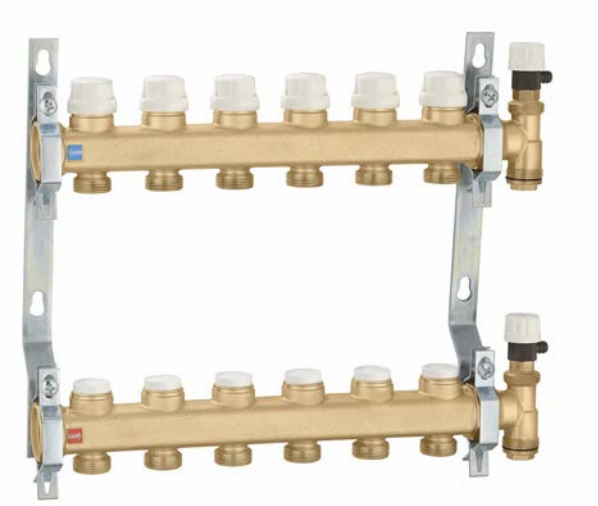
Distribution manifold

for heating systems

662 series

01180/17 GB
replaces dp 01180/09 GB



Function

The distribution manifold is used for the control and distribution of thermal medium in heating systems.
It offers accuracy in controlling the flow to the individual circuits, cutting them off and reduced size.
Furthermore, the reduced head losses mean it can be used as a distribution manifold for several zones, when installed directly in a central heating system.
This manifold is supplied fitted with special fastening brackets.

Reference documentation

- Brochure 01042 Thermo-electric actuator 6561 series
- Brochure 01142 Thermo-electric actuator with manual opening and position indicator 6563 series
- Brochure 01198 Thermo-electric actuator. 6562 series Thermo-electric actuator with low power consumption. 6564 series
- Brochure 01054 Automatic air vent valves 5020 series
- Brochure 01141 Automatic flow rate regulators with high-strength polymer cartridge
- Brochure 01041 Automatic flow rate regulators with steel cartridge

Product range

662 series Distribution manifold for heating systems size 1”

Technical specifications

Materials

Flow manifold

Body:	brass EN 1982 CB753S

Lockshield valve

Headwork:	brass EN 12164 CW614N
Lockshield valve stem:	brass EN 12164 CW614N
Seals:	EPDM
Cap:	self-extinguishing polycarbonate

Lockshield adjustment with 5 mm hexagonal wrench

Return manifold

Body:	brass EN 1982 CB753S

Shut-off valve

Headwork:	PSU
Obturator stem:	stainless steel
Obturator:	EPDM
Spring:	stainless steel
Seals:	EPDM
Knob:	ABS

End fitting

Air vent:	POM
Cap:	brass EN 12165 CW617N

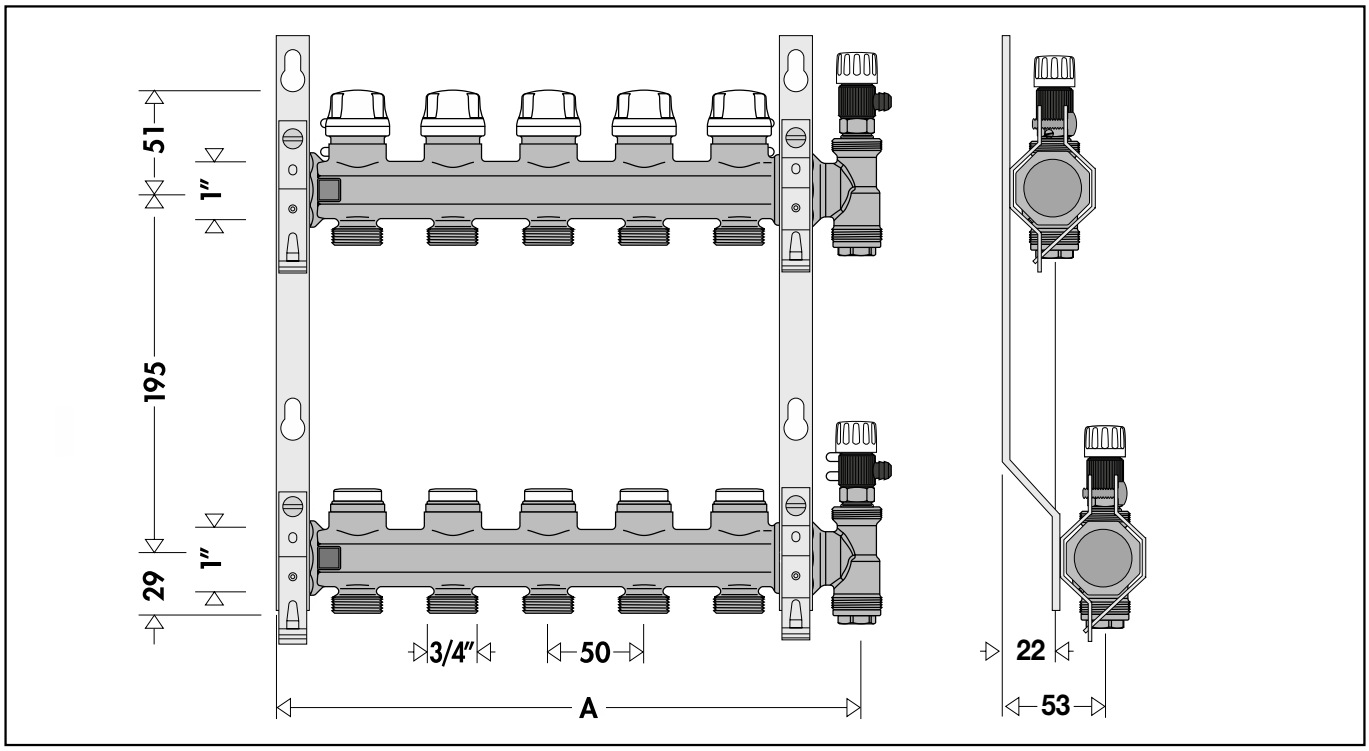
Brackets and supports:

Material:	S235JR

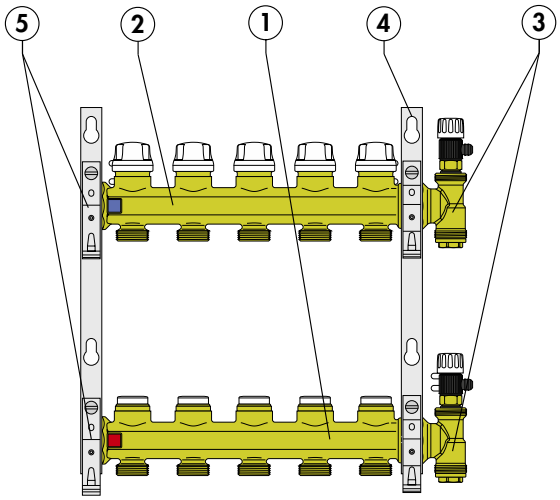
Performance

Medium:	water, glycol solutions
Max. percentage of glycol:	30%
Max. working pressure:	10 bar
Working temperature range:	5–100°C
Main connections:	1” F (ISO 228-1)
Outlets:	3/4” M - Ø 18
Centre distance:	50 mm

Dimensions



Code	**662**6B5	**662**6C5	**662**6D5	**662**6E5	**662**6F5	**662**6G5	**662**6H5	**662**6I5	**662**6L5	**662**6M5	**662**6N5	**662**6O5
No. outlets	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Total L (A)	180	230	280	330	380	440	490	540	590	640	690	750



Characteristic components

1 Flow manifold complete with lockshield valves for flow rate pre-adjustment

2 Return manifold complete with shut-off valves fitted for thermo-electric actuator

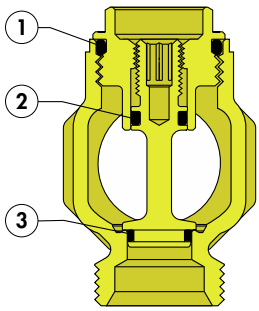
3 End fittings complete with manually operated air vents, double radial end fitting and caps

4 Pair of mounting brackets for box or wall installation

5 Upper and lower manifold supports, for brackets

Construction details

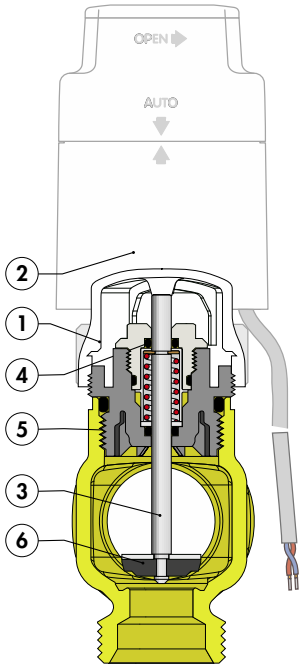
Flow manifold



The flow manifold is equipped with outlet circuit shut-off and lockshield valves.
In order to prevent leaks or seepage over time, the assembly seal is guaranteed by the EPDM O-Rings on the headwork (1) and on the control stem of the lockshield (2), while the O-Ring on the obturator (3) permits full closure of the outlet circuit, if necessary.

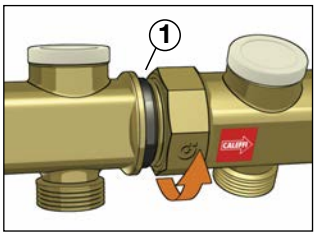
Return manifold

The return manifold is equipped with manual shut-off valves (1), in order to cut off the flow to the individual circuits.
They can also be fitted with a thermo-electric actuator (2) that, when used with a room thermostat, maintains the ambient temperature at the set values in spite of thermal load variations.
The obturator stem (3) consists of a single piece of ground stainless steel, in order to minimise friction and prevent building up of dangerous limescale deposits.
The headwork has a double EPDM O-Ring seal (4) – (5) on the sliding stem.
The EPDM obturator (6) is shaped so as to optimise the hydraulic characteristics of the valve and minimise the noise caused by the flow of the medium, also during the progressive opening or closing action when operating with thermo-electric actuator.



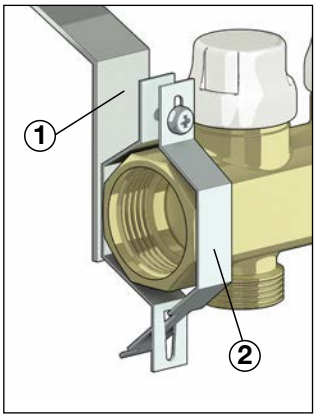
Modular manifolds

The manifolds are modular thanks to the threaded connections with O-Ring seal (1). The threading is designed to create a perfect hydraulic seal and to align the relevant respective outlets correctly when the components are screwed on and fully tightened.



Bracket and manifold mounting

The manifolds are easily mounted onto the brackets (1) using the modular supports (2) supplied in the package.

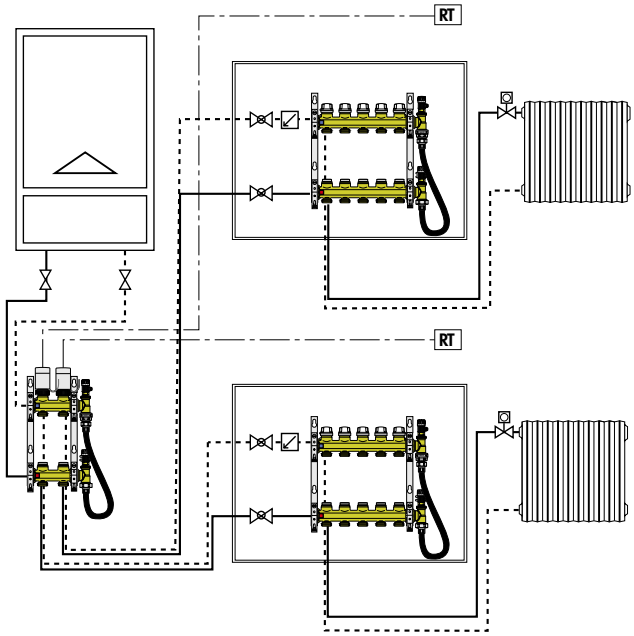


Low head losses

The manifold outlet flow sections have been specifically designed to encourage lower head loss.
This means the manifold can be used (as illustrated in the diagram) as a distribution device for 2, 3 or 4 independent zones, when installed directly in a central heating system.

A simple numeric example can be used to demonstrate the efficiency of a device performing this function.
Imagine we are using the 662 series manifold with 2 outlets to distribute the medium to the other zone manifolds with 5 outlets each.
If we consider an average flow rate value per manifold of 700 l/h, the calculation gives us an average value of around 6 kPa for the zone manifold/valve and lockshield head loss.
The calculated value is in line with the head losses for the zone valves used in this type of application.

Thermo-electric actuators can be used to make the various zones operate independently in response to the timer thermostats controlling them.

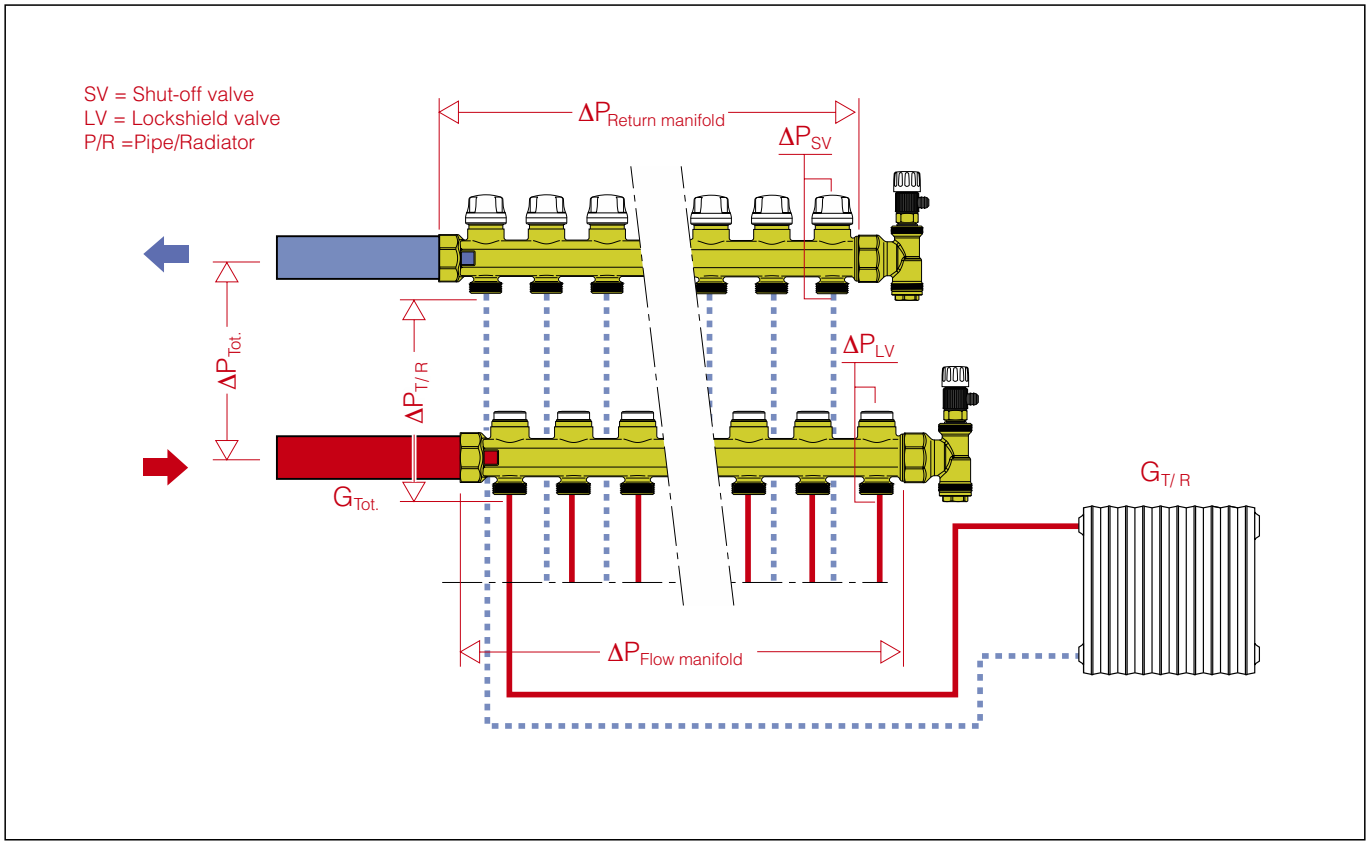


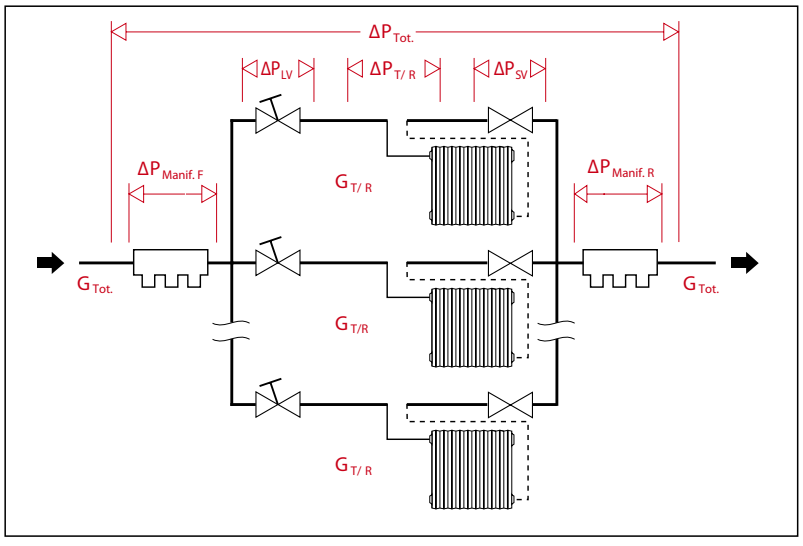
Managing the medium directly in the central heating system simplifies the electrical connection process of the thermo-electric actuators fitted to the manifold for zone control purposes.

Hydraulic characteristics

In order to determine the hydraulic characteristics of the circuit, it is necessary to calculate the total head loss suffered by the flow of medium as it passes through the devices forming the manifold assembly and the radiator circuits.

From a hydraulic point of view, the system consisting of the manifold assembly and the circuits can be represented as a set of hydraulic elements arranged in series and in parallel.

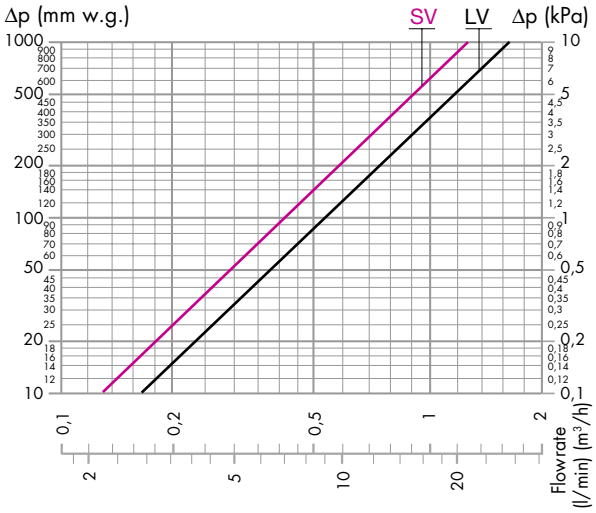




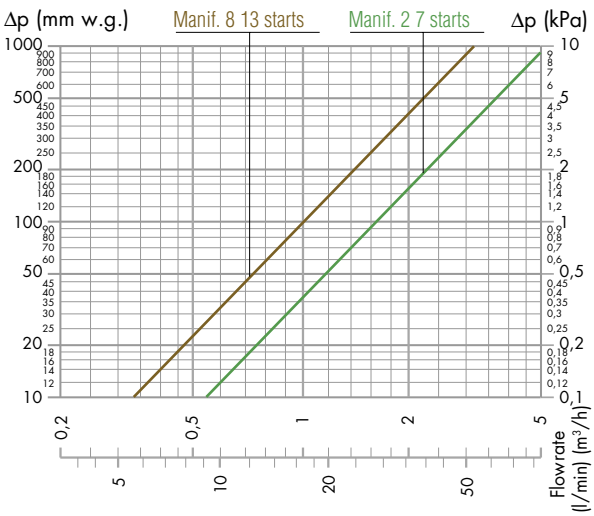
$\Delta P_{Tot.}$	=	Total loss at the ends of the manifold (Flow + Return + Pipe/Radiator)
ΔP_{LV}	=	Circuit setting lockshield valve localised loss (P/R circuit flow rate)
$\Delta P_{P/R}$	=	Pipe/Radiator loss (P/R circuit flow rate)
ΔP_{SV}	=	Localised loss for P/R circuit shut-off valve (P/R circuit flow rate)
$\Delta P_{Manif. F}$	=	Distributed loss of the flow manifold (total flow rate)
$\Delta P_{Manif. R}$	=	Distributed loss of the return manifold (total flow rate)

$$\Delta P_{Tot.} = \Delta P_{LV} + \Delta P_{P/R} + \Delta P_{SV} + \Delta P_{Manif.\ F} + \Delta P_{Manif.\ R} \qquad (1.1)$$

When the hydraulic characteristics of each component and the design flow rates are known, the total loss can be calculated as the sum of the partial head losses for each specific component in the system, as indicated by the formula *(1.1)*.



	Kv	$Kv_{0,01}$
Lockshield valve (LV) completely open	5,40	540
Shut-off valve (SV)	4,10	410



	Kv	$Kv_{0,01}$
Flow/return manifold 2 7 starts	16,70*	1670*
Flow/return manifold 8 13 starts	10,40*	1040*

** Average value*

- Kv = flow rate in m³/h for a head loss of 1 bar

- $Kv_{0,01}$ = flow rate in l/h for a head loss of 1 kPa

Example of total head loss calculation
Supposing we need to calculate the head loss of a manifold with three circuits with the following characteristics:

Total manifold flow rate: 410 l/h

The pipes and radiators of the three circuits have the following flow rate and head loss characteristics:

Circuit 1	Circuit 2	Circuit 3	
G1 = 80 l/h	G2 = 130 l/h	G3 = 200 l/h	
$\Delta P_{Radiator\ 1}$ = 1,3 kPa	$\Delta P_{Radiator\ 2}$ = 3 kPa	$\Delta P_{Radiator\ 3}$ = 5,3 kPa	(1.2)
$\Delta P_{Pipe\ 1}$ = 1,7 kPa	$\Delta P_{Pipe\ 2}$ = 6,8 kPa	$\Delta P_{Pipe\ 3}$ = 7,2 kPa	
$\Delta P_{T/\ R1}$ = 1,7 + 1,3 = 3 kPa	$\Delta P_{T/\ R2}$ = 6,8 + 3 = 9,8 kPa	$\Delta P_{T/\ R3}$ = 7,2 + 5,3 = 12,5 kPa	

Each segment of the formula (1.1) is calculated using the following relationship:

$\Delta P = G^2/Kv_{0,01}{}^2$

· G= flow rate in l/h
· ΔP = head loss in kPa (1 kPa = 100 mm w.g.)
· $Kv_{0,01}$ = flow rate in l/h through the device, which corresponds to a head loss of 1 kPa

It should be stressed that the calculation of $\Delta p_{Tot.}$ must be carried out taking account of the circuit in which there are the greatest head losses distributed along the entire circuit consisting of pipe + radiator.
In the case we are examining, the relevant circuit is No. 3.

It follows that:

ΔP_{LV3} = $200^2/540^2$ = 0,14 kPa
$\Delta P_{T/\ R3}$ = 12,5 kPa
ΔP_{VI3} = $200^2/410^2$ = 0,24 kPa
$\Delta P_{Manif.\ F}$ = $410^2/1670^2$ = 0,06 kPa
$\Delta P_{Manif.\ R}$ = $410^2/1670^2$ = 0,06 kPa
} *Values obtained by neglecting the changes due to tapping off flow rate to the single branched circuits.*

Using formula (1.1), adding up all the calculated terms, we obtain:

$\Delta P_{Tot.}$= 0,14 +12,5 + 0,24 + ~~0,06~~ + ~~0,06~~ ≅ 13 kPa

Note:
Because of the low head losses for the manifolds, the two terms relating to them can be neglected.
In general, the total head loss is reasonably approximate to that of the circuit consisting of the pipe, radiator and lockshield valve fully open.

Using the lockshield valve

The lockshield valve makes it possible to balance the individual circuits of the radiators in order to obtain the actual flow rates as determined at the design stage. Each individual circuit is considered as consisting of: lockshield valve, pipe/radiator and shut-off valve. To be able to set the system correctly it is necessary to take account of the following data:

· the flow rate of the medium that must pass through each circuit (design data).

· the head loss which, for this flow rate, is generated in each circuit:

$$\Delta P_{Circuit} = \Delta P_{T/R} + \Delta P_{SV} \qquad (1.3)$$

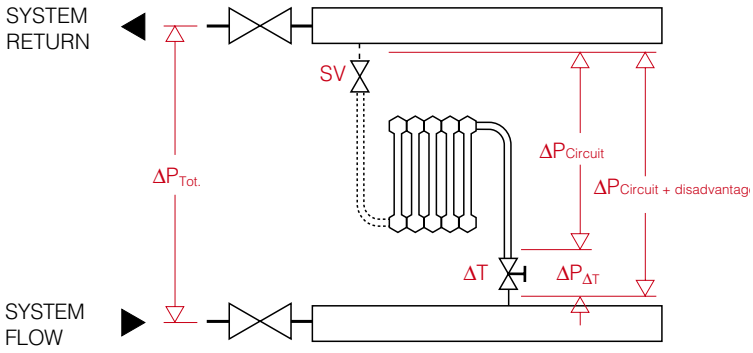
· the head loss of the most disadvantaged circuit:

$$\Delta P_{\substack{Circuit \\ + disadvantaged}} = \Delta P_{LV} + \Delta P_{T/R} + \Delta P_{SV} \qquad (1.4)$$

In all the circuits the lockshield valve, for the flow rate $G_{Circuit}$, must provide an additional head loss equal to the difference, which we can indicate as **ΔP_{LV} (ΔV lockshield valve)**.

To permit an increase in flow rate, we sometimes consider the lockshield of the circuit with the greatest head losses open to 80%.

Once the data ΔP_{LV} and $G_{Circuit}$ has been established for each circuit, we need to refer to the graph displaying the hydraulic characteristics of the lockshield and choose the optimum adjustment curve to which the valve adjustment position corresponds.



Example of pre-adjustment

Suppose we need to balance three circuits with the head loss and flow rate characteristics for the pipe/radiator assembly shown in the example *(1.2)*:

Since circuit No. 3 is the most unfavourable one, because it has the greatest head loss for the pipe/radiator assembly, we need to adjust the remaining circuits:

Circuit 3
$\Delta P_{T/R3}$ = 12,5 kPa
G3 = 200 l/h

$\Delta P_{LV3} = 200^2/540^2 = 0{,}14$ kPa
$\Delta P_{SV3} = 200^2/410^2 = 0{,}24$ kPa

With the relationship (1.4):
$\Delta P_{\substack{Circuit\ 3 \\ + disadvantaged}} = 0{,}14 + 12{,}5 + 0{,}24 \cong 13$ kPa

Circuit 1
$\Delta P_{T/R1}$ = 3 kPa
G1 = 80 l/h

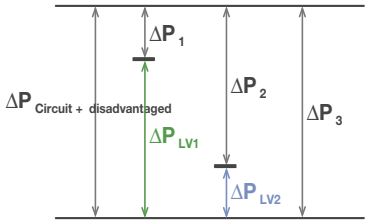
$\Delta P_{SV1} = 80^2/410^2 = 0{,}04$ kPa

with the relationship (1.3):
$\Delta P_{Circuit\ 1} = 3{,}0 + 0{,}04 \cong 3$ kPa

Circuit 2
$\Delta P_{T/R2}$ = 9,8 kPa
G2 = 130 l/h

$\Delta P_{SV2} = 130^2/410^2 = 0{,}1$ kPa

with the relationship (1.3):
$\Delta P_{Circuit\ 2} = 9{,}8 + 0{,}1 = 9{,}9$ kPa



$$\Delta P_{\substack{Circuit \\ + disadvantaged}} \cong 13 \text{ kPa}$$

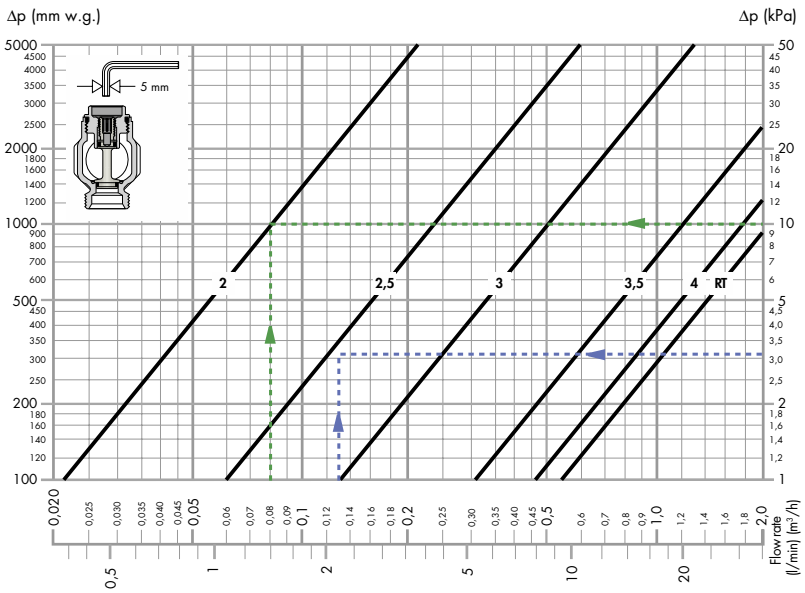
To balance circuits 1 and 2, the data we need for each circuit for reading the pre-setting position will be as follows:

Circuit 1
ΔP_{LV1} = **13** - 3 = 10 kPa
G1 = 80 l/h
No. of adjustment turns = 2

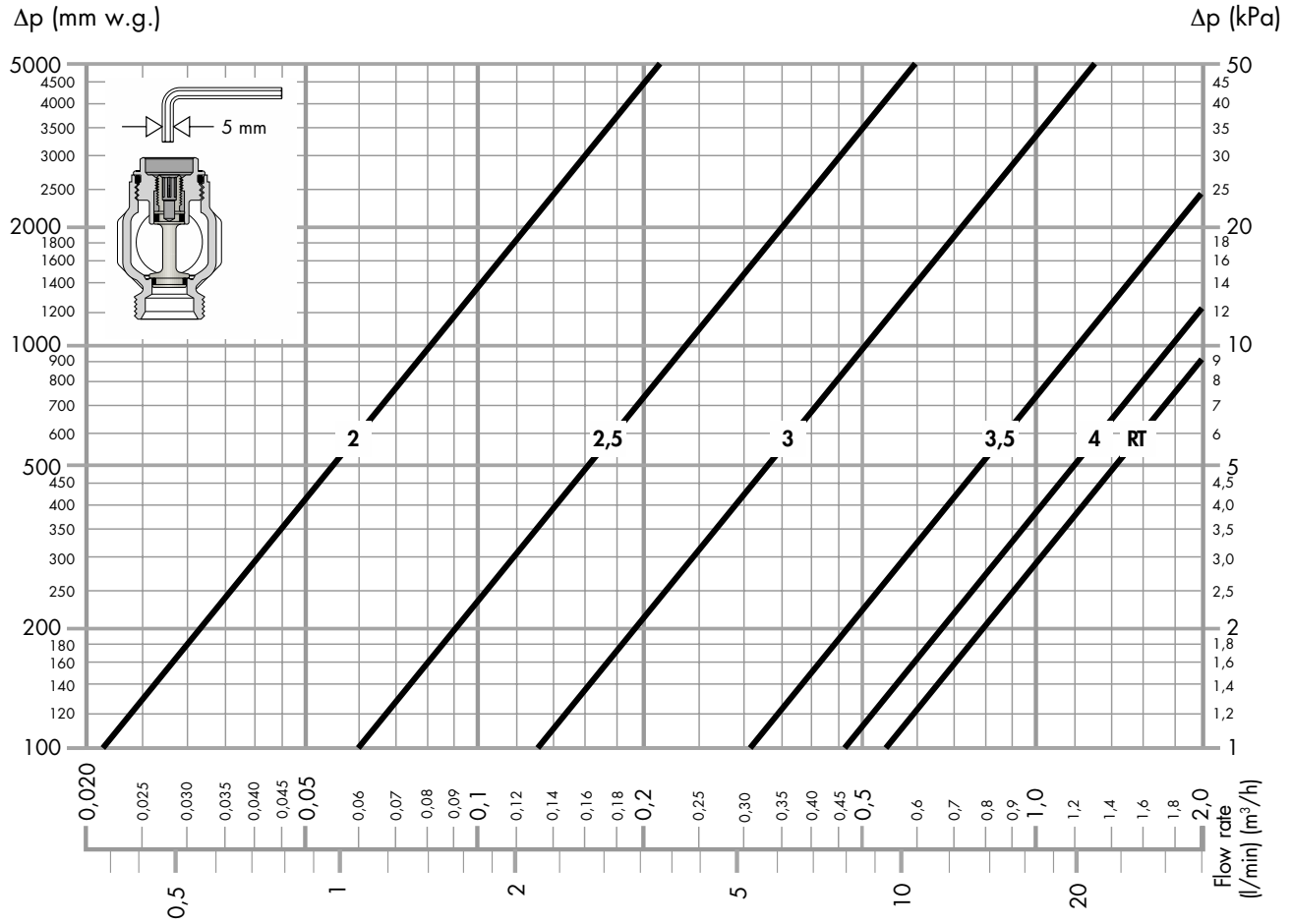
Circuit 2
ΔP_{LV2} = **13** - 9,9 = 3,1 kPa
G2 = 130 l/h
No. of adjustment turns ≅ 2,5*

Circuit 3
Adjustment position fully open

* Rounded up or down to the nearest curve on the adjustment graph



Lockshield hydraulic characteristics



Adjustment position	2	2,5	3	3,5	4	F.O.
Kv	0,22	0,60	1,30	3,20	4,70	5,40
$Kv_{0,01}$	22	60	130	320	470	540

- Kv = flow rate in m^3/h for a head loss of 1 bar

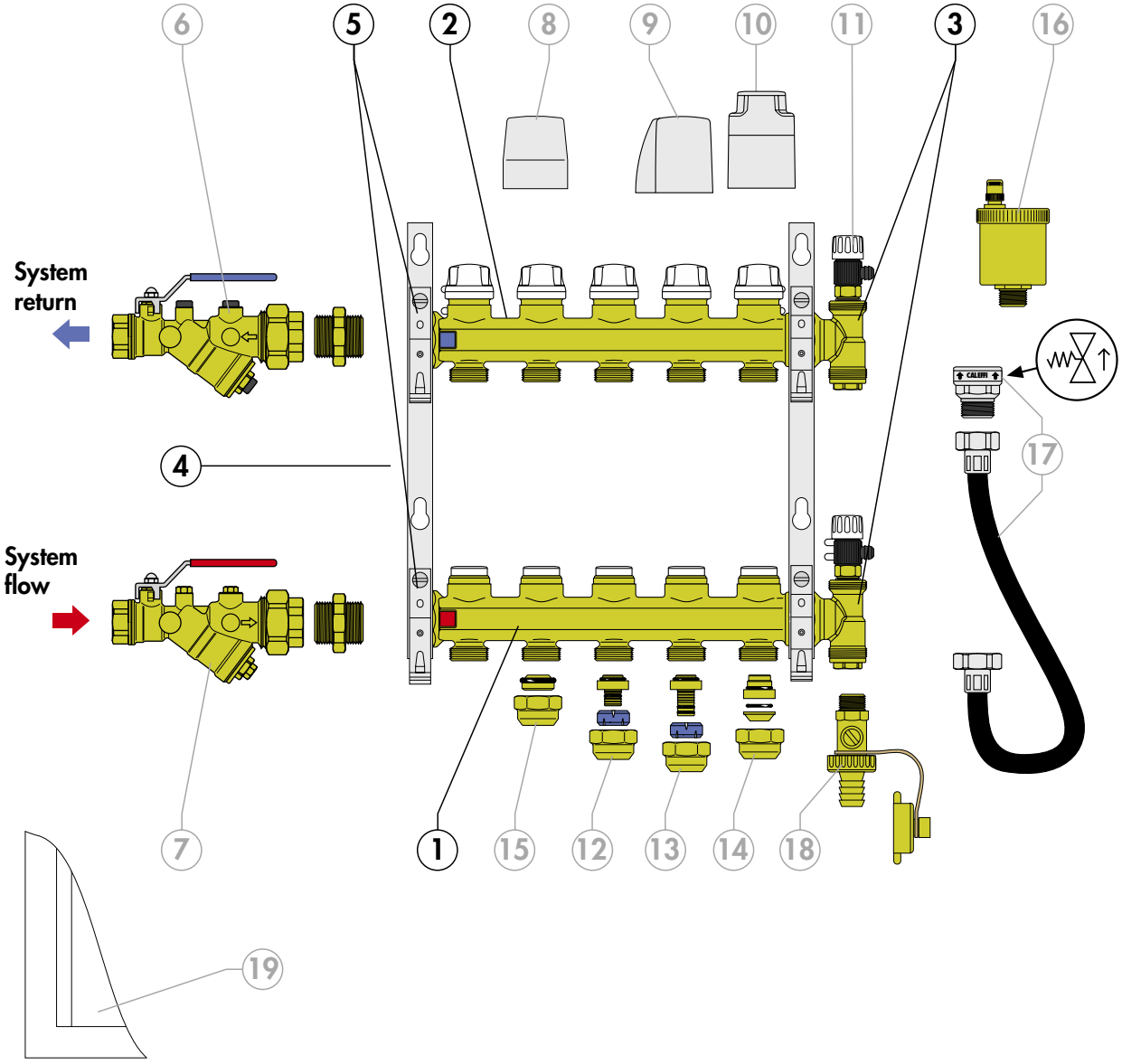
- $Kv_{0,01}$ = flow rate in l/h for a head loss of 1 kPa

SPECIFICATION SUMMARY

662 series

Distribution manifold for heating systems with 2 (from 2 to 13) outlets. Brass body. EPDM seals. Main connections 1" F (ISO 228-1). Outlet connections 3/4" M - Ø 18 threaded, centre distance 50 mm. Medium water and glycol solutions. Maximum percentage of glycol 30%. Maximum working pressure 10 bar. Working temperature range 5–100°C.
Complete with:
- Flow manifold complete with lockshield valves with 5 full pre-adjustment turns.
- Return manifold complete with shut-off valves fitted for thermo-electric actuator.
- End fittings consisting of union with double radial connection, manually operated air vent valve and cap.
- Pair of mounting brackets for box or wall installation and mountable manifold supports.
- Upper and lower manifold supports, for brackets.

Manifolds and accessories



1) Flow manifold complete with lockshield valves for flow rate pre-adjustment, 6621 series
2) Return manifold complete with shut-off valves fitted for thermo-electric actuator, 6620 series
3) End fittings complete with manually operated air vent valves, union with double radial connection and caps, 5996 series
4) Pair of mounting brackets for box or wall installation, code 658101
5) Upper and lower manifold supports, for brackets
6) AUTOFLOW®, 121 series
7) Filter, 120 series
8) Thermo-electric actuator, 6561 series
9) Thermo-electric actuator, 6562 series and 6564 series with low power consumption
10) Thermo-electric actuator with manual opening and position indicator, 6563 series
11) Mini drain cock, code 337231
12) DARCAL fitting, code 6805 . .
13) DARCAL fitting, code 6795 . .
14) Mechanical fitting, code 3475 . .
15) Screw plug, code 386500
16) Automatic air vent, code 502030 + hygroscopic cap code R59681
17) Fixed set differential by-pass kit, code 662000
18) Drain cock, code 538400
19) Box, code 659..5.

Fixed set differential by-pass kit with flexible hose, code 662000

Function

In heating and air-conditioning systems, the medium distribution circuits can be totally or partially shut off by closing the thermo-electric valves in the manifolds or the thermostatic valves of the radiators.
After reducing the flow rate, the differential pressure in the circuit may increase up to values which may generate noise problems, a high medium speed, mechanical erosion and hydraulic unbalancing of the system itself.
The differential by-pass for 662 series manifolds performs the function of keeping the flow and return pressure in the manifold circuit balanced as the flow rate changes.
This special by-pass consists of a flexible hose which makes installation easier and allows the manifold to be adapted to suit the brackets, according to the actual positions of the system flow and return piping.

Product range

Code 662000 Fixed set differential by-pass kit with flexible hose _____ sizes 3/4" x 3/4" F captive nut

Technical specifications

Materials

Hose:	stainless steel
Nuts:	brass EN 12165 CW617N, chrome plated
Check valve holding body:	brass EN 12165 CW617N, chrome plated
Check valve obturator:	POM
Spring:	stainless steel
Hydraulic seals:	EPDM

Performance

Medium:	water, glycol solutions
Max. percentage of glycol:	30%
Max. working pressure:	10 bar
Working temperature range:	0–100°C
Fixed setting differential pressure:	20 kPa (2000 mm w.g.)
Hose connections:	3/4" x 1/2" F (ISO 228-1) with captive nut
Check valve holding connections:	1/2" M x 3/4" F (ISO 228-1)

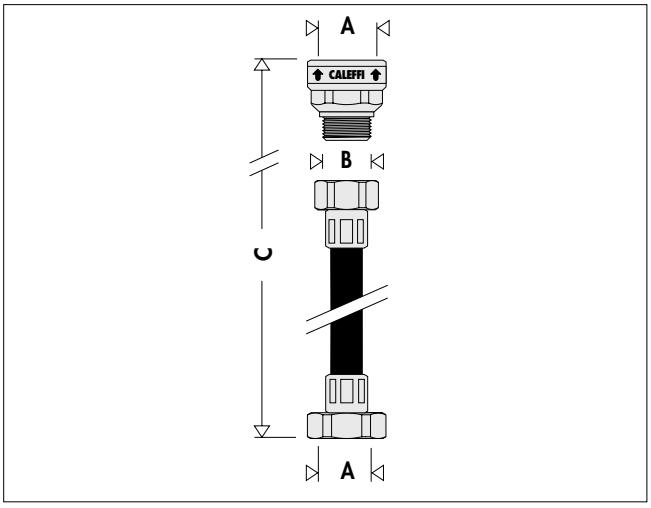
Operating principle

The by-pass valve contains a check obturator integrated with a counter-acting spring.
When the fixed set pressure value is reached, the valve obturator opens gradually. In this way the flow rate is recirculated and, being proportional to the closure of the thermo-electric valves, keeps the differential pressure in the manifold circuit at a constant level.

Construction details

The differential by-pass kit has a fixed setting that cannot be changed since it has no accessible adjustment devices.
As it is made using woven stainless steel, it remains flexible and is easily fitted to the manifold.
The flexibility of the hose also offers the advantage of being able to adjust the position of the flow and return manifolds on the brackets, according to the actual centre distance between the system flow and return piping.

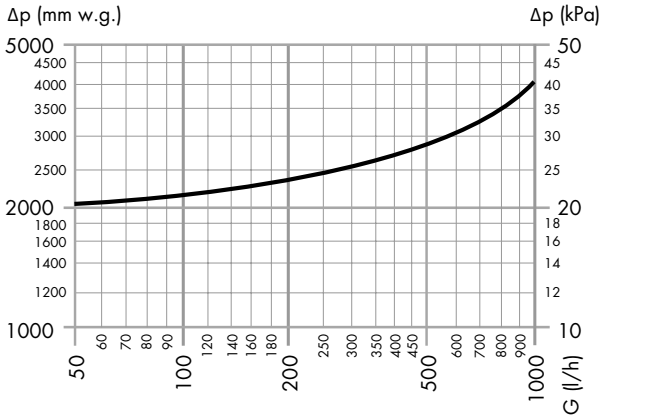
Dimensions



Code	A	B	C	Mass (kg)
662000	3/4	1/2"	420	0,24

Hydraulic characteristics

By-pass differential pressure: 20 kPa (2000 mm w.g.)



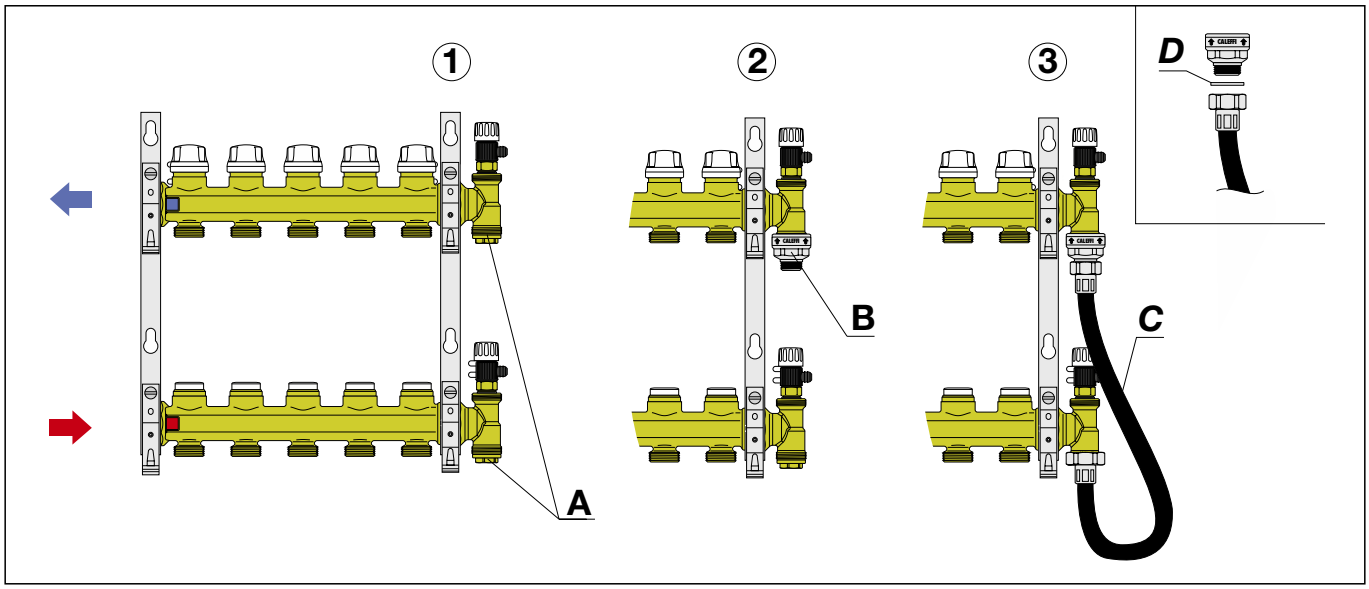
SPECIFICATION SUMMARY

Code 662000
Fixed set differential by-pass kit with flexible hose. Connections 3/4" x 3/4" F (ISO 228-1) with captive nut. Brass nuts, chrome-plated. Stainless steel flexible hose. Brass check valve holding body. Stainless steel spring. EPDM hydraulic seals. Medium water and glycol solutions. Maximum percentage of glycol 30%. Maximum working pressure 10 bar. Working temperature range 0–100°C. Fixed differential setting pressure 20 kPa.

By-pass installation

To fit the differential by-pass on the 662 series manifolds, it is necessary to carry out the following steps:

1) When the system is empty, remove the stopper caps (A) from the flow and return manifold end fittings.
2) Screw the check valve holding (B) (supplied) onto the return manifold end fitting and create a seal using hemp, PTFE tape or another suitable sealant.
3) Fit the flexible hose (C) to the two manifold end fittings using the captive nuts, once the seals (D) (supplied) have been positioned correctly.



Automatic flow rate regulators

121 AUTOFLOW®

broch. 01141

Combination of automatic flow rate regulator and ball valve.
CR Dezincification resistant alloy body.
AUTOFLOW® high-resistance polymer cartridge.

Maximum working pressure:	25 bar
Working temperature range:	-20–100°C
Max. percentage of glycol:	50%
Δp range:	15–200 kPa
Flow rates:	0,085 – 5 m³/h
Accuracy:	±10%

Designed for pressure point and drain valve connection.

Code		Kv (m³/h)	Minimum working Δp (kPa)	Δp range (kPa)
121141 ●●●	1/2”	6,90	15	15–200
121151 ●●●	3/4”	7,73	15	15–200
121161 ●●●	1”	18,00	15	15–200
121171 ●●●	1 1/4”	18,50	15	15–200

120 STRAINER

tech. broch. 01041

Combination of strainer and ball valve.
Brass body.
Stainless steel filter cartridge.

Maximum working pressure:	25 bar
Working temperature range:	0–110°C
Max. percentage of glycol:	50%
Strainer mesh size Ø:	1/2”–1 1/4”: 0,87 mm; 1 1/2” and 2”: 0,73 mm

Fitted for connection of pressure ports and drain valve.

Code		Kv (m³/h)
120141 000	1/2”	6.87
120151 000	3/4”	7,25
120161 000	1”	16,65
120171 000	1 1/4”	17,23

Thermo-electric actuators

6561

tech. broch. 01042

Thermo-electric actuator
for manifolds 662 series.
Normally closed.

Code	Supply voltage (V)	
656102	230	
656104	24	
656112	230	With auxiliary microswitch
656114	24	With auxiliary microswitch

Technical specifications

Materials

Protective shell:	self-extinguishing polycarbonate
Colour:	(code 656102/04) white RAL 9010
	(code 656112/14) grey RAL 9002

Performance

Normally closed	
Electric supply:	230 V (ac) - 24 V (ac) - 24 V (dc)
Starting current:	≤ 1 A
Running current:	230 V (ac) = 13 mA
	24 V (ac) - 24 V (dc) = 140 mA
Running power consumption:	3 W
Auxiliary microswitch contact rating (code 656112/114):	0,8 A (230 V)
Protection class:	IP 44 (in vertical position)
Double insulation construction:	CE ⧈
Ambient temperature range:	0–50°C
Operating time:	opening and closing from 120 s to 180 s
Length of supply cable:	80 cm

Thermo-electric actuators with manual opening and position indicator

6563

tech. broch. 01142

Thermo-electric actuator
for manifolds 662 series.
Normally closed.

Code	Supply voltage (V)	
656302	230	
656304	24	
656312	230	With auxiliary microswitch
656314	24	With auxiliary microswitch

Technical specifications

Materials

Protective shell:	self-extinguishing polycarbonate
Colour:	(code 656302/04) white RAL 9010
	(code 656312/14) grey RAL 9002

Performance

Normally closed	
Electric supply:	230 V (ac) - 24 V (ac) - 24 V (dc)
Starting current:	≤ 1 A
Running current:	230 V (ac) = 13 mA
	24 V (ac) - 24 V (dc) = 140 mA
Running power consumption:	3 W
Auxiliary microswitch contact rating (code 656312/14):	0,8 A (230 V)
Protection class:	IP 40
Double insulation construction:	CE ⧈
Ambient temperature range:	0–50°C
Operating time:	opening and closing from 120 s to 180 s
Length of supply cable:	80 cm

Thermo-electric actuators, quick-coupling installation with a clip adaptor

6562/4

tech. broch. 01198

Thermo-electric actuator
for manifolds 662 series.
Normally closed.

Code	Supply voltage (V)	
656202	230	
656204	24	
656212	230	With auxiliary microswitch
656214	24	With auxiliary microswitch

Low power consumption version

Code	Supply voltage (V)	
656402	230	
656404	24	
656412	230	With auxiliary microswitch
656414	24	With auxiliary microswitch

Technical specifications

Materials

Protective shell:	self-extinguishing polycarbonate
Colour:	(code 656.02/04) white RAL 9010
	(code 656.12/14) grey RAL 9002

Performance

Normally closed	
Electric supply:	230 V (ac) - 24 V (ac) - 24 V (dc)
Starting current:	(6562) ≤ 1 A, (6564) ≤ 250 mA
Running current:	
-6562 series:	230 V (ac) = 13 mA; 24 V (ac) - 24 V (dc) = 140 mA
-6564 series:	230 V (ac) = 15 mA; 24 V (ac) - 24 V (dc) = 125 mA
Running power consumption:	3 W
Auxiliary microswitch contact rating (code 656.12/14):	0,8 A (230 V)
Protection class (fitted in all positions):	IP 54
Double insulation construction:	CE ⧈
Ambient temperature range:	0–50°C
Operating time 6562 series	
Operating time:	opening and closing from 120 s to 180 s
Aux. microswitch closing time:	from 120 s to 180 s
Operating time 6564 series	
Opening time:	(80%): 300 s; (100%): 600 s
Closing time:	240 s
Aux. microswitch closing time:	300 s
Length of supply cable:	80 cm

Manifolds

662

Pair of manifolds equipped with shut-off valves and pre-regulation valves.
Maximum working pressure: 10 bar.
Temperature range: 5–100°C.
Outlet centre distance: 50 mm.

Code	Connection	Outlet No.	Outlets
662625	1”	x 2	3/4” M
662635	1”	x 3	3/4” M
662645	1”	x 4	3/4” M
662655	1”	x 5	3/4” M
662665	1”	x 6	3/4” M

6620

Return manifold equipped with shut-off valves fitted for thermo-electric actuator.
Maximum working pressure: 10 bar.
Temperature range: 5–100°C.
Outlet centre distance: 50 mm.

Code	Connection	Outlet No.	Outlets
662025	1”	x 2	3/4” M
662035	1”	x 3	3/4” M
662045	1”	x 4	3/4” M
662055	1”	x 5	3/4” M
662065	1”	x 6	3/4” M

6621

Flow manifold complete with pre-regulation valves.
Maximum working pressure: 10 bar.
Temperature range: 5–100°C.
Outlet centre distance: 50 mm.

Code	Connection	No. of outlets	Outlets
662125	1”	x 2	3/4” M
662135	1”	x 3	3/4” M
662145	1”	x 4	3/4” M
662155	1”	x 5	3/4” M
662165	1”	x 6	3/4” M

Materials

Flow manifold

Body:	brass EN 1982 CB753S
Lockshield valve	
Headwork:	brass EN 12164 CW614N
Lockshield valve stem:	brass EN 12164 CW614N
Seals:	EPDM
Plug	self-extinguishing polycarbonate

Lockshield adjustment with 5 mm hexagonal wrench

Return manifold

Body:	brass EN 1982 CB753S
Shut-off valve	
Headwork:	PSU
Obturator stem:	stainless steel
Obturator:	EPDM
Spring:	stainless steel
Seals:	EPDM
Knob:	ABS

Performance

Maximum working pressure:	10 bar
Working temperature range:	5–100°C
Main connections:	1” F (ISO 228-1)
Outlets:	3/4” M - Ø 18
Centre distance:	50 mm

Drain cock

538

Drain cock with hose connection and cap.
Max. working pressure: 10 bar.
Max. working temperature: 110°C.

Code	
538400	1/2” M

Brackets

658

Pair of steel brackets for manifolds 662 and 664 series.
For use with box code 659..5 or directly wall mounted.

Code
658101

Air vent

5020

Automatic air vent.
In hot-stamped brass.
Maximum working pressure: 10 bar.
Max. discharge pressure: 2.5 bar.
Max. working temperature: 120°C.

WRAS APPROVED PRODUCT CERTIFICATION MARK

Code	
502030	3/8” M

R59681 AQUASTOP®

Hygroscopic safety cap.
For air vents 5020 and 5021 series.

Code
R59681

337

Drain cock with metal seal.
Adjustable outlet.
PTFE seal on thread.
Maximum working pressure: 10 bar.
Max. working temperature: 100°C.

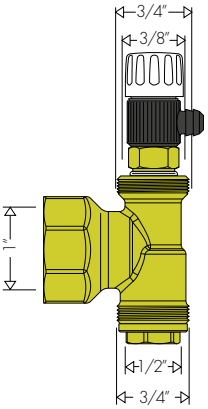
WRAS APPROVED PRODUCT CERTIFICATION MARK

Code	
337231	3/8” M

End fitting

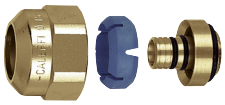
5996

End fitting composed of air vent cock, double radial end fitting and plug.
Maximum working pressure: 10 bar.
Working temperature range: 5–100°C.
Main connection: 1" F.
Lower connection: 3/4" M.
Upper air vent connection: 3/8" F.
Lower plug connection: 1/2" F.



Code	
59962	1" F

Fittings



680 DARCAL®

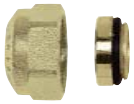
Self-adjustable diameter fitting for single and multilayer plastic pipes.
Maximum working pressure: 10 bar.
Working temperature range: 5–80°C (PE-X)
5–75°C (Multilayer marked 95°C)

Code		$Ø_{inner}$	$Ø_{outer}$
680507	3/4"	7,5- 8	10,5– 12
680502	3/4"	7,5- 8	12 – 14
680503	3/4"	8,5– 9	12 – 14
680500	3/4"	9 – 9,5	14 – 16
680501	3/4"	9,5–10	12 – 14
680506	3/4"	9,5–10	14 – 16
680515	3/4"	10,5–11	14 – 16
680517	3/4"	10,5–11	16 – 18
680524	3/4"	11,5–12	14 – 16
680526	3/4"	11,5–12	16 – 18
680535	3/4"	12,5–13	16 – 18
680537	3/4"	12,5–13	18 – 20
680544	3/4"	13,5–14	16 – 18
680546	3/4"	13,5–14	18 – 20
680555	3/4"	14,5–15	18 – 20
680556	3/4"	15 –15,5	18 – 20
680564	3/4"	15,5–16	18 – 20
680505	3/4"	17	22.5

347

Compression fitting for annealed copper, hard copper, brass, mild steel and stainless steel pipes.
With O-Ring seal.
Maximum working pressure: 10 bar.
Working temperature range: -25–120°C.

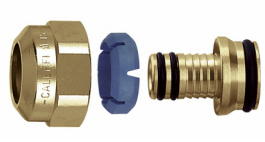
Code	
347510	3/4" - Ø 10
347512	3/4" - Ø 12
347514	3/4" - Ø 14
347515	3/4" - Ø 15
347516	3/4" - Ø 16
347518	3/4" - Ø 18



386

Screw plug with nut, for manifold outlets.

Code	
386500	3/4"



679 DARCAL®

Fitting for multilayer pipe with continuous high-temperature use.
Maximum working pressure: 10 bar.
Working temperature range: 0–95°C.

For a correct use, adjust the multilayer pipe diameter before installation using the Caleffi calibrator 679 series.

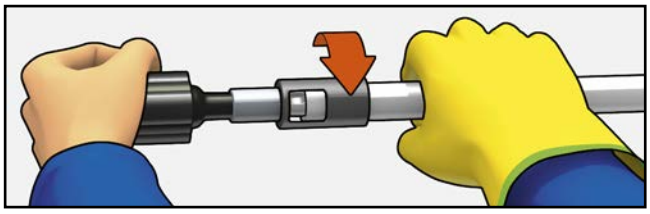
Code	
679514	3/4" - Ø 14x2
679524	3/4" - Ø 16x2
679525	3/4" - Ø 16x2,25
679544	3/4" - Ø 18x2
679564	3/4" - Ø 20x2
679565	3/4" - Ø 20x2,25
679566	3/4" - Ø 20x2,5

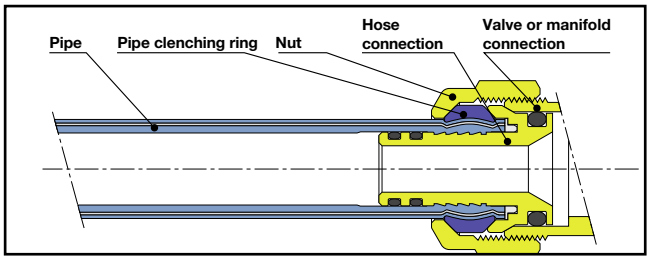
679

Calibratori and Handle to adjust multilayer pipes diameter before use with fittings 679 series.

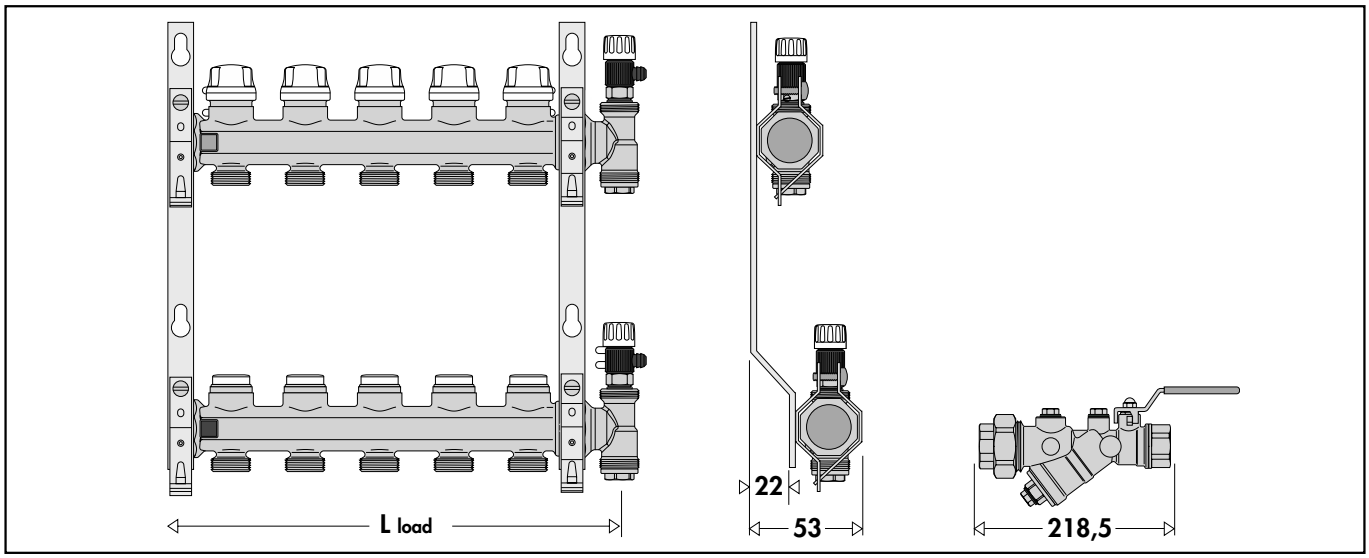
Code	
679001	Calibrator Ø 14x2
679002	Calibrator Ø 16x2
679003	Calibrator Ø 16x2,25
679004	Calibrator Ø 18x2
679006	Calibrator Ø 20x2
679007	Calibrator Ø 20x2,25
679008	Calibrator Ø 20x2,5
679009	Handle for "Burnished" calibrator

Multilayer pipe calibration and installation of fitting components 679 series





Choice of box size, 659 and 661 series, according to the number of outlets



Code	**662**6B5	**662**6C5	**662**6D5	**662**6E5	**662**6F5	**662**6G5	**662**6H5	**662**6I5	**662**6L5	**662**6M5	**662**6N5	**662**6O5
No. of outlets	2	3	4	5	6	7	8	9	10	11	12	13
Manifold total length (mm)	190	240	290	340	390	450	500	550	600	650	700	760
Box length (mm)	400	400	400	600	600	600	600	800	800	800	800	1000
Box code, 659 series	**659**045	**659**045	**659**045	**659**065	**659**065	**659**065	**659**065	**659**085	**659**085	**659**085	**659**085	**659**105

Boxes

659

tech. broch. 01180

Inspection wall box for manifolds 349, 350, 592, 662 and 671 series.
Complete with specific support for manifold brackets.
Closure with a push-fit clamp.
In painted sheet steel.
Adjustable depth from 80 to 120 mm.

Code	Useful dim. (h x b x d)
659045	500 x 400 x 80 – 120
659065	500 x 600 x 80 – 120
659085	500 x 800 x 80 – 120
659105	500 x 1000 x 80 - 120

659

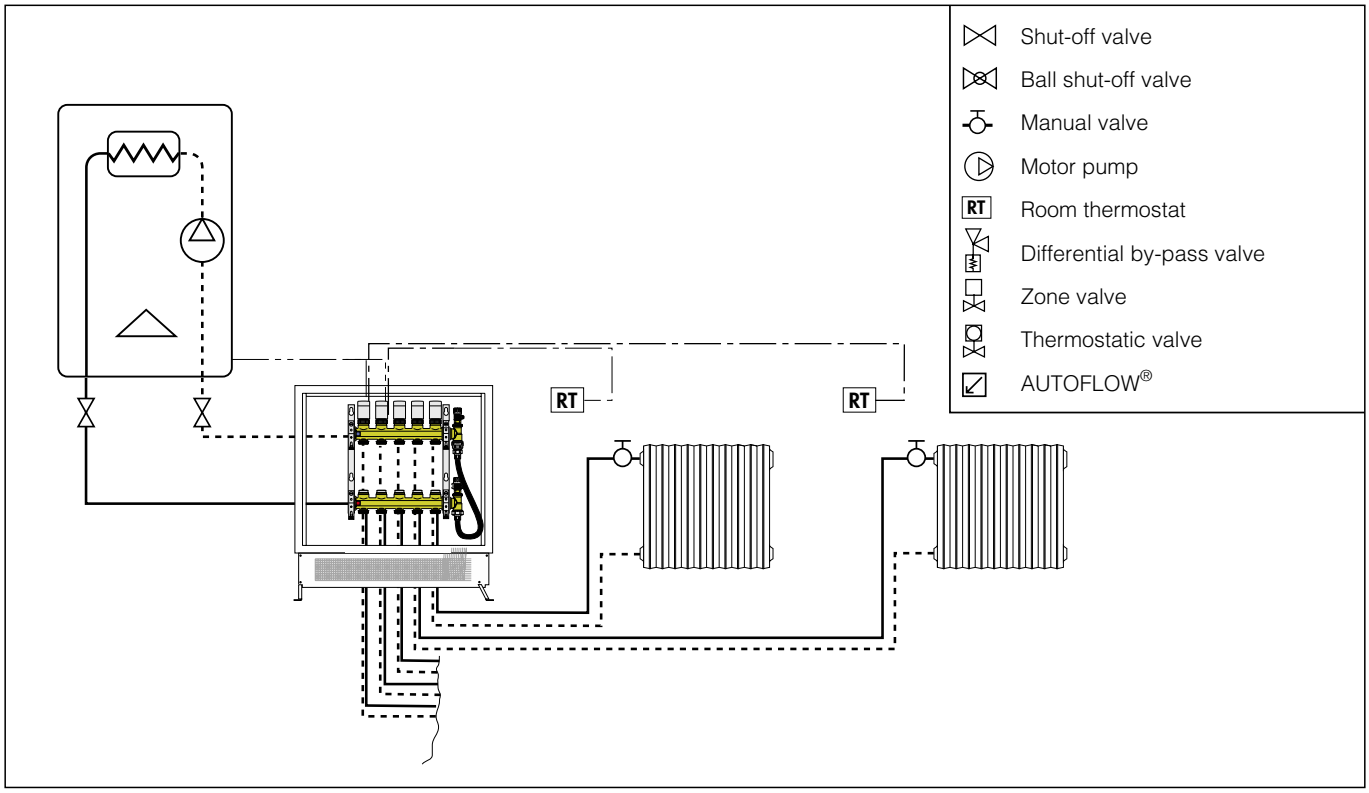
tech. broch. 01144

Inspection wall port with frame.
In painted sheet steel.

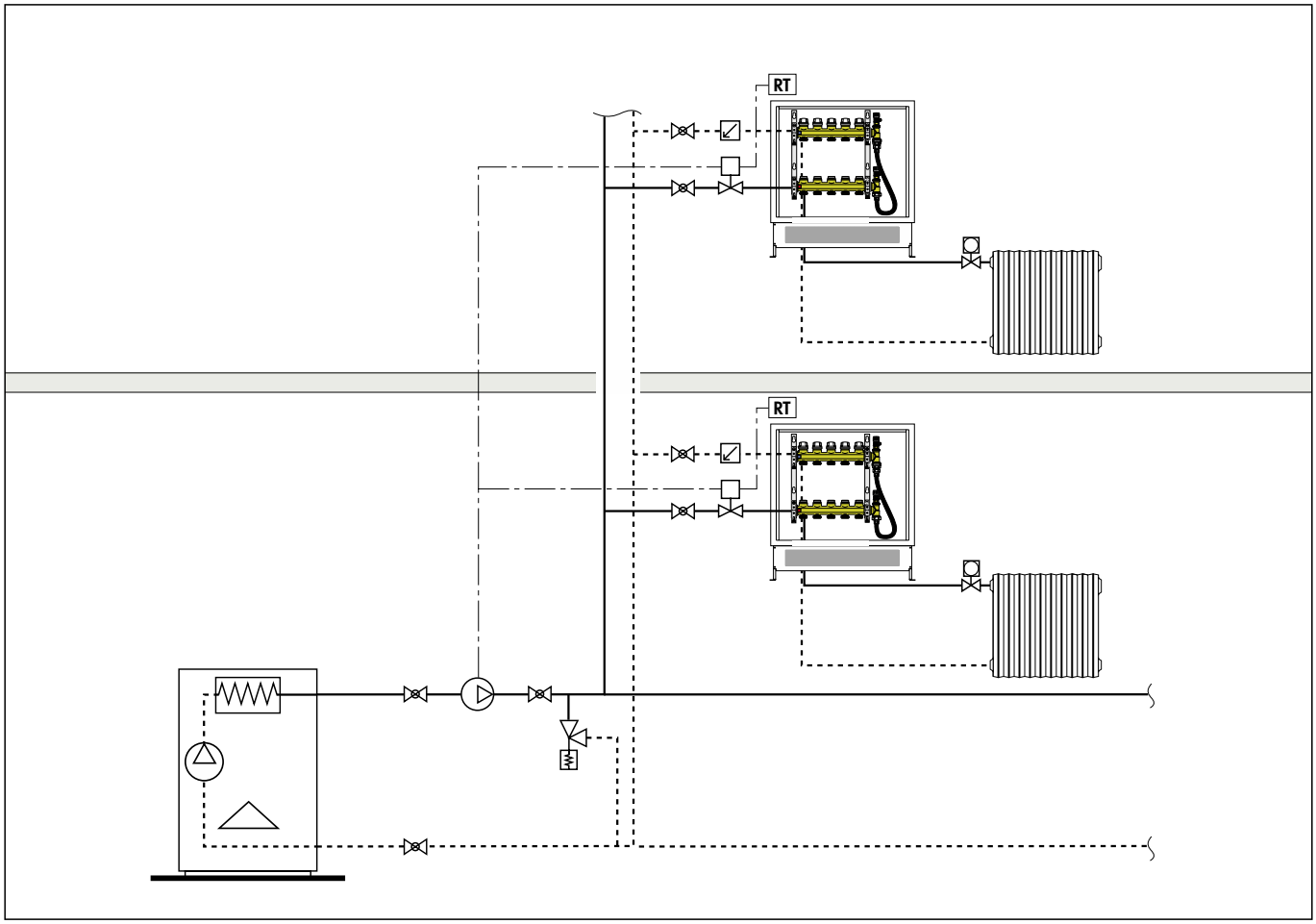
Code	
659504	for 659045
659506	for 659065
659508	for 659085
659510	for 659105

Application diagrams

Independent radiator system with wall-mounted boiler and direct distribution



Zone heating system and differential by-pass valve



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