

NEW

Aluminum and cast

A modular and

FLANGE

Fully modular to IEC and Compact integrated motor.
NEMA C flange

ALLOY HOUSING

is vacuum impregnated (MIL-STD 276) for protection and sealing. No secondary finish required but readily accepts paint

REMOVABLE INSPECTION COVER

Allows periodic inspection of gearing during routine maintenance

GEARS

Hardened and ground gears.

OIL SEAL

Two oil seals on request

OUTPUT SHAFT

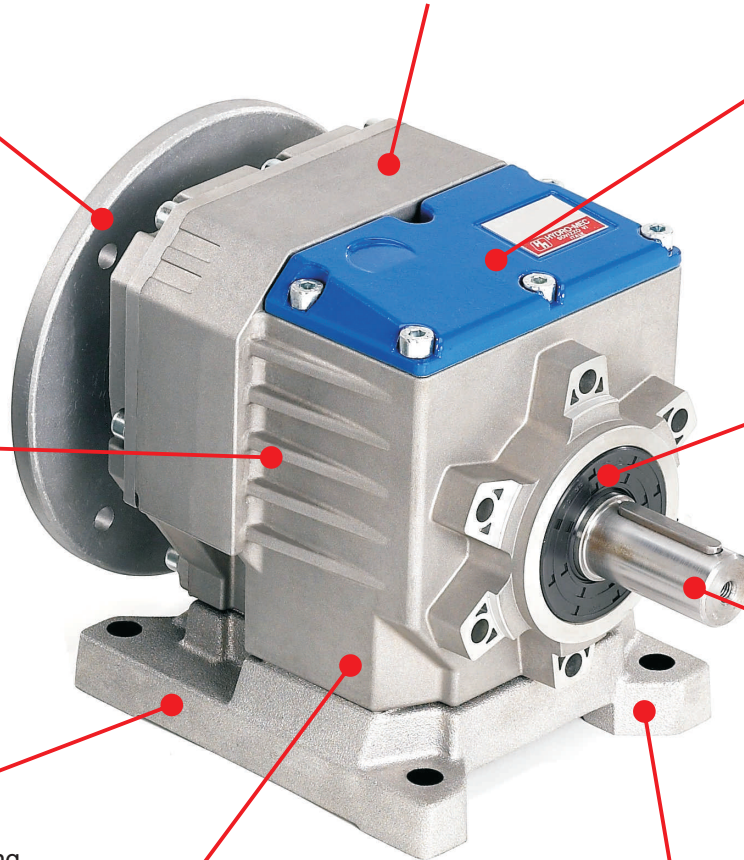
With well proportioned bearings

FEET

Removable feet.
With patented locking system.

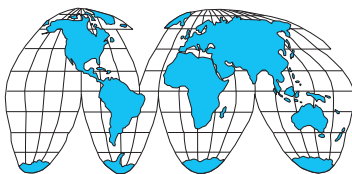
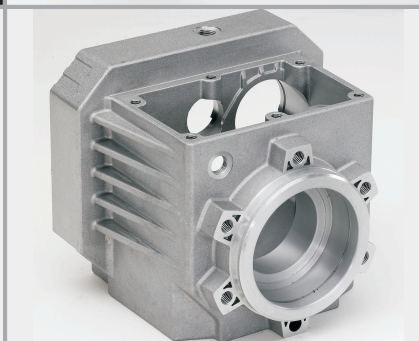
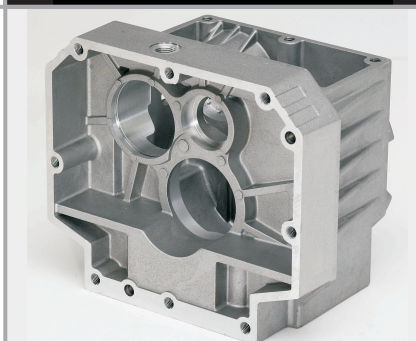
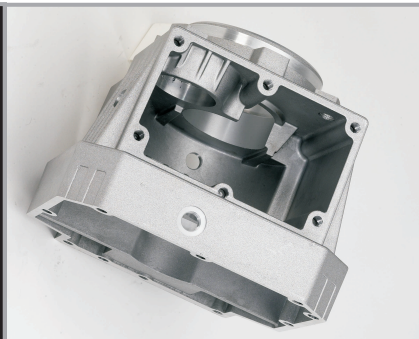
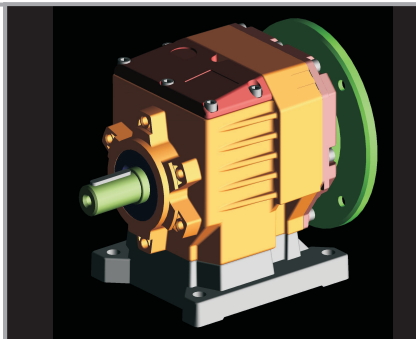
FOOT PRINTS

compatible to the main standard of the market.



Single-piece aluminum alloy housing

combines light weight with high tensile strength. Precision machined for alignment of bearings and gearing



World wide sales network.

iron in line gearboxes

Compact product

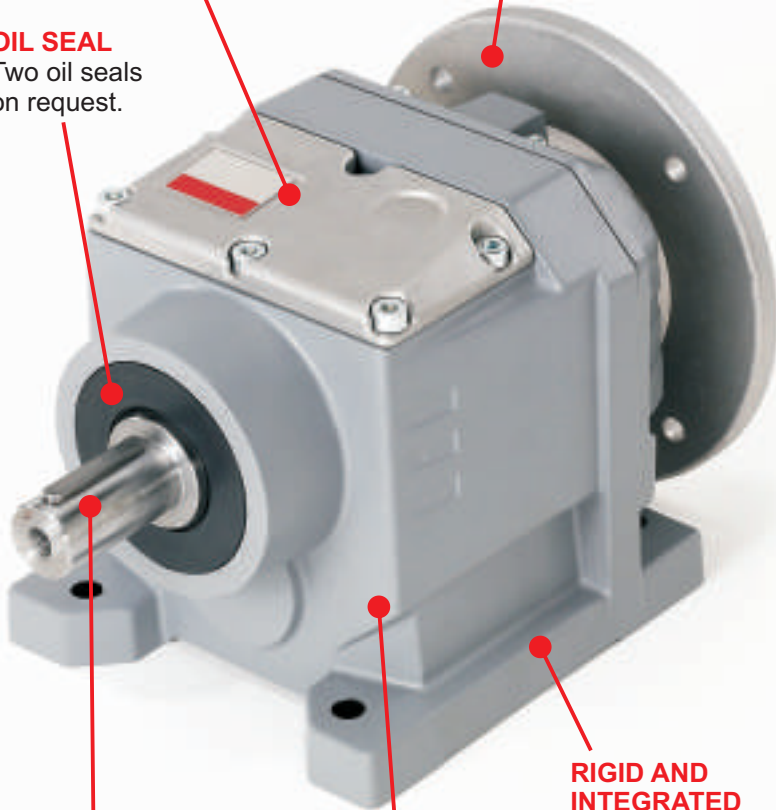
*Some internal
quality control
Equipment:*



REMOVABLE INSPECTION COVER
Allows periodic inspection of gearing during routine maintenance

FLANGE
Fully modular to IEC and Compact integrated motor.
NEMA C flange.

OIL SEAL
Two oil seals on request.













OUTPUT SHAFT
With well proportioned bearings

RIGID AND INTEGRATED FOOT PRINTS
compatible to the main standard of the market.

HOUSING
Robust cast iron housing

Lubricated for life with synthetic oil with operative range from -15° to +130°C



| | | |
|--|----|---|
| GUIDA ALLA SELEZIONE SELECTION GUIDE AUSWAHL GUIDE POUR LA SELECTION PARA LA SELECCION | 4 |  |
| CODIFICA HOW TO ORDER TYPENBEZICHNUNGEN CODIFICATION CODIFICACI3N | 10 |  |
| LUBRIFICAZIONE LUBRICATION SCHMIERUNG LUBRIFICATION LUBRICACI3N | 13 |  |
| CARICHI RADIALI E ASSIALI RADIAL AND AXIAL LOADS RADIALE UND AXIALE BELASTUNG CHARGES RADIALES ET AXIALES CARGA RADIAL Y AXIAL | 16 |  |
| SELEZIONE RIDUTTORI, DIMENSIONI GEARBOXES SELECTION, DIMENSIONS GETRIEBE OHNE MOTOR- AUSWAHL, ABMESSUNGEN S3LECTION R3DUCTEURS, DIMENSIONS SELECCI3N REDUCTORES, DIMENSIONES | 18 |  |
| SELEZIONE MOTORIDUTTORI GEARMOTORS SELECTION WAHL DES GETRIEBEMOTORS SELECTION DES MOTOREDUCTEURS SELECCI3N MOTO-REDUCTORES | 38 |  |
| ACCESSORI E VARIANTI ACCESSORIES AND OPTIONALS ZUBEH3R UND OPTIONEN ACCESSOIRES ET VARIANTES ACCESORIOS Y VARIANTES | 60 |  |
| INSTALLAZIONE, USO E MANUTENZIONE INSTALLATION USE AND MAINTENANCE EINBAUVORSCHRIFTEN UND WARTUNG INSTALLATION, UTILISATION ET ENTRETIEN INSTALACI3N, USO Y MANTENIMIENTO | 68 |  |
| LISTE PARTI DI RICAMBIO SPARE PARTS LISTS ERSATZTEILLISTE LISTES PI3CES DE RECHANGE LISTA DE REPUESTOS | 70 |  |
| MOTORI ELETTRICI ELECTRIC MOTORS ELEKTROMOTOREN MOTEURS 3LECTRIQUES MOTORES EL3CTRICOS | 72 |  |

La nostra ditta non si riterr3 responsabile per eventuali danni diretti o indiretti derivanti da un uso improprio dei prodotti e dalla mancata osservanza delle indicazioni riportate a catalogo.

Our company will not be responsible for any direct or indirect damages caused by a wrong use to the products and or for not observing the catalogue descriptions.

Bei nicht korrektem Einsatz unserer Getriebe oder bei Nichtbeachtung der Katalogvorschriften und daraus resultierender Zerst3rung der Getriebe entf3llt jegliche Haftung oder Gew3hrleistung unseres Hauses.

Notre firme n'est pas responsable pour d'3ventuels dommages directs ou indirects provenant d'une utilisation impropre des produits et de la non-observation des indications report3es sur le catalogue.

Nuestra empresa no se considerar3 responsable por daos directos o indirectos que sean debidos al uso indebido de los productos y al incumplimiento de las instrucciones contenidas en el cat3logo.

Ci riserviamo il diritto di apportare modifiche senza preavviso. Ci riserviamo inoltre il divieto di riprodurre o pubblicare parte o la totalit3 di questo catalogo senza nostra autorizzazione.

We reserve the right to make modifications at any time without prior notice. Furthermore we reserve the prohibition to reproduce or publish pages or whole parts of this catalogue without authorization.

Beh3lt sich das Recht vor, 3nderungen ohne vorherige Informationen durchzuf3hren. Die Ver3ffentlichung oder Reproduktion des Katalogs ohne Genehmigung ist verboten.

Nous nous r3servons le droit d'apporter toutes modifications 3 nos produits. La reproduction et la publication partielle ou totale de ce catalogue est interdite sans notre autorisation.

Nos reservamos el derecho de modificar el catalogo sin preaviso. Est3 prohibido reproducir parcial o totalmente 3ste catalogo sin nuestra autorizaci3n.



Per una corretta selezione del riduttore o motoriduttore è importante rispettare le seguenti indicazioni:

For a proper selection of the required gearbox it is essential to follow the following guide:

Fattore di servizio
Service factor
Betriebsfaktor
Facteur de service
Factor de servicio

1

Determinare tramite la seguente tabella il fattore di servizio f_s relativo all'applicazione.

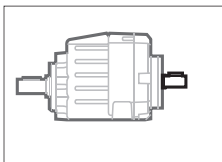
Find out the application service factor through the following table.

| Tipo di carico e avviamenti per ora Type of load and starts per hour | | f_s | | | |
|--|------|--|------|------|------|
| | | Ore di funz. giorn. Oper. hours per day | | | |
| | | 3 h | 10 h | 24 h | |
| Applicazione cont. o interm. con n.ro operazioni/ora Continuous or intermittent appl. with start/hour | 10 | Uniforme / Uniform | 0.8 | 1 | 1.25 |
| | | Moderato / Moderate | 1 | 1.25 | 1.5 |
| | | Forte / Heavy | 1.25 | 1.5 | 1.75 |
| Applicazione intermittente con n.ro operazioni/ora Intermittent application with start/hour | > 10 | Uniforme / Uniform | 1 | 1.25 | 1.5 |
| | | Moderato / Moderate | 1.25 | 1.5 | 1.75 |
| | | Forte / Heavy | 1.5 | 1.75 | 2.15 |

N.B. Per azionamenti con motore a scoppio o per funzionamento alternato istantaneo, moltiplicare il valore del coefficiente di servizio per 1.15.

N.B. For applications with flameproof motors or instantaneous reversal, multiply the service coefficient by 1.15.

Scelta di un riduttore
Gearbox selection
Getriebeauswahl
Choix d'un réducteur
Selección del reductor



2

Un riduttore nella configurazione R dovrà essere ricercato nelle tabelle di selezione riduttori in base alla potenza richiesta P_{1r} (o alla coppia richiesta M_{2r}) e ai giri uscita n_2 riferiti a 1400 min^{-1} (o al rapporto di trasmissione i).

A gearbox version R should be searched for in the selection tables, considering the required P_{1r} power (or M_{2r} torque required) and output rpms n_2 referred to 1400 min^{-1} (or to reduction ratio).

Il riduttore selezionato in base alla potenza P_{1R} (indicata in tabella) e a n_1 dovrà soddisfare le seguenti condizioni:

Once the gearbox has been selected upon P_{1R} power (indicated in the table) and n_1 , it should comply with the following conditions:

$$n_1 = 1400 \text{ min}^{-1}$$

$$P_{1R} \quad P_{1r} \times f_s \quad (M_{2R} \quad M_{2r} \times f_s)$$

$$n_1 = 2800 \text{ min}^{-1}$$

$$P_{1R} \times 1.6 \quad P_{1r} \times f_s \quad (M_{2R} \times 0.8 \quad M_{2r} \times f_s)$$

Per l'abbinamento a motori a 2800 min^{-1} , specificare sempre tale caratteristica in fase di ordine.

Where 2 pole motors are required, specify when placing order.

$$n_1 = 900 \text{ min}^{-1}$$

$$P_{1R} / 1.5 \quad P_{1r} \times f_s \quad (M_{2R} \quad M_{2r} \times f_s)$$

Alle tabelle di selezione dei riduttori è associata la seguente simbologia:

Following symbols will be found in the selection tables of the gearboxes:

| n_2 [min^{-1}] | i | P_{1M} [kW] | M_{2M} [Nm] | f_s | P_{1R} [kW] | M_{2R} [Nm] | |
|--------------------------------|------|------------------|------------------|-------|------------------|------------------|----|
| 398 | 3.52 | 1.8 | 41 | 1.8 | 3.3 | 75 | 20 |
| 320 | 4.36 | 1.8 | 51 | 1.6 | 2.8 | 80 | 20 |
| 252 | 5.55 | 1.8 | 65 | 1.2 | 2.2 | 80 | 20 |
| 220 | 6.36 | 1.8 | 75 | 1.0 | 1.8 | 75 | 20 |
| 191 | 7.33 | 1.5 | 72 | 1.1 | 1.7 | 80 | 20 |

n_2 [min^{-1}] giri in uscita ($n_1 = 1400 \text{ min}^{-1}$)

n_2 [min^{-1}] output speed ($n_1 = 1400 \text{ min}^{-1}$)

i — rapporto di riduzione

i — reduction ratio

P_{1M} [kW] potenza motore installata ($n_1 = 1400 \text{ min}^{-1}$)

P_{1M} [kW] motor input power ($n_1 = 1400 \text{ min}^{-1}$)

P_{1R} [kW] potenza in entrata riduttore ammissibile con $f_s=1$ ($n_1 = 1400 \text{ min}^{-1}$)

P_{1R} [kW] transmitted power at input gearbox with $f_s=1$ ($n_1 = 1400 \text{ min}^{-1}$)

M_{2M} [Nm] coppia in uscita riferita a P_{1M} ($n_1 = 1400 \text{ min}^{-1}$)

M_{2M} [Nm] output torque referred to P_{1M} ($n_1 = 1400 \text{ min}^{-1}$)

M_{2R} [Nm] coppia in uscita riferita a P_{1R} ($n_1 = 1400 \text{ min}^{-1}$)

M_{2R} [Nm] output torque referred to P_{1R} ($n_1 = 1400 \text{ min}^{-1}$)

f_s — fattore di servizio (riferito a P_{1M})

f_s — service factor (referred to P_{1M})



D

F

E

Für eine exakte Auswahl der benötigten Getriebe werden folgende Angaben benötigt:

Pour une sélection correcte du réducteur ou du motoréducteur il est important de respecter les indications suivantes:

Para una correcta selección del reductor o moto-reductor es importante respetar las siguientes indicaciones:

Anhand der beigefügten Tabelle kann der Betriebsfaktor bestimmt werden:

Déterminer au moyen du tableau suivant le facteur de service f_s correspondant à l'application.

Determinar a través de la tabla siguiente el factor de servicio f_s correspondiente a la aplicación.

| fs | | | | | |
|---|------|--|------|------|------|
| Belastungsart und schaltungen/Stunde Type de charge et type de fonctionnement par heure Tipo de carga y arranques/hora | | Betriebsstunden bestiften pro tag Opérations heure par hour Horas de trabajo por día | | | |
| | | 3 h | 10 h | 24 h | |
| Daueranwendung oder unterbrochene Anwendung mit Anzahl Starts/Stunde Service continu ou intermittent avec démarrage/heure Aplicación continua o intermitente con numero de arranques/hora | 10 | Gleichmäßige Belastung Normal / Uniforme | 0.8 | 1 | 1.25 |
| | | Mittlere Belastung Légère / Moderado | 1 | 1.25 | 1.5 |
| | | Schwere Belastung Forte / Fuerte | 1.25 | 1.5 | 1.75 |
| Unterbrochene Anwendung mit Anzahl Starts/Stunde Service intermittent avec démarrage/heure Aplicación intermitente con numero de arranques/hora | > 10 | Gleichmäßige Belastung Normal / Uniforme | 1 | 1.25 | 1.5 |
| | | Mittlere Belastung Légère / Moderado | 1.25 | 1.5 | 1.75 |
| | | Schwere Belastung Forte / Fuerte | 1.5 | 1.75 | 2.15 |

Achtung: Bei Einsatz der Getriebe mit Verbrennungsmotoren bzw. anderen stark lastschwankenden Antrieben ist der Betriebsfaktor mit 1.15 zu multiplizieren.

N.B. Pour des actionnements avec moteur à explosion ou pour un fonctionnement alterné instantané, multiplier la valeur du coefficient de service par 1.15

Atención: Para accionamientos con motor de explosión o para funcionamiento con cargas alternas puntuales, multiplicar el valor del coeficiente de servicio por 1.15.

Auswahl eines Getriebetyps R (oder "B") aus den Auswahltabellen unter Berücksichtigung der Leistung bzw. des Drehmomentes, der Eintriebsdrehzahl 1400 1/min der Untersetzung i und des daraus resultierenden Abtriebsdrehmomentes. Sollte das Getriebe von der Leistung und der Eintriebsdrehzahl (1400 1/min) nicht nach der nebenstehenden Tabelle aus gesucht werden können, so ist folgendes zu beachten:

Un réducteur dans la configuration R (ou B) devra être recherché dans les tableaux de sélection réducteurs sur la base de la puissance demandée P_{1r} (ou du couple maximal M_{2r}) et une vitesse de sortie n_2 se référant à 1400 min (ou au rapport de transmission i).
Le réducteur sélectionné sur la base de la puissance P_1 (indiquée sur le tableau) et de n_1 devra satisfaire les conditions suivantes:

Un reductor en la configuración R (o B) tendrá que buscarse en las tablas para la selección de los reductores en función de la potencia requerida P_{1r} (o del par máximo M_{2r}) y de las revoluciones salida n_2 referidas a 1400 min (o a la relación de transmisión i).
El reductor elegido en función de la potencia P_1 (indicada en la tabla) y a n_1 deberá satisfacer las condiciones siguientes:

$n_1 = 1400 \text{ min}^{-1}$

P_{1R} $P_{1r} \times f_s$ (M_{2R} $M_{2r} \times f_s$)

$n_1 = 2800 \text{ min}^{-1}$

$P_{1R} \times 1.6$ $P_{1r} \times f_s$ ($M_{2R} \times 0.8$ $M_{2r} \times f_s$)

Beim Anbau von zweipoligen Motoren bitte immer bei der Bestellung angeben.

Pour le montage de moteurs à 2800 min, toujours spécifier cette caractéristique en phase de commande.

Para el montaje con motores de 2800 min, especificar siempre esta característica al efectuar el pedido.

$n_1 = 900 \text{ min}^{-1}$

$P_{1R} / 1.5$ $P_{1r} \times f_s$ (M_{2R} $M_{2r} \times f_s$)

Folgende Zeichen sind in der Auswahltabelle für Getriebe zu finden

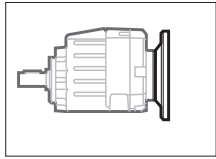
Aux tableaux de sélection des réducteurs est associée la symbologie suivante:

A las tablas para la selección de los reductores se ha asociado la simbología siguiente:

n_2 [min^{-1}] Abtriebsdrehzahl ($n_1 = 1400 \text{ 1/min}$)
 i — Lieferbare Untersetzungen
 P_{1M} [kW] Motoreingangsleistung ($n_1 = 1400 \text{ min}^{-1}$)
 P_{1R} [kW] Durchtriebsleistung am Getriebe eingang $f_s=1$ ($n_1 = 1400 \text{ min}^{-1}$)
 M_{2M} [Nm] Ausgangsdrehmoment bezogen auf P_{1M} ($n_1 = 1400 \text{ min}^{-1}$)
 M_{2R} [Nm] Ausgangsdrehmoment bezogen auf P_{1R} ($n_1 = 1400 \text{ min}^{-1}$)
 f_s — Betriebsfaktor (bezogen auf P_{1M})

n_2 [min^{-1}] vitesse de sortie ($n_1 = 1400 \text{ min}^{-1}$)
 i — rapport de réduction
 P_{1M} [kW] puissance du moteur ($n_1 = 1400 \text{ min}^{-1}$)
 P_{1R} [kW] puissance du réducteur en entrée $f_s=1$ ($n_1 = 1400 \text{ min}^{-1}$)
 M_{2M} [Nm] couple de sortie rapportée a P_{1M} ($n_1 = 1400 \text{ min}^{-1}$)
 M_{2R} [Nm] couple de sortie rapportée a P_{1R} ($n_1 = 1400 \text{ min}^{-1}$)
 f_s — facteur de service (rapportée a P_{1M})



n_2 [min^{-1}] revoluciones de salida ($n_1 = 1400 \text{ min}^{-1}$)
 i — relación de reducción
 P_{1M} [kW] potencia motor ($n_1 = 1400 \text{ min}^{-1}$)
 P_{1R} [kW] potencia transmitida en la entrada $f_s=1$ ($n_1 = 1400 \text{ min}^{-1}$)
 M_{2M} [Nm] par de salida referida a P_{1M} ($n_1 = 1400 \text{ min}^{-1}$)
 M_{2R} [Nm] par de salida referida a P_{1R} ($n_1 = 1400 \text{ min}^{-1}$)
 f_s — factor de servicio (referida a P_{1M})





3 Le tabelle per la selezione riduttori possono essere utilizzate anche per i riduttori nella configurazione P (predisposti per attacco motore IEC B5 o B14). Oltre alle verifiche precedentemente illustrate è necessario controllare, nelle colonne retinate, l'applicabilità della grandezza (63, 71, ecc.) del motore desiderato. La simbologia aggiuntiva associata è la seguente:

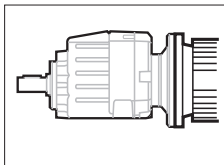
Selection tables can be used also for mounting version P (prearranged for motor attachment throughout IEC flange B5 or B14). In this case, besides carrying out all previous cheques, it is also important to verify the suitability of the required motorsizes (63, 71, etc.) in the shaded columns. Associated symbols are the following:

| B5 | | | | | B14 | | | | | RD | |
|----|----|----|----|------------|-----|----|-----|----|----|------------|----|
| B | C | D | E | F | O | P | Q | R | T | | U |
| 63 | 71 | 80 | 90 | 100 112 | 56 | 63 | 71 | 80 | 90 | 100 112 | |
| B | B | | | | | | B-C | C | | | 96 |
| B | B | | | | | | B-C | C | | | 96 |
| B | B | | | | | | B-C | C | | | 96 |
| B | B | | | | | | B-C | C | | | 96 |
| B | B | | | | | | B-C | C | | | 96 |

- 63,.. — grandezze motore (IEC) applicabili
- B5 — predisposizione flange B5
- B14 — predisposizione flange B14
- grandezze motore accoppiabili
- B — montaggio con boccia di riduzione 
- C — posizione fori flangia/basetta motore 
- RD — rendimento dinamico





- 63,.. — suitable motor sizes (IEC)
- B5 — B5 motorflange
- B14 — B14 motorflange
- available motor adaptors
- B — assembling by means of reduction bushes 
- C — motor flange/terminal box position 
- RD — dynamic efficiency

Scelta di un motoriduttore
Selection of a motorized gearbox
Auswahl eines Getriebes mit Motor
Choix d'un moto-réducteur
Selección del moto-reductor






4 I motoriduttori (configurazione M) possono essere selezionati agevolmente tramite le tabelle di selezione motoriduttori. Conoscendo P_{1M} , in corrispondenza del numero di giri in uscita n_2 desiderato, si sceglierà il motoriduttore il cui fattore di servizio f_s sia uguale o maggiore a quello definito al punto 1. Oltre alle motorizzazioni con motori a 4 poli (1400 min^{-1}) è possibile selezionare (dove disponibili) motori a 2 poli (2800 min^{-1}) e a 6 poli (900 min^{-1}).




Motorised gearboxes (version M) can be easily selected throughout the appropriate selection tables. Knowing P_1 value, in corresponding to the required output speed, the gearbox should be selected having a service factor equal or higher than the one shown in point 1. In addition to 4 pole motors (1400 min^{-1}) it is also possible to select 2 pole (2800 min^{-1}) and 6 pole (900 min^{-1}) motors.

| $P_{1M} = 0.75 \text{ kW}$ | | | | | | 1400 min^{-1} (80B4) - 900 min^{-1} (90S6) | | | | |
|--------------------------------|---------------|--------------|-------|---|------------|---|-------------|---------------------------------|---|---|
| n_2 [min^{-1}] | M_2 [Nm] | i | f_s |  | |  | B5 | B14 |  |  |
| | 53 | 10.50 | 1.5 | 24/28 | 511 | | 80B4 | 71 ^{B)} -80-90-100/112 | 80-90-100/112 | |
| 139 | 49 | 10.06 | 3.0 | 24/25 | | 402A | 80B4 | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90-100/112 | ● |
| | 49 | 10.04 | 3.0 | 24/25 | | | 402C | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90-100/112 | ● |
| | 48 | 9.85 | 2.0 | 20 | | 302A | 80B4 | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90 | ● |
| | 42 | 5.45 | 1.2 | 20 | | 302A | 90S6 | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90 | ● |

Alle tabelle di selezione dei motoriduttori è associata la seguente simbologia:

Following symbols are associated to the selection tables of the geared motors:

- P_{1M} [kW] potenza in entrata
- n_2 [min^{-1}] giri in uscita
- M_2 [Nm] coppia trasmessa in uscita
- i — rapporto di riduzione
- f_s — fattore di servizio
- B5 — predisposizione flange B5
- B14 — predisposizione flange B14
- B) — montaggio con boccia di riduzione 
- C) — posizione fori flangia/basetta motore 
-  flange attacco motore IEC disponibili

- P_{1M} [kW] input power
- n_2 [min^{-1}] output speed
- M_2 [Nm] transmitted output torque
- i — reduction ratio
- f_s — service factor
- B5 — B5 motorflange
- B14 — B14 motorflange
- B) — coupling by means of reduction bushing 
- C) — motor flange/terminal box position 
-  suitable motorflanges IEC



D

F



E


Die Auswahltabellen werden auch für die Montage der P- Version (vorbereitet für Motorflansche nach IEC - B5 bzw. B14) verwendet. In diesem Fall sind die anbaubaren Motorgrößen (BG 63, 71 usw.) aus der unterlegten Tabelle zu entnehmen.



Folgende Symbole werden verwendet:

Les tableaux pour la sélection des réducteurs peuvent aussi être utilisés pour les réducteurs dans la configuration P (prédisposés pour montage moteur IEC B5 ou B14). En plus des vérifications précédentes, il est nécessaire de contrôler dans les colonnes tramées l'application de la taille (63, 71, etc.) du moteur souhaité. La symbolique utilisée est la suivante:

Las tablas para la selección de los reductores pueden también utilizarse para los reductores en la configuración P (predispuestos para el montaje con el motor IEC B5 ó B14). Además de los controles anteriormente ilustrados, es necesario controlar, en las columnas reticuladas, la aplicación del tamaño (63, 71, etc.) del motor deseado. La simbología adicional asociada es la siguiente:

- 63,... — Mögliche Motorgrößen nach IEC
- B5 — Motorflansche B5
- B14 — Motorflansche B14
- Mögliche Motoradapter
- B — Zusammenbau unter Verwendung der Reduzierhülsen 
- C — Bohrungsposition am Motorflansch/-sockel 
- RD — Dynamischer Wirkungsgrad






- 63,.. — taille moteur (IEC) applicables
- B5 — prédisposition brides B5
- B14 — prédisposition brides B14
- tailles moteurs pouvant être accouplées
- B — montage avec douille de réduction 
- C — position trous bride/barrette à bornes moteur 
- RD — rendement dynamique

- 63,... — tamaño motor (IEC) aplicables
- B5 — predisposición bridas B5
- B14 — predisposición bridas B14
- tamaño motor acoplable
- B — montaje con casquillo de reducción 
- C — posición agujeros brida / base motor 
- RD — rendimiento dinámico

Getriebe mit Motoren (version M) werden einfach durch die Auswahltabellen ausgesucht. Ist die Leistung (P_1) und die Abtriebsdrehzahl bekannt so sollte das ausgesuchte Getriebe einen Betriebsfaktor >1 haben. Anstelle von 4-polige Motoren können auch 6- polige Motoren verwendet werden.- Drehzahlen beachten.

Les moto-réducteurs (configuration M) peuvent être sélectionnés aisément au moyen des tableaux de sélection moto-réducteurs. En connaissant P_1 , en correspondance de la vitesse de sortie n_2 souhaité, on choisira le moto-réducteur dont le facteur de service f_s soit égal ou supérieur à celui défini au point 1. En plus des motorisations avec moteurs à 4 pôles (1400 min^{-1}) il est possible de sélectionner (là où disponible) des moteurs à 6 pôles (900 min^{-1})


Los moto-reductores (configuración M) pueden seleccionarse fácilmente a través de las tablas de los moto-reductores. Conociendo P_1 , en correspondencia del número de revoluciones en salida n_2 deseado, se elegira el moto-reductor cuyo factor de servicio f_s sea igual o mayor al definido en el punto 1. Además de las motorizaciones con motores de 4 polos (1400 min^{-1}) es posible seleccionar (si está disponible) motores de 6 polos (900 min^{-1}).




| P _{1M} = 0.75 kW | | | | | 1400 min ⁻¹ (80B4) - 900 min ⁻¹ (90S6) | | | | | |
|-------------------------------------|---------------------|----|----------------|---|--|---|---|---|---|---|
| n ₂ [min ⁻¹] | M ₂ [Nm] | i | f _s |  | |  |  |  |  | |
| | | | | | | | B5 | B14 | | |
| | 133 | 53 | 10.50 | 1.5 | 24/28 | 511 | | 71 ^{B)} -80-90-100/112 | 80-90-100/112 | |
| 139 | 139 | 49 | 10.06 | 3.0 | 24/25 | 402A | 80B4 | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90-100/112 | ● |
| | 139 | 49 | 10.04 | 3.0 | 24/25 | | 402C | 80B4 | 63 ^{B)} -71-80-90 | ● |
| | 142 | 48 | 9.85 | 2.0 | 20 | 302A | 80B4 | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90 | ● |
| | 165 | 42 | 5.45 | 1.2 | 20 | 302A | 90S6 | 63 ^{B)} -71-80-90 | 71 ^{C)} -80 ^{C)} -90 | ● |




Symbole der Auswahltabellen für Getriebe mit Motor

Aux tableaux de sélection des moto-réducteurs est associée la symbolique suivante:

A las tablas para la selección de los moto-reductores se ha asociado la simbología siguiente:

- P_{1M} [kW] Leistung Motor
- n₂ [min⁻¹] Abtriebsdrehzahl
- M₂ [Nm] Abtriebsdrehmoment
- i — Lieferbare Untersetzungen
- f_s — Betriebsfaktor
- B5 — Motorflansche B5
- B14 — Motorflansche B14
- B) — Reduzierhülsen 
- C) — Bohrungsposition am Motorflansch/-sockel 
-  Lieferbare Motorflansche nach IEC

- P_{1M} [kW] puissance en entrée
- n₂ [min⁻¹] vitesse de sortie
- M₂ [Nm] couple transmis en sortie
- i — rapport de réduction
- f_s — facteur de service
- B5 — prédisposition brides B5
- B14 — prédisposition brides B14
- B) — Montage avec douille de réduction 
- C) — position trous bride/barrette à bornes moteur 
-  bridas acoplamiento motor IEC disponibles

- P_{1M} [kW] potencia de entrada
- n₂ [min⁻¹] revoluciones de salida
- M₂ [Nm] Par transmitido de salida
- i — relación de reducción
- f_s — factor de servicio
- B5 — predisposición bridas B5
- B14 — predisposición bridas B14
- B) — montaje con casquillo de reducción 
- C) — posición agujeros brida / base motor 
-  bridas acoplamiento motor IEC disponibles



Una selezione semplificata del motoriduttore in base ad un unico fattore di servizio (il più prossimo a 1) può essere effettuata tramite le tabelle di selezione riduttori (punto 2).
In questo caso sono riportati solo motoriduttori con motori a 4 poli (1400 min⁻¹).

An easier selection of the motorized gearbox (closer as possible to sf 1) can be effected throughout gear selection table (Point 2).
In fact only 4 pole motors (1400 min⁻¹) are listed here .

Riduttore con variatore di velocità
Gearbox coupled to a speed variator
Getriebe mit Regelgetriebe kombiniert
Réducteur avec variateur de vitesse
Reductor con variador de velocidad

- 5** Qualora al riduttore venga abbinato un variatore idraulico o meccanico, è necessario considerare che a bassi giri, al diminuire della velocità d'ingresso, le coppie M_2 possono superare anche notevolmente il valore nominale. Tale effetto deve essere maggiormente tenuto in considerazione nei rapporti elevati.

Where a hydraulic or mechanic variator is coupled to a gearbox, it is necessary to take into consideration the fact that in the presence of low output speed, decreasing the input speed, M_2 torques can easily exceed their nominal values. In high reduction ratios this effect should be taken even in more consideration.

Riduttore con motore autofrenante
Gearbox equipped with a brake motor
Getriebebremmotor
Réducteur avec moteur frein
Reductor con motor freno

- 6** Nella selezione con motori autofrenanti, potendo essere considerevole l'effetto inerziale delle masse, è opportuno scegliere riduttori con $fs = 1$.

For selection with brake motors, having considerable mass inertia values, it is advisable to select gearboxes with sf higher or equal to 1.

Selezioni fuori catalogo
Selections not listed in the catalogue
Auswahl von Nichtkatalog-Getrieben
Sélection hors catalogue
Selección fuera de catálogo

- 7** Nel caso vengano applicate potenze superiori a quelle indicate a catalogo, la nostra ditta non può garantire il corretto funzionamento del gruppo.

In those cases where higher powers than the ones given in this catalogue have to be used, our factory cannot guarantee the proper operation of the gearbox.

Note
Notes
Anmerkungen
Note
Notas

- 8** Occorre tenere nella giusta considerazione e valutare attentamente le segg. applicazioni consultando il ns. Servizio Tecnico.
- Utilizzo in servizi che potrebbero risultare pericolosi per l'uomo in caso di rottura del riduttore.
 - Applicazioni con inerzie particolarmente elevate.
 - Utilizzo come organo di sollevamento.
 - Applicazioni con elevate sollecitazioni dinamiche sulla cassa del riduttore.
 - Utilizzo in ambiente con T° inferiore a 5°C o superiore a 40°C .
 - Utilizzo in ambiente con presenza di aggressivi chimici.
 - Utilizzo in ambiente salmastro.
 - Posizioni di piazzamento non previste a catalogo.
 - Utilizzo in ambiente radioattivo.
 - Utilizzo in ambiente con pressione diversa da quella atmosferica.
 - Evitare applicazioni dove è prevista l'immersione, anche parziale, del riduttore.

Take in due consideration following applications by contacting our technical Service.

- Dangerous applications in case of gearbox breakage.
- Particularly high inertia applications
- Lifting devices.
- High dynamic stress on gearbox housing.
- Particular environment conditions with temperatures lower than 5°C or higher than 40°C .
- Highly chemical aggressive environment.
- Salty environment.
- Applications not considered in the catalogue.
- Radioactive environment.
- Pressure different to atmospheric.
- Avoid those applications where total or partial immersion of the gearbox is required.



D

F

E

Eine weitere Auswahl von Getriebemotoren kann durch Selektion der Verzahnungen getroffen werden. Dadurch kann der Betriebsfaktor näher an 1 gelegt werden. Es sind nur 4-polige Motoren (1400 1/min) aufgeführt.

Une sélection simplifiée du moto-réducteur sur la base d'un unique facteur de service (le plus proche de 1) peut être effectuée au moyen des tableaux de sélection réducteurs (point 2). Dans ce cas, sont reportés uniquement les moto-réducteurs. Avec moteurs à 4 pôles (1400 min⁻¹).

Una selección simplificada del moto-reductor en base de un único factor de servicio (el más próximo a 1) puede efectuarse a través de las tablas para la selección del reductor (punto 2). En este caso se incluyen exclusivamente los moto-reductores con motores de 4 polos (1400 min⁻¹).

Beim Anbau eines mechanischen oder hydraulischen Regelgetriebes muss darauf geachtet werden, daß sich bei niederen Eintriebsdrehzahlen in das Getriebe die Drehmomente deutlich erhöhen. Besonders bei höheren Untersetzungen muss dies gesondert beachtet werden.

Au cas où on assemblerait au réducteur un variateur hydraulique ou mécanique, il est nécessaire de considérer que lorsque la vitesse d'entrée diminue, les couples M₂ peuvent dépasser même considérablement la valeur nominale cet effet doit être encore plus tenu en considération dans les rapports élevés.

Si al reductor se le acopla un variador hidráulico o mecánico, es necesario considerar que a bajas revoluciones, al disminuir la velocidad de entrada, los pares M₂ podrían superar, el máximo del valor nominal. Este efecto debe tenerse todavía más en cuenta en las relaciones de reducción elevadas.

Bei der Auswahl der Getriebe mit Bremsmotor ist es wichtig, die Massenträgheit des Motors zu beachten. Die Getriebe immer mit einem Betriebsfaktor 1 auswählen.

Dans la sélection avec moteurs freins, puisque l'effet inertiel des masses peut être considérable, il est opportun de choisir des réducteurs avec fs 1.

En la selección con motores freno, pudiendo ser considerable el efecto inercial de las masas, es conveniente elegir reductores con fs 1.

Werden die Getriebe mit größeren Leistungen als im Katalog angegeben belastet, kann Hydromec keine Gewährleistung für sicheren Betrieb übernehmen.

Au cas où on appliquerait des puissances supérieures à celles indiquées sur le catalogue, notre société ne peut pas garantir le fonctionnement correct du groupe.

Si se aplican potencias superiores a las indicadas en el catálogo, nuestra empresa no puede garantizar el correcto funcionamiento del grupo.

Bei folgenden Einsatzfällen sollte mit unserer technischen Abteilung Rücksprache gehalten werden:

- Mechanische Beanspruchung, die zum Gehäusebruch führen kann.
- Einsatzfälle mit höheren Eintriebsleistungen als angegeben.
- Hubantriebe.
- Höchste dynamische Belastungen des Gehäuses.
- Umgebungstemperaturen höher + 50°C und kleiner + 5°C.
- Chemisch aggressive Umgebung.
- Salzhaltige Umgebungsluft.
- Umgebungsbedingungen und Einsatzfälle die nicht im Katalog aufgeführt sind.
- Radioaktive Umgebungsbedingungen
- Anderer Luftdruck als der Atmosphärendruck.
- Alle ungewöhnlichen Einsatzbedingungen, von denen unsere Getriebe teilweise oder im Ganzen betroffen sind.

Il faut considérer et évaluer attentivement les applications suivantes par la consultation de notre Service Technique:

- Utilisation pour des services dangereux pour l'homme en cas de casse du réducteur.
- Applications avec des inerties particulièrement élevées.
- Utilisation comme organe de lavage.
- Applications avec des sollicitations dynamiques élevées sur la caisse du réducteur.
- Utilisation avec une température ambiante inférieure à 5°C ou supérieure à 40°C.
- Utilisation en ambiance avec présence d'agents chimiques.
- Utilisation en ambiance saumâtres.
- Positions de montage non prévues dans le catalogue.
- Utilisation en ambiance radioactive.
- Utilisation avec une pression différente que celle atmosphérique.
- Eviter les applications avec une immersion, même partielle, du réducteur.

Las siguientes aplicaciones deben considerarse en modo adecuado y evaluarse atentamente consultando nuestro Servicio Técnico

- Utilización en servicios que podrían resultar peligrosos para la persona en caso de rotura del reductor.
- Aplicaciones con inercias particularmente elevadas.
- Utilización como órgano de elevación.
- Aplicaciones con elevadas exigencias dinámicas en la carcasa del reductor.
- Utilización en ambiente con temperatura inferior a 5°C o superior a 40°C.
- Utilización en ambiente con presencia de agentes químicos.
- Utilización en ambiente salobre.
- Posiciones de montaje no previstas en el catálogo.
- Utilización en ambiente radioactivo.
- Utilización en ambiente con presión distinta a la atmosférica.
- Evitar aplicaciones en las que se prevé la inmersión, incluso parcial, del reductor.

Tipo - Type - Typ - Types - Tipo

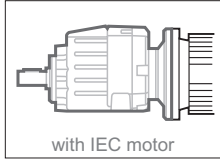
Grandezza
Size
Grösse
Taille
Tamaño

Montaggio - Mounting - Montage - Fixation - Tipo de montaje

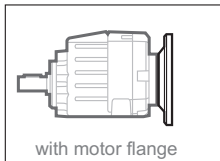
P

402..

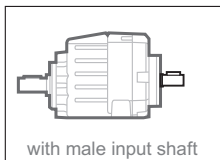
S2



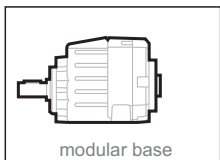
with IEC motor
M



with motor flange
P



with male input shaft
R



modular base
B

Alluminio
Aluminium
Aluminium
Aluminium
Aluminio



Ghisa
Cast iron
Grauguss
Fonte
Fundicion



2
Riduzioni
Stages
Stufen
Trains
Etapas

202A M_{2R} = 70 Nm

302A M_{2R} = 120 Nm

402A M_{2R} = 150 Nm

452A M_{2R} = 300 Nm

502A M_{2R} = 320 Nm

602A M_{2R} = 460 Nm

402C M_{2R} = 195 Nm

602C M_{2R} = 460 Nm

3
Riduzioni
Stages
Stufen
Trains
Etapas

403A M_{2R} = 150 Nm

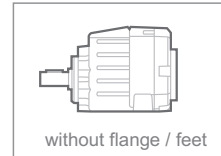
503A M_{2R} = 320 Nm

603A M_{2R} = 460 Nm

403C M_{2R} = 195 Nm

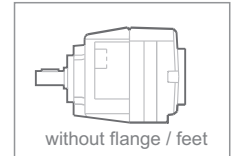
603C M_{2R} = 460 Nm

Alluminio
Aluminium
Aluminium
Aluminium
Aluminio

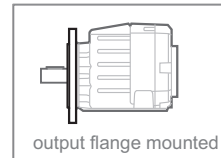


-N

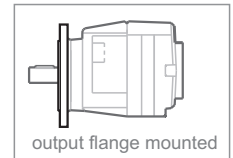
Ghisa
Cast iron
Grauguss
Fonte
Fundicion



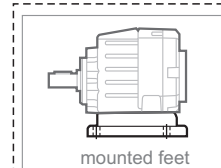
-N



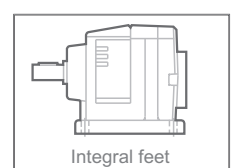
-F



-F



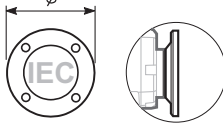
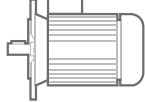
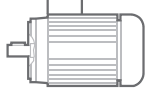
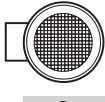

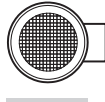
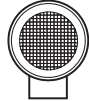
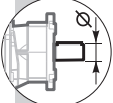
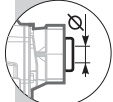


B.. S..
M.. L..



SP

Vedi codice piede nella tabella delle dimensioni
You see feet code in the chart of the dimensions

| Market reference | Feet Code: | G | H | R | L | S | H 1 |
|------------------|------------|----|-----|---------|-------|-----|-----|
| 302/3 | B 3 | 18 | 110 | 160 | 130 | 190 | 1f |
| 30 / 35 | B 4 | 20 | 130 | 180 | 149.5 | 216 | |
| 47 - 57 | S 4 | 30 | 115 | 135 | 165 | 170 | |
| 06 | L 6 | 19 | 125 | 160 | 106 | 2' | |
| 2202/3 | E 2 | 13 | 100 | 135 | 192 | | |
| 52/3 | M 2 | 30 | 110 | 135+150 | | | |
| 142 | P 4 | 35 | 142 | 130 | | | |
| 4100-05G | J 3 | 25 | 100 | | | | |

| Rapporto Ratio Übersetzung Reduction Relación | Albero uscita Output shaft Abtriebswelle Arbre lent Eje de salida | Flangia uscita Output flange Ausgangsflansch Bride de sortie Brida de salida | Grandezza motore Motor size Motor Grösse Grandeur moteur Tamaño motor | Forma costrutt. motore Motor version Motor Bauform Forme constr. moteur Forma constr. motor | Posizione morsetteria Terminal box position Klemmkastenlage Pos. boîte à bornes Pos. caja de bornes | Posizione di montaggio Mounting position Einbaulage Position de montage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|---|---|---|--|--------|------|--------|------|--------|--------|--------|---|--------|---|--------|------|------|------|------|------|--------|---|--------|---|--------|--|--|------|--------|---|--------------|---|---------------|---|---------------|------|--------|------|------|------|--------|------|---|---------------|------|------|---|--------|--|---|---------------|--|---|--------|--|---|--------|---------------|---|--------|--|------|------|------|------|------|--------|---|---------------|---|--------|---|---------------|---|--------|---|----------------|---|--------|---|--|--|------|------|------|------|------|------|---|---------|--|--|--|--|---|---------|--|--|--|--|---|---------|--|--|--|--|---|---------|--|--|--|--|------|------|------|---|---------|--|--|---|---------|--|--|---|---------|--|--|------|------|------|------|---|---------|--|--|---|---------|--|--|---|---------|--|--|--|----|-----|--------------|-------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|-------------------|--|---------------|------|------|------|------|------|------|------|---|---------------|--|--|--|---|---------------|---|---------------|--|--|--|--|--|------|------|------|------|------|------|---|---------------|---|---------------|--|--|---|---------------|---|---------------|--|--|---|---------------|--|--|--|--|--|---|---|
| 3.10 | V | 2 | C | B5 | A | B3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Vedi dati tecnici See technical data table STechnisches datenblatt beachten! Voir tableau données techniques Ver tabla datos técnicos/Ver tabla</p> | <p>→ STANDARD</p> <table border="1"> <tr><td>202A</td><td>302A</td></tr> <tr><td>S</td><td>⇒ ∅ 14</td></tr> <tr><td>B</td><td>⇒ ∅ 16</td></tr> <tr><td>C</td><td>⇒ ∅ 19</td></tr> <tr><td>D</td><td>⇒ ∅ 20</td></tr> <tr><td>E</td><td>⇒ ∅ 24</td></tr> <tr><td>V</td><td>⇒ ∅ 25</td></tr> <tr><td>G</td><td>⇒ ∅ 28</td></tr> </table> <table border="1"> <tr><td>402A</td><td>403A</td><td>402C</td><td>403C</td></tr> <tr><td>S</td><td>⇒ ∅ 14</td><td></td><td></td></tr> <tr><td>B</td><td>⇒ ∅ 16</td><td></td><td></td></tr> <tr><td>C</td><td>⇒ ∅ 19</td><td></td><td></td></tr> <tr><td>D</td><td>⇒ ∅ 20</td><td></td><td></td></tr> <tr><td>E</td><td>⇒ ∅ 24</td><td></td><td></td></tr> <tr><td>V</td><td>⇒ ∅ 25</td><td></td><td></td></tr> </table> <table border="1"> <tr><td>452A</td><td>502A</td><td>503A</td></tr> <tr><td>E</td><td>⇒ ∅ 24</td><td></td></tr> <tr><td>V</td><td>⇒ ∅ 25</td><td></td></tr> <tr><td>G</td><td>⇒ ∅ 28</td><td></td></tr> <tr><td>H</td><td>⇒ ∅ 30</td><td></td></tr> <tr><td>I</td><td>⇒ ∅ 35</td><td></td></tr> </table> <table border="1"> <tr><td>602A</td><td>603A</td><td>602C</td><td>603C</td></tr> <tr><td>H</td><td>⇒ ∅ 30</td><td></td><td></td></tr> <tr><td>I</td><td>⇒ ∅ 35</td><td></td><td></td></tr> <tr><td>L</td><td>⇒ ∅ 38</td><td></td><td></td></tr> <tr><td>M</td><td>⇒ ∅ 40</td><td></td><td></td></tr> </table> | 202A | 302A | S | ⇒ ∅ 14 | B | ⇒ ∅ 16 | C | ⇒ ∅ 19 | D | ⇒ ∅ 20 | E | ⇒ ∅ 24 | V | ⇒ ∅ 25 | G | ⇒ ∅ 28 | 402A | 403A | 402C | 403C | S | ⇒ ∅ 14 | | | B | ⇒ ∅ 16 | | | C | ⇒ ∅ 19 | | | D | ⇒ ∅ 20 | | | E | ⇒ ∅ 24 | | | V | ⇒ ∅ 25 | | | 452A | 502A | 503A | E | ⇒ ∅ 24 | | V | ⇒ ∅ 25 | | G | ⇒ ∅ 28 | | H | ⇒ ∅ 30 | | I | ⇒ ∅ 35 | | 602A | 603A | 602C | 603C | H | ⇒ ∅ 30 | | | I | ⇒ ∅ 35 | | | L | ⇒ ∅ 38 | | | M | ⇒ ∅ 40 | | | <p>Senza flangia Without flange</p> <table border="1"> <tr><td>202A</td><td>302A</td><td>402A</td><td>403A</td><td>402C</td><td>403C</td></tr> <tr><td>1</td><td>⇒ ∅ 120</td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td>⇒ ∅ 140</td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td>⇒ ∅ 160</td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td>⇒ ∅ 200</td><td></td><td></td><td></td><td></td></tr> </table> <table border="1"> <tr><td>452A</td><td>502A</td><td>503A</td></tr> <tr><td>3</td><td>⇒ ∅ 160</td><td></td><td></td></tr> <tr><td>4</td><td>⇒ ∅ 200</td><td></td><td></td></tr> <tr><td>5</td><td>⇒ ∅ 250</td><td></td><td></td></tr> </table> <table border="1"> <tr><td>602A</td><td>603A</td><td>602C</td><td>603C</td></tr> <tr><td>3</td><td>⇒ ∅ 160</td><td></td><td></td></tr> <tr><td>4</td><td>⇒ ∅ 200</td><td></td><td></td></tr> <tr><td>5</td><td>⇒ ∅ 250</td><td></td><td></td></tr> </table> | 202A | 302A | 402A | 403A | 402C | 403C | 1 | ⇒ ∅ 120 | | | | | 2 | ⇒ ∅ 140 | | | | | 3 | ⇒ ∅ 160 | | | | | 4 | ⇒ ∅ 200 | | | | | 452A | 502A | 503A | 3 | ⇒ ∅ 160 | | | 4 | ⇒ ∅ 200 | | | 5 | ⇒ ∅ 250 | | | 602A | 603A | 602C | 603C | 3 | ⇒ ∅ 160 | | | 4 | ⇒ ∅ 200 | | | 5 | ⇒ ∅ 250 | | | <p>Flangia Standard Standard Flange</p>  <table border="1"> <tr><td>B5</td><td>B14</td></tr> <tr><td>A=56 (∅ 120)</td><td>O=56 (∅ 80)</td></tr> <tr><td>B=63 (∅ 140)</td><td>P=63 (∅ 90)</td></tr> <tr><td>C=71 (∅ 160)</td><td>Q=71 (∅ 105)</td></tr> <tr><td>D=80 (∅ 200)</td><td>R=80 (∅ 120)</td></tr> <tr><td>E=90 (∅ 200)</td><td>T=90 (∅ 140)</td></tr> <tr><td>F=100-112 (∅ 250)</td><td>U=100-112 (∅ 160)</td></tr> <tr><td></td><td>V=132 (∅ 200)</td></tr> </table> <p>Flangia ridotta Reduced F flange</p> <table border="1"> <tr><td>302A</td><td>503A</td><td>402A</td><td>402C</td><td>403C</td><td>603A</td><td>603C</td></tr> <tr><td>1</td><td>⇒ ∅ 19 (71B5)</td><td></td><td></td><td></td><td>3</td><td>⇒ ∅ 28 (90B5)</td></tr> <tr><td>2</td><td>⇒ ∅ 24 (80B5)</td><td></td><td></td><td></td><td></td><td></td></tr> </table> <table border="1"> <tr><td>202A</td><td>403A</td><td>452A</td><td>502A</td><td>602A</td><td>602C</td></tr> <tr><td>5</td><td>⇒ ∅ 11 (56B5)</td><td>2</td><td>⇒ ∅ 24 (80B5)</td><td></td><td></td></tr> <tr><td>6</td><td>⇒ ∅ 14 (63B5)</td><td>3</td><td>⇒ ∅ 28 (90B5)</td><td></td><td></td></tr> <tr><td>7</td><td>⇒ ∅ 19 (71B5)</td><td></td><td></td><td></td><td></td></tr> </table> | B5 | B14 | A=56 (∅ 120) | O=56 (∅ 80) | B=63 (∅ 140) | P=63 (∅ 90) | C=71 (∅ 160) | Q=71 (∅ 105) | D=80 (∅ 200) | R=80 (∅ 120) | E=90 (∅ 200) | T=90 (∅ 140) | F=100-112 (∅ 250) | U=100-112 (∅ 160) | | V=132 (∅ 200) | 302A | 503A | 402A | 402C | 403C | 603A | 603C | 1 | ⇒ ∅ 19 (71B5) | | | | 3 | ⇒ ∅ 28 (90B5) | 2 | ⇒ ∅ 24 (80B5) | | | | | | 202A | 403A | 452A | 502A | 602A | 602C | 5 | ⇒ ∅ 11 (56B5) | 2 | ⇒ ∅ 24 (80B5) | | | 6 | ⇒ ∅ 14 (63B5) | 3 | ⇒ ∅ 28 (90B5) | | | 7 | ⇒ ∅ 19 (71B5) | | | | | <p>B5</p>  <p>B14</p>  | <p>A</p>  <p>B</p>  <p>STANDARD</p>  <p>C</p>  <p>D</p> | <p>Vedi tabella See tables Siehe Tabelle Voir tableau Ver tabla</p> |
| | 202A | 302A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | S | ⇒ ∅ 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | B | ⇒ ∅ 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C | ⇒ ∅ 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D | ⇒ ∅ 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E | ⇒ ∅ 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | V | ⇒ ∅ 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G | ⇒ ∅ 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 402A | 403A | 402C | 403C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | ⇒ ∅ 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | ⇒ ∅ 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | ⇒ ∅ 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | ⇒ ∅ 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | ⇒ ∅ 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| V | ⇒ ∅ 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 452A | 502A | 503A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | ⇒ ∅ 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| V | ⇒ ∅ 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | ⇒ ∅ 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | ⇒ ∅ 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I | ⇒ ∅ 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 602A | 603A | 602C | 603C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | ⇒ ∅ 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I | ⇒ ∅ 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | ⇒ ∅ 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M | ⇒ ∅ 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202A | 302A | 402A | 403A | 402C | 403C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ⇒ ∅ 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ⇒ ∅ 140 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ⇒ ∅ 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ⇒ ∅ 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 452A | 502A | 503A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ⇒ ∅ 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ⇒ ∅ 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ⇒ ∅ 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 602A | 603A | 602C | 603C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ⇒ ∅ 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ⇒ ∅ 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ⇒ ∅ 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B5 | B14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A=56 (∅ 120) | O=56 (∅ 80) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B=63 (∅ 140) | P=63 (∅ 90) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C=71 (∅ 160) | Q=71 (∅ 105) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D=80 (∅ 200) | R=80 (∅ 120) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E=90 (∅ 200) | T=90 (∅ 140) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F=100-112 (∅ 250) | U=100-112 (∅ 160) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | V=132 (∅ 200) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 302A | 503A | 402A | 402C | 403C | 603A | 603C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ⇒ ∅ 19 (71B5) | | | | 3 | ⇒ ∅ 28 (90B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ⇒ ∅ 24 (80B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202A | 403A | 452A | 502A | 602A | 602C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ⇒ ∅ 11 (56B5) | 2 | ⇒ ∅ 24 (80B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | ⇒ ∅ 14 (63B5) | 3 | ⇒ ∅ 28 (90B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | ⇒ ∅ 19 (71B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | <p>Tipo R Type R</p>  <table border="1"> <tr><td>302A</td><td>402A</td><td>402C</td><td>403C</td><td>503A</td><td>603A</td><td>603C</td></tr> <tr><td>2</td><td>⇒ ∅ 19</td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p>→ STANDARD</p> <table border="1"> <tr><td>202A</td><td>403A</td><td>452A</td><td>502A</td><td>602A</td><td>602C</td></tr> <tr><td>1</td><td>⇒ ∅ 14</td><td>3</td><td>⇒ ∅ 24</td><td></td><td></td></tr> </table> <p>Senza flangia Without flange</p>  <table border="1"> <tr><td>202A</td><td>403A</td></tr> <tr><td>Z</td><td>⇒ ∅ 9 (56B5)</td></tr> <tr><td>0</td><td>⇒ ∅ 11 (63B5)</td></tr> <tr><td>1</td><td>⇒ ∅ 14 (71B5)</td></tr> </table> <table border="1"> <tr><td>302A</td><td>402A</td><td>402C</td><td>403C</td><td>503A</td><td>603A</td><td>603C</td></tr> <tr><td>1</td><td>⇒ ∅ 14 (71B5)</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td>⇒ ∅ 19 (80B5)</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td>⇒ ∅ 24 (90B5)</td><td></td><td></td><td></td><td></td><td></td></tr> </table> <table border="1"> <tr><td>452A</td><td>502A</td><td>602A</td><td>602C</td></tr> <tr><td>2</td><td>⇒ ∅ 19 (80B5)</td><td></td><td></td></tr> <tr><td>3</td><td>⇒ ∅ 24 (90B5)</td><td></td><td></td></tr> <tr><td>4</td><td>⇒ ∅ 28 (100B5)</td><td></td><td></td></tr> </table> | 302A | 402A | 402C | 403C | 503A | 603A | 603C | 2 | ⇒ ∅ 19 | | | | | | 202A | 403A | 452A | 502A | 602A | 602C | 1 | ⇒ ∅ 14 | 3 | ⇒ ∅ 24 | | | 202A | 403A | Z | ⇒ ∅ 9 (56B5) | 0 | ⇒ ∅ 11 (63B5) | 1 | ⇒ ∅ 14 (71B5) | 302A | 402A | 402C | 403C | 503A | 603A | 603C | 1 | ⇒ ∅ 14 (71B5) | | | | | | 2 | ⇒ ∅ 19 (80B5) | | | | | | 3 | ⇒ ∅ 24 (90B5) | | | | | | 452A | 502A | 602A | 602C | 2 | ⇒ ∅ 19 (80B5) | | | 3 | ⇒ ∅ 24 (90B5) | | | 4 | ⇒ ∅ 28 (100B5) | | | <p>  Dossier according to 94/9/EG 8. b ii stored  </p> <p>A richiesta possiamo consegnare i nostri prodotti secondo le normative ATEX. On request we can deliver our products according to the ATEX normative. Auf Anfrage können wir unsere Produkte den Richtlinien ATEX entsprechend liefern. Sur demande nos produits peuvent se conformer à la réglementation ATEX. A pedido, se pueden enviar nuestros productos de acuerdo con las normas ATEX.</p> <p>Prima di ordinare vedere selezione "check list" pag. 66 69 Before to order see selection "check list" page 66 69 Vor einer Bestellung sollte die "check list" auf den Seiten 66 69 gelesen werden. Avant de commander, se reporter à la sélection "check list"</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 302A | 402A | 402C | 403C | 503A | 603A | 603C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ⇒ ∅ 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202A | 403A | 452A | 502A | 602A | 602C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ⇒ ∅ 14 | 3 | ⇒ ∅ 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202A | 403A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z | ⇒ ∅ 9 (56B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | ⇒ ∅ 11 (63B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ⇒ ∅ 14 (71B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 302A | 402A | 402C | 403C | 503A | 603A | 603C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ⇒ ∅ 14 (71B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ⇒ ∅ 19 (80B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ⇒ ∅ 24 (90B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 452A | 502A | 602A | 602C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ⇒ ∅ 19 (80B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ⇒ ∅ 24 (90B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ⇒ ∅ 28 (100B5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Tipo
Type
Typ
Types

Grandezza
Size
Grösse
Taille

Montaggio
Mounting
Montage
Fixation

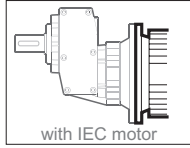
Rapporto
Ratio
Übersetzung
Reduction

P

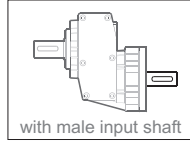
311A

-N

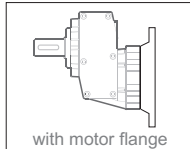
2.84



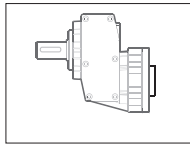
M



R

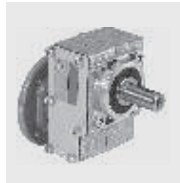


P



B

1
Riduzioni
Stages
Stufen
Trains
Etapas

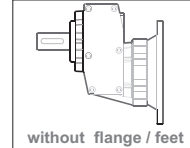


311A $M_{2R} = 30 \text{ Nm}$

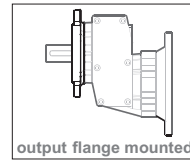
411A $M_{2R} = 50 \text{ Nm}$

511A $M_{2R} = 118 \text{ Nm}$

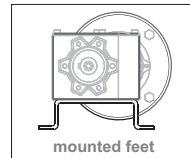
Alluminio
Aluminium
Aluminium
Aluminium
Aluminio



-N

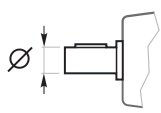
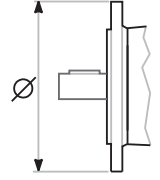
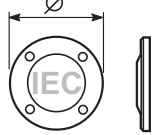
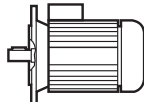
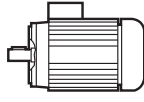
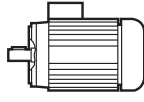
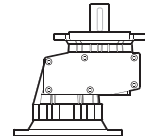
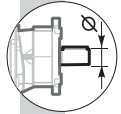
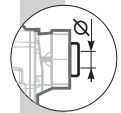


-F



H1

Vedi tabelle dati tecnici
See technical data table
Technisches Datenblatt
beachten!
Voir tableau données
techniques
Ver tabla datos técnicos

| Albero uscita Output shaft Abtriebswelle Arbre lent Eje de salida | Flangia uscita Output flange Ausgangsflansch Bride de sortie Brida de salida | Grandezza motore Motor Size Motor Grösse Grandeur moteur Tamaño motor | Forma costrutt. motore Motor version Motor bauform Forme constructive moteur Forma constructiva motor | Posizione di montaggio Mounting position Einbaulage Position de montage Position de montaje | | | | | | | | | | | | | | |
|--|---|--|--|--|------|---------------------------|--|---------------------------|------|---------------------------|------|---------------------------|--|---------------------------|--|----------------------------|--|--|
| S | 3 | C | B5 | | | | | | | | | | | | | | | |
|  |  | <p style="text-align: center;">M Senza flangia Without flange Ohne Flansch Sans bride Sin brida</p>  |  | <p style="text-align: center;">Specificare solo per posiz. Verticale Specify only for Vertical positions</p> | | | | | | | | | | | | | | |
| → STANDARD | | | B5 | | | | | | | | | | | | | | | |
| <p style="text-align: center;">311A</p> <p>S → ∅ 14 C → ∅ 19 E → ∅ 24</p> | <p style="text-align: center;">N Senza flangia Without flange Ohne Flansch Sans bride Sin brida</p> <p style="text-align: center;">311A</p> <p>1 → ∅ 120 2 → ∅ 140 3 → ∅ 160 4 → ∅ 200</p> | <p style="text-align: center;">B5</p> <p>A=56 (∅ 120) B=63 (∅ 140) C=71 (∅ 160) D=80 (∅ 200) E=90 (∅ 200) F=100-112 (∅ 250)</p> | <p style="text-align: center;">B14</p> <p>O=56 (∅ 80) P=63 (∅ 90) Q=71 (∅ 105) R=80 (∅ 120) T=90 (∅ 140) U=100-112 (∅ 160) V=132 (∅ 200)</p> |  | | | | | | | | | | | | | | |
| <p style="text-align: center;">411A</p> <p>S → ∅ 14 C → ∅ 19 E → ∅ 24</p> | <p style="text-align: center;">411A</p> <p>1 → ∅ 120 2 → ∅ 140 3 → ∅ 160 4 → ∅ 200</p> | | B14 |  | | | | | | | | | | | | | | |
| <p style="text-align: center;">511A</p> <p>C → ∅ 19 E → ∅ 24 G → ∅ 28</p> | <p style="text-align: center;">511A</p> <p>2 → ∅ 140 3 → ∅ 160 4 → ∅ 200 5 → ∅ 250</p> | | | <p style="text-align: center;">V6</p>  | | | | | | | | | | | | | | |
| | | <p style="text-align: center;">Flangia ridotta Reduced Flange</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">302A 503A</td> <td style="padding: 2px;">402A 402C 403C 603A 603C</td> </tr> </table> <p>1 → ∅ 19 (71B5) 3 → ∅ 28 (90B5)</p> <p>2 → ∅ 24 (80B5)</p> | 302A 503A | 402A 402C 403C 603A 603C | | V5 | | | | | | | | | | | | |
| 302A 503A | 402A 402C 403C 603A 603C | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">202A 403A</td> <td style="padding: 2px;">452A 502A 602A 602C</td> </tr> </table> <p>5 → ∅ 11 (56B5) 2 → ∅ 24 (80B5)</p> <p>6 → ∅ 14 (63B5) 3 → ∅ 28 (90B5)</p> <p>7 → ∅ 19 (71B5)</p> | 202A 403A | 452A 502A 602A 602C | | | | | | | | | | | | | | |
| 202A 403A | 452A 502A 602A 602C | | | | | | | | | | | | | | | | | |
| | | <p style="text-align: center;">Tipo R Type R</p>  | | | | | | | | | | | | | | | | |
| | | <p style="text-align: center;">→ STANDARD</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">411A</td> <td style="padding: 2px;">2 → ∅ 19</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">311A</td> <td style="padding: 2px;">511A</td> </tr> </table> <p>1 → ∅ 14 3 → ∅ 24</p> | 411A | 2 → ∅ 19 | 311A | 511A | | | | | | | | | | | | |
| 411A | 2 → ∅ 19 | | | | | | | | | | | | | | | | | |
| 311A | 511A | | | | | | | | | | | | | | | | | |
| | | <p style="text-align: center;">Senza flangia Without flange</p>  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">311A</td> <td style="padding: 2px;">Z → ∅ 9 (56B5)</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">0 → ∅ 11 (63B5)</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">1 → ∅ 14 (71B5)</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">411A</td> <td style="padding: 2px;">1 → ∅ 14 (71B5)</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">511A</td> <td style="padding: 2px;">2 → ∅ 19 (80B5)</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">3 → ∅ 24 (90B5)</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">4 → ∅ 28 (100B5)</td> </tr> </table> | 311A | Z → ∅ 9 (56B5) | | 0 → ∅ 11 (63B5) | | 1 → ∅ 14 (71B5) | 411A | 1 → ∅ 14 (71B5) | 511A | 2 → ∅ 19 (80B5) | | 3 → ∅ 24 (90B5) | | 4 → ∅ 28 (100B5) | | |
| 311A | Z → ∅ 9 (56B5) | | | | | | | | | | | | | | | | | |
| | 0 → ∅ 11 (63B5) | | | | | | | | | | | | | | | | | |
| | 1 → ∅ 14 (71B5) | | | | | | | | | | | | | | | | | |
| 411A | 1 → ∅ 14 (71B5) | | | | | | | | | | | | | | | | | |
| 511A | 2 → ∅ 19 (80B5) | | | | | | | | | | | | | | | | | |
| | 3 → ∅ 24 (90B5) | | | | | | | | | | | | | | | | | |
| | 4 → ∅ 28 (100B5) | | | | | | | | | | | | | | | | | |



Tutti i riduttori sono forniti completi di olio sintetico per la lubrificazione permanente e non necessitano di alcuna manutenzione.

All the units are supplied with synthetic oil for lifetime lubrication, no maintenance is necessary.

Alle Getriebes sind mit synthetischem Öl gefüllt und sind lebensdauer-geschmiert.

Les reducteurs sont fournis avec une lubrification permanente à l'huile synthétique et ne demandent aucun entretien.

Los reductores se suministran con lubricación permanente por aceite sintético y no requieren mantenimiento alguna.

I riduttori sono forniti con una quantità d'olio adatta per le posizioni di montaggio B3 / B5.

The gearboxes are furnished with one quantity of oil adapts for the positions of assemblage B3 / B5.

Die Getriebe werden standardmäßig mit der Ölfüllmenge für Einbaulage B3/B5 ausgeliefert.

Les réducteurs sont achalandés avec une quantité d'huile adapte pour les positions d'assemblage B3 / B5.

Los reductores son dotados con una cantidad de aceite adapta por las posiciones de montaje B3 / B5.

Nel caso di utilizzo in altre posizioni tipo B6 / B56 / V5 / V1 / V6 / V3 / V8 / V58 è necessario specificare in fase d'ordine tale scelta.

Specify in the order, when mounting position are : B6 B56 V5 V1 V6 V3 V8 V58

Bei Montage in den Einbaulagen B6 / B56 / V5 / V1 / V6 / V3 / V8 / V58 ist die Einbaulage in der Bestellung anzugeben.

Dans le cas de jouissance en autres positions type B6 / B56 / V5 / V1 / V6 / V3 / V8 / V58 est nécessaire spécifier en phase d'ordre tel choix.

En el caso de empleo en otras posiciones tipo B6 / B56 / V5 / V1 / V6 / V3 / V8 / V58 es necesario precisar en fase de orden tal selección.

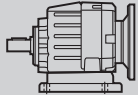
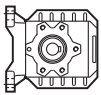
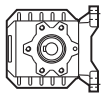
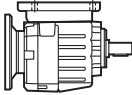
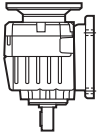
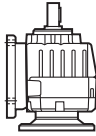
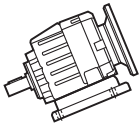
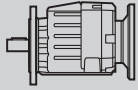
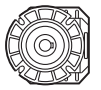

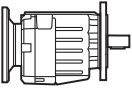
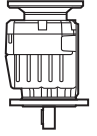
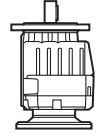
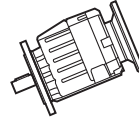
Nel caso i riduttori forniti con una quantità di lubrificante per posizioni di montaggio B3 / B5 vengano utilizzati in altre posizioni va effettuata un'aggiunta d'olio sintetico fino alla quantità totale riportata in tabella.

If gearboxes are ordered for B3 B5 , but used in different mounting position , just add if your position requires an higher Q.ty.

Werden die Getriebe welche für die Einbaulage B3/B5 geliefert wurden in anderen Einbaulagen verwendet ist die Ölfüllmenge entsprechend der Tabelle zu ändern.

Dans le cas les réducteurs achalandés avec une quantité de lubrifiant pour positions d'assemblage B3 / B5 ils soient utilisés en autres positions il va effectuée une addition d'huile synthétique jusqu'à la la quantité totale reportée en tableau.

En el caso los reductores dotados con una cantidad de lubricante por posiciones de montaje B3 / B5 sean utilizados en otras posiciones va efectuada una añadidura de aceite sintético hasta la cantidad total reconducida en tablero.

| Standard | A richiesta / On request / Auf Anfrage / A la demande / A solicitud | | | | | |
|---|---|---|---|--|---|---|
|  B3 |  B6 |  B7 |  B8 |  V5 |  V6 |  V8 |
|  B5 |  B6 |  B7 |  B8 |  V1 |  V3 |  V8 |

Quantità di olio / Oil quantity / Ölmenge / Quantités d'huile / Cantidad de aceite [l]

| | | | | | | | |
|------|------|------|------|------|------|------|------|
| 202A | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 302A | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 402A | 0.25 | 0.30 | 0.40 | 0.40 | 0.40 | 0.50 | 0.40 |
| 403A | 0.30 | 0.35 | 0.45 | 0.45 | 0.45 | 0.55 | 0.45 |
| 452A | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 502A | 0.45 | 0.55 | 1.00 | 1.10 | 1.10 | 1.15 | 1.10 |
| 503A | 0.75 | 0.75 | 1.05 | 1.15 | 1.20 | 1.20 | 1.20 |
| 602A | 0.55 | 0.85 | 1.10 | 1.20 | 1.20 | 1.25 | 1.20 |
| 603A | 0.75 | 0.90 | 1.15 | 1.25 | 1.30 | 1.35 | 1.30 |

Quantità di olio / Oil quantity / Ölmenge / Quantités d'huile / Cantidad de aceite [l]

| | | | | | | | |
|------|------|------|------|------|------|------|------|
| 402C | 0.50 | 0.50 | 0.50 | 0.50 | 0.65 | 0.85 | 0.65 |
| 403C | 0.55 | 0.55 | 0.55 | 0.55 | 0.70 | 0.90 | 0.70 |
| 602C | 1.00 | 1.50 | 1.50 | 1.50 | 2.00 | 2.00 | 2.00 |
| 603C | 1.30 | 1.50 | 1.50 | 1.50 | 2.10 | 2.00 | 2.10 |

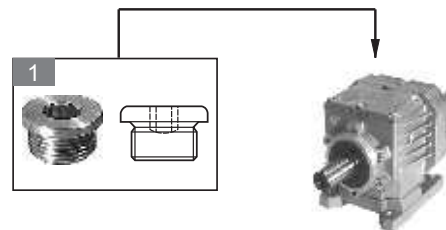
Tutti i riduttori sono forniti con un solo tappo di carico / scarico del tipo 1.

All the gearboxes are furnished with a solo cork of un/loaded / load of the type 1.

Die Getriebe werden standardmäßig mit Verschluss-schrauben ausgeliefert.

Tous les réducteurs sont fournis avec un bouchon seul de charge / déchargement du type 1.

Todos los reductores son provistos con un solista tapón d.e cargado / descargue del tipo 1





Lubrificanti consigliati

Suggested lubricants

Vorgeschlagene Schmierstoffe

Lubrifiants indiqués

Lubricante recomendados

| STANDARD | | Olio sintetico / Synthetic oil Synthetisches Öl / Huile Synthétique Aceite sintético | | | A RICHIESTA ON REQUEST | Olio minerale / Mineral oil Mineralisches Öl / Huile minérale Aceite mineral | | |
|---|---------------|--|------------------|------------------|---------------------------|--|------------------|------------------|
| ISO VG | | 460 | 220 320 | 150 | 680 | 460 | 320 | 220 |
| Temperatura ambiente Ambient temperature Einsatztemperaturen Température ambiante Temperatura ambiente Tc (°C) | | - 15° 100° | - 25° 80° | - 30° 70° | 5° 50° | 5° 45° | - 0° 40° | - 0° 35° |
| FORNITORE / MANUFACTURER HERSTELLER / FOURNISSEUR FABRICIANTE | AGIP | | Telium VSF 320 | Telium VSF 150 | Blasia 680 | Blasia 460 | Blasia 320 | Blasia 220 |
| | BP | Energol SGXP 460 | Energol SGXP 220 | Energol SGXP 150 | Energol GRXP 680 | Energol GRXP 460 | Energol GRXP 320 | Energol GRXP 220 |
| | ESSO | | | | Spartan EP 680 | Spartan EP 460 | Spartan EP 320 | Spartan EP 220 |
| | SHELL | Tivela OIL SD | Tivela OIL WB | | Omala OIL 680 | Omala OIL 460 | Omala OIL 320 | Omala OIL 220 |
| | KLÜBER | Syntheso D460 EP | Syntheso D220 EP | Syntheso D150 EP | Lamora 680 | Lamora 460 | Lamora 320 | Lamora 220 |
| | MOBIL | Glygoyle HE 460 | Glygoyle 30 | Glygoyle 22 | Mobilgear 636 | Mobilgear 636 | Mobilgear 632 | Mobilgear 630 |
| Tappi olio Oil plugs | | Chiuso Closed | | | Aperto Open | | | |



311 - 411 - 511



I riduttori tipo 311, 411, 511 sono forniti completi di olio sintetico per una lubrificazione permanente e non necessitano di alcuna manutenzione.

All the units 311, 411, 511 are supplied with synthetic oil for lifetime lubrication, no maintenance is necessary.

Die Getriebe 311, 411, 511 sind mit synthetischem Öl gefüllt und sind lebensdauer-geschmiert.

Les reducteurs 311, 411, 511 sont fournis avec une lubrification permanente à l'huile synthétique et ne demandent aucun entretien.

Los reductores 311, 411, 511 se suministran con lubricación permanente por aceite sintético y no requieren mantenimiento alguna.

I riduttori sono forniti con una quantità d'olio adatta per tutte le posizioni di montaggio.

The gearboxes are furnished with one quantity of oil adapts for the positions of assemblage B3 / B5.

Die Getriebe werden standardmäßig mit der Ölfüllmenge für Einbaulage B3 / B5 ausgeliefert.

Les réducteurs sont achalandés avec une quantité d'huile adapte pour les positions d'assemblage B3 / B5.

Los reductores son dotados con una cantidad de aceite adapta por las posiciones de montaje B3 / B5.

| B3 | B5 | Quantità di olio / Oil quantity / Ölmenge Quantités d'huile / Cantidad de aceite [l] | | |
|----|----|---|------|------|
| | | 311 | 411 | 511 |
| | | 0.10 | 0.20 | 0.29 |

Nel caso di utilizzo in posizioni verticali quali V5 / V1 / V6 / V3 / V8 / V58 è necessario specificare in fase d'ordine tale scelta.

For vertical mounting V5 / V1 / V6 / V3 / V8 / V58 please specify in the order.

Bei Montage in den Einbaulagen V5 / V1 / V6 / V3 / V8 / V58 ist die Einbaulage in der Bestellung anzugeben.

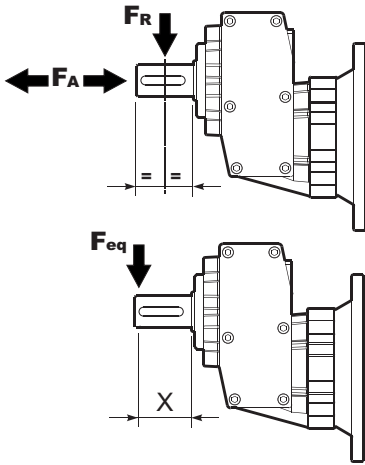
Pour fixation V5 / V1 / V6 / V3 / V8 / V58 S.V.P. nous contacter.

Para montaje V5 / V1 / V6 / V3 / V8 / V58 consultar nos.

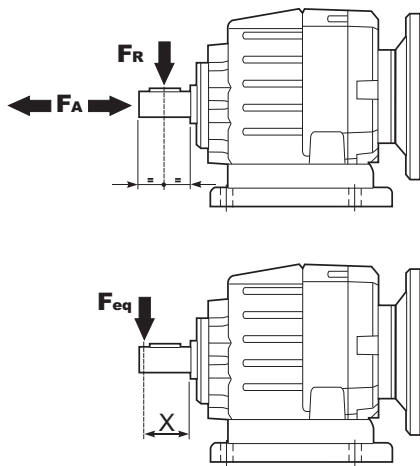


CARICHI RADIALI E ASSIALI / RADIAL AND AXIAL LOADS / RADIALE UND AXIALE BELASTUNG
CHARGES RADIALES ET AXIALES / CARGA RADIAL Y AXIAL

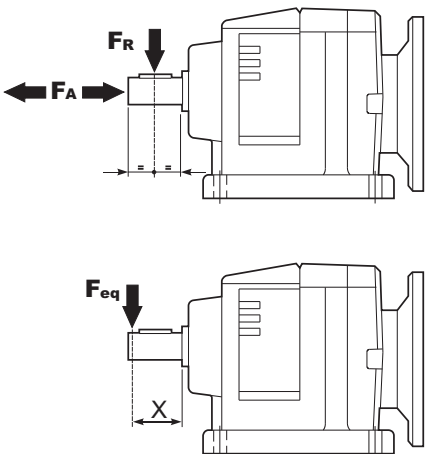
Albero uscita / Output shaft / Abtriebswelle / Arbre lent / Eje de salida



| n_2 [min ⁻¹] | 311 | | 411 | | 511 | |
|-------------------------------|---------------------------------|--------------|-----------------------------|--------------|---------------------------------|--------------|
| | F_A [N] | F_R [N] | F_A [N] | F_R [N] | F_A [N] | F_R [N] |
| 700 | 84 | 420 | 182 | 910 | 294 | 1470 |
| 600 | 100 | 500 | 200 | 1000 | 320 | 1600 |
| 400 | 115 | 580 | 230 | 1150 | 370 | 1850 |
| 300 | 126 | 630 | 250 | 1250 | 400 | 2000 |
| 200 | 146 | 730 | 290 | 1450 | 460 | 2300 |
| 140 | 160 | 800 | 320 | 1600 | 510 | 2550 |
| $F_{eq} =$ | $F_R \frac{38.5}{x \cdot 18.5}$ | | $F_R \frac{40}{x \cdot 20}$ | | $F_R \frac{52.5}{x \cdot 22.5}$ | |



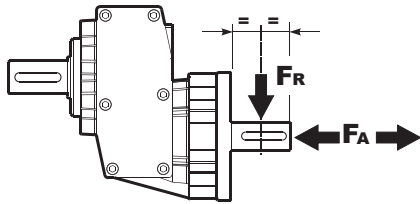
| n_2 [min ⁻¹] | 202A 302A | | 402A 403A | | 452A | | 502A 503A | | 602A 603A | |
|-------------------------------|---------------------------------|--------------|-----------------------------|--------------|-----------------------------|--------------|-----------------------------|--------------|---------------------------------|--------------|
| | F_A [N] | F_R [N] | F_A [N] | F_R [N] | F_A [N] | F_R [N] | F_A [N] | F_R [N] | F_A [N] | F_R [N] |
| 300 | 140 | 700 | 310 | 1550 | 415 | 2070 | 460 | 2300 | 560 | 2800 |
| 250 | 151 | 756 | 330 | 1650 | 430 | 2160 | 480 | 2400 | 600 | 3000 |
| 200 | 185 | 924 | 360 | 1800 | 470 | 2340 | 520 | 2600 | 640 | 3200 |
| 140 | 246 | 1320 | 406 | 2030 | 540 | 2700 | 600 | 3000 | 740 | 3700 |
| 120 | 270 | 1350 | 448 | 2240 | 560 | 2790 | 620 | 3100 | 760 | 3800 |
| 85 | 300 | 1500 | 480 | 2400 | 630 | 3150 | 700 | 3500 | 840 | 4000 |
| 70 | 340 | 1700 | 540 | 2700 | 700 | 3510 | 780 | 3900 | 890 | 4200 |
| 40 | 380 | 1900 | 600 | 3000 | 810 | 4050 | 900 | 4500 | 1160 | 5800 |
| 15 | | | 600 | 3000 | 900 | 4500 | 1000 | 5000 | 1300 | 6500 |
| $F_{eq} =$ | $F_R \frac{35.7}{x \cdot 20.7}$ | | $F_R \frac{46}{x \cdot 21}$ | | $F_R \frac{51}{x \cdot 21}$ | | $F_R \frac{54}{x \cdot 24}$ | | $F_R \frac{60.5}{x \cdot 25.5}$ | |



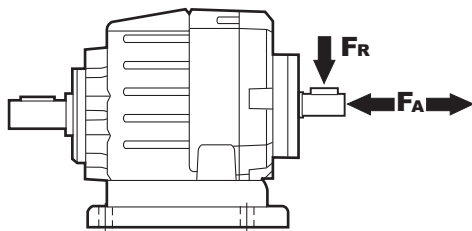
| n_2 [min ⁻¹] | 402C 403C | | 602C 603C | |
|-------------------------------|-----------------------------|--------------|---------------------------------|--------------|
| | F_A [N] | F_R [N] | F_A [N] | F_R [N] |
| 300 | 400 | 2000 | 580 | 2900 |
| 250 | 440 | 2200 | 620 | 3100 |
| 200 | 470 | 2350 | 660 | 3300 |
| 140 | 540 | 2700 | 760 | 3800 |
| 120 | 590 | 2900 | 800 | 4000 |
| 85 | 680 | 3400 | 960 | 4800 |
| 70 | 760 | 3800 | 1000 | 5000 |
| 40 | 860 | 4300 | 1200 | 6000 |
| 15 | 860 | 4300 | 1452 | 7260 |
| $F_{eq} =$ | $F_R \frac{46}{x \cdot 21}$ | | $F_R \frac{60.5}{x \cdot 25.5}$ | |



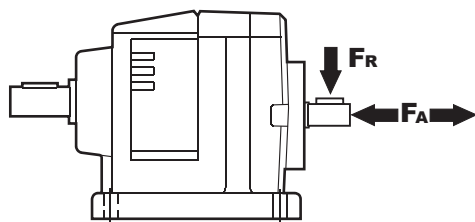
Albero entrata / Input shaft / Antriebswelle / Arbore rapide / Eje de entrada



| n ₁ [min ⁻¹] | 311 | | 411 | | 511 | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] |
| 1400 | 140 | 700 | 240 | 1200 | 400 | 2000 |
| 900 | 160 | 800 | 280 | 1400 | 440 | 2200 |



| n ₁ [min ⁻¹] | 202A | | 302A | | 402A | | 403A | | 452A 502A | | 503A | | 602A | | 603A | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] |
| 1400 | 140 | 700 | 226 | 1130 | 240 | 1200 | 140 | 700 | 400 | 2000 | 240 | 1200 | 450 | 2250 | 400 | 2000 |
| 900 | 160 | 800 | 264 | 1320 | 280 | 1400 | 160 | 800 | 440 | 2200 | 280 | 1400 | 500 | 2500 | 440 | 2200 |
| 500 | 190 | 950 | 322 | 1610 | 340 | 1700 | 190 | 950 | 440 | 2200 | 310 | 1700 | 600 | 3000 | 440 | 2200 |



| n ₁ [min ⁻¹] | 402C | | 403C | | 602C | | 603C | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] | F _A [N] | F _R [N] |
| 1400 | 240 | 1200 | 240 | 1200 | 450 | 2250 | 400 | 2000 |
| 900 | 280 | 1400 | 280 | 1400 | 500 | 2500 | 440 | 2200 |
| 500 | 340 | 1700 | 340 | 1700 | 600 | 3000 | 440 | 2200 |

$$F_R [N] = \frac{M \cdot 2000}{d} \cdot f_k$$

| | |
|------------------|---|
| M [Nm] | Momento torcente / Output torque / Drehmoment / Couple / Par torsor |
| d [mm] | Diametro primitivo / Diam. of driving element / Durchmesser / Diamètre / Diámetro primitivo |
| f _k = | Coeff. di trasmissione / Factor / Übertragungsfaktor / Coefficient / Coeficiente de transmisión |
| 1.15 | Ingranaggi / Gearwheels / Zahnrad / Engrenage / Engranaje |
| 1.25 | Catena / Chain sprockets / Antriebskette / Chaîne / Cadena |
| 1.75 | Cinghia trapezoidale / Narrow v-belt pulley / Keilriemen / Courroie trap. / Correa trapezoidal. |
| 2.5 | Cinghia piatta / Flat-belt pulley / Flachzahnriem. / Courroie crantée / Correa plana |

- Nel caso la vs. applicazione richieda carichi radiali o assiali superiori consultate il ns. ufficio tecnico; valori maggiori possono essere accettati.
- If your application requires higher radial loads contact our technical office, it is in practice often possible to apply higher loads.
- Wenn Ihre Anwendung höhere Radialbelastungen erfordert, so wenden Sie sich bitte an unser technischen Büro.
- Si votre application demande des charges radiales supérieures, s'adresser à notre bureau technique.
- En ei caso en que una aplicación exija una carga radial superior a la especificada en el catálogo, consultara nuestras oficina tecnica.