The fire suppression which takes care of environment

LPG GROUP OF COMPANIES

Table of Contents

Loss Prevention Certification Board

CERTIFICATE OF QUALITY SYSTEM REGISTRATION

This is to certify

LPG TÉCNICAS EN EXTINCIÓN DE INCENDIOS, S.L.
Mestre Joan Corrales 107-109, 08950 Esplugues de Llobregat,
Barcelona, Spain*

has complied with the requirements identified in

ISO 9001:2000

and is authorised to use the LPCB mark on stationery and publications related to the following products and/or services

The design and manufacture of gaseous fire suppression components and the periodical maintenance, inspection, test and refilling of gas cylinders.

further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by contacting us.

*Also at C/ Josep Ros i Ros no. 19A y 19B, Poligono Industrial la Clota, 08740 Sant Andreu de la Barca, Barcelona, AND Sierra de Guadarrama, 32 Naves A y B, Poligono Industrial San Fernando 1, 28830 San Fernando De Henares, Madrid, Spain

Certificate No. 446 Issue 6

Issued 29 April 2008

To check the authenticity of this certificate please visit our website www.RedBookLive.com or contact us.

Signed on behalf of the LPCB

P J Clare

LPCB is part of BRE Certification Ltd., Garston, Watford WD25 9XX. Tel +44 (0)1923 664100
Fax +44 (0)1923 664603 www.RedBookLive.com

File EX6482 Vol 1 Issued: 2007-05-25
Revised: 2009-07-15

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

CLEAN AGENT EXTINGUISHING SYSTEM UNITS
(GAQF)

Manufacturer: (100233-450)
LPG - TECNICAS EN EXTINCION DE INCENDIOS S A
JOSEP ROS I ROS 23-25
POL IND LA CLOTA
08740 S ANDREU DE LA BARCA BARCELONA
SPAIN

Applicant: (100523-830)
LPG TECNICAS EN EXTINCION DE INCENDIOS SL
CALLE MESTRE JOAN CORRALES 107-109
08950 ESPLUGUES DE LLOBREGAT SPAIN

Listee: (100523-830)
SAME AS APPLICANT

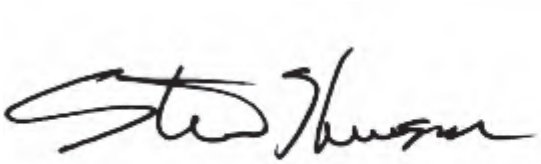
This Procedure authorizes the above manufacturer to use the marking specified by Underwriters Laboratories Inc.(UL), or any authorized licensee of UL, only on products covered by this Procedure, in accordance with the applicable UL Services Agreement.

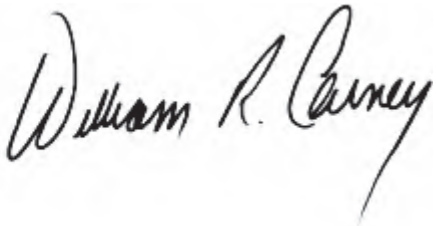
The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

The Procedure contains information for the use of the above named Manufacturer and representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. (UL) or any authorized licensee of UL, upon request.

This PROCEDURE, and any subsequent revision, is the property of Underwriters Laboratories Inc.(UL) and the authorized licensee of UL and is not transferable.

Underwriters Laboratories Inc.





Stephen Hewson
Senior Vice President
Global Follow-Up Service Operations

William R. Carney
Director
North American Certification Program

LPG Products

- LPG Discharge Valve Technology
- FM200, FE-15, HFC-125 & FE-13
- CO2
- LPG INERT IFLOW® Constant Pressure
- CO_2 High and Low Pressure
- AQUAFOG® LPG Water Mist

- Kept closed by gas own pressure contained in cylinders
- Electrical actuation by solenoid, pyrotechnical, pneumatic or manual actuation
- Allows checking and maintenance of all critical elements included in a fixed fire extinguishing system
- Complete traceability
- Couplings for pressure gauge and pressure switch

DISCHARGE VALVES

Valves designed and manufactured by **LPG** operate in conjunction with the gas pressure stored within the cylinder. The cylinder valve is opened by means of a solenoid allowing the gas to be released. They offer a great flexible adaptability for all actuation and release systems currently used in the market, even allowing combinations of several of them. Incorporated in the design is a protection against accidental actuation due to small leakages. They also allow checking 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.

LPG valve body is made of forged brass in accordance with EN 12165:98 tab. 4, and internal parts in stainless steel AISI-303. 100% of valves undergo mounting, operation, tightness and pressure tests. Each valve is marked with mechanized code, lot number, series number and final verification, to ensure its complete design in accordance with procedures of **ISO 9001:2000** Quality Assurance Certificates.

FE-13™ GASEOUS AGENT

VALVE	CYLINDER (lts.)	OUTLET	WORKING PRESSURE	WORKING TEMP.	SAFETY DISC	WEIGHT	CERTIFICATION
128	5 - 13.4 - 26.8	3/4"	42 bar Maximum: 150 bar @ 55ºC	-20º C / 55º C	210 ± 10 bar	1.6 Kg.	LPCB - VNIIPO Reg. Type MINER D.E.P.
145	40.2 - 67	1"				2.9 Kg.	
190	75 - 100 - 120	1 1/2"				4.6 Kg.	

CONSTRUCTION MATERIALS

BODY			PISTON			AXIS			JOINT HOLDERS			SEALING JOINT			O-RINGS		
128	145	190	128	145	190	128	145	190	128	145	190	128	145	190	128	145	190
Brass EN 12165:98 tab. 4			Stainless Steel AISI-303			Stainless Steel AISI-303			Stainless Steel AISI-303			PTFE			Nitrile		

OPTIONAL RELEASE SYSTEMS: Electrical actuation by solenoid valve. Pyrotechnical, pneumatic and manual actuation

ACCESSORIES: Pressure gauge and pressure switch

HFC-125 GASEOUS AGENT

VALVE	CYLINDER (lts.)	OUTLET	WORKING PRESSURE	WORKING TEMP.	SAFETY DISC	WEIGHT	CERTIFICATION
128	5 - 13.4 - 26.8	3/4"	42 bar Maximum: 80 bar @ 55ºC	-20º C / 55º C	95 ± 7 bar	1.6 Kg.	LPCB Reg. Type MINER D.E.P. UL.
145	40.2 - 67	1"				2.9 Kg.	
190	75 - 100 - 120	1 1/2"			80 ± 10 bar	4.6 Kg.	

CONSTRUCTION MATERIALS

BODY			PISTON			AXIS			JOINT HOLDERS			SEALING JOINT			O-RINGS		
128	145	190	128	145	190	128	145	190	128	145	190	128	145	190	128	145	190
Brass EN 12165:98 tab. 4			Stainless Steel AISI-303			Stainless Steel AISI-303			Stainless Steel AISI-303			PTFE + FV			EPDM		
												PTFE			Nitrile		

OPTIONAL RELEASE SYSTEMS: Electrical actuation by solenoid valve. Pyrotechnical, pneumatic and manual actuation

ACCESSORIES: Pressure gauge and pressure switch

HFC-227ea GASEOUS AGENT

VALVE	CYLINDER (lts.)	OUTLET	WORKING PRESSURE	WORKING TEMP.	SAFETY DISC	WEIGHT	CERTIFICATION
128	5 - 13.4 - 26.8	3/4"	42 bar Maximum: 80 bar @ 55ºC	-20º C / 55º C	95 ± 7 bar	1.6 Kg.	LPCB Reg. Type MINER D.E.P. VNIIPO
145	40.2 - 67	1"				2.9 Kg.	
190	75 - 100 - 120	1 1/2"			80 ± 10 bar	4.6 Kg.	

CONSTRUCTION MATERIALS

BODY			PISTON			AXIS			JOINT HOLDERS			SEALING JOINT			O-RINGS		
128	145	190	128	145	190	128	145	190	128	145	190	128	145	190	128	145	190
Brass EN 12165:98 tab. 4			Stainless Steel AISI-303			Stainless Steel AISI-303			Stainless Steel AISI-303			PTFE			Nitrile		

OPTIONAL RELEASE SYSTEMS: Electrical actuation by solenoid valve. Pyrotechnical, pneumatic and manual actuation

ACCESSORIES: Pressure gauge and pressure switch

ARGON GASEOUS AGENT

VALVE	CYLINDER (lts.)	OUTLET	WORKING PRESSURE	WORKING TEMP.	SAFETY DISC	WEIGHT	CERTIFICATION
128	80 - 140	3/4"	200 bar @ 15ºC	-20º C / 55º C	270 ± 10 bar	1.6 Kg.	Vds - CNPP - LPCB - VNIIPO - PrEn 12094-4 Reg. Type MINER D.E.P.
			300 bar @ 15ºC		410 ± 10 bar		

CONSTRUCTION MATERIALS

BODY	PISTON	AXIS	JOINT HOLDERS	SEALING JOINT	O-RINGS
Brass EN 12165:98 tab. 4		Stainless Steel AISI-431	Stainless Steel AISI-303	PTFE + FV	Nitrile

OPTIONAL RELEASE SYSTEMS: Electrical actuation by solenoid valve. Pyrotechnical, pneumatic and manual actuation

ACCESSORIES: Pressure gauge and pressure switch

CO_2 GASEOUS AGENT

VALVE	CYLINDER (lts.)	OUTLET	WORKING PRESSURE	WORKING TEMP.	SAFETY DISC	WEIGHT	CERTIFICATION
110	Auxiliary	21.7 mm	60 bar Maximum: 166 bar @ 55ºC	-20º C / 55º C	190 ± 10 bar	0.950 Kg.	Vds - VNIIPO - PrEn 12094-4 Reg. Type MINER D.E.P.
128	4.7 - 13.4 - 26.8 - 40.2 . 67					1.6 Kg.	

CONSTRUCTION MATERIALS

BODY		PISTON	AXIS		JOINT HOLDERS		SEALING JOINT		O-RINGS	
110	128	128	110	128	110	128	110	128	110	128
Brass EN 12165:98 tab. 4			Stainless Steel AISI-303		Stainless Steel AISI-303		PTFE		Nitrile	

OPTIONAL RELEASE SYSTEMS: Electrical actuation by solenoid valve. Pyrotechnical, pneumatic and manual actuation (Valve 110: pneumatic and manual)

ACCESSORIES: Pressure gauge and pressure switch (only VALVE 128)

LPG GROUP OF COMPANIES

HEAD OFFICE
Mestre Joan Corrales 107-109 - 08950 Espulgues de Llobregat - Barcelona (España) - Tel. +34 93 4802933 - Fax: +34 93 4737492 - e-mail: export@lpg.es - http://www.lpg.es

FM-200®

- **Suitable for occupied areas**
- **Discharge time: 10 seconds**
- **No residue to clean up after discharge**
- **Widely accepted as substitute to Halon 1301**
- **Compliance with standards ISO-14520 and NFPA 2001**
- **Suitable for storage in welded high pressure cylinders, saving space and money**
- **Electrically non - conductive**
- **Zero Ozone Depletion Potential**

FM-200® extinguishing agent is a clean gas widely accepted as substitute to Halon. **FM-200®**, or heptafluoropropane (CF_3CHFCF_3), is suitable for the protection of most hazards where Halon 1301 had to be applied in the past. Because **FM-200®** is not electrical conductive, (but it is odourless and colourless), it is effective in the protection of electrical hazards, such as computer rooms.

Furthermore, it is suitable for class A fires (fires including solid materials) as well as for class B fires (flammable liquids).

FM-200® extinguishes fires mainly by physical means, weakening and extinguishing the fire by absorbing heat.

Once discharged, **FM-200®** extinguishes the fire quickly reducing to a minimum damages to property and valuable equipment, likewise ensuring total safety to persons.

LPG systems containing **FM-200®** are designed to discharge within 10 seconds. Extinguishing agent pressurized with dry Nitrogen at 42 bar and stored in steel cylinders fitted with approved valves.

LPG

A wide field of application

LPCB
Loss Prevention Certification Board

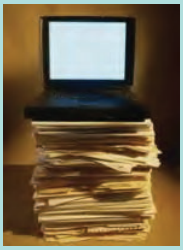
APCI
Agencia Protección Contra Incendios Ministerio del Interior

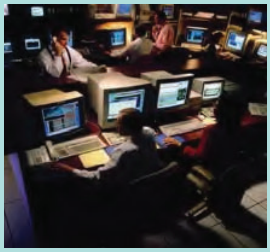
CNPP
Centre National de Prevention et Protection

UL®
Underwriters Laboratories

Where To Use It:

- With electrical or electronic equipment
- Archives
- Stores
- Cable ducts
- Engine rooms
- Flammable liquids
- Hazards with people inside





HEADQUARTERS
Mestre Joan Corrales, 107-109 08950 Esplugues de Llobregat - **BARCELONA**
Tel.: +34 93 480 29 25 - Fax: +34 93 473 74 92
e-mail: lpg@lpg.es - www.lpg.es

EXPORT DEPARTMENT
Tel.: +34 93 480 29 33 - Fax: +34 93 473 74 92
e-mail: export@lpg.es

Physical Properties

Chemical name:	Heptafluoropropane
Chemical formula:	CF_3CHFCF_3
Compliance with ISO 14520 and NFPA 2001:	HFC-227ea
Molecular weight:	170
Boiling point at 1.013 bar:	-16.4° C
Liquid density at 20° 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 1atm. 25° C (N_2=1.0):	2.0
Maximum filling density :	1.15 kg./l.
Design concentration for heptane:	9%
Flooding factor for heptane at 20° C:	0.721 kg./m^3
Design concentration for surface fires class A (ISO):	7.9%
Flooding factor for surface fires class A (ISO):	0.625 kg./m^3
Design concentration for class A higher fires (ISO):	8.5%
Flooding factor for class A higher fires (ISO):	0.677 kg./m^3
Design concentration for class A fires (NFPA):	7.3%
Flooding factor for class A fires (NFPA):	0.574 kg./m^3
NOAEL:	9%
LOAEL:	10.5%
Ozone depletion potential:	0
Greenhouse effect potential :	2900

LPG FRANCE
Tel.: +33 1 34482030 · e-mail: commercial@lpg-france.fr
LPG PORTUGAL
Tel.: +351 21 9751322/3 · e-mail: lpg.portugal@mail.telepac.pt
LPG FIRE Ltd.
Tel.: +44 1280 821229· e-mail: tnichols@lpg.es
LPG TÜRKIYE
Tel.: + 90 216 561 37 75 · e-mail: lpg@lpgtr.com
LPG AMÉRICA LATINA
Tel.: +598 2 6227840 · e-mail: lpg.uruguay@conectate.com.uy
LPG RUSSIA
Tel.: +7495 6439958/+34 670 33 96 51 · e-mail: acardoso@mail.ru
LPG MIDDLE EAST
Tel.: +966 2 6637017/ +966 2 6637053 · e-mail: lpg@lpgme.com

Headquarters

Mestre Joan Corrales, 107-109

08950 Esplugues de Llobregat - BARCELONA (SPAIN)

Tel.: + 34 93 480 29 25 · Fax: + 34 93 473 74 92 · e-mail: lpg@lpg.es

Web: www.lpg.es

Export Department

Tel.: + 34 93 480 29 33

Fax: + 34 93 473 74 92

e-mail: export@lpg.es

LPG GROUP OF COMPANIES

LPG France

Tel.: +33 1 34482030 Fax: +33 1 34481353

e-mail: commercial@lpg-france.fr

LPG Portugal

Tel.: +351 21 9751322/3 Fax: +351 21 9751317

e-mail: lpg.portugal@mail.telepac.pt

LPG Türkiye

Tel. & Fax: +90 2164821831

e-mail: lpg@lpgtr.com

LPG América Latina

Tel.: +598 2 6227840 Fax: +598 2 6229801

e-mail: lpg.uruguay@conectate.com.uy

LPG Russia

Tel.: +7095 998 90 93/+34 670 33 96 51

e-mail: acardoso@mail.ru

LPG Middle East

Tel.: +966 2 6637017/53 Fax: +966 2 6690741

e-mail: lpg@lpgme.com Web: www.lpgme.com

LPG Fire Ltd.

Tel.: +44 845 453 1320 Fax: +44 1525 385 864

e-mail: help@lpgfire.co.uk

EQUIPMENT: **FM-200® (UL/FM)**
PUBLICATION: 14A-07L
ISSUE No. 02
DATE: 2015-10

FM-200® TOTAL FLOOD FIRE SUPPRESSION SYSTEMS

ENGINEERED SYSTEM DESIGN AND INSTALLATION MANUAL (UL/FM VERSION)

Removable Electrical Actuator (Suppression Diode)

The removable electrical actuator locates to the top of the container valve. 24 v dc is required for solenoid operation. Provision is made for the connection of a manual actuator to the top of the actuator assembly. The suppression diode electrical actuator must be wired up correctly with the positive supply from the control panel connected to terminal 1, and the negative supply connected to terminal 2.The removable electrical actuator has a life span of 10 years from manufacture, which is indicated on the label.

Figure 12 - Electrical Actuator - Suppression Diode (Part No. 304.205.010)

Technical Information

Body:	Mild Steel & Dull Nickel
Swivel nut:	Brass CZ121
Actuation Pin:	Stainless Steel
Actuation Type:	Latching
Reset Requirement:	Manually via Reset Tool supplied
Connection:	1" BSPP Brass
Nominal Voltage:	24 v dc
Nominal Current:	0.25 A
Max. Monitoring Current:	25 mA
Manual Actuation Force:	50 N (11.24 lbf)
Nominal Pin Travel:	4.4 mm (0.17")
Electrical connection:	3-pin plug connector
Back EMF Protection:	Suppression Diode
Certification:	UL Recognised
Overall Size:	104mm (L) x 44mm (Dia) (4.09" (L) x 1.73" (Dia))
Weight:	0.95 kg (2.09 lbs)

Removable Electrical Actuator (Bridge Rectifier)

The removable electrical actuator locates to the top of the container valve. 24 v dc is required for solenoid operation. Provision is made for the connection of a manual actuator to the top of the actuator assembly. Due to the design of the bridge rectifier it will operate regardless of how it is wired up; the positive supply from control panel can be connected to either terminal 1 or 2 with the reverse for the negative supply. The removable electrical actuator has a life span of 10 years from manufacture, which is indicated on the label.

Figure 13 - Electrical Actuator - Bridge Rectifier (Part No. 304.209.001)

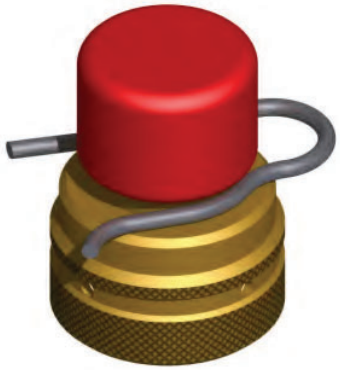
Technical Information

Body:	Mild Steel & Dull Nickel
Swivel nut:	Brass CZ121
Actuation Pin:	Stainless Steel
Actuation Type:	Latching
Reset Requirement:	Manually via Reset Tool supplied
Connection:	1" BSPP Brass
Nominal Voltage:	24 v dc
Nominal Current:	0.25 A
Max. Monitoring Current:	25 mA
Manual Actuation Force:	50 N (11.24 lbf)
Nominal Pin Travel:	4.4 mm (0.17")
Electrical connection:	3-pin plug connector
Back EMF Protection:	Bridge Rectifier
Certification:	UL Recognised
Overall Size:	104mm (L) x 44mm (Dia) (4.09" (L) x 1.73" (Dia))
Weight:	0.95 kg (2.09 lbs)

Manual Actuator

The manual actuator is used to mechanically operate the system at the container position and is fitted to the top of the valve assembly or removable electrical actuator. Inadvertent operation is prevented by a safety clip which has to be removed before activation.

Figure 10 - Manual Actuator (Part No. 304.209.002)



Technical Information

Body:	Brass CZ 121
Knob:	PVC (Colour: Red)
Safety Pin:	Stainless Steel 303
Piston Rod:	Brass CZ 121
Min. Actuation Force:	25.5 N (5.73 lbf)
Overall Size:	52mm (L) x 41.5mm (Dia) (2.05" (L) x 1.63" (Dia))
Weight:	0.265 kg (0.584 lbs)

Pneumatic Actuator

The pneumatic actuator is used to pneumatically operate the system at the container position and is fitted to the top of the valve assembly or removable electrical actuator. Pressure from a 'master' container is used to actuate the valve, via small bore piping or a flexible hose.

Figure 11 - Pneumatic Actuator (Part No. 304.209.004)

Technical Information

Body:	Brass CZ121
Actuation Pin:	Stainless Steel
Piston Rod:	Brass CZ 121
Pipe connection:	1/4" NPT Female
Min. Actuation Pressure:	4 bar (58 psi)
Max. Working Pressure:	56 bar (812 psi)
Overall Size:	48mm (L) x 41.5mm (Dia) (1.89" (L) x 1.63" (Dia))
Weight:	0.228 kg (0.503 lbs)

Valve Assembly

The container valve is the result of extensive research and development and incorporates many unique safety features. The valve assembly is factory-fitted to the container and is supplied pre-assembled with a low pressure switch (to be ordered seperately), pressure gauge and burst disc.

Figure 3 - Valve Assembly

25 mm (1") Valve Assembly
Part No. 302.209.001

50 mm (2") Valve Assembly
Part No. 302.209.002

80 mm (3") Valve Assembly
Part No. 302.205.002

Technical Information

25 mm (1") Valve

Body Material:	Brass CZ 121
Outlet Anti-Recoil Cap Material:	CZ122
Max. Working Pressure:	34 bar (493 psi)
Outlet:	25mm (1" BSPP)
Low Pressure Switch Port:	1/8" NPT
Gauge Port:	1/8" NPT
Pilot Pressure Port:	1/4" BSPP
Solenoid Adaptor Port:	1/8" NPT
Overall Size:	130mm (L) x 62mm (Dia) (5.12" (L) x 2.44" (Dia))
Weight:	2.96 kg (6.526 lbs)
Equivalent Length:	6.096 m (20 ft)

50 mm (2") Valve

Body Material:	Brass CZ 121
Outlet Anti-Recoil Cap Material:	CZ122
Max. Working Pressure:	34 bar (493 psi)
Outlet:	50mm (2"BSPP)
Low Pressure Switch Port:	1/8" NPT
Gauge Port:	1/8" NPT
Pilot Pressure Port:	1/4" BSPP
Solenoid Adaptor Port:	1/8" NPT
Overall Size:	173mm (L) x 100mm (Dia) (6.12" (L) x 3.94" (Dia))
Weight:	9.18 kg (20.238 lbs)
Equivalent Length:	10.668 m (35 ft)

80 mm (3")Valve

Material:	Brass UNS36000
Max. Working Pressure:	34 bar (493 psi)
Outlet:	80mm (3" Flared*)
Low Pressure Switch Port:	1/8" NPT
Gauge Port:	1/8" NPT
Pilot Pressure Port:	1/4" NPT
Solenoid Adaptor Port:	None
Overall Size:	241mm (L) x 129mm (Dia) (9.50" (L) x 5.06" (Dia))
Weight:	18.82 kg (41.491 lbs)
Equivalent Length:	25.91 m (85 ft)

*Outlet adaptors are available for 3" NPT, BSP and grooved.

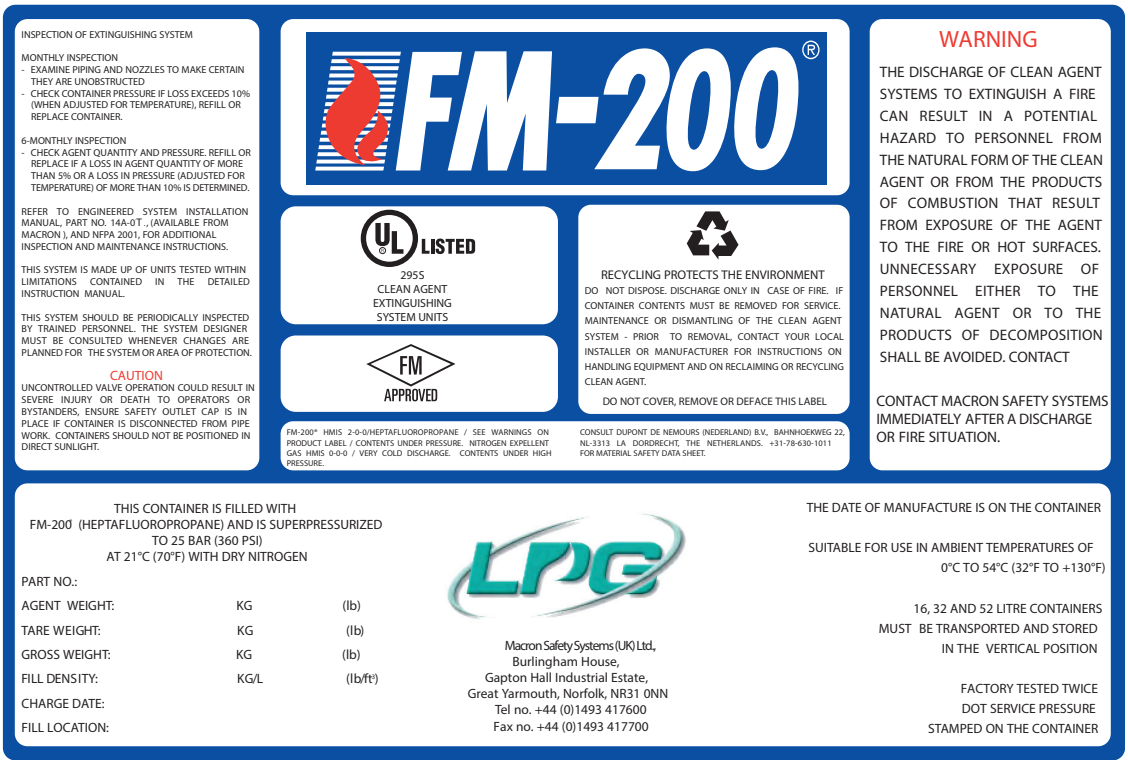
Container Label

The container label details the weight of FM-200® contained, empty weight, fill density and charge date. Once the label is applied to the container surface, and to avoid possible tampering it can not be removed intact.

Technical Information

Material:	Aluminum
Adhesive:	Pre-applied 3M adhesive 9485
Certification:	UL Recognised
Overall Size:	241.3 mm x 165.1 mm (9.5 in. x 6.5 in.) (Part No. 314.205.106) 558 mm x 50.8 mm (22 in. x 2 in.) (Part No. 314.205.107)
Weight:	0.0416 kg (0.092 lbs) (Part No. 314.205.106) 0.0300 kg (0.066 lbs) (Part No. 314.205.107)

Figure 2 - Container Label (Part No. 314.205.106 Shown)



System Components

This section describes the individual components that comprise a complete system. Some items are optional depending on the application, and are indicated as such.

FM-200® Container

The container assembly consists of a container fitted with a valve and internal syphon tube, factory filled with FM-200®, and super-pressurised with dry nitrogen to 25 bar @ 21 °C (360 psi @ 70 °F). Containers sharing the same manifold shall be equal in size and fill density. Containers are finished in red and are available in various sizes. A nameplate is fixed to the container displaying the agent weight, tare weight, gross weight, fill density, charge date and fill location.

Figure 1 - FM-200® Container

Technical Information

The 4.5, 8, 16, 32, 52, 106, 147 and 180 litre containers are manufactured in accordance with DOT 4BW500 or 4BW450, the 343 litre container in accordance with DOT 4BW450 and the 40, 67.5 and 80 litre containers in accordance with DOT 3AA 580.

Material:	Carbon Steel
4BW500	
Hydraulic test pressure:	69.0 bar (1000 psi)
Working Pressure:	34.5 bar (500 psi)
4BW450	
Hydraulic test pressure:	62.1 bar (900 psi)
Working Pressure:	31.0 bar (450 psi)
3AA580	
Hydraulic test pressure:	70.0 bar (1015 psi)
Working Pressure:	40.0 bar (580 psi)
Paint Specification:	Red epoxy polyester or red polyester powder coated

The 8, 16, 32, 52, 106 and 147 litre containers are also available manufactured in accordance with EN 13322-1.

Material:	Carbon Steel
Hydraulic test pressure:	40.0 bar (580 psi)
Working Pressure:	34.5 bar (500 psi)
Paint Specification:	Red epoxy polyester or red polyester powder coated

FM200 CERTIFICATES

ONLINE CERTIFICATIONS DIRECTORY

GAQF.EX6482
Clean Agent Extinguishing System Units

Page Bottom

Clean Agent Extinguishing System Units

See General Information for Clean Agent Extinguishing System Units

LPG - TECNICAS EN EXTINCION DE INCENDIOS S A EX6482
MESTRE JOAN CORRALES 107-109
ESPLUNGUES DE LLOBREGAT
08950 BARCELONA, SPAIN

ENGINEERED UNITS, Models 70025410, 70025409, 70025408, 70025407, 70025406, 70025405, 70025404, 70025403, NAF S 125 Clean Agent Extinguishing System Units, stored pressure type, having nominal charging capacities of 5, 13, 26, 40, 67, 67.5, 75, 100 and 120 L of NAF S 125 Clean Agent, respectively. The units are super pressurized to 42 bar with operating temperatures of -18 C to +50 C. The units are designed for total flooding protection against Class A surface burning, Class B flammable liquid and Class C fires occurring within an enclosure.

Models 70025415, 70025414, 70025413, NAF S 125 Clean Agent Extinguishing System Units, stored pressure type, having nominal charging capacities of 142, 175 and 240 L of NAF S 125 Clean Agent, respectively. The units are super pressurized to 25 bar with operating temperatures of -18 C to +50 C. The units are designed for total flooding protection against Class A surface burning, Class B flammable liquid and Class C fires occurring within an enclosure.

These systems are intended to be designed and installed in accordance with the Listee's installation, maintenance and user's manual, P/N MU2503IN00 Rev. 00, dated January, 2004; and Design manual P/N MD2502IN00 Rev. 01, dated April, 2004; and Addendum P/N MU2501 Rev. 01, dated March, 2005. Copies are available from the Listee. Design program is accessed through Safety Hi-Tech NAF S 125 Flowcalc, Version LPG3.71 floppy disc or CD and the flow program User's Manual P/N MPSW02IN00, dated April, 2004.

PRE-ENGINEERED UNITS , Models 71103000, 72103000, 72103001 and 74103000, HFC-227ea Clean Agent Extinguishing System Units, stored pressure type, having nominal capacities of 75, 75, 120 and 120 liters. These unties are super pressurized to 42 bar with operating temperature of 0°C to + 50°C. Theses units are designed for total flooding protection against Class A surface burning, Class B flammable liquid and Class C fires occurring within an enclosure.

Models 72103002, 74103001, 72103003 and 74103002, HFC-227ea Clean Agent Extinguishing System Units, stored pressure type, having nominal capacities of 142, 142, 240 and 240 liters. These unties are super pressurized to 25 bar with operating temperature of 0°C to + 50°C. Theses units are designed for total flooding protection against Class A surface burning, Class B flammable liquid and Class C fires occurring within an enclosure.

These systems are intended to be designed and installed in accordance with the Listee's Design Manual MD-27-03-IN; Installation, Maintenance and User's Manual MU-27-03-IN. Copies are available from the Listee.

Last Updated on 2007-05-30

Questions? Notice of Disclaimer Page Top

Clean Agent Fire Extinguishing Systems

These systems contain electrically nonconducting, volatile, or gaseous fire extinguishing agents that don't leave a residue upon evaporation (per NFPA 2001 paragraph 1-3.1). They are effective for total flooding protection against hazards involving liquid flammable materials, electrical equipment, and ordinary solid combustibles in occupancy arrangements which produce only surface burning. In general, these agents are not effective or appropriate for hazards which produce deep-seated burning or for those which involve chemicals containing their own oxygen (such as cellulose nitrate), metal hydrides, or reactive metals (such as sodium, magnesium or uranium).

Clean Agent systems are similar in many respects to Halon 1301 and carbon dioxide systems. Discharge of the agent by total flooding or local application may create atmospheric hazards to personnel. Toxic thermal decomposition products can be minimized by fast fire detection coupled with rapid agent discharge. Personnel should not remain in the area following system discharge. Table A-1-5.1.1 of NFPA 2001 provides information on toxicological and physiological effects covered in this equipment classification. The No Observed Adverse Effect Level (NOAEL) is the highest concentration at which no adverse physiological or toxicological effect has been observed. The Lowest Observed Adverse Effect Level (LOAEL) is the lowest concentration at which an adverse physiological or toxicological effect has been observed.

Systems can only be FM Approved under this classification if they use agents having a component Approval. The system Approvals specifically reference the relevant agent Approval. Individual agent listings appear under the category Clean Extinguishing Agents.

Compatible FM Approvals controls must be used. (See AUTOMATIC RELEASES FOR EXTINGUISHING SYSTEMS AND OTHER FIRE PROTECTION EQUIPMENT under ELECTRICAL SIGNALING.)

Application of this equipment should be subject to the limitations specified and subject to FM Global's acceptance of plans prior to installation. Required design concentrations vary from agent to agent and depending upon maximum design parameters, the concentration may vary among system manufacturers. The design concentrations listed by the system manufacturers are generally accepted in electrical/electronic hazards, i.e. computer, telecommunication areas, provided that Class A ordinary combustibles are kept to a minimum, thereby minimizing the potential for a deep seated Class A fire.

System charging and recharging shall be done only by the manufacturer or a FM Approved representative.

The Clean Agent systems FM Approved under this classification have been addressed by NFPA 2001, Standard on Clean Agent Extinguishing Systems, 1994 Edition and must be listed in the United States Environmental Protection Agency (EPA) Significant New Alternatives Policy (SNAP) as an acceptable substitute to Halon 1301.

Jurisdictions ***outside*** the United States may ***not*** recognize NFPA and EPA sanction of certain clean agents. Local and national governmental regulations should be consulted ***prior*** to agent selection.

*Alternative to Halon 1211 and Halon 1301.

LPG FM-200® Fire Suppression Systems

System Designation:	LPG FM-200® Fire Suppression Systems
System Type:	Engineered Systems
Agent Identification:	FM-200®
Minimum and Maximum Agent Storage Temperatures:	32°F to 130°F (0°C to 54°C)
Minimum and Maximum Nozzle Heights:	16 ft (4.9 m) Maximum Height 1 ft (0.3 m) Minimum Height
Types of Nozzles Available:	180°, 360°
Maximum Area of Coverage for Nozzle Type:	180°: Radius 33 ft (10.05 m) 360°: Radius 28.6 ft (8.7 m)
Minimum Design Concentrations for Hazard Class:	Class A – 7.17% Class B – 9.0%
Minimum and Maximum Discharge Times:	6 to 10 seconds
Design, Installation, Operation, and Maintenance Manuals:	LPG FM-200® Total Flood Fire Suppression Systems Engineered Systems Design and Installation Manual, P/N 14A-07L, Issue 02, 2015-10 Flow Calculation Software Manual - Version TYCO4.00, P/N 441301, March 2014
Design Software:	Tyco Clean Agent System Flow Calculation Software v4.00
Limitations or Exceptions to the Approval:	None.
Approved Filling Stations:	Tyco Fire Protection Products (TFPP) Burlingham House, Hewett Rd, Gapton Hall Industrial Estate, Great Yarmouth NR31 0NN, United Kingdom

Company Name:	LPG
Company Address:	Burlingham House, Hewett Rd, Gapton Hall Industrial Estate, Great Yarmouth NR31 0NN, United Kingdom
Company Website:	http://tfppemea.com
New/Updated Product Listing:	No
Listing Country:	United Kingdom
Agent Type:	FM-200®
Certification Type:	FM Approved

Product Approvals

VdS (Verband der Schadenversicherer from Germany):
CO_2 - LPG ARGOGEN® IG-01, IG-55 & IG-100 @ 200 & 300 bar – AQUAFOG ®

LPCB (Loss Prevention Council Board from the U .K):
FE-13® - LPG ARGOGEN® IG-01, IG-55 & IG-100 @ 200 & 300 bar – HFC-227ea - HFC-125 - TPED (For all LPG valves)

CNPP (Centre National de Prevention et Protection from France):
FE-13® – LPG ARGOGEN® IG- 01 & IG-55 @ 200 & 300 bar -

VNIIPO (Russian Certification Body):
CO_2 - FE-13® - LPG ARGOGEN® IG-01, IG-55 & IG-100 @ 200 & 300 bar – Weighing device - HFC-125 – HFC-227ea -

UL (Unwriters Laboratories from USA):
NAF S-125® – NAF S-227® (In process)

APCI (Cuban Certification Body)
Hose reels - FE-13® - LPG ARGOGEN® IG-01- CO_2 -HFC-227ea - HFC-125 –

IMO (International Maritime Organization)
FE-13® – NAF S-125® -

LGAI Technological Center (Laboratori General d'Assaigs i Investigacions)
Weighing device (Electromagnetic Compatibility and Electric Security)

LPCB (Loss Prevention Council Board from the U .K):
ISO9001 – 2000

Members of :

NFPA (National Fire Protection Association)

IWMA (International Water Mist Association)

ASSURE (European Association for Responsible Use of HFCs in Fire Fighting)

Representing Tecnifuego-Aespi (Spanish Fire Protection Association) in :

1 Consignor

MACRON SAFETY SYSTEMS (UK) LTD
BURLINGHAM HOUSE, HEWETT ROAD,
GAPTON HALL INDUSTRIAL ESTATE
GREAT YARMOUTH
NORFOLK UNITED KINGDOM
NR31 0NN
Tel No. 01493 417600

No. BD 142072

ORIGINAL

SO49748 + V1 + V2

EUROPEAN COMMUNITY

CERTIFICATE OF ORIGIN

2 Consignee

UNISAFE
13 Ibrahim Soliman street
MOHANDSEEN
CAIRO
12411
EGYPT

3 Country of Origin

European Community - United Kingdom, Spain & China, United States of America.

4 Transport details (Optional)

5 Remarks

6 Item number; marks; numbers, number and kind of packages; description of goods		7 Quantity
FULLY ADDRESSED	17 X PALLETS + 2 X TCRS FIRE SUPPRESSION EQUIPMENT ORDER NOS: SO49748 + SO49748/V1 + SO49748/V2 CUSTOMER ORDER NOS 17-100 AS PER INVOICE NOS: SL065962 + SL065963 + SL065964 DATED 30/05/17	Total Gross: 10714 KG Total Cube: 23.737 M3

NATIONAL BANK OF GREECE
WADI EL NIL BRANCH

TFD 17-0291

8 THE UNDERSIGNED AUTHORITY CERTIFIES THAT THE GOODS DESCRIBED ABOVE ORIGINATE IN THE COUNTRY SHOWN IN BOX 3

NORFOLK CHAMBER OF COMMERCE, TRADE AND INDUSTRY

Norfolk Chamber
Of Commerce & Industry
CERTIFYING STAMP

31 MAY 2017

Authorised by H M Government

Darcy Bayfield
AUTHORISED SIGNATORY

INTERNATIONAL CHAMBER OF COMMERCE
ICC
CERTIFICATE OF ORIGIN
Accredited Chamber | GB1300901
WORLD CHAMBERS FEDERATION

002437625
www.e-zcert.co.uk

Place and date of issue: name, signature and stamp of competent authority

Consulate General of the Arab Republic of Egypt
in London
Seen for legalisation with no responsibility on the content

02 JUN 2017

Signature and seal of EBC
Legalisation No. 5818 bc
Fees collected £ 44
The Consul

THE ABOVE SIGNATURE/SEAL IS CERTIFIED BY
THE EGYPTIAN-BRITISH CHAMBER OF COMMERCE

02 JUN 2017

غرفة التجارة المصرية البريطانية

Authorised Signature Name

LPG GROUP OF COMPANIES

4.2 SYSTEM 2: CYLINDER BANK UP TO CYLINDERS OF 40'2, 67, 100 LITRES.

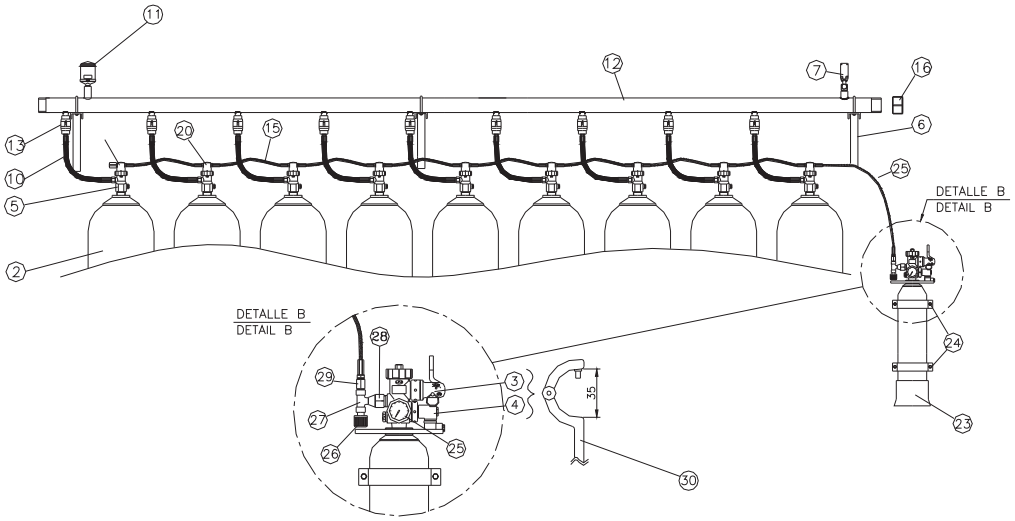
A pilot cylinder of reduced volume filled with dry nitrogen at 100 bar is used. In this case the pilot cylinder contents are not used as effective extinguishing agent. The pressure released at the opening of the pilot cylinder is directed towards the pneumatic release heads of the slave cylinders. Valves used on the pilot cylinder is or LPG 128-90. Slave cylinders are fitted with LPG 110-00 and LPG 110-10 valves.

The cylinder bank is delivered fitted with devices to prevent actuation through micro-leakage a well as controlled release evacuation of residual pressure in the pneumatic release circuit.

The control panel via a solenoid valve may actuate the system automatically. For manual actuation it is necessary to access the pilot cylinder manual lever release, remove the safety seal and pull the lever.

After a real system activation it is necessary to release residual pressure trapped within the pneumatic release circuit.

EXAMPLE LAY-OUT



Pos	Description	Pos	Description	Pos	Description
2	Slave cylinder	11	Odorizer	24	Rack with straps pilot cylinder
3	Manual actuator	12	Manifold pipe	25	Pressure gauge
4	Solenoid Valve	13	Check valve	26	Depressurization valve 1/4"
5	LPG 110 valve	15	PTFE release hose 1/4"x350mm	27	"T" 1/4" male to 2x1/4" female
6	Manifold seat	16	Blind cap threaded NPT	28	Reduction 21'7 to 1/4" H-H
7	Pressure switch with locking device	20	2 ways pneumatic head	29	Coupling 1/4" to hose
10	R2 discharge hose	23	N2 pilot cylinder (LPG 128-90)	30	Rounded spanner

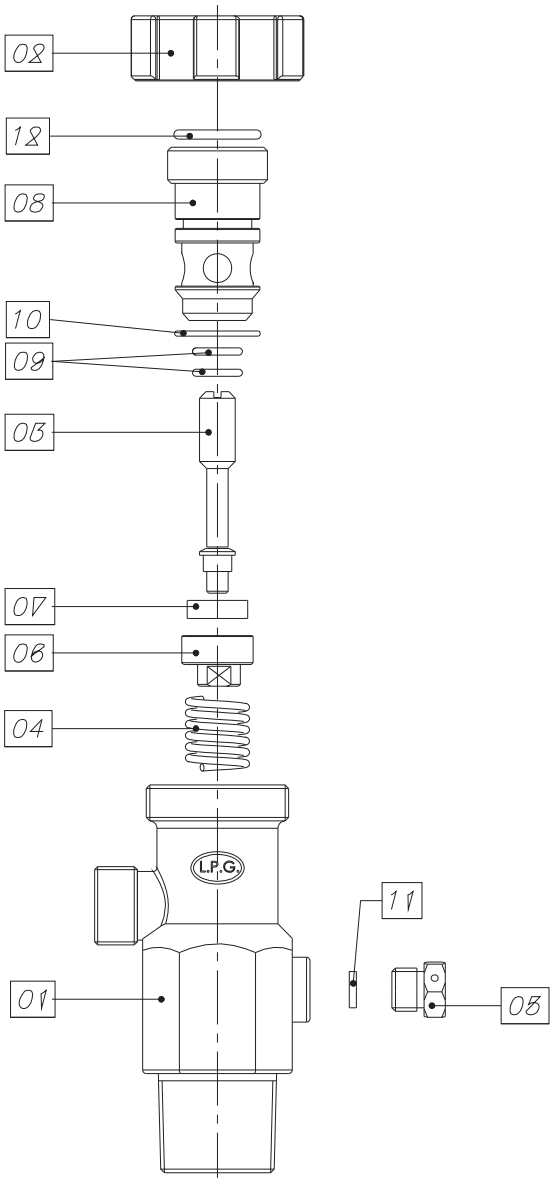
5.2.2 Carbon dioxide (CO_2) LPG valve: LPG 110-00.

Description:

The LPG 110 valve is used in auxiliary cylinders of centralised systems or modular cylinders of the following capacities: 5, 13'4, 26'8, 40 and 67 litres with manual activation

In order to have more information about the LPG 110 valve components, please refer to fig. 5.2.2.1. In that illustration, there is a drawing showing the inner details of the valve.

The design of the valve is very simple and is focussed on its use as valve for auxiliary cylinders in Co2 systems. It can be released pneumatically and/or manually. As safety devices, you can find a safety disk against overpressures set at 190 bar.



Pos	Description
1	Valve body
2	Head cap
3	Axle
4	Recovery spring
5	Safety disk cap
6	Joint holder
7	Valve sealing joint
8	Inner cartdrige
9	Axle sealing O-ring
10	Inner cartdrige lower O-ring
11	Safety disk
12	Inner cartdrige higher O-ring

Fig. 5.2.2.1. *LPG 110-00 "explosion" valve*

5.2.3 Carbon dioxide (CO_2) Pressure Gauge.

Description:

This device allows reading of the cylinder internal pressure. Scale 0-160 bar.

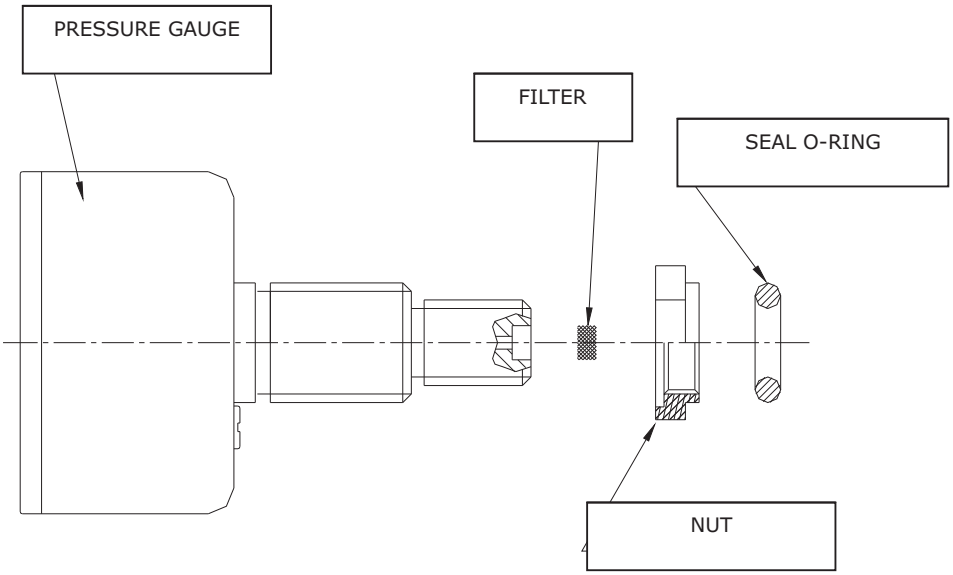


Fig. 5.2.3.1. *Pressure Gauge 0-160 bar*

Installation:

The pressure gauge is supplied factory mounted on the pilot cylinder valve. If for any reason you have to disassemble (for example, to remove solenoid valve), remove its protector cap by unscrewing by hand. Using a fixed wrench, loosen the fixing nut contained in the pressure gauge and valve body and remove the pressure gauge by unscrewing by hand.

Prior to starting Installation of the pressure gauge on the valve, check for the "O" ring seal and a fixing nut. Prior to connecting the pressure gauge, move the nut against the "O" ring to unscrew the first thread. Begin to thread the pressure gauge into its coupling by turning by hand, at the same time with the help of a fixed wrench tighten the fixing nut. In this way, the fixing nut pushes the "O" ring preventing its being ejected by cylinder pressure.

If during this operation, the fixing nut touches the valve body (it is detected because flattening of the "O" ring may not be filled) loosen the fixing nut a little and continue.

When gauge reaches the bottom and you observe that "O" ring is properly fitted, check the position of the lens and the pressure indicating needle. If the lens is not in its normal reading position, by holding the fixing nut with a fixed wrench so that it will not move, rotate the gauge until a suitable position is found. Once in position, tighten the fixing nut against the valve body so as to fix its position.

Check with soapy water for possible leakage for 10 minutes prior to completion of the operation.

5.2.6 ½" Carbon dioxide (CO_2) check valve.

Description:

Used in cylinder banks of 40'2, 67 and 100 litre capacity.

A device, which prevents the gas returning from the manifold pipe to the cylinders, thus ensuring a complete discharge of all the bank cylinders. Acts as a safety element during maintenance operations, in that, in case of having cylinders disconnecting and an accidental discharge produced towards the manifold, blocks the exit of gas.

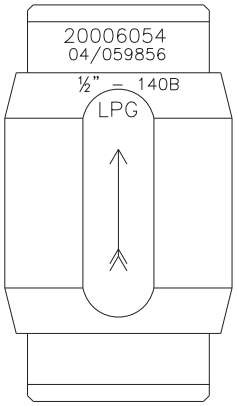


Fig. 5.2.6.1. ***1/2"*** *Check valve*

Installation:

Once the manifold is mounted onto the brackets, mount all the check valves.
They are always located between the discharge hose connected to the cylinder and the discharge manifold. To mount, apply joint sealing compound or Teflon tape to the manifold pipe threaded connection where the check valve is fitted. Do not apply to the two first rows of thread. Make the same operation on the male thread connection of the flexible hose. It is marked on the body of the check valve an arrow that indicates the sense of the flow. It must always be installed with the arrow towards the manifold.

Tighten the joint firmly using a fixed wrench.

5.2.8 High pressure slave cylinders.

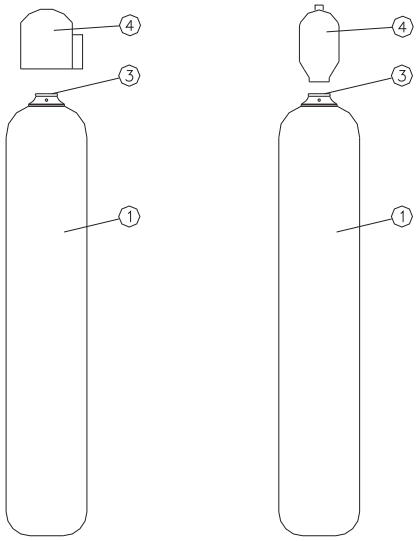


Fig. 5.2.8.1. *Carbon dioxide (CO_2) cylinders*

Description:

High pressure containers containing a fill of ***carbon dioxide (CO_2)*** extinguishing agent. Maximum filling ratio is 0’75 kg/litre. Cylinders of seamless drawn steel in accordance with specifications 1999/36/EEC, thermal treatment, with hydraulic test pressure of 250 bar. The cylinder capacities are 40’2,67,100 litre capacity. Self-contained cylinders of 5’0, 13’4, 26’8 litre volume are also available. All models are approved according to the applicable European Regulations (Π trade mark). Once the valve is assembled onto the cylinder collar (3) and the protection flange (5), the assembly is protected by a safety cap for transportation (4). All cylinders are provided with identification labels indicating handling instructions.

Installation:

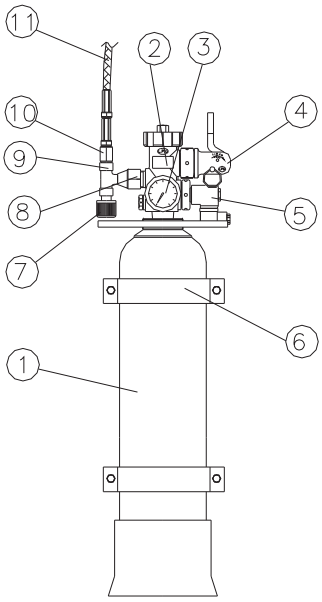
The cylinder-valve assembly is supplied fully mounted. Place all cylinders onto the bracket. To prevent damage to the cylinders through accidental dropping, locate the front pieces of bracket prior to removing the protective caps. Tighten the front pieces allowing the cylinder freedom of movement. Next, remove protective caps (4). Remove the valve head cap.

Do not forget, when release system Installation is finished, fix the cylinders onto the bracket, tightening firmly. When the complete system installation is finished (including the release system) install and tighten manually all LPG valve head caps.

5.3.1 Pressure pilot cylinder.

Description:

A pilot cylinder (1), equipped with an LPG 128-90 valve (2), filled with dry nitrogen at 100 bar. It can be manually actuated (4) and electrically actuated by solenoid valve (5). Once the pilot cylinder discharge is activated, nitrogen flows through release line to the pneumatic release heads mounted on the bank slave cylinders. The valve incorporates a pressure gauge (3). Once activated **it is not possible to interrupt total discharge** of the cylinders.



Pos	Description
1	N2 pilot cylinder
2	LPG 128-90 valve
3	Pressure gauge
4	Manual lever
5	Solenoid valve
6	Rack with straps
7	Depressurization valve 1/4”
8	Reduction 21’7 to 1/4” H-H
9	Tee 1/4” male to 2 x 1/4” female
10	Coupling 1/4” to hose
11	PTFE release hose 1/4” x 700

Fig. 5.3.1.1. *Pilot Cylinder fitted with valve model LPG 128-90*

Valve operation coincides with description in section 5.2.1. ***"Carbon dioxide (CO_2) LPG valve: LPG 128-20”and LPG 128-30".***

Installation:

Fix the bracket of the pilot cylinder in the approximate position shown in the drawings. The height of cylinder bracket should be adequate for a possible manual operation. Unpack pilot cylinder, fix it onto its bracket and remove the protection cap. When installed the pressure gauge should be clearly visible and access to the manual release systems should be free of obstacles. Unscrew the pilot valve head cap to prevent accidental discharge during Installation of the rest of release system components. Upon completion of all handling of the release system, replace the pilot valve head cap.

5.2.9 1/2" R2F hose.

Description:

Discharge pipe for **carbon dioxide (CO_2)** that connects the cylinders to the manifold pipe.

This model is used with self-contained cylinders and CO_2 batteries without weighing device.

1/2" nominal diameter made of synthetic rubber with two (R2) intermediate metallic braids and a external synthetic rubber coat that gives a resistance in front of the atmospheric agents.

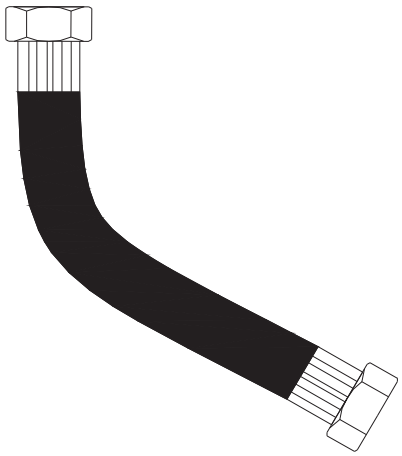


Fig. 5.2.9.1. *1/2" R2F Hose*

Installation:

The female end of the flexible hose is been adapted to the valve or the deviator device and it does not need any sealing type, although it is recommended to add Vaseline for the adjustment of the threads.

The male end is connected on the check valve and needs to add Teflon (PTFE) tape without covering the first threads to avoid clogging.

5.2.10 ½" Teflon (PTFE) discharge hose.

Description:

This flexible hose is been used for the same function as the R2F hose, but only in the batteries with weighing device system because its high flexibility. 1/2" diameter Teflon (PTFE) hoses fitted with brass ends and protected with an external stainless steel braid.

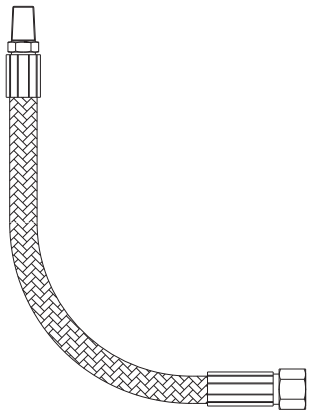


Fig. 5.2.10.1. *½" Rigid hose*

Installation:

The female end of the flexible hose is been adapted to the valve or the deviator device and it does not need any sealing type, although it is recommended to add vaseline for the adjustment of the threads. The male end is connected on the check valve and needs to add Teflon (PTFE) tape without covering the first threads to avoid clogging.

5.3.2 Manual lever release.

Description:

A device, which allows manual actuation of the cylinder bank pilot cylinders. It consists of a lever (1) that manually operated backwards and downwards to push a needle (2) against a release disk located on the pilot valve body. The bursting of the disk opens the valve. It incorporates a safety pin (3) to prevent accidental discharge.

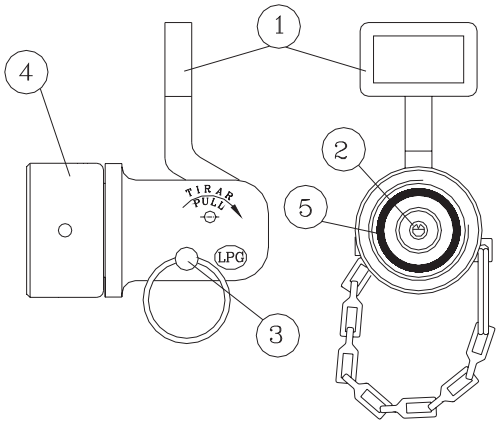
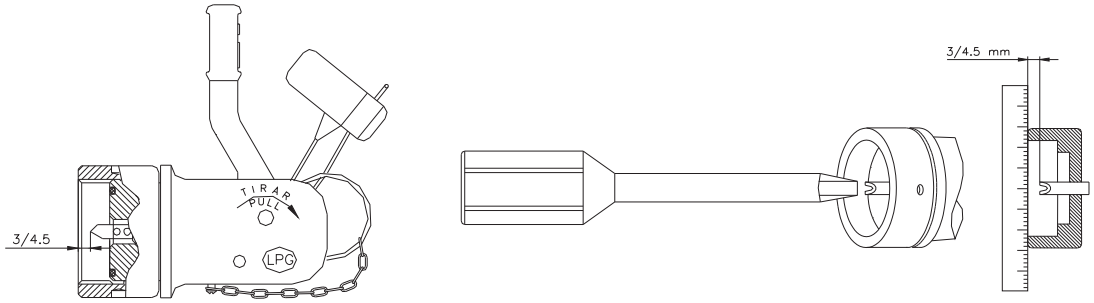


Figure 5.3.2.1. *Manual Lever Release*

Installation:

Check that the seals assembled on the safety pin (3) are not damaged. Check that the "O" ring (5) is in position. The release is placed on the pilot valves on the connection port indicated in 5.2.1. Use an appropriated rounded spanner for Installation and do not apply sealing compound to threaded fitting (4) as sealing is achieved through the "O" ring (5). It is recommended to apply a little vaseline to the joint to facilitate Installation.

Manual actuation devices should be installed at normal operating height, in highly visible locations. They should be protected against being actuated accidentally. Each lever manual release device should be clearly marked indicating the protected zone that it serves.



Note:	***Prior to installing the manual release onto the valve check that the piston is deep seated inside its housing, by pushing down with a screwdriver. Afterwards, check using a ruler that the needle is deep seated inside 3'0-4'5 mm as it is shown on the drawing.***

5.3.3 Solenoid valve.

Description:

An electric device, which allows opening of the LPG family of valves. Connects (1) to the pilot cylinder valve or self-contained valve and allows their actuation by means of an electric signal sent by a control panel or by a push button release. Consists of a coil (3) mounted on a stem. When the coil energises the internal core is drawn up, opening the valve. The coil is fed electrically by means of the connector (4). There are two models available, one for normal operations and one for explosion proof operations. This device may be disassembled even when pilot cylinder is pressurised.

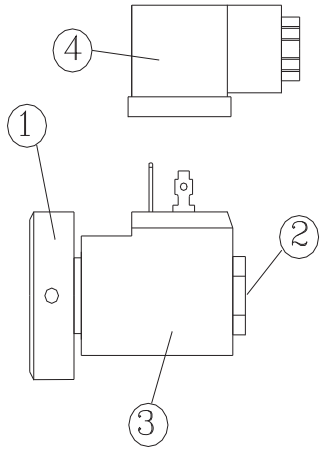


Figure 5.3.3.1. *Solenoid Valve*

Installation:

The solenoid valve is delivered mounted on the pilot cylinder valve or self-contained cylinder valve. Do not perform the electrical connection until the pneumatic Installation for all the installation is completed (see 5.5. *Electrical Installation*).

In case of having to disassemble for operation test, remove the connector (4), loosen the nut (2) and remove the coil (3)

Note:	***LPG does not recommend removing the solenoid valve from the pilot cylinder, in case of malfunction, send the valve + cylinder + solenoid valve assembly to LPG.***

If for any reason, breakdown or under expressed instructions of LPG Technical Service it is essential to remove solenoid valve from pilot cylinder valve, ***first***, ***disassemble the blind cover (14) and the cap (15).*** As indicated in fig. 5.2.1.1. when the pressure gauge is disconnected, the pressure supply to the solenoid valve is shut-off. ***This operation should be performed with great care and carried out carefully to prevent false operation.*** Therefore, the operator should stand sideways to prevent a sudden ejection of the pressure

5.3.8 Solenoid valve + manual release.

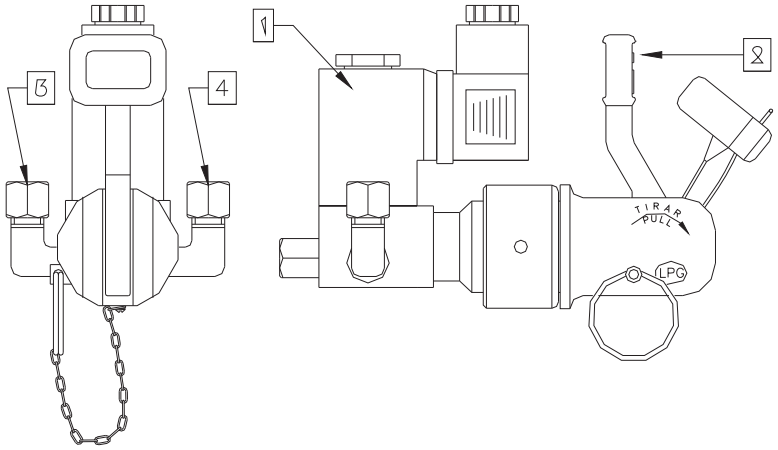


Figure. 5.3.8.1. *Solenoid valve + Manual Release*

Description:

An electric and manual actuation device for operation of the selector valves. The assembly consists of a solenoid valve (1) + a manual release (2). The manual opening enables system operation even in the event of an electrical failure. It is important to have each valve marked indicating zone that it protects so as to prevent misunderstanding in the case of manual operation. Its function is to select the selector valve assigned to be opened for cylinder banks covering more than one hazard. For further description of the solenoid valve see 5.3.2. For further description of manual release see 5.3.3.

Installation:

These devices are always mounted on a support fixed to the wall at a suitable height for manual actuation. Position the valve in such a way that the manual release is always be accessible. Fix the valve to the support using through bolts. Connect a 4 x 6 copper pipe, from the pilot cylinder to the inlet (3) and connect the outlet (4) to the appropriate selector valve, in accordance with the installation drawing.

Attention:	***If there is a mistake on connection 3 and 4, the selector valve will be open independently of the activation or not of the solenoid valve + manual release.***