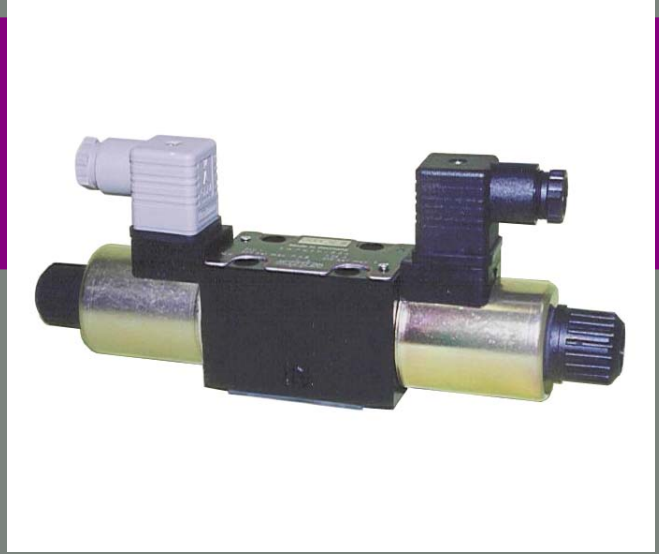




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# Solenoid Valves CETOP 3

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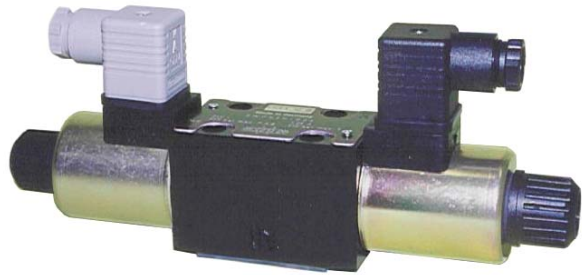
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# Solenoid Valves

## Directional solenoid valves from HAWE, type SWPN, CETOP 3

These 4/3- and 4/2-way directional spool valves from HAWE offer long, reliable life with optimum performance. They are directly actuated, wet armature types with easily replaceable coils for service or voltage changes. The valves conform to the DIN 24 340-A6 standard (ISO 4401-AB-03-4-A).



### General Specifications

Max. flow	60 lpm ( cylinders having unequal area ratios may cause an increased flow rate on the return stroke)
Max. pressure	(P,A,B ports) 350 bar (T port) 210 bar
Installed position	Any position but preferably horizontal. Mounting bolts 4x M5 x 30
Port coding	P = inlet (pump) A, B = actuator connections T = return (tank)
Flow direction	In accordance with the arrow direction in the flow pattern symbol. The flow direction cannot be reversed.
Recommended fluid cleanliness rating	ISO 4406 18/14 or better / NAS 1638 class 7 or better (10 - 20µm).
Hydraulic fluids	Mineral oils, HEPG Poly Alkylene Glycol, HEES Synthetic Ester
Viscosity range	3 mm <sup>2</sup> /s to 400 mm <sup>2</sup> /s
Fluid temperature	-20° C to + 70° C
Over-lap	zero
Protection class & Duty cycle	IP 65 (with plug properly mounted) 100% ED
Weight	Single solenoid valve, approx. 1.5 kg, double solenoid valve, approx 2.1 kg

### Electrical Specifications

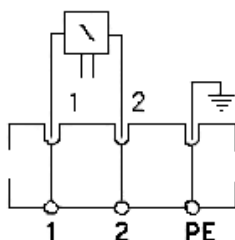
Solenoid Wet armature solenoid; coils are DC coils. The WG110 and WG230 units have rectifiers in the Hirschmann plugs. Coil voltages are 98V & 205V DC respectively.

Coding	G 12	G 24	WG 110	WG 230
Voltage (Nom)	12V DC	24V DC	110V AC	230V AC
Nom. Power	30W	30W	30W	30W
Nom. Current	2.5A	1.25A	0.37A	0.18A

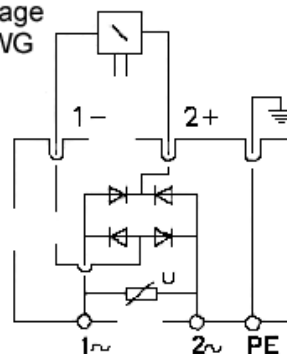
Switch-off energy = or < 0.3 Ws

Wiring Diagram

DC-voltage  
Coding G

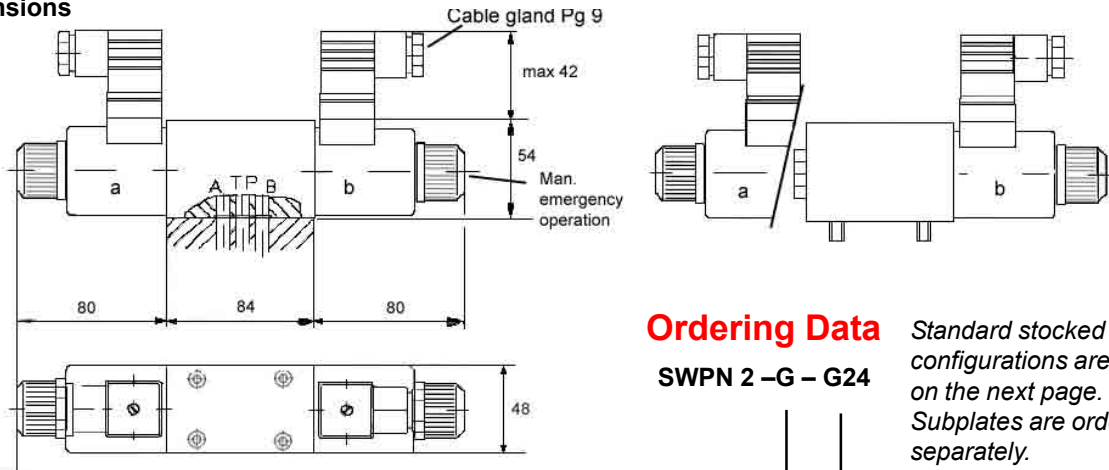


AC-voltage  
Coding WG



# Solenoid Valves

## Dimensions



## Ordering Data

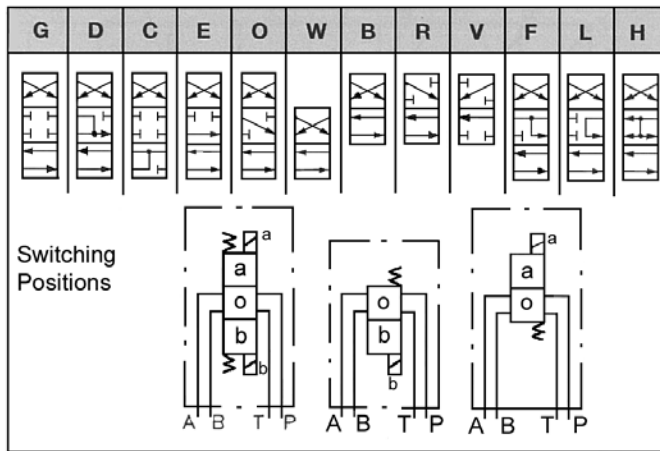
SWPN 2 -G - G24

Standard stocked valve configurations are listed on the next page. Subplates are ordered separately.

## Spool Designations

Spool selection

Solenoid selection



Designation	Nominal Voltage
G 12	12V DC
G 24	24V DC
WG 110	110V AC
WG 230	230V AC

## Maximum permissible flow rate to allow switching. System operating pressure at P port

Spool	100 bar	150 bar	200 bar	250 bar	300 bar	350 bar
G	60	60	60	60	25	20
D	55	40	25	23	22	20
C	60	60	60	60	60	60
E,O,R	47	47	47	47	47	47
H	60	59	59	57	55	54
F	37	34	32	28	24	22
B,W	60	60	60	50	32	30
V	23	23	21	19	17	16
L	52	52	52	52	52	52

Flow l/min

## Switching the valve.

The table gives maximum flow rates for switching the valve at different working pressures. For intermediate pressures, the approximate flows can be interpolated.

## Pressure Drop through the valve.

To calculate the  $\Delta P$  through the valve, the table set out below gives the specific curve number which applies to the individual function, eg., from port P to port A (P - A) in switching position "a" for "L" spool, use curve No.2. Each flow path needs to be calculated separately and then added together to total the full  $\Delta P$  through the valve.

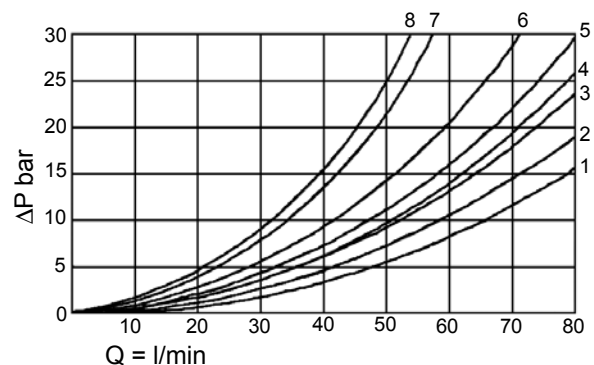
These curves are at 35 mm<sup>2</sup>/s and a correction factor needs to be applied for other viscosities. This factor is a multiplier and is the actual viscosity divided by 35.

## Table for $\Delta P$ Curves

At switching position "o" at position "a" & "b"

Spool	P - A P - B	A - T B - T	P - T	A - B	P - A P - B	A - T B - T
H	3	1	5	1	4	2
L			7		2	2
G					3	1
D		6		8	3	2
B					4	1

## $\Delta P$ Curves



# Solenoid Valves

## Standard Stocked Valves and Parts

Part No.	Description
SWPN 2-G-G12	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 12V DC
SWPN 2-G-G24	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 24V DC
SWPN 2-G-WG110	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 110V AC
SWPN 2-G-WG230	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 230V AC
SWPN 2-D-G12	Valve, CETOP 3, 4/3, closed centre, motor spool, 12V DC
SWPN 2-D-G24	Valve, CETOP 3, 4/3, closed centre, motor spool, 24V DC
SWPN 2-D-WG110	Valve, CETOP 3, 4/3, closed centre, motor spool, 110V AC
SWPN 2-D-WG230	Valve, CETOP 3, 4/3, closed centre, motor spool, 230V AC
SWPN 2-B-G12	Valve, CETOP 3, 4/2, changeover, 12V DC
SWPN 2-B-G24	Valve, CETOP 3, 4/2, changeover, 24V DC
SWPN 2-B-WG110	Valve, CETOP 3, 4/2, changeover, 110V AC
SWPN 2-B-WG230	Valve, CETOP 3, 4/2, changeover, 230V AC
SWPN 2-L-G12	Valve, CETOP 3, 4/3, open centre, cylinder spool, 12V DC
SWPN 2-L-G24	Valve, CETOP 3, 4/3, open centre, cylinder spool, 24V DC
SWPN 2-L-WG110	Valve, CETOP 3, 4/3, open centre, cylinder spool, 110V AC
SWPN 2-L-WG230	Valve, CETOP 3, 4/3, open centre, cylinder spool, 230V AC
SWPN 2-H-G12	Valve, CETOP 3, 4/3, open centre, motor spool, 12V DC
SWPN 2-H-G24	Valve, CETOP 3, 4/3, open centre, motor spool, 24V DC
SWPN 2-H-WG110	Valve, CETOP 3, 4/3, open centre, motor spool, 110V AC
SWPN 2-H-WG230	Valve, CETOP 3, 4/3, open centre, motor spool, 230V AC
4704 1000	Coil, G12V (12V DC) for Hawe SWPN 2 valve
4704 1001	Coil, G24V (24V DC) for Hawe SWPN 2 valve
4704 1002	Coil, WG98V (110V AC) for Hawe SWPN 2 valve
4704 1003	Coil, WG198V (230V AC) for Hawe SWPN 2 valve
MSD3-309	Plug for DC voltages, to suit Hawe SWPN 2 valve
MSD4-209-P10	Plug, rectified, for AC voltages, to suit Hawe SWPN 2 valves

## Subplates

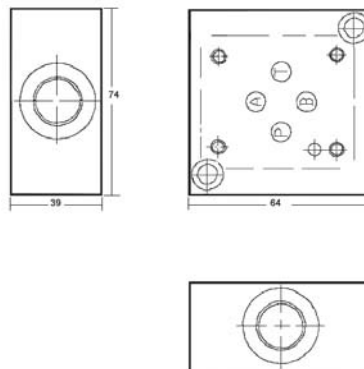
Subplates are available for simplified mounting of the valves. They are available in side ported and bottom ported versions. The standard aluminium version has a pressure rating of 210 bar.

A blanking plate is available for when a valve is removed from a manifold or subplate.

Multiple station manifolds in parallel and series configurations are available. Consult your local sales office. Steel subplates and manifolds are available on request.

### Ordering Data

- SSPC3S Subplate, side entry (all ports)
- SSPC3B Subplate, bottom entry (P & T ports)
- SBPC3 Blanking plate
- SBKC3 Bolt kit, cap screws, M5 x 30mm.



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