Parallel grippers HGPT-B, heavy-duty

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Parallel grippers HGPT-B, heavy-duty

Key features

Advantages compared with the parallel gripper HGPT

- **Space-optimised:**
  Choice of shorter housing without gripping force retention or longer housing with gripping force retention
- **Increased gripping force/ high-force variant:**
  Gripping force increased by 30% by means of oval piston.
  High-force variant also available: half the stroke, twice the force
- **Reduced weight:**
  Systematic use of lighter and higher performance materials
- **4 sensor slots:**
  Proximity sensors no longer project past the bottom of the housing.
  Up to four positions can be sensed with the proximity sensors

At a glance

General information

Sturdy and precise kinematic system for maximum torque absorption and long service life.
The force generated by the linear motion is translated into the gripper jaw movement via a wedge mechanism with guided motion sequence.
This also guarantees synchronous movement of the gripper jaws.
The virtually backlash-free plain-bearing guide is realised using ground-in gripper jaws.

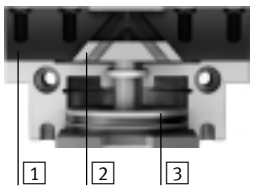
Flexible range of applications

A wide range of uses:

- Can be used as either a double-acting or single-acting gripper
- Compression spring for supplementary or retaining gripping forces
- Suitable for external and internal gripping
- Centring either via centring pins or centring sleeves

The technology in detail

Gripper closed

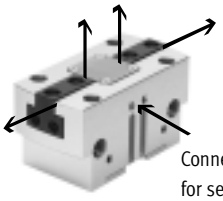


Gripper open

1 Gripper jaw
2 Wedge with restricted guidance
3 Piston with magnet

Additional connections

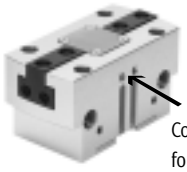
For sealing air



Connections for sealing air

Compressed air flows past the gripper jaw when sealing air (max. 0.5 bar) is connected.
This prevents, for example, dust particles from entering the gripper jaw guides.

For lubrication



Connections for lubrication

The connections can also be used for relubricating the guide.

Position sensing/force control

With position transmitter SMAT-8M

Analogue positional feedback 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/-10G

Multiple positions can be sensed:

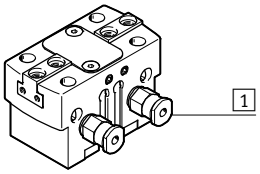
- Open
- Closed
- Workpiece gripped

Parallel grippers HGPT-B, heavy-duty

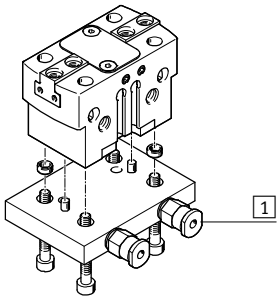
Key features

Wide range of supply ports

Direct
From the front



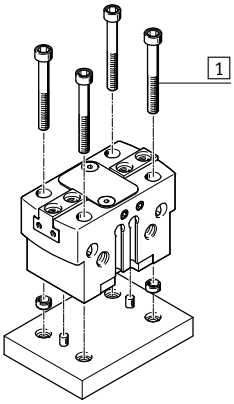
Via adapter plate
From underneath



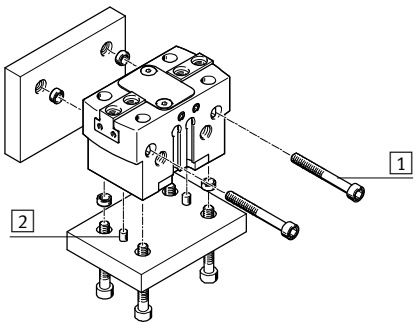
1 Supply ports

Mounting options

Direct mounting
From above



From underneath or from the side

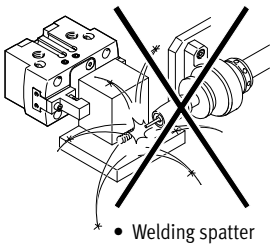


1 Mounting screws
2 Centring pins, centring sleeves

- Note

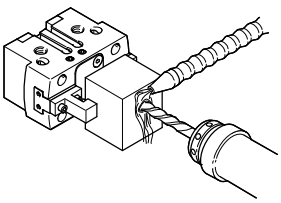
These grippers are not suitable or are of limited suitability for the following application examples:

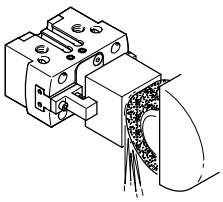
Not suitable for:



- Welding spatter

Of limited suitability for:



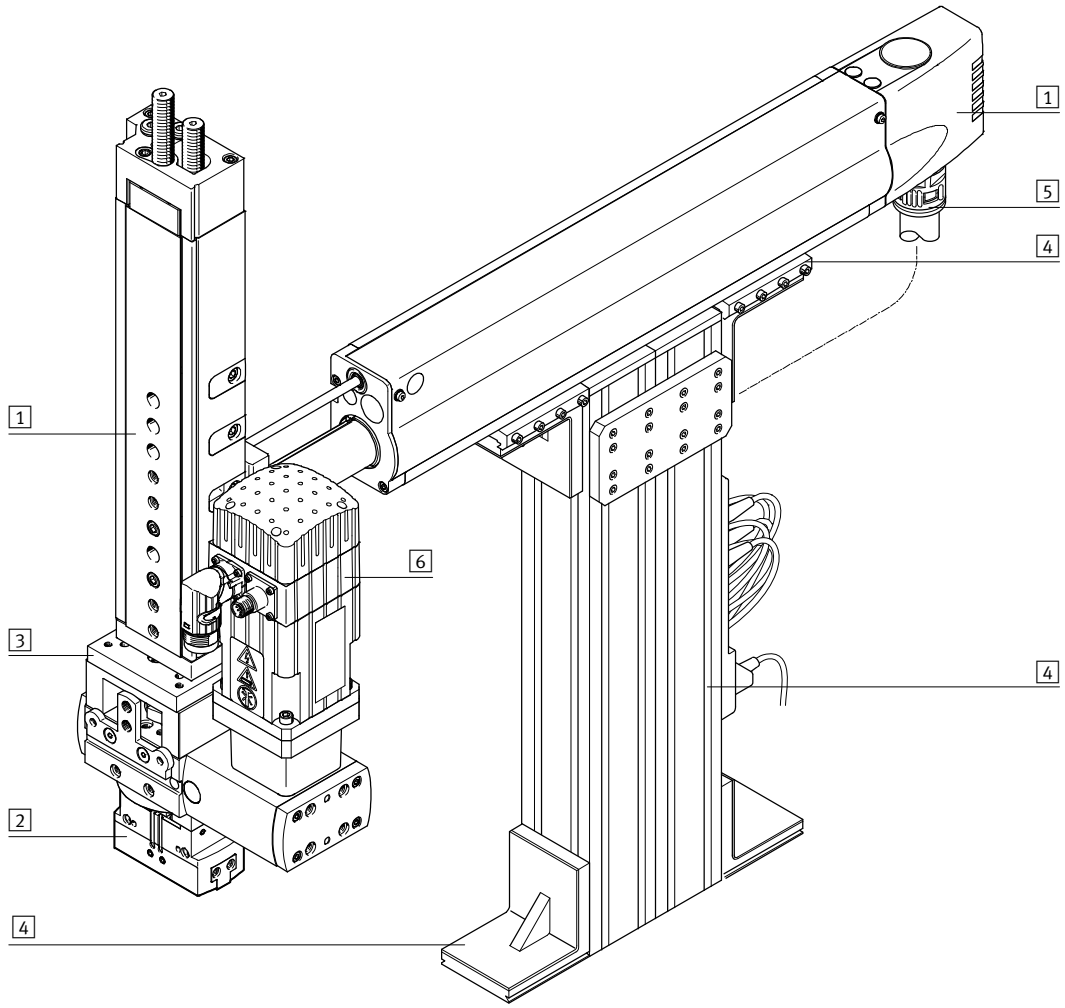


- Machining with sealing air possible
- Aggressive media only possible after consultation with Festo

Parallel grippers HGPT-B, heavy-duty

Key features

System product for handling and assembly technology

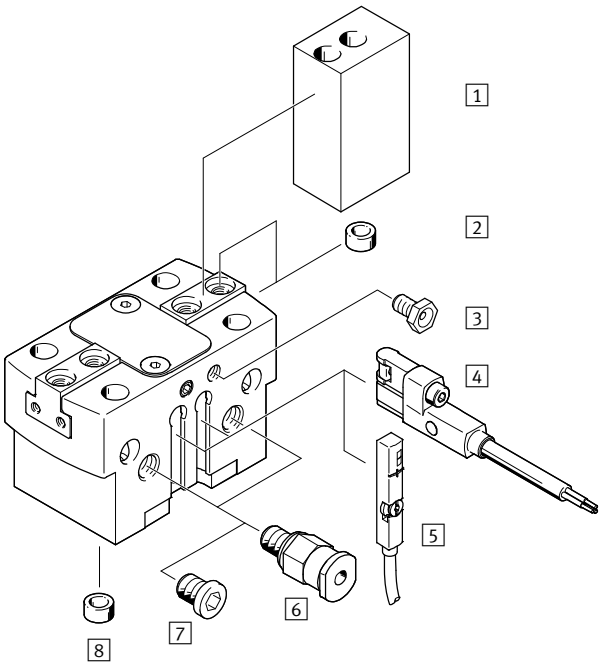


System components and accessories			
		Brief description	**➔ Page/Internet**
1	Drives	Wide range of combinations possible within handling and assembly technology	drive
2	Grippers	Wide range of variations possible within handling and assembly technology	gripper
3	Adapters	For drive/drive and drive/gripper connections	adapter kit
4	Basic components	Profiles and profile connections as well as profile/drive connections	basic component
5	Installation components	For a clear, safe layout of electrical cables and tubing	installation component
6	Motors	Servo and stepper motors, with or without gearing	motor
–	Axes	Wide range of combinations possible within handling and assembly technology	axis

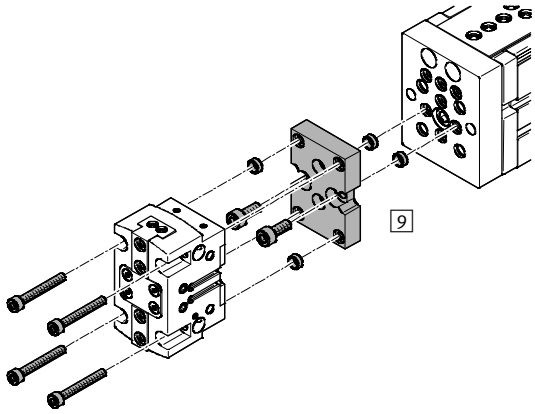
Parallel grippers HGPT-B, heavy-duty

Peripherals overview

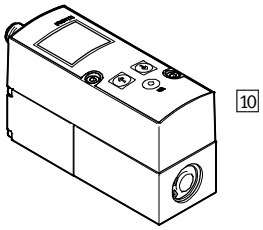
Peripherals overview



System product for handling and assembly technology



Proportional pressure regulator VPPM

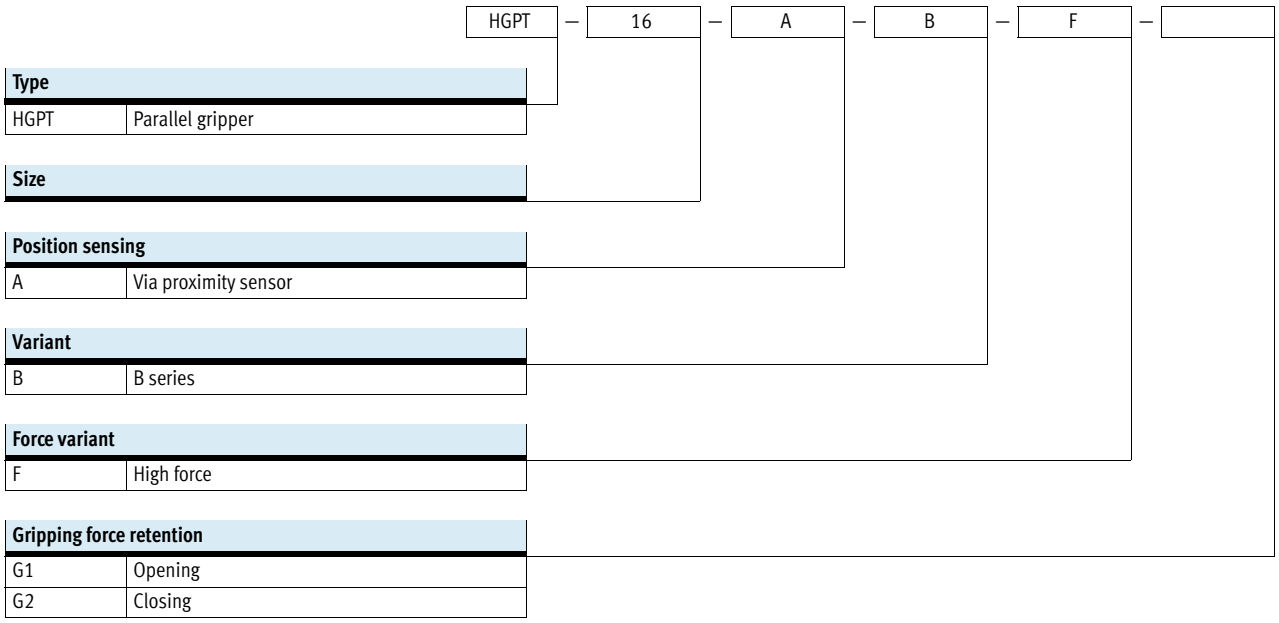


Accessories

	Type	Size	Description	➔ Page/Internet
1	Gripper jaw blank BUB-HGPT	16 ... 80	Blank specially matched to the gripper jaws for custom production of gripper fingers	22
2	Centring sleeve ZBH	16 ... 80	• For centring gripper jaw blanks/gripper fingers on the gripper jaws • Centring sleeves are included in the scope of delivery of the gripper	23
3	Lubrication nipple	16 ... 80	Included in the scope of delivery of the gripper	–
4	Proximity sensor SMT-8G/-10G	16 ... 80	• For sensing the piston position • The proximity sensor is flush with the housing at the bottom	24
5	Position transmitter SMAT-8M	40 ... 80	• Continuously senses the position of the piston. It has an analogue output with an output signal that is proportional to the piston position.	24
6	Push-in fitting QS	16 ... 80	For connecting compressed air tubing with standard O.D.	quick star
7	Blanking plug B	16 ... 80	For sealing the supply ports when using the lower supply ports	23
8	Centring sleeve ZBH	16 ... 80	For centring the gripper during mounting	23
9	Adapter kit DHAA, HMSV, HAPG	16 ... 80	Drive/gripper connections	19
10	Proportional pressure regulator VPPM	16 ... 80	For infinite adjustment of the gripping force	vppm

Parallel grippers HGPT-B, heavy-duty

Type codes



Parallel grippers HGPT-B, heavy-duty

Technical data

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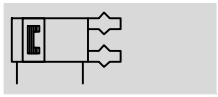
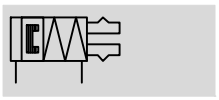
Function
Double-acting
HGPT-...



Function – Variants
Single-acting or
with gripping force retention ...
... opening HGPT-...-G1



... closing HGPT-...-G2

- Size
  16 ... 80 mm
- Total stroke
  3 ... 50 mm

General technical data									
Size			16	20	25	35	40	50	63	80
Design			Wedge mechanism							
			Guided motion sequence							
Mode of operation			Double-acting							
Gripper function			Parallel							
Number of gripper jaws			2							
Max. load per external gripper finger[1]		[g]	40	50	110	180	310	640	1260	1830
Stroke per gripper jaw	HGPT-...-A	[mm]	3	4	6	8	10	12	16	25
	HGPT-...-A-F	[mm]	1.5	2	3	4	5	6	8	12.5
Pneumatic connection			M5	M5	M5	M5	M5	G1/8	G1/8	G1/4
Pneumatic connection, sealing air			M3	M3	M5	M5	M5	M5	M5	M5
Repetition accuracy[2]		[mm]	±0.01	±0.02		±0.025				
Max. interchangeability		[mm]	0.2							
Max. operating frequency		[Hz]	3				2			
Rotational symmetry		[mm]	< ∅ 0.2							
Position sensing			Via proximity sensor, position transmitter							
Type of mounting			Via through-hole and locating pin/centring sleeve							
			Via female thread and locating pin/centring sleeve							
Mounting position			Any							

1) Valid for unthrottled operation
2) End-position drift under constant conditions of use with 100 consecutive strokes in the direction of movement of the gripper jaws
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Operating and environmental conditions			
Min. operating pressure	HGPT-...-A	[bar]	3
	HGPT-...-A-G	[bar]	4
Max. operating pressure		[bar]	8
Operating pressure, sealing air		[bar]	0 ... 0.5
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]		[°C]	+5 ... +60
Corrosion resistance class CRC[2]			2

1) Note operating range of proximity sensors.
2) 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.

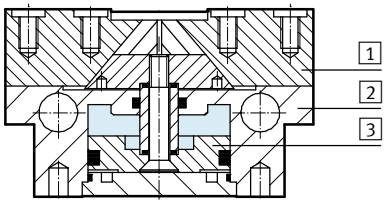
Parallel grippers HGPT-B, heavy-duty

Technical data

Weight [g]								
Size	16	20	25	35	40	50	63	80
HGPT-...-A	85	135	266	490	821	1400	2712	4745
HGPT-...-A-F	85	135	266	490	821	1400	2712	4745
HGPT-...-A-G	100	155	353	567	1075	1832	3562	6287

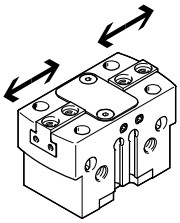
Materials

Sectional view



Parallel gripper		
1	Gripper jaw	Hardened steel
2	Housing	Hard anodised wrought aluminium alloy
3	Piston	Hard anodised aluminium
–	Seals	Nitrile rubber
–	Note on materials	Free of copper, PTFE and silicone
		RoHS-compliant

Gripping force [N] at 6 bar

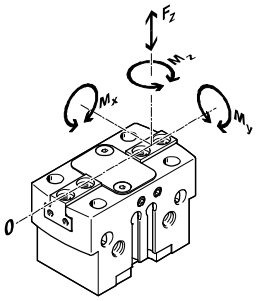


Size		16	20	25	35	40	50	63	80
Gripping force per gripper jaw									
HGPT-...-A	Opening	60	82	133	245	355	570	896	1613
	Closing	53	77	124	229	331	535	851	1551
HGPT-...-A-F	Opening	108	172	238	500	723	1185	1885	3275
	Closing	96	161	221	467	674	1113	1791	3150
Total gripping force									
HGPT-...-A	Opening	120	162	266	490	710	1140	1792	3226
	Closing	106	154	248	458	662	1070	1702	3102
HGPT-...-A-F	Opening	216	344	476	1000	1446	2370	3770	6550
	Closing	192	322	442	934	1328	2226	3522	6300

Parallel grippers HGPT-B, heavy-duty

Technical data

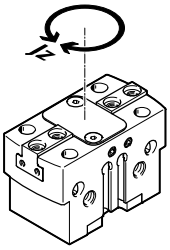
Characteristic load values at the gripper jaws



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 gripper fingers and acceleration forces occurring during movement. The zero co-ordinate line (gripper jaw guide) must be taken into consideration for the calculation of torques.

Size		16	20	25	35	40	50	63	80
Max. permissible force F_z	[N]	200	700	1200	1800	2500	3200	5000	7000
Max. permissible torque M_x	[Nm]	10	15	50	80	100	120	160	180
Max. permissible torque M_y	[Nm]	12	15	45	60	90	120	180	220
Max. permissible torque M_z	[Nm]	6	8	35	50	75	100	140	170

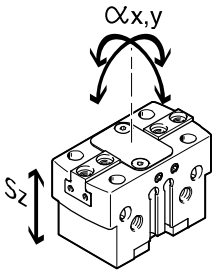
Mass moment of inertia [kgm^2x10^{-4}]



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

Size	16	20	25	35	40	50	63	80
HGPT-...-A	0.141	0.344	0.983	2.807	7.277	19.488	60.903	150.515
HGPT-...-A-G	0.163	0.445	1.479	3.974	10.990	29.423	93.034	238.336

Gripper jaw backlash



With grippers, backlash occurs between the gripper jaws and the housing due to the plain-bearing guide. The backlash values listed in the table have been calculated based on the traditional accumulative tolerance method.

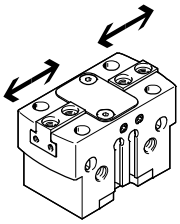
Size		16	20	25	35	40	50	63	80
Max. gripper jaw backlash Sz	[mm]	0.02							
Max. gripper jaw angular backlash ax, ay	[°]	0.1							

Parallel grippers HGPT-B, heavy-duty

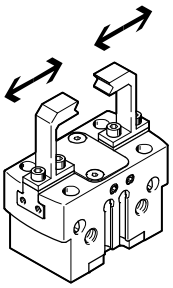
Technical data

Opening and closing times [ms] at 6 bar

Without external gripper fingers



With external gripper fingers



The indicated opening and closing times [ms] have been measured at room temperature at an operating pressure of 6 bar with horizontally mounted gripper without additional gripper fingers. The grippers must be throttled for greater loads [g]. Opening and closing times must then be adjusted accordingly.

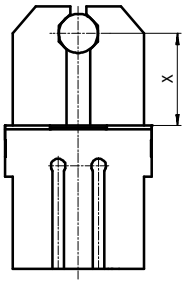
Size			16	20	25	35	40	50	63	80
Without external gripper fingers										
Standard	HGPT-...-A	Opening	9	22	26	36	56	80	150	214
		Closing	11	30	32	67	60	85	156	213
	HGPT-...-A-G1	Opening	13	13	24	37	67	70	146	182
		Closing	31	25	48	114	135	153	328	353
	HGPT-...-A-G2	Opening	22	35	40	69	122	151	294	379
		Closing	15	18	28	87	71	77	185	176
High force	HGPT-...-A-F	Opening	8	28	25	33	60	83	143	212
		Closing	10	31	32	70	64	82	152	211
	HGPT-...-A-F-G1	Opening	19	13	24	35	71	70	145	180
		Closing	30	25	45	115	143	143	315	340
	HGPT-...-A-F-G2	Opening	33	38	36	63	120	137	308	362
		Closing	17	14	28	72	72	80	154	178
With external gripper fingers (as a function of the load)										
HGPT-...		50 g	10	–	–	–	–	–	–	–
		100 g	15	30	–	–	–	–	–	–
		200 g	21	42	35	–	–	–	–	–
		300 g	–	52	42	42	–	–	–	–
		400 g	–	–	49	49	63	–	–	–
		500 g	–	–	–	55	71	–	–	–
		600 g	–	–	–	–	78	–	–	–
		800 g	–	–	–	–	90	90	–	–
		1,000 g	–	–	–	–	–	95	–	–
		1,200 g	–	–	–	–	–	100	–	–
		1,500 g	–	–	–	–	–	–	164	–
		1,800 g	–	–	–	–	–	–	179	–
		2,000 g	–	–	–	–	–	–	189	223
		2,200 g	–	–	–	–	–	–	–	234
		2,400 g	–	–	–	–	–	–	–	244

Parallel grippers HGPT-B, heavy-duty

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.



3 bar
6 bar
8 bar

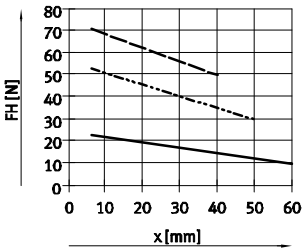
- Note

Gripper selection sizing software
➔ www.festo.com

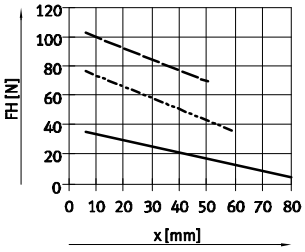
External gripping (closing)

Standard

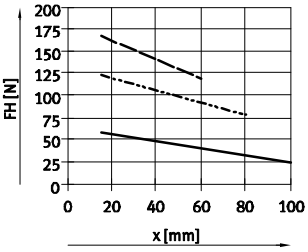
HGPT-16-A



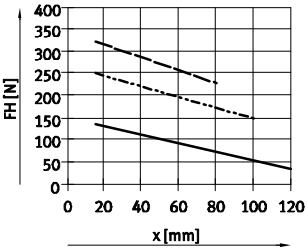
HGPT-20-A



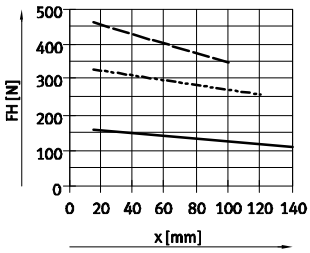
HGPT-25-A



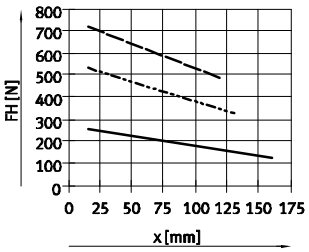
HGPT-35-A



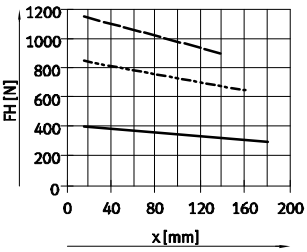
HGPT-40-A



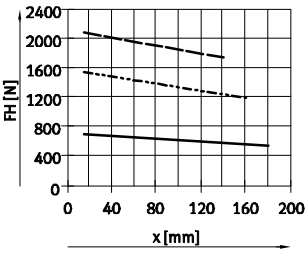
HGPT-50-A



HGPT-63-A

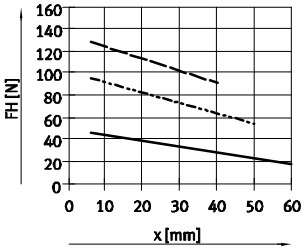


HGPT-80-A

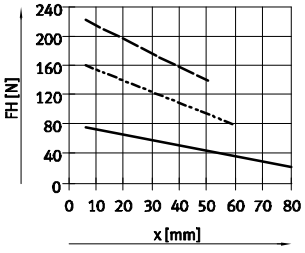


High force

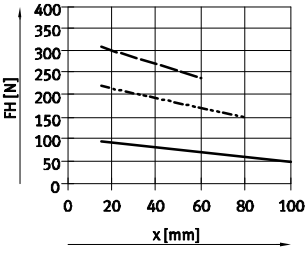
HGPT-16-A-F



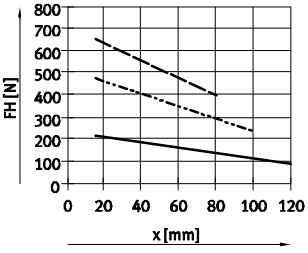
HGPT-20-A-F



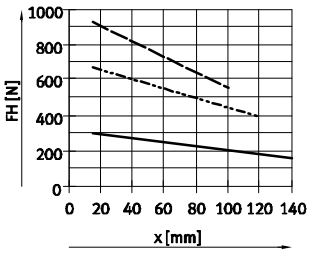
HGPT-25-A-F



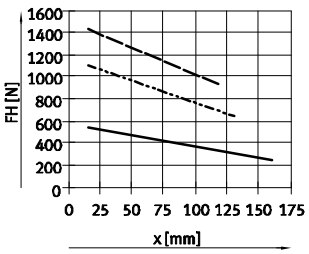
HGPT-35-A-F



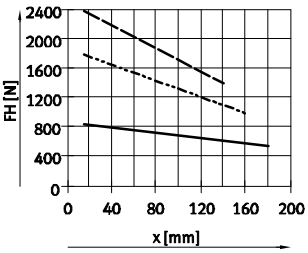
HGPT-40-A-F



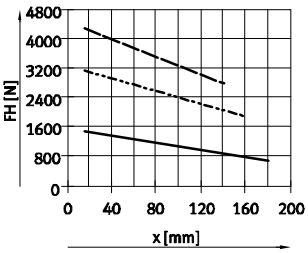
HGPT-50-A-F



HGPT-63-A-F



HGPT-80-A-F

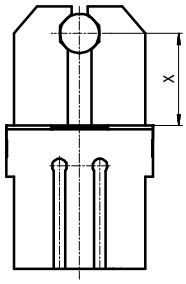


Parallel grippers HGPT-B, heavy-duty

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.



3 bar
6 bar
8 bar

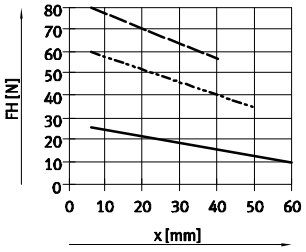
- Note

Gripper selection sizing software
➔ www.festo.com

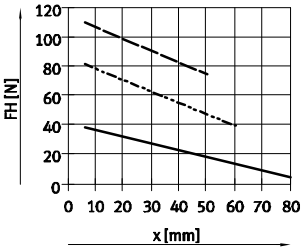
Internal gripping (opening)

Standard

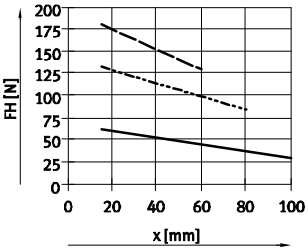
HGPT-16-A



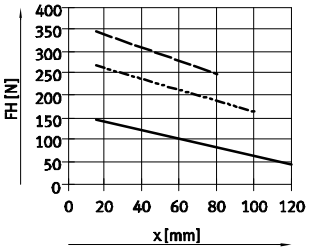
HGPT-20-A



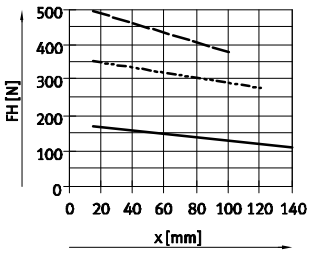
HGPT-25-A



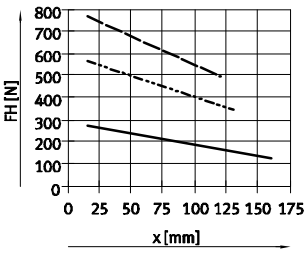
HGPT-35-A



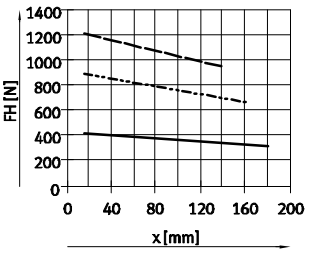
HGPT-40-A



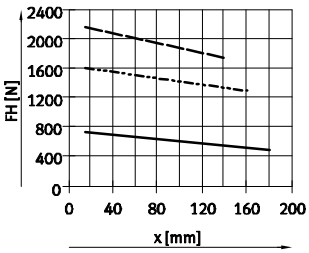
HGPT-50-A



HGPT-63-A

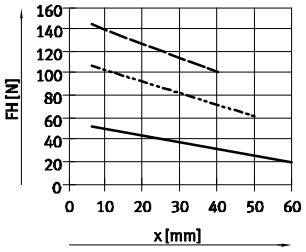


HGPT-80-A

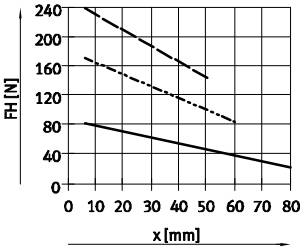


High force

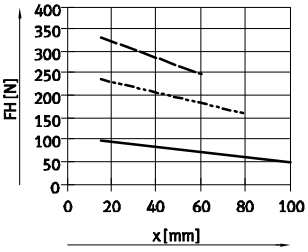
HGPT-16-A-F



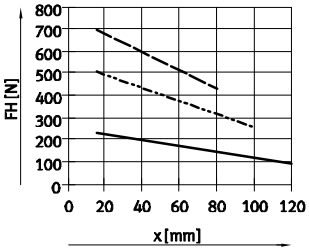
HGPT-20-A-F



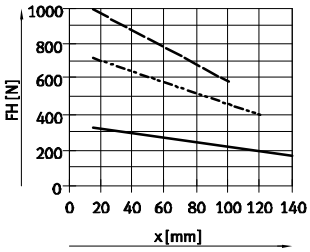
HGPT-25-A-F



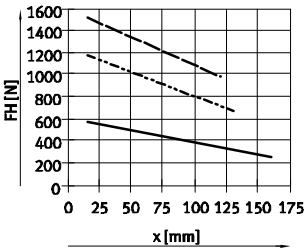
HGPT-35-A-F



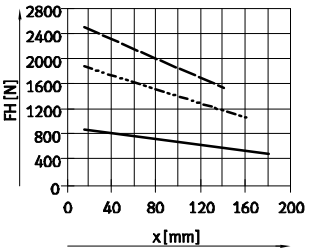
HGPT-40-A-F



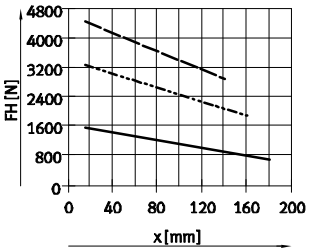
HGPT-50-A-F



HGPT-63-A-F



HGPT-80-A-F

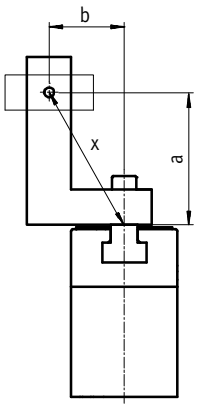


Gripping force F_H per gripper jaw at 6 bar as a function of lever arm x and eccentricity a and b

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 then be read from the graphs (➔ from 11) using the calculated value x.



Calculation example

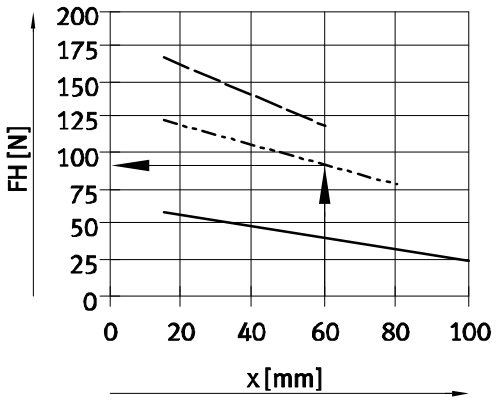
Given:
Distance a = 45 mm
Distance b = 40 mm
To be calculated:
The gripping force at 6 bar,
with an HGPT-25,
used as an external gripper

Procedure:
Calculate the lever arm x

$x = \sqrt{45^2 + 40^2}$

x = 60 mm

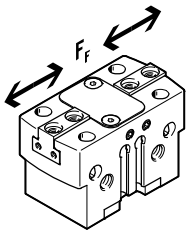
The graph (➔ 11) gives a value of F_H = 89 N for the gripping force.



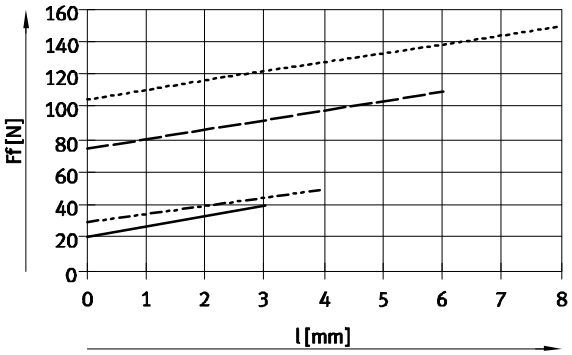
Spring force F_F as a function of size, gripper jaw stroke l

Gripping force retention for HGPT-...-G...

The spring forces F_F as a function of gripper jaw stroke l can be determined from the following graph.

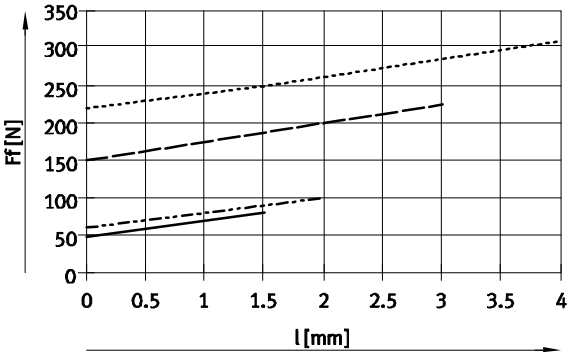


Standard
HGPT-...-A-G
Size 16 ... 35



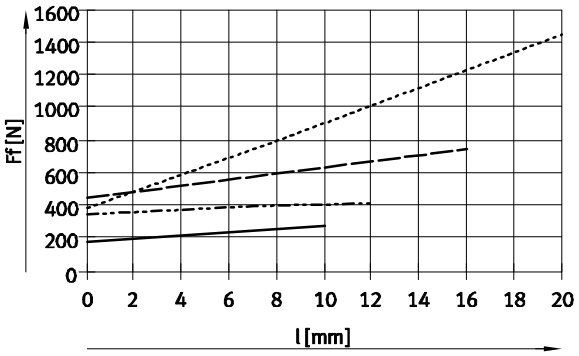
HGPT-16-A-G
HGPT-20-A-G
HGPT-25-A-G
HGPT-35-A-G

High force
HGPT-...-A-F-G
Size 16 ... 35



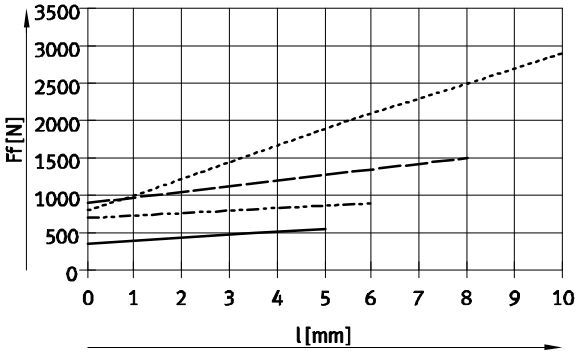
HGPT-16-A-F-G
HGPT-20-A-F-G
HGPT-25-A-F-G
HGPT-35-A-F-G

Size 40 ... 80



HGPT-40-A-G
HGPT-50-A-G
HGPT-63-A-G
HGPT-80-A-G

Size 40 ... 80



HGPT-40-A-F-G
HGPT-50-A-F-G
HGPT-63-A-F-G
HGPT-80-A-F-G

Parallel grippers HGPT-B, heavy-duty

Technical data

FESTO

Spring force F_F as a function of size, gripper jaw stroke l and lever arm x per gripper finger

The lever arm x must be taken into consideration when determining the actual spring force F_{Ftotal}.
The formulae for calculating the spring force are provided in the table below.

Standard – HGPT-...-A-G

Gripping force retention	Size	F_{Ftotal} =
G1	16	$-0.1* x+0.7* F_F$
	20	$-0.05* x+0.9* F_F$
	25	$-0.7* x+0.7* F_F$
	35	$-0.65* x+0.7* F_F$
	40	$-1.05* x+0.8* F_F$
	50	$-0.75* x+0.8* F_F$
	63	$-2* x+0.8* F_F$
	80	$-1.4* x+0.6* F_F$

Gripping force retention	Size	F_{Ftotal} =
G2	16	$-0.2* x+0.7* F_F$
	20	$-0.65* x+0.9* F_F$
	25	$-0.55* x+0.7* F_F$
	35	$-0.05* x+0.7* F_F$
	40	$-1.05* x+0.8* F_F$
	50	$-1.4* x+0.8* F_F$
	63	$-1.2* x+0.8* F_F$
	80	$-0.6* x+0.6* F_F$

High force – HGPT-...-A-F-G

Gripping force retention	Size	F_{Ftotal} =
G1	16	$-0.6* x+0.6* F_F$
	20	$-0.7* x+0.75* F_F$
	25	$-0.85* x+0.9* F_F$
	35	$-0.4* x+0.55* F_F$
	40	$-1.9* x+0.75* F_F$
	50	$-2.5* x+0.7* F_F$
	63	$-5.5* x+0.7* F_F$
	80	$-5.65* x+0.8* F_F$

Gripping force retention	Size	F_{Ftotal} =
G2	16	$-0.4* x+0.6* F_F$
	20	$-0.95* x+0.75* F_F$
	25	$-0.5* x+0.9* F_F$
	35	$-0.4* x+0.55* F_F$
	40	$-2.3* x+0.75* F_F$
	50	$-1* x+0.7* F_F$
	63	$-1* x+0.7* F_F$
	80	$-0.5* x+0.8* F_F$

Determination of the actual gripping forces F_{Gr} for HGPT-...-G1 and HGPT-...-G2 as a function of the application

The parallel grippers with integrated spring type HGPT-...-G1 (opening gripping force retention) and HGPT-...-G2 (closing gripping force retention) can be used as:
– single-acting grippers
– grippers with supplementary gripping force and
– grippers with gripping force retention

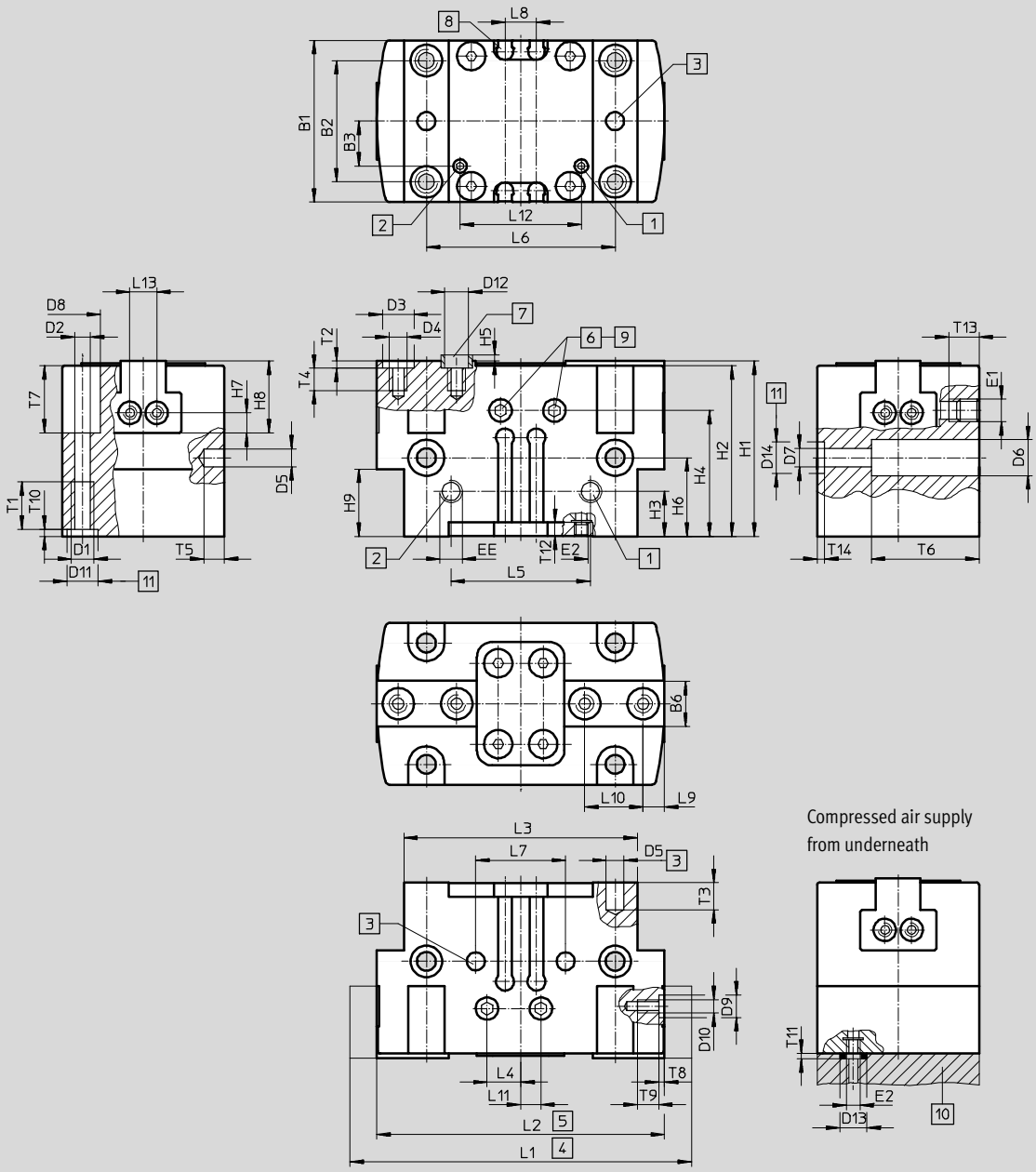
depending on requirements.

In order to calculate available gripping forces F_{Gr} (per gripper jaw), the gripping force (F_H) and spring force (F_{Ftotal}) must be combined accordingly.

Application

Single-acting	Supplementary gripping force	Gripping force retention
• Gripping with spring force: $F_{Gr} = F_{Ftotal}$	• Gripping with pressure and spring force: $F_{Gr} = F_H + F_{Ftotal}$	• Gripping with spring force: $F_{Gr} = F_{Ftotal}$
• Gripping with pressure force: $F_{Gr} = F_H - F_{Ftotal}$		

Dimensions Download CAD data ➔ **www.festo.com**



1 Supply port opening, either on the side or underneath (bottom port sealed on delivery)
2 Supply port closing, either on the side or underneath (bottom port sealed on delivery)
3 Hole for dowel pin (not included in the scope of delivery)
4 Gripper jaw open
5 Gripper jaw closed
6 Sealing air port (sealed on delivery)
7 Centring sleeves ZBH (4 included in the scope of delivery)
8 Slot for proximity sensor
9 Lubrication nipple (sealed on delivery)
10 O-ring for parallel gripper
HGPT-16 ... 40: ∅ 3x1.5
HGPT-50 ... 80: ∅ 5x1.5
11 Hole for centring sleeve ZBH

Parallel grippers HGPT-B, heavy-duty

Technical data

Size	B1	B2[1]	B3	B6	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
				−0.05		∅	∅		∅	∅	∅	∅	∅		∅	∅
[mm]	±0.05		±0.1	−0.1			H8/h7		H8	±0.1		+0.3	H8		H8	
16	24	17	4	6	M3	2.6	5	M3	2	4.6	2.6	4.6	–	M2	5	3.2
20[2]	28	22	8.7	6.5	M4	3.3	5	M3	3	6	3.2	6	5	M3	5	3.2
25	36	27	11	10	M5	4.2	7	M4	4	8	4.2	8	5	M3	7	5.3
35	42	32	13	12	M5	4.2	9	M5	4	9.2	5.3	8	7	M5	7	6.4
40	50	38	17	14	M6	5.1	9	M6	5	11	6.4	9	7	M5	9	6.4
50	60	45	20	15.5	M8	6.8	9	M6	6	13.5	8.4	11	7	M5	12	6.4
63	72	56	24.5	20	M8	6.8	12	M10	6	13.5	8.4	11	7	M5	12	10.3
80	100	70	39.5	22	M10	8.5	15	M12	8	16.5	10.2	13.5	9	M6	12	12.4

Size	D13	D14	EE	E1	E2	H1		H2		H3		H4		H5	H6[1]	
	∅	∅					-G		-G		-G		-G			-G
[mm]		H8/h7				±0.05	±0.05	±0.05	±0.05	±0.1	±0.1			−0.3		
16	6	–	M5	M3	M3	29	37	28	36	12	12	23.7	31.7	1.2	17.5	25.5
20	6	–	M5	M3	M3	31	38	30	37	10	15	23	30	1.2	14.5	21.5
25	6	7	M5	M5	M3	39	57	38	56	10	20	28	46	1.4	17.5	35.5
35	6	7	M5	M5	M3	49	67	48	66	12	30	36	54	1.9	20	38
40	6	9	M5	M5	M3	55	81	54	80	15	36	41	67	1.9	25	51
50	8	12	G⅛	M5	M5	63	93	62	92	15	30	47	77	1.9	30	60
63	8	12	G⅛	M5	M5	77	117	76	116	18	26	56	96	2.4	28	68
80	8	12	G¼	M5	M5	91	133	90	132	22	33	65	107	2.9	34	76

Size	H7[1]	H8	H9		L1		L2	L3	L4	L5	L6[1]	L7[1]	L8	L9[1]	L10[1]	L11
				-G		-F										
[mm]		−0.02	±0.1	±0.1	±0.5	±0.5	±0.5	±0.1	±0.5	±0.1			+0.1			±0.5
16	2.25	8.5	15	23	50	47	44	36	5.5	20	29	20	6	3	8	1
20	3	12	15	22	64	60	56	44	2.5	24	35	24	6	3.25	12	2.5
25	4.5	16	15	33	76	70	64	52	3.5	31	42	20	7	4.75	13	3.5
35	5.5	19	20	38	96	88	80	64	5.5	40	52	40	7	5.5	16	5.5
40	5.5	22	24	50	120	110	100	80	5.5	49	66	50	10	6.5	20	5.5
50	7.5	25.5	26	56	149	137	125	100	5.5	63	82	60	10	8	24	5.5
63	9	32	32	72	192	176	160	125	5.5	74	100	76	10	9.5	32	5.5
80	11	39	34	77	230	205	180	154	5.5	82	130	100	10	12	40	5.5

Size	L12	L13[1]	T1	T2	T3	T4	T5	T6	T7		T8	T9	T10	T11	T12	T13	T14
										-G							
[mm]	±0.1		min.	+0.1	min.	min.	min.		+0.2	+0.2	+0.1		+0.1		min.	min.	+0.1
16	22	6	5.5	1.3	4	5	4	15	14	22	–	3	1.3	1.2	3	5.5	–
20	22.6	6	6.5	1.3	5	5.5	4	19	11	11	1.3	6	1.3	1.2	3	5.5	–
25	29	6	8.5	1.6	6	6.5	4.5	24	15	15	1.3	6	1.6	1.2	3	6.7	1.6
35	39	13	8.5	2.1	6	8.5	4.5	16	19	19	1.6	9	1.6	1.2	3	6.5	1.6
40	47.4	13	10.5	2.1	6	10.5	6	33	20	20	1.6	9	2.1	1.2	4	6.5	2.1
50	61	13	12.5	2.1	8	10.5	6	43	23	23	1.6	9	2.6	1.2	4	6.5	2.6
63	75	13	12.5	2.6	8	15.5	7	55	35	35	1.6	9	2.6	1.2	5	6.5	2.6
80	82	20	15	3.1	10	20	10	70	44	44	2.1	10	2.6	1.2	5.5	5	2.6

1) Tolerance for centring hole ±0.02 mm
Tolerance for thread ±0.1 mm
2) Dowel pins 3 must be used when mounted from below.
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Parallel grippers HGPT-B, heavy-duty

Technical data

Ordering data						
Size	Double-acting without compression spring		Single-acting or with gripping force retention			
			Opening		Closing	
[mm]	Part No.	Type	Part No.	Type	Part No.	Type
Standard						
16	**560192**	**HGPT-16-A-B**	**560193**	**HGPT-16-A-B-G1**	**560194**	**HGPT-16-A-B-G2**
20	**560198**	**HGPT-20-A-B**	**560199**	**HGPT-20-A-B-G1**	**560200**	**HGPT-20-A-B-G2**
25	**560204**	**HGPT-25-A-B**	**560205**	**HGPT-25-A-B-G1**	**560206**	**HGPT-25-A-B-G2**
35	**560210**	**HGPT-35-A-B**	**560211**	**HGPT-35-A-B-G1**	**560212**	**HGPT-35-A-B-G2**
40	**560216**	**HGPT-40-A-B**	**560217**	**HGPT-40-A-B-G1**	**560218**	**HGPT-40-A-B-G2**
50	**560222**	**HGPT-50-A-B**	**560223**	**HGPT-50-A-B-G1**	**560224**	**HGPT-50-A-B-G2**
63	**560228**	**HGPT-63-A-B**	**560229**	**HGPT-63-A-B-G1**	**560230**	**HGPT-63-A-B-G2**
80	**560234**	**HGPT-80-A-B**	**560235**	**HGPT-80-A-B-G1**	**560236**	**HGPT-80-A-B-G2**
High force						
16	**560195**	**HGPT-16-A-B-F**	**560196**	**HGPT-16-A-B-F-G1**	**560197**	**HGPT-16-A-B-F-G2**
20	**560201**	**HGPT-20-A-B-F**	**560202**	**HGPT-20-A-B-F-G1**	**560203**	**HGPT-20-A-B-F-G2**
25	**560207**	**HGPT-25-A-B-F**	**560208**	**HGPT-25-A-B-F-G1**	**560209**	**HGPT-25-A-B-F-G2**
35	**560213**	**HGPT-35-A-B-F**	**560214**	**HGPT-35-A-B-F-G1**	**560215**	**HGPT-35-A-B-F-G2**
40	**560219**	**HGPT-40-A-B-F**	**560220**	**HGPT-40-A-B-F-G1**	**560221**	**HGPT-40-A-B-F-G2**
50	**560225**	**HGPT-50-A-B-F**	**560226**	**HGPT-50-A-B-F-G1**	**560227**	**HGPT-50-A-B-F-G2**
63	**560231**	**HGPT-63-A-B-F**	**560232**	**HGPT-63-A-B-F-G1**	**560233**	**HGPT-63-A-B-F-G2**
80	**560237**	**HGPT-80-A-B-F**	**560238**	**HGPT-80-A-B-F-G1**	**560239**	**HGPT-80-A-B-F-G2**

Parallel grippers HGPT-B, heavy-duty

Accessories

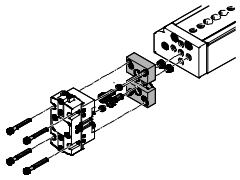
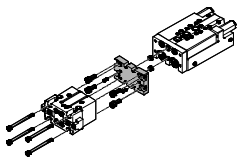
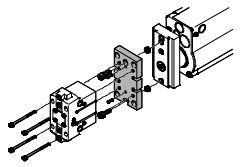
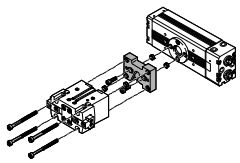
Adapter kit
DHAA, HAPG

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	Mounting option		Adapter kit		
	Size	Size			CRC[1]	Part No.	Type
DGSL/HGPT-B	DGSL	HGPT-B			DHAA, HAPG		
	8, 10	16, 20	■	■	2	**564957**	**DHAA-G-G6-8-B8-16**
	12, 16	16, 20	■	■		**564954**	**DHAA-G-G6-16-B8-16**
	12, 16	25	■	■		**564952**	**DHAA-G-G6-16-B8-25**
	20, 25	25, 35	■	■		**537175**	**HAPG-79**
	20, 25	40	■	■		**564951**	**DHAA-G-G6-20-B8-40**
SLT/HGPT-B	SLT	HGPT-B			DHAA, HAPG		
	6	16	■	–	2	**537168**	**HAPG-74**
	10	16, 20	■	–		**564957**	**DHAA-G-G6-8-B8-16**
	16	16, 20	■	–		**564954**	**DHAA-G-G6-16-B8-16**
	16	25	■	–		**564952**	**DHAA-G-G6-16-B8-25**
	20	25, 35	■	–		**537175**	**HAPG-79**
	25	35	■	–		**564953**	**DHAA-G-H2-20-B8-35**
	25	40	■	–		**564951**	**DHAA-G-G6-20-B8-40**
HMP/HGPT-B	HMP	HGPT-B			DHAA, HAPG		
	16	25	–	■	2	**537178**	**HAPG-81**
	20, 25	35	–	■		**564953**	**DHAA-G-H2-20-B8-35**
	20, 25	40	–	■		**537182**	**HAPG-84**
	25, 32	50	–	■		**537185**	**HAPG-86**
	32	63	–	■		**537187**	**HAPG-87**
DRQD/HGPT-B							
	DRQD-...	HGPT-B			DHAA, HAPG		
	12, 16	16	■	■	2	**564958**	**DHAA-G-Q5-12-B8-16**
	12, 16	20	■	■		**564955**	**DHAA-G-Q5-16-B8-20**
	16, 20	25	■	■		**537181**	**HAPG-SD2-25**
	20, 25	35	■	■		**537173**	**HAPG-SD2-23**
	25, 32	40	■	■		**537184**	**HAPG-SD2-26**
	32, 40	50	■	■		**564956**	**DHAA-G-Q5-32-B8-50**
	40, 50	63	■	■		**537188**	**HAPG-SD2-28**
	DRQD-E422	HGPT-B			DHAA, HAPG		
	16	16, 20	■	■	2	**564959**	**DHAA-G-Q5-16-B8-16**
	16, 20	25	■	■		**544642**	**HAPG-SD2-48**
	20	35	■	■		**544642**	**HAPG-SD2-48**
	DRQD-E444	HGPT-B			HAPG		
	32	50	■	■	2	**544643**	**HAPG-SD2-49**

1) 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.

Parallel grippers HGPT-B, heavy-duty

Accessories

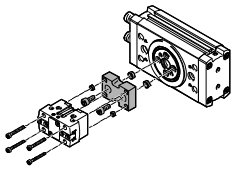
Adapter kit
DHAA, HAPG

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	Mounting option		Adapter kit		
	Size	Size			CRC[1]	Part No.	Type
DRRD/HGPT-B	DRRD	HGPT-B			DHAA		
	12	16	■	■	2	**2449927**	**DHAA-G-Q11-12-B8/B8G-16**
	12	20	■	■		**2449921**	**DHAA-G-Q11-12-B8-20**
	16	16	■	■		**2091740**	**DHAA-G-Q11-16-B8/B8G-16**
	16	20	■	■		**2091577**	**DHAA-G-Q11-16-B8-20**
	16	25	■	■		**2090543**	**DHAA-G-Q11-16-B8-25**
	20	25	■	■		**2088114**	**DHAA-G-Q11-20-B8-25**
	20	35	■	■		**2087524**	**DHAA-G-Q11-20-B8-35**
	25	35	■	■		**1731604**	**DHAA-G-Q11-25-B8-35**
	25	40	■	■		**1731735**	**DHAA-G-Q11-25-B8-40**
	32	40	■	■		**2092070**	**DHAA-G-Q11-32-B8-40**
	35	40	■	■		**2114241**	**DHAA-G-Q11-35-B8-40**
	32	50	■	■		**2118750**	**DHAA-G-Q11-32-B8-50**
	35, 40	50	■	■		**2124990**	**DHAA-G-Q11-35/40-B8-50**
	40	63	■	■		**2125264**	**DHAA-G-Q11-40-B8-63**
	50	63	■	■		**2424526**	**DHAA-G-Q11-50-B8-63**
	50	80	■	■		**2424527**	**DHAA-G-Q11-50-B8-80**
	DRRD	HGPT-B-G			DHAA		
	12	16	■	■	2	**2449927**	**DHAA-G-Q11-12-B8/B8G-16**
	12	20	■	■		**2800827**	**DHAA-G-Q11-12-B8G-20**
	16	16	■	■		**2091740**	**DHAA-G-Q11-16-B8/B8G-16**
	16	20	■	■		**2595935**	**DHAA-G-Q11-16-B8G-20**
	16	25	■	■		**2596187**	**DHAA-G-Q11-16-B8G-25**
	20	25	■	■		**2596248**	**DHAA-G-Q11-20-B8G-25**
	20	35	■	■		**2596517**	**DHAA-G-Q11-20-B8G-35**
	25	35	■	■		**2597040**	**DHAA-G-Q11-25-B8G-35**
	25	40	■	■		**2597322**	**DHAA-G-Q11-25-B8G-40**
	32	40	■	■		**2597387**	**DHAA-G-Q11-32-B8G-40**
	35	40	■	■		**2597928**	**DHAA-G-Q11-35-B8G-40**
	32	50	■	■		**2597428**	**DHAA-G-Q11-32-B8G-50**
	35, 40	50	■	■		**2604977**	**DHAA-G-Q11-35/40-B8G-50**
	40	63	■	■		**2604813**	**DHAA-G-Q11-40-B8G-63**
	50	63	■	■		**2604845**	**DHAA-G-Q11-50-B8G-63**
	50	80	■	■		**2604887**	**DHAA-G-Q11-50-B8G-80**

1) 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.

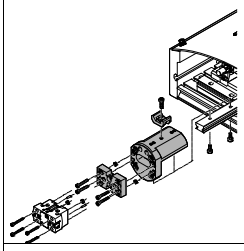
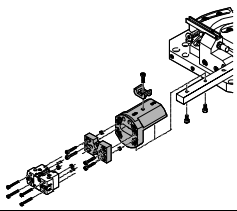
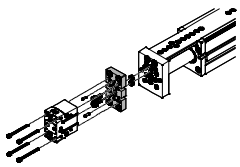
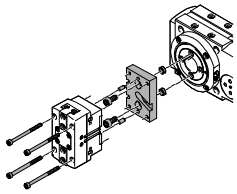
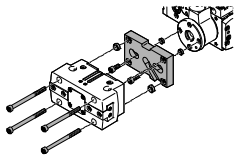
Adapter kit
DHAA, HAPG

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

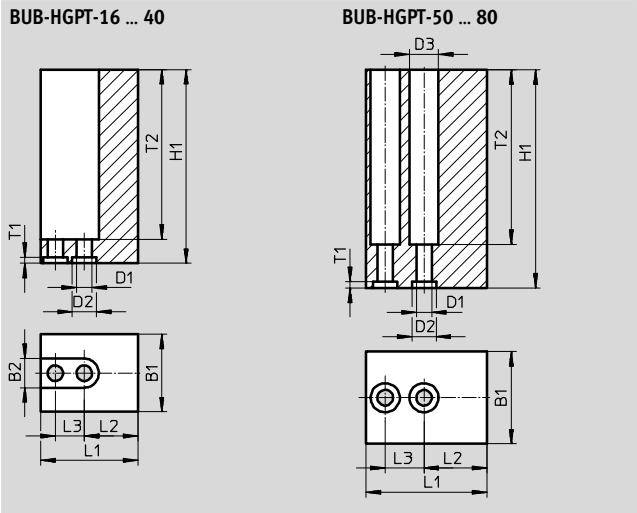
Download CAD data ➔ **www.festo.com**

Combination	Drive	Gripper	Mounting option		Adapter kit		
	Size	Size			CRC[1]	Part No.	Type
HSP/HGPT-B	HSP	HGPT-B			DHAA, HAPG		
	12	16	■	–	2	**564957** **540881**	**DHAA-G-G6-8-B8-16** **HAPG-70-B**
	16	16, 20	■	–		**564957** **540882**	**DHAA-G-G6-8-B8-16** **HAPG-71-B**
	25	16, 20	■	–		**564957** **540883**	**DHAA-G-G6-8-B8-16** **HAPG-72-B**
HSW/HGPT-B	HSW	HGPT-B			DHAA, HAPG		
	12	16	■	–	2	**564957** **540882**	**DHAA-G-G6-8-B8-16** **HAPG-71-B**
	16	16, 20	■	–		**564957** **540882**	**DHAA-G-G6-8-B8-16** **HAPG-71-B**
EGSL/HGPT-B	EGSL	HGPT-B			DHAA, HAPG		
	45, 55	25	■	■	2	**564952**	**DHAA-G-G6-16-B8-25**
	75	40	■	■		**564951**	**DHAA-G-G6-20-B8-40**
	75	25, 35	■	■		**537175**	**HAPG-79**
ERMB/HGPT-B	ERMB	HGPT-B			DHAA, HAPG		
	20	25	■	■	2	**537181**	**HAPG-SD2-25**
	20, 25	35	■	■		**537173**	**HAPG-SD2-23**
	25, 32	40	■	■		**537184**	**HAPG-SD2-26**
	32	50	■	■		**564956**	**DHAA-G-Q5-32-B8-50**
EHMB/HGPT-B	EHMB	HGPT-B			DHAA, HAPG		
	20	40	■	■	2	**537184**	**HAPG-SD2-26**
	20, 25, 32	50	■	■		**564956**	**DHAA-G-Q5-32-B8-50**
	25, 32	63	■	■		**537188**	**HAPG-SD2-28**

1) 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.

Gripper jaw blank BUB-HGPT
(scope of delivery: 2 pieces)

Material:
Aluminium



Dimensions and ordering data

For size [mm]	B1 ±0.05	B2 H13	D1 ∅ H13	D2 ∅ H8	D3 ∅ H13	H1 ±0.05	L1 ±0.05
16	16	6	3.2	5	–	40	21
20	19	6	3.2	5	–	45	27
25	24	8	4.3	7	–	60	31
35	28	10	5.3	9	–	70	39
40	34	11	6.4	9	–	75	49
50	40	–	6.4	9	11	100	61
63	50	–	10.3	12	17	120	79
80	58	–	12.4	15	20	140	88

For size [mm]	L2[1)]	L3[1)]	T1 +0.1	T2	Weight per blank [g]	Part No.	Type
16	10	8	1.3	35	29	**560244**	**BUB-HGPT-16-B**
20	11.75	12	1.3	36	53	**560245**	**BUB-HGPT-20-B**
25	13.25	13	1.6	51	98	**560246**	**BUB-HGPT-25-B**
35	17.5	16	2.1	61	161	**560247**	**BUB-HGPT-35-B**
40	22.5	20	2.1	66.5	280	**560248**	**BUB-HGPT-40-B**
50	29	24	2.1	91	622	**560249**	**BUB-HGPT-50-B**
63	37.5	32	2.6	110	1,213	**560250**	**BUB-HGPT-63-B**
80	36	40	3.1	125	1,738	**560251**	**BUB-HGPT-80-B**

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

Ordering data

	For size [mm]	Description	Weight [g]	Part No.	Type	PU[1]
Centring sleeve ZBH						Technical data ➔ Internet: zbh
	16, 20	For centring gripper jaw blanks/gripper fingers on the gripper jaws	1	**189652**	**ZBH-5**	10
	25		1	**186717**	**ZBH-7**	
	35, 40, 50		1	**150927**	**ZBH-9**	
	63		1	**189653**	**ZBH-12**	
	80		3	**191409**	**ZBH-15**	
	20, 25	For lateral centring of gripper fingers on the gripper jaws	1	**189652**	**ZBH-5**	
	35, 40, 50, 63		1	**186717**	**ZBH-7**	
	80		1	**150927**	**ZBH-9**	
	16, 20	For centring the gripper during mounting	1	**189652**	**ZBH-5**	
	25, 35		1	**186717**	**ZBH-7**	
	40		1	**150927**	**ZBH-9**	
	50, 63, 80		1	**189653**	**ZBH-12**	
Connecting sleeve ZBV						Technical data ➔ Internet: zbv
	–	For compensating different centring diameters	1	**571033**	**ZBV-6-5**	1
			1	**571034**	**ZBV-8-7**	
			1	**560253**	**ZBV-9-8**	
			2	**571035**	**ZBV-12-10**	
			2	**560255**	**ZBV-14-12**	
Blanking plug B						Technical data ➔ Internet: blanking plug
	16, 20	For sealing the supply ports	1	**30979**	**B-M3-S9**	10
	25, 35, 40		1	**174308**	**B-M5-B**	
	50, 63		5	**3568**	**B-⅛**	
	80		15	**3569**	**B-¼**	

1) Packaging unit

Proximity sensors for size 16 … 35

Ordering data – Proximity sensors for C-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	**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**

Proximity sensors for size 40 … 80

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**

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**

Position transmitter

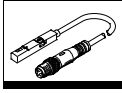
Mode of operation:
The position transmitter continuously senses the position of the piston.
It has an analogue output with an output signal in proportion to the piston position.

Measuring range:
Measurement is possible across the entire stroke with the sizes 40 and 50.
A stroke of 13 mm (with the high-force variant 6.5 mm) can be measured with the sizes 63 and 80.

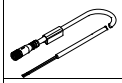
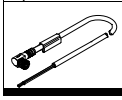
Two position transmitters are required for sensing longer strokes.

Projection:
The position transmitter projects past the housing with the sizes 40 and 50.

Ordering data – Position transmitters for T-slot — Technical data ➔ Internet: position transmitter

	Piston-∅	Position measuring range	Analogue output [V]	Analogue output [mA]	Type of mounting	Electrical connection	Cable length [m]	Part No.	Type
	40 … 80	0 … 40	0 … 10	–	Insertable in slot from above	Plug M8x1, 4-pin, in-line	0.3	**553744**	**SMAT-8M-U-E-0,3-M8D**

Ordering data – Connecting cables — Technical data ➔ Internet: nebu

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	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**