BUCHER hydraulics

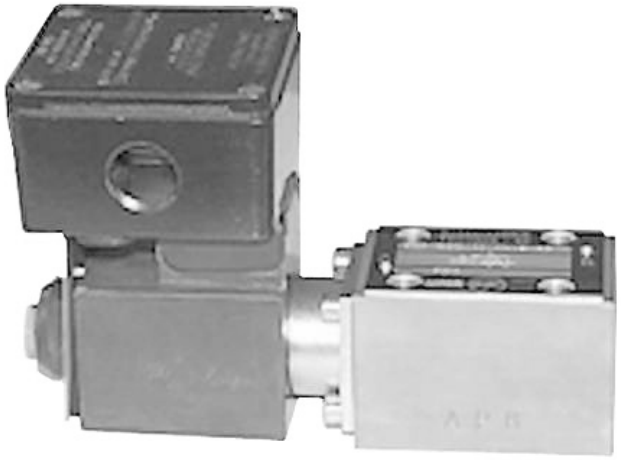
W - 2.23

2/2 ... 4/4 Seat Valves in ISO Size 03 Body
Direct Acting
for Explosions-hazard Areas

Series EEx-W2 ...

20 l/min, 315 bar

- Bidirectional seat-valve closure
- Full cartridge in ISO size 03 body
- Corner power: 20 l/min at 315 bar
- **EEx- classification: EEx me II T4**
- Coils can be changed without opening the hydraulic envelope
- **Option:** with closed crossover characteristic for accumulator and clamping systems (Q max. 10 l/min)



DESCRIPTION

Series EEx-W2 ... directional seat valves consist of a type EEx-W1 ... cartridge seat valve (data sheets W-2.21 and 2.22) fitted in a manifold mounting body with an industry-standard ISO 4401 size 03 interface.

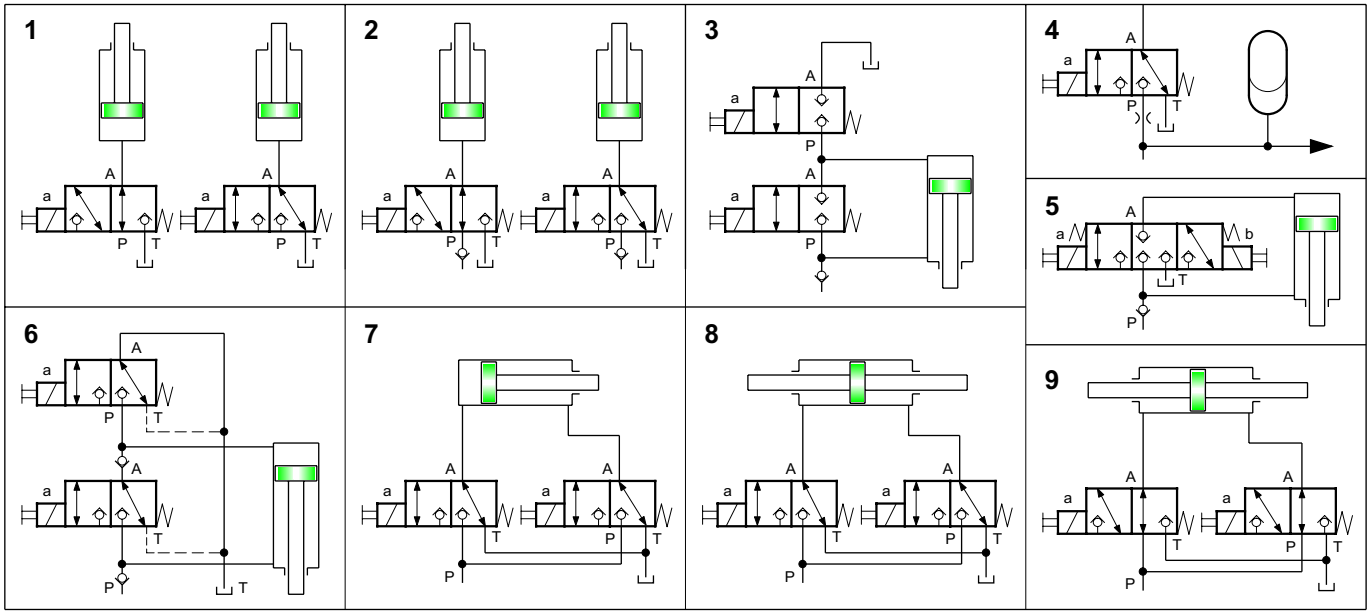
They operate on the proven 'guided stem and cone' principle and the guide stem is equipped with a seal.

The solenoid is approved for use in explosion-hazard areas and uses the 'core tube / slip-on coil' principle. Coils can be replaced or changed to a different supply voltage (AC <> DC) while the hydraulic system is pressurised, and without opening the hydraulic envelope.

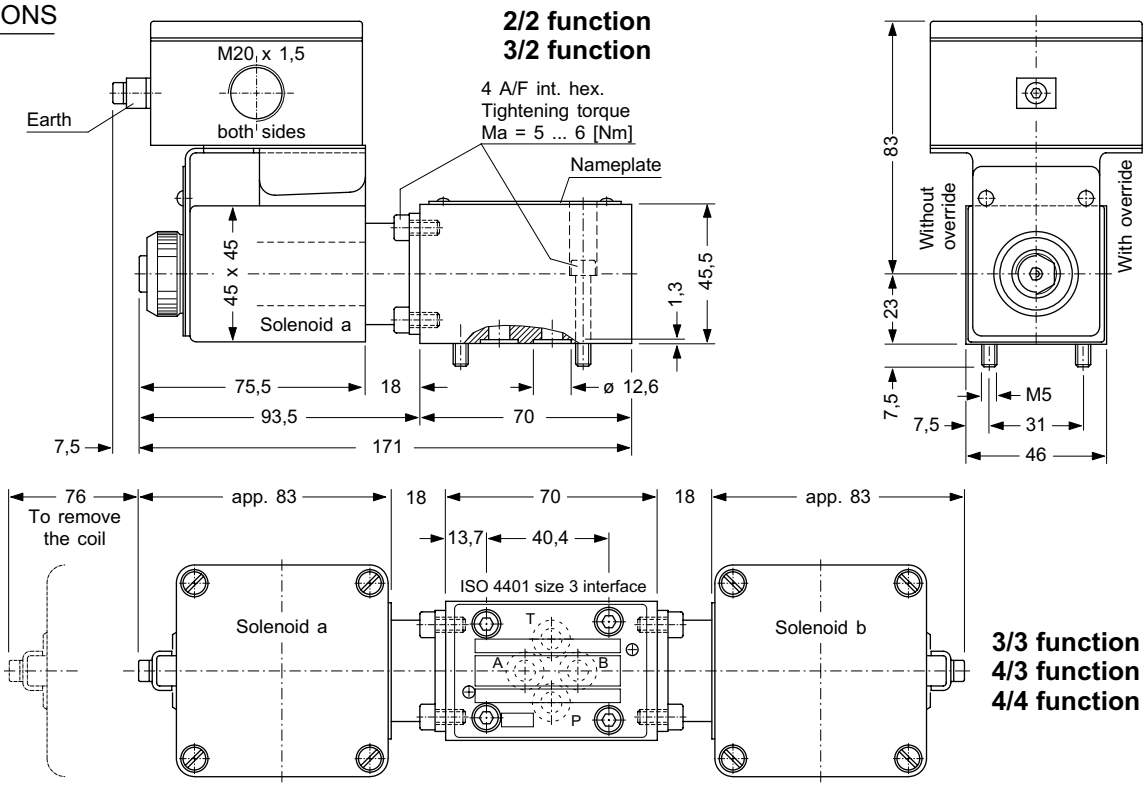
Option: 3/2 and 4/3 function valves can be supplied with a 'closed crossover' characteristic. With closed crossover models there is no connection between the ports while the valve is switching, with the result that only a minimal loss of system pressure occurs.

This is a very important benefit in small-volume systems and in accumulator- and clamping systems.

APPLICATION EXAMPLES with 2/2, 3/2 and 3/3 directional seat valves

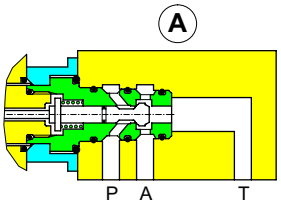


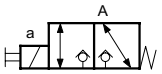
DIMENSIONS



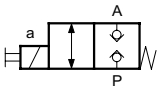
STANDARD- AND PREFERRED MODELS

2/2 and 3/2 seat valves (solenoid at 'A' end)

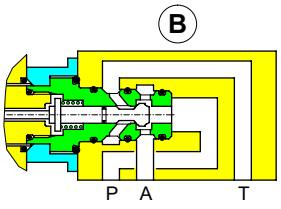


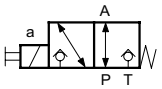


EEx-W2N32SN-6AB

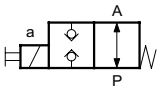


The customer must plug port T

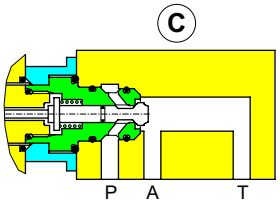


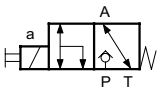


EEx-W2N32ON-6AB

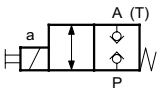


The customer must plug port T

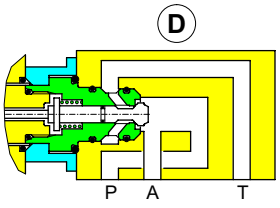


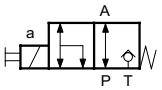


EEx-W2N22SN-6AB

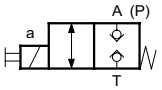


The customer must plug port T (A)



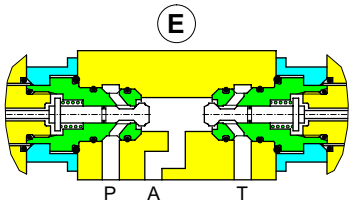


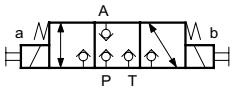
EEx-W2N22ON-6AB



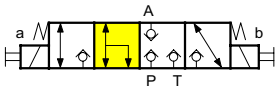
The customer must plug port P (A)

3/3, 4/3 and 4/4 seat valves (solenoids at both ends)

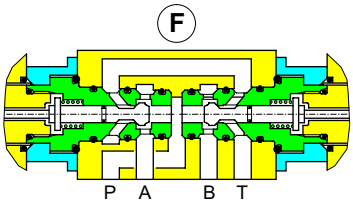


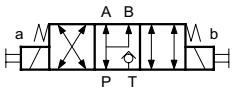


EEx-W2N33RN-6AB

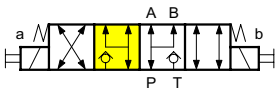


The 4th valve position is achieved by simultaneous energisation of solenoids 'a' and 'b'

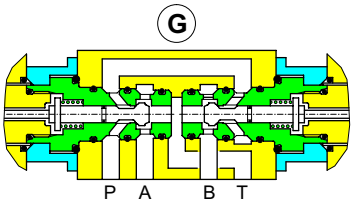


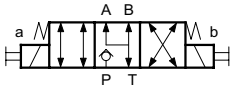


EEx-W2N43FN-6AB

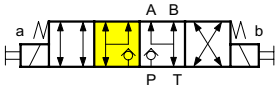


The 4th valve position is achieved by simultaneous energisation of solenoids 'a' and 'b'





EEx-W2N43GN-6AB

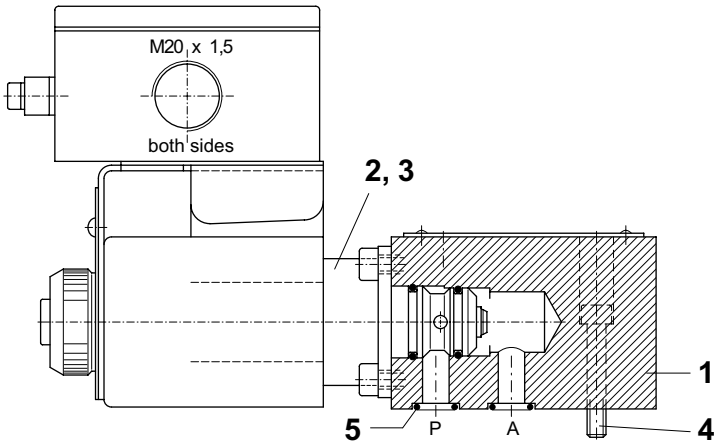


The 4th valve position is achieved by simultaneous energisation of solenoids 'a' and 'b'

For CHECK VALVE or ORIFICE DISC in the 'P' port, see page 3.

FOR OTHER MODELS SEE MODEL CODE KEY

SCHEMATIC SECTION



COMPONENTS / SERVICE PARTS

It.	Qty.		Description	= available as service part
1	1	1	ISO size 3 manifold mtg. body	46 x 45,5 x 70
2	2	1	2/2 cartridge seat valve, type EEx-W1 ...	
3			3/2 cartridge seat valve, type EEx-W1 ...	
4	4	4	Hex. skt. screw M5 x 30 8.8	DIN 912
5	4	4	O-ring no. 012 ø 9,25 x 1,78	N90

2/2 and 3/2 valves
3/3, 4/3 and 4/4 valves

TO ORDER SERVICE PARTS, STATE:

- complete unit model code from the nameplate, including the design number
- data sheet number, including issue date
- part item number from above list
- part description from above list
- quantity required

CHECK VALVE INSERT in port 'P'

To prevent uncontrolled back-pressure effects or reverse flow from A or B to P, a variant of the EEx-W2 ...-6 valve is available with the push-in check valve insert, type RCA-5, in the P port.

Application: where one or more parallel-connected valves are actuated and the pressure in P can fall below that in A or B (pump is vented, or another valve is opened to a low-pressure load).

In such circumstances, the P port check valve prevents the A and B pressures of the more highly loaded valves from falling.

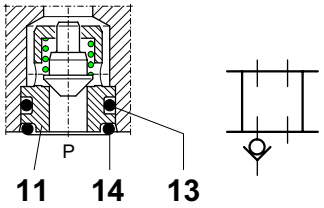
The check valve insert needs a special version of the valve body.

ORIFICE DISC in port 'P'

An orifice disc must always be installed if there is a possibility of flow rates that exceed the valve's rated maximum of 20 (10) l/min. The D10 orifice disc (ø = 1.0 mm; 10 l/min at 315 bar) can be drilled out by the customer to a maximum of 1.4 mm (see Δp-Q graphs on data sheet i-01, Orifice Flow Chart).

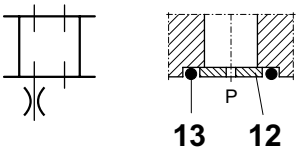
Application: in accumulator systems, for example, or where the seat valve is used to supply several downstream spool valves.

The orifice disc can be shipped in standard EEx-W2 ...-6 valves as shown on page 2, or fitted later by the customer.



It.	Qty.		Description	= available as service part
11	1	--	C.V. insert type RCA-5	ø 12,5 x 14
12	--	1	Orifice disc	ø 8 x 1,2
13	1	--	O-ring no. 012	ø 9,25 x 1,78 N70
	--	1	O-ring no. 012	ø 9,25 x 1,78 N90
14	1	--	O-ring	ø 10 x 1,5 N90

Orifice disc in 'P' port
Check valve insert in 'P' port



MAIN CHARACTERISTICS

Type	2/2 ... 4/4 directional seat valves for explosion-hazard areas
Design	direct acting seat type
Mounting method	manifold mounting
Size	ISO 4401 size 3 interface nominal 6 mm
Mass	2/2 and 3/2 valves = 2,05 kg 3/3, 4/3 and 4/4 valves = 2,80 kg
Mounting attitude	unrestricted
Flow direction	see symbols
Operating pressure v. Switching frequency	... 315 bar at ... 1,200 cycles/hr. ... 210 bar at 1,000 ... 10,000 cycles/hr.
Switching power limits	to Q max. = 20 l/min and p = 315 bar with closed crossover: Q max. 10 l/min
Fluids	hydraulic oils HL and HLP to DIN 51 524 other fluids - contact HTF
Min. fluid cleanliness	18/14 to ISO 4406 / CETOP RP70H 8 ... 9 to NAS 1638
Fluid temperature range	see "Apparatus Cert. No. Ex 89Y5111X"
Viscosity range	3 ... 300 cSt
Flow rate Q max.	EEx-W2N ... = 20 l/min (open x-over) EEx-W2P ... = 10 l/min (closed x-over)

Electrical data for **EEx-W2N ... -6 / EEx-W2P ... -6 :**

Solenoid type	EEx-classification	Voltage	Power rating	Standards
D 14	EEx me II T4	24 VDC	40 W	EN 50014 EN 50019 EN 50028
K 14 *)	EEx me II T4	230 VAC		

Valves (and solenoids) are supplied **without** cable and **without** M20 x 1,5 cable gland.

Suitable cable: min. ø 6 / max. ø 12, 3-core x 1,5 mm²

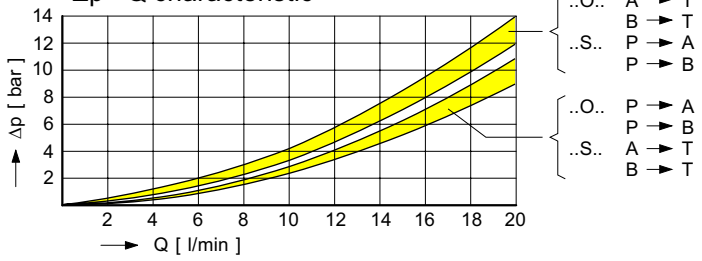
EEx- classification	EEx me II T4
Enclosure protection	IP 66
Standards	EN 50014 / 50019 / 50028
Solenoid	wet-armature type with core tube and slip-on coil
Nominal voltages	24 VDC 230 VAC 50 ... 60 Hz
Voltage tolerance	± 5 %
Max. core tube pressure	315 bar (static)
Duty cycle	100 %

The solenoid coils must be protected by a semi-delay fuse to DIN 41 571.

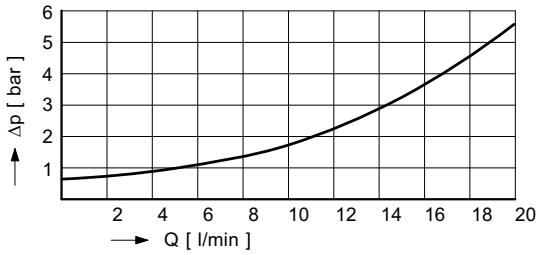
*) = with integral rectifier/varistor

PERFORMANCE DATA Oil viscosity 33 cSt

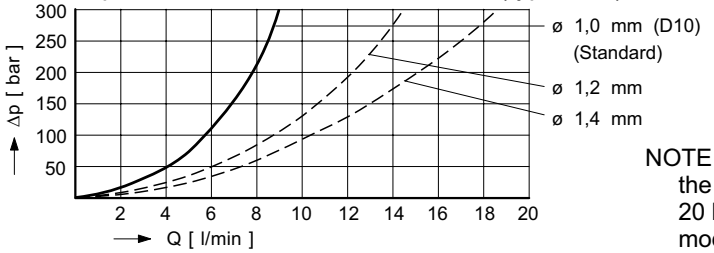
Δp - Q characteristic



Δp - Q characteristic across CV (type RCA-5)



Δp - Q characteristic across orifice (type D ...)



Switching times Flow direction 1 → 2

Solenoid ON	80 ... 220 ms
Solenoid OFF	10 ... 160 ms

These times are strongly influenced by flow rate, pressure and viscosity, as well as by the dwell time under pressure.

NOTE ON OPERATIONAL RELIABILITY: In accumulator systems, the user must ensure that the maximum permitted flow rate of 20 l/min for EEx-W2 ... models and 10 l/min for EEx-W2P ... models is not exceeded in any flow direction.

For all applications involving long dwell periods under pressure, please contact HTF

MODEL CODE KEY (see also the separate Quick-selection tables) Ex. EEx - W2 N 32 S N - 6 A B - 1 24 VDC

EEx = EEx- classification EEx me II T4 (for explosion-hazard areas)

W2 = cartridge seat valve, 2/2 or 3/2 function, for Q max. 20 (10) l/min in ISO size 3 manifold mounting body

N = open crossover transient **(standard)**
P = closed crossover transient (see sheet W-2.20)

22 = 2/2 function
32 = 3/2 function
33 = 3/3 function
43 = 4/3 function

S = 2/2 and 3/2 valves: P normally closed
O = 2/2 and 3/2 valves: P → A normally open
R = 3/3 valves: P, A and B normally closed
G = 4/3 (and 4/4) valves: normally A → B → T
F = 4/3 (and 4/4) valves: normally P → A → B

N = with normal P inlet **(standard)**
R = with CV Insert type RCA-5 in P port (see page 3)
D10 = with orifice disc type D10 in P port (see page 3)

6 = ISO 4401 size 3 interface, nominal 6 mm

A ... Q = **standard** model per relevant data sheet
Z ... R = special features by arrangement

*** specify special seal requirements on the order

	Seals: Nitrile 90 Shore	Viton 85 Shore	Special ***
with solenoid and with manual override	B	G	M
with solenoid and without manual override	D	I	O

1 ... 9 = design number (omit when ordering new units)

Voltage and current plainly specified

RELATED DATA SHEETS

i - 01	Orifice flow chart	W - 2.20
i - 31	DIN 24 340 A6 i'face	W - 2.21
---	Quick-selection table	W - 2.22
---	Apparatus Certificate No. Ex 89Y5111X	W - 2.55

2/2 and 3/2 seat valves for explosion-hazard areas.

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