

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.



MFD16E02CL

Direzione del movimento

Actuation direction

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

Diametro nominale

Base diameter

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

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.

Alimentazione

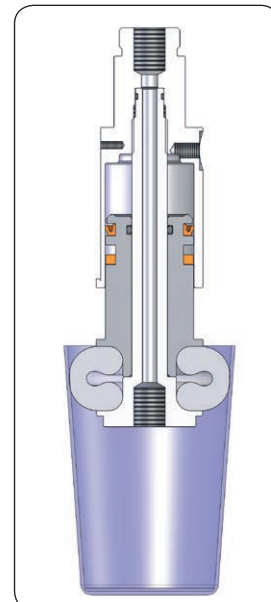
Air feeding

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

Parte elastica

Elastic part

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



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

| 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 |



Silicone



EPDM

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

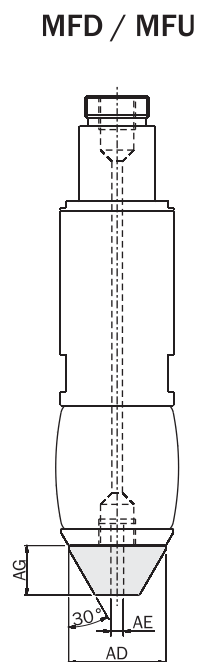
Sono disponibili come accessori dei coni di centraggio in nylon, con la vite inox. Per le taglie maggiori di 33, sono anche dotati del foro passante.

Centering cones

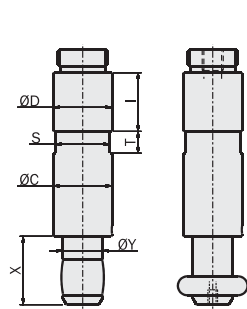
Centering cones in nylon with the stainless screw, are available as an option. For the sizes larger than 33, they are also provided with a through hole.



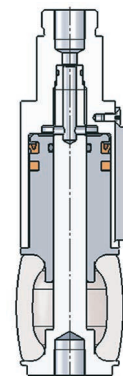
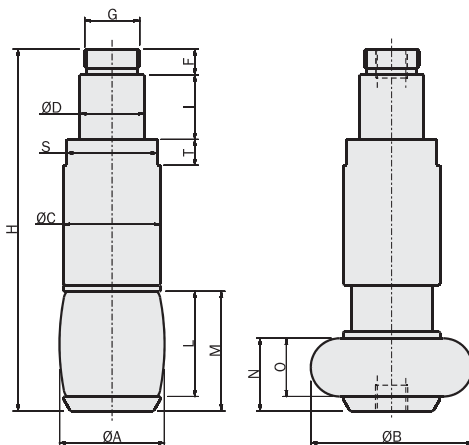
| | MFC10 | MFC12 | MFC14 | MFC18 | MFC22 | MFC27 | MFC33 | MFC41 | MFC51 | MFC63 |
|----------------|-------|-------|------------|------------|-------|-------|-------|------------|-------|-------|
| Peso Weight | 0.5 g | 1 g | 1 g | 1.5 g | 2 g | 5 g | 7 g | 12 g | 21 g | 30 g |
| ØAD [mm] | 7.8 | 10 | 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 |



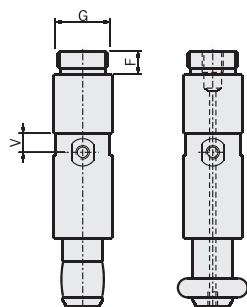
Dimensioni (mm) / Dimensions (mm)



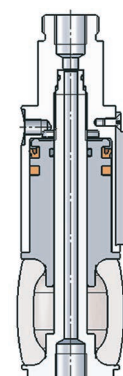
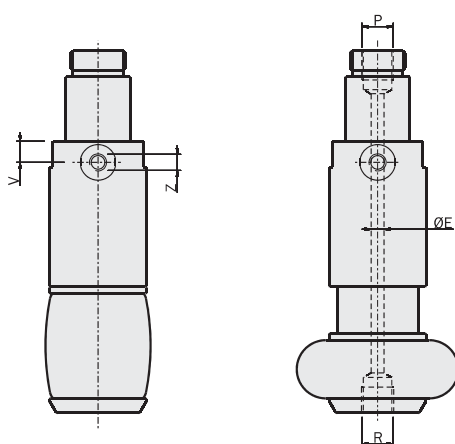
MFD 08/10/12



MFD...E02CL
MFD...S01CL



MFD 08/10/12

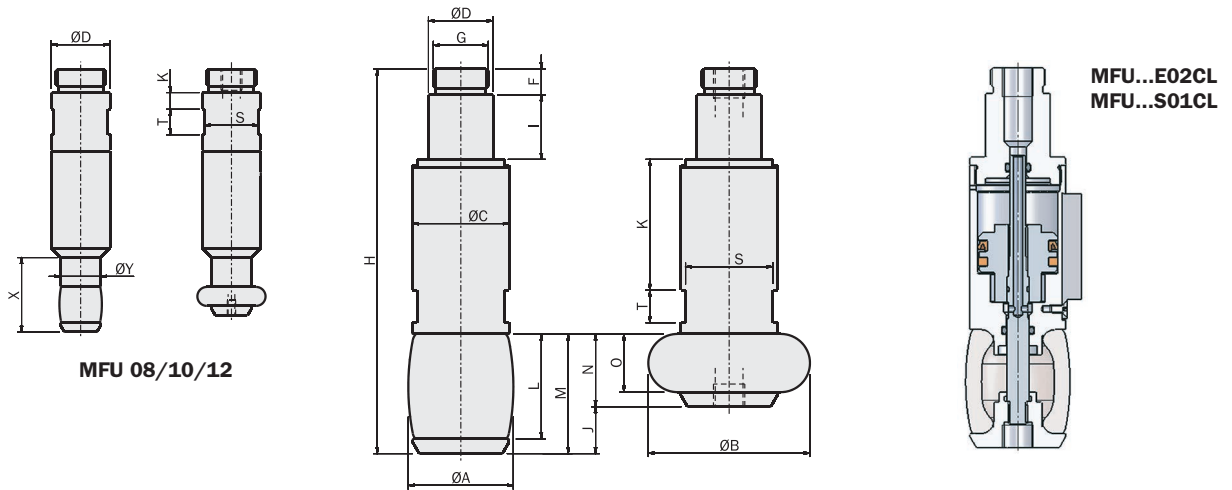


MFD...E02HL
MFD...S01HL

| | 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 | 37 | 25 | 20 | -3 | 8 | M17x1 | 98 | 20 | 26 | 30 | 18 | 14 | G1/8 | M5 | 22 | 8 | -7 | -M5 | - | - |
| MFD33...CL MFD33...HL | 118g | 34 | 45 | 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 | 85 | 60 | 30 | -6 | 11 | M27x1 | 198 | 30 | 61 | 70 | 45 | 36 | G1/8 | G1/8 | 54 | 16 | -14 | -G1/8 | - | - |

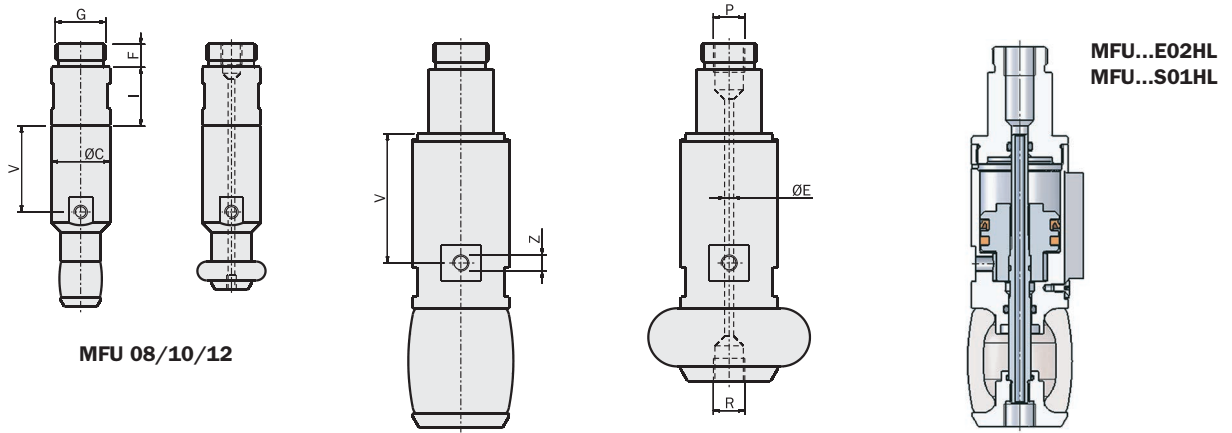
m [Peso / Weight]

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 | 37 | 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 | 45 | 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 | 85 | 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 |
|----|------|------|------|----|----|----|----|----|
| 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 | 37 | | | | |
| 33 | | | 34 | 45 | | | | |
| 41 | | | | 42 | 54 | | | |
| 47 | | | | | 50 | 58 | | |
| 51 | | | | | 54 | | 68 | |
| 63 | | | | | | 66 | | 85 |

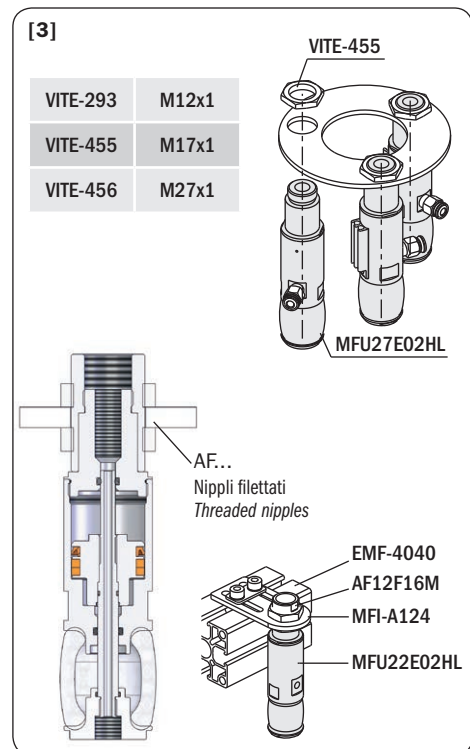
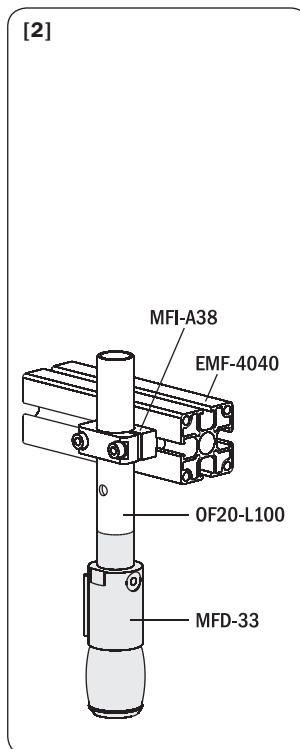
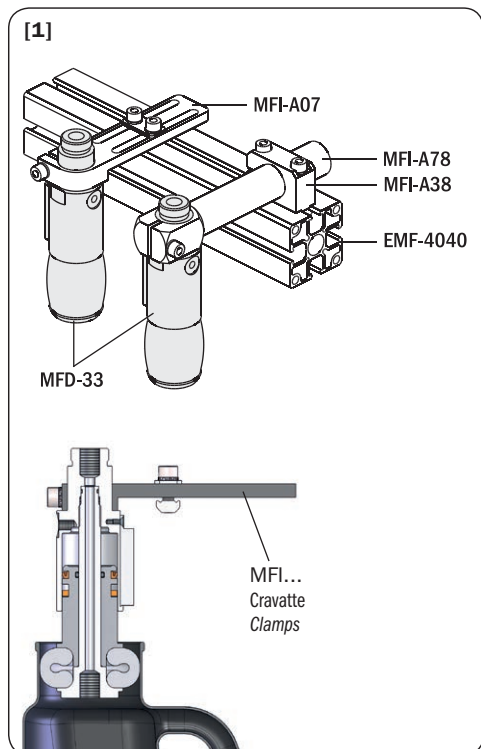
Taglia MFD-MFU / MFD-MFU Size

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].



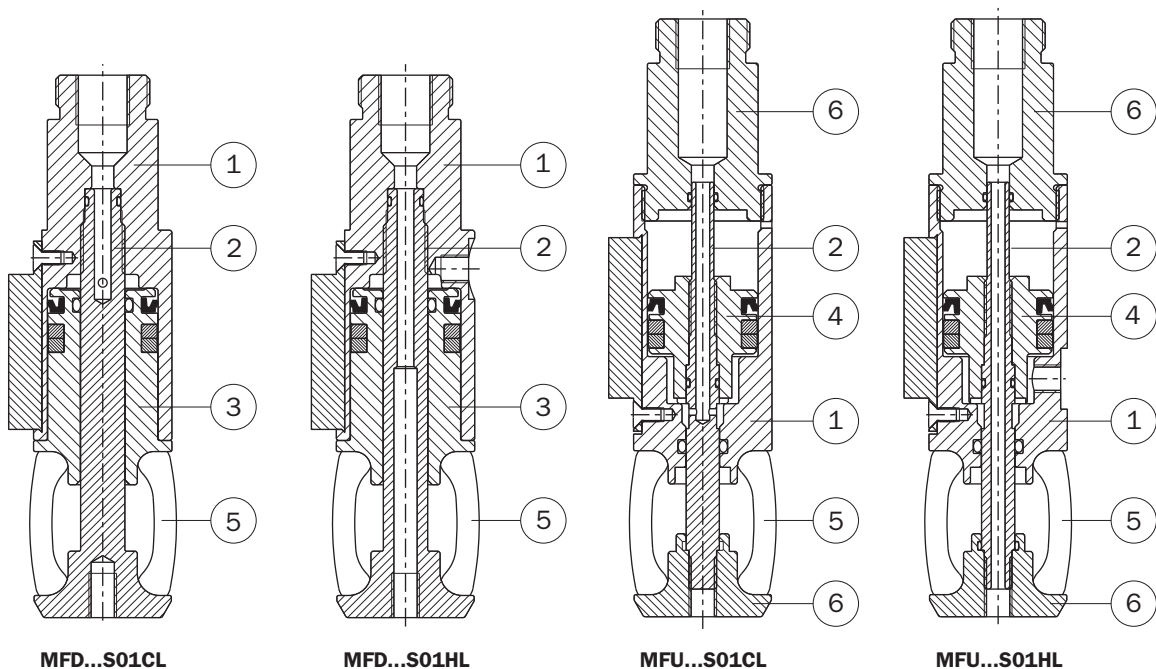
Applicazioni nell'industria alimentare

Le versioni S01, cioè quelle con la parte elastica in Silicone, sono adatte per la maggior parte delle applicazioni nell'industria alimentare, in quanto le parti che possono venire in contatto con l'alimento sono:

Food applications

The S01 versions, the ones with the elastic part in Silicone, are suitable for most of the food applications, as the parts intended to come into contact with food are:

| | | | |
|---|--------------------------------|----------------------------|---|
| 1 | Corpo Housing | EN AW-6026-T6 | Alluminio ossidato ANSI/NSF 51 Oxidized aluminum ANSI/NSF 51 |
| 2 | Stelo Piston rod | EN AW-6026-T6 | Alluminio ossidato ANSI/NSF 51 Oxidized aluminum ANSI/NSF 51 |
| 3 | Pistone MFD Piston MFD | POM-C | Resina acetica FDA CFR 21 Part section 177.2470 Acetal FDA CFR 21 Part section 177.2470 |
| 4 | Pistone MFU Piston MFU | EN AW-6026-T6 | Alluminio ossidato ANSI/NSF 51 Oxidized aluminum ANSI/NSF 51 |
| 5 | Parte elastica Elastic part | VMQ | Elastomero Silicone FDA CFR 21 Part section 177.2600 Elastomer Silicone FDA CFR 21 Part section 177.2600 |
| 6 | Terminale End cap | EN AW-6026-T6 | Alluminio ossidato ANSI/NSF 51 Oxidized aluminum ANSI/NSF 51 |
| | Grasso Grease | INTERFLON FOOD GREASE LT 2 | Lubrificante NSF H1 Registration no. 123533 Lubricant NSF H1 Registration no. 123533 |

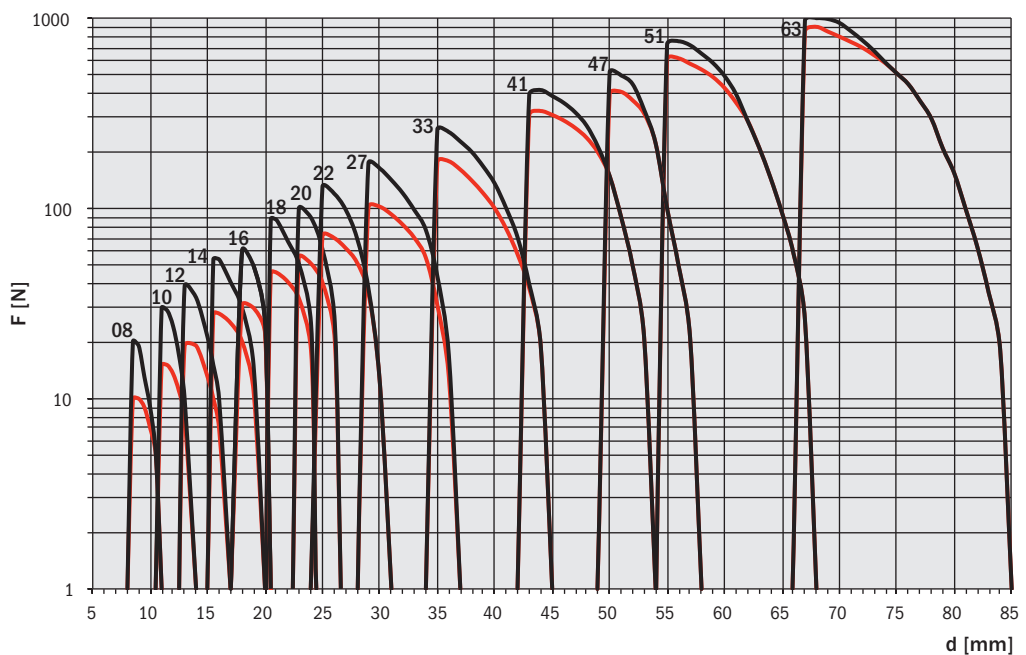
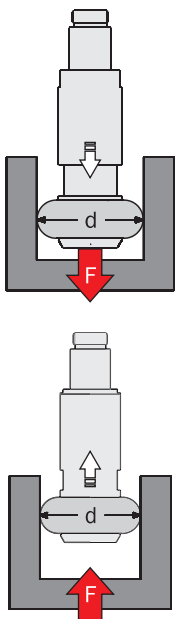
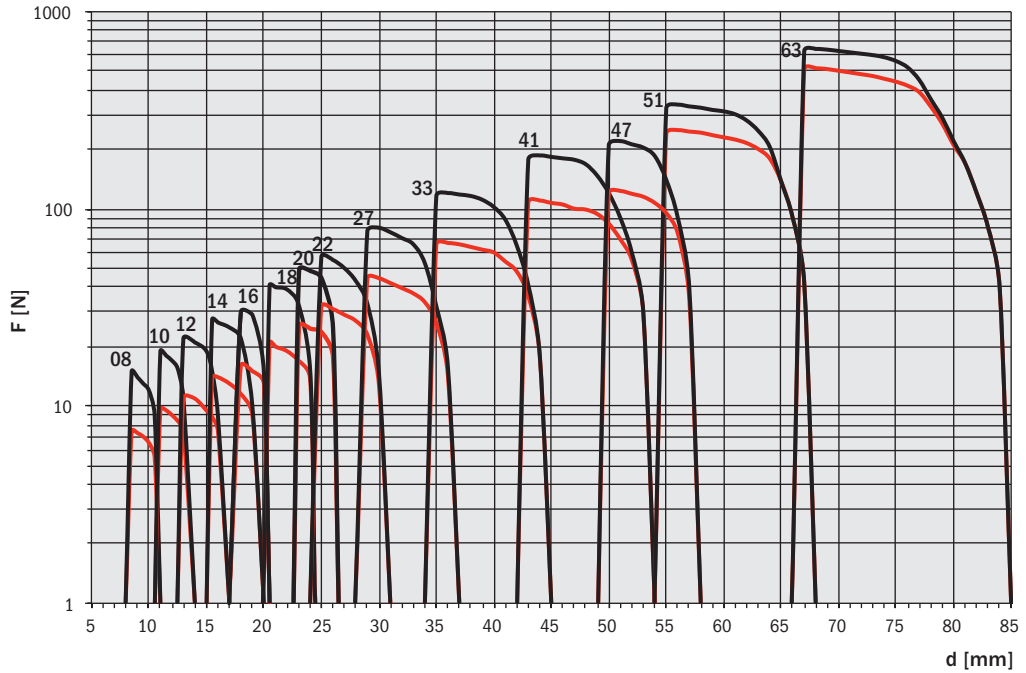
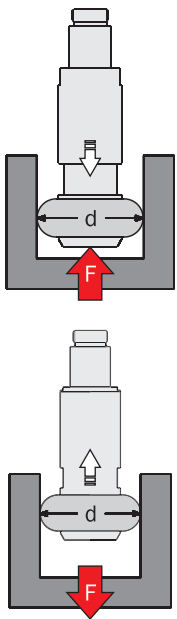


Forza di serraggio

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.



Connessione pneumatica

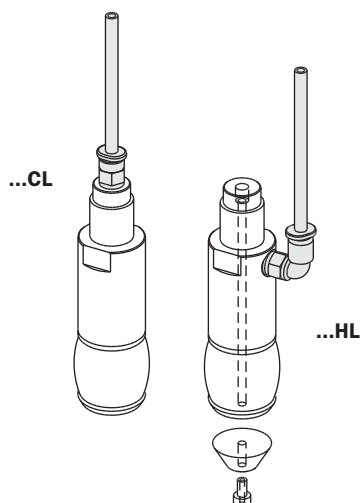
La pinza è azionata con aria compressa filtrata (5÷40 µm) non necessariamente lubrificata.

La scelta iniziale, lubrificata o non lubrificata, deve essere mantenuta per tutta la vita della pinza.

L'impianto pneumatico deve essere pressurizzato gradualmente, per evitare movimenti incontrollati.

La forza di serraggio può essere regolata con la pressione di alimentazione.

Il campo operativo è 4÷8 bar.



Compressed air feeding

The compressed air feeding the gripper must be filtered (5÷40 µm) but not necessarily lubricated.

The type of medium selected at the start – lubricated or not lubricated – must be kept for the complete service life of the gripper.

The pneumatic circuit must be pressurized progressively, to avoid uncontrolled movements.

The gripping force can be adjusted by suitably adjusting the air pressure.

The pressure range is 4÷8 bar.



Circuito pneumatico

Possibili inconvenienti sul circuito di alimentazione dell'aria compressa:

- 1- Oscillazioni di pressione.
- 2- Riempimento pinza vuota all'avvio.
- 3- Velocità di azionamento eccessiva.

Accorgimenti per risolvere i problemi:

- 1- Serbatoio esterno (A).
- 2- Valvola di avviamento progressivo (B).
- 3- Regolatori di flusso (C).

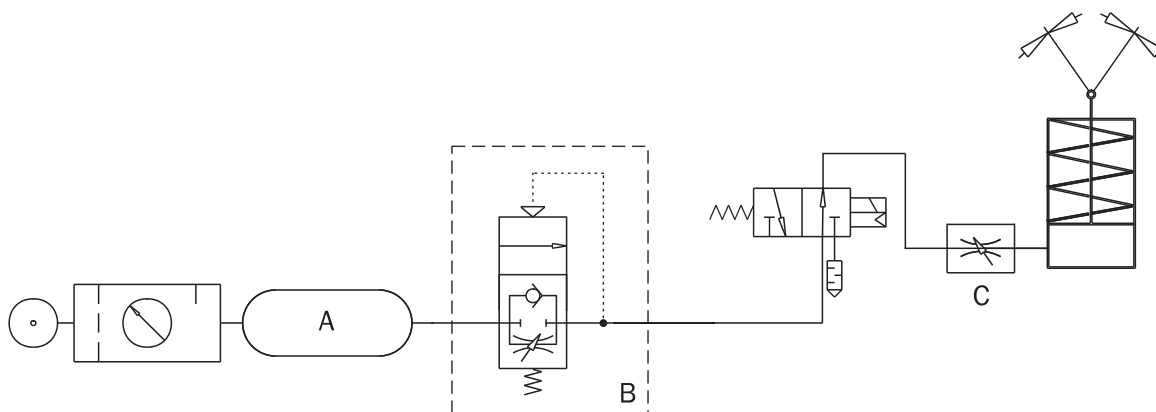
Pneumatic circuit

Possible problems on a compressed air circuit:

- 1- Pressure variation.
- 2- Pressurizing with empty cylinder.
- 3- Excessive speed of the jaws.

Possible solutions:

- 1- Compressed air storage (A).
- 2- Start-up valve (B).
- 3- Flow controller (C).



Manutenzione

Non è necessaria alcuna manutenzione periodica.
 La parte elastica in Silicone o EPDM è fornita come ricambio e può essere sostituita, quando usurata.
 Per smontarla la si può tagliare (nella direzione mostrata nella foto).
 Il ricambio si può calzare senza smontare la pinza.
 Non deve essere nè incollato, nè ingrassato.

Maintenance

No periodic maintenance is necessary.
 The elastic part in Silicone or EPDM is available as a spare part and can be replaced, when worn out.
 It can be cut (direction showed in the photo) to remove it from the gripper body.
 It is not necessary to dismantle the gripper to fit the new elastic part.
 It must not be glued nor greased.

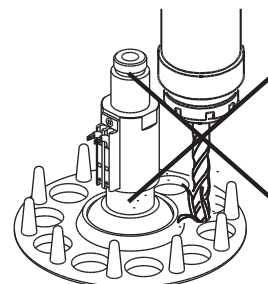
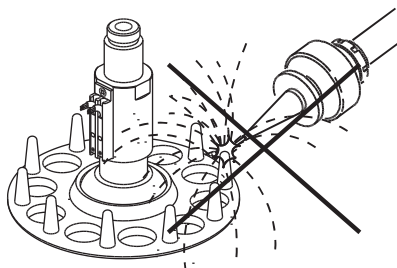
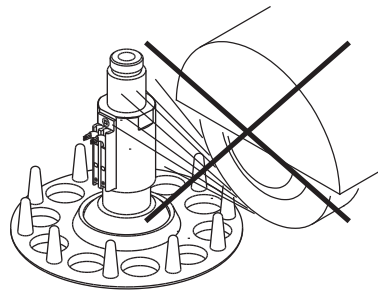
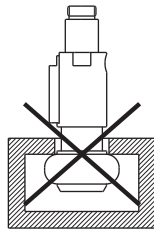
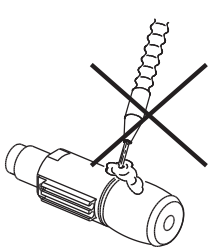


Avvertenze

Evitare il contatto con sostanze corrosive, spruzzi di saldatura, polveri abrasive, che potrebbero danneggiare la funzionalità della pinza.
 Per nessun motivo, persone od oggetti estranei devono entrare nel raggio d'azione della pinza.
 La pinza non deve essere messa in servizio prima che la macchina di cui fa parte sia stata dichiarata conforme alle disposizioni di sicurezza vigenti.

Caution

Avoid the gripper coming into contact with the following media: coolants which cause corrosion, grinding dust or glowing sparks. Make sure that nobody can place his/her hand in the working area and there are no objects in the path of the gripper. The gripper must not run before the whole machine, on which it is mounted, complies with the laws or safety norms of your country.



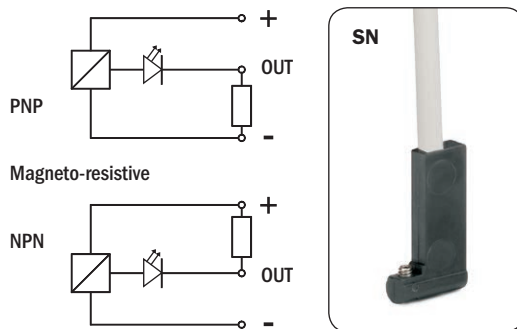
Sensori

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

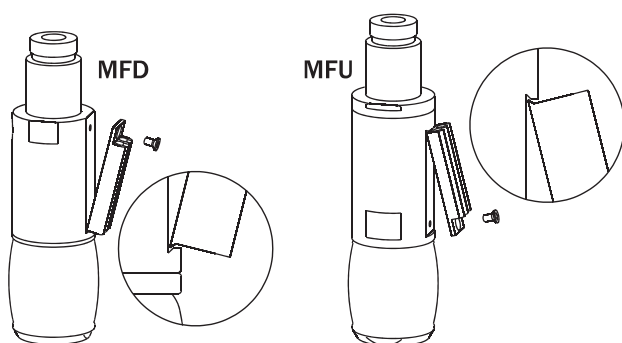
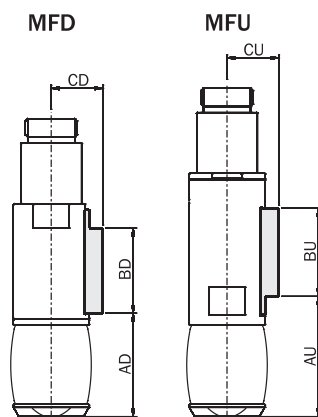
In the larger sizes a magnet is integrated in the piston.
An optional housing for the sensors of the SN series is available.
One or two sensors can be fitted on a gripper.

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



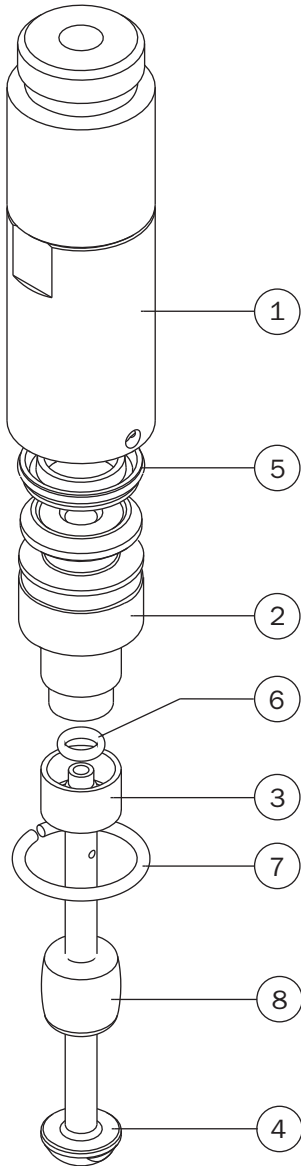
| | MFD27-K | MFD33-K | MFD41-K | MFD51-K | MFD63-K |
|----------------|---------|---------|------------|---------|---------|
| Peso Weight | 4 g | 5 g | 5 g | 6 g | 7 g |
| AD [mm] | 34 | 41.5 | 52 | 65 | 85.5 |
| BD [mm] | 28 | 34.5 | 40.5 | 49 | 54.5 |
| CD [mm] | 17 | 19.7 | 23.8 | 28.5 | 33.5 |
| 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 |

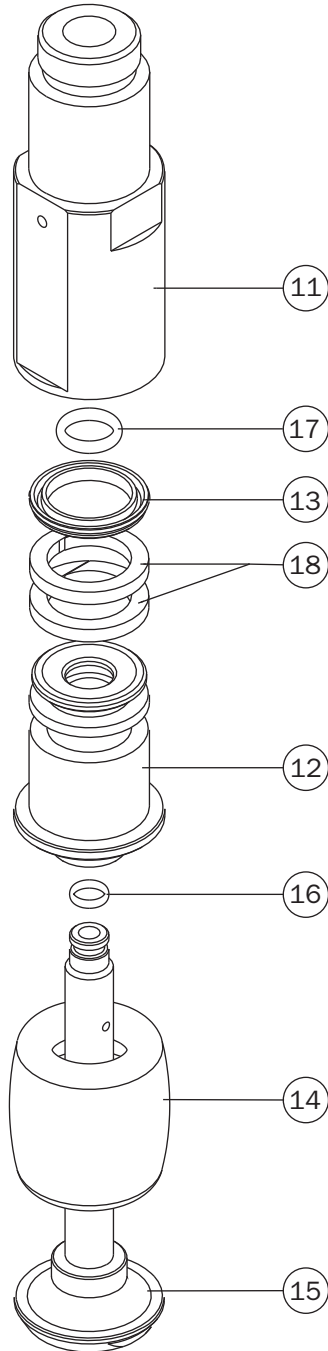


Vista esplosa / Exploded view

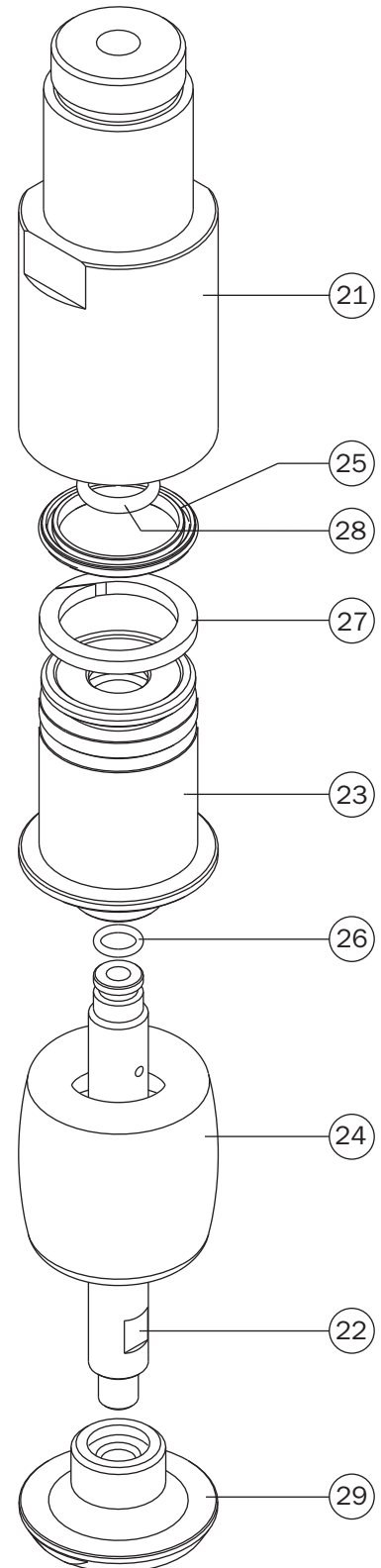
MFD08CL
MFD10CL



MFD12CL
MFD14CL
MFD16CL
MFD18CL
MFD20CL
MFD22CL
MFD27CL
MFD33CL



MFD41CL
MFD47CL
MFD51CL
MFD63CL



Elenco delle parti / Part list

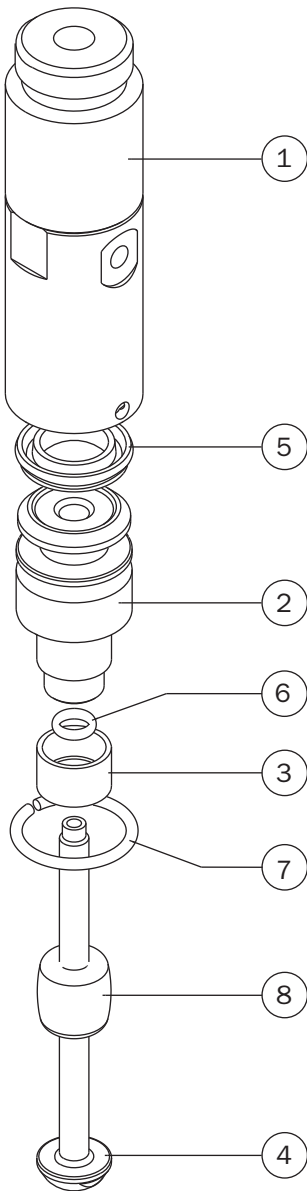
| | | MFD08CL | MFD10CL | | |
|---|----------------------|------------------------------|------------------------------|----------------|---|
| 1 | Corpo | MFD08-02 | MFD08-02 | Body | 1 |
| 2 | Pistone | FFD08-01 | FFD10-02 | Piston | 2 |
| 3 | Coperchio | IFD08-02 | IFD10-03 | Cover | 3 |
| 4 | Stelo pistone | FFD08-03 | FFD10-05 | Piston rod | 4 |
| 5 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | Dynamic gasket | 5 |
| 6 | O-Ring | 1x3 (GUAR-082H) | 1x3 (GUAR-082H) | O-Ring | 6 |
| 7 | Anello elastico | D1=12 DIN-7993B (SEEGER-027) | D1=12 DIN-7993B (SEEGER-027) | Snap-ring | 7 |
| 8 | Parte elastica | IF08-11 | IF10-11 | Elastic part | 8 |

| | | MFD12CL | MFD14CL | MFD16CL | MFD18CL | MFD20CL | MFD22CL | MFD27CL | MFD33CL | | |
|----|----------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-----------------------|-----------------------|----------------|--------------|----|
| 11 | Corpo | MFD12-02 | MFD12-02 | MFD12-02 | MFD18-02 | MFD22-02 | MFD27-02 | MFD33-01 | Body | | 11 |
| 12 | Pistone | FFD12-01 | FFD14-02 | FFD14-02 | FFD18-02 | FFD22-02 | FFD27-03 | FFD33-03 | Piston | | 12 |
| 13 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 15x9x3 (GUAR-019) | 18x12x3 (GUAR-133) | 20x14x3 (GUAR-058) | 25x19x3.5 (GUAR-064) | Dynamic gasket | | 13 |
| 14 | Parte elastica | IF12-12 | IF14-12 | IF16-12 | IF18-11 | IF20-11 | IF22-12 | IF27-11 | IF33-11 | Elastic part | 14 |
| 15 | Stelo pistone | FFD12-03 | FFD14-05 | FFD14-05 | FFD18-06 | FFD22-06 | FFD27-06 | FFD33-06 | Piston rod | | 15 |
| 16 | O-Ring | - | - | - | - | - | 1x4.5 (GUAR-171) | 1x6 (GUAR-098) | O-Ring | | 16 |
| 17 | O-Ring | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x5 (GUAR-021H) | 1x6 (GUAR-098H) | 1.78x7.66 (GUAR-045H) | 1.78x9.25 (GUAR-065H) | O-Ring | | 17 |
| 18 | Magnete | - | - | - | - | - | PAR-20-10B | PAR-25-10B | Magnet | | 18 |

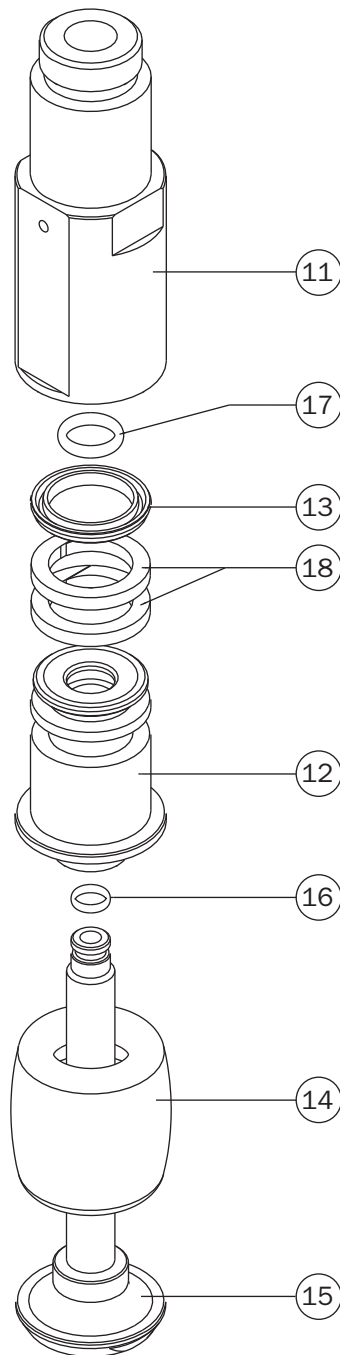
| | | MFD41CL | MFD47CL | MFD51CL | MFD63CL | | |
|----|----------------------|------------------------|------------------------|------------------------|------------------------|----------------|----|
| 21 | Corpo | MFD41-02 | MFD41-02 | MFD51-02 | MFD63-02 | Body | 21 |
| 22 | Stelo pistone | FFD41-09 | FFD41-09 | FFD51-07 | FFD63-07 | Piston rod | 22 |
| 23 | Pistone | FFD41-03 | FFD41-03 | FFD51-03 | FFD63-03 | Piston | 23 |
| 24 | Parte elastica | IF41-11 | IF47-11 | IF51-11 | IF63-11 | Elastic part | 24 |
| 25 | Guarnizione dinamica | 32x24x3.5 (GUAR-063) | 32x24x3.5 (GUAR-063) | 40x32x3.5 (GUAR-092) | 50x42x3.5 (GUAR-114E) | Dynamic gasket | 25 |
| 26 | O-Ring | 1.5x7 (GUAR-115) | 1.5x7 (GUAR-115) | 1.78x8.73 (GUAR-013) | 1.78x9.25 (GUAR-065) | O-Ring | 26 |
| 27 | Magnete | FES-32-3-5 | FES-32-3-5 | RAD-40-10 | FES-50-3-6 | Magnet | 27 |
| 28 | O-Ring | 2.62x11.91 (GUAR-033H) | 2.62x11.91 (GUAR-033H) | 2.62x15.08 (GUAR-105H) | 2.62x15.88 (GUAR-169H) | O-Ring | 28 |
| 29 | Terminale | FFD41-04 | FFD41-04 | FFD51-04 | FFD63-05 | Rod cap | 29 |

Vista esplosa / Exploded view

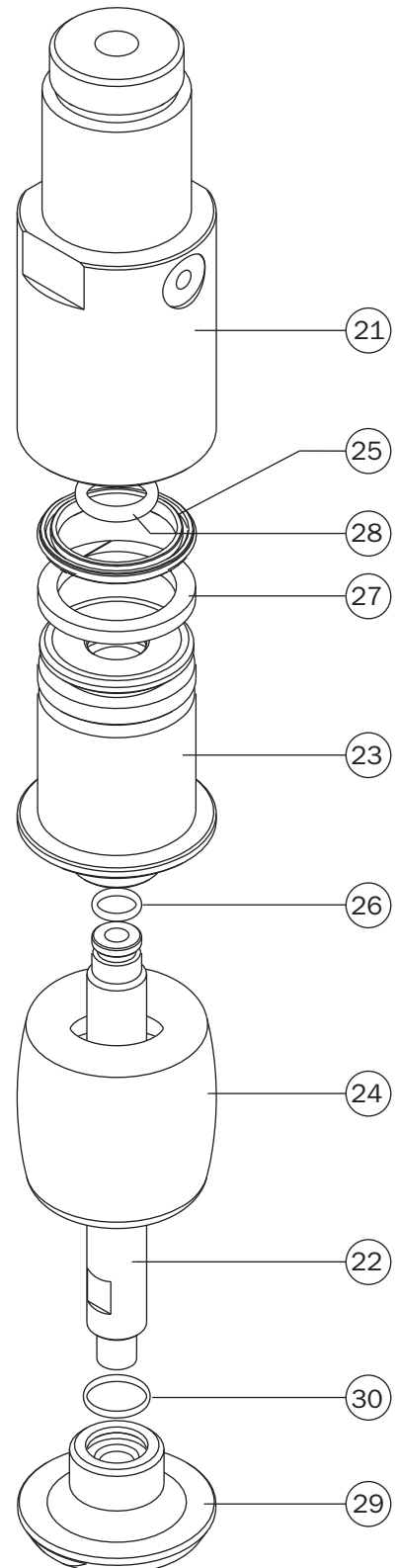
MFD08HL
MFD10HL



MFD12HL
MFD14HL
MFD16HL
MFD18HL
MFD20HL
MFD22HL
MFD27HL
MFD33HL



MFD41HL
MFD47HL
MFD51HL
MFD63HL



Elenco delle parti / Part list

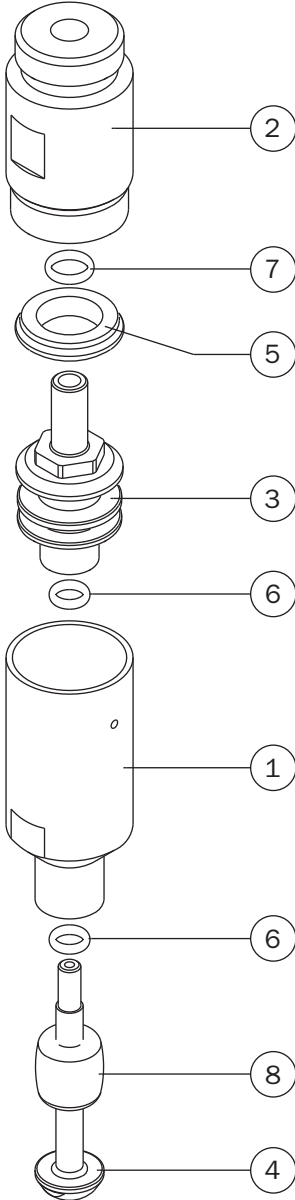
| | | MFD08HL | MFD10HL | | |
|---|----------------------|------------------------------|------------------------------|----------------|---|
| 1 | Corpo | MFD08-01 | MFD08-01 | Body | 1 |
| 2 | Pistone | MFD08-01 | FFD10-02 | Piston | 2 |
| 3 | Coperchio | IFD08-02 | IFD10-03 | Cover | 3 |
| 4 | Stelo pistone | FFD08-02 | FFD10-03 | Piston rod | 4 |
| 5 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | Dynamic gasket | 5 |
| 6 | O-Ring | 1x3 (GUAR-082H) | 1x3 (GUAR-082H) | O-Ring | 6 |
| 7 | Anello elastico | D1=12 DIN-7993B (SEEGER-027) | D1=12 DIN-7993B (SEEGER-027) | Snap-ring | 7 |
| 8 | Parte elastica | IF08-11 | IF10-11 | Elastic part | 8 |

| | | MFD12HL | MFD14HL | MFD16HL | MFD18HL | MFD20HL | MFD22HL | MFD27HL | MFD33HL | | |
|----|----------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-----------------------|-----------------------|----------------|--------------|----|
| 11 | Corpo | MFD12-01 | MFD12-01 | MFD12-01 | MFD18-01 | MFD22-01 | MFD27-01 | MFD33-03 | Body | | 11 |
| 12 | Pistone | FFD12-01 | FFD14-02 | FFD14-02 | FFD18-02 | FFD22-02 | FFD27-03 | FFD33-03 | Piston | | 12 |
| 13 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 15x9x3 (GUAR-019) | 18x12x3 (GUAR-133) | 20x14x3 (GUAR-058) | 25x19x3.5 (GUAR-063) | Dynamic gasket | | 13 |
| 14 | Parte elastica | IF12-12 | IF14-12 | IF16-12 | IF18-11 | IF20-11 | IF22-12 | IF27-11 | IF33-11 | Elastic part | 14 |
| 15 | Stelo pistone | FFD12-02 | FFD14-03 | FFD14-03 | FFD18-03 | FFD22-03 | FFD27-02 | FFD33-02 | Piston rod | | 15 |
| 16 | O-Ring | - | - | - | - | - | 1x4.5 (GUAR-171) | 1x6 (GUAR-098) | O-Ring | | 16 |
| 17 | O-Ring | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x5 (GUAR-021H) | 1x6 (GUAR-098H) | 1.78x7.66 (GUAR-045H) | 1.78x9.25 (GUAR-065H) | O-Ring | | 17 |
| 18 | Magnete | - | - | - | - | - | PAR-20-10B | PAR-25-10B | Magnet | | 18 |

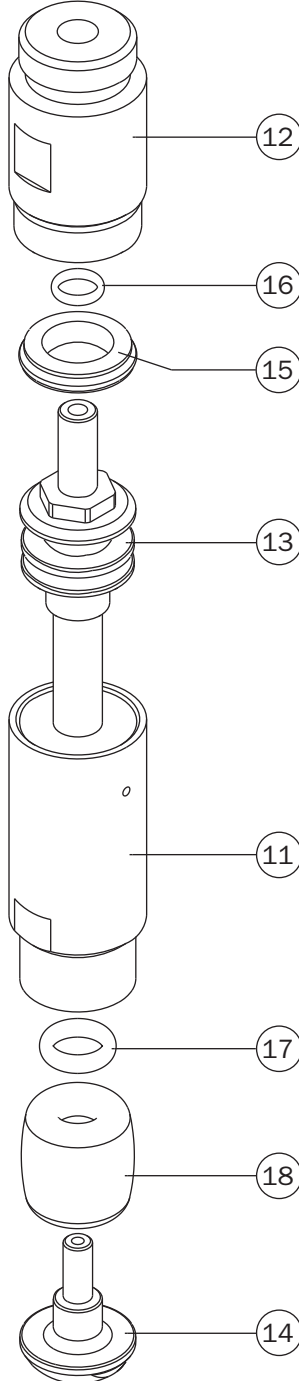
| | | MFD41HL | MFD47HL | MFD51HL | MFD63HL | | |
|----|----------------------|------------------------|------------------------|------------------------|------------------------|----------------|----|
| 21 | Corpo | MFD41-01 | MFD41-01 | MFD51-01 | MFD63-01 | Body | 21 |
| 22 | Stelo pistone | FFD41-02 | FFD41-02 | FFD51-02 | FFD63-02 | Piston rod | 22 |
| 23 | Pistone | FFD41-03 | FFD41-03 | FFD51-03 | FFD63-03 | Piston | 23 |
| 24 | Parte elastica | IF41-11 | IF47-11 | IF51-11 | IF63-11 | Elastic part | 24 |
| 25 | Guarnizione dinamica | 32x24x3.5 (GUAR-063) | 32x24x3.5 (GUAR-063) | 40x32x3.5 (GUAR-092) | 50x42x3.5 (GUAR-114E) | Dynamic gasket | 25 |
| 26 | O-Ring | 1.5x7 (GUAR-115) | 1.5x7 (GUAR-115) | 1.78x8.73 (GUAR-013) | 1.78x9.25 (GUAR-065) | O-Ring | 26 |
| 27 | Magnete | FES-32-3-5 | FES-32-3-5 | RAD-40-10 | FES-50-3-6 | Magnet | 27 |
| 28 | O-Ring | 2.62x11.91 (GUAR-033H) | 2.62x11.91 (GUAR-033H) | 2.62x15.08 (GUAR-105H) | 2.62x15.88 (GUAR-169H) | O-Ring | 28 |
| 29 | Terminale | FFD41-04 | FFD41-04 | FFD51-04 | FFD63-05 | Rod cap | 29 |
| 30 | O-Ring | 1x2 (GUAR-071) | 1x2 (GUAR-071) | 1.78x14 (GUAR-007) | 1.78x15.6 (GUAR-023) | O-Ring | 30 |

Vista esplosa / Exploded view

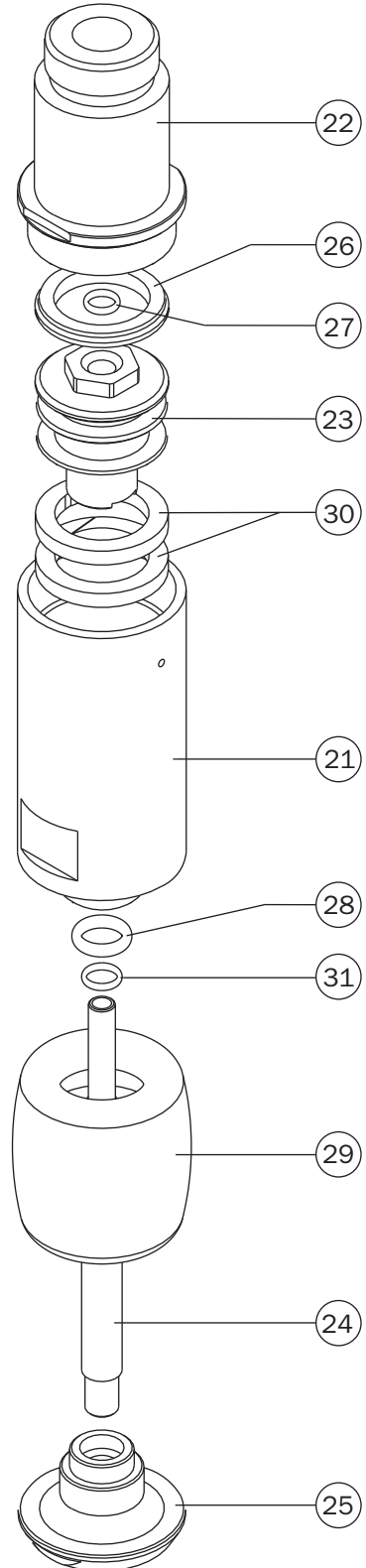
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MFU10CL



MFU12CL
MFU14CL
MFU16CL
MFU18CL
MFU20CL



MFU22CL
MFU27CL
MFU33CL
MFU41CL
MFU47CL
MFU51CL
MFU63CL



Elenco delle parti / Part list

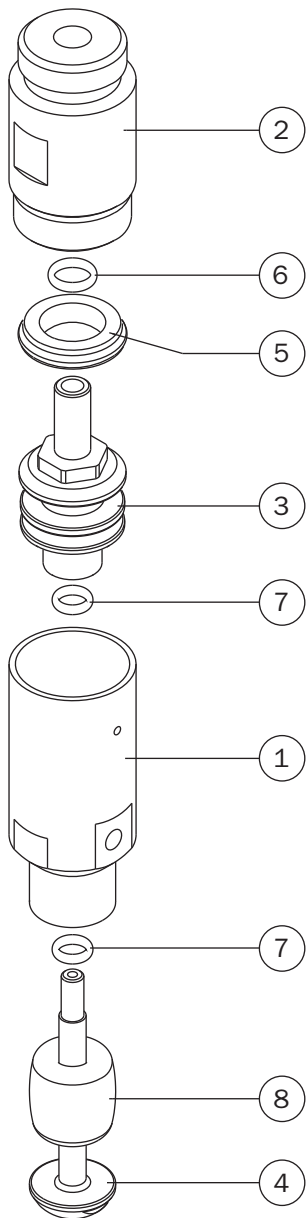
| | | MFU08CL | MFU10CL | | |
|---|----------------------|-------------------|-------------------|----------------|---|
| 1 | Corpo | FFU08-06 | FFU10-04 | Body | 1 |
| 2 | Testata | MFU08-01 | MFU08-01 | Head | 2 |
| 3 | Pistone | FFU08-02 | FFU08-02 | Piston | 3 |
| 4 | Stelo pistone | FFU08-05 | FFU10-03 | Piston rod | 4 |
| 5 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | Dynamic gasket | 5 |
| 6 | O-Ring | 1x3 (GUAR-082H) | 1x3 (GUAR-082H) | O-Ring | 6 |
| 7 | O-Ring | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | O-Ring | 7 |
| 8 | Parte elastica | IF08-11 | IF10-11 | Elastic part | 8 |

| | | MFU12CL | MFU14CL | MFU16CL | MFU18CL | MFU20CL | | |
|----|----------------------|--------------------|--------------------|--------------------|--------------------|---------|----------------|----|
| 11 | Corpo | FFU12-04 | FFU14-04 | FFU14-04 | FFU18-05 | | Body | 11 |
| 12 | Testata | MFU08-01 | MFU08-01 | MFU08-01 | MFU18-01 | | Head | 12 |
| 13 | Pistone | FFU12-05 | FFU14-05 | FFU14-05 | FFU18-06 | | Piston | 13 |
| 14 | Terminale | FFU12-03 | FFU14-03 | FFU14-03 | FFU18-04 | | Rod cap | 14 |
| 15 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 15x9x3 (GUAR-019) | | Dynamic gasket | 15 |
| 16 | O-Ring | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | | O-Ring | 16 |
| 17 | O-Ring | 1x4.48 (GUAR-029H) | 1x4.48 (GUAR-029H) | 1x4.48 (GUAR-029H) | 1x4.48 (GUAR-029H) | | O-Ring | 17 |
| 18 | Parte elastica | IF12-12 | IF14-12 | IF16-12 | IF18-11 | IF20-11 | Elastic part | 18 |

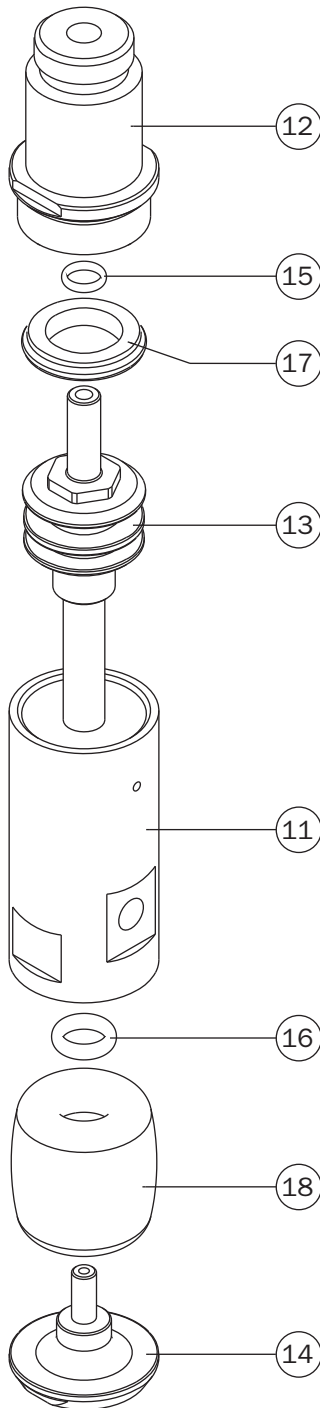
| | | MFU22CL | MFU27CL | MFU33CL | MFU41CL | MFU47CL | MFU51CL | MFU63CL | | |
|----|----------------------|------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------------|----|
| 21 | Corpo | FFU22-07 | FFU27-07 | FFU33-07 | FFU41-07 | FFU41-07 | FFU51-07 | FFU63-07 | Body | 21 |
| 22 | Testata | MFU22-01 | MFU27-01 | MFU33-01 | MFU41-01 | MFU41-01 | MFU51-01 | MFU63-01 | Head | 22 |
| 23 | Pistone | FFU22-03 | FFU27-03 | FFU33-03 | FFU41-03 | FFU41-03 | FFU51-03 | FFU63-03 | Piston | 23 |
| 24 | Stelo pistone | FFU22-06 | FFU27-08 | FFU33-08 | FFU41-08 | FFU41-08 | FFU51-08 | FFU63-08 | Piston rod | 24 |
| 25 | Terminale | FFU22-05 | FFU27-05 | FFU33-05 | FFU41-05 | FFU41-05 | FFU51-05 | FFU63-05 | Rod cap | 25 |
| 26 | Guarnizione dinamica | 18x12x3 (GUAR-133P) | 20x14x3 (GUAR-058) | 25x19x3.5 (GUAR-064) | 32x24x3.5 (GUAR-063) | 32x24x3.5 (GUAR-063) | 40x32x3.5 (GUAR-092) | 50x42x3.5 (GUAR-114E) | Dynamic gasket | 26 |
| 27 | O-Ring | 1x3 (GUAR-082H) | 1x4 (GUAR-091H) | 1x4.48 (GUAR-029H) | 2.62x7.6 (GUAR-060H) | 2.62x7.6 (GUAR-060H) | 2.62x7.6 (GUAR-060H) | 2.62x7.6 (GUAR-060H) | O-Ring | 27 |
| 28 | O-Ring | 1x5 (GUAR-021) | 1.78x6.07 (GUAR-039H) | 1.78x6.75 (GUAR-012H) | 1.78x10.82 (GUAR-080H) | 1.78x10.82 (GUAR-080H) | 2.62x11.91 (GUAR-033H) | 2.62x13.95 (GUAR-141H) | O-Ring | 28 |
| 29 | Parte elastica | IF22-12 | IF27-11 | IF33-11 | IF41-11 | IF47-11 | IF51-11 | IF63-11 | Elastic part | 29 |
| 30 | Magnete | - | PAR-20-10B | PAR-25-10B | FES-32-3-5 | FES-32-3-5 | RAD-40-10 | FES-50-3-6 | Magnet | 30 |
| 31 | O-Ring | 1x4.48 (GUAR-029H) | 1x4 (GUAR-091H) | 1x5 (GUAR-021) | 1x9 (GUAR-168) | 1x9 (GUAR-168) | 1x10 (GUAR-089) | 1x12 (GUAR-071) | O-Ring | 31 |

Vista esplosa / Exploded view

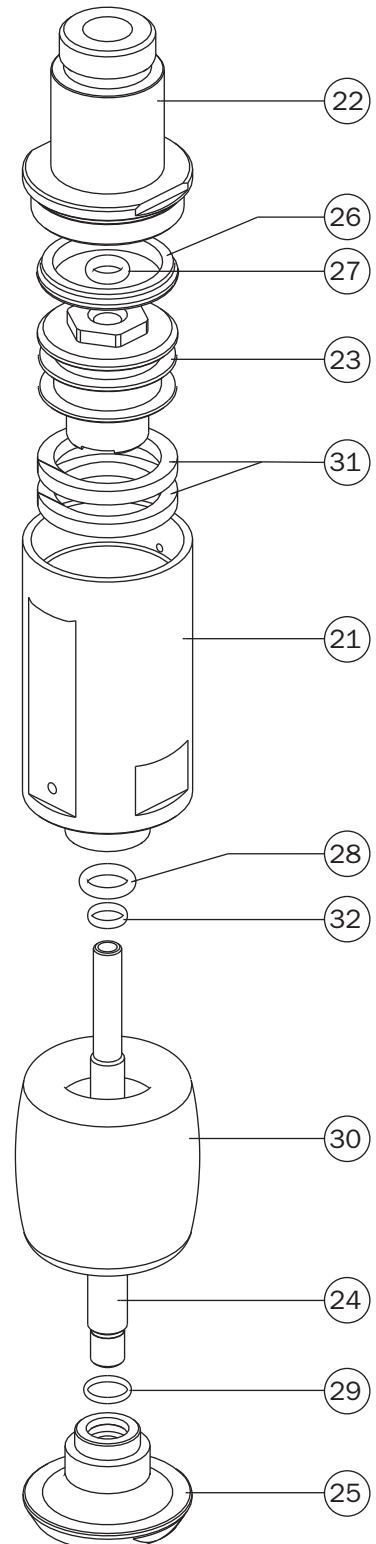
MFU08HL
MFU10HL



MFU12HL
MFU14HL
MFU16HL
MFU18HL
MFU20HL



MFU22HL
MFU27HL
MFU33HL
MFU41HL
MFU47HL
MFU51HL
MFU63HL



Elenco delle parti / Part list

| | | MFU08HL | MFU10HL | | |
|---|----------------------|-------------------|-------------------|----------------|---|
| 1 | Corpo | FFU08-03 | FFU10-01 | Body | 1 |
| 2 | Testata | MFU08-01 | MFU08-01 | Head | 2 |
| 3 | Pistone | FFU08-02 | FFU08-02 | Piston | 3 |
| 4 | Stelo pistone | FFU08-04 | FFU10-02 | Piston rod | 4 |
| 5 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | Dynamic gasket | 5 |
| 6 | O-Ring | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | O-Ring | 6 |
| 7 | O-Ring | 1x3 (GUAR-082H) | 1x3 (GUAR-082H) | O-Ring | 7 |
| 8 | Parte elastica | IF08-11 | IF10-11 | Elastic part | 8 |

| | | MFU12HL | MFU14HL | MFU16HL | MFU18HL | MFU20HL | | |
|----|----------------------|--------------------|--------------------|--------------------|--------------------|---------|----------------|----|
| 11 | Corpo | FFU12-01 | FFU14-01 | FFU14-01 | FFU18-01 | | Body | 11 |
| 12 | Testata | MFU08-01 | MFU08-01 | MFU08-01 | MFU18-01 | | Head | 12 |
| 13 | Pistone | FFU12-02 | FFU14-02 | FFU14-02 | FFU18-03 | | Piston | 13 |
| 14 | Terminale | FFU12-03 | FFU14-03 | FFU14-03 | FFU18-04 | | Rod cap | 14 |
| 15 | O-Ring | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | 1x4 (GUAR-091H) | | O-Ring | 15 |
| 16 | O-Ring | 1x4.48 (GUAR-029H) | 1x4.48 (GUAR-029H) | 1x4.48 (GUAR-029H) | 1x4.48 (GUAR-029H) | | O-Ring | 16 |
| 17 | Guarnizione dinamica | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 12x7x3 (GUAR-018) | 15x9x3 (GUAR-019) | | Dynamic gasket | 17 |
| 18 | Parte elastica | IF12-12 | IF14-12 | IF16-12 | IF18-11 | IF20-11 | Elastic part | 18 |

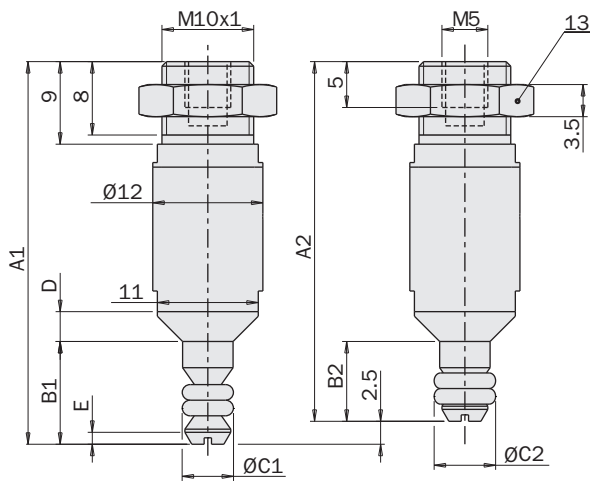
| | | MFU22HL | MFU27HL | MFU33HL | MFU41HL | MFU47HL | MFU51HL | MFU63HL | | |
|----|----------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------------|----|
| 21 | Corpo | FFU22-01 | FFU27-01 | FFU33-01 | FFU41-01 | FFU41-01 | FFU51-01 | FFU63-01 | Body | 21 |
| 22 | Testata | MFU22-01 | MFU27-01 | MFU33-01 | MFU41-01 | MFU41-01 | MFU51-01 | MFU63-01 | Head | 22 |
| 23 | Pistone | FFU22-03 | FFU27-03 | FFU33-03 | FFU41-03 | FFU41-03 | FFU51-03 | FFU63-01 | Piston | 23 |
| 24 | Stelo pistone | FFU22-04 | FFU27-04 | FFU33-04 | FFU41-04 | FFU41-04 | FFU51-04 | FFU63-04 | Piston rod | 24 |
| 25 | Terminale | FFU22-05 | FFU27-05 | FFU33-05 | FFU41-05 | FFU41-05 | FFU51-05 | FFU63-05 | Rod cap | 25 |
| 26 | Guarnizione dinamica | 18x12x3 (GUAR-133P) | 20x14x3 (GUAR-058) | 25x19x3.5 (GUAR-064) | 32x24x3.5 (GUAR-063) | 32x24x3.5 (GUAR-063) | 40x32x3.5 (GUAR-092) | 50x42x3.5 (GUAR-114E) | Dynamic gasket | 26 |
| 27 | O-Ring | 1x3 (GUAR-082H) | 1x4 (GUAR-091H) | 1.78x4.48 (GUAR-029H) | 2.62x7.6 (GUAR-060H) | 2.62x7.6 (GUAR-060H) | 2.62x7.6 (GUAR-060H) | 2.62x7.6 (GUAR-060H) | O-Ring | 27 |
| 28 | O-Ring | 1x5 (GUAR-021) | 1.78x6.07 (GUAR-039H) | 1.78x6.75 (GUAR-012H) | 1.78x10.82 (GUAR-080H) | 1.78x10.82 (GUAR-080H) | 2.62x11.91 (GUAR-033H) | 2.62x13.95 (GUAR-141H) | O-Ring | 28 |
| 29 | O-Ring | - | 1x6 (GUAR-098) | 1x7 (GUAR-136) | 1.78x10.82 (GUAR-080) | 1.78x10.82 (GUAR-080) | 2x12 (GUAR-088) | 1.78x14 (GUAR-007) | O-Ring | 29 |
| 30 | Parte elastica | IF22-12 | IF27-11 | IF33-11 | IF41-11 | IF47-11 | IF51-11 | IF63-11 | Elastic part | 30 |
| 31 | Magnete | - | PAR-20-10B | PAR-25-10B | FES-32-3-5 | FES-32-3-5 | RAD-40-10 | FES-50-3-6 | Magnet | 31 |
| 32 | O-Ring | 1.78x4.48 (GUAR-029H) | 1x4 (GUAR-091H) | 1x5 (GUAR-021) | 1x9 (GUAR-168) | 1x9 (GUAR-168) | 1x10 (GUAR-089) | 1x12 (GUAR-071) | O-Ring | 32 |

Micro pinze ad espansione per interni serie IFU

- Nuovo concetto di pinza innovativa.
- Movimento verso l'alto.
- La parte elastica può essere in Silicone o NBR.
- Diametro di presa da 4.5 a 8.7 mm.

ID expansion micro grippers series IFU

- New concept for innovative air hands.
- Upward movement.
- The elastic part can be in Silicone or NBR.
- Grip diameters from 4.5 to 8.7 mm.



| | IFU04S01RT IFU04N03RT | IFU05S01RT IFU05N03RT | IFU06S01RT IFU06N03RT | IFU07S01RT IFU07N03RT |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|
| A1 | 40.9 | 41.7 | 42 | 42 |
| A2 | 38.4 | 39.2 | 39.5 | 39.5 |
| B1 | 9.9 | 11.2 | 11.5 | 11.5 |
| B2 | 7.4 | 8.7 | 9 | 9 |
| C1 | Ø4.5 | Ø5.6 | Ø6.6 | Ø7.6 |
| C2 | Ø5.4 | Ø6.7 | Ø7.6 | Ø8.7 |
| X1 | 3 | 3.4 | 3.4 | 3.4 |
| X2 | 2.7 | 3.4 | 3.4 | 3.4 |
| W1 | 4 | 4.8 | 5.1 | 5.1 |
| W2 | 2.7 | 3.6 | 3.8 | 3.9 |
| D | 3.75x45° | 3.25x45° | 2.75x45° | 2.4x45° |
| E | 1x60° | 1.3x60° | 1.4x60° | 1.5x60° |
| Peso Weight | 7g | 7g | 8g | 9g |

Esempi di utilizzo / Application examples

