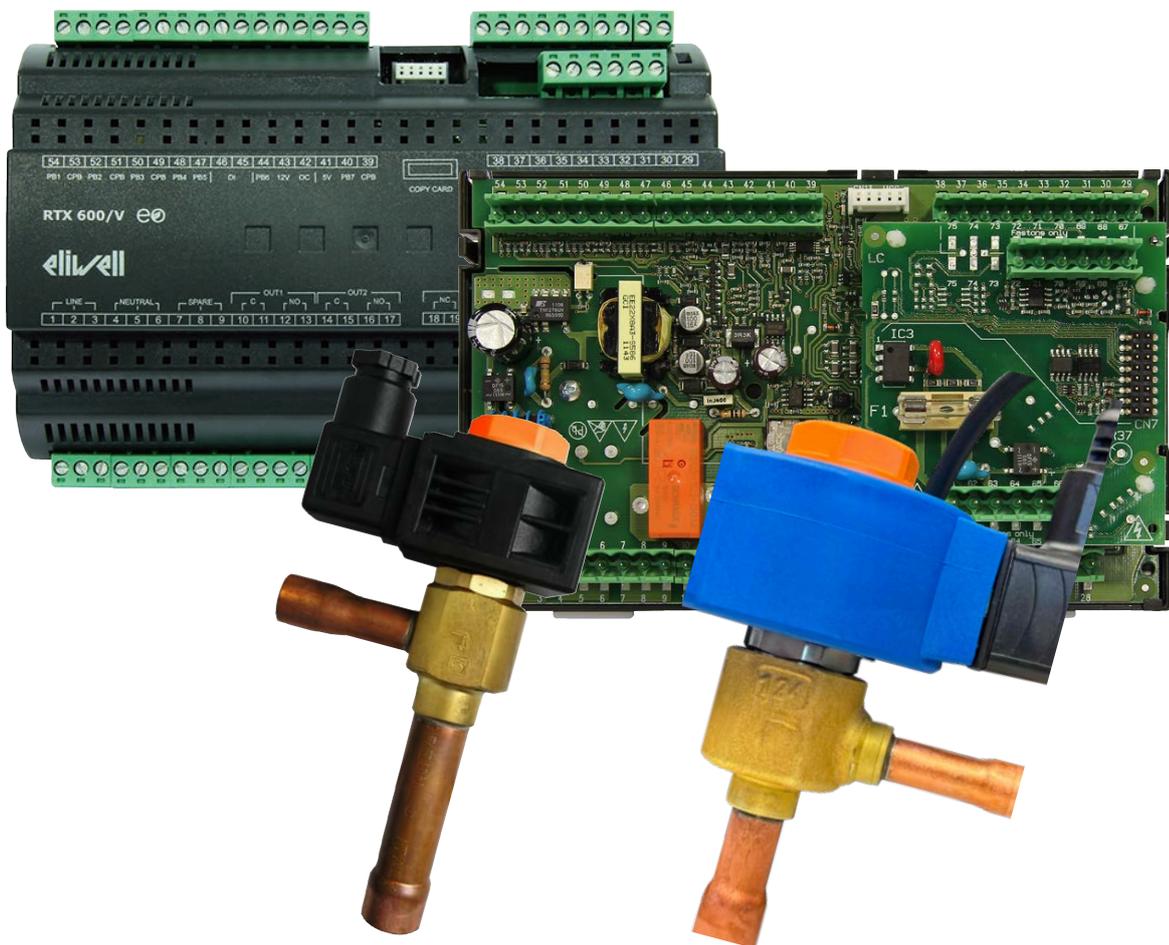


PXVM - PXVS

User Guide

9MA10320.02
02/2026



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The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

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SAFETY INFORMATION

Important information

Read these instructions carefully and visually inspect the equipment to familiarize yourself with the device before attempting to install, operate, service, or maintain it.

The following special messages may appear anywhere in this documentation or on the equipment to inform you of potential hazards or draw your attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that there is an electrical hazard that will cause personal injury if the instructions are not followed.



This is the safety alert symbol.

Used to alert the user to potential hazards of personal injury. Observe all safety messages that follow this symbol in order to avoid possible accidents, including fatal ones.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in fatal or serious injury**.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in fatal injury or serious injury**.

ATTENTION

WARNING indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury**.

NOTICE

NOTE is used to refer to practices not related to physical injury.

NOTE

Electrical equipment must only be installed, used, and repaired by qualified personnel.

Neither Eliwell nor Schneider Electric shall be held liable for any consequences arising from the use of this material. A qualified person is someone who has the skills and knowledge relating to the structure and operation of electrical equipment and its installation, and who has received safety training to recognize and avoid the dangers involved.

Staff qualifications

Only personnel with appropriate training and in-depth knowledge and understanding of the content of this document manual and any other relevant product documentation is authorized to work on and with this product. In addition, they must be familiar with accident prevention regulations, provisions, and rules, which they must comply with when designing and implementing the system.

Permitted use

The valve and coil assembly must be installed and used in accordance with the instructions provided and, in particular, under normal conditions, no parts carrying dangerous voltage must be accessible. The valve and coil assembly must be adequately protected from water and dust, overpressure, and overtemperature, depending on the application, and must also be accessible only with the use of a tool.

The valve and coil assembly is suitable for incorporation into a system for use in large-scale distribution and/or similar applications in the field of refrigeration and air conditioning, and has been tested on the basis of the relevant harmonized European standards.

Prohibited use

Any use other than that permitted is strictly prohibited.

Residual liability and risks

Eliwell and Schneider Electric's liability is limited to the correct and professional use of the product in accordance with the guidelines contained in this and other supporting documents, and does not extend to any damage caused by the following (by way of example but not limited to):

- installation/use other than that intended and, in particular, not in compliance with the safety requirements set forth in the regulations in force in the country where the product is installed and/or provided in this manual;
- use on devices that do not guarantee adequate protection against electric shock, water, dust, overpressure, and overtemperature in the installation conditions provided;
- use on equipment that allows access to hazardous parts without the use of a locking mechanism or tools to access the instrument;
- tampering with and/or alteration of the product;
- installation/use in appliances that do not comply with the regulations in force in the country where the product is installed.

Disposal

The equipment (or product) must be disposed of separately in accordance with current local regulations on waste disposal.

Date of production

The date of manufacture is indicated on the device label, showing the week of manufacture and the year (WW-YY).

ABOUT THE DOCUMENT

Document Scope

This document describes and provides detailed instructions for the installation, configuration, and maintenance of Eliwell PXV electronic expansion valves. Describes the product features, compatible refrigerants, and electrical and mechanical specifications. Includes instructions on the correct orientation of the valve, installation of the coil and label, and torque values to be observed. Explain the use of interchangeable ports, the PWM modulation principle, and the selection procedure using the Eliwell online tool.

The manual supports various PXV models for applications in commercial and industrial refrigeration, as well as in HVAC systems.

Use this document to:

- Installing and using PXV valves
- Become familiar with the functions of the PXV valves

NOTE: Read this document and related documents carefully before installing, operating, or servicing the device.

Validity Note

This document applies to the PXV valves.

The characteristics of the products described in this document are intended to match the characteristics that are available on www.eliwell.com. As part of our corporate strategy for constant improvement, we may revise the content over time to enhance clarity and accuracy. If you see a difference between the characteristics in this document and the characteristics on www.eliwell.com, consider www.eliwell.com to contain the latest information.

Product information

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ELECTRIC ARC

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Replace and secure all covers, accessories, hardware, cables, and wires before applying power to the unit.
- For all the devices requiring it, make sure there is an effective ground connection.
- Use only the specified voltage when operating this equipment and any associated products.
- Do not connect the device directly to the line voltage, unless expressly indicated.

Failure to follow these instructions will result in death or serious injury.

WARNING

UNINTENDED EQUIPMENT OPERATION

- Check that the electrical connections are completely intact. If any abnormal deformations are found, do not proceed with installation.
- Proceed with electrical connections only after completing installation on the system.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- Do not use this equipment in safety-critical machine functions.
- Tighten the plastic cap and nut in accordance with the technical specifications relating to tightening torques.
- Disassemble and repair the valve in accordance with the requirements of current standards ⁽¹⁾.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

⁽¹⁾ The equipment must be installed, repaired, and updated only by experienced, qualified personnel who are authorized in accordance with the regulations in force in their respective regions. In European Union countries, such personnel must be equipped with a refrigeration technician license in accordance with the F-GAS directive (Presidential Decree No. 43 of October 27, 2012, formerly EC 303/2008), according to the procedures indicated in the product documentation. The aforementioned personnel are also responsible for replacing spare parts officially supplied by Eliwell in the field.

Flammable refrigerant gases

For use with flammable gases:

- This device has been tested in accordance with section 22.112 of IEC 60335-2-89, as it is not considered to be a source of ignition caused by temperature or arcs/sparks.
- This device has been tested with refrigerant gases that do not exceed the ignition temperature limit (limit temperature) as specified in clause 22.114 of standard IEC 60335-2-89, according to the criteria in chapter 11 (normal operation).

The use and application of the information contained in this document requires experience in the design and parameterization/programming of control systems for refrigeration plants. Only you, i.e., the original equipment manufacturers, installers, or users, can be aware of the conditions and factors present, as well as the applicable regulations during the design, installation, setup, operation, and maintenance of the machine or related processes. Therefore, only you can decide on the suitability of the automation and associated equipment and the resulting safety and interlocking devices that can be used effectively and appropriately in the locations where the equipment in question is to be put into service. When selecting automation and control equipment—and any other related equipment or software—for a particular application, you must also take into account any standards defined by the relevant national regulatory bodies or certification agencies.

When using flammable refrigerant gases, during installation of this controller and related equipment, the final compliance of the machine with applicable regulations and standards must be verified. Although all statements and information contained herein are believed to be accurate and reliable, they are not guaranteed. The information provided herein does not exempt the user from the responsibility of conducting their own tests and validations of compliance with any applicable regulations.

WARNING

REGULATORY INCOMPATIBILITY

Ensure that all equipment used and systems designed comply with all applicable local, regional, and national regulations and standards.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

Table of Flammable Refrigerants

HFC (R134A, R32, R404A, R407C, R410A, R507)

HFO (R1234YF, R1234ZE)

HFO + HFC (R448A, R449A, R450A, R452A, R452B, R454A, R454B, R454C, R455A, R513A, R515A, R515B)

HC (R290, R600, R600A, R1270)

Environmental Data

For information on product compliance and the environment, please refer to the Environmental Data Program by Schneider Electric.

Languages available for this document

This document is available in the following languages:

- Italian (9MA00320)
- English (9MA10320)
- Spanish (9MA30320)
- Portuguese (9MAN0320)

Related documents

Document type	Document coder reference
PXV Instruction Sheet	9IS24942

You can download these technical publications and other technical information from our website at: www.eliwell.com

Information on non-inclusive terminology

As part of a group of responsible and inclusive companies, we are updating our communications and products that contain non-inclusive terminology. However, until we have completed this process, our content may still contain standardized industry terms that may be considered inappropriate by our customers.

CHAPTER 1

INTRODUCTION

1.1. DESCRIPTION

Application

The PXV solenoid expansion valve regulates the flow of refrigerant to the evaporator by modulating the opening time of its shutter, allowing for a wide range of power variation. The highly accurate and reliable regulation of the refrigerant flow increases the efficiency of the entire system.

Silent models with low noise performance are available.

Various interchangeable orifices of different nominal sizes are available.

The PXV valve can be controlled by the following Eliwell devices:

RTX600/V (DOMINO), RTN600/V (DOMINO), and V800. It is typically used in refrigeration systems, especially refrigerated display cases used in large-scale retail outlets.

In particular:

Commercial refrigeration

- hypermarkets, supermarkets, grocery stores
- hotels, restaurants

Industrial refrigeration

- processing, food distribution

Civil air conditioning

- air conditioners, residential heat pumps with inverter compressors

The PXV valve can be used as an evaporation pressure regulator in refrigeration systems equipped with one or more evaporators and a hot gas bypass valve, as a capacity control.

Features

These are new-generation devices whose main functions are as follows:

- Evaporator overheating control via an integrated driver for pulse valves (EEV)
- Models for refrigerants R290, R600, R600a, R744 (CO₂)
- Optimization of coolant injection into the evaporator, increasing its efficiency
- 230 Vac and 24 Vac available
- 230 Vdc available for silent models
- Improved control of overheating as working conditions vary

In this manual, the photographs and drawings are used to show the device **PXV** (and other Eliwell devices) and are for illustrative purposes only. The relative dimensions and proportions may not correspond to actual dimensions, either in full size or to scale. Furthermore, all wiring or electrical diagrams are to be considered simplified representations and do not correspond exactly to reality.

NOTE. Please refer to the manuals for the relevant Eliwell controllers for the electrical connections of the PXV valve.

Refrigerants Table

HFC (R134A, R32, R404A, R407C, R410A, R507)

HFO (R1234YF, R1234ZE)

HFO + HFC (R448A, R449A, R450A, R452A, R452B, R454A, R454B, R454C, R455A, R513A, R515A, R515B)

HC (R290, R600, R600A, R1270)

Operation

The PXV valve is a laminating device that receives the liquid from the condenser and feeds it into the evaporator, performing the necessary pressure drop on the expansion nozzle.

It is an ON/OFF valve that must be adjusted according to the pulse width modulation criterion, better known as **“Pulse Width Modulation” (PWM)** and can be controlled by a fairly simple electronic control system. According to this principle, once a reference period T has been set for the regulator, the refrigerant flow rate QT required by the evaporator during that period is supplied by the valve in a time interval t that is shorter than the period T , during which the maximum flow rate passes (ON phase). During the remaining time interval $T - t$, the valve remains closed (OFF phase). Therefore, for effective regulation, the PXV valve must be sized so that, under the most demanding load conditions, it can supply a sufficient quantity of refrigerant to meet demand. Under these extreme conditions, the valve will remain open for the entire period T . The use of an RTX/RTN 600 electronic regulator allows for more precise refrigerant dosing, achieving greater efficiency over time (and therefore a significant reduction in machine operating costs) and also a more rapid response to changes in evaporator load.

Coils and connectors

The coils that can be used for this valve are listed in the Coils and Connectors section, which summarizes the main characteristics of the coils and the connectors to be paired with them.

1.2. PACKAGE CONTENTS

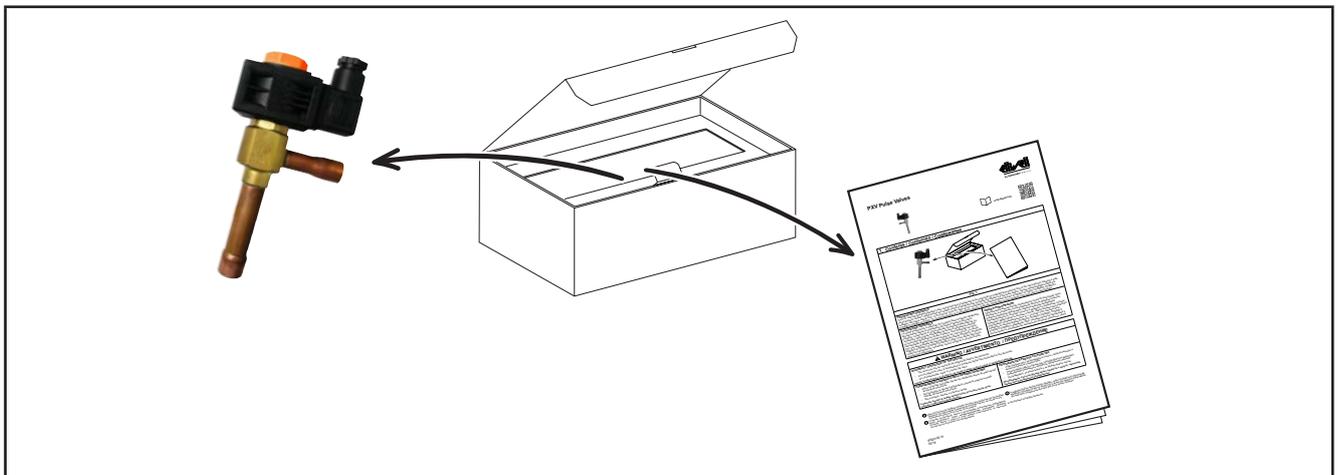


Fig. 1. Package contents

CHAPTER 2

MECHANICAL ASSEMBLY

2.1. BEFORE STARTING

Before you begin installing your system, read this chapter carefully.

Only the user and the machine manufacturer can be aware of all the conditions and factors present during the installation and setup, commissioning, and maintenance of the machine or process, and can therefore determine which automation and associated equipment and related safety devices and interlocks can be used efficiently and correctly.

When selecting automation and control equipment and any other related equipment or software for a particular application, all applicable local, regional, or national standards and/or regulations must also be taken into account.

Pay particular attention to compliance with all safety information, electrical requirements, and legal regulations that would apply to your machine or process when using this equipment.

See the Flammable Refrigerants section for important regulatory information on the use of these products in applications that use flammable refrigerants.

WARNING

REGULATORY INCOMPATIBILITY

Ensure that all equipment used and systems designed comply with all applicable local, regional, and national regulations and standards.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

2.2. DISCONNECTING POWER

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ELECTRIC ARC

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Replace and secure all covers, accessories, hardware, cables, and wires before applying power to the unit.
- For all the devices requiring it, make sure there is an effective ground connection.
- Use only the specified voltage when operating this equipment and any associated products.
- Do not connect the device directly to the line voltage, unless expressly indicated.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Check that the electrical connections are completely intact. If any abnormal deformations are found, do not proceed with installation.
- Proceed with electrical connections only after completing installation on the system.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- Do not use this equipment in safety-critical machine functions.
- Tighten the plastic cap and nut in accordance with the technical specifications relating to tightening torques.
- Disassemble and repair the valve in accordance with the requirements of current standards ⁽¹⁾.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

⁽¹⁾The equipment must be installed, repaired, and updated only by experienced, qualified personnel who are authorized in accordance with the regulations in force in their respective regions. In European Union countries, such personnel must be equipped with a refrigeration technician license in accordance with the F-GAS directive (Presidential Decree No. 43 of October 27, 2012, formerly EC 303/2008), according to the procedures indicated in the product documentation. The aforementioned personnel are also responsible for replacing spare parts officially supplied by Eliwell in the field.

2.3. OPERATING ENVIRONMENT

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Install and use this equipment in accordance with the conditions described in the "Environmental and Electrical Characteristics" section of this document.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

2.4. INSTALLATION CONSIDERATIONS

During handling and assembly:

⚠ ATTENTION

UNINTENDED EQUIPMENT OPERATION

- Avoid exposing the valve to magnetic fields for prolonged periods.
- Do not subject the valve to impact or twisting. If any abnormal deformations are found, do not proceed with installation.
- Do not remove the orientation device on the connector.

Failure to follow these instructions may result in injury or damage to the equipment.

2.5. PXV INSTALLATION

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Check that the electrical connections are completely intact. If any abnormal deformations are found, do not proceed with installation.
- Proceed with electrical connections only after completing installation on the system.
- For electrical power and control connections, observe local and national regulatory requirements regarding the rated current and voltage of the equipment in use.
- Do not use the device in equipment or machines with safety functions.
- Tighten the plastic cap and nut in accordance with the technical specifications relating to tightening torques.
- Disassemble and repair the valve in accordance with the requirements of current standards⁽¹⁾.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

⁽¹⁾The equipment must be installed, repaired, and updated only by experienced, qualified personnel who are authorized in accordance with the regulations in force in their respective regions. In European Union countries, such personnel must be equipped with a refrigeration technician license in accordance with the F-GAS directive (Presidential Decree No. 43 of October 27, 2012, formerly EC 303/2008), according to the procedures indicated in the product documentation. The aforementioned personnel are also responsible for replacing spare parts officially supplied by Eliwell in the field.

Pipe mounting

1. Before connecting to the pipe, check the condition and cleanliness of the pipe and the direction of the fluid flow.
2. Check the line voltage and use this equipment and all connected products only at the specified voltage.
3. Position the valve as indicated (see Fig. 2). The coil must not be oriented downward.
4. It is not necessary to disassemble the valve during welding.
Remove the coil and related O-rings and check the condition of the O-rings before installation.
During this process, protect the valve body with a wet cloth and avoid direct contact with the flame.

NOTICE

INOPERABLE EQUIPMENT

- Inspect the condition of the pipe, including any signs of deformation, corrosion, leaks, or other mechanical abnormalities. (1)
- Check that the pipe is clean.
- Verify that the direction of fluid flow corresponds to the direction of the arrow stamped on the body.
- Verify that the line voltage corresponds to that printed on the coil.
- Check that the coil is not facing downwards (other positions, up to horizontal, are permitted). (2)
- Check that the refrigerant fluid in the system is compatible with the valve.
- Check that the main filter is present in the system (3).

Failure to follow these instructions may result in damage to the equipment.

(1) Use appropriate inspection methods (for example, visual, pressure testing) and ensure compliance with applicable standards. Document any irregularities and take corrective action if necessary.

(2) See Fig. 2

(3) Help ensure that a main filter is installed in the system to prevent the internal components of the valve from becoming clogged with impurities during operation. See Fig. 5.

NOTICE

INOPERABLE EQUIPMENT

- Ensure that the O-ring is present before proceeding with the installation of the coil.
- Visually inspect the O-ring for damage or wear. If there are any defects, replace the O-ring before reinstalling.
- Use only the specified tightening torque for all screws, in accordance with the technical specifications.
- During installation, carefully check the position of the label.
- Apply the label directly to the valve body, avoiding attachment to the fixed core.
- Avoid any interference between the label and the valve O-ring.
- After brazing, check for refrigerant leaks.

Failure to follow these instructions may result in damage to the equipment.

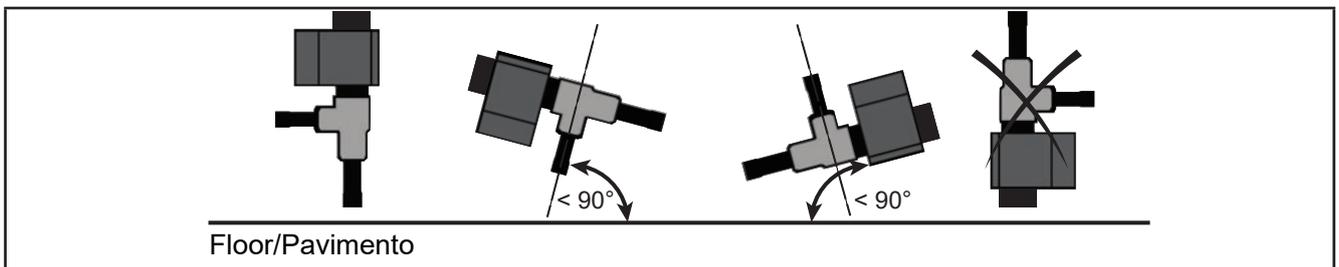


Fig. 2. Valve positioning

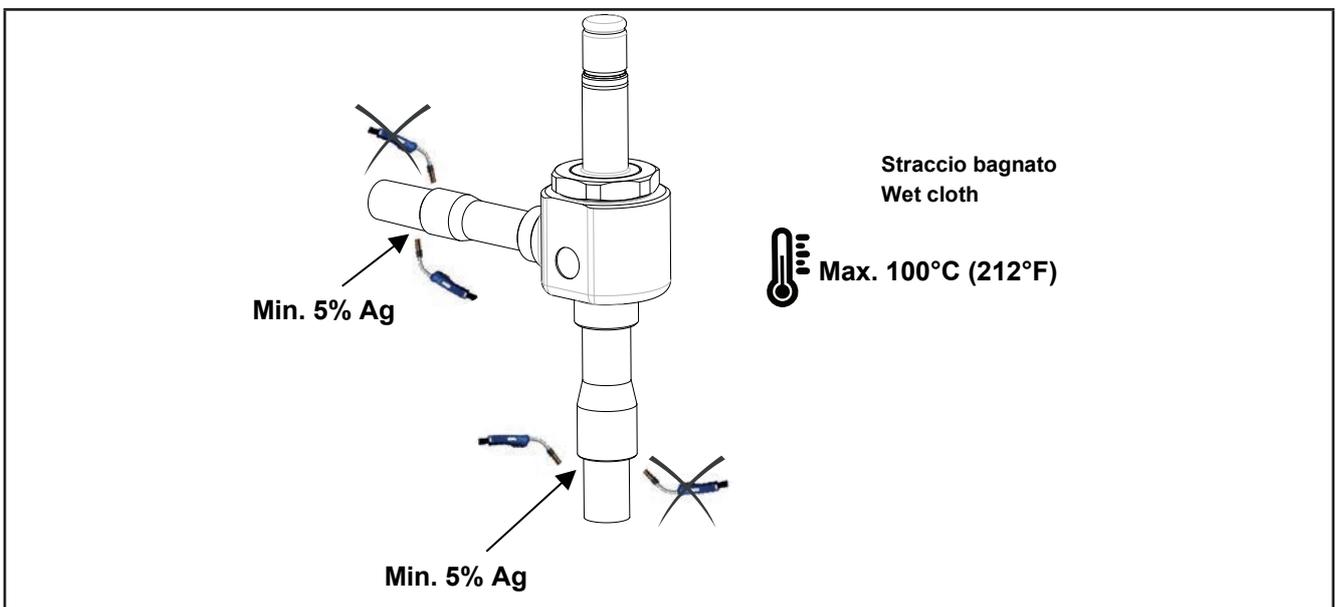


Fig. 3. Brazing

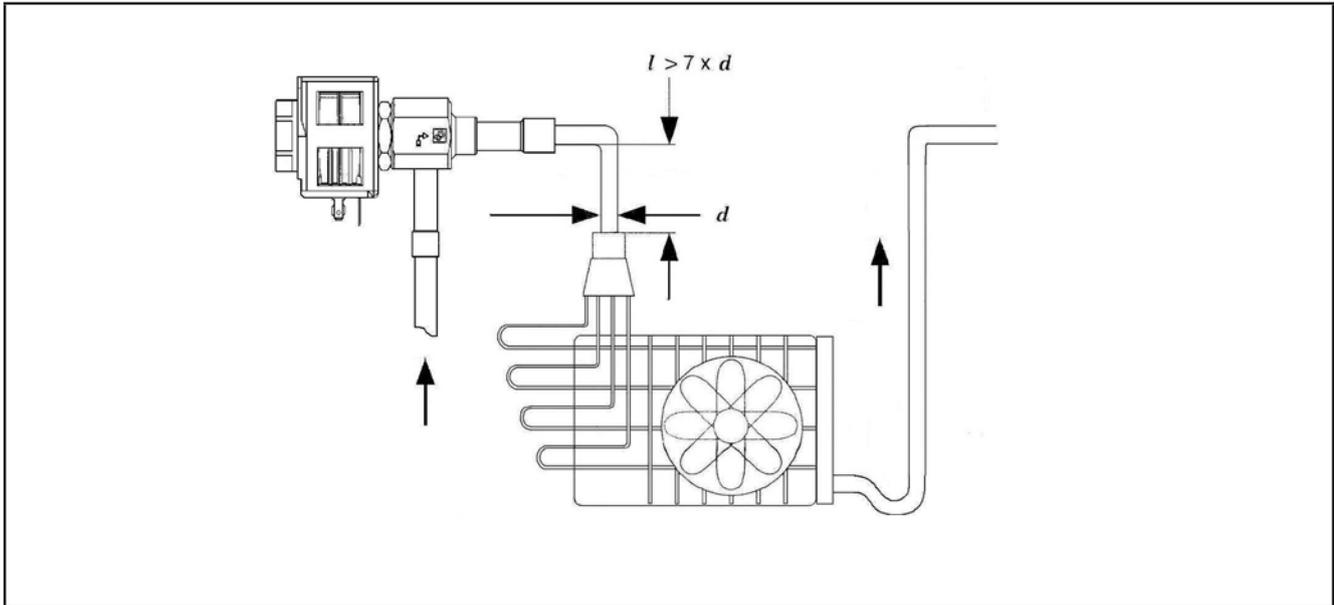


Fig. 4. Detail Valves and evaporator

NOTICE

INOPERABLE EQUIPMENT

Perform a functional test of the valve and driver assembly on the specific installation.

Failure to follow these instructions may result in damage to the equipment.

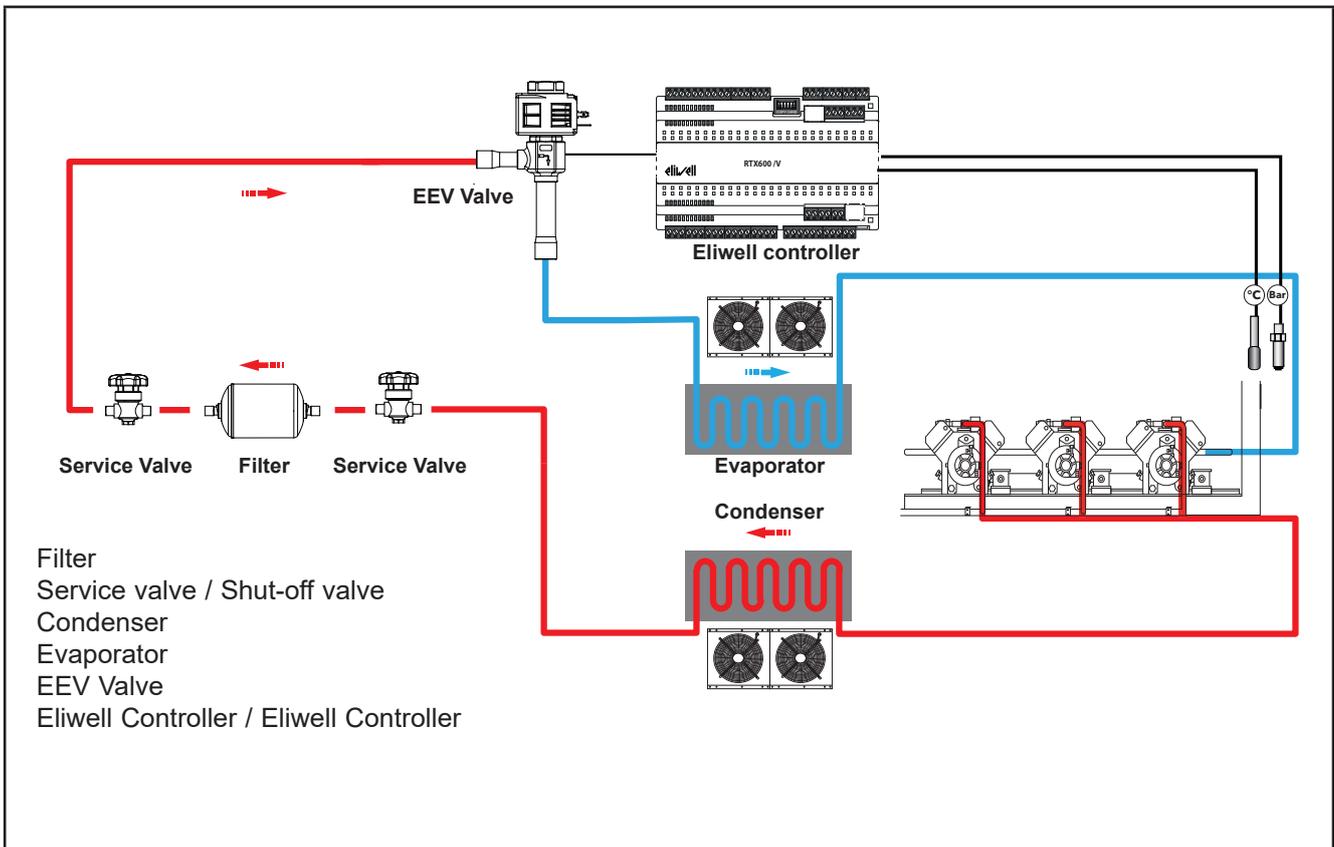


Fig. 5. Application example

2.6. PXV MAINTENANCE

The product consists of a coil, a body, and a connector/cable.

To replace coil 4, unscrew plastic cap 1 (complete with O-ring 2) and remove screw 3.

O-ring 5 remains fitted on the stem.

The coil is protected from moisture only if O-ring 5 is correctly installed.

Plastic cap 1 is tightened with a torque of 3.5 - 5 Nm.

NOTICE

INOPERABLE EQUIPMENT

- Ensure that both O-rings are present before proceeding with the installation of the coil.
- Visually inspect the O-ring for damage or wear. If there are any defects, replace the O-ring before reinstalling.
- Use only the specified tightening torque for all screws, in accordance with the technical specifications.
- During installation, carefully check the position of the label.
- Apply the label directly to the valve body, avoiding attachment to the fixed core.
- Avoid any interference between the label and the valve O-ring.

Failure to follow these instructions may result in damage to the equipment.

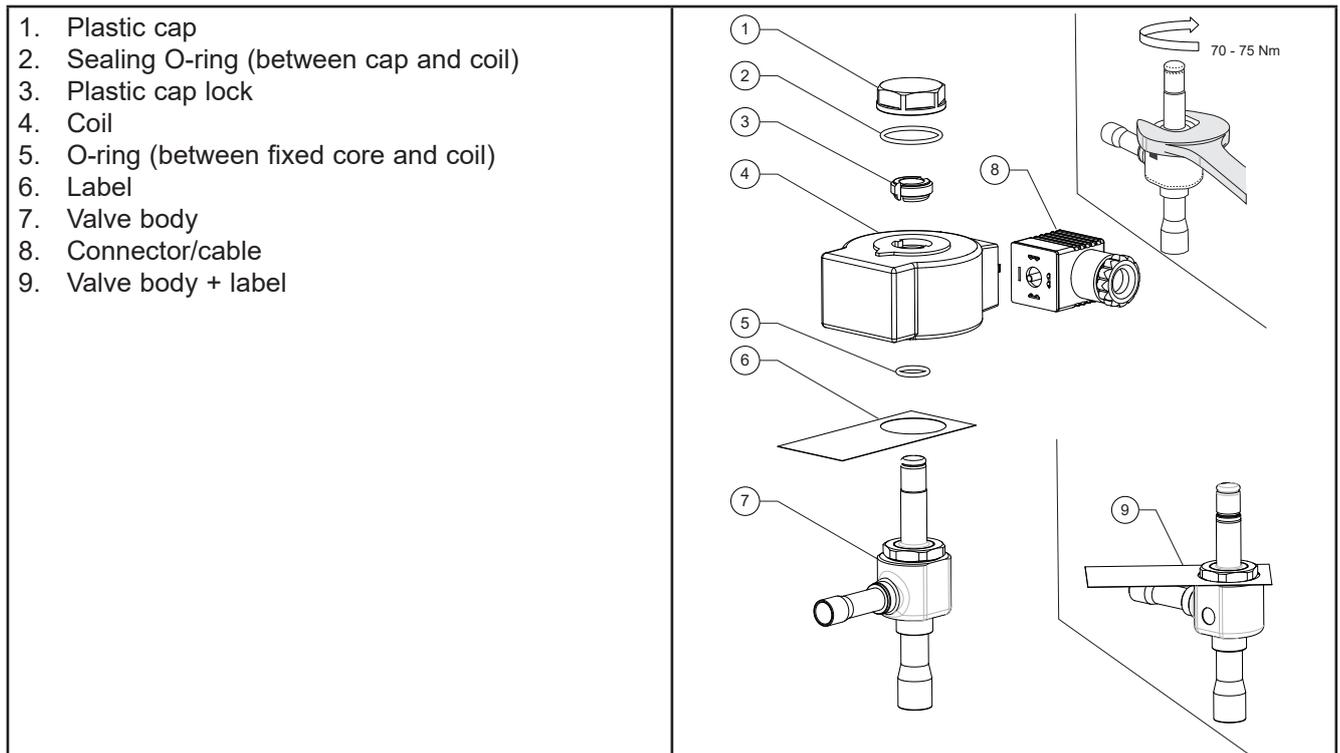


Fig. 6. Valve coil and connector components

Position the O-ring and label as shown in the figure.

NOTICE

LOSS OF IP RATING AND DAMAGE TO COIL

Ensure that there is no interference with the labels between the valve body, O-ring, and coil.

Failure to follow these instructions may result in damage to the equipment.

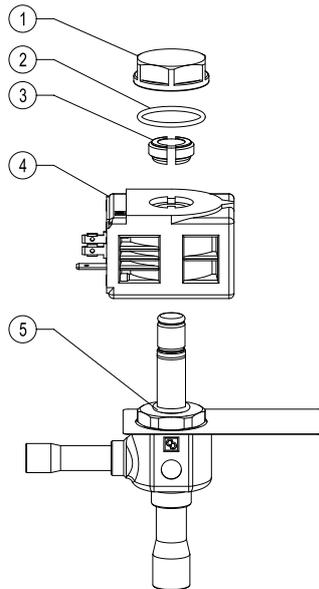


Fig. 7. 8 W coil, body 03/M10

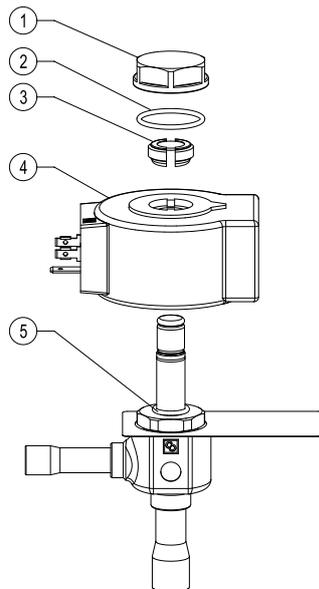


Fig. 8. 12 W coil body 03/M10

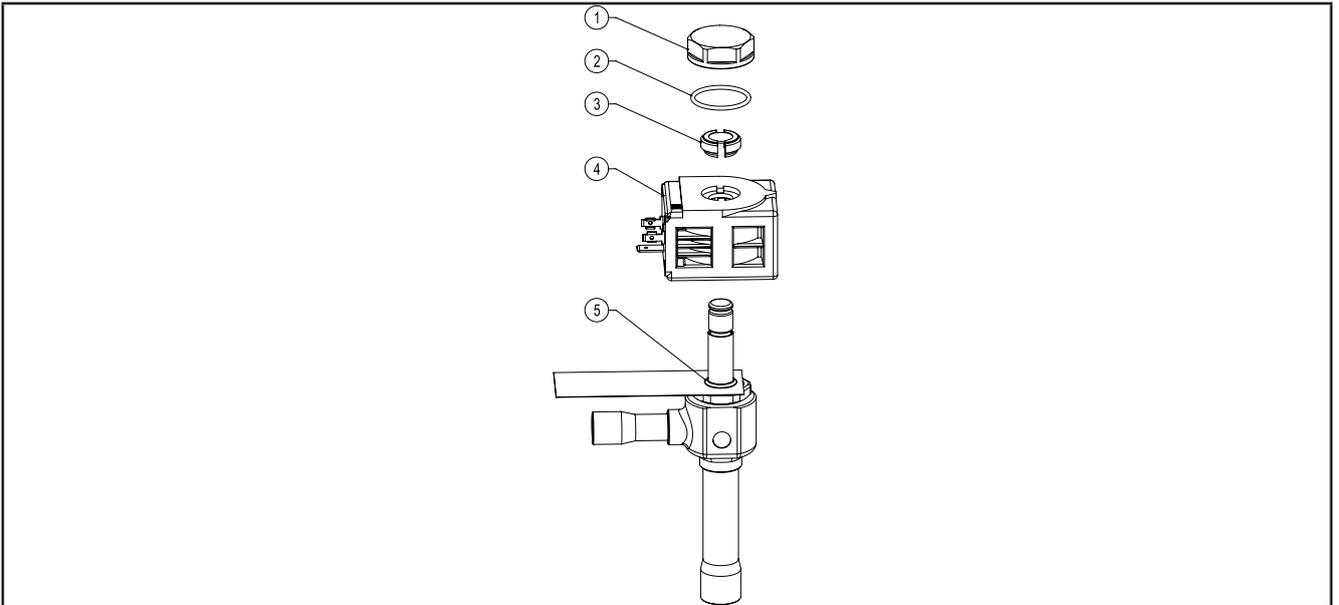


Fig. 9. 8 W coil, 04/M12 body

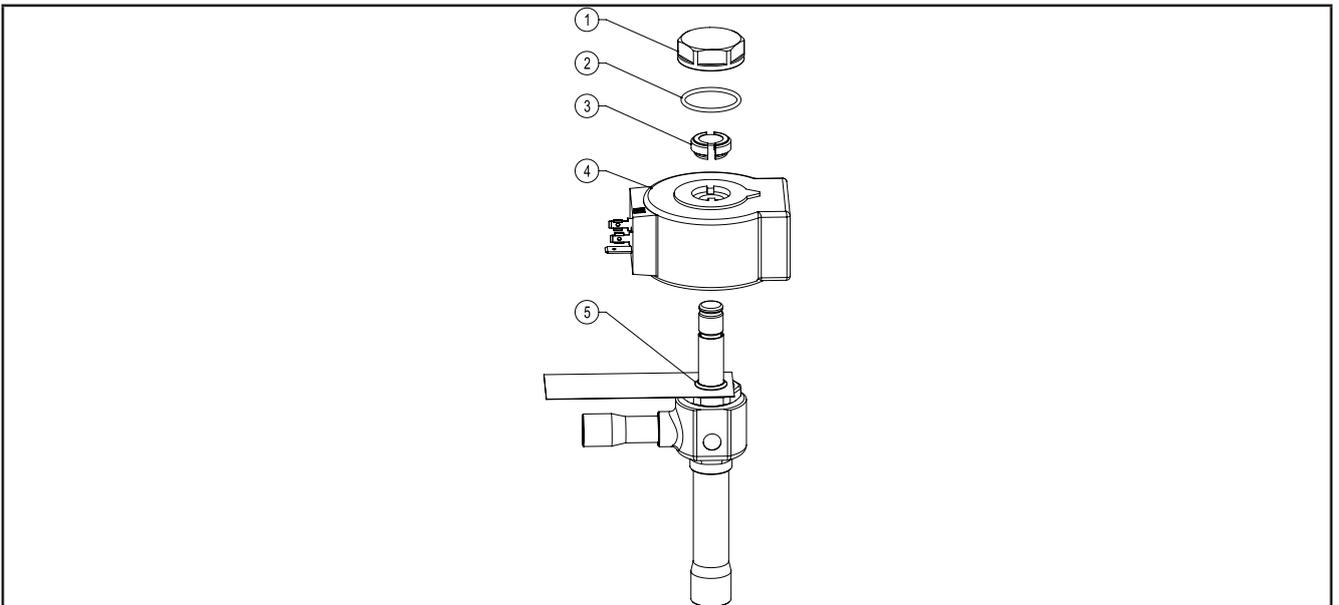


Fig. 10. 12 W coil, 04/M12 body

2.7. COIL + CONNECTOR

NOTICE

INOPERABLE EQUIPMENT

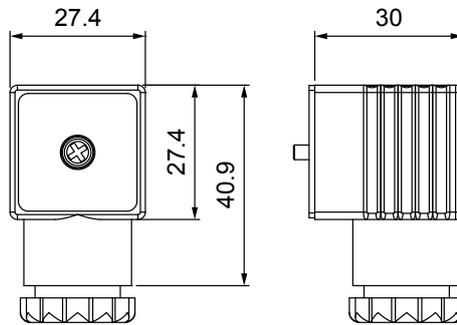
- Screw the connector ring nut correctly to connect the cable (1).
- Carefully check that the valve is correctly connected to the power supply. If necessary, consult the documentation relating to the driver.
- Check the condition and presence of the DIN connector gasket.

Failure to follow these instructions may result in damage to the equipment.

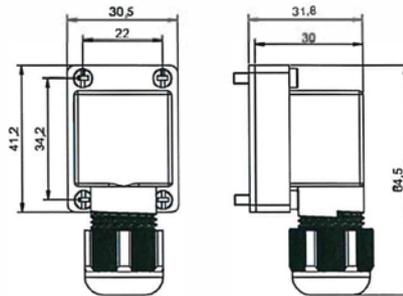
(1) The tightening torque of the cable gland ring nut is 2-2.5 N·m. For the fixing screws, the tightening torque is 0.8 N·m.

Coil + connector

IP65 PXVB0AR020100, PXVS0AR02R100



IP68 PXVB0AR030100



2.7.1. Connector positioning vs. coil

Position the connector as shown (see Fig. 11). The connector cable gland must not be oriented upwards.

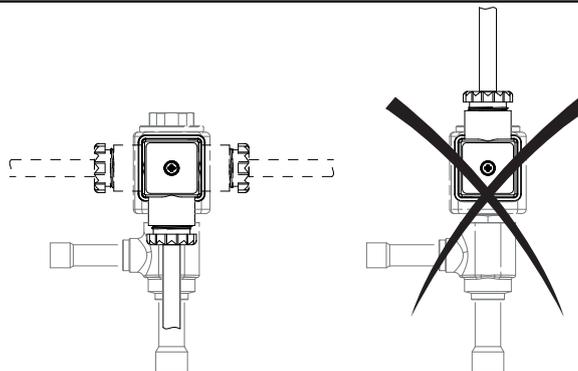


Fig. 11. Connector positioning

CHAPTER 3

ELECTRICAL CONNECTIONS

3.1. WIRING PRACTICES

The following information describes the wiring guidelines and practices to follow when using the device.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ELECTRIC ARC

- Disconnect all devices, including connected devices, before removing any covers or doors, or before installing/uninstalling accessories, hardware, cables, or wires.
- To verify that the system is de-energized, always use a voltmeter correctly calibrated to the nominal voltage value.
- Before turning the device back on, replace and secure all covers, hardware components, and cables.
- For all devices that require it, check that there is a good ground connection.
- Use this device and all connected products only with the specified voltage.
- Do not connect the device directly to the mains voltage, unless expressly indicated.

Failure to follow these instructions will result in death or serious injury.

3.1.1. Special handling considerations

Care must be taken to avoid damage from electrostatic sources when handling this equipment. In particular exposed connectors and, in some cases, exposed printed circuit boards are exceptionally vulnerable to electrostatic discharge.

WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO ELECTROSTATIC DISCHARGE DAMAGE

- Keep equipment in the protective conductive packaging until you are ready to install the equipment.
- Only install equipment in approved enclosures and / or locations that prevent casual access and provide electrostatic discharge protection.
- Use a conductive wrist strap or equivalent field force protective device attached to an earth ground when handling sensitive equipment.
- Always discharge yourself by touching a grounded surface or approved antistatic mat before handling the equipment.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

Before proceeding with any operation, ensure that the device is connected to a suitable external power supply.

CHAPTER 4

TECHNICAL DATA

4.1. TECHNICAL DATA VALVES

Description	PXVS●●●●●●●●	PXVM●●●●●●●●
System temperature (TS)	-40 °C ... 60 °C (-40 °F ... 140 °F)	-80 °C ... 60 °C (-112 °F ... 140 °F)
Ambient temperature (TA)	-40 °C ... 50 °C (-40 °F ... 122 °F)	-40 °C ... 50 °C (-40 °F ... 122 °F)
opening differential pressure (minimum OPD)	0 bar / 0 psi	
Differential opening pressure (MOPD)	Orifice 1-6 : 35 bar (508 psi) Orifice 7 : 24 bar (348 psi) ⁽¹⁾	Orifice 1-6 : 37 bar (537 psi) Orifice 7 : 35 bar (508 psi) Orifice 8 : 30 bar (435 psi) Orifice 9 : 25 bar (363 psi)
Maximum working pressure (PS)	90 bar (1305 psi)	
PED	ART. 4.3 of 2014/68/EU	
Operating principle	PWM	
Minimum operating time	1 second	

⁽¹⁾Orifice 8-9 Not available for PXVS models

4.2. TECHNICAL DATA COILS

coil/connector code	power supply (1)	type of valve	power supply tolerance (%)	frequency (Hz)	power (W)	insulation class	MOPD		connections
							port (2)		
							1-4	5-9	
PXVB0ARA60100	220/230 VAC	PXVM	+6 / -10	50/60	8	F	35	22	IP 65 connector PXVB0AR020100 IP 68 connector PXVB0AR030100
PXVB0ARA20100	24 Vac	PXVM	+10 / -10	50/60	8	F	35	22	IP 65 connector PXVB0AR020100 IP 68 connector PXVB0AR030100
PXVE0ARA60100	220/230 VAC	PXVM	+6 / -10	50/60	12	F	>45 <80		IP 65 connector PXVB0AR020100
PXVS0ARA60100	230 Vdc	PXVS	+10 / -5	--	18	F	35 (2)	24 (3)	IP 65 connector PXVB0AR020100 IP 65 connector PXVS0AR02R100
(1) consult the sales department for other power supplies (2) up to Orifice 6 (3) only Orifice 7 Orifices 8-9 not available for PXVS models									

WARNING

UNINTENDED EQUIPMENT OPERATION

Do not exceed any of the nominal values specified in the environmental and electrical characteristics tables.

Failure to follow these instructions may result in death, serious injury, or damage to equipment.

4.3. APPROVALS

Models	PED 2014/68/EU	
	PS	Refrigerant
PXVM●●●●●●●●●● PXVS●●●●●●●●●●	90 bar	HFC - HFO - HC (1) R744

- (1) **HFC** (R134A, R32, R404A, R407C, R410A, R507)
HFO (R1234YF, R1234ZE)
HFO + HFC (R448A, R449A, R450A, R452A, R452B, R454A, R454B, R454C, R455A, R513A, R515A, R515B)
HC (R290, R600, R600A, R1270)

NOTE. These products cannot be used in the United States or Canada.

4.4. MECHANICAL CHARACTERISTICS

PXVS models

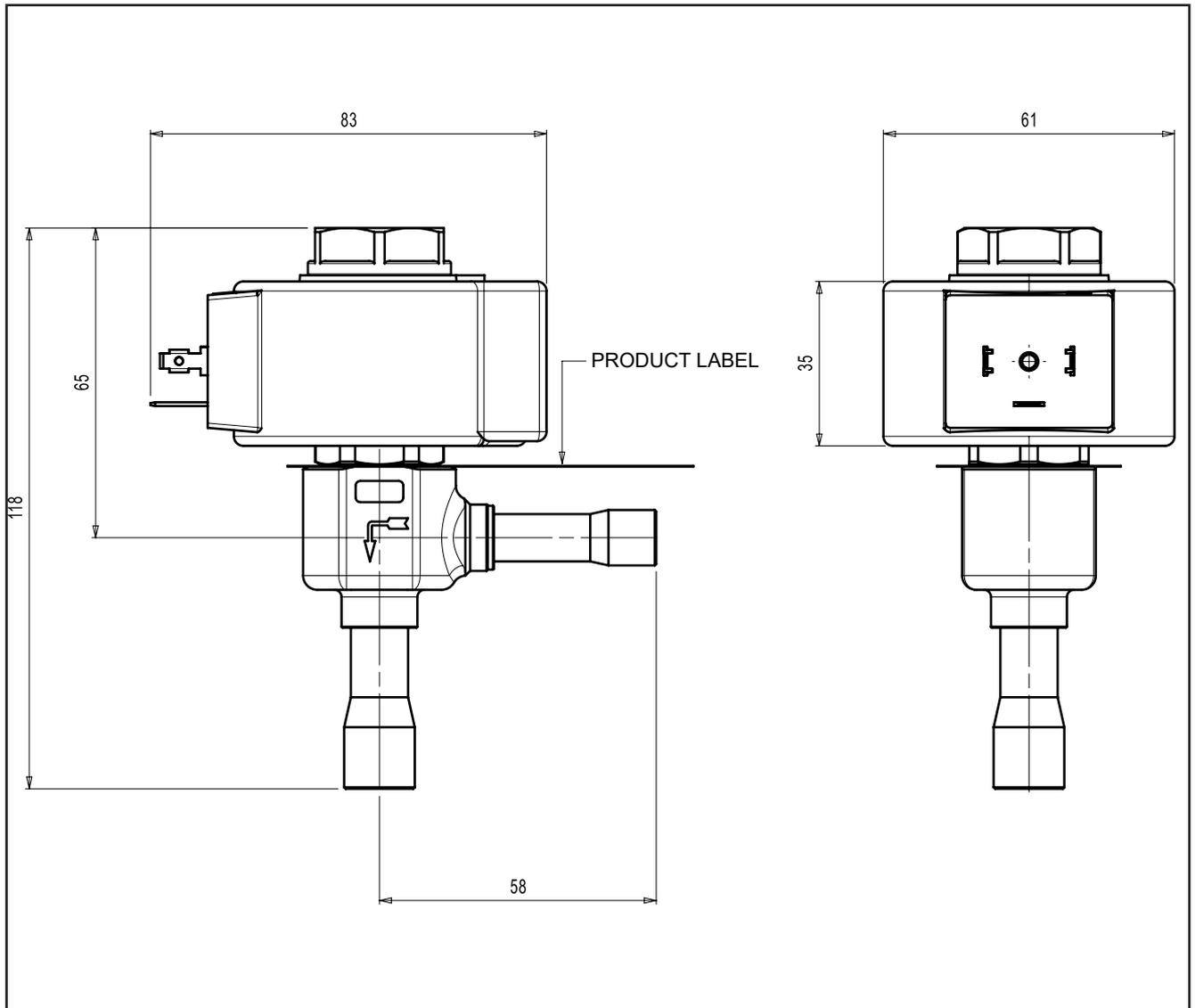


Fig. 12. PXVS mechanical dimensions

PXVM models

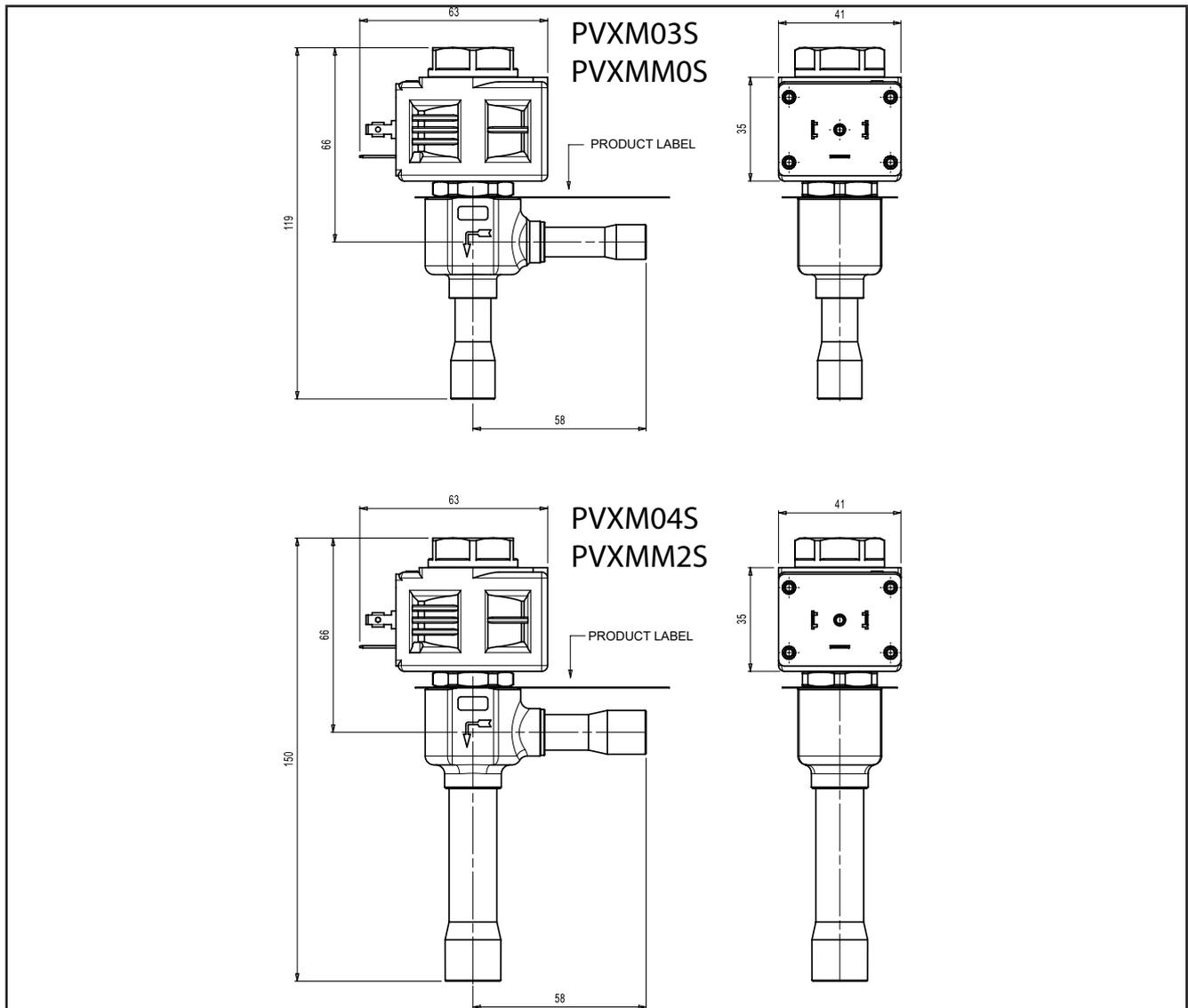


Fig. 13. Mechanical dimensions **PXVM**

Coil models PXVE0ARA60100, PXVS0ARA60100

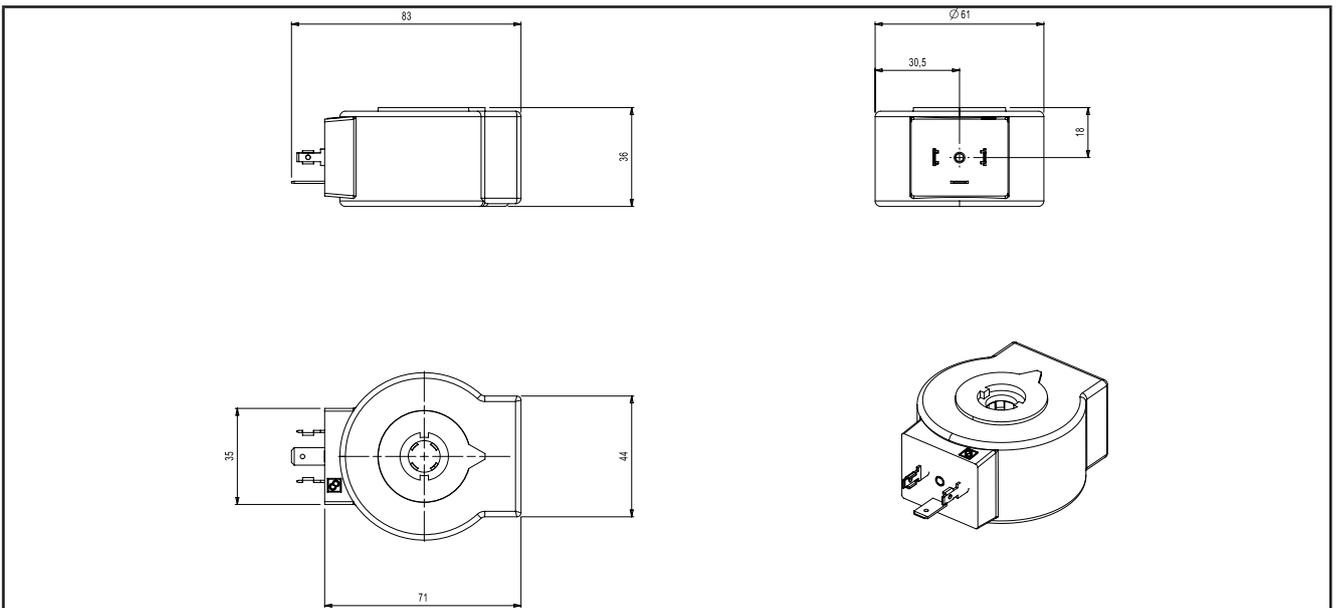


Fig. 14. coil mechanical dimensions for models PXVE0ARA60100, PXVS0ARA60100

Coil models PXVB0ARA60100, PXVB0ARA20100

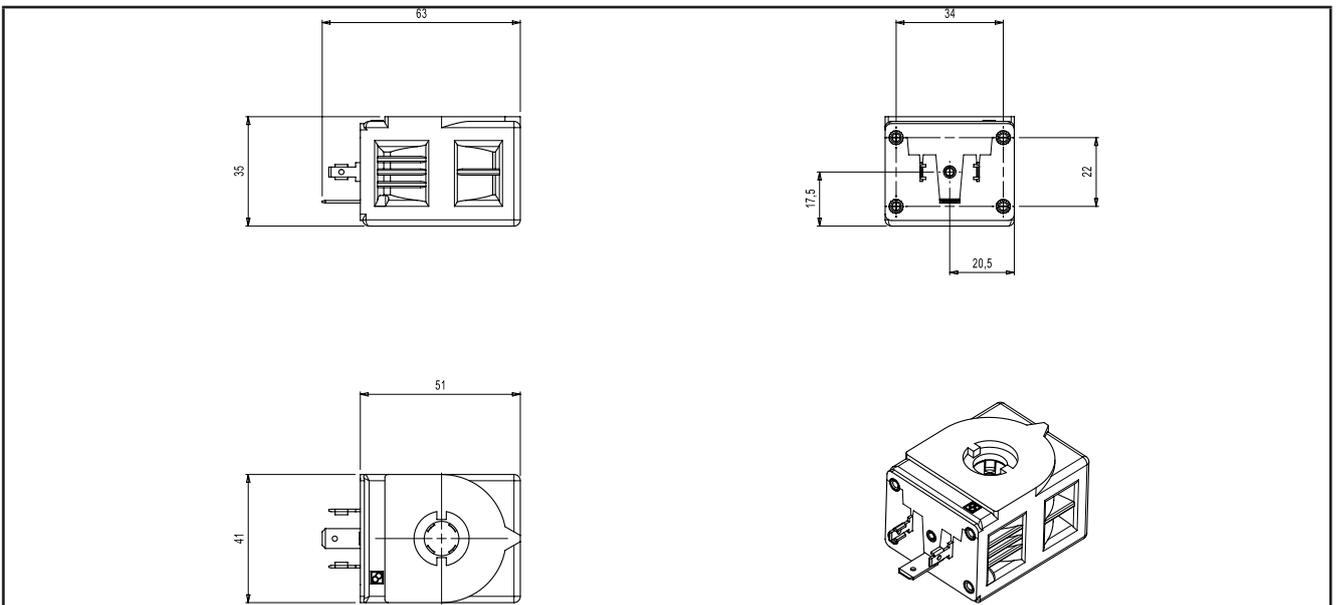


Fig. 15. coil mechanical dimensions models PXVB0ARA60100, PXVB0ARA20100

CHAPTER 5

GENERAL CHARACTERISTICS TABLES VALVES

5.1. TABLES GENERAL CHARACTERISTICS OF VALVE BODIES

Silent PXVS models

references	orifice	hole	ODS connections				Kv factor
			inches		mm		
			in	out	in	out	
PXVS03S010100	01	0.5	3/8"	1/2"	-	-	0.010
PXVS03S020100	02	0.7	3/8"	1/2"	-	-	0.017
PXVS03S030100	03	0.8	3/8"	1/2"	-	-	0.023
PXVS03S040100	04	1.1	3/8"	1/2"	-	-	0.043
PXVS03S050100	05	1.3	3/8"	1/2"	-	-	0.065
PXVS03S060100	06	1.7	3/8"	1/2"	-	-	0.113
PXVS03S070100	07	2.3	3/8"	1/2"	-	-	0.200

PXVM models

references	orifice	hole	ODS connections				Kv factor
			inches		mm		
			in	out	in	out	
PXVM03S010100	1	0.5	3/8"	1/2"	-	-	0.010
PXVMM0S01100	1	0.5	-	-	10	12	
PXVM03S020100	2	0.7	3/8"	1/2"	-	-	0.017
PXVMM0S02100	2	0.7	-	-	10	12	
PXVM03S030100	3	0.8	3/8"	1/2"	-	-	0.023
PXVMM0S03100	3	0.8	-	-	10	12	
PXVM03S040100	4	1.1	3/8"	1/2"	-	-	0.043
PXVMM0S04100	4	1.1	-	-	10	12	
PXVM03S050100	5	1.3	3/8"	1/2"	-	-	0.065
PXVMM0S05100	5	1.3	-	-	10	12	
PXVM03S060100	6	1.7	3/8"	1/2"	-	-	0.113
PXVMM0S06100	6	1.7	-	-	10	12	
PXVM04S070100	7	2.3	1/2"	5/8"	-	-	0.200
PXVMM2S07100	7	2.3	-	-	12	16	
PXVM04S080100	8	2.5	1/2"	5/8"	-	-	0.230
PXVMM2S08100	8	2.5	-	-	12	16	
PXVM04S090100	9	2.7	1/2"	5/8"	-	-	0.250
PXVMM2S09100	9	2.7	-	-	12	16	

Nominal capacities of refrigerants – Multigas + R744

references	orifice	hole	refrigerant capacity															
			R134a	R32	R404A	R407C	R410A	R1234ze	R1234yf	R448A	R449A	R450A	R452A	R290	R600	R600a	R23	R744
PXVM●●S010100	01	0.5	0.79	1.75	0.74	1.03	1.21	0.62	0.58	0.98	0.97	0.69	0.76	1.06	0.68	0.70	1.5	2.09
PXVM●●S020100	02	0.7	1.57	3.48	1.47	2.04	2.40	1.23	1.16	1.96	1.92	1.38	1.52	2.11	1.34	1.39	3.0	4.16
PXVM●●S030100	03	0.8	1.86	4.13	1.75	2.42	2.84	1.46	1.37	2.32	2.27	1.63	1.80	2.51	1.59	1.64	3.52	4.93
PXVM●●S040100	04	1.1	3.01	6.68	2.83	3.92	4.60	2.36	2.22	3.75	3.68	2.64	2.91	4.05	2.57	2.66	5.74	7.98
PXVM●●S050100	05	1.3	5.15	11.43	4.84	6.71	7.88	4.05	3.80	6.42	6.30	4.52	4.98	6.94	4.40	4.55	9.77	13.65
PXVM●●S060100	06	1.7	7.14	15.84	6.71	9.30	10.92	5.61	5.26	8.90	8.73	6.27	6.90	9.62	6.11	6.31	13.54	18.93
PXVM●●S070100	07	2.3	24.98	10.58	14.66	17.22	8.84	8.30	14.03	13.77	9.88	10.88	15.17	9.63	9.95	21.45	29.85	24.98
PXVM●●S080100	08	2.5	13.57	30.11	12.75	17.67	20.75	10.66	10.00	16.91	16.60	11.91	13.11	18.28	11.60	12.00	25.78	35.98
PXVM●●S090100	09	2.7	15.05	33.39	14.14	19.60	23.02	11.82	11.09	18.76	18.40	13.21	14.54	20.27	12.87	13.31	28.57	39.90
			(1)															(2)

(1) Nominal capacities are based on:

- Evaporation temperature $T_{\text{evap}} = +5 \text{ }^{\circ}\text{C}$
- Condensation temperature $T_{\text{cond}} = +32 \text{ }^{\circ}\text{C}$
- Coolant temperature before the valve $T_{\text{liq}} = +28 \text{ }^{\circ}\text{C}$

(2) Nominal capacities are based on:

- Evaporation temperature $T_{\text{evap}} = -25 \text{ }^{\circ}\text{C}$
- Condensation temperature $T_{\text{cond}} = 0 \text{ }^{\circ}\text{C}$
- Coolant temperature before the valve $T_{\text{liq}} = -4 \text{ }^{\circ}\text{C}$

CHAPTER 6

VALVE SELECTION

SELECTION

To correctly size a PXV valve on a refrigeration system, the following design parameters must be available:

- Type of refrigerant
- Evaporator capacity; Q_e
- Evaporating Temperature/Pressure; T_e/p_e
- Minimum condensation temperature/pressure; T_c/p_c
- Liquid refrigerant temperature at the valve inlet; T_l
- Pressure drop in the liquid line, distributor, evaporator; Δp

The procedure described below helps to correctly size an expansion valve on a refrigeration system. Contact Eliwell Customer Support for further information and technical assistance

Point 1

Determination of pressure drop across the valve

The pressure drop is calculated using the formula:

$$\Delta p_{\text{tot}} = p_c - (p_e + \Delta p)$$

where:

- p_c = condensation pressure
- p_e = evaporation pressure
- Δp = sum of pressure drops in the liquid line (), distributor, and evaporator at maximum flow rate, i.e., with the valve always open

Point 2

Determination of subcooling

The potential Q_{and} of the evaporator must be appropriately corrected according to the subcooling value. Subcooling is calculated using the formula:

$$\Delta_{\text{sub}} = T_c - T_l$$

As regards the correction factor, this is appropriately applied by the Eliwell tool algorithm during the selection phase, once the newly determined subcooling value Δ_{sub} has been entered in the appropriate field.

Point 3

Potential correction depending on the application

In order for the valve to regulate correctly, it must be oversized so that, within the control period, it remains closed for a fraction of time not less than 25%. The choice of this power margin depends on the application, which may involve flow rate peaks of varying magnitude, and on the control algorithm used by the electronic regulator. Therefore, values between 0% and 75% can be entered in the tool.

Point 4**Determination of the required orifice size.**

Based on the results obtained from the research, select the valve with an orifice such that the valve capacity is equal to or slightly higher than the calculated evaporator capacity and that it has an opening time percentage between 50% and 75% of the total regulator time. In any case, these are recommended values, but the opening/closing time depends on the application, which may present load peaks, and on the criteria used by the regulator. Finally, check that the size of the valve connections is compatible with the system in question.

Point 5**Sizing of the liquid line**

Since the valve has an on-off operating principle, the flow rate may increase during the opening phase considerably compared to its average value over the period. For this reason, the designer must size the diameter of the liquid line pipes according to the maximum flow rate from the orifice under actual conditions of Δp_{tot} , and in such a way that the pressure drop does not cause a reduction in the maximum power of the valve.

Eliwell Controls LLC
Via dell'Industria, 15 • Zona Industriale Paludi •
32016 Alpago (BL) ITALY
T +39 0437 166 0000
T +39 0437 166 0060 (Italy)
+39 0437 166 0066 (other countries)
saleseliwell@se.com
Technical helpline +39 0437 166 0005
techsuppliwell@se.com
www.eliwell.com

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