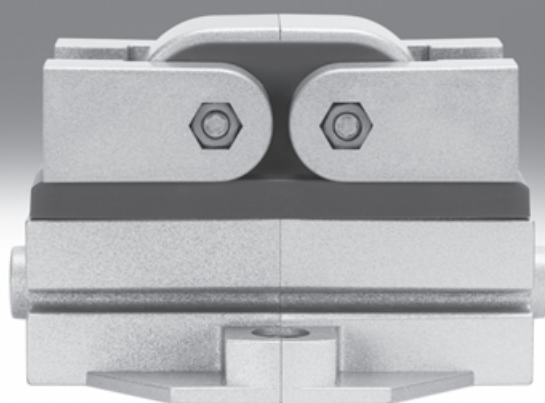


Radial grippers HGRC

FESTO



Radial grippers HGRC

Key features

At a glance

General information

The compact and cost-optimised radial gripper consists of a two-part mirror-symmetrical housing made of die-cast zinc. The force generated by the linear motion of the piston is translated into the gripper jaw movement via a pneumatic piston, which acts directly on the gripper jaws

installed in the housing by means of a moment compensator in accordance with the rack and pinion principle. To ensure a low-backlash plain-bearing guide for the gripper jaws, appropriate guide elements are fitted in the housing and pretensioned by means of socket head screws.

- Double-acting gripper
- Internal fixed flow control, does away with the need for external flow control in 90% of applications
- High force with minimal volume
- Suitable for external and internal gripping

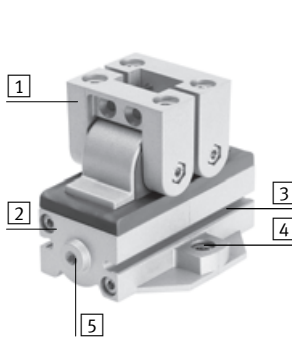
- Opening angle of 180°
- Repetition accuracy of 0.05 mm
- Slot for proximity sensor SME/SMT-10
- Wide range of options for mounting on drives



Note

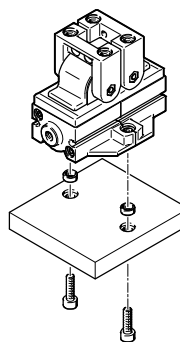
Sizing software for gripper selection
→ www.festo.com

Details

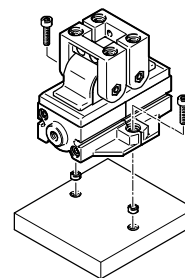


- 1 Gripper jaw
- 2 Housing based on half-shell principle
- 3 Slot for proximity sensor, for sensing the piston position
- 4 Mounting option
- 5 Supply port

Mounting option from underneath

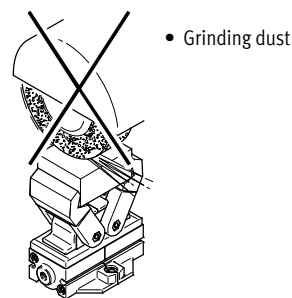
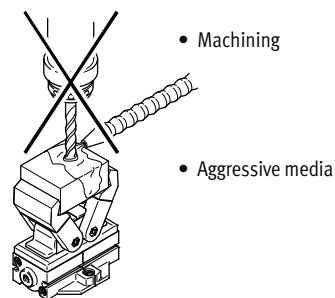


from above

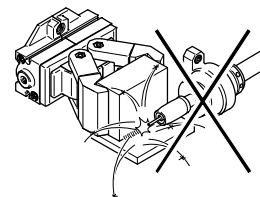


Note

Radial grippers are not designed for the following sample applications:



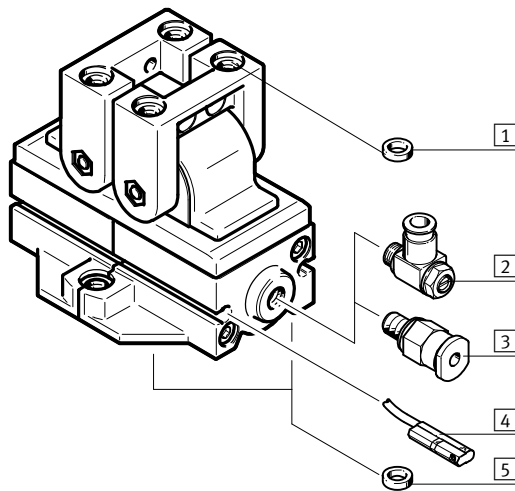
• Welding spatter



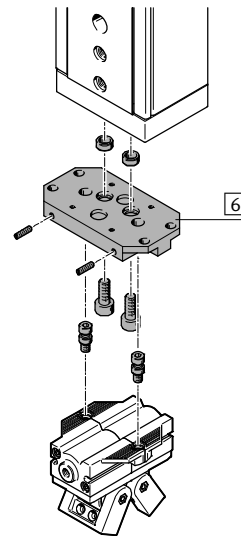
Radial grippers HGRC

Peripherals overview and type codes

Peripherals overview



System product for handling and assembly technology



Accessories			
Type	Description		→ Page/Internet
1 Centring sleeve ZBH	- For centring when attaching gripper fingers 4 included in the scope of delivery of the gripper		11
2 One-way flow control valve GRLA	For regulating speed		grla
3 Push-in fitting QS	For connecting compressed air tubing with standard O.D.		qs
4 Proximity sensor SME/SMT-10	For sensing the piston position		11
5 Centring sleeve ZBH	- For centring when attaching to a drive or plate 2 included in the scope of delivery of the gripper		11
6 Adapter kit HAPG	Drive/gripper connections		adapter kit

Type codes

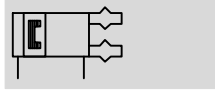
		HGRC	–	12	–	A
Type						
HGRC	Radial gripper					
Size						
Position sensing						
A	Via proximity sensor					

- 1 - Type discontinued
Available up until 2018

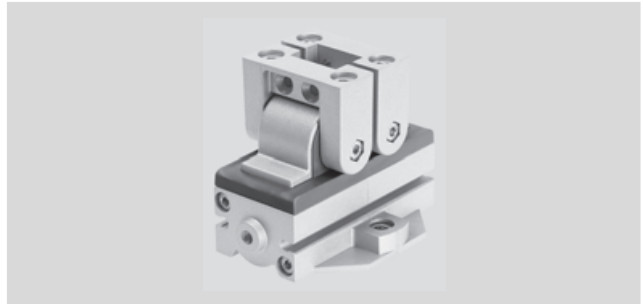
Radial grippers HGRC

Technical data

Function
Double-acting
HGRC-...-A



- Ø - Size
12, 16, 20 mm
- I - Opening angle
180°



General technical data			
Size	12	16	20
Design	Rack and pinion Force-guided motion sequence		
Mode of operation	Double-acting		
Gripper function	Radial		
Number of gripper jaws	2		
Max. opening angle	180		
Pneumatic connection	M5		
Repetition accuracy ¹⁾	≤ 0.05		
Max. interchangeability	≤ 0.2		
Max. gripper jaw backlash ²⁾	≤ 0.1		
Max. gripper jaw angular backlash ³⁾	≤ 0.5		
Max. operating frequency	≤ 4		
Rotational symmetry	≤ Ø 0.2		
Position sensing	Via proximity sensor		
Type of mounting	Via female thread and centring sleeve		
Mounting position	Any		
Product weight	200	350	700

1) End-position drift under constant operating conditions with 100 consecutive strokes in the direction of movement of the gripper jaws

2) Perpendicular to the direction of motion of the gripper jaws

3) Pretensioned, backlash-free ball bearing guide

Operating and environmental conditions	
Operating pressure	2 ... 8
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature ¹⁾	+5 ... +60
Corrosion resistance class CRC ²⁾	2

1) Note operating range of proximity sensors

2) Corrosion resistance class CRC 2 to Festo standard FN 940070

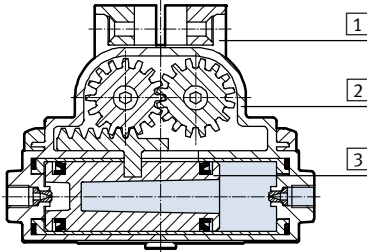
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Radial grippers HGRC

Technical data

Materials

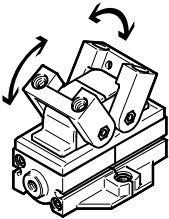
Sectional view



Radial gripper

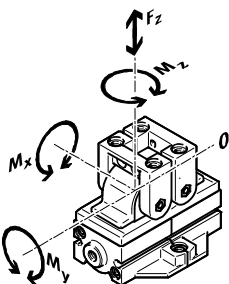
1	Gripper jaw	Die-cast zinc, painted
2	Housing	Die-cast zinc, painted
3	Piston	Polyamide
-	Seals	Polyurethane, nitrile rubber
-	Note on materials	Free of copper and PTFE
		RoHS-compliant

Total gripping torque at 6 bar



Size		12	16	20
Opening	[Ncm]	22	72	144
Closing	[Ncm]	22	72	144

Static characteristic load values at the gripper jaws



The indicated permissible forces and torques apply to a single gripper jaw. The indicated values include the lever arm, additional applied loads caused by the workpiece or external gripper

fingers, as well as forces which occur during movement.

The zero co-ordinate line (gripper jaw guide) must be taken into consideration for the calculation of torques.

Size		12	16	20
Max. permissible force F_z	[N]	40	60	80
Max. permissible torque M_x	[Nm]	2.5	4	8
Max. permissible torque M_y	[Nm]	0.6	1	1.9
Max. permissible torque M_z	[Nm]	2	3.2	6.7

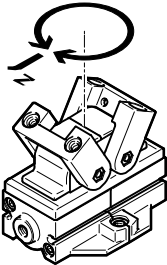
- 1 - Type discontinued
Available up until 2018

Radial grippers HGRC

Technical data

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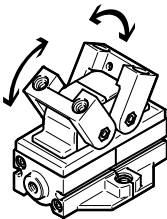
Mass moment of inertia



Mass moment of inertia [$\text{kgm}^2 \times 10^{-4}$]
of the radial gripper in relation to the
central axis with no load.

Size		12	16	20
HGRC-...-A	[$\text{kgm}^2 \times 10^{-4}$]	0.52	1.35	4.31

Opening and closing times [ms] at 6 bar



The indicated opening and closing
times [ms] have been measured at
room temperature and an operating
pressure of 6 bar with vertically
mounted gripper and without
additional gripper fingers.

The grippers must be throttled for
greater applied loads. Opening and
closing times must then be adjusted
accordingly.

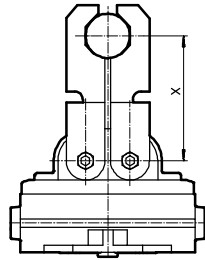
Size		12	16	20
Without external gripper fingers				
HGRC-...-A	Opening	120	160	170
	Closing	100	150	160

Radial grippers HGRC

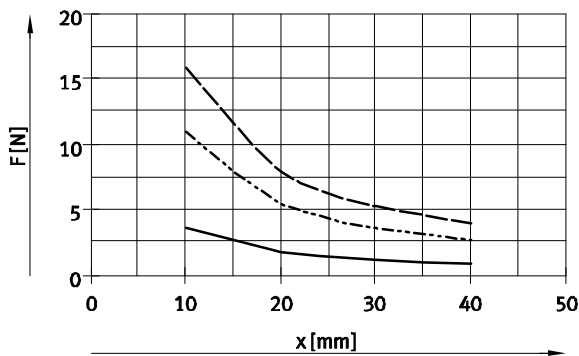
Technical data

Gripping force F_{Grip} per gripper jaw as a function of operating pressure and lever arm x

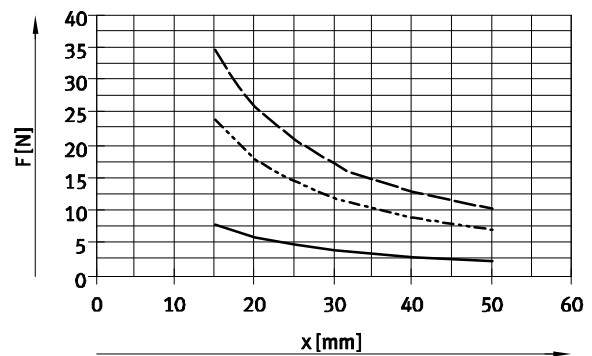
Gripping forces as a function of the operating pressure and the lever arm can be determined for the size using the following graph.



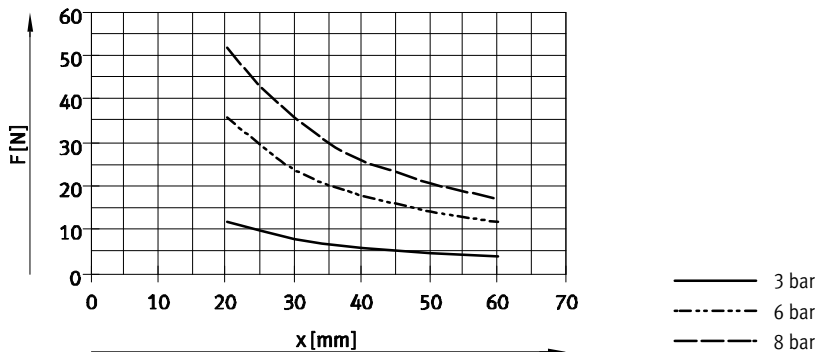
HGRC-12-A



HGRC-16-A



HGRC-20-A

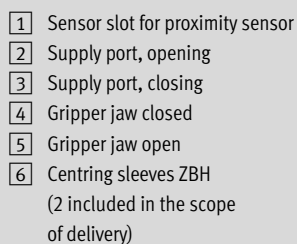


— 3 bar
- - - 6 bar
- · - 8 bar

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Technical data

Download CAD data → www.festo.com



- 2 - Type discontinued
Available up until 2018

Radial grippers HGRC

Technical data

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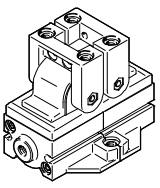
Type	B1	B2	B3 ±0.05	B4 +0.25 -0.05	B5 +0.5	B6 +0.1	D1	D2	D3 +0.05 -0.02	D4 F10/h7	D5
HGRC-12	57	52	12	23	4	11	12	M3	5	7	5.3
HGRC-16	70	63	16	30	5.5	14	12	M4	7	7	5.3
HGRC-20	86	79	20	38	6	18	12	M5	9	9	6.4

Type	D6	D7	D8	EE	H1 ±0.5	H2	H3	H4	H5	H6 ±0.2	H7
HGRC-12	M4	4.8	2.6	M5	43.2	20.7	18.2	35.2	6.9	17	12.5
HGRC-16	M5	5.8	3.2	M5	54.2	26.2	21.2	44.7	8.2	21	15.7
HGRC-20	M6	8.1	4.4	M5	68.2	32.7	27	55.7	10.2	26.5	19.5

Type	H8	H10	L1 ±0.2	L2	L3 ±0.1	L4 ¹⁾	L5	L6 +0.25 -0.05	L7 ¹⁾	T1 min.
HGRC-12	7.5	9.2	27.5	25.5	6	33	42	12	20	4.5
HGRC-16	9	10.7	33	30	9	40	51	15	24	5
HGRC-20	12	13.7	45	38	12	50	65	21	33	5

Type	T2	T3 ±0.1	T4 +0.4 -0.3	T5 +0.1 -0.3	T6 min.	T7 +0.2	T8	T9 +0.1	W1 ±2	W2 ±3	W3
HGRC-12	2.2	1.7	3.1	1.3	6	1.7	0.5	1.3	90°	1°	90°
HGRC-16	2.7	1.8	3.8	1.2	7	3	0.3	1.6	90°	1°	90°
HGRC-20	3.2	2.3	5.2	1.7	9	3.5	0.5	2.1	90°	1°	90°

1) Tolerance for centring hole ±0.03
Tolerance for thread ±0.2

Ordering data		
	Size [mm]	Double-acting Part No. Type
	12	565129 HGRC-12-A
	16	565131 HGRC-16-A
	20	565133 HGRC-20-A

- 1 - Type discontinued
Available up until 2018

Radial grippers HGRC

Accessories

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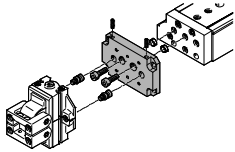
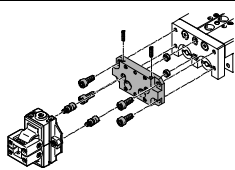
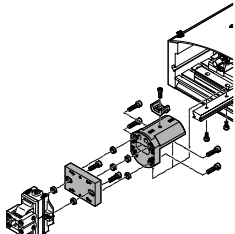
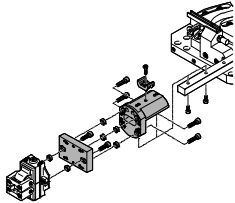
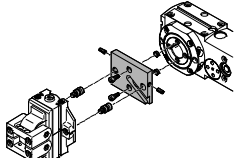
Adapter kit HAPG

Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant



Note

The kit includes the individual mounting interface as well as the necessary mounting material.

Permissible drive/gripper combinations with adapter kit					Download CAD data → www.festo.com		
Combination	Drive	Gripper			Adapter kit		
	Size	Size	Mounting option		CRC ¹⁾	Part No.	Type
							
DGSL/HGRC	DGSL	HGRC			HAPG		
	12, 16	12	■	■	2	529018	HAPG-58
	20, 25	16	■	■		191267	HAPG-49
	20, 25	20	■	■		191269	HAPG-51
SLT/HGRC	SLT	HGRC			HAPG		
	10	12	–	■	2	542670	HAPG-100
	16	12	–	■		529018	HAPG-58
	16	16	–	■		542666	HAPG-101
	20	16	–	■		191267	HAPG-49
	20	20	–	■		542667	HAPG-102
	25	20	–	■		191269	HAPG-51
HSP/HGRC	HSP	HGRC			HAPG		
	16	16	–	■	2	191901	HAPG-55
						540882	HAPG-71-B
	25	20	–	■		191901	HAPG-55
						540883	HAPG-72-B
HSW/HGRC	HSW	HGRC			HAPG		
	12	16	–	■	2	191901	HAPG-55
						540882	HAPG-71-B
	16	16	–	■		191901	HAPG-55
						540882	HAPG-71-B
ERMB/HGRC	ERMB	HGRC			HAPG		
	20	16	■	■	2	542668	HAPG-SD2-42
	20	20	■	■		542669	HAPG-SD2-43
	25	20	■	■		542758	HAPG-SD2-44

1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Radial grippers HGRC

Accessories

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Ordering data – Centring sleeves				Technical data → Internet: zbh
	For size [mm]	Part No.	Type	PU ¹⁾
	For attachment to a drive or on a plate			
	12, 16	186717	ZBH-7	10
	20	150927	ZBH-9	10
	For attaching gripper fingers			
	12	189652	ZBH-5	10
	16	186717	ZBH-7	10
	20	150927	ZBH-9	10

1) Packaging unit

Ordering data – Proximity sensors for C-slot						Technical data → Internet: smt
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
	N/O contact, magneto-resistive					
	Insertable in slot from above	Cable, 3-wire, in-line	PNP	2.5	551373	SMT-10M-PS-24V-E-2,5-L-OE
		Plug M8x1, 3-pin, in-line		0.3	551375	SMT-10M-PS-24V-E-0,3-L-M8D
	N/O contact, magnetic reed					
	Insertable in slot length- wise	Cable, 3-wire, in-line	Contacting	2.5	173210	SME-10-KL-LED-24
		Plug M8x1, 3-pin, in-line		0.3	173212	SME-10-SL-LED-24

Ordering data – Proximity sensors for C-slot						Technical data → Internet: sme
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
	N/O contact, magneto-resistive					
	Insertable in slot from above	Cable, 3-wire, lateral	PNP	2.5	551374	SMT-10M-PS-24V-E-2,5-Q-OE
		Plug M8x1, 3-pin, lateral		0.3	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
	N/O contact, magnetic reed					
	Insertable in slot length- wise	Cable, 3-wire, lateral	Contacting	2.5	173211	SME-10-KQ-LED-24
		Plug M8x1, 3-pin, lateral		0.3	173213	SME-10-SQ-LED-24

Ordering data – Proximity sensors for C-slot						Technical data → Internet: smt
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
	N/O contact, magneto-resistive					
	Insertable in slot length- wise	Cable, 3-wire, lateral	PNP	2.5	547862	SMT-10G-PS-24V-E-2,5Q-OE
		Plug M8x1, 3-pin, lateral		0.3	547863	SMT-10G-PS-24V-E-0,3Q-M8D

Ordering data – Connecting cables				Technical data → Internet: nebu
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No. Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333 NEBU-M8G3-K-2.5-LE3
			5	541334 NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338 NEBU-M8W3-K-2.5-LE3
			5	541341 NEBU-M8W3-K-5-LE3

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