

Hydraulic power packs type R and RG

with one main and one or two auxiliary pressure ports
for the supply of control circuits

| | | | |
|--------------------------------|-----------------------------|---|-----------|
| Operating pressure p_{max} | = 700 bar | Radial piston pumps type R and RG | D 6010 |
| Delivery flow Q_{max} | = 89.0 lpm (1450 rpm) | Radial piston pumps type R and RG with several pressure ports | D 6010 D |
| Geom. displacement $V_{g max}$ | = 62.6 cm ³ /rev | Hydraulic power packs type R and RG with several pressure connections | D 6010 DB |
| | | Motor pumps and hydraulic power packs type R and RG | D 6010 H |

1. General

There is generally the need for a control circuit for the actuation of piloted or hydraulically remote controlled valves. An additional, independent supply for the control circuit is usually necessary, when control tasks are to be maintained while the main circuit is depressurized (idle circulation) or the current operating condition of the consumer result in a very low pressure that is less than the one required for the control tasks.

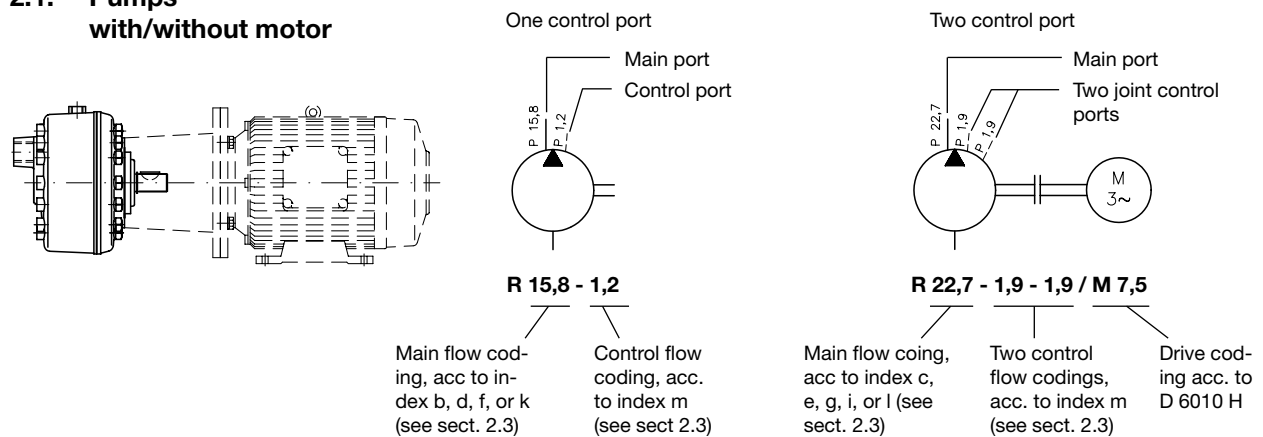
Such control circuits usually require significantly less flow and a different (control) pressure than the main circuit. This low flow requirement can be delivered independently from the main delivery by one or two pump cylinders without much modifications of the basic pump design. Depending on operating requirements, any excess control flow may be fed into the main circuit as long as the minimum pressure level for the control circuit is maintained via a sequence valve (example 1 in sect. 3). In such a case the control pressure will follow the pressure of the main circuit plus the setting of the sequence valve. Another way is to maintain a fixed pressure level in the control circuit via a pressure limiting valve (example 2 in sect. 3).

For piloted directional spool valves see type HSR, HSL, and HSF acc. to D 7493 ++ .

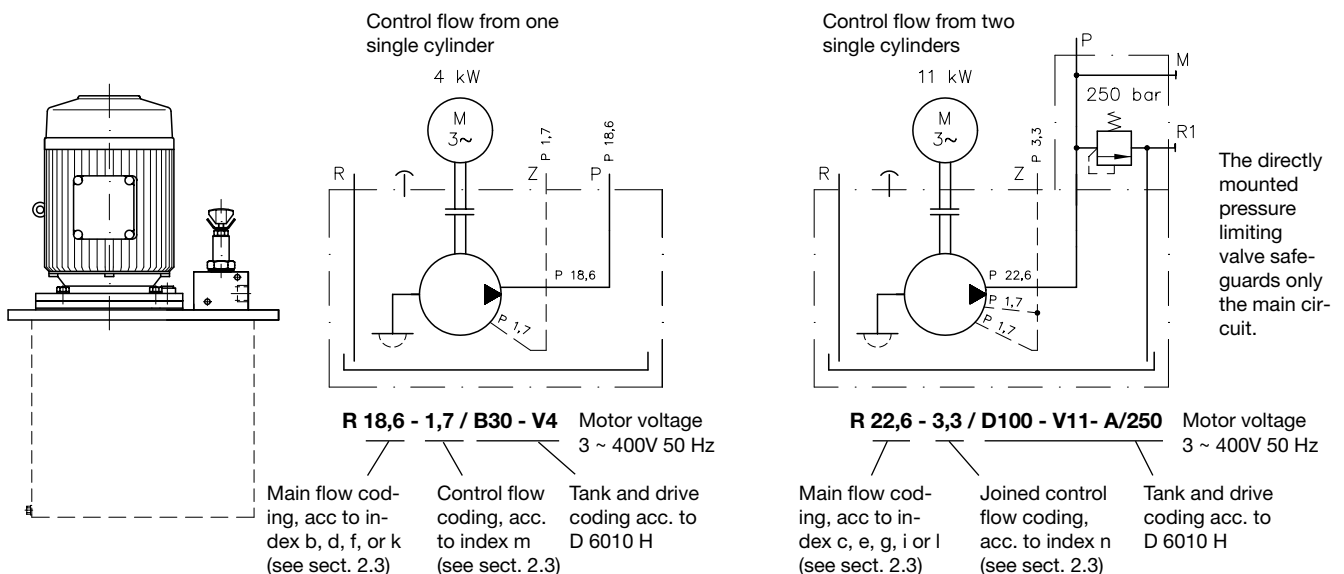
2. Available versions, main data

The order coding is composed by the coding of the pump type (R or RG), the delivery of main and auxiliary pressure ports (see sect. 2.3 on page 2) plus the coding for motor (motor pumps) or tank and motor (hydraulic power packs).

2.1. Pumps with/without motor



2.2. Hydraulic power packs



2.3. Flow coding and notes

Order examples:

R 4,95 - 0,8 - 0,8 - ...

R 5,4 - 1,2 - ...




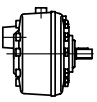
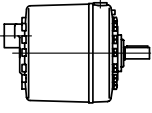
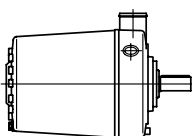
R, RG = Basic type acc. to D 6010

Main port

Options acc. to D 6010 table 2 and 3

2. control port (optional)

1. control port

| Design, see D 6010 | | Number of avail. control ports | Index ²⁾ | Delivery flow coding (guideline figure Q in (lpm) at 1450 rpm) Figures in brackets show the geometric displacement (cm ³ /rev.) | | | | | | | | | | | | |
|--|---|---|-----------------------|---|--|-------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|--|--|
| | | | | Piston diameter (mm) | | | | | | | | | | | | |
| | | | | 6 | 7 | 8 | 10 | 12 | 13 | 14 | 15 | 16 | | | | |
| | | | | Max. permissible operating pressure p _{max} (bar) ³⁾ | | | | | | | | | | | | |
| | | | | 700 | 600 | 550 | 450 | 350 | 300 | 250 | 200 | 160 | | | | |
| Main flow (Take note, which main delivery is available with one or with two control ports) | Design 7631 1-radial pump ¹⁾ |  | 3 to 5 | --- | Only piston-∅ 4 to 9 mm (see sect. 2.1 in D 6010D) | | | | | | | | | | | |
| | Design 6010 1-radial pump ¹⁾ |  | 1 or 2 | a | 3-cylinder pump (see sect. 2.2 in D 6010D) | | | | | | | | | | | |
| | Design 6011 1-radial pump ¹⁾ |  | 1 or 2 | a | see D 6010 D, sect. 2.3 | | | | | | | | | | | |
| | Design 6012 2-radial pump ¹⁾ |  | 5 cylinder per radial | 1 | b | 2,35 (1.93) | 3,74 (2.63) | 4,7 (3.44) | 7,3 (5.37) | 10,8 (7.74) | 12,8 (9.08) | 15,9 (10.53) | 17,2 (12.09) | 19,5 (13.75) | | |
| | | | | 2 | c | 2,05 (1.72) | 3,32 (2.34) | 4,25 (3.06) | 6,6 (4.78) | 9,6 (5.91) | 11,4 (8.07) | 13,5 (9.36) | 15,2 (10.74) | 17,35 (12.22) | | |
| | | | 7 cylinder per radial | 1 | d | 3,65 (2.79) | 5,4 (3.80) | 6,9 (4.97) | 10,7 (7.76) | 15,8 (11.17) | 18,6 (13.11) | 21,8 (15.21) | 24,6 (17.46) | 28,2 (19.86) | | |
| | | | | 2 | e | 3,4 (2.58) | 4,95 (3.51) | 6,4 (4.58) | 10,1 (6.57) | 14,6 (10.31) | 17,1 (12.11) | 20,2 (14.04) | 22,7 (16.12) | 26,1 (18.34) | | |
| | Design 6014 4-radial pump |  | 5 cylinder per radial | 1 | f | 5,75 (4.08) | 7,9 (5.56) | 10,5 (7.26) | 16,6 (11.34) | 23,8 (16.33) | 28,6 (19.17) | 33,3 (22.23) | 36,1 (25.52) | 41,3 (29.03) | | |
| | | | | 2 | g | 5,5 (3.87) | 7,5 (5.26) | 10,0 (6.88) | 15,7 (10.74) | 22,6 (15.47) | 27,2 (18.16) | 31,7 (21.06) | 34,2 (24.17) | 39,1 (27.51) | | |
| | | | 7 cylinder per radial | 1 | h | 7,65 (5.80) | 11,25 (7.90) | 14,5 (10.31) | 22,2 (16.12) | 32,8 (23.21) | 38,6 (27.24) | 45,3 (31.59) | 51,2 (36.26) | 58,7 (41.26) | | |
| 2 | | | | i | 7,35 (5.59) | 10,85 (7.60) | 14,0 (9.93) | 21,4 (15.52) | 31,6 (22.35) | 37,2 (26.23) | 43,7 (30.42) | 49,2 (34.92) | 56,5 (39.73) | | | |
| Design 6016 6-radial pump |  | 7 cylinder per radial | 1 | k | 12,4 (8.81) | 17,05 (11.99) | 21,5 (15.66) | 33,7 (24.47) | 49,8 (35.24) | 58,6 (41.36) | 68,3 (47.97) | 78,0 (55.06) | 89,0 (62.65) | | | |
| | | | 2 | l | 12,1 (8.60) | 16,65 (11.70) | 21,0 (15.28) | 32,9 (23.88) | 48,6 (34.38) | 57,2 (40.35) | 66,6 (46.80) | 76,2 (53.72) | 86,9 (61.12) | | | |
| Control flow | Coding for control flow of one cylinder | | | m | 0,3 (0.21) | 0,41 (0.29) | 0,5 (0.38) | 0,8 (0.60) | 1,2 (0.86) | 1,45 (1.01) | 1,7 (1.17) | 1,9 (1.34) | 2,2 (1.53) | | | |
| | Coding for joined control flows of two cylinders (applies only to power packs) | | | n | 0,6 (0.43) | 0,83 (0.58) | 1,0 (0.76) | 1,6 (1.19) | 2,4 (1.72) | 2,8 (2.02) | 3,3 (2.34) | 3,8 (2.69) | 4,4 (3.06) | | | |

¹⁾ Main flow below 10 lpm: It is usually more efficient to employ a control mode without need for a control flow e.g. via solenoid actuated directional seated valves acc. to D 7470A/1 or D 7300.

²⁾ Index b, d, f, h, and k: Only one control flow (index m) is available
Index c, e, g, i, and l: Two control flows (index m) are available (index n in the case of power packs)

³⁾ The operating pressure should be restricted for applications with continuous operation where the subsequent load cycles are all at the upper end of the pressure range (>75%) e.g. accumulator charging etc.
It is advisable for an economic service life of the bearings to restrict the operating pressure of the respective pump element diameter to about 75% of its original specification. Another pump with smaller but more pump elements should be selected, if this is not possible.

3. Circuitry examples

Example 1:

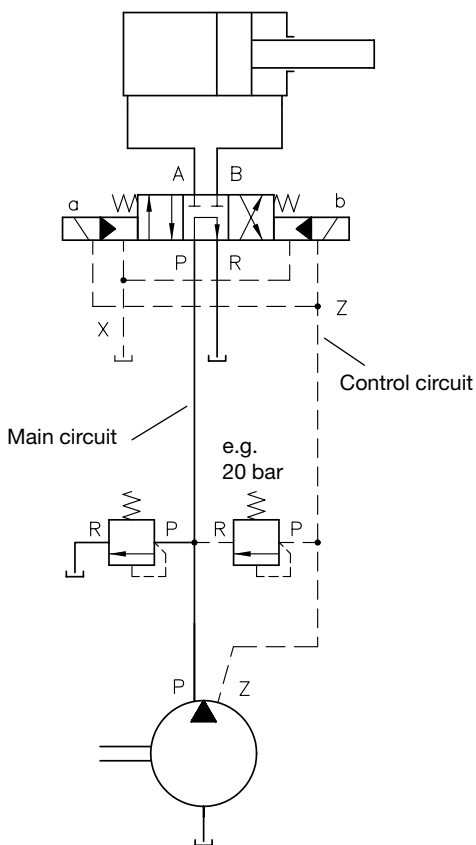
The control flow is pre-loaded to the requested minimum pressure, depending on the specifications of the piloted directional valve, via an sequence valve type MVG 14N or MVS 41F (acc. to D 3726 or D 7000/1). Any excess delivery is fed into the main circuit.

Attention: The pressure might exceed the rating of the valve or pump cylinder, as the control pressure will follow the pressure of the main circuit plus the setting of the sequence valve.

Advantage: Excess control flow can be employed for consumer movements

Disadvantage: Harsh operation behavior of the directional valve, Limited effect of possible switching time adjustment

A pre-load of the control circuit is usually necessary, when control tasks are to be maintained, while the main circuit is depressurized (idle circulation) or the current operating condition of the consumer result in a very low pressure that is less than the one required for the control tasks.



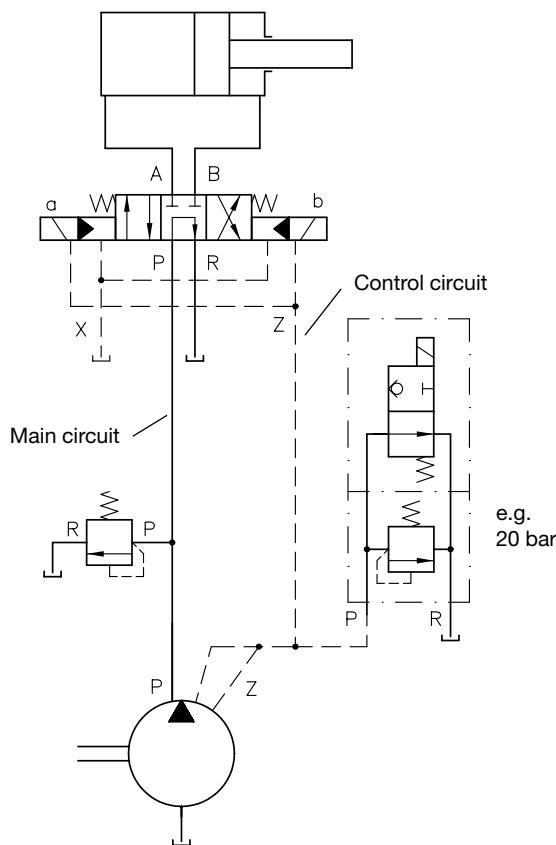
Example 2:

The control flow is safeguarded by its own pressure limiting valve. The setting depends on the piloted directional valve connected.

A pump with two control deliveries is employed here to achieve a higher flow. It is possible to switch the control delivery into idle circulation via a solenoid actuated directional valve (e.g. type WN1F-1/4S acc. to D 7470 A/1) during prolonged stand-still periods of the hydraulic consumer.

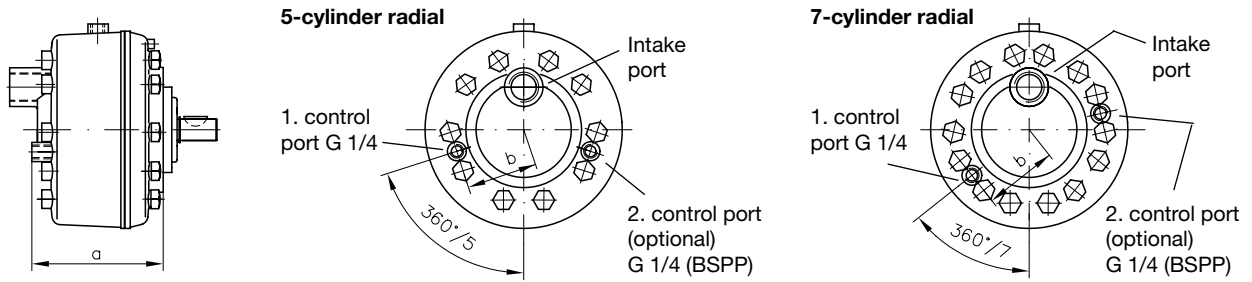
Advantage: Low setting of the pressure limiting valve enables soft operation behavior of the directional valve, as a possible switching time adjustment via throttles can work effectively.

Disadvantage: Any excess control flow cannot be employed for consumer movements.



4. Dimensions All dimensions in mm, subject to change without notice!

4.1. Pumps only



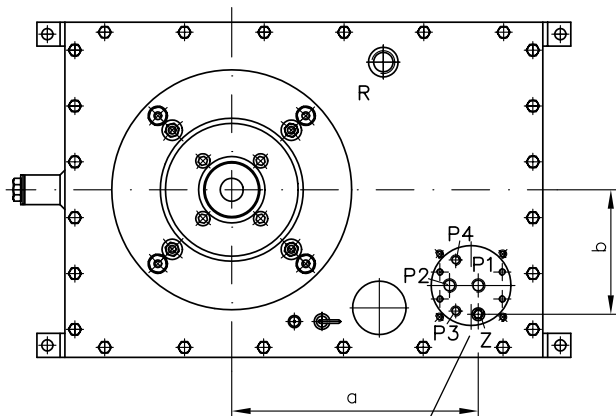
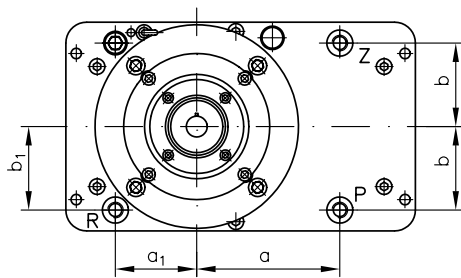
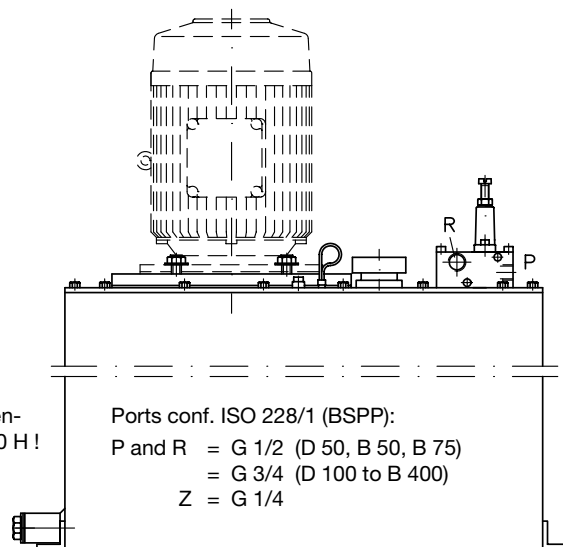
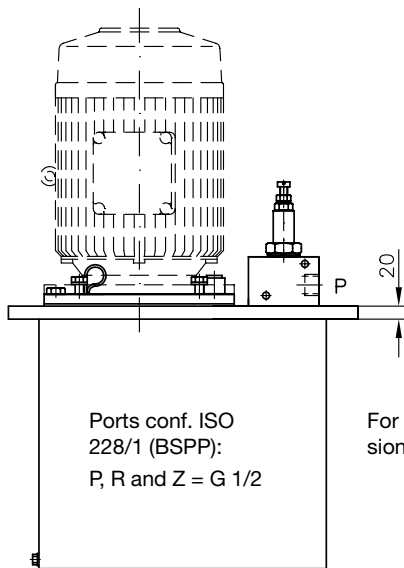
| | | | | |
|--------|------------------|------|------|------|
| Design | 7631, 6010, 6011 | 6012 | 6014 | 6016 |
| a | see D 6010 D | 135 | 226 | 315 |
| b | | 65 | 70 | 74 |

For missing dimensions, see D 6010 !

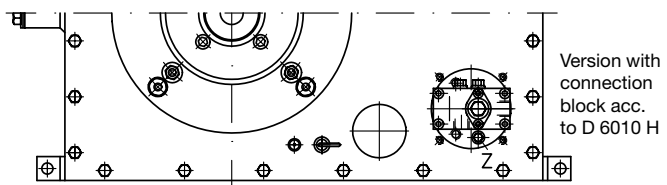
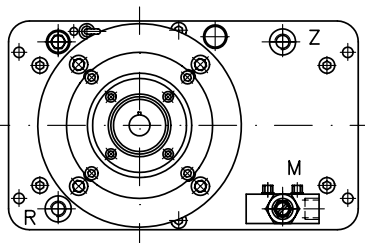
4.2. Hydraulic power packs

Type D 6 ... D 40 and B 6 ... B 40

Type D 50 ... D 250 and B 50 ... B 400



For pump versions with several pressure ports, see D 6010 D and D 6010 DB



| | | | |
|----|-------------|--------------------------------|--------------------------------|
| | D 6 and B 6 | D 13 and D 20 B 13 and B 20 | D 30 and D 40 B 30 and B 40 |
| a | 126 | 175 | 175 |
| a1 | 85 | 103 | 75 |
| b | 84 | 108 | 133 |
| b1 | 86 | 105 | 130 |

| | | | |
|---|-----------------------|--------------------------|--------------------------|
| | D 50 B 50 and B 75 | D 100 B 100 and B 160 | D 250 B 250 and B 400 |
| a | 311.5 | 306 | 476 |
| b | 156.5 | 190 | 210 |