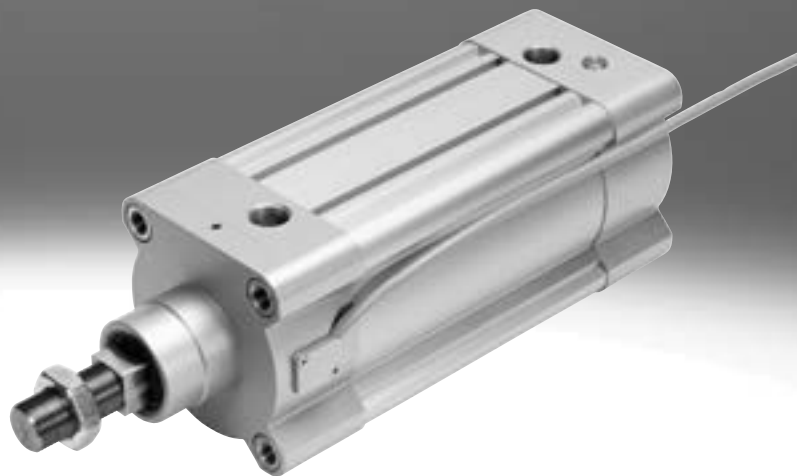


Standards-based cylinders DDPC, with measured-value transducer DADE

FESTO



Key features

Components for positioning and measuring using the standards-based cylinder DDP



Measuring

With measured-value transducer DADE

Measured-value transducer
DADE



Controller
e.g. CECC



Operator unit
e.g. CDPX



Positioning

With end-position controller SPC11 or controller module CPX-CMAX/-CMPX

Proportional directional control valve
MPYE



End-position controller
SPC11-INC



Proportional directional control
valve VPWP



Sensor interface
CASM



Controller module
CPX-CMAX, CPX-CMPX



Type codes

001	Series	
DDPC	Standards-based cylinder, integrated displacement encoder	

002	Protection against rotation	
D	With guide unit	
Q	With protection against rotation	

003	Piston diameter	
80	80	
100	100	

004	Stroke	
...	10 ... 2000	

005	Clamping unit	
	None	
C	Attached	

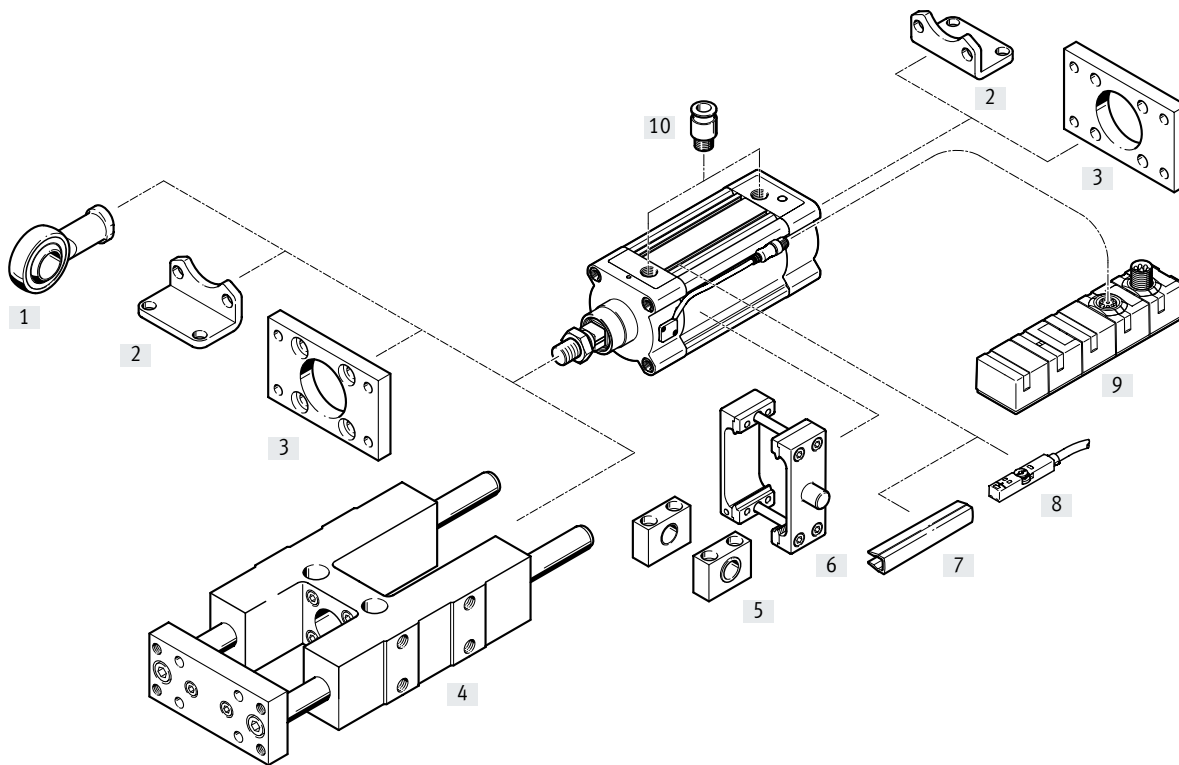
006	Piston rod type	
	At one end	
T	Through piston rod	


007	Cushioning	
P	Elastic cushioning rings/plates on both sides	

008	Position sensing	
A	For proximity sensor	

009	Piston rod extension	
	None	
...E	1 ... 500 mm	

Peripherals overview



 **Note**

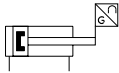
If the drive DDPC is used without an end-position controller CPX-CMPX, SPC11 or axis controller CPX-CMAX, e.g. as a measuring cylinder, then the standard accessories for the drive DNC can be used.

Peripherals overview

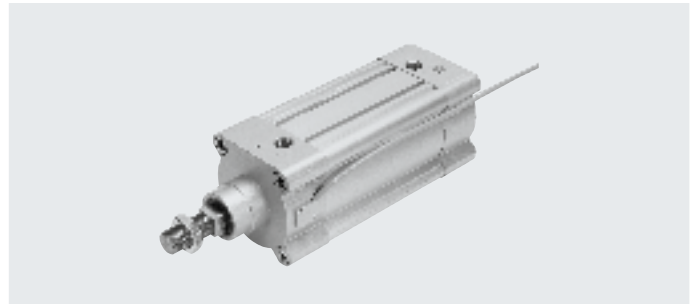
Accessories		
Type	Description	→ Page/Internet
[1] Rod eye SGS	With spherical bearing	ddpc
[2] Foot mounting HNC	For mounting the drive on the bearing and end caps	ddpc
[3] Flange mounting FNC	For mounting the drive on the bearing and end caps	ddpc
[4] Guide unit ¹⁾ FENG-KF	For protecting against rotation at high torque loads	12
[5] Trunnion support LNZG	For mounting the trunnion flange kit DAMT	ddpc
[6] Trunnion flange kit DAMT	For swivelling movements of the drive	ddpc
[7] Slot cover ABP-5-S	For protection against contamination	ddpc
[8] Proximity switch SME/SMT-8	For additional sensing of the piston position, can be ordered optionally, only in conjunction with the order code A in the drive's modular product system	ddpc
[9] Measured-value transducer DADE	Converts the sensor signal of the cylinder to a voltage signal of 0 ... 10 V and/or a current signal of 4 ... 20 mA	14
[10] Push-in fitting QS	For connecting tubing with standard O.D.	qs

1) Guide unit FENG-KF must be attached to the piston rod so that backlash is eliminated

Data sheet



www.festo.com



- Diameter
80 and 100 mm
- Stroke length
10 ... 1250 mm

General technical data		
Piston \varnothing	80	100
Based on standard	ISO 15552	
Design	Piston	
	Piston rod	
	Profile barrel	
Mode of operation	Double-acting	
Guide ¹⁾	Guide rod with yoke, with ball bearing guide	
Protection against rotation	Square piston rod	
Mounting position	Any	
Type of mounting	Via accessories	
Cushioning	Elastic cushioning rings/pads at both ends	
Position sensing	Integrated displacement encoder	
	Via proximity switch ²⁾	
Measuring principle (displacement encoder)	Encoder, contactless and relative measurement	
Pneumatic connection	G3/8	G1/2
Stroke		
DDPC...	[mm]	10 ... 1250
DDPC...-D	[mm]	100 ... 500
Extended piston rod	[mm]	1 ... 500

- 1) Guide unit FENG-KF can be ordered via the modular product system (feature D) and is supplied attached. The maximum stroke is restricted.
- 2) Not included in the scope of delivery, can be ordered as an option

Operating and environmental conditions		
Operating pressure	[bar]	4 ... 12
Operating pressure ¹⁾	[bar]	4 ... 8
Operating medium ²⁾	Compressed air to ISO 8573-1:2010 [6:4:4]	
Note on the operating/pilot medium	Lubricated operation not possible	
	Pressure dew point 10°C below ambient/medium temperature	
Ambient temperature ³⁾	[°C]	-20 ... +80
Vibration resistance to DIN/IEC 68, Part 2-6	Severity level 2	
Continuous shock resistance to DIN/IEC 68, Part 2 - 82	Severity level 2	
CE marking (see declaration of conformity) ⁴⁾	To EU EMC Directive	
Corrosion resistance class CRC ⁵⁾	1	

- 1) Only applies to applications with end-position controller CPX-CMPX, SPC11 and axis controller CPX-CMAX
- 2) The proportional directional control valve VPWP, MPYE used requires these characteristic values
- 3) Note operating range of proximity switches
- 4) For information about the area of use, see the EC declaration of conformity: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
- 5) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Data sheet

Forces [N] and impact energy [Nm]		
Piston \varnothing	80	100
Theoretical force at 6 bar, advancing	3016	4712
Theoretical force at 6 bar, retracting	2721	4418
Impact energy at the end positions	1.8	2.5

Permissible impact velocity:

$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

v Permissible impact velocity

E Max. impact energy

 m_1 Moving mass (drive) m_2 Moving payload

Maximum permissible mass:

$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

**Note**

These specifications represent the maximum values that can be achieved. The maximum permissible impact energy must be observed.

Electrical data – Displacement encoder

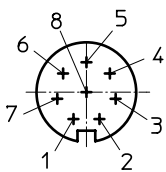
Output signal	Analogue	
Linearity error		
Strokes up to 500 mm	[mm]	< ± 0.08
Strokes up to 1000 mm	[mm]	< ± 0.09
Strokes over 1000 mm	[mm]	< ± 0.11
Resolution ¹⁾	[%]	≤ 0.025
Repetition accuracy		
≤ 400	[mm]	± 0.1
≤ 500	[mm]	± 0.13
≤ 750	[mm]	± 0.19
≤ 1200	[mm]	± 0.3
≤ 1250	[mm]	± 0.4
Max. speed of travel	[m/s]	1.5
Degree of protection	IP65	
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive	
Max. permitted magnetic interference field ³⁾	[kA/m]	10
Electrical connection	Cable with 8-pin plug, round design, M12	
Cable length	[m]	1.5

1) Always refers to max. stroke

2) For information about the area of use, see the EC declaration of conformity: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) At a distance of 100 mm

Pin allocation for the plug

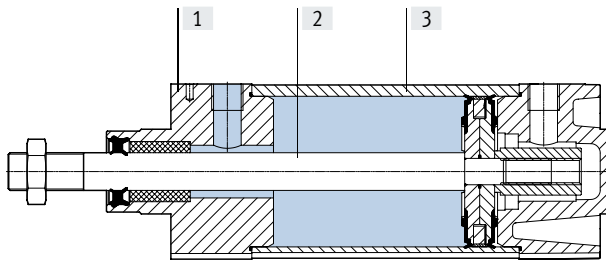
Pin	Function	Colour
1	5 V	Black
2	GND	Brown
3	sin+	Red
4	sin-	Orange
5	cos-	Green
6	cos+	Yellow
7	Shielding	Shielding
8	n.c.	-

Data sheet

Weight [g]		
Piston ø	80	100
DDPC-...		
Basic weight with 0 mm stroke	3053	4330
Additional weight per 10 mm stroke	87	95
Moving mass with 0 mm stroke	804	994
Additional weight per 10 mm stroke	31	31
DDPC-...-T – Through piston rod		
Basic weight with 0 mm stroke	3537	5019
Additional weight per 10 mm stroke	127	134
Moving mass with 0 mm stroke	1247	1467
Additional weight per 10 mm stroke	70	70
DDPC-...-E – Additional weight with piston rod extension		
Additional weight per 10 mm extension	31	31
DDPC-...-C – Additional weight with clamping unit		
Additional weight	2046	2829
DDPC-...-D – Additional weight with guide unit		
Basic weight with 0 mm stroke	10430	12990
Additional weight per 10 mm stroke	80	80

Materials

Sectional view



Standards-based cylinder

[1]	Cover	Wrought aluminium alloy
[2]	Piston rod	High-alloy steel
[3]	Cylinder barrel	Wrought aluminium alloy
-	Seals	NBR, polyurethane
	Note on materials	Free of copper and PTFE
		RoHS-compliant

Data sheet

Torques and lateral forces

Max. torque for protection against rotation:

Dynamic $\leq 3 \text{ Nm}$

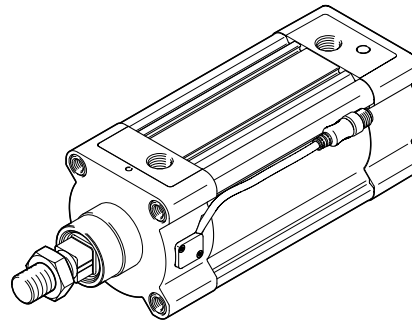
Static $\leq 5 \text{ Nm}$

An external guide unit FENG-KF is recommended with higher torque loads.

The guide unit is supplied attached.

The permissible static and dynamic characteristic load values with and without attached guide

→ Internet: feng



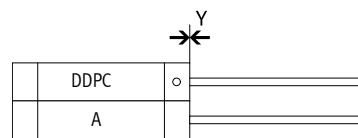
Mounting conditions

When mounting a drive A with magnet (for position sensing) next to a standards-based cylinder DDPC, the following conditions must be observed:

- X Minimum distance between the drives
- Y Offset between the drives on the bearing cap

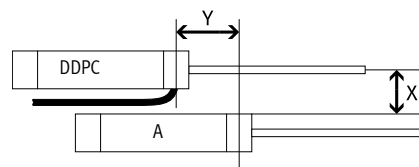
Parallel assembly

The drives can be mounted directly next to one another if the offset $Y = 0 \text{ mm}$.



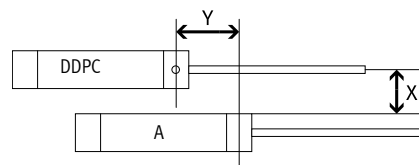
Offset mounting, cable outlet between the drives

If the offset $Y > 0 \text{ mm}$ and the cable outlet is between the drives, a distance of $X > 70 \text{ mm}$ must be observed.



Offset mounting, cable outlet upwards or downwards

If the offset is $Y > 0 \text{ mm}$ and the cable outlet is up or down, a distance of $X > 60 \text{ mm}$ must be observed.

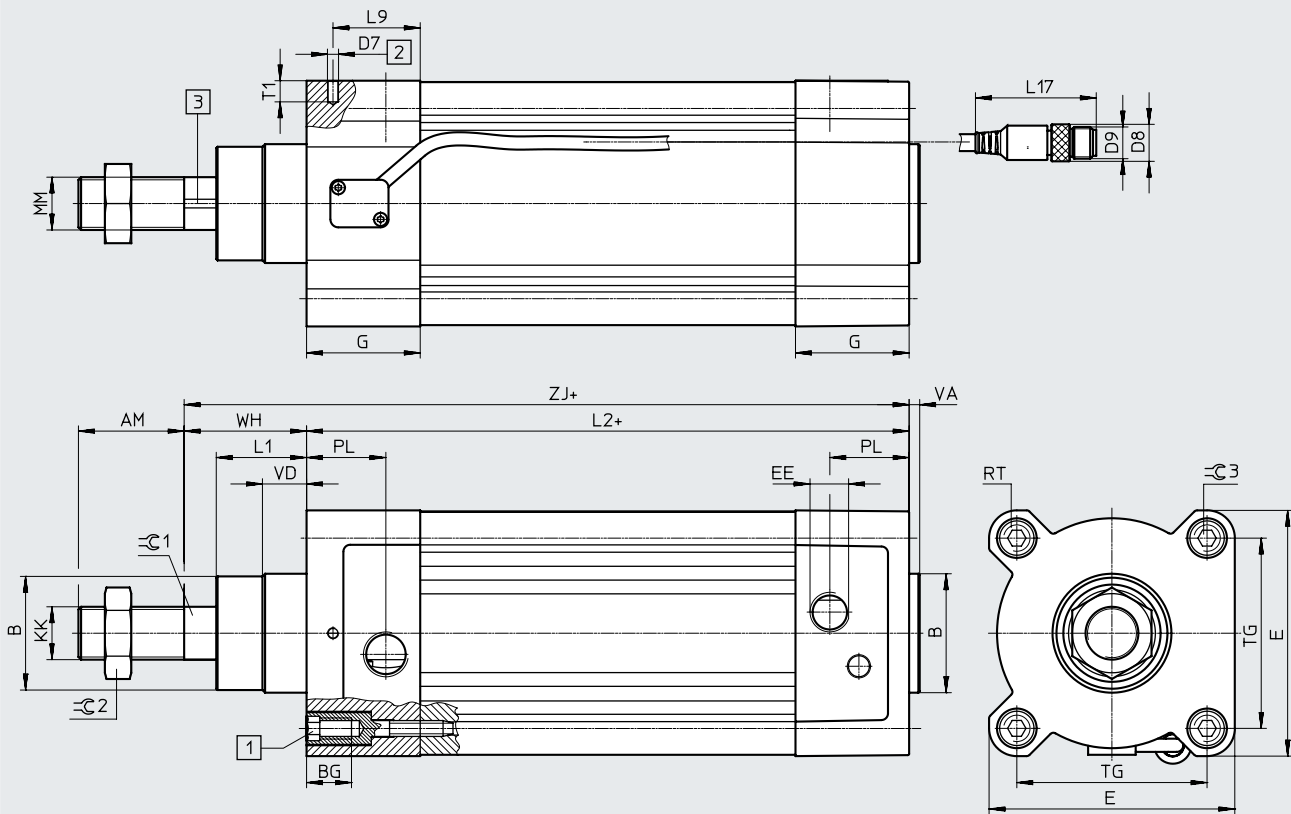


Data sheet

Dimensions

Download CAD data → www.festo.com

DDPC...



- [1] Socket head screw with female thread for mounting components
- [2] Hole for securing the earthing for self-tapping M4 screw to DIN 7500
- [3] Magnetic measuring band
- + = plus stroke length

∅	AM	B ∅ d11	BG	D7 ∅	D8 ∅	D9	E	EE	G
80	40	45	17	3.7	14	M12	93	G3/8	43
100	40	55	17	3.7	14	M12	110	G1/2	48

∅	KK	L1	L2	L9	L17	MM ∅	PL	RT	T1
80	M20x1.5	34.2	128	20	45.7	20	30	M10	8
100	M20x1.5	38	138	21.5	45.7	20	31.5	M10	8

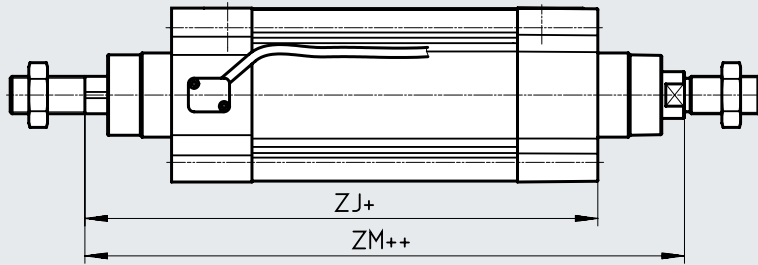
∅	TG	VA	VD	WH	ZJ	∅ 1	∅ 2	∅ 3
80	72	4	16.7	46	174	22	30	6
100	89	4	20.5	51	189	22	30	6

Data sheet

Dimensions

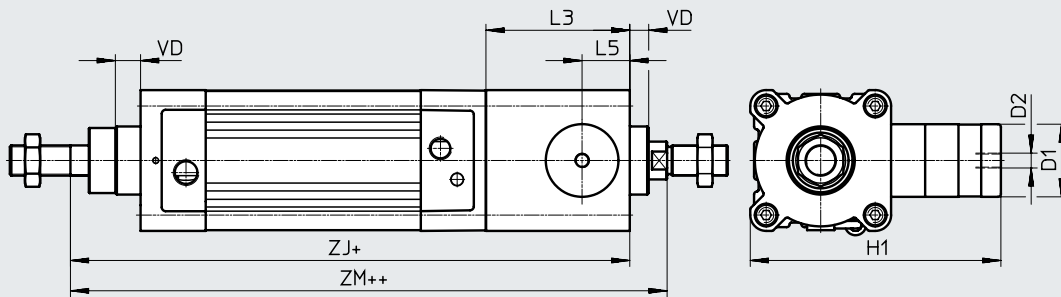
Download CAD data → www.festo.com

DDPC...-T – Through piston rod



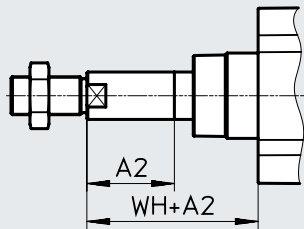
- + = plus stroke length
- ++ = plus 2x stroke length

DDPC...-CT – Through piston rod with clamping unit



- + = plus stroke length
- ++ = plus 2x stroke length

DDPC...-...E – Extended piston rod



∅	A2	D1	D2	H1	L3	L5
[mm]	max.	∅ f9				
80	500	48	G1/8	165.5	95	31.5
100	500	48	G1/8	174	98	31

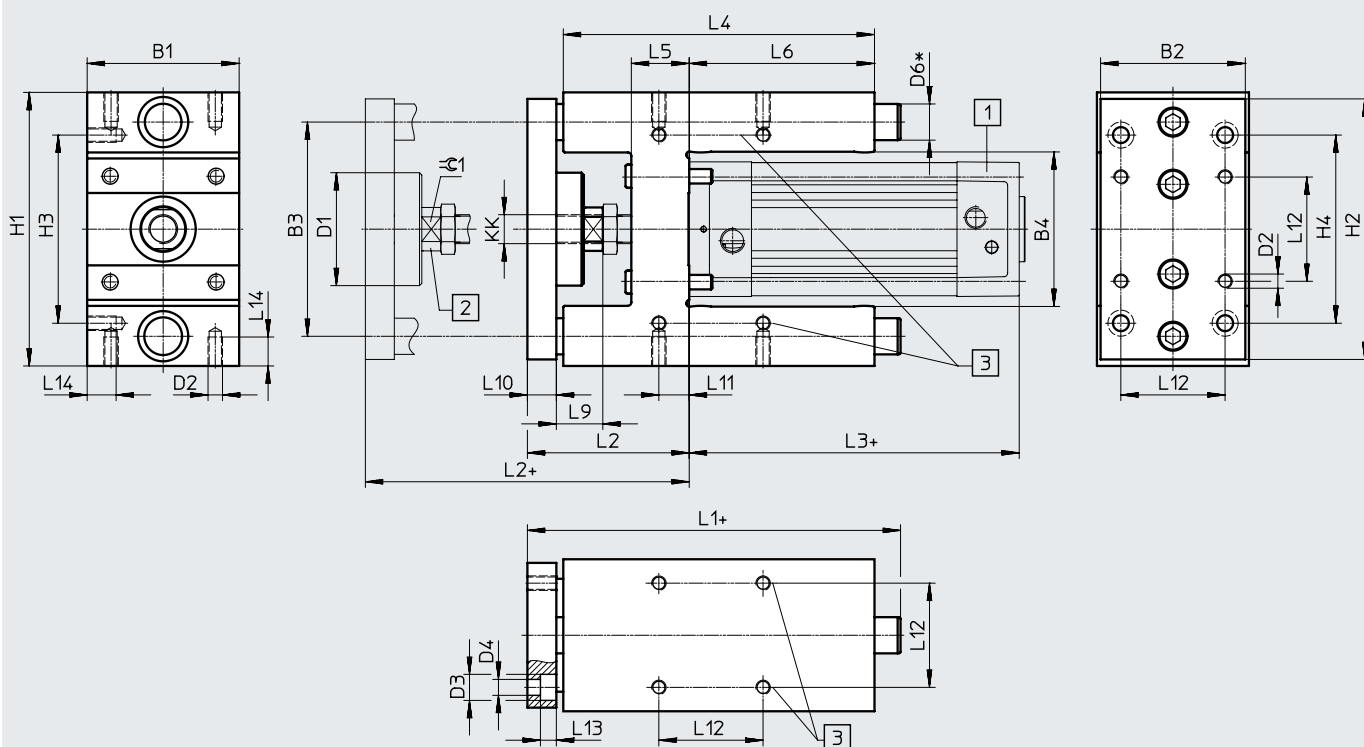
∅	VD	WH	ZJ	ZM
[mm]			DDPC...-T	DDPC...-CT
80	16.7	46	174	269
100	20.5	51	189	287
			DDPC...-T	DDPC...-CT
			222	317
			240	338

Data sheet

Dimensions

Download CAD data → www.festo.com

DDPC...-D



- [1] Standards-based cylinder DDPC
 - [2] Compensating coupling
 - [3] Customers can drill additional mounting holes here as required
- + = plus stroke length

∅	B1	B2	B3	B4	D1	D2	D3	D4	D6
[mm]	-0.3		±0.2	±0.6	∅		∅	∅	∅
80	105	100	148	106	78	M10	18	11	25
100	130	120	172	131	78	M10	18	11	25

∅	H1	H2	H3	H4	KK	L1	L2	L3	L4
[mm]	-0.5		±0.2	±0.2			+10		
80	189	180	130	130	M20x1.5	258	111	194	215
100	213	200	150	150	M20x1.5	263	116	138	220

∅	L5	L6	L9	L10	L11	L12	L13	L14	∅ 1
[mm]						±0.2			
80	40	128	32	20	21	72	11	20	27
100	40	128	32	20	24.5	89	11	20	27

Ordering data – Modular product system

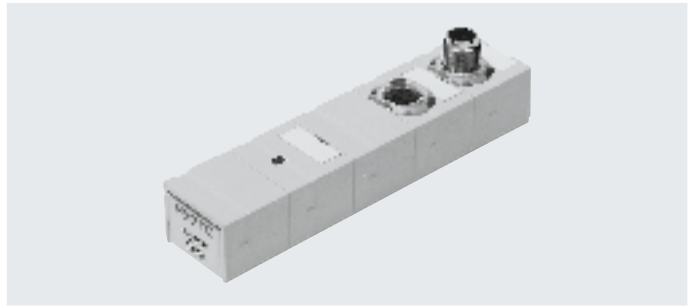
Ordering table		80	100	Conditions	Code	Enter code
Piston Ø		80	100			
Module no.		1677705	1691433			
Function		Standards-based cylinder with integrated displacement encoder			DDPC	DDPC
Protection against rotation		With protection against rotation			-Q	-Q
Piston Ø	[mm]	80	100		-...	
Stroke	[mm]	10 ... 1250			-...	
Guide unit		None				
		Attached			-D	
Clamping unit		None				
		Attached		[1]	-C	
Piston rod		At one end				
		Through piston rod			T	
Cushioning		Elastic cushioning rings/pads at both ends			-P	-P
Position sensing		Via proximity switch			A	A
Piston rod extension		None				
	[mm]	1 ... 500			-...E	

[1] C Only available with T

Data sheet

Measured-value transducer**DADE-MVC-010****DADE-MVC-420**

The measured-value transducer converts sensor signals of the standards-based cylinder DDPC into a voltage signal of 0 ... 10 V and/or a current signal of 4 ... 20 mA. These signals can be evaluated by a PLC with an appropriate signal input.

**General technical data**

Type of mounting	With through-hole
Mounting position	Any
Short circuit current rating	Yes
Reverse polarity protection	Yes
Diagnostic function	Display via LED

General electrical data

Analogue output	[V]	0 ... 10 (as per EN 61131-2)
	[mA]	4 ... 20 (as per EN 61131-2)
Nominal operating voltage	[V DC]	24 ±25%
Residual ripple	[%]	4 (at 50 Hz)
Current consumption at nominal operating voltage	[mA]	20 ... 30
Switching logic at outputs		PNP
Switching logic at inputs		PNP
Debounce time at inputs	[ms]	3
Linearity error FS		0.2%

Operating and environmental conditions

Ambient temperature	[°C]	0 ... 55
Degree of protection		IP65
Relative humidity		95% non-condensing
CE marking (see declaration of conformity)		To EU EMC Directive
		To EU RoHS Directive
KC marking		KC EMC
Corrosion resistance class CRC ¹⁾		1
Product weight	[g]	128
Note on materials : Housing		Polybutylene terephthalate

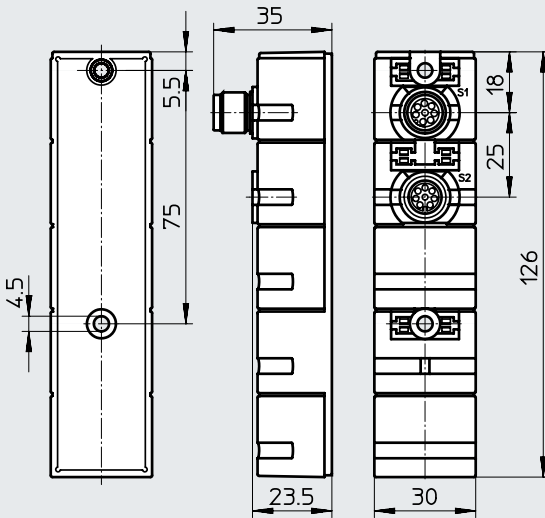
1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Data sheet

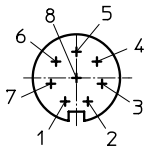
Dimensions

Download CAD data → www.festo.com

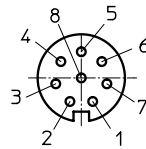


Pin allocation

PLC interface



Measuring system interface



Pin	Function	Cable colour
1	24 V	White
2	Analogue measurement signal	Brown
3	Reference output	Green
4	0 V measurement signal	Yellow
5	Reference input	Grey
6	Calibration input	Pink
7	Ready output	Blue
8	0 V power supply and inputs/outputs	Red

Pin	Function
1	Ub
2	0 V
3	Signal sine +
4	Signal sine -
5	Signal cosine -
6	Signal cosine +
7	Screening / earth
8	-

Ordering data

Ordering data		Description	Part no.	Type
Measured-value transducer				
	With voltage signal	0 ... 10 V	542117	DADE-MVC-010
	With current signal	4 ... 20 mA	542118	DADE-MVC-420
Accessories				
	Connecting cable	PLC connecting cable (length 2 m)	525616	SIM-M12-8GD-2-PU
		PLC connecting cable (length 5 m)	525618	SIM-M12-8GD-5-PU

Data sheets → Internet: sim