing and tensors	50113006

Accessories



Cabinet	12 l.	25 l.
DESCRIPTION	P.NUMBER	P.NUMBER
Cabinet for stainless steel cylinder ready to fix on wall	50113007	50113008

Nozzles

DESCRIPTION	P.NUMBER
Contain filter and stainless protecting cap to avoid entry of dirt in the system.	
PROTEK 1B.	32116000
PROTEK 1A.	32116001
PROTEK 2B.	32116002
PROTEK 2A.	32116003
PROTEK 2C.	32116004
Articulate Adaptor for Nozzles	32116005

Assemblage accessories	Pipe Ø 12	Pipe Ø 15
DESCRIPTION	P.NUMBER	P.NUMBER
Straight coupling M1/2" G A	35116203	35116206
"T"	35116204	35116207
Elbow	35116205	35116208
Stainless Steel Pipe S/S AISI 316L 12 x 1 DIN 2462	H20T1201	H20T1515

Components of the detection system



Artdetec 200 E Control Panel

It has two detection areas and extinguishing control. Main characteristics:

- It distinguishes between short-circuit and open circuit in case of failure.
- It distinguishes between detector and call point alarm within the same area.
- It has the possibility of control through SMS from a mobile phone (Optional).
- It has three levels of access.
- Surveillance mode and test mode.
- Timing output relays and sirens.
- Limited bank load control (it preserves power source).
- Four general outputs (one rechargeable and one supervised).
- Two outputs for activation (one supervised and one dry contact).
- Two temporized release outputs (one supervised and one dry contact) + four general outputs.
- Release button programming to cancel delays.
- It can incorporate a telephone module to control through SMS. (Optional).
- Connector in the reloading input circuit
- Comply with standard EN 54 part 2 and 4, and with EN 12.094 part 1.

Illuminated Warning Sign – Extinction alarm release

Visual-acoustic alarm release. It is easy to install and highly visible. While at rest, words remain hidden.



ISA Conventional Siren (Optional)



- Incorporates base for connections
- Automatic change of polarity
- Consumption: 75 mA
- Sound power at 1 m = 95 dB
- Power supply: 12/24 V without polarity

Temperature Sensing Rod

It has an adjustable temperature. The protection threshold can be adapted depending on the maximum working temperature of the kitchen.



IPC Extinguishing release button

IPC buttons are designed to assemble directly onto standard mechanisms, embedding the unit into the wall. They can be reset from alarm position without replacing any element.

For higher operational security, they also incorporate led and cap.

They include mounting base and are fabricated and designed according to EN54-11.



Stop Button

Designed to assemble directly onto standard mechanisms, embedding the unit into the wall

Once pressed, the electric release system cancels.



Components of the detection system

DESCRIPTION	P.NUMBER
Extinction Control Panel Artdetec 200 E	03502EXT
Battery of 12 V.7 Ah. 2 units required	00001180
Illuminated sign - extinction released	00007610
IPC Extinguishing release button	W1000007
TEMPERATURE SENSING ROD	60800030
Stop button	W1000008
ISA Conventional Siren	01000015

Battery of 12V. 7 Ah

Two units are required for installation.



Spares

DESCRIPTION	P.NUMBER
Spare round methacrylate + 2 subject washers. P/Remote manual release (LPG ProteK)	50113010
Pyrotechnic Spark Gap [=Explosor]. G 1/8" high pressure (ref.74000p03)	30110604
Secur Pull Sealing 3,8 (445 mm) blue	35116069

LPG AQUAFOG®

Kitchen hood systems

This water mist system supplies a quick and efficient extinction of fires caused by flammable liquids, avoiding any risk of re-ignition. It also has an incomparable capacity for deep-seated fire suppression.

One of the main advantages of the system is that **little amounts of water are required, and therefore the damages caused by water are minimized.**

Its protection scope is for fryers or stoves, extraction hood filters and the fume extraction ducts.

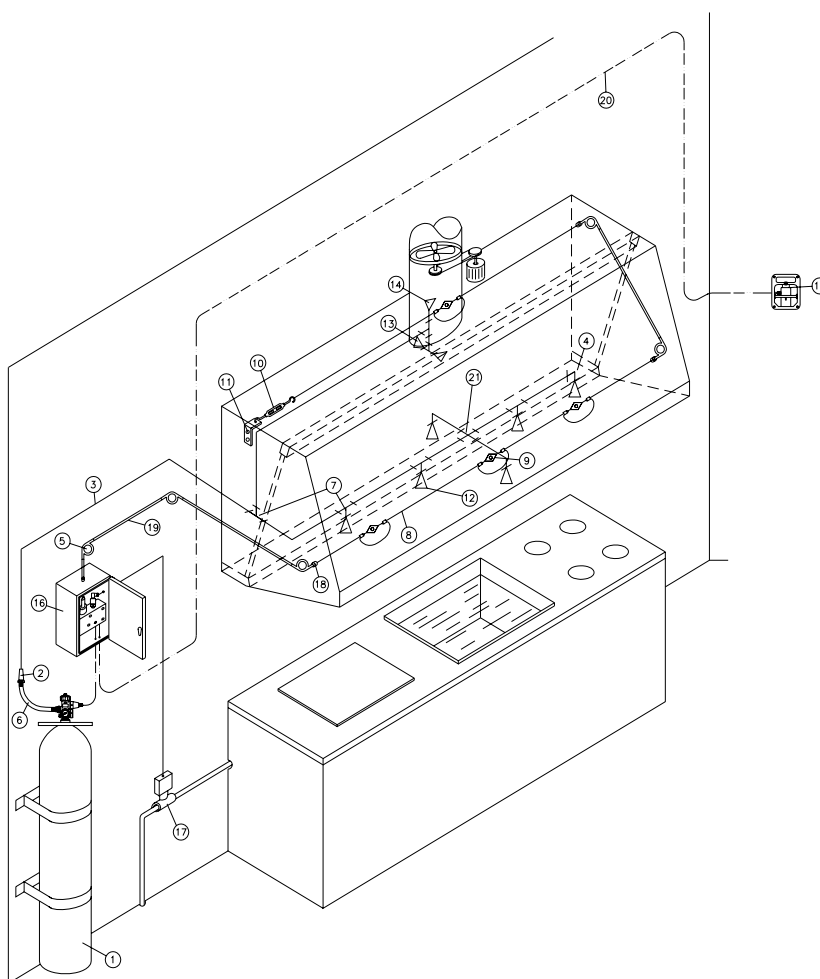
The flexibility of this system makes it adaptable to any worktop layout regardless of the number of fryers and/or stoves available, being the only limitation that the maximum size of these must be 600 x 600 mm.

The design of the system considers the need to close all power supplies to fryers, stoves and extraction system.

Detection can be thermal, being the maximum activation temperature 144° C [according to NFPA 96 and NBR 14518].

Note:

To carry out designs with thermal probe please contact with **LPG**



Material included in system

1 Water cylinder LPG 128	12 Atomizer "T" pipe ø12mm 3 l./min
2 Reduction H-H OF 1/2" to Ø12 Reduction H-H OF 1/2" to Ø15	13 Atomizer "T" pipe ø12mm 1,26 l./min
3 Stainless Steel Pipe 12x1 mm Stainless Steel Pipe 15x1 mm	14 Atomizer open environment 6,00l./min
4 Nickel-plated brass elbow ø12 Nickel-plated brass elbow ø15	15 Mechanical manual release system
5 Cable guide pulley	16 Box for Automatic release mechanism
6 Discharge hose R2 1/2" x 350mm MF/HG	17 Gas by-pass valve with automatic closing
7 Nickel-plated brass "T" Ø12 Nickel-plated brass "T" Ø15	18 Pulley-hood joint
8 Steel cable of 2mm	19 Protector pipe stainless steel cabl Ø 10mm
9 Fuse Board 141 ° Fuse Board 182 °	20 Nickel-plated pipe Cu 6x4
10 Galvanized steel cable tensor Ø 2mm	21 Nickel-plated Cross Ø 12mm
11 Cable tensor support	

Notes to consider

LPG HAS AVAILABLE 26, 50, 67,5 AND 80 LITRE CYLINDERS; CENTRALIZED SYSTEMS CAN BE SUPPLIED IF REQUIRED, which

are made of two equal cylinders as the ones previously described, equipped with stainless steel 3/4" MANIFOLD, 1/4" x 350 mm teflon

hoses, elbow and adjustable "T", bracket and set of labels.

CO₂ Kitchen hood systems

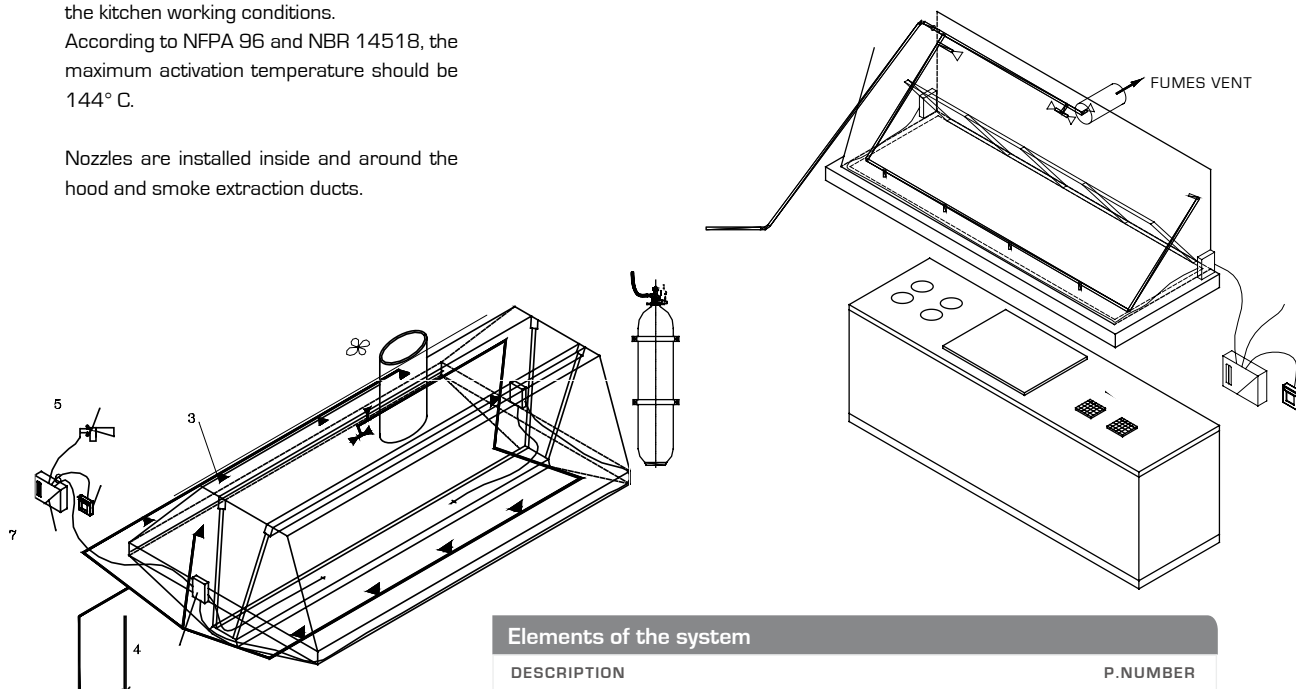
Specific CO₂ system for the protection of fryers, associated hoods and kitchen aspiration ducts designed according to CEPREVEN RTA-CO₂ / CEA 4007 standards or to NFPA-12. For fire detection, an adjustable temperature sensing rod is used, which allows adjustment of the alarm threshold to the kitchen working conditions.

According to NFPA 96 and NBR 14518, the maximum activation temperature should be 144° C.

Nozzles are installed inside and around the hood and smoke extraction ducts.

MAIN ADVANTAGES:

- Leaves no waste after use
- Easy to refill
- Fast and efficient penetration in the protected area
- Does not generate decomposition products in contact with flames



Elements of the system

DESCRIPTION	P. NUMBER
TEMPERATURE SENSING ROD WITH RELAY of 24 V.d.c. (6080024R) or 220 V.a.c. (6080003R). Designed to work with a solenoid, it allows power feeding even when the risk temperature decreases. The 24 V. unit should be used with fire station, and the 220 V. unit can be used without a station. (Count 1 every 3 metres).	6080024R 6080003R
TEMPERATURE SENSING ROD WITHOUT RELAY is reset when the temperature decreases, cutting the power supply to the electrical release. It should be used with fire station. It can operate at 24 V.d.c. or 220 V.a.c.	60800030
CO ₂ 1/2" nozzle cone, drilled to discharge in 30 seconds - local application -	30460C12
CO ₂ 3/8" nozzle cone, drilled to discharge in 30 seconds - local application -	30460C38
CO ₂ 1/4" nozzle cone, drilled to discharge in 30 seconds - local application -	30460C14
Push button release: a slight pressure triggers the discharge. (WITHOUT protective cap)	W1000007
Protective cap	22116007
KR-24 Illuminated sign	00007610
SK-07 electronic siren; 17 mA consumption; Sound level 95 db at 1 metre	01000015

Notes to consider

- If the hood is longer than 2.5 metres, a "T" should be placed inside the filters with two centred nozzles and an additional one at the beginning of the duct.
- Estimated Nr. of nozzles = 2 per cylinder.
- All the filter nozzles are 1/4" aluminium cones with anti-grease joint in its inner core.
- For piping types and accessories, see chapter CO₂ in this price list.
- The maximum length that the temperature sensing rod bulb can reach is 3 metres; if the hood is bigger then use as many as necessary.

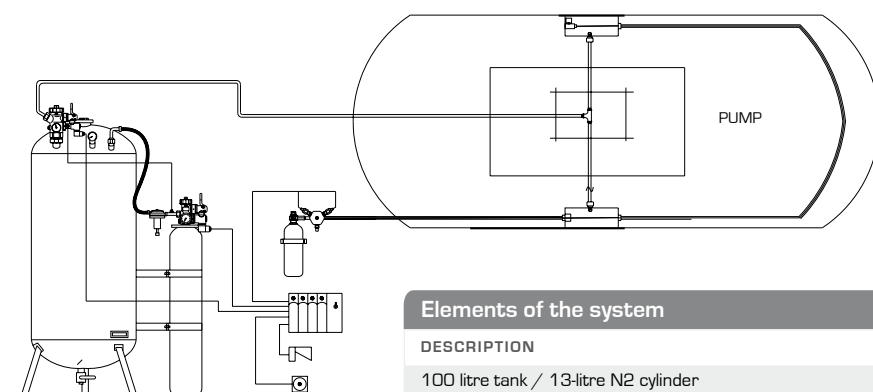
Foam Equipment for Service Stations

FIRE DETECTION AND EXTINGUISHING SYSTEM is appropriate for protecting service stations from the pouring of flammable liquid.

The system is designed to prevent vehicle-refuelling areas from fuel spillage. The vertical tank is made of stainless steel.

Characteristics

- It detects and extinguishes fire automatically in its initial stage.
- It allows activation of the electrical manual release.
- It allows incorporating selector valves to protect several pumps with only one tank of extinguishing agent.
- Automatic failure signal in the detection system.
- It allows switching on alarms, switching off pumps, etc.



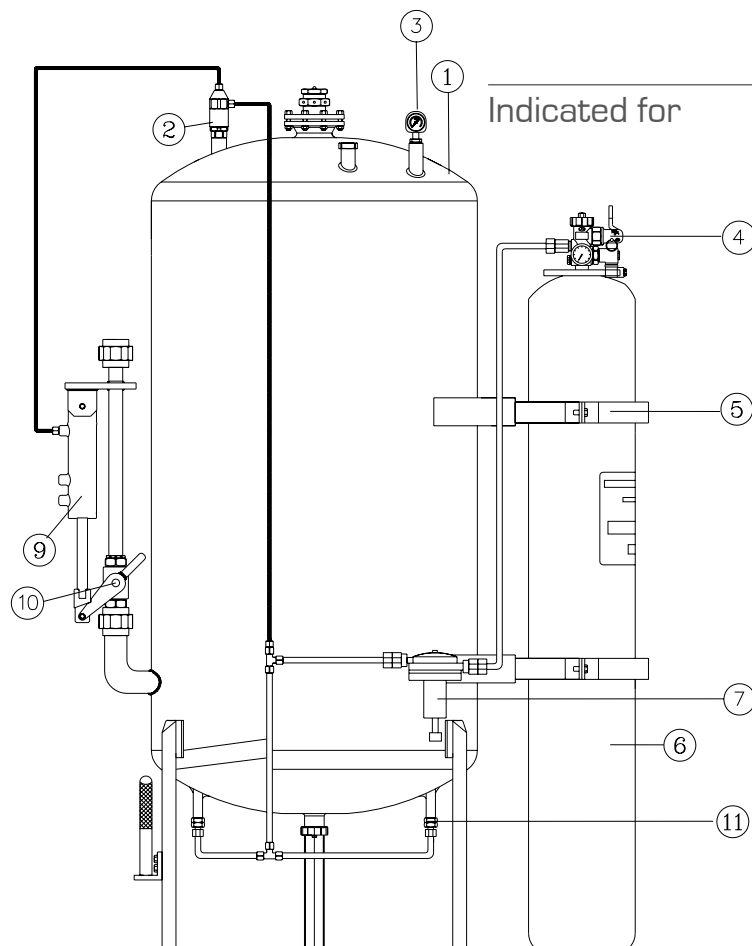
Elements of the system

DESCRIPTION	P. NUMBER
100 litre tank / 13-litre N2 cylinder (For 2 boxes / 100 litres of foam at 8%)	606KD117
250 litre tank / 30-litre N2 cylinder (For 4 boxes / 200 litres of foam at 8%)	606KD300
100 litre tank controller (One per tank without selector valve)	606KIT74
250 litre tank controller (One per tank without selector valve)	606KIT75
Manifold ø 1 1/2" for two selector valves	36544002
Manifold ø 1 1/2" for three selector valves	36544003
Manifold ø 1 1/2" for four selector valves	36544004
Manifold ø 2 1/2" for two selector valves	36544005
Manifold ø 2 1/2" for three selector valves	36544006
Manifold ø 2 1/2" for four selector valves	36544007
LPG-145 selector set (as required, min. 2)	606KIT14
Joint Nut 1 1/2" M-H (one per tank of 100 l). (With two or more selector valves)	606KIT73
Joint Nut 2 1/2" M-H (one per tank of 250 l). (With two or more selector valves)	30830125
Buffer N2 of 3 litres LPG-60 with pressure switch (1 per risk)	606KIT41
Initial Box with nozzle (as required)	606KIT31
Final Box with nozzle and Pressure Gauge (as required)	606KIT30
Medium Box with nozzle (as required)	606KIT32
Connection accessories set 2 boxes (1 per set of 2 boxes)	606KIT34
Connection accessories set 4 boxes (1 per set of 4 boxes)	606KIT48
4 x 6 Copper pipe (as many metres as distance from tank to pump. Max. 25 m.)	30804060
WIRSBO 25 mm pipe (as many metres as distance from tank to pump, Max. 25 m.)	606KIT08
Control Module de control (Max. 3 selector valves per module)	606KIT35
Manual release button with protective box (1 per risk)	606KIT51
SK-07 Alarm Siren (1 per system)	60460631

Powder Tanks

Characteristics

Fixed fire protection system using chemical powder



Indicated for

- Open spaces
- Class B and C fires

The set consists of

Vertical tank made of steel plate **(1)** with appropriate capacity, as per the table below, with 0-25 bar pressure gauge **(3)** pneumatic activator **(2)** set at 8/10 bar for automatic opening of PN-16 valve output **(10)** of suitable diameter assembled on a cart with pneumatic cylinder **(9)** and threaded outlet for connection to a network and pressure reducer **(7)** N₂ inlet **(11)** with DUNLOP system.

Cylinder **(6)** pressurized at 150 bar, of appropriate capacity with double brackets **(5)**, includes LPG-128 N₂ valve **(4)**, solenoid, manual lever and pressure gauge, and adaptor for a reducer.

The set is complete with instruction labels and selector close lever

Powder tank systems

MINIMUM SPACE REQUIRED HIGH	B	C:	CAPACITY LITRES	LOAD / KG POWDER BC/ PULVEX	CAPACITY N ₂ CYLINDER	OUTPUT DIAMETER	P.NUMBER
1200	565	365	60	60	1 de 6.70	1"	606SC050
1350	565	450	116	116	1 de 13.4	1½"	606SC100
1000	1020	750	300	300	1 de 26.8	2½"	606SC250
1180	1020	750	500	500	1 de 50.2	2½"	606SC500
1720	1020	750	750	750	2 de 50.2	3"	606SC750
1800	1020	750	1000	1000	2 de 50.2	3"	606SC999

Concepts to consider

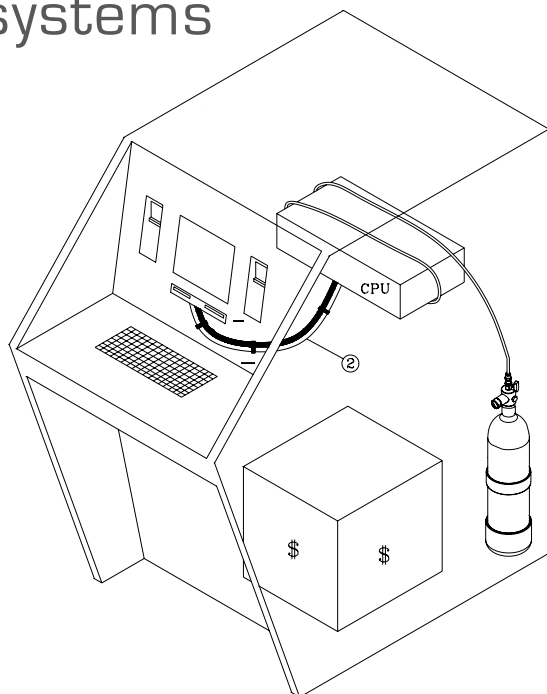
DESCRIPTION	P.NUMBER
Kilo of Powder BC	400BC000
Kilos of Powder PULVEX - D 7000	400PULVE
Manipulation per kilo of loaded powder	400BC001
Powder Nozzle ½" with cap Max 80 Kg/min	304AL100

Powder Nozzle



LPG PoinTTech®

Direct extinguishing systems



High-pressure equipment

The high-pressure direct extinguishing systems allow the use of high-pressure gas such as CO₂ and DuPont™ FE-13™. The valve includes an internal mechanism that reduces the cylinder pressure to the working pressure of the 50 tube. The extinguishing agent discharges by means of the LPG PoinTTech® tube.

High Pressure

DESCRIPTION	P.NUMBER
3 litres equipment	8APED003

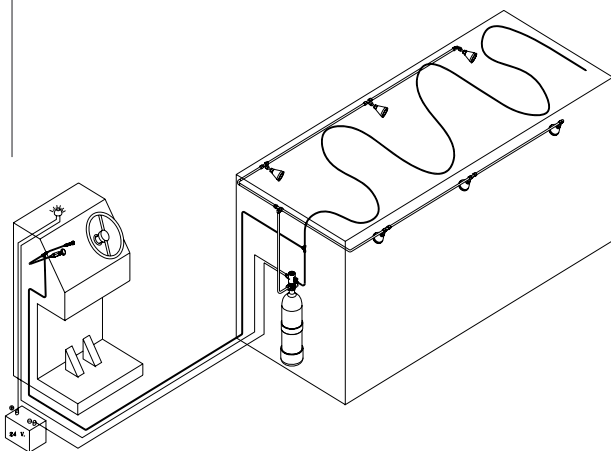
Low-pressure equipment

The low-pressure direct extinguishing systems are especially designed for volumes of up to 5 m³. The listed equipment includes pressure gauge, by-pass valve for connection of the 50 tube, coupling to the pressure switch and brackets. The extinguishing agent discharges by means of the 50 LPG PoinTTech® tube.

Low Pressure

DESCRIPTION	P.NUMBER
3 litres equipment	8BPED003
6 litres equipment	8BPED006
12 litres equipment	8BPED012

Indirect extinguishing systems



High-pressure equipment

The high-pressure indirect extinguishing equipments allow the use of high-pressure gas such as CO₂ and DuPont™ FE-13™. The valve includes an internal mechanism that reduces the cylinder pressure to the working pressure of the LPG PoinTTech® tube. It incorporates two by-pass valves for the LPG PoinTTech® tube connection. It has a W 21.7 DIN 477 outlet.

High Pressure

DESCRIPTION	P.NUMBER
5 litres equipment	8APEI005
13 litres equipment	8APEI013
26 litres equipment	8APEI026
40 litres equipment	8APEI040
67 litres equipment	8APEI067

Low-pressure equipment

The low-pressure indirect extinguishing equipment is especially designed for larger volumes than 5 m³. The listed equipment includes a pressure gauge, by-pass valve for connection of the LPG PoinTTech® tube, two 1/4" discharge outputs and brackets.

Low Pressure

DESCRIPTION	P.NUMBER
3 litres equipment	8BPEI003
6 litres equipment	8BPEI006
12 litres equipment	8BPEI012

LPG PoinTTech®

Fixed elements		
DESCRIPTION	APPLICATION	P.NUMBER
Meter of LPG PoinTTech® tube 4 x 6 (Black)	Fire break-out detection and discharge of extinguishing agent (Necessary length according to application) (high temperatures or exterior)	35133002
Meter of LPG PoinTTech® tube 4 x 6 (Red)	Fire break-out detection and discharge of extinguishing agent (Necessary length according to application)	35133003
Flange for fixing LPG PoinTTech® tube	Pipe Fixing to surfaces of small sections, irregular or drill holes (3 units per metre of tube)	803FT006
Adhesive plastic base	Pipe Fixing for smooth surfaces (2 units per meter of tube)	803FT018
LPG PoinTTech® end coupling of tube line	To assembly switch pressure or pressure gauge at the end of the line. It's also useful in previous filling of line tube LPG PoinTTech®, before setting the equipment into service. • 1 per high pressure system • 1 per low pressure system without filling kit	8B422000

Optional elements		
DESCRIPTION	APPLICATION	P.NUMBER
¼" non-return valve	Inserted in the LPG PoinTTech® tube line, it allows the passage of pressure in one way only.	20006020
Pressure switch	When pressure drops, opens/closes a dry voltage contact.	30301008
Manual push button	It allows equipment's electrical activation. Always connect to LPG PoinTTech® tube line.	8B442001
Manual push button + IE Pressure Gauge	It allows equipment's electrical activation. Always connect to LPG PoinTTech® tube line.	8B442033
Pressure Gauge, 0-25 bar T-13 Æ 25 (with o-ring)	Control of container's internal pressure or of LPG PoinTTech® tube line.	30210252
T LPG PoinTTech® Blind cap (Cap incorporated)	Alternative to the end coupling of the tube line. With this element it's not possible to use pressure switch or pressure gauge. Allows mechanical sealing of the free end of the tube (1 per free end)	35112000

Filling elements		
DESCRIPTION	APPLICATION	P.NUMBER
Filling Kit S.I.	It allows the tube filling by using the container's pressure. According to the installation requirements, only for low-pressure (indirect extin.) equipments and it comes factory-fitted on cylinder.	8FT10051
LPG PoinTTech® filling coupling at the end of the line	It allows the tube filling by using the pressure of an independent source. It is used in high and low-pressure systems, for commissioning and maintenance. For its use, it is necessary at least one end of line coupling	8FT10064

Couplings / Accessories / Nozzles		
DESCRIPTION	APPLICATION	P.NUMBER
Fitting 1/4"	It has a coupling for the LPG PoinTTech® tube and a male ¼" gas discharge output.	803FT021
Quick fitting same cross	It has 4 couplings for the LPG PoinTTech® tube.	8FT13002
Quick fitting for partition	Straight connection, two couplings for LPG PoinTTech® tube and wall fixing nuts.	8FT10504
Quick fitting T	It has three couplings connectors for the LPG PoinTTech® tube.	8FT12303
Quick Fitting Union Straight	Straight connection with two couplings for the LPG PoinTTech® tube.	8FT10406
Dif. CO ₂ ¼" cone mini/polymer		304CMINI
Dif. CO ₂ ½" cone aluminium		30460031
Dif. CO ₂ ¼" with lid		8FTDIF14
Dif. R-360 3/8"		30400000

Quantity of extinguishing agent low-pressure systems			
DESCRIPTION	CALCULATION	P.NUMBER	
kg of BC Powder	= Risk Volume x 1	400BC000	
kg of PULVEX Powder	= Risk Volume x 1	400PULVE	
kg de FM 200®	= Risk Volume x 0.725	40022700	

Quantity of extinguishing agent high-pressure systems			
DESCRIPTION	CALCULATION	P.NUMBER	
kg de DuPont™ FE-13™	= Risk Volume x 0.556	400FE130	
KILO of CO ₂	= Risk Volume x 1.6	40010000	

Piping Kits

Saving time means saving costs

LPG has developed the **PIPING KITS** for modular systems of DuPont™ FM 200®, HFC-125 and DuPont™ FE-13™ designed with the aim of saving time and easing installation.

The kits are pre-design and include pipes already cut with the required sizes and diameters depending on installation, couplings and supports.

These kits offer simplicity and speed as the installation tools are readily available:

These piping kits not only do save time on installation but also management time and costs. Similarly, they avoid having to travel to specialised premises for the purchase, cut and mechanization, transportation of tools or the machinery needed for its preparation in-situ.



Ladder



Drill



Set of spanners



Teflon tape



Dowels and Screws

Pre-engineered System

The design of the pipes was made to obtain maximum efficiency in loading and consistent with a pre-engineered system, Sch40 and Sch80 pipe using ANSI B 36 10 straight seamless. Steel material ASTM / ASME 53 99 & 106

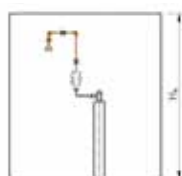
99/5L 2000 GR.B / X42, threaded accessories made of galvanized steel 3000lbs (working pressure exceeding 140 bar). These features allow us to market these systems in compliance with standards.

Types of PIPING KITS

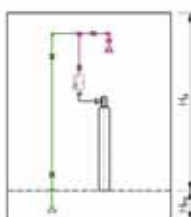
There are 4 piping kits depending on the type of room or hazard to protect:

Modular Piping Kit for void room:

• gas discharge (environment)

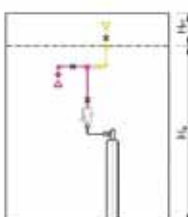


• gas discharge + raised floor



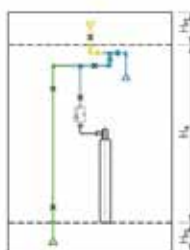
ENVIRONMENT
RAISED FLOOR
FALSE CEILING

• gas discharge + false ceiling



ENVIRONMENT
(R.F. o F.C.)
ENVIRONMENT
R.F. AND F.C.

• gas discharge + raised floor and false ceiling



How to request the PIPING KIT for modular systems

In order to request the type of PIPING KIT, you only need to provide LPG with the following data:

- ROOM SIZE (VOLUME)
- ROOM HEIGHT_A = 00 MM
- HEIGHT OF FALSE CEILING H_{FC} = 00 MM (IF APPLICABLE)
- HEIGHT OF RAISED FLOOR H_{RF} = 00 MM (IF APPLICABLE)

Piping Kits

Data to consider when requesting the KIT:

1.Height limits

In order to install correctly, there are height limits to be taken into account before ordering. These limits are listed by room type or hazard to protect.

Modular Piping Kits for environment

MM		120 l.	75 l.	67 l.	40 l.	26 l.	13 l.	5 l.
H_A	MAX.	6015	6135	6060	5810	5295	5485	4885
	MIN.	2555	2693	2596	2308	1732	1950	1260

Modular Piping Kits for environment and false ceiling

MM		120 l.	75 l.	67 l.	40 l.	26 l.	13 l.	5 l.
H_A	MAX.	6015	6135	6060	5810	5295	5485	4885
	MIN.	2555	2693	2596	2308	1732	1950	1290
H_{FC min.}	MIN.	150	150	150	150	150	150	150

Modular Piping Kits for environment and raised floor

MM		120 l.	75 l.	67 l.	40 l.	26 l.	13 l.	5 l.
H_A	MAX.	3770	3770	3770	3770	3770	3770	3770
	MIN.	2555	2693	2593	2308	1732	1950	1290
H_{RF}	MAX.	800	800	800	800	800	800	800
	MIN.	150	150	150	150	150	150	150

Modular Piping Kits for environment, raised floor and false ceiling

MM		120 l.	75 l.	67 l.	40 l.	26 l.	13 l.	5 l.
H	MAX.	3770	3770	3770	3770	3770	3770	3770
	MIN.	2555	2693	2593	2308	1732	1950	1290
H_{RF}	MAX.	800	800	800	800	800	800	800
	MIN.	150	150	150	150	150	150	150
H_{FC min.}	MIN.	150	150	150	150	150	150	150

2.Volume limits

The room volume limits depend on the type of gas and type of room or hazard to protect:

Volumes and agents

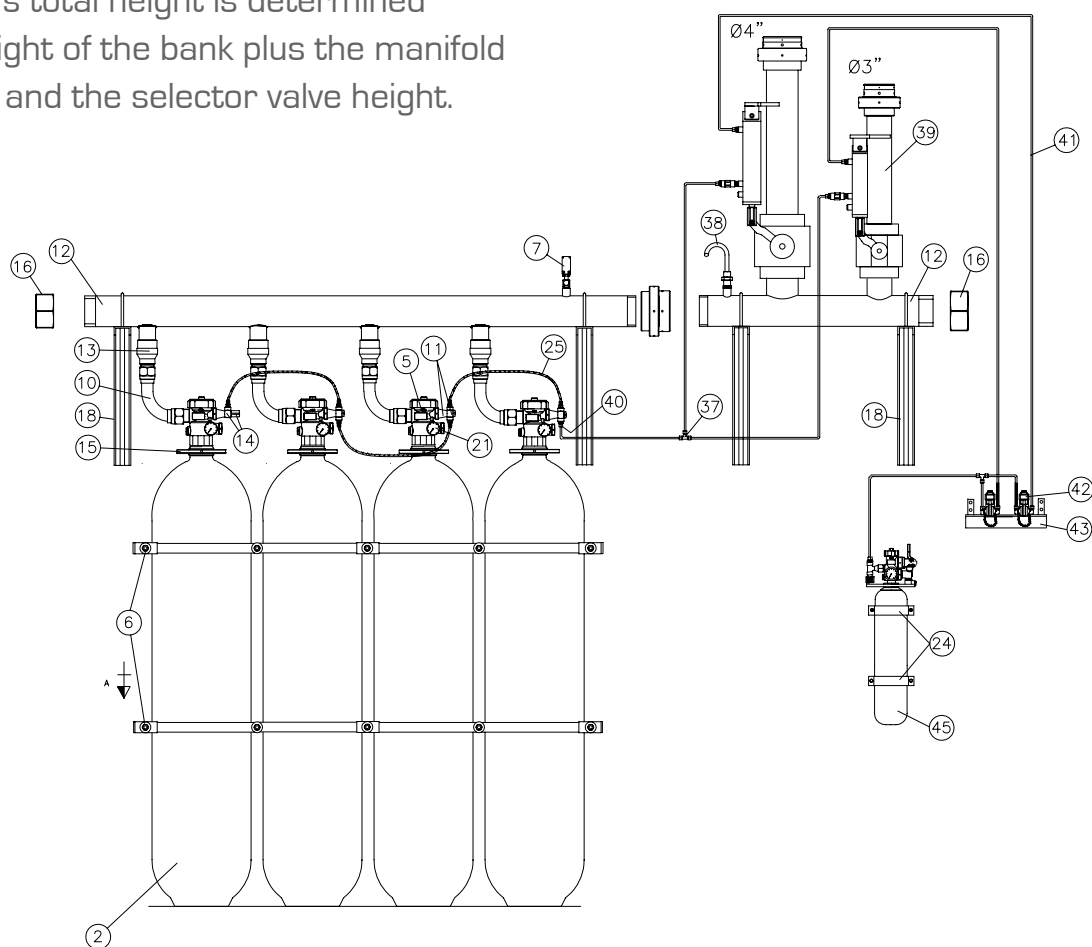
GAS	DuPont™ FM 200®		DuPont™ FE-13™		HFC-125	
HAZARD OR ROOM	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
Environment	4 m ³	220 m ³	4 m ³	182 m ³	5,5 m ³	242 m ³
False ceiling or raised floor	0 m ³	112 m ³	0 m ³	98 m ³	0 m ³	130 m ³

Selector valves

The selector valves allow the protection of different hazards using a single centralized system (bank.). In order to use this system, there should be no chance for fire to break out in two of the protected hazards simultaneously. Systems with selector valves can work with a different quantity of cylinders, depending on the needs of each hazard.

They are comprised of a high pressure ball valve, a pneumatic piston with one pressure inlet and one pressure outlet. The whole set stands on an ASTM Sch.80 steel reel threaded by both sides NPT of the same diameter as the valve. It also includes a solenoid valve and a lever for its automatic and manual release. Optionally, a micro switch for surveillance can be added.

The bank's total height is determined by the height of the bank plus the manifold diameter and the selector valve height.



Elements of the system

2 Slave cylinder	14 H. P. way pneumatic cone with "L"screw	37 "T" coupling Cu6 pipe
3 Manual actuator high pressure.	15 Red LPG 190 cylinder flange	38 Manifold safety disk
4 High pressure solenoid valve	16 Blind cap threaded NPT	39 Selector valve
5 LPG 190 valve	18 Manifold seat	40 1/4" to Cu6 coupling
6 Rack with straps	21 Pressure gauge	41 Cu tube 4x6
7 Pressure switch W/Locking device	24 Rack with straps pilot cylinder	42 Selector valve solenoid W/manual lever
10 Ridgid discharge hose 1/4"	25 PTFE release hose G.1/4" x 700 mm	43 Selector solenoid bracket
11 High pressure 2 ways pneumatic cone	27 "T" 1/4 male to 2 x 1/4" female	45 N2 pilot cylinder 3 Lt. LPG 128-90/Selector valve
12 Discharge manifold	28 Depresuritation valve G.1/4"	46 LPG 128-90 valve
13 Check valve Ø 2"	29 Reduction 21.7 to 1/4" H-H	

Selector valves

Selector valves for all gases except Inerts

Ø	HEIGHT	PN	P. NUMBER
3/4"	625	350	21100050
1"	635	350	21100060
1 1/4"	650	350	21100070
1 1/2"	655	350	21100080
2"	685	350	21100090
2 1/2"	750	250	62116006
3"	790	250	62116004
4"	920	250	62116005
END OF THE LINE micro switch			30116011

Available selector valves for Inerts 200 bar

Ø	HEIGHT	PN	P. NUMBER
3/4"	625	350	21100050
1"	635	350	21100060
1 1/4"	650	350	62116012
1 1/2"	655	350	62116013
2"	685	350	62116014
2 1/2"	750	210	62116006
3"	790	210	62116008
4"	920	210	62116009
END OF THE LINE micro switch			30116011

Available selector valves for Inerts 300 bar

Ø	HEIGHT	PN	P. NUMBER
3/4"	625	350	21100050
1"	635	350	62116011
1 1/4"	650	350	62116012
1 1/2"	655	350	62116013
2"	685	350	62116014
END OF THE LINE micro switch			30116011

To be added to inert gas systems

DESCRIPTION	P. NUMBER
Restrictor disk for selector valve 3/4"	61016105
Restrictor disk for selector valve 1"	61016106
Restrictor disk for selector valve 1 1/4"	61016107
Restrictor disk for selector valve 1 1/2"	61016108
Restrictor disk for selector valve 2"	61016109
Restrictor disk for selector valve 2 1/2"	61016110
Restrictor disk for selector valve 3"	61016111
Restrictor disk for selector valve 4"	61016112



After-sales service

LPG offers customers an after-sale service support that includes the following:

1. Telephone support:

Inquiries about the installation of the systems as well as solving complaints related to previously supplied orders can be solved.

2. Review of the facilities:

LPG will visit the facility to solve any questions or incidents or others that may hinder the commissioning of the system.

3. Training courses:

Organisation of training courses for installation companies about assemblage, implementation and maintenance. This service offers support for further activities such as management of halon residues, stamping and filling of cylinders, sealing and concentration tests.

In this way, we want to anticipate our clients' needs and provide as efficient and integral solutions as possible.

Technical assistance, commissioning and auditing

LPG technician/s shall move over to customers so as to provide advice and assistance on installation of LPG systems, commissioning and auditing, which includes the issuance of a certificate/report with the result of the visit.

Technical assistance	
DESCRIPTION	P.NUMBER
Technical assistance per hour by an engineer	61118011
Displacement up to 00 Km.	61118003
Displacement from 101 to 200 Km.	61118004
Displacement from 201 to 350 Km.	61118005
Displacement exceeding 350 km (AIR FARE)	61118006
Travel allowances per day including hotel	61118008
Half day allowances	61118009
Report writing	61116000
Commissioning LPG equipment (1/2 hr.)	61116002
Commissioning LPG equipment (1 hr.)	61116001

The working daily fee is based on 5 working days a week, 8 hours/day, all within the working day timetable.

Overtime fees

1) For overtime per week

25% from the 41st to the 46th working hours per week
50% from the 47th working hour per week

2) For overtime per day

Only for work performed in less than a week
25% for the 9th to the 10th working hour per day
50% from the 11th working hour per day

3) For work performed on Sundays or holidays

50% for work performed on Sundays or holidays
Per each working hour performed on a Sunday or holiday exceeding 10 hours, the additional charge will be increased to 75%.

4) For evening works

25% for evening works from 20:00 to 6:00 a.m. hours
60% for evening works also considered overtime.
When several of these additional criteria do coincide for the same working hours, LPG will always invoice the highest fee.

RETROTEC EQUIPMENT sealing test

PERCO EQUIPMENT concentration test

SPECIFIED BY: NFPA 2001 IN ANNEX C – UNE 15004-1 (ISO 14520-1)

The NFPA, UNE and ISO standards require checking the time that the gaseous extinguishing agent remains inside the protected hazard every year. There are basically two methods for determining this time:

door vent (sealing test using Retrotec equipment) and actual discharge (concentration test using Perco equipment).

RETROTEC equipment

- It allows verification of the extinguishing agent's remaining time in the hazard (10 minutes).
- It allows performing the tests with all types of gaseous agents.
- Allows leak detection for later sealing and limits the size of the additional venting areas.

Generally, the maximum volume to be tested would be 3.500 m³. **LPG** certifies each one of the tests performed.

LPG is certified by RETROTEC to perform such tests.



Observations

The door vent offers significant advantages such as reduction in costs and in room interferences (the test is performed in about 30

minutes). The pressurization/depressurization values are about 20 Pa (does not affect operation of computer equipment).

PERCO equipment



LPG certifies each one of the tests performed, attaching copies of the graphics resulting from the three probes.

- Allows verification of the design concentration, ensuring it lasts for 10 minutes and that there are no leaks inside the room.
- Allows tests to be performed with DuPont™ FE-13™, CO₂ or DuPont FM 200®
- Provided with three independent testing probes located at different levels.
- In general, the maximum length of the probe is 15 metres

Technical support	
DESCRIPTION	P.NUMBER
Rehearsal day (RETROTEC)	61118001
Rehearsal day (PERCO)	61118002
Displacement up to 100 Km.	61118003
Displacement from 101 to 200 Km.	61118004
Displacement from 201 to 350 Km.	61118005
Displacement exceeding 350 Km. (AIR FARE)	61118006
Transport of equipment (up to 200 kg.	61118007
Allowances per day including hotel	61118008
Half day allowance	61118009



Additional Information

In this section, we offer a series of data and specific information to carry out hydraulic calculations properly:

- Methodology for calculating prices
- Dimensions and Weights
- Ø Standard Manifolds
- Ø Pipes (pre-determined)
- Sales Conditions

Systems Methodology for the price calculation of LPG Systems with FE-13™, HFC-S125, FM 200® and LPG INERT®

Necessary information

- Room Volume to be protected (m³)
- Design standard
- Extinguishant to use:
DuPont FE-13™, HFC-125,
DuPont FM 200®, CO₂, LPG INERT®
- Type of hazard

FE-13™, HFC-125, FM 200® y LPG INERT® systems

1.

Choose the design concentration according to the design standard to use and the type of fire to protect:

The design standard and the type of fire are the necessary parameters to choose the right design concentration and to calculate the required quantity of agent. The types of fire are classified as follows:

- **Class A surface fire:** Fires involving ordinary combustible solid materials like wood, rubber, paper and plastics.
- **Class A higher fire** (only for ISO 14520): Class A surface fires where one of the following conditions is present:
 - Cable bundles greater than 100 mm of diameter
 - Cable trays with a filling density greater than 20% of the tray cross-section
 - Horizontal or vertical stacks of cable trays (shorter than 250 mm distance)
 - Equipment energized during the extinguishing period where the collective power consumption exceeds 5 kW
- **Class B fires:** Fires involving flammable liquid and gases.

Note:

When more than one type of fire is present, the highest concentration will be chosen.

The concentrations to use for LPG Systems according to the design standard and the flooding factor (FF) are shown in the following table:

CLASS OF FIRE	ISO 14520 (edition 2006)				EN 15004 (edition 2008)				NFPA 2001	
CLASE A	NORMAL		HIGHER		NORMAL		HIGHER		NORMAL	
Agent	Concentration	Flooding Fact. kg/m³	Concentration	Flooding Fact. kg/m³	Concentration	Flooding Fact. kg/m³	Concentration	Flooding Fact. kg/m³	Concentration	Flooding Fact. kg/m³
DuPont™ FE-13™	15,90%	0.556	16,3%	0.573	15,9%	0.556	16,3%	0.573	14,7%	0.507
HFC 125	8,7%	0.485	11,5%	0.661	11,2%	0.485	11,5%	0.661	8%	0.443
DuPont™ FM 200®	7,9%	0.625	8,5%	0.677	7,9%	0.625	8,5%	0.677	7,3%	0.574
DuPont™ FM 200® UL	-	-	-	-	-	-	-	-	6,25	0.485
IG-01	41,9%	0.534	48,4%	0.650	41,9%	0.534	49,2%	0.666	38,7%	0.481
IG-55	40,3%	0.507	45,1%	0.589	40,3%	0.507	45,2%	0.591	37,2%	0.457
IG-100	40,3%	0.507	41,5%	0.527	40,3%	0.507	45,2%	0.591	37,2%	0.457
IG-541	39,9%	0.501	39,9%	0.501	39,9%	0.501	45,7%	0.600	36,8%	0.451

NOTE: Some observations in next page

Systems Methodology for the price calculation of LPG Systems with FE-13™, HFC-125, FM 200® and LPG INERT®

OBSERVATIONS:

- The flooding factor is calculated at 20 °C room temperature and 0 m. altitude above sea level.
- The flooding factor for DuPont FE-13™, HFC-125, and DuPont FM 200® is calculated in kg/m³.
- The flooding factors for LPG INERT® IG-01, IG-55, IG-100 and IG-541 are calculated in m³/m³.

2.

Calculate the number of kilos or m³ of agent using the following formula:

For DuPont™ FE-13™, HFC-125, DuPont™ FM 200® systems:

$$\text{Agent quantity (kg)} = \text{Protected Room Volume (m}^3 \times \text{FF (kg/m}^3)$$

Note:

For Dupont™ FE-13™ systems, multiply the calculated quantity by 1.2 in order to obtain the total required quantity (although after running the hydraulic calculations this extra quantity can vary).

FOR LPG INERT® SYSTEMS:

$$\text{Agent quantity (m}^3) = \text{Protected Room Volume (m}^3) \times \text{FF (m}^3/\text{m}^3)$$

3.

Go to the section of the price list corresponding to the extinguishing agent and choose the LPG System that can store the calculated amount of agent. You will also find the list of elements to be included in your quotation.

For class B fires please contact LPG.

Note:

The values of LPG Systems resulting from this method may vary when hydraulic calculations are made.

Methodology for the price calculation of LPG Systems with CO₂

CO₂ systems

1. A)

Choose the design concentration

The main international design standards for CO₂ systems are:

NFPA-12 (Edition 2005) and **CEA 4007** (Edition 2003).

CÁLCULO DEL SISTEMA SEGÚN CEA 4007:

$$Q = K_B (0,75V + 0,2A) \times F$$

Where:

$$V = V_v + 4 V_z - V_g$$

$$A = A_v + 30 A_o$$

A_v – Total surface area in m² of sidewalls, floor and ceiling (including the openings **A_o**).

A_o – Total surface area of all openings.

Q – CO₂ design quantity in kg.

V_v – Volume of Protected Room in m³.

V_z – Air volume in m³, of air exchange due to ventilation during discharge.

V_g – Structure Volume that can be deduced, in m³.

k_B – Factor for the material or risk to protect, always bigger or equal than unit.

F – Factor for the supply quantity.

F = 1,1 if the required number of cylinders is 19 or less and

F = 1,05 if the number of cylinders is 20 or more.

The K_B factors for typical installations are as follows:

TYPE OF HAZARD	CEA 4007
Cable rooms, cable ducts	1,50
Data Processing Areas	1,20
Computer facilities	1,50
Electrical switch and distribution stations	1,20
Generators, including cooling system	2,00
Oil-filled transformers	2,00
Output printing areas	2,25
Paint spraying and drying installations	1,20
Spinning machines	2,00

Note:

An additional quantity might be needed when ventilation, openings or extreme temperatures are present.

Methodology for the price calculation of **LPG** Systems with **CO₂** or **AQUAFOG®**

CO₂ systems

B)

SYSTEM CALCULATION ACCORDING TO **NFPA-12** (TOTAL FLOODING FOR DEEP-SEATED FIRES):

$$\text{CO}_2 \text{ required quantity (kg)} = \text{Protected Room Volume (m}^3\text{)} \times \text{FF (kg/m}^3\text{)}$$

The flooding factor has to be chosen according to the type of fire:

TYPE OF HAZARD	FLOODING FACTOR (kg/m ³)
Dry electrical hazards up to 56.6 m ³	1,6
Dry electrical hazards greater than 56.6 m ³	1,33*
Files, ducts	2
Fur storage, dust collectors	2,66

* Minimum 90 kg of CO₂

Note:

An additional quantity might be needed when special conditions (ventilation, openings or extreme temperatures) are present.

2.

Go to the **CO₂** (pages 38 to 47) and choose the **LPG** System that can store the calculated amount of agent. You will also find the list of elements you should include in your quotation.

Note:

The **LPG** System calculated by this method may be modified after performing the hydraulic calculations. For class B surface fires or CO₂ local application quotations please contact **LPG**.

AQUAFOG® systems

For **LPG AQUAFOG®** systems, please contact **LPG** since they are specific systems according to each application and do not allow a generic design.

Table for Cylinders' dimensions

Clean Agents								
CAPACITY LITRES	VALVE	Ø HOSE	HEIGHT (mm)	WEIGHT (kg)	DIAMETER (mm)	MAX. LOAD KILOS FE-13™	MAX. LOAD KILOS HFC-125	MAX. LOAD KILOS FM 200®
240	LP-230	2 1/2"	1980	142	460	-	223	276
175			1550	121	460	-	162	201
120	LPG-190	1 1/2"	1720	136	360	102	112	138
75			1860	95	267	63	69	86
67,5	LPG-145	1"	1620	86	267	56	62	77
40,2			1400	63	229	34	37	46
26,8	LPG-128	3/4"	970	40	229	22	24	30
13,4			1210	24	140	11	12	15
5			600	15	140	4	4	5

CO ₂						
CAPACITY LITRES	VALVE	Ø HOSE	HEIGHT (mm)	WEIGHT (kg)	DIAMETER (mm)	MAX. LOAD KILOS CO ₂
67			1620	86	267	50
40,2			1400	63	229	30
26,8	LPG-128	W 21.7	970	40	229	20
13,4			1210	24	140	10
5			600	15	140	3,5

LPG INERT® 300 bar									
CAPACITY LITRES	VALVE	Ø HOSE	HEIGHT (mm)	WEIGHT (kg)	DIAMETER (mm)	MAX. LOAD IG-01	MAX. LOAD IG-55	MAX. LOAD IG-100	MAX. LOAD IG-541
140	LPG-128	3/4"	2000	220	358	41.70	39.10	36.70	40.24
80			1920	100	267	23.80	23.80	21.00	22.99

LPG INERT® 200 bar									
CAPACIDAD LITROS	VÁLVULA	Ø LATIGUILLO	HEIGHT (mm)	WEIGHT (kg)	DIAMETER (mm)	MAX. LOAD IG-01	MAX. LOAD IG-55	MAX. LOAD IG-100	MAX. LOAD IG-541
140	LPG-128	3/4"	1890	144	358	29.20	27.80	26.40	29.00
80			1800	90	267	16.70	15.90	15.10	16.57

Approximate Table for banks' dimensions

Liquefied / Halogenated				
BANK	HEIGHT TO MANIFOLD BASE (mm)	MANIFOLD LENGTH (mm)	DEPTH (mm)	ADDITIONAL CYLINDER (mm)
2 Cylinders of 240 l.	2097	1405	530	600
2 Cylinders of 175 l.	1727	1405	530	600
2 Cylinders of 120 l.	1890	1185	440	400
2 Cylinders of 75 l.	2045	1185	440	400
2 Cylinders of 67 l.	1635	950	310	350
2 Cylinders of 120 l. WITH WEIGHING DEVICE	1910	1035	310	350
2 Cylinders of 75 l. WITH WEIGHING DEVICE	2065	950	343	350
2 Cylinders of 67 l. WITH WEIGHING DEVICE	1675	1035	343	350

CO ₂				
BANK	HEIGHT TO MANIFOLD BASE (mm)	MANIFOLD LENGTH (mm)	DEPTH (mm)	ADDITIONAL CYLINDER (mm)
2 Cylinders of 67 l. CO ₂	1885	975	316	350
4 Cylinders of 67 l. CO ₂ DOUBLE ROW	1885	920	620	350
2 Cylinders of 67 l. CO ₂ WITH WEIGHING DEVICE	1885	975	343	350
4 Cylinders of 67 l. CO ₂ D.R. WITH WEIGHING DEVICE	1785	920	680	350
2 Cylinders of 40 l. CO ₂	1665	975	316	350
2 Cylinders of 40 l. CO ₂ WITH WEIGHING DEVICE	1665	975	343	350

LPG INERT®				
BANK	HEIGHT TO MANIFOLD BASE (mm)	MANIFOLD LENGTH (mm)	DEPTH (mm)	ADDITIONAL CYLINDER (mm)
2 Cylinders of 140 l. INERTS	2275	1125	440	400
4 Cylinders of 140 l. INERTS DOUBLE ROW	2275	1040	880	400
2 Cylinders of 80 l. INERTS	2196	1075	316	350
4 Cylinders of 80 l. INERTS DOUBLE ROW	2196	1000	616	350

Table for manifold diameters vs. number of cylinders / gas

DuPont FE-13™

67 litres		75 litres		120 litres	
Nº CIL.	Ø	Nº CIL.	Ø	Nº CIL.	Ø
2	1 1/2"	2 and 3	2"	2	2 1/2"
3	2"	4	2 1/2"	3 and 4	3"
4 and 5	2 1/2"	from 5 to 7	3"	more than 4	4"
from 6 to 8	3"	more than 7	4"		
more than 8	4"				

DuPont FM-200®

67 litres		75 litres		120 litres	
Nº CIL.	Ø	Nº CIL.	Ø	Nº CIL.	Ø
2	1 1/2"	from 2 to 3	2"	2	2"
3 and 4	2"	4 and 5	2 1/2"	3	2 1/2"
from 5 to 6	2 1/2"	from 6 to 7	3"	4 and 5	3"
from 7 to 8	3"	more than 8	4"	more than 5	4"

HFC-125

67 litres		75 litres		120 litres	
Nº CIL.	Ø	Nº CIL.	Ø	Nº CIL.	Ø
2	2"	2	2 1/2"	2	2 1/2"
3	2 1/2"	3	2 1/2"	3	3"
4	2 1/2"	4	3"	4	3"
5	3"	5	3"	5	4"
6	3"	6	3"	6	4"
7	4"	7	4"	7	4"
8	4"	8	4"	8	4"

LPG INERT® 300 bar

80 litres		140 litres		80 litres		140 litres	
Nº CIL.	Ø	Nº CIL.	Ø	Nº CIL.	Ø	Nº CIL.	Ø
Up to 3	3/4"	Up to 7	1 1/4"	Up to 5	3/4"	Up to 3	3/4"
from 4 to 12	1 1/4"	from 8 to 9	1 1/2"	from 6 to 12	1 1/4"	from 4 to 7	1 1/4"
from 13 to 17	1 1/2"	from 10 to 12	2"	from 13 to 17	1 1/2"	from 8 to 10	1 1/2"
from 18 to 21	2"	from 13 to 16	2 1/2"	from 18 to 29	2"	from 11 to 17	2"
from 22 to 31	2 1/2"	from 17 to 25	3"	from 30 to 43	2 1/2"	from 18 to 25	2 1/2"
from 32 to 43	3"	more than 25	4"	from 44 to 62	3"	from 26 to 36	3"
more than 43	4"			more than 62	4"	more than 36	4"

LPG INERT® 200 bar

CO₂

67 l. 30 sec. discharge		67 l. 60 sec. discharge		67 l. 120 sec. discharge	
Nº CIL.	Ø	Nº CIL.	Ø	Nº CIL.	Ø
2	3/4"	2 and 3	3/4"	2	3/4"
3	1"	from 4 to 6	1"	3	1"
4	1 1/4"	from 7 to 8	1 1/4"	from 4 to 6	1 1/4"
from 5 to 7	1 1/2"	from 9 to 12	1 1/2"	from 7 to 10	1 1/2"
from 8 to 12	2"	from 13 to 21	2"	from 11 to 24	2"
from 13 to 16	2 1/2"	from 22 to 29	2 1/2"	from 25 to 32	2 1/2"
from 17 to 28	3"	from 30 to 35	3"	from 33 to 44	3"
more than 28	4"	more than 35	4"	more than 44	4"

Approximate Table for pipe diameters vs. kilos of gas

Ø "	DuPont FE-13™	HFC-125®	FM200® (UL)	DuPont FM 200®	DuPont FM 200® (BP)
Working Pressure (bar)	42 bar	42 bar	42 bar	42 bar	25 bar
Maximum filling density (kg/l)	0.85	0.93	0.93	1.15 mod. / 0.9 bat.	1.15 mod. / 0.9 bat.
Minimum filling density (kg/l)	0.45	0.52	0.52	0.64	0.64
Maximum coverage per nozzle	9 m x 9 m	9 m x 9 m	6 m x 6 m	9 m x 9 m	9 m x 9 m
10 mm 3/8"	7 kg	13 kg	—	16 kg	Up to 9 kg
15 mm 1/2"	11 kg	21 kg	Hasta 18	25 kg	10-15
20 mm 3/4"	20 kg	38 kg	19-31 kg	44 kg	16-27
25 mm 1"	34 kg	61 kg	32-47 kg	71 kg	28-38
32 mm 1 1/4"	60 kg	106 kg	48-117 kg	122 kg	39-59
40 mm 1 1/2"	83 kg	144 kg	118-147 kg	167 kg	60-88
50 mm 2"	138 kg	237 kg	148-279 kg	275 kg	89-149
65 mm 2 1/2"	198 kg	338 kg	280-377 kg	392 kg	150-263
80 mm 3"	309 kg	523 kg	378-577 kg	605 kg	264-430
100 mm 4"	538 kg	900 kg		1042 kg	
Ø "	CO ₂ A.L 30 s.	CO ₂ I.T 60 s.	CO ₂ I.T 120 s.	LPG INERT® & iFlow Systems	
Working Pressure		57 bar		60 bar from restrictor	
Maximum coverage per nozzle	Consult Regulations (Depending on the risk to protect)			7 m x 7 m	
10 mm 3/8"	19 kg	38 kg	76 kg	Up to 8 m3	
15 mm 1/2"	31 kg	63 kg	126 kg	9-16 m3	
20 mm 3/4"	58 kg	116 kg	232 kg	17-32 m3	
25 mm 1"	96 kg	193 kg	386 kg	33-48 m3	
32 mm 1 1/4"	172 kg	344 kg	688 kg	49-80 m3	
40 mm 1 1/2"	237 kg	474 kg	948 kg	81-128 m3	
50 mm 2"	396 kg	792 kg	1584 kg	129-240 m3	
65 mm 2 1/2"	568 kg	1137 kg	2274 kg	241-385 m3	
80 mm 3"	886 kg	1772 kg	3544 kg	386-610 m3	
100 mm 4"		Up to limit of hydraulic calculations.			

The diameters indicated can vary depending on the pipe network of the hydraulic calculations.

The number of nozzles should be balanced and in powers of two.

Standard Regulation

The UNE 23570 Standard: 2000 in section 6.3.2.1 indicates that the pipes should be made of non-combustible material and shall have certain physical and chemical features so that their integrity is guaranteed under the pressures to which they will be subjected. The thickness of the wall will be estimated according to the applicable national standard. The pressure for this calculation shall correspond to the maximum storage temperature,

no less than 50°C. In case of approval for a given system under higher working temperatures, the design pressure shall be adjusted to the pressure developed at the maximum temperature. When making the calculation, the whole range of factors related to tolerances of thread, slot and welding should be taken into account. Cast and non-metal pipes should not be used.

Notes to consider

When predetermining the manifold diameter, take into account that the retention valve from 75l. Cylindres is 2". The maximum diameter for Inert's manifolds is 4". Approximate

diameters depending on the discharge flow. **DO NOT** use as detailed engineering; the diameters shown for Dupont™ FE-13™ are for the actual number of Kilos.



General Terms & Sales Conditions

Article nº1 – PURPOSE OF THE CONTRACT

The present contract regulates the business relation between THE CLIENT and LPG Técnicas en Extinción de Incendios S.L. (henceforth LPG) concerning the purchase of products that THE CLIENT is interested in buying to LPG.

Article nº2 – ORDERS AND QUOTATIONS

2.1. Orders

2.1.1. All the orders are subject to the conditions herein expressed. They will be valid in all situations. Therefore, no terms or conditions included in a CLIENTS order and in contradiction with these conditions and not accepted by LPG will be considered valid.

2.1.2. The sale is formal when LPG accepts the order by written confirmation or actual delivery of the product. The submittal of an order on behalf of the client does not compose a contract, even if LPG has previously presented an offer.

2.1.3. The information listed in the catalogues, leaflets and price lists is not binding for the supplier, seeing that he reserves the right to introduce any type of changes in the shape, dimension or material of the equipment, material or elements whose pictures and descriptions are part of the commercial printouts.

2.1.4. Once the order is accepted and the fabrication process has started, no modifications or changes in the materials will be made. Supposing that the client demands modifications, a 3% surcharge will apply.

2.1.5. If the client declines the order once manufactured, he shall be obliged to pay 20% of the initial price as compensation.

2.2. Quotations

2.2.1. All the offers made by LPG refer the total amount of products comprised in the offer. The client has the obligation to place his order regarding the totality of the offer, unless determined otherwise by LPG in the order. If THE CLIENT places an order regarding an inferior amount than offered, LPG reserves the right to revise the offer.

Article nº3. PRICE AND DELIVERY TIME

3.1. Prices to be obtained when directly contacting LPG are at all the registered clients' disposal. LPG can modify the established prices at any moment and without prior notice, always subject to the instructions made in an individual contract with the CLIENT.

3.2. LPG may apply, by way of management and administrative fees, a surcharge to those offers with an amount inferior to 25 EUR (before taxes).

3.3. The values indicated in the price list of LPG does not include transport, insurance, installation or tax costs.

3.4. LPG guarantees the price recorded in the offer, until the limit date indicated in the offer.

3.5. The supply of the products may be realized in several deliveries, except when a single delivery has been specifically required and accepted by LPG.

3.6. LPG is committed to keep all the delivery dates agreed upon with the client; however, these dates can change for production reasons. The client knows and accepts the situation, which is why there will be neither penalizations nor the right to cancel the contract.

Article nº4 - PAYMENT CONDITIONS AND TRANSPORT

4.1. Payment conditions

4.1.1. The payment of the billed rate should be made by 30 days of the date of emission of the bill. In cases where the products cannot be delivered or where there is a delay because of the CLIENT, the payment shall be made on the foreseen delivery date as if there had been no such difficulty or delay.

4.1.2. LPG reserves the right to charge interest and payment costs for any bill that remains unpaid on the agreed-upon deadline, according to articles 5 and 8 of the 3/2004 law of 29 December. This is why measures will be taken against lateness/delinquency regarding commercial transaction.

4.1.3. If the client does not pay on the agreed-upon deadline, LPG can cancel the pending deliveries.

4.1.4. In case of insolvency or bankruptcy of the client, LPG has the right to cancel deliveries and annul the contract.

4.1.5. In case of a termination of the contract by any cause, the CLIENT will be obliged to pay all the work and delivered products immediately, as well as the damages caused to LPG.

4.1.6. LPG reserves the right to charge the client the handling expenses, packaging and transport if the products are returned without a failure to comply on behalf of LPG

4.2. Transport

4.2.1. The transport costs are not included in the product rate and are payable by the CLIENT.

LPG

General Terms & Sales Conditions

4.2.2. LPG does not take responsibility for the duration of shipping once the material has been dispatched. LPG will not be held responsible for losses due to packaging, discrepancies or total or partial loss of deliveries, unless in writing is sent to LPG within ten days of the delivery and previous inspection by LPG.

4.2.3. If damages of the packaging or the product are detected during delivery, the CLIENT should state them in the delivery documents signed by the carrier, otherwise reclamations on the items will not be accepted.

4.2.4. No complaints will proceed, whatever the reason, after 8 days of the reception date of the merchandise.

4.2.3. If damages of the packaging or the product are detected during delivery, the CLIENT should state them in the delivery documents signed by the carrier, otherwise reclamations on the items will not be accepted.

4.2.4. No complaints will proceed, whatever the reason, after 8 days of the reception date of the merchandise.

Article n°5 – QUALITY GUARANTEE

5.1. The products have a 12-month guarantee by LPG from the reception of the products, for which the date on the delivery note will be required.

5.2. In case the CLIENT detects defective products, LPG must immediately notify in writing from the location of these defects, indicating at least the serial number and a brief description of the defect.

5.3. When LPG acknowledges defective products (being material, software or services), these will be repaired or replaced accordingly free of charge.

5.4. Repaired products have the same warranty period, but limiting responsibility for the parts repaired.

5.5. Once you review a product and determine that it is operating correctly or that the cause of the malfunction is irrelevant to the product itself, it will be returned to the client postage due and with a minimum charge of 20 € and a maximum of 2 hours manpower in handling and verification process.

5.6. Installation and maintenance of the supplied equipment will be performed following the provider's instruction book and maintenance, in compliance with provisions of Royal Decree 1942 / 1993 of 5 November. 1993.

5.7. The storage conditions (temperature, moisture, stacking, etc.) will not alter the essence of the materials or endanger the proper functioning of

equipment.

5.8. The failure of the wiring diagrams and indications for use in our manuals relieves the Supplier of this guarantee. The same would apply in the case where the client, without asking, to any removal or manipulation, albeit partially.

5.9. The warranty does not cover replacements or repairs arising from normal wear of materials, damage from accidents or negligence, lack of supervision or maintenance or inappropriate use of equipment.

5.10. The Provider assumes no liability for any direct or indirect consequences due to malfunction of equipment, whatever the cause, even during the warranty period.

Article n° 6. LIMITATION OF LIABILITY

6.1. LPG is released from any liability for loss or damage as a result of factors/causes that are not attributable to LPG.

6.2. LPG will be responsible for product defects provided the CLIENT has warned LPG within the warranty period specified in Article 5. Liability is limited to repair whatever necessary in our premises and/or to deliver alternative goods.

6.3. LPG will not be liable for lost profits or other resulting damages, whatever the cause might be.

6.4. When LPG manufactures products following the CLIENT's design specifications, LPG does not warrant that such products are suitable for use as planned by the customer.



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