# POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO A CILINDRATA VARIABILE

# *VARIABLE DISPLACEMENT CLOSED CIRCUIT AXIAL PISTON PUMPS*

# AXIALKOLBENVERSTELLPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

# HM PLB

398SCP0013A01

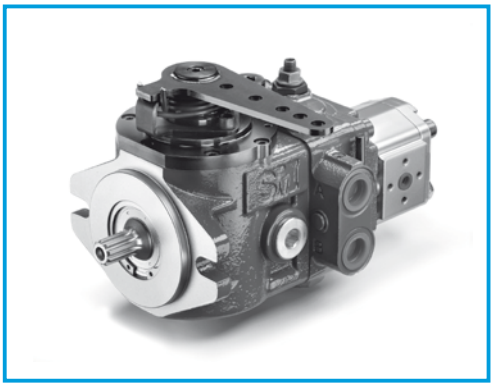
# HM PLB

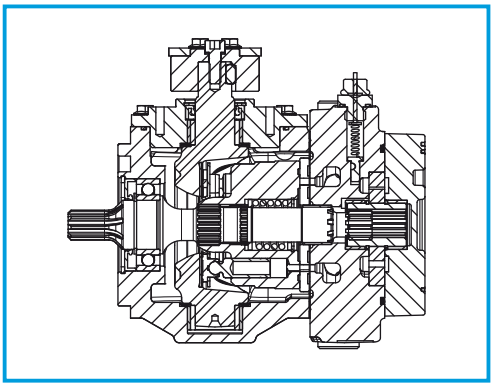
## POMPE A PISTONI ASSIALI A CILINDRATA VARIABILE
## *VARIABLE DISPLACEMENT AXIAL PISTON PUMPS*
## AXIALKOLBENVERSTELLPUMPEN

Le pompe a pistoni assiali serie HM PLB 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 HM PLB 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 HM PLB 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 | | |
| | $cm^3$ | $in^3$ | bar | psi | bar | psi | bar | psi | $min^{-1}$ | $min^{-1}$ | kg | lbs |
| HM PLB | 7 | 0,43 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 8 | 0,49 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 9 | 0,55 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 10 | 0,61 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 11 | 0,67 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 12 | 0,73 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 13 | 0,80 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 14 | 0,85 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 16 | 0,98 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |
| | 18 | 1,10 | 210 | 3045 | 230 | 3335 | 250 | 3625 | 3600 | 500 | 8,5 | 18,7 |

PRESSIONE CONTINUA: pressione media del normale range di pressioni di funzionamento
PRESSIONE INTERMITTENTE: pressione che può essere mantenuta per periodi brevi (circa il 10% del ciclo di lavoro)
PRESSIONE DI PICCO: pressione massima permessa regolata dalle valvole di max.(max. 1-2% del ciclo di lavoro)

*CONTINUOUS PRESSURE: average pressure of the normal operating pressure range*
*INTERMITTENT PRESSURE: pressure that can be maintained for short periods (for about 10% of the work cycle)*
*PEAK PRESSURE: maximum allowable pressure regulated by maximum relief valves (max 1-2% of the work cycle)*

KONTINUIERLICHER DRUCK: durchschnittlicher Druck der normalen Betriebsdruckreihe
INTERMITTIERENDER DRUCK: Druck, der für kurze Zeitabschnitte beibehalten werden kann (etwa 10% des Betriebszyklus)
SPITZENDRUCK: zugelassener Höchstdruck, von den Höchstdruckventilen geregelt (max. 1-2% des Betriebszyklus)

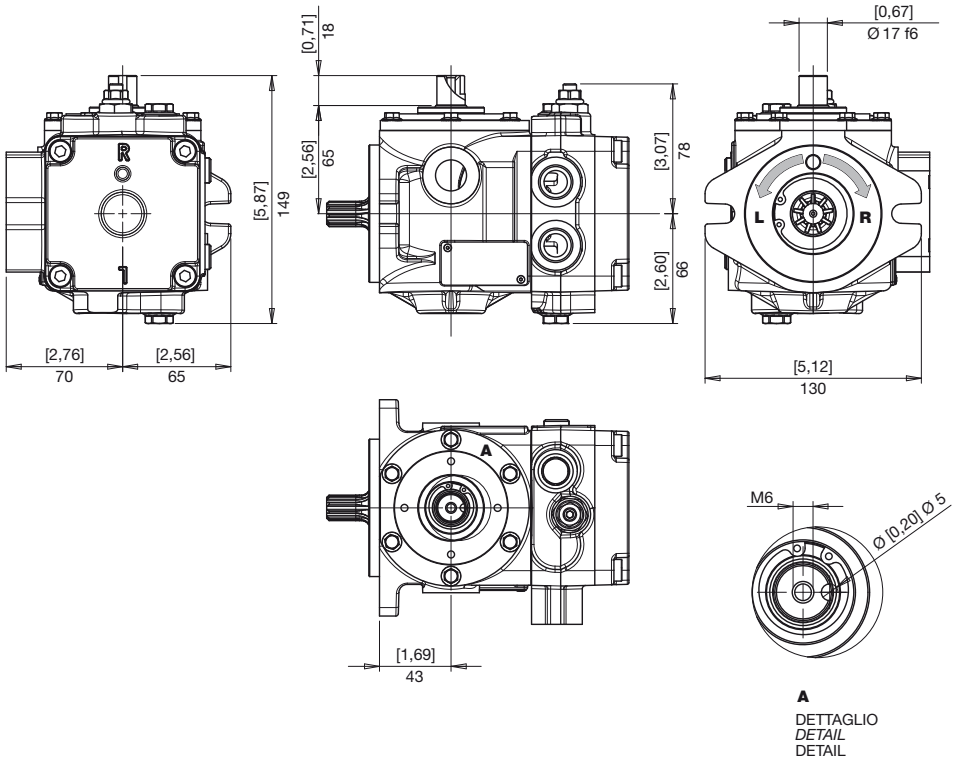
**POMPA DI ALIMENTAZIONE**
***BOOST PUMP***
**SPEISEPUMPE**

| HM PLB | CILINDRATA *DISPLACEMENT* FORDERVOLUMEN | | PRESSIONE *PRESSURE* DRUCK | |
|---|---|---|---|---|
| | $cm^3$ | $in^3$ | bar | psi |
| POMPA SINGOLA *SINGLE PUMP* PUMPE | 5 | 0.30 | 12 | 174 |
| POMPE TANDEM (una sovralimentazione) *TANDEM PUMPS (one boost pump)* MEHRFACHPUMPEN (eine Speisepumpe) | 8 | 0.48 | 12 | 174 |
| POMPE TANDEM (due sovralimentazioni) *TANDEM PUMPS (two boost pumps)* MEHRFACHPUMPEN (zwei Speisepumpen) | 5+5 | 0.30+0.30 | 12 | 174 |

**MOMENTO POLARE DI INERZIA**
***INERTIAL MASS***
**TRÄGHEITSMOMENT**

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

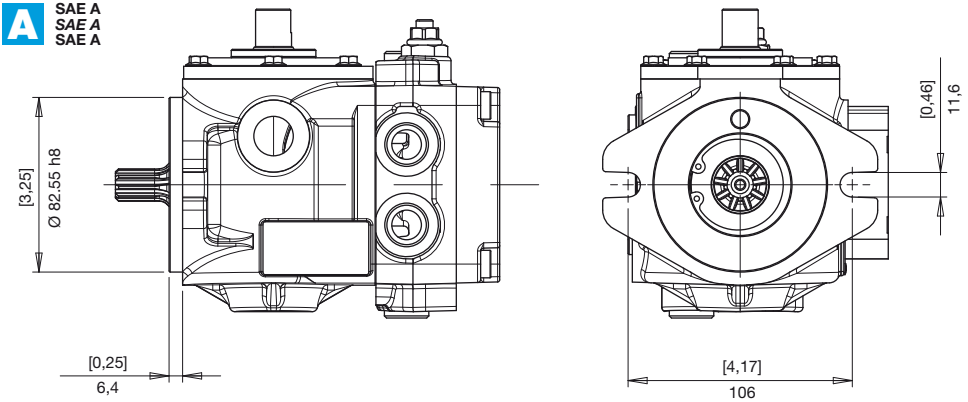
## DIMENSIONI
## *SIZE*
## ABMESSUNGEN



## FLANGE
## *FLANGES*
## FLANSCHE

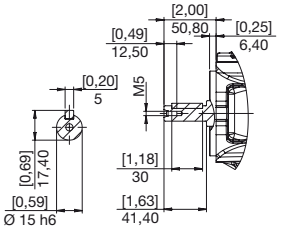
**HM PLB**

**A** SAE A
*SAE A*
SAE A

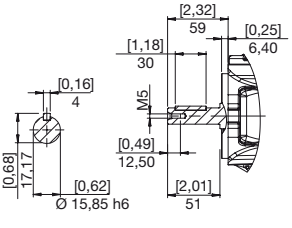



## ESTREMITÀ ALBERI
## *SPLINE SHAFTS*
## WELLENPROFILE

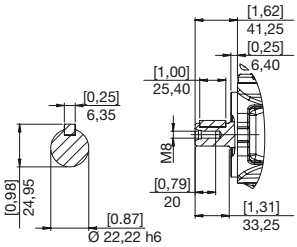
**A** COPPIA MAX
*MAX TORQUE*
MAX DREHMOMENT **140 N•m**



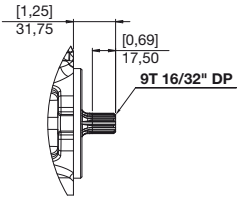

**P** COPPIA MAX
*MAX TORQUE*
MAX DREHMOMENT **80 N•m**



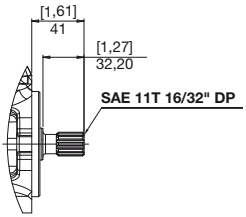

**J** COPPIA MAX
*MAX TORQUE*
MAX DREHMOMENT **220 N•m**



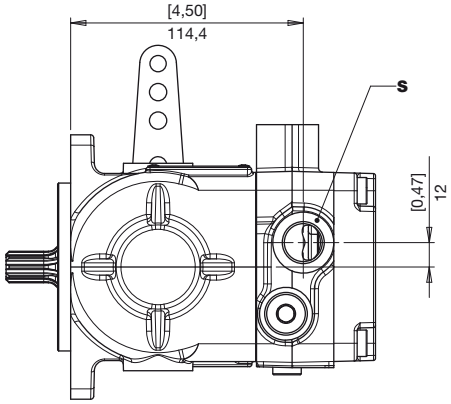

**V** COPPIA MAX
*MAX TORQUE*
MAX DREHMOMENT **120 N•m**

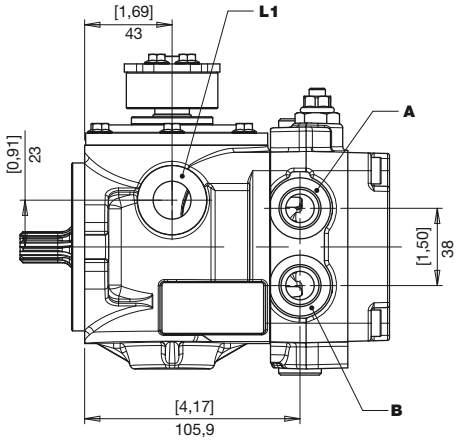


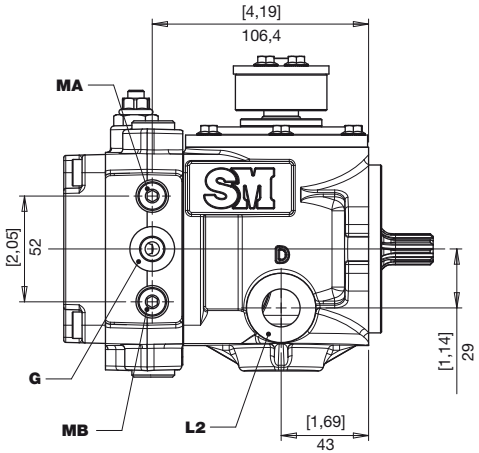

**X** COPPIA MAX
*MAX TORQUE*
MAX DREHMOMENT **170 N•m**



## BOCCHE
## *PORTS*
## ANSCHLÜSSE



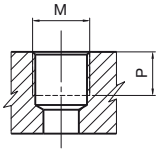



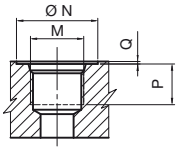

| | | | |
|---|---|---|---|
| **A**<br>**B** | Utilizzi<br>*Use*<br>Verbraucher | **G** | Presa bassa pressione<br>*Test port boost pressure*<br>Messanschluß Speisedruck |
| **L1**<br>**L2** | Drenaggi<br>*Drain*<br>Leckölanschluss | **MA**<br>**MB** | Presa alta pressione<br>*Test port high pressure*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

## BOCCHE
## *PORTS*
## ANSCHLÜSSE

**HM PLB**




| 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 |



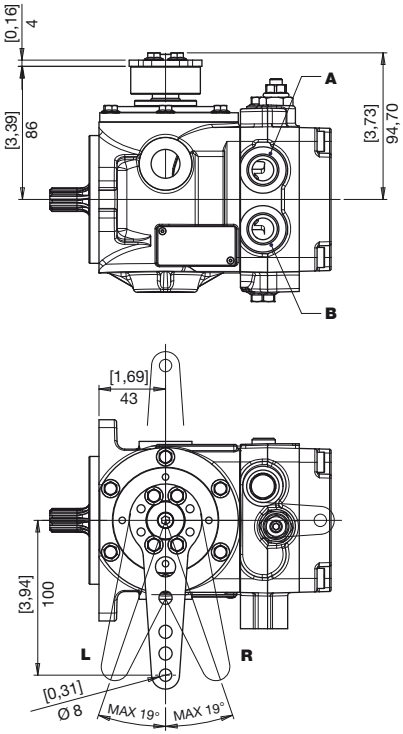

| TIPO *TYPE* TYP | DIMENSIONE *SIZE* GRÖSSE | N | | P | | Q | | M | |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | in | mm | in | mm | in | | Nm |
| **U2** | 1/4” | 20 | 0,79 | 12 | 0,47 | 0,3 | 0,01 | 7/16-20 UNF | 17 |
| **U5** | 5/8” | 34 | 1,34 | 18 | 0,71 | 0,3 | 0,01 | 3/4-16 UNF | 70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

## COMBINAZIONI
## *COMBINATIONS*
## KOMBINATIONEN

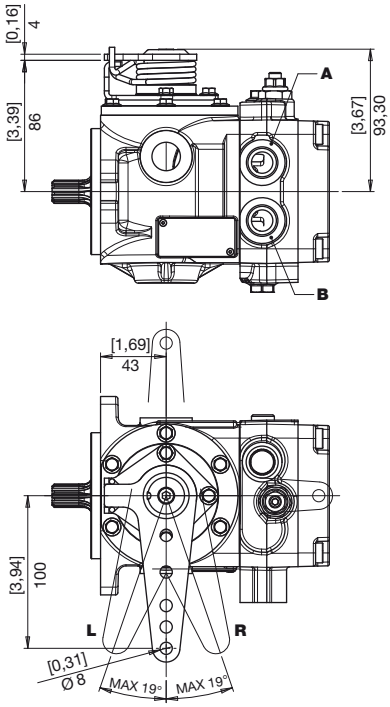
| TIPO *TYPE* TYP | S ASPIRAZIONE *INLET* SAUGSEITE | A - B MANDATA *OUTLET* AUSGANG | L1 - L2 DRENAGGI *DRAIN* LECKÖLANSCHLUSS | PRESE PRESSIONE PRESSURE INTAKE DRUCKANSCHLÜSSE | |
|---|---|---|---|---|---|
| | | | | MA-MB | G |
| **G** | G4 | G4 | G4 | G1 | G2 |
| **U** | U5 | U5 | U5 | G1 | U2 |

# COMANDI
# *CONTROLS*
# STEUERUNGEN

## L MANUALE SENZA AZZERATORE
## *MANUAL WITHOUT ZEROING*
## MANUELL OHNE NULLSTELLUNG

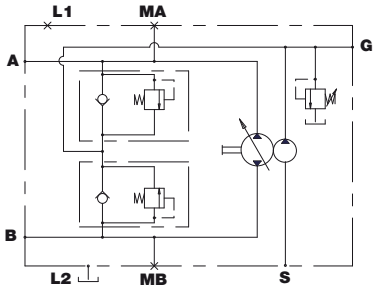



## M MANUALE CON AZZERATORE
## *MANUAL WITH ZEROING*
## MANUELL MIT NULLSTELLUNG




## L M

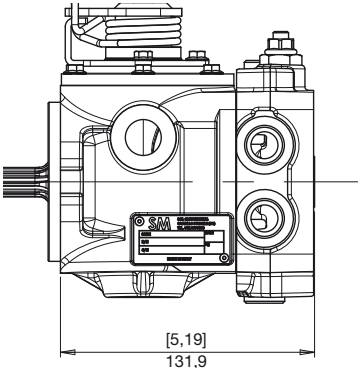
| ROTAZIONE *DIRECTION* DREHRICHTUNG | POSIZIONE LEVA *LEVER POSITION* HEBELSTELLUNG | MANDATA *OUTPUT* AUSGANG | ASPIRAZIONE *SUCTION* SAUGSEITE |
|---|---|---|---|
| DESTRA *RIGHT* RECHTS | R | A | B |
| | L | B | A |
| SINISTRA *LEFT* LINKS | R | B | A |
| | L | A | B |



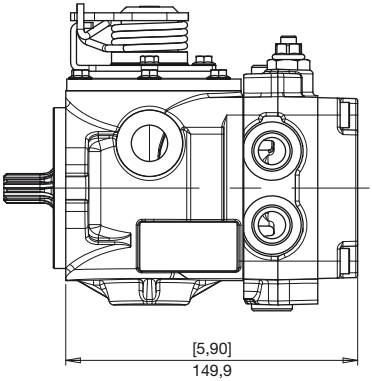
## PREDISPOSIZIONI
## *VERSION*
## BAUART

**HM PLB**

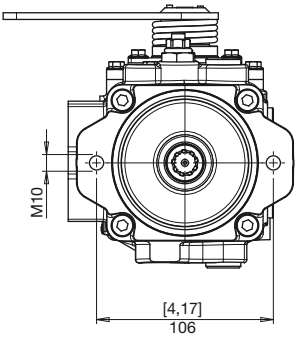
**0** **NESSUNA PREDISPOSIZIONE SENZA POMPA SOVRALIMENTAZIONE**
***NO AUXILIARY MOUNT WITHOUT CHARGE PUMP***
**OHNE ANSCHLUSSFLANSCH, OHNE SPEISEPUMPE**



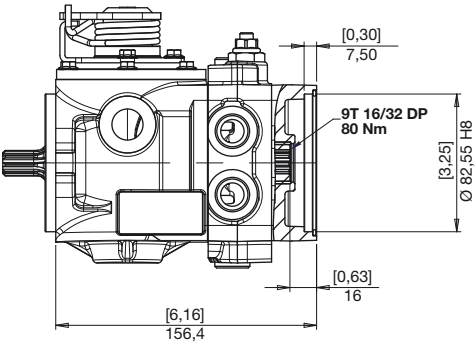

**1** **NESSUNA PREDISPOSIZIONE CON POMPA SOVRALIMENTAZIONE**
***NO AUXILIARY MOUNT WITH CHARGE PUMP***
**OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE**




**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**

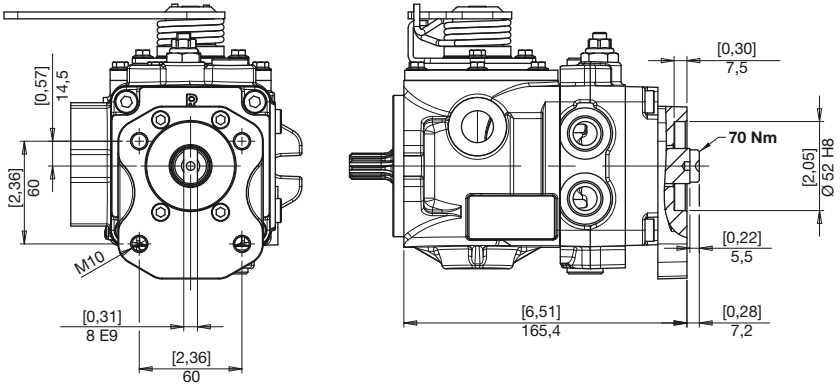



Su richiesta è possibile avere la flangia ruotata di 90°
*On request it is possible to have the flange rotated by 90°*
Auf Wunsch kann der Flansch eine um 90° gedrehte Stellung einnehmen.

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

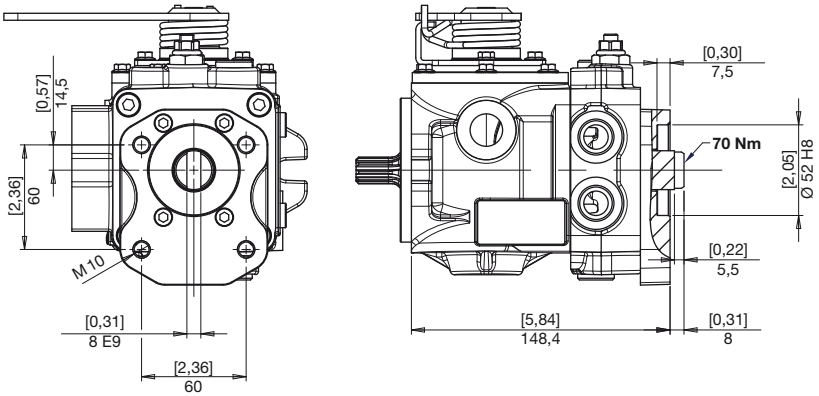
## 4

**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**

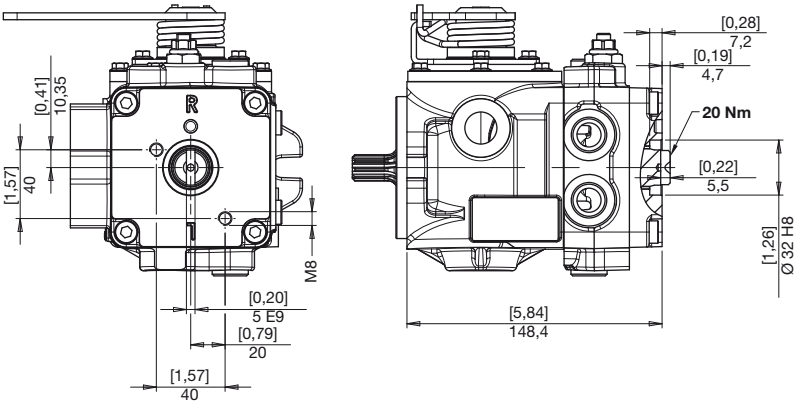



## 7

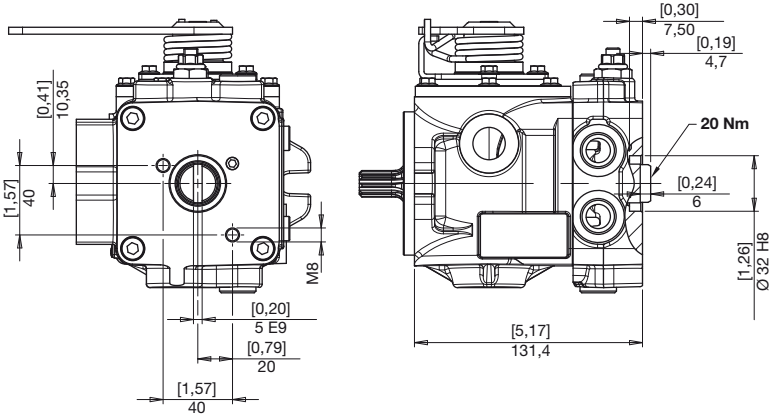
**POMPA INGRANAGGI GRUPPO 2 FLANGIA TEDESCA D 52 SENZA POMPA SOVRALIMENTAZIONE**
***GROUP 2 GEAR PUMP GERMAN FLANGE D 52 WITHOUT CHARGE PUMP***
**BAUREIHE 2 ZAHNRADPUMPE DIN NORM FLANSCHE D 52 OHNE SPEISEPUMPE**



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

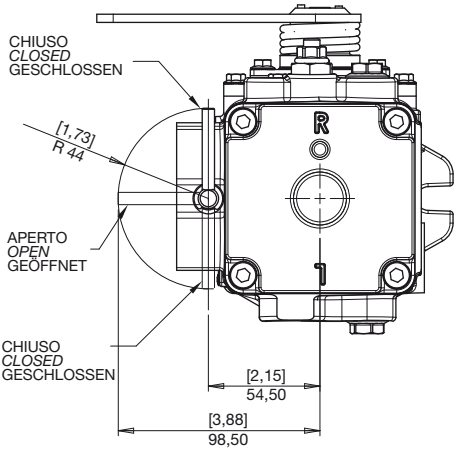


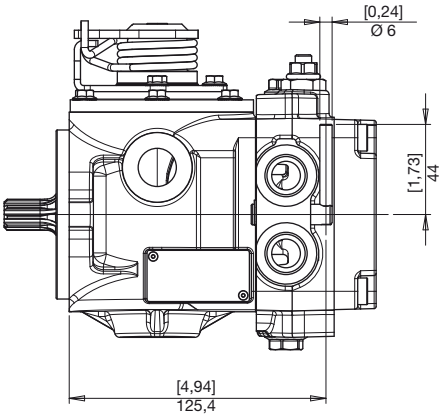

## 9 POMPA INGRANAGGI GRUPPO 1 SENZA POMPA SOVRALIMENTAZIONE
***GROUP 1 GEAR PUMP WITHOUT CHARGE PUMP***
**BAUREIHE 1 ZAHNRADPUMPE OHNE SPEISEPUMPE**

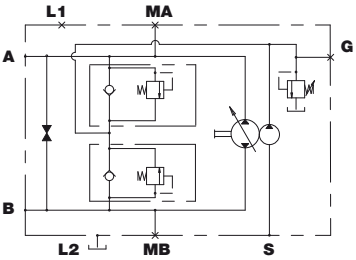


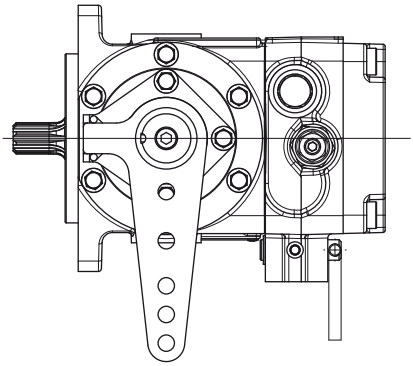
## ACCESSORI
## *ACCESSORIES*
## ZUBEHÖR

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



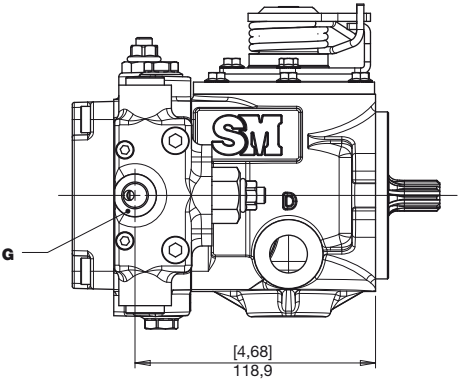



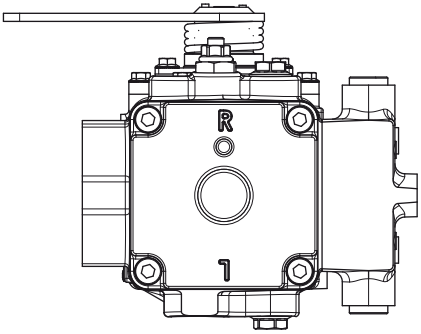



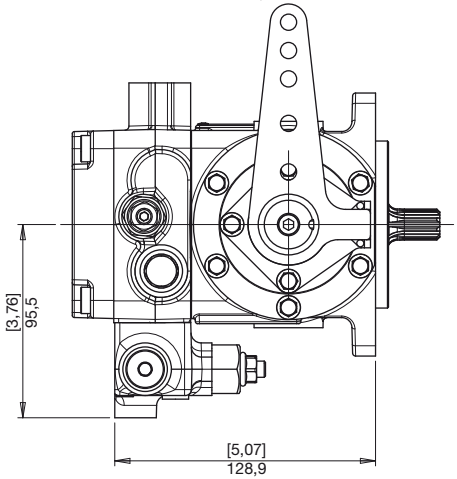



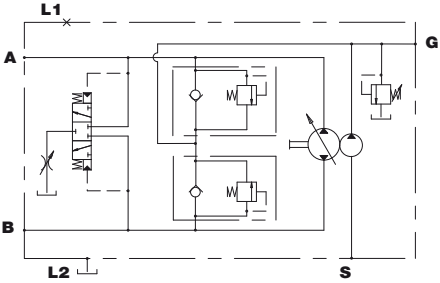
**M**

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



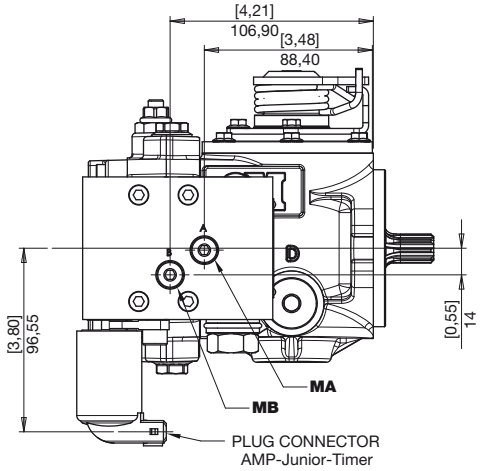



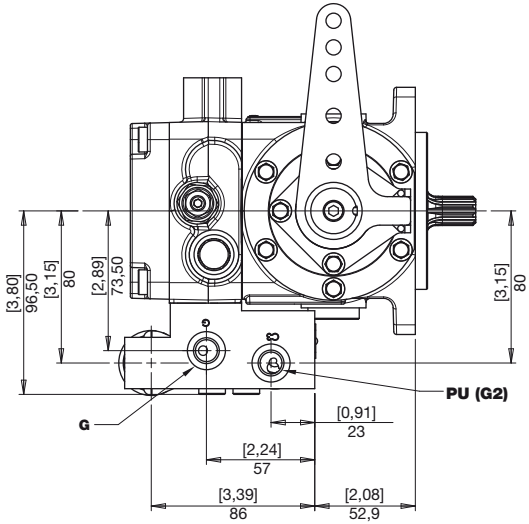



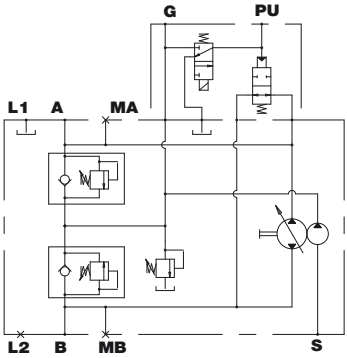

| ROTAZIONE *DIRECTION* DREHRICHTUNG | POSIZIONE LEVA *LEVER POSITION* HEBELSTELLUNG | MANDATA *OUTPUT* AUSGANG | ASPIRAZIONE *SUCTION* SAUGSEITE |
|---|---|---|---|
| DESTRA *RIGHT* RECHTS | R | A | B |
| | L | B | A |
| SINISTRA *LEFT* LINKS | R | B | A |
| | L | A | B |

È possibile richiedere la leva in posizioni diverse, ad intervalli di 90°
*Different lever position available 90° step*
Die Hebelposition kann in Schritten von 90° gedreht werden

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

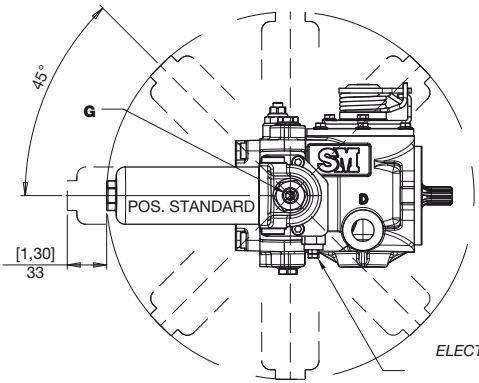


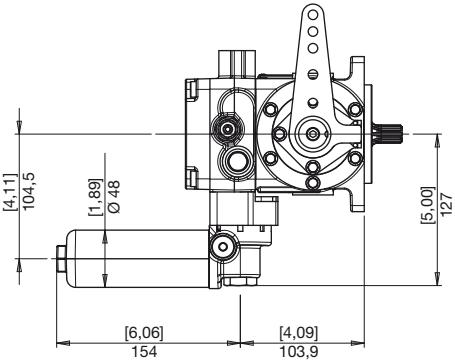



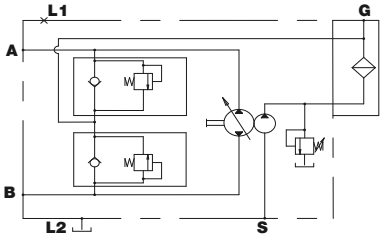

| | |
|---|---|
| **PU** | Pilotaggio sblocco freno (G2)<br>*Brake opening pressure (G2)*<br>Bremse offnung druck (G2) |

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




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



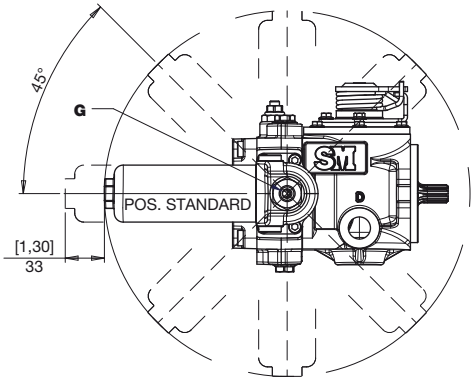

| | | |
|---|---|---|
| **G** | Presa olio filtrato<br>*Filtered oil intake*<br>Anschluss filtriertes Öl | G 1/4" BSPP<br>7/16-20 UNF |

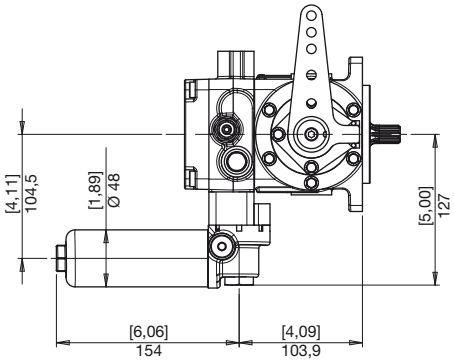
È possibile richiedere il filtro ruotato ad intervalli di 45°
*You can ask the filter rotated at intervals of 45°*
Sie können den Filter bei 45 ° -Schritten gedreht gelten

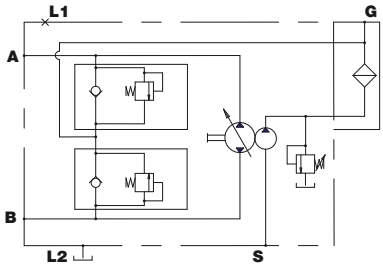
Su richiesta vengono forniti i tappi valvole con prese alta pressione G1/8"BSPP
*On request we supply relief valve plugs with pressure intake G1/8" BSPP*
Auf Wunsch werden die Ventile mit Kappen aus Hochdruck -G1/8" BSPP vorgesehen

## ACCESSORI
## *ACCESSORIES*
## ZUBEHÖR

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




| | | |
|---|---|---|
| **G** | Presa olio filtrato<br>*Filtered oil intake*<br>Anschluss filtriertes Öl | G 1/4" BSPP<br>7/16-20 UNF |
| **MA**<br>**MB** | Presa alta pressione<br>*Test port high pressure*<br>Messanschluß Hochdruck | G 1/8" BSPP |

È possibile richiedere il filtro ruotato ad intervalli di 45°
*You can ask the filter rotated at intervals of 45°*
Sie können den Filter bei 45 ° -Schritten gedreht gelten

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

**HM PL B 07 R S J G L B 1 0 ...**

**PRODOTTO**
***PRODUCT***
**PRODUKT**

**SERIE**
***SERIES***
**SERIE**

**CILINDRATA**
***DISPLACEMENT***
**FÖRDERVOLUMEN**

| | |
|---|---|
| **07** = 7 cc | **12** = 12 cc |
| **08** = 8 cc | **13** = 13 cc |
| **09** = 9 cc | **14** = 14 cc |
| **10** = 10 cc | **16** = 16 cc |
| **11** = 11 cc | **18** = 18 cc |

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

Special for high torque
**R** - SAE 13T 16/32" DP

**BOCCHE**
***PORTS***
**ANSCHLÜSSE**

**G** - Gas
**U** - UNF

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

**L** - Manuale senza azzeratore
**M** - Manuale con azzeratore
**A** - Manuale con azzeratore (Molla Hard)

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

**L** - Manuell ohne Nullstellung
**M** - Manuell mit Nullstellung
**A** - Manuell mit Nullstellung

**TARATURA VALVOLE**
***VALVE SETTING***
**VENTILE**

**B** - 150 bar
**D** - 180 bar
**E** - 210 bar
**H** - 230 bar
**G** - 250 bar

**ESECUZIONI SPECIALI**
***SPECIAL VERSIONS***
**SONDERBAUARTEN**

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

**0** - nessuno
**B** - By-pass
**M** - Valvola di flussaggio taratura regolabile
**U** - Valvola di flussaggio taratura fissa
**W** - Valvola 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 adjustable setting
***U*** - Flushing and boost valve fixed setting
***W*** - By-pass valve+ brake release
***X*** - filter with electric clogging indicator
***Y*** - filter without electric clogging indicator

**0** - Ohne Zubehör
**B** - By-pass
**M** - Spül- und speisedrunkventil
**U** - Spül- und speisedrunkventil
**W** - By-pass ventil + bremse lösen
**X** -Filter mit Verstopfungsanzeiger
**Y** - Filter ohne Verstopfungsanzeiger

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

**0** - nessuna, senza pompa di alimentazione
**1** - nessuna, con pompa di alimentazione 5cc
**A** - nessuna, con pompa di alimentazione 8cc
**5** - SAE A, senza pompa di alimentazione
**2** - SAE A, con pompa di alimentazione 5cc
**B** - SAE A, con pompa di alimentazione 8cc
**7** - GR2 senza pompa di alimentazione
**4** - GR2 con pompa di alimentazione 5cc
**9** - GR1, senza pompa di alimentazione
**8** - GR1, con pompa di alimentazione 5cc
**N** - predisp. tandem, senza pompa di alimentazione
**Z** - predisp. tandem, con pompa di alimentazione 5cc
**P** - predisp. tandem, con pompa di alimentazione 8cc

***0*** - *No auxiliary mount without charge pump*
***1*** - *No auxiliary mount with charge pump 5cc*
***A*** - *No auxiliary mount with charge pump 8cc*
***5*** - *SAE A mounting without charge pump*
***2*** - *SAE A mount with charge pump 5cc*
***B*** - *SAE A mount with charge pump 8cc*
***7*** - *GR2 mount without charge pump*
***4*** - *GR2 mount with charge pump 5cc*
***9*** - *GR1 mount without charge pump*
***8*** - *GR1 mount with charge pump 5cc*
***N*** - *Tandem pump mount without charge pump*
***Z*** -*Tandem pump mount with charge pump 5cc*
***P*** - *Tandem pump mount with charge pump 8cc*

**0** - Ohne Anschlussflansch, ohne Speisepumpe
**1** - Ohne Anschlussflansch, mit Speisepumpe 5cc
**A** - Ohne Anschlussflansch, mit Speisepumpe 8cc
**5** - SAE A-Anschlussflansch, ohne Speisepumpe
**2** - SAE A -Anschlussflansch, mit Speisepumpe 5cc
**B** - SAE A -Anschlussflansch, mit Speisepumpe 8cc
**7** - GR2-Anschlussflansch, ohne Speisepumpe
**4** - GR2 -Anschlussflansch, mit Speisepumpe 5cc
**9** - GR1 ohne Speisepumpe
**8** - GR1 mit Speisepumpe 5cc
**N** - Vorbereitet für Tandempumpe, ohne Speisepumpe
**Z** - Vorbereitet für Tandempumpe, mit Speisepumpe 5cc
**P** - Vorbereitet für Tandempumpe, mit Speisepumpe 8cc

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

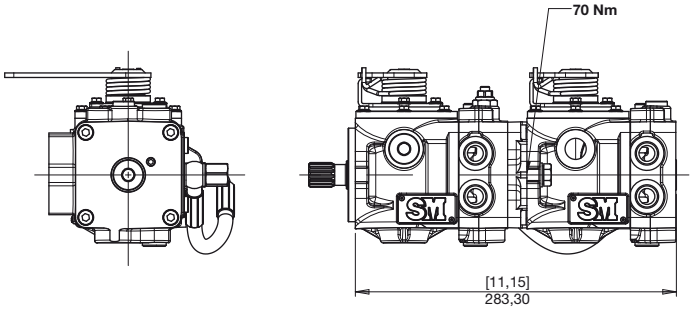
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

*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

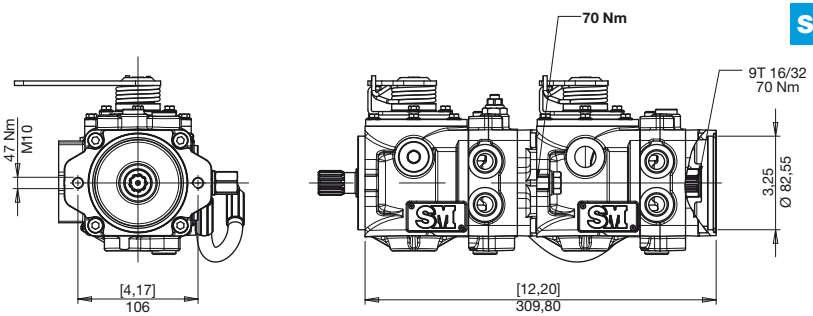
| HM | PL | B | 08 | R | T | X | G | M | E | P | O | HM | PL | B | 08 | R | C | V | G | M | E | B | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|




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

| HM | PL | B | 08 | R | T | X | G | M | E | P | O | HM | PL | B | 08 | R | C | V | G | M | E | B | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**SAE A**




Nelle pompe tandem con una pompa di sovralimentazione è obbligatorio installare nell'impianto un tubo di collegamento (non fornito) tra un drenaggio del primo stadio ed un drenaggio del secondo stadio.

- La configurazione Tandem standard è con pompa da 8cc nel primo stadio.
- Con albero rinforzato è disponibile una sola configurazione con pompa da 8cc nel secondo stadio.

*In the tandem pumps with one boost pump it is mandatory to assemble in the plant a connecting pipe (not supplied) between a drain of the first stage and a drain of the second one.*

- *The standard Tandem configuration is with a 8cm³ pump in the first stage.*
- *With reinforced shaft only one configuration with 8cm³ pump in the second stage is available.*

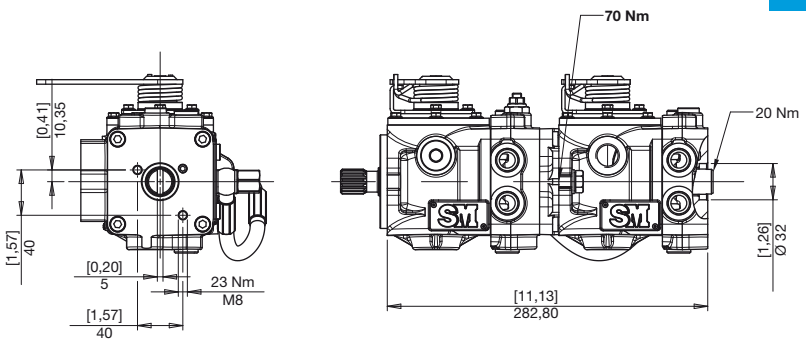
Bei den Tandempumpen mit einer Verstärkerpumpe muss in der Anlage ein Verbindungsrohr (nicht beigestellt) zwischen einer Drainage der ersten Stufe und einer Drainage der zweiten Stufe installiert werden.

- Die serienmäßige Tandemversion hat eine 8cc Pumpe in der ersten Stufe.
- Mit verstärkter Welle ist nur eine einzige Ausführung mit 8cc in der zweiten Stufe erhältlich.

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

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM | PL | B | 08 | R | T | X | G | M | E | P | O | HM | PL | B | 08 | R | C | V | G | M | E | B | 9 |

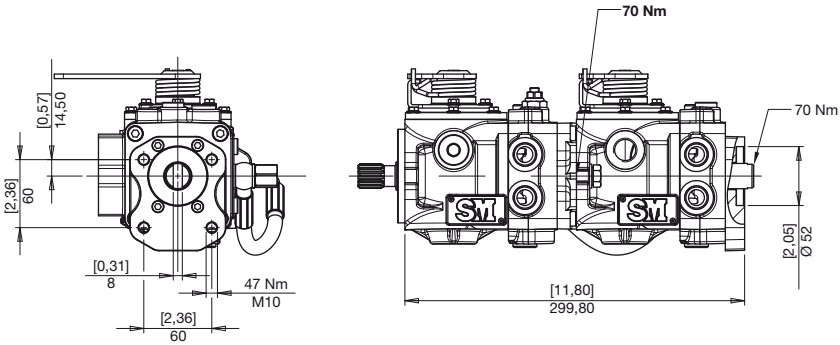
**GR1**




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

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HM | PL | B | 08 | R | T | X | G | M | E | P | O | HM | PL | B | 08 | R | C | V | G | M | E | B | 7 |

**GR2**

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