

Norgren Pneumatic Grippers

Single acting angular gripperACT-15-2
Double acting angular gripperACT-15-5
Double acting 180° angular gripperACT-15-8
Single acting parallel gripperACT-15-11
Double acting parallel gripperACT-15-14
Single acting parallel gripper w/magnetic pistonACT-15-17
Double acting parallel gripper w/magnetic pistonACT-15-21
Three jaw, double acting w/magnetic pistonACT-15-29
Low profile, double acting w/magnetic pistonACT-15-26
Long stroke, double acting w/magnetic pistonACT-15-32



ACT-15-2 Single Acting Angular gripper
ACT-15-5 Double Acting Angular Gripper



ACT-15-8 Double acting 180° Angular gripper



ACT-15-11 Single acting parallel gripper
ACT-15-14 Double acting parallel gripper



ACT-15-17 Single acting parallel gripper w/magnetic piston
ACT-15-21 Double acting parallel gripper w/magnetic piston



ACT-15-26 Low profile Double acting w/magnetic piston



ACT-15-29 Three jaw, double acting w/magnetic piston



ACT-15-32 Long stroke, double acting w/magnetic piston

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:

Single acting, angular, magnetic piston

Operating pressure:

29 to 101.5 psig (2 to 7 bar)

Ø 8 mm - 52.2 to 101.5 psig (3.6 to 7 bar)

Ø 10 mm - 43.5 to 101.5 psig (3 to 7 bar)

Operating temperature:

+32°F to +140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (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: aluminum alloy

Fingers: carbon steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

Ordering information

To order a gripper with an effective closing grip force of up to 0.325 lb at 72.5 psig (1.4N at 5 bar) quote: **M/160306/M/11**

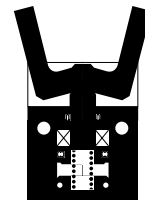
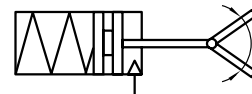
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-3





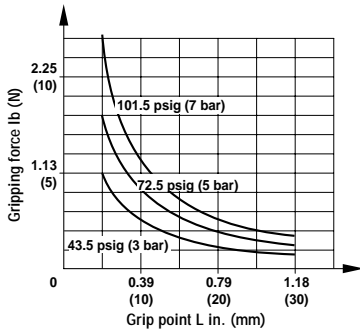
Standard models ● Effective gripping force ● Air consumption

Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160305/M/11	0.135 (0.6)	0.225 (1)	0.0036 (0.06)
M/160306/M/11	0.225 (1)	0.315 (1.4)	0.006 (0.1)
M/160307/M/11	0.63 (2.8)	2.25 (10)	0.039 (0.65)
M/160308/M/11	1.35 (6)	4.05 (18)	0.078 (1.3)
M/160309/M/11	2.25 (10)	8.55 (38)	0.144 (2.4)

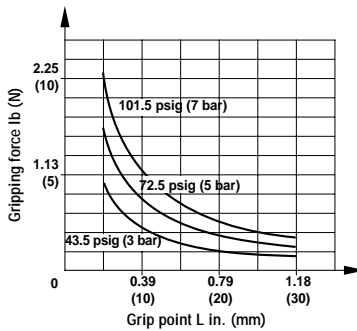
**per cycle

Theoretical closing gripping forces

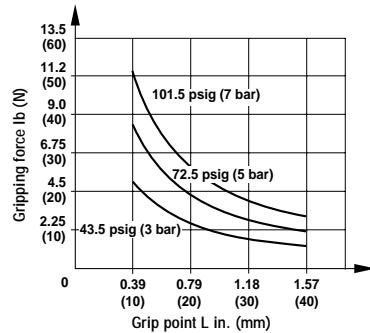
M/160305/M/11



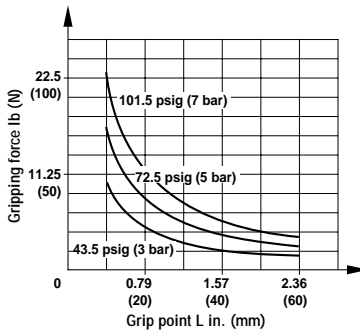
M/160306/M/11



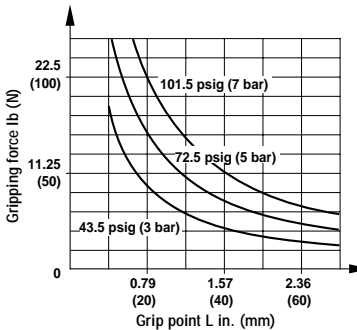
M/160307/M/11



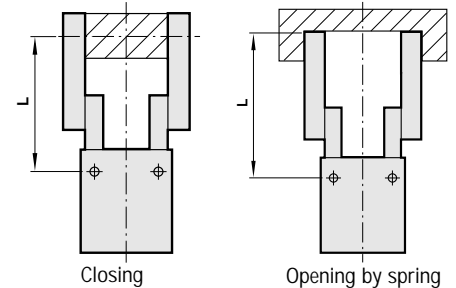
M/160308/M/11



M/160309/M/11



Workpiece grip point



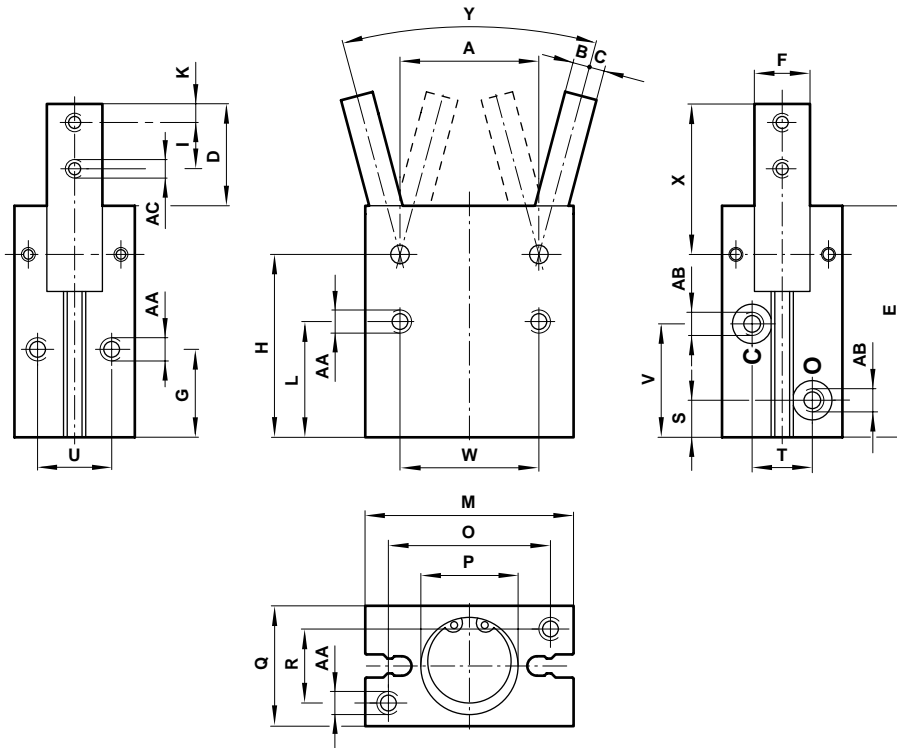
Effective closing gripping forces = Theoretical closing gripping force x 0.85

Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Dimensions



	Ø	A	B	C	D	E	F	G	H	I	K
M/160305/M/11	8	0.47 (12)	0.06 (1.5)	0.08 (2)	0.492 (12.5)	1.14 (29)	0.22 (5.5)	-0.001 (-0.03)	0.94 (24)	0.22 (5.5)	0.10 (2.5)
M/160306/M/11	10	0.55 (14)	0.06 (1.5)	0.10 (2.5)	0.571 (14.5)	1.42 (36)	0.28 (7)	-0.001 (-0.03)	1.18 (30)	0.24 (6)	0.12 (3)
M/160307/M/11	16	0.94 (24)	0.12 (3)	0.12 (3)	0.689 (17.5)	1.67 (42.5)	0.35 (9)	-0.001 (-0.03)	1.38 (35)	0.31 (8)	0.12 (3)
M/160308/M/11	20	1.18 (30)	0.14 (3.5)	0.14 (3.5)	0.866 (22)	1.97 (50)	0.47 (12)	-0.001 (-0.03)	1.56 (39.5)	0.39 (10)	0.16 (4)
M/160309/M/11	25	1.42 (36)	0.16 (4)	0.20 (5)	1.024 (26)	2.28 (58)	0.55 (14)	-0.001 (-0.03)	1.79 (45.5)	0.47 (12)	0.20 (5)
	Ø	L	M	O	P	Q	R	S	T	U	V
M/160305/M/11	8	0.73 (18.5)	0.79 (20)	0.59 (15)	Ø 0.35 + 0.002 deep 0.04 (Ø 9 +0.05 deep 1)	0.51 (13)	0.35 (9)	0.18 (4.5)	-	-	0.57 (14.5)
M/160306/M/11	10	0.79 (20)	0.91 (23)	0.67 (17)	Ø 0.43 + 0.002 deep 0.06 (Ø 11 +0.05 deep 1.5)	0.63 (16)	0.39 (10)	0.30 (7.5)	0.39 (10)	0.39 (10)	0.75 (19)
M/160307/M/11	16	0.89 (22.5)	1.34 (34)	1.02 (26)	Ø 0.67 + 0.002 deep 0.06 (Ø 12 +0.05 deep 1.5)	0.87 (22)	0.55 (14)	0.30 (7.5)	0.47 (12)	0.55 (14)	0.87 (22)
M/160308/M/11	20	0.98 (25)	1.77 (45)	1.38 (35)	Ø 0.83 + 0.002 deep 0.06 (Ø 21 +0.05 deep 1.5)	1.02 (26)	0.63 (16)	0.31 (8)	0.51 (13)	0.63 (16)	0.96 (24.5)
M/160309/M/11	25	1.12 (28.5)	2.05 (52)	1.57 (40)	Ø 1.02 + 0.002 deep 0.06 (Ø 26 +0.05 deep 1.5)	1.26 (32)	0.79 (20)	0.35 (9)	0.71 (18)	0.79 (20)	1.10 (28)
	Ø	W	X	Y	AA	AB	AC	lb	kg		
M/160305/M/11	8	0.59 (15)	0.69 (17.5)	30° -10°	(M2.5 x 0.45 deep 0.18 (base); M3 x 0.5 deep 0.14 (side); Ø 0.13 (front) (M2.5 x 0.45 deep 4.5 (base); M3 x 0.5 deep 3.5 (side); Ø 3.2 (front)	M3 x 0.5	M2.5 x 0.45	0.04	(0.02)		
M/160306/M/11	10	0.71 (18)	0.81 (20.5)	30° -10°	M3 x 0.5 deep 0.20 (M3 x 0.5 deep 5)	M3 x 0.5	M3 x 0.5	0.09	(0.04)		
M/160307/M/11	16	0.94 (24)	0.98 (25)	30° -10°	M4 x 0.7 deep 0.28 (M4 x 0.7 deep 7)	M5 x 0.8	M3 x 0.5	0.22	(0.10)		
M/160308/M/11	20	1.18 (30)	1.28 (32.5)	30° -10°	M5 x 0.8 deep 0.31 (M5 x 0.8 deep 8)	M5 x 0.8	M4 x 0.7	0.40	(0.18)		
M/160309/M/11	25	1.42 (36)	1.52 (38.5)	30° -10°	M6 x 1 deep 0.39 (M6 x 1 deep 10)	M5 x 0.8	M5 x 0.8	0.68	(0.31)		

M/160300/M/12

Angular grippers, Double acting
Magnetic piston, Ø 8 ... 25 mm



Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Ordering information

To order a gripper with an effective closing grip force of up to 0.56 lb (2.5 N) at 72.5 psig (5 bar) quote: **M/160306/M/12**

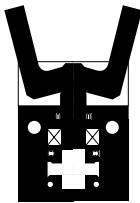
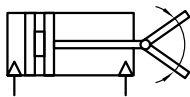
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-6



Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, angular, magnetic piston

Operating pressure:

14.5 to 101.5 psig (1 to 7 bar)

Ø 8 mm - 31.9 to 101.5 psig (2.2 to 7 bar)

Operating temperature:

32°F to 140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (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: aluminum alloy

Fingers: carbon steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**



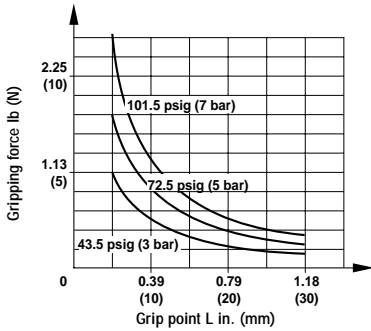
Standard models ● Effective gripping force ● Air consumption

Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160305/M/12	0.59 (2.6)	0.36 (1.6)	0.01 (0.15)
M/160306/M/12	0.86 (3.8)	0.56 (2.5)	0.02 (0.3)
M/160307/M/12	3.83 (17)	2.88 (12.8)	0.09 (1.5)
M/160308/M/12	7.20 (32)	5.40 (24)	0.18 (3)
M/160309/M/12	13.95 (62)	10.80 (48)	0.33 (5.5)

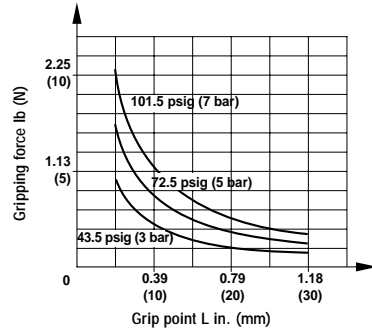
**per cycle

Theoretical closing gripping forces

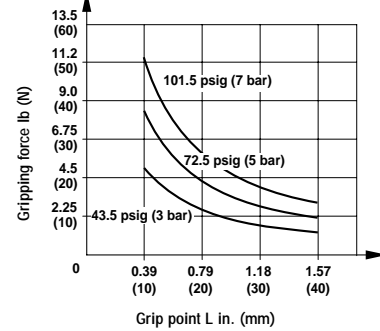
M/160305/M/12



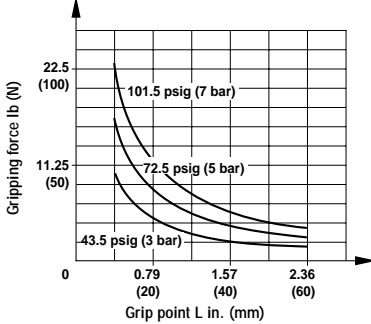
M/160306/M/12



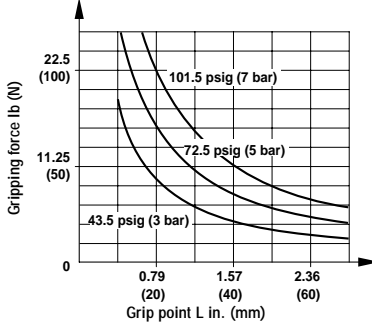
M/160307/M/12



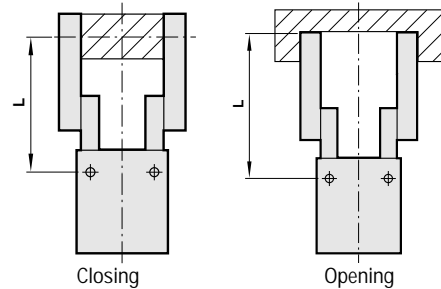
M/160308/M/12



M/160309/M/12



Workpiece grip point



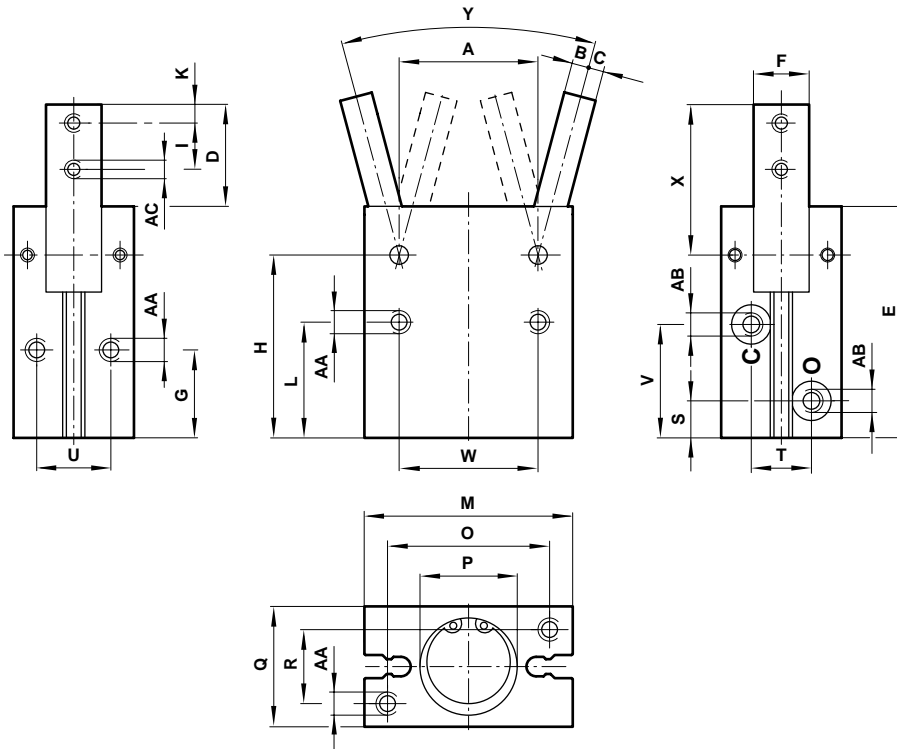
Effective closing gripping forces = Theoretical closing gripping force x 0.85

Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Dimensions



	Ø	A	B	C	D	E	F	G	H	I	K	
M/160305/M/12	8	0.47 (12)	0.06 (1.5)	0.08 (2)	0.49 (12.5)	1.14 (29)	0.22 -0.001 (5.5 -0.03)	0.51 (13)	0.94 (24)	0.22 (5.5)	0.10 (2.5)	
M/160306/M/12	10	0.55 (14)	0.06 (1.5)	0.10 (2.5)	0.57 (14.5)	1.42 (36)	0.28 -0.001 (7 -0.03)	0.63 (16)	1.18 (30)	0.24 (6)	0.12 (3)	
M/160307/M/12	16	0.94 (24)	0.12 (3)	0.12 (3)	0.69 (17.5)	1.67 (42.5)	0.35 -0.001 (9 -0.03)	0.71 (18)	1.38 (35)	0.31 (8)	0.12 (3)	
M/160308/M/12	20	1.18 (30)	0.14 (3.5)	0.14 (3.5)	0.87 (22)	1.97 (50)	0.47 -0.001 (12 -0.03)	0.75 (19)	1.56 (39.5)	0.39 (10)	0.16 (4)	
M/160309/M/12	25	1.42 (36)	0.16 (4)	0.20 (5)	1.02 (26)	2.28 (58)	0.55 -0.001 (14 -0.03)	0.85 (21.5)	1.79 (45.5)	0.47 (12)	0.20 (5)	
	Ø	L	M	O	P		Q	R	S	T	U	V
M/160305/M/12	8	0.73 (18.5)	0.79 (20)	0.59 (15)	Ø 0.35 +0.002 deep 0.04 (Ø 9 +0.05 deep 1)		0.51 (13)	0.35 (9)	0.18 (4.5)	- (-)	- (-)	0.57 (14.5)
M/160306/M/12	10	0.79 (20)	0.91 (23)	0.67 (17)	Ø 0.43 +0.002 deep 0.06 (Ø 11 +0.05 deep 1.5)		0.63 (16)	0.39 (10)	0.30 (7.5)	0.39 (10)	0.39 (10)	0.75 (19)
M/160307/M/12	16	0.89 (22.5)	1.34 (34)	1.02 (26)	Ø 0.67 +0.002 deep 0.06 (Ø 17 +0.05 deep 1.5)		0.87 (22)	0.55 (14)	0.30 (7.5)	0.47 (12)	0.55 (14)	0.87 (22)
M/160308/M/12	20	0.98 (25)	1.77 (45)	1.38 (35)	Ø 0.83 +0.002 deep 0.06 (Ø 21 +0.05 deep 1.5)		1.02 (26)	0.63 (16)	0.31 (8)	0.51 (13)	0.63 (16)	0.96 (24.5)
M/160309/M/12	25	1.12 (28.5)	2.05 (52)	1.57 (40)	Ø 1.02 +0.002 deep 0.06 (Ø 26 +0.05 deep 1.5)		1.26 (32)	0.79 (20)	0.35 (9)	0.71 (18)	0.79 (20)	1.10 (28)
	Ø	W	X	Y	AA				AB	AC	lb	kg
M/160305/M/12	8	0.59 (15)	0.69 (17.5)	30° -10°	M2.5 x 0.45 deep 0.18 (4.5) base; M3 x 0.5 deep 0.14 (3.5) side; Ø 0.13 (Ø 3.2) front				M3 x 0.5	M2.5 x 0.45	0.04	(0.02)
M/160306/M/12	10	0.71 (18)	0.81 (20.5)	30° -10°	M3 x 0.5 deep 0.20 (5)				M3 x 0.5	M3 x 0.5	0.09	(0.04)
M/160307/M/12	16	0.94 (24)	0.98 (25)	30° -10°	M4 x 0.7 deep 0.28 (7)				M5 x 0.8	M3 x 0.5	0.22	(0.1)
M/160308/M/12	20	1.18 (30)	1.28 (32.5)	30° -10°	M5 x 0.8 deep 0.31 (8)				M5 x 0.8	M4 x 0.7	0.40	(0.18)
M/160309/M/12	25	1.42 (36)	1.52 (38.5)	30° -10°	M6 x 1 deep 0.39 (10)				M5 x 0.8	M5 x 0.8	0.68	(0.31)

- 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:
29 to 101.5 psig (2 to 7 bar)
- Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (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: aluminum alloy
- Fingers: carbon steel
- Slide plate: carbon steel
- Elastomers: nitrile

Barb fittings connections

- M3 x 1/8" tube ID, straight barb, part number **29217X303**
- M5 x 1/8" tube ID, straight barb, part number **29217X305**

Ordering information

To order a gripper with an effective closing grip force of up to 12.36 lb (55N/L) at 72.5 psig (5 bar) quote: **M/160335/M/12**

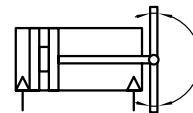
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-9





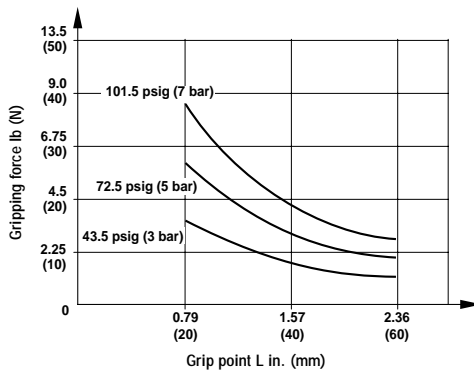
Standard models ● Effective gripping force ● Air consumption

Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160335/M/12	14.4/L (64/L)	12.38/L (55/L)	0.21 (3.5)
M/160336/M/12	30.15/L (134/L)	25.43/L (113/L)	0.48 (8.0)

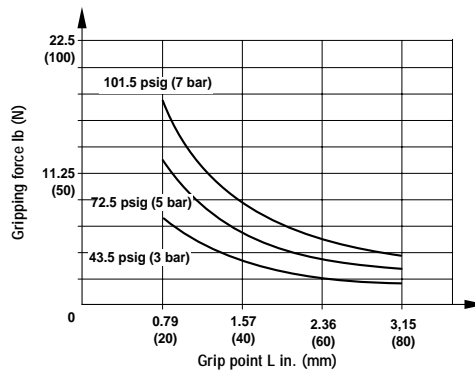
**per cycle

Theoretical closing gripping forces

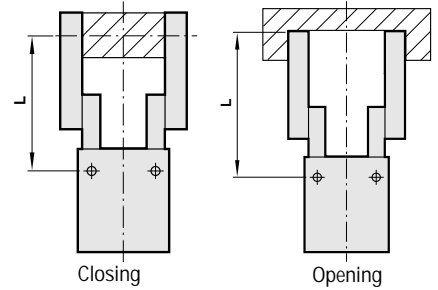
M/160335/M/12



M/160336/M/12



Workpiece grip point



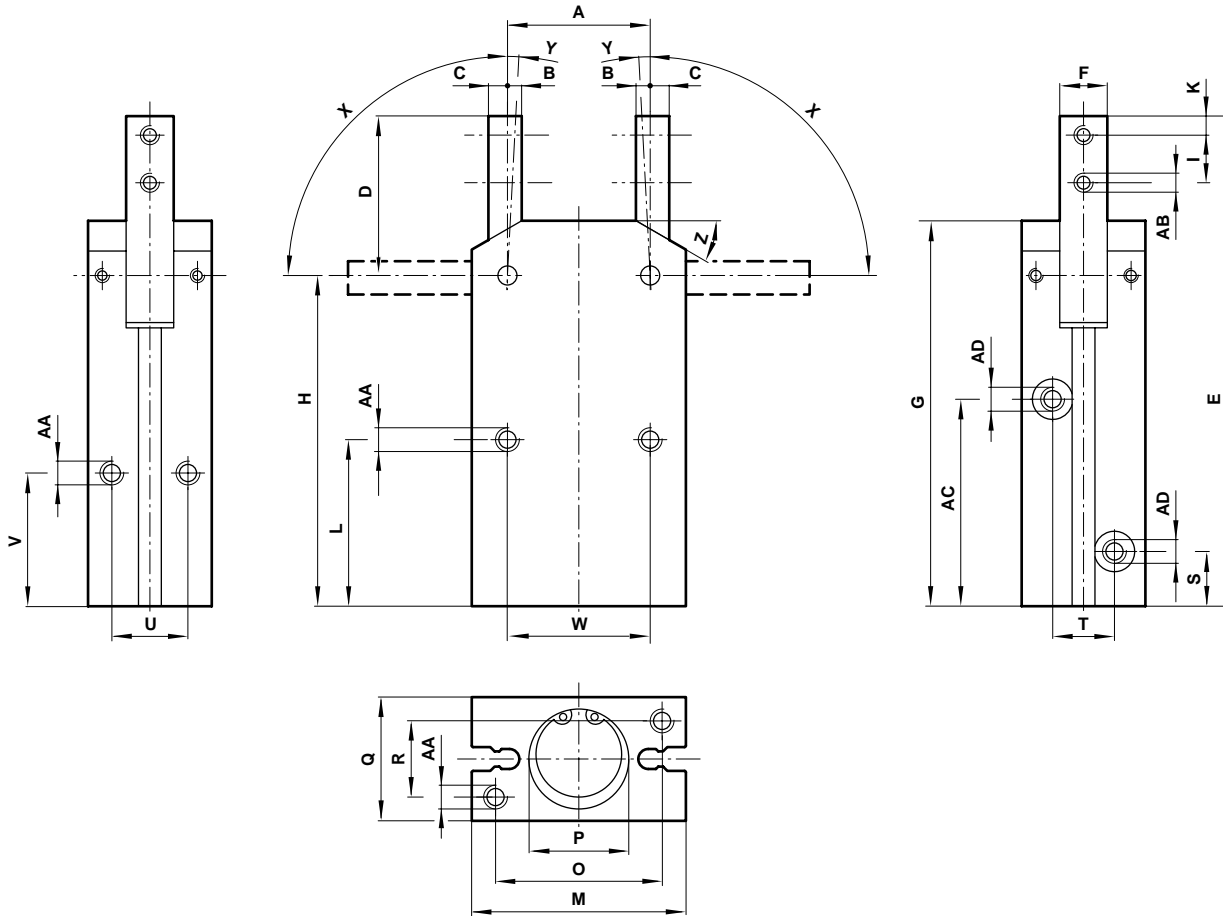
Effective closing gripping forces = Theoretical closing gripping force x 0.85

Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Basic dimensions



	Ø	A	B	C	D	E	F	G	H	I	K		
M/160335/M/12	16	0.94 (24)	0.12 (3)	0.10 (2.5)	1.12 (28.5)	3.44 (87.5)	0.31 -0.001 (8 -0.03)	2.72 (69)	2.32 (59)	0.31 (8)	0.16 (4)		
M/160336/M/12	20	1.18 (30)	0.16 (4)	0.12 (3)	1.32 (33.5)	4.06 (103)	0.39 -0.001 (10 -0.03)	3.19 (81)	2.74 (69.5)	0.39 (10)	0.16 (4)		
	Ø	L	M	O	P			Q	R	S	T	U	V
M/160335/M/12	16	1.18 (30)	1.34 (34)	1.02 (26)	Ø 0.67 + 0.002 deep 0.06 (Ø 17 + 0.05 deep 1.5)			0.87 (22)	0.55 (14)	0.41 (10.5)	0.47 (12)	0.55 (14)	0.98 (25)
M/160336/M/12	20	1.38 (35)	1.77 (45)	1.38 (35)	Ø 0.83 + 0.002 deep 0.06 (Ø 21 + 0.05 deep 1.5)			1.02 (26)	0.63 (16)	0.45 (11.5)	0.51 (13)	0.63 (16)	1.10 (28)
	Ø	W	X	Y	Z	AA	AB	AC	AD	lb (kg)			
M/160335/M/12	16	0.94 (24)	90°	3°	30°	M4 X 0.7 deep 0.28 (7)	M3 X 0.5	1.50 (38)	M5 X 0.8	0.33 (0.15)			
M/160336/M/12	20	1.18 (30)	90°	3°	30°	M5 X 0.8 deep 0.31 (8)	M4 X 0.7	1.71 (43.5)	M5 X 0.8	0.62 (0.28)			

M/160340/M/11

Parallel grippers, Single acting
Magnetic piston, Ø 10 ... 25 mm



Ideal for general purpose gripping applications

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Ordering information

To order a gripper with an effective closing grip force of up to 4.72 lb (21N) at 72.5 psig (5 bar) quote: **M/160344/M/11**

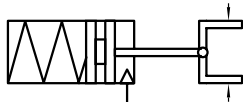
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-12



Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Single acting, parallel, magnetic piston

Operating pressure:

36.25 to 101.5 psig (2.5 to 7 bar)

Ø 10 mm – 50.75 to 101.5 psig (3.5 to 7 bar)

Operating temperature:

32°F to 140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Mounting:

Mounting holes on three faces

Gripping repeatability:

+/- 0.0004 inches (+/- 0.01 mm)

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

200 cycles per minute maximum

Materials

Body: aluminum alloy

Top plate: carbon steel

Fingers: carbon steel

External screws: carbon steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

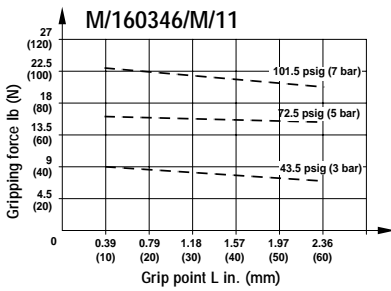
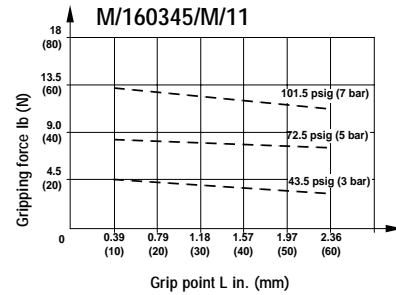
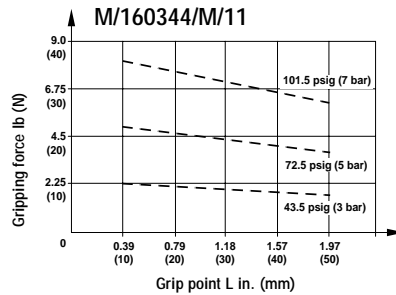
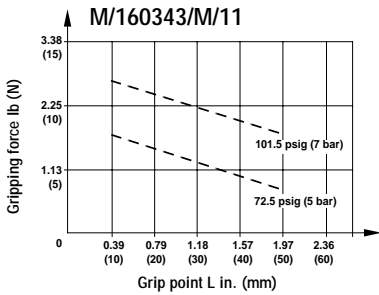


Standard models ● Effective gripping force ● Air consumption

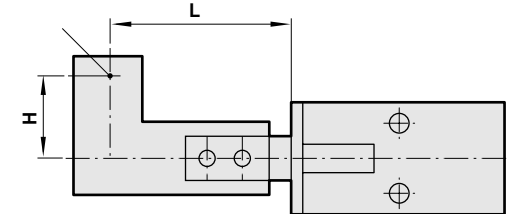
Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160343/M/11	0.45 (2)	1.10 (4.9)	0.10 (0.1)
M/160344/M/11	0.88 (3.9)	4.73 (21)	0.65 (0.65)
M/160345/M/11	1.55 (6.9)	8.19 (36.4)	1.40 (1.4)
M/160346/M/11	3.08 (13.7)	12.15 (54)	2.80 (2.8)

**per cycle

Theoretical closing gripping forces

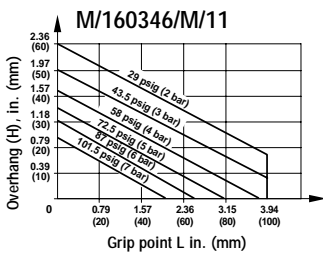
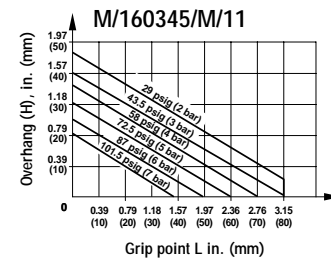
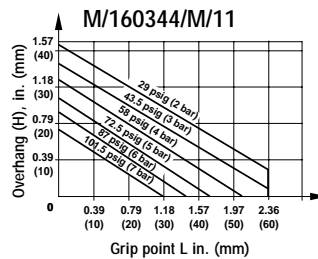
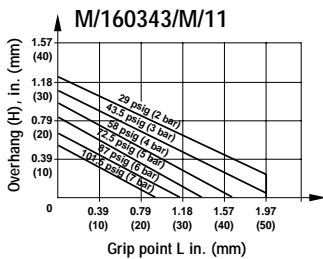


Workpiece grip point



Effective closing gripping forces = Theoretical closing gripping force x 0.85

Grip point limitation range



Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.

When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value. (Reference value is 1/30-1/50)

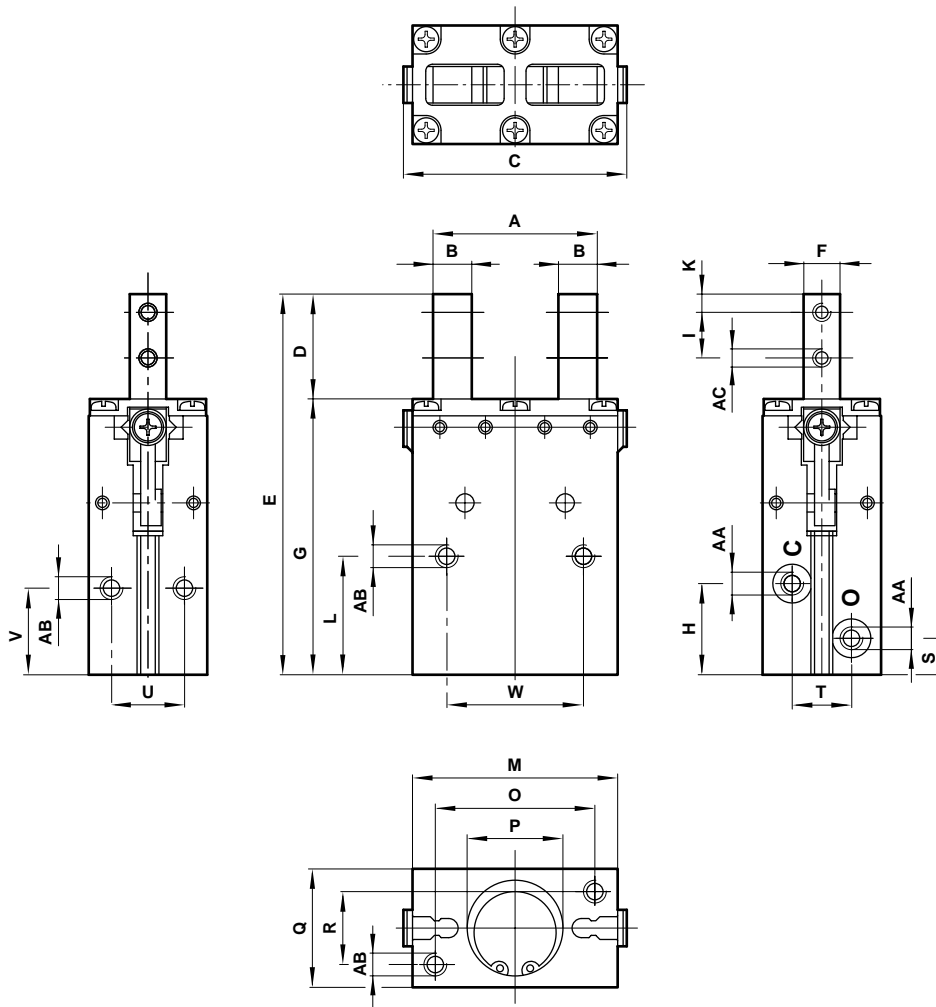
Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)

Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Dimensions



	Ø	A					B	C	D	E		
M/160343/M/11	10	0.67 + 0.06/-0.01 open, 0.55 ± 0.02 closed (17 + 1.6/-0.2 open, 13 ± 0.4 closed)					0.18 (4.5)	0.98 max. (25 max.)	0.65 (16.5)	2.34 (59.5)		
M/160344/M/11	16	1.02 + 0.09 open, 0.71 + 0.02/-0.01 closed (26 + 2.3 open, 18 + 0.6/-0.2 closed)					0.26 (6.5)	1.48 max. (37.5 max)	0.75 (19)	2.80 (71)		
M/160345/M/11	20	1.42 + 0.06/-0.04 open, 0.94 + 0.004/-0.04 closed (36 + 1.5/-0.9 open, 24 + 0.1/-0.9 closed)					0.33 (8.5)	1.93 max. (49 max)	0.91 (23)	3.29 (83.5)		
M/160346/M/11	25	1.65 + 0.04/-0.03 open, 1.10 ± 0.02 closed (42 + 1.0/-0.7 open, 28 ± 0.4 closed)					0.39 (10)	2.26 max. (57.5 max)	1.06 (27)	3.74 (95)		
	Ø	F	G	H	I	K	L	M	O	P		
M/160343/M/11	10	0.22 -0.001 (5.5 - 0.03)	1.69 (43)	0.59 (15)	0.24 (6)	0.12 (3)	0.79 (20)	0.91 (23)	0.67 (17)	Ø 0.43 + 0.002 deep 0.06 (Ø11 + 0.05 deep 1.5)		
M/160344/M/11	16	0.28 -0.001 (7 - 0.03)	2.05 (52)	0.69 (17.5)	0.31 (8)	0.12 (3)	0.91 (23)	1.34 (34)	1.02 (26)	Ø 0.67 + 0.002 deep 0.06 (Ø17 + 0.05 deep 1.5)		
M/160345/M/11	20	0.31 -0.001 (8 - 0.04)	2.38 (60.5)	0.79 (20)	0.39 (10)	0.16 (4)	1.02 (26)	1.77 (45)	1.38 (35)	Ø 0.83 + 0.002 deep 0.06 (Ø21 + 0.05 deep 1.5)		
M/160346/M/11	25	0.39 -0.001 (10 - 0.03)	2.68 (68)	0.91 (23)	0.47 (12)	0.20 (5)	1.18 (30)	2.05 (52)	1.57 (40)	Ø 1.02 + 0.002 deep 0.06 (Ø26 + 0.05 deep 1.5)		
	Ø	Q	R	S	T	U	V	W	AA	AB	AC	lb (kg)
M/160343/M/11	10	0.63 (16)	0.39 (10)	0.30 (7.5)	0.39 (10)	0.39 (10)	0.63 (16)	0.71 (18)	M3 X 0.5	M3 X 0.5 deep 0.12 (5)	M3 X 0.5	0.11 (0.05)
M/160344/M/11	16	0.87 (22)	0.55 (14)	0.30 (7.5)	0.47 (12)	0.55 (14)	0.71 (18)	0.94 (24)	M5 X 0.8	M4 X 0.7 deep 0.28 (7)	M3 X 0.5	0.26 (0.12)
M/160345/M/11	20	1.02 (26)	0.63 (16)	0.31 (8)	0.51 (13)	0.63 (16)	0.75 (19)	1.18 (30)	M5 X 0.8	M5 X 0.8 deep 0.31 (8)	M4 X 0.7	0.48 (0.22)
M/160346/M/11	25	1.26 (32)	0.79 (20)	0.35 (9)	0.71 (18)	0.79 (20)	0.87 (22)	1.42 (36)	M5 X 0.8	M6 X 1.0 deep 0.39 (10)	M5 X 0.8	0.82 (0.37)

Ideal for general purpose gripping applications

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, parallel, magnetic piston

Operating pressure:

14.5 to 101.5 psig (1 to 7 bar)

Ø 10 mm - 26.1 to 101.5 psig (1.8 to 7 bar)

Ø 16 mm - 17.4 to 101.5 psig (1.2 to 7 bar)

Operating temperature:

32°F to 140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Mounting:

Mounting holes on three faces

Gripping repeatability:

+/- 0.0004 inches (+/- 0.01 mm)

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Materials

Body: aluminum alloy

Top plate: carbon steel

Fingers: carbon steel

External screws: carbon steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

Ordering information

To order a gripper with an effective closing grip force of up to 5.73 lb at 72.5 psig (25.5N at 5 bar) quote: **M/160344/M/12**

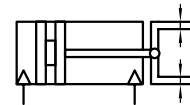
Order magnetically operated switches separately

Accessories

Switch M/344

See Page

ACT-15-15



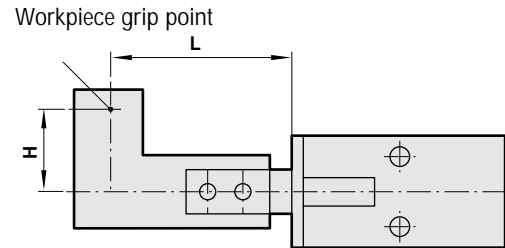
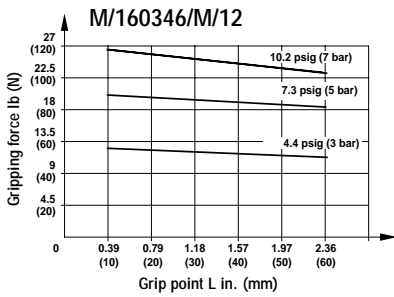
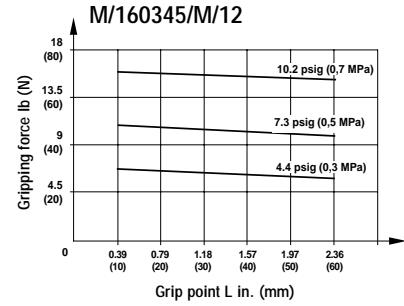
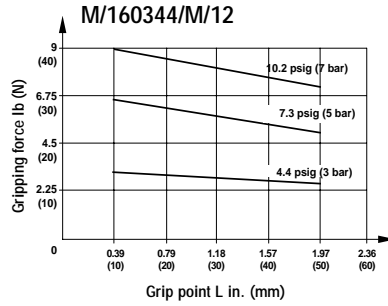
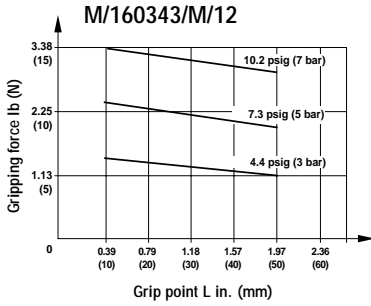


Standard models ● Effective gripping force ● Air consumption

Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160343/M/12	3.29 (14.6)	2.12 (9.4)	0.02 (0.3)
M/160344/M/12	7.65 (34)	5.74 (25.5)	0.09 (1.5)
M/160345/M/12	13.70 (60.9)	10.28 (45.7)	0.20 (3.3)
M/160346/M/12	19.58 (87)	15.08 (67)	0.38 (6.4)

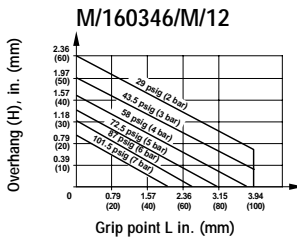
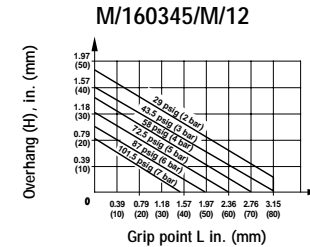
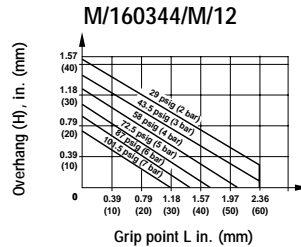
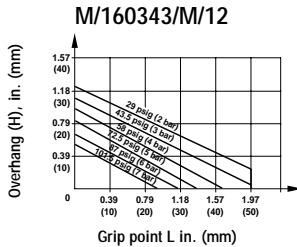
**per cycle

Theoretical closing gripping forces



Effective closing gripping forces = Theoretical closing gripping force x 0.85

Grip point limitation range



Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.

When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value. (Reference value is 1/30-1/50)

Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)

Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-

M/160350/M/11

Parallel grippers - precision, Single acting
Magnetic piston, Ø 8 ... 20 mm



Ideal for applications demanding accuracy and precise repeatability

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Ordering information

To order a gripper with an effective closing grip force of up to 4.49 lb at 72.5 psig (20N at 5 bar) quote: **M/160356/M/11**

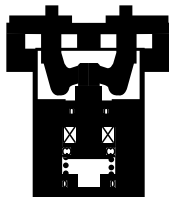
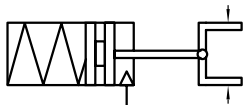
Order magnetically operated switches separately

Accessories

Switch M/344

See Page

ACT-15-18



Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Single acting, parallel, magnetic piston

Operating pressure:

101.5 psig (7 bar) maximum - see page ACT-15-18 for minimum operating pressures

Operating temperature:

32°F to 140°F (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

Gripping repeatability:

+/- 0.0004 inches (+/- 0.01 mm)

Accuracy to center:

+/- 0.003 inches (+/- 0.07 mm)

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

120 cycles per minute maximum

Materials

Body: aluminum alloy

Fingers: stainless steel

Guide rail: stainless steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**



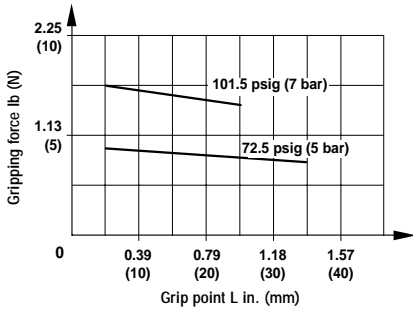
Standard models ● Effective gripping force ● Air consumption

Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Minimum operating pressure in psig (bar)	Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing		
M/160354/M/11	0.61 (2.7)	0.92 (4.1)	58.00 (4)	0.004 (0.06)
M/160355/M/11	0.54 (2.4)	1.53 (6.8)	50.75 (3.5)	0.010 (0.16)
M/160356/M/11	1.22 (5.4)	4.50 (20)	36.25 (2.5)	0.042 (0.7)
M/160357/M/11	1.64 (7.3)	7.65 (34)	36.25 (2.5)	0.096 (1.6)

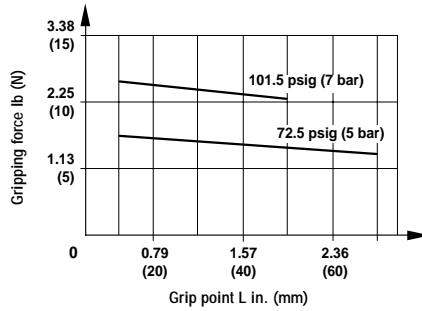
**per cycle

Theoretical closing gripping forces

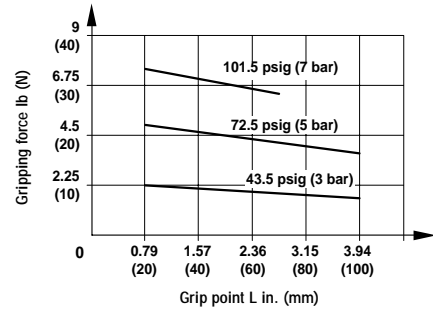
M/160354/M/11



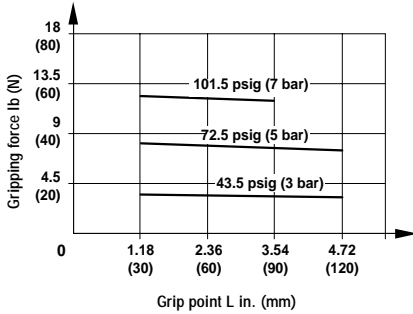
M/160355/M/11



M/160356/M/11



M/160357/M/11



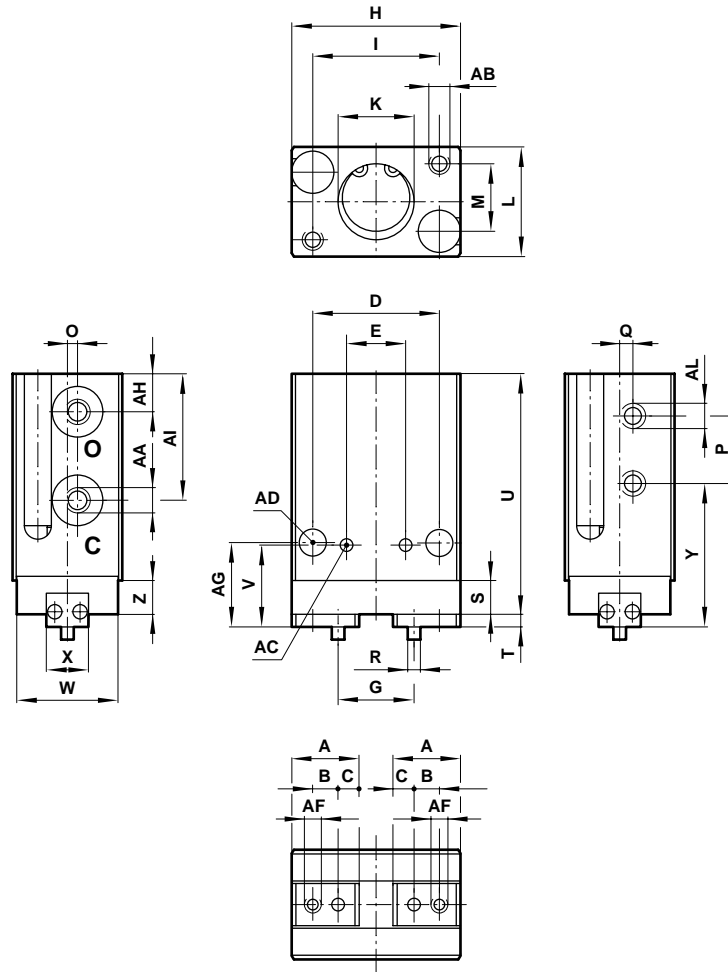
Effective closing gripping forces = Theoretical closing gripping force x 0.85

Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



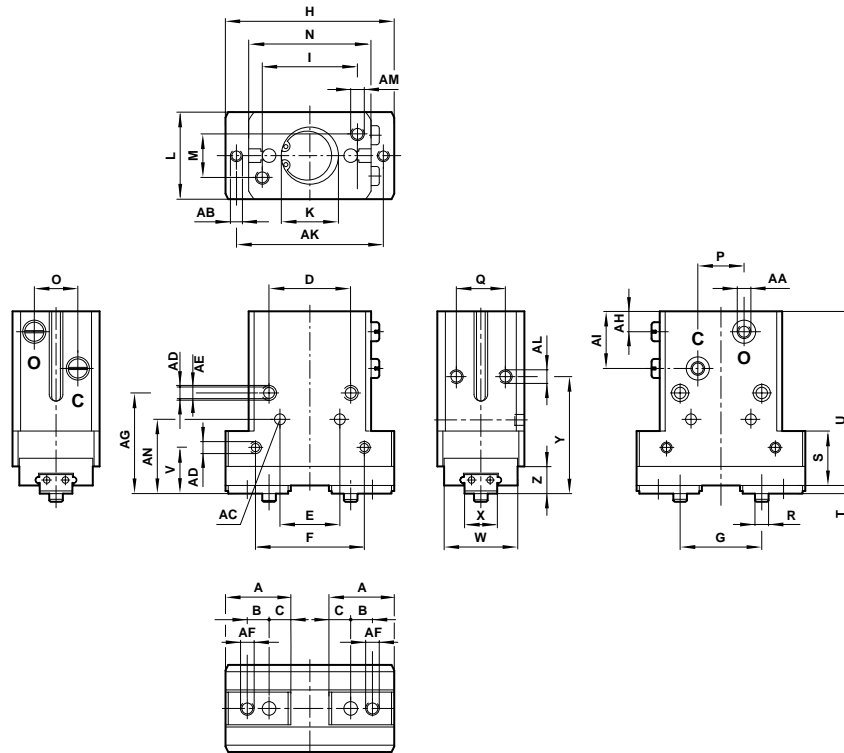
Dimensions



M/160354/M/11	Ø	A	B	C	D	E		G			H	I	
	8	0.31 (8)	0.12 (3.00)	0.10 (2.5)	0.59 (15)	0.28 ± 0.001 (7 ± 0.03)		0.35 + 0.06 open, 0.20 + 0.02 closed (9 + 1.5 open, 5 + 0.5 closed)			0.79 (20)	0.59 (15)	
M/160354/M/11	Ø	K			L		M	O	P	Q	R		S
	8	Ø 0.35 + 0.002 deep 0.04 (Ø 9 + 0.05 deep 1)			0.51 ± 0.002 (13 ± 0.05)		0.35 (9)	0.05 (1.2)	0.31 (8)	0.06 (1.5)	Ø 0.06 -0.001 (Ø 1.5 -0.03)		0.16 (4)
M/160354/M/11	Ø	T	U	V	W	X		Y	Z	AA	AB		
	8	0.06 (1.5)	1.12 (28.5)	0.38 (9.7)	0.47 (12)	0.2 ± 0.001 (5 ± 0.025)		0.67 (17)	0.16 (4)	M3 X 0.5	M2.5 X 0.45 deep 0.16 (4)		
M/160354/M/11	Ø	AC			AD	AF		AG	AH	AI	AL	Ib (kg)	
	8	Ø0.06 + 0.001 deep 0.04 (Ø1.5 + 0.02 deep 1)			Ø0.13 (Ø3.2)	M2 X 0.4 deep 0.14 (3.5)		0.39 (10)	0.18 (4.5)	0.59 (15)	M3 X 0.5 deep 0.12 (3)	0.04 (0.02)	



Dimensions



	Ø	A	B	C	D	E	F	G				H	
M/160355/M/11	10	0.58 (14.7)	0.20 (5)	0.18 (4.5)	0.67 (17)	0.47 ± 0.001 (12 ± 0.03)	0.79 (20)	0.61 + 0.06 open. 0.35 + 0.02 closed (15.5 + 1.5 open. 9 + 0.5 closed)				1.42 (36)	
M/160356/M/11	16	0.79 (20)	0.31 (8)	0.24 (6)	0.94 (24)	0.63 ± 0.001 (16 ± 0.03)	1.18 (30)	0.87 + 0.07 open. 0.47 + 0.05 closed (22 + 1.8 open. 12 + 1.3 closed)				1.97 (50)	
M/160357/M/11	20	0.94 (24)	0.31 (8)	0.31 (8)	1.18 (30)	0.87 ± 0.001 (22 ± 0.03)	1.57 (40)	1.18 + 0.09/-0.02 open. 0.63 + 0.06 closed (30 + 2.4/-0.5 open. 16 + 1.4 closed)				2.44 (62)	
	Ø	K			L	M	N	O	P	Q	R		
M/160355/M/11	10	0.67 (17)	Ø0.43 + 0.002 deep 0.06 (Ø11 + 0.05 deep 1.5)			0.79 ± 0.002 (20 ± 0.05)	0.39 (10)	0.91 (23)	0.35 (9)	0.28 (7)	0.47 (12)	Ø 0.12 - 0.001 (Ø3 - 0.03)	
M/160356/M/11	16	1.02 (26)	Ø0.67 + 0.002 deep 0.06 (Ø17 + 0.05 deep 1.5)			0.98 ± 0.002 (25 ± 0.05)	0.55 (14)	1.34 (34)	0.47 (12)	0.59 (15)	0.59 (15)	Ø 0.16 - 0.001 (Ø4 - 0.03)	
M/160357/M/11	20	1.38 (35)	Ø0.83 + 0.002 deep 0.06 (Ø21 + 0.05 deep 1.5)			1.26 ± 0.002 (32 ± 0.05)	0.63 (16)	1.77 (45)	0.63 (16)	0.67 (17)	0.67 (18)	Ø 0.20 - 0.001 (Ø5 - 0.03)	
	Ø	S	T	U	V	W	X	Y	Z	AA	AB		
M/160355/M/11	10	0.49 (12.5)	0.06 (1.5)	1.87 (47.5)	0.43 (11)	0.67 (17)	0.28 ± 0.001 (7 ± 0.025)	1.14 (29)	0.24 (6)	M3 X 0.5	M3 X 0.5 deep 0.18 (4.5)		
M/160356/M/11	16	0.59 (15)	0.08 (2)	2.13 (54)	0.55 (14)	0.79 (20)	0.35 ± 0.001 (9 ± 0.025)	1.42 (36)	0.31 (8)	M5 X 0.8	M4 X 0.7 deep 0.20 (5)		
M/160357/M/11	20	0.79 (20)	0.12 (3)	2.52 (64)	0.67 (17)	1.06 (27)	0.47 ± 0.001 (12 ± 0.025)	1.69 (43)	0.31 (8)	M5 X 0.8	M4 X 0.7 deep 0.28 (7)		
	Ø	AC			AD	AE	AF	AG	AH	AI	AK		
M/160355/M/11	10	Ø 0.10 + 0.001 deep 0.10 (Ø2.5 + 0.02 deep 2.5)			M4 X 0.7 deep 0.24 (6)	Ø0.13 (Ø3.4)	M3 X 0.5 deep 0.16 (4)	0.94 (24)	0.3 (7.5)	0.67 (17)	1.18 (30)		
M/160356/M/11	16	Ø 0.12 + 0.001 deep 0.12 (Ø3 + 0.02 deep 3)			M4 X 0.7 deep 0.24 (6)	Ø0.13 (Ø3.4)	M4 X 0.7 deep 0.20 (5)	1.22 (31)	0.3 (7.5)	0.75 (19)	1.65 (42)		
M/160357/M/11	20	Ø 0.16 + 0.001 deep 0.14 (Ø4 + 0.02 deep 3.5)			M5 X 0.8 deep 0.31 (8)	Ø0.17 (Ø4.2)	M5 X 0.8 deep 0.28 (7)	1.46 (37)	0.3 (7.5)	0.83 (21)	2.13 (54)		
	Ø	AL		AM	AN	AO	Lb (kg)						
M/160355/M/11	10	M3 X 0.5 deep 0.20 (5)		M3 X 0.5 deep 0.24 (6)	0.63 (16)	M3 X 0.5 deep 0.20 (5)	0.18 (0.08)						
M/160356/M/11	16	M4 X 0.7 deep 0.24 (6)		M4 X 0.7 deep 0.28 (7)	0.83 (21)	M3 X 0.5 deep 0.20 (5)	0.35 (0.16)						
M/160357/M/11	20	M5 X 0.8 deep 0.31 (8)		M5 X 0.8 deep 0.35 (9)	1.07 (27.3)	M4 X 0.7 deep 0.24 (6)	0.73 (0.33)						

M/160350/M/12

Parallel grippers - precision, Double acting
Magnetic piston, Ø 8 ... 50 mm



Ideal for applications demanding accuracy and precise repeatability

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Ordering information

To order a gripper with an effective closing grip force of up to 5.84 lb (26N) at 72.5 psig (5 bar) quote: **M/160356/M/12**

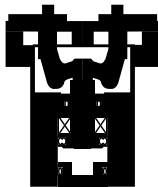
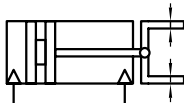
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-22



Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, parallel, magnetic piston

Operating pressure:

101.5 psig (7 bar) maximum – see page ACT-15-2 for minimum operating pressures

Operating temperature:

32°F to 140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Mounting:

Mounting holes on three faces

Gripping repeatability:

+/- 0.0004 inches (+/- 0.01 mm)

Accuracy to center:

+/- 0.003 inches (+/- 0.07 mm)

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

120 cycles per minute maximum

Materials

Body: aluminum alloy

Fingers: stainless steel

Guide rail: stainless steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

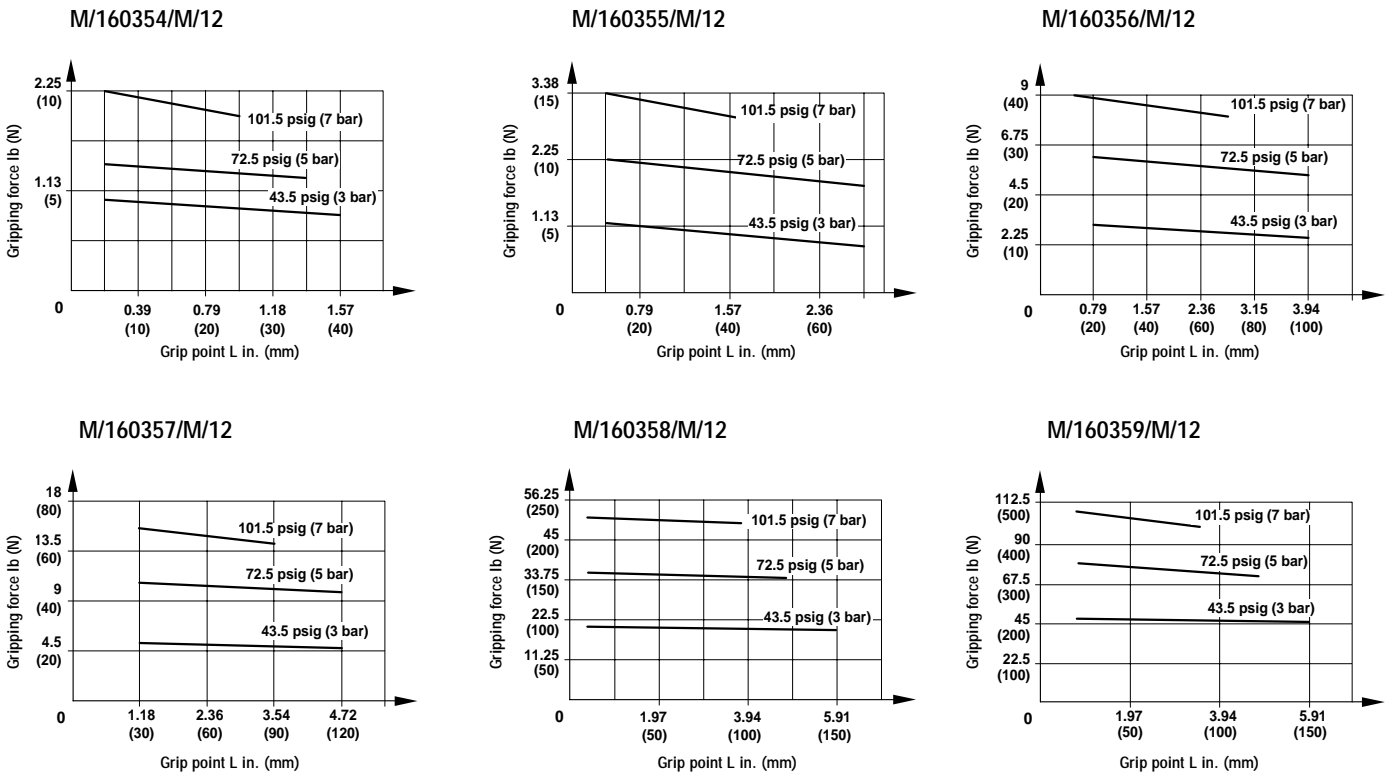


Standard models ● Effective gripping force ● Air consumption

Model	Effective gripping force lb (N) at 72.5 psig (5 bar) Opening	Effective gripping force lb (N) at 72.5 psig (5 bar) Closing	Minimum operating pressure in bar	Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
M/160354/M/12	2.23 (9.9)	1.31 (5.8)	31.9 (2.2)	0.009 (0.15)
M/160355/M/12	3.38 (15)	2.12 (9.4)	29 (2)	0.025 (0.41)
M/160356/M/12	8.78 (39)	5.85 (26)	17.4 (1.2)	0.096 (1.6)
M/160357/M/12	13.50 (60)	10.13 (45)	14.5 (1)	0.222 (3.7)
M/160358/M/12	39.60 (176)	35.33 (157)	14.5 (1)	0.984 (16.4)
M/160359/M/12	93.15 (414)	78.08 (347)	14.5 (1)	3.660 (61.0)

**per cycle

Theoretical closing gripping forces



Effective closing gripping forces = Theoretical closing gripping force x 0.85

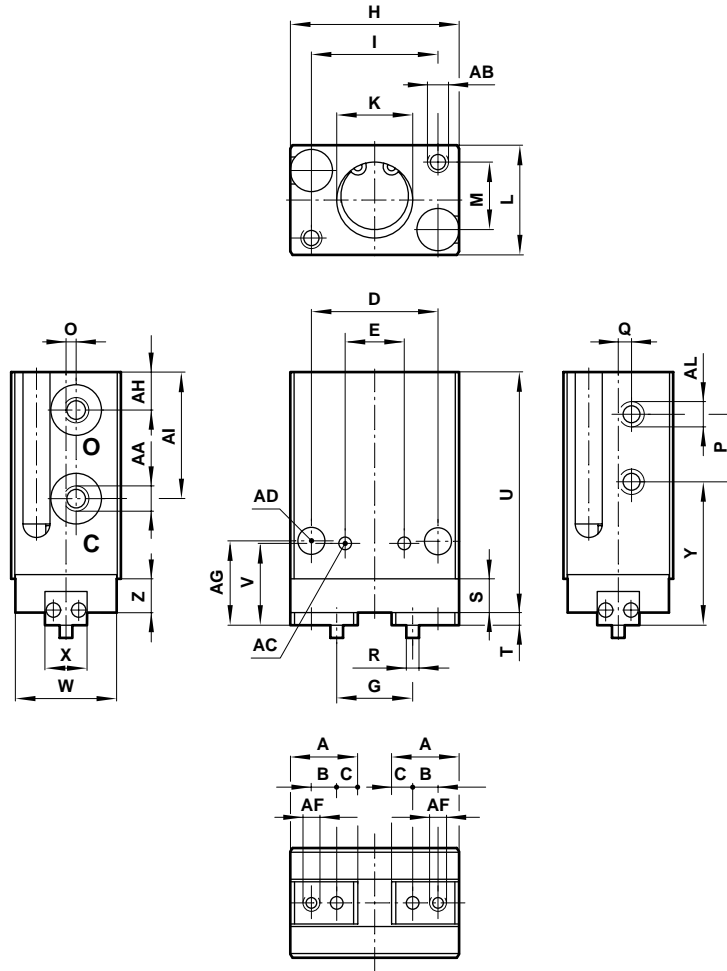
Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



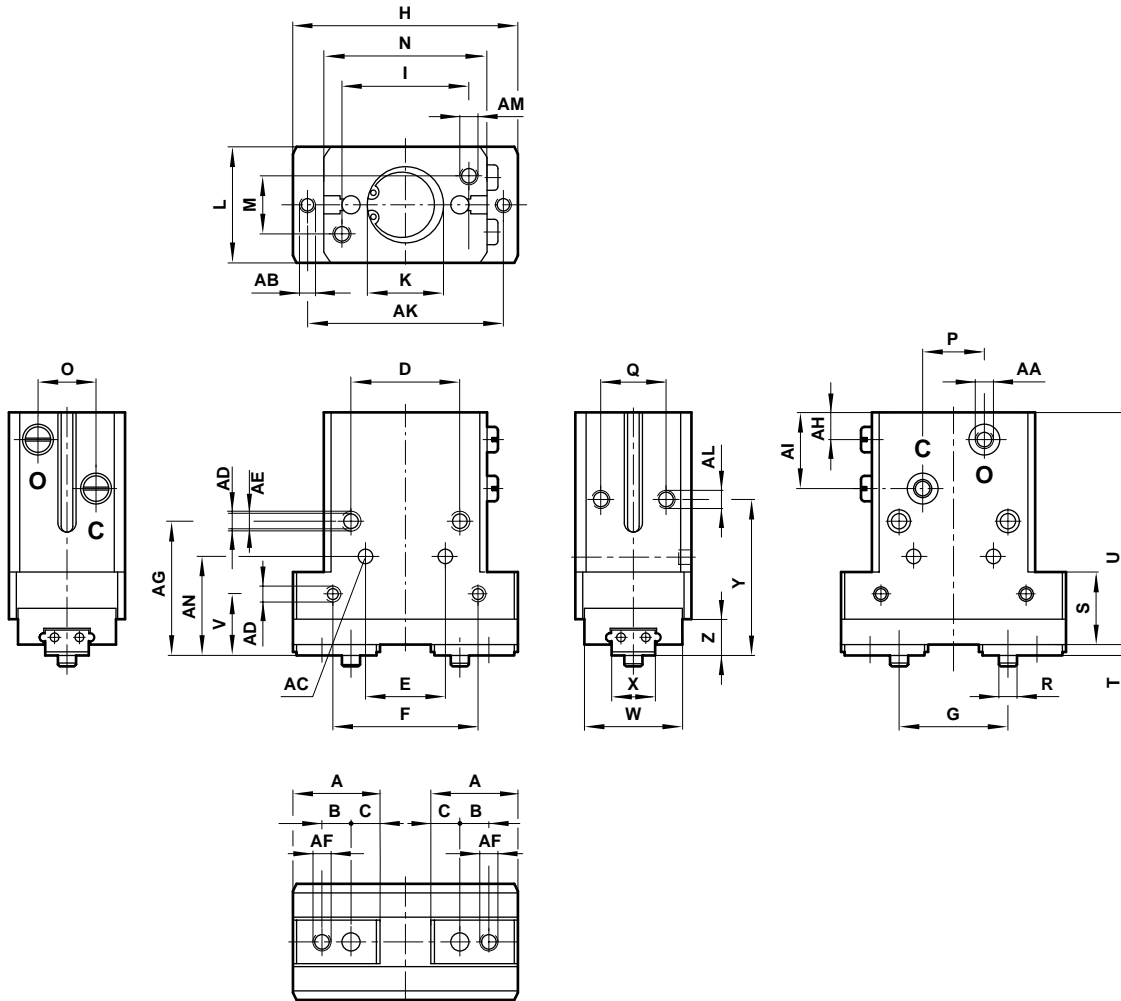
M/160354/M/12

Dimensions



M/160354/M/12	Ø	A	B	C	D	E	G				H	I
M/160354/M/12	8	0.31 (8)	0.12 (3)	0.10 (2.5)	0.59 (15)	0.28 ±0.001 (7 ± 0.03)	0.35 + 0.06 open, 0.20 + 0.02 closed (9 + 1.5 open, 5 + 0.5 closed)				0.79 (20)	0.59 (15)
M/160354/M/12	Ø	K				L	M	O	P	Q	R	S
M/160354/M/12	8	Ø 0.35 + 0.002 deep 0.04 (Ø9 + 0.05 deep 1)				0.51 ±0.002 (13 ± 0.05)	0.35 (9)	0.05 (1.2)	0.31 (8)	0.06 (1.5)	Ø 0.06 - 0.001 (Ø1.5 - 0.03)	0.16 (4)
M/160354/M/12	Ø	T	U	V	W	X	Y	Z	AA	AB		
M/160354/M/12	8	0.06 (1.5)	1.12 (28.5)	0.38 (9.7)	0.47 (12)	0.20 ±0.001 (5 ± 0.025)	0.67 (17)	0.16 (4)	M3 X 0.5	M2.5 X 0.45 deep 0.16 (4)		
M/160354/M/12	Ø	AC			AD	AF		AG	AH	AI	AL	lb (kg)
M/160354/M/12	8	Ø 0.06 + 0.001 deep 0.04 (Ø1.5 + 0.02 deep 1)			Ø 0.13 (Ø3.2)	M2 X 0.4 deep 0.14 (3.5)		0.39 (10)	0.18 (4.5)	0.59 (15)	M3 X 0.5 deep 0.12 (3)	0.04 (0.02)

Dimensions in inches (mm)

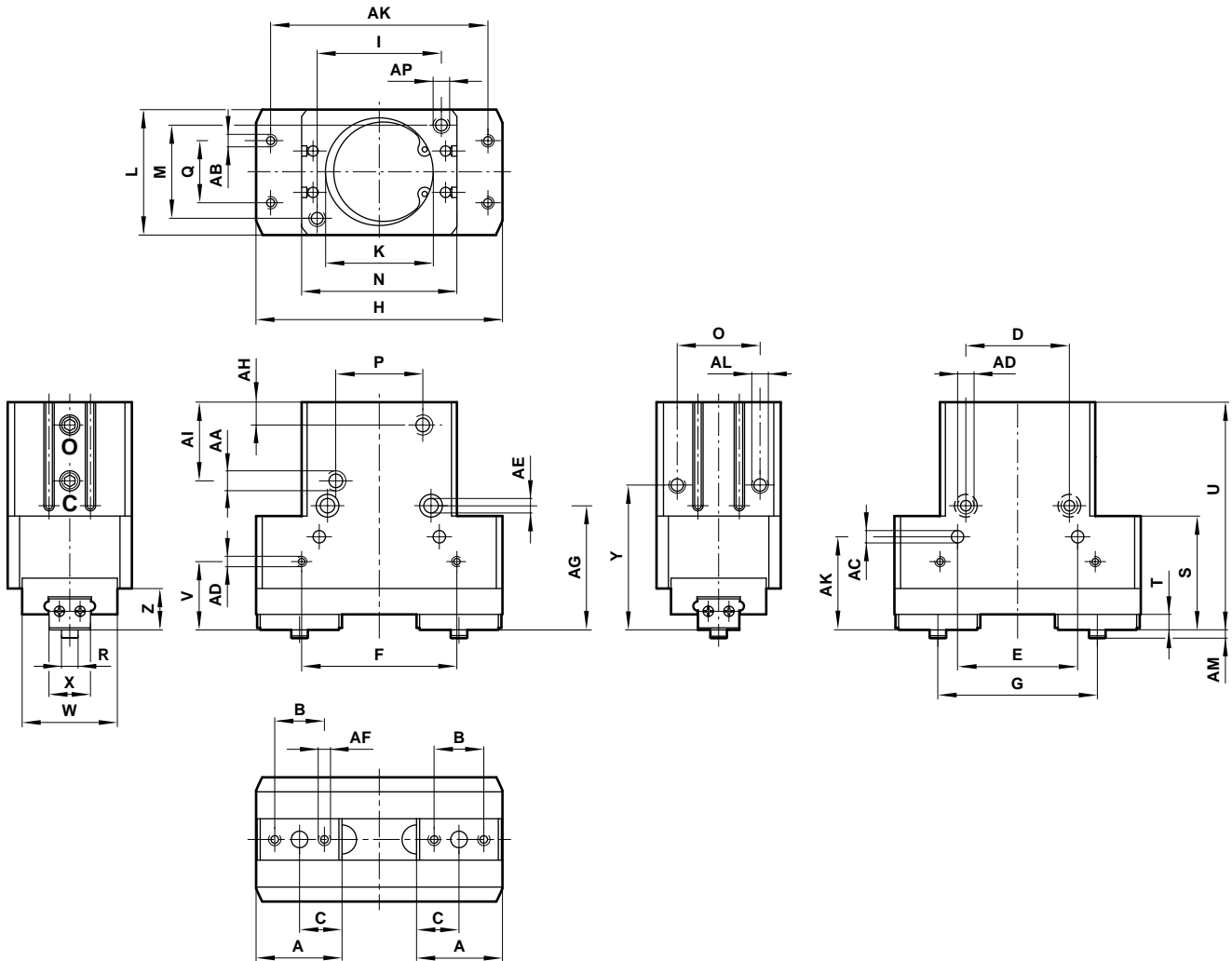


Ø	A	B	C	D	E	F	G					H
M/160355/M/12	10 0.58 (14.7)	0.20(5)	0.18 (4.5)	0.67 (17)	0.47 ± 0.001 (12 ± 0.03)	0.79 (20)	0.61 + 0.06 open, 0.35 + 0.02 closed (15.5 + 1.5 open, 9 + 0.5 closed)					1.42 (36)
M/160356/M/12	16 0.79 (20)	0.31 (8)	0.24 (6)	0.94 (24)	0.63 ± 0.001 (16 ± 0.03)	1.18 (30)	0.87 + 0.07 open, 0.47 + 0.05 closed (22 + 1.8 open, 12 + 1.3 closed)					1.97 (50)
M/160357/M/12	20 0.94 (24)	0.31 (8)	0.31 (8)	1.18 (30)	0.87 ± 0.001 (22 ± 0.03)	1.57 (40)	1.18 + 0.09/0.02 open, 0.63 + 0.06 closed (30 + 2.4/-0.5 open, 16 + 1.4 closed)					2.44 (62)
M/160358/M/12	32 1.22 (31)	0.55(14)	0.37 (9.5)	1.18 (30)	1.18 ± 0.001 (30 ± 0.03)	1.97 (50)	1.61 + 0.07 open, 0.75 + 0.05 closed (41 + 1.80 open, 19 + 1.30 closed)					3.35 (85)
Ø	I	K			L	M	N	O	P	Q	R	
M/160355/M/12	10 0.67 (17)	Ø 0.43 + 0.02 deep 0.06 (Ø11 + 0.05 deep 1.5)			0.79 ± 0.002 (20 ± 0.05)	0.39 (10)	0.91 (23)	0.35 (9)	0.28 (7)	0.47 (12)	Ø 0.12 - 0.001 (Ø 3 - 0.03)	
M/160356/M/12	16 1.02 (26)	Ø 0.67 + 0.02 deep 0.06 (Ø17 + 0.05 deep 1.5)			0.98 ± 0.002 (25 ± 0.05)	0.55 (14)	1.34 (34)	0.47 (12)	0.59 (15)	0.59 (15)	Ø 0.16 - 0.001 (Ø 4 - 0.03)	
M/160357/M/12	20 1.38 (35)	Ø 0.83 + 0.02 deep 0.06 (Ø21 + 0.05 deep 1.5)			1.26 ± 0.002 (32 ± 0.05)	0.63 (16)	1.77 (45)	0.63 (16)	0.67 (17)	0.71 (18)	Ø 0.20 - 0.001 (Ø 5 - 0.03)	
M/160358/M/12	32 1.57 (40)	Ø 1.34 + 0.02 deep 0.08 (Ø34 + 0.050 deep 2)			1.57 ± 0.002 (40 ± 0.05)	1.18 (30)	2.05 (52)	0.79 (20)	0.79 (20)	0.79 (20)	Ø 0.24 - 0.001 (Ø 6 - 0.03)	
Ø	S	T	U	V	W	X	Y	Z	AA	AB		
M/160355/M/12	10 0.49 (12.5)	0.06 (1.5)	1.87 (47.5)	0.43 (11)	0.67 (17)	0.28 ± 0.001 (7 ± 0.025)	1.14 (29)	0.24 (6)	M3 X 0.5	M3 X 0.5 deep 0.18 (4.5)		
M/160356/M/12	16 0.59 (15)	0.08 (2)	2.13 (54)	0.55 (14)	0.79 (20)	0.35 ± 0.001 (9 ± 0.025)	1.42 (36)	0.31 (8)	M5 X 0.8	M4 X 0.7 deep 0.20 (5)		
M/160357/M/12	20 0.79 (20)	0.12 (3)	2.52 (64)	0.67 (17)	1.06 (27)	0.47 ± 0.001 (12 ± 0.025)	1.69 (43)	0.31 (8)	M5 X 0.8	M4 X 0.7 deep 0.28 (7)		
M/160358/M/12	32 1.22 (31)	0.16 (4)	3.11 (79)	0.79 (20)	1.26 (32)	0.59 ± 0.001 (15 ± 0.025)	2.09 (53)	0.51 (13)	M5 x 0.8	M8 x 1 deep 0.35 (9)		
Ø	AC			AD		AE	AF	AG	AH	AI		
M/160355/M/12	Ø 0.10 + 0.001 deep 0.10 (Ø 2.5 + 0.02 deep 2.5)			M4 X 0.7 deep 0.24 (6)		Ø 0.13 (Ø 3.4)	M3 X 0.5 deep 0.16 (4)	0.94 (24)	0.30 (7.5)	0.67 (17)		
M/160356/M/12	Ø 0.12 + 0.001 deep 0.12 (Ø 3 + 0.02 deep 3)			M4 X 0.7 deep 0.24 (6)		Ø 0.13 (Ø 3.4)	M4 X 0.7 deep 0.20 (5)	1.22 (31)	0.30 (7.5)	0.75 (19)		
M/160357/M/12	Ø 0.16 + 0.001 deep 0.14 (Ø 4 + 0.02 deep 3.5)			M5 X 0.8 deep 0.31 (8)		Ø 0.17 (Ø 4.2)	M5 X 0.8 deep 0.28 (7)	1.46 (37)	0.30 (7.5)	0.83 (21)		
M/160358/M/12	Ø 0.2 + 0.001 deep 0.16 (Ø 5 + 0.03 deep 4)			M6 x 1 deep 0.35 (9)		Ø 0.2 (Ø 5.2)	M6 x 1 deep 0.35 (9)	1.81 (46)	0.35 (9)	1.12 (28.5)		
Ø	AK	AL	AM	AN	AO	lb (kg)						
M/160355/M/12	10 1.18 (30)	M3 X 0.5 deep 0.20 (5)	M3 X 0.5 deep 0.24 (6)	0.63 (16)	M3 X 0.5 deep 0.20 (5)	0.18 (0.08)						
M/160356/M/12	16 1.65 (42)	M4 X 0.7 deep 0.24 (6)	M4 X 0.7 deep 0.28 (7)	0.83 (21)	M3 X 0.5 deep 0.20 (5)	0.35 (0.16)						
M/160357/M/12	20 2.13 (54)	M5 X 0.8 deep 0.31 (8)	M5 X 0.8 deep 0.35 (9)	1.07 (27.3)	M4 X 0.7 deep 0.24 (6)	0.73 (0.33)						
M/160358/M/12	32 2.76 (70)	M6 x 1 deep 0.31 (8)	M6 x 1 deep 0.35 (9)	1.22 (31)	M5 x 0.8 deep 0.31 (8)	1.46 (0.66)						

Dimensions in inches (mm)



M/160359/M/12



	Ø	A	B	C	D	E	F	G					
M/160359/M/12	50	1.61 (41)	0.94 (24)	0.81 (20.5)	1.97 (50)	2.28 ± 0.001 (58 ± 0.03)	2.95 (75)	3.03 + 0.07/-0.01 open, 1.61 + 0.02 closed (77 + 1.8/-0.2 open, 41 + 0.4 closed)					
	Ø	H	I	K			L	M	N	O	P	Q	
M/160359/M/12	50	4.69 (119)	2.36 (60)	Ø 2.05 + 0.002 deep 0.12 (Ø52 + 0.05 deep 3)			2.36 ± 0.002 (60 ± 0.05)	1.77 (45)	2.95 (5)	1.57 (40)	1.65 (2)	1.18 (30)	
	Ø	R		S	T	U	V	W	X	Y	Z	AA	AB
M/160359/M/12	50	Ø 0.31 - 0.001 (Ø8 - 0.02)		2.17 (55)	0.30 (7.5)	4.33 (110)	1.30 (33)	1.81 (46)	0.79 - 0.001 (20 - 0.025)	2.76 (70)	0.79 (20)	Rc1/8	M6 X 1 deep 0.47 (12)
	Ø	AC			AD		AE		AF		AG	AH	AI
M/160359/M/12	50	Ø 0.24 + 0.001 deep 0.28 (Ø6 + 0.03 deep 7)			M8 X 1.25 deep 0.47 (12)		Ø 0.43 deep 0.26 (Ø11 deep 6.5)		M6 X 1 deep 0.47 (12)		2.36 (60)	0.43 (11)	1.50 (38)
	Ø	AK	AL		AM	AN	AO	AP		lb (kg)			
M/160359/M/12	50	4.13 (105)	M8 X 1.25 deep 0.47 (12)		0.16 (4)	1.77 (45)	M5 X 0.8 deep 0.32 (8)	M8 X 1.25 deep 0.59 (15)		4.08 (1.85)			

Dimensions in inches (mm)

**Ideal for applications where operating space
is restricted**

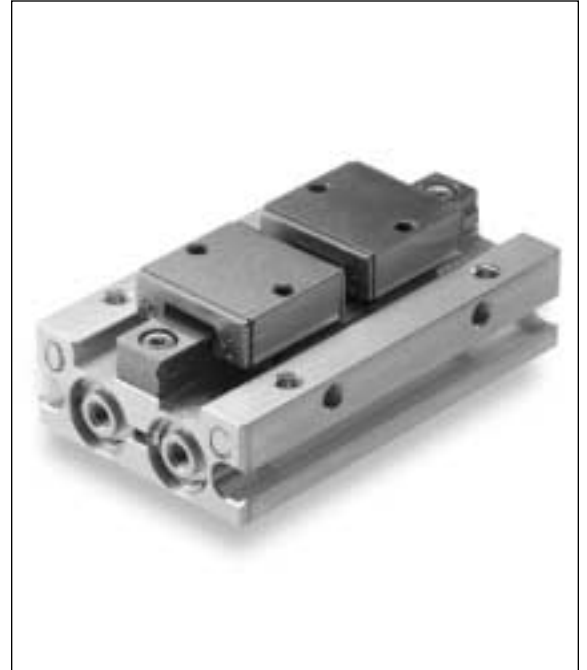
Smooth, accurate movement

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:

M/160364/M/12: 29 to 101.5 psig (2 to 7 bar)

M/160365/M/12: 21.75 to 101.5 psig (1.5 to 7 bar)

Operating temperature:

32°F to 140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Mounting:

Mounting holes on three faces

Gripping repeatability:

+/- 0.003 inches (+/- 0.07mm)

Accuracy to center:

+/- 0.004 inches (+/- 0.1mm)

Materials

Body: aluminum alloy

Fingers: carbon steel

Bearings: stainless steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

Ordering information

To order a gripper with an effective closing grip force of up to 3.75 lb at 72.5 psig (16.7N at 5 bar) quote: **M/160364/M/12**

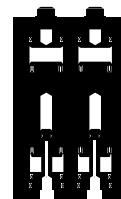
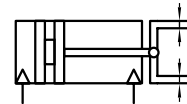
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-27



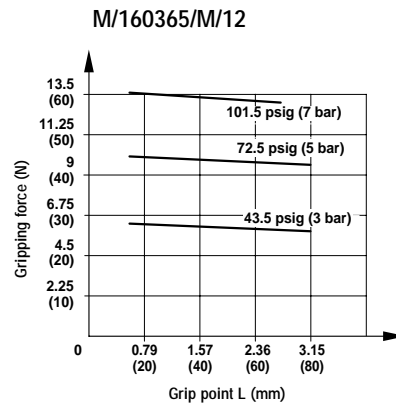
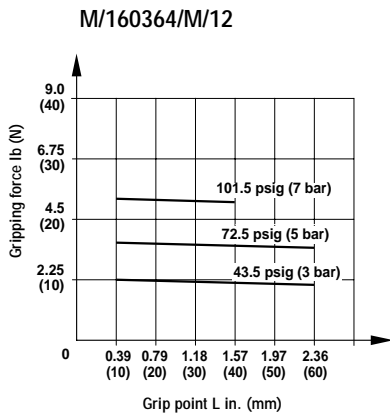


Standard models ● Effective gripping force ● Air consumption

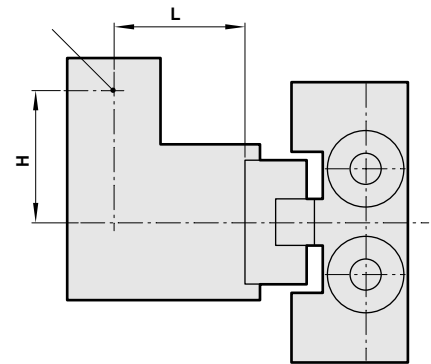
Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160364/M/12	3.76 (16.7)	3.76 (16.7)	0.084 (1.4)
M/160365/M/12	9.90 (44)	9.90 (44)	0.258 (4.3)

**per cycle

Theoretical gripping forces



Workpiece grip point

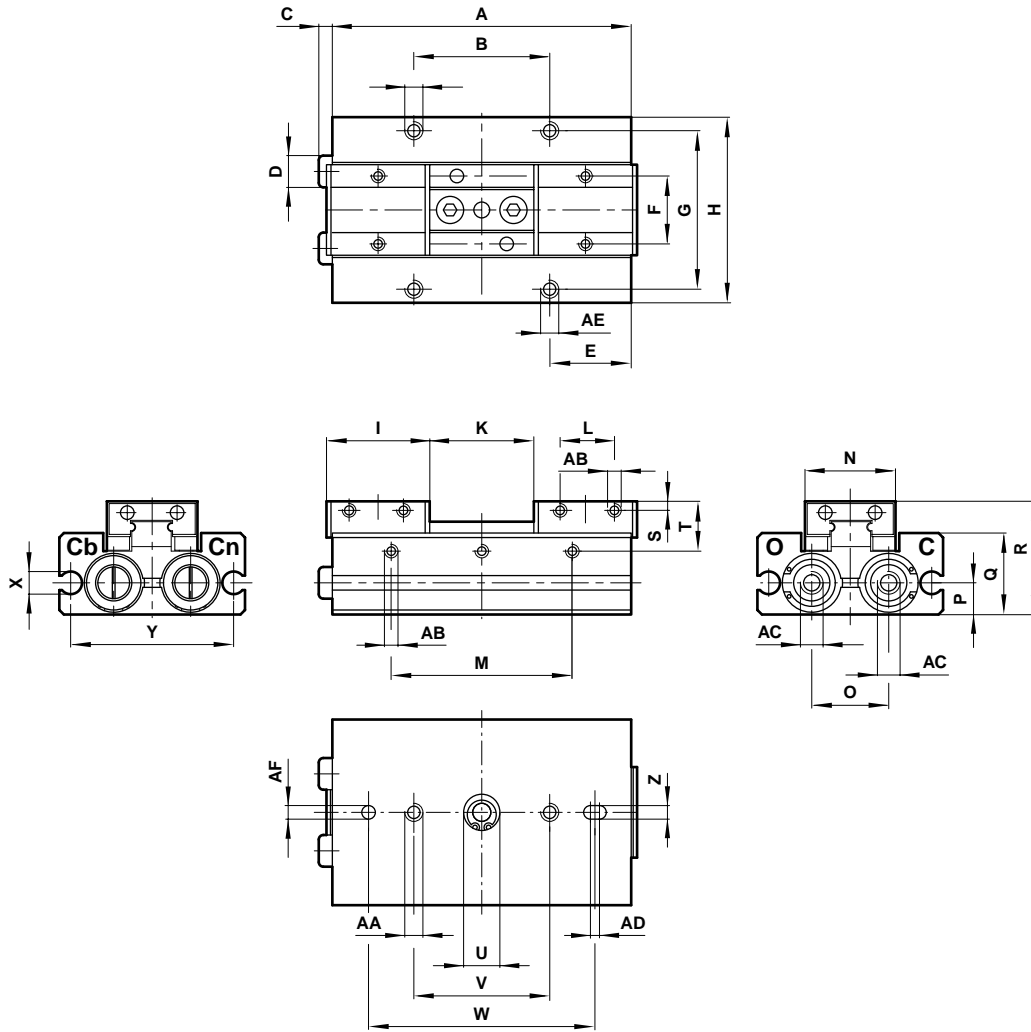


Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Dimensions



	Ø	A	B	C	D	E	F	G	H	I		
M/160364/M/12	8	2.05 (52)	1.26 (32)	0.10 (2.5)	Ø 0.20 (Ø 5)	0.32 (8.1)	0.51 (13)	1.02 (26)	1.26 (32)	0.64 (16.2)		
M/160365/M/12	12	2.60 (66)	1.18 (30)	0.12 (3)	Ø 0.28 (Ø 7)	0.45 (11.4)	0.59 (15)	1.38 (35)	1.61 (41)	0.90 (22.8)		
	Ø	K						L	M	N	O	P
M/160364/M/12	8	0.67 +0.07/-0.02 open, 0.04 +0.03/-0.04 closed (17 +1.7/-0.5 open, 1 +0.7/-1.0 closed)						0.39 (10)	0.94 (24)	0.67 (17)	0.47 (12)	0.20 (5)
M/160365/M/12	12	0.91 +0.07/-0.02 open, 0.04 +0.04/-0.04 closed (23 +1.9/-0.5 open, 1 +0.9/-1.0 closed)						0.47 (12)	1.57 (40)	0.79 (20)	0.67 (17)	0.28 (7)
	Ø	Q	R	S	T	U		V	W	X	Y	
M/160364/M/12	8	0.51 (13)	0.75 (19)	0.08 (2)	0.33 (8.5)	Ø 0.31 +0.002 deep 0.04 (Ø 8 + 0.05 deep 1)		0.94 (24)	1.57 (40)	Ø 0.20 (Ø 5)	1.06 (27)	
M/160365/M/12	12	0.71 (18)	0.98 (25)	0.08 (2)	0.43 (11)	Ø 0.31 +0.002 deep 0.04 (Ø 8 + 0.05 deep 1)		1.18 (30)	1.97 (50)	Ø 0.20 (Ø 5)	1.42 (36)	
	Ø	Z			AA	AB	AC	AD	AE		lb (kg)	
M/160364/M/12	8	0.10 +0.001 deep 0.10 (2.5 + 0.03 deep 2.5)			M3 X 0.5 deep 0.20 (5)	M2.5 X 0.45 deep 0.12 (3)	M3 X 0.5	0.08 (2)	M3 X 0.5 deep 0.20 (5)		0.20 (0.09)	
M/160365/M/12	12	0.12 +0.001 deep 0.12 (3 + 0.03 deep 3)			M4 X 0.7 deep 0.31 (8)	M3 X 0.5 deep 0.20 (5)	M5 X 0.8	0.08 (2)	M4 X 0.7 deep 0.24 (6)		0.44 (0.20)	

Dimensions in inches (mm)

M/160380/M/12

Parallel grippers - three jaw, Double acting
Magnetic piston, Ø 16 ... 20 mm



Ideal for gripping spheres or components with circular faces

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Ordering information

To order a gripper with an effective closing grip force of up to 4.49 lb (20N) at 72.5 psig (5 bar) quote: **M/160385/M/12**

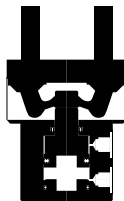
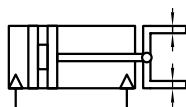
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-30



Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, three jaw parallel, magnetic piston

Operating pressure:

29 to 101.5 psig (2 to 7 bar)

21.75 to 101.5 psig (1.5 to 7 bar) M/160386/M/12

Operating temperature:

32°F to 140°F (+0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Mounting:

Mounting holes on base

Gripping repeatability:

+/- 0.004 inches (+/- 0.01 mm)

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

200 cycles per minute maximum

Materials

Body: aluminum alloy

Top plate: carbon steel

Fingers: carbon steel

External screws: carbon steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

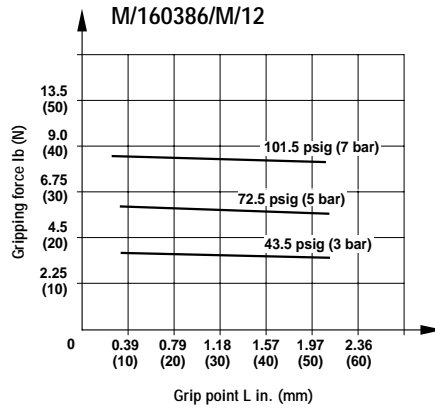
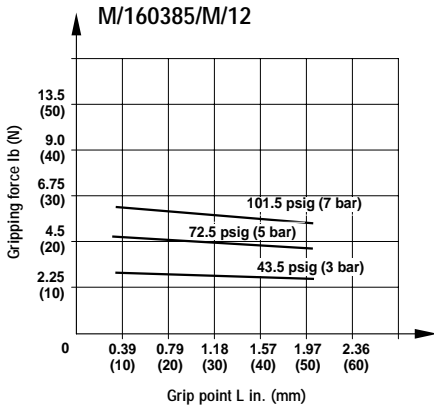


Standard models ● Effective gripping force ● Air consumption

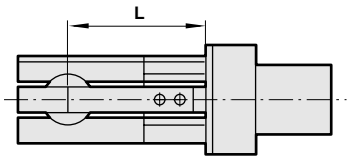
Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160385/M/12	6.08 (27)	4.50 (20)	0.08 (1.4)
M/160386/M/12	8.10 (36)	6.08 (27)	0.20 (3.3)

**per cycle

Theoretical closing gripping forces



Workpiece grip point



Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.

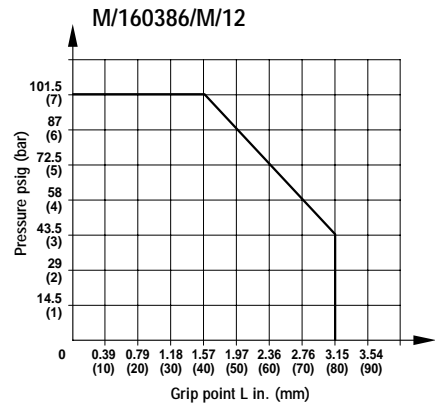
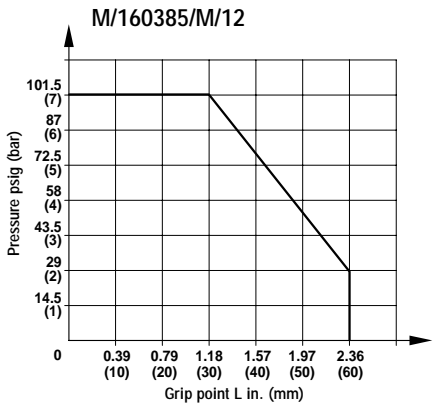
When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value.

(Reference value is 1/30-1/50)

Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)

Effective closing gripping forces = Theoretical closing gripping force x 0.85

Grip point limitation range

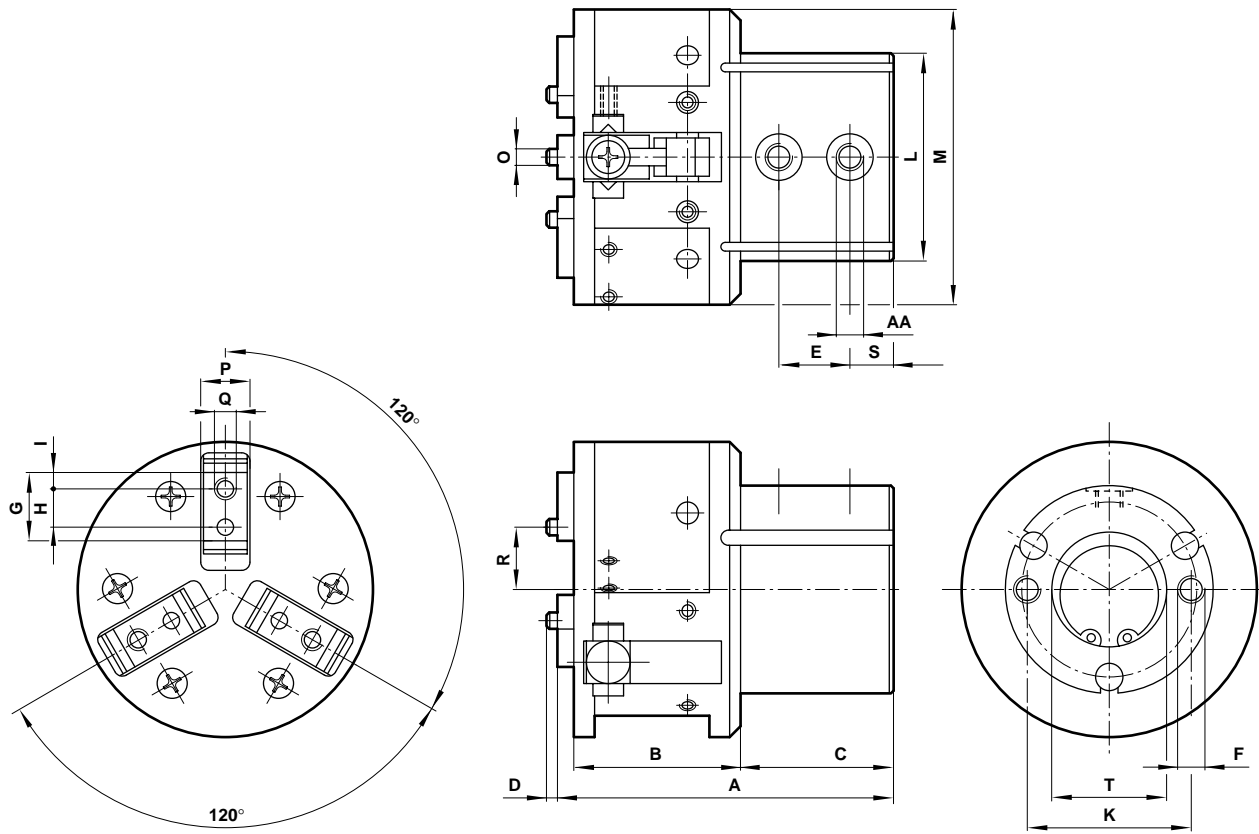


Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140° (0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140° (0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Dimensions



	Ø	A	B	C	D	E	F	G	H	I
M/160385/M/12	16	2.09 (53.0)	0.91 (23)	1.06 (27)	0.08 (2)	0.49 (12.5)	M4 X 0.7 deep 0.28 (7)	0.39 (10)	0.20 (5)	0.10 (2.5)
M/160386/M/12	20	2.42 (61.5)	1.20 (30.5)	1.10 (28)	0.08 (2)	0.51 (13.0)	M5 X 0.8 deep 0.31 (8)	0.49 (12.5)	0.28 (7)	0.12 (3)
	Ø	K	L	M	O		P		Q	
M/160385/M/12	16	0.94 (24)	Ø 1.26 (Ø 32)	Ø 1.65 (Ø 42)	Ø 0.12 -0.0002 (Ø3 - 0.005)		0.28 -0.0012 (7 - 0.03)		M3 X 0.5	
M/160386/M/12	20	1.18 (30)	Ø 1.50 (Ø 38)	Ø 2.13 (Ø 54)	Ø 0.12 -0.0002 (Ø3 - 0.005)		0.31 -0.0016 (8 - 0.04)		M4 X 0.7	
	Ø	R				S	T		AA	lb (kg)
M/160385/M/12	16	0.37 + 0.04/-0.02 open, 0.22 + 0.04/-0.02 closed (9.5 + 0.9/-0.4 open 5.5 + 0.9/-0.4 closed)				0.30 (7.5)	Ø 0.67 + 0.002 deep 0.059 (Ø17 + 0.05 deep 1.5)		M5 X 0.8	0.32 (0.16)
M/160386/M/12	20	0.51 + 0.06/-0.02 open, 0.28 + 0.05/-0.02 closed (13 + 1.6/-0.4 open 7 + 1.2/-0.4 closed)				0.31 (8)	Ø 0.83 + 0.002 deep 0.029 (Ø21 + 0.05 deep 1.5)		M5 X 0.8	0.56 (0.28)

Ideal for handling wide components

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size



Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operating pressure:

29 to 101.5 psig (2 to 7 bar)

Operating temperature:

32°F to 140°F (0°C to 60°C)

* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (+2°C)

Mounting:

Mounting holes on two faces

Materials

Body: aluminum alloy

Piston rods: stainless steel

External nuts: carbon steel

Elastomers: nitrile

Barb fittings connections

M3 x 1/8" tube ID, straight barb, part number **29217X303**

M5 x 1/8" tube ID, straight barb, part number **29217X305**

Ordering information

To order a gripper with an effective closing grip force of up to 12.36 lb (55 N) at 72.5 psig (5 bar) quote: **M/160395/M/12**

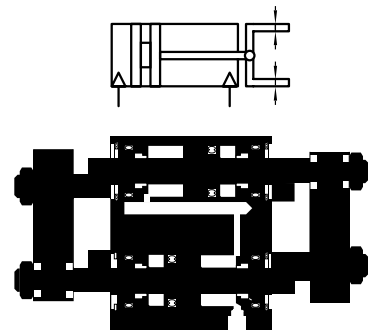
Order magnetically operated switches separately

Accessories

Switch M/344

See page

ACT-15-33



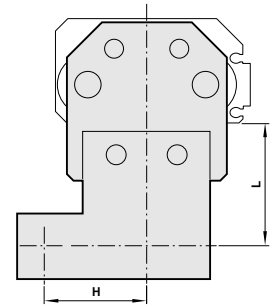
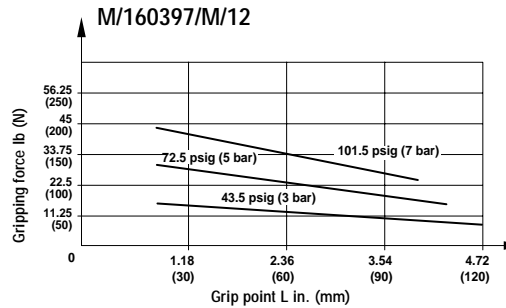
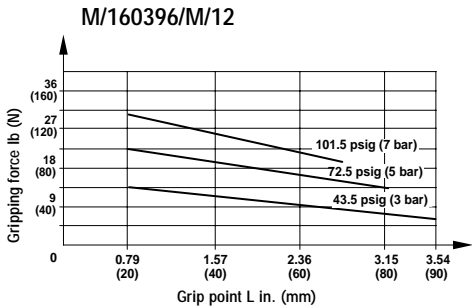
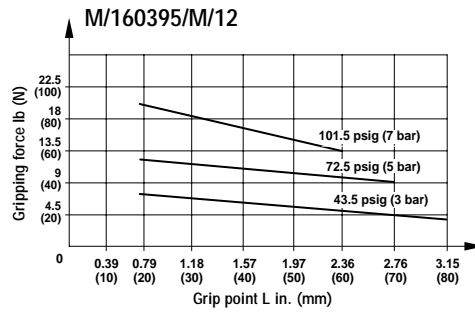
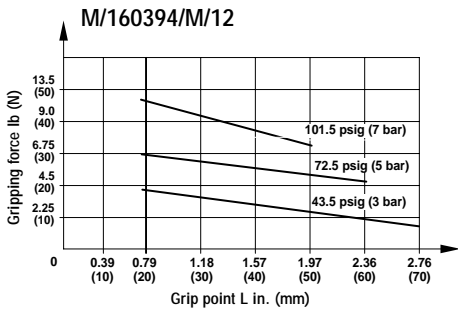


Standard models ● Effective gripping force ● Air consumption

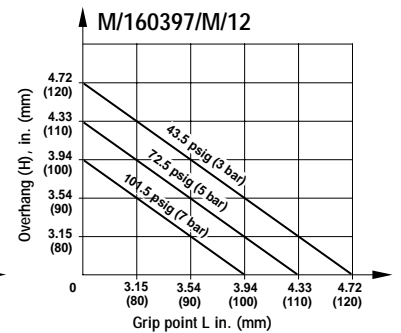
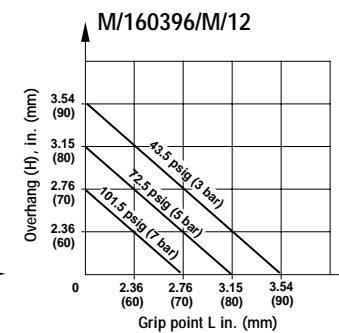
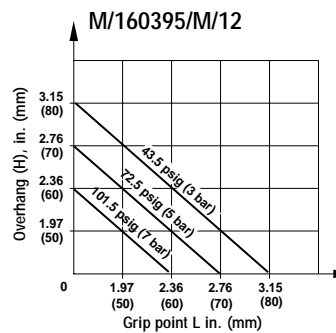
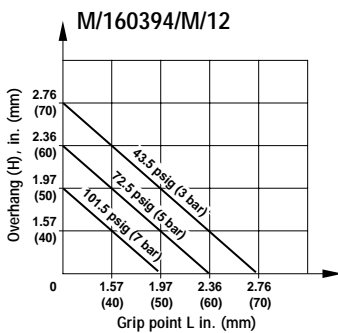
Model	Effective gripping force lb (N) at 72.5 psig (5 bar)		Air consumption in ³ (cm ³) at 72.5 psig (5 bar)**
	Opening	Closing	
M/160394/M/12	6.08 (27)	6.08 (27)	0.24 (4)
M/160395/M/12	12.36 (55)	12.36 (55)	0.57 (9.5)
M/160396/M/12	19.13 (85)	19.13 (85)	1.13 (18.8)
M/160397/M/12	30.38 (135)	30.38 (135)	2.28 (38)

**per cycle

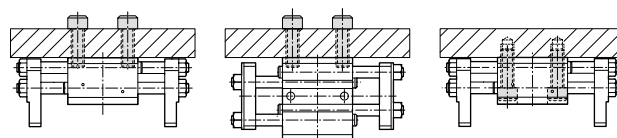
Effective gripping forces



Grip point limitation range



Mounting examples

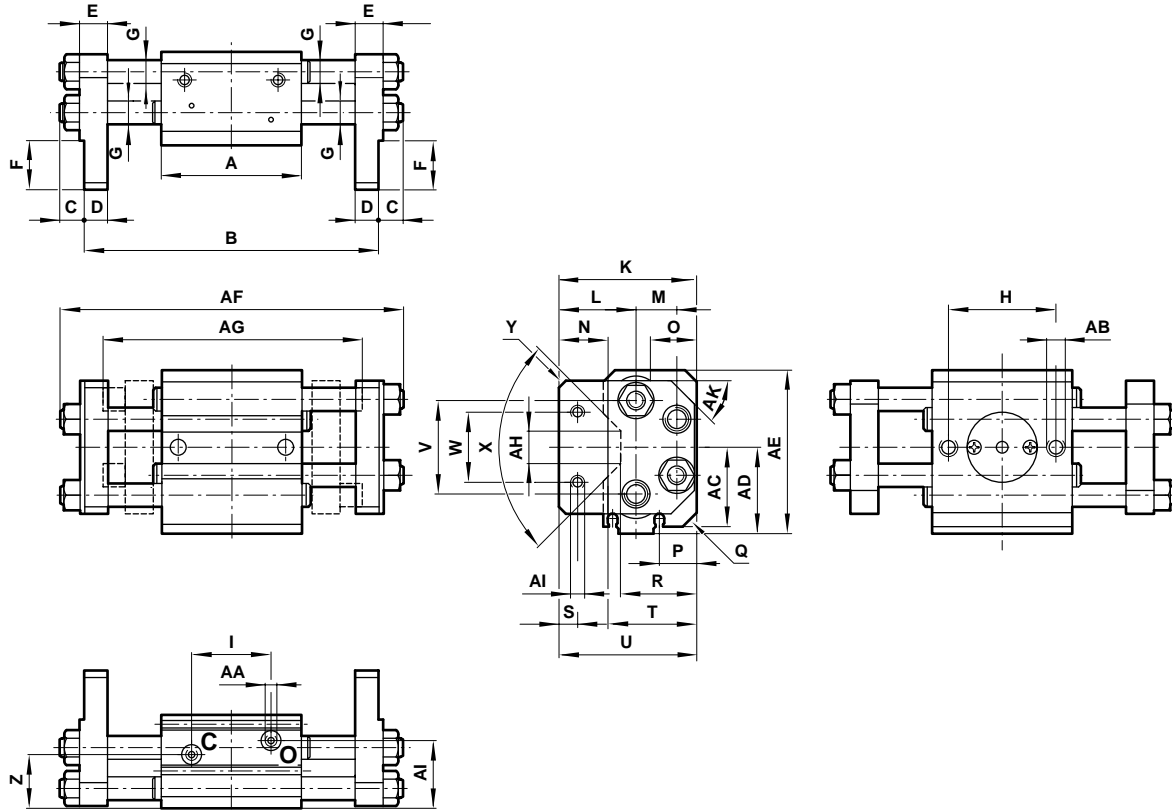


Switches with LED indication

Model	Voltage V d.c.	Current max.	Temperature °F	Temperature °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV	10 ... 28	20 mA	32° ... 140°	(0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	-	•
M/344/EAU/1PV	10 ... 28	20 mA	32° ... 140°	(0° ... 60°)	•	-	3.28 ft. (1 m)	PVC	•	-
M/344/EAU/3APV	10 ... 28	20 mA	32° ... 140°	(0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	-	•
M/344/EAU/3PV	10 ... 28	20 mA	32° ... 140°	(0° ... 60°)	•	-	9.84 ft. (3 m)	PVC	•	-
M/344/EAN/1APV	4.5 ... 28	50 mA	32° ... 140°	(0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	-	•
M/344/EAN/1PV	4.5 ... 28	50 mA	32° ... 140°	(0° ... 60°)	•	NPN	3.28 ft. (1 m)	PVC	•	-
M/344/EAN/3APV	4.5 ... 28	50 mA	32° ... 140°	(0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	-	•
M/344/EAN/3PV	4.5 ... 28	50 mA	32° ... 140°	(0° ... 60°)	•	NPN	9.84 ft. (3 m)	PVC	•	-



Dimensions



	Ø	A	C	D	E	F	G	H	I	K				
M/160394/M/12	12	1.73 (44)	0.26 (6.5)	0.24 (6)	0.31 (8)	0.47 (12)	Ø 0.24 (Ø 6)	1.34 (34)	0.83 (21)	1.52 (38.5)				
M/160395/M/12	16	1.97 (50)	0.31 (8)	0.31 (8)	0.39 (10)	0.53 (13.5)	Ø 0.31 (Ø 8)	1.50 (38)	1.10 (28)	1.71 (43.5)				
M/160396/M/12	20	2.36 (60)	0.41 (10.5)	0.39 (10)	0.47 (12)	0.83 (21)	Ø 0.39 (Ø 10)	1.81 (46)	1.34 (34)	2.28 (58)				
M/160397/M/12	25	2.60 (66)	0.43 (11)	0.47 (12)	0.55 (14)	1.02 (26)	Ø 0.39 & Ø 0.47 (Ø 10 & Ø 12)	2.05 (52)	1.54 (39)	2.66 (67.5)				
	Ø	L	M	O	P	Q	R	S	T	U	V			
M/160394/M/12	12	0.83 (21)	0.45 (11.5)	0.59 (15)	0.37 (9.5)	0.14 (3.5)	0.94 (24)	0.16 (4)	1.06 (27)	1.54 (39)	1.14 (29)			
M/160395/M/12	16	0.93 (23.5)	0.55 (14.0)	0.59 (15)	0.43 (11)	0.14 (3.5)	1.06 (27)	0.20 (5)	1.26 (32)	1.77 (45)	1.34 (34)			
M/160396/M/12	20	1.30 (33)	0.69 (17.5)	- (-)	0.63 (16)	0.39 (10)	1.28 (32.5)	0.31 (8)	1.57 (40)	2.32 (59)	1.57 (40)			
M/160397/M/12	25	1.61 (41)	0.73 (18.5)	- (-)	0.65 (16.5)	0.39 (10)	1.40 (35.5)	0.39 (10)	1.73 (44)	2.72 (69)	1.93 (49)			
	Ø	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AI	AK
M/160394/M/12	12	0.79 (20)	90°	0.04 (1)	0.63 (16)	M5 X 0.8	M5 X 0.8	0.89 (22.7)	1.06 (27)	1.97 (50)	3.90 (99)	2.99 (76)	M4 X 0.7	30°
M/160395/M/12	16	0.79 (20)	90°	0.04 (1)	0.77 (19.5)	M5 X 0.8	M6 X 1	1.08 (27.5)	1.28 (32.5)	2.36 (60)	4.84 (123)	3.66 (93)	M5 X 0.8	30°
M/160396/M/12	20	1.18 (30)	90°	0.12 (3)	0.91 (23)	M5 X 0.8	M8 X 1.25	1.34 (34)	1.46 (37)	2.76 (70)	5.79 (147)	4.41 (112)	M6 X 1	45°
M/160397/M/12	25	1.18 (30)	90°	0.12 (3)	0.98 (25)	M5 X 0.8	M10 X 1.5	1.59 (40.5)	1.73 (44)	3.31 (84)	6.65 (169)	4.88 (124)	M8 X 1.25	45°
	Ø	B									lb (kg)			
M/160394/M/12	12	3.32 + 0.055/-0.039 open, 2.36 + 0.039/-0.035 closed (84.4 + 1.4/-1.0 open, 60 + 1.0/-0.9 closed)									0.51 (0.23)			
M/160395/M/12	16	4.03 + 0.055/-0.039 open, 2.76 + 0.039/-0.071 closed (102.4 + 1.4/-1.0 open, 70 + 1.0/-1.8 closed)									0.88 (0.40)			
M/160396/M/12	20	4.90 + 0.059/-0.043 open, 3.31 + 0.043/-0.075 closed (124.4 + 1.5/-1.1 open, 84 + 1.1/-1.9 closed)									1.68 (0.76)			
M/160397/M/12	25	5.71 + 0.059/-0.043 open, 3.72 + 0.043/-0.075 closed (145 + 1.5/-1.1 open, 94.6 + 1.1/-1.9 closed)									2.43 (1.10)			

Dimensions in inches (mm)