



CXD

HAZARDOUS ENCLOSURES

MECAIR - CXD

HAZARDOUS ENCLOSURES

PRODUCT LEAFLET

DESCRIPTION

The CXD explosion-proof solenoid enclosure is designed for those applications where the atmosphere may present the possibility of combustion. The CXD enclosure is explosion proof with the following grade of protection: II 2 G Ex d IIB T5 - II 2 D Ex tD A21 IP67 T100°C. This ensures that any spark, resulting from the electrical activation of the solenoid, will be restricted within the interior of the enclosure.

The CXD explosion-proof enclosure is certified in accordance with the European Directive 94/9/CE (ATEX). The CXD Series is available in two models/sizes:

- **CXD 4:** from 1 to 4 solenoid pilots
- **CXD 8:** from 5 to 8 solenoid pilots

Each solenoid pilot, energised in sequence, commands a corresponding VEM type diaphragm valve, by way of a 6 mm internal diameter pneumatic tube being less than 2 metres in length. The control consists in releasing the compressed air from the upper chamber of the valve and its piping. The CXD enclosure is supplied complete with fixing brackets. The common terminal is pre-wired.

The CXD solenoid base is made of extruded aluminium, while the cover is in diecast aluminium. Both are anodised for protection against aggressive agents. The CXD enclosure features a common exhaust port, located on the underside of the unit. The exhaust is open to the atmosphere and can be piped or muted with a silencer. Within the enclosure a safety device is installed in order to cut off the power supply to the solenoids in case of an abnormal increase in temperature within the enclosure. This device is recognised as GTRM-1. It is possible to install within the enclosure a heat resistor group complete with thermostat for installation in cold climates where low temperature is a problem. GTRM-2 maintains an internal temperature of approximately +4°C, and is available in two models:

- GTRM 50, for CXD 4
- GTRM 120, for CXD 8

PLEASE NOTE: single diaphragm 1½" VEM valve not suitable with remote pilot.



GENERAL FEATURES

OPERATING TEMPERATURE	-20°C/+60°C
WEIGHT	CXD 4 - 5 kg CXD 8 - 8.5 kg

CONSTRUCTION FEATURES

TOP COVER	Diecast aluminium (anodised)
BASE	Extruded aluminium (anodised)
PILOT	Stainless steel
GASKETS	NBR

ELECTRICAL FEATURES

COIL INSULATION	Class H
ELECTRICAL CONNECTION	2 x ½" NPT for CXD 1-4 2 x ¾" NPT for CXD 5-8
ELECTRICAL PROTECTION	II 2 G Ex d IIB T5 - II 2 D Ex tD A21 IP67 T100°C
VOLTAGE AND FREQUENCY	AC: 24/110/220 V 50/60 Hz DC: 24/110 V
PNEUMATIC CONNECTIONS	To VEM Valves ¼" female Gas Common exhaust, No. 2 connections 3/8" female Gas
APPROVALS - INERIS	INERIS 03 ATEX 0069X II 2GD

HOW TO ORDER

Part Number Code: **CXD 5 - ..V/..Hz - R**

CXD

Explosion-proof enclosure

Number of solenoid pilots

CXD 1-2-3-4 (small enclosure)
CXD 5-6-7-8 (large enclosure)

Heater element with thermostat

Available in two versions:
GTRM 50 = 70 WATT (for CXD 4)
GTRM 100 = 100 WATT (for CSN 8)

Coil voltage/frequency

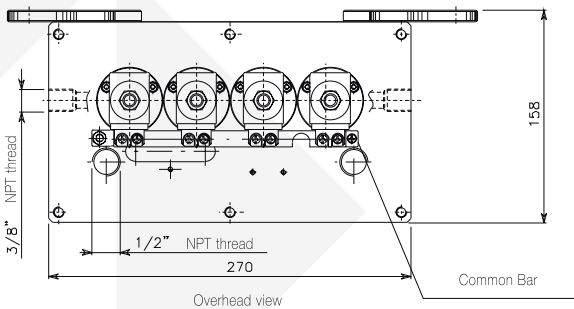
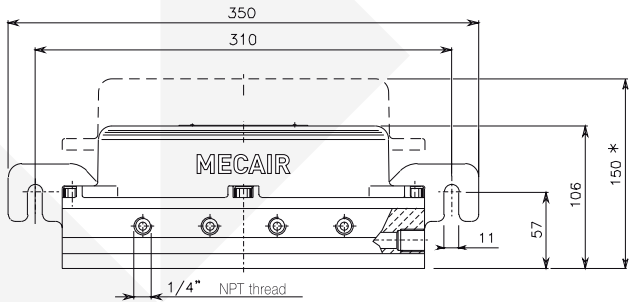
Nominal values	Operating range
24/50	24 V/50 Hz
24/60	24 V/60 Hz
24/DC	24 V/DC 15W
110/50	110-127 V/50 Hz
110/60	110-127 V/60 Hz
110/DC	110 V / DC
220/50	220-240 V/50 Hz
220/60	220-240 V/60 Hz

MECAIR - CXD HAZARDOUS ENCLOSURES

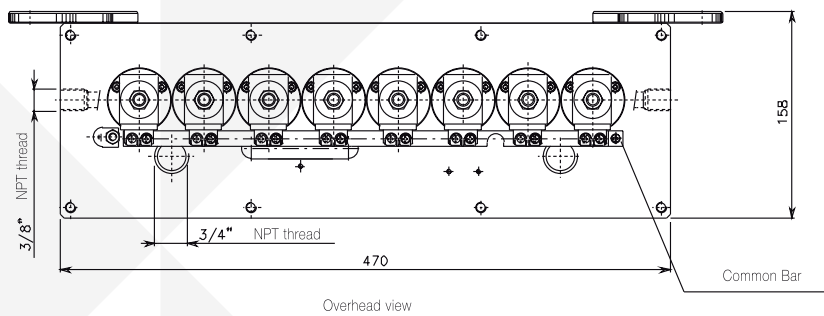
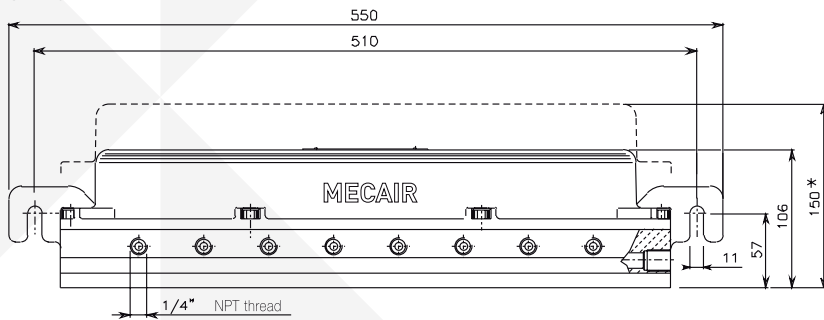
PRODUCT LEAFLET

DIMENSIONS (MM)

CXD 4



CXD 8

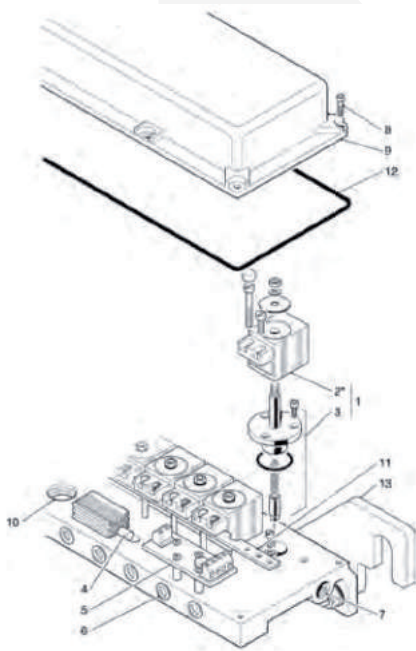


MECAIR - CXD HAZARDOUS ENCLOSURES

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SPARE PARTS

CXD 4 - CXD 8



POS.	DESCRIPTION	CODE
1	Pilot group complete with coil	KIT ELA2 - ../..*
2	Solenoid coil*	KIT SA2 - ../..*
3	Ferrule tube complete	KIT ECL 28 X
4	Heater for CXD4	KIT GRT 50 - 220 V 50/60 Hz
4	Heater for CXD8	KIT GRT 100 - 220 V 50/60 Hz
5	Circuit - for internal temperature control	KIT GTRM - 1
5	Circuit - for internal temperature control and resistor control	KIT GTRM - 2

* Specify voltage and frequency (or DC)

RECOMMENDED SPARE PARTS

For start-up:

≥ 5% of supply (min. 1 piece): • pilot group (1), complete with coil.

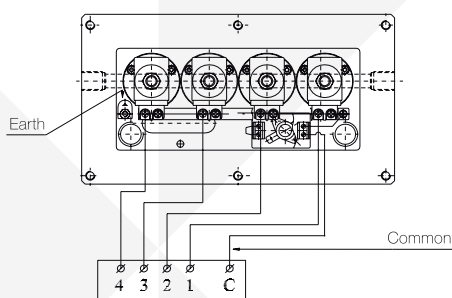
For first two years of service:

≥ 10% of supply (min. 2 pieces): • pilot group (1), complete with coil.

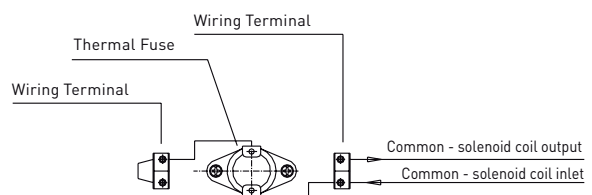
ELECTRICAL CONNECTIONS

A	Pilot group complete with coil
B	Connect the solenoid coils as described in drawing [E1 if without the heater or E2 if with heater] Use a multi-core cable to: 1 wire to pre-wired common terminal (11) and 1 wire to each solenoid coil
C	Connect the thermostatically controlled heater (optional) as per drawing [E2]
D	Refit the top cover (9) ensuring the correct position of the seal (12)

E1 - INTERNAL TEMPERATURE CONTROL



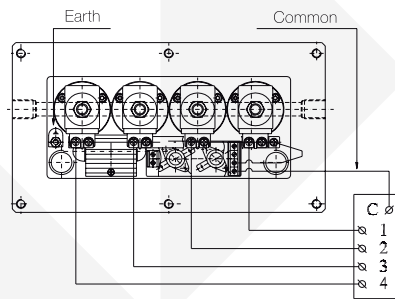
E1 - INTERNAL TEMPERATURE CONTROL (GTRM-1)



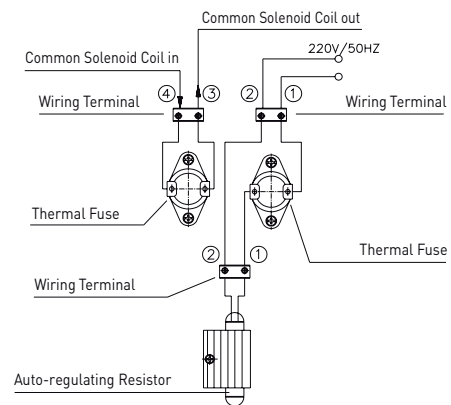
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E2 - INTERNAL TEMPERATURE CONTROL AND RESISTOR



E2 - INTERNAL TEMPERATURE CONTROL AND THERMOSTAT (GTRM-2)



PNEUMATIC CONNECTIONS

Pneumatic connections (6) 1/4" female Gas - Valve connection with:

- Tube Ø 6/8 mm - Rilsan or stainless steel
- Max. length 2 metres

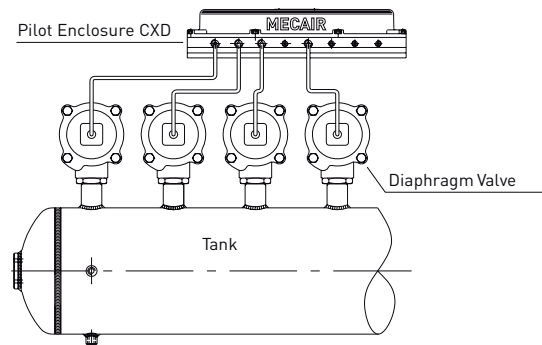
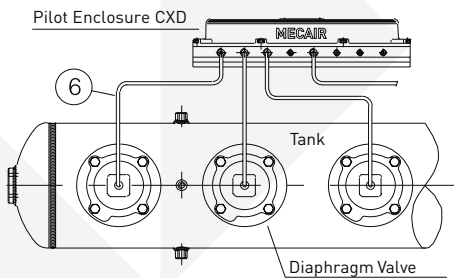
Fluid: Compressed air (or nitrogen) dried, filtered and oil free - min/max pressure 0.5-7.5 bar

Exhaust connections (7): Connection 1/8" female Gas:

- open in atmosphere
- or muted with silencer
- or piped to an external tank for nitrogen recovery.

PNEUMATIC CONNECTIONS ON TANKS

Certified in accordance with ATEX 94/9/EC



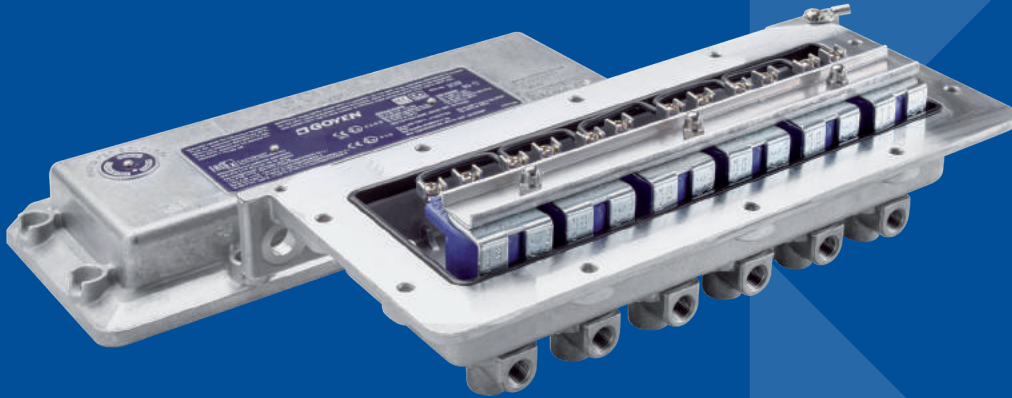


MECAIR SRL

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PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

GOYEN

PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

PRODUCT LEAFLET

3-6VFD COMBINATION FLAME AND DUST IGNITION PROOF ENCLOSURES

Goyen pilot valve enclosures for hazardous locations are available in a combination of flame proof and dust ignition proof assemblies, where 4, 5 and 6 pilot valves are available. The 3-6VFD can be supplied with combined international approvals: Canadian CSA/Underwriters Laboratory UL or European ATEX/International IECEx.

In addition, in Canada and Europe, Goyen offers enclosures that are certified for use in flame proof and dust ignition proof applications. This has the advantage of simplifying assembly designs when using the Goyen enclosures.

CONSTRUCTION

Body: Diecast Aluminium AS313, LM24, A380 The ATEX/IECEx enclosure is available with optional electroless nickel plating, or optional E-coat when there is no heater fitted.

Ferrule: AISI 302 SS

Armature: 430FR SS

Seals: Nitrile

Screws: AISI 302 SS

OPERATION

Recommended on time: 50–150 ms

On time range: 50–500 ms

Recommended time between pulses:

1 minute or more, if maximum on time is used.

PILOT PERFORMANCE

Flow: 0.27 Kv/0.32 Cv

Maximum Working Pressure: 800 kPa/
116 psi

Minimum Working Pressure: 0 kPa/0 psi

SOLENOID PERFORMANCE

VOLTAGE	INRUSH CURRENT MA	HOLD CURRENT MA	POWER
220/240 50/60 Hz	148/143	105/94	23.1 V A
100/120 50/60 Hz	234/255	180/152	19.8 V A
24 V DC	873	873	20 W
24 V AC	1338	963	13 W
110 V DC	212	212	24 W

AMBIENT TEMPERATURE RANGE

ATEX/IECEx: -20°C to +40°C
(-4°F to +104°F)

CSA/UL: -25°C to +40°C
(-13°F to +104°F)

Fluid Media: Air or inert gas at 25°C

CERTIFICATION

CSA/UL: NEC500 Div 1, NEC505 Zone 1 and NEC506 Zone 21

ATEX/IECEx: II Category 2G, II Category 2D

IP Rating: IP66

RESTRICTIONS

This product's hazardous areas certifications are valid only for product that has not been modified since leaving the factory. Modifications made to the enclosure such as the fitment of additional seals, the addition or removal of pilot valves and coils, changes in markings, or physical modifications made to the enclosure itself will invalidate the product certifications. Only activities described in 'Installation' and 'Maintenance' may be conducted without affecting the certification of the product.

MAINTENANCE

Annual maintenance of serviceable parts is recommended. Serviceable items are the pilot armature, armature spring, pilot valve body o-ring. The same model Goyen coil may also replace damaged coils. All other items are non-serviceable. Goyen recommend that appropriately qualified personnel conduct all maintenance activities. Certification of maintenance staff and facilities may be required under some certification schemes. Inappropriate service invalidates the product certifications.

PRODUCT WARNING LABELS

3-6VFD Series

CSA/UL

CAUTION: open circuit and allow 5 minutes after heater is de-energised before removing cover. Keep tightly closed when in operation

WARNING: more than one live circuit. See diagram.

ATEX/IECEx

Warning do not open whilst energised, do not open when explosive atmosphere is present. Use cables rated at 135°C when anti-condensation heater is installed. Where optional E-coat is applied to the enclosure: warning – Electrostatic hazard, clean only with damp cloth.

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PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

PRODUCT LEAFLET

GUIDE TO HAZARDOUS AREAS APPLICATION WITHIN DUST COLLECTORS

Example zones around a dust collector
The following examples assume that the particulate being collected is a combustible dust.

Note that the responsibility for correctly assessing the hazardous zones around the dust collection equipment remains with the plant operator.

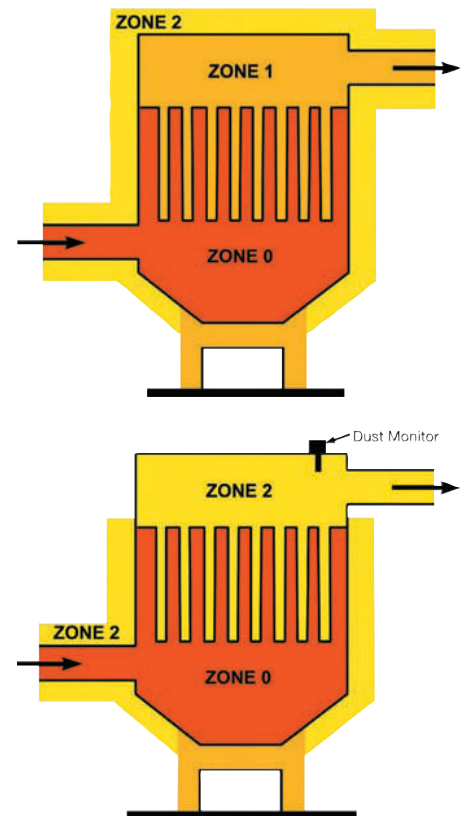
In the event of a filter breakage, dust will enter the clean side of the dust collector. The migration of dust may be in sufficient concentration to present a dust explosion risk.

Where there are no dust monitors in place on the clean side of the dust collector,

a broken bag condition may exist for more than 10 hours before rectification. Therefore the clean side is classed as Zone 1 (NEC505) or Zone 21 (Atex).

Goyen supplies AtexII 3G/D dust monitors to raise an alarm in the case of a filter break. In this case the clean air plenum is classified as Zone 2 if the system will be rectified within 10 hours.

The area surrounding the dust collector housing may be classified as Zone 2. If there is adequate ventilation around the dust collector the Zone 2 classification may be eliminated. The area around the dust collection point is usually classified as Zone 1.



COMPARING AREA CLASSIFICATION SCHEMES

NORTH AMERICA		EUROPE (ATEX SCHEME)			
NEC500 DIVISIONS	NEC505 & 506 CEC ZONES	GAS ZONES	DUST ZONES	EQUIPMENT CATEGORY*	GROUP**
2	0	0	20	1	II
	1	1	21	2	II
2	2	2	22	3	II

* Under the ATEX scheme equipment categories for use in gas environments are denoted by a 'G' suffix, and equipment categories for dust environments are denoted by a 'D' suffix. Examples: Equipment category 2G is suitable for use in ATEX zone 1 areas. Equipment category 2D is suitable for use in ATEX zone 21 areas.

** Only Group II zones are shown. Group I zones are relevant to mining applications only.

HAZARDOUS ZONE DEFINITIONS

DIVISION	ZONE	HAZARDOUS AREA CHARACTERISTIC
1	0 or 20	Hazardous condition is present continuously, for long periods, or frequently (more than 1000 hours per year)
	1 or 21	Hazardous condition is likely to occur in normal operation occasionally (between 10 and 1000 hours per year)
2	2 or 22	Hazardous condition is unlikely to occur in normal operation, or infrequently and for short periods (less than 10 hours per year)

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PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

PRODUCT LEAFLET



3-6VFD SERIES COMBINATION FLAME AND EXPLOSION PROOF PILOT VALVE ENCLOSURE

Diecast aluminium enclosure with explosion proof and flame proof (Ex-d) protection suitable for use in hazardous areas, available optionally with anticondensation heater.

SUITABLE FOR

NEC500 Division 1, NEC505 Zone 1, NEC506 Zone 21 and ATEX/IECEX Zone 21 (II Cat 2G and 2D equipment) hazardous environments, for piloting Goyen diaphragm valves.

SPARE PARTS

K0383 Single armature kit. Includes, spring, armature, and o-ring

G604718 DP Seal

ORDER CODE

3-6VFD - 4 - 0 - 1 - 0 - C - B - 0

Number of pilots fitted

4
5
6

Thread type

(Pilot Thread/Enclosure Conduit Thread)
0=NPT/NPT
1=RP/M
3=NPT/M
4=RP/G

Name plate

1=Goyen

Solenoid type

QT2 solenoid order code, drop the 'K-'
Refer to Q Series Solenoid product specification.

Surface protection type

Blank=Natural
N=ENP (Electroless Nickel Plated), for ATEX/IECEX enclosures
E=E-coat, for ATEX/IECEX enclosures without heaters

Approval type

C=CSA/UL
A=ATEX/IEC Ex

Heater type

0=none
5=24V DC
6=100/120V AC
7=240V AC

3-6VFD PRODUCT CERTIFICATIONS

WITH HEATER KIT FITTED	WITHOUT HEATER KIT FITTED
CSA	
LR26709	LR26709
Class I, Group D	Class I, Group D
Class II Groups E, F, G	Class II Groups E, F, G
Temp Code T2C	Temp Code T4
UL	
Listed 823N	Listed 823N
Class I, Group D	Class I, Group D
Nema 7	Nema 7
Class II Groups E, F, G	Class II Groups E, F, G
Nema 9	Nema 9
Temp Code T3C	Temp Code T3C
IECEX	
Ex d IIB T3 Gb	Ex d IIB T6 Gb
Ex tb IIIC T192°C Db IP6X	Ex tb IIIC T85°C Db IP6X
IECEX SIR 08.0045X	IECEX SIR 08.0045X
ATEX	
II 2 G D	II 2 G D
Ex d IIB T3 Gb	Ex d IIB T6 Gb
Ex tb IIIC T192°C Db IP6X	Ex tb IIIC T85°C Db IP6X
SIRA 02ATEX1408X	SIRA 02ATEX1408X

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PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

PRODUCT LEAFLET

CSA/UL RATED ENCLOSURES

PART NO.	NO. OF VALVES	THREAD SIZES	GOYEN NAMEPLATE	HEATER TYPE	COIL VOLTAGE
3-6VFD4010C-330	4	1/8-3/4 NPT	No	No	220/240 V AC
3-6VFD4010C-331	4	1/8-3/4 NPT	No	No	100/120 V AC
3-6VFD4010C-336	4	1/8-3/4 NPT	No	No	24 V DC
3-6VFD5010C-330	5	1/8-3/4 NPT	No	No	220/240 V AC
3-6VFD5010C-331	5	1/8-3/4 NPT	No	No	100/120 V AC
3-6VFD5010C-336	5	1/8-3/4 NPT	No	No	24 V DC
3-6VFD6010C-330	6	1/8-3/4 NPT	No	No	220/240 V AC
3-6VFD6010C-331	6	1/8-3/4 NPT	No	No	100/120 V AC
3-6VFD6010C-336	6	1/8-3/4 NPT	No	No	24 V DC
3-6VFD4017C-330	4	1/8-3/4 NPT	No	220/240 V AC	220/240 V AC
3-6VFD4016C-331	4	1/8-3/4 NPT	No	100/120 V AC	100/120 V AC
3-6VFD4015C-336	4	1/8-3/4 NPT	No	24 V DC	24 V DC
3-6VFD5017C-330	5	1/8-3/4 NPT	No	220/240 V AC	220/240 V AC
3-6VFD5016C-331	5	1/8-3/4 NPT	No	100/120 V AC	100/120 V AC
3-6VFD5015C-336	5	1/8-3/4 NPT	No	24 V DC	24 V DC
3-6VFD6017C-330	6	1/8-3/4 NPT	No	220/240 V AC	220/240 V AC
3-6VFD6016C-331	6	1/8-3/4 NPT	No	100/120 V AC	100/120 V AC
3-6VFD6015C-336	6	1/8-3/4 NPT	No	24 V DC	24 V DC

ATEX/IECEX RATED ENCLOSURES

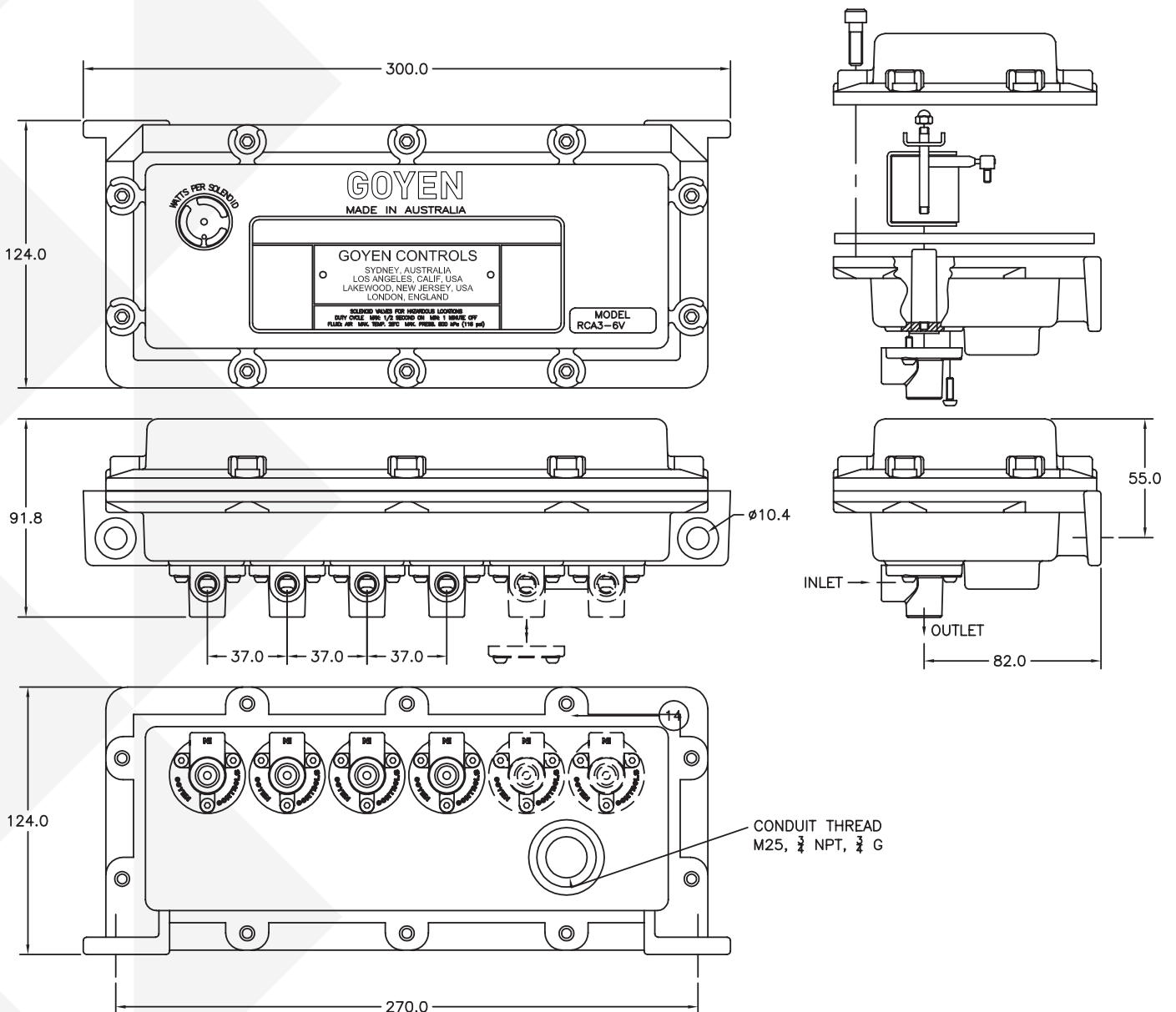
PART NO.	NO. OF VALVES	THREAD SIZES	GOYEN NAMEPLATE	HEATER TYPE	COIL VOLTAGE
3-6VFD4110A-331	4	1/8RP-M25	Yes	No	100/120 V AC
3-6VFD4110A-330	4	1/8RP-M25	Yes	No	220/240 V AC
3-6VFD4110A-332	4	1/8RP-M25	Yes	No	24 V AC
3-6VFD4110A-334	4	1/8RP-M25	Yes	No	110 V DC
3-6VFD4110A-336	4	1/8RP-M25	Yes	No	24 V DC
3-6VFD5110A-331	5	1/8RP-M25	Yes	No	100/120 V AC
3-6VFD5110A-334	5	1/8RP-M25	Yes	No	110 V DC
3-6VFD5110A-336	5	1/8RP-M25	Yes	No	24 V DC
3-6VFD6110A-331	6	1/8RP-M25	Yes	No	100/120 V AC
3-6VFD6110A-330	6	1/8RP-M25	Yes	No	220/240 V AC
3-6VFD6110A-336	6	1/8RP-M25	Yes	No	24 V DC
3-6VFD5115A-336	5	1/8RP-M25	Yes	24 V DC	24 V DC
3-6VFD5117A-330	5	1/8RP-M25	Yes	220/240 V AC	220/240 V AC
3-6VFD5110A-332	5	1/8RP-M25	Yes	No	24 V AC
3-6VFD4110A-331	4	1/8RP-M25	No	No	100/120 V AC
3-6VFD4110A-336	4	1/8RP-M25	No	No	24 V DC
3-6VFD6117A-330	6	1/8RP-M25	Yes	220/240 V AC	220/240 V AC
3-6VFD6110A-332	6	1/8RP-M25	Yes	No	24 VAC
3-6VFD6110A-330	6	1/8RP-M25	No	No	220/240 VAC
3-6VFD4110A-330	4	1/8RP-M25	No	No	220/240 VAC
3-6VFD5110A-331	5	1/8RP-M25	No	No	100/120 VAC
3-6VFD5110A-336	5	1/8RP-M25	No	No	24 V DC
3-6VFD5110A-330	5	1/8RP-M25	No	No	220/240 VAC
3-6VFD6110A-331	6	1/8RP-M25	No	No	100/120 VAC
3-6VFD6110A-336	6	1/8RP-M25	No	No	24 V DC
3-6VFD6116A-331	6	1/8RP-M25	Yes	100/120 V AC	100/120 V AC
3-6VFD6115A-336	6	1/8RP-M25	Yes	24 V DC	24 V DC
3-6VFD5017A-330	5	1/8-3/4 NPT	Yes	220/240 V AC	220/240 V AC

GOYEN

PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

PRODUCT LEAFLET

3-6VFD - DIMENSIONS AND WEIGHTS IN MM (AND INCHES)



WEIGHTS

3-6VFD Series

Mass = 2.21 kg + 0.08 kg per fitted pilot (4.87 lbs + 0.18 lbs per fitted pilot)

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PILOT VALVE ENCLOSURES FOR HAZARDOUS LOCATIONS

PRODUCT LEAFLET

INSTALLATION

WARNING: Ensure that power is isolated from the system prior to installing or opening this product. Where a heater kit is installed, ensure that the heater has been de-energised for a minimum of 5 minutes prior to opening the enclosure. Ensure that the enclosure is properly assembled with all flange screws fully tightened (minimum 10 Nm [7.4 ft.lbs]) prior to applying power in a hazardous area.

Mounting

Enclosures should be mounted in a horizontal position, where the pilot valves and solenoid assemblies are in the preferred vertical orientation.

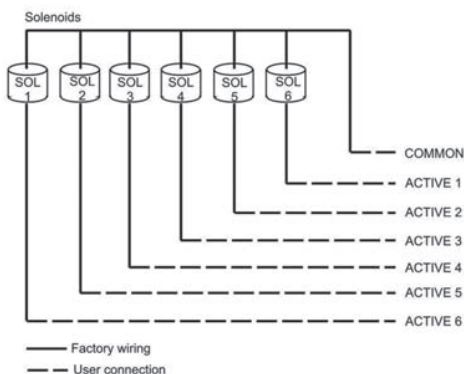
Threads

Pilot valve inlet and exhaust outlets are offered in both 1 8" BSPP (Rp) and NPT. The enclosure base has one conduit entry with either M25 or 3/4" NPT thread.

Electrical connections

Refer to diagram below. The included Goyen QT2 solenoids are provided with screw/spade terminals. These solenoids are neutrally linked at the factory for customer convenience.

The internal grounding terminal must be used for equipment grounding.



Pneumatic connections

These pilot valves are connected to the dust collector reverse pulse jet valves using metric 4 mm tubing (ID 0.157") or imperial 1/8" tubing (ID 0.162") and maximum length of 1.5 m [4.9 ft].

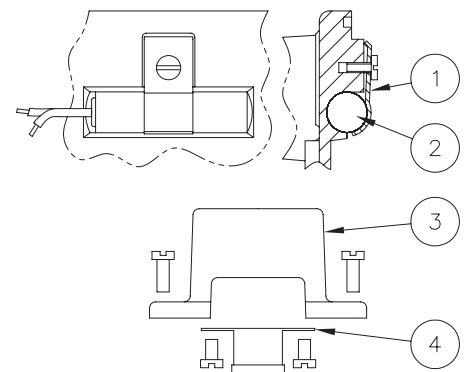
ANTI-CONDENSATION HEATER ELEMENTS

Enclosures can be factory fitted with a heater element to assist in the prevention of condensation within the enclosure. Using separate power supply wiring, the choice of heater voltage can be used with any coil voltage.

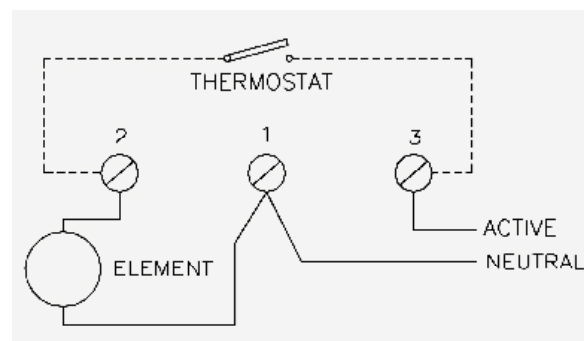
Refer to the How To Order code.

HEATER INSTALLATION

- (1) Heater retaining clip
- (2) Heater element
- (3) Wiring terminal block
- (4) Thermostat element



Heater terminal block connections



HEATER RATINGS

VOLTAGE	WATTS
24 V DC	48
110/120 V AC	100
220/240 V AC	100



GOYEN CONTROLS PTY LIMITED

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