

## ID expansion grippers series MFD/MFU

- New concept for innovative air hands.
- Downward movement (MFD), or upward movement (MFU).
- The elastic part can be in Silicone or EPDM.
- Grip diameters from 8 to 85 mm.
- Optional nose cones for centering.
- Optional proximity magnetic sensors.
- Several mounting accessories.



**M F D 1 6 E 0 2 C L**

### Actuation direction

- D - Downward
- U - Upward

### Base diameter

### Air feeding

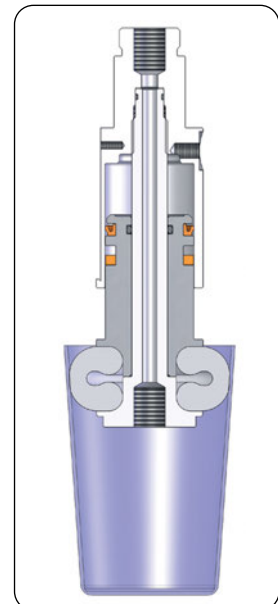
- C - With coaxial air fitting
- H - With side air fitting and through hole

### Elastic part

- S01 in white Silicone
- E02 in black EPDM


### Through hole

The ...HL models have a central through hole. It can be used to blow compressed air, or to provide vacuum, with the purpose to cool a part, or to check the sealing.



**Silicone or EPDM?**

The elastic part can be in white silicone or black EPDM. Silicone can be used over a wider temperature range and assures a longer life time, but it is not suitable in some industries, because it makes it difficult to paint or to coat the parts that are touched. EPDM is mark-free and provides a higher coefficient of friction. The elastic part in Silicone or EPDM is available as a spare part and can be replaced, when worn out. The expected medium life time of the elastic part in EPDM is about 0.5 million cycles. The expected medium life time of the elastic part in Silicone is about 1 million cycles.

Spare elastic part	T	MFD / MFU													
		Ø8	Ø10	Ø12	Ø14	Ø16	Ø18	Ø20	Ø22	Ø27	Ø33	Ø41	Ø47	Ø51	Ø63
 Silicone	-70°C +200°C	IF08S01	IF10S01	IF12S01U	IF14S01U	IF16S01U	IF18S01	IF20S01	IF22S01	IF27S01	IF33S01	IF41S01	IF47S01	IF51S01	IF63S01
	-50°C +140°C	IF08E02	IF10E02	IF12E02U	IF14E02U	IF16E02U	IF18E02	IF20E02	IF22E02	IF27E02	IF33E02	IF41E02	IF47E02	IF51E02	IF63E02

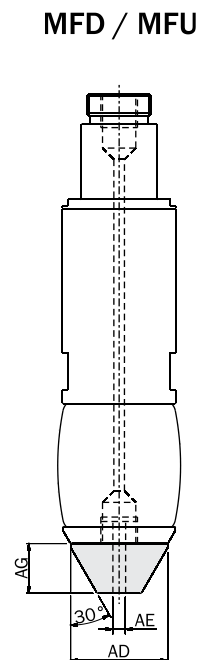
T - Temperatura d'esercizio della parte elastica (5÷60°C per il corpo pinza)

**Centering cones**

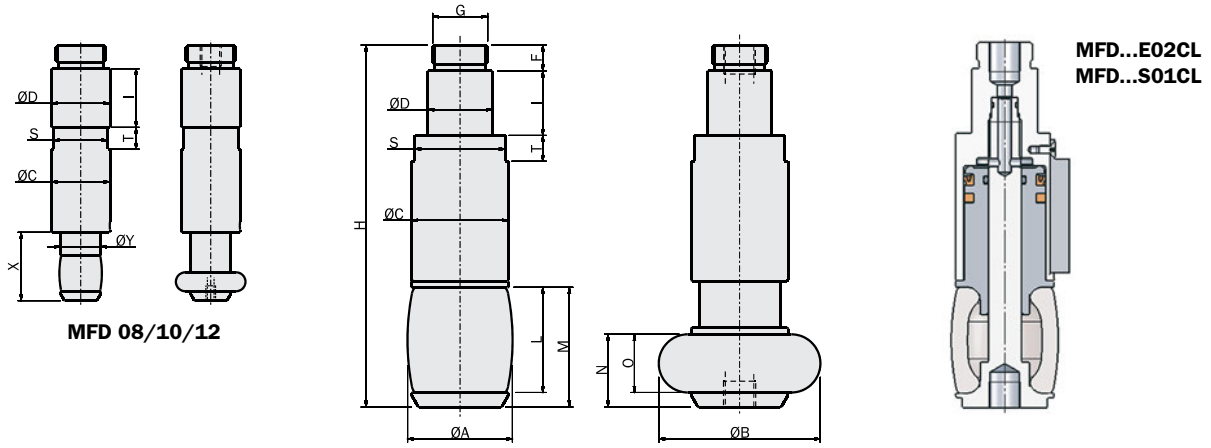
Centering cones in nylon with the stainless screw, are available as an option. For the sizes larger than 33, they are also provided with a through hole.



	MFC10	MFC12	MFC14	MFC18	MFC22	MFC27	MFC33	MFC41	MFC51	MFC63
Weight	0.5 g	1 g	1 g	1.5 g	2 g	5 g	7 g	12 g	21 g	30 g
ØAD [mm]	7.8	10	11.8	15.5	18.8	21.3	28	37	47	56
ØAE [mm]	-	-	-	-	-	-	4	4	4	4
ØAG [mm]	2.9	3.5	4.5	6.5	8	9.5	12	19	26	30
MFD	Ø10	Ø12	Ø14	Ø18	Ø22	Ø27	Ø33	Ø41	Ø51	Ø63
MFU			Ø16	Ø20				Ø47		

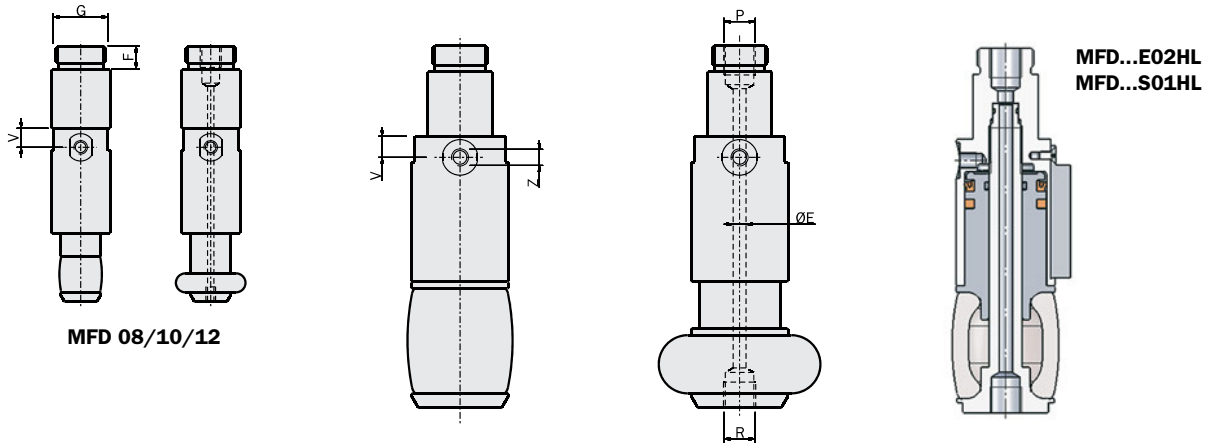


## Dimensions (mm)



MFD 08/10/12

MFD...E02CL  
MFD...S01CL



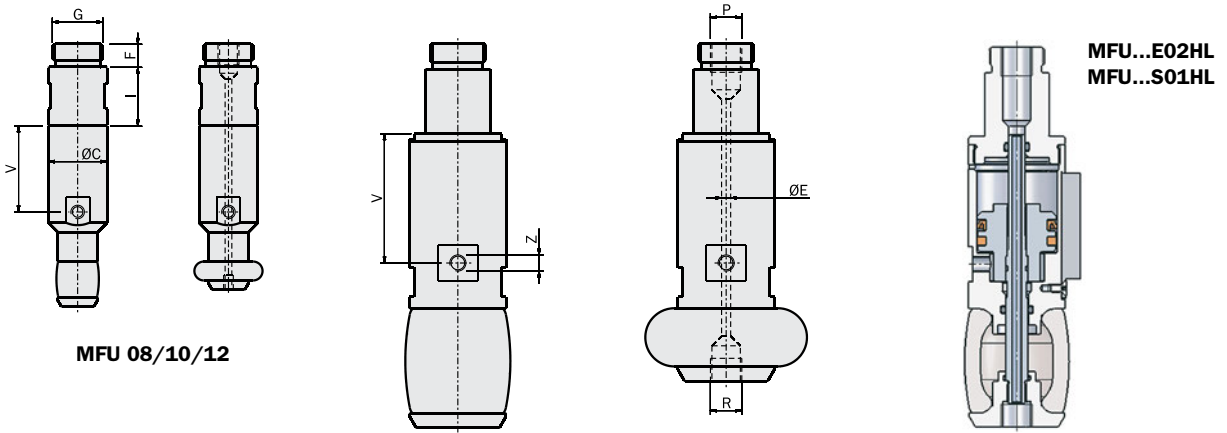
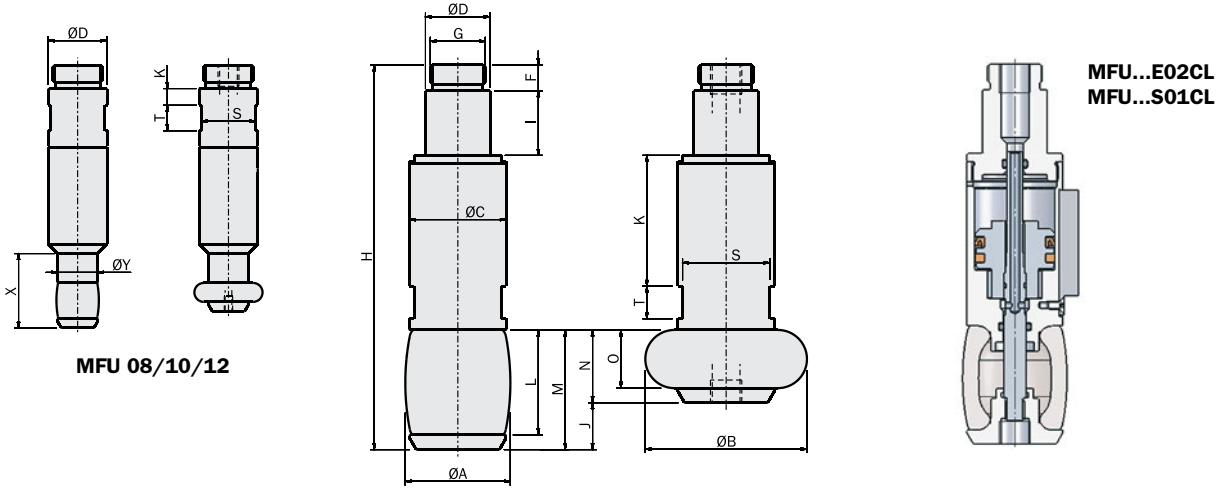
MFD 08/10/12

MFD...E02HL  
MFD...S01HL

	m	ØA	ØB	ØC	ØD	ØE	F	G	H	I	L	M	N	O	P	R	S	T	V	Z	X	ØY
MFD08...CL MFD08...HL	15g	8	11	14	14	-1.5	5.5	M12x1	59.2	14	7	9.2	5.7	3.5	M5	M2	13	6	-	-	14.7	7.6
MFD10...CL MFD10...HL	16g	10.5	13.5	14	14	-1.5	5.5	M12x1	60.7	14	8.5	10.7	6.7	4.5	M5	M2	13	6	-	-	16.2	9.5
MFD12...CL MFD12...HL	17g	13	17	14	14	-2	5.5	M12x1	62	14	10.5	13	7.5	5	M5	M3	13	6	-	-	16.8	11.8
MFD14...CL MFD14...HL	17g	15	19.5	14	14	-2	5.5	M12x1	62.3	14	13	15.8	8.8	6	M5	M3	13	6	-	-	-	-
MFD16...CL MFD16...HL	17g	18	21.5	14	14	-2	5.5	M12x1	62.3	14	13	15.8	8.8	6	M5	M3	13	6	-	-	-	-
MFD18...CL MFD18...HL	28g	19.5	24.5	18	14	-2.5	5.5	M12x1	70.5	14	16.5	19.5	12	9	M5	M3	16	6	-	-	-	-
MFD20...CL MFD20...HL	28g	22.5	26.5	18	14	-2.5	5.5	M12x1	70.5	14	16.5	19.5	12	9	M5	M3	16	6	-	-	-	-
MFD22...CL MFD22...HL	43g	24	31.5	21.5	14	-2.5	5.5	M12x1	80	14	21	24.2	12.2	11	M5	M3	19	7	-	-	-	-
MFD27...CL MFD27...HL	79g	28	36	25	20	-3	8	M17x1	98	20	26	30	18	14	G1/8	M5	22	8	-	-	-	-
MFD33...CL MFD33...HL	118g	34	44	30	20	-4	8	M17x1	112	20	32.5	37	22.5	18	G1/8	G1/8	28	8	-	-	-	-
MFD41...CL MFD41...HL	280g	42	54	40	30	-4.3	11	M27x1	142.5	30	39.5	45	29.5	24	G1/8	G1/8	36	11	-	-	-	-
MFD47...CL MFD47...HL	280g	50	58	40	30	-4.3	11	M27x1	142.5	30	39.5	45	29.5	24	G1/8	G1/8	36	11	-	-	-	-
MFD51...CL MFD51...HL	490g	54	68	50	30	-5.5	11	M27x1	168	30	48	55	37	30	G1/8	G1/8	45	13	-	-	-	-
MFD63...CL MFD63...HL	800g	66	84	60	30	-6	11	M27x1	198	30	61	70	45	36	G1/8	G1/8	54	16	-	-	-	-

[Weight]

**Dimensions (mm)**



	m	ØA	ØB	ØC	ØD	ØE	F	G	H	I	J	K	L	M	N	O	P	R	S	T	V	Z	X	ØY	
MFU08...CL MFU08...HL	16g	8	11	14	14	1.1	5.5	M12x1	61.5	14	3.5	4	7	9.2	5.7	3.5	M5	M2	13	6	-	-	M3	16.3	7.6
MFU10...CL MFU10...HL	17g	10.5	13.5	14	14	1.1	5.5	M12x1	62.5	14	4	4	8.5	10.7	6.7	4.5	M5	M2	13	6	20.5	-	M3	17.7	9.5
MFU12...CL MFU12...HL	18g	13	17	14	14	1.3	5.5	M12x1	65	14	5.5	4	10.5	13	7.5	5	M5	M3	13	6	21.5	-	M3	20	11.8
MFU14...CL MFU14...HL	20g	15	19.5	14	14	1.3	5.5	M12x1	68.5	14	7	24.2	13	15.8	8.8	6	M5	M3	13	6	23.2	-	M3	-	-
MFU16...CL MFU16...HL	20g	18	21.5	14	14	1.3	5.5	M12x1	68.5	14	7	24.2	13	15.8	8.8	6	M5	M3	13	6	23.2	-	M3	-	-
MFU18...CL MFU18...HL	35g	19.5	24.5	18	14	1.3	5.5	M12x1	78	14	7.5	29	16.5	19.5	12	9	M5	M3	16	7	28	-	M5	-	-
MFU20...CL MFU20...HL	35g	22.5	26.5	18	14	1.3	5.5	M12x1	78	14	7.5	29	16.5	19.5	12	9	M5	M3	16	7	28	-	M5	-	-
MFU22...CL MFU22...HL	50g	24	31.5	21.5	14	1.8	5.5	M12x1	86.5	14	10	31.8	21	24.2	14.2	11	M5	M3	20	8	31.5	-	M5	-	-
MFU27...CL MFU27...HL	100g	28	36	25	20	2.5	8	M17x1	108	20	12	37.5	26	30	18	14	G1/8	M5	22	9	37	-	M5	-	-
MFU33...CL MFU33...HL	130g	34	44	30	20	2.8	8	M17x1	119	20	14.5	40.5	32.5	37	22.5	18	G1/8	G1/8	28	10	40	-	M5	-	-
MFU41...CL MFU41...HL	300g	42	54	40	30	4.5	11	M27x1	147	30	15.5	45	39.5	45	29.5	24	G1/8	G1/8	36	12	45	-	M5	-	-
MFU47...CL MFU47...HL	300g	50	58	40	30	4.5	11	M27x1	147	30	15.5	45	39.5	45	29.5	24	G1/8	G1/8	36	12	45	-	M5	-	-
MFU51...CL MFU51...HL	500g	54	68	50	30	5	11	M27x1	169	30	18	54	48	55	37	30	G1/8	G1/8	45	14	56.5	-	G1/8	-	-
MFU63...CL MFU63...HL	785g	66	84	60	30	5	11	M27x1	194	30	25	62	61	70	45	36	G1/8	G1/8	54	16	64.5	-	G1/8	-	-

[Weight]

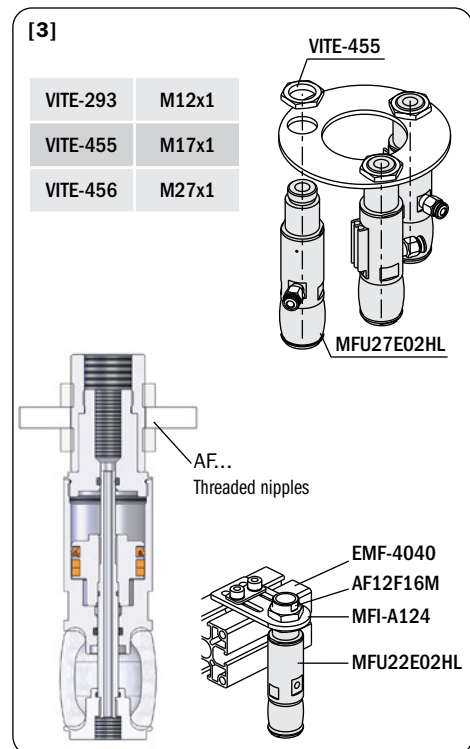
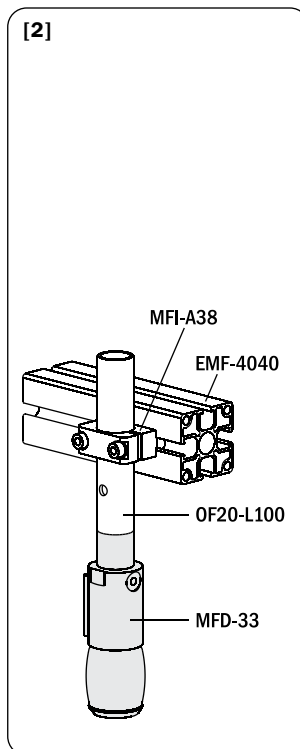
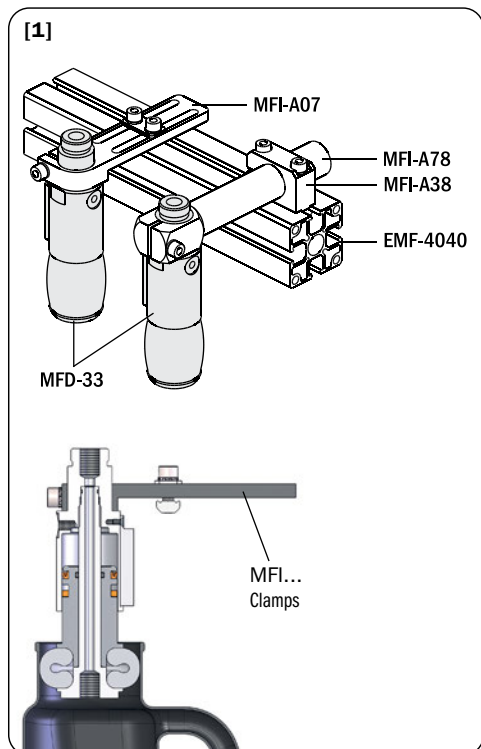
## Grip diameters

The gripper size is indicated in the gripper code with a nominal diameter of the elastic part.  
Each model can work in a diameter range between a minimum and a maximum value.

		Diameter (mm) /								
		10	20	30	40	50	60	70	80	
MFD-MFU Size /	08	8	11							
	10	10.5	13.5							
	12		13	17						
	14		15	19.5						
	16			18	21.5					
	18			19.5	24.5					
	20			22.5	26.5					
	22			24	31.5					
	27				28	36				
	33					34	44			
41						42	54			
47							50	58		
51								54	68	
63									66	84

## Fastening

The gripper can be fitted with a clamp, either directly on its tail [1], or on the optional extension tube [2].  
Alternatively, it can be fitted through the optional threaded nipples [3].



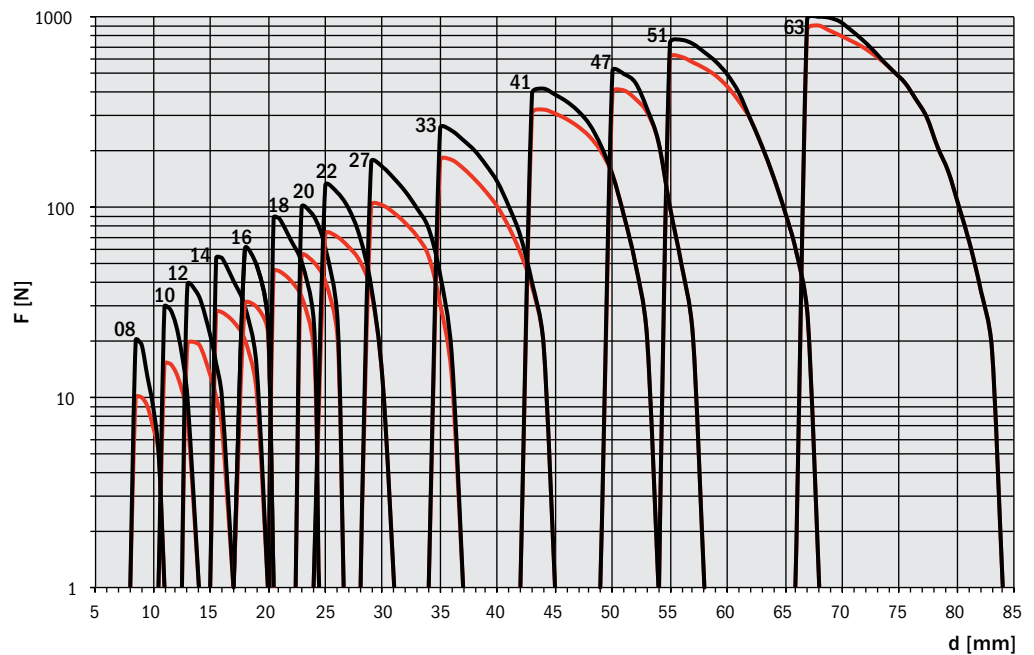
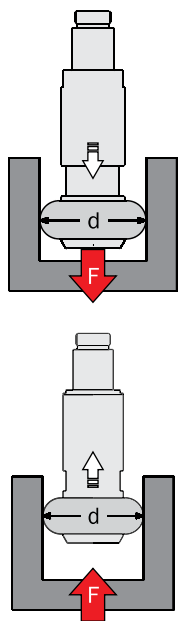
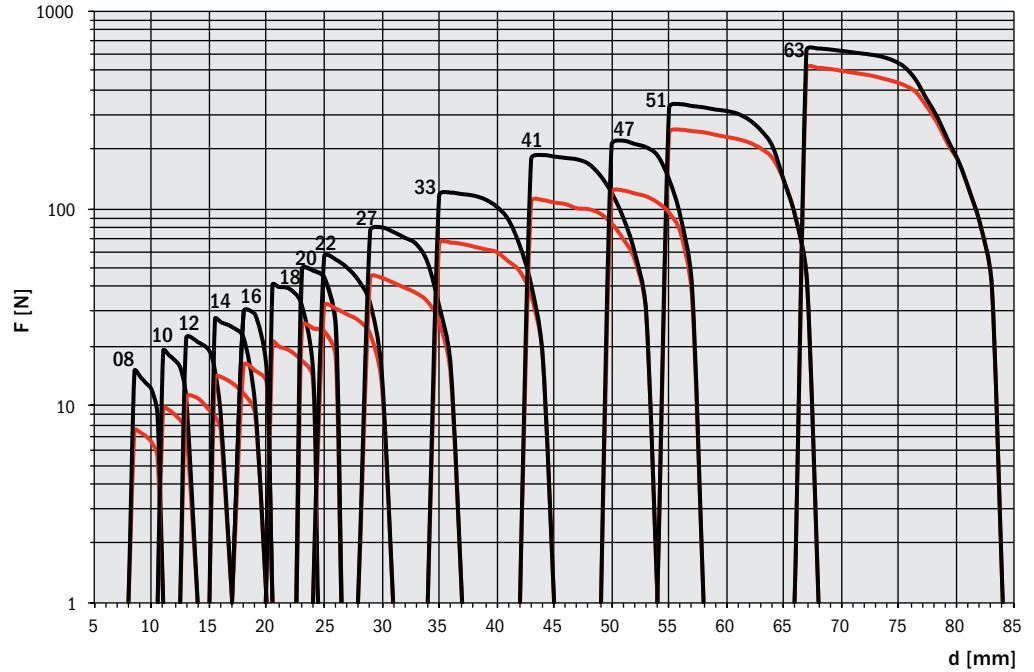
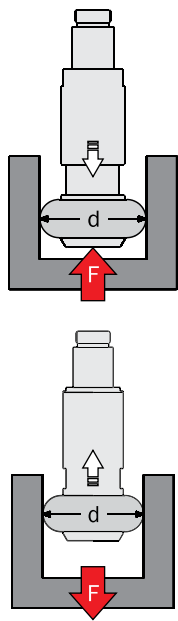
**Gripping force**

The force output of an MFD/MFU gripper depends on several variables.

Mainly on the diameter of the picked object, but also on the surface finishing, the coefficient of friction and the air pressure. The graphs show the extraction force (F) on the gripped object as a function of its diameter (d).

Measurements were performed with aluminum rings, with roughness Ra=0.8 while the grippers were fed with 6 bar compressed air.

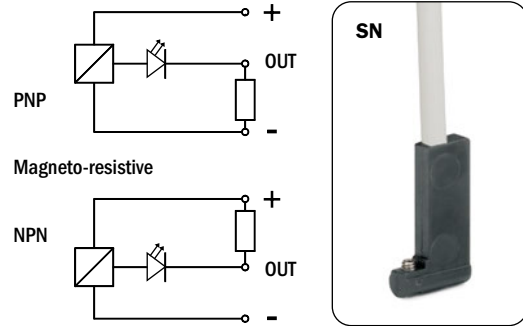
The black lines refer to the grippers in EPDM, while the red ones to the grippers in Silicone.



## Sensors

In the larger sizes a magnet is integrated in the piston.  
 An optional housing for the sensors of the SN series is available.  
 One or two sensors can be fitted on a gripper.

SN		
SN4N225-G	PNP	2.5m Cable
SN4M225-G	NPN	
SN3N203-G	PNP	Snap M8 plug connector
SN3M203-G	NPN	



	MFD27-K	MFD33-K	MFD41-K	MFD51-K	MFD63-K
Weight	4 g	5 g	5 g	6 g	7 g
AD [mm]	34	41.5	52	65	85.5
BD [mm]	28	34.5	40.5	49	54.5
CD [mm]	17	19.7	23.8	28.5	33.5
MFD	Ø27	Ø33	Ø41 Ø47	Ø51	Ø63

	MFU27-K	MFU33-K	MFU41-K	MFU51-K	MFU63-K
Weight	4 g	5 g	5 g	6 g	7 g
AU [mm]	39.5	46.5	55.5	71.5	87.5
BU [mm]	29	33	36.5	39	45
CU [mm]	17	19.8	23.8	28.5	33.5
MFU	Ø27	Ø33	Ø41 Ø47	Ø51	Ø63

