

Pinze ad espansione per interni serie MFD/MFU

- Nuovo concetto di pinza innovativa.
- Movimento verso il basso (MFD), o verso l'alto (MFU).
- La parte elastica può essere in Silicone o EPDM.
- Diametro di presa da 8 a 85 mm.
- Coni di centraggio opzionali.
- Sensori magnetici opzionali.
- Vari accessori disponibili per il fissaggio.

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

Direzione del movimento

Actuation direction

D - Verso il basso
D - Downward
U - Verso l'alto
U - Upward

Alimentazione

Air feeding

C - Con raccordo coassiale
C - With coaxial air fitting
H - Con raccordo laterale e foro passante
H - With side air fitting and through hole

Diametro nominale

Base diameter

08 - 10 - 12 - 14 - 16 - 18 - 20 - 22
27 - 33 - 41 - 47 - 51 - 63

Parte elastica

Elastic part

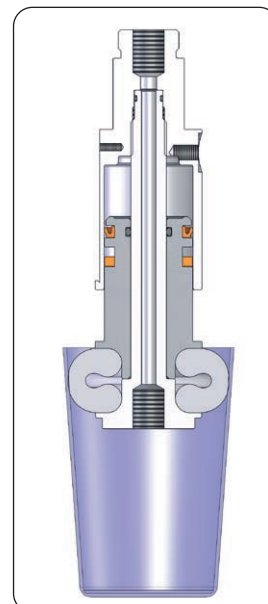
S01 - in Silicone bianco
S01 in white Silicone
E02 - in EPDM nero
E02 in black EPDM

Foro passante

I modelli ...HL sono dotati di un foro passante, che si può usare per immettere aria compressa o in depressione, allo scopo di raffreddare delle parti o di controllarne la tenuta.

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 o EPDM?

La parte elastica può essere in Silicone bianco o EPDM nero. Il Silicone può essere usato su un campo di temperature più ampio e garantisce una maggiore durata, ma non è adatto in alcuni settori merceologici, perchè rende difficoltosa la verniciatura o il rivestimento delle parti che tocca. Invece l'EPDM non lascia impronte e assicura anche un maggior coefficiente di attrito.

La parte elastica in Silicone o EPDM è fornita come ricambio e può essere sostituita, quando usurata.

La vita media della parte elastica in EPDM è di circa 0.5 milioni di cicli.

La vita media della parte elastica in Silicone è di circa 1 milione di cicli.

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.

Ricambio per la parte elastica
Spare elastic part



Silicone
Silicone



EPDM

T	MFD / MFU													
	Ø8	Ø10	Ø12	Ø14	Ø16	Ø18	Ø20	Ø22	Ø27	Ø33	Ø41	Ø47	Ø51	Ø63
-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)

T - Operating temperature of the elastic part (5÷60°C for the gripper body)

Coni di centraggio

Sono disponibili come accessori dei coni di centraggio in nylon, con la vite inox.

Per le taglie maggiori di 33, sono anche dotati del foro passante.

Centering cones

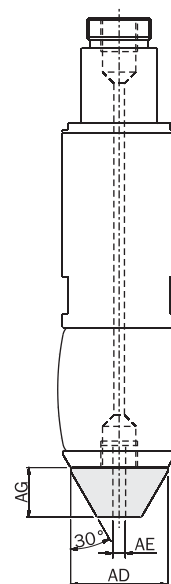
Centering cones in nylon with the stainless screw, are available as an option.

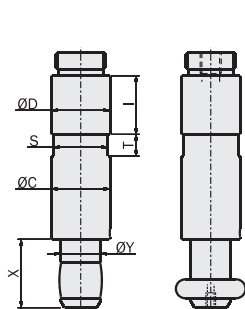
For the sizes larger than 33, they are also provided with a through hole.



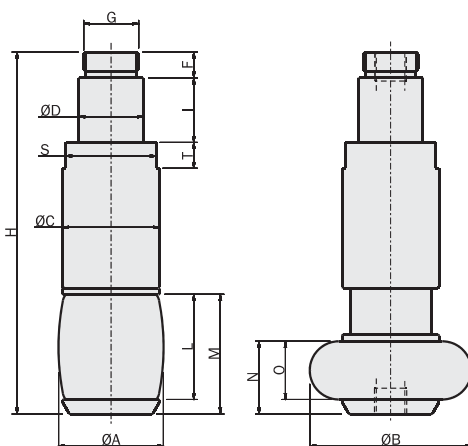
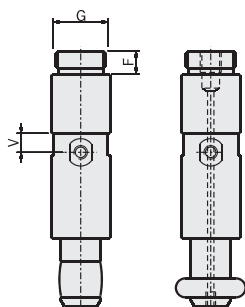
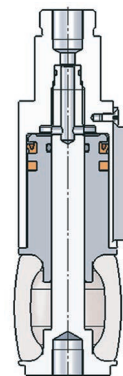
	MFC10	MFC12	MFC14	MFC18	MFC22	MFC27	MFC33	MFC41	MFC51	MFC63
Peso Weight	0.5 g	1 g	1 g	1.5 g	2 g	5 g	7 g	12 g	21 g	30 g
ØAD [mm]	7.8	10	11.8	15.5	18.8	21.3	28	37	47	56
ØAE [mm]	-	-	-	-	-	-	4	4	4	4
ØAG [mm]	2.9	3.5	4.5	6.5	8	9.5	12	19	26	30
MFD MFU	Ø10	Ø12	Ø14 Ø16	Ø18 Ø20	Ø22	Ø27	Ø33	Ø41 Ø47	Ø51	Ø63

MFD / MFU

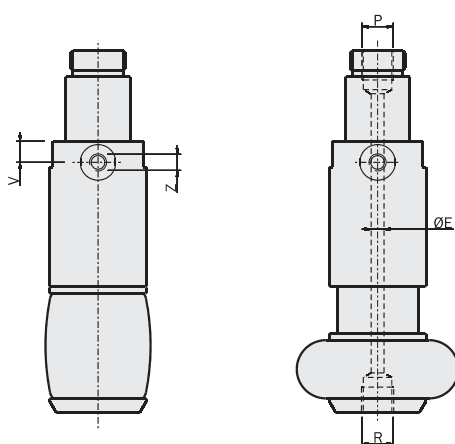
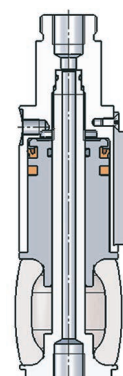


Dimensioni (mm)
Dimensions (mm)


MFD 08/10/12

MFD...E02CL
MFD...S01CL

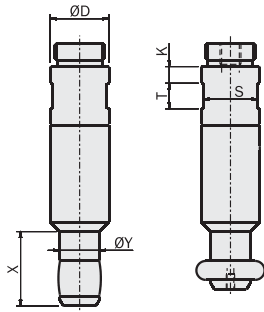
MFD 08/10/12

MFD...E02HL
MFD...S01HL

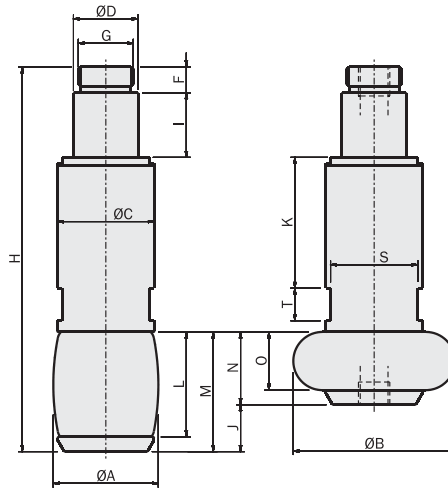
	m	ØA	ØB	ØC	ØD	ØE	F	G	H	I	L	M	N	O	P	R	S	T	V	Z	X	ØY
MFD08...CL MFD08...HL	15g	8	11	14	14	- 1.5	5.5	M12x1	59.2	14	7	9.2	5.7	3.5	M5	M2	13	6	- 4.5	- M3	14.7	7.6
MFD10...CL MFD10...HL	16g	10.5	13.5	14	14	- 1.5	5.5	M12x1	60.7	14	8.5	10.7	6.7	4.5	M5	M2	13	6	- 4.5	- M3	16.2	9.5
MFD12...CL MFD12...HL	17g	13	17	14	14	- 2	5.5	M12x1	62	14	10.5	13	7.5	5	M5	M3	13	6	- 4.5	- M3	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	- 4.5	- M3	-	-
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	- 4.5	- M3	-	-
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	- 5.3	- M5	-	-
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	- 5.3	- M5	-	-
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	- 5.5	- M5	-	-
MFD27...CL MFD27...HL	79g	28	36	25	20	- 3	8	M17x1	98	20	26	30	18	14	G1/8	M5	22	8	- 7	- M5	-	-
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	- 6.5	- M5	-	-
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	- 7.5	- M5	-	-
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	- 7.5	- M5	-	-
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	- 10.5	- G1/8	-	-
MFD63...CL MFD63...HL	800g	66	84	60	30	- 6	11	M27x1	198	30	61	70	45	36	G1/8	G1/8	54	16	- 14	- G1/8	-	-

m [Peso]
[Weight]

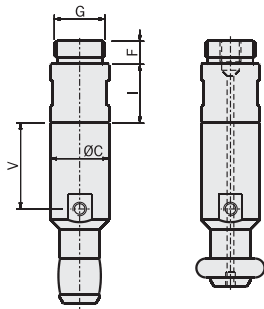
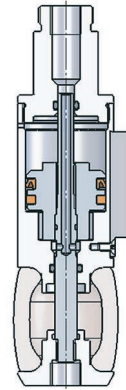
Dimensioni (mm)
Dimensions (mm)



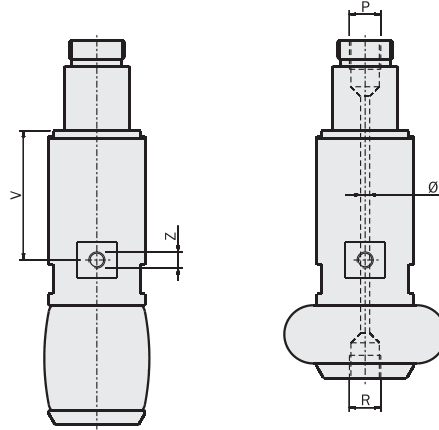
MFU 08/10/12



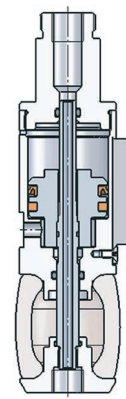
MFU...E02CL
MFU...S01CL



MFU 08/10/12



MFU...E02HL
MFU...S01HL



	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	- 20	- 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	-	-

m [Peso]
[Weight]

Diametri di presa

La taglia è indicata nel codice con un diametro nominale della parte elastica.
Ma ogni modello può lavorare fra un diametro minimo ed un diametro massimo.

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.

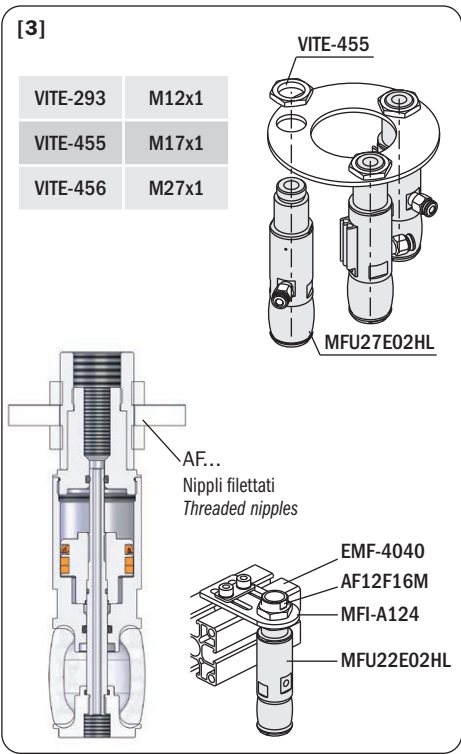
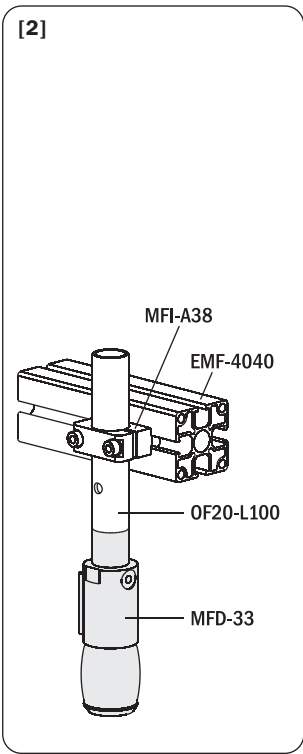
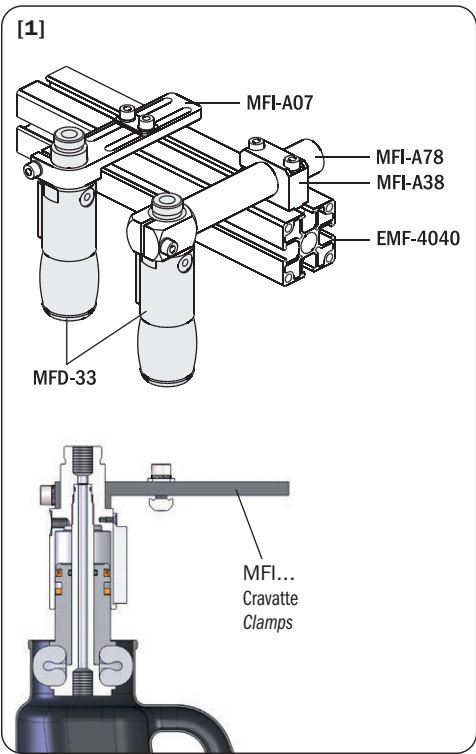
		Diametro (mm) / Diameter (mm)												
		10	20	30	40	50	60	70	80					
Taglia MFD-MFU / MFD-MFU Size	08	8	11											
	10	10.5	13.5											
	12		13	17										
	14		15	19.5										
	16			18	21.5									
	18			19.5	24.5									
	20			22.5	26.5									
	22			24		31.5								
	27				28		36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

Fissaggio

La pinza può essere montata, con una staffa a cravatta, direttamente sul suo codolo [1].
Con una staffa a cravatta, sulla prolunga opzionale [2].
Oppure attraverso i nippli filettati opzionali [3].

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].



Forza di serraggio

La forza esercitata da una pinza MFD/MFU dipende da molteplici fattori.

Principalmente il diametro dell'oggetto, ma anche la sua finitura superficiale, il coefficiente di attrito e la pressione di alimentazione.

I grafici mostrano la forza di sfilamento (F) di un carico preso con la pinza a espansione, in funzione del diametro (d).

Per le misurazioni sono stati usati anelli di alluminio, con rugosità $Ra=0.8$ e le pinze alimentate a 6 bar.

Le linee nere si riferiscono alle pinze in EPDM e quelle rosse alle pinze in Silicone.

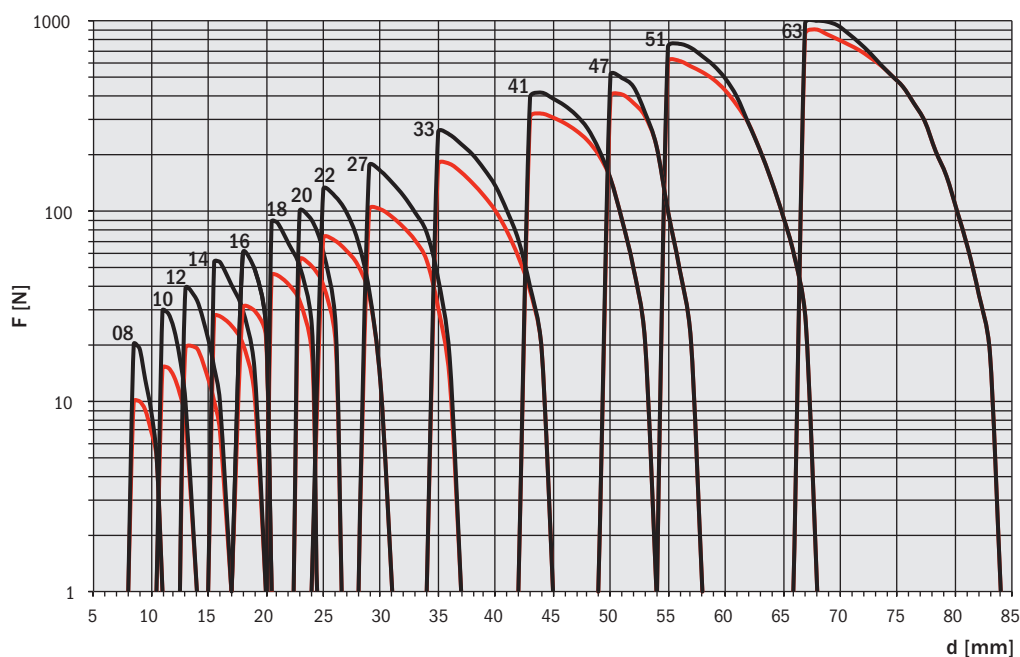
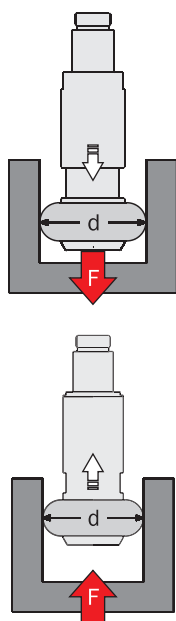
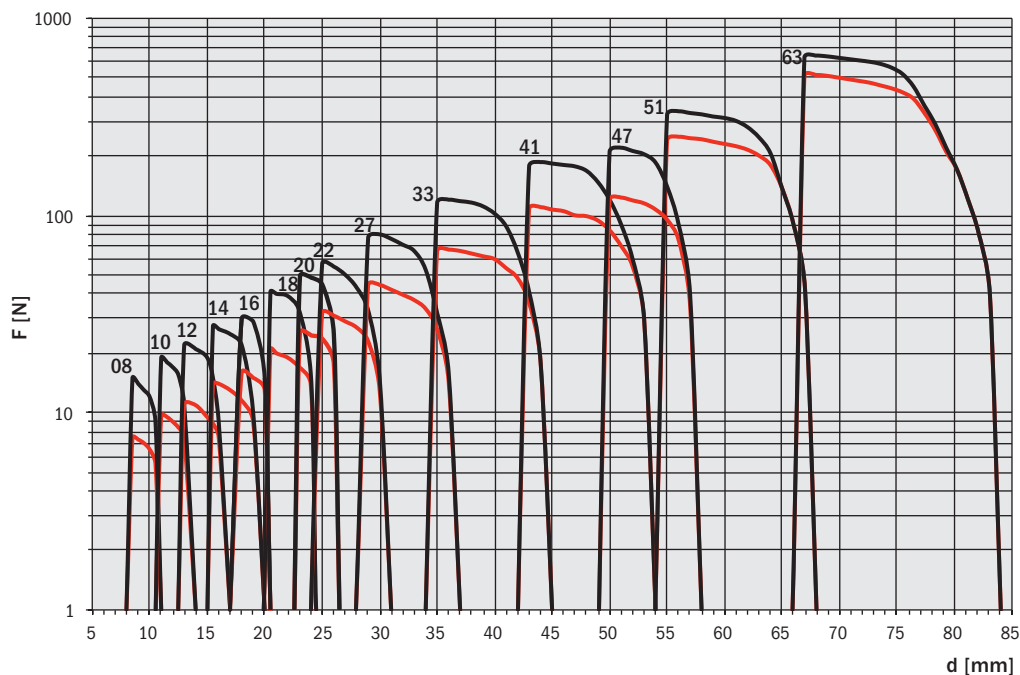
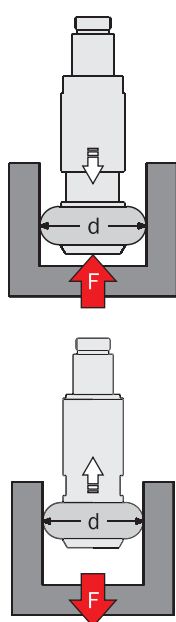
Gripping force

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.



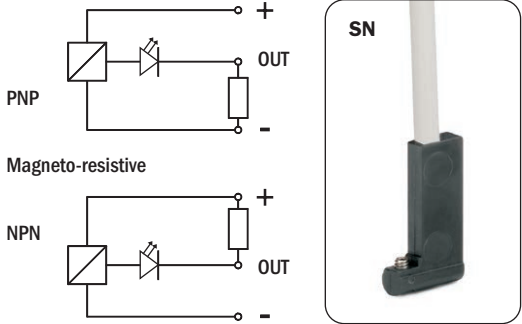
Sensori

Nelle taglie più grandi un magnete è integrato nel pistone.
E' disponibile un accessorio per montare i sensori della serie SN. Possono essere fissati uno o due sensori per pinza.

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	Cavo 2.5m 2.5m Cable
SN4M225-G	NPN	
SN3N203-G	PNP	Connettore M8 Snap M8 plug connector
SN3M203-G	NPN	



	MFD27-K	MFD33-K	MFD41-K	MFD51-K	MFD63-K
Peso 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
Peso 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

