

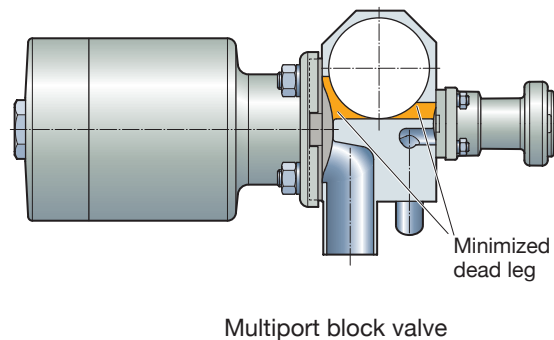
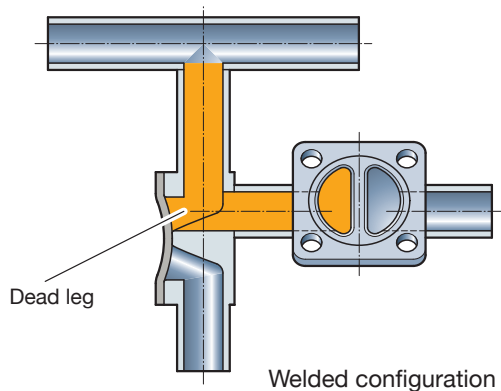
Why Multiport Valves?

A multiport valve consists of a valve body machined from a solid block material with a minimum of three tube ends. Multiport valves can be produced with up to 20 actuators and 40 tube ends or even more depending on the feasibility of multiport valve manufacturing. The selection and specification of multiport valves in the aseptic process industry becomes more and more important. The reason is found in the advantages the product offers in optimizing aseptic process purity and efficient product manufacturing.

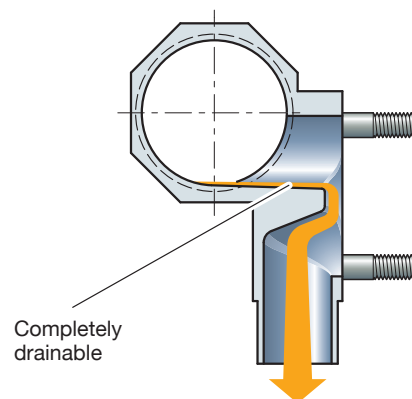
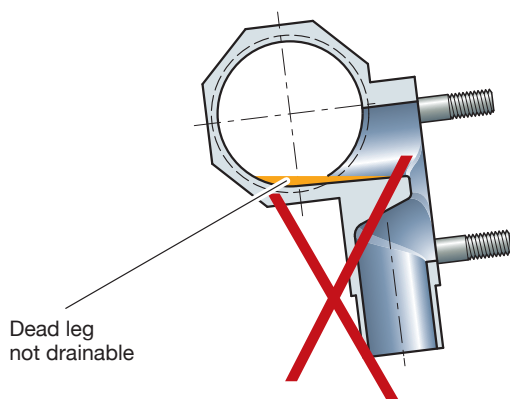
Innovative conceptual designs and modern machining capabilities are integrated through the CAD-CAM system creating profitable individual solutions with a high degree of flexibility. A prerequisite for this is an operational structure which supports a close relationship between sales, engineering and manufacturing. With a high vertical range of manufacturing at its factory, SED is in an excellent position to meet these challenging market needs. The continuous innovative development of multiport block valve products is a main focus of SED.

The ideal benefit for you, our customer, is achieved through active and cooperative teamwork of both parties during the design and specification of the valves. This refers especially to the process requirements dictated by the P&ID's for proper flow direction, drainability and installation restraints.

The below illustrations compare the hold up volume and the compact design of a multiport block valve to a welded valve configuration:



The complete drainability is an important consideration for the design of multiport valves. The following illustration shows the correct and incorrect installation of a standard T-valve:



The Advantages at a Glance:

- Customer's specific design
- Compact design and smaller envelope dimension is achievable with the Steripur Series actuators
- Combination of many different nominal diameters
- Optimized drainability
- Minimized dead leg
- Reduces surface contact, hold up volume and cross contamination of the product
- Reduction of fittings, tubing and field welds in the system
- Reduces qualification and validation documentation requirements
- All end connections and materials are available according to the customer's specification

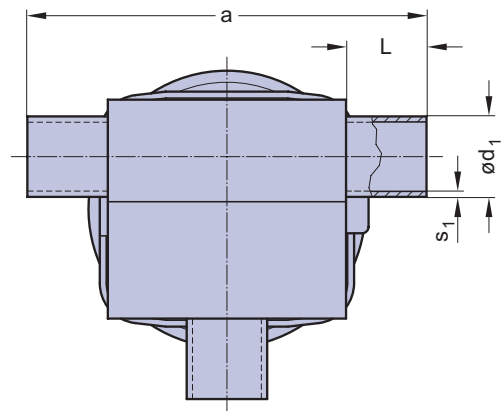
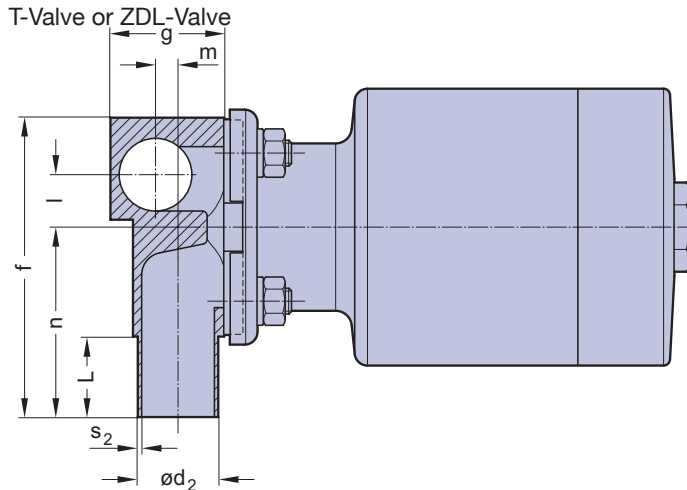
The application of multiport block valves is mainly for the distribution, point of use, sampling, diverting, mixing, bypass, drain and process sterilization (SIP/CIP).

The following Multiport Valve pages display a selection of multiport block valves. These are examples that should assist in specifying the multiport block body. Up to size DN100 (4.0") and larger nominal diameters and nominal diameter combinations are available. Within this range, all tube standards, tube end orientations, and other application specific customized blocks can be specified. Some of the multiport block valves have become standard products for SED and years of development and manufacturing has allowed for efficiency in production.

For the differentiation in the following tables, two main criteria are considered:

- 1) Multiport blocks with main line open for circulation (page 69 to 73)
- 2) Multiport blocks with all lines and valve ports able to close (page 74 to 79)

1) Main line open



On request, all dimensional data sheets or 2D and 3D - CAD drawings are available.

Description

For valve specification see page 81 as guideline

P&ID

- Flow direction
- Drain direction
- ✕ Valve

Illustration

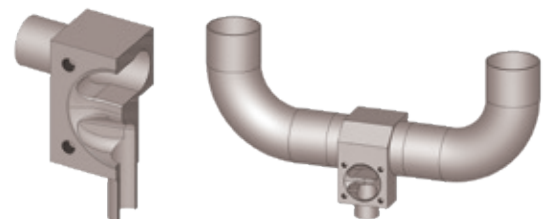
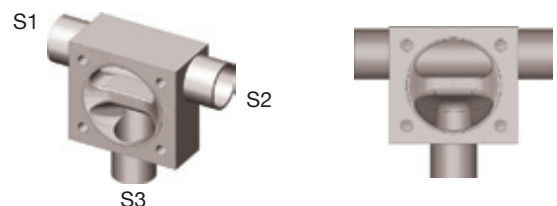
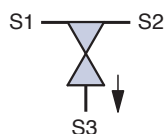
Actuators and other options are included in some of the illustrations

1.1)

T-Valve or ZDL-Valve

1 x Point of use or sampling valve port
Optional available with U-bend for easy fit into the loop

Recommended installation:
S3 down



1) Main line open

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
 → Drain direction
 Valve

Illustration

Actuators and other options are included in some of the illustrations

1.15)

TL- Valve, actuation left side

(illustration)

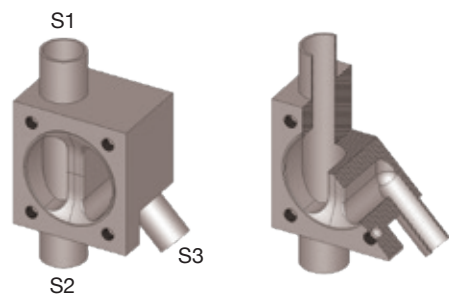
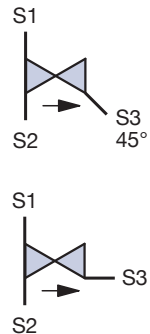
TR-Valve, actuation right side

1 x Point of use or sampling valve port

Main line vertical

Recommended installation:

S3 - 45° down



1.16)

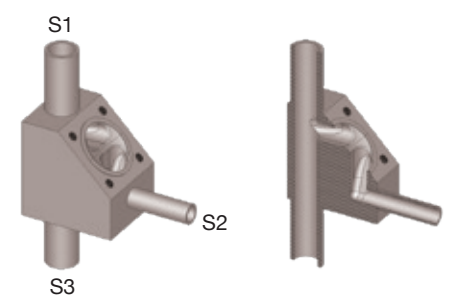
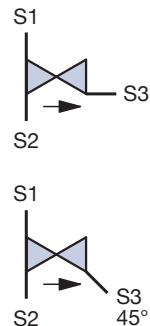
TH- Valve

1 x Point of use or sampling valve port

Main line vertical and with horizontal outlet port

Recommended installation:

S2 down



1.2)

LL 3/1 – S2 left side

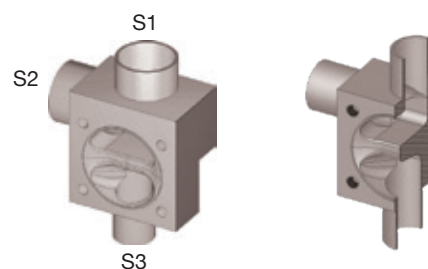
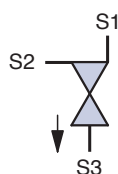
(illustration)

LR 3/1 – S2 right side

1 x Point of use valve port with integrated directional flow 90° to the main line

Recommended installation:

S3 down



1.13)

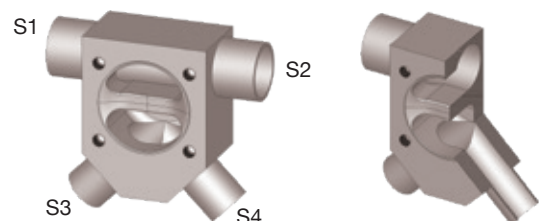
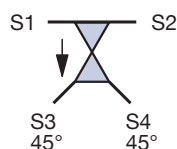
TY-Valve

2 x Point of use or sampling valve ports

Optional available with U-bend for easy fit into the loop

Recommended installation:

S3 and S4 - 45°down



1) Main line open

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
→ Drain direction
✕ Valve

Illustration

Actuators and other options are included in some of the illustrations

1.4)

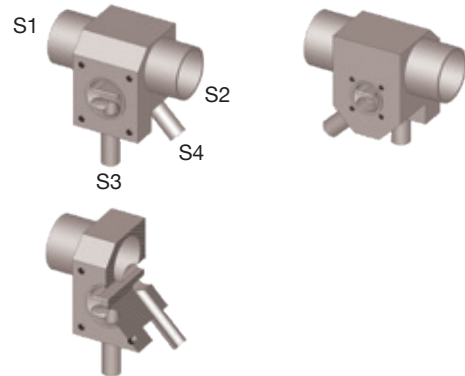
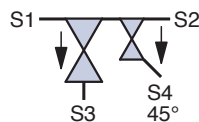
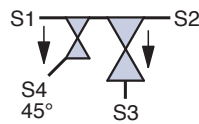
MZL 4/2 – S4 left side
MZR 4/2 – S4 right side

(illustration)

1 x Point of use valve port
1 x Integral loop sample valve port
Sample valve be provides on either side of the valve body.

Back to back valve actuation

Recommended installation:
S3 down



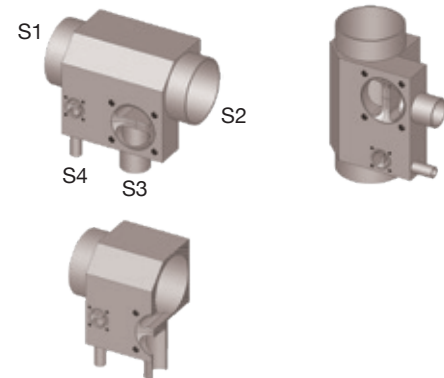
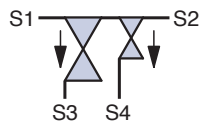
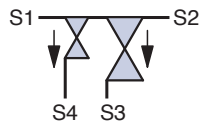
1.45)

MTL 4/2 – S4 left side
MTR 4/2 – S4 right side

2 x Point of Use Valve Port or Double Zero Dead Leg Tee Valve with different diaphragm size. One port maybe used for sampling and the second port for downstream processing.

One side valve actuation

Recommended installation:
S3 and S4 down



1.6)

MXL 4/2 – S4 left side
MXR 4/2 – S4 right side

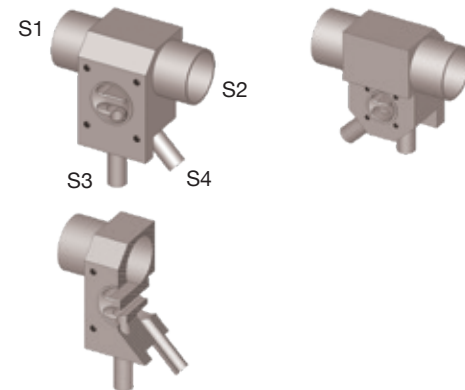
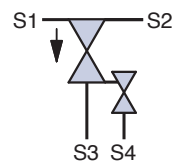
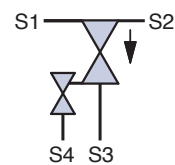
(illustration)

1 x Point of use valve port
1 x Integral sample purge valve, valve port below the weir.

Sample valve be provides on either side of the valve body.

Back to back valve actuation

Recommended installation:
S3 down



1.61)

MKL 4/2 – S4 left side
MKR 4/2 – S4 right side

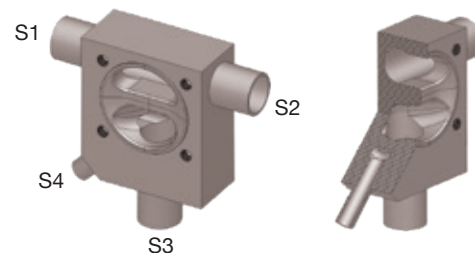
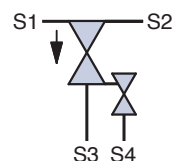
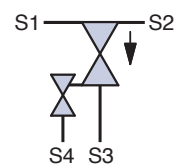
(illustration)

1 x Point of use valve port
1 x Integral sample purge valve, valve port below the weir.

Sample valve be provides on either side of the valve body.

No valve actuation on the back side

Recommended installation:
S3 down



1) Main line open

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
 → Drain direction
 Valve

Illustration

Actuators and other options are included in some of the illustrations

1.7)

MWL 5/3 – S4 left side

(illustration)

MWR 5/3 – S4 right side

1 x Point of use valve port

1 x Integral loop sample valve port

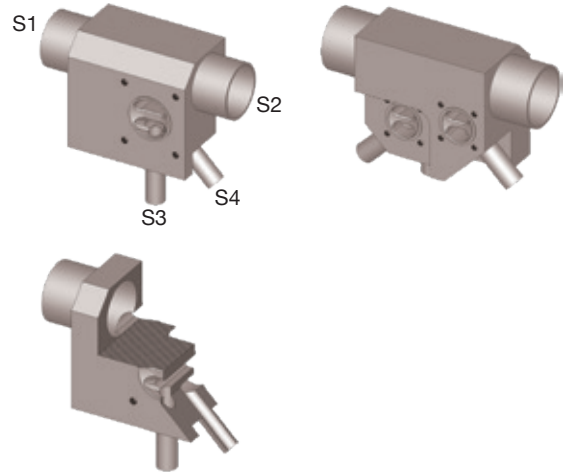
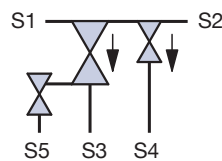
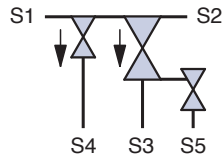
1 x Integral sample purge valve port below the weir.

Sample and purge valve be provides on either side of the valve body.

Back to back valve actuation

Recommended installation:

S3 down



1.72)

MVL 5/3 – S4 left side

(illustration)

MVR 5/3 – S4 right side

1 x Point of use valve port

1 x Integral loop sample valve port

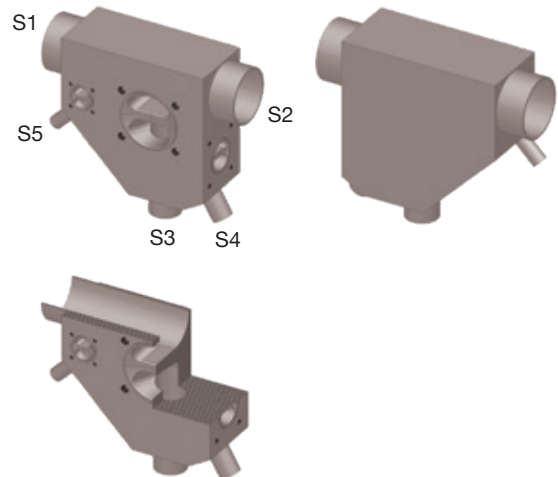
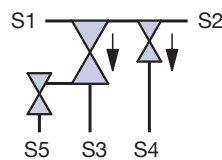
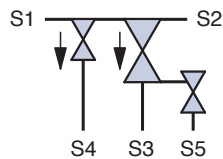
1 x Integral sample purge valve port below the weir.

Sample and purge valve be provides on either side of the valve body.

No valve actuation on the back side

Recommended installation:

S3 down



1.9)

MTE 6/4

4 x Point of use valve ports

The Number of valve ports is variable.

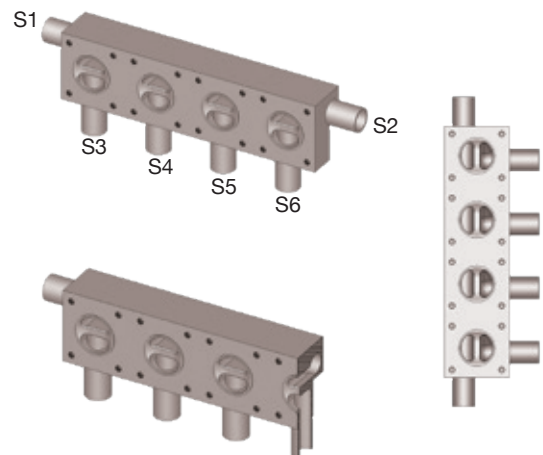
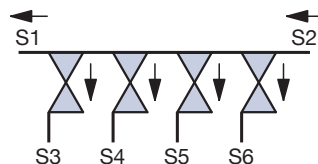
No valve actuation on the back side

Recommended installation:

S1 and S2 horizontal

S3 to S6 vertical down or vertical up orientation.

S1 and S2 can be vertical if tube outlets S3 to S6 are positioned to the lowest point of valve pocket like the picture shows



1) Main line open

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
→ Drain direction
✕ Valve

Illustration

Actuators and other options are included in some of the illustrations

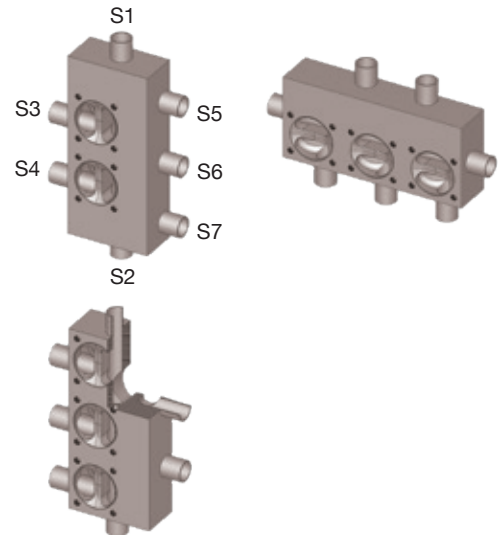
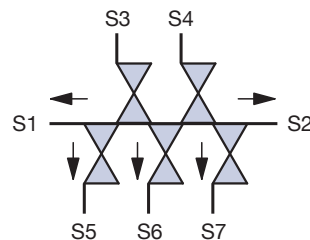
1.11)

MTD 7/5

5 x Point of use valve ports
The number of valve ports is variable.

Back to back valve actuation

Recommended installation:
S1 and S2 horizontal
S3 to S7 can be vertical if tube outlets S3 to S7 are positioned to the lowest point of valve pocket like the picture shows.



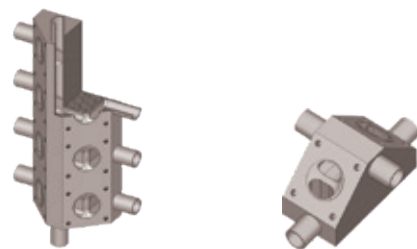
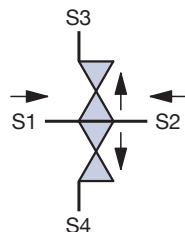
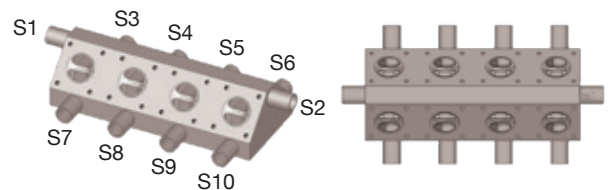
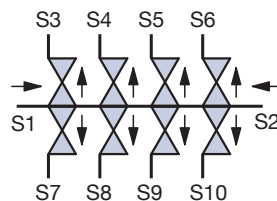
1.14)

MCE 4/2 to 16/14

2 to 14 Point of use valve ports
The number of valve ports is variable

No valve actuation on the back side

Recommended installation:
S1 and S2 horizontal
S3 to S4 or max S16
down or vertical up orientation.
S1 and S2 can be vertical if tube outlets S3 to S4 or max S16 are positioned to the lowest point of valve pocket like the picture shows.



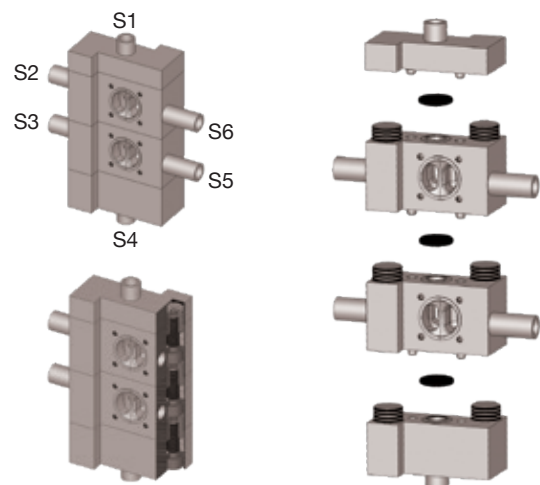
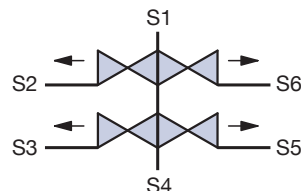
1.16)

MFF 4/2 to 32/30

Up to 30 point of use valve ports as flexible manifold system

Dependent on the requirements the number of valves installed can be between 2 and 30.
It is a mirror design to be suitable also for applying clamp connection.
It allows standardizing skids and other system solutions.
Aseptic O-ring connection according ASME/BPE and DIN 11864 see also catalogue page 23
Back to back valve actuation

Recommended installation:
S4 down



2) All lines and valve ports able to close

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
→ Drain direction
✕ Valve

Illustration

Actuators and other options are included in some of the illustrations

2.1)

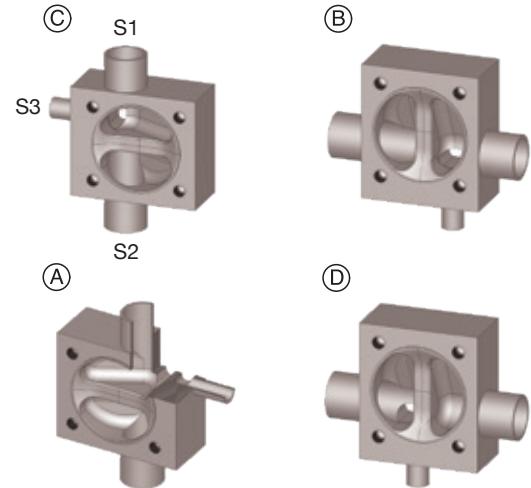
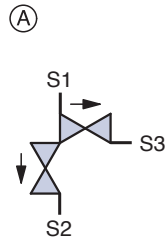
MFE 3/2

1 x Valve horizontal

1 x Valve vertical

Back to back valve actuation

Recommended installation:
Dependent on design and application



2.15)

MBE 3/2

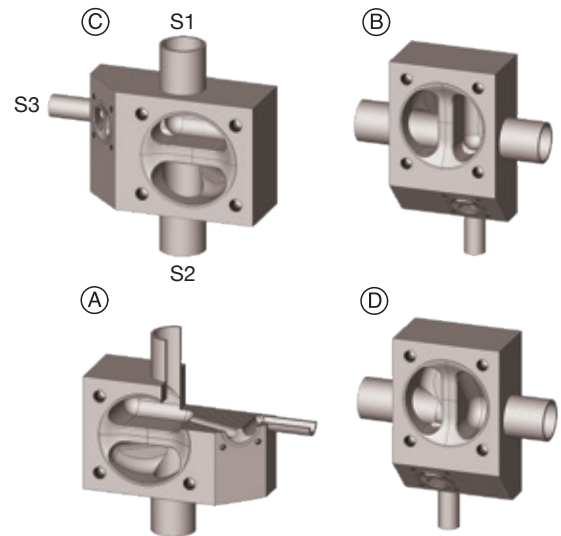
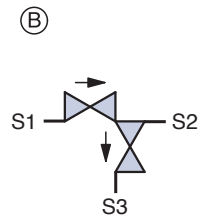
1 x Valve horizontal

1 x Valve vertical

Function similar to pos. 2.1 but

No valve actuation on the back side

Recommended installation:
Dependent on design and application



2.17)

MCE 3/2

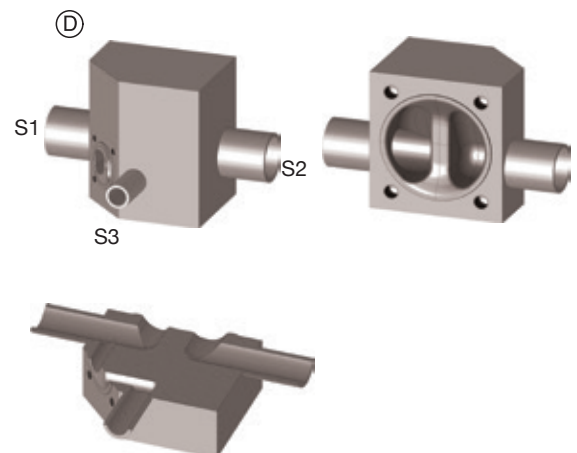
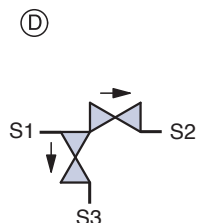
1 x Valve horizontal

1 x Valve vertical

Illustration shows one version only.

Function similar to pos. 2.1

Recommended installation:
Dependent on design and application



2) All lines and valve ports able to close

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
 → Drain direction
 Valve

Illustration

Actuators and other options are included in some of the illustrations

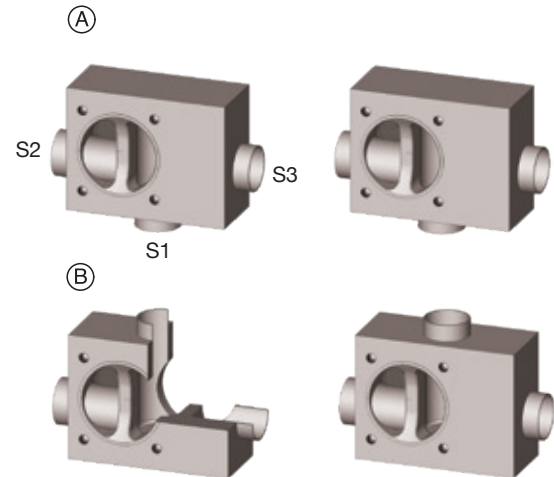
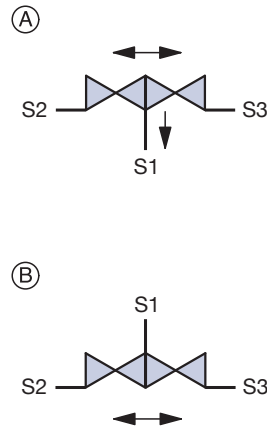
2.25)

MFE 3/2

2 x Valve horizontal

Back to back valve actuation

Recommended installation:
 S1 vertical down or vertical up
 Dependent on design and application



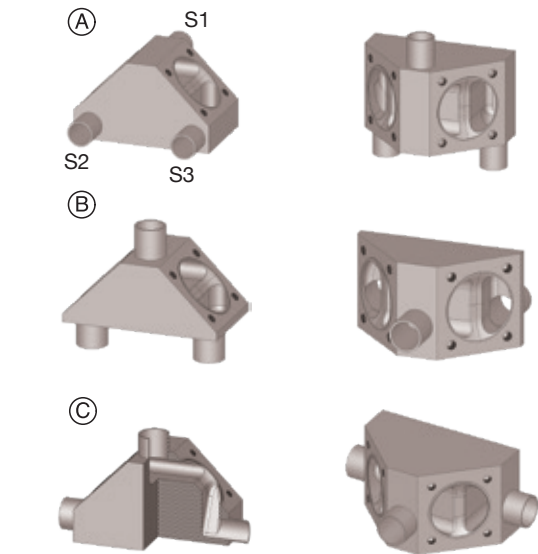
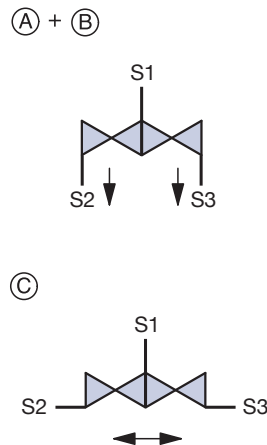
2.31)

MCE 3/2

2 x Valve horizontal

Function similar to pos. 2.25 but
no valve actuation on the back side

Recommended installation:
 S1 horizontal or vertical
 The 2- way divert valve block body allows for many different inlet and outlet orientations. Some of them are illustrated



2.35)

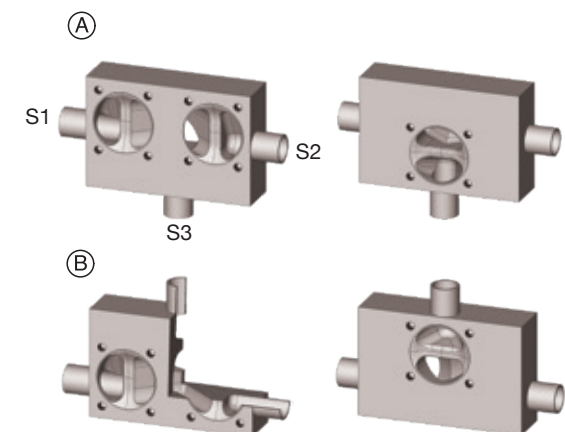
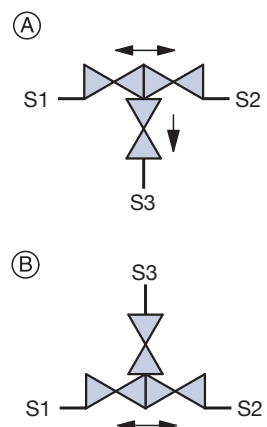
MFE 3/3

2 x Valve horizontal

1 x Valve vertical

Back to back valve actuation

Recommended installation:
 S3 vertical down or vertical up



2) All lines and valve ports able to close

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
 → Drain direction
 Valve

Illustration

Actuators and other options are included in some of the illustrations

2.38)

MCE 3/3

2 x Valve horizontal

1 x Valve vertical

Function similar to pos. 2.35 but

no valve actuation on the back side

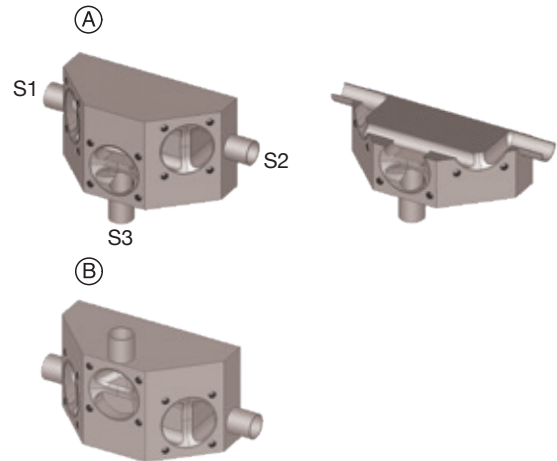
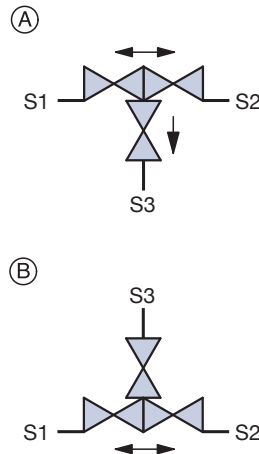
Recommended installation:

S3 vertical down or vertical up

The valve block body allows for many different inlet and outlet orientations.

Some of them are illustrated

Dependent on design and application



2.41)

MFE 4/3

1 x Valve horizontal

2 x Valve vertical

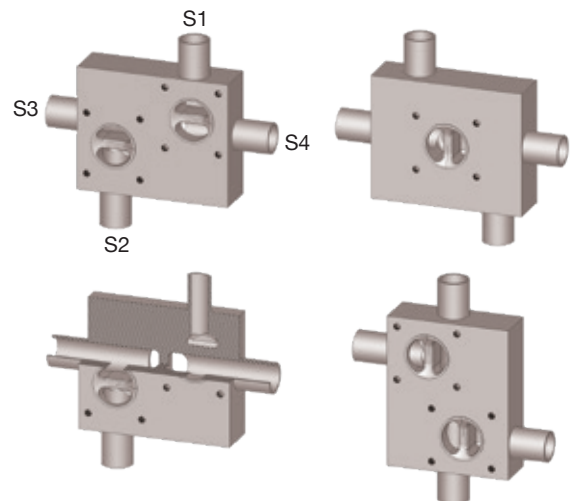
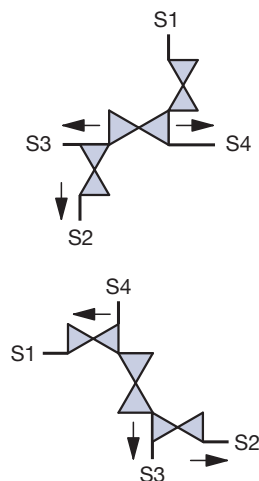
Back to back valve actuation

Recommended installation:

Main line isolation through S3 and S4, S1 vertical up sterili-

zation valve port, S2 vertical down sterilization valve port.

Or S3 and S4 vertical dependent on design and application.



2.43)

MFE 4/3

1 x Valve horizontal

2 x Valve vertical

Back to back valve actuation

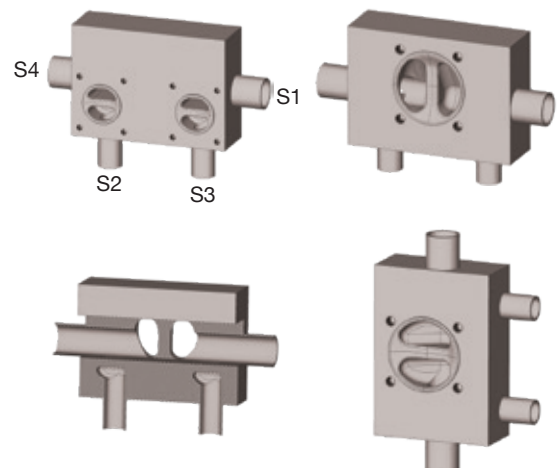
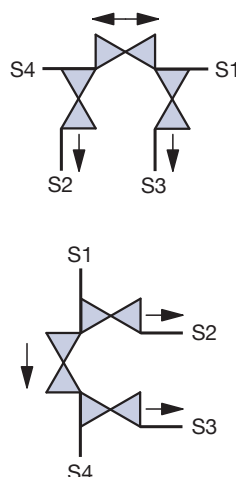
Recommended installation:

S2, S3 vertical down or

dependent on design

and application

S4 vertical down.



2) All lines and valve ports able to close

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
 → Drain direction
 Valve

Illustration

Actuators and other options are included in some of the illustrations

2.49)

MFE 4/4

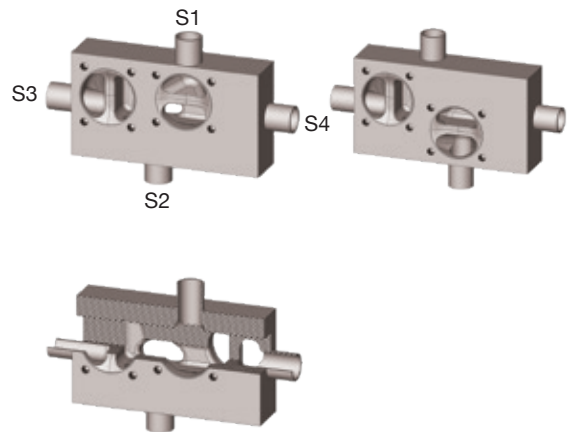
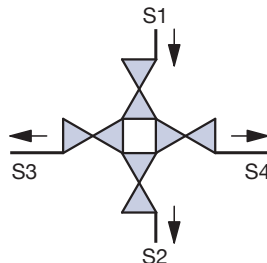
2 x Valve horizontal

2 x Valve vertical

Back to back valve actuation

Recommended installation:

S2 vertical down



2.51)

MBE 4/4

2 x Valve horizontal

2 x Valve vertical

Function similar to pos. 2.35 but

no valve actuation one the back side

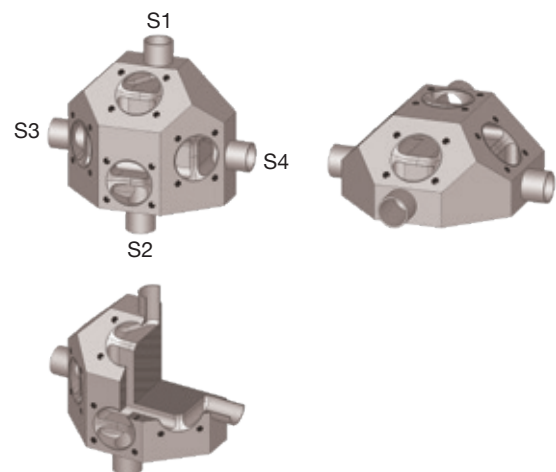
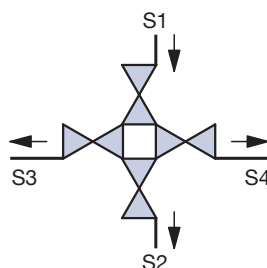
Recommended installation:

S2 vertical down or

S1 and S2 horizontal

The valve block body allows for many different inlet and outlet orientations.

Dependent on design and application



2.71)

MFE 5/4

2 x Valve horizontal

2 x Valve vertical

Back to back valve actuation

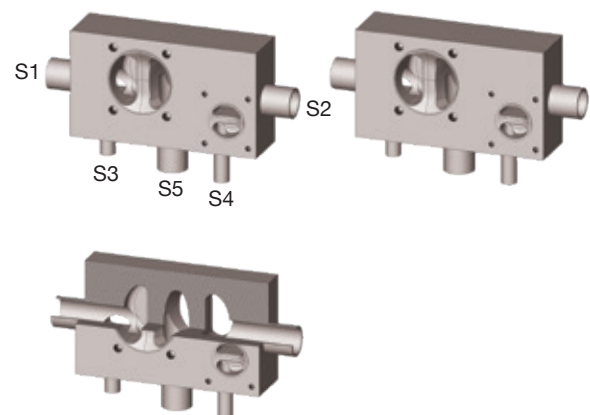
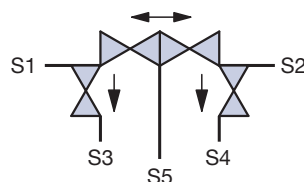
Recommended installation:

S3, S4, S5 vertical down

Dependent on design and application

application

S3, S4, S5 vertical up



Multiport Valves

2) All lines and valve ports able to close

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
→ Drain direction
✕ Valve

Illustration

Actuators and other options are included in some of the illustrations

2.72)

MFE 4/4

2 x Valve horizontal

2 x Valve vertical

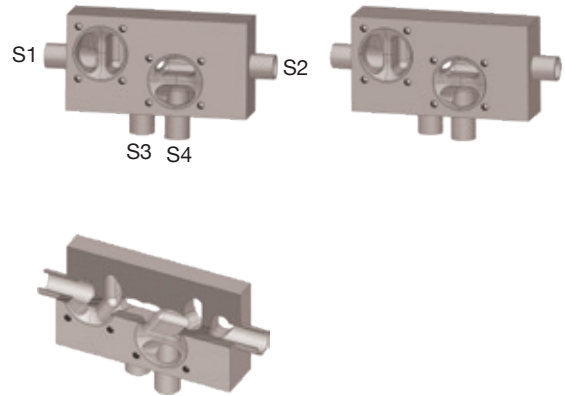
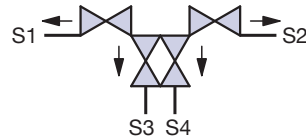
Back to back valve actuation

Recommended installation:

S3 and S4 vertical down

Dependent on design and application

S3 and S4 vertical up



2.73)

MFE 4/4

2 x Valve horizontal

2 x Valve vertical

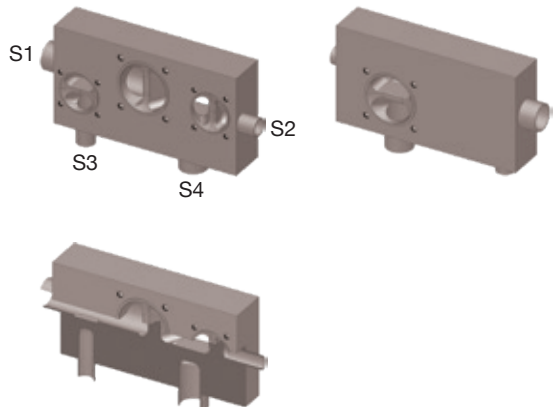
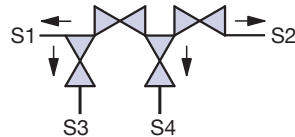
Back to back valve actuation

Recommended installation:

S3 and S4 vertical down

Dependent on design and application

S3 and S4 vertical up



2.8)

MDE 4/4

no valve actuation on the back side

Chromatography valve without bypass

MDE 4/5

no valve actuation on the back side

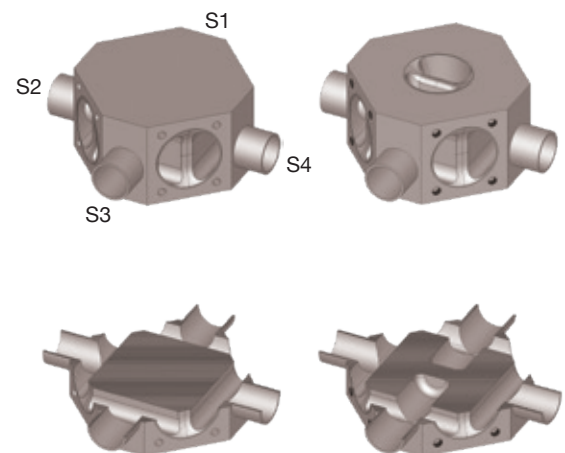
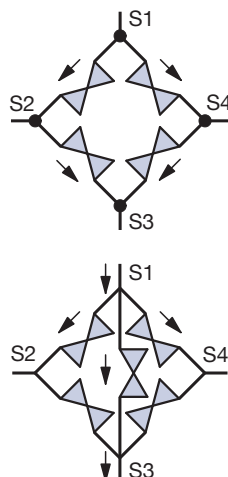
Chromatography valve with bypass

Recommended installation:

S2 and S4 horizontal

S1 and S3 horizontal.

Or S1 to S4 horizontal



2) All lines and valve ports able to close

Description

For valve specification see page 81 as guideline

P&ID

→ Flow direction
 → Drain direction
 Valve

Illustration

Actuators and other options are included in some of the illustrations

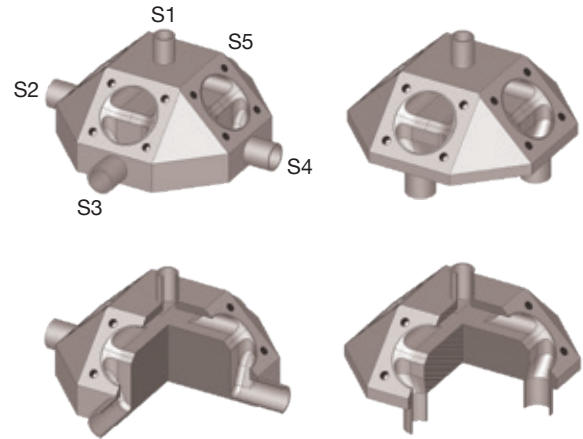
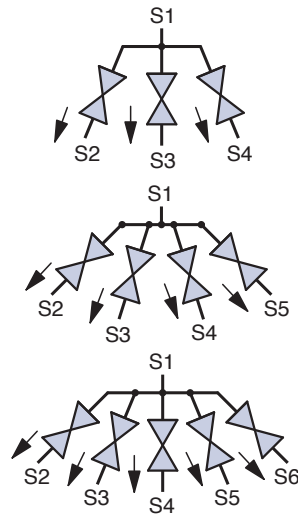
2.9)

MCS 4/3 Star Design
 3x Valves vertical

MCS 5/4 Star Design
 4x Valves vertical

MCS 6/5 Star Design
 5x Valves vertical
no valve actuation on the back side

Recommended installation:
 S1 vertical; Depending on the diameter the star design is available with up to 7 valves. The star design has also been manufactured with two opposing multiport block valves with one common port connection.



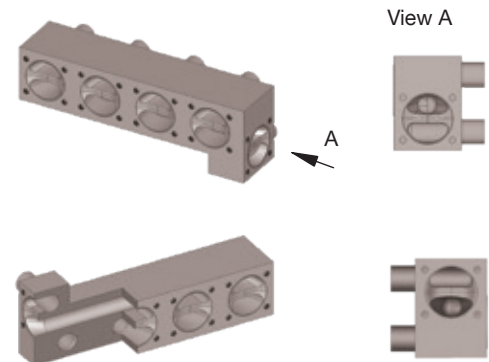
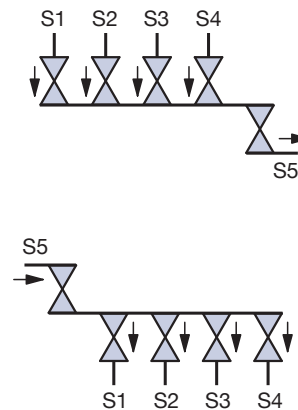
2.91)

MTA 5/5

5 Valves horizontal with one for drainage

no valve actuation on the back side

Recommended installation:
 S5 as drainage valve.
 Different inlet and outlet orientations e.g. S5 as inlet valve.



2.95)

MTE 5/5

5x Valve horizontal or vertical.

Back to back valve actuation

Recommended installation:
 S1 to S5 vertical
 S1 to S5 can be horizontal if the tubes positioned to the lowest point of the valve pocket
 This block solution may be used for mixing, diverting, isolation or sterilization.

