

# Direct acting 2/2 or 3/2 way Pivoted armature valve

- Direct acting, medium separated valve up to orifice DN 4
- Maintenance-free pivoted armature technology

FLUID CONTROL SYSTEMS

- Vibration resistent, screwed block coil system
- Suitable for aggressive alkali solutions and acids
- Service friendly, robust manual override
- Explosion proofed version

The 0331 valve is a direct-acting, mediaseparated pivoted armature valve. It is available in 3/2 and 2/2-way versions. As a 3/2-way version, it can be used as a distributor or mixing valve. Various diaphragm material combinations and methods of operation are available depending on the application. The standard brass housing satisfies all European drinking water requirements. Stainless steel (316L), PVDF, polypropylene and PEEK housing versions complete the offering. The solenoid coils are moulded with a chemically resistant epoxy. The 0331 is equipped with manual override for commissioning and testing. For reduced energy requirements all coils can be delivered with electronic power reduction or as an impulse version. The switching status can be indicated with position feedback as a binary or NAMUR signal. In combination with a plug in accordance with DIN EN 17301-803 Form A, the valves satisfy protection class IP65/67 - in combination with a stainless steel or plastic housing NEMA 250 Kat.4X.

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Technical data	
Available body material	Brass Stainless steel (1.4401) PP (Polypropylene) PVDF (Polyvinyl fluoride) PEEK
Port connection	Flange interface acc. to Bürkert standard 1000225877 (see also sectional dimensions)
Medium	
for NBR	Neutral mediums such as compressed air, town gas, water, hydraulic oil, oils and greases without additives, oxygen
for EPDM	Alkalis, acids to medium concentrations, alkaline washing and bleaching lyes
for FKM	Oxidizing acids and substances, hot oils with additives, salt solutions, waste gases, oxygen
for FFKM	Aggressive mediums, hot air, hot oils
All materials	For more detailed information please refer to our compatibility chart
Medium temperature for body material Brass, Stainless Steel or PEEK	NBR         0 to +80°C           EPDM         -30 to +90°C           FKM         0 to +90°C           FFKM         +5 to +90°C
Medium temperature for body material PP or PVDF	NBR         0 to +80°C           EPDM         -30 to +80°C           FKM         0 to +80°C           FFKM         +5 to +80°C
Viscosity	Max. 37mm <sup>2</sup> /s
Ambient temperature	Max. +55°C
Operating voltage	24V 50Hz; 110V 50Hz; 230V 50Hz 120V 60Hz; 240V 60Hz 12V DC; 24V DC; (further voltages on request)
Voltage tolerance	+/- 10%
Duty cycle for brass and stainless steel	100%
Duty cycle for PP PVDF PEEK	40% ED (60% intermittent operation) in 30min for 8W version 100% ED for 5W version 60% ED (40% intermittent operation) in 30min for 8W version

W



- A 2/2-way direct acting valve, normally closed
- B 2/2-way direct acting valve, normally open
- C 3/2-way valve, direct acting, when de-energised Port A exhausted (P) 3(R)
- D 3/2-way valve, servo-assisted, outlet B normally pressurized
- F Distribution valve, direct-acting, 4(A) 2(B) in de-energized positon, P→B open, A closed
- T 3/2 way valve, universal function, flow direction as required

# Technical data (continued)

Electrical connection	Tag connector acc. to DIN EN 175301-803 Form A for
	cable plug Type 2508/2509
	(on request also with moulded cable or terminal box)
Type of protection	IP65 with cable plug
Coil thermal isolation class	Н
Installation	As required, preferably with actuator upright
Weight [kg]	
with metal body	0.47
with plastic body	0.40

## Standard power consumption

FrequencyAC			FrequencyDC				
Inrush [VA]	Hold [VA]	Operation [W] Cold [W] Warm [W]					
30	15	8	11	8			

## Impulse (inrush winding)

FrequencyAC		FrequencyDC						
Hold [VA]	Operation [W]	Cold [W]	Warm [W]					
20	11	11	8					

# Response times

Orifice	FrequencyAC		FrequencyDC					
[mm]	Opening [ms]	Closing [ms]	Opening [ms] Closing [r					
2-4	8–15	8–15	10–20	10-20				

### Response times [ms]:

Measured at valve outlet at 6 bar and +20 °C *Opening:* Pressure rise 0 to 90%, *Closing:* Pressure relief 100 to 10%

# Pressure range and flow rate for brass, stainless steel or PEEK body

<b>Circuit function</b>	DN	Kv value [m <sup>3</sup> /h]:		Standard <sup>1)</sup>	Impulse 2)	
		DC	AC [50 or 60hz]	Pressure range <sup>4)</sup> [bar]	Vaccum <sup>3)</sup> Pressure range <sup>4)</sup> [bar]	Pressure range <sup>4)</sup> [bar]
A/B/C/D/F	2.0	0.08	0.10	0 - 16 5)	-0.98 - 10	0 – 16 <sup>5)</sup>
	3.0	0.12	0.15	0 – 10	-0.98 - 6	0 - 10
	4.0	0.15	0.18	0 – 5	-0.98 - 3	0 – 5
E	2.0	0.08	0.10	0 – 10	-0.98 - 8	0 – 10
	3.0	0.12	0.15	0 - 6	-0.98 - 5	0 - 6
	4.0	0.15	0.18	0 – 3	-0.98 - 2.5	0 – 3
Т	2.0	0.08	0.10	0 - 12	-0.98 - 8	-
	3.0	0.12	0.15	0 - 8	-0.98 - 5	-
	4.0	0.15	0.18	0 - 4	-0.98 - 3	-

## Pressure range and flow rate PVDF or PP body

Circuit function	DN	Kv value water	Standard <sup>1)</sup>			Impulse <sup>2)</sup>
		[m³/h]	Pressure range <sup>4)</sup> [bar] AC [50 or 60hz]	Pressure range <sup>4)</sup> [bar] DC	Vacuum Pressure range <sup>4)</sup> [bar]	Pressure range <sup>4)</sup> [bar]
A/B/C/D/F	2.0	0.1	0 - 16 5)	0 – 12	-0.98 - 10	0 – 12
	3.0	0.15	0 – 10	0 – 8	-0.98 - 6	0 – 8
	4.0	0.18	0 – 5	0 - 4	-0.98 - 3	0 – 4
E/T	2.0	0.1	0 – 10	0 – 7	-0.98 - 7	0 – 7
	3.0	0.15	0 – 6	0 - 4	-0.98 - 5	0 - 4
	4.0	0.18	0 – 3	0 – 2.5	-0.98 - 2.5	0 – 2

1) Heat output 8 W

<sup>2)</sup> Inrush power 11 W

<sup>3)</sup> Vacuum possible for all seal materials

<sup>4)</sup> Pressure values [bar] for atmospheric pressure

<sup>5)</sup> For seal material FKM and FFKM the max. mediums pressure is 12 bar







#### Use in other circuit functions

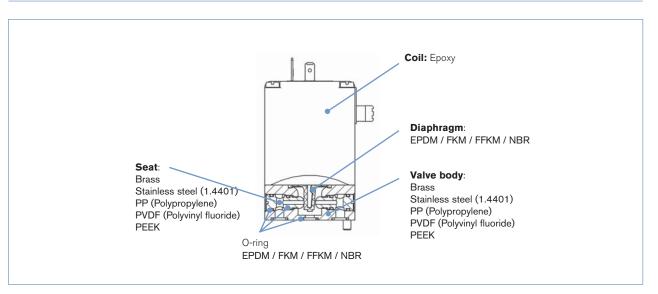
The valves are fitted with different springs for a particular circuit function When used in other circuit functions, the maximum operating pressure varies according to the following tables

Metal body	Netal body (8W respectively 11W)																	
Circuit																		
function	Orifice 2 mm Orifice 3 mm Orifice 4 mm																	
	<b>A</b> <sup>1)</sup>	<b>B</b> <sup>1)</sup>	С	D	E	F	Α	В	С	D	E	F	Α	В	С	D	E	F
С	16	1.5	16	1.5	1.5	16	10	1	10	1	1	10	5	0.8	5	0.8	0.8	5
D	4	16	4.5	16	4	4	2.5	10	2.5	10	2	3	2	5	2	5	2	2
Т	8	8	10	10	10	8	6	6	6	6	6	6	3	3	3	3	3	3

Plastic boo	lastic body (8W respectively 11W)																	
Circuit																		
function	Orifice 2 mm Orifice 3 mm Orifice 4 mm																	
	<b>A</b> <sup>1)</sup>	B <sup>1)</sup>	С	D	E	F	Α	В	С	D	E	F	Α	В	С	D	E	F
С	16	1.5	16	1.5	1.5	16	10	1	10	1	1	10	5	0.8	5	0.8	0.8	5
D	4	16	4.5	16	4	4	2.5	10	2.5	10	2	3	2	5	2	5	2	2
F	16	1.5	10	1.5	1.5	16	6	1	6	1	1	10	4	1	4	1	1	

<sup>1)</sup> For circuit function A and B the valve must be connected acc. to the pin assignment of 3/2-way valve.

## Construction and material specifications





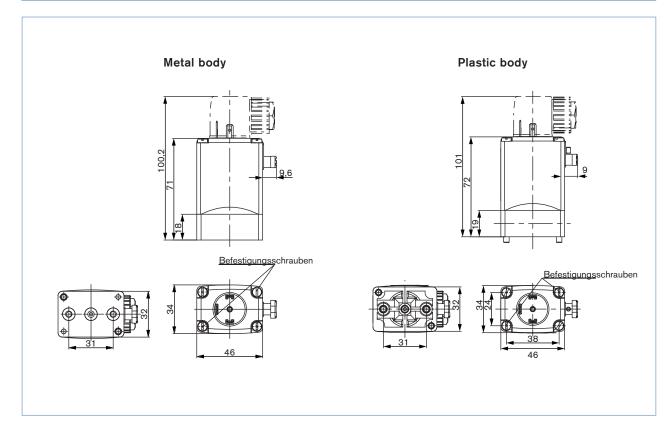
# Additional options

Option	Var. Code	Description
Impulse version	CF02	Bistable magnetic system with inrush and drop-off coil;Continuous operation or operation with short current pulses (min. 150 ms) possible
Oxygen versions	NL02	Suitable for applications with oxygen (non-metal materials that are in contact with the medium, are tested and approved according to BAM)
Increased purity requirements e.g. oil, grease and silicone-free	NL50/NL05	Wetted parts are specially cleaned and packaged in accordance with the valves
Increased tightness requirements	PCxx	Standard units are tested at $10^{-2}$ mbar x l / sec; feasible up to $10^{6}$ mbar
Electrical feedback	LF02 / LF03	See Type 1060
High-power electronics	CZ05	Inrush power 60 W, nominal holding current 3 W; with plastic versions 100% ED is now feasible
Vacuum version	NA02	Suitable for vacuums up to -0.98bar
Increased purity and tightness requirements	NA03	Wetted parts are specially cleaned and leak tested to $10^{-4}$ mbar x l/sec
Increased purity and tightness requirements and vacuum version	NA01	Wetted parts are specially cleaned and leak tested up to 10 <sup>-4</sup> mbar x l/sec and suited for vacuum up to -0.98 bar
Coil with reduced power (5W)		Devices have lower pressure range; with plastic versions 100% ED is now feasible
Cable plug	JFxx / JGxx	Cable plug is included in delivery. Cable plug versions (acc. to DIN EN 175301-803 Form A), see datasheet Type 2508 and 2509
Manifold with banjo bolt	LG09	Due to the banjo bolt a direct attachment is possible (for example, to externally controlled pneumatic drives)
Approvals	PD01	CSA General Purpose valve
	PD02	UL recognized General Purpose valve CSA General Purpose valve
	PD45	FM explosionproof for class I Div. 1 and dust-ingnitionproof for class II / III Div. 1 T4
		CSA General Purpose valve for hazardous location class I / II Div.2 and class III T4
	PD07	DNV-GL (formerly Germanischer Lloyd)
possible conformities (depending on the assembly)		EAC ; drinking water; FDA;



# Dimensions [mm]

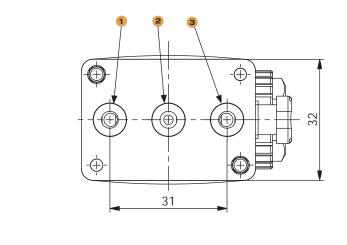
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# **PIN Assignments**

The connections marked with 1, 2 and 3 are labelled in the drawing according to the circuit function table on the left.

Circuit function	Connection 1	Connection 2	Connection 3
A	Р	A	
В	В	Р	
С	Р	A	R
D	R	В	Р
E	P1	A	P2
F	A	Р	В





Ordering chart (products with reduced delivery time)

	- Item no. per voltage/						
	E frequency [V/Hz]						
Circuit function	Orifice [mm]	Seal Material	Body and seat material	024/DC	024/50	110/50	230/50
А	04.0	FKM	Polypropylene	088 352	-	-	020 278
С	02.0	NBR	Brass	041 183	041 184	044 989	041 188
	02.0	FKM	Stainless steel	048 354	-	-	-
	02.0	EPDM	PVDF	-	-	-	130 301
	03.0	NBR	Brass	041 195	041 198	041 203	041 209
	03.0	FKM	Stainless steel	045 796	-	-	-
D	02.0	NBR	Brass	041 234	041 235	041 798	041 242
	02.0	EPDM	PVDF	079 663	-	-	-
	02.0	FKM	PVDF	-	-	-	078 859
	03.0	NBR	Brass	041 247	041 248	041 531	041 254
E	02.0	NBR	Brass	042 061	042 799	040 064	041 265
	03.0	NBR	Brass	042 980	043 104	046 843	041 270
	03.0	EPDM	Polypropylene	021 892	-	-	-
Т	02.0	FKM	Brass	124 953	124 954	124 955	124 956
	03.0	FKM	Brass	124 958	124 959	124 960	124 961

Ordering chart (products with reduced delivery time)

All devices wi	All devices with manual override and cable plug Type 2508 and manifold (banjo version)						
	[w		ا erial	Item no. per voltage/ frequency [V/Hz]			
Circuit function	Orifice [n	Seal Material	Body and seat mate	024/DC	024/50	110/50	230/50
С	02.0	NBR	Brass	041 191	-	-	041 192
	03.0	NBR	Brass	041 217	041 219	041 223	041 228
	03.0	FKM	Brass	041 231	-	-	041 233
E	02.0	NBR	Brass	123 092	_	-	043 913



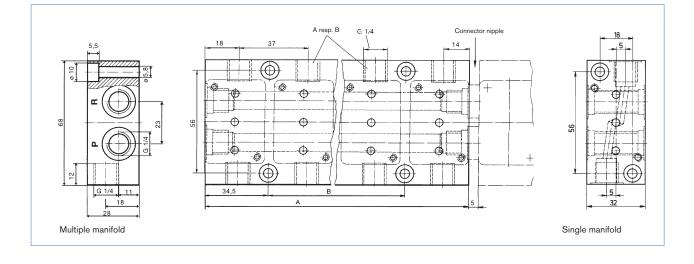
# Ordering chart for flange valve manifolds and accessories

Manifolds	(the plate	s connecting	thread is G1/4)
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Number of valve	Length A	Hole spacing B			
positions [mm]		[mm]	Material, aluminum anodized	Material, stainless steel	Material, brass
1	32	-	5043	679 211	006 014
2	69	-	5045	679 209	612 071
3	106	37	5366	679 266	006 323
4	143	74	5294	658 925	006 324
5	180	111	5295	679 268	006 325
6	217	148	5296	679 269	006 326
7	254	185	5403	679 270	006 327
8	291	222	6074	679 271	-

### Accessories for manifolds

	Material	Seal material	Item No.
Covering plate (for empty valve places)	Stainless steel	FKM	265 294
Covering plate (for empty valve places)	Aluminium anodized	NBR	005 625
Nipple (for connecting the collecting ducts of 2 manifolds)	Steel lined	FKM	005 049
Nipple (for connecting the collecting ducts of 2 manifolds)	Stainless steel	FKM	007 376
Nipple (for connecting the manifolds; connecting duct is closed)	Steel lined	NBR	006 049





#### **Circuit function**

A 2/2-way direct acting valve, normally closed

(B)

1 (P) 2(A)

2(A)

1(P1) 3(P2)

2(IN/OUT)

T W

- B 2/2-way direct acting valve, normally open
- C 3/2-way valve, direct acting, when de-energised Port A  $\Box$ τìM 1(P) 3(R) exhausted
- 2(B) D 3/2-way valve, servo-assisted, ll-w outlet B normally pressurized 1(P) 3(R)
- E Mixer valve, direct-acting, in de-energized position,  $\Box$ P2→A open, P1 closed
- 4(A) 2(B) F Distribution valve, direct-acting, in de-energized positon, M P→B open, A closed 1(P)
- T 3/2 way valve, universal TITAM  $\Box$ function, flow direction as required

Explosion	proofed	version

Technical data	
Available body	Brass, stainless steel (1.4401), PP (Polypropylene)
material	PVDF (Polyvinyl fluoride), PEEK
Port connection	Flange interface acc. to Bürkert standard 1000225877
	(see also sectional dimensions)
Seal material	EPDM / FKM / FFKM / NBR
Medium	
for NBR	Neutral mediums such as compressed air, town gas, water, hydraulic
	oil, oils and greases without additives, oxygen
for EPDM	Alkalis, acids to medium concentrations, alkaline washing and
	bleaching lyes
for FKM	Oxidizing acids and substances, hot oils with additives, salt solutions,
	waste gases, oxygen
for FFKM	Aggressive mediums, hot air, hot oils
All materials	For more detailed information please refer to our compatibility chart
Medium temperature	NBR 0 to +80°C
for body material	EPDM -30 to +90°C
Brass, Stainless steel	FKM 0 to +90°C
or PEEK	FFKM +5 to 90°C
Medium temperature	NBR 0 to +80°C
for body material	EPDM -30 to +80°C
PP or PVDF	FKM 0 to +80°C
<u> </u>	FFKM +5 to +80°C
Viscosity	Max. 37 mm <sup>2</sup> /s
Ambient temperature	Max. +55 °C
Voltages	24V; 230V (further voltages on request)
Frequency	AC/DC
Voltage tolerance	+/- 10%
Duty cycle	100%
Electrical connection	Moulded cable (For more detailed information, refer to the instruction manual
	ACP016, chapter 7.6.1)
Type of protection	Terminal box without safety fuse IP65
Coil thermal isolation	H
class	
Ignition protection	II 2 G Ex d e IIC T4 bzw. T5
(Terminal box version)	II 2 D Ex tD A21 IP65 T135°C bzw. 100°C
Certificate	PTB 03 ATEX 1030 X
(Terminal box version)	IECEx PTB 05.0026
Ignition protection	II 2 G Ex mb IIC T4 Gb
(Cable version)	II 2 D EX mb IIIC T130° Db
Certificate	EPS 16 ATEX 1 111 X
(Cable version)	IECEx EPS 16.0049X
Safety fuse	Appropriate inrush current (see also chart recommended fusing rate)
Installation	As required, preferably with actuator upright

burkert

#### Cycling rate

	Max. cycling rate	Mediums temp.	Ambient temp.
Variant 1	20/min	Up to +70 °C	Up to +40 °C
Variant 2	5/min	Up to +90 °C	Up to +40 °C

#### **Power consumption**

Inrush [W]	Operation [W]
40	3

#### **Response times**

Orifice [mm]	Opening [ms]	Closing [ms]
2 - 4	30	40

## Response times [ms]:

Measured at valve outlet at 6 bar and +20 °C

Opening: Pressure rise 0 to 90%,

Closing: Pressure relief 100 to 10%



# Technical data (continued)

## Pressure range and flow rate metal body

Circuit function	DN	Kv value water [m³/h]	Standard Pressure range <sup>23)</sup> [bar]	Vacuum Pressure range [bar]
A/B/C/D/F	2.0	0.11	0 - 16	-0.98 - 10
	3.0	0.18	0 - 10	-0.98 - 6
	4.0	0.23	0 – 5	-0.98 - 3
	5.0	0.29	0 - 4	-0.98 - 2.5
E	2.0	0.11	0 - 10	-0.98 - 8
	3.0	0.18	0 - 6	-0.98 - 5
	4.0	0.23	0 – 3.5	-0.98 - 2.5
	5.0	0.29	0 – 3	-0.98 - 2
Т	2.0	0.11	0 - 10	-0.98 - 8
	3.0	0.18	0 - 6	-0.98 - 5

## Pressure range and flow rate for plastic body

Circuit function	DN	Kv value water [m³/h]	Standard Pressure range <sup>23)</sup> [bar]	Vacuum Pressure range [bar]
A/B/C/D/F	2.0	0.13	0 - 16	-0.98 - 10
	3.0	0.25	0 - 10	-0.98 - 6
	4.0	0.30	0 – 5	-0.98 – 3
	5.0	0.40	0 - 4.5	-0.98 – 1
E/T	2.0	0.13	0 - 10	-0.98 – 7
	3.0	0.25	0 - 6	-0.98 – 5
	4.0	0.30	0 - 3	-0.98 – 2.5

Measured at +20 °C, 1 bar<sup>2</sup>) pressure at valve inlet and free outlet.
 Devices with FKM or FFKM diaphragm are reduced to a max. pressure of 12 bar
 Pressure values [bar]: Measured as overpressure to the atmospheric pressure



#### Other circuit functions

The valves are fitted with different springs for a particular circuit functionWhen used in other circuit functions the permissable operating pressure changes acc. to the following table.

Metal body	Metal body																	
Circuit Max. operating pressure [bar] when using the valve in a new circuit function																		
function	Orifice 2 mm					Orifice 3 mm						Orifice 4 mm						
	<b>A</b> <sup>1)</sup>	<b>B</b> <sup>1)</sup>	С	D	E	F	Α	В	С	D	E	F	Α	В	С	D	E	F
С	16	1.5	16	1.5	1.5	16	10	1	10	1	1	10	5	0.8	5	0.8	0.8	5
D	4	16	4.5	16	4	4	2.5	10	2.5	10	2	3	2	5	2	5	2	2
Т	8	8	10	10	10	8	6	6	6	6	6	6	3	3	3	3	3	3

Plastic bo	Plastic body																	
Circuit Max. operating pressure [bar] when using the valve in a new circuit function																		
function	Orifice 2 mm						Orifice 3 mm						Orifice 4 mm					
	<b>A</b> <sup>1)</sup>	B <sup>1)</sup>	С	D	E	F	Α	в	С	D	E	F	Α	в	С	D	E	F
С	16	1.5	16	1.5	1.5	16	10	1	10	1	1	10	5	0.8	5	0.8	0.8	5
D	4	16	4.5	16	4	4	2.5	10	2.5	10	2	3	2	5	2	5	2	2
F	16	1.5	10	1.5	1.5	16	6	1	6	1	1	10	4	1	4	1	1	

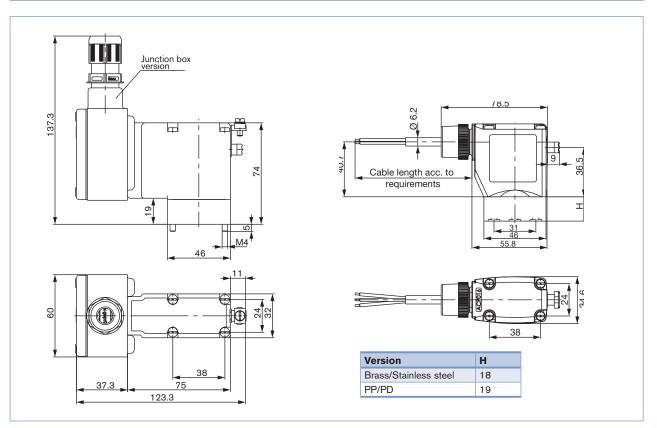
<sup>1)</sup> For circuit function A and B the valve must be connected acc. to the pin assignment of 3/2-way valve.

# Additional options

Option	Variable Code	Description
Oxygen versions	NL02	Suitable for applications with oxygen (non-metal materials that are in contact with the medium, are tested and approved according to BAM)
Increased purity requirements e.g. oil, grease and silicone-free	NL50/NL05	Wetted parts are specially cleaned and packaged in accordance with the valves
Increased hermetic requirements	PCxx	Standard units are tested at 10 <sup>-2</sup> mbar x I / sec; feasable up to 10 <sup>-6</sup> mbar
Vacuum version	NA02	Suitable for vacuums up to -0.98bar
Increased purity and hermetic requirements	NA03	Wetted parts are specially cleaned and leak tested to 10 <sup>-4</sup> mbar x l/sec
Increased purity and hermetic requirements and vacu- um version	NA01	Wetted parts are specially cleaned and leak tested up to 10 <sup>-4</sup> mbar x l/ sec and suited for vacuum up to -0.98 bar
Electrical feedback	CF15	Coil with intrinsically safe proximity switches (PTB 00 ATEX 2048X) instead of manual override
Manifold with banjo bolt	LG09	Due to the banjo bolt a direct attachement is possible (for example, to externally controlled pneumatic drives)
potential conformities (depending on design)		EAC ; drinking water; FDA;

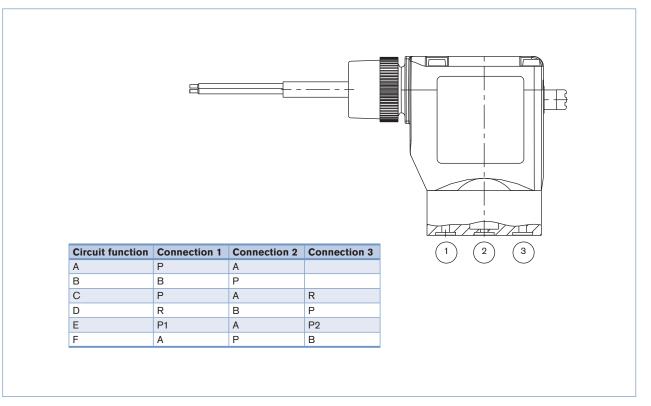
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# Dimensions [mm]



# **PIN Assignments**

The connections marked with 1, 2 and 3 are labelled in the drawing according to the circuit function table on the left.





# Recommended fusing rate (no fuse is required for the cable version)

Voltage [V]	Max. current [A]
24	2
230	0.5
110 resp. 120	0.8

# Ordering chart

### All devices with manual override

	_		<u>.</u>		Item no. per voltage/ frequency [V/Hz]				
Circuit function	Orifice [mm]	Seal Material	Housing or seat material	Electrical connection	024/UC		230 resp. 240 /UC		
А	03.0	FKM	Stainless steel	Cable	305 882	-	305 877		
С	02.0	NBR	Stainless steel	Terminal box	-	153 748	-		
С	02.0	FKM	Stainless steel	Terminal box	-	137 604	-		
С	02.0	NBR	Stainless steel	Cable	305 875	-	-		
С	02.0	FKM	Brass	Terminal box	-	-	142 705		
С	03.0	NBR	Brass	Cable	305 857	-	305 853		
С	03.0	NBR	Brass	Terminal box	-	140 105	-		
С	03.0	FKM	Stainless steel	Cable	305 883	305 880	305 881		
D	02.0	NBR	Brass	Terminal box	-	136 704	137 983		
D	02.0	NBR	Brass	Cable	305 899	305 907	305 862		
D	02.0	NBR	Stainless steel	Cable	305 872	-	305 859		
D	02.0	NBR	Stainless steel	Terminal box	-	153 747	160 701		
D	03.0	NBR	Brass	Cable	305 874	-	-		
F	04.0	FKM	Brass	Terminal box	-	-	132 435		
Т	02.0	FKM	Stainless steel	Cable	305 871	305 886	305 861		
Т	02.0	FKM	Stainless steel	Terminal box	-	138 267	138 268		
Т	02.0	NBR	Stainless steel	Cable	305 869	-	305 870		
Т	02.0	EPDM	Stainless steel	Terminal box	-	-	148 146		
Т	02.0	NBR	Brass	Cable	305 863	305 865	305 866		
Т	02.0	NBR	Brass	Terminal box	-	138 250	138 251		
Т	02.0	FKM	Brass	Cable	305 867	-	305 868		
Т	02.0	FKM	Brass	Terminal box	-	138 256	138 257		
Т	03.0	FKM	Stainless steel	Terminal box	-	157 201	157 202		
Т	03.0	FKM	Brass	Terminal box	-	157 204	157 205		

Note: Further versions on request

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In case of special application conditions, please consult for advice.

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