

## Radial grippers DHRS

**FESTO**



## Radial grippers DHRS

Key features

**FESTO**

### At a glance

#### General information

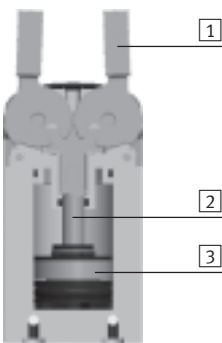
- Lateral gripper jaw support for high torque loads
- Self-centring
- Gripper jaw centring options
- Max. repetition accuracy
- Gripping force retention
- Internal fixed flow control
- Wide range of options for mounting on drive units
- Sensor technology:
  - Adaptable position sensor for the small gripper sizes
  - Integratable proximity sensors for the medium and large gripper sizes

#### Flexible range of applications

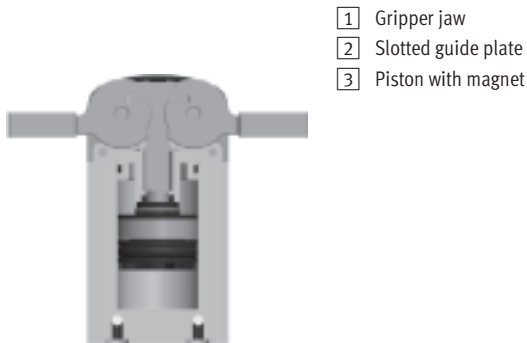
- Can be used as a double-acting and single-acting gripper
- Compression spring for supplementary or retaining gripping forces
- Suitable for external and internal gripping

### The technology in detail

#### Gripper closed



#### Gripper open



#### Note

Gripper selection  
sizing software  
→ [www.festo.com](http://www.festo.com)

### Position sensing/force control

#### With position transmitter SMAT-8M



Infinite position sensing possible

- Analogue output 0 ... 10 V

#### With proportional pressure regulator VPPM



Infinite adjustment of the gripping force possible

- Setpoint input
  - 0 ... 10 V
  - 4 ... 20 mA

#### With proximity sensor SMT-8G



Multiple positions can be sensed:

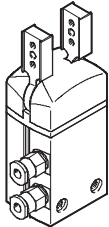
- Open
- Closed
- Workpiece gripped

# Radial grippers DHRS

Key features

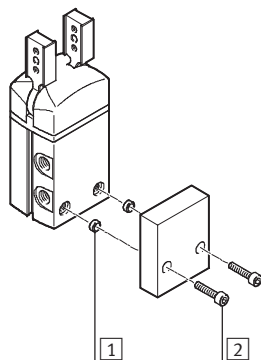
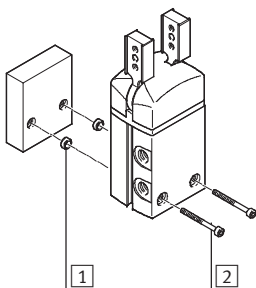
## Supply ports

At the side

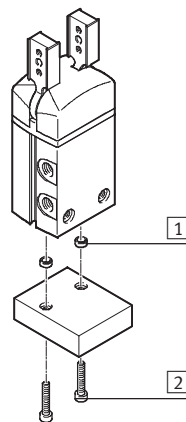


## Mounting options

At the side

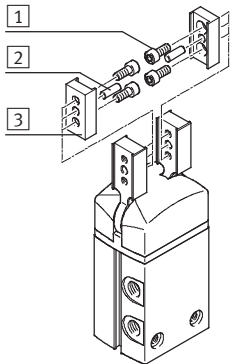


From underneath



- 1 Centring sleeves
- 2 Mounting screws

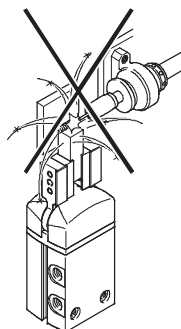
## Mounting options for external gripper fingers



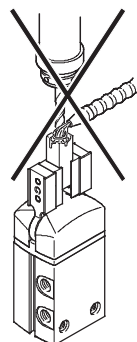
- 1 Mounting screws
- 2 Centring pins
- 3 Gripper fingers

## Note

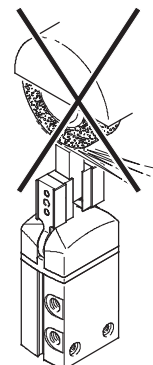
These grippers are not designed for the following or similar sample applications:



- Welding spatter



- Machining
- Aggressive media



- Grinding dust

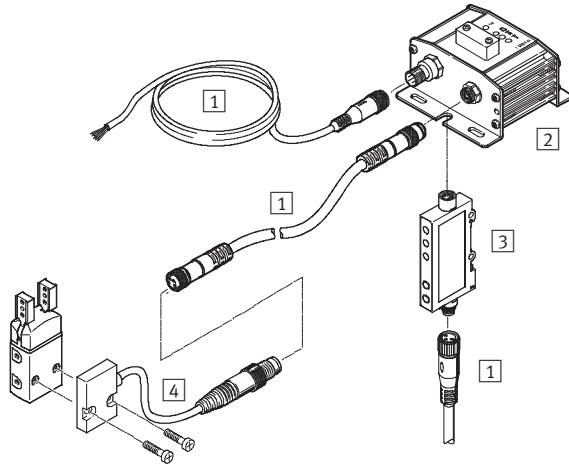
# Radial grippers DHRS

Peripherals overview

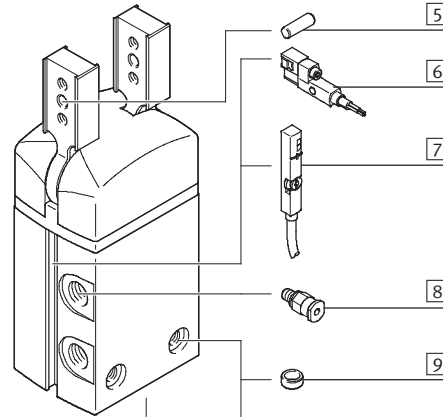
**FESTO**

## Peripherals overview

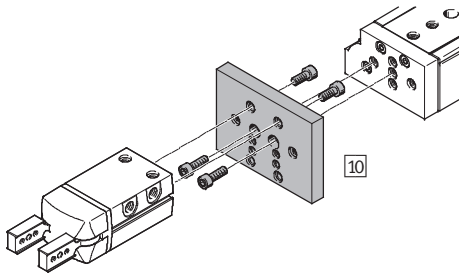
DHRS-10



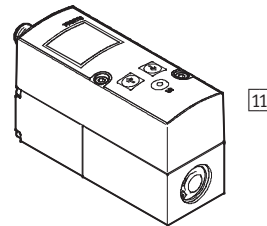
DHRS-16 ... 40



## System product for handling and assembly technology



## Proportional pressure regulator VPPM



## Radial grippers DHRS

Peripherals overview

Accessories		
Type	Brief description	→ Page/Internet
1 Connecting cable NEBU	For connecting evaluation unit and signal converter	21
2 Evaluation unit SMH-AE1	<ul style="list-style-type: none"> <li>For evaluating signals for position sensor SMH-S1</li> <li>For size 10</li> </ul>	21
3 Signal converter SVE4	<ul style="list-style-type: none"> <li>For evaluating signals for position sensor SMH-S1</li> <li>For size 10</li> </ul>	21
4 Position sensor SMH-S1	<ul style="list-style-type: none"> <li>Adaptable and integratable sensor technology, for sensing the piston position</li> <li>For size 10</li> </ul>	21
5 Centring pin	For centring the gripper fingers on the gripper jaws	–
6 Proximity sensor SMT-8G	<ul style="list-style-type: none"> <li>For sensing the piston position</li> <li>Proximity sensor does not project past the housing at the bottom</li> <li>For size 16 ... 40</li> </ul>	22
7 Position transmitter SMAT-8M	<ul style="list-style-type: none"> <li>Continuously senses the position of the piston. Has an analogue output with an output signal in proportion to the piston position</li> <li>For size 16 ... 40</li> </ul>	22
8 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	quick star
9 Centring sleeve ZBH	<ul style="list-style-type: none"> <li>For centring the gripper during mounting</li> <li>The scope of delivery of the gripper includes 2 centring sleeves</li> </ul>	21
10 Adapter kit HMSV, HAPG, HAPS, HMVA	Connecting plate between drive and gripper	16
11 Proportional pressure regulator VPPM	For infinite adjustment of the gripping force	vppm

## Radial grippers DHRS

Type codes

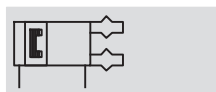
**FESTO**

		DHRS	—	16	—	A	—	
<b>Type</b>								
DHRS	Radial gripper							
<b>Size</b>								
<b>Position sensing</b>								
A	Via proximity sensor							
<b>Gripping force retention</b>								
NC	Closing							

# Radial grippers DHRS

Technical data

Function  
Double-acting  
DHRS-...-A



-N- Size  
10 ... 40 mm  
-T- Opening angle  
180°

Function – Variants  
Single-acting or  
with gripping force retention ...  
... closing DHRS-...-NC



[www.festo.com/en/](http://www.festo.com/en/)  
Spare\_parts\_service

General technical data					
Size	10	16	25	32	40
Design	Forced motion sequence				
Mode of operation	Double-acting				
Gripper function	Radial				
Guide	Plain-bearing guide				
Gripping force retention	–	NC	NC	NC	NC
Number of gripper jaws	2				
Opening angle per gripper jaw [°]	90				
Pneumatic connection	M3	M3	M5	G¼	G¼
Repetition accuracy <sup>1)</sup> [mm]	≤ 0.1				
Max. interchangeability [mm]	≤ ±0.2				
Max. operating frequency [Hz]	4		3		2
Rotational symmetry [mm]	< Ø 0.2				
Position sensing	Via position sensor	Via proximity sensor, position transmitter			
Type of mounting	Via through-hole and centring sleeve				
	Via female thread and centring sleeve				
Mounting position	Any				

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

Operating and environmental conditions						
Size		10	16	25	32	40
Min. operating pressure						
DHRS-...-A		[bar]	2			
DHRS-...-A-NC		[bar]	–	4		
Max. operating pressure		[bar]	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 <sup>1)</sup>		[°C]	+5 ... +60			
Corrosion resistance class CRC <sup>2)</sup>		1				

1) Note operating range of proximity sensors

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

Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Weight [g]					
Size	10	16	25	32	40
DHRS-...-A	44	114	270	480	829
DHRS-...-A-NC	–	118	277	490	844

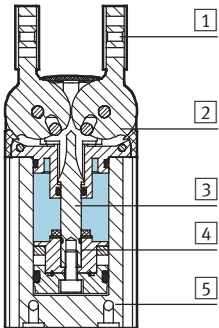
# Radial grippers DHRS

Technical data

**FESTO**

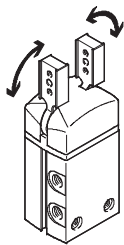
## Materials

Sectional view



Radial gripper		
1	Gripper jaw	High-alloy stainless steel
2	Cover cap	Polyamide
3	Slotted guide plate	Tempered steel
4	Piston	Polyacetal
5	Housing	Hard anodised wrought aluminium alloy
–	Seals	Nitrile rubber
–	Note on materials	Free of copper and PTFE
–		RoHS-compliant

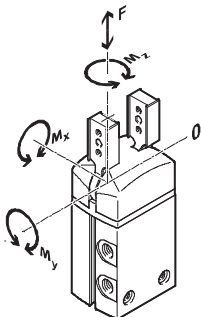
## Total gripping torque [Ncm] at 6 bar



The gripping torque is not constant within the opening angle → 12.

Size		10	16	25	32	40
DHRS-...-A	Opening	21	62	233	423	725
	Closing	15	55	215	390	660

## Static characteristic load values at the gripper jaws

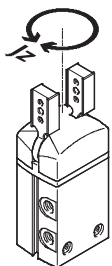


The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during

movement.  
The zero coordinate line (gripper jaw guide) must be taken into consideration for the calculation of torques.

Size		10	16	25	32	40
Max. permissible force $F_z$	[N]	30	40	75	120	200
Max. permissible torque $M_x$	[Nm]	0.8	1.3	3.2	6.2	14
Max. permissible torque $M_y$	[Nm]	0.8	1.3	3.2	6.2	14
Max. permissible torque $M_z$	[Nm]	0.8	1.3	3.2	6.2	14

## Mass moment of inertia [kgm<sup>2</sup>x10<sup>-4</sup>]



Mass moment of inertia of the radial gripper in relation to the central axis, without external gripper fingers, without load.

Size	10	16	25	32	40
DHRS-...-A	0.03	0.14	0.69	1.66	4.18
DHRS-...-A-NC	–	0.15	0.71	1.69	4.24



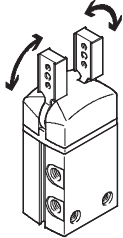
# Radial grippers DHRS

Technical data

FESTO

## Opening and closing times [ms] at 6 bar

Without external gripper fingers



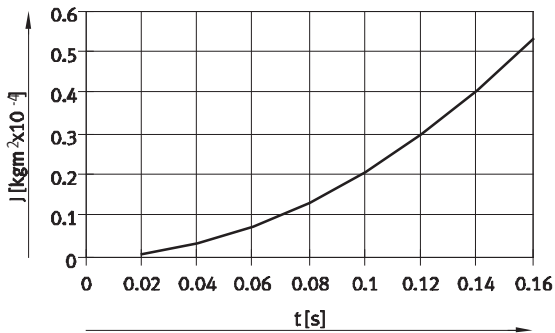
The indicated opening and closing times [ms] were measured at room temperature at an operating pressure of 6 bar with horizontally mounted grippers without additional gripper

fingers (average values). The grippers must be throttled for greater applied loads. Opening and closing times must then be adjusted accordingly.

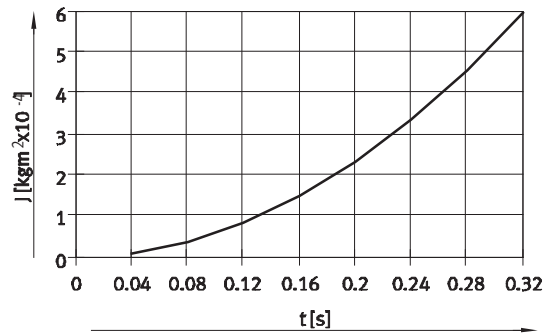
Size		10	16	25	32	40
Without external gripper fingers						
DHRS-...-A	Opening	35	61	102	111	113
	Closing	91	63	105	119	142
DHRS-...-A-NC	Opening	–	75	150	131	151
	Closing	–	43	96	88	110

## Opening and closing times $t$ to be set at 6 bar as a function of mass moment of inertia of the gripper fingers

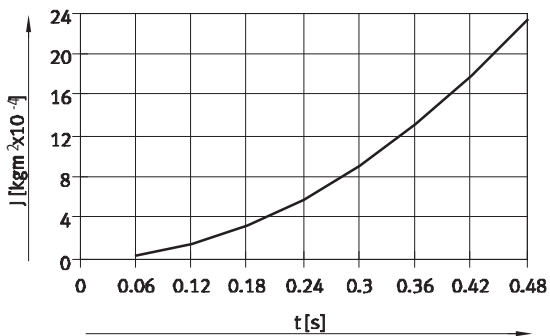
DHRS-10



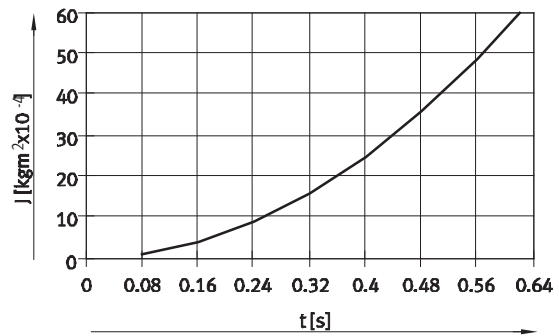
DHRS-16



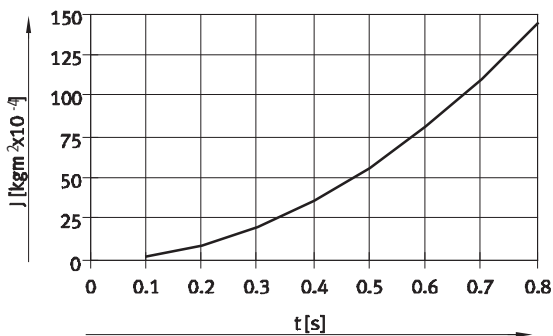
DHRS-25



DHRS-32



DHRS-40



## Radial grippers DHRS

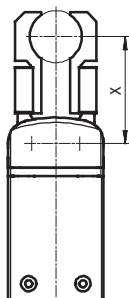
Technical data

**FESTO**

### Gripping force $F_H$ per gripper jaw as a function of operating pressure and lever arm $x$

The gripping forces as a function of operating pressure and lever arm can be determined from the following graphs.

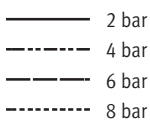
The gripping torque is not constant within the opening angle  $\rightarrow 12^\circ$ .



#### Note

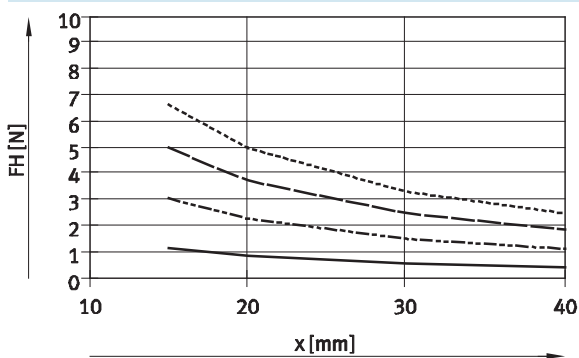
Gripper selection  
sizing software

[www.festo.com](http://www.festo.com)

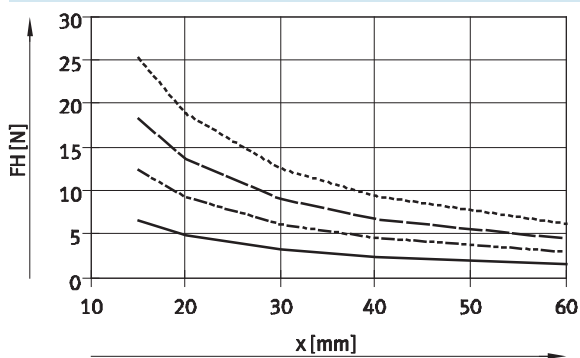


### External gripping (closing)

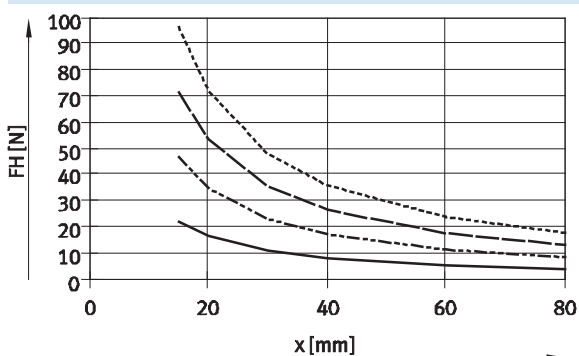
DHRS-10



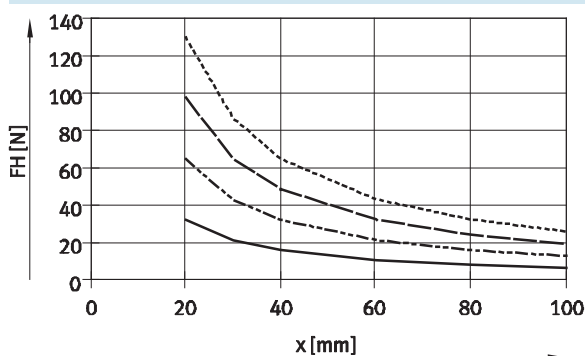
DHRS-16



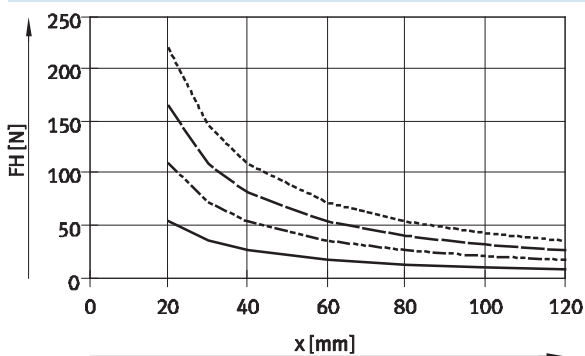
DHRS-25



DHRS-32



DHRS-40



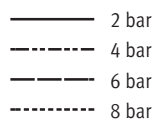
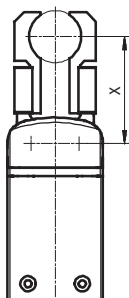
# Radial grippers DHRS

Technical data

## Gripping force $F_H$ per gripper jaw as a function of operating pressure and lever arm $x$

The gripping forces as a function of operating pressure and lever arm can be determined from the following graphs.

The gripping torque is not constant within the opening angle → 12.



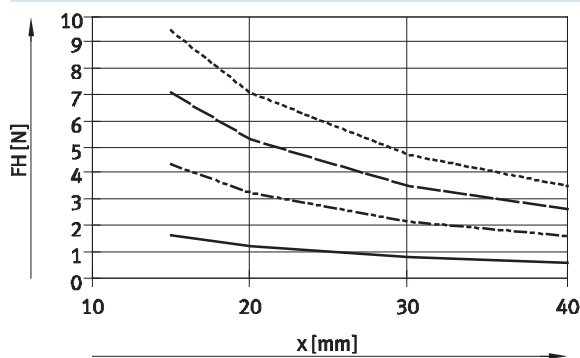
### Note

Gripper selection  
sizing software

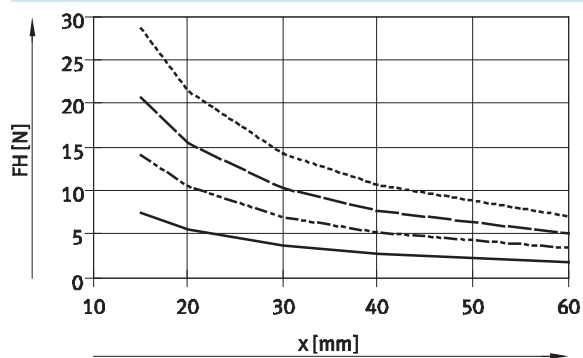
→ [www.festo.com](http://www.festo.com)

## Internal gripping (opening)

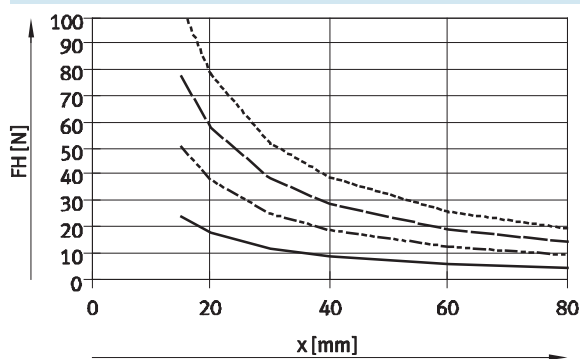
DHRS-10



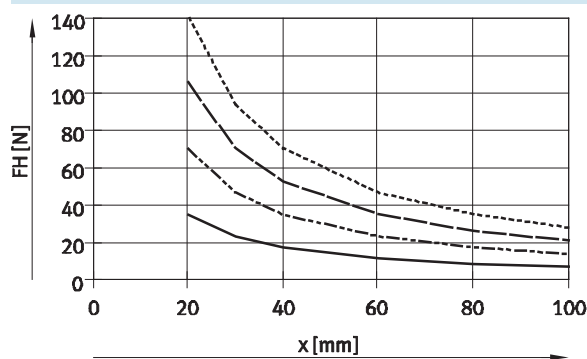
DHRS-16



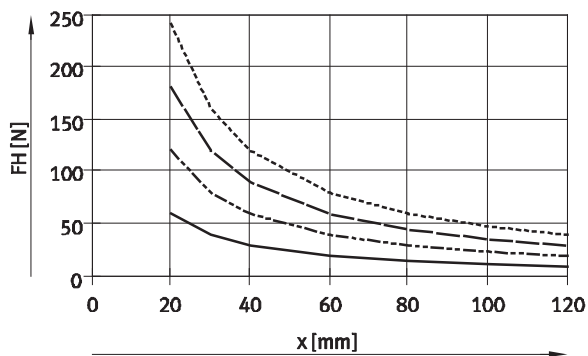
DHRS-25



DHRS-32



DHRS-40



## Radial grippers DHRS

Technical data

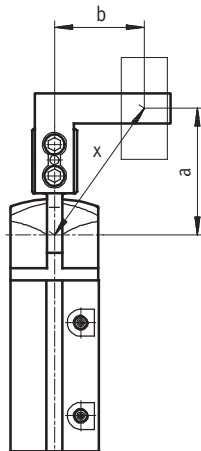
**FESTO**

### Gripping force $F_H$ per gripper jaw at 6 bar as a function of lever arm $x$ and eccentricity $a$ and $b$

The following formula must be used to calculate the lever arm  $x$  with eccentric gripping:

$$x = \sqrt{a^2 + b^2}$$

The gripping force  $F_H$  can be read from the graphs (→ 10/11) using the calculated value  $x$ .



### Calculation example

Given:

Distance  $a = 25$  mm

Distance  $b = 20$  mm

To be calculated:

The gripping force at 6 bar, with a DHRS-16, used as an external gripper

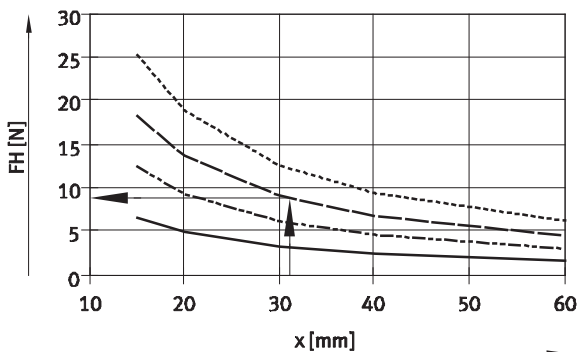
Procedure:

Calculating the lever arm  $x$

$$x = \sqrt{25^2 + 20^2}$$

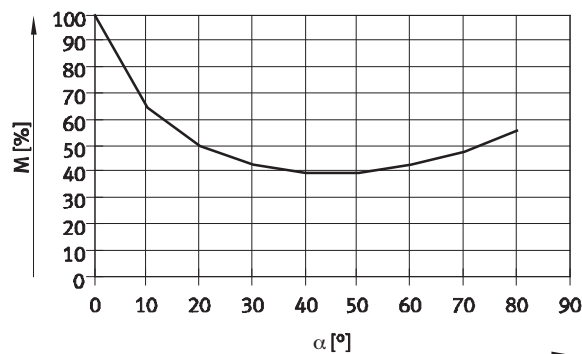
$$x = 32$$
 mm

The graph (→ 10) gives a value of  $F_H = 8$  N for the gripping force.



### Torque curve $M$ as a function of opening angle $\alpha$

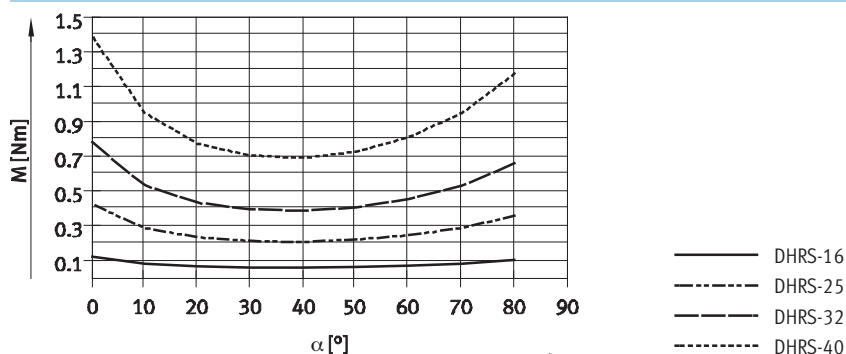
The drive principle of the gripper jaws means that the torque is not constant within the opening angle. The percentage of torque available in each case can be seen in the graph. An opening angle of  $0^\circ$  means a parallel gripper jaw position.



## Radial grippers DHRS

Technical data

### Spring torque $M_F$ as a function of opening angle $\alpha$



### Determination of the actual gripping torques $M_{Grtotal}$ for DHRS-...-NC as a function of application

The radial gripper with integrated spring type DHRS-...-NC (closing gripping force retention) can be used as:

- single-acting grippers
- grippers with supplementary gripping force and
- grippers with gripping force retention depending on requirements.

In order to calculate the available gripping torque  $M_{Grtotal}$  (per gripper jaw), the data from the graphs for the gripping force  $F_H$  (→ 10/11), the

torque curve (→ 12) and the spring torque  $M_F$  (→ 13) must be combined accordingly.

$$M_{Gr} = F_H \cdot x \cdot M \text{ [%]}$$

$M_{Gr}$  Gripping torque

$F_H$  Gripping force

$x$  Lever arm

$M$  Torque curve

### Application

#### Single-acting

- Gripping with spring force:  
 $M_{Grtotal} = M_F$
- Gripping with pressure force:  
 $M_{Grtotal} = M_{Gr} - M_F$

#### Supplementary gripping force

- Gripping with pressure and spring force:  
 $M_{Grtotal} = M_{Gr} + M_F$

#### Gripping force retention

- Gripping with spring force:  
 $M_{Grtotal} = M_F$

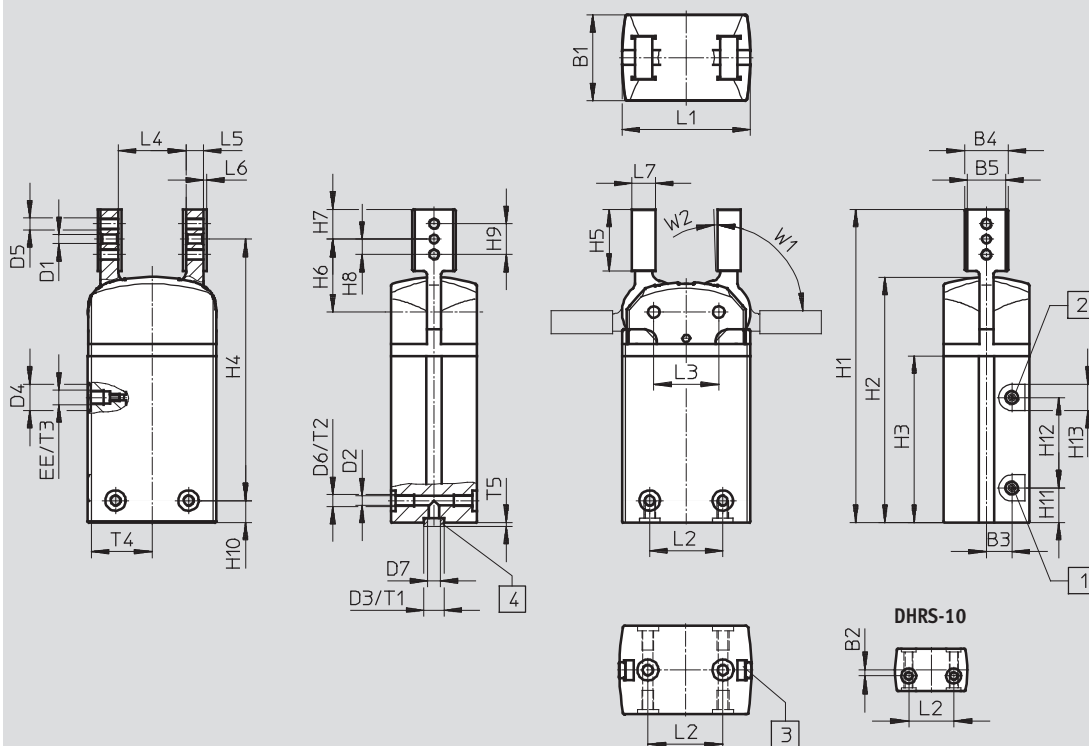
# Radial grippers DHRS

Technical data

**FESTO**

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



- 1) Supply port, opening
- 2) Supply port, closing
- 3) Slot for proximity sensor
- 4) Centring sleeves ZBH  
(2 included in the scope of delivery)

Size	B1	B2 <sup>1)</sup>	B3	B4	B5	D1	D2	D3	D4	D5
[mm]	±0.05				+0.03/ +0.01	Ø H8	Ø +0.1	Ø H8/h7	Ø	
10	14	2	2	8.5	6.5	2	2.4	5	7	M2.5
16	19	–	5.8	14	10	2	2.5	5	–	M3
25	29.5	–	8.75	15	13	3	3.3	7	9	M4
32	38	–	11	16	14	4	5.1	9	15	M5
40	49	–	11	24	20	5	6.4	12	15	M6

Size	D6	D7	EE	H1	H2	H3	H4	H5	H6
[mm]		Ø					±0.25	±0.2	±0.05
10	M3	3.2	M3	60.8	46	30.8	42.25	13.8	14.95
16	M3	3.2	M3	88.2	70.5	49	73.70	16.5	19.7
25	M4	5.3	M5	107.2	84	57	89.45	21.2	24.95
32	M6	6.4	G1/8	128.5	96.2	65	103.5	29.5	32
40	M8	10.3	G1/8	140	108.4	71.5	108.7	29.5	33.7

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm

# Radial grippers DHRS

Technical data

Size [mm]	H7 -0.1	H8	H9	H10 <sup>2)</sup>	H11	H12	H13	L1 ±0.05	L2 <sup>1)</sup>	L3 ±0.02
10	6.25	4	8	12.3	8.8	16	7	24	15	12.4
16	7	4	8	7.5	12.25	23	7	33.4	16	17
25	10.25	5.25	10.5	7.5	11.8	31	9	44	25	22.2
32	14	7	14	11	20	25	15	51	29	25.8
40	13.8	8	16	17.5	9	46	15	59	33	30

Size [mm]	L4	L5 ±0.05	L6	L7	T1 +0.1	T2 +1	T3 +0.5	T4	T5 -0.3	W1 ±2°	W2 +3°
10	12	4	0.5	5	1.2	through	3.5	11.6	1.2	90	2
16	21	4	1	6	1.2	5.8	4.5	16	1.2	90	2
25	23.2	6	1	8	1.6	6.4	4.5	21	1.4	90	2
32	24.8	8	1	10	2.1	12.9	6.5	24	1.9	90	2
40	29.6	10	1	12	2.6	13.4	6	28.4	2.4	90	2

1) Tolerance for centring hole ±0.02 mm, tolerance for thread ±0.1 mm

2) Tolerance for centring hole -0.05 mm, tolerance for thread ±0.1 mm

Ordering data					
Size [mm]	Double-acting without compression spring			Single-acting or with gripping force retention	
	Part No.	Type		Closing Part No.	Type
10	<b>1310159</b>	<b>DHRS-10-A</b>		-	
16	<b>1310160</b>	<b>DHRS-16-A</b>		<b>1310161</b>	<b>DHRS-16-A-NC</b>
25	<b>1310162</b>	<b>DHRS-25-A</b>		<b>1310163</b>	<b>DHRS-25-A-NC</b>
32	<b>1310164</b>	<b>DHRS-32-A</b>		<b>1310165</b>	<b>DHRS-32-A-NC</b>
40	<b>1310166</b>	<b>DHRS-40-A</b>		<b>1310167</b>	<b>DHRS-40-A-NC</b>

# Radial grippers DHRS

Accessories



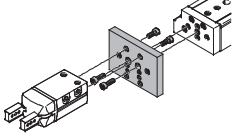
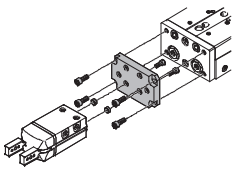
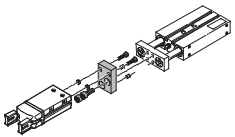
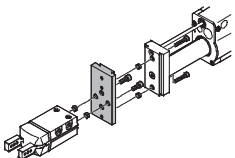
**FESTO**

**Adapter kit**  
HMSV, HAPG, HAPS, HMVA, DHAA

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 → <a href="http://www.festo.com/us/cad">www.festo.com/us/cad</a>		
Combination	Drive Size	Gripper Size	Mounting option		Adapter kit		
					CRC <sup>1)</sup>	Part No.	Type
<b>DGSL/DHRS</b>	<b>DGSL</b>	<b>DHRS</b>			<b>HMSV</b>		
	8, 10	10	■	■	2	548784	HMSV-54
	12, 16	16	■	■		548785	HMSV-55
	20, 25	25, 32	■	■		548786	HMSV-56
<b>SLT/DHRS</b>	<b>SLT</b>	<b>DHRS</b>			<b>HAPS</b>		
	10	10	■	—	2	178448	HAPS-2
	16	16	■	—		178449	HAPS-3
	20	25	■	—		178450	HAPS-4
	25	32	■	—		178451	HAPS-5
<b>DPZ/DHRS</b>	<b>DPZ</b>	<b>DHRS</b>			<b>HAPG</b>		
	10, 16	16	■	—	2	163250	HAPG-1
	16	25	■	—		163251	HAPG-2
	20	25	■	—		163252	HAPG-3
	25, 32	32	■	—		163253	HAPG-4
<b>HMP/DHRS</b>	<b>HMP</b>	<b>DHRS</b>			<b>HMSV</b>		
	Direct mounting						
	16, 20	16	■	■	2	177666	HMSV-20
	16, 20, 25	25	■	■		177761	HMSV-21
	16, 20, 25, 32	32	■	■		177762	HMSV-22
	25	40	■	■		177763	HMSV-23
	32	40	■	■		177764	HMSV-24
	Dovetail mounting						
	16, 20	16	■	■	2	177767	HMSV-27
	16, 20, 25	25	■	■		177768	HMSV-28
	16, 20, 25, 32	32	■	■		177769	HMSV-29
	25	40	■	■		177770	HMSV-30
	32	40	■	■		178211	HMSV-31

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 DHRS



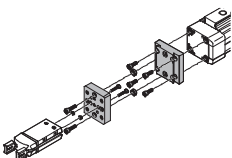
Accessories

**Adapter kit**  
HMSV, HAPG, HAPS, HMVA, DHAA

**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 → <a href="http://www.festo.com/us/cad">www.festo.com/us/cad</a>		
Combination	Drive	Gripper			Adapter kit		
	Size	Size	Mounting option		CRC <sup>1)</sup>	Part No.	Type
							
DGP-..., DGE-..., DGEA/DHRS	DG...	DHRS			HMVA, HAPG, HMSV		
	Direct mounting						
	18 <sup>2)</sup> , 25 <sup>3)</sup>	10	■	■	2	196788	HMVA-DLA18/25
						192706	HAPG-37-S1
	40 <sup>3)</sup>	10	■	■		196790	HMVA-DLA40
						192706	HAPG-37-S1
	18 <sup>2)</sup> , 25 <sup>3)</sup>	16	■	■		196788	HMVA-DLA18/25
						192705	HAPG-36-S1
	40 <sup>3)</sup>	16	■	■	196790	HMVA-DLA40	
					192705	HAPG-36-S1	
	18 <sup>2)</sup> , 25 <sup>3)</sup>	25	■	■	196788	HMVA-DLA18/25	
					193922	HAPG-37-S4	
	40 <sup>3)</sup>	25	■	■	196790	HMVA-DLA40	
					193922	HAPG-37-S4	
	Dovetail mounting						
	18 <sup>2)</sup> , 25	16	■	■	2	196788	HMVA-DLA18/25
						177767	HMSV-27
	40	16	■	■		196790	HMVA-DLA40
						177767	HMSV-27
	18 <sup>2)</sup> , 25	25	■	■		196788	HMVA-DLA18/25
				177768		HMSV-28	
40	25	■	■	196790		HMVA-DLA40	
				177768		HMSV-28	
40	32	■	■	196790	HMVA-DLA40		
				177769	HMSV-29		
40	40	■	■	196790	HMVA-DLA40		
				177770	HMSV-30		

- 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.
- 2) Only for DGEA-...
- 3) Only for DGE-/DGP...

# Radial grippers DHRS

Accessories



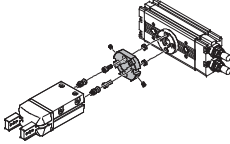
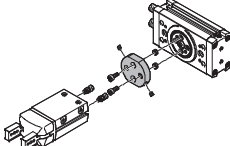
**FESTO**

**Adapter kit**  
HMSV, HAPG, HAPS, HMVA, DHAA

**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 → <a href="http://www.festo.com/us/cad">www.festo.com/us/cad</a>		
Combination	Drive Size	Gripper Size	Mounting option		Adapter kit		
					CRC <sup>1)</sup>	Part No.	Type
<b>DRQD/DHRS</b>	<b>DRQD-...-FW</b>	<b>DHRS</b>				<b>HAPG</b>	
	6, 8, 12	10	■	■	2	187568	HAPG-34
	16 <sup>2)</sup>	10	■	■		187566	HAPG-SD2-12
	16 <sup>2)</sup>	16	■	■		184477	HAPG-SD2-1
	16 <sup>2)</sup>	25	■	■		184478	HAPG-SD2-2
	20 <sup>2)</sup>	25	■	■		184479	HAPG-SD2-3
	20 <sup>2)</sup>	32	■	■		184480	HAPG-SD2-4
	25 <sup>3)</sup>	25	■	■		184482	HAPG-SD2-6
	25 <sup>3)</sup>	32	■	■		184483	HAPG-SD2-7
	32 <sup>3)</sup>	32	■	■		184485	HAPG-SD2-9
	32 <sup>3)</sup>	40	■	■		184486	HAPG-SD2-10
	40, 50	40	■	■		526027	HAPG-SD2-21
	<b>DRQD-...ZW</b>	<b>DHRS</b>				<b>HAPG</b>	
	16	16	■	■	2	163267	HAPG-18
	16	25	■	■		163268	HAPG-19
	20	25	■	■		163269	HAPG-20
	20	32	■	■		163270	HAPG-21
	25	32	■	■		163271	HAPG-22
<b>DRRD/DHRS</b>	<b>DRRD</b>	<b>DHRS</b>				<b>DHAA</b>	
	16	16	■	■	2	1979085	DHAA-G-Q11-16-B2/B3-16
	16	25	■	■		1978889	DHAA-G-Q11-16-B2/B3-25
	20	25	■	■		1978443	DHAA-G-Q11-20-B2/B3-25
	20	32	■	■		1979912	DHAA-G-Q11-20-B2/B3-32
	25	25	■	■		1801802	DHAA-G-Q11-25-B2/B3-25
	25	32	■	■		1802969	DHAA-G-Q11-25-B2/B3-32
	32	32	■	■		1979992	DHAA-G-Q11-32-B2/B3-32
	32	40	■	■		1980014	DHAA-G-Q11-32-B2/B3-40
	35, 40	40	■	■		1980059	DHAA-G-Q11-35/40-B2/B3-40

- 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.
- 2) Possible in combination with DRQD-...-E422 (flanged shaft with energy through-feed).
- 3) Possible in combination with DRQD-...-E444 (flanged shaft with energy through-feed).

# Radial grippers DHRS



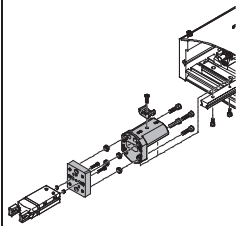
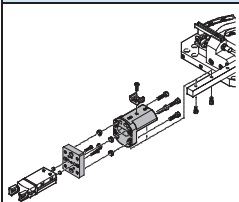
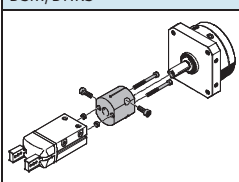
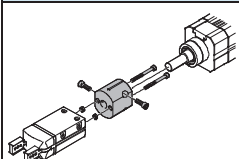
Accessories

**Adapter kit**  
HMSV, HAPG, HAPS, HMVA, DHAA

**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 → <a href="http://www.festo.com/us/cad">www.festo.com/us/cad</a>	
Combination	Drive Size	Gripper Size	Mounting option		Adapter kit CRC <sup>1)</sup>	Part No.	Type
							
<b>HSP/DHRS</b>	<b>HSP</b>	<b>DHRS</b>			<b>HAPG</b>		
	12	10	■	—	2	192709	HAPG-60-S1
	16	10	■	—		540881	HAPG-70-B
	16	16	■	—		192706	HAPG-37-S1
	25	16	■	—		540882	HAPG-71-B
	25	25	■	—		192705	HAPG-36-S1
	25	25	■	—		540882	HAPG-71-B
						192705	HAPG-36-S1
						540883	HAPG-72-B
						193922	HAPG-37-S4
						540883	HAPG-72-B
<b>HSW/DHRS</b>	<b>HSW</b>	<b>DHRS</b>			<b>HAPG</b>		
	12, 16	10	■	—	2	192706	HAPG-37-S1
	12, 16	16	■	—		540882	HAPG-71-B
	12, 16	16	■	—		192705	HAPG-36-S1
						540882	HAPG-71-B
<b>DSM/DHRS</b>	<b>DSM-...-FW</b>	<b>DHRS</b>			<b>HAPG</b>		
	6, 8, 10	10	■	■	2	187568	HAPG-34
	DSM-...	DHRS			<b>HAPG</b>		
	12	16	■	■	2	163266	HAPG-17
	16	16	■	■		163267	HAPG-18
	16	25	■	■		163268	HAPG-19
	25	25	■	■		163269	HAPG-20
	25	32	■	■		163270	HAPG-21
	32	32	■	■		163271	HAPG-22
<b>DSL/DHRS</b>	<b>DSL</b>	<b>DHRS</b>			<b>HAPG</b>		
	16	16	■	■	2	163266	HAPG-17
	20	16	■	■		163267	HAPG-18
	20	25	■	■		163268	HAPG-19
	25	25	■	■		163269	HAPG-20
	25	32	■	■		163270	HAPG-21
	32	32	■	■		163271	HAPG-22

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 DHRS

Accessories



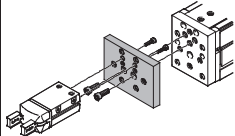
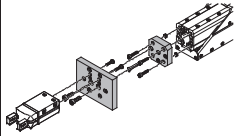
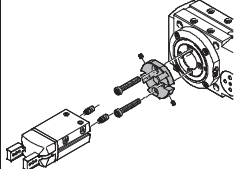
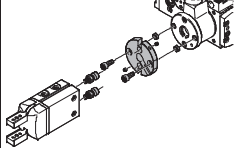
**FESTO**

**Adapter kit**  
HMSV, HAPG, HAPS, HMVA, DHAA

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 ➔ <a href="http://www.festo.com/us/cad">www.festo.com/us/cad</a>		
Combination	Drive	Gripper		Adapter kit			
	Size	Size	Mounting option		CRC <sup>1)</sup>	Part No.	Type
							
EGSL/DHRS	EGSL	DHRS		HMSV			
	35	10	■	■	2	548784	HMSV-54
	45, 55	16	■	■		1088262	HMSV-70
		75	25, 32	■		■	548785
							548786
EGSA/DHRS	EGSA	DHRS		HMSV			
	50	16	■	■	2	560017	HMSV-61
	60	16	■	■		548785	HMSV-55
		60	25, 32	■		■	560019
							177666
					560018	HMSV-62	
					548786	HMSV-56	
ERMB/DHRS	ERMB	DHRS		HAPG			
	20	25	■	■	2	184479	HAPG-SD2-3
	25	25	■	■		184482	HAPG-SD2-6
	20	32	■	■		184480	HAPG-SD2-4
	25	32	■	■		184483	HAPG-SD2-7
	32	32	■	■		184485	HAPG-SD2-9
	32	40	■	■		184486	HAPG-SD2-10
EHMB/DHRS	EHMB	DHRS		HAPG			
	20	32	■	■	2	184485	HAPG-SD2-9
	20	40	■	■		184486	HAPG-SD2-10
	25, 32	40	■	■		526027	HAPG-SD2-21

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

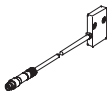
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

# Radial grippers DHRS

Accessories

Ordering data						
	For size [mm]	Description	Weight [g]	Part No.	Type	PU <sup>1)</sup>
Centring sleeve ZBH <span style="float: right;">Technical data → Internet: zbh</span>						
	10, 16	For centring the gripper during mounting	1	<b>189652</b>	<b>ZBH-5</b>	10
	25		1	<b>186717</b>	<b>ZBH-7</b>	
	32		1	<b>150927</b>	<b>ZBH-9</b>	
	40		1	<b>189653</b>	<b>ZBH-12</b>	

1) Packaging unit

Ordering data				
Type	For size	Weight [g]	Part No.	Type
Position sensor SMH-S1 <span style="float: right;">Technical data → Internet: smh-s1</span>				
	10	20	<b>175712</b>	<b>SMH-S1-HGR10</b>



## Signal converter/evaluation unit for position sensor SMH-S1



### Signal converter SVE4

- Converts analogue signals into switching points
- Switching function freely programmable with teach-in
- Threshold value, hysteresis or window comparator

### Evaluation unit SMH-AE1

- Converts analogue signals into switching points
- With 3 potentiometers for setting 3 switching points



Ordering data							
Type	For size	Input connection	Output connection	Switching output	Weight [g]	Part No.	Type
Signal converter SVE4						Technical data → Internet: sve4	
	10	Socket M8x1, 4-pin	Plug M8x1, 4-pin	2x PNP	19	544216	SVE4-HS-R-HM8-2P-M8
				2x NPN		544219	SVE4-HS-R-HM8-2N-M8
Evaluation unit SMH-AE1						Technical data → Internet: smh-ae	
	10	Socket M8x1, 4-pin	Plug M12x1, 5-pin	3x PNP	170	175708	SMH-AE1-PS3-M12
				3x NPN		175709	SMH-AE1-NS3-M12

Ordering data – Connecting cables				
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No. Type
Connection between position sensor and signal converter/evaluation unit <span style="float: right;">Technical data → Internet: nebu</span>				
	Straight socket, M8x1, 4-pin	Straight plug, M8x1, 4-pin	2.5	<b>554035</b> <b>NEBU-M8G4-K-2.5-M8G4</b>
Connection between evaluation unit and controller				
	Straight socket, M12x1, 5-pin	Cable, open end, 5-wire	2.5	<b>541330</b> <b>NEBU-M12G5-K-2.5-LE5</b>
			5	<b>541331</b> <b>NEBU-M12G5-K-5-LE5</b>


## Radial grippers DHRS

Accessories


FESTO

Ordering data – Connecting cables					Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type	
Connection between signal converter and controller						
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541342	NEBU-M8G4-K-2.5-LE4	
			5	541343	NEBU-M8G4-K-5-LE4	
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541344	NEBU-M8W4-K-2.5-LE4	
			5	541345	NEBU-M8W4-K-5-LE4	

### Proximity sensor for size 16 ... 40

Ordering data – Proximity sensors for T-slot, magneto-resistive					Technical data → Internet: smt	
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot lengthwise	Cable, 3-wire, lateral	PNP	2.5	547859	SMT-8G-PS-24V-E-2,5Q-OE
		Plug M8x1, 3-pin, lateral		0.3	547860	SMT-8G-PS-24V-E-0,3Q-M8D



### Proximity sensor for size 16 ... 40

Ordering data – Position transmitters for T-slot					Technical data → Internet: smat	
	Type of mounting	Electrical connection, connection direction	Analogue output [V]	Cable length [m]	Part No.	Type
	Insertable in the slot from above	Plug M8x1, 3-pin, in-line	0 ... 10	0.3	553744	SMAT-8M-U-E-0,3-M8D

#### Note

##### Mode of operation:

The position transmitter continuously senses the position of the piston. It has an analogue output with an output signal in proportion to the piston position.

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	

## Product Range and Company Overview

### A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



**Custom Automation Components**  
Complete custom engineered solutions



**Custom Control Cabinets**  
Comprehensive engineering support and on-site services



**Complete Systems**  
Shipment, stocking and storage services

### The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



**Electromechanical**  
Electromechanical actuators, motors, controllers & drives



**Pneumatics**  
Pneumatic linear and rotary actuators, valves, and air supply



**PLCs and I/O Devices**  
PLC's, operator interfaces, sensors and I/O devices

### Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

### Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



© Copyright 2008, Festo Corporation. While every effort is made to ensure that all dimensions and specifications are correct, Festo cannot guarantee that publications are completely free of any error, in particular typing or printing errors. Accordingly, Festo cannot be held responsible for the same. For Liability and Warranty conditions, refer to our "Terms and Conditions of Sale", available from your local Festo office. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of Festo. All technical data subject to change according to technical update.



Printed on recycled paper at New Horizon Graphic, Inc., FSC certified as an environmentally friendly printing plant.



# Festo North America

## Festo Regional Contact Center

5300 Explorer Drive  
Mississauga, Ontario L4W 5G4  
Canada

### USA Customers:

For ordering assistance,

**Call:** 1.800.99.FESTO (1.800.993.3786)

**Fax:** 1.800.96.FESTO (1.800.963.3786)

**Email:** [customer.service@us.festo.com](mailto:customer.service@us.festo.com)

For technical support,

**Call:** 1.866.GO.FESTO (1.866.463.3786)

**Fax:** 1.800.96.FESTO (1.800.963.3786)

**Email:** [product.support@us.festo.com](mailto:product.support@us.festo.com)

### Canadian Customers:

**Call:** 1.877.GO.FESTO (1.877.463.3786)

**Fax:** 1.877.FX.FESTO (1.877.393.3786)

**Email:** [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com)

## USA Headquarters

Festo Corporation  
395 Moreland Road  
P.O. Box 18023  
Hauppauge, NY 11788, USA  
[www.festo.com/us](http://www.festo.com/us)

## USA Sales Offices

### Appleton

North 922 Tower View Drive, Suite N  
Greenville, WI 54942, USA

### Boston

120 Presidential Way, Suite 330  
Woburn, MA 01801, USA

### Chicago

1441 East Business Center Drive  
Mt. Prospect, IL 60056, USA

### Dallas

1825 Lakeway Drive, Suite 600  
Lewisville, TX 75057, USA

### Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320  
Auburn Hills, MI 48326, USA

### New York

395 Moreland Road  
Hauppauge, NY 11788, USA

### Silicon Valley

4935 Southfront Road, Suite F  
Livermore, CA 94550, USA

## United States



**USA Headquarters, East:** Festo Corp., 395 Moreland Road, Hauppauge, NY 11788

Phone: 1.631.435.0800; Fax: 1.631.435.8026;

Email: [info@festo-usa.com](mailto:info@festo-usa.com)

[www.festo.com/us](http://www.festo.com/us)

## Canada



**Headquarters:** Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4

Phone: 1.905.624.9000; Fax: 1.905.624.9001;

Email: [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com)

[www.festo.ca](http://www.festo.ca)

## Mexico



**Headquarters:** Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,  
54020 Tlalneapantla, Edo. de México

Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;

Email: [festo.mexico@mx.festo.com](mailto:festo.mexico@mx.festo.com)

[www.festo.com/mx](http://www.festo.com/mx)

## Central USA

Festo Corporation  
1441 East Business  
Center Drive  
Mt. Prospect, IL 60056, USA  
Phone: 1.847.759.2600  
Fax: 1.847.768.9480



## Western USA

Festo Corporation  
4935 Southfront Road,  
Suite F  
Livermore, CA 94550, USA  
Phone: 1.925.371.1099  
Fax: 1.925.245.1286



## Festo Worldwide

Argentina Australia Austria Belarus Belgium Brazil Bulgaria Canada Chile China Colombia Croatia Czech Republic Denmark  
Estonia Finland France Germany Great Britain Greece Hong Kong Hungary India Indonesia Iran Ireland Israel Italy Japan Latvia  
Lithuania Malaysia Mexico Netherlands New Zealand Norway Peru Philippines Poland Romania Russia Serbia Singapore  
Slovakia Slovenia South Africa South Korea Spain Sweden Switzerland Taiwan Thailand Turkey Ukraine United States Venezuela

[www.festo.com](http://www.festo.com)