

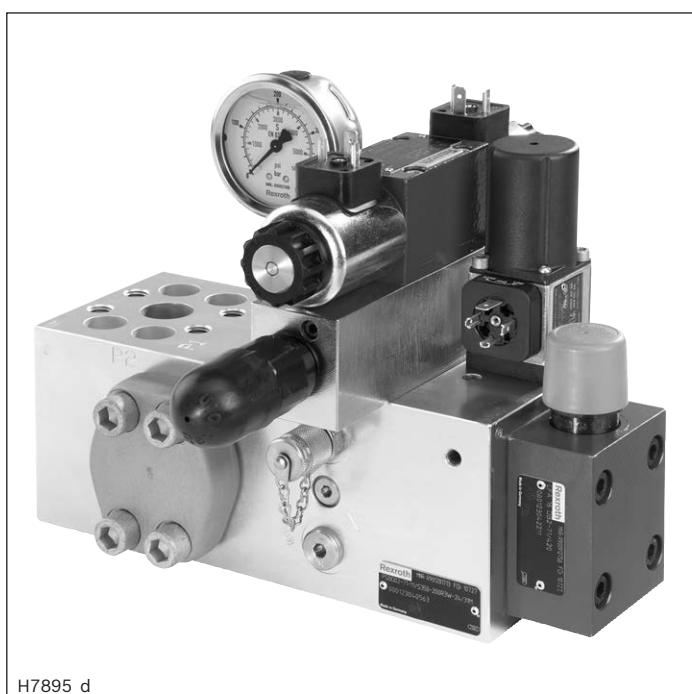
## Pump manifold block

Type PSBD02

**RE 62300**

Edition: 2016-08

Replaces: 2012-04



H7895\_d

- ▶ Sizes 40, 71, 180, 355 for axial piston pump A4VSO
- ▶ Component series 1X
- ▶ Maximum operating pressure 350 bar
- ▶ Maximum flow 600 l/min

### Features

- ▶ Combination of maximum pressure limitation, depressurized start-up and/or circulation at zero pressure and pressure measurement
- ▶ Attachment of a pressure switch, a second pressure rating and a proportional servo valve possible
- ▶ Influencing of the pump controller
- ▶ Direct attachment to axial piston pumps A4VSO NG40 to 355
- ▶ max. operating pressure 350 bar
- ▶ Sizes 40, 71, 180 and 355
- ▶ Maximum flow 600 liters/minute

### Contents

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**Ordering code****of the pump manifold block**

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
PSB	D	02	-	-	1X	/					-	/	31	&

**Device type**

01	Pump manifold block	PSB
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**Design principle**

02	Direct attachment on pump	D
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**Circuit variation**

03	Variant 02	02
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**(Block) size**

04	for A4VSO 40	40
	for A4VSO 71	71
	for A4VSO 125, 180	180
	for A4VSO 250, 355	355

**Component series**

05	10 to 19 (10 to 19: unchanged installation and connection dimensions)	1X
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**Adjustment type of the pressure valve**

06	Lockable rotary knob	A
	Rotary knob	H
	Hexagon with protective cap	S

**Pressure rating 1**

07	Set pressure up to 200 bar	200
	Set pressure up to 315 bar	315
	Set pressure up to 350 bar	350

**Pressure rating 2**

08	without pressure rating 2	no code
	Set pressure up to 200 bar	200
	Set pressure up to 315 bar	315
	Set pressure up to 350 bar	350

**Controller option for control pump**

09	with DFR1 controller	F
	with DRG, LR2G power controller	G
	with DR, LR2, LR3 controller, MA, EM, HM	R

**Accessories/additional equipment**

10	without accessories	no code
	Pressure gauge	1
	Pressure switch	2
	Pressure gauge and pressure switch	3

**Valve mounting**

11	without valve mounting	no code
	with attached proportional pressure relief valve DBET	E
	with attached directional valve	W

**Ordering code****of the pump manifold block**

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
<b>PSB</b>	<b>D</b>	<b>02</b>	-	-	<b>1X</b>	/	-	-	-	-	-	/	<b>31</b>	<b>&amp;</b>

**Supply voltage**

12	without directional valve	<b>no code</b>
	Direct voltage DC 24 V	<b>24</b>

**Port sizes**

13	SAE connection	<b>31</b>
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**Seal material**

14	NBR seals	<b>M</b>
	FKM seals	<b>V</b>
15	Further details in the plain text	<b>&amp;</b>

**Example of supplementary information:**

with DBETE-6X/315G24K31A1V (material no. R901029969)

**Order example/search term:**

Pump manifold block for direct attachment on pump A4VSO 250 or 355, with circuit variation 02, adjustment type of the pressure valve with hexagon and protective cap, pressure rating 1 = 315 bar, for DRG controller, with pressure gauge, with attached directional valve, direct voltage DC 24 V, SAE connection and NBR seal:

**Material short text:**

**PSBD02-355-1X/S315-G1W-24/31M**

**Material no.:**

**R901118871**

## Standard program

### Selection table controller option "R" (DR, LR2, LR3 controller, MA, EM, HM)

Without accessories

Pressure rating 1	Denomination	Material no.	Installation drawing material no.
315 bar	PSBD02- 40-1X/S315-RW-24/31M	R901180397	R901180720
350 bar	PSBD02- 40-1X/S350-RW-24/31M	R901180401	
315 bar	PSBD02- 71-1X/S315-RW-24/31M	R901180653	R901180722
350 bar	PSBD02- 71-1X/S350-RW-24/31M	R901180655	
315 bar	PSBD02-180-1X/S315-RW-24/31M	R901180676	R901180724
350 bar	PSBD02-180-1X/S350-RW-24/31M	R901180679	
315 bar	PSBD02-355-1X/S315-RW-24/31M	R901118881	R901118252
350 bar	PSBD02-355-1X/S350-RW-24/31M	R901118883	

For more versions see ordering code

### Selection table controller option "F" (DFR controller)

Without accessories

Pressure rating 1	Denomination	Material no.	Installation drawing material no.
315 bar	PSBD02- 40-1X/S315-FW-24/31M	R901180633	R901180718
350 bar	PSBD02- 40-1X/S350-FW-24/31M	R901180634	
315 bar	PSBD02- 71-1X/S315-FW-24/31M	R901180658	R901180721
350 bar	PSBD02- 71-1X/S350-FW-24/31M	R901180659	
315 bar	PSBD02-180-1X/S315-FW-24/31M	R901180688	R901180723
350 bar	PSBD02-180-1X/S350-FW-24/31M	R901180689	
315 bar	PSBD02-355-1X/S315-FW-24/31M	R901118876	R901118254
350 bar	PSBD02-355-1X/S350-FW-24/31M	R901118878	

For more versions see ordering code

### Selection table controller option "G" (DRG, LR2G controller)

Without accessories

Pressure rating 1	Denomination	Material no.	Installation drawing material no.
315 bar	PSBD02-40-1X/S315-GW-24/31M	R901180643	R901178294
350 bar	PSBD02-40-1X/S350-GW-24/31M	R901180645	
315 bar	PSBD02-71-1X/S315-GW-24/31M	R901180663	R901178295
350 bar	PSBD02-71-1X/S350-GW-24/31M	R901180664	
315 bar	PSBD02-180-1X/S315-GW-24/31M	R901180712	R901178296
350 bar	PSBD02-180-1X/S350-GW-24/31M	R901180713	
315 bar	PSBD02-355-1X/S315-GW-24/31M	R901105562	R901118101
350 bar	PSBD02-355-1X/S350-GW-24/31M	R901118873	

For more versions see ordering code

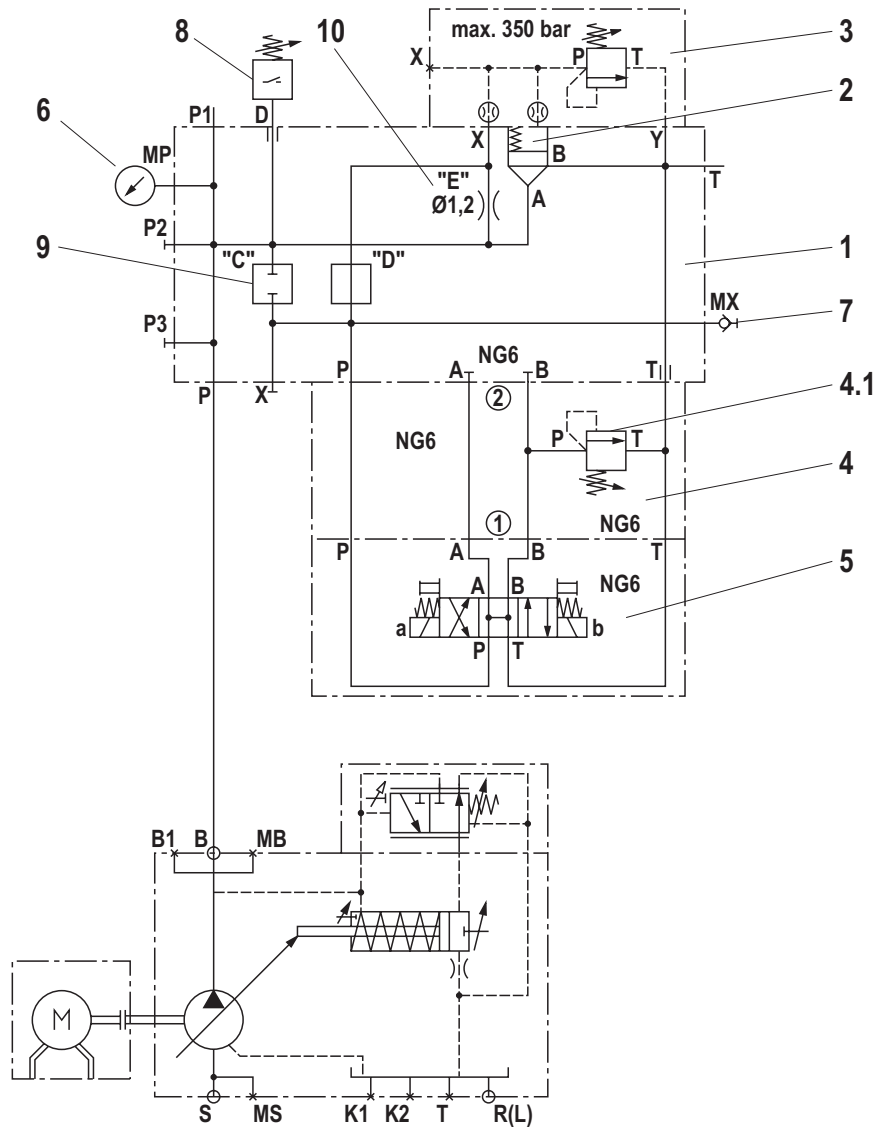
## Circuit diagrams

### 1. Controller option "R" (DR, LR2, LR3 controller, MA, EM, HM)

for fixed displacement pump and variable displacement pump A4VSO with DR controller or LR2 controller, LR3 controller, MA, EM, HM

### Example:

Maximum pressure limitation (first pressure rating), start-up circuit and optional second pressure rating with pressure switch and pressure gauge



- |   |  |
|---|--|
| <p><b>1</b> Plate PSBD02-...-1X/31</p> <p><b>2</b> Pressure relief valve cartridge valve according to data sheet 21050</p> <p><b>3</b> Pressure relief valve control cover (pressure value 1 - maximum pressure) according to data sheet 21050</p> <p><b>4</b> Sandwich plate (optional) according to data sheet 48050</p> <p><b>4.1</b> Pressure relief valve (pressure value 2 - second pressure rating - optional) according to data sheet 25402</p> | <p><b>5</b> Directional valve NG6 according to data sheet 23178</p> <p><b>6</b> Pressure gauge (optional - otherwise threaded coupling) according to data sheet 50205</p> <p><b>7</b> Measuring coupling according to DCCS 11005-11</p> <p><b>8</b> Pressure switch (optional) according to data sheet 50061</p> <p><b>9</b> Plug screw ZN10027-M8X1-SV; material no. <b>R913019129</b></p> <p><b>10</b> Orifice ZN10028-1,2-B-M8X1X8-ST; material no. <b>R913017627</b></p> |
|---|--|

Attached valve types can be seen from the parts list

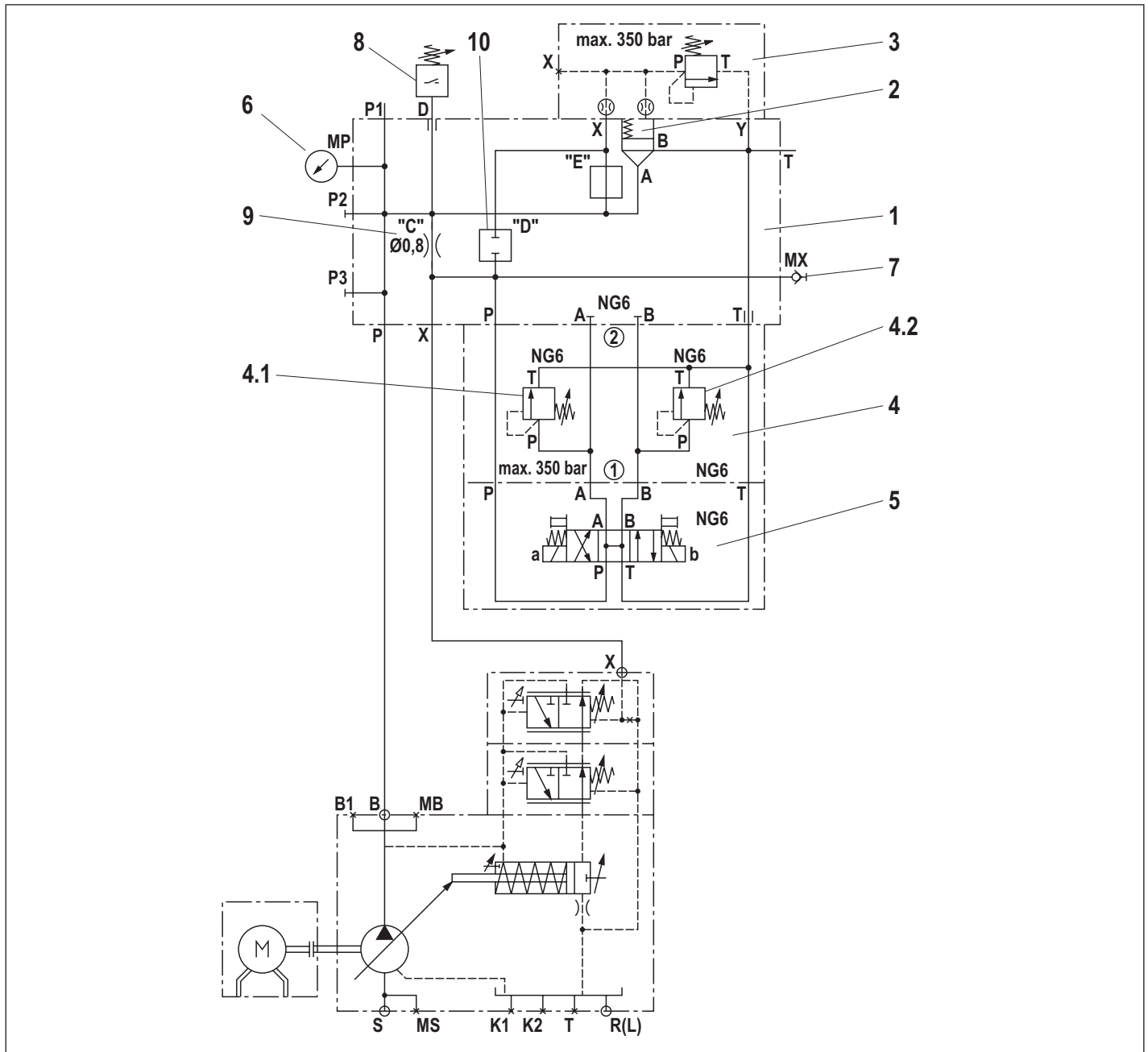
## Circuit diagrams

### 2. Controller option "F" (DFR controller)

for variable displacement pumps A4VSO with DFR1 controller

### Example:

Maximum pressure limitation, start-up circuit, first and optional second pressure rating with pressure switch and pressure gauge.



- |  |   |
|--|---|
| 1 Plate PSBD02-...-1X/31   | 5 Directional valve NG6 according to data sheet 23178                                   |
| 2 Pressure relief valve cartridge valve according to data sheet 21050                  | 6 Pressure gauge (optional - otherwise threaded coupling) according to data sheet 50205 |
| 3 Pressure relief valve control cover (maximum pressure) according to data sheet 21050 | 7 Measuring coupling according to DCCS 11005-11   |
| 4 Sandwich plate according to data sheet 48050   | 8 Pressure switch (optional) according to data sheet 50061                              |
| 4.1 Pressure relief valve (pressure value 1) according to data sheet 25402             | 9 Orifice ZN10028-0,8-B-M8X1X8-ST; material no. <b>R913017614</b>                       |
| 4.2 Pressure relief valve (pressure value 2 optional) according to data sheet 25402    | 10 Plug screw ZN10027-M8X1-SV; material no. <b>R913019129</b>                           |
- Attached valve types can be seen from the parts list

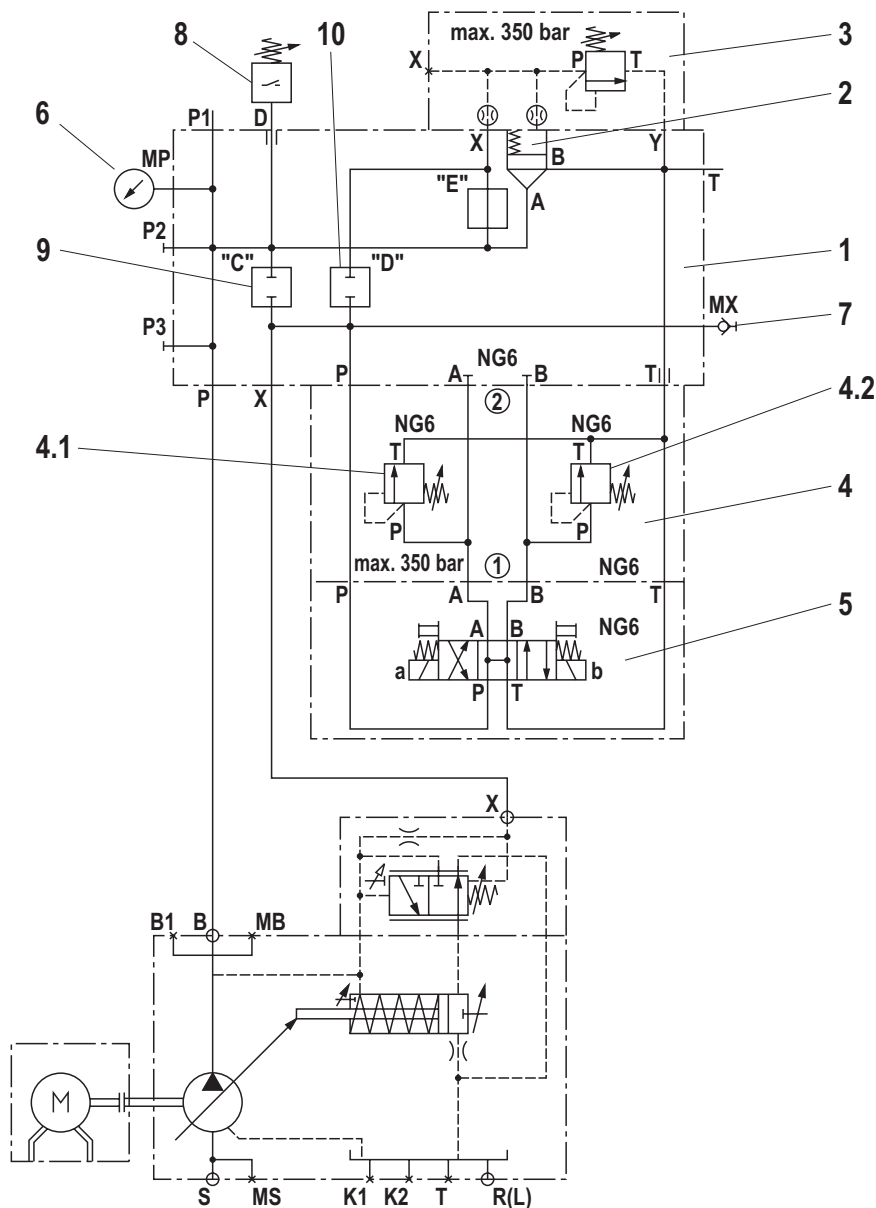
## Circuit diagrams

### 3. Controller option "G" (DRG, LR2G controller)

for variable displacement pumps A4VSO with DRG,  
LR2G power controller with remote controlled pressure  
controller

### Example:

Maximum pressure limitation, start-up circuit, first and  
optional second pressure rating with pressure switch and  
pressure gauge.



- |  |   |
|--|---|
| <p><b>1</b> Plate PSBD02-...-1X/31</p> <p><b>2</b> Pressure relief valve cartridge valve according to data sheet 21050</p> <p><b>3</b> Pressure relief valve control cover (pressure value 1 - maximum pressure) according to data sheet 21050</p> <p><b>4</b> Sandwich plate according to data sheet 48050</p> <p><b>4.1</b> Pressure relief valve (pressure value 1 - maximum pressure) according to data sheet 25402</p> <p><b>4.2</b> Pressure relief valve (pressure value 2 - second pressure rating - optional) according to data sheet 25402</p> | <p><b>5</b> Directional valve NG6 according to data sheet 23178</p> <p><b>6</b> Pressure gauge (optional - otherwise threaded coupling) according to data sheet 50205</p> <p><b>7</b> Measuring coupling according to DCCS 11005-11</p> <p><b>8</b> Pressure switch (optional) according to data sheet 50061</p> <p><b>9</b> Plug screw ZN10027-M8X1-SV; material no. <b>R913019129</b></p> <p><b>10</b> Plug screw ZN10027-M8X1-SV; material no. <b>R913019129</b></p> <p>Attached valve types can be seen from the parts list</p> |
|--|---|

## Function, exploded drawing

The pump manifold blocks basically consist of the valve block (1), the cartridge valve (2) with pilot control valve (3) (according to data sheet 21050) of the pressure relief function and the control valve (5) 4WE6... (according to data sheet 23178). Optionally, a pressure switch (8) type HED 8 (according to data sheet 50061) and a pressure gauge (6) can be attached.

At the block bottom side, the valve block has a P connection (SAE high-pressure series) for the input and a total of 3 connections (SAE high-pressure series) P1, P2 and P3 for the output of the hydraulic fluid as well as one tank port T (SAE standard pressure series).

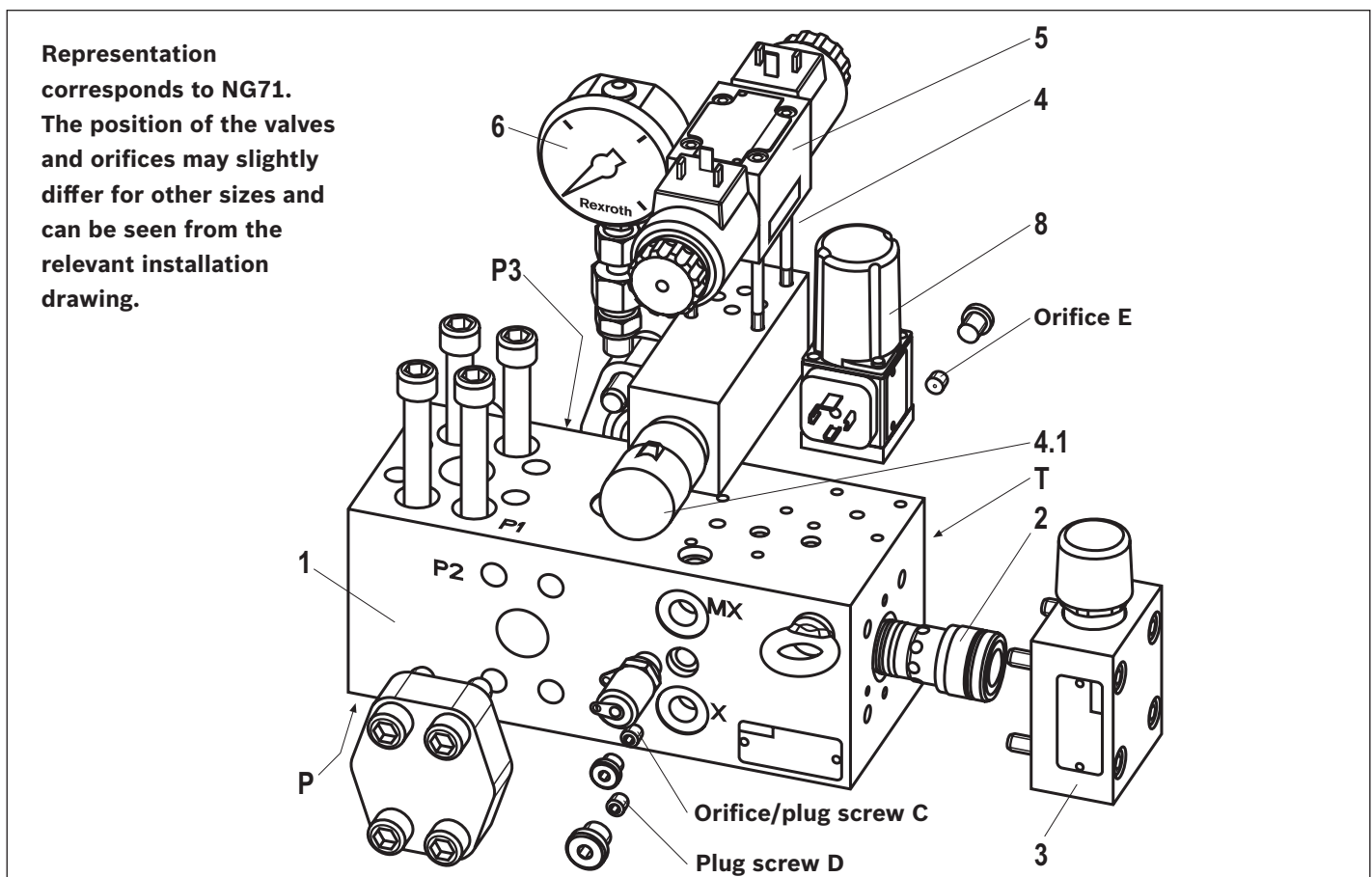
In an internally bored branch, there is the cartridge valve (2) and the pilot control valve (3). Via the open function of the valve, there is a connection to the T port (SAE standard pressure series).

By means of orifice/plug fitting in threads "C", "D", and "E", the pump manifold block can be adjusted to different pump types and controller variants.

In the basic version, the control line of the cartridge valve (2) and the pilot control valve (3) is unloaded to the tank

via the 4WE6HB... (5) control valve (cartridge valve is open, P-T connection is established). If solenoid b of the control valve (5) is connected, the control line of the cartridge valve (2) and the pilot control valve (3) is closed, the pending pressure P-P1-P2-P3 acts on the main spool of the cartridge valve (2); at the same time, the pressure is applied to the pilot control valve (3) via an auxiliary bore. If the pressure in P reaches the set pressure of the pilot control valve (3), the latter is opened. The spring chamber of the cartridge valve (2) is unloaded and due to the hydraulic state of equilibrium, hydraulic fluid flows from P, P1, P2, P3 to channel T, maintaining the set operating pressure. With controller option "F" and "G", this operating pressure must also be set at the controller-influenced pressure relief valve (4.1) of the sandwich plate (4).

Optionally, a second pressure rating can be selected electrically via the sandwich plate (4), via solenoid a of the control valve 4WE6H... (5). However, the set pressure **must** be less than the pressure set at the pilot control valve (3).





**Technical data**

(For applications outside these parameters, please consult us.)

<b>general</b>					
Weight with maximum fitting	NG	40	71	180	355
	kg	23	27	30	40
Installation position	Any				
Ambient temperature range in case of use with the following devices and seals				NBR seal	FKM seal
	°C	HED according to data sheet 50061		-25 ... +50	-20 ... +50
	°C	WE according to data sheet 23178		-30 ... +50	-20 ... +50
If different components are used at the same time, the corresponding limited temperature range applies.	°C	DBET according to data sheet 29162			-20 ... +70
	°C	DBETE according to data sheet 29162			-20 ... +50
Maintenance information: For assembly, commissioning and maintenance of oil hydraulic systems please observe the data sheet 07900!					
<b>hydraulic</b>					
Maximum operating pressure	bar	The maximum operating pressure is determined after selection of the pressure rating. The maximum admissible operating pressure is 350 bar For special versions of the controller option "G" with remote controlled pressure controller, a maximum operating pressure of 400 bar is admissible. This is accordingly documented on the name plate. In these special versions, a cover plate is attached at position 4 or 5 (data sheet 48042) and port X is closed.			
Maximum counter pressure	- with DBET or DBETE	bar	Return flow pressure (port T or Y): separately depressurized to the tank		
Maximum set pressure	- with DBET or DBETE	bar	with pressure rating 200 bar: 200 bar with pressure rating 315 bar: 315 bar with pressure rating 350 bar: 350 bar		
	- with 2-way cartridge valve	bar	with pressure rating 200 bar: 200 bar with pressure rating 315 bar: 315 bar with pressure rating 420 bar: 350 bar		
	- with HED8	bar	with pressure rating 200 bar: 200 bar with pressure rating 350 bar: 350 bar		
Maximum flow	NG	40	71	180	355
	l/min	150	200	400	600
Hydraulic fluid	Mineral oil HLP according to DIN 51524-2, for further information, see data sheet 90220 For other hydraulic fluids, please contact us.				
Hydraulic fluid temperature range	°C	+10 ... +80 The optimum operating temperature of the power unit for operation with mineral oil HLP according to DIN 51524-2 lies between +40 °C and +50 °C. In continuous operation, the operating temperature is not to exceed +70 °C!			
Hydraulic fluid temperature range			for NBR seals		for FKM seals
	- with directional valve	°C	-30 ... +80		-20 ... +50
	- with 2-way cartridge valve	°C	-30 ... +80		-20 ... +80
	- with DBET or DBETE	°C			-20 ... +80
	- with HED8	°C	-25 ... +80		-20 ... +80
If different components are used at the same time, the corresponding limited temperature range applies.					
Viscosity range	- with directional valve	mm <sup>2</sup> /s	2.8 ... 500		
	- with 2-way cartridge valve	mm <sup>2</sup> /s	2.8 ... 380		
	- with DBET or DBETE	mm <sup>2</sup> /s	20 ... 380 (preferably 30 ... 46)		
	- with HED8	mm <sup>2</sup> /s	10 ... 800		
If different components are used at the same time, the corresponding limited viscosity range applies.					

**Technical data**

(For applications outside these parameters, please consult us.)

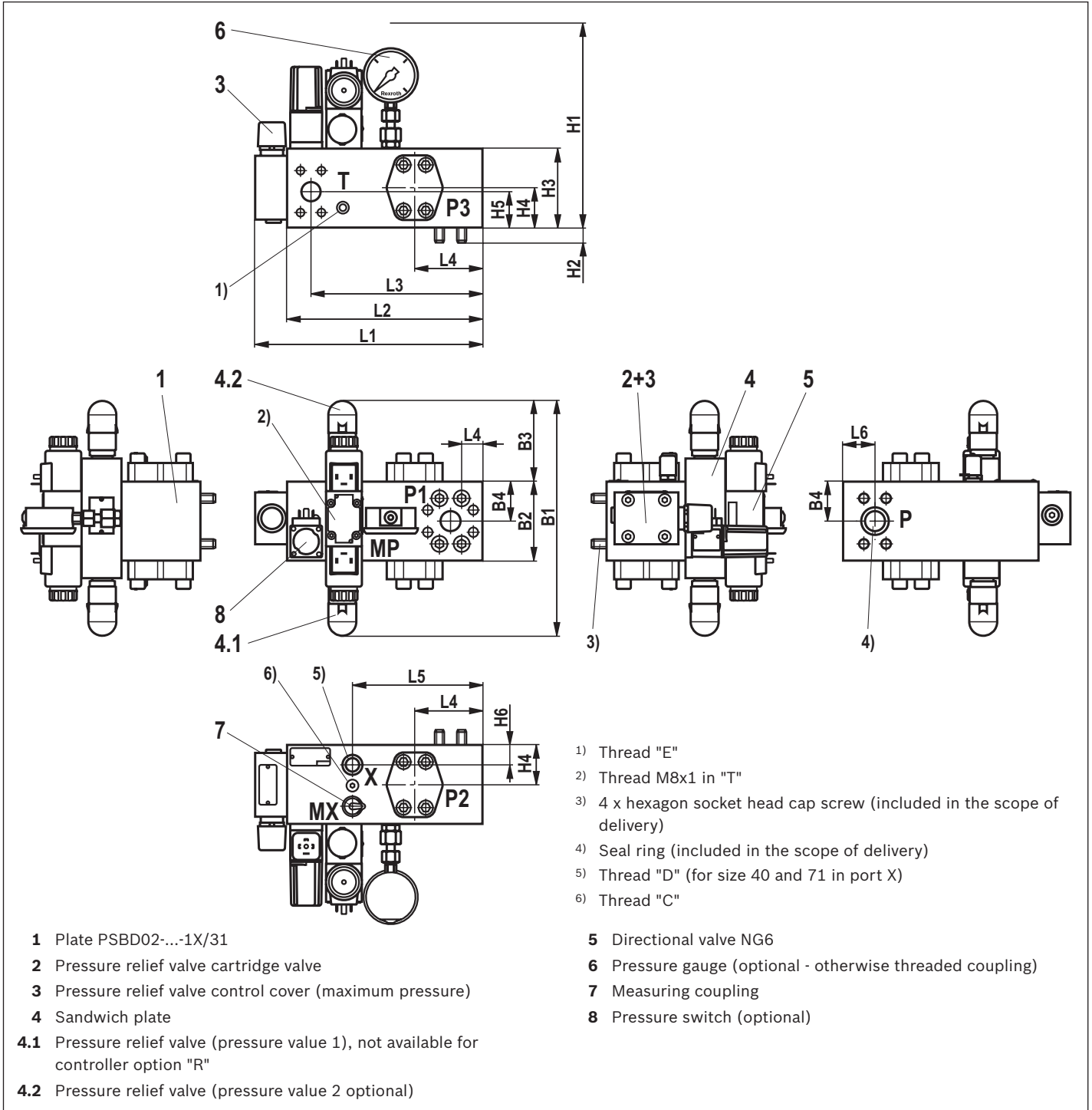
<b>hydraulic</b> (continued)		
Maximum admissible degree of contamination of the hydraulic fluid; Cleanliness class according to ISO 4406 (c)	Class 20/18/15 <sup>1)</sup>	
For more technical data refer to the data sheets	- Directional valve	Data sheet 23178
	- 2-way cartridge valve	Data sheet 21050
	- PropDB: DBET and DBETE	Data sheet 29162
	- Pressure switch HED8	Data sheet 50061
<b>electric</b>		
Mating connectors	<p>Mating connectors are not included in the scope of delivery and must be ordered separately.</p> <p>In the set-up of the following devices, please use the corresponding data sheets:</p> <ul style="list-style-type: none"> <li>▶ 4/3, 4/2 and 3/2 directional valves with wet-pin DC or AC solenoids data sheet 23178</li> <li>▶ Pressure switch HED8 data sheet 50061</li> <li>▶ Proportional pressure relief valves direct operated, without/with integrated electronics (OBE) data sheet 29162</li> <li>▶ 2-way cartridge valve pressure functions data sheet 21050</li> </ul>	

<sup>1)</sup> The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components. For selecting the filters, see technical data sheet 51501.

**Unit dimensions** (dimensions in mm)

Representation corresponds to NG71.

The position of the valves and orifices may slightly differ for other sizes and can be seen from the relevant installation drawing.



Size	B1 max.	B2	B3 max.	B4	H1 max.	H2	H3	H4	H5	H6	L1 approx.	L2	L3	L4	L5	L6
40	310	99	115	49.5	260	17	99	50	45	25	280	230	200	85	148	35
71	310	99	115	49.5	260	19	99	50	45	25	295	245	215	85	163	40
180	310	112	110	56.0	260	18	112	55	50	45	300	250	210	100	175	45
355	310	126	110	63.0	260	21	126	63	54	45	315	260	211	109	177	51

## Connections

Connections	(Block) size			
	40	71	180	355
<b>P</b> (for direct attachment on the pump)	SAE 3/4 H	SAE 1 H	SAE 1 1/4 H	SAE 1 1/2 H
<b>P1</b>	SAE 3/4 H	SAE 1 H	SAE 1 1/4 H	SAE 1 1/2 H
<b>P2, P3 closed</b>	SAE 3/4 H	SAE 1 H	SAE 1 1/4 H	SAE 1 1/2 H
<b>T</b>	SAE 3/4 S	SAE 1 S	SAE 1 1/4 S	SAE 1 1/2 S
<b>X</b>	G 1/4	G 1/4	G 1/4	G 1/4
<b>MP, MX</b>	G 1/4	G 1/4	G 1/4	G 1/4
<b>Y only with DBET.. directly at the valve</b>	G 1/4	G 1/4	G 1/4	G 1/4

Line connection 1: Threaded hole DIN 3852-2 a), imperial pipe thread DIN EN ISO 228, line connection 2: SAE flange DIN ISO 6162-2, enlarged connection, flange mounting: metrical ISO thread DIN 13, valve mounting: metrical ISO thread DIN 13

## Pump selection

Pump manifold block		NG40	NG71	NG180	NG355
Port P	Data sheet	SAE 3/4" H	SAE 1" H	SAE 1 1/4" H	SAE 1 1/2" H
Pump type: - Variable displacement pump type A4VSO	92050	A4VSO 40	A4VSO 71	A4VSO 125 A4VSO 180	A4VSO 250 A4VSO 355

Considering the size of the connection flange and the dimensions, this block may also be attached to other pumps. Here, special attention must be paid to possible interfering edges of the pump. This must be structurally checked in the individual case.

## **Commissioning, maintenance and operating instructions**

### **General information**

- ▶ Observe the documentation for the machinery.
- ▶ Also observe the documentation pertaining to the other components, assemblies and partly completed machinery, which form part of the complete machinery.
- ▶ Observe the generally applicable, legal or otherwise binding European and national regulations as well as the relevant legislation for your country pertaining to the prevention of accidents and protection of the environment.
- ▶ Keep documents included in the delivery carefully; they will be required by the expert in recurring tests.
- ▶ The machine end-user will have sole responsibility for complying with existing provisions.
- ▶ Repairs may only be carried out by the manufacturer or their authorized dealers and agencies. Repairs performed by third parties invalidate the approval and release the manufacturer from all claims resulting from an unauthorized intervention.
- ▶ Assembly and maintenance must be implemented by authorized, instructed persons only.

## Notes

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