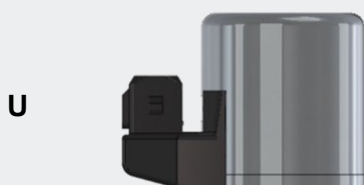
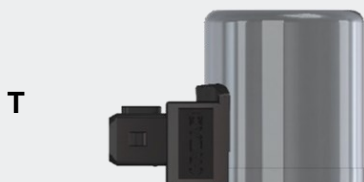
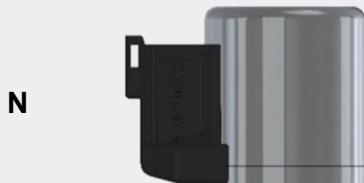
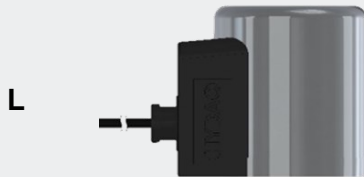
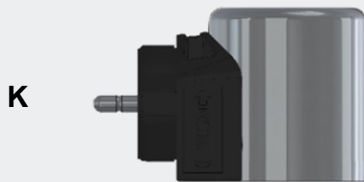
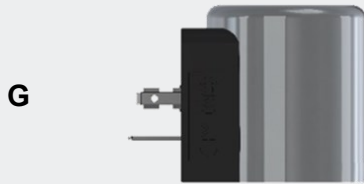


## CONNECTION TYPES



## Solenoid coils for directional valves

for electromagnetic actuation

Direct current (DC) and alternating current (AC)

### PRODUCT ADVANTAGES

- **Maximum force with minimum space requirements**  
due to layer-wound coil with maximum copper insertion and minimum space requirement. Prevents damage to the wire insulation (avoidance of short circuits)
- **Fully encapsulated coil**  
with internal coil sealing prevents ingress of moisture and thus avoids short circuits in the winding
- **Designed for 100 % duty cycle**
- **Low energy consumption**  
through optimised design of the force/energy ratio
- **High mechanical resistance and corrosion protection**  
thanks to zinc-nickel coated steel casing
- **High thermal load capacity**  
up to insulation class H (180 °C)
- **7 different electrical connection types with protection classes IP65, IP67 or IP69 as standard**
- **Any mounting direction**  
due to symmetrical coil design
- **Extensive range of coils with UL approval**  
certified according to UL94 with Flame Rating V-0

### CONTENTS

Connection types	1
Product advantages	1
Specifications	2
Model code	2
Description	3
Connection plug / energy saving	3
Available coils	3
Dimensions	8
Coil - valve assignment	9
Coils with suppressor diodes	10

## SPECIFICATIONS

Duty cycle	100 % (S1) up to max. 115 % of the nominal voltage for sizes 1329 and 1836 max. 110 % of the nominal voltage for sizes 2345 and 3164 at max. 60 °C* ambient temperature
Coil (according to DIN VDE 0580)	Insulation class H for sizes 1329 and 1836 insulation class F for sizes 2345 and 3164
Max. permissible winding temperature	180 °C for sizes 1329 and 1836 155 °C for sizes 2345 and 3164
Max. surface temperature of the coil at 100 % duty cycle	>100 °C for sizes 1329, 1836, 2345 and 3164
Ambient temperature range:	-30 °C to +60 °C for sizes 1329, 1836 and 2345 -30 °C to +50 °C for size 3164 The information in the valve leaflet must also be observed.
Coil casing	Steel, ZnNi coating
Plug socket	Polyamide, black

\*This value applies to a screw-in cartridge valve installed in a standard inline connection housing. An extension of the maximum ambient temperature range to +80 °C is possible if the surface temperature of the housing during operation is limited to a maximum of 100 °C by suitable heat dissipation. Heat dissipation in the application must be ensured at all times during valve operation, e.g. via convection or a flow of pressurised fluid through the control block. For more information, see "Operating conditions and instructions for valves" in brochure 53.000.

### Note

All parameters refer to a coil mounted on the valve.

## MODEL CODE

The type code provides an overview. For available types, see table "Available coils" from page 3.

**Coil 12 DN 01 - 40-1836**

### Designation

#### Nominal voltage

12	= 12 V DC
24	= 24 V AC/DC
48	= 48 V AC/DC
110	= 110 V AC (Connection type G)
230	= 230 V AC (Connection type G)

Further versions from page 3 and on request.

#### Voltage type

A	= Alternating current (AC)
D	= Direct current (DC)

#### Connection type

Connection type	Poles	Connection	Protection class
G = Plug A/B acc. to DIN EN 175301-803	3-pole	radial	IP65
K = KOSTAL plug connector M27x1	2-pole	radial	IP65 / IP67
L = 2 flying leads 0.75 mm <sup>2</sup> x 457 mm (18")	2-pole	radial	IP65 / IP67
N = DEUTSCH plug connector DT04-2P	2-pole	axial	IP67 / IP69
O = M12 plug connector	4-pole	radial	IP65
T = AMP Junior Timer	2-pole	radial	IP65 / IP67
U = AMP Junior Timer	2-pole	axial	IP65 / IP67

Further versions on request.

#### Variant (depending on connection type)

n. a.	= Standard
01	= Bidirectional suppressor diode for connection type DN, DT, DU (see p. 10)
02	= Additional cable lengths for connection type L (02, 03, etc.)

Size	Coil length	Inner-Ø	Outer-Ø	Weight
32-1329	= 32 mm	- 13 mm	29 mm	0.10 kg
40-1836	= 40 mm	- 18 mm	36 mm	0.19 kg
50-1836	= 50 mm	- 18 mm	36 mm	0.24 kg
50-2345	= 50 mm	- 23 mm	45 mm	0.35 kg
75-3164	= 75 mm	- 31 mm	64 mm	1.00 kg

#### Optional specifications

-S = with O-ring for sealing the coil on industrial valve bodies in nominal size 6  
UL V0 = UL certification of coils with flame rating V-0 according to UL94

### Note

Specification of the protection class according to EN 60529 applies to suitable and correctly installed cable socket.

## DESCRIPTION

The solenoid coil is generally manufactured as a direct current (DC) coil. Solenoid coils in version A for operation on alternating current (AC) have an integrated bridge rectifier.

In addition, solenoid coils with an integrated bidirectional suppressor diode are available on page 10, which serve to protect against voltage peaks and reduce the switch-off induction voltage.

Special coils are generally available on customer request - please contact your responsible sales partner.

Coils for proportional valves can be found in our separate brochure.

## CONNECTION PLUG / ENERGY SAVING

A cable socket for DC and AC coils is available for coils of connection type G with a design in accordance with DIN EN 175301-803 via part no. 394287.

The LRS2 power reduction plug (part no. 4747017) is used to save energy with DC coils by reducing the power when the hold position is reached.

To fulfil the protection class (IP code), the coil must be installed correctly on the valve and a connector plug must be used that corresponds to the protection class.

## AVAILABLE COILS

### CONNECTION TYPE G

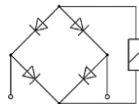
IP65

#### ALTERNATING CURRENT (AC)

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
40-1836	24	18	24.8	-	3003122
	48	19	95	-	3301143
	100	18	394	-	3899699
	115	20	500	-	3003156
	230	20	2137	-	3002594
50-1836	24	25	18	-	3091593
	48	25	73	-	3019734
	110	25	383	-	3019735
	230	25	1680	-	3019736
50-2345	48 -S	31	74.5	-	4648425
	110	30	288	-	4224861
	110 -S	30	288	-	4244174
	120 -S	30	372	-	4348779
	230	30	1285	-	4224863
	230 -S	30	1285	-	4244276
75-3164	110	38	242.5	-	4384591
	120	45	242.5	-	
	230	38	1106	-	4407514

#### Note

Rectifier integrated in coil base. Design as bridge rectifier:



## DIRECT CURRENT (DC)

Size	Voltage U [V]	Power P <sub>Nom.20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
32-1329	12	11.8	12.2	0.984	2610160
	20	11.8	33.8	0.594	2611288
	24	11.8	48.7	0.493	2610161
	26	11.8	57.3	0.454	3709203
	105	11.3	980	0.107	2610156
	205	11.3	3700	0.055	2610159
All UL V0 <sup>1</sup>					
40-1836	10	18	5.4	1.852	3003128
	12	18	8	1.5	3000489
	12 UL V0 <sup>1</sup>	18	8	1.5	3399930
	13	19	8.8	1.477	4058149
	24	19	30	0.8	3000249
	24 UL V0 <sup>1</sup>	19	30	0.8	3399932
	26	19.3	35	0.743	3614877
	28	19	41	0.683	3104545
	36	20	65	0.554	3003151
	48	20	116	0.414	3003155
	72	18	282	0.255	3020353
	110	20	607	0.181	3003142
	125	19.5	800	0.156	3401209
	205	20	2137	0.096	3173182
	220	20	2350	0.094	3529173
50-1836	12	26.7	5.4	2.222	915151
	12 UL V0 <sup>1</sup>	26.7	5.4	2.222	3401711
	20	26	15.5	1.290	3874682
	24	27.2	21.2	1.132	915142
	24 UL V0 <sup>1</sup>	27.2	21.2	1.132	3401712
	26	26.6	25.4	1.024	3614878
	28	27	29	0.966	3504099
	48	26	89	0.539	3091591
	110	26	467	0.236	3091592
	125	26	600	0.208	3400879
	220	24	2000	0.11	3529174
50-2345	12	30	5.2	2.308	3274860
	12 -S	30	5.2	2.308	4244169
	12 UL V0 <sup>1</sup>	30	5.2	2.308	3401761
	24	30	19.2	1.25	3274861
	24 -S	8	68.5	0.350	4277864
		30	19.2	1.25	4244171
	24 UL V0 <sup>1</sup>	30	19.2	1.25	3401763
	28	30	26.1	1.073	4093484
	48	30	76.8	0.625	4375720
	80	30	200	0.4	3197677
	96	32	288	0.333	4224852
	96 -S	32	288	0.333	4244173
	110 -S	32	372	0.296	4330790
	205	33	1285	0.160	4224854
	205 -S	33	1285	0.160	4244275
	220 -S	32	1489	0.148	4386106
75-3164	12	38	3.79	3.166	4251228
	24	38	15.16	1.583	4251230
	96	38	242.5	0.396	4251232
	110	38	318.4	0.345	4251233
	125	38	411.2	0.304	4251234
	205	38	1105.9	0.185	4251234
	220	38	1273.7	0.173	4251257

<sup>1</sup>UL certification of coils with flame rating V-0 in accordance with UL94.

**CONNECTION TYPE K**
**IP65/IP67**
**DIRECT CURRENT (DC)**

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
40-1836	10	18	5.4	1.852	3003125
	12	18	8	1.5	3003133
	24	19	30	0.8	3003138
	28	19	41.7	0.671	3794789
	36	20	65	0.554	3003148
	48	20	116	0.414	3003153
50-1836	24	27	21	1.143	3091681
	28	27	29	0.966	3830428
50-2345	12 -S	30	5.2	2.308	4639056
	24 -S	30	19.2	1.25	4639055
	28 -S	32	26.1	1.073	4638924

**CONNECTION TYPE L**
**IP65/IP67**
**DIRECT CURRENT (DC)**

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
32-1329 All UL V0 <sup>1</sup>	12	11.8	12.2	0.984	2610151
	24	11.8	48.7	0.493	2610162
40-1836	12	18	8	1.5	3002244
	24	19	30	0.8	3003119
	28	19	41	0.683	3263948
	36	20	65	0.554	3003140
50-1836	48	20	116	0.414	3003149
	10	26	3.8	2.632	3112950
	12	27	5.4	2.222	3091633
	24	27	21	1.143	3112951
	36	27	48.5	0.742	3112952
50-2345	48	26	89	0.539	3112953
	12	22	6.6	1.818	4288257
50-2345	24	22	26.1	0.920	3488338
	32	22	46.55	0.687	3863110
	34	22	52.55	0.647	3844024
	36	22	58.8	0.612	3538813

<sup>1</sup>UL certification of coils with flame rating V-0 in accordance with UL94.

## CONNECTION TYPE N

IP67/IP69

### DIRECT CURRENT (DC)

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
32-1329 All UL V0 <sup>1</sup>	10	12	8.3	1.205	2610947
	12	11.8	12.2	0.984	2610149
	20	11.8	33.8	0.594	2610973
	24	11.8	48.7	0.493	2610150
40-1836	10	18	5.4	1.852	3012601
	12	18	8	1.5	3012600
	12 UL V0 <sup>1</sup>	18	8	1.5	3426653
	20	19	21	0.952	3277546
	24	19	30	0.8	3012599
	24 UL V0 <sup>1</sup>	19	30	0.8	3426654
	28	19	41	0.683	4479654
	36	20	65	0.554	3012602
50-1836	48	20	116	0.414	3012603
	10	26	3.8	2.632	3091664
	12	27	5.4	2.222	3091665
	12 UL V0 <sup>1</sup>	27	5.4	2.222	3426780
	20	26	15.5	1.290	3277570
	24	27	21	1.143	3091667
	24 UL V0 <sup>1</sup>	27	21	1.143	3426781
	28	27	29	0.966	3910046
50-2345	36	27	48.5	0.742	3091669
	48	26	89	0.539	3091670
	12	30	5.2	2.308	3241892
	12 -S	28	5.1	2.353	4244170
	24	30	19.2	1.25	3241893
	24 -S	32	18	1.333	4244172
75-3164	24 -S	9	64.1	0.374	4290983
	28	32	24.5	1.143	4118636
	12	38	15.16	1.58	4360072
	24	38	3.79	3.17	4360073

<sup>1</sup>UL certification of coils with flame rating V-0 in accordance with UL94.

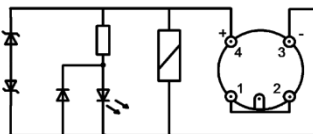
## CONNECTION TYPE O

IP65

### DIRECT CURRENT (DC)

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
40-1836	12	18	8	1.5	4501730
	24	19	30	0.8	3030064
	24	8	72	0.333	3131960
50-1836	24	27	21	1.143	3214337
50-2345	12 -S	30	4.8	2.5	4250874
	12 -S	8	18.18	0.66	4253622
	24 -S	30	19.2	1.25	4250885
	24 -S	8	68.57	0.35	4250889

Circuit diagram:



**CONNECTION TYPE T**
**IP65/IP67**
**DIRECT CURRENT (DC)**

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
<b>32-1329</b>	12	11.8	12.2	0.984	3576908
<b>40-1836</b>	10	18	5.4	1.852	3008291
	12	18	8	1.5	3008275
	12 UL V0 <sup>1</sup>	18	8	1.5	3426667
	20	19	21	0.952	3517698
	24	19	30	0.8	3008279
	24 UL V0 <sup>1</sup>	19	30	0.8	3426669
	28	19	41	0.683	3245522
	36	20	65	0.554	3008283
	48	20	116	0.414	3008287
	60	19	189.5	0.317	3479295
<b>50-1836</b>	12	27	5.4	2.222	3001033
	24	27	21	1.143	3001503
	26	27	25.4	1.024	3001507
	48	26	89	0.539	3414493
<b>75-3164</b>	12	38	3.79	3.166	4327603
	24	38	15.16	1.583	4327604

<sup>1</sup>UL certification of coils with flame rating V-0 in accordance with UL94.

**CONNECTION TYPE U**
**IP65/IP67**
**DIRECT CURRENT (DC)**

Size	Voltage U [V]	Power P <sub>Nom 20</sub> [W]	Resistance R <sub>20</sub> [Ω]	Current I <sub>Nom</sub> [A]	Part no.
<b>40-1836</b>	10	18	5.4	1.852	3011668
	12	18	8	1.5	3011669
	18	18	18	1	3809718
	24	19	30	0.8	3008276
	28	19	41	0.683	3918750
	36	20	65	0.554	3011670
	48	20	116	0.414	3011672
	60	20	179	0.335	3531697
<b>50-1836</b>	12	27	5.4	2.222	3002184
	24	27	21	1.143	3002104
<b>50-2345</b>	12	30	5.2	2.308	3274862
	12 -S	30	5.2	2.308	4250893
	12 -S UL V0 <sup>1</sup>	30	5.2	2.308	4745929
	24	30	19.2	1.25	3274863
	24 -S	30	19.2	1.25	4250892
	24 -S UL V0 <sup>1</sup>	30	19.2	1.25	4745930
	28 -S	30	26.1	1.073	4639060
	28 -S UL V0 <sup>1</sup>	30	26.1	1.073	4745967
	48 -S UL V0 <sup>1</sup>	30	76.8	0.625	4750600

<sup>1</sup>UL certification of coils with flame rating V-0 in accordance with UL94.

# DIMENSIONS

<b>DIRECT CURRENT (DC)</b>	<b>32-1329</b>	<b>40-1836</b>	<b>50-1836</b>	<b>50-2345</b>	<b>75-3164</b>	
<b>G</b>		A = 15 B = 23 C = 30 D = 23.9	A = 19.1 B = 30 C = 35.1 D = 23.8	A = 19.1 B = 30 C = 35.1 D = 23.8	A = 19.1 B = 30 C = 34.5 D = 28	A = 20 B = 32 C = 36 D = 37.5
	Form B	Form A				
<b>K</b>		-	A = 18 B = 30 C = 34 D = 25.6	A = 18 B = 30 C = 34 D = 25.6	-	-
<b>L</b>		A = 15.6 B = 23 C = 23 D = 26.5 E = 457	A = 12.6 B = 30 C = 31.7 D = 26.6 E = 457	A = 12.6 B = 30 C = 31.7 D = 26.6 E = 457	A = 11.6 B = 31 C = 30 D = 31 E = 457	-
	Cable length E for standard version. Further versions on request.					
<b>N</b>		A = 31.5 B = 23 D = 32.8	A = 33.7 B = 27 D = 35.9	A = 33.7 B = 30 D = 33.7	A = 33.7 B = 27 D = 40.1	A = 52 B = 35 D = 50.1
<b>O</b>		-	A = 28.1 B = 29 D = 51.8	A = 28.1 B = 29 D = 51.8	A = 27.1 B = 29 D = 56	-
<b>T</b>		-	A = 11 B = 27 D = 26.8	A = 11 B = 27 D = 26.8	-	A = 19 B = 30.2 D = 40.3
<b>U</b>		-	A = 26.4 B = 27 D = 35.7	A = 26.4 B = 27 D = 35.7	A = 26.4 B = 27 D = 40	-
<b>ALTERNATING CURRENT (AC)</b>		<b>40-1836</b>	<b>50-1836</b>	<b>50-2345</b>	<b>75-3164</b>	
<b>G</b>		-	A = 19.1 B = 30 C = 35 D = 26.5	A = 19.1 B = 30 C = 35 D = 26.5	A = 18.1 B = 30 C = 34 D = 30.7	A = 20 B = 32 C = 41.5 D = 40.3

All dimensions are given in millimetres and are subject to tolerance. The coils are not shown to scale.



## COIL – VALVE ASSIGNMENT

The following overview assigns the available HYDAC directional valves to the sizes of the solenoid coils. The detailed assignment of the common coil designs is listed in the respective valve brochure.

### Size 32-1329

Valve type	Symbol							
WK06	V	W						
WS06	C	D	E	G	H	J	Y(R)	Z(R)

### Size 40-1836

Valve type	Symbol												
WSM06020	V	W	Y(R)	Z(R)									
WSM10120	Y(R)	Z(R)											
WSM12120	BR	V	W	Y(R)	Z(R)								
WSM20121	V	W											
WS08	D-51	V	W	Y(R)	Z(R)								
WS10	Y(R)	Z(R)											
WS12	Y(R)	Z(R)											
WS16	Y(R)	Z(R)											
WKM08140	EB	X	Y										
WKM08130	C	D											
WK07	L												
WK08	A	C	D	J	K	L	P	R	V	W	X	Y	Z
WK081	A	C	D	J	K	L	P	R	V	W	X	Y	Z
WK10	E	G	H	J	T	Y-40							
WSM20121	V	W											
DB08	PY												
DB10	PY												
DB12	PY												
DB16	PY												
DBM10120	APY												
DBM12120	APY												
DWM12121	ZMDY												
DR08	PY												

### Size 50-1836

Valve type	Symbol													
WS08	C	D	W-61											
WS10	V	W												
WK10	A	C	D	JB	K	L	N	P	R	V	W	X	Y	Z
WSM03230	C	D												
WSM06020	W-61													
WSM08130	C	D												
WSM10120	V	W												

### Size 50-2345

Valve type	Symbol											
4WE6 A01/A40	(A/B)E	C	D(T)	E(A/B)	F	G(A/B)	H(A/B)	J(A/B/R)	K(A)	L	M	
	P	Q(A)	R	U	Y(T)							
4WE6 A08	C	D	E	G	H	J(A)	Q	Y				
WSE6	(B)E2	(B)E4	C	D	E	J+M(-2RV)	M+J-2RV	Z+X-2RV	E+H	H	U	
	Y											
WSER6	(B)E2	(B)E4	D	Y								

## Size 75-3164

Valve type	Symbol											
4WE10	AE	BE	BJ	C	D(-OF)	E(A/B)	F	G(A)	H(A/B)	J(A/B)	JR	K
	L	M	P	Q(A)	R	U(A)	Y					
4WEW10	D	E	H(A)	J(A)								

## COILS WITH SUPPRESSOR DIODES

### DIRECT CURRENT (DC)

Size	Diode	Blocking voltage $U_z$ [V]	Connection type + variant	Voltage $U$ [V]	Part no.		
32-1329	P4KE68CA	68	DG01	12 UL V0 <sup>1</sup>	2610268		
				24 UL V0 <sup>1</sup>	2610269		
			DL01	12 UL V0 <sup>1</sup>	2610266		
				24 UL V0 <sup>1</sup>	2610267		
DN01			12 UL V0 <sup>1</sup>	2610210			
			24 UL V0 <sup>1</sup>	2610265			
40-1836			P4KE68CA	68	DK01	12	3050203
						24	3050204
					DL01	24 UL V0 <sup>1</sup>	3399949
						DN01	12
					12 UL V0 <sup>1</sup>		3426665
					24		3036401
	24 UL V0 <sup>1</sup>	3426666					
	DT01	28			3269649		
		12			3039436		
		12 UL V0 <sup>1</sup>			3426670		
		24			3039430		
	DU01	24 UL V0 <sup>1</sup>			3426671		
28		3322583					
12		3317162					
24		3096576					
50-1836	P4KE68CA	68	DN01	12	3091666		
				12 UL V0 <sup>1</sup>	3426784		
				24	3091668		
			DT01	24 UL V0 <sup>1</sup>	3426785		
				12 UL V0 <sup>1</sup>	3426788		
				24	3091641		
DU01			24 UL V0 <sup>1</sup>	3426789			
			28	3468775			
			12	3039437			
50-2345			P4KE68CA	68	DN01	12	3525251
						12 s	4367306
						24	3525252
	24 s	4367307					
	DU01	12 s			4437673		
		12 -S UL V0 <sup>1</sup>			4745932		
		24 -S UL V0 <sup>1</sup>			4745965		
		28 -S UL V0 <sup>1</sup>			4745967		
	48 -S UL V0 <sup>1</sup>	4750600					

<sup>1</sup>UL certification of coils with flame rating V-0 in accordance with UL94.

For technical data, please refer to the respective coils under "Available coils" starting from p.3. Further versions on request.

### NOTE

The information in this brochure relates to the operating conditions and fields of application described. For applications and operating conditions not described, please contact the relevant technical departments.

Subject to technical modifications.

Documents are only valid if they have been obtained via the website and are up-to-date.

**HYDAC Fluidtechnik GmbH**  
 Justus-von-Liebig-Str.  
**66280 Sulzbach/Saar**  
**Germany**  
 Phone: +49 6897 - 86 509 -0  
 E-mail: [valves@hydac.com](mailto:valves@hydac.com)  
 Internet: [www.hydac.com](http://www.hydac.com)