
**SERVOCOMANDI
SERVO CONTROLS
SERVOSTEUERUNGEN**

**UNITÀ DI ALIMENTAZIONE
FEEDING UNIT
VERSORGUNGS EINHEIT**

SC009



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SERVO CONTROLS
SERVOSTEUERUNGEN

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INTRODUZIONE INTRODUCTION EINLEITUNG



I servocomandi sono dispositivi di pilotaggio per il comando remoto di pompe a cilindrata variabile (trasmissioni idrostatiche) e valvole di controllo direzionale della portata.

L'utilizzo preciso e adeguato a ogni tipo di applicazione sono assicurati da una elevata sensibilità, una molteplicità di curve di regolazione e una bassa forza di azionamento.

L'offerta HP Hydraulic si innesta su una consolidata tradizione di sviluppo e produzione con spirito innovativo nel design nei processi produttivi. Questo permette di offrire una gamma completa di comandi in grado di soddisfare un ampio spettro di esigenze degli utilizzatori finali.

Il corpo in ghisa abbinato all'elevata qualità degli acciai impiegati unitamente ai più idonei trattamenti termici, collocano questa nuova gamma di comandi idraulici ai vertici prestazionali in termini di robustezza, affidabilità, ergonomicità, e dolcezza di comando.

Servocontrols are control devices for the remote control of variable-displacement pumps (hydrostatic transmissions) and flow rate directional control valves.

The precise and adequate use of all types of applications is ensured by high sensitivity, numerous adjustment curves and a low operating force.

The HP Hydraulic range of products is part of a consolidated tradition of development and production with innovative spirit of design in production processes. This permits offering a complete range of controls able to cater for the many different needs of end users.

The cast-iron body together with the top quality of the steels used and most suitable heat treatments make this new range of hydraulic controls a forerunner in terms of sturdiness, reliability, ergonomics and smooth control.

Servosteuerungen sind Vorrichtungen für die Fernsteuerung von Verstellpumpen (Hydrostaten) und Richtungsventilen.

Die Präzision und die Eignung für jede Art von Anwendung werden durch eine hohe Ansprechempfindlichkeit, eine Vielzahl von Regelkurven und Leichtgängigkeit gewährleistet.

Das Angebot von HP Hydraulic beruht auf einer bewährten Tradition in Entwicklung und Produktion mit stark innovativem Gehalt in Design und Produktionsprozessen. Dies ermöglicht das Angebot einer kompletten Palette an Steuerungen, die ein großes Spektrum kundenspezifischer Anforderungen erfüllen.

Das Guss-Gehäuse und die hohe Qualität der verwendeten Stähle, sowie deren Wärmebehandlungen machen diese neuen hydraulischen Steuerungen zu leistungsstarken Produkten der Spitzenklasse in Bezug auf robuste Bauweise, Zuverlässigkeit, Ergonomie und Leichtgängigkeit der Steuerung.



SERVOCOMANDI ED UNITÀ DI ALIMENTAZIONE - ISTRUZIONI GENERALI DI IMPIEGO
SERVOCONTROLS AND FEEDING UNITS - OPERATING INSTRUCTIONS
SERVOSTEUERUNGEN UND VERSORGUNGS EINHEIT - ALLGEMEINE GEBRAUCHSANWEISUNGEN



I servocomandi idraulici sono **dispositivi di comando e non è possibile impiegarli con funzione di sicurezza.**

La funzione di "sicurezza" deve essere realizzata con opportuni dispositivi. L'utilizzo del comando deve essere consentito esclusivamente a personale addestrato al suo uso e a quello della apparecchiatura comandata.

*Hydraulic servo controls are **control devices and cannot be used for safety functions.***

Safety functions must be assigned to the appropriate devices. The controls must be used only by personnel who have received an adequate training on the controls and the machinery being operated.

Die hydraulischen Servosteuerungen sind **Steuervorrichtungen** und können nicht mit Sicherheitsfunktion angewandt werden.

Die "Sicherheits"-Funktion ist mit zweckdienlichen Vorrichtungen zu bewerkstelligen. Der Gebrauch der Steuerung darf nur diesbezüglich angelerntem Personal und den Bedienern des gesteuerten Geräts erlaubt werden.

I servocomandi idraulici HP Hydraulic della serie C coprono una ampia gamma di gruppi (a leva, a pedale, a camma, a volantino) permettono in tal modo un ampio spettro di applicazioni e utilizzi

The C series HP Hydraulic servo controls covers a broad range of units (lever, pedal, cam, handwheel) for a wide assortment of different applications and uses.

Die hydraulischen Servosteuerungen von HP Hydraulic der Baureihe C decken ein großes Spektrum an Aggregaten (Hand-/Fußbedienungen, mit Nocken, mit Handrad) und gestatten daher einen breit gefächerten Anwendungs- und Einsatzbereich.

FLUIDO IDRAULICO

Oli idraulici:

Fluidi idraulici HLP (DIN 51224 parte2)
Oli lubrificanti per motori API CD (SAE)
Fluidi idraulici HLPV(DIN 51224 parte3) J183).

Per fluidi diversi da quelli citati si prega di consultare il nostro servizio tecnico.

HYDRAULIC FLUID

Hydraulic fluids:

*HLP hydraulic fluid (DIN 51224 part2)
Lubrication motor oils API CD (SAE)
HLPV hydraulic fluids (DIN 51224 part3) J183)*

For fluids different to those shown, please refer to our technical service

HYDRAULIK MEDIUM

Hydrauliköle HLP (DIN 51224 Teil 2)

Motoröle API CD (SAE Hydrauliköle HLPV (DIN 51224 Teil 3) J183).

Für andere Medien als oben angegeben ist eine Rücksprache mit unserem technischen Kundendienst erforderlich

Pressioni di esercizio:

- massima pressione di alimentazione 100 bar
- massima pressione regolata 65 bar
- massima contropressione allo scarico 3 bar

Portate:

- minima 5 l/min
- massima 15 l/min
- massimo trafilemento a 30 bar 5 cm³/min per ogni bocca
- massima isteresi 0.8 bar

Operating pressure:

- *max supply pressure 100 bar*
- *max regulated pressure 65 bar*
- *max counter pressure at drainage 3 bar*

Flow rates:

- *min 5l/min*
- *max 15l/min*
- *max reduction unit leak at 30 bar 5 cm³/min on every port*
- *max hysteresis 0.8 bar*

Betriebsdrücke:

- max. Versorgungsdruck 100 bar
- max. gesteuerter Druck 65 bar
- max. Gegendruck am Auslass 3 bar

Durchsätze:

- Minstdurchsatz 5 l/Min.
- Höchstdurchsatz 15 l/Min.
- max. Austritt für Druckminderventil bei 30 bar 5 cm³ /Min auf jedem Einkommen
- max. Hysterese 0,8 bar

TEMPERATURE DI FUNZIONAMENTO

- Minima -20°C
- Massima continua 90°C
- Di picco (intermittente) 100°C

OPERATING TEMPERATURE

- *Min -20°C*
- *Max continuous 90°C*
- *Peak (intermittent) 100°C*

VISCOSITÀ

- Minima 10 mm²/s
- Massima 400 mm²/s
- Campo di viscosità raccomandato 15-100 mm²/s

VISCOSITY

- *Min 10 mm²/s*
- *Max 400 mm²/s*
- *Recommended viscosity range 15-100 mm²/s*

GRADO DI CONTAMINAZIONE

20/18/15 ISO 4406 (NAS 1638 - class 10)

DEGREE OF CONTAMINATION

20/18/15 ISO 4406 (NAS 1638 - class 10)

PROTEZIONE

I servocomandi non sono stagni. Devono essere utilizzati in ambiente chiuso e protetto da umidità e polvere. Per i tipi di materiali impiegati non sono adatti all'impiego in ambiente marino.

PROTECTIONS

Servo controls are not sealed. They must be used in a closed environment, and protected from water and dust. Due to their material composition, the controls are not intended for offshore use.

BETRIEBSTEMPERATUREN

- Mindestemperatur -20°C
- Dauerhöchsttemperatur 90°C
- Höchsttemperatur (intermittierend) 100°C

VISKOSITÄT

- Min. Viskosität 10 mm²/s
- Max. Viskosität 400 mm²/s
- Empfohlener Viskositätsbereich 15-100 mm²/s

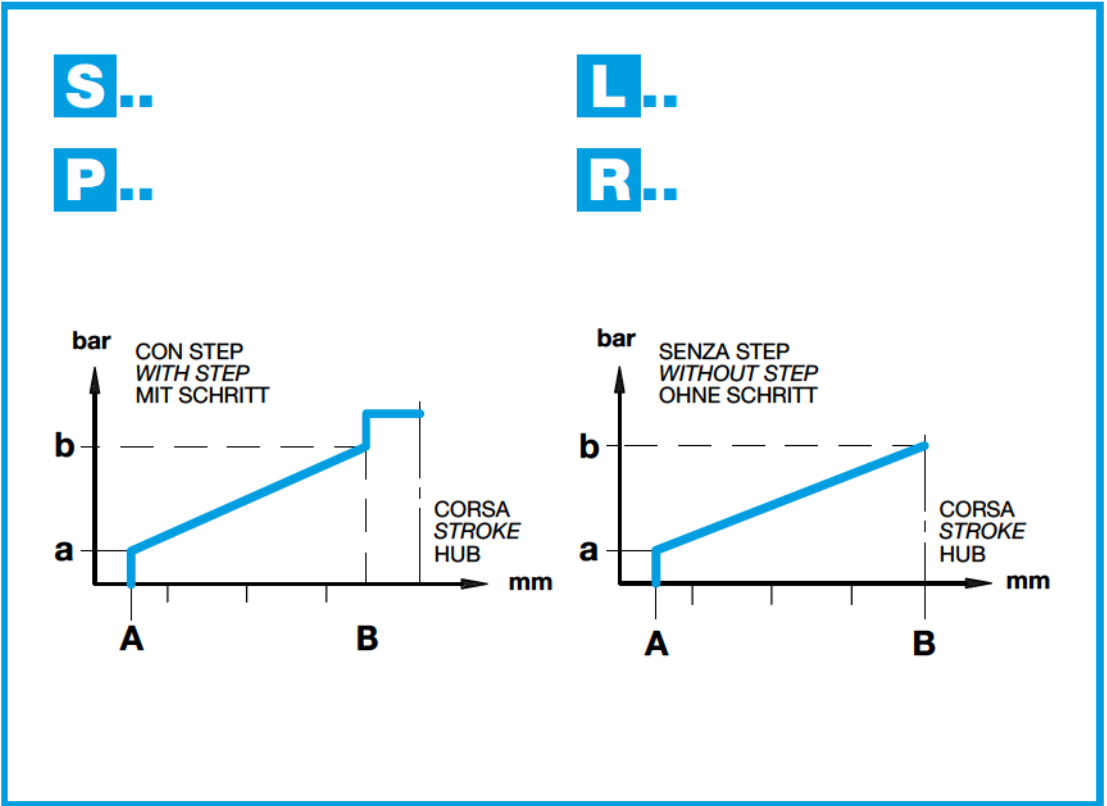
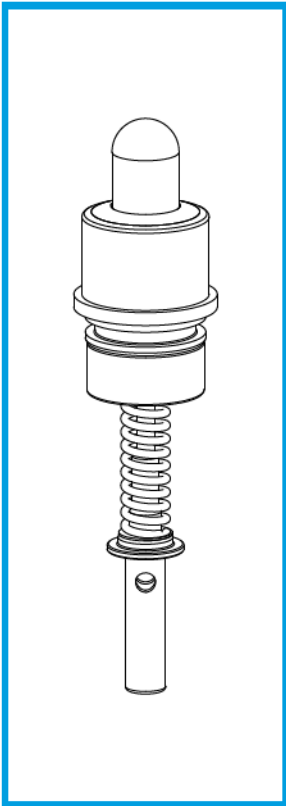
REINHEITSKLASSE

20/18/15 ISO 4406 (NAS 1638 - class 10)

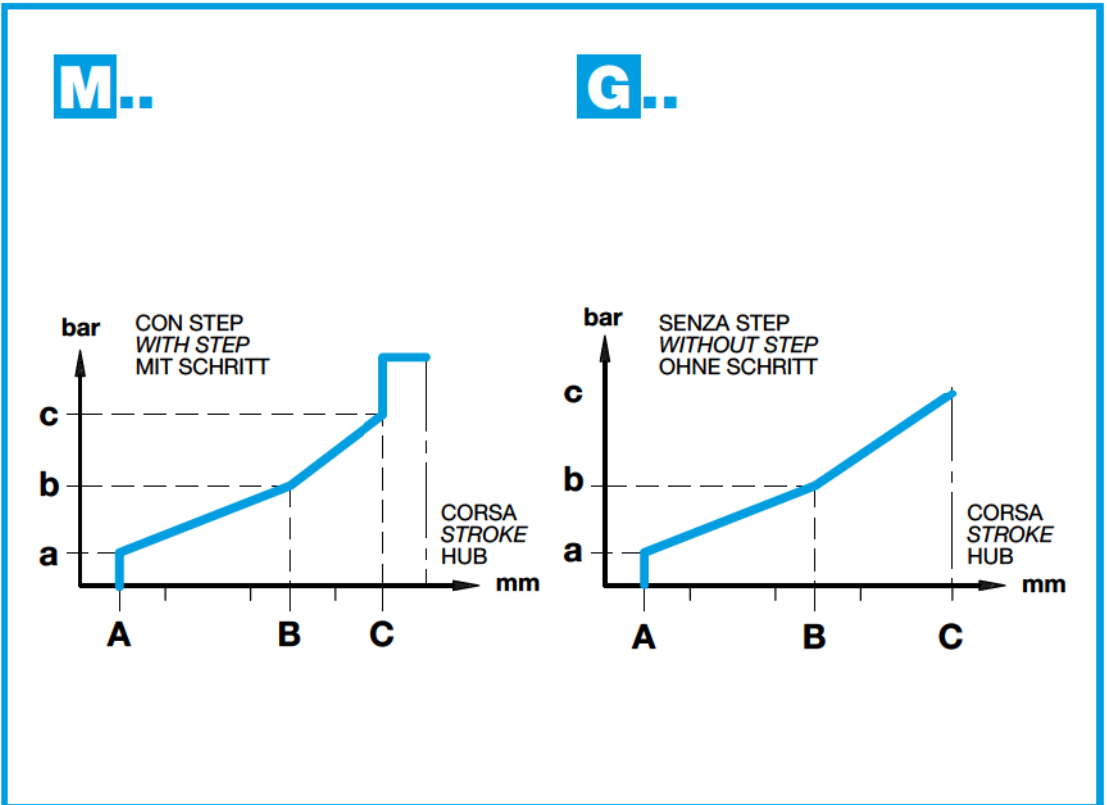
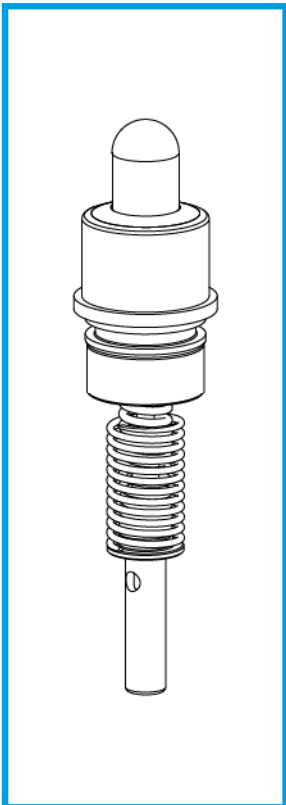
SCHUTZ

Die Servosteuerungen sind nicht wasserdicht. Sie sind nur zum Gebrauch in geschlossenen Räumen mit Schutz gegen Feuchtigkeit und Staub geeignet. Aufgrund der Art der verwendeten Werkstoffe sind sie nicht zum Gebrauch auf der See geeignet.

CURVE DI REGOLAZIONE RAMPA SINGOLA
SINGLE SLOPE PRESSURE CURVES
EIN-RAMPEN-REGELKURVEN



CURVE DI REGOLAZIONE DOPPIA RAMPA
DUAL SLOPE PRESSURE CURVES
ZWEI-RAMPEN-REGELKURVEN

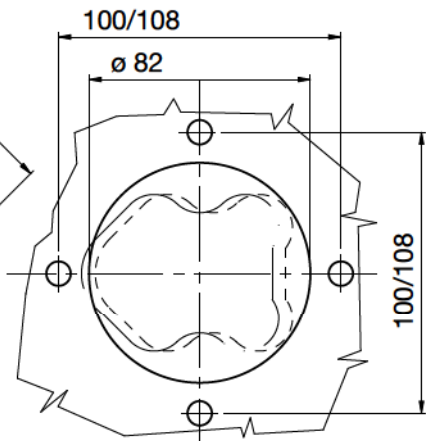
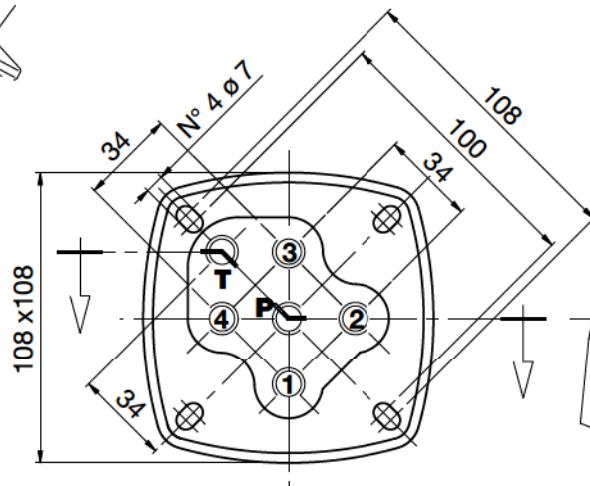
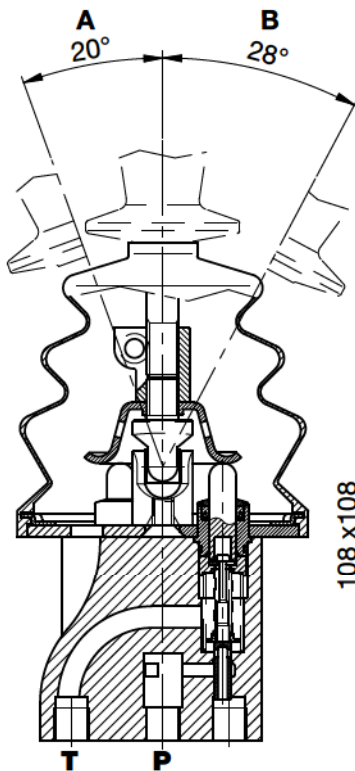
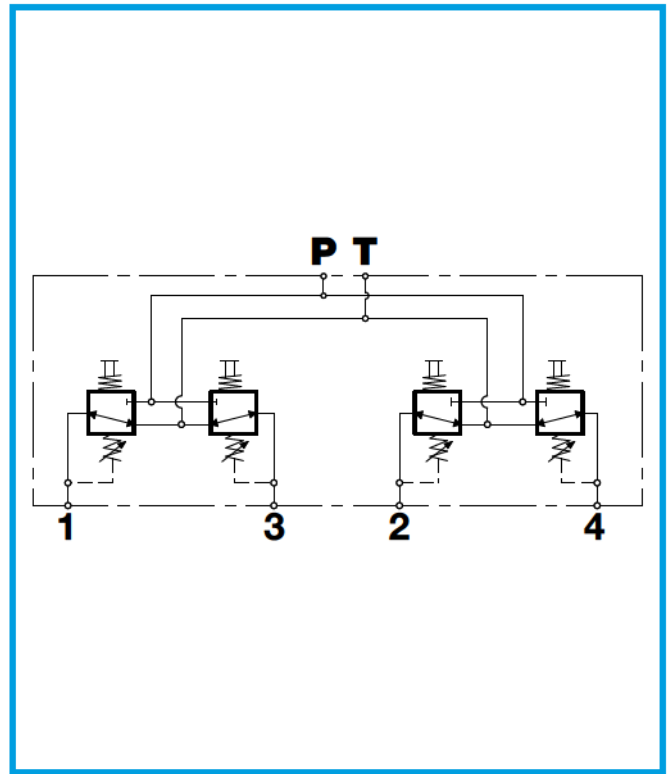


CURVE DI REGOLAZIONE ADJUSTMENT CURVES REGELKURVEN

TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK				TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK			
	a		b			a		b	
	bar	psi	bar	psi		bar	psi	bar	psi
S00	2	29	16	232	L00	2	29	18	261
S01	5	73	20	290	L01	5	73	22	319
S02	6,5	94	24,5	355	L02	6,5	94	26,5	384
S04	3	46	17	249	L04	3	46	19	276
S08	5	73	16	232	L08	5	73	18	261
S11	4	58	15	218	L11	4	58	15	218
S12	1,5	22	7	102	L12	1,5	22	9	131
S13	5	73	28	406	L13	5	73	30	435

TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK						CORSA STROKE HUB		
	a		b		c		A	B	C
	bar	psi	bar	psi	bar	psi	mm	mm	mm
M60	5	73	12	174	21	306	1,2	5,4	7,8

TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK						CORSA STROKE HUB		
	a		b		c		A	B	C
	bar	psi	bar	psi	bar	psi	mm	mm	mm
G60	5	73	12	174	23	334	1,2	5,4	8,3



FORATURA DI MONTAGGIO
MOUNTING BORE
MONTAGEBOHRUNG

A ANGOLO DELLA LEVA CON UN SOLO ATTUATORE AZIONATO
B ANGOLO DELLA LEVA CON DUE ATTUATORI AZIONATI SIMULTANEAMENTE

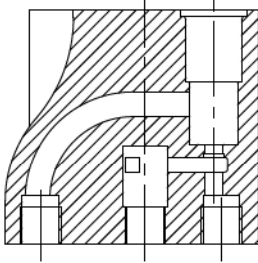
A LEVER DEFLECTION WHEN ACTUATING ONLY ONE ACTUATOR
B LEVER DEFLECTION WHEN SIMULTANEOUSLY ACTUATING TWO ACTUATORS

A HEBELSCHWENKBEREICH BEI EIN VERBRAUCHER
B HEBELSCHWENKBEREICH BEI ZWEI GLEICHZEITIG BETÄTIGTEN VERBRAUCHERN



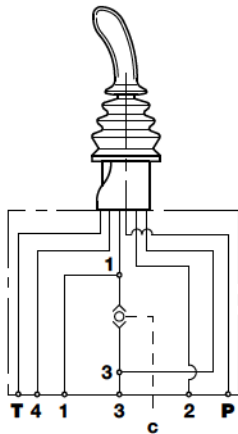
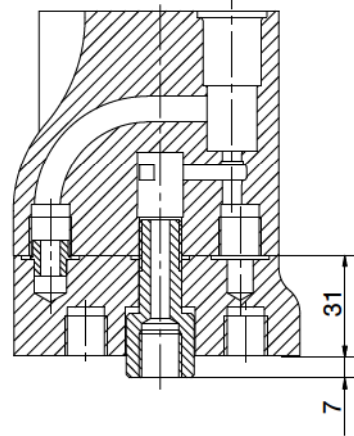
**MODELLI
MODELS
MODELLE**

0



0 = LEVA CENTRALE
CENTRAL LEVER
MITTLERER HEBEL

**1
2
3
4**

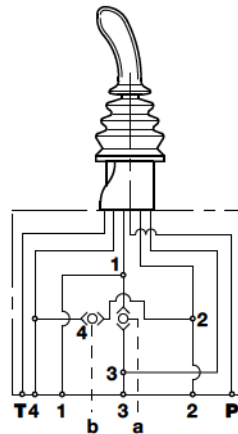
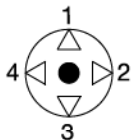


1

LEVA CENTRALE
+ 1 SEGNALE DI PRESSIONE

CENTRAL LEVER
+ 1 PRESSURE SIGNAL

MITTLERER HEBEL
+ 1 DRUCKSIGNAL

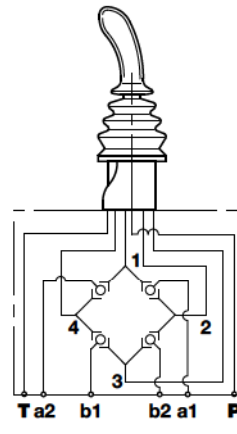
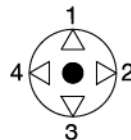


2

LEVA CENTRALE
+ 2 SEGNALI DI PRESSIONE

CENTRAL LEVER
+ 2 PRESSURE SIGNALS

MITTLERER HEBEL
+ 2 DRUCKSIGNAL

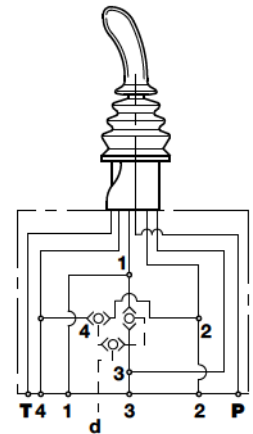
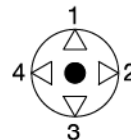


3

LEVA CENTRALE
+ CONTROROTAZIONE

CENTRAL LEVER
+ COUNTER ROTATION

MITTLERER HEBEL
+ GEGENDREHUNG

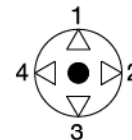


4

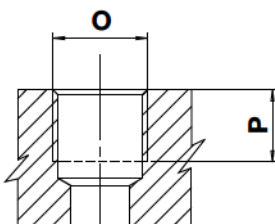
LEVA CENTRALE
+ SEGNALE SINGOLO DA 4 POSIZIONI

CENTRAL LEVER
+ SINGLE 4-POSITION SIGNAL

MITTLERER HEBEL
+ EINZELSIGNAL MIT 4 POSITIONEN



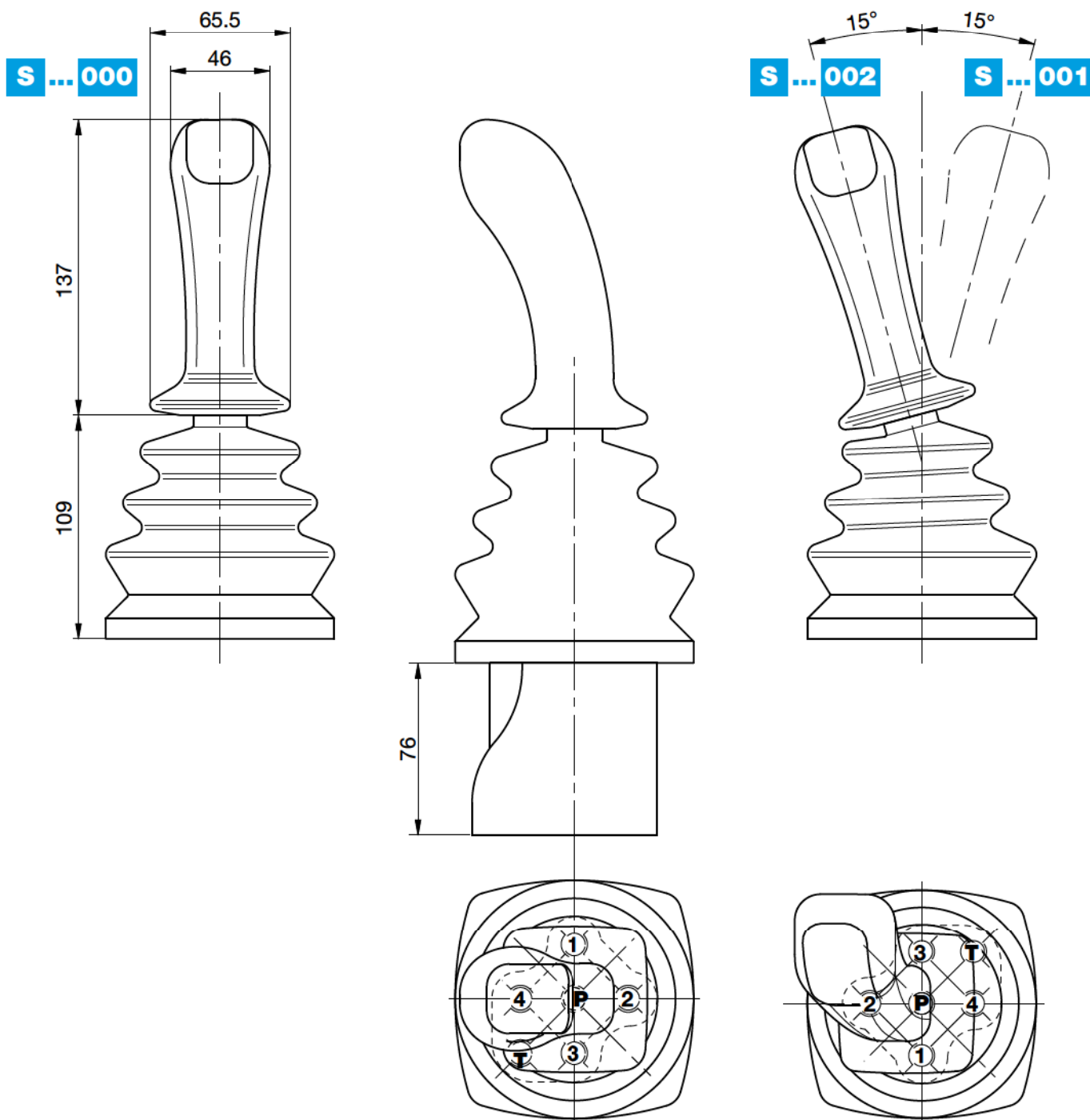
**BOCCE
PORTS
ANSCHLÜSSE**



TIPO TYPE TYP	O		P	
		mm		in
G2	1/4"	13		0,47
U3	9/16-18 UNF	13		0,47

IMPUGNATURA ANATOMICA
ANATOMIC GRIP
ANATOMISCHER GRIFF

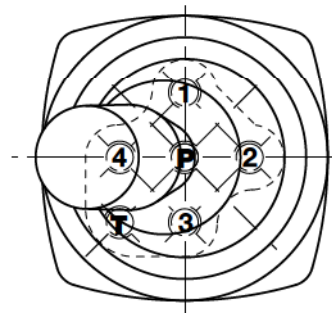
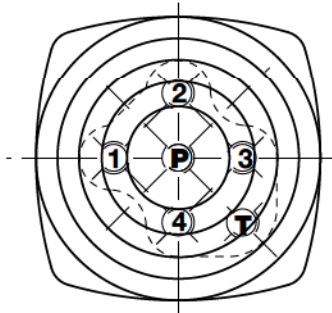
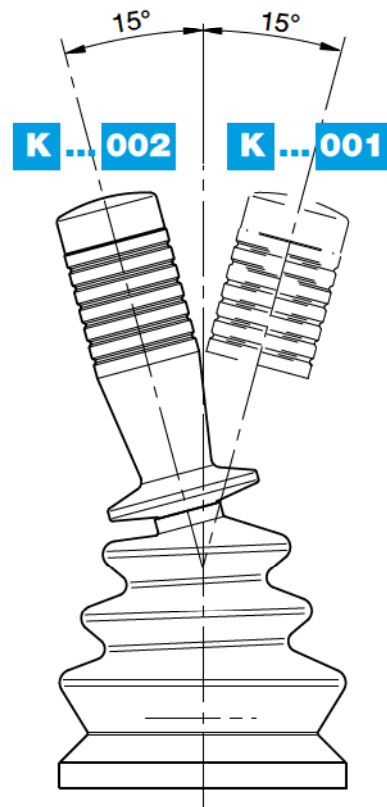
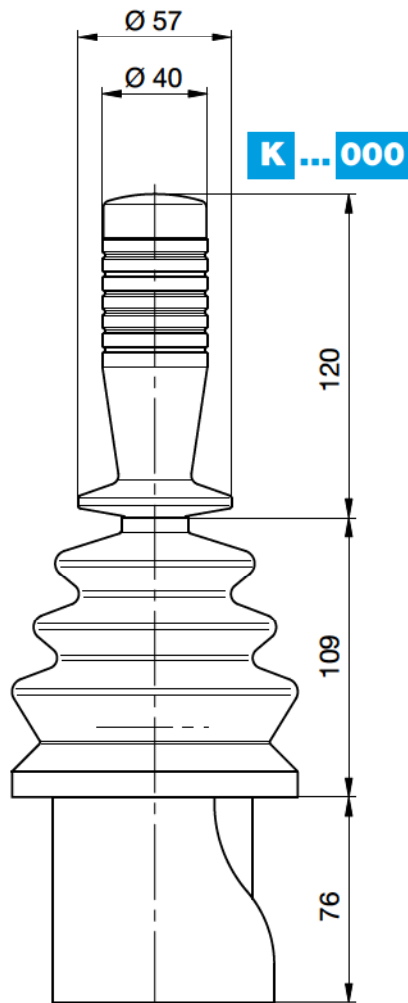
S





IMPUGNATURA CILINDRICA
CYLINDER GRIP
ZYLINDRISCHER GRIFF

K

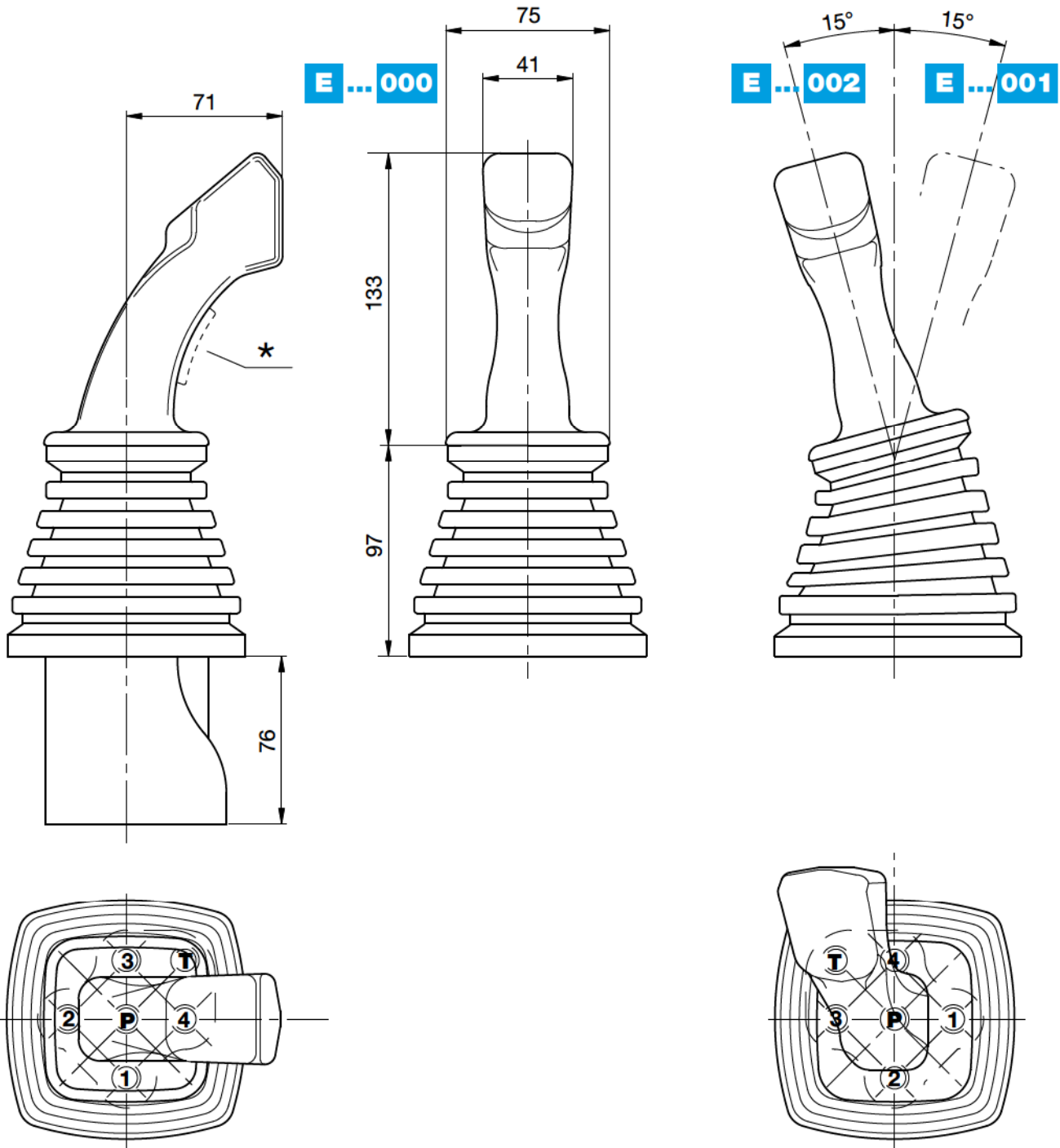


IMPUGNATURA ERGONOMICA
ERGONOMIC GRIP
ERGONOMISCH GRIFF

E

***F**

PULSANTE UOMO PRESENTE
NO OPERATOR SAFETY
SICHERHEITSTASTER KEIN BEDIENER



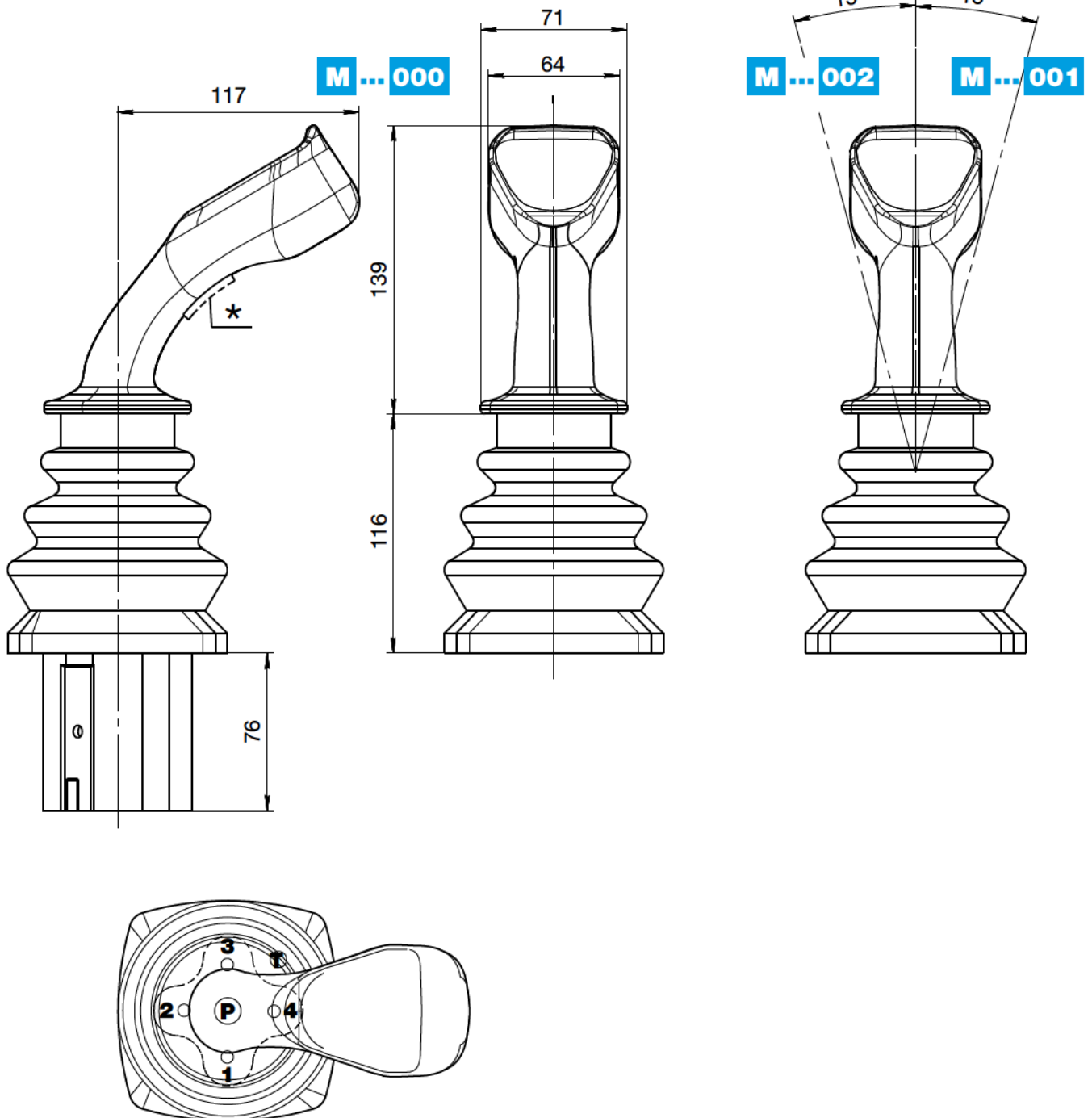


**IMPUGNATURA MULTIFUNZIONE
MULTIFUNCTION GRIP
MULTIFUNKTIONS GRIFF**

M

***N**

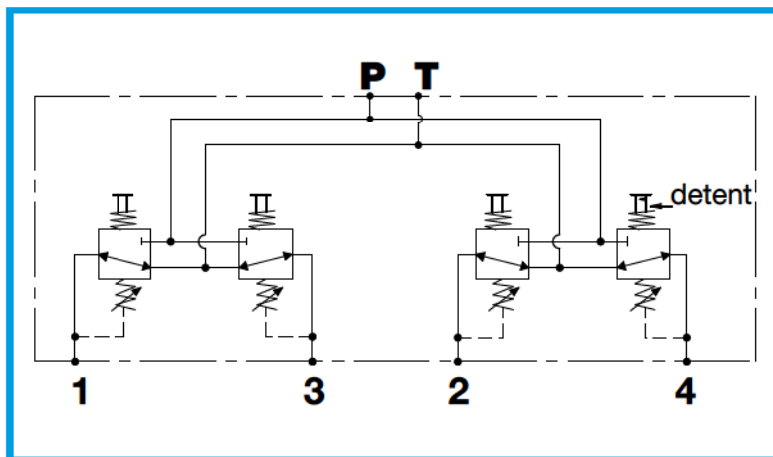
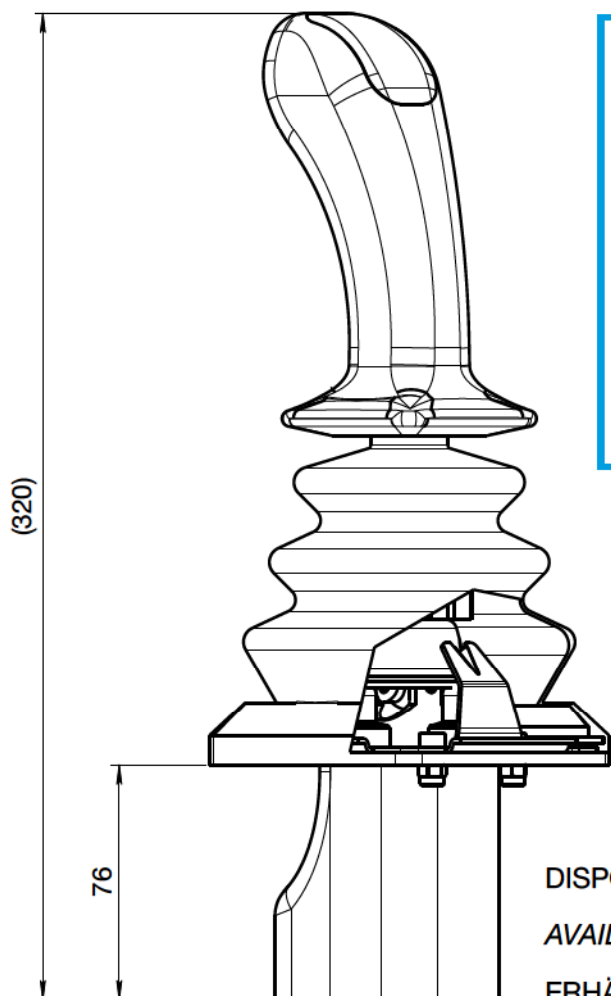
**PULSANTE UOMO PRESENTE
NO OPERATOR SAFETY
SICHERHEITSTASTER KEIN BEDIENER**



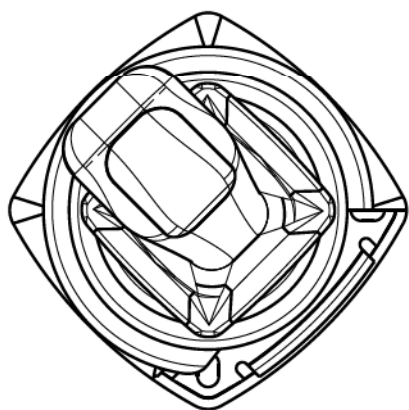
HPCJ

SERVOCOMANDO A DUE ASSI (AZIONAMENTO A LEVA)
DOUBLE AXIS SERVO CONTROL (LEVER MECHANISM)
SERVOSTEUERUNG MIT HANDBEDIENUNG

BLOCCO MECCANICO
MECHANICAL DETENT
MECHANISCHE ARRETIERUNG



DISPONIBILE CON TUTTE LE VERSIONI DI MANOPOLE
AVAILABLE ON ALL VERSIONS OF GRIPS
ERHÄLTICH IN ALLEN HANDGRIFFVERSIONEN



NORMALMENTE INSERITO IN POSIZIONE DI MARCIA AVANTI,
POSIZIONE 4

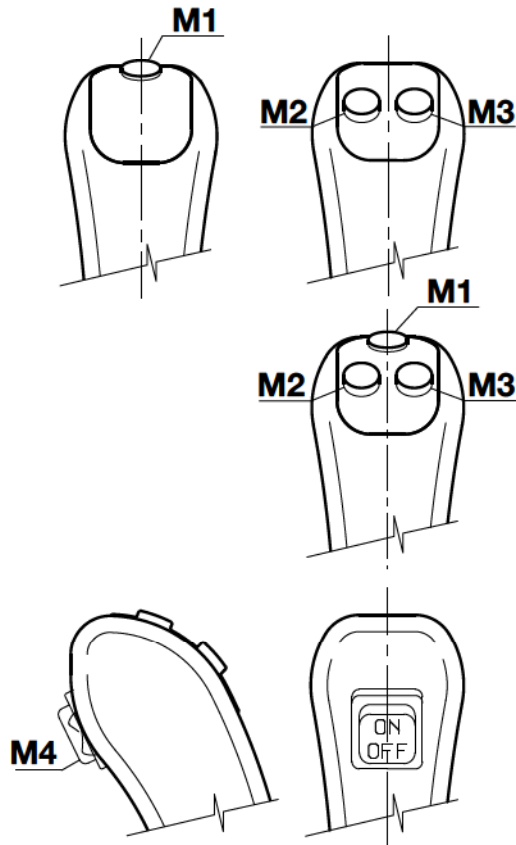
MECHANICAL DETENT, NORMALLY IN PORT 4 AHEAD

NORMALERWEISE IM VORWÄRTSGANG, POSITION 4



**COMANDI ELETTRICI
ELECTRIC CONTROLS
ELEKTROSTEUERUNGEN**

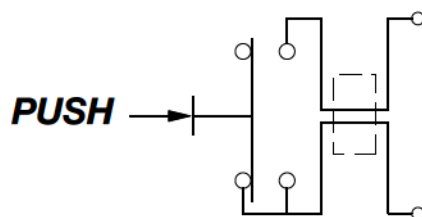
S



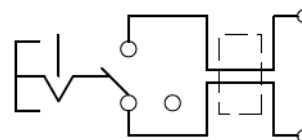
PULSANTI ELETTRICI : M1/M4
ELECTRIC SWITCHES: M1/M4
ELEKTRISCHE TASTER: M1/M4

- 0** - NESSUN PULSANTE SUPERIORE
NO TOP BUTTON
KEIN OBERER TASTER
- 1** - 1 PULSANTE SUPERIORE M1
1 TOP BUTTON M1
1 OBERER TASTER M1
- 2** - 2 PULSANTI SUPERIORI M2+M3
2 TOP BUTTONS M2+M3
2 OBERE TASTER M2+M3
- 3** - 3 PULSANTI SUPERIORI M1+M2+M3
3 TOP BUTTONS M1+M2+M3
3 OBERE TASTER M1+M2+M3

- 0** - NESSUN PULSANTE M4
NO M4 BUTTON
KEIN OBERER M4
- 1** - 1 PULSANTE FRONTALE M4
A BILANCIERE CON RITORNO A MOLLA
1 FRONT BUTTON M4 WITH ROCKING LEVER
WITH SPRING RETURN-TO-CENTRE
1 FRONTSEITIGER KIPPSCHALTER M4
MIT FEDERRÜCKLAUF IN MITTLERER STELLUNG
- 2** - 1 INTERRUTTORE ON/OFF
1 ON/OFF SWITCH
1 ON/OFF-SCHALTER



**MICRO
M1-M2-M3**

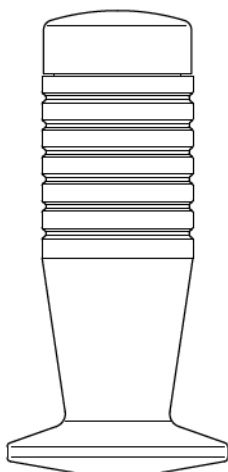


**MICRO
M4**

CAPACITÀ MICRO: DC 12V x 2A
MICRO CAPACITY: DC 12V x 2A
MIKROKAPAZITÄT: DC 12V x 2A

COMANDI ELETTRICI
 ELECTRIC CONTROLS
 ELEKTROSTEUERUNGEN

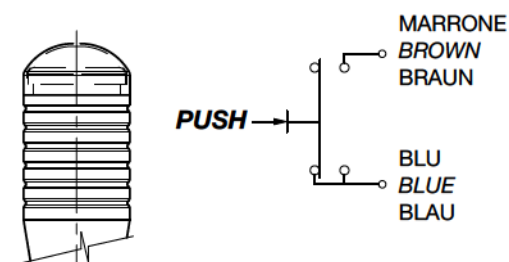
K



- 00** NESSUN PULSANTE
 NO BUTTON
 KEIN KNOFF
- 01** PULSANTE SINGOLO
 SINGLE BUTTON
 EINZELNER KNOFF
- 02** PULSANTE BASCULANTE
 TOGGLE BUTTON
 WIPPSCHALTER

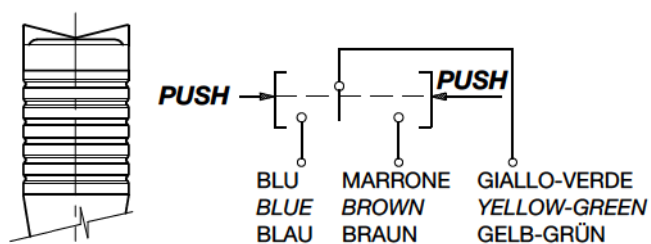
SINGOLO PULSANTE ELETTRICO
 SINGLE ELECTRIC BUTTON
 EINZELNER ELEKTRISCHER TASTER

K ... 01 ...



PULSANTE ELETTRICO BASCULANTE
 TOGGLE ELECTRIC BUTTON
 ELEKTRISCHER KIPPSCHALTER

K ... 02 ...

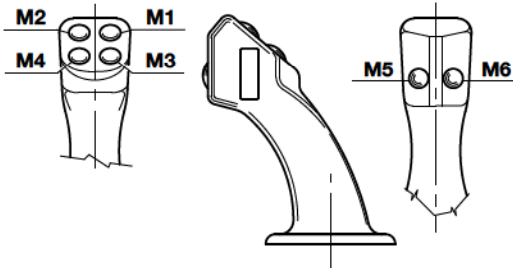


CAPACITÀ MICRO: DC 12V x 8A
 MICRO CAPACITY: DC 12V x 8A
 MIKROKAPAZITÄT: DC 12V x 8A

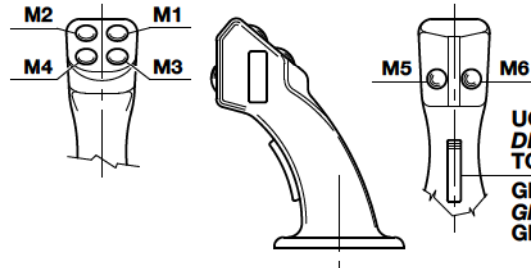


**COMANDI ELETTRICI
ELECTRIC CONTROLS
ELEKTROSTEUERUNGEN**

E



F



**UOMO PRESENTE
DEADMAN
TOTMANN-SCHALTER**
**GRIGIO
GREY
GRAU**

**PULSANTI ELETTRICI : M1/M6
ELECTRIC SWITCHES: M1/M6
ELEKTRISCHE TASTER: M1/M6**

0 - **NESSUN PULSANTE SUPERIORE
NO TOP BUTTON
KEIN OBERER TASTER**

1 - **1 PULSANTE SUPERIORE M1
1 TOP BUTTON M1
1 OBERER TASTER M1**

2 - **2 PULSANTI SUPERIORI M1+M2
2 TOP BUTTONS M1+M2
2 OBERE TASTER M1+M2**

3 - **3 PULSANTI SUPERIORI M1+M2+M3
3 TOP BUTTONS M1+M2+M3
3 OBERE TASTER M1+M2+M3**

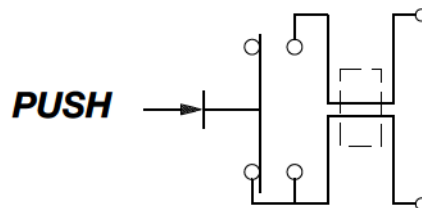
4 - **4 PULSANTI SUPERIORI M1+M2+M3+M4
4 TOP BUTTONS M1+M2+M3+M4
4 OBERE TASTER M1+M2+M3+M4**

0 - **NESSUN PULSANTE FRONTALE
NO FRONT BUTTON
KEIN VORDERER TASTER**

1 - **1 PULSANTE FRONTALE M5
1 FRONT BUTTON M5
1 VORDERER TASTER M5**

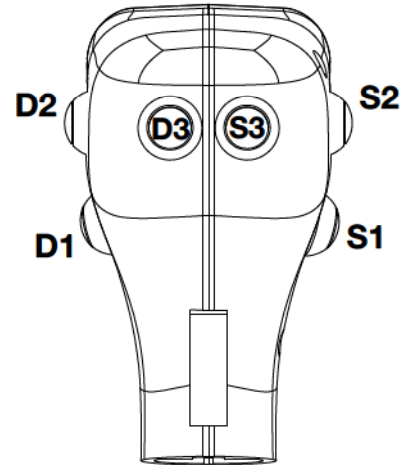
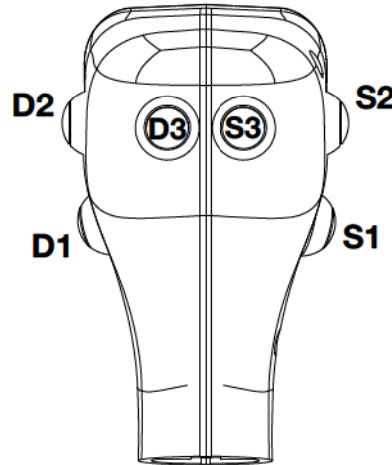
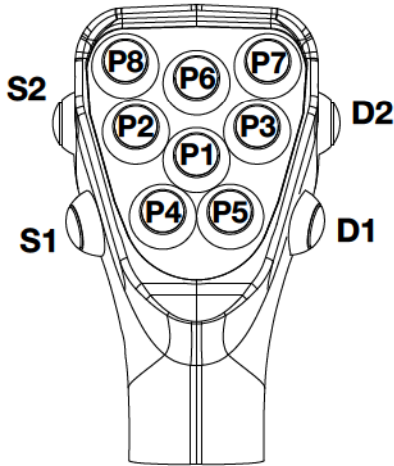
2 - **2 PULSANTI FRONTALI M5+M6
2 FRONT BUTTONS M5+M6
2 VORDERER TASTERE M5+M6**

3 - **1 PULSANTE FRONTALE M6
1 FRONT BUTTON M6
1 VORDERER TASTER M6**



**CAPACITÀ MICRO: DC 12V x 2A
MICRO CAPACITY: DC 12V x 2A
MIKROKAPAZITÄT: DC 12V x 2A**

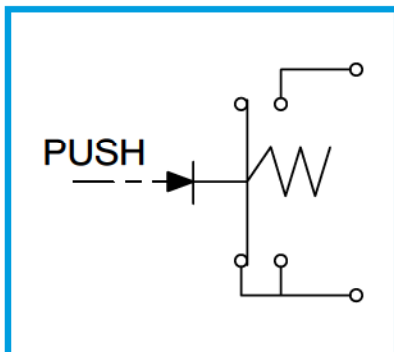
COMANDI ELETTRICI
 ELECTRIC CONTROLS
 ELEKTROSTEUERUNGEN



PULSANTI ELETTRICI
 ELECTRIC SWITCHES
 ELEKTRISCHE TASTER

- 0** ■ NESSUN PULSANTE
NO BUTTON
KEIN TASTER
- 2** ■ P2 + P3
- 4** ■ P2+P3+P4+P5
- 6** ■ P2+P3+P4+P5+P7+P8
- 8** ■ P1+P2+P3+P4+P5+P6+P7+P8

- 0** ■ NESSUN PULSANTE
NO BUTTON
KEIN TASTER
- 1** ■ D1
- 2** ■ S1
- 3** ■ D1+D2
- 4** ■ S1+S2
- 5** ■ D1+S1
- 6** ■ D1+D2+S1+S2
- 7** ■ D1+S1+D3+S3
- 8** ■ D3+S3
- 9** ■ D1+D2+D3+S1+S2+S3



CAPACITA' MICRO: DC 28V x 5A RESISTIVA ; DC 28V x 3A INDUCTIVA
 MICRO CAPACITY : DC 28V x 5A RESISTIVE ; DC 28V x 3A INDUCTIVE
 MIKROKAPAZITAT: DC 28V x 5A WIDERSTANDSFAHIG ; DC 28V x 3A INDUKTIV



**ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG**

HPC J 0 G2 1 K S S01 00 000

**SERIE
SERIES
SERIE**

**PRODOTTO
PRODUCT
PRODUKT**

J - 2 assi
J - 2-axis
J - 2 Achsen

**MODELLI
MODELS
MODELLE**

0 = Leva centrale
1 = Leva centrale + 1 segnale di press.
2 = Leva centrale + 2 segnali di press.
3 = Leva centrale + controrotazione
4 = Leva centrale + segnale sing. da 4 pos.

0 = Central lever
1 = Central lever + 1 press. signal
2 = Central lever + 2 press. signals
3 = Central lever + counter rotation
4 = Central lever + single 4-pos. signal

0 = Mittlerer Hebel
1 = Mittlerer Hebel + 1 Drucksignal
2 = Mittlerer Hebel + 2 Drucksignale
3 = Mittlerer Hebel + Gegendrehung
4 = Mittlerer Hebel + Einzelsignal mit 4 Stellungen

**BOCCHE STANDARD
STANDARD PORT
STANDARD ANSCHLÜSSE**

G2 = 1/4" gas-BSPP
U3 = SAE 9/16"-18UNF

**GUARNIZIONI
SEALS
DICHTUNGEN**

1 - NBR
2 - Viton

**VERSIONI SPECIALI
SPECIAL VERSIONS
SONDERAUSFÜHRUNGEN**

000 = Nessuna esec. spec.
001 = Leva inclinata a DX 15°
002 = Leva inclinata a SX 15°
029 = Detent pos. 4

000 = No spec. execution
001 = Lever tilted to right 15°
002 = Lever tilted to left 15°
029 = Mechanical Detent port. 4

000 = Keine Sonderausführung
001 = Um 15° nach rechts geneigter Hebel
002 = Um 15° nach links geneigter Hebel
029 = Arretierung Pos. 4

**COMANDI ELETTRICI
ELECTRIC CONTROLS
ELEKTROSTEUERUNGEN**

Vedere tabella pag. 13/16
See table pag. 13/16
Siehe Tabelle Seite 13/16

**CURVE
CURVES
KURVEN**

Vedere tabella pag. 6
See table pag. 6
Siehe Tabelle Seite 6

**POSIZIONATORE
POSITIONER
RASTER**

S = Standard con ritorno a molla
Standard with spring-back
Rückstellungsfeder

A = Frizionato AV./IND. 2-4
Clutch Controlled FORW./REV. 2-4
Rückstellungsfeder geklemmt,
VOR/ZURÜCK 2-4

**IMPUGNATURE
HANDLES
GRIFFE**

0 = Senza impugnatura
K = Impugnatura cilindrica
S = Impugnatura anatomica
E = Impugnatura ergonomica
F = Impugnatura ergonomica uomo presente
M = Impugnatura multifunzione
N = Impugnatura multifunzione uomo presente

0 = Without grip
K = Cylinder grip
S = Anatomic grip
E = Ergonomic grip
F = Ergonomic grip totman
M = Multifunction grip
N = Multifunction grip totman

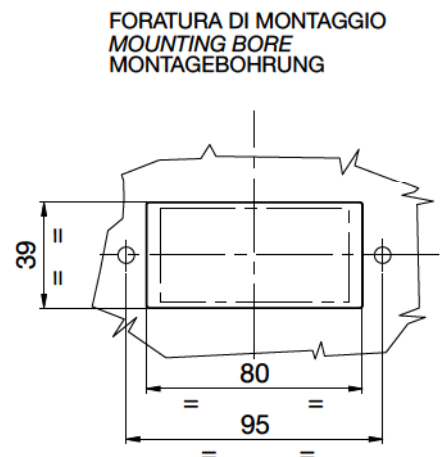
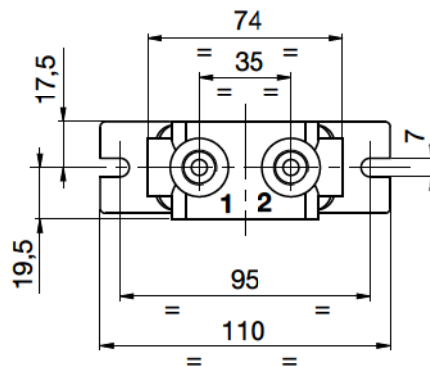
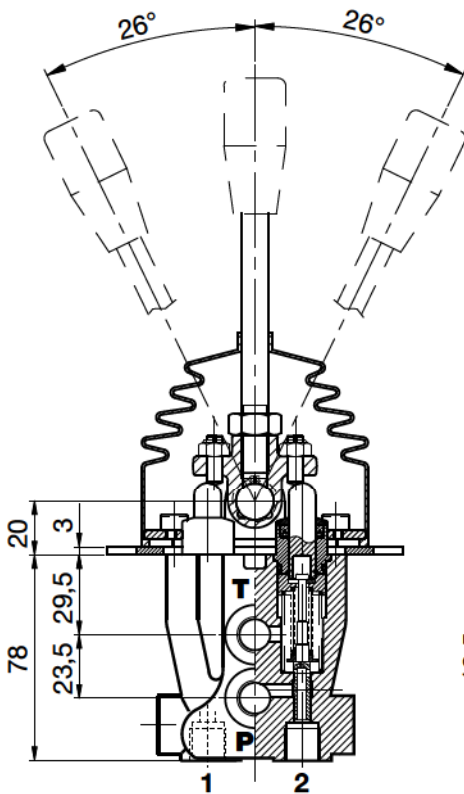
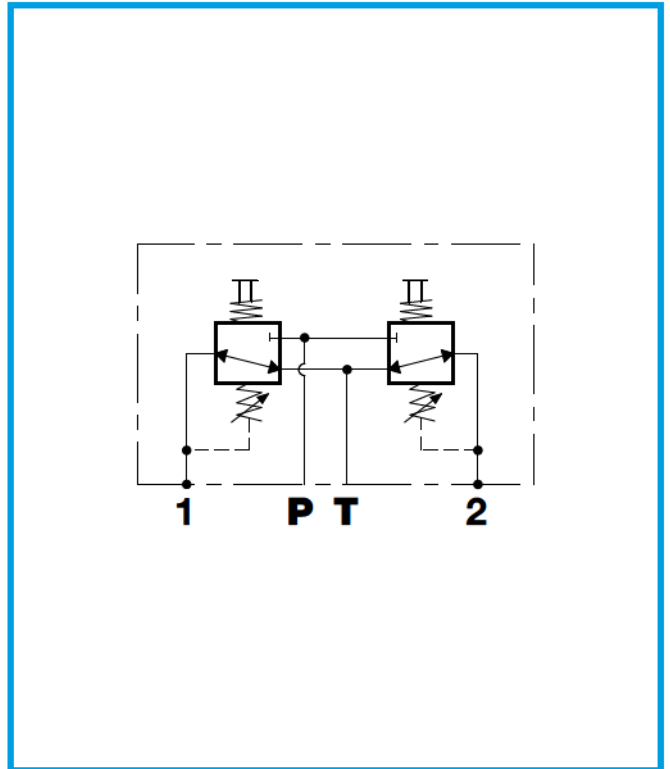
0 = Ohne Griff
K = Zylindrischer Griff
S = Anatomischer Griff
E = Ergonomischer Griff
F = Ergonomischer Griff Totmannschaltung
M = Multifunktions Griff
N = Multifunktions Griff Totmannschaltung

CURVE DI REGOLAZIONE ADJUSTMENT CURVES REGELKURVEN

TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK				TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK			
	a		b			a		b	
	bar	psi	bar	psi	bar	psi	bar	psi	
S00	2	29	16	232	L00	2	29	18	261
S01	5	73	20	290	L01	5	73	22	319
S02	6,5	94	24,5	355	L02	6,5	94	26,5	384
S04	3	46	17	249	L04	3	46	19	276
S08	5	73	16	232	L08	5	73	18	261
S11	4	58	15	218	L11	4	58	15	218
S12	1,5	22	7	102	L12	1,5	22	9	131
S13	5	73	28	406	L13	5	73	30	435

TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK						CORSA STROKE HUB		
	a		b		c		A	B	C
	bar	psi	bar	psi	bar	psi	mm	mm	mm
M60	5	73	12	174	21	305	1,2	5,4	7,8

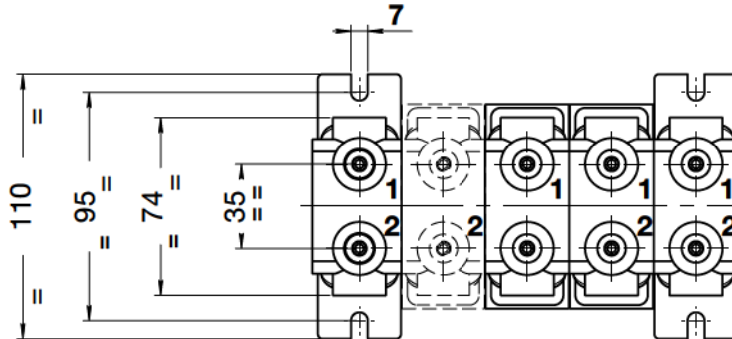
TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK						CORSA STROKE HUB		
	a		b		c		A	B	C
	bar	psi	bar	psi	bar	psi	mm	mm	mm
G60	5	73	12	174	23	334	1,2	5,4	8,3



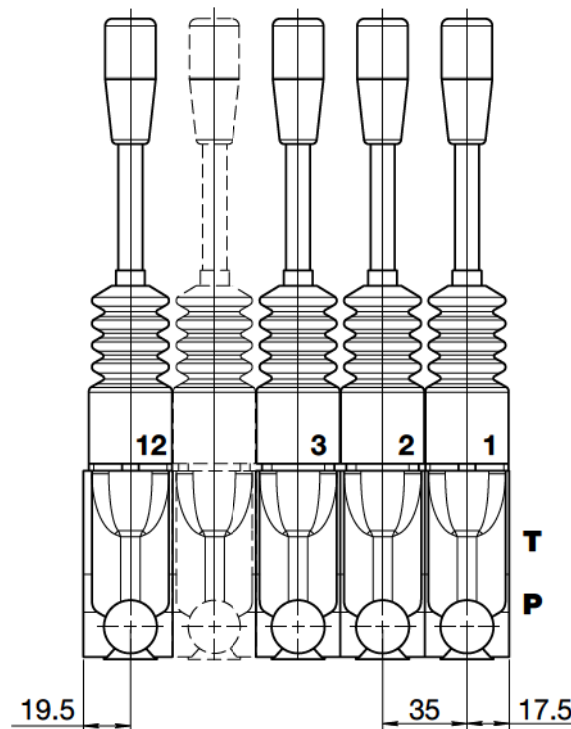
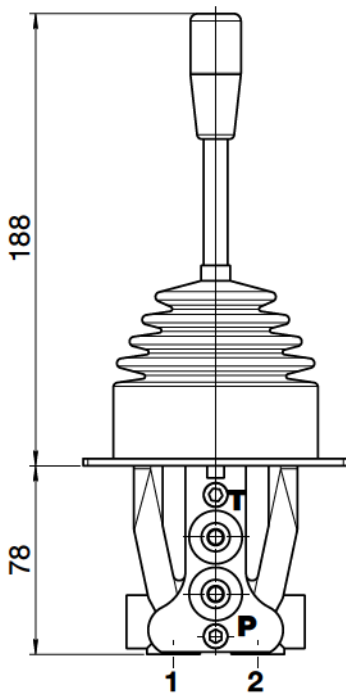


MODELLI
MODELS
MODELLE

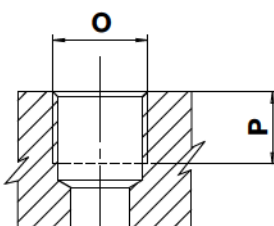
DA 2 A 12 SEZIONI
FROM 2 TO 12 SECTIONS
VON 2 BIS 12 SEKTIONEN



- 1** N° 1 Sezione Section Sektion
- 2** N° 2 Sezione Section Sektion
- 3** N° 3 Sezione Section Sektion
- 4** N° 4 Sezione Section Sektion
- 5** N° 5 Sezione Section Sektion
- 6** N° 6 Sezione Section Sektion
- 7** N° 7 Sezione Section Sektion
- 8** N° 8 Sezione Section Sektion
- 9** N° 9 Sezione Section Sektion
- A** N° 10 Sezione Section Sektion
- B** N° 11 Sezione Section Sektion
- C** N° 12 Sezione Section Sektion



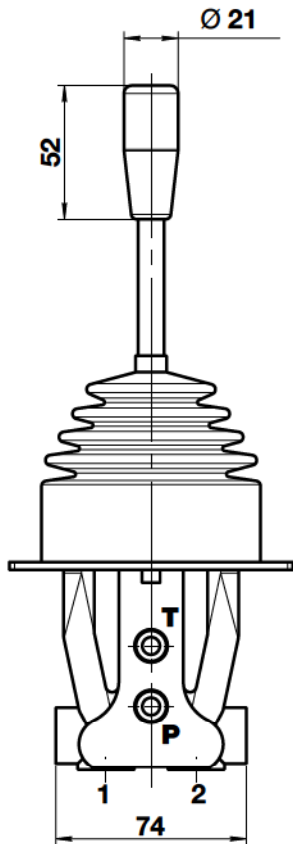
BOCCHIE
PORTS
ANSCHLÜSSE



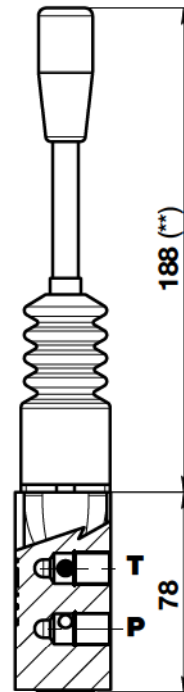
TIPO TYPE TYP	O	P	
		mm	in
G2	1/4"	13	0,47
U3	9/16-18 UNF	13	0,47

IMPUGNATURA STANDARD
 STANDARD GRIPS
 GRIFFE

G



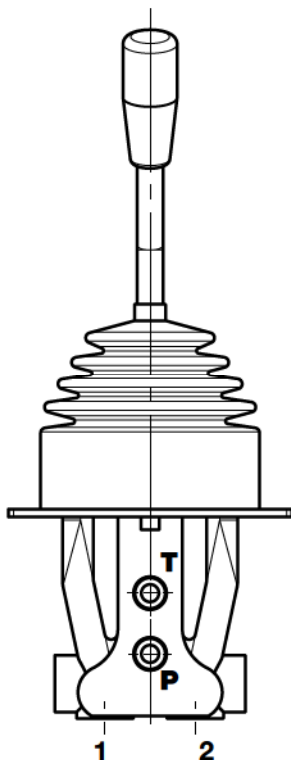
G ... 000



(**) Per la versione frizionata aggiungere 15 mm ca.

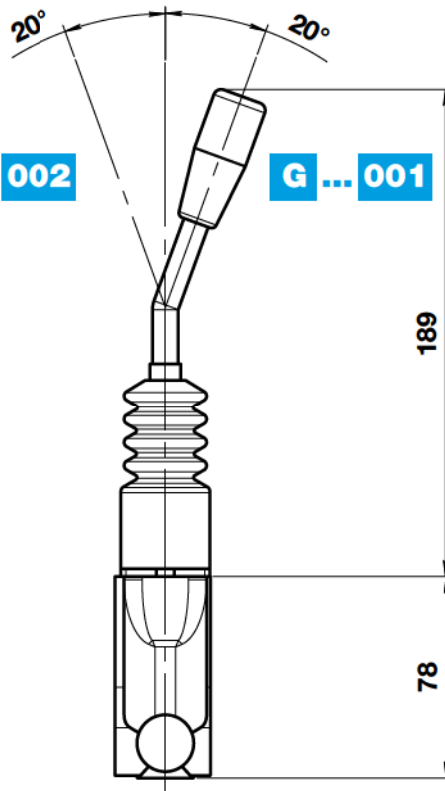
(**) For the clutch version adding 15 mm.

(**) Für die RÜchstellungsfeder geklemmt Version, die 15 mm hinzufügt.



G ... 002

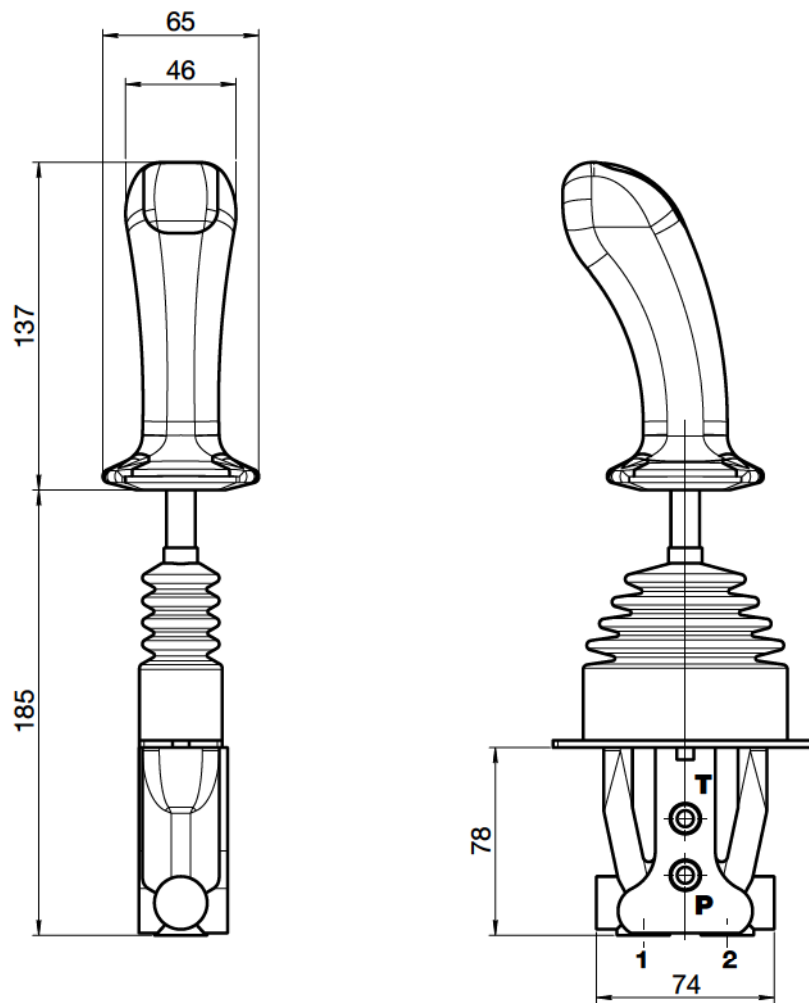
G ... 001





**IMPUGNATURA ANATOMICA
ANATOMIC GRIP
ANATOMISCHER GRIFF**

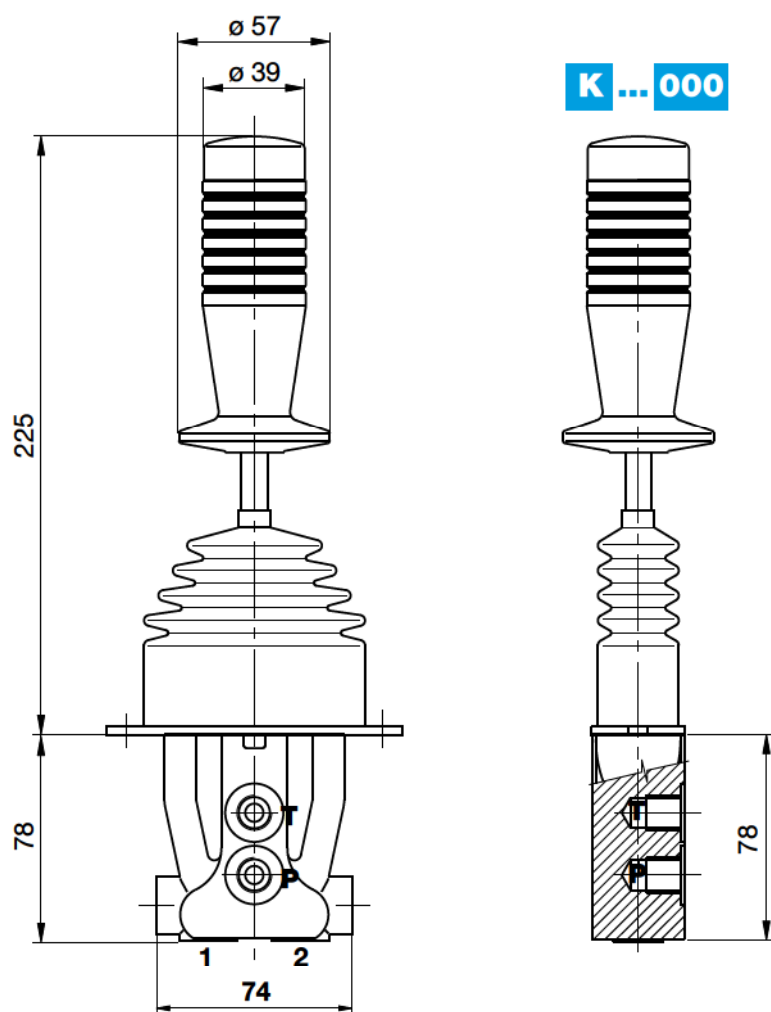
S



TIPO DI MONTAGGIO PER TUTTE LE IMPUGNATURE.
ASSEMBLY TYPE FOR ALL HANDLES.
VERSAMMLUNG TYP FÜR ALLE HANDGRIFFVERSIONEN.

IMPUGNATURA CILINDRICA
CYLINDER GRIP
ZYLINDRISCHER GRIFF

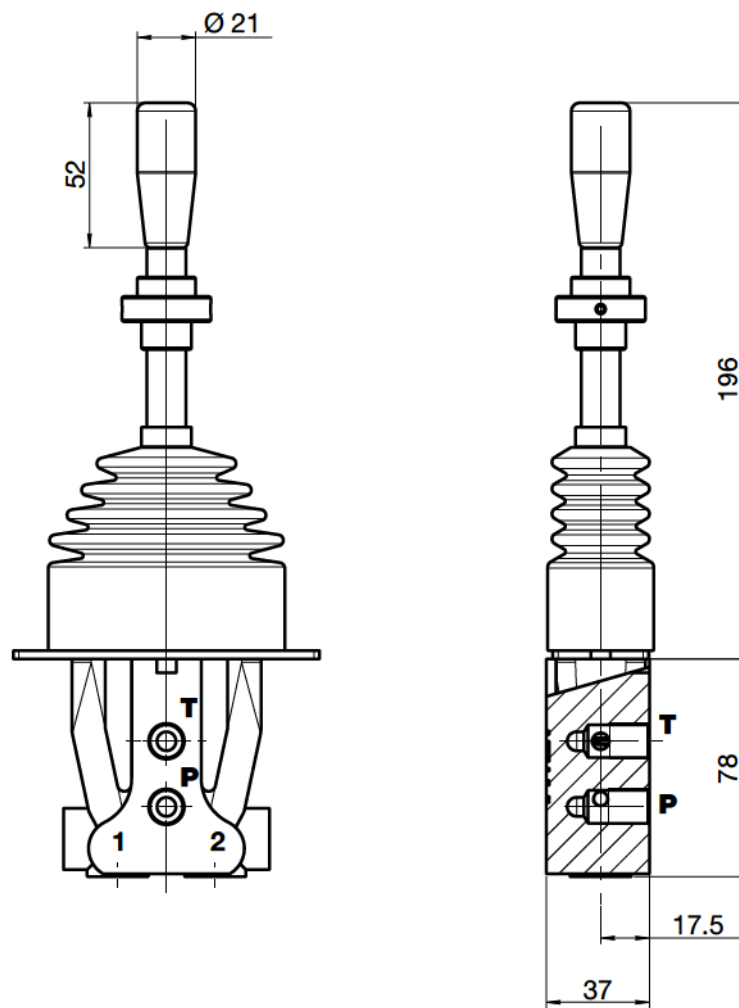
K



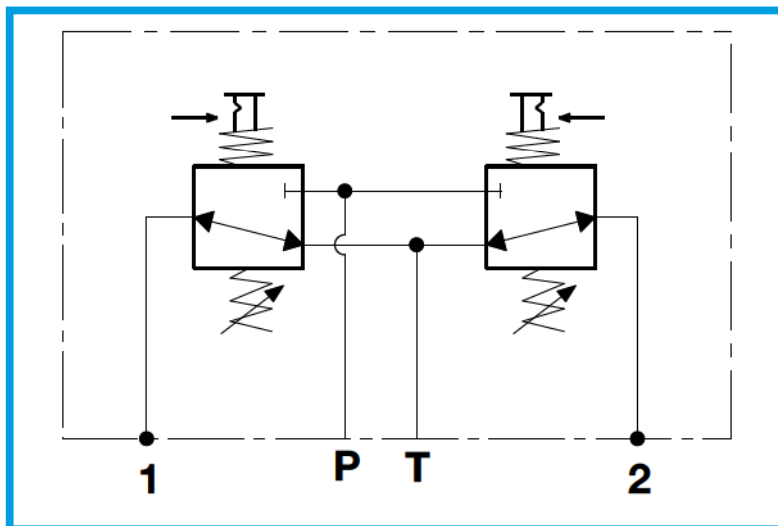
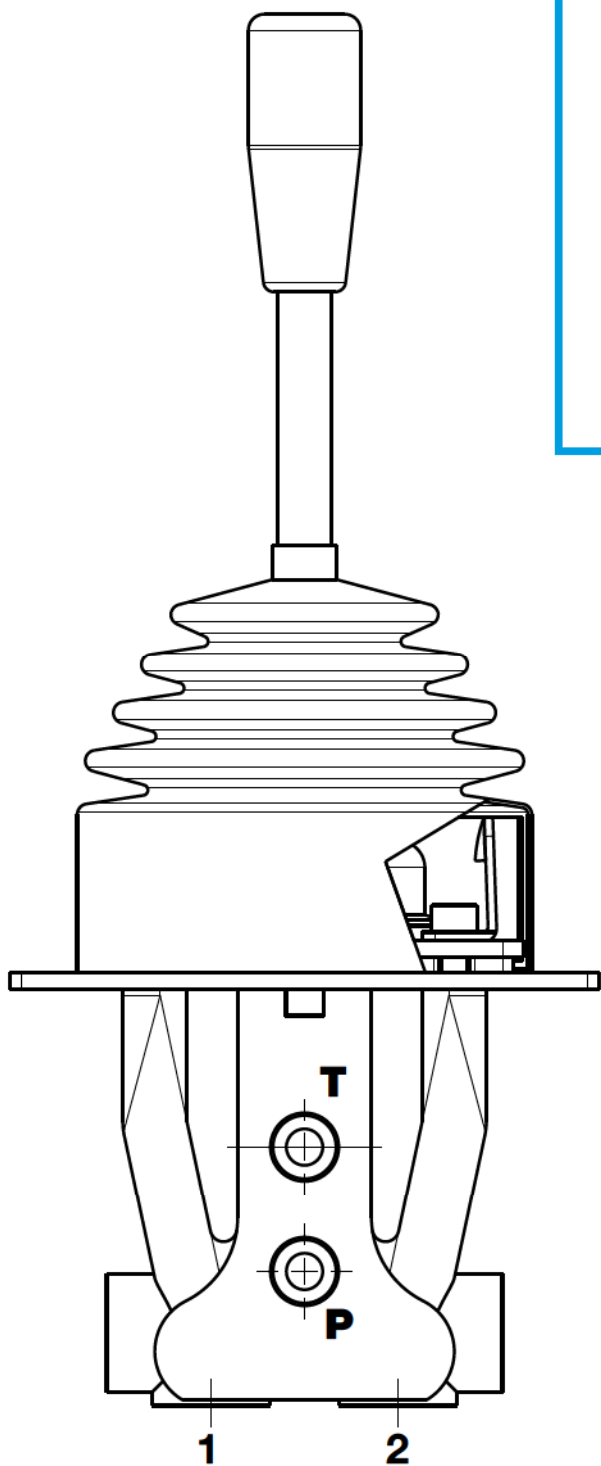


BLOCCO IN CENTRO
CENTRAL
ARRETIERUNG IN MITTELSTELLUNG

B
C



MANIPOLATORE CON BLOCCO MECCANICO
JOYSTICK, MECHANICAL INTERLOCK
JOYSTICK MIT MECHANISCHER ARRETIERUNG





**ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG**

HPC S 1 G2 1 G S S00 00 000

**SERIE
SERIES
SERIE**

**PRODOTTO
PRODUCT
PRODUKT**

S - 1 asse
1-axis
1 Achse

**MODELLI
MODELS
MODELLE**

1 = N° 1 sezione - 1 section - 1. Sektion
2 = N° 2 sezioni - 2 sections - 2. Sektion
3 = N° 3 sezioni - 3 sections - 3. Sektion
4 = N° 4 sezioni - 4 sections - 4. Sektion
5 = N° 5 sezioni - 5 sections - 5. Sektion
6 = N° 6 sezioni - 6 sections - 6. Sektion
7 = N° 7 sezioni - 7 sections - 7. Sektion
8 = N° 8 sezioni - 8 sections - 8. Sektion
9 = N° 9 sezioni - 9 sections - 9. Sektion
A = N° 10 sezioni - 10 sections - 10. Sektion
B = N° 11 sezioni - 11 sections - 11. Sektion
C = N° 12 sezioni - 12 sections - 12. Sektion

**BOCCHIE STANDARD
STANDARD PORT
STANDARD ANSCHLÜSSE**

G2 = 1/4" gas-BSPP
U3 = SAE 9/16"-18UNF

**GUARNIZIONI
SEALS
DICHTUNGEN**

1 - NBR
2 - Viton

**IMPUGNATURE
HANDLES
GRIFFE**

Ø - Senza leva
Without lever
Ohne Leber
G - Pomello cilindrico
Knob cylinder
Zylindrischer Knauf
K - Impugnatura cilindrica
Cylinder grip
Zylindrischer Griff

**VERSIONI SPECIALI
SPECIAL VERSIONS
SONDERAUSFÜHRUNGEN**

000 = Nessuna esec. spec.
001 = Leva inclinata a DX 20°
002 = Leva inclinata a SX 20°
012 = Micro di zero
022 = Versione con forcella rinforzata
029 = Versione con detent nei due utilizzi
030 = Versione con detent utilizzo 2 a dx di P

000 = No spec. execution
001 = Lever tilted to right 20°
002 = Lever tilted to left 20°
012 = Neutral switch
022 = Version heavy-duty yoke
029 = Version with mechanical detent for both ports
030 = Version with detent port 2 right of positioner

000 = Keine Sonderausführung
001 = Um 20° nach rechts geneigter Hebel
002 = Um 20° nach links geneigter Hebel
012 = Neutral switch
022 = Ausführung mit verstärkter Gabel
029 = Ausführung mit Arretierung für zwei Verbraucher
030 = Ausführung mit Arretierung 2 Verbraucher rechts des Rasters

**COMANDI ELETTRICI
ELECTRIC CONTROLS
ELEKTROSTEUERUNGEN**

00 - Senza leva
00 - Spring-back
00 - Rückstellungsfeder

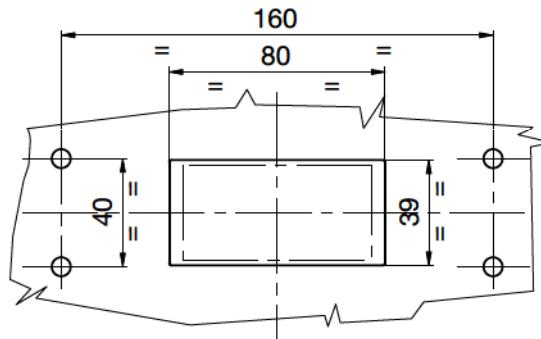
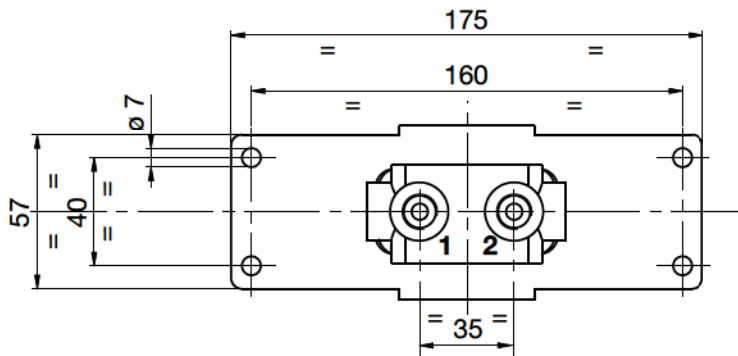
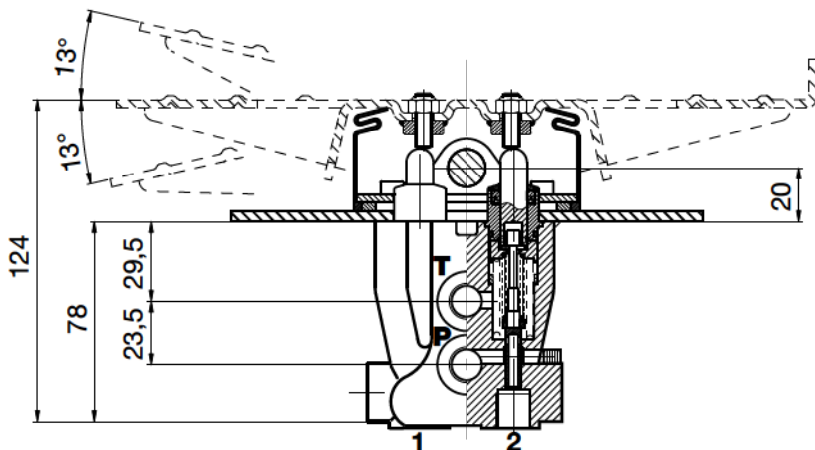
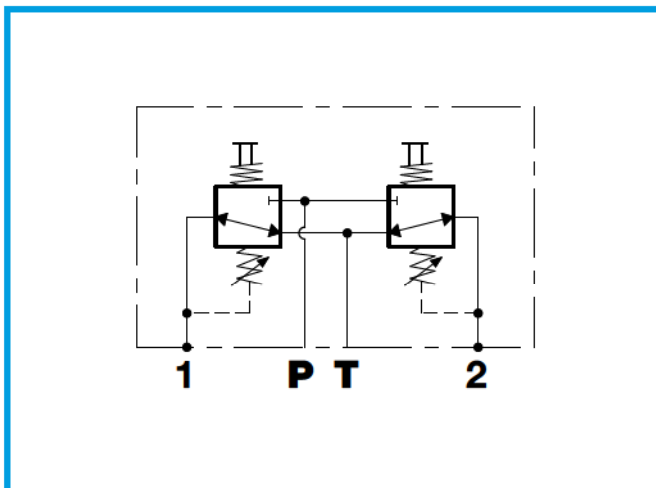
**CURVE
CURVES
KURVEN** Vedere tabella pag. 18
See table pag. 18
Siehe Tabelle Seite 18

**POSIZIONATORE
POSITIONER
RASTER**

S - Ritorno a molla
Spring-back
Rückstellungsfeder
A = Frizionato
Clutch Controlled
Rückstellungsfeder geklemmt
B - Blocco in centro con ritorno a molla
Central, with spring-back
Federarretierung in Mittelstellung
C - Blocco in centro frizionato
Central, clutch-controlled
Sicherung in der Mittelstellung

CURVE DI REGOLAZIONE ADJUSTMENT CURVES REGELKURVEN

TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK				TIPO TYPE TYP	PRESSIONE PRESSURE DRUCK			
	a bar	a psi	b bar	b psi		a bar	a psi	b bar	b psi
P00	2	29	16	232	R00	2	29	18	261
P01	3	43	18	261	R01	3	44	22	290

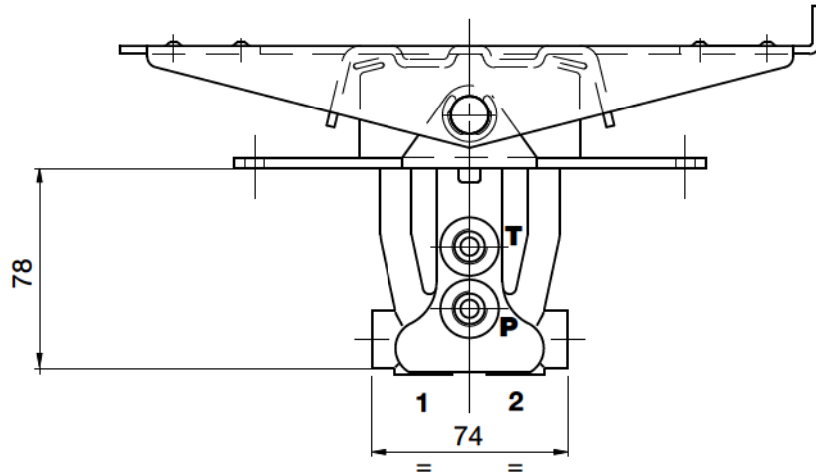


FORATURA DI MONTAGGIO
MOUNTING BORE
MONTAGEBOHRUNG

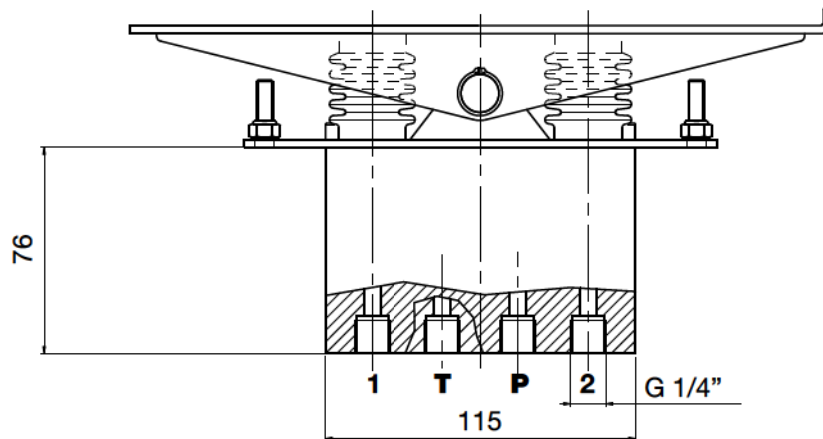


MODELLI
MODELS
MODELLE

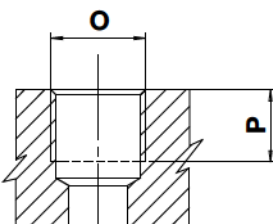
0 STANDARD
STANDARD
STANDARD



1 PASSO LUNGO (SOLO PER PEDALI 1 - 4)
LONG STEP (PEDALS 1 - 4 ONLY)
GROSSER WEG (NUR FÜR PEDALEN 1 - 4)

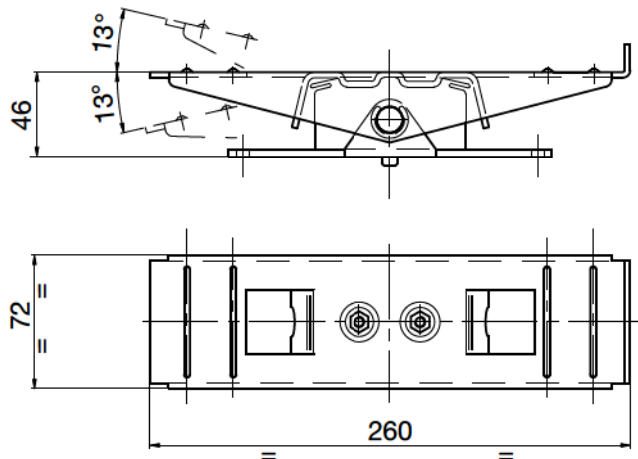


BOCCHIE
PORTS
ANSCHLÜSSE

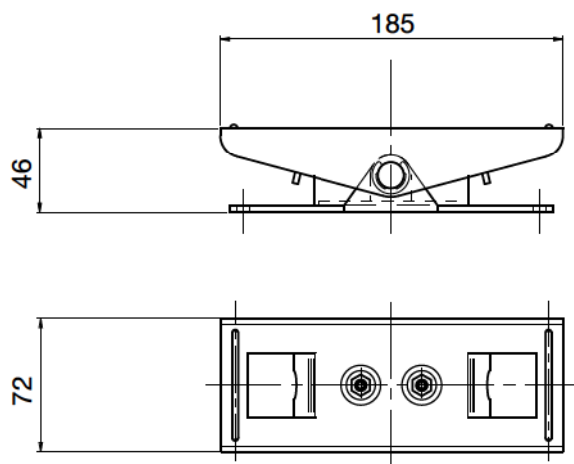


TIPO TYPE TYP	O		P	
		mm		in
G2	1/4"	13		0,47
U3	9/16-18 UNF	13		0,47

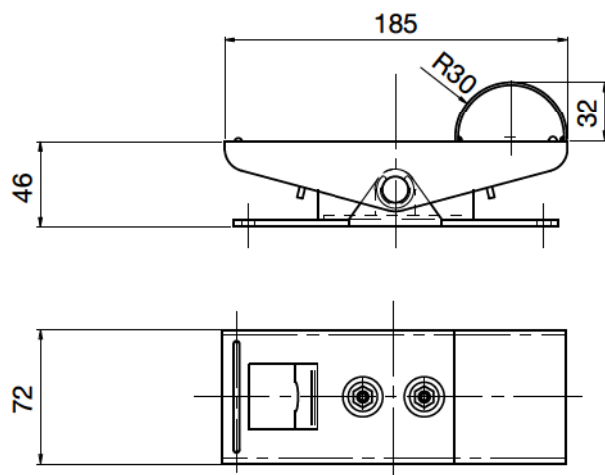
HPCF ... 1



HPCF ... 2



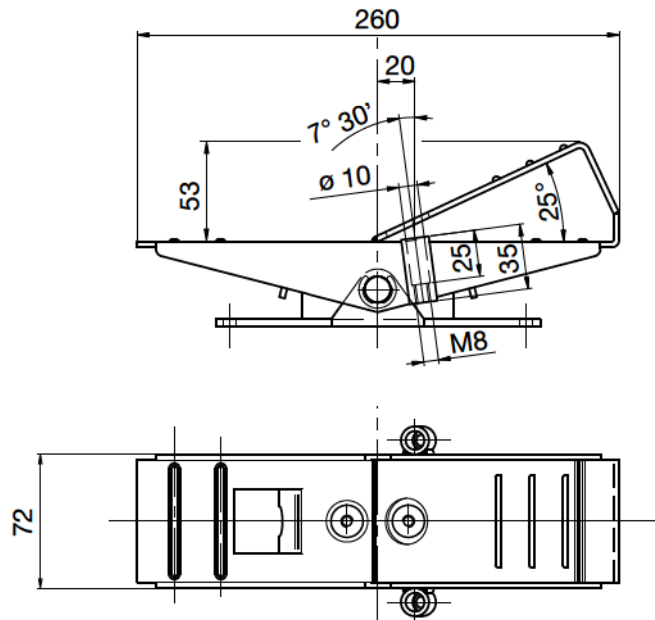
HPCF ... 3



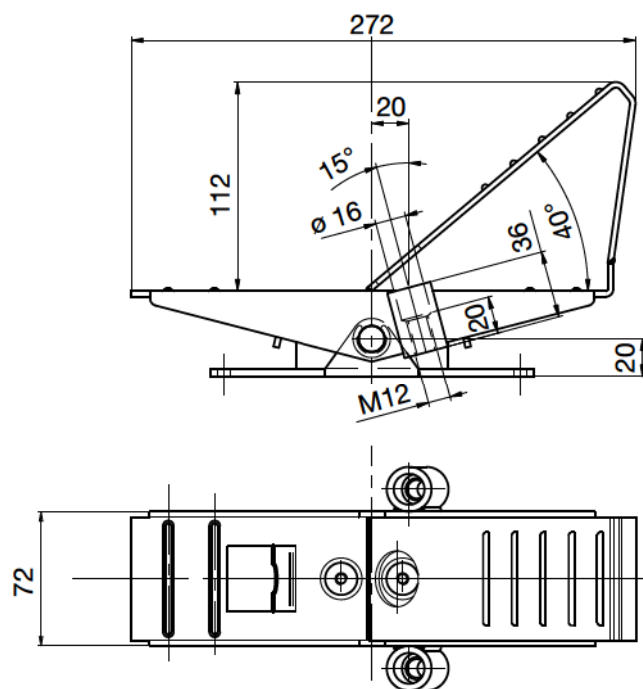


**PEDALI
PEDALS
PEDALE**

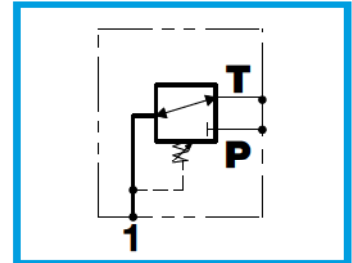
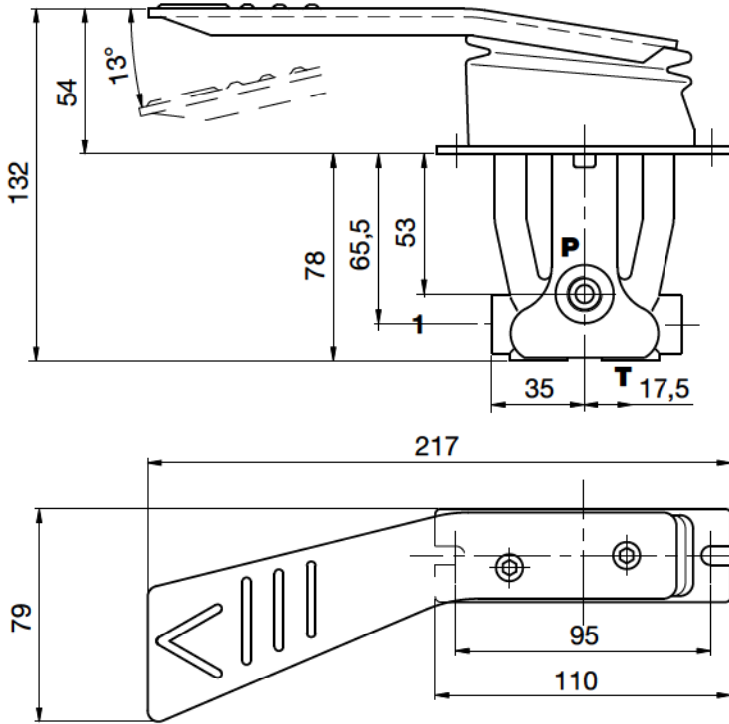
HPCF ... 4



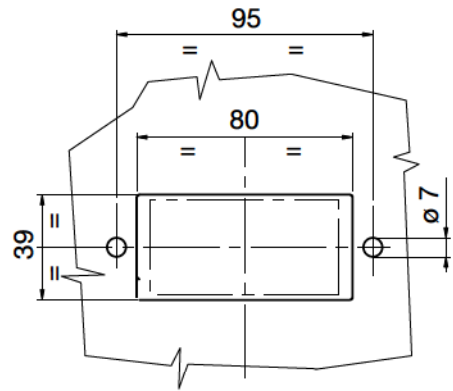
HPCF ... 5



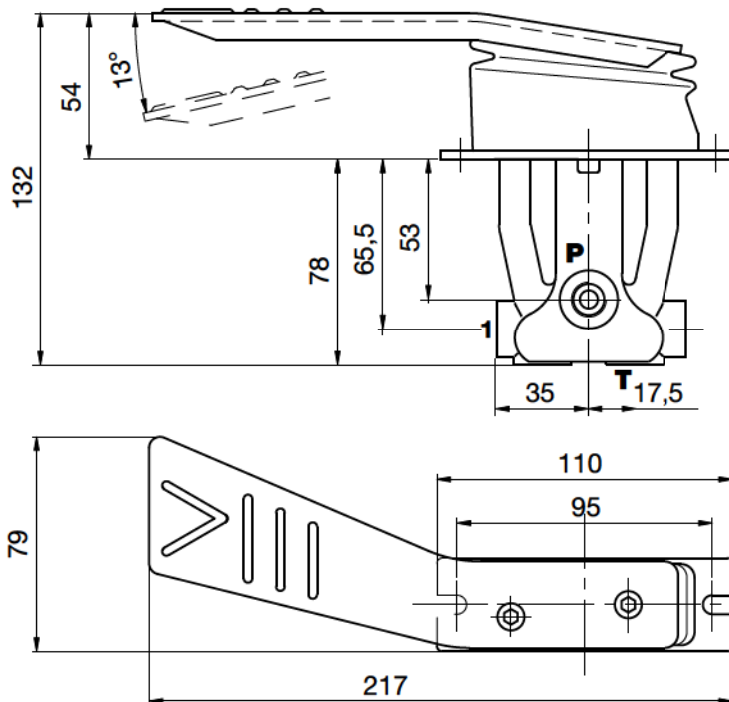
HPCF ... 6



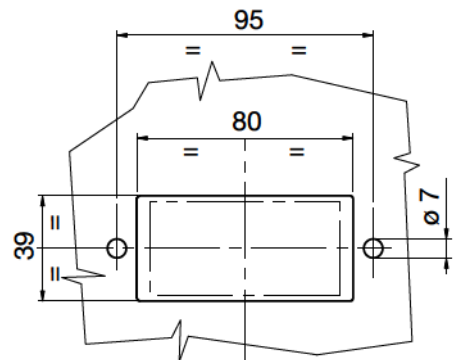
FORATURA DI MONTAGGIO
 MOUNTING BORE
 MONTAGEBOHRUNG



HPCF ... 7



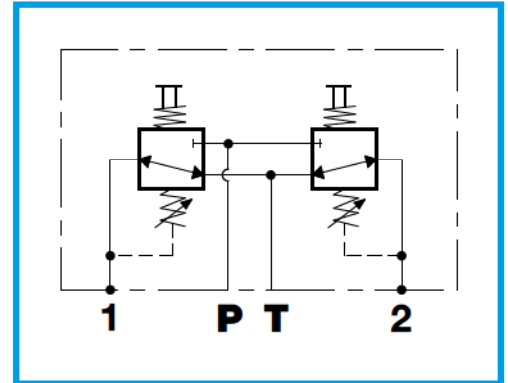
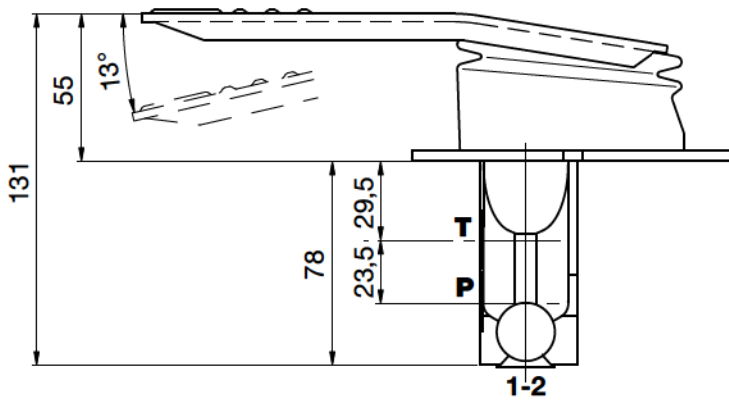
FORATURA DI MONTAGGIO
 MOUNTING BORE
 MONTAGEBOHRUNG



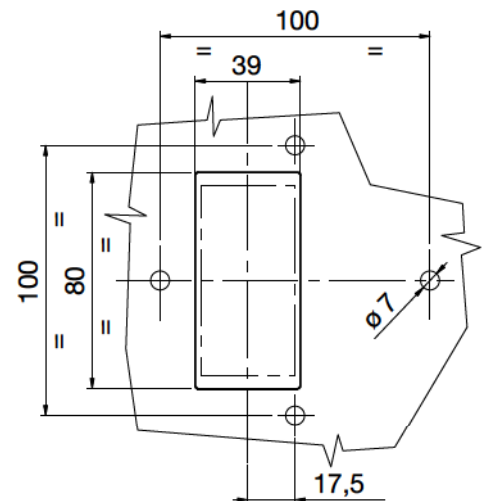
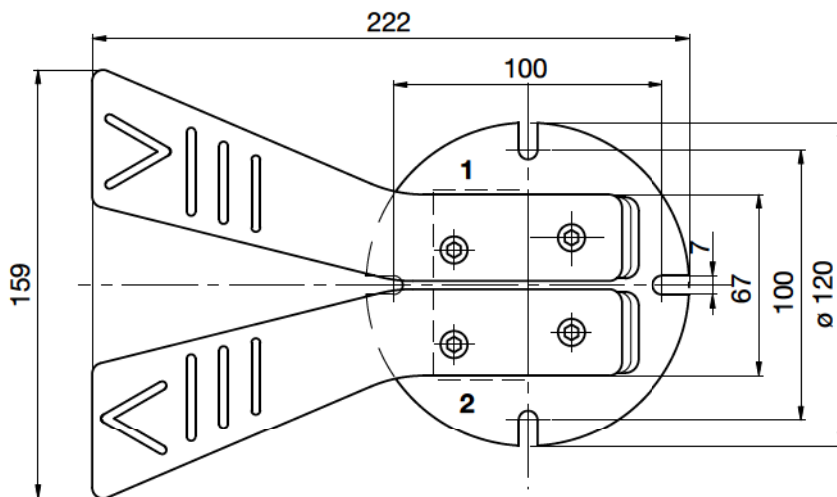


PEDALI
PEDALS
PEDALE

HPCF ... 8



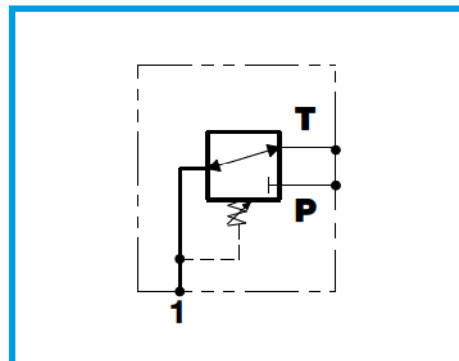
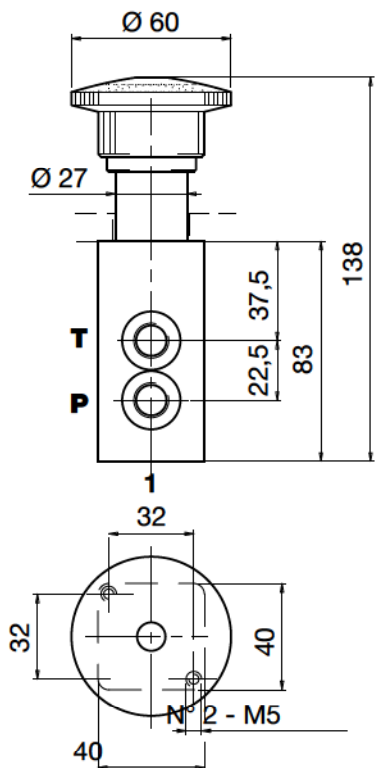
FORATURA DI MONTAGGIO
MOUNTING BORE
MONTAGEBOHRUNG



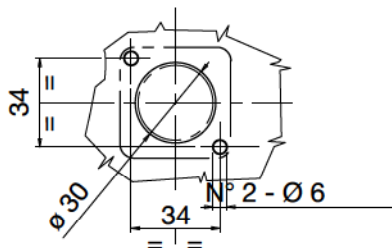
PEDALI
 PEDALS
 PEDALE

HPCF ... 9

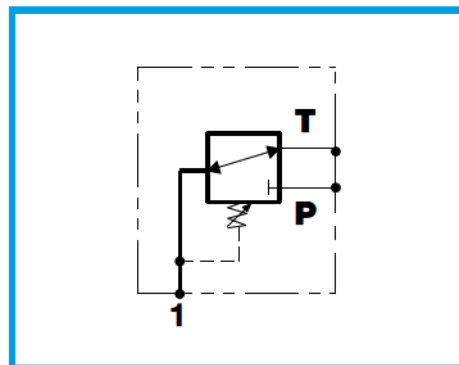
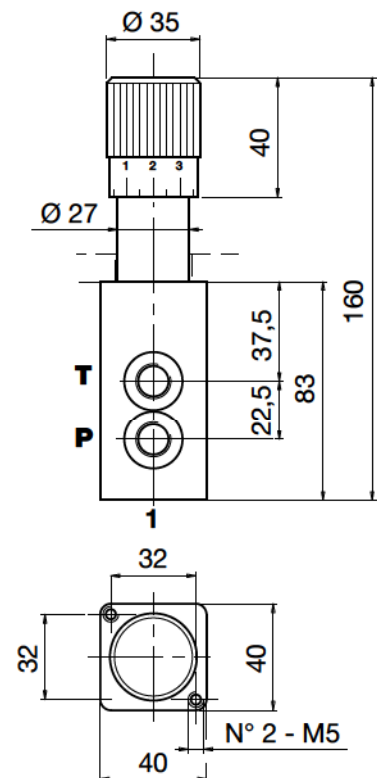
CORSA: 8.3 mm
 STROKE: 8.3 mm
 HUB: 8.3 mms



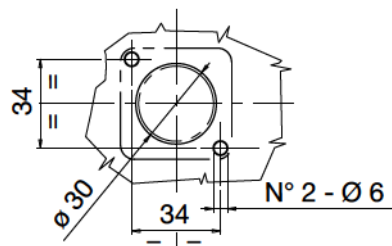
FORATURA DI MONTAGGIO
 MOUNTING BORE
 MONTAGEBOHRUNG



HPCF ... R



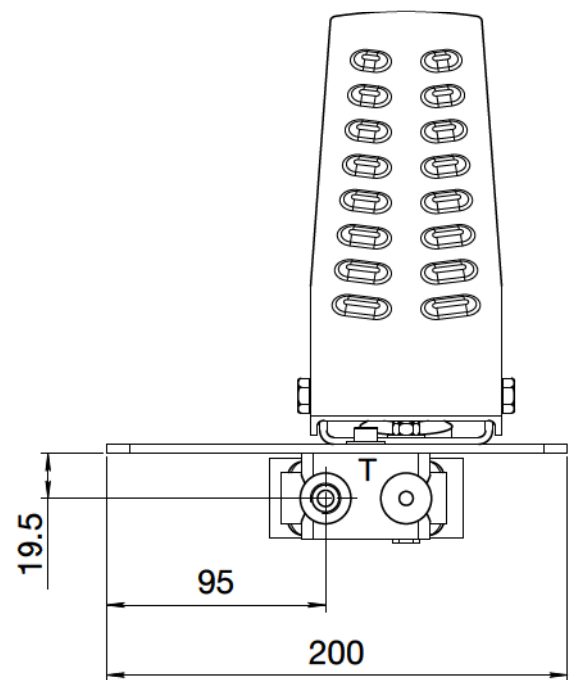
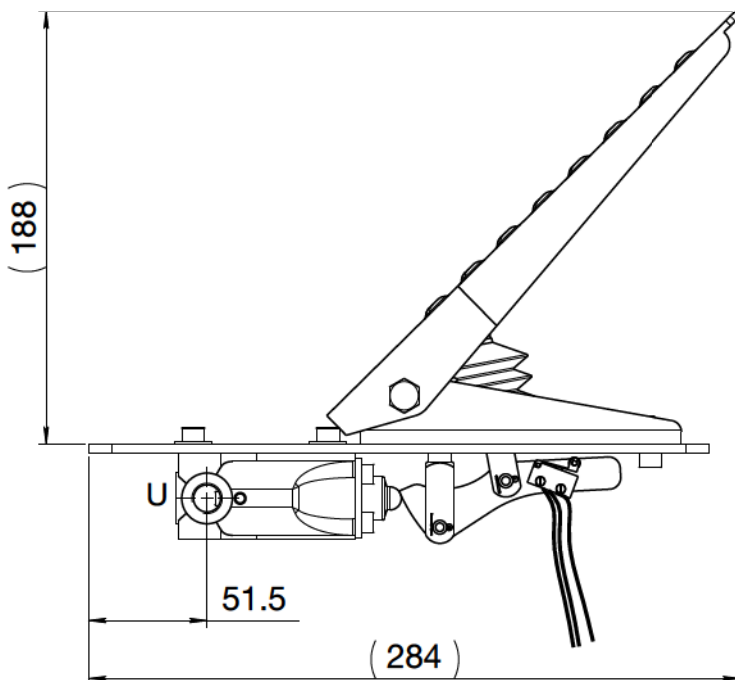
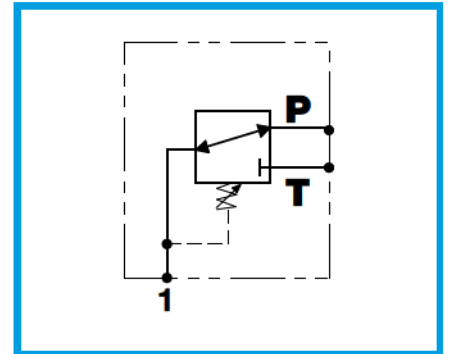
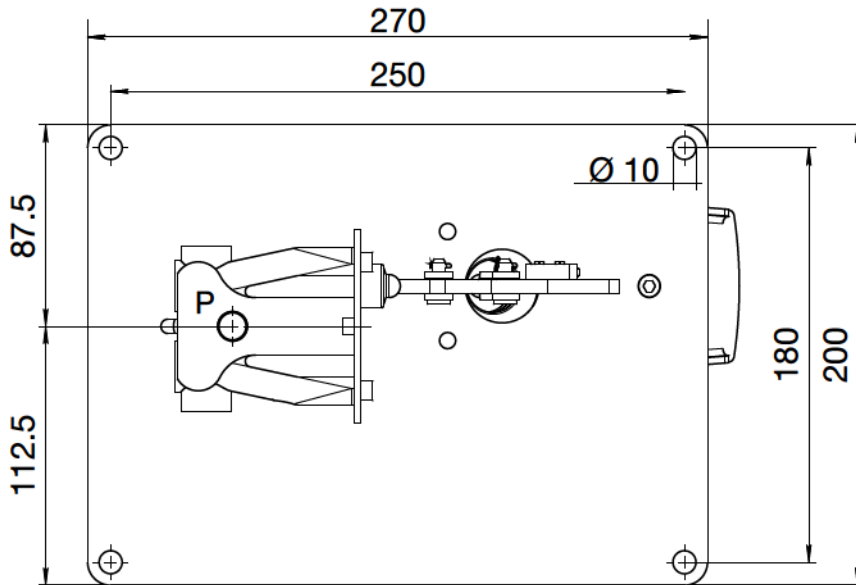
FORATURA DI MONTAGGIO
 MOUNTING BORE
 MONTAGEBOHRUNG



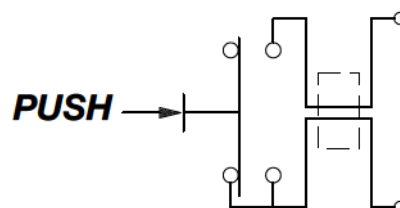


PEDALE LUNGO CON AZIONAMENTO A LEVA
LONG PEDAL, LEVER
LANGES PEDAL MIT HEBELBETÄTIGUNG

HPCF ... V



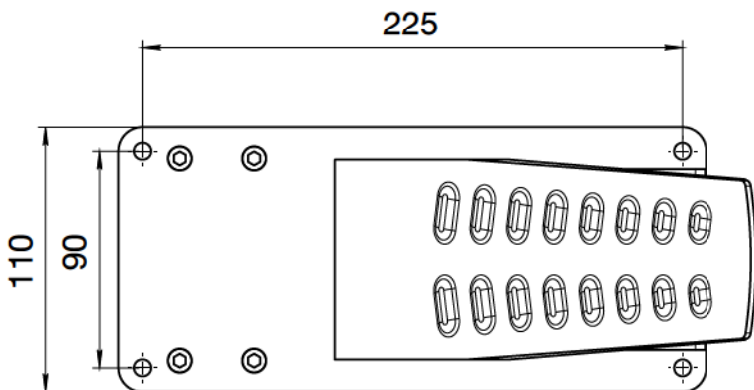
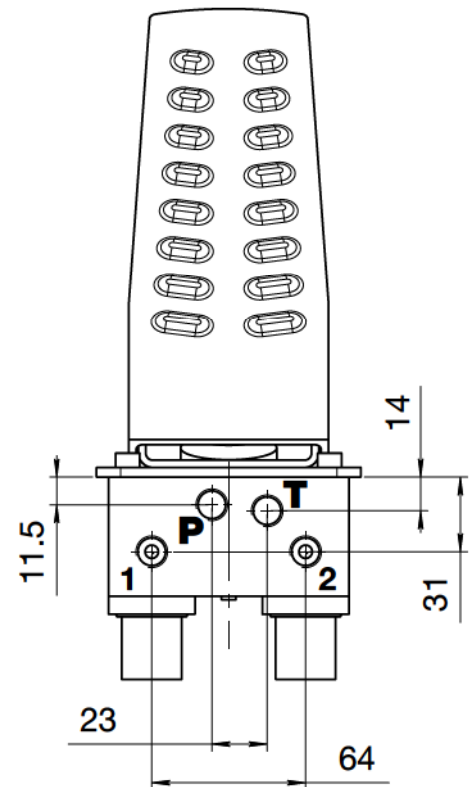
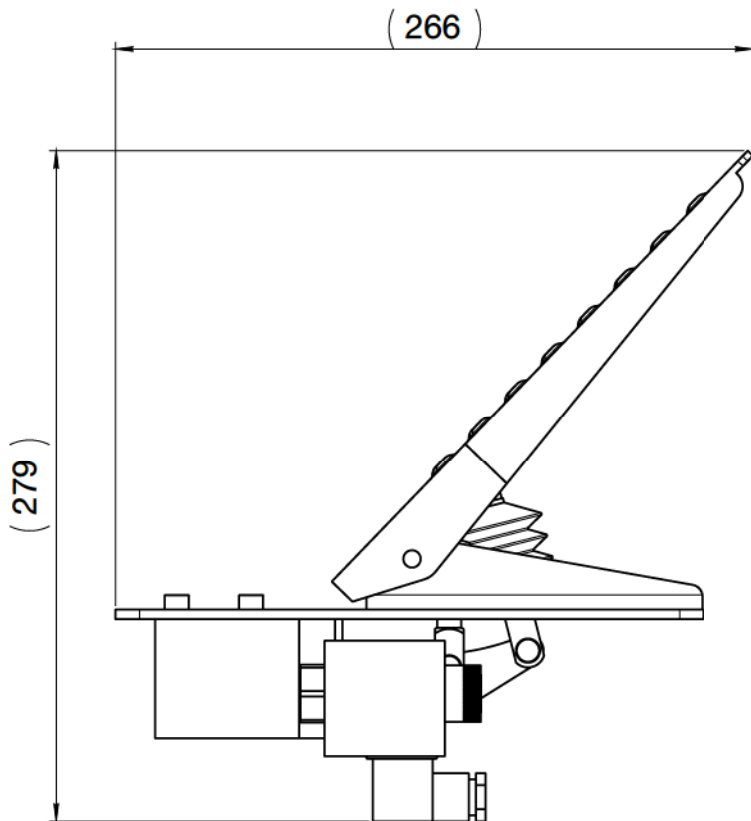
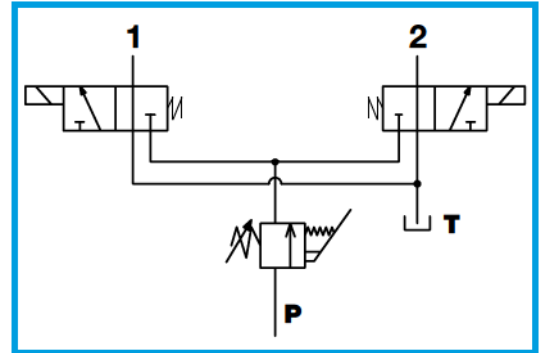
Disponibile a richiesta
a versione positiva
*Positive version
on request*
Auf Wunsch ist die positive
usführung erhältlich



CAPACITÁ MICRO: DC 12V x 2A
MICRO CAPACITY: DC 12V x 2A
MIKROKAPAZITÄT: DC 12V x 2A

PEDALIERA CON ELETTROVALVOLE SELETTRICI
PEDAL WITH DIRECTIONAL ELECTROVALVES
PEDAL MIT ELEKTRISCH GESTEUERTEN WAHLVENTILEN

HPCF ... 01





**ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG**

HPC F 0 G2 1 8 S P01 00 000

**SERIE
SERIES
SERIE**

**PRODOTTO
PRODUCT
PRODUKT**

F - Pedale
Pedal
Pedal

**MODELLI
MODELS
MODELLE**

0 = Standard
1 = Passo lungo (solo per pedale 1-4)
Long step (pedal 1-4 only)
Grosser Weg (nur für pedal 1-4)

**BOCCHIE STANDARD
STANDARD PORT
STANDARD ANSCHLÜSSE**

G2 = 1/4" gas-BSPP
U3 = SAE 9/16"-18UNF

**GUARNIZIONI
SEALS
DICHTUNGEN**

1 - NBR
2 - Viton

**VERSIONI SPECIALI
SPECIAL VERSIONS
SONDERAUSFÜHRUNGEN**

018 = Micro di 0 (solo per tipi 6,7,8)
024 = Pedale negativo con micro tipo V

018 = Neutral switch (only for types 6,7,8)
024 = Negative pedal with type V switch

018 = Nullpunkt-Mikroschalter (nur für Typen 6,7,8)
024 = Negatives Pedal mit Mikroschalter Typ V

**COMANDI ELETTRICI
ELECTRIC CONTROLS
ELEKTROSTEUERUNGEN**

00 = Nessun comando elettrico
01 = Con elettrovalvole selettici

00 = No power control
01 = With directional electrovalves

00 = Keine elektrische Steuerung
01 = Mit elektrisch gesteuerten wahlventilen

**CURVE
CURVES
KURVEN**

Vedere tabella pag. 26
See table pag. 26
Siehe Tabelle Seite 26

**POSIZIONATORE
POSITIONER
RASTER**

S = Ritorno a molla
Spring-back
Federrücklauf

**TIPI DI PEDALI
PEDAL TYPE
PEDAL TYP**

0 = Senza pedale
1 = Pedale basculante normale
2 = Pedale corto normale
3 = Pedale corto bombato
4 = Pedale con zeppa
5 = Pedale con zeppa alta
6 = Pedale singolo destro
7 = Pedale singolo sinistro
8 = Doppio pedale
9 = Pedale a pulsante
R = Regolatore di pressione
V = Pedale singolo a leva lungo

0 = Without pedal
1 = Standard toggle pedal
2 = Standard short pedal
3 = Convex short pedal
4 = Pedal with shim
5 = Pedal with high shim
6 = Single right pedal
7 = Single left pedal
8 = Double pedal
9 = Button pedal
R = Pressure regulator
V = Single long toggle lever pedal

0 = Ohne Pedal
1 = Normales Kippedal
2 = Normales kurzes Pedal
3 = Gewölbtes kurzes Pedal
4 = Kurzes Keilpedal
5 = Pedal mit angewinkeltem Keil
6 = Einzelnes Pedal rechts
7 = Einzelnes Pedal links
8 = Doppelpedal
9 = Tasterpedal
R = Pressure regulator
V = Langes pedal mit hebelbetätigung

L'unità di alimentazione preleva una parte di olio dal circuito principale e alimenta con una pressione regolata i servocomandi, senza la necessità di una pompa dedicata.

Essa costituisce un dispositivo di sicurezza, che rende disponibile una certa potenza per azionare i servocomandi quando la macchina è spenta.

Oltre al modello base sono disponibili configurazioni con elettrovalvole per interrompere l'alimentazione verso gli utilizzi e configurazioni con valvola unloading ed elettrovalvole per permettere il caricamento dell'accumulatore all'avviamento, qualora la pressione di precarica scenda sotto i 13 bar.

Nella versione senza accumulatore, l'unità di alimentazione può essere utilizzata come pura valvola riduttrice di pressione.

The power supply unit takes a portion of the oil contained in the circuit to feed servocontrols under a constant pressure. No special pump is required.

The power supply unit acts as a safety device, that supplies the necessary power to feed servocontrols when the machine is not operating.

Three versions are available:

- *Standard*
- *With solenoid operated valves to interrupt power to ports*

- *With unloading valve and solenoid operated valves to permit accumulator loading during startup (with a pre-loading pressure lower than 13 bar).*

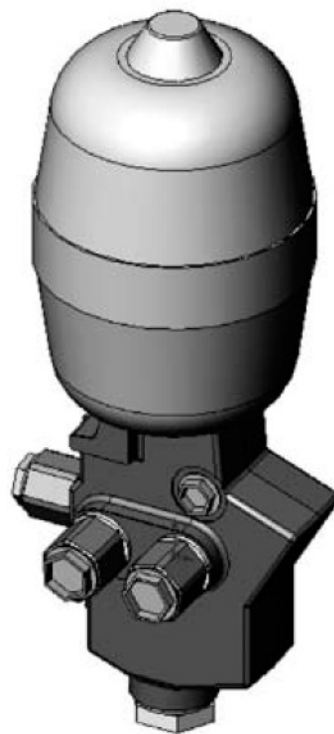
The power supply unit can act as pressure reducing valve on versions without accumulator.

Die Versorgungseinheit entnimmt einen Teil des Öls aus dem Hauptkreislauf und versorgt die Servosteuerungen mittels gesteuertem Druck, ohne dass eine Spezialpumpe dafür erforderlich ist.

Sie stellt eine Sicherheitsvorrichtung dar, die die notwendige Leistung zur Betätigung der Servosteuerungen liefert, wenn die Maschine ausgeschaltet ist.

Außer dem Standardmodell sind Ausführungen mit Magnetventilen zur Unterbrechung der Versorgung zu den Verbrauchern erhältlich sowie Ausführungen mit Entlastungsventilen und Magnetventilen, um das Laden des Akkumulators zu ermöglichen, wenn der Vorladedruck unter 13 Bar fallen sollte.

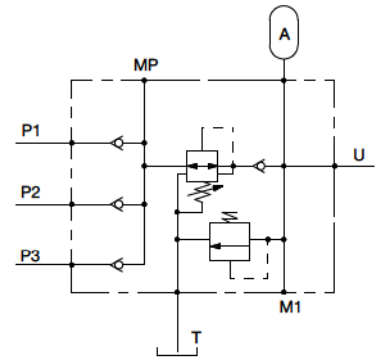
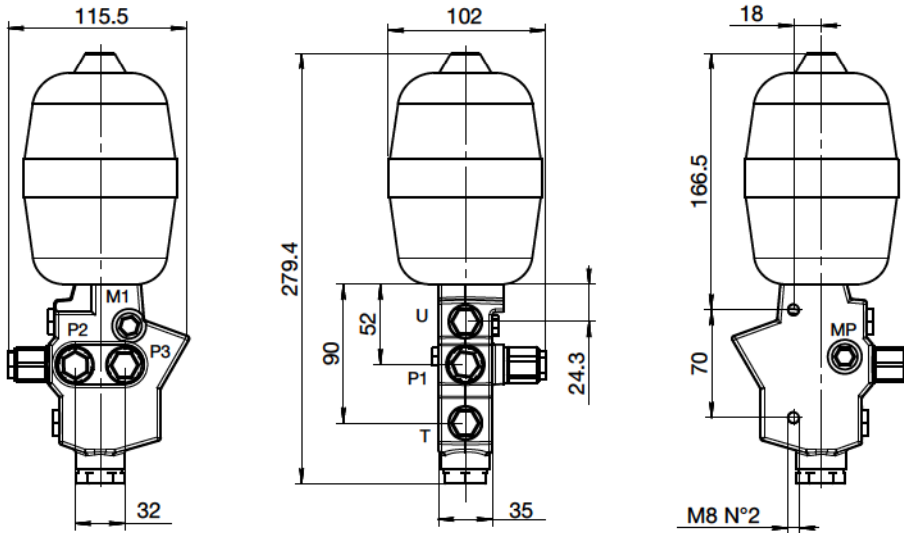
Bei Modellen ohne Akkumulator kann die Versorgungseinheit als Druckminderventil verwendet werden.





HPU0

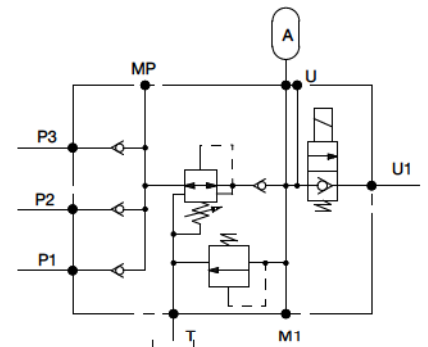
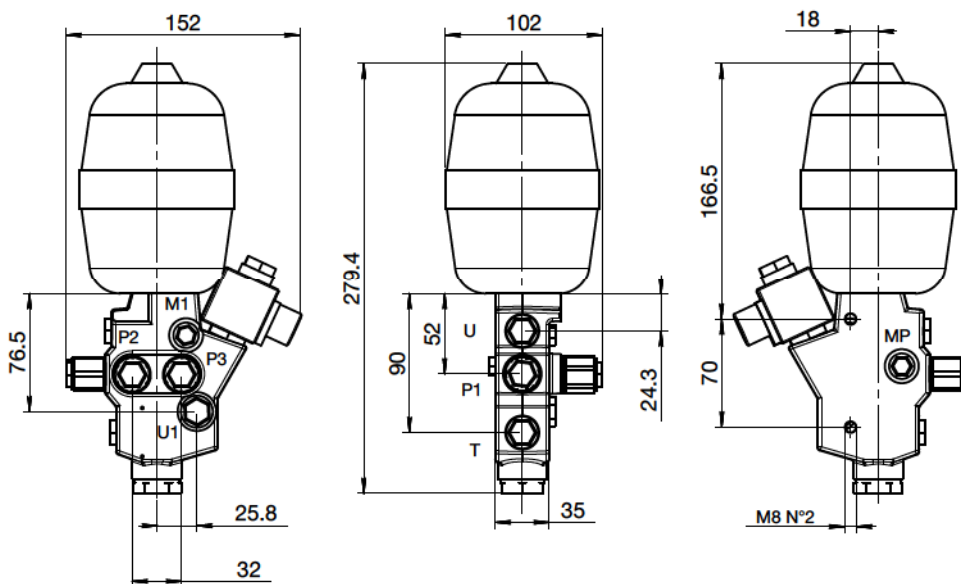
UNITÀ DI ALIMENTAZIONE BASE
STANDARD POWER SUPPLY UNIT
UNITÀ DI ALIMENTAZIONE BASE



MP, M1 = G 1/8"

HPUA/C

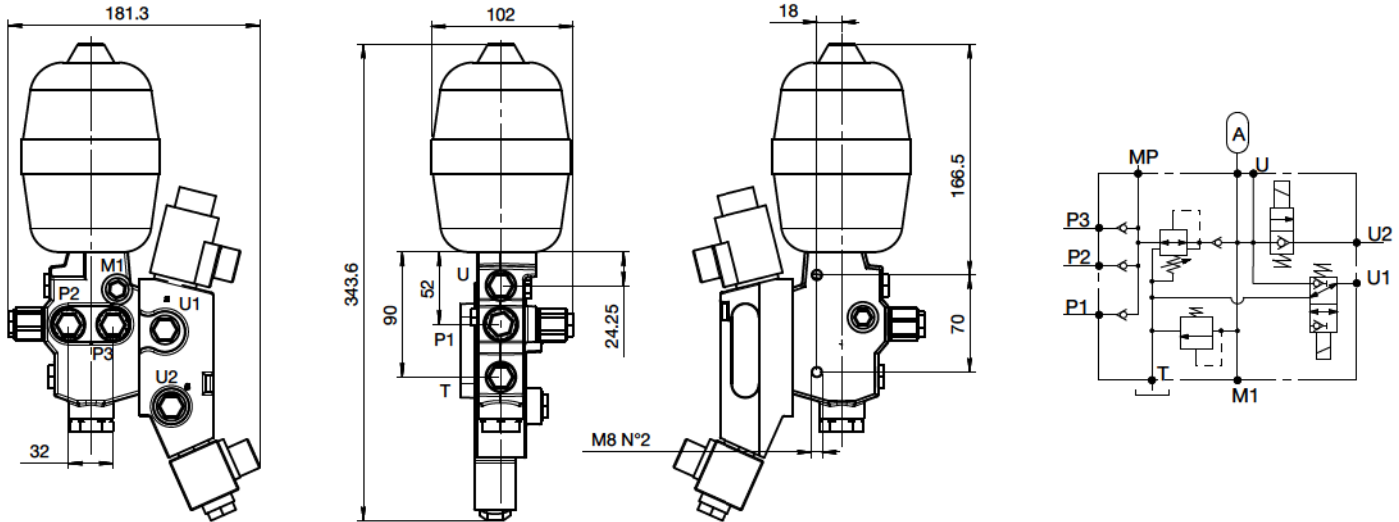
UNITÀ DI ALIMENTAZIONE CON UNA ELETTROVALVOLA (DUE O TRE VIE)
POWER SUPPLY UNIT WITH ONE SOLENOID OPERATED VALVE (2-WAY OR 3-WAY)
VERSORGUNGSEINHEIT MIT EINEM MAGNETVENTIL (2 ODER 3 WEGE)



MP, M1 = G 1/8"

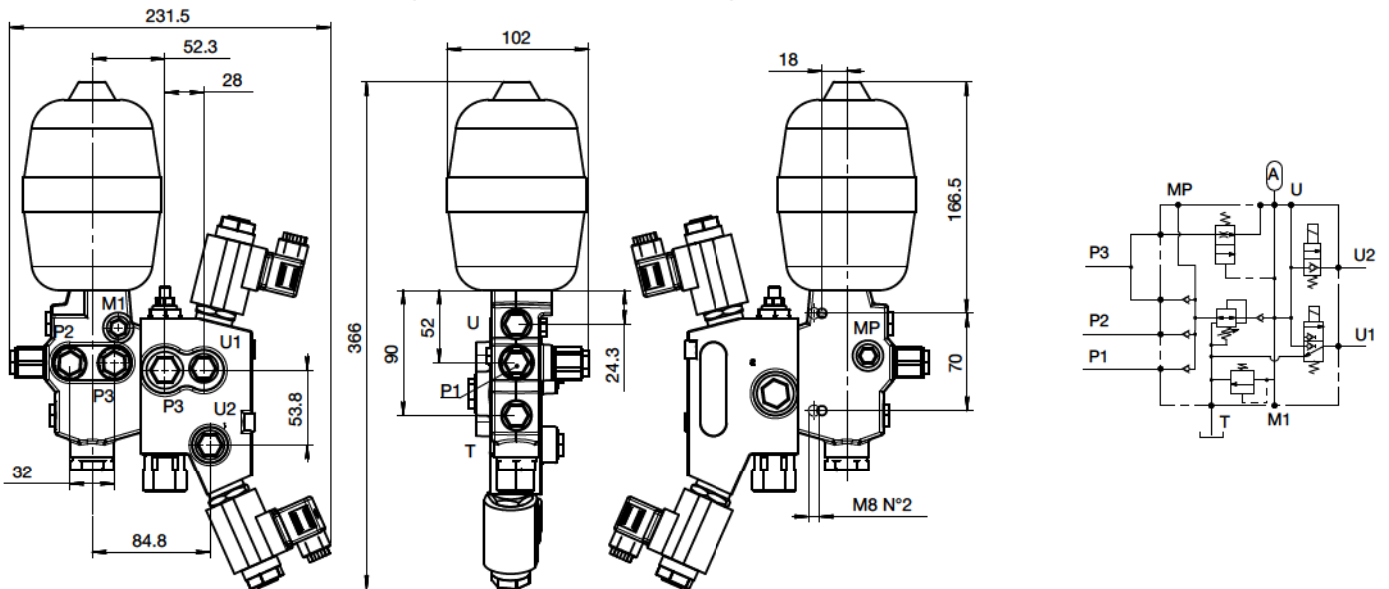
HPUB/D/E

UNITÀ DI ALIMENTAZIONE CON DUE ELETTROVALVOLE (DUE O TRE VIE)
POWER SUPPLY UNIT WITH TWO SOLENOID OPERATED (2-WAY OR 3-WAY)
VERSORGUNGSEINHEIT MIT ZWEI MAGNETVENTILEN (2 ODER 3 WEGE)

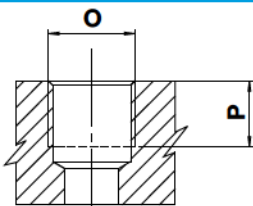


HPUF/G/H/I

UNITÀ DI ALIMENTAZIONE CON UNA O DUE ELETTROVALVOLE
(DUE O TRE VIE) E VALVOLA UNLOADING
POWER SUPPLY UNIT WITH ONE OR TWO SOLENOID OPERATED
(2-WAY OR 3-WAY) AND UNLOADING VALVE
VERSORGUNGSEINHEIT MIT EINEM ODER ZWEI MAGNETVENTILEN
(ZWEI ODER DREI WEGE) UND ENTLASTUNGSVENTIL



BOCCHIE - PORTS - ANSCHLÜSSE



TIPO TYPE TYP	O	P	
		mm	in
G2	1/4"	13	0,47
U3	9/16-18 UNF	13	0,47



**ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG**

HPU 0 0 0 G2 2 X 35 030 000

**SERIE
SERIES
SERIE**

**MODELLI
MODELS
MODELLE**

0 = Senza elettrovalvole (modello base)
A = Con una elettrovalvola 2 vie
B = Con due elettrovalvole 2 vie
C = Con una elettrovalvola 3 vie
D = Con due elettrovalvole 3 vie
E = Con una elettrovalvola 2 vie e una a 3 vie
F = Con unloading + 1 elettrovalvola a 2 vie
G = Con unloading + 2 elettrovalvole a 2 vie
H = Con unloading + 1 elettrovalvola a 3 vie
I = Con unloading + 2 elettrovalvole a 3 vie

0 = No solenoid operated valve
(standard version)

A = One solenoid operated valve, 2-way
B = Two solenoid operated valves, 2-way
C = One solenoid operated valve, 3-way
D = Two solenoid operated valves, 3-way

E = 2-Way solenoid operated valve
+ 3-way solenoid operated valve

F = Unloading valve + one solenoid
operated valve, 2-way

G = Unloading valve + two solenoid
operated valves, 2-way

H = Unloading valve + one solenoid
operated valve, 3-way

I = Unloading valve + two solenoid
operated valves, 3-way

0 = ohne elektrisch gesteuertes Ventil
(Standardausführung)

A = Mit einem elektrisch gesteuerten
2-Wege-Ventil

B = Mit zwei elektrisch gesteuerten
2-Wege-Ventilen

C = Mit einem elektrisch gesteuerten
3-Wege-Ventil

D = Mit zwei elektrisch gesteuerten
3-Wege-Ventilen

E = Mit einem elektrisch gesteuerten 2-Wege-Ventil
+ einem elektrisch gesteuerten 3-Wege-Ventil

F = Mit Entlastungsventil + ein elektrisch
gesteuertes 2-Wege-Ventil

G = Mit Entlastungsventil + 2 elektrisch gesteuerte
2-Wege-Ventile

H = Mit Entlastungsventil + 1 elektrisch gesteuertes
3-Wege-Ventil

I = Mit Entlastungsventil + 2 elektrisch gesteuerte
3-Wege-Ventile

TIPO DI ELETTROVALVOLA

**NUMBER OF INLETS
TYP DES ELEKTRISCH GESTEUERTEN VENTILS**

0 = Senza elettrovalvola (mod. base)
A = Normalmente aperta
C = Normalmente chiusa

0 = No solenoid operated valve (mod. standard)
A = Normally open
C = Normally closed

0 = Ohne elektrisch gesteuertes Ventil (Standardausf.)
A = Stromlos offen
C = Stromlos geschlossen

0 = Ohne elektrisch gesteuertes Ventil (Standardausf.)
A = Stromlos offen
C = Stromlos geschlossen

**VERSIONI SPECIALI
SPECIAL VERSIONS
SONDERAUSFÜHRUNGEN**

000 = Nessuna applicazione
No fittings
Keine Sonderausführungen

**TARATURA VALVOLA RIDUTTRICE
REDUCING VALVE SETTING
DRUCKEINSTELLUNG DES
DRUCKREDUZIERVENTILS**

25/60 BAR

**CAPACITÀ ACCUMULATORE
ACCUMULATOR CAPACITY
AKKUMULATORKAPAZITÄT**

00 = Senza accumulatore
No accumulator
Ohne Speicher

35 = 0,35 l

75 = 0,75 l

**G 1/8" OR 7/16-20 UNF
PRESE DI PRESSIONE
PRESSURE INTAKE
DRUCKANSCHLÜSSE**

0 = Senza presa di pressione

X = Presa sull'alta pressione (MP)

Y = Presa sulla pressione ridotta (M1)

Z = Presa su entrambe (MP+M1)

0 = No pressure intake

X = High pressure intake (MP)

Y = Reduced pressure intake (M1)

Z = Both intakes (MP+M1)

0 = Ohne Druckanschluss

X = Hochdruckanschluss (MP)

Y = Anschluss reduzierter Druck (M1)

Z = Beide Anschlüsse (MP+M1)

**NUMERO DI INGRESSI
NUMBER OF INLETS
ANZAHL DER EINGÄNGE**

1 = 1 Ingresso alta pressione

2 = 2 Ingressi alta pressione

3 = 3 Ingressi alta pressione

1 = 1 inlet, high pressure

2 = 2 inlets, high pressure

3 = 3 inlets, high pressure

1 = 1 Eingang Hochdruck

2 = 2 Eingänge Hochdruck

3 = 3 Eingänge Hochdruck

**BOCCHIE STANDARD P.T.U.
STANDARD PORT P.T.U.
STANDARDANSCHLÜSSE P.T.U.**

G2 = 1/4" gas-BSPP

U3 = SAE 9/16"-18UNF

**TENSIONE DI ALIMENTAZIONE ELETTROVALVOLA
SOLENOID VALVE INPUT POWER
VERSORGUNGSSPANNUNG ELEKTRISCH GESTEUERTES VENTIL**

0 = Senza elettrovalvola (mod. base)

No solenoid operated valve (mod. standard)

Ohne elektrisch gesteuertes Ventil (Standardausf.)

1 = 12 Volt cc

2 = 24 Volt cc