**MANNESMANN REXROTH**

# Multi-station manifold blocks
# Type HSR 04, Series 1X

**Size 4** | **up to 210 bar**

**RE**
**48 102/12.95**
**Replaces: 09.92**

Multi-station manifolds form the basis of complete control systems in a vertical stacking configuration.

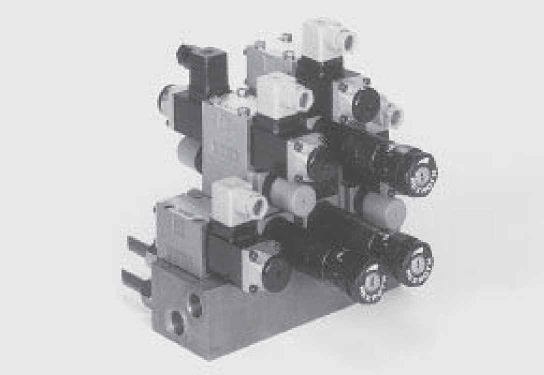
Very compact hydraulic circuits may be built-up on each axis, using vertically stacked sandwich plate valves in combination with a size 4 directional valve.

All circuits have a common pressure and tank port which are positioned on each end of the manifold.

Each control circuit has separate actuator ports A and B, which can be on the side (model C) or on the underside (model D) as required.

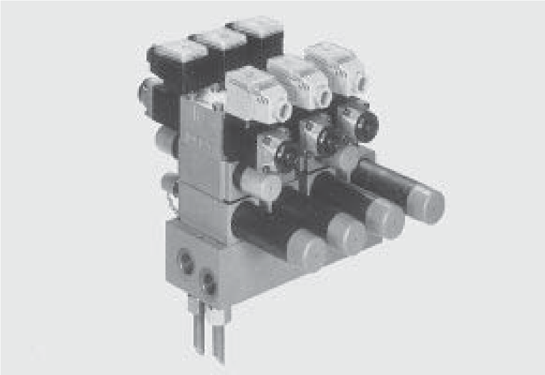
The following are available as vertical stacking elements:

- Pressure reducing valve ZDR to RE 26 545
- Pressure relief valve ZDB to RE 25 720
- Double check valve Z2S to RE 21 540
- Check valve Z1S to RE 21 523
- Double throttle/check valve Z2FS to RE 27 498
- Directional valve type WE 4 to RE 23 160



K 4949-1

Multi-station manifold block for 4 control circuits in a vertical stacking configuration
Actuator ports on side



K 4949-9

Multi-station manifold block for 4 control circuits in a vertical stacking configuration
Actuator ports on underside

## Ordering details – manifold without built-on valves

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Manifold | | HSR | 04– | | ⁄ 01 | | * |

Further details in clear text

**C =** Actuator ports on side
**D =** Actuator ports on underside

**01 =** Pipe threads to ISO 228, part 1

No. of control circuit stations in vertical a stacking configuration
For 2 controls **= 2**
For 3 controls **= 3**
For 4 controls **= 4**
For 5 controls **= 5**
For 6 controls **= 6**
For 7 controls **= 7**
For 8 controls **= 8**

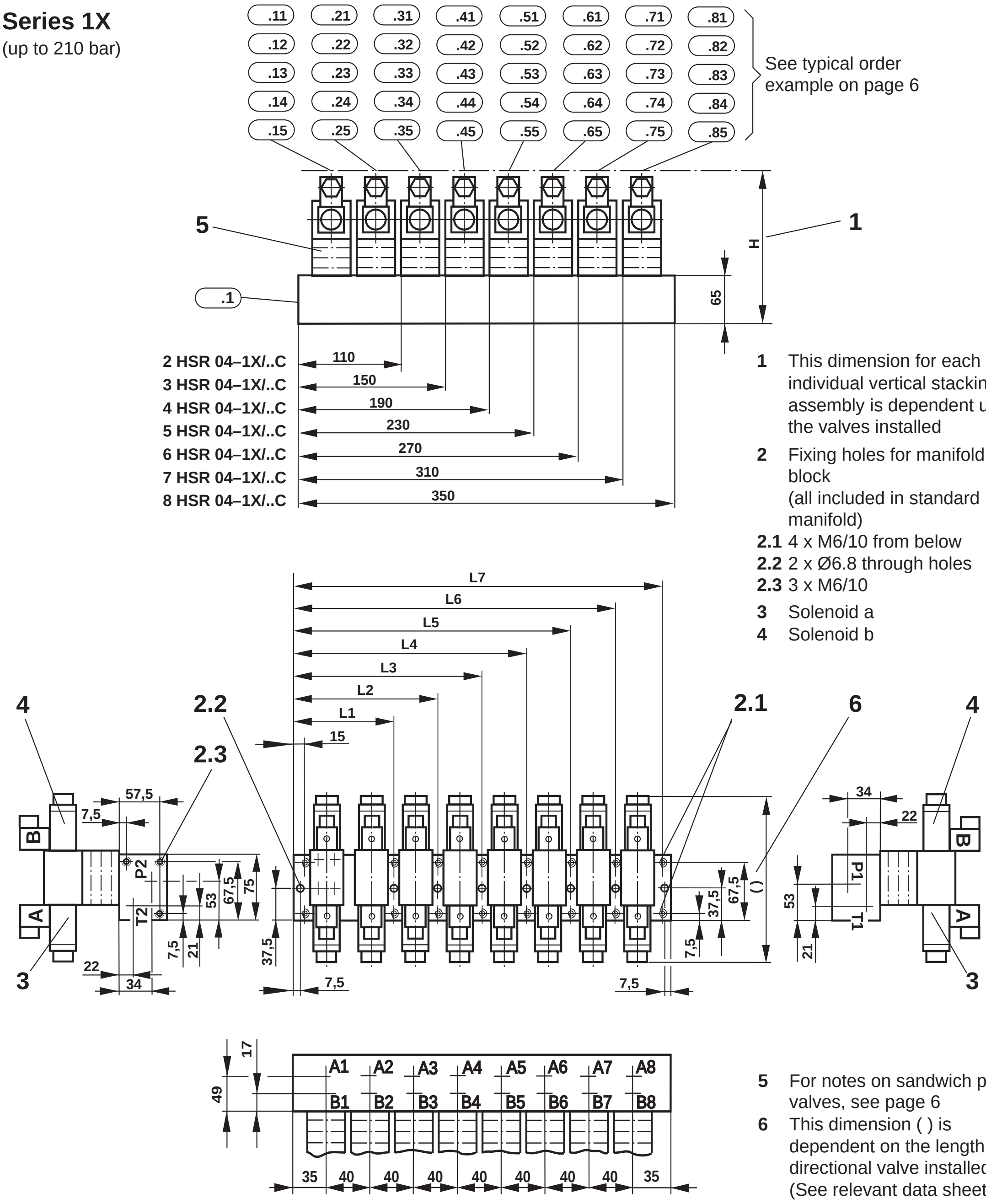
**Up to 210 bar**
Series 10 to 19 **= 1X**
(10 to 19: unchanged installation and connection dimensions)

**To order a multi-station manifold block with built-on valves, see page 6**

RE 48 102/09.92

## **Unit dimensions:** acutator ports on side "C" (Dimensions in mm)

### Series 1X
(up to 210 bar)



1 This dimension for each individual vertical stacking assembly is dependent upon the valves installed

2 Fixing holes for manifold block
(all included in standard manifold)

**2.1** 4 x M6/10 from below

**2.2** 2 x Ø6.8 through holes

**2.3** 3 x M6/10

3 Solenoid a

4 Solenoid b

5 For notes on sandwich plate valves, see page 6

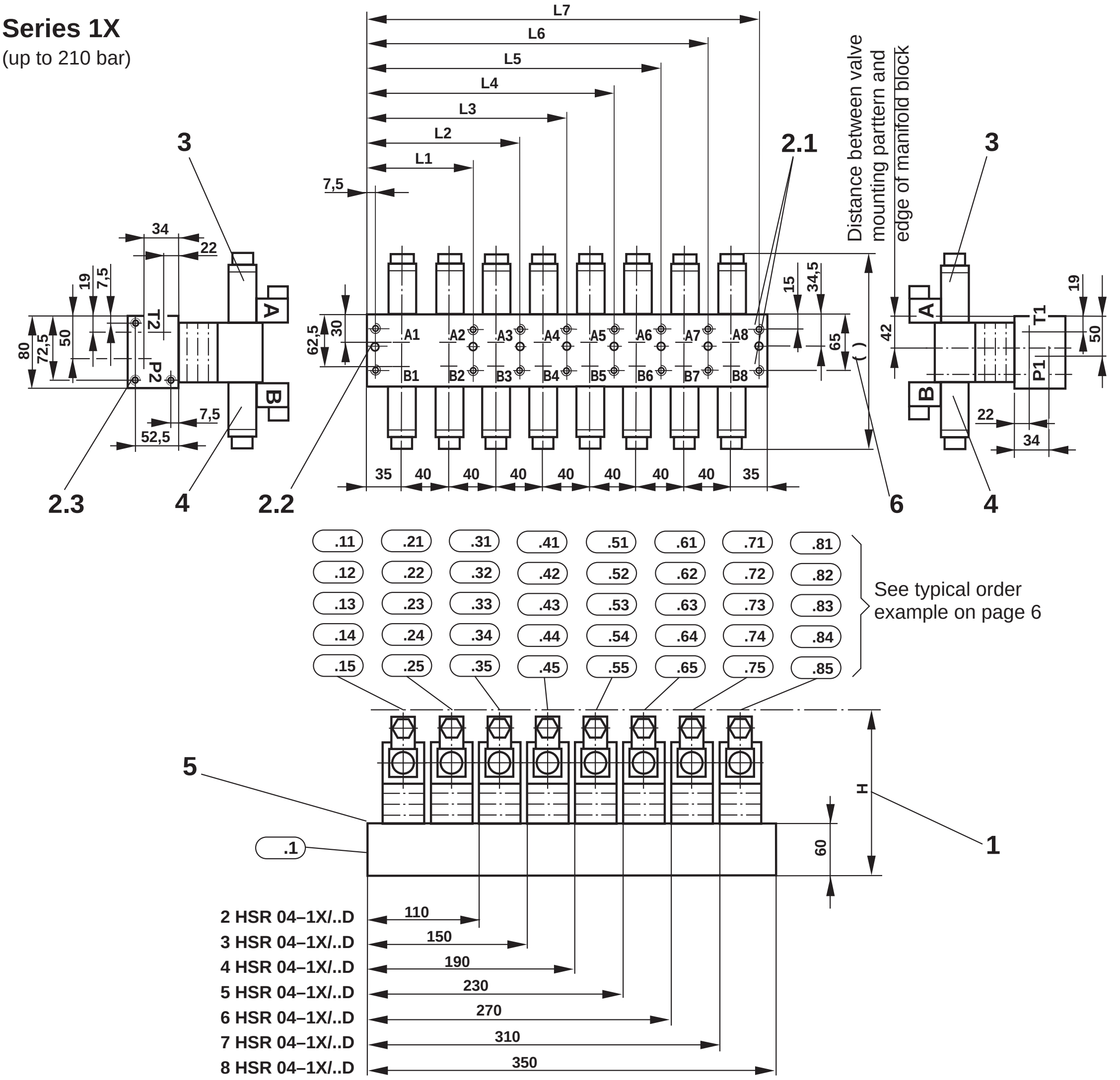
6 This dimension ( ) is dependent on the length of directional valve installed (See relevant data sheet)

| | | |
|---|---|---|
| Thread type | Pipe threads to ISO 228, part 1 | |
| Port | A1..A8; B1..B8 | P1, P2, T1, T2 |
| Thread - Ø | G 1/4 | G 3/8 |
| Thread depth | 12 | 12 |
| Spot face - Ø | 25 | 28 |
| Spot face depth | 1 | 1 |

| Manifold block | L1 | L2 | L3 | L4 | L5 | L6 | L7 |
|---|---|---|---|---|---|---|---|
| 2station | 95 | | | | | | |
| 3station | | 135 | | | | | |
| 4station | | | 175 | | | | |
| 5station | | | | 215 | | | |
| 6station | | | | | 255 | | |
| 7station | | | | | | 295 | |
| 8station | | | | | | | 335 |

## **Unit dimensions:** actuator ports on underside "D" (Dimensions in mm)

**Series 1X**
(up to 210 bar)



**1** This dimension for each individual vertical stacking assembly is dependent upon the valves installed

**2** Fixing holes for manifold block (all included in standard manifold)

**2.1** 4 x M6;10 from underside

**2.2** 2 x Ø6.8 through holes

**2.3** 3 x M6;10

**3** Solenoid a

**4** Solenoid b

**5** For notes on sandwich plate valves, see page 6

**6** This dimension ( ) is dependent on the length of directional valve installed (See relevant data sheet)

| Manifold block | L1 | L2 | L3 | L4 | L5 | L6 | L7 |
|---|---|---|---|---|---|---|---|
| 2 station | 102.5 | | | | | | |
| 3 station | | 142.5 | | | | | |
| 4 station | | | 182.5 | | | | |
| 5 station | | | | 222.5 | | | |
| 6 station | | | | | 262.5 | | |
| 7 station | | | | | | 302.5 | |
| 8 station | | | | | | | 342.5 |

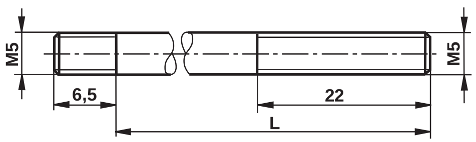
| Thread type | Pipe threads to ISO 228, part 1 | |
|---|---|---|
| Port | A1..A8; B1..B8 | P1, P2, T1, T2 |
| Thread - Ø | G 1/4 | G 3/8 |
| Thread depth | 12 | 12 |
| Spot face - Ø | 25 | 28 |
| Spot face depth | 1 | 1 |

## **Fixing screws and permissible operating pressure** related to the values fitted

**Screw selection table for vertical stacking assembly in conjunction with directional valve size 4:**

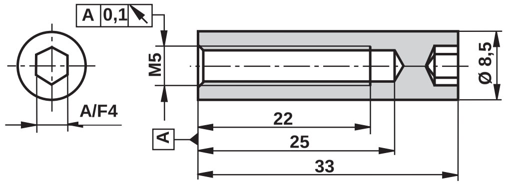
| **Pressure reducing valve** (clamp length 30 mm) | **Pressure relief valve** (clamp length 30 mm) | **Double check valve** (clamp length 30 mm) | **Check valve** (clamp length 30 mm) | **Double throttle/ check valve** (clamp length 30 mm) | **S.H.C.S. DIN 912 $M_A$ = 8,9 Nm** | **Studs DIN 939 $M_A$ = 8,9 Nm** | **Tensile strength** | **Order No.** | **Operating pressure $p_{max}$ in bar** |
|---|---|---|---|---|---|---|---|---|---|
| ZDR 4 D..-1X/... | | | | | M5 x 65 | | 10.9 | 017010 | 210 |
| | Z.DB 4 V...-1X/... | | | | M5 x 65 | | 10.9 | 017010 | 210 |
| | | Z2S 4 ..-1X/... | | | M5 x 65 | | 10.9 | 017010 | 210 |
| | | | Z1S 4 ..-1X/... | | M5 x 65 | | 10.9 | 017010 | 210 |
| | | | | Z2FS 4 -1X/... | M5 x 65 | | 10.9 | 017010 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | | | | M5 x 95 | | 10.9 | 005260 | 210 |
| ZDR 4 D..-1X/... | | Z2S 4 ..-1X/... | | | M5 x 95 | | 10.9 | 005260 | 210 |
| ZDR 4 D..-1X/... | | | Z1S 4 ..-1X/... | | M5 x 95 | | 10.9 | 005260 | 210 |
| ZDR 4 D..-1X/... | | | | Z2FS 4 -1X/... | M5 x 95 | | 10.9 | 005260 | 210 |
| | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | | | M5 x 95 | | 10.9 | 005260 | 210 |
| | Z.DB 4 V ...-1X/... | | Z1S 4 ..-1X/... | | M5 x 95 | | 10.9 | 005260 | 210 |
| | Z.DB 4 V ...-1X/... | | | Z2FS 4 -1X/... | M5 x 95 | | 10.9 | 005260 | 210 |
| | | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | | M5 x 95 | | 10.9 | 005260 | 210 |
| | | Z2S 4 ..-1X/... | | Z2FS 4 -1X/... | M5 x 95 | | 10.9 | 005260 | 210 |
| | | | Z1S 4 ..-1X/... | Z2FS 4 -1X/... | M5 x 95 | | 10.9 | 005260 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | | | M5 x 130 | | 10.9 | 014920 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | | Z1S 4 ..-1X/... | | M5 x 130 | | 10.9 | 014920 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | | | Z2FS 4 -1X/... | M5 x 130 | | 10.9 | 014920 | 210 |
| ZDR 4 D..-1X/... | | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | | M5 x 130 | | 10.9 | 014920 | 210 |
| ZDR 4 D..-1X/... | | Z2S 4 ..-1X/... | | Z2FS 4 -1X/... | M5 x 130 | | 10.9 | 014920 | 210 |
| ZDR 4 D..-1X/... | | | Z1S 4 ..-1X/... | Z2FS 4 -1X/... | M5 x 130 | | 10.9 | 014920 | 210 |
| | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | | M5 x 130 | | 10.9 | 014920 | 210 |
| | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | | Z2FS 4 -1X/... | M5 x 130 | | 10.9 | 014920 | 210 |
| | Z.DB 4 V ...-1X/... | | Z1S 4 ..-1X/... | Z2FS 4 -1X/... | M5 x 130 | | 10.9 | 014920 | 210 |
| | | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | Z2FS 4 -1X/... | M5 x 130 | | 10.9 | 014920 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | | | MFO x 160 | 10.9 | 001120 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | | Z2FS 4 -1X/... | | MFO x 160 | 10.9 | 001120 | 210 |
| | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | Z2FS 4 -1X/... | | MFO x 160 | 10.9 | 001120 | 210 |
| ZDR 4 D..-1X/... | Z.DB 4 V ...-1X/... | Z2S 4 ..-1X/... | Z1S 4 ..-1X/... | Z2FS 4 -1X/... | | MFO x 190 | 10.9 | 015578 | 210 |
| Directional valve 4 WE 4..-1X + manifold block HSR 04 | | | | | M5 x 35 | | 10.9 | 003189 | 210 |

**Stud M5 FO**
**DIN 939,**
**tensile strength 10.9**



**L** see table

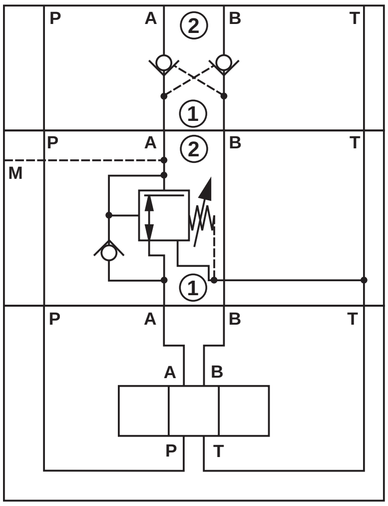
**Nut M5 A3C**
**RN 115.43-C45V,**
**Order No. 176106**



## Project design notes

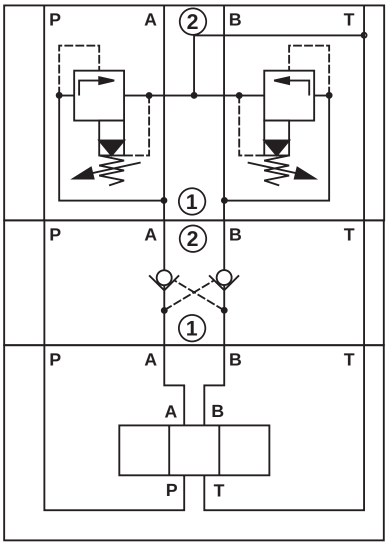
**Pressure reducing valve combined with double check valve**

The pressure reducing valve ZDR..DA (with pressure reduction in port A) **must** always be fitted between the directional valve and double check valve Z2S... Leak-free closure of the system cannot otherwise be ensured.



**Pressure relief valve combined with double check valve**

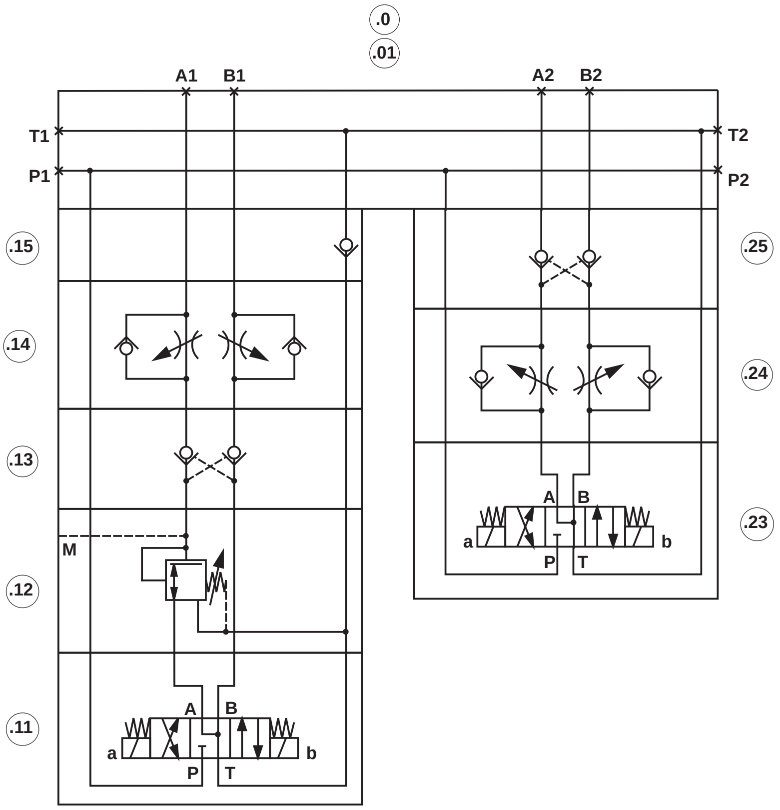
Leak-free closure of the actuator is **not** possible, if a pressure relief valve, type ZDB../Z2DB.. effective in port A and/or B is used with a double check valve.



**Note:**
The circuits shown are only examples.
These project design notes also apply to valves of similar design and function.

## Example of the ordering code necessary for a manifold block assembly

**Example:** 2 station manifold block to hydraulic circuit HS-115-B234



| Item | Qty. | Unit description | Designation | Order No. |
|---|---|---|---|---|
| .0 | 1 | Manifold block assembly | 2HSR 04 C1X/115B234… | 1) |
| .01 | 1 | Manifold block | MANIFOLD 2HSR 04 -15/01 C | 810793 |
| .11 | 1 | Directional valve | 4WE 4 J1X/AG24N9K4 | 522016 |
| .12 | 1 | Pressure reducing valve | ZDR 4 DA2-1X/150YM | 563069 |
| .13 | 1 | Double check valve | Z2S 4 -2-1X/V | 526877 |
| .14 | 1 | Double throttle/check valve | Z2FS 4 -2-1X/2QV | 526879 |
| .15 | 1 | Check valve | Z1S 4 T1-1X/V | 526883 |
|  | 4 | Stud | M5 FO x 160-10.9 DIN 939 | 001120 |
|  | 4 | Hex. nut | M5 -A3C RN 145.15-C45 | 009433 |
| .23 | 1 | Directional valve | 4WE 4 J1X/AG24N9K4 | 522016 |
| .24 | 1 | Double throttle/check valve | Z2FS 4 -2-1X/2QV | 526879 |
| .25 | 1 | Double check valve | Z2S 4 -2-1X/V | 526877 |
|  | 4 | S.H.C.S. | M5 x 95-10.9 DIN 912 | 005260 |

[1] Order No. is defined by the factory !