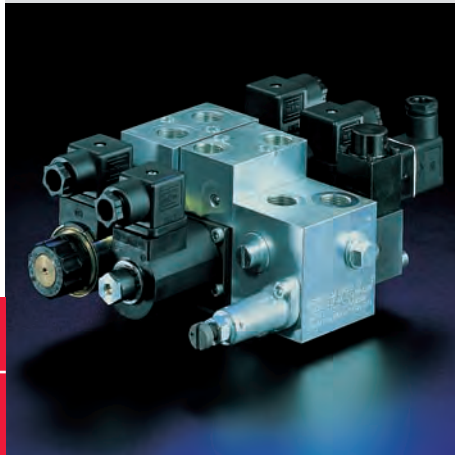


# Directional spool valve type SWR and SWS

These directional spool valves are designed as valve bank. Actuation is via directly acting pressure resistant single stroke solenoids (wet armature); type SWS may be controlled also via twin solenoids enabling two speed rates or via prop. solenoids optionally with a stroke limitation. Versions with ATEX-approval are available as well. Every valve bank consists of a connection block or adaptor plate (for direct mounting onto power packs), valve sections, and an end plate all held together by tension rods. The valve sections type SWS can be combined with consumer sided ancillary blocks with various options e.g. check-, over-center-, or pre-load valves. Another option are check valves,

throttles, orifices or flow controllers on the pump side. These directional spool valves are mainly used at mobile applications.



<b>Nomenclature:</b>	Directional spool valve
<b>Design:</b>	Individual valve for pipe connection Valve bank Combination with hydraulic power packs
<b>Actuation:</b>	Solenoid
<b><math>p_{max}</math>:</b>	315 bar
<b><math>Q_{max}</math>:</b>	12 ... 25 lpm

## Basic types and general parameters

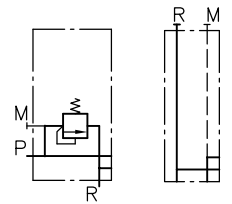
### Basic type and size

#### Valve bank

Bank cable	Flow $Q_{max}$ (lpm)	Oper. pressure $p_{max}$ (bar)	Tapped ports (BSPP)
SWR 1	12	315	G 1/4
SWS 2	25	315	G 3/8, G 1/4

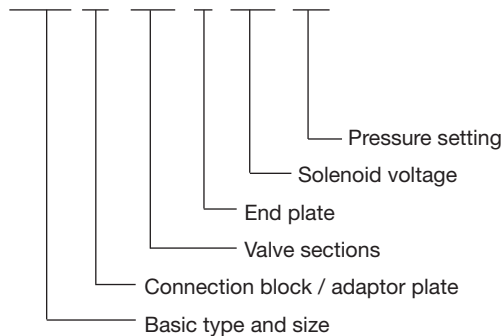
## Connection blocks / adaptor plates for valve banks

Basic type	Brief description	Symbol
A 6	With tool adjustable pressure limiting valve (for pipe connection) For direct mounting onto hydraulic power packs (type HK, HC, MP)	SW.. A 6
F	For direct mounting onto hydraulic power packs (type HK, HC, MP)	SW.. F(D)
D	For direct mounting onto hydraulic power packs (type R)	

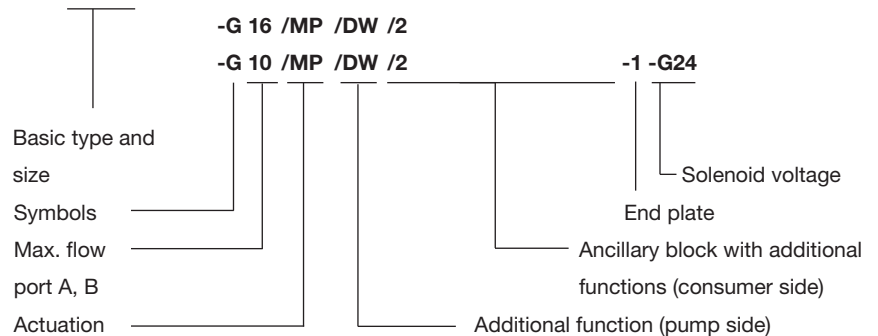


## Valve bank coding

SWR 1 A6 - UGD - 1 - G24 - 120



SWS 2 A6/230 -W /M /R /2 ALB7/200 BLC4/100



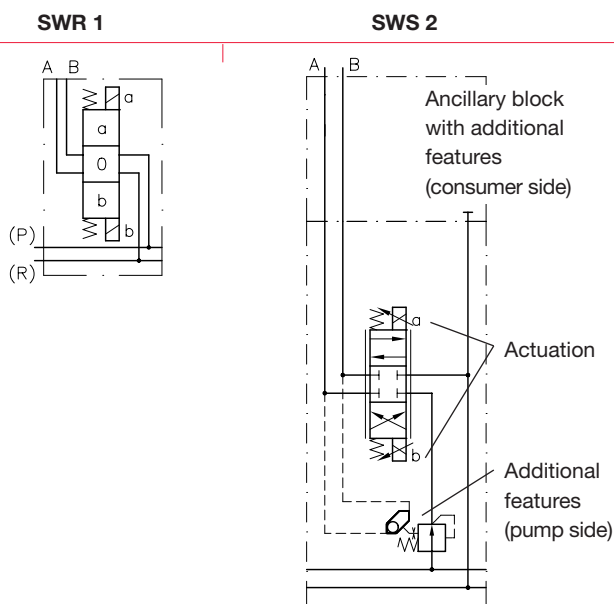
**Additional versions of connection blocks/adaptor plates for valve bank**

- Connection block for pipe connection with 3-way prop. flow control valve and pressure limiting valve
- Connection block with incorporated idle circulation valve
- Individual connection block with/without pressure limiting valve, manually or tool adjustable
- Adaptor plates enabling, optional connection of a pressure switch type DG3.. in port P (see also “Additional informations”)

**Symbols (valve sections)** max. 10 valves may be combined in a valve bank

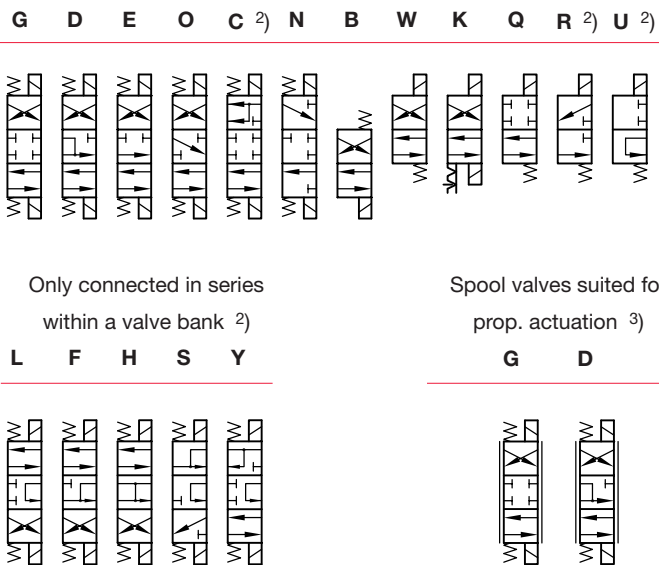
**Basic symbol**

**Valve bank**



**Symbol**

May be connected either in parallel or in series within a valve bank



<sup>2)</sup> Only type SWR 1  
<sup>3)</sup> with max. flow codings type SWS

**Additional versions (valve sections)**

- Individual connection blocks without or with pressure limiting valve, manually or tool adjustable
- Individual valve with check valve or orifice in port P and/or check valve in port R

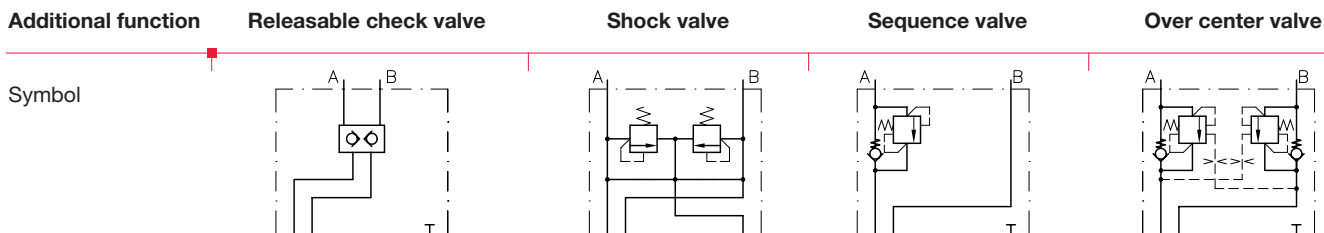
**Valve sections type SWS 2 with additional functions (pump side)**

- Basic block with/without provision for additional functions
- Basic valve block with orifice, throttle, check valve or flow control valve

**Additional versions (valve sections)**

- Pressure reducing valve, reducing the pressure downstream in gallery P
- Damped valve spool for consumer side A and B (type SWS 2)
- Intermediate plate with flow control valve

**Ancillary block type SWS 2 with additional functions (consumer side)**



**Additional versions (additional functions type SWS)**

- Releasable check valve consumer side A or A and B
- Ancillary block without function, tapped ports G 1/4 or G 3/8 (BSPP)
- Ancillary block with shock and/or suction valves consumer side A or A and B
- Ancillary block with over center valve consumer side A or A and B
- Ancillary blocks with over-center- or shock valves
- Ancillary blocks with over-center-, shock- and check valves

**Actuation solenoid**

- On/off solenoid ( $p_{max} = 315$  bar)
- Solenoid with detent
- Prop. solenoid (type SWS 2)

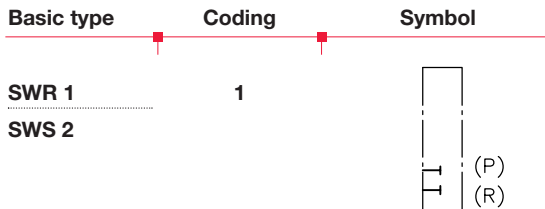
- Solenoid with stroke limitation (limiting  $Q_{max}$ )
- Double solenoid (two speed rates)
- Solenoid conforming ATEX ( $p_{max} = 210$  bar)

**Solenoid voltage**

- 12V DC, 24V DC, 230V AC 50/60 Hz
- Other voltage on request

- Plugs with LED, improving EMC or with economy circuit (see also "Additional informations")

**End plates**



**Additional versions (end plates)**

- Version with additional ports P and/or R, (P may be arbitrarily blocked)
- Version with idle circulation valve (on/off, proportional)
- End section spool valve
- Adaptor plates for the combination with directional seated valve banks type BWH(N)1, BWH2

**Order examples**

**SWR 1 A 7 - WGZ 6 G - 1 - WG 230 - 210**

Valve bank type SWR, size 1, connection block with manually adjustable pressure limiting valve (factory set to 210 bar), three valve sections symbols W and G pressure reducing valve (coding Z6) installed between

the valve sections, standard end plate (coding 1) and solenoid voltage 230V AC 50/60 Hz

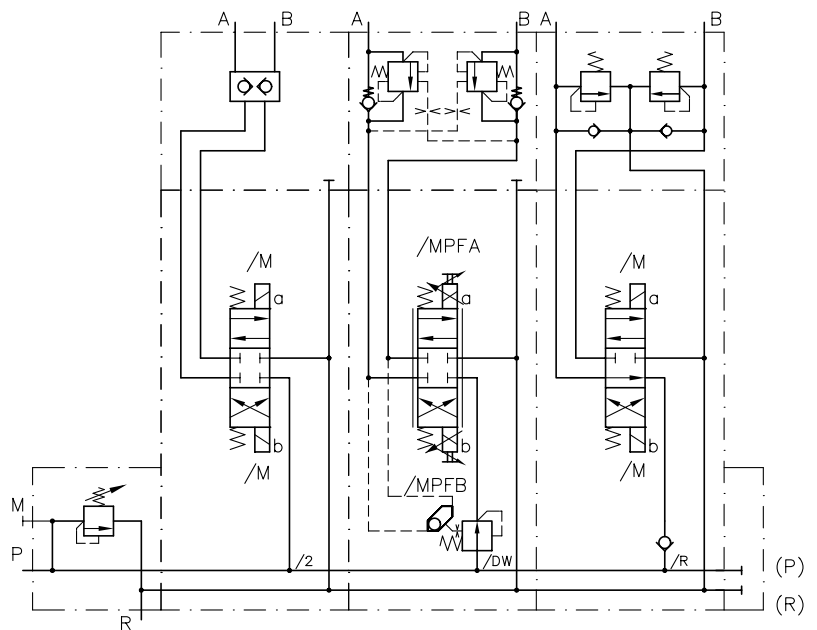
**SWS 2 A 7/200 - G/M/2/2 RH**

- G 10/MPF/DW/2 AL B 7/180 BLC 4/140
- E/M/R/2 AN100 BN 100-1-G 24

Valve bank type SWS, size 2, connection block with pressure limiting valve (manually adjustable, factory set to 200 bar);  
 1. valve section flow pattern G with solenoid actuation, no additional function in gallery P, with ancillary block featuring releasable check valves for ports A and B;  
 2. valve section flow pattern G with prop. solenoid actuation (MP) and stroke limitation for A and B (FAB), max. flow for ports A and B is 10 lpm, flow control in gallery P of the basic valve body (DW), ancillary block with over center valves (factory set to A = 180 bar and B = 140 bar);  
 3. valve section flow pattern E with solenoid actuation, check valve in gallery P, ancillary block featuring shock and suction valves for ports A and B (both factory set to 100 bar), standard end plate. All solenoids 24V DC.

**Symbol**

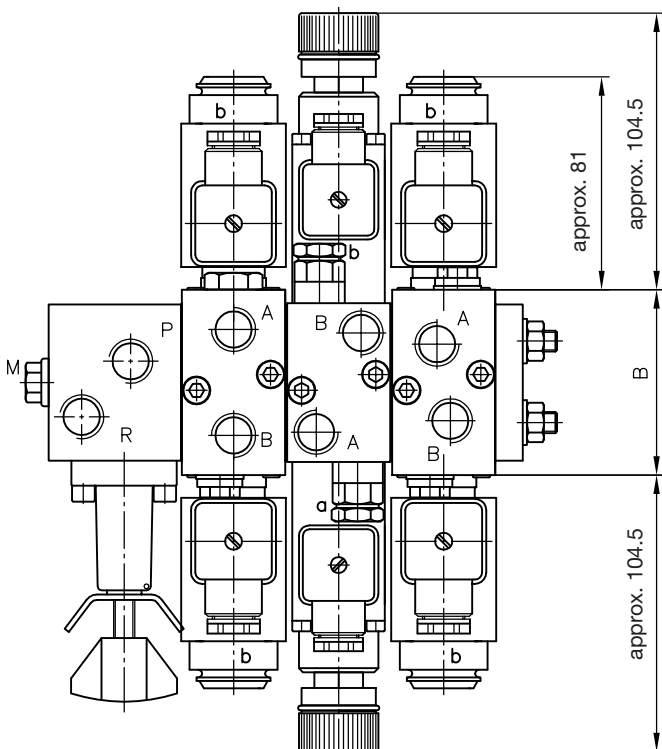
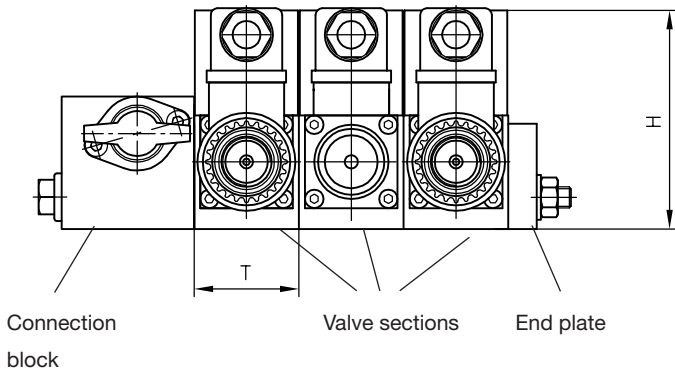
Valve bank type SWS, see order example below



**Dimensions**

**Type SWR 1 and SWS 2**

Flow pattern for valve bank type SWR, see order example



All dimensions in mm, subject to change without notice!

Basic type	H	B	T	m (kg)	
				Indiv. section	Connection block
SWR 1	77 ... 90	40	40	1.1 ... 1.5	0.6 ... 0.7
SWS 2	78 ... 82.5	60	40	1.1 ... 2.4	approx. 0.8

**Additional information**

- Directional spool valve banks type SWS D 7951
  - type SWR D 7450, D 7451
  - Plugs with LED etc. D 7163
  - Plugs with economy circuit D 7813, D 7833
  - Pressure switches type DG3..., DG5.E D 5440, D 5440 E/1
- See also "Turn-key solutions out of the modular system"
  - See also section "Devices for special applications" (Industrial trucks)
  - See also section "Devices for special applications" (Hydraulic for mobile applications, Devices for explosion hazardous areas, conforming ATEX; Prop. valves)

For page and section of the devices additionally listed, see type index