Round cylinder CRHD

Characteristics

At a glance Further information ➔ crhd

Features of stainless-steel cylinders:

Their applications:
- Even in harsh operating environments, components have to be sturdy and totally reliable. The aim is to achieve high availability while reducing downtimes in machine systems. Wherever pneumatic drives stand no chance because their surface quality cannot withstand the surrounding media, stainless steel cylinders are the best choice. The corrosion-proof design of systems requires not only the selection of a suitable steel, but also a matching range of mounting components and accessories.
- Application example: In the maturing cellar of a cheese factory, stainless-steel cylinders are surrounded by an atmosphere with an unpleasant mix of ammonia, lactic acid and 98% humidity .

Our strength:
- Stainless-steel cylinders from Festo are characterised by resistant materials, such as 1.4301 and 1.4401. These popular high-alloy, stainless austenitic chrome-nickel and chrome-nickel-molybdenum steels protect against chemical or electrochemical stress as well as damage to the material surfaces caused by cleaning agents and disinfectants. These material groups are particularly resistant to even surface corrosion and offer increased protection against pitting and crevice corrosion.

The benefit to you:
- Our stainless steel cylinders are globally available thanks to the worldwide Festo service network. We offer an extensive range of standards-based cylinders to DIN ISO 15552 and 6432. In addition, we supply a range of mounting components and accessories tailored to the cylinders. The stainless steel cylinders are provided with NSF-H1 compliant greases and with wipers according to BGVV (Federal Institute for Risk Assessment) guidelines. They can thus be used in the food sector. We would be happy to inform you about future additions to our stainless-steel program. Take advantage of this opportunity and get in touch with us!

Good to know:
- For difficult applications, you can rely on our years of experience in stainless steel. Our experts will answer any questions you might have about surface finishes and chemical resistance.

Resistant to:
- Absolute resistance to pitting and crevice corrosion is not always guaranteed, even with ideal application parameters. Parameters such as a concentration of chloride ions, contact time, temperature and decreasing pH value increase the pitting effect of chloride ions. It must be therefore be ensured that, during design, assembly and operation, all areas of the system can be well flushed to avoid a concentration of chloride ions.
- Selected sealing materials ensure very high resistance to numerous chemical compounds. Further information on media resistance can be found on the Internet at www.festo.com.
- In many industry sectors, machinery gets exposed to different kinds of contamination and therefore needs to be cleaned. The extent of the cleaning process ranges from dry wiping of the system to wet cleaning and foam cleaning with different application times and concentrations. A general recommendation on compatibility is therefore not possible. In principle, we recommend cleaning with the piston rod retracted to avoid washing out the lifetime lubrication.

Diagrams Further information ➔ crhd

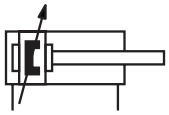
The diagrams shown in this document are also available online. These can be used to display precise values.

Characteristics

Cushioning

End-position cushioning has the following functions:
- Reduces kinetic energy in the end positions
- Avoids vibrations
- Reduces noise generation

[PPV] Pneumatic cushioning, adjustable at both ends



The drive is fitted with pneumatic end-position cushioning, which can be adapted by the operator for maximum performance according to the moving mass and speed.
Benefits:
- Very powerful

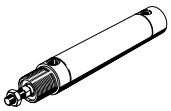
Position sensing

[A] For proximity sensor

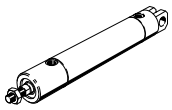
By using proximity switches, any position can be detected.

Type of end cap

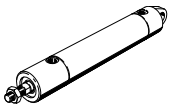
[MQ] Without mounting threads



[MC] With clevis



[MS] With strap



Temperature range

[S6] Heat-resistant seals max. 120 °C

For use in the temperature range –20 ... +120 °C

Type code

001	Series	
CRHD	Round cylinder, double-acting, stainless steel	

002	Piston diameter [mm]	
32	32	
40	40	
50	50	
63	63	
80	80	
100	100	

003	Stroke range [mm]	
...	10 ... 500	

004	Cushioning	
PPV	Pneumatic cushioning, adjustable at both ends	

005	Position sensing	
A	For proximity sensor	

006	Type of end cap	
MC	With clevis	
MS	With strap	
MQ	Without mounting threads	

007	Temperature range	
	Standard	
S6	Heat-resistant seals max. 120 °C	

Datasheet

General technical data

Piston diameter	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Stroke	10 ... 500 mm					
Pneumatic connection	G1/8		G1/4	G3/8		
Piston rod thread type[1)]	Male thread					
Design	Piston Piston rod					
Cushioning	Pneumatic cushioning, adjustable at both ends					
Cushioning length	17 mm	19.5 mm	21 mm		31 mm	
Position detection	Via proximity switch					
Mounting position	optional					

1) Piston rod thread:
Ø 32: M10x1.25
Ø 40: M12x1.25
Ø 50, 63: M16x1.5
Ø 80, 100: M20x1.5

Operating and environmental conditions

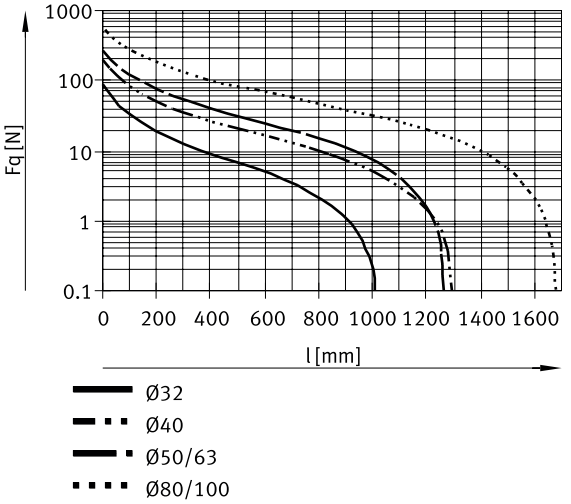
Temperature range	Standard	Heat-resistant seals max. 120°C
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	1 ... 10 bar	
Ambient temperature [1)]	-20 ... 80°C	-20 ... 120°C
Suitable for use with food [2)]	See supplementary material information	
Corrosion resistance class CRC [3)]	3 - high corrosion stress	3 - High corrosion stress, 3 - high corrosion stress

1) Note the operating range of the proximity switches.
2) CRHD-...-S6: Not suitable for direct contact with food products because of the seals and the grease used.
More information www.festo.com/sp Certificates
3) Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional surface requirements that are in direct contact with the surrounding industrial environment.
More information: www.festo.com/x/topic/crc

Forces

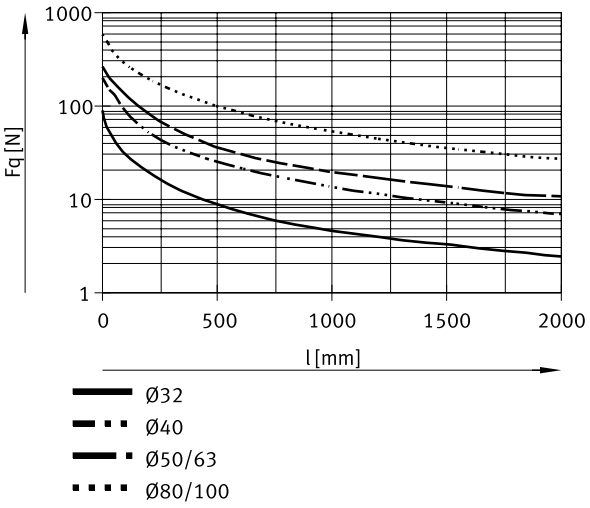
Piston diameter	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Theoretical force at 0.6 MPa (6 bar, 87 psi), advance stroke	483 N	754 N	1,178 N	1,870 N	3,016 N	4,712 N
Theoretical force at 0.6 MPa (6 bar, 87 psi), return stroke	415 N	633 N	990 N	1,682 N	2,721 N	4,418 N

Permissible lateral force Fq as a function of stroke length l – horizontal mounting



Datasheet

Permissible lateral force Fq as a function of stroke length l – vertical mounting



Weight

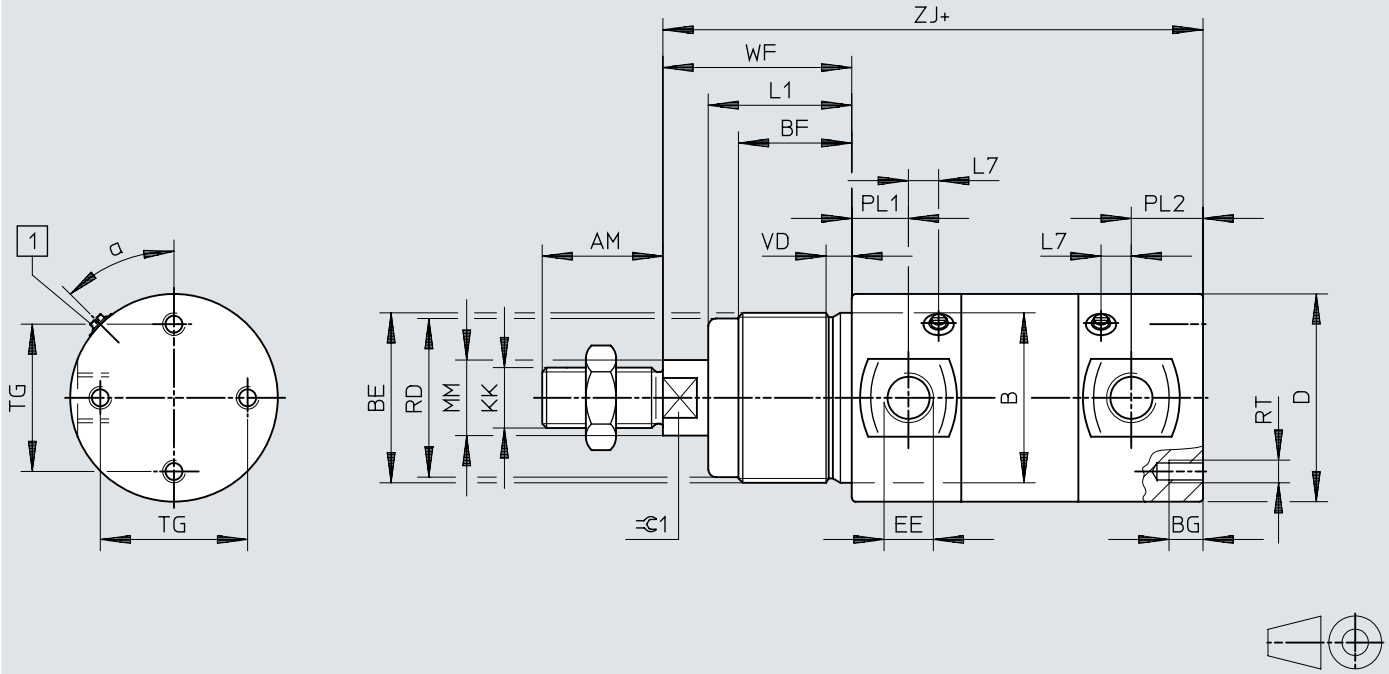
Piston diameter	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Basic weight for 0 mm stroke	640 g	1,154 g	1,792 g	2,912 g	5,072 g	8,357 g
Additional weight per 10 mm stroke	26 g	42 g	57 g	65 g	100 g	115 g
Moving mass for 0 mm stroke	106 g	198 g	340 g	398 g	717 g	968 g
Additional moving mass per 10 mm stroke	9 g	16 g	25 g		38 g	

Materials

Temperature range	Standard	Heat-resistant seals max. 120°C
Material housing	High-alloy stainless steel	
Material cover	High-alloy stainless steel	
Material piston rod	High-alloy stainless steel	
Material seals	NBR TPE-U(PU)	FPM
LABS (PWIS) conformity	VDMA24364-B2-L	

Dimensions

Dimensions – CRHD-...-MQ – Bearing cap with male thread Download CAD data ➔ www.festo.com



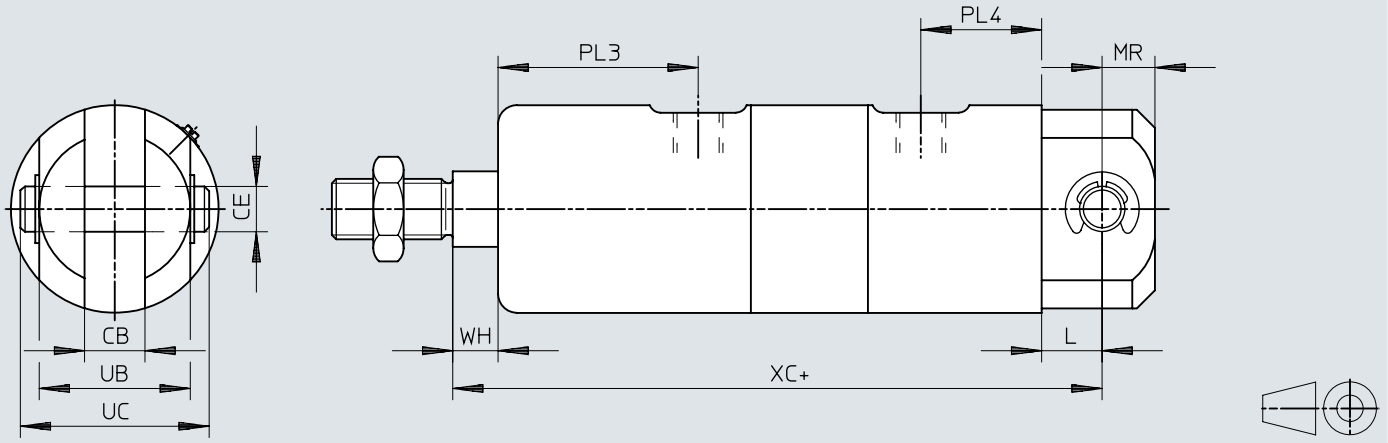
[1] Adjusting screw for end-position cushioning
[2] + = plus stroke length

	α	AM	B ø h9	BE	BF	BG	D ø	EE	KK	L1
CRHD-32	50°	22	30	M30x1,5	25	8	36	G1/8	M10x1,25	30
CRHD-40	45°	24	38	M38x1,5	29	8	45	G1/8	M12x1,25	35
CRHD-50	45°	32	45	M45x1,5	30	8	55	G1/4	M16x1,5	38
CRHD-63	45°	32	45	M45x1,5	30	10	68	G3/8	M16x1,5	38
CRHD-80	45°	40	50	M50x2	30	15	86	G3/8	M20x1,5	38
CRHD-100	45°	40	50	M50x2	30	15	106	G3/8	M20x1,5	38

	L7	MM ø	RD ø	RT	PL1	PL2	TG	VD	WF	ZJ	=C1
CRHD-32	5	12	27	M5	13	21	22	7	38	120	10
CRHD-40	8	16	35	M6	15	18	30	7	45	135	13
CRHD-50	5	20	42	M6	15	19	39	6,25	50	143	17
CRHD-63	8	20	42	M8	17	24	49	6,25	50	158	17
CRHD-80	9	25	47	M10	18	31	65	7,5	50	174	22
CRHD-100	13	25	47	M10	22	30	82	7,5	50	189	22

Dimensions

Dimensions – CRHD-...-MC – End cap with clevis Download CAD data ➔ www.festo.com

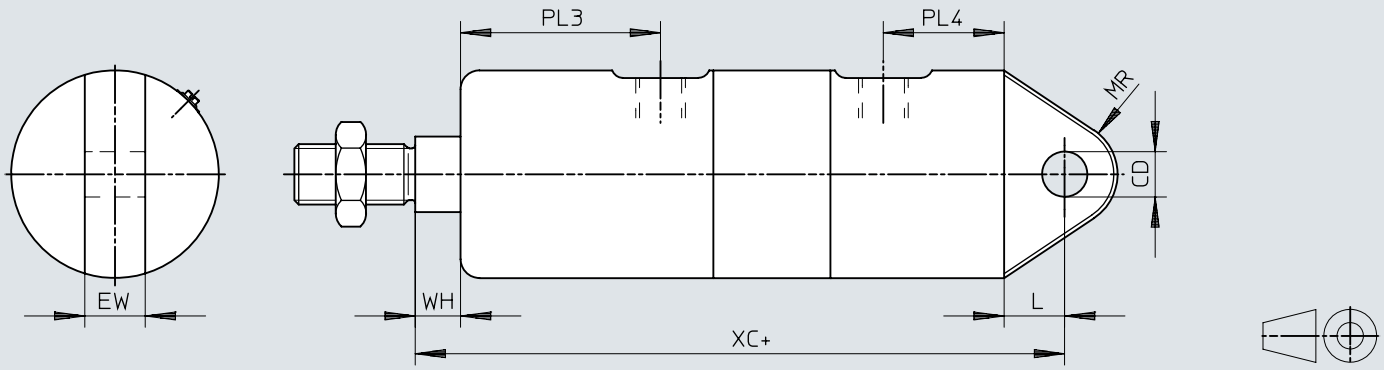


[1] + = plus stroke length

	CB +0,2/+0,1	CE ø e8	L	MR	PL3	PL4	UB –0,1/–0,2	UC	WH	XC
CRHD-32	10	10	15	12	43	28	26	35	8	142
CRHD-40	12	12	16	14	50	27	32	43	10	160
CRHD-50	16	12	16	14	53	30	40	51	12	170
CRHD-63	16	16	22	18	55	34	40	53	12	190
CRHD-80	20	16	22	20	56	45	60	73	12	210
CRHD-100	20	20	27	25	60	43,5	60	73	12	230

Dimensions

Dimensions – CRHD-...-MS – End cap with lug Download CAD data ➔ www.festo.com

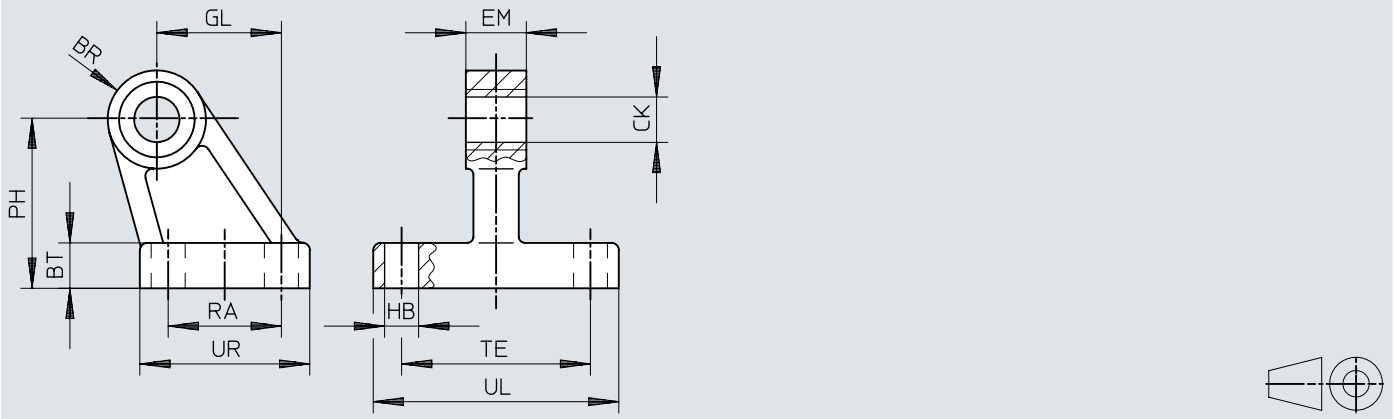


[1] + = plus stroke length

	CD ø H9	EW –0,1/–0,2	L	MR	PL3	PL4	WH	XC
CRHD-32	10	10	15	12	43	28	8	142
CRHD-40	12	12	16	14	50	27	10	160
CRHD-50	12	16	16	14	53	30	12	170
CRHD-63	16	16	22	18	55	34	12	190
CRHD-80	16	20	22	20	56	45	12	210
CRHD-100	20	20	27	25	60	43,5	12	230

Dimensions

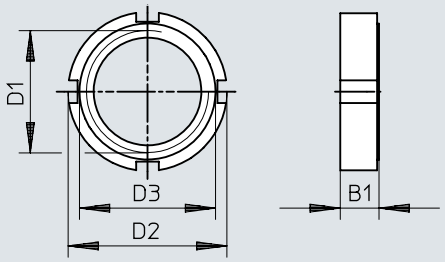
Dimensions – Clevis foot CRLMC Download CAD data ➔ www.festo.com

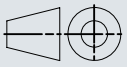


	BR	BT	CK ø D11	EB ø H13	EM –0,4	GL	HB ø H13	OF	PH	RA	TE	UL	UR
CRLMC-32	10	8	10	–	10	21	6,6	–	32	18	38	51	31
CRLMC-40	11	10	12	–	12	24	6,6	–	36	22	41	54	35
CRLMC-50	12	12	12	–	16	33	9	–	45	30	50	65	45
CRLMC-63	15	12	16	15	16	37	9	10,8	50	35	52	67	50
CRLMC-80	15	14	16	18	20	47	11	12,7	63	40	66	86	60
CRLMC-100	19	15	20	18	20	55	11	13,7	71	50	76	96	70

Dimensions

Dimensions – Nut CR Download CAD data ➔ www.festo.com





		B1	D1	D2	D3
CR-M30X1,5	32	8	M30x1,5	42	36
CR-M38X1,5	40	10	M38x1,5	50	48
CR-M45X1,5	50, 63	10	M45x1,5	60	56
CR-M50X2	80, 100	13	M50x2	75	67

Ordering data

CRHD-...-MQ – Bearing cap with male thread

	Piston diameter	Stroke	Temperature range	Part no.	Type
	32 mm	10 ... 500 mm	Standard	**195507**	**CRHD-32- -PPV-A-MQ**
			Heat-resistant seals max. 120°C	**195543**	**CRHD-32- -PPV-A-MQ-S6**
	40 mm		Standard	**195508**	**CRHD-40- -PPV-A-MQ**
			Heat-resistant seals max. 120°C	**195544**	**CRHD-40- -PPV-A-MQ-S6**
	50 mm		Standard	**195509**	**CRHD-50- -PPV-A-MQ**
			Heat-resistant seals max. 120°C	**195545**	**CRHD-50- -PPV-A-MQ-S6**
	63 mm		Standard	**195510**	**CRHD-63- -PPV-A-MQ**
			Heat-resistant seals max. 120°C	**195546**	**CRHD-63- -PPV-A-MQ-S6**
	80 mm		Standard	**195511**	**CRHD-80- -PPV-A-MQ**
			Heat-resistant seals max. 120°C	**195547**	**CRHD-80- -PPV-A-MQ-S6**
	100 mm		Standard	**195512**	**CRHD-100- -PPV-A-MQ**
			Heat-resistant seals max. 120°C	**195548**	**CRHD-100- -PPV-A-MQ-S6**

CRHD-...-MC – End cap with clevis

	Piston diameter	Stroke	Temperature range	Part no.	Type
	32 mm	10 ... 500 mm	Standard	**195513**	**CRHD-32- -PPV-A-MC**
			Heat-resistant seals max. 120°C	**195549**	**CRHD-32- -PPV-A-MC-S6**
	40 mm		Standard	**195514**	**CRHD-40- -PPV-A-MC**
			Heat-resistant seals max. 120°C	**195550**	**CRHD-40- -PPV-A-MC-S6**
	50 mm		Standard	**195515**	**CRHD-50- -PPV-A-MC**
			Heat-resistant seals max. 120°C	**195551**	**CRHD-50- -PPV-A-MC-S6**
	63 mm		Standard	**195516**	**CRHD-63- -PPV-A-MC**
			Heat-resistant seals max. 120°C	**195552**	**CRHD-63- -PPV-A-MC-S6**
	80 mm		Standard	**195517**	**CRHD-80- -PPV-A-MC**
			Heat-resistant seals max. 120°C	**195553**	**CRHD-80- -PPV-A-MC-S6**
	100 mm		Standard	**195518**	**CRHD-100- -PPV-A-MC**
			Heat-resistant seals max. 120°C	**195554**	**CRHD-100- -PPV-A-MC-S6**

CRHD-...-MS – End cap with strap

	Piston diameter	Stroke	Temperature range	Part no.	Type
	32 mm	10 ... 500 mm	Standard	**195519**	**CRHD-32- -PPV-A-MS**
			Heat-resistant seals max. 120°C	**195555**	**CRHD-32- -PPV-A-MS-S6**
	40 mm		Standard	**195520**	**CRHD-40- -PPV-A-MS**
			Heat-resistant seals max. 120°C	**195556**	**CRHD-40- -PPV-A-MS-S6**
	50 mm		Standard	**195521**	**CRHD-50- -PPV-A-MS**
			Heat-resistant seals max. 120°C	**195557**	**CRHD-50- -PPV-A-MS-S6**
	63 mm		Standard	**195522**	**CRHD-63- -PPV-A-MS**
			Heat-resistant seals max. 120°C	**195558**	**CRHD-63- -PPV-A-MS-S6**
	80 mm		Standard	**195523**	**CRHD-80- -PPV-A-MS**

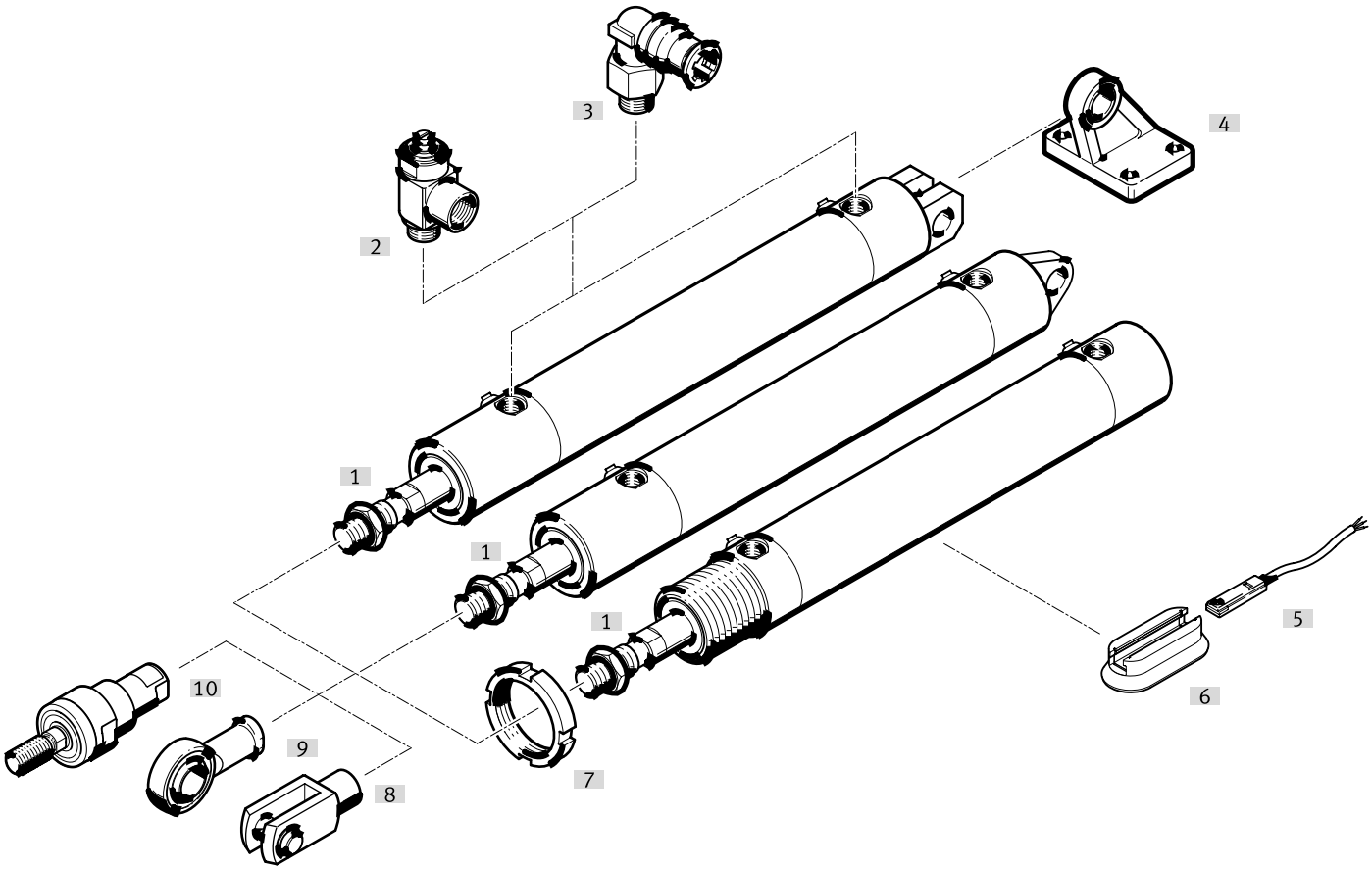
Ordering data

CRHD-...-MS – End cap with strap

	Piston diameter	Stroke	Temperature range	Part no.	Type
	80 mm	10 ... 500 mm	Heat-resistant seals max. 120°C	**195559**	**CRHD-80- -PPV-A-MS-S6**
	100 mm		Standard	**195524**	**CRHD-100- -PPV-A-MS**
			Heat-resistant seals max. 120°C	**195560**	**CRHD-100- -PPV-A-MS-S6**

Peripherals

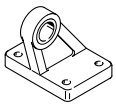
Peripherals overview



Accessories			→ Page/Internet
	Type/order code	Description	
[1]	Round cylinders CRHD	Double-acting, stainless steel	crhd
[2]	One-way flow control valve CRGRLA	For regulating speed	15
[3]	Push-in fitting CRQS	For connecting tubing with standard O.D	crqs
[4]	Clevis foot CRLMC	For end cap	15
[5]	Proximity switch CRSMT	With LED for switching status indication	16
[6]	Mounting kit CRSMB-8-32/100	For proximity switch CRSMT	15
[7]	Nut CR	For bearing cap	15
[8]	Rod clevis CRSG	Permits a swivelling movement of the cylinder in one plane	15
[9]	Rod eye CRSGS	With spherical bearing	15
[10]	Self-aligning rod coupler CRFK	To compensate for radial and angular deviations	15

Accessories

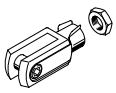
Clevis foot CRLMC

	Description	Material mounting	Product weight	Part no.	Type
	For Ø 32	Electropolished, High-alloy steel	112 g	**197320**	**CRLMC-32**
	For Ø 40		144 g	**197321**	**CRLMC-40**
	For Ø 50		254 g	**197322**	**CRLMC-50**
	For Ø 63		306 g	**197323**	**CRLMC-63**
	For Ø 80		482 g	**197324**	**CRLMC-80**
	For Ø 100		722 g	**197325**	**CRLMC-100**

Nut CR

	Description	Material mounting	Product weight	Part no.	Type
	For Ø 32	High-alloy stainless steel	40 g	**197326**	**CR-M30X1,5**
	For Ø 40		61 g	**197327**	**CR-M38X1,5**
	For Ø 50 ... 63		89 g	**197328**	**CR-M45X1,5**
	For Ø 80 ... 100		228 g	**197329**	**CR-M50X2**

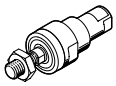
Rod clevis CRSG

	Description	Material rod clevis	Product weight	Part no.	Type
	for Ø 32	High-alloy steel	101.8 g	**13569**	**CRSG-M10X1,25**
	for Ø 40		162.8 g	**13570**	**CRSG-M12X1,25**
	For Ø 50 ... 63		380.2 g	**13571**	**CRSG-M16X1,5**
	For Ø 80 ... 100		757.8 g	**13572**	**CRSG-M20X1,5**

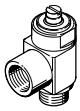
Rod eye CRSGS

	Description	Material housing	Product weight	Part no.	Type
	for Ø 32	High-alloy steel	87 g	**195582**	**CRSGS-M10X1,25**
	for Ø 40		129 g	**195583**	**CRSGS-M12X1,25**
	For Ø 50 ... 63		265 g	**195584**	**CRSGS-M16X1,5**
	For Ø 80 ... 100		464 g	**195585**	**CRSGS-M20X1,5**

Self-aligning rod coupler CRFK

	Description	Material housing	Product weight	Part no.	Type
	for Ø 32	High-alloy stainless steel	230 g	**2305778**	**CRFK-M10X1,25**
	for Ø 40			**2305779**	**CRFK-M12X1,25**
	For Ø 50 ... 63		670 g	**2490673**	**CRFK-M16X1,5**
	For Ø 80 ... 100		1,280 g	**2545677**	**CRFK-M20X1,5**

One-way flow control valves CRGRLA

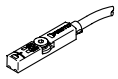
	Description	Pneumatic connection	Material swivel fitting	Product weight	Part no.	Type
	For Ø 32 ... 40	G1/8	High-alloy stainless steel	37.8 g	**161404**	**CRGRLA-1/8-B**
	For Ø 50	G1/4		71.6 g	**161405**	**CRGRLA-1/4-B**
	For Ø 63 ... 100	G3/8		126.9 g	**161406**	**CRGRLA-3/8-B**

Mounting kits CRSMB for proximity switches

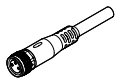
	Description	Material housing	Product weight	Part no.	Type
	For Ø 32 ... 100	Anodised aluminium, TPE-U(PU)	3 g	**525565**	**CRSMB-8-32/100**

Accessories

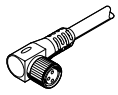
Proximity switch CRSMT-8M for T-slot, magneto-resistive — **Further information → crsmt**

	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type
	Screw-clamped, Insertable in the slot from above	3-wire PNP N/O contact	Open end	5 m	**574380**	**CRSMT-8M-PS-24V-K-5,0-OE-EX2**
				10 m	**574381**	**CRSMT-8M-PS-24V-K-10,0-OE-EX2**
			Plug M8, A-coded	0.3 m	**574383**	**CRSMT-8M-PS-24V-K-0,3-M8D-EX2**
			Plug M12, A-coded		**574382**	**CRSMT-8M-PS-24V-K-0,3-M12-EX2**

Connecting cables NEBU, straight

	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/ cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	3	2.5 m	**541363**	**NEBU-M12G5-K-2.5-LE3**
				5 m	**541364**	**NEBU-M12G5-K-5-LE3**
	M8x1, A-coded, to EN 61076-2-104			2.5 m	**541333**	**NEBU-M8G3-K-2.5-LE3**
				5 m	**541334**	**NEBU-M8G3-K-5-LE3**

Connecting cables NEBU, angled

	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/ cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	3	2.5 m	**541367**	**NEBU-M12W5-K-2.5-LE3**
				5 m	**541370**	**NEBU-M12W5-K-5-LE3**
	M8x1, A-coded, to EN 61076-2-104			2.5 m	**541338**	**NEBU-M8W3-K-2.5-LE3**
				5 m	**541341**	**NEBU-M8W3-K-5-LE3**