

INSTALLATION MANUAL

Steam humidification system
Condair Esco

Thank you for choosing Condair

Installation date (MM/DD/YYYY):

Commissioning date (MM/DD/YYYY):

Site:

Model:

Serial number:

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1 Introduction

1.1 General

The present installation instructions are a supplement of the installation and operating instructions of the Condair Esco and describe the installation of the different steam distribution systems of the Condair Esco in a duct. The electrical connection of the valve actuators is not part of these installation instructions.

1.2 Safety

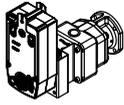
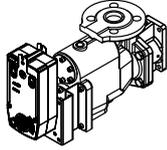
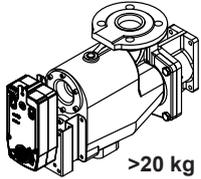
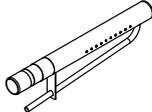
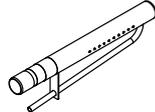
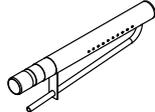
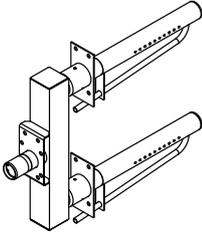
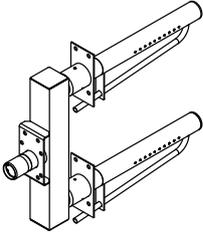
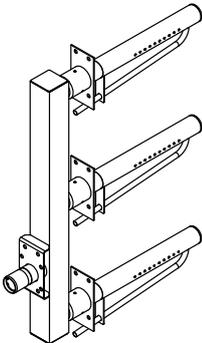
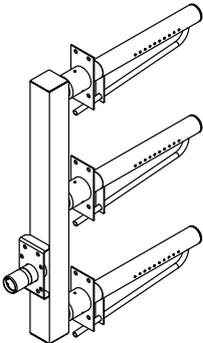
Inappropriate installation of the steam distribution system may result in steam leakage during operation. Withdrawing steam may cause injury of person or damage of material assets.

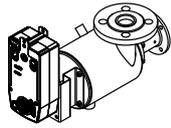
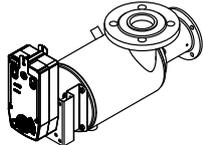
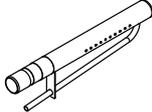
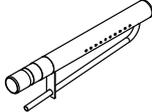
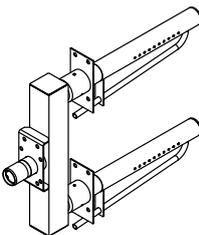
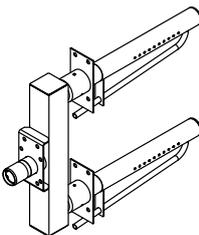
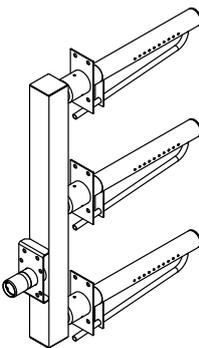
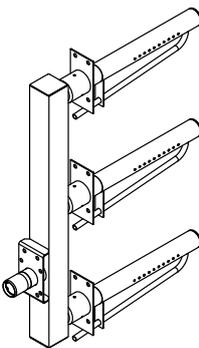
Therefore, please observe and comply with the following safety instructions and the information and safety instructions contained in the installation and operating instructions of the Condair Esco.

- The steam distribution system Condair Esco must only be installed by persons familiar with this product and sufficiently qualified for the task.
- All instructions in the present installation instructions must be followed and complied with.
- **Original Condair accessories and options** from your supplier must be used **exclusively** for installation of the steam distribution system Condair Esco.
- **Without the written consent** of the supplier, no attachments or modifications must be made to the steam distribution systems Condair Esco, accessories, and options.
- All local safety regulations concerning the use of pressurised steam systems must be followed complied with.
- It is assumed that all persons in charge with the installation of the steam distribution system are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.
- The weight of some components of the steam distribution system is more than 20 kg. Therefore, always transport these components with the help of another person or use an appropriate lifting device. Always secure the components during installation against falling down.
- After the installation or during the initial start-up of the system all installations must be checked for tightness. Systems with leaky installations may not be taken in operation.

2 Esco DL40

2.1 Overview Esco DL40

	Esco 5 cast iron	Esco 10 cast iron	Esco 20 cast iron
			 >20 kg
DL40 - 1 pipe			
DL40 - 2 pipes			
DL40 - 3 pipes			
Primary steam trap			
Thermostatic steam trap			
Ball float steam trap			
Inverted bucket steam trap			
Secondary steam trap			
Thermostatic steam trap			
Pressure gauge			

	Esco 10 stainless steel	Esco 20 stainless steel
		
DL40 - 1 pipe		
DL40 - 2 pipes		
DL40 - 3 pipes		
Primary steam trap		
Ball float steam trap		
Inverted bucket steam trap		
Secondary steam trap		
Thermostatic steam trap		
Pressure gauge		

2.2 Mounting the Esco DL40

2.2.1 Mounting the Esco DL40 with one steam pipe

1. With the aid of a spirit level, affix the supplied (self-adhesive) drilling template exactly vertically onto the duct wall as shown below and drill the holes.

Use drilling template "1103702" for: Esco 5 and Esco 10 stainless steel with one steam pipe

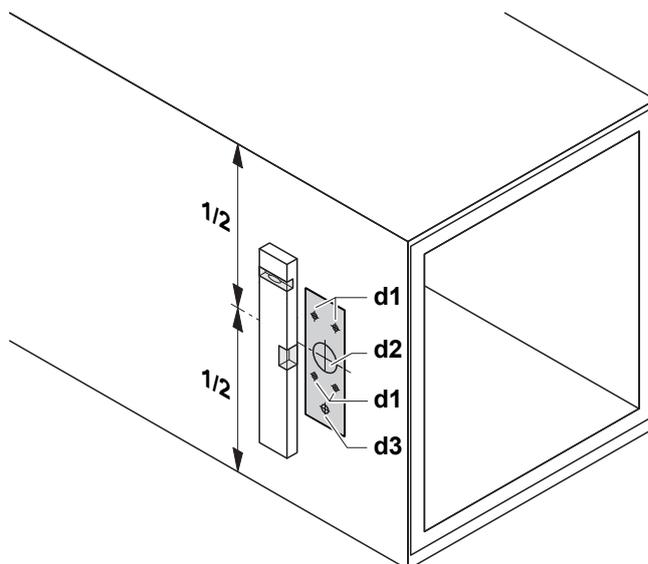
Use drilling template "1103487" for: Esco 10 with one steam pipe

Use drilling template "1112926" for: Esco 20 with one steam pipe

Use drilling template "2557214" for: Esco 20 stainless steel with one steam pipe

		Esco 5	Esco 10	Esco 20
d1		ø9 mm ø13 mm **		
d2		ø45 mm	ø45 mm	ø65 mm
d3		ø13 mm		

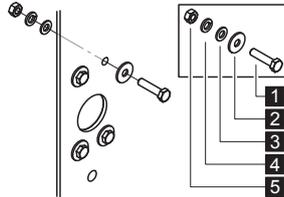
** if mounting set for insulated ducts is used



2. Mount valve unit.

- Remove protective plug from the connector flange of the valve unit.
- This step must be carried out only if mounting set for insulated ducts is used: Cut length of the supporting tubes to duct wall thickness “L”, then insert the tubes into the fixing holes.
- Fix valve unit to the duct (installation position as shown below) using the screws, washers, spring washers and nuts. Before tightening, centrally align the bores of the duct and the valve unit.

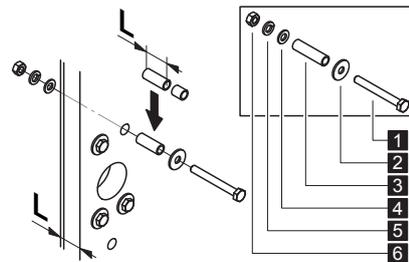
Screws, washers, lock washers and nuts for non insulated ducts (by client)



	Esco 5	Esco 10	Esco 20
1	M8 x * (Wrench size 13 mm)		
2	ø24/8.4 x 2 mm		
3	ø16/8.4 x 1.6 mm		
4	Lock washer M8		
5	M8 x 0.8d		

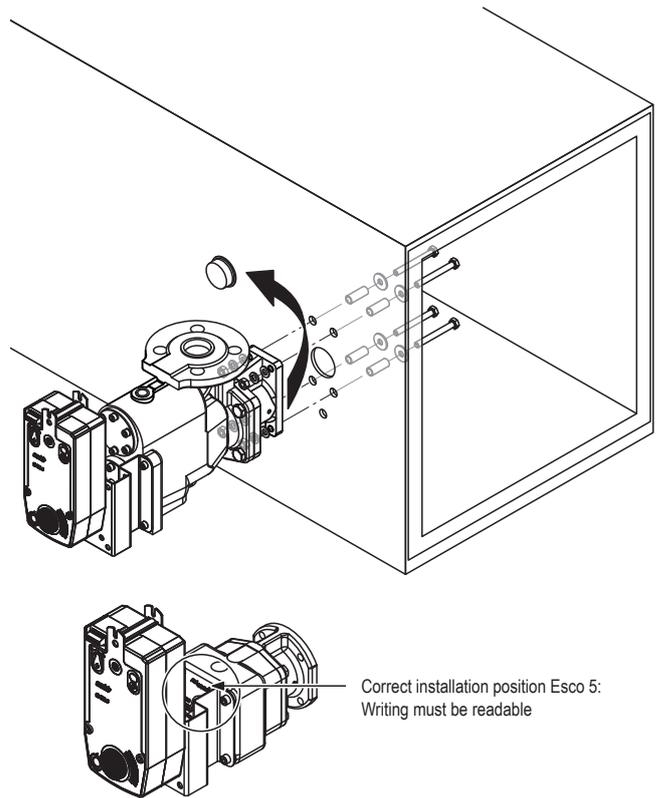
* length as required

Mounting set for insulated ducts



	Esco 5	Esco 10	Esco 20
1	M8 x 70 mm **/ M8 x 100 mm ** Wrench size 13 mm		
2	ø24/8.4 x 2 mm		
3	ø12 x 45 mm **/ ø12 x 75 mm **		
4	ø16/8.4 x 1.6 mm		
5	Lock washer M8		
6	M8 x 0.8d		

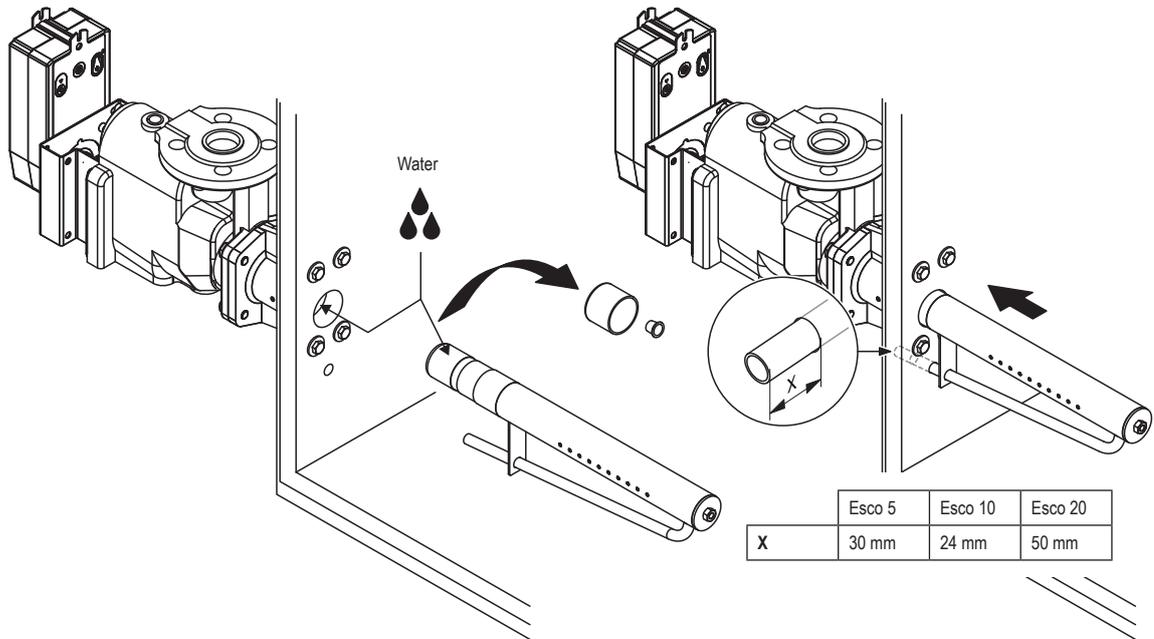
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3. Mounting the steam pipe.

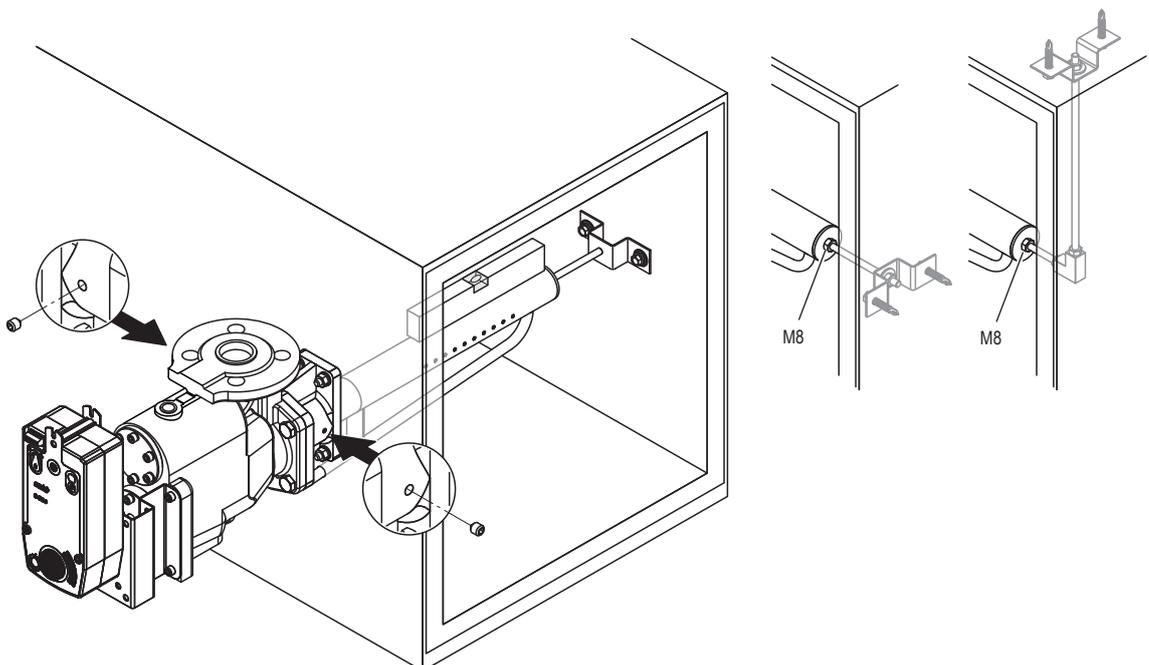
- Remove protective caps from the steam pipe.
- From the inside of the duct push the steam pipe into the valve unit until it comes to a stop (the resistance of the O-rings inside the valve unit must be overcome). The steam pipe is installed correctly, if the secondary condensate drain pipe pokes X mm out of the duct (see illustration and table below).

Note: To improve gliding ability moisten the end of the steam pipe and the O-rings inside the valve unit with water (do not use oil or grease!).

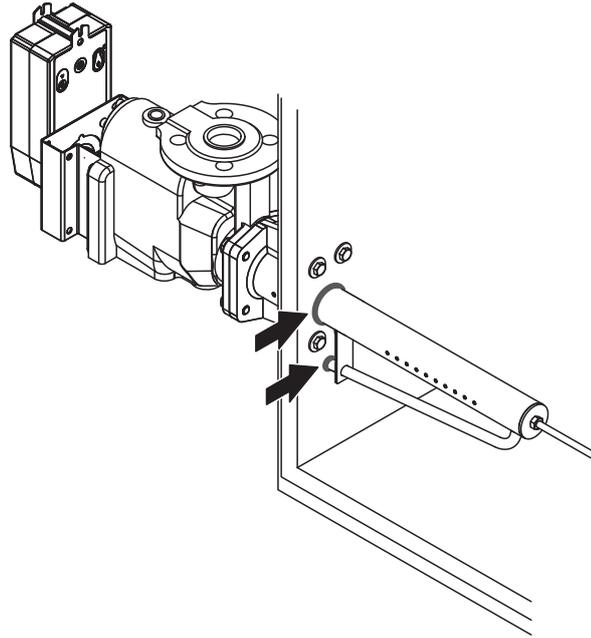


4. Fix steam pipe.

- Horizontally align steam pipe using a spirit level, then fix the end of the steam pipe to the duct wall or the duct ceiling (Fixing bracket available as an option).
- Screw M5x6 grub screws (allen key 2.5 mm) provided on both sides into the valve unit, until they touch the steam pipe.



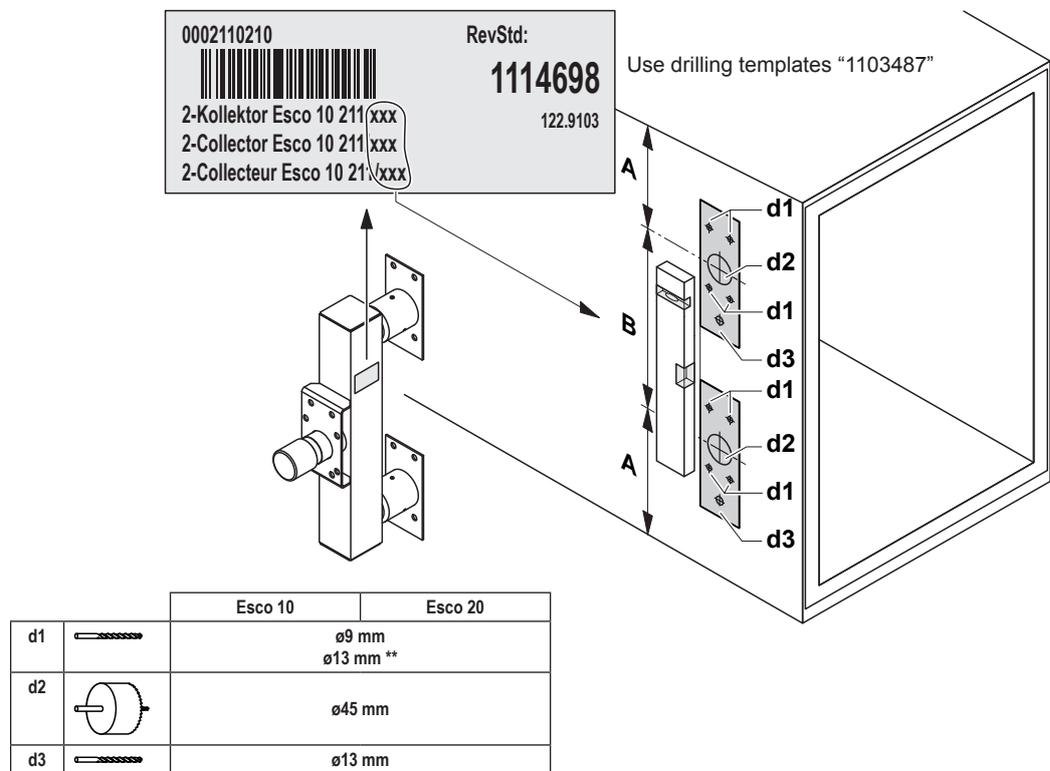
5. Seal the bores inside the duct with silicone-free sealant.



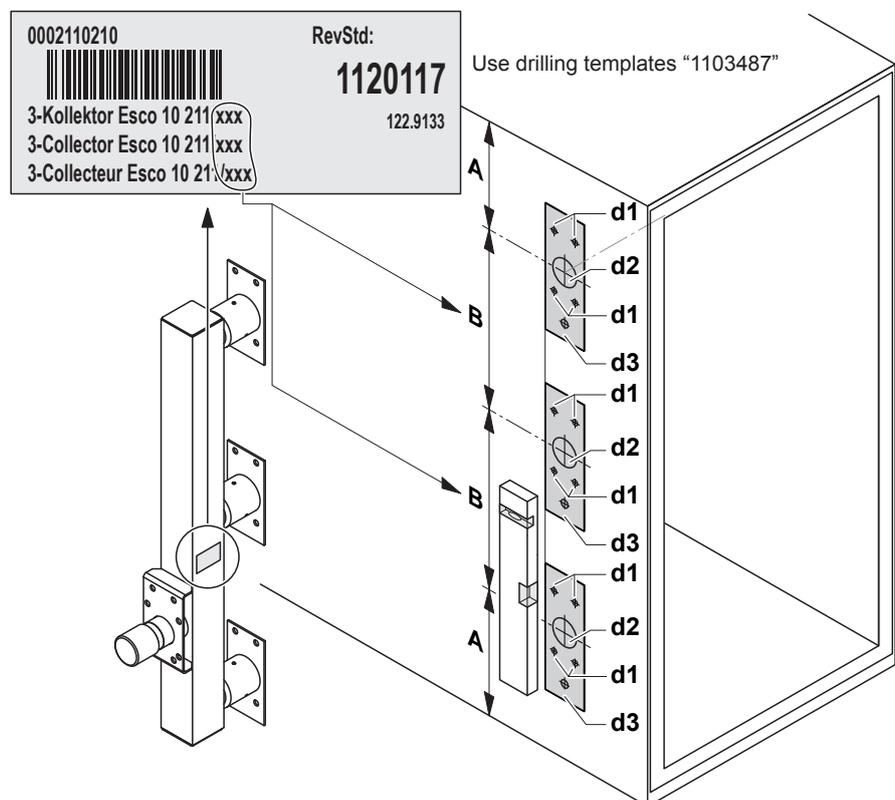
6. Connecting the steam supply line (see [chapter 5.1](#)).
7. Mounting the secondary steam trap (see [chapter 5.2](#)).
8. Mounting the primary steam trap (see [chapter 5.3](#)).
9. Mounting the pressure gauge (see [chapter 5.4](#)).

2.2.2 Mounting the Esco DL40 with two/three steam pipes

1. With the aid of a spirit level, affix the supplied (self-adhesive) drilling templates exactly vertically onto the duct wall as shown below and drill the holes.
 Note: exclusively use the drilling templates "1103487" in the plastic bag attached to the collector.



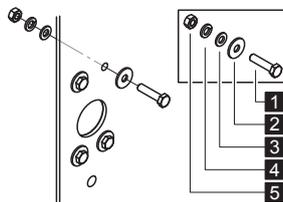
** if mounting set for insulated ducts is used



2. Mount collector.

- Remove protective plugs from the collector sockets.
- This step must be carried out only if mounting set for insulated ducts is used: Cut length of the supporting tubes to duct wall thickness “L”, then insert the tubes into the fixing holes.
- Fix collector to the duct as shown below using the screws, washers, lock washers and nuts. Before tightening, centrally align the bores of the duct and the collector.

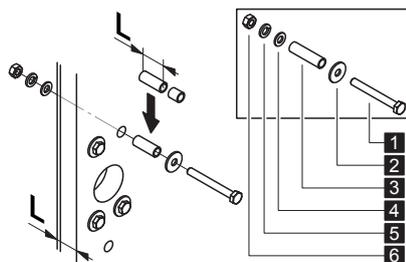
Screws, washers, lock washers and nuts for non insulated ducts (by client)



	Esco 10	Esco 20
1	M8 x * (Wrench size 13 mm)	
2	ø24/8.4 x 2 mm	
3	ø16/8.4 x 1.6 mm	
4	Lock washer M8	
5	M8 x 0.8d	

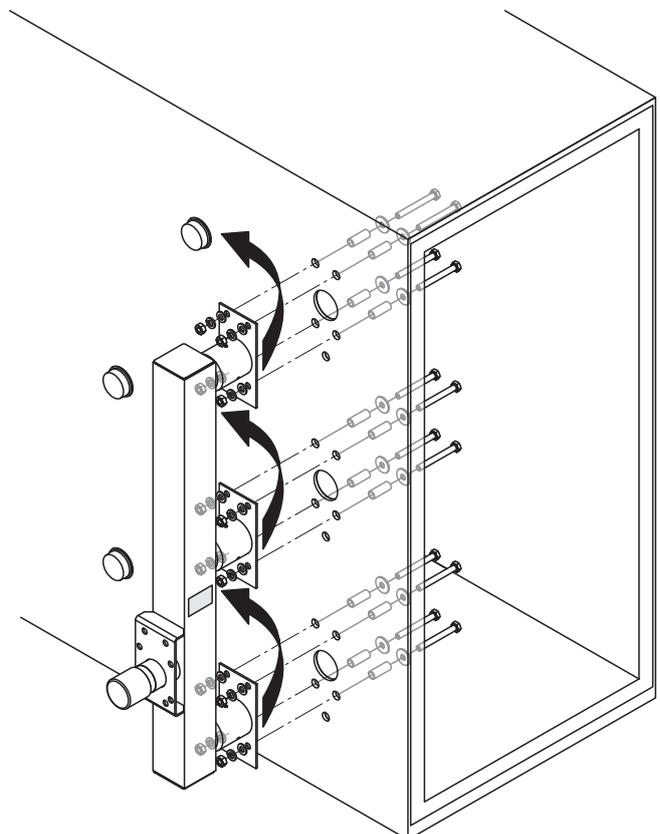
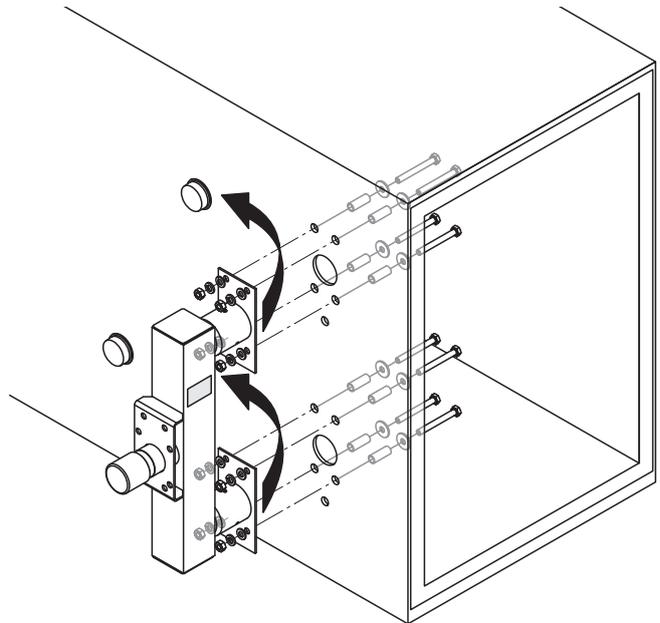
* length as required

Mounting set for insulated ducts



	Esco 10	Esco 20
1	M8 x 70 mm **/ M8 x 100 mm **	
	Wrench size 13 mm	
2	ø24/8.4 x 2 mm	
3	ø12 x 45 mm **/ ø12 x 75 mm **	
4	ø16/8.4 x 1.6 mm	
5	Lock washer M8	
6	M8 x 0.8d	

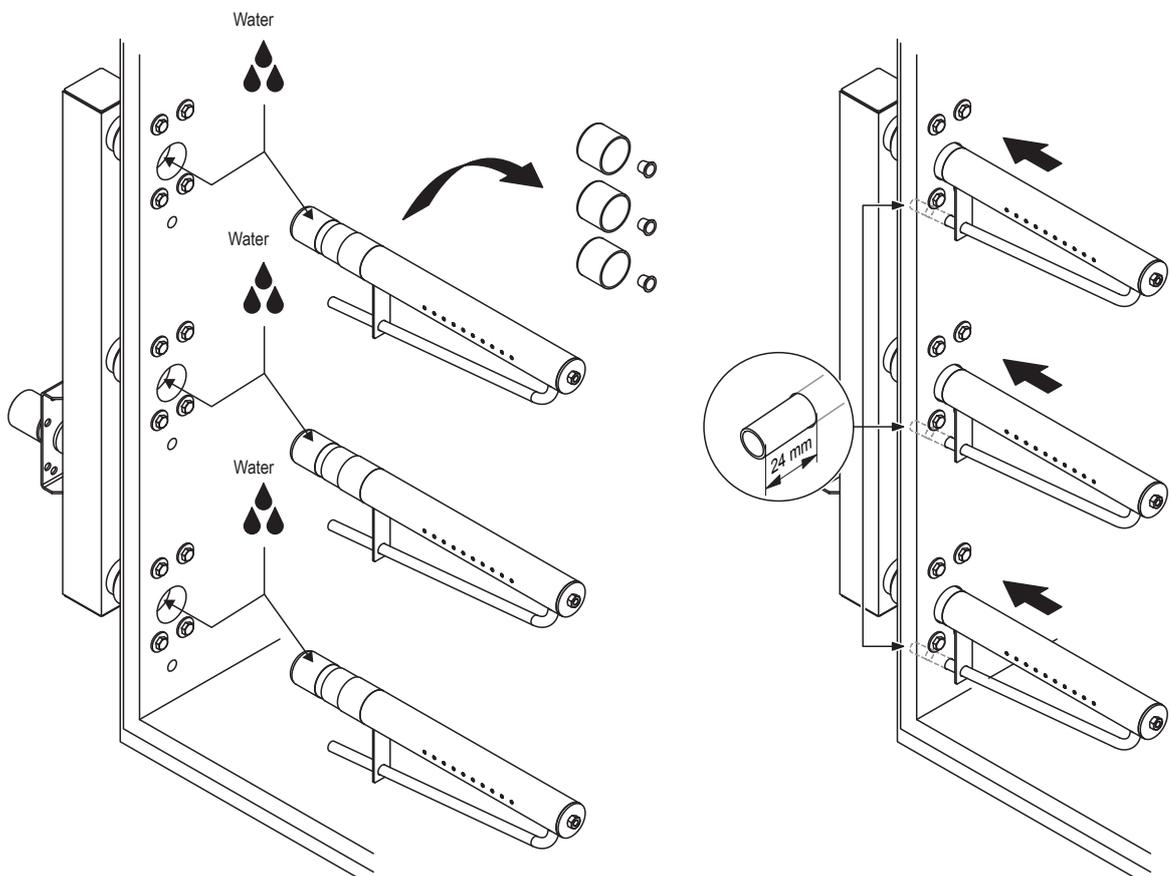
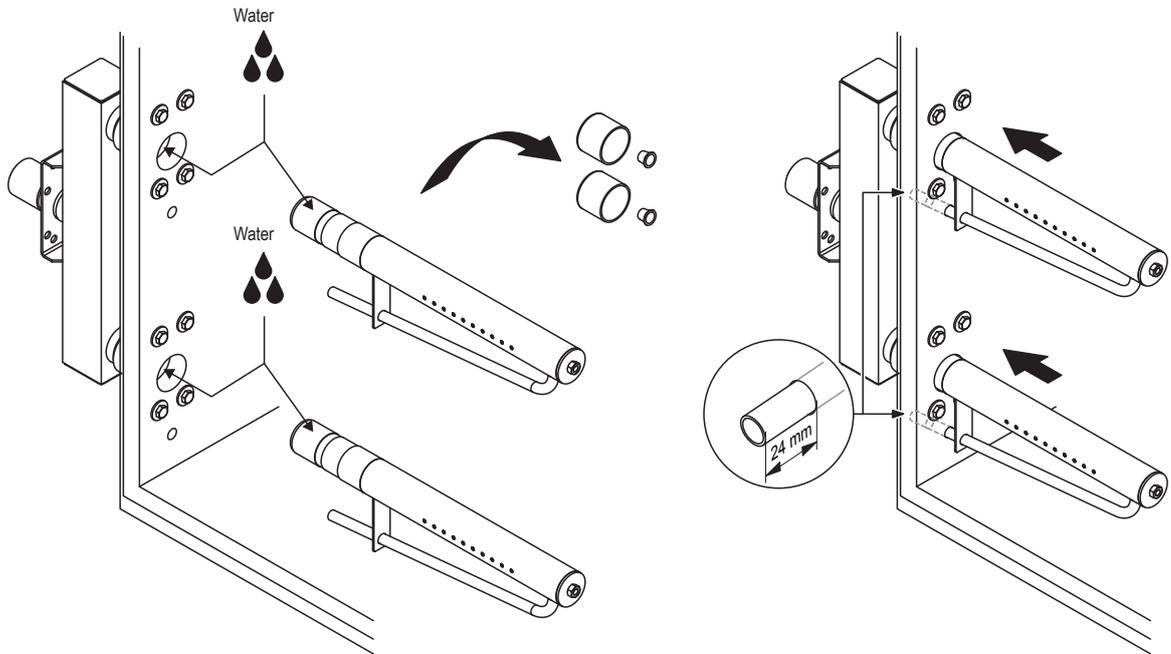
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3. Mount steam pipes.

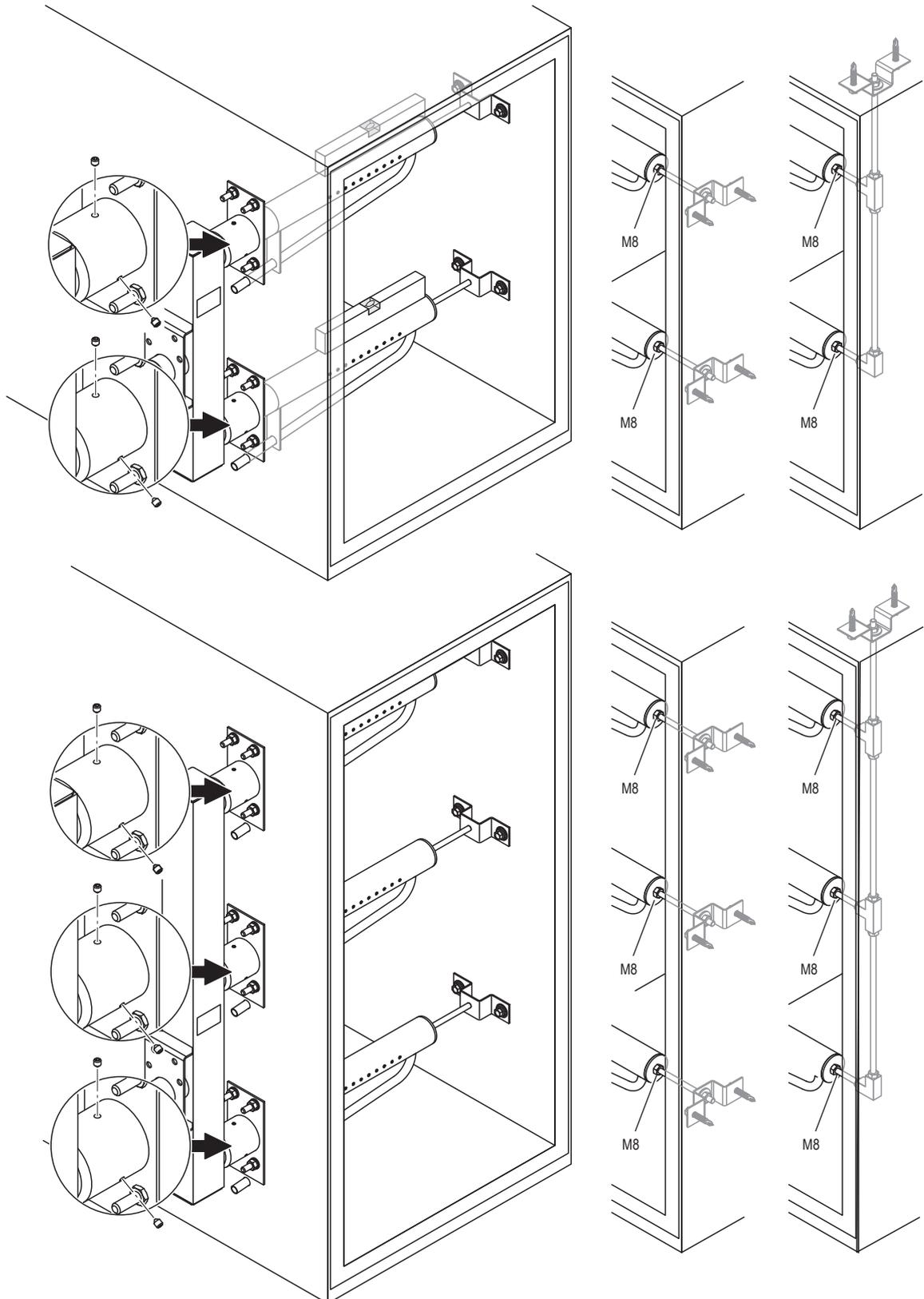
- Remove protective caps from the steam pipes.
- From the inside of the duct push the steam pipes into the collector sockets until they come to a stop (the resistance of the O-rings inside the collector sockets must be overcome). The steam pipes are installed correctly, if the secondary condensate drain pipe pokes 24 mm out of the duct.

Note: To improve gliding ability moisten the end of the steam pipes and O-rings inside the collector sockets with water (do not use oil or grease!).

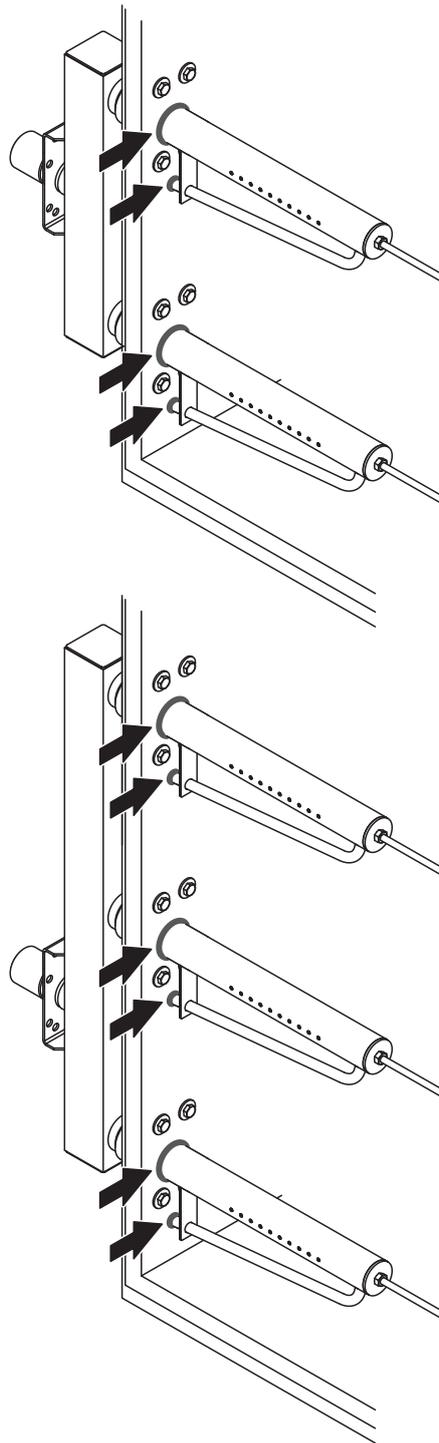


4. Fix steam pipes.

- Horizontally align steam pipes using a spirit level, then fix the ends of the steam pipes to the duct wall or the duct ceiling (Fixing bracket available as an option).
- Screw the M5x6 grub screws (allen key 2.5 mm) provided into the collector sockets (as shown below), until they touch the steam pipe.

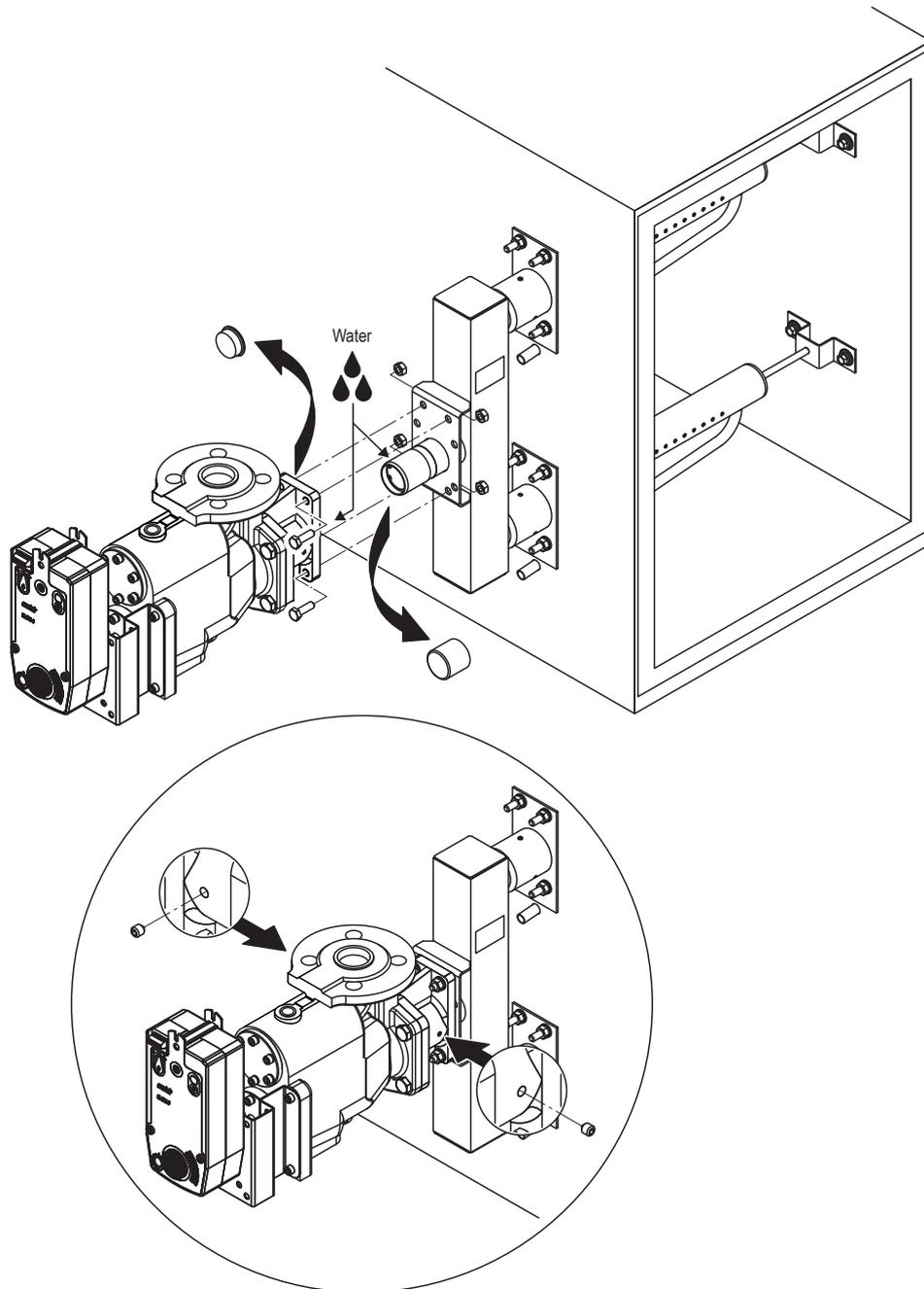


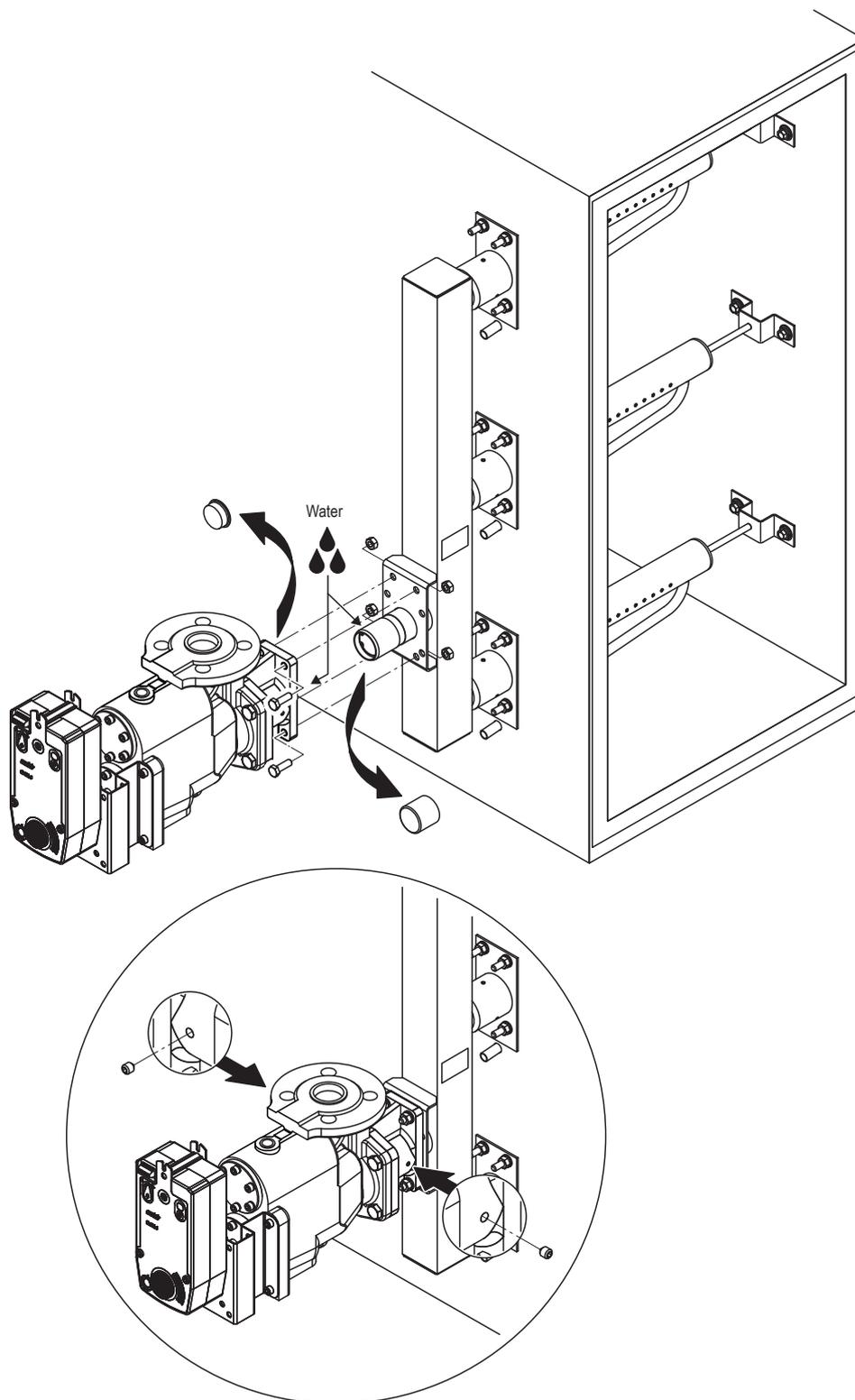
5. Seal the bores inside the duct with silicone-free sealant.



6. Mount valve unit.

- Remove protective cap/plug from the valve unit and the connector of the collector.
- Push the valve unit (installation position as shown below) onto the connector of the collector until it comes to a stop (the resistance of the O-rings inside the valve unit must be overcome). Then, fix valve unit to the collector as shown below using the screws and nuts (wrench size 13 mm). Note: To improve the gliding ability moisten the steam connector of the collector and the O-rings inside the valve unit with water (do not use oil or grease!).
- Screw M5x6 grub screws (allen key 2.5 mm) provided on both sides into the valve unit, until they touch the connector of the collector.

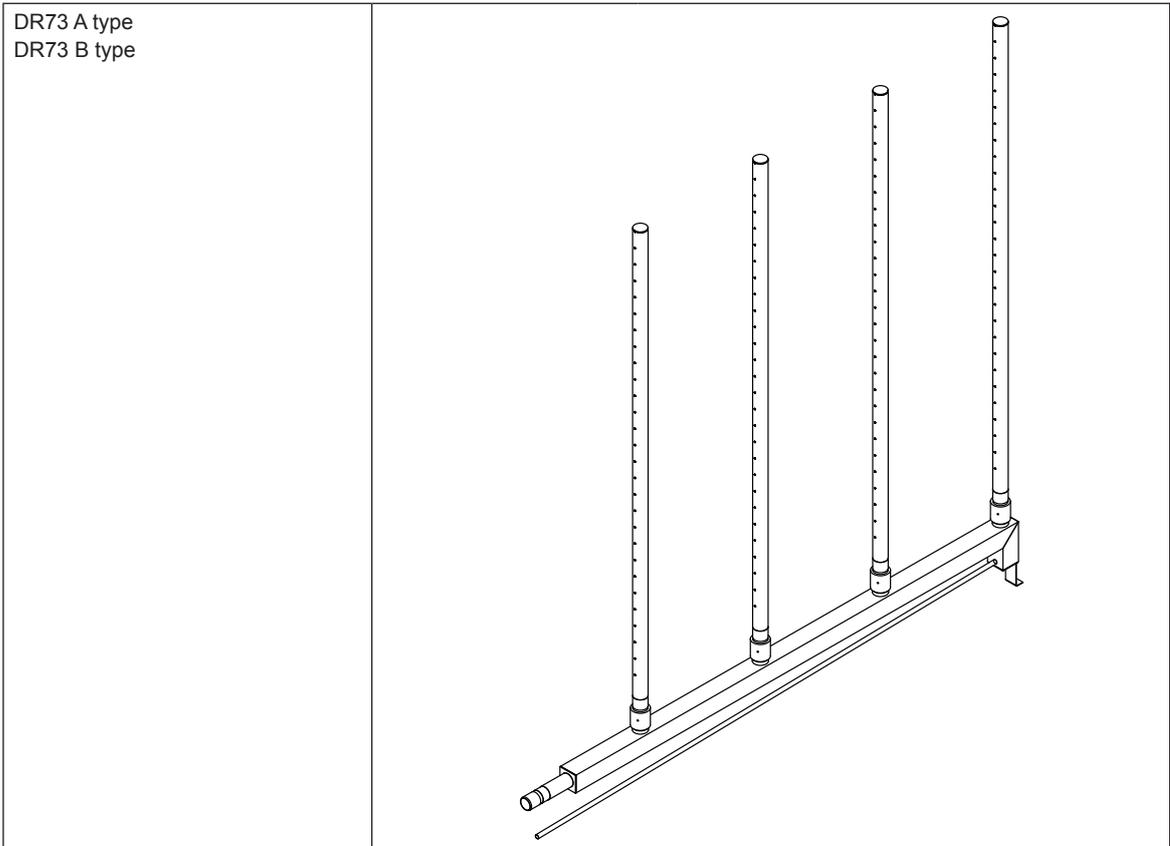
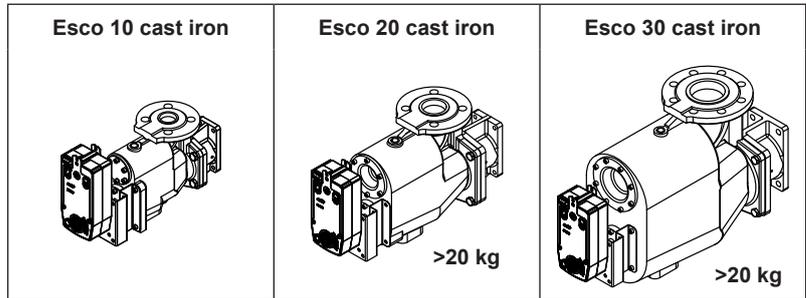




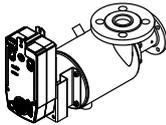
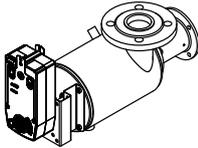
7. Connecting the steam supply line (see [chapter 5.1](#)).
8. Mounting the secondary steam trap (see [chapter 5.2](#)).
9. Mounting the primary steam trap (see [chapter 5.3](#)).
10. Mounting the pressure gauge (see [chapter 5.4](#)).

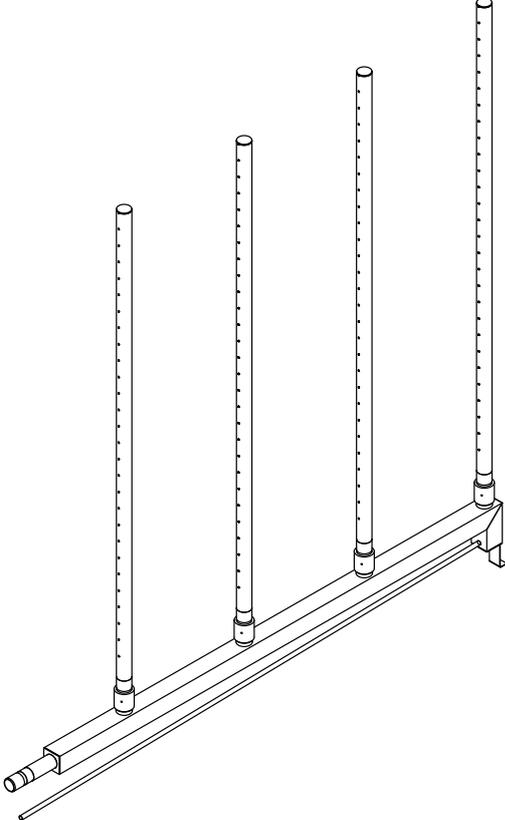
3 Esco DR73

3.1 Overview Esco DR73



Primary steam trap			
Ball float steam trap			
Inverted bucket steam trap			
Secondary steam trap			
Thermostatic steam trap			
Pressure gauge			

Esco 10 stainless steel	Esco 20 stainless steel
	

DR73 A type DR73 B type	
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Primary steam trap		
Ball float steam trap		
Inverted bucket steam trap		
Secondary steam trap		
Thermostatic steam trap		
Pressure gauge		

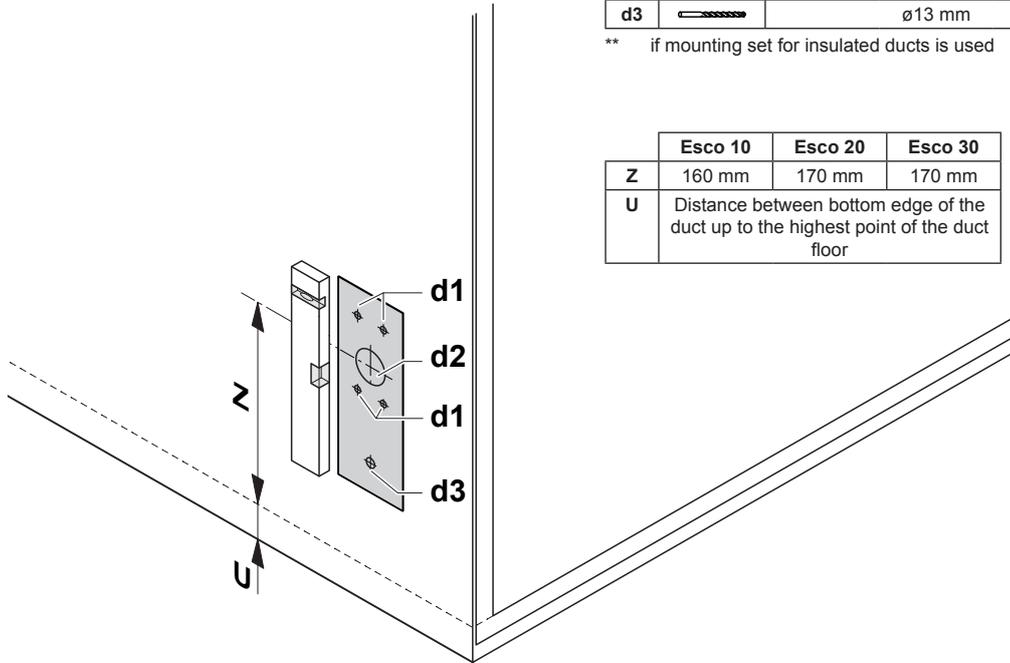
3.2 Mounting the Esco DR73 A type

1. With the aid of a spirit level, affix the supplied (self-adhesive) drilling template exactly vertically onto the duct wall as shown below and drill the holes.

		Esco 10	Esco 20	Esco 30
d1		ø9 mm ø13 mm **		ø13.5 mm ø17 mm **
d2		ø45 mm	ø65 mm	ø95 mm
d3		ø13 mm		

** if mounting set for insulated ducts is used

	Esco 10	Esco 20	Esco 30
Z	160 mm	170 mm	170 mm
U	Distance between bottom edge of the duct up to the highest point of the duct floor		



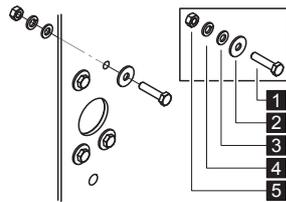
- Use drilling template "1112848" for: Esco 10 with DR73
- Use drilling template "1112849" for: Esco 20 with DR73
- Use drilling template "1112850" for: Esco 30 with DR73
- Use drilling template "1114629" for: Esco 10 stainless steel with DR73
- Use drilling template "2557213" for: Esco 20 stainless steel with DR73

2. Mount valve unit.

Important: if the collector is mounted before the valve unit, steps 3 to 6 must be done first.

- Remove protective plug from the steam pipe connector of the valve unit.
- This step must be carried out only if mounting set for insulated ducts is used: Cut length of the supporting tubes to duct wall thickness “L”, then insert the tubes into the fixing holes.
- Fix valve unit to the duct (installation position as shown below) using the screws, washers, lock washers and nuts. Before tightening, centrally align the bores of the duct and the valve unit.

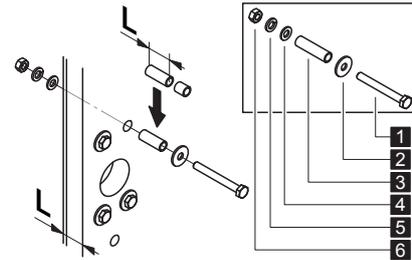
Screws, washers, lock washers and nuts for non insulated ducts (by client)



	Esco 10	Esco 20	Esco 30
1	M8 x *		M12 x *
	Wrench size 13 mm		Wrench size 19 mm
2	ø24/8.4 x 2 mm		ø37/13 x 3 mm
3	ø16/8.4 x 1.6 mm		ø24/13 x 2.5 mm
4	Lock washer M8		Lock washer M12
5	M8 x 0.8d		M12 x 0.8d

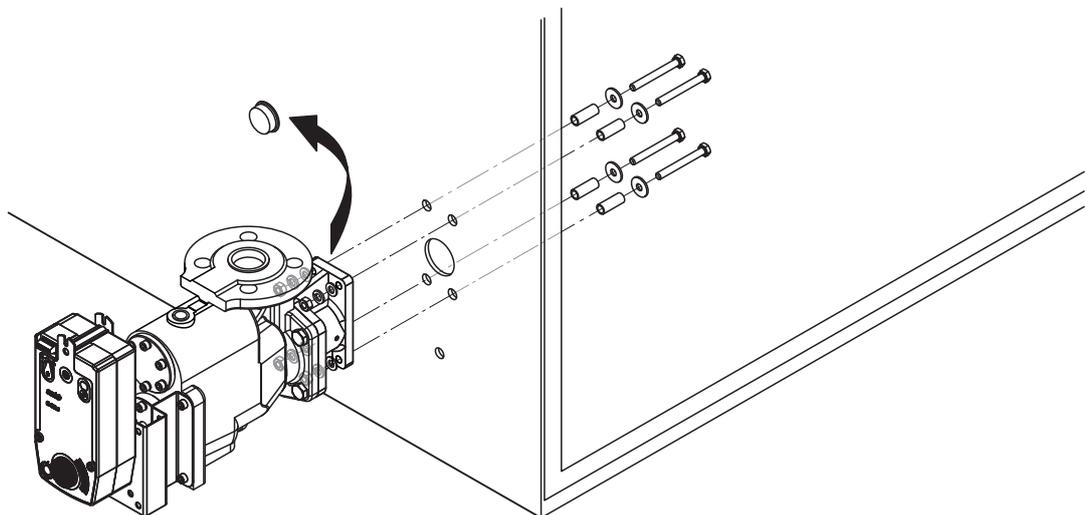
* length as required

Mounting set for insulated ducts



	Esco 10	Esco 20	Esco 30
1	M8 x 70 mm ** M8 x 100 mm **		M12 x 70 mm ** M12 x 100 mm **
	Wrench size 13 mm		Wrench size 19 mm
2	ø24/8.4 x 2 mm		ø37/13 x 3 mm
3	ø12 x 45 mm ** ø12 x 75 mm **		ø16 x 45 mm ** ø16 x 75 mm **
4	ø16/8.4 x 1.6 mm		ø24/13 x 2.5 mm
5	Lock washer M8		Lock washer M12
6	M8 x 0.8d		M12 x 0.8d

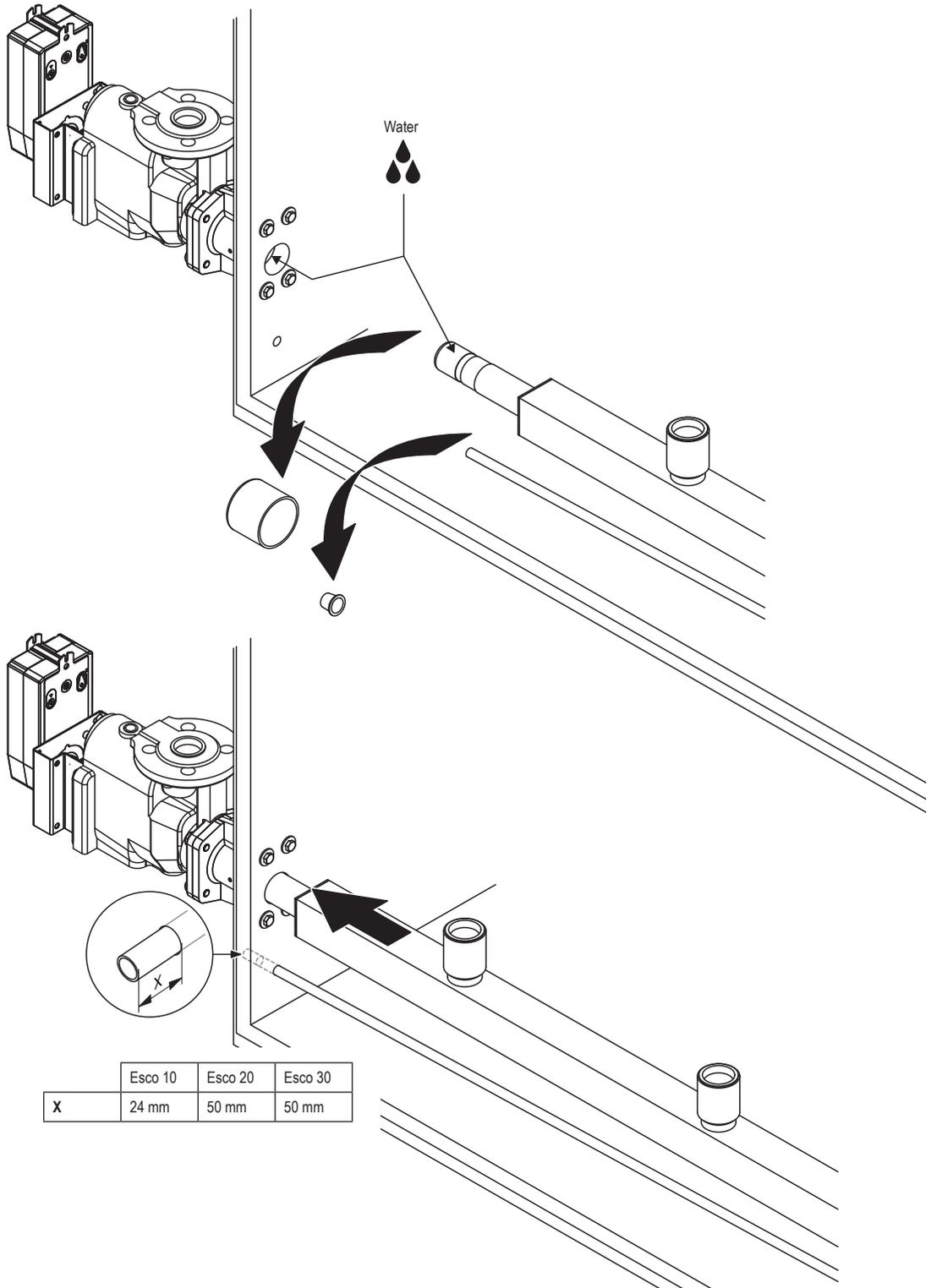
** as ordered



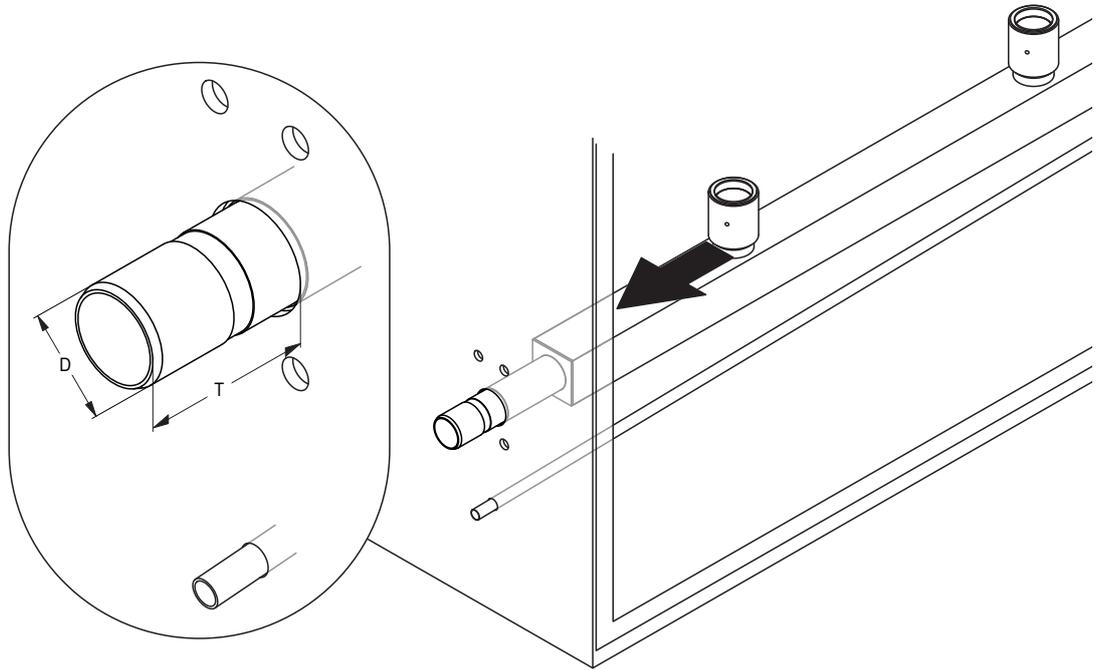
3. Mount collector.

- Remove protective caps from the collector.
- If the valve unit is already mounted: from the inside of the duct push the collector into the valve unit until it comes to a stop (the resistance of the O-rings inside the valve unit must be overcome). The collector is installed correctly, if the secondary condensate drain pipe pokes X mm out of the duct (see illustration and table below).

Note: To improve gliding ability moisten the end of the collector and the O-rings inside the valve unit with water (do not use oil or grease!).



- If the valve unit is not mounted yet: from the inside of the duct push the collector and the secondary condensate drain pipe through the corresponding bores in the duct wall until the end of the collector pokes **exactly T mm** out of the duct (see table below).

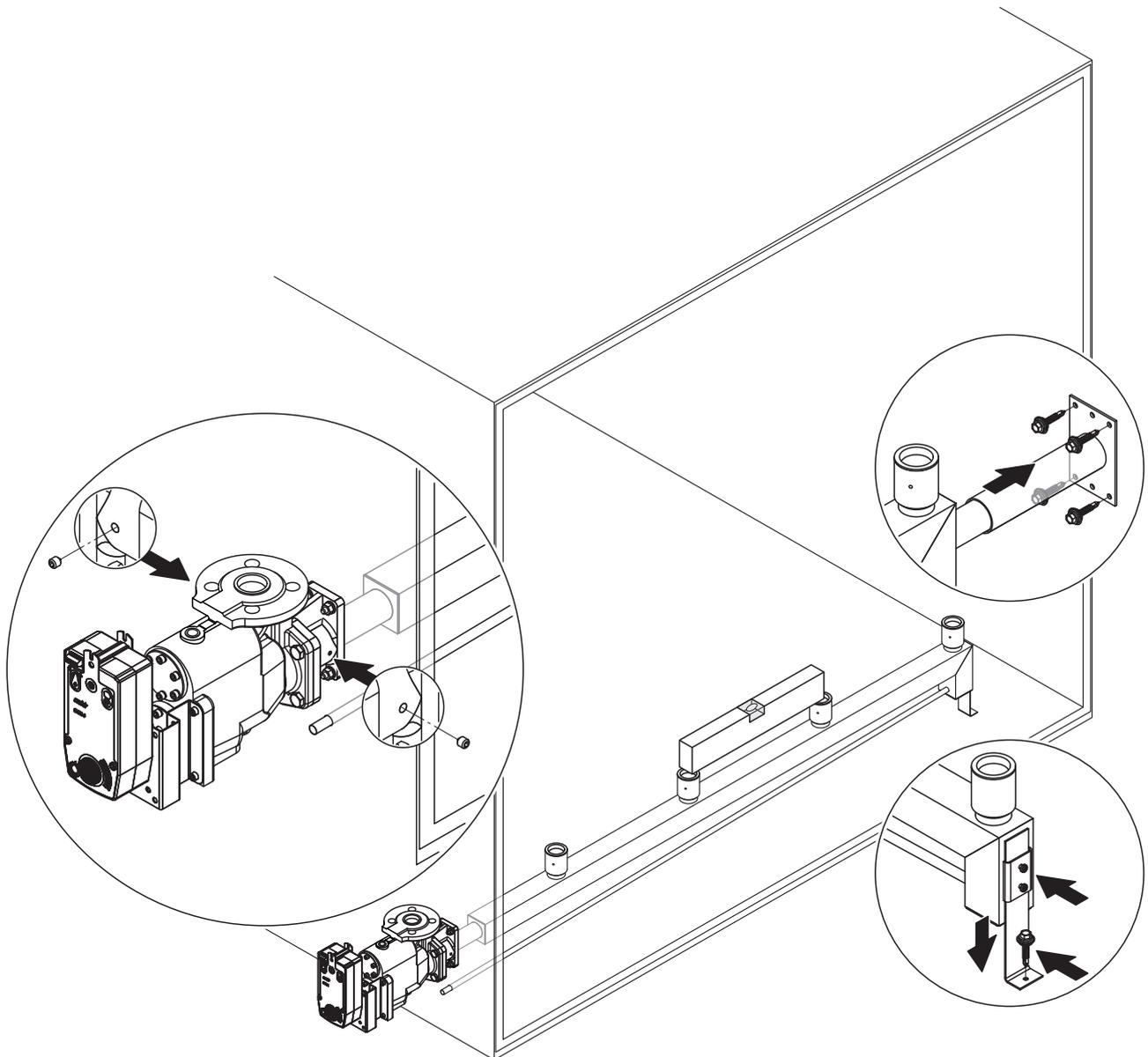


	Esco 10	Esco 20	Esco 30
D	41.0 mm	59.5 mm	88.0 mm
T	69 mm	95 mm	95 mm

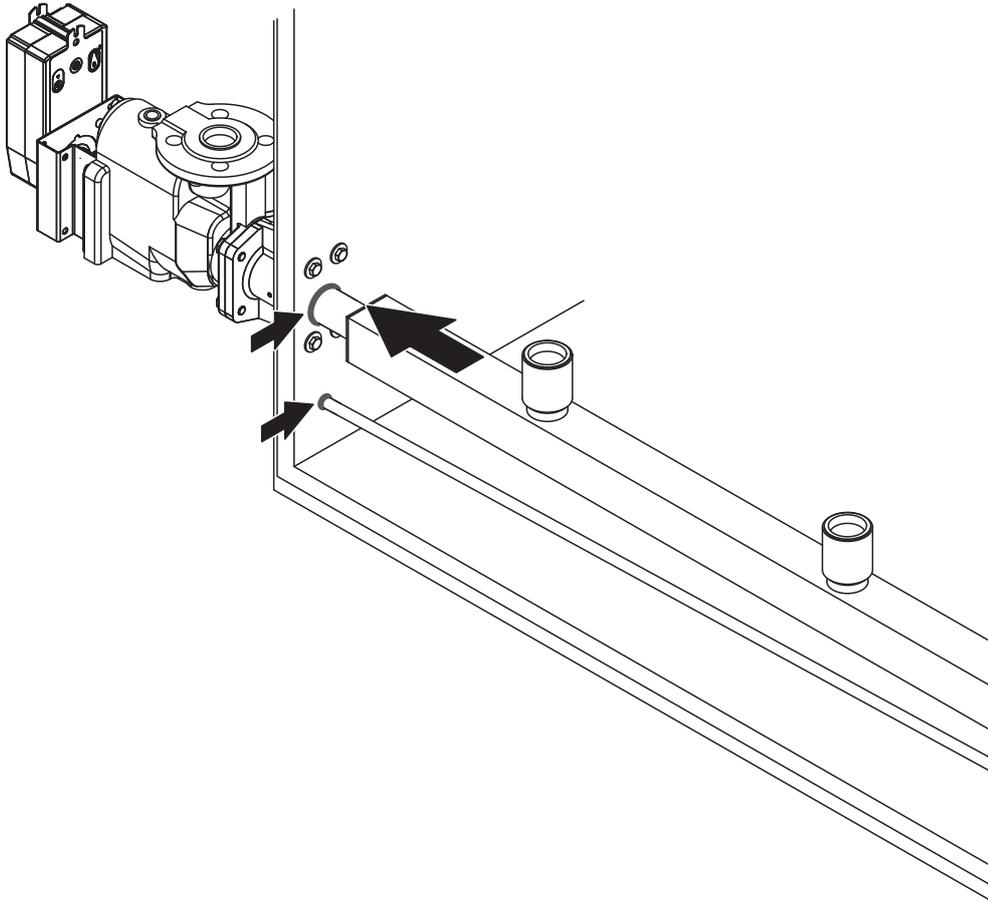
4. Fix collector.

Important: if the valve unit is not mounted yet, make sure the end of the collector pokes **exactly T mm** out of the duct (see table in step 3) before fixing the collector.

- Horizontally align collector using a spirit level, then fix the end of the collector with the bracket supplied to the duct floor or with the optional wall support (collectorspud) to the duct wall.
- Screw M5x6 grub screws (allen key 2.5 mm) provided on both sides into the valve unit, until they touch the collector pipe.

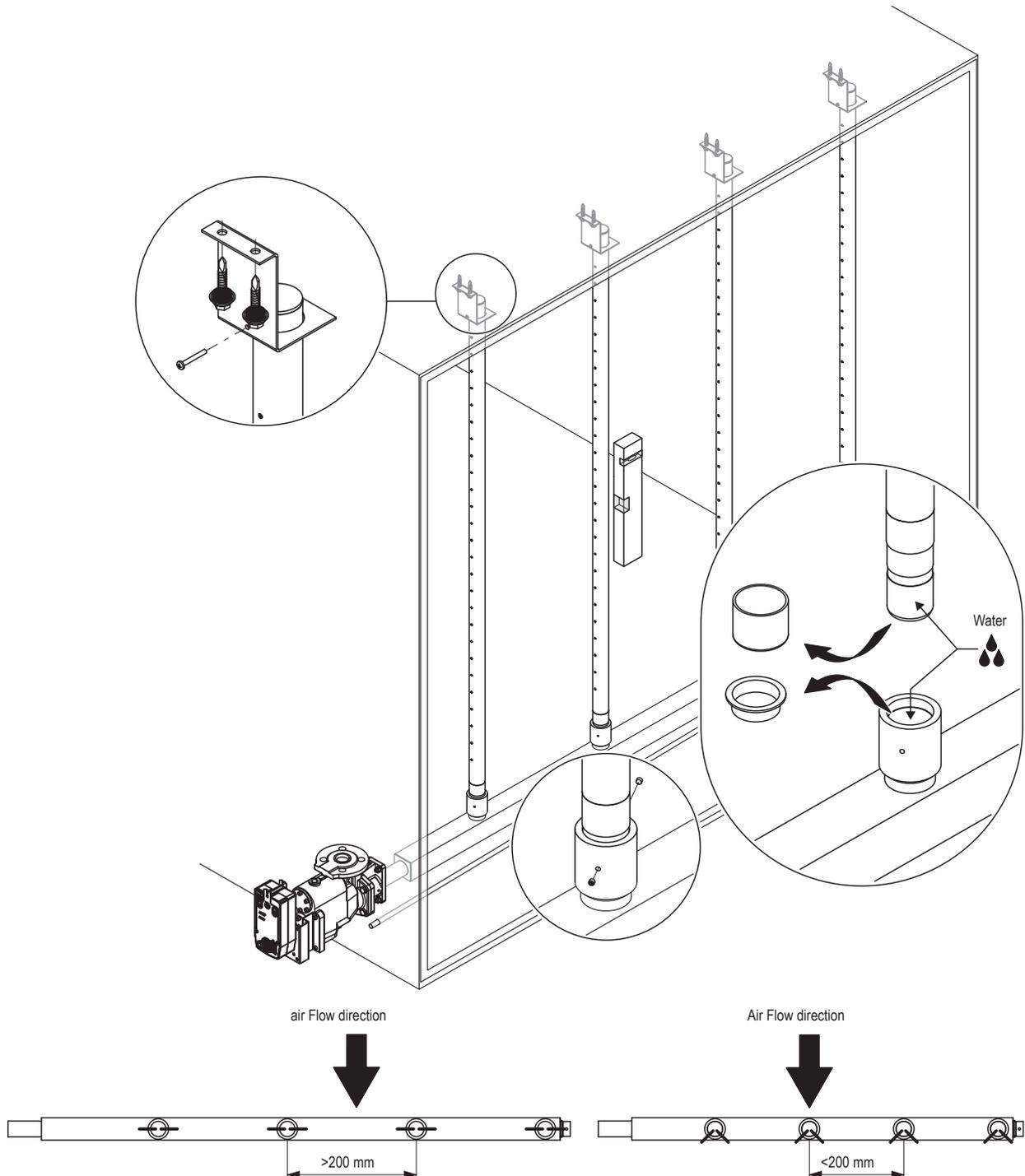


5. Seal the bores inside the duct with silicone-free sealant.



6. Mount vertical steam pipes.

- Remove the protective plugs from the sockets of the collector and the steam pipes.
- Push vertical steam pipes into the sockets of the collector until they come to a stop (the resistance of the O-rings inside the sockets must be overcome). Then, align nozzle apertures to the air flow according to drawing below.
Note: To improve the gliding ability moisten the end of the vertical steam pipes and the O-rings inside the collector sockets with water (do not use oil or grease!).
- Screw the M5x6 grub screws (allen key 2.5 mm) provided into the sockets (as shown below), until they touch the vertical steam pipes.
- Fix the vertical steam pipes to the duct ceiling using the brackets supplied. Before tightening the brackets vertically align steam pipes using a spirit level.



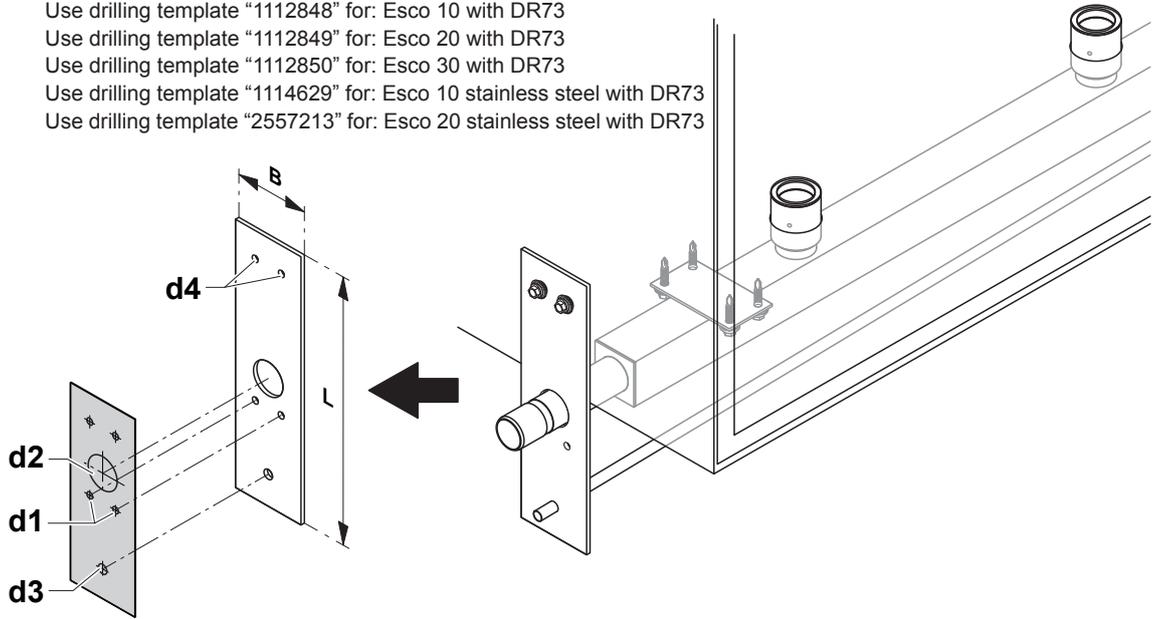
7. Connecting the steam supply line (see [chapter 5.1](#)).
8. Mounting the secondary steam trap (see [chapter 5.2](#)).
9. Mounting the primary steam trap (see [chapter 5.3](#)).
10. Mounting the pressure gauge (see [chapter 5.4](#)).

3.3 Mounting the Esco DR73 B type

1. Fabricate collector supporting sheet (by client).

- Cut collector supporting sheet (L= as required, B= 20 mm more than flange width or flange outer diameter of the valve unit used)
- Mark holes on the collector supporting sheet using the template supplied, then drill holes.
- Holes “d4” must not be drilled until the collector supporting sheet is fixed to the duct.

Use drilling template “1112848” for: Esco 10 with DR73
 Use drilling template “1112849” for: Esco 20 with DR73
 Use drilling template “1112850” for: Esco 30 with DR73
 Use drilling template “1114629” for: Esco 10 stainless steel with DR73
 Use drilling template “2557213” for: Esco 20 stainless steel with DR73



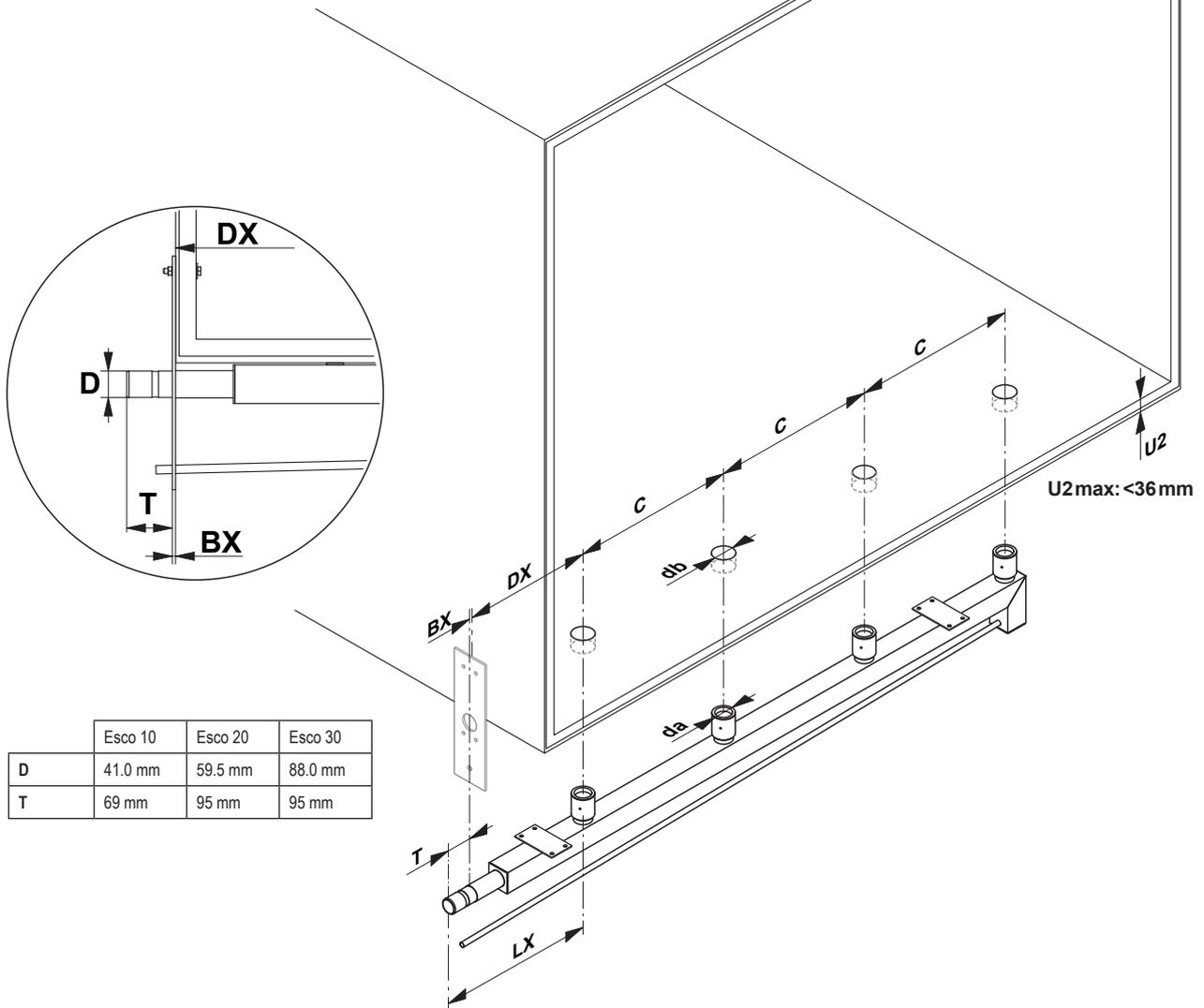
		Esco 10	Esco 20	Esco 30
d1		ø9 mm		ø13.5 mm
d2		ø45 mm	ø65 mm	ø95 mm
d3		ø13 mm		

2. Mark holes on the duct floor, then drill holes.

- Measure dimensions “LX”, “C”, “da” and “BX” (thickness of the collector supporting sheet).
- Mark holes according to the illustration below, then drill holes.

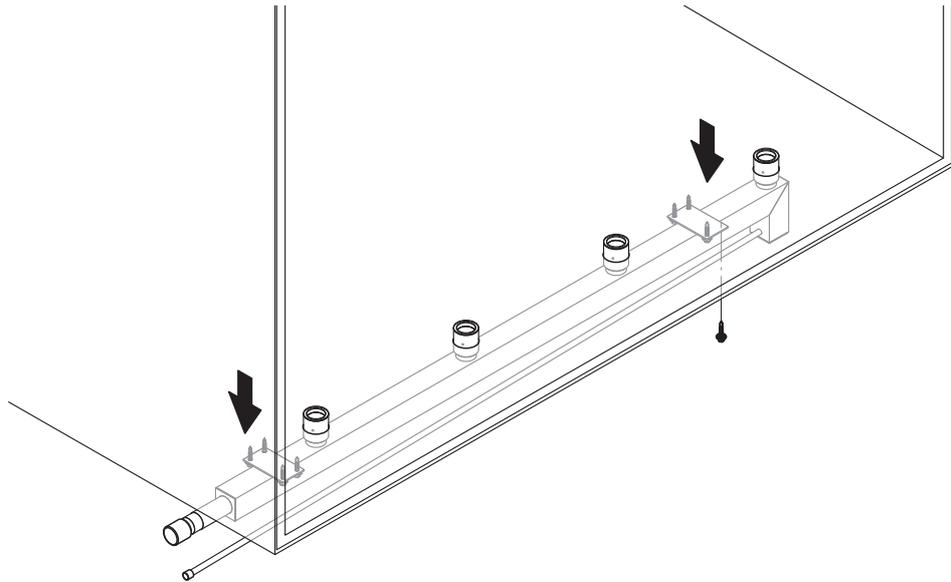
	Esco 10	Esco 20	Esco 30
T	69 mm **	95 mm **	95 mm **
DX	Distance between the first bore to the outer wall of the duct $DX = LX - T - BX$		
C	Distance according measurement		
db	Diameter of the bores $db = da + 2 \text{ mm}$		

** imperatively observe the dimensions indicated



	Esco 10	Esco 20	Esco 30
D	41.0 mm	59.5 mm	88.0 mm
T	69 mm	95 mm	95 mm

3. Fix collector to the duct floor using self-tapping screws.



Caution! Until the definite supports are installed (step 4) the collector must be secured with auxiliary supports against falling down.

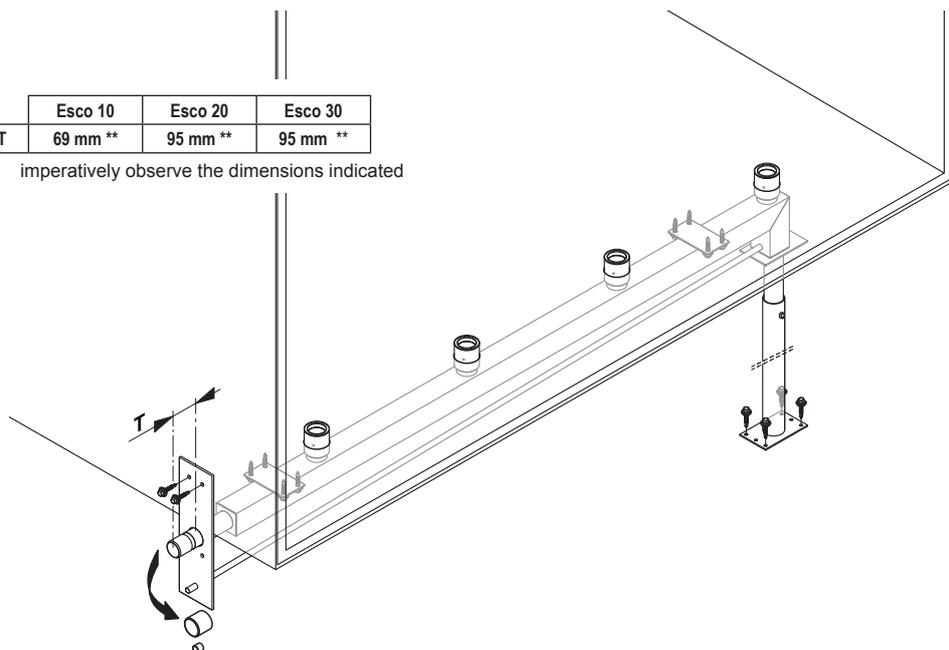
4. Mount supports.

- Remove protective plugs from the collector pipe connector and the condensate pipe connector.
- Slide supporting sheet onto the collector and fix it to the duct wall using two self-tapping screws (check dimension “T”).
- Fabricate a support in order to support the angled end of the collector (by client), then mount the support.

Note: for collectors with more than 10 vertical steam pipes an additional support must be mounted in the middle of the collector.

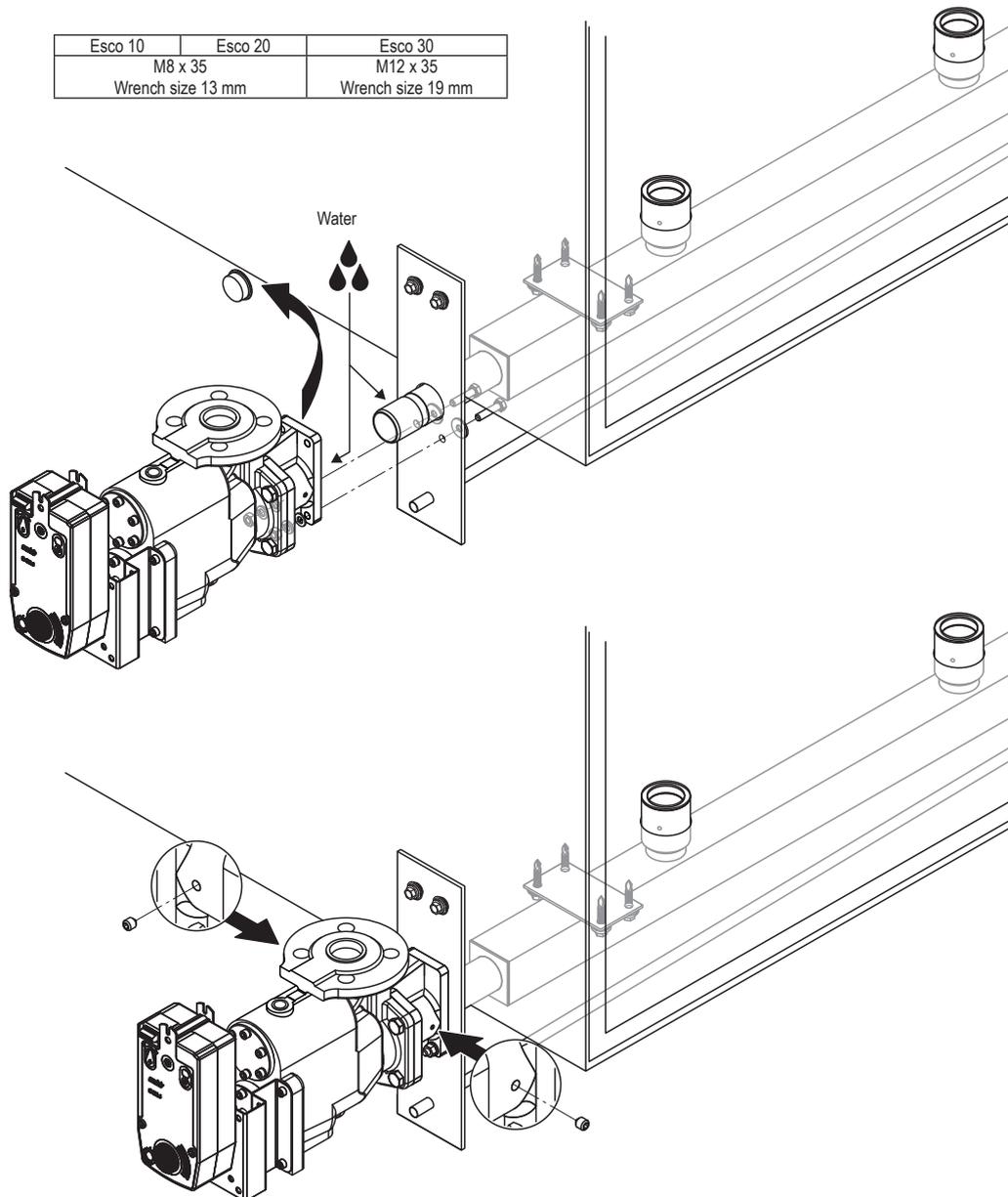
	Esco 10	Esco 20	Esco 30
T	69 mm **	95 mm **	95 mm **

** imperatively observe the dimensions indicated



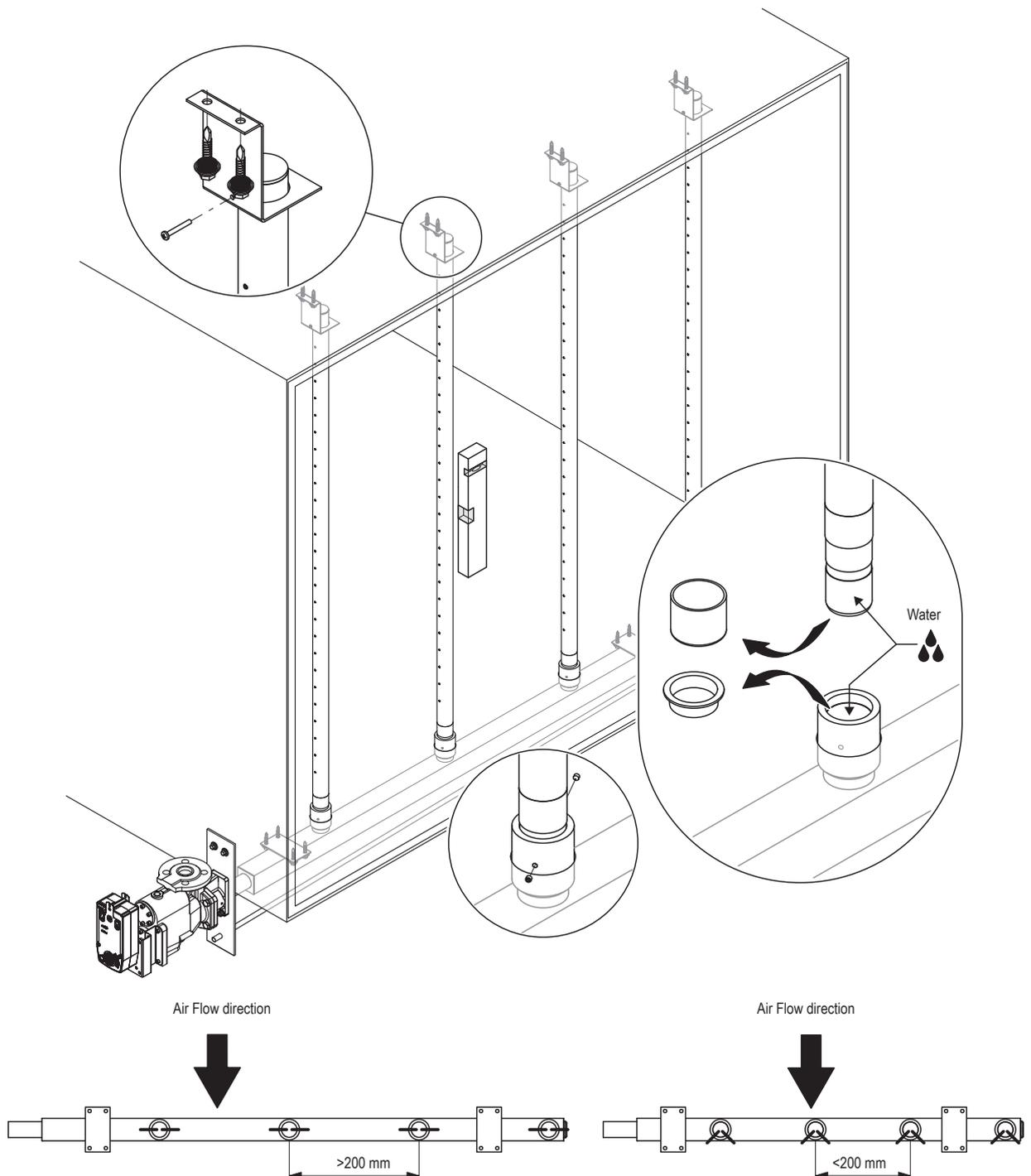
5. Mount valve unit.

- Remove protective plug from the valve unit.
- Push the valve unit (installation position as shown below) onto the steam pipe until it comes to a stop (the resistance of the O-ring inside the valve unit must be overcome) and fix it to the collector supporting sheet with two each of the screws, washers, lock washers and nuts.
Note: To improve the gliding ability moisten the steam connector of the collector and the O-ring inside the valve unit with water (do not use oil or grease!).
- Screw the M5x6 grub screws (allen key 2.5 mm) provided on both sides into the valve unit (as shown below), until they touch the collector pipe.



6. Mount vertical steam pipes.

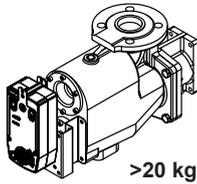
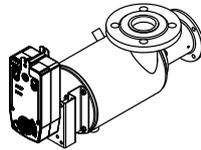
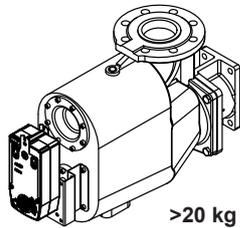
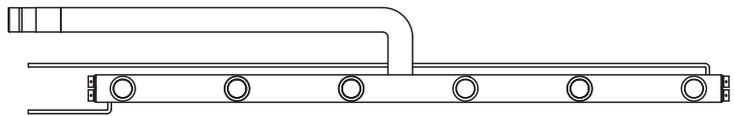
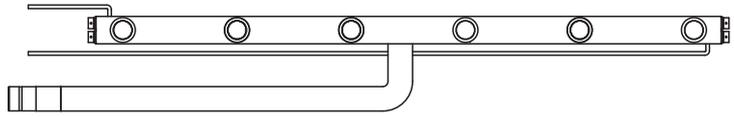
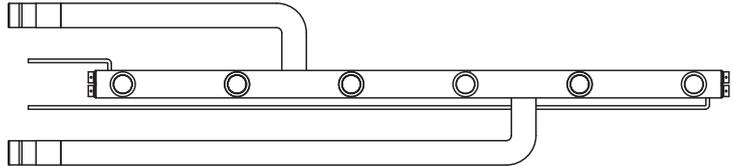
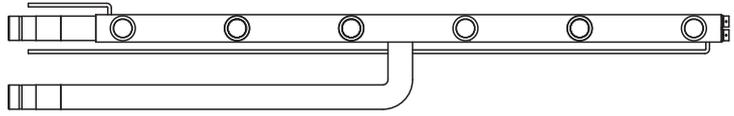
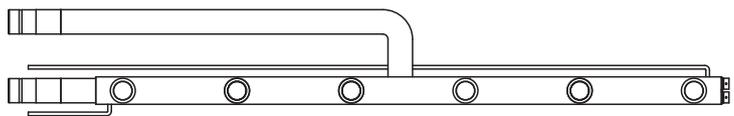
- Remove the protective plugs from the sockets of the collector and the steam pipes
- Push vertical steam pipes into the sockets of the collector until they come to a stop (the resistance of the O-rings inside the sockets must be overcome). Then, align nozzle apertures to the air flow according to drawing below.
Note: To improve the gliding ability moisten the end of the vertical steam pipes and the O-rings inside the collector sockets with water (do not use oil or grease!).
- Screw the M5x6 grub screws (allen key 2.5 mm) provided into the sockets (as shown below), until they touch the vertical steam pipes.
- Fix the vertical steam pipes to the duct ceiling using the brackets supplied. Before tightening the brackets vertically align steam pipes using a spirit level.



7. Connecting the steam supply line (see [chapter 5.1](#)).
8. Mounting the secondary steam trap (see [chapter 5.2](#)).
9. Mounting the primary steam trap (see [chapter 5.3](#)).
10. Mounting the pressure gauge (see [chapter 5.4](#)).

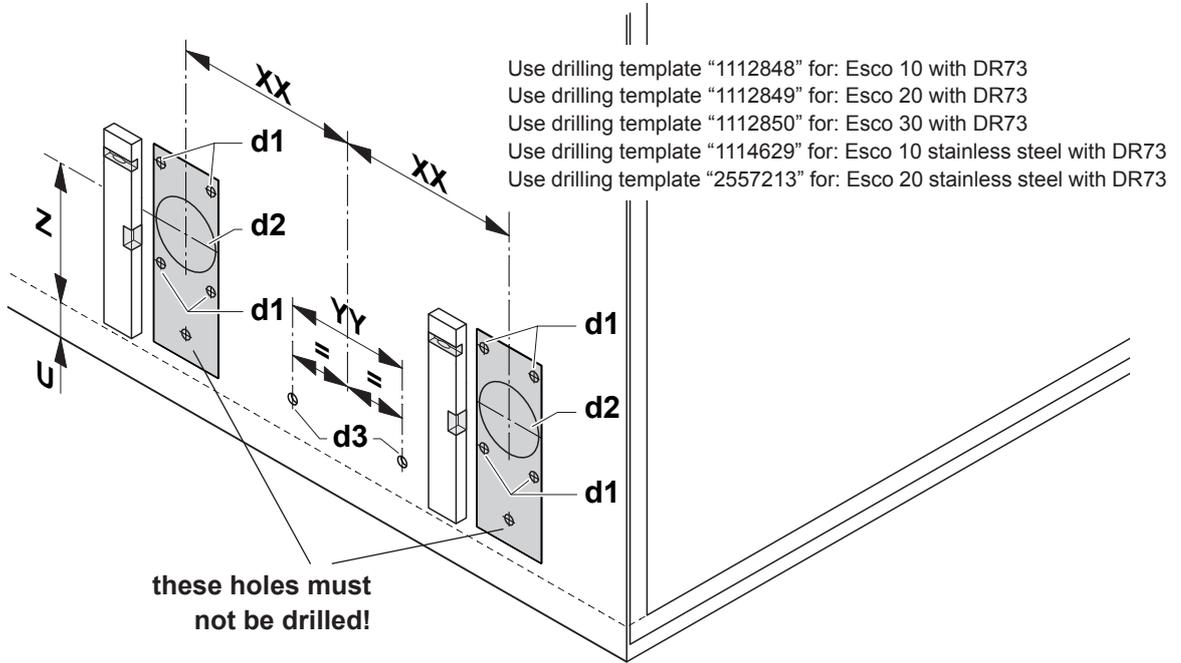
4 Esco DR73 J

4.1 Overview Esco DR73 J

	Esco 20 cast iron	Esco 20 stainless steel	Esco 30 cast iron
	 >20 kg		 >20 kg
DR73 JA Left			
DR73 JA Right			
DR73 J2A Left Right			
DR73 J2A Right Middle			
DR73 J2A Left Middle			
Primary steam trap			
Ball float steam trap			
Inverted bucket steam trap			
Secondary steam trap			
Thermostatic steam trap			
Ball float steam trap			
Pressure gauge			

4.2 Mounting the Esco DR73 J (Jumbo)

1. With the aid of a spirit level, affix the supplied (self-adhesive) drilling templates exactly vertically onto the duct wall as shown below and drill the holes (illustration below shows DR73 J2A Left Right).
Note: Dimensions for the placement of the drilling templates see following hole pattern.



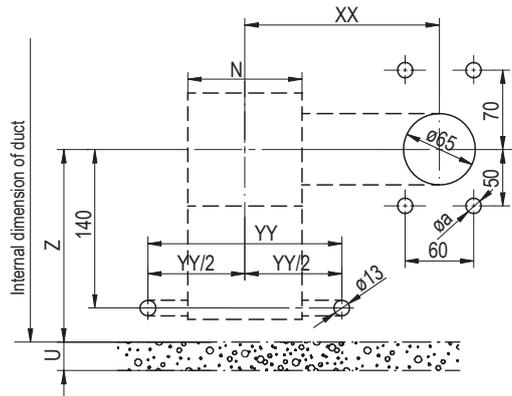
		Esco 20	Esco 30
d1		ø9 mm ø13 mm **	ø13.5 mm ø17 mm **
d2		ø65 mm	ø95 mm
d3		ø13 mm	

** if mounting set for insulated ducts is used

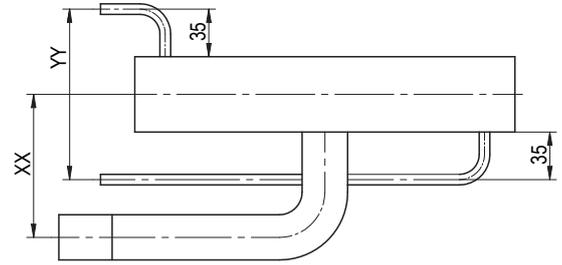
Hole pattern DR73 J... for Esco 20

– Hole pattern DR73 JA Right (dimensions in mm)

Front view

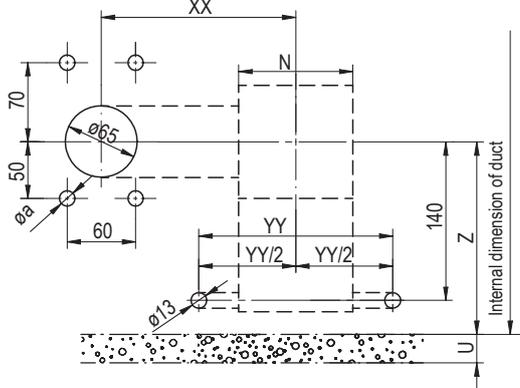


Top view

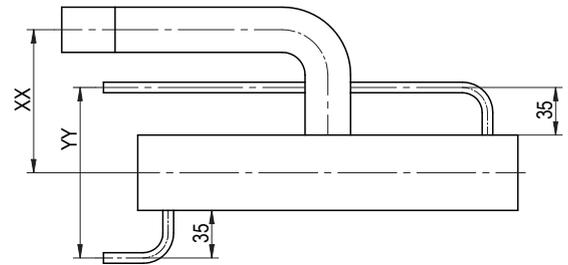


– Hole pattern DR73 JA Left (dimensions in mm)

Front view

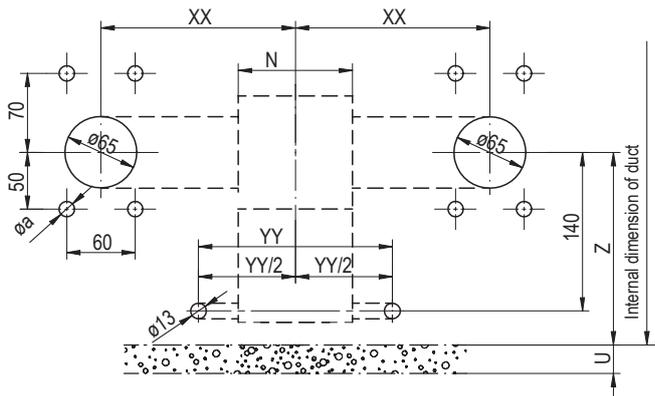


Top view

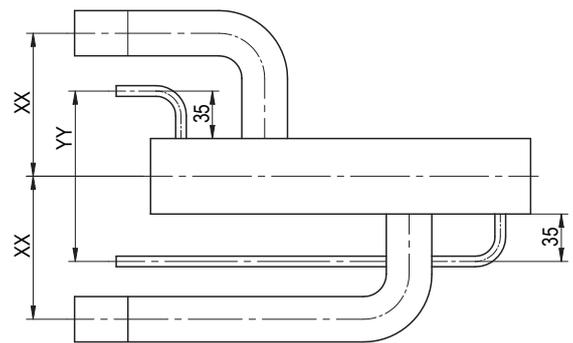


– Hole pattern DR73 J2A Left Right (dimensions in mm)

Front view



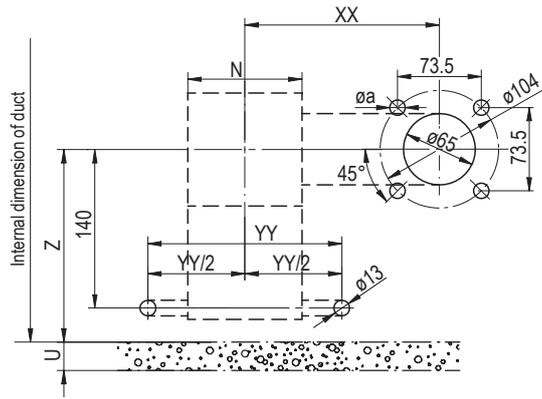
Top view



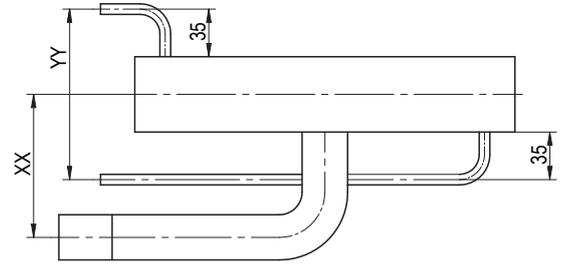
Hole pattern DR73 J... for Esco 20 Niro

– **Hole pattern DR73 JA Right** (dimensions in mm)

Front view

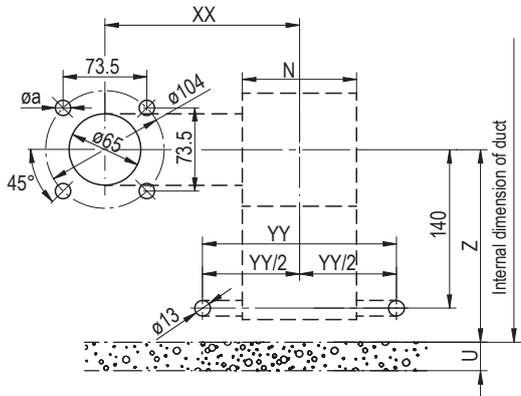


Top view

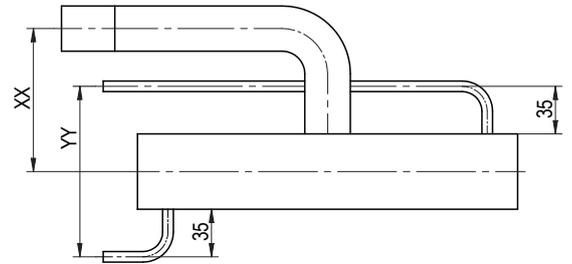


– **Hole pattern DR73 JA Left** (dimensions in mm)

Front view

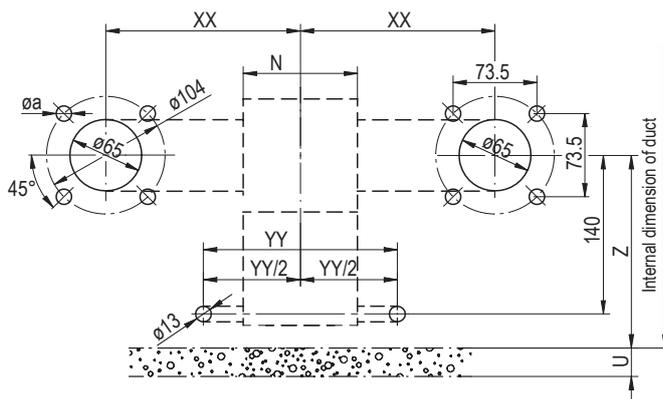


Top view

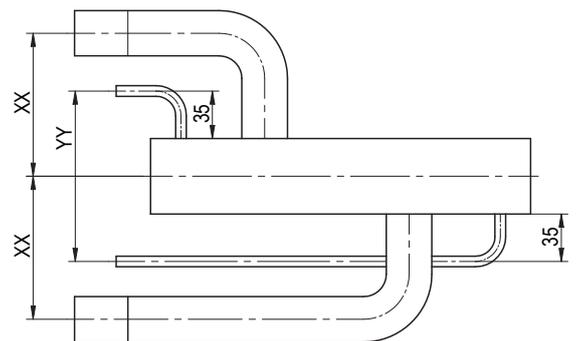


– **Hole pattern DR73 J2A Left Right** (dimensions in mm)

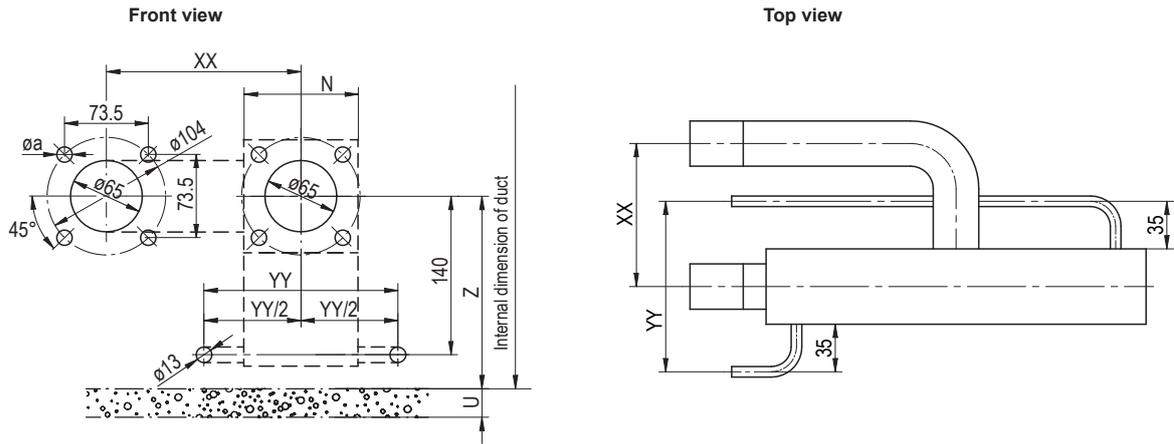
Front view



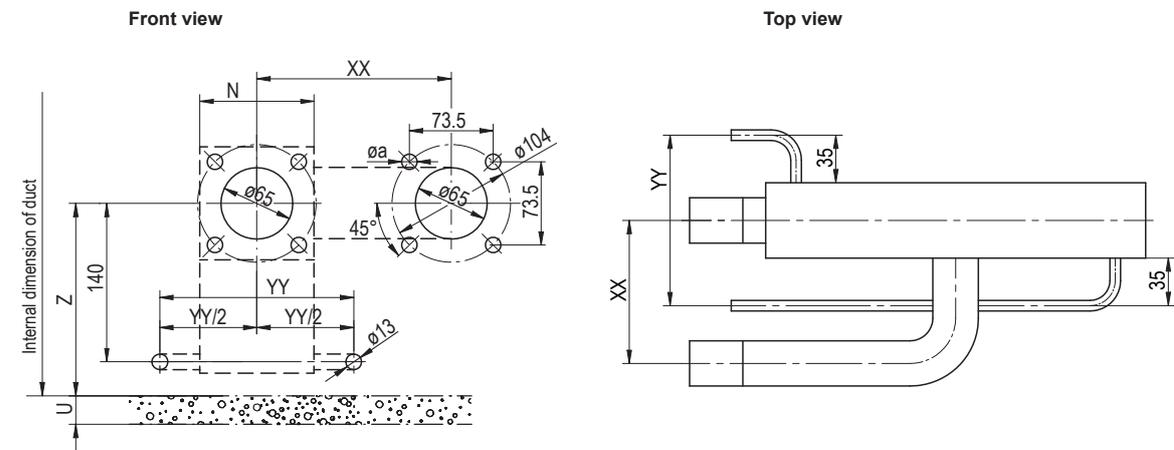
Top view



– Hole pattern DR73 J2A Left Middle (dimensions in mm)



– Hole pattern DR73 J2A Right Middle (dimensions in mm)



	N (Collector)	XX *	YY *	YY/2 *	Z	a	U
Esco 20 Niro	80 x 80 mm	210 mm / 250.5 mm	170 mm	85 mm	170 mm	ø9 mm (ø13 mm **)	Distance between bottom edge of the duct to the highest point of the duct floor
	100 x 100 mm	210 mm / 250.5 mm	170 mm	85 mm	170 mm		
	120 x 120 mm	220 mm / 260.5 mm	190 mm	95 mm	170 mm		

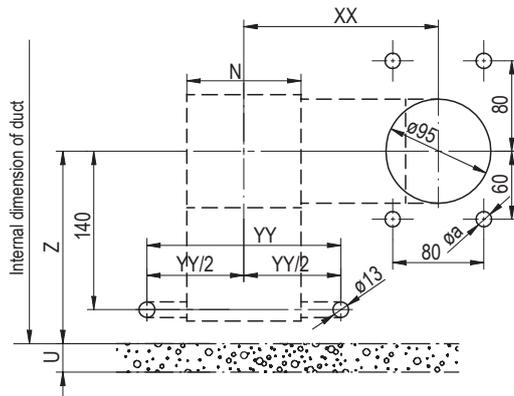
* customised versions with deviating dimensions XX and YY possible

** if mounting set for insulated ducts is used

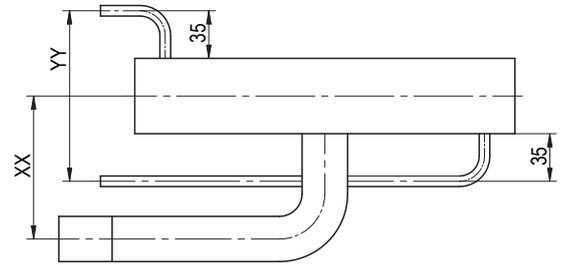
Hole pattern DR73 J... for Esco 30

– Hole pattern DR73 JA Right (dimensions in mm)

Front view

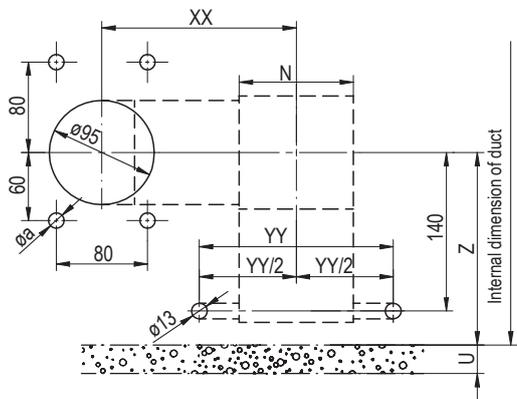


Top view

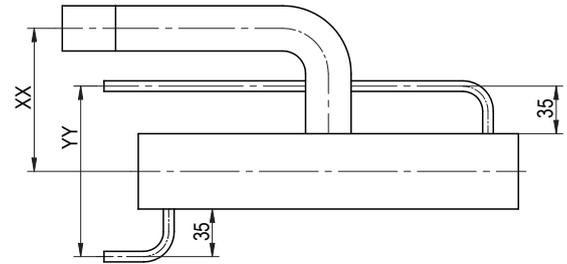


– Hole pattern DR73 JA Left (dimensions in mm)

Front view

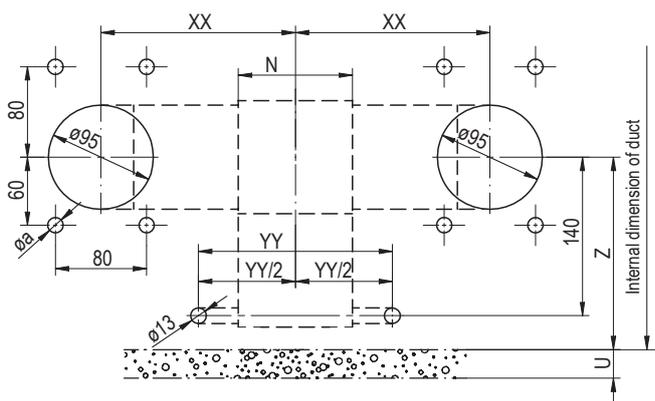


Top view

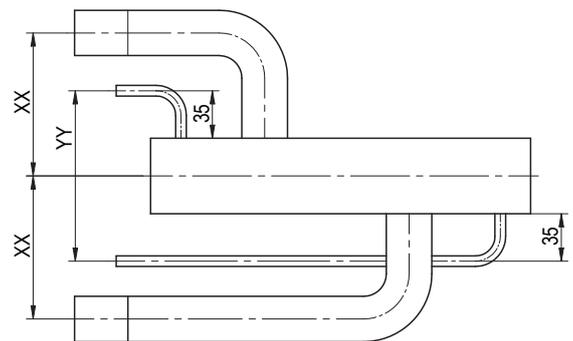


– Hole pattern DR73 J2A Left Right (dimensions in mm)

Front view



Top view

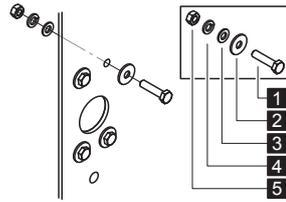


2. Mount valve unit.

Important: if the collector is mounted before the valve unit(s) is(are) fixed, steps 3 to 6 must be done first.

- Remove protective plug from the connector flange(s) of the valve unit(s).
- This step must be carried out only if mounting set for insulated ducts is used: Cut length of the supporting tubes to duct wall thickness “L”, then insert the tubes into the fixing holes.
- Fix valve unit(s) to the duct (installation position as shown below) using the screws, washers, lock washers and nuts. Before tightening, centrally align the bores of the duct and the valve unit.

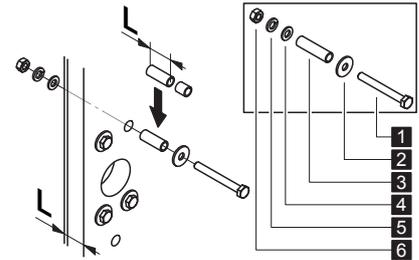
Screws, washers, lock washers and nuts for non insulated ducts (by client)



	Esco 20	Esco 30
1	M8 x *	M12 x *
	Wrench size 13 mm	Wrench size 19 mm
2	ø24/8.4 x 2 mm	ø37/13 x 3 mm
3	ø16/8.4 x 1.6 mm	ø24/13 x 2.5 mm
4	Lock washer M8	Lock washer M12
5	M8 x 0.8d	M12 x 0.8d

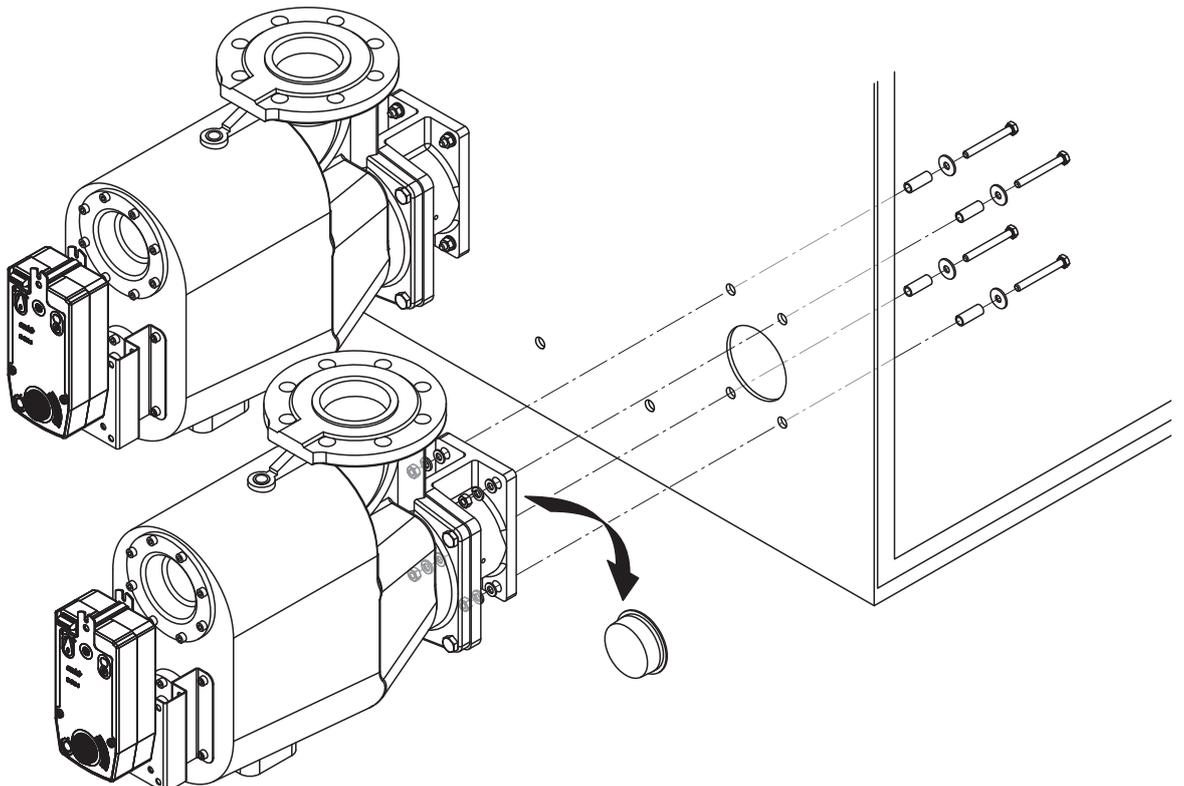
* length as required

Mounting set for insulated ducts



	Esco 20	Esco 30
1	M8 x 70 mm ** M8 x 100 mm ** Wrench size 13 mm	M12 x 70 mm ** M12 x 100 mm ** Wrench size 19 mm
2	ø24/8.4 x 2 mm	ø37/13 x 3 mm
3	ø12 x 45 mm ** ø12 x 75 mm **	ø16 x 45 mm ** ø16 x 75 mm **
4	ø16/8.4 x 1.6 mm	ø24/13 x 2.5 mm
5	Lock washer M8	Lock washer M12
6	M8 x 0.8d	M12 x 0.8d

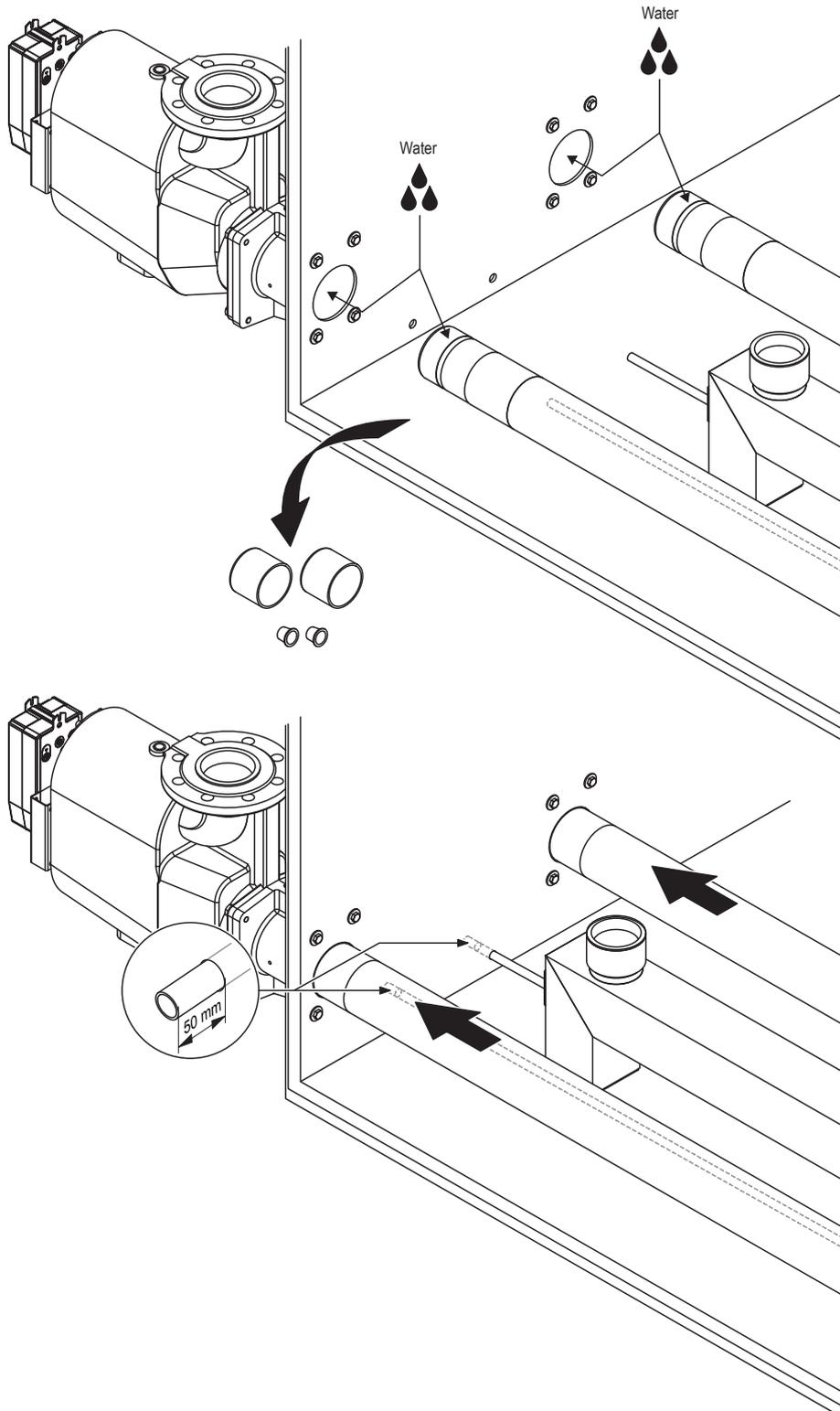
** as ordered



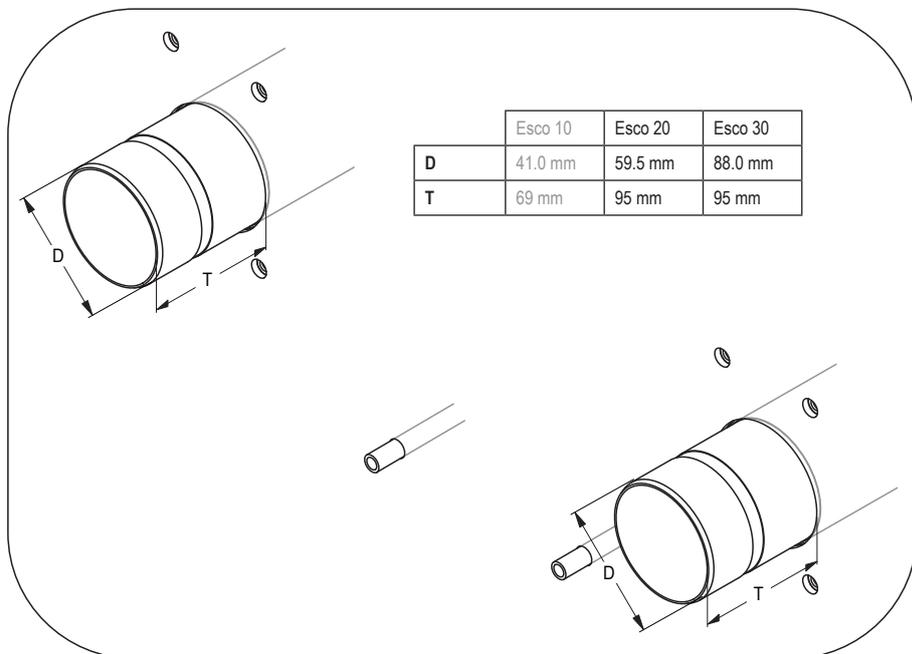
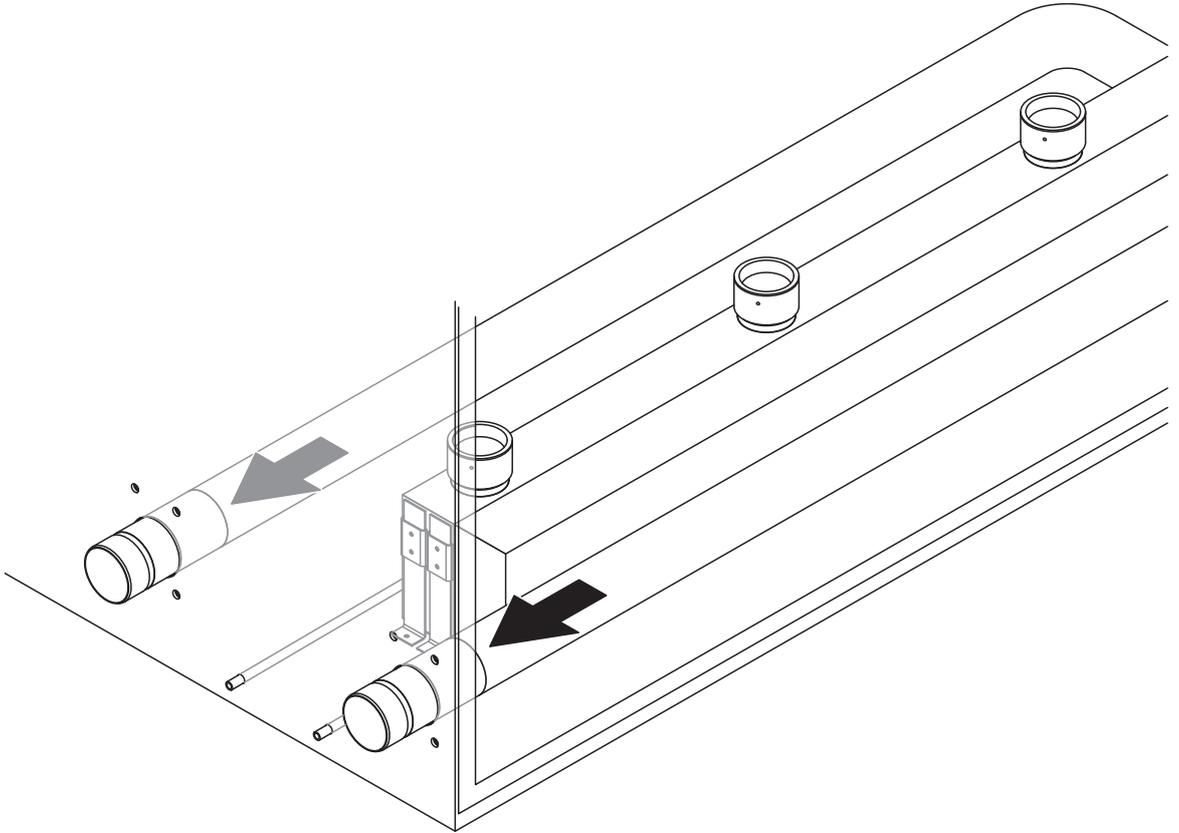
3. Mount collector (illustration below shows DR73 J2A Left Right).

- Remove protective caps from the collector.
- If the valve unit(s) is(are) already mounted: from the inside of the duct push the connector(s) of the collector into the valve unit(s) until it/they come(s) to a stop (the resistance of the O-rings inside the valve unit(s) must be overcome). The collector is installed correctly, if the secondary condensate drain pipe pokes 50 mm out of the duct (see illustration below).

Note: To improve gliding ability moisten the end/ends of the collector connector(s) and the O-rings inside the valve unit(s) with water (do not use oil or grease!).



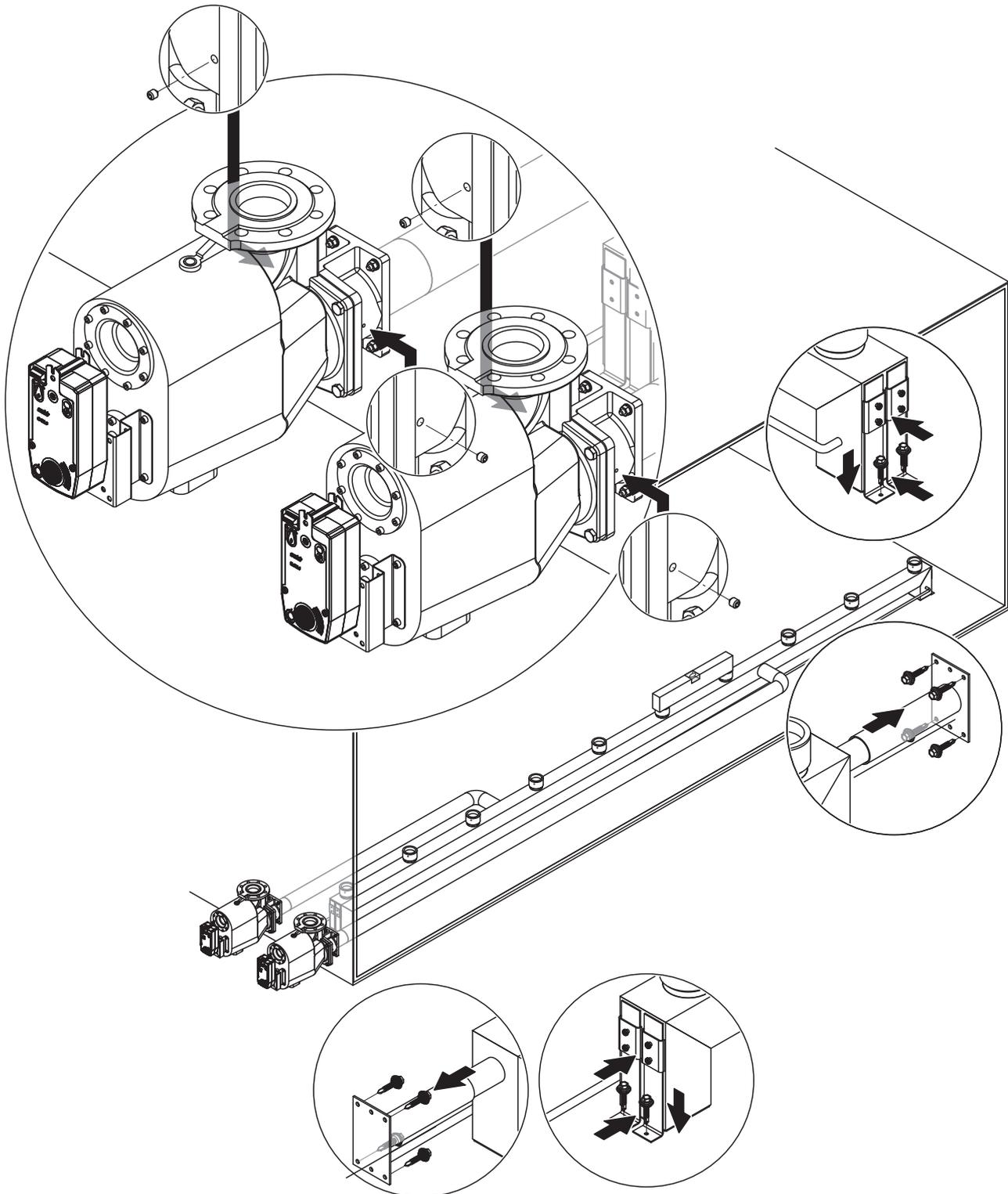
- If the valve unit(s) is(are) not mounted yet: from the inside of the duct push the connector(s) of the collector and the secondary condensate drain pipes through the corresponding bores in the duct wall until the connector(s) of the collector poke(s) **exactly T mm** out of the duct (see table below).



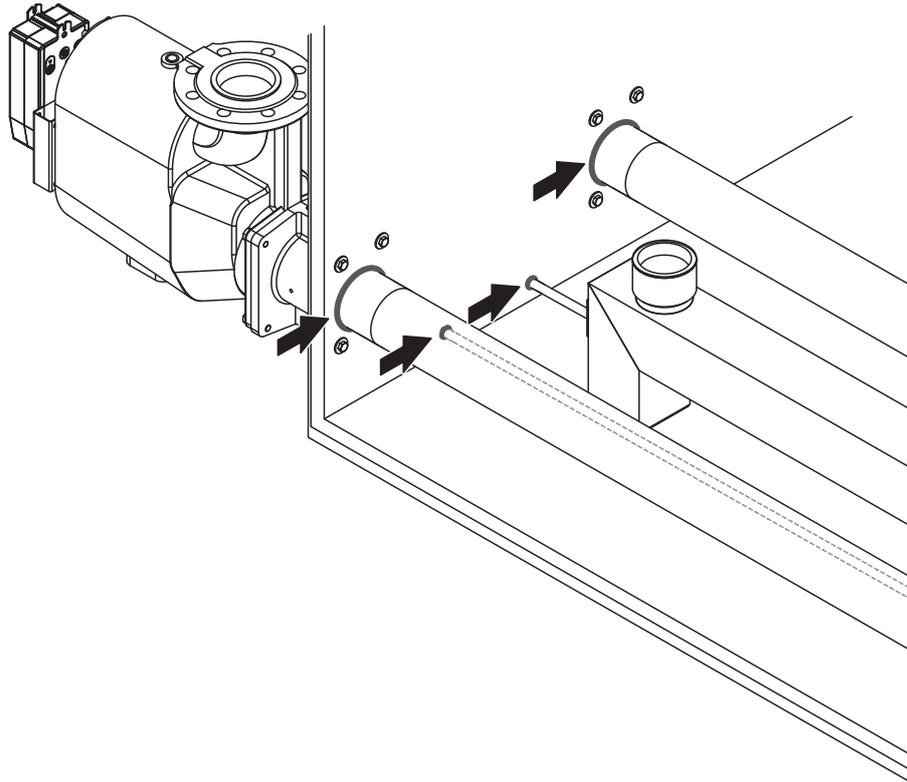
4. Fix collector (illustration below shows DR73 J2A Left Right).

Important: if the valve unit(s) is(are) not mounted yet, make sure the connector(s) of the collector poke(s) **exactly T mm** out of the duct (see table in step 3) before fixing the collector.

- Horizontally align collector using a spirit level, then fix the end of the collector with the brackets supplied to the duct floor or with the optional wall support (collectorspud) to the duct wall.
- Screw the M5x6 grub screws (allen key 2.5 mm) provided on both sides into the valve unit, until they touch the collector pipes.

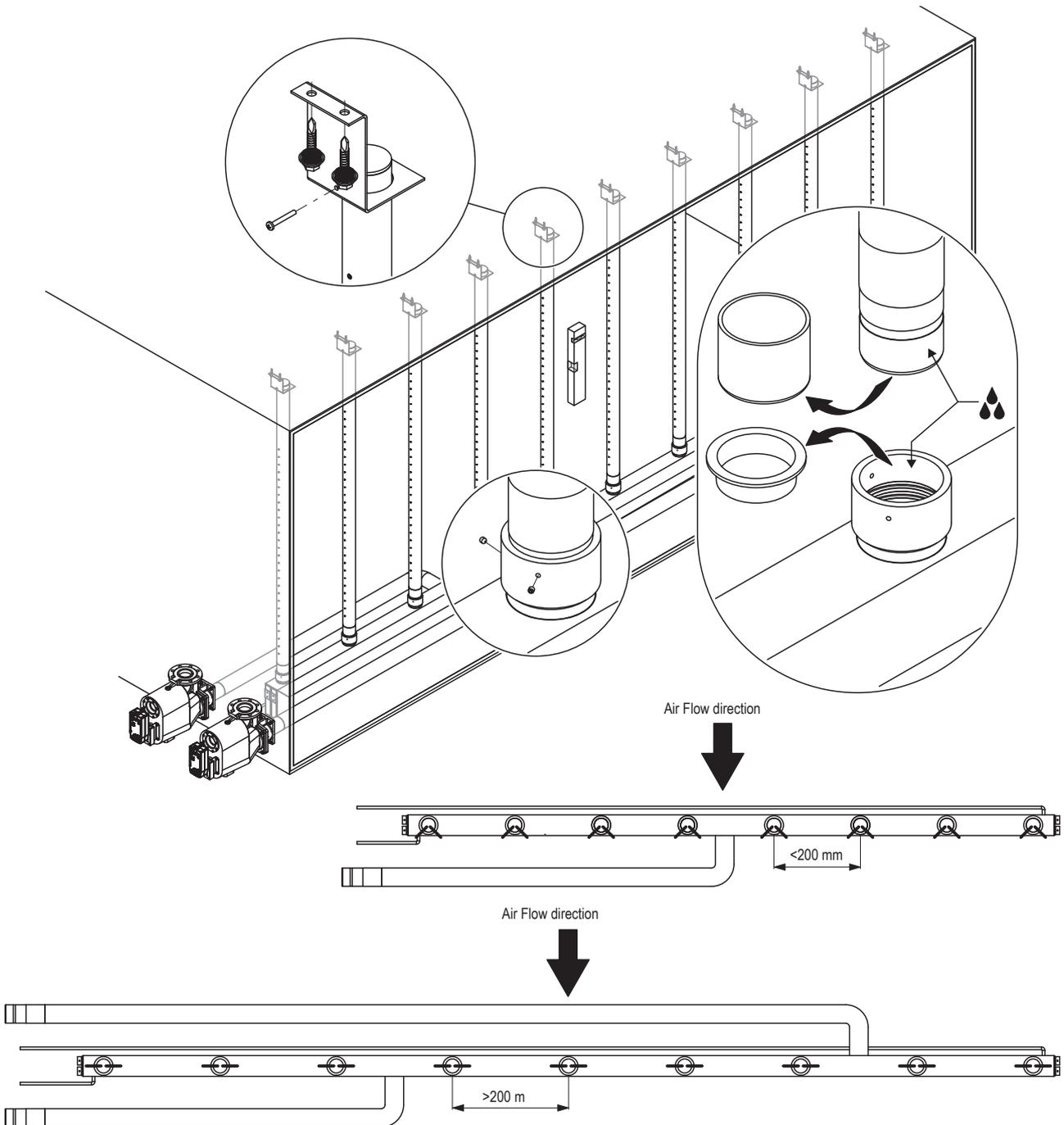


5. Seal the bores inside the duct with silicone-free sealant.



6. Mount vertical steam pipes.

- Remove the protective plugs from the sockets of the collector and the steam pipes
- Push vertical steam pipes into the sockets of the collector until they come to a stop (the resistance of the O-rings inside the sockets must be overcome). Then, align nozzle apertures to the air flow according to drawing below.
Note: To improve the gliding ability moisten the end of the vertical steam pipes and the O-rings inside the collector sockets with water (do not use oil or grease!).
- Screw the M5x6 grub screws (allen key 2.5 mm) provided into the sockets (as shown below), until they touch the vertical steam pipes.
- Fix the vertical steam pipes to the duct ceiling using the brackets supplied. Before tightening the brackets vertically align steam pipes using a spirit level.

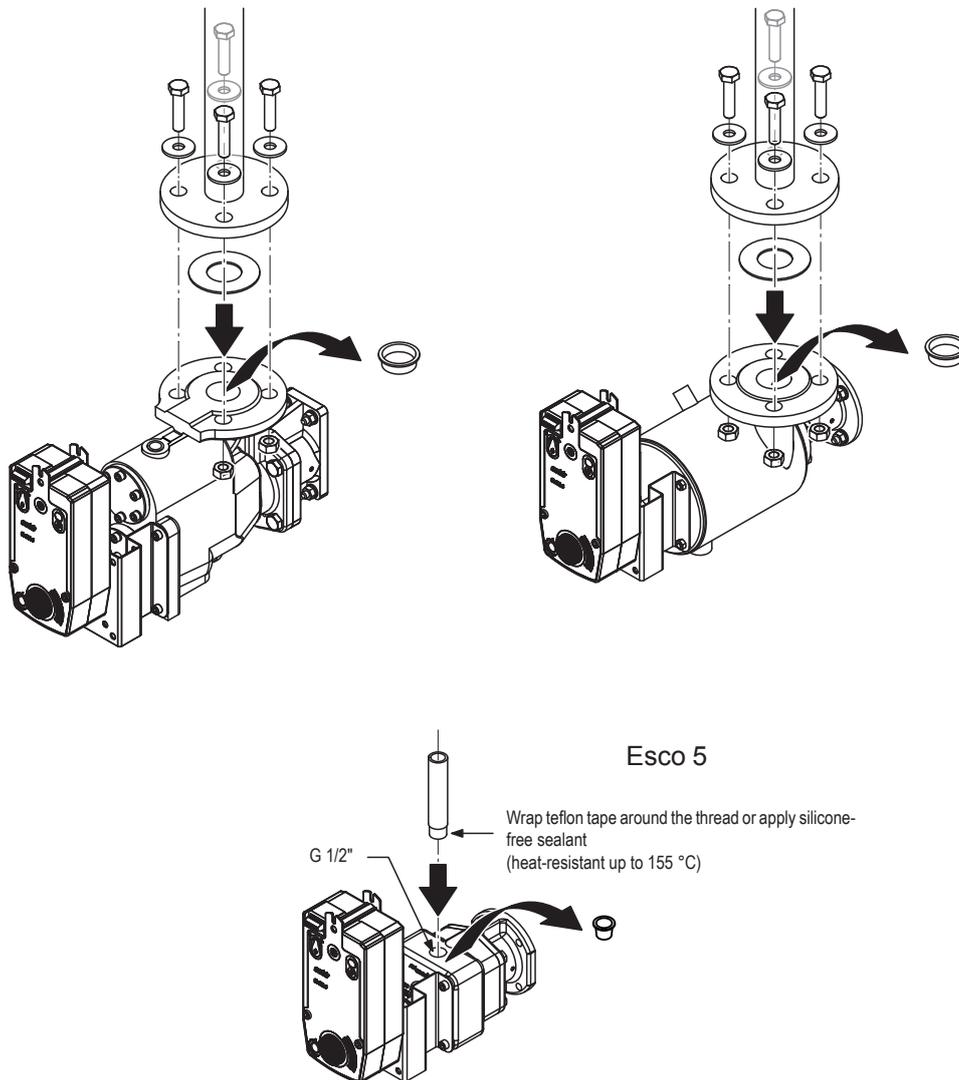


7. Connecting the steam supply line (see [chapter 5.1](#)).
8. Mounting the secondary steam trap (see [chapter 5.2](#)).
9. Mounting the primary steam trap (see [chapter 5.3](#)).
10. Mounting the pressure gauge (see [chapter 5.4](#)).

5 Mounting the steam supply line, the primary and secondary steam trap and the pressure gauge

5.1 Connect the steam supply line (by client)

Note: the steam supply line must be made according to the instructions in chapter 5 of the installation and operating instructions of the Condair Esco. Steam supply lines with a length of more than 4 m between the branch connection of the main steam line and the connecting flange of the valve unit must mandatory be drained.



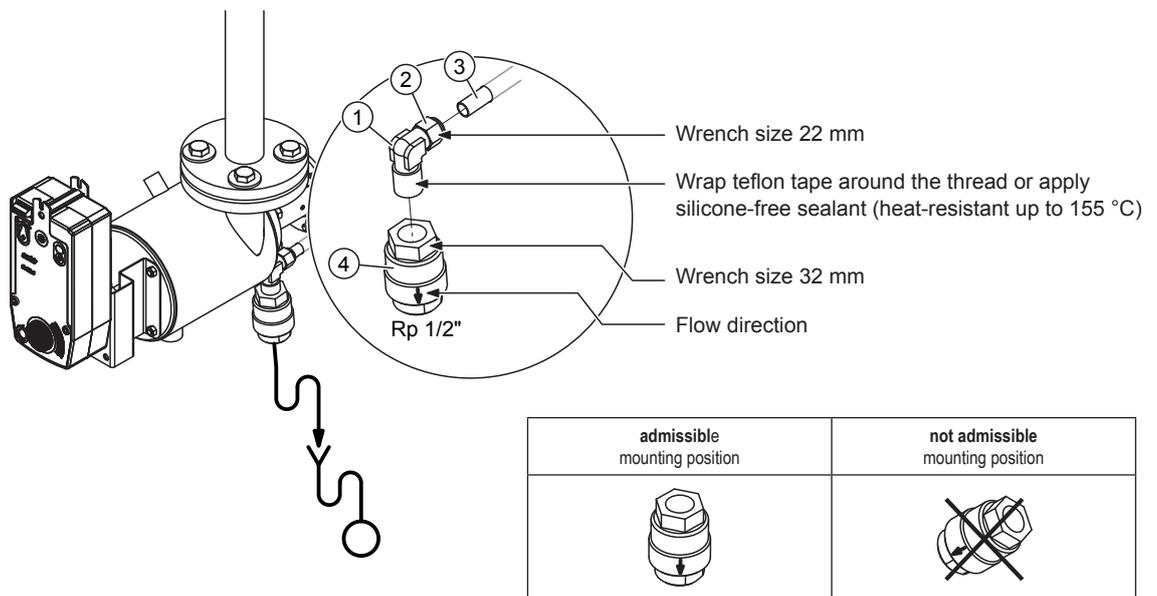
5.2 Mounting the secondary steam trap

5.2.1 Important notes on the secondary steam trap

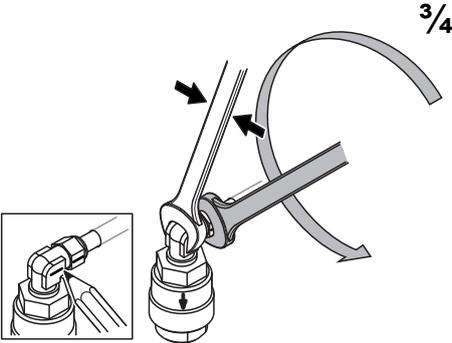
- The secondary condensate must be discharged separately from the primary condensate.
- The secondary condensate is not pressurised. Therefore, the outlet pipe of the secondary condensate must always be discharged downwards.
- Do not insulate the thermostatic steam trap and do not use with superheated steam!

5.2.2 Thermostatic steam trap, stainless steel

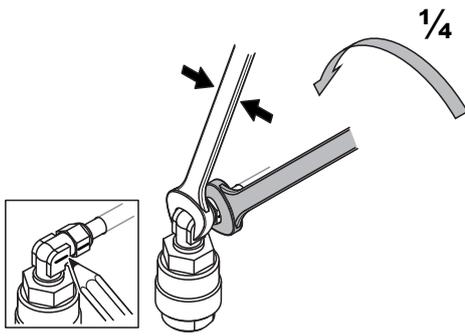
- Wrap teflon tape around the thread of the threaded elbow connector (1) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the threaded elbow connector (1) into the steam trap connector (4). **The arrow on the steam trap must point in flow direction.**



- Push the threaded elbow connector (1) with the steam trap (4) onto the condensate pipe connector (3) and tighten the union nut (2) in accordance with the instructions below.

Tighten first time	
	<ul style="list-style-type: none"> • Press the threaded elbow connector against the condensate pipe and tighten the union nut by hand until it comes to a stop. • Hold the threaded elbow connector with an open-ended wrench and tighten the union nut $\frac{3}{4}$ of a turn with a second open-ended wrench. Note: As a check, mark a line on the fitting.

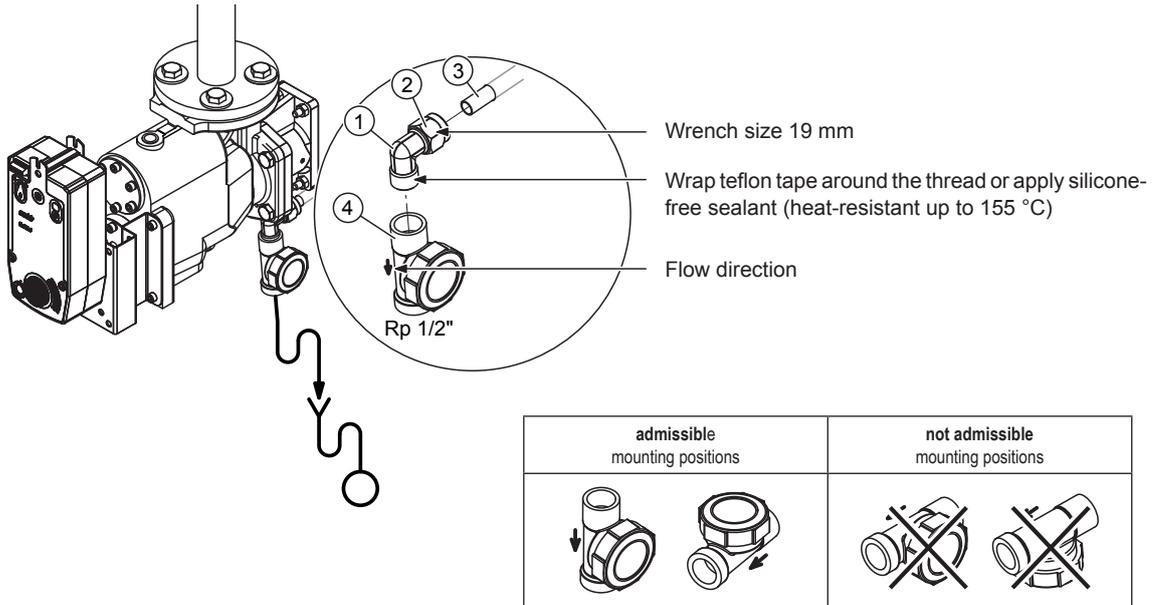
Tighten the same fitting **again**



- Press the threaded elbow connector against the condensate pipe and tighten the union nut by hand until it comes to a stop.
- Hold the threaded elbow connector with an open-ended wrench and tighten the union nut $\frac{1}{4}$ of a turn with a second open-ended wrench.
Note: As a check, mark a line on the fitting.

- Connect the drain pipe of the secondary steam trap (4) downwards to the building drain pipe via a (non-pressurised) open drain funnel and a drain trap (by client).

5.2.3 Thermostatic steam trap, brass



- Wrap teflon tape around the thread of the threaded elbow connector (1) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the threaded elbow connector (1) into the steam trap connector (4). **The arrow on the steam trap must point in flow direction.**
- Push the threaded elbow connector (1) with the steam trap (4) onto the condensate pipe connector (3) and tighten the union nut (2) in accordance with the instructions below.

Tighten first time	
	<ul style="list-style-type: none"> • Press the threaded elbow connector against the condensate pipe and tighten the union nut by hand until it comes to a stop. • Hold the threaded elbow connector with an open-ended wrench and tighten the union nut 1 ¾ turns with a second open-ended wrench. Note: As a check, mark a line on the fitting

Tighten the same fitting again	
	<ul style="list-style-type: none"> • Press the threaded elbow connector against the condensate pipe and tighten the union nut by hand until it comes to a stop. • Hold the threaded elbow connector with an open-ended wrench and tighten the union nut ¼ of a turn with a second open-ended wrench. Note: As a check, mark a line on the fitting.

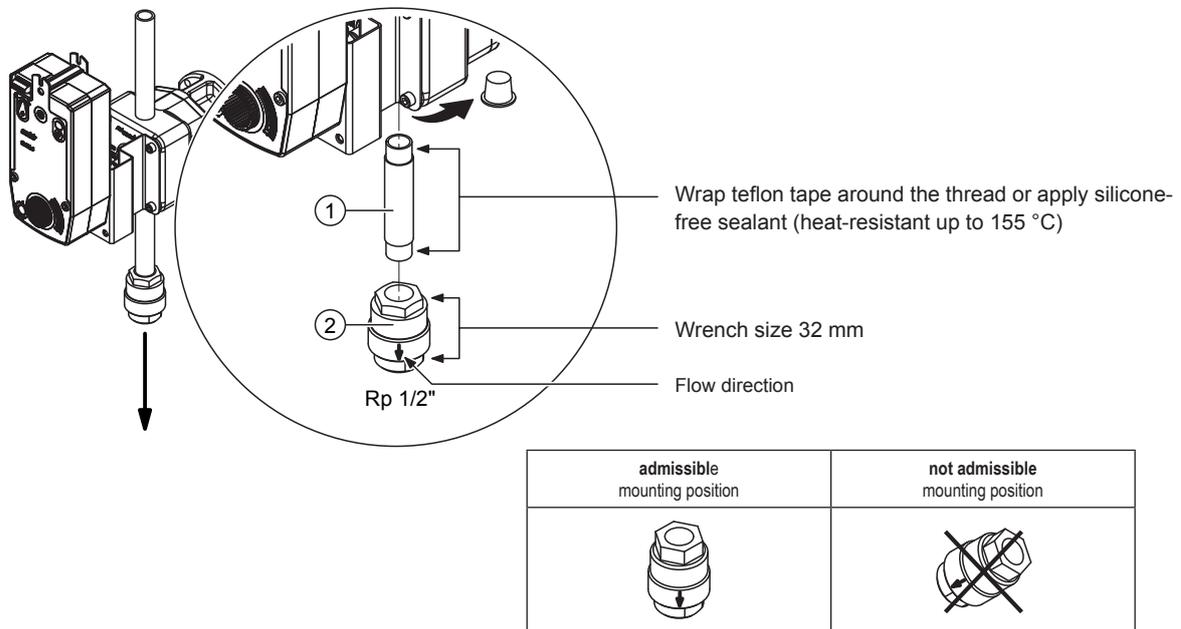
- Connect the drain pipe of the secondary steam trap (4) downwards to the building drain pipe via a (non-pressurised) open drain funnel and a drain trap (by client).

5.3 Mounting the primary steam trap

5.3.1 Important notes on the primary steam trap

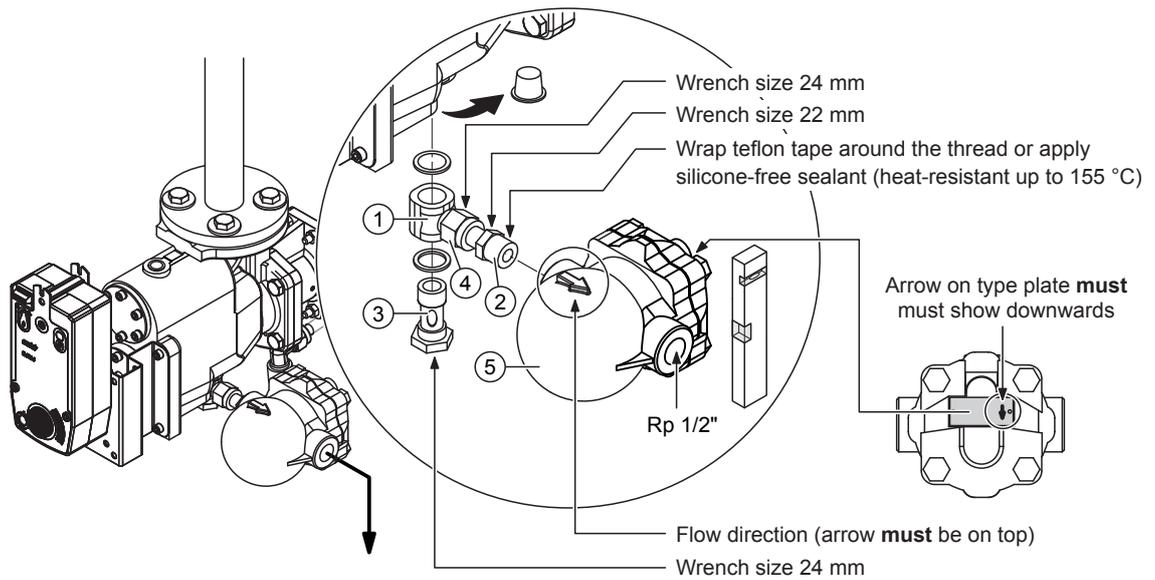
- The primary condensate must be discharged separately from the secondary condensate.
- The primary condensate can be discharged without pressure or with a **maximum back pressure of 1/2 of the primary steam pressure**. The discharge/return of the primary condensate is a matter for the client.
- The outlet pipe of the primary condensate must therefore always be discharged downwards. If installation conditions require the outlet pipe to discharge upwards, a non-return valve must be fitted in the outlet pipe.
- Do not use inverted bucket steam trap with superheated steam!

5.3.2 Thermostatic steam trap for Esco 5



- Wrap teflon tape around the thread of the pipe (1) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the threaded pipe (1) into the primary steam trap connector (2). **The arrow on the steam trap must point in flow direction.**
- Remove protective plugs and screw the threaded pipe with drain into the valve unit from below.

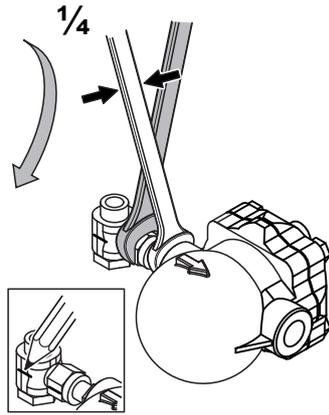
5.3.3 Ball float steam trap for Esco cast-iron versions



- Wrap teflon tape around the thread of the adjustable male adapter (2) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the adjustable male adapter (2) into the ball float steam trap (5). **The arrow on the ball float steam trap must be at the top and must point in flow direction and the arrow on the data plate must point downwards.**
- Remove protective plugs (only with new installations) and fix the swivel screw fitting (1) with the banjo bolt (3) and the copper rings to the valve unit from below.
- Tighten union nut (4) in accordance with the instructions below.

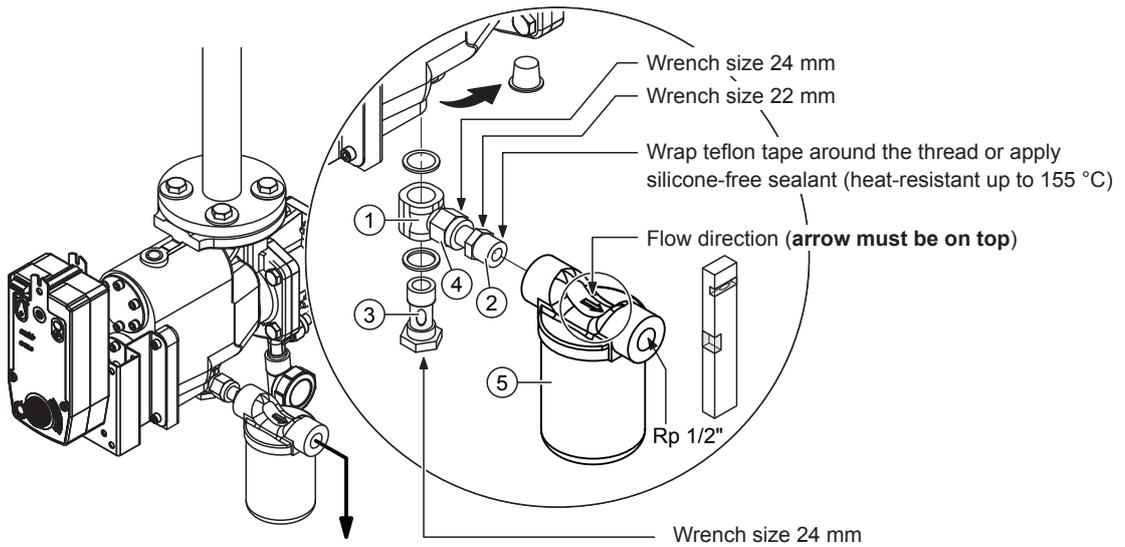
Tighten first time	
	<ul style="list-style-type: none"> • Press the adjustable male adapter against the swivel connector and tighten the union nut by hand until it comes to a stop. • Hold the adjustable male adapter with an open-ended wrench and tighten the union nut 1 3/4 turns with a second open-ended wrench. Note: As a check, mark a line on the fitting.

Tighten the same fitting **again**



- Press the adjustable male adapter against the swivel connector and tighten the union nut by hand until it comes to a stop.
- Hold the adjustable male adapter with an open-ended wrench and tighten the union nut $\frac{1}{4}$ **of a turn** with a second open-ended wrench.
Note: As a check, mark a line on the fitting.

5.3.4 Inverted bucket steam trap for Esco cast-iron versions



- Wrap teflon tape around the thread of the adjustable male adapter (2) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the adjustable male adapter (2) into the inverted bucket steam trap (5). **The arrow on the inverted bucket steam trap must be at the top and must point in flow direction.**
- Remove protective plug (only with new installations) and fix the swivel screw fitting (1) with the banjo bolt (3) and the copper rings to the valve unit from below.
- Tighten union nut (4) in accordance with the instructions below.

Tighten first time	
<p>1^{3/4}</p>	<ul style="list-style-type: none"> • Press the adjustable male adapter against the swivel connector and tighten the union nut by hand until it comes to a stop. • Hold the adjustable male adapter with an open-ended wrench and tighten the union nut 1^{3/4} turns with a second open-ended wrench. <p>Note: As a check, mark a line on the fitting.</p>

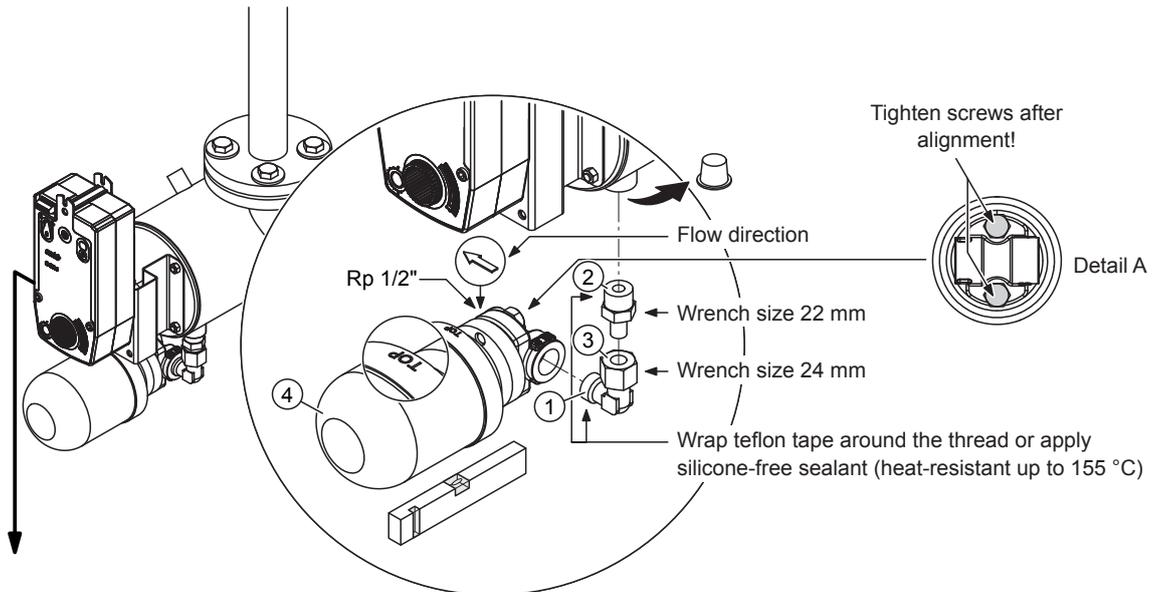
Tighten the same fitting again	
	<ul style="list-style-type: none"> • Press the adjustable male adapter against the swivel connector and tighten the union nut by hand until it comes to a stop. • Hold the adjustable male adapter with an open-ended wrench and tighten the union nut 1/4 of a turn with a second open-ended wrench. Note: As a check, mark a line on the fitting.

5.3.5 Ball float steam trap and inverted bucket steam trap for Esco stainless steel versions

Attention danger of mistake: the stainless steel ball float steam trap can easily be mistaken with the stainless steel inverted bucket steam trap. A mistake of the two floats leads to a malfunctioning during operation, since the two floats have different installation positions.

Ball float steam trap made of stainless steel	inverted bucket steam trap made of stainless steel
correct installation position	
Characteristics of the ball float steam trap: – Designation “TOP” (on top) 	
wrong installation position	

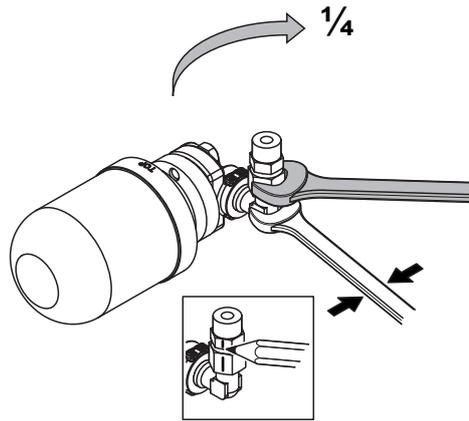
5.3.5.1 Ball float steam trap for Esco stainless steel versions



- Wrap teflon tape around the thread of the adjustable male adapter (2) or apply silicone-free sealant (heat-resistant up to 155 °C). Remove protective plugs (only with new installations) and screw the adjustable male adapter (2) into the valve unit from below.
- Wrap teflon tape around the thread of the elbow connector (1) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the elbow connector (1) into the connector of the ball float steam trap (4). **The arrow on the ball float steam trap must point in flow direction. The “TOP” marking must be at the top (see illustration above).**
- Push the elbow connector (1) with the ball float steam trap (4) onto the adjustable male adapter (2) until it comes to a stop. Tighten union nut (3) in accordance with the instructions below.

Tighten first time	
	<ul style="list-style-type: none"> • Press the elbow connector against the adjustable male adapter and tighten the union nut by hand until it comes to a stop. • Hold the elbow connector with an open-ended wrench and tighten the union nut 1 ¾ turns with a second open-ended wrench. Note: As a check, mark a line on the fitting

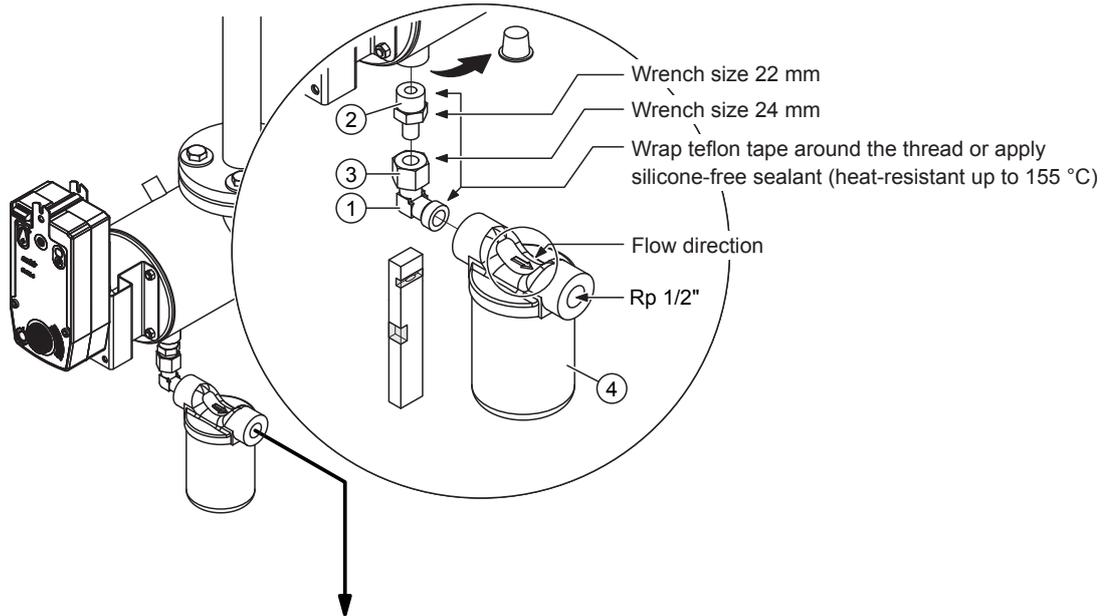
Tighten the same fitting **again**



- Press the elbow connector against the adjustable male adapter and tighten the union nut by hand until it comes to a stop.
- Hold the elbow connector with an open-ended wrench and tighten the union nut $\frac{1}{4}$ of a turn with a second open-ended wrench.
Note: As a check, mark a line on the fitting.

- Align the ball float steam trap (4) once and tighten the screws (Detail A).

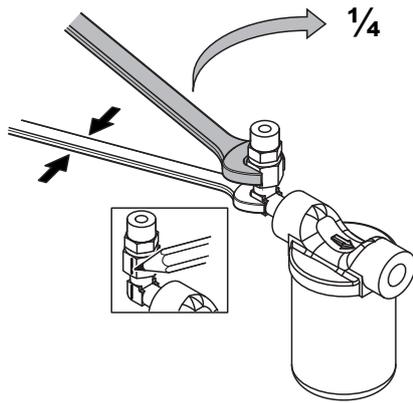
5.3.5.2 Inverted bucket steam trap for Esco stainless steel versions



- Wrap teflon tape around the thread of the adjustable male adapter (2) or apply silicone-free sealant (heat-resistant up to 155 °C). Remove protective plugs (only with new installations) and screw the adjustable male adapter (2) into the valve unit from below.
- Wrap teflon tape around the thread of the elbow connector (1) or apply silicone-free sealant (heat-resistant up to 155 °C). Then screw the elbow connector (1) into the inverted bucket steam trap connector (4). **The union nut (3) of the elbow connector (1) must point upwards and the arrow on the inverted bucket steam trap must point in flow direction.**
- Push the elbow connector (1) with the inverted bucket steam trap onto the adjustable male adapter (2) until it comes to a stop. Tighten union nut (3) in accordance with the instructions below.

Tighten first time	
	<ul style="list-style-type: none"> • Press the elbow connector against the adjustable male adapter and tighten the union nut by hand until it comes to a stop. • Hold the elbow connector with an open-ended wrench and tighten the union nut 1 3/4 turns with a second open-ended wrench. Note: As a check, mark a line on the fitting.

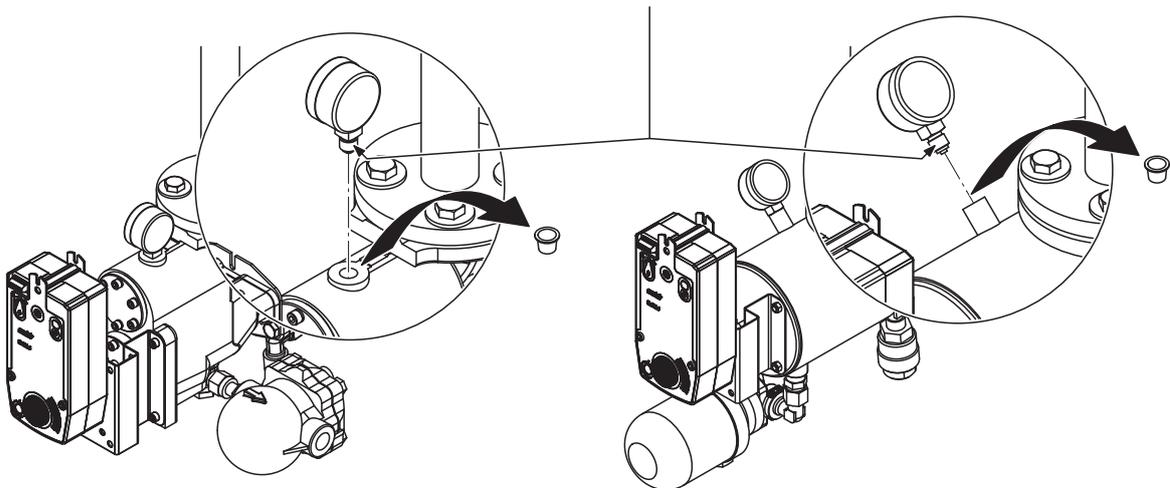
Tighten the same fitting **again**



- Press the elbow connector against the adjustable male adapter and tighten the union nut by hand until it comes to a stop.
- Hold the elbow connector with an open-ended wrench and tighten the union nut **1/4 of a turn** with a second open-ended wrench.
Note: As a check, mark a line on the fitting.

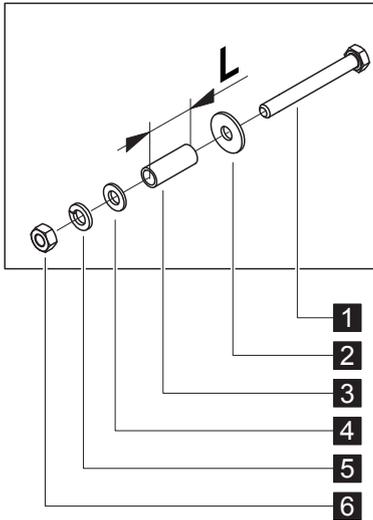
5.4 Mounting the pressure gauge

Wrap teflon tape around the thread or apply silicone-free sealant (heat-resistant up to 155 °C)



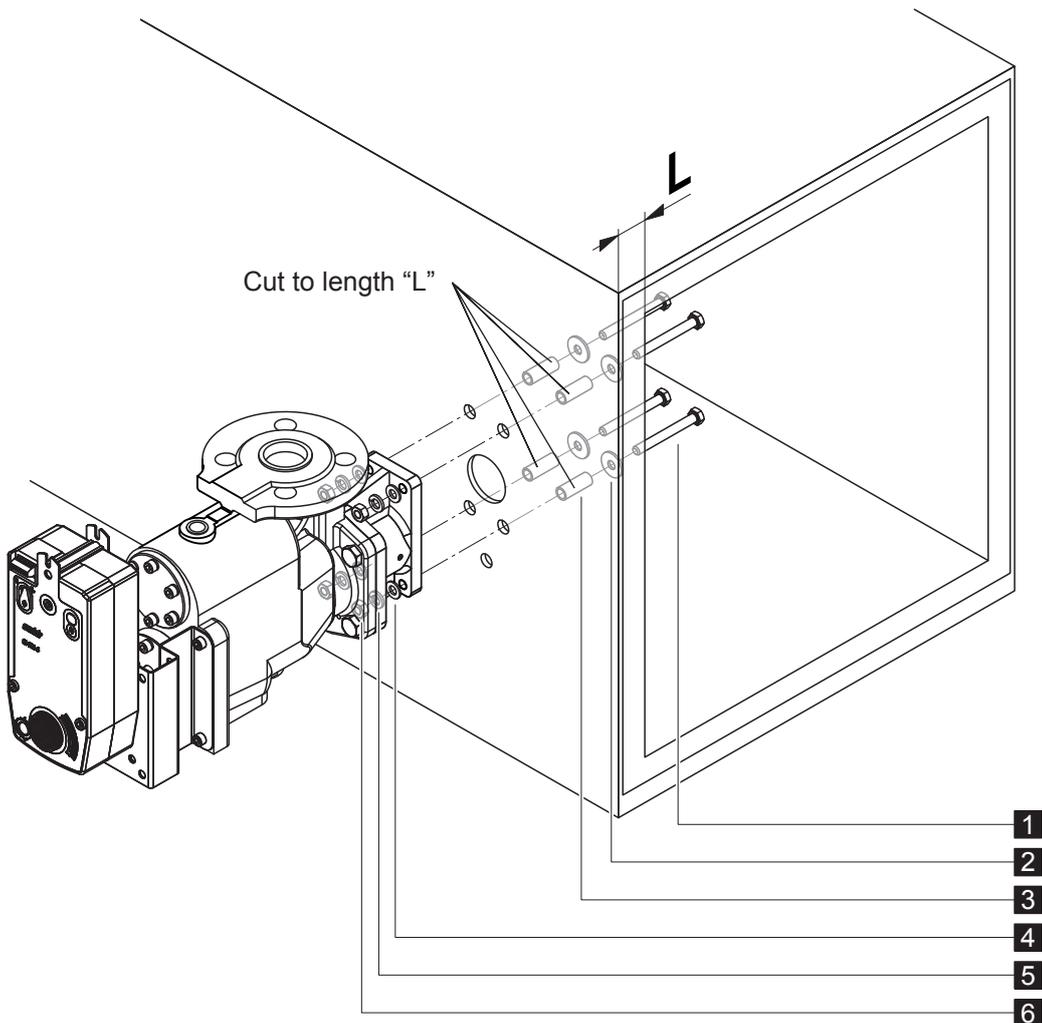
6 Appendix

6.1 Overview of mounting set for insulated ducts



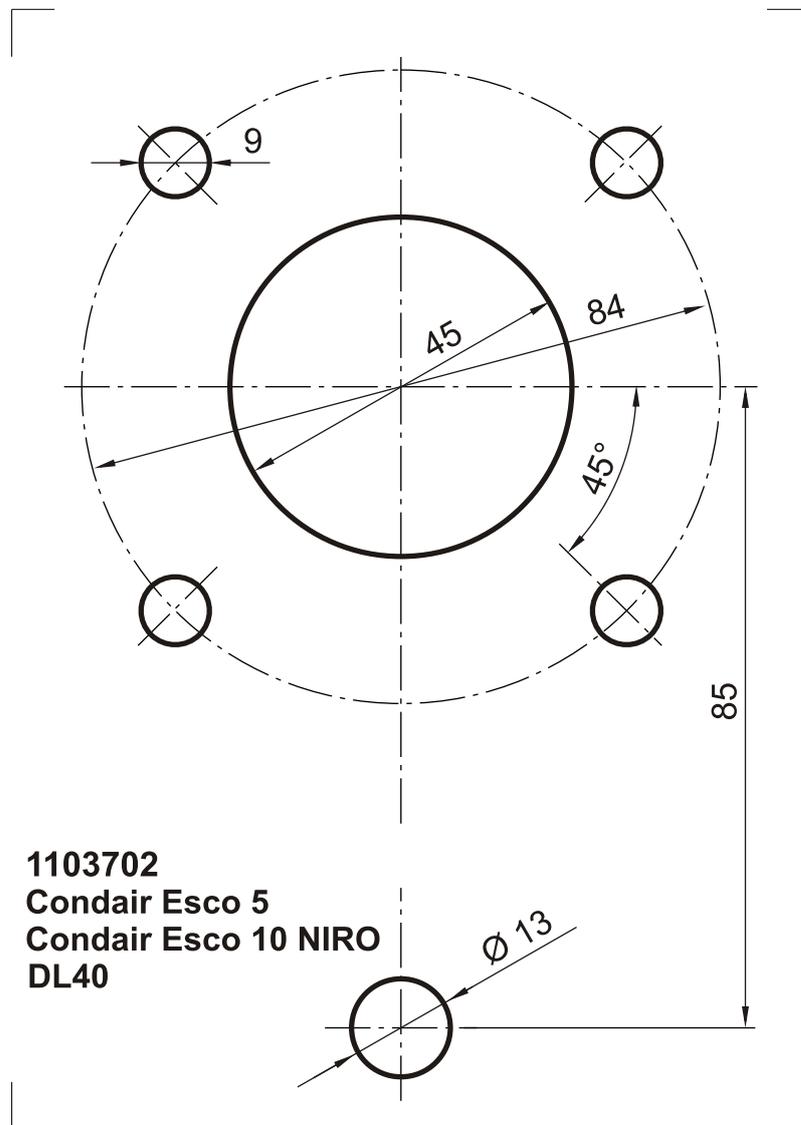
	Esco 5	Esco 10	Esco 20	Esco 30
1	M8 x 70 mm ** M8 x 100 mm ** Wrench size 13 mm		M12 x 70 mm ** M12 x 100 mm ** Wrench size 19 mm	
2	∅24/8.4 x 2 mm		∅37/13 x 3 mm	
3	∅12 x 45 mm ** ∅12 x 75 mm **		∅16 x 45 mm ** ∅16 x 75 mm **	
4	∅16/8.4 x 1.6 mm		∅24/13 x 2.5 mm	
5	Lock washer M8		Lock washer M12	
6	M8 x 0.8d		M12 x 0.8d	

** Length as ordered

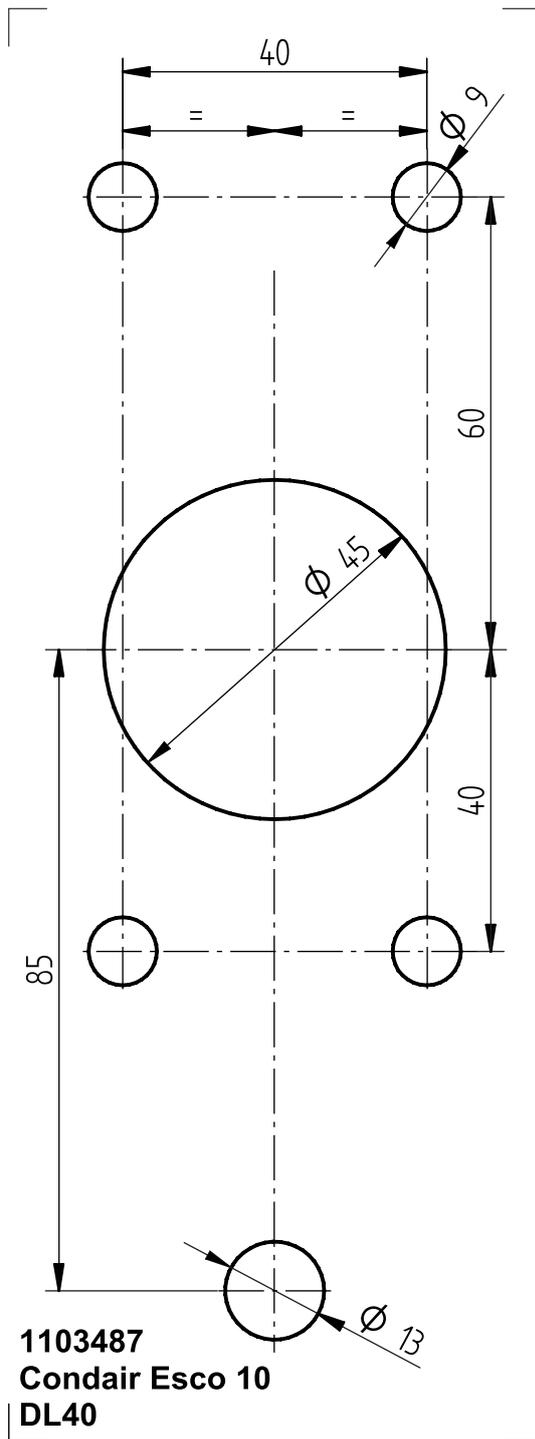


6.2 Drilling templates

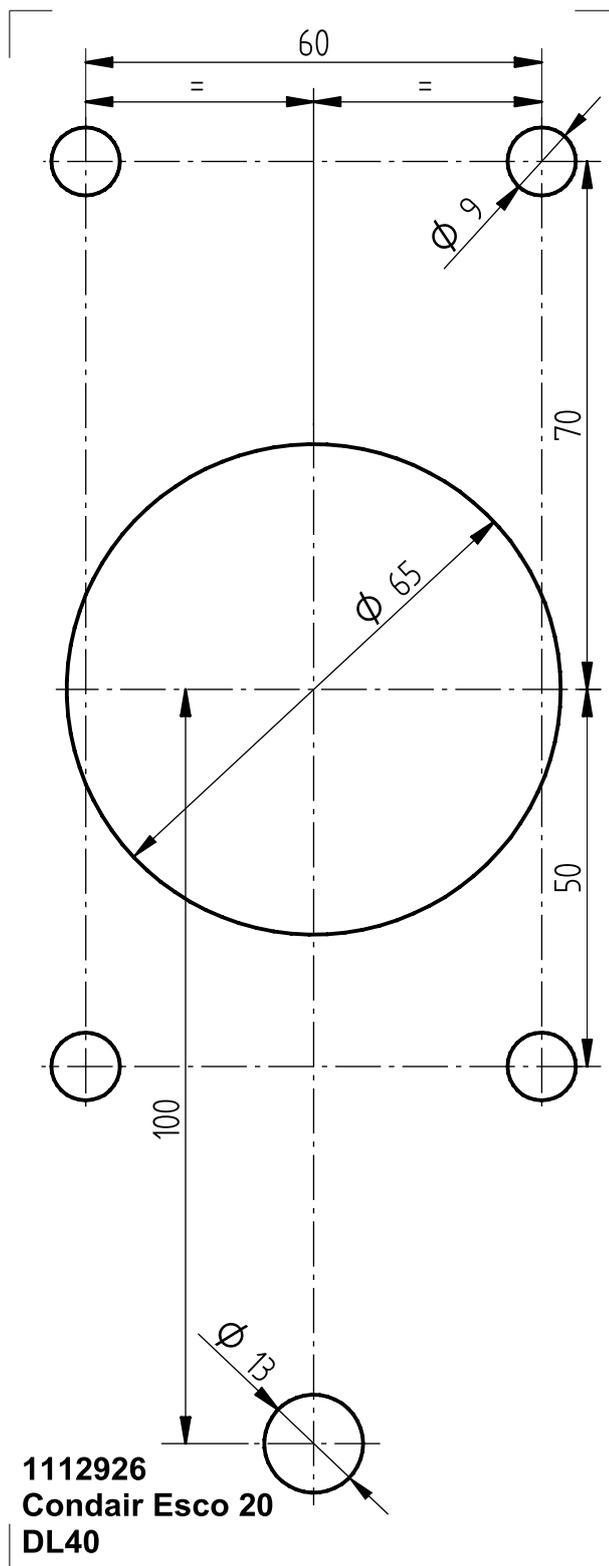
6.2.1 Drilling template "1103702" for Esco 5 and Esco 10 stainless steel with one steam pipe



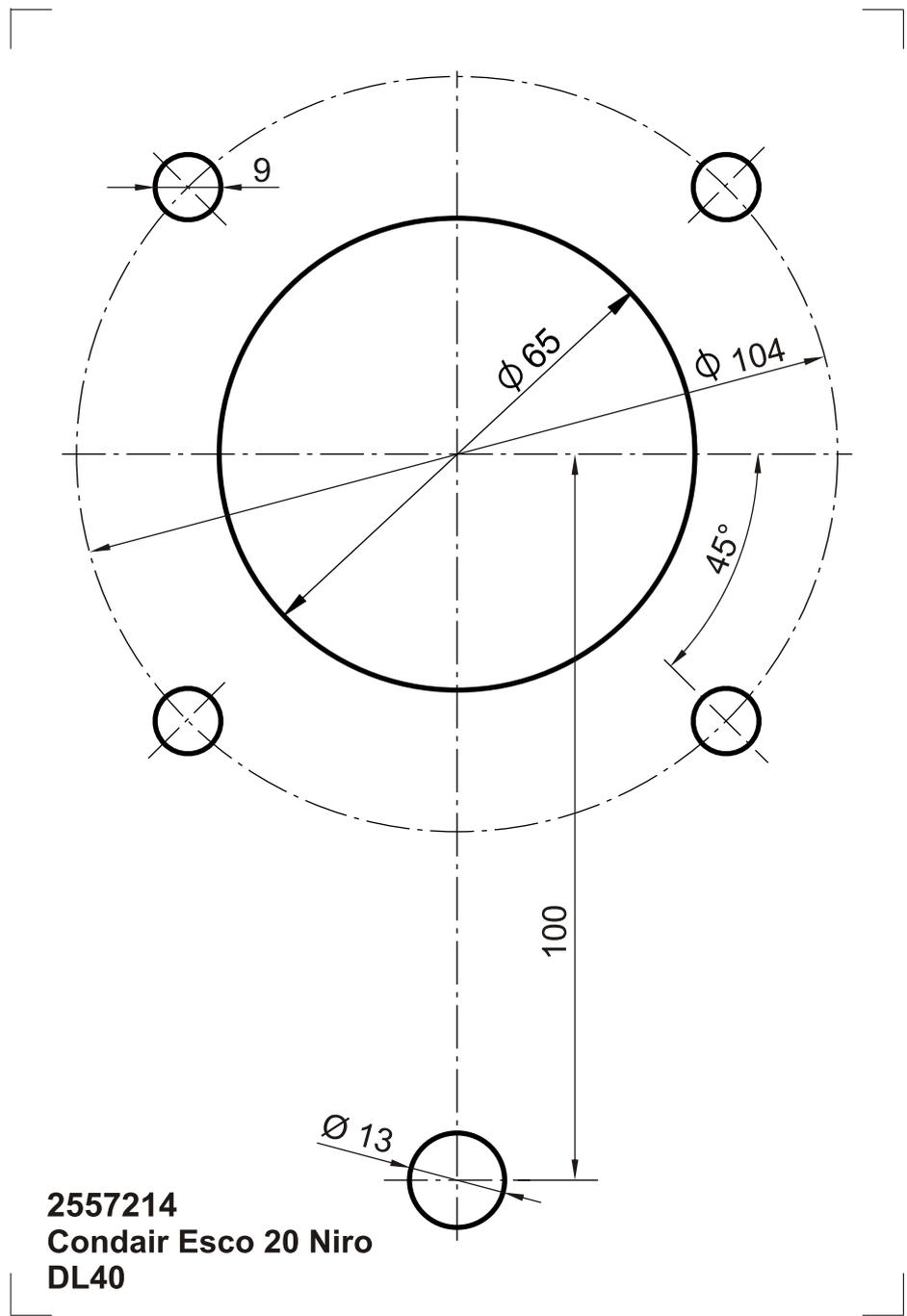
6.2.2 Drilling template "1103487" for Esco 10 with one steam pipe and for collectors DL40



6.2.3 Drilling template “1112926” for Esco 20 with one steam pipe

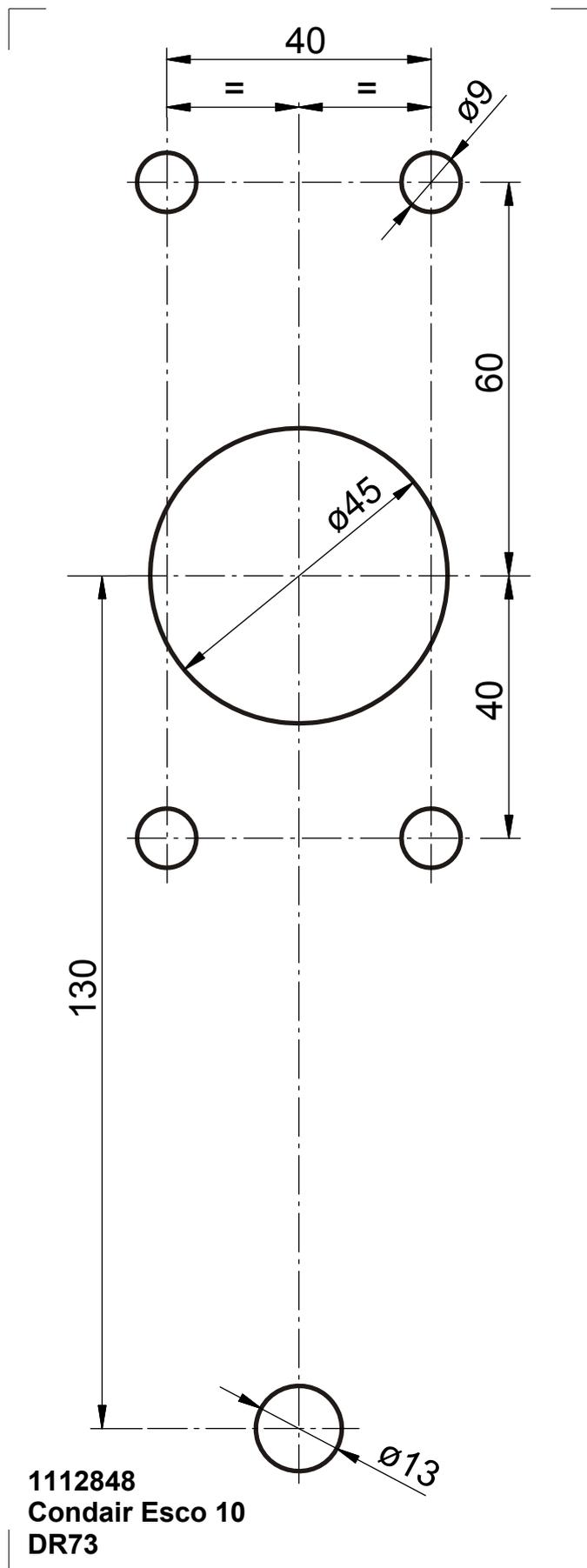


6.2.4 Drilling template “2557214” for Esco 20 stainless steel with one steam pipe

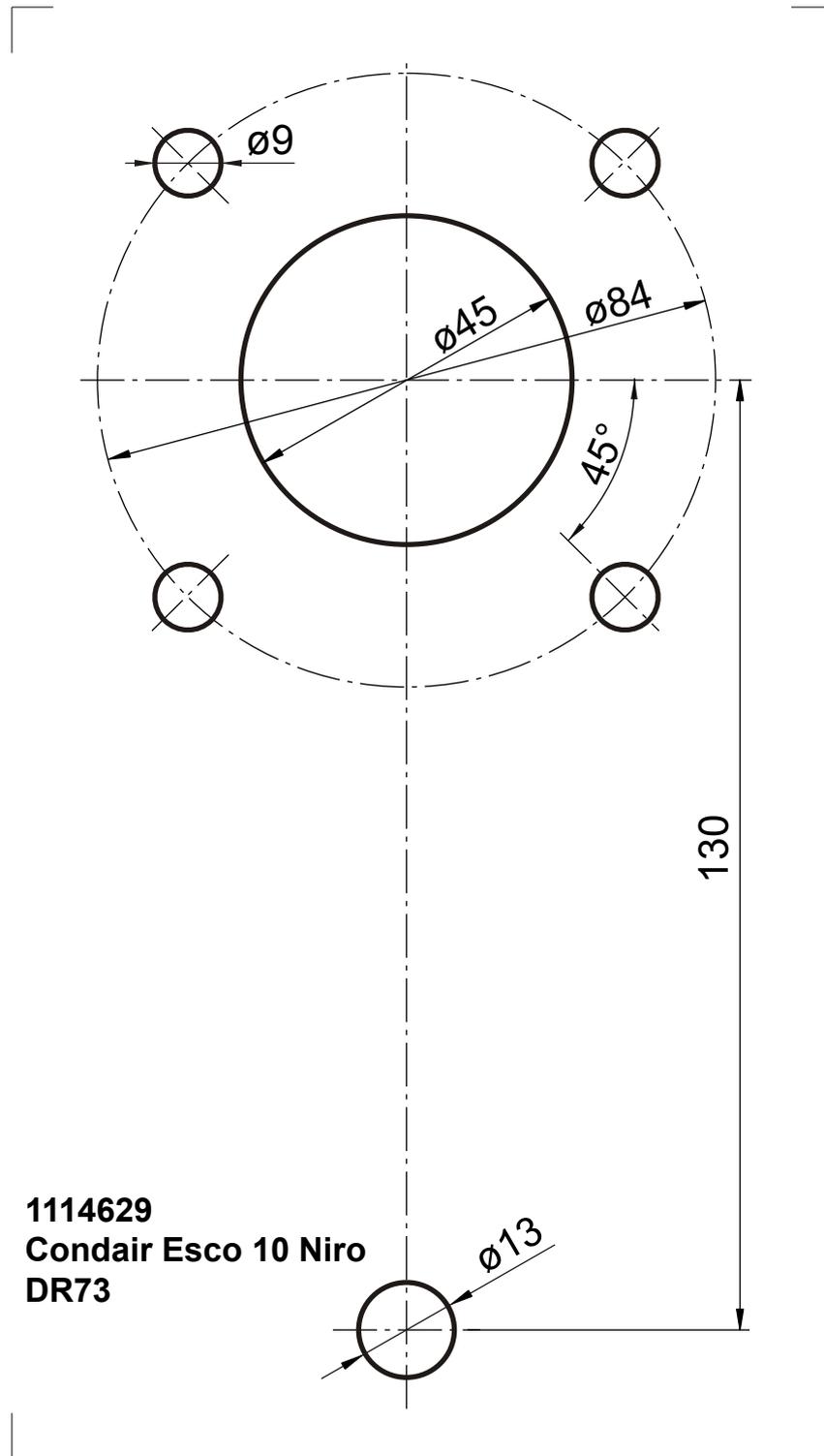


2557214
Condair Esco 20 Niro
DL40

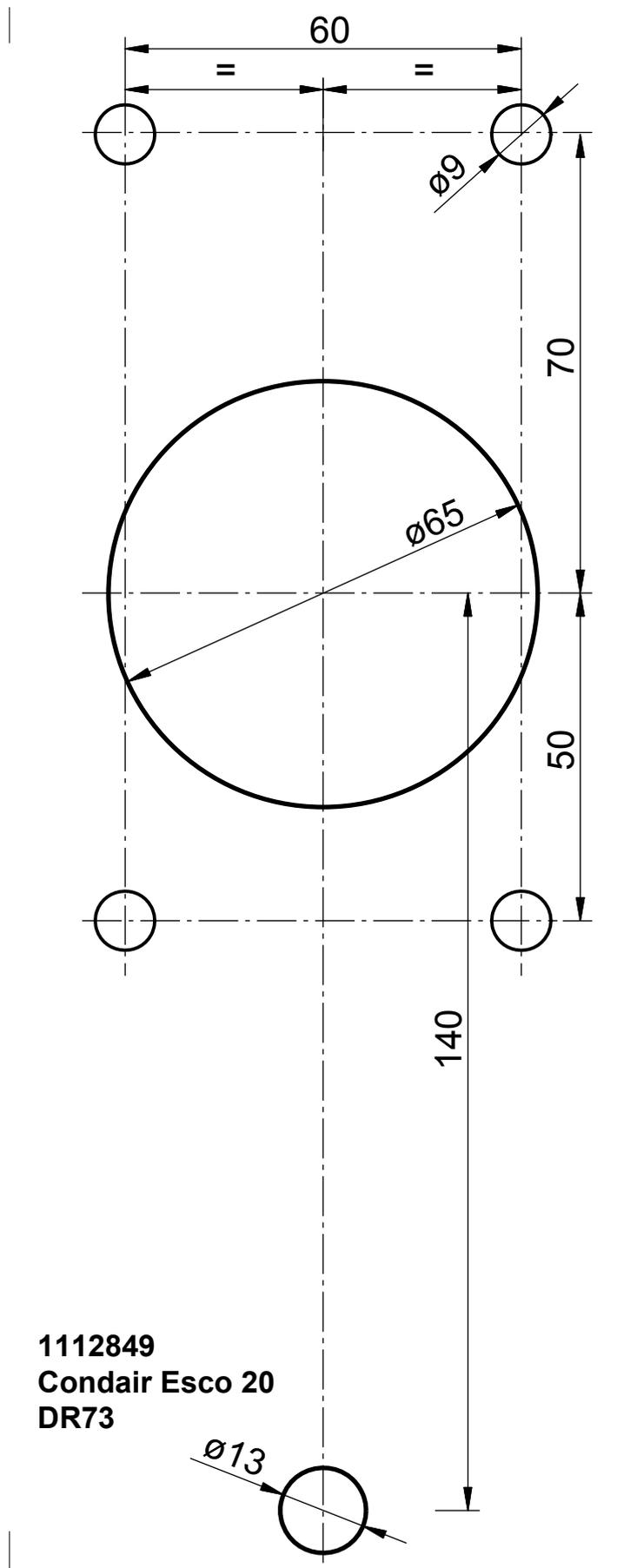
6.2.5 Drilling template “1112848” for Esco 10 with DR73



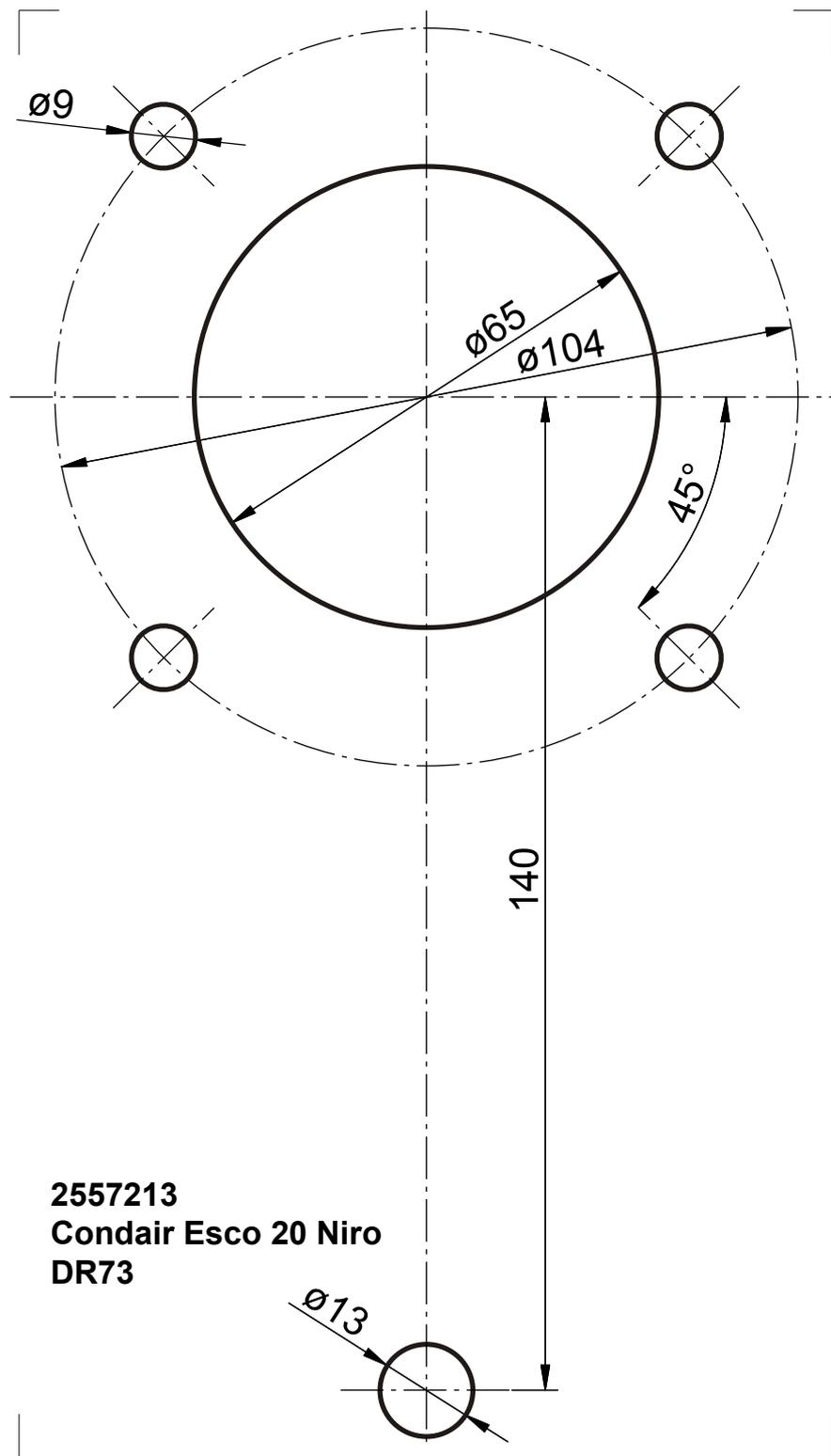
6.2.6 Drilling template “1114629” for Esco 10 stainless steel with DR73



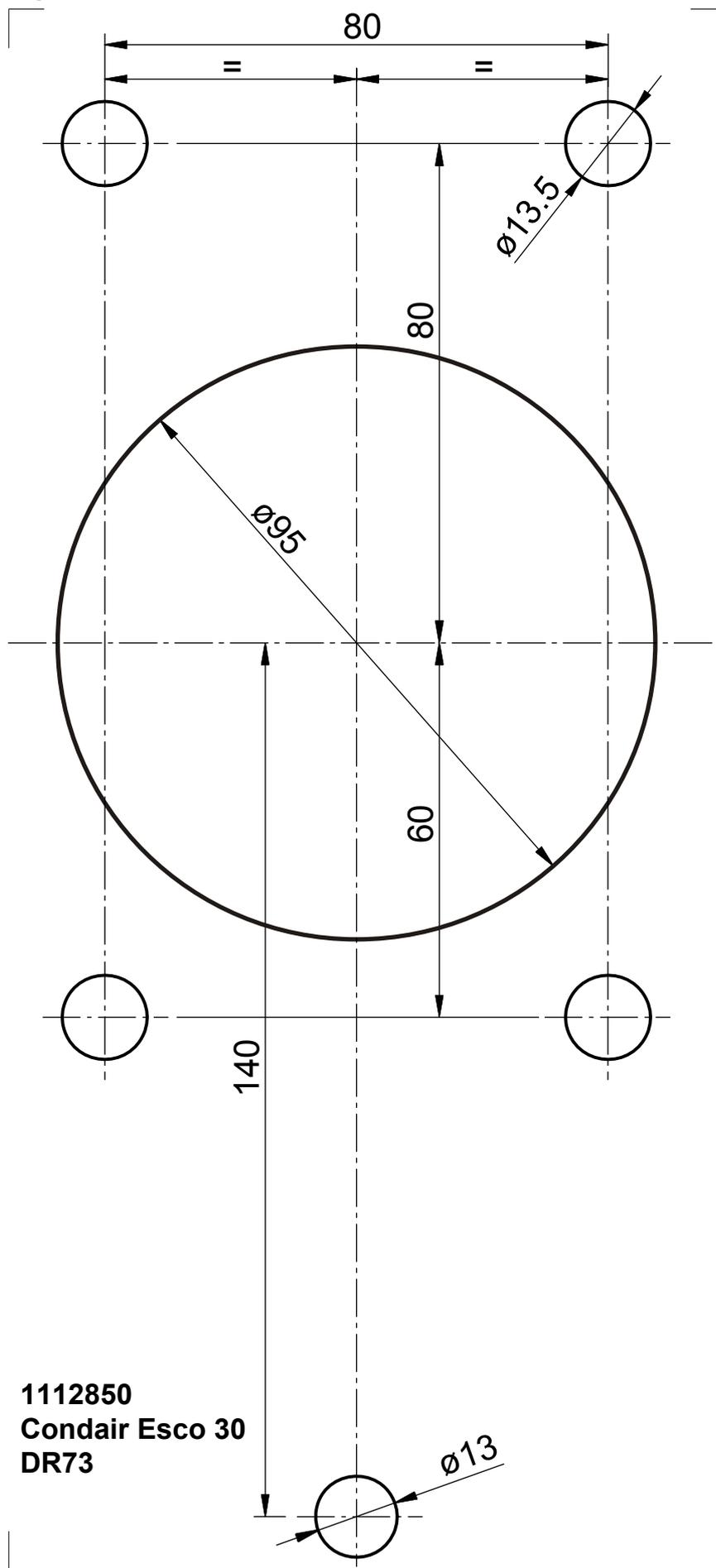
6.2.7 Drilling template “1112849” for Esco 20 with DR73



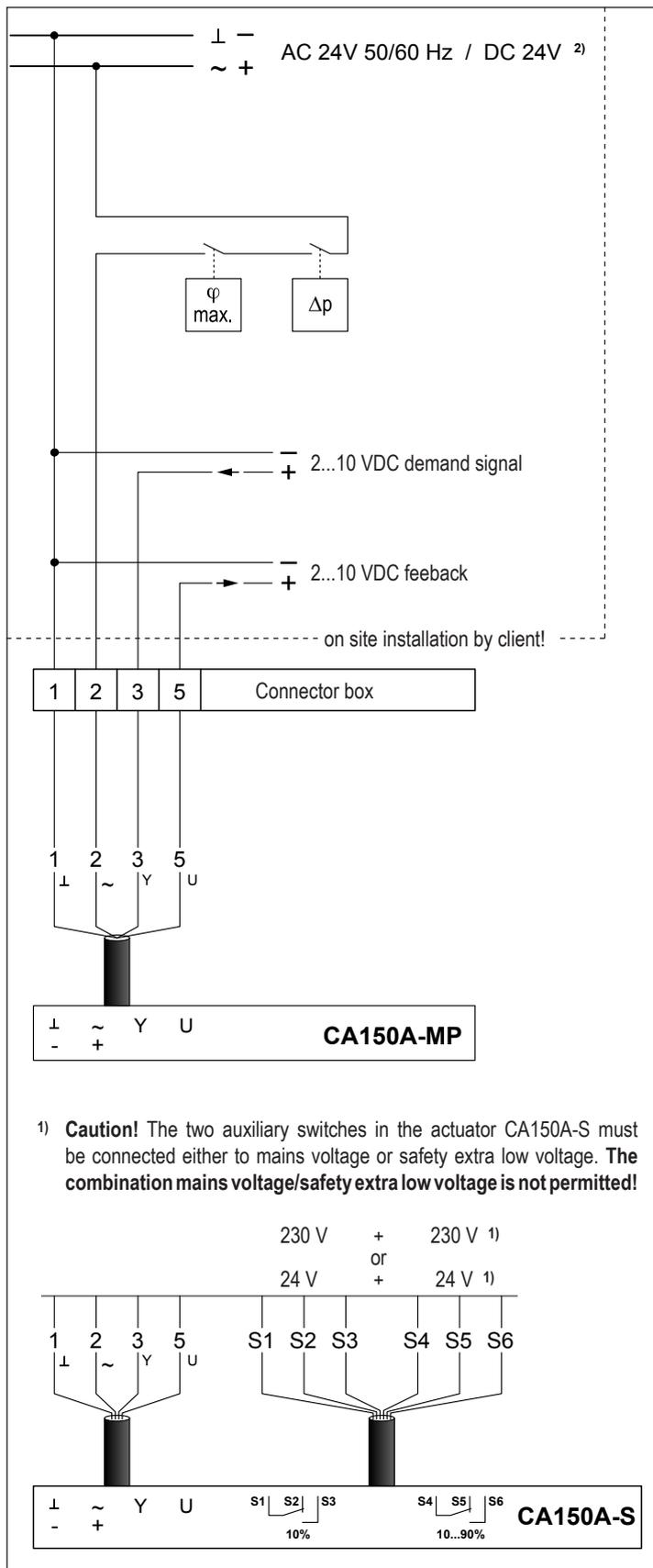
6.2.8 Drilling template “2557213” for Esco 20 stainless steel with DR73



6.2.9 Drilling template "1112850" for Esco 30 with DR73



6.3 Connection diagram for rotary actuators CA150A-MP and CA150A-S



Supply

AC 24 V 50/60 Hz ²⁾
DC 24 V ²⁾

²⁾ connection only via safety isolating transformer

External safety loop

Maximum hygrostat and air flow monitor interrupt the supply voltage to the actuator if the humidity is too high or the air flow is missing. The actuator closes mechanically via the spring return. The steam output is stopped. When the supply voltage returns, the actuator automatically moves to the position specified by the demand signal.

2...10 V Demand signal

Input resistance: 100 k Ω (0,1 mA)
Working range: 2...10 VDC

Feedback

The feedback signal enables the current valve position to be transmitted to a building controller (e.g. PLC with analog input)

Connector box

Wiring diagram CA150A-MP/CA150A-S:

Conductor 1: Ground
Conductor 2: AC 24 V / DC 24 V+
Conductor 3: Demand signal Y 2...10 VDC
Conductor 5: Feedback U 2...10 VDC

S1/S2/S3

Auxiliary switch 10%

S4/S5/S6

Auxiliary switch 10...90%, adjustable

Spring return actuator

Specifications **CA150A-MP**:

Supply voltage: AC 24 V 50/60 Hz / DC 24 V
Dimensioning: 11 VA
Power consumption: 8,5 W during operating
3,5 W in rest position
Function: continuous
Demand signal Y: 2...10 VDC ³⁾
Feedback U: 2...10 VDC ³⁾
Torque: 20 Nm
Running time: Motor 150 s ³⁾
Spring return 20 s

³⁾ Factory setting adjustable

Specifications **CA150A-S** with auxiliary switch:

Supply voltage: AC 24 V 50/60 Hz / DC 24 V
Dimensioning: 7 VA
Power consumption: 5 W during operating
3 W in rest position
Function: continuous
Demand signal Y: 2...10 VDC
Feedback U: 2...10 VDC
Torque: 20 Nm
Running time: Motor 150 s
Spring return 20 s

Auxiliary switch: 2xEPU 1 mA...3(0.5)A, AC 250 V
Switching points: 10% fixed, 10...90% adjustable

Caution: The figure on the previous page is a functional diagram. The installation has to be carried out in accordance with local regulations. To prevent malfunction of the valve, **all electrical connections** of the rotary actuators must be properly wired to the connector box.

Note: The regulating range of the electric rotary control valve actuators starts at a demand signal of 2 VDC. However, because the ceramic rotary disks overlap in their closed state (to ensure absolute tightness), the valve starts opening at a signal value of 3 VDC.

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The Condair logo, consisting of a stylized wave symbol followed by the word 'condair' in a bold, lowercase, sans-serif font.