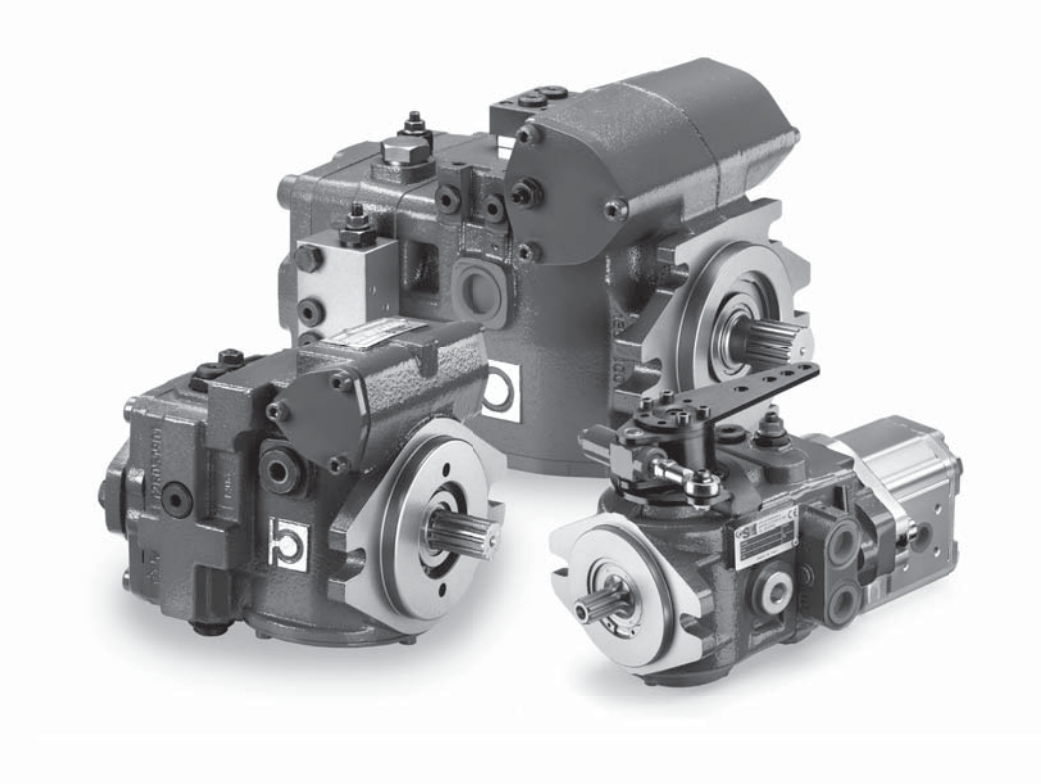
POMPE E MOTORI A PISTONI ASSIALI PER CIRCUITO CHIUSO

CLOSED CIRCUIT AXIAL PISTON PUMPS AND MOTORS

AXIALKOLBENPUMPEN-MOTOREN FÜR DEN GESCHLOSSENEN KREISLAUF

CP013



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ISTRUZIONI GENERALI DI IMPIEGO
OPERATING INSTRUCTIONS
ALLGEMEINE GEBRAUCHSANWEISUNGEN

BONDIOLI & PAVESI HP Hydraulic

CARATTERISTICHE FUNZIONALI
Le curve caratteristiche rappresentate nel presente catalogo sono tipiche di prodotti di produzione calcolati e testati in laboratorio e non necessariamente rappresentative di ogni unità.

CONSERVAZIONE A MAGAZZINO
I componenti idraulici vanno conservati nel loro imballaggio in luogo asciutto, lontano dall'irraggiamento solare o da sorgenti di calore o di ozono, in un ambiente con temperatura compresa tra -20°C e +50°C.

FLUIDO IDRAULICO
Si raccomanda di utilizzare fluidi idraulici definiti dalla norma ISO 6743-4.

TEMPERATURE LIMITE DI FUNZIONAMENTO
Temperatura minima -20°C.
Temperatura massima continua +85°C.
Temperatura massima di picco +100°C.
L'esercizio con fluido a temperatura superiore a +85°C comporta un precoce decadimento delle caratteristiche funzionali delle guarnizioni impiegate. (NBR).

VISCOSITÀ
Deve essere verificata la rispondenza alla viscosità del fluido, richiesta per il corretto funzionamento: minima 10 mm^2/s (per brevi periodi), massima 1000 mm^2/s (per brevi periodi alla partenza), viscosità raccomandata 15-90 mm^2/s.

PRESSIONE DI FUNZIONAMENTO IN ASPIRAZIONE
Pressione massima assoluta:
P min 0,8 bar - P max 2 bar.

PRESSIONE DI DRENAGGIO
Pressione massima assoluta: 2 bar.

GRADO DI FILTRAZIONE
La classe di contaminazione consigliata per pompe e servocomandi è la seguente:
Classe ISO4406 20/18/15 (NAS1638 - 9)

INSTALLAZIONE
Prima di far funzionare i componenti idraulici, assicurarsi che tutto il circuito idraulico sia accuratamente riempito d'olio e disareato.
Filtrare l'olio di riempimento in modo da garantire la classe ISO o NAS richiesta.
Prevedere nel circuito un sistema di filtraggio che garantisca la classe ISO o NAS richiesta.
Avviare l'impianto lentamente a vuoto, facendolo spurgare bene dell'aria residua prima di applicare il carico.
Sostituire i filtri dopo le prime 50 ore di lavoro.
Sostituire il filtro del circuito idraulico ogni 500 ore di funzionamento. Sostituire il fluido idraulico come da specifiche del fornitore.
In caso di mancato funzionamento dei componenti idraulici non insistere inutilmente; ricontrollare la corretta esecuzione dell'impianto ed eventualmente contattare il servizio tecnico.

Operare sempre prestando la massima attenzione agli organi in movimento; non utilizzare indumenti larghi o svolazzanti.
Non approssimarsi a ruote, cingoli, trasmissioni a catena o ad albero non adeguatamente protette ed in movimento, o che potrebbero iniziare a muoversi in qualsiasi istante senza preavviso.
Non svitare e scollegare raccordi e tubi con il motore in moto.
Evitare le fughe di olio, per prevenire l'inquinamento ambientale.
Non dirigere getti d'acqua direttamente sui componenti idraulici.
SM Oleodinamica e HP Hydraulic si sollevano da ogni responsabilità riguardante la non osservanza di queste indicazioni e del rispetto delle normative di sicurezza vigenti, anche se non contemplate nel presente manuale.

FUNCTIONAL FEATURES
The characteristic curves represented in this catalogue are typical of laboratory calculated and tested production products and do not necessarily represent each unit.

WAREHOUSE STORAGE
The hydraulic components must be kept in their packaging in a dry place, away from sunlight or sources of heat or ozone, at a temperature between -20°C e +50°C

HYDRAULIC FLUID
We recommend using hydraulic fluids defined by the standard ISO 6743-4

OPERATING LIMIT TEMPERATURES
Minimum temperature -20°C
Maximum continuous temperature +85°C
Maximum peak temperature +100°C
Operating with fluid at temperatures higher than +85°C entails early wear of the functional features of the gaskets used. (NBR)

VISCOSITY
The correspondence of the fluid to the viscosity required for correct operation must be checked:
minimum 10 mm^2/s (for short periods),
maximum 1000 mm^2/s (for short periods when starting), recommended viscosity 15-90 mm^2/s.

INTAKE OPERATING PRESSURE
Maximum absolute value:
P min 0.8 bar - P max 2 bar

DRAIN PRESSURE
Maximum absolute pressure: 2 bar

FILTERING DEGREE
The recommended contamination class for pumps and servocontrols is the following:
Class ISO4406 20/18/15 (NAS1638 - 9)

INSTALLATION
Before operating the hydraulic components, make sure that the entire hydraulic circuit is completely filled with oil and deaerated.
Filter the filling oil in order to guarantee the required ISO or NAS class.
Provide a filtering system in the circuit which guarantees the required ISO or NAS class.
Start the system slowly unloaded, properly purging residual air before applying the load.
Replace the filters after the first 50 hours of work.
Replace the filter of the hydraulic circuit every 500 hours of work.
Replace the hydraulic filter according to the supplier's specifications.
If the hydraulic components do not work, do not insist in trying them to no avail; recheck the correct execution of the system and contact the technical service if needed.

Always pay the utmost attention to moving parts when operating; do not wear wide or loose clothing.
Do not approach wheels, belts, chain or shaft transmissions which are inadequately protected or in movement or which could start moving suddenly without forewarning.
Do not unscrew or disconnect fittings and pipes with the motor running.
Avoid oil leakage to prevent environmental pollution.
Do not spray water directly on hydraulic components.
SM Oleodinamica and HP Hydraulic will not be held liable for failure to comply with these indications and with safety standards in force even if not considered in this manual.

FUNKTIONSEIGENSCHAFTEN
Die in dem vorliegenden Katalog dargestellten Kennlinien sind typisch für Produkte, die im Labor berechnet und getestet wurden und sind nicht unbedingt für jede Einheit charakteristisch.

LAGERUNG
Die hydraulischen Komponenten sind in ihrer Verpackung in einem trockenen Raum, fern von Sonneneinstrahlung und Wärme- oder Ozonquellen, bei einer Umgebungstemperatur zwischen -20°C und +50°C aufzubewahren.

HYDRAULIKFLUID
Es wird empfohlen, Hydraulikfluide zu verwenden, die der Norm ISO 6743-4 entsprechen.

GRENZWERTE BETRIEBSTEMPERATUREN
Mindesttemperatur -20°C
Höchsttemperatur (durchgehend) +85°C
Höchsttemperatur (Spitzenwert) +100°C
Der Betrieb mit dem Fluid bei einer Temperatur über + 85°C führt zu einem vorzeitigen Verfall der Funktionseigenschaften der verwendeten Dichtungen. (NBR)

VISKOSITÄT
Es ist zu überprüfen, dass die Viskosität des Fluids für den einwandfreien Betrieb geeignet ist:
mindestens 10 mm^2/s (über kurze Zeiträume), höchstens 1000 mm^2/s (über kurze Zeiträume beim Starten), empfohlene Viskosität 15-90 mm^2/s.

BETRIEBSDRUCK EINGANGSSEITIG
Absoluter Höchstdruck:
P min 0,8 bar - P max 2 bar

ABLASSDRUCK
Absoluter Höchstdruck: 2 bar

FILTRATIONSGRAD
Für Pumpen und Servosteuerungen wird folgende Reinheitsklasse empfohlen:
Klasse ISO4406 20/18/15 (NAS1638 - 9)

INSTALLATION
Vor Inbetriebnahme der hydraulischen Komponenten, ist sicherzustellen, dass der gesamte Hydraulikkreis entsprechend mit Öl befüllt und entlüftet wurde. Das Öl für die Befüllung ist so zu filtern, dass die Einhaltung der geforderten ISO- oder NAS-Klassen gewährleistet werden kann. Im Kreislauf ist ein Filtrationssystem vorzusehen, das die Einhaltung der geforderten ISO- oder NAS-Klasse gewährleistet. Die Anlage langsam leer in Betrieb nehmen und vor Lastaufbringung die vorhandene Restluft vollständig entweichen lassen. Die Filter nach den ersten 50 Betriebsstunden auswechseln. Den Filter des Hydraulikkreises jeweils nach 500 Betriebsstunden auswechseln. Für den Austausch des Hydraulikfilters sind die Spezifikationen des Herstellers zu berücksichtigen. Bei einer Funktionsstörung der hydraulischen Komponenten den Betrieb unterbrechen, die korrekte Ausführung der Anlage überprüfen und gegebenenfalls den Technischen Kundendienst kontaktieren.

Bei Durchführung der Tätigkeiten immer besonders auf in Bewegung befindliche Elemente achten; keine weite oder flatternde Kleidung tragen. Sich niemals Rädern, Raupenketten, Ketten- oder Wellenantrieben nähern, die nicht ausreichend geschützt und in Bewegung sind bzw. sich jederzeit ohne Vorankündigung in Bewegung setzen könnten.
Niemals Verbindungsstücke und Rohre bei laufendem Motor lösen und entfernen.
Zur Vorbeugung von Umweltverschmutzungen sind Ölleckagen zu vermeiden. Niemals Wasserstrahlen direkt auf die Hydraulikkomponenten richten.
Im Fall der Nichtbeachtung dieser Anweisungen und der gültigen Sicherheitsnormen, auch wenn diese im vorliegenden Handbuch nicht angeführt, lehnt SM Oleodinamica und HP Hydraulic jegliche Verantwortung ab.

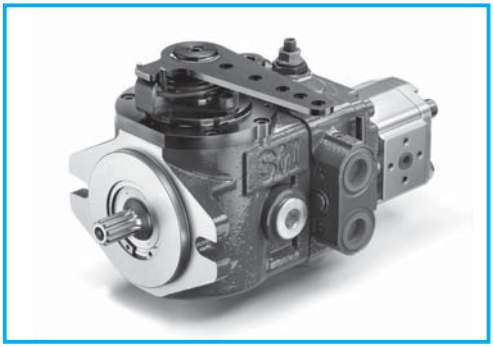
SM PL

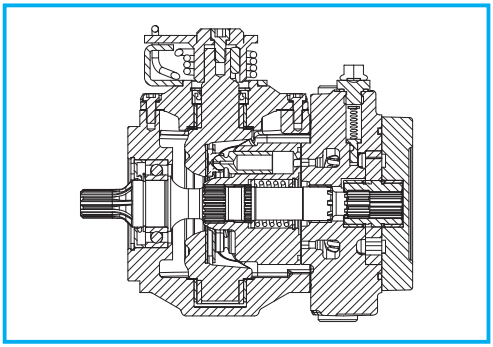
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

Le pompe a pistoni assiali serie SM PL sono state concepite per operare in circuito chiuso.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 230 bar di picco.
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

Axial piston pumps series SM PL have been designed to operate in a closed circuit.
The available control systems make it easy to use these pumps in any application for industrial and mobile fields.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working peak pressure up to 230 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie SM PL wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die verschiedenen lieferbaren Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen ermöglichen, wie von modernen Antriebsaggregaten gefordert, den Einsatz bei hohen Pumpendrehzahlen, wobei ein kontinuierlicher Arbeitsdruck mit einem Spitzenwert von 230 Bar gewährleistet ist.
Unter Anwendung der auf Anfrage erhältlichen Anbauflansche können die Pumpen in der Tandemversion geliefert werden.





DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK						VELOCITÀ *DI ROTAZIONE SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
			CONTINUA *CONTINUOUS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
SM PL	7	0,43	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	8	0,49	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	9	0,55	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	10	0,61	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	11	0,67	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	12	0,73	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	13	0,80	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	14	0,85	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	16	0,98	180	2610	210	3045	230	3335	3600	500	8,5	18,7
	18	1,10	180	2610	210	3045	230	3335	3600	500	8,5	18,7

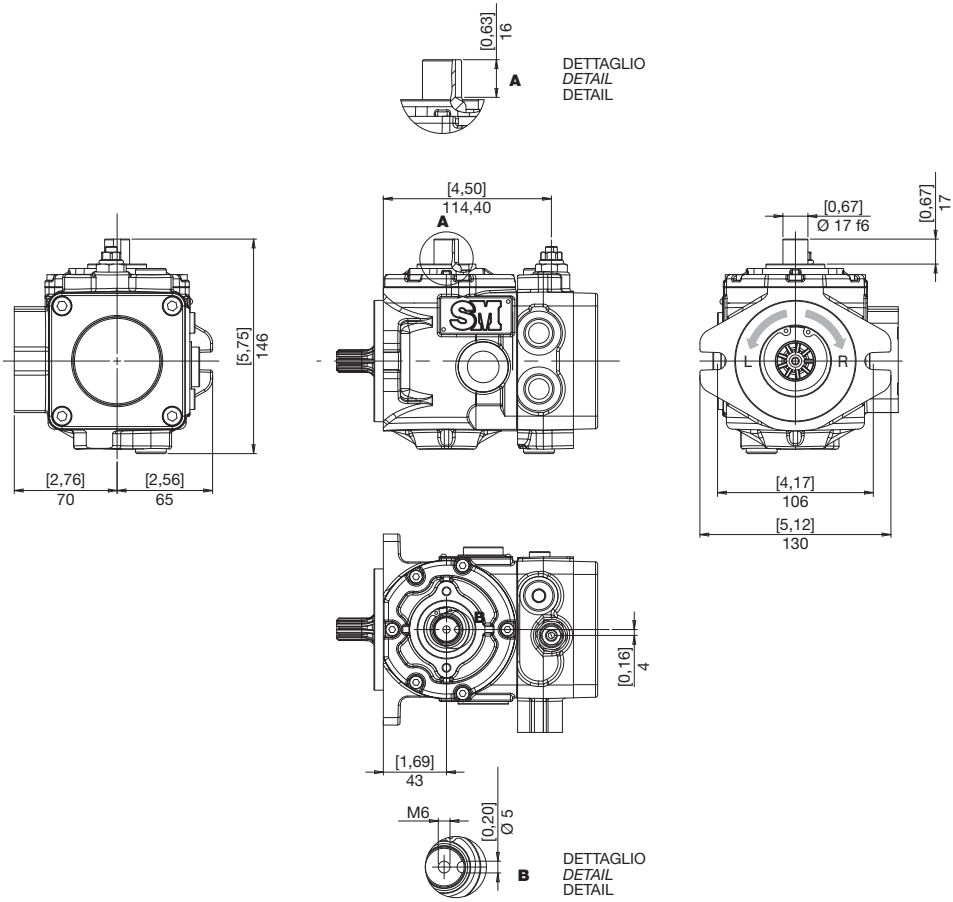
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
SM PL	5	0,30	12	174

MOMENTO POLARE DI INERZIA
INERTIAL MASS
TRÄGHEITSMOMENT

approx. $4,3 \times 10^{-4}$ Kg m²

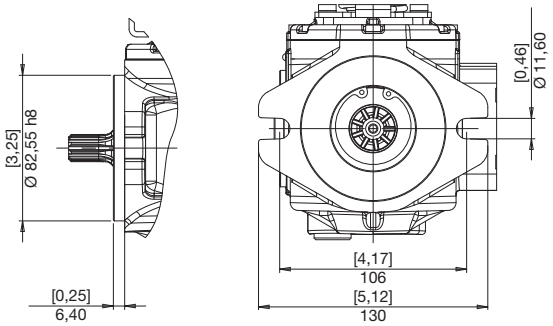
DIMENSIONI
SIZE
ABMESSUNGEN



FLANGE
FLANGES
FLANSCHE

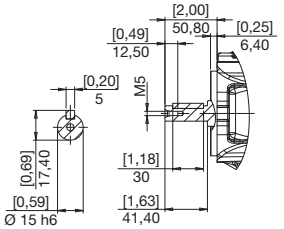
SM PL

A SAE A
SAE A
SAE A

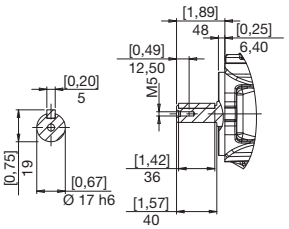


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

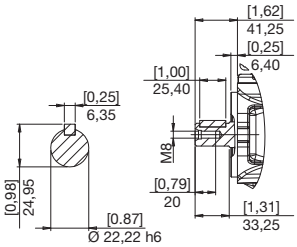
A COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **65 N•m**



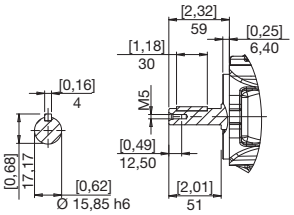
D COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **130 N•m**



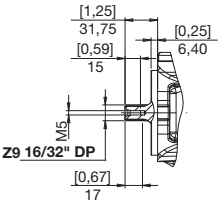
J COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **180 N•m**



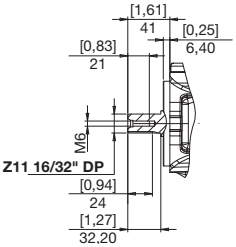
P COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **70 N•m**



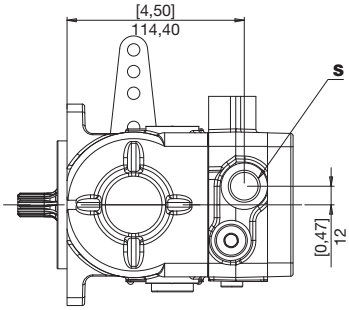
V COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **120 N•m**

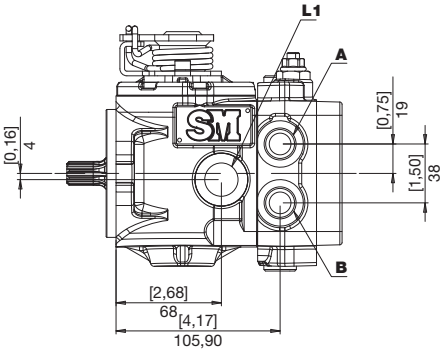


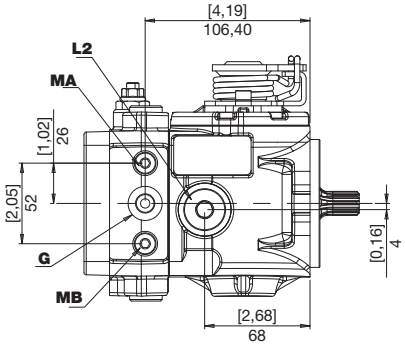
X COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **160 N•m**



BOCCHE
PORTS
ANSCHLÜSSE



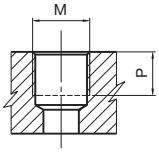




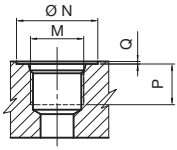
A **B**	Utilizzi *Use* Verbraucher	**G**	Presa bassa pressione *Test port boost pressure* Messanschluß Speisedruck
L1 **L2**	Drenaggi *Drain* Leckölanschluss	**MA** **MB**	Presa alta pressione *Test port high pressure* Messanschluß Hochdruck
S	Aspirazione *Feeding pump inlet* Sauganschluß Speisepumpe		

BOCCHE
PORTS
ANSCHLÜSSE

SM PL



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G1	1/8” GAS BSPP	8	8	0,31
G2	1/4” GAS BSPP	17	9	0,35
G4	1/2” GAS BSPP	70	14,5	0,57



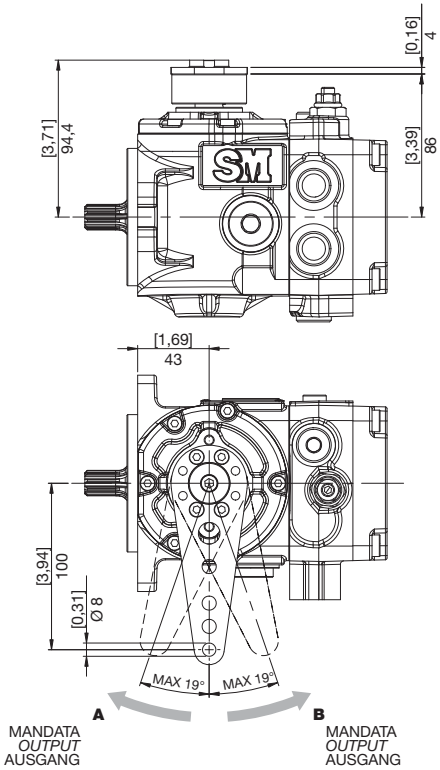
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U5	5/8”	34	1,34	18	0,71	0,3	0,01	3/4-16 UNF	70

COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

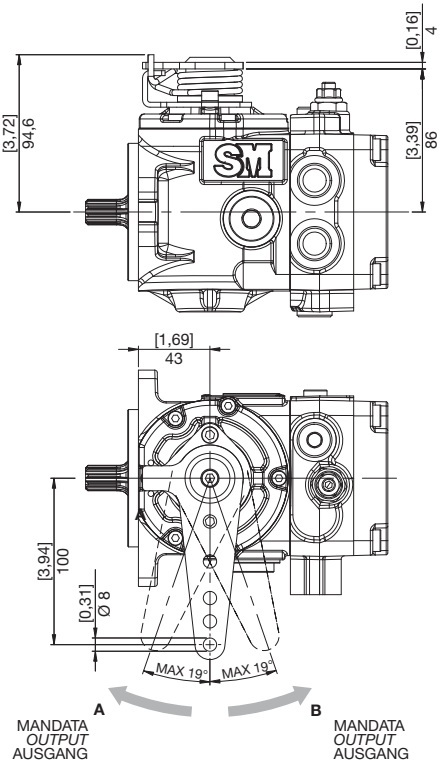
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGI *DRAIN* LECKÖLANSCHLUSS	PRESE PRESSIONE PRESSURE INTAKE DRUCKANSCHLÜSSE	
				MA-MB	G
G	G4	G4	G4	G1	G2
U	U5	U5	U5	G1	U2

COMANDI
CONTROLS
STEUERUNGEN

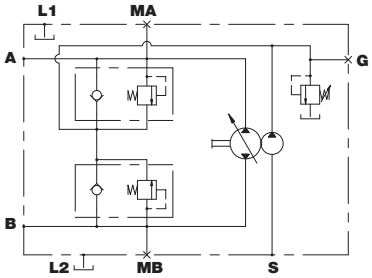
L MANUALE SENZA AZZERATORE
MANUAL WITHOUT ZEROING
MANUELL OHNE NULLSTELLUNG



M MANUALE CON AZZERATORE
MANUAL WITH ZEROING
MANUELL MIT NULLSTELLUNG



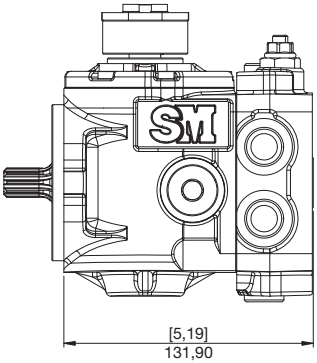
L M



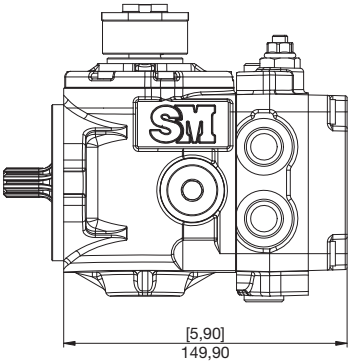
PREDISPOSIZIONI
VERSION
BAUART

SM PL

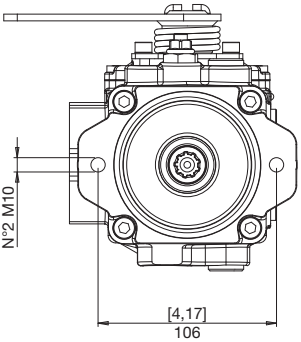
0 NESSUNA PREDISPOSIZIONE SENZA POMPA SOVRALIMENTAZIONE
NO AUXILIARY MOUNT WITHOUT CHARGE PUMP
OHNE ANSCHLUSSFLANSCH, OHNE SPEISEPUMPE



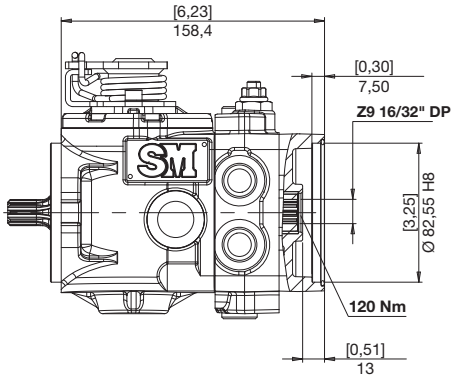
1 NESSUNA PREDISPOSIZIONE CON POMPA SOVRALIMENTAZIONE
NO AUXILIARY MOUNT WITH CHARGE PUMP
OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE



2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH CHARGE PUMP
SAE A MIT SPEISEPUMPE



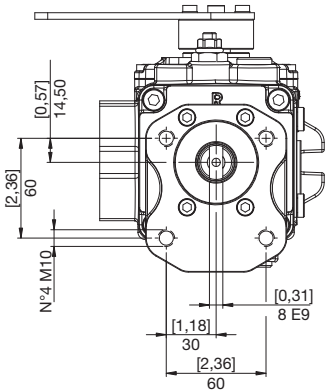
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT CHARGE PUMP
SAE A OHNE SPEISEPUMPE

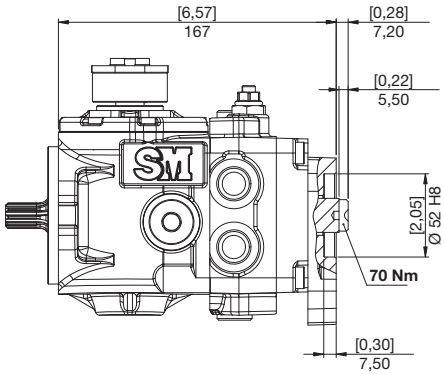


PREDISPOSIZIONI
VERSION
BAUART

4

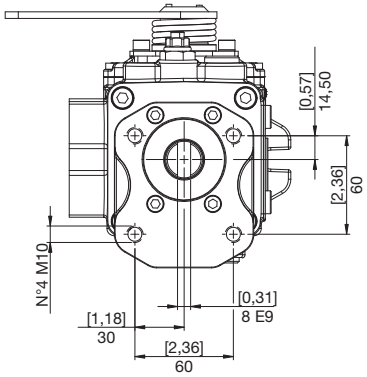
POMPA INGRANAGGI GRUPPO 2 FLANGIA TEDESCA D 52 CON POMPA SOVRALIMENTAZIONE
GROUP 2 GEAR PUMP GERMAN FLANGE D 52 WITH CHARGE PUMP
BAUREIHE 2 ZAHNRADPUMPE DIN NORM FLANSCHE D 52 MIT SPEISEPUMPE

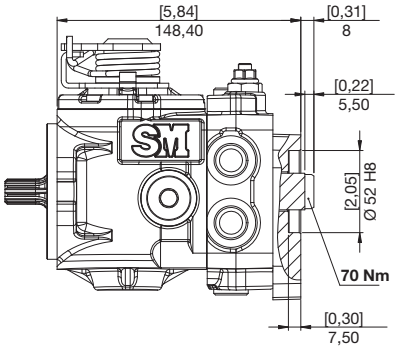




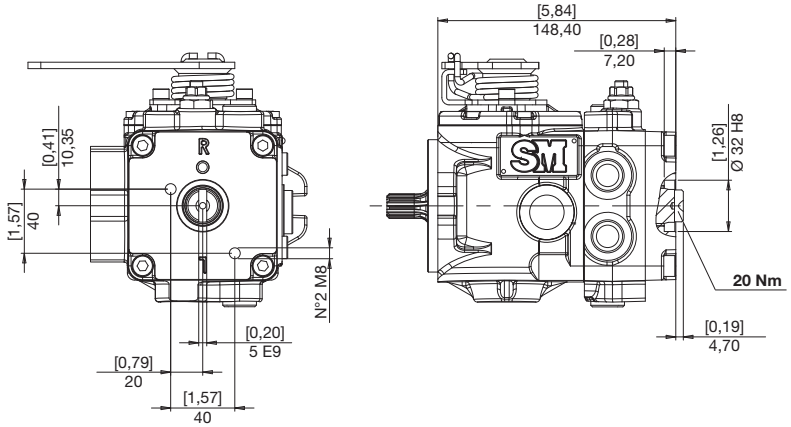
7

POMPA INGRANAGGI GRUPPO 2 FLANGIA TEDESCA D 52 SENZA POMPA SOVRALIMENTAZIONE
GROUP 2 GEAR PUMP GERMAN FLANGE D 52 WITHOUT CHARGE PUMP
BAUREIHE 2 ZAHNRADPUMPE DIN NORM FLANSCHE D 52 OHNE SPEISEPUMPE

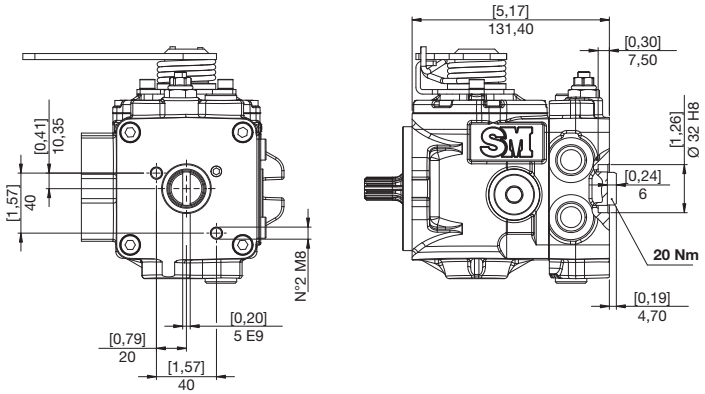




8 POMPA INGRANAGGI GRUPPO 1 CON POMPA SOVRALIMENTAZIONE
GROUP 1 GEAR PUMP WITH CHARGE PUMP
BAUREIHE 1 ZAHNRADPUMPE MIT SPEISEPUMPE

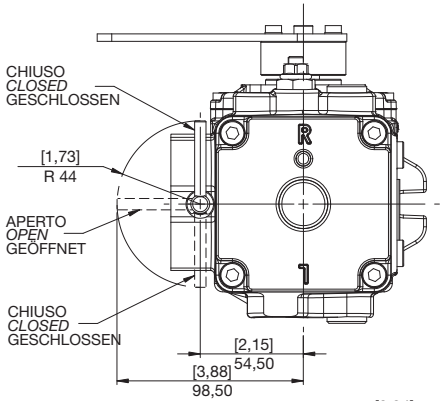


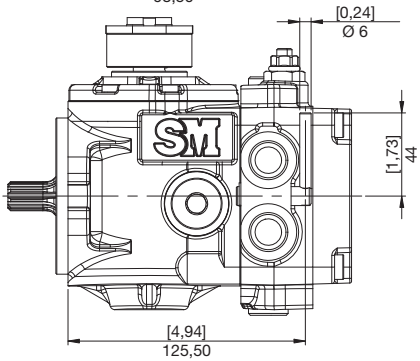
9 POMPA INGRANAGGI GRUPPO 1 SENZA POMPA SOVRALIMENTAZIONE
GROUP 1 GEAR PUMP WITHOUT CHARGE PUMP
BAUREIHE 1 ZAHNRADPUMPE OHNE SPEISEPUMPE

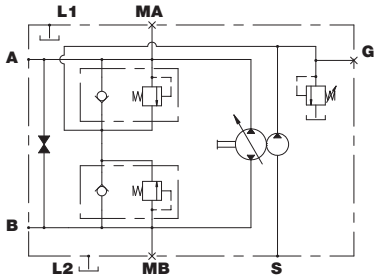


ACCESSORI
ACCESSORIES
ZUBEHÖR

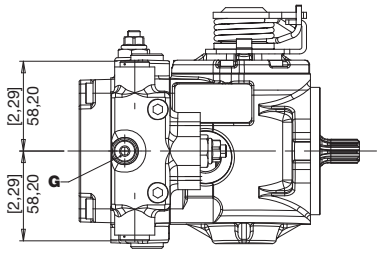
B BY-PASS
BY-PASS
BY-PASS

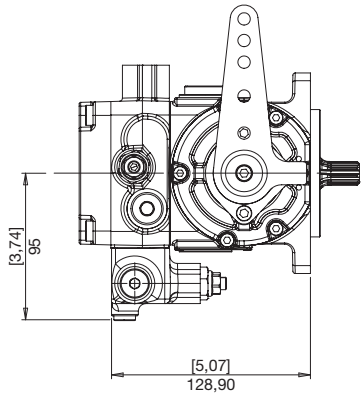


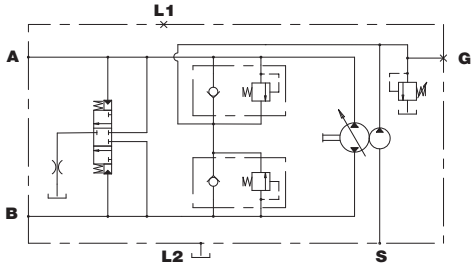




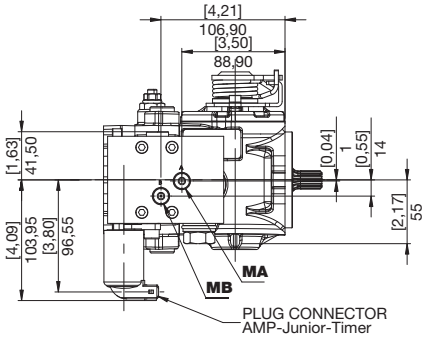
M VALVOLA DI FLUSSAGGIO
FLUSHING AND BOOST VALVE
SPUL- UND SPEISEDRUKVENTIL

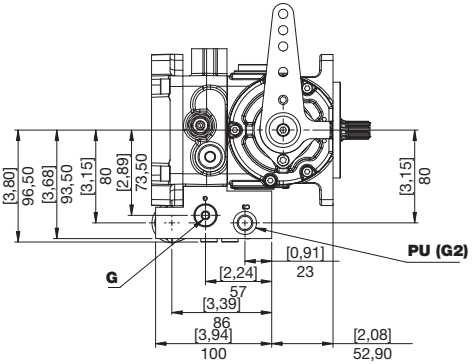




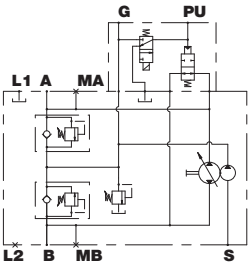


W VALVOLA BY-PASS + SBLOCCO FRENO
BY-PASS VALVE + BRAKE RELEASE
BY-PASS VENTIL + BREMSE LÖSEN

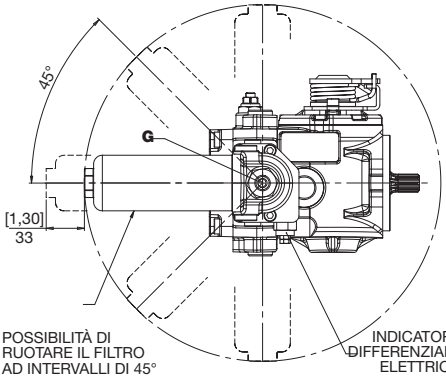




PU	Pilotaggio sblocco freno (G2) *Brake opening pressure (G2)* Bremse offnung druck (G2)



X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



POSSIBILITÀ DI RUOTARE IL FILTRO AD INTERVALLI DI 45°

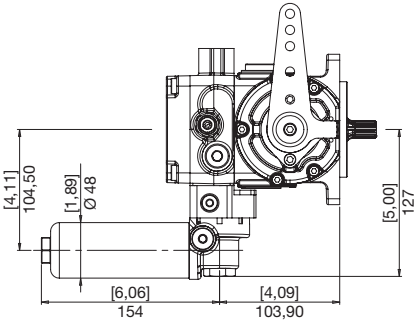
THE FILTER CAN BE ROTATED AT INTERVALS OF 45°

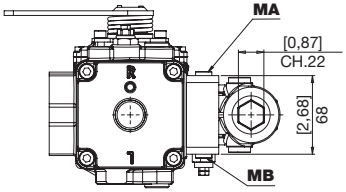
DAS FILTER KANN ROTIERT INTERVALLEN VON 45°

INDICATORE DIFFERENZIALE ELETTRICO

ELECTRICAL DIFFERENTIAL INDICATOR

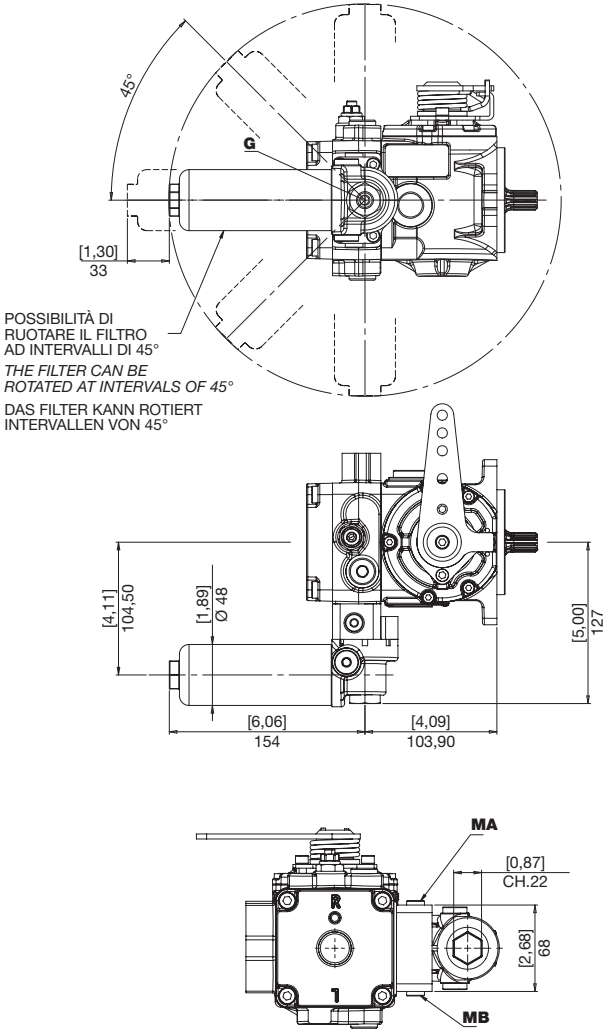
DIFFERENZDRUCKANZEIGER
30VDC - 0,2 A max





G	Presa olio filtrato *Filtered oil intake* Anschluss filtriertes Öl

Y **FILTRO SENZA INDICATORE DI INTASAMENTO**
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER



G	Presa olio filtrato *Filtered oil intake* Anschluss filtriertes Öl

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ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

SM PL 07 R S V G L E 1 0

PRODOTTO
PRODUCT
PRODUKT

PL - Pompa a pistoni assiali per circuito chiuso
PL - *Closed circuit axial piston pump*
PL - Axialkolbenpumpe für den geschlossenen Kreislauf

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
07 - 08 - 09 - 10 - 11
12 - 13 - 14 - 16 - 18

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

S - Pompa singola / *Single pump* / Einzelne Pumpe
T - Pompa ant. Tandem / *Tandem front pump* / Vordere Tandem-Pumpe
C - Pompa post. Tandem / *Tandem rear pump* / Hintere Tandem-Pumpe

ESTREMITÀ D'ALBERO
SHAFT PROFILE
WELLENENDE

A - Ø 15
D - Ø 17
J - Ø 22,22
P - Ø 15,85
V - SAE 9T 16/32 DP
X - SAE 11T 16/32" DP

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

COMANDO ***CONTROL*** **STEUERUNG**

L - Manuale senza azzeratore
M - Manuale con azzeratore

L - *Manual without zeroing*
M - *Manual with zeroing*

L - Manuell ohne Nullstellung
M - Manuell mit Nullstellung

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
H - 230 bar

PCE 050

PREDISPOSIZIONI
VERSION
BAUART

0 - nessuna predisposizione senza pompa sovralimentazione
1 - nessuna predisposizione con pompa sovralimentazione
2 - predisposizione SAE A con pompa sovralimentazione
4 - pompa ingranaggi tedesca Gruppo 2 D 52 con pompa sovralimentazione
5 - predisposizione SAE A
7 - pompa ingranaggi tedesca Gruppo 2 D 52 senza pompa sovralimentazione
8 - predisposizione per pompa ingranaggi Gruppo 1 con pompa sovralimentazione
9 - predisposizione per pompa ingranaggi Gruppo 1 senza pompa sovralimentazione
N - predisposizione Tandem senza pompa sovralimentazione
P - predisposizione Tandem con pompa sovralimentazione

0 *- no auxiliary mount without charge pump*
1 *- no auxiliary mount with charge pump*
2 *- SAE A mount with charge pump*
4 *- Group 2 gear pump german D 52 with charge pump*
5 *- SAE A mount without charge pump*
7 *- Group 2 gear pump german D 52 without charge pump*
8 *- Group 1 gear pump with charge pump*
9 *- Group 1 gear pump without boost pump*
N *- Prepared for tandem pump, without boost pump*
P *- Prepared for tandem pump, with boost pump*

0 - ohne Anschlussflansch, ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A - Anschlussflansch mit Speisepumpe
4 - Baureihe 2 zahnradpumpe din norm D 52 mit Speisepumpe
5 - SAE A Bauart
7 - Baureihe 2 zahnradpumpe din norm D 52 ohne Speisepumpe
8 - Baureihe 1 zahnradpumpe mit peisepumpe
9 - Baureihe 1 zahnradpumpe ohne Speisepumpe
N - mit Durchtrieb, vorbereitet für Tandempumpe, ohne Speisepumpe
P - mit Durchtrieb, vorbereitet für Tandempumpe, mit Speisepumpe

ACCESSORI
ACCESSORIES
ZUBEHÖR

0 - nessuna opzione
B - By-pass
M - Valvola di flussaggio
W - By-pass + sblocco freno
X - Filtro con indicatore di intasamento
Y - Filtro senza indicatore di intasamento

0 *- no accessories*
B *- By-pass*
M *- Flushing and boost valve*
W *- By-pass + brake release*
X *- filter with electric clogging indicator*
Y *- filter without electric clogging indicator*

0-ohne Zubehör
B - By-pass
M - Spül- und speisedrukventil
W - By-pass + bremse lösen
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger

SM PL

POMPE MULTIPLE
MULTIPLE PUMPS
MEHRFACHPUMPEN

Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel.

POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	**in³**	**bar**	**psi**
SM PL	8	0,49	12	174

1° STADIO ***STAGE*** **STUFE** — **2° STADIO** ***STAGE*** **STUFE**

SM PL 08 R T V G M E P O — **SM PL 08 R C V G M E B 0**

STADIO **ANTERIORE** SMPL
CON PREDISPOSIZIONE
PER STADIO **POSTERIORE** SMPL

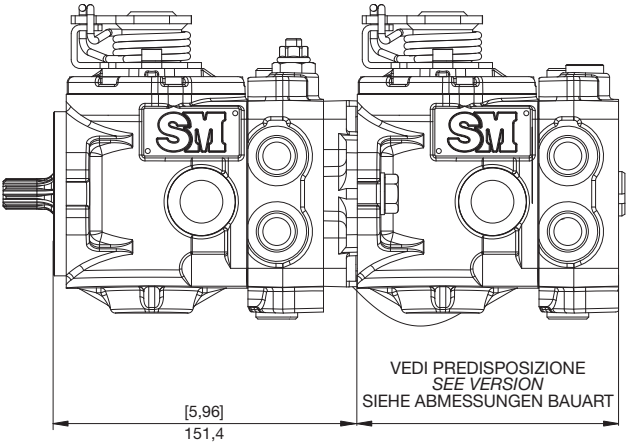
FRONT *PUMP SMPL*
PREPARED FOR ASSEMBLY
OF A ***REAR*** *PUMP SMPL*

VORDERE PUMPE SMPL
VORBEREITET MIT DURCHTRIEB
FÜR **HINTERE** PUMPE SMPL

STADIO **POSTERIORE** SMPL
CON PREDISPOSIZIONE
PER STADIO **ANTERIORE** SMPL

REAR *PUMP SMPL*
PREPARED FOR ASSEMBLY
OF A ***FRONT*** *PUMP SMPL*

HINTERE PUMPE SMPL
VORBEREITET MIT DURCHTRIEB
FÜR ANBAU AN **VORDERE** PUMPE SMPL



NOTE PER L'ORDINAZIONE

- Su richiesta la leva può essere fornita ruotata in posizione diversa dalla standard
- Le pompe di tipo **S** (singola), **T** (anteriore tandem) e **C** (posteriore tandem) non sono intercambiabili
- Le pompe di tipo **S** (singola) e **C** (posteriore tandem), non prevedono le predisposizioni **N** e **P**
- La pompa di tipo **T** (anteriore tandem) prevede solo le predisposizioni **N** e **P**
- La pompa di tipo **C** (posteriore tandem) prevede solo l'estremità d'albero **V**
- Il piatto oscillante è previsto unicamente su bronzine
- In caso di pompa tandem, la pompa di sovralimentazione è di norma sulla pompa anteriore

ORDERING NOTES

- *On request the control lever can be supplied mounted in a rotated position than standard*
- *Pumps **S** (single) type, **T** (front pump) and **C** (rear pump) are not interchangeable*
- *Pumps **S** (single) type and **C** (rear pump) do not provide predispositions N and P*
- *Pump **T** (front pump) type provide predispositions **N** and **P** only*
- *Pump **C** (rear pump) type provide shaft **V** only*
- *The swashplate is provided only on bushings*
- *In tandem pump, boost pump is normally on the front pump*

ANMERKUNG ZUM BESTELLSCHLÜSSEL

- Auf Anforderung kann der Verstellhebel auch in einer anderen als der Standard-Position gedreht geliefert werden.
- Pumpen **S** (Einzel), **T** (vordere Pumpe) und **C** (hintere Pumpe) sind nicht miteinander austauschbar.
- Die Pumpen **S** (Einzel) und **C** (hintere Pumpe) haben keine Durchtriebsmöglichkeiten **N** und **P**
- Nur die vordere Pumpe **T** kann die Durchtriebsmöglichkeiten **N** und **P** haben
- Die hintere Pumpe **C** hat nur das Wellenende **V**
- Die Schwenkwiegenlagerung wird einzig mit Bronze-Gleitlager geliefert.
- Bei einer Doppelpumpe wird normalerweise nur eine Speisepumpe in der Mitte montiert

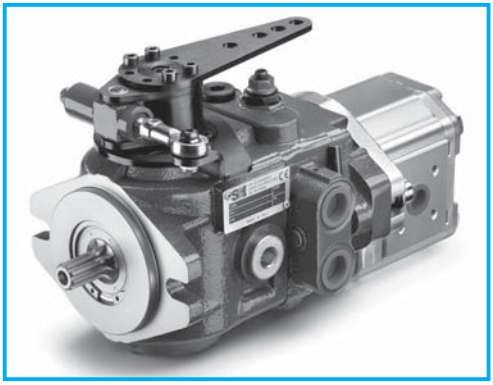
SM P0

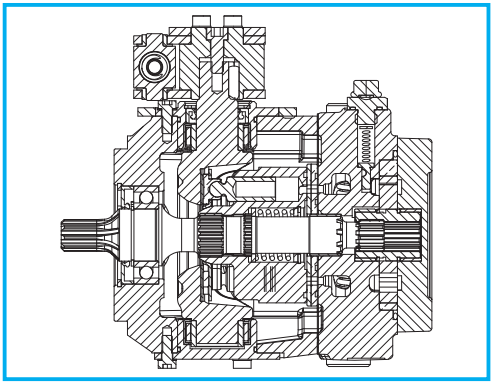
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

Le pompe a pistoni assiali serie SM P0 sono state concepite per operare in circuito chiuso. I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 350 bar di picco.
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

Axial piston pumps series SM P0 have been designed to operate in a closed circuit.
The available control systems make it easy to use these pumps in any application for industrial and mobile fields.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working peak pressure up to 350 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie SM P0 wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die verschiedenen lieferbaren Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen ermöglichen, wie von modernen Antriebsaggregaten gefordert, den Einsatz bei hohen Pumpendrehzahlen, wobei ein kontinuierlicher Arbeitsdruck mit einem Spitzenwert von 350 Bar gewährleistet ist.
Unter Anwendung der auf Anfrage erhältlichen Anbauflansche können die Pumpen in der Tandemversion geliefert werden.





DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK						VELOCITÀ *DI ROTAZIONE SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
			CONTINUA *CONTINUOUS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
SM P0	7	0,43	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	8	0,49	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	9	0,55	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	10	0,61	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	11	0,67	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	12	0,73	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	13	0,80	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	14	0,85	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	16	0,98	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	18	1,10	280	4060	300	4350	320	4640	3600	500	8,5	18,7

POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

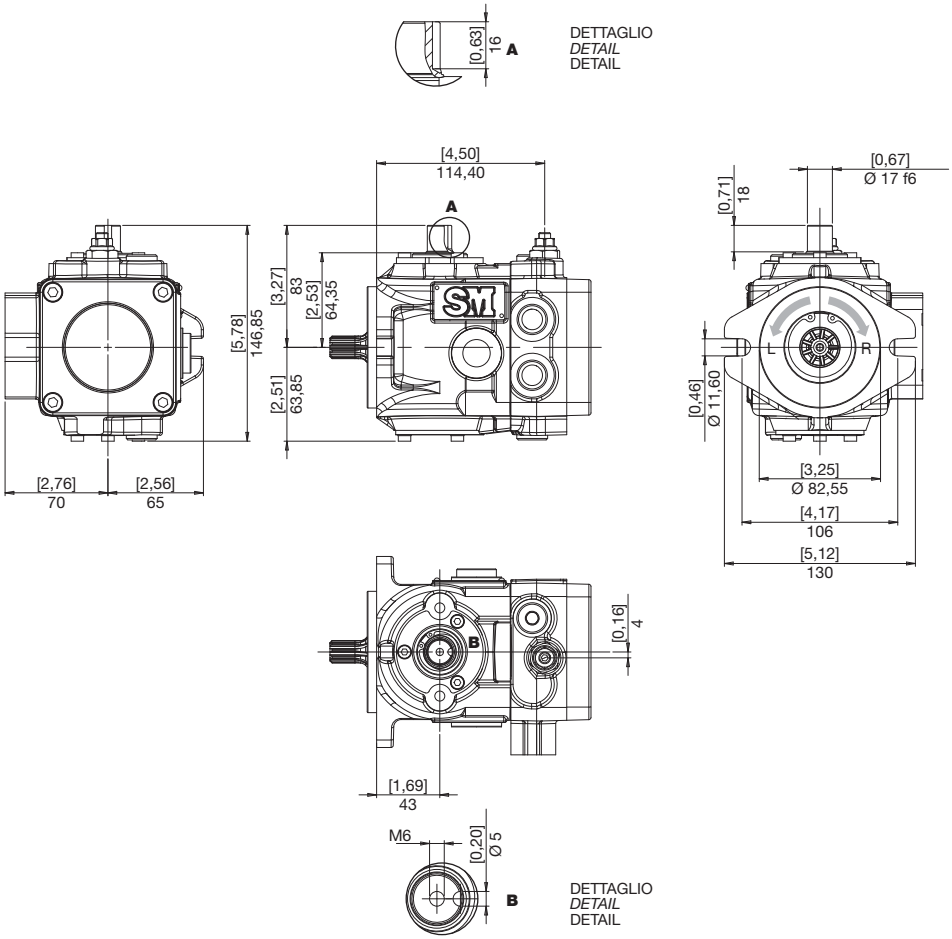
TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
SM P0	6	0,36	12	174

MOMENTO POLARE DI INERZIA
INERTIAL MASS
TRAGHEITSMOMENT

approx. 4,3 x 10^{-4} Kg m^2

DIMENSIONI
SIZE
ABMESSUNGEN

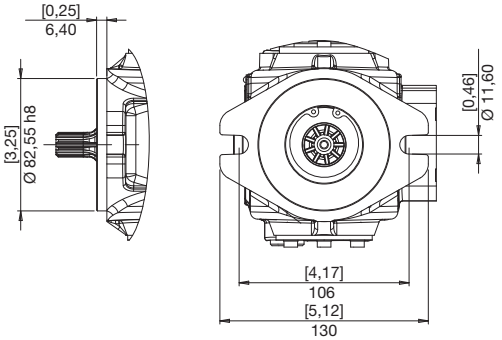
SM P0



FLANGE
FLANGES
FLANSCHE

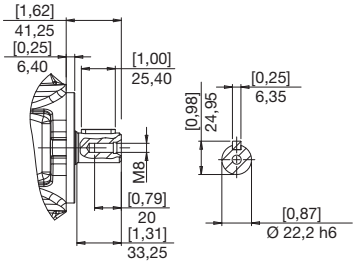
SM P0

A SAE A
SAE A
SAE A

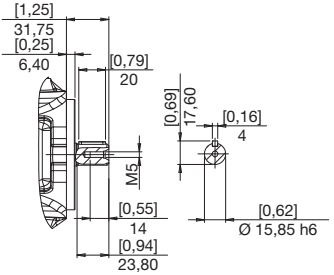


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

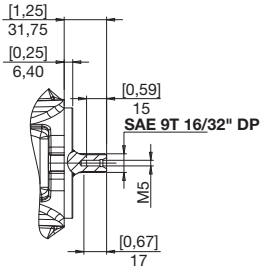
J COPPIA MAX
MAX TORQUE 180 N•m
MAX DREHMOMENT



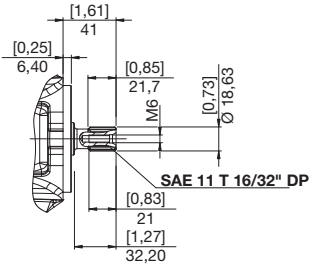
P COPPIA MAX
MAX TORQUE 70 N•m
MAX DREHMOMENT



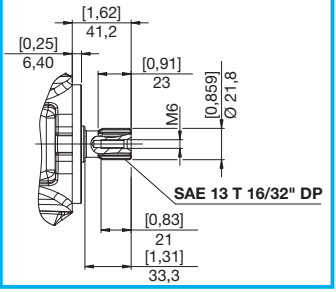
V COPPIA MAX
MAX TORQUE 120 N•m
MAX DREHMOMENT



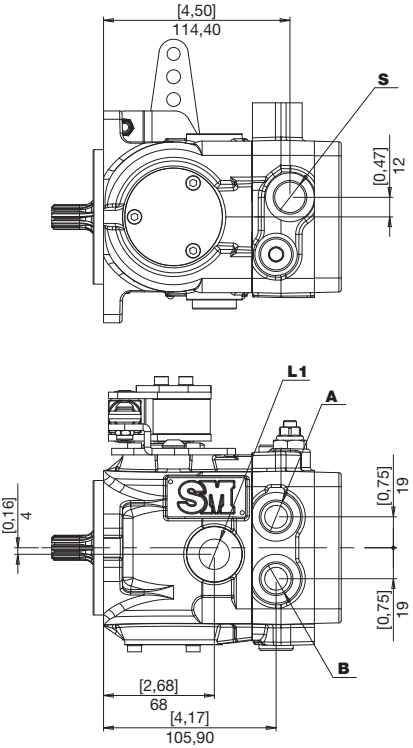
X COPPIA MAX
MAX TORQUE 160 N•m
MAX DREHMOMENT

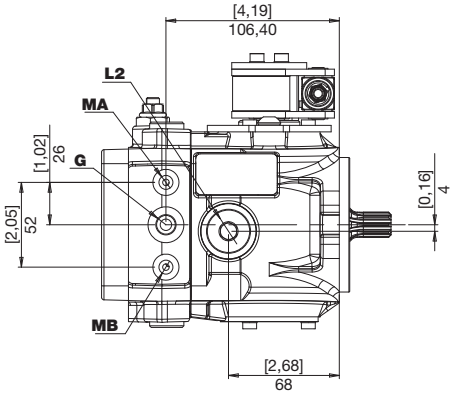


9 COPPIA MAX
MAX TORQUE 310 N•m
MAX DREHMOMENT



BOCCHE
PORTS
ANSCHLÜSSE

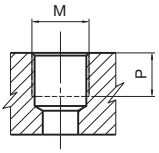




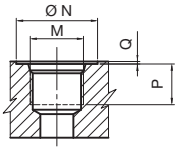
A **B**	Utilizzi *Use* Verbraucher	**G**	Presa bassa pressione *Test port boost pressure* Messanschluß Speisedruck
L1 **L2**	Drenaggi *Drain* Leckölanschluss	**MA** **MB**	Presa alta pressione *Test port high pressure* Messanschluß Hochdruck
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

SM P0



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G1	1/8” GAS BSPP	8	8	0,31
G2	1/4” GAS BSPP	17	9	0,35
G4	1/2” GAS BSPP	70	14,5	0,57



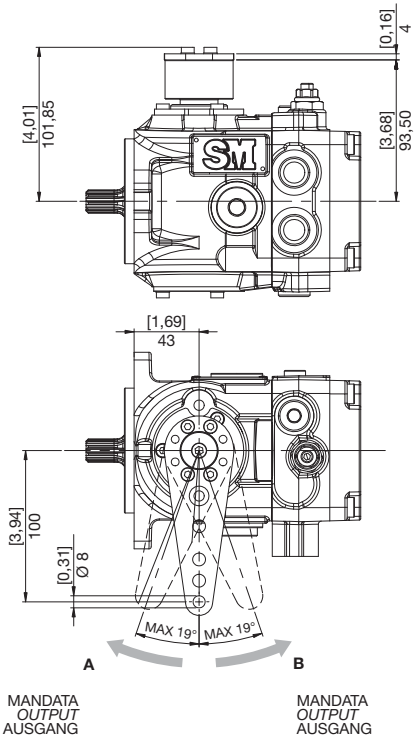
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U5	5/8”	34	1,34	18	0,71	0,3	0,01	3/4-16 UNF	70

COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

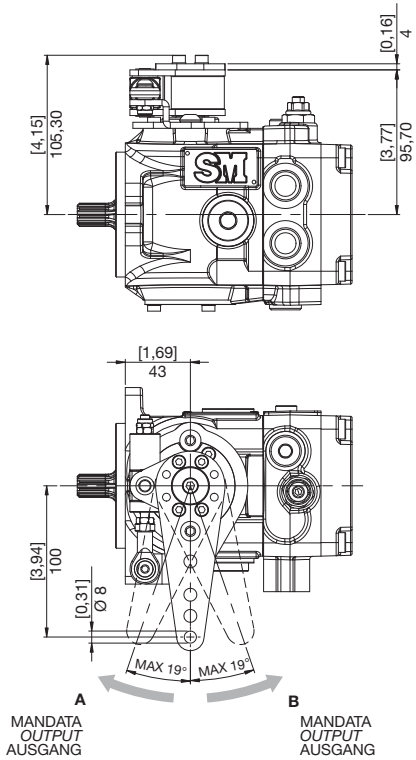
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGI *DRAIN* LECKÖLANSCHLUSS	PRESE PRESSIONE PRESSURE INTAKE DRUCKANSCHLÜSSE	
				MA-MB	G
G	G4	G4	G4	G1	G2
U	U5	U5	U5	G1	U2

COMANDI
CONTROLS
STEUERUNGEN

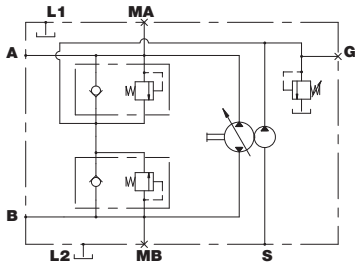
L MANUALE SENZA AZZERATORE
MANUAL WITHOUT ZEROING
MANUELL OHNE NULLSTELLUNG



M MANUALE CON AZZERATORE
MANUAL WITH ZEROING
MANUELL MIT NULLSTELLUNG



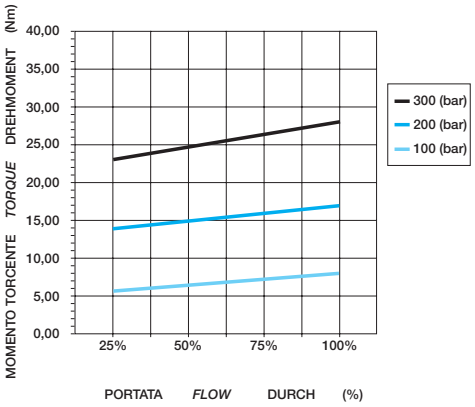
L M



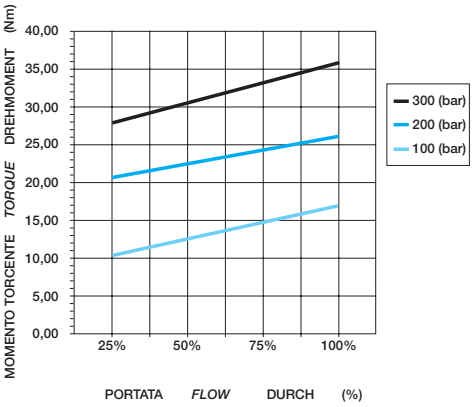
MOMENTI TORCENTI LEVA DI COMANDO
TORQUE FOR CONTROL PIN ACTUATION
DREHMOMENT FÜR SCHWENKWINKELVERSTELLUNG

SM P0

L MANUALE SENZA AZZERATORE
MANUAL WITHOUT ZEROING
MANUELL OHNE NULLSTELLUNG

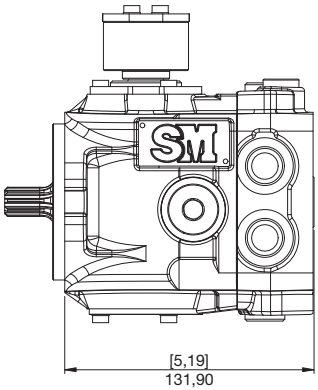


M MANUALE CON AZZERATORE
MANUAL WITH ZEROING
MANUELL MIT NULLSTELLUNG

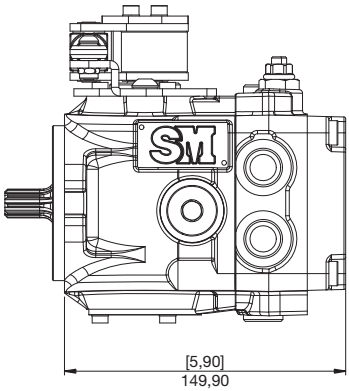


PREDISPOSIZIONI
VERSION
BAUART

0 NESSUNA PREDISPOSIZIONE SENZA POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITHOUT CHARGE PUMP
OHNE ANSCHLUSSFLANSCH OHNE SPEISEPUMPE

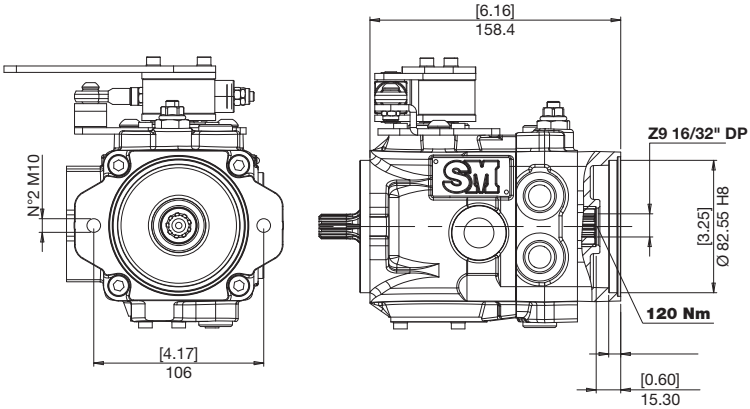


1 NESSUNA PREDISPOSIZIONE CON POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITH CHARGE PUMP
OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE

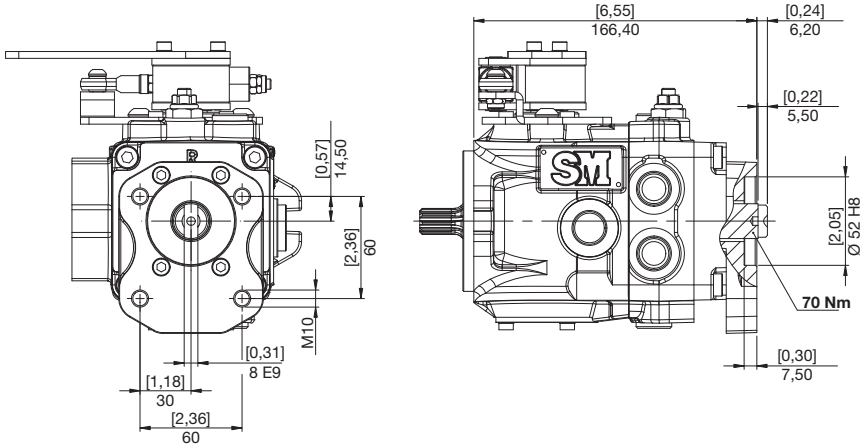


2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH CHARGE PUMP
SAE A MIT SPEISEPUMPE

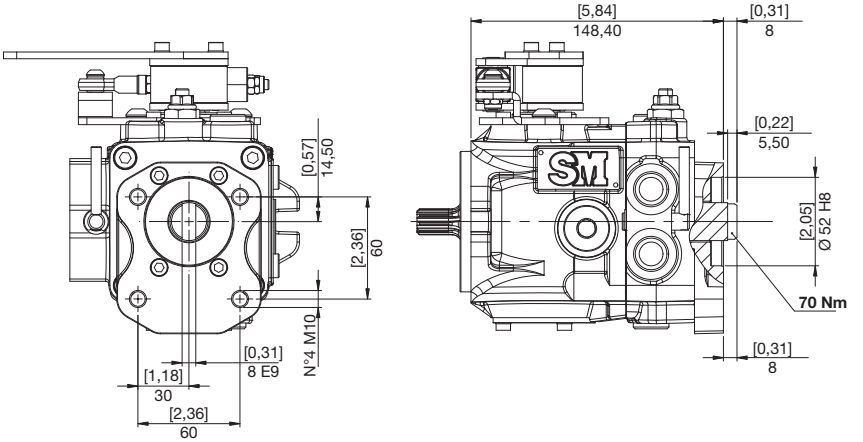
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT CHARGE PUMP
SAE A OHNE SPEISEPUMPE



4 POMPA INGRANAGGI TEDESCA Ø 52 CON POMPA SOVRALIMENTAZIONE
GEAR PUMP GERMAN Ø 52 WITH CHARGE PUMP
ZAHNRADPUMPE DIN-NORME Ø 52 MIT SPEISEPUMPE

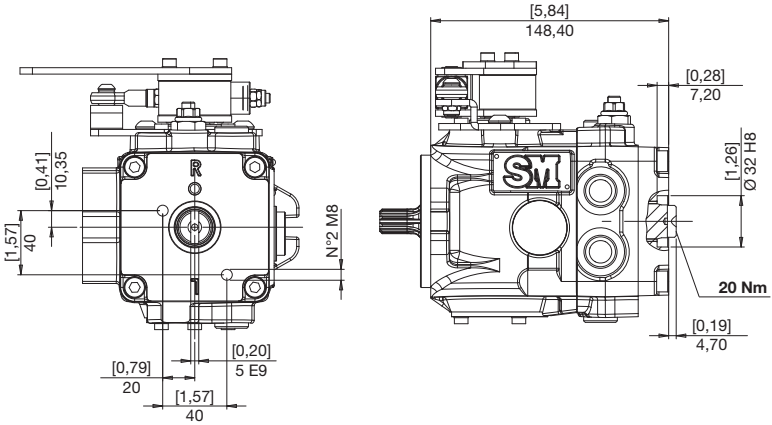


7 POMPA INGRANAGGI TEDESCA Ø 52 SENZA POMPA SOVRALIMENTAZIONE
GEAR PUMP GERMAN Ø 52 WITHOUT CHARGE PUMP
ZAHNRADPUMPE DIN-NORME Ø 52 OHNE SPEISEPUMPE

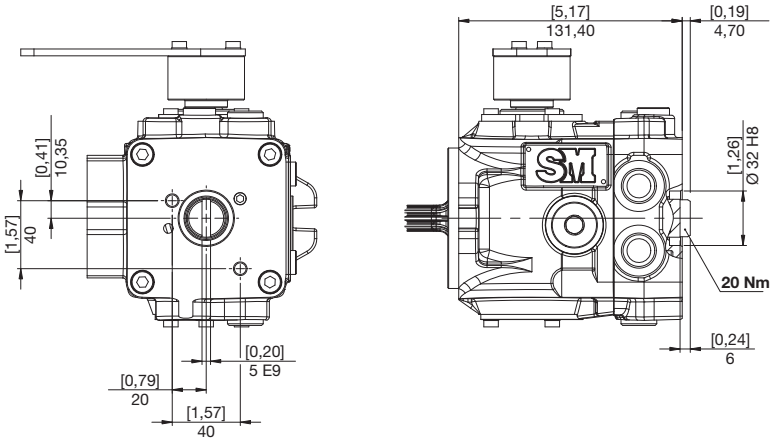


PREDISPOSIZIONI
VERSION
BAUART

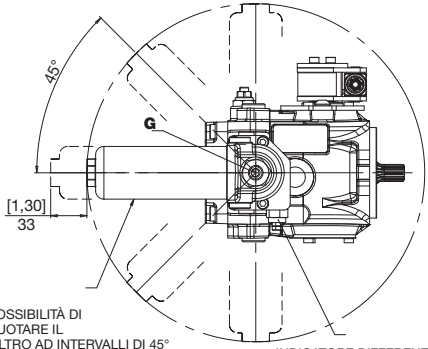
8 POMPA INGRANAGGI GR 1 CON POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITH CHARGE PUMP
ZAHNRADPUMPE GR 1 MIT SPEISEPUMPE



9 POMPA INGRANAGGI GR 1 SENZA POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITHOUT CHARGE PUMP
ZAHNRADPUMPE GR 1 OHNE SPEISEPUMPE

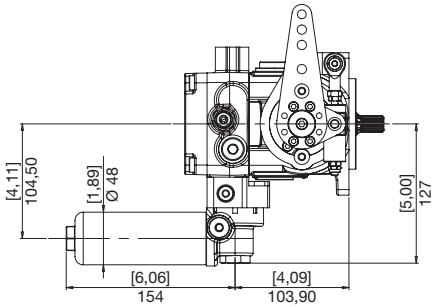


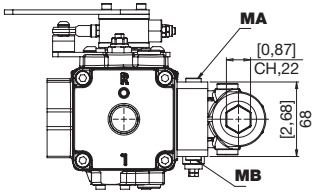
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



POSSIBILITÀ DI
RUOTARE IL
FILTRO AD INTERVALLI DI 45°
THE FILTER CAN BE ROTATED
AT INTERVALS OF 45°
DAS FILTER KANN ROTIERT
INTERVALLEN VON 45°

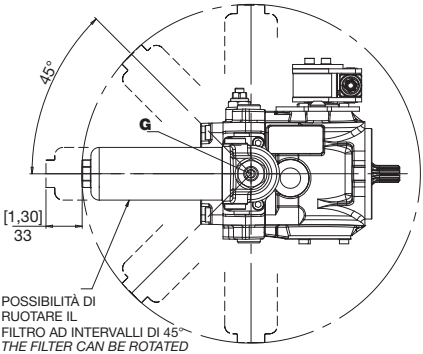
INDICATORE DIFFERENZIALE
ELETTRICO 30VDC - 0,2 A max
ELECTRICAL DIFFERENTIAL
INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER
30VDC - 0,2 A max



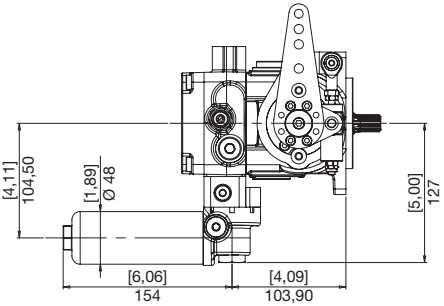


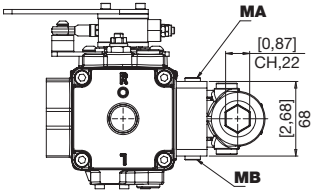
G presa olio filtrato
filtered oil intake
anschluss filtriertes öl

Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER



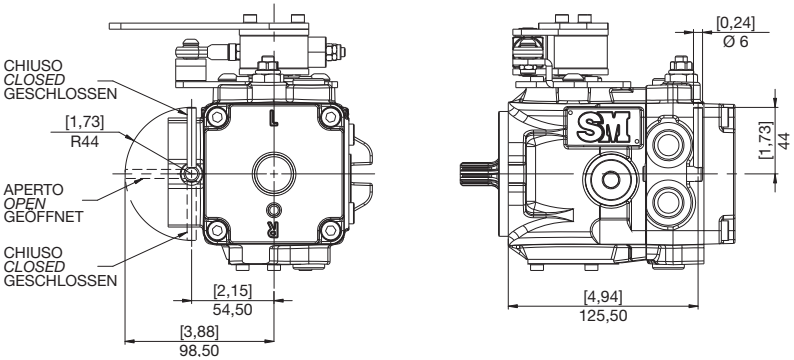
POSSIBILITÀ DI
RUOTARE IL
FILTRO AD INTERVALLI DI 45°
THE FILTER CAN BE ROTATED
AT INTERVALS OF 45°
DAS FILTER KANN ROTIERT
INTERVALLEN VON 45°

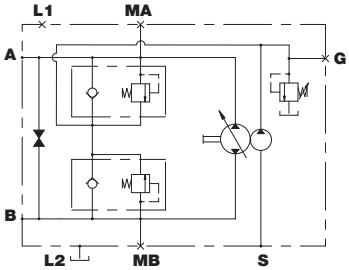




G presa olio filtrato
filtered oil intake
anschluss filtriertes öl

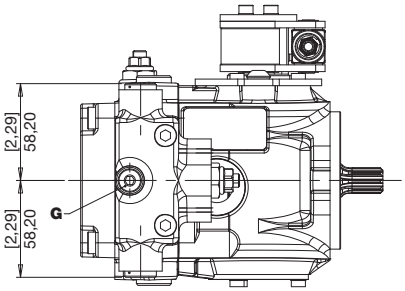
B BY-PASS
BY-PASS
BY-PASS

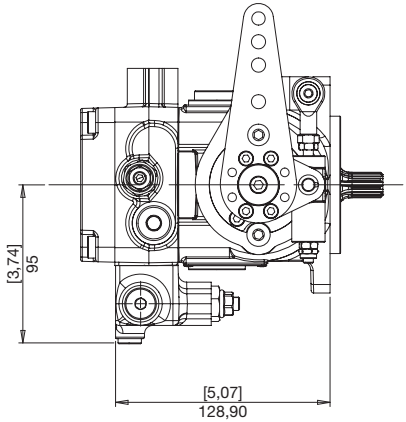


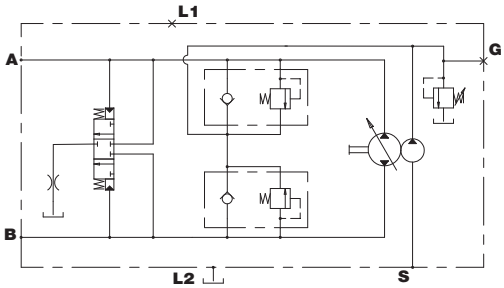


M

VALVOLA DI FLUSSAGGIO
FLUSHING AND BOOST VALVE
SPÜL- UND SPEISEDRUKVENTIL

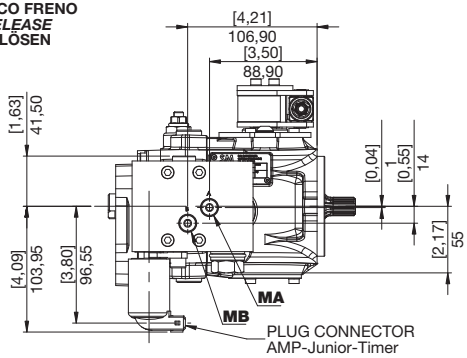


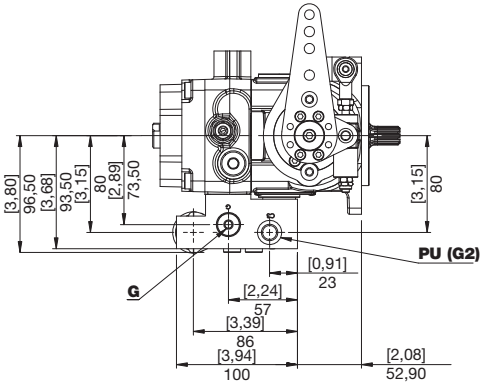


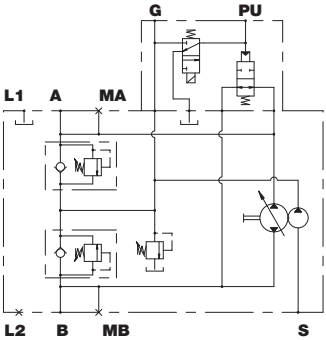


ACCESSORI
ACCESSORIES
ZUBEHÖR

W **VALVOLA BY-PASS + SBLOCCO FRENO**
BY-PASS VALVE + BRAKE RELEASE
BY-PASS VENTIL + BREMSE LÖSEN







PU	Pilotaggio sblocco freno (G2) *Brake opening pressure (G2)* Bremse offnung druck (G2)

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ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

SM	P0	08	R	S	V	G	L	E	A	1	0

PRODOTTO
PRODUCT
PRODUKT

P0 - Pompa a pistoni assiali per circuito chiuso
P0 - *Closed circuit axial piston pump*
P0 - Axialkolbenpumpe für den geschlössenen kreislauf

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
07 - 08 - 09 - 10 - 11
12 - 13 - 14 - 16 - 18

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

S - Pompa singola / *Single pump* / Einzelne Pumpe
T - Pompa ant. Tandem / *Tandem front pump* / Vordere Tandem-Pumpe
C - Pompa post. Tandem / *Tandem rear pump* / Hintere Tandem-Pumpe

ESTREMITÀ D'ALBERO
SHAFT PROFILE
WELLENENDE

J - Ø 22,22
P - Ø 15,85
V - SAE 9T 16/32 DP
X - SAE 11T 16/32" DP
9 - SAE 13T 16/32" DP

COMANDO ***CONTROL*** **STEUERUNG**

L - Manuale senza azzeratore
M - Manuale con azzeratore

L - *Manual without zeroing*
M - *Manual with zeroing*

L - Manuell ohne Nullstellung
M - Manuell mit Nullstellung

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
H - 230 bar
G - 250 bar
I - 280 bar
L - 300 bar
M - 320 bar
O - 350 bar

PCE 050

TIPO DI OSCILLANTE:
A = oscillante su rullini
B = oscillante su bronzine

SWASHPLATE TYPE:
A *= mounted on needle bearing*
B *= mounted on bronze bearings*

SCHWENKSCHEIBENLAGERUNG:
A = Rollengelagert
B = Bronze-Gleitgelagert

ACCESSORI
ACCESSORIES
ZUBEHÖR

0 - nessuna opzione
B - By-pass
M - Valvola di flussaggio
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento
S - X+B
W - Y+B

0 *- no accessories*
B *- By-pass*
M *- Flushing and boost valve*
X *- filter with electric clogging indicator*
Y *- filter without electric clogging indicator*
S *- X+B*
W *- Y+B*

0 - ohne Zubehör
B - By-pass
M - Spül- und speisedrukventil
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger
S - X+B
W - Y+B

PREDISPOSIZIONI ***VERSION*** **BAUART**

0 - nessuna predisposizione senza pompa sovralimentazione
1 - nessuna predisposizione con pompa sovralimentazione
2 - predisposizione SAE A con pompa sovralimentazione
4 - pompa ingranaggi tedesca GR2 ø 52 con pompa sovralimentazione
5 - predisposizione SAE A
7 - pompa ingranaggi tedesca GR2 ø 52 senza pompa sovralimentazione
8 - predisposizione per pompa ingranaggi GR1 con pompa sovralimentazione
9 - predisposizione per pompa ingranaggi GR1 senza pompa sovralimentazione
N - predisposizione Tandem senza pompa sovralimentazione
P - predisposizione Tandem con pompa sovralimentazione

0 *- no auxiliary mount without charge pump*
1 *- no auxiliary mount with charge pump*
2 *- SAE A mount with charge pump*
4 *- Gear pump german GR2 ø 52 with charge pump*
5 *- SAE A mount without charge pump*
7 *- Gear pump german GR2 ø 52 without charge pump*
8 *- Gear pump GR1 with charge pump*
9 *- Gear pump GR1without boost pump*
N *- Prepared for tandem pump, without boost pump*
P *- Prepared for tandem pump, with boost pump*

0 - ohne Anschlussflansch, ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A - Anschlussflansch mit Speisepumpe
4 - Zahnradpumpe din norm GR2 ø 52 mit Speisepumpe
5 - SAE A Bauart
7 - Zahnradpumpe din norm GR2 ø 52 ohne Speisepumpe
8 - Zahnradpumpe GR1 mit Speisepumpe
9 - Zahnradpumpe GR1 ohne Speisepumpe
N - mit Durchtrieb, vorbereitet für Tandempumpe, ohne Speisepumpe
P - mit Durchtrieb, vorbereitet für Tandempumpe, mit Speisepumpe

SM P0

POMPE MULTIPLE
MULTIPLE PUMPS
MEHRFACHPUMPEN

Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel.

POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	**in³**	**bar**	**psi**
SM P0	8	0,49	12	174

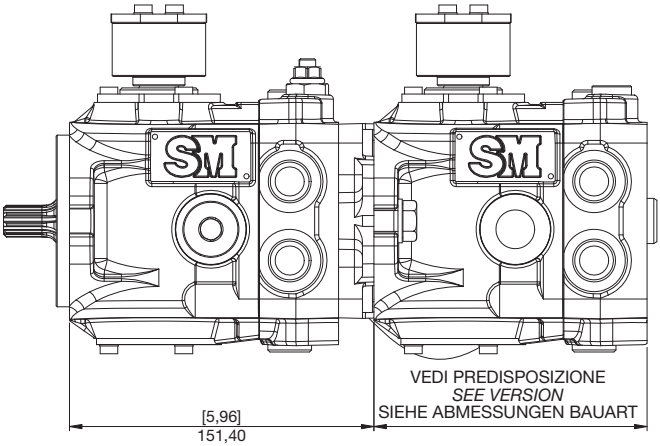
1° STADIO ***STAGE*** **STUFE**

2° STADIO ***STAGE*** **STUFE**

SM P0 08 R T V G M E B P 0 SM P0 08 R C V G M E B 1 0

STADIO **ANTERIORE** SMP0 CON PREDISPOSIZIONE PER STADIO **POSTERIORE** SMP0
FRONT *PUMP SMP0 PREPARED FOR ASSEMBLY OF A* ***REAR*** *PUMP SMP0*
VORDERE PUMPE SMP0 VORBEREITET MIT DURCHTRIEB FÜR **HINTERE** PUMPE SMP0

STADIO **POSTERIORE** SMP0 CON PREDISPOSIZIONE PER STADIO **ANTERIORE** SMP0
REAR *PUMP SMP0 PREPARED FOR ASSEMBLY OF A* ***FRONT*** *PUMP SMP0*
HINTERE PUMPE SMP0 VORBEREITET MIT DURCHTRIEB FÜR ANBAU AN **VORDERE** PUMPE SMP0



NOTE PER L'ORDINAZIONE

- Su richiesta la leva può essere fornita ruotata in posizione diversa dalla standard
- Su richiesta il filtro può essere fornito ruotato in posizione diversa dalla standard
- Le pompe di tipo **S** (singola), **T** (anteriore tandem) e **C** (posteriore tandem) non sono intercambiabili
- Le pompe di tipo **S** (singola) e **C** (posteriore tandem), non prevedono le predisposizioni **N** e **P**
- La pompa di tipo **T** (anteriore tandem) prevede solo le predisposizioni **N** e **P**
- La pompa di tipo **C** (posteriore tandem) prevede solo l'estremità d'albero **V**
- In caso di pompa tandem, la pompa di sovralimentazione è di norma sulla pompa anteriore
- Le pompe multiple sono fornite senza tubo di collegamento tra i drenaggi

ORDERING NOTES

- *On request the control lever can be supplied mounted in a rotated position than standard*
- *On request the filter can be supplied mounted in a rotated position than standard*
- *Pumps **S** (single) type, **T** (front pump) and **C** (rear pump) are not interchangeable*
- *Pumps **S** (single) type and **C** (rear pump) do not provide predispositions **N** and **P***
- *Pump **T** (front pump) type provide predispositions **N** and **P** only*
- *Pump **C** (rear pump) type provide shaft **V** only*
- *In tandem pump, boost pump is normally on the front pump*
- *Multiple pumps are supplied without connecting tube between the drains*

ANMERKUNG ZUM BESTELLSCHLÜSSEL

- Auf Anforderung kann der Verstellhebel auch in einer anderen als der Standard-Position gedreht geliefert werden.
- Pumpen **S** (Einzel), **T** (vordere Pumpe) und **C** (hintere Pumpe) sind nicht miteinander austauschbar.
- Die Pumpen **S** (Einzel) und **C** (hintere Pumpe) haben keine Durchtriebsmöglichkeiten **N** und **P**
- Nur die vordere Pumpe **T** kann die Durchtriebsmöglichkeiten **N** und **P** haben
- Die hintere Pumpe **C** hat nur das Wellenende **V**
- Bei einer Doppelpumpe wird normalerweise nur eine Speisepumpe in der Mitte montiert
- Bei Mehrfach-Pumpen werden diese ohne Sammelleitung der Leckölanschlüsse geliefert

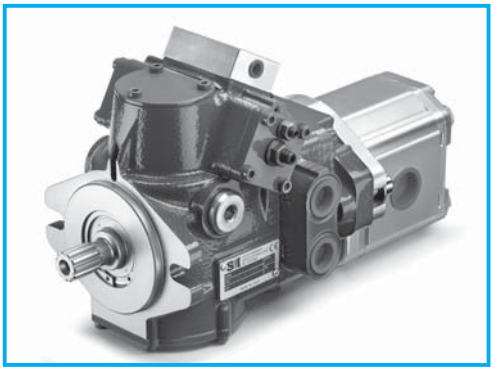
SM PZ

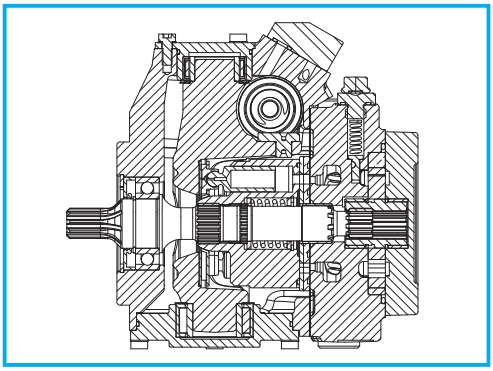
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

Le pompe a pistoni assiali serie SM PZ sono state concepite per operare in circuito chiuso.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 350 bar di picco.
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

Axial piston pumps series SM PZ have been designed to operate in a closed circuit.
The available control systems make it easy to use these pumps in any application for industrial and mobile fields.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working peak pressure up to 350 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie SM PZ wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die verschiedenen lieferbaren Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen ermöglichen, wie von modernen Antriebsaggregaten gefordert, den Einsatz bei hohen Pumpendrehzahlen, wobei ein kontinuierlicher Arbeitsdruck mit einem Spitzenwert von 350 Bar gewährleistet ist.
Unter Anwendung der auf Anfrage erhältlichen Anbauflansche können die Pumpen in der Tandemversion geliefert werden.





DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK						VELOCITÀ *DI ROTAZIONE SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
			CONTINUA *CONTINUOUS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm^3	in^3	bar	psi	bar	psi	bar	psi	min^{-1}	min^{-1}	kg	lbs
SM PZ	7	0,43	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	8	0,49	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	9	0,55	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	10	0,61	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	11	0,67	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	12	0,73	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	13	0,80	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	14	0,85	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	16	0,98	280	4060	300	4350	350	5075	3600	500	8,5	18,7
	18	1,10	280	4060	300	4350	320	4640	3600	500	8,5	18,7
	19	1,16	280	4060	300	4350	320	4640	3600	500	8,5	18,7

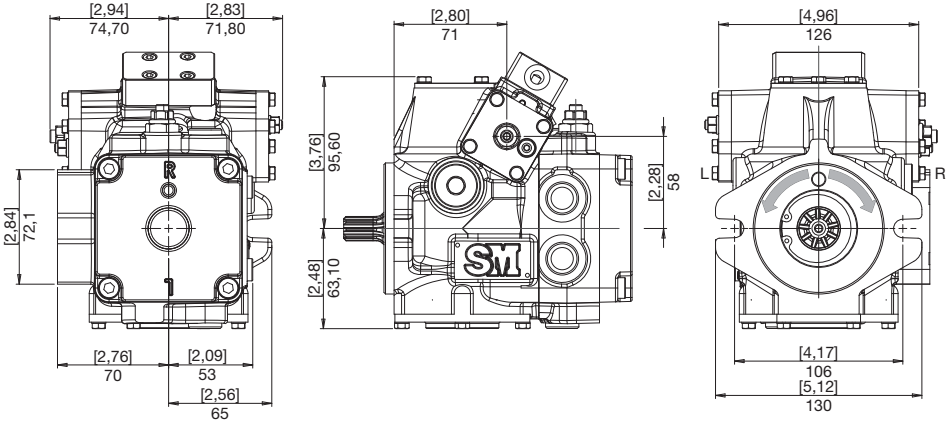
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm^3	in^3	bar	psi
SM PZ	5	0,30	20	290

MOMENTO POLARE DI INERZIA
INERTIAL MASS
TRAGHEITSMOMENT

approx. $4,3 \times 10^{-4}$ Kg m^2

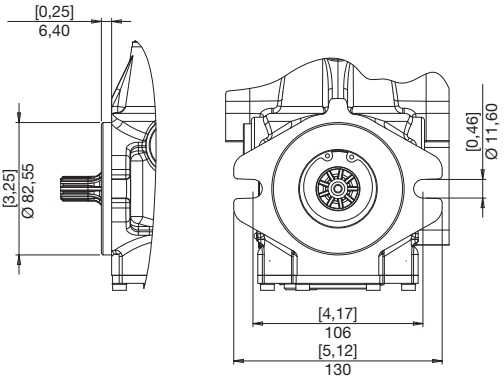
DIMENSIONI
SIZE
ABMESSUNGEN



FLANGE
FLANGES
FLANSCHE

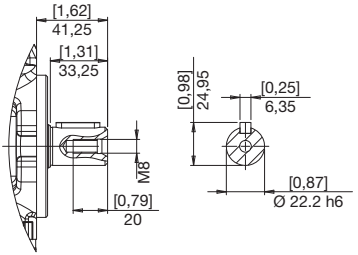
SM PZ

A SAE A
SAE A
SAE A

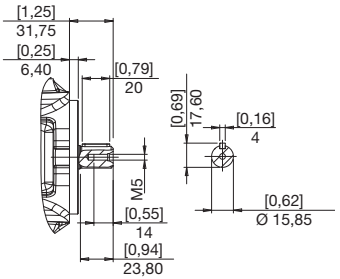


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

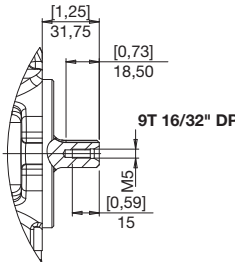
J COPPIA MAX
MAX TORQUE 180 N•m
MAX DREHMOMENT



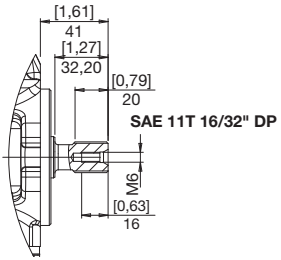
P COPPIA MAX
MAX TORQUE 70 N•m
MAX DREHMOMENT



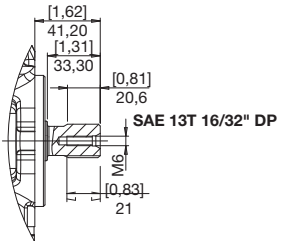
V COPPIA MAX
MAX TORQUE 120 N•m
MAX DREHMOMENT



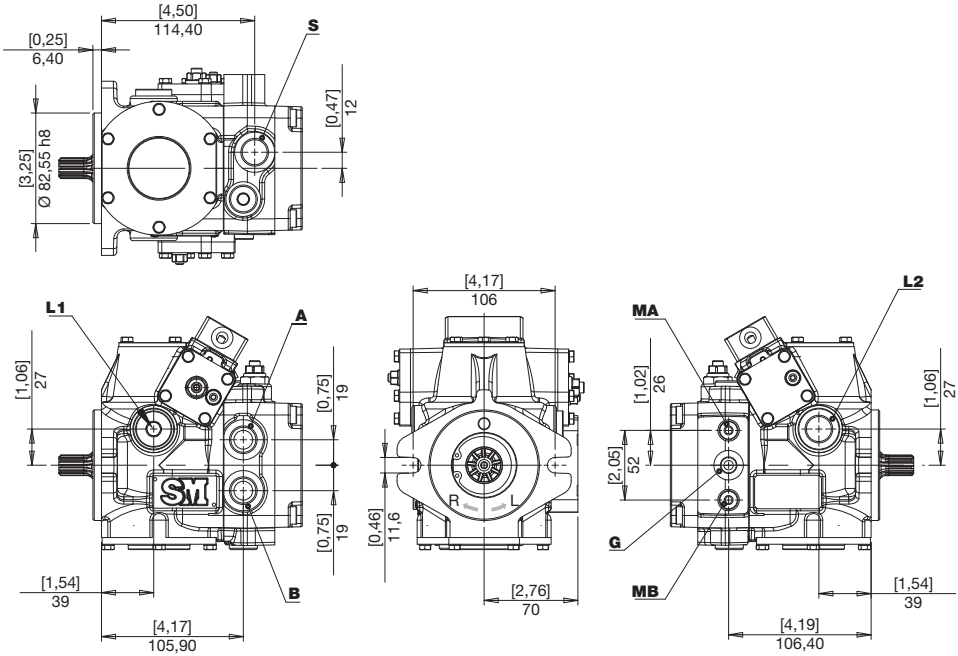
X COPPIA MAX
MAX TORQUE 160 N•m
MAX DREHMOMENT



9 COPPIA MAX
MAX TORQUE 310 N•m
MAX DREHMOMENT



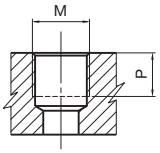
BOCCHE
PORTS
ANSCHLÜSSE



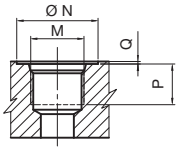
A **B**	Utilizzi *Use* Verbraucher	**G**	Presa bassa pressione *Test port boost pressure* Messanschluß Speisedruck
L1 **L2**	Drenaggi *Drain* Leckölanschluss	**MA** **MB**	Presa alta pressione *Test port high pressure* Messanschluß Hochdruck
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

SM PZ



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G1	1/8” GAS BSPP	8	8	0,31
G2	1/4” GAS BSPP	17	9	0,35
G4	1/2” GAS BSPP	70	14,5	0,57



TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U5	5/8”	34	1,34	18	0,71	0,3	0,01	3/4-16 UNF	70

COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGI *DRAIN* LECKÖLANSCHLUSS	PRESE PRESSIONE PRESSURE INTAKE DRUCKANSCHLÜSSE	
				MA-MB	G
G	G4	G4	G4	G1	G2
U	U5	U5	U5	G1	U2

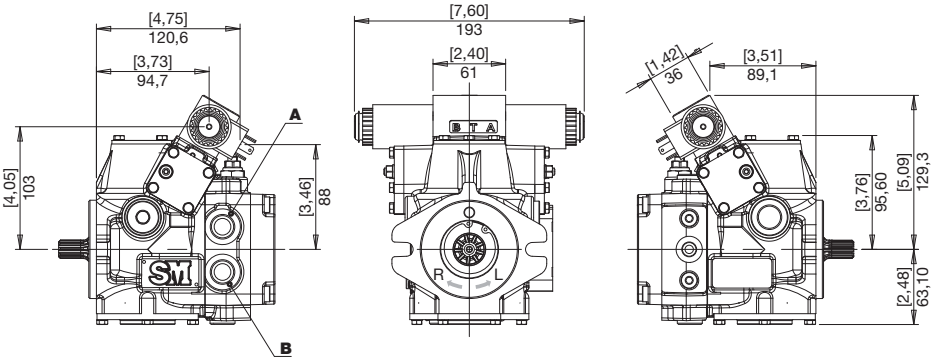
COMANDI
CONTROLS
STEUERUNGEN

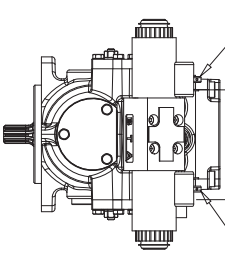
E F — 12 V 24 V

ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

N Q — 12 V 24 V

ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, GEÖFFNETES VENTIL



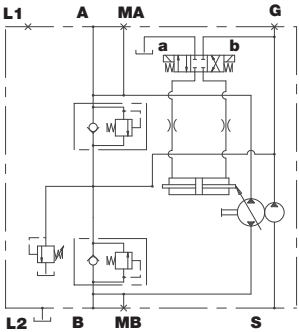


CONNETTORE
CONNECTOR
VERBINDUNG
DIN 43650

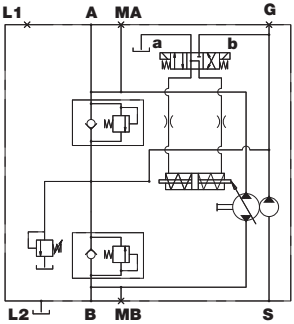
CONNETTORE
CONNECTOR
VERBINDUNG
DIN 43650

ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

E F

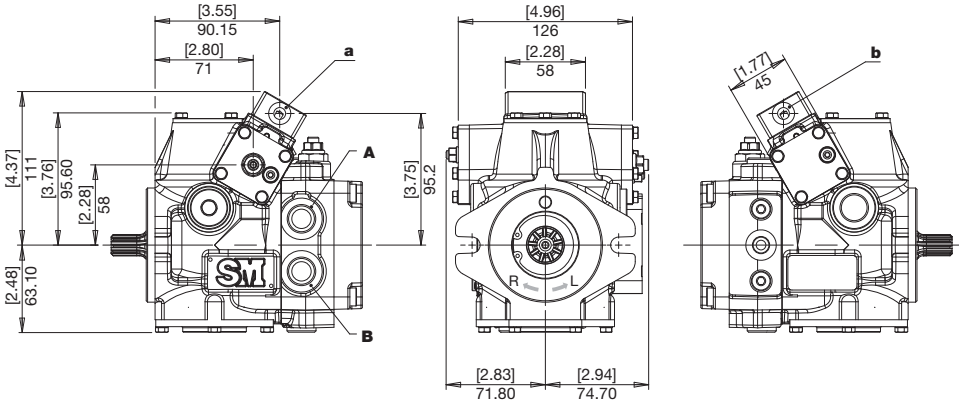


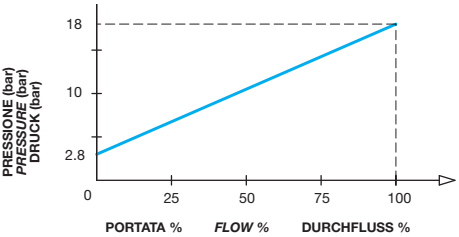
N Q

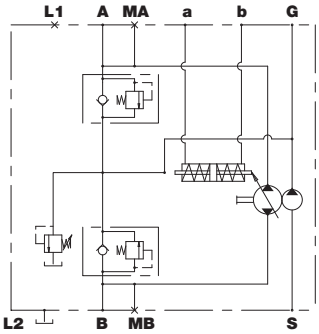


COMANDI
CONTROLS
STEUERUNGEN

K **IDRAULICO A DISTANZA**
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG







ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEVERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

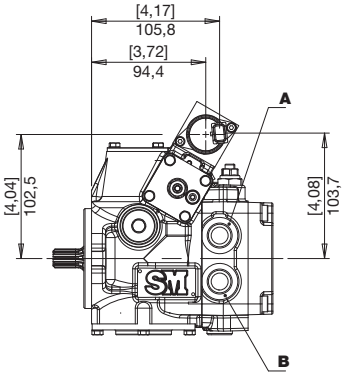
COMANDI
CONTROLS
STEUERUNGEN

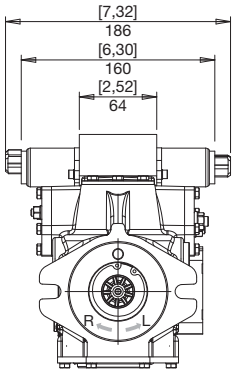
S — 12 V

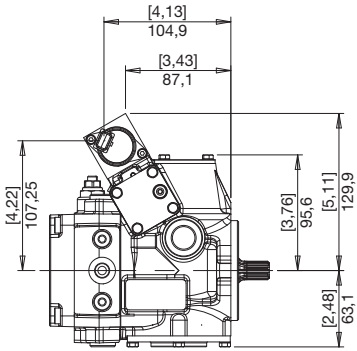
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG

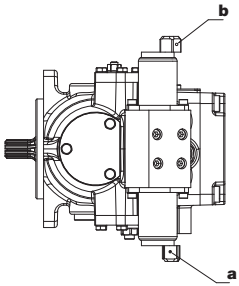
W — 24 V

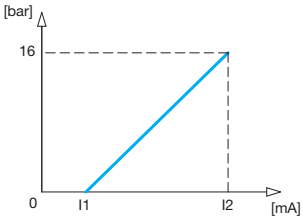
ELETTRICO PROPORZIONALE DIRETTO
ELECTRONIC PROPORTIONAL CONTROL
ELEKTRONISCHE PROPORTIONALSTEUERUNG



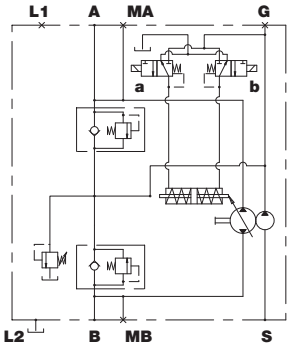








	S	W
Tensione nominale *Rated voltage* Nennspannung	12 V	24 V
Corrente min (I1) *Min. Current* Mindeststrom	450 mA	250 mA
Corrente max (I2) *Max. Current* Maximaler Strom	1100 mA	540 mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100 Hz	

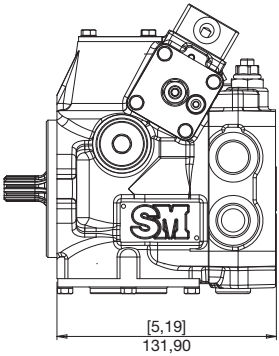


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

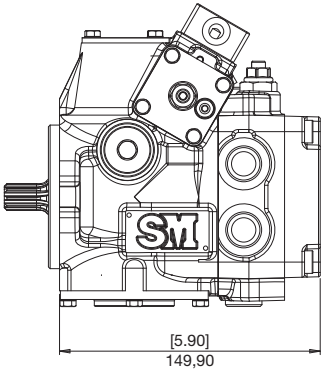
PREDISPOSIZIONI
VERSION
BAUART

SM PZ

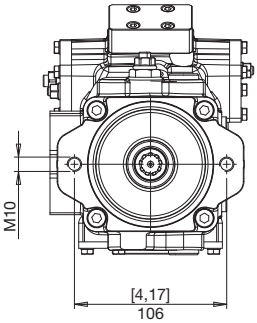
0 NESSUNA PREDISPOSIZIONE SENZA POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITHOUT CHARGE PUMP
OHNE ANSCHLUSSFLANSCH OHNE SPEISEPUMPE



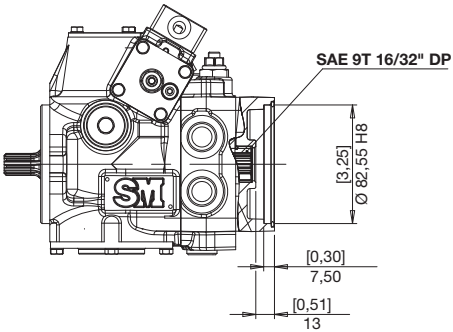
1 NESSUNA PREDISPOSIZIONE CON POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITH CHARGE PUMP
OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE



2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH CHARGE PUMP
SAE A MIT SPEISEPUMPE



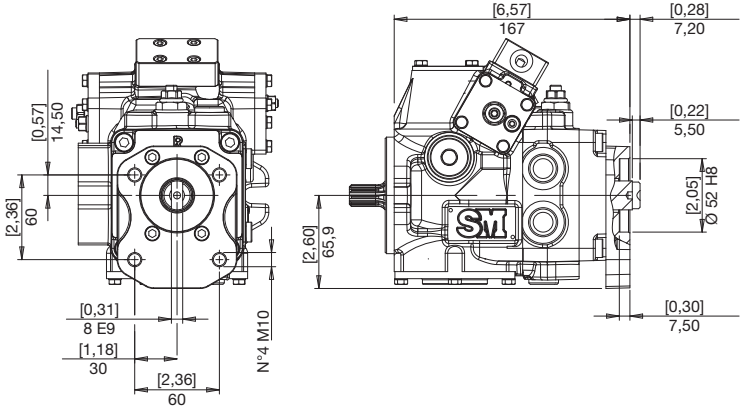
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT CHARGE PUMP
SAE A OHNE SPEISEPUMPE



PREDISPOSIZIONI
VERSION
BAUART

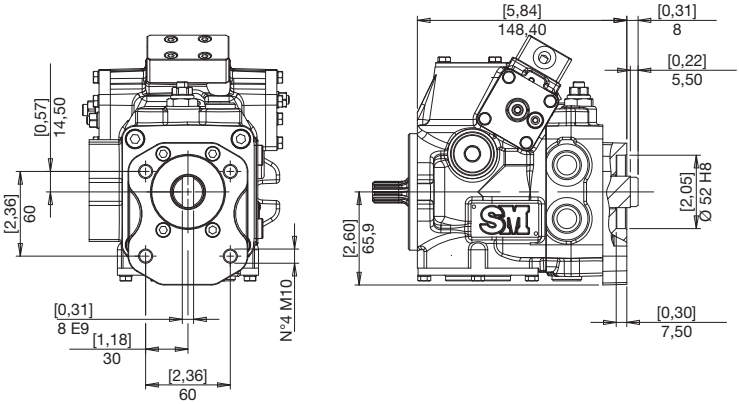
4

POMPA INGRANAGGI GR2 TEDESCA Ø 52 CON POMPA SOVRALIMENTAZIONE
GEAR PUMP GERMAN GR2 Ø 52 WITH CHARGE PUMP
ZAHNRADPUMPE DIN-NORME GR2 Ø 52 MIT SPEISEPUMPE

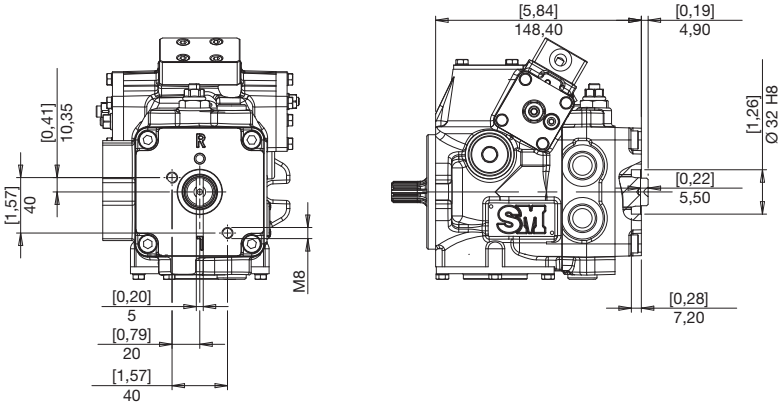


7

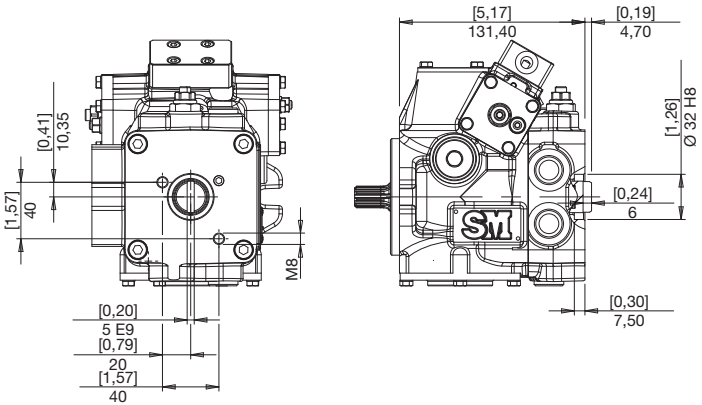
POMPA INGRANAGGI TEDESCA GR2 Ø 52 SENZA POMPA SOVRALIMENTAZIONE
GEAR PUMP GERMAN GR2 Ø 52 WITHOUT CHARGE PUMP
ZAHNRADPUMPE DIN-NORME GR2 Ø 52 OHNE SPEISEPUMPE



8 POMPA INGRANAGGI GR 1 CON POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITH CHARGE PUMP
ZAHNRADPUMPE GR 1 MIT SPEISEPUMPE

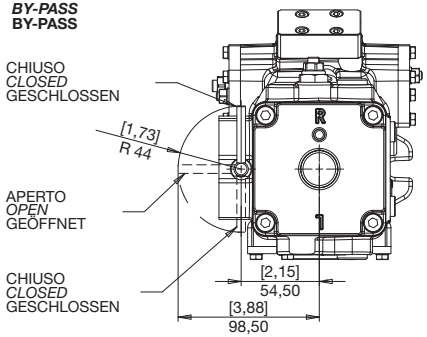


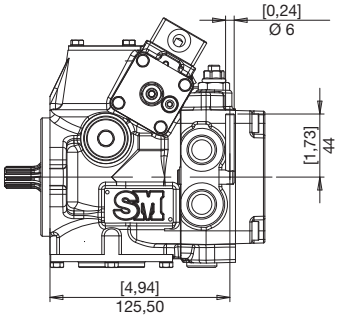
9 POMPA INGRANAGGI GR 1 SENZA POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITHOUT CHARGE PUMP
ZAHNRADPUMPE GR 1 OHNE SPEISEPUMPE

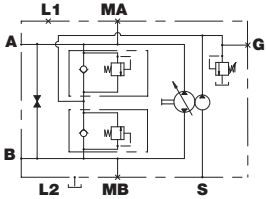


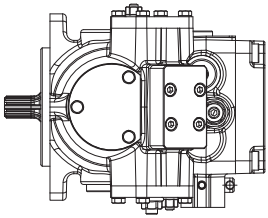
ACCESSORI
ACCESSORIES
ZUBEHÖR

B BY-PASS *BY-PASS* BY-PASS



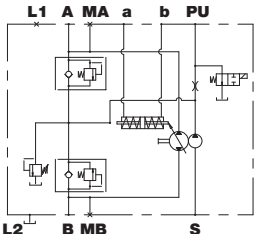


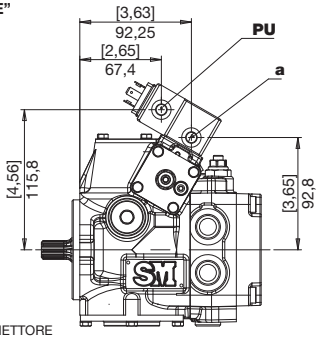


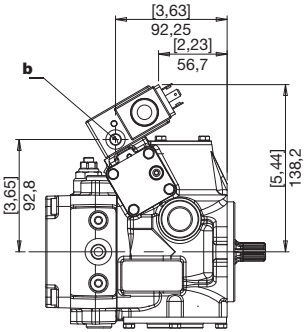


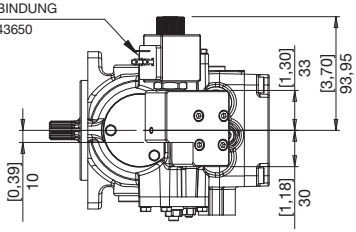
E SICUREZZA "OPERATORE ASSENTE" *"NO OPERATOR" SAFETY* SICHERUNG "KEIN BEDIENER"

12 V



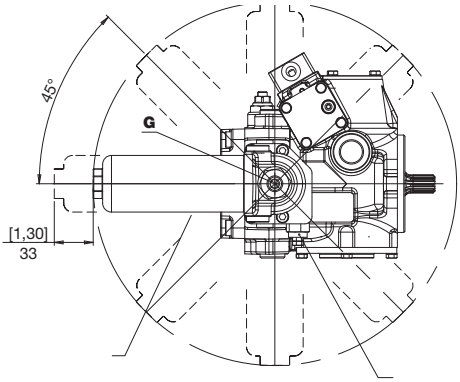


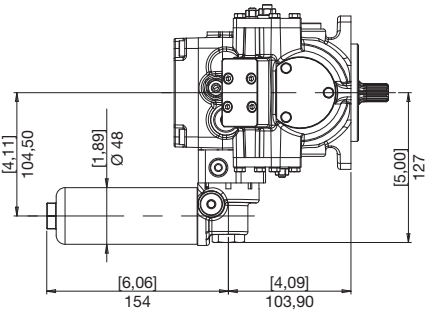


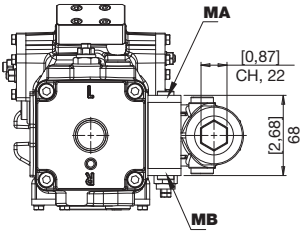


PU	Pilotaggio sblocco freno (G1) *Brake opening pressure (G1)* Bremse offnung druck (G1)

X **FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO**
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER

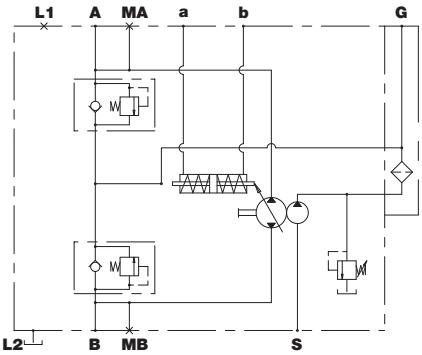






POSSIBILITA' DI
RUOTARE IL
FILTRO AD INTERVALLI DI 45°
THE FILTER CAN BE ROTATED
AT INTERVALS OF 45°
DAS FILTER KANN ROTIERT
INTERVALLEN VON 45°

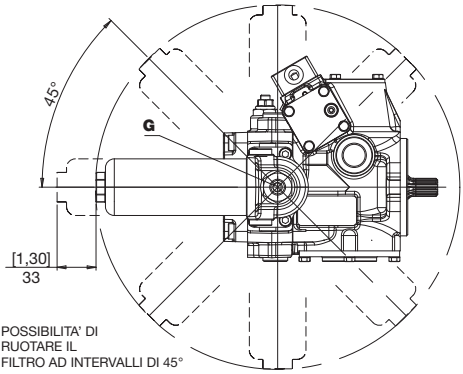
INDICATORE DIFFERENZIALE
ELETTRICO 30VDC - 0,2 A max
ELECTRICAL DIFFERENTIAL
INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER
30VDC - 0,2 A max



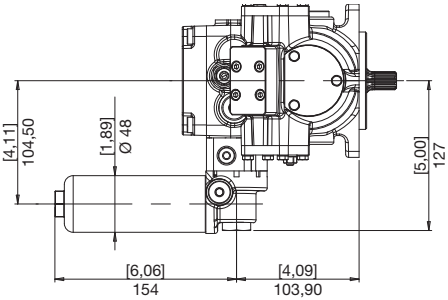
G	presa olio filtrato *filtered oil intake* anschluss filtriertes öl

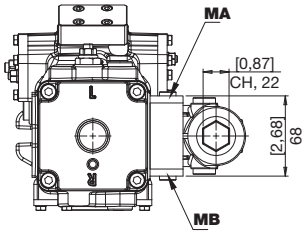
ACCESSORI
ACCESSORIES
ZUBEHÖR

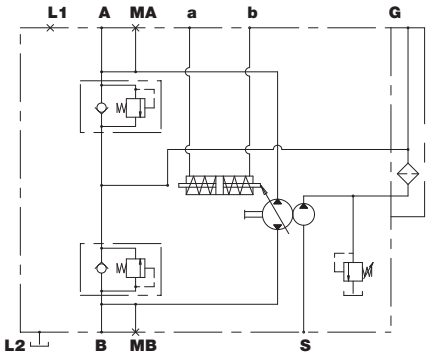
Y **FILTRO SENZA INDICATORE DI INTASAMENTO**
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER



POSSIBILITA' DI RUOTARE IL FILTRO AD INTERVALLI DI 45°
THE FILTER CAN BE ROTATED AT INTERVALS OF 45°
DAS FILTER KANN ROTIERT INTERVALLEN VON 45°



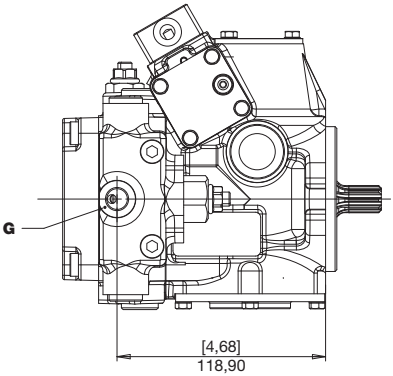


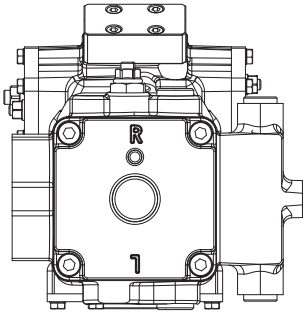


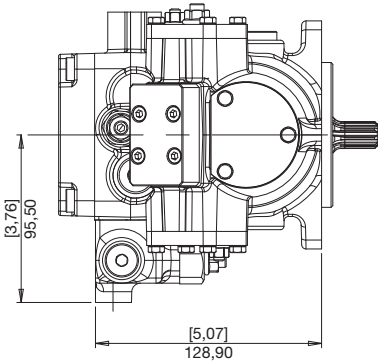
G	presa olio filtrato *filtered oil intake* anschluss filtriertes öl

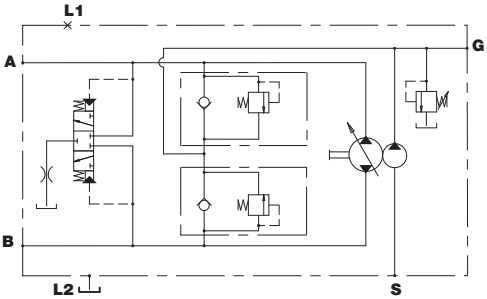
M

VALVOLA DI FLUSSAGGIO
FLUSHING AND BOOST VALVE
SPÜL- UND SPEISEDRUKVENTIL









ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

SM	PZ	08	R	S	V	G	K	E	A	1	0

PRODOTTO
PRODUCT
PRODUKT

PZ - Pompa a pistoni assiali per circuito chiuso
PZ - *Closed circuit axial piston pump*
PZ - Axialkolbenpumpe für den geschlössenen kreislauf

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
07 - 08 - 09 - 10 - 11
12 - 13 - 14 - 16 - 18 - 19

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

S - Pompa singola / *Single pump* / Einzelne Pumpe
T - Pompa ant. Tandem / *Tandem front pump* / Vordere Tandem-Pumpe
C - Pompa post. Tandem / *Tandem rear pump* / Hintere Tandem-Pumpe

ESTREMITÀ D'ALBERO
SHAFT PROFILE
WELLENENDE

J - Ø 22,22
P - Ø 15,85
V - SAE 9T 16/32 DP
X - SAE 11T 16/32" DP
9 - SAE 13T 16/32" DP

COMANDO ***CONTROL*** **STEUERUNG**

E - Elettrico on/off centro chiuso (12 V)
F - Elettrico on/off centro chiuso (24 V)
K - Idraulico a distanza
N - Elettrico on/off centro aperto (12 V)
Q - Elettrico on/off centro aperto (24 V)
S - Elettronico proporzionale (12 V)
W - Elettronico proporzionale (24 V)

E *- 12 V electrical on/off, closed center*
F *- 24 V electrical on/off, closed center*
K *- Remote hydraulic*
N *- 12 V electrical on/off, open center*
Q *- 24 V electric on/off, open center*
S *- 12 V electronic proportional*
W *- 24 V electronic proportional*

E - Elektrische Steuerung on/off geschlossenes Ventil (12 V)
F - Elektrische Steuerung on/off geschlossenes Ventil (24 V)
K - Hydraulische Fernsteuerung
N - Elektrische Steuerung on/off geöffnetes Ventil (12 V)
Q - Elektrische Steuerung on/off geöffnetes Ventil (24 V)
S - Elektronische Poroportionalsteuerung (12 V)
W - Elektronische Poroportionalsteuerung (24 V)

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
H - 230 bar
G - 250 bar
I - 280 bar
L - 300 bar
M - 320 bar
O - 350 bar

PCE 050

TIPO DI OSCILLANTE:
A = oscillante su rullini
B = oscillante su bronzine

SWASHPLATE TYPE:
A *= mounted on needle bearing*
B *= mounted on bronze bearings*

SCHWENKSCHEIBENLAGERUNG:
A = Rollengelagert
B = Bronze-Gleitgelagert

ACCESSORI ***ACCESSORIES*** **ZUBEHÖR**

0 - nessuna opzione
B - By-pass
M - Valvola di flussaggio
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento
E - presenza uomo 12 V

0 *- no accessories*
B *- By-pass*
M *- Flushing and boost valve*
X *- filter with electric clogging indicator*
Y *- filter without electric clogging indicator*
E *- Deadman safety valve 12 V*

0 - ohne Zubehör
M - Spül- und speisedrukventil
B - By-pass
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger
E - Totmann-Abschaltventil12 V

S - X+B
T - X+E
D - B+E
U - X+B+E
V - Y+B
Z - Y+E
R - Y+B+E

PREDISPOSIZIONI ***VERSION*** **BAUART**

0 - nessuna predisposizione senza pompa sovralimentazione
1 - nessuna predisposizione con pompa sovralimentazione
2 - predisposizione SAE A con pompa sovralimentazione
4 - pompa ingranaggi tedesca GR2 ø 52 con pompa sovralimentazione
5 - predisposizione SAE A senza pompa sovralimentazione
7 - pompa ingranaggi tedesca GR2 ø 52 senza pompa sovralimentazione
8 - predisposizione per pompa ingranaggi GR1 con pompa sovralimentazione
9 - predisposizione per pompa ingranaggi GR1 senza pompa sovralimentazione
N - predisposizione Tandem senza pompa sovralimentazione
P - predisposizione Tandem con pompa sovralimentazione

0 *- no auxiliary mount without charge pump*
1 *- no auxiliary mount with charge pump*
2 *- SAE A mount with charge pump*
4 *- Gear pump german GR2 ø 52 with charge pump*
5 *- SAE A mount without charge pump*
7 *- Gear pump german GR2 ø 52 without charge pump*
8 *- Gear pump GR1 with charge pump*
9 *- Gear pump GR1without boost pump*
N *- Prepared for tandem pump, without boost pump*
P *- Prepared for tandem pump, with boost pump*

0 - ohne Anschlussflansch, ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A - Anschlussflansch mit Speisepumpe
4 - Zahnradpumpe din norm GR2 ø 52 mit Speisepumpe
5 - SAE A Bauart
7 - Zahnradpumpe din norm GR2 ø 52 ohne Speisepumpe
8 - Zahnradpumpe GR1 mit Speisepumpe
9 - Zahnradpumpe GR1 ohne Speisepumpe
N - mit Durchtrieb, vorbereitet für Tandempumpe, ohne Speisepumpe
P - mit Durchtrieb, vorbereitet für Tandempumpe, mit Speisepumpe

SM PZ

POMPE MULTIPLE
MULTIPLE PUMPS
MEHRFACHPUMPEN

Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel.

POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

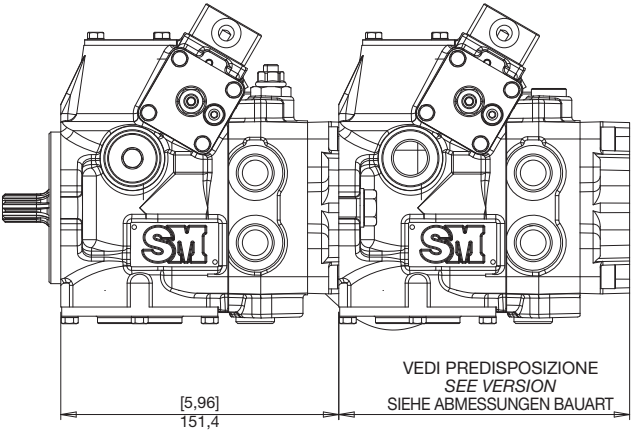
TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm^3	in^3	bar	psi
SM PZ	8	0,48	20	290

1° STADIO ***STAGE*** **STUFE** — **2° STADIO** ***STAGE*** **STUFE**

SM PZ 08 R T V G K E B P 0 SM PZ 08 R C V G K E B 1 0

STADIO **ANTERIORE** SMPZ CON PREDISPOSIZIONE PER STADIO **POSTERIORE** SMPZ
FRONT *PUMP SMPZ PREPAREDFOR ASSEMBLY OF A* ***REAR*** *PUMP SMPZ*
VORDERE PUMPE SMPZ VORBEREITET MIT DURCHTRIEB FÜR **HINTERE** PUMPE SMPZ

STADIO **POSTERIORE** SMPZ CON PREDISPOSIZIONE PER STADIO **ANTERIORE** SMPZ
REAR *PUMP SMPZ PREPARED FOR ASSEMBLY OF A* ***FRONT*** *PUMP SMPZ*
HINTERE PUMPE SMPZ VORBEREITET MIT DURCHTRIEB FÜR ANBAU AN **VORDERE** PUMPE SMPZ



NOTE PER L'ORDINAZIONE
- Su richiesta il filtro può essere fornito ruotato in posizione diversa dalla standard
- Le pompe di tipo **S** (singola), **T** (anteriore tandem) e **C** (posteriore tandem) non sono intercambiabili
- Le pompe di tipo **S** (singola) e **C** (posteriore tandem), non prevedono le predisposizioni **N** e **P**
- La pompa di tipo **T** (anteriore tandem) prevede solo le predisposizioni **N** e **P**
- La pompa di tipo **C** (posteriore tandem) prevede solo l'estremità d'albero **V**
- In caso di pompa tandem, la pompa di sovralimentazione è di norma sulla pompa anteriore
- Le pompe multiple sono fornite senza tubo di collegamento tra i drenaggi

ORDERING NOTES
- *On request the filter can be supplied mounted in a rotated position than standard*
- *Pumps **S** (single) type, **T** (front pump) and **C** (rear pump) are not interchangeable*
- *Pumps **S** (single) type and **C** (rear pump) do not provide predispositions **N** and **P***
- *Pump **T** (front pump) type provide predispositions **N** and **P** only*
- *Pump **C** (rear pump) type provide shaft **V** only*
- *In tandem pump, boost pump is normally on the front pump*
- *Multiple pumps are supplied without connecting tube between the drains*

ANMERKUNG ZUM BESTELLSCHLÜSSEL
- Auf Anforderung kann der Speisedruckfilter auch in einer anderen als der Standard-Position gedreht geliefert werden.
- Pumpen **S** (Einzel), **T** (vordere Pumpe) und **C** (hintere Pumpe) sind nicht miteinander austauschbar.
- Die Pumpen **S** (Einzel) und **C** (hintere Pumpe) haben keine Durchtriebsmöglichkeiten **N** und **P**
- Nur die vordere Pumpe **T** kann die Durchtriebsmöglichkeiten **N** und **P** haben
- Die hintere Pumpe **C** hat nur das Wellenende **V**
- Bei einer Doppelpumpe wird normalerweise nur eine Speisepumpe in der Mitte montiert
- Bei Mehrfach-Pumpen werden diese ohne Sammelleitung der Leckölanschlüsse geliefert

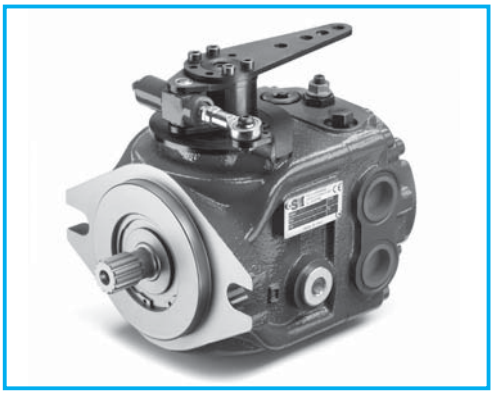
SM P1

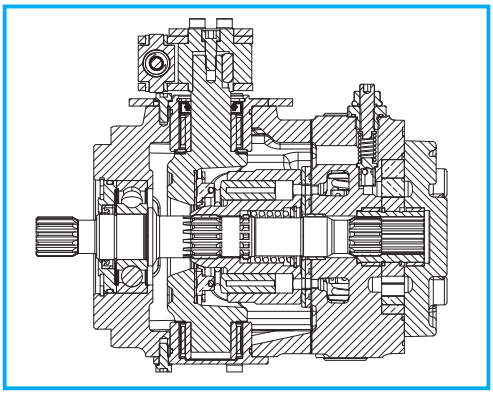
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

Le pompe a pistoni assiali serie SM P1 sono state concepite per operare in circuito chiuso.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 350 bar di picco.
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

Axial piston pumps series SM P1 have been designed to operate in a closed circuit.
The available control systems make it easy to use these pumps in any application for industrial and mobile fields.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working peak pressure up to 350 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie SM P1 wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die verschiedenen lieferbaren Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen ermöglichen, wie von modernen Antriebsaggregaten gefordert, den Einsatz bei hohen Pumpendrehzahlen, wobei ein kontinuierlicher Arbeitsdruck mit einem Spitzenwert von 350 Bar gewährleistet ist.
Unter Anwendung der auf Anfrage erhältlichen Anbauflansche können die Pumpen in der Tandemversion geliefert werden.





DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK						VELOCITÀ *DI ROTAZIONE SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
			CONTINUA *CONTINUOUS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
SM P1	17	1,04	280	4060	300	4350	350	5075	3600	500	15,66	17,86
	19	1,16	280	4060	300	4350	350	5075	3600	500	15,66	17,86
	21	1,28	280	4060	300	4350	350	5075	3600	500	15,66	17,86
	22	1,34	280	4060	300	4350	350	5075	3600	500	15,90	18,10
	23	1,40	280	4060	300	4350	350	5075	3600	500	15,90	18,10
	25	1,53	280	4060	300	4350	350	5075	3600	500	15,90	18,10
	28	1,71	280	4060	300	4350	320	4640	3600	500	15,90	18,10

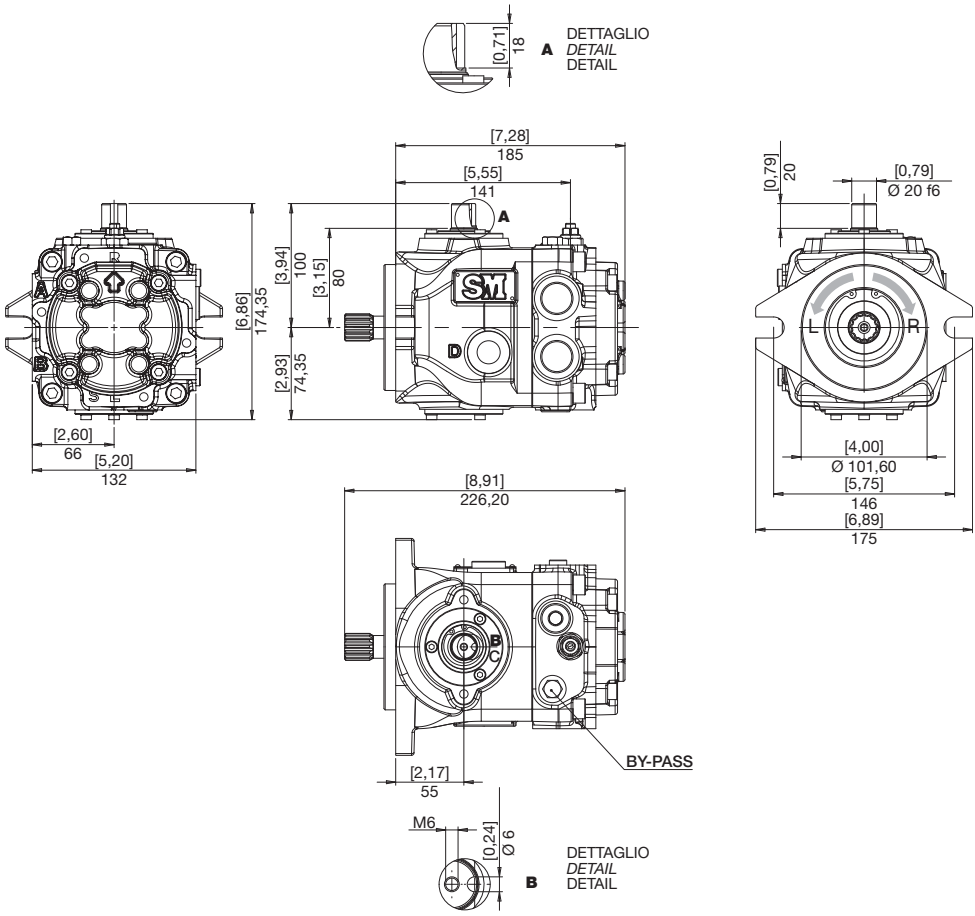
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
SM P1	10	0,61	20	290

MOMENTO POLARE DI INERZIA
INERTIAL MASS
TRÄGHEITSMOMENT

approx. 8,5 x 10^{-4} Kg m^2

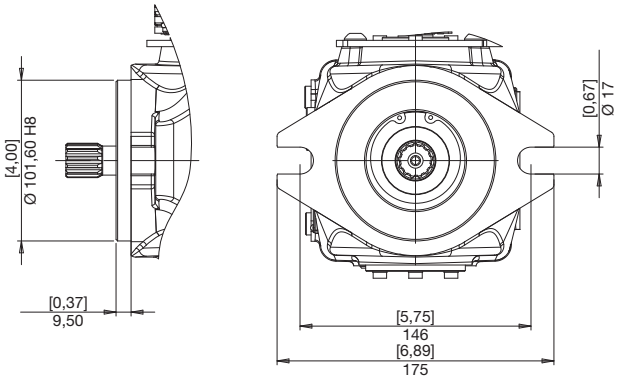
DIMENSIONI
SIZE
ABMESSUNGEN



FLANGE
FLANGES
FLANSCHE

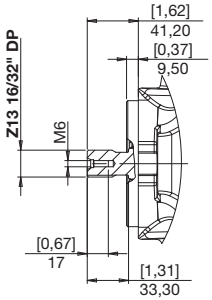
SM P1

B SAE B
SAE B
SAE B

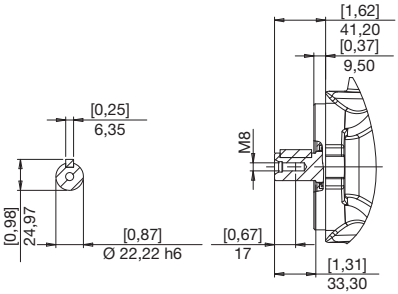


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

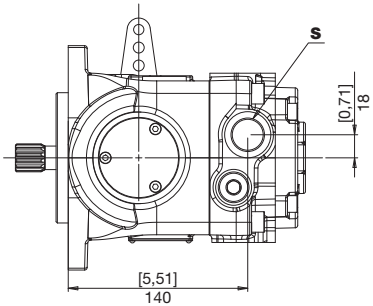
9 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **310 N•m**

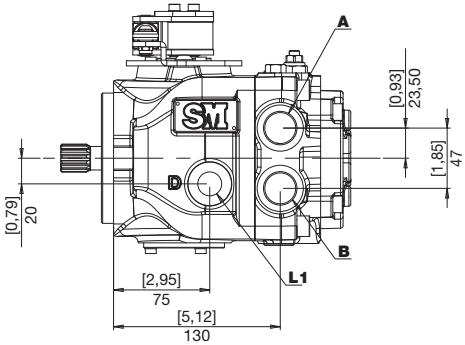


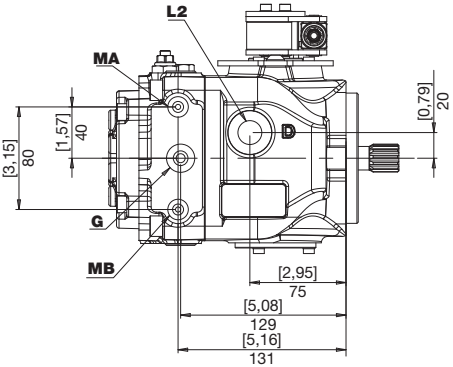
J COPPIA MAX
MAX TORQUE
MAX DREHMOMENT **180 N•m**



BOCCHE
PORTS
ANSCHLÜSSE



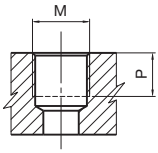




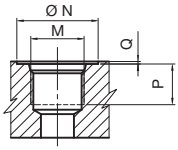
A **B**	Utilizzi *Use* Verbraucher	**G**	Presa bassa pressione *Test port boost pressure* Messanschluß Speisedruck
L1 **L2**	Drenaggi *Drain* Leckölanschluss	**MA** **MB**	Presa alta pressione *Test port high pressure* Messanschluß Hochdruck
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

SM P1



TIPO *TYPE* TYP	M		P mm	P in
G1	1/8” GAS BSPP	8	8	0,31
G2	1/4” GAS BSPP	17	9	0,35
G4	1/2” GAS BSPP	70	14,5	0,57
G6	3/4” GAS BSPP	90	19	0,75



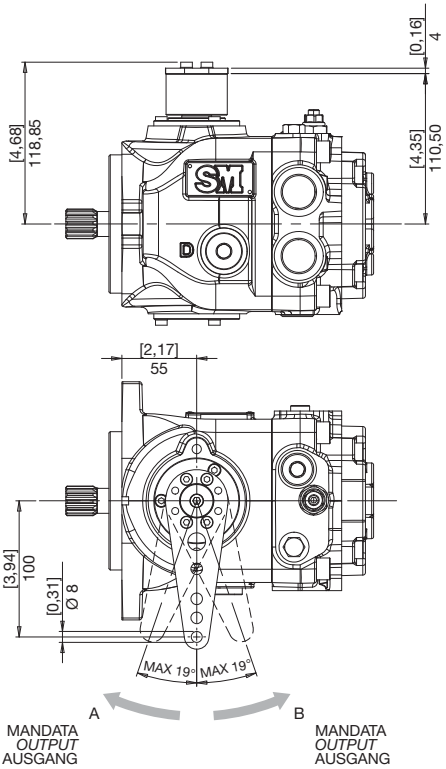
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GROSSE	N mm	N in	P mm	P in	Q mm	Q in	M	M
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U5	5/8”	34	1,34	18	0,71	0,3	0,01	3/4-16 UNF	70
U6	3/4”	41	1,61	20	0,79	0,3	0,01	1-1/16”-12 UNF	90

COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

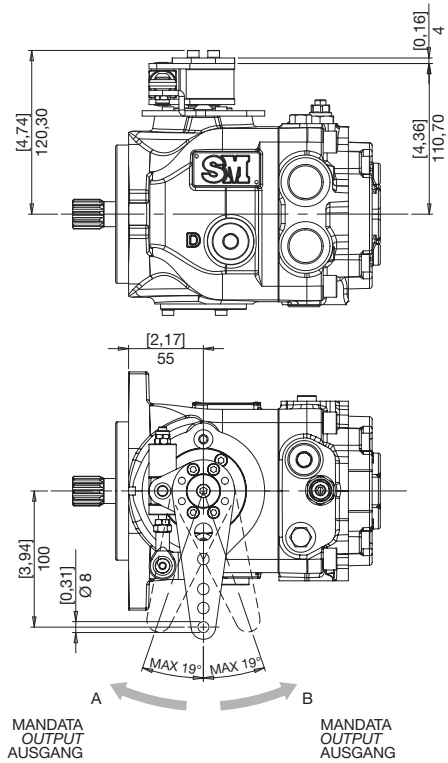
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGI *DRAIN* LECKÖLANSCHLUSS	PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLÜSSE MA-MB	G
G	G6	G6	G4	G1	G2
U	U6	U6	U5	G1	U2

COMANDI
CONTROLS
STEUERUNGEN

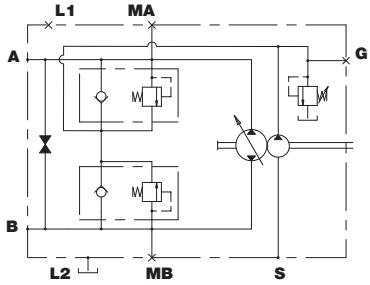
L MANUALE SENZA AZZERATORE
MANUAL WITHOUT ZEROING
MANUELL OHNE NULLSTELLUNG



M MANUALE CON AZZERATORE
MANUAL WITH ZEROING
MANUELL MIT NULLSTELLUNG



L M

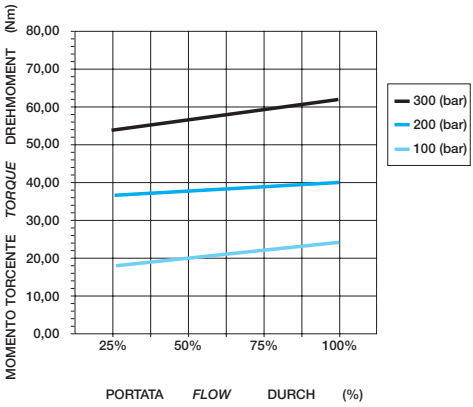


MOMENTI TORCENTI LEVA DI COMANDO
TORQUE FOR CONTROL PIN ACTUATION
DREHMOMENT FÜR SCHWENKWINKELVERSTELLUNG

SM P1

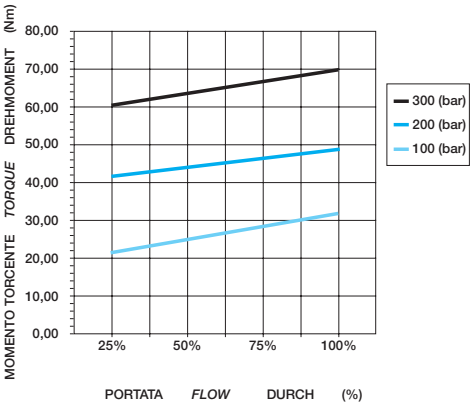
L

MANUALE SENZA AZZERATORE
MANUAL WITHOUT ZEROING
MANUELL OHNE NULLSTELLUNG



M

MANUALE CON AZZERATORE
MANUAL WITH ZEROING
MANUELL MIT NULLSTELLUNG

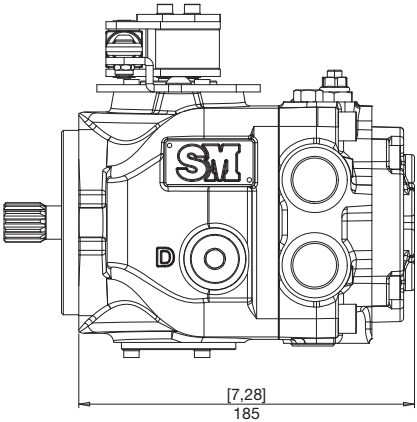


PREDISPOSIZIONI
VERSION
BAUART

SM P1

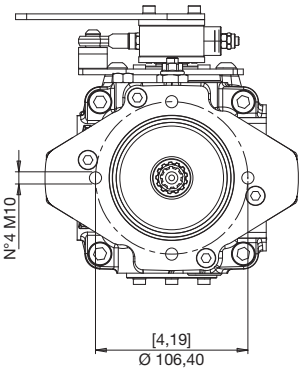
0 NESSUNA PREDISPOSIZIONE SENZA POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITHOUT CHARGE PUMP
OHNE ANSCHLUSSFLANSCH OHNE SPEISEPUMPE

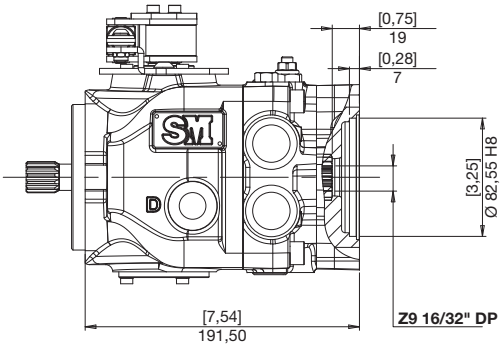
1 NESSUNA PREDISPOSIZIONE CON POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITH CHARGE PUMP
OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE



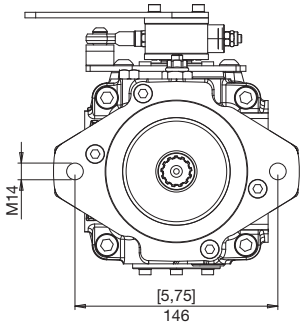
2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH CHARGE PUMP
SAE A MIT SPEISEPUMPE

5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT CHARGE PUMP
SAE A OHNE SPEISEPUMPE

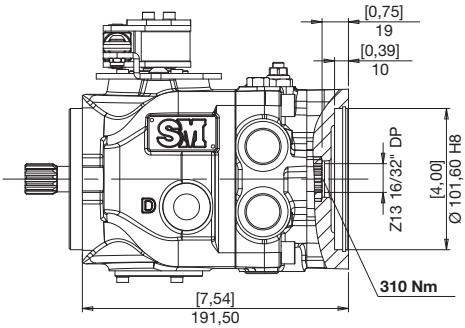




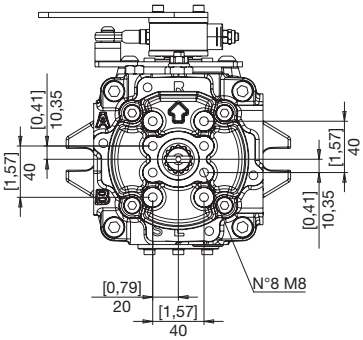
3 SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH CHARGE PUMP
SAE B MIT SPEISEPUMPE



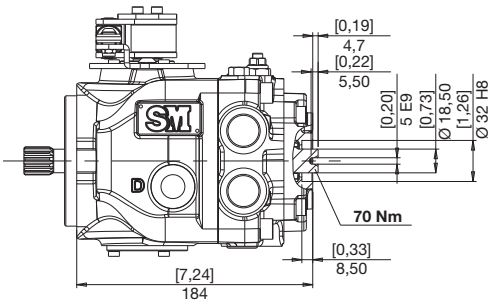
6 SAE B SENZA POMPA SOVRALIMENTAZIONE
SAE B WITHOUT CHARGE PUMP
SAE B OHNE SPEISEPUMPE



8 POMPA INGR. GR 1 CON POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITH CHARGE PUMP
ZAHNRADPUMPE GR 1 MIT SPEISEPUMPE

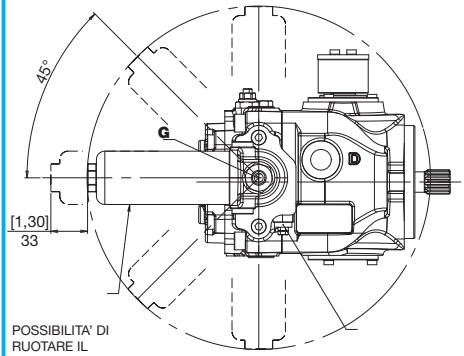


9 POMPA INGR. GR 1 SENZA POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITHOUT CHARGE PUMP
ZAHNRADPUMPE GR 1 OHNE SPEISEPUMPE



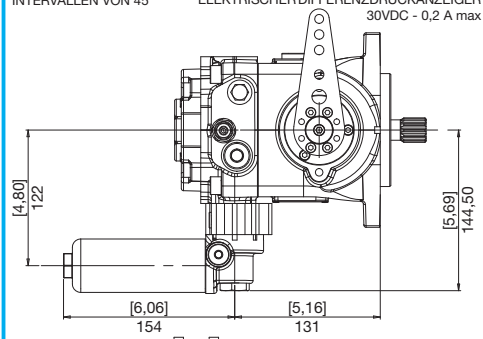
ACCESSORI
ACCESSORIES
ZUBEHÖR

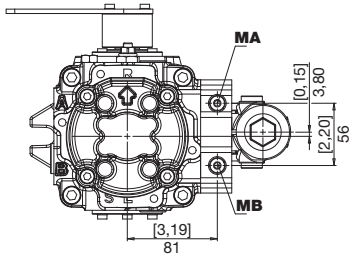
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



POSSIBILITA' DI RUOTARE IL FILTRO AD INTERVALLI DI 45°
THE FILTER CAN BE ROTATED AT INTERVALS OF 45°
DAS FILTER KANN ROTIERT INTERVALLEN VON 45°

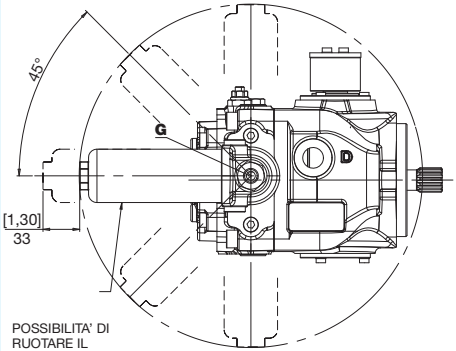
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRICAL DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max



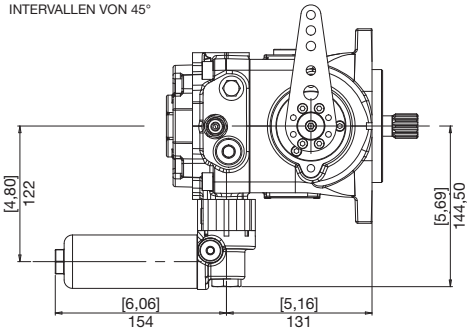


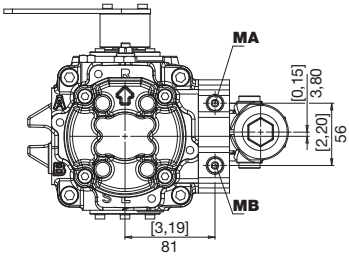
G presa olio filtrato
filtered oil intake
anschluss filtriertes öl

Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER



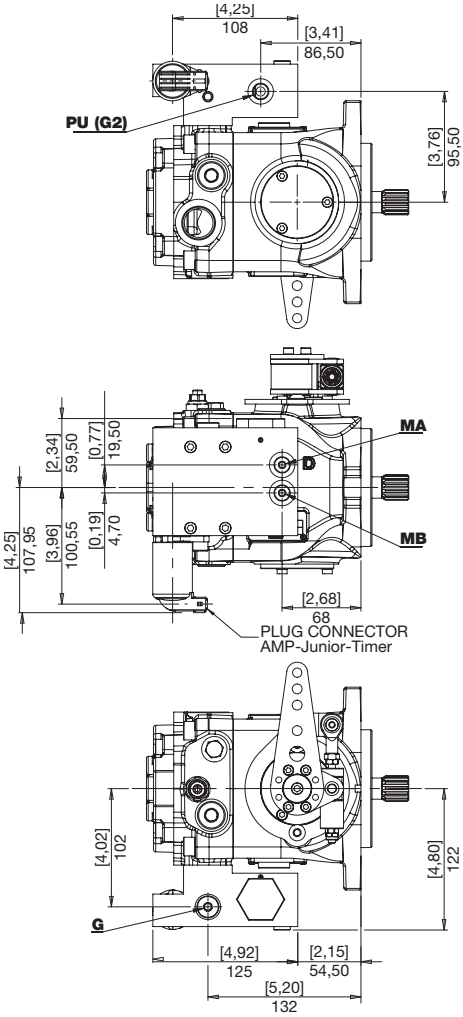
POSSIBILITA' DI RUOTARE IL FILTRO AD INTERVALLI DI 45°
THE FILTER CAN BE ROTATED AT INTERVALS OF 45°
DAS FILTER KANN ROTIERT INTERVALLEN VON 45°

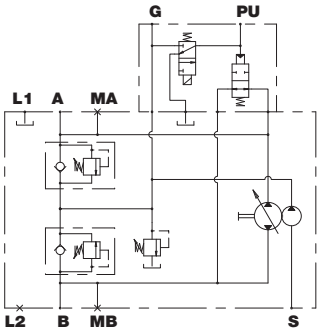




G presa olio filtrato
filtered oil intake
anschluss filtriertes öl

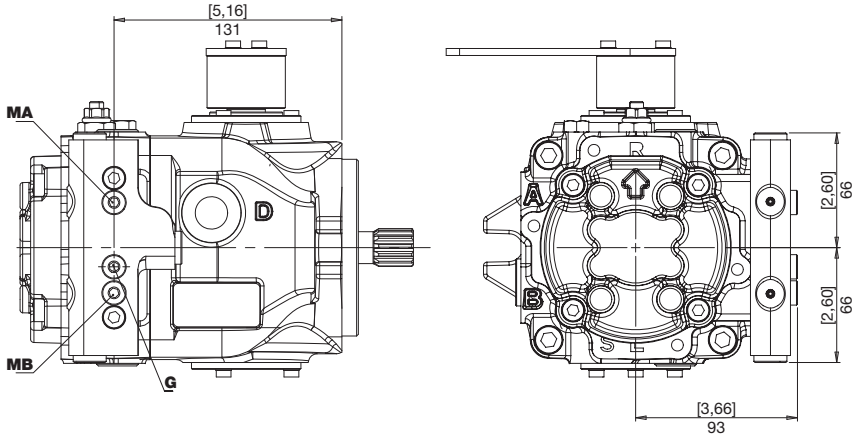
W **VALVOLA BY-PASS + SBLOCCO FRENO**
BY-PASS VALVE + BRAKE RELEASE
BY-PASS VENTIL + BREMSE LÖSEN

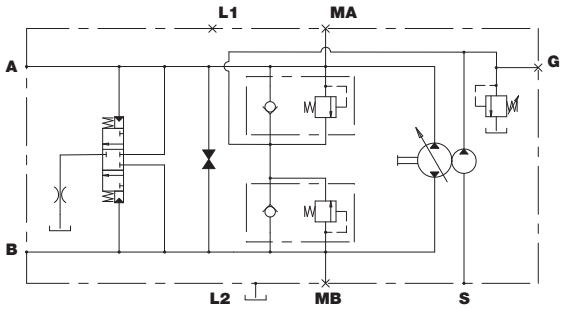




PU	Pilotaggio sblocco freno (G2) *Brake opening pressure (G2)* Bremse offnung druck (G2)

V VALVOLA DI FLUSSAGGIO
FLUSHING AND BOOST VALVE
SPUL- UND SPEISEDRUKVENTIL





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ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

SM P1 21 R S 9 G L E A 1 0

PRODOTTO
PRODUCT
PRODUKT

P1 - Pompa a pistoni assiali per circuito chiuso
P1 - *Closed circuit axial piston pump*
P1 - Axialkolbenpumpe für den geschlössenen kreislauf

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

17 - 19 - 21 - 22 - 23
25 - 28

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

S - Pompa singola
Single pump
Einzelne Pumpe

C - Pompa post. Tandem
Tandem rear pump
Hintere Tandem-Pumpe

ESTREMITÀ D'ALBERO
SHAFT PROFILE
WELLENENDE

9 - SAE 13T 16/32" DP
J - Ø 22,22

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

COMANDO
CONTROL
STEUERUNG

L - Manuale senza azzeratore
M - Manuale con azzeratore

L - *Manual without zeroing*
M - *Manual with zeroing*

L - Manuell ohne Nullstellung
M - Manuell mit Nullstellung

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
M - 320 bar
O - 350 bar

TIPO DI OSCILLANTE:
A = oscillante su rullini
B = oscillante su bronzine

SWASHPLATE TYPE:
A *= mounted on needle bearing*
B *= mounted on bronze bearings*

SCHWENKSCHEIBENLAGERUNG:
A = Rollengelagert
B = Bronze-Gleitgelagert

ACCESSORI
ACCESSORIES
ZUBEHÖR

0 - nessuna opzione
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento
V - Valvola di flussaggio

0 *- no accessories*
X *- filter with electric clogging indicator*
Y *- filter without electric clogging indicator*
V *- Flushing and boost valve*

0 - ohne Zubehör
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger
V - Spül- und speisedrukventil

PREDISPOSIZIONI
VERSION
BAUART

0 - nessuna predisposizione senza pompa sovralimentazione
1 - nessuna predisposizione con pompa sovralimentazione
2 - predisposizione SAE A con pompa sovralimentazione
3 - predisposizione SAE B con pompa sovralimentazione
5 - predisposizione SAE A senza pompa sovralimentazione
6 - predisposizione SAE B senza pompa sovralimentazione
8 - predisposizione per pompa ingranaggi GR1 con pompa sovralimentazione
9 - predisposizione per pompa ingranaggi GR1 senza pompa sovralimentazione

0 *- no auxiliary mount without charge pump*
1 *- no auxiliary mount with charge pump*
2 *- SAE A mount with charge pump*
3 *- SAE B mount with charge pump*
5 *- SAE A mount without charge pump*
6 *- SAE B mount without charge pump*
8 *- Gear pump GR 1 with charge pump*
9 *- Gear pump GR 1 without boost pump*
P *- Tandem charge*

0 - ohne Anschlussflansch,ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A - Anschlussflansch mit Speisepumpe
3 - SAE B - Anschlussflansch mit Speisepumpe
5 - SAE A Bauart
6 - SAE B Bauart
8 - Zahnradpumpe GR 1mit Speisepumpe
9 - Zahnradpumpe GR 1ohne Speisepumpe
P - Anschlussflansch Tandem

SM P1

POMPE MULTIPLE
MULTIPLE PUMPS
MEHRFACHPUMPEN

Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel.

1° STADIO ***STAGE*** **STUFE**

2° STADIO ***STAGE*** **STUFE**

SM	P1	21	R	S	9	G	M	G	B	3	0	SM	P1	21	R	C	9	G	M	G	B	0	0

POMPA SINGOLA SMP1
CON PREDISPOSIZIONE SAE B

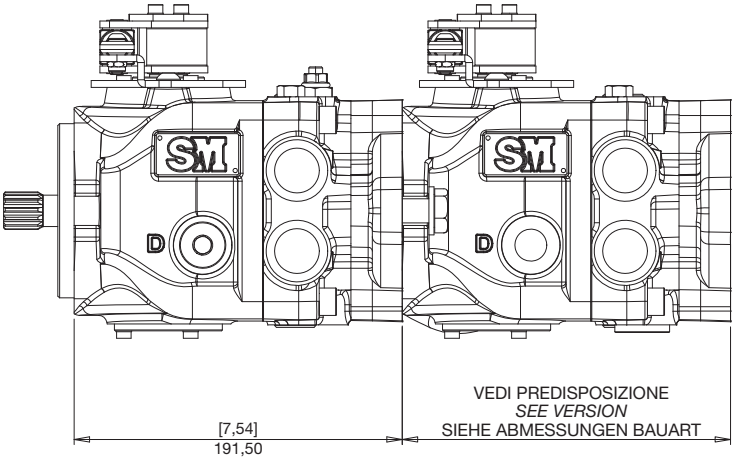
SIGLE PUMP SMP1 PREPARED FOR SAE B CONNECTION

VORDERE PUMPE SMP1
VORBEREITET MIT DURCHTRIEB
FÜR HINTERE PUMPE SMP1 (SAE B)

STADIO **POSTERIORE** SMP1
CON PREDISPOSIZIONE
PER STADIO **ANTERIORE** SMP1

REAR *PUMP SMP1 PREPARED FOR ASSEMBLY OF A* ***FRONT*** *PUMP SMP1*

HINTERE PUMPE SMP1
VORBEREITET MIT DURCHTRIEB
FÜR ANBAU AN **VORDERE** PUMPE SMP1



NOTE PER L'ORDINAZIONE
- Su richiesta la leva può essere fornita ruotata in posizione diversa dalla standard
- Su richiesta il filtro può essere fornito ruotato in posizione diversa dalla standard
- La pompa anteriore tandem prevede solo le predisposizioni **3** e **6**
- La pompa di tipo **C** (posteriore tandem) prevede solo l'estremità d'albero **9**
- In caso di pompa tandem, la pompa di sovralimentazione è di norma sulla pompa anteriore
- Le pompe multiple sono fornite senza tubo di collegamento tra i drenaggi
- Il by-pass a vite è standard su tutte le pompe

ORDERING NOTES
- *On request the control lever can be supplied mounted in a rotated position than standard*
- *On request the filter can be supplied mounted in a rotated position than standard*
- *Tandem front pump provide predispositions **3** and **6** only*
- *Pump **C** (rear pump) type provide shaft **9** only*
- *In tandem pump, boost pump is normally on the front pump*
- *Multiple pumps are supplied without connecting tube between the drains*
- *By-pass screw is standard on all the pumps*

ANMERKUNG ZUM BESTELLSCHLÜSSEL
- Auf Anforderung kann der Verstellhebel auch in einer anderen als der Standard-Position gedreht geliefert werden.
- Auf Anforderung kann der Speisedruckfilter auch in einer anderen als der Standard-Position gedreht geliefert werden.
- Die vordere Tandem-Pumpe T kann nur mit den Durchtrieben **3** und **6** geliefert werden
- Die hintere Pumpe **C** hat nur das Wellenende **9**
- Bei einer Doppelpumpe wird normalerweise nur eine Speisepumpe in der Mitte montiert
- Bei Mehrfach-Pumpen werden diese ohne Sammelleitung der Leckölanschlüsse geliefert
- Das Bypass-Ventil als Schraube ist Standard bei allen Pumpen dieser Baureihe

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HP P2

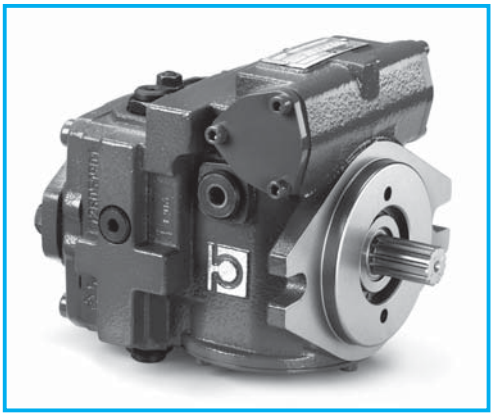
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLÖSSENEN KREISLAUF

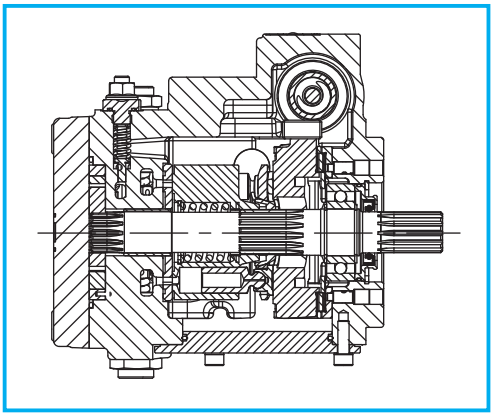
Le pompe a pistoni assiali serie HP P2 sono state concepite per operare in circuito chiuso.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale. La pompa HP P2 viene normalmente fornita con oscillante su bronzine a sostentamento idrostatico.
A richiesta è fornibile su cuscinetti a rulli.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elvata affidabilità per pressioni di funzionamento fino a 250 bar continui. (350 bar di picco)
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

HP P2 series axial piston pumps have been designed to work in a closed circuit. Control systems actually available are making easy to use these pumps in any application for industrial and mobile field.
Typically the pump HP P2 is equipped with bronze bearings for hydrostatic suspension of the swash plate. Alternatively there are roller bearings for the swash plate suspension available on request.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working continuous pressure until 250 bar and working peak pressure until 350 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie HP P2 wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die lieferbaren unterschiedlichen Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Die Pumpe HP P2 wird normalerweise mit hydrostatischen Bronze-Gleitlagern für die Schwenkscheibenverstellung ausgestattet. Auf Anfrage kann die Pumpe aber auch mit einer Rollenlagerung ausgestattet werden.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Pumpendrehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Arbeitsdruck von bis zu 250 Bar (Spitzenwert 350 Bar) gewährleistet.
Die Pumpen können in der Tandemversion geliefert werden, wobei die auf Wunsch erhältichen Flanschverbindungen angewendet werden.

HP P2 14•19•23





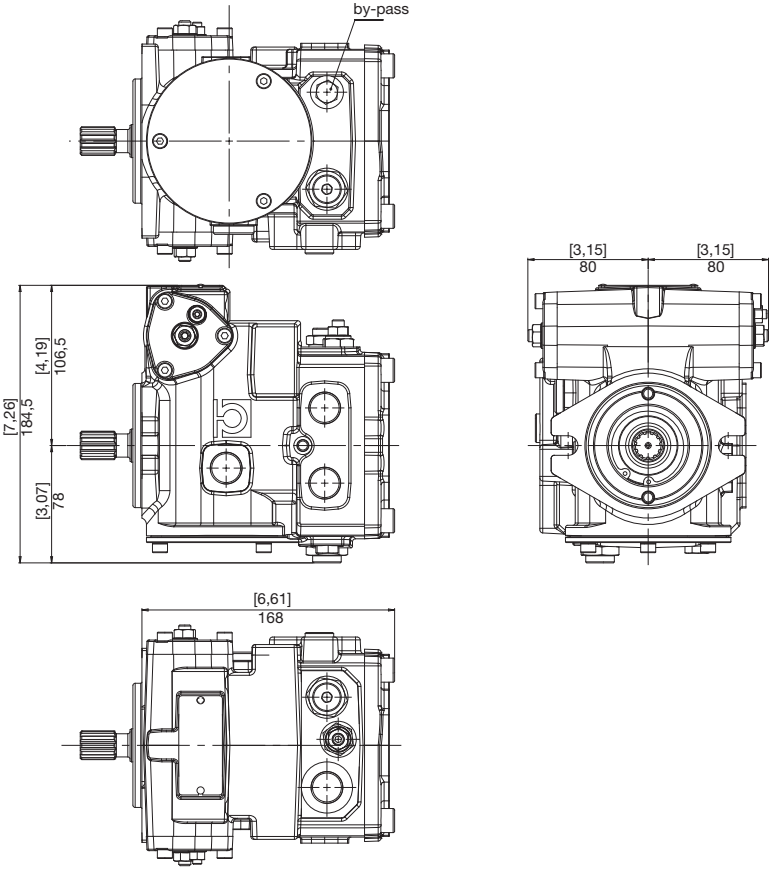
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
HP P2	14	0,85	14,5	250	3625	280	4060	350	5075	4000	500	15	33
	19	1,16	19	250	3625	280	4060	350	5075	3600	500	16	35,3
	23	1,40	18	250	3625	280	4060	350	5075	3200	500	16	35,3

POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

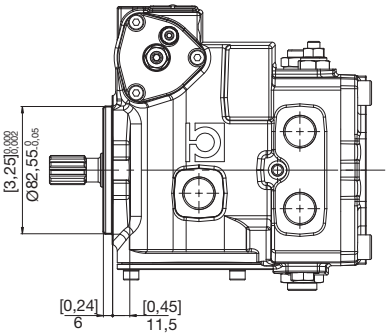
TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FÖRDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
HP P2	6	0,36	25	360

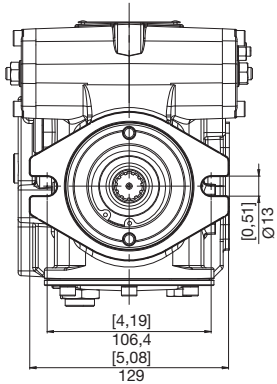
DIMENSIONI
SIZES
ABMESSUNGENE



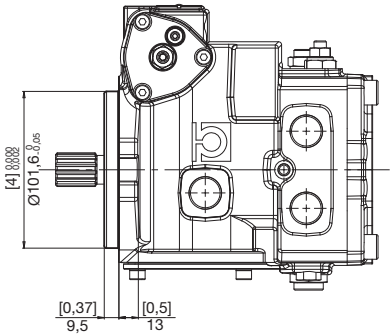
FLANGE
FLANGES
FLANSCHE

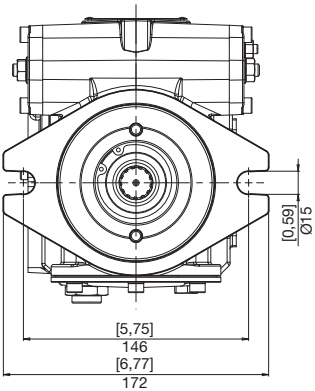
A
SAE A
SAE A
SAE A





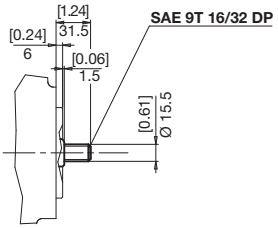
B
SAE B
SAE B
SAE B





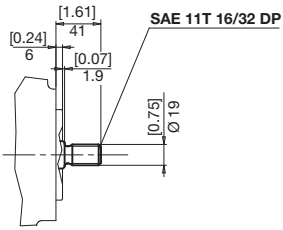
ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

V COPPIA MAX
MAX TORQUE 120 N•m
MAX DREHMOMENT



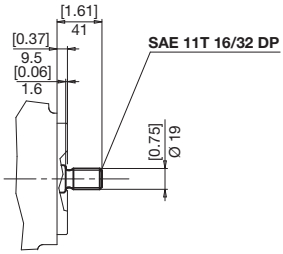
SU FLANGIA SAE A
ON SAE A FLANGES
AUF FLANSCH SAE A

X COPPIA MAX
MAX TORQUE 160 N•m
MAX DREHMOMENT



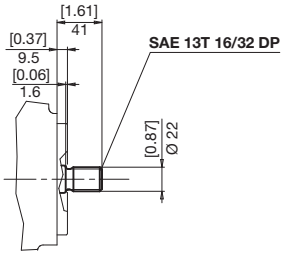
SU FLANGIA SAE A
ON SAE A FLANGES
AUF FLANSCH SAE A

X COPPIA MAX
MAX TORQUE 160 N•m
MAX DREHMOMENT



SU FLANGIA SAE B
ON SAE B FLANGES
AUF FLANSCH SAE B

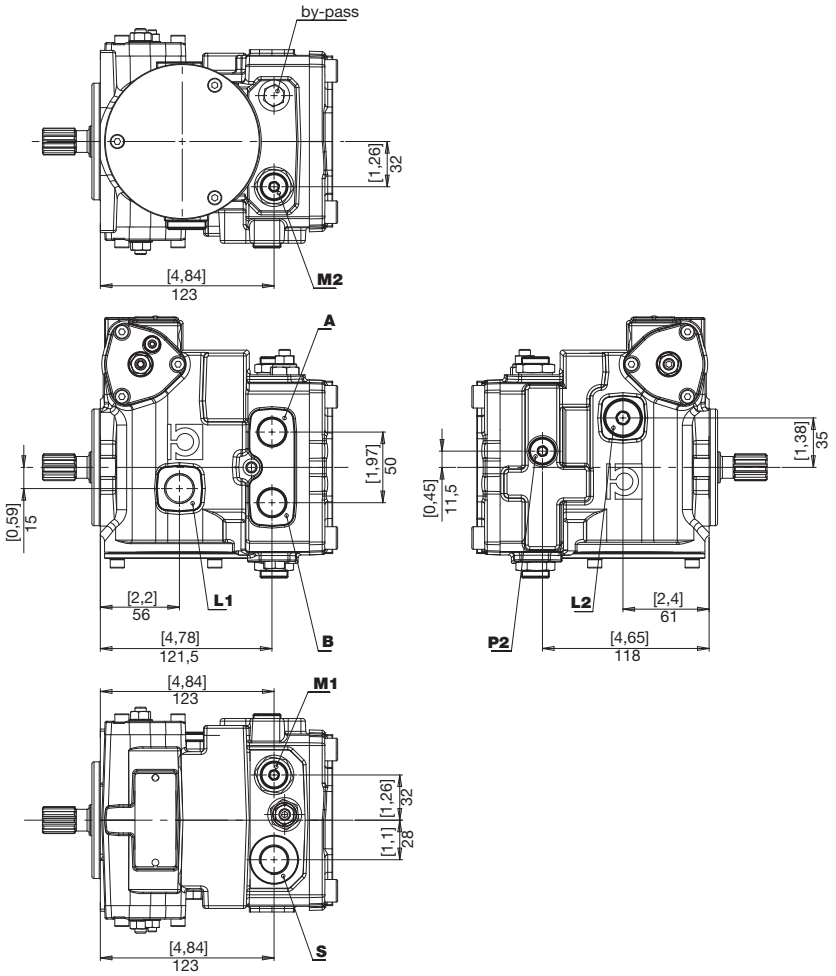
9 COPPIA MAX
MAX TORQUE 310 N•m
MAX DREHMOMENT



SU FLANGIA SAE B
ON SAE B FLANGES
AUF FLANSCH SAE B

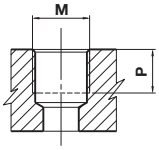
BOCCHE
PORTS
ANSCHLÜSSE

HP P2

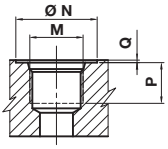


A **B**	Utilizzo *Use* Verbraucher	**P2**	Presa pressione *Pressure intake* Druckanschluss
L1 **L2**	Drenaggio *Drain* Leckölanschluss	**M1** **M2**	Presa manometro *Manometer intake* Manometeranschluss
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G1	1/8” GAS BSPP	8	8	0,31
G2	1/4” GAS BSPP	17	9	0,35
G4	1/2” GAS BSPP	70	16	0,57



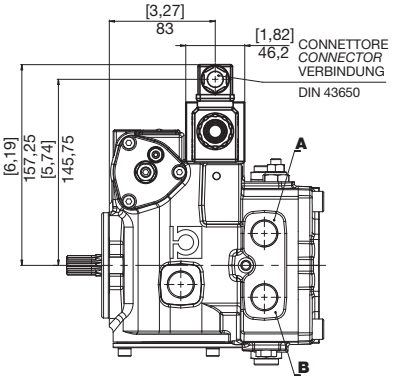
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U5	5/8”	34	1,34	17	0,67	0,3	0,01	7/8-14 UNF	70

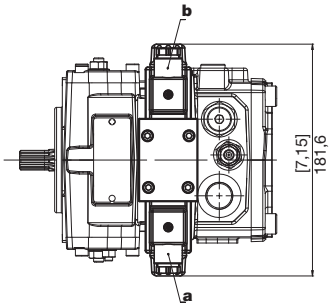
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* ANSAUGÖFFNUNG	A-B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	a - b PILOTAGGIO *PILOT* STEUERDRUCK	M1 - M2 PRESA MANOMETRO *MANOMETER INTAKE* MANOMETERANSCHLUSS
G	G4	G4	G4	G1	G2
U	U5	U5	U5	G2	U2

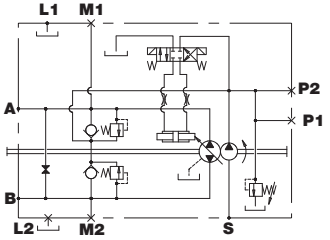
E F — ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

12 V 24 V



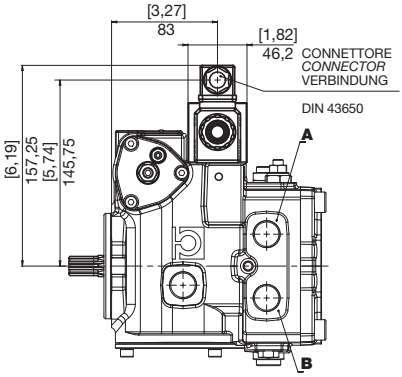


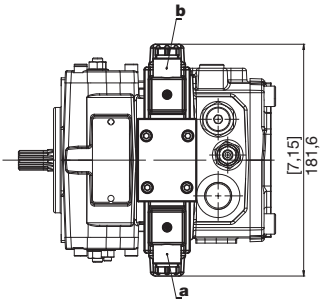
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A



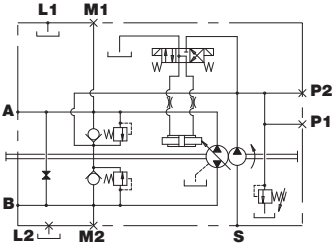
N Q — ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, GEÖFFNETES VENTIL

12 V 24 V

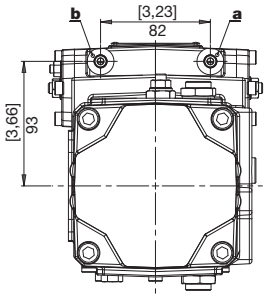


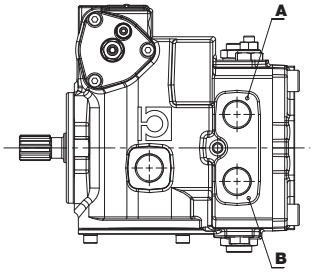


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

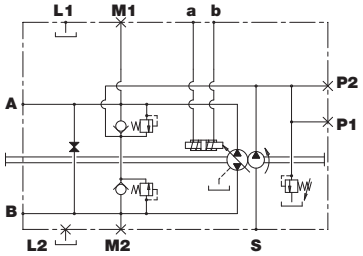


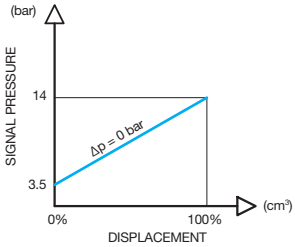
K IDRAULICO A DISTANZA
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG





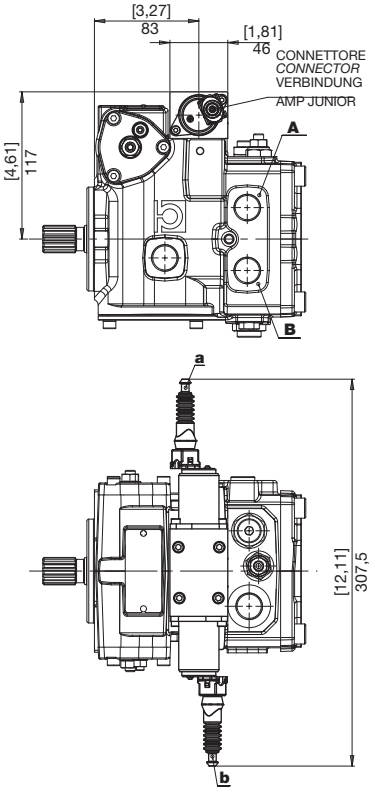
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A





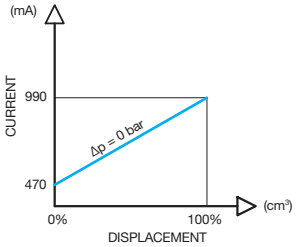
S **W**
12 V 24 V

ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG

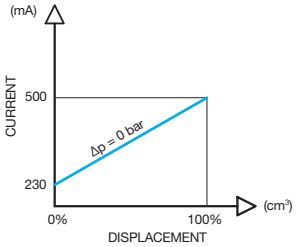


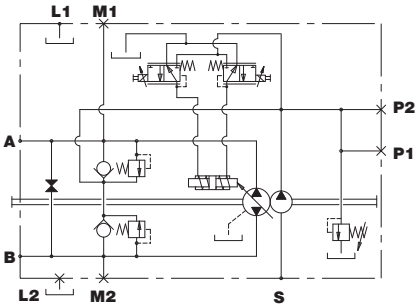
	S	W	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

S



W

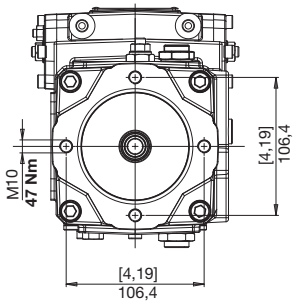




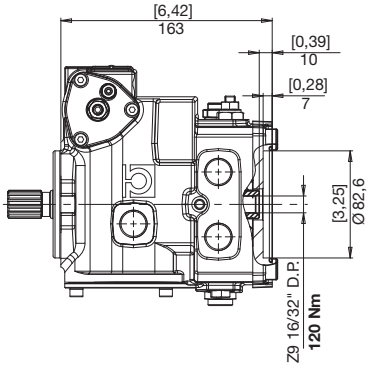
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

PREDISPOSIZIONI
VERSION
BAUART

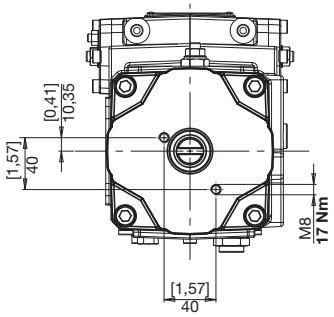
2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH BOOST PUMP
SAE A MIT SPEISEPUMPE



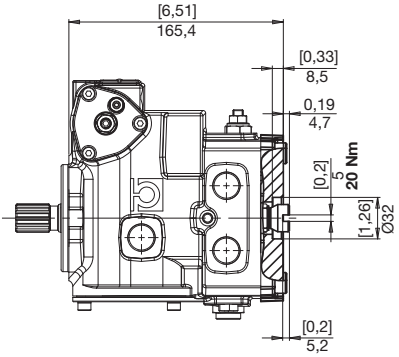
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT BOOST PUMP
SAE A OHNE SPEISEPUMPE



8 POMPA INGR. GR 1 CON POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITH BOOST PUMP
ZAHNRADPUMPE GR 1 MIT SPEISEPUMPE



9 POMPA INGR. GR 1 SENZA POMPA SOVRALIMENTAZIONE
GEAR PUMP GR 1 WITHOUT BOOST PUMP
ZAHNRADPUMPE GR 1 OHNE SPEISEPUMPE

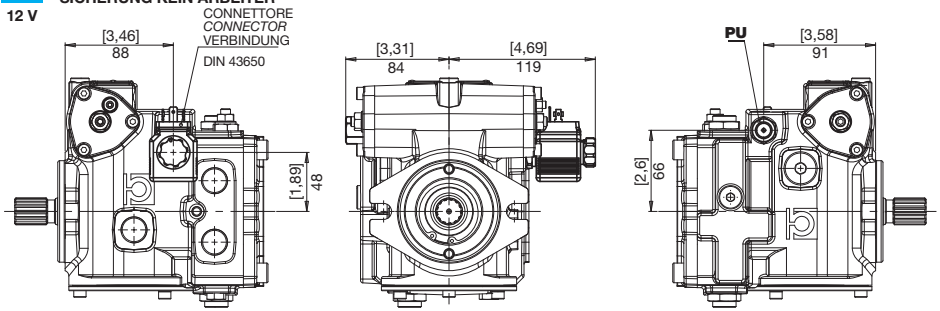


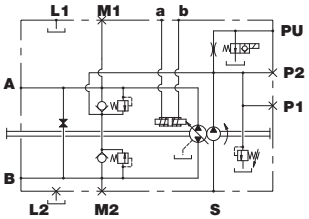
ACCESSORI
ACCESSORIES
ZUBEHÖR

E

SICUREZZA OPERATORE ASSENTE
NO OPERATOR SAFETY
SICHERUNG KEIN ARBEITER

12 V

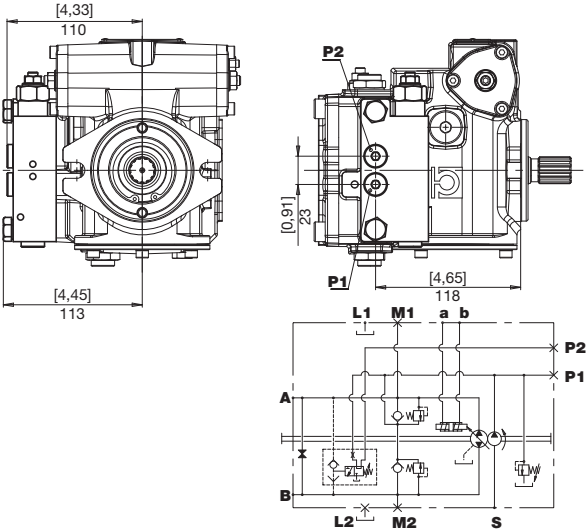




PU	Presa pressione sblocco freno (1/4" Gas) *Brake opening pressure (1/4" Gas)* Bremse Öffnung Druck (1/4" Gas)

J

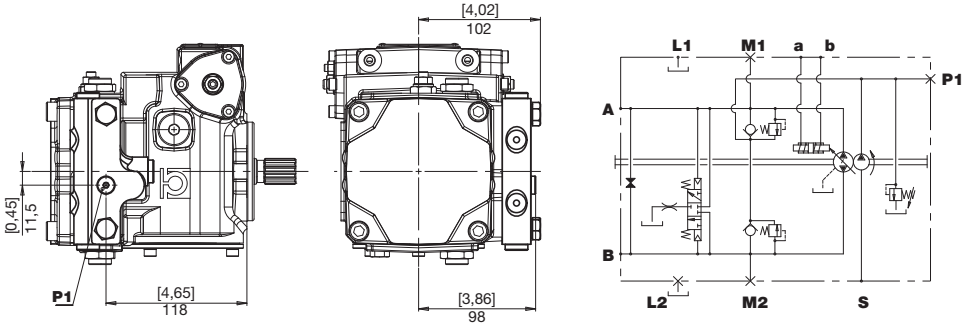
TAGLIO DI PRESSIONE (SOLO PER VERSIONE A RULLI)
CUTOFF (ONLY FOR ROLLER VERSION)
DRUCKABSCHNEIDUNG (NUR FUR ROLLER VERSION)



ACCESSORI
ACCESSORIES
ZUBEHÖR

V

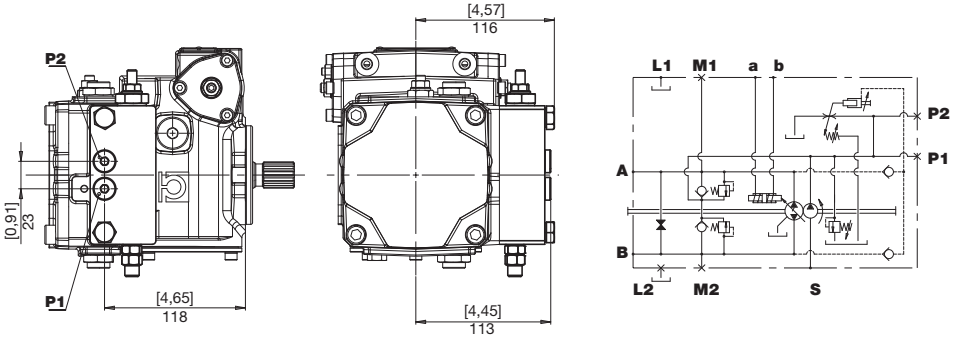
VALVOLA DI FLUSSAGGIO (5-7 l/min)
FLUSHING AND BOOST VALVE (5-7 l/min)
SPUL-UND SPEISEDRUKVENTIL (5-7 l/min)



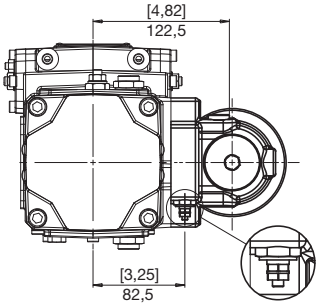
P1	Presa pressione (1/8" Gas) *Pressure intake (1/8" Gas)* Druckanschluss (1/8" Gas)

W

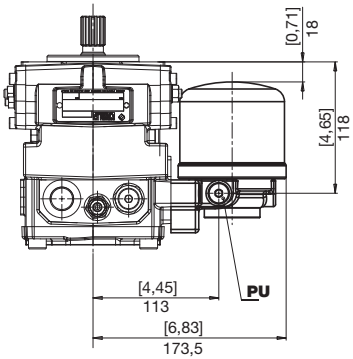
LIMITATORE DI POTENZA (SOLO PER VERSIONE A RULLI)
POWER LIMITER (ONLY FOR ROLLER VERSION)
LEISTUNGSBEGRENZER (NUR FUR ROLLER VERSION)



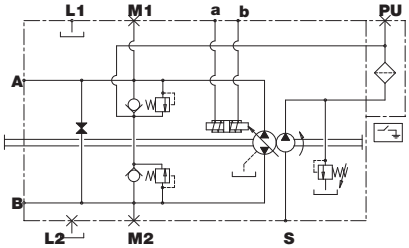
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



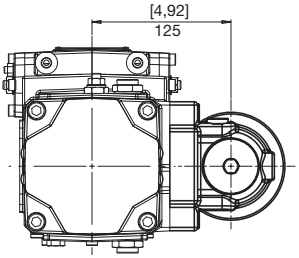
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRIC DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max

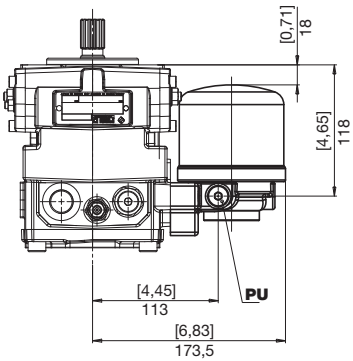


PU	Presa olio filtrato (1/4" Gas) *Filtered oil intake (1/4" Gas)* Anschluss filtriertes Ol (1/4" Gas)

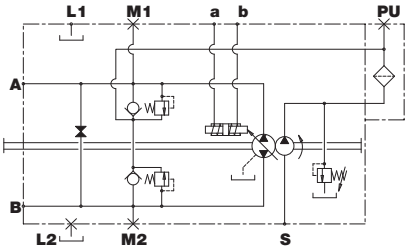


Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER





PU	Presa olio filtrato (1/4" Gas) *Filtered oil intake (1/4" Gas)* Anschluss filtriertes Ol (1/4" Gas)



ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HP | P2 | 014 | R | A | V | G | K | E | 1 | Y | ...

PRODOTTO
PRODUCT
PRODUKT

P2 - Pompa a pistoni assiali per circuito chiuso

P2 - *Closed circuit axial piston pump*

P2 - Axialkolbenpumpen für den geschlössenen kreislauf

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

014 - 019 - 023

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE

V - SAE 9T 16/32 DP
X - SAE 11T 16/32 DP
9 - SAE 13T 16/32 DP
0 - Per stadio P2
For pump P2
Für Stufe P2

FLANGIA
FLANGE
FLANSCHE

A - SAE A
B - SAE B

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

COMANDO
CONTROL
STEUERUNG

E - elettrico on/off centro chiuso (12 V)
F - elettrico on/off centro chiuso (24 V)
K - idraulico a distanza
N - elettrico on/off centro aperto (12 V)
Q - elettrico on/off centro aperto (24 V)
S - elettronico proporzionale (12 V)
W - elettronico proporzionale (24 V)

E *- 12 V electrical on/off, closed center*
F *- 24 V electrical on/off, closed center*
K *- remote hydraulic*
N *- 12 V electric on/off, open center*
Q *- 24 V electrical on/off, open center*
S *- 12 V electronic proportional*
W *- 24 V electronic proportional*

E - elektrisch on/off, Ventil geschlossen (12 V)
F - elektrisch on/off, Ventil geschlossen (24 V)
K - hydraulisch ferngesteuert
N - elektrisch on/off, geöffnetes Ventil (12 V)
Q - elektrisch on/off, geöffnetes Ventil (24 V)
S - elektronisch proportional (12 V)
W - elektronisch proportional (24 V)

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
F - 230 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI
ACCESSORIES
ZUBEHÖR

0 - nessuna opzione
E - sicurezza "operatore assente"
J - taglio di pressione
S - accessori multipli esecuzioni speciali
V - valvola di flussaggio
W - limitatore di potenza
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento

0 *- no accessories*
E *- "no operator" safety*
J *- cut-off*
S *- multiple accessories special versions*
V *- flushing and boost valve*
W *- power limiter*
X *- filter with electric clogging indicator*
Y *- filter without electric clogging indicator*

0 - ohne Zubehör
E - Sicherung "kein Bediener"
J - Druckabschneidung
S - Zubehörkombinationen Sonderbauarten
V - Spul-und speisedrukventil
W - Leistungsbegrenzer
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger

Per la combinazione di più accessori consultare l'ufficio tecnico
For further details on accessories combinations, please contact our Technical Department
Für weitere Zubehörkombinationen wenden Sie sich bitte an die Technische Abteilung

PREDISPOSIZIONI
VERSION
BAUART

0 - nessuna predisposizione senza pompa sovralimentazione
1 - nessuna predisposizione con pompa sovralimentazione
2 - predisposizione SAE A con pompa sovralimentazione
5 - predisposizione SAE A senza pompa sovralimentazione
T - predisposizione per pompa P2 senza pompa sovralimentazione
V - predisposizione per pompa P2 con pompa sovralimentazione
8 - predisposizione per pompa ingranaggi G1 con pompa sovralimentazione
9 - predisposizione per pompa ingranaggi G1 senza pompa sovralimentazione

0 *- no special fittings without boost pump*
1 *- no special fittings with boost pump*
2 *- SAE A mounting boost pump*
5 *- SAE A mounting without boost pump*
T *- fitting for P2 pump without boost pump*
V *- fitting for P2 pump with boost pump*
8 *- fitting for G1 gear pump with boost pump*
9 *- fitting for G1 gear pump without boost pump*

0 - ohne Anschlussflansch, ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A - Anschlussflansch mit Speisepumpe
5 - SAE A - Anschlussflansch ohn Speisepumpe
T - Anschlussflansch für P2-Pumpe ohne Speisepumpe
V - Anschlussflansch für P2-Pumpe mit Speisepumpe
8 - Anschlussflansch für G1-Zahnradpumpe mit Speisepumpe
9 - Anschlussflansch für G1-Zahnradpumpe ohne Speisepumpe

POMPA DOPPIA CON 2 POMPE DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 2 BOOST PUMPS
TANDEMPUMPE MIT 2 SPEISEPUMPEN

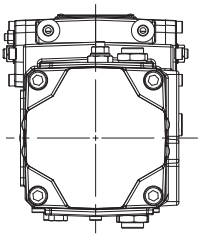
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

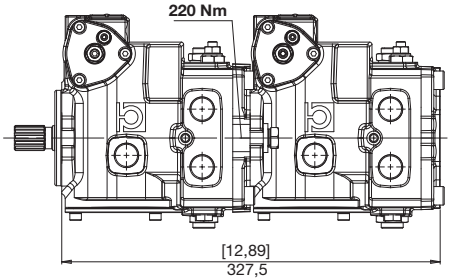
You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

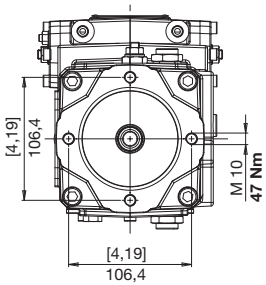
HP	P2	014	R	A	V	G	K	E	V	0	000	HP	P2	014	R	A	0	G	K	E	1	0	000

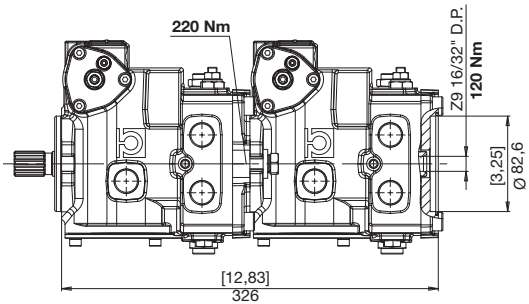




1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

HP	P2	014	R	A	V	G	K	E	V	0	000	HP	P2	014	R	A	0	G	K	E	2	0	000





SAE A

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M4 PV

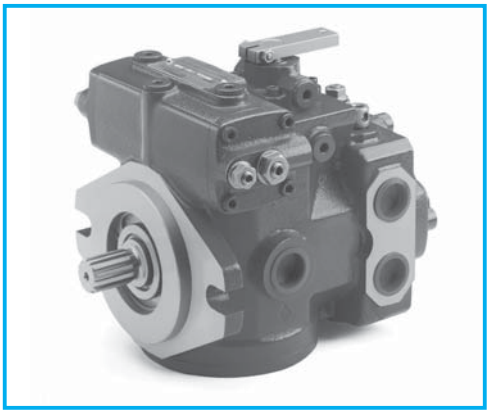
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

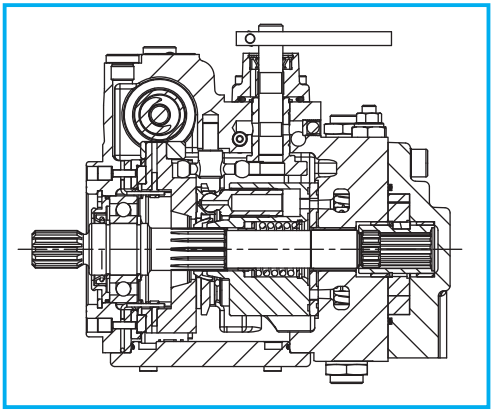
Le pompe a pistoni assiali serie M4PV sono stati concepite per operare in circuito chiuso per impieghi a media pressione.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale
Lo sviluppo di gruppi rotanti appositamente concepiti unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 250 bar continui (350 bar di picco)
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

M4PV series axial piston pumps have been designed to work in a closed circuit. Control systems actually available are making easy to use these pumps in any application for industrial and mobile field. Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working continuous pressure until 250 bar and working peak pressure until 350 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie M4PV wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die lieferbaren unterschiedlichen Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Pumpendrehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Arbeitsdruck von bis zu 250 Bar (Spitzenwert 350 Bar) gewährleistet.
Die Pumpen können in der Tandemversion geliefert werden, wobei die auf Wunsch erhältichen Flanschverbindungen angewendet werden.

M4 PV 21•28•37





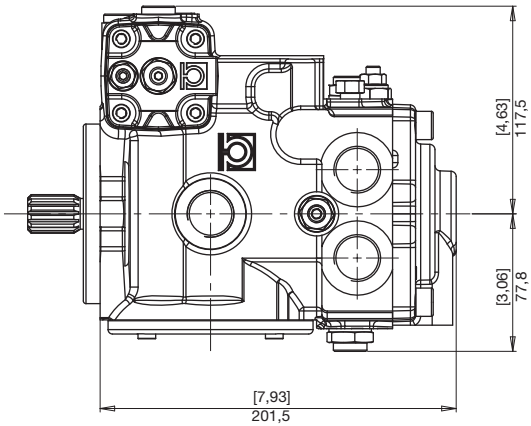
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

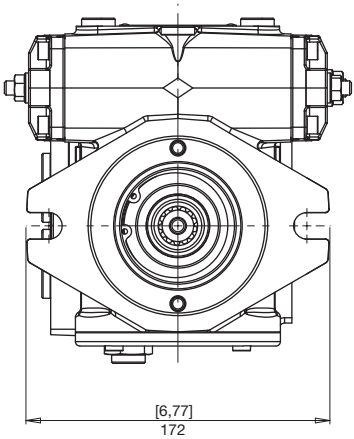
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
M4PV	21	1,28	18	250	3625	300	4350	350	5075	3600	500	20	44,00
	28	1,71	18	250	3625	300	4350	350	5075	3600	500	20	44,00
	37	2,26	18	250	3625	300	4350	350	5075	3400	500	21	46,20

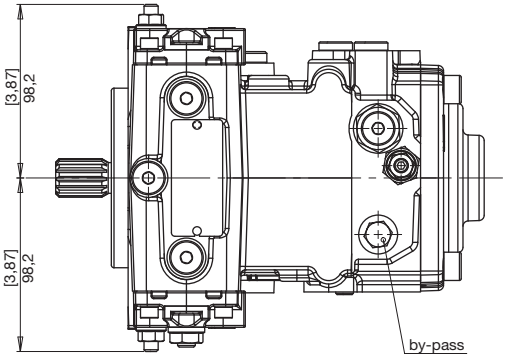
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA STANDARD POMPA DI ALIMENTAZIONE BOOST PUMP STANDARD DISPLACEMENT FORDERVOLUMEN STANDARD SPEISEPUMPE		CILINDRATA OPZIONALE *OPTIONAL DISPLACEMENT* OPTIONALES FÖRDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	cm³	in³	bar	psi
M4PV21	9	0,55	12	0,74	25	360
M4PV28	9	0,55	12	0,74	25	360
M4PV37	12	0,74	---	---	25	360

DIMENSIONI
SIZE
ABMESSUNGEN



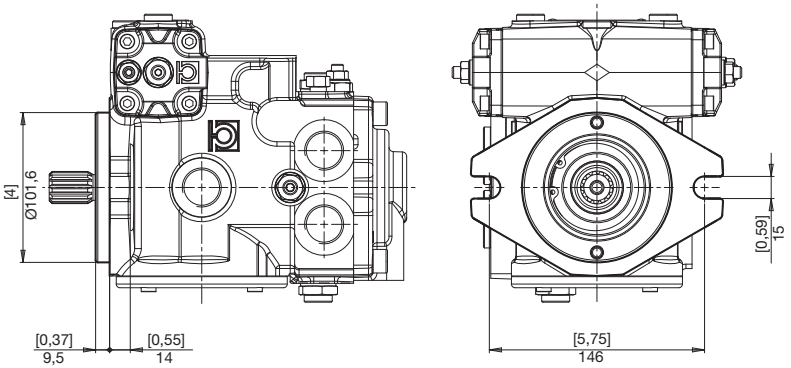




FLANGE
FLANGES
FLANSCHE

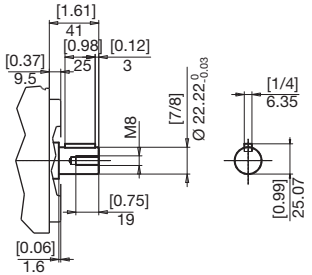
M4 PV

B SAE B
SAE B
SAE B

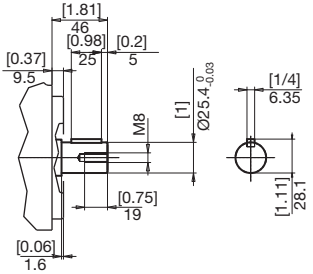


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

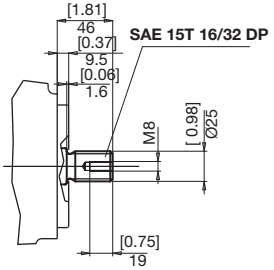
1 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
210 N•m



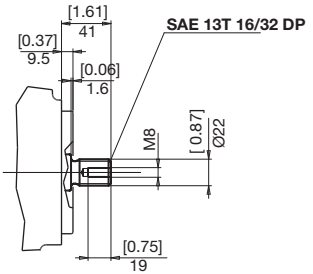
2 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
285 N•m



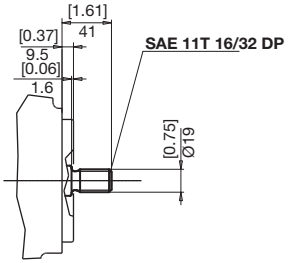
3 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
460 N•m



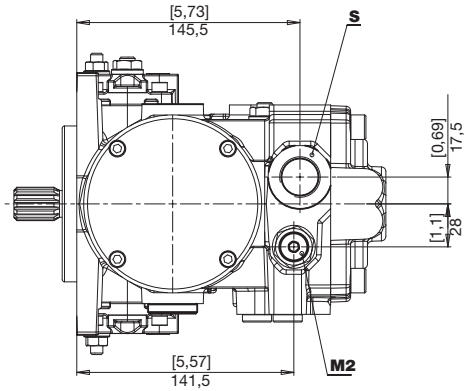
6 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
310 N•m

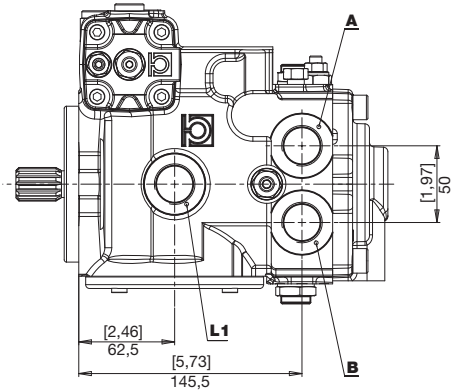


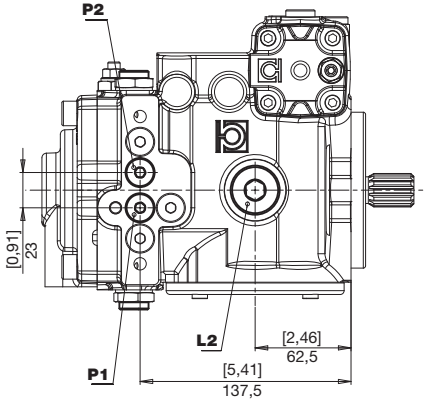
7 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
160 N•m

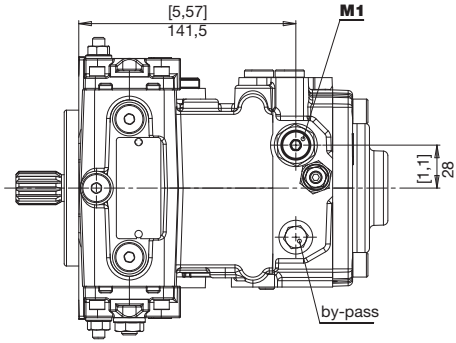


BOCCHE
PORTS
ANSCHLÜSSE





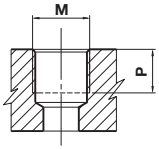




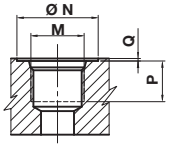
A **B**	Utilizzo *Use* Verbraucher	**P1** **P2**	Presa pressione *Pressure intake* Druckanschluss
L1 **L2**	Drenaggio *Drain* Leckölanschluss	**M1** **M2**	Presa manometro *Manometer intake* Manometeranschluss
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

M4 PV



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G2	1/4" GAS BSPP	17	12	0,47
G6	3/4" GAS BSPP	90	15	0,75



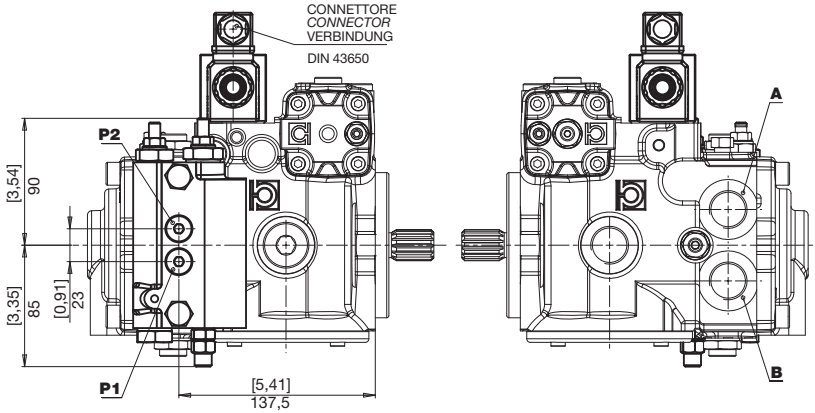
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4"	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U6	3/4"	42	1,65	18	0,70	0,3	0,01	1-1/16-12 UNF	90

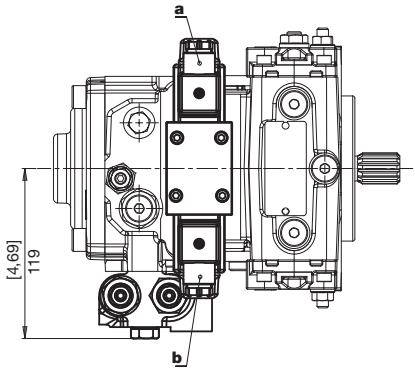
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

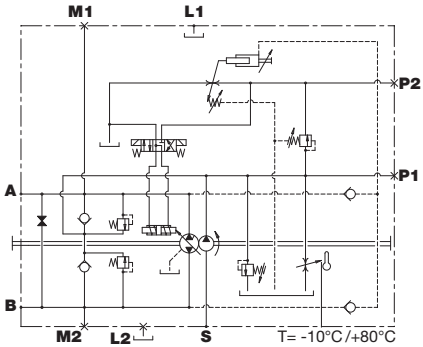
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	a - b PILOTAGGIO *PILOT* STEUERDRUCK	P1 - P2 PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLUSS	M1 - M2 PRESE MANOMETRO *MANOMETER INTAKE* MANOMETER-ANSCHLUSS
R	G6	G6	G6	G2	G2	G2
U	U6	U6	U6	U2	G2	U2

COMANDI
CONTROLS
STEUERUNGEN

D AUTOMOTIVE
AUTOMOTIVE
AUTOMOTIVE
12 V



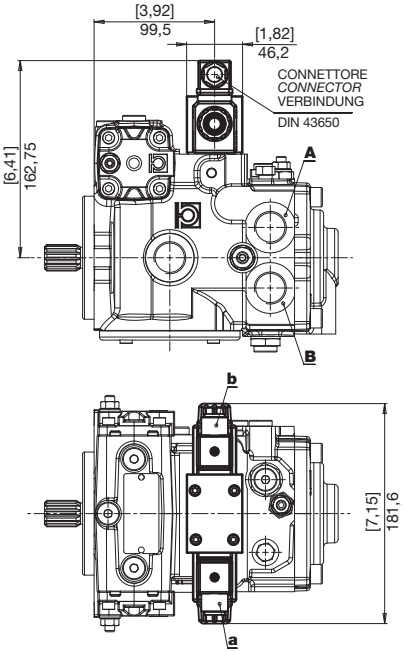




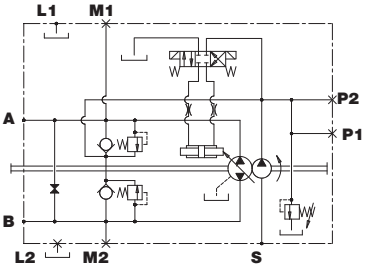
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

E F — 12 V 24 V

ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

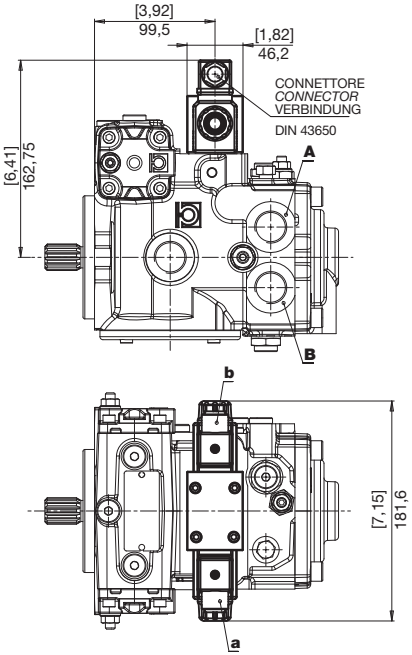


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

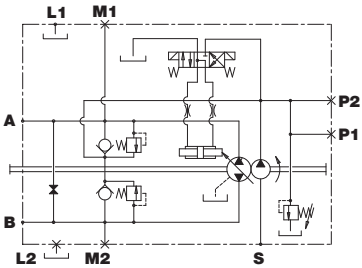


N Q — 12 V 24 V

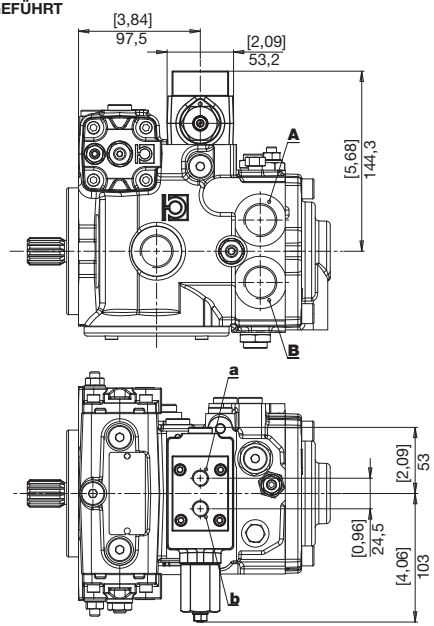
ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, VENTIL GEÖFFNET

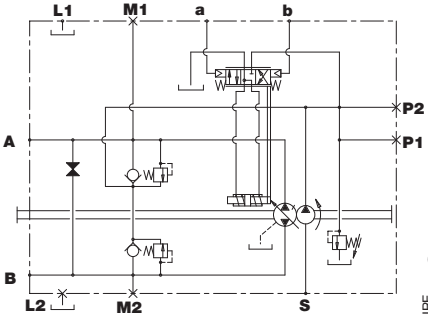


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

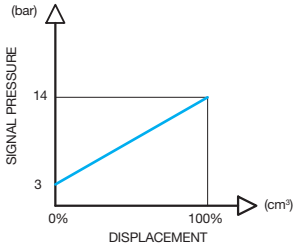


G IDRAULICO RETROAZIONATO
HYDRAULIC, FEEDBACK
HYDRAULISCH, RÜCKGEFÜHRT

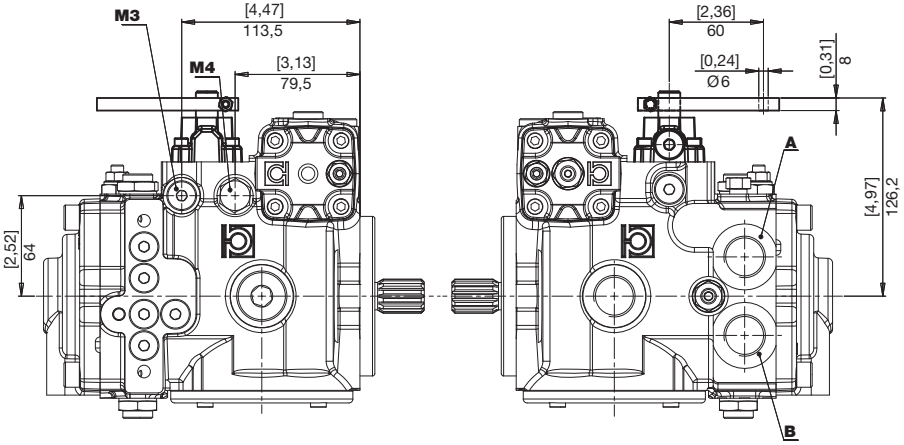


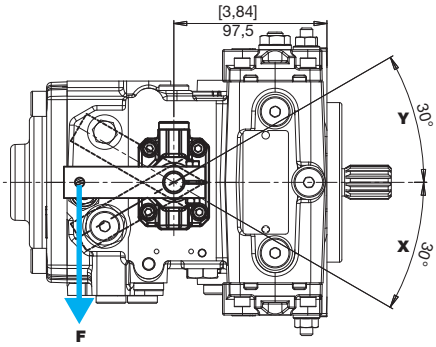


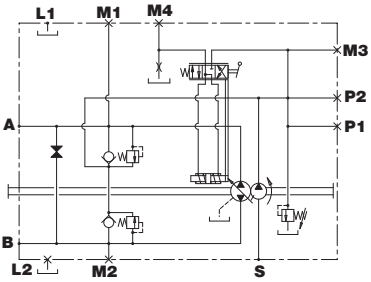
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B



I SERVOCOMANDO A LEVA
LEVER-OPERATED SERVO-CONTROL
HYDRAULISCHE HEBEL-SERVOSTEUERUNG

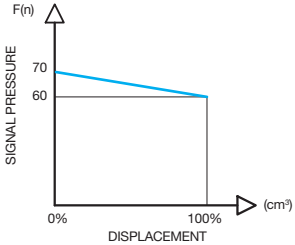






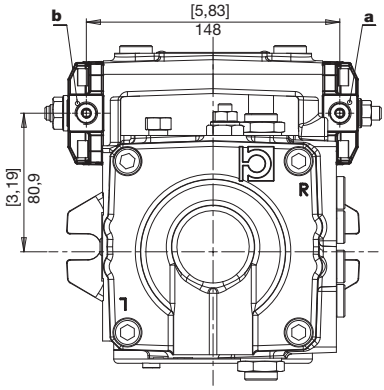
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	B
	X	A
SINISTRA *LEFT* LINKS	Y	A
	X	B

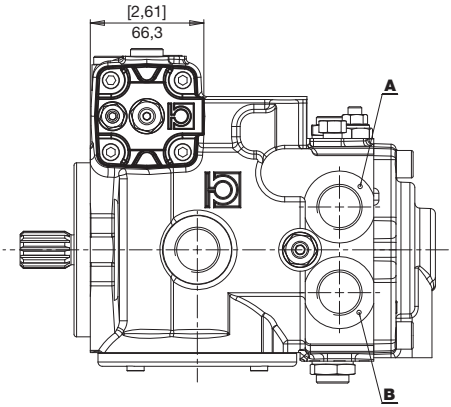
M3	Strozzatore in alimentazione *Intake restrictor* Eingangsdrossel	**M4**	Strozzatore in scarico *Outlet restrictor* Ausgangsdrossel

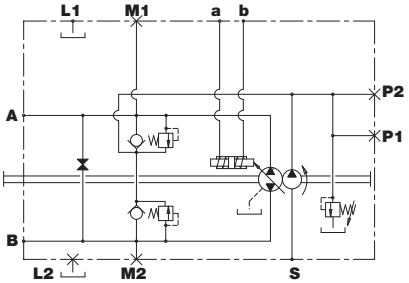


COMANDI
CONTROLS
STEUERUNGEN

K IDRAULICO A DISTANZA
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG

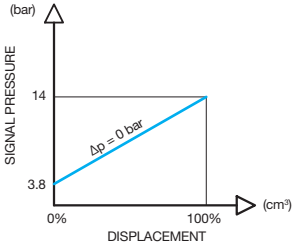






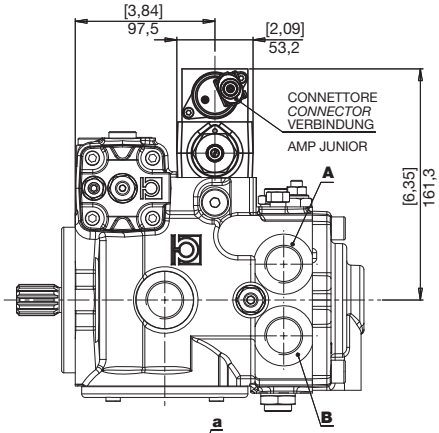
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

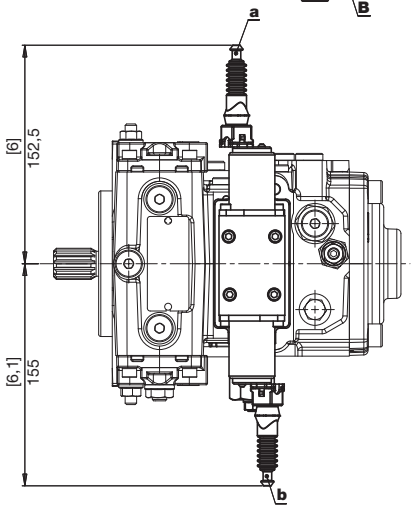
a Pressione di pilotaggio
b *Pilot Pressure*
Steuerdruck



O V
12 V 24 V

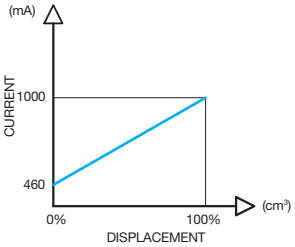
ELETTRICO PROPORZIONALE RETROAZIONATO
ELECTRICAL PROPORTIONAL FEEDBACK CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG RÜCHGEFÜHRT



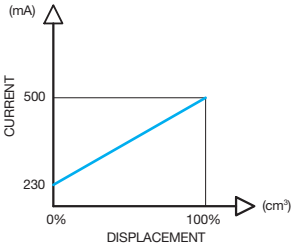


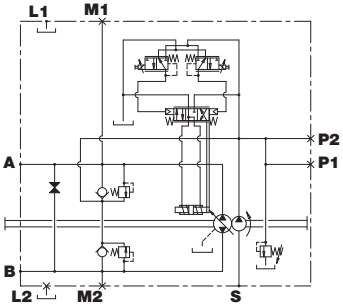
	O	V	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

O



V

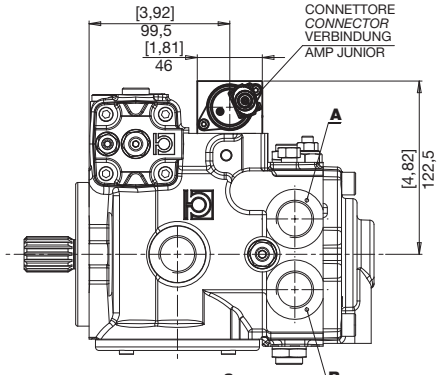


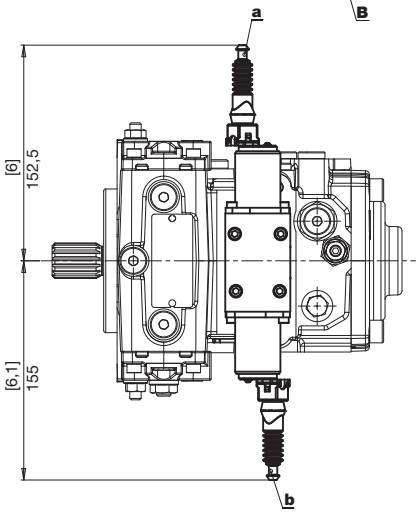


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

S **W**
12 V 24 V

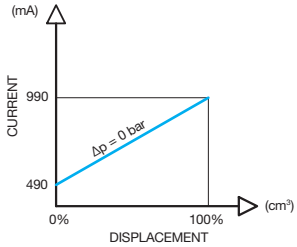
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG



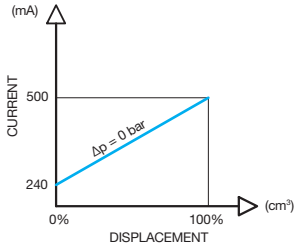


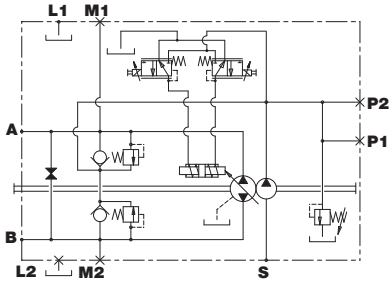
	S	W	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

S



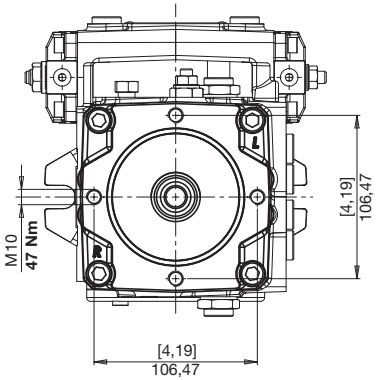
W



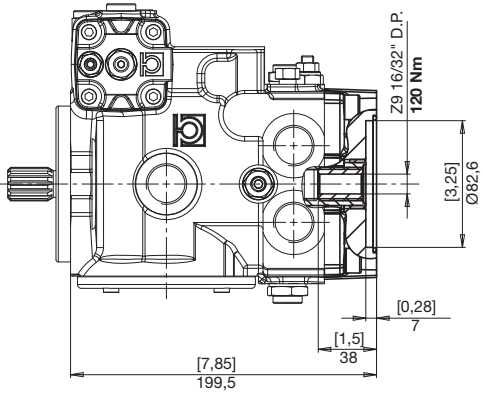


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

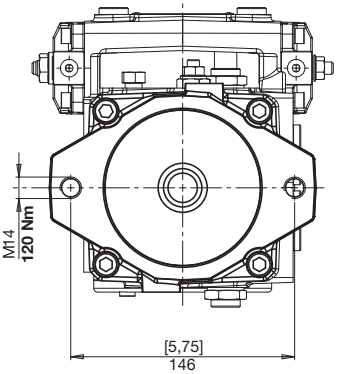
2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH BOOST PUMP
SAE A MIT SPEISEPUMPE



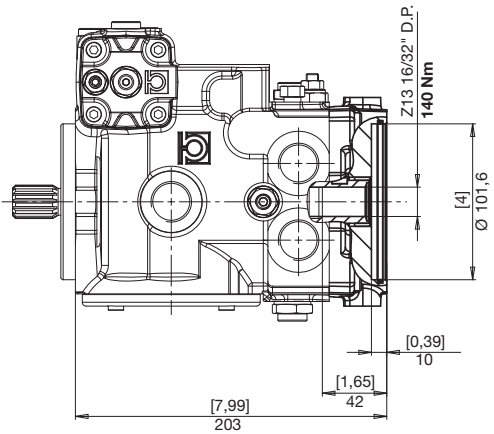
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT BOOST PUMP
SAE A OHNE SPEISEPUMPE



3 SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH BOOST PUMP
SAE B MIT SPEISEPUMPE



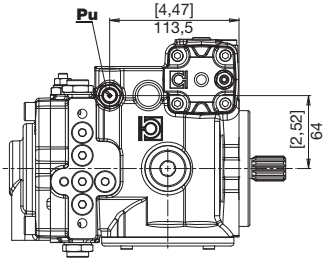
6 SAE B SENZA POMPA SOVRALIMENTAZIONE
SAE B WITHOUT BOOST PUMP
SAE B OHNE SPEISEPUMPE

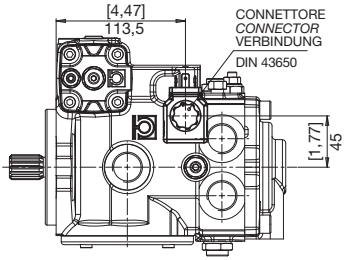


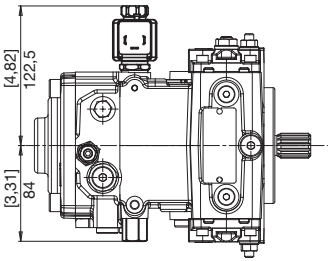
ACCESSORI
ACCESSORIES
ZUBEHÖR

E
12 V

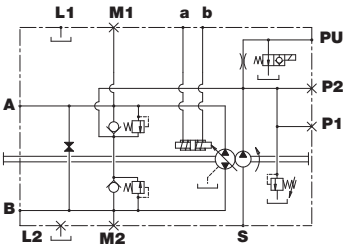
SICUREZZA OPERATORE ASSENTE
NO OPERATOR SAFETY
SICHERUNG KEIN ARBEITER





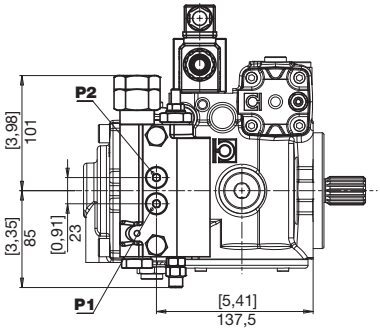


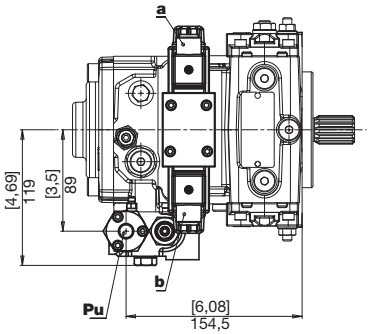
PU	Pilotaggio sblocco freno (1/4" GAS) *Brake opening pressure (1/4" GAS)* Bremse Öffnung Druck (1/4" GAS)



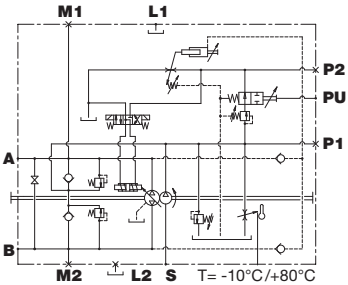
H

INCHING IDRAULICO (SOLO COMANDO D)
HYDRAULIC INCHING ("D" CONTROL)
HYDRAULISCHE INCH-VENTIL (NUR STEUERUNG D)

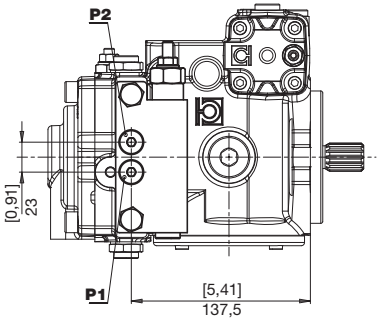


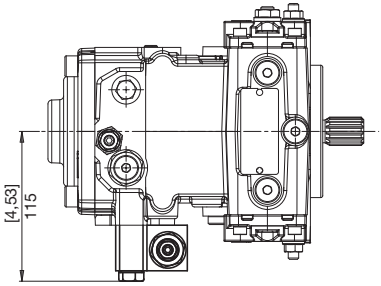


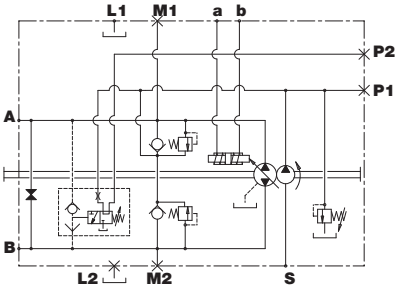
PU	Pilotaggio sblocco freno (1/4" GAS) *Brake opening pressure (1/4" GAS)* Bremse Öffnung Druck (1/4" GAS)



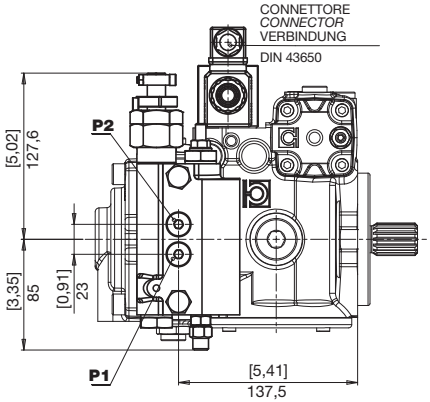
J TAGLIO DI PRESSIONE
CUT-OFF
DRUCKABSCHNEIDUNG

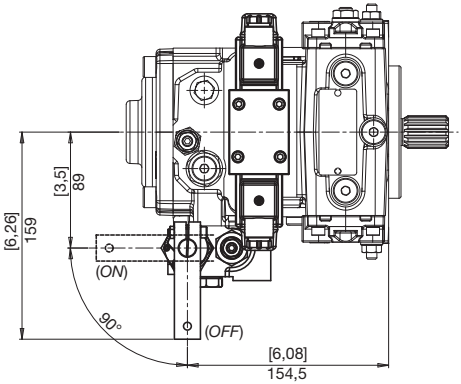


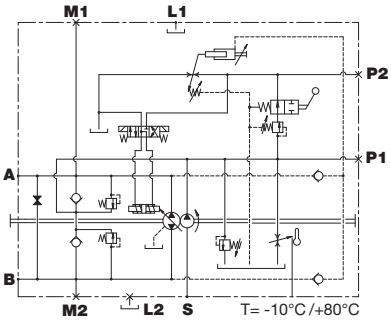




M INCHING MECCANICO (SOLO COMANDO D)
MECHANIC INCHING CONTROL ("D" CONTROL)
MECHANISCHES INCH-VENTIL (NUR STEUERUNG D)







ACCESSORI
ACCESSORIES
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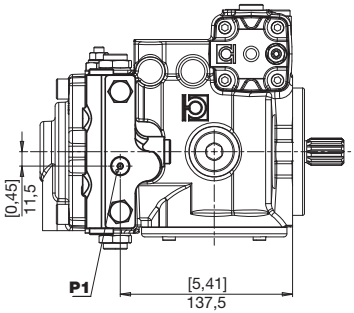
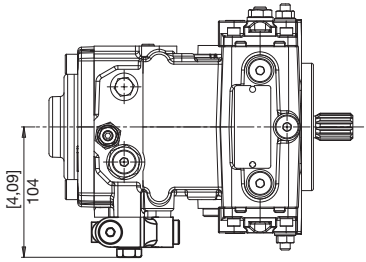
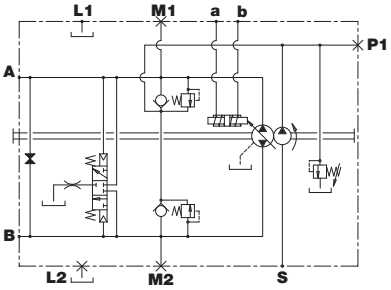
V VALVOLA DI FLUSSAGGIO (5-7 l/min)
FLUSHING AND BOOST VALVE (5-7 l/min)
SPUL-UND SPEISEDRUKVENTIL (5-7 l/min)

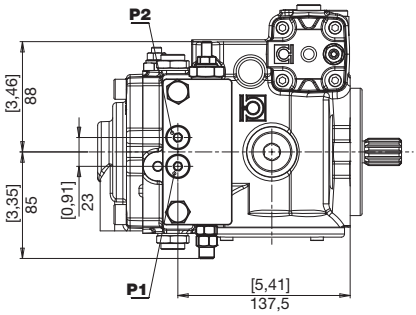


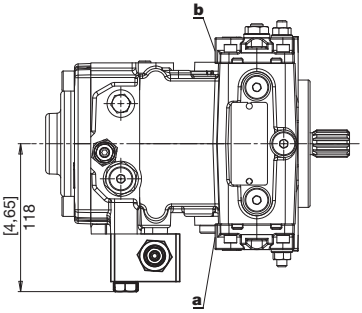


P1	Presa pressione (1/8" GAS) *Pressure intake (1/8" GAS)* Druckanschluss (1/8" GAS)

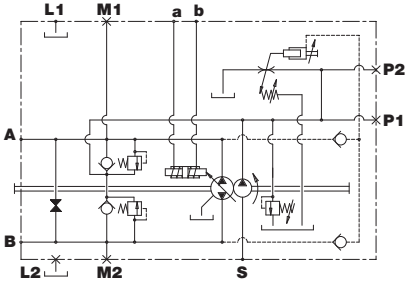


W LIMITATORE DI POTENZA
POWER LIMITER
LEISTUNGSBEGRENZER

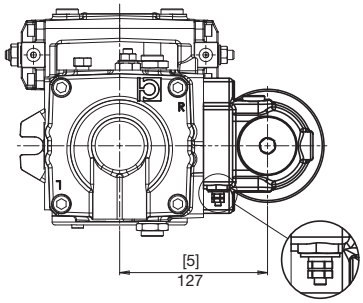




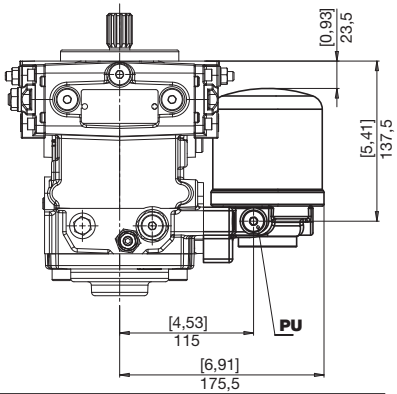
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A



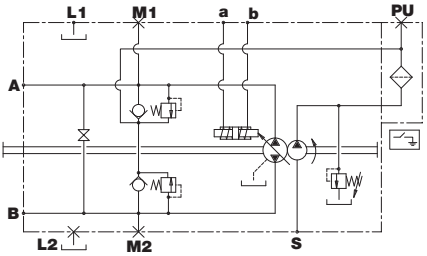
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



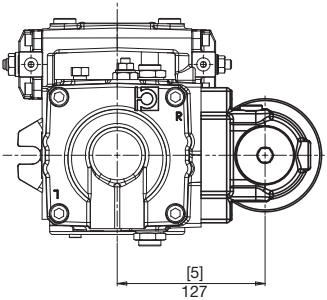
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRIC DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max

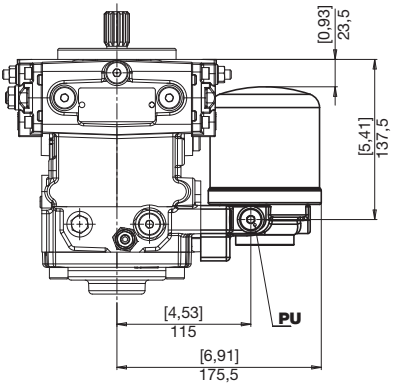


PU Presa olio filtrato (1/4" GAS)
Filtered oil intake (1/4" GAS)
Anschluss filtriertes Ol (1/4" GAS)

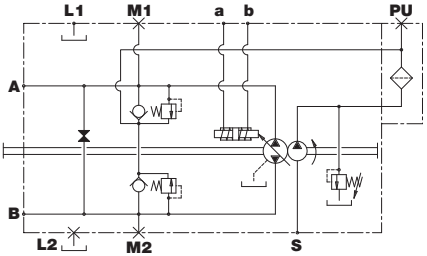


Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER





PU Presa olio filtrato (1/4" GAS)
Filtered oil intake (1/4" GAS)
Anschluss filtriertes Ol (1/4" GAS)



ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M4PV 28 28 I 1 E A R 6 B Y ...

SERIE
SERIES
SERIE

CILINDRATE NOMINALI
RATED DISPLACEMENT
NENNFÖRDERVOLUMEN
21 - 28 - 37

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
21 - 28 - 37

COMANDO ***CONTROL*** **STEUERUNG**

D = AUTOMOTIVE
E-F = Elettrico (12 V-24V)
G = Servocomando idraulico retroazionato
I = Servocomando a leva
K = Servocomando idraulico a distanza
N-Q = Elettrico on/off (12 V)
O-V = Elettronico proporzionale retroazionato (12 V-24V)
S-W = Elettronico proporzionale (12 V-24V)

D *= AUTOMOTIVE control*
E-F *= Electric (12 V - 24V)*
G *= Hydraulic remote feedback*
I *= Lever-operated servo-control*
K *= Remote servo-control*
N-Q *= Electric on/off (12 V)*
O-V*= Electronic proportional feedback (12 V-24V)*
S-W *= Electronic proportional (12 V-24V)*

D = Automotive
E-F = Elektrische (12 V-24V)
G = Hydraulik Fernsteuerung Rüchgeführt
I = Hydraulische Hebel-Servosteuerung
K = Fern-Servosteuerung
N-Q = Elektrische on/off (12V)
Q = Elektrische on/off (24V)
O-V = Elektronische Proportional Rüchgeführt (12 V-24V)
S-W = Elektronische Proportional (12 V-24V)

PREDISPOSIZIONI ***VERSION*** **BAUART**

1 = nessuna con pompa di alimentazione
2 = SAE A con pompa di alimentazione
3 = SAE B 2 fori con pompa di alimentazione
4 = nessuna senza pompa di alimentazione
5 = SAE A senza pompa di alimentazione
6 = SAE B 2 fori senza pompa di alimentazione
S = pompa "SHORT" primaria con pompa di alimentazione
T = pompa "SHORT" primaria senza pompa di alimentazione
Y = pompa "SHORT" secondaria senza predisposizione
U = pompa "SHORT" secondaria con predisposizione SAE A
W = pompa "SHORT" secondaria con predisposizione SAE B

1 *= no special fittings with boost pump*
2 *= SAE A mounting with boost pump*
3 *= SAE B - 2 holes mounting with boost pump*
4 *= no special fittings, no boost pump*
5 *= SAE A mounting without boost pump*
6 *= SAE B - 2 holes mounting without boost pump*
S *= primary "SHORT" pump with boost pump*
T *= primary "SHORT" pump without boost pump*
Y *= secondary "SHORT" pump without special fitting*
U *= secondary "SHORT" pump with SAE A mounting*
W *= secondary "SHORT" pump with SAE B mounting*

1 = ohne Anschlußflansch mit Speisepumpe
2 = SAE A Anschlußflansch mit Speisepumpe
3 = SAE B Anschlußflansch, mit 2 Bohrungen, mit Speisepumpe
4 = ohne Anschlußflansch, ohne Speisepumpe
5 = SAE A Anschlußflansch ohne Speisepumpe
6 = SAE B Anschlußflansch, mit 2 Bohrungen, ohne Speisepumpe
S = Primärpumpe "SHORT" mit Speisepumpe
S = Primärpumpe "SHORT" ohne Speisepumpe
Y = Sekundärpumpe "SHORT" ohne Anschlußflansch
U = Sekundärpumpe "SHORT" mit SAE A Anschlußflansch
W = Sekundärpumpe "SHORT" mit SAE B Anschlußflansch

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI ***ACCESSORIES*** **ZUBEHÖR**

ggf. weglassen
0 = nessuna opzione
E = sicurezza "operatore assente"
H = inching idraulico (comandi "D")
J = cut-off
M = inching meccanico (comandi "D")
R = filettatura GAS
U = filettatura UNF
V = valvola di flussaggio
W = limitatore di potenza
Y = filtro su linea sovralimentazione
X = filtro su linea sovralimentazione con indicatore intasamento elettrico

Omit if not required
0 *= no accessories*
E *= "no operator" safety*
H *= hydraulic inching ("D" control)*
J *= cut-off*
M *= mechanic inching ("D" control)*
R *= GAS threads*
U *= UNF threads*
V *= flushing and boost valve*
W *= power limiter*
Y *= filter on charge line*
X *= filter on charge line with electric clogging indicator*

Omettere se non richiesto
0 = kein Zubehör
E = Sicherung "kein arbeiter"
H = Hydraulische Inch-Ventil ("D" steuerung)
J = Druckabschneidung
M = Mechanische Inch-Ventil ("D" steuerung)
R = GAS Gewinde
U = UNF Gewinde
V = Spul-und speisedrukventil
W = Leistungsbegrenzer
Y = Filter auf Speisedruckleitung
X = Filter auf Speisedruckleitung mit elektrischem Anzeiger

B = Valvola by-pass
B *= By-pass valve*
B = Bypass-Ventil

ESTREMITÀ D'ALBERO ***SHAFT PROFIL***
WELLENENDE

1 = cilindrico Ø 22.22 (7/8")
3 = scanalato maschio 16/32" d.p. Z 15 (Std)
6 = scanalato maschio 16/32" d.p. Z 13
7 = scanalato maschio 16/32" d.p. Z 11

1 *= Round shaft Δ 22.22 (7/8")*
3 *= Male splined shaft Z15 16/32" d.p. (Std)*
6 *= Male splined shaft Z 13 16/32" d.p*
7 *= Male splined shaft Z 11 16/32" d.p*

1 = Zylindrisch Δ 22.22 (7/8")
3 = Profilwelle Z 15-16/32" d.p. (Std)
6 = Profilwelle Z 13-16/32" d.p.
7 = Profilwelle Z 11-16/32" d.p.

SENSO DI ROTAZIONE ***DIRECTION OF ROTATION***
DREHRICHTUNG

R = Destro / *Right* / Rechts
L = Sinistro / *Left* / Links

TIPO DI OSCILLANTE
SWASHPLATE TYPE
SCHWENKSCHEIBENLAGERUNG

A = oscillante su rullini
B = oscillante su bronzine
A *= mounted on needle bearing*
B *= mounted on bronze bearings*
A = Rollengelagert
B = Bronze-Gleitgelagert

POMPA DOPPIA CON 2 POMPE DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 2 BOOST PUMPS
TANDEMPUMPE MIT 2 SPEISEPUMPEN

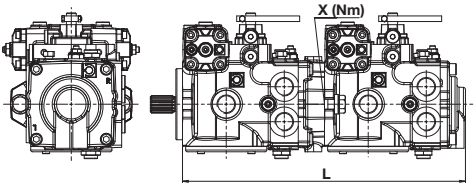
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV 28 28 I 3 25 A R 3 B R M4PV 28 28 I 1 25 A R 6 B R

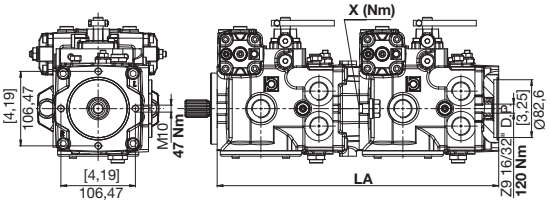


TIPO *TYPE* TYP	L		POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE		X COPPIA *TORQUE* DREHMOMENT
	mm	in	cm³	in³	Nm
M4PV21-28	404,5	15,92	9	0,55	140
M4PV37	421	16,57	12	0,74	240

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV 28 28 I 3 25 A R 3 B R M4PV 28 28 I 2 25 A R 6 B R

SAE A

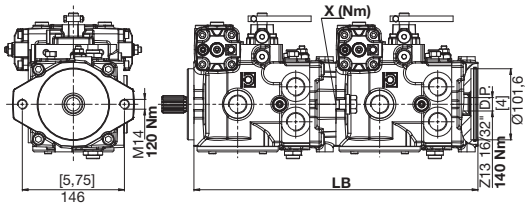


TIPO *TYPE* TYP	LA		POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE		X COPPIA *TORQUE* DREHMOMENT
	mm	in	cm³	in³	Nm
M4PV21-28	402,5	15,85	9	0,55	140
M4PV37	419	16,50	12	0,74	240

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV 28 28 I 3 25 A R 3 B R M4PV 28 28 I 3 25 A R 6 B R

SAE B



TIPO *TYPE* TYP	LB		POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE		X COPPIA *TORQUE* DREHMOMENT
	mm	in	cm³	in³	Nm
M4PV21-28	406	15,98	9	0,55	140
M4PV37	422,5	16,64	12	0,74	240

POMPA DOPPIA VERSIONE “SHORT”
DOUBLE PUMP “SHORT” VERSION
TANDEMPUMPE “SHORT” SONDERAUSRÜSTUNG

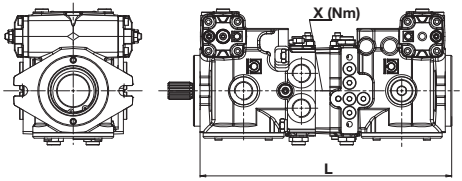
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

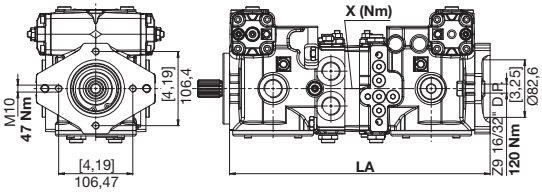
M4PV	28	28	K	S	25	A	R	3	B	R	M4PV	28	28	K	Y	25	A	R



TIPO *TYPE* TYP	L mm	L in	POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE cm³	POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE in³	X COPPIA *TORQUE* DREHMOMENT Nm
M4PV21-28	361,2	14,22	12	0,74	140
M4PV37	363,2	14,23	14	0,86	240

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV	28	28	K	S	25	A	R	3	B	R	M4PV	28	28	K	U	25	A	R

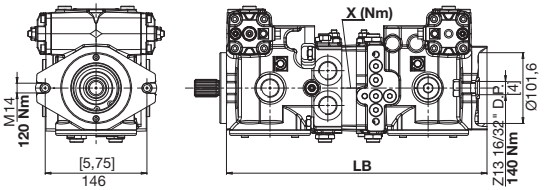


SAE A

TIPO *TYPE* TYP	LA mm	LA in	POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE cm³	POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE in³	X COPPIA *TORQUE* DREHMOMENT Nm
M4PV21-28	374	14,72	12	0,74	140
M4PV37	376	14,80	14	0,86	240

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV	28	28	K	S	25	A	R	3	B	R	M4PV	28	28	K	W	25	A	R



SAE B

TIPO *TYPE* TYP	LB mm	LB in	POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE cm³	POMPA DI ALIMENTAZIONE *BOOST PUMP* SPEISEPUMPE in³	X COPPIA *TORQUE* DREHMOMENT Nm
M4PV21-28	374	14,72	12	0,74	140
M4PV37	376	14,80	14	0,86	240

M4 PV

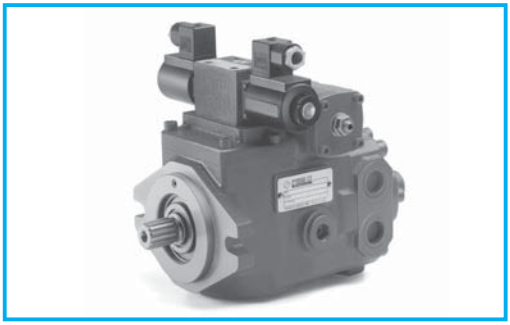
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

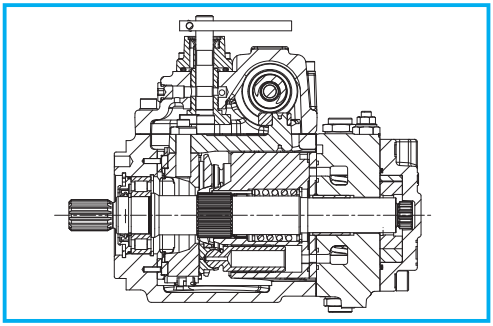
Le pompe a pistoni assiali serie M4PV sono stati concepite per operare in circuito chiuso per impieghi a media pressione.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale
Lo sviluppo di gruppi rotanti appositamente concepiti unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 250 bar continui (350 bar di picco)
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

M4PV series axial piston pumps have been designed to work in a closed circuit. Control systems actually available are making easy to use these pumps in any application for industrial and mobile field. Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working continuous pressure until 250 bar and working peak pressure until 350 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie M4PV wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die lieferbaren unterschiedlichen Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Pumpendrehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Arbeitsdruck von bis zu 250 Bar (Spitzenwert 350 Bar) gewährleistet.
Die Pumpen können in der Tandemversion geliefert werden, wobei die auf Wunsch erhältichen Flanschverbindungen angewendet werden.

M4 PV 34•45•50•58•65





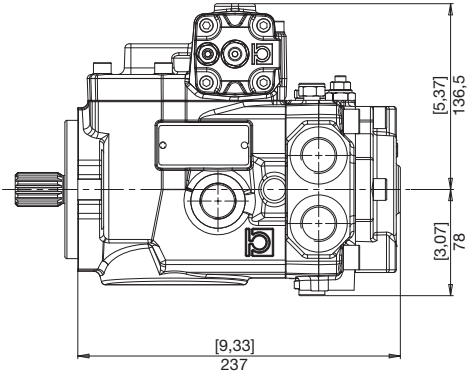
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

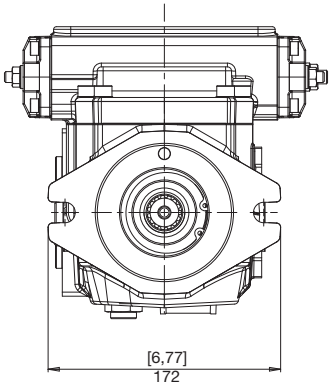
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
M4PV	34	2,08	18	300	4350	380	5075	400	5800	3800	500	25,0	55,0
	46	2,81	19	300	4350	380	5075	400	5800	3800	500	25,0	55,0
	50	3,05	18	300	4350	380	5075	400	5800	3800	500	25,0	55,0
	58	3,54	18	250	3625	320	4640	400	5800	3600	500	26,5	58,3
	65	3,97	18	250	3625	320	4640	400	5800	3600	500	28,9	63,6

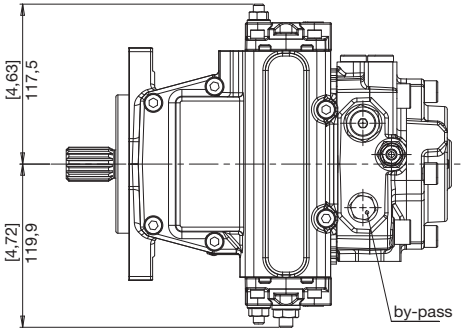
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA STANDARD POMPA DI ALIMENTAZIONE BOOST PUMP STANDARD DISPLACEMENT FORDERVOLUMEN STANDARD SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
M4PV34	14	0,86	25	360
M4PV46	14	0,86	25	360
M4PV50	14	0,86	25	360
M4PV58	14	0,86	25	360
M4PV65	14	0,86	25	360

DIMENSIONI
SIZE
ABMESSUNGEN



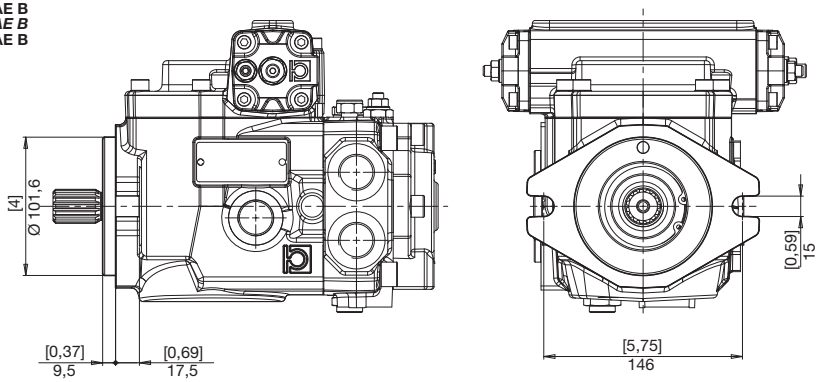




FLANGE
FLANGES
FLANSCHE

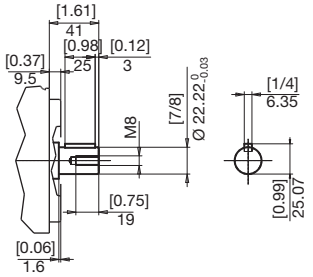
M4 PV

B SAE B
SAE B
SAE B

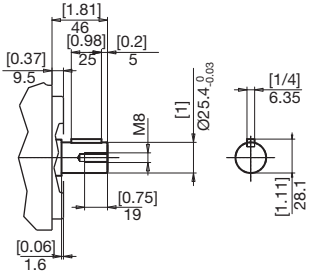


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

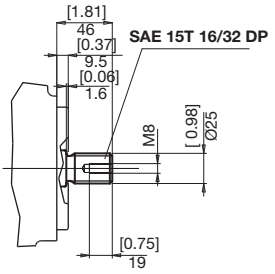
1 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
210 N•m



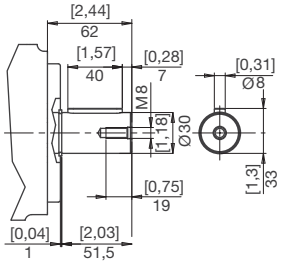
2 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
285 N•m



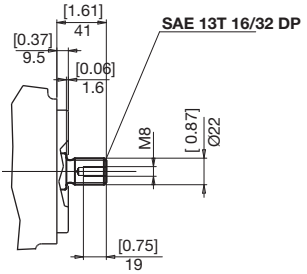
3 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
460 N•m



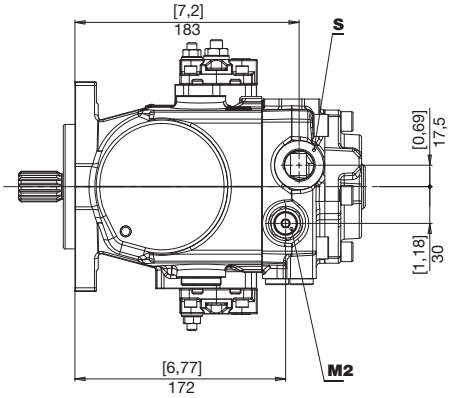
4 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
300 N•m

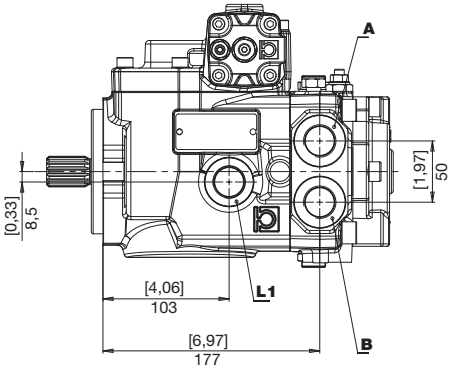


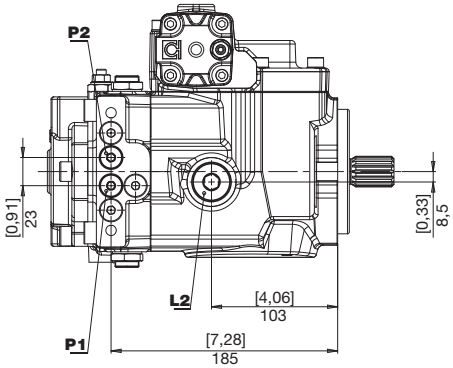
6 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
310 N•m

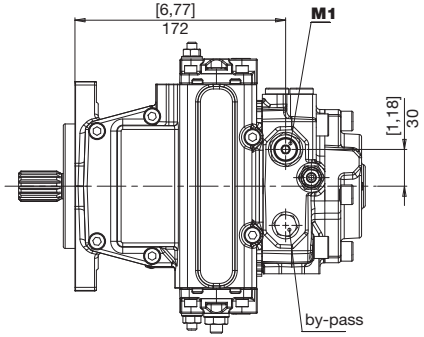


BOCCHE
PORTS
ANSCHLÜSSE





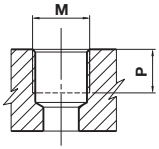




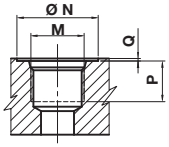
A **B**	Utilizzo *Use* Verbraucher	**P1** **P2**	Presa pressione *Pressure intake* Druckanschluss
L1 **L2**	Drenaggio *Drain* Leckölanschluss	**M1** **M2**	Presa manometro *Manometer intake* Manometeranschluss
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

M4 PV



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G2	1/4" GAS BSPP	17	12	0,47
G6	3/4" GAS BSPP	90	15	0,75



TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4"	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U6	3/4"	42	1,65	18	0,70	0,3	0,01	1-1/16-12 UNF	90

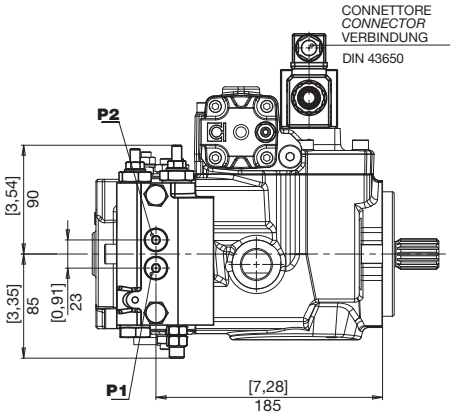
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

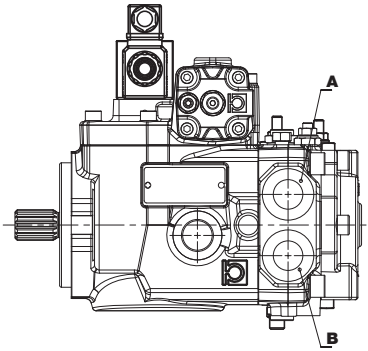
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	a - b PILOTAGGIO *PILOT* STEUERDRUCK	P1 - P2 PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLUSS	M1 - M2 PRESE MANOMETRO *MANOMETER INTAKE* MANOMETER-ANSCHLUSS
R	G6	G6	G6	G2	G2	G2
U	U6	U6	U6	U2	G2	U2

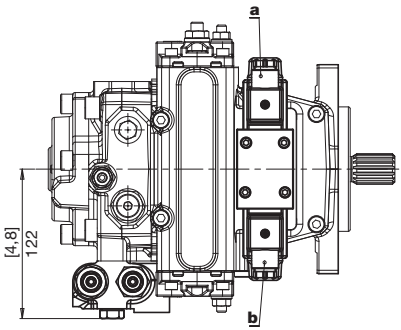
COMANDI
CONTROLS
STEUERUNGEN

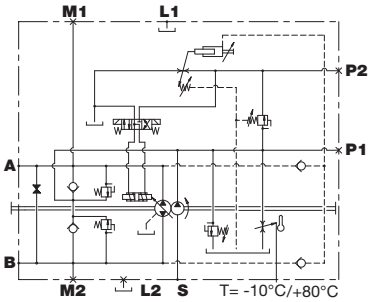
D 12 V

AUTOMOTIVE
AUTOMOTIVE
AUTOMOTIVE





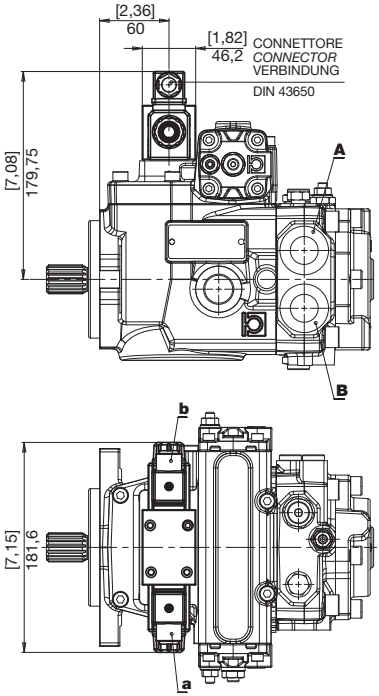




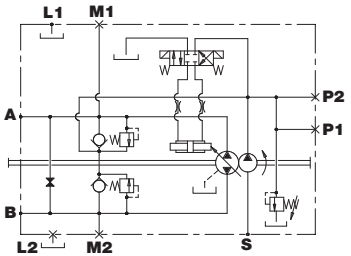
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

E F — ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

12 V 24 V

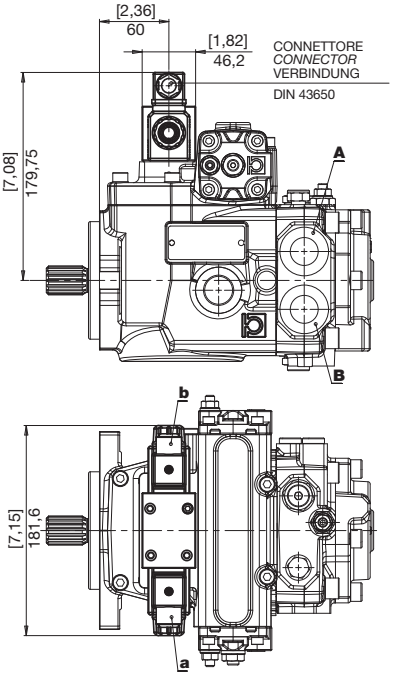


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

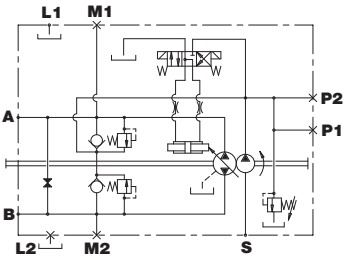


N Q — ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, VENTIL GEÖFFNET

12 V 24 V

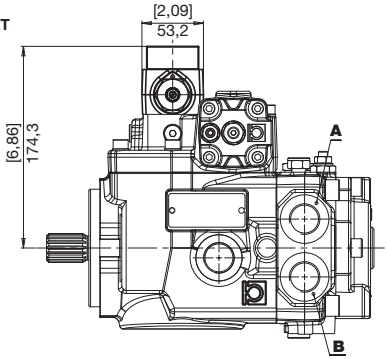


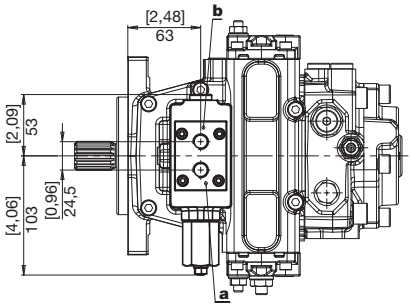
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

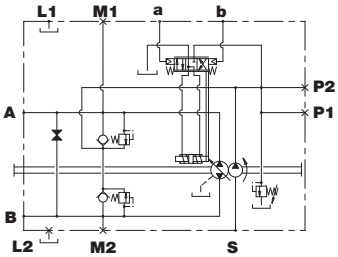


COMANDI
CONTROLS
STEUERUNGEN

G IDRAULICO RETROAZIONATO
HYDRAULIC, FEEDBACK
HYDRAULISCH, RÜCKGEFÜHRT

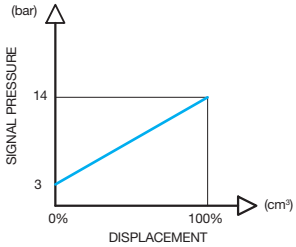




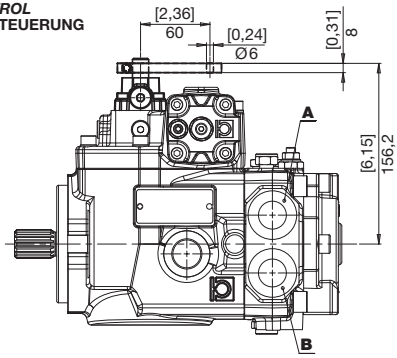


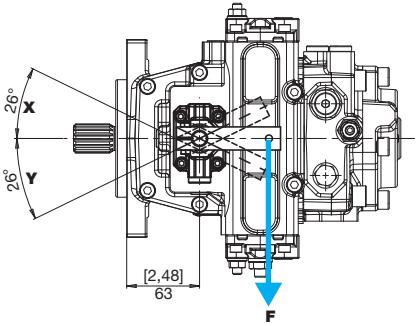
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

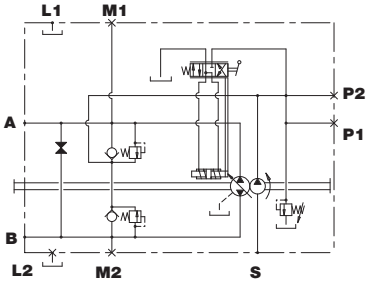
a Pressione di pilotaggio
Pilot Pressure
b Steuerdruck

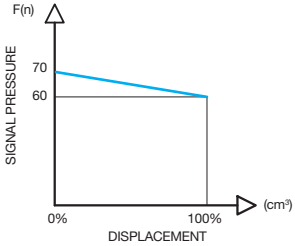


I SERVOCOMANDO A LEVA
LEVER-OPERATED SERVO-CONTROL
HYDRAULISCHE HEBEL-SERVOSTEUERUNG





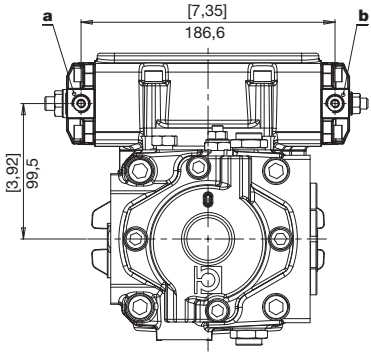


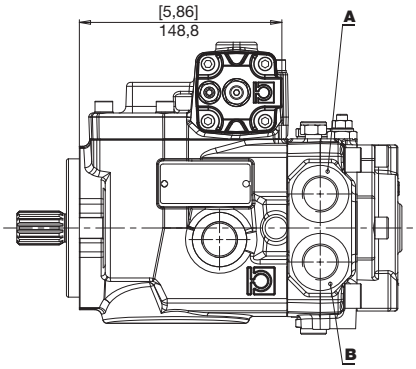


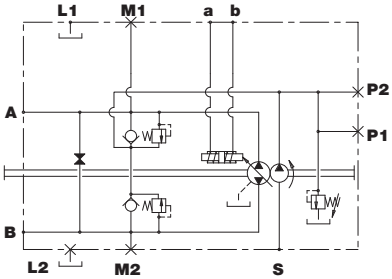
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	A
	X	B
SINISTRA *LEFT* LINKS	Y	B
	X	A

COMANDI
CONTROLS
STEUERUNGEN

K IDRAULICO A DISTANZA
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG

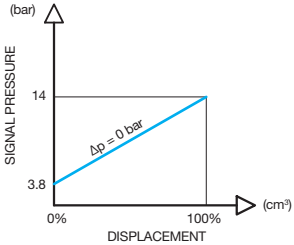






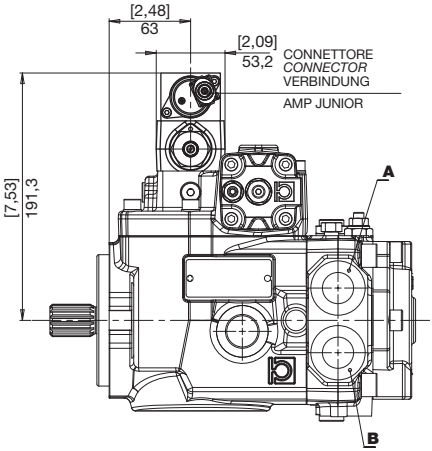
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

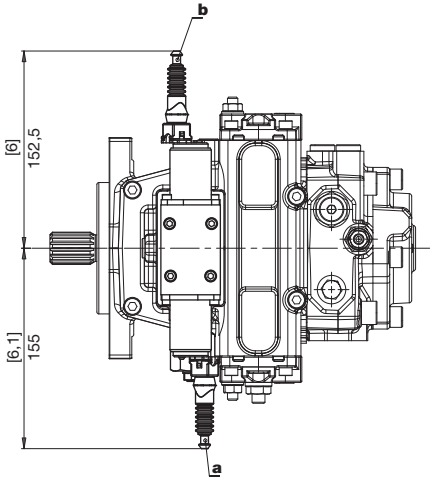
a Pressione di pilotaggio
b *Pilot Pressure*
Steuerdruck



O **V**
12 V 24 V

ELETTRICO PROPORZIONALE RETROAZIONATO
ELECTRICAL PROPORTIONAL FEEDBACK CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG RÜCHGEFÜHRT

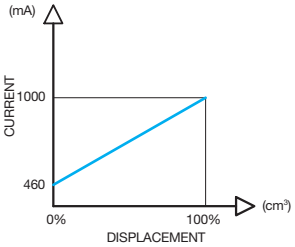




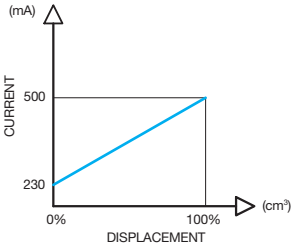
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

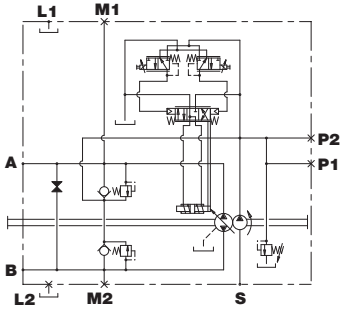
	O	V	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

O



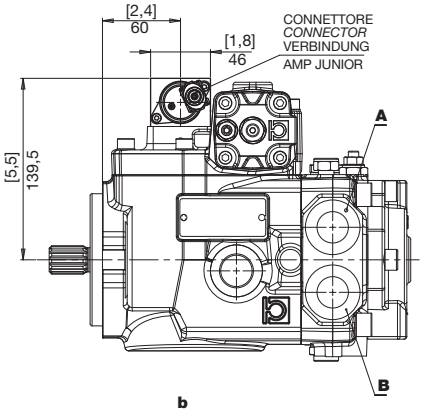
V

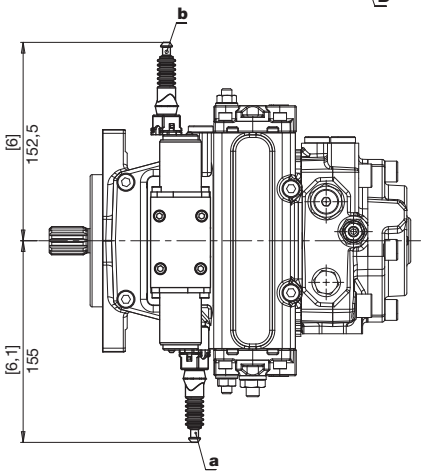




S **W**
12 V 24 V

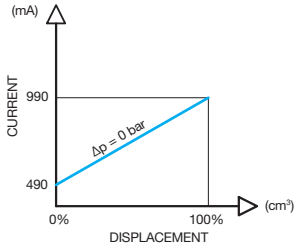
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG



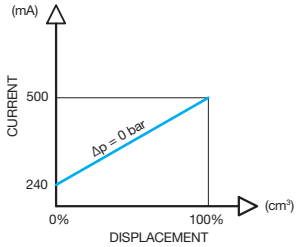


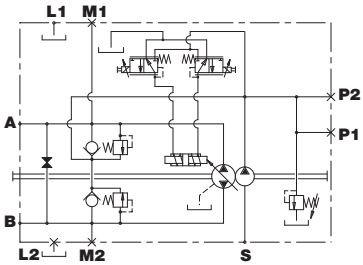
	S	W	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

S



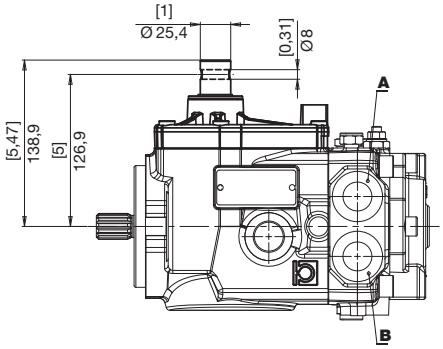
W

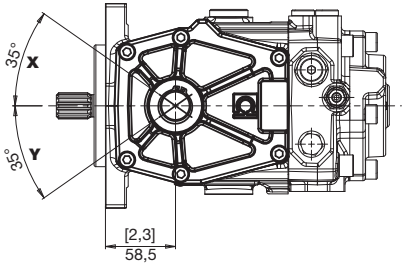


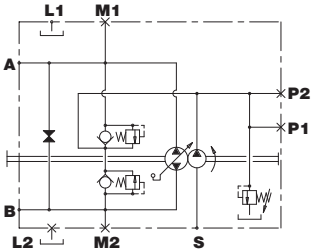


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

M MANUALE
MANUAL
MANUELLERS STEUERUNG



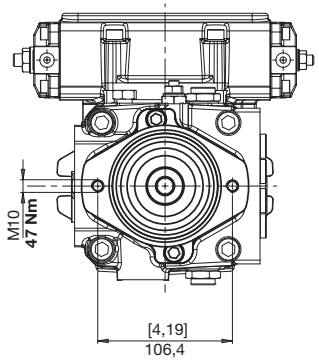




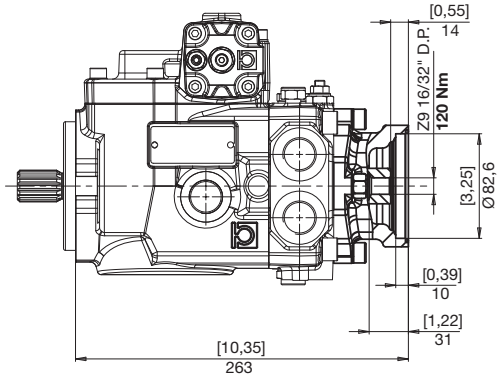
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	A
	X	B
SINISTRA *LEFT* LINKS	Y	B
	X	A

PREDISPOSIZIONI
VERSION
BAUART

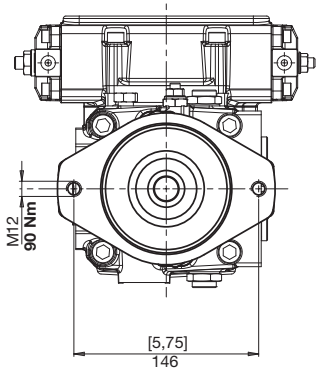
2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH BOOST PUMP
SAE A MIT SPEISEPUMPE



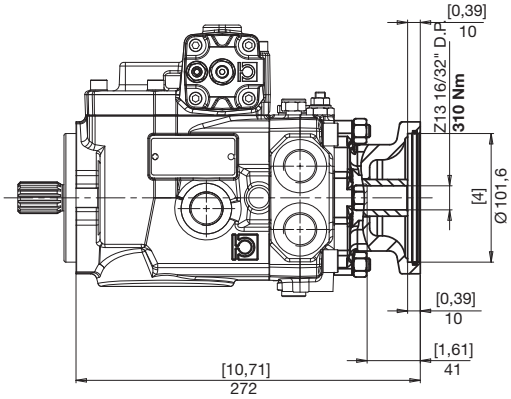
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT BOOST PUMP
SAE A OHNE SPEISEPUMPE



3 SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH BOOST PUMP
SAE B MIT SPEISEPUMPE



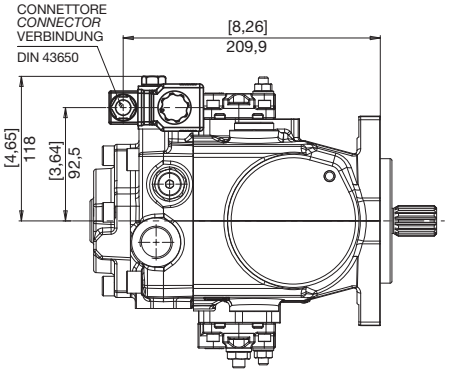
6 SAE B SENZA POMPA SOVRALIMENTAZIONE
SAE B WITHOUT BOOST PUMP
SAE B OHNE SPEISEPUMPE

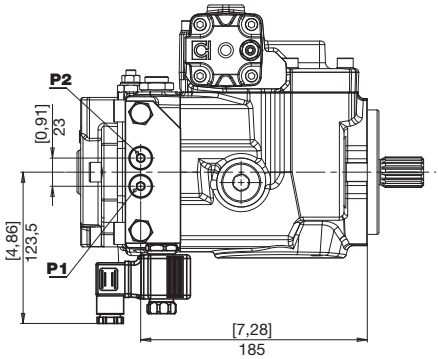


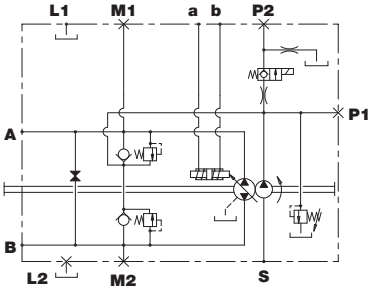
E

SICUREZZA OPERATORE ASSENTE
NO OPERATOR SAFETY
SICHERUNG KEIN ARBEITER

12 V

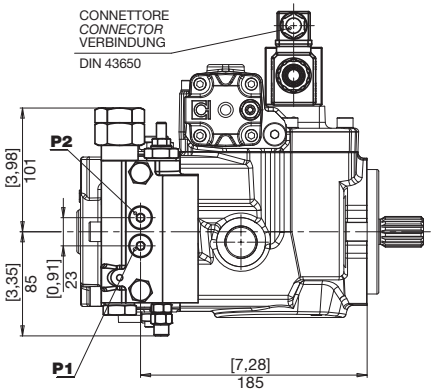


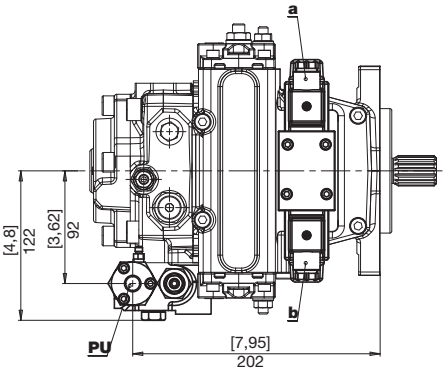




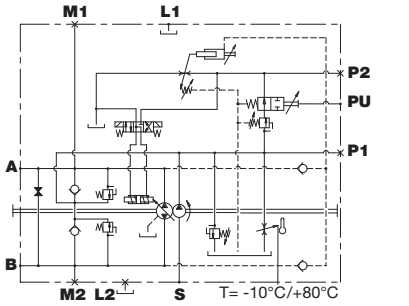
H

INCHING IDRAULICO (SOLO COMANDO D)
HYDRAULIC INCHING ("D" CONTROL)
HYDRAULISCHE INCH-VENTIL (NUR STEUERUNG D)



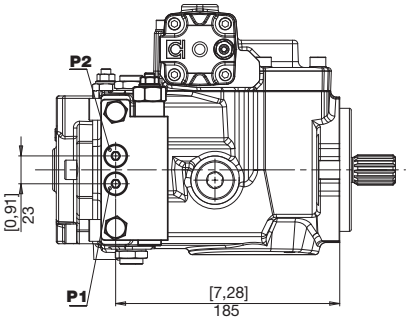


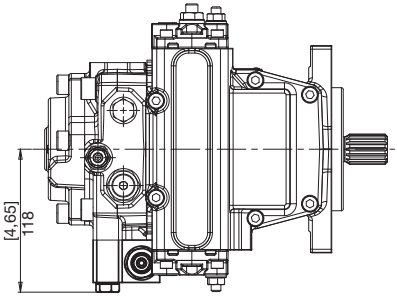
PU	Pilotaggio sblocco freno (1/4" GAS) *Brake opening pressure (1/4" GAS)* Bremse Öffnung Druck (1/4" GAS)

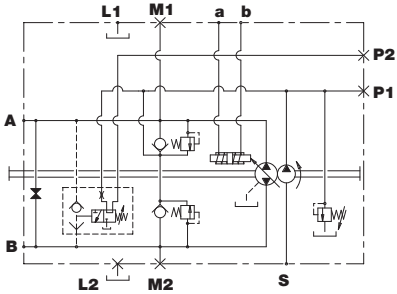


ACCESSORI
ACCESSORIES
ZUBEHÖR

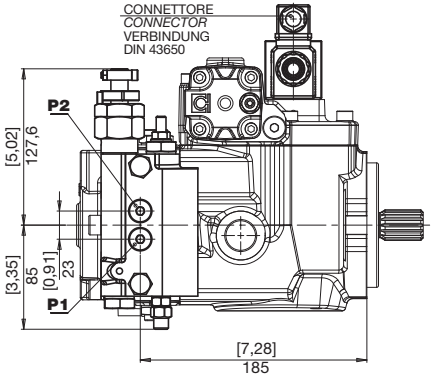
J TAGLIO DI PRESSIONE
CUT-OFF
DRUCKABSCHNEIDUNG

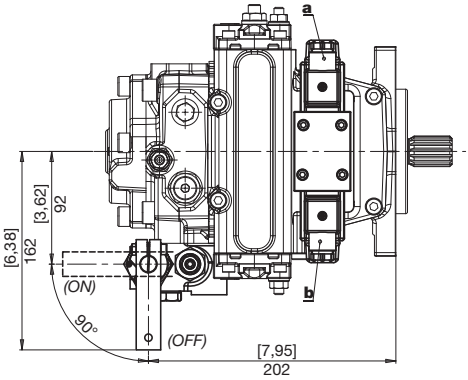


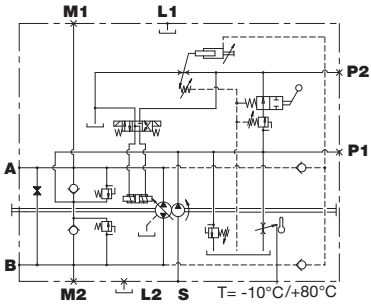




M INCHING MECCANICO (SOLO COMANDO D)
MECHANIC INCHING CONTROL ("D" CONTROL)
MECHANISCHES INCH-VENTIL (NUR STEUERUNG D)

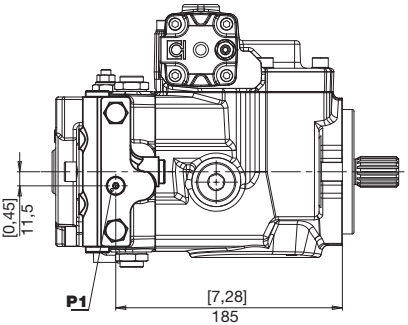


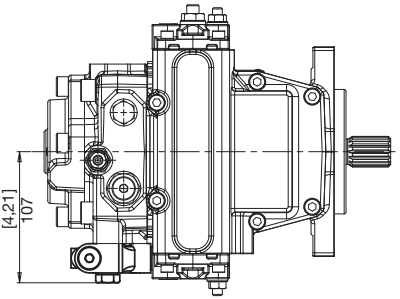




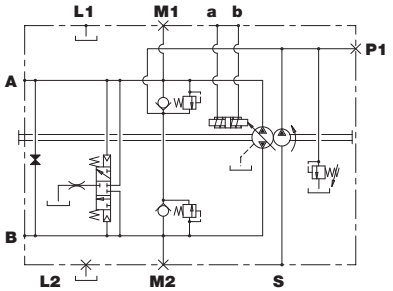
V

VALVOLA DI FLUSSAGGIO (5-7 l/min)
FLUSHING AND BOOST VALVE (5-7 l/min)
SPUL-UND SPEISEDRUKVENTIL (5-7 l/min)



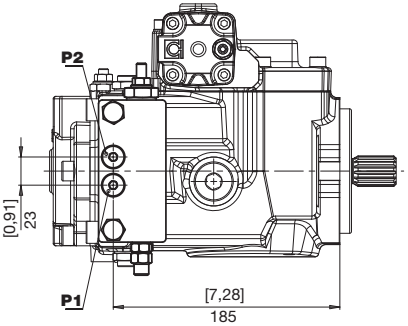


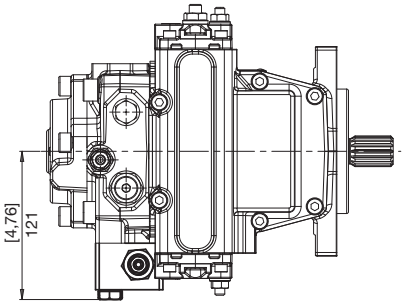
P1	Presa pressione (1/8" GAS) *Pressure intake (1/8" GAS)* Druckanschluss (1/8" GAS)

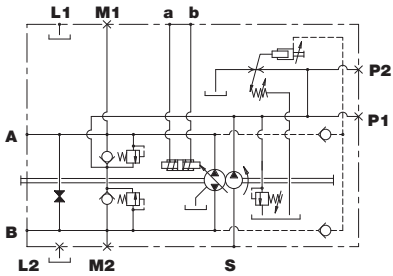


W

LIMITATORE DI POTENZA
POWER LIMITER
LEISTUNGSBEGRENZER

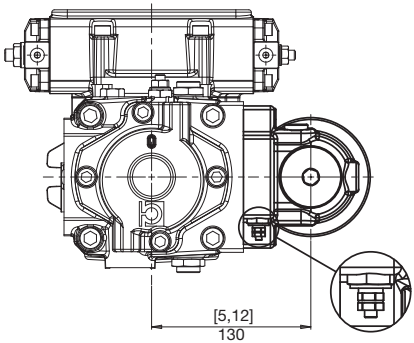




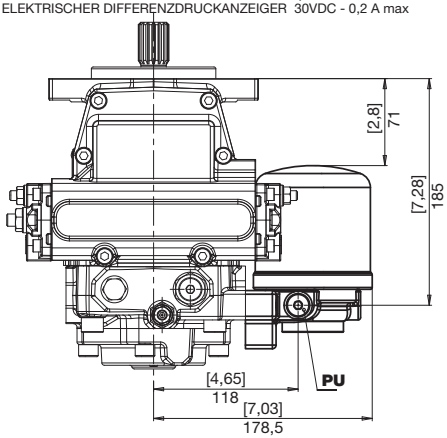


ACCESSORI
ACCESSORIES
ZUBEHÖR

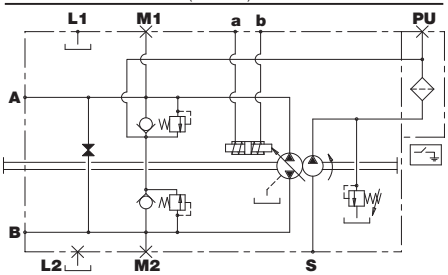
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



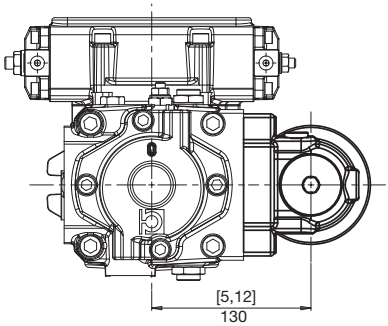
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRIC DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max

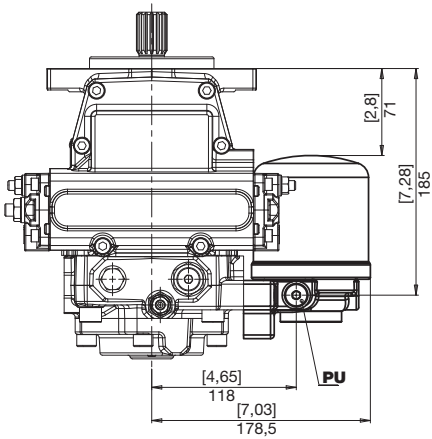


PU Presa olio filtrato (1/4" GAS)
Filtered oil intake (1/4" GAS)
Anschluss filtriertes Ol (1/4" GAS)

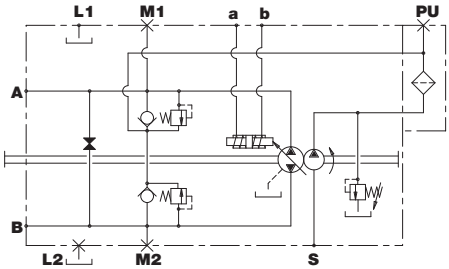


Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER





PU Presa olio filtrato (1/4" GAS)
Filtered oil intake (1/4" GAS)
Anschluss filtriertes Ol (1/4" GAS)



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ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M4PV 58 58 I 1 E A R 6 B Y ...

SERIE
SERIES
SERIE

CILINDRATE NOMINALI
RATED DISPLACEMENT
NENNFÖRDERVOLUMEN
34 - 46 - 50 - 58 - 65

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
34 - 46 - 50 - 58 - 65

COMANDO ***CONTROL*** **STEUERUNG**

D = Automotive
E = Elettrico (12 V)
F = Elettrico (24 V)
G = Servocomando idraulico retroazionato
I = Servocomando a leva
K = Servocomando idraulico a distanza
N = Elettrico on/off (12 V)
Q = Elettrico on/off (24 V)
O = Elettronico proporzionale retroazionato (12V)
V = Elettronico proporzionale retroazionato (24V)
S = Elettronico proporzionale (12V)
W = Elettronico proporzionale (24V)

D *= Automotive control*
E *= Electric (12 V)*
F *= Electric (24 V)*
G *= Hydraulic remote feedback*
I *= Lever-operated servo-control*
K *= Remote servo-control*
N *= Electric on/off (12 V)*
Q *= Electric on/off (24 V)*
O *= Electronic proportional feedback (12V)*
V *= Electronic proportional feedback (24V)*
S *= Electronic proportional (12V)*
W *= Electronic proportional (24V)*

D = Automotive
E = Elektrische (12V)
F = Elektrische (24V)
G = Hydraulik Fernsteuerung Rüchgeführt
I = Hydraulische Hebel-Servosteuerung
K = Fern-Servosteuerung
N = Elektrische on/off (12V)
Q = Elektrische on/off (24V)
O = Elektronische Proportional Rüchgeführt (12V)
V = Elektronische Proportional Rüchgeführt (24V)
S = Elektronische Proportional (12V)
W = Elektronische Proportional (12V)

PREDISPOSIZIONI ***VERSION*** **BAUART**

1 = nessuna con pompa di alimentazione
2 = SAE A con pompa di alimentazione
3 = SAE B 2 fori con pompa di alimentazione
4 = nessuna senza pompa di alimentazione
5 = SAE A senza pompa di alimentazione
6 = SAE B 2 fori senza pompa di alimentazione
7 = flangia bassa SAE B 2 fori senza pompa di alimentazione (solo per pompe tandem)

1 *= no special fittings with boost pump*
2 *= SAE A mounting with boost pump*
3 *= SAE B - 2 holes mounting with boost pump*
4 *= no special fittings, no boost pump*
5 *= SAE A mounting without boost pump*
6 *= SAE B - 2 holes mounting without boost pump*
7 *= low flange SAE B 2 holes no boost pump (for tandem pump only)*

1 = ohne Anschlußflansch mit Speisepumpe
2 = SAE A Anschlußflansch mit Speisepumpe
3 = SAE B Anschlußflansch, mit 2 Bohrungen, mit Speisepumpe
4 = ohne Anschlußflansch, ohne Speisepumpe
5 = SAE A Anschlußflansch ohne Speisepumpe
6 = SAE B Anschlußflansch, mit 2 Bohrungen, ohne Speisepumpe
7 = Niedrigflansch SAE B, 2 Bohrungen, ohne Speisepumpe (nur für TandemPumpen)

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI ***ACCESSORIES*** **ZUBEHÖR**

ggf. weglassen

0 = nessuna opzione
E = sicurezza "operatore assente"
H = inching idraulico (comandi "D")
J = cut-off
M = inching meccanico (comandi "D")
R = filettatura GAS
U = filettatura UNF
V = valvola di flussaggio
W = limitatore di potenza
Y = filtro su linea sovrimentazione
X = filtro su linea sovralimentazione con indicatore intasamento elettrico

Omit if not required

0 *= no accessories*
E *= "no operator" safety*
H *= hydraulic inching ("D" control)*
J *= cut-off*
M *= mechanic inching ("D" control)*
R *= GAS threads*
U *= UNF threads*
V *= flushing and boost valve*
W *= power limiter*
Y *= filter on charge line*
X *= filter on charge line with electric clogging indicator*

Omettere se non richiesto

0 = kein Zubehör
E = Sicherung "kein arbeiter"
H = Hydraulische Inch-Ventil ("D" steuerung)
J = Druckabschneidung
M = Mechanische Inch-Ventil ("D" steuerung)
R = GAS Gewinde
U = UNF Gewinde
V = Spul-und speisedrukventil
W = Leistungsbegrenzer
Y = Filter auf Speisedruckleitung
X = Filter auf Speisedruckleitung mit elektrischem Anzeiger

B = Valvola by-pass
B *= By-pass valve*
B = Bypass-Ventil

ESTREMITÀ D'ALBERO ***SHAFT PROFIL***
WELLENENDE

1 = cilindrico Ø 22.22 (7/8")
2 = cilindrico Ø 25.4 (1")
3 = scanalato maschio 16/32" d.p. Z 15 (Std)
4 = scanalato Ø 30
5 = scanalato femmina 16/32" d.p. Z 13
6 = scanalato maschio 16/32" d.p. Z 13

1 *= Round shaft ∆ 22.22 (7/8")*
2 *= Round shaft ∆ 25.4 (1")*
3 *= Male splined shaft Z15 16/32" d.p. (Std)*
4 *= Round shaft Ø 30*
6 *= Male splined shaft Z 13 16/32" d.p*
5 *= Female splined shaft Z 13 16/32" d.p*
6 *= Male splined shaft Z 13 16/32" d.p*

1 = Zylindrisch Ø 22.22 (7/8")
2 = Zylindrisch Ø 25.4 (1")
3 = Profilwelle Z 15-16/32" d.p. (Std)
4 = Zylindrisch Ø 30
5 = Hollilwelle Z 13-16/32" d.p.
6 = Profilwelle Z 13-16/32" d.p.

SENSO DI ROTAZIONE ***DIRECTION OF ROTATION***
DREHRICHTUNG

R = Destro / *Right* / Rechts
L = Sinistro / *Left* / Links

TIPO DI OSCILLANTE
SWASHPLATE TYPE
SCHWENKSCHEIBENLAGERUNG

A = oscillante su rullini
B = oscillante su bronzine
A *= mounted on needle bearing*
B *= mounted on bronze bearings*
A = Rollengelagert
B = Bronze-Gleitgelagert

POMPA DOPPIA CON 2 POMPE DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 2 BOOST PUMPS
TANDEMPUMPE MIT 2 SPEISEPUMPEN

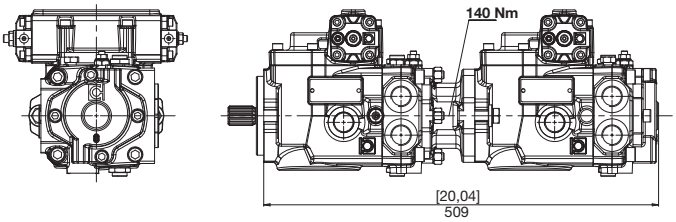
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

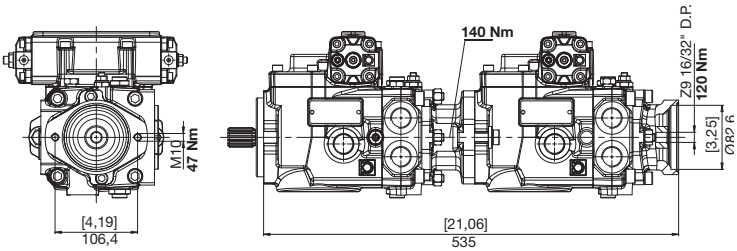
M4PV	58	58	K	3	E	A	R	3	B	0	M4PV	58	58	K	1	E	A	R	6	B	0



1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV	58	58	K	3	E	A	R	3	B	0	M4PV	58	58	K	2	E	A	R	6	B	0

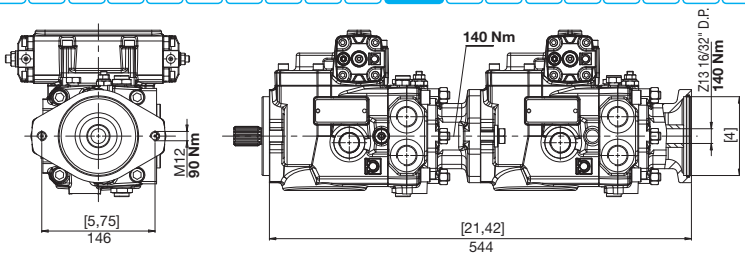
SAE A



1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV	58	58	K	3	E	A	R	3	B	0	M4PV	58	58	K	3	E	A	R	6	B	0

SAE B



POMPA DOPPIA CON 1 POMPA DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 1 BOOST PUMP
TANDEMPUMPE MIT 1 SPEISEPUMPE

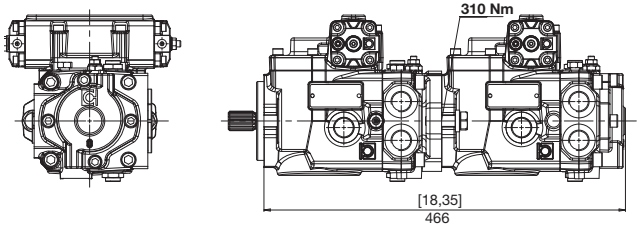
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

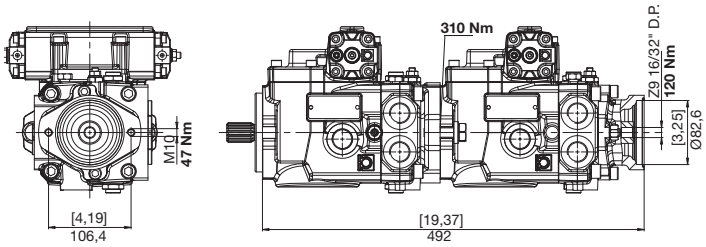
M4PV	58	58	K	7	E	A	R	3	B	0	M4PV	58	58	K	1	E	A	R	3	B	0



1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV	58	58	K	7	25	A	R	3	B	0	M4PV	58	58	K	2	25	A	R	3	B	0

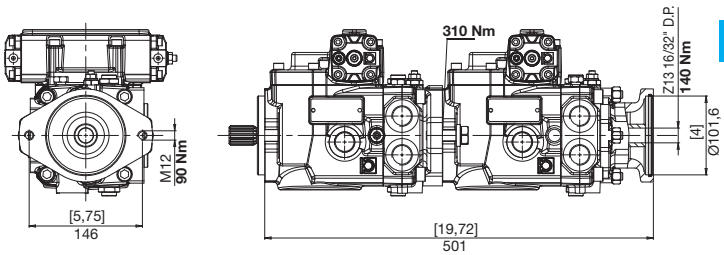
SAE A



1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M4PV	58	58	K	7	E	A	R	3	B	0	M4PV	58	58	K	3	E	A	R	3	B	0

SAE B



HP P4

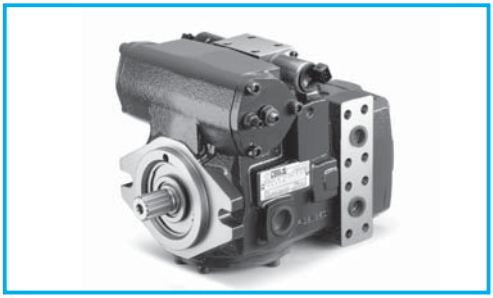
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

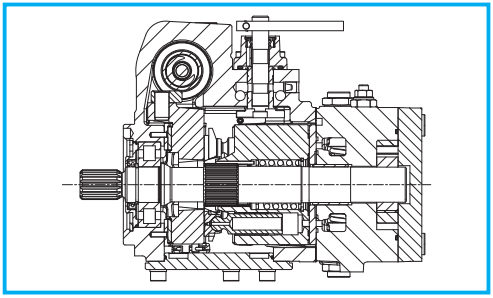
Le pompe a pistoni assiali serie HP P4 sono state concepite per operare in circuito chiuso per impieghi a media pressione. I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale. Per una migliore risposta al comando le pompe HP P4 vengono normalmente fornite con oscillante su cuscinetti a rulli. A richiesta sono fornibili su bronzine a sostentamento idrostatico. Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elvata affidabilità per pressioni di funzionamento fino a 300 bar in continuo (400 bar di picco). Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

The HP P4 series axial piston pumps have been designed to work in a closed circuit both for application at medium pressure. Control systems actually available are making easy to use these pumps in any application for industrial and mobile field. Typically the pumps HP P4 are equipped with roller bearings for the swash plate suspension. Alternatively there are bronze bearings for hydrostatic suspension of the swash plate available on request.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working continuous pressure until 400 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie HP P4 sind sowohl im offenen als auch im geschlossenen Kreislauf einsetzbar.
Durch die lieferbaren unterschiedlichen Steuerungssysteme eignen sie sich sowohl für stationäre als auch für mobile Anwendungen.
Für eine bessere Verstelldynamik wird die Pumpe HP P4 normalerweise mit einer Rollenlagerung für die Schwenkscheibenverstellung ausgestattet. Auf Anfrage kann die Pumpe aber auch mit hydrostatischen Bronze-Gleitlagern ausgestattet werden.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Pumpendrehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Betriebsdruck von bis zu 400 Bar und ein Spitzenwert von 450 Bar für die Serie HP P4 gewährleistet.
Die Pumpen können in der Tandemversion mit auf Wunsch erhältlichen Flanschanschlüssen geliefert werden.

HP P4 34•46•50•58•65





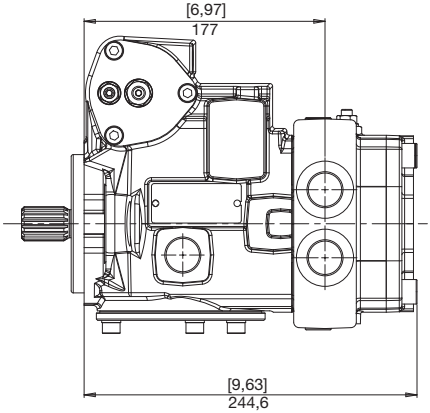
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

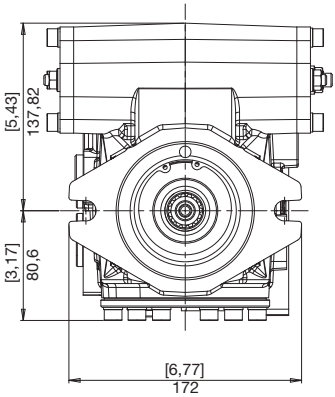
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FORDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
HP P4	34	2,08	18	300	4350	380	5075	400	5800	3800	500	28,8	63,37
	46	2,81	19	300	4350	380	5075	400	5800	3800	500	28,8	63,37
	50	3,05	18	300	4350	380	5075	400	5800	3800	500	31,0	68,21
	58	3,54	18	250	3625	320	4640	400	5800	3600	500	33,2	73,05
	65	3,97	18	250	3625	320	4640	400	5800	3600	500	33,2	73,05

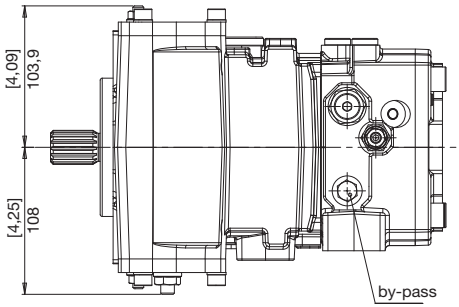
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA STANDARD POMPA DI ALIMENTAZIONE *BOOST PUMP STANDARD DISPLACEMENT* FORDERVOLUMEN STANDARD SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
HPP4 034	14	0,86	25	360
HPP4 046	14	0,86	25	360
HPP4 050	14	0,86	25	360
HPP4 058	16	0,98	25	360
HPP4 065	16	0,98	25	360

DIMENSIONI
SIZE
ABMESSUNGEN



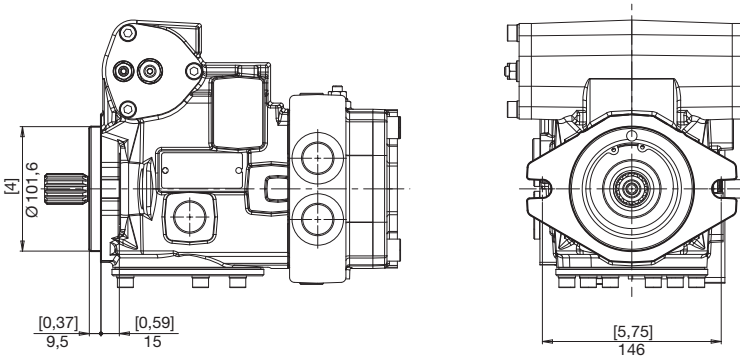




FLANGE
FLANGES
FLANSCHE

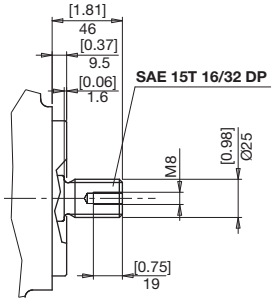
HP P4

B SAE B
SAE B
SAE B

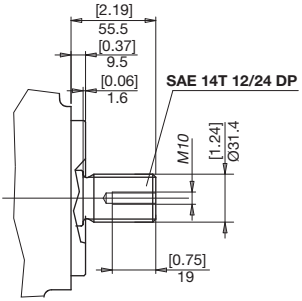


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

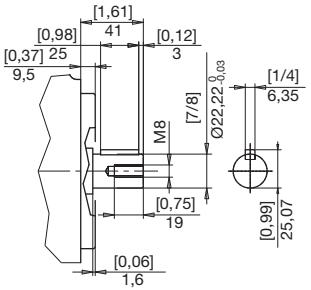
1 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
460 N•m



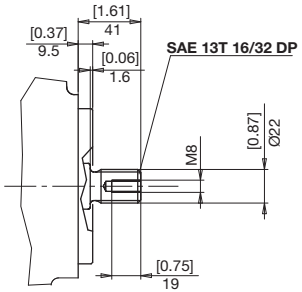
3 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
850 N•m



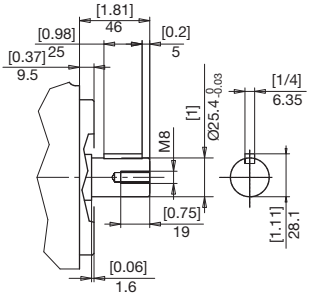
6 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
210 N•m



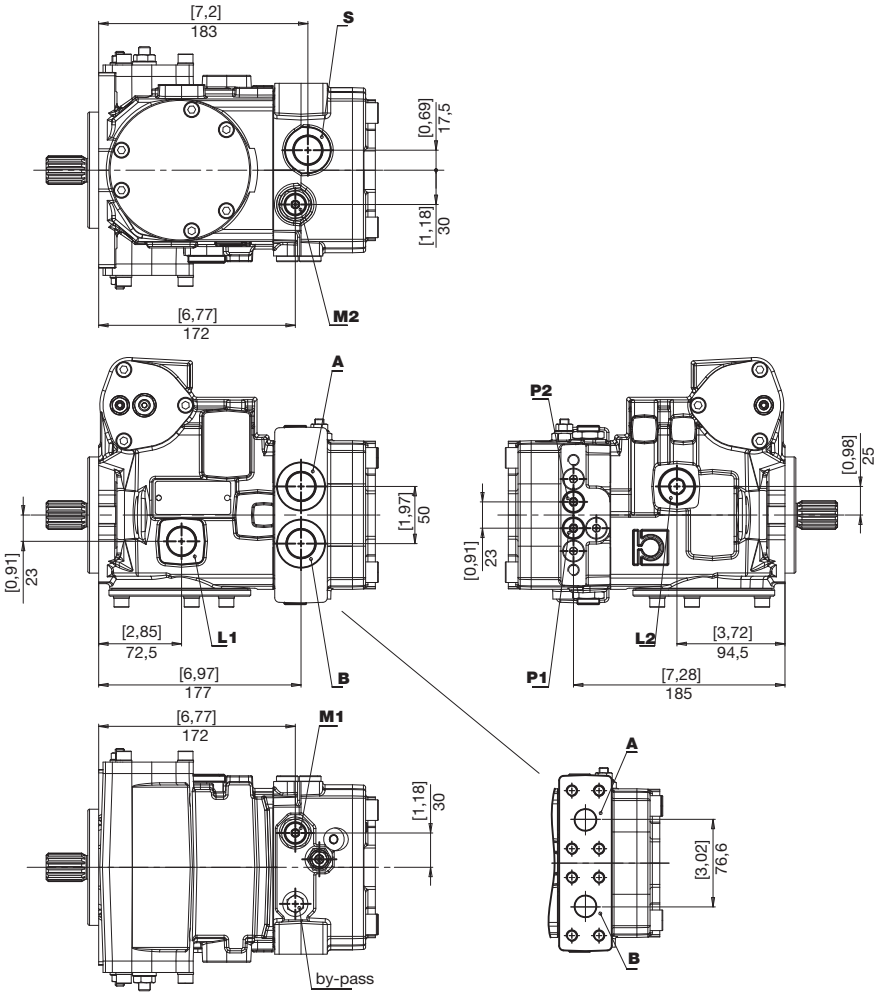
9 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
310 N•m



B *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
285 N•m



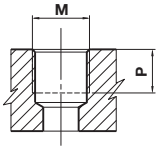
BOCCHE
PORTS
ANSCHLÜSSE



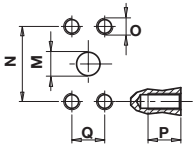
A **B**	Utilizzo *Use* Verbraucher	**P1** **P2**	Presa pressione *Pressure intake* Druckanschluss
L1 **L2**	Drenaggio *Drain* Leckölanschluss	**M1** **M2**	Presa manometro *Manometer intake* Manometeranschluss
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

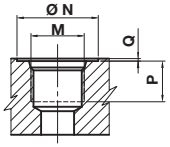
HP P4



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G2	1/4" GAS BSPP	17	12	0,47
G6	3/4" GAS BSPP	90	15	0,75



TIPO *TYPE* TYP	M		N		Q		P		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N6	19	0,75	50,8	2	23,8	0,94	20	0,79	M10	38



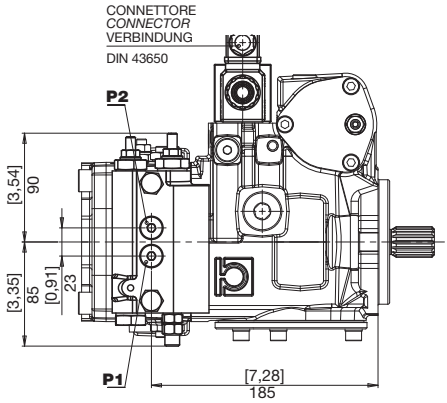
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4"	21	0,83	12	0,47	0,3	0,01	7/16-20 UNF	17
U6	3/4"	42	1,65	18	0,70	0,3	0,01	1-1/16-12 UNF	90

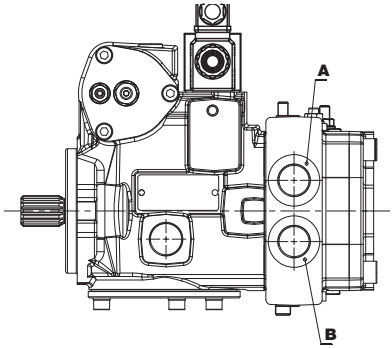
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

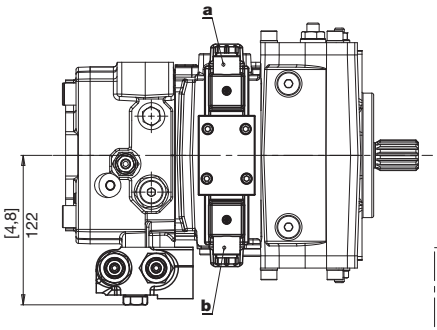
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	a - b PILOTAGGIO *PILOT* STEUERDRUCK	P1 - P2 PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLUSS	M1 - M2 PRESE MANOMETRO *MANOMETER INTAKE* MANOMETER-ANSCHLUSS
G	G6	G6	G6	G2	G2	G2
U	U6	U6	U6	U2	G2	U2
N	G6	N6	G6	G2	G2	G2
M	U6	N6	U6	U2	G2	U2

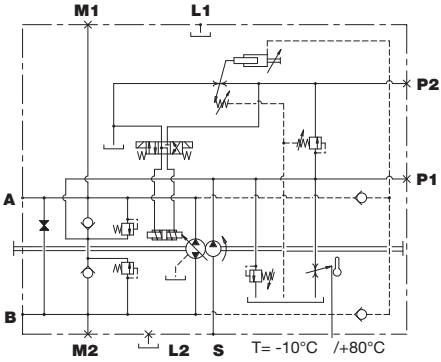
D
12 V

AUTOMOTIVE
AUTOMOTIVE
AUTOMOTIVE







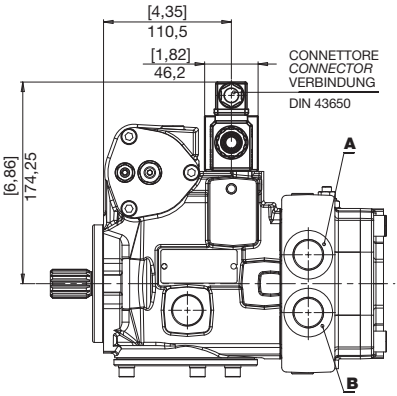


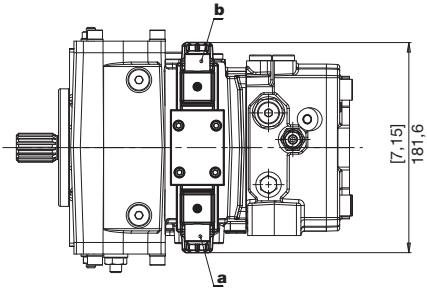
POMPA DI ALIMENTAZIONE 14cc PER TUTTE LE CILINDRATE
14cc BOOST PUMP FOR THE WOOLE DISPLACEMENT RANGE
SPEISEPUMPE 14cc FÜR ALLE FORDERVOLUMEN

ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

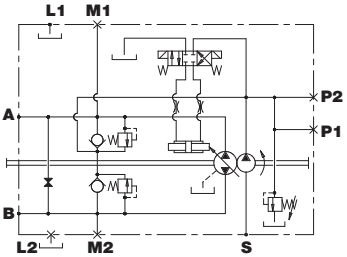
E F — 12 V 24 V

ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL



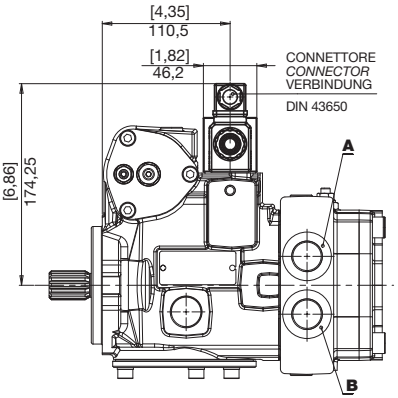


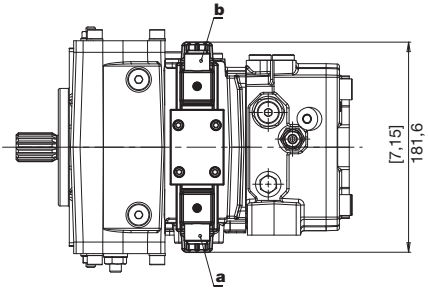
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A



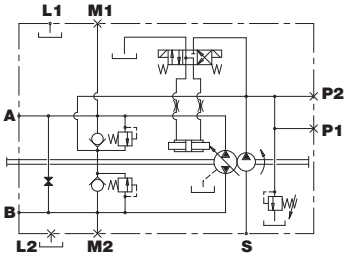
N Q — 12 V 24 V

ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, VENTIL GEÖFFNET



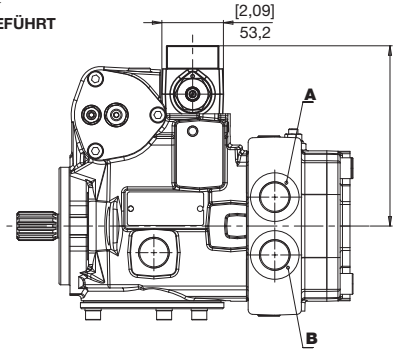


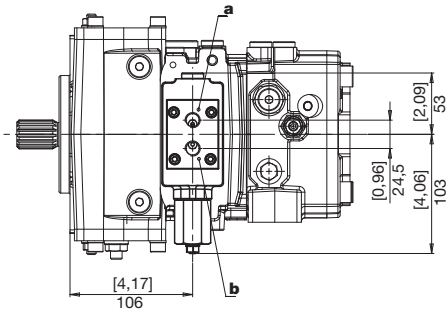
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

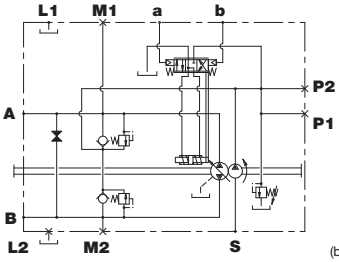


COMANDI
CONTROLS
STEUERUNGEN

G IDRAULICO RETROAZIONATO
HYDRAULIC, FEEDBACK
HYDRAULISCH, RÜCKGEFÜHRT

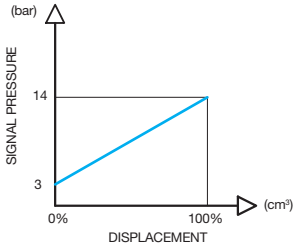




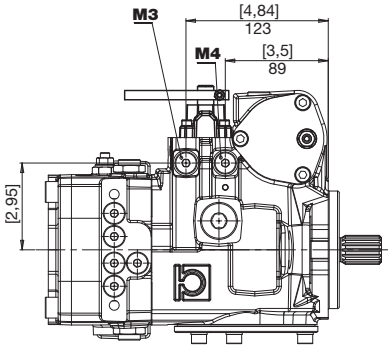


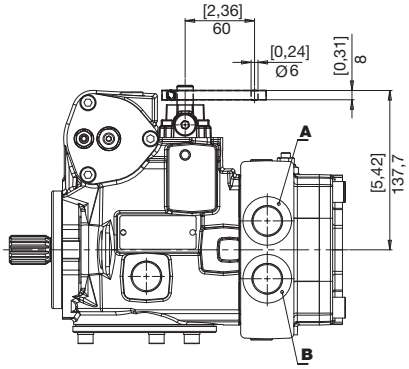
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	B
	b	A

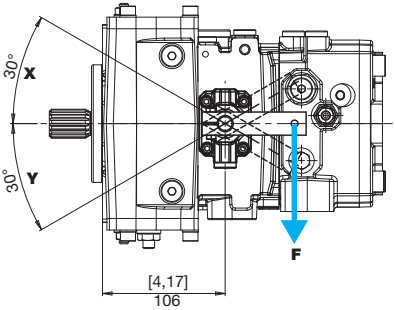
a Pressione di pilotaggio
Pilot Pressure
b Steuerdruck

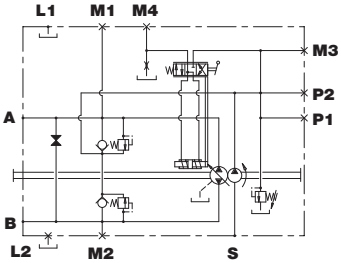


I SERVOCOMANDO A LEVA
LEVER-OPERATED SERVO-CONTROL
HYDRAULISCHE HEBEL-SERVOSTEUERUNG



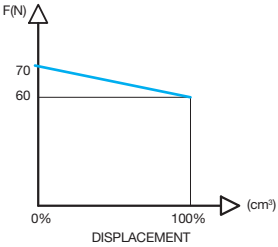






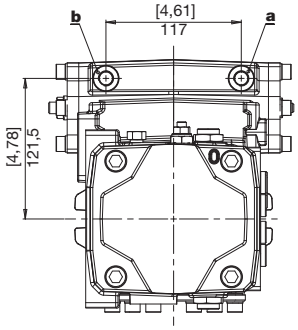
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	B
	X	A
SINISTRA *LEFT* LINKS	Y	A
	X	B

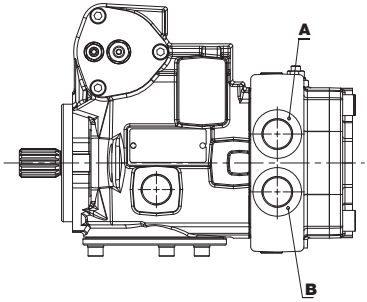
M3	Strozzatore in alimentazione *Intake restrictor* Eingangsdrossel	**M4**	Strozzatore in scarico *Outlet restrictor* Ausgangsdrossel

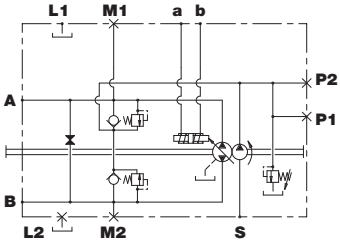


COMANDI
CONTROLS
STEUERUNGEN

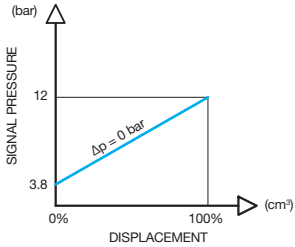
K IDRAULICO A DISTANZA
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG





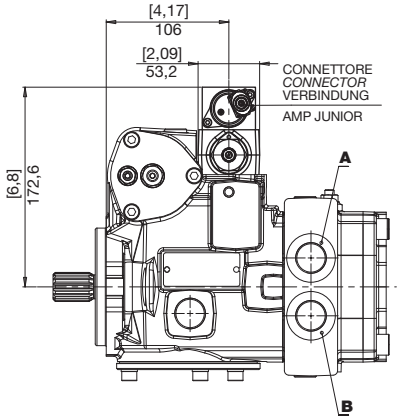


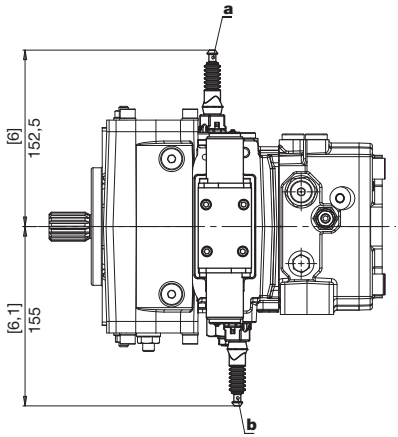
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A



O V
12 V 24 V

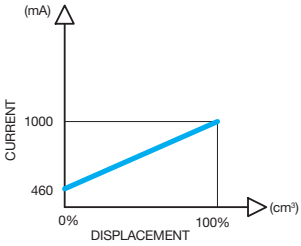
ELETTRICO PROPORZIONALE RETROAZIONATO
ELECTRICAL PROPORTIONAL FEEDBACK CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG RÜCHGEFÜHRT



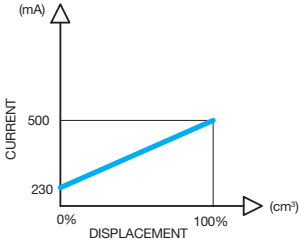


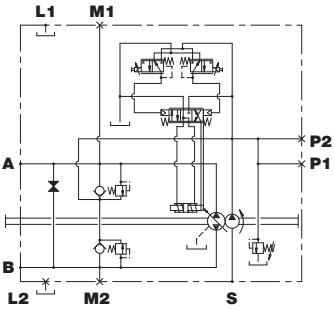
	O	V	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

O



V

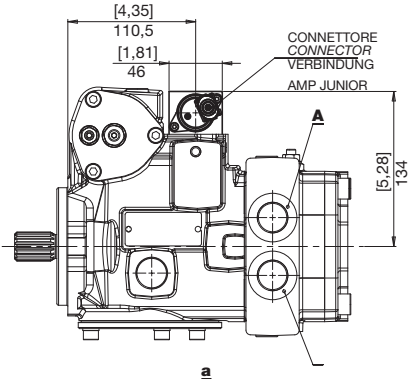


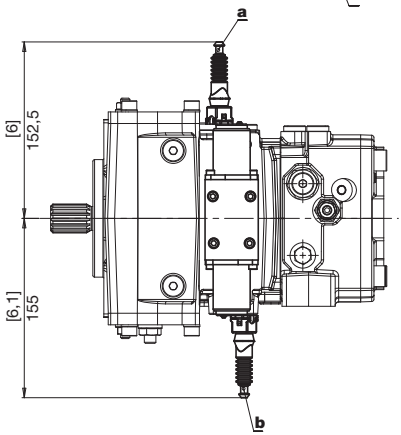


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

S **W**
12 V 24 V

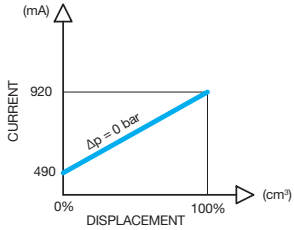
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG



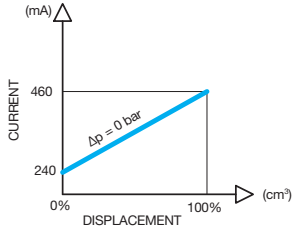


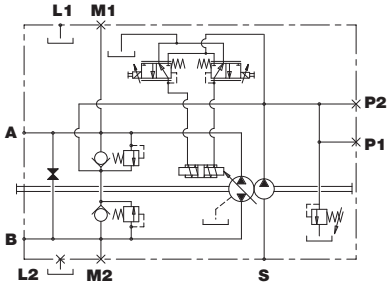
	S	W	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

S



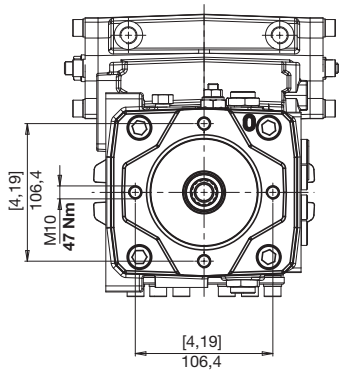
W



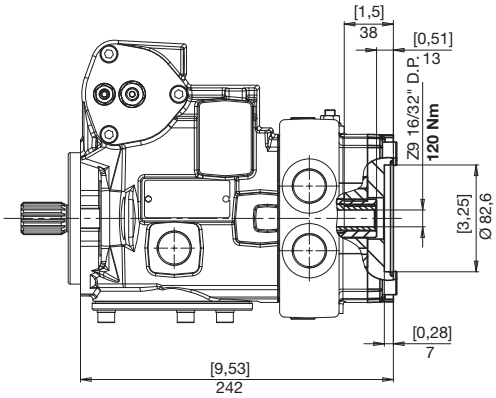


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

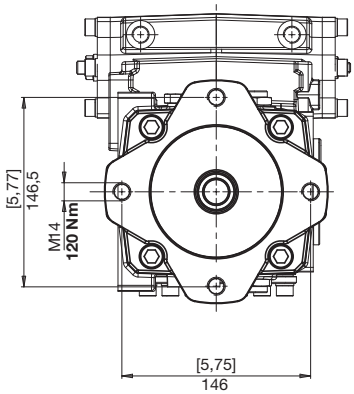
2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH BOOST PUMP
SAE A MIT SPEISEPUMPE



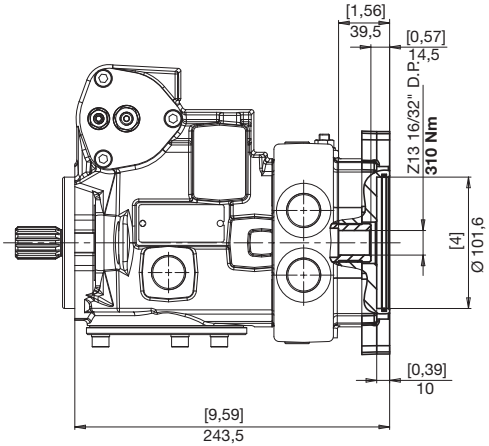
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT BOOST PUMP
SAE A OHNE SPEISEPUMPE



3 SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH BOOST PUMP
SAE B MIT SPEISEPUMPE



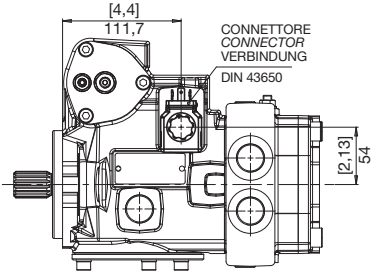
6 SAE B SENZA POMPA SOVRALIMENTAZIONE
SAE B WITHOUT BOOST PUMP
SAE B OHNE SPEISEPUMPE

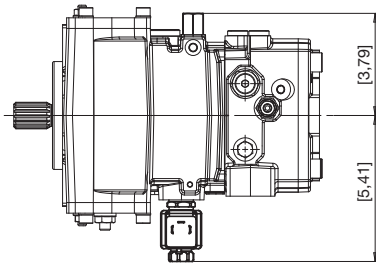


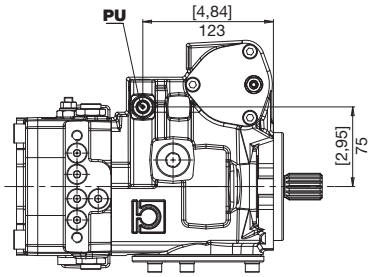
ACCESSORI
ACCESSORIES
ZUBEHÖR

E SICUREZZA OPERATORE ASSENTE
NO OPERATOR SAFETY
SICHERUNG KEIN ARBEITER

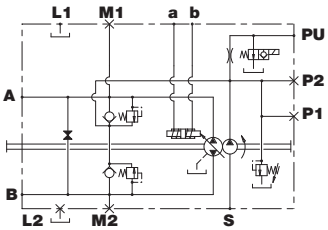
12 V



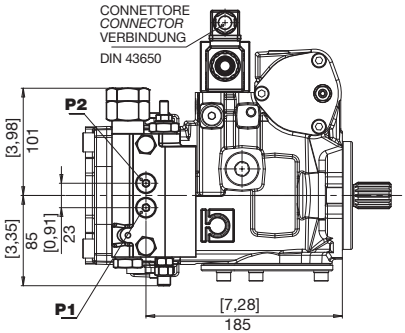


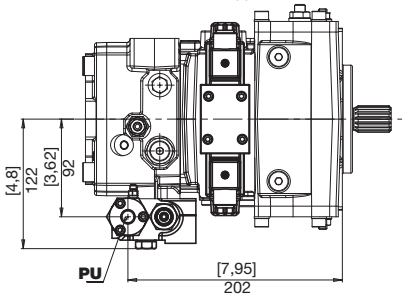


PU Pilotaggio sblocco freno (1/4" GAS)
Brake opening pressure (1/4" GAS)
Bremse Öffnung Druck (1/4" GAS)

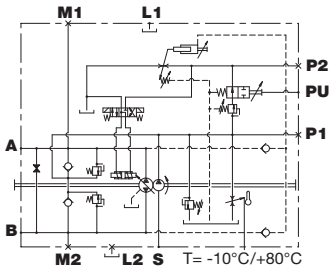


H INCHING IDRAULICO (SOLO COMANDO D)
HYDRAULIC INCHING ("D" CONTROL)
HYDRAULISCHE INCH-VENTIL (NUR STEUERUNG D)

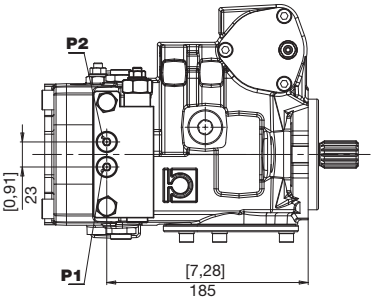


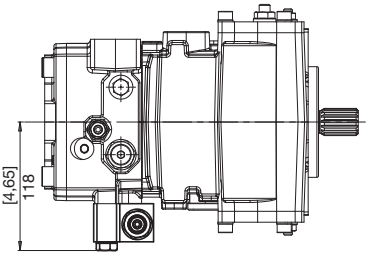


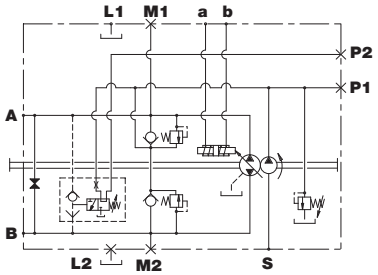
PU Pilotaggio (1/4" GAS)
Pilot pressure (1/4" GAS)
Steuerdruck (1/4" GAS)



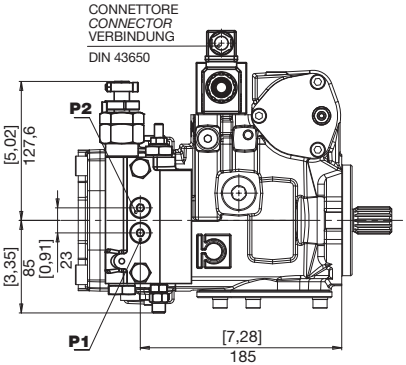
J TAGLIO DI PRESSIONE
CUT-OFF
DRUCKABSCHNEIDUNG

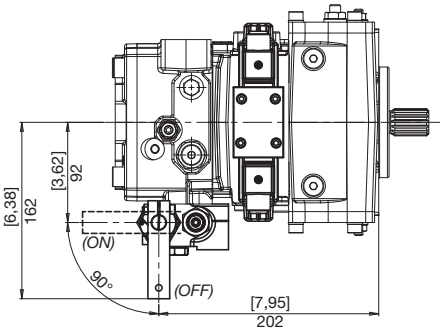


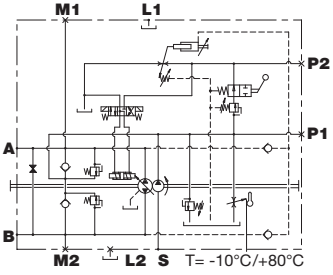




M INCHING MECCANICO (SOLO COMANDO D)
MECHANIC INCHING CONTROL ("D" CONTROL)
MECHANISCHES INCH-VENTIL (NUR STEUERUNG D)

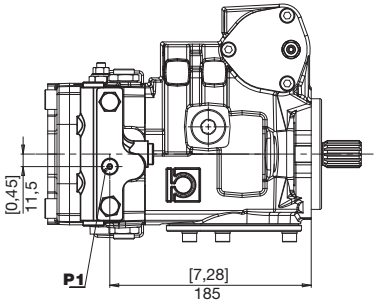


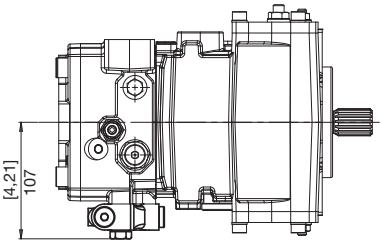




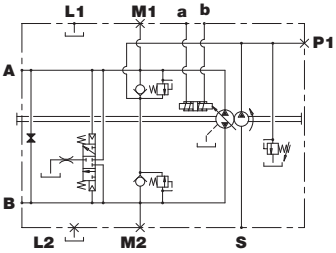
ACCESSORI
ACCESSORIES
ZUBEHÖR

V VALVOLA DI FLUSSAGGIO (5-7 l/min)
FLUSHING AND BOOST VALVE (5-7 l/min)
SPUL-UND SPEISEDRUKVENTIL (5-7 l/min)

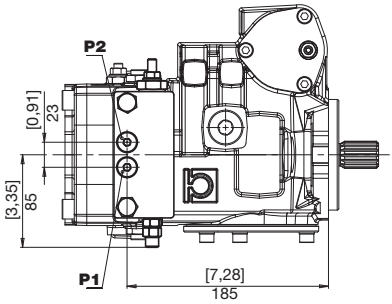


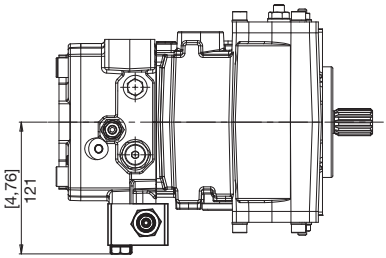


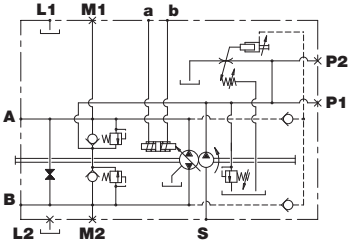
P1	Presa pressione (1/8" GAS) *Pressure intake (1/8" GAS)* Druckanschluss (1/8" GAS)



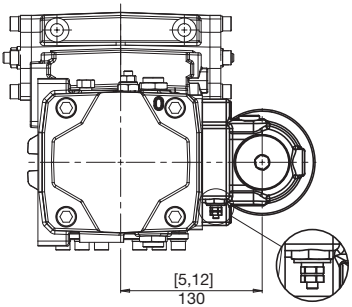
W LIMITATORE DI POTENZA
POWER LIMITER
LEISTUNGSBEGRENZER



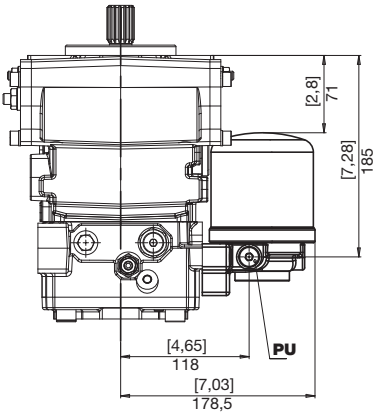




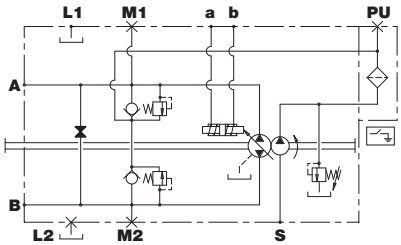
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



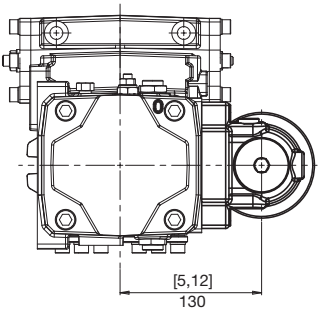
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRIC DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max

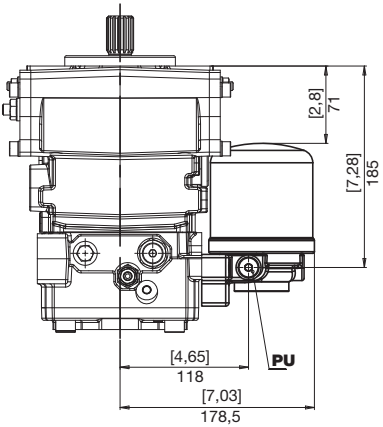


PU	Presa olio filtrato (1/4" GAS) *Filtered oil intake (1/4" GAS)* Anschluss filtriertes Ol (1/4" GAS)

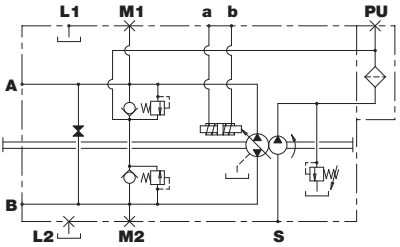


Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER





PU	Presa olio filtrato (1/4" GAS) *Filtered oil intake (1/4" GAS)* Anschluss filtriertes Ol (1/4" GAS)



ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HP | P4 | 034 | R | B | 1 | G | I | A | 1 | Y | ...

PRODOTTO
PRODUCT
PRODUKT

P4 - Pompe a pistoni assiali per circuito chiuso media pressione

P4 - *Closed curcuit axial piston pump, medium pressure*

P4 - Axialkolbenpumpen für geschlossenen Kreislauf, Mitteldruck

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

034 - 046 - 050 - 058 - 065

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

FLANGIA ***FLANGE*** **FLANSCHE**

B - SAE B

BOCCHE
PORTS
ANSCHLÜSSE

Vedi tabella
See chart
Siehe Tabelle

ESTREMITÀ ALBERO
SHAFT PROFIL
WELLENENDE

1 - Z15 16/32" DP
3 - Z14 12/24" DP
6 - Cilindrico 22,22
Round shaft 22,22
Zylindrisch 22,22
9 - Z13 16/32" DP
B - Cilindrico 25,4
Round shaft 25,4
Zylindrisch 25,4
0 - Per stadio P4
For pump P4
Für Pumpen P4

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI ***ACCESSORIES*** **ZUBEHÖR**

0 - nessuna opzione
E - sicurezza "operatore assente"
H - inching idraulico (solo comando D)
J - taglio di pressione
M - inching meccanico (solo comando D)
S - accessori multipli esecuzioni speciali
V - valvola di flussaggio
W - limitatore di potenza
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento

0 - *no accessories*
E - *"no operator" safety*
H - *hydraulic inching ("D" control)*
J - *cut-off*
M - *mechanical inching ("D" control)*
S - *multiple accessories special versions*
V - *flushing and boost valve*
W - *power limiter*
X - *filter with clogging indicator*
Y - *filter without clogging indicator*

0 - kein Zubehör
E - Sicherung "kein Bediener"
H - Hydraulisches Inch-Ventil (nur Steuerung D)
J - Druckabschneidung
M - Mechanisches Inch-Ventil (nur Steuerung D)
S - Zubehörkombinationen Sonderbauarten
V - Spul-und speisedrukventil
W - Leistungsbegrenzer
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger

Per la combinazione di più accessori consultare l'ufficio tecnico

For further details on accessories combinations, please contact our Technical Department

Für weitere Zubehörkombinationen wenden Sie sich bitte an die Technische Abteilung.

COMANDO ***CONTROL*** **STEUERUNG**

D = Automotive
E = Elettrico (12 V)
F = Elettrico (24 V)
G = Servocomando idraulico retroazionato
I = Servocomando a leva
K = Servocomando idraulico a distanza
N = Elettrico on/off (12 V)
Q = Elettrico on/off (24 V)
O = Elettronico proporzionale retroazionato (12V)
V = Elettronico proporzionale retroazionato (24V)
S = Elettronico proporzionale (12V)
W = Elettronico proporzionale (24V)

D = *Automotive control*
E = *Electric (12 V)*
F = *Electric (24 V)*
G = *Hydraulic remote feedback*
I = *Lever-operated servo-control*
K = *Remote servo-control*
N = *Electric on/off (12 V)*
Q = *Electric on/off (24 V)*
O = *Electronic proportional feedback (12V)*
V = *Electronic proportional feedback (24V)*
S = *Electronic proportional (12V)*
W = *Electronic proportional (24V)*

D = Automotive
E = Elektrische (12V)
F = Elektrische (24V)
G = Hydraulik Fernsteuerung Rüchgeführt
I = Hydraulische Hebel-Servosteuerung
K = Fern-Servosteuerung
N = Elektrische on/off (12V)
Q = Elektrische on/off (24V)
O = Elektronische Proportional Rüchgeführt (12V)
V = Elektronische Proportional Rüchgeführt (24V)
S = Elektronische Proportional (12V)
W = Elektronische Proportional (12V)

PREDISPOSIZIONI ***VERSION*** **BAUART**

0 - nessuna senza pompa sovralimentazione
1 - nessuna con pompa sovralimentazione
2 - SAE A con pompa sovralimentazione
3 - SAE B con pompa sovralimentazione
5 - SAE A senza pompa sovralimentazione
6 - SAE B senza pompa sovralimentazione
T - per pompa P4 senza pompa sovralimentazione
V - per pompa P4 con pompa sovralimentazione

0 - *no special fittings without boost pump*
1 - *no special fittings with boost pump*
2 - *SAE A mounting boost pump*
3 - *SAE B mounting boost pump*
5 - *SAE A mounting without boost pump*
6 - *SAE B mounting without boost pump*
T - *fiitting for P4 pump without boost pump*
V - *fitting for P4 pump with boost pump*

0 - ohne Anschlussflansch, ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A - Anschlussflansch mit Speisepumpe
3 - SAE B - Anschlussflansch mit Speisepumpe
5 - SAE A - Anschlussflansch ohne Speisepumpe
6 - SAE B - Anschlussflansch ohne Speisepumpe
T - Anschlussflansch für P4-Pumpe ohne Speisepumpe
V - Anschlussflansch für P4-Pumpe mit Speisepumpe

POMPA DOPPIA CON 2 POMPE DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 2 BOOST PUMPS
TANDEMPUMPE MIT 2 SPEISEPUMPEN

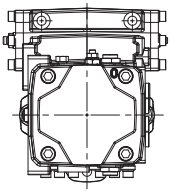
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

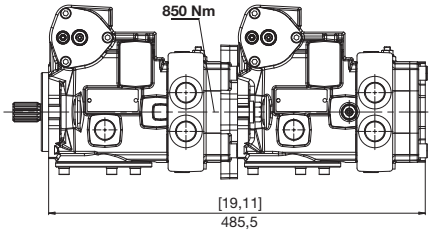
You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

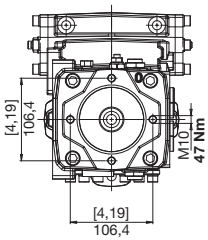
HP	P4	058	R	B	3	G	K	L	V	0	000	HP	P4	058	R	B	0	G	K	L	1	0	000

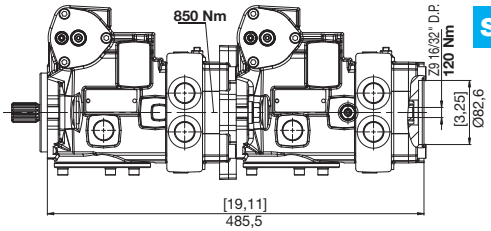




1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

HP	P4	058	R	B	3	G	K	L	V	0	000	HP	P4	058	R	B	0	G	K	L	2	0	000

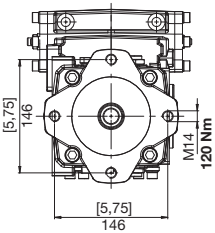


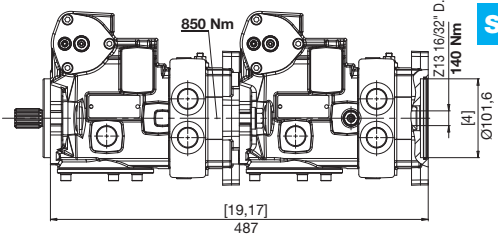


SAE A

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

HP	P4	058	R	B	3	G	K	L	V	0	000	HP	P4	058	R	B	0	G	K	L	3	0	000





SAE B

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M6 PV

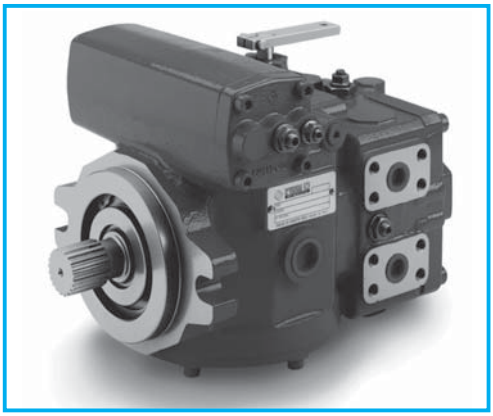
POMPE A PISTONI ASSIALI A CILINDRATA VARIABILE
VARIABLE-DISPLACEMENT AXIAL PISTON PUMPS
AXIALKOLBENVERSTELLPUMPEN

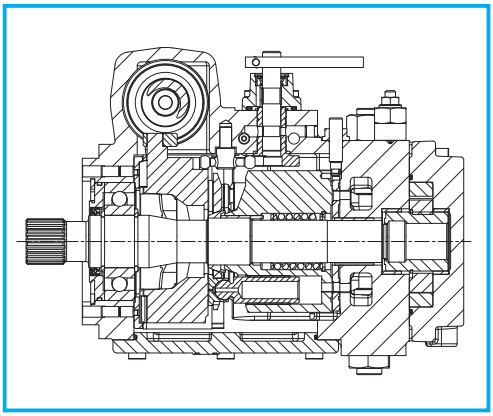
La pompa M6PV rappresenta la logica evoluzione verso le esigenze degli utenti evoluti, che nella realizzazione di una trasmissione idrostatica richiedono componenti con prestazioni sempre migliori e rapporto qualità/prezzo estremamente elevato.
Pressione continua di lavoro di 380 bar con punte di 420 bar.

M6PV pump represents the logic evolution towards requirements of progressive users, who, projecting an hydrostatic drive, are asking for components with better performances and extremely high quality/price ratio.
380 bars constant working pressure, up to 420 bars peak.

Die Pumpe M6PV ist die logische Weiterentwicklung entsprechend den Anforderungen, die sich entwicklen und die fur hydrostatische Antriebe immer leistungsfähigere Komponenten erfordem, wobei sie ein hervorragendes Preis/ Qualitatsverhältnis bietet.
380 bar Konstantdruck, bzw. 420 bar intermittierend Druck ausgelegt sind.

M6 PV 72





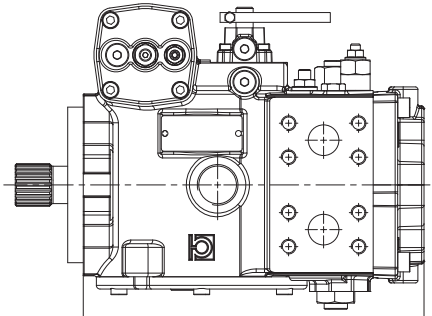
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

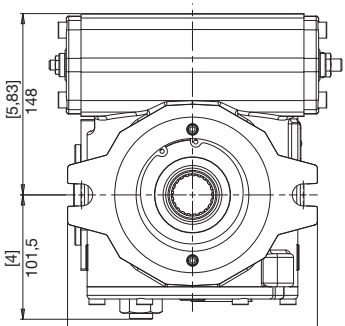
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
M6 PV	72	4,4	19,0	380	5510	400	5800	420	6090	3300	500	43,5	44,0
	82	5,0	19,5	380	5510	400	5800	420	6090	3300	500	43,5	44,0

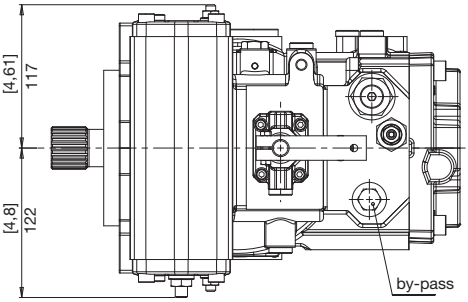
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FÖRDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
HP P2	16	0,98	25	360

DIMENSIONI
SIZE
ABMESSUNGEN



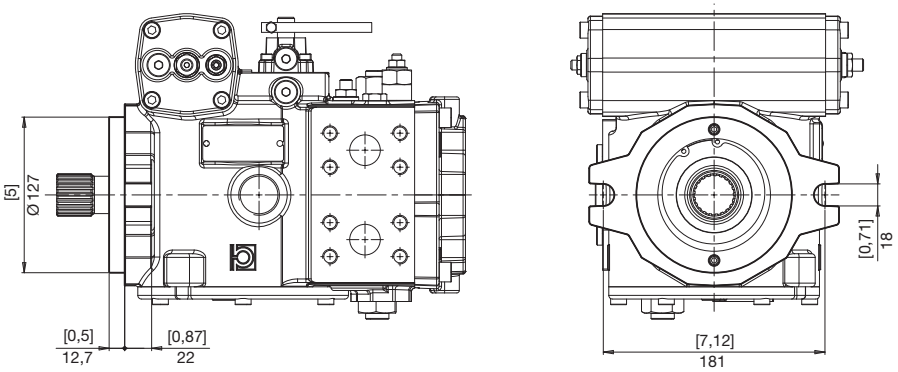




FLANGE
FLANGES
FLANSCHE

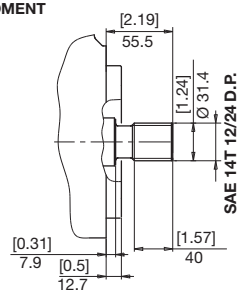
M6 PV

E SAE C
SAE C
SAE C

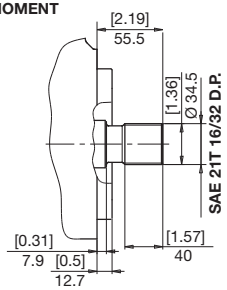


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

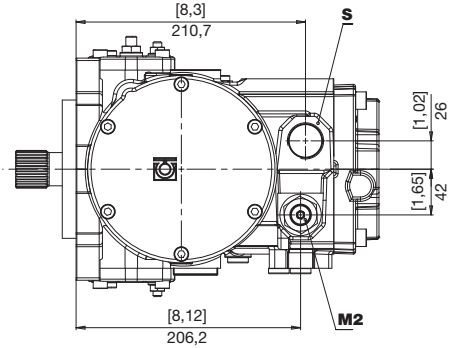
3 *COPPIA MAX*
MAX TORQUE **850 N•m**
MAX DREHMOMENT

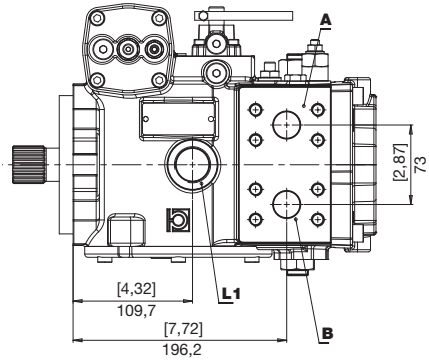


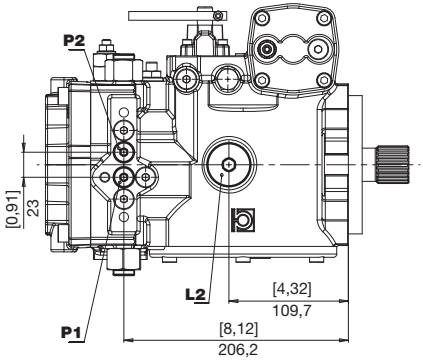
7 *COPPIA MAX*
MAX TORQUE **1100 N•m**
MAX DREHMOMENT

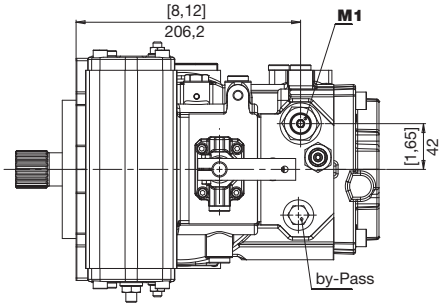


BOCCHE
PORTS
ANSCHLÜSSE





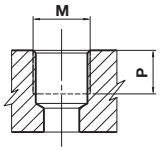




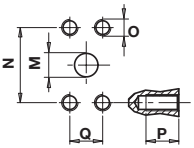
A **B**	Utilizzi *Use* Verbraucher	**P1** **P2**	Presa pressione *Pressure intake* Druckanschluss
L1 **L2**	Drenaggio *Drain* Leckölanschluss	**M1** **M2**	Presa manometro *Manometer intake* Manometeranschluss
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

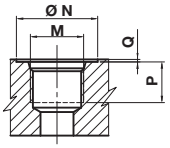
M6 PV



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G2	1/4” GAS BSPP	17	12	0,47
G7	1” GAS BSPP	160	18	0,75



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N7	25	1	57,15	2,25	20	0,79	27,76	1,09	M12	70



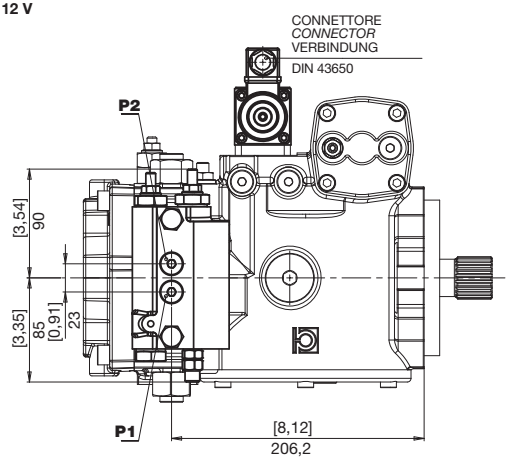
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U7	1”	49	1,93	18	0,70	0,3	0,01	1-5/16-12 UNF	160

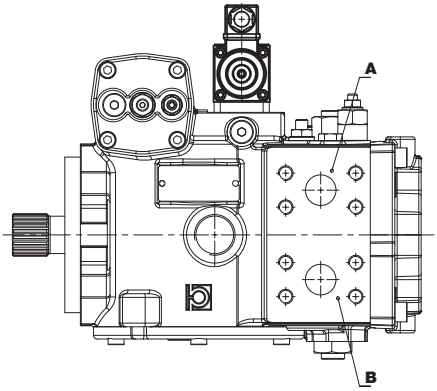
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

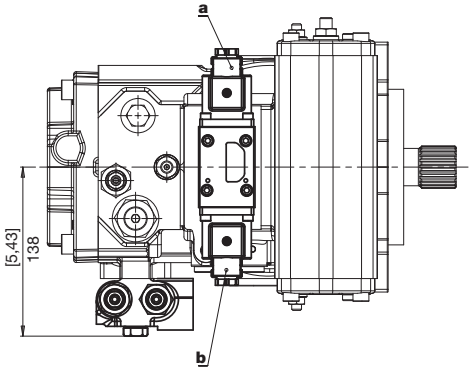
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	a - b PILOTAGGIO *PILOT* STEUERDRUCK	P1 - P2 PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLUSS	M1 - M2 PRESE MANOMETRO *MANOMETER INTAKE* MANOMETER-ANSCHLUSS
G	G7	N7	G7	G2	G2	G2
U	U7	N7	U7	U2	G2	G2

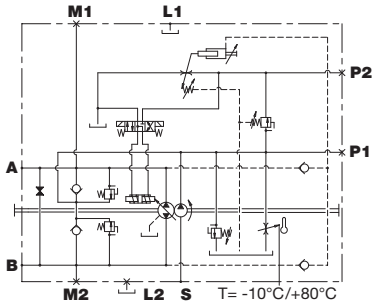
COMANDI
CONTROLS
STEUERUNGEN

D AUTOMOTIVE
AUTOMOTIVE
AUTOMOTIVE
12 V







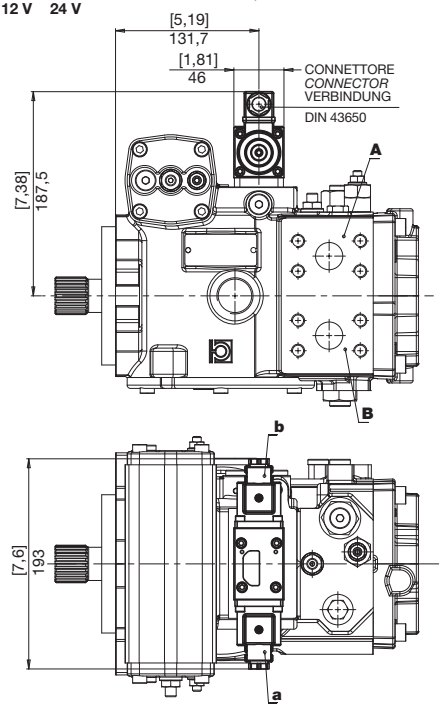


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

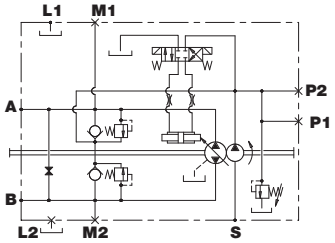
M3	Strozzatore in alimentazione *Intake restrictor* Eingangsdrossel	**M4**	Strozzatore in scarico *Outlet restrictor* Ausgangsdrossel

E F — 12 V 24 V

ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

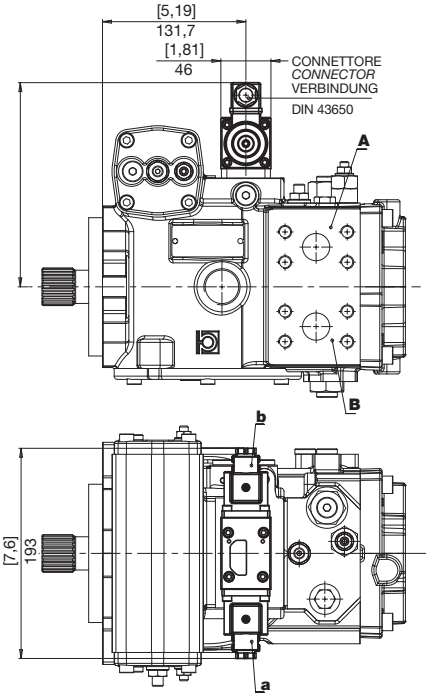


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

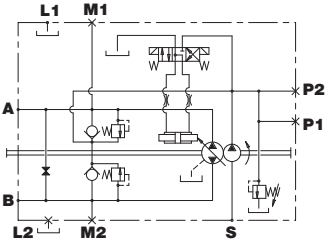


N Q — 12 V 24 V

ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, VENTIL GEÖFFNET



ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A



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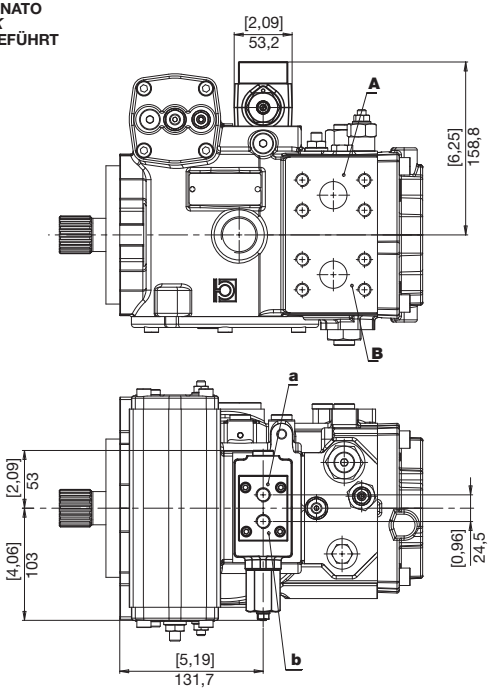
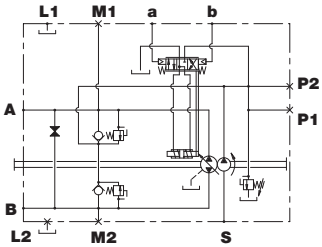
CONTROLS
STEUERUNGEN

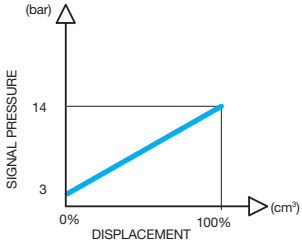
G IDRAULICO RETROAZIONATO
HYDRAULIC, FEEDBACK
HYDRAULISCH, RÜCKGEFÜHRT





ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

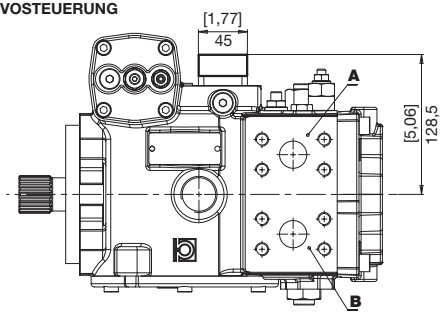
a Pressione di pilotaggio
b *Pilot Pressure*
Steuerdruck

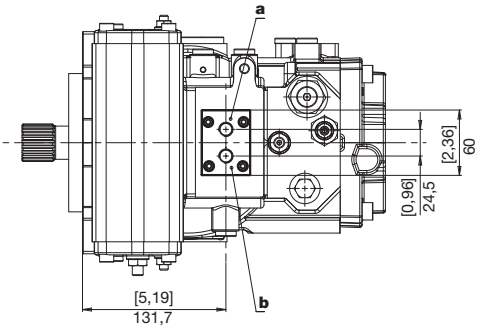


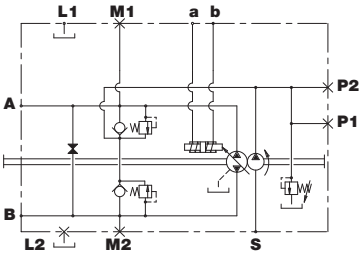
COMANDI
CONTROLS
STEUERUNGEN

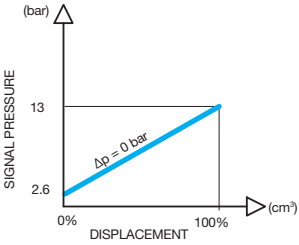
H

SERVOCOMANDO IDRAULICO A DISTANZA
HYDRAULIC REMOTE CONTROL
HYDRAULISCHE FERN-SERVOSTEUERUNG









ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

COMANDI
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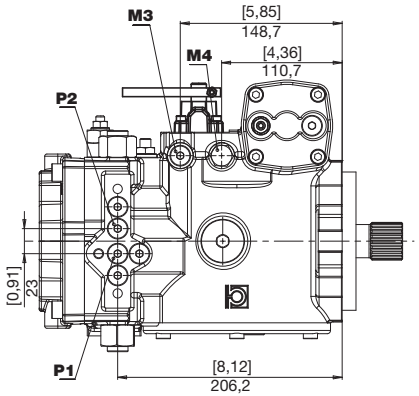
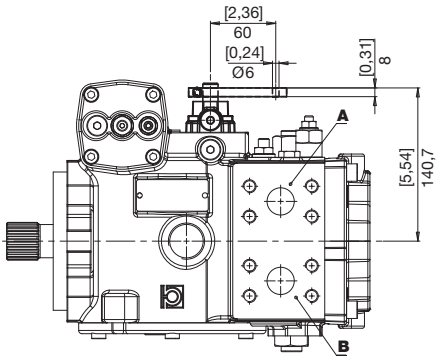
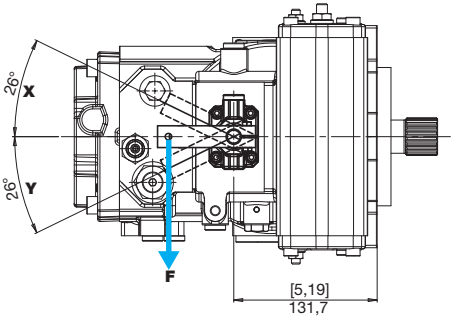
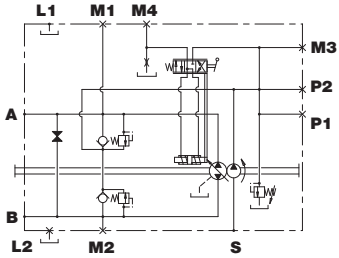
STEUERUNGEN

I SERVOCOMANDO A LEVA
LEVER-OPERATED SERVO-CONTROL
HYDRAULISCHE HEBEL-SERVOSTEUERUNG



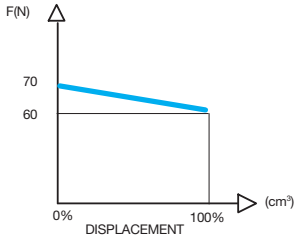






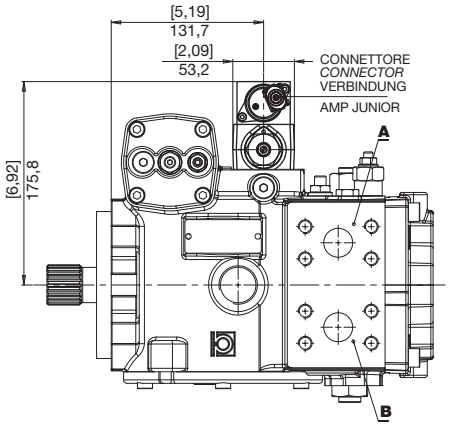
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	B
	X	A
SINISTRA *LEFT* LINKS	Y	A
	X	B

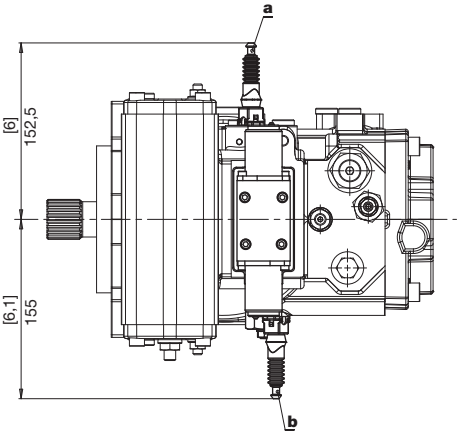
M3	Strozzatore in alimentazione *Intake restrictor* Eingangsdrossel	**M4**	Strozzatore in scarico *Outlet restrictor* Ausgangsdrossel



O V
12 V 24 V

ELETTRICO PROPORZIONALE RETROAZIONATO
ELECTRICAL PROPORTIONAL FEEDBACK CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG RÜCHGEFÜHRT

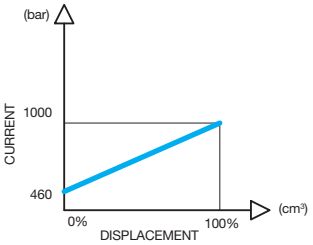




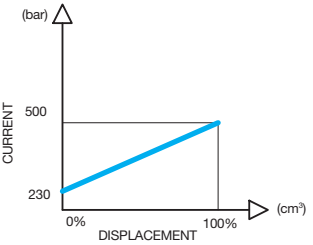
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

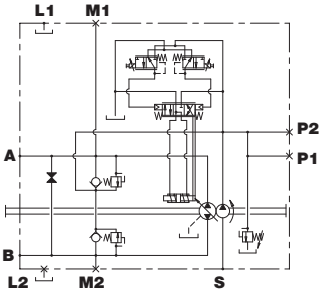
	O	V	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

O



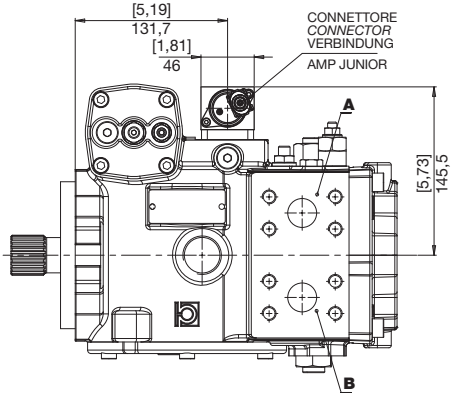
V

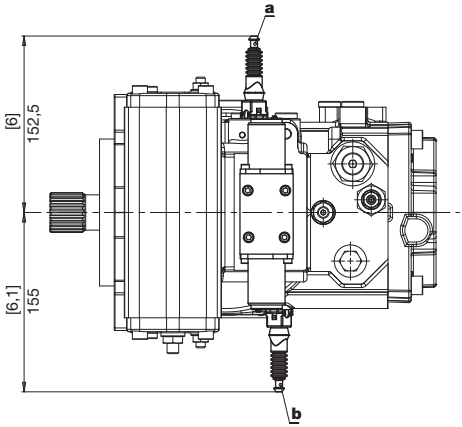




S **W**
12 V 24 V

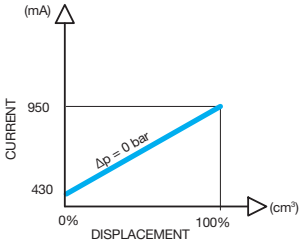
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG



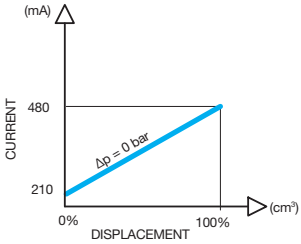


	S	W	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

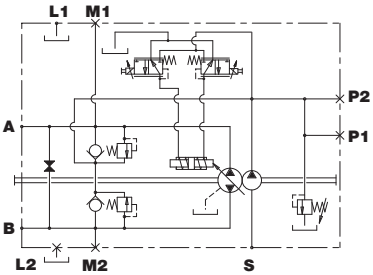
S



W



ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

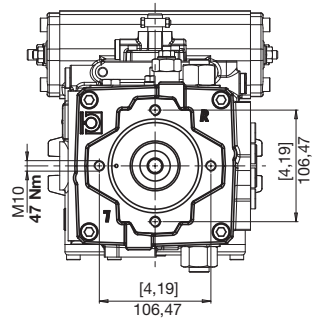


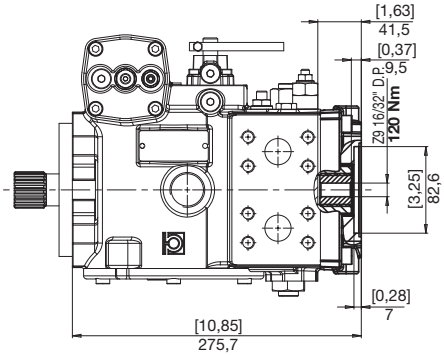
PREDISPOSIZIONI
VERSION
BAUART

M6 PV

2

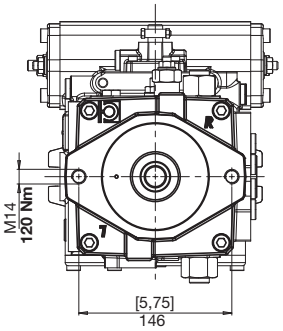
SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH BOOST PUMP
SAE A MIT SPEISEPUMPE

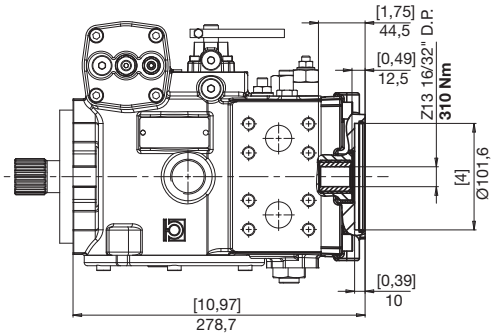




3

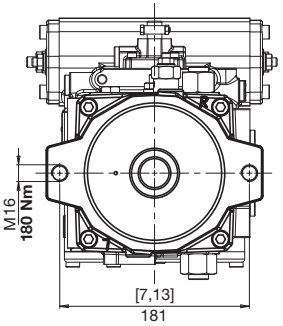
SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH BOOST PUMP
SAE B MIT SPEISEPUMPE

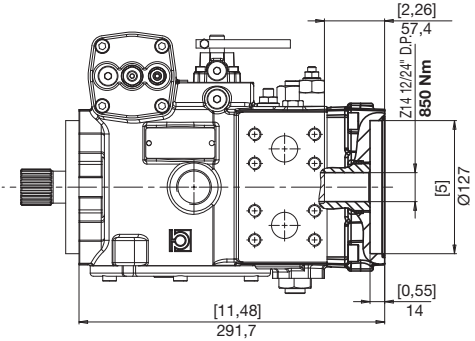




E

SAE C CON POMPA SOVRALIMENTAZIONE
SAE C WITH BOOST PUMP
SAE C MIT SPEISEPUMPE

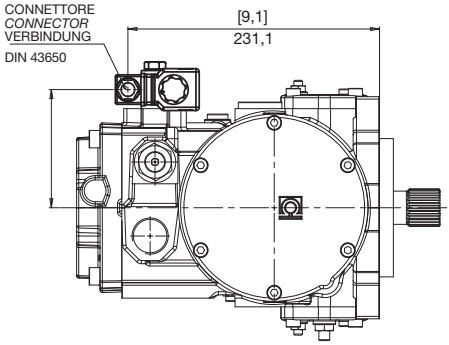


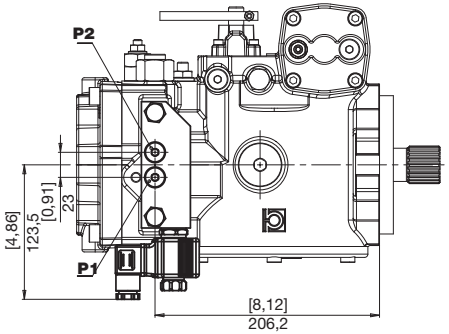


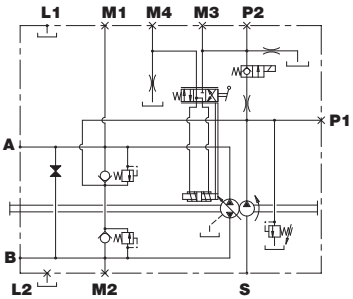
ACCESSORI
ACCESSORIES
ZUBEHÖR

E
SICUREZZA OPERATORE ASSENTE
NO OPERATOR SAFETY
SICHERUNG KEIN ARBEITER

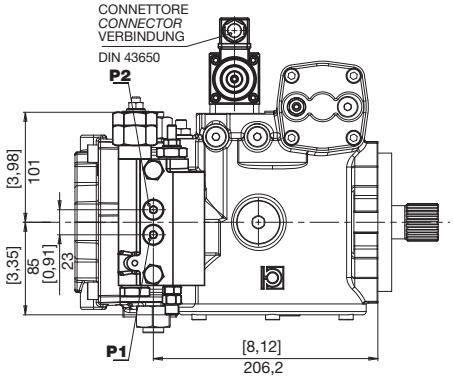
12 V

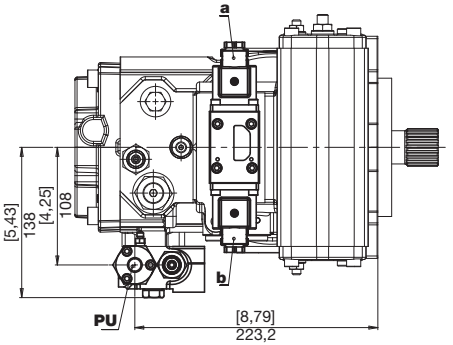




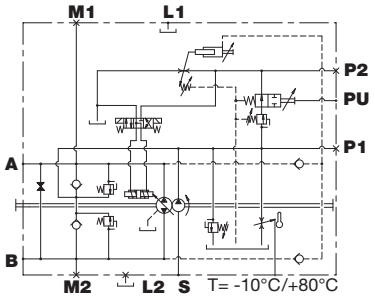


H
INCHING IDRAULICO (SOLO COMANDO D)
HYDRAULIC INCHING ("D" CONTROL)
HYDRAULISCHE INCH-VENTIL (NUR STEUERUNG D)

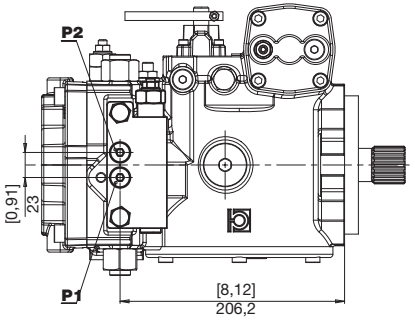


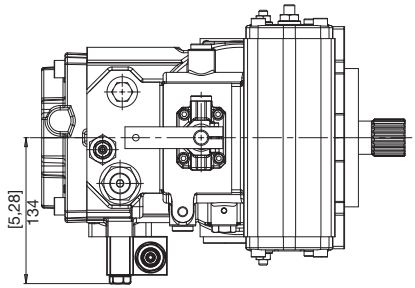


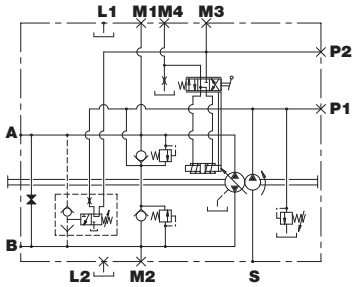
PU	Pilotaggio (1/4" GAS) *Pilot pressure (1/4" GAS)* Steuerdruck (1/4" GAS)



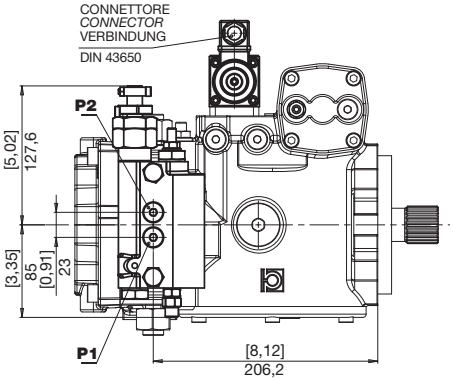
J TAGLIO DI PRESSIONE
CUT-OFF
DRUCKABSCHNEIDUNG

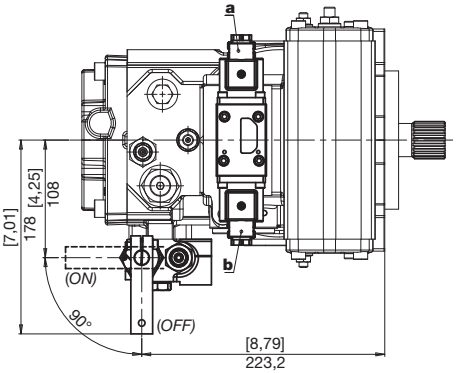


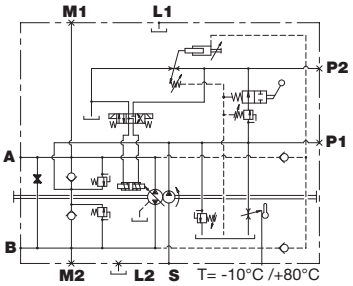




M INCHING MECCANICO (SOLO COMANDO D)
MECHANIC INCHING CONTROL ("D" CONTROL)
MECHANISCHES INCH-VENTIL (NUR STEUERUNG D)

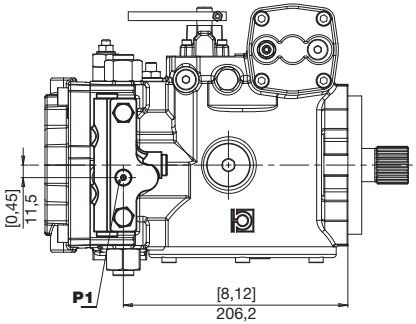


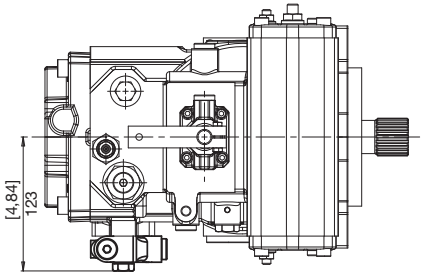




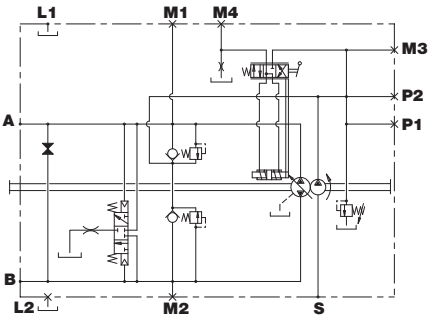
ACCESSORI
ACCESSORIES
ZUBEHÖR

V VALVOLA DI FLUSSAGGIO (5-7 l/min)
FLUSHING AND BOOST VALVE (5-7 l/min)
SPUL-UND SPEISEDRUKVENTIL (5-7 l/min)

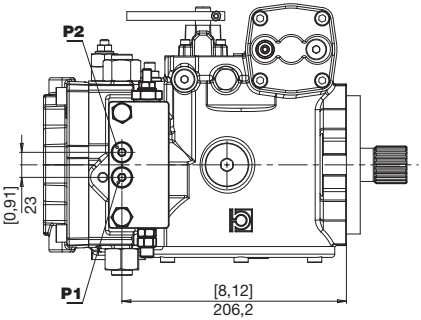


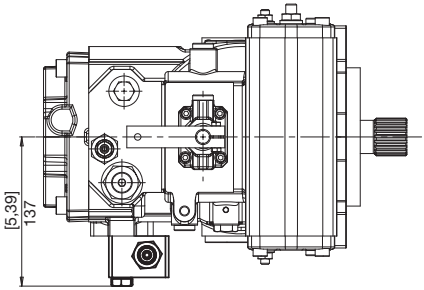


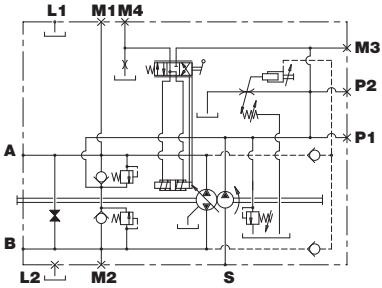
P1	Presa pressione (1/8" GAS) *Pressure intake (1/8" GAS)* Druckanschluss (1/8" GAS)



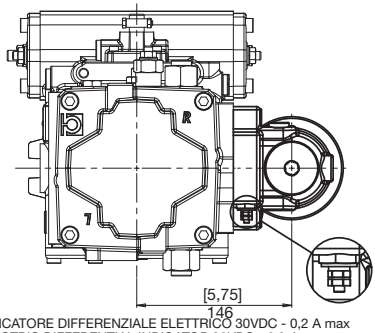
W LIMITATORE DI POTENZA
POWER LIMITER
LEISTUNGSBEGRENZER



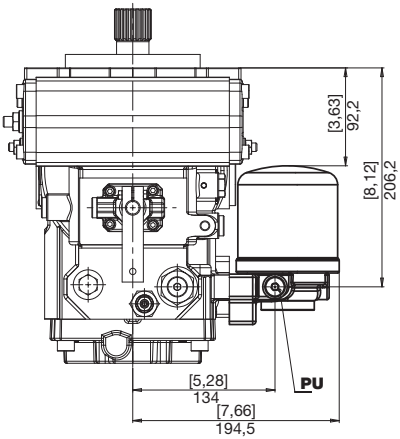




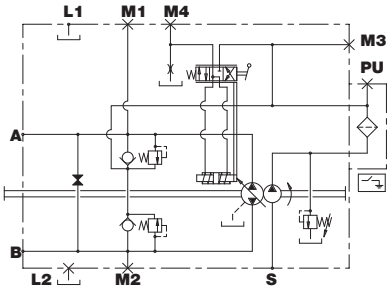
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



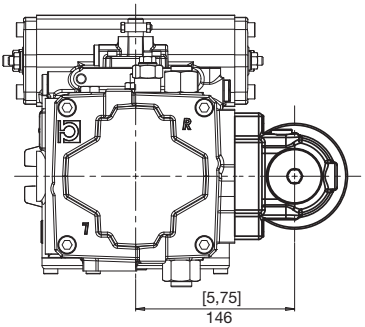
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRIC DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max

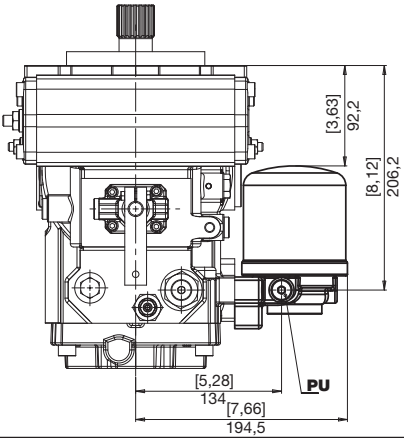


PU	Presa olio filtrato (1/4" GAS) *Filtered oil intake (1/4" GAS)* Anschluss filtriertes Ol (1/4" GAS)

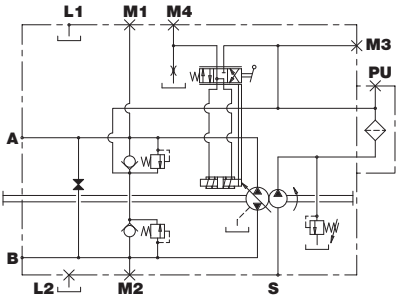


Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER





PU	Presa olio filtrato (1/4" GAS) *Filtered oil intake (1/4" GAS)* Anschluss filtriertes Ol (1/4" GAS)



ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M6 PV

M6PV	72	72	I	1	O	A	R	3	B	Y	...

SERIE
SERIES
SERIE

CILINDRATA NOMINALE
RATED DISPLACEMENT
NENNFÖRDERVOLUMEN

72 - 82

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

72 - 82

TARATURA VALVOLE
VALVE SETTING
VENTILE

I - 270 bar
L - 300 bar
O - 350 bar
P - 400 bar
Q - 420 bar

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

VALVOLE
VALVE
VENTILE

B - Valvola by-pass
B - *By-pass valve*
B - Bypass-Ventil

COMANDO *CONTROL* STEUERUNG

D = Automotive
E = Elettrico (12 V)
F = Elettrico (24 V)
G = Servocomando idraulico retroazionato
H = Servocomando idraulico a distanza
I = Servocomando a leva
K = Servocomando idraulico a distanza
N = Elettrico on/off (12 V)
Q = Elettrico on/off (24 V)
O = Elettronico proporzionale retroazionato (12V)
V = Elettronico proporzionale retroazionato (24V)
S = Elettronico proporzionale (12V)
W = Elettronico proporzionale (24V)

D = *Automotive control*
E = *Electric (12 V)*
F = *Electric (24 V)*
G = *Hydraulic remote feedback*
H = *Hydraulic remote control*
I = *Lever-operated servo-control*
K = *Remote servo-control*
N = *Electric on/off (12 V)*
Q = *Electric on/off (24 V)*
O = *Electronic proportional feedback (12V)*
V = *Electronic proportional feedback (24V)*
S = *Electronic proportional (12V)*
W = *Electronic proportional (24V)*

D = Automotive
E = Elektrische (12V)
F = Elektrische (24V)
G = Hydraulik Fernsteuerung Rüchgeführt
H = Hydraulische fern-servosteuerung
I = Hydraulische Hebel-Servosteuerung
K = Fern-Servosteuerung
N = Elektrische on/off (12V)
Q = Elektrische on/off (24V)
O = Elektronische Proportional Rüchgeführt (12V)
V = Elektronische Proportional Rüchgeführt (24V)
S = Elektronische Proportional (12V)
W = Elektronische Proportional (12V)

ACCESSORI *ACCESSORIES* ZUBEHÖR

0 - nessuna opzione
E - sicurezza "operatore assente"
H - inching idraulico (solo comando D)
J - cut-off
M - inching meccanico (solo comando D)
R - filettatura GAS
U - filettatura UNF
V - valvola di flussaggio
W - limitatore di potenza
X - filtro su linea sovralimentazione con indicatore intasamento elettrico
Y - filtro su linea sovralimentazione

0 - *no accessories*
E - *"no operator" safety*
H - *hydraulic inching ("D" control)*
J - *cut-off*
M - *mechanical inching ("D" control)*
R - *GAS threads*
U - *UNF threads*
V - *flushing and boost valve*
W - *power limiter*
X - *filter on charge line with electric clogging indicator*
Y - *filter on charge line*

0 - kein Zubehör
E - Sicherung "kein Bediener"
H - Hydraulisches Inch-Ventil (nur Steuerung D)
J - Druckabschneidung
M - Mechanisches Inch-Ventil (nur Steuerung D)
R - GAS Gewinde
U - UNF Gewinde
W - Leistungsbegrenzer
V - spul-und speisedrukventil
X - Filter auf Speisedruckleitung mit elektrischem Anzeiger
Y - Filter ohne Verstopfungsanzeiger

Omettere se non richiesto
Omit if not required
ggf. weglassen

PREDISPOSIZIONI *VERSION* BAUART

1 = nessuna con pompa di sovralimentazione
2 = SAE A con pompa alimentazione
3 = SAE B 2 fori con pompa di alimentazione
E = SAE C 2 fori con pompa di alimentazione

1 - *no fittings with boost pump*
2 - *SAE A mounting with boost pump*
3 - *SAE B - 2 holes mounting with boost pump*
E - *SAE C - 2 holes mounting with boost pump*

1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A Anschlußflansch mit Speisepumpe**3** - SAE B Anschlußflansch, mit 2 Bohrungen, mit Speisepumpe
E - SAE C Anschlußflansch, mit 2 Bohrungen, mit Speisepumpe

TIPO DI OSCILLANTE
SWASHPLATE TYPE
SCHWENKSCHEIBENLAGERUNG

A = oscillante su rullini
B = oscillante su bronzine
A = *mounted on needle bearing*
B = *mounted on bronze bearings*
A = Rollengelagert
B = Bronze-Gleitgelagert

ESTREMITÀ ALBERO
SHAFT PROFIL
WELLENENDE

3 - Z14 12/24" DP
7 - Z21 16/32" DP

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L Sinistra / *Left* / Links

POMPA DOPPIA CON 2 POMPE DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 2 BOOST PUMPS
TANDEMPUMPE MIT 2 SPEISEPUMPEN

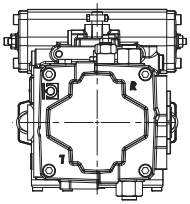
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

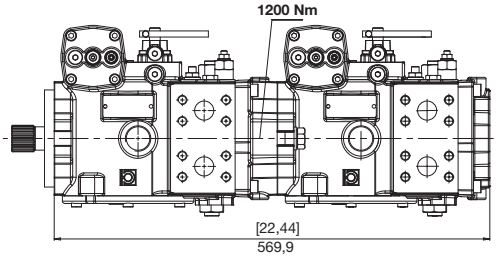
You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

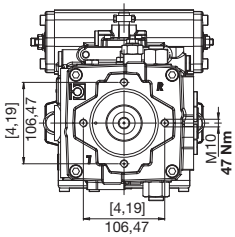
M6PV	72	72	I	E	O	A	R	3	B	Y	M6PV	72	72	I	1	O	A	R	3	B	Y	000

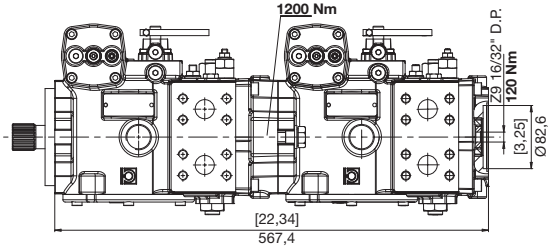




1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M6PV	72	72	I	E	O	A	R	3	B	Y	M6PV	72	72	I	2	O	A	R	3	B	Y	000

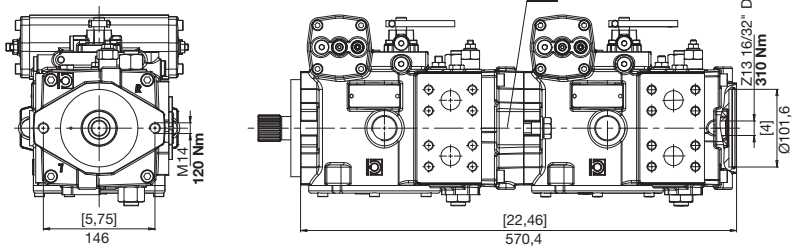




SAE A

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

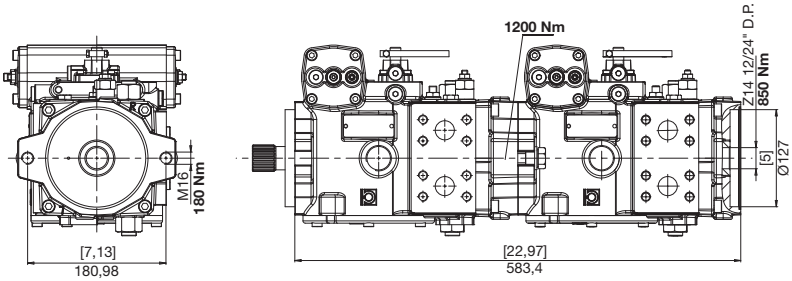
M6PV	72	72	I	E	O	A	R	3	B	Y	M6PV	72	72	I	3	O	A	R	3	B	Y	000



SAE B

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

M6PV	72	72	I	E	O	A	R	3	B	Y	M6PV	72	72	I	E	O	A	R	3	B	Y	000



SAE C

HP P7 HP P8

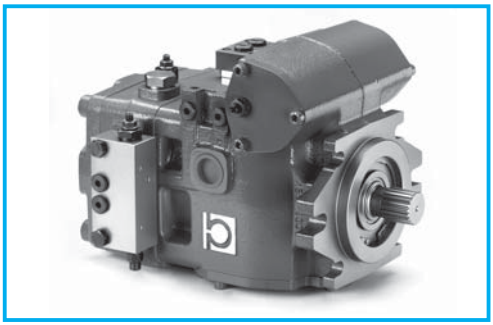
POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO
CLOSED CIRCUIT AXIAL PISTON PUMPS
AXIALKOLBENPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

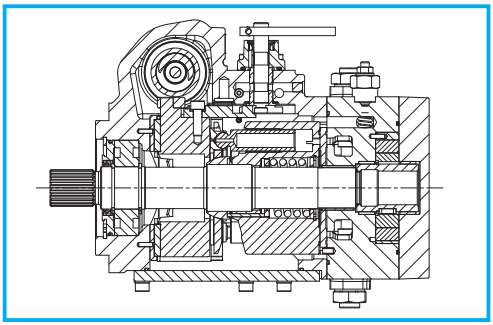
Le pompe a pistoni assiali serie HP P7 HP P8 sono state concepite per operare in circuito chiuso per impieghi a media pressione (HP P7) e ad alta pressione.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello del mobile in generale. Per una migliore risposta al comando le pompe HP P7 e HP P8 vengono normalmente fornite con oscillante su cuscinetti a rulli. A richiesta sono fornibili su bronzine a sostentamento idrostatico.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elvata affidabilità per pressioni di funzionamento fino a 400 bar continui e 450 bar di picco per la serie HP P8.
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

The HP P7 and P8 series axial piston pumps have been designed to work in a closed circuit both for application at medium pressure (HP P7) and at high pressure.
Control systems actually available are making easy to use these pumps in any application for industrial and mobile field.
Typically the pumps HP P7 and HP P8 are equipped with roller bearings for the swash plate suspension. Alternatively there are bronze bearings for hydrostatic suspension of the swash plate available on request.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working continuous pressure until 400 bar and working peak pressure until 450 bar for series HP P8.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

Die Axialkolbenpumpen der Serie HP P7 HP P8 sind sowohl im offenen als auch im geschlossenen Kreislauf einsetzbar.
Durch die lieferbaren unterschiedlichen Steuerungssysteme eignen sie sich sowohl für stationäre als auch für mobile Anwendungen.
Für eine bessere Verstelldynamik wird die Pumpe HP P7 und HP P8 normalerweise mit einer Rollenlagerung für die Schwenkscheibenverstellung ausgestattet. Auf Anfrage kann die Pumpe aber auch mit hydrostatischen Bronze-Gleitlagern ausgestattet werden.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Pumpendrehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Betriebsdruck von bis zu 400 Bar und ein Spitzenwert von 450 Bar für die Serie HP P8 gewährleistet.
Die Pumpen können in der Tandemversion mit auf Wunsch erhältlichen Flanschanschlüssen geliefert werden.

HP P7- HP P8 82•100•125





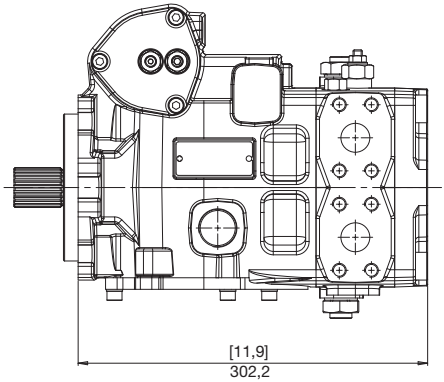
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

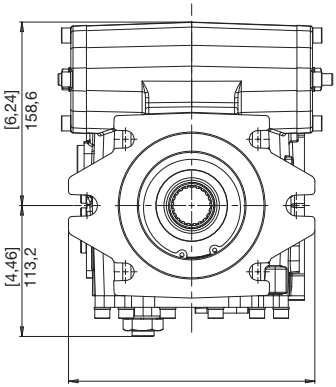
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FORDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL MAX	MIN	MASSA *WEIGHT* GEWICHT	
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
HP P7	82	5,0	18,0	350	5075	380	5510	400	5800	3000	500	55	121
	100	6,1	16,5	350	5075	380	5510	400	5800	3000	500	55	121
	125	7,6	20,0	350	5075	380	5510	400	5800	3000	500	56	123
HP P8	82	5,0	18,0	400	5800	420	6090	450	6525	3000	500	55	121
	100	6,1	16,5	400	5800	420	6090	450	6525	3000	500	55	121
	125	7,6	20,0	400	5800	420	6090	450	6525	3000	500	56	123

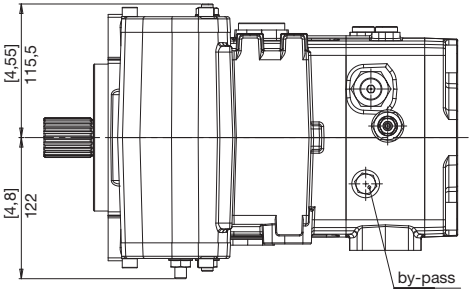
POMPA DI ALIMENTAZIONE ***BOOST PUMP*** **SPEISEPUMPE**

TIPO *TYPE* TYP	CILINDRATA POMPA DI ALIMENTAZIONE *BOOST PUMP DISPLACEMENT* FORDERVOLUMEN SPEISEPUMPE		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
HP P7-P8	18	1,1	25	360

DIMENSIONI
SIZE
ABMESSUNGEN



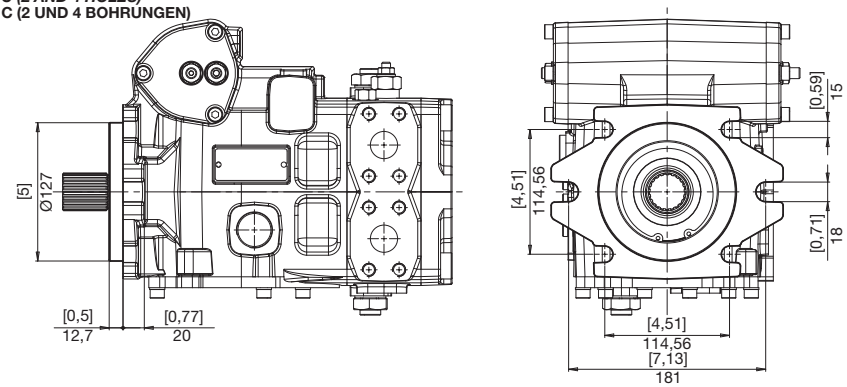




FLANGE
FLANGES
FLANSCHE

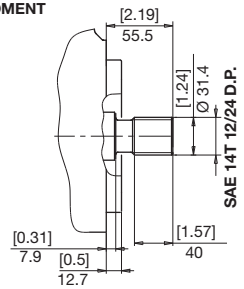
HP P7 **HP P8**

E SAE C (2 E 4 FORI)
SAE C (2 AND 4 HOLES)
SAE C (2 UND 4 BOHRUNGEN)

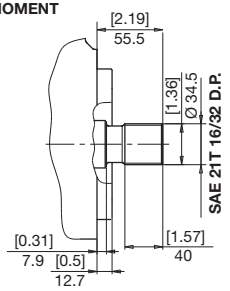


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

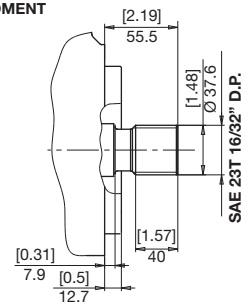
3 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
850 N•m



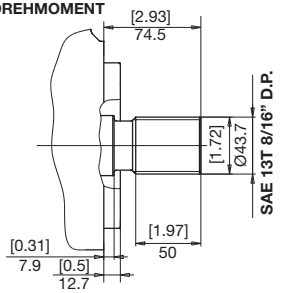
7 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
1100 N•m



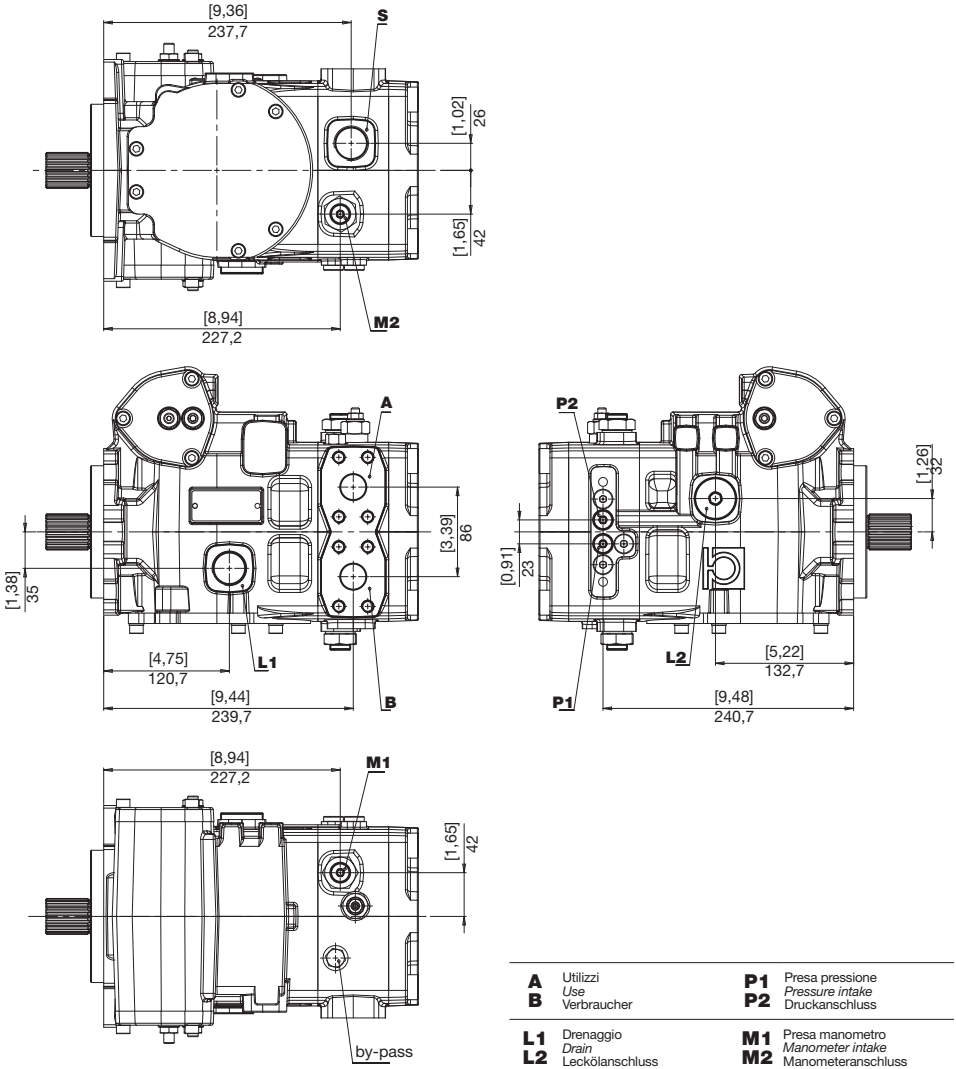
8 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
1300 N•m



9 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT
2400 N•m



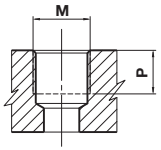
BOCCHE
PORTS
ANSCHLÜSSE



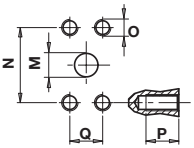
A **B**	Utilizzi *Use* Verbraucher	**P1** **P2**	Presa pressione *Pressure intake* Druckanschluss
L1 **L2**	Drenaggio *Drain* Leckölanschluss	**M1** **M2**	Presa manometro *Manometer intake* Manometeranschluss
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

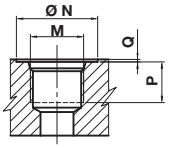
HP P7 **HP P8**



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G2	1/4” GAS BSPP	17	12	0,47
G7	1” GAS BSPP	160	18	0,75



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N7	25	1	57,15	2,25	20	0,79	27,76	1,09	M12	70



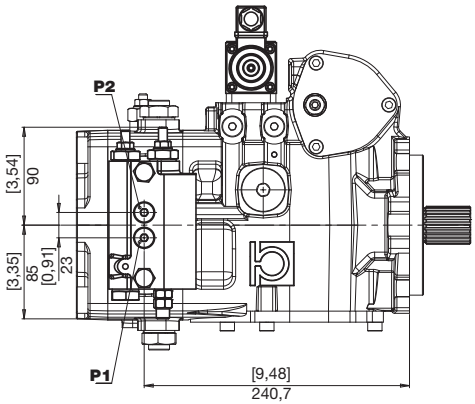
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U7	1”	49	1,93	18	0,70	0,3	0,01	1-5/16-12 UNF	160

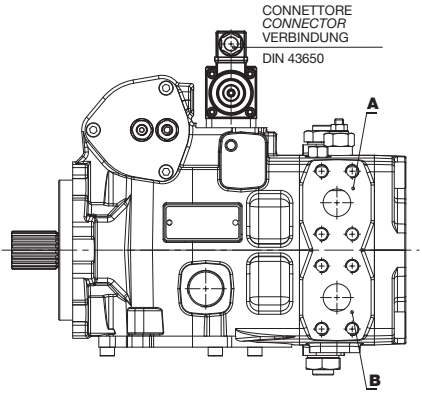
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

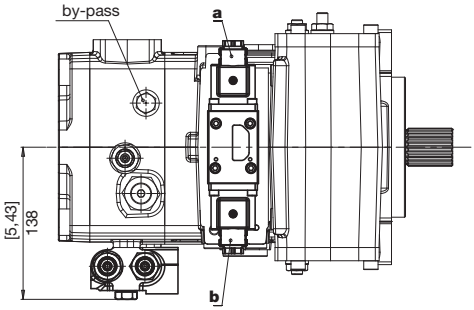
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	a - b PILOTAGGIO *PILOT* STEUERDRUCK	P1 - P2 PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLUSS	M1 - M2 PRESE MANOMETRO *MANOMETER INTAKE* MANOMETER-ANSCHLUSS
G	G7	N7	G7	G2	G2	G2
U	U7	N7	U7	U2	G2	U2

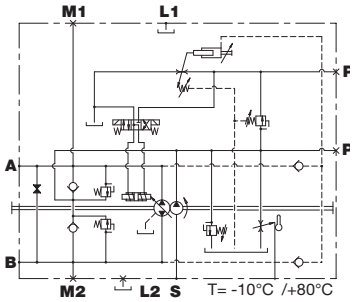
D
12 V

AUTOMOTIVE
AUTOMOTIVE
AUTOMOTIVE





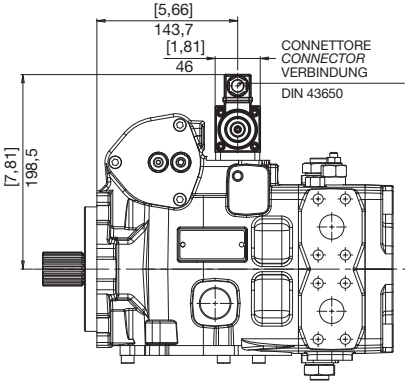


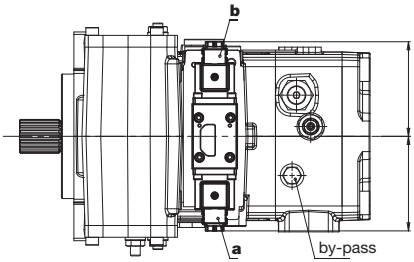


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

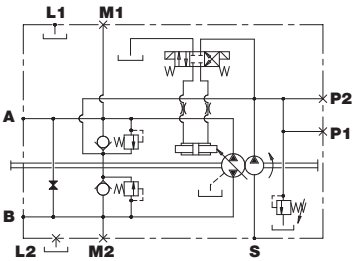
E F — ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

12 V 24 V



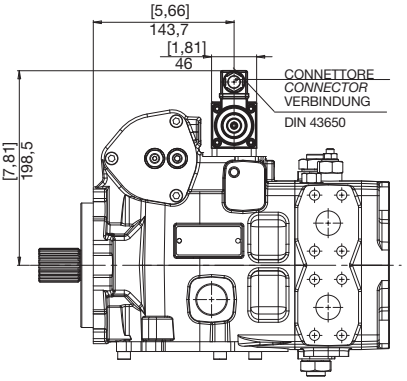


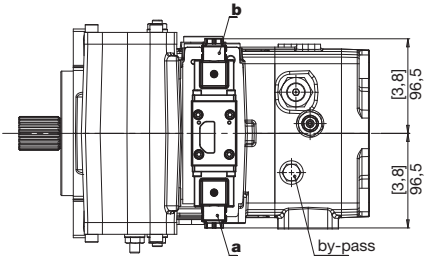
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A



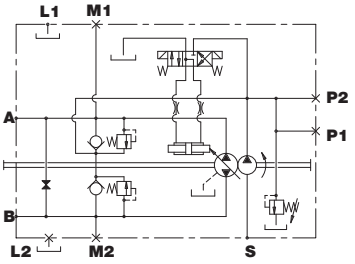
N Q — ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, VENTIL GEÖFFNET

12 V 24 V



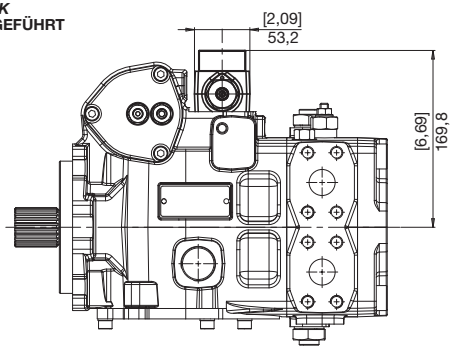


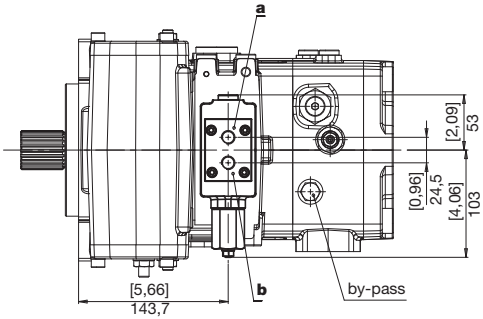
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

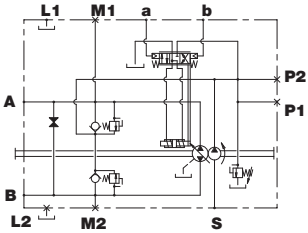


COMANDI
CONTROLS
STEUERUNGEN

G IDRAULICO RETROAZIONATO
HYDRAULIC, FEEDBACK
HYDRAULISCH, RÜCKGEFÜHRT

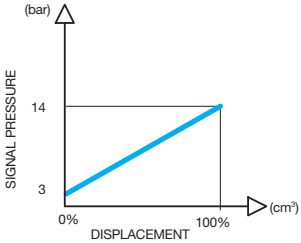




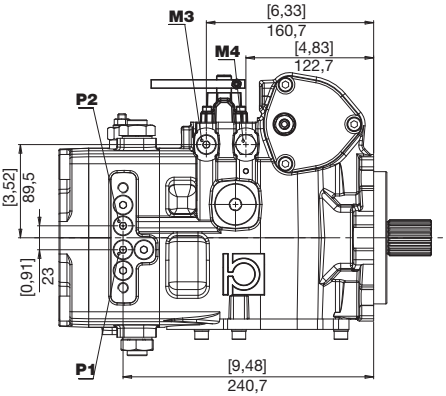


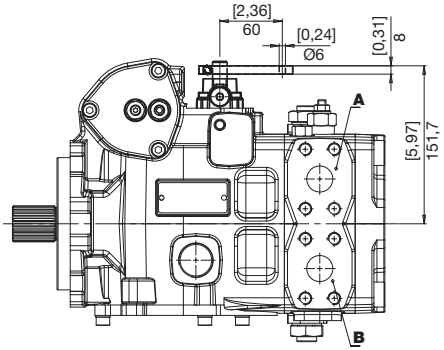
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

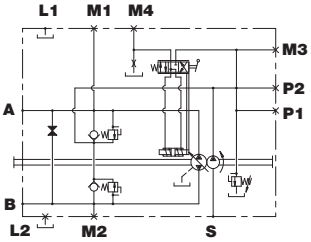
a Pressione di pilotaggio
Pilot Pressure
b Steuerdruck

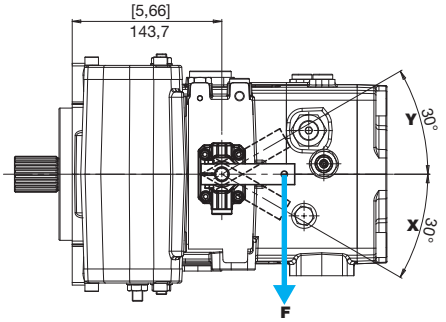


I SERVOCOMANDO A LEVA
LEVER-OPERATED SERVO-CONTROL
HYDRAULISCHE HEBEL-SERVOSTEUERUNG



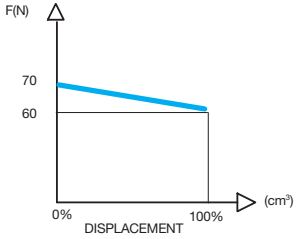






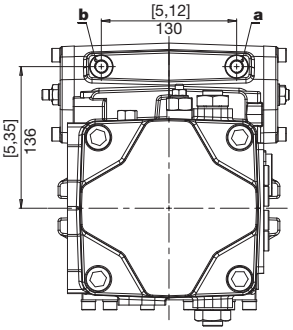
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	B
	X	A
SINISTRA *LEFT* LINKS	Y	A
	X	B

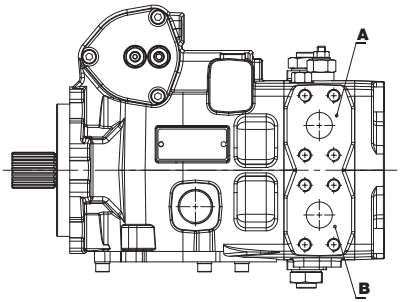
M3	Strozzatore in alimentazione *Intake restrictor* Eingangsdrossel	**M4**	Strozzatore in scarico *Outlet restrictor* Ausgangsdrossel

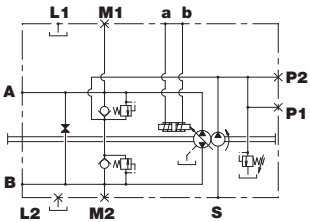


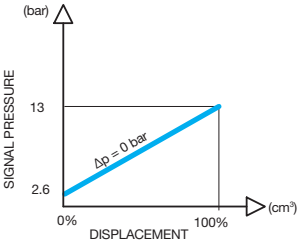
COMANDI
CONTROLS
STEUERUNGEN

K IDRAULICO A DISTANZA
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG







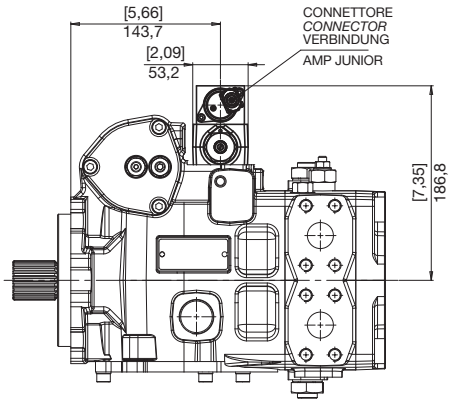


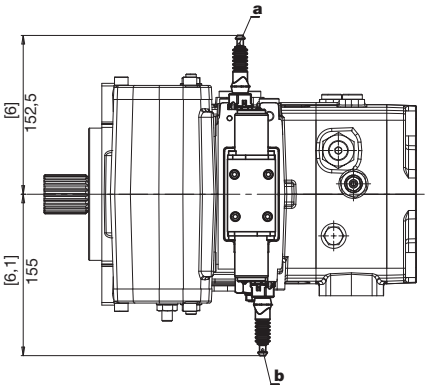
ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEUERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

O **V**
12 V 24 V

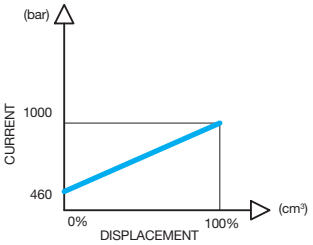
ELETTRICO PROPORZIONALE RETROAZIONATO
ELECTRICAL PROPORTIONAL FEEDBACK CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG RÜCHGEFÜHRT

	O	V	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

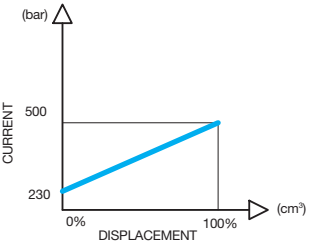


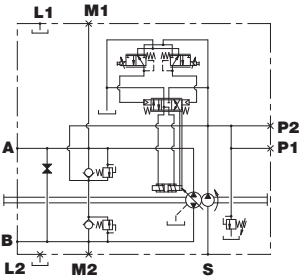


O



V



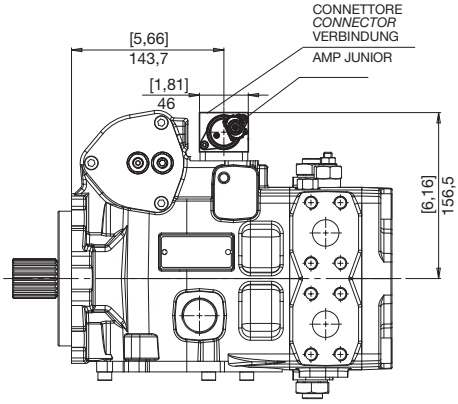


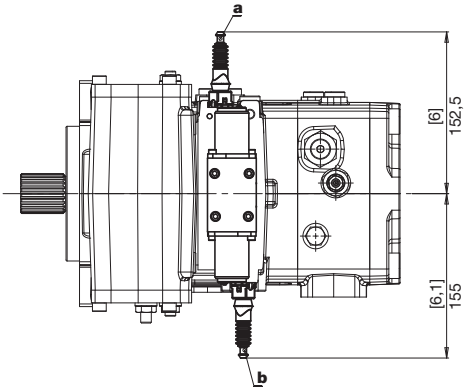
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	B
	b	A
SINISTRA *LEFT* LINKS	a	A
	b	B

COMANDI
CONTROLS
STEUERUNGEN

S **W**
12 V 24 V

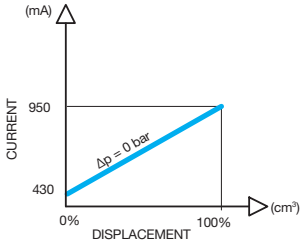
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG



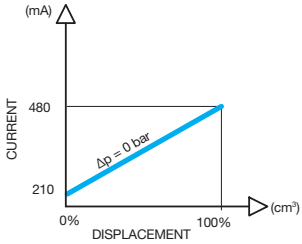


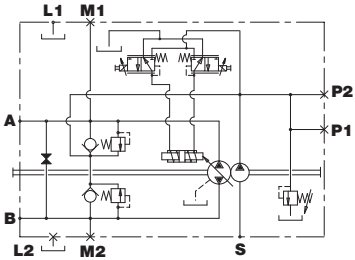
	S	W	
Tensione nominale *Rated voltage* Nennspannung	12	24	V
Corrente min (I1) *Min. current* Mindeststrom	300	180	mA
Corrente max (I2) *Max. current* Maximaler Strom	1500	850	mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100	100	Hz

S



W



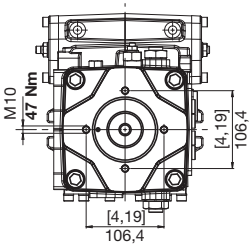


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

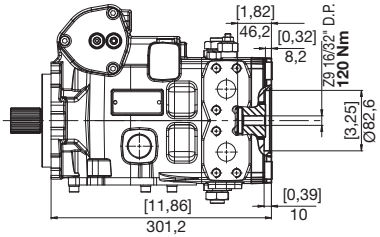
PREDISPOSIZIONI
VERSION
BAUART

HP P7 **HP P8**

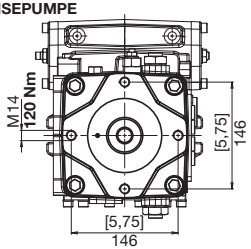
2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH BOOST PUMP
SAE A MIT SPEISEPUMPE



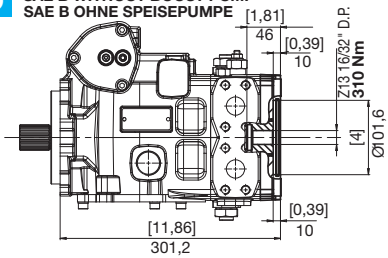
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT BOOST PUMP
SAE A OHNE SPEISEPUMPE



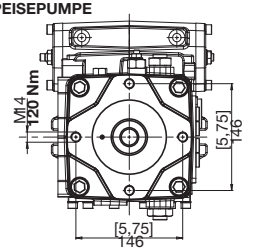
3 SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH BOOST PUMP
SAE B MIT SPEISEPUMPE



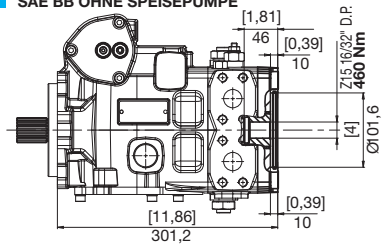
6 SAE B SENZA POMPA SOVRALIMENTAZIONE
SAE B WITHOUT BOOST PUMP
SAE B OHNE SPEISEPUMPE



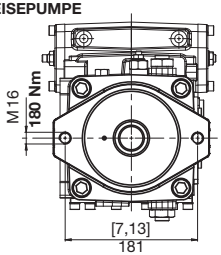
8 SAE BB CON POMPA SOVRALIMENTAZIONE
SAE BB WITH BOOST PUMP
SAE BB MIT SPEISEPUMPE



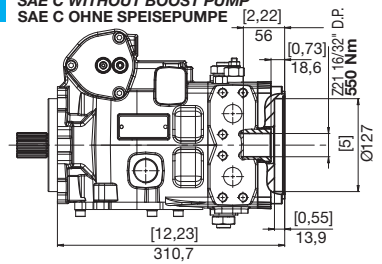
9 SAE BB SENZA POMPA SOVRALIMENTAZIONE
SAE BB WITHOUT BOOST PUMP
SAE BB OHNE SPEISEPUMPE



4 SAE C CON POMPA SOVRALIMENTAZIONE
SAE C WITH BOOST PUMP
SAE C MIT SPEISEPUMPE



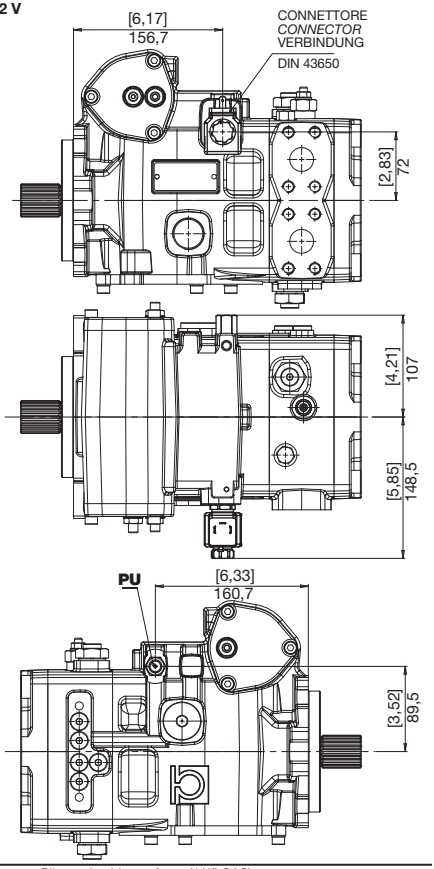
7 SAE C SENZA POMPA SOVRALIMENTAZIONE
SAE C WITHOUT BOOST PUMP
SAE C OHNE SPEISEPUMPE



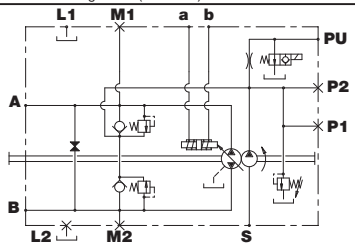
ACCESSORI
ACCESSORIES
ZUBEHÖR

E — SICUREZZA OPERATORE ASSENTE
NO OPERATOR SAFETY
SICHERUNG KEIN ARBEITER

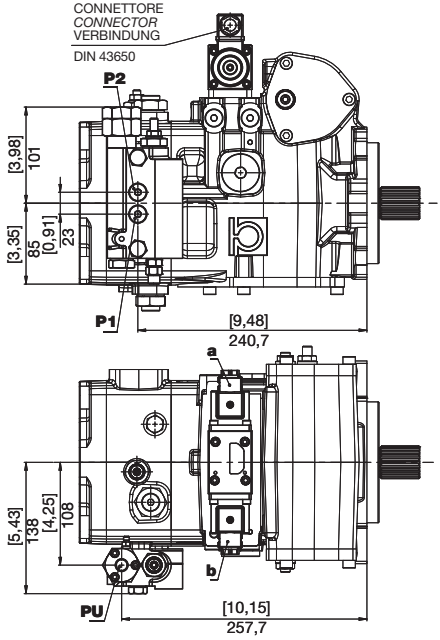
12 V



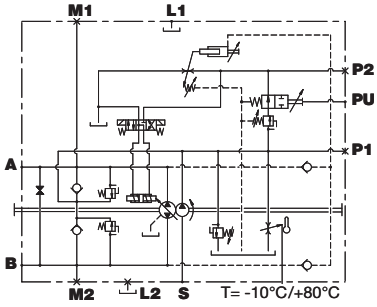
PU	Pilotaggio sblocco freno (1/4" GAS) *Brake opening pressure (1/4" GAS)* Bremse Öffnung Druck (1/4" GAS)



H — INCHING IDRAULICO (SOLO COMANDO D)
HYDRAULIC INCHING ("D" CONTROL)
HYDRAULISCHE INCH-VENTIL (NUR STEUERUNG D)



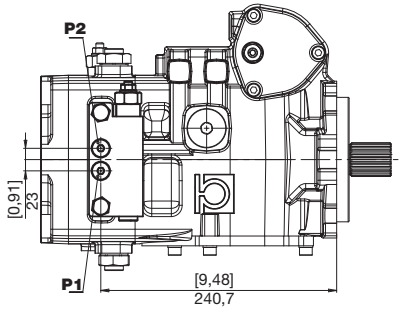
PU	Pilotaggio (1/4" GAS) *Pilot pressure (1/4" GAS)* Steuerdruck (1/4" GAS)

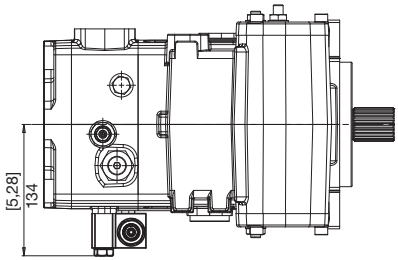


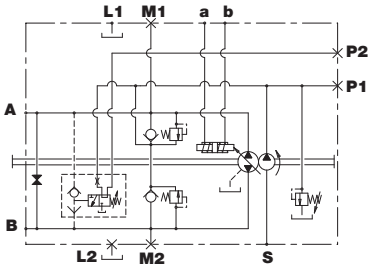
ACCESSORI
ACCESSORIES
ZUBEHÖR

HP P7 **HP P8**

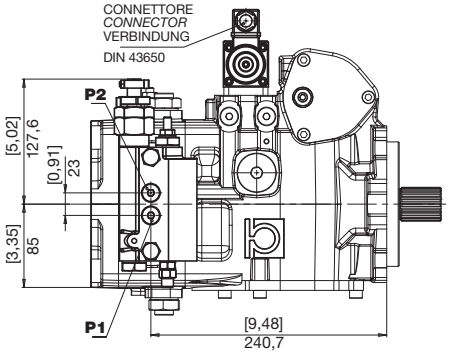
J TAGLIO DI PRESSIONE
CUT-OFF
DRUCKABSCHNEIDUNG

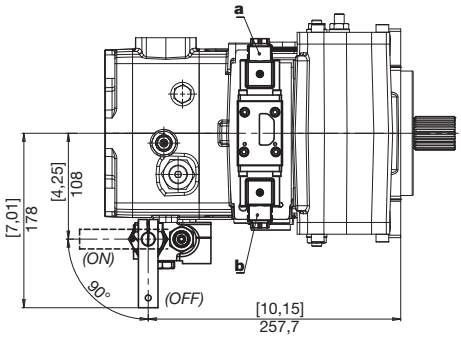


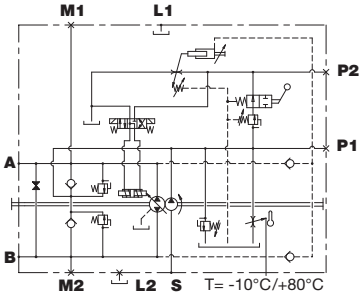




M INCHING MECCANICO (SOLO COMANDO D)
MECHANIC INCHING CONTROL ("D" CONTROL)
MECHANISCHES INCH-VENTIL (NUR STEUERUNG D)

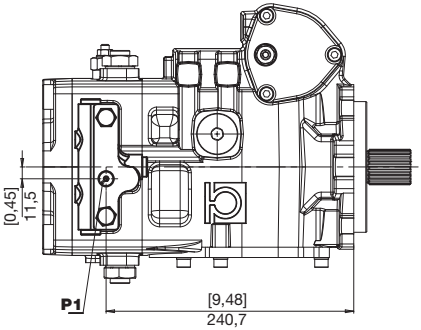


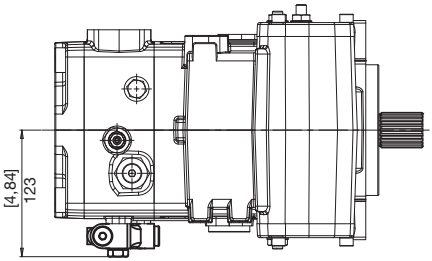




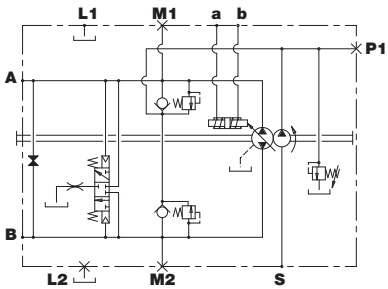
ACCESSORI
ACCESSORIES
ZUBEHÖR

V VALVOLA DI FLUSSAGGIO (5-7 l/min)
FLUSHING AND BOOST VALVE (5-7 l/min)
SPUL-UND SPEISEDRUKVENTIL (5-7 l/min)

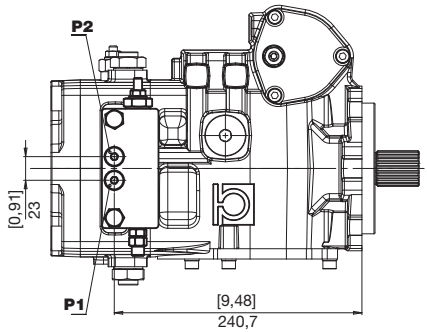


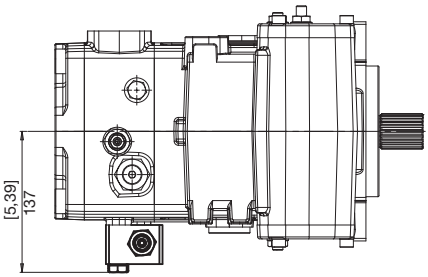


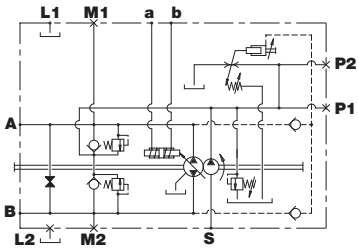
P1	Presa pressione (1/8" GAS) *Pressure intake (1/8" GAS)* Druckanschluss (1/8" GAS)



W LIMITATORE DI POTENZA
POWER LIMITER
LEISTUNGSBEGRENZER



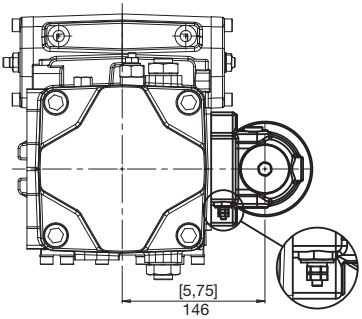




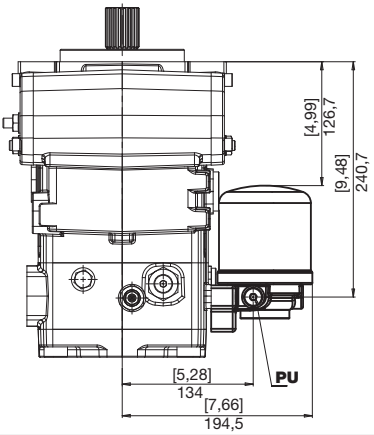
ACCESSORI
ACCESSORIES
ZUBEHÖR

HP P7 **HP P8**

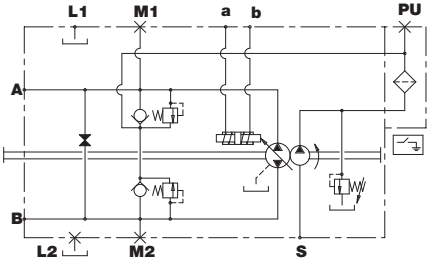
X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



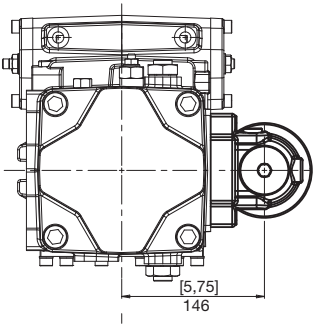
INDICATORE DIFFERENZIALE ELETTRICO 30VDC - 0,2 A max
ELECTRIC DIFFERENTIAL INDICATOR 30VDC - 0,2 A max
ELEKTRISCHER DIFFERENZDRUCKANZEIGER 30VDC - 0,2 A max

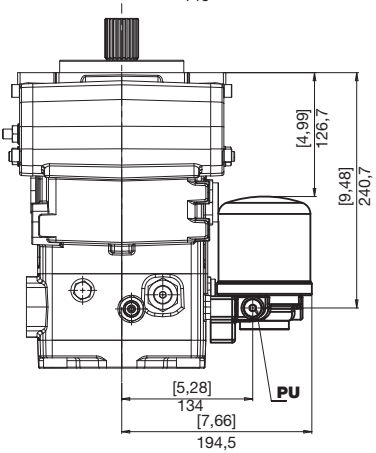


PU Presa olio filtrato (1/4" GAS)
Filtered oil intake (1/4" GAS)
Anschluss filtriertes Ol (1/4" GAS)

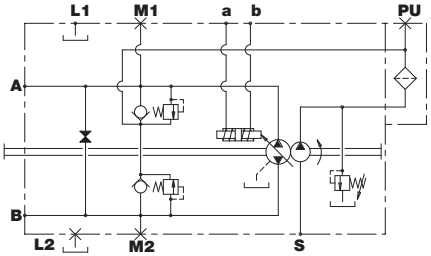


Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER





PU Presa olio filtrato (1/4" GAS)
Filtered oil intake (1/4" GAS)
Anschluss filtriertes Ol (1/4" GAS)



ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HP P7 | **HP P8**

HP P7 082 R E 3 G I L 1 Y ...

PRODOTTO *PRODUCT* PRODUKT

P7 - Pompe a pistoni assiali per circuito chiuso media pressione
P8 - Pompe a pistoni assiali per circuito chiuso alta pressione

P7 - *Closed curcuit axial piston pump, medium pressure*
P8 - *Closed circuit axial piston pump, high pressure*

P7 - Axialkolbenpumpen für geschlossenen Kreislauf, Mitteldruck
P8 - Axialkolbenpumpen für geschlossenen Kreislauf, Hochdruck

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

082 - 100 - 125

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

FLANGIA *FLANGE* FLANSCHE

E - SAE C (2 fori + 4 fori)
E - *SAE C (2 holes+4 holes)*
E - SAE C (2 Bohrungen + 4 Bohrungen)

COMANDO *CONTROL* STEUERUNG

D = Automotive
E = Elettrico (12 V)
F = Elettrico (24 V)
G = Servocomando idraulico retroazionato
I = Servocomando a leva
K = Servocomando idraulico a distanza
N = Elettrico on/off (12 V)
Q = Elettrico on/off (24 V)
O = Elettronico proporzionale retroazionato (12V)
V = Elettronico proporzionale retroazionato (24V)
S = Elettronico proporzionale (12V)
W = Elettronico proporzionale (24V)

D = *Automotive control*
E = *Electric (12 V)*
F = *Electric (24 V)*
G = *Hydraulic remote feedback*
I = *Lever-operated servo-control*
K = *Remote servo-control*
N = *Electric on/off (12 V)*
Q = *Electric on/off (24 V)*
O = *Electronic proportional feedback (12V)*
V = *Electronic proportional feedback (24V)*
S = *Electronic proportional (12V)*
W = *Electronic proportional (24V)*

D = Automotive
E = Elektrische (12V)
F = Elektrische (24V)
G = Hydraulik Fernsteuerung Rüchgeführt
I = Hydraulische Hebel-Servosteuerung
K = Fern-Servosteuerung
N = Elektrische on/off (12V)
Q = Elektrische on/off (24V)
O = Elektronische Proportional Rüchgeführt (12V)
V = Elektronische Proportional Rüchgeführt (24V)
S = Elektronische Proportional (12V)
W = Elektronische Proportional (12V)

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

ESTREMITÀ ALBERO
SHAFT PROFIL
WELLENENDE

3 - Z14 12/24" DP
7 - Z21 16/32" DP
8 - Z23 16/32" DP
9 - Z13 8/16" DP
0 - Per stadio P8
For pump P8
Für Stufe P8

TARATURA VALVOLE
VALVE SETTING
VENTILE

I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar
Q - 420 bar
R - 450 bar

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI *ACCESSORIES* ZUBEHÖR

0 - nessuna opzione
E - sicurezza "operatore assente"
H - inching idraulico (solo comando D)
J - taglio di pressione
J - inching meccanico (solo comando D)
S - accessori multipli esecuzioni speciali
V - valvola di flussaggio
W - limitatore di potenza
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento

0 - *no accessories*
E - *"no operator" safety*
H - *hydraulic inching ("D" control)*
J - *cut-off*
M - *mechanical inching ("D" control)*
S - *multiple accessories special versions*
V - *flushing and boost valve*
W - *power limiter*
X - *filter with clogging indicator*
Y - *filter without clogging indicator*

0 - kein Zubehör
E - Sicherung "kein Bediener"
H - Hydraulisches Inch-Ventil (nur Steuerung D)
J - Druckabschneidung
M - Mechanisches Inch-Ventil (nur Steuerung D)
S - Zubehörkombinationen Sonderbauarten
V - Spul-und speisedrukventil
W - Leistungsbegrenzer
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger

Per la combinazione di più accessori consultare l'ufficio tecnico
For further details on accessories combinations, please contact our Technical Department
Für weitere Zubehörkombinationen wenden Sie sich bitte an die Technische Abteilung.

PREDISPOSIZIONI

0 = nessuna senza pompa sovralimentazione
1 = nessuna con pompa di sovralimentazione
2 = SAE A con pompa sovralimentazione
3 = SAE B con pompa sovralimentazione
4 = SAE C con pompa sovralimentazione
5 = SAE A senza pompa sovralimentazione
6 = SAE B senza pompa sovralimentazione
7 = SAE C senza pompa sovralimentazione
8 = SAE BB (Z15) con pompa sovralimentazione
9 = SAE BB (Z15) senza pompa sovralimentazione
T = per pompa P8 senza pompa sovralimentazione
V = per pompa P8 con pompa sovralimentazione

VERSION

0 - *no fittings without boost pump*
1 - *no fittings with boost pump*
2 - *SAE A mounting boost pump*
3 - *SAE B mounting boost pump*
4 - *SAE C mounting boost pump*
5 - *SAE A not mounting boost pump*
6 - *SAE B not mounting boost pump*
7 - *SAE C not mounting boost pump*
8 - *SAE BB (Z15) mounting boost pump*
9 - *SAE BB (Z15) not mounting boost pump*
T - *P8 pump not mounting boost pump*
V - *P8 pump mounting boost pump*

BAUART

0 - ohne Anschlussflansch ohne Speisepumpe
1 - ohne Anschlussflansch mit Speisepumpe
2 - SAE A-Anschlussflansch mit Speisepumpe
3 - SAE B-Anschlussflansch mit Speisepumpe
4 - SAE C-Anschlussflansch mit Speisepumpe
5 - SAE A-Anschlussflansch ohne Speisepumpe
6 - SAE B-Anschlussflansch ohne Speisepumpe
7 - SAE C-Anschlussflansch ohne Speisepumpe
8 - SAE BB (Z15)-Anschlussflansch mit Speisepumpe
9 - SAE BB (Z15)-Anschlussflansch ohne Speisepumpe
T - P8 pumpe-Anschlussflansch ohne Speisepumpe
V - P8 pumpe-Anschlussflansch mit Speisepumpe

POMPA DOPPIA CON 2 POMPE DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 2 BOOST PUMPS
TANDEMPUMPE MIT 2 SPEISEPUMPEN

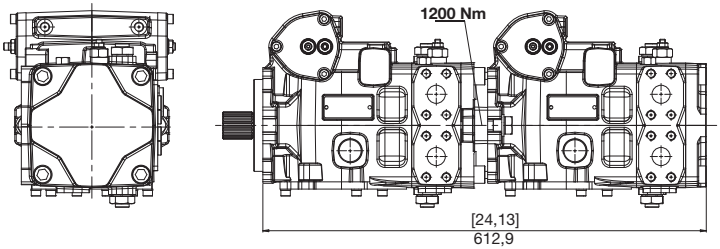
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

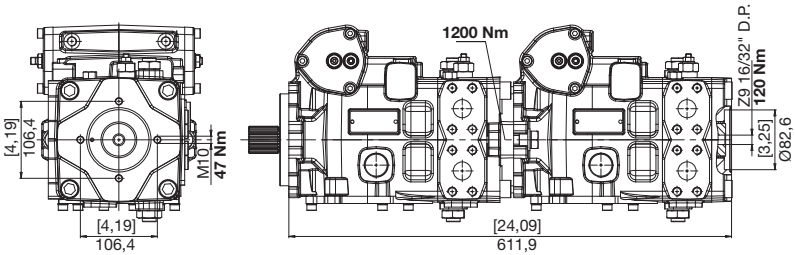
1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

HP	P8	125	R	E	8	G	K	L	V	0	000	HP	P8	100	R	E	0	G	K	L	1	0	000



1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

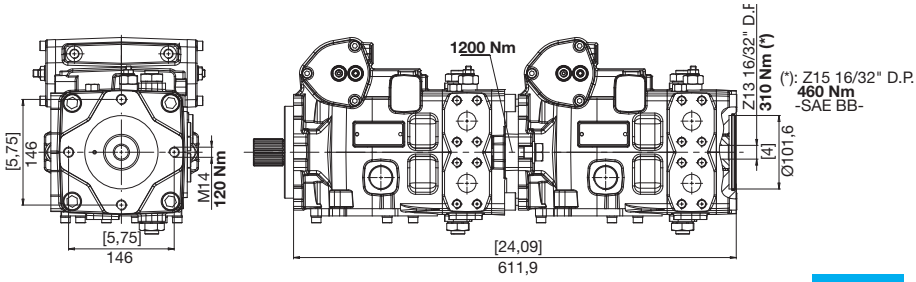
HP	P8	125	R	E	8	G	K	L	V	0	000	HP	P8	100	R	E	0	G	K	L	2	0	000



SAE A

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

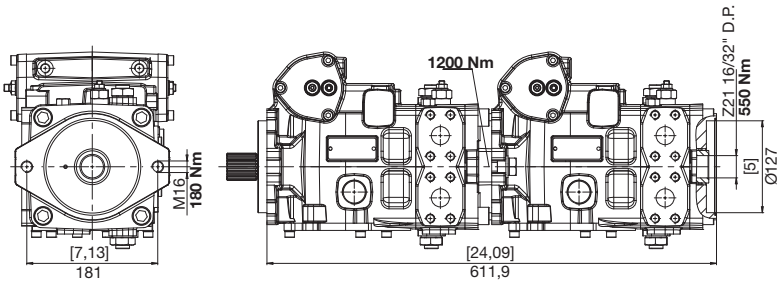
HP	P8	125	R	E	8	G	K	L	V	0	000	HP	P8	100	R	E	0	G	K	L	3	0	000



SAE B

1° STADIO *STAGE* STUFE — 2° STADIO *STAGE* STUFE

HP	P8	125	R	E	8	G	K	L	V	0	000	HP	P8	100	R	E	0	G	K	L	4	0	000



SAE C

POMPE MULTIPLE
MULTIPLE PUMPS
MEHRFACHPUMPEN

Le pompe multiple HP Hydraulic sono state progettate per ottenere il massimo delle performance negli spazi più ridotti possibili. Al fine di raggiungere valori di coppie trasmissibili rilevanti, per pompe multiple formate da stadi della stessa serie (es. HPP2 con HPP2) sono stati studiati sistemi di trascinamento aventi scanalati speciali. Quando invece si realizzano pompe multiple di serie diverse (es. HPP8+HPA4), gli stadi si assemblano tramite lo standard SAE.

Nel catalogo sono presenti, sia per gli alberi che per le predisposizioni, tutte le informazioni in termini di coppie trasmissibili che il tecnico deve tener presente in fase di calcolo della coppia trasmissibile totale della pompa multipla e anche delle coppie trasmissibili per ogni stadio che concorrono alla totale.
Le pompe multiple devono essere abbinate in cascata dalla serie più grande alla più piccola.

La formula del calcolo della coppia da impiegare è:

$$M = \frac{\Delta p \cdot c}{62{,}83 \cdot \eta_m} \qquad [Nm]$$

dove:

M = Coppia (Nm)
ΔP = Pressione (bar)
c = Cilindrata pompa (cm^3)
62,83 = Fattore di conversione
η_m = Rendimento meccanico = 0,9

VERIFICA DELLA COPPIA TRASMISSIBILE, DEL CALCOLO DELLA LUNGHEZZA E CODICE DI ORDINAZIONE DI UNA POMPA MULTIPLA A 4 STADI

Di seguito un utile esempio che permette di verificare il corretto dimensionamento delle coppie trasmissibili di una pompa multipla in funzione delle cilindrate scelte e delle pressioni di esercizio di ogni stadio.

Nell'esempio viene considerato che tutti gli stadi che compongono la pompa multipla possano andare in pressione contemporaneamente; ciò ovviamente rende la pompa più sollecitata e quindi indispensabile la verifica della coppia trasmissibile di ogni stadio e complessiva.

HP Hydraulic multiple pumps have been designed for the best performance also in the narrowest spaces.
In order to reach relevant transmissible torque values, drive systems with special splined parts have been designed for multiple pumps made up of stages from the same series (i.e. HPP2 with HPP2).
In case of multiple pumps made of different series (i.e. HPP8 + HPA4), the different stages are assembled in compliance with SAE standards.

The catalogue outlines, both for shafts and for versions, all necessary data in terms of transmissible torques that must taken into consideration when calculating the multiple pump total transmissible torque as well as the transmissible torques for each stage which constitute the total one. Multiple pump must be coupled from biggest to the smallest series.

The calculation formula of the torque to be used is:

$$M = \frac{\Delta p \cdot c}{62{,}83 \cdot \eta_m} \qquad [Nm]$$

where:

M = Torque (Nm)
ΔP = Pressure (bar)
c = Pump displacement (cm^3)
62,83 = Conversion factor
η_m = Mechanical efficiency = 0,9

CHECKING THE TRANSMISSIBLE TORQUE, THE CALCULATION OF LENGTH AND ORDERING CODE FOR A 4-STAGE MULTIPLE PUMP

What follows is a useful example to be used to check the proper dimensioning of transmissible torques of a multiple pump in function of the selected displacements and of the continuous pressure of each stage.

The example assumes that all stages constituting the multiple pump create pressure at the same time; this clearly results in a bigger stress onto the pump, and requires that the transmissible torque of each stage and the total torque are checked.

Die Mehrfach-Pumpen von HP Hydraulic wurden so konstruiert, daß höchste Leistung bei geringst möglichem Einbauraum erzielt wird. Bei Kombination von zwei Pumpen derselben Familie (z.B. HPP2 mit HPP2) werden Wellen mit Sonderprofilen für die Leistungsübertragung verwendet. Wenn hingegen Pumpen aus verschiedenen Familien (z.B. HPP8 mit HPP4) kombiniert werden, dann wird die Antriebsleistung über Standard SAE-Flansch und Welle mit SAE-Vielzahnprofil übertragen.

In diesem Katalog sind alle erforderlichen Angaben enthalten, sowohl die zulässigen Durchtriebsdrehmomente, die der Konstrukteur bei der Projektierung einer Mehrfachpumpe beachten muß, als auch die zulässigen Drehmomente, die von jeder einzelnen Stufe übertragen werden darf, welche sich dann zum Gesamt-Antriebsdrehmoment aufsummiern.
Die Pumpen sollen von der größten (vorn) zur kleinsten hin angeordnet werden.

Zur Berechnung des Drehmoments einer Pumpe verwenden Sie folgende Formel:

$$M = \frac{\Delta p \cdot c}{62{,}83 \cdot \eta_m} \qquad [Nm]$$

Dabei ist:

M = Drehmoment (Nm)
ΔP = Druckdifferenz (bar)
c = Verdrängungsvolumen (cm^3)
62,83 = Umrechnungsfaktor
η_m = Mechanischer Wirkungsgrad = 0,9

ÜBERPRÜFEN SIE DAS ZU ÜBERTRAGENDE DREHMOMENT, DIE SICH ERGEBENDE EINBAULÄNGE UND DEN BESTELLSCHLÜSSELL DER MEHRFACHPUMPE (MAX. 4 STUFEN)

Nachfolgend finden Sie ein nützliches Beispiel, welches erlaubt die Berechnung des zu übertragenden Drehmoments einer Mehrfachpumpe zu überprüfen, abhängig von dem Verdrängungvolumen der einzelnen Stufen und der zugehörigen Betriebsdrücke.

In dem vorliegenden Beispiel wird angenommen, daß alle Stufen der Mehrfachpumpe geleichzeitig auf Druck belastet werden, was offensichtlich der ungünstigste Fall ist.

PER L`ORDINAZIONE CONSULTARE LE PAGINE A CATALOGO RELATIVE A TIPO E GRUPPO.
FOR ORDERING INSTRUCTIONS REFER TO THE SECTIONS FOR EACH TYPE AND GROUP .
FÜR DIE BESTELLUNG, DIE KATALOGSEITEN BEZÜGLICH TYP UND GRUPPE KONSULTIEREN.

Il calcolo si svolge partendo dall'ultimo stadio della pompa risalendo fino all'albero primario. In tutti gli stadi il risultato della coppia calcolata deve essere minore o uguale alle coppia massima ammissibile di ciascun giunto di trascinamento, compreso l'estremità d'albero della pompa.

Stadio 4:
Gr.2, cilindrata 11 cm^3 Pressione massima 150 bar: coppia assorbita = 29.2 Nm.
La condizione del giunto 4 è soddisfatta. (limite massimo 120 Nm).

Stadio 3:
HPA4, cilindrata 46 cm^3 Pressione massima 180 bar: coppia assorbita = 146.5 Nm, sommato al giunto 4 otteniamo: 175.7 Nm (29,2+146,5).
La condizione del giunto 3 è soddisfatta. (limite massimo 310 Nm).

Stadio 2:
HPP4, cilindrata 65 cm^3 Pressione massima 280 bar: coppia assorbita = 322 Nm, sommato al giunto 3 otteniamo: 497.7 Nm (175,7+322).
Attenzione: la condizione del giunto 2 NON è soddisfatta.
(limite massimo 460 Nm).
Perché la condizione del giunto 2 risulti soddisfatta necessiterà non superare il limite di 240 bar anziché 280 bar precedentemente ipotizzati, oppure ridurre la cilindrata da 65 cm^3 a 57 cm^3.
Limitando ad esempio la pressione a 240 bar si raggiungerà così il valore di 276 Nm che sommati alla coppia a valle del giunto 2 compreso, fornisce un valore di 451.7 Nm (175,7+276).
In questo caso, la condizione del giunto 2 è soddisfatta (limite massimo 460 Nm).

Stadio 1:
HPP8, cilindrata 125 cm^3 Pressione massima 400 bar: coppia assorbita = 884.6 Nm,
sommato al giunto 3 otteniamo: 1336.3 Nm (451,7+884,6).
La condizione dell'albero scanalato è soddisfatta. (limite massimo 2.400 Nm).

La pompa risulta essere correttamente dimensionata.

Per eventuali casi di particolari condizioni e necessità consultare sempre il servizio clienti HP Hydraulic-Bondioli & Pavesi.

VELOCITÀ MASSIMA

La velocità massima di una pompa multipla è limitata al valore minimo delle velocità massime dei singoli stadi costituenti la pompa della quale sono state verificate le coppie trasmissibili.

The calculation is made from the last stage of the pump and going back as far as the main shaft. At all stages the result of the calculated torque must be less or equal to the maximum permissible torque for each drive joint, including the pump shaft end.

Stage 4:
Group 2, displacement: 11 cm^3, max. pressure 150 bar, absorbed torque = 29.2 Nm. The joint 4 condition is satisfied (maximum limit 120 Nm).

Stage 3:
HPA4, displacement: 46 cm^3, max. pressure 180 bar, absorbed torque = 146.5 Nm, added up to joint 4: 175.7 Nm (29.2 + 146.5).
The joint 3 condition is satisfied (maximum limit 310 Nm).

Stage 2:
HPP4, displacement: 65 cm^3, max. pressure 280 bar, absorbed torque = 322 Nm, added up to joint 3: 497.7 Nm (175.7 + 322).
Important: The joint 2 condition is NOT satisfied (maximum limit 460 Nm).
In order to satisfy joint 2 condition, it is required not to exceed 240 bar limit instead of the supposed limit of 280 bar. Alternatively the displacement must be reduced from 65 cm^3 to 57 cm^3 .
For example, by limiting the pressure to 240 bar, a value of 276 Nm can be reached, which added up the torque downstream of the joint 2 included, gives a value of 451.7 Nm (175.7 + 276).
In this case the joint 2 condition is satisfied (maximum limit 460 Nm).

Stage 1:
HPP8, displacement: 125 cm^3, max. pressure 400 bar, absorbed torque = 884.6 Nm, added up to the joint 3: 1336.3 Nm (451.7 + 884.6) .
The condition of the splined shaft is satisfied (maximum limit 2400 Nm).

The pump dimensioning is correct.

In case of special requirements and conditions, please contact customer service HP Hydraulic-Bondioli & Pavesi.

MAXIMUM SPEED

The maximum speed of a multiple pump is limited by the lowest max speed of the individual stages constituting the pump, for which transmissible torques have been checked.

Die Berechnung beginnt bei der letzten Stufe und endet bei der Welle der ersten Stufe. Bei jeder Stufe muß die zuvor ermittelte Summe der Drehmomente kleiner oder gleich dem zulässigen Drehmoment der Welle sein.

Stufe 4:
Gr. 2, Fördervolumen 11 cm^3, max. Arbeitsdruck 150 bar: Erforderliches Drehmoment M = 29,2 Nm.
Die Bedingung an der Kupplung 4 ist erfüllt (zulässiges Drehmoment 120 Nm).

Stufe 3:
HPA4, Fördervolumen 46 cm^3, max. Arbeitsdruck 180 bar: Erforderliches Drehmoment M = 146,5 Nm, zusammen mit Drehmoment an Kupplung 4 erhalten wir 175,7 Nm.
Die Bedingung an der Kupplung 3 ist erfüllt (zulässiges Drehmoment 310 Nm).

Stufe 2:
HPP4, Fördervolumen 65 cm^3, max. Arbeitsdruck 280 bar: Erforderliches Drehmoment M = 322 Nm, zusammen mit Drehmoment an Kupplung 3 erhalten wir 497,7 Nm (175,7 + 322). Die Bedingung an der Kupplung 2 ist NICHT erfüllt (zulässiges Drehmoment 460 Nm).
Achtung:
Weil die Bedingung an der Kupplung 2 erfüllt werden muß, darf der max. Arbeitsdruck 240 bar anstatt 280 bar nicht übersteigen oder das max. Fördervolumen der Pumpe 2 wird von 65 auf 57cm^3 reduziert.
Indem der max. Arbeitsdruck auf 240 bar reduziert wird, sinkt das Drehmoment auf 276 Nm, wodurch die Summe der Drehmomente auf 451,7 Nm sinkt (175,7 +276 Nm). In diesem Fall ist die zulässige Bedingung an der Kupplung 2 erfüllt (zulässiges Drehmoment 460 Nm).

Stufe 1:
HPP8, Fördervolumen 125 cm^3, max. Arbeitsdruck 400 bar: Erforderliches Drehmoment M = 884,6 Nm, zusammen mit Drehmoment an Kupplung 3 erhalten wir 1336,3 Nm. Die Bedingung an der Vielkeilwelle ist erfüllt (zulässiges Drehmoment 2400 Nm).

Somit ist die Pumpe korrekt dimensioniert.

Im fall von Besorunden Bedingungen oder bedürfnissen, stets den kundendienst von HP Hydraulic-Bondioli & Pavesi kontaktieren.

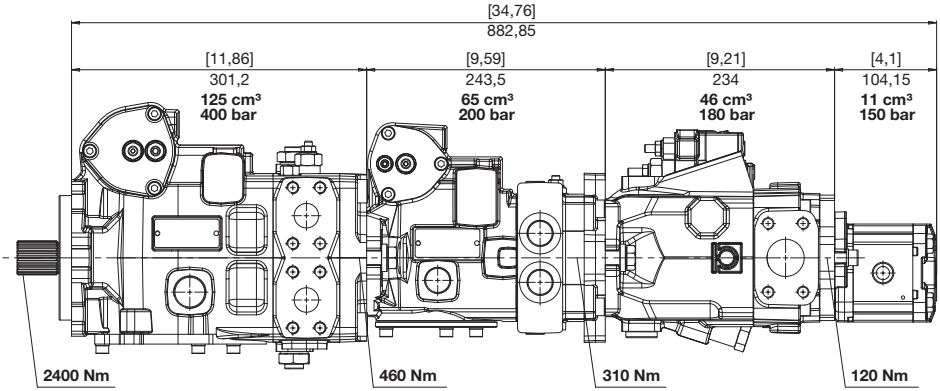
HÖCHSTDREHZAHL

Die Höchstdrehzahl einer Mehrfachpumpe ist begrenzt durch die niedrigste Höchstdrehzahl der einzelnen Stufen.

Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel



1° STADIO *STAGE* STUFE

2° STADIO *STAGE* STUFE

3° STADIO *STAGE* STUFE

4° STADIO *STAGE* STUFE

1° STADIO *STAGE* STUFE

HP	P8	125	R	E	9	G	K	P	8	0	000

2° STADIO *STAGE* STUFE

HP	P4	065	R	B	1	G	K	I	3	0	000

3° STADIO *STAGE* STUFE

HP	A4A	046	R	B	9	S	L	A	5	000

4° STADIO *STAGE* STUFE

HPL	PA	211	D	S	V	G4 G4	B	ST	00

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M4 MF

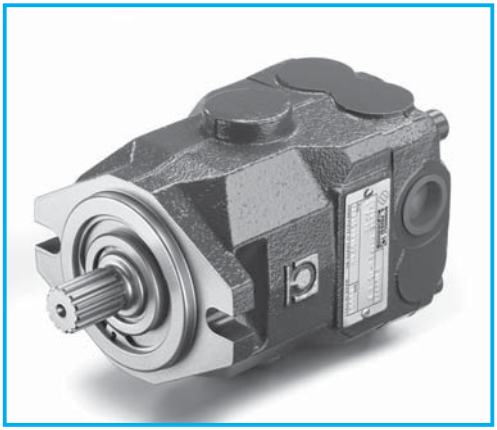
MOTORI A PISTONI ASSIALI A CILINDRATA FISSA
FIXED-DISPLACEMENT AXIAL PISTON MOTORS
KONSTANT-AXIALKOLBENMOTOREN

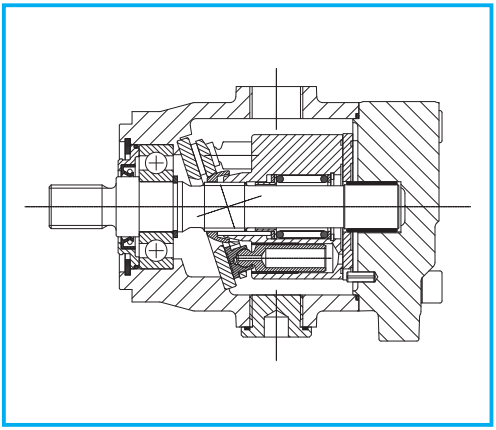
I motori a pistoni assiali serie M4 MF sono a cilindrata fissa del tipo a piatto inclinato e sono stati concepito per operare sia in circuito chiuso che aperto.
Lo sviluppo di gruppi rotanti appositamente concepiti unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a questi motori di raggiungere elevate velocità di rotazione garantendo una elevata affidabilità per pressioni di funzionamento fino a 250 bar continui (350 bar di picco)
I motori possono essere forniti completi di accessori quali valvole a scarico incrociato e valvola di scambio integrata disponibili a richiesta.

The M4 MF series axial piston motors have been designed to work both in an open and in a closed circuit.
Control systems actually available are making easy to use these motors in any application for industrial and mobile field.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, giving extreme reliability for working continuous pressure unit 250 bar and until 350 bar for peak pressure.
Motors can be supplied on requests with complete accessories such as cross relief valves and built-in relief valve.

Die Axialkolbenmotore der Baureihe M4MF sind Schrägscheibenmotoren mit konstantem Verdrängungsvolumen und können sowohl im offenen, als auch im geschlossenen Kreislauf arbeiten.
Die Konstruktion der rotierenden Baugruppen erfolgte zum einen auf Grund des genauen Studiums des Öldurchflusses und zum anderen zur Erzielung möglichst hoher Arbeitsdrehzahlen bei einem Dauerdruck von 250 bar (Spitzendruck bis 350 bar).
Die Motore können komplett mit Zubehör, z.B. Druckbegrenzungsventile, Nachsaugventil oder Spülventil.

M4 MF 21•28•37

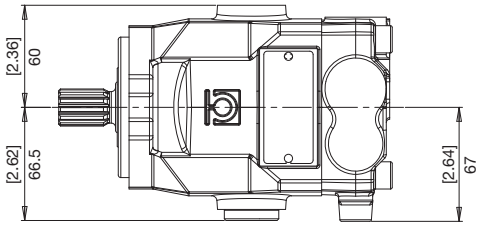


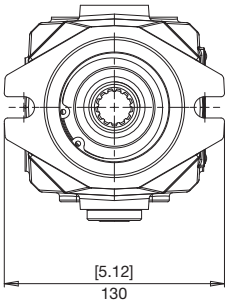


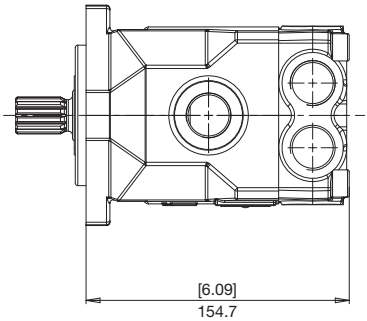
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
M4 MF	21	1,28	18	250	3625	300	4350	350	5075	3600	500	7,5	16,50
	28	1,71	18	250	3625	300	4350	350	5075	3600	500	7,8	17,16
	37	2,26	18	250	3625	300	4350	350	5075	2800	500	8,1	17,82

DIMENSIONI
SIZE
ABMESSUNGEN





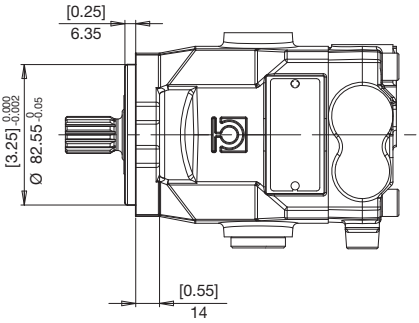


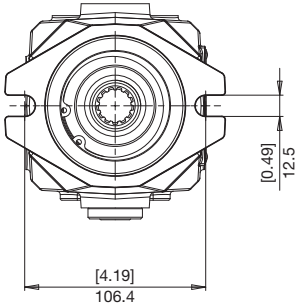
FLANGE
FLANGES
FLANSCHE

M4 MF

A

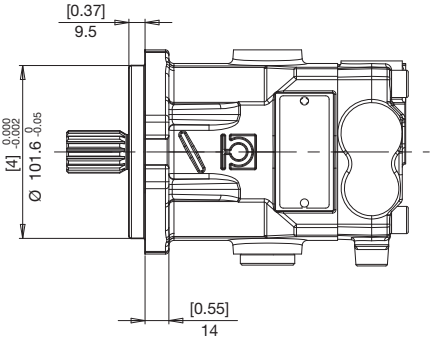
SAE A
SAE A
SAE A

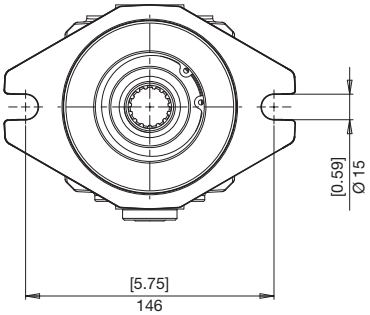




B

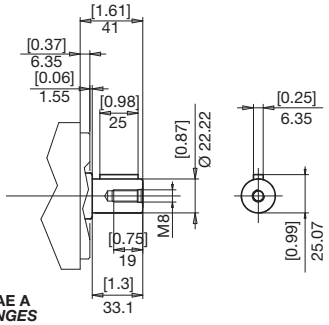
SAE B
SAE B
SAE B





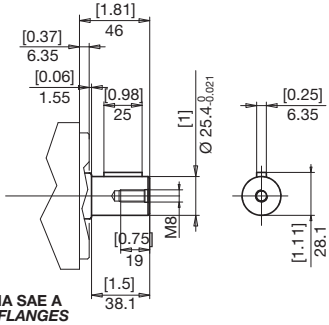
ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

1 COPPIA MAX
MAX TORQUE 210 N•m
MAX DREHMOMENT



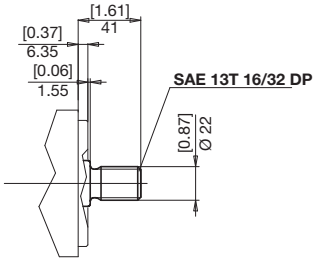
SU FLANGIA SAE A
ON SAE A FLANGES
AUF FLANSCH SAE A

2 COPPIA MAX
MAX TORQUE 250 N•m
MAX DREHMOMENT



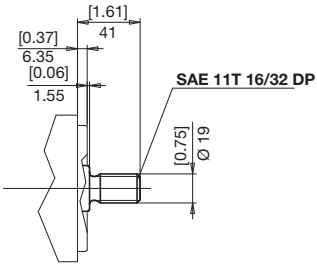
SU FLANGIA SAE A
ON SAE A FLANGES
AUF FLANSCH SAE A

6 COPPIA MAX
MAX TORQUE 310 N•m
MAX DREHMOMENT



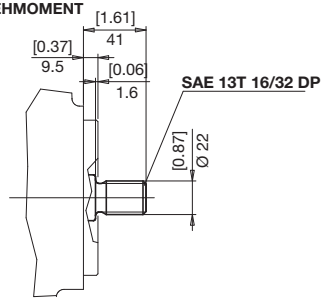
SU FLANGIA SAE A
ON SAE A FLANGES
AUF FLANSCH SAE A

7 COPPIA MAX
MAX TORQUE 160 N•m
MAX DREHMOMENT



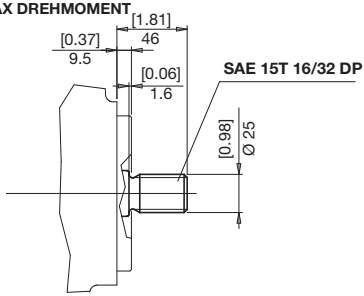
SU FLANGIA SAE A
ON SAE A FLANGES
AUF FLANSCH SAE A

6 COPPIA MAX
MAX TORQUE 310 N•m
MAX DREHMOMENT



SU FLANGIA SAE B
ON SAE B FLANGES
AUF FLANSCH SAE B

3 COPPIA MAX
MAX TORQUE 460 N•m
MAX DREHMOMENT

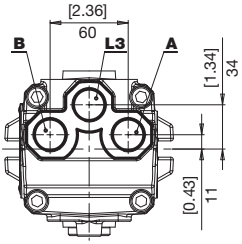


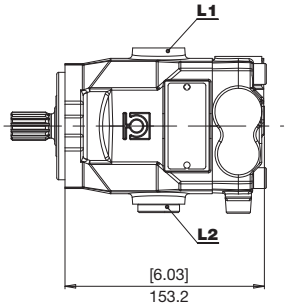
SU FLANGIA SAE B
ON SAE B FLANGES
AUF FLANSCH SAE B

POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

M4 MF

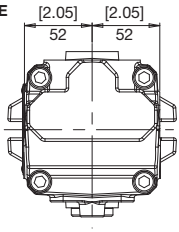
1 **POSTERIORI**
REAR
HINTEN

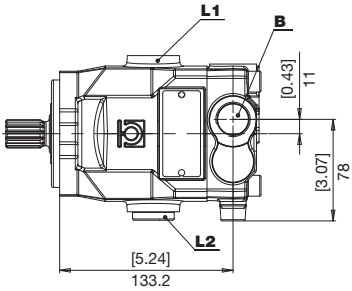




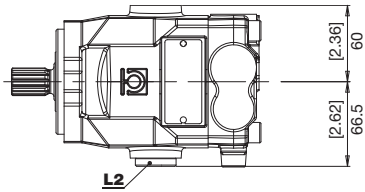
DRENAGGIO POSTERIORE OPZIONALE
OPTIONAL REAR DRAIN
WAHLWEISE LECKÖLANSCHLUSS HINTEN

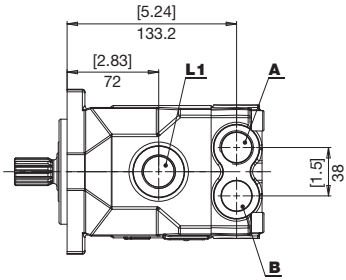
2 **LATERALI CONTRAPPOSTE**
OPPOSITE SIDEWAYS
BEIDSEITIG





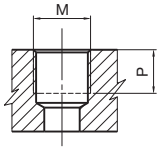
3 **LATERALI ACCOPPIATE**
COUPLED SIDEWAYS
SEITLICH GEKOPPELT



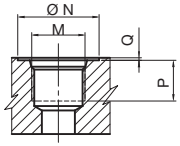


ROTAZIONE *DIRECTION* DREHRICHTUNG	INGRESSO *INPUT* EINGANG
DESTRA *RIGHT* RECHTS	A
SINISTRA *LEFT* LINKS	B

BOCCHE
PORTS
ANSCHLÜSSE



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G6	3/4" GAS BSPP	90	19	0,75



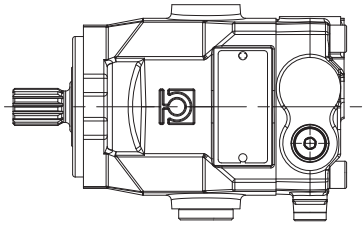
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U6	3/4"	41	1,81	19	0,75	0,3	0,01	1-1/16-12 UNF	90

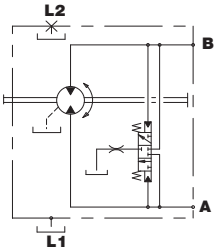
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

TIPO *TYPE* TYP	A - B INGRESSO/USCITA *INLET/ OUTLET* EINGANG/AUSGANG	L1 - L2 - L3 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS
R	G6	G6
U	U6	U6

V

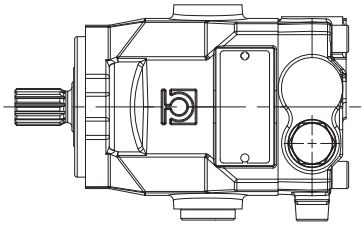
VALVOLA DI FLUSSAGGIO (5 - 7 l/min)
FLUSHING AND BOOST VALVE (5 - 7 l/min)
SPUL- UND SPEISEDRUCKVENTIL (5 - 7 l/min)

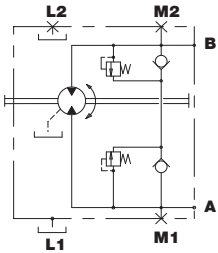




M

VALVOLA LIMITATRICE DI PRESSIONE E ANTICAVITAZIONE
PRESSURE LIMITER AND ANTICAVITATION VALVE
DRUCKBEGRENZUNGS UND NACHSAUGVENTIL

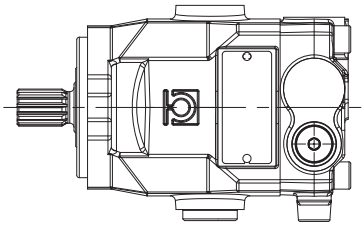


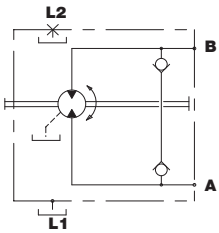


I valori di taratura sono riportati nella tabella valvole
Settings are listed in the chart for valves
Für die Einstellwerte siehe Ventiltabelle

A

VALVOLE DI ANTICAVITAZIONE
ANTICAVITATION VALVE
NACHSAUGVENTIL





ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M4 MF | **21** | **21** | **A** | **1** | **B** | **3** | **R** | **M** | **G** | **-**

SERIE
SERIES
SERIE

CILINDRATE NOMINALI
RATED DISPLACEMENT
NENNFÖRDERVOLUMEN
21 - 28 - 37

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
21 - 28 - 37

FLANGIA
FLANGE
FLANSCHE
A - SAE A
B - SAE B

POSIZIONE BOCCHE
POSITION OF PORT
ANSCHLÜSSPOSITION
1 = Utilizzi A - B posteriori
2 = Utilizzi A - B laterali - contrapposti
3 = Utilizzi laterali accoppiati
1 *= Users A - B rear*
2 *= Users A - B opposite sideways*
3 *= Users A - B coupled sideways*
1 = Verbraucher A - B hinten
2 = Verbraucher A - B beidseitig
3 = Verbraucher A - B paarweise seitlich

SENSO DI ROTAZIONE
DIRECTION OF ROTATION
DREHRICHTUNG
B = Bidirezionale
Bidirectional
bidirektional

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

TARATURA VALVOLE
VALVE SETTING
VENTILE
0 - senza valvole
no valve
ohne ventile
B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar
Q - 420 bar
R - 450 bar

ACCESSORI
ACCESSORIES
ZUBEHÖR
0 = Nessuna opzione
A = Valvola di anticavitazione
M = Valvola limitatrice di pressione e anticavitazione
P = Drenaggio posteriore
V = Valvola di flussaggio

0 *= no accessories*
A *= Anticavitation valve*
M *= pressure limiter and anticavitation valve*
P *= Rear drainage*
V *= flushing and boost valve*

0 = kein Zubehör
A = Nachsaugventil
M = Druckbegrenzungs und Nachsaugventil
P = Drenage hinten
V = Spul- und Speisedruckventil

BOCCHE
PORTS
ANSCHLÜSSE
Vedi tabella
See chart
Siehe Tabelle

ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE
1 = cilindrico Ø 22.22 (7/8")
2 = cilindrico Ø 25.4 (1")
3 = scanalato maschio 16/32" d.p. Z 15 (Std)
6 = scanalato maschio 16/32" d.p. Z 13
7 = scanalato maschio 16/32" d.p. Z 11

1 *= Round shaft Ø 22.22 (7/8")*
2 *= Round shaft Ø 25.4 (1")*
3 *= Male splined shaft Z15 16/32" d.p. (Std)*
6 *= Male splined shaft Z 13 16/32" d.p*
7 *= Male splined shaft Z11 16/32" d.p.*

1 = Zylindrisch Ø 22.22 (7/8")
2 = Zylindrisch Ø 25.4 (1")
3 = Profilwelle Z 15-16/32" d.p. (Std)
6 = Profilwelle Z 13-16/32" d.p.
7 = Profilwelle Z 11-16/32" d.p.

M4 MF

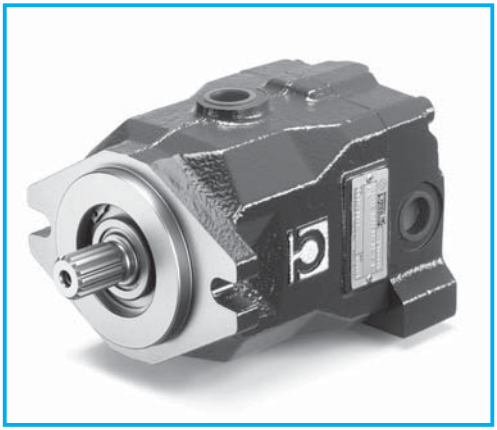
MOTORI A PISTONI ASSIALI A CILINDRATA FISSA
FIXED-DISPLACEMENT AXIAL PISTON MOTORS
KONSTANT-AXIALKOLBENMOTOREN

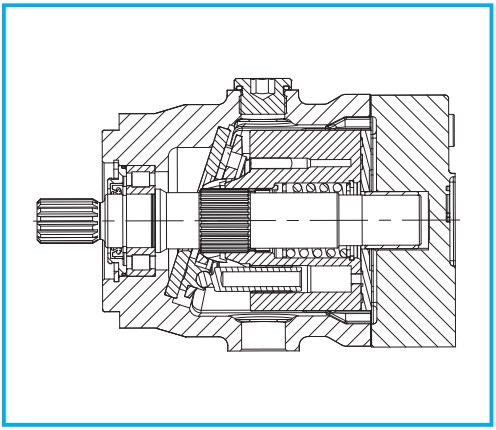
I motori a pistoni assiali serie M4 MF sono a cilindrata fissa del tipo a piatto inclinato e sono stati concepito per operare sia in circuito chiuso che aperto.
Lo sviluppo di gruppi rotanti appositamente concepiti unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a questi motori di raggiungere elevate velocità di rotazione garantendo una elevata affidabilità per pressioni di funzionamento fino a 250 bar continui (350 bar di picco)
I motori possono essere forniti completi di accessori quali valvole a scarico incrociato e valvola di scambio integrata disponibili a richiesta.

The M4 MF series axial piston motors have been designed to work both in an open and in a closed circuit.
Control systems actually available are making easy to use these motors in any application for industrial and mobile field.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, giving extreme reliability for working continuous pressure unit 250 bar and until 350 bar for peak pressure.
Motors can be supplied on requests with complete accessories such as cross relief valves and built-in relief valve.

Die Axialkolbenmotoren der Serie M4 MF sind sowohl im offenen als auch im geschlossenen Kreislauf einsetzbar.
Durch die lieferbaren unterschiedlichen Steuerungssysteme eignen sie sich sowohl für stationäre als auch für mobile Anwendungen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Drehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Betriebsdruck von bis zu 250 Bar (Spitzenwert 350 Bar) gewährleistet.
Die Motoren können auf Wunsch mit Sonderzubehör wie Kreuz-Überdruckventile und integrierte Spülventile ausgestattet werden.

M4 MF 34•46•50•58•65



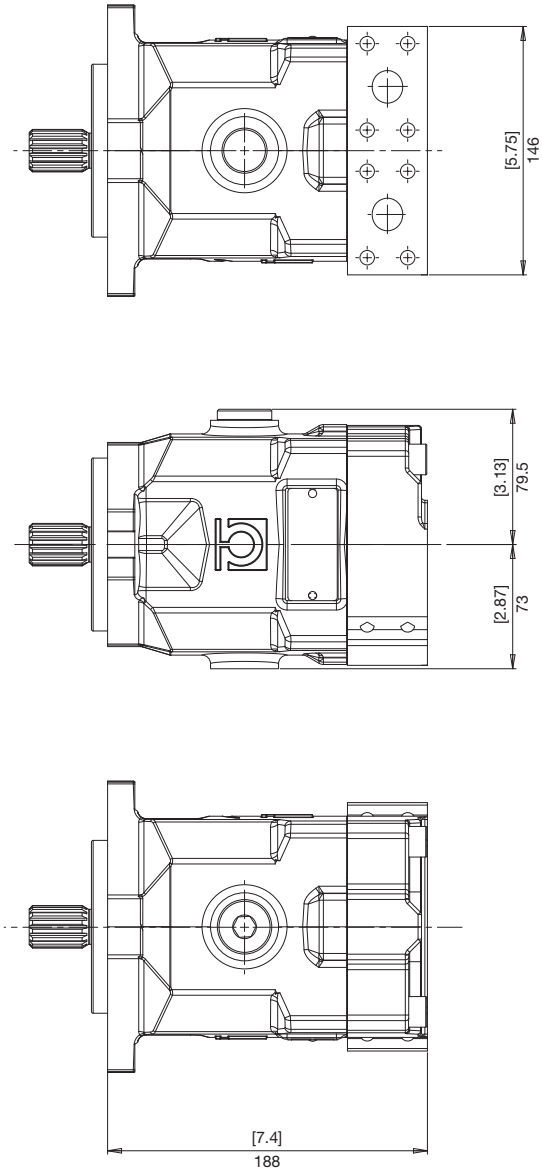


DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
M4 MF	34	2,08	18	250	3625	330	4785	400	5800	3600	500	13	28,60
	46	2,81	19	250	3625	330	4785	400	5800	3600	500	13	28,60
	50	3,05	18	250	3625	330	4785	400	5800	3600	500	14	30,80
	58	3,54	18	250	3625	330	4785	400	5800	3600	500	14	30,80
	65	3,97	18	250	3625	300	4350	350	5075	3600	500	14	30,80

DIMENSIONI
SIZE
ABMESSUNGEN

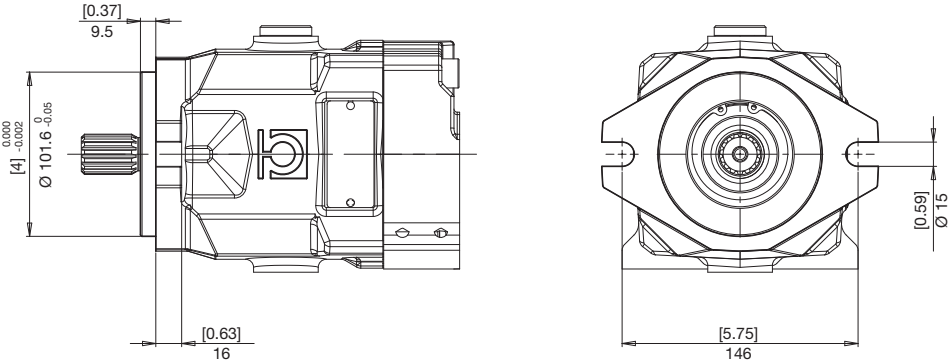
M4 MF



FLANGE
FLANGES
FLANSCHE

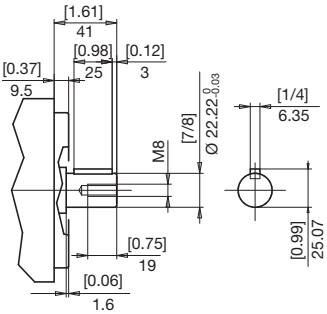
M4 MF

B **SAE B**
SAE B
SAE B

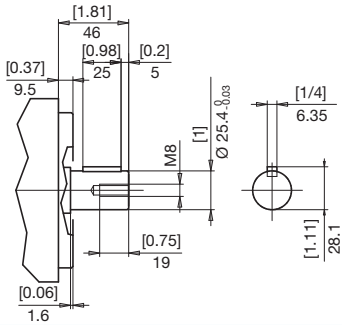


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

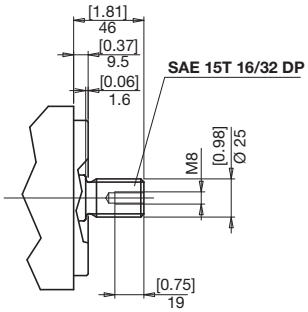
1
COPPIA MAX
MAX TORQUE **210 N•m**
MAX DREHMOMENT



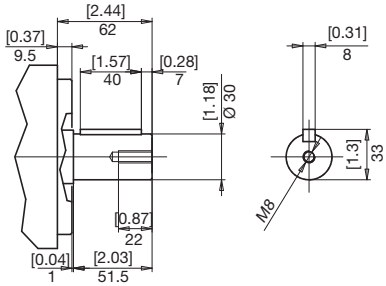
2
COPPIA MAX
MAX TORQUE **250 N•m**
MAX DREHMOMENT



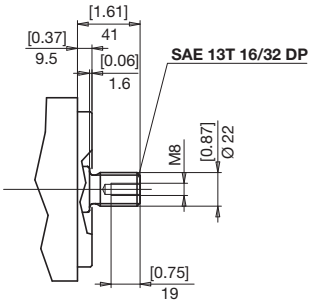
3
COPPIA MAX
MAX TORQUE **460 N•m**
MAX DREHMOMENT



4
COPPIA MAX
MAX TORQUE **300 N•m**
MAX DREHMOMENT



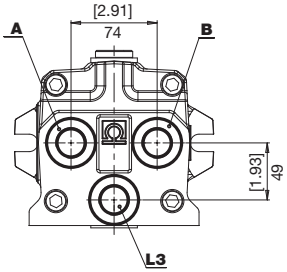
6
COPPIA MAX
MAX TORQUE **310 N•m**
MAX DREHMOMENT

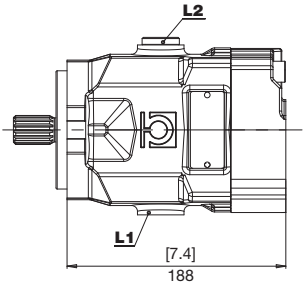


POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

M4 MF

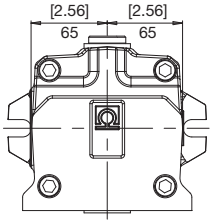
1 POSTERIORI
REAR
HINTEN

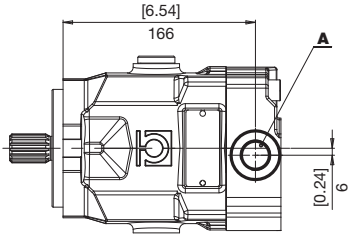




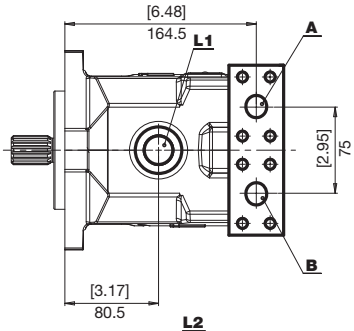
DRENAGGIO POSTERIORE OPZIONALE
OPTIONAL REAR DRAIN
WAHLWEISE LECKÖLANSCHLUSS HINTEN

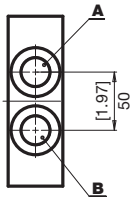
2 LATERALI CONTRAPPOSTE
OPPOSITE SIDEWAYS
BEIDSEITIG

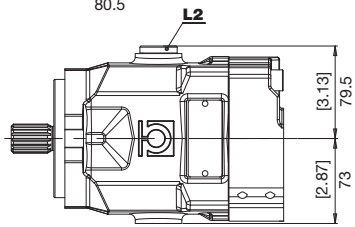




3 LATERALI ACCOPPIATE
COUPLED SIDEWAYS
SEITLICH GEKOPPELT

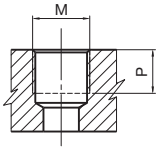




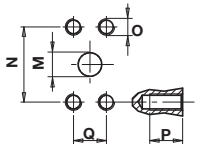


ROTAZIONE *DIRECTION* DREHRICHTUNG	INGRESSO *INPUT* EINGANG
DESTRA *RIGHT* RECHTS	A
SINISTRA *LEFT* LINKS	B

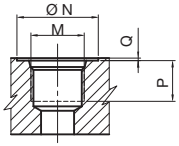
BOCCHE
PORTS
ANSCHLÜSSE



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G6	3/4" GAS BSPP	90	19	0,75



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N6	19	0,75	50,8	2	20	0,79	23,80	0,94	M10	38



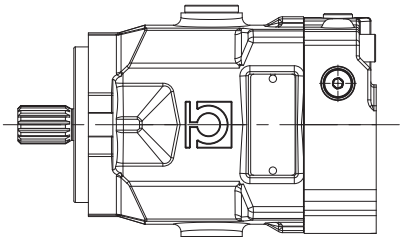
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U6	3/4"	41	1,81	19	0,75	0,3	0,01	1-1/16-12 UNF	90

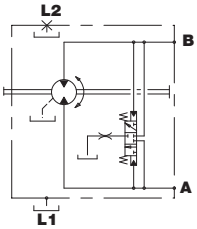
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

TIPO *TYPE* TYP	A - B INGRESSO/USCITA *INLET/ OUTLET* EINGANG/AUSGANG	L1 - L2 - L3 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS
R	G6	G6
U	U6	U6
N	N6	G6
M	N6	U6

V

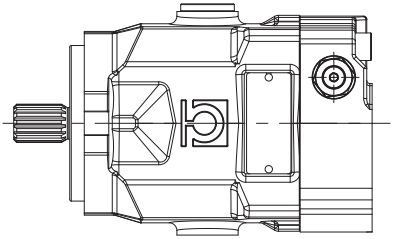
VALVOLA DI FLUSSAGGIO (5 - 7 l/min)
FLUSHING AND BOOST VALVE (5 - 7 l/min)
SPUL- UND SPEISEDRUCKVENTIL (5 - 7 l/min)

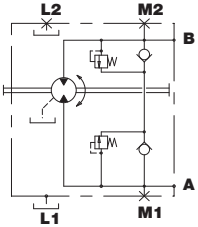




M

VALVOLA LIMITATRICE DI PRESSIONE E ANTICAVITAZIONE
PRESSURE LIMITER AND ANTICAVITATION VALVE
DRUCKBEGRENZUNGS UND NACHSAUGVENTIL





I valori di taratura sono riportati nella tabella valvole
Settings are listed in the chart for valves
Für die Einstellwerte siehe Ventiltabelle

ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M4 MF | **58** | **58** | **1** | **B** | **3** | **R** | **M** | **G** | **-**

SERIE
SERIES
SERIE

CILINDRATE NOMINALI
RATED DISPLACEMENT
NENNFORDERVOLUMEN
34 - 46 - 50 - 58 - 65

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
34 - 46 - 50 - 58 - 65

POSIZIONE BOCCHE
POSITION OF PORT
ANSCHLÜSSPOSITION
1 = Utilizzi A - B posteriori
2 = Utilizzi A - B laterali - contrapposti
3 = Utilizzi laterali accoppiati
1 *= Users A - B rear*
2 *= Users A - B opposite sideways*
3 *= Users A - B coupled sideways*
1 = Verbraucher A - B hinten
2 = Verbraucher A - B beidseitig
3 = Verbraucher A - B paarweise seitlich

SENSO DI ROTAZIONE
DIRECTION OF ROTATION
DREHRICHTUNG
B = Bidirezionale
Bidirectional
bidirektional

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

TARATURA VALVOLE
VALVE SETTING
VENTILE
0 - senza valvole
no valve
ohne ventile
B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar

ACCESSORI
ACCESSORIES
ZUBEHÖR
0 = Nessuna opzione
M = Valvola limitatrice di pressione e anticavitazione
P = Drenaggio posteriore
V = Valvola di flussaggio
0 *= no accessories*
M *= pressure limiter and anticavitation valve*
P *= Rear drainage*
V *= flushing and boost valve*
0 = kein Zubehör
M = Druckbegrenzungs und Nachsaugventil
P = Drenage hinten
V = Spul- und Speisedruckventil

BOCCHE
PORTS
ANSCHLÜSSE
Vedi tabella
See chart
Siehe Tabelle

ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE
1 = cilindrico Ø 22.22 (7/8")
2 = cilindrico Ø 25.4 (1")
3 = scanalato maschio 16/32" d.p. Z 15 (Std)
4 = cilindrico Ø 30
6 = scanalato maschio 16/32" d.p. Z 13
1 *= Round shaft Ø 22.22 (7/8")*
2 *= Round shaft Ø 25.4 (1")*
3 *= Male splined shaft Z15 16/32" d.p. (Std)*
4 *= Round shaft Ø 30*
6 *= Male splined shaft Z 13 16/32" d.p*
1 = Zylindrisch Ø 22.22 (7/8")
2 = Zylindrisch Ø 25.4 (1")
3 = Profilwelle Z 15-16/32" d.p. (Std)
4 = Zylindrisch Ø 30
6 = Profilwelle Z 13-16/32" d.p.

HP M7 HP M8

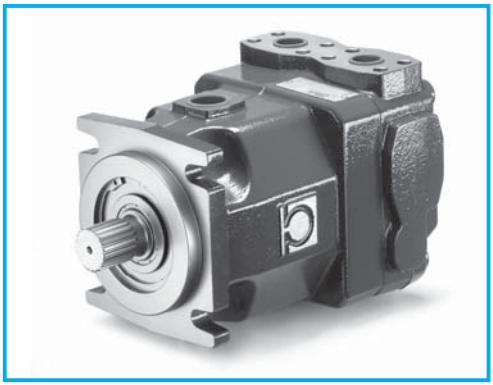
MOTORI A PISTONI ASSIALI A PIATTO INCLINATO
SWASHPLATE AXIAL PISTON MOTORS
SCHRÄGSCHEIBEN-AXIALKOLBENMOTOREN

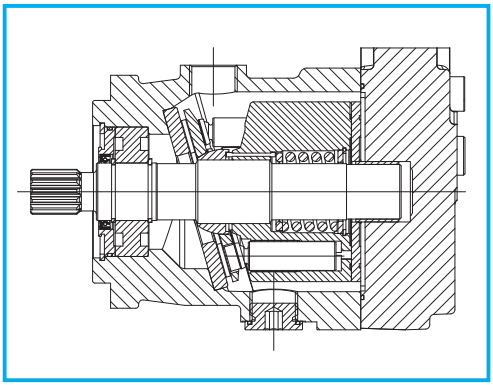
I motori a pistoni assiali serie HP M7, HP M8 sono stati concepiti per operare sia in circuito chiuso che aperto.
I vari sistemi di comando disponibili li rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che mobile.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a questi motori di raggiungere elevate velocità di rotazione, garantendo una elvata affidabilità per pressioni di funzionamento fino a 350 bar continui per HPM7 (400 bar di picco) e 400 bar continui per HPM8 (450 bar di picco). I motori possono essere forniti completi di accessori quali valvole a scarico incrociato e valvola di scambio integrata, disponibili a richiesta.

The HP M7 and M8 series axial piston motors have been designed to work both in an open and in a closed circuit.
Control systems actually available are making easy to use these motors in any application for industrial and mobile field. Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, giving extreme reliability for working continuous pressure unit of 350 bar for motors of Series M7 (peak pressure up to 400 bar) and 400 bar and until 450 bar for peak pressure for motors of Series M8.
Motors can be supplied on requests with complete accessories such as cross relief and anticavitation valves and built-in relief valve.

Die Axialkolbenmotoren der Serie HP M7 sind sowohl im offenen als auch im geschlossenen Kreislauf einsetzbar.
Durch die lieferbaren unterschiedlichen Steuerungssysteme eignen sie sich sowohl für stationäre als auch für mobile Anwendungen. Speziell entwickelte Zylinderblöcke mit optimalen Strömungsverhältnissen erlauben den Einsatz bei hohen Drehzahlen, wie von modernen Antriebsaggregaten gefordert. Dabei ist ein kontinuierlicher Betriebsdruck von bis zu 350 bar (Spitzendruck bis 400 bar) bei der Baureihe M7 und bis zu 400 bar (Spitzendruck bis 450 bar) bei der Baureihe M8 gewährleistet.
Die Motoren können auf Wunsch mit Sonderzubehör wie Kreuz-Druckbegrenzungs- und Nachsauggventile und integrierte Spülventile ausgestattet werden.

HP M7 - HP M8 77•82•92•100•111•125

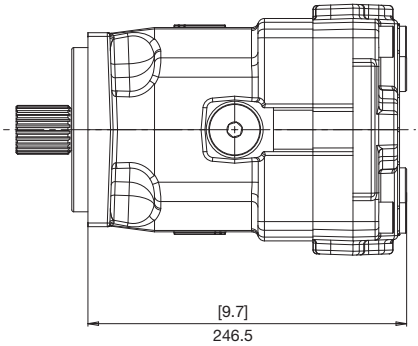


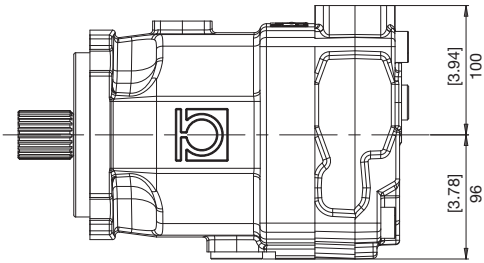


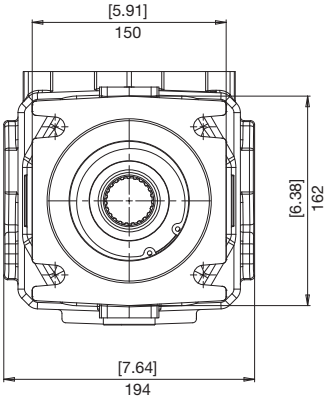
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL MAX	MIN	MASSA *WEIGHT* GEWICHT	
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	kg	lbs
HP M7	77	4,7	17	350	5075	380	5510	400	5800	3600	500	39	86
	82	5,0	18	350	5075	380	5510	400	5800	3600	500	39	86
	92	5,6	20	350	5075	380	5510	400	5800	3200	500	39	86
	100	6,1	17	350	5075	380	5510	400	5800	3200	500	40	88
	111	6,8	18	350	5075	380	5510	400	5800	2800	500	40	88
	125	7,6	20	350	5075	380	5510	400	5800	2800	500	40	88
HP M8	77	4,7	17	400	5800	420	6090	450	6525	3600	500	39	86
	82	5,0	18	400	5800	420	6090	450	6525	3600	500	39	86
	92	5,6	20	400	5800	420	6090	450	6525	3200	500	39	86
	100	6,1	17	400	5800	420	6090	450	6525	3200	500	40	88
	111	6,8	18	400	5800	420	6090	450	6525	2800	500	40	88
	125	7,6	20	400	5800	420	6090	450	6525	2800	500	40	88

DIMENSIONI
SIZE
ABMESSUNGEN



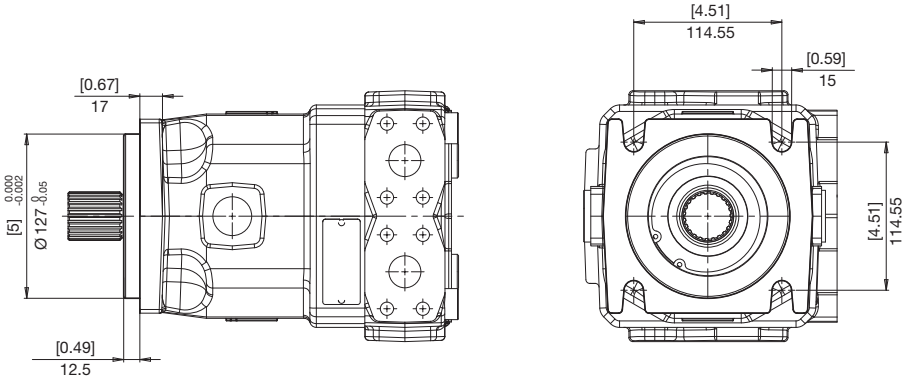




FLANGE
FLANGES
FLANSCHE

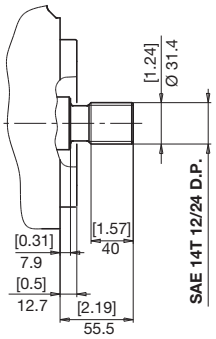
HP M7 **HP M8**

C SAE C 4 FORI
SAE C 4 HOLES
SAE C 4 BOHRUNGEN

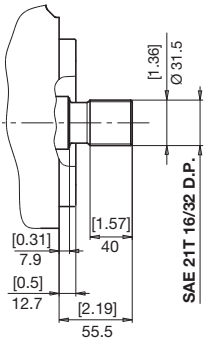


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

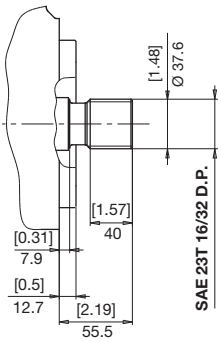
3 *COPPIA MAX*
MAX TORQUE 865 N•m
MAX DREHMOMENT



7 *COPPIA MAX*
MAX TORQUE 1085 N•m
MAX DREHMOMENT



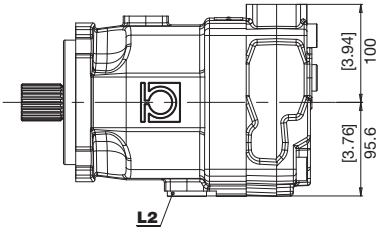
8 *COPPIA MAX*
MAX TORQUE 1300 N•m
MAX DREHMOMENT

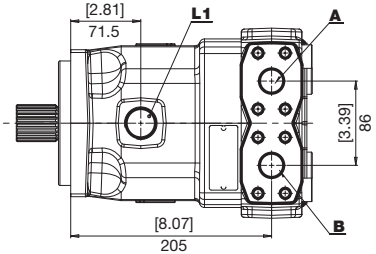


POSITIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

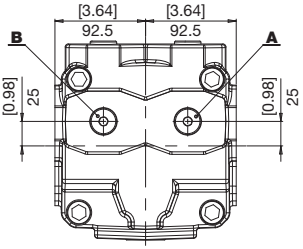
HP M7 **HP M8**

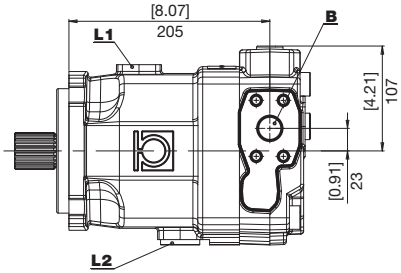
A LATERALI ACCOPPIATE
COUPLED SIDEWAYS
SEITLICH GEKOPPELT



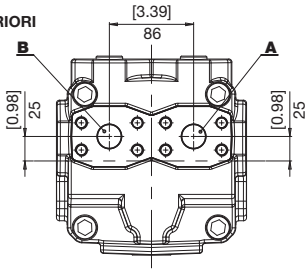


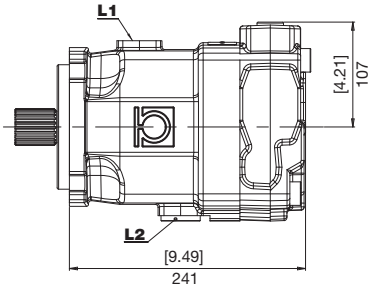
L LATERALI CONTRAPPOSTE
OPPOSITE SIDEWAYS
BEIDSEITIG





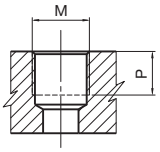
P POSTERIORI
REAR
HINTEN



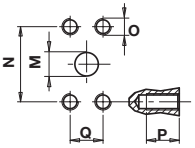


BOCCHE
PORTS
ANSCHLÜSSE

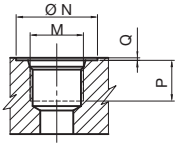
HP M7 **HP M8**



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G7	1” GAS BSPP	160	18	0,75



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N7	25	1	57,15	2,25	20	0,78	27,76	1,09	M12	70



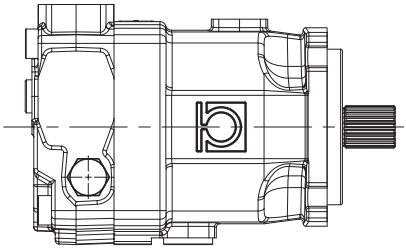
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U7	1”	49	1,93	18	0,70	0,3	0,01	1-5/16-12 UNF	160

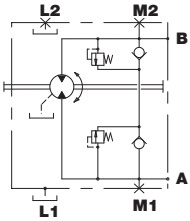
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

TIPO *TYPE* TYP	A - B INGRESSO/USCITA *INLET/ OUTLET* EINGANG/AUSGANG	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS
G	**N7**	**G7**
U	**N7**	**U7**

ACCESSORI
ACCESSORIES
ZUBEHÖR

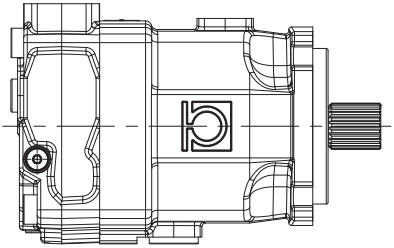
M VALVOLA LIMITATRICE DI PRESSIONE E ANTICAVITAZIONE
PRESSURE LIMITER AND ANTICAVITATION VALVE
DRUCKBEGRENZUNGS UND NACHSAUGVENTIL

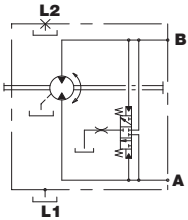




I valori di taratura sono riportati nella tabella valvole
Settings are listed in the chart for valves
Für die Einstellwerte siehe Ventiltabelle

V VALVOLA DI FLUSSAGGIO (5 - 7 l/min)
FLUSHING AND BOOST VALVE (5 - 7 l/min)
SPUL- UND SPEISEDRUCKVENTIL (5 - 7 l/min)





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ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HP M7 **HP M8**

HP M8 082 B C 3 G A V 0 ...

PRODOTTO
PRODUCT
PRODUKT

M7 - Motori a pistoni assiali a cilindrata fissa media pressione
M8 - Motori a pistoni assiali a cilindrata fissa alta pressione

M7 - *Fixed-diplacement axial piston motor, medium pressure*
M8 - *Fixed-displacement axial piston motor, high pressure*

M7 - Konstant-Axialkolbenmotoren mittlerer Druck hoher Druck
M8 - Konstant-Axialkolbenmotoren

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

077 - 082 - 092 - 100 - 111 - 125

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

B - Bidirezionale
B - *Bidirectional*
B - Bidirektional

FLANGIA
FLANGE
FLANSCHE

C - SAE C 4 fori
C - *SAE C 4 holes*
C - SAE C 4 Bohrungen

ESTREMITÀ ALBERO
SHAFT PROFIL
WELLENENDE

3 - Z14 12/24" DP
7 - Z21 16/32" DP
8 - Z23 16/32" DP

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

TARATURA VALVOLE
VALVE SETTING
VENTILE

0 - senza valvole
no valve
ohne ventile
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar
Q - 420 bar
R - 450 bar

ACCESSORI
ACCESSORIES
ZUBEHÖR

0 - nessuno
M - Valvola limitatrice di pressione e anticavitazione
S - accessori multipli -esecuzioni speciali
V - Valvola di flussaggio

0 - *no accessories*
M - *pressure limiter and anticavitation valve*
S - *multiple accessories special versions*
V - *flushing and boost valve*

0 - kein Zubehör
M - Druckbegrenzungs und Nachsaugventil
S - Zubehörkombinationen Sonderbauartenl
V - Spul- und Speisedruckventil

POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

A - Laterali accoppiate
L - Laterali contrapposte
P - Posteriori

A - *Coupled sideways*
L - *Opposite sideways*
P - *Rear*

A - Seitlich gekoppelt
L - Beidseitig
P - Hinten

M4 MV

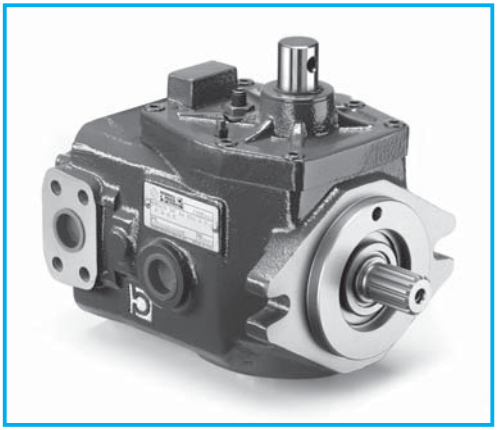
MOTORI A PISTONI ASSIALI A CILINDRATA VARIABILE
VARIABLE-DISPLACEMENT AXIAL PISTON MOTORS
AXIALKOLBEN-VERSTELLMOTORE

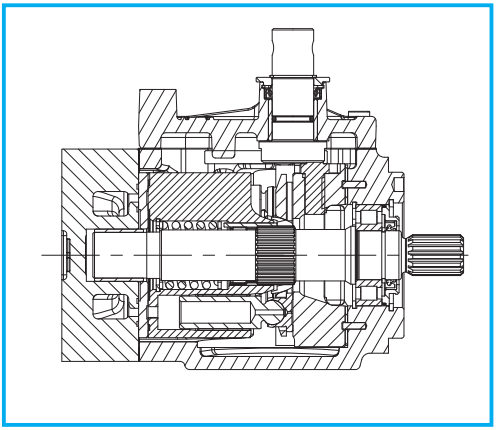
I motori a pistoni assiali serie M4 MV sono a cilindrata variabile del tipo a piatto inclinato e sono stati concepiti per operare sia in circuito chiuso che aperto.
Lo sviluppo di gruppi rotanti appositamente progettati unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a questi motori di raggiungere elevate velocità di rotazione garantendo una elevata affidabilità per pressioni di funzionamento fino a 250 bar continui (400 bar di picco)
I motori possono essere forniti completi di accessori quali valvole a scarico incrociato e valvola di scambio integrata disponibili a richiesta.

The M4 MV series axial piston motors have been designed to work both in an open and in a closed circuit.
Control systems actually available are making easy to use these motors in any application for industrial and mobile field.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, giving extreme reliability for working continuous pressure unit 250 bar and until 400 bar for peak pressure.
Motors can be supplied on requests with complete accessories such as cross relief and anticaviation valves and flushing valve.

Die Axialkolbenmotoren der M4 MV sind sowohl im offenen als auch im geschlossenen Kreislauf einsetzbar.
Durch die lieferbaren unterschiedlichen Steuerungssysteme eignen sie sich sowohl für stationäre als auch für mobile Anwendungen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen erlauben den Einsatz bei hohen Drehzahlen, wie von modernen Antriebsaggregaten gefordert.
Dabei ist ein kontinuierlicher Betriebsdruck von bis zu 250 bar (Spitzenwert 400 bar) gewährleistet.
Die Motoren können auf Wunsch mit Sonderzubehör wie Kreuz-Überdruckventile und integrierte Spülventile ausgestattet werden.

M4 MV 34•46•50•58•65



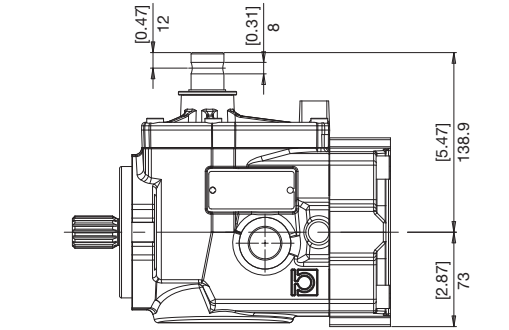


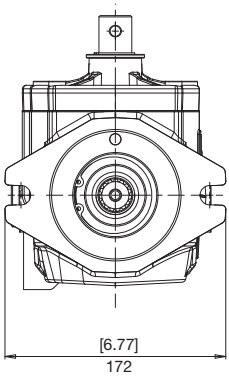
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

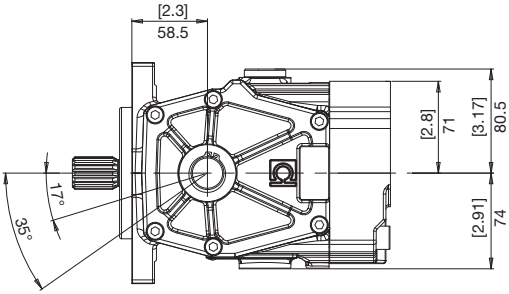
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL			MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX (max V)	MAX (min V)	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	min⁻¹	kg	lbs
M4 MV	34	2,08	18	250	3625	330	4785	400	5800	3600	4000	500	19	41,80
	46	2,81	19	250	3625	330	4785	400	5800	3600	4000	500	19	41,80
	50	3,05	18	250	3625	330	4785	400	5800	3600	4000	500	20	44,00
	58	3,54	18	250	3625	330	4785	400	5800	3600	4000	500	20	44,00
	65	3,97	18	250	3625	300	4350	350	5075	3600	4000	500	20	44,00

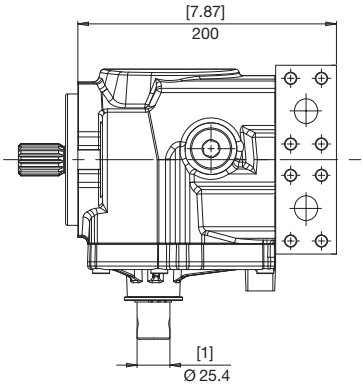
DIMENSIONI
SIZE
ABMESSUNGEN

M4 MV





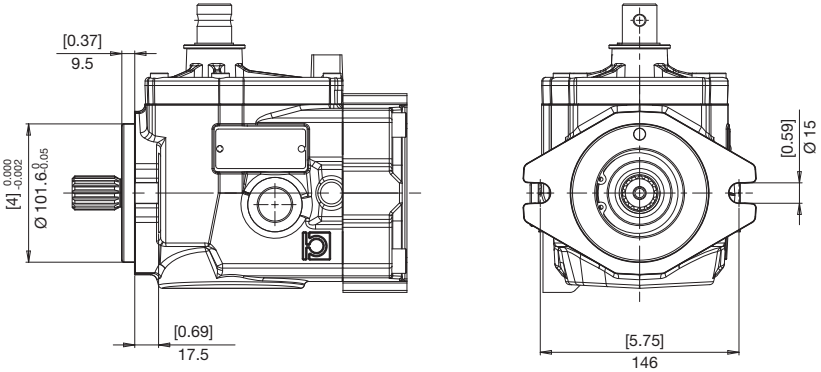




FLANGE
FLANGES
FLANSCHE

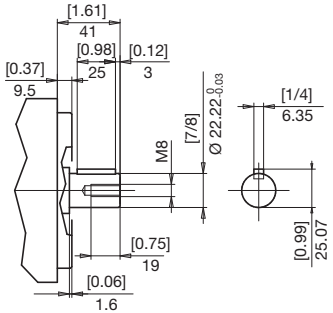
M4 MV

B **SAE B**
SAE B
SAE B

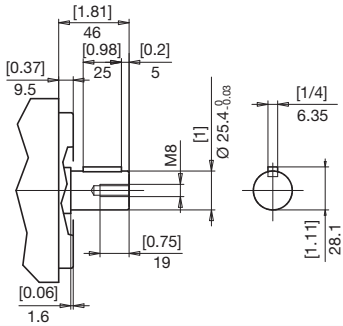


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

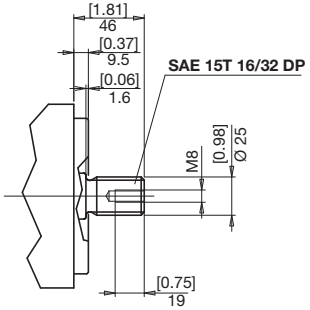
1
COPPIA MAX
MAX TORQUE **210 N•m**
MAX DREHMOMENT



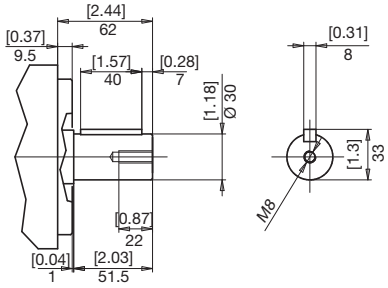
2
COPPIA MAX
MAX TORQUE **250 N•m**
MAX DREHMOMENT



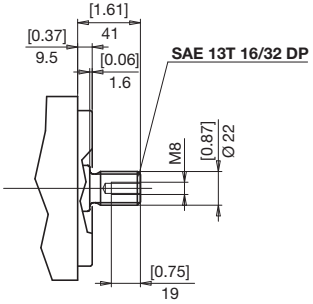
3
COPPIA MAX
MAX TORQUE **460 N•m**
MAX DREHMOMENT



4
COPPIA MAX
MAX TORQUE **300 N•m**
MAX DREHMOMENT



6
COPPIA MAX
MAX TORQUE **310 N•m**
MAX DREHMOMENT

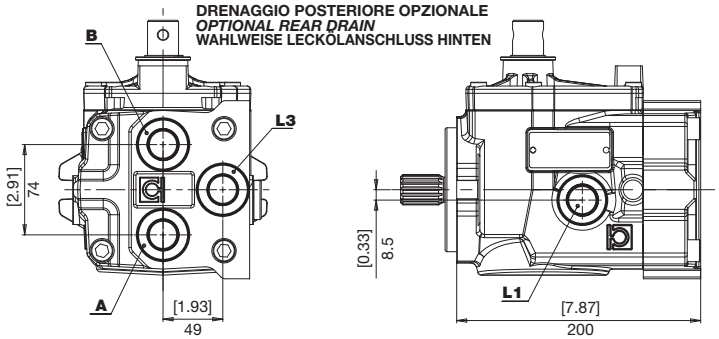


POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

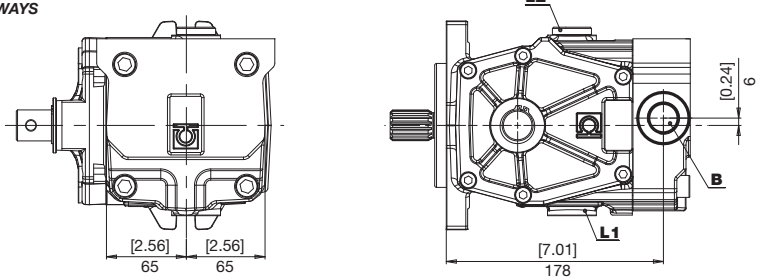
M4 MV

1 POSTERIORI
REAR
HINTEN

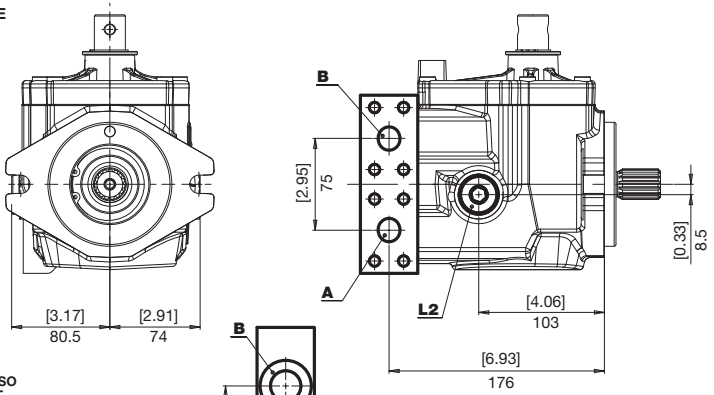
DRENAGGIO POSTERIORE OPZIONALE
OPTIONAL REAR DRAIN
WAHLWEISE LECKÖLANSCHLUSS HINTEN

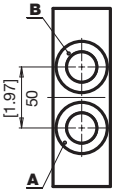


2 LATERALI CONTRAPPOSTE
OPPOSITE SIDEWAYS
BEIDSEITIG



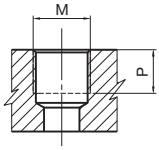
3 LATERALI ACCOPPIATE
COUPLED SIDEWAYS
SEITLICH GEKOPPELT



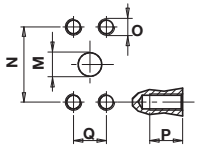


ROTAZIONE *DIRECTION* DREHRICHTUNG	INGRESSO *INPUT* EINGANG
DESTRA *RIGHT* RECHTS	A
SINISTRA *LEFT* LINKS	B

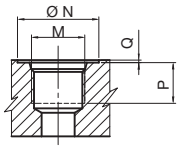
BOCCHE
PORTS
ANSCHLÜSSE



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G6	3/4" GAS BSPP	90	19	0,75



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N6	19	0,75	50,8	2	20	0,79	23,80	0,94	M10	38



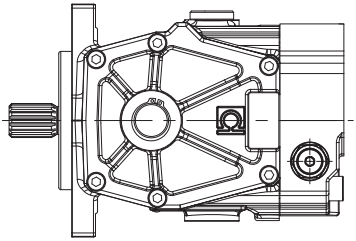
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U6	3/4"	41	1,81	19	0,75	0,3	0,01	1-1/16-12 UNF	90

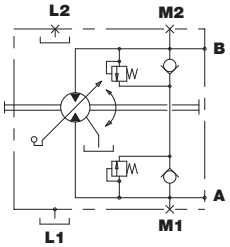
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

TIPO *TYPE* TYP	A - B INGRESSO/USCITA *INLET/ OUTLET* EINGANG/AUSGANG	L1 - L2 - L3 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS
R	G6	G6
U	U6	U6
N	N6	G6
M	N6	U6

M

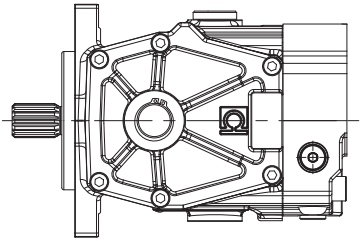
VALVOLA LIMITATRICE DI PRESSIONE E ANTICAVITAZIONE
PRESSURE LIMITER AND ANTICAVITATION VALVE
DRUCKBEGRENZUNGS UND NACHSAUGVENTIL

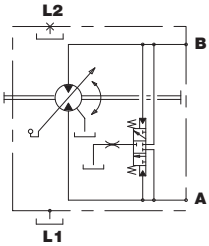




V

VALVOLA DI FLUSSAGGIO (5 - 7 l/min)
FLUSHING AND BOOST VALVE (5 - 7 l/min)
SPUL- UND SPEISEDRUCKVENTIL (5 - 7 l/min)





ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M4 MV | 58 | 58/29 | M | B | 1 | B | 3 | R | V | 0 | -

SERIE
SERIES
SERIE

CILINDRATE NOMINALI
RATED DISPLACEMENT
NENNFÖRDERVOLUMEN
34 - 46 - 50 - 58 - 65

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
34/17 - 46/23 - 50/25 - 58/29 - 65/32

COMANDI
CONTROLS
STEUERUNGE

M = Comando manuale (Rapporto 1:2)
M = *Manual control (Ratio 1:2)*
M = manuelle Betätigung (Verhältnis1:2)

TIPO DI OSCILLANTE
SWASHPLATE TYPE
SCHWENKSCHEIBENLAGERUNG

B = oscillante su bronzine
B = *mounted on bronze bearings*
B = Bronze-Gleitgelagert

POSIZIONE BOCCHE
POSITION OF PORT
ANSCHLÜSSPOSITION
1 = Utilizzi A - B posteriori
2 = Utilizzi A - B laterali - contrapposti
3 = Utilizzi laterali accoppiati
1 = *Users A - B rear*
2 = *Users A - B opposite sideways*
3 = *Users A - B coupled sideways*
1 = Verbraucher A - B hinten
2 = Verbraucher A - B beidseitig
3 = Verbraucher A - B paarweise seitlich

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

TARATURA VALVOLE
VALVE SETTING
VENTILE
0 - senza valvole
no valve
ohne ventile
B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar

ACCESSORI
ACCESSORIES
ZUBEHÖR
0 = Nessuna opzione
M = Valvola limitatrice di pressione e anticavitazione
P = Drenaggio posteriore
V = Valvola di flussaggio

0 = *no accessories*
M = *pressure limiter and anticavitation valve*
P = *Rear drainage*
V = *flushing and boost valve*

0 = kein Zubehör
M = Druckbegrenzungs und Nachsaugventil
P = Drenage hinten
V = Spul- und Speisedruckventil

BOCCHE
PORTS
ANSCHLÜSSE
Vedi tabella
See chart
Siehe Tabelle

ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE
1 = cilindrico Ø 22.22 (7/8")
2 = cilindrico Ø 25.4 (1")
3 = scanalato maschio 16/32" d.p. Z 15 (Std)
4 = cilindrico Ø 30
6 = scanalato maschio 16/32" d.p. Z 13

1 = *Round shaft Ø 22.22 (7/8")*
2 = *Round shaft Ø 25.4 (1")*
3 = *Male splined shaft Z15 16/32" d.p. (Std)*
4 = *Round shaft Ø 30*
6 = *Male splined shaft Z 13 16/32" d.p*

1 = Zylindrisch Ø 22.22 (7/8")
2 = Zylindrisch Ø 25.4 (1")
3 = Profilwelle Z 15-16/32" d.p. (Std)
4 = Zylindrisch Ø 30
6 = Profilwelle Z 13-16/32" d.p.

SENSO DI ROTAZIONE
DIRECTION OF ROTATION
DREHRICHTUNG

B = Bidirezionale (Std)
B = *Bidirectional (Std)*
B = Bidirektional (Std)

HP V4

MOTORI A PISTONI ASSIALI A CILINDRATA VARIABILE
VARIABLE-DISPLACEMENT AXIAL PISTON MOTORS
AXIALKOLBENVERSTELLMOTOREN

I motori variabili a pistoni assiali serie HP V4 sono stati concepiti per operare sia in circuito aperto che in circuito chiuso.
I vari sistemi di comando disponibili li rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che mobile.
I comandi disponibili sono i seguenti:

- comando elettrico a 12 V (due posizioni)
- comando elettrico a 24 V (due posizioni)
- comando idraulico pilotabile a bassa pressione (30 bar) (due posizioni)
- comando idraulico diretto ad alta pressione (due posizioni).

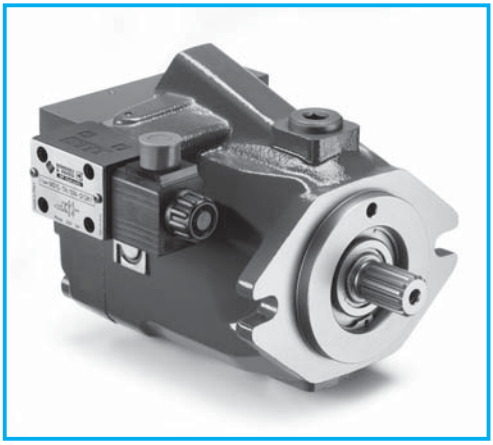
The HP V4 series variable-displacement axial piston motors have been designed to work both in an open and closed circuit.
Control systems actually available are making easy to use these motors in any application for industrial and mobile field.
Available control systems are:

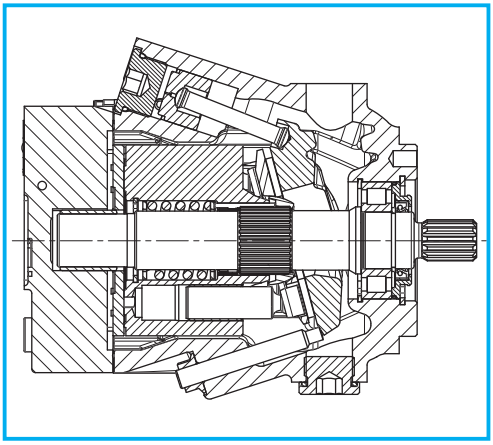
- *12 V electrical control (2-position)*
- *24 V electrical control (2-position)*
- *hydraulic piloted, low pressure (30 bar) (2-position)*
- *direct hydraulic control, high pressure (2-position).*

Die Axialkolbenmotoren der Serie HP V4 wurden konzipiert, um sowohl im offenen als auch im geschlossenen Kreislauf zu arbeiten. Die lieferbaren unterschiedlichen Steuerungssysteme eignen sich sowohl für Anwendungen im industriellen als auch im mobilen Sektor.
Folgende Steuerungen sind erhältlich:

- elektrische Steuerung 12 V (2 Stellungen)
- elektrische Steuerung 24 V (2 Stellungen)
- hydraulische Steuerung, Niederdruck (30 Bar - 2 Stellungen)
- hydraulische Direktsteuerung, Hochdruck (2 Stellungen).

HP V4 34•46•50•58•65

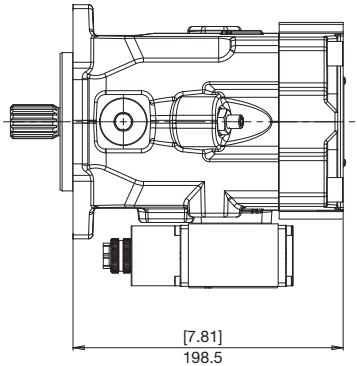


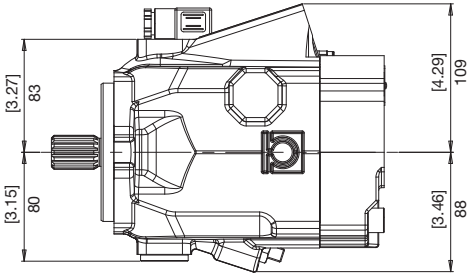


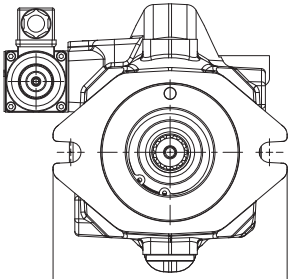
DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

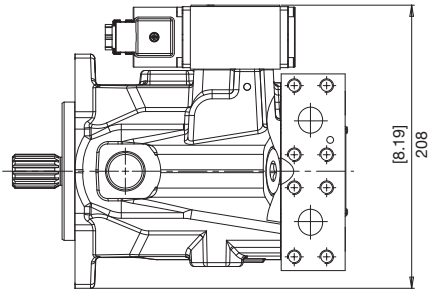
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL			MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX (max V)	MAX (min V)	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	min⁻¹	kg	lbs
HP V4	34	2,08	18	250	3625	330	4785	400	5800	3600	4000	500	23	50,61
	46	2,81	19	250	3625	330	4785	400	5800	3600	4000	500	23	50,61
	50	3,05	18	250	3625	330	4785	400	5800	3600	4000	500	23	50,61
	58	3,54	18	250	3625	330	4785	400	5800	3600	4000	500	24	52,81
	65	3,97	18	250	3625	300	4350	350	5075	3600	4000	500	24	52,81

DIMENSIONI
SIZE
ABMESSUNGEN





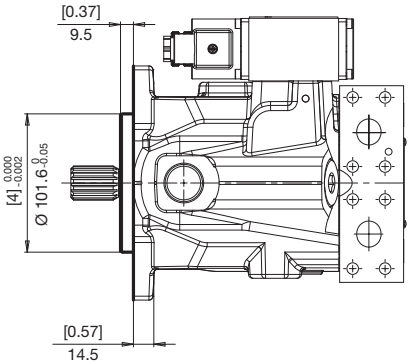


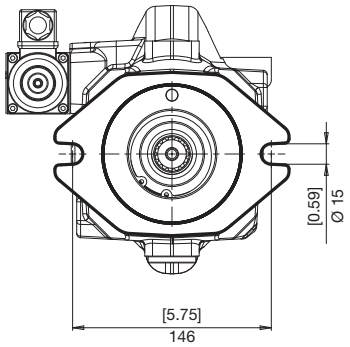


FLANGE
FLANGES
FLANSCHE

HP V4

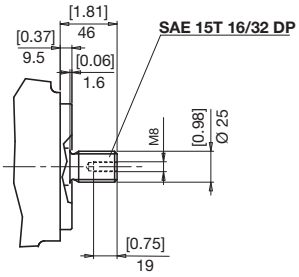
B SAE B
SAE B
SAE B



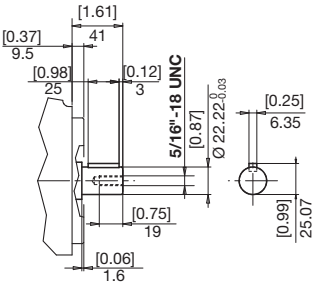


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

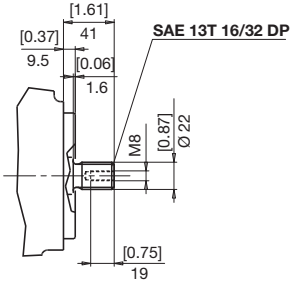
1 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT **460 N•m**



6 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT **210 N•m**

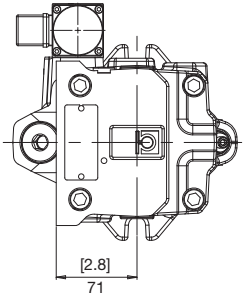


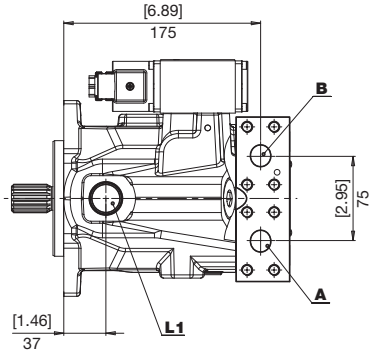
9 *COPPIA MAX*
MAX TORQUE
MAX DREHMOMENT **310 N•m**



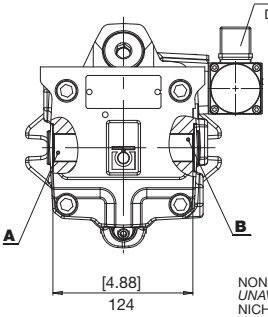
POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

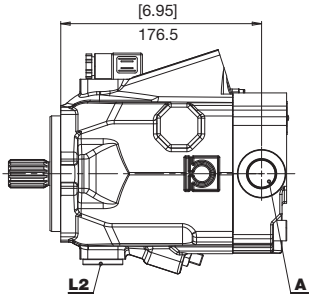
A LATERALI ACCOPPIATE
COUPLED SIDEWAYS
SEITLICH GEKOPPELT





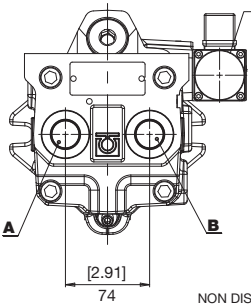
L LATERALI CONTRAPPOSTE
OPPOSITE SIDEWAYS
BEIDSEITIG

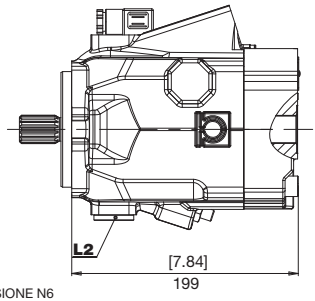




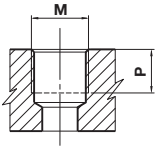
NON DISPONIBILE IN VERSIONE N6
UNAVAILABLE IN N6 VERSION
NICHT VERFÜGBAR IN N6 VERSION

P POSTERIORI
REAR
HINTEN

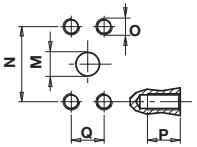




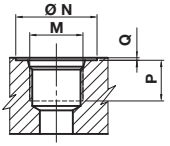
NON DISPONIBILE IN VERSIONE N6
UNAVAILABLE IN N6 VERSION
NICHT VERFÜGBAR IN N6 VERSION



TIPO *TYPE* TYP	M		P	
		NM	mm	in
G1	1/8” GAS BSPP	8	8	0,31
G6	3/4” GAS BSPP	90	19	0,75



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N6	20	0,79	50,8	2,00	20	0,79	23,8	0,94	M10	38



TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U6	3/4”	41	1,61	20	0,79	0,3	0,01	1-1/16-12 UNF	90

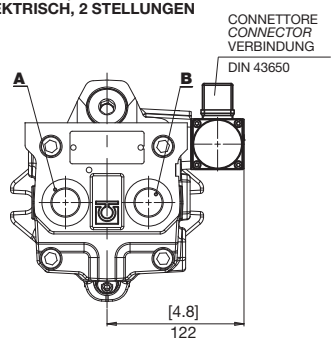
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

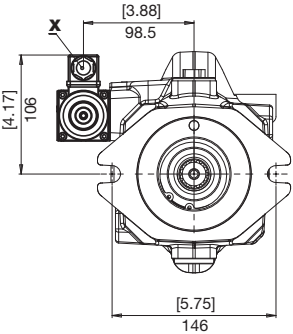
TIPO *TYPE* TYP	A - B PILOTAGGIO *PILOT* STEUERDRUCK	L1 - L2 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	X PILOTAGGIO *PILOT* STEUERDRUCK
G	G6	G6	G1
M	N6	U6	U2
N	N6	G6	G1
U	U6	U6	U2

COMANDI
CONTROLS
STEUERUNGEN

E F — ELETTRICO A 2 POSIZIONI / *ELECTRICAL, 2-POSITION* / ELEKTRISCH, 2 STELLUNGEN

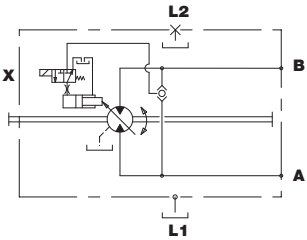
E: 12 V — F: 24 V



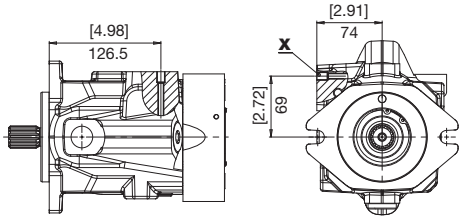


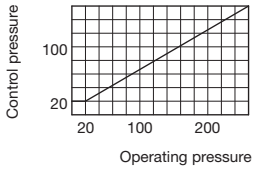
INGRESSO *INLET* EINGANG	ROTAZIONE *DIRECTION* DREHRICHTUNG
A	DESTRA *RIGHT* RECHTS
B	SINISTRA *LEFT* LINKS

X	Elettrovalvola *Solenoid Valve* Magnetventil



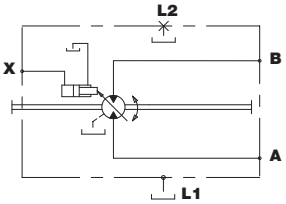
H — IDRAULICO DIRETTO A 2 POSIZIONI / *DIRECT HYDRAULIC, 2-POSITION* / HYDRAULISCH DIREKT, 2 STELLUNGEN





INGRESSO *INLET* EINGANG	ROTAZIONE *DIRECTION* DREHRICHTUNG
A	DESTRA *RIGHT* RECHTS
B	SINISTRA *LEFT* LINKS

X	Elettrovalvola *Solenoid Valve* Magnetventil



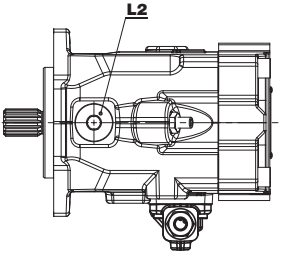
Normalmente il motore é in cilindrata massima. Applicando una pressione esterna sul pilotaggio “X” si ottiene la variazione di cilindrata alla minima. Il controllo pressione dipende direttamente dalla pressione di lavoro delle bocche “A” e “B”.
Per una corretta variazione della cilindrata attenersi ai valori di pressione di pilotaggio riportati nel diagramma.

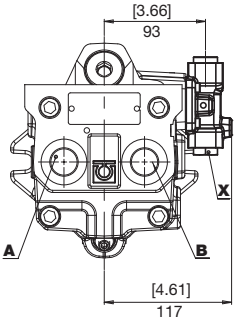
The motor is usually at maximum displacement. By applying external pressure on pilot “X” the displacement is changed to a minimum. The pressure control depends directly on the working pressure at ports “A” and “B”.
To correctly change displacement, follow the pilot pressure values as shown in the chart.

Normalerweise hat der Motor das maximale Schluckvolumen. Durch Anwendung eines äußeren Drucks auf den Steuerdruck “X” wird die Verstellung auf das Mindest-Schluckvolumen vorgenommen. Der Steuerdruck hängt direkt vom Betriebsdruck der Anschlüsse “A” und “B” ab. Zur korrekten Änderung des Schluckvolumens wird empfohlen, die im Diagramm dargestellten Steuerdruckwerte zu beachten.

K

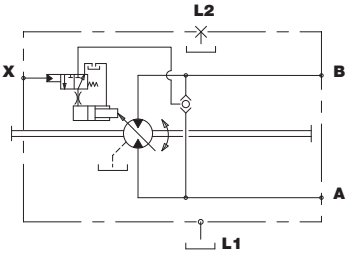
IDRAULICO A 2 POSIZIONI
HYDRAULIC, 2-POSITION
HYDRAULISCH, 2 STELLUNGEN

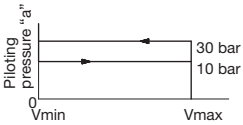




INGRESSO *INLET* EINGANG	ROTAZIONE *DIRECTION* DREHRICHTUNG
A	DESTRA *RIGHT* RECHTS
B	SINISTRA *LEFT* LINKS

X	Elettrovalvola *Solenoid Valve* Magnetventil





Normalmente il motore é in cilindrata massima. Applicando una pressione esterna sul pilotaggio si ottiene la variazione di cilindrata alla minima.
Per una corretta variazione della cilindrata attenersi ai valori di pressione di pilotaggio riportati nel diagramma.

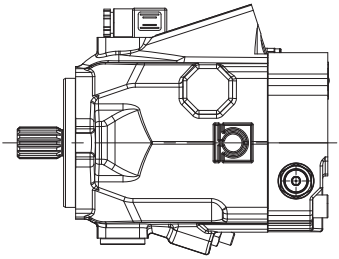
The motor is usually at maximum displacement. By applying external pressure on pilot "X" the displacement is changed to a minimum.
To correctly change displacement, follow the pilot pressure values as shown in the chart.

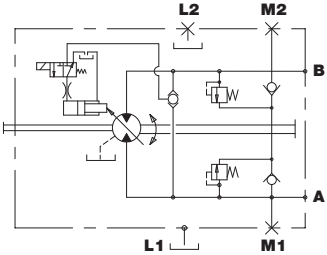
Normalerweise hat der Motor das maximale Schluckvolumen. Durch Anwendung eines äußeren Drucks auf den Steuerdruck erzielt man die Verstellung auf das Mindest-Schluckvolumen.
Zur korrekten Änderung des Schluckvolumens wird empfohlen, die im Diagramm dargestellten Steuerdruckwerte zu beachten.

ACCESSORI
ACCESSORIES
ZUBEHÖR

M

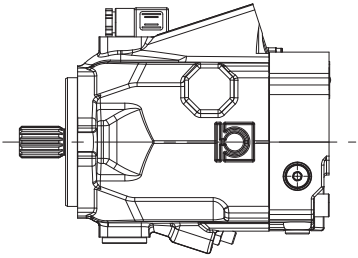
VALVOLA LIMITATRICE DI PRESSIONE E ANTICAVITAZIONE
PRESSURE LIMITER AND ANTICAVITATION VALVE
DRUCKBEGRENZUNGS UND NACHSAUGVENTIL

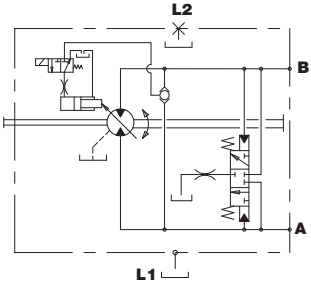




V

VALVOLA DI FLUSSAGGIO (5 - 7 l/min)
FLUSHING AND BOOST VALVE (5 - 7 l/min)
SPUL- UND SPEISEDRUCKVENTIL (5 - 7 l/min)





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ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HP V4 034 020 1 G A E 0 0 ...

PRODOTTO
PRODUCT
PRODUKT

V4 - Motori a pistoni assiali a cilindrata variabile
V4 - *Variable-displacement axial piston motors*
V4 - Axialkolbenverstellmotoren

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

034 - 046 - 050 - 058 - 065

CILINDRATA MINIMA
MIN. DISPLACEMENT
MIN. SCHLUCKVOLUMEN

ESTREMITÀ ALBERO
SHAFT PROFIL
WELLENENDE

1 - Z15 16/32" DP
9 - Z13 16/32" DP
6 - cilindrico d. 22,22
round shaft d. 22,22
zylindrisch d. 22,22

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF
N - SAE - split drenaggi GAS
SAE - GAS drains split
SAE - Split Leckölanschluss GAS
M - SAE - split drenaggi UNF
SAE - UNF drains split
SAE - Split Leckölanschluss UNF

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

TARATURA VALVOLE
VALVE SETTING
VENTILE

0 - senza valvole
no valve
ohne ventile
B - 150 bar
D - 180 bar
E - 210 bar
G - 250 bar
I - 280 bar
L - 300 bar
O - 350 bar
P - 400 bar

ACCESSORI *ACCESSORIES* ZUBEHÖR

0 - nessuno
M - Valvola limitatrice di pressione e anticavitazione
S - accessori multipli esecuzioni speciali
V - Valvola di flussaggio

0 - *no accessories*
M - *pressure limiter and anticavitation valve*
S - *multiple accessories special versions*
V - *flushing and boost valve*

0 - kein Zubehör
M - Druckbegrenzungs und Nachsaugventil
S - Zubehörkombinationen Sonderbauartenl
V - Spul- und Speisedruckventil

COMANDI
CONTROLS
STEUERUNGE

E - Elettrico (12 V) a 2 posizioni
F - Elettrico (24 V) a 2 posizioni
H - Idraulico diretto a 2 posizioni
K - Idraulico a 2 posizioni

E - *12 V electrical, 2-position*
F - *24 V electrical, 2- position*
H - *Direct hydraulic, 2-position*
K - *Hydraulic, 2-position*

E - Elektrisch (12 V), 2 Stellungen
F - Elektrisch (24 V), 2 Stellungen
H - Hydraulisch direkt, 2 Stellungen
K - Hydraulisch, 2 Stellungen

POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

A - Laterali accoppiate
L - *Laterali contrapposte*
P - Posteriori

A - *Coupled sideways*
L - *Opposite sideways*
P - *Rear*

A - Seitlich gekoppelt
L - Beidseitig
P - Hinten

M5 MV

MOTORI A PISTONI ASSIALI A CILINDRATA VARIABILE
VARIABLE DISPLACEMENT AXIAL PISTON MOTORS
AXIALKOLBENVERSTELLMOTOREN

I motori a pistoni assiali a cilindrata variabile HP sono del tipo a piatto inclinato e possono operare sia in circuito aperto che in circuito chiuso.
I sistemi di comando disponibili per la variazione della cilindrata sono:
- Comando elettrico on/off
- Servocomando idraulico a distanza

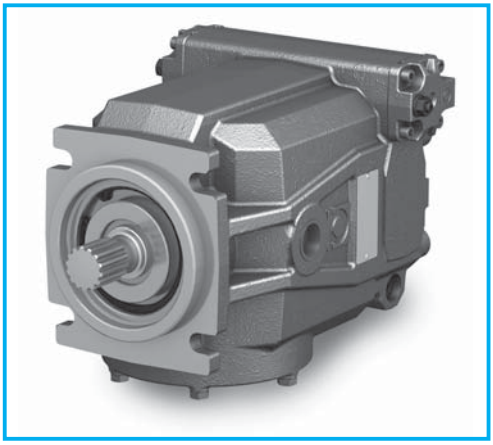
A richiesta sui motori a pistoni assiali HP a cilindrata variabile è possibile montare la valvola di scambio. Sempre a richiesta è possibile adattare la cilindrata massima e minima alle singole esigenze dell'utilizzatore.

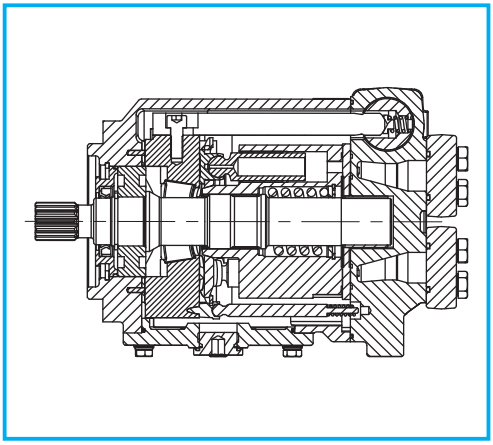
The variable-displacement axial piston motors feature a swashplate-system and may operate in either a closed open circuit.
The following control systems are available for varying displacement.
- Electric on/off control
- Remote hydraulic servo-control
Upon request, an exchange valve can be mounted on the HP variable-displacement axial piston motors. Upon request max. and min. displacement can be adapted to user requirements.

Die Axialkolbenmotoren mit verstellbarem Schluckvolumen und Schwenkscheibe sind, sowohl im offenen wie auch im geschlossenen Kreislauf, einsetzbar. der Schwenkwinkel kann mit folgenden Steuersystemen kontolliert werden:
- elektrische EIN/AUS-Steuerung
- direkte, hydraulische Servosteuerung

Auf Wunsch kann an HP-Axialkolbenverstellmotoren ein Spülventil montiert werden.
Ebenfalls auf Wunsch können max. und min. Schwenkwinkel anwenderspezifisch ausgelegt werden.

M5 MV 75•80•100•115



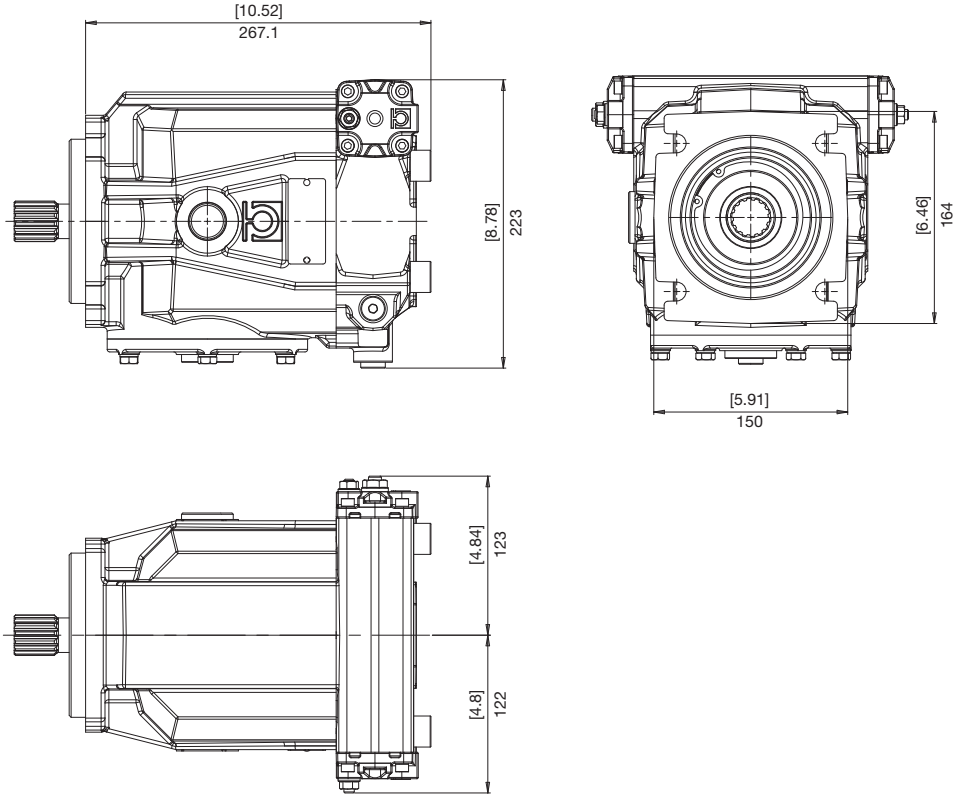


DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

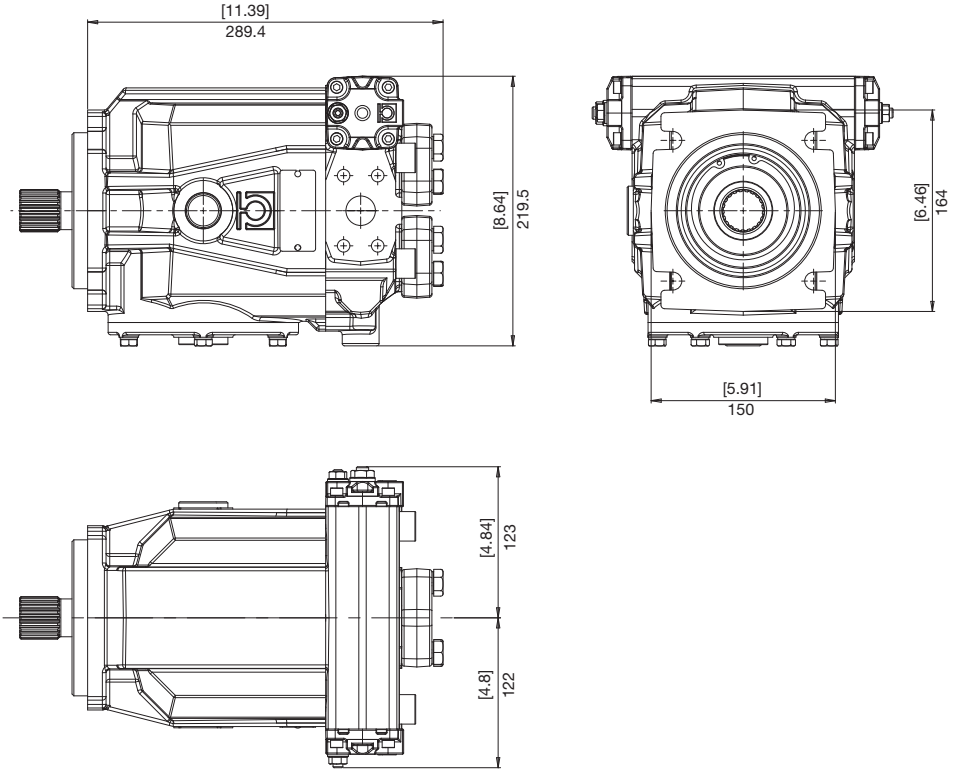
GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN (TM)		OSCILLANTE *SWASHPLATE* SCHWENKWINKEL	PRESSIONE *PRESSURE* DRUCK						VELOCITÀ DI ROTAZIONE *SPEED* DREHZAHL			MASSA *WEIGHT* GEWICHT	
				CONTINUA *CONTINUOS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX (max V)	MAX (min V)	MIN		
	cm³	in³	°	bar	psi	bar	psi	bar	psi	min⁻¹	min⁻¹	min⁻¹	kg	lbs
M5 MV	75	4,57	17	380	5510	400	5800	420	6090	3600	4000	500	40	88
	80	4,88	18	380	5510	400	5800	420	6090	3600	4000	500	40	88
	100	6,1	17	380	5510	400	5800	420	6090	3500	3800	500	48	105
	115	7,2	19	380	5510	400	5800	420	6090	3500	3800	500	48	105

DIMENSIONI
SIZE
ABMESSUNGEN

1 POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

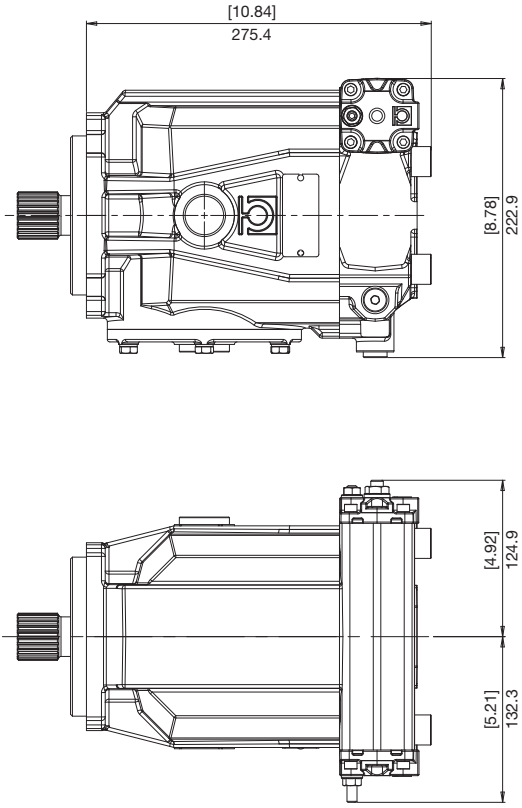


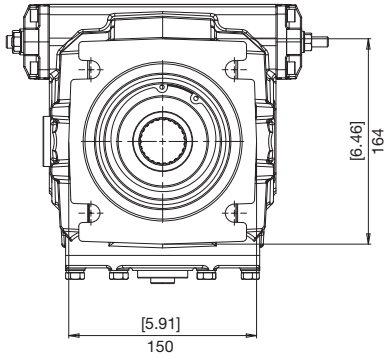
2 POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION



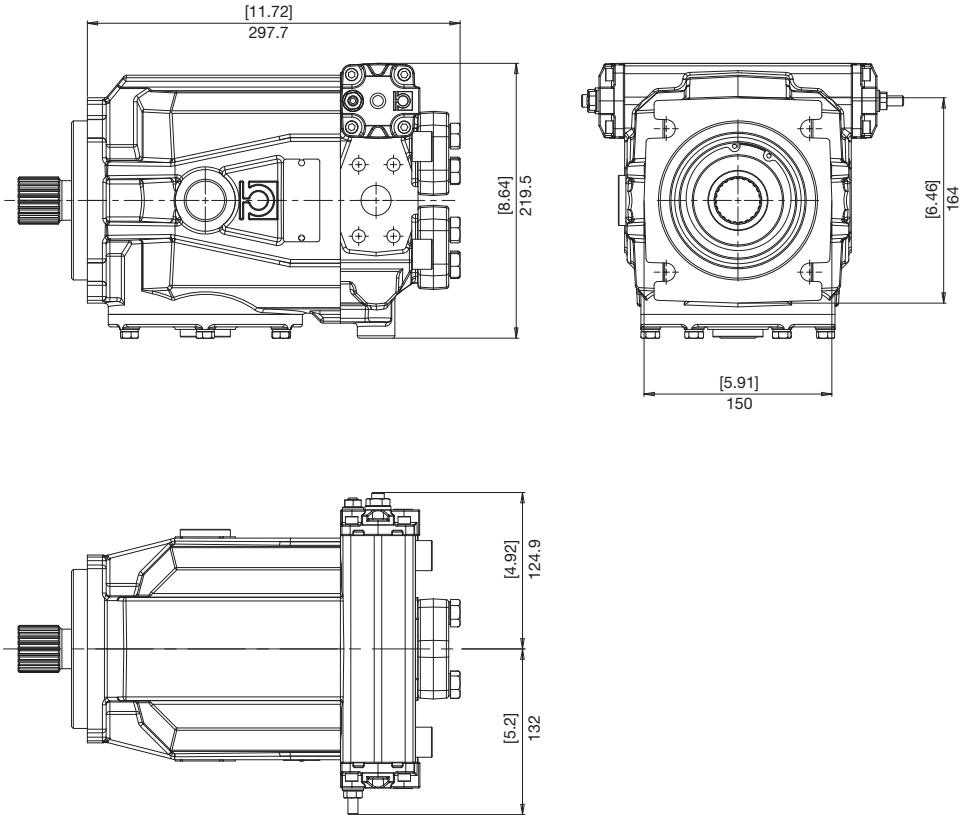
DIMENSIONI
SIZE
ABMESSUNGEN

1 POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION



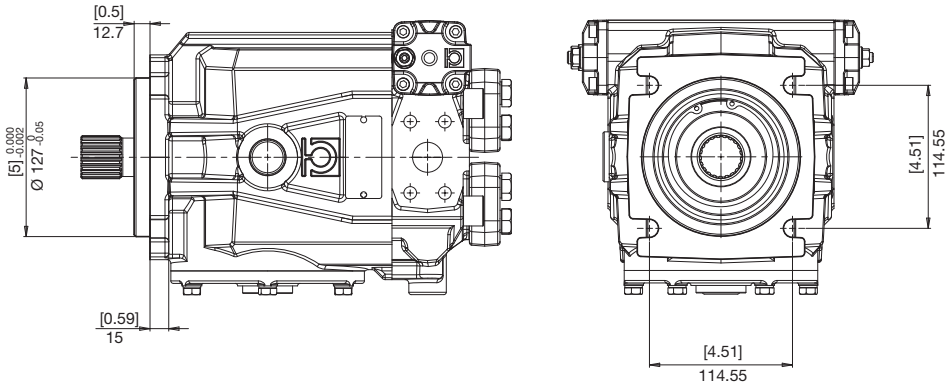


2 POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION



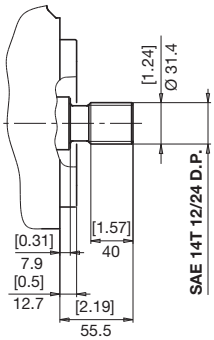
FLANGE
FLANGES
FLANSCHE

C SAE C 4 FORI
SAE C 4 HOLES
SAE C 4 BOHRUNGEN

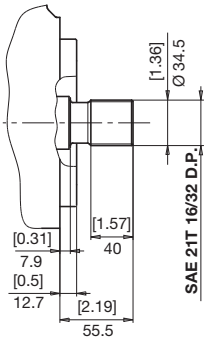


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

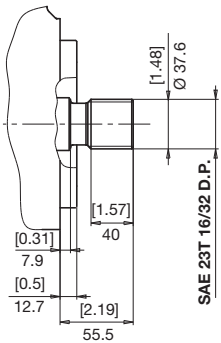
3 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
865 N•m



7 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
1085 N•m



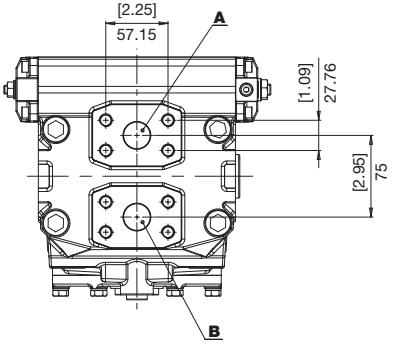
8 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT
1300 N•m



POSIZIONE BOCCHE
POSITION OF PORTS
ANSCHLUSSPOSITION

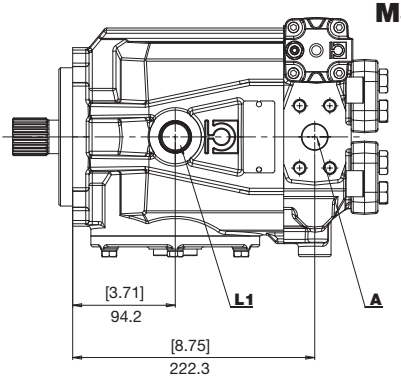
M5 MV

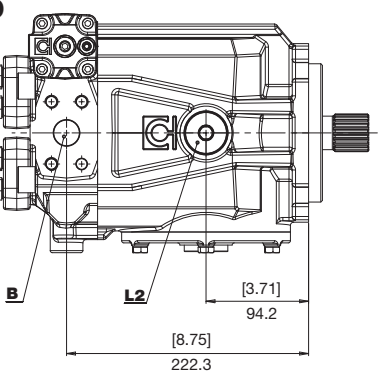
1 POSTERIORI
REAR
HINTEN



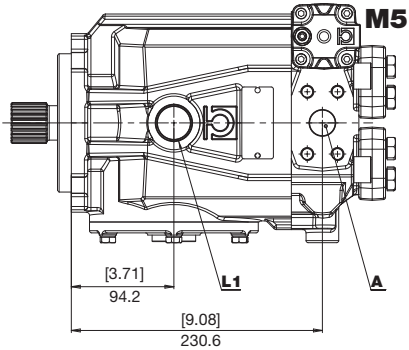
2 LATERALI CONTRAPPOSTE
OPPOSITE SIDEWAYS
BEIDSEITIG

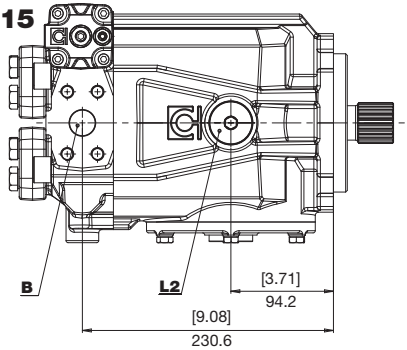
M5 MV 75-80



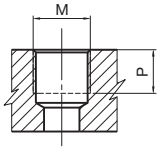


M5 MV 100-115

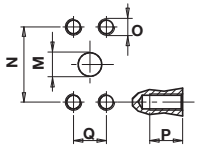




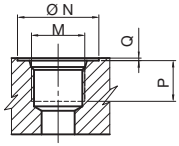
BOCCHE
PORTS
ANSCHLÜSSE



TIPO *TYPE* TYP	M		P	
		Nm	mm	in
G7	1" GAS BSPP	160	18	0,75
G2	1/4" GAS BSPP	17	12	0,35



TIPO *TYPE* TYP	M		N		P		Q		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N7	25	1	57,15	2,25	20	0,78	27,76	1,09	M12	70



TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U7	1"	49	1,93	18	0,70	0,3	0,01	1-5/16-12 UNF	160
U2	1/4"	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17

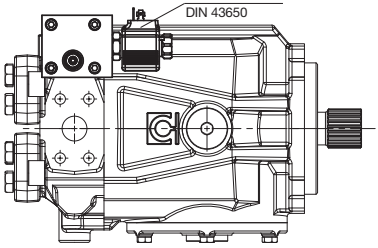
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

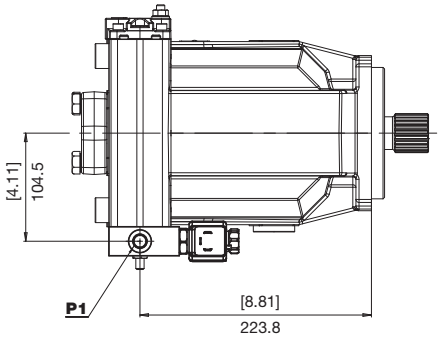
TIPO *TYPE* TYP	A - B INGRESSO/USCITA *INLET/ OUTLET* EINGANG/AUSGANG	L1 - L2 - L3 DRENAGGIO *DRAIN* LECKÖLANSCHLUSS	P1 PILOTAGGIO *PILOT* STEUERDRUCK
G	N7	G7	G2
U	N7	U7	U2

E **F**
12 V 24 V

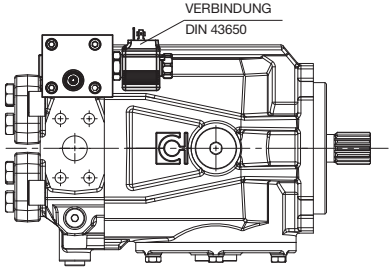
ELETTRICO A 2 POSIZIONI
ELECTRICAL, 2-POSITION
ELEKTRISCH, 2 STELLUNGEN

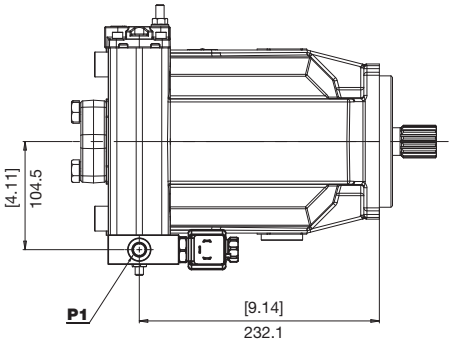
M5 MV 75-80

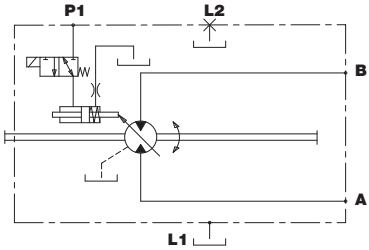




M5 MV 100-115





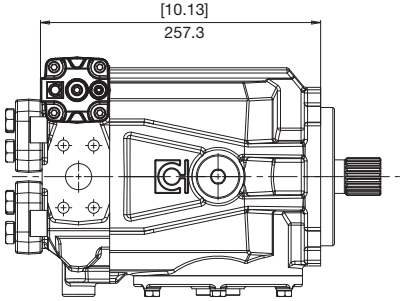


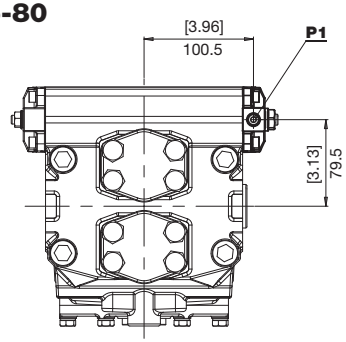
INGRESSO *INLET* EINGANG	ROTAZIONE *DIRECTION* DREHRICHTUNG
A	SINISTRA *LEFT* LINKS
B	DESTRA *RIGHT* RECHTS

P1	Pilotaggio (max 30 bar) *Pilot (max 30 bar)* Steuerdruck (max 30 bar)

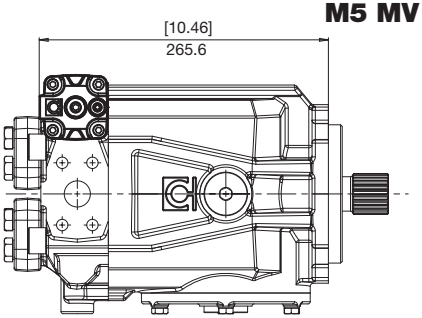
K IDRAULICO A 2 POSIZIONI
HYDRAULIC, 2-POSITION
HYDRAULISCH, 2 STELLUNGEN

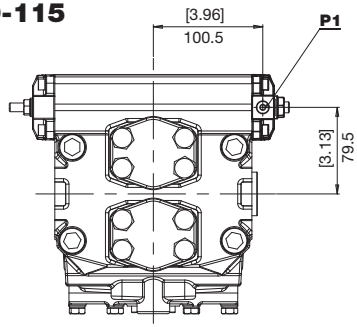
M5 MV 75-80

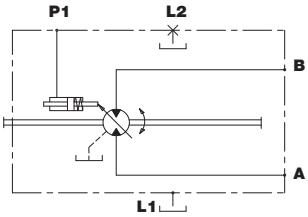




M5 MV 100-115





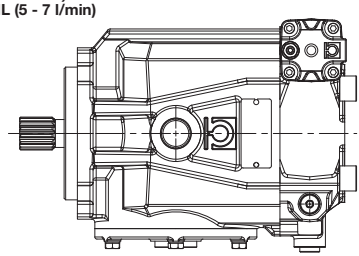


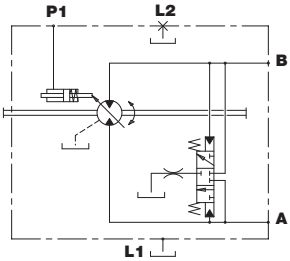
P1	Pilotaggio (max 30 bar) *Pilot (max 30 bar)* Steuerdruck (max 30 bar)

INGRESSO *INLET* EINGANG	ROTAZIONE *DIRECTION* DREHRICHTUNG
A	SINISTRA *LEFT* LINKS
B	DESTRA *RIGHT* RECHTS

V

VALVOLA DI FLUSSAGGIO (5 - 7 l/min)
FLUSHING AND BOOST VALVE (5 - 7 l/min)
SPUL- UND SPEISEDRUCKVENTIL (5 - 7 l/min)





ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

M5 MV | **100** | **115/40** | **E** | **B** | **1** | **B** | **8** | **-** | **-**

SERIE
SERIES
SERIE

CILINDRATE NOMINALI
RATED DISPLACEMENT
NENNFÖRDERVOLUMEN
75 - 100

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN
75/30 - 80/30 - 100/40 - 115/40

COMANDI
CONTROLS
STEUERUNGE

E = Comando elettrico (12V)
F = Comando elettrico (24V)
K = Servocomando idraulico a distanza

E *= Electric control (12V)*
F *= Electric control (24V)*
K *= Remote servo-control*

E = Elektrische Steuerung (12V)
F = Elektrische Steuerung (24V)
K = Fern-Servosteuerung

TIPO DI OSCILLANTE
SWASHPLATE TYPE
SCHWENKSCHEIBENLAGERUNG

B = oscillante su bronzine
B *= mounted on bronze bearings*
B = Bronze-Gleitgelagert

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI
ACCESSORIES
ZUBEHÖR

V = Valvola di flussaggio
V *= flushing and boost valve*
V = Spul- und Speisedruckventil

ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE

3 = Z14 12/24" DP
7 = Z21 16/32" DP
8 = Z23 16/32" DP

SENSO DI ROTAZIONE
DIRECTION OF ROTATION
DREHRICHTUNG

B = Bidirezionale (Std)
B *= Bidirectional (Std)*
B = Bidirektional (Std)

POSIZIONE BOCCHE
POSITION OF PORT
ANSCHLUSSPOSITION

1 = Utilizzi A - B posteriori
2 = Utilizzi A - B laterali - contrapposti

1 *= Users A - B rear*
2 *= Users A - B opposite sideways*

1 = Verbraucher A - B hinten
2 = Verbraucher A - B beidseitig

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