

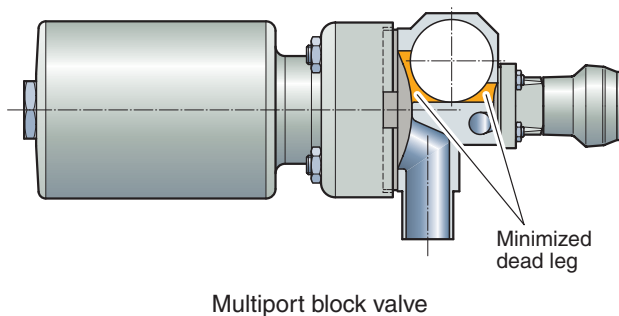
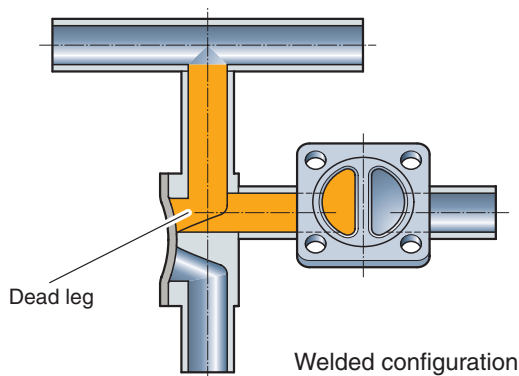
Why Multiport Valves?

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:

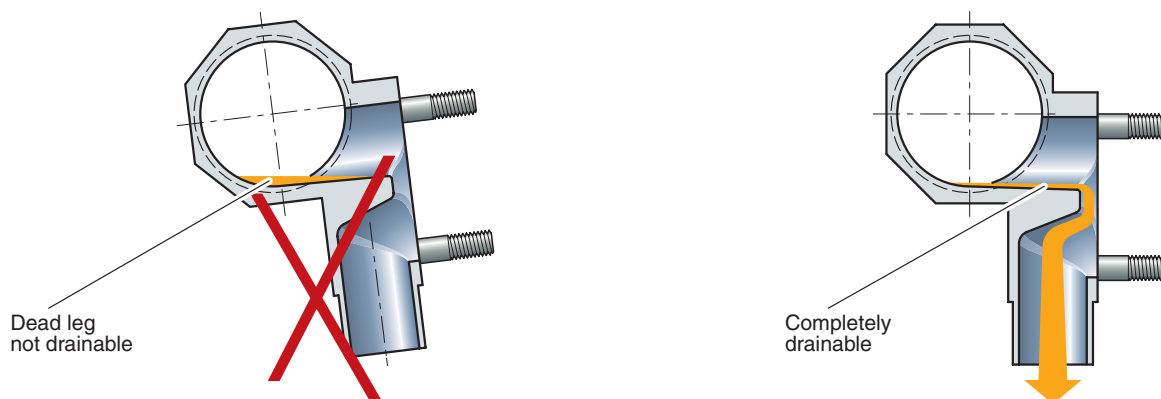


The Advantages at a Glance:

- 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 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:



Multiport Valves

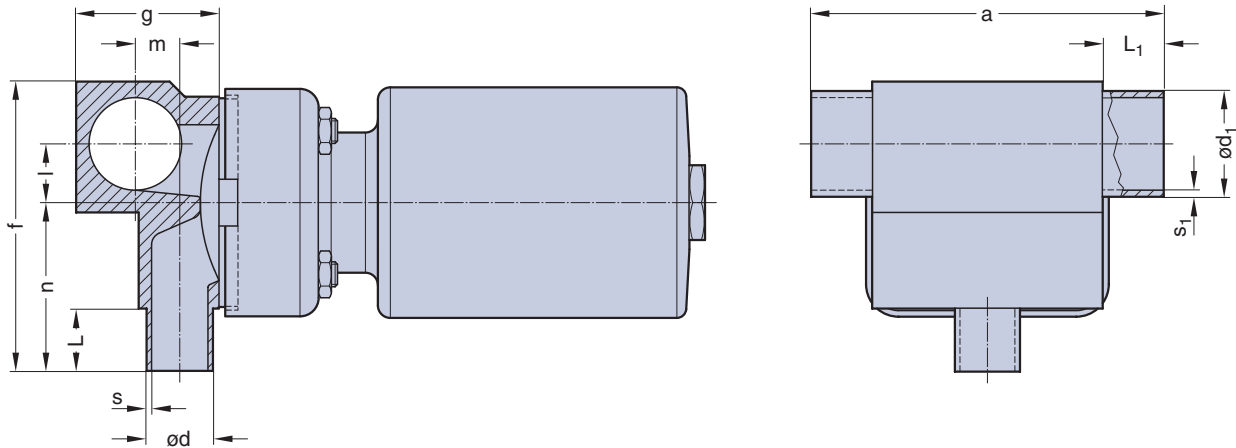
The following Multiport Valve pages display a selection of multiport block valves. These are examples that should assist in specifying the multiport block body. Up to size DN100 (4.0") and larger nominal diameters and nominal diameter combinations are available. Within this range, all tube standards, 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 49 to 51)
- 2) Multiport blocks with all lines and valve ports able to close (Page 52 to 54)

1) Multiport block valves with main line open

T-Valve or ZDL-Valve



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

Description

For valve specification see page 55 as guideline

P&ID

- ⇒ Flow direction
- ▶ Drain direction
- ⊗ Valve

Illustration

Actuators and other options are included in some of the illustrations

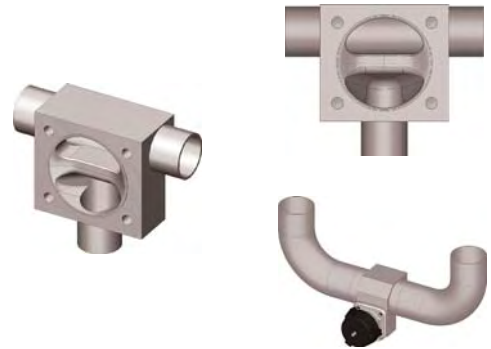
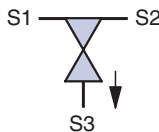
1.1)

T-Valve or ZDL-Valve

1x Point of use valve port

Recommended installation:
S3 down

Illustration right side:
T-Valve with U-bend added for
distribution loop installation

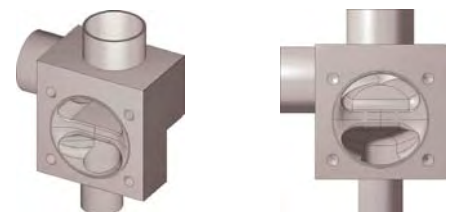
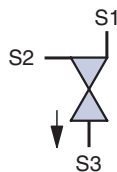


1.2)

ML 3/1

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

Recommended installation:
S3 down



Multiport Valves

1) Multiport block valves with main line open

Description

For valve specification see page 55 as guideline

P&ID

- ⇒ Flow direction
- ➔ Drain direction
- ⊗ Valve

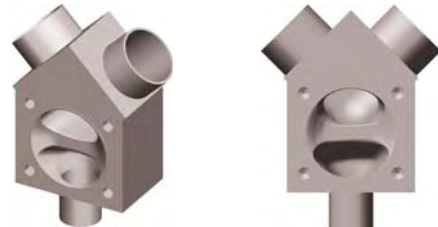
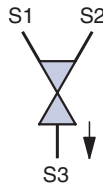
Illustration

Actuators and other options are included in some of the illustrations

1.3)

MY 3/1

1x Point of use valve port with Y main line inlet and outlet. Thus the inlet and outlet dimension of the main line is reduced and can meet the centerline dimensions of an ASME BPE 180° U-bend.

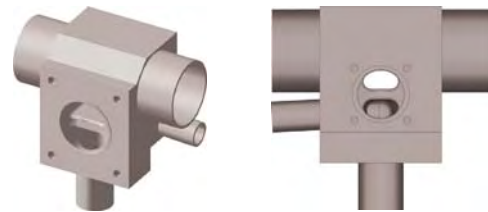
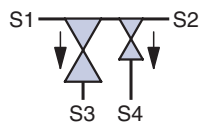


Recommended installation:
S3 down

1.4)

MZ 4/2

1x Point of use valve port
1x Integral loop sample valve port
Can be opposite positioned as showed on the picture or sidewise.

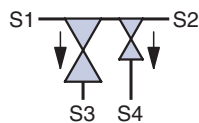


Recommended installation:
S3 down

1.45)

MT 4/2

2x Point of Use Valve Port or Double Zero Dead Leg Tee Valve. One port may be used for sampling and the second port for down stream processing.

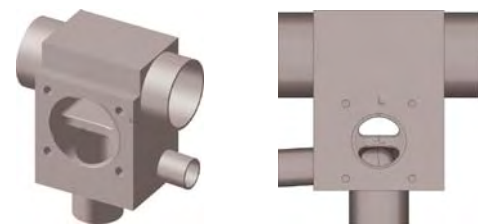
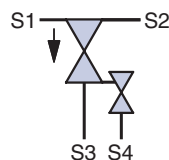


Recommended installation:
S3 and S4 down

1.6)

MX 4/2

1x Point of use valve port
1x Integral sample purge valve, valve port below the weir
Can be opposite positioned as showed on the picture or sidewise.

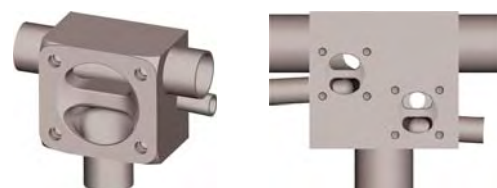
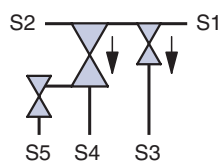


Recommended installation:
S3 down

1.7)

MW 5/3

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



Recommended installation:
S4 down

Multiport Valves

1) Multiport block valves with main line open

Description

For valve specification see page 55 as guideline

P&ID

- ⇒ Flow direction
- ➔ Drain direction
- ⊘ Valve

Illustration

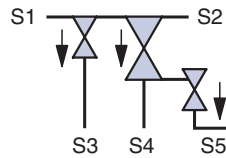
Actuators and other options are included in some of the illustrations

1.71)

MWP 5/3

Zero Dead Leg U-bend with 1 x point of use valve port, 1 x integral sample valve port and 1 x integral purge valve port below the weir.

Recommended installation: S3 sample port down, S4 point of use valve port down, S5 purge port valve down or horizontal



1.8) MF 3/1

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

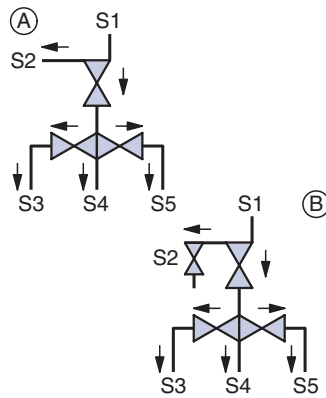
1.8 A) MF 5/3

2x Integral sample purge valve port below the weir

1.8 B) MF 6/4

1x Integral loop sample valve port
2x Integral sample purge valve port below the weir

Recommended installation: S5 and S3 down, S4 horizontal



P&ID: A

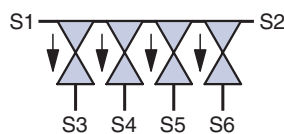


1.9)

MT 6/4

4x Point of use valve ports
The number of valve ports is variable

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

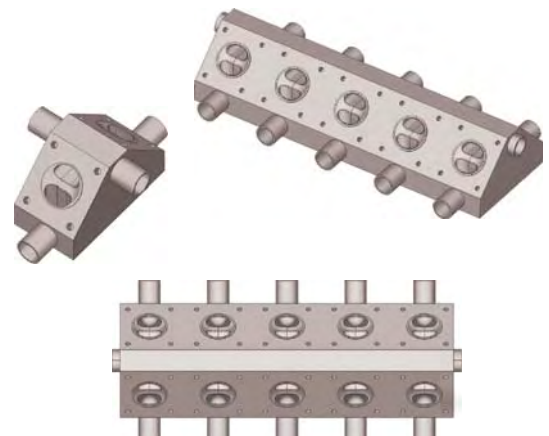
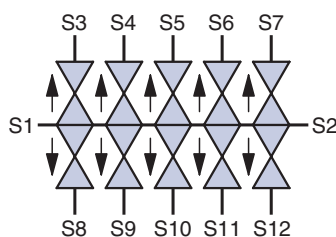


1.10)

MX 12/10

10x Point of use valve ports
The number of valve ports is variable

Recommended installation: S1 and S2 horizontal
S3 to S10 horizontal or vertical down or vertical up orientation.
S1 and S2 can be vertical if tube outlets S3 to S10 are positioned to the lowest point of valve pocket



Multiport Valves

2) Multiport block valves with all lines and valve ports able to close

Description

For valve specification see page 55 as guideline

P&ID

- ⇒ Flow direction
- ➔ Drain direction
- ⊘ Valve

Illustration

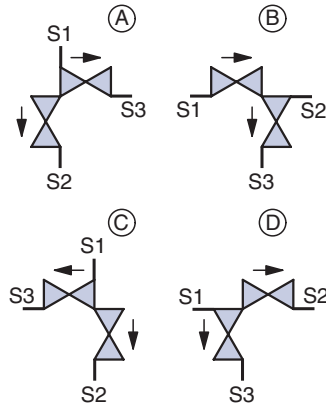
Actuators and other options are included in some of the illustrations

2.1)

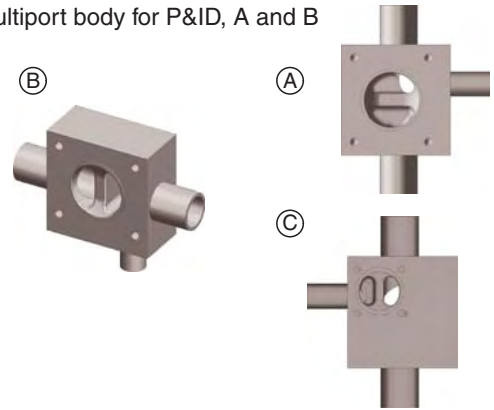
MFE 3/2

1x Valve horizontal
1x Valve vertical
Two parallel opposite orientated valve actuators.

Recommended installation:
Dependent on application



Multiport body for P&ID, A and B

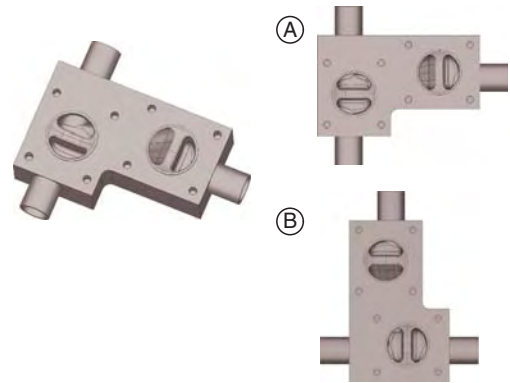
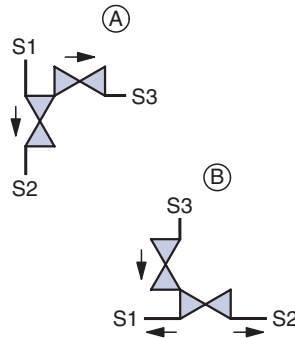


2.11)

MFEP 3/2

Alternate to position 2.1)
1x Valve horizontal
1x Valve vertical
SL or SA block solution with 2D dead leg dimensions.

Recommended installation:
Dependant on application

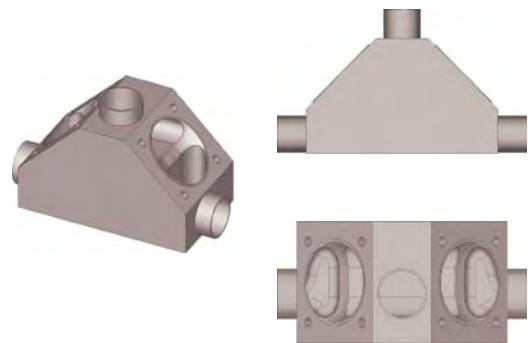
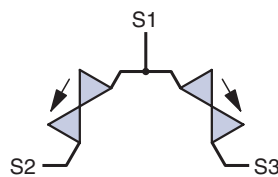


2.31)

MCE 3/2

2-Way Divert Valve

Recommended installation:
S1 vertical,
S2 and S3 horizontal.
The 2-way divert valve block body allows for many different inlet and outlet orientations.

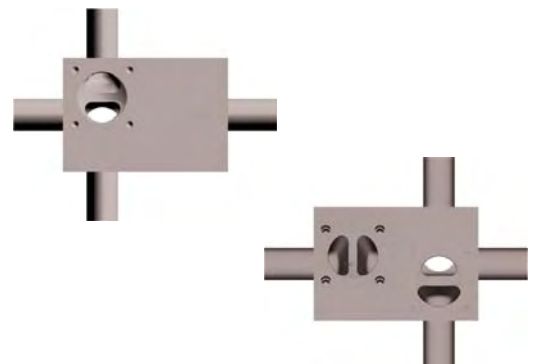
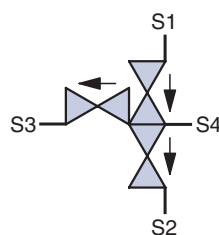


2.4)

MF 4/3

1x Valve horizontal
2x Valves vertical

Recommended installation:
S2 down
For 90° rotation, the block design has to be modified to provide drain ability



Multiport Valves

2) Multiport block valves with all lines and valve ports able to close

Description

For valve specification see page 55 as guideline

P&ID

- ⇒ Flow direction
- ➔ Drain direction
- ⊘ Valve

Illustration

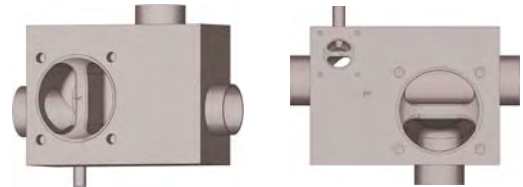
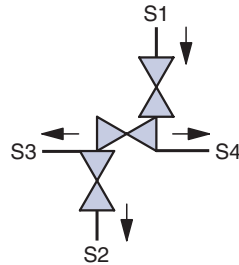
Actuators and other options are included in some of the illustrations

2.41)

MFE 4/3

1x Valve horizontal
2x Valve vertical

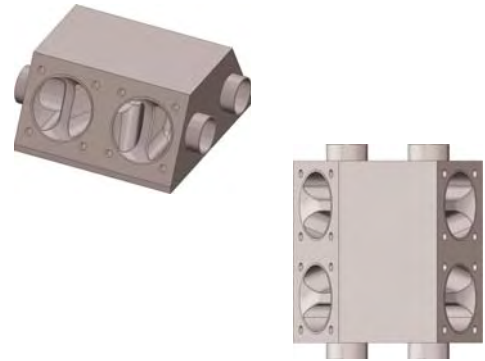
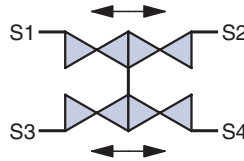
Recommended installation:
Main line isolation through S3 and S4,
S1 vertical up sterilization valve port,
S2 vertical down point of use, sample or drain valve port.



2.5)

MF 4/4 Cross over
4x Valves horizontal

Recommended installation:
S1 to S4 horizontal position
but it is also applicable in vertical position

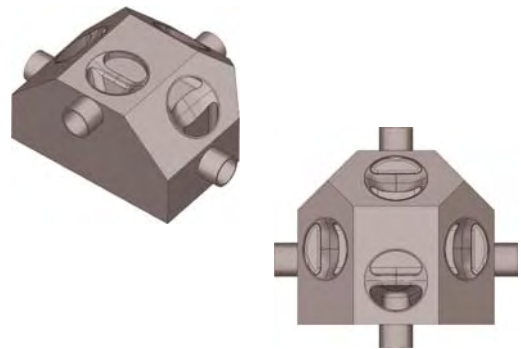
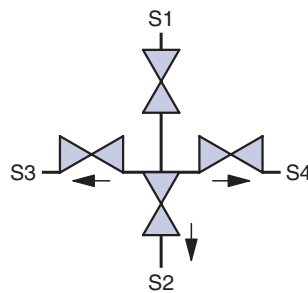


2.51)

MBE 4/4

1x Valve inlet isolation
3x Valve divert process flow

Recommended installation:
S1 horizontal inlet,
S2 horizontal straight through outlet,
S3 and S4 90 degree horizontal outlet.

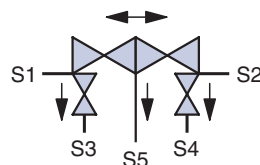


2.71)

MT 5/4

2x Valve horizontal
2x Valve vertical

Recommended installation:
S1 and S2 horizontal with main line isolation, S3, S4, and S5 orientation vertical up or vertical down.



Multiport Valves

2) Multiport block valves with all lines and valve ports able to close

Description

For valve specification see page 55 as guideline

P&ID

- ⇒ Flow direction
- ➔ Drain direction
- ⊘ Valve

Illustration

Actuators and other options are included in some of the illustrations

2.8)

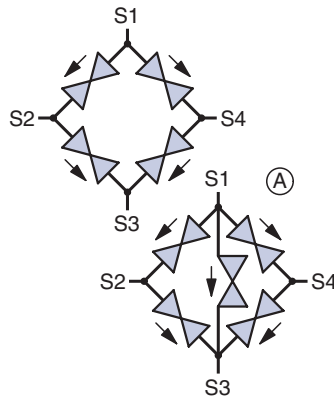
MF 4/4

4x Valves vertical
Chromatography valve
without bypass

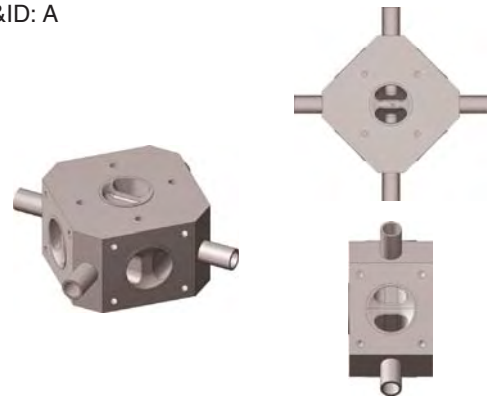
MF 4/5 (A)

5x Valves vertical
Chromatography valve
with bypass

Recommended installation:
S2 and S4 horizontal
S1 and S3 vertical



P&ID: A



2.9)

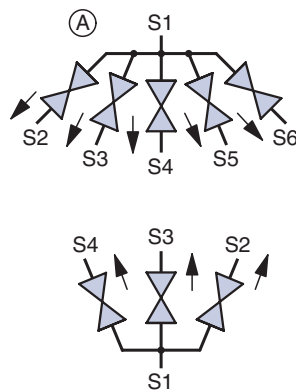
MC 4/3 Star Design

3x Valves vertical

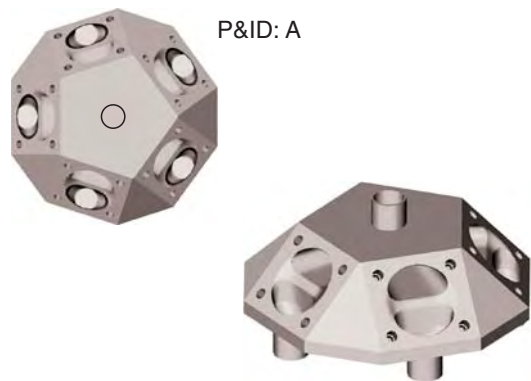
MC 6/5 Star Design

5x Valves vertical

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.



P&ID: A

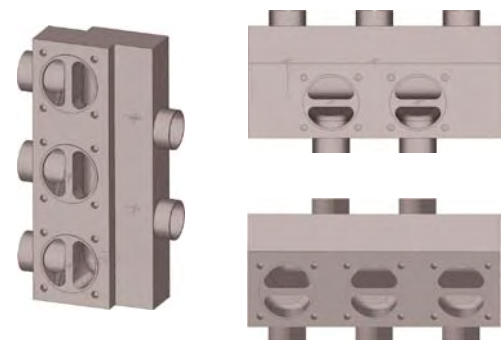
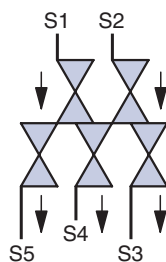


2.95)

MT 5/5

5x Valve horizontal or vertical.

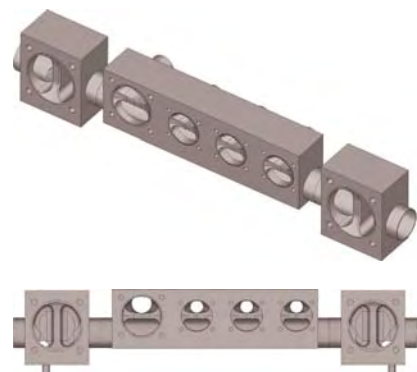
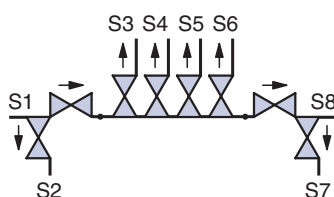
Recommended installation:
This block solution may be used for mixing, diverting, isolation or sterilization.



2.96)

4 valve block body manifold with
2 valve block body sterile access
isolation on inlet and outlet.

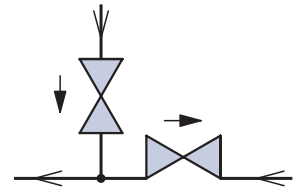
2x Valve vertical sterile access
2x Valve horizontal isolation
main line
4x Valve horizontal x vertical
inlet



Specification Multiport Valves

Your P&ID Sketch:

Example: P&ID



Tube End:

S1, S2, ...

Interior Polish $Ra \leq \mu m$:

$\leq \mu inch$:

Preferred Installation:

Horizontal (h) / Vertical (v)

Diaphragm Material:

Flow Direction:



Block Material:

Drain Direction:



Valve Seat:



Valve seat horizontal
axis rotated in self
draining position



Intersection:



Tube end No	Preferred Installation	Tube end connection				Actuator		Other
		DN	s[mm]	D[mm]	Code	Actuator Type	Control Function	Accessories / Comments
S1								
S2								
S3								
S4								
S5								
S6								
S7								
S8								
S9								
S10								
S11								
S12								