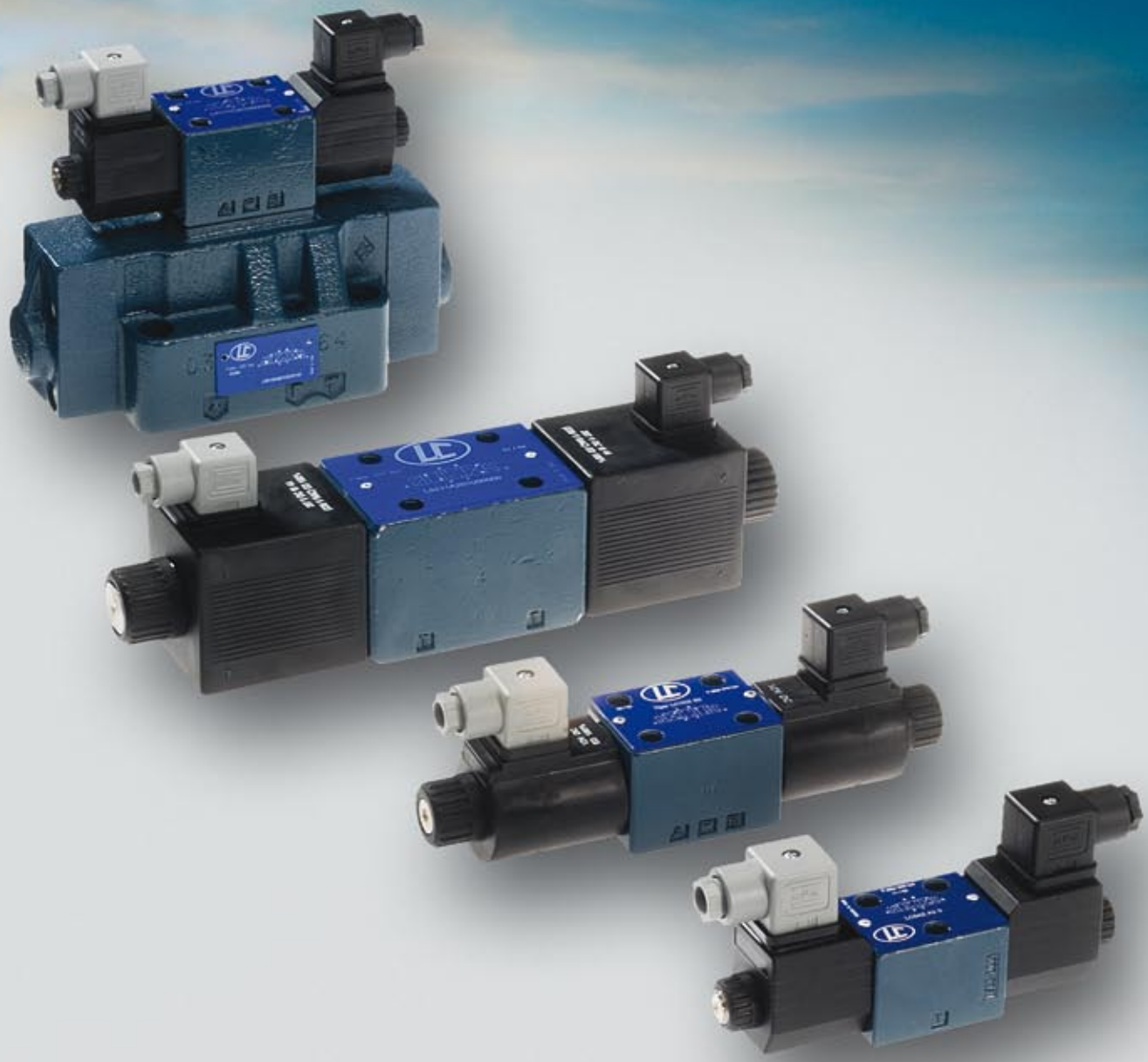

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I - E

oleodinamica

# ELETTROVALVOLE CETOP
# *SOLENOID CETOP VALVES*

# CONDIZIONI DI FORNITURA E GARANZIA

**CONDIZIONI DI FORNITURA**
Oleodinamica LC s.r.l., con Stabilimento ed Uffici situati in:
via Artigianale Sedrio, 12 - 12A - 42030 Vezzano sul Crostolo (REGGIO EMILIA) Italia,
distribuisce le proprie valvole attraverso la propria Rete Commerciale in conformità con le condizioni generali di fornitura (contratto) che sono riportate nella modulistica specifica (offerte, conferme d'ordine, fatture) e a tali condizioni farà riferimento per quanto qui non indicato.

**ORDINI**
Gli ordini devono pervenire in forma scritta e devono riportare le seguenti indicazioni:
a) data e luogo di emissione dell'ordine;
b) esatta denominazione della società acquirente con indirizzo completo;
c) sottoscrizione di un suo legale rappresentante con indicazione della relativa qualifica;
d) numero offerta società fornitrice (se esistente);
e) codice di ordinazione completo, con eventuale descrizione della merce ordinata;
f) numero di pezzi;
g) termine indicativo di consegna (eventuale);
h) vettore (eventuale);
L'ordine e da ritenersi valido alle condizioni generali di fornitura LC.
I termini di consegna indicati, o eventualmente scambiati, saranno da ritenersi essenziali solo in caso di specifico accordo sottoscritto dalle parti, fornitore ed acquirente.

**GARANZIA**
La garanzia LC ha durata di un anno a partire dalla data di fornitura del materiale.
Qualora l'acquirente ritenga che uno o piu prodotti siano viziati per cause imputabili a LC, l'acquirente si impegna a contestare immediatamente a LC la presenza dei pretesi vizi, mediante l'invio di una relazione tecnica dettagliata, affinché LC possa constatare, attraverso un tecnico di propria fiducia, se i vizi denunciati sussistano effettivamente.
Nell'ipotesi che il tecnico di fiducia LC abbia constatato la presenza di difetti imputabili ad Oleodinamica LC s.r.l., quest'ultima si impegna a riparare o a sostituire la valvola entro un congruo termine. Da parte sua l'acquirente si impegna a non chiedere la risoluzione del contratto se non decorso il congruo termine senza che la valvola sia stata riparata o sostituita.
Ogni restituzione in garanzia di valvole ritenute difettose dovrà essere preventivamente autorizzata per iscritto da Oleodinamica LC s.r.l. e dovrà essere effettuata franco destino, allegando una dettagliata descrizione delle anomalie riscontrate e delle condizioni di impiego.
La garanzia non si applica alle valvole che siano state contaminate, impiegate erroneamente o manomesse senza controllo o autorizzazione di LC Oleodinamica, così come la garanzia non si applica qualora siano state apportate modifiche a circuiti o a impianti tali da influenzare negativamente il funzionamento della valvola stessa.
Qualora la valvola fornita debba essere assemblata in impianti potenzialmente in grado di cagionare danni a terzi di importo di gran lunga superiore al prezzo della valvola stessa, l'acquirente si impegna ad adottare tutti i mezzi di sicurezza possibili per evitare qualsiasi danno, essendo consapevole che la produzione in serie a prezzi di mercato del prodotto stesso comporta il rischio, pur limitato, della presenza di pezzi difettosi.

**PRESCRIZIONI D'USO**
E' fatto divieto all'acquirente di adibire le valvole a usi diversi da quelli descritti nei disegni tecnici o nei cataloghi Oleodinamica LC s.r.l..
Qualora l'acquirente intenda adibire le valvole fornite ad usi diversi ha l'obbligo di chiedere preventivamente specifica autorizzazione a Oleodinamica LC s.r.l..
Le valvole LC sono sottoposte a collaudi funzionali conformemente alle specifiche riportate nella relativa documentazione tecnica. Poiché le effettive e dettagliate condizioni di funzionamento dell'apparecchiatura dell'acquirente possono non essere integralmente riproducibili nei laboratori di prova LC, la completa idoneità all'uso è responsabilità dell'acquirente stesso.
Generalmente egli validerà il prodotto attraverso la costruzione di uno o più prototipi da sottoporre ad un completo ciclo di prove funzionali.

**DICHIARAZIONE**
Le valvole e i gruppi integrati descritti nel presente catalogo sono destinati ad essere incorporati in macchine a cui si applica la Direttiva CEE 98/37/CE (Direttiva Macchine) e successivi emendamenti. E' fatto divieto di mettere in funzione le valvole o i blocchi integrati prima che la macchina in cui sono incorporati sia dichiarata conforme alle disposizioni della direttiva citata.

**GIURISDIZIONE**
In caso di contestazione in cui Oleodinamica LC s.r.l. sia convenuta, è esclusivamente competente il foro di Reggio Emilia.

**N.B.**
- Il presente catalogo annulla e sostituisce i precedenti.
- Oleodinamica LC s.r.l. si riserva il diritto di cessare la produzione o di variare le specifiche o i disegni di qualsiasi modello di valvola senza preavviso e senza incorrere in obblighi.
- Tutti i diritti sono riservati. E' fatto espresso divieto di qualunque riproduzione parziale o totale del presente catalogo.

# DATI TECNICI D'USO

**COLLAUDO FUNZIONALE**
Tutte le curve di funzionamento riportate a catalogo sono state rilevate utilizzando olio minerale con grado di viscosità ISO-VG32 alla temperatura di 40°C.. Tutte le valvole vengono collaudate a queste condizioni su banchi prova che assicurano un grado di filtrazione assoluta di 15 micron (NAS 9).

**VALORI LIMITE DI TEMPERATURA**
Temperatura ambiente da –20°C a +50°C
Temperatura olio da –20°C a +80°C

A**TTACCHI DELLE VALVOLE CON COLLETTORE**
Gli attacchi filettati sono normalmente del tipo "G", gas cilindrico (BSPP) nelle dimensioni da G ¼" a G 1".
Sono disponibili altri tipi di attacchi filettati.

**GUARNIZIONI**
O-RING: Acrilo – Nitrite Butadiene NBR (BUNA-N) standard per temperature comprese tra –20°C e +100°C. A richiesta sono disponibili in FLUOROCARBONIO FPM (Viton) ed in altre mescole.
ANELLI ANTIESTRUSIONE: LUBRIFLON – PTFE – PBK.

**CONSERVAZIONE A MAGAZZINO DELLE VALVOLE NUOVE**
Le valvole vanno conservate protette nel loro involucro termoretraibile, in luogo asciutto, lontane dall'irraggiamento solare o da sorgenti di calore e di ozono (evitare la vicinanza con motori elettrici funzionanti) in un ambiente con temperatura tra –20°C e +50°C.

**INSTALLAZIONE DELLE VALVOLE**
Si raccomanda di seguire scrupolosamente la seguente procedura:
· Assicurarsi che la base di fissaggio non sia sporca o in cattive condizioni (vd. Catalogo)
· Assicurarsi che gli O-ring siano integri e correttamente montati
· Non serrare viti o raccordi con momento di serraggio superiore al valore massimo indicato sul catalogo

**TENSIONE DI ALIMENTAZIONE**
Per ottenere un corretto funzionamento ed una lunga durata di esercizio delle bobine è necessario che le variazioni della tensione di alimentazione non siano superiori al +5% -10% della tensione nominale.

**INTERMITTENZA DI FUNZIONAMENTO DIN VDE 0580**
L'intermittenza di funzionamento ED di un elettromagnete è il valore percentuale del tempo di inserzione $\mathbf{t_i}$ rispetto al tempo completo di funzionamento $\mathbf{t_c}$, dove $\mathbf{t_c}=\mathbf{t_i}+\mathbf{t_r}$ con $\mathbf{t_r}$ = tempo di riposo.
$ED = (\mathbf{t_i} / \mathbf{t_c}) \cdot 100\ \%$
Tutte le bobine funzionano con ED=100% purchè non venga superato il valore limite di temperatura per la loro classe di isolamento.

**PROTEZIONE EN 60529**
Sono disponibili bobine con protezione IP65/IP69K.

**FLUIDO IDRAULICO**
Si raccomanda l'impiego di OLI A BASE MINERALE con caratteristiche fisico-chimiche idonee all'utilizzo in apparati oleodinamici.
OLI A BASE MINERALE tipo HL (DIN 51524 parte 1)
OLI A BASE MINERALE tipo HLP (DIN 51524 parte 2)
Si prega di consultare LC Oleodinamica prima dell'eventuale utilizzo di fluidi "ecologici" (generalmente a base vegetale o poliglycolica).
Classe di viscosità: secondo gli standard ISO DIN, viene espressa con il n. ISO-VG, che indica la viscosità media a 40°C ($mm^2/s$ o centiStokes – cSt-).
**- Vd. Tab. A -**

**CONTAMINAZIONE – FILTRAZIONE**
CONSIDERAZIONI GENERALI: i maggiori costruttori ed utilizzatori di componenti e sistemi oleodinamici riconoscono che la eccessiva contaminazione del fluido è la principale causa di guasti e disfunzioni negli impianti oleodinamici. Le particelle abrasive che circolano nel fluido provocano l'erosione delle parti in movimento, che porta all'usura dei componenti e al conseguente malfunzionameno dell'impianto.
Si raccomanda di mantenere il livello di contaminazione per lo meno ai valori nominali indicati in tabella, adottando i sistemi di filtrazione più idonei allo scopo.

RAPPORTO DI FILTRAZIONE BETAx: è il rapporto tra il numero di particelle all'ingresso e all'uscita del filtro che hanno diametro maggiore di x micron.

GRADO DI FILTRAZIONE ASSOLUTA ISO 4572: è il diametro x della particella più grande, con BETAx≥75.

CLASSE DI CONTAMINAZIONE ISO 4406: è espressa da 3 numeri che indicano rispettivamente: il numero di particelle di diametro maggiore o pari a 4 micron (c); il numero di particelle di diametro maggiore o pari a 6 micron(c); il numero di particelle di diametro maggiore o pari a 14 micron(c), contenute in 1 ml di fluido.

CLASSE DI CONTAMINAZIONE NAS 1638: è espressa da un numero che indica il numero di particelle contenute in 100 ml di fluido suddivise per classi dimensionali.
**- Vd. Tab. B -**

# SALES, DELIVERY AND WARRANTY TERMS

***SALES AND DELIVERY TERMS***

*Oleodinamica LC s.r.l., with factory and offices situated at:*
*via Artigianale Sedrio, 12 - 12A - 42030 Vezzano sul Crostolo (REGGIO EMILIA) Italia,*
*distributes its valves throught its sales network in compliance with the delivery terms (contract) shown in the specific documents (offers, order, confirmations, invoices), and those conditions shall be applicable for all what not specified here.*

***ORDERS***

*All orders shall be in written form and shall show the*
*following information:*
*a) date and place where the order is issued;*
*b) full name and address of the purchasing company;*
*c) signature of a legal representative, with indication of his/her qualification;*
*d) reference of the suppliers offer (when applicable);*
*e) complete ordering code and eventual description of the valves ordered;*
*f) number of pieces;*
*g) delivery time requested (eventual)*
*h) carrier (eventual).*
*The order will be considered valid at the LC Oleodinamica delivery terms.*
*The delivery terms requested or shown, and eventually notified in writing, can be considered essential only in case of specific signed agreement between both parties, supplier and buyer.*

***WARRANTY***

*The LC limited warranty lasts for a period of 12 months starting from the delivery date of the valve.*
*If the buyer deems that one or more products are faulty due to improper manufacturing, he undertakes to notify immediately the presence of these faults to the supplier, by means of detailed written report, so that LC may verify, through an expert of its own trust, whether the complained faults are really present.*
*Once the LC expert has verified that the notified faults are effectively present and that they are due to manufacturing defects, Oleodinamica LC s.r.l. undertakes to repair or to replace the valve within an adeguate term and the buyer undertakes not to ask for contract cancellation before the adeguate term to repair or replace the valve has expired.*
*Written permission for warranty returns must be obtained from Oleodinamica LC s.r.l. prior to shipment. All warranty returns shall be shipped freight pre-paid and shall include a detailed description of the malfunction and of the working conditions. The warranty does not cover products which have been contaminated, used improperly or tampered without control and approval of Oleodinamica LC s.r.l.. Similarly the warranty is not valid if changes are made to the circuits or systems which could negatively affect the valve function. If the valve supplied must be assembled in systems which could cause damages to third parties exceeding by for the price of the valve, the buyer undertakes to adapt all safety measures in order to avoid any damage, since he recognizes that mass production of the valves at market prices entails the risk, even if limited, that occasional faulty valves may result.*

***USER'S INTRUCTIONS***

*The buyer shall not use the vave for purposes different from what pointed out in the relevant drawings or in the Oleodinamica LC s.r.l. catalogues. If the buyer wants to use the valves for other purposes he shall ask specific approval from Oleodinamica LC s.r.l..*
*All LC valves are tested and checked in compliance with the specifications shown by the relevant documents. Since the actual detailed performance of the buyer's equipment cannot be totally reproduced in LC's testing laboratory, the full assurance of suitability of LC valves in the buyer's applications is the responsibility of the buyer.*
*Generally the buyer will validate the valve in his own application by manufacturing a prototype to be submitted to a full testing program.*

***STATEMENT***

*The valves and the multifunction integrated blocks described in this catalogue can be employed in systems or machines falling into the specifications of EEC Directive 89/37/CE (Machine Directive) and later amendments. The valves and the blocks shall not be operated before the complete machine is verified to be in compliance with the requirements of the above mentioned Directive.*

***JURISDICTION***

*In case of a dispute where OOleodinamica LC s.r.l. is summoned before court, the Court of law in Reggio Emilia (Italy) is exclusively competent: drafts, acceptance of settlement, dispatches without or with C.O.D. do not constitute a derogation from this clause of jurisdiction even in case Oleodinamica LC s.r.l. should be pursued for concession or continence of cause. When Oleodinamica LC s.r.l. is the plantiff, it will be able to recur both to the Court of Law in Reggio Emilia and to that where the other party resides.*

***Notes***

- *The present catalogue cancels and supersedes all the previous issues.*
- *Oleodinamica LC s.r.l. reserves the right to stop production or to change specifications and dimensions of any valve without prior notice and without incurring in any obbligation.*
- *All rights are reserved. It is specifically forbidden to reproduce partially or totally the present catalogue.*

# TECHNICAL DATA

***FUNCTIONAL TESTING***

*All performance curves in this catalogue are obtained using mineral based hydraulic oil with 32 cSt viscosity at 40°C (ISO VG 32 viscosity class). All valves go through functional testing at these conditions before shipment.*
*Our test stands ensure 15 micron Absolute Filtration (NAS 9).*

***TEMPERATURE RANGES***

*Ambient Temperature from –20°C to +50°C*
*Oil Temperature from –20°C to +80°C*

***PORTS***

*G sizes (BSPP) from G 1/4" to G 1" are standard; other threads can be manufactured upon request.*

***SEALS***

*O-RINGS: Acryl – Nitrile Butadiene Rubber NBR (BUNA-N) standard for temperature between –20°C and +100°C. Fluorocarbo FPM (Viton) and other compounds are available on request.*
*BACKUP RINGS: Lubriflon – PTFE – PBK.*

***STOCKING OF NEW VALVES***

*encapsulated by a protective wrapping, the valves shall not be exposed to direct sun light nor to source of heat or ozone (like electric motors running) and kept in a dry place at a temperature between –20°C and +50°C.*

***VALVES INSTALLATION***

*It is recommended to follow these steps:*
- *inspect the sub-plate to ensure that it is in good conditions and no external contaminant is present.*
- *Check that O-Rings are intact and correctly positioned.*
- *Don't tighten screws or connectors more than the maximum torque specified in the catalogue.*

***INLET VOLTAGE***

*To obtain correct operation and long life of coils it is necessary that the operating voltage fluctuations do not exceed +5% -10% of nominal voltage.*

***WORKING DUTY***

*The working duty ED of a coil is the ratio between energized time* $t_i$ *and full cycle time* $t_c$ *where* $t_c = t_i + t_r$ *and* $t_r$ *= de-energized time.*
*ED =* $(t_i/t_c) \cdot 100$ *%*
*All coils are rated for ED = 100 % provided that temperature limit of their insulation class is not exceeded.*

***PROTECTION EN 60529***

*On request coils with IP65/IP69K protection.*

***HYDRAULIC FLUID***

*It must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:*
*MINERAL OIL FLUIDS HL (DIN 51524 part1)*
*MINERAL OIL FLUIDS HLP (DIN 51524 part2)*
*For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult LC Oleodinamica.*
*Viscosity class: with ISO-DIN, the viscosity class is expressed by ISO-VG (no.); the no. Indicates the average kinematic viscosity at 40°C in* $mm^2/s$ *or centiStoks (cSt).*
***- See Tab. A -***

***CONTAMINATION – FILTRATION***

*GENERAL INFORMATION: Manufacturers and users of hydraulic equipment admit that contamination is the most likely cause of malfunction or failure in hydraulic systems and reduces security and reliability of components and systems. Metal particles flowing throughout the circuit scratch moving surfaces so that contamination level, if not controlled, increases very rapidly.*
*It is strongly recomended to mantain contamination level at least at nominal values shown below, choosing adequate filtration products.*

*FILTRATION RATIO BETAx: It's the ratio between the number of particles before and after the filter with diameter larger than X micron.*

*ABSOLUTE FILTRATION RATIO ISO 4572: It's the diameter X of the largest particle with BETAx≥ 75.*

*CONTAMINATION CLASS ISO 4406: it's expressed by 3 scale numbers representing respectively: the number of particles equal to or larger than 4 micron (c); the number of particles equal to or larger than 6 micron (c); the number of particles equal to or larger than 14 micron(c), contained in 1 ml of fluid.*

*CONTAMINATION CLASS NAS 1638: It's expressed by one scale numbers representing the number of particles of different size ranges contained in 100 ml of fluid.*
***- See Tab. B -***

# TABELLE VISCOSITA' E CONTAMINAZIONE

## *VISCOSITY CLASS AND FILTRATION DATA*

**- Tabella A**

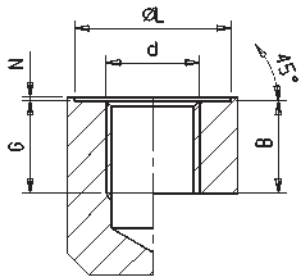
| - **Calsse di viscosità** *Viscosity class* | **Viscosità cinematica** *Kinematic viscosity* | | |
|---|---|---|---|
| | **MASSIMA A 0°C MAXIMUM AT 0°C** | **MEDIA A 40°C MEDIUM AT 40°C** | **MINIMA A 100°C MINIMUM AT 100°C** |
| ISO VG 10 | 90 | 10 | 2.4 |
| ISO VG 22 | 300 | 22 | 4.1 |
| ISO VG 32 | 420 | 32 | 5.0 |
| ISO VG 46 | 780 | 46 | 6.1 |
| ISO VG 68 | 1400 | 68 | 7.8 |
| ISO VG 100 | 2560 | 100 | 9.9 |

**- Tabella B**

| - **TIPO DI IMPIANTO TIPO DI VALVOLA** *TYPE OF SYSTEM TYPE OF VALVE* | **SPECIFICHE L.C. SUL GRADO DI CONTAMINAZIONE DELL'OLIO** *L.C. FILTRATION RECCOMENDATIONS* | | | |
|---|---|---|---|---|
| | **CAPACITA' DI FILTRAZIONE NOMINALE** *NOMINAL FILTRATION* **(micron)** | **FILTRAZIONE ASSOLUTA SECONDO ISO 4572** *ABSOLUTE FILTRATION RATING ISO 4572* **(BETA$_x$ ≥ 75)** | **CLASSE DI CONTAMINAZIONE SECONDO:** *CONTAMINATION CLASS ACCORDING TO:* | |
| | | | **ISO 4406** | **NAS 1638** |
| **Apparati o componenti funzionanti ad ALTA PRESSIONE >250 bar APPLICAZIONI GRAVOSE Valvole e componenti poco tolleranti alla contaminazione dell'olio.** ***System/components operating at HIGH PRESSURE >250 bar HIGH DUTY CYCLE APPLICATIONS Systems/components with LOW dirt tolerance*** | 10 | X = 10...12 | 19 / 17 / 14 | 8 |
| **Apparati o componenti funzionanti a MEDIA PRESSIONE APPLICAZIONI GRAVOSE Valvole e componenti mediamente tolleranti alla contaminazione dell'olio.** ***System/components operating at MEDIUM HIGH PRESSURE HIGH DUTY CYCLE APPLICATIONS Systems/components with moderately dirt tolerance*** | 15 | X = 12... 15 | 20 / 18 / 15 | 9 |
| **Apparati o componenti funzionanti a BASSA PRESSIONE <100 bar APPLICAZIONI POCO GRAVOSE Valvole e componenti ben tolleranti alla contaminazione dell'olio.** ***System/components operating at LOW PRESSURE <100 bar LOW DUTY CYCLE APPLICATIONS Systems/components with GOOD dirt tolerance*** | 25 | X = 15... 25 | 21 / 19 / 16 | 10 |

# SPECIFICHE DEGLI ATTACCHI - *PORT DETAILS*

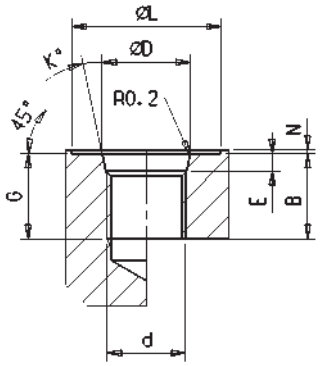
## ATTACCHI - *PORTS*




### DIN 3852/2

| Filettature *Thtreads* UNI-ISO 228 d | G - B | Ø - L* | N max |
|---|---|---|---|
| G 1/4 | 13 | 19 | 1 |
| G 3/8 | 13 | 25 | 1 |
| G 1/2 | 15 | 29 | 1,5 |
| G 3/4 | 17 | 36 | 1,5 |
| G 1" | 19 | 45 | 2 |
| - | - | - | - |

*** Non conforme alla norma DIN 3852/2** - *Different from DIN 3582/2 standard*




### ISO 11926-1 / SAE J514

| Filettature *Thtreads* ASA-B1-1 d | | G - B | Ø - L | Ø - D | E | K | N max |
|---|---|---|---|---|---|---|---|
| 7/16-20 UNF-2B | SAE 4 | 12 | 19 | 12,5 | 2,4 | 12° | 1 |
| 9/16-18 UNF-2B | SAE 6 | 13 | 26 | 15,6 | 2,5 | 12° | 1 |
| 3/4-16 UNF-2B | SAE 8 | 15 | 30 | 20,6 | 2,6 | 15° | 1,5 |
| 7/8-14 UNF-2B | SAE 10 | 17 | 34 | 23,9 | 2,6 | 15° | 1,5 |
| 1 1/16-12 UN-2B | SAE 12 | 20 | 41 | 29,2 | 3,3 | 15° | 1,5 |
| 1 5/16-12 UN-2B | SAE 16 | 20 | 50 | 35,5 | 3,3 | 15° | 2 |
| - | - | - | - | - | - | - | - |

### UNI-ISO 6149-1

| Filettature *Thtreads* ISO 261 d | G - B | Ø - L | Ø - D | E | K | N max |
|---|---|---|---|---|---|---|
| M18x1,5 | 15,5 | 29 | 19,8 | 2,4 | 15° | 1,5 |

### JIS B 2351

| Filettature *Thtreads* UNI-ISO 228 d | G - B | Ø - L | Ø - D | E | K | N max |
|---|---|---|---|---|---|---|
| G 1/4 | 13 | 24 | 15,6 | 2,5 | 15° | 1 |

# CAPITOLO 3 - LC2

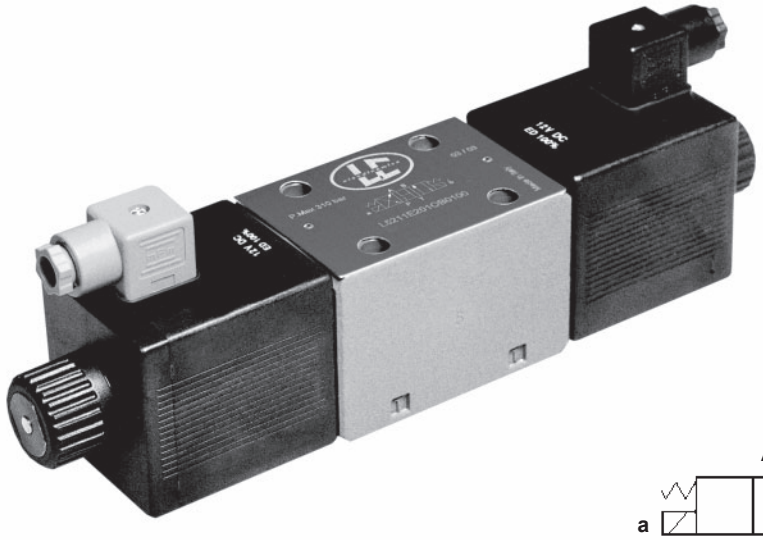
## Grandezza / *size*: NG10 ISO 4401-05 CETOP RP121 H-05 (CETOP 5)

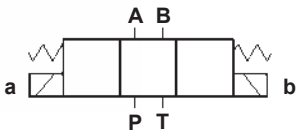

| | | |
|---|---|---|
| LC2 AZ - LC2 DZ | **Elettrovalvole dirette controllo direzione**<br>*Solenoid operated directional valves* | 3.10. |
| LC2S | **Elettrovalvole dirette controllo direzione con reg. del tempo d'intervento**<br>*Solenoid operated directional valves with operating time adjustment* | 3.30. |
| LC2 CM | **Valvole controllo direzione con comando a camma**<br>*Cam-operated directional valves* | 3.40. |
| LC2 OP | **Valvole controllo direzione a comando oleodinamico o pneumatico**<br>*Oil/air operated directional valves* | 3.50. |
| LC2 LV | **Valvole controllo direzione con comando a leva**<br>*Lever operated directional valves* | 3.60. |
| LC2 IA10 | **Valvole di commutazione automatica (in pressione)**<br>*Automatic inversion valves (pressure)* | 3.70. |
| LC2 IA12 | **Valvole di commutazione automatica (in portata)**<br>*Automatic inversion valves (flow)* | 3.80. |
| LC2M VR | **Valvole modulari di ritegno semplici e pilotate**<br>*Modular direct and pilot operated check valves* | 3.90. |
| LC2M VM | **Valvole modulari limitatrici di pressione ad azione diretta**<br>*Modular pressure relief valves* | 3.100. |
| LC2M VF | **Valvole modulari di controllo portata**<br>*Modular flow regulator valves* | 3.110. |
| LC2M VFCU | **Valvole modulari compensate di controllo portata**<br>*Modular pressure compensated flow regulator valves* | 3.120. |
| LC2M VRPM | **Valvole modulari riduttrici di pressione**<br>*Modular pressure reducing valves* | 3.130. |
| LC2M VSPM | **Valvole modulari di sequenza**<br>*Modular sequence valves* | 3.140. |
| LC2 VFCU | **Valvole compensate di controllo portata**<br>*Pressure compensated flow regulator valves* | 3.150. |
| LC2M RL | **Valvole modulari compensate rapido - lento**<br>*Modular compensated valves quick - slow* | 3.160. |
| PDM - PDT | **Piastre per elettrovalvole LC2**<br>*Plates for solenoid valves LC2* | 3.170. |

# LC2AZ - LC2DZ

## Elettrovalvole dirette controllo direzione

*Solenoid operated directional valves*






**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**LC2AZ - CORRENTE ALTERNATA: Portata massima : 100 l/min**
**Pressione massima d'esercizio su A-B-P: 310bar**
**Pressione massima in T: dinamica=140 bar - statica=210 bar**

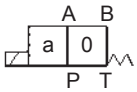
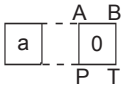
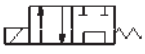
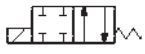
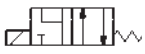
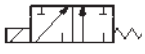
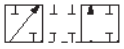
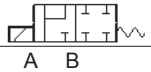
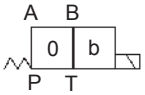
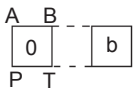
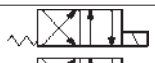
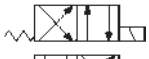
**LC2DZ - CORRENTE CONTINUA: Portata massima : 120 l/min**
**Pressione massima d'esercizio su A-B-P: 310bar**
**Pressione massima in T: dinamica=250 bar - statica=300 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*LC2AZ - A.C. VERSION: Max flow : 100 l/min*
*Max operating pressure on A-B-P: 310bar*
*Max pressure in T: dynamic=140 bar - static=210 bar*

*LC2DZ - D.C. VERSION: Max flow : 120 l/min*
*Max operating pressure on A-B-P: 310bar*
*Max pressure in T: dynamic=250 bar - static=300 bar*

# TIPI DI CIRCUITI • *SPOOL TYPES*

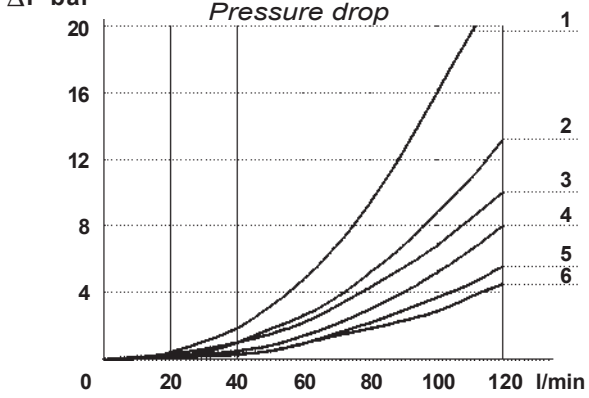
| Nuovo codice *New code* | Vecchia sigla *Old code* | Simbolo *Circuit* | Direzione del flusso durante il passaggio al centro *Oil direction during shift* |
|---|---|---|---|
| | |  |  |
| **X301** | A11A | | |
| **Y301** | A11C | | |
| **A301** | A11S |  | |
| **A361** | A14S | | |
| **B301** | B11C | | |
| **B361** | B14C |  | |
| **C301** | C11A | | |
| **C361** | C14A | | |
| **D301** | D11C | | |
| **D361** | D14C | | |
| **E301** | E11C | | |
| **E361** | E14C |  | |
| **N301** | N11C |  |  |
| **T301** | T11C | | |
| **T361** | T13C | | |
| **U369** | U11C |  | |
| | |  |  |
| **X401** | A12A |  | |
| **Y401** | A12C |  | |
| **A401** | A12S |  |  |
| **A471** | A13S |  |  |
| **B471** | B12C |  |  |
| **B401** | B13C |  |  |
| **C471** | C12A |  |  |
| **C401** | C13A |  |  |
| **D471** | D12C |  |  |
| **D401** | D13C |  |  |
| **E401** | E12C |  |  |
| **E471** | E13C |  |  |
| **N401** | N12C |  |  |
| **T409** | T12C |  |  |
| **T479** | T14C |  |  |

| Nuovo codice *New code* | Vecchia sigla *Old code* | Simbolo *Circuit* | Direzione del flusso durante il passaggio al centro *Oil direction during shift* |
|---|---|---|---|
| | |  |  |
| **A201** | A2 |  |  |
| **B201** | B2 |  |  |
| **C201** | C2 |  |  |
| **D201** | D2 |  |  |
| **E201** | E2 |  |  |
| **E2R1** | ER |  |  |
| **F201** | F2 |  |  |
| **G201** | G2 |  |  |
| **G209** | H2 |  |  |
| **K201** | K2 |  |  |
| **K209** | R2 |  |  |
| **U201** | U2 |  |  |
| | |  |  |
| **L201** | M2A |  |  |
| **M201** | M2C |  |  |
| **N201** | N2 |  |  |
| | |  |  |
| **L501** | M2A/D |  |  |
| **M501** | M2C/D |  |  |
| **N501** | N2/D |  |  |

# CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

| Tipo di circuito *Spool type* | Nr. di riferimento *Reference number* | | | | |
|---|---|---|---|---|---|
| | P>T | P>A | P>B | A>T | B>T |
| A2 - A11S - A12S - A13S - A14S G2 - H2 | 3 | 1 | 1 | 1 | 1 |
| B2 - B11C - B12C - B13C - B14C F2 | | 3 | 3 | 5 | 5 |
| C2 - C11A - C12A - C13A - C14A | 5 | 4 | 4 | 6 | 6 |
| D2 - D11C - D12C - D13C - D14C T11C - T12C | | 4 | 4 | 4 | 4 |
| E2 - E11C - E12C - E13C - E14C | | 3 | 3 | 6 | 6 |
| A11A - A12A / A11C - A12C | | 3 | 3 | 3/4 | 3/4 |
| G2 / H2 | 3 | 4/1 | 1/4 | 1 | 1 |
| K2 - R2 | | 2 | 2 | 5 | 5 |
| M2A - M2C | | 3 | 3 | 5 | 5 |
| N11C - N12C | | 2 | 2 | | |

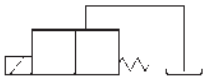
**Cadute di pressione**
*Pressure drop*




| Tipo di circuito *Spool type* | Nr. di riferimento *Reference number* |
|---|---|
| B2 - C2 - E2 - M2 - N2 T11/13 | 1 |
| A11A - A11C - B2 - E2 F2 - K2 - R2 | 2 |
| A2 - G2 - H2 - A11S A13S - A14S | 3 |
| D2 - N11C - N12C - D11C D12C - D13C - D14C | 4 |

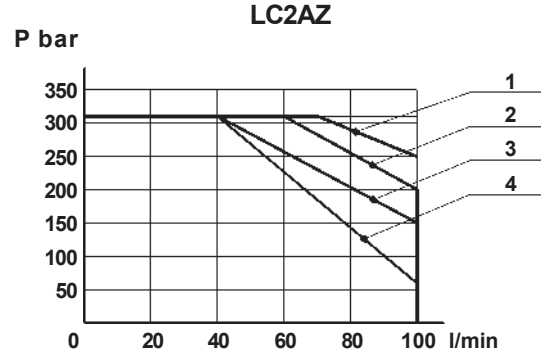
**I valori indicati nel grafico non sono validi se l'elettrovalvola è utilizzata in applicazioni con collegamenti 2 o 3 vie.**

*The values indicated in the graph are not valid if the solenoid valve is used in applications with 2 or 3 way connections.*

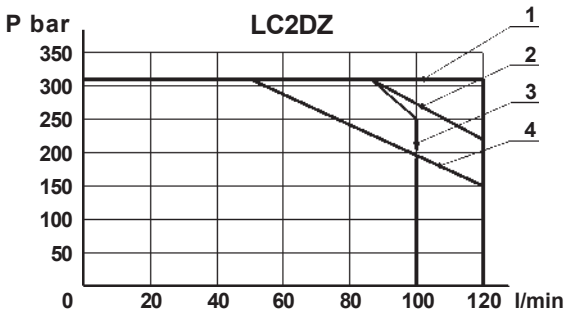


**Portate massime in funzione della pressione**
*Maximum flows depending on pressure*

**LC2AZ**




**LC2DZ**

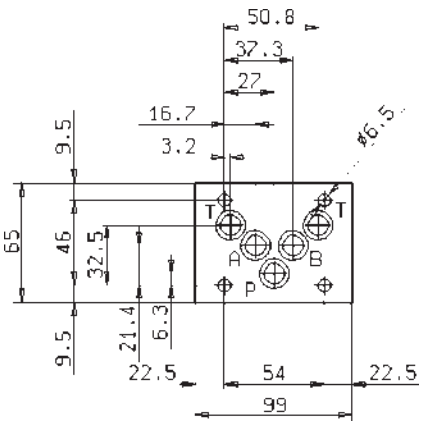



**Tempi di commutazione**
(rilevati con 80 l/min e 150 bar)

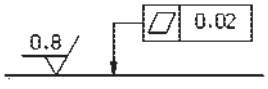
*Shifting time*
*(taken with 80 l/min and 150 bar)*

| c.c. - *DC* | c.a. - *AC* |
|---|---|
| **Eccitazione** *Energised* 60÷95 ms | **Eccitazione** *Energised* 10÷30ms |
| **Diseccitazione** *De-energised* 25÷70 ms | **Diseccitazione** *De-energised* 25÷60ms |

# GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)

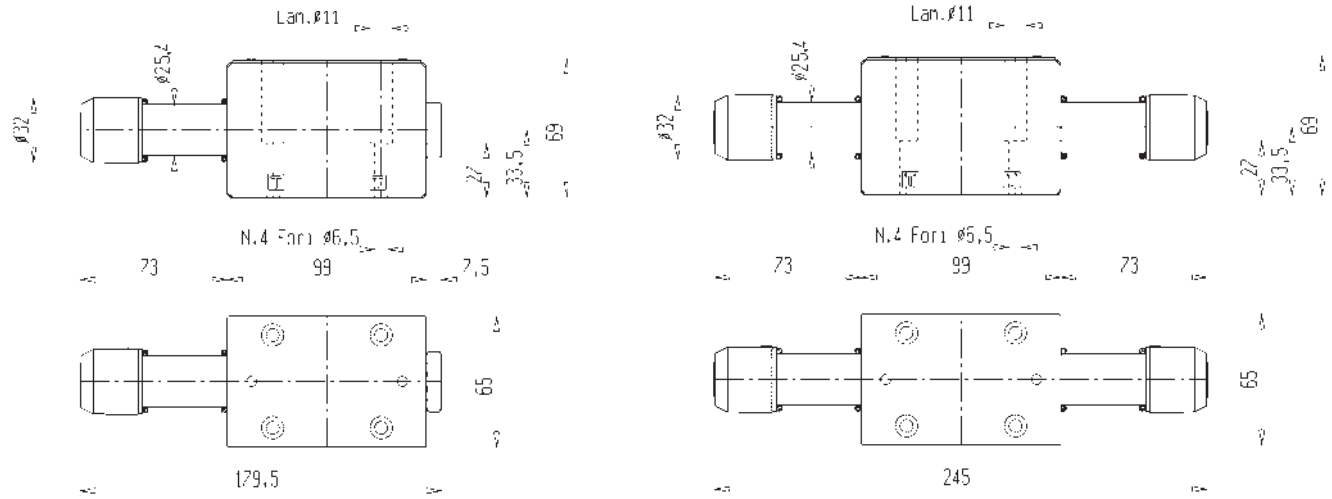



**Qualità superficie di attacco**
*Mounting plane quality*

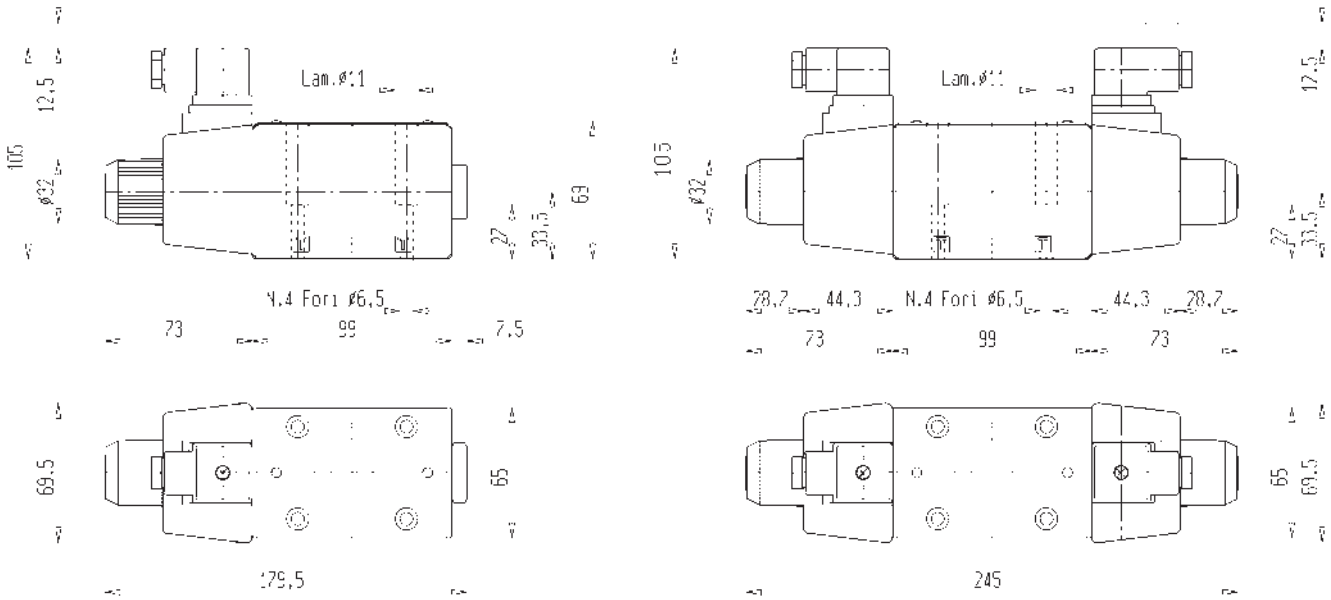


# LC2 AZ

**Elettrovalvola 4 vie 2/3 posizioni. (Fornitura standard)**
*Solenoid valve 4 way 2/3 positions. (Standard supply)*



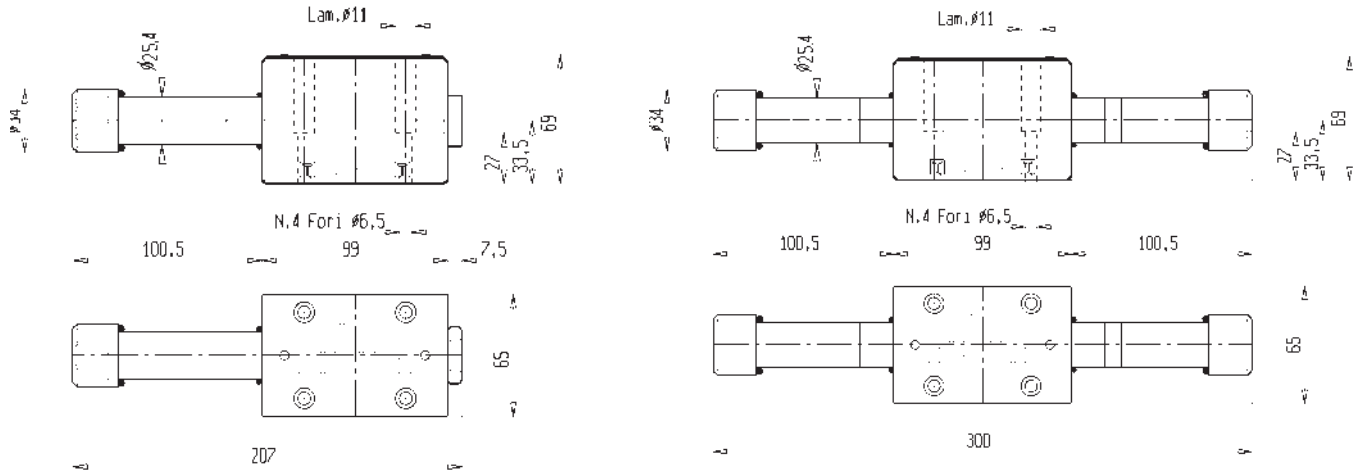

**Elettrovalvola 4 vie 2/3 posizioni. (Fornitura su richiesta)**
*Solenoid valve 4 way 2/3 positions. (Supply on request)*




| **Pesi**<br>*Weights* | |
|---|---|
| **Elettrovalvola con 1 solenoide:**<br>*With 1 solenoid :* | 3,30 kg |
| **Elettrovalvola con 2 solenoidi:**<br>*With 2 solenoids :* | 4,10 kg |

# LC2 DZ

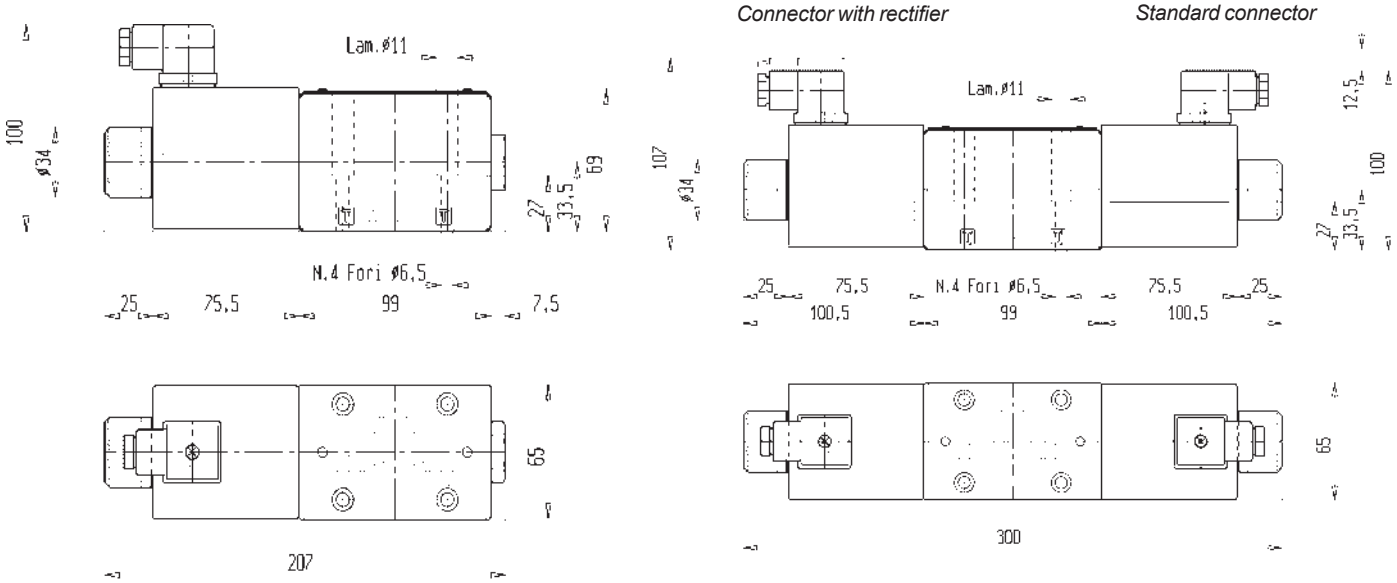
**Elettrovalvola 4 vie 2/3 posizioni. (Fornitura standard)**
*Solenoid valve 4 way 2/3 positions. (Standard supply)*



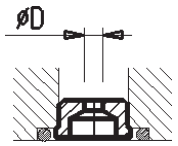
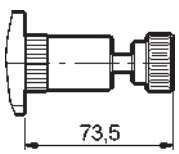

**Elettrovalvola 4 vie 2/3 posizioni. (Fornitura su richiesta)**
*Solenoid valve 4 way 2/3 positions. (Supply on request)*

**Connettore con raddrizzatore**
*Connector with rectifier*

**Connettore standard**
*Standard connector*




| **Pesi** *Weights* | |
|---|---|
| **Elettrovalvola con 1 solenoide:** 4,00 kg *With 1 solenoid :* | **Elettrovalvola con 2 solenoidi:** 5,10 kg *With 2 solenoids :* |

| **Strozzatore per utilizzi P,T,A,B** *Flow restrictor for P,T,A,B ports* | **ø D mm** | **Codice** *Designation code* | **Comando manuale di emergenza a vite** *Screwed manual override* **EF Cod.: LC2DZ EF** | **Comando manuale di emergenza a pulsante** *Push-button manual override* **EP Cod.: 281-0010** |
|---|---|---|---|---|
|   | 1.5<br>2.0<br>2.5<br>3.0 | 20-0250<br>20-0251<br>20-0252<br>20-0253 |   | |

## MOMENTI MASSIMI DI SERRAGGIO • *MAXIMUM BLOCKING TORQUE*

| Serraggio cannotto<br>*Tube mounting* | Serraggio ghiera blocco bobina<br>*Retainer nut blocking torque* | Viti di fissaggio<br>*Fixing screws* |
|---|---|---|
| **LC2AZ**<br>**ch. 13mm: 19÷21Nm**<br>**LC2DZ**<br>**ch. 19mm: 25÷27Nm** | **7÷8Nm** | **N°4 DIN 912-8.8 M6x35: 9÷10Nm** |

## SOLENOIDI • *SOLENOIDS*

### LC2AZ

**Le elettrovalvole LC2AZ montano i solenoidi K16 costruiti per alimentazione in corrente alternata, con frequenze di 50 o 60Hz.**
**Frequenza di inserzione: 4Hz.**
**Sui solenoidi K16 sono montate le bobine K16-2038... nelle diverse versioni, per ulteriori informazioni tecniche vedere a pagina 3.10.07.**

*The valves LC2AZ use the solenoids K16 which function in alternate current (AC) with frequencies of 50 and 60Hz.*
*Switching frequency: 4Hz*
*The solenoids K16 use K 16-2038... coils in different verions; for more technical information go to page 3.10.07.*

### LC2DZ

**Le elettrovalvole LC2DZ montano i solenoidi GM 8015, costruiti per alimentazione in corrente continua.**
**Il funzionamento in corrente alternata, con frequenze di 50 o 60Hz, è possibile utilizzando un connettore con raddrizzatore (RAC).**
**Frequenza di inserzione: 3Hz.**
**Sui solenoidi GM 8015 sono montate le bobine C65... nelle diverse versioni, per ulteriori informazioni tecniche vedere a pagina 3.10.08.**

*The valves LC2DZ use the solenoids GM 8015 which function in direct current (DC).*
*Use in alternate current (AC) with frequencies of 50 and 60Hz is possible by using a connector with rectrifier (RAC).*
*Switching frequency: 3Hz*
*The solenoids GM 8015 use C65... coils in different verions; for more technical information go to page 3.10.08.*

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 5 | 2 | V | _ | W | _ | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|

| V | MODELLO<br>*MODEL* |
|---|---|
| 11 | **LC2 DZ**<br>*LC2 DZ* |
| 12 | **LC2 AZ**<br>*LC2 AZ* |

| W | CIRQUITO<br>*CIRCUIT* |
|---|---|
| - - - - | **VEDI PAGINA 3.10.02**<br>*SEE PAGE 3.10.02* |

| Y | CONNESSIONE<br>*CONNECTION* |
|---|---|
| 00 | **SENZA BOBINA, SENZA CONNETTORE**<br>*WITHOUT COIL AND CONNECTOR* |
| 01 | **CON BOBINA, SENZA CONNETTORE**<br>*WITH COIL, WITHOUT CONNECTOR* |
| 02 | **CON CONNETTORE DIN 43650**<br>*WITH CONNECTOR DIN 43650* |
| 03 | **AMP JUNIOR**<br>*AMP JUNIOR* |
| 07 | **DT04-2P DEUTSCH**<br>*DT04-2P DEUTSCH* |
| 31 | **CAVO 350mm**<br>*CABLE 350 mm* |
| 34 | **CAVO 350mm + DT04-2P DEUTSCH**<br>*CABLE 350 mm + DT04-2P DEUTSCH* |

| Z | VERSIONE<br>*VERSION* |
|---|---|
| 00 | **STANDARD**<br>*STANDARD* |
| 0V | **GUARNIZIONI IN VITON**<br>*SEALS IN VITON* |

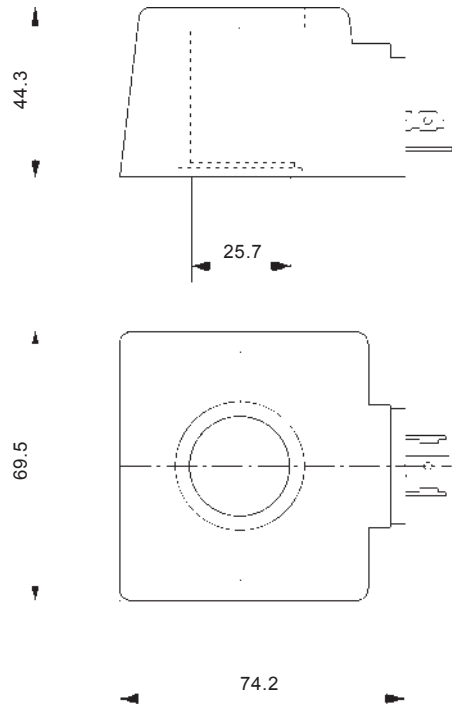
| modello<br>*model* | X | TENSIONE<br>*VOLTAGE* | Connessioni disponibili<br>*Available connections* | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 00 | 01 | 03 | 07 | 31 | 34 |
| | 00 | **SENZA BOBINA**<br>*WITHOUT COIL* | | | | | | |
| LC2 DZ | OB | 12V DC | X | X | X | X | X | X |
| | AD | 13V DC | X | X | | X | X | |
| | OC | 24V DC | X | X | X | X | X | X |
| | AC | 27V DC | X | X | | X | | |
| | OD | 48V DC | X | X | | | | |
| | OV | 24 RAC (21.5 DC) | X | X | | | | |
| | OW | 110 RAC (98 DC) | X | X | | | | |
| | OZ | 230 RAC (207 DC) | X | X | | | | |
| LC2 AZ | OH | 24V AC 50/60Hz | X | X | | | | |
| | OL | 48V AC 50/60Hz | X | X | | | | |
| | OM | 110V AC 50/60Hz | X | X | | | | |
| | ON | 230V AC 50/60Hz | X | X | | | | |
| | OK | 240V AC 50Hz | X | X | | | | |

# BOBINE • *COILS* : LC 2 AZ

**Peso : 0,800 Kg - Classe di isolamento: H**
**Intermittenza di funzionamento: ED = 100% solo se la temperatura ambiente non supera i 40°C.**
**Tensione di alimentazione: non deve superare +5% / -10% del valore nominale.**
**Tensioni disponibili: vedi tabella. Su richiesta possono essere fornite versioni speciali.**
**Connessioni standard: DIN 43650-ISO 4400.**
**Grado di protezione secondo DIN 40050, valido solo nel caso in cui la bobina sia montata correttamente con O-Ring e ghiera di fermo:**
**- IP65 con connettore DIN 43650, solo se montato con guarnizioni in gomma e vite di fissaggio opportunamente bloccata.**

*Weight: 0,800 Kg - Insulation Class: H*
*Working Duty: ED 100% only if the room temperature does not exceed 40°C.*
*Inlet voltage: should not exceed +5% / -10% of the nominal value.*
*Available voltages: Look at table. On request different voltages can be supplied.*
*Standard connections: DIN 43650-ISO 4400.*
*Protection Class according to DIN 40050: only if the coil is assembled correctly with O'ring and retainer:*
*- IP65 with DIN 43650 connector, only if it is assembled with rubber sealings and the fixing screw is properly tightened.*

**DIN 43650 - ISO 4400**




| **Codice** *Designation code* | **Tipo** *Type* | **Connessione** *Connection* | **Tensione nominale** *Nominal voltage* **volt** | **Frequenza** *Frequency* **Hz** | **Potenza** *Power* **watt** | **Corrente a regime** *Holding current* **ampere** (± 10%) | **Resistenza** *Resistance* **Ω** ± 10% | T=20°C |
|---|---|---|---|---|---|---|---|---|
| **281-00098010** | K16 - 2038 - 57 | DIN 43650 - ISO 4400 | 24 | 50 | 50 | 4.40 | 0.55 | |
| | | | 24 | 60 | 40 | 3.40 | 0.55 | |
| **281-00098020** | K16 - 2038 - 89 | DIN 43650 - ISO 4400 | 48 | 50 | 43 | 2.36 | 2.10 | |
| **281-00098030** | K16 - 2038 - 33 | DIN 43650 - ISO 4400 | 110 | 50 | 44 | 1.11 | 9.36 | |
| | | | 115 | 60 | 42 | 0.90 | 9.36 | |
| **281-00098040** | K16 - 2038 - 35 | DIN 43650 - ISO 4400 | 230 | 50 | 44 | 0.55 | 37.58 | |
| | | | 230 | 60 | 42 | 0.43 | 37.58 | |
| **281-00098050** | K16 - 2038 - 8 | DIN 43650 - ISO 4400 | 240 | 50 | 44 | 0.50 | 47.39 | |

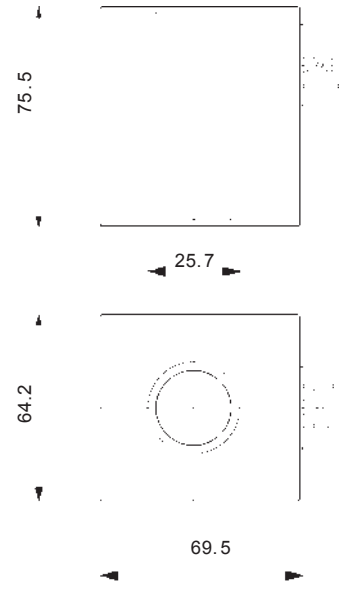
# BOBINE • *COILS* : LC 2 DZ

**Peso : 1,050 Kg - Classe di isolamento: H - Intermittenza di funzionamento: ED = 100% solo se la temperatura ambiente non supera i 40°C.**
**Tensione di alimentazione: non deve superare +5% / -10% del valore nominale.**
**Tensioni disponibili: vedi tabella. Su richiesta possono essere fornite versioni speciali.**
**Bassa tensione: conforme alle direttive 73/23/CEE e 89/336/CEE. Connessioni standard: DIN 43650-ISO 4400.**
**Grado di protezione secondo DIN 40050, valido solo nel caso in cui la bobina sia montata correttamente con O-Ring e ghiera di fermo:**
**- IP65 con connettore DIN 43650, solo se montato con guarnizioni in gomma e vite di fissaggio opportunamente bloccata.**
**- IP69k per versioni con connettore Deutsch applicato da Oleodinamica LC e correttamente montato.**

*Weight: 1,050 kg - Insulation Class: H - Working Duty: ED 100% only if the room temperature does not exceed 40°C.*
*Inlet voltage: should not exceed +5% / -10% of the nominal value.*
*Available voltages: Look at table. On request different voltages can be supplied.*
*Low voltage: conforms to the 73/23/CEE and 89/336/CEE directives. Standard connections: DIN 43650-ISO 4400.*
*Protection Class according to DIN 40050: only if the coil is assembled correctly with O'ring and retainer:*
*- IP65 with DIN 43650 connector, only if it is assembled with rubber sealings and the fixing screw is properly tightened.*
*- IP69k for versions with Deutsch connector applied by Oleodinamica LC and correctly mounted.*

**DIN 43650 - ISO 4400**

**C65 01**




**AMP JUNIOR**

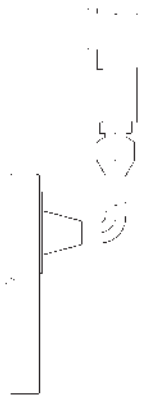
**65 03**

**CONNETTORE DEUTSCH**
*DEUTSCH CONNECTOR*
**DT 04 - 2P**

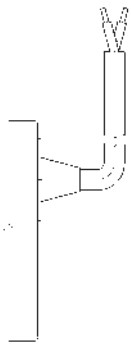
**C65 07**

**CAVI CON GUAINA IMPERMEABILE**
*WATERPROOF SHEATHED CABLES*

**C65 34**



**C65 31**



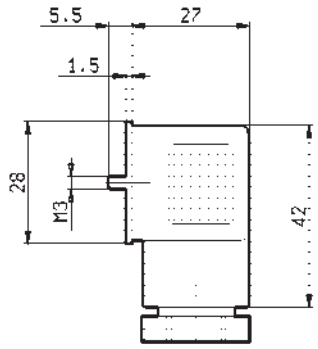
**La lunghezza del cavo è di 350mm**
Cable length is 350 mm

| **Codice** Designation code | **Tipo** Type | **Connessione** Connection | **Tensione nominale** Nominal voltage **volt** | **Marcatura** Marking | **Potenza** Power **watt** | **Corrente nominale** Nominal current **ampere** | **Resistenza** Resistance **Ω** ± 7% | **Resistenza** Resistance **Ω** T=20°C |
|---|---|---|---|---|---|---|---|---|
| **281-0617** | C6501 12DC | DIN 43650 - ISO 4400 | 12 DC | 12 VDC | 44 | 3.60 | | 3.2 |
| **281-06190** | C6531 12DC | CABLES | 12 DC | 12 VDC | 44 | 3.60 | | 3.2 |
| **281-0631** | C6503 12DC | AMP JUNIOR | 12 DC | 12 VDC | 44 | 3.60 | | 3.2 |
| **281-06191** | C6534 12DC | CABLE + DEUTSCH | 12 DC | 12 VDC | 44 | 3.60 | | 3.2 |
| **281-06194** | C6507 12DC | DEUTSCH | 12 DC | 12 VDC | 44 | 3.60 | | 3.2 |
| **281-061700** | C6501 13DC | DIN 43650 - ISO 4400 | 13 DC | 13 VDC | 44 | 3.40 | | 3.6 |
| **281-0618** | C6501 24DC | DIN 43650 - ISO 4400 | 24 DC | 24 VDC | 44 | 1.80 | | 12.8 |
| **281-06195** | C6531 24DC | CABLES | 24 DC | 24 VDC | 44 | 1.80 | | 12.8 |
| **281-0632** | C6503 24DC | AMP JUNIOR | 24 DC | 24 VDC | 44 | 1.80 | | 12.8 |
| **281-06196** | C6534 24DC | CABLE + DEUTSCH | 24 DC | 24 VDC | 44 | 1.80 | | 12.8 |
| **281-06197** | C6507 24DC | DEUTSCH | 24 DC | 24 VDC | 44 | 1.80 | | 12.8 |
| **281-061800** | C6501 27DC | DIN 43650 - ISO 4400 | 27 DC | 27 VDC | 44 | 1.60 | | 16.9 |
| **281-0621** | C6501 48DC | DIN 43650 - ISO 4400 | 48 DC | 48 VDC | 44 | 0.90 | | 50.5 |
| **281-0622** | C6501 24 50 RAC | DIN 43650 - ISO 4400 | 21.5 DC | 21.5 VDC | 44 | 2.00 | | 11 |
| **281-0623** | C6501 110 50 RAC | DIN 43650 - ISO 4400 | 98 DC | 98 VDC | 44 | 0.45 | | 98 |
| **281-0624** | C6501 230 50 RAC | DIN 43650 - ISO 4400 | 207 DC | 207 VDC | 44 | 0.21 | | 997 |

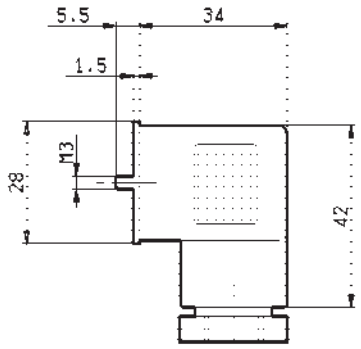
**Questi connettori sono normalizzati DIN 43650 - ISO 4400. Sono disponibili in quattro versioni:**
**_ versione standard MPM 182-09**
**_ versione con raddrizzatore MPM 532-09 RAC**
**_ versione con LED luminoso (indica la presenza di tensione) MPM 182-LED-T-A1**
**_ versione con VDR (dispositivo che taglia le sovratensioni in ingresso) MPM 182-09-G-DO-2-1**
**Per un corretto funzionamento e per garantire il grado di protezione IP65 è indispensabile montare i connettori con guarnizioni in gomma e vite di fissaggio opportunamente bloccata.**

*These connectors are standardised DIN 43650 – ISO 4400. Four versions are available:*
*_ standard version MPM 182-09*
*_ version with rectifier MPM 532-09 RAC*
*_ version with LED (which indicates presence of voltage) MPM 182-LED-T-A1*
*_ version with VDR (device which cuts over-voltage in input) MPM 182-09-G-DO-2-1*
*For a correct functioning and to guarantee the level of protection IP 65, it is essential to assemble the connectors with rubber seals and have the mounting screw fully screwed in.*

**MPM 182-09**
**MPM 182-LED-T-A1**
**MPM 182-09-G-DO-2-1**




**MPM 532-09 RAC**



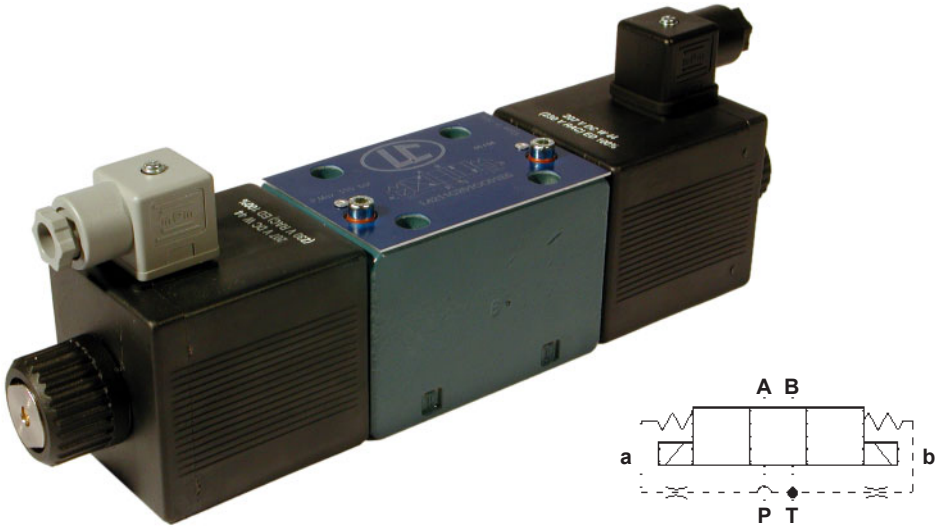

| **Codice**<br>*Code* | **Tipo**<br>*Type* |
|---|---|
| **29-0001** | MPM 182-09 GRIGIO |
| **29-0002** | MPM 182-09 NERO |
| **29-0003/A** | MPM 532-09 RAC GRIGIO |
| **29-0003** | MPM 532-09 RAC NERO |
| **29-0004** | MPM 182-LED-T-A1 12DC/AC |
| **29-0005** | MPM 182-LED-T-A1 24DC/AC |
| **29-0006** | MPM 182-LED-T-A1 48DC/AC |
| **29-0007** | MPM 182-LED-T-A1 110DC/AC |
| **29-0008** | MPM 182-LED-T-A1 230DC/AC |
| **29-00010** | MPM 182-09-G-DO-2-1 12DC CON VDR |
| **29-00011** | MPM 182-09-G-DO-2-1 24DC CON VDR |

| | |
|---|---|
| **Nº poli** | **2 + terra** |
| **Portata nominale sui contatti** | **10 A** |
| **Portata max sui contatti** | **16 A** |
| **Resistenza sui contatti** | **4 mΩ** |
| **Sezione max conduttori** | **1.5 mm²** |
| **Filettatura serracavo** | **Pg 9 Din 40430** |
| **Grado di protezione** | **IP65 DIN 40050** |
| **Isolamento elettrico** | **VDE 0110** |
| **Coppia di serraggio** | **3 ÷ 4 Nm** |
| *Number of poles* | *2 + earth* |
| *Rated current capacity* | *10 A* |
| *Max current capacity* | *16 A* |
| *Contact resistance* | *4 mΩ* |
| *Max wire section area* | *1.5 mm²* |
| *Cable gland thread* | *Pg 9 Din 40430* |
| *Protection class* | *IP65 DIN 40050* |
| *Electrical insulation* | *VDE 0110* |
| *Tightening torque* | *3 ÷ 4 Nm* |

# LC2S

## Elettrovalvole dirette controllo direzione con regolazione del tempo d'intervento

## *Solenoid operated directional valves with operating time adjustment*



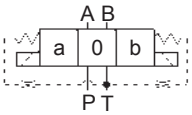
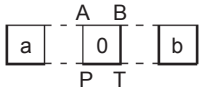
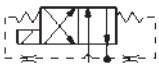
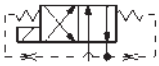
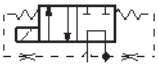
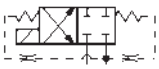
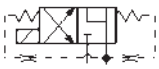
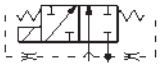
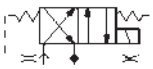
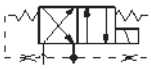
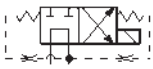
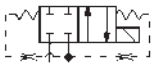
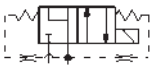
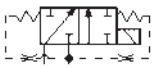
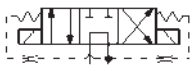
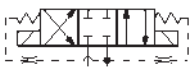
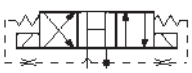
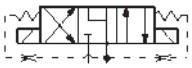
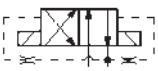
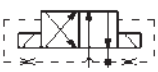
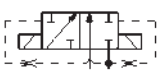

**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima : 100 l/min**
**Pressione massima d'esercizio su A-B-P: 310 bar**
**Pressione massima in T : dinamica = 250 bar, statica = 300 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*Max flow : 100 l/min*
*Max operating pressure on A-B-P: 310 bar*
*Max pressure in T : dynamic = 250 bar, static = 300 bar*

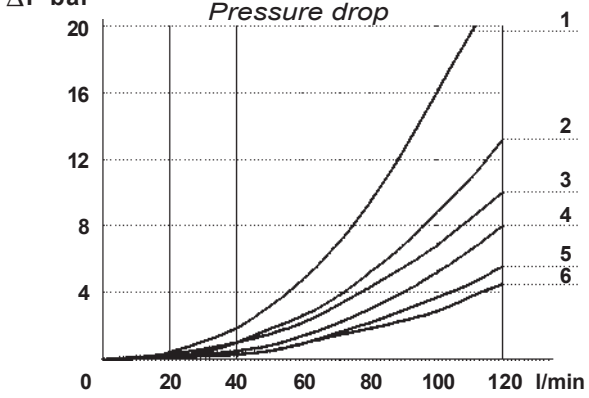
# TIPI DI CIRCUITI • *SPOOL TYPES*

| Nuovo codice<br>*New code* | Vecchio codice<br>*Old code* | Simbolo<br>*Circuit* | Direzione del flusso durante il passaggio al centro<br>*Oil direction during shift* | Portata Max<br>*Max flow*<br>l/min | Pressione Max<br>*Max pressure*<br>bar |
|---|---|---|---|---|---|
| | |  |  | | |
| **X301** | A11A |  | | **100** | **310** |
| **Y301** | A11C |  | | **100** | **310** |
| **A301** | A11S |  | | **100** | **310** |
| **B301** | B11C |  | | **100** | **310** |
| **C301** | C11A | | | **100** | **310** |
| **E301** | E11C |  | | **100** | **310** |
| **N301** | N11C |  | | **100** | **310** |
| **X401** | A12A |  | | **100** | **310** |
| **Y401** | A12C |  | | **100** | **310** |
| **A401** | A12S |  | | **100** | **310** |
| **B401** | B13C |  | | **100** | **310** |
| **E401** | E12C |  | | **100** | **310** |
| **N401** | N12C |  | | **100** | **310** |
| **A201** | A2 |  | | **100** | **310** |
| **B201** | B2 |  | | **100** | **310** |
| **C201** | C2 |  | | **100** | **310** |
| **E201** | E2 |  | | **100** | **310** |
| **L201** | M2A |  | | **100** | **310** |
| **M201** | M2C |  | | **100** | **310** |
| **N201** | N2 |  | | **100** | **310** |

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

| Tipo di circuito *Spool type* | Nr. di riferimento *Reference number* | | | | |
|---|---|---|---|---|---|
| | P>T | P>A | P>B | A>T | B>T |
| A2 - A11S - A12S | 3 | 1 | 1 | 1 | 1 |
| B2 - B11C - B13C | | 3 | 3 | 5 | 5 |
| C2 - C11A | 5 | 4 | 4 | 6 | 6 |
| E2 - E11C - E12C | | 3 | 3 | 6 | 6 |
| A11A - A12A - M2A / A11C - A12C M2C | | 3 | 3 | 3/4 | 3/4 |
| N11C - N12C - N2 | | 2 | 2 | | |

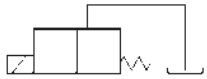
**Cadute di pressione**
*Pressure drop*



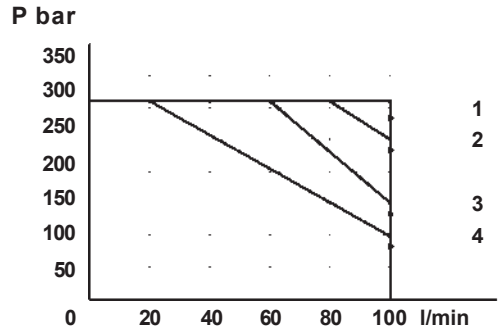

| Tipo di circuito *Spool type* | Nr. di riferimento *Reference number* |
|---|---|
| A11C - A12C - B2 - B11C B13C - M2A - M2C | 1 |
| A11A - A12A - C2 - C11A E2 - E11C - E12C - N2 | 2 |
| A2 - A11S - A12S | 3 |
| N11C - N12C | 4 |

**I valori indicati nel grafico non sono validi se l'elettrovalvola è utilizzata in applicazioni con collegamenti 2 o 3 vie.**

*The values indicated in the graph are not valid if the solenoid valve is used in applications with 2 or 3 way connections.*



**Portate massime in funzione della pressione**
*Maximum flows depending on pressure*



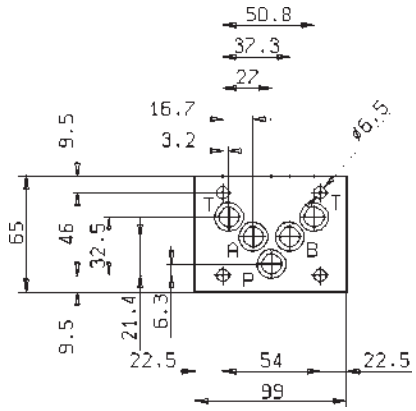

## GRANI DI STROZZAMENTO • *FLOW RESTRICTOR SCREWS*

| V Codice *Code* | Ø D mm | Disegno *Draw* |
|---|---|---|
| A | 0,15 | 18 - 0091 |
| C | 0,3 | 18 - 0092 |
| E | 0,4 | 18 - 0093 |
| G | 0,5 | 18 - 0094 |
| I | 0,6 | 18 - 0095 |
| 0 | **SENZA GRANI, FORI TAPPATI** *WITHOUT RESTRICTORS, PLUGGED* | |

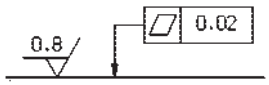
**Norme d'impiego**
**Le elettrovalvole LC2S (temporizzate), sono provviste di due grani di strozzamento con diverse forature come da tabella, permettono di controllare il tempo d'intervento dell'elettrovalvola (da 0,1÷3 sec. circa), ottenendo uno scambio ammortizzato.**
**Per un corretto funzionamento si richiede di montare sullo scarico della elettrovalvola LC2S una valvola di non ritorno, onde evitare lo svuotamento della stessa.**
**Nella fase iniziale: eccitare l'elettrovalvola a varie riprese, per avere un corretto riempimento delle camere di regolazione.**

*Operating instructions*
*The solenoid valves LC2S (slow action) come with two flow restrictor screws which can have different holes (see table), enabling to control the operating time of the solenoid (approx. 0,1 to 3 seconds), in order to obtain a cushioned effect on the operated equipment.*
*For a correct operation an in order to prevent the valve from emptying, we recommend fitting a non-return valve on the return line of the solenoid valve LC2S.*
*In the initial phase: energise the solenoid valve several times in order to fill the regulating chambers.*

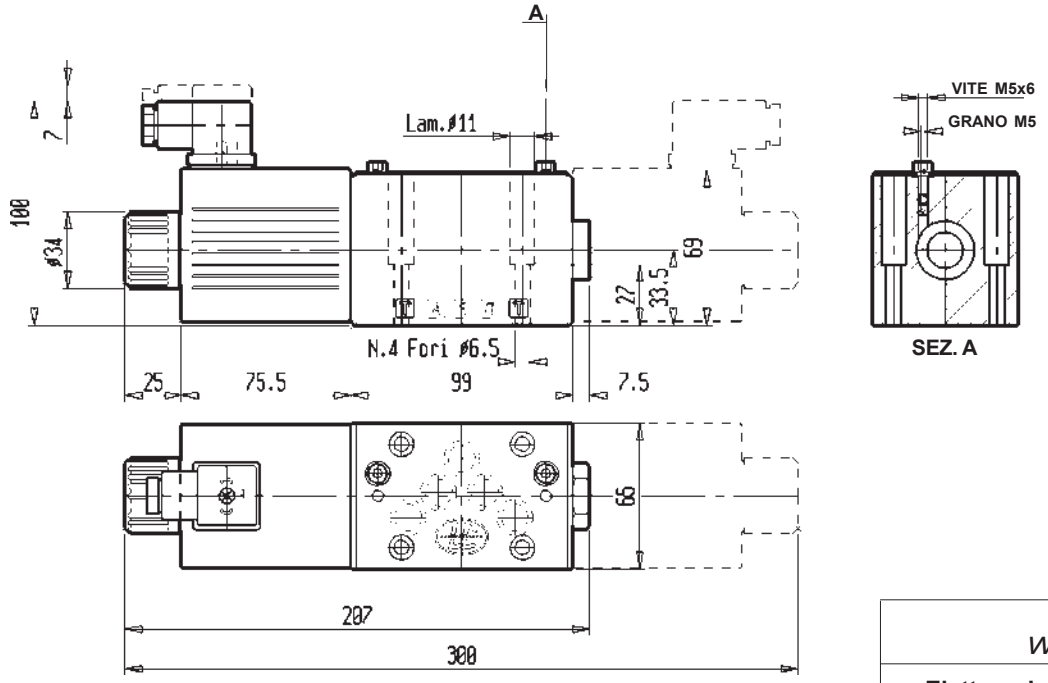
## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)



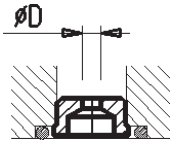
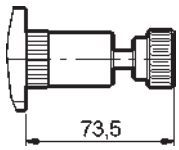

**Qualità superficie di attacco**
*Mounting plane quality*



## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*




| **Pesi** *Weights* | |
|---|---|
| **Elettrovalvola con 1 solenoide:** *With 1 solenoid :* | 4.00 kg |
| **Elettrovalvola con 2 solenoidi:** *With 2 solenoids :* | 5.10 kg |

| **Strozzatore per utilizzi P,T,A,B** *Flow restrictor for P,T,A,B ports* | **ø D mm** | **Codice** *Designation code* | **Comando manuale di emergenza a vite** *Screwed manual override* **EF Cod.: LC2DZ EF** | **Comando manuale di emergenza a pulsante** *Push-button manual override* **EP Cod.: 281-0010** |
|---|---|---|---|---|
|   | 1.5<br>2.0<br>2.5<br>3.0 | 20-0250<br>20-0251<br>20-0252<br>20-0253 |   | |

## MOMENTI MASSIMI DI SERRAGGIO • *MAXIMUM BLOCKING TORQUE*

| **Serraggio cannotto** *Tube mounting* | **Serraggio ghiera blocco bobina** *Retainer nut blocking torque* | **Viti di fissaggio** *Fixing screws* | **Viti** *Screws* | **Grano strozzatore** *Flow restrictor* |
|---|---|---|---|---|
| **ch. 16mm: 20÷22Nm** | **6÷7Nm** | **N°4 DIN 912-8.8 M6x35: 9÷10Nm** | **N°2 DIN 912-8.8 M5x6: 5÷6Nm** | **N°2 DIN 913 M5x5: 2÷3Nm** |

## SOLENOIDI • *SOLENOIDS*: GM 8015

**Le elettrovalvole LC2S montano i solenoidi GM 8015, costruiti per alimentazione in corrente continua.**
**Il funzionamento in corrente alternata, con frequenze di 50 o 60Hz, è possibile utilizzando un connettore con raddrizzatore (RAC).**
**Frequenza di inserzione: 1Hz max.**
**Sui solenoidi GM 8015 sono montate le bobine C65... nelle diverse versioni, per ulteriori informazioni tecniche vedere a pagina 3.10.08.**

*The valves LC2S use the solenoids GM 8015 which function in direct current (DC).*
*Use in alternate current (AC) with frequencies of 50 and 60Hz is possible by using a connector with rectrifier (RAC).*
*Switching frequency: max 1Hz.*
*The solenoids GM 8015 use C65... coils in different verions; for more technical information go to page 3.10.08.*

| L | 4 | 2 | 1 | 1 | _ | W | _ | X | _ | Y | _ | V | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| W | **CIRQUITO** *CIRCUIT* |
|---|---|
| – – – – | **VEDI PAGINA 2.30.02** *SEE PAGE 2.30.02* |

| Y | **CONNESSIONE** *CONNECTION* |
|---|---|
| 00 | **SENZA BOBINA, SENZA CONNETTORE** *WITHOUT COIL AND CONNECTOR* |
| 01 | **CON BOBINA, SENZA CONNETTORE** *WITH COIL, WITHOUT CONNECTOR* |
| 02 | **CON CONNETTORE DIN 43650** *WITH CONNECTOR DIN 43650* |
| 03 | **AMP JUNIOR** *AMP JUNIOR* |
| 07 | **DT04-2P DEUTSCH** *DT04-2P DEUTSCH* |
| 31 | **CAVO 350mm** *CABLE 350 mm* |
| 34 | **CAVO 350mm + DT04-2P DEUTSCH** *CABLE 350 mm + DT04-2P DEUTSCH* |

| Z | **VERSIONE** *VERSION* |
|---|---|
| 0 | **STANDARD** *STANDARD* |
| V | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

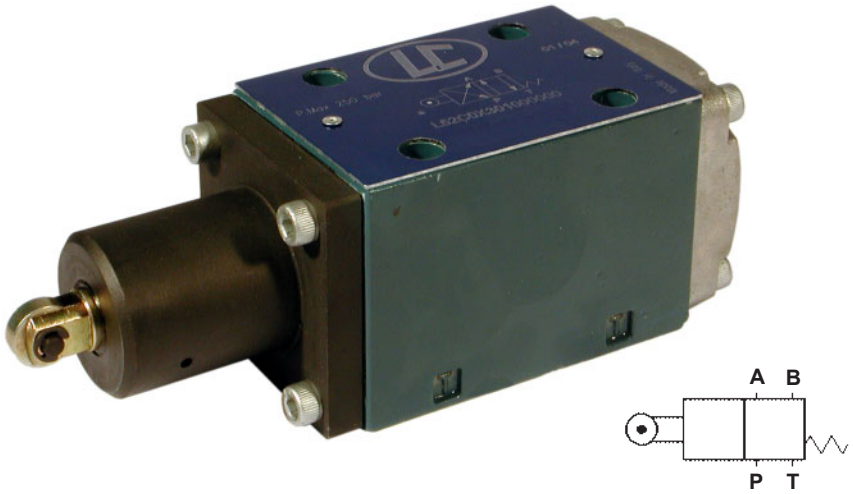
| X | **TENSIONE** *VOLTAGE* | **Connessioni disponibili** *Available connections* | | | | | |
|---|---|---|---|---|---|---|---|
| | | **00** | **01** | **03** | **07** | **31** | **34** |
| 00 | **SENZA BOBINA** *WITHOUT COIL* | | | | | | |
| OB | 12V DC | X | X | X | X | X | X |
| AD | 13V DC | X | X | | X | X | |
| OC | 24V DC | X | X | X | X | X | X |
| AC | 27V DC | X | X | | X | | |
| OD | 48V DC | X | X | | | | |
| OV | 24 RAC (21.5 DC) | X | X | | | | |
| OW | 110 RAC (98 DC) | X | X | | | | |
| OZ | 230 RAC (207 DC) | X | X | | | | |

| V | **DIAMETRO GRANI STROZZATORI** *RESTRICTORS DIAMETER* |
|---|---|
| 0 | **VEDI PAGINA 3.30.03** *SEE PAGE 3.30.03* |
| A | **VEDI PAGINA 3.30.03** *SEE PAGE 3.30.03* |
| C | **VEDI PAGINA 3.30.03** *SEE PAGE 3.30.03* |
| E | **VEDI PAGINA 3.30.03** *SEE PAGE 3.30.03* |
| G | **VEDI PAGINA 3.30.03** *SEE PAGE 3.30.03* |
| I | **VEDI PAGINA 3.30.03** *SEE PAGE 3.30.03* |

# LC2 CM

## Valvole controllo direzione con comando a camma

*Cam-operated directional valves*



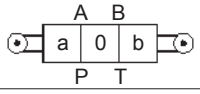
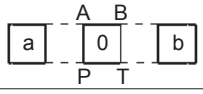
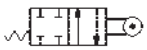

**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima: 120 l/min**
**Pressione massima d'esercizio su A-B-P : 310 bar**
**Pressione massima in T: 70 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

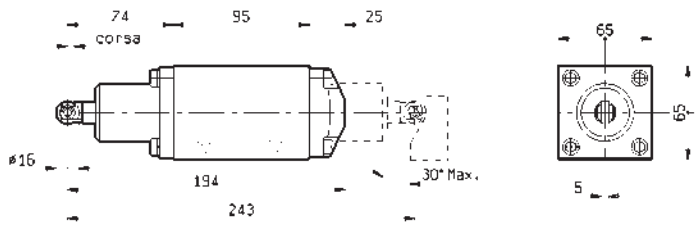
*Max flow: 120 l/min*
*Max operating pressure on A-B-P: 310 bar*
*Max pressure in T: 70 bar*

## TIPI DI CIRCUITI • *SPOOL TYPES*

| Nuovo codice<br>*New code* | Vecchio codice<br>*Old code* | Simbolo<br>*Circuit* | Direzione del flusso durante il passaggio al centro<br>*Oil direction during shift* | Pressione Max<br>*Max pressure*<br>bar | Portata Max<br>*Max flow*<br>l/min | Corsa camma<br>*Cam drive stroke*<br>mm |
|---|---|---|---|---|---|---|
| | |  |  | | | |
| **X301** | A11A | | | 310 | 120 | 7 |
| **Y301** | A11C | | | 310 | 120 | 7 |
| **B301** | B11C | | | 310 | 120 | 4 |
| **C301** | C11A | | | 310 | 120 | 4 |
| **E301** | E11C | | | 310 | 120 | 4 |
| **N301** | N11C | | | 310 | 120 | 4 |
| **X401** | A12A | | | 310 | 120 | 7 |
| **Y401** | A12C | | | 310 | 120 | 7 |
| **B401** | B13C |  | | 310 | 120 | 4 |
| **C401** | C13A | | | 310 | 120 | 4 |
| **E401** | E12C | | | 310 | 120 | 4 |
| **N401** | N12C | | | 310 | 120 | 4 |
| **L201** | M2A | | | 310 | 120 | 7 |
| **M201** | M2C | | | 310 | 120 | 7 |
| **N201** | N2 | | | 310 | 120 | 7 |

## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

| Pesi<br>*Weights* | | Forza azionamento camma<br>*Cam operating force* | |
|---|---|---|---|
| **con 1 comando:**<br>*With 1 control:* | 3.20 kg | **Senza contropressione sullo scarico:**<br>*Without tank line back pressure:* | 12 kg |
| **con 2 comandi:**<br>*With 2 controls:* | 3.75 kg | **Contropressione sullo scarico 70bar:**<br>*Tank line back pressure 70bar:* | 35 kg |
| **Viti di fissaggio:**<br>*Fixing screw:* | | **N°4 DIN 912-8.8 M6x35: 9÷10Nm** | |




## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 5 | 2 | C | 0 | _ | W | _ | 0 | 0 | 0 | 0 | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

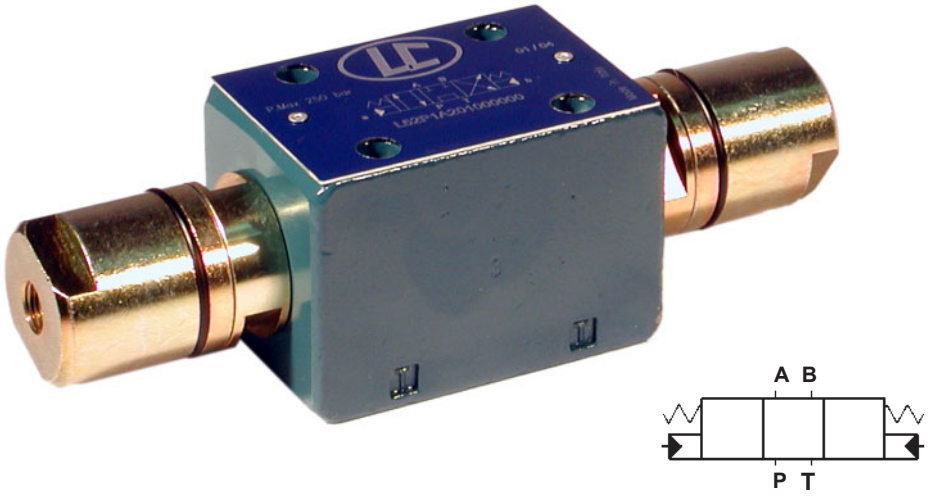
| | |
|---|---|
| W | **CIRQUITO**<br>*CIRCUIT* |
| – – – – | **VEDI SOPRA**<br>*SEE ABOVE* |

| | |
|---|---|
| Z | **VERSIONE**<br>*VERSION* |
| 00 | **STANDARD**<br>*STANDARD* |
| 0V | **GUARNIZIONI IN VITON**<br>*SEALS IN VITON* |

# LC2 OP

## Valvole controllo direzione a comando oleodinamico o pneumatico

*Oli/air operated directional valves*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima: 120 l/mim**
**Pressione massima d'esercizio su A-B-P: 310 bar**
**Contropressione massima sullo scarico: 200 bar**
**Pressione minima di pilotaggio: 4 bar**
**Pressione massima di pilotaggio: 200 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

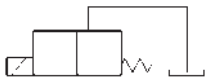
*Max flow: 120 l/min*
*Max operating pressure on A-B-P: 310 bar*
*Max tank line back pressure: 200 bar*
*Min pilot pressure: 4 bar*
*Max pilot pressure: 200 bar*

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

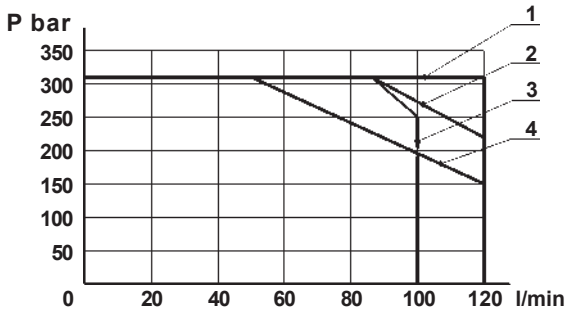
| **Tipo di circuito** *Spool type* | **Nr. di riferimento** *Reference number* |
|---|---|
| **B2 - B11C - B12C - B13C B14C - T12C - D2 - D11C D12C - D13C - D14C - E2 E11C - E12C - E13C E14C - T11C** | **1** |
| **C2 - C11A - C12A - C13A C14A - A11C - A12C A11A - A12A** | **2** |
| **A2 - A11S - A12S - A13S A14S - G2 - H2** | **3** |
| **N11C - N12C** | **4** |

**I valori indicati nel grafico non sono validi se l'elettrovalvola è utilizzata in applicazioni con collegamenti 2 o 3 vie.**

*The values indicated in the graph are not valid if the solenoid valve is used in applications with 2 or 3 way connections.*



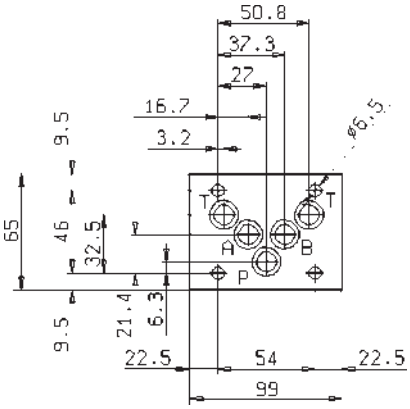
**Portate massime in funzione della pressione**
*Maximum flows depending on pressure*



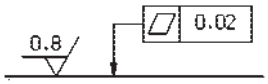

**Sono disponibili tutti i circuiti a 2 e 3 posizioni come nelle elettrovalvole tipo LC2DZ a comando diretto, con le stesse cadute di pressione.**
**Nelle applicazioni con lo scarico (T) della valvola in pressione, considerare un rapporto di pilotaggio 11:1.**
**Esempio: valvola con pressione in T di 120 bar, pressione minima di pilotaggio 120:11 =10,9 bar.**

*All 2 and 3 position spools used with the direct acting solenoid valve LC2DZ can be used in air/oil operated versions with the same pressure drop figures.*
*In applications where the discharge line (T) is in pressure, allow for pilot ratio 11:1.*
*Example: valve with a 120 bar pressure on T will need a minimum pilot pressure of 120:11 = 10,9 bar*

## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)




**Qualità superficie di attacco**
*Mounting plane quality*



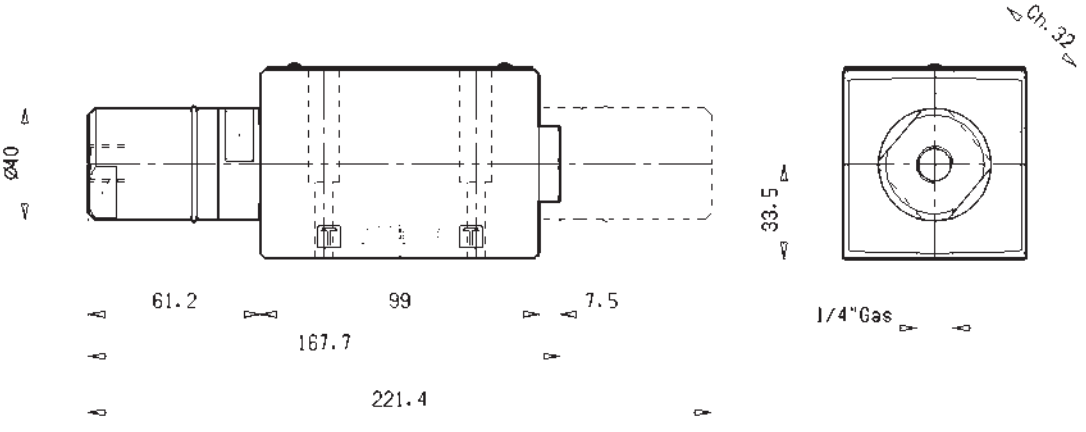

## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**Pesi**
*Weights*

| | |
|---|---|
| **con 1 comando:** *With 1 control:* | 3.70 kg |
| **con 2 comando:** *With 2 control:* | 4.75 kg |

**Viti di fissaggio**
*Fixing screws*
**N°4 DIN 912-8.8 M6 x 35**

**Momento massimo di serraggio:**
*Maximum blocking torque:*
**9÷10Nm**




## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 5 | 2 | P1 | _ | W | _ | _ | _ | 0 | 0 | 0 | 0 | _ | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

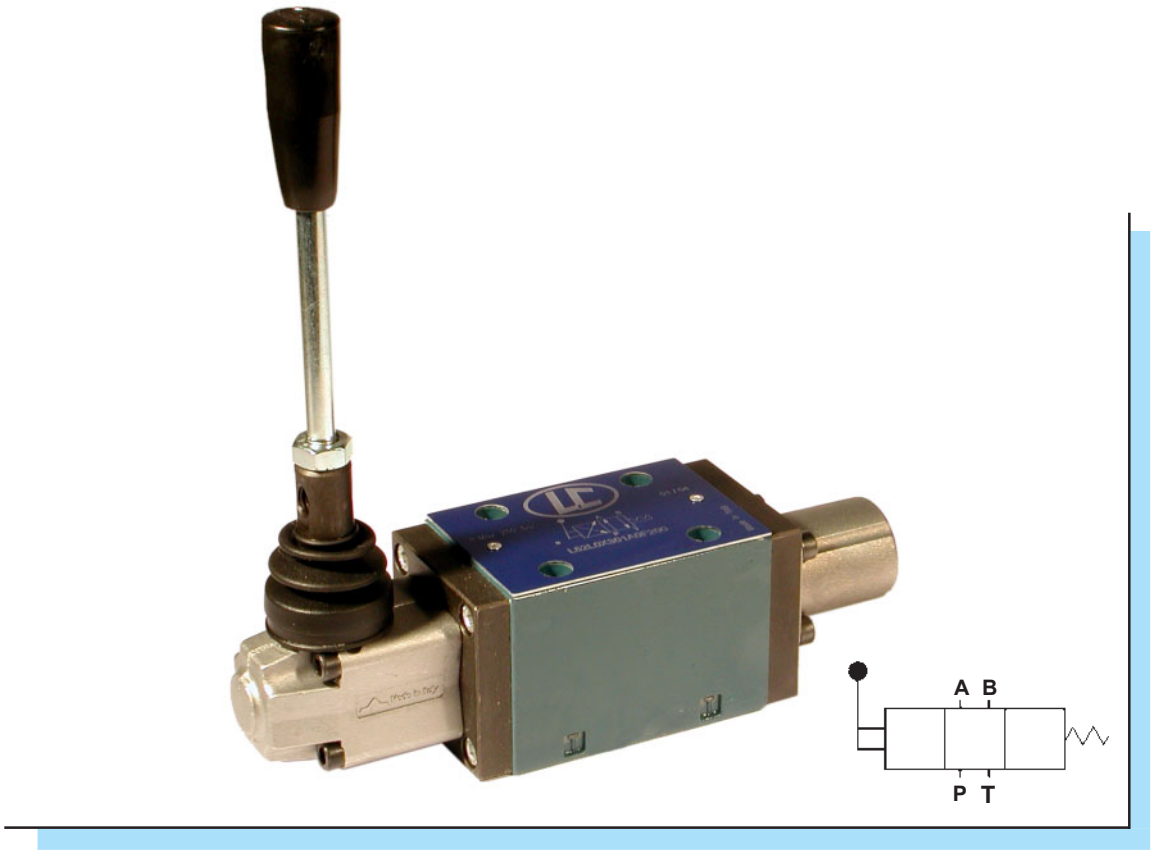
| | |
|---|---|
| **W** | **CIRQUITO** *CIRCUIT* |
| **_ _ _ _** | **VEDI PAGINA 3.10.02** *SEE PAGE 3.10.02* |

| | |
|---|---|
| **Z** | **VERSIONE** *VERSION* |
| **00** | **STANDARD** *STANDARD* |
| **0V** | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

# LC2 LV

## Valvole controllo direzione con comando a leva

*Lever operated directional valves*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima: 120 l/min**
**Pressione massima d'esercizio su A-B-P: 310 bar**
**Contropressione massima in T: 100 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*Max flow: 120 l/min*
*Max operating pressure on A-B-P: 310 bar*
*Max tank line back pressure: 100 bar*

## W — TIPI DI CIRCUITI • *SPOOL TYPES*

| Vecchio *Old* | Nuovo *New* | Vecchio *Old* | Nuovo *New* | Vecchio *Old* | Nuovo *New* | Vecchio *Old* | Nuovo *New* |
|---|---|---|---|---|---|---|---|
| A11A | **X301** | A2 | **A201** | C11A | **C301** | E12C | **E401** |
| A11C | **Y301** | B11C | **B301** | C12A | **C471** | E13C | **E471** |
| A11S | **A301** | B12C | **B471** | C13A | **C401** | E14C | **E361** |
| A12S | **A401** | B13C | **B401** | C14A | **C361** | E2 | **E201** |
| A13S | **A471** | B14C | **B361** | C2 | **C201** | N11C | **N301** |
| A14S | **A361** | B2 | **B201** | E11C | **E301** | N12C | **N401** |

## X — DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**Viti di fissaggio**
*Fixing screws*

**N°4 DIN 912-8.8 M6 x 35**

**Momento massimo di serraggio:**
*Maximum blocking torque:*

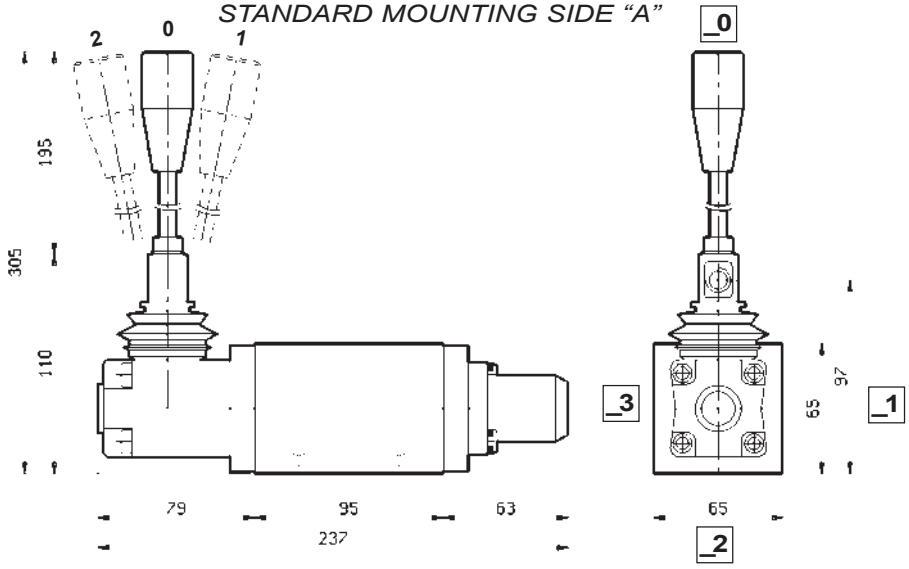
**9÷10Nm**

**Peso** *Weight* **3,66 kg**

**Versione con comando microinterruttore a richiesta**

*By request version with microswitch control*

**MONTAGGIO STANDARD LATO "A"**
*STANDARD MOUNTING SIDE "A"*




## Y — TIPO DI CONTROLLO DEL CURSORE • *TYPE OF SPOOL CONTROL*

| Schema *Diagram* | Codice *Code* |
|---|---|
| 1 0 2 | **M1** |
| 1 2 | **M2** |
| 1 0 | **M3** |
| 0 2 | **M4** |

| Schema *Diagram* | Codice *Code* |
|---|---|
| 1 0 2 | **F1** |
| 1 2 | **F2** |
| 1 0 | **F3** |
| 0 2 | **F4** |

## CODICE DI ORDINAZIONE • *ORDERING CODE*

**L 5 2 L 0 _ W _ X Y Z**

| W | TIPI DI CIRCUITI *SPOOL TYPES* |
|---|---|
| _ _ _ _ | **VEDI SOPRA** *SEE ABOVE* |

| X | MONTAGGIO LEVA *LEVER MOUNTING* | | | | |
|---|---|---|---|---|---|
| A_ | **MONTAGGIO LEVA LATO "A"** *LEVER MOUNTING SIDE "A"* | _0 | _1 | _2 | _3 |
| B_ | **MONTAGGIO LEVA LATO "B"** *LEVER MOUNTING SIDE "B"* | _0 | _1 | _2 | _3 |

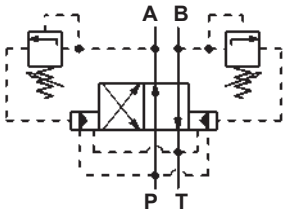
| Y | TIPO DI CONTROLLO DEL CURSORE *TYPE OF SPOOL CONTROL* |
|---|---|
| _ _ | **VEDI SOPRA** *SEE ABOVE* |

| Z | VERSIONE *VERSION* |
|---|---|
| 00 | **STANDARD** *STANDARD* |
| 0V | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

# LC2 IA10

## Valvole di commutazione automatica (in pressione)

*Automatic inversion valves (pressure)*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata minima: 10 l/min**
**Portata massima: 80 l/min**
**Pressione minima d'esercizio: 10 bar**
**Pressione massima d'esercizio: 310 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*Min flow: 10 l/min*
*Max flow: 80 l/min*
*Min operating pressure: 10 bar*
*Max operating pressure: 310 bar*

## CARATTERISTICHE • *FEATURES*

**Sono valvole a doppio effetto in grado di commutare automaticamente la direzione del flusso dell'olio. Il movimento è completamente idraulico e avviene normalmente a fine corsa del cilindro. L'inversione può anche verificarsi in qualsiasi posizione, a condizione che si crei una resistenza esterna operante sul sistema, tale da aumentare la pressione di lavoro, fino al raggiungimento del valore di taratura della valvola pilota.**
**Il ciclo di inversione inizia al 90% della pressione di taratura delle valvole pilota. La differenza di taratura fra le valvole degli utilizzi A e B non deve essere superiore a 30 bar.**

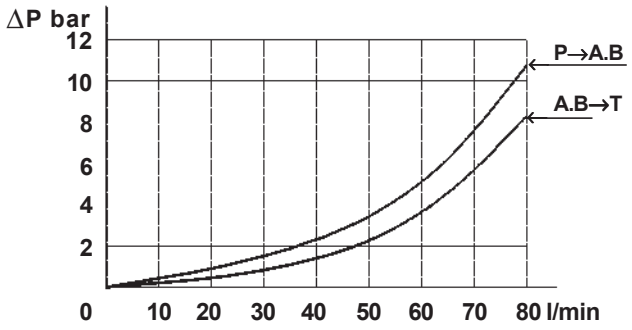
*These are double-acting valves which automatically change-over the oil flow direction. The motion is completely automatic and normally takes place when the cylinder reaches its end of stroke. Inversion can also occur in any position whatsoever, as long as an external resistance acting on the system is created in order to increase the working pressure to reach the setting pressure of the pilot valve. Inversion cycle starts at 90% of the setting pressure of the pilot valves. Setting difference between the valves on A and B ports should not be higher than 30 bar.*

| W | **Campo di taratura** *Pressure range* |
|---|---|
| **1S** | 10 ÷ 150 bar |
| **2S** | 20 ÷ 310 bar |

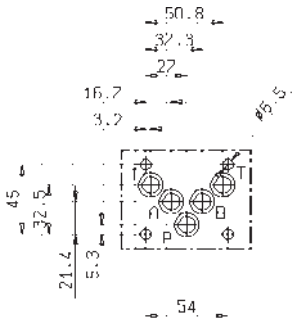
**INSTALLARE IN POSIZIONE ORIZZONTALE**

*ALWAYS INSTALL HORIZONTALLY*

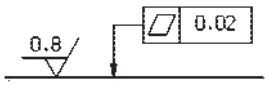
**Cadute di pressione**
*Pressure drop diagrams*




## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)




**Qualità superficie di attacco**
*Mounting plane quality*



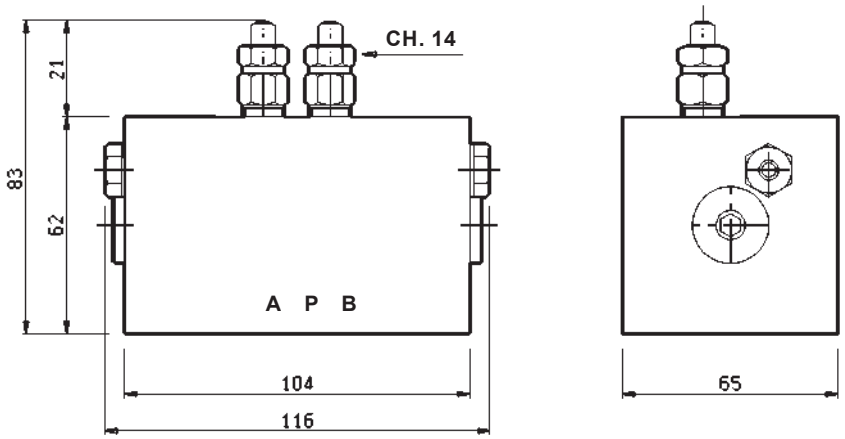

## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**Viti di fissaggio**
*Fixing screws*

**N°4 DIN 912-8.8 M6 x 35**

**Momento massimo di serraggio:**
*Maximum blocking torque:*
**9÷10Nm**

| **Peso** *Weight* | **2,95 kg** |
|---|---|




## CODICE DI ORDINAZIONE • *ORDERING CODE*

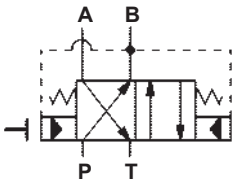
| L | 5 | 2 | 3 | 0 | W | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| W | **CAMPO DI TARATURA** *PRESSURE RANGE* |
|---|---|
| – – | **VEDI SOPRA** *SEE ABOVE* |

# LC2 IA12

## Valvole di commutazione automatica (in portata)

*Automatic inversion valves (flow)*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata minima : 10 l/min**
**Portata massima : 80 l/min**
**Pressione minima d'esercizio : 60 bar**
**Pressione massima d'esercizio : 250 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*Min flow : 10 l/min*
*Max flow : 80 l/min*
*Min operating pressure : 60 bar*
*Max operating pressure : 250 bar*

## CARATTERISTICHE • *FEATURES*

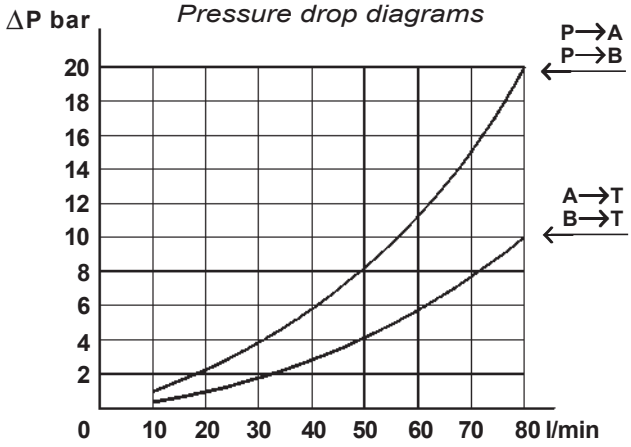
**Sono valvole a doppio effetto in grado di commutare automaticamente la direzione del flusso dell'olio. Il movimento è completamente idraulico e avviene normalmente a fine corsa del cilindro. In caso di arresto della manovra si ripristina automaticamente la posizione P>B.**

*These are double-acting valves which automatically change-over the oil flow direction. The motion is completely automatic and normally takes place when the cylinder reaches its end of stroke. In case the movement is stopped the valve resets automatically back to P>B.*

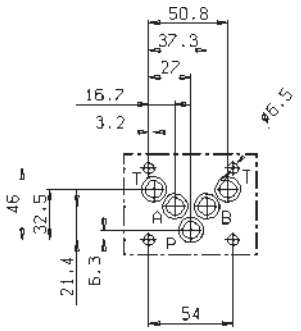
**NOTA: Nel caso di utilizzo, in versione standard, con valvola di ritegno pilotata, è possibile impiegare solamente la versione LC2M VR/A.**
**Trafilamento max. interno: 0,7 l/min.**

*NOTE: In case of use in standard version with pilot operated check valve, it is allowed to use only LC2M VR/A.*
*Max internal leakage: 0,7 l/min.*

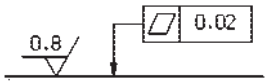
**Cadute di pressione**
*Pressure drop diagrams*




## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)




**Qualità superficie di attacco**
*Mounting plane quality*




## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**Viti di fissaggio**
*Fixing screws*

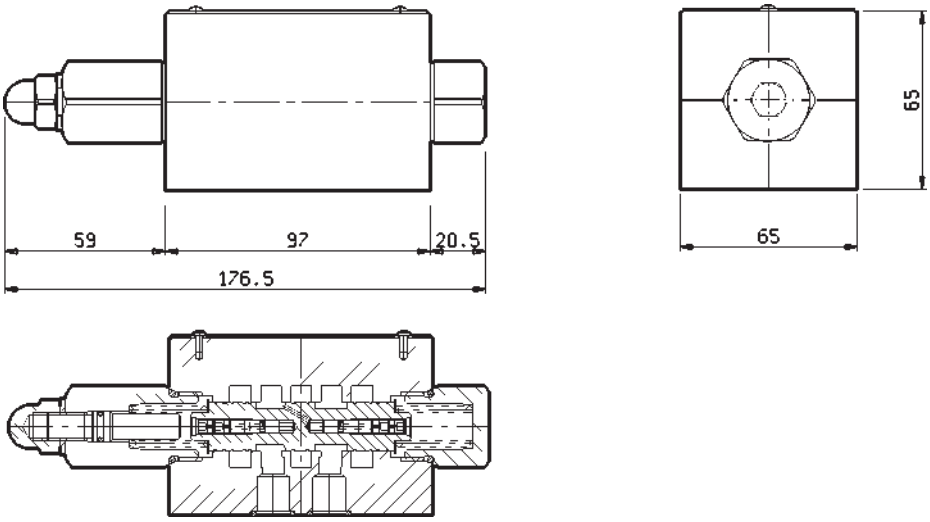
**N°4 DIN 912-8.8 M6 x 35**

**Momento massimo di serraggio:**
*Maximum blocking torque:*
**9÷10Nm**

**Peso**
*Weight*

| | |
|---|---|
| **IA12** | 3,60 kg |

**LC2 IA12**

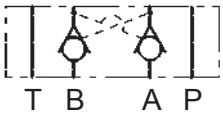



## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 5 | 2 | 3 | 5 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

# LC2M VR

## Valvole modulari di ritegno semplici e pilotate
Modular direct and pilot operated check valves



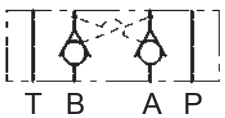
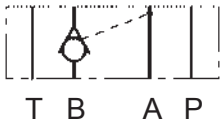
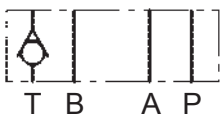

**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima: 90 l/min**
**Pressione massima d'esercizio: 310 bar**
**Rapporto di pilotaggio = 2,7:1**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

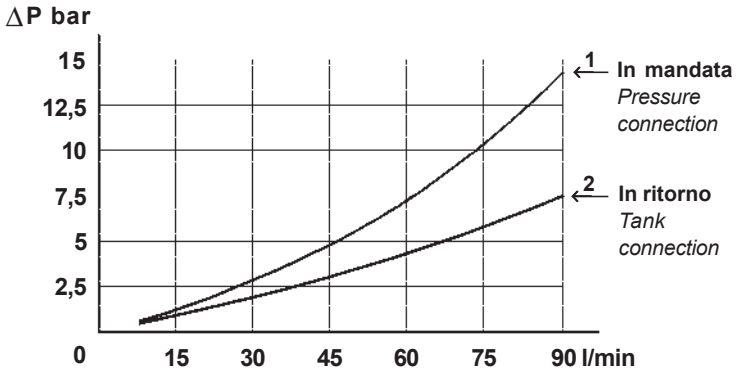
*Max flow: 90 l/min*
*Max operating pressure: 310 bar*
*Pilot ratio = 2,7:1*

## TIPI DI VALVOLE • *VALVES TYPES*

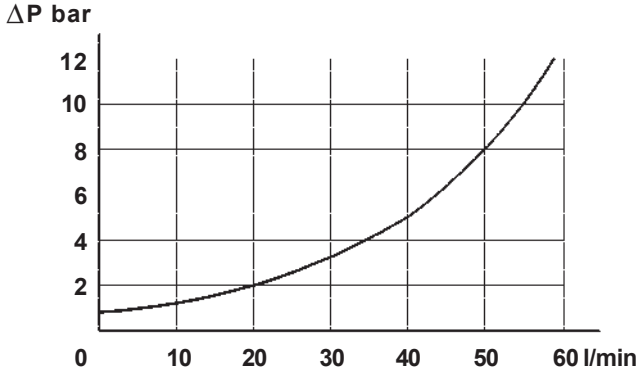
| CIRCUITI *CIRQUITS* | | | | | |
|---|---|---|---|---|---|
| |   | |   | |   |
| | **AB** | **0A** | **0B** | **0P** | **0T** |

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

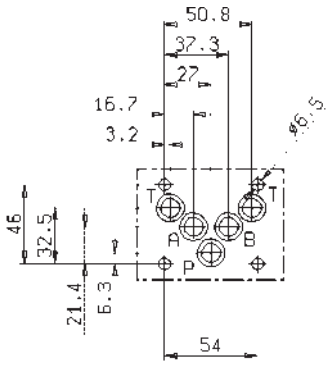
**VR/AB**



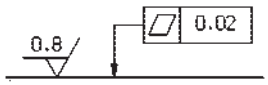

**VR/P VR/T**



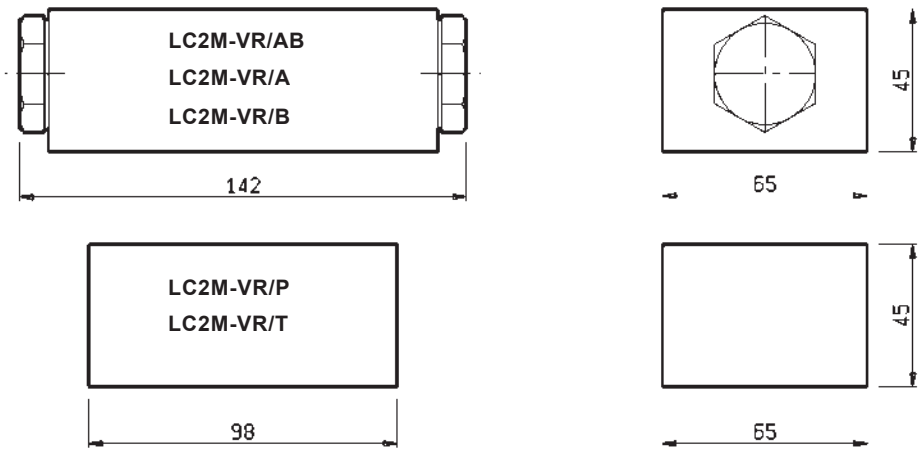

## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)




**Qualità superficie di attacco**
*Mounting plane quality*

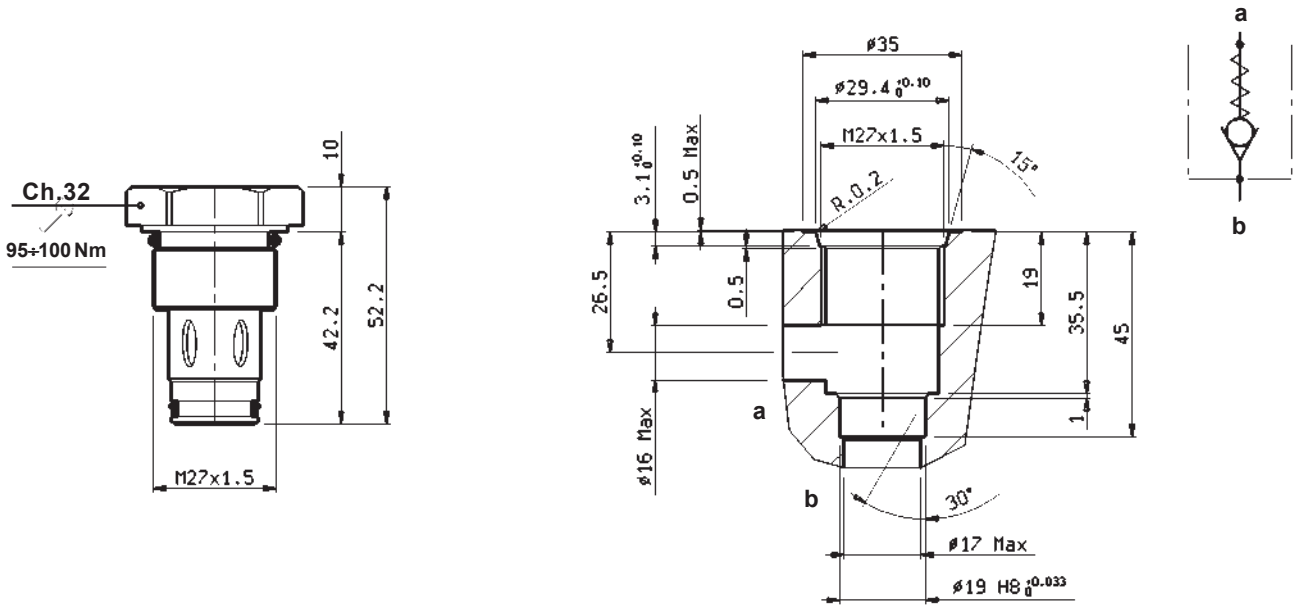



## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*




| | **Peso** *Weight* |
|---|---|
| LC2M-VR/AB | 2,15 kg |
| LC2M-VR/A | 2,14 kg |
| LC2M-VR/B | 2,14 kg |
| LC2M-VR/P | 1,81 kg |
| LC2M-VR/T | 1,79 kg |

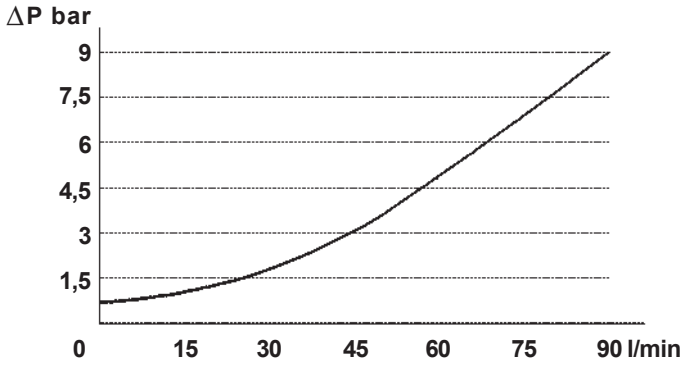
## VALVOLA UNIDIREZIONALE A CARTUCCIA • *UNI-DIRECTIONAL CARTRIDGE VALVE*




| Tipo<br>*Type* | Diam. nominale di passaggio<br>*Ø Size*<br>mm | Portata Max.<br>*Max. flow*<br>l/min | Pressione Max.<br>*Max. pressure*<br>bar | Pressione di apertura<br>*Cracking pressure*<br>bar | Cavità<br>*Cavity*<br>n° | Peso<br>*Weight*<br>kg |
|---|---|---|---|---|---|---|
| VU 10 | 11 | 90 | 350 | 1 | 16 | 0,170 |

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

**Diagramma caduta di pressione della cartuccia**
*Cartridge pressure drop diagram*




## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | 4 | 0 | 0 | 0 | W | _ | 0 | 1 | 0 | 0 | Z | _ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

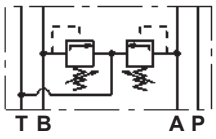
| W | TIPI DI VALVOLE<br>*VALVES TYPE* |
|---|---|
| AB | LC2M-VR/AB |
| 0A | LC2M-VR/A |
| 0B | LC2M-VR/B |
| 0P | LC2M-VR/P |
| 0T | LC2M-VR/T |

| Z | VERSIONE<br>*VERSION* |
|---|---|
| 00 | STANDARD<br>*STANDARD* |
| 0V | GUARNIZIONI IN VITON<br>*SEALS IN VITON* |

# LC2M VM

## Valvole modulari limitatrici di pressione ad azione diretta

*Modular direct acting adjustable pressure relief valves*



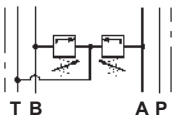
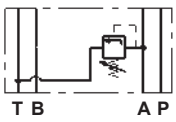
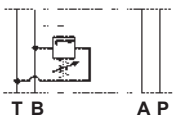
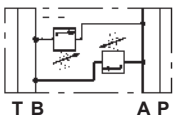
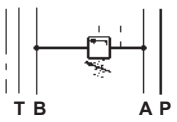
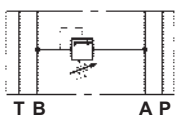
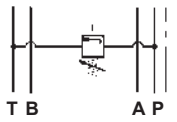

**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima: 80 l/min**
**Pressione massima d'esercizio: 310 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*Max flow: 80 l/min*
*Max operating pressure: 310 bar*

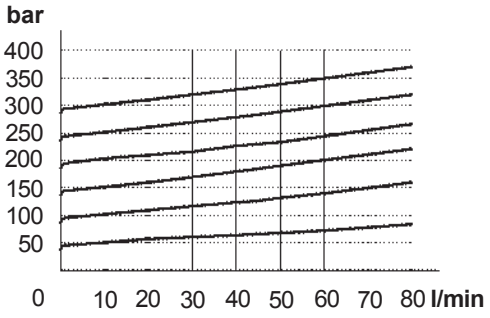
## TIPI DI VALVOLE • *VALVES TYPES*

| 01 AB | 01 0A | 01 0B | 02 AB | 02 0A | 02 0B | 01 0P |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |

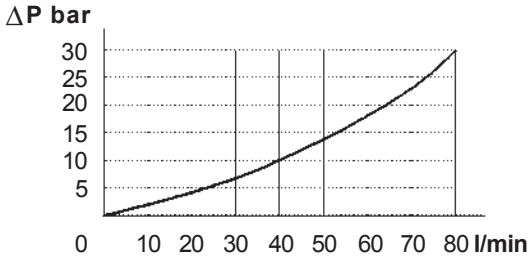


## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

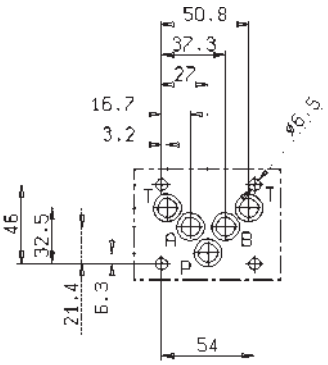
**Curve di apertura**
*Opening curves*



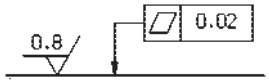

**Valore minimo di taratura**
*Min adjustable setting*



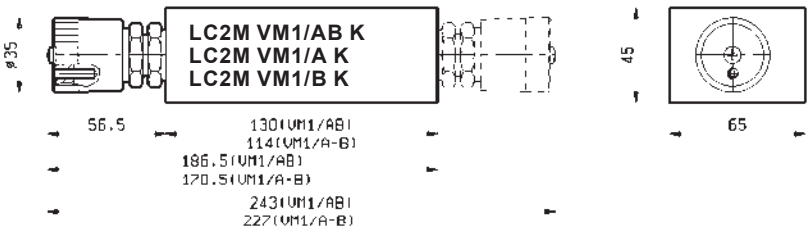

## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)

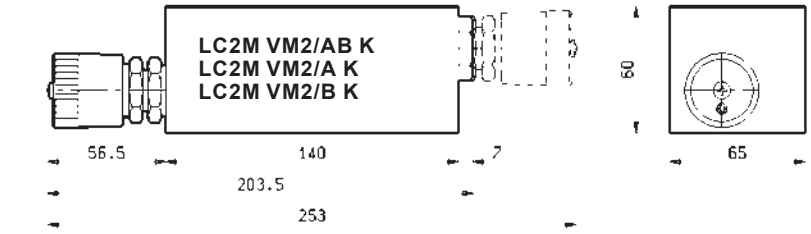



**Qualità superficie di attacco**
*Mounting plane quality*




## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*



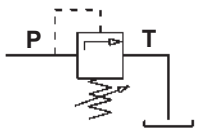



**K =** Valvola con taratura a volantino
*Knob adjustment*

**S =** Valvola con taratura a chiave
*Screw adjustment*

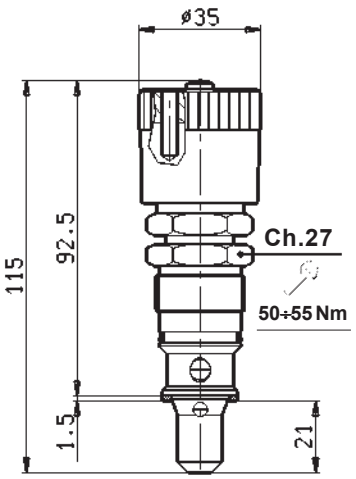
| **Peso** *Weight* | |
|---|---|
| LC2M VM1/AB | 2.64 kg |
| LC2M VM1/A | 2.10 kg |
| LC2M VM1/B | 2.10 kg |
| LC2M VM2/AB | 3.49 kg |
| LC2M VM2/A | 3.40 kg |
| LC2M VM2/B | 3.40 kg |
| LC2M VM1/P | 2.20 kg |

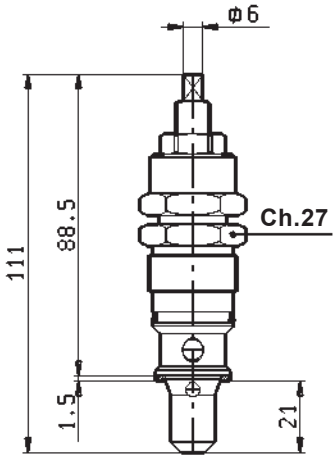
## X VALVOLA LIMITATRICE DI PRESSIONE A CARTUCCIA • *RELIEF VALVE CARTRIDGE*

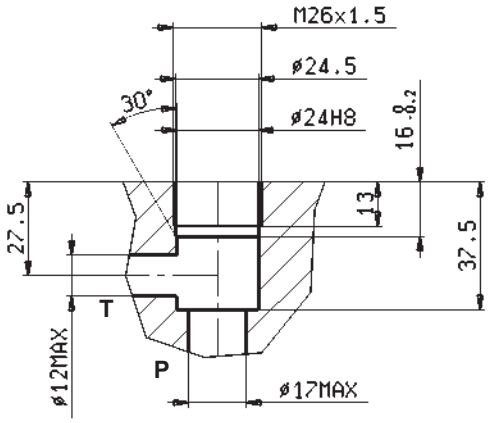



**Tipo** Type **K =** Valvola con taratura a volantino *Knob adjustment*

**Tipo** Type **S =** Valvola con taratura a chiave *Screw adjustment*




| Tipo *Type* | X | | Portata Max. *Max. flow* l/min | Pressione Max. *Max. pressure* bar | Campo di taratura *Pressure range* bar | Cavità *Cavity* n° | Peso *Weight* kg |
|---|---|---|---|---|---|---|---|
| | Regolazione a volantino *Knob adjustment* | Regolazione a vite *Screw adjustment* | | | | | |
| VM 10 | **KL** | **SL** | 80 | 310 | 0÷60 | 13 | 0,23 |
| | **KN** | **SN** | | | 10÷140 | | |
| | **KB** | **SB** | | | 20÷200 | | |
| | **KV** | **SV** | | | 50÷310 | | |
| | **00** | | **Senza valvola limitatrice** - *Without pressure relief valve* | | | | |

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | 6 | 0 | V | W | X | 0 | 0 | Z |
|---|---|---|---|---|---|---|---|---|---|---|

| V | MODELLO *MODEL* |
|---|---|
| 01 | **MODELLO 01 (scarico in T)** *MODEL 01 (T outlet)* |
| 02 | **MODELLO 02 (scarico incrociato)** *MODEL 02 (cross-over outlet)* |

| W | TIPI DI VALVOLE *VALVES TYPE* |
|---|---|
| AB | LC2M-VM_/AB |
| 0A | LC2M-VM_/A |
| 0B | LC2M-VM_/B |
| 0P | LC2M-VM_/P |

| X | CAMPO DI TARATURA *PRESSURE RANGE* |
|---|---|
| – – | **VEDI SOPRA** *SEE ABOVE* |

| Z | VERSIONE *VERSION* |
|---|---|
| 00 | **STANDARD** *STANDARD* |
| 0V | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

# LC2M VF

## Valvole modulari di controllo portata

*Modular flow regulator valves*

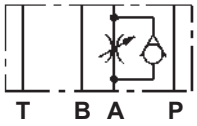
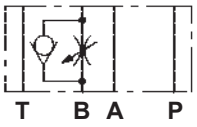
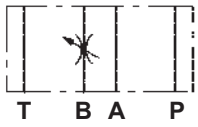
**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

**Portata massima: 90 l/min**
**Pressione massima d'esercizio: 310 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

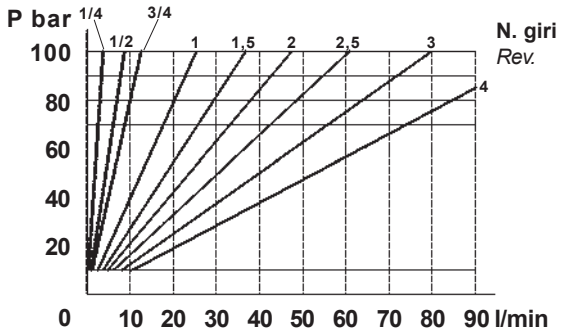
*Max flow: 90 l/min*
*Max operating pressure: 310 bar*

## TIPI DI VALVOLE • *VALVES TYPES*

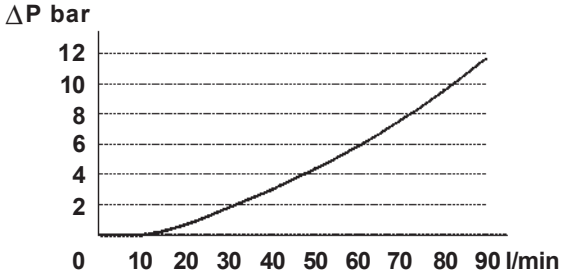
| 01 AB | 01 0A | 01 0B | 02 AB | 02 0A |
|---|---|---|---|---|
| |  | | | |
| **02 0B** | **0B 0A** | **0B 0B** | **0B 0P** | **V = 01** Regolazione in ritorno *Meter-Out flow* **V = 02** Regolazione in mandata *Meter-In flow* **V = 0B** Bidirezionale *Bidirectional* |
|  | |  | | |

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

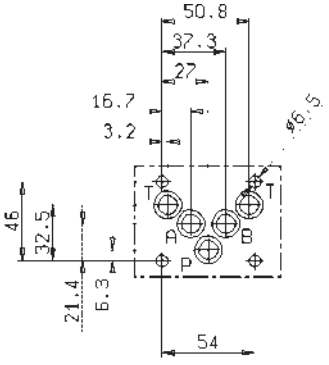
**Variazione di portata in funzione dei giri del volantino e della pressione**
*Pressure drop depending on knob revolutions and on pressure*



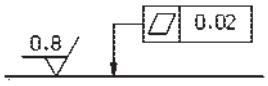

**Caduta di pressione nel senso del flusso libero**
*Pressure drop in the free flow direction*




## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)



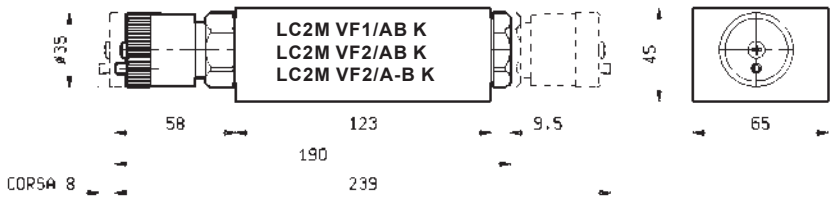

**Qualità superficie di attacco**
*Mounting plane quality*

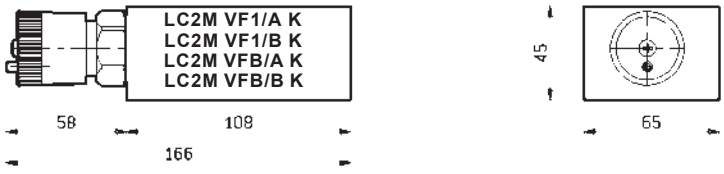


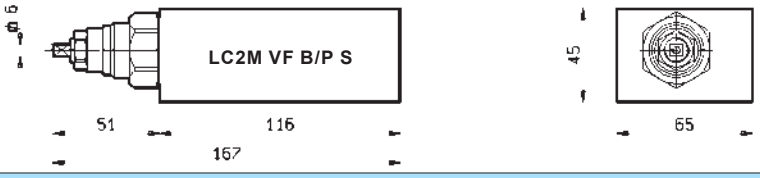
## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**K =** **Valvola con regolazione a volantino**
*Knob adjustment*

**S =** **Valvola con regolazione a chiave**
*Screw adjustment*

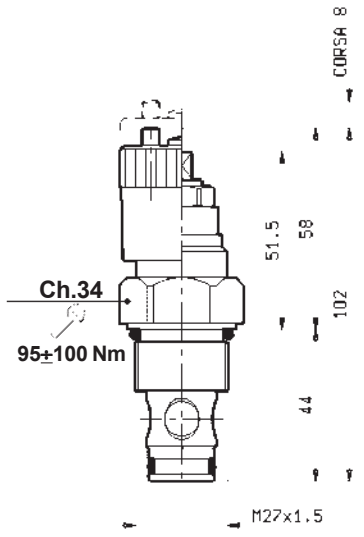


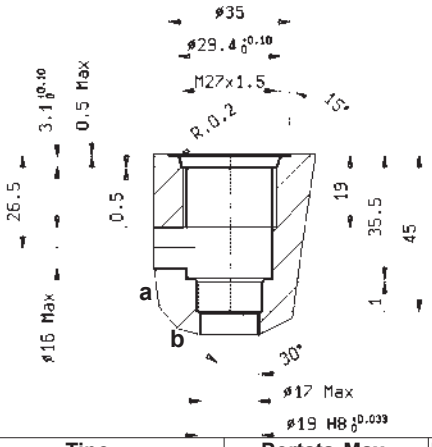



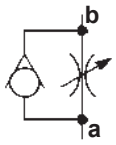

| Peso *Weight* | |
|---|---|
| LC2M VF1/AB | 2.78 kg |
| LC2M VF1/A-B | 2.50 kg |
| LC2M VF2/ABN | 2.78 kg |
| LC2M VFB/P | 2.08 kg |
| LC2M VFB/A-B | 2.28 kg |
| LC2M VF1/A | 2.28 kg |
| LC2M VF1/B | 2.28 kg |

## X VALVOLA A CARTUCCIA • *CARTRIDGE VALVE*




**VFU10**
**Valvola unidirezionale**
*Uni-directional valve*




**VFB10**
**Valvola bidirezionale**
*Bi-directional valve*

**S =** **Valvola con regolazione a chiave**
*Screw adjustment*

**K =** **Valvola con regolazione a volantino**
*Knob adjustment*

| Tipo *Type* | Tipo (regolazione a volantino) *Type (knob adjustment)* | Tipo (regolazione a vite) *Type (screw adjustment)* | Portata Max. *Max. flow* l/min | Diametro nominale di passaggio *Ø Size* mm | Numero di giri del volantino *Knob revolutions number* n° | Cavità *Cavity* n° | Peso *Weight* kg |
|---|---|---|---|---|---|---|---|
| VFU 10 | 2K | 2S | 90 | 11 | 7 | 16 | 0,280 |
| VFB 10 | | | 90 | 9 | | | 0,280 |

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | 5 | 0 | V | W | X | 0 | 0 | Z |
|---|---|---|---|---|---|---|---|---|---|---|

| V | MODELLO *MODEL* |
|---|---|
| 01 | **MODELLO 01** *MODEL 01* |
| 02 | **MODELLO 02** *MODEL 02* |
| 0B | **MODELLO 0B** *MODEL 0B* |

| W | TIPI DI VALVOLE *VALVES TYPE* |
|---|---|
| AB | LC2M-VF_/AB |
| 0A | LC2M-VF_/A |
| 0B | LC2M-VF_/B |
| 0P | LC2M-VF_/P |

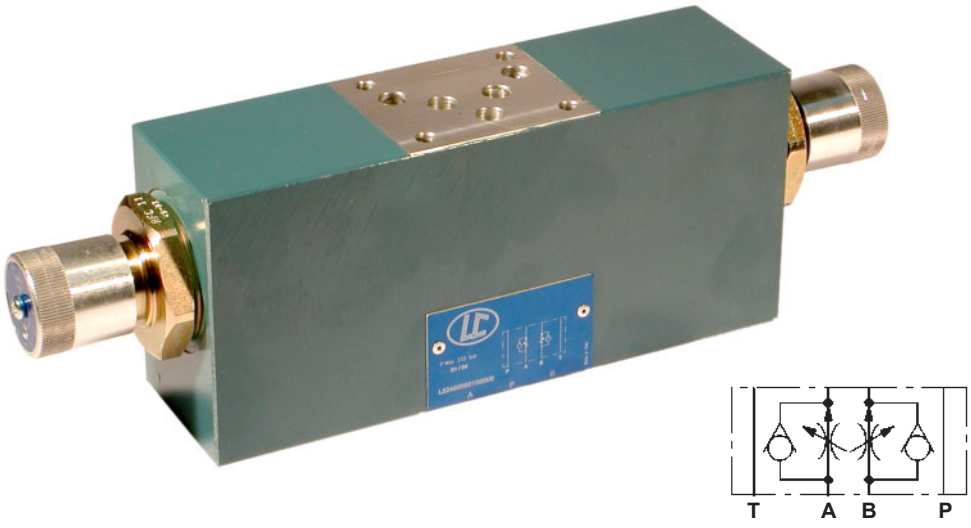
| X | REGOLAZIONE *ADJUSTMENT* |
|---|---|
| – – | **VEDI SOPRA** *SEE ABOVE* |

| Z | VERSIONE *VERSION* |
|---|---|
| 00 | **STANDARD** *STANDARD* |
| 0V | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

# LC2M VFCU

## Valvole modulari compensate di controllo portata

*Modular pressure compensated flow regulator valves*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

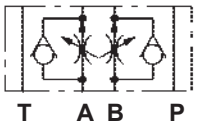
**Portata massima: 65 l/min**
**Pressione massima d'esercizio: 310 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

*Max flow: 65 l/min*
*Max operating pressure: 310 bar*

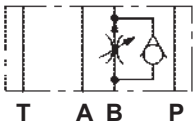
## TIPI DI VALVOLE • *VALVES TYPES*

**AB**



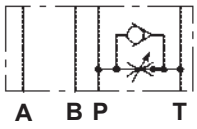

**0A**

**0B**



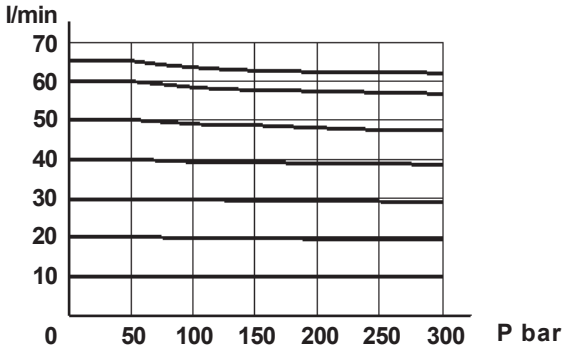

**0P**

**0T**

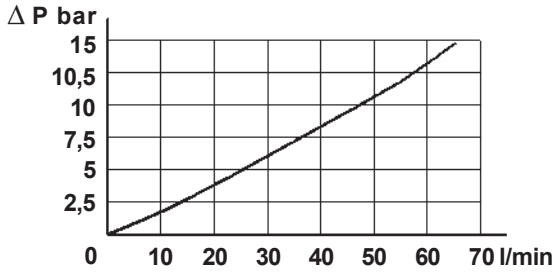



## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

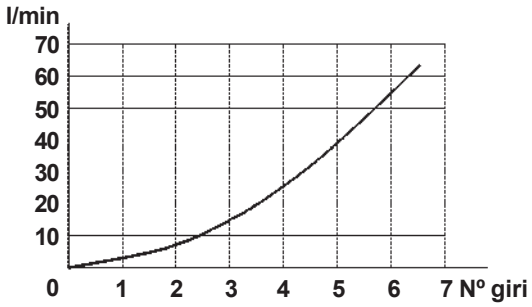
**Variazione di portata in funzione della pressione**
*Flow change depending on pressure*




**Caduta di pressione nel senso del flusso libero**
*Pressure drop in the free flow direction*

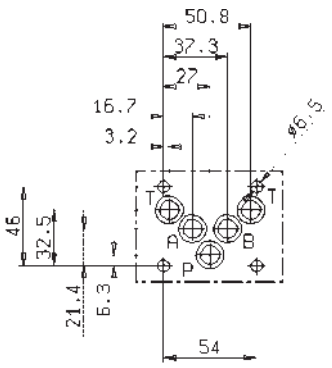



**Variazione di portata in funzione dei giri del volantino**
*Flow adjustment depending on knob revolution*

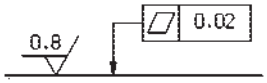



| | | | |
|---|---|---|---|
| **Regolazione a volantino** *Knob adjustment* | **Regolazione a vite** *Screw adjustment* | **Portata Max.** *Max. flow* **l/min** | **Numero di giri del volantino** *Knob revolutions number* **n°** |
| **1K** | **1S** | 65 | 7 |

## GRANDEZZA • *SIZE* : NG10 ISO 4401-05 CETOP RP 121H- 05 (CETOP 5)



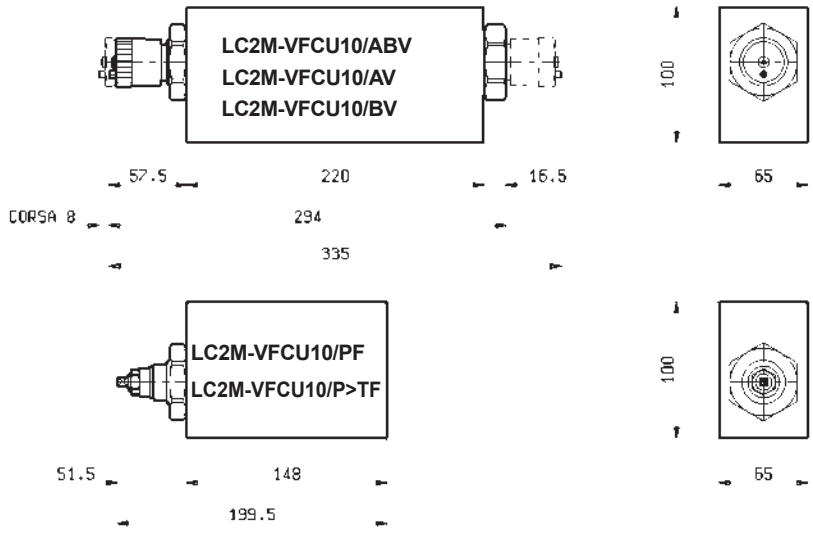

**Qualità superficie di attacco**
*Mounting plane quality*



## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

| Peso *Weight* | |
|---|---|
| LC2M VFCU/AB | 1.80 kg |
| LC2M VFCU/A | 1.50 kg |
| LC2M VFCU/B | 1.50 kg |
| LC2M VFCU/P | 1.20 kg |
| LC2M VFCU/T | 1.20 kg |

**K =** **Valvola con regolazione a volantino**
*Knob adjustment*




**S =** **Valvola con regolazione a chiave**
*Screw adjustment*

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | 4 | 5 | 0 | 0 | W | X | 0 | 0 | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | _ | _ | | | _ |

| W | **TIPI DI VALVOLE** *VALVES TYPE* |
|---|---|
| **AB** | LC2M-VFCU/AB |
| **0A** | LC2M-VFCU/A |
| **0B** | LC2M-VFCU/B |
| **0P** | LC2M-VFCU/P |
| **0T** | LC2M-VFCU/T |

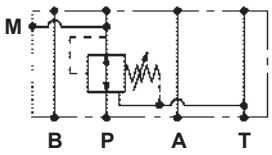
| X | **REGOLAZIONE** *ADJUSTMENT* |
|---|---|
| **– –** | **VEDI PAGINA 3.120.02** *SEE PAGE 3.120.02* |

| Z | **VERSIONE** *VERSION* |
|---|---|
| **00** | **STANDARD** *STANDARD* |
| **0V** | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

# LC2M VRPM

## Valvole modulari riduttrici di pressione

*Modular pressure reducing valves*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

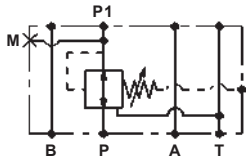
**Portata massima : 80 l/min**
**Pressione massima in entrata: 310 bar**
**Pressione controllata in uscita: 10÷310 bar**
**Valvole riduttrici di pressione pilotate agenti su P e A**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

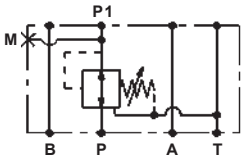
*Max flow : 80 l/min*
*Inlet max pressure: 310 bar*
*Controlled pressure at outlet port: 10 to 310 bar*
*Pilot operated pressure reducing valves acting on P and A*

## TIPI DI VALVOLE • *VALVES TYPES*

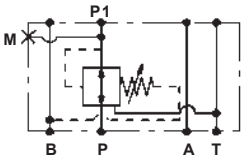
### EP
**LC2M-VRPM-E/P**
**Drenaggio esterno**
*External drain*




### IP
**LC2M-VRPM-I/P**
**Drenaggio interno in T**
*Internal drain to T*



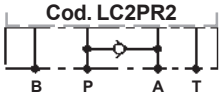

### IA
**LC2M-VRPM-I/A**
**Drenaggio interno in B**
*Internal drain to B*




**Cod. LC2PR1**

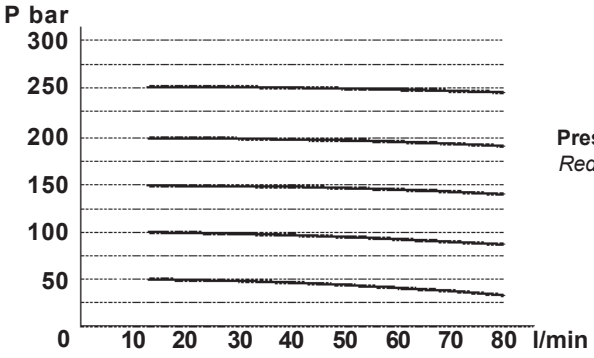
**LC2-VRPM-...**

**Cod. LC2PR2**




## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

**Curve caratteristiche valvole**
*Relief valves diagram characteristics*

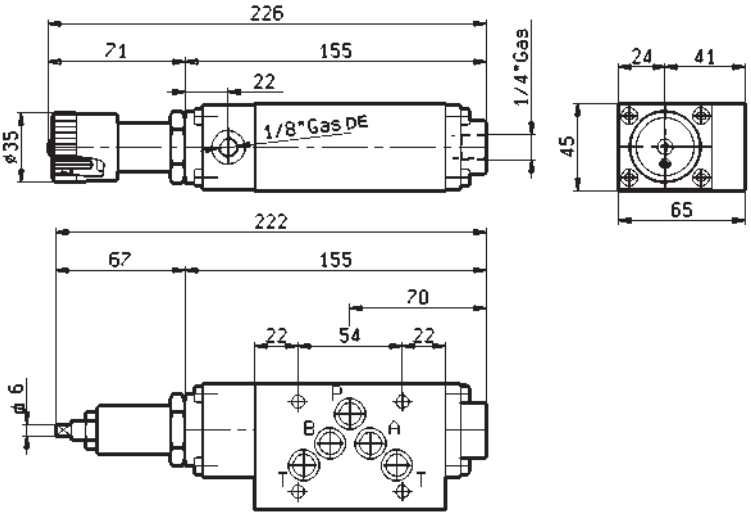



**Pressione ridotta**
*Reduced pressure*

| X | | |
|---|---|---|
| **Tipo** (regolazione a volantino) *Type (knob adjustment)* | **Tipo** (regolazione a vite) *Type (screw adjustment)* | **Campo di taratura** *Pressure range* |
| **1K** | **1S** | 0 ÷ 70 bar |
| **2K** | **2S** | 10 ÷ 180 bar |
| **3K** | **3S** | 30 ÷ 310 bar |

## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**K =** **Valvola con taratura a volantino**
*Knob adjustment*

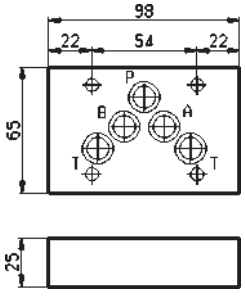



**Tipo**
*Type*

**2PR1**

**Piastra di collegamento**
*Connection sub-plate*

**P → A**

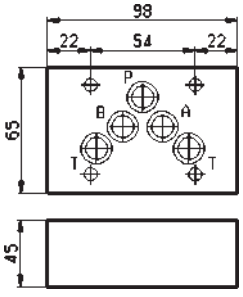



**Tipo**
*Type*

**2PR2**

**Piastra con ritegno da**
*Sub-plate with check valve from*

**A → P**




**S =** **Valvola con taratura a chiave**
*Screw adjustment*

| **Pesi** *Weights* | |
|---|---|
| **LC2M-VRPM** | 2,48 kg |

| **Pesi** *Weights* | |
|---|---|
| **LC22PR1** | 1,00 kg |
| **LC22PR2** | 1,80 kg |

## CARATTERISTICHE DI FUNZIONAMENTO • *SPECIFICATIONS*

**Le valvole LC2M-VRPM, sono da impiegare quando in un circuito si vuole ottenere una riduzione costante di pressione su uno o più utilizzi.**
**Eventuali aumenti di pressione sull'entrata "P" non hanno influenza sulla pressione ridotta.**
**LC2M-VRPM/A pressione ridotta su utilizzo A.**
**LC2M-VRPM.../P pressione ridotta su utilizzo P1.**

*The valves LC2M-VRPM must be used when in a circuit a constant reduced pressure is needed on one or more ports.*
*Possible pressure increase on the inlet <P> Line do not influence the reduced pressure.*
*LC2M-VRPM/A reduced pressure on port A.*
*LC2M-VRPM.../P reduced pressure on port P1.*

## DRENAGGIO • *DRAIN*

**Le valvole LC2M-VRPM/A sono montate con drenaggio in utilizzo B.**
**Le valvole LC2M-VRPM.../P vengono montate a richiesta con drenaggio interno o esterno.**
**Interno specificare I.**
**Esterno specificare E.**
**In caso di contropressione in T, superiore a 1 bar, impiegare la versione drenaggio E (esterno).**
**Per variare il sistema di drenaggio, da interno (I) a esterno (E), ruotare il coperchio anteriore (lato volantino) di 180º, togliendo il tappo DIN 906 1/8" gas e collegando il drenaggio al serbatoio.**
Valore massimo di drenaggio: 0,35 l/min.

*The valves LC2M-VRPM/A are supplied with drain connected to B.*
*The valves LC2M-VRPM.../P are supplied with internal or external drain by request.*
*Internal specify I.*
*External specify E.*
*Whenever there is back pressure, exceeding 1 bar, in the tank line T the external drain should be used.*
*To modify the drain system from internal to external, turn the back cover (knob side) by 180º, opening the DIN 906 1/8" BSP screw plug and connecting the drain to the tank.*
*Max drainage value: 0.35 l/min.*

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | 6 | 3 | 0 | 2 | W | X | 0 | 0 | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|

| W | **CIRQUITO** *CIRCUIT* |
|---|---|
| **EP** | LC2M-VRPM-...-EP |
| **IP** | LC2M-VRPM-...-IP |
| **IA** | LC2M-VRPM-...-IA |

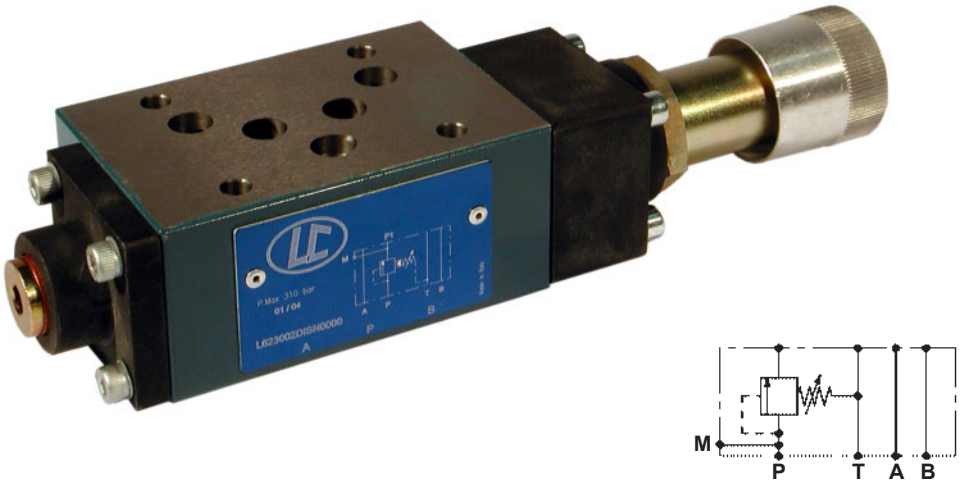
| X | **REGOLAZIONE** *ADJUSTMENT* |
|---|---|
| – – | **VEDI PAGINA 3.130.02** *SEE PAGE 3.130.02* |

| Z | **VERSIONE** *VERSION* |
|---|---|
| **00** | **STANDARD** *STANDARD* |
| **0V** | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

# LC2M - VSPM

## Valvole modulari di sequenza

*Modular sequence valves*




**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

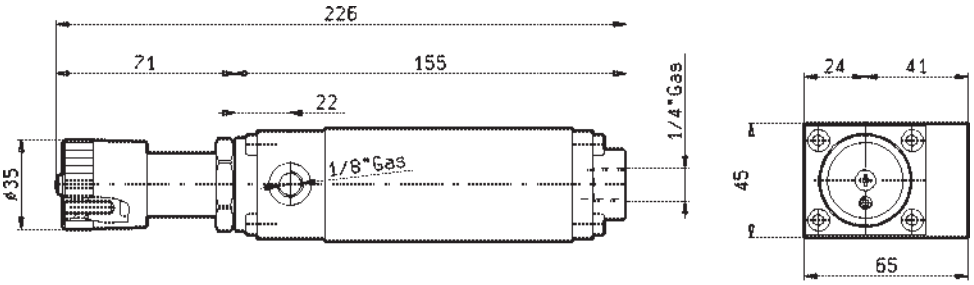
**Portata massima : 80 l/min**
**Pressione massima in entrata: 310 bar**
**Pressione controllata in uscita: 10÷310 bar**
**Valvole di sequenza pilotate agenti su P**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

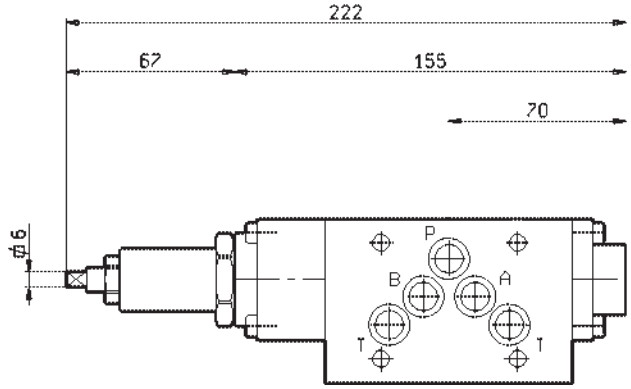
*Max flow : 80 l/min*
*Inlet max pressure: 310 bar*
*Controlled pressure at outlet port: 10 to 310 bar*
*Pilot operated sequence valves acting on P*

## Y DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**K =** **Valvola con taratura a volantino**
*Knob adjustment*




**S =** **Valvola con taratura a chiave**
*Screw adjustment*




| Y | | | |
|---|---|---|---|
| **Tipo** (regolazione a volantino) *Type* *(knob adjustment)* | **Tipo** (regolazione a vite) *Type* *(screw adjustment)* | **Campo di taratura** *Pressure range* | **Peso** *Weight* |
| **KN** | **SN** | 0 ÷ 70 bar | 2,48 kg |
| **KB** | **SB** | 10 ÷ 180 bar | |
| **KV** | **SV** | 30 ÷ 310 bar | |

## CARATTERISTICHE DI FUNZIONAMENTO • *SPECIFICATIONS*

**Le valvole LC2M-VSPM, sono valvole di sequenza pilotate agenti sulla linea P con drenaggio in T.**
**Sono disponibili con due campi di taratura.**

*LC2M-VSPM are pilot sequence valves operating on P line with chain in T.*
*They are available with 2 pressure ranges.*

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | 3 | 0 | 0 | 2 | X | _ | Y | _ | 0 | 0 | Z | _ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| X | VERSIONE *VERSION* |
|---|---|
| DI | DRENAGGIO INTERNO *INTERNAL DRAIN* |
| DE | DRENAGGIO ESTERNO *EXTERNAL DRAIN* |

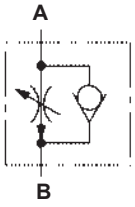
| Y | REGOLAZIONE *ADJUSTMENT* |
|---|---|
| – – | VEDI SOPRA *SEE ABOVE* |

| Z | VERSIONE *VERSION* |
|---|---|
| 00 | STANDARD *STANDARD* |
| 0V | GUARNIZIONI IN VITON *SEALS IN VITON* |

# LC2 VFCU

## Valvole compensate di controllo portata

*Pressure compensated flow regulator valves*




**CARATTERISTICHE TECNICHE**

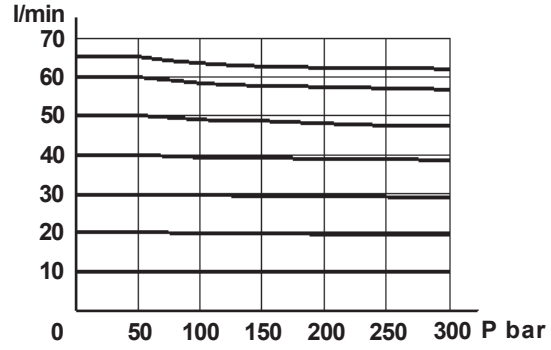
**Portata massima : 65 l/min**
**Pressione massima d'esercizio: 310 bar**

*TECHNICAL CHARACTERISTICS*

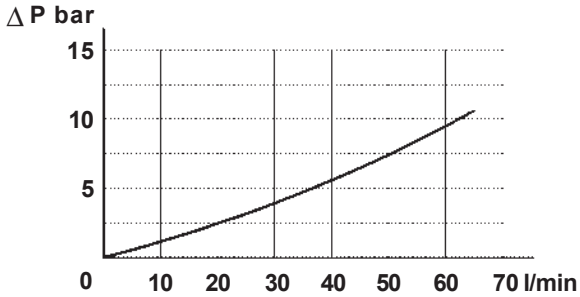
*Max flow : 65 l/min*
*Max operating pressure: 310 bar*

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

**Variazione di portata in funzione della pressione**
*Flow change depending on the pressure*

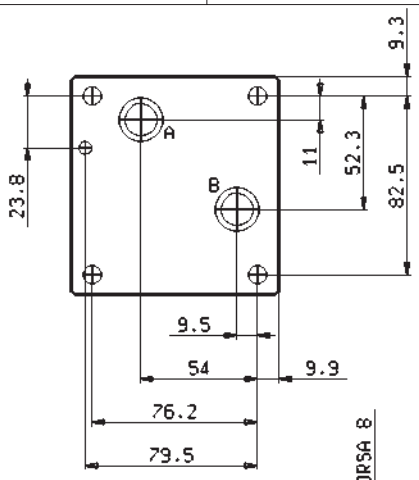



**Caduta di pressione nel senso del flusso libero**
*Pressure drop in the free flow direction*

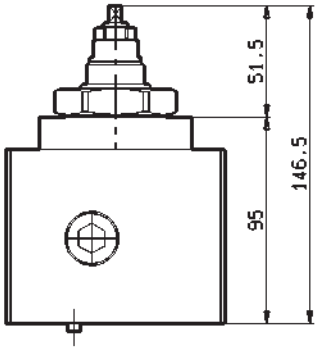



## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

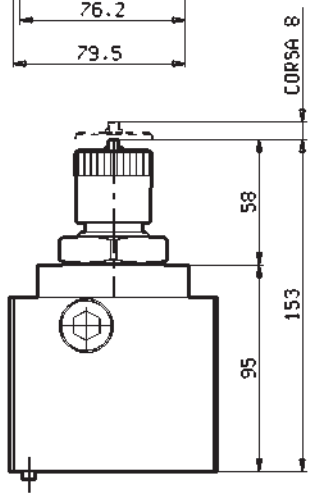
| **Viti di fissaggio**<br>*Fixing screws* | **Momento massimo di serraggio**<br>*Maximum blocking torque* |
|---|---|
| **N°4 DIN 912-8.8 M8x80** | **14 ÷ 15Nm** |

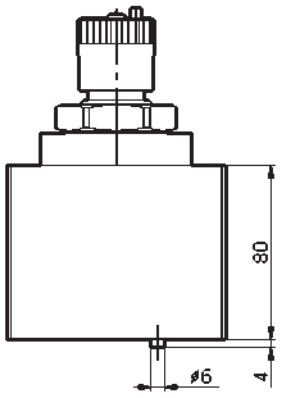


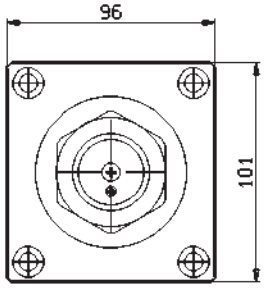

**S =** **Valvola con regolazione a chiave**
*Screw adjustment*




**K =** **Valvola con regolazione a volantino**
*Knob adjustment*

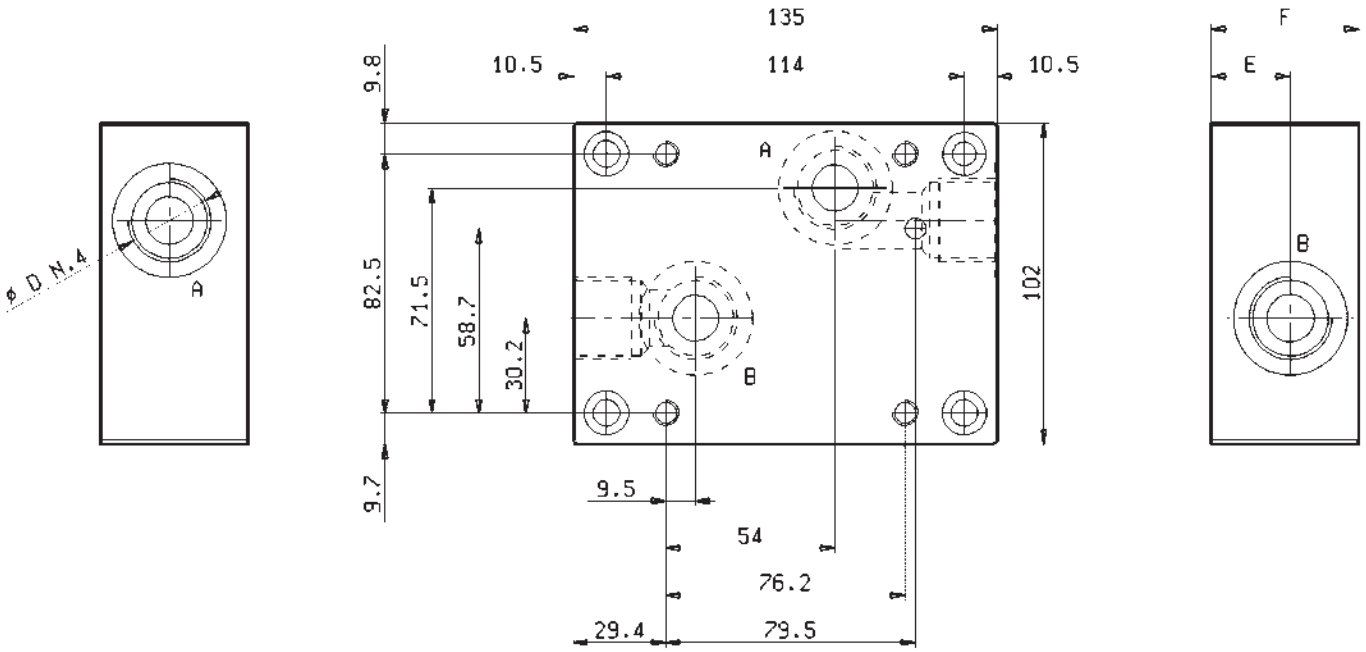



| ✕ | | **Portata Max.**<br>*Max. flow*<br>**l/min** | **Numero di giri del volantino**<br>*Knob revolutions number*<br>**n°** | **Peso**<br>*Weight*<br>**kg** |
|---|---|---|---|---|
| **Regolazione a volantino**<br>*Knob adjustment* | **Regolazione a vite**<br>*Screw adjustment* | | | |
| **1K** | **1S** | 65 | 7 | 1,747 |

## PIASTRA • *PLATE*




| Codice<br>*Code* | Ø D | E<br>mm | F<br>mm | Pesi<br>*Weight* |
|---|---|---|---|---|
| **PDM226** | 1/2" gas | 23 | 43 | 4,3 |
| **PDM228** | 3/4" gas | 25 | 47 | 4,7 |

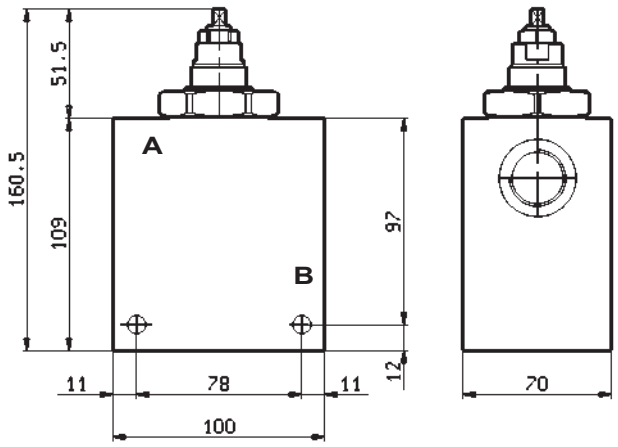
## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 5 | 2 | 4 | 5 | 0 | 0 | 0 | 0 | X | _ | 0 | 0 | Z | _ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---|---|
| X | **REGOLAZIONE**<br>*ADJUSTMENT* |
| _ _ | **VEDI PAGINA 3.150.02**<br>*SEE PAGE 3.150.02* |

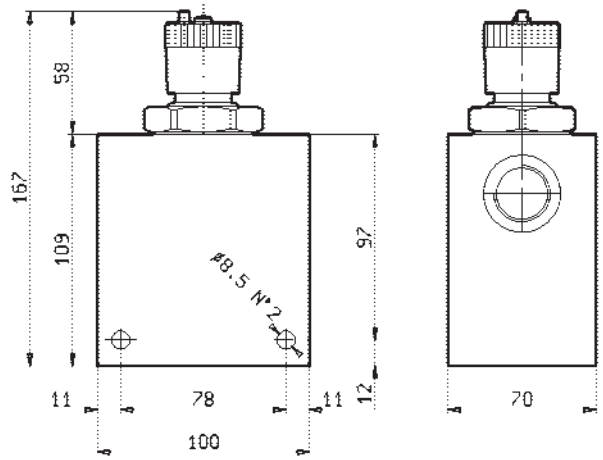
| | |
|---|---|
| Z | **VERSIONE**<br>*VERSION* |
| 00 | **STANDARD**<br>*STANDARD* |
| 0V | **GUARNIZIONI IN VITON**<br>*SEALS IN VITON* |

**S =** **Valvola con regolazione a vite**
*Screw adjustment*




| **Descrizione** *Description* | **Codice** *Code* | **Attacchi** *Ports* | **Pesi** *Weights* |
|---|---|---|---|
| CFCU10/12+VFCU10/S | **L97552100000016** | G 1/2” | 1,55 kg |
| CFCU10/34+VFCU10/S | **L97552100000018** | G 3/4” | 1,50 kg |

**K =** **Valvola con regolazione a volantino**
*Knob adjustment*

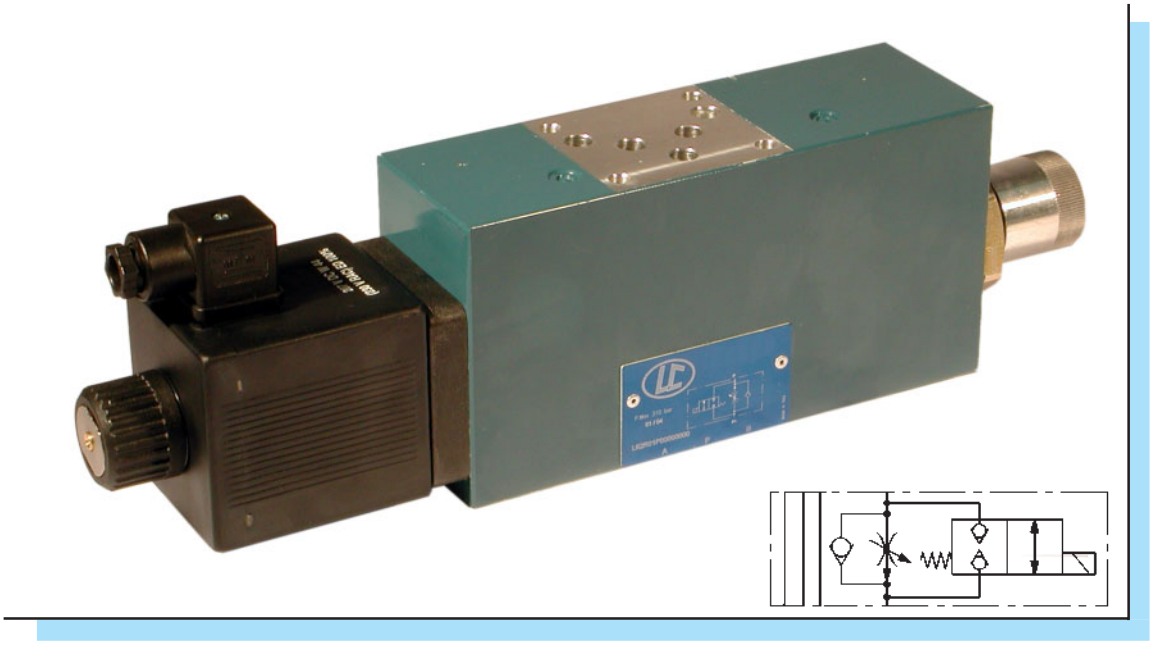



| **Descrizione** *Description* | **Codice** *Code* | **Attacchi** *Ports* | **Pesi** *Weights* |
|---|---|---|---|
| CFCU10/12+VFCU10/K | **L97552100000017** | G 1/2” | 1,55 kg |
| CFCU10/34+VFCU10/K | **L97550100000019** | G 3/4” | 1,50 kg |

# LC2M RL

## Valvole modulari compensate rapido - lento

*Modular compensated valves quick - slow*



**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

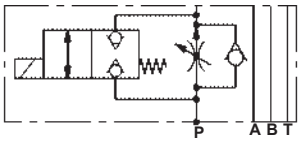
**Portata massima: 65 l/min**
**Pressione massima d'esercizio: 310 bar**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

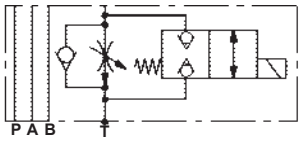
*Max flow: 65 l/min*
*Max operating pressure: 310 bar*

## TIPI DI CIRCUITI • *SPOOL TYPES*

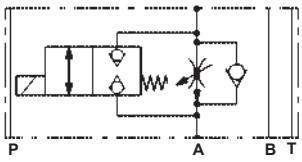
**P**




**T**

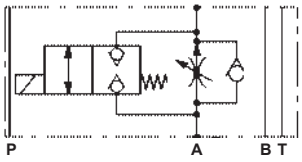



**R**




**Regolazione in ritorno -** *Meter-Out*

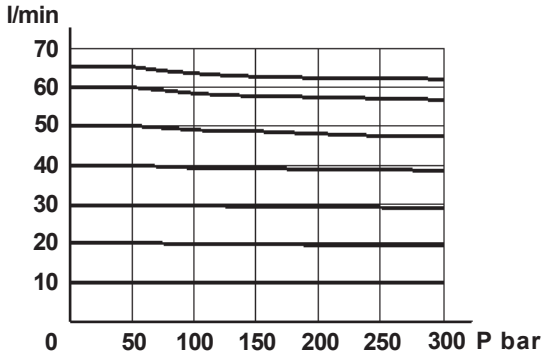
**M**



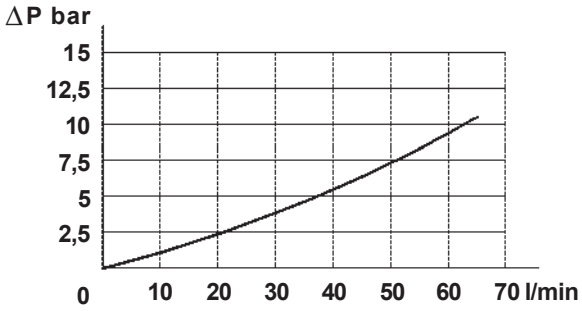

**Regolazione in mandata -** *Meter-In*

## CARATTERISTICHE TECNICHE • *TECHNICAL FEATURES*

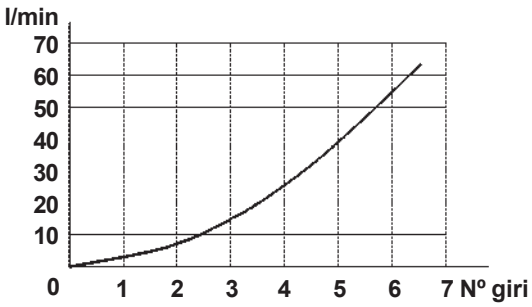
**Variazione di portata in funzione della pressione**
*Flow change depending on pressure*




**Caduta di pressione nel senso del flusso libero**
*Pressure drop in the free flow direction*



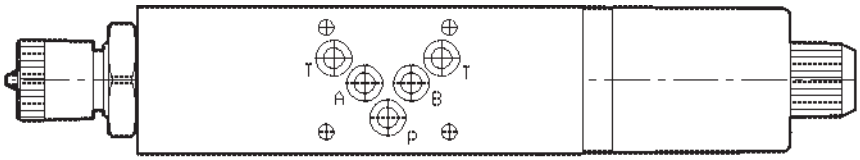

**Variazione di portata in funzione dei giri del volantino**
*Pressure drop depending on knob revolutions*



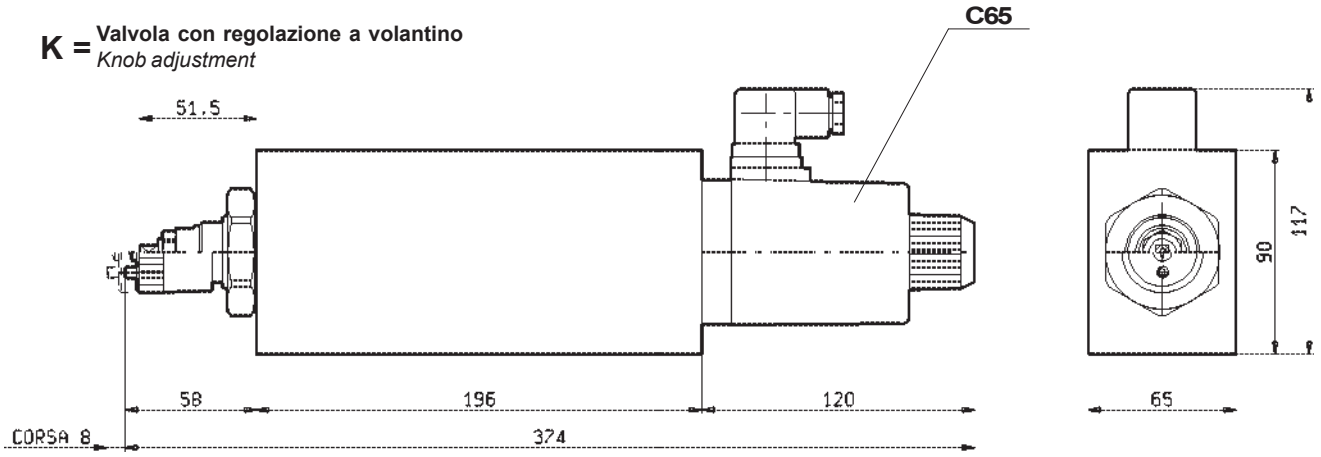

| | | Portata Max. | Numero di giri del volantino |
|---|---|---|---|
| Regolazione a volantino<br>*Knob adjustment* | Regolazione a vite<br>*Screw adjustment* | *Max. flow*<br>l/min | *Knob revolutions number*<br>n° |
| 1K | 1S | 65 | 7 |

## DIMENSIONI DI INGOMBRO • *OVER-ALL DIMENSIONS*

**S =** **Valvola con regolazione a chiave**
*Screw adjustment*




**K =** **Valvola con regolazione a volantino**
*Knob adjustment*




| **Pesi** *Weights* |
|---|
| 2,25 kg |

## CODICE DI ORDINAZIONE • *ORDERING CODE*

| L | 6 | 2 | R | 0 | 1 | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|

| V | **TIPI** *TYPES* |
|---|---|
| – | **VEDI PAGINA 3.160.02** *SEE PAGE 3.160.02* |

| Z | **VERSIONE** *VERSION* |
|---|---|
| 00 | **STANDARD** *STANDARD* |
| 0V | **GUARNIZIONI IN VITON** *SEALS IN VITON* |

| W | **REGOLAZIONE** *ADJUSTMENT* |
|---|---|
| – – | **VEDI PAGINA 3.160.02** *SEE PAGE 3.160.02* |

| X | **TENSIONE** *VOLTAGE* |
|---|---|
| OB | 12V CC |
| OC | 24V CC |
| – – | **ALTRE TENSIONI A RICHIESTA** *OTHER VOLTAGE ON REQUEST* |

| Y | **CONNESSIONE** *CONNECTION* |
|---|---|
| 00 | **SENZA BOBINA, SENZA CONNETTORE** *WITHOUT COIL AND CONNECTOR* |
| 01 | **CON BOBINA, SENZA CONNETTORE** *WITH COIL, WITHOUT CONNECTOR* |
| 02 | **CON CONNETTORE DIN 43650** *WITH CONNECTOR DIN 43650* |
| – – | **ALTRE CONNESSIONI A RICHIESTA** *OTHER CONNECTIONS ON REQUEST* |

# PDM - PDT

## Piastre per elettrovalvole LC 2

*Plates for solenoid valves LC 2*

**CARATTERISTICHE TECNICHE**
**Grandezza: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)**

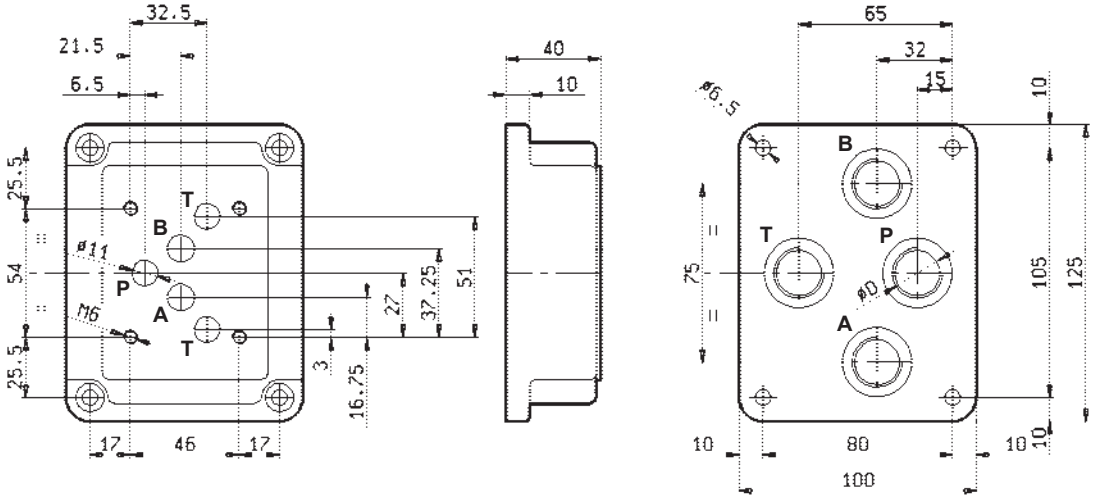
**Disponibili con o senza valvola limitatrice di pressione**
**Versione in ghisa EN GJL 250**
**Pressione max di lavoro: 310 bar**
**Circuiti in parallelo. Circuiti in serie a richiesta.**

*TECHNICAL CHARACTERISTICS*
*Size: NG10 ISO4401-05 CETOP RP121 H-05 (CETOP 5)*

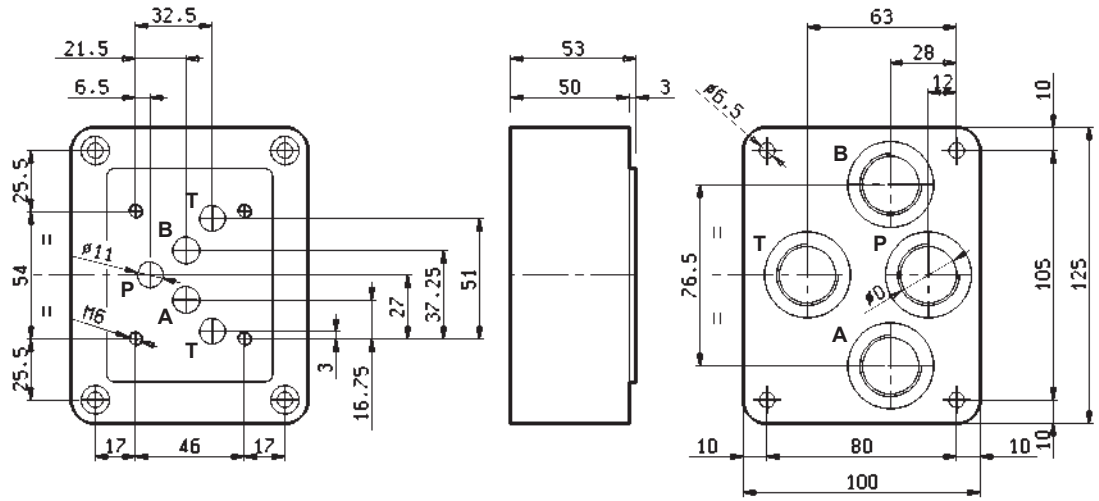
*Available with or without pressure relief valve*
*Version made in cast-iron EN GJL 250*
*Max working pressure: 310 bar*
*Parallel circuits. Series circuits by request.*

# PIASTRE SINGOLE • *SINGLE PLATES*

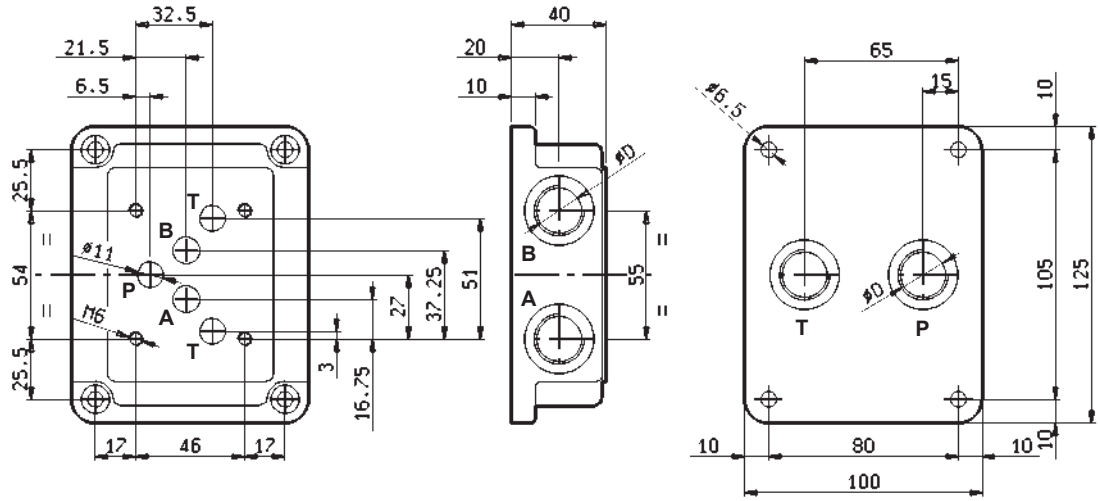
| **Codice** · *Code* | **Descrizione** · *Description* | **Attacchi** · *Ports* | **Peso** · *Weight* |
|---|---|---|---|
| **PDM220** | **Attacchi A-B-P-T inferiori**<br>*Rear A-B-P-T ports* | (D) 1/2" Gas | 2,60 kg |



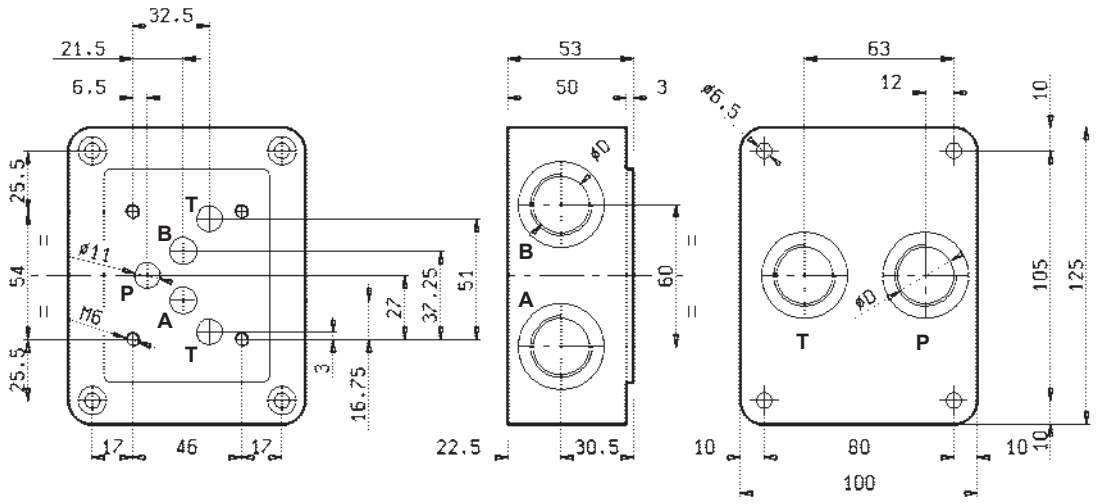

| **Codice** · *Code* | **Descrizione** · *Description* | **Attacchi** · *Ports* | **Peso** · *Weight* |
|---|---|---|---|
| **PDM320** | **Attacchi A-B-P-T inferiori**<br>*Rear A-B-P-T ports* | (D) 3/4" Gas | 3,70 kg |



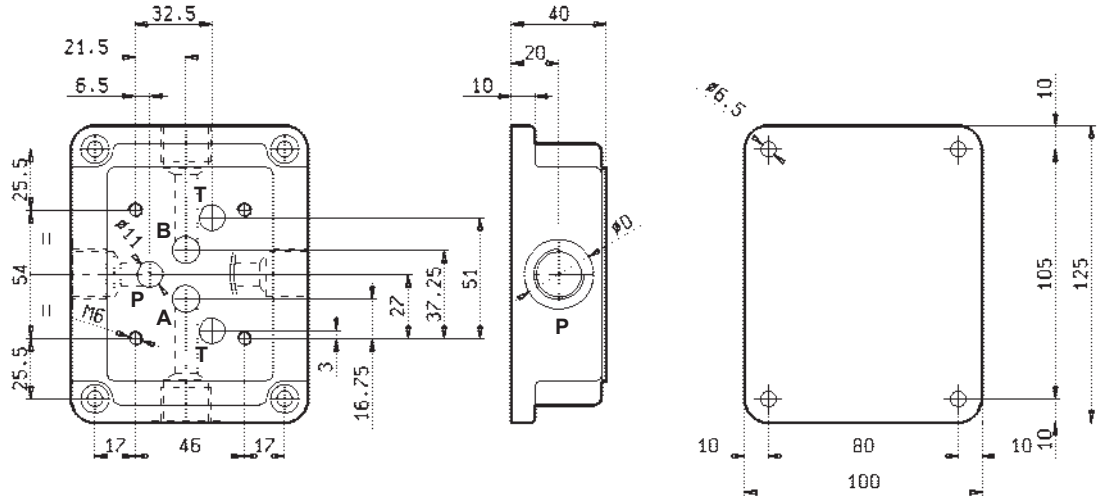

| **Codice** · *Code* | **Descrizione** · *Description* | **Attacchi** · *Ports* | **Peso** · *Weight* |
|---|---|---|---|
| **PDM221** | **Utilizzi A-B laterali, P-T inferiori**<br>*Side work A-B ports, rear work P-T ports* | (D) 1/2" Gas | 2,70 kg |



| Codice · *Code* | Descrizione · *Description* | Attacchi · *Ports* | Peso · *Weight* |
|---|---|---|---|
| **PDM321** | **Attacchi A-B laterali, P-T inferiori**<br>*Side A-B ports, rear P-T* | (D) 3/4" Gas | 3,65 kg |

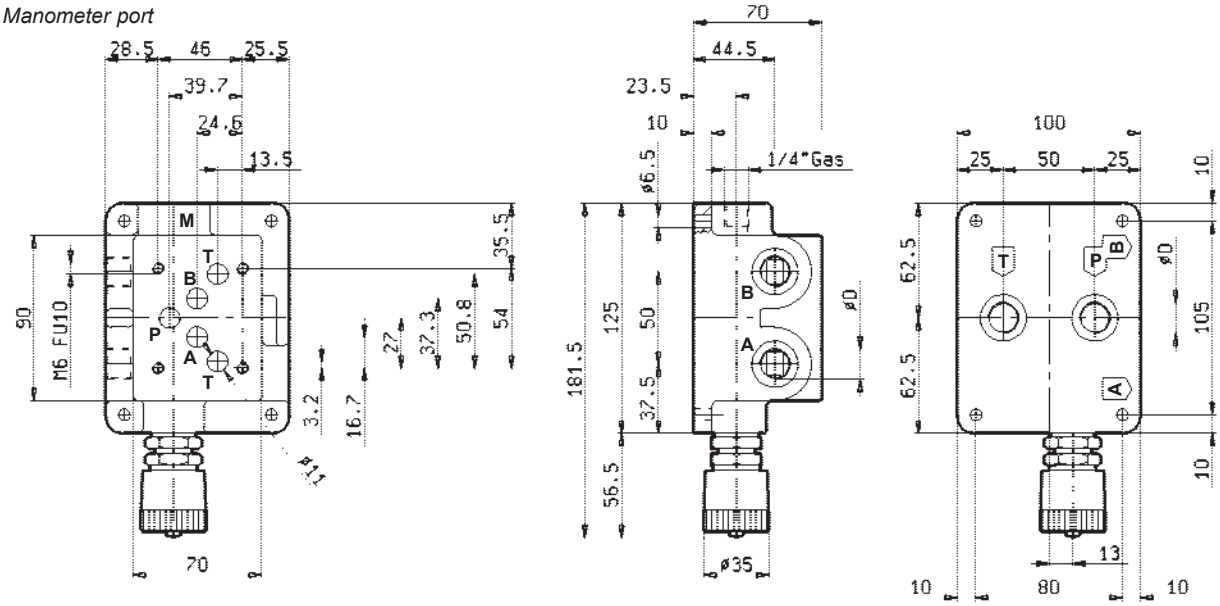



| Codice · *Code* | Descrizione · *Description* | Attacchi · *Ports* | Peso · *Weight* |
|---|---|---|---|
| **PDM221LAT** | **Attacchi A-B-P-T laterali**<br>*Side A-B-P-T ports* | 1/2" Gas | 2,66 kg |

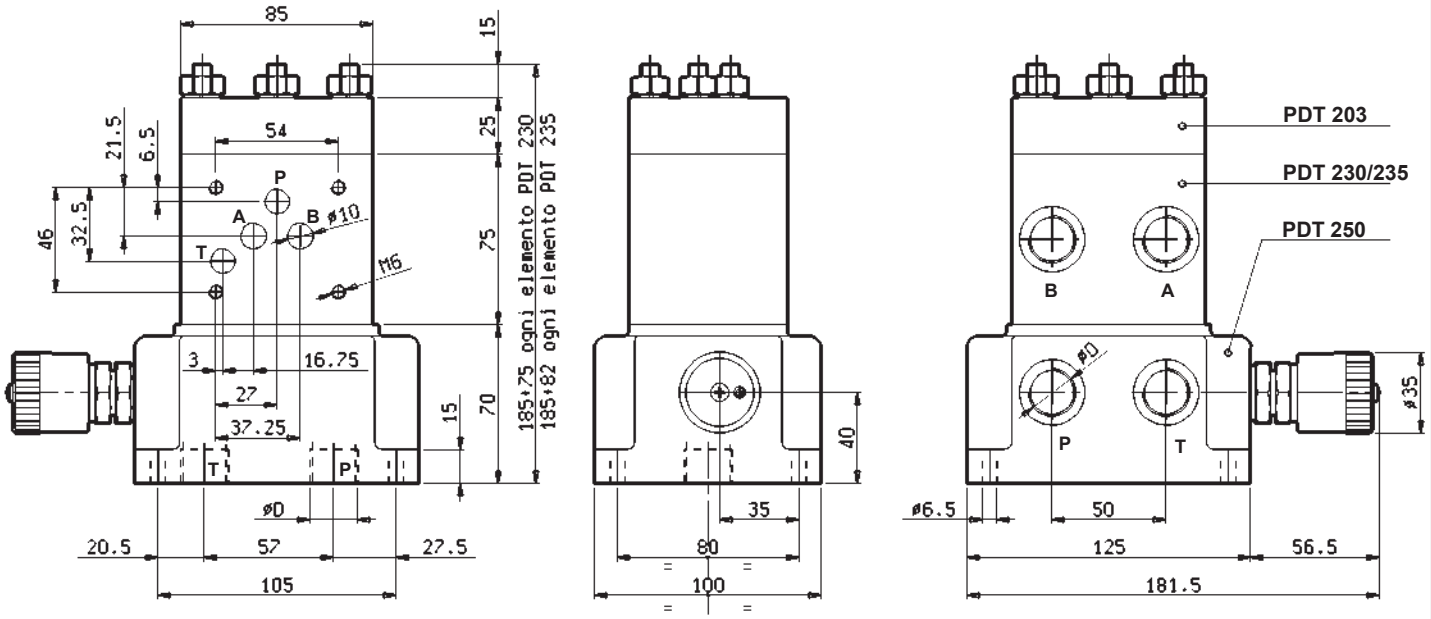



| Codice · *Code* | Descrizione · *Description* | Attacchi · *Ports* | Peso · *Weight* |
|---|---|---|---|
| **PDM223VV**<br>**PDM323VV**<br>(Vedi - *See* Pag.3.170.07) | **Attacchi A-B laterali, P-T inferiori con valvola limitatrice di pressione VM7 incorporata**<br>*Side A-B ports, rear P-T with built-in pressure relief valve VM7* | 1/2" Gas<br>3/4" Gas | 5,17 kg<br>5,00 kg |

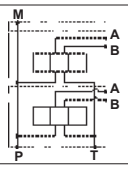
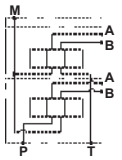
**M =** **Attacco manometro**
*Manometer port*



# PIASTRE MODULARI • *MODULAR PLATES*




**I singoli elementi sono da ordinare separatamente**
*Every element must be ordered separately*

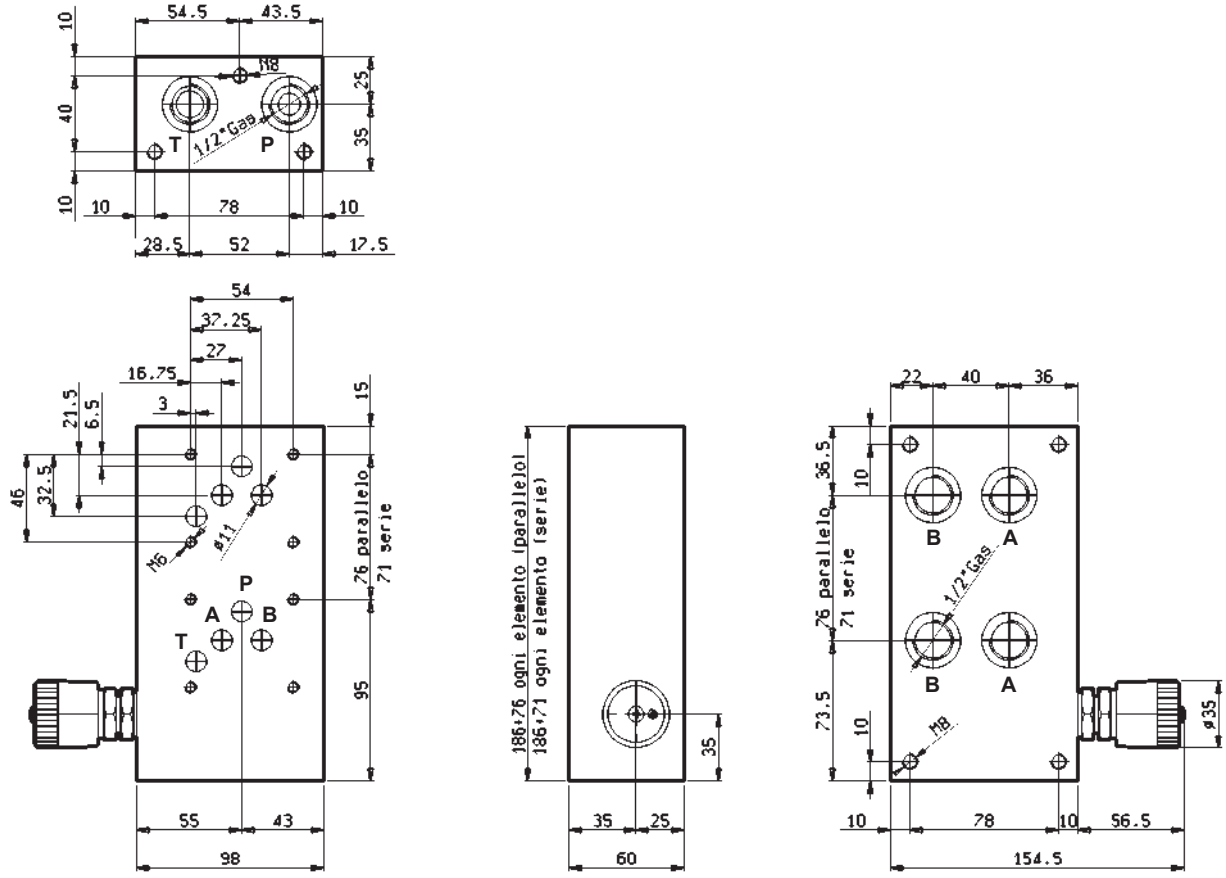
| Tipo di piastra<br>*Type of plate* | | | Ø D | Peso<br>*Weight*<br>kg | Codice<br>*Code* |
|---|---|---|---|---|---|
| **Collegamento in parallelo**<br>*Parallel connection* |  | Standard | 1/2" Gas | 2,70 | **PDT230** |
| **Collegamento in serie**<br>*Series connection* |  | | 1/2" Gas | 2,95 | **PDT235 SERIE** |
| **Piastra di base**<br>*Plate* | **Con valvola limitatrice di pressione VM10**<br>*With pressure relief valve VM10* | | 1/2" Gas | 5,45 | **PDT250** VV<br>(Vedi - *See* Pag.3.170.07) |
| | **Senza valvola limitatrice di pressione**<br>*Without pressure relief valve* | | 1/2" Gas | 5,38 | **PDT240** |
| **Coperchio di chiusura**<br>*Closing cover* | | | 1/4" Gas<br>su P<br>*to P* | 1,00 | **PDT203** |

## LUNGHEZZA VITI (V) O TIRANTI (T) • *LENGTH BOLT (V) OR TIE-RODS (T)*

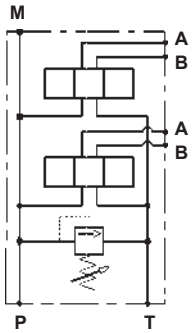
| | | PDT 230 | | | | | | | PDT 235 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **N. elementi**<br>*Elements Nr.* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 2 | 3 | 4 | 5 | 6 | 7 |
| N.3 | **Tiranti o viti**<br>*Tie-rods or bolt* | V<br>M10 X 110 | V<br>M10 X 185 | V<br>M10 X 260 | T<br>M10 X 350 | T<br>M10 X 425 | T<br>M10 X 500 | T<br>M10 X 575 | V<br>M10 X 190 | T<br>M10 X 285 | T<br>M10 X 370 | T<br>M10 X 450 | T<br>M10 X 535 | T<br>M10 X 615 |

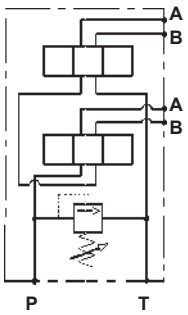
# PIASTRE MONOBLOCCO PER ELETTROVALVOLE • *MULTIELEMENT PLATES*

| **Codice** · *Code* | **Descrizione** · *Description* | **Attacchi** · *Ports* |
|---|---|---|
| **PDT280/X**<br>**PDT280/X SERIE**<br>**PDT290/XW**<br>**PDT290/XW SERIE** | **Attacchi PT inferiori, M opposto (solo parallelo), AB posteriori, con valvola limitatrice di pressione VM10 incorporata**<br>*Rear PT ports, opposite M ports (only parallel connection), rear AB, with built-in pressure relief valve VM10* | 1/2" Gas |



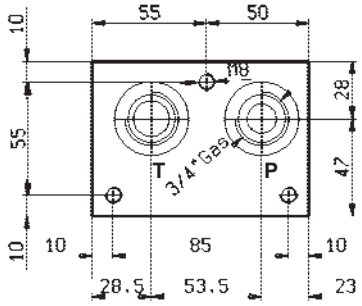

| **Tipo di piastra** *Type of plate* | | **N. elettrovalvole** *Types* X | **Peso** *Weight* kg |
|---|---|---|---|
| **STANDARD**<br>**Collegamento in parallelo**<br>*Parallel connection* | **PDT 290**<br>**Con valvola limitatrice di pressione VM10**<br>*With pressure relief valve VM10*<br>W<br>(Vedi - *See* Pag.3.170.07) | **2** | 6,76 |
| | | **3** | 9,60 |
| | | **4** | 12,44 |
| | | **5** | 15,28 |
| | | **6** | 18,12 |
| | **PDT 280**<br>**Senza valvola limitatrice di pressione**<br>*Without pressure relief valve* | **2** | 6,66 |
| | | **3** | 9,50 |
| | | **4** | 12,34 |
| | | **5** | 15,18 |
| | | **6** | 18,02 |
| **Collegamento in serie**<br>*Series connection* | **PDT 290 SERIE**<br>**Con valvola limitatrice di pressione VM10**<br>*With pressure relief valve VM10*<br>W<br>(Vedi - *See* Pag.3.170.07) | **2** | 6,76 |
| | | **3** | 9,60 |
| | | **4** | 12,44 |
| | | **5** | 15,28 |
| | | **6** | 18,12 |
| | **PDT 280 SERIE**<br>**Senza valvola limitatrice di pressione**<br>*Without pressure relief valve* | **2** | 6,66 |
| | | **3** | 9,50 |
| | | **4** | 12,34 |
| | | **5** | 15,18 |
| | | **6** | 18,02 |

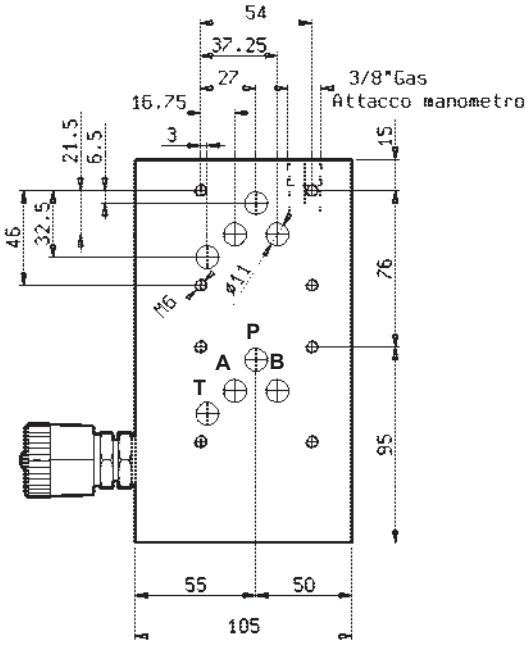


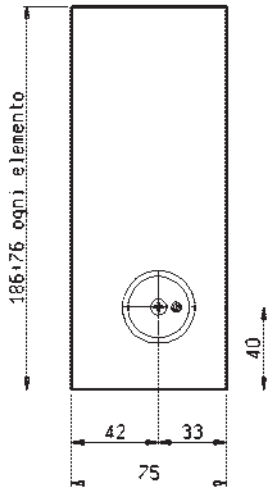



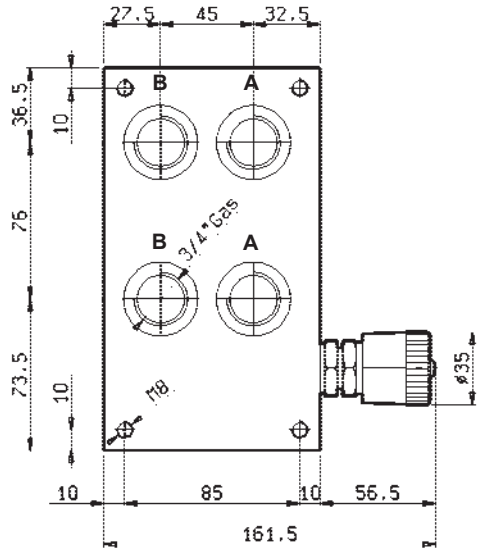
# PIASTRE MONOBLOCCO PER ELETTROVALVOLE • *MULTIELEMENT PLATES*

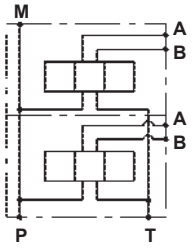
| **Codice** · *Code* | **Descrizione** · *Description* | **Attacchi** · *Ports* |
|---|---|---|
| **PDT281/X**<br>**PDT291/XW** | **Attacchi PT inferiori, M opposto, AB posteriori, con valvola limitatrice di pressione VM10 incorporata**<br>*Rear PT ports, opposite M ports, rear AB, with built-in pressure relief valve VM10* | 3/4" Gas |



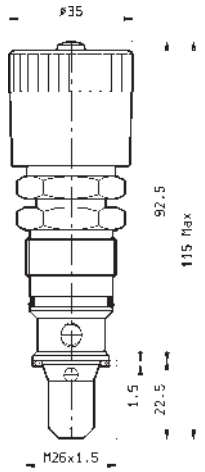



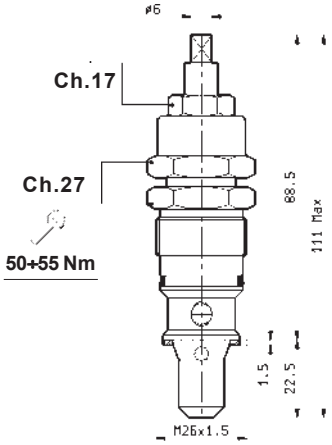

| **Tipo di piastra**<br>*Type of plate* | | **N. elettrovalvole**<br>*Types*<br>X | **Peso**<br>*Weight*<br>**kg** |
|---|---|---|---|
| **STANDARD**<br>**Collegamento in parallelo**<br>*Parallel connection*<br>  | **PDT 291**<br>**Con valvola limitatrice di pressione VM10**<br>*With pressure relief valve VM10*<br>W<br>(Vedi - *See* Pag.3.170.07) | **2** | 9,28 |
| | | **3** | 13,01 |
| | | **4** | 16,74 |
| | | **5** | 20,47 |
| | | **6** | 24,20 |
| | **PDT 281**<br>**Senza valvola limitatrice di pressione**<br>*Without pressure relief valve* | **2** | 9,18 |
| | | **3** | 12,91 |
| | | **4** | 16,64 |
| | | **5** | 20,37 |
| | | **6** | 24,10 |

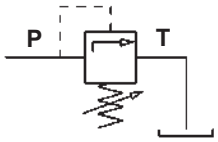
# VALVOLA LIMITATRICE DI PRESSIONE A CARTUCCIA
## *CARTRIDGE TYPE PRESSURE RELIEF VALVE*

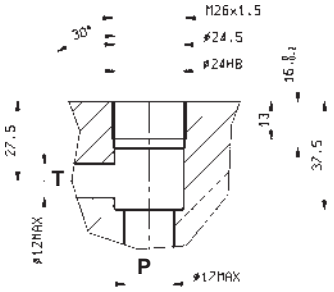
**Tipo** V
Type



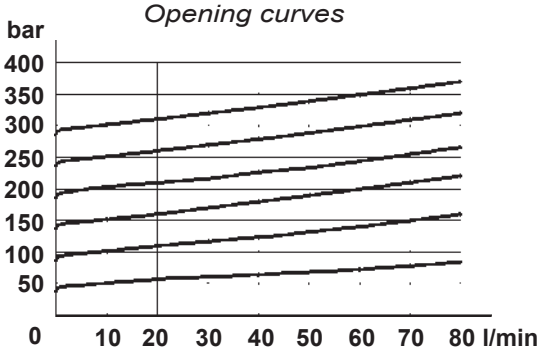

**Tipo** F
Type



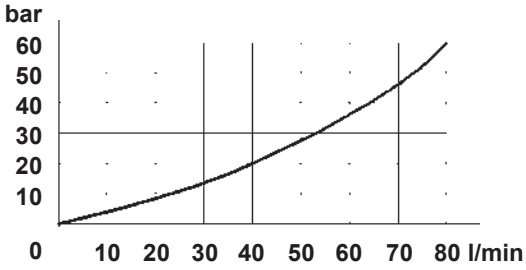




### Curve di apertura
*Opening curves*

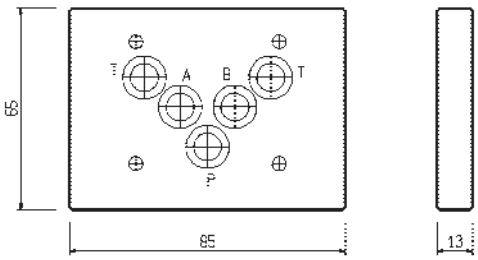


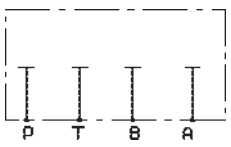

### Valore min di taratura
*Min adjustable setting*




| Tipo<br>*Type* | Regolazione a volantino<br>*Knob adjustment* | Regolazione a vite<br>*Screw adjustment* | Portata Max.<br>*Max. flow*<br>l/min | Pressione Max.<br>*Max. pressure*<br>bar | Campo di taratura<br>*Pressure range*<br>bar | Cavità<br>*Cavity*<br>n° | Peso<br>*Weight*<br>kg |
|---|---|---|---|---|---|---|---|
| VM 10 | **0V** | **0F** | 80 | 310 | 0÷60 | 13 | 0,25 |
| | **1V** | **1F** | | | 10÷140 | | |
| | **2V** | **2F** | | | 20÷200 | | |
| | **3V** | **3F** | | | 50÷310 | | |

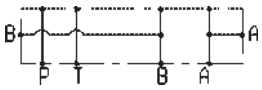
## PIASTRE DI CHIUSURA • *CLOSING PLATES*

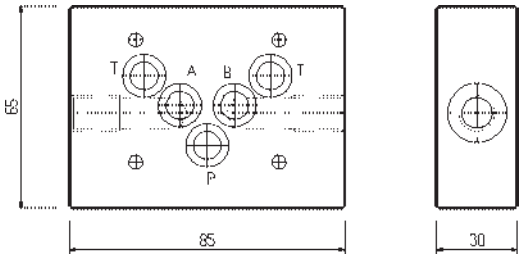



| Tipo<br>*Type* | Peso<br>*Weight* | Codice<br>*Code* |
|---|---|---|
| **Chiusura**<br>*Closing* | 0,190 kg | **PA05001** |

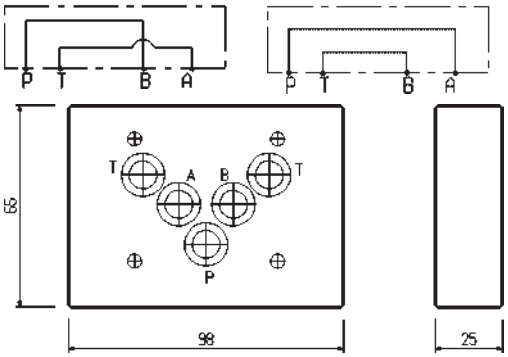
# PIASTRE DI COLLEGAMENTO • *CONNECTION PLATES*



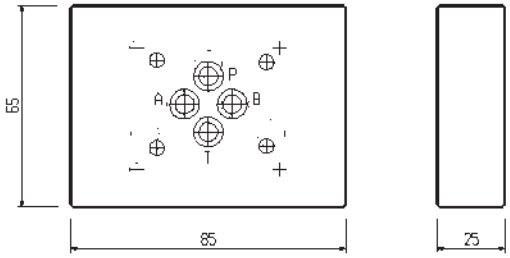

| Collegamento supplementare *Additional connection* | D | Peso *Weight* (Al 2011) | Codice *Code* |
|---|---|---|---|
| A | 1/4" Gas | 0,450 kg | **PA050A909** |
| B | 1/4" Gas | 0,450 kg | **PA050B909** |
| A B | 1/4" Gas | 0,450 kg | **PA05AB909** |
| P T | 1/4" Gas | 0,450 kg | **PA05PT909** |
| A | 3/8" Gas | 0,445 kg | **PA050A902** |
| B | 3/8" Gas | 0,445 kg | **PA050B902** |
| A B | 3/8" Gas | 0,445 kg | **PA05AB902** |
| P T | 3/8" Gas | 0,445 kg | **PA05PT902** |

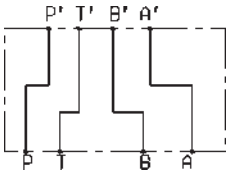
**PA05011** **PA05014**




| Collegamento supplementare *Additional connection* | Peso *Weight* (Al 2011) | Codice *Code* |
|---|---|---|
| P→A / B→T | 0,430 kg | **PA05014** |
| P→B / A→T | 0,430 kg | **PA05011** |

# PIASTRE DI RIDUZIONE • *REDUCTION PLATES*




| Tipo *Type* | Peso *Weight* | Codice *Code* |
|---|---|---|
| LC2 / LC1 | 0,370 kg | **PA 05005** |

PA materiale alluminio 2011 UNI 9002/5 con portata massima 250 bar.
*PA in alluminium 2011 uni 9002/5 with max flow 250 bar.*

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