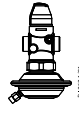
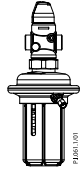
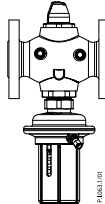
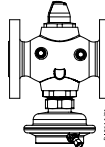
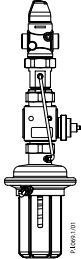
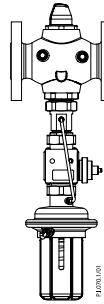
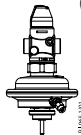
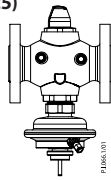
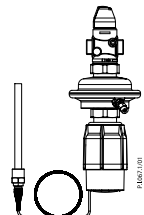
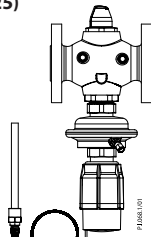
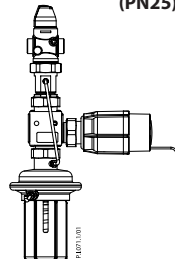
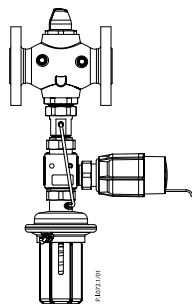
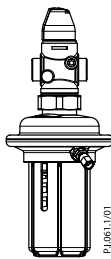
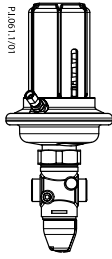
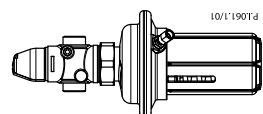
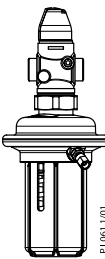
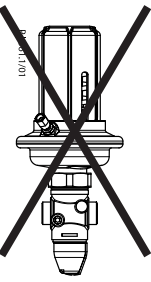
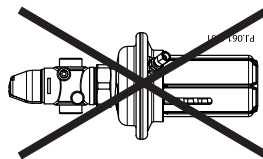


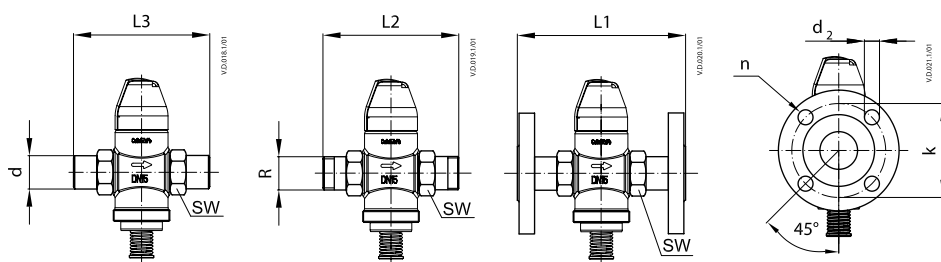
Operating Guide

AVPB, AVPB-F, AVPBT, AVPBT-F – PN 16,25/DN 15 – 50

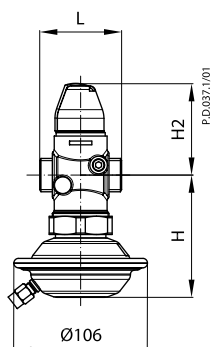
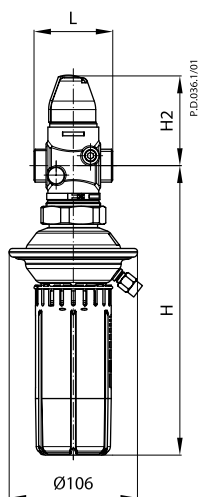
AVPB (PN 16)  PN 16/1.0/1 AVPB-F (PN 16)  PN 16/0.5/1 DN 15 - 32 $\Delta p = 0.05 - 0.5$ $\Delta p = 0.2 - 1.0$ $\Delta p = 0.8 - 1.6$ DN 15 - 32 $\Delta p = 0.2$ $\Delta p = 0.3$ $\Delta p = 0.5$	AVPB (PN25)  PN 25/1.0/1 AVPB-F (PN25)  PN 25/1.0/1 AVPB (PN25)  PN 25/1.0/1 AVPB-F (PN25)  PN 25/1.0/1 DN 15 - 50 $\Delta p = 0.2 - 1.0$ $\Delta p = 0.3 - 2.0$ DN 15 - 50 $\Delta p = 0.5$ DN 32 - 50 $\Delta p = 0.2 - 1.0$ $\Delta p = 0.3 - 2.0$ DN 32 - 50 $\Delta p = 0.5$	AVPBT (PN25)  PN 25/1.0/1  PN 25/1.0/1 DN 15 - 25 $\Delta p = 0.2 - 1.0$ DN 32 - 50 $\Delta p = 0.2 - 1.0$
AVPBT-F (PN25)  PN 25/1.0/1  PN 25/1.0/1 DN 15 - 25 $\Delta p = 0.5$ DN 32 - 50 $\Delta p = 0.5$	AVT/AVPBT-F (PN25)  PN 25/1.0/1  PN 25/1.0/1 DN 15 - 25 $\Delta p = 0.5$ DN 32 - 50 $\Delta p = 0.5$	AVT/AVPBT (PN25)  PN 25/1.0/1  PN 25/1.0/1 DN 15 - 25 $\Delta p = 0.2 - 1.0$ DN 32 - 50 $\Delta p = 0.2 - 1.0$

1 < 100 °C  PN 16/1.0/1  PN 16/1.0/1  PN 16/1.0/1	> 100 °C  PN 16/1.0/1  PN 16/1.0/1  PN 16/1.0/1
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1

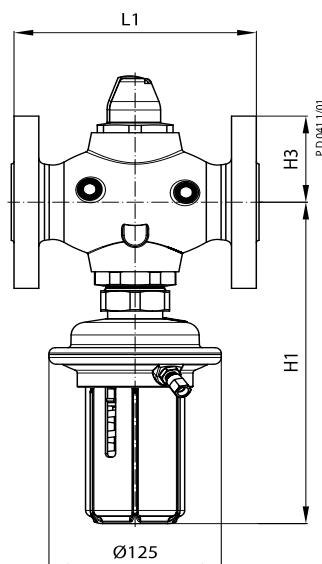
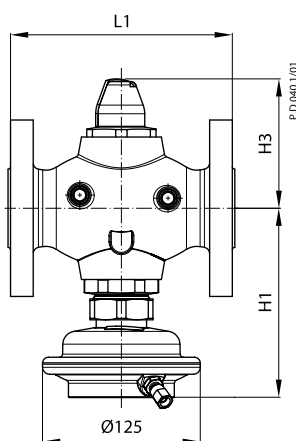
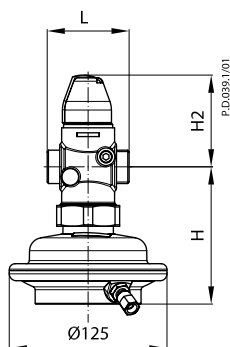
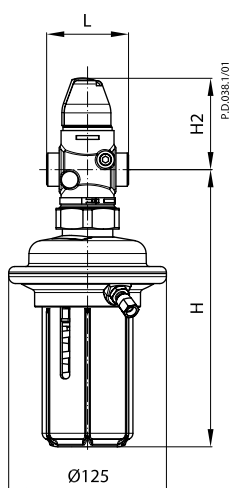


DN		15	20	25	32	40	50
SW		32 (G ¾A)	41 (G 1A)	50 (G 1¼A)	63 (G 1¾A)	70 (G 2A)	82 (G 2½A)
d		21	26	33	42	47	60
R 1)		½	¾	1	1¼	-	-
L1 2)		130	150	160	-	-	-
L2		131	144	160	177	-	-
L3		139	154	159	184	204	234
k		65	75	85	100	110	125
d2		14	14	14	18	18	18
n		4	4	4	4	4	4



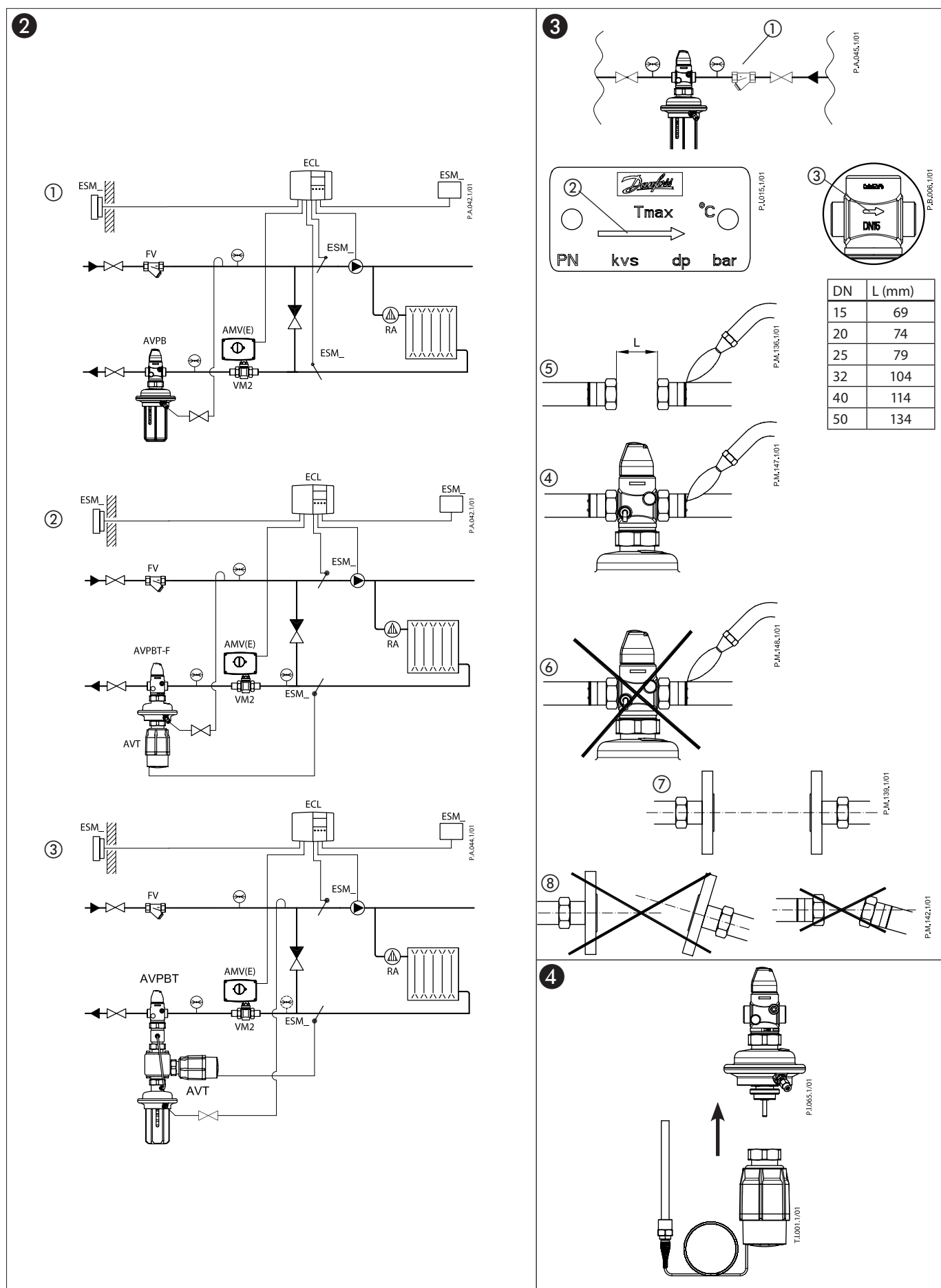
AVPB, AVPB-F (PN16)

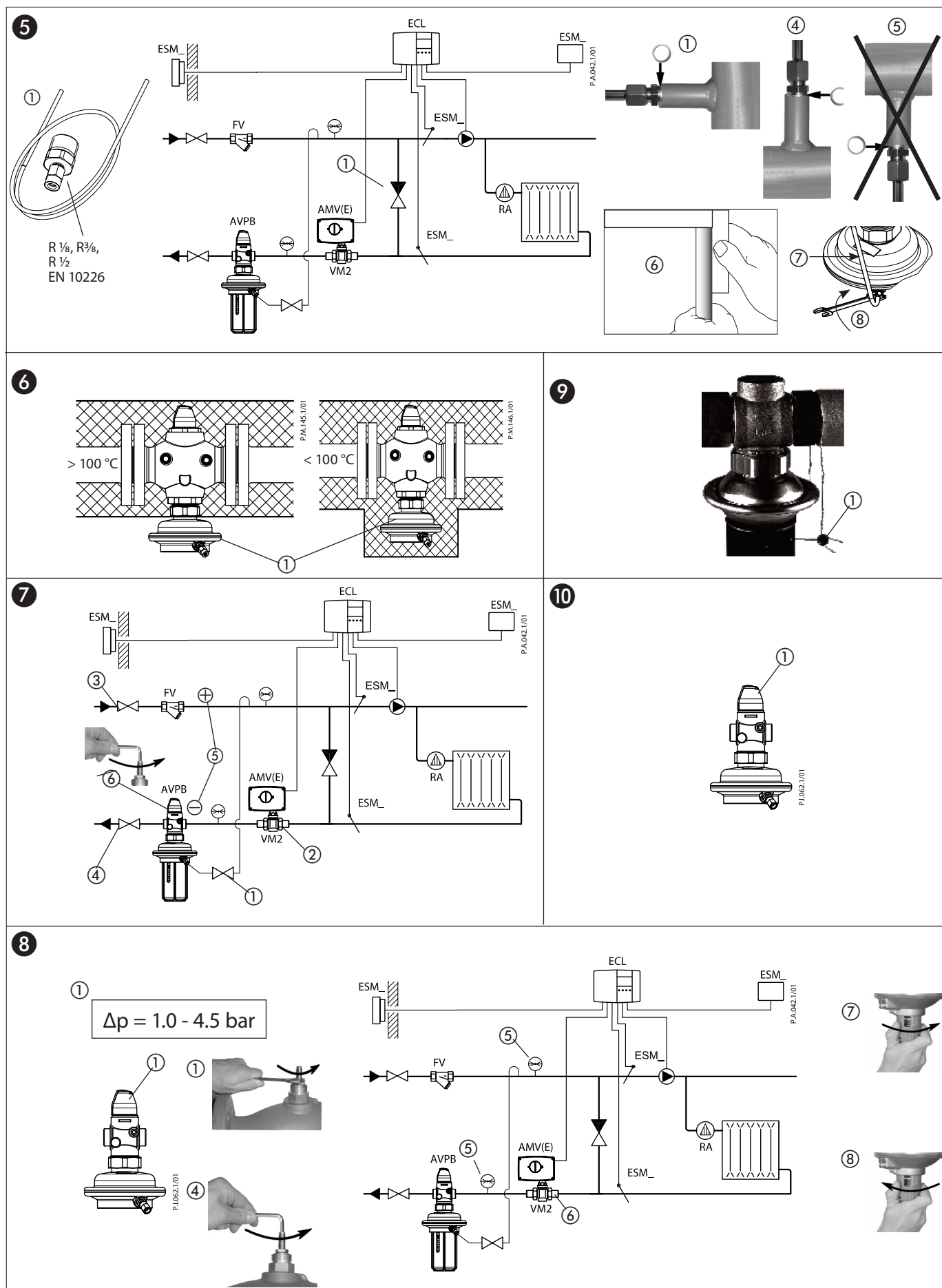
DN		15	20	25	32
		AVPB	AVPB-F	AVPB	AVPB-F
L		65	70	75	100
H	mm	232	97	232	97
H2		73	73	76	77



AVPB, AVPB-F (PN25)

DN		15	20	25	32	40	50
		AVPB	AVPB-F	AVPB	AVPB-F	AVPB	AVPB-F
L		65	70	75	100	110	130
L1 (flanges)		-	-	-	180	200	230
H	mm	220	109	220	109	261	150
H1 (flanges)		-	-	-	261	150	261
H2		73	73	76	103	103	103
H3 (flanges)		-	-	-	103	103	103





AVPB, AVPB-F, AVPBT, AVPBT-F – PN 16,25/DN 15 – 50

11

12

13

PN 16, PN 25
1 = 360°

DN 15

DN 20

DN 25

DN 32

DN 40/50

14

1

2

3

4

5

6

7

ENGLISH

Safety Notes



Prior to assembly and commissioning to avoid injury of persons and damages of the devices, it is absolutely necessary to carefully read and observe these instructions.

Necessary assembly, start-up, and maintenance work must be performed only by qualified, trained and authorized personnel.

Prior to assembly and maintenance work on the controller, the system must be:

- depressurized,
- cooled down,
- emptied and
- cleaned.

Please comply with the instructions of the system manufacturer or system operator.

Definition of Application

The controller is used for differential pressure (and temperature at AVPBT(-F)) control with flow limitation of water and water glycol mixtures for heating, district heating and cooling systems.

The technical parameters on the product labels determine the use.

Assembly

Admissible Installation Positions ①

Medium temperatures up to 100 °C:

- Can be installed in any position.

Medium temperatures > 100 °C:

- Installation permitted only in horizontal pipelines with the actuator oriented downwards.

Installation Location and Installation Scheme ②



The controller AVPB(T), AVPBT-F could be installed in the return pipeline only.

- ① AVPB(-F) return mounting
- ② AVPBT-F return mounting
- ③ AVPBT return mounting

Valve Installation ③

1. Clean pipeline system prior to assembly.
2. The installation of a strainer ① in front of the controller is strongly recommended.
3. Install pressure indicators in front of and behind the system part to be controlled.
4. Install valve
 - The flow direction indicated on the product label ② or on the valve ③ must be observed.
 - The valve with mounted weld-on tailpieces may only be spot welded to the pipeline ④. The weld-on tailpieces may be welded only without the valve and seals! ⑤⑥
 - If these instructions are not observed, high welding temperatures may destroy the seals.
 - Flanges ⑦ in the pipeline must be in parallel position and sealing surfaces must be clean and without any damage. Tighten screws in flanges crosswise in 3 steps up to the maximum torque (50 Nm).
5. **Caution:**
Mechanical loads of the valve body by the pipelines are not permitted ⑧.

Mounting of temperature actuator ④
(relevant only at AVPBT(-F) controllers)

Place temperature actuator AVT at the diaphragm and tighten union nut with wrench SW 50.

Torque 35 Nm.



Other details:
See instructions for temperature actuator AVT.

Impulse tube mounting ⑤

- Which impulse tubes to use?
Use Impulse tube set AV ① or use following pipe:
Copper Ø 6 x 1 mm EN 12449
- Connection of impulse tube ② in the system (Return mounting).
- Connection to the pipeline
It is strongly recommended to install the impulse tube to the pipeline horizontally ③ or upwards ④.
 - This prevents dirt accumulation in the impulse tube and possible malfunction of the controller.
 - Connection downwards is not recommendable ⑤.
- Impulse Tube Mounting
 1. Cut pipe perpendicularly to the pipe axis and smooth edges out ⑥.
 2. Press impulse tube ⑦ into the threaded joint up to its stop.
 3. Tighten union nut ⑧ Torque 14 Nm.

Insulation ⑥

For medium temperatures up to 100 °C the pressure actuator ① may also be insulated.

Dimensions, Weights

(see page 2)

- 1) Conical ext. thread acc. to EN 10226-1
- 2) Flanges PN 25, acc. to EN 1092-2

Start-up ⑦

Filling the system, first start-up

1. Slowly open shut-off valves ① that are possibly available in the impulse tubes.
2. Open valves ② in the system.
3. Slowly open shut-off devices ③ in the flow pipeline.
4. Slowly open shut-off devices ④ in the return pipeline.



Pressure must be gradually increased at the +/- connection ⑤.
Non-compliance may cause damages at the actuator or the valve.

A pressure test of the entire system must be carried out in accordance with manufacturer's instructions.

The maximum test pressure is: **1.5 x PN**

PN - see product label!

Putting out of operation

1. Slowly close shut-off devices ③ in the flow pipeline.
2. Slowly close shut-off devices ④ in the return pipeline.

Settings ⑧

First set the differential pressure.
(not relevant at fixed setting version AVPB(T)-F)

Differential Pressure Setting

The diff. pressure setting range is indicated on the product label ①.

Procedure:

1. Unscrew cover ②.
2. Loosen counter nut ③.
3. Unscrew (counter-clockwise) adjustable flow restrictor ④ up to its stop.
4. Start system, see section "Filling the system, first start-up".
Completely open all shut-off devices in the system.
5. Set flow rate on a motorized valve ⑥, on which differential pressure is controlled, to about 50 %.
6. Adjustment
Observe pressure indicators ⑤ or/and alternatively see handle scale indication.
 - Turning to the right ⑦ (clockwise) increases the set-point (stressing the spring).
 - Turning to the left ⑧ (counter-clockwise) reduces the set-point (releasing the spring)



If the required differential pressure is not attained, a cause may be a too small pressure loss in the system.

Seal ⑨

The set-point adjuster can be sealed by a seal wire ①, if necessary. **Flow Rate Setting ⑩**

The flow rate is adjusted by means the setting of adjustable flow restrictor ①.

There are two possibilities:

1. Adjustment with the flow adjusting curves,
2. Adjustment with heat meter, see ⑭.

Pre-condition ⑪

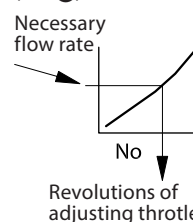
(min. diff. pressure over the valve)

At the maximum flow rate, the pressure difference Δp_v across the control valve must be at least: **$\Delta p_{min} = 0.5 \text{ bar}$**

Adjustment with flow adjusting curves ⑫

The system don't need to be active for being adjusted.

1. Unscrew cover ①, loosen counter nut ②.
2. Screw (clockwise) adjustable flow restrictor ③ in up to its stop.
Valve is closed, no flow.
3. Select flow adjusting curve in the diagram (see ⑬).



4. Unscrew (counter-clockwise) the adjustable flow restrictor by determined number of revolutions ④.
5. The setting is completed, continue with step 3, ⑭.



The setting may be verified with help of a heat meter if the system is in operation, see next section.

**Flow Adjusting Curves ¹³
Adjustment with Heat Meter ¹⁴**
Pre-condition:

The system must be in operation. All units in the system ① or a bypass must be completely open.

1. Unscrew cover ②, loosen counter nut ③.
2. Observe heat meter indicator.
 - Turning to the left ④ (counter-clockwise) increases the flow rate.
 - Turning to the right (clockwise) ⑤ reduces the flow rate.

After the adjustment has been completed:

3. Tighten counter nut ⑥.
4. Screw the cover ⑦ in and tighten.
5. Cover may be sealed.

Temperature setting
(relevant only at AVPBT(-F) controllers)

See instructions for temperature actuator AVT.

DEUTSCH
Sicherheitshinweise


Um Verletzungen an Personen und Schäden am Gerät zu vermeiden, diese Anleitung vor Montage unbedingt beachten.

Montage, Inbetriebnahme und Wartungsarbeiten dürfen nur von sachkundigen und autorisierten Personen durchgeführt werden.

Anlage vor Montage und Wartungsarbeiten am Regler:

- drucklos machen,
- abkühlen,
- entleeren und
- reinigen.

Die Vorgaben des Anlagenherstellers und Anlagenbetreibers sind zu beachten.


NEDERLANDS
Veiligheid


Om verwondingen aan personen en schade aan de apparatuur te voorkomen is het absoluut noodzakelijk om deze instructies zorgvuldig te lezen en te bestuderen.

jke (de)montage, inbedrijfstelling en onderhoud dient alleen door deskundig, getraind en bevoegd personeel te worden uitgevoerd.

Voorafgaand aan montage- of onderhoudswerkzaamheden moet het systeem worden:

- afgesloten,
- afgekoeld,
- afgetapt en
- gereinigd.

Volg altijd de instructies van de installatiebouwer- of beheerder op.


DANSK
Sikk erhedsnoter


Disse instruktioner SKAL læses omhyggeligt forud for montering og indkøring samt respekteres for at undgå skader på personer og udstyr. Nødvendigt monterings-, opstart- og vedligeholdelsesarbejde må kun udføres af faglært og autoriseret personale.

Forud for monterings- og vedligeholdelsesarbejde på regulatoren skal systemet være:

- trykløst,
- nedkølet,
- tømt og
- rengjort.

Systemproducentens eller -operatørens instruktioner skal overholdes.


ESPAÑOL
Notas de seguridad


Antes del montaje y de la puesta en marcha, para evitar daños personales y perjuicios en los dispositivos, es absolutamente necesario leer cuidadosamente estas instrucciones.

El montaje, la puesta en marcha y el trabajo de mantenimiento necesario deberán ser realizados solo por personal cualificado y autorizado.

Antes del montaje y el trabajo de mantenimiento del controlador, el sistema debe ser:

- despresurizado
- enfriado,
- vaciado y
- limpiado.

Por favor, cumpla con las instrucciones del fabricante del sistema o del operador del sistema.


SLOVENŠČINA
Varnostna opozorila


Izjemno pomembno je, da pred montažo in zagonom skrbno preberete navodila in se jih držite. S tem se izognete poškodbam ljudi in okvaram na opremi.

Nujna sestavna, zagonska in vzdrževalna dela lahko izvajajo samo kvalificirani, šolani in pooblaščen delavci.

Pred sestavo in vzdrževalnimi deli na regulatorju mora biti sistem:

- tlačno izravnano,
- ohlajeno,
- izpraznjen in
- očiščen.

Prosimo, upoštevajte navodila proizvajalca sistema ali systemskega operaterja



AVPB, AVPB-F, AVPBT, AVPBT-F – PN 16,25/DN 15 – 50

MAGYAR

Biztonsági előírások

Összeszerelés és üzembehelyezés előtt feltétlenül olvassa el és tartsa be ezen útmutató utasításait és személyi sérülések és a készülék meghibásodásának elkerülése érdekében!

Az összeszerelést, üzembehelyezést és karbantartást csak szakképzett és arra feljogosított személy végezheti.

A szerelési és karbantartási munkálatok előtt a rendszert:

- nyomásmentesíteni kell,
- le kell hűteni,
- le kell üríteni,
- és meg kell tisztítani.

Kérjük, tartsa be a rendszer gyártójának és üzemeltetőjének rendelkezéseit!



POLSKI

Warunki bezpieczeństwa

W celu uniknięcia zranienia osób i uszkodzenia urządzeń należy bezwzględnie przed montażem i uruchomieniem zaworu zapoznać się dokładnie z niniejszą instrukcją.

Czynności związane z montażem, uruchomieniem i obsługą mogą być dokonywane wyłącznie przez osoby uprawnione i odpowiednio wykwalifikowane.

Przed montażem i obsługą konserwacyjną regulatora należy:

- zrzuć ciśnienie,
- ostudzić urządzenie,
- opróżnić układ i
- oczyścić.

Prosimy stosować się do instrukcji producenta lub operatora układu.



РУССКИЙ

правила техники безопасности

Для предупреждения травматизма и повреждения оборудования перед началом производства работ по его монтажу и вводу в эксплуатацию следует изучить и соблюдать настоящую инструкцию.

Монтаж, наладку и техническое обслуживание оборудования может выполнять только квалифицированный персонал, имеющий допуск к таким работам. инструкция по эксплуатации системы.

В целях соблюдения правил техники безопасности перед началом работ по монтажу или обслуживанию регулятора необходимо произвести следующие действия с трубопроводной системой:

- сбросить давление;
- охладить;
- опорожнить;
- прочистить.

При этом должна соблюдаться также



ROMÂNĂ

Instrucțiuni privind siguranța în funcționare

Înainte de asamblare și de punerea în funcțiune, pentru evitarea accidentării persoanelor și a deteriorării echipamentului, este absolut necesară citirea cu atenție și respectarea acestor instrucțiuni.

Lucrările necesare de montare, punere în funcțiune și întreținere, trebuie efectuate numai de persoane calificate și autorizate.

Înainte de lucrările de asamblare și întreținere, sistemul trebuie să fie:

- depresurizat,
- răcit,
- golit și
- curățat.

Vă rugăm să respectați instrucțiunile producătorului sau operatorului sistemului.



ČESKY

Bezpečnostní informace

Z důvodu maximálního snížení možnosti poranění osob nebo vzniku škod na majetku je bezpodmínečně nutné se před vlastní montáží a uvedením regulátoru do provozu pečlivě seznámit se všemi bezpečnostními informacemi zde uvedenými.

Nezbytné montážní práce, kroky při uvádění do provozu a opravy mohou provádět pouze kvalifikovaní, proškolení pracovníci, kteří pro tuto činnost byly určeni.

Před montáží nebo před případnou opravou nebo servisem regulátoru je nutné, aby regulovaný systém splňoval následující podmínky:

- nebyl pod tlakem
- byl dostatečně ochlazen
- vyprázdněn a
- vyčištěn.

Potupujte podle návodu výrobce systému nebo jeho provozovatele.



Danfoss A/S

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