

MEC FLUID 2

Specialists in Custom Pneumatics



MOLTIPLICATORI DI PRESSIONE
1:2 / 1:3 / 1:4

Pressure boosters
1:2 / 1:3 / 1:4



MADE IN ITALY
SINCE 1983

Moltiplicatori di pressione

Pressure boosters

Generalità

Information

Il moltiplicatore di pressione serve ad aumentare la pressione fornita dal compressore a spese di una perdita di portata proporzionale. Non sostituiscono quindi un compressore ma forniscono per un tempo limitato una pressione di un valore superiore. Normalmente vengono impiegati per incrementare la forza di cilindri pneumatici, mantenendo ingombri e pesi più contenuti, per soffiaggi ad alta pressione, per collaudi di componenti, per prove di scoppio, ecc...

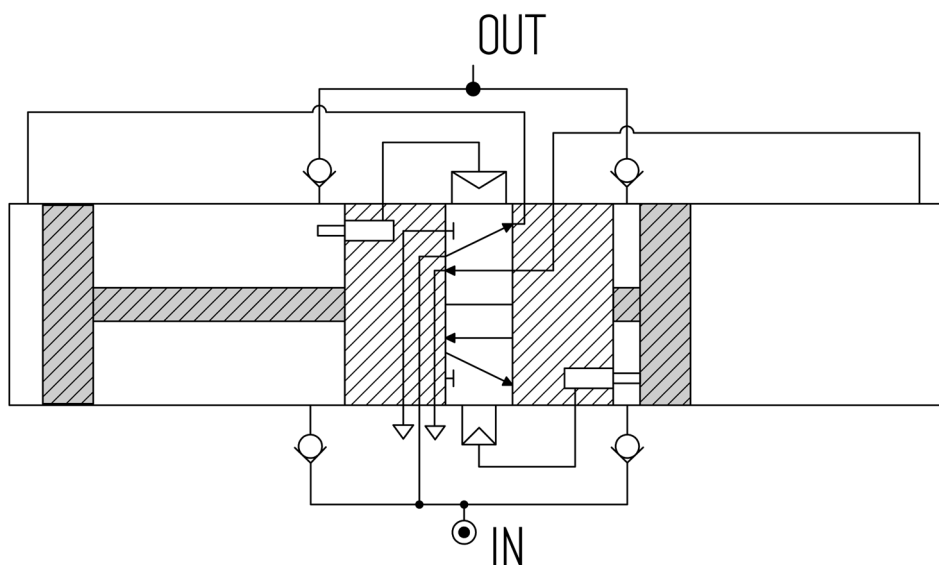
Pressure boosters serve to increase the pressure supplied by the compressor at the expense of a proportional flow loss. Therefore they don't replace a compressor but provide a pressure of a higher value for a limited time. They are normally used to increase the strength of pneumatic cylinders, keeping smaller overall dimensions and weights, for blowing at high pressure, for testing components, for bust test, etc....

Funzionamento

Function

Il moltiplicatore di pressione entra automaticamente in funzione appena si applica una pressione in ingresso (P_1) e lavora fino a che la pressione in uscita (P_2) raggiunge il doppio di quella in ingresso (con rapporto di compressione 1:2), il triplo (con rapporto di compressione 1:3), il quadruplo (con rapporto di compressione 1:4). Il booster non è concepito per lavorare a scarico libero, ma prevede sempre un utilizzo collegato. La pressione in uscita può eventualmente essere regolata tramite un riduttore di pressione. Quando non viene prelevata aria in uscita, la presenza delle valvole di non ritorno integrate permette di mantenere la pressione moltiplicata anche in assenza di pressione in ingresso.

The pressure multiplier automatically goes into operation as soon as an inlet pressure (P_1) is applied and works until the outlet pressure (P_2) reaches: double the inlet pressure (with compression ratio 1:2), the triple (with compression ratio 1:3), quadruple (with compression ratio 1:4). The booster is not designed to work with a free drain, but always requires a connected use. The outlet pressure can be regulated by a pressure reducer. When no air is taken out, the presence of the integrated non-return valves allows to maintain the pressure multiplied even in the absence of inlet pressure.



Funzionamento interno moltiplicatore - internal multiplier operation

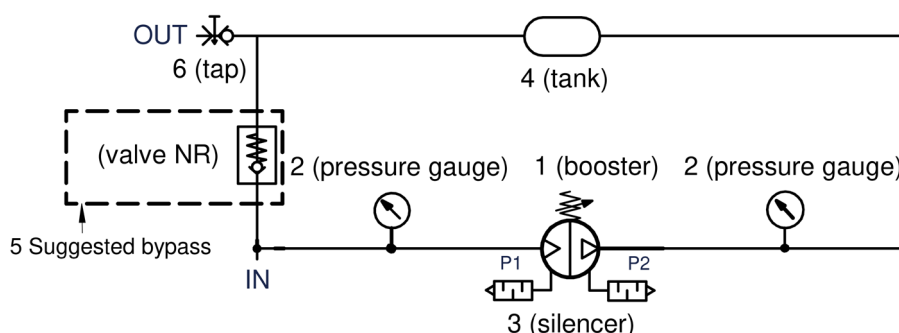
Collegamento all'impianto

Connection to the compressed air network

Connection to the compressed air network

In caso di collegamento diretto del moltiplicatore in un impianto si deve prevedere una valvola 3/2 (6) per aprire e chiudere il circuito a valle del moltiplicatore. Nel moltiplicatore l'erogazione del fluido ad alta pressione è di tipo "pulsante", si consiglia quindi di utilizzare sempre un serbatoio d'aria (4) all'uscita del moltiplicatore per evitare pulsazioni all'utilizzo. Un collegamento di bypass come illustrato da schema (5) è suggerito per velocizzare il primo riempimento dell'impianto. La scelta del moltiplicatore non coinvolge solo il rapporto di compressione ma soprattutto il volume del serbatoio sufficiente a garantire la corretta alimentazione degli utilizzi. Preliminarmente si deve calcolare il volume d'aria prelevato dagli utilizzi (cilindri, ugelli di soffiaggio etc...) per poi passare alla determinazione del volume del serbatoio.

In case of direct connection of the booster in a system it should be provided a 3/2 valve (6) to open and close the circuit downstream of the multiplier. The booster provides high pressure air in a "pulsating" way, therefore it is suggested to always use an air tank (4) at the output of the multiplier to avoid pulsation on use. A bypass connection as shown in the diagram (5) is suggested to speed up the initial filling of the system. The choice of the booster doesn't only involve the compression ratio but, most all it involves the tank volume that as to be enough to guarantee the correct feeding of the uses. First of all it is necessary to calculate the volume of air taken from the uses (cylinders, blowing nozzles etc...) and then move on to the determination of the tank volume.



Collegamento consigliato all'impianto - Recommended connection to the system

Manutenzione

Maintenance

Il moltiplicatore di pressione ha una vita media di 20 milioni di scambi in condizioni di impiego ottimali. Un buon grado di filtrazione (<50 micron) aiuta ad aumentare la vita del componente. Si raccomanda di proteggere le bocche di scarico dalla polvere con silenziatori idonei, e si raccomanda, ove possibile, di lavorare con aria non lubrificata. Kit di ricambio per le guarnizioni di tenuta soggette ad usura sono fornibili su richiesta.

The booster has an average life time 20 million cycles when the conditions of use are optimal; a high degree of filtration (<50 microns) helps to increase the life time of the component. We recommend using suitable silencers to protect from dust the exhaust ports, and it is recommended, wherever it is possible, to use non lubricated air. Replacement kit for the seals are available on request.

Chiave di codifica

Codification key

-UM12-

-UM12- Standard
-UM22- Con regolatore -
With pressure regulator

040

Diametro - Diameter
040 mm
063 mm
100 mm

RC1.2

Rapporto di compressione - Pressure ratio
1.2 (out Pmax = 20 bar)
1.3 (out Pmax = 30 bar)
1.4 (out Pmax = 40 bar)



-UM12-063RC1.2



-UM22-063RC1.2

Dati Tecnici

Technical data

Fluido: aria filtrata, lubrificata* o (preferibilmente) non lubrificata.
Pressione di alimentazione: 3 ÷ 10 bar.
Temperatura ambiente: -20°C ÷ +50°C.
Posizione di montaggio: si suggerisce il montaggio con l'alimentazione dall'alto.

*ATTENZIONE: tutti gli elementi scorrevoli e le guarnizioni, sono prelubrificati con grasso speciale ad alte prestazioni. Nel caso si iniziasse a lubrificare con olio nebulizzato, ciò dovrà perdurare in maniera costante.

Fluid: filtered air, lubricated* or (preferred) non lubricated.
Inlet pressure: 3 ÷ 10 bar.

Ambient temperature: -20°C ÷ +50°C.

Mounting position: it is suggested mounting with the inlet connection above.

*ATTENTION: all the sliding elements and the seals, are lubricated with special high performance grease. If you began to lubricate with oil mist, you will have to lubricate continuously.

Caratteristiche componenti - Components specifications

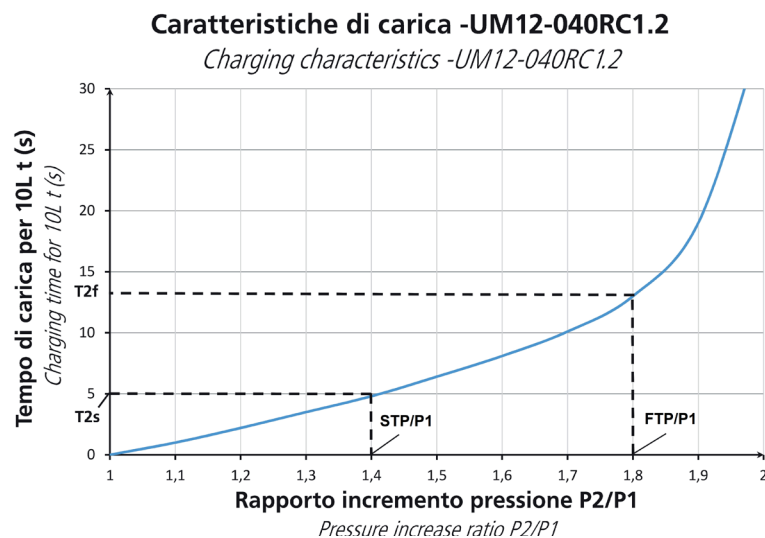
DESCRIZIONE - DESCRIPTION	MATERIALE - MATERIAL	TRATTAMENTO - TREATMENT
Corpo fondelli - Body caps	Lega 11s - Alluminiun 2011	Anodizzazione - Anodized
Pistoni - Pistons	Lega 11s - Alluminiun 2011	
Stelo - Rod	Acciaio cromato - Chromated steel	
Viti di fissaggio - Fixing screws	Acciaio - Steel	Zincatura - Galvanized
Spole valvole - Valves spools	Acciaio inox, OT58 - Stainless steel, Brass	
Elementi di tenuta - Seals	NBR, Poliuretano - NBR, Polyurethane	

Dimensionamento del serbatoio

Tank sizing

Esempio di calcolo del tempo di riempimento di un serbatoio ad una pressione iniziale di 7 bar che deve essere portata a 9 bar con un moltiplicatore -UM12-040RC1.2 alimentato con una pressione di rete di 5 bar (per il dimensionamento con altri moltiplicatori confrontare diagrammi da pag. 6 a pag.11).

Calculation example about filling time of a tank from starting pressure of 7 bar to final pressure of 9 bar using a pressure booster -UM12-040RC1.2 with a inlet pressure of a 5 bar (for sizing with other boosters compare diagrams from page 6 to page 11).



Dati da conoscere - Known data

Pressione di alimentazione booster - *Inlet booster pressure*: $P_1 = 5$ bar ;
 Pressione iniziale serbatoio - *Starting tank pressure*: $STP = 7$ bar ;
 Pressione finale serbatoio - *Final tank pressure*: $FTP = 9$ bar ;
 Volume serbatoio - *Tank volume*: V ;

Istruzioni per il calcolo del serbatoio - Tank calculation instruction

- 1) Calcolare STP/P_1 e FTP/P_1 ;
- 2) Ricavare i tempi di carica T_{2s} e T_{2f} dal grafico usando i valori calcolati STP/P_1 e FTP/P_1 ;
- 3) Il tempo di riempimento di un serbatoio è dato da

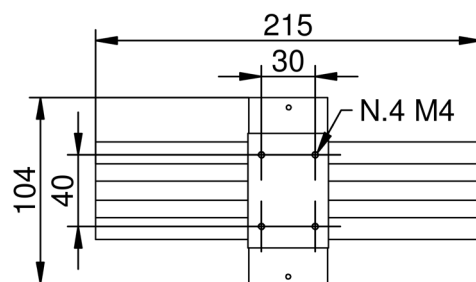
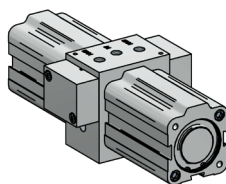
$$T_{tot} = (T_{2f} - T_{2s}) * V / 10.$$

- 1) Calculate STP/P_1 and FTP/P_1 ;
- 2) Get the charging times T_{2s} and T_{2f} from the graph using the calculated values STP/P_1 and FTP/P_1 ;
- 3) The filling time of a tanks is given by

$$T_{tot} = (T_{2f} - T_{2s}) * V / 10.$$

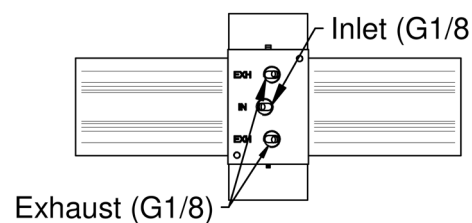
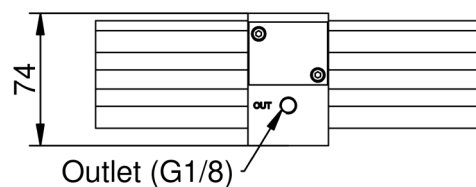
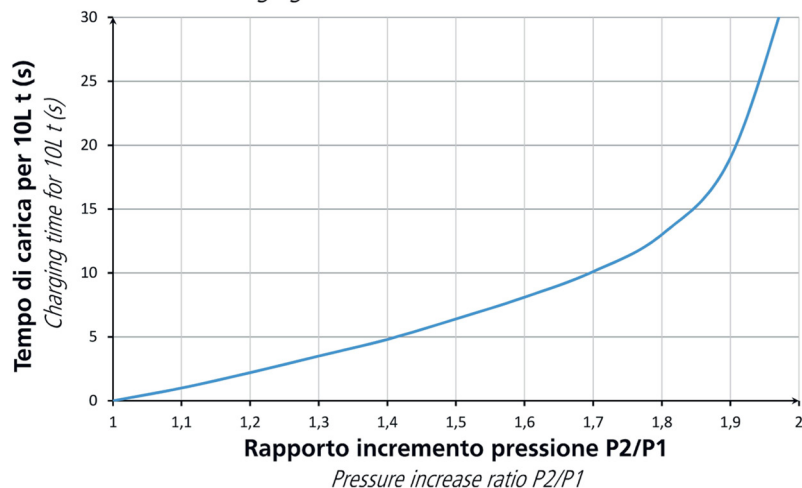
Ø40 Rc=1:2

-UM12-040RC1.2



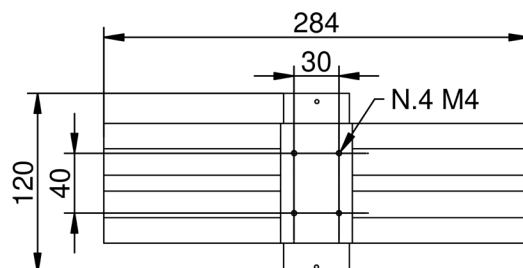
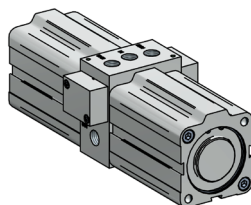
Caratteristiche di carica -UM12-040RC1.2

Charging characteristics -UM12-040RC1.2



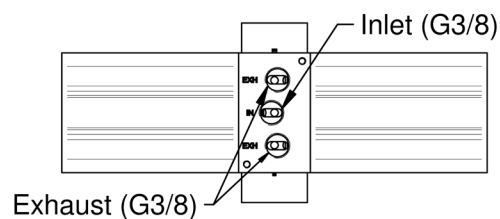
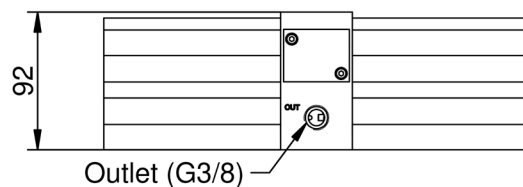
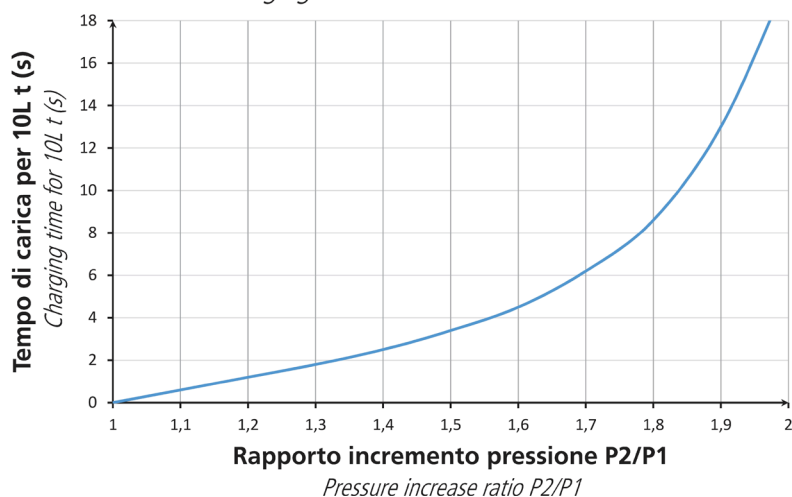
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-UM12-063RC1.2



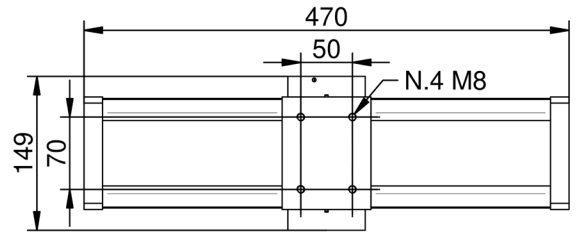
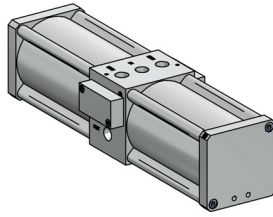
Caratteristiche di carica -UM12-063RC1.2

Charging characteristics -UM12-063RC1.2



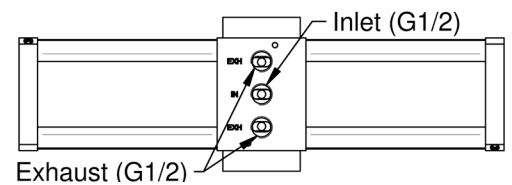
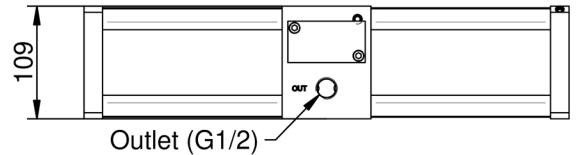
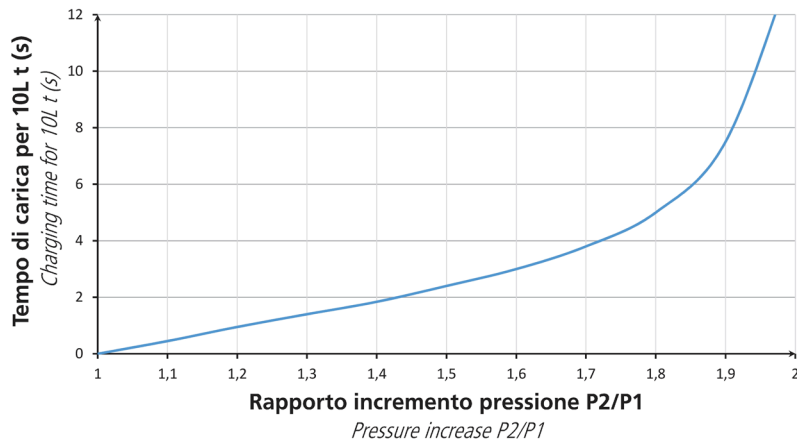
Ø100 Rc=1:2

-UM12-100RC1.2



Caratteristiche di carica -UM12-100RC1.2

Charging characteristics -UM12-100RC1.2



Accessori - Accessories

-UM12-040KT01

Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

-UM12-063KT01

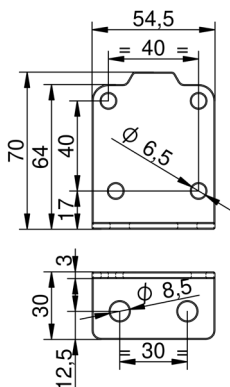
Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

-UM12-100KT01

Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

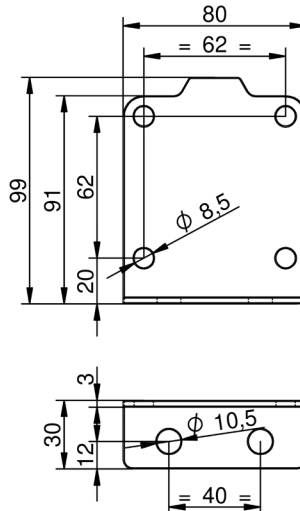
-UM-13040

Coppia staffe di fissaggio -
Pairs of fixing brackets



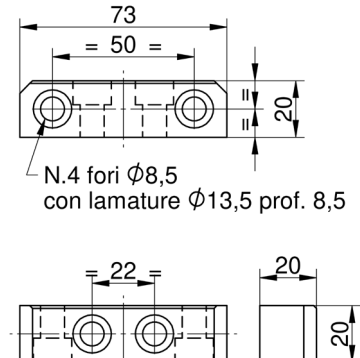
-UM-13063

Coppia staffe di fissaggio -
Pairs of fixing brackets



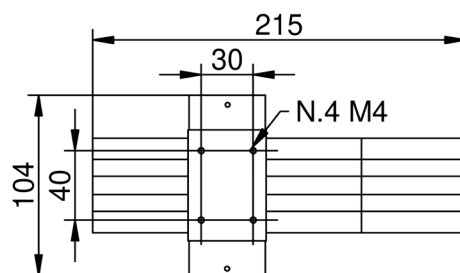
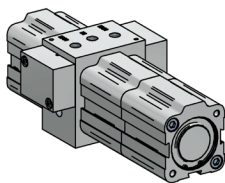
-UM-13100

Coppia staffe di fissaggio -
Pairs of fixing brackets



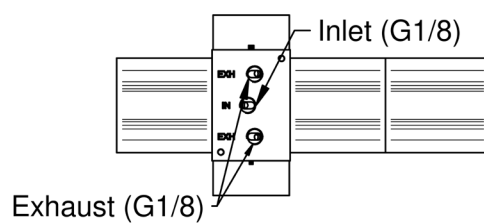
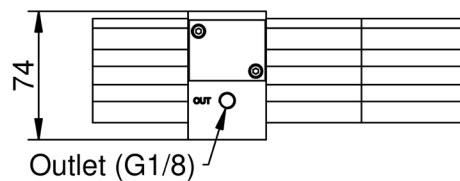
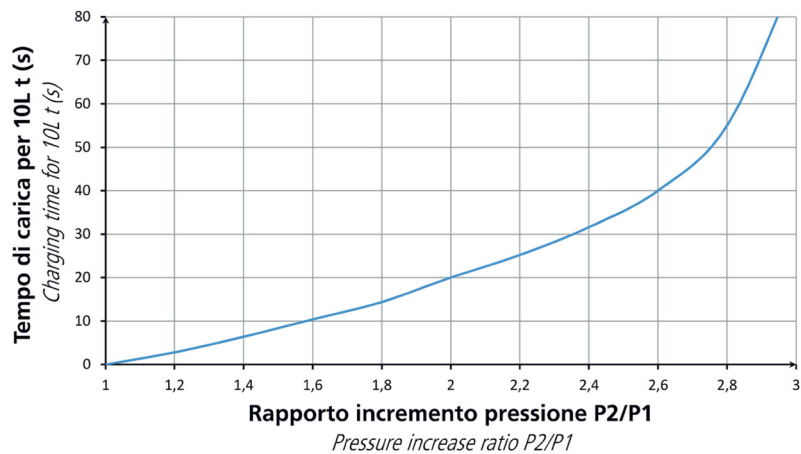
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-UM12-040RC1.3



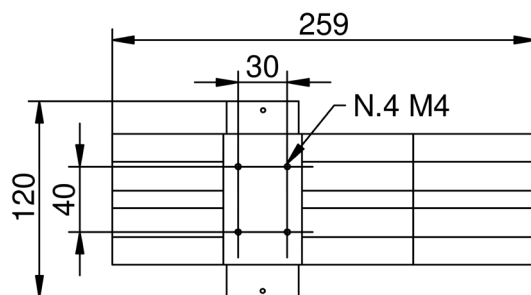
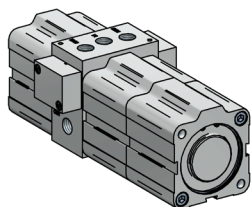
Caratteristiche di carica -UM12-040RC1.3

Charging characteristics -UM12-040RC1.3



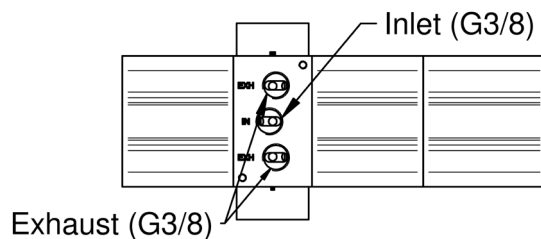
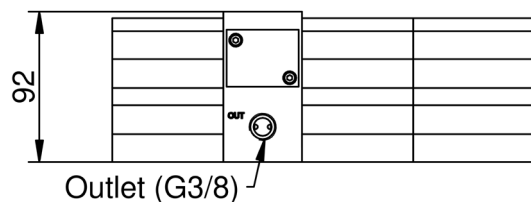
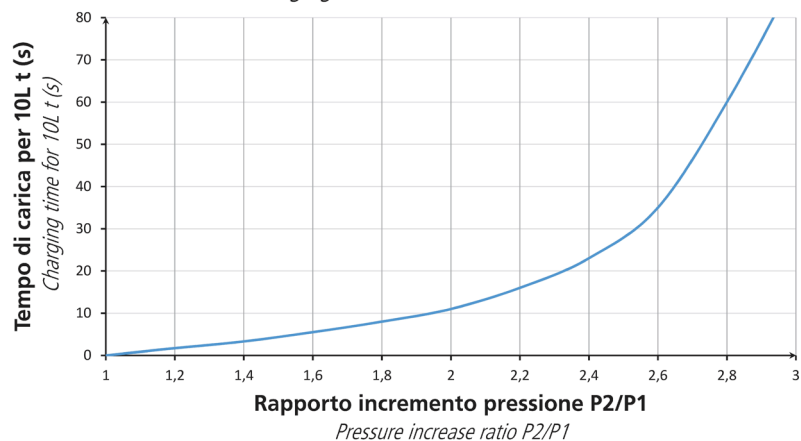
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-UM12-063RC1.3



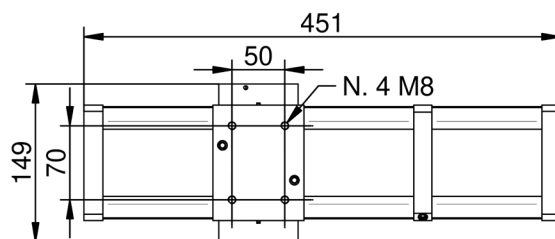
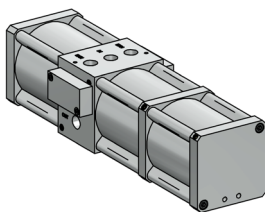
Caratteristiche di carica -UM12-063RC1.3

Charging characteristics -UM12-063RC1.3



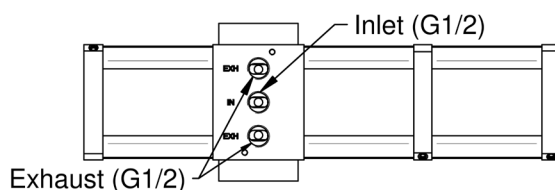
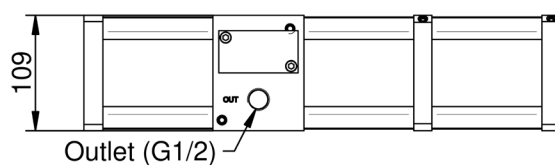
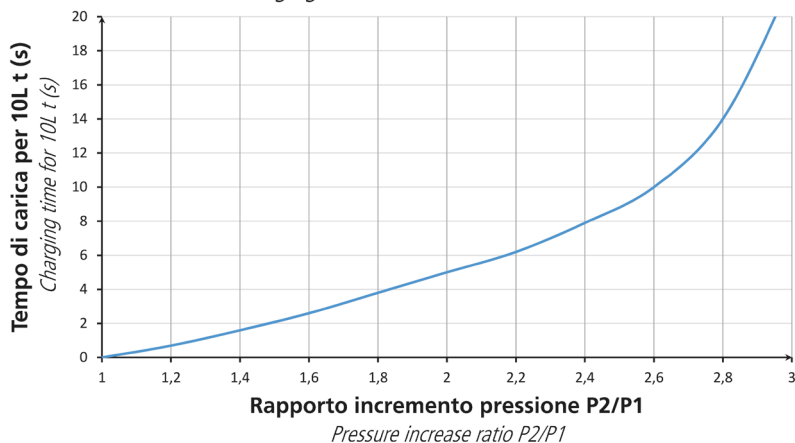
Ø100 Rc=1:3

-UM12-100RC1.3



Caratteristiche di carica -UM12-100RC1.3

Charging characteristics -UM12-100RC1.3



Accessori - Accessories

-UM12-040KT01

Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

-UM12-063KT01

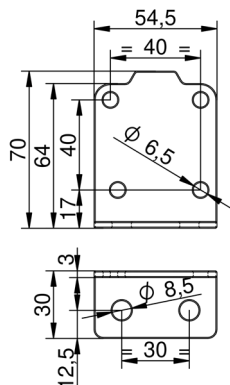
Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

-UM12-100KT01

Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

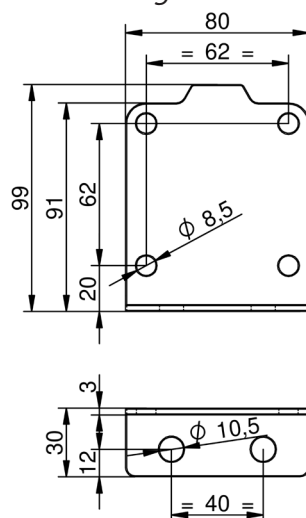
-UM-13040

Coppia staffe di fissaggio -
Pairs of fixing brackets



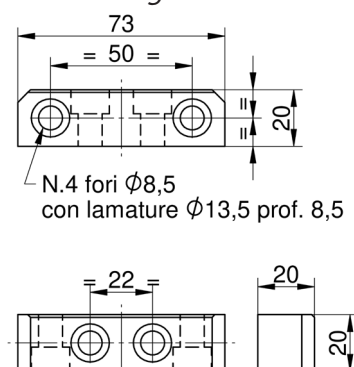
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Coppia staffe di fissaggio -
Pairs of fixing brackets



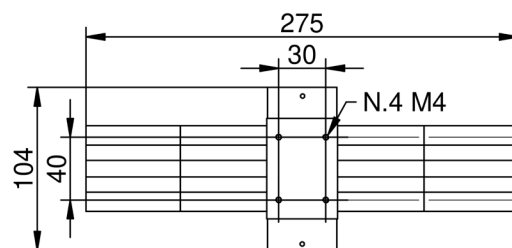
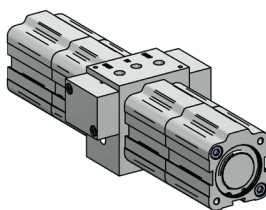
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Pairs of fixing brackets



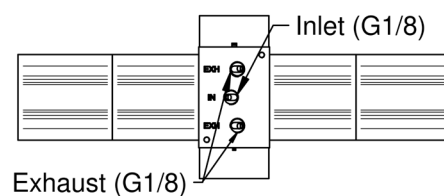
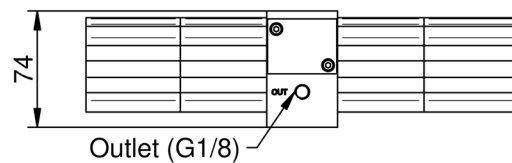
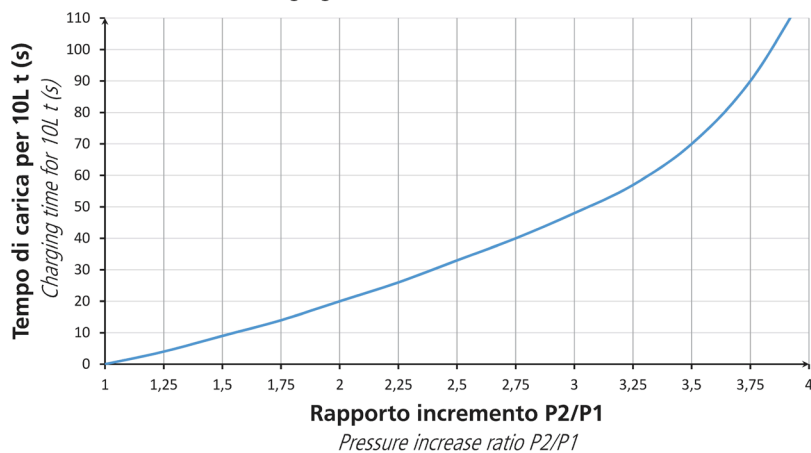
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-UM12-040RC1.4



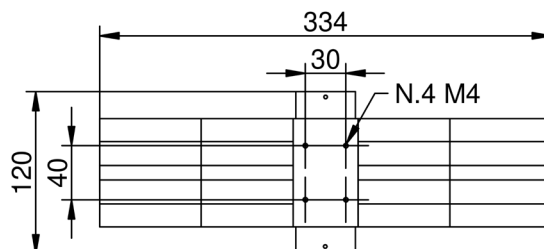
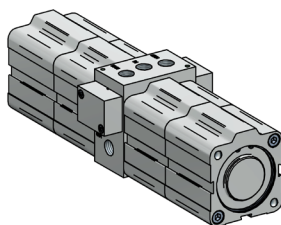
Caratteristiche di carica -UM12-040RC1.4

Charging characteristics -UM12-040RC1.4



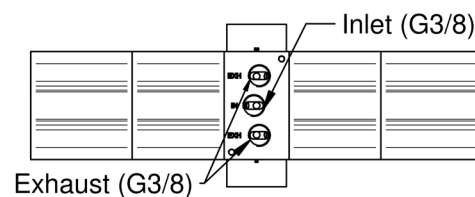
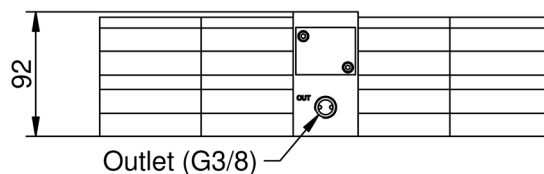
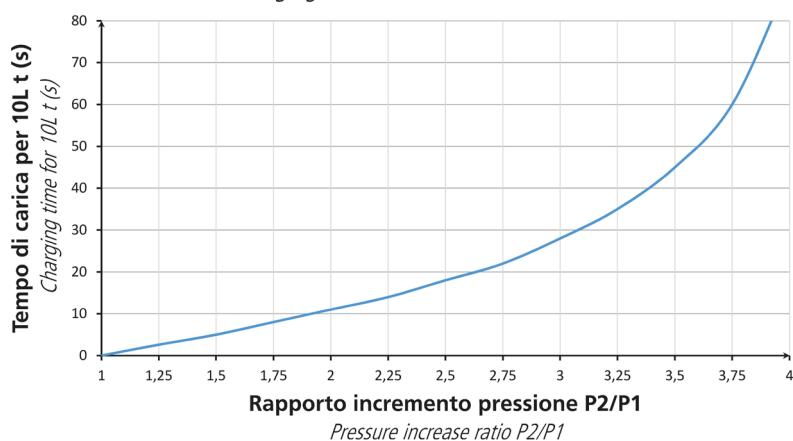
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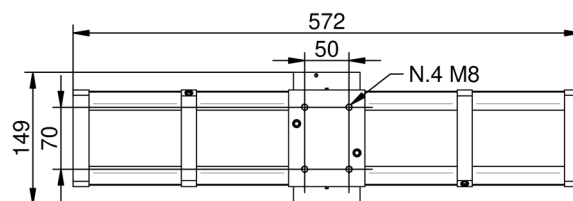
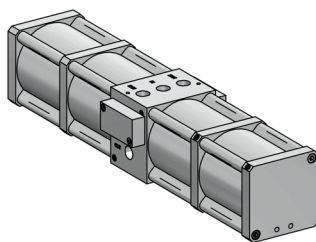
Caratteristiche di carica -UM12-063RC1.4

Charging characteristics -UM12-063RC1.4



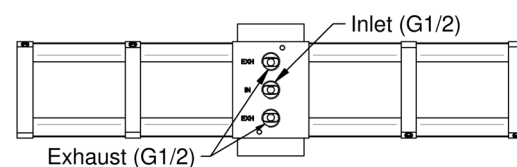
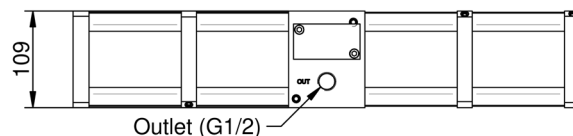
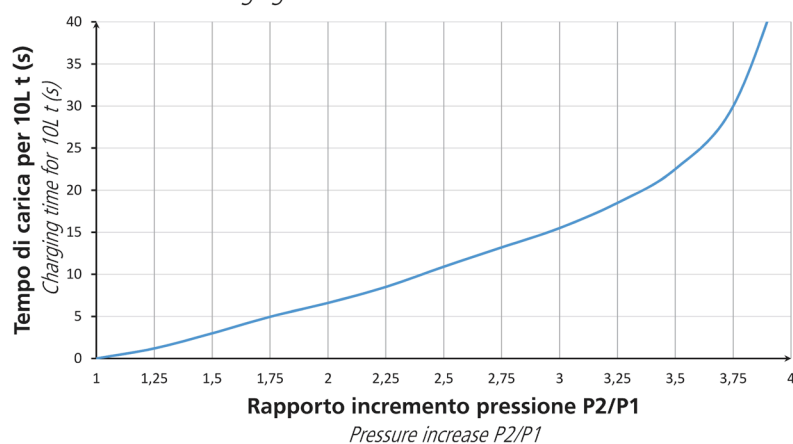
Ø100 Rc=1:4

-UM12-100RC1.4



Caratteristiche di carica -UM12-100RC1.4

Charging characteristics -UM12-100RC1.4



Accessori - Accessories

-UM12-040KT01

Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

-UM12-063KT01

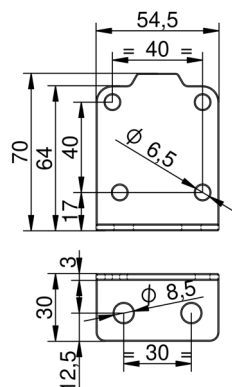
Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

-UM12-100KT01

Kit ricambio guarnizioni e o-ring -
Gasket and o-ring replacement kit

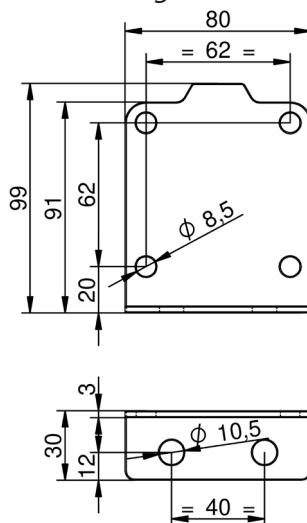
-UM-13040

Coppia staffe di fissaggio -
Pairs of fixing brackets



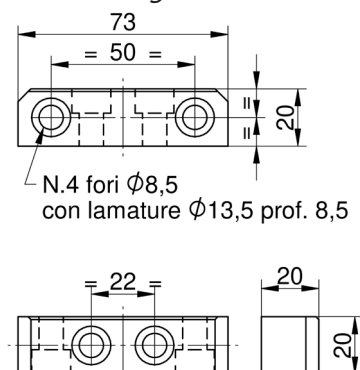
-UM-13063

Coppia staffe di fissaggio -
Pairs of fixing brackets

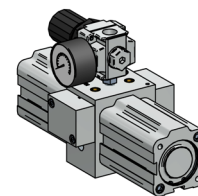
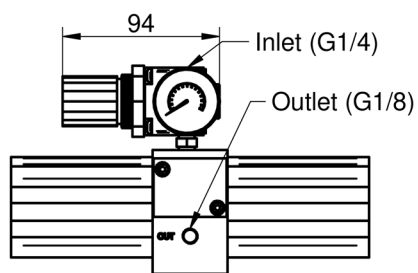
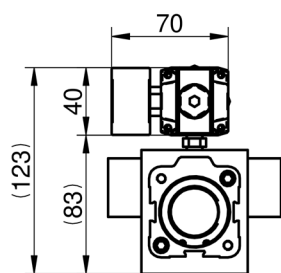


-UM-13100

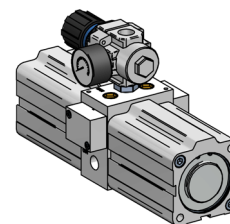
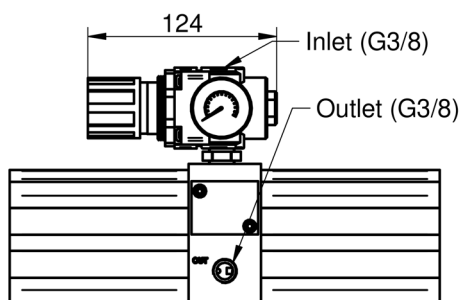
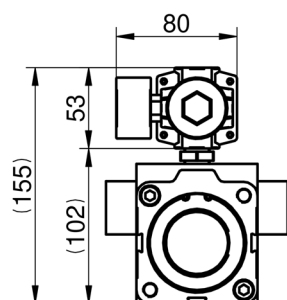
Coppia staffe di fissaggio -
Pairs of fixing brackets



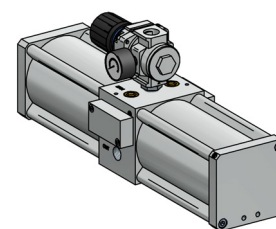
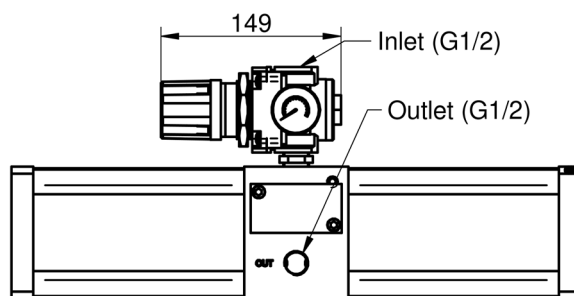
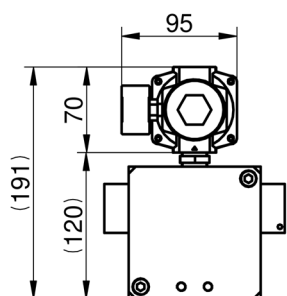
-UM22-040RC1.2 (con regolatore) - (With pressure regulator)



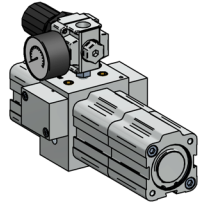
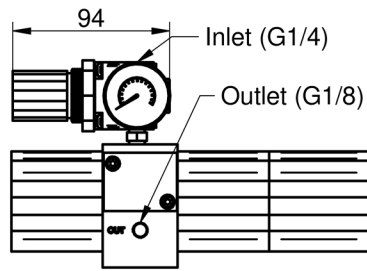
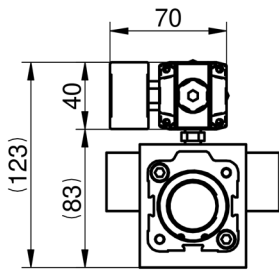
-UM22-063RC1.2 (con regolatore) - (With pressure regulator)



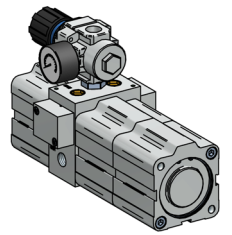
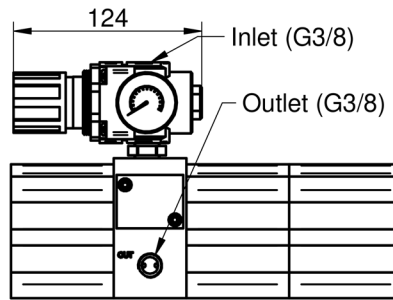
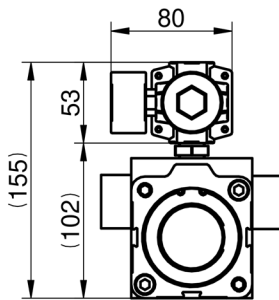
-UM22-100RC1.2 (con regolatore) - (With pressure regulator)



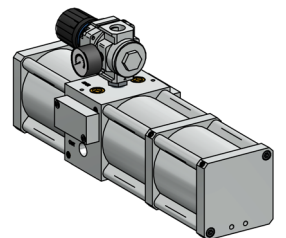
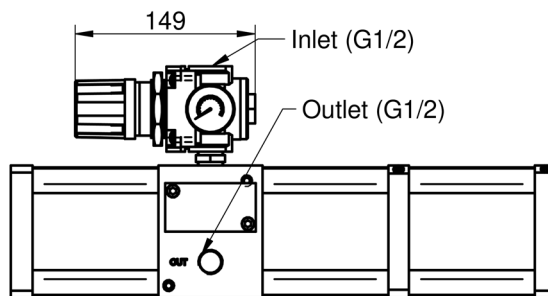
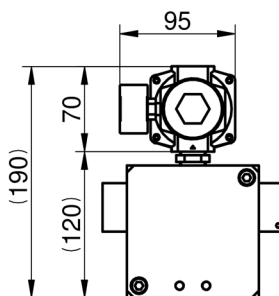
-UM22-040RC1.3 (con regolatore) - (With pressure regulator)



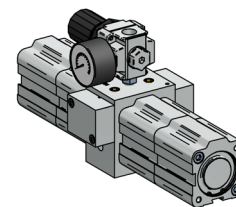
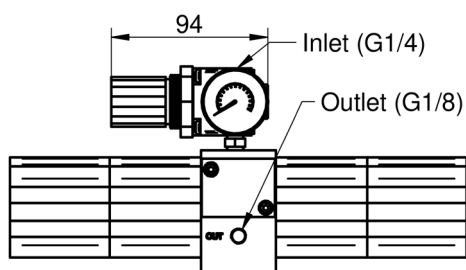
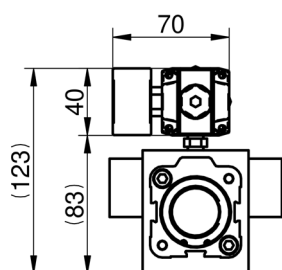
-UM22-063RC1.3 (con regolatore) - (With pressure regulator)



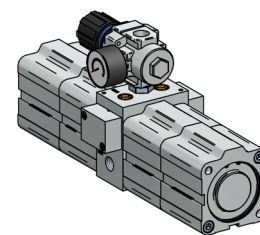
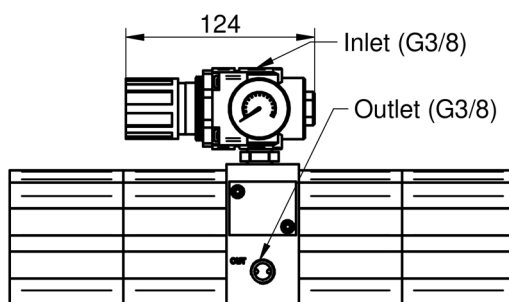
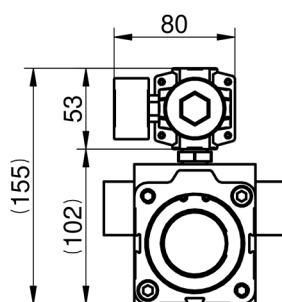
-UM22-100RC1.3 (con regolatore) - (With pressure regulator)



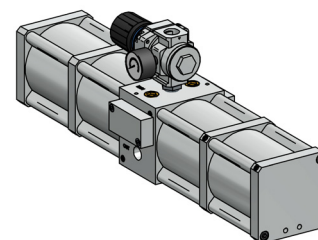
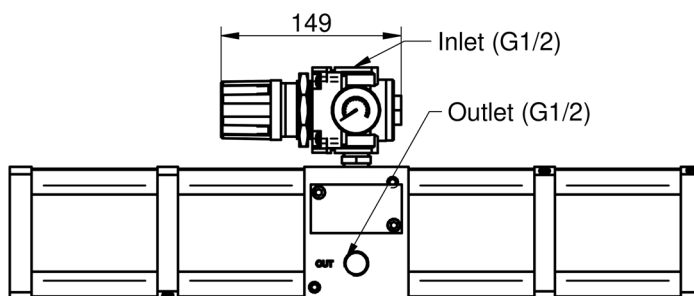
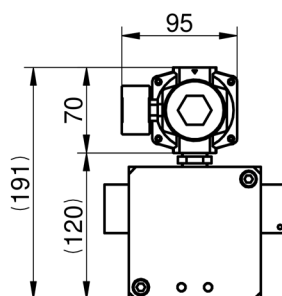
-UM22-040RC1.4 (con regolatore) - (With pressure regulator)



-UM22-063RC1.4 (con regolatore) - (With pressure regulator)

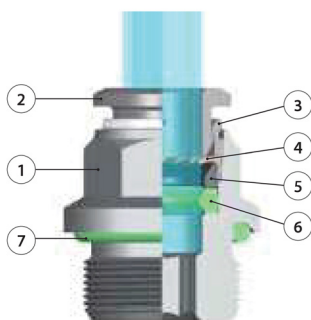


-UM22-100RC1.4 (con regolatore) - (With pressure regulator)



Raccordi automatici metallici con guarnizioni FKM - *Metallic push-in fittings with FKM seal*

- Caratteristiche generali - *General characteristics*:



- Materiali e Componenti :

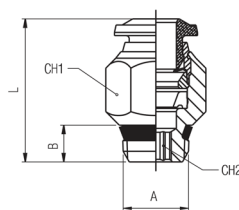
- 1 Corpo in ottone nichelato ;
- 2 Spintore sgancio tubo in ottone nichelato ;
- 3 Capsula in ottone nichelato ;
- 4 Pinza d'aggraffaggio in acciaio inox AISI 301 ;
- 5 Anello di posizionamento in tecnopolimero ;
- 6 Guarnizione sagomata in FKM ;
- 7 Guarnizione filetto in FKM ;

Component Parts and Materials

- 1 Nickel-plated brass Body ;
- 2 Nickel-plated brass Collet ;
- 3 Nickel-plated brass Capsule ;
- 4 Steel AISI 301 Clamping washer ;
- 5 Technopolymeric positioning ring ;
- 6 FKM Molded seal ;
- 7 FKM Thread packing ;

Pressioni <i>Pressure</i> (bar)	Temperature <i>Temperatures</i> (°C)	Fluidi compatibili <i>Fluids</i>
- 0,99 / 30	- 15 / +130	Aria Compressa / <i>Compressed air</i>

Raccordo diritto maschio "universal short" - *Straight male adaptor "universal short"*

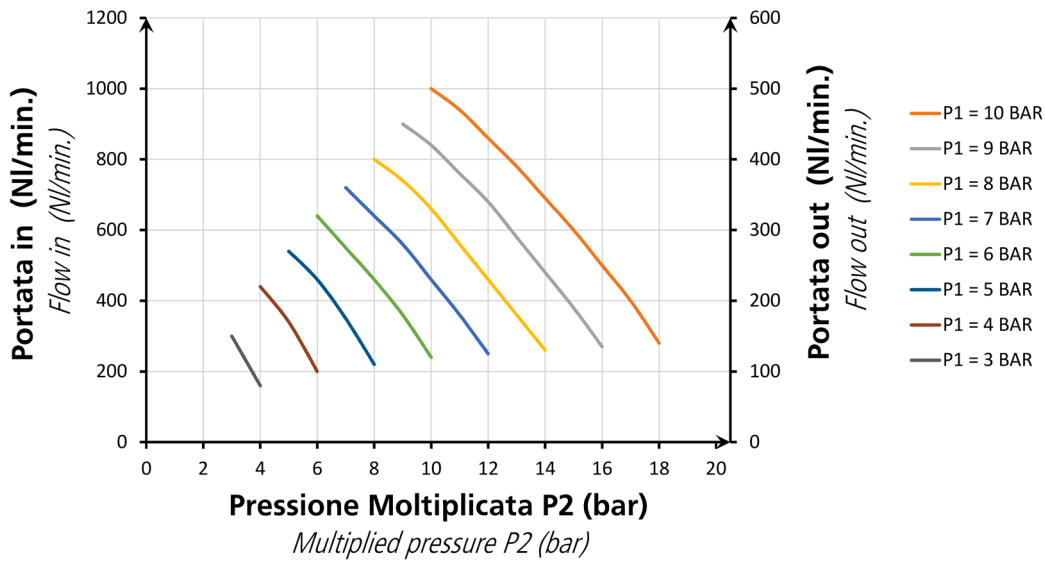


Codice <i>Code</i>	Tubo <i>Tube</i>	A	B	L	CH1	CH2	Pack.
-RC-40005V0 002	6	G1/8	5,5	21,5	13	4	10
-RC-40005V0 004	8	G1/8	5,5	24,5	14	5	10
-RC-40005V0 005	8	G1/4	7	22	14	6	10
-RC-40005V0 007	10	G1/4	7	28	17	7	10
-RC-40005V0 017	10	G1/2	9	26	21	8	10
-RC-40005V0 009	12	G1/4	7	31,5	20	7	10
-RC-40005V0 010	12	G3/8	7,5	29,5	20	9	10

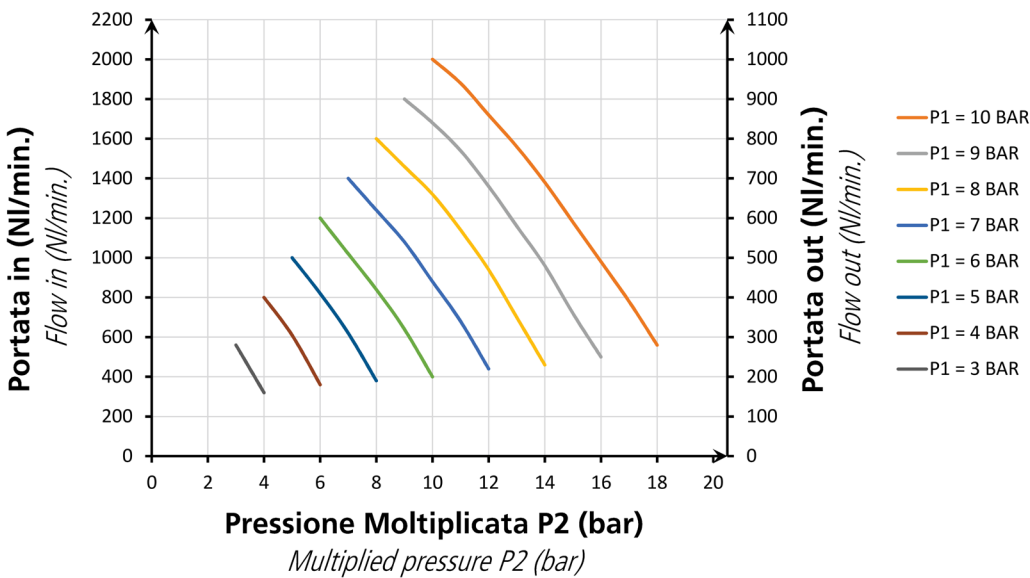
* Per raccordi con caratteristiche differenti sono disponibili su richiesta - *For fittings with different characteristics are available on request.*

Caratteristiche delle portate - Flow rate characteristics

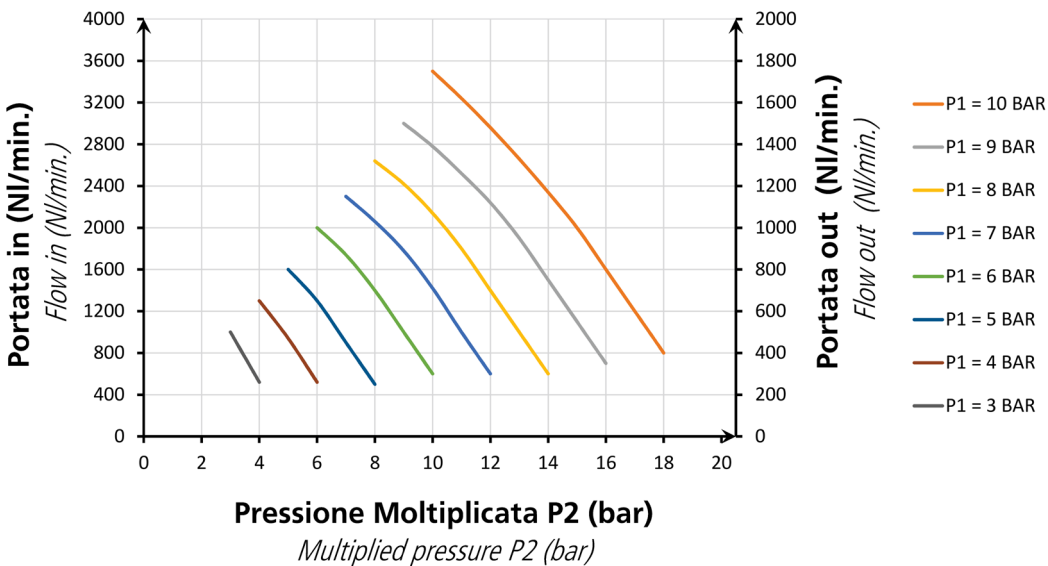
-UM12-040RC1.2



-UM12-063RC1.2

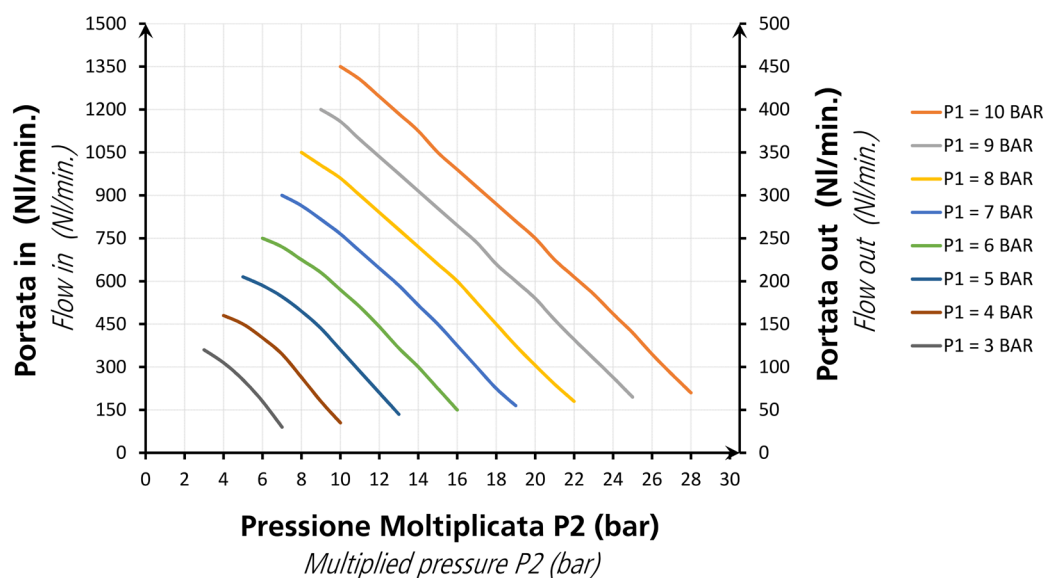


-UM12-100RC1.2

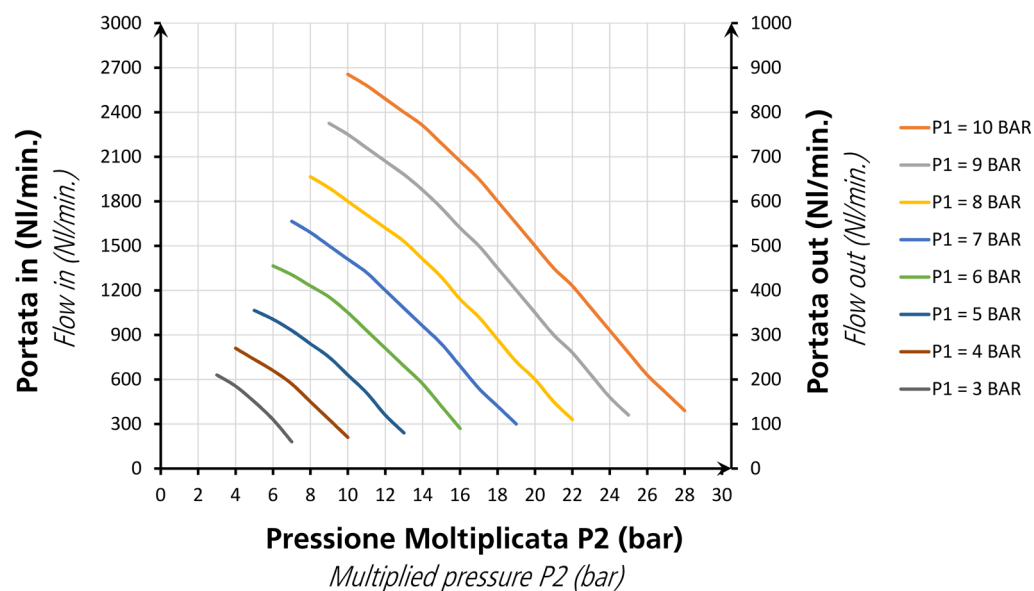


Caratteristiche delle portate - Flow rate characteristics

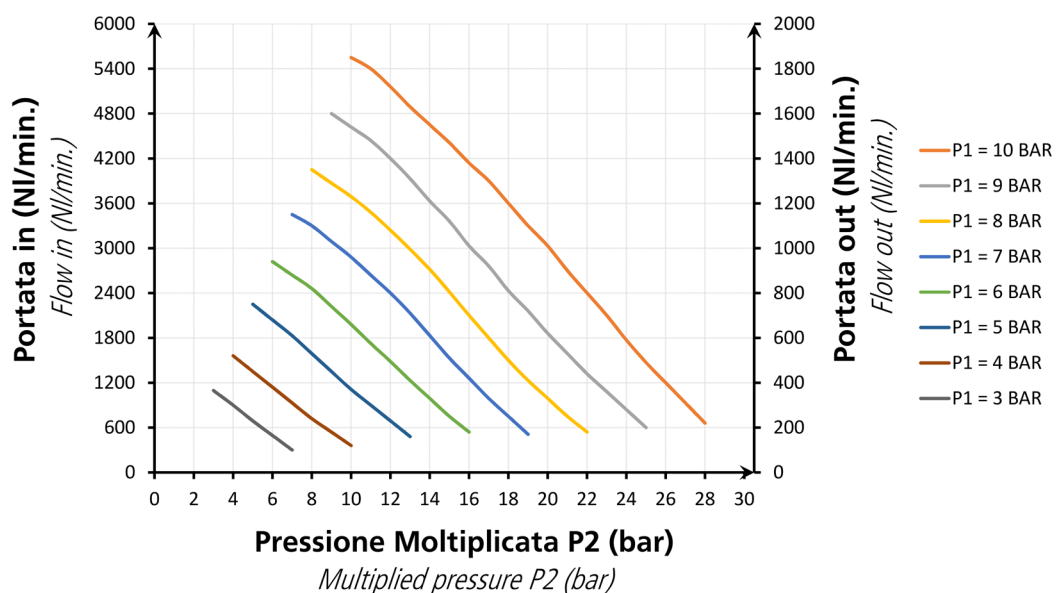
-UM12-040RC1.3



-UM12-063RC1.3

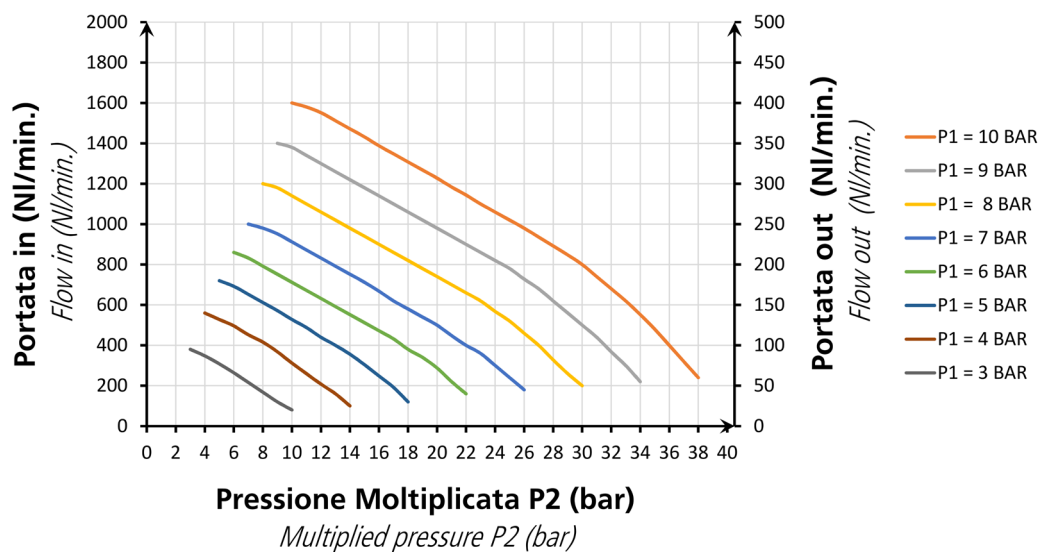


-UM12-100RC1.3

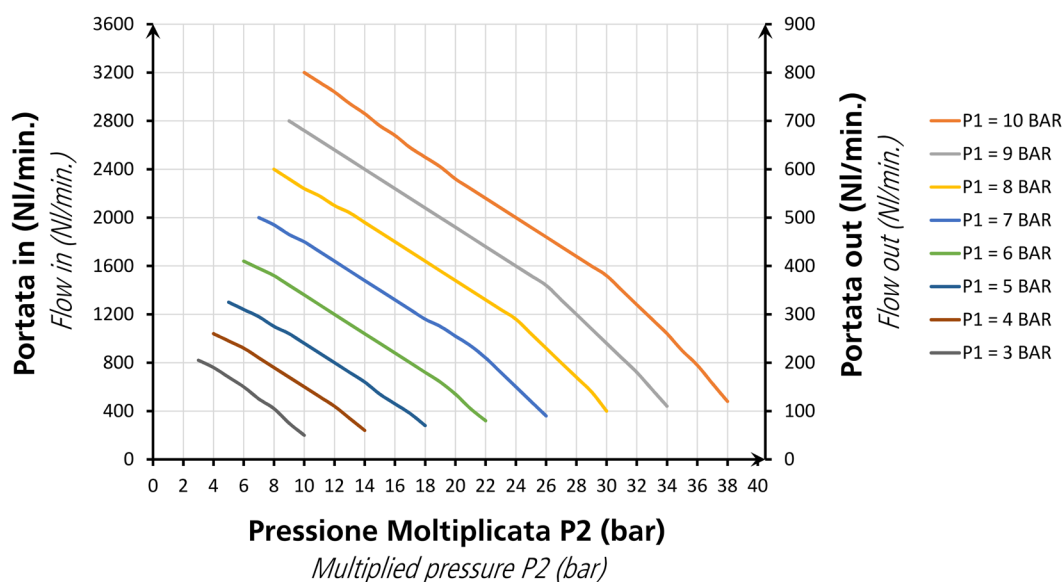


Caratteristiche delle portate - Flow rate characteristics

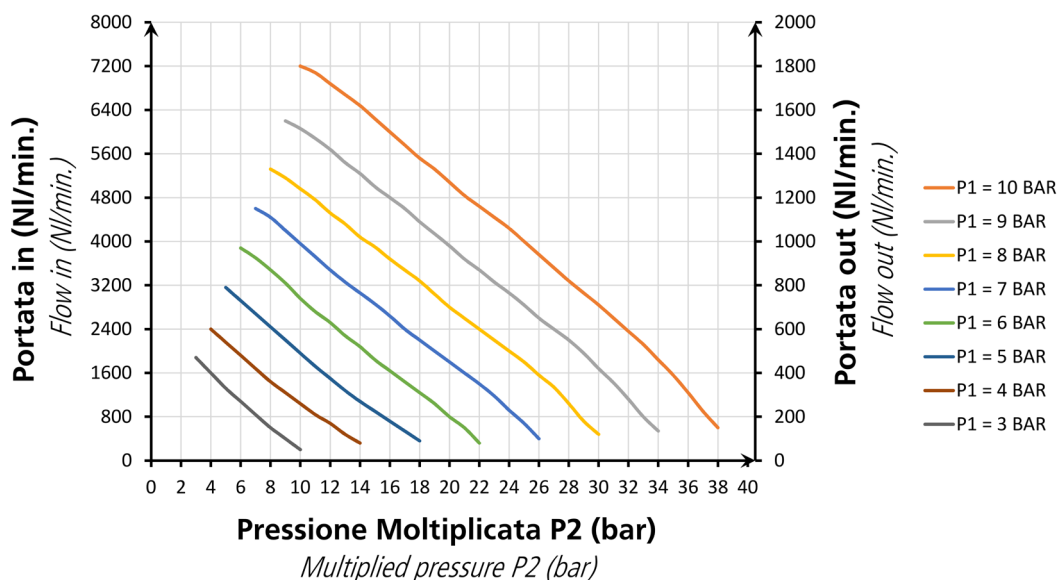
-UM12-040RC1.4



-UM12-063RC1.4



-UM12-100RC1.4



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CB/1/02