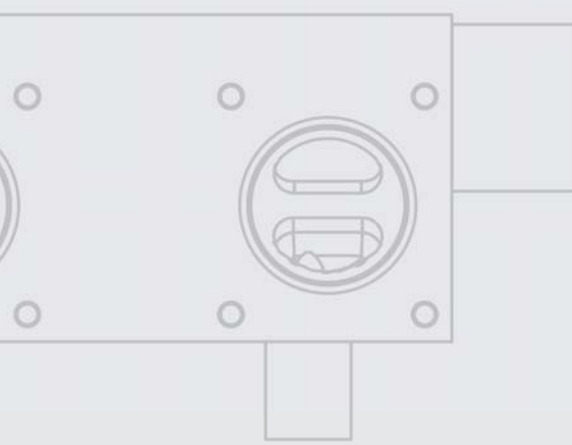
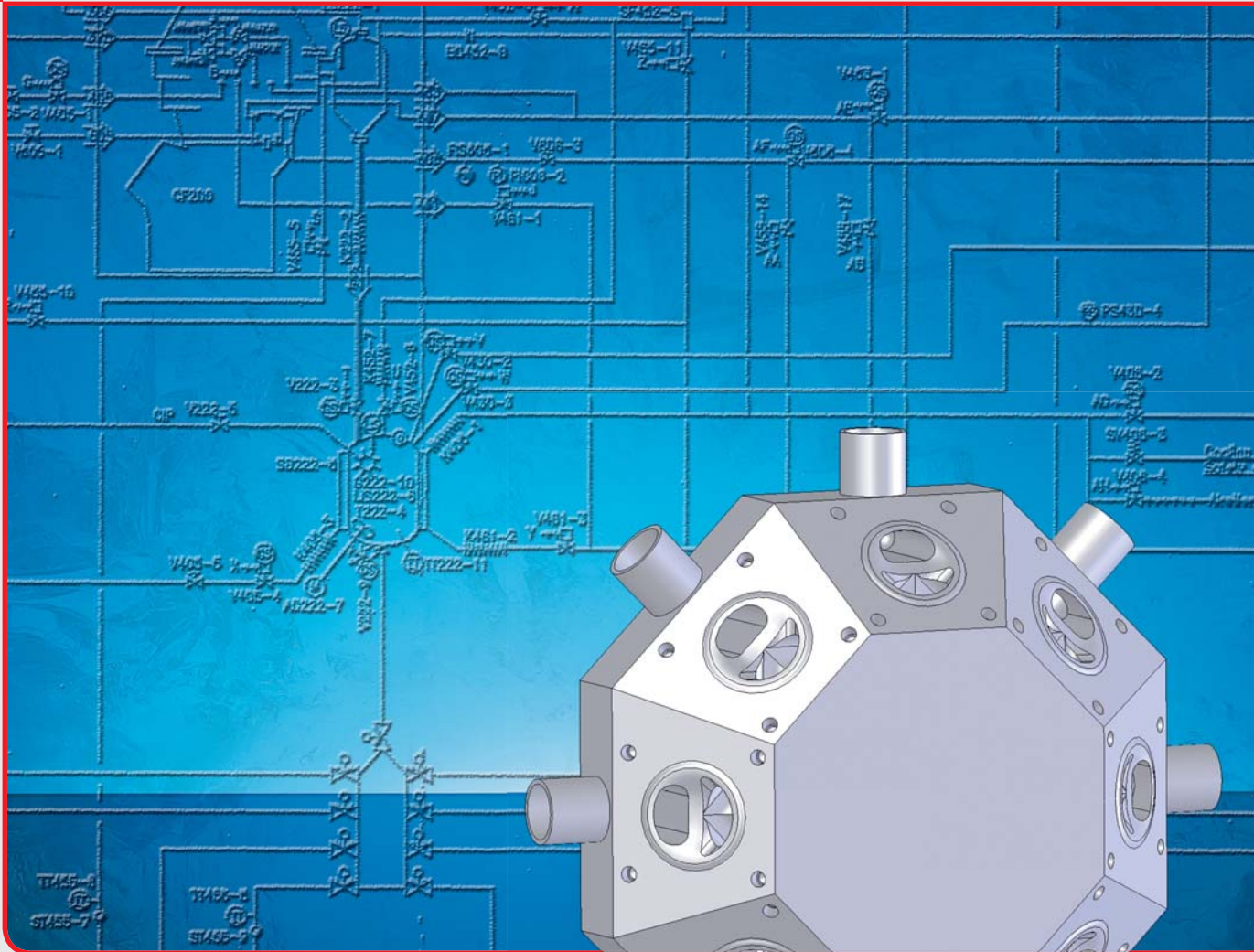


# M600 Multi-port Valves for Engineered Solutions

Product overview and technical data





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## Innovative Technology

Forty-five years of design, development and manufacture of high quality products have led to global recognition of Gemu as a market leader in valves and automation for aseptic service. The vision and dedication of founder Fritz Mueller combined with innovative design and leading edge technology have resulted in outstanding achievement in measurement and control of fluids in critical applications.

Testimonials to the performance, reliability and quality of Gemu products are evident by the inclusion of Gemu in design specifications worldwide.

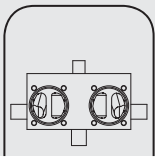
### Major Markets:

- Pharmaceutical and Biotechnology
- Food and Beverage
- Microelectronics/Semiconductor
- Chemical Processing
- Water and Waste Water Treatment
- Industrial and Commercial Machinery

Investment and development in manufacturing technology, robotics and superior craftsmanship insure products of unsurpassed precision, performance and quality to complement the design innovation and competence of a dedicated staff.

Strategically located manufacturing facilities, worldwide representation and extensive inventory commitment assure the highest levels of service and response to the demands of a broad range of global markets.





## Engineered Multi-port Solutions...

### ... The Possibilities Are Endless

In the quest by the Life Science sector for higher quality of life and human well-being, the stringent demands for quality, security and efficiency from process systems component manufacturers continue to rise to unprecedented levels.

Gemu is proud to assume a leading role in the development and introduction of optimized valve design, superior sealing concepts, material development and instrumentation technology for use in the most demanding aseptic process applications.

Engineered solutions to piping and process challenges are found in Gemu customized multiport valve blocks that minimize dead-legs, optimize drainability, simplify system validation and provide a reduced envelope profile that facilitates installation.

Design engineers on our development team utilize computer assisted design technology which provides transparency in dimensional detail, 3D modeling, fluid dynamics and finite element analysis. The resulting mechanical characteristics of the multiport body are of the highest design integrity.

Customized configurations for complex piping challenges minimize system welds and the associated quality assurance documented activity. They reduce the risk of challenge by jurisdictional authority on fluid retention issues and offer solutions to problems of space constraint.

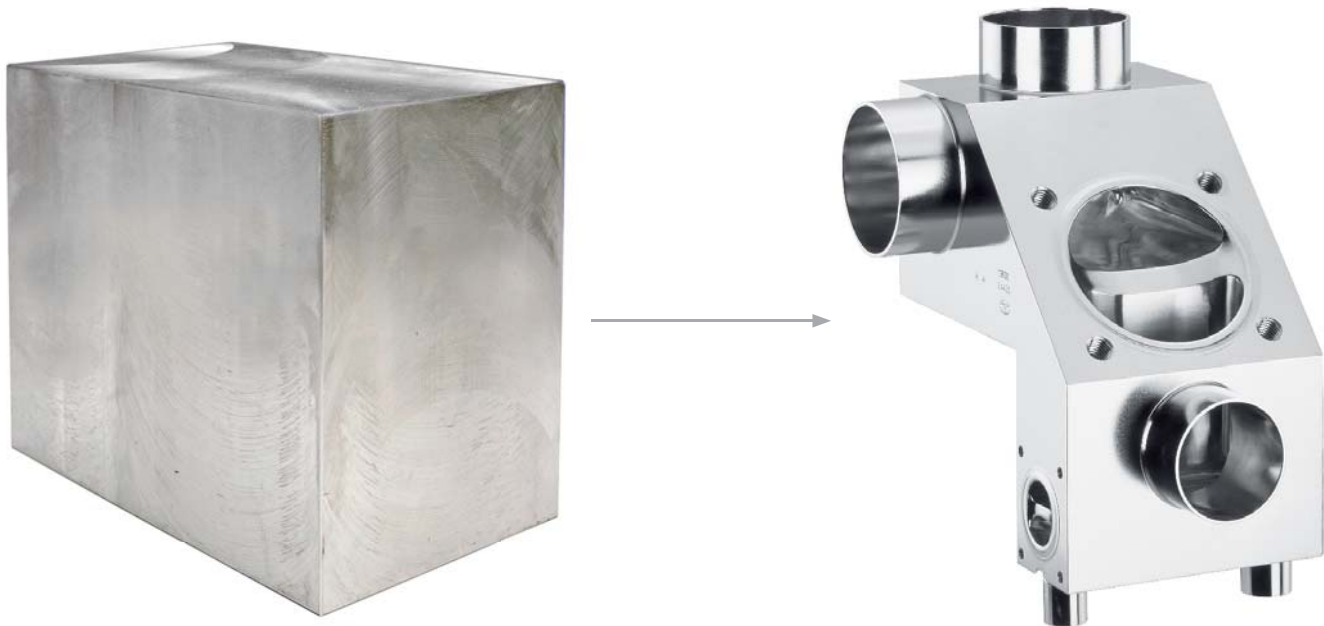
Customized solutions are supplied via e-file in a format that supports 3D modeling of piping systems. This provides savings in design time and reduces potential for error.

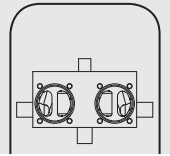
The unique sealing system of Gemu multiport valves, as qualified by EHEDG, assures superior cleanability and sealing integrity for protection of process and personnel.

Extensive material testing programs have resulted in a new generation elastomer, formulated to resist exposure to sterilization cycles in process and utility systems.

Innovative technology is evident in leading edge instrumentation, including process controllers, valve positioners, flow measurement, valve communication and control modules for network control systems.

Over 45 years of continuous innovative design and manufacturing development have made Gemu the preferred choice for security in performance and reliability. The configuration to most effectively resolve your complex system challenge will be tailored to serve your specific needs.



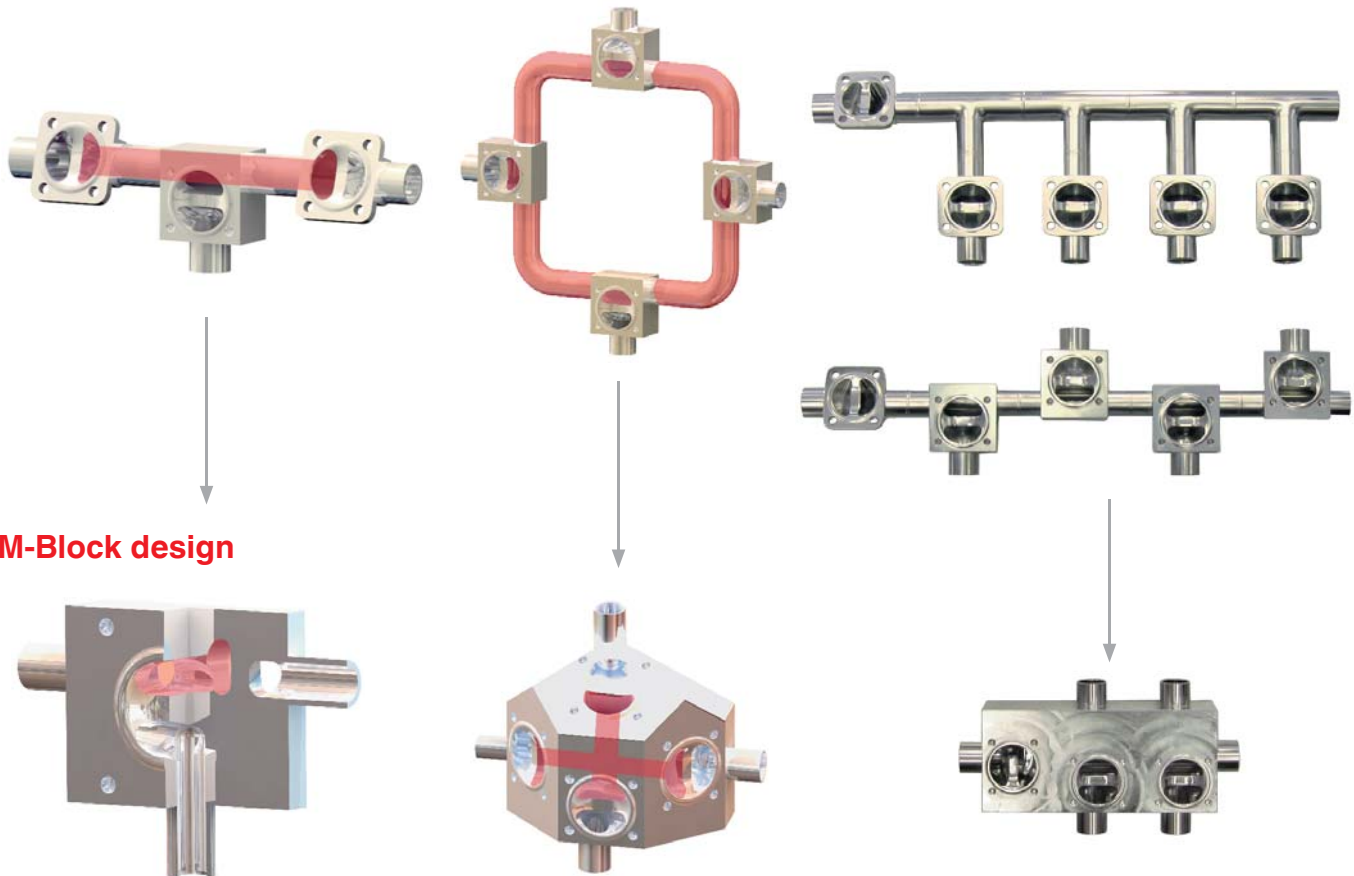


# From your Imagination to Realization via M600

## M600 Multi-port Valve Advantages

- Configuration versatility for demanding piping challenges
- Compact profile for space optimization
- Integrated valve functions provide:
  - Ease of installation
  - Improved process efficiency
  - Shorter CIP cycle
  - Enhanced cleanability
  - Improved drainability
  - Reduction of system welds
  - Reduction in RT
- Simplified Validation by single block body
- Reduction in hold up volume
- Elimination of inaccessible internal welds
- Standard diaphragms, actuators and accessories from the Gemu proven modular valve system are used.
- Integral tube ends suitable for orbital welding
- Cost of ownership extending beyond capital cost of the material. Installation, validation, commissioning, operations and process efficiency are all elements of cost that require consideration in economic component selection.
- E-file submission of product design supports 3D modeling of piping system with reduced design time and reduced potential for error

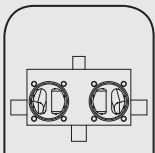
## Conventional welded fabrication



## M-Block design

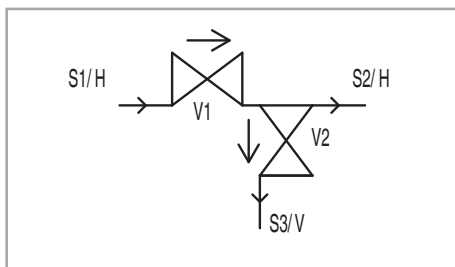
The red colored line sections mark the hold-up volume.



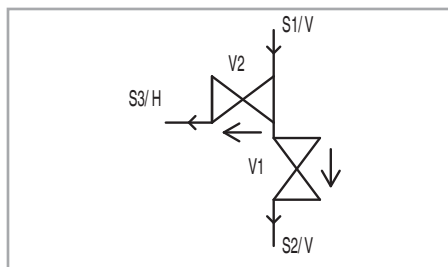


# GEMU M600 - A Superior Concept

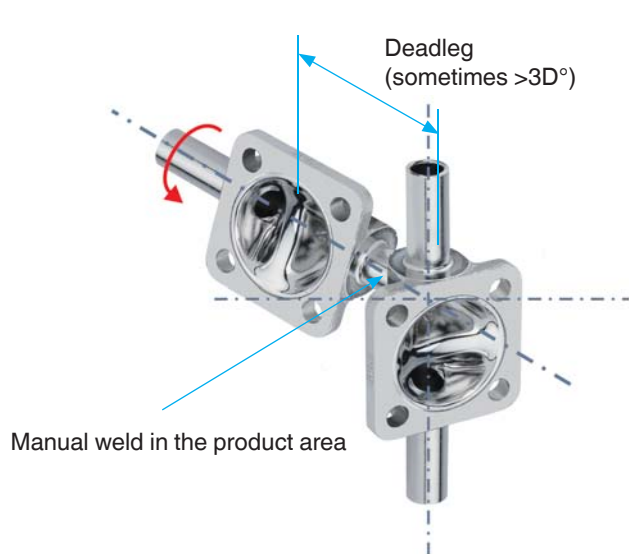
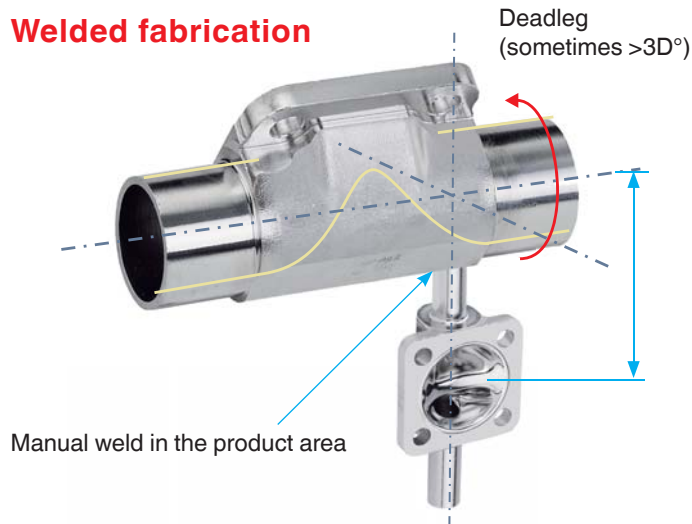
## SAP Configuration



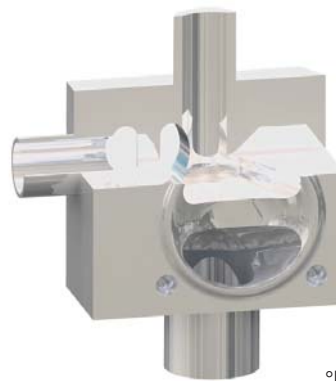
## GMP Configuration



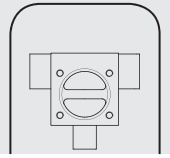
### Welded fabrication



### M-Block concept



°D = Tube inside diameter



## i-bodies

The evolution from welded SAP valve configurations according to the 6D or 3D rule to modern M-Blocks provides advantages that are readily identified.

The I-body (integrated access valve) from Gemu offers an intermediate alternative to an M-Block provided in a single valve body. It offers a moderate cost option for several applications. The I-body exhibits two essential features of the M-Block. The concept provides significantly reduced deadlegs and can eliminate welds in the media flow path. The connection of the integral access valve is welded downstream of the outlet/drain seat or upstream of the inlet seat.

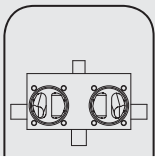
"i-bodies" are a modified construction of the classic 2/2-way bodies. The valve bodies have 2 seats and 3 tube connections and are manufactured from a forging or block material. This access valve concept is particularly suitable for sampling, condensate drains, steam inlet or venting applications up to 1/2" size.

### Features include:

- Compact construction and reduced weight
- Reduced deadlegs
- No weld in the media flow path
- Horizontal connection available
- No rear mounted actuators
- Cost effective
- Reduced deadleg compared to welded SAP access valves
- Ideal drainability in vertical installations
- Manual or pneumatic actuators available for both valve seats



Further information, dimensions and technical advice upon request.



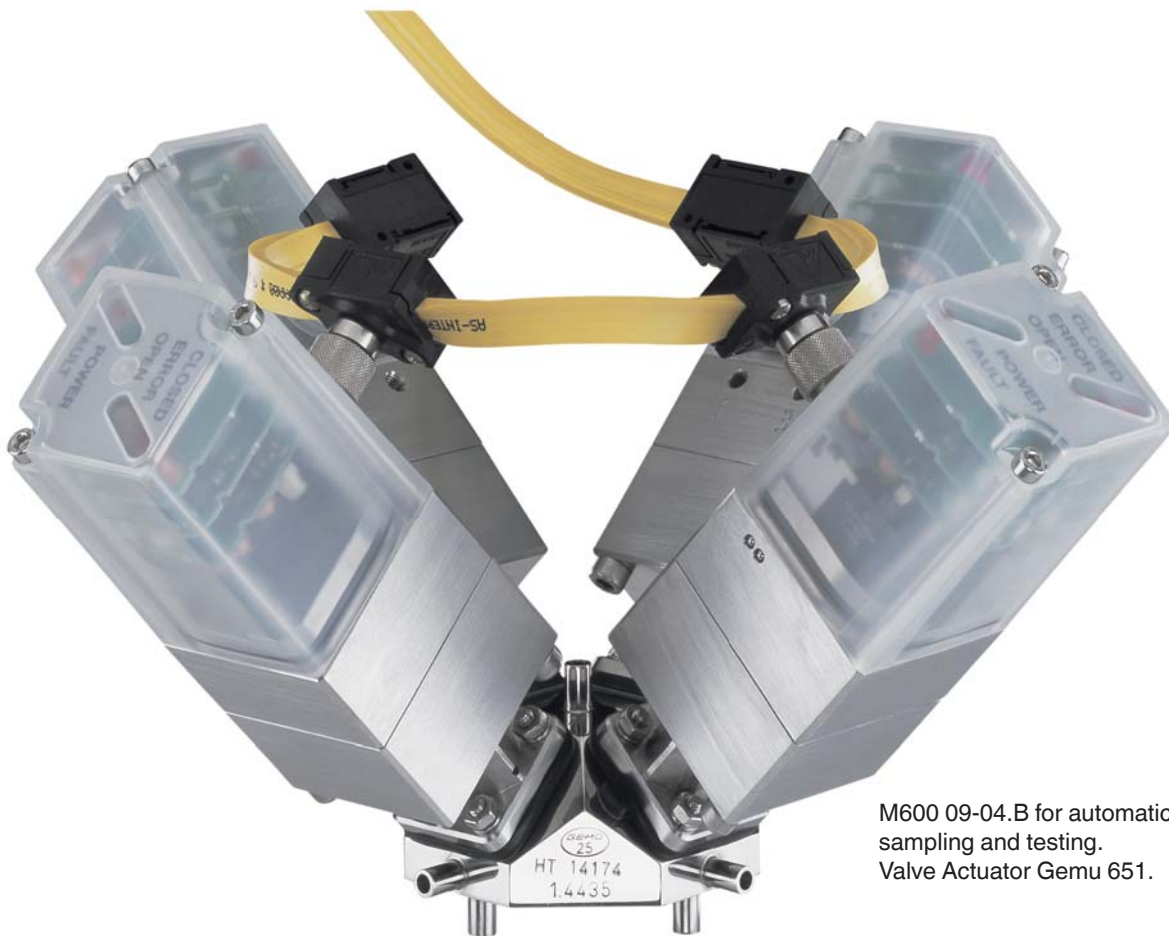
## M600 Multi-port Valve Application

M-blocks can unite a wide variety of different functions in the smallest of spaces thanks to their individual design:

- mixing
- dividing
- sampling
- diverting
- discharging
- automatic switching

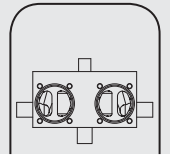
Substantial tasks are assigned to individual functions in numerous applications. Sampling, clean steam access (SIP), Cleaning solution access (CIP), flow control, product transfer and other critical functions within the scope of automation are handled repeatedly and reliably to provide process security.

In automatic sampling and testing of media, four separate media lines can be sampled through a single multi-ported block valve and a single analytical instrument. Sampling and testing are conducted in a predetermined cycle and each media sample is fed individually to the analytical instrument by the M-Block Valve, controlled by a PLC or other control device together with a Gemu automation package.

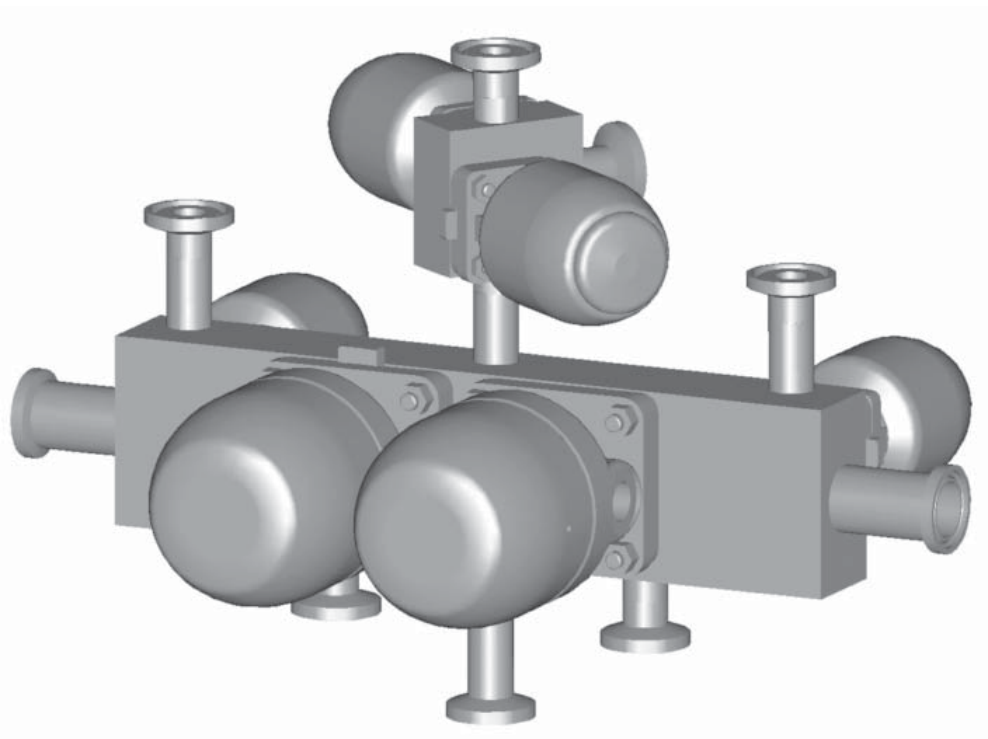
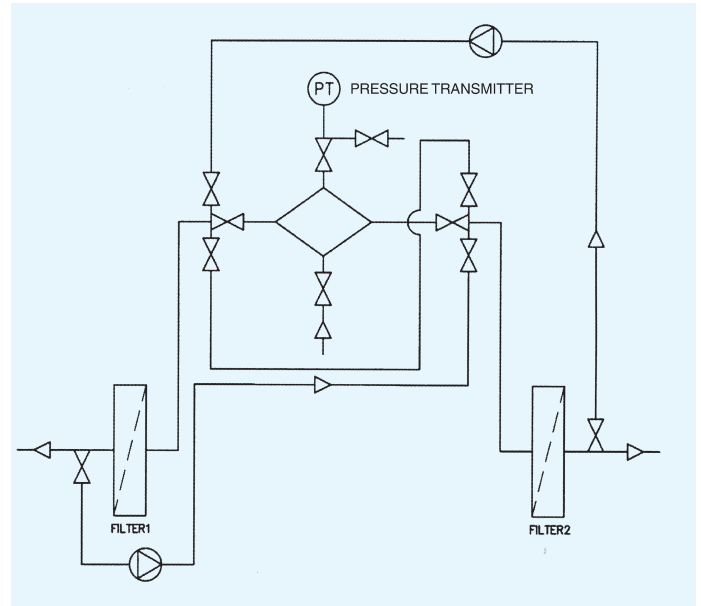


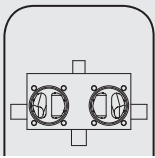
M600 09-04.B for automatic sampling and testing.  
Valve Actuator Gemu 651.





Another example is the automatic switching between two filters. If the set differential pressure in filter 1 is reached, the M-block automatically switches over to filter 2. This also ensures that the rest of the medium is fed through filter 2 before backwashing filter 1. This means no medium is lost. The filters in the plant previously were connected manually with the associated high risk of contamination and loss of valuable medium. This automatic switching could also be implemented by using welded manifolds, but enhanced draining and space considerations are factors which promote the use of M-blocks for this application.





## Design of M600 Multi-port valves

Initial analysis leads to a graphic flow diagram of the valve to be designed.

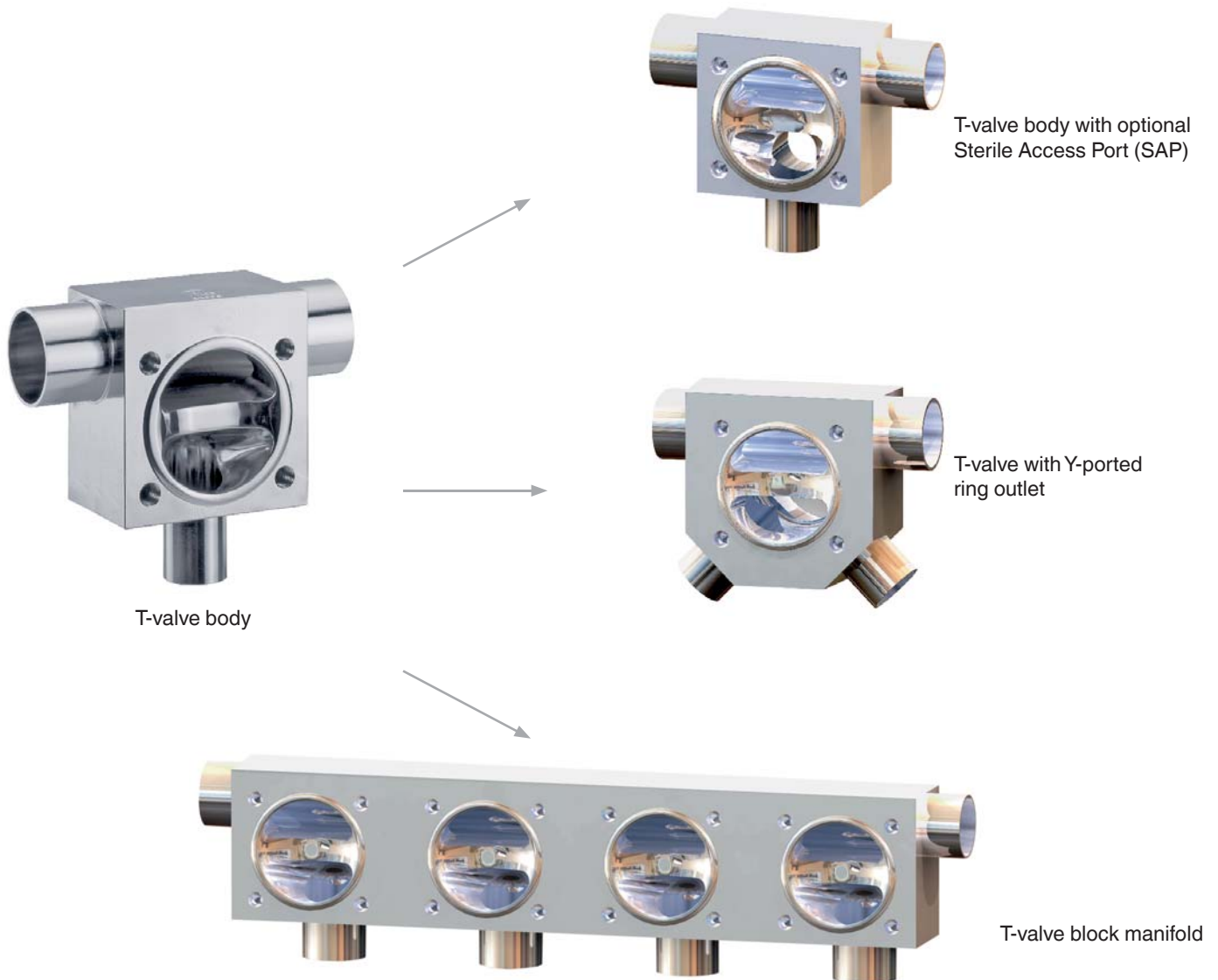
Customer specifications are handled in strict confidentiality.

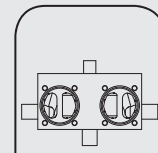
The design schematic is further developed in 3D modeled CAD based construction drawings.

Customized M-blocks are produced to your specifications.

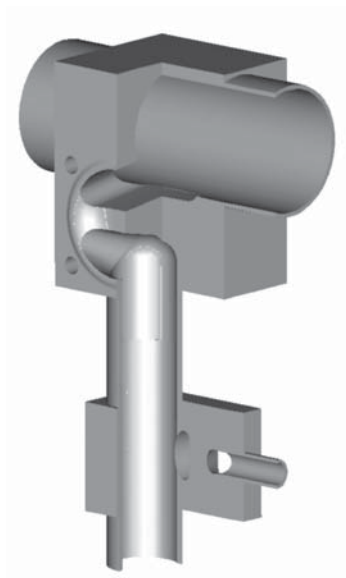
Design and manufacture of Block Valves includes function of the valve, operating conditions, piping orientation, and process security. The number, size and type of connections, the number and size of valve seats, block orientation, block material and actuator detail should be specified at the initial phase of development. The specifications are incorporated into the customized solution required.

Some examples of basic modification of a standard T-valve with optional porting and manifolding are illustrated.

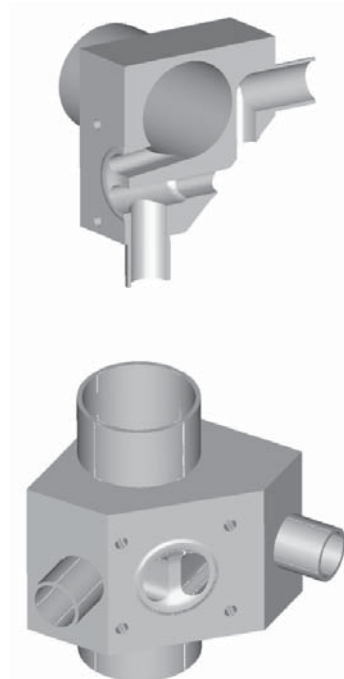




If, for example, a T-valve is combined with a steam access valve, the block could look like the compact solution below..

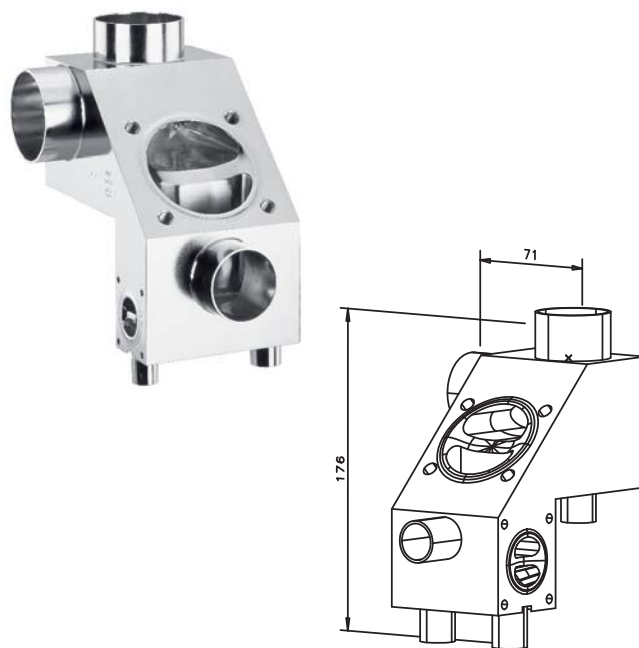
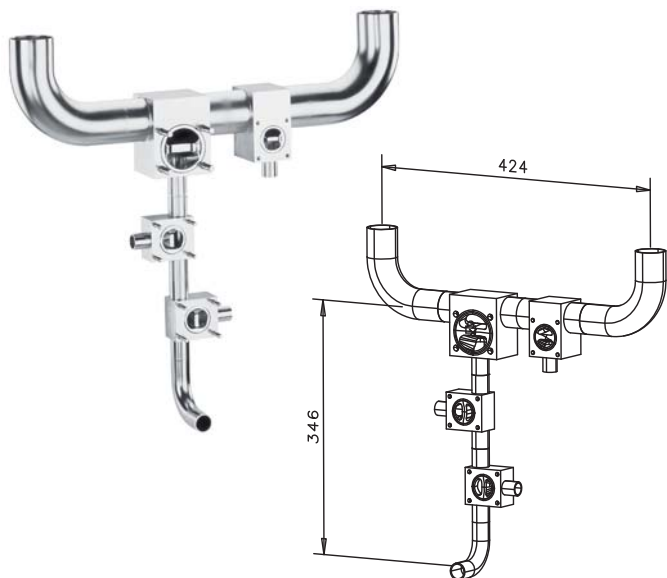


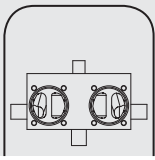
T-valve body with separate sterilization valve



T-valve body with integrated access valve for steam sterilization

A more complex version is represented by the following WFI Point of Use block manifold. Discharge, condensate drain, steam supply and sampling functions are integrated in a compact block.





# M600 Multi-port Product Code and Overview

In order to be able to readily identify M-blocks, a reference code is generated at Gemu to facilitate communication and selection.

## Product Code

**M600 06-04.P1**

M600 indicates a multi-port valve

06 indicates the number of tube connections

04 indicates the number of valve seats

The characters at the end of the reference are assigned to a specific configuration and variant detail

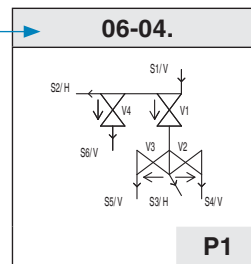
**Code numbers** are printed: - In the bottom corner of pages 16-89  
- In the table of contents on page 2

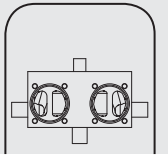
## Product Overview

The Product Overview on pages 13-15 represents only a small portion of the broad range of standard and customized solutions available from Gemu.

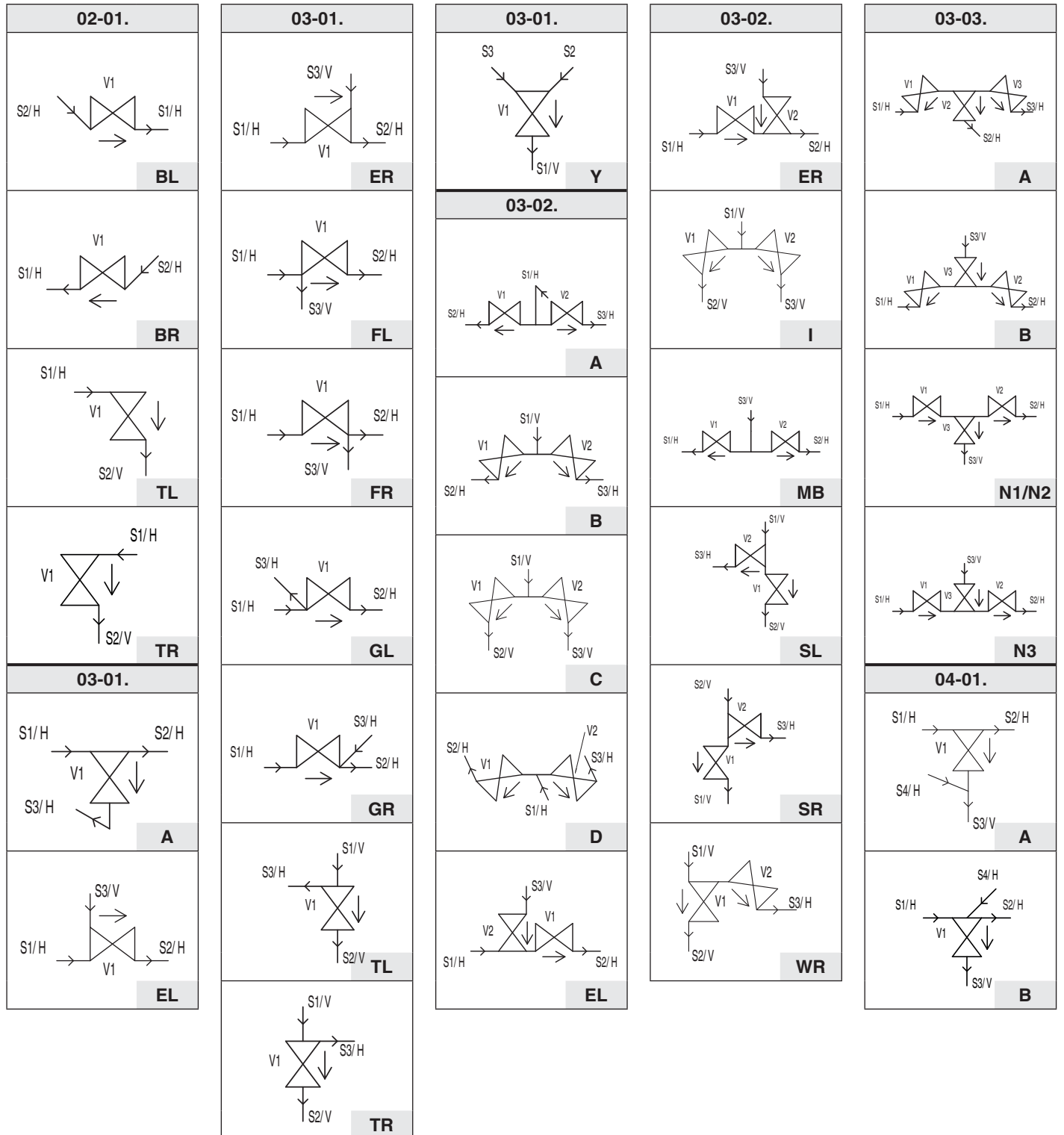
The basic **code number** is located at the top of the column.

The **variant code** suffix is located at the bottom right corner of the flow diagram.

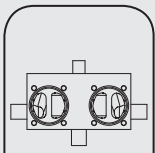




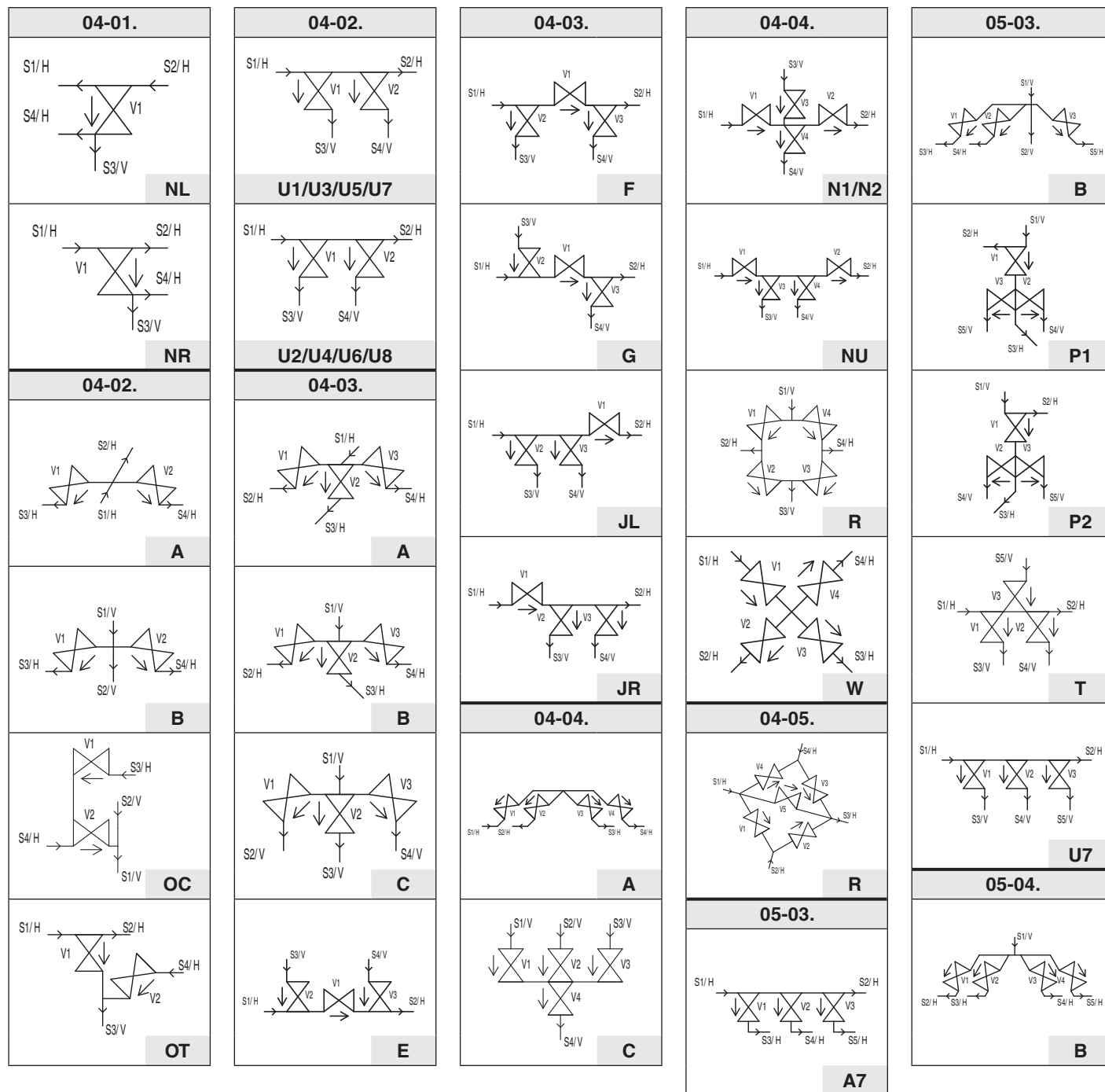
# Overview GEMU M600 Multi-port valves

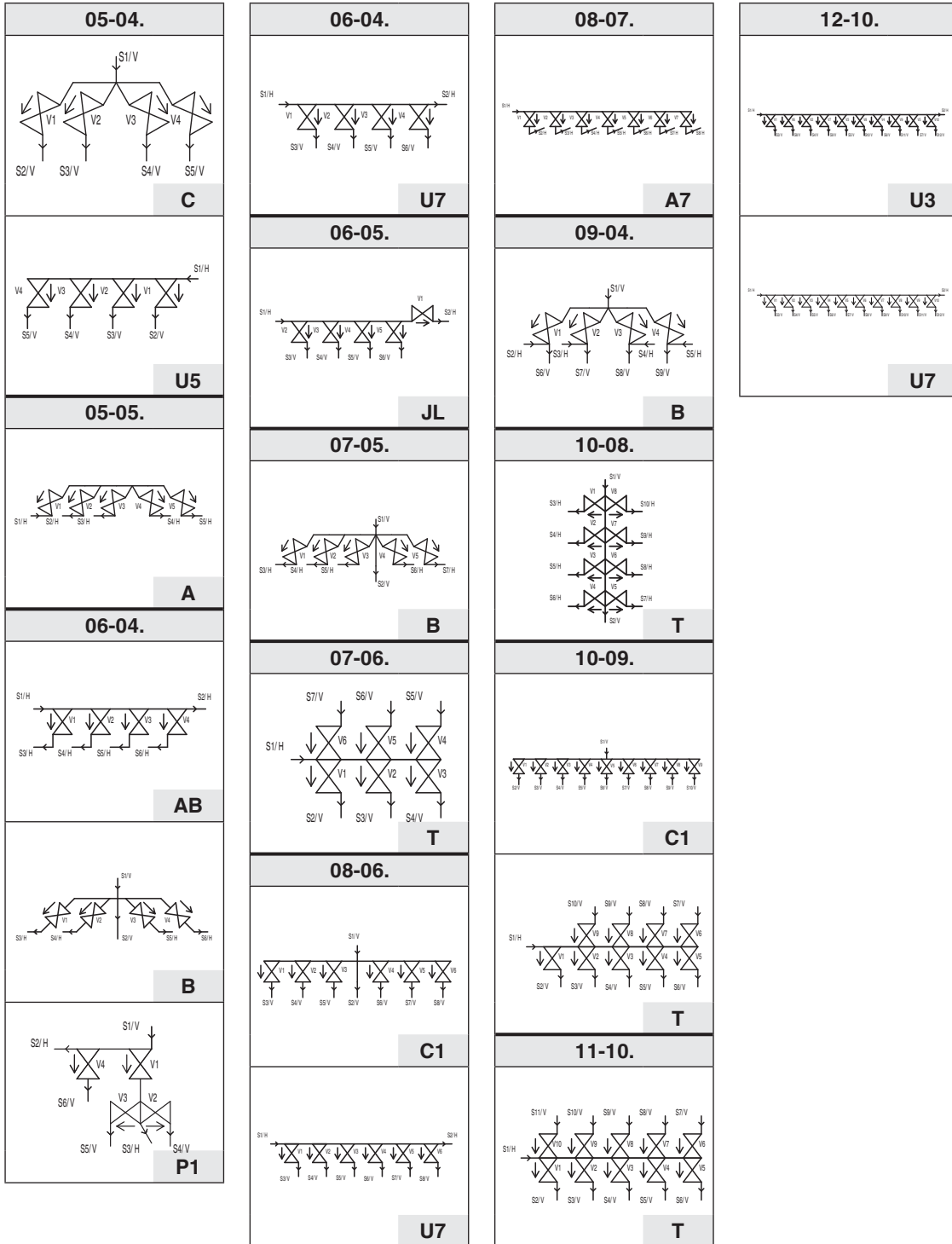
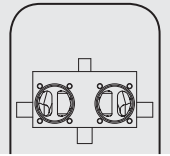




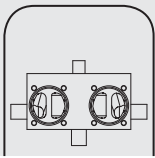


# Overview GEMU M600 Multi-port valves





This overview represents a small portion of the broad range of standard and customized solutions available from GEMÜ.

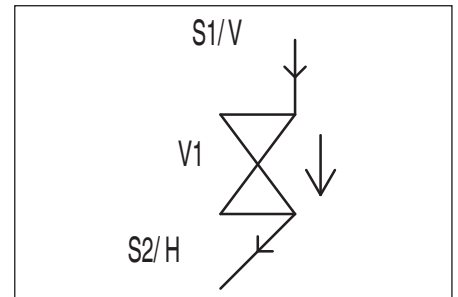
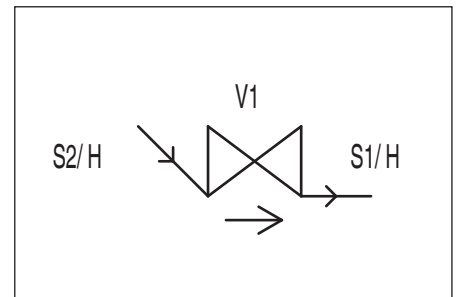
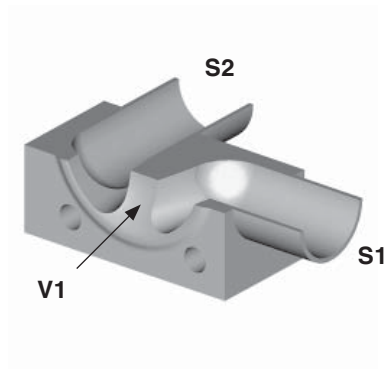
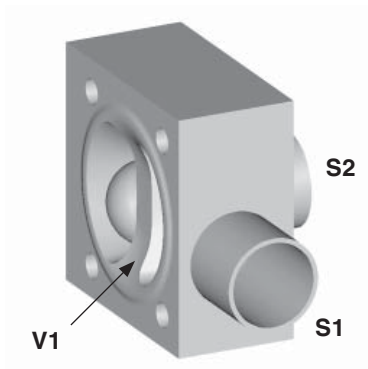


## 02-01.BL / 02-01.BR

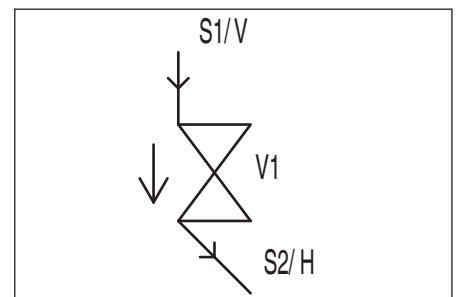
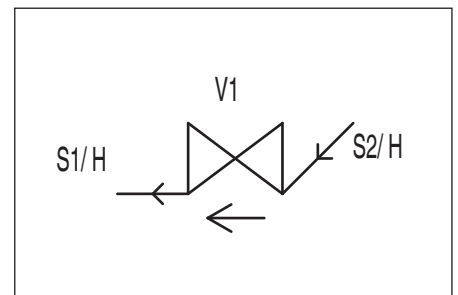
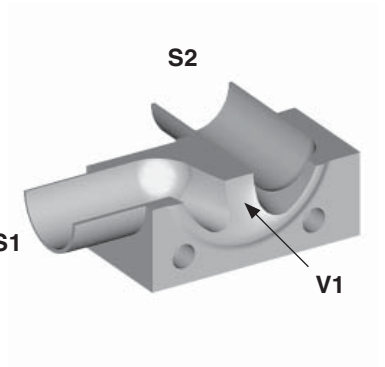
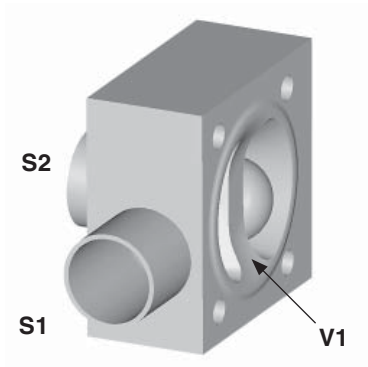
90° valve with backside inlet or outlet

Flow diagram and recommended installation: Please inform us about installation at the request.

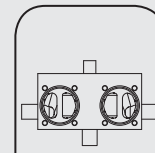
### GEMU M600 02-01.BL



### GEMU M600 02-01.BR



H = horizontal, V = vertical



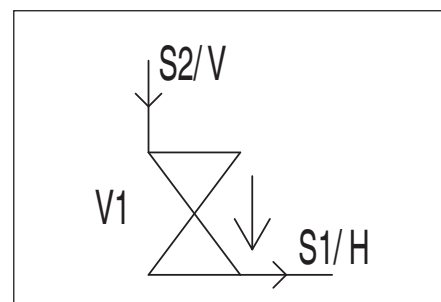
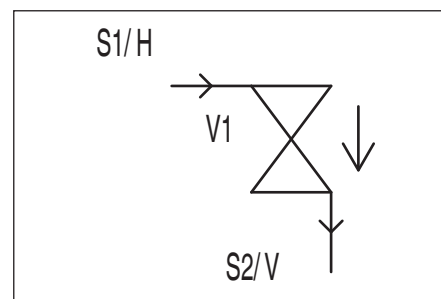
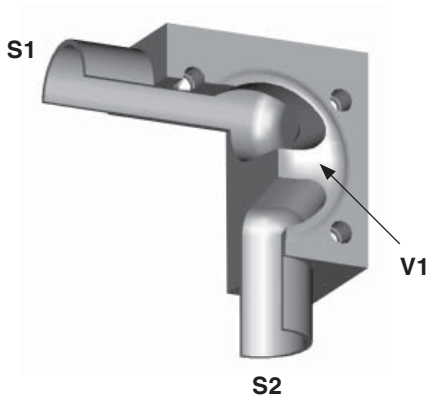
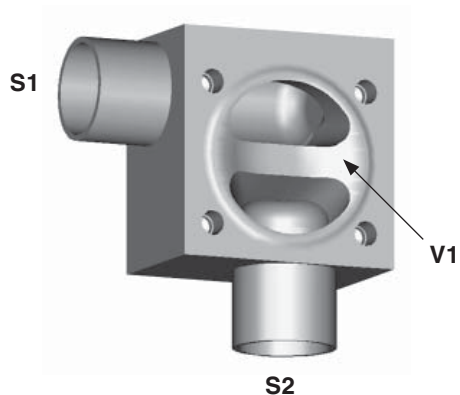
# 02-01.TL / 02-01.TR

90° valve with side inlet or outlet

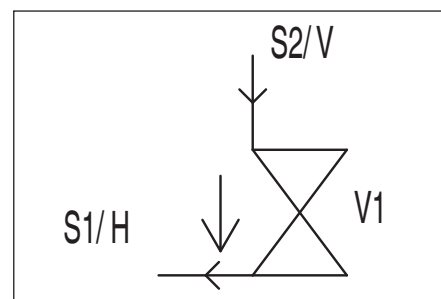
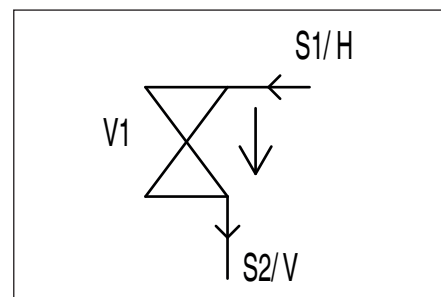
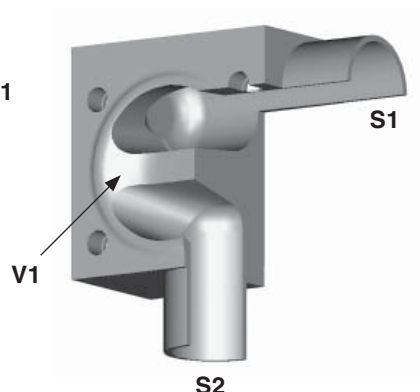
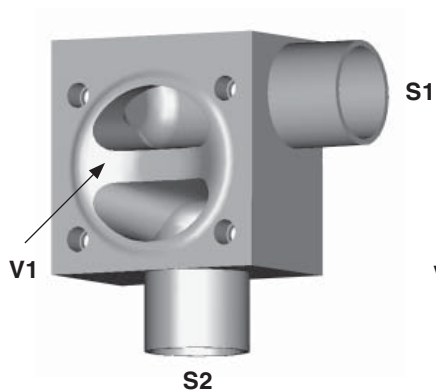
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

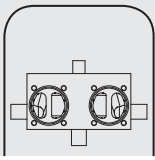
## GEMU M600 02-01.TL



## GEMU M600 02-01.TR



H = horizontal, V = vertical

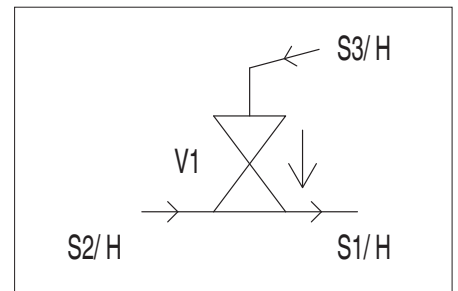
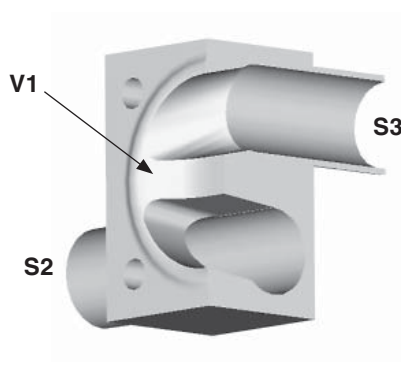
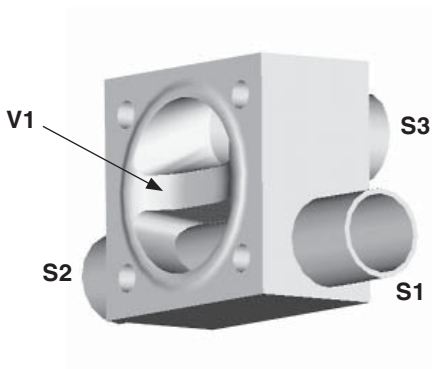
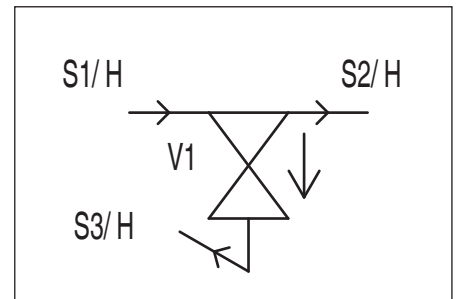
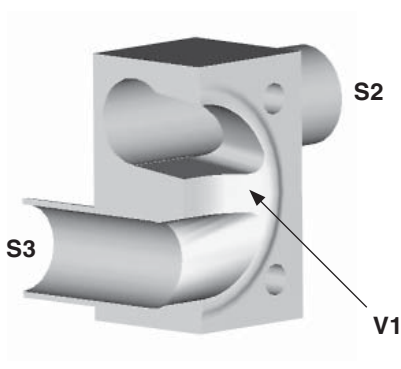
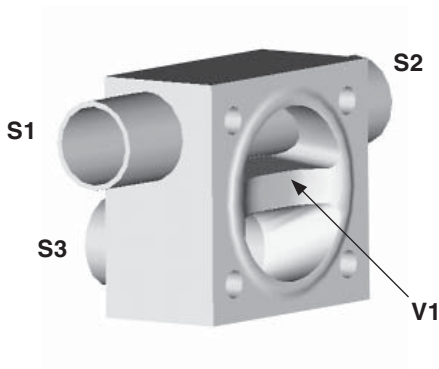


# 03-01.A

Zero Static T-Valve with backside horizontal port

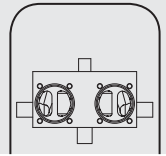
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical





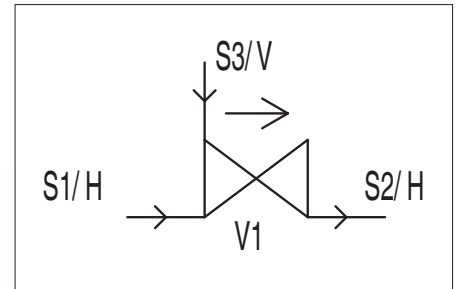
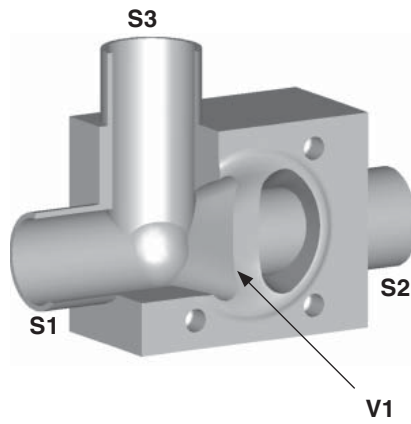
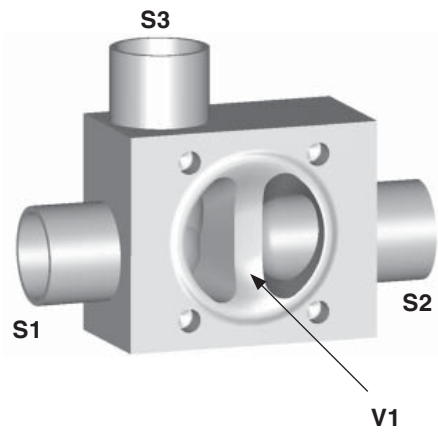
# 03-01.EL / 03-01.ER

90° T-Valve with upstream vertical access port, e.g. ring main transfer

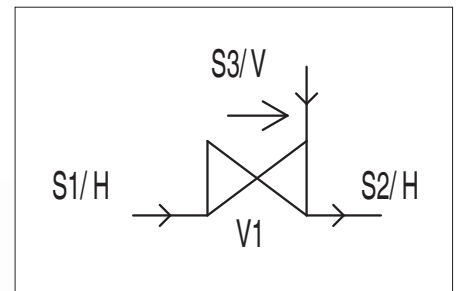
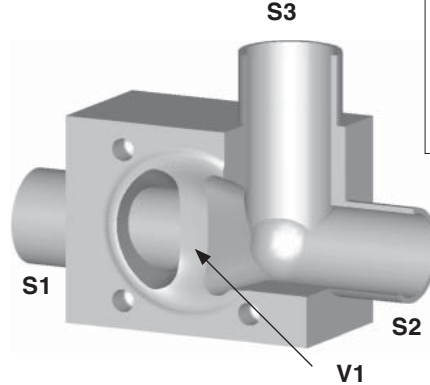
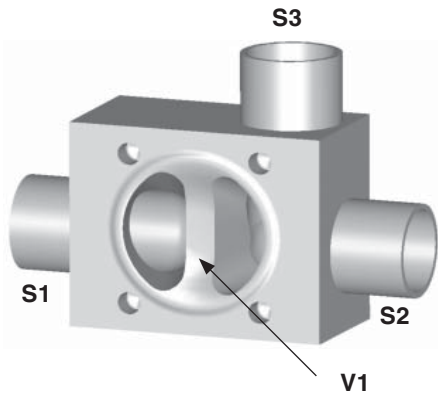
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

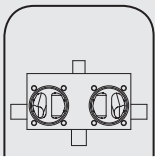
## GEMU M600 03-01.EL



## GEMU M600 03-01.ER



H = horizontal, V = vertical



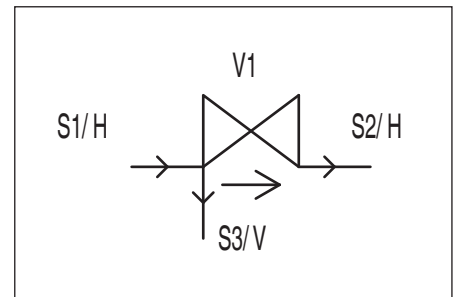
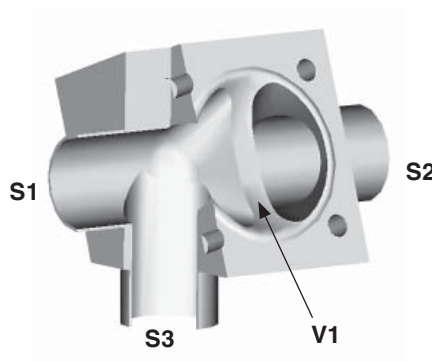
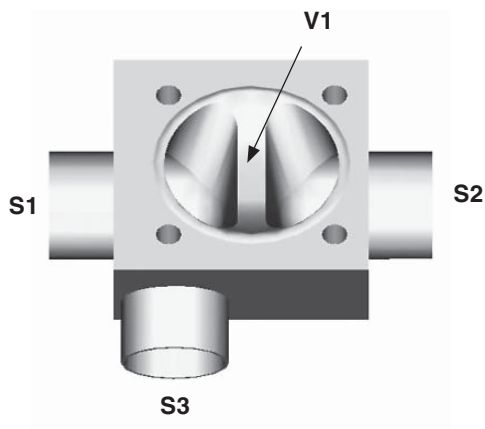
# 03-01.FL / 03-01.FR

90° T-Valve with upstream vertical access port, e.g. ring main transfer

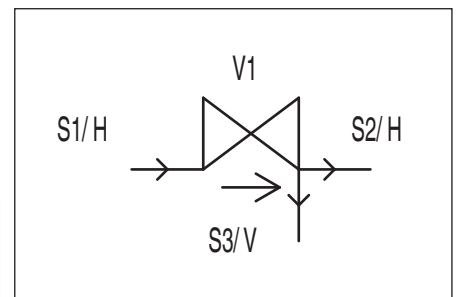
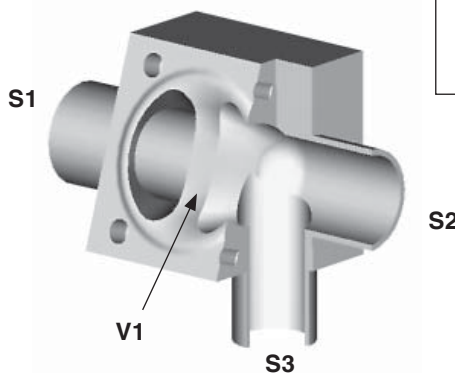
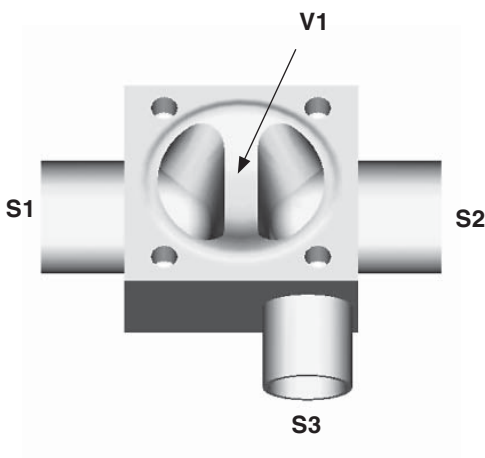
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

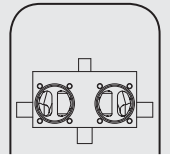
## GEMU M600 03-01.FL



## GEMU M600 03-01.FR



H = horizontal, V = vertical



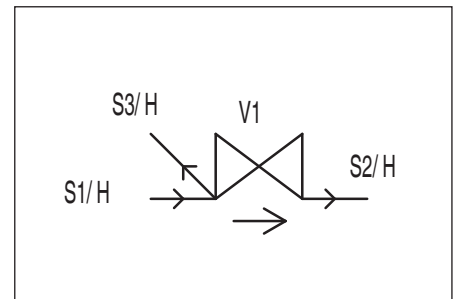
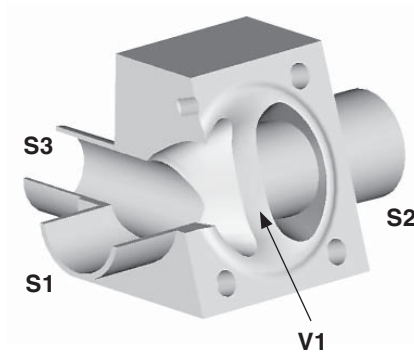
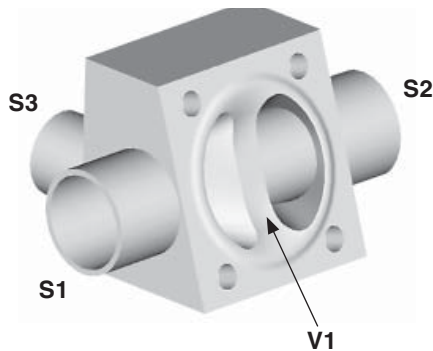
# 03-01.GL / 03-01.GR

90° T-Valve with upstream or downstream horizontal access port, e.g. ring main transfer

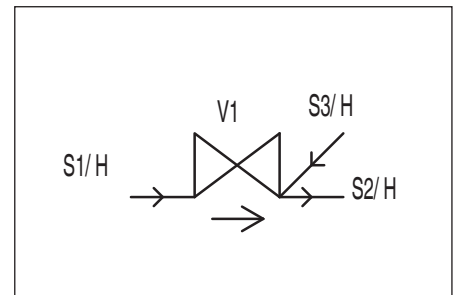
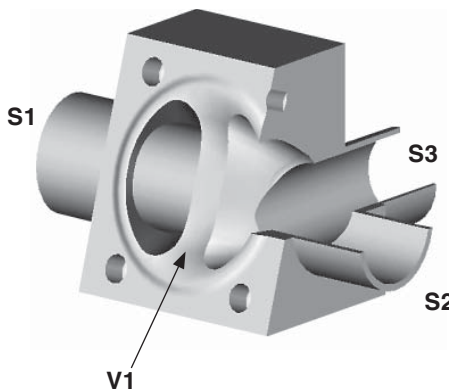
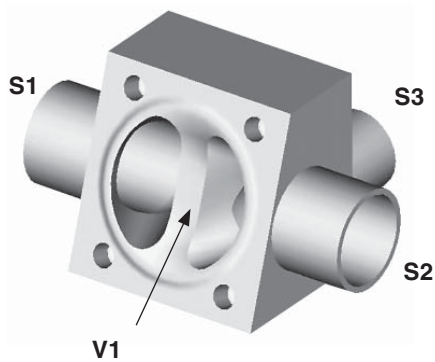
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

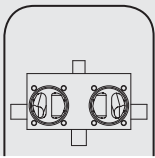
## GEMU M600 03-01.GL



## GEMU M600 03-01.GR



H = horizontal, V = vertical



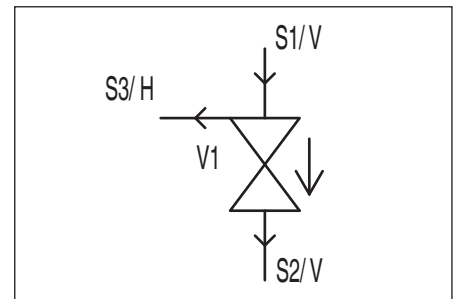
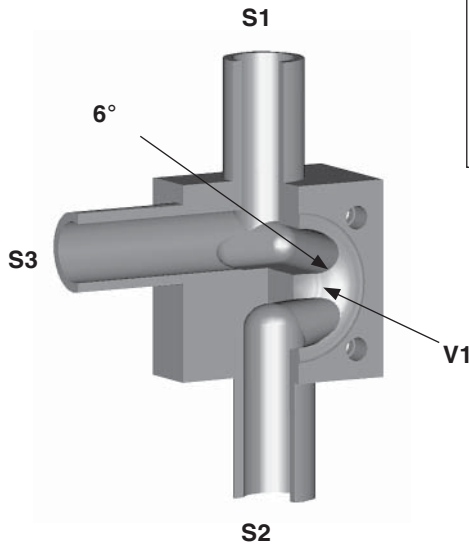
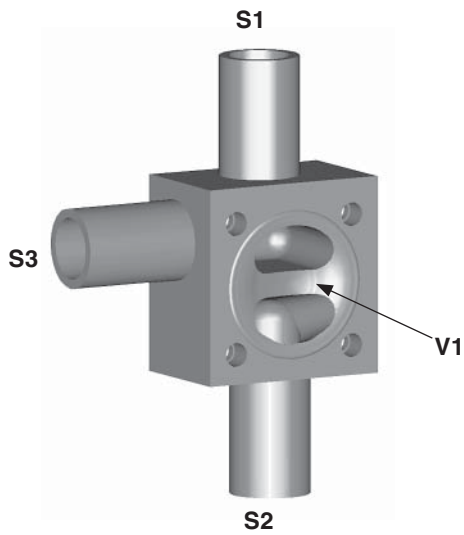
# 03-01.TL / 03-01.TR

90° T-Valve with horizontal access port, e.g. ring main transfer or WFI point of use

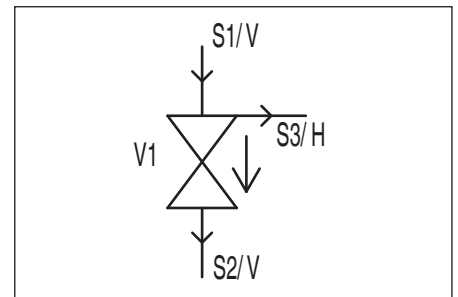
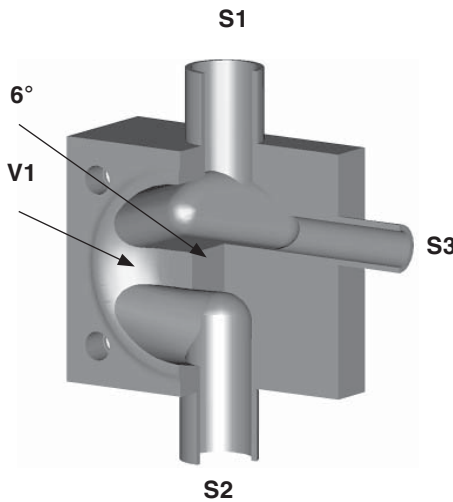
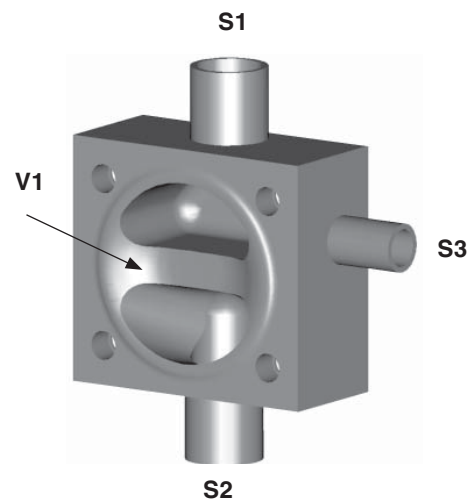
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

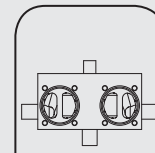
## GEMU M600 03-01.TL



## GEMU M600 03-01.TR



H = horizontal, V = vertical

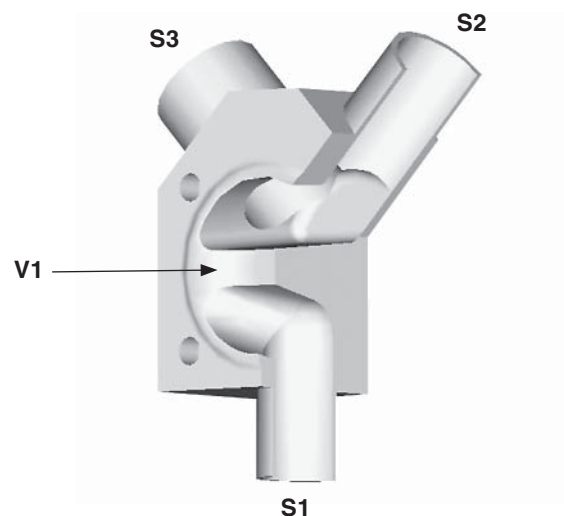
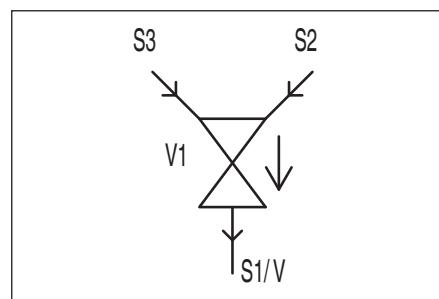
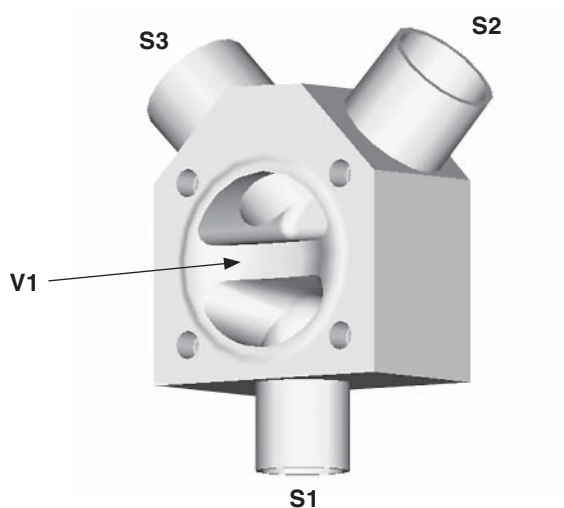


# 03-01.Y

Zero Static Y-Valve for WFI point of use

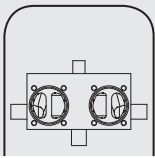
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



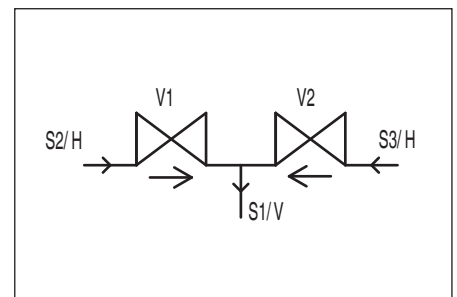
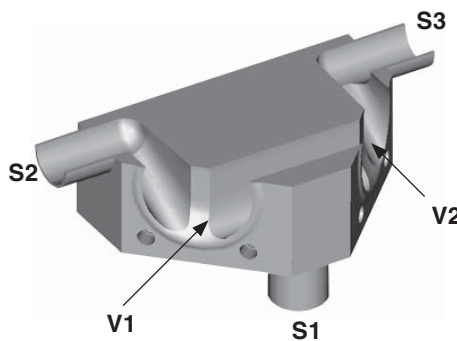
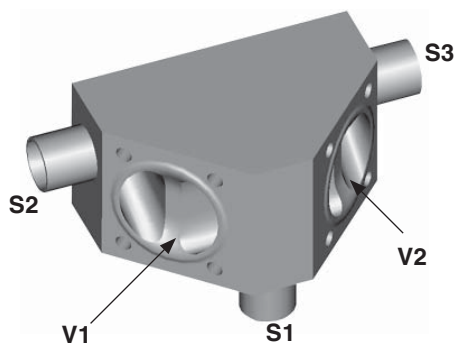
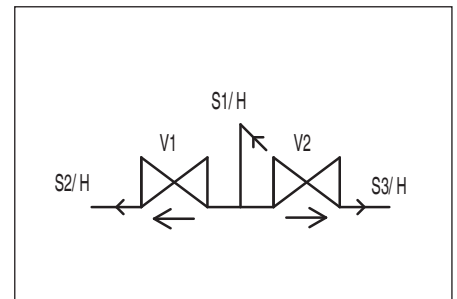
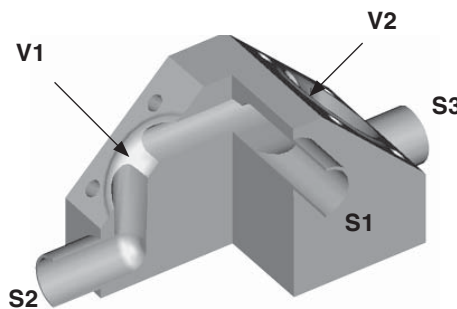
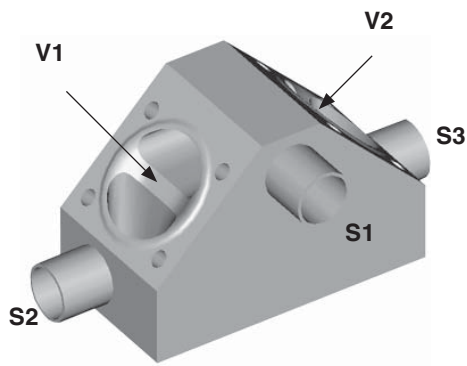


# 03-02.A

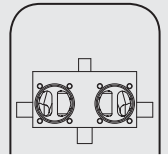
2 way Diverter Valve, 90° inlet/outlets, vertical or horizontal installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

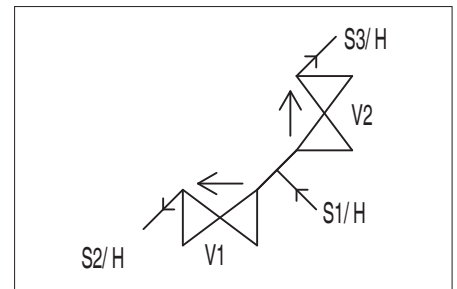
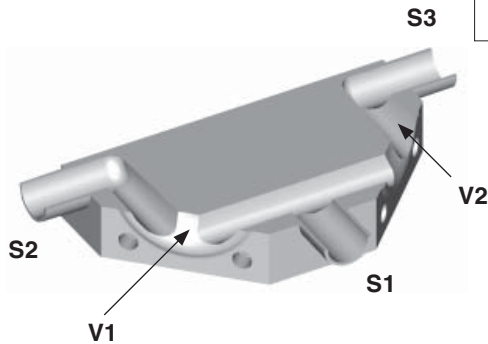
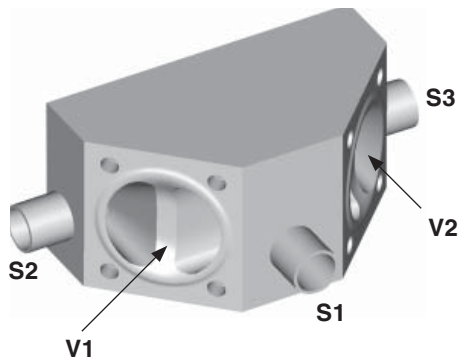
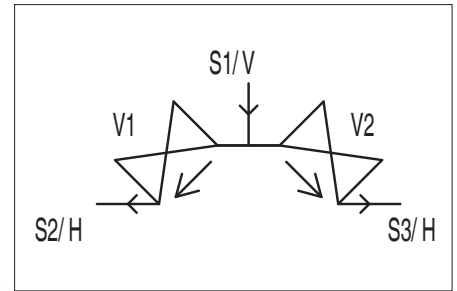
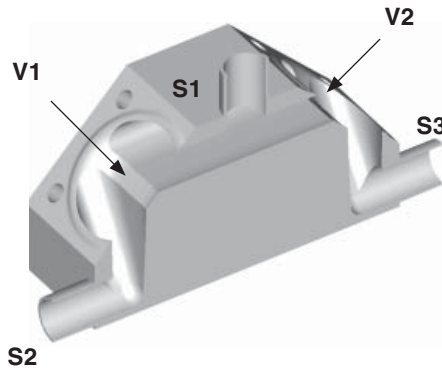
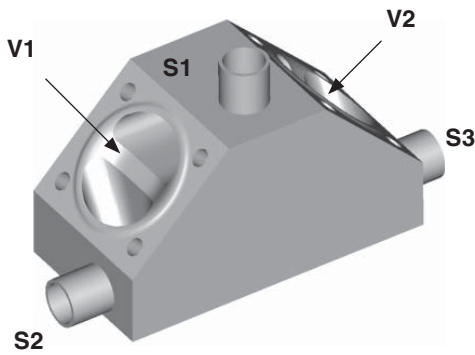


# 03-02.B

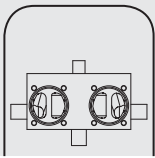
2 way Diverter Valve, 90° inlet/outlets, vertical or horizontal installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

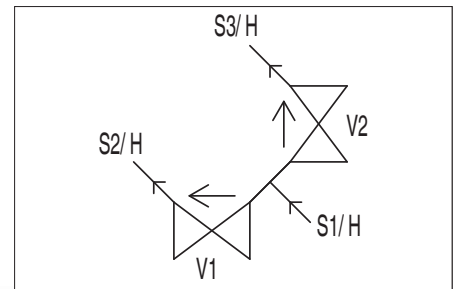
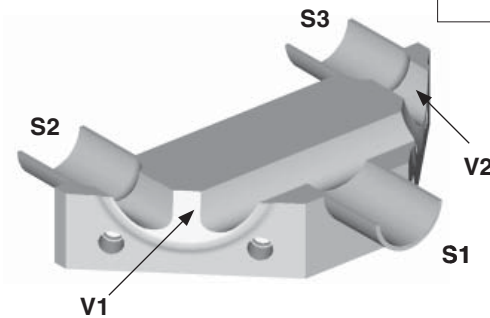
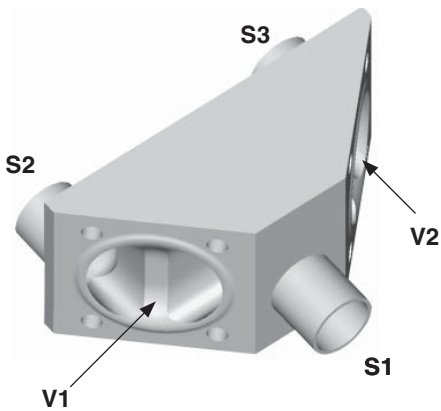
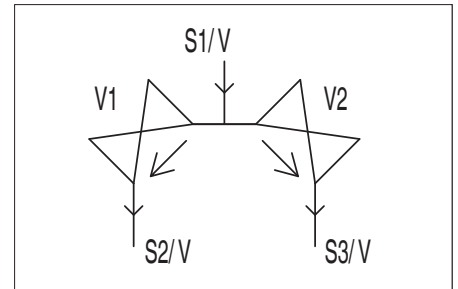
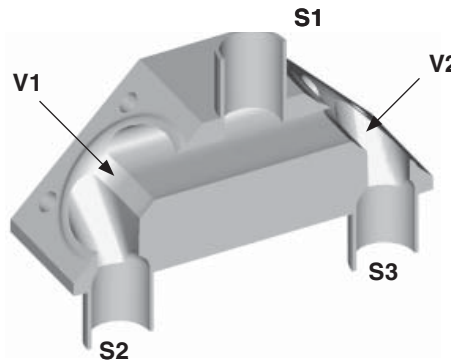
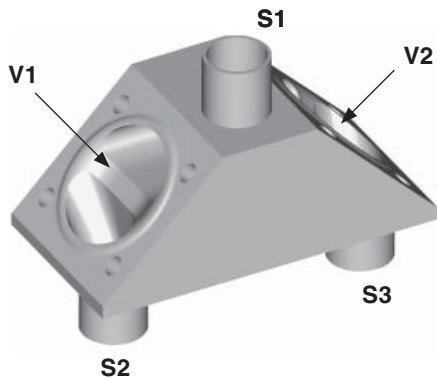


## 03-02.C

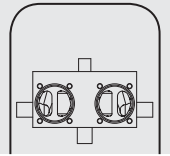
2 way Diverter Valve, inlet/outlets in same axis, vertical or horizontal installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

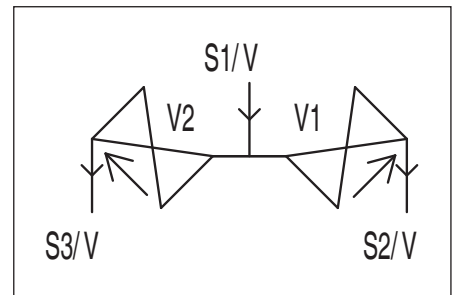
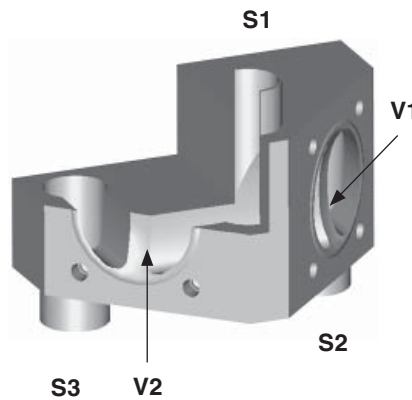
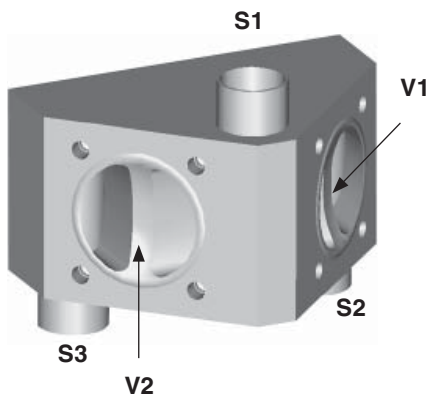
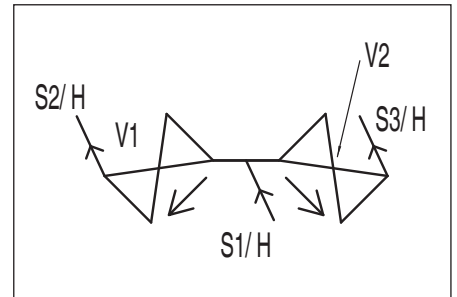
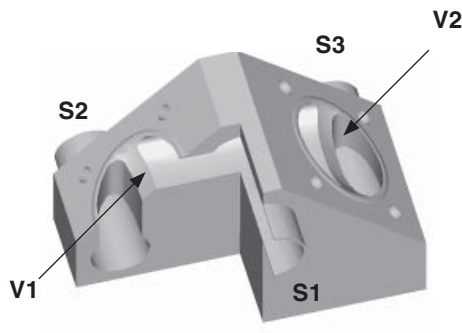
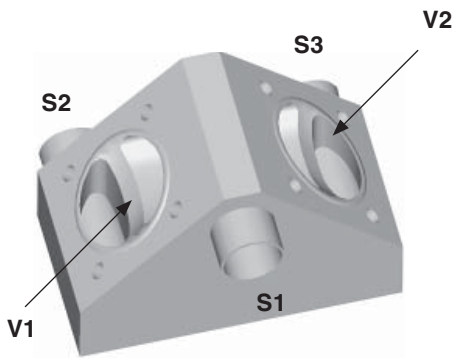


# 03-02.D

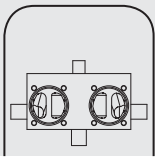
2 way Diverter Valve, inlets/outlets in same axis, vertical or horizontal installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



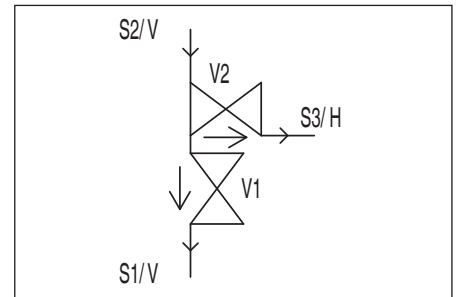
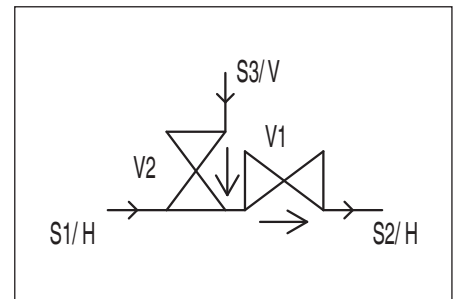
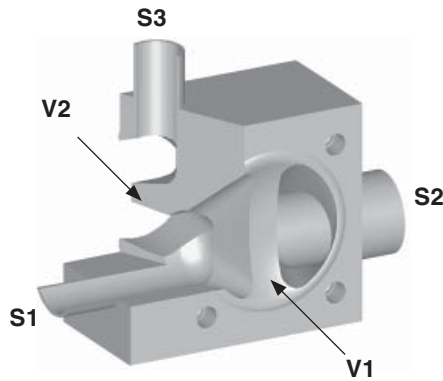
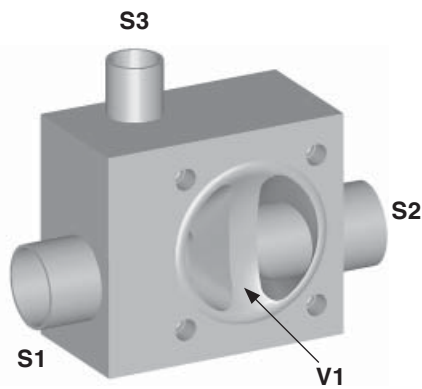
# 03-02.EL / 03-02.ER

2 way Valve with integrated, upstream or downstream SAP/GMP valve, vertical or horizontal installation, (suitable for top access valve)

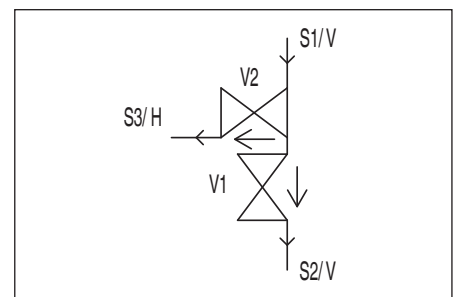
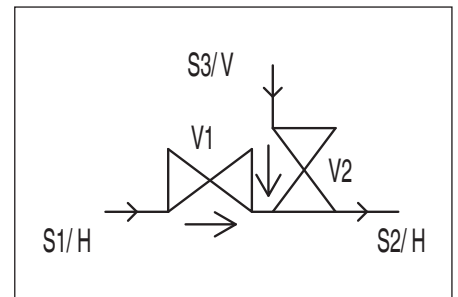
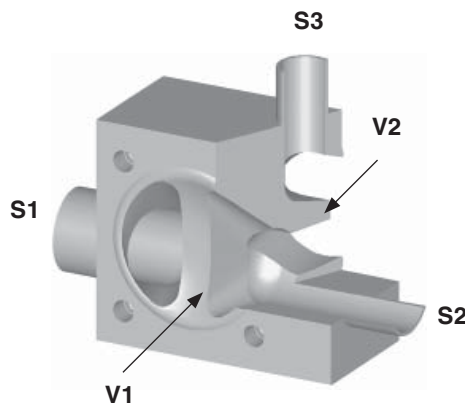
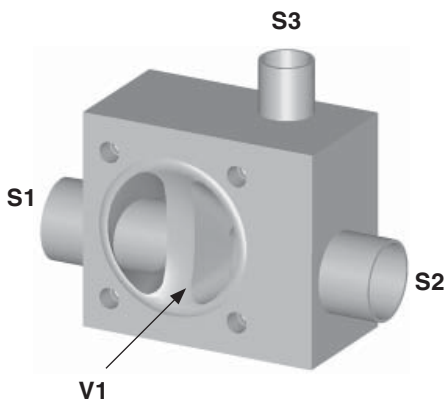
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

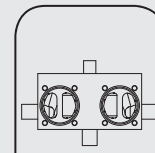
## GEMU M600 03-02..EL



## GEMU M600 03-02.ER



H = horizontal, V = vertical

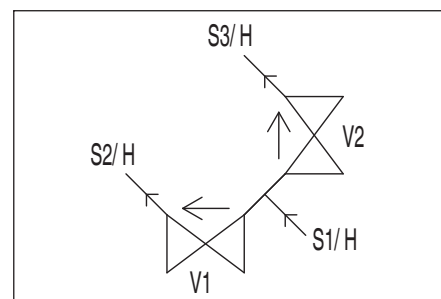
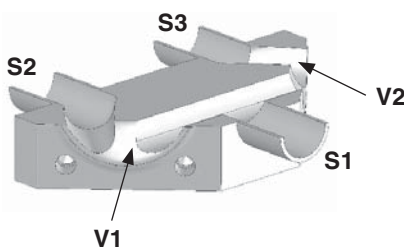
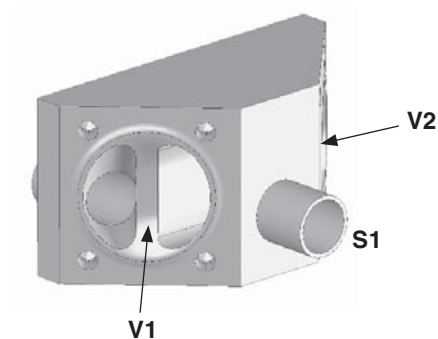
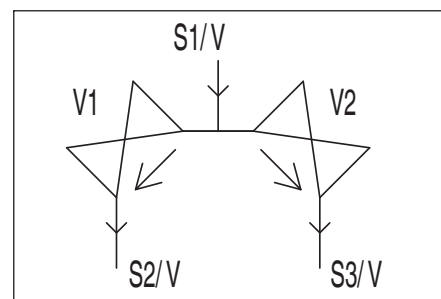
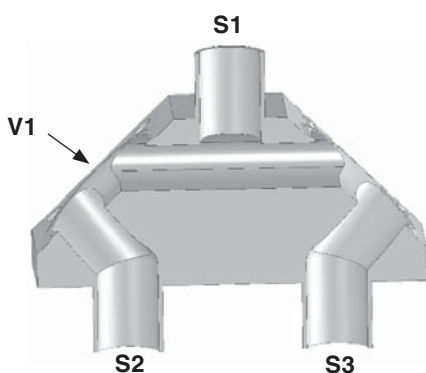
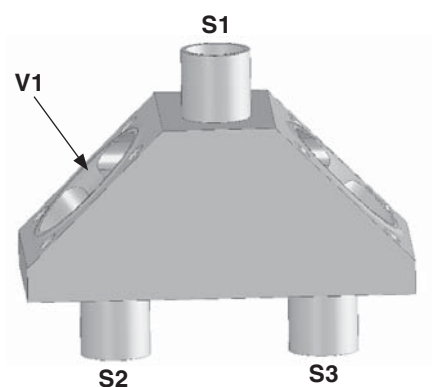


# 03-02.I

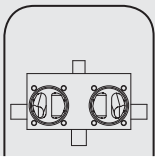
2-way Diverter Valve, inlet/outlets in same axes, vertical or horizontal installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

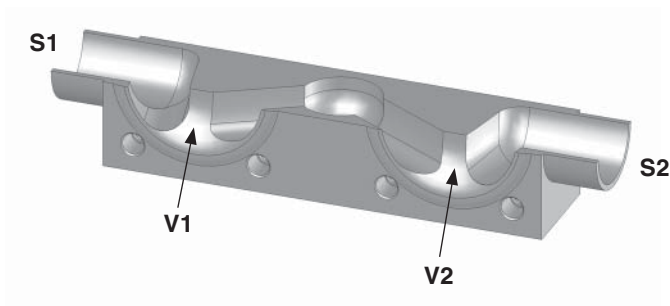
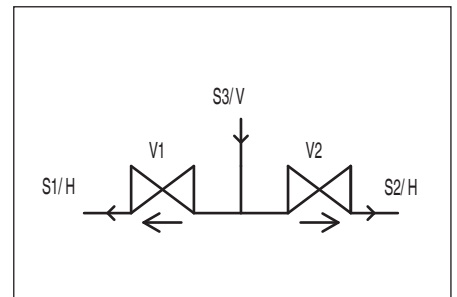
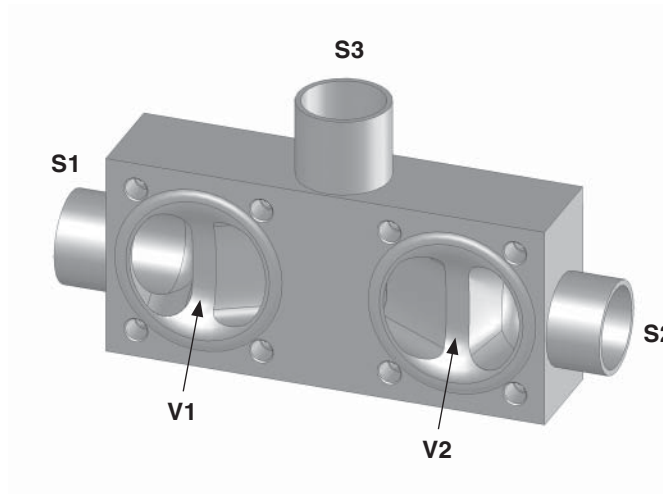


# 03-02.MB

2 way Diverter Valve with 90° horizontal outlets

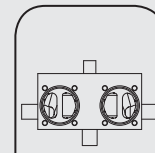
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical





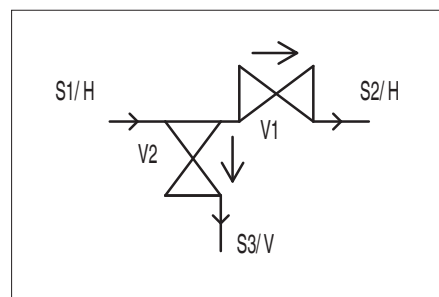
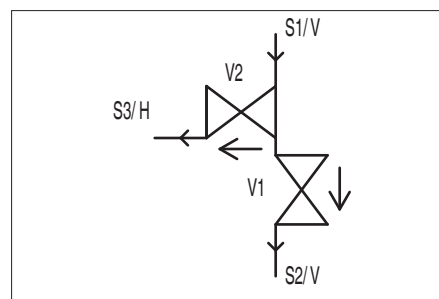
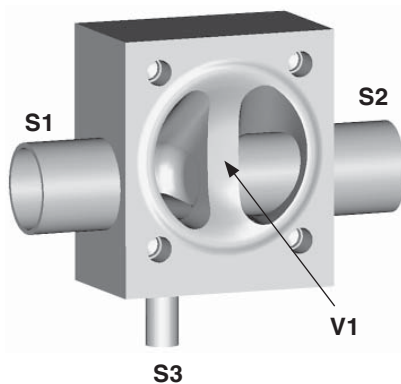
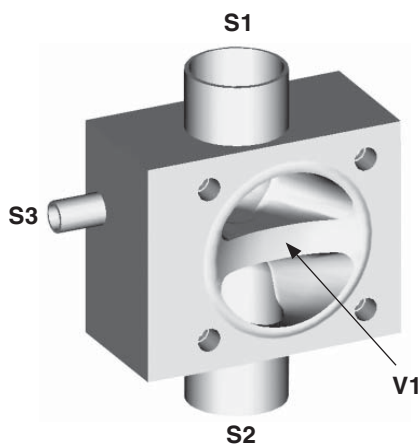
# 03-02.SL / 03-02.SR

2 way Valve with integrated, upstream or downstream SAP/GMP valve, vertical or horizontal installation, (suitable for bottom access valve)

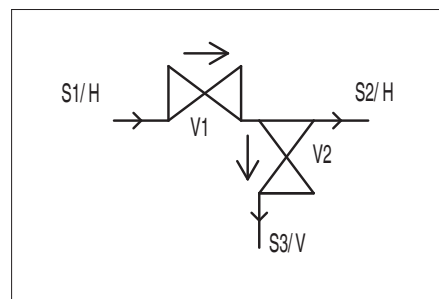
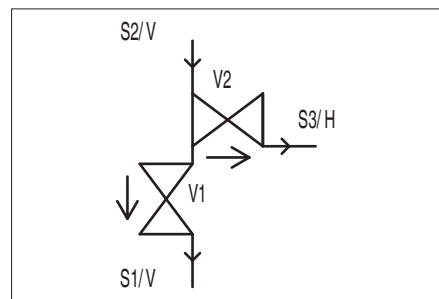
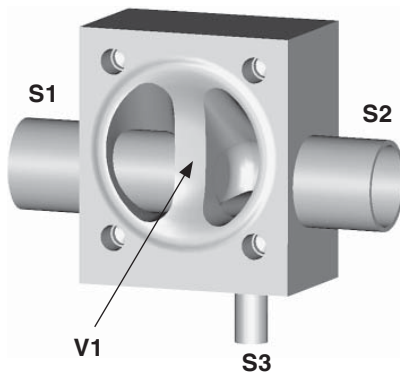
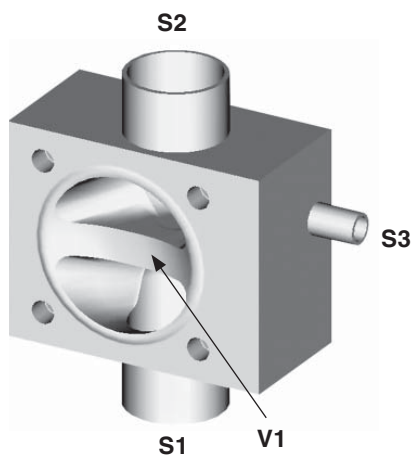
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

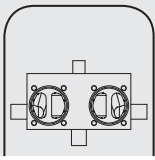
## GEMU M600 03-02.SL



## GEMU M600 03-02.SR



H = horizontal, V = vertical

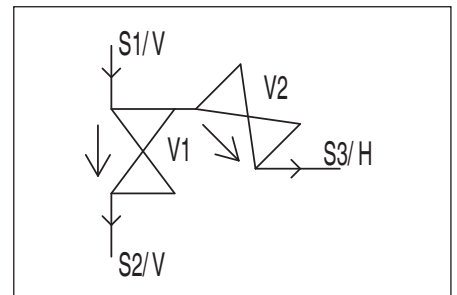
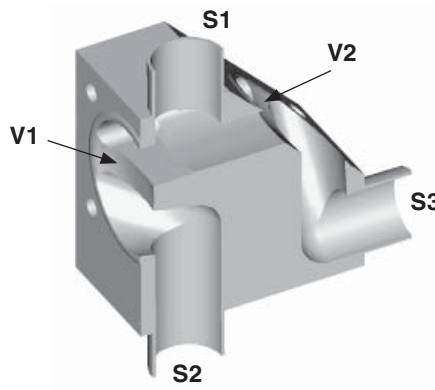
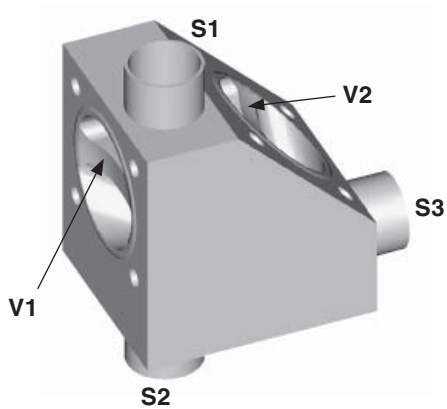
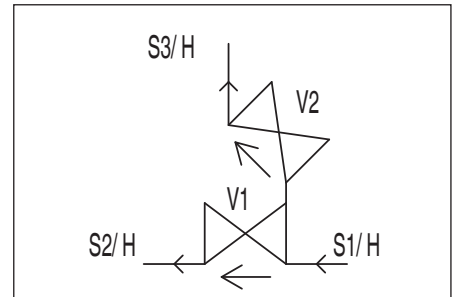
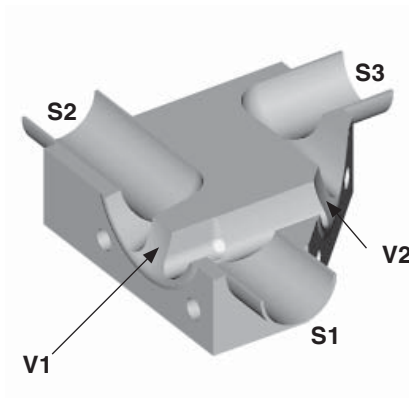
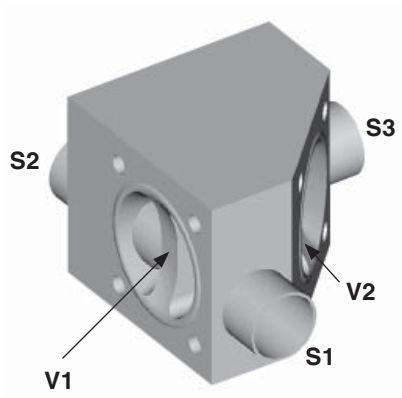


# 03-02.WR

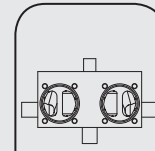
2 way Diverter Valve with 90° horizontal access

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

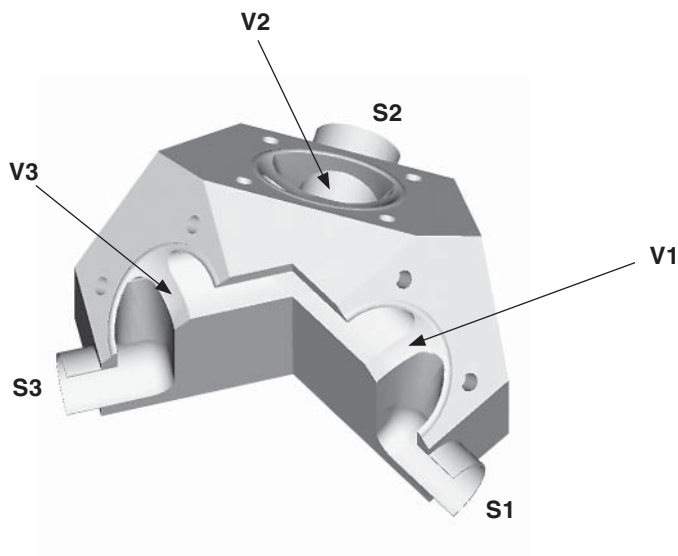
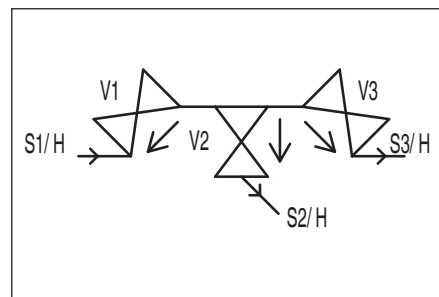
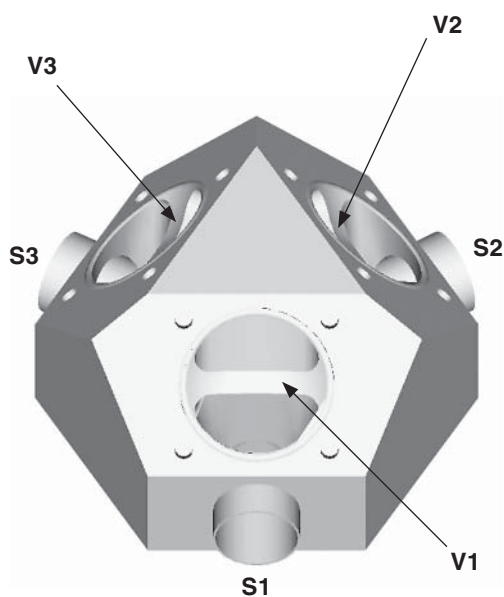


# 03-03.A

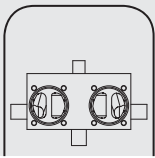
3 seat distribution valve block, e.g. filter system management

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

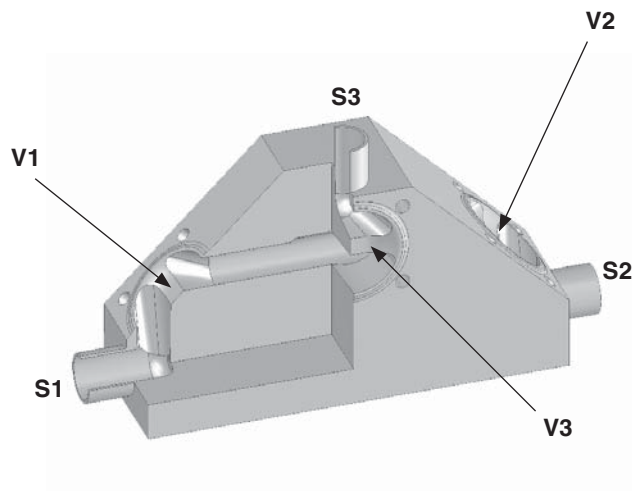
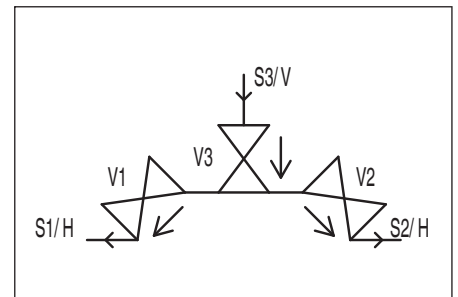
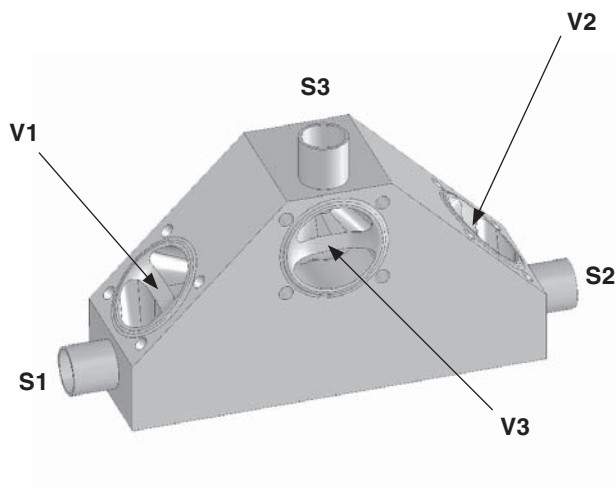


## 03-03.B

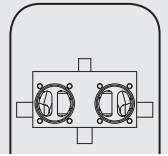
3 seat distribution valve block with horizontal outlets

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



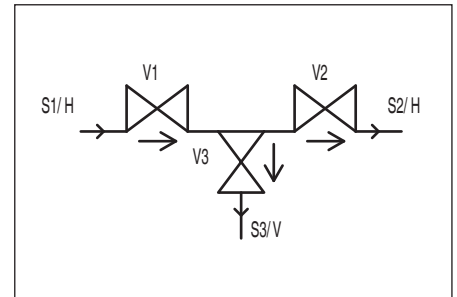
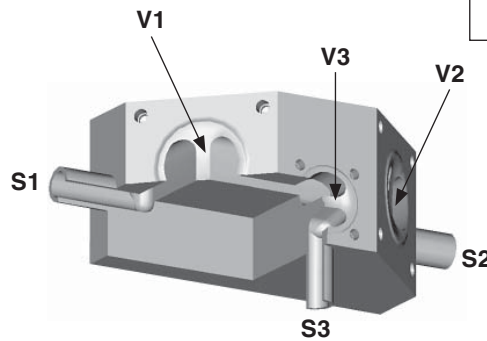
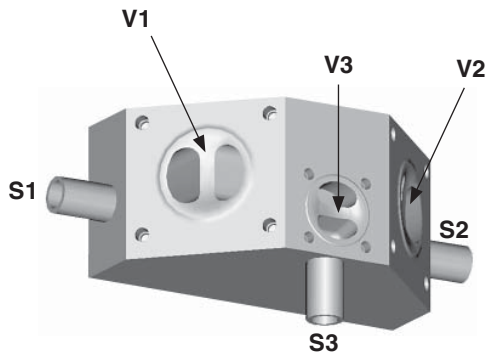
# 03-03.N1 / 03-03.N3

Double Block and Bleed (or vent) valve block, all actuators on front side

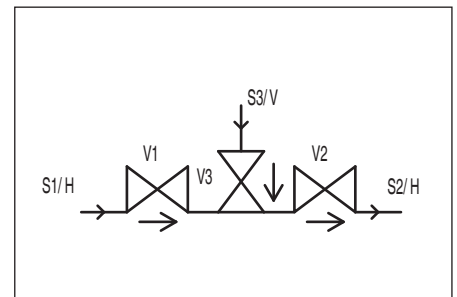
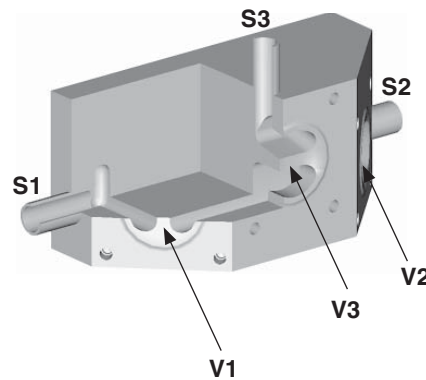
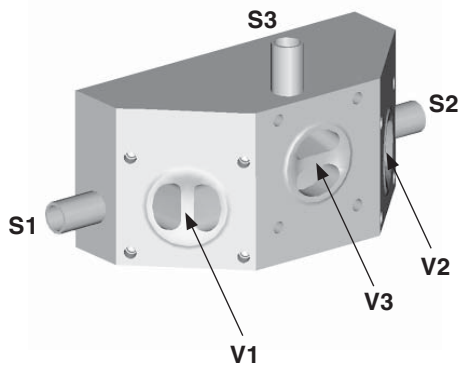
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

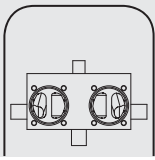
## GEMÜ M600 03-03.N1



## GEMÜ M600 03-03.N3



H = horizontal, V = vertical



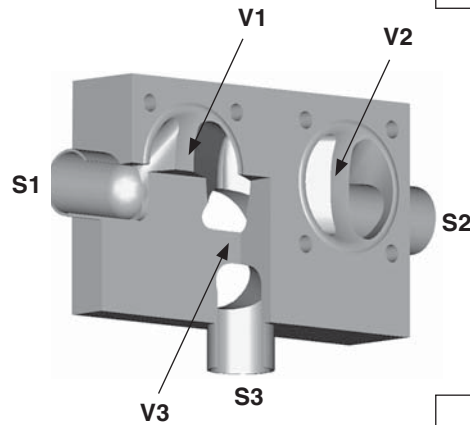
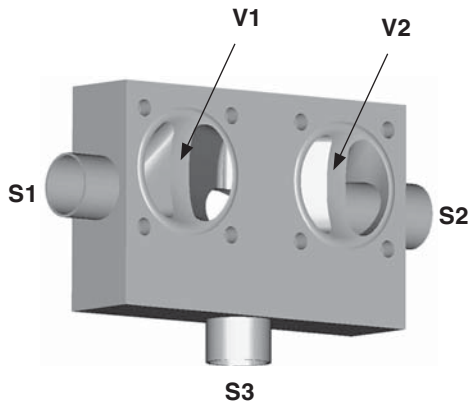
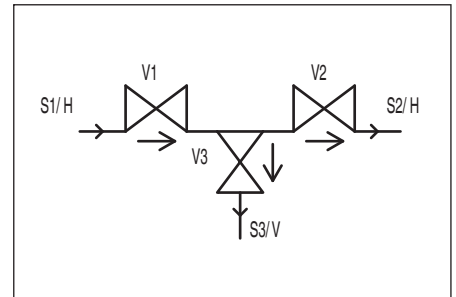
## 03-03.N2 / 03-03.N9

Double Block and Bleed (or vent) valve block with actuators on front and back sides

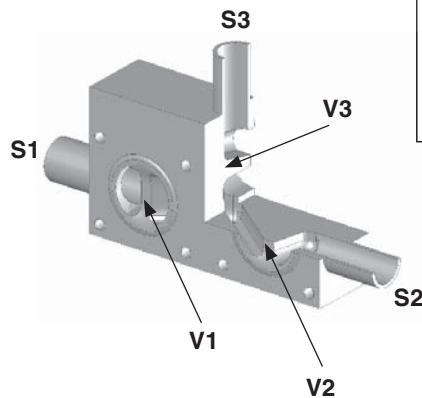
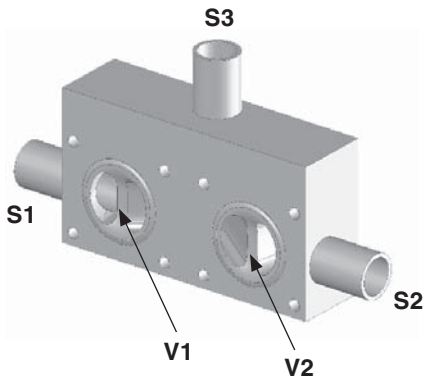
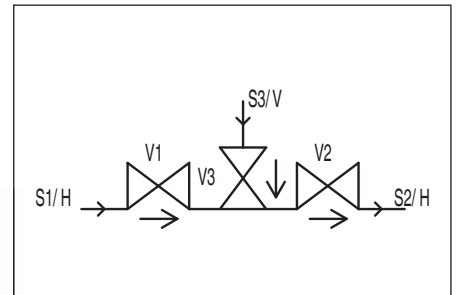
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

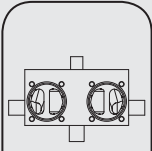
### GEMU M600 03-03.N2



### GEMU M600 03-03.N9



H = horizontal, V = vertical

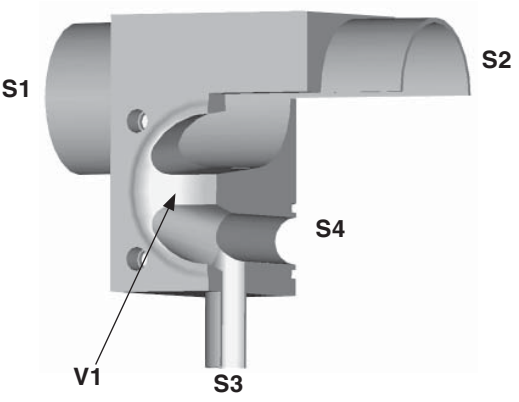
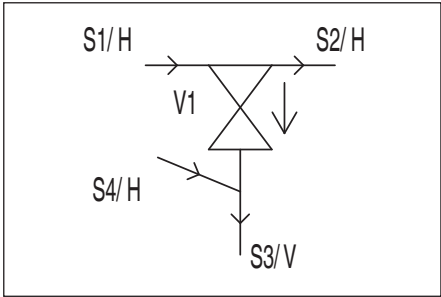
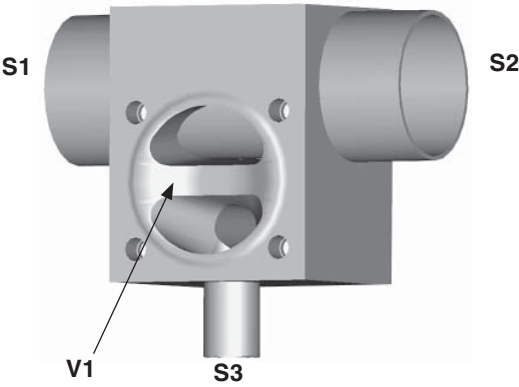


# 04-01A

Zero Static T-Valve with downstream access port, e.g. steam purge

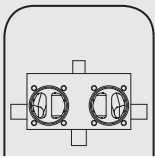
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



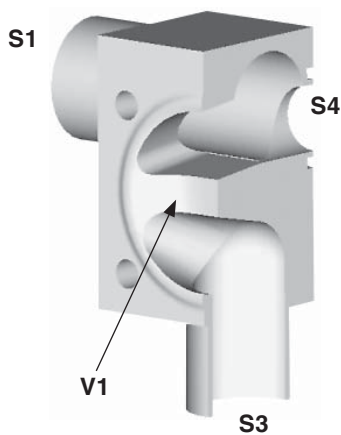
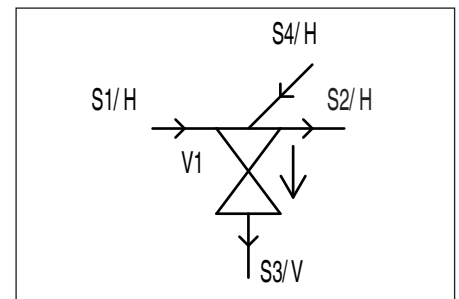
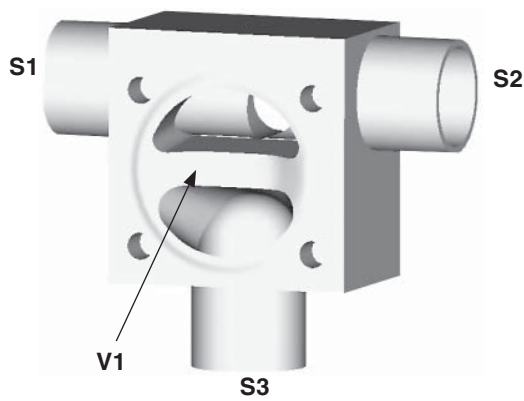


# 04-01.B

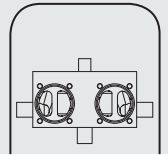
Zero Static T-Valve with upstream access port on back side, e.g. sampling

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

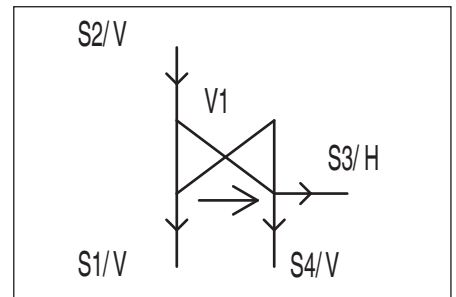
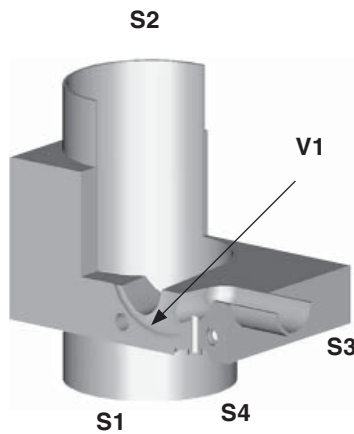
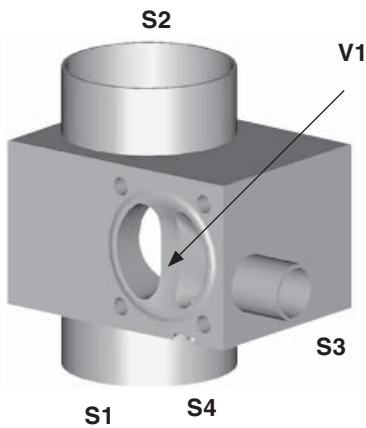
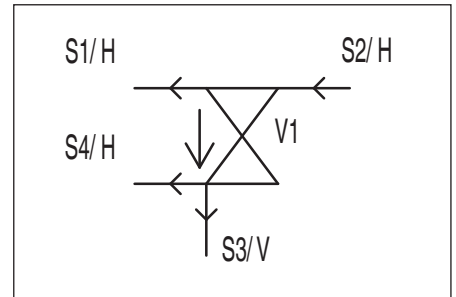
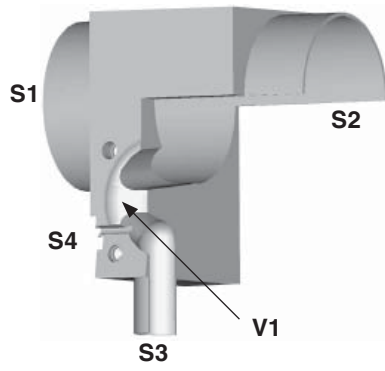
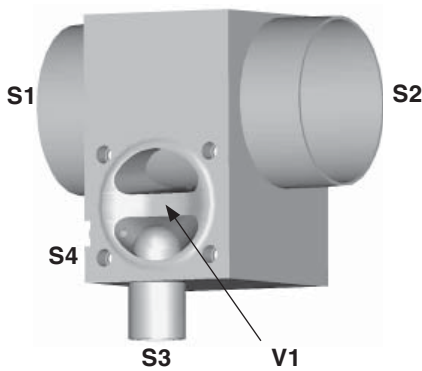


# 04-01.NL

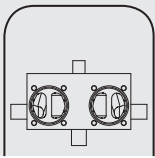
Zero Static T-Valve with left side downstream access port, e.g. point of use with steam purge

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

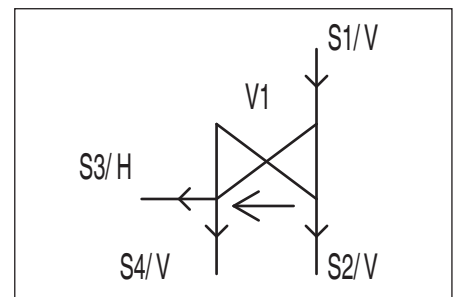
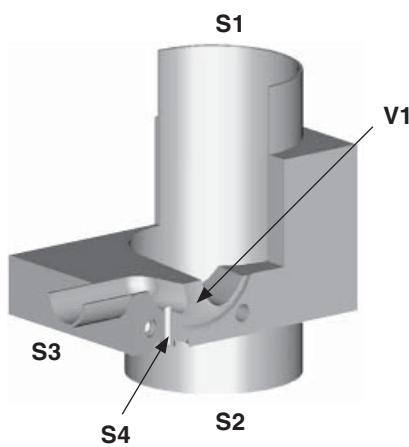
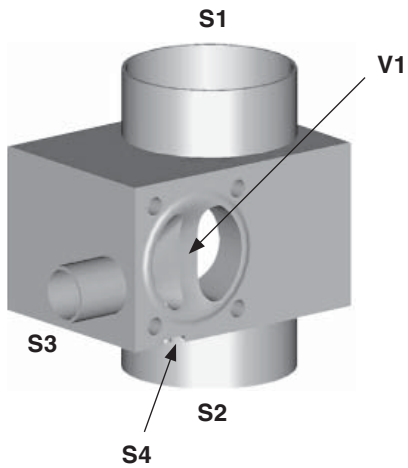
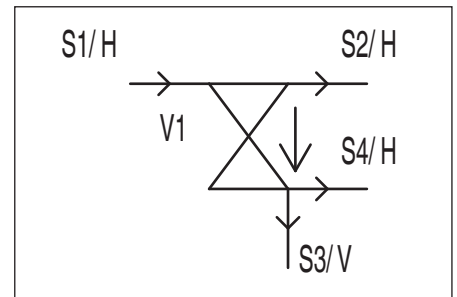
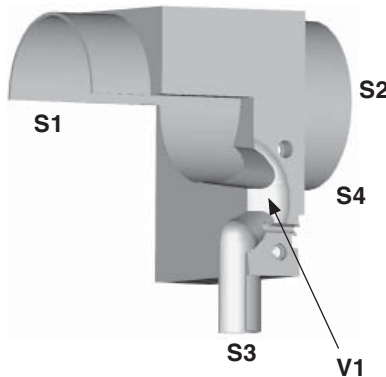
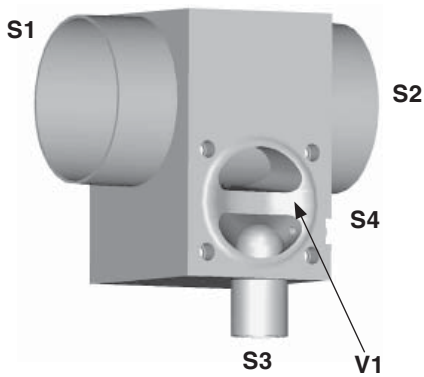


# 04-01.NR

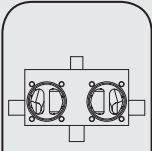
Zero Static T-Valve with right side downstream access port, e.g. point of use with steam purge

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

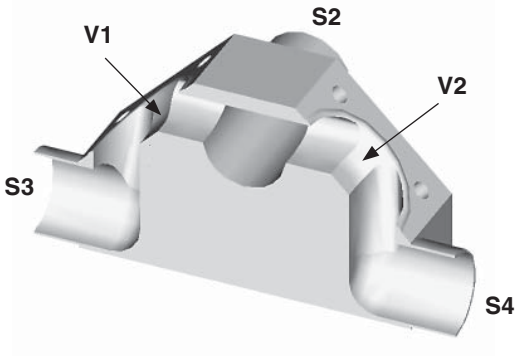
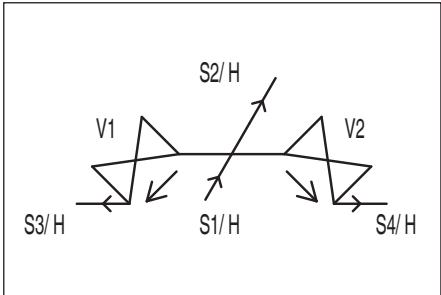
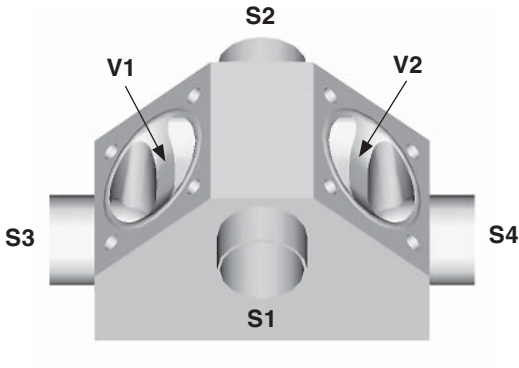


# 04-02.A

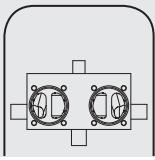
2 seat distribution valve block, horizontal ports with horizontal supply main

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

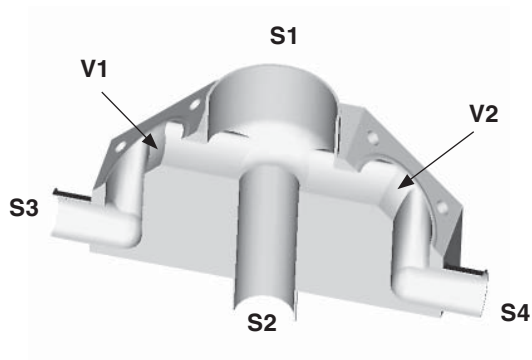
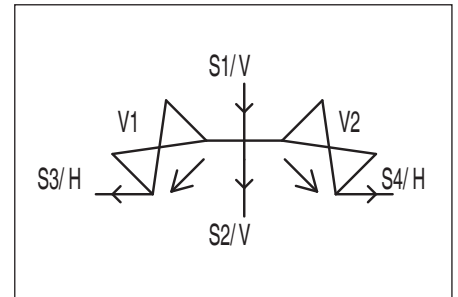
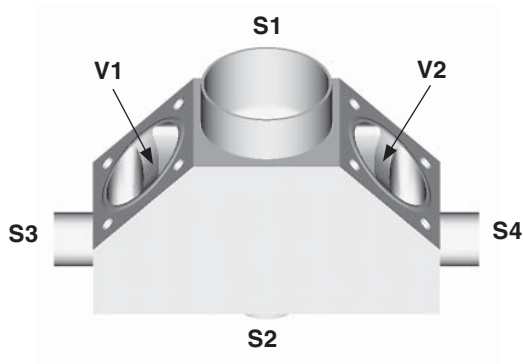


## 04-02.B

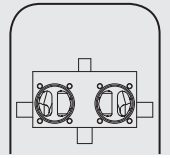
2 seat distribution valve block with horizontal outlets and vertical supply main

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

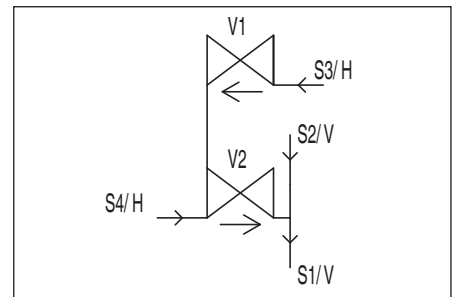
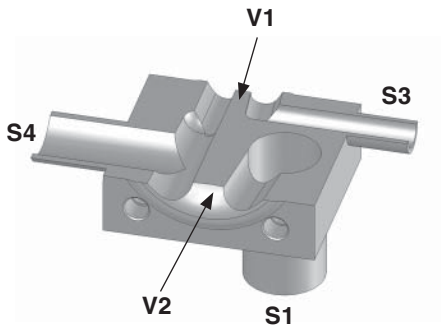
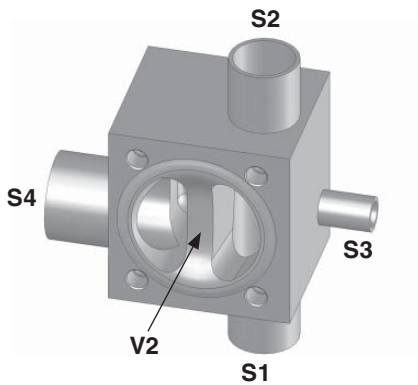
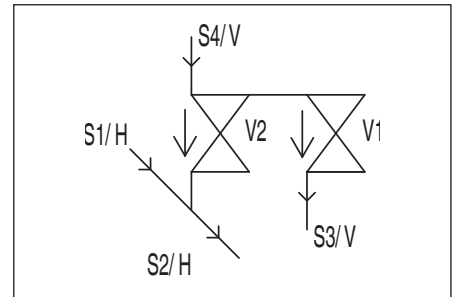
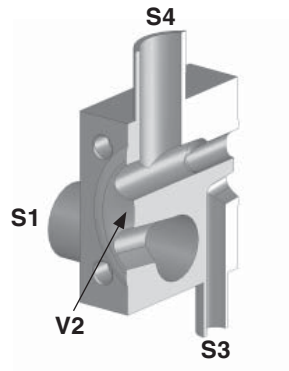
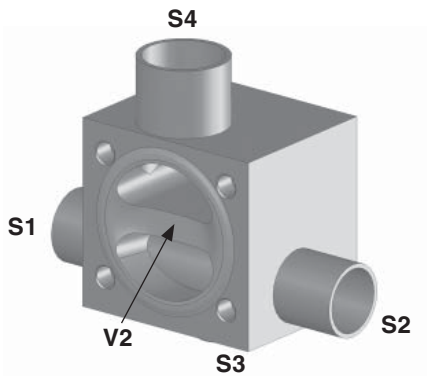


# 04-02.OC

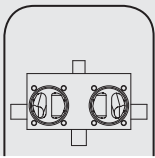
Zero Static T-Valve with upstream sample valve and outlet distribution main

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

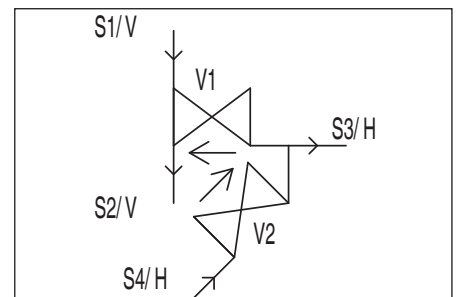
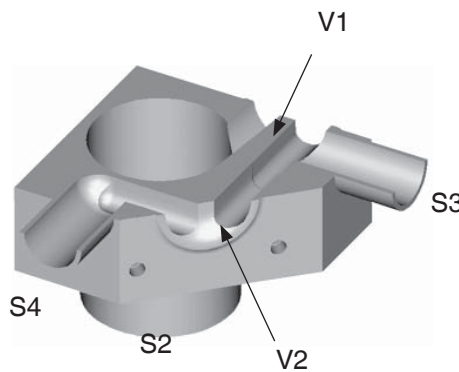
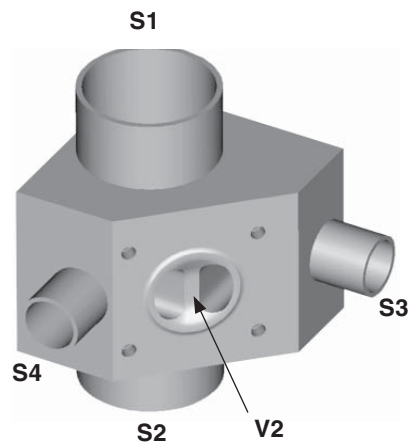
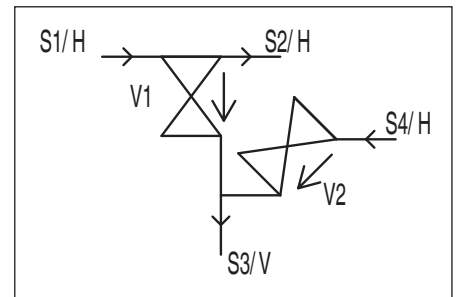
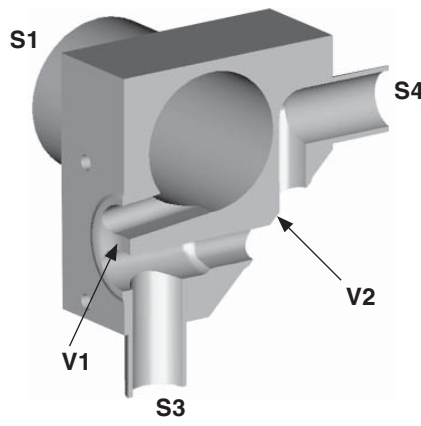
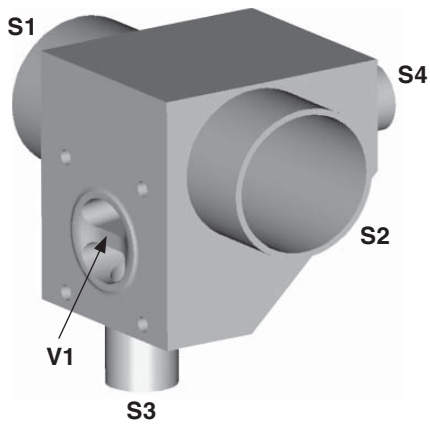


# 04-02.OT

Zero Static T-Valve with downstream CIP/SIP purge valve

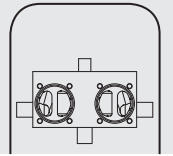
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical





# 04-02.U1 / 04-02.U2

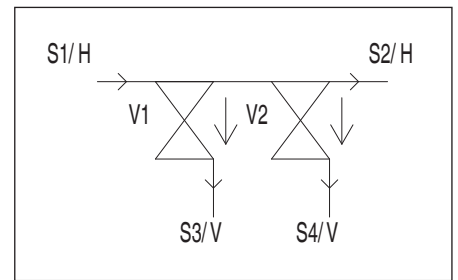
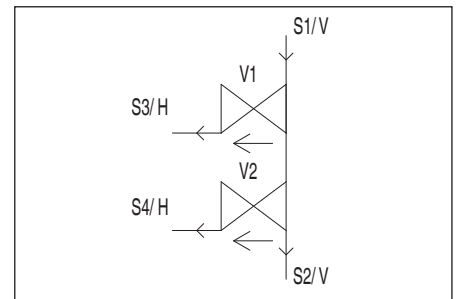
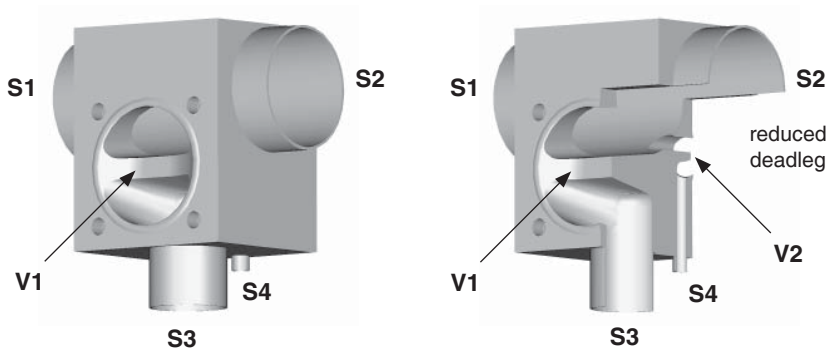
Zero Static Duplex T-Valve with upstream access valve, e.g. point of use with sampling valve

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

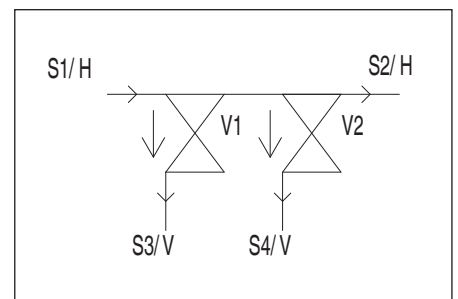
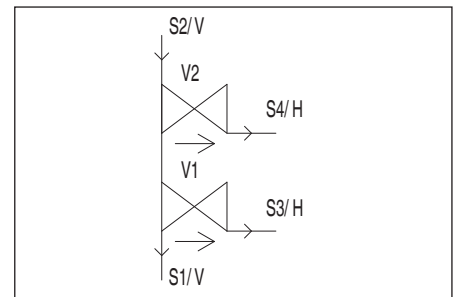
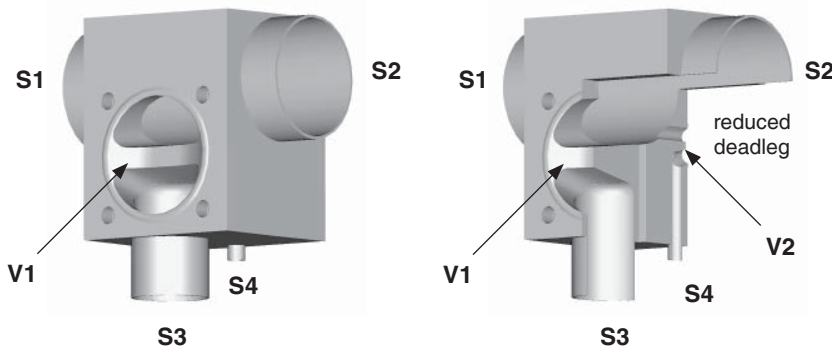
## GEMÜ M600 04-02.U1

Horizontal seat: S3/S4 positioned at the right side of the cavity  
 Vertical seat: S3/S4 positioned to the right of the seat

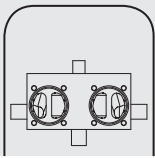


## GEMÜ M600 04-02.U2

Horizontal seat: S3/S4 positioned at the left side of the cavity  
 Vertical seat: S3/S4 positioned to the left of the seat



H = horizontal, V = vertical



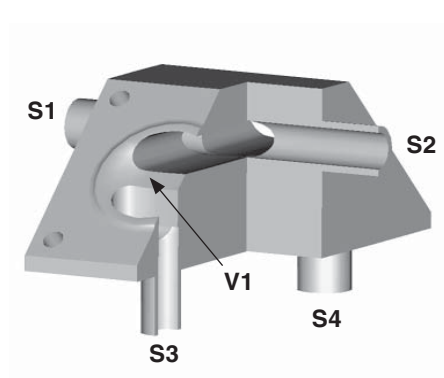
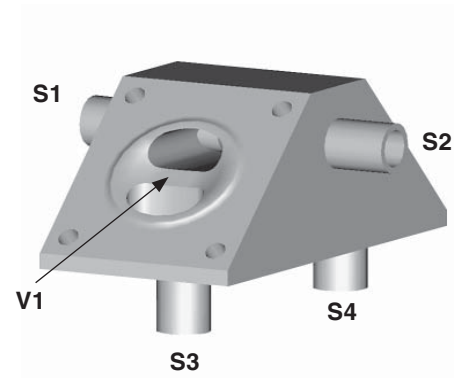
## 04-02.U3 / 04-02.U4

Zero static back to back dual T-Valve block with common supply main or 2 seat collection valve block with common discharge main, vertical or horizontal installation

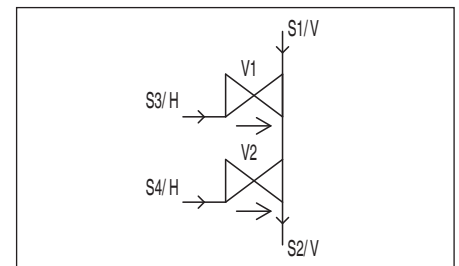
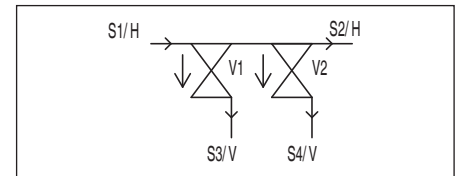
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

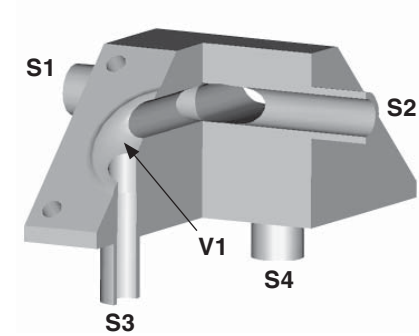
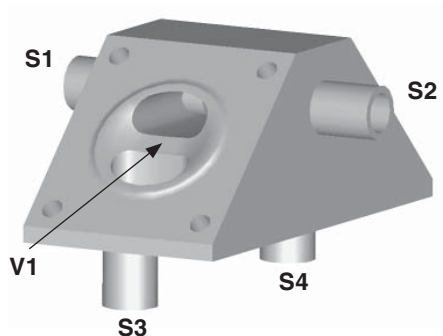
### GEMÜ M600 04-02.U3



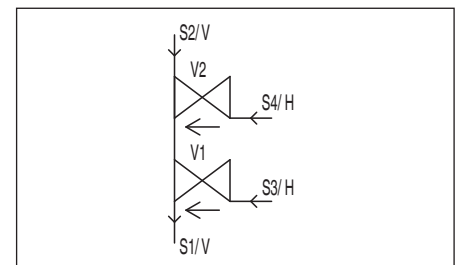
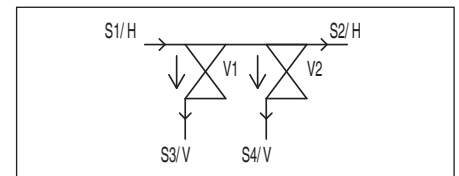
Horizontal seat: S3/S4 positioned at the right side of the cavity  
 Vertical seat: S3/S4 positioned to the right of the seat



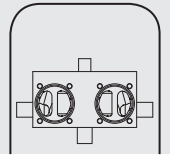
### GEMÜ M600 04-02.U4



Horizontal seat: S3/S4 positioned at the left side of the cavity  
 Vertical seat: S3/S4 positioned to the left of the seat



H = horizontal, V = vertical



# 04-02.U5 / 04-02.U6

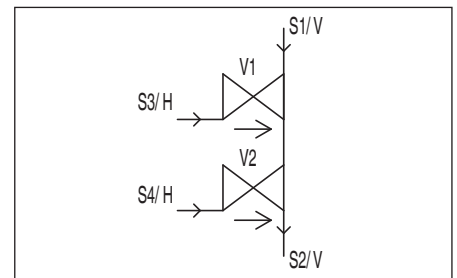
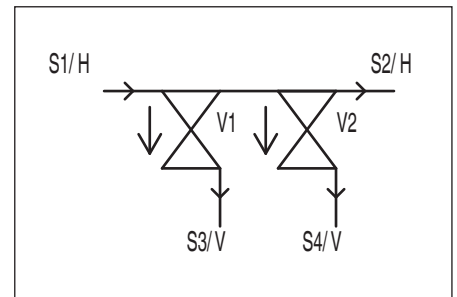
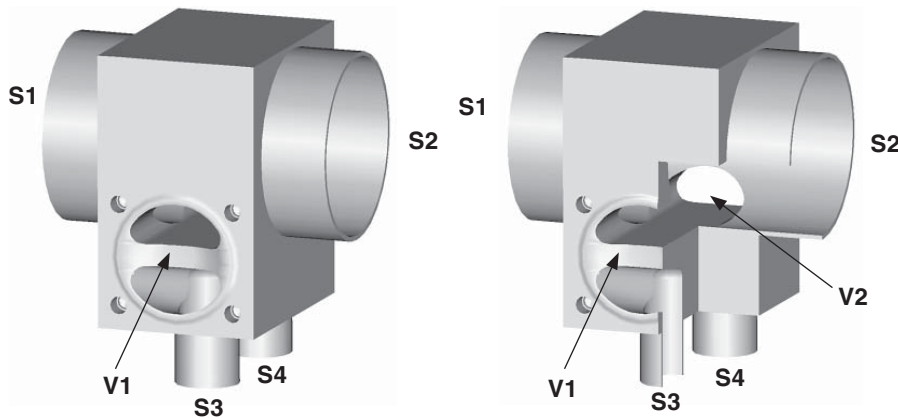
Zero Static back to back dual T-Valve block, distribution or collection, vertical or horizontal installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

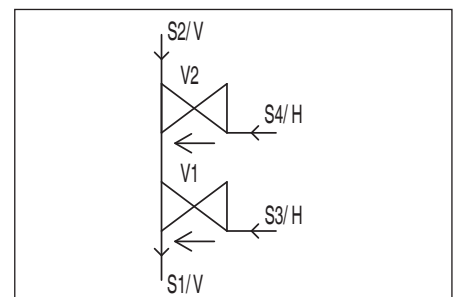
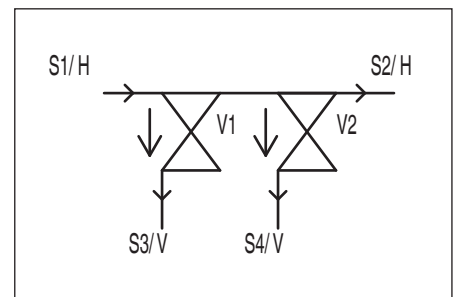
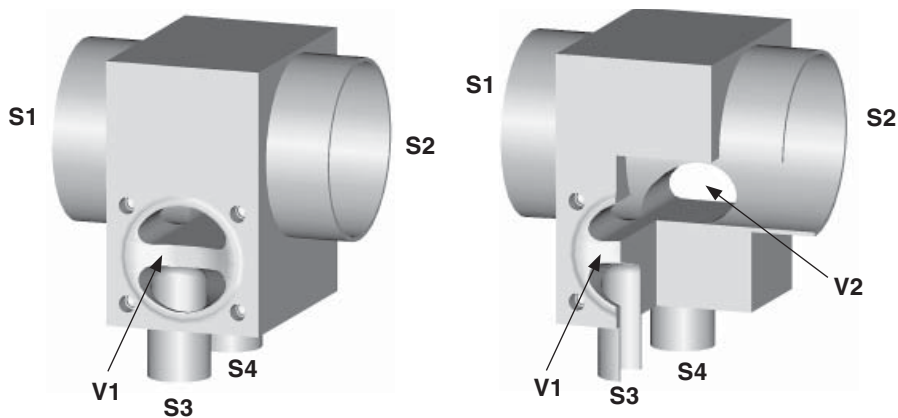
## GEMÜ M600 04-02.U5

Horizontal seat: S3/S4 positioned at the right side of the cavity  
 Vertical seat: S3/S4 positioned to the right of the seat

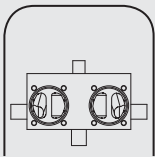


## GEMÜ M600 04-02.U6

Horizontal seat: S3/S4 positioned at the left side of the cavity  
 Vertical seat: S3/S4 positioned to the left of the seat



H = horizontal, V = vertical



# 04-02.U7 / 04-02.U8

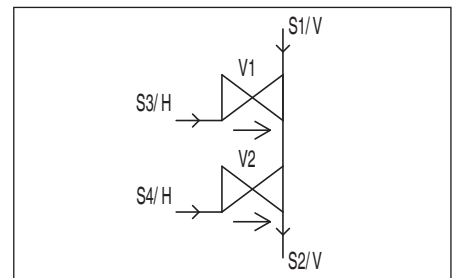
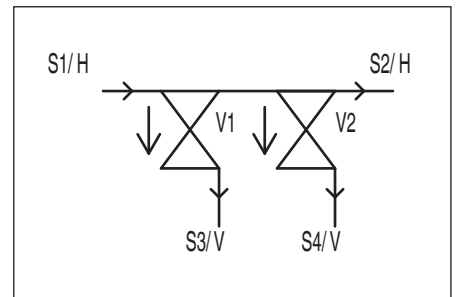
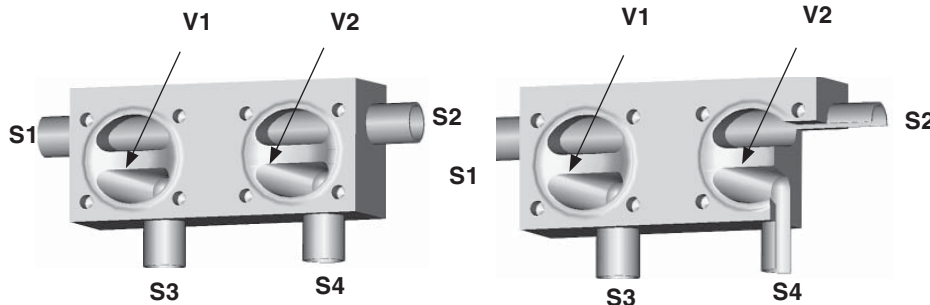
Zero Static side by side T-Valves, actuators on front side, horizontal or vertical installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

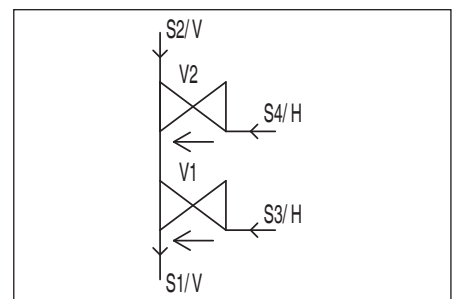
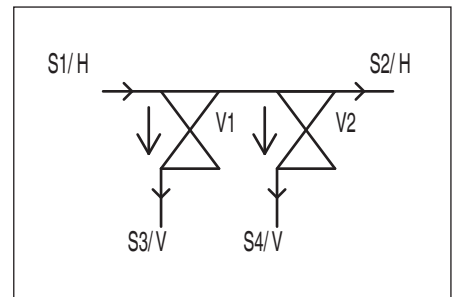
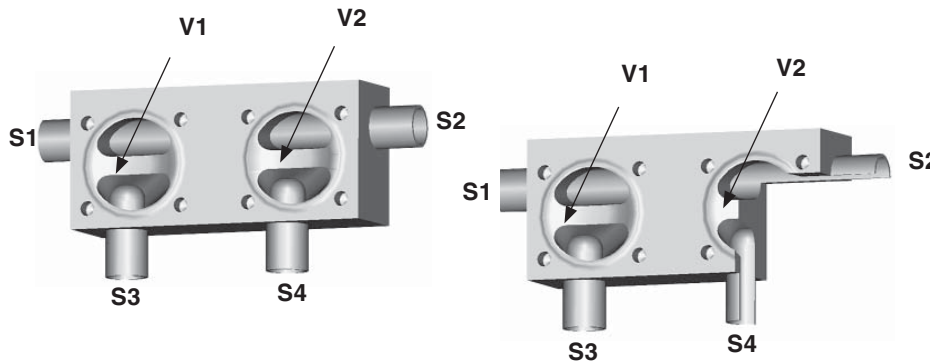
## GEMU M600 04-02.U7

Horizontal seat: S3/S4 positioned at the right side of the cavity  
 Vertical seat: S3/S4 positioned to the right of the seat

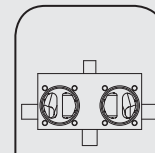


## GEMU M600 04-02.U8

Horizontal seat: S3/S4 positioned at the left side of the cavity  
 Vertical seat: S3/S4 positioned to the left of the seat



H = horizontal, V = vertical

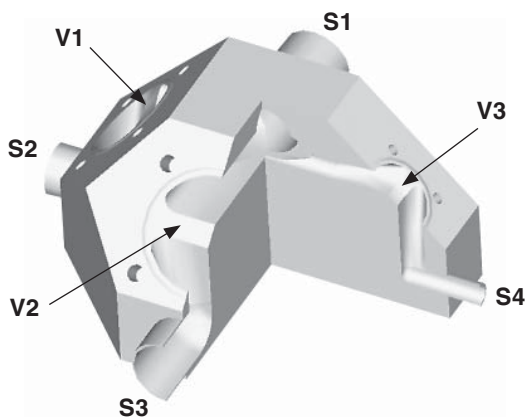
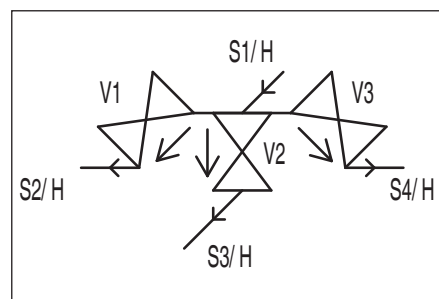
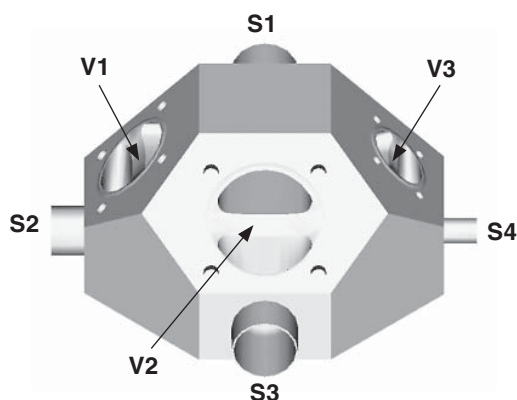


# 04-03.A

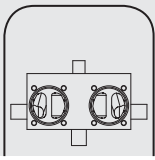
3 way diverter valve, horizontal ports. distribution / collection

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

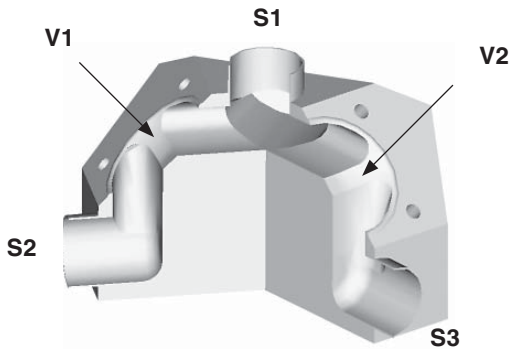
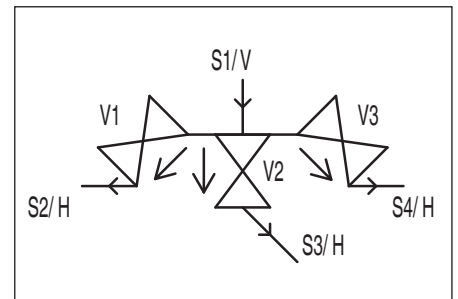
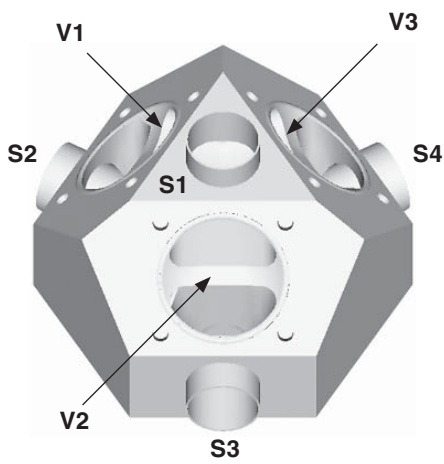


# 04-03.B

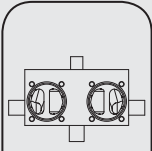
3 way diverter valve, vertical inlet, horizontal outlet

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

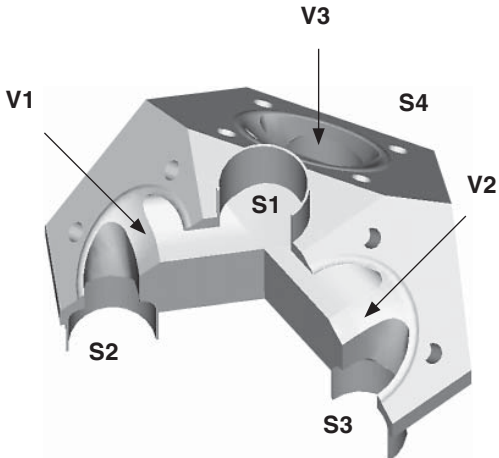
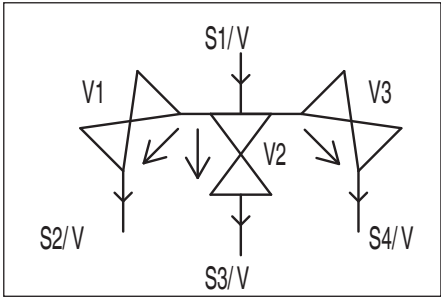
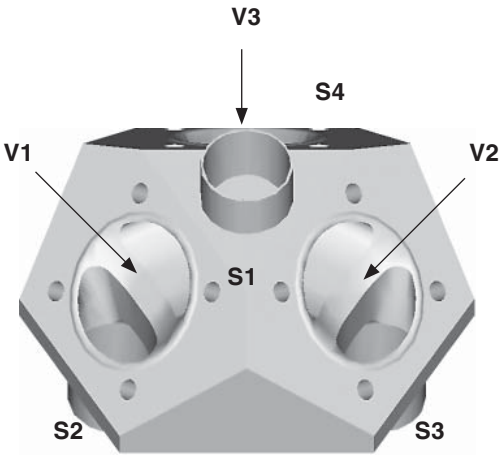


# 04-03.C

3 way diverter valve, vertical installation

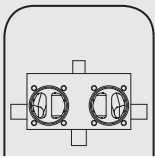
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



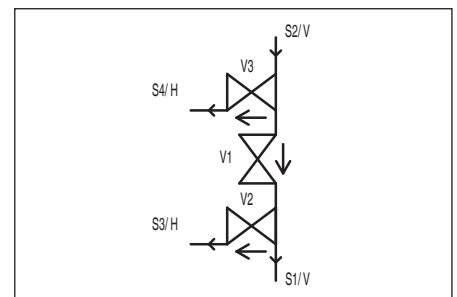
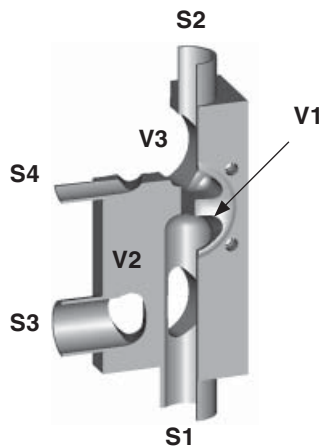
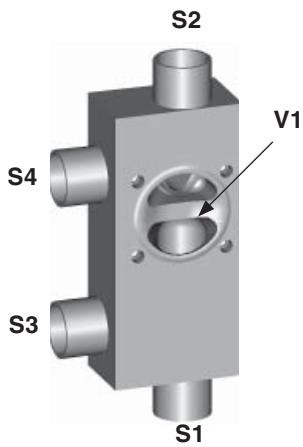
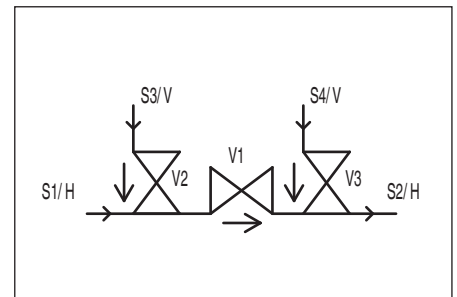
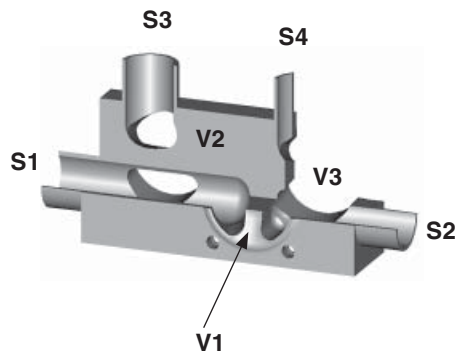
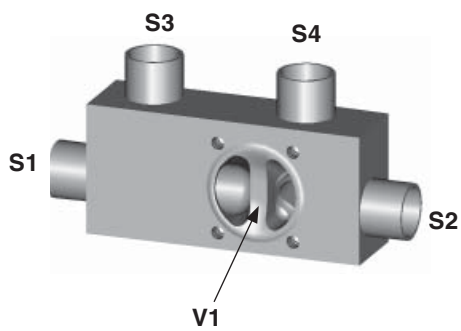


# 04-03.E

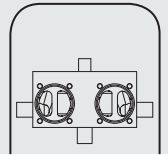
Isolation valve block with upstream and downstream access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

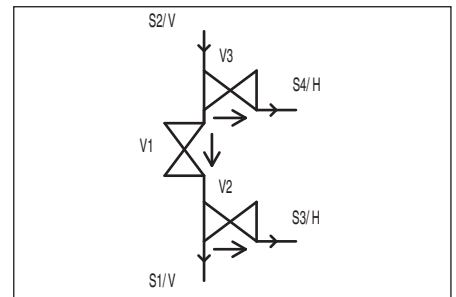
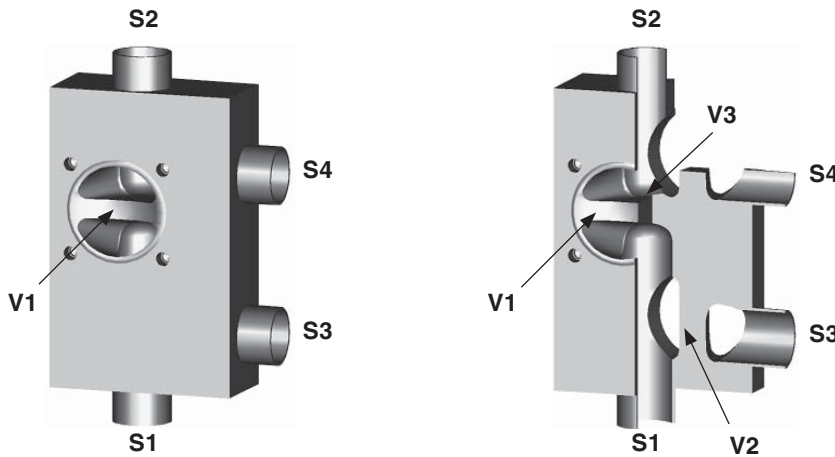
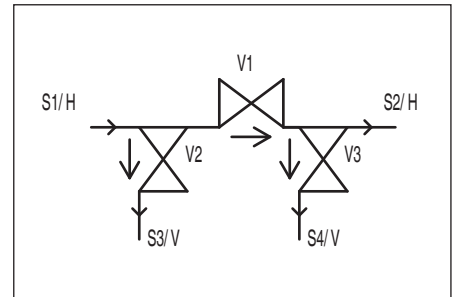
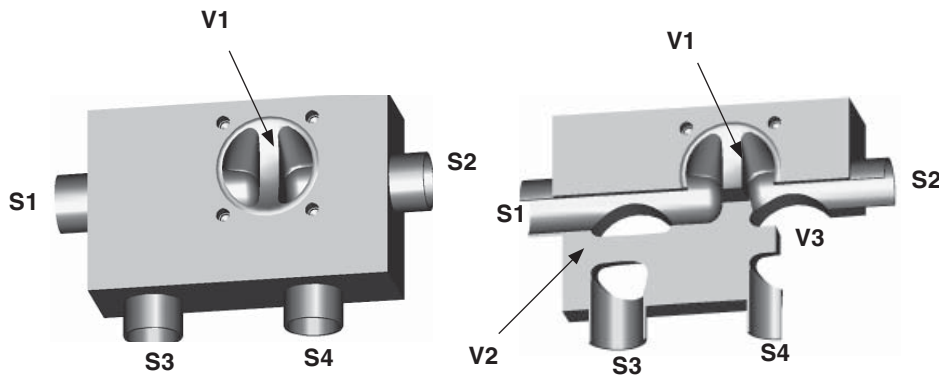


# 04-03.F

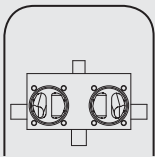
Isolation valve block with upstream and downstream access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

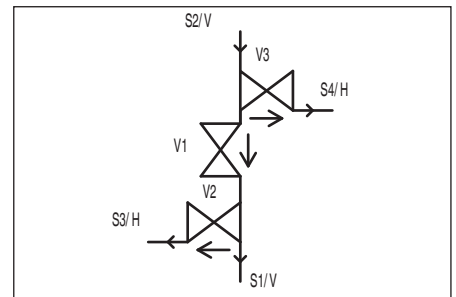
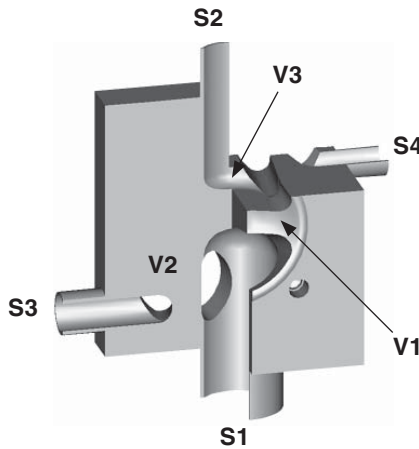
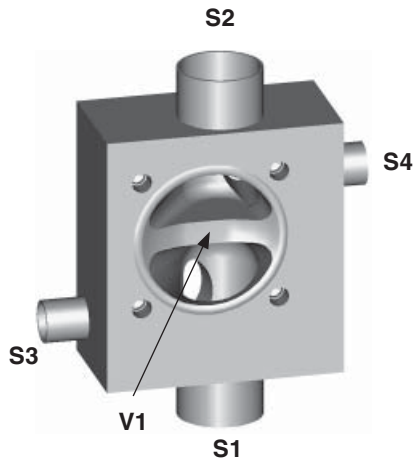
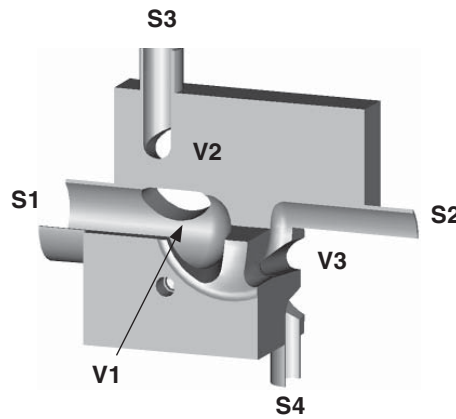
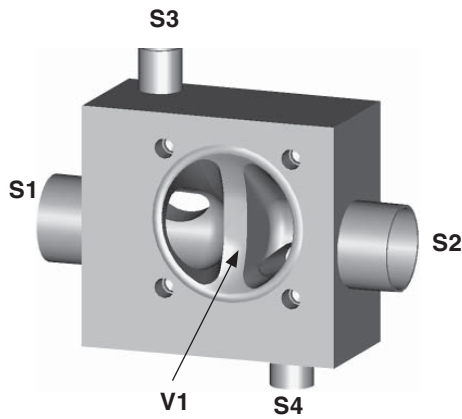
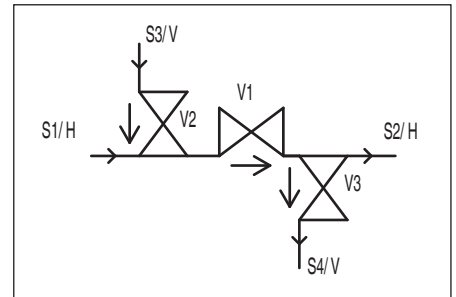


# 04-03.G

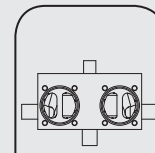
Isolation valve block with upstream and downstream access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

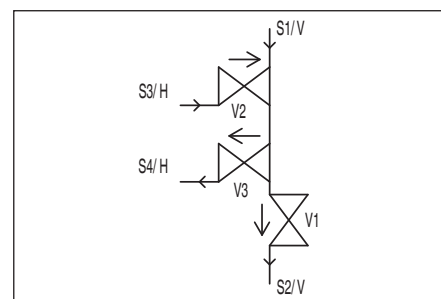
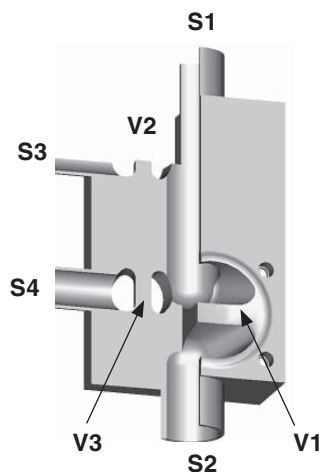
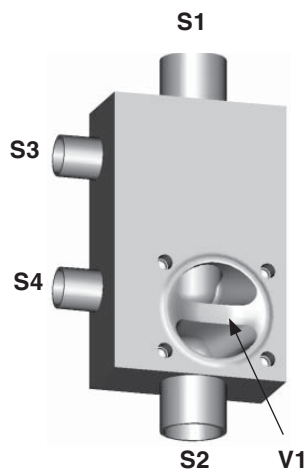
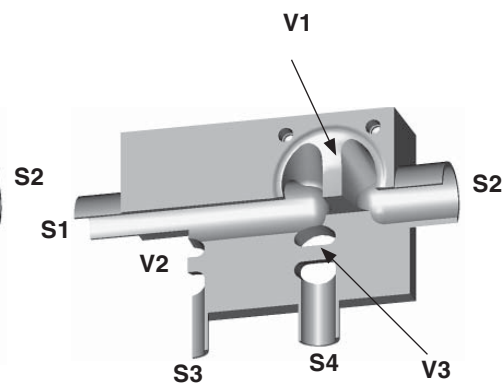
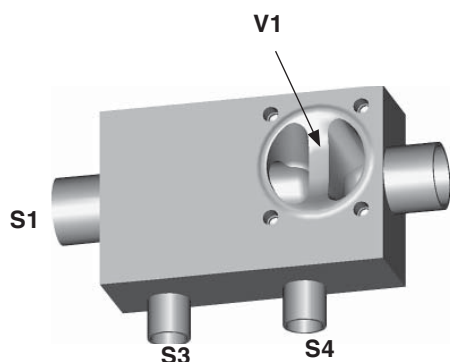
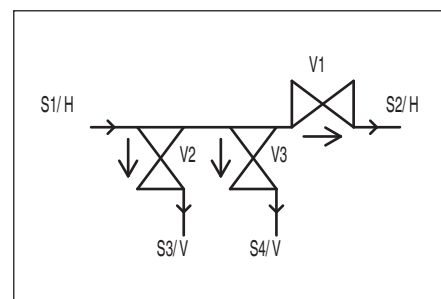


# 04-03.JL

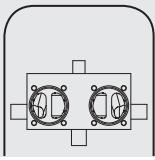
Isolation valve block with 2 side by side upstream access valves e.g. Points of use

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

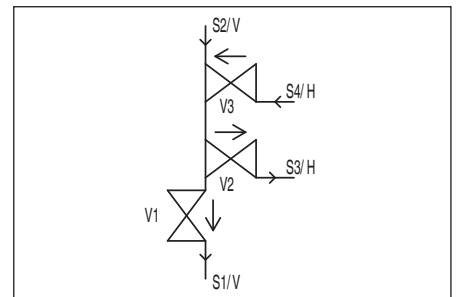
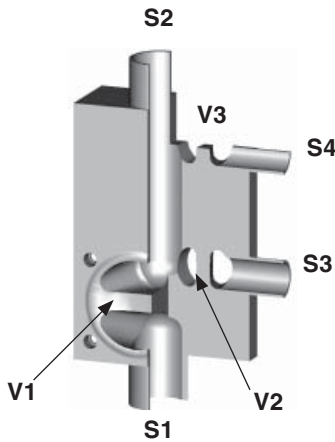
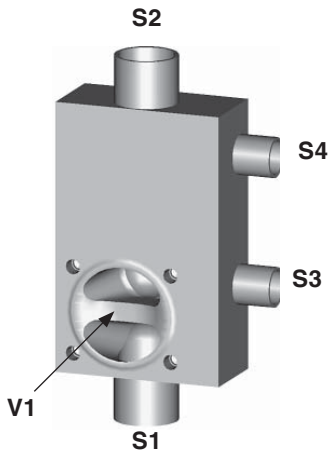
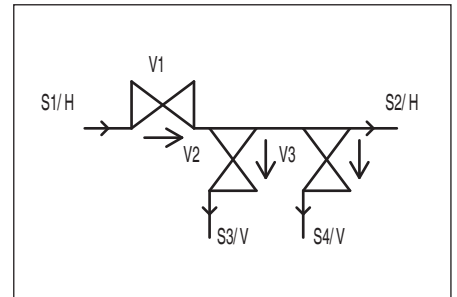
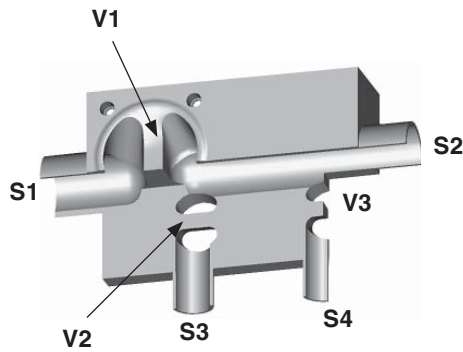
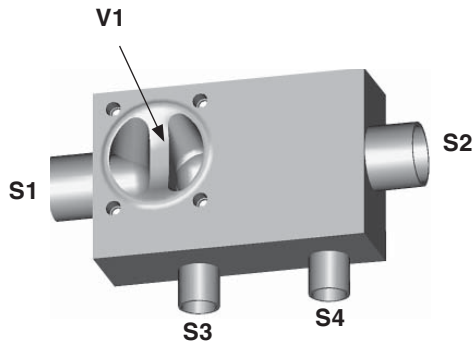


# 04-03.JR

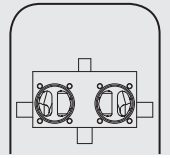
Isolation valve block with 2 side by side downstream access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

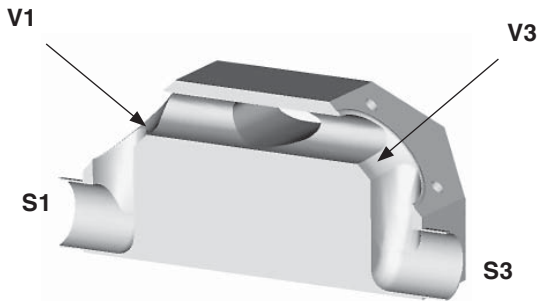
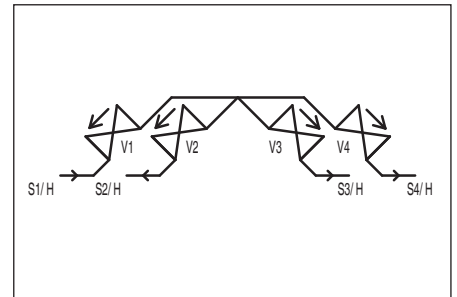
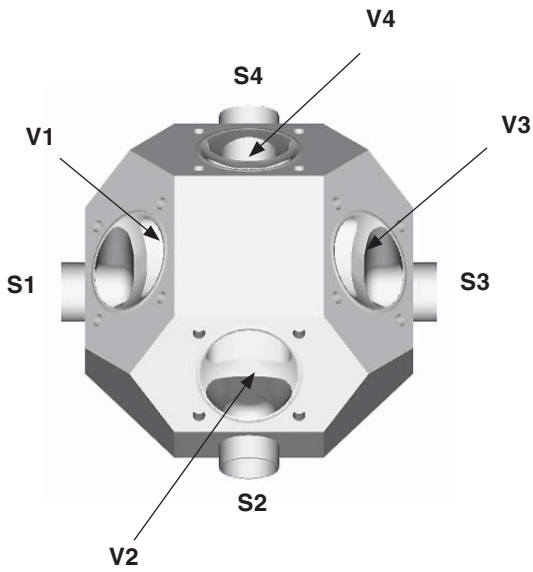


# 04-04.A

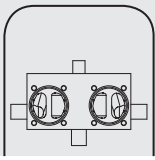
4 seat valve block, horizontal ports distribution / collection

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

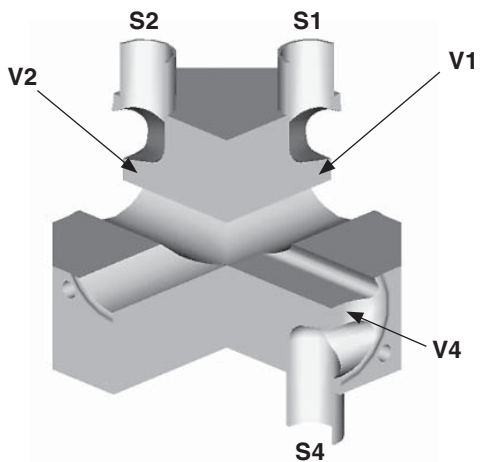
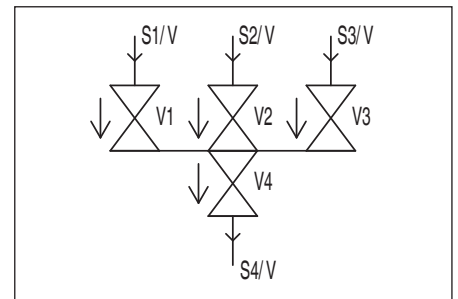
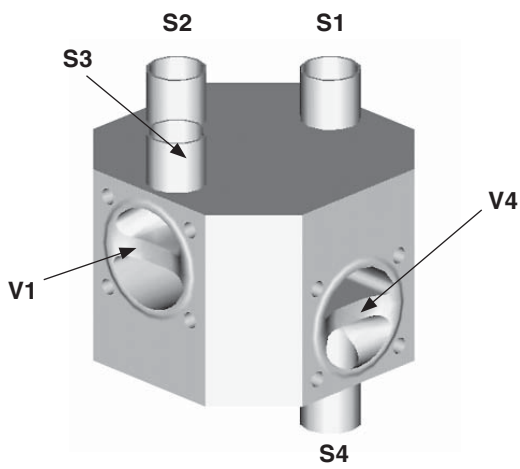


# 04-04.C

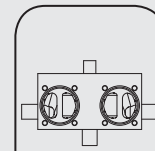
4 seat collection valve block, vertical installation

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



# 04-04.N1 / 04-04.N2

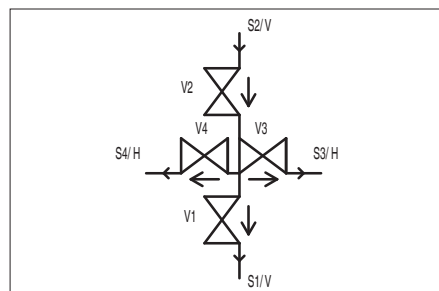
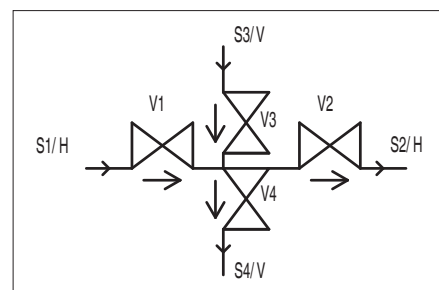
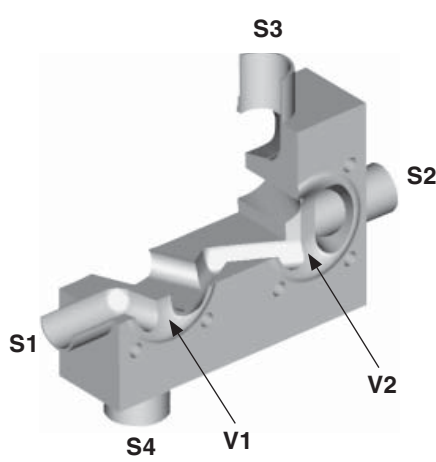
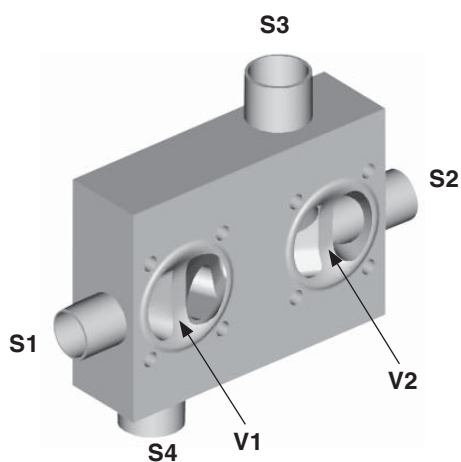
N1: 4 seat valve block, vertical flow with horizontal access valves, CIP / SIP or sterile barrier, actuators on back and front sides

N2: 4 seat valve block, horizontal flow, CIP / SIP access and condensate drain, all actuators on front side

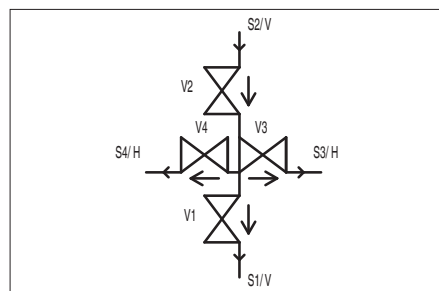
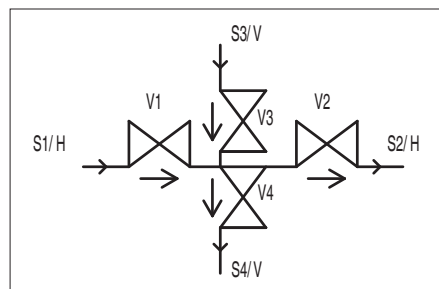
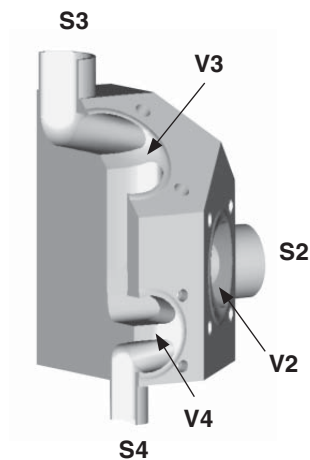
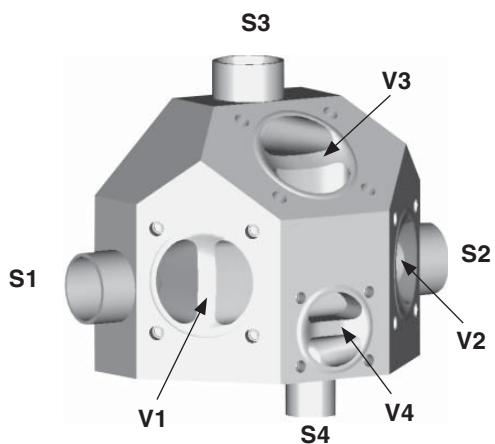
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

## GEMÜ M600 04-04.N1

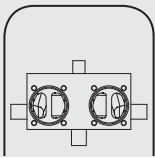


## GEMÜ M600 04-04.N2



H = horizontal, V = vertical



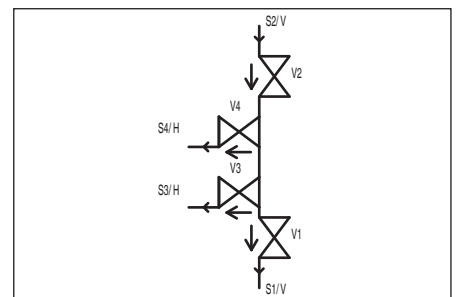
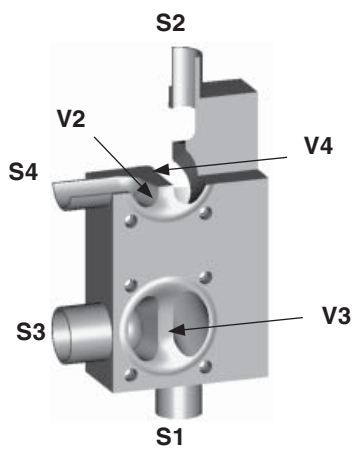
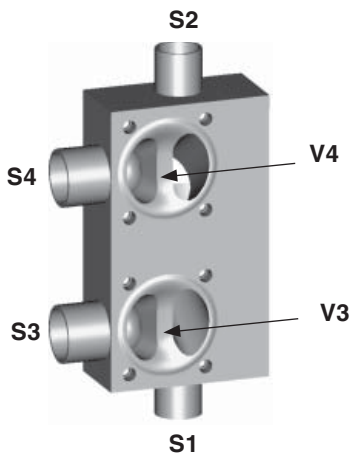
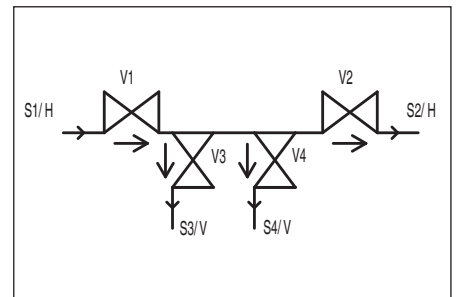
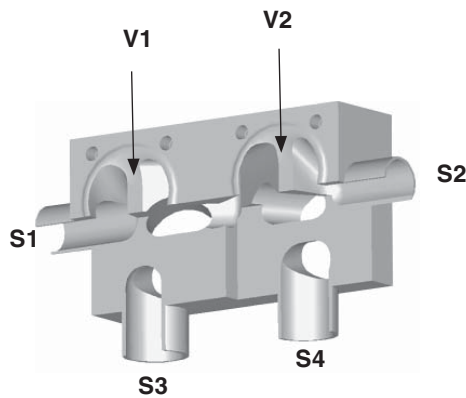
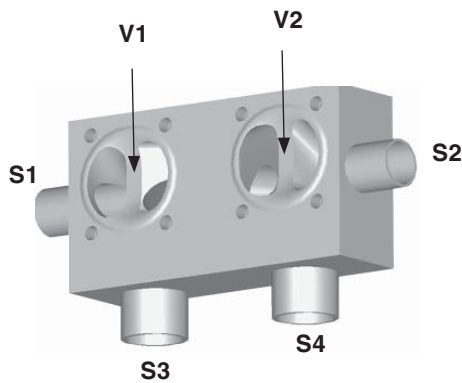


# 04-04.NU

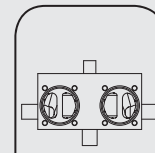
4 seat linear valve block, dual access valves with upstream and downstream isolation, actuators on front and back sides, CIP / SIP for Upstream or downstream, or 3 port distribution

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

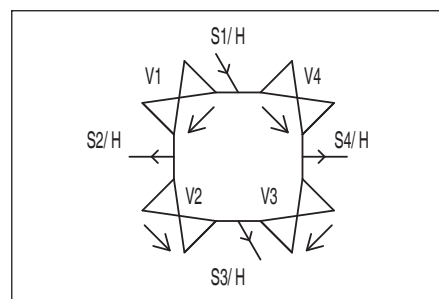
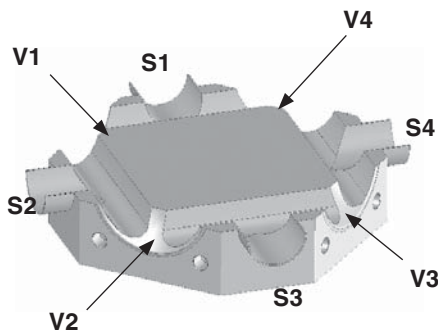
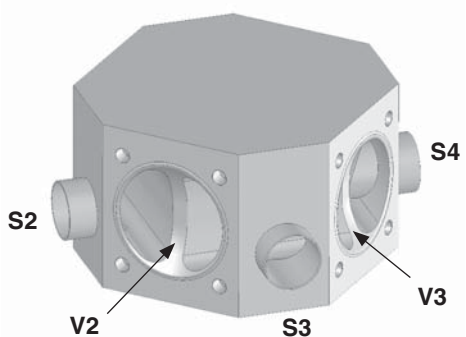
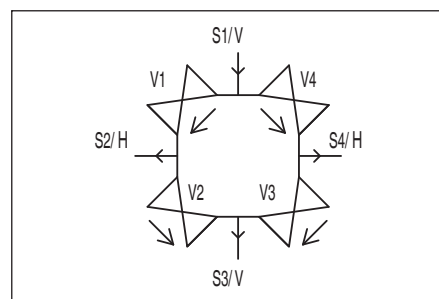
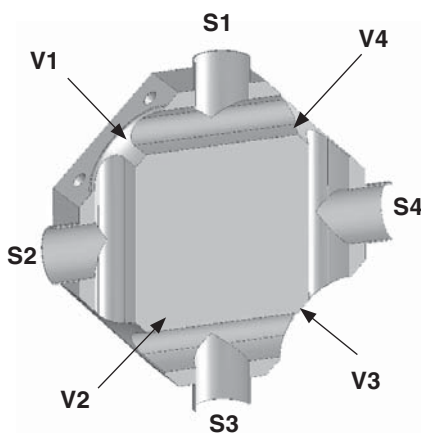
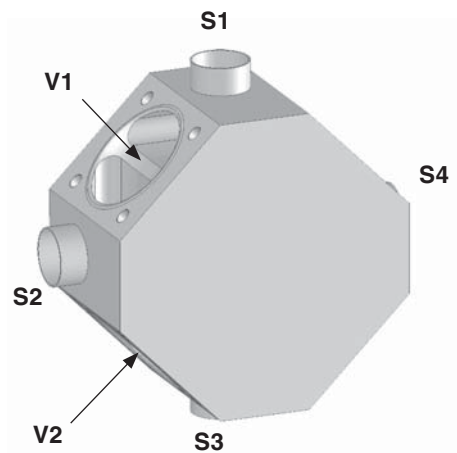


# 04-04.R

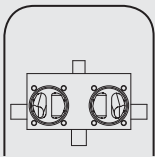
4 seat valve block, linking any port alternately to 2 adjacent ports, distribution / collection, vertical or horizontal installation, Chromatography (without by-pass)

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



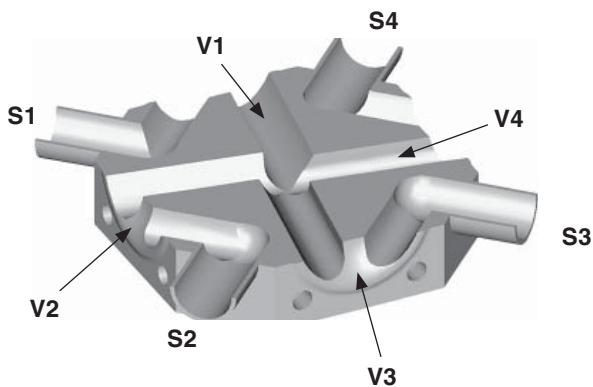
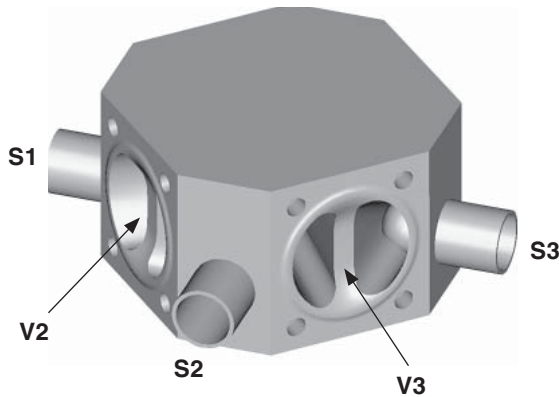
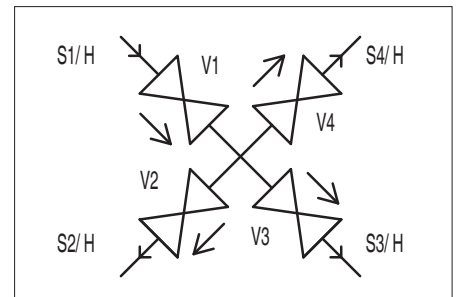
# 04-04.W

4 seat valve block, linking any port to any of 3 other ports, distribution / collection, vertical or horizontal installation

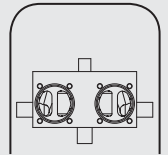
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

Mounting position:  
All connenctions aligned horizontally



H = horizontal, V = vertical

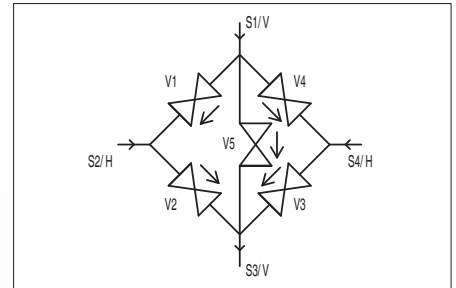
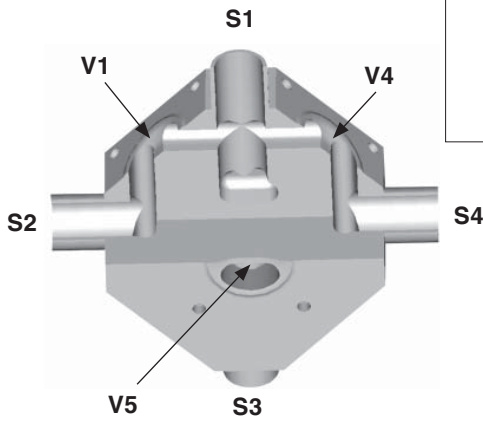
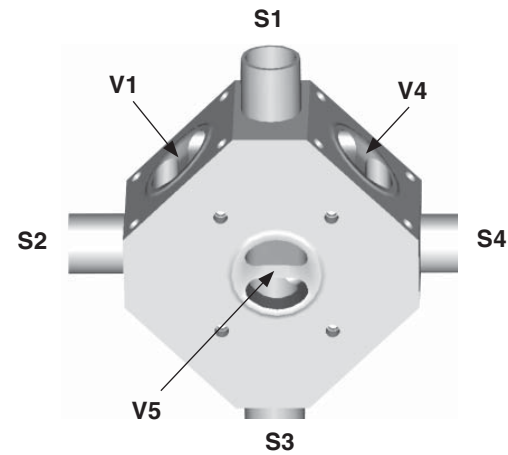
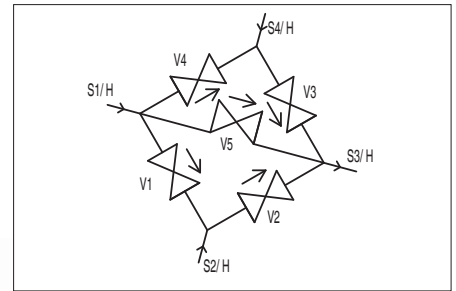
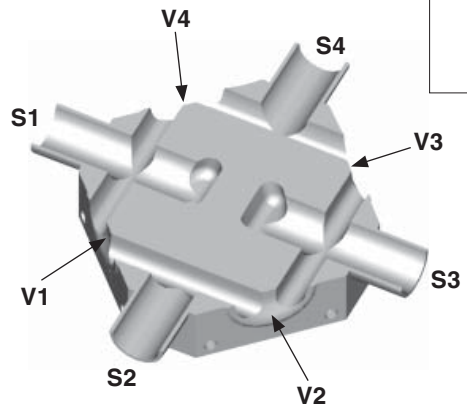
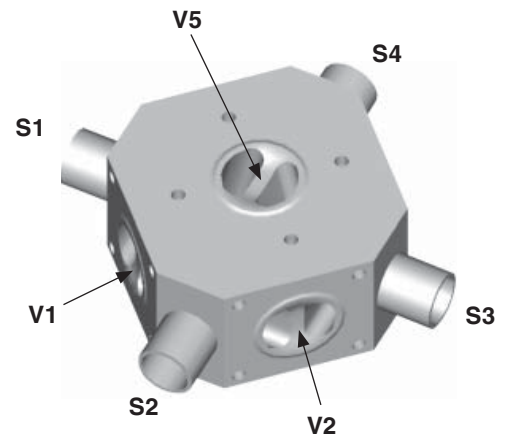


# 04-05.R

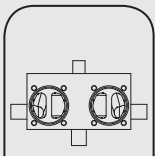
5 seat valve block , linking ports alternately to 2 adjacent ports, distribution / collection, vertical or horizontal installation, Chromatography (with by-pass)

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



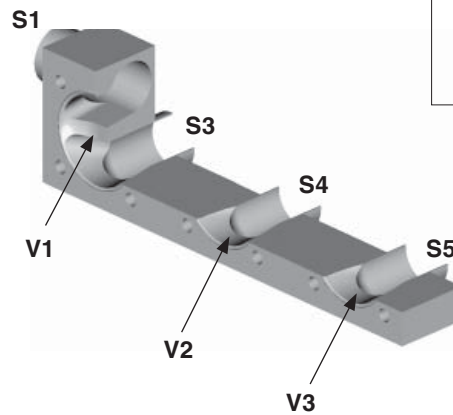
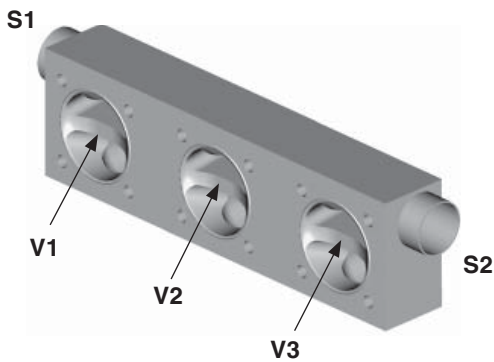
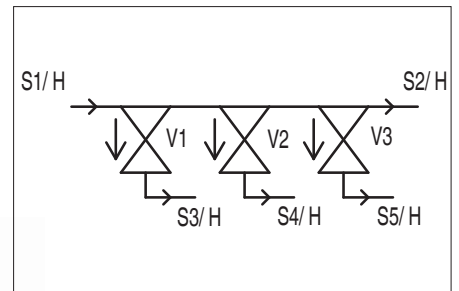
# 05-03.A7

3 seat linear T-Valve block, backside horrozontal ports, all actuators on front side, distribution / collection / point of use control

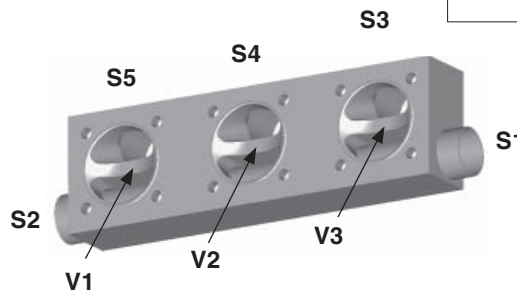
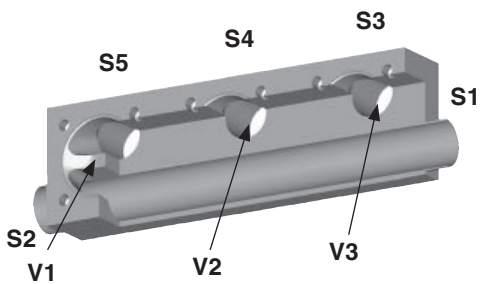
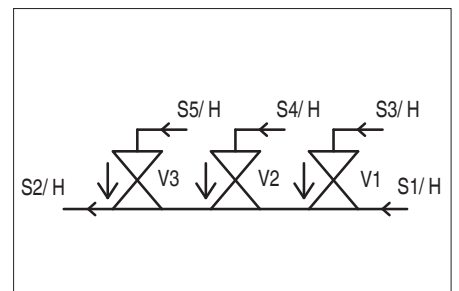
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

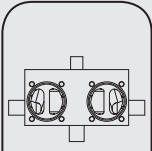
Mounting position:  
Main pipe at top



Alternative mounting position:  
Main pipe at bottom



H = horizontal, V = vertical

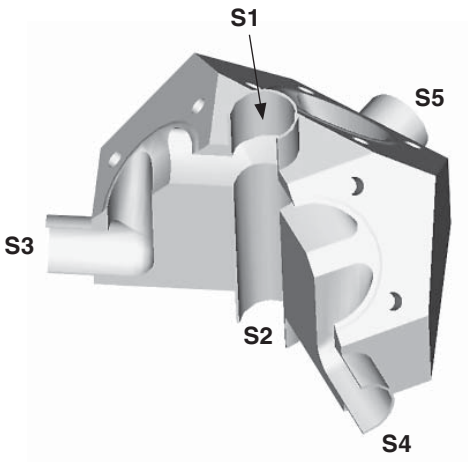
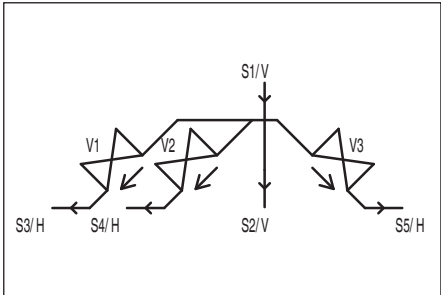
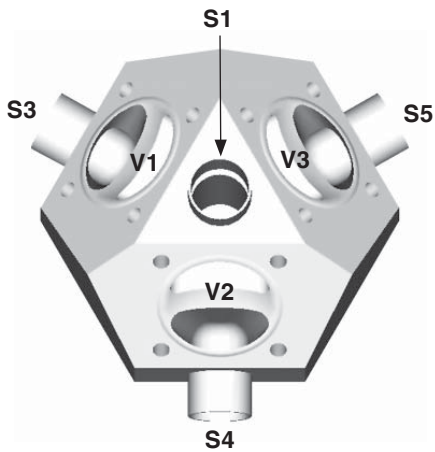


# 05-03.B

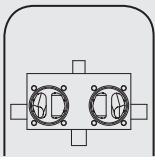
3 seat distribution valve block, vertical main run with 3 horizontal access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



# 05-03.P1 / 05-03.P2

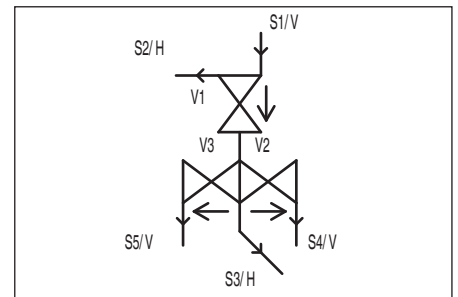
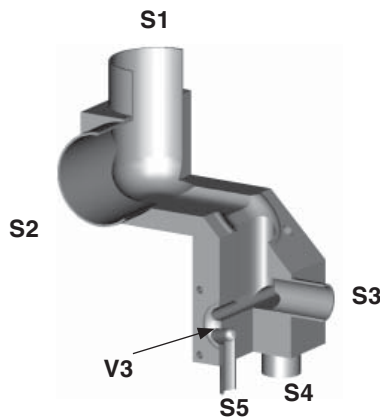
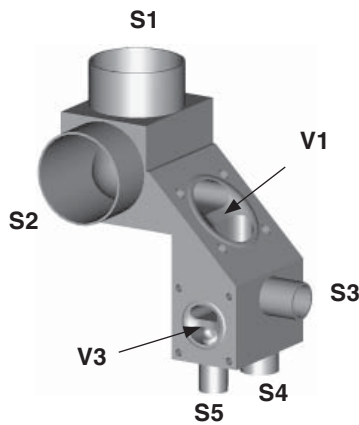
3 seat point of use valve block with horizontal outlet, separate CIP and SIP access valves, actuators on front and sides

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

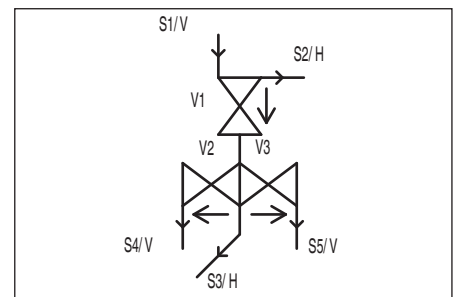
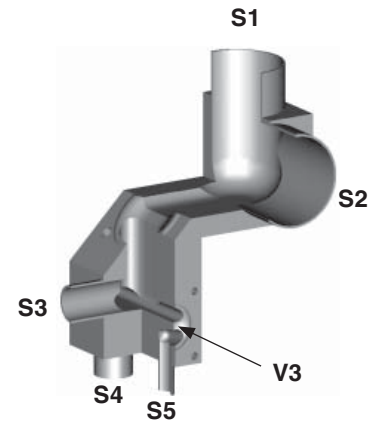
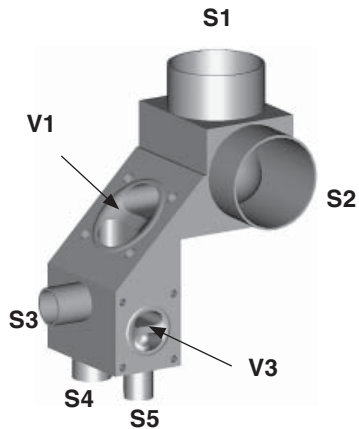
## GEMU M600 05-03.P1

Left variant

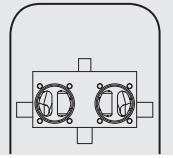


## GEMU M600 05-03.P2

Right variant



H = horizontal, V = vertical

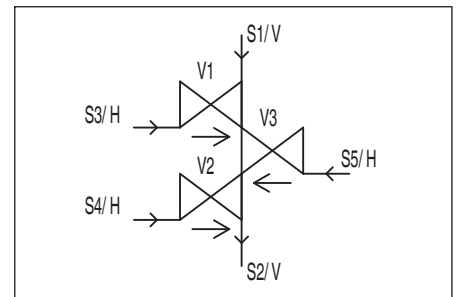
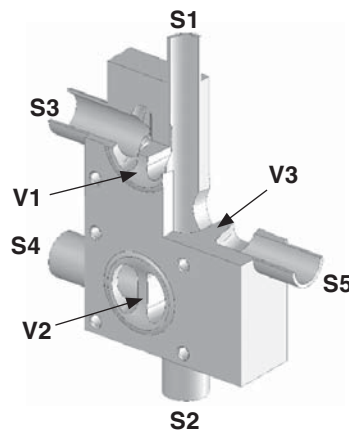
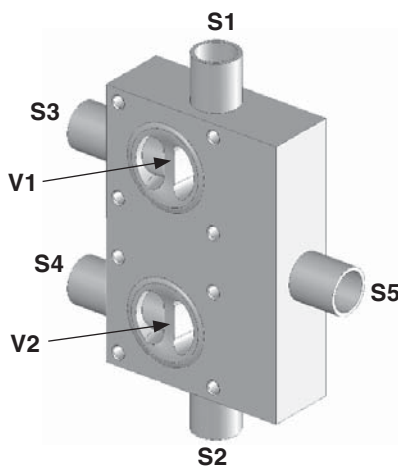
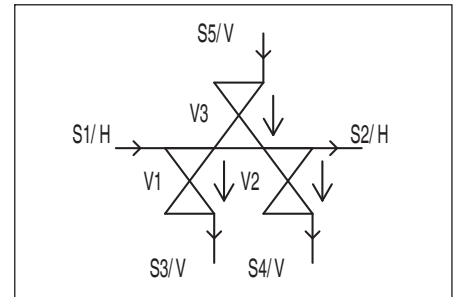
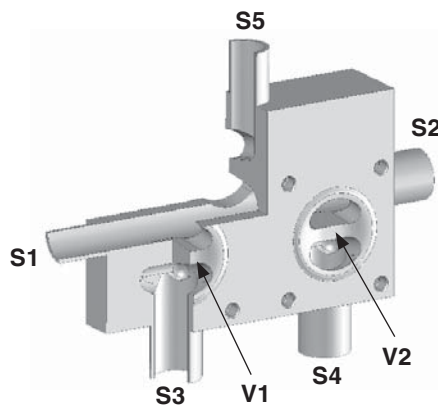
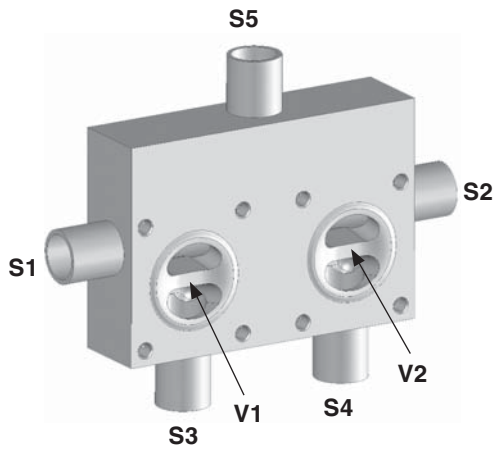


# 05-03.T

3 seat linear T-Valve block, actuators front and back sides, distribution, point of use control

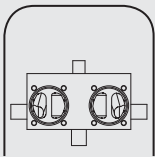
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



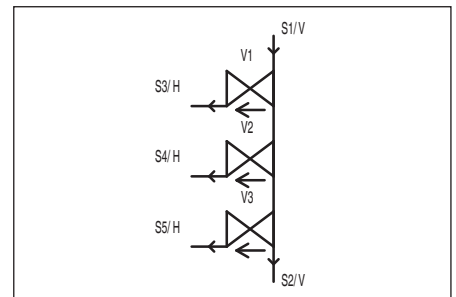
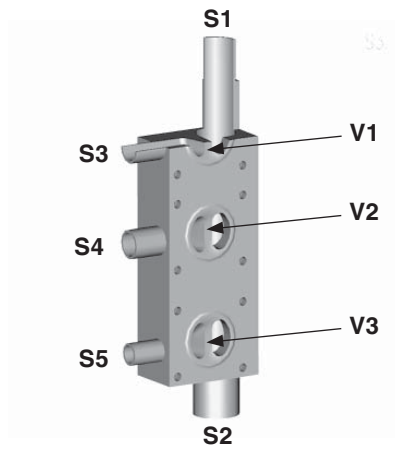
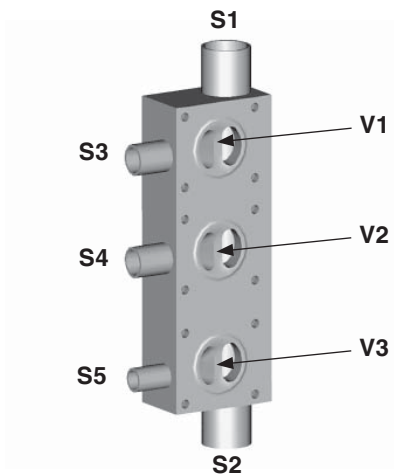
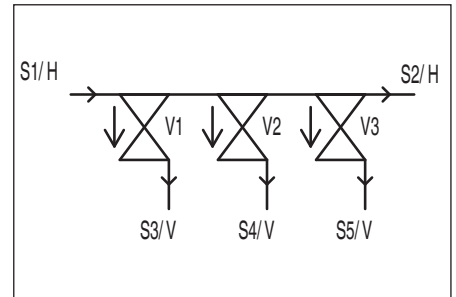
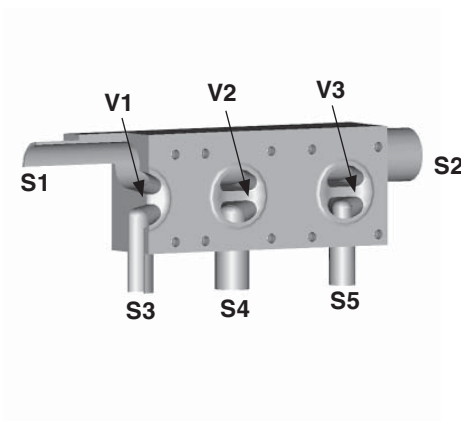
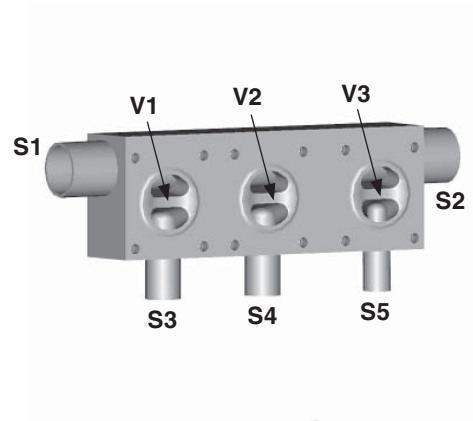


# 05-03.U7

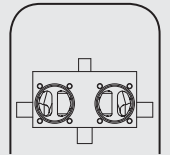
3 seat linear T-Valve block, all actuators on front side, distribution / collection / point of use control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



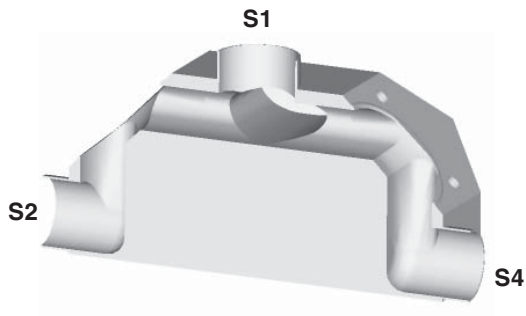
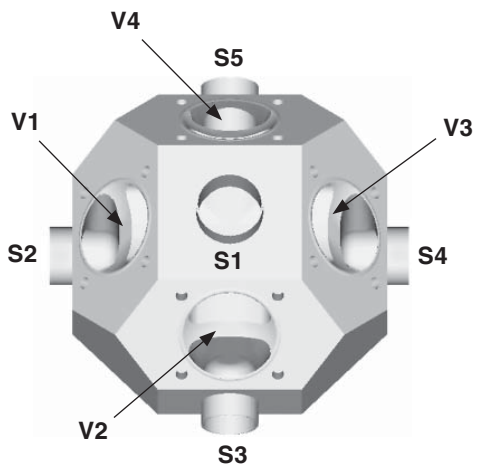
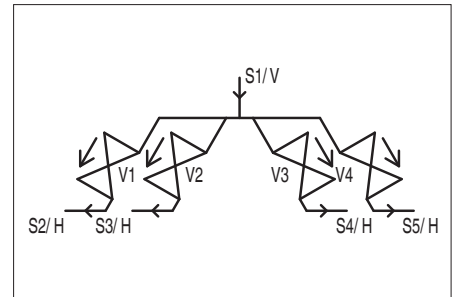
# 05-04.B

4 way diverter valve, horizontal outlet ports

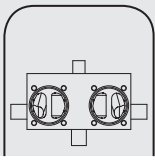
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

Mounting position:  
Spigot S1 aligned vertically up or down



H = horizontal, V = vertical



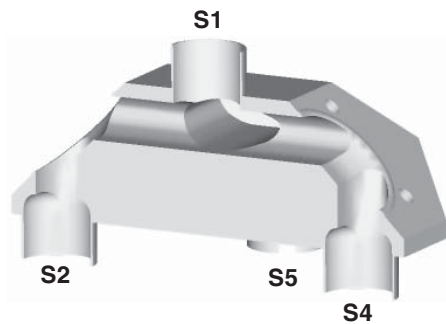
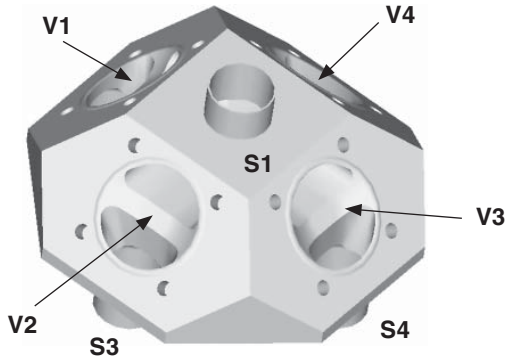
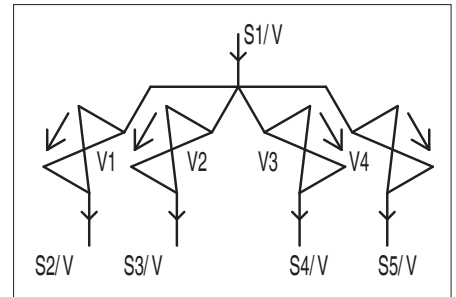
# 05-04.C

4 way diverter valve, vertical ports

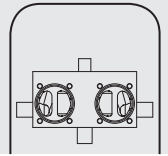
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

Mounting position:  
Spigot S1 aligned vertically up or down



H = horizontal, V = vertical

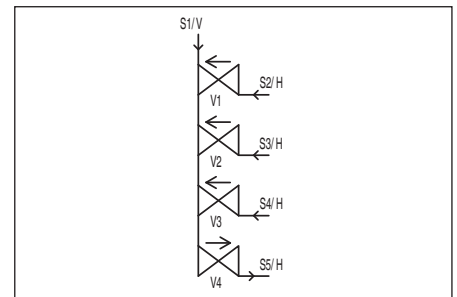
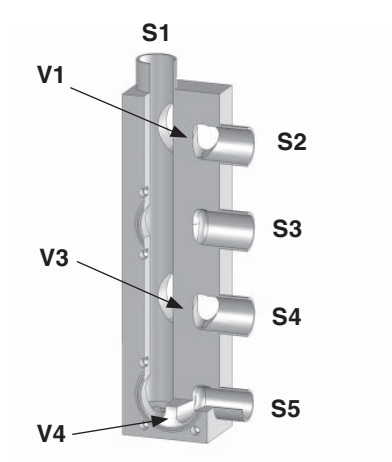
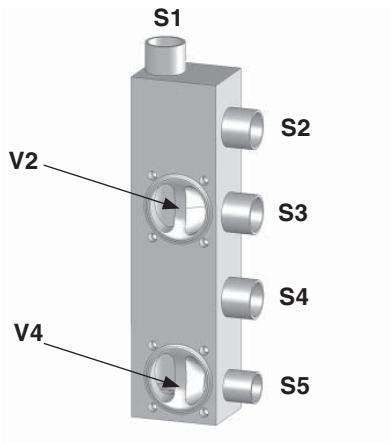
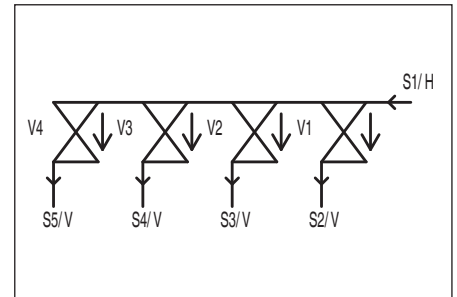
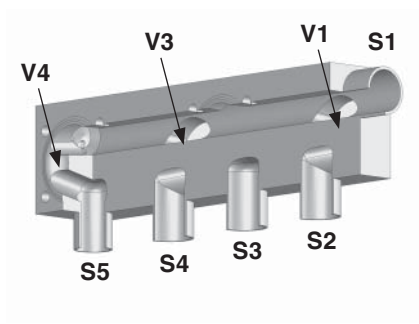
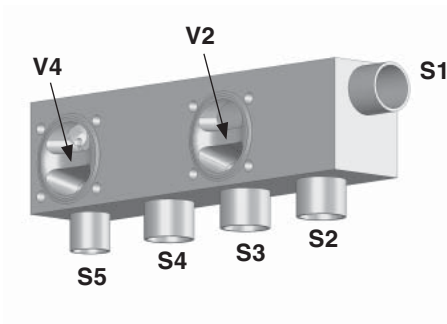


# 05-04.U5

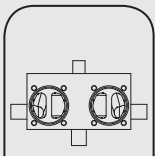
4 seat linear T-Valve block, actuators on front and back sides, distribution / collection or multiple media control.

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

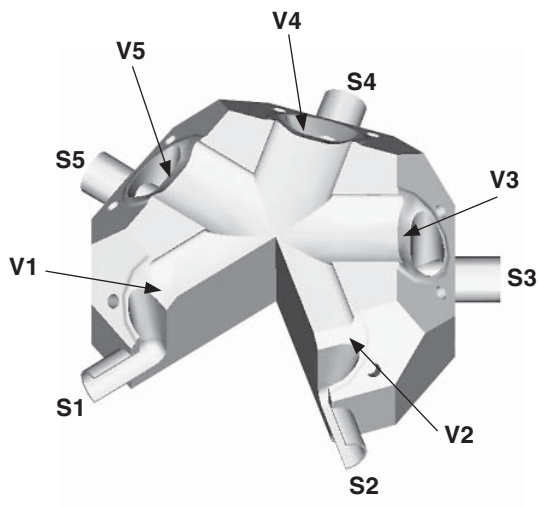
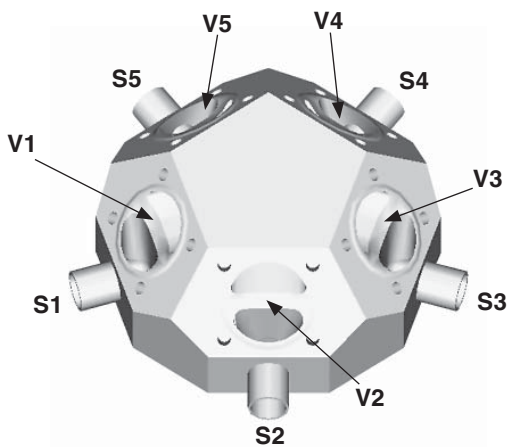
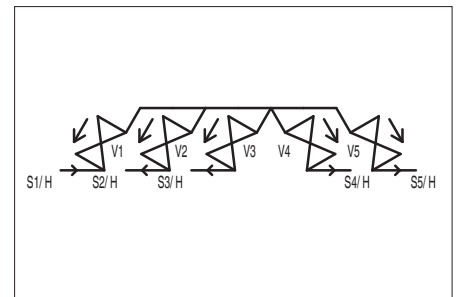


# 05-05.A

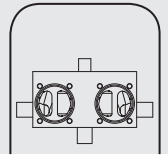
5 seat circular valve block, distribution header, horizontal ports

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

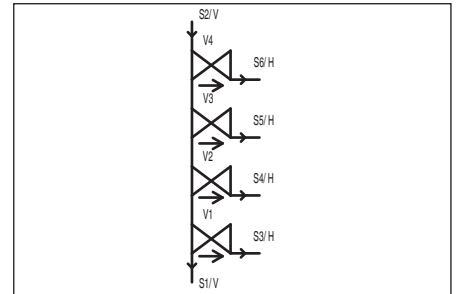
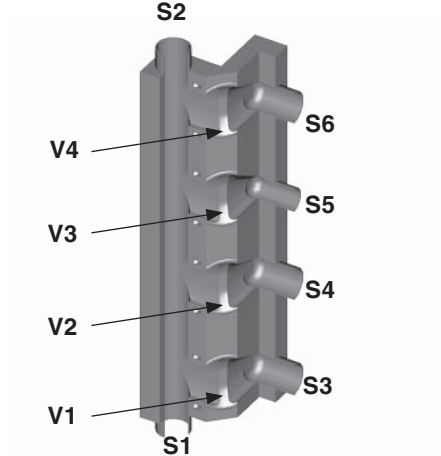
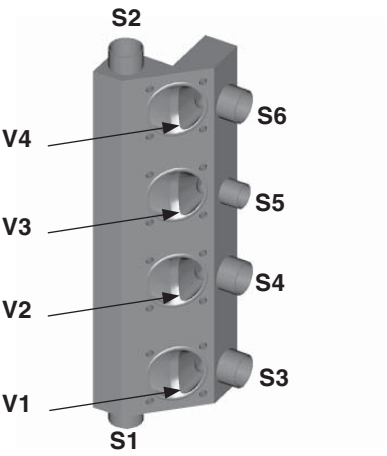
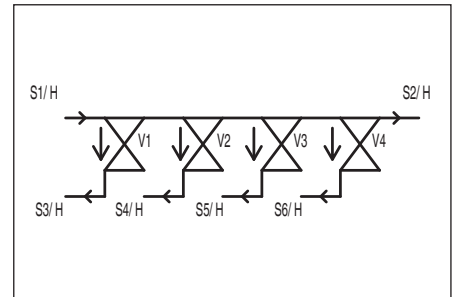
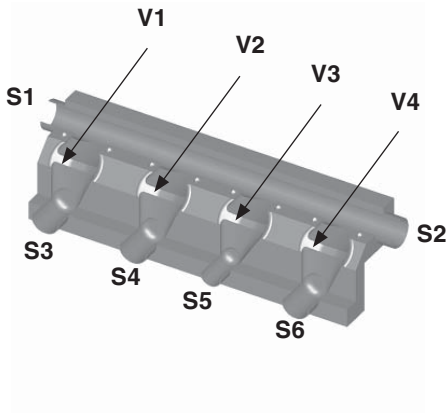
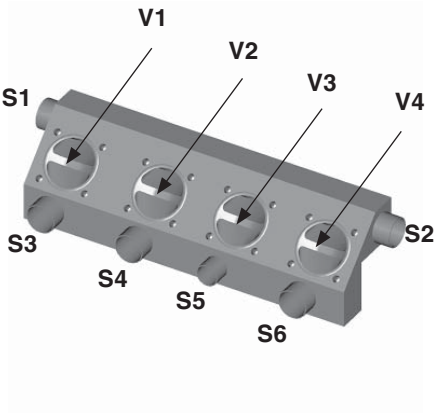


# 06-04.AB

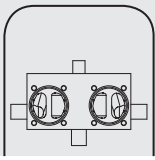
4 seat linear T-Valve block, front side horizontal ports, all actuators 45° to header, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

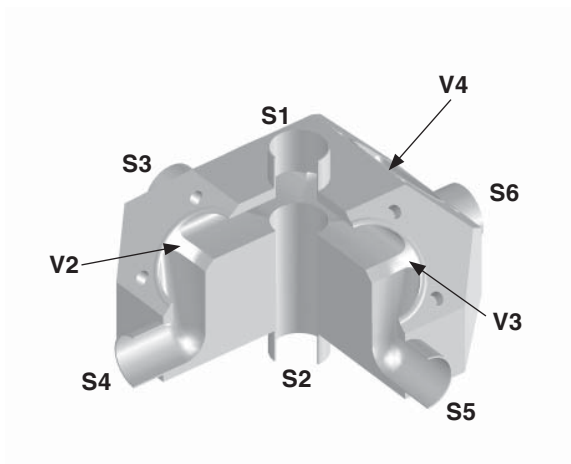
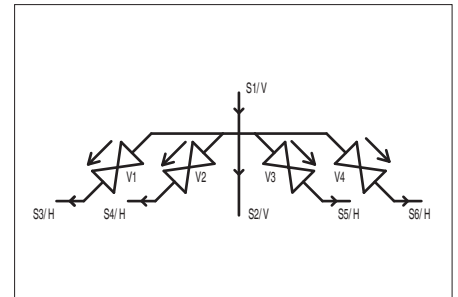
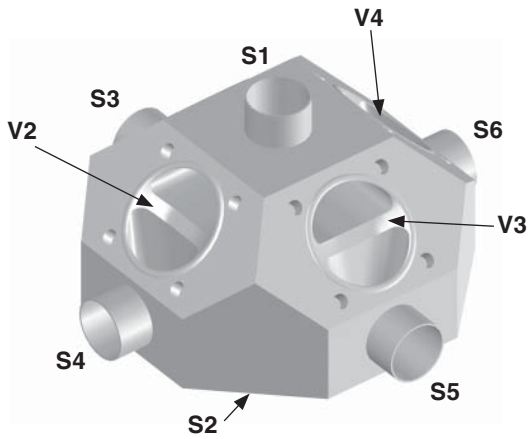


# 06-04.B

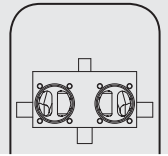
4 seat distribution valve block, vertical main run with 4 horizontal access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

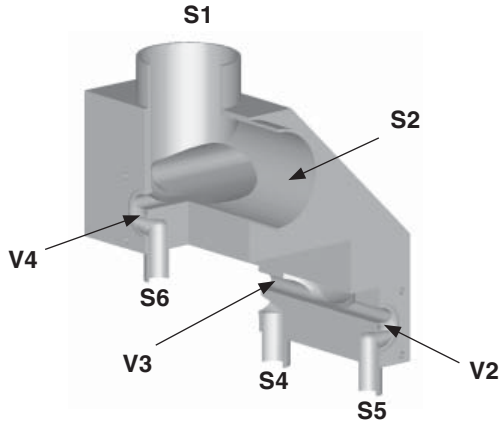
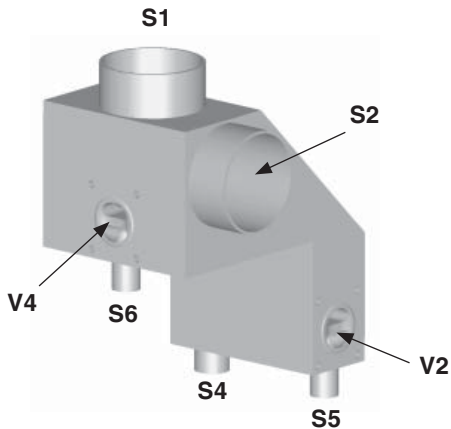
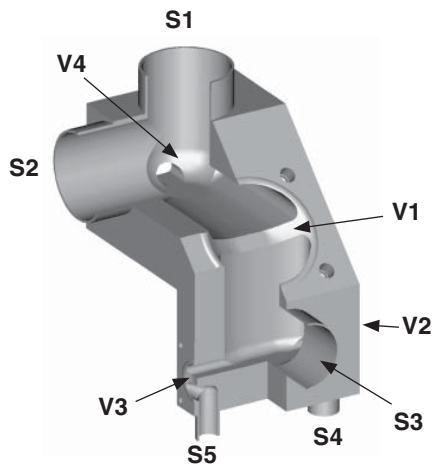
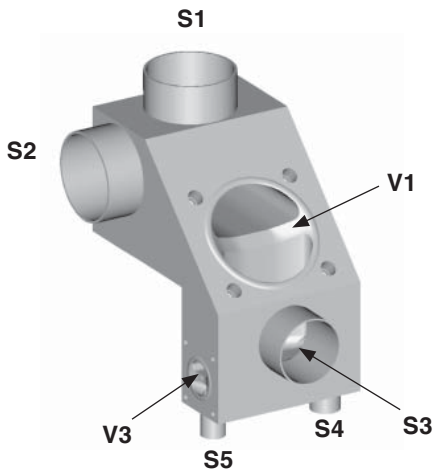
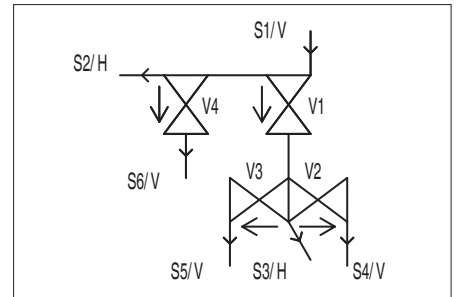


# 06-04.P1

4 seat point of use valve block with horizontal outlet, separate upstream sampling, downstream CIP and SIP access valves, actuators on front and sides

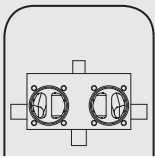
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical



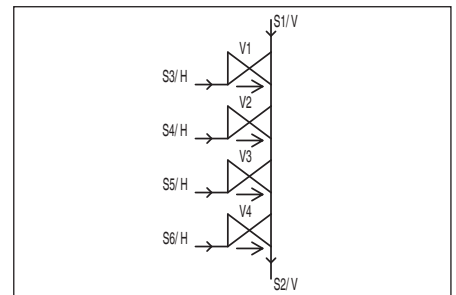
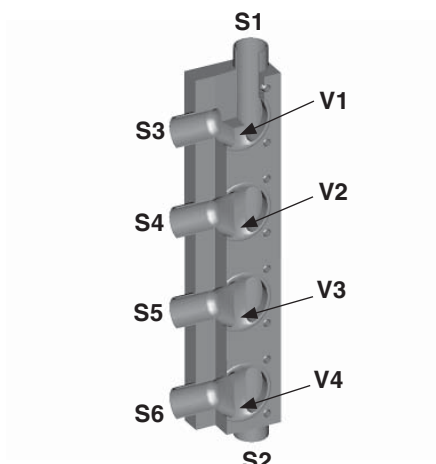
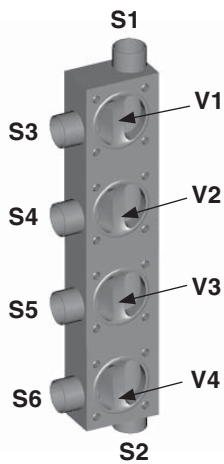
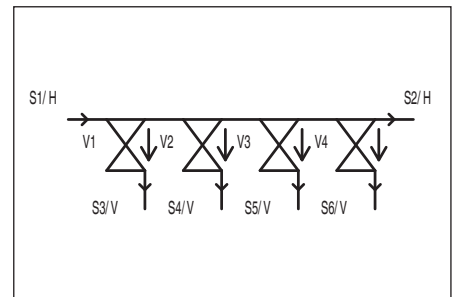
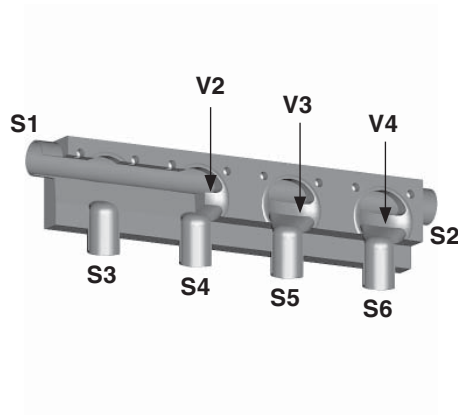
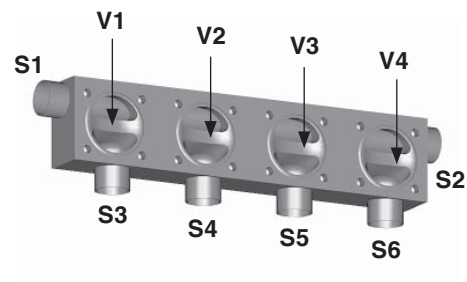


# 06-04.U7

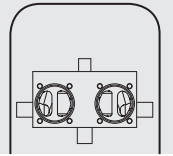
4 seat linear T-Valve block, all actuators on front side, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

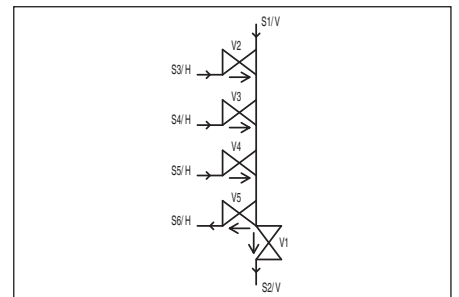
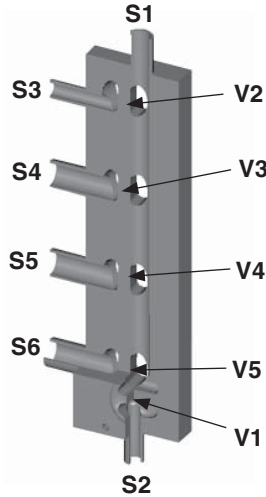
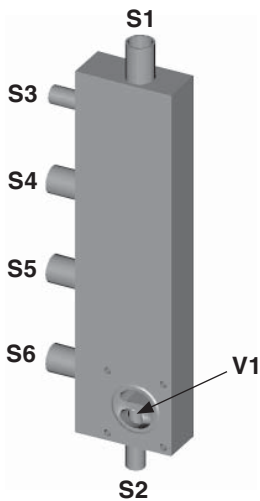
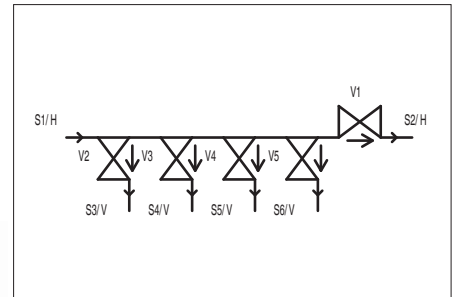
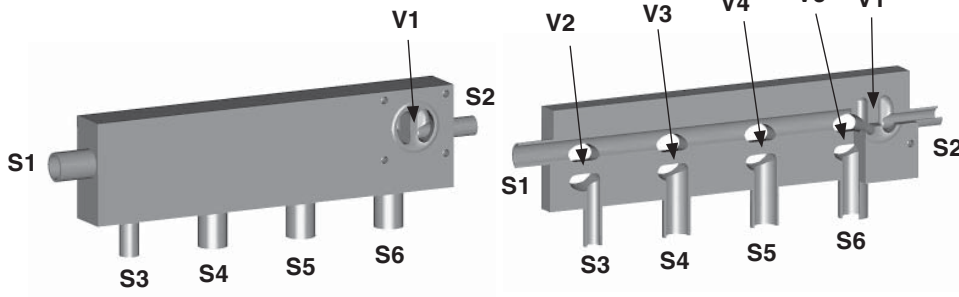


# 06-05.JL

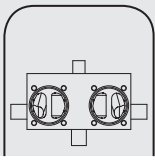
5 seat linear T-Valve block, with downstream isolation or SIP access valve, actuators on front and back sides, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

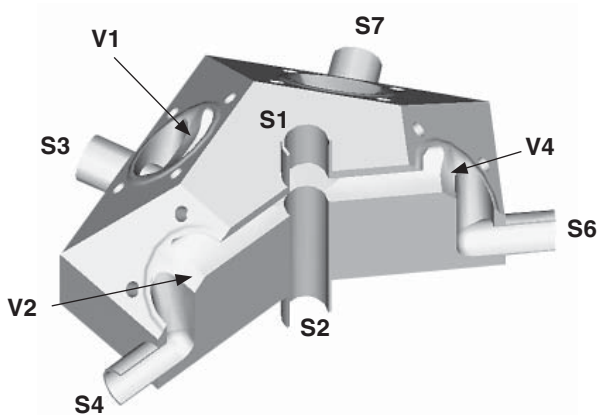
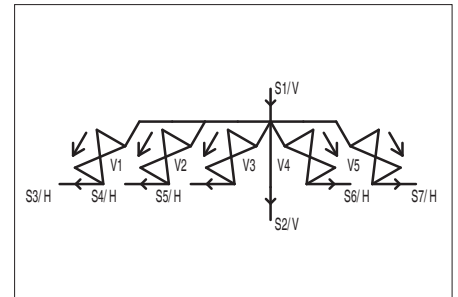
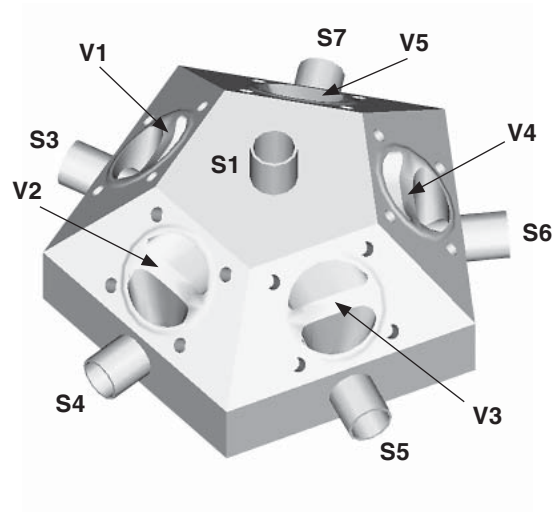


# 07-05.B

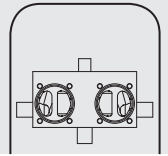
5 seat circular distribution valve block, vertical main run with 5 horizontal access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

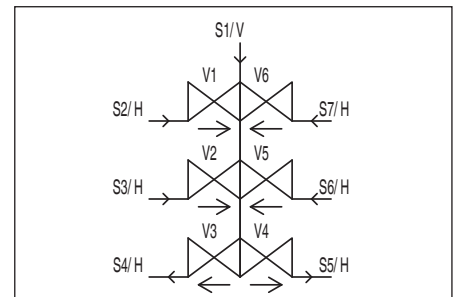
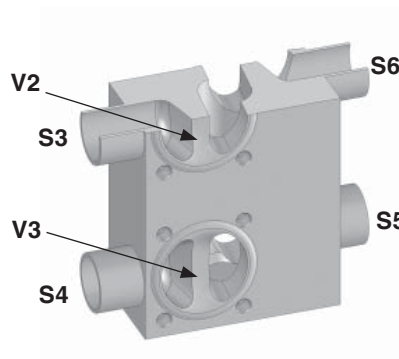
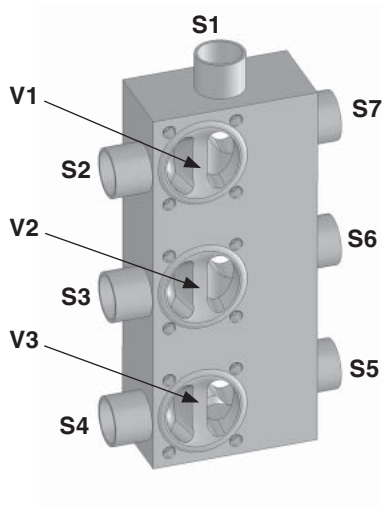
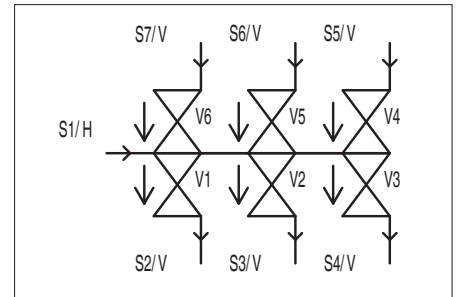
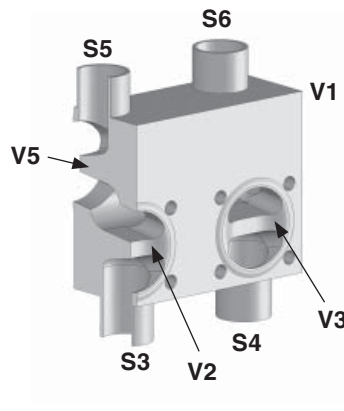
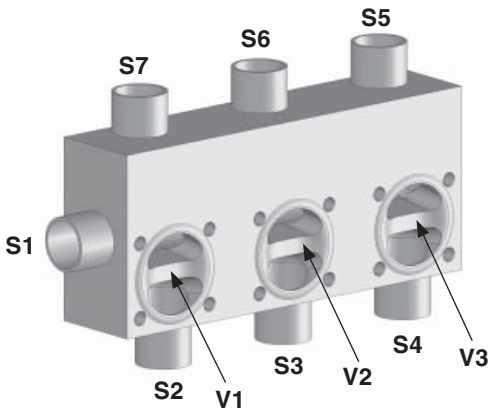


# 07-06.T

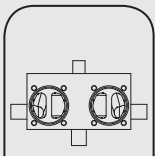
6 seat linear T-Valve block, actuators on front and back sides, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

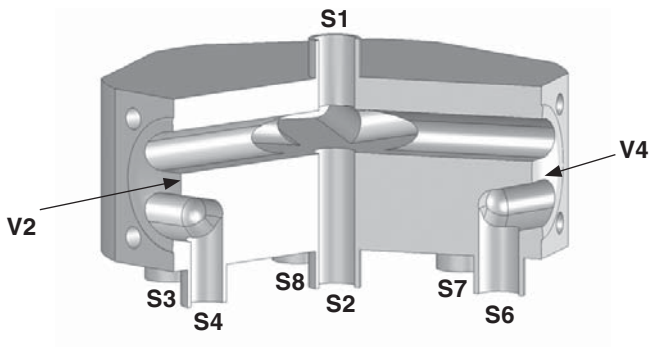
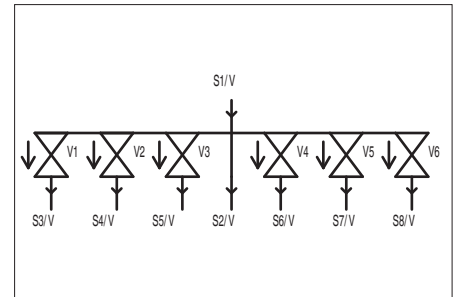
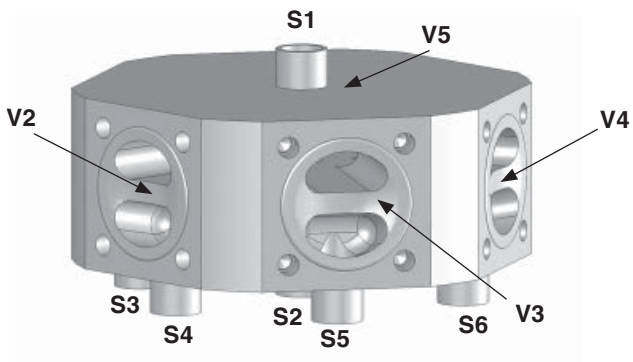


# 08-06.C1

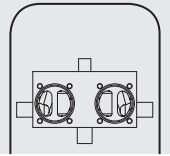
6 seat circular distribution valve block, vertical main run with 6 vertical access valves

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

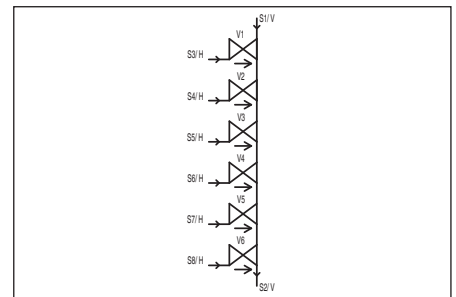
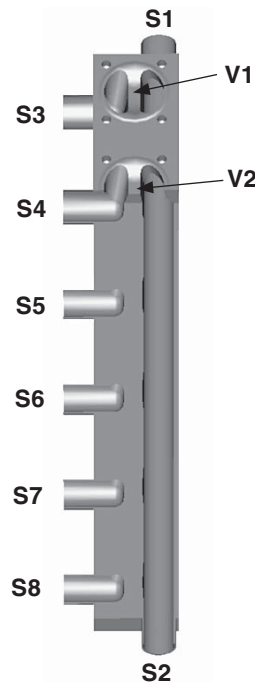
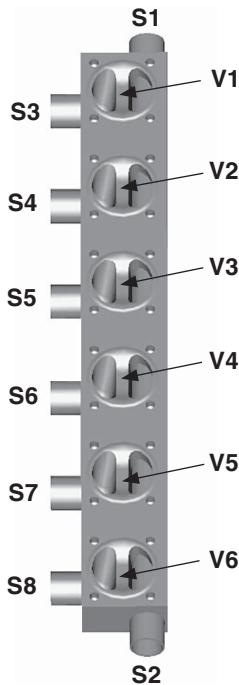
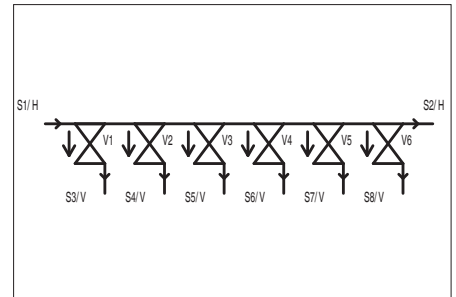
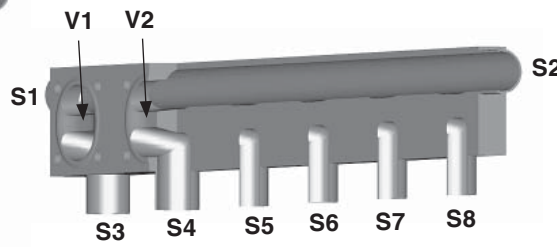
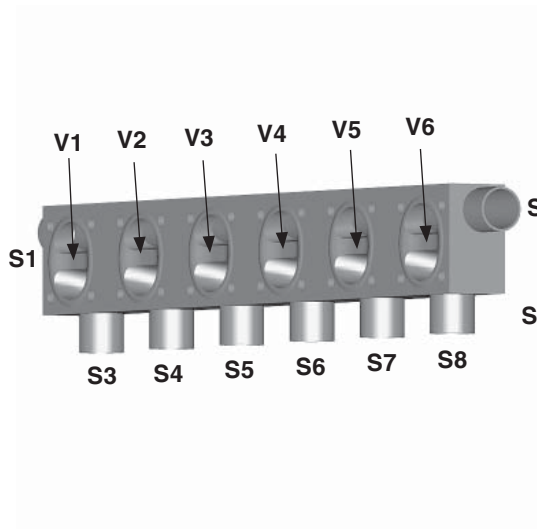


# 08-06.U7

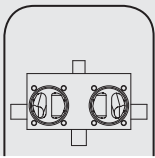
6 seat linear T-Valve block, all actuators on front side, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

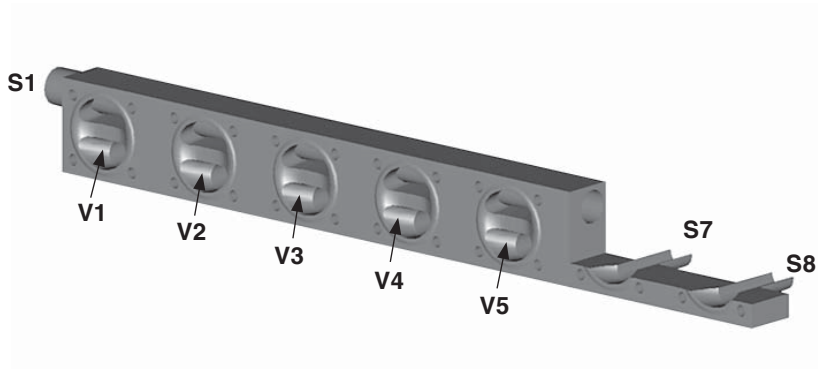
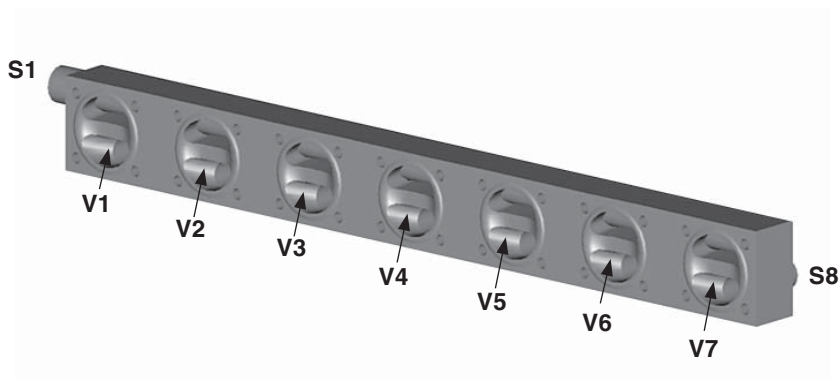
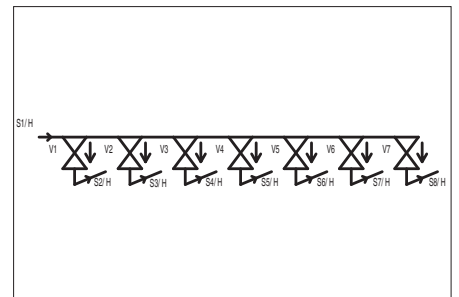


# 08-07.A7

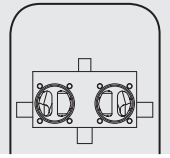
7 seat linear T-Valve block, backside horizontal ports, all actuators on front side, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

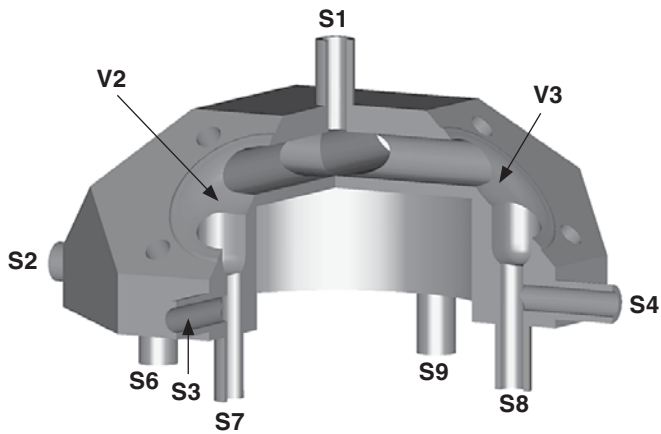
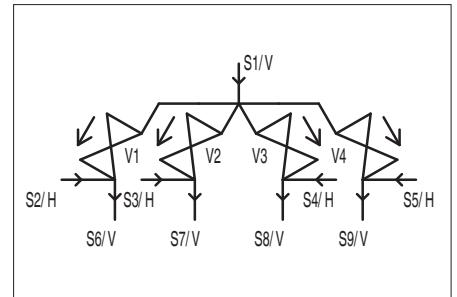
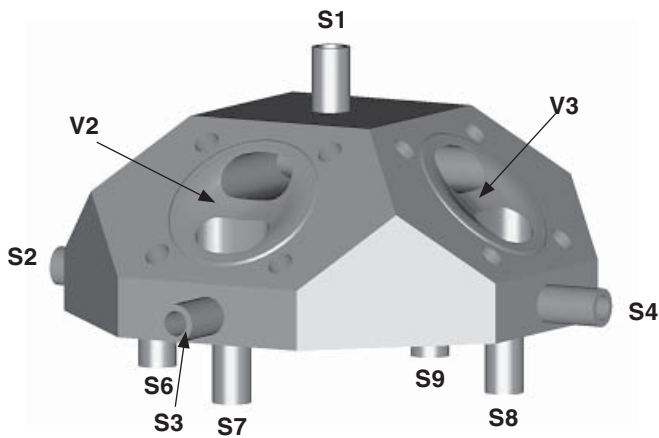


# 09-04.B

4 seat sampling valve block for sampling of 4 separate fluid lines at a single sampling point

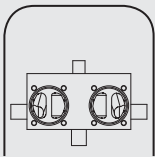
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical





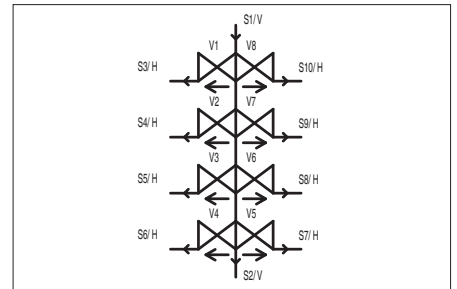
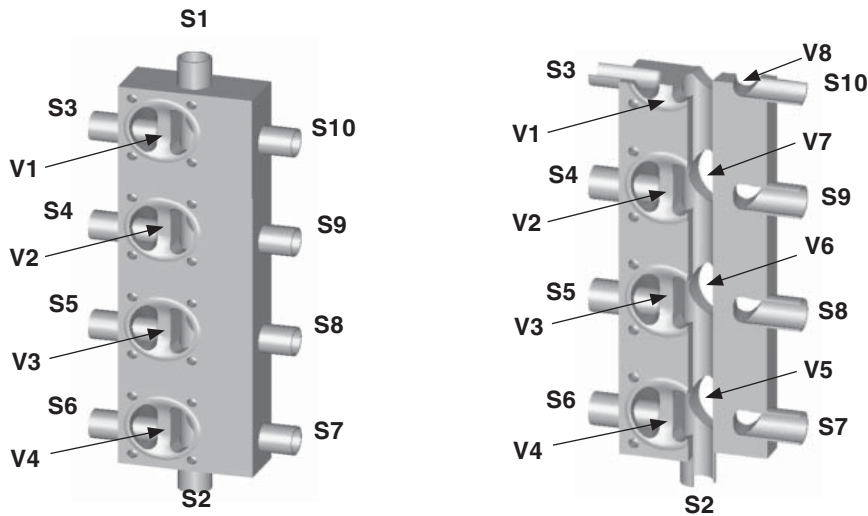
# 10-08.T

8 seat linear T-Valve block, actuators on front and back sides, distribution / collection control

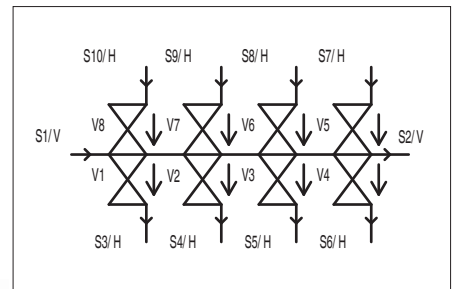
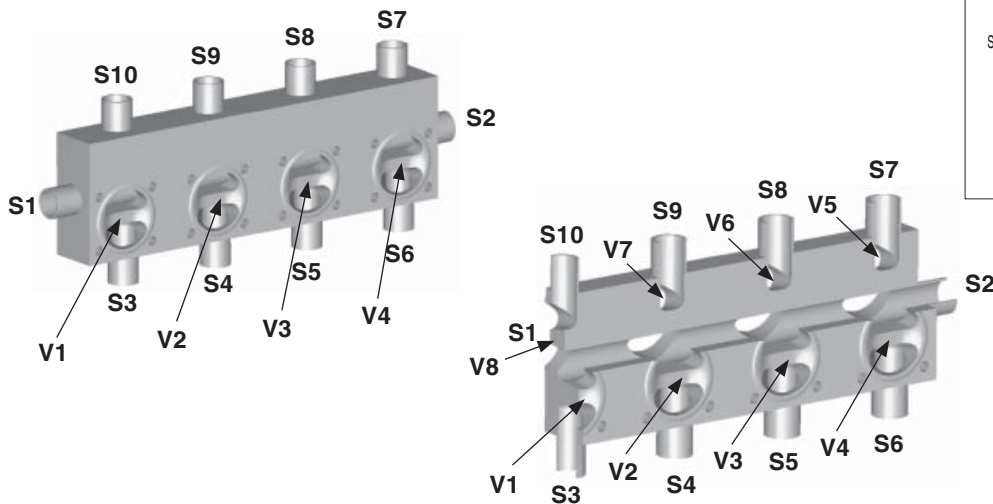
Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.

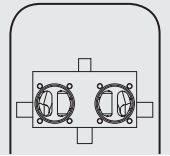
Mounting position:  
Spigot S1 aligned vertically up



Alternative mounting position:  
Spigots S3 to S10 aligned vertically



H = horizontal, V = vertical

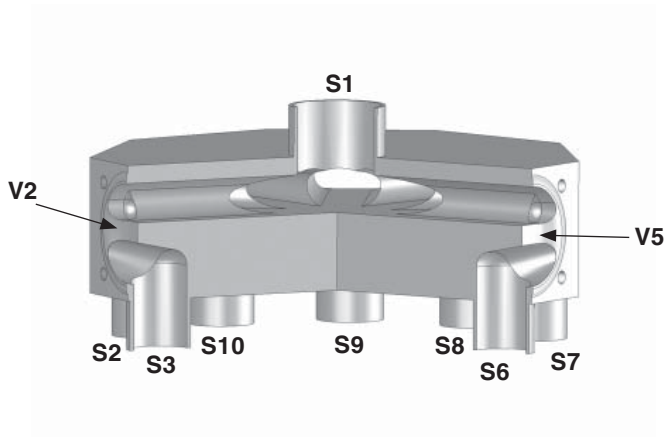
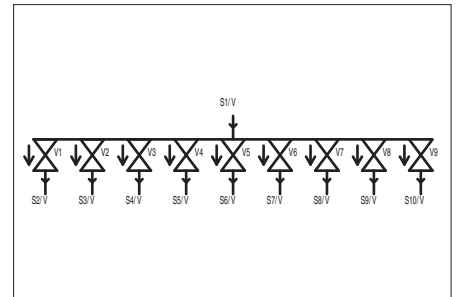
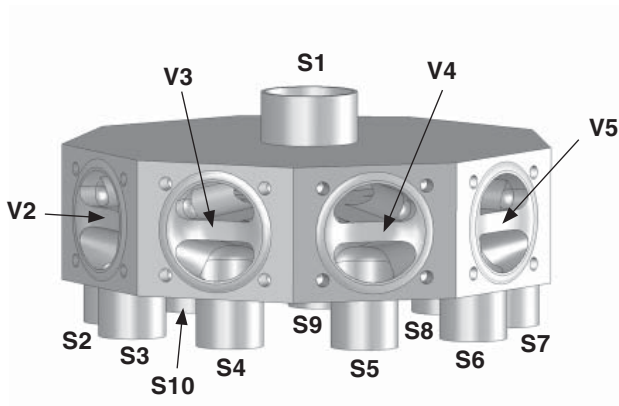


# 10-09.C1

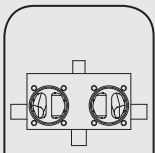
9 seat circular distribution valve block, 9 way diverter, vertical ports

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

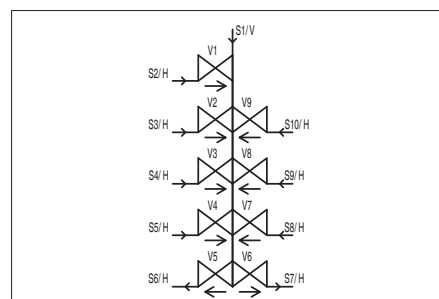
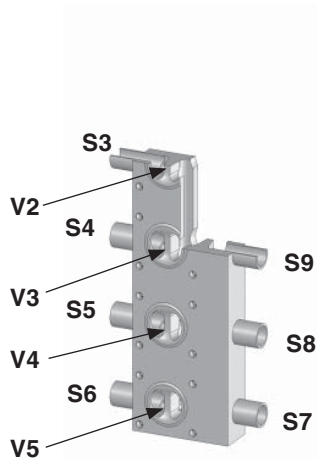
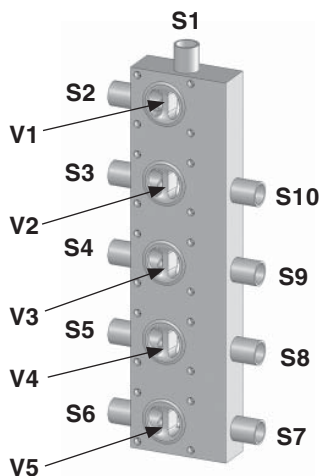
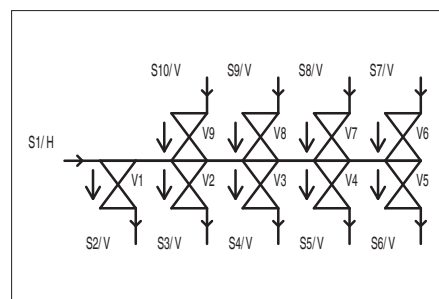
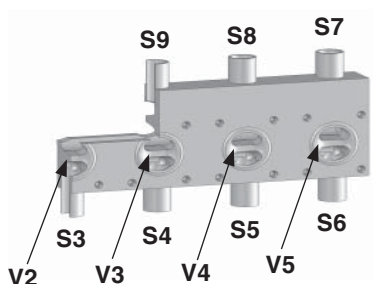
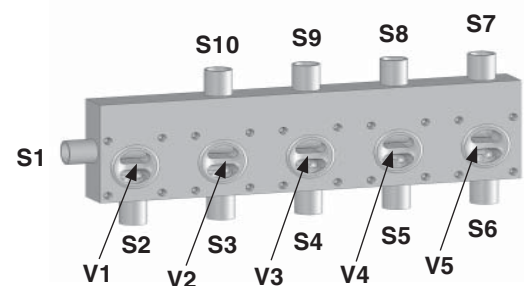


# 10-09.T

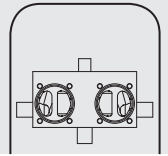
9 seat linear T-Valve block, actuators on front and back sides, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

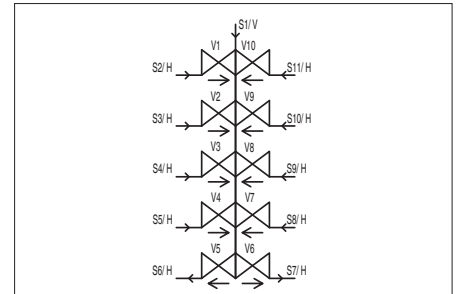
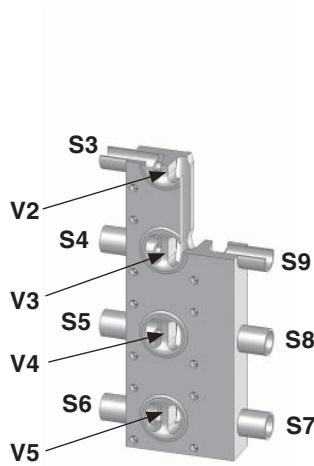
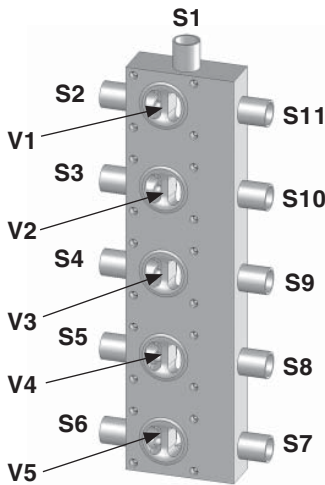
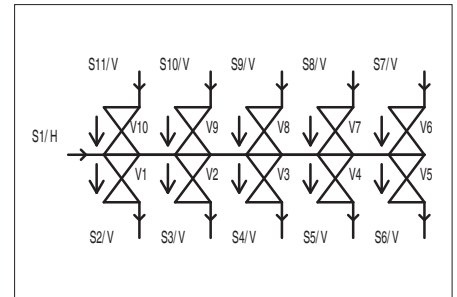
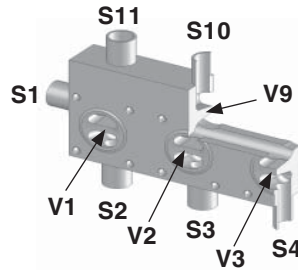
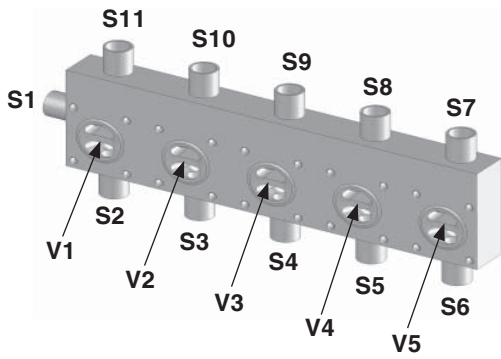


# 11-10.T

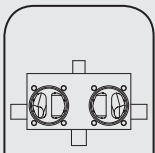
10 seat linear T-Valve valve block, actuators on front and back sides, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

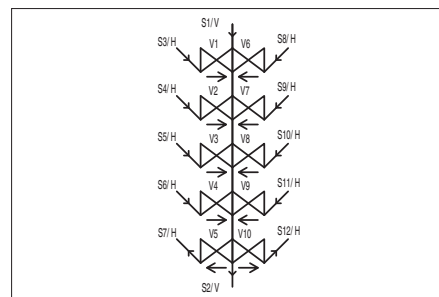
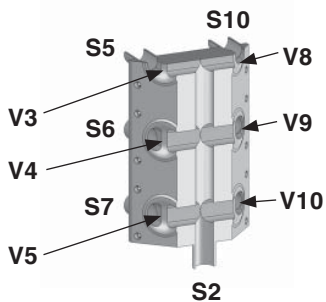
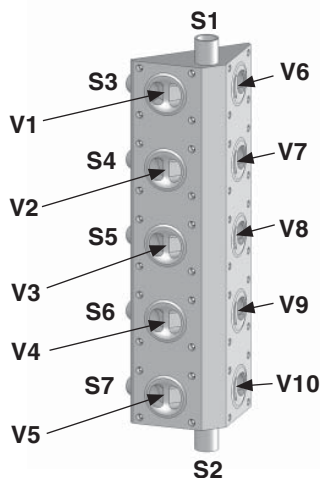
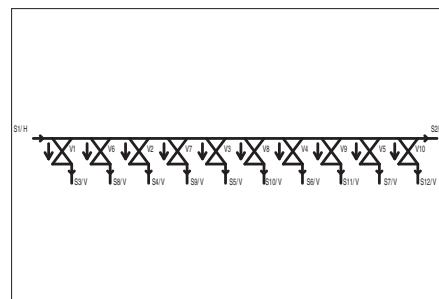
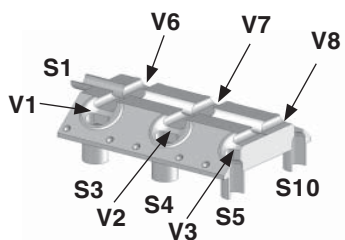
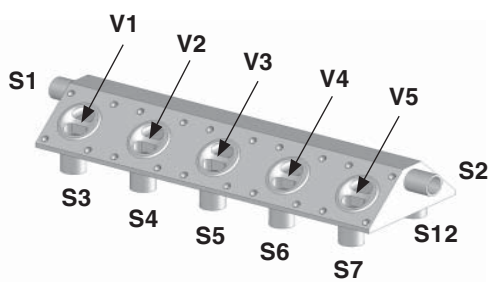


# 12-10.U3

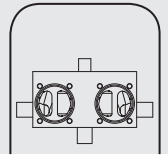
10 seat linear dual T-Valve block, actuators at 45°, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

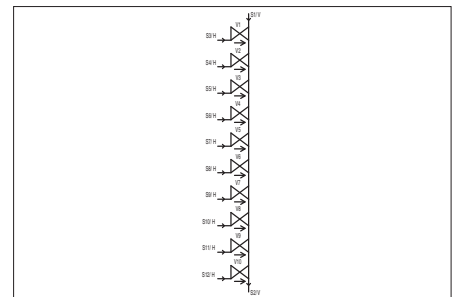
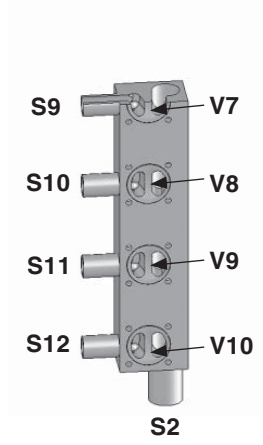
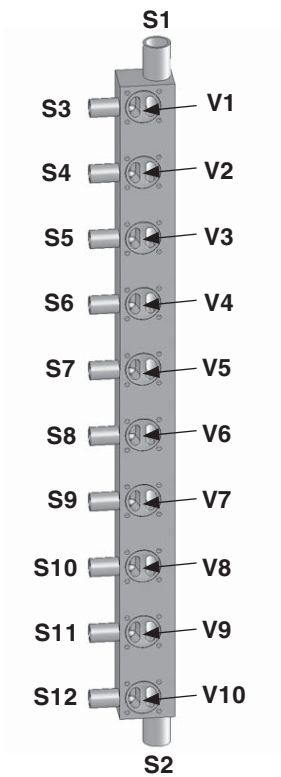
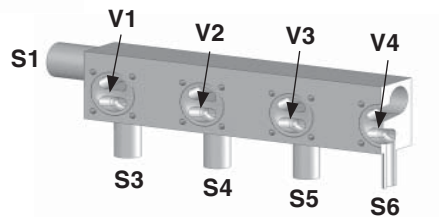
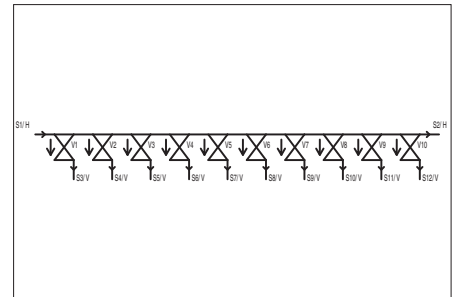
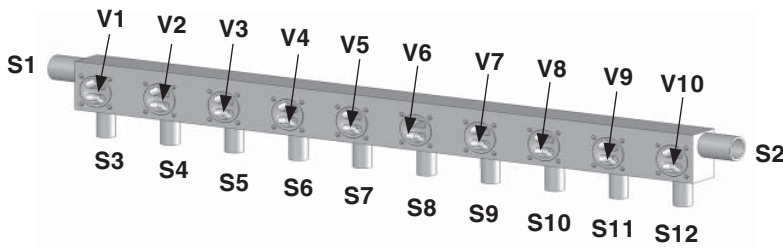


# 12-10.U7

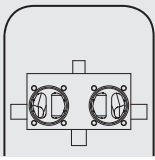
10 seat linear T-Valve block, all actuators on front side, distribution / collection control

Flow diagram and recommended installation are not intended to preclude alternate functions or orientation of the illustrated block valve:

Please provide configuration and piping orientation detail at the time of request.



H = horizontal, V = vertical

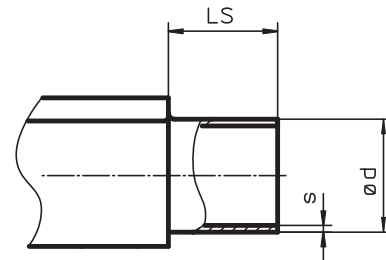


# Butt weld connections

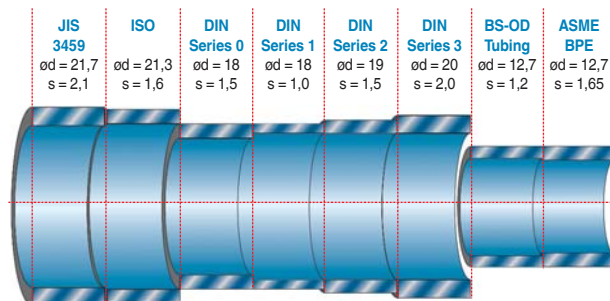
Dimensions in inch/mm

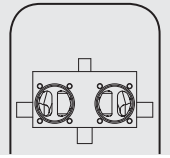
DN	size	MG	LS (min)	ASME BPE	BS O.D. 4825	EN ISO 1127	DIN	DIN 11850	DIN 11850	DIN 11850	DIN 11866
				Code 59	Code 55	Code 60	Code 0	Series 1	Series 2	Series 3	Code 1A
				Code 59	Code 55	Code 60	Code 0	Code 16	Code 17	Code 18	Code 1A
				ø d x s	ø d x s	ø d x s	ø d x s	ø d x s	ø d x s	ø d x s	ø d x s
4	-		0.787 20	-	-	-	0.236 x 0.039 6 x 1.00	-	-	-	-
6	-		0.787 20	-	-	-	0.236 x 0.039 6 x 1.00	-	-	-	-
8	1/4"	8	0.787 20	0.250 x 0.035 6.35 x 0.89	0.250 x 0.047 6.35 x 1.2	0.531 x 0.063 13.5 x 1.6	0.394 x 0.039 10 x 1.00	-	-	-	-
10	3/8"		0.787 20	0.375 x 0.035 9.53 x 0.89	0.375 x 0.047 9.53 x 1.2	-	-	0.472 x 0.039 12 x 1.00	0.512 x 0.059 13 x 1.50	0.551 x 0.079 14 x 2.00	0.512 x 0.059 13 x 1.50
15	1/2"		0.787 20	0.500 x 0.065 12.7 x 1.65	0.500 x 0.047 12.7 x 1.2	-	-	-	-	-	-
10	3/8"	10	0.984 25	0.375 x 0.035 9.53 x 0.89	0.375 x 0.047 9.53 x 1.2	0.677 x 0.063 17.2 x 1.6	-	0.472 x 0.039 12 x 1.00	0.512 x 0.059 13 x 1.50	0.551 x 0.079 14 x 2.00	0.512 x 0.059 13 x 1.50
15	1/2"		0.984 25	0.500 x 0.065 12.7 x 1.65	0.500 x 0.047 12.7 x 1.2	0.839 x 0.063 21.3 x 1.6	0.709 x 0.059 18 x 1.50	0.709 x 0.039 18 x 1.00	0.748 x 0.059 19 x 1.50	0.787 x 0.079 20 x 2.00	0.748 x 0.059 19 x 1.50
20	3/4"		0.984 25	0.750 x 0.065 19.05 x 1.65	0.750 x 0.047 19.05 x 1.2	-	-	-	-	-	-
15	1/2"	15	0.984 25	0.500 x 0.065 12.7 x 1.65	0.500 x 0.047 12.7 x 1.2	0.839 x 0.063 21.3 x 1.6	0.709 x 0.059 18 x 1.50	0.709 x 0.039 18 x 1.00	0.748 x 0.059 19 x 1.50	0.787 x 0.079 20 x 2.00	0.748 x 0.059 19 x 1.50
20	3/4"	25	0.984 25	0.750 x 0.065 19.05 x 1.65	0.750 x 0.047 19.05 x 1.2	1.059 x 0.063 26.9 x 1.6	0.866 x 0.059 22 x 1.50	0.866 x 0.039 22 x 1.00	0.906 x 0.059 23 x 1.50	0.945 x 0.079 24 x 2.00	0.906 x 0.059 23 x 1.50
25	1"		0.984 25	1.000 x 0.065 25.4 x 1.65	-	1.327 x 0.079 33.7 x 2.0	1.102 x 0.059 28 x 1.50	1.102 x 0.039 28 x 1.00	1.142 x 0.059 29 x 1.50	1.181 x 0.079 30 x 2.00	1.142 x 0.059 29 x 1.50
32	1 1/4"		0.984 25	-	-	1.669 x 0.079 42.4 x 2.0	1.339 x 0.059 34 x 1.50	1.339 x 0.039 34 x 1.00	1.378 x 0.059 35 x 1.50	1.417 x 0.079 36 x 2.00	1.378 x 0.059 35 x 1.50
40	1 1/2"	40	0.984 25	1.500 x 0.065 38.1 x 1.65	-	1.902 x 0.079 48.3 x 2.0	1.575 x 0.059 40 x 1.50	1.575 x 0.039 40 x 1.00	1.614 x 0.059 41 x 1.50	1.654 x 0.079 42 x 2.00	1.614 x 0.059 41 x 1.50
50	2"	50	1.181 30	2.000 x 0.065 50.8 x 1.65	-	2.374 x 0.079 60.3 x 2.0	2.047 x 0.059 52 x 1.50	2.047 x 0.039 52 x 1.00	2.087 x 0.059 53 x 1.50	2.126 x 0.079 54 x 2.00	2.087 x 0.047 53 x 1.20
65	2 1/2"		1.181 30	2.500 x 0.065 63.5 x 1.65	-	2.996 x 0.079 76.1 x 2.0	-	-	2.756 x 0.079 70 x 2.00	-	2.756 x 0.079 70 x 2.00
80	3"	80	1.181 30	3.000 x 0.065 76.2 x 1.65	-	3.500 x 0.091 88.9 x 2.3	-	-	3.346 x 0.079 85 x 2.00	-	3.346 x 0.079 85 x 2.00
100	4"	100	1.181 30	4.000 x 0.083 101.6 x 2.11	-	4.500 x 0.091 114.3 x 2.3	-	-	4.094 x 0.079 104 x 2.00	-	4.094 x 0.079 104 x 2.00

MG=Diaphragm size. Other standards on request.



## The difference between tube specifications (Example DN 15)



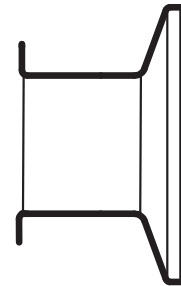


## Clamp connections / Surface finishes

Clamp connections are machined according to ASME BPE standards or other common industrial specifications listed below as required. Most clamp connections are integrally machined but clamp connections or other mechanical connections may be welded to the body. Welding, polishing and non-destructive testing are performed by qualified personnel to qualified procedures.

Clamp connection standards and Gemu code numbers	Code
ASME BPE for ASTM tubing	80
ASME BPE for ISO 1127 tubing	82
ASME BPE for BS 4825 tubing	88
DIN 32676 for DIN 11850 tubing	86
SMS 3017 for SMS 3008 tubing	87

Note: Codes 80 and 88 clamps have different end to end dimensions when supplied on standard 2/2 bodies.



GEMU Code	Ra Average		BPE Surface Designation	Ra max $\mu$ -inch
	$\mu$ -inch			
3	35	Mechanical		
1502	25	Mechanical	SFV3	30
1507	20	Mechanical	SFV2	25
1508	20	E-pol	SFV6	25
1536	15	Mechanical	SFV1	20
1537	15	E-pol	SFV5	20
1516	10	E-pol	SFV4	15

- Notes:
- 1) Surface finish applies to internal wetted surfaces.
  - 2) All readings are taken across the lay.
  - 3) Average Ra is derived from two readings taken at different locations.





## Selection of manual operators

### **GEMU 601 / 602**

with seal adjuster (GEMU 601),  
with stainless steel hand wheel (GEMU 602)  
autoclavable



Diaphragm size 8  
Nominal size 1/2"  
1/4" - 1/2"

### **GEMU 612**

with seal adjuster  
autoclavable



Diaphragm size 10  
Nominal size 3/4"  
3/8" - 3/4"

### **GEMU 673**

with seal adjuster  
autoclavable



Diaphragm size 25-50  
Nominal size 1" - 2"  
1/2" - 2"

### **GEMU 653 BioStar®**

with seal adjuster and stroke limiter  
autoclavable



Design T  
suitable for all body variants

Diaphragm size 10-100  
Nominal size 3/4" - 4"  
3/4" - 4"

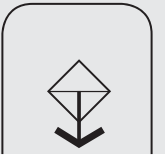
### **GEMU 654 BioStar®**

with seal adjuster and stroke limiter  
autoclavable



Design T  
suitable for all body variants

Diaphragm size 10-100  
Nominal size 3/4" - 4"  
3/4" - 4"



# Selection of pneumatic operators

## GEMU 605

with optical position indicator



Diaphragm size 8  
Nominal size 1/2"  
1/4" - 1/2"

## GEMU 625

with optical position indicator



Diaphragm size 10  
Nominal size 3/4"  
3/8" - 3/4"

## GEMU 687



Diaphragm size 25-100  
Nominal size 1" - 4"  
1/2" - 4"

## GEMU 650 BioStar®

with optical position indicator



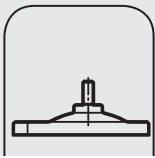
### Design T

suitable for all body variants  
Diaphragm size 8-50  
Nominal size 1/2" - 2"  
1/4" - 2"

MG°	Diaphragm bolt centres	Possible operators		
		Manual	Pneumatic	Motorized
8	22 x 22	9601, 9602	9605, 9650	9618
10	39 x 44	9612, 9653, 9654	9625, 9650	9618
25	54 x 46	9653, 9654, 9673	9650, 9687, 9688	9698
40	70 x 65	9653, 9654, 9673	9650, 9687, 9688	9698
50	82 x 78	9653, 9654, 9673	9650, 9687, 9688	9698
80	127 x 114	9653	9687	
100	Ø 194	9653	9687	

° MG = Diaphragm size

Further versions, accessories as well as motorized operators available. See "Aseptic Diaphragm Valves" brochure.



# Diaphragms

## FDA / USP conformity

EPDM	Code 3A/13, 6A/16/17
PTFE/EPDM	Code 5A, 52, 5E

Compliant with FDA requirements and tested per USP class 6

## Material selection

The operating conditions throughout a typical aseptic processing facility can vary significantly. For optimum diaphragm life cycle the operating conditions of each application must be evaluated by the customer. The chemical properties and temperature of the media are critical to selection of suitable diaphragm material.

It is the responsibility of the end user to determine suitability of materials for the wide range of service conditions encountered in aseptic process and utility systems. The continuous testing and development by GEMU of superior polymer materials assure our customers of optimum diaphragm performance and security of critical processes.

## Cycle Life

Diaphragm life cycle may be measured by the duration in which a diaphragm remains in operation. Cycle life is normally measured by the number of valve operating cycles that can be expected to occur without significant degradation of the diaphragm material. One of the most significant factors that will influence effective life of the diaphragm is exposure to steam. This is particularly important in determining effective life of elastomer material. Continuous exposure to steam at typical sterilization temperatures over extended periods can result in degradation of elastomer materials. The introduction of GEMU code 17 EPDM diaphragms represents milestone achievement in enhanced resistance to steam exposure.

## Elastomer Diaphragms

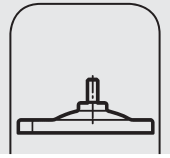
EPDM diaphragms of material formulations compliant with FDA and USP requirements have been extensively utilized in pharmaceutical applications worldwide. Flexibility and resiliency of the material provide ideal sealing characteristics where positive closure and containment are critical. The custom formulated compounds in Gemu grades 13, 16 and 17 are compliant with the requirements of FDA Title 21 CFR 177.2600 and USP Class VI biological reactivity test sections 87 and 88 in vitro and in vivo respectively. These diaphragms are cured using non-chlorinated organic peroxide, enhancing the biocompatibility of the material.

The code 17 EPDM is the result of ongoing research and development of materials for superior resistance to steam exposure. The mechanical properties also offer improved resistance to tearing or cracking associated with degradation of elastomers that are continuously exposed to steam service. The code 17 offers more than twice the cycle life of other EPDM formulations in continuous steam applications.

## Method of Attachment

The method of attachment for all GEMU diaphragms permits interchangeability of elastomer and PTFE diaphragms without conversion or replacement of bonnets or actuators. This provides optimum flexibility in pursuit of extended effective life cycle or in accommodation of change in operating conditions. The net result is lower cost of ownership.





# Diaphragms

## PTFE Diaphragms

Code 5E diaphragms are manufactured from a second-generation modified polytetrafluoroethylene (PTFE) that incorporates a perfluoro vinyl ether (PPVE) modifier in its polymer chain. This material retains all the favorable characteristics of the original PTFE and offers significant improvement in effectiveness under the steam and vacuum conditions associated with the sterilization cycle. Deformation under load at typical sterilization temperature is approximately half that of the original PTFE. These diaphragms are 2-piece construction and are molded in the closed profile. The 5E diaphragm is provided with an EPDM backing. The PTFE compound in all Gemu diaphragms is compliant with the requirements of FDA title 21 CFR 177.1550 and test requirements outlined in USP Class VI Biological Reactivity Tests 87 and 88.

## Advantages of Gemu second generation PTFE diaphragms:

- Reduced deformation under load
- Higher density material for reduced permeability
- Improved surface finish for enhanced cleanability
- Extended life cycle of the diaphragm

The innovative design profile of the diaphragm and machined body is fundamental to the effectiveness of the unique Gemu sealing system. Qualification by EHEDG assures superior cleanability and sealing integrity for protection of process and personnel.



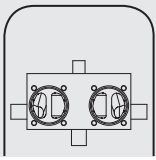
Code 5A



Code 52



Convex diaphragms code 5E

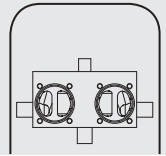


## How to specify M600 multi-port valves

M600 multi-port valves are the economic choice when considering total cost of ownership. Design, installation, validation, commissioning and operations will attain economic and functional benefit derived from the use of this advanced concept in superior valve design. (Refer to page 5 for details).

Good planning of the valve designs begins in the process concept stage. The implementation of complex process sequences demands a wide variety of compact valve designs. GEMU places great emphasis on ensuring that you receive the optimum block for your specific application and not any standard solution from the catalogue. It is therefore important that all relevant details of the application are provided at the earliest stage of the project. The GEMU specification sheet is a great help here. Please use only one form for each M-block and proceed as follows to fill in the specification.

1. Enter the operating conditions and desired materials.
2. What functions should the M-block fulfill.
3. Draw a pictogram and make a sketch in the specification.  
You can of course use the examples shown in this brochure as a guide
4. Label all connection connenctions with S1, S2, ...
5. Assign the necessary features to every connection in the table and add explanatory remarks where necessary.
6. Specify the necessary operator type and control function for every connection.
7. For extra remarks and descriptions, simply use an additional sheet.



# M600 Specification

Please complete this form and return it to your nearest GEMÜ office or to the address listed below!

Working pressure: \_\_\_\_\_ PSIG

Medium temperature: \_\_\_\_\_ °C

Valve block material:

- 1.4435 (316L)
- 1.4435 BN 2 ( $\Delta Fe < 0,5\%$ )
- 1.4539
- Other \_\_\_\_\_

Diaphragm material:

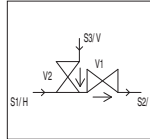
- EPDM Code \_\_\_\_\_
- PTFE Code \_\_\_\_\_
- Other \_\_\_\_\_

Surface finish of M600 multi-port valve:

- 1502 SFV3 max 30 Ra
- 1507 SFV2 max 25 Ra
- 1508 SFV6 max 25 Ra EP
- 1536 SFV1 max 20 Ra
- 1537 SFV5 max 20 Ra EP
- 1516 SFV4 max 15 Ra EP

Quantity:

Example:



Please draw flow diagram.

Please complete all sections of this form.

Connections: S1, S2, ...

Preferred orientation: Horizontal/Vertical

Flow direction:

Draining direction:

Valve seat:

Connection Reference	Tube connection				Operator		Other
	DN	ga./sch	OD	Code	Operator type	Control function	Comment / accessories
S1							
S2							
S3							
S4							
S5							
S6							
S7							
S8							
S9							
S10							
S11							
S12							

The technical details of each enquiry will be checked by GEMÜ.

Contact (GEMÜ): \_\_\_\_\_  
 Customer: \_\_\_\_\_  
 Dept.: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Please do not write here!

Version: \_\_\_\_\_  
 990  
 LZ: \_\_\_\_\_  
 Price°: \_\_\_\_\_

°e/body





**GEMU®**

Dear Customer,

Installation of GEMU products shall be in accordance with all current industry standards, provisions, directives and jurisdiction regulatory codes.

The application of these or other regulations relating to local or industrial requirements are the responsibility of the user.

GEMU cannot accept any liability for improper installation which does not comply with current legal or engineering practice.

We reserve the right to make alterations to products or this brochure without notice.

The technical data specified in this documentation serves only as a guideline to the product range.

Selection and suitability of the products identified in this brochure are the responsibility of the end user.









**GEMÜ<sup>®</sup>** VALVES, MEASUREMENT  
AND CONTROL SYSTEMS

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