

# ISO Valve Terminal with Bus Interface or Multi-pin Plug Connection



for 5-way pneumatic valves

Pressure switches/differential pressure switches

Pressure regulators



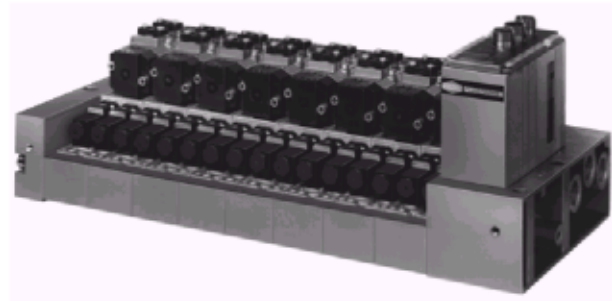
## Description

Fully assembled and tested unit which will accept 5/2 and 5/3 directional control valves in accordance with DIN ISO 5599/1, sizes 1 and 2, and all standard vertical interconnection components.

The terminal can be controlled electronically via a multi-pin plug connection or an interface for various bus systems.

## Features

- Reduces installation costs
- No need for system wiring
- Modular pneumatic and electrical system
- 4, 8, 12 or 16 valve stations
- Common air supply for valves
- Environmentally-friendly ducted exhaust air
- Individual pressure levels for valve stations
- Working ports (2 and 4) below and at the side
- Facility for external control signals
- All electrical connections of plug-in type
- Output drivers equipped with overload and short-circuit protection
- Degree of protection IP 65
- Temperature range +5 to +50 °C



## Parameters

### Electrical

- Multi-pin plug connection (42-pin) 24 V  $\pm$  10%
- Phoenix Interbus S
  - 2-wire remote bus
  - 2-wire remote installation bus
  - 24 V  $\pm$  10% operating voltage
  - Diagnostic facility
- Siemens Sinec L 2 DP (ET 200)
  - 24 V  $\pm$  10% operating voltage
  - Diagnostic facility

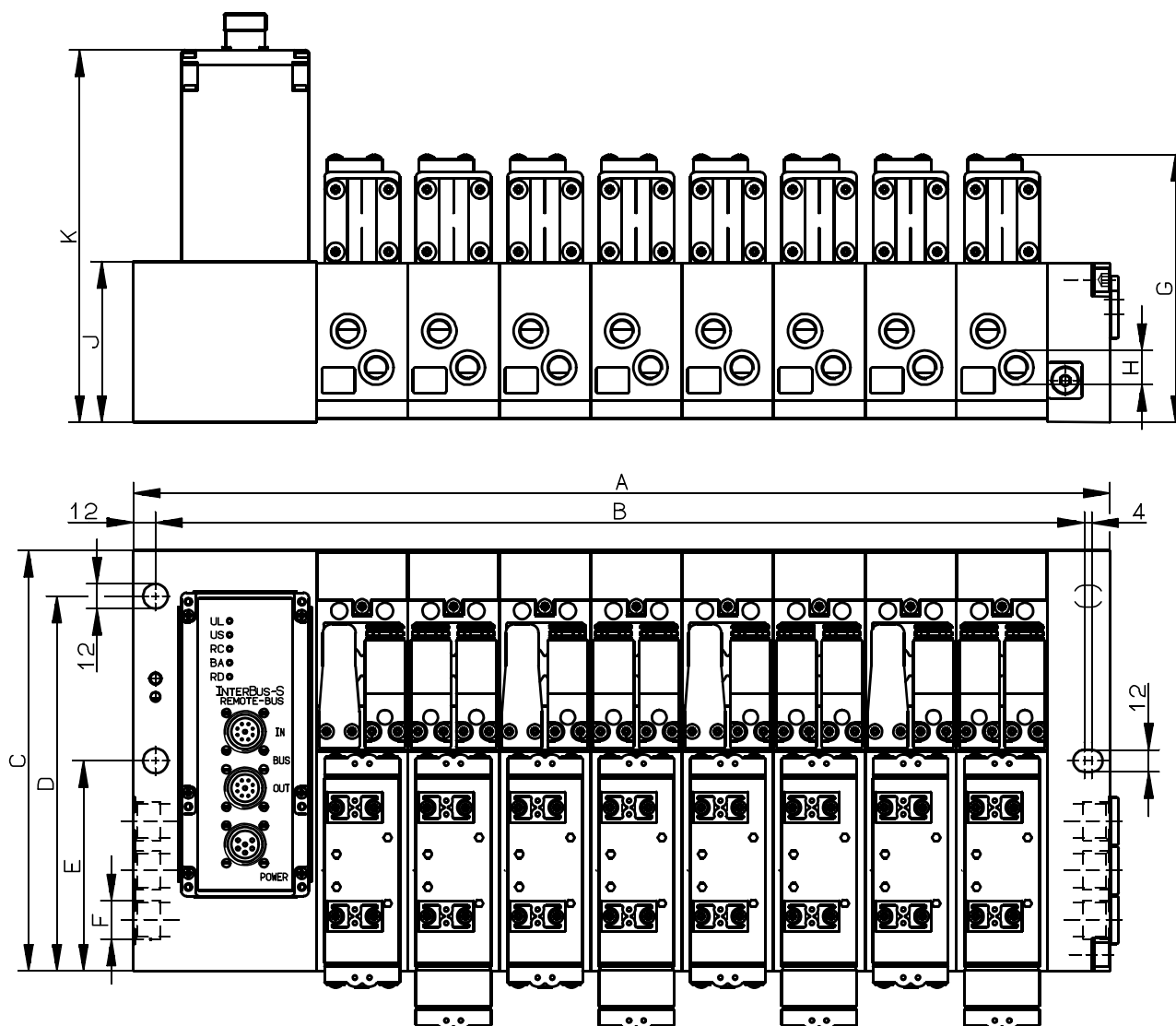
### Mechanical

- Reduces installation costs, without need for additional tubing
- Working ports (2 and 4) below and at the side

### Pneumatic

- Operating pressure range from vacuum to 16 bar
  - Internal fluid: 1.5 to 12 bar
  - External fluid: –1 to 16 bar
- External pilot air possible
- Ducted exhaust air
- Individual speed control possible by using a throttle sub-base for each cylinder

## Dimensional drawing [mm]



**Dimensional table [mm]**

| Number of valve stations | ISO size 1 |     |     |     |     |       |     |       |    |     |
|--------------------------|------------|-----|-----|-----|-----|-------|-----|-------|----|-----|
|                          | A          | B   | C   | D   | E   | F     | G   | H     | J  | K   |
| 4                        | 334        | 308 | 230 | 205 | 115 | G 1/2 | 148 | G 1/4 | 88 | 204 |
| 8                        | 534        | 508 | 230 | 205 | 115 | G 1/2 | 148 | G 1/4 | 88 | 204 |
| 12                       | 734        | 708 | 230 | 205 | 115 | G 1/2 | 148 | G 1/4 | 88 | 204 |
| 16                       | 934        | 908 | 230 | 205 | 115 | G 1/2 | 148 | G 1/4 | 88 | 204 |

**Dimensional table [mm]**

| Number of valve stations | ISO size 2 |      |     |     |     |       |     |       |    |     |
|--------------------------|------------|------|-----|-----|-----|-------|-----|-------|----|-----|
|                          | A          | B    | C   | D   | E   | F     | G   | H     | J  | K   |
| 4                        | 360        | 334  | 255 | 230 | 131 | G 3/4 | 154 | G 3/8 | 89 | 205 |
| 8                        | 584        | 558  | 255 | 230 | 131 | G 3/4 | 154 | G 3/8 | 89 | 205 |
| 12                       | 808        | 782  | 255 | 230 | 131 | G 3/4 | 154 | G 3/8 | 89 | 205 |
| 16                       | 1032       | 1006 | 255 | 230 | 131 | G 3/4 | 154 | G 3/8 | 89 | 205 |

## Functional descriptions

The following detailed functional descriptions are available for use during installation and commissioning:

Cat. No.: **7503015** Interbus S

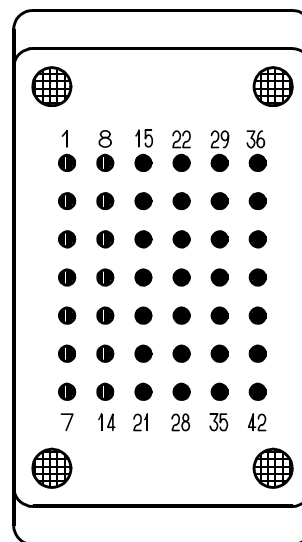
Cat. No.: **7503031** Sinec L2 DP

## Connection diagram of multi-pin plug connection, IP 65

Harting plug

### Pin allocation

| Pin No.               | Valve No.                       | Pilot control |    |
|-----------------------|---------------------------------|---------------|----|
|                       |                                 | 12            | 14 |
| 1                     | 1                               | ●             |    |
| 8                     |                                 |               | ●  |
| 29                    | 2                               | ●             |    |
| 36                    |                                 |               | ●  |
| 2                     | 3                               | ●             |    |
| 9                     |                                 |               | ●  |
| 30                    | 4                               | ●             |    |
| 37                    |                                 |               | ●  |
| 3                     | 5                               | ●             |    |
| 10                    |                                 |               | ●  |
| 31                    | 6                               | ●             |    |
| 38                    |                                 |               | ●  |
| 4                     | 7                               | ●             |    |
| 11                    |                                 |               | ●  |
| 32                    | 8                               | ●             |    |
| 39                    |                                 |               | ●  |
| 5                     | 9                               | ●             |    |
| 12                    |                                 |               | ●  |
| 33                    | 10                              | ●             |    |
| 40                    |                                 |               | ●  |
| 6                     | 11                              | ●             |    |
| 13                    |                                 |               | ●  |
| 20                    | 12                              | ●             |    |
| 27                    |                                 |               | ●  |
| 34                    | 13                              | ●             |    |
| 41                    |                                 |               | ●  |
| 7                     | 14                              | ●             |    |
| 14                    |                                 |               | ●  |
| 21                    | 15                              | ●             |    |
| 28                    |                                 |               | ●  |
| 35                    | 16                              | ●             |    |
| 42                    |                                 |               | ●  |
| 22, 23, 24,<br>25, 26 | 0V<br>(return)                  |               |    |
| 15 +<br>housing       | PE<br>(protective<br>conductor) |               |    |



Pin allocation of connector mounted on valve terminal.

Recommended connecting cable:  
Ölflex 110 41 x 0.75 mm<sup>2</sup>

## Connection diagram of power supply Interbus-S

| Pin No. | Signal                         |
|---------|--------------------------------|
| 1       | PE                             |
| 2       | 24V power supply (valves)      |
| 3       | 0V (valves)                    |
| 4       | 24V power supply (electronics) |
| 1) 5    | 0V (electronics)               |
| 6       |                                |

- 1) Activation of power supply monitoring of valves by means of a jumper between pin 6 and pin 4

### Interbus-S (remote bus) Bus ON

| Pin No. | Signal     |
|---------|------------|
| 1       | DO         |
| 2       | / DO       |
| 3       | DI         |
| 4       | / DI       |
| 5       | Ground bus |
| 6       | Screen     |
| 7       | NC         |
| 8       | NC         |
| 9       | NC         |

In order to prevent earth circuits above the cable screen, the screen of the incoming remote bus line must not be connected to the screen sleeve but rather to pin 6 (screen).

### Interbus-S (installation remote bus) Bus ON

| Pin No. | Signal     |
|---------|------------|
| 1       | DO         |
| 2       | / DO       |
| 3       | DI         |
| 4       | / DI       |
| 5       | Ground bus |
| 6       | PE         |
| 7       | 24V bus    |
| 8       | 0V bus     |
| 9       | NC         |

### Interbus-S (remote bus) Bus OFF

| Pin No. | Signal     |
|---------|------------|
| 1       | DO         |
| 2       | / DO       |
| 3       | DI         |
| 4       | / DI       |
| 5       | Ground bus |
| 6       | Screen     |
| 7       | NC         |
| 8       | NC         |
| 9       | RBST       |

### Interbus-S (installation remote bus) Bus OFF

| Pin No. | Signal     |
|---------|------------|
| 1       | DO         |
| 2       | / DO       |
| 3       | DI         |
| 4       | / DI       |
| 5       | Ground bus |
| 6       | PE         |
| 7       | 24V bus    |
| 8       | 0V bus     |
| 9       | RBST       |

## Connection diagram of power supply Sinec L 2 DP

| Pin No. | Signal                         |
|---------|--------------------------------|
| 1       | PE                             |
| 2       | 24V power supply (valves)      |
| 3       | 0V (valves)                    |
| 4       | 24V power supply (electronics) |
| 5       | 0V (electronics)               |
| 6       | NC                             |

### Sinec L 2 DP Bus ON and bus OFF

| Pin No. | Signal              |
|---------|---------------------|
| 1       | Screen              |
| 2       | Free                |
| 3       | B                   |
| 4       | RTS <sup>1)</sup>   |
| 5       | Frame <sup>1)</sup> |
| 6       | +5V <sup>1)</sup>   |
| 7       | Free                |
| 8       | A                   |
| 9       | Free                |

<sup>1)</sup> Connections to the "bus ON interface" are only necessary when using the ET 200-handheld programming unit.

## Valve terminal ISO 5599/1, sizes 1 and 2

### Valves

| Code     | Function symbol | Description  | Code     | Function symbol | Description                           |
|----------|-----------------|--|----------|-----------------|---------------------------------------|
| <b>1</b> |                 | Double-pilot valve                                 | <b>6</b> |                 | Valve closed in neutral position      |
| <b>2</b> |                 | Monostable valve, air spring                       | <b>7</b> |                 | Valve pressurised in neutral position |
| <b>3</b> |                 | Double-pilot valve with differential piston        | <b>8</b> |                 | Valve exhausted in neutral position   |
| <b>4</b> |                 | Monostable valve, mechanical spring                |          |                 |                                       |
| <b>5</b> |                 | Monostable valve, mechanical spring and air spring | <b>0</b> |                 | Cover plate                           |

### Vertical interconnection

### Manual override: Standard version is "non-detenting"

|          |  |  |          |  |                                  |
|----------|--|--|----------|--|----------------------------------|
| <b>P</b> |  | Pressure regulator at port 1                     | <b>S</b> |  | Pressure switch at port 2        |
| <b>Q</b> |  | Throttle sub-base                                | <b>T</b> |  | Pressure switch at port 4        |
| <b>Y</b> |  | Differential pressure switch                     | <b>U</b> |  | Pressure switch at ports 2 and 4 |
| <b>W</b> |  | Separator disc for two different pressure ranges |          |  |                                  |

### Accessories

#### Multi-pin plugs

|          |  |                            |
|----------|--|----------------------------|
| <b>M</b> |  | Multi-pin socket for MP 42 |
|----------|--|----------------------------|

### Interbus - S

|          |  |   |          |  |                                     |
|----------|--|---|----------|--|-------------------------------------|
| <b>N</b> |  | Network connector socket for cable dia. 7 ... 8.5 mm  | <b>C</b> |  | Screw-on cover for last user device |
| <b>O</b> |  | Network connector socket for cable dia. 8.5 ... 10 mm |          |  |                                     |
| <b>A</b> |  | Pair of bus plugs for remote bus                      |          |  |                                     |
| <b>B</b> |  | Pair of bus plugs for remote installation bus         |          |  |                                     |

### Sinec L2 DP

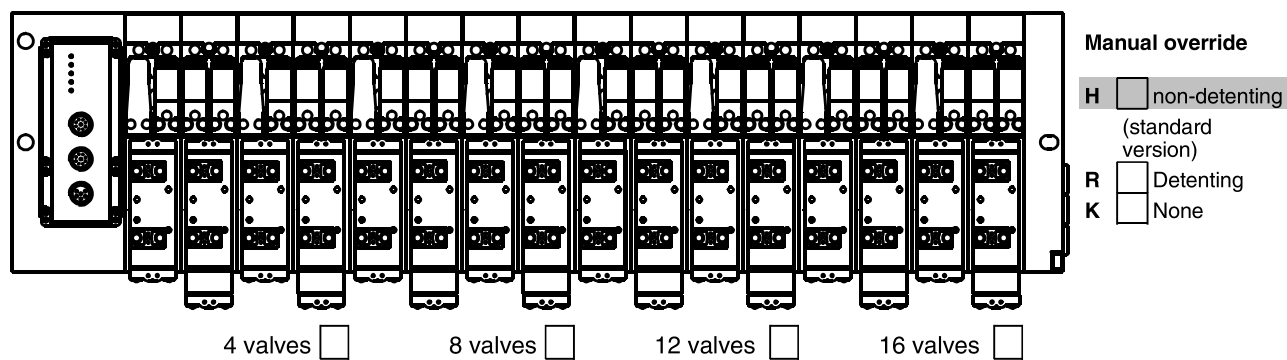
|          |  |   |          |  |  |
|----------|--|---|----------|--|--|
| <b>P</b> |  | Network connector socket for cable dia. 7 ... 8.5 mm  | <b>D</b> |  | Screw-on cover for last user device with terminating resistor                                  |
| <b>Q</b> |  | Network connector socket for cable dia. 8.5 ... 10 mm | <b>F</b> |  | Software (type file) on 3 1/2" diskette  |
| <b>L</b> |  | Pair of bus plugs                                     | <b>Z</b> |  | Adapter cable for programming of station address with Siemens ET 200-handheld programming unit |
|          |  |   | <b>G</b> |  | T coupler and screw-on cover   |

**Short form:** Combinations repeating in immediate succession can be grouped together by brackets. The figure preceding this indicates the number of valve combinations.

ISO size   Stations   E-box   Factory   Manual   Equipment   Accessories

| Description                                    | Function  | Cat. No.                   |
|--|---|----------------------------|
| Pilot valve without manual override            | Pilot valve for ISO valves                            | <b>8010307.9000 024 00</b> |
| Pilot valve with non-detenting manual override | Pilot valve for ISO valves                            | <b>8010305.9000 024 00</b> |
| Pilot valve with detenting manual override     | Pilot valve for ISO valves                            | <b>8010306.9000 024 00</b> |
| Blanking plate                                 | Cover to replace pilot valve                          | <b>0544375</b>             |
| Separator stud                                 | Changeover from internal to external fluid            | <b>0544600</b>             |
| Rating plate                                   | Identification of valve stations<br>(plate and screw) | <b>0544215</b>             |

## Valve terminal ISO 5599/1, sizes 1 and 2

[illegible][illegible]

## Valve terminal equipment

| Equipped with         | Description  |
|-----------------------|--|
| 4, 8, 12 or 16 valves | Equipment levels available with Interbus-S, Sinec L 2 DP and multi-pin plugs |
| I                     | E-box for Interbus-S (remote bus)  |
| E                     | E-box for Interbus-S (remote installation bus)                               |
| M                     | Multi-pin plug connection  |
| S                     | E-box for Sinec L 2 DP   |

### Factory standard

|   |                  |
|---|------------------|
| A | AUDI             |
| B | BMW              |
| F | FORD             |
| M | Mercedes-Benz AG |
| O | ADAM OPEL AG     |
| V | Volkswagen AG    |
| W | VOLVO            |
| S | Standard         |

## Manual override

|   |                                  |
|---|----------------------------------|
| H | Non-detenting (standard version) |
| R | Detenting                        |
| K | None                             |



## Valve terminal equipment

| Equipped with | Description |
|---------------|-------------|
|---------------|-------------|

### Valves

|   |  |
|---|--|
| 1 | Double-pilot valve                                 |
| 2 | Monostable valve air spring                        |
| 3 | Double-pilot valve with differential piston        |
| 4 | Monostable valve, mechanical spring                |
| 5 | Monostable valve, mechanical spring and air spring |
| 6 | Valve closed in neutral position                   |
| 7 | Valve pressurised in neutral position              |
| 8 | Valve exhausted in neutral position                |
| 0 | Cover plate  |

### Vertical interconnection

|   |   |
|---|---|
| P | Pressure regulator at port 1                |
| Q | Throttle sub-base                           |
| Y | Differential pressure switch, fixed setting |
| S | Pressure switch at port 2                   |
| T | Pressure switch at port 4                   |
| U | Pressure switch at ports 2 and 4            |

### Separator disc

|   |  |
|---|--|
| W | Separator disc for two pressure ranges |
|---|--|

### Accessories

#### Multi-pin plug connection

|   |                            |
|---|----------------------------|
| M | Multi-pin socket for MP 42 |
|---|----------------------------|

### Interbus - S

|   |  |
|---|--|
| N | Network connector socket for cable dia. 7.0 ... 8.5 mm |
| O | Network connector socket for cable dia. 8.5 ... 10 mm  |
| A | Pair of bus plugs for remote bus                       |
| B | Pair of bus plugs for remote installation bus          |
| C | Screw-on cover for last user device                    |

### Sinec L 2 DP

|   |  |
|---|--|
| P | Network connector socket for cable dia. 7.0 ... 8.5 mm   |
| Q | Network connector socket for cable dia. 8.5 ... 10 mm  |
| L | Pair of bus plugs  |
| G | T coupler and screw-on cover   |
| D | Screw-on cover for last bus user device with terminating resistor                              |
| F | Software (type file) on 3 1/2" diskette  |
| Z | Adapter cable for programming of station address with Siemens ET 200-handheld programming unit |

**Example of order: ISO-1-12-I-SBH:2,2P,2PQ,1,1P,5,6,6,7,0,2,2 + N ...**

ISO size   Stations   E-box   Factory standard   Manual override   Equipment   Accessories

## Separator stud

### Description

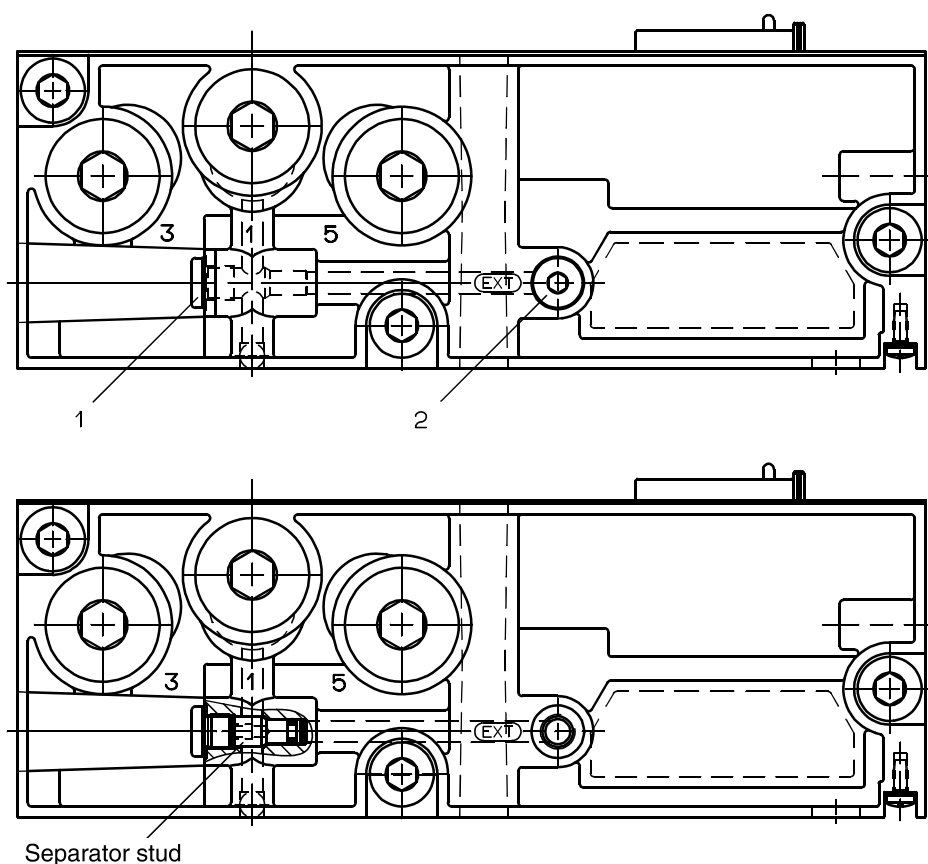
The standard version of the valve carrier system is designed for internal fluid. The separator stud can be used to adapt the valve terminal for external pilot air.

#### Procedure for fitting:

- Unscrew the screw plug, item 1
- Press the separator stud (complete stud Cat. No. **0544600**) into the bore
- Re-fit the screw plug, item 1
- Remove the screw plug, item 2, and connect up the external pilot air

#### Removing the separator stud:

Screw a bolt M4 - 25 into the separator stud and use this to pull the stud out.

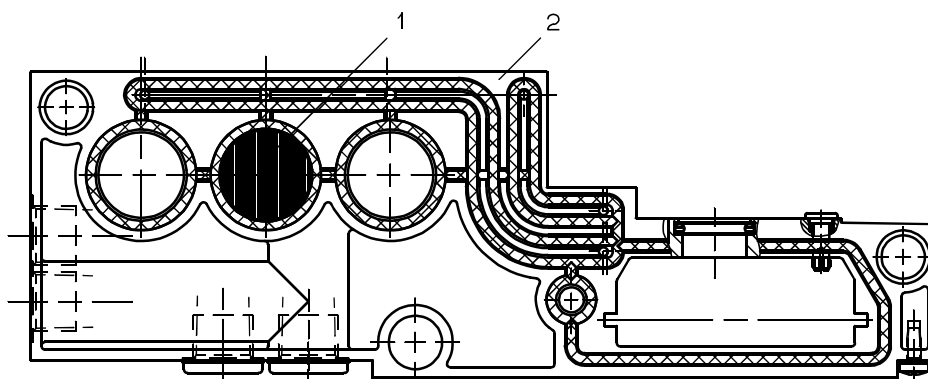


## Separator disc

### Description

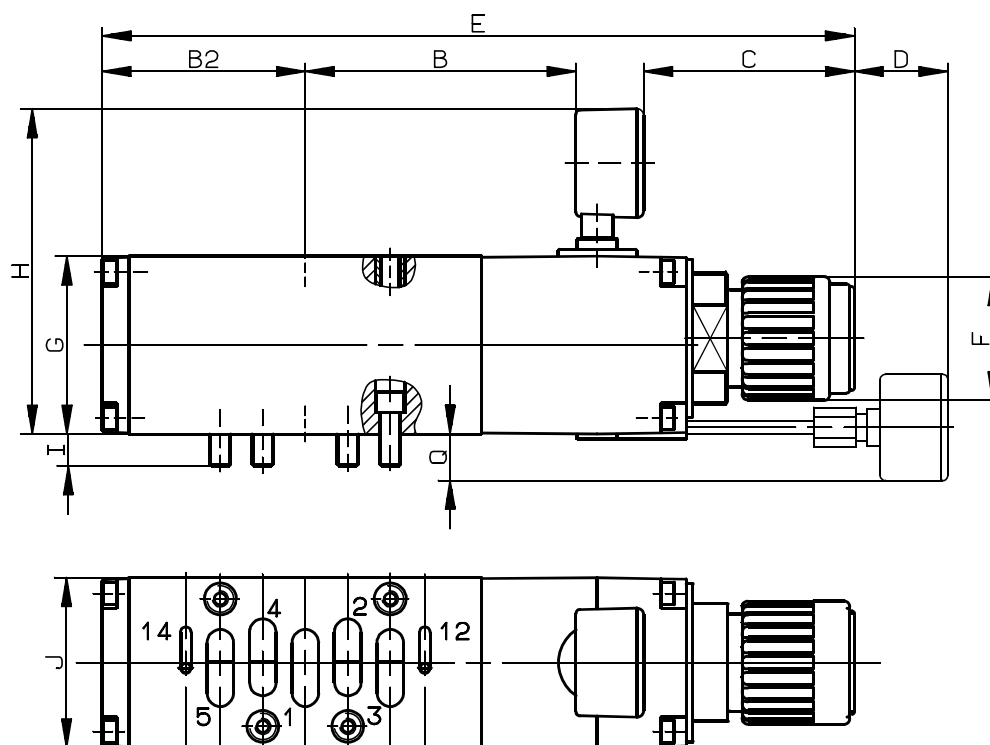
The valve carrier system enables two different supply pressures to be used. In order to do this, a separator disc (item 1) must be inserted at the appropriate place in the P duct (duct 1) of the interconnection plate (item 2).

If a large volume of exhaust air is discharged by a load device, the separator disc can be used to isolate the exhaust air zone in question.



## Pressure regulators

0.5 to 12 bar

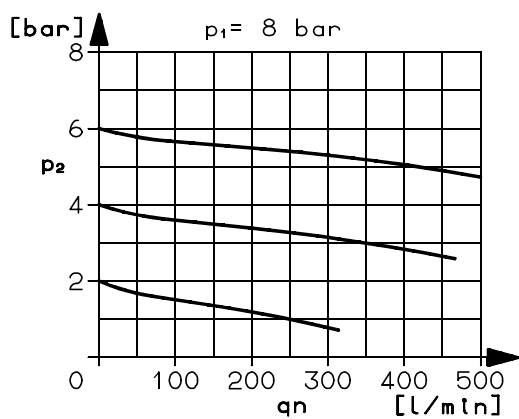


**Dimensional table** [mm]

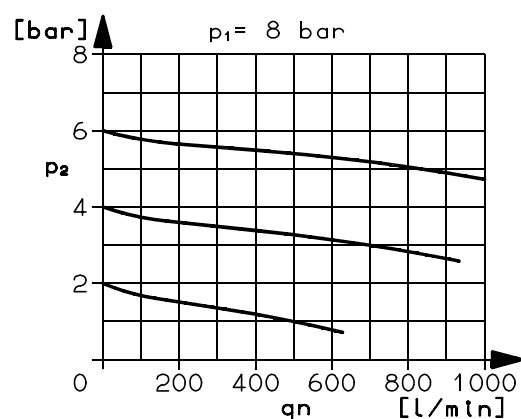
| Symbol                 | ISO size | B  | B2   | C    | D  | E   | F Dia. | G  | H     | I  | J  | Q  |
|------------------------|----------|----|------|------|----|-----|--------|----|-------|----|----|----|
| <p>14 5 4 1 2 3 12</p> | 1        | —  | 52.5 | —    | 34 | 194 | 27     | 45 | —     | 10 | 42 | 17 |
|                        | 2        | 82 | 76.5 | 74.5 | —  | 256 | 38     | 60 | 115.5 | 12 | 54 | —  |

## Characteristic curves

Flow diagram ISO size 1

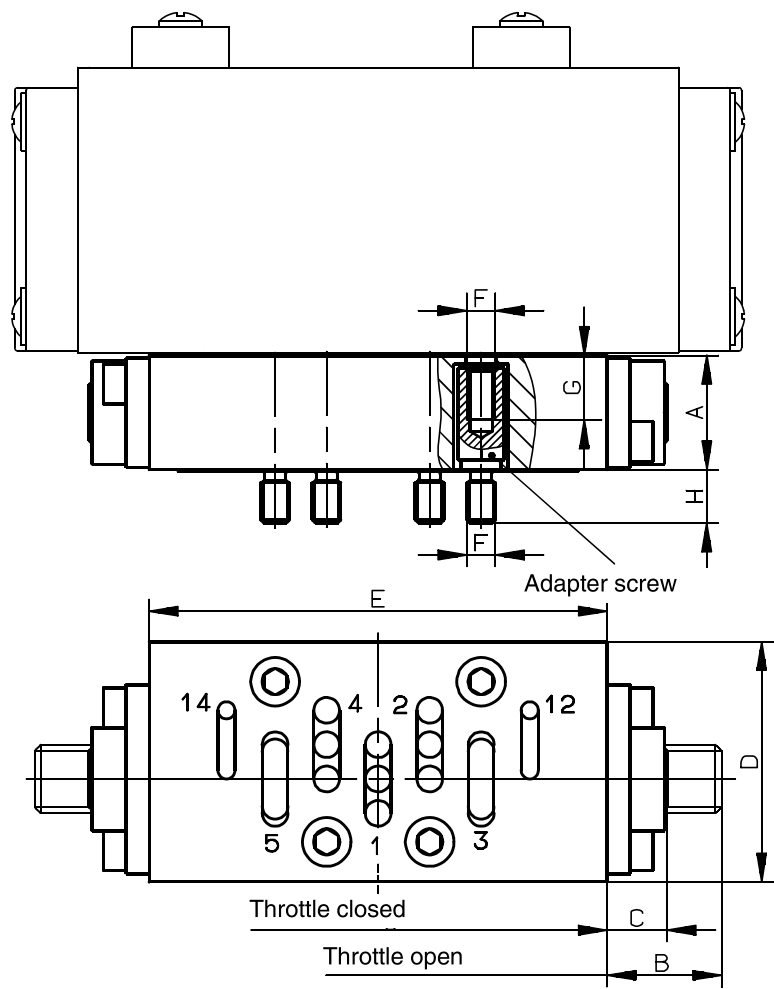


Flow diagram ISO size 2

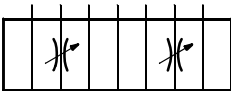


**Throttle sub-base**

for speed control

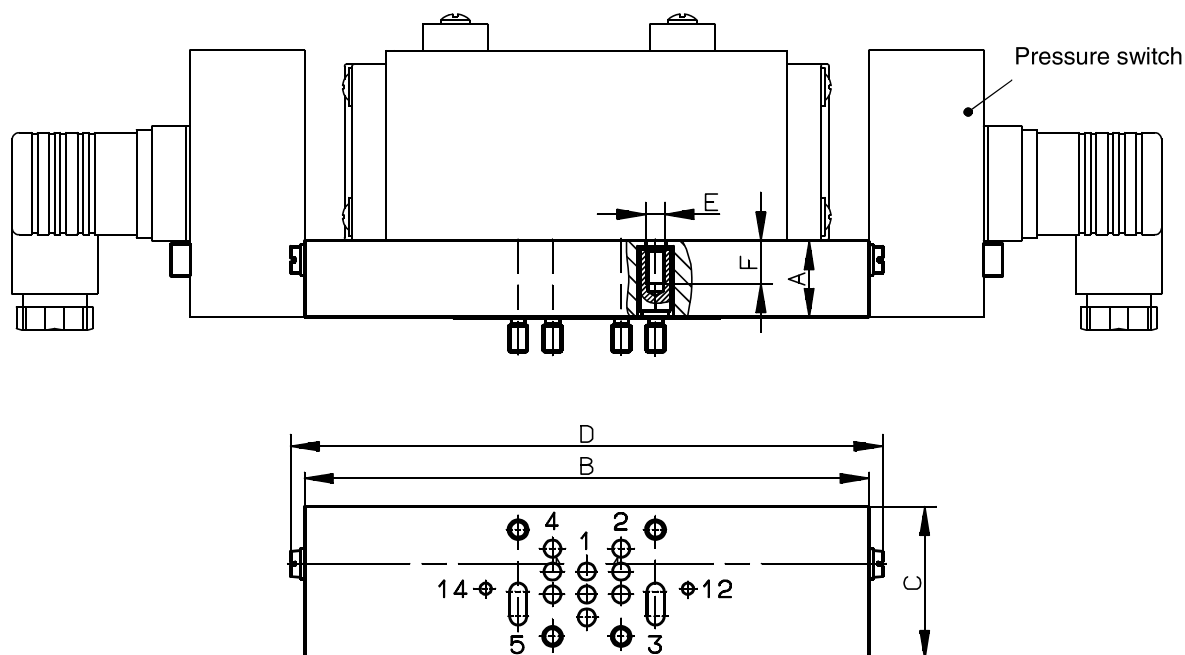


**Dimensional table** [mm]

| Symbol   | ISO size | A  | B  | C    | D  | E   | F  | G  | H |
|--|----------|----|----|------|----|-----|----|----|---|
| <br>14 5 4 1 2 3 12 | 1        | 20 | 20 | 10.5 | 42 | 80  | M5 | 11 | 9 |
|  | 2        | 30 | 30 | 19.5 | 55 | 100 | M6 | 12 | 9 |

## Pressure monitoring Adapter plate for pressure switch

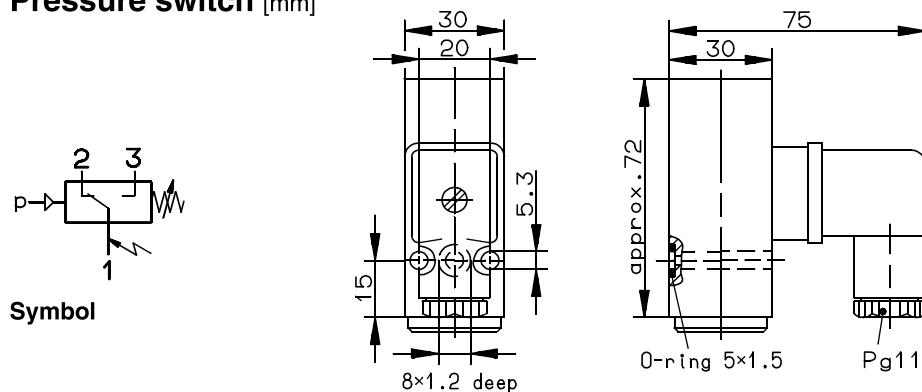
Pressure monitoring on one or both sides



**Dimensional table** [mm]

| Symbol | ISO size | A  | B   | C  | D   | E   | F  |
|--------|----------|----|-----|----|-----|-----|----|
|        | 1        | 20 | 148 | 40 | 155 | M 5 | 11 |
|        | 2        | 20 | 150 | 55 | 157 | M 6 | 12 |

**Pressure switch** [mm]

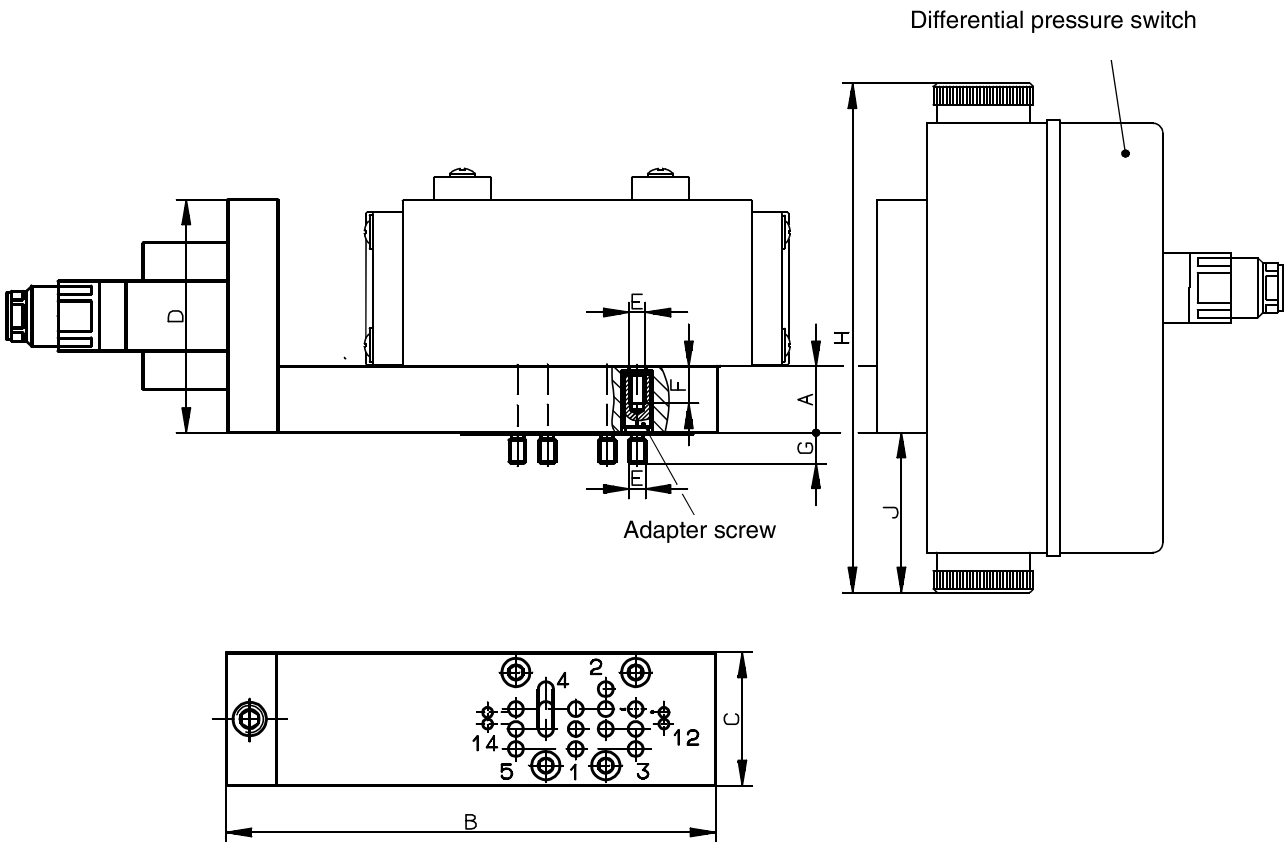


**Parameters** (fixed switching pressure difference)

| Differential pressure range<br>$p_{VU \min} \dots p_{VU \max}$<br>(VDI 3283)<br>[bar] | Switching pressure difference [bar] |                           | Operating pressure range<br>[bar] | Max. value<br>[bar] | Switching time<br>[1/min] | Pressure sensor materials |      | Pressure connection | Weight<br>[kg] |
|---|-------------------------------------|---------------------------|-----------------------------------|---------------------|---------------------------|---------------------------|------|---------------------|----------------|
|   | at beginning of switching range     | at end of switching range |                                   |                     |                           | Body                      | Seal |                     |                |
| 1 ... 16  | 0.6                                 | 2.0                       | 1.5 ... 12                        | 80                  | 100                       | AL                        | NBR  | For flange mounting | 0.2            |

**Pressure monitoring**  
**Adapter plate for pressure switch**

Monitoring of pressure difference at cylinder piston



**Dimensional table** [mm]

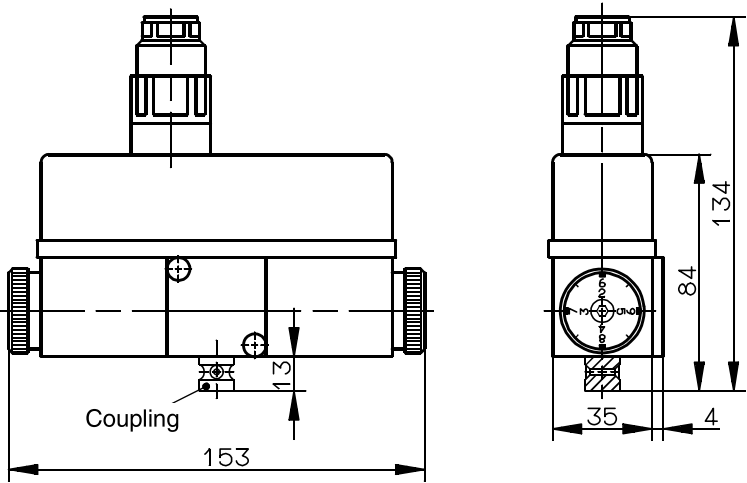
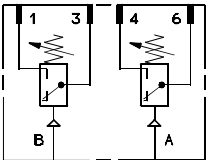
| Symbol | ISO size | A  | B   | C  | D  | E  | F  | G | H  | J   |
|--------|----------|----|-----|----|----|----|----|---|----|-----|
|        | 1        | 20 | 167 | 40 | 70 | M5 | 11 | 9 | 48 | 153 |
|        | 2        | 20 | 167 | 55 | 70 | M6 | 12 | 9 | 48 | 153 |

Differential pressure switch

Dimensional drawings [mm]

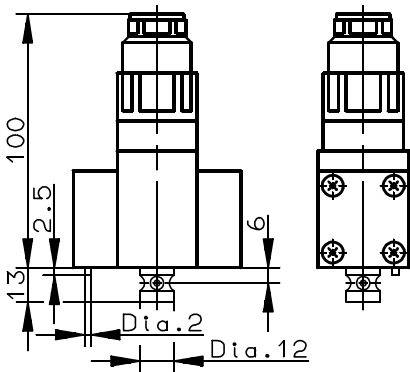
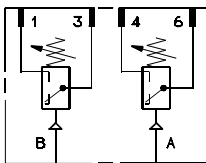
01

Symbol



02

Symbol



For detailed technical data on pressure switches and differential pressure switches, see Publication 7502193, Catalog Register P 19.

Parameters (fixed switching pressure difference)

| ISO size   | HERION Cat. No. | Differential pressure range<br>$p_{VU \min} \dots p_{VO \max}$<br>(VDI 3283)<br>[bar] | Switching pressure difference               |                                       | Operating pressure range<br>[bar] | Limit value<br>[bar] | Switching time<br>[1/min] | Pressure sensor materials |      | Pressure connection | Dimensional drawing |                |
|------------|-----------------|---|---|---------------------------------------|-----------------------------------|----------------------|---------------------------|---------------------------|------|---------------------|---------------------|----------------|
|            |                 |   | at beginning of switching of range<br>[bar] | at end of switching of range<br>[bar] |                                   |                      |                           | Body                      | Seal |                     | No.                 | Weight<br>[kg] |
| 1, 2 and 3 | 9950517         | 2.0 ... 10 <sup>1)</sup>  | 0.6   | 2                                     | 1.5 ... 12                        | 20                   | 40                        | Al                        | AU   | Flange              | 01                  | 0.8            |
| 1, 2 and 3 | 9950518         | 2.5 ... 4.5 <sup>1)</sup>   | 0.6   | 0.9                                   | 2.0 ... 10                        | 20                   | 40                        | Al                        | AU   | Flange              | 02                  | 0.25           |

<sup>1)</sup> Factory-adjusted to  $p_{VO} < 3.8$  bar

## Further information on ISO-type directional control valves

| Model                                  | Actuation       | ISO size      | Nominal size     | Register | Publication    |
|--|-----------------|---------------|------------------|----------|----------------|
| 5/2 and 5/3 directional control valves | Pneumatic       | 1, 2, 3 and 4 | 7, 10, 15 and 21 | 8        | <b>7503097</b> |
| 5/2 and 5/3 directional control valves | Electromagnetic | 1, 2, 3 and 4 | 7, 10, 15 and 21 | 11       | <b>7503043</b> |

## Valves according to specifications of the automotive industry (on request)

Electromagnetically or pneumatically operated, ported to DIN ISO 5599

| Model        | Specification/Firm                   | ISO-size      | Nominal size     | Register | Publication    |
|--------------|--------------------------------------|---------------|------------------|----------|----------------|
| 5-way valves | ADAM OPEL AG                         | 1, 3 and 4    | 7, 15 and 21     | –        | <b>7502521</b> |
| 5-way valves | BMW – BAYERISCHE<br>MOTOREN-WERKE AG | 1, 2 and 3    | 7, 10 and 15     | –        | <b>7501706</b> |
| 5-way valves | FORD                                 | 1, 2, 3 and 4 | 7, 10, 15 and 21 | –        | <b>7501620</b> |
| 5-way valves | Mercedes-Benz AG                     | 1, 3 and 4    | 7, 15 and 21     | –        | <b>7501691</b> |
| 5-way valves | Volkswagen AG                        | 1 and 3       | 7 and 15         | –        | <b>7501693</b> |

## Further valve terminals with field bus interfaces or multi-pin plug connection

| Model                                  | Actuation       | Line connection                               | Flow rate approx.<br>Q <sub>N</sub> [l/min] | Register | Publication    |
|--|-----------------|---|---|----------|----------------|
| 5/2 and 5/3 directional control valves | Electromagnetic | G 1/8 or plug-in connection for hose dia. 8/6 | 1000  | 6        | <b>7503034</b> |