

**Angular grippers**
**Double acting**
**Magnetic piston**
**Ø 8 to 25 mm**

**Smooth, accurate movement**  
**Long, uninterrupted service life**  
**Low weight**  
**Compact size**  
**Integral magnets for positional feedback**



### Technical data

**Medium:**  
 Compressed air, filtered, lubricated or non-lubricated

**Operation:**  
 Double acting, angular, magnetic piston

**Operating pressure:**  
 1 to 7 bar  
 (Ø 8 mm, 2,2 to 7 bar)

**Operating temperature:**  
 0°C to +60°C

\* Air supply must be dry enough to avoid ice formation at temperatures below +2°C

**Mounting:**  
 Mounting holes on three faces

**Mechanical life:**  
 ~ 5 million cycles before maintenance may be necessary

**Operating frequency:**  
 180 cycles per minute maximum

### Materials

Body: aluminium alloy  
 Fingers: carbon steel  
 Elastomers: nitrile

### Ordering information

To order a gripper with an effective closing grip force of up to 2,5N at 5 bar quote:

**M/160306/M/12**

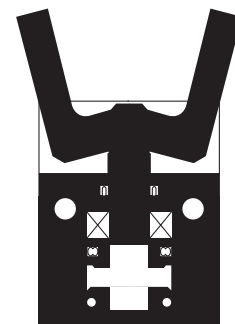
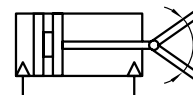
Order magnetically operated switches separately

### Accessories

Switch M/344

**See page**

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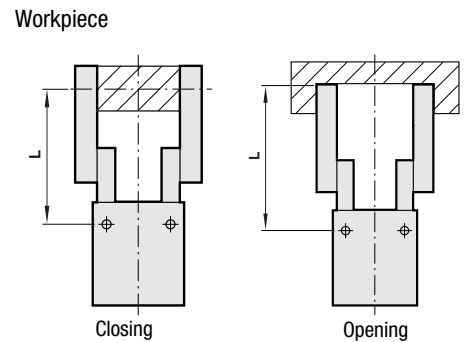
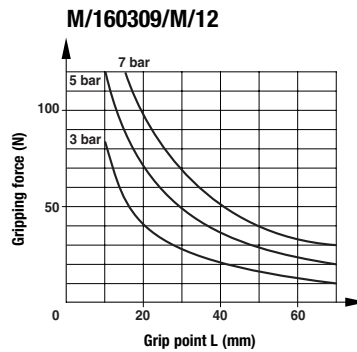
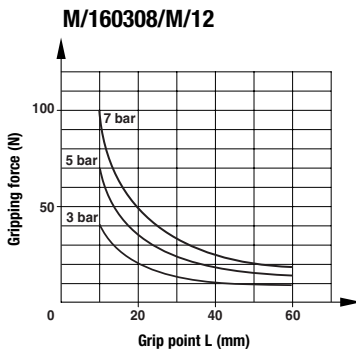
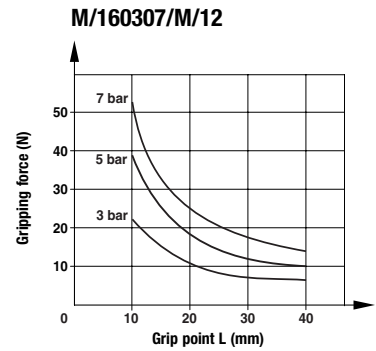
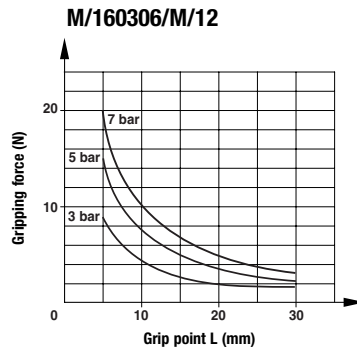
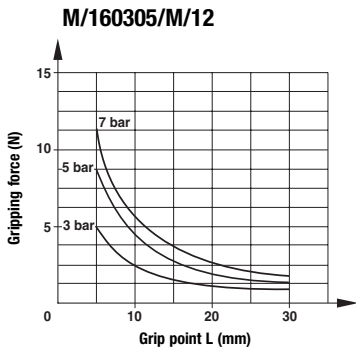


**Standard models • Effective gripping force • Air consumption**

Model	Effective gripping force (N) at 5 bar*		Air consumption (cm <sup>3</sup> ) at 5 bar**
	Opening	Closing	
M/160305/M/12	2,6	1,6	0,15
M/160306/M/12	3,8	2,5	0,3
M/160307/M/12	17,0	12,8	1,5
M/160308/M/12	32,0	24,0	3,0
M/160309/M/12	62,0	48,0	5,5

\* Grip point L = 30 mm  
 \*\* per cycle

**Theoretical closing gripping forces**



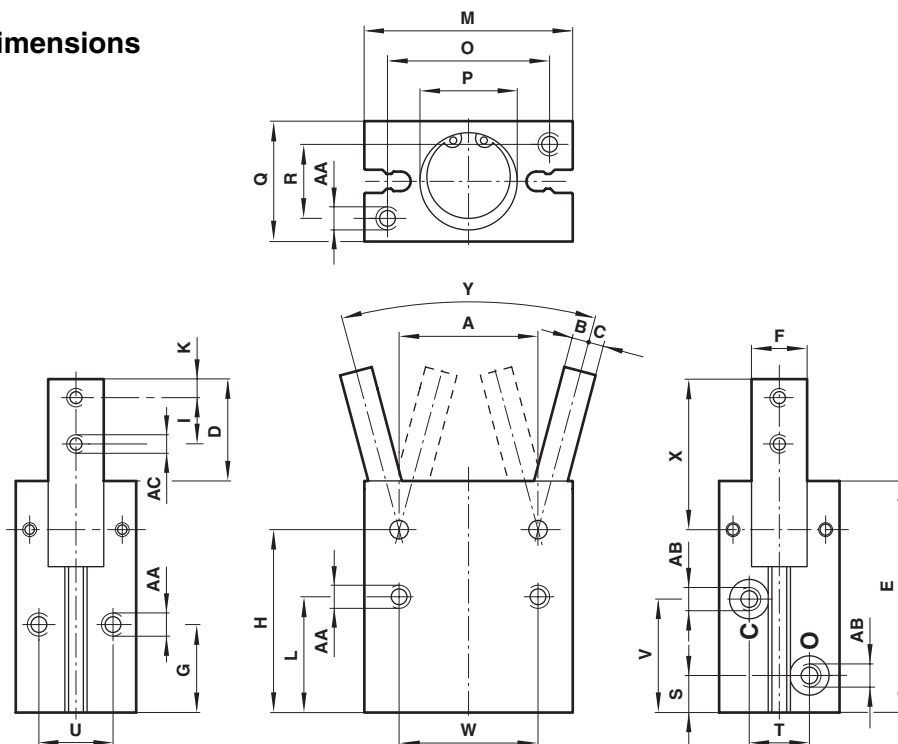
Effective closing gripping forces = Theoretical closing gripping force x 0,85

**Switches with LED indication**

Model	2-wire solid state	3-wire solid state	Voltage V d.c.	Current max.	Temperature °C	LED	Features	Cable length	Cable type	Connections	
										Straight cable connection	90° elbow cable connection
M/344/EAU/1APV			10 ... 28	20 mA	0° ... +60°	●	-	1 m	PVC	-	●
M/344/EAU/1PV			10 ... 28	20 mA	0° ... +60°	●	-	1 m	PVC	●	-
M/344/EAU/3APV			10 ... 28	20 mA	0° ... +60°	●	-	3 m	PVC	-	●
M/344/EAU/3PV			10 ... 28	20 mA	0° ... +60°	●	-	3 m	PVC	●	-
		M/344/EAN/1APV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	1 m	PVC	-	●
		M/344/EAN/1PV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	1 m	PVC	●	-
		M/344/EAN/3APV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	3 m	PVC	-	●
		M/344/EAN/3PV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	3 m	PVC	●	-



## Dimensions



\* Port size

	Ø	A	B	C	D	E	F	G	H	I	K
M/160305/M/12	8	12	1,5	2,0	12,5	29	5,5 -0,03	13	24	5,5	2,5
M/160306/M/12	10	14	1,5	2,5	14,5	36	7 -0,03	16	30	6	3
M/160307/M/12	16	24	3	3	17,5	42,5	9 -0,03	18	35	8	3
M/160308/M/12	20	30	3,5	3,5	22	50	12 -0,03	19	39,5	10	4
M/160309/M/12	25	36	4	5	26	58	14 -0,03	21,5	45,5	12	5
	Ø	L	M	O	P	Q	R	S	T	U	V
M/160305/M/12	8	18,5	20	15	Ø 9 +0,05 deep 1	13	9	4,5	-	-	14,5
M/160306/M/12	10	20	23	17	Ø 11 +0,05 deep 1,5	16	10	7,5	10	10	19
M/160307/M/12	16	22,5	34	26	Ø 17 +0,05 deep 1,5	22	14	7,5	12	14	22
M/160308/M/12	20	25	45	35	Ø 21 +0,05 deep 1,5	26	16	8	13	16	24,5
M/160309/M/12	25	28,5	52	40	Ø 26 +0,05 deep 1,5	32	20	9	18	20	28
	Ø	W	X	Y	AA				AB	AC	kg
M/160305/M/12	8	15	17,5	30° -10°	M2,5 x 0,45 deep 4,5 (base); M3 x 0,5 deep 3,5 (side); Ø3,2 (front)				M3 x 0,5	M2,5 x 0,45	0,02
M/160306/M/12	10	18	20,5	30° -10°	M3 x 0,5 deep 5				M3 x 0,5	M3 x 0,5	0,04
M/160307/M/12	16	24	25	30° -10°	M4 x 0,7 deep 7				M5 x 0,8	M3 x 0,5	0,10
M/160308/M/12	20	30	32,5	30° -10°	M5 x 0,8 deep 8				M5 x 0,8	M4 x 0,7	0,18
M/160309/M/12	25	36	38,5	30° -10°	M6 x 1 deep 10				M5 x 0,8	M5 x 0,8	0,31

## Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult **NORGREN**.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

**Smooth, accurate movement**

**Long, uninterrupted service life**

**Low weight**

**Compact size**

**Integral magnets for positional feedback**



### Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operating pressure:

2 to 7 bar

Operating temperature:

0°C to + 60°C

\* Air supply must be dry enough to avoid ice formation at temperatures below +2°C

Mounting:

Mounting holes on three surfaces

Mechanical life:

~ 3 million cycles before maintenance may be necessary

Operating frequency:

100 cycles per minute maximum

### Materials

Body: aluminium alloy

Fingers: carbon steel

Slide plate: carbon steel

Elastomers: nitrile

### Ordering information

To order a gripper with an effective closing grip force of up to 55N (/L) at 5 bar quote:

**M/160335/M/12**

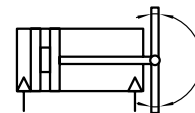
Order magnetically operated switches separately

### Accessories

Switch M/344

### See page

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## Standard models • Effective gripping force • Air consumption

Model	Effective gripping force (N) at 5 bar*		Air consumption (cm <sup>3</sup> ) at 5 bar**
	Opening	Closing	
M/160335/M/12	64/L	55/L	3,5
M/160336/M/12	134/L	113/L	8,0

\* Example - calculating the effective closing gripping force (N) at 5 bar for the M/160335/M/12

Establish the approximate grip point in cm (not mm), example 4 cm

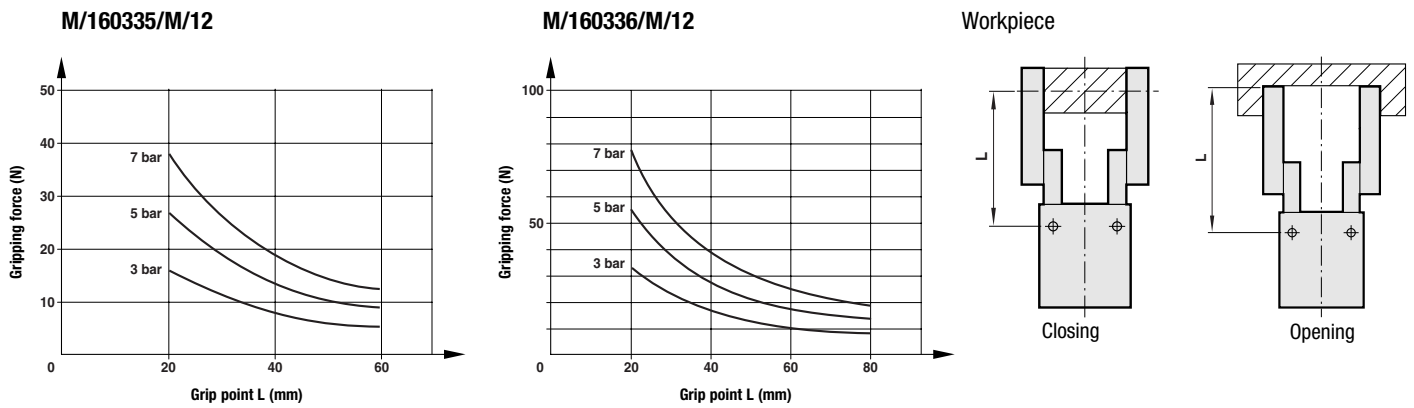
Calculation = 55 / L  
= 55 / 4

Effective closing gripping force = 13,75N

Use the graphs below for cross-reference.

\*\* per cycle

## Theoretical closing gripping forces



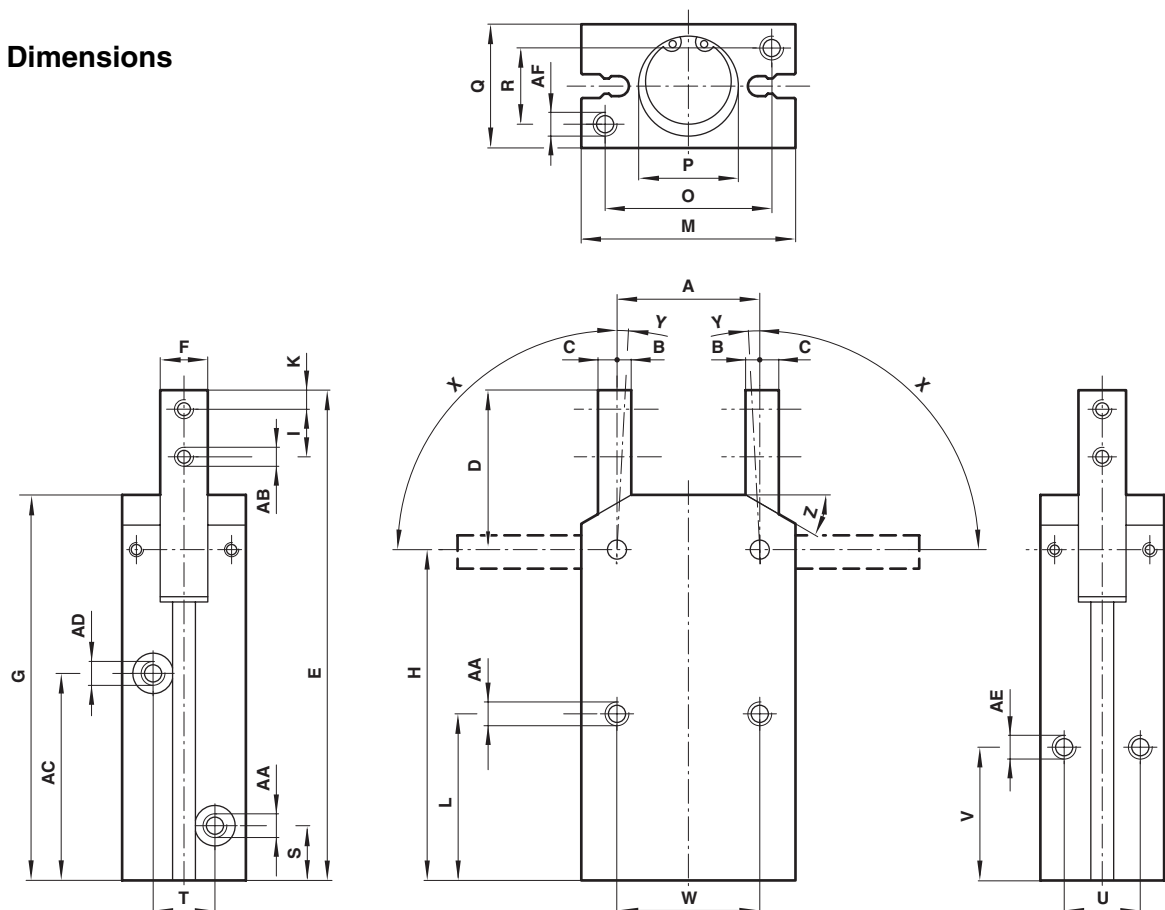
Effective closing gripping forces = Theoretical closing gripping force x 0,85

## Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	0° ... +60°	●	-	1 m	PVC	-	●
M/344/EAU/1PV	10 ... 28	20 mA	0° ... +60°	●	-	1 m	PVC	●	-
M/344/EAU/3APV	10 ... 28	20 mA	0° ... +60°	●	-	3 m	PVC	-	●
M/344/EAU/3PV	10 ... 28	20 mA	0° ... +60°	●	-	3 m	PVC	●	-
M/344/EAN/1APV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	1 m	PVC	-	●
M/344/EAN/1PV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	1 m	PVC	●	-
M/344/EAN/3APV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	3 m	PVC	-	●
M/344/EAN/3PV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	3 m	PVC	●	-



## Dimensions



\* Port size

	Ø	A	B	C	D	E	F	G	H	I	K
M/160335/M/12	16	24	3	2,5	28,5	87,5	8 - 0,03	69	59	8	4
M/160336/M/12	20	30	4	3	33,5	103	10 - 0,03	81	69,5	10	4
	Ø	L	M	O	P	Q	R	S	T	U	V
M/160335/M/12	16	30	34	Ø 17 + 0,05 deep 1,5		22	14	11,5	12	14	25
M/160336/M/12	20	35	45	Ø 21 + 0,05 deep 1,5		26	16	11,5	13	16	28
	Ø	W	X	Y	Z	AA	AB	AC	AD	kg	
M/160335/M/12	16	24	90°	3°	30°	M4 x 0,7 deep 7	M3 x 0,5	37,5	M5 x 0,8	0,15	
M/160336/M/12	20	30	90°	3°	30°	M5 x 0,8 deep 8	M4 x 0,7	43,5	M5 x 0,8	0,28	

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