Ci IV8 Discharge valve IEC 60331

Item numbers covered by his datasheet

305410-31 Ci IV8-300 Mansowitch IEC331
305420-31 Ci IV8-200 Mansowitch IEC331

General

See datasheet Ci IV8 for all details except for variations described on this page

The Ci IV8 IEC331 is a variant of the Ci IV8 with a manoswitch fitted with a cable complying to IEC 60331 (function safe cable)

Specifications

Cable used for manoswitch is IEC 60331

Marking

Only cable will have different marking, this marking is TBD

Replaceable parts

Manoswitch should have -31 item number extension

Standards & approvals

Cable comply with IEC60331

Manoswitch is per 2014-09-17 not included in EN12094 or UL approval.

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Ci IV8 discharge valve

Item numbers covered by this datasheet

305410	Ci IV8-300 Manosw
305411	Ci IV8-300 Basic
305420	Ci IV8-200 Manosw
305421	Ci IV8-200 Basic

General

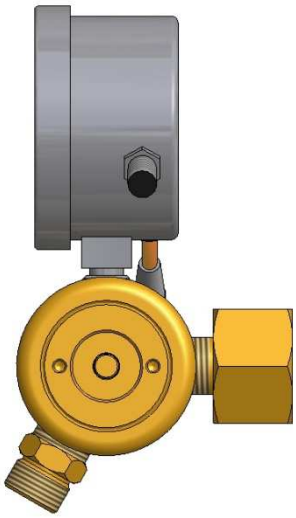
Discharge valve for use in INERGEN fire extinguishing systems.

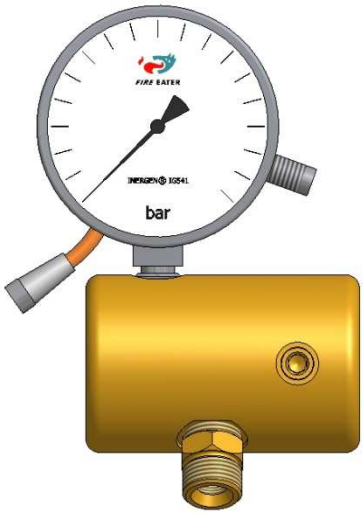
The valve has built-in pneumatic activation for inter-system activation, back pressure activation and mechanical activation interface.

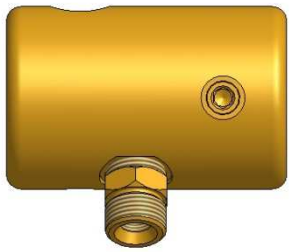
The discharge outlet is connected internally to the Pneumatic Actuator (PA) via a check valve (the check valve allows pressure from the discharge side to enter the actuator side), this allows for the discharge port to be used as activation port also (back pressure), hence eliminating the need for PA circuitry between valves connected to the same manifold. When more than one manifold is used, the PA system must be connected to at least one IV8 valve on each manifold.

The port for the PA function works as both inlet and outlet, hence the same connection is used on both pilot and slave cylinders, and the pilot cylinders can be placed anywhere in the line of IV8 valves. All equipment connected to the PA connection must be rated at 300/400 bar.

The standard valve is classified as a Type 2 valve, as it has a built-in burst disc which relieves pressure to the open.







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Specifications

Pressure

Work:	See table 1
Proof (burst):	> 1440 bar
Burst disc:	480 ±20 bar

Temperature: -50 to +70°C

Flow way: 50mm^2 (ø8mm)

Smallest container: 2l (200 or 300 bar @ 15°C)

Activation (pneumatic and back pressure)

Triggering pres.:	10 - 400 bar
Min.:	8 bar 2 sec (0.01 l/sec)
Max. no triggering:	2 bar 10 sec

Activation (Mechanical)

Connection tread:	M20×1.5 (Female)
Stroke × diameter:	4mm×ø6mm
Force:	350 N (minimum required)

Thread connections

Cylinder valve:	See table 1
Discharge outlet:	ISO228/1-G3/8"
Pneu. Act. (in/out):	ISO7/1-Rc1/8"
Pres. gauge/switch:	Electrical M8-3 (internal EN837-1 (G 1/4" B))

Function

Operation time: < 1 sec

Remains fully open, also after activation.

Materials: Brass, stainless steel, EPDM, PU.

Dimension

L×H×W:	90×125/46×90
Weight:	1.3 - 1.5 kg

Table 1

Part number	Marking	Designation	Pressure			HWV Connection thread
			Work		Fill @ 15°C	
			Bar		Bar	
305410	Ci-IV8-300	Ci IV8-300 Manosw	400		300	M25×1.5
305411	Ci-IV8-300	Ci IV8-300 Basic	400		300	M25×1.5
305420	Ci-IV8-200	Ci IV8-200 Manosw	300		200	W24.32×1/14
305421	Ci-IV8-200	Ci IV8-200 Basic	300		200	W24.32×1/14

Markings

Fire Eater Logo, Ci-IV8-###, Serial number, CE 1116.

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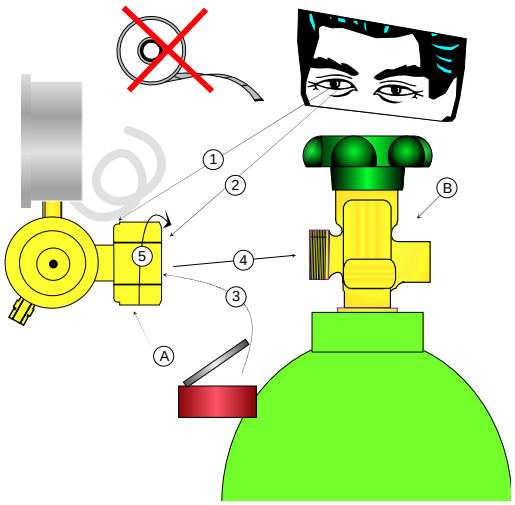
Installation

After the cylinder has been securely fastened the Ci IV8 discharge valve is attached to the hand wheel valve on the cylinder. Discharge hoses are connected between the Ci IV8 and the manifold. Only valves connected to the same manifold will be actuated through the discharge hose.
The PA (Pneumatic Activation) system must be used for activation between manifolds.

If the pneumatic system is used, the PA adapter is fitted and the hoses connected.

Activators are installed.

Discharge valve to cylinder



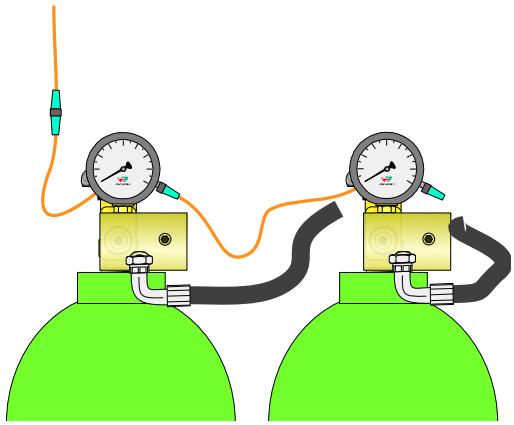
1. Check the connecting thread on both Ci IV8 [A] and the cylinder valve [B] (hand wheel valve)
   On the union nut M25 is rounded opposite to the connection, W24 is chamfered.
   On the hand wheel valve a green hand wheel is M25 and a black is W24.
   M25 is typical on 300 bar systems and W24 is used on 200bar systems (note that some 300bar system may use the W24 thread)
2. Inspect the O-ring in the Ci IV8.
   It must be clean and undamaged.
3. Lubricate the O-ring to ensure proper sealing.
   Use only Fire Eater lubricant.
4. Place the valve on the outlet of the hand wheel valve and tighten the nut (approximately 22.5° after O-ring contact) or to 80Nm.

Test of assembly

5. Open the hand wheel valve for 1 minute and then closed.
   After 6 hours re open the hand wheel valve and check that there has been no pressure drop.
6. Open the wheel valve to the full position and sealed with coarse sealing wire and seal.

Activation and manifold

7. See the datasheet for the respective component



Electrical connection

8. If fitted connect the Manoswitch in a Daisy-chain, placing the terminator in the last manoswitch.
   See datasheet Ci Manoswitch and Ci Manoswitch startkit for details and.

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Operating

The valves on the pilot cylinders are activated by the actuator (see datasheet for these components).

The additional cylinders are activated by either the

a) Pneumatic (PA) system connected between the cylinders.
This system features both inlet and outlet through the same connection and hence the hoses are only connected at one place on each IV8 valve.

b) Backpressure (BP) from the pressure generated in the manifold during discharge.
Only valves connected to the same manifold can be activated this way. When several manifolds are used the PA system (see A) must be used between the manifolds to activate at least one valve for each manifold.

Maintenance

After discharge the piston assembly has to be replaced in order to ensure leak free operation, and the O-ring between the Ci IV8 and the hand wheel valve are to be replaced..
Use service kit item number 305403 and O-ring 2141162.

The procedure for replacing the piston is:

1. Make sure that the Ci IV8 valve is depressurised.
2. Remove the actuator if fitted.
3. Loosen the set-screw [2] at least 3 turns to unlock the Act plug 305020 with a 2.5mm In-hex key.
4. Unscrew the Act plug [20] 305020 with FE tool 305491 (red).
5. Extract Drive piston [18] 305018 (with rod and other parts) and place it in the Act plug.
6. Unscrew separator disc [16] 305011 with FE tool 305490 (green).
7. Insert a 4mm inhex wrench in the Ci IV8 valve from the opposite end of the Act plug (though the ø5 hole) and push out the Piston [23].
8. Assembly is the reverse procedure of dismantling.
O-rings must be lubricated (use lubricant FE part number 203012).
Damaged or dirty o-rings must be replaced.
9. Piston with o-rings [23] is inserted in the valve, Piston rod 305019 (with Drive piston) may be used to guide in the Piston, but must be removed afterwards.
10. Separator disc [16] is inserted and tightened to 10Nm.
11. Drive piston [18] 305018 with rod is inserted
12. Act plug [20] 305020 is fastened to the valve and tightened to 20Nm.
13. The set-screw [2] is tightened again.
14. The Piston [23] is pushed back with a 4mm inhex wrench though the 5 mm hole.

Routine testing

No requirements.

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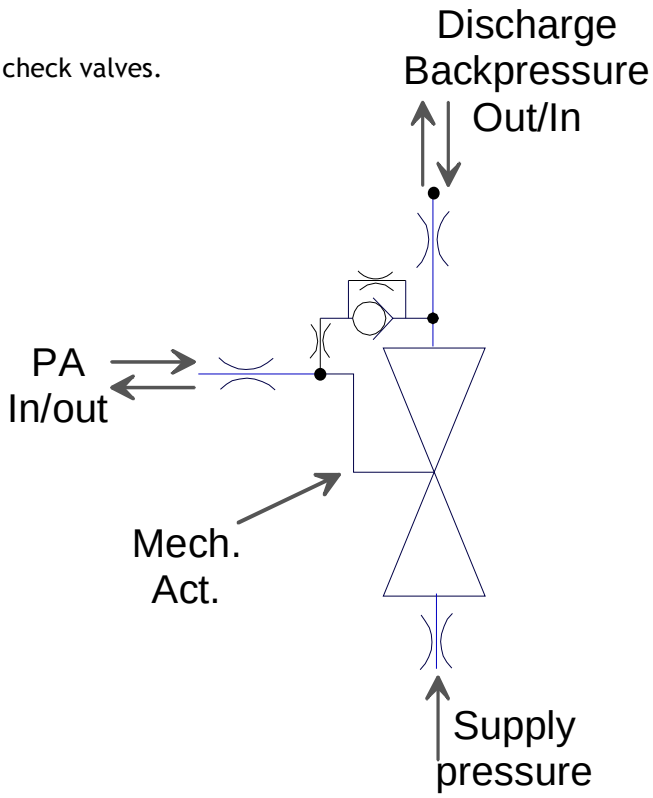
Symbols of valve function

Internal valve functions showing restrictions and check valves.



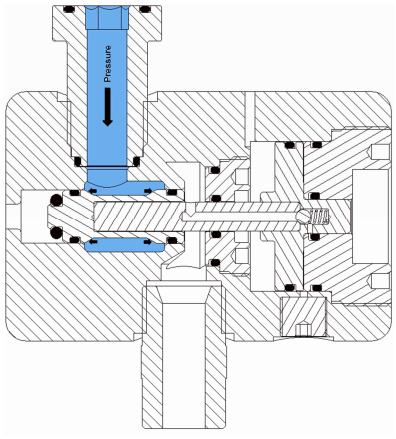
Section drawings

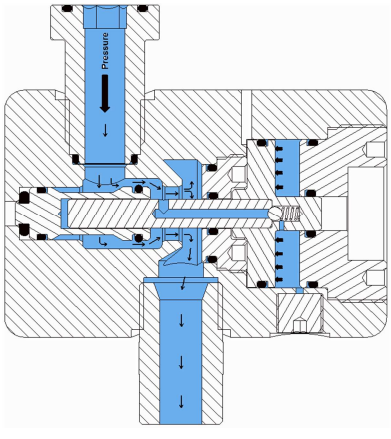
Valve in normal closed and fully opened position

When the valve is closed, pressure is contained in the inlet and between the two O-rings on the piston (blue areas are the pressurised chambers).

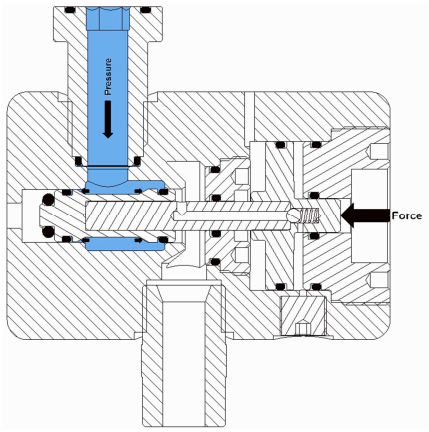
When the valve is opened, pressure is allowed to exit through the outlet port as well as the PA inlet/outlet.

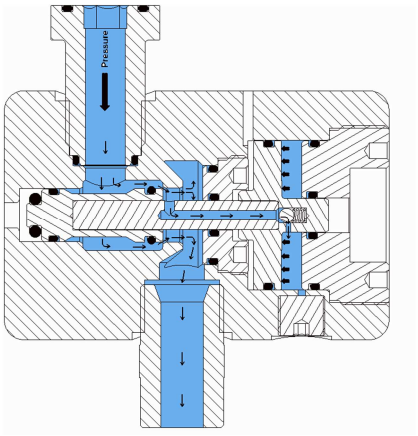
Notice that there is a check valve with a limited leakage between the discharge outlet and the PA inlet/outlet allowing pressure to go from the discharge outlet to the PA inlet/outlet, hence restricting flow from PA inlet/outlet to the discharge outlet.



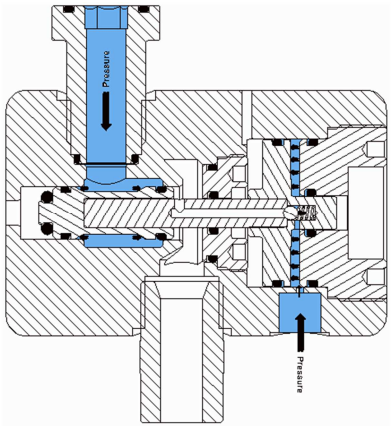


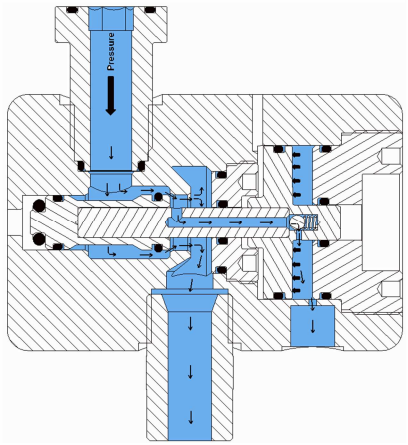
Valve operated mechanically (initial and half opened)



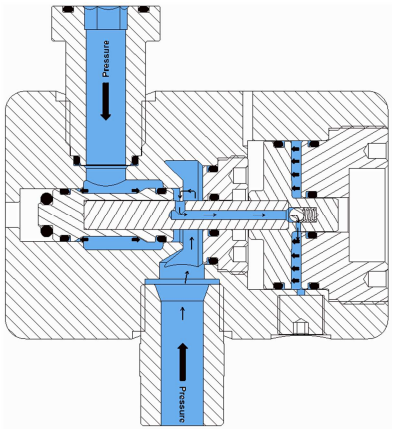


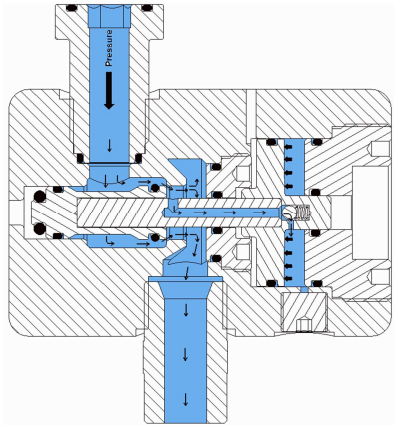
Valve operated pneumatically (initial and half opened)





Valve operated by pneumatic backpressure (initial and half opened)





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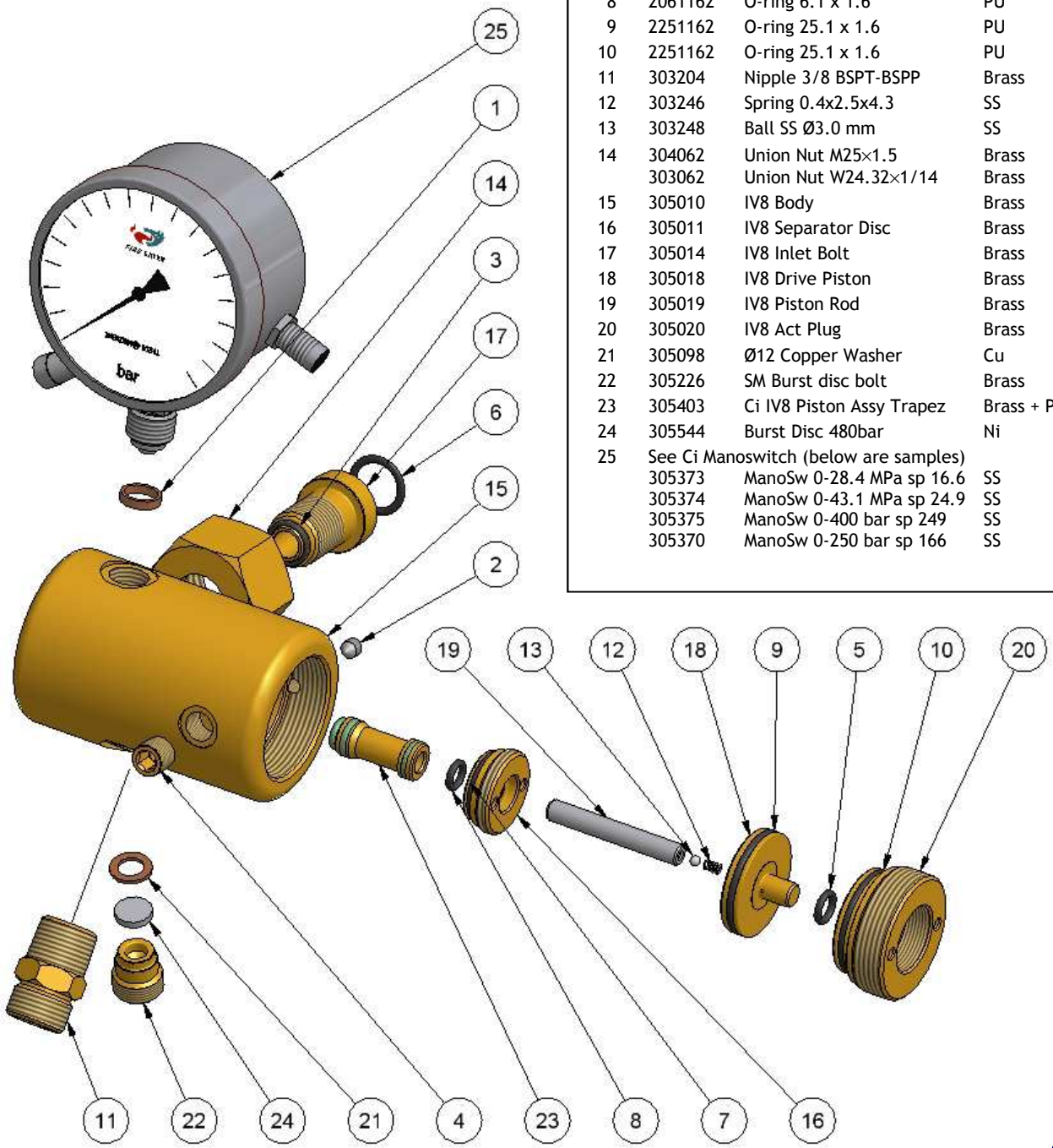
Exploded view



Recommended replacement parts

Pos.	Item	Description	Material
1	212181	Cu Seal 1/4	Cu
2	212221	Screw DIN 914 M5xL6	SS
3	2101162	O-ring 10.1 x 1.6	PU
4	302083	Plug 1/8" BSPT	Brass
5	2071162	O-ring 7.1 x 1.6	PU
6	2141162	O-ring 14.1 x 1.6	PU
7	2171162	O-ring 17.1 x 1.6	PU
8	2061162	O-ring 6.1 x 1.6	PU
9	2251162	O-ring 25.1 x 1.6	PU
10	2251162	O-ring 25.1 x 1.6	PU
11	303204	Nipple 3/8 BSPT-BSPP	Brass
12	303246	Spring 0.4x2.5x4.3	SS
13	303248	Ball SS Ø3.0 mm	SS
14	304062	Union Nut M25×1.5	Brass
	303062	Union Nut W24.32×1/14	Brass
15	305010	IV8 Body	Brass
16	305011	IV8 Separator Disc	Brass
17	305014	IV8 Inlet Bolt	Brass
18	305018	IV8 Drive Piston	Brass
19	305019	IV8 Piston Rod	Brass
20	305020	IV8 Act Plug	Brass
21	305098	Ø12 Copper Washer	Cu
22	305226	SM Burst disc bolt	Brass
23	305403	Ci IV8 Piston Assy Trapez	Brass + PUR Z24
24	305544	Burst Disc 480bar	Ni
25	See Ci Manoswitch (below are samples)		
	305373	ManoSw 0-28.4 MPa sp 16.6	SS
	305374	ManoSw 0-43.1 MPa sp 24.9	SS
	305375	ManoSw 0-400 bar sp 249	SS
	305370	ManoSw 0-250 bar sp 166	SS

Document: Ci IV8 Discharge Valve

Category: Control inert

Id: **MK**

Rev:**2012.06.01**

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Declaration of Performance

Nr. Ci IV8 2014-11

1. Product type identification:
   Ci IV8
2. Type identification:
   "Ci IV8" and serial number, Logo
   CE mark
3. Intended use:
   Inert gas Fire suppression system
4. Manufacturer:
   Fire Eater A/S
   Vølundsvej 14, DK-3400 Hillerød
   Denmark
5. NA
6. Assessment system:
   System 1
7. Certification body for this product is
   CNPP Cert
   CNPP certificate: 1116-CPR-017
   Test report: CNPP GH 07 0002
8. NA
9. Performance

Product type	Discharge valve
Operating temp	-20 to +70 °C
Type of system	Inert gas system
Flow diameter	ø8.0mm
Flow way	500 mm2
Work pressure	15 - 40 MPa
Burst pressure	>120 MPa
Actuation type	Mechanical Ci actuator series & Pneumatic
Actuation	500 N 0.8 - 40 MPa (min 2 sec)
Smallest cylinder	2l
Mounting	Any

10. On behalf of Fire Eater

Signature:

Michael Kroneder, CTO

Hillerød 2014-11-05

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