# 1 Pumpengruppe FE 2



**⚠ GEFAHR**

**Bei Arbeiten an elektrischen Komponenten:**

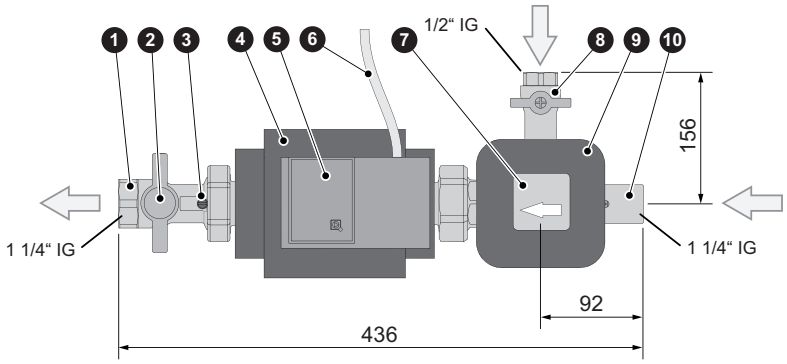
***Lebensgefahr durch Stromschlag!***

Für Arbeiten an elektrischen Komponenten gilt:

- ❒ Arbeiten nur durch eine Elektrofachkraft durchführen lassen
- ❒ Geltende Normen und Vorschriften beachten

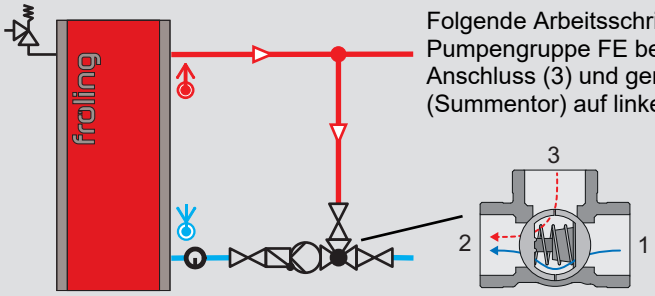
  ➥ Arbeiten an elektrischen Komponenten durch Unbefugte ist verboten

*Übersicht Pumpengruppe FE 2*

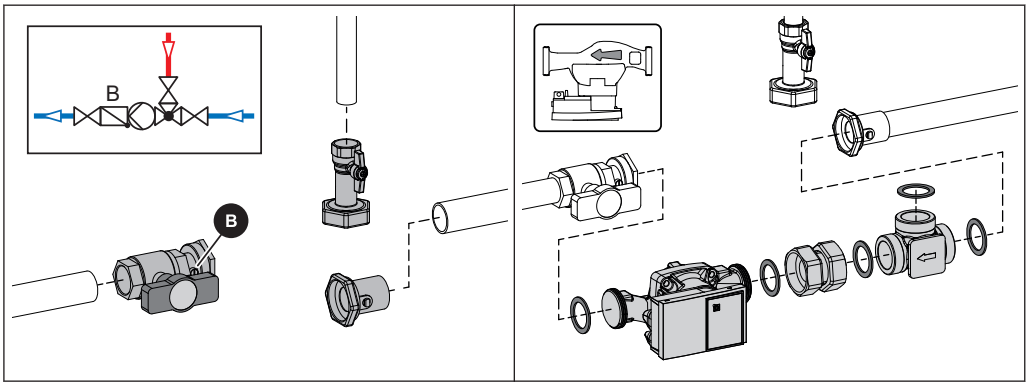



| | | | |
|---|---|---|---|
| **1** | Kugelhahn 1 1/4“ IG | **7** | Thermisches Mischventil 61 °C (kvs 12) |
| **2** | Thermometer | **8** | Kugelhahn 1/2“ IG mit Rückschlagventil |
| **3** | Rückschlagventil | **9** | Wärmedämmschale |
| **4** | Wärmedämmschale | **10** | Kugelhahn 1 1/4“ IG |
| **5** | Hocheffizienzpumpe | **o.A.** | Flachdichtungen EPDM |
| **6** | 230V-Versorgungskabel 3-polig, 3 m<br>PWM-Signalkabel, 3 m | | |

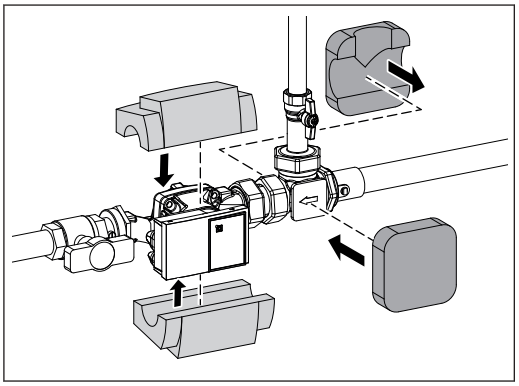
## 1.1 Pumpengruppe FE - Durchflussrichtung nach links




Folgende Arbeitsschritte zeigen die Montage der Pumpengruppe FE bei Bypass am oberen Anschluss (3) und gemischtem Abgang (Summentor) auf linker Seite (2) Richtung Kessel.

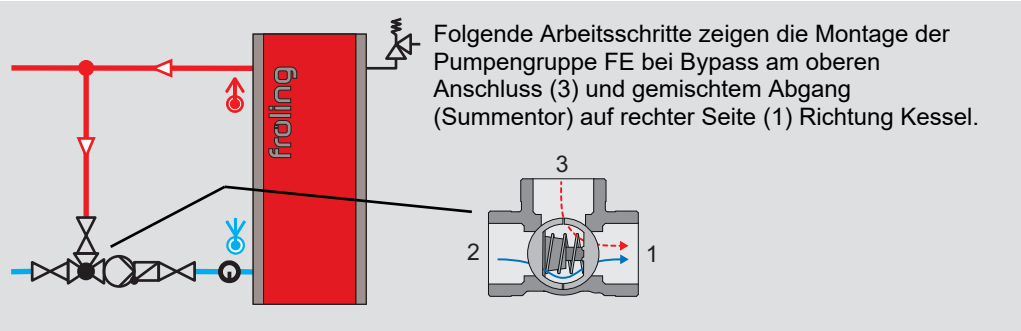


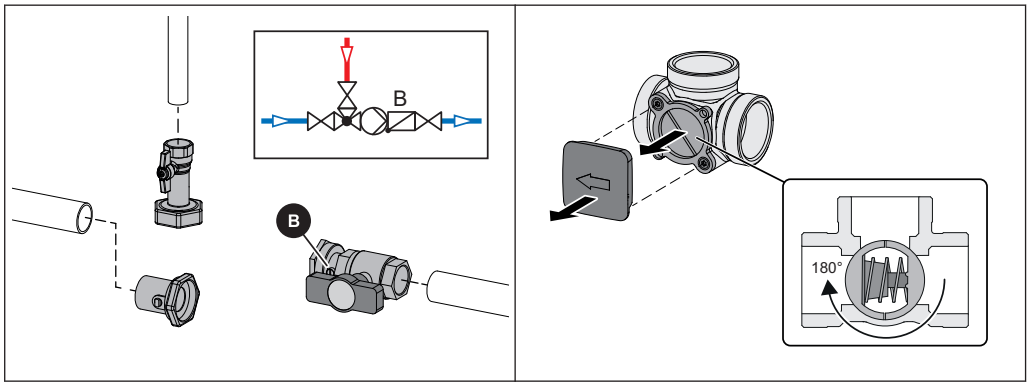

- ❒ Kugelhahn mit Rückschlagventil (B) am Rohr zum Kessel montieren
- ❒ Kugelhähne an Rücklauf- und Bypassleitung montieren
- ❒ Umwälzpumpe, thermisches Mischventil und Kupplung montieren
  - ➥ SIL-Dichtungen bei flachdichtenden Verschraubungen verwenden!
  - ➥ ACHTUNG: Flussrichtung der Umwälzpumpe und des thermischen Mischventils beachten!



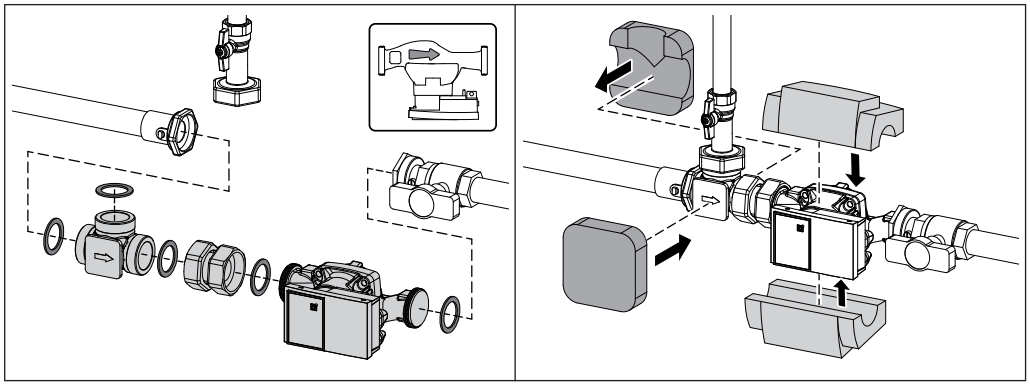
- ❒ Wärmedämmschalen aufstecken

## 1.2 Pumpengruppe FE - Durchflussrichtung nach rechts



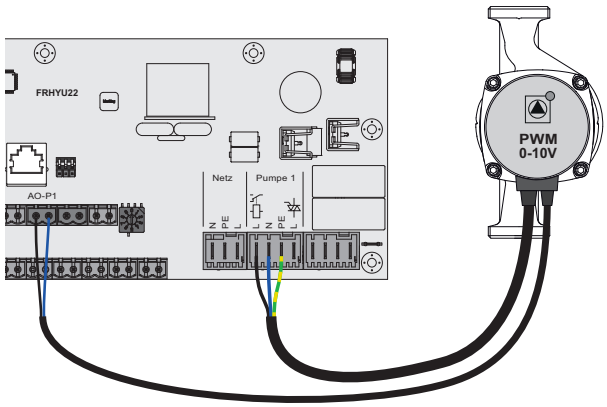

- ❒ Kugelhahn mit Rückschlagventil (B) am Rohr zum Kessel montieren
- ❒ Kugelhähne an Rücklauf- und Bypassleitung montieren
- ❒ Abdeckung und Deckel am thermischen Mischventil demontieren
- ❒ Thermostatisches Element um 180° drehen
- ❒ Deckel und Abdeckung um 180° drehen und wieder montieren
  - ➥ Pfeil zeigt nun in entgegengesetzte Richtung



- ❒ Umwälzpumpe, thermisches Mischventil und Kupplung montieren
  - ➥ SIL-Dichtungen bei flachdichtenden Verschraubungen verwenden!
  - ➥ ACHTUNG: Flussrichtung der Umwälzpumpe und des thermischen Mischventils beachten!
- ❒ Wärmedämmschalen aufstecken

## 1.3 Elektrischer Anschluss

*Anschluss der Hocheffizienzpumpe*



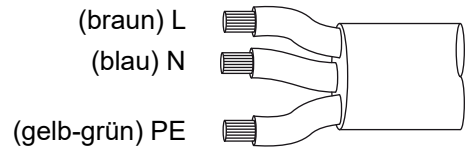
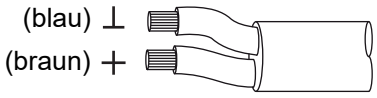

- ❒ Mitgelieferte Kabel an der Pumpe entsprechend der Hersteller-Dokumentation verbinden
- ❒ Spannungsversorgung der Pumpe am jeweiligen Pumpenausgang (im Beispiel „Pumpe 0.1“ am Hydraulikmodul mit Adresse 0) anschließen
- ❒ PWM-Signalkabel am zugehörigen PWM-Ausgang (im Beispiel „AO-P1“) anschließen

  ➥ Auf richtige Belegung (Polung) gemäß Anschlussplan der Pumpe achten!
- ❒ An der Pumpe gemäß Hersteller-Dokumentation die Betriebsart „PWM“ auswählen

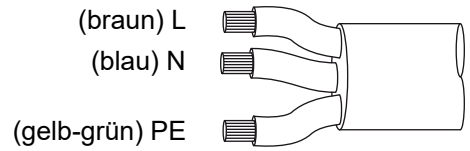
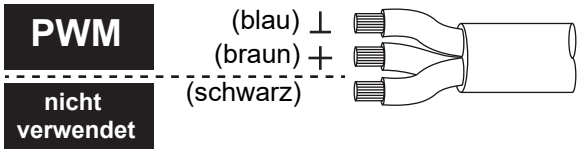
## 1.3.1 Anschlusshinweise nach Pumpentypen

Abhängig vom Pumpentyp wird beim Anschluss zwischen 2-poligem, 3-poligem und 4-poligem Steuerkabel unterschieden. Entsprechend dem eingesetzten Pumpentyp sind bei der Verkabelung folgende Anschlusshinweise zu beachten:

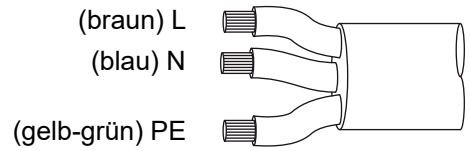
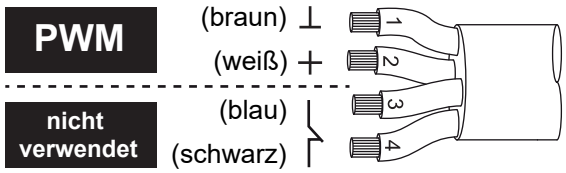
*Pumpentyp mit 2-poligem Steuerkabel*

| Spannungsversorgung | Steuerkabel 2-polig |
|---|---|
|  |  |
| Spannungsversorgung am Pumpenausgang der Platine verkabeln | Steuerkabel am PWM-Ausgang der Platine anschließen, dabei auf korrekte Polung achten:<br>- blauer Draht an Masse<br>- brauner Draht an Plus |

*Pumpentyp mit 3-poligem Steuerkabel*

| Spannungsversorgung | Steuerkabel 3-polig |
|---|---|
|  |  |
| Spannungsversorgung am Pumpenausgang der Platine verkabeln | Steuerkabel am PWM-Ausgang der Platine anschließen, dabei auf korrekte Polung achten:<br>- blauer Draht an Masse<br>- brauner Draht an Plus<br>Den schwarzen Draht nicht verwenden und ggf. isolieren |

*Pumpentyp mit 4-poligem Steuerkabel*

| Spannungsversorgung | Steuerkabel 4-polig |
|---|---|
|  |  |
| Spannungsversorgung am Pumpenausgang der Platine verkabeln | Steuerkabel am PWM-Ausgang der Platine anschließen, dabei auf korrekte Polung achten:<br>- brauner Draht an Masse<br>- weißer Draht an Plus<br>Die beiden anderen Drähte (blau, schwarz) nicht verwenden und isolieren |

# 1 Pump assembly FE 2



**DANGER**

**When working on electrical components:**

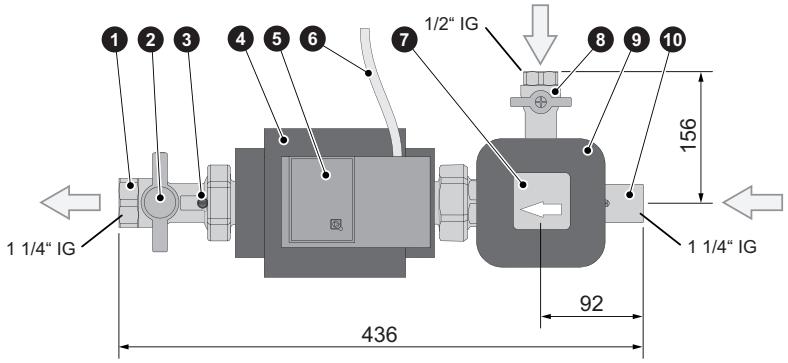
***Risk of electrocution!***

When work is carried out on electrical components:

- ❒ Always have work carried out by a qualified electrician
- ❒ Observe the applicable standards and regulations

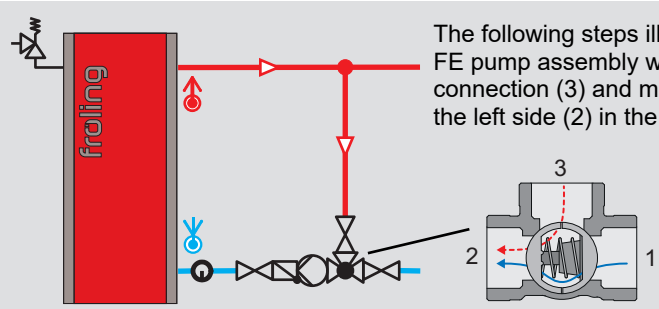
  ➥ Work must not be carried out on electrical components by unauthorised persons

*Pump assembly ME 2 overview*

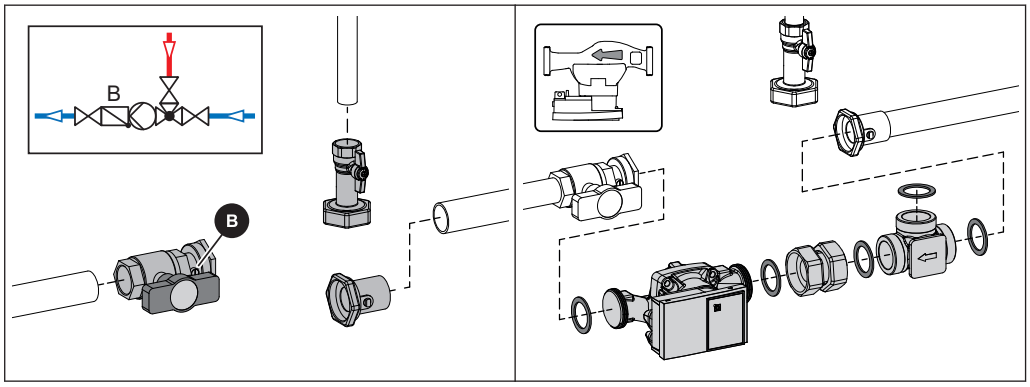



| | | | |
|---|---|---|---|
| **1** | Ball valve 1 1/4“ IT | **7** | Thermal mixer valve 61°C (kvs 12) |
| **2** | Thermometer | **8** | Ball valve 1/2“ IT with check valve |
| **3** | Check valve | **9** | Insulation jacket |
| **4** | Insulation jacket | **10** | Ball valve 1 1/4“ IT |
| **5** | High efficiency pump | **Not pic-tured** | EPDM flat gasket |
| **6** | 230 V supply cable 3-pin, 3 m<br>PWM signal cable, 3 m | | |

## 1.1 FE pump assembly – Direction of flow to the left




The following steps illustrate the assembly of the FE pump assembly with bypass at the upper connection (3) and mixed outflow (common port) on the left side (2) in the direction of the boiler.



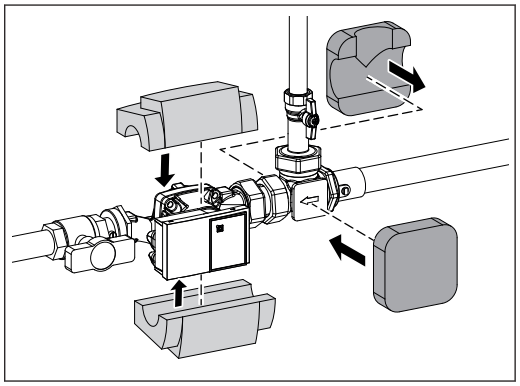

❒ Install ball valve with check valve (B) on the pipe to the boiler

❒ Install ball valves on return and bypass line

❒ Install circulating pump, thermal mixer valve and coupling

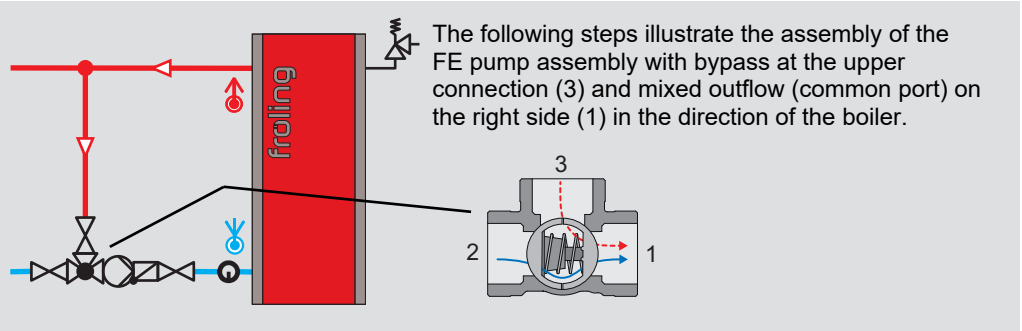
➥ Use SIL seals for flat sealing screw connections!

➥ CAUTION: Pay attention to the flow direction of the circulating pump and mixer valve.

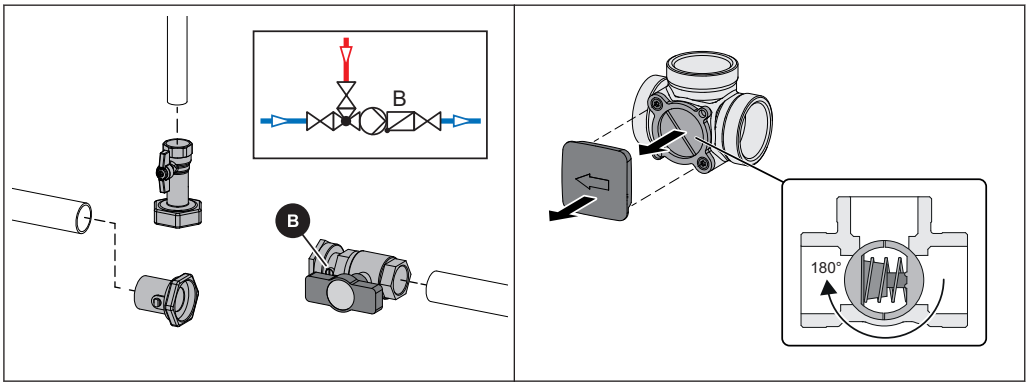


❒ Fit insulation jackets

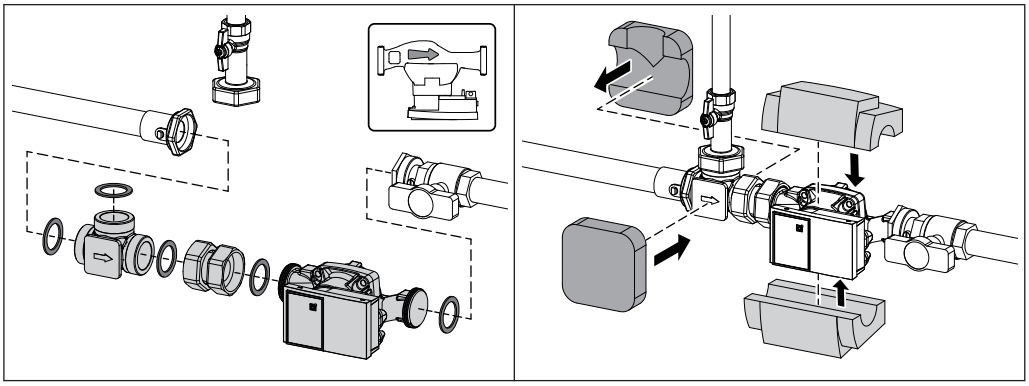
## 1.2 FE pump assembly – Direction of flow to the right




The following steps illustrate the assembly of the FE pump assembly with bypass at the upper connection (3) and mixed outflow (common port) on the right side (1) in the direction of the boiler.



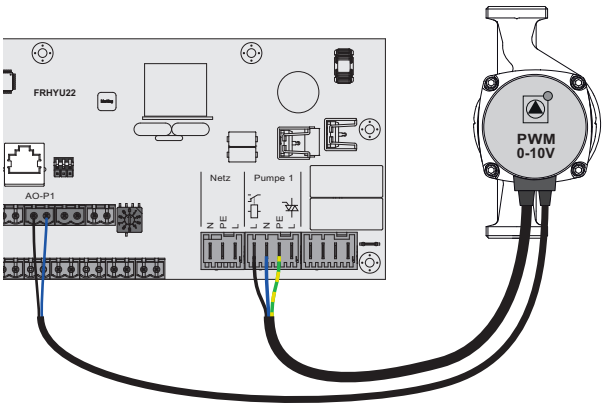

- ❒ Install ball valve with check valve (B) on the pipe to the boiler
- ❒ Install ball valves on return and bypass line
- ❒ Remove the cover and lid to the thermal mixer valve
- ❒ Turn the thermostatic element 180°
- ❒ Turn the lid and cover 180° and refit
  - ➥ The arrow will now point in the opposite direction



- ❒ Install circulating pump, thermal mixer valve and coupling
  - ➥ Use SIL seals for flat sealing screw connections!
  - ➥ CAUTION: Pay attention to the flow direction of the circulating pump and mixer valve.
- ❒ Fit insulation jackets

## 1.3 Electrical connection

*Connecting the high efficiency pump*

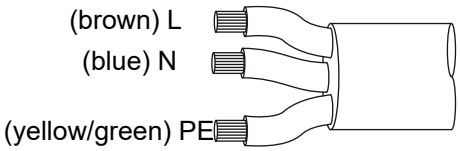
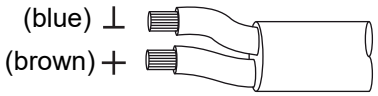



- ❒ Connect the supplied cable to the pump according to the manufacturer's instructions
- ❒ Connect the power supply for the pump to the appropriate pump outlet (in example: "Pump 0.1" on hydraulic module with address 0)
- ❒ Connect the PWM signal cable to the appropriate PWM outlet (in example: "AO-P1")
  - ➥ Make sure that the cables are configured correctly (polarity) in accordance with the connection diagram for the pump.
- ❒ Set the operating mode on the pump to "PWM" according to the manufacturer's documentation.

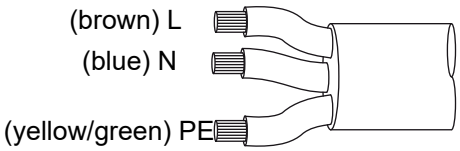
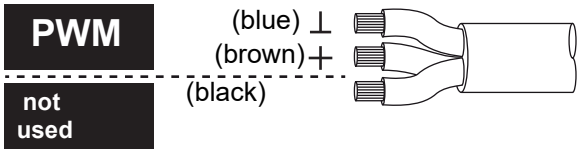
### 1.3.1 Connection information according to pump types

Either a 2-pin, 3-pin, or 4-pin control cable is used for the connection depending on the pump type. Please follow the connection instructions below for the wiring depending on the pump type used:

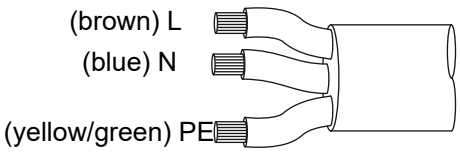
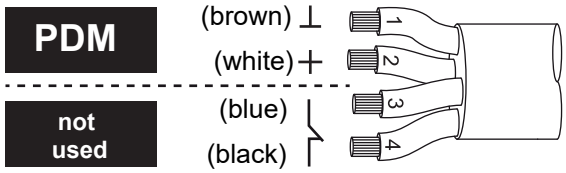
*Pump type with 2-pin control cable*

| Power supply | 2-pin control cable |
|---|---|
|  |  |
| Wire the power supply to the pump outlet on the board | Connect the control cable to the PDM output on the board, making sure that the polarity is correct:<br>- blue wire to earth<br>- brown wire to plus |

*Pump type with 3-pin control cable*

| Power supply | 3-pin control cable |
|---|---|
|  |  |
| Wire the power supply to the pump outlet on the board | Connect the control cable to the PDM output on the board, making sure that the polarity is correct:<br>- blue wire to earth<br>- brown wire to plus<br>Do not use the black wire and insulate if necessary |

*Pump type with 4-pin control cable*

| Power supply | 4-pin control cable |
|---|---|
|  |  |
| Wire the power supply to the pump outlet on the board | Connect the control cable to the PDM output on the board, making sure that the polarity is correct:<br>- brown wire to earth<br>- white wire to plus<br>Do not use the other two wires (blue, black) and insulate |

# 1 Groupe de pompes FE 2



**⚠ DANGER**

**Lors des interventions sur les composants électriques :**

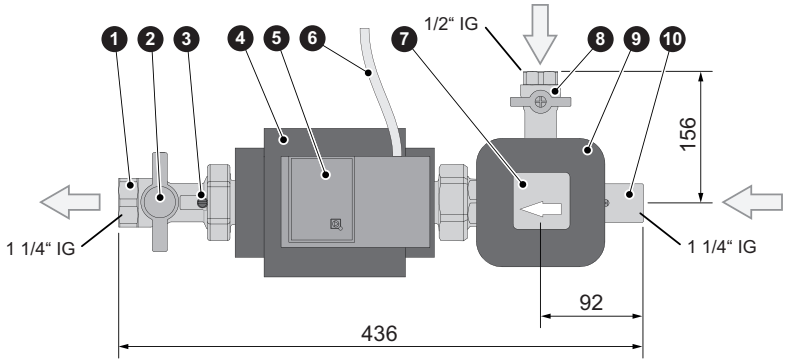
***Danger de mort par choc électrique !***

Pour toute intervention sur les composants électriques :

- ❒ Les interventions doivent être réalisées uniquement par un personnel spécialisé en électricité
- ❒ Respecter les normes et prescriptions en vigueur.

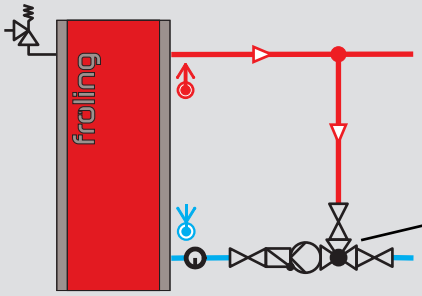
  ➥ Les interventions sur les composants électriques par des personnes non autorisées sont interdites

*Vue d'ensemble du groupe de pompes FE 2*

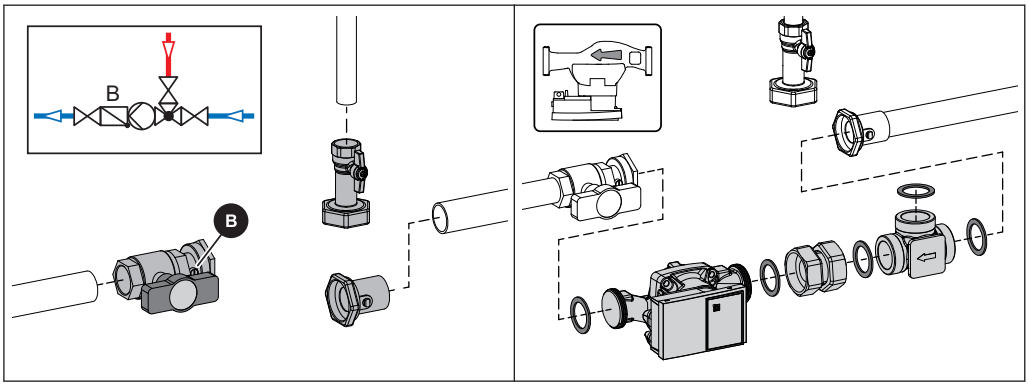



| | | | |
|---|---|---|---|
| **1** | Robinet à bille 1 filetage femelle 1/4“ | **7** | Vanne mélangeuse thermique 61 °C (kvs 12) |
| **2** | Thermomètre | **8** | Robinet à bille filetage femelle 1/2“ avec soupape anti-retour |
| **3** | Soupape anti-retour | **9** | Coque d'isolation thermique |
| **4** | Coque d'isolation thermique | **10** | Robinet à bille 1 filetage femelle 1/4“ |
| **5** | Pompe haute performance | **Non représenté** | Joints plats EPDM |
| **6** | Câble d'alimentation 230V 3 pôles, 3 m<br>câble de signal PWM, 3 m | | |

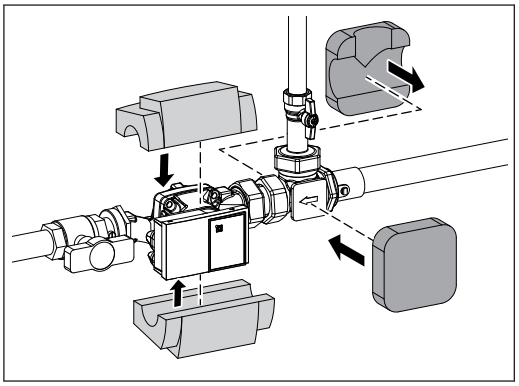
## 1.1 Groupe de pompes FE - sens d'écoulement à gauche




Les étapes de travail suivantes montrent le montage du groupe de pompes FE avec bypass sur le raccord supérieur (3) et la sortie du mélange (porte totalisatrice) du côté gauche (2) dans le sens de la chaudière.

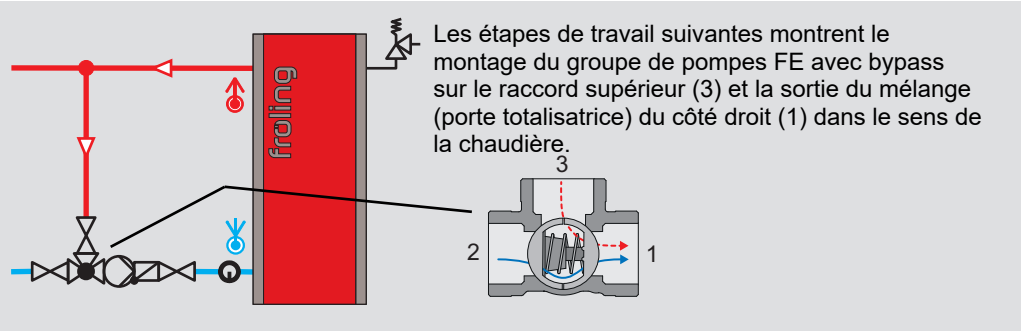


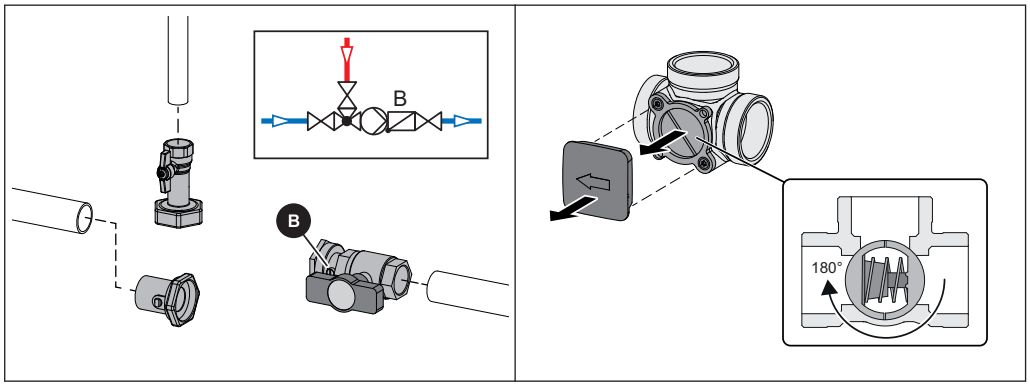

- ❒ Monter le robinet à bille avec la soupape anti-retour (B) sur le tube de la chaudière
- ❒ Monter les robinets à bille sur la conduite de retour et la conduite de dérivation
- ❒ Monter la pompe de circulation, la vanne mélangeuse thermique et l'accouplement
  - ➥ Utiliser des garnitures SIL sur les raccords à joints plats !
  - ➥ ATTENTION : Tenir compte du sens d'écoulement de la pompe de circulation et de la vanne mélangeuse thermique !



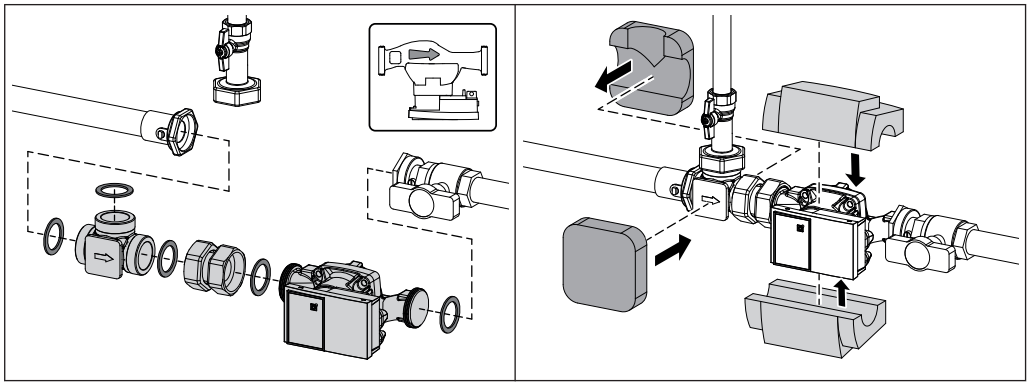
- ❒ Installer les coques d'isolation thermique

## 1.2 Groupe de pompes FE - sens d'écoulement à droite



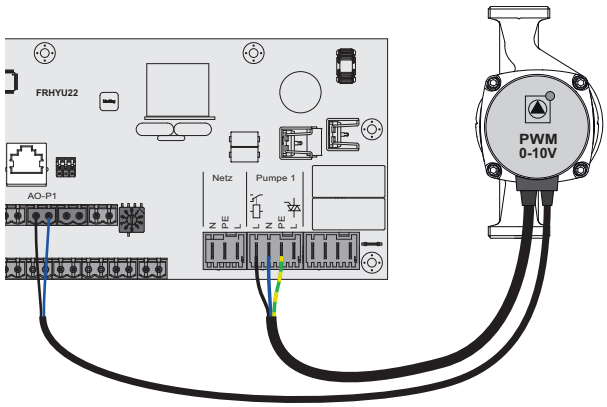

- ❒ Monter le robinet à bille avec la soupape anti-retour (B) sur le tube de la chaudière
- ❒ Monter les robinets à bille sur la conduite de retour et la conduite de dérivation
- ❒ Démonter le recouvrement et le couvercle sur la vanne mélangeuse
- ❒ Tourner l'élément thermostatique de 180°
- ❒ Tourner le couvercle et le recouvrement de 180° et les remonter
  - ➥ La flèche pointe maintenant dans la direction opposée



- ❒ Monter la pompe de circulation, la vanne mélangeuse thermique et l'accouplement
  - ➥ Utiliser des garnitures SIL sur les raccords à joints plats !
  - ➥ ATTENTION : Tenir compte du sens d'écoulement de la pompe de circulation et de la vanne mélangeuse thermique !
- ❒ Installer les coques d'isolation thermique

## 1.3 Raccordement électrique

*Raccordement de la pompe haute performance*

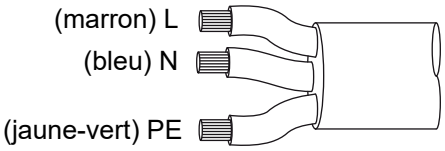
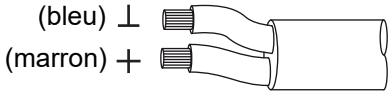



- ❒ Relier les câbles fournis à la pompe, en suivant la documentation du fabricant
- ❒ Raccorder l'alimentation électrique de la pompe sur la sortie de pompe concernée (dans l'exemple « Pompe 0.1 » sur le module hydraulique avec l'adresse 0)
- ❒ Raccorder le câble de signal PWM à la sortie PWM afférente (dans l'exemple « AO-P1 »)
  - ➥ Respecter la polarisation indiquée dans le schéma électrique de la pompe !
- ❒ Sur la pompe, sélectionner le mode de fonctionnement « PWM » conformément à la documentation du fabricant

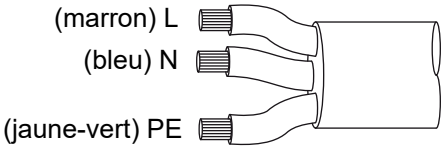
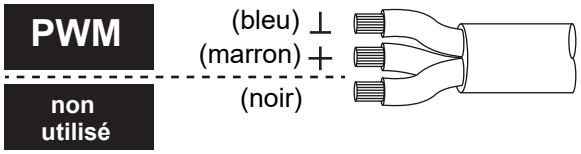
### 1.3.1 Consignes de raccordement selon les types de pompes

En fonction du type de pompe, une différenciation est faite entre le câble de commande à 2 pôles, à 3 pôles et à 4 pôles pour le branchement. Selon le type de pompe utilisé, les consignes de raccordement suivantes doivent être respectées lors du câblage :

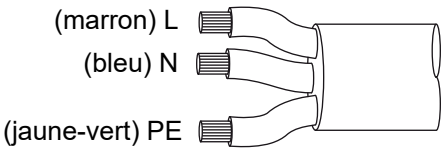
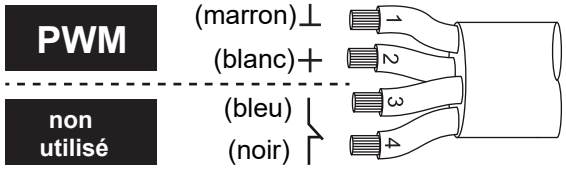
*Type de pompe avec câble de commande à 2 pôles*

| Alimentation électrique | Câble de commande à 2 pôles |
|---|---|
|  |  |
| Câbler l'alimentation électrique à la sortie de pompe de la carte | Raccorder le câble de commande à la sortie PWM de la carte ; pour ce faire, respecter la polarité :<br>- fil bleu à la masse<br>- fil marron à la borne positive |

*Type de pompe avec câble de commande à 3 pôles*

| Alimentation électrique | Câble de commande à 3 pôles |
|---|---|
|  |  |
| Câbler l'alimentation électrique à la sortie de pompe de la carte | Raccorder le câble de commande à la sortie PWM de la carte ; pour ce faire, respecter la polarité :<br>- fil bleu à la masse<br>- fil marron à la borne positive<br>Ne pas utiliser le fil noir et isoler le cas échéant |

*Type de pompe avec câble de commande à 4 pôles*

| Alimentation électrique | Câble de commande à 4 pôles |
|---|---|
|  |  |
| Câbler l'alimentation électrique à la sortie de pompe de la carte | Raccorder le câble de commande à la sortie PWM de la carte ; pour ce faire, respecter la polarité :<br>- fil marron à la masse<br>- fil blanc à la borne positive<br>Ne pas utiliser les deux autres fils (bleu, noir) et les isoler |

# 1 Gruppo pompa FE 2



**⚠ PERICOLO**

**In caso di interventi su componenti elettrici:**

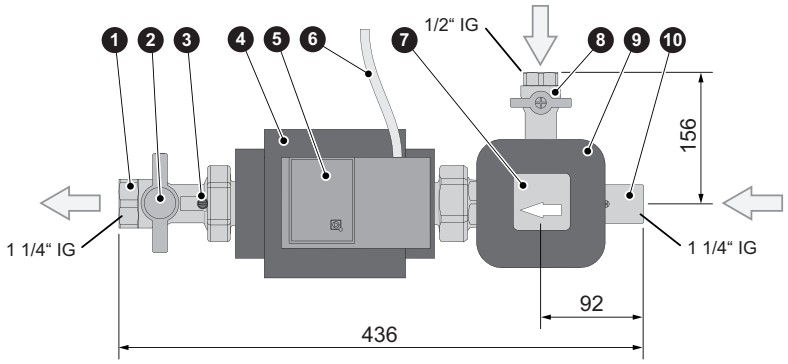
***Pericolo di morte per folgorazione!***

In caso di interventi su componenti elettrici attenersi a quanto segue:

- ❒ Gli interventi devono essere effettuati soltanto da un elettricista
- ❒ Attenersi alle norme e alle prescrizioni vigenti

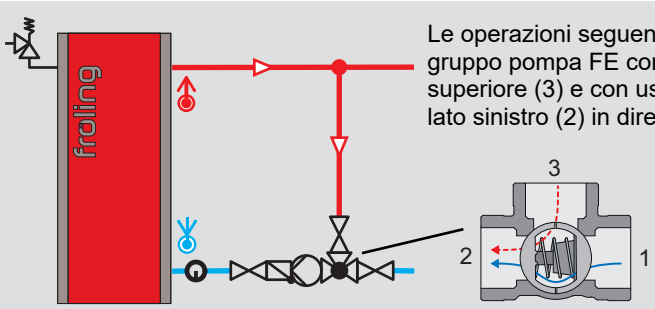
  ➥ Ai non autorizzati è vietato eseguire interventi sui componenti elettrici

*Vista d'insieme gruppo pompa FE 2*

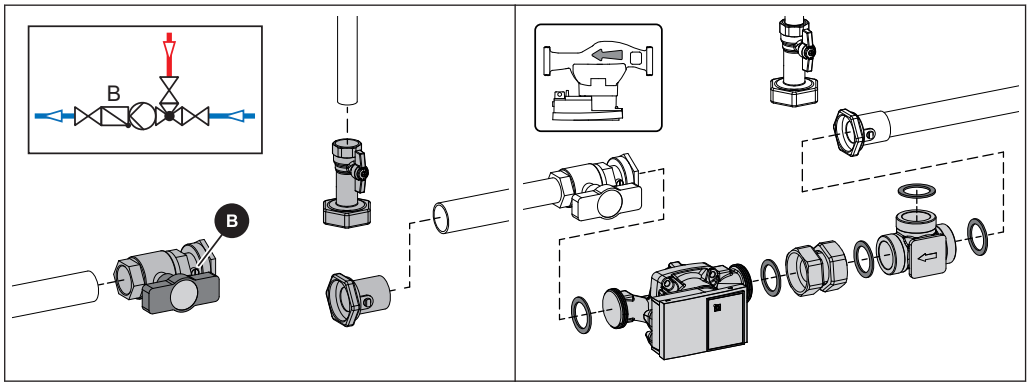



| | | | |
|---|---|---|---|
| **1** | rubinetto a sfera, filettatura interna 1 1/4" | **7** | valvola termica di miscelazione 61 °C (kvs 12) |
| **2** | termometro | **8** | rubinetto a sfera, filettatura interna 1/2“ con valvola di non ritorno |
| **3** | valvola di non ritorno | **9** | isolamento termico |
| **4** | isolamento termico | **10** | rubinetto a sfera, filettatura interna 1 1/4" |
| **5** | pompa ad alta efficienza | **non raffigurato** | guarnizioni piatte EPDM |
| **6** | cavo di alimentazione 230 V tripolare, 3 m<br>cavo di segnale PWM, 3 m | | |

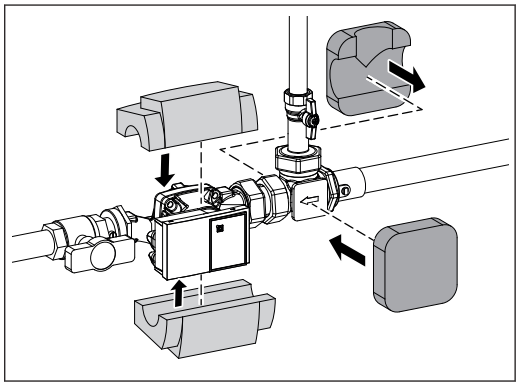
## 1.1 Gruppo pompa FE - direzione del flusso a sinistra




Le operazioni seguenti illustrano il montaggio del gruppo pompa FE con bypass sull'attacco superiore (3) e con uscita mista (porta comune) sul lato sinistro (2) in direzione della caldaia.

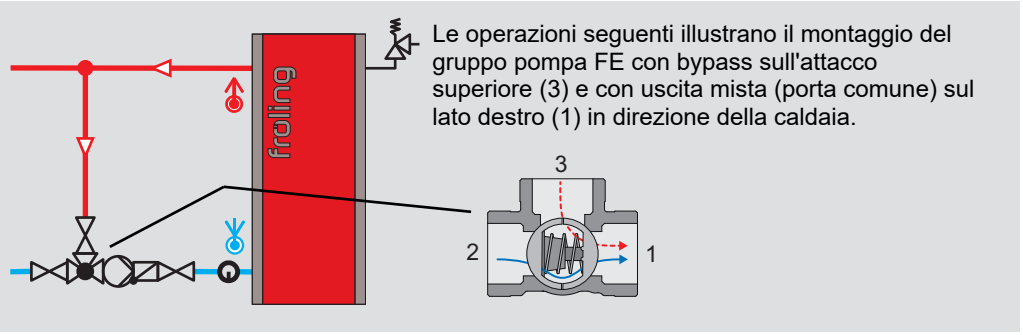



- ❒ Montare il rubinetto a sfera con la valvola di non ritorno (B) sul tubo della caldaia
- ❒ Montare i rubinetti a sfera sul condotto dell'aria di ritorno e sulla linea di bypass
- ❒ Montare la pompa di circolazione, la valvola termica di miscelazione e il giunto
  - ➥ Utilizzare le guarnizioni SIL per i collegamenti a vite a sede piana!
  - ➥ ATTENZIONE: rispettare la direzione del flusso della pompa di circolazione e della valvola termica di miscelazione!

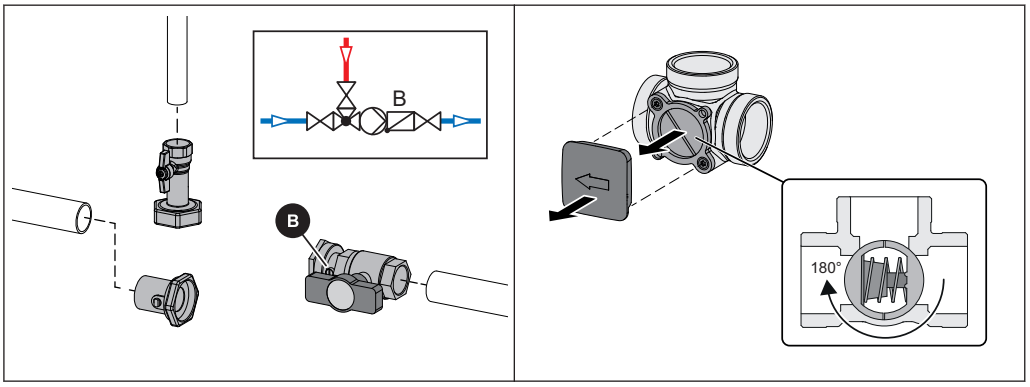


- ❒ Inserire l’isolamento termico

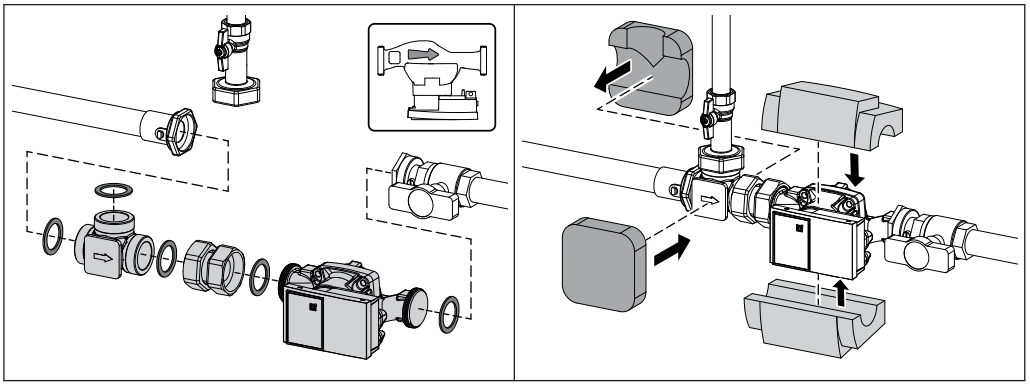
## 1.2 Gruppo pompa FE - direzione del flusso a destra




Le operazioni seguenti illustrano il montaggio del gruppo pompa FE con bypass sull'attacco superiore (3) e con uscita mista (porta comune) sul lato destro (1) in direzione della caldaia.



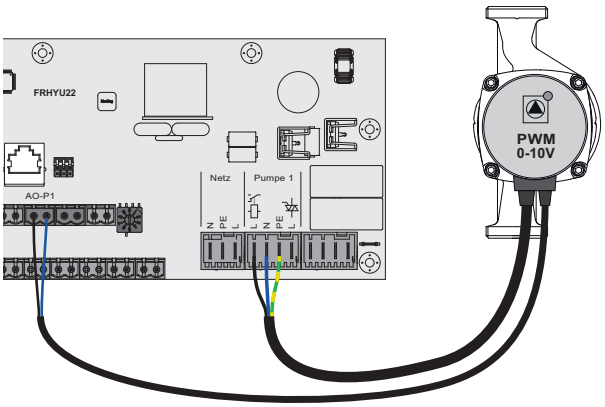

- ❒ Montare il rubinetto a sfera con la valvola di non ritorno (B) sul tubo della caldaia
- ❒ Montare i rubinetti a sfera sul condotto dell'aria di ritorno e sulla linea di bypass
- ❒ Smontare la copertura e il coperchio sulla valvola termica di miscelazione
- ❒ Ruotare l'elemento termostatico di 180°
- ❒ Ruotare il coperchio e la copertura di 180° e rimontarli
  - ➥ Ora la freccia indica la direzione opposta



- ❒ Montare la pompa di circolazione, la valvola termica di miscelazione e il giunto
  - ➥ Utilizzare le guarnizioni SIL per i collegamenti a vite a sede piana!
  - ➥ ATTENZIONE: rispettare la direzione del flusso della pompa di circolazione e della valvola termica di miscelazione!
- ❒ Inserire l'isolamento termico

## 1.3 Collegamento elettrico

*Collegamento della pompa ad alta efficienza*

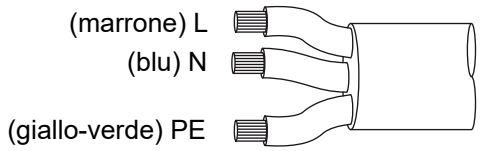
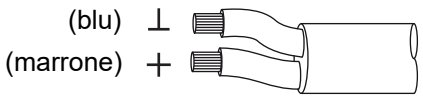



- ❒ Collegare alla pompa i cavi in dotazione secondo la documentazione del produttore
- ❒ Collegare l'alimentazione elettrica della pompa alla rispettiva uscita della pompa (nell'esempio "pompa 0.1" sul modulo idraulico con indirizzo 0)
- ❒ Collegare il cavo di segnale PWM alla relativa uscita PWM (nell'esempio "AO-P1")
  - ➥ Prestare attenzione alla corretta configurazione (polarità) facendo riferimento allo schema elettrico della pompa!
- ❒ Selezionare il modo operativo "PWM" sulla pompa in base alla documentazione del produttore

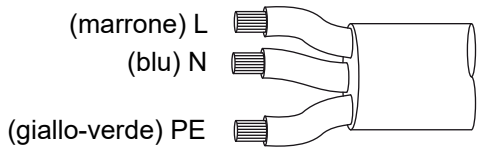
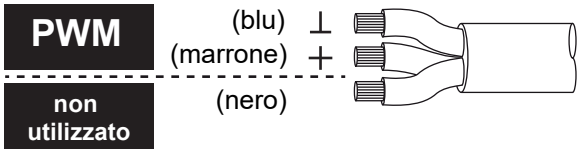
## 1.3.1 Istruzioni di collegamento in base ai tipi di pompa

A seconda del tipo di pompa, per il collegamento i cavi di comando si distinguono in bipolari, tripolari e quadripolari. A seconda del tipo di pompa utilizzato, per il cablaggio attenersi alle seguenti istruzioni di collegamento:

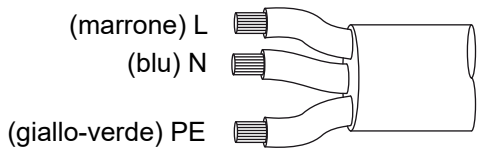
*Tipo di pompa con cavo di comando bipolare*

| alimentazione elettrica | cavo di comando bipolare |
|---|---|
|  |  |
| Cablare l'alimentazione sull'uscita pompa della scheda | Collegare il cavo di comando all'uscita PWM della scheda prestando attenzione alla corretta polarità:<br>- filo blu alla terra<br>- filo marrone al polo positivo |

*Tipo di pompa con cavo di comando tripolare*

| Alimentazione elettrica | Cavo di comando tripolare |
|---|---|
|  |  |
| Cablare l'alimentazione sull'uscita pompa della scheda | Collegare il cavo di comando all'uscita PWM della scheda prestando attenzione alla corretta polarità:<br>- filo blu alla terra<br>- filo marrone al polo positivo<br>Non utilizzare il filo nero ed eventualmente isolarlo |

*Tipo di pompa con cavo di comando quadripolare*

| alimentazione elettrica | cavo di comando quadripolare |
|---|---|
|  |  |
| Cablare l'alimentazione sull'uscita pompa della scheda | Collegare il cavo di comando all'uscita PWM della scheda prestando attenzione alla corretta polarità:<br>- filo marrone alla terra<br>- filo bianco al polo positivo<br>Non utilizzare gli altri due fili (blu, nero) e isolarli |