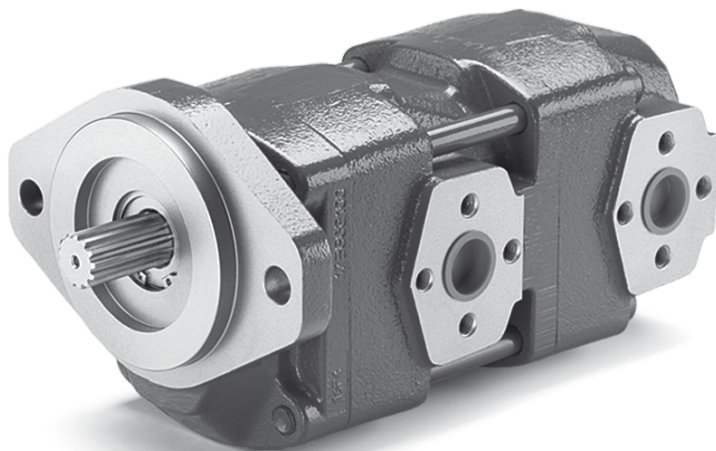

**POMPE E MOTORI AD INGRANAGGI
SERIE G**

***GEARS PUMPS AND MOTORS
SERIES G***

**ZAHNRADPUMPEN,-MOTOREN
BAUREIHE G**

GG016



INDICE
INDEX
INHALTSVERZEICHNIS

| | |
|--|---|
| ISTRUZIONI GENERALI DI IMPIEGO <i>OPERATING INSTRUCTIONS</i> ALLGEMEINE GEBRAUCHSANWEISUNGEN | 3 |
|--|---|

| | |
|---|---|
| INTRODUZIONE <i>INTRODUCTION</i> EINLEITUNG | 4 |
|---|---|

| | |
|--|---|
| PROGRAMMA DI PRODUZIONE <i>PRODUCTION RANGE</i> LIEFERPROGRAMM | 7 |
|--|---|

| | |
|---------------|----------|
| HPG..2 | 8 |
|---------------|----------|

| | |
|---------------|-----------|
| HPG..3 | 14 |
|---------------|-----------|

| | |
|---------------|-----------|
| HPG..4 | 20 |
|---------------|-----------|

| | |
|--|----|
| POMPE MULTIPLE <i>MULTIPLE GEAR PUMPS</i> MEHRFACHPUMPEN | 26 |
|--|----|

| | |
|--|----|
| POMPE E MOTORI CON VALVOLE INTEGRATE <i>INTEGRATED VALVES FOR PUMPS AND MOTORS</i> PUMPEN UND MOTOREN MIT EINGEBAUTEN VENTILEN | 34 |
|--|----|

| | |
|---|----|
| POMPE LOAD SENSING <i>LOAD SENSING PUMPS</i> LOAD SENSING PUMPE | 36 |
|---|----|

| | |
|--|----|
| RACCORDI E GUARNIZIONI <i>CONNECTORS AND SEALS</i> VERBINDUNGEN UND DICHTUNGEN | 38 |
|--|----|

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

Utilizzare fluidi idraulici definiti dalla norma UNI EN ISO 6743-4 prospetto 1 limitatamente alle seguenti tipologie di fluido:

ISO-L-HL / ISO-L-HM / ISO-L-HR / ISO-L-HV
ISO-L-HS Per fluidi diversi da quelli citati si prega di consultare il nostro servizio tecnico.

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 mm²/s (per brevi periodi), massima 1000 mm²/s (per brevi periodi alla partenza), viscosità raccomandata 15-90 mm²/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; riconfermare 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 alberi non adeguatamente protette 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.

HP Hydraulic si solleva da ogni responsabilità riguardante la non osservanza di queste indicazioni e del rispetto delle norme 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

Use hydraulic fluids defined by standard UNI EN ISO 6743-4 prospectus 1 limited to the following types of fluid:

ISO-L-HL / ISO-L-HM / ISO-L-HR / ISO-L-HV
ISO-L-HS For fluids other than those mentioned please contact our technical support service.

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 mm²/s (for short periods),
maximum 1000 mm²/s (for short periods when starting), recommended viscosity 15-90 mm²/s.

INTAKE OPERATING PRESSURE

Maximum absolute value:
P min 0.8 bar - P max 2 bar

DRAIN PRESSURE

Maximum absolute pressure: 2 bar

FILTRING DEGREE


The recommended contamination class for pumps and servovalves 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 degaired.

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.

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

In die 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 müssen Hydraulikflüssigkeiten verwendet werden, die der Norm UNI EN ISO 6743-4 Übersicht 1 entsprechen, beschränkt auf die folgenden Fluidarten:

ISO-L-HL / ISO-L-HM / ISO-L-HR / ISO-L-HV/ISO-L-HS. Für andere als die angegebenen Flüssigkeiten wird gebeten, unseren technischen Kundendienst zu kontaktieren.

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 mm²/s (über kurze Zeiträume), höchstens 1000 mm²/s (über kurze Zeiträume beim Starten), empfohlene Viskosität 15-90 mm²/s.

BETRIEBSDRUCK EINGANGSSEITIG

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

ABLASSDRUCK


Absoluter Höchstdruck: 2 bar

FILTRATIONSGRAD

Für Pumpen und Servosteuervorgaben 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 Öllecksagen 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 HP Hydraulic jegliche Verantwortung ab.

INTRODUZIONE INTRODUCTION EINLEITUNG

Tra le unità idrostatiche le pompe e motori ad ingranaggi sono tra le più prodotte ed utilizzate. La robustezza della concezione, il favorevole rapporto prezzo/prestazioni, la semplicità di installazione, la possibilità di soluzioni personalizzate, l'integrazione con componenti di controllo (valvole) sono alcuni dei punti caratterizzanti questi prodotti.

L'offerta HP Hydraulic si innesta su una pluridecennale e consolidata tradizione di sviluppo e produzione di unità ad ingranaggi con spirito innovativo nel design e nei processi produttivi.

Questo permette di offrire una gamma di pompe ad ingranaggi in ghisa con la possibilità di varianti ad hoc e con prestazioni che permettono ogni tipo d'impiego.

Le pompe HP Hydraulic della serie G sono prodotte nei gruppi dimensionali 2, 3, e 4 all'interno del quale vengono ottenute le differenti cilindrate.

Una gamma completa di flange, estremità d'albero e la possibilità di ottenere pompe multiple e/o con valvole integrate nel coperchio posteriore completano la gamma di produzione.

Gear pumps and motors are among the most popularly produced and utilized hydrostatic units. Some of their many characteristics are: robust design, profitable price/performance ratio, easy installation, suitability for customized solutions, possible integration with control devices (valves).

HP Hydraulic offers decades of well consolidated experience in the development and production of gear units with a constant approach towards innovation of design and of manufacturing process.

This same experience enables us today to offer a gear pumps range cast iron, grouped according to their capacity, whose main features can be devised and varied to best respond to customer's requirements and whose performance permits use in any kind of application.

HP Hydraulic series G pumps are supplied in size group 2, 3 and 4. Various capacities will be determined within this group.

The series of products is even further completed with a full range of flanges, shaft ends, and available multiple pumps with or without valves integrated into the back cover.

Zahnradpumpen und -motoren gehören zu den meistgebauten und gängigsten hydrostatischen Maschinen:

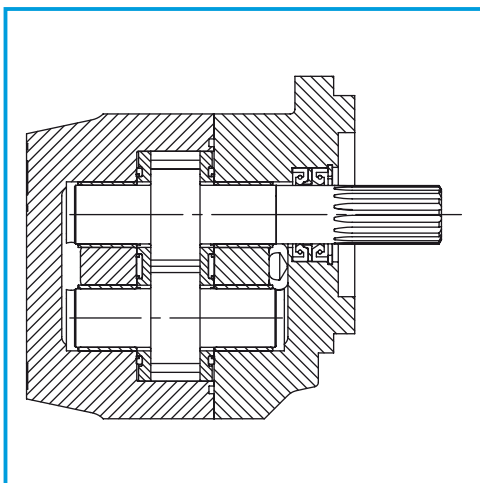
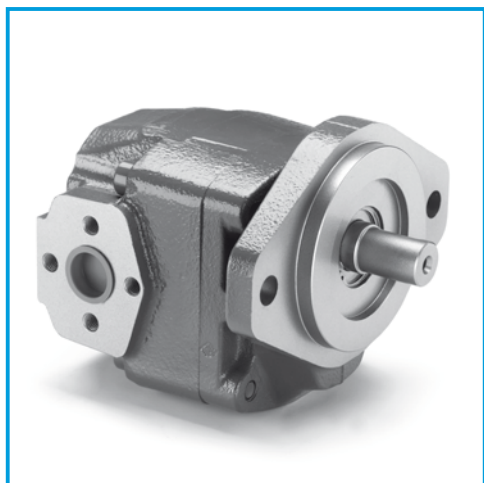
Die robuste Bauweise, das günstige Preis/Leistungsverhältnis, der einfache Einbau, die Möglichkeit individueller Lösungen, die Kombination mit Steuerungskomponenten (Ventile) sind nur einige der Vorzüge, durch die sich diese Produkte auszeichnen.

Das Angebot von HP Hydraulic beruht auf einer jahrzehntelangen und bewährten Tradition in Entwicklung und Produktion von Zahnradeneinheiten mit stark innovativem Gehalt in Design und Produktionsprozessen.

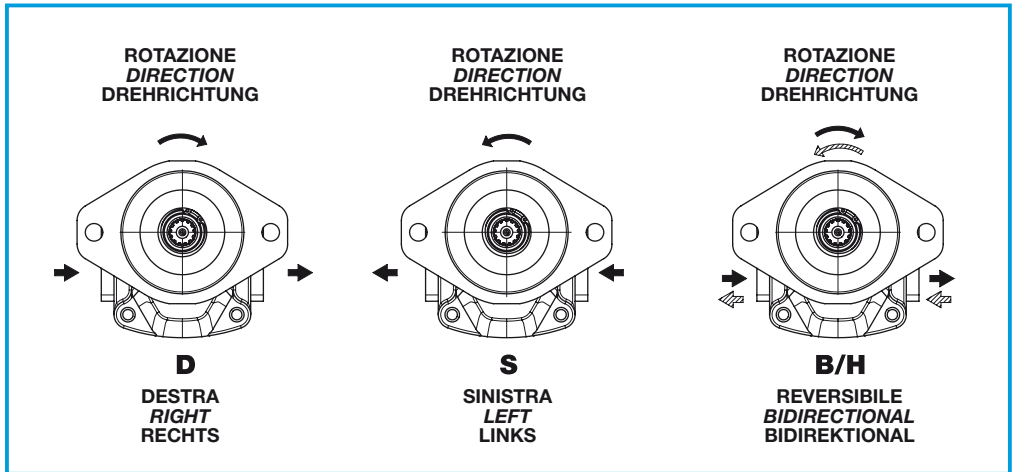
Dadurch sind wir in der Lage, ein Programm von Zahnradpumpen mit Gussgehäuse für jede Anwendung anzubieten, das optimal in Baugruppen und Hubvolumen sowie speziell entwickelte, kundenspezifische Varianten gegliedert ist.

Die Pumpen HP Hydraulic Baureihe G sind in Baugröße 2, 3 und 4 lieferbar, die in verschiedene Hubvolumen gegliedert ist.

Die Baureihe wird durch ein Programm von Flanschen und Wellen komplettiert. Außerdem können Mehrfachpumpen mit und ohne Ventile im Deckel geliefert werden.



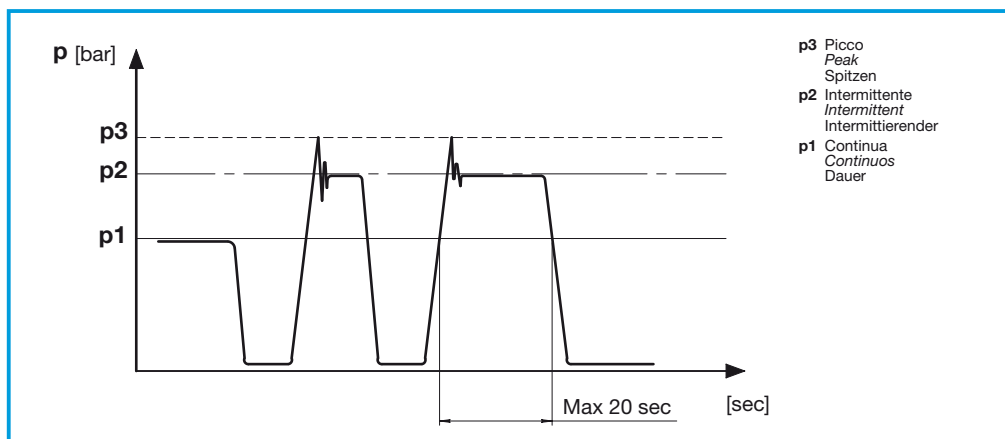
DEFINIZIONE DEL VERSO DI ROTAZIONE GUARDANDO L'ALBERO DI TRASCINAMENTO
DEFINITION OF ROTATION LOOKING AT THE DRIVE SHAFT
BESTIMUNG DER DREHRICHTUNG MIT BLICK AUF DIE ANTRIEBSWELLE



FORMULE INERENTI A POMPE E MOTORI
FORMULAS FOR PUMPS AND MOTORS
FORMELN FÜR PUMPEN UND MOTOREN

| POMPA PUMP PUMPE | | MOTORE MOTOR MOTOR | |
|--|-----------------------------------|--|--|
| $Q = c \cdot \eta_v \cdot n \cdot 10^{-3}$ | [l/min] | $Q = \frac{c \cdot n \cdot 10^{-3}}{\eta_v}$ | [l/min] |
| $M = \frac{\Delta p \cdot c}{62,83 \cdot \eta_m}$ | [Nm] | $M = \frac{\Delta p \cdot c \cdot \eta_m}{62,83}$ | [Nm] |
| $P = \frac{\Delta p \cdot c \cdot n}{600 \cdot 1000 \cdot \eta_t}$ | [kW] | $P = \frac{\Delta p \cdot c \cdot n \cdot \eta_t}{600 \cdot 1000}$ | [kW] |
| Q [l/min] | Portata Flow rate Durchfluß | c [cm ³ /giro] | Cilindrata Displacement Fördervolumen |
| M [Nm] | Coppia Torque Drehmoment | n [min ⁻¹] | nr. giri Speed Drehzahl |
| P [kW] | Potenza Power Leistung | Δp [bar] | Pressione Pressure Druck |
| | | η_v | Rendimento volumetrico Volumetric efficiency Volumetrisch Leistungsfähigkeit |
| | | η_m | Rendimento meccanico Mechanical efficiency Mechanisch Leistungsfähigkeit |
| | | η_t = η_v · η_m | Rendimento totale Overall efficiency Gesamt Leistungsfähigkeit |

DEFINIZIONE DELLE PRESSIONI
PRESSURE DEFINITION
DRUCKBESTIMMUNGEN

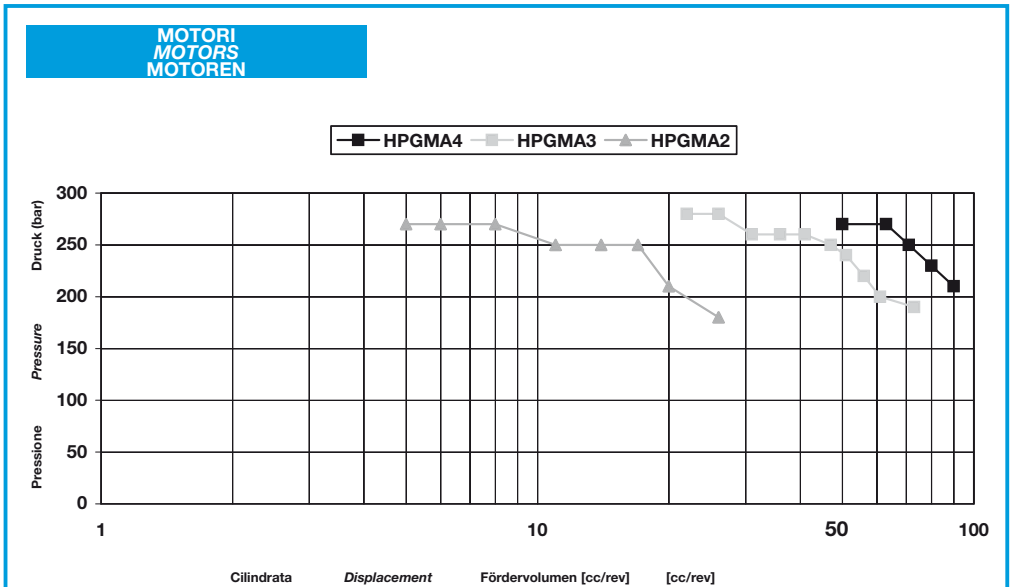
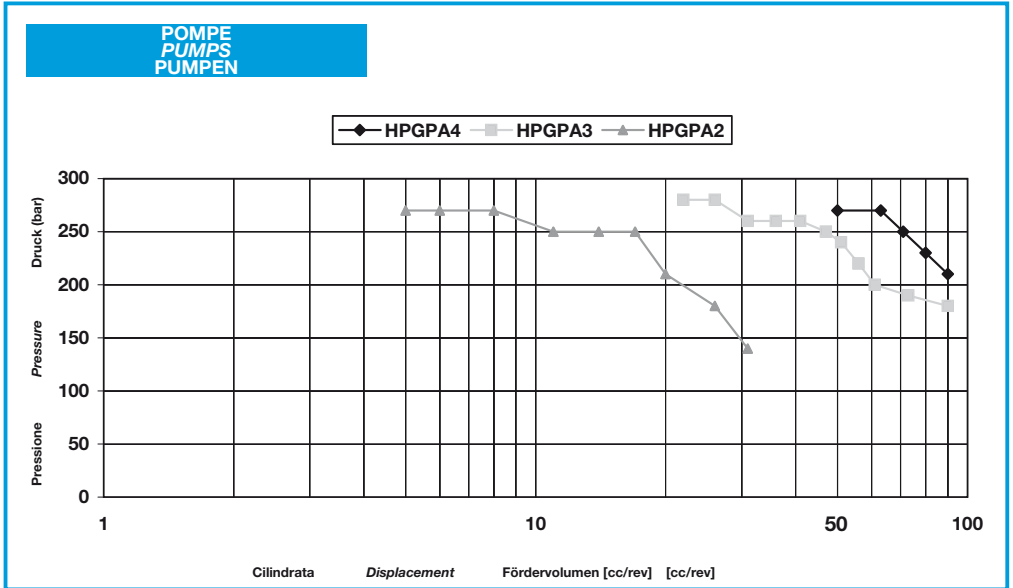


COPPIE DI SERRAGGIO VITI
SCREW TIGHTENING TORQUE
SCHRAUBENANZUGSMOMENT

| Codice Code Code | Tipo vite Screw type Schraube Typ | Coppia min Min Torque Min Drehmomen [Nm] | Coppia max Max Torque Max Drehmoment [Nm] |
|------------------------|---|---|--|
| HPG...2 | M10 | 70 | 75 |
| HPG...3 | M12 | 125 | 135 |
| HPG...4 | M16 | 275 | 285 |



PROGRAMMA DI PRODUZIONE
PRODUCTION RANGE
LIEFERPROGRAMM



HPG .A2

POMPE E MOTORI AD INGRANAGGI GEAR PUMPS AND MOTORS ZAHNRADPUMPEN UND -MOTOREN

HPG PA2

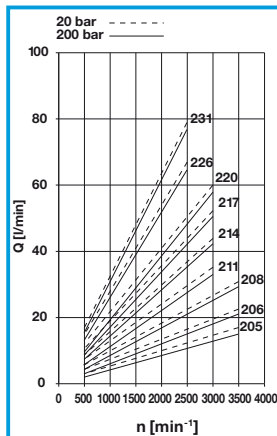
POMPE AD INGRANAGGI GEAR PUMPS ZAHNRADPUMPEN

DATI TECNICI TECHNICAL DATA TECHNISCHE MERKMALE



| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | CILINDRATA TEORICA NOMINAL DISPLACEMENT FÖRDERVOLUMEN (TM) | | CONTINUA CONTINUOUS DAUER | | PRESSIONE PRESSURE DRUCK INTERMITTENTE INTERMITTENT INTERMITTIERENDER | | | | VELOCITÀ DI ROTAZIONE SPEED DREHZAHL | | MASSA WEIGHT GEWICHT | | | |
|-----------------------------|---------------------|---|-----------------|---------------------------------|------|--|------|------|------|---|-----|----------------------------|-------|-------------------|-------------------|
| | | cm ³ | in ³ | bar | psi | bar | psi | bar | psi | MAX | MIN | kg | lbs | | |
| | | | | | | | | | | | | | | min ⁻¹ | min ⁻¹ |
| 2 | 05 | 4,50 | 0,27 | 270 | 3916 | 290 | 4206 | 320 | 4641 | 3500 | 500 | 4,37 | 9,64 | | |
| | 06 | 6,00 | 0,37 | 270 | 3916 | 290 | 4206 | 320 | 4641 | | | 4,46 | 9,84 | | |
| | 08 | 8,50 | 0,52 | 270 | 3916 | 290 | 4206 | 320 | 4641 | | | 4,65 | 10,24 | | |
| | 11 | 11,00 | 0,67 | 250 | 3626 | 270 | 3916 | 300 | 4351 | 3000 | 500 | 4,86 | 10,72 | | |
| | 14 | 14,50 | 0,88 | 250 | 3626 | 270 | 3916 | 300 | 4351 | | | 5,41 | 11,93 | | |
| | 17 | 17,00 | 1,04 | 250 | 3626 | 270 | 3916 | 280 | 4061 | 2500 | 500 | 5,64 | 12,44 | | |
| | 20 | 19,50 | 1,19 | 210 | 3046 | 230 | 3336 | 250 | 3626 | | | 5,84 | 12,87 | | |
| | 26 | 26,00 | 1,59 | 190 | 2756 | 200 | 2901 | 210 | 3046 | 2000 | 500 | 6,29 | 13,87 | | |
| 31 | 31,00 | 1,89 | 160 | 2321 | 180 | 2611 | 190 | 2756 | 6,71 | | | 14,79 | | | |

DIAGRAMMA PORTATE DIAGRAMS KENNLINIEN



HPG MA2

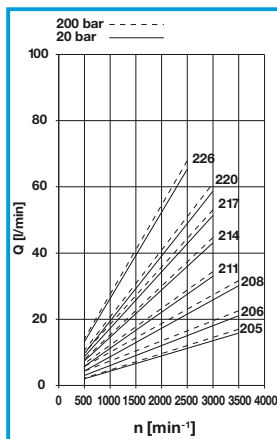
MOTORI AD INGRANAGGI GEAR MOTORS ZAHNRADMOTOREN

DATI TECNICI TECHNICAL DATA TECHNISCHE MERKMALE



| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | CILINDRATA TEORICA NOMINAL DISPLACEMENT FÖRDERVOLUMEN (TM) | | CONTINUA CONTINUOUS DAUER | | PRESSIONE PRESSURE DRUCK INTERMITTENTE INTERMITTENT INTERMITTIERENDER | | | | VELOCITÀ DI ROTAZIONE SPEED DREHZAHL | | MASSA WEIGHT GEWICHT | | | |
|-----------------------------|---------------------|---|-----------------|---------------------------------|------|--|------|-----|------|---|-----|----------------------------|-------|-------------------|-------------------|
| | | cm ³ | in ³ | bar | psi | bar | psi | bar | psi | MAX | MIN | kg | lbs | | |
| | | | | | | | | | | | | | | min ⁻¹ | min ⁻¹ |
| 2 | 05 | 4,50 | 0,27 | 270 | 3916 | 290 | 4206 | 320 | 4641 | 3500 | 500 | 4,37 | 9,64 | | |
| | 06 | 6,00 | 0,37 | 270 | 3916 | 290 | 4206 | 320 | 4641 | | | 4,46 | 9,84 | | |
| | 08 | 8,50 | 0,52 | 270 | 3916 | 290 | 4206 | 320 | 4641 | | | 4,65 | 10,24 | | |
| | 11 | 11,00 | 0,67 | 250 | 3626 | 270 | 3916 | 300 | 4351 | 3000 | 500 | 4,86 | 10,72 | | |
| | 14 | 14,50 | 0,88 | 250 | 3626 | 270 | 3916 | 300 | 4351 | | | 5,41 | 11,93 | | |
| | 17 | 17,00 | 1,04 | 250 | 3626 | 270 | 3916 | 280 | 4061 | 2500 | 500 | 5,64 | 12,44 | | |
| | 20 | 19,50 | 1,19 | 210 | 3046 | 230 | 3336 | 250 | 3626 | | | 5,84 | 12,87 | | |
| | 26 | 26,00 | 1,59 | 190 | 2756 | 200 | 2901 | 210 | 3046 | 2000 | 500 | 6,29 | 13,87 | | |

DIAGRAMMA PORTATE DIAGRAMS KENNLINIEN

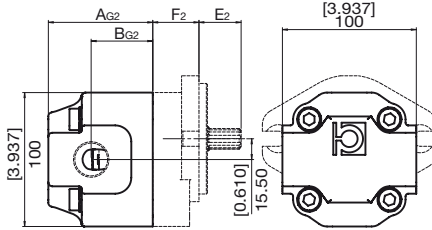




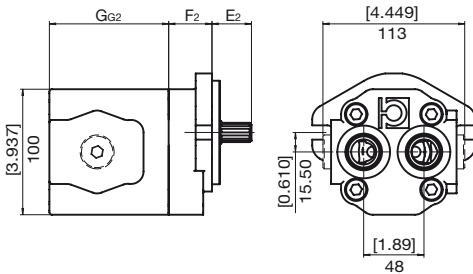
**DIMENSIONI
SIZE
ABMESSUNGEN**

HPG..2

**BOCCHE LATERALI
LATERAL PORTS
SEITLICHANSCHLÜSSE**



**BOCCHE POSTERIORI
REAR PORTS
HINTENANSCHLÜSSE**



F₂= Vedi sezione flange
E₂= Vedi sezione profilo alberi

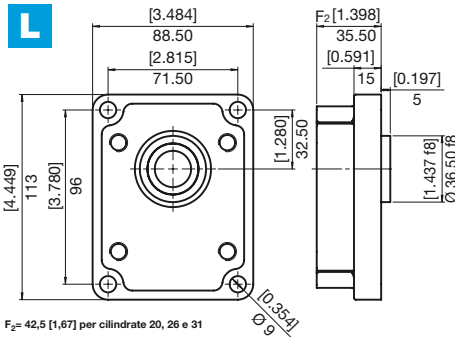
F₂= See flange section
E₂= See splined shafts section

F₂= siehe Abschnitt Flansche
E₂= siehe Abschnitt Wellenprofile

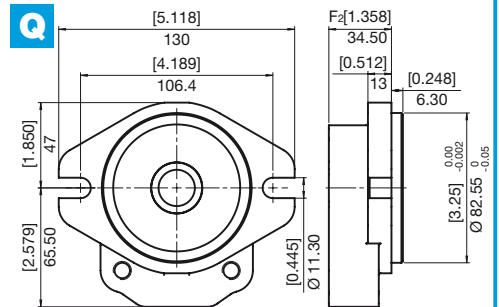
**DIMENSIONI
SIZE
ABMESSUNGEN**

| GRUPPO GROUP BAUREIHE | TIPO TYPE | A _{G2} | | B _{G2} | | G _{G2} | |
|-----------------------------|--------------|-----------------|------|-----------------|------|-----------------|------|
| | | mm | in | mm | in | mm | in |
| 2 | 05 | 48,3 | 1,90 | 27,3 | 1,07 | 55,8 | 2,20 |
| | 06 | 51 | 2,01 | 30 | 1,18 | 58,5 | 2,30 |
| | 08 | 55,5 | 2,19 | 34,5 | 1,36 | 63 | 2,48 |
| | 11 | 60 | 2,36 | 39,00 | 1,54 | 67,5 | 2,66 |
| | 14 | 69 | 2,72 | 37,00 | 1,46 | 74 | 2,91 |
| | 17 | 73,5 | 2,89 | 41,50 | 1,63 | 78,5 | 3,09 |
| | 20 | 77,7 | 3,06 | 44,7 | 1,76 | 96,7 | 3,81 |
| | 26 | 90 | 3,54 | 57,00 | 2,24 | 109 | 4,29 |
| | 31 | 98,5 | 3,87 | 65,50 | 2,58 | 117,5 | 4,62 |

**FLANGE
FLANGES
FLANSCH**



F₂= 42,5 [1,67] per cilindrate 20, 26 e 31
F₂= 42,5 [1,67] for displacements 20, 26 and 31
F₂= 42,5 [1,67] für Hubräume 20, 26 und 31

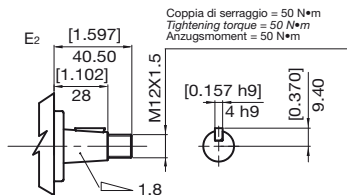


F₂= 41,5 [1,63] per cilindrate 20, 26 e 31
F₂= 41,5 [1,63] for displacements 20, 26 and 31
F₂= 41,5 [1,63] für Hubräume 20, 26 und 31

L

**COPPIA MAX
MAX TORQUE
MAX DREHMOMENT**

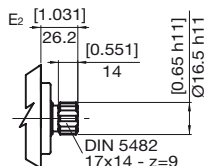
140 N•m



U

**COPPIA MAX
MAX TORQUE
MAX DREHMOMENT**

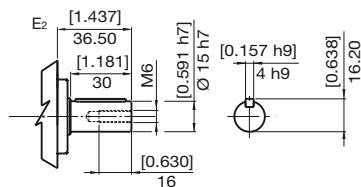
110 N•m



N

**COPPIA MAX
MAX TORQUE
MAX DREHMOMENT**

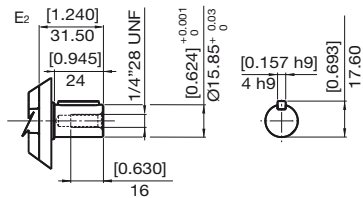
65 N•m



P

**COPPIA MAX
MAX TORQUE
MAX DREHMOMENT**

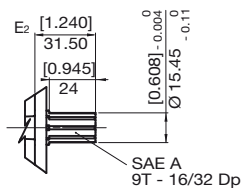
70 N•m



V

**COPPIA MAX
MAX TORQUE
MAX DREHMOMENT**

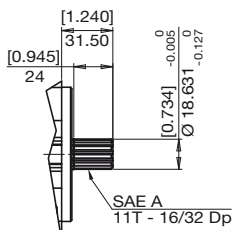
120 N•m



X

**COPPIA MAX
MAX TORQUE
MAX DREHMOMENT**

160 N•m





**BOCCHE
PORTS
ANSCHLÜSSE**

HPG..2

E LATERALE
LATERAL
SEITLICH

| TIPO TYPE TYP | M | | N | | O | |
|---------------------|----|------|----|------|-----|----|
| | mm | in | mm | in | | Nm |
| E3 | 13 | 0,51 | 30 | 1,18 | M6 | 10 |
| E5 | 20 | 0,79 | 40 | 1,57 | M8 | 17 |
| E7 | 27 | 1,06 | 51 | 2,01 | M10 | 30 |

X LATERALE
LATERAL
SEITLICH

| TIPO TYPE TYP | M | | N | | O | |
|---------------------|----|------|----|------|----|----|
| | mm | in | mm | in | | Nm |
| X4 | 15 | 0,59 | 35 | 1,38 | M6 | 10 |
| X5 | 15 | 0,59 | 40 | 1,57 | M6 | 10 |
| X6 | 20 | 0,79 | 40 | 1,57 | M6 | 10 |
| X8 | 27 | 1,06 | 55 | 2,17 | M8 | 15 |

G LATERALE
LATERAL
SEITLICH
T POSTERIORE
REAR
HINTEN

| TIPO TYPE TYP | M | | P | |
|---------------------|---------------|-----|----|------|
| | | Nm | mm | in |
| *G3 | 3/8" GAS BSPP | 38 | 12 | 0,47 |
| G4 | 1/2" GAS BSPP | 70 | 16 | 0,63 |
| G6 | 3/4" GAS BSPP | 90 | 19 | 0,75 |
| G7 | 1" GAS BSPP | 160 | 21 | 0,83 |
| T4 | 1/2" GAS BSPP | 70 | 16 | 0,63 |
| T6 | 3/4" GAS BSPP | 90 | 19 | 0,75 |
| T7 | 1" GAS BSPP | 160 | 21 | 0,83 |

U LATERALE
LATERAL
SEITLICH
C POSTERIORE
REAR
HINTEN

| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | N | | P | | Q | | M | |
|---------------------|------------------------------|----|------|----|------|-----|------|---------------|-----|
| | | mm | in | mm | in | mm | in | | Nm |
| *U3 | 3/8" | 25 | 0,98 | 13 | 0,51 | 0,3 | 0,01 | 9/16-18 UNF | 25 |
| U5 | 5/8" | 34 | 1,34 | 17 | 0,67 | 0,3 | 0,01 | 7/8-14 UNF | 70 |
| U6 | 3/4" | 41 | 1,61 | 19 | 0,75 | 0,3 | 0,01 | 1-1/16-12 UNF | 90 |
| U7 | 1" | 49 | 1,93 | 20 | 0,79 | 0,3 | 0,01 | 1-5/16-12 UNF | 160 |
| C5 | 5/8" | 34 | 1,34 | 17 | 0,67 | 0,3 | 0,01 | 7/8-14 UNF | 70 |
| C6 | 3/4" | 41 | 1,61 | 19 | 0,75 | 0,3 | 0,01 | 1-1/16-12 UNF | 90 |
| C7 | 1" | 49 | 1,93 | 20 | 0,79 | 0,3 | 0,01 | 1-5/16-12 UNF | 160 |

N LATERALE
LATERAL
SEITLICH

| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | M | | P | | Q | | O | |
|---------------------|------------------------------|----|------|------|------|------|------|---------------|----|
| | | mm | in | mm | in | mm | in | | Nm |
| N4 | 1/2" | 13 | 0,51 | 38,1 | 1,49 | 17,5 | 0,68 | 5/16-18UNC-2B | 17 |
| N6 | 3/4" | 20 | 0,79 | 47,6 | 1,87 | 22,2 | 0,87 | 3/8"-16UNC-2B | 38 |
| N7 | 1" | 27 | 1,06 | 52,4 | 2,60 | 26,2 | 1,03 | 3/8"-16UNC-2B | 38 |

F LATERALE
LATERAL
SEITLICH

| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | M | | P | | Q | | O | |
|---------------------|------------------------------|------|------|------|------|------|------|-----|----|
| | | mm | in | mm | in | mm | in | | Nm |
| F4 | 1/2" | 13 | 0,51 | 38,1 | 1,49 | 17,5 | 0,68 | M8 | 17 |
| F6 | 3/4" | 20 | 0,79 | 47,6 | 1,87 | 22,2 | 0,87 | M10 | 38 |
| F7 | 1" | 25,4 | 1,06 | 52,4 | 2,60 | 26,2 | 1,03 | M10 | 38 |

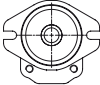












M

| TIPO TYPE TYP | M | | P | |
|---------------------|---------|----|----|------|
| | | Nm | mm | in |
| *M2 | M14x1,5 | 17 | 12 | 0,47 |

* Drenaggio

* Drain Port

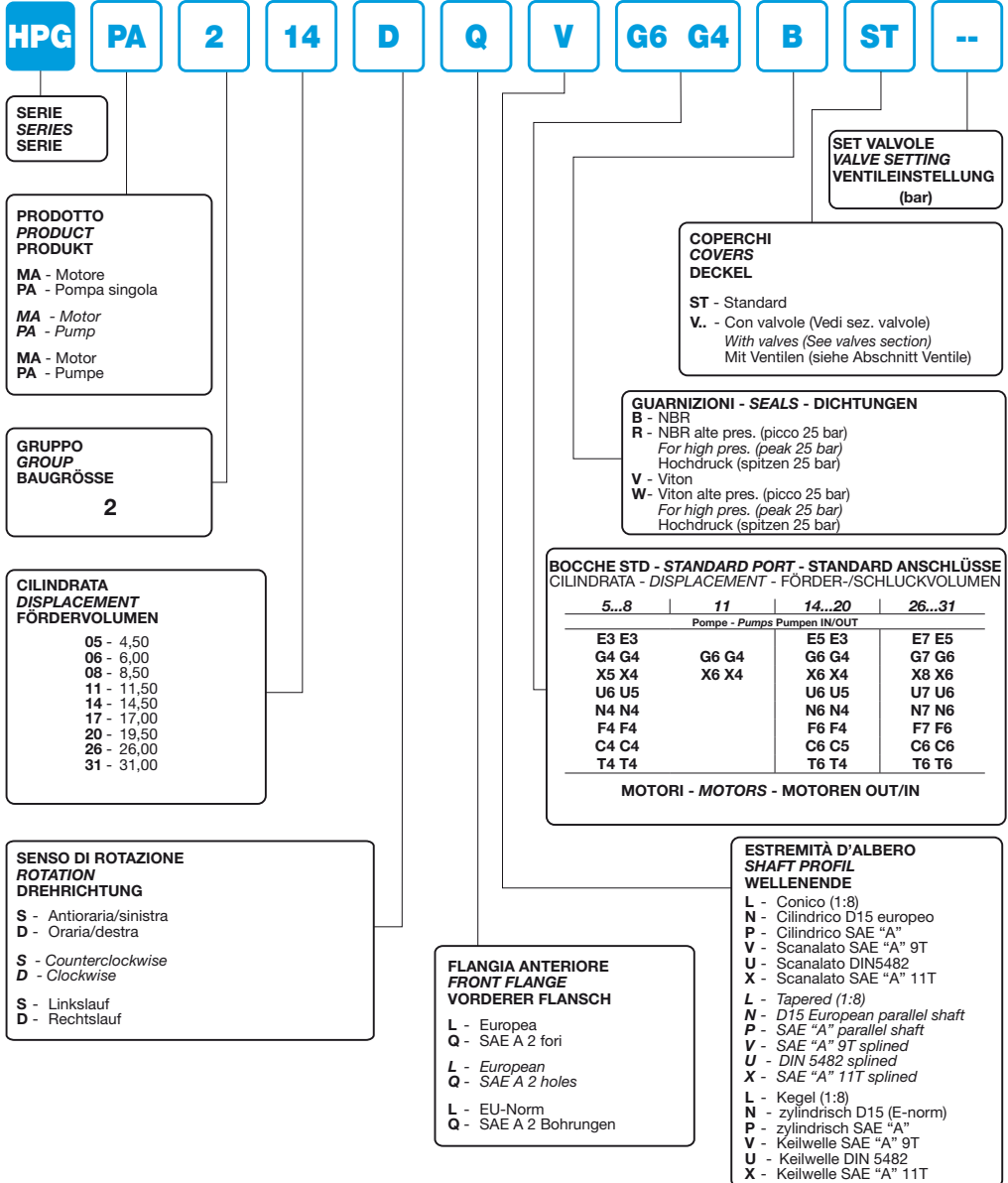
* Lecköl

| ESTREMITÀ ALBERO SHAFT PROFIL WELLESENDE | Q  | FLANGE FLANGE FLANSCH | L  |
|--|---|-----------------------------|---|
| L  | | | ■ |
| N  | | | ■ |
| P  | ■ | | |
| U  | | | ■ |
| V  | ■ | | |
| X  | ■ | | |
| BOCCHIE PORTS ANSCHLÜSSE | | | |
| E  | | | ■ |
| X  | | | ■ |
| GT  | ■ | | ■ |
| UC  | ■ | | |
| NF  | ■ | | |



ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HPG..2



HPG .A3

POMPE E MOTORI AD INGRANAGGI GEAR PUMPS AND MOTORS ZAHNRADPUMPEN UND -MOTOREN

HPG PA3

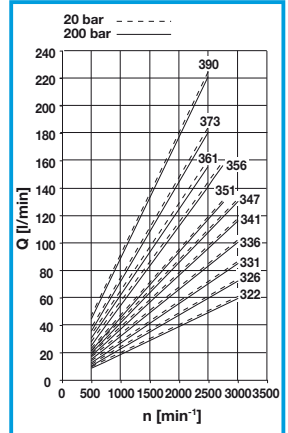
POMPE AD INGRANAGGI GEAR PUMPS ZAHNRADPUMPEN

DATI TECNICI TECHNICAL DATA TECHNISCHE MERKMALE



| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | CILINDRATA TEORICA NOMINAL DISPLACEMENT FÖRDERVOLUMEN (TM) | | CONTINUA CONTINUOUS DAUER | | PRESSIONE PRESSURE DRUCK INTERMITTENTE INTERMITTIERENDER | | PICCO PEAK SPITZEN | | VELOCITÀ DI ROTAZIONE SPEED DREHZAHL | | MASSA WEIGHT GEWICHT | |
|-----------------------------|---------------------|---|-----------------|---------------------------------|------|--|------|--------------------------|-------|---|-------|----------------------------|-------|
| | | cm ³ | in ³ | bar | psi | bar | psi | bar | psi | MAX | MIN | kg | lbs |
| | | | | | | | | | | | | | |
| 3 | 22 | 21,50 | 1,31 | 280 | 4061 | 300 | 4351 | 310 | 4496 | 3000 | 500 | 12,00 | 26,46 |
| | 26 | 26,00 | 1,59 | 280 | 4061 | 300 | 4351 | 310 | 4496 | | | 12,25 | 27,00 |
| | 31 | 30,50 | 1,86 | 260 | 3771 | 280 | 4061 | 300 | 4351 | | | 12,50 | 27,56 |
| | 36 | 36,00 | 2,20 | 260 | 3771 | 280 | 3916 | 300 | 4351 | | | 12,80 | 28,22 |
| | 41 | 41,50 | 2,53 | 260 | 3771 | 270 | 3916 | 280 | 4061 | | | 13,20 | 29,10 |
| | 47 | 46,50 | 2,84 | 250 | 3626 | 270 | 3916 | 280 | 4061 | | | 13,50 | 29,76 |
| | 51 | 50,50 | 3,08 | 240 | 3481 | 250 | 3626 | 270 | 3916 | 13,90 | 30,64 | | |
| | 56 | 55,50 | 3,39 | 220 | 3191 | 230 | 3336 | 250 | 3626 | 14,30 | 31,52 | | |
| | 61 | 61,00 | 3,72 | 200 | 2901 | 210 | 3046 | 220 | 3191 | 14,50 | 31,97 | | |
| | 73 | 72,00 | 4,39 | 190 | 2756 | 210 | 3046 | 220 | 3190 | 16,50 | 36,38 | | |
| 90 | 88,00 | 5,37 | 180 | 2611 | 190 | 2756 | 200 | 2901 | 17,20 | 37,92 | 2500 | | |

DIAGRAMMA PORTATE DIAGRAMS KENNLINIEN



HPG MA3

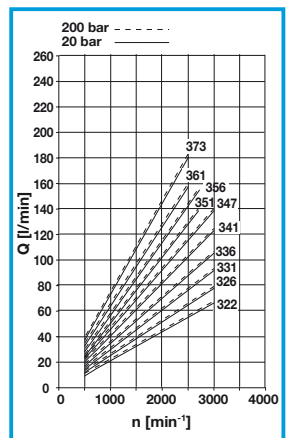
MOTORI AD INGRANAGGI GEAR MOTORS ZAHNRADMOTOREN

DATI TECNICI TECHNICAL DATA TECHNISCHE MERKMALE



| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | CILINDRATA TEORICA NOMINAL DISPLACEMENT FÖRDERVOLUMEN (TM) | | CONTINUA CONTINUOUS DAUER | | PRESSIONE PRESSURE DRUCK INTERMITTENTE INTERMITTIERENDER | | PICCO PEAK SPITZEN | | VELOCITÀ DI ROTAZIONE SPEED DREHZAHL | | MASSA WEIGHT GEWICHT | |
|-----------------------------|---------------------|---|-----------------|---------------------------------|------|--|------|--------------------------|------|---|-------|----------------------------|-------|
| | | cm ³ | in ³ | bar | psi | bar | psi | bar | psi | MAX | MIN | kg | lbs |
| | | | | | | | | | | | | | |
| 3 | 22 | 21,50 | 1,31 | 280 | 4061 | 300 | 4351 | 310 | 4496 | 3000 | 500 | 12,00 | 26,46 |
| | 26 | 26,00 | 1,59 | 280 | 4061 | 300 | 4351 | 310 | 4496 | | | 12,25 | 27,00 |
| | 31 | 30,50 | 1,86 | 260 | 3771 | 280 | 4061 | 300 | 4351 | | | 12,50 | 27,56 |
| | 36 | 36,00 | 2,20 | 260 | 3771 | 280 | 3916 | 300 | 4351 | | | 12,80 | 28,22 |
| | 41 | 41,50 | 2,53 | 260 | 3771 | 270 | 3916 | 280 | 4061 | | | 13,20 | 29,10 |
| | 47 | 46,50 | 2,84 | 250 | 3626 | 270 | 3916 | 280 | 4061 | | | 13,50 | 29,76 |
| | 51 | 50,50 | 3,08 | 240 | 3481 | 250 | 3626 | 270 | 3916 | 13,90 | 30,64 | | |
| | 56 | 55,50 | 3,39 | 220 | 3191 | 230 | 3336 | 250 | 3626 | 14,30 | 31,52 | | |
| | 61 | 61,00 | 3,72 | 200 | 2901 | 210 | 3046 | 220 | 3191 | 14,50 | 31,97 | | |
| | 73 | 72,00 | 4,39 | 190 | 2756 | 210 | 3046 | 220 | 3190 | 16,50 | 36,38 | 2500 | |

DIAGRAMMA PORTATE DIAGRAMS KENNLINIEN

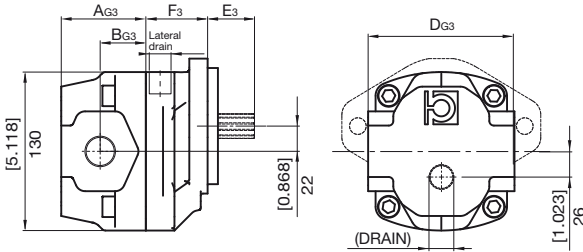




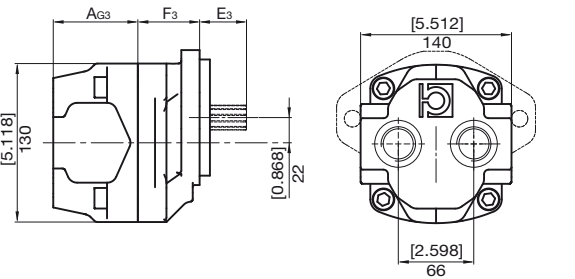
**DIMENSIONI
SIZE
ABMESSUNGEN**

HPG..3

**BOCCHE LATERALI
LATERAL PORTS
SEITLICHANSCHLÜSSE**



**BOCCHE POSTERIORI
REAR PORTS
HINTENANSCHLÜSSE**



F₃= Vedi sezione flange
E₃= Vedi sezione profilo alberi

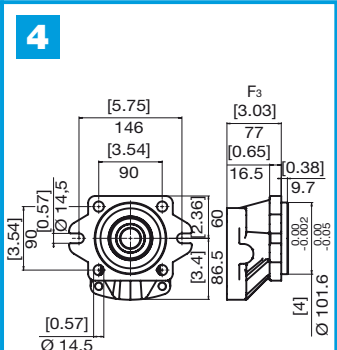
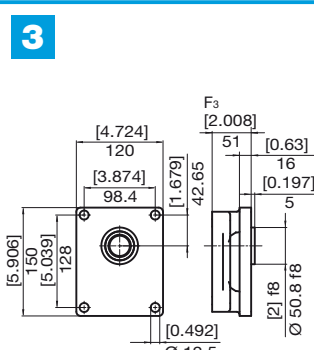
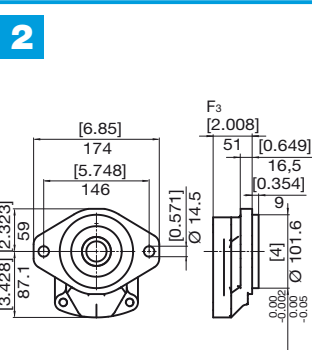
F₃= See flange section
E₃= See splined shafts section

F₃= siehe Abschnitt Flansche
E₃= siehe Abschnitt Wellenprofile

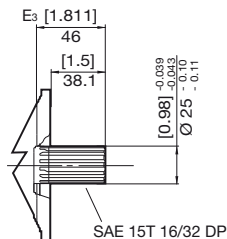
**DIMENSIONI
SIZE
ABMESSUNGEN**

| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | A _{G3} | | B _{G3} | | D _{G3} | |
|-----------------------------|---------------------|-----------------|------|-----------------|------|-----------------|------|
| | | mm | in | mm | in | mm | in |
| 3 | 22 | 76 | 2,99 | 40 | 1,57 | 134 | 5,28 |
| | 26 | 79 | 3,11 | 43 | 1,69 | 134 | 5,28 |
| | 31 | 82 | 3,23 | 46 | 1,81 | 134 | 5,28 |
| | 36 | 86 | 3,39 | 50 | 1,97 | 134 | 5,28 |
| | 41 | 90,5 | 3,56 | 54,5 | 2,15 | 134 | 5,28 |
| | 47 | 93,5 | 3,68 | 57,5 | 2,26 | 134 | 5,28 |
| | 51 | 96,5 | 3,80 | 60,5 | 2,38 | 134 | 5,28 |
| | 56 | 100 | 3,94 | 64 | 2,52 | 134 | 5,28 |
| | 61 | 117,5 | 4,63 | 64,5 | 2,54 | 148 | 5,83 |
| | 73 | 125 | 4,92 | 72 | 2,83 | 148 | 5,83 |
| 90 | 136 | 5,35 | 83 | 3,27 | 148 | 5,83 | |

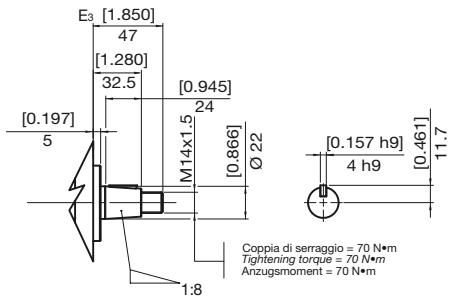
**FLANGE
FLANGES
FLANSCH**



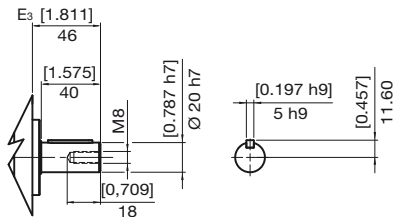
1 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT 460 N•m



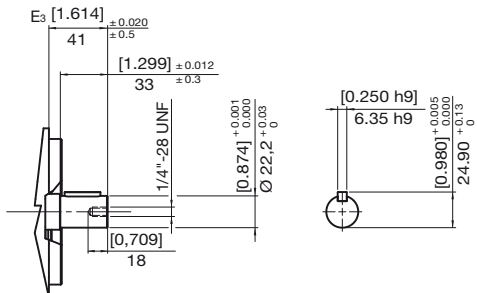
2 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT 240 N•m



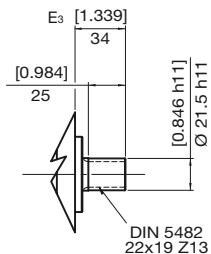
4 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT 190 N•m



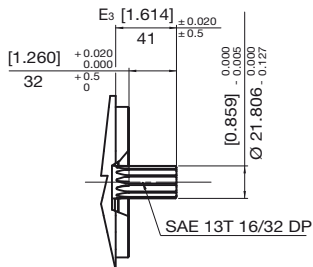
6 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT 210 N•m



7 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT 250 N•m



9 COPPIA MAX
MAX TORQUE
MAX DREHMOMENT 310 N•m





**BOCCHIE
PORTS
ANSCHLÜSSE**

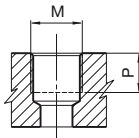
HPG...3

E LATERALE
LATERAL
SEITLICH



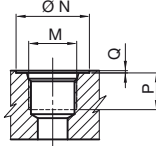
| TIPO TYPE TYP | M | | N | | O | |
|---------------------|----|------|----|------|-----|----|
| | mm | in | mm | in | M | Nm |
| E5 | 20 | 0,79 | 40 | 1,57 | M8 | 17 |
| E7 | 27 | 1,06 | 51 | 2,01 | M10 | 38 |
| E8 | 34 | 1,34 | 62 | 2,44 | M10 | 38 |
| E9 | 34 | 1,34 | 62 | 2,44 | M12 | 70 |

G LATERALE
LATERAL
SEITLICH
T POSTERIORE
REAR
HINTEN



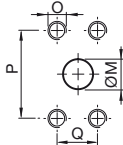
| TIPO TYPE TYP | M | | P | |
|---------------------|-----|----|------|----|
| | Nm | mm | in | in |
| * G3 | 38 | 12 | 0,47 | |
| G6 | 90 | 19 | 0,75 | |
| G7 | 160 | 21 | 0,83 | |
| G8 | 200 | 21 | 0,83 | |
| G9 | 210 | 25 | 0,83 | |
| G0 | 210 | 32 | 0,75 | |
| T6 | 90 | 19 | 0,75 | |
| T7 | 160 | 21 | 0,83 | |
| T8 | 200 | 21 | 0,83 | |

U LATERALE
LATERAL
SEITLICH
C POSTERIORE
REAR
HINTEN



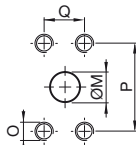
| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | N | | P | | Q | | M | |
|---------------------|------------------------------|----|------|----|------|-----|------|----------------|-----|
| | | mm | in | mm | in | mm | in | M | Nm |
| * U3 | 3/8" | 25 | 0,98 | 13 | 0,51 | 0,3 | 0,01 | 9/16"-18 UNF | 25 |
| U6 | 3/4" | 41 | 1,61 | 20 | 0,79 | 0,3 | 0,01 | 1-1/16"-12 UNF | 90 |
| U7 | 1" | 49 | 1,93 | 20 | 0,79 | 0,3 | 0,01 | 1-5/16"-12 UNF | 160 |
| U8 | 1 1/4" | 58 | 2,28 | 20 | 0,79 | 0,3 | 0,01 | 1-5/8"-12 UNF | 200 |
| U9 | 1 1/2" | 65 | 2,56 | 20 | 0,79 | 0,3 | 0,01 | 1-7/8"-12 UNF | 200 |
| C6 | 3/4" | 41 | 1,61 | 20 | 0,79 | 0,3 | 0,01 | 1-1/16"-12 UNF | 90 |
| C7 | 1" | 49 | 1,93 | 20 | 0,79 | 0,3 | 0,01 | 1-5/16"-12 UNF | 160 |
| C8 | 1 1/4" | 58 | 2,28 | 20 | 0,79 | 0,3 | 0,01 | 1-5/8"-12 UNF | 200 |

N LATERALE
LATERAL
SEITLICH



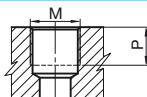
| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | M | | P | | Q | | O | |
|---------------------|------------------------------|------|------|------|------|------|------|----------------|----|
| | | mm | in | mm | in | mm | in | M | Nm |
| N6 | 3/4" | 20 | 0,79 | 47,6 | 1,87 | 22,2 | 0,87 | 3/8"-16UNC-2B | 38 |
| N7 | 1" | 27 | 1,06 | 52,4 | 2,6 | 26,2 | 1,03 | 3/8"-16UNC-2B | 38 |
| N8 | 1 1/4" | 34 | 1,34 | 58,7 | 2,31 | 30,2 | 1,19 | 7/16"-14UNC-2B | 38 |
| N9 | 1 1/2" | 39 | 1,54 | 69,9 | 2,74 | 35,7 | 1,40 | 1/2"-13UNC-2B | 70 |
| N0 | 2" | 51,0 | 2,00 | 77,8 | 3,06 | 42,9 | 1,69 | 1/2"-13UNC-2B | 70 |

F LATERALE
LATERAL
SEITLICH















| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | M | | P | | Q | | O | |
|---------------------|------------------------------|------|------|------|------|------|------|-----|----|
| | | mm | in | mm | in | mm | in | M | Nm |
| F6 | 3/4" | 20 | 0,79 | 47,6 | 1,87 | 22,2 | 0,87 | M10 | 38 |
| F7 | 1" | 25,4 | 1,06 | 52,4 | 2,60 | 26,2 | 1,03 | M10 | 38 |
| F8 | 1 1/4" | 30,5 | 1,34 | 58,7 | 2,31 | 30,2 | 1,19 | M10 | 38 |
| F9 | 1 1/2" | 39 | 1,54 | 69,9 | 2,74 | 35,7 | 1,40 | M12 | 70 |
| F0 | 2" | 51,0 | 2,00 | 77,8 | 3,06 | 42,9 | 1,69 | M12 | 70 |

M LATERALE
LATERAL
SEITLICH



| TIPO TYPE TYP | M | | P | |
|---------------------|----|----|------|----|
| | Nm | mm | in | in |
| M3 | 35 | 14 | 0,55 | |

* Drenaggio * Drain Port * Lecköl

| ESTREMITÀ ALBERO SHAFT PROFIL WELLESENDE | 2 4 |  | FLANGE FLANGE FLANSCH | 3 |  |
|--|--------|---|-----------------------------|-------------------------------------|---|
| 1  | | <input checked="" type="checkbox"/> | | | |
| 2  | | | | <input checked="" type="checkbox"/> | |
| 4  | | | | <input checked="" type="checkbox"/> | |
| 6  | | <input checked="" type="checkbox"/> | | | |
| 7  | | | | <input checked="" type="checkbox"/> | |
| 9  | | <input checked="" type="checkbox"/> | | | |
| BOCCHE PORTS ANSCHLÜSSE | | | | | |
| E  | | | | <input checked="" type="checkbox"/> | |
| GT  | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | |
| UC  | | <input checked="" type="checkbox"/> | | | |
| NF  | | <input checked="" type="checkbox"/> | | | |



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

HPG..3

HPG PA 3 36 S 2 9 G7 G6 B ST ..

**SERIE
SERIES
SERIE**

**PRODOTTO
PRODUCT
PRODUKT**

MA - Motore
PA - Pompa singola

MA - Motor
PA - Pump

MA - Motor
PA - Pumpe

**GRUPPO
GROUP
BAUGRÖSSE**

3

**CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN**

22 - 21,50
26 - 26,00
31 - 30,50
36 - 36,00
41 - 41,50
47 - 46,50
51 - 50,50
56 - 55,50
61 - 61,00
73 - 72,00
90 - 88,00

**SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG**

S - Antioraria/sinistra
D - Oraria/destra
H - Bidirezionale drenaggio interno
B - Bidirezionale drenaggio esterno posteriore

S - Counterclockwise
D - Clockwise
H - Reversible ind drain.
B - Reversible rear. drain. pont.

S - Linkslauf
D - Rechtslauf
H - reversibel, Lecköl intern, Anschluß seitlich
B - reversibel, Lecköl extern, Anschluß hinten

**SET VALVOLE
VALVE SETTING
VENTILEINSTELLUNG
(bar)**

COPERCHI - COVERS - DECKEL

ST - Standard
V. - Con valvole
(Vedi sez. valvole)
With valves
(See valves section)
Mit Ventilen
(siehe Abschnitt Ventile)
DL - Drenaggio laterale (motori)
Lateral drain (motors)
Seitlich Lecköl (motor)lich

GUARNIZIONI - SEALS - DICHTUNGEN

B - NBR
R - NBR alte pres. (picco 25 bar)
For high pres. (peak 25 bar)
Hochdruck (spitzen 25 bar)
V - Viton
W - Viton alte pres. (picco 25 bar)
For high pres. (peak 25 bar)
Hochdruck (spitzen 25 bar)

**BOCCHIE STD - STANDARD PORT - STANDARD ANSCHLÜSSE
CILINDRATA - DISPLACEMENT - FÖRDER-/SCHLUCKVOLUMEN**

| 22.....36 | | 41.....56 | | 61.....73 | | 90 | | DRAIN | |
|-----------------------------|-------|-----------|-------|-----------|--|----|--|-------|--|
| Pompe - Pumps Pumpen IN/OUT | | | | | | | | | |
| E7 E5 | E7 E7 | E8 E7 | E9 E8 | M3 | | | | | |
| G7 G6 | G8 G7 | G9 G8 | G0 G9 | G3 | | | | | |
| U7 U6 | U8 U7 | U9 U8 | U9 U8 | U3 | | | | | |
| N7 N6 | N8 N7 | N9 N8 | N0 N9 | U3 | | | | | |
| F7 F6 | F8 F7 | F9 F8 | F0 F9 | U3 | | | | | |
| T7 T6 | T8 T7 | | | G3 | | | | | |
| C7 C6 | C8 C7 | | | U3 | | | | | |

**MOTORI - MOTORS - MOTOREN OUT/IN
MOTORI BIDIR. IN=OUT - REVERS. MOTORS IN=OUT -
BIDIREK. MOTOREN IN=OUT**

**FLANGIA ANTERIORE
FRONT FLANGE
VORDERER FLANSCH**

2 - SAE B 2 fori
3 - Europea D 50,8
4 - SAE B 2/4 fori

2 - SAE B 2 holes
3 - European D 50,8
4 - SAE B 2/4 holes

2 - SAE B 2 Bohrungen
3 - EU-Norm D 50,8
4 - SAE B 2/4 Bohrungen

**ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE**

1 - Scanalato SAE "BB" 15T
2 - Conico (1:8)
4 - Cilindrico europeo
6 - Cilindrico SAE "B"
7 - Scanalato DIN 5482
9 - Scanalato SAE "B" 13T

1 - SAE "BB" 15T splined
2 - Tapered (1:8)
4 - European parallel shaft
6 - SAE "B" parallel shaft
7 - DIN 5482 splined
9 - SAE "B" 13T splined

1 - Keilwelle SAE "BB" 15T
2 - Kegel (1:8)
4 - Kegel EU-Norm
6 - zylindrisch SAE "B"
7 - Keilwelle DIN 5482
9 - Keilwelle SAE "B" 13T

HPG .A4

POMPE E MOTORI AD INGRANAGGI GEAR PUMPS AND MOTORS ZAHNRADPUMPEN UND -MOTOREN

HPG PA4

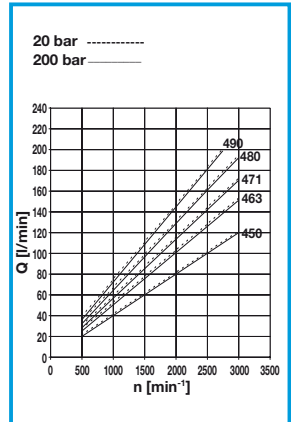
POMPE AD INGRANAGGI
GEAR PUMPS
ZAHNRADPUMPEN

DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE



DIAGRAMMA PORTATE
DIAGRAMS
KENNLIENEN

| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | CILINDRATA TEORICA NOMINAL DISPLACEMENT FÖRDERVOLUMEN (TM) | | CONTINUA CONTINUOUS DAUER | | PRESSIONE PRESSURE DRUCK | | PICCO PEAK SPITZEN | VELOCITÀ DI ROTAZIONE SPEED DREHZAHL | | MASSA WEIGHT GEWICHT | | |
|-----------------------------|---------------------|---|-----------------|---------------------------------|------|--------------------------------|------|--------------------------|---|-------------------|----------------------------|------|-------|
| | | cm ³ | in ³ | bar | psi | bar | psi | | bar | psi | MAX | MIN | kg |
| | | cm ³ | in ³ | bar | psi | bar | psi | bar | psi | min ⁻¹ | min ⁻¹ | | |
| 4 | 50 | 50,00 | 3,05 | 270 | 3916 | 280 | 4061 | 310 | 4496 | 3000 | 500 | 28 | 61,73 |
| | 63 | 63,00 | 3,84 | 270 | 3916 | 280 | 4061 | 310 | 4496 | | | 28,9 | 63,71 |
| | 71 | 71,00 | 4,33 | 250 | 3626 | 280 | 4061 | 300 | 4351 | | | 29,7 | 65,48 |
| | 80 | 80,50 | 4,88 | 230 | 3336 | 280 | 4061 | 300 | 4351 | | | 30,4 | 67,02 |
| | 90 | 90,50 | 5,49 | 210 | 3046 | 260 | 3771 | 280 | 4061 | 2700 | 31,3 | 69 | |



HPG MA4

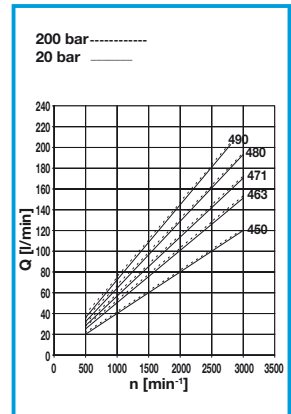
MOTORI AD INGRANAGGI
GEAR MOTORS
ZAHNRADMOTOREN

DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE



DIAGRAMMA PORTATE
DIAGRAMS
KENNLIENEN

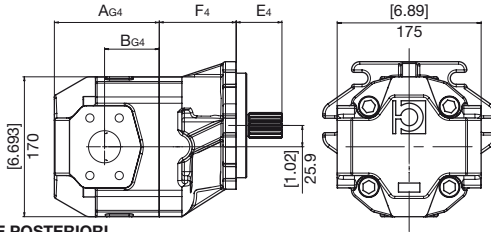
| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | CILINDRATA TEORICA NOMINAL DISPLACEMENT FÖRDERVOLUMEN (TM) | | CONTINUA CONTINUOUS DAUER | | PRESSIONE PRESSURE DRUCK | | PICCO PEAK SPITZEN | VELOCITÀ DI ROTAZIONE SPEED DREHZAHL | | MASSA WEIGHT GEWICHT | | |
|-----------------------------|---------------------|---|-----------------|---------------------------------|------|--------------------------------|------|--------------------------|---|-------------------|----------------------------|------|-------|
| | | cm ³ | in ³ | bar | psi | bar | psi | | bar | psi | MAX | MIN | kg |
| | | cm ³ | in ³ | bar | psi | bar | psi | bar | psi | min ⁻¹ | min ⁻¹ | | |
| 4 | 50 | 50,00 | 3,05 | 270 | 3916 | 280 | 4061 | 310 | 4496 | 3000 | 500 | 28 | 61,73 |
| | 63 | 63,00 | 3,84 | 270 | 3916 | 280 | 4061 | 310 | 4496 | | | 28,9 | 63,71 |
| | 71 | 71,00 | 4,33 | 250 | 3626 | 280 | 4061 | 300 | 4351 | | | 29,7 | 65,48 |
| | 80 | 80,50 | 4,88 | 230 | 3336 | 280 | 4061 | 300 | 4351 | | | 30,4 | 67,02 |
| | 90 | 90,50 | 5,49 | 210 | 3046 | 260 | 3771 | 280 | 4061 | 2700 | 31,3 | 69 | |



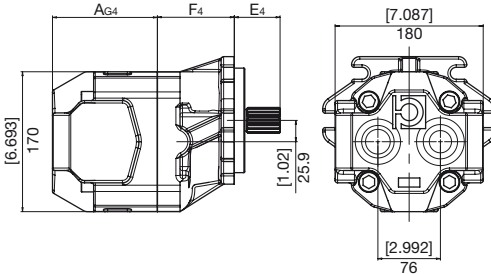
**DIMENSIONI
SIZE
ABMESSUNGEN**

HPG..4

**BOCCHIE LATERALI
LATERAL PORTS
SEITLICHANSCHLÜSSE**



**BOCCHIE POSTERIORI
REAR PORTS
HINTENANSCHLÜSSE**



F₄= Vedi sezione flange
E₄= Vedi sezione profilo alberi

F₄= See flange section
E₄= See splined shafts section

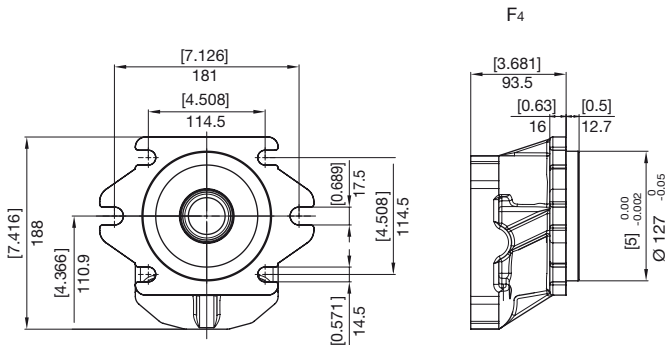
F₄= siehe Abschnitt Flansche
E₄= siehe Abschnitt Wellenprofile

**DIMENSIONI
SIZE
ABMESSUNGEN**

| GRUPPO GROUP BAUREIHE | TIPO TYPE TYP | A _{G4} | | B _{G4} | |
|-----------------------------|---------------------|-----------------|------|-----------------|------|
| | | mm | in | mm | in |
| 4 | 50 | 109,5 | 4,31 | 48,5 | 1,91 |
| | 63 | 116,5 | 4,59 | 55,5 | 2,19 |
| | 71 | 122,0 | 4,80 | 61,0 | 2,40 |
| | 80 | 127,5 | 5,02 | 66,5 | 2,62 |
| | 90 | 133,5 | 5,26 | 72,5 | 2,85 |

**FLANGE
FLANGES
FLANSCHEN**

5



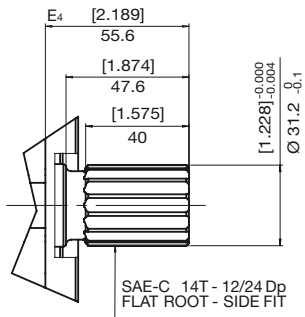
PROFILO ALBERI
SPLINE SHAFTS
WELLENPROFILE

HPG..4

S

COPPIA MAX
MAX TORQUE
MAX DREHMOMENT

900 N•m

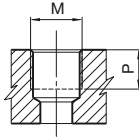




**BOCCHIE
PORTS
ANSCHLÜSSE**

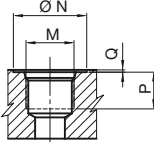
HPG..4

G LATERALE
LATERAL
SEITLICH
T POSTERIORE
REAR
HINTEN



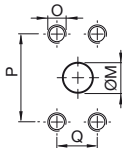
| TIPO TYPE TYP | M | | P | |
|---------------------|--------|-----|----|------|
| | | Nm | mm | in |
| G8 | 1 1/4" | 200 | 21 | 0,83 |
| G9 | 1 1/2" | 210 | 25 | 0,83 |
| G0 | 2" | 210 | 32 | 0,75 |
| T7 | 1" | 160 | 21 | 1,26 |
| T8 | 1 1/4" | 200 | 21 | 0,83 |

U LATERALE
LATERAL
SEITLICH
C POSTERIORE
REAR
HINTEN



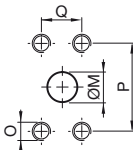
| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | N | | P | | Q | | M | |
|---------------------|------------------------------|----|------|----|------|-----|------|----------------|-----|
| | | mm | in | mm | in | mm | in | | Nm |
| U7 | 1" | 49 | 1,93 | 20 | 0,79 | 0,3 | 0,01 | 1-5/16"-12 UNF | 160 |
| U8 | 1 1/4" | 58 | 2,28 | 20 | 0,79 | 0,3 | 0,01 | 1-5/8"-12 UNF | 200 |
| U9 | 1 1/2" | 65 | 2,56 | 20 | 0,79 | 0,3 | 0,01 | 1-7/8"-12 UNF | 200 |
| C7 | 1" | 49 | 1,93 | 20 | 0,79 | 0,3 | 0,01 | 1-5/16"-12 UNF | 160 |
| C8 | 1 1/4" | 58 | 2,28 | 20 | 0,79 | 0,3 | 0,01 | 1-5/8"-12 UNF | 200 |

N LATERALE
LATERAL
SEITLICH



| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | M | | P | | Q | | O | |
|---------------------|------------------------------|------|------|------|------|------|------|----------------|----|
| | | mm | in | mm | in | mm | in | | Nm |
| N8 | 1 1/4" | 34,0 | 1,34 | 58,7 | 2,31 | 30,2 | 1,19 | 7/16"-14UNC-2B | 38 |
| N9 | 1 1/2" | 39 | 1,54 | 69,9 | 2,74 | 35,7 | 1,40 | 1/2"-13UNC-2B | 70 |
| N0 | 2" | 51,0 | 2,00 | 77,8 | 3,06 | 42,9 | 1,69 | 1/2"-13UNC-2B | 70 |

F LATERALE
LATERAL
SEITLICH



| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | M | | P | | Q | | O | |
|---------------------|------------------------------|------|------|------|------|------|------|-----|----|
| | | mm | in | mm | in | mm | in | | Nm |
| F8 | 1 1/4" | 30,5 | 1,34 | 58,7 | 2,31 | 30,2 | 1,19 | M10 | 38 |
| F9 | 1 1/2" | 39 | 1,54 | 69,9 | 2,74 | 35,7 | 1,40 | M12 | 70 |
| F0 | 2" | 51,0 | 2,00 | 77,8 | 3,06 | 42,9 | 1,69 | M12 | 70 |

FLANGE
FLANGE
FLANSCH

5



ESTREMITÀ ALBERO
SHAFT PROFIL
WELLENENDE

S



BOCCHIE
PORTS
ANSCHLÜSSE

G T



U C



N
F





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

HPG..4

HPG

PA

4

90

S

5

S

F0 F9

B

ST

**SERIE
SERIES
SERIE**

**PRODOTTO
PRODUCT
PRODUKT**
MA - Motore
PA - Pompa singola

MA - Motor
PA - Pump

MA - Motor
PA - Pumpe

**GRUPPO
GROUP
BAUGRÖSSE**

4

**CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN**

50 - 50.00
63 - 63.00
71 - 71.00
80 - 80.50
90 - 90.50

**SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG**
S - Antioraria/sinistra
D - Oraria/destra

S - Counterclockwise
D - Clockwise

S - Linkslauf
D - Rechtslauf

**FLANGIA ANTERIORE
FRONT FLANGE
VORDERER FLANSCH**

5 - SAE C 2/4 FORI

5 - SAE C 2/4 HOLES

5 - SAE C 2/4 BOHRUNGEN

**COPERCHI
COVERS
DECKEL**
ST - Standard

GUARNIZIONI - SEALS - DICHTUNGEN
B - NBR
R - NBR alte pres. (picco 25 bar)
For high pres. (peak 25 bar)
Hochdruck (spitzen 25 bar)
V - Viton
W - Viton alte pres. (picco 25 bar)
For high pres. (peak 25 bar)
Hochdruck (spitzen 25 bar)

**BOCCHIE STD - STANDARD PORT - STANDARD ANSCHLÜSSE
CILINDRATA - DISPLACEMENT - FÖRDER-/SCHLUCKVOLUMEN**

| 50.....80 | | 90 | |
|-----------------------------|-------|-----------------------------|-------|
| Pompe - Pumps Pumpen IN/OUT | | Pompe - Pumps Pumpen IN/OUT | |
| G9 G8 | U8 U7 | G0 G9 | U9 U8 |
| N9 N8 | F9 F8 | N0 N9 | F0 F9 |
| T8 T7 | C8 C7 | T8 T7 | C8 C7 |

MOTORI - MOTORS - MOTOREN OUT/IN

**ESTREMITÀ D'ALBERO
SHAFT PROFIL
WELLENENDE**

S - SCANALATO SAE C 14T

S - SAE C 14T SPLINED

S - KEIWELLE SAE C 14T

Le pompe multiple sono combinazioni di due o più sezioni trascinate da un unico albero. Il trascinamento delle sezioni che compongono la pompa multipla avviene per mezzo di giunti scanalati.

La pompa multipla così composta può avere aspirazione e mandata per ogni stadio oppure, laddove possibile, aspirazione unica e più mandate.

Per le singole sezioni valgono i valori riportati a catalogo con alcune limitazioni di pressione derivanti dalla coppia massima del giunto di trascinamento e dell'estremità di albero.

La velocità massima di una pompa multipla è limitata al valore minimo delle velocità massime delle singole sezioni.

A seguire un utile esempio per dimensionare correttamente la coppia trasmissibile all'estremità di albero e per ogni singolo stadio di una pompa tripla gruppo 3 + gruppo 3 + gruppo 2 a determinate pressioni di esercizio su ogni stadio.

ESEMPIO POMPA TRIPLA:

HPGPC322D29E7E5B322E7E5205E3E3ST

La formula del calcolo della coppia da impiegare è:

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

dove:

M = Coppia (Nm)

ΔP = Pressione (bar)

c = Cilindrata pompa (cm³)

62,83 = Fattore di conversione

η_m = Rendimento meccanico = 0,9

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 3:

Gruppo 2, cilindrata 4,5 cm³ Pressione di funzionamento 210 bar: M₃ = 16.7 Nm
La condizione del giunto 2 è soddisfatta. (limite massimo 100 Nm).

Stadio 2:

Gruppo 3, cilindrata 21,5 cm³ Pressione di funzionamento 200 bar: M₂ = 76 Nm
M₃+M₂=92.7 Nm .
La condizione del giunto 1 è soddisfatta. (limite massimo 200 Nm).

Stadio 1:

Gruppo 3, cilindrata 21,5 cm³ Pressione di funzionamento 200 bar: M₁ = 76 Nm
M₃+M₂+M₁ = 168.7 Nm .
La condizione dell'albero conduttore è soddisfatta. (limite massimo 310 Nm).

Multiple gear pumps are combinations of two or more sections driven by a single shaft. The sections which constitute the pump are driven by means of splined joints.

The multiple gear pump can have suction and delivery for each stage or, where possible, single suction and multiple delivery.

For the individual selections, the values indicated in the catalogue apply, with some pressure limits derived from the maximum torque of the drive joint and shaft profile.

The maximum speed of a multiple gear pump is limited by the lowest maximum speed value of the individual sections.

Below is a useful example for correctly dimensioning the torque transmissible to the shaft profile and for each individual stage of a group 3 + group 3 + group 2 triple pump at fixed working pressures on each stage.

EXAMPLE OF TRIPLE PUMP:

HPGPC322D29E7E5B322E7E5205E3E3ST

The calculation formula of the torque to use is:

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

where:

M = Torque (Nm)

ΔP = Pressure (bar)

c = Pump displacement (cm³)

62,83 = Conversion factor

η_m = Mechanical efficiency = 0,9

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 than or equal to the maximum permissible torque of each drive joint, including the pump shaft profile.

Stage 3:

Group 2, displacement 4,5 cm³ Operating pressure 210 bar: M₃ = 16.7 Nm
The joint 2 condition is satisfied (maximum limit 100 Nm).

Stage 2:

Group 3, displacement 21,5 cm³ Operating pressure 200 bar: M₂ = 76 Nm
M₃+M₂=92.7 Nm
The joint 1 condition is satisfied (maximum limit 200 Nm)

Stage 1:

Group 3, displacement 21,5 cm³ Operating pressure 200 bar: M₁ = 76 Nm
M₃+M₂+M₁ = 168.7 Nm
The drive shaft condition is satisfied. (maximum limit 310 Nm).

Die Mehrfachpumpen sind Kombinationen von zwei oder mehreren Pumpenstufen, die von einer einzigen Welle angetrieben werden. Der Antrieb der Pumpenstufen, aus denen sich die Mehrfachpumpe zusammensetzt, erfolgt über Nutwellen.

Die auf diese Weise aufgebaute Mehrfachpumpe kann jeweils eine Saug- und Druckseite für jede Stufe oder, sofern dies möglich ist, eine Saugseite und mehrere Druckseiten aufweisen. Für die einzelnen Pumpenstufen gelten die im Katalog aufgeführten Werte, jedoch mit einigen Druckeinschränkungen, die auf das Höchstdrehmoment der Mitnehmerwelle und des Wellenendes zurückzuführen sind.

Die Höchstdrehzahl einer Mehrfachpumpe entspricht der niedrigsten Drehzahl aller montierten Pumpen.

Nachfolgend ein nützliches Beispiel für die korrekte Bestimmung des übertragbaren Drehmoments auf das Wellenende und für jede einzelne Stufe einer Dreifachpumpe Baugröße 3 + Baugröße 3 + Baugröße 2 mit bestimmten Betriebsdrücken in jeder Stufe.

BEISPIEL EINER DREIFACHPUMPE:

HPGPC322D29E7E5B322E7E5205E3E3ST

Formel zur Berechnung des erforderlichen Drehmoments:

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

wobei:

M = Drehmoment (Nm)

ΔP = Druck (bar)

c = Fördervolumen der Pumpe (cm³)

62,83 = Umrechnungsfaktor

η_m = mechanischer Wirkungsgrad = 0,9

Die Berechnung erfolgt ausgehend von der letzten Stufe der Pumpe bis hin zur Hauptwelle. In allen Stufen muss das Ergebnis des berechneten Drehmoments kleiner oder gleich dem Wert des zulässigen Höchstdrehmoments jeder Mitnehmerwelle, einschließlich Wellenende der Pumpe, sein.

Stufe 3:

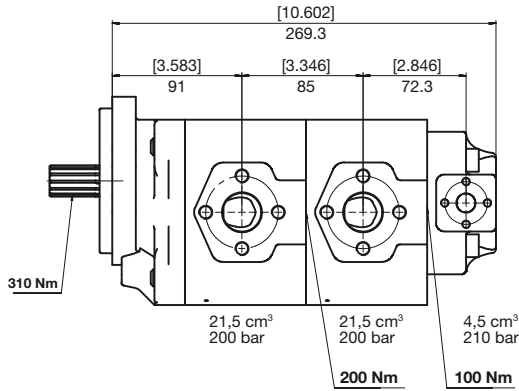
Baugröße 2, Fördervolumen 4,5 cm³, Betriebsdruck 210 bar: M₃ = 16.7 Nm
Die Bedingung der Mitnehmerwelle 2 ist erfüllt (Höchstgrenze 100 Nm).

Stufe 2:

Baugröße 3, Fördervolumen 21,5 cm³, Betriebsdruck 200 bar: M₂ = 76 Nm
M₃+M₂=92.7 Nm
Die Bedingung der Mitnehmerwelle 1 ist erfüllt (Höchstgrenze 200 Nm).

Stufe 1:

Baugröße 3, Fördervolumen 21,5 cm³, Betriebsdruck 200 bar: M₁ = 76 Nm
M₃+M₂+M₁ = 168.7 Nm
Die Bedingung der Antriebswelle ist erfüllt (Höchstgrenze 310 Nm).



1° STADIO
STAGE
STUFE

2° STADIO
STAGE
STUFE

3° STADIO
STAGE
STUFE

1° STADIO STAGE STUFE

HPG **PC** **3** **22** **D** **2** **9** **E7E5** **B**

2° STADIO STAGE STUFE

G **3** **22** **E7E5**

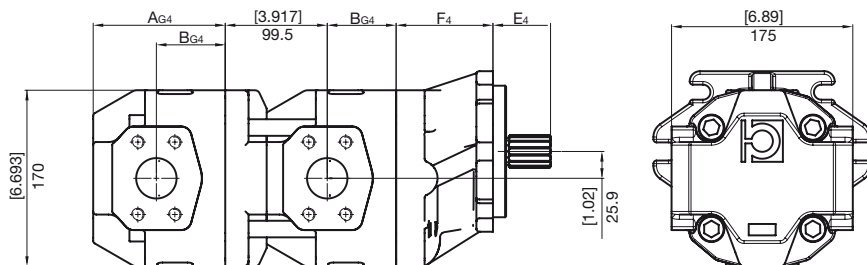
3° STADIO STAGE STUFE

G **2** **05** **E3E3** **ST**

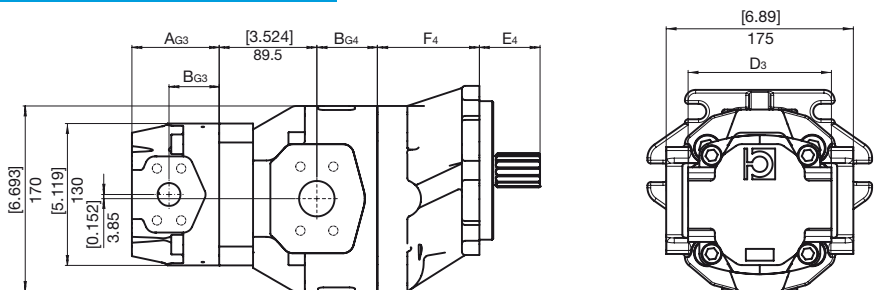
GIUNTO DI ACCOPIAMENTO
COUPLING JOINT
WELLENKUPPLUNG

| GIUNTO DI ACCOPIAMENTO COUPLING JOINT WELLENKUPPLUNG | COPPIA MASSIMA TRASMISSIBILE MAXIMUM TRANSMITTED TORQUE MAX. ÜBERTRAGBARES DREHMOMENT |
|--|---|
| HPGP•4 + HPGP•4 | 450 N•m |
| HPGP•4 + HPGP•3 HPGP•3 + HPGP•3 | 200 N•m |
| HPGP•4 + HPLP•2 HPGP•3 + HPLP•2 HPGP•3 + HPGP•2 HPGP•2 + HPGP•2 | 100 N•m |

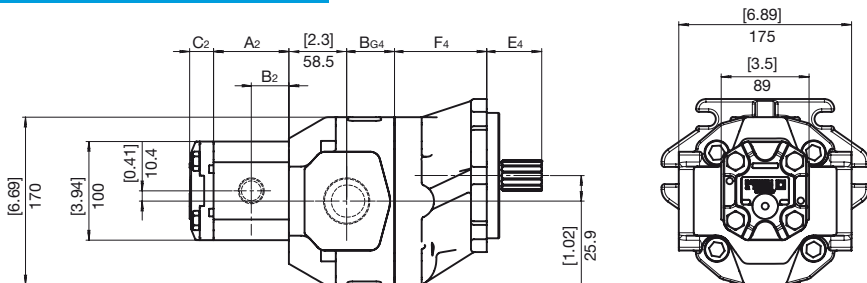
HPGP•4+HPGP•4



HPGP•4+HPGP•3



HPGP•4+HPLP•2

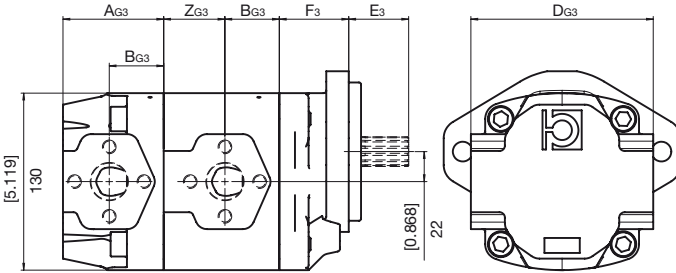




**DIMENSIONI
SIZE
ABMESSUNGEN**

HPGP.

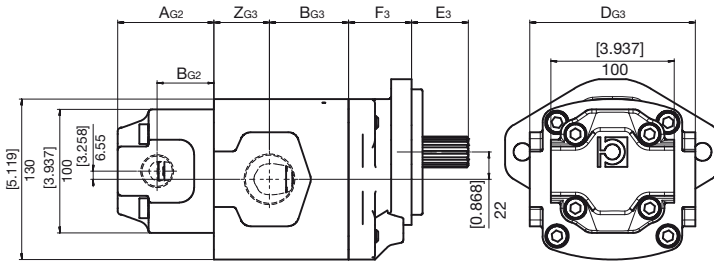
HPGP•3+HPGP•3



**CILINDRATA
DISPLACEMENT
FÖRDER-/SCHLUCKVOLUMEN**

| Z _{G3} | 22...56 | | 61...90 | |
|-----------------|---------|----|---------|------|
| | mm | in | mm | in |
| 45 | 1,77 | | 48 | 1,89 |

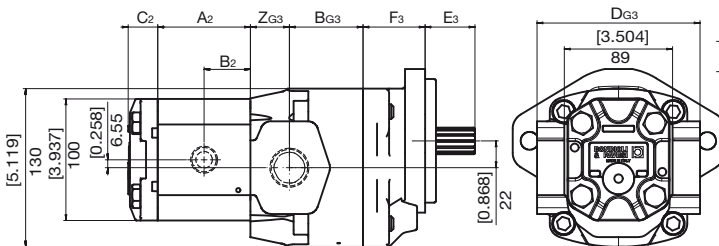
HPGP•3+HPGP•2



**CILINDRATA
DISPLACEMENT
FÖRDER-/SCHLUCKVOLUMEN**

| Z _{G3} | 22...56 | | 61...90 | |
|-----------------|---------|----|---------|------|
| | mm | in | mm | in |
| 45 | 1,77 | | 48 | 1,89 |

HPGP•3+HPLP•2



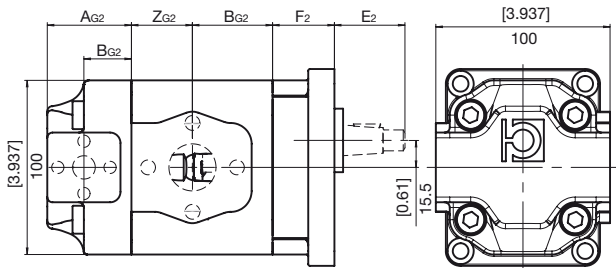
**CILINDRATA
DISPLACEMENT
FÖRDER-/SCHLUCKVOLUMEN**

| Z _{G3} | 22...56 | | 61...90 | |
|-----------------|---------|----|---------|------|
| | mm | in | mm | in |
| 32 | 1,26 | | 49 | 1,93 |

DIMENSIONI
SIZE
ABMESSUNGEN

HPGP..

HPGP•2+HPGP•2



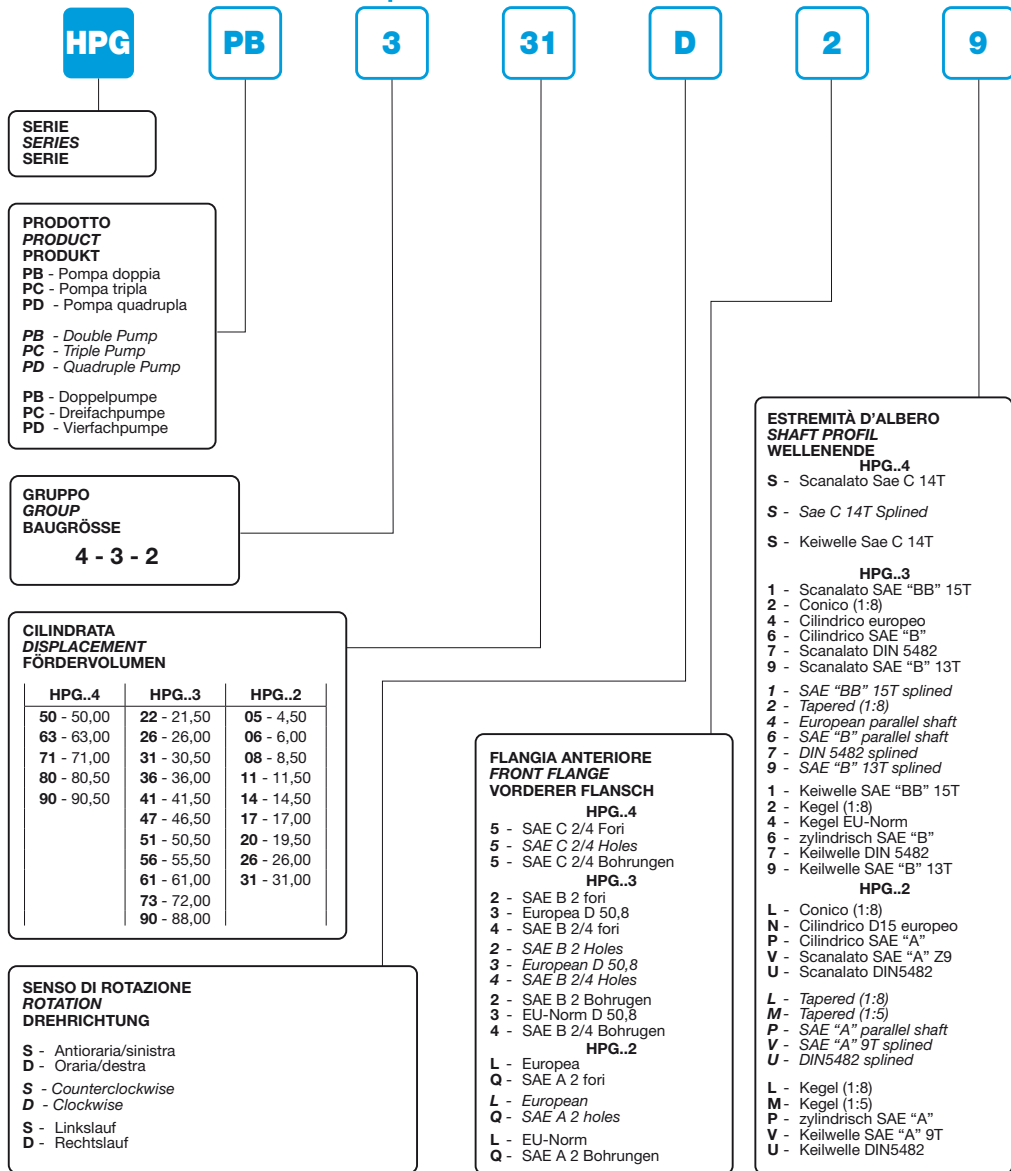
CILINDRATA
DISPLACEMENT
FÖRDER-/SCHLUCKVOLUMEN

| Z_{G2} | 5...11 | | 14...17 | | 20...31 | |
|----------|--------|------|---------|------|---------|------|
| | mm | in | mm | in | mm | in |
| Z_{G2} | 26,5 | 1,04 | 35 | 1,38 | 49,5 | 1,95 |

Questa pagina è intenzionalmente bianca
This page is intentionally blank
Diese Seite ist bewusst frei gelassen

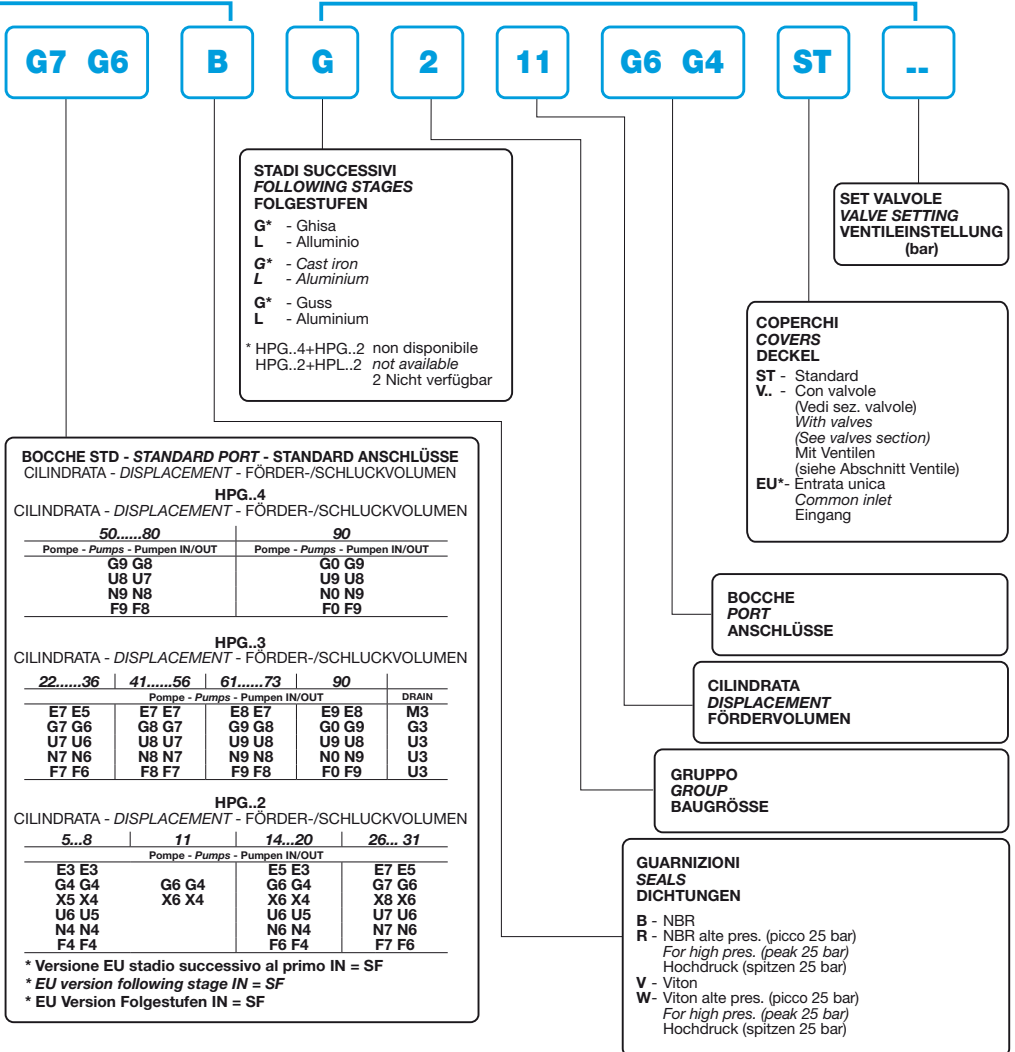
ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

1° STADIO - STAGE - STUFE (Descrizione dello Stadio - Stage Description - Stufe-Benennung)





STADI SUCCESSIVI - FOLLOWING STAGES - FOLGESTUFEN
(Descrizione dello Stadio - Stage Description - Stufe Benennung)



PER OGNI STADIO AGGIUNTO
RIPETERE LA DESCRIZIONE

DESCRIPTION TO BE REPEATED
FOR EVERY ADDED SECTION

FÜR JEDE STUFE BITTE DIE
BESCHREIBUNG WIEDERHOLEN.

POMPE E MOTORI CON VALVOLE INTEGRATE
INTEGRATED VALVES FOR PUMP AND MOTORS
PUMPEN UND MOTOREN MIT INTEGRIERTEN VENTILEN

Con lo scopo di integrare più funzioni in un unico componente il circuito idraulico e quindi per ridurre anche la circuitistica d'impianto è possibile incorporare nel coperchio della pompa alcuni tipi di valvole di controllo pressione oltre a valvole di non ritorno.

Per ottenere informazioni più accurate della gamma di personalizzazioni si prega di contattare il ns servizio tecnico-commerciale.

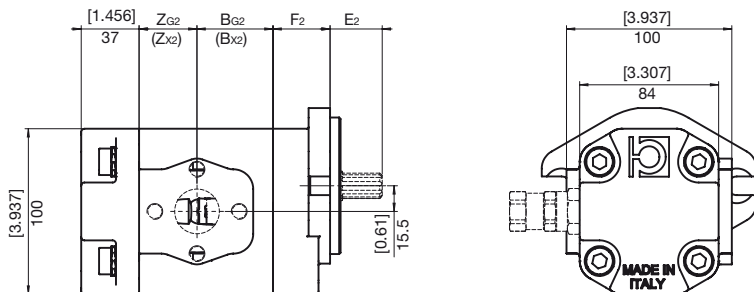
To integrate many functions into a single component of the hydraulic circuit and to limit the installation circuitry, it is possible to have some types, pressure control valves, and check valves incorporated into the pump cover.

For further information about the series of customized solutions, please contact our Technical and Commercial Department.

Um mehrere Funktionen in einem einzigen Bauteil des Hydraulikkreislaufs zusammenzu und, um die Anzahl der Bauteile zu reduzieren, können in den Deckel der Pumpe einige Ventiltypen zur Regelung von Druck sowie Rückschlagventile integriert werden.

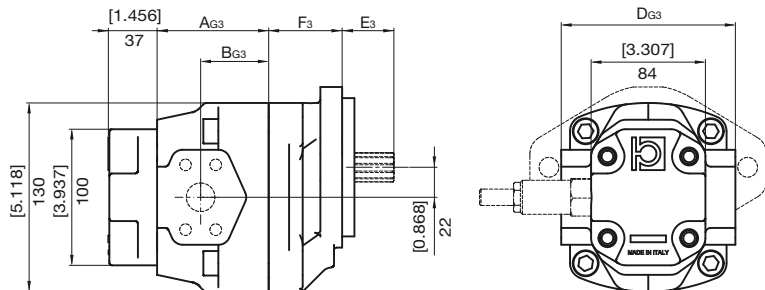
Für nähere Informationen über die Möglichkeiten der individuellen Auslegung wenden Sie sich bitte an unseren technischen Kundendienst und Vertrieb.

V..



HPG..2

V..



HPG..3

**VALVOLE
VALVES
VENTILE**

VA



**VALVOLA ANTICAVITAZIONE
ANTI-CAVITATION CHECK VALVE
RÜCKSCHLAGVENTIL**

VB



**VALVOLA LIMITATRICE DI PRESSIONE A TARATURA FISSA CON VALVOLA ANTICAVITAZIONE DRENAGGIO INTERNO
ANTI-CAVITATION CHECK VALVE AND RELIEF VALVE WITH INTERNAL DRAIN
FESTEINGESTELLTES DRUCKBEGRENZUNGSVENTIL MIT INTERNEM LECKÖL**

VC



**VALVOLA LIMITATRICE DI PRESSIONE A TARATURA FISSA CON VALVOLA ANTICAVITAZIONE DRENAGGIO INTERNO
ANTI-CAVITATION CHECK VALVE AND RELIEF VALVE WITH EXTERNAL DRAIN
FESTEINGESTELLTES DRUCKBEGRENZUNGSVENTIL MIT EXTERNEM LECKÖL**

VD



**VALVOLA LIMITATRICE DI PRESSIONE DIRETTA REGOLABILE A DRENAGGIO INTERNO
PRESSURE RELIEF VALVE WITH INTERNAL DRAIN
EINSTELLBARES DRUCKBEGRENZUNGSVENTIL MIT INTERNEM LECKÖL**

VE



**VALVOLA LIMITATRICE DI PRESSIONE DIRETTA REGOLABILE A DRENAGGIO ESTERNO
PRESSURE RELIEF VALVE WITH EXTERNAL DRAIN
EINSTELLBARES DRUCKBEGRENZUNGSVENTIL MIT EXTERNEM LECKÖL**

VW



**DOPPIA VALVOLA ANTICAVITAZIONE DRENAGGIO ESTERNO
DOUBLE ANTI-CAVITATION VALVE EXTERNAL DRAIN
DOPPEL NACHSAUGVENTIL LECKÖLANSCHLUSS**

VV



**DOPPIA VALVOLA LIMITATRICE DI PRESSIONE A TARATURA FISSA + VALV. ANTICAVITAZ. DRENAGGIO ESTERNO
DOUBLE ANTI-CAVITATION CHECK VALVE AND RELIEF VALVE + ANTI-CAVITATION VALVE EXTERNAL DRAIN
DOPPEL DRUCKBEGRENZUNGSVENTIL, FEST EINGESTELLT MIT NACHSAUGVENTIL; EXTERNER LECKÖLANSCHLUSS**

**POMPE LOAD SENSING
LOAD SENSING PUMP
LOAD SENSING PUMPE**

Pompe ad ingranaggi serie HPGPA3 con load sensing integrato nel coperchio posteriore oppure in un bloccetto flangiato sulla mandata. Il sistema è utilizzato principalmente per comandare unità idroguida load sensing oppure distributori load sensing.

PRINCIPIO DI FUNZIONAMENTO:

Il sistema, prelevando il segnale dall'idroguida LS o dal distributore LS, fornisce la portata (CF) necessaria all'idroguida nella situazione di carico in cui essa si trova indipendentemente da numero di giri, garantendone sempre il corretto funzionamento e lavorando alla pressione richiesta dal carico. La portata eccedente (EF) è indirizzata ai servizi. Quando l'idroguida è in condizioni di riposo tutta la portata (EF) è fornita ai servizi.

Load sensing statico: deve essere utilizzata con unità idroguida o distributori load sensing statici. Load sensing dinamico deve essere utilizzato con unità idroguida o distributori load sensing dinamici.

Gear pumps series HPGPA3 with load sensing integrated in the rear cover or in a block flanged onto the delivery. The system is used mainly to control load sensing power steering units or load sensing distributors.

OPERATING PRINCIPLE:

Receiving the signal from the LS power steering or from the LS distributor, the system supplies the necessary flow (CF) to the power steering in the current load situation, irrespective of the number of revs, always ensuring correct operation and working at the required load pressure. The excess flow (EF) is sent to the utilities. When the power steering is in rest conditions, the whole flow (EF) is sent to the utilities.

Static load sensing: must be used with static power steering units or load sensing distributors. Dynamic load sensing must be used with dynamic power steering units or load sensing distributors.

Zahnradpumpen der Baureihe HPGPA3 mit Load Sensing, das im hinteren Deckel oder in einem geflanschten Block auf der Druckseite integriert ist. Das System dient in erster Linie zur Steuerung von Load Sensing Hydrolenkungseinheiten oder Load Sensing Steuergeräten.

FUNKTIONSPRINZIP:

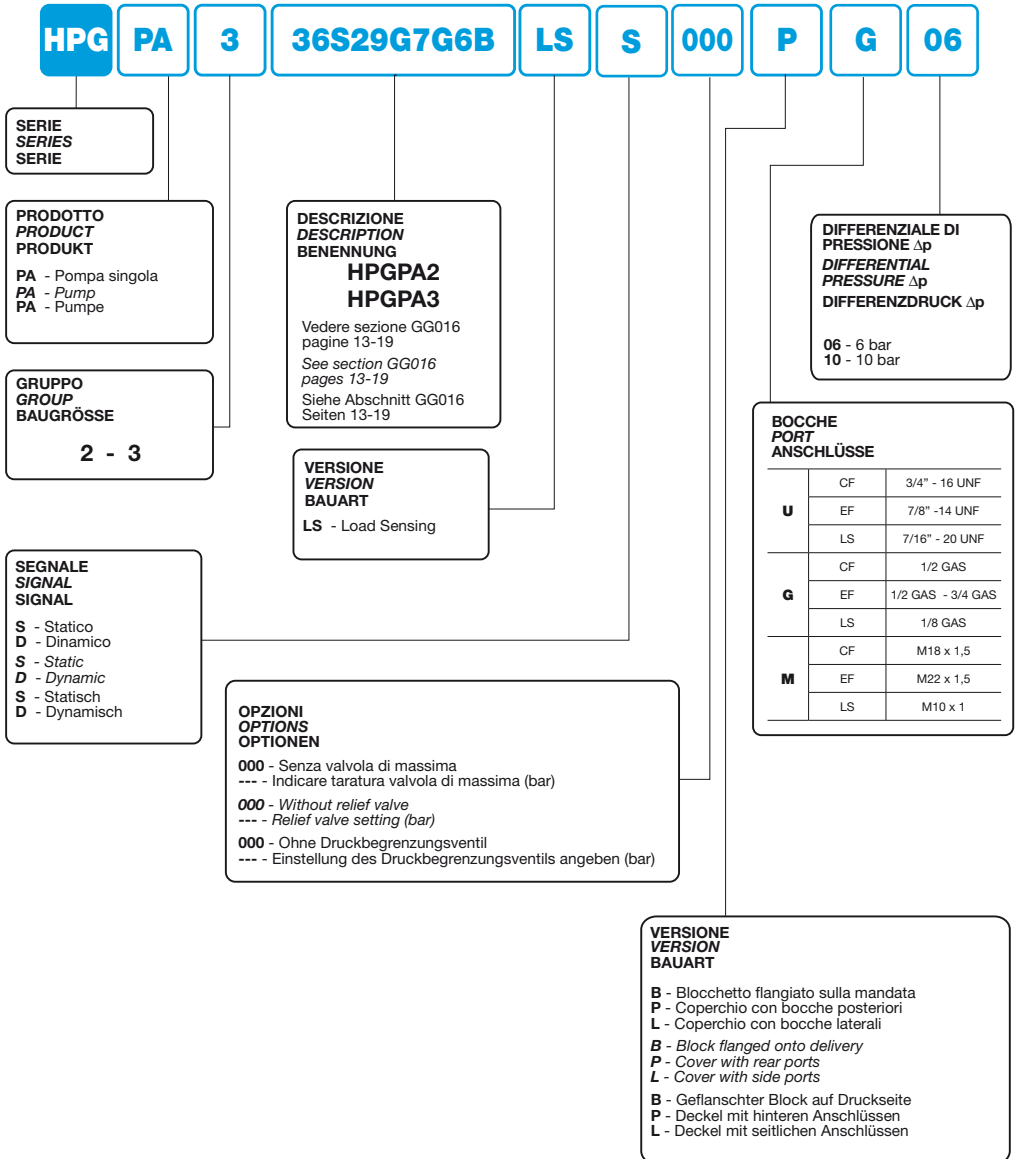
Beim Eingang des Signals von der LS Hydrolenkung oder vom LS Steuergerät liefert das System das erforderliche Volumen (CF) an die Hydrolenkung im Lastzustand, in der sich diese unabhängig von der Drehzahl befindet, und gewährleistet somit stets deren korrekte Funktionsweise mit dem von der Last geforderten Druck. Das überschüssige Volumen (EF) geht hierbei an die Verbraucher. Ist die Hydrolenkung im Ruhezustand, wird das gesamte Volumen (EF) an die Verbraucher geleitet.

Statisches Load Sensing: Nutzung nur mit statischen Load Sensing Hydrolenkungseinheiten oder Steuergeräten. Dynamisches Load Sensing: Nutzung nur mit dynamischen Load Sensing Hydrolenkungseinheiten oder Steuergeräten.

| | | |
|--|--|---|
| <p>S</p> <p>LOAD SENSING STATICO LOAD SENSING STATIC STATIC LOAD SENSING</p> | <p>LS: load sensing signal CF: central flow EF: excess flow</p> | <p>D</p> <p>LOAD SENSING DINAMICO LOAD SENSING DYNAMIC DYNAMIC LOAD SENSING</p> |
| <p>HPGP.2</p> | <p>HPGP.3</p> | <p>HPGP.3</p> |
| <p>L</p> <p>BOCCHIE LATERALI LATERAL PORTS SEITLICH ANSCHLÜSSE</p> | <p>L</p> <p>BOCCHIE LATERALI LATERAL PORTS SEITLICH ANSCHLÜSSE</p> | <p>L</p> <p>BOCCHIE LATERALI LATERAL PORTS SEITLICH ANSCHLÜSSE</p> |
| <p>P</p> <p>BOCCHIE POSTERIORI REAR PORTS HINTEN ANSCHLÜSSE</p> | <p>P</p> <p>BOCCHIE POSTERIORI REAR PORTS HINTEN ANSCHLÜSSE</p> | <p>B</p> <p>BLOCCETTO FLANGIATO SULLA MANDATA BLOCK FLANGED ONTO DELIVERY GEFLANSCHTER BLOCK AUF DRUCKSEITE</p> |

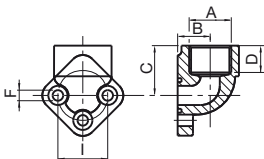


ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG



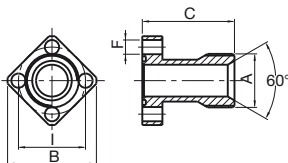
RACCORDI E GUARNIZIONI
CONNECTORS AND SEALS
VERBINDUNGEN UND DICHTUNGEN

RACCORDI A GOMITO
UNION ELBOW
WINKELVERBINDUNGEN



| TIPO TYPE TYP | DESCRIZIONE DESCRIPTION BENENNUNG | A | | B | | C | | D | | I | | F | |
|---------------------|---|--------|------|------|----|------|----|------|----|------|------|------|----|
| | | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in |
| HPL5767E3G31R | GR.RG 30x13.5 G3/8" | 3/8" | 17,5 | 0,69 | 26 | 1,02 | 14 | 0,56 | 30 | 1,18 | 6,5 | 0,26 | |
| HPL5767E3G41R | GR.RG 30x13.5 G1/2" | 1/2" | 17,5 | 0,69 | 26 | 1,02 | 14 | 0,56 | 30 | 1,18 | 6,5 | 0,26 | |
| HPL5767E4G61R | GR.RG 40x20 G3/4" | 3/4" | 21 | 0,82 | 36 | 1,42 | 16 | 0,60 | 40 | 1,58 | 8,5 | 0,33 | |
| HPL5767E7G71R | GR.RG 51x27 G1" | 1" | 27 | 1,06 | 43 | 1,70 | 21 | 0,80 | 51 | 2,00 | 10,5 | 0,41 | |
| HPL5767E8G81R | GR.RG 62x34 G1 1/4" | 1 1/4" | 34,5 | 1,36 | 55 | 2,17 | 27 | 1,06 | 62 | 2,45 | 10,5 | 0,41 | |
| HPL5767E4G41R | GR.RG 40x20 G1/2" | 1/2" | 21 | 0,83 | 36 | 1,42 | 16 | 0,63 | 40 | 1,58 | 8,5 | 0,33 | |
| HPL5767E3M41R | GR.RG 30x13.5 M18x1.5 | 18X1.5 | 17,5 | 0,69 | 26 | 1,02 | 14 | 0,56 | 30 | 1,18 | 6,5 | 0,26 | |

RACCORDI DIRITTI
STRAIGHT UNION
GERADE VERBINDUNGEN



| TIPO TYPE TYP | DIMENSIONE SIZE GRÖSSE | A | | B | | C | | I | | F | |
|---------------------|------------------------------|--------|----|------|----|------|----|------|------|------|----|
| | | mm | in | mm | in | mm | in | mm | in | mm | in |
| HPL5767E3G42R | GR.RD 30x13.5 (1/2") | 1/2" | 46 | 1,81 | 55 | 2,16 | 30 | 1,18 | 6,5 | 0,26 | |
| HPL5767E5G42R | GR.RD 40x20 (3/4") | 3/4" | 53 | 2,09 | 40 | 1,58 | 40 | 1,58 | 8,5 | 0,33 | |
| HPL5767E7G42R | GR.RD 51x27 (1") | 1" | 73 | 2,88 | 55 | 2,17 | 51 | 2,00 | 10,5 | 0,41 | |
| HPL5767E8G42R | GR.RD 62x34 (1 1/4") | 1 1/4" | 86 | 3,39 | 70 | 2,76 | 62 | 2,45 | 10,5 | 0,41 | |

NOTA: I raccordi vengono forniti completi di viti, rondelle e guarnizioni OR.

NOTE: Connectors are supplied complete with bolts, washers and O-rings.

BEMERKUNG: Die Verbindungen werden komplett mit Schrauben, U-Scheiben und O-Ringen geliefert.

KIT GUARNIZIONI
SEALS KIT
DICHTUNGSSÄTZE

| TIPO TYPE TYP | DESCRIZIONE | DESCRIPTION | BEZEICHNUNG |
|---------------------|------------------------------------|-----------------------------------|-----------------------------------|
| HPL48683PAUNB00R05 | POMPA HPG GR3 STANDARD NBR | PUMP HPG GR3 STANDARD NBR | PUMPE HPG GR3 STANDARD NBR |
| HPL48683PAUNV00R05 | POMPA HPG GR3 STANDARD VITON | PUMP HPG GR3 STANDARD VITON | PUMPE HPG GR3 STANDARD VITON |
| HPL48683PAUNB01R05 | POMPA HPG GR3 SAE-ALBERO1/6 NBR | PUMP HPG GR3 SAE-SHAFT 1/6 NBR | PUMPE HPG GR3 SAE-WELLE 1/6 NBR |
| HPL48683PAUNV01R05 | POMPA HPG GR3 SAE-ALBERO1/6 VITON | PUMP HPG GR3 SAE-SHAFT 1/6 VITON | PUMPE HPG GR3 SAE-WELLE 1/6 VITON |
| HPL48684PAUNB00R05 | POMPA HPG GR4 STANDARD NBR | PUMP HPG GR4 STANDARD NBR | PUMPE HPG GR4 STANDARD NBR |
| HPL48684PAUNV00R05 | POMPA HPG GR4 STANDARD VITON | PUMP HPG GR4 STANDARD VITON | PUMPE HPG GR4 STANDARD VITON |
| HPL48683MARVB10R05 | MOTORE HPG GR3 STANDARD NBR | MOTOR HPG GR3 STANDARD NBR | MOTOR HPG GR3 STANDARD NBR |
| HPL48683MARVV10R05 | MOTORE HPG GR3 STANDARD VITON | MOTOR HPG GR3 STANDARD VITON | MOTOR HPG GR3 STANDARD VITON |
| HPL48683MARVB11R05 | MOTORE HPG GR3 SAE-ALBERO1/6 NBR | MOTOR HPG GR3 SAE-SHAFT 1/6 NBR | MOTOR HPG GR3 SAE-WELLE 1/6 NBR |
| HPL48683MARVV11R05 | MOTORE HPG GR3 SAE-ALBERO1/6 VITON | MOTOR HPG GR3 SAE-SHAFT 1/6 VITON | MOTOR HPG GR3 SAE-WELLE 1/6 VITON |