

# *Instruction Manual*

## IPVA10EK Air Admittance Valve

Description	Item Number
Normally open valve - 230 V a.c.	C417-60-000
Normally open valve - 110 V a.c.	C417-60-100
Normally open valve - 24 V d.c.	C417-60-200
Normally closed valve - 230 V a.c.	C417-70-000
Normally closed valve - 110 V a.c.	C417-70-100
Normally closed valve - 24 V d.c.	C417-70-200

Original Instructions





# Declaration of Conformity

We, Edwards,  
Innovation Drive,  
Burgess Hill,  
West Sussex,  
RH15 9TW, UK

declare under our sole responsibility, as manufacturer and person within the EU authorised to assemble the technical file, that the product(s)

Normally open valves:

230 V a.c.	C417-60-000
110 V a.c.	C417-60-100
24 V d.c.	C417-60-200

Normally closed valves:

230 V a.c.	C417-70-000
110 V a.c.	C417-70-100
24 V d.c.	C417-70-200

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

EN61010-1:2010	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. General Requirements
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and fulfils all the relevant provisions of

2014/35/EU <sup>†</sup>	Low Voltage Directive
2011/65/EU	Restriction of Certain Hazardous Substances (RoHS) Directive

<sup>†</sup> 110 V a.c. and 230 V a.c. only

*Note: This declaration covers all product serial numbers from the date this Declaration was signed onwards.*

Mr L Marini, Senior Technical Manager

26.09.2017, Eastbourne

Date and Place

This product has been manufactured under a quality management system certified to ISO 9001:2008



# Declaration of Incorporation

We, Edwards,  
Innovation Drive,  
Burgess Hill,  
West Sussex,  
RH15 9TW, UK

declare under our sole responsibility, as manufacturer and person within the EU authorised to assemble the technical file, that the machine(s)

Normally open valves:

230 V a.c.	C417-60-000
110 V a.c.	C417-60-100
24 V d.c.	C417-60-200

Normally closed valves:

230 V a.c.	C417-70-000
110 V a.c.	C417-70-100
24 V d.c.	C417-70-200

to which this declaration relates is intended to be incorporated into other equipment and not to function independently. The machine(s) must not be put into service until the equipment into which it is incorporated has been brought into conformity with the provisions of the Machinery Directive, 2006/42/EC.

The machine(s) is in conformity with the following standard(s) or other normative document(s)

None.

and fulfils all the relevant provisions of

2014/35/EU	Low Voltage Directive
2011/65/EU	Restriction of Certain Hazardous Substances (RoHS) Directive

*The relevant essential requirements of the Machinery Directive 2006/42/EC Annex 1 have been applied and fulfilled so far as practicable for this partly completed machinery. The relevant technical documentation has been compiled in accordance with Annex VII Part B. In response to a reasoned request by the national authorities, Edwards Ltd undertakes to provide relevant information on the partly completed machinery (via email).*

*Note: This declaration covers all product serial numbers from the date this Declaration was signed onwards.*

  
Mr L Marini, Senior Technical Manager

27.09.2017, Eastbourne

Date and Place

*This product has been manufactured under a quality management system certified to ISO 9001:2008*

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For return of equipment, complete the HS Forms at the end of this manual.

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# 1 Introduction

## 1.1 Scope and definitions

This manual provides installation, operation and maintenance instructions for the Edwards IPVA10EK air admittance valve. The valve must be used as specified in this manual.

Read this manual before installing and operating the valve. Important safety information is highlighted as WARNING instructions; these instructions must be obeyed.

The use of WARNINGS and CAUTIONS are defined below.



### **WARNING**

Warnings are given where failure to observe the instruction could result in injury or death to people.

### **CAUTION**

Cautions are given where failure to observe the instruction could result in damage to the equipment, associated equipment and process.

The following warning symbols can be found on this product:



Warning - refer to accompanying documentation.



Warning - hot surface.

The units used throughout this manual conform to the SI international system of units of measurement.

## 1.2 Description

The IPVA10EK valve is solenoid-operated and is designed for the automatic admittance of air or vent gas into a vacuum system. The vacuum system is isolated from atmosphere (or the vent gas supply) by a fluoroelastomer pad on the base of the valve-plunger which seals against the body of the valve.

The valve has two ports with NW flanges. One of these flanges is used to connect the valve to the vacuum system; the other flange can be left open to atmosphere or connected to a vent gas supply.

Normally-open and normally-closed versions of the valve with a range of different electrical supplies are available to suit the application.

## 2 Technical data

### 2.1 General

Dimensions	See Figure 1
Mass	0.35 kg
Ambient operating temperature range	-20 to 55°C
Vent gas temperature range	-10 to 130°C
Maximum humidity	80% RH up to 31°C decreasing linearly to 50% RH at 40°C and above
Maximum altitude	2000 meters
Pollution degree	2
Overvoltage category	II

### 2.2 Performance

Leak rate	$< 1 \times 10^{-6}$ mbar.l.s <sup>-1</sup> , $< 1 \times 10^{-4}$ Pa.l.s <sup>-1</sup>
Venting rate	10 l in 12 seconds
Maximum cycle frequency	100 min <sup>-1</sup>
Mean time to failure (MTTF)	500,000 cycles
Response time	20 ms to open 30 ms to close
Maximum pressure	d.c. electrical supply 1.8 bar (absolute), $1.8 \times 10^5$ Pa a.c. electrical supply 1.8 bar (absolute), $1.8 \times 10^5$ Pa

### 2.3 Electrical data

Electrical supply	24 V d.c. 110 V a.c., 1-phase, 50/60Hz 230 V a.c., 1-phase, 50/60Hz
Electrical supply tolerance	
Normally closed valves:	
230 V a.c.	±10%
110 V a.c.	±10%
24 V d.c.	±10%
Normally open valves:	
230 V a.c.	±10%
110 V a.c.	±10%
24 V d.c.	+10%, -5%*

\* Voltage tolerance reduced at elevated ambient temperatures; maximum recommended ambient temperature: 40°C



Power Consumption	
Normally closed valves	
230 V a.c.	5 W
110 V a.c.	5 W
24 V d.c.	5 W
Normally open valves	
230 V a.c.	10 W
110 V a.c.	10 W
24 V d.c.	9 W
Duty cycle	100% continuous rating
Protection class	IP65
Electrical supply cable outer diameter	6 to 7 mm
Coil insulation	Class H

## 2.4 Materials

Materials exposed to vacuum\*:

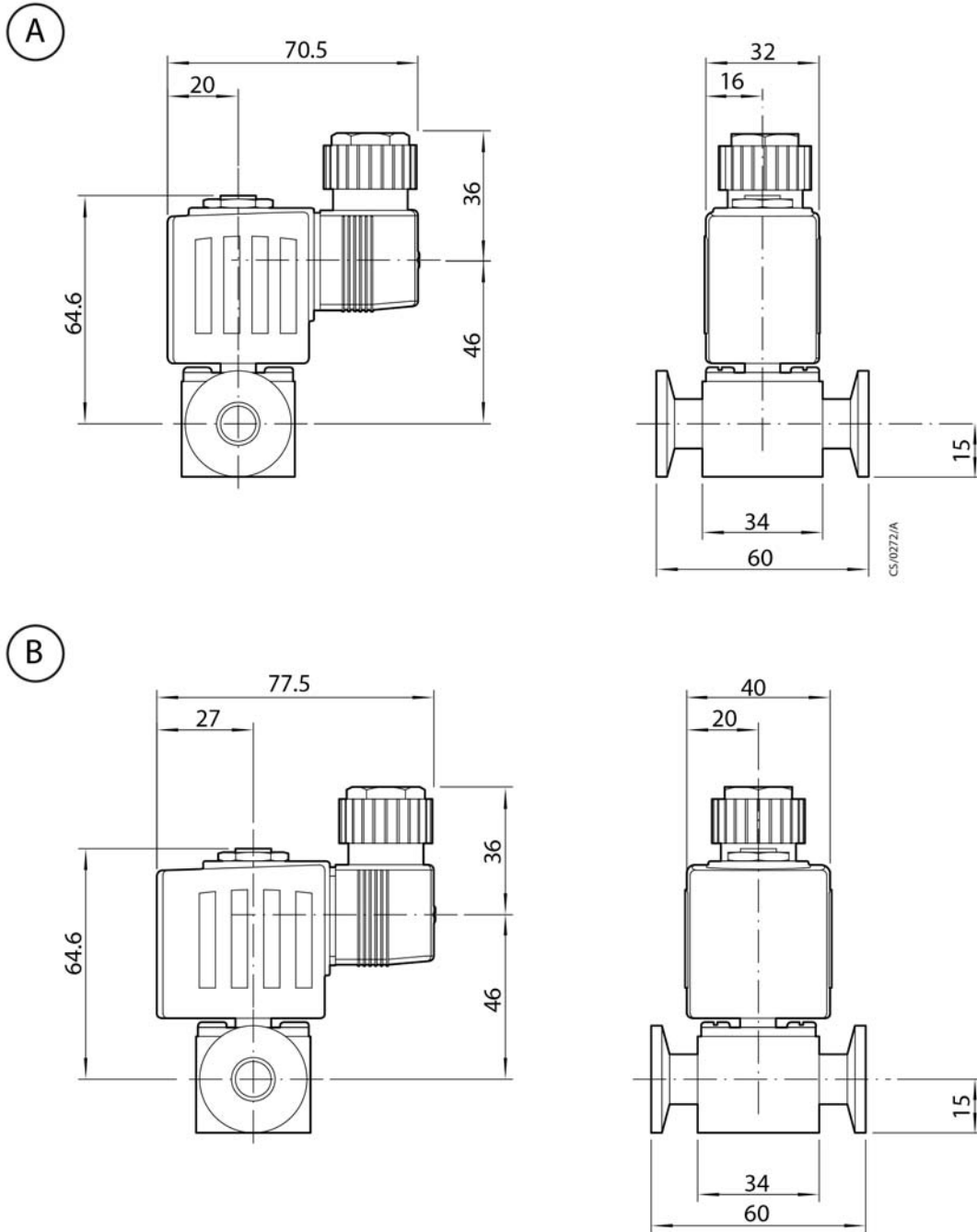
Body	Aluminium
Valve seals	Fluoroelastomer
Actuator	Stainless steel
Shading rings	Silver

\* Normally open variants have an additional carbon loaded PTFE slide ring within the vacuum envelope

## 2.5 Item numbers

IPVA10EK normally open valves		IPVA10EK normally closed valves	
230 V a.c.	C417-60-000	240 V a.c.	C417-70-000
110 V a.c.	C417-60-100	110 V a.c.	C417-70-100
24 V d.c.	C417-60-200	24 V d.c.	C417-70-200

Figure 1 - Valve dimensions



**IPVA10EK normally open valves**

Voltage	Item number	Dimensions
230 V a.c.	C417-60-000	Figure 1B
110 V a.c.	C417-60-100	Figure 1B
24 V d.c.	C417-60-200	Figure 1A

**IPVA10EK normally closed valves**

Voltage	Item number	Dimensions
230 V a.c.	C417-70-000	Figure 1A
110 V a.c.	C417-70-100	Figure 1A
24 V d.c.	C417-70-200	Figure 1B

## 3 Installation



### **WARNING**

Do not operate the IPVA10EK valve in safety critical applications. The IPVA10EK is not intended to be fail-safe.



### **WARNING**

If the nature of your application requires there to be an electrical connection between the valve and adjacent pipe-work, the electrical connection should be adequately verified before the system to which the valve is connected is operated.

### 3.1 Unpack and inspect

Remove all the packing materials and protective covers and check the IPVA10EK valve. If the valve is damaged, notify the supplier and carrier in writing within three days; state the Item Number of the valve together with the order number and the supplier's invoice number. Retain the packing materials for inspection. Do not use the valve if it is damaged.

If the valve is not to be used immediately, replace the protective covers. Store the valve in suitable conditions, as described in Section 6.

### 3.2 Install the valve



### **WARNING**

Take appropriate safety precautions when installing the valve in a system in which dangerous process substances have been pumped.

### **CAUTION**

The body of the valve has an arrow which indicates the correct direction of gas flow. If the direction of gas flow is incorrect, the valve may leak.

Connect the valve to the vacuum system (and, if required, to the vent gas supply) with standard NW coupling components. If the valve is used to vent directly from the atmosphere, Edwards recommend that a filter is fitted to the inlet of the valve to prevent contamination of the valve through the ingress of dust.

### 3.3 Electrical connections



### **WARNING**

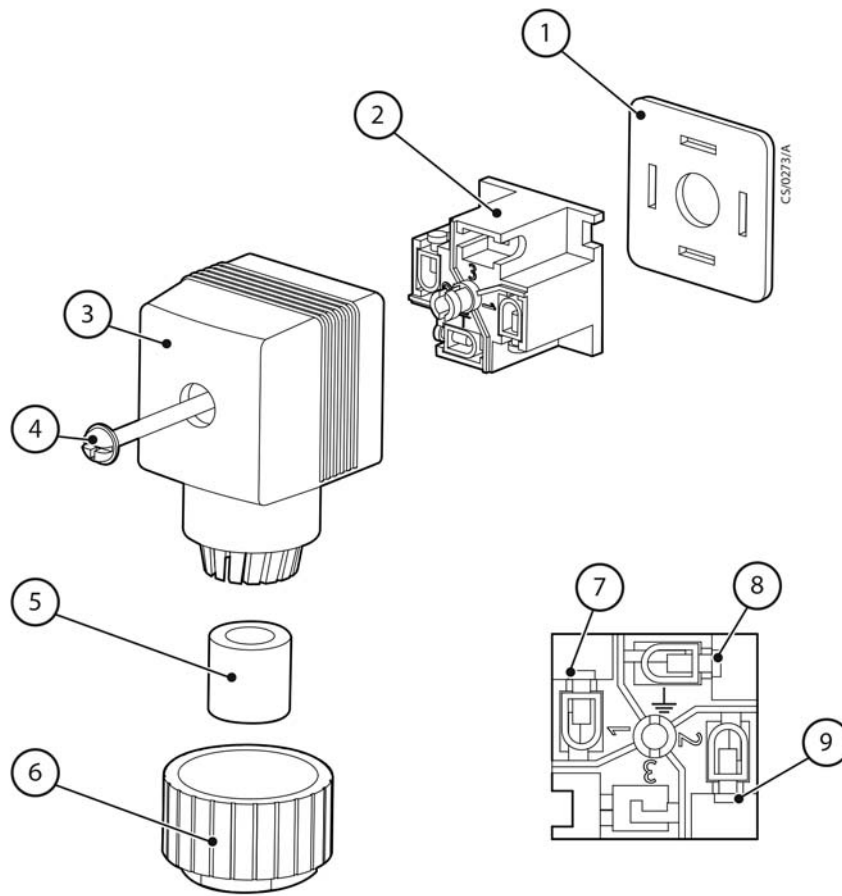
Ensure that the electrical installation of the IPVA10EK valve conforms with local and national safety requirements. It must be connected to a suitable fused and protected electrical supply.

Refer to Figure 2 for item numbers in brackets and use the following procedure to connect the electrical supply to the valve; ensure that a suitably sized electrical supply cable is used (refer to Section 2.3):

1. Ensure the electrical supply corresponds with the voltage stated on the valve label.
2. Gently prise out the connector block (2).

3. Remove the strain-relief nut (6) and sealing gland (5). Pass the electrical supply cable through the strain-relief nut (6), the sealing gland (5) and into the electrical supply socket (3).
4. Connect the electrical supply cable to the appropriate terminals of the connector block (7, 8, 9) as shown in Figure 2.
5. Push the connector block (2) back into the electrical supply socket (3), a click should be heard; ensure that it is orientated correctly so that the sockets mate with the corresponding pins on the valve.
6. Tighten the strain-relief nut (6) and push the electrical supply socket (3) onto the three connector pins on the valve.
7. Refit the retaining screw (4) and tighten; ensure that there is a slight compression of the sealing gasket (1).

Figure 2 - Electrical supply socket



- |                             |                      |                            |
|-----------------------------|----------------------|----------------------------|
| 1. Sealing gasket           | 4. Retaining screw   | 7. Supply (-ve/N or +ve/L) |
| 2. Connector block          | 5. Sealing gland     | 8. Earth                   |
| 3. Electrical supply socket | 6. Strain-relief nut | 9. Supply (+ve/L or -ve/N) |

## 4 Operation



### *WARNING*

Do not touch the surface of the valve coil during operation. It may be hot.

Once correctly installed, the operation of the IPVA10EK valve is dependent only upon the switching of the electrical supply to the valve:

- Normally-open valves close when the electrical supply to the valve is switched on; the valve opens automatically when the electrical supply is switched off.
- Normally-closed valves open when the electrical supply to the valve is switched on; the valve closes automatically when the electrical supply is switched off.

## 5 Maintenance



### *WARNING*

Do not inhale or touch the breakdown products of fluorinated materials which may be present if the vacuum system has been heated to 250°C or more. These breakdown products are very dangerous.

IPVA10EK valves do not require routine maintenance during normal operational life and cannot be serviced by the user. Carry out the following checks when maintaining the vacuum system:

- Check that the connection to the vacuum system (and to the vent gas supply, if fitted) is secure.
- Check that the electrical connections are secure and that the electrical cable is not damaged.

## 6 Storage and disposal

### 6.1 Storage

Place protective covers over the valve-ports and store the IPVA10EK valve in cool, dry conditions until required for use. When required, prepare and install the valve as described in [Section 3](#).

### 6.2 Disposal

Dispose of the valve and any components removed from it safely in accordance with all local and national safety and environmental requirements.

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## Return the equipment or components for service

Before you send your equipment to us for service or for any other reason, you must send us a completed Declaration of Contamination of Vacuum Equipment and Components - Form HS2. The HS2 form tells us if any substances found in the equipment are hazardous, which is important for the safety of our employees and all other people involved in the service of your equipment. The hazard information also lets us select the correct procedures to service your equipment.

We provide instructions for completing the form in the Declaration of Contamination of Vacuum equipment and Components - Procedure HS1.

If you are returning a vacuum pump, note the following:

- If a pump is configured to suit the application, make a record of the configuration before returning the pump. All replacement pumps will be supplied with default factory settings.
- Do not return a pump with accessories fitted. Remove all accessories and retain them for future use.
- The instruction in the returns procedure to drain all fluids does not apply to the lubricant in pump oil reservoirs.

Download the latest documents from [www.edwardsvacuum.com/HSForms/](http://www.edwardsvacuum.com/HSForms/), follow the procedure in HS1, fill in the electronic HS2 form, print it, sign it, and return the signed copy to Edwards.

**Note:** *If we do not receive a completed HS2 form, we will not accept the return of the equipment.*

