



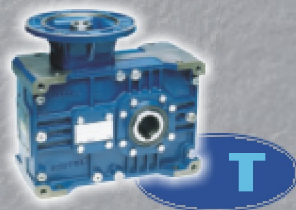
CATALOGO GENERALE INFORMAZIONI GENERALI



GENERAL CATALOGUE GENERAL INFORMATION



КАТАЛОГ ОБЩАЯ ИНФОРМАЦИЯ



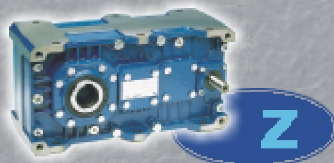
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- 2.2 Designazione
- 2.3 Dati tecnici
- 2.4 Dimensioni
- 2.5 Accessori
- 2.6 Sensi di rotazione alberi
- 2.7 Lubrificazione
- 2.8 Carichi radiali e assiali
- 2.9 Liste parti di ricambio

BEVEL HELICAL GEARBOX

- Characteristics
- Designation
- Technical data
- Dimensions
- Accessories
- Direction of shaft rotation
- Lubrication
- Radial and axial loads
- Spare parts list

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- Характеристики
- Схемы редукторов
- Технические данные
- Размеры
- Вспомогательные устройства
- Направление вращения вала
- Смазка
- Радиальные и осевые нагрузки
- Список запчастей



RIDUTTORI AD ASSI PARALLELI ACHSEN

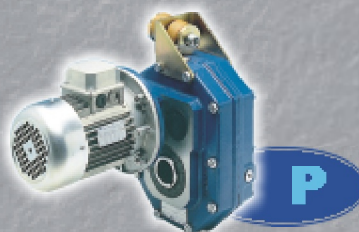
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PARALLEL GEAR SHAFT UNIT

- Characteristics
- Designation
- Technical data
- Dimensions
- Accessories
- Lubrication
- Radial and axial loads
- Spare parts list

Редукт. с парал. валами

- Характеристики
- Схемы редукторов
- Технические данные
- Размеры
- Вспомогательные устройства
- Смазка
- Радиальные и осевые нагрузки
- Список запчастей



RIDUTTORI PENDOLARI

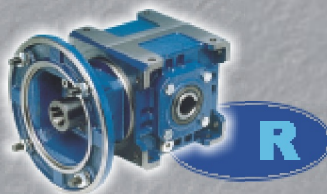
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- 4.8 Liste parti di ricambio

SHAFT-MOUNTED GEARBOX

- Characteristics
- Designation
- Technical data
- Dimensions
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- Radial and axial loads
- Spare parts list

Редукт. с крепл. на валу

- Характеристики
- Схемы редукторов
- Технические данные
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RIGHTANGLE GEARBOX

- Characteristics
- Designation
- Technical data
- Direction of shaft rotation
- Dimensions
- Accessories
- Lubrication
- Radial and axial loads
- Spare parts list

Высокоточ.планет.редукторы

- Характеристики
- Схемы редукторов
- Технические данные
- Направление вращения вала
- Размеры
- Вспомогательные устройства
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MOTORI ELETTRICI

ELECTRIC MOTORS

ЭЛЕКТРОМОТОРЫ

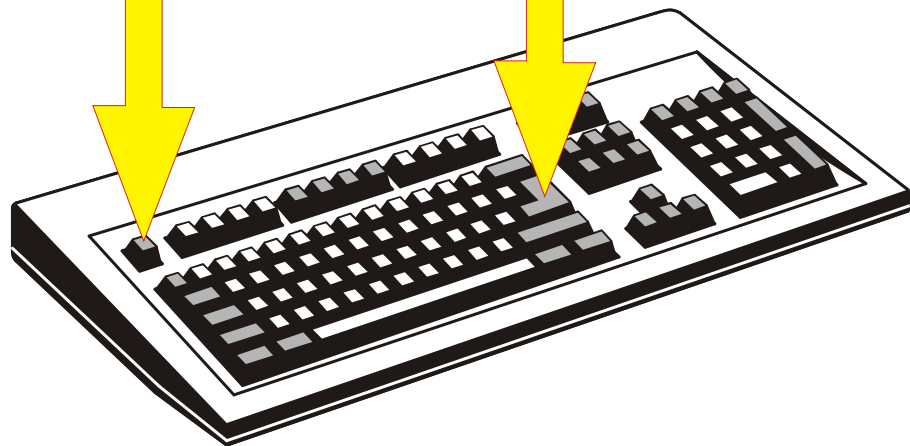


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1.0 GENERALITA'

1.0 GENERAL INFORMATION

1.0 ОБЩАЯ ИНФОРМАЦИЯ

1.1 Unità di misura

1.1 Measurement units

1.1 Единицы измерения

Tab. 1

| SIMBOLO SYMBOL SYMBOL | DEFINIZIONE | DEFINITION | DEFINITION | UNITA' DI MISURA MEASUREMENT UNIT MAßEINHEIT | |
|-----------------------------|--------------------------------|------------------------------|--------------------------------|--|----------------------------|
| Fr 1-2 | Carico Radiale | <i>Radial load</i> | Querbelastung | daN | 1daN=10N \cong 1Kg |
| Fa 1-2 | Carico Assiale | <i>Axial load</i> | Axialbelastung | daN | |
| | Dimensioni | <i>Dimensions</i> | Abmessungen | mm | |
| FS | Fattore di servizio | <i>Service factor</i> | Betriebsfaktor | | |
| Kg | Massa | <i>Mass</i> | Masse | Kg | |
| T_{2M} | Momento torcente riduttore | <i>Output torque</i> | Getriebe Drehmoment | Nm | 1Nm=0.1daNm \cong 0.1Kgm |
| T₂ | Momento torcente motorid. | <i>Gear motor torque</i> | Getriebemotor Drehmoment | Nm | |
| P | Potenza motore | <i>Gear unit power</i> | Getriebe Leistung | kW | |
| Pc | Potenza corretta | <i>Correct power</i> | Korrekte Leistung | kW | |
| P1 | Potenza motoriduttore | <i>Gear motor power</i> | Getriebemotor Leistung | kW | 1kW = 1.36 HP (PS) |
| P' | Potenza richiesta in uscita | <i>Output power</i> | Erforderliche Abtriebsleistung | kW | |
| RD | Rendimento dinamico | <i>Dynamic efficiency</i> | Dynamischer Wirkungsgrad | | |
| in | Rapp. Di trasm. nominale | <i>Rated reduction ratio</i> | Nennübersetzungsverhältnis | | |
| ir | Rapporto di trasmissione reale | <i>Real reduction ratio</i> | Reelles Übersetzungsverhältnis | | |
| n₁ | Velocità albero entrata | <i>Input speed</i> | Antriebsdrehzahl | omdr.-rpm | 1 rpm = 6.283 rad. |
| n₂ | Velocità albero uscita | <i>Output speed</i> | Abtriebsdrehzahl | | 1 omdr. = 1 rpm |
| Tc | Temperatura ambiente | <i>Ambient temperature</i> | Umgebungstemperatur | °C | |
| η | Rendimento | <i>Efficiency</i> | Wirkungsgrad | | |
| IEC | Motori accoppiabili | <i>Motor options</i> | Passende Motoren | | |

1.2 Velocità in entrata

Tutte le prestazioni dei riduttori sono calcolate in base ad una velocità in entrata di 1400 rpm.

Tutti i riduttori ammettono velocità fino a 3000 rpm anche se è consigliabile, dove l'applicazione lo permette, utilizzare valori inferiori a 1400 rpm.

Nella tabella sottostante riportiamo i coefficienti correttivi della potenza in entrata P alle varie velocità riferite ad FS=1

1.2 Input speed

All gear unit performance specifications are calculated on the basis of an input speed of 1400 rpm.

All gear units permit speed up to 3000 rpm, although it is better to keep below 1400 rpm, depending on application.

The table below reports corrective input power P(P1) coefficients at the various speeds, with FS = 1.

1.2. Входная скорость

Все приводы, представленные спецификацией рассчитываются на основании входной скорости, составляющей 1400 об/мин.

Все приводы могут достигать скорости до 3000 об/мин (максимально возможная скорость для всех приводов 3000 об/мин, однако лучше всего сохранять скорость до 1400 об/мин или ниже (зависит от применения)).

Tab. 2

| n ₁ (rpm) | 3000 | 2800 | 2200 | 1800 | 1400 | 900 | 700 | 500 |
|----------------------|---------|---------|----------|----------|-------|---------|----------|----------|
| Pc (kW) | P x 1.9 | P x 1.8 | P x 1.48 | P x 1.24 | P x 1 | P x 0.7 | P x 0.56 | P x 0.42 |

1.3 Rendimento

Il valore del rendimento dei riduttori può essere stimato con sufficiente approssimazione in base al numero di riduzioni, trascurando le variazioni non significative attribuibili alle varie grandezze e rapporti (Tab.3).

1.3 Efficiency

The efficiency value of the gear units can be estimated sufficiently well on the basis of the number of reducers, ignoring non-significant variations which can be attributed to the various sizes and ratios (Tab. 3).

1.3 КПД

КПД редукторов достаточно хорошо оценивается на основании количества редукционных ступеней, исключая незначительные отличия, которые могут относиться к различным размерам и передаточным числам

Tab. 3

| N°.riduzioni N. reducers № фазы | Riduttori/Gear units / Редукторы | | | | | | | |
|---------------------------------------|---|------|--|------|------|---|------|---|
| | Ad assi ortogonali Bevel helical gearbox Редуктор с кон. косоз. парой | | Ad assi paralleli Parallel shaft gear unit Редуктор с параллельными валами | | | Pendolari Shaft mounted gearbox Конусн. редуктор с закр. вал. | | Rinvii Right angle gearbox В. план. редук. |
| | T..B | T..C | Z..A | Z..B | Z..C | P..A | P..B | R.. |
| 1 | | | 0.97 | | | 0.97 | | 0.97 |
| 2 | 0.95 | | | 0.95 | | | 0.95 | |
| 3 | | 0.93 | | | 0.93 | | | |



1.4 Fattore di servizio

Il fattore di servizio FS permette di qualificare, in prima approssimazione, la tipologia dell'applicazione tenendo conto della natura del carico (A, B, C), della durata di funzionamento h/d (ore giornaliere) e del numero di avviamenti/ora. Il coefficiente così trovato dovrà essere uguale o inferiore al fattore di servizio del riduttore FS' dato dal rapporto fra la coppia nominale del riduttore T_{2M} indicata a catalogo e la coppia M' richiesta dall'applicazione.

I valori di FS indicati nella tab. 4, sono relativi all'azionamento con motore elettrico; se utilizzato un motore a scoppio, si dovrà tenere conto di un fattore di moltiplicazione 1.3 se a più cilindri e 1.5 se monocilindrico.

Se il motore elettrico applicato è autofrenante, considerare un numero di avviamenti doppio di quello effettivamente richiesto.

1.4 Service factor

The service factor FS permits approximate qualification of the type of application, taking into account the type of load (A, B, C), length of operation h/d (hours/day) and the number of start-up/hour. The coefficient thus calculated must be equal to or less than the gear unit service factor FS' given by the rated torque of gear unit T_{2M} as indicated in the catalogue and the torque M' required by the application.

The FS values reported in Table 4 refer to a drive unit with an electric motor. If a combustion engine is used, a multiplication factor of 1.3 must be applied for a several-cylinder engine, 1.5 for a single-cylinder engine.

If the electric motor applied is self-braking, consider twice the number of start-up than those actually required.

1.4 Сервисный коэффициент

Сервисный коэффициент (FS) дает возможность представления типов редукторов, принимая во внимание тип нагрузки (A, B, C), продолжительность операций (часов/день) и количество запусков/час. Коэффициент, рассчитанный данным способом, может быть меньше или равен сервисному коэффициенту привода, представленному передаточным числом между вращающим моментом привода T_{2M} , как указано в каталоге, и вращающим моментом M , который требуется при применении. Значения сервисного коэффициента, представленные в таблице 4 относятся к приводу с электрическим мотором. Если используется тепловой двигатель, коэффициент следует умножить на 1.3 для многоцилиндрового двигателя и на 1.5 для одноцилиндрового. Если применяемый мотор самотормозящий, количество стартов больше существующего в 2 раза.

Tab. 4

| Classe di carico Load class Тип нагрузки | h/d | N. AVVIAMENTI/ORA / N. START-UP/HOUR / КОЛИЧЕСТВО ЗАПУСКОВ В ЧАС | | | | | | | | |
|---|--|--|-----------------------|--|---------------------------------|-----|-----|-----|-----|-----|
| | | 2 | 4 | 8 | 16 | 32 | 63 | 125 | 250 | 500 |
| A | 4 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 |
| | 8 | 1.0 | 1.0 | 1.1 | 1.1 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| | 16 | 1.3 | 1.3 | 1.3 | 1.3 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | 24 | 1.5 | 1.5 | 1.5 | 1.5 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| | APPLICAZIONI / APPLICATIONS / ПРИМЕНЕНИЕ | | | | | | | | | |
| Carico uniforme Uniform load Равномерная нагрузка | Agitatori per liquidi puri | | Pure liquid agitators | | Чистые жидкие агитаторы | | | | | |
| | Alimentatori per fornaci | | Furnace feeders | | Загрузочное устройство | | | | | |
| | Alimentatori a disco | | Disc feeders | | Дисковые загрузочные устройства | | | | | |
| | Filtri di lavaggio con aria | | Air laundry filters | | Воздушные фильтры | | | | | |
| | Generatori | | Generators | | Генераторы | | | | | |
| | Pompe centrifughe | | Centrifugal pumps | | Центробежные насосы | | | | | |
| Trasportatori con carico uniforme | | Uniform load conveyors | | Равном. нагруз. конвейеры (транспортеры) | | | | | | |

| Classe di carico Load class Тип нагрузки | h/d | N. AVVIAMENTI/ORA / N. START-UP/HOUR / КОЛИЧЕСТВО ЗАПУСКОВ В ЧАС | | | | | | | | |
|---|--|--|----------------------------|-----|--------------------------------|-----|-----|-----|-----|-----|
| | | 2 | 4 | 8 | 16 | 32 | 63 | 125 | 250 | 500 |
| B | 4 | 1.0 | 1.0 | 1.0 | 1.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| | 8 | 1.3 | 1.3 | 1.3 | 1.3 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | 16 | 1.5 | 1.5 | 1.5 | 1.5 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| | 24 | 1.8 | 1.8 | 1.8 | 1.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| | APPLICAZIONI / APPLICATIONS / ПРИМЕНЕНИЕ | | | | | | | | | |
| Carico con urti moderati Moderate shock load Умеренная ударная нагрузка | Agitatori per liquidi e solidi | | Liquid and solid agitators | | Жидкие и твердые агитаторы | | | | | |
| | Alimentatori a nastro | | Belt conveyors | | Ремневые конвейеры | | | | | |
| | Argani con medio servizio | | Medium service winches | | Средние домкраты или лебедки | | | | | |
| | Filtri con pietre e ghiaia | | Stone and gravel filters | | Каменные или гравийные фильтры | | | | | |
| | Viti per espulsione acqua | | Dewatering screws | | Флоккуляторы | | | | | |
| | Floculatori | | Floculator | | Вакуумные фильтры | | | | | |
| | Filtri a vuoto | | Vacuum filters | | Поршневые подъемники | | | | | |
| | Elevatori a tazze | | Bucket elevators | | Краны | | | | | |
| Gru | | Cranes | | | | | | | | |

| Classe di carico Load class Тип нагрузки | h/d | N. AVVIAMENTI/ORA / N. START-UPS/HOUR / КОЛИЧЕСТВО ЗАПУСКОВ В ЧАС | | | | | | | | |
|---|--|---|--------------------------|---------------|--------------------|-----|-----|-----|-----|-----|
| | | 2 | 4 | 8 | 16 | 32 | 63 | 125 | 250 | 500 |
| C | 4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | 8 | 1.5 | 1.5 | 1.5 | 1.5 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| | 16 | 1.8 | 1.8 | 1.8 | 1.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| | 24 | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| | APPLICAZIONI / APPLICATIONS / ПРИМЕНЕНИЕ | | | | | | | | | |
| Carico con urti forti Heavy shock load Сильная ударная нагрузка | Argani per servizio pesante | | Heavy duty hoists | | Тяжелые подъемники | | | | | |
| | Estrusori | | Extruders | | Экструдеры | | | | | |
| | Calandre per gomma | | Crusher rubber calenders | | Резиновые цилиндры | | | | | |
| | Presse per mattoni | | Brick presses | | Кирпичные прессы | | | | | |
| | Piattatrici | | Planing machine | | Planing машина | | | | | |
| Mulini a sfera | | Ball mills | | Шаровые фрезы | | | | | | |



1.5 Selezione

Determinare la potenza in entrata P' (in base alla coppia T₂ richiesta dall'applicazione) con la seguente formula:

$$P' = \frac{T_2 \cdot n_2}{955 \cdot \eta} \text{ (kW)}$$

Calcolare il rapporto di trasmissione con la relazione:

$$i = \frac{n_1}{n_2}$$

Scegliere il fattore di servizio FS dell'applicazione nella Tab. 4.

Scelta riduttore

A) n₁ = 1400 rpm. Si sceglierà nelle tabelle delle prestazioni dei riduttori un gruppo che in corrispondenza di un rapporto prossimo a quello calcolato ammetta una potenza: **P ≥ P' x FS'**

B) n₁ 1400 rpm. Si dovrà effettuare la scelta come nel caso precedente però in base ad una potenza Pc corretta con i coefficienti riportati nella Tab.4 verificando la relazione: **Pc ≥ P' x FS.**

Scelta del motoriduttore

C) n₁ = 1400 rpm e FS = 1. Si cercherà nelle tabelle della prestazioni dei motoriduttori un gruppo la cui potenza P1 corrisponda alla P' calcolata.

D) n₁ ≠ 1400 rpm o se il fattore FS ≠ 1. La scelta dovrà essere effettuata come al punto A) verificando che la grandezza del motore da installare sia compatibile con quelle ammesse dal riduttore (IEC); ovviamente la potenza installata dovrà corrispondere al valore P' richiesto.

Verifiche

Verificare che i carichi radiali agenti sugli alberi rientrino nei valori ammissibili riportati nelle relative tabelle.

Tali valori (FR₂) si riferiscono a carichi che agiscono a metà sporgenza dell'albero, per cui se il punto di applicazioni è diverso, è necessario effettuare il calcolo dei nuovi valori ammissibili alla distanza (y) desiderata.

Analogamente a quanto precisato sopra, anche i carichi assiali dovranno essere oggetto di verifica confrontandoli con i valori delle relative tabelle.

Generalmente tutti i riduttori ammettono dei sovraccarichi max. (istantanei) pari al 200% del valore nominale della coppia T_{2M}.

Se si temono sovraccarichi superiori è indispensabile prevedere degli opportuni dispositivi per la limitazione della coppia.

1.5 Selection

Calculate input power P' (on the basis of the torque T₂ required by the application), using the following formula:

$$P' = \frac{T_2 \cdot n_2}{955 \cdot \eta} \text{ (kW)}$$

Calculate the transmission ratio with this equation :

$$i = \frac{n_1}{n_2}$$

Select the service factor FS of the application in Table 4.

Choosing a gear unit

A) n₁ equal to 1400 rpm . Consult the gear unit efficiency table; select a group which corresponds to a ratio which is close to the calculated ratio and which permits power : P P' x FS'

B) n₁ 1400 rpm Make the selection as previously described, but on the basis of power Pc corrected by the coefficient reported in Table 4, checking the equation : Pc P' x FS.

Choosing a gear motor

C) n₁ = 1400 rpm and FS = 1 . Consult the gear motor specification table to find a group having power P1 corresponding to calculated P'.

D) n₁ 1400 rpm or FS 1 . Follow the directions in point A), checking that the size of the motor to be installed is compatible with gear unit value (IEC); obviously, installed power must correspond to the required P' value.

Check-list

Check that radial loads on shafts correspond to admissible values reported in the relative tables.

These values refer to loads which affect the shaft at the half-way point of its projection; if the point of application is different, it becomes necessary to calculate the new admissible values at the desired distance.

In keeping with the above guidelines, the axial loads should also be checked against values reported in relative tables.

Generally, all gear units allow a max. overload (instantaneous) equal to 200% of the rated value of torque T_{2M}.

If excessive overload can be expected, a torque limiting device must be installed.

1.5 Выбор

Чтобы рассчитать входящую мощность (на основании вращающего момента, требуемого при применении) используется формула:

$$P' = \frac{T_2 \cdot n_2}{955 \cdot \eta} \text{ (kW)}$$

Berechnen Sie das Untersetzungsverhältnis mit Hilfe der Gleichung:

$$i = \frac{n_1}{n_2}$$

Сервисный коэффициент FS применения выбирается по таблице 4.

Выбор редуктора

A) n₁ равен 1400 об/мин. Определитесь с выбором редуктора по таблице; выберите редуктор которому соответствует передаточное число близкое по значению вычисленному передаточному числу и которое соответствует данной мощности: P i P' x FS'

B) n₁ не равен 1400 об/мин. Выбор производится как описано выше, но на основании мощности Pc корректируемой коэффициентом, представленным в таблице 4, проверяя уравнением: Pc i P' x FS.

Выбор редукторного мотора

C) n₁ = 1400 об/мин и FS = 1. Чтобы найти редуктор, имеющий мощность P1 которая соответствует вычисленной P, определитесь с выбором мотора для редуктора по спецификационной таблице.

D) n₁ не равен 1400 об/мин или FS не равен 1. Следуйте указаниям в пункте A. Проверьте, чтобы размер устанавливаемого мотора соответствовал редукторному стандарту (IEC); установленная мощность должна соответствовать требуемой величине P'.

Проверочный список

Проверьте, чтобы радиальные нагрузки на валах соответствовали допустимым величинам, приведенным в соответствующих таблицах.

Эти величины относятся к нагрузкам, которые воздействуют на вал в средней точке проекции; если точка применения другая, в этом случае необходимо рассчитать допустимые величины на желаемые дистанции.

При соответствии с вышеуказанными направляющими, осевые нагрузки должны быть сверены с показателями, представленными в соответствующей таблице.

В целом, все редукторы допускают максимальную перегрузку (мгновенного действия) равную до 200% установленной величины крутящего момента T_{2M}.

При возможности чрезмерной нагрузки, должно быть установлено устройство, ограничивающее крутящий момент.



1.6 Lubrificazione

Una scelta oculata del tipo di lubrificante, in funzione delle condizioni operative e ambientali, consente ai riduttori di raggiungere le prestazioni ottimali.

VISCOSITA'

E'uno dei parametri più importanti da considerare nella scelta di un olio ed è influenzabile da diversi parametri quali velocità, temperatura. Riportiamo sinteticamente le valutazioni generali per la scelta della giusta viscosità:

Viscosità alta

Usare per basse velocità di rotazione e/o temperature alte.

(Una viscosità troppo bassa in queste condizioni operative causa una usura precoce).

Viscosità bassa

Usare per alte velocità di rotazione e/o temperature basse.

(Una viscosità troppo elevata provoca diminuzione del rendimento e surriscaldamento).

ADDITIVI

In tutti gli oli sono contenuti degli additivi antiusura, EP (più o meno energici), antiossidanti ed antisciuma. E' opportuno assicurarsi che essi siano blandi e non aggressivi nei confronti delle guarnizioni.

BASE DELL'OLIO

Può essere minerale o sintetica.

L'olio sintetico, compensa il costo più elevato con una serie di vantaggi:

- a) minor coefficiente d'attrito (quindi migliore rendimento)
- b) migliore stabilità nel tempo (possibile lubrificazione a vita)
- c) migliore indice di viscosità (migliore adattabilità alle varie temperature)

L'olio a base minerale come vantaggi ha il minore costo e un migliore comportamento in rodaggio.

1.6 Oil lubrication

The type of lubricant should be chosen as a function of operating and ambient conditions to ensure efficient gear unit performance.

VISCOSITY

One of the most important parameters to consider in selecting an oil; influenced by factors like speed and temperature. Following are general guidelines to be used in choosing the correct viscosity :

High viscosity

Use for low rotation speed and/or high temperatures.

(Viscosity which is too low under these operating conditions will cause premature wear.)

Low viscosity

Use for high rotation speeds and/or low temperatures.

(Viscosity which is too high reduces efficiency and can cause overheating).

ADDITIVES

All oils contain additives to protect against wear, EP (more or less energetic), anti-oxidizing and anti-frothing. It is better to make sure that the action of such additives is bland and not too aggressive on the seals.

OIL BASE

May be mineral or synthetic.

Synthetic oil compensates for higher cost with a series of advantages :

- a) lower friction coefficient (making for improved efficiency)
- b) better stability through time (possible life lubrication)
- c) better viscosity index (more adaptable to various temperatures)

Mineral-base oils have the advantages of costing less and having better during the running-in period.

1.6 Смазка

Тип смазки необходимо выбирать в зависимости от вида операций и условий окружающей среды.

Вязкость

Одним из наиболее важных параметров считается выбор масла, зависящий от таких факторов как скорость и температура. Придерживайтесь основных указаний при определении правильной вязкости.

Высокая вязкость

Используется при низкой скорости вращения и/или высокой температуре. (Слишком низкая вязкость при этих условиях работы будет причиной преждевременного износа.)

Низкая вязкость

Используется при высокой скорости вращения и/или низких температурах. (Слишком высокая вязкость уменьшает эффективность и может стать причиной перегрева.)

Присадки

Все масла содержат присадки, защищающие от износа, EP (более или менее энергетические), антиокислительные и антипенные. Желательно убедиться, что действия таких присадок мягкое и не слишком агрессивное (указано на пломбе).

Основа масла

Может быть минеральная или синтетическая.

Синтетическое масло компенсирует более высокую стоимость рядом преимуществ:

- a) снижает фрикционный коэффициент трения, что повышает КПД
- б) лучше стабильность смазывающих свойств в течение времени
- с) улучшает индекс вязкости (выдерживает более широкий диапазон рабочих температур)

Масла на минеральной основе имеют такое преимущество как более низкая цена

Tab. 5

| ISO VG | | OLIO MINERALE / MINERAL OIL / Минер. масло | | | OLIO SINTETICO / SYNTHETIC OIL / Синтетич. масло | | |
|--|-----------------|--|---------------------|---------------------|--|---------------------|---------------------|
| | | 460 | 320 | 220 | 460 | 220 | 150 |
| Temperatura ambiente Amb. temp. Umgebungstemperatur Tc (°C) | | 5°÷ 45° | 0°÷ 40° | - 5°÷ 35° | - 15°÷ 100° | - 25°÷ 80° | - 30°÷ 70° |
| FORNITORE / MANUFACTURER / ПРОИЗВОДИТЕЛЬ | ARAL | Degol BG 460 | Degol BG 320 | Degol BG 220 | Degol GS 460 | Degol GS 220 | |
| | BP | Energol GRXP 460 | Energol GRXP 320 | Energol GRXP 220 | Energol SGXP 460 | Energol SGXP 220 | Energol SG 150 |
| | ESSO | Spartan EP 460 | Spartan EP 320 | Spartan EP 220 | | | |
| | IP | Mellana OIL 460 | Mellana OIL 320 | Mellana OIL 220 | | | Telesia OIL 150 |
| | KLÜBER | Lamora 460 | Lamora 320 | Lamora 220 | Syntheso D460 EP | Syntheso D220 EP | Syntheso D150 EP |
| | MOBIL | Mobilgear 634 | Mobilgear 632 | Mobilgear 630 | Glygoyle 80 | Glygoyle 30 | |
| | | | | | SHC 634 | SHC 630 | |
| | SHELL | Omala OIL 460 | Omala OIL 320 | Omala OIL 220 | Tivela OIL SD | Tivela OIL WB | |
| | TEXACO | Meropa 460 | Meropa 320 | Meropa 220 | Synlube CLP 460 | Synlube CLP 220 | |
| CASTROL | Alpha SP 460 | Alpha SP 320 | Alpha SP 220 | Alpha Synt 460 | Alpha Synt 220 | Alpha Synt 150 | |



1.7 Installazione

Montare il riduttore in modo tale da eliminare qualsiasi vibrazione.

Curare particolarmente l'allineamento del riduttore con il motore e la macchina da comandare interponendove è possibile giunti elastici od autoallineanti.

Quando il riduttore è sottoposto a sovraccarichi prolungati, urti o pericoli di bloccaggio, installare salvamotori, limitatori di coppia, giunti idraulici od altri dispositivi similari.

Fare attenzione a non superare i valori consentiti di carico radiale ed assiale che agiscono sugli alberi veloce e lento.

Assicurarsi che gli organi da montare sui riduttori siano lavorati con tolleranza ALBERO ISO h6 FORO ISO H7.

Prima di effettuare il montaggio pulire e lubrificare le superfici fine di evitare il pericolo di grippaggio e l'ossidazione da contatto

Il montaggio va effettuato con l'ausilio di tiranti ed estrattori utilizzando il foro filettato posto in testa alle estremità degli alberi. Durante la verniciatura si consiglia di proteggere il bordo esterno degli anelli di tenuta per evitare che la vernice ne essichi la gomma pregiudicandola tenuta del paraolio stesso.

Prima della messa in funzione della macchina accertarsi che la quantità di lubrificante e la posizione dei tappi di livello e sfiato siano conformi alla posizione di montaggio del riduttore e che la viscosità del lubrificante sia adeguata al tipo di carico.

1.8 Rodaggio

Si consiglia di incrementare gradualmente nel tempo la potenza trasmessa oppure limitare il momento torcente resistente della macchina da comandare per le prime ore di funzionamento.

1.9 Manutenzione

Per i riduttori lubrificati con olio minerale dopo le prime 500 - 1000 ore di funzionamento sostituire l'olio effettuando, se possibile, un accurato lavaggio interno del riduttore. Controllare periodicamente il livello del lubrificante ed effettuare il cambio dopo 4000 ore di funzionamento.

Se è utilizzato olio sintetico il cambio può essere effettuato dopo 12500 ore di funzionamento.

Quando il riduttore resta per lungo tempo inattivo in un ambiente con una elevata percentuale di umidità si consiglia di riempirlo completamente di olio.

Naturalmente al momento della successiva messa in funzione sarà necessario ripristinare il livello del lubrificante.

1.7 Installation

Install the gearbox so that all vibration is eliminated.

Take special care over alignment between the gear unit, the motor and the driven machine, fitting flexible or self-adjusting couplings wherever possible.

When the gearbox is subject to prolonged overloads, shocks or possible jamming, fit thermostatic cut-outs, torque limiters, hydraulic couplings or other similar devices.

Take care not to exceed the permitted radial and axial loads on the input and output shafts.

Ensure that the components for fitting to the gear units are machined with tolerance SHAFT ISO h6 HOLE ISO H7.

Before assembling clean and lubricate the surface to prevent jamming and contact oxidation.

Assembly is carried out with the aid of tie-rods and extractors using the threaded hole on the shaft and heads.

When painting, protect the outside edge of the oil seals to prevent the paint from drying the rubber and impairing sealing properties.

Before starting up the machine check that the amount of lubricant and the positions of the filler and breather plugs are correct for the gear unit mounting positions and that the lubricant viscosity is appropriate for the type of load.

1.8 Running-in

Increase the power transmitted gradually or limit the resistant torque of the driven machine for the first few operating hours.

1.9 Maintenance

Gear units packed with synthetic grease do not require any maintenance. On gear units lubricated with mineral oil, after the first 500 - 1000 operating hours change the oil, washing out the inside of the gear unit thoroughly if possible.

Check the lubricant level regularly and change after 4000 operating hours. If synthetic oil is used the oil change may be made after 12500 operating hours.

When the gear unit is left unused in an environment with high humidity, fill it completely with oil.

Naturally, it must be returned to the operating level before the unit is used again.

1.7 Установка

Установите редуктор так, чтобы исключить все вибрации.

Уделите особое внимание выравниванию осей редукторов приводного двигателя и приводимого в движение механизма, применяя гибкое соединение типа эластичной муфты там, где возможно.

Если редуктор подвергается продолжительным перегрузкам, ударам или возможным перебоям в работе, применяются плавкие предохранители, ограничители крутящего момента, гидромуфты или другие подобные устройства.

Не превышайте допустимые радиальные или осевые нагрузки на входные и выходные валы.

Убедитесь в том, что детали для сборки редуктора выполнены согласно допускам SHAFT ISO h6 HOLE ISO H7.

Для предотвращения перебоев в работе и окисления, очистите и смажьте поверхности перед сборкой. Внимательно производите сборочный процесс. По возможности используйте выпускные отверстия на конце вала, предназначены для этой цели.

При покраске предохраняйте внешний край сальника для предотвращения ухудшения уплотнительных свойств.

Перед запуском проверьте уровень смазки и плотность закрытия заливного отверстия, а также соответствие вязкости масла данному типу нагрузки.

1.8. Обкатка

Увеличивайте нагрузку на выходном валу постепенно или ограничивайте нагрузку потребителя приводного механизма в течение нескольких первых часов работы.

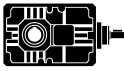
1.9. Техническое обслуживание

Редукторы, поставляемые с синтетической смазкой, не требуют никакого профилактического обслуживания. В случае, использования минерального масла, меняйте его после 500-1000 часов работы, предварительно промывая редуктор согласно руководству.

Если редуктор остается длительное время без работы в условиях высокой влажности, его следует законсервировать, полностью заливая маслом.

При последующем вводе в эксплуатацию уровень масла должен быть доведен до нормального.

| 2.0 | RIDUTTORE AD ASSI ORTOGONALI | BEVEL HELICAL GEARBOX | РЕДУКТОРЫ С КОНУСНОЙ КОНУСНОЙ КОСОЗУБОЙ ПАР. | |
|------------|-------------------------------------|------------------------------------|---|----|
| 2.1 | Caratteristiche | <i>Characteristics</i> | Характеристики | 8 |
| 2.2 | Designazione | <i>Designation</i> | Схемы редукторов | 8 |
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2.1 Caratteristiche

Costruiti in 6 grandezze a due riduzioni e in 5 grandezze a tre riduzioni.

Sono previsti tre tipi di entrata: con albero entrata sporgente, con predisposizione attacco motore (campana e giunto) e predisposizione attacco motore COMPATTA. I tre tipi di entrata possono essere montati indifferentemente nelle esecuzioni verticale e/o orizzontale.

Il corpo riduttore in ghisa meccanica (71-180) o in ghisa sferoidale (200-225), abbondantemente nervato all'interno e all'esterno per garantire la rigidità, è lavorato su tutti i piani per consentire una facile posizionamento; inoltre un'unica camera di lubrificazione garantisce una maggiore dissipazione termica e una migliore lubrificazione di tutti gli organi interni.

Gli ingranaggi sono costruiti in acciaio legato da cementazione e sottoposti a trattamento di cementazione a tempra. In particolare, la prima riduzione è costituita da due ingranaggi conici a dentatura spiroidale GLEASON con profilo accuratamente rodato, in acciaio 16CrNi4 o 18NiCrMo5 UNI7846 cementati e temprati.

L'utilizzo dei cuscinetti a rulli conici di qualità su tutti gli assi (ad eccezione del manico in entrata nella predisposizione attacco motore compatta, il quale è sostenuto da cuscinetti obliqui a sfere) consente al riduttore di ottenere delle durate molto elevate e di sopportare dei carichi radiali e assiali esterni molto elevati.

L'albero lento cavo di serie in acciaio (disponibile a richiesta con calettatore), la possibilità di montare una flangia uscita su uno o entrambi i fianchi laterali e la predisposizione per il montaggio del dispositivo antiritorno esaltano la versatilità di questi riduttori facilitandone l'installazione.

2.2 Designazione

Macchina
Machine
Редуктор

Tipo
entrata
Input type
Входной
тип

Grandezza
Size
Размер

Rotismo
Gearing
Зубчатая
передача

Rapporto rid.
Ratio
Коэфф.ц.

Predisposiz.
Motor mounting
facility
Установка
мотора

Esecuzione
Execution
Выполнение

Posizione di
montaggio
Mount.pos.
Установоч.
позиция

Flangia uscita
Output flange
Выходной
фланец

Antiritorno
Back-stop
device
Ограничитель
заднего хода

Calettatore
Shrink disk
Диск сжатия

T

A

112

B

10/1

P.A.M.

O

B3

FLS

CW

C.S.

Riduttore ad assi
ortogonali



A

71

B

in = .../1
8 630

63

225

O
Albero entrata
orizzontale
Horizontal
input shaft
Горизонт. вход. вал

B3
B6
VA
VB



CW

Rotazione
oraria
Clockwise
rotation
Вращение по час.
стрелке

C.S.
Calettatore
sinistro
Shrink disc
left
Левый диск

Bevel helical
gearbox



C

140

2 rid.
2 Stufen

180

225

Riduttore con albero
conico a doppia
velocità



F

80

C

3 rid.
3 Stufen

100

125

160

200

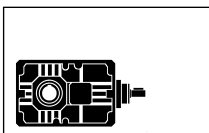
V
Albero entrata
verticale
Vertical input
shaft
Вертикальный
входной вал



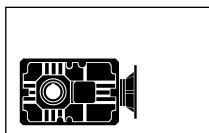
AW

Rotazione
antioraria
Anti-clockwise
rotation
Вр. прот. часовой
стрелки

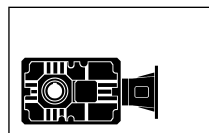
C.D.
Calettatore
destra
Shrink disc
right
Правый диск



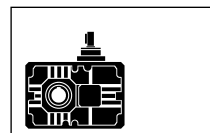
TA..BO



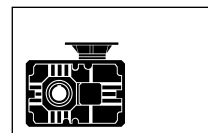
TC..BO



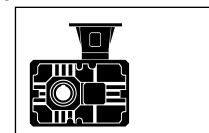
TF..BO



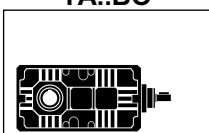
TA..BV



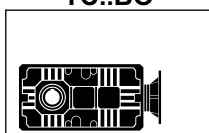
TC..BV



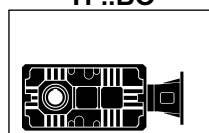
TF..BV



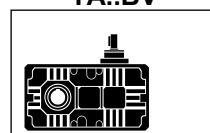
TA..CO



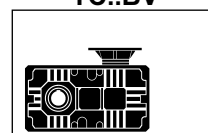
TC..CO



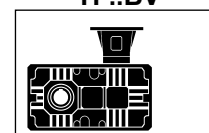
TF..CO



TA..CV



TC..CV



TF..CV

2.1 Characteristics

Built in 6 sizes with 2 reducers and in 5 sizes with 3 reducer gearing.

Three input types are available : with projecting input shaft, with pre-engineered motor coupling (bell and joint) and pre-engineered COMPACT motor coupling. The three input types can be mounted either vertically or horizontally.

Gear unit body in engineering cast iron, (71-180) or spheroidal graphite cast iron (200-225) is ribbed internally and externally to guarantee rigidity and machined on all surfaces for easy positioning. The single lubrication chamber guarantees improved heat dissipation and better lubrication of all the internal components.

Gears are built in casehardening compound steel which has undergone case-hardening and quench-hardening treatments. In particular, the first reducer consists of two GLEASON helical gear-tooth bevel gears with precision ground profile, in 16CrNi4 or 18NiCrMo5 UNI7846 case-hardened and quench-hardened steel.

The use of high-quality taper bearings on all shafts (except for the input sleeve on the pre-engineered compact motor coupling, which is supported by angular ball bearings) ensures extremely long gear unit life, even under very high radial and axial loads.

The standard hollow steel output shaft (locking assembly available on request), as well as the option of mounting an output flange on one or both sides and the pre-engineered backstop coupling make these gear units extremely versatile while facilitating installation.

2.2 Designation

2.1 Характеристики

Изготовлены 6 размеров продукции с двойной кратностью и 5 размеров с тройной кратностью. Возможны 3 типа соединения редуктора с приводом: с составным входным валом, с конусной или шарнирной муфтой мотора и компактной муфтой мотора. Редукторы, соединенные с приводом перечисленными 3 способами могут монтироваться как вертикально так и горизонтально. На картере редуктора, отлитого из чугуна (71-180) или сфероидального графитового чугуна (200-225), выполняют внутреннее или внешнее оребрение с целью повышения жесткости картера. Общая смазочная ванна гарантирует хорошие теплоотдачу и смазывание всех внутренних трущихся деталей редуктора. Шестерни редуктора выполнены из высоколегированной стали и подвержены специальной термической обработке, обеспечивающей необходимую внутреннюю ударную вязкость и твердую поверхность зуба. (Например, сталь 16CrNi4 или 18NiCrMo5)

Использование высококачественных конических подшипников на всех валах (за исключением входного полого соединительного вала, установленного на шариковых самоустанавливающихся угловых подшипниках) гарантирует долговечную работу редуктора, даже при очень высоких радиальных и осевых нагрузках. Стандартный полый стальной выходной вал (замкнутый штопорным кольцом по желанию заказчика) также как и выбор установки выходного фланца на одной или обеих сторонах и ограничитель обратного хода облегчают установку и эксплуатацию редуктора.

2.2 Схемы редукторов

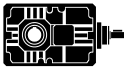
2.3 Dati tecnici

2.3 Technical data

2.3 Технические данные

| T | n ₁ = 1400 | | | TC - TF | | | | TA | |
|------|-----------------------|--------|-----------------------|----------------------|----------------------|------|--|-----------------------|---------|
| | in | ir | n ₂ rpm | T ₂ Nm | P ₁ kW | FS' | IEC | T _{2M} Nm | P kW |
| 71B | 10 | 10.25 | 137 | 120 | 1.8 | 1.9 | 63 71 80 90 TC-TF | 230 | 3.5 |
| | 12.5 | 13.05 | 107 | 152 | 1.8 | 1.6 | | 240 | 2.8 |
| | 16 | 15.63 | 90 | 182 | 1.8 | 1.4 | | 250 | 2.5 |
| | 20 | 19.64 | 71 | 229 | 1.8 | 1.1 | | 260 | 2.0 |
| | 25 | 24.99 | 56 | 243 | 1.5 | 1.0 | | 250 | 1.5 |
| | 31.5 | 29.95 | 47 | 213 | 1.1 | 1.1 | | 240 | 1.2 |
| | 40 | 38.73 | 36 | 188 | 0.75 | 1.3 | | 240 | 1.0 |
| | 50 | 50.18 | 28 | 244 | 0.75 | 1.0 | | 240 | 0.7 |
| | 63 | 60.13 | 23 | 214 | 0.55 | 1.2 | | 250 | 0.6 |
| | 80 | 77.76 | 18 | 186 | 0.37 | 1.3 | | 250 | 0.5 |
| 90B | 10 | 10.25 | 137 | 266 | 4 | 1.7 | 71 80 90 100 112 TC-TF | 460 | 6.9 |
| | 12.5 | 13.05 | 107 | 338 | 4 | 1.4 | | 480 | 5.7 |
| | 16 | 15.63 | 90 | 405 | 4 | 1.2 | | 500 | 4.9 |
| | 20 | 19.64 | 71 | 509 | 4 | 1.0 | | 520 | 4.1 |
| | 25 | 24.99 | 56 | 486 | 3 | 1.0 | | 500 | 3.1 |
| | 31.5 | 29.95 | 47 | 427 | 2.2 | 1.1 | | 480 | 2.5 |
| | 40 | 38.73 | 36 | 452 | 1.8 | 1.1 | | 480 | 1.9 |
| | 50 | 50.18 | 28 | 488 | 1.5 | 1.0 | | 480 | 1.5 |
| | 63 | 60.13 | 23 | 429 | 1.1 | 1.2 | | 500 | 1.3 |
| | 80 | 77.76 | 18 | 378 | 0.75 | 1.3 | | 500 | 1.0 |
| 80C | 50 | 52.18 | 27 | 596 | 1.8 | 1.0 | 63 71 80 90 TC-TF | 580 | 1.8 |
| | 63 | 62.53 | 22 | 595 | 1.5 | 1.0 | | 600 | 1.5 |
| | 80 | 79.58 | 18 | 555 | 1.1 | 1.1 | | 620 | 1.2 |
| | 100 | 99.97 | 14 | 476 | 0.75 | 1.3 | | 640 | 1.0 |
| | 125 | 119.78 | 12 | 570 | 0.75 | 1.2 | | 660 | 0.9 |
| | 160 | 152.45 | 9 | 532 | 0.55 | 1.3 | | 680 | 0.7 |
| | 200 | 182.67 | 8 | 637 | 0.55 | 1.1 | | 700 | 0.6 |
| | 250 | 240.51 | 6 | 565 | 0.37 | 1.3 | | 720 | 0.5 |
| | 315 | 306.11 | 5 | 719 | 0.37 | 1.0 | | 740 | 0.4 |
| | 400 | 366.78 | 4 | 582 | 0.25 | 1.2 | | 700 | 0.3 |
| 500 | 474.35 | 3 | 542 | 0.18 | 1.2 | 660 | 0.2 | | |
| 630 | 613.46 | 2 | 525 | 0.13 | 1.2 | 620 | 0.2 | | |
| 112B | 10 | 10.25 | 137 | 598 | 9 | 1.5 | 80 90 100 112 132 TC-TF | 920 | 13.9 |
| | 12.5 | 13.05 | 107 | 761 | 9 | 1.3 | | 960 | 11.4 |
| | 16 | 15.63 | 90 | 912 | 9 | 1.1 | | 1000 | 9.9 |
| | 20 | 19.64 | 71 | 954 | 7.5 | 1.1 | | 1030 | 8.1 |
| | 25 | 24.99 | 56 | 891 | 5.5 | 1.1 | | 1000 | 6.2 |
| | 31.5 | 29.95 | 47 | 776 | 4 | 1.2 | | 960 | 4.9 |
| | 40 | 38.73 | 36 | 753 | 3 | 1.3 | | 960 | 3.8 |
| | 50 | 50.18 | 28 | 976 | 3 | 1.0 | | 960 | 3.0 |
| | 63 | 60.13 | 23 | 857 | 2.2 | 1.2 | | 1000 | 2.6 |
| | 80 | 77.76 | 18 | 907 | 1.8 | 1.1 | | 1000 | 2.0 |
| 100C | 50 | 52.18 | 27 | 993 | 3 | 1.2 | 71 80 90 100 112 TC-TF | 1160 | 3.5 |
| | 63 | 62.53 | 22 | 1190 | 3 | 1.0 | | 1200 | 3.0 |
| | 80 | 79.58 | 18 | 1111 | 2.2 | 1.1 | | 1240 | 2.5 |
| | 100 | 99.97 | 14 | 1142 | 1.8 | 1.1 | | 1280 | 2.0 |
| | 125 | 119.78 | 12 | 1140 | 1.5 | 1.2 | | 1320 | 1.7 |
| | 160 | 152.45 | 9 | 1064 | 1.1 | 1.3 | | 1360 | 1.4 |
| | 200 | 182.67 | 8 | 1275 | 1.1 | 1.1 | | 1400 | 1.2 |
| | 250 | 240.51 | 6 | 1144 | 0.75 | 1.3 | | 1440 | 0.9 |
| | 315 | 306.11 | 5 | 1456 | 0.75 | 1.0 | | 1480 | 0.8 |
| | 400 | 366.78 | 4 | 1280 | 0.55 | 1.1 | | 1400 | 0.6 |
| 500 | 474.35 | 3 | 1113 | 0.37 | 1.2 | 1320 | 0.4 | | |
| 630 | 613.46 | 2 | 973 | 0.25 | 1.2 | 1240 | 0.3 | | |

| T | n ₁ = 1400 | | | TC - TF | | | | TA | |
|------|-----------------------|--------|-----------------------|----------------------|----------------------|-------|--|-----------------------|---------|
| | in | ir | n ₂ rpm | T ₂ Nm | P ₁ kW | FS' | IEC | T _{2M} Nm | P kW |
| 140B | 10 | 10.25 | 137 | 1461 | 22 | 1.3 | 80 90 TC 100 112 132 160 180 TC-TF | 1840 | 27.7 |
| | 12.5 | 13.05 | 107 | 1860 | 22 | 1.0 | | 1920 | 22.7 |
| | 16 | 15.63 | 90 | 1874 | 18.5 | 1.1 | | 2000 | 19.7 |
| | 20 | 19.64 | 71 | 1909 | 15 | 1.1 | | 2080 | 16.3 |
| | 25 | 24.99 | 56 | 1782 | 11 | 1.1 | | 2000 | 12.3 |
| | 31.5 | 29.95 | 47 | 1747 | 9 | 1.1 | | 1920 | 9.9 |
| | 40 | 38.73 | 36 | 1882 | 7.5 | 1.0 | | 1920 | 7.7 |
| | 50 | 50.18 | 28 | 1789 | 5.5 | 1.1 | | 1920 | 5.9 |
| | 63 | 60.13 | 23 | 1559 | 4 | 1.3 | | 2000 | 5.1 |
| | 80 | 77.76 | 18 | 2016 | 4 | 1.0 | | 2000 | 4.0 |
| 125C | 50 | 52.18 | 27 | 1821 | 5.5 | 1.3 | 80 90 100 112 132 TC-TF | 2320 | 7.0 |
| | 63 | 62.53 | 22 | 2182 | 5.5 | 1.1 | | 2400 | 6.1 |
| | 80 | 79.58 | 18 | 2019 | 4 | 1.2 | | 2480 | 4.9 |
| | 100 | 99.97 | 14 | 2537 | 4 | 1.0 | | 2560 | 4.0 |
| | 125 | 119.78 | 12 | 2280 | 3 | 1.2 | | 2640 | 3.5 |
| | 160 | 152.45 | 9 | 2128 | 2.2 | 1.3 | | 2720 | 2.8 |
| | 200 | 182.67 | 8 | 2549 | 2.2 | 1.1 | | 2800 | 2.4 |
| | 250 | 240.51 | 6 | 2746 | 1.8 | 1.0 | | 2880 | 1.9 |
| | 315 | 306.11 | 5 | 2913 | 1.5 | 1.0 | | 2960 | 1.5 |
| | 400 | 366.78 | 4 | 2560 | 1.1 | 1.1 | | 2800 | 1.2 |
| 500 | 474.35 | 3 | 2257 | 0.75 | 1.2 | 2640 | 0.9 | | |
| 630 | 613.46 | 2 | 2140 | 0.55 | 1.2 | 2480 | 0.6 | | |
| 180B | 10 | 10.25 | 137 | 1993 | 30 | 1.8 | 132 160 180 200 TC-TF | 3680 | 55.4 |
| | 12.5 | 13.05 | 107 | 2536 | 30 | 1.5 | | 3840 | 45.4 |
| | 16 | 15.63 | 90 | 3039 | 30 | 1.3 | | 4000 | 39.5 |
| | 20 | 19.64 | 71 | 3818 | 30 | 1.1 | | 4160 | 32.7 |
| | 25 | 24.99 | 56 | 3563 | 22 | 1.1 | | 4000 | 24.7 |
| | 31.5 | 29.95 | 47 | 3590 | 18.5 | 1.1 | | 3840 | 19.8 |
| | 40 | 38.73 | 36 | 3764 | 15 | 1.0 | | 3840 | 15.3 |
| | 50 | 50.18 | 28 | 3577 | 11 | 1.1 | | 3840 | 11.8 |
| | 63 | 60.13 | 23 | 3507 | 9 | 1.1 | | 4000 | 10.3 |
| | 80 | 77.76 | 18 | 3779 | 7.5 | 1.1 | | 4000 | 7.9 |
| 160C | 50 | 52.18 | 27 | 3641 | 11 | 1.3 | 80 90 TC 100 112 132 160 180 TC-TF | 4640 | 14.0 |
| | 63 | 62.53 | 22 | 4363 | 11 | 1.1 | | 4800 | 12.1 |
| | 80 | 79.58 | 18 | 4543 | 9 | 1.1 | | 4960 | 9.8 |
| | 100 | 99.97 | 14 | 4756 | 7.5 | 1.1 | | 5120 | 8.1 |
| | 125 | 119.78 | 12 | 4179 | 5.5 | 1.3 | | 5280 | 6.9 |
| | 160 | 152.45 | 9 | 5319 | 5.5 | 1.0 | | 5440 | 5.6 |
| | 200 | 182.67 | 8 | 4635 | 4 | 1.2 | | 5600 | 4.8 |
| | 250 | 240.51 | 6 | 4577 | 3 | 1.3 | | 5760 | 3.8 |
| | 315 | 306.11 | 5 | 5826 | 3 | 1.0 | | 5920 | 3.0 |
| | 400 | 366.78 | 4 | 5119 | 2.2 | 1.1 | | 5600 | 2.4 |
| 500 | 474.35 | 3 | 4514 | 1.5 | 1.2 | 5280 | 1.8 | | |
| 630 | 613.46 | 2 | 4281 | 1.1 | 1.2 | 4960 | 1.3 | | |
| 225B | 8 | 8.44 | 166 | 2461 | 45 | 2.9 | 160 180 200 225 TF | 7050 | 128.9 |
| | 10 | 10.13 | 138 | 2955 | 45 | 2.5 | | 7330 | 111.6 |
| | 12.5 | 12.45 | 112 | 3630 | 45 | 2.1 | | 7700 | 95.5 |
| | 16 | 15.93 | 88 | 4644 | 45 | 1.7 | | 7950 | 77.0 |
| | 20 | 19.13 | 73 | 5577 | 45 | 1.4 | | 8350 | 67.4 |
| | 25 | 23.49 | 60 | 6850 | 45 | 1.1 | | 7980 | 52.4 |
| 200C | 31.5 | 30.29 | 46 | 7262 | 37 | 1.1 | 132 160 180 200 TC-TF | 7950 | 40.5 |
| | 40 | 37.09 | 38 | 7210 | 30 | 1.0 | | 7700 | 32.0 |
| | 40 | 42.62 | 33 | 8110 | 30 | 1.1 | | 9120 | 33.7 |
| | 50 | 51.18 | 27 | 7143 | 22 | 1.3 | | 9280 | 28.6 |
| | 63 | 62.86 | 22 | 8772 | 22 | 1.1 | | 9600 | 24.1 |
| | 80 | 81.64 | 17 | 9581 | 18.5 | 1.0 | | 9920 | 19.2 |
| | 100 | 98.04 | 14 | 9330 | 15 | 1.1 | | 10240 | 16.5 |
| | 125 | 120.41 | 12 | 8403 | 11 | 1.3 | | 10560 | 13.8 |
| | 160 | 147.45 | 9 | 10290 | 11 | 1.1 | | 10880 | 11.6 |
| | 200 | 196.87 | 7 | 11240 | 9 | 1.0 | | 11200 | 9.0 |
| 250 | 241.79 | 6 | 11504 | 7.5 | 1.0 | 11520 | 7.5 | | |
| 315 | 296.07 | 5 | 10330 | 5.5 | 1.1 | 11840 | 6.3 | | |



2.4 Dimensioni

2.4 Dimensions

2.4 Размеры

| TA... - TC... - TF... | | | | | | | | | | | | | |
|-----------------------|------|-------|------|------|-------|------|------|------|------|------|------|------|-------|
| | 71B | 90B | 112B | 140B | 180B | 225B | | | | | | | |
| A | 142 | 180 | 224 | 280 | 360 | 450 | | | | | | | |
| a | 102 | 134 | 166 | 209 | 272.5 | 344 | | | | | | | |
| a1 | — | — | — | — | — | — | | | | | | | |
| B | 112 | 127 | 150 | 175 | 215 | 290 | | | | | | | |
| b | 90 | 104 | 125 | 145 | 180 | 240 | | | | | | | |
| C2 | 115 | 130 | 155 | 180 | 220 | 300 | | | | | | | |
| D1 | 14 | 19 | 24 | 28 | 38 | 48 | | | | | | | |
| D2 | 24 | 28 | 32 | 30 | 35 | 42 | 40 | 45 | 55 | 50 | 70 | 60 | 100 |
| E | 206 | 262 | 326 | 407 | 522.5 | 654 | | | | | | | |
| e | 38 | 52 | 64 | 82 | 110 | 140 | | | | | | | |
| F | 9 | 11 | 13 | 15 | 17 | 21 | | | | | | | |
| f | M8 | M10 | M12 | M14 | M16 | M18 | | | | | | | |
| G | 122 | 155 | 194 | 244 | 320 | 400 | | | | | | | |
| g | 61 | 77.5 | 97 | 122 | 160 | 200 | | | | | | | |
| H | 71 | 90 | 112 | 140 | 180 | 225 | | | | | | | |
| h | 174 | 212 | 262 | 317 | 400 | 500 | | | | | | | |
| I | 110 | 130 | 160 | 190 | 237.5 | 296 | | | | | | | |
| i | 125 | 159.5 | 199 | 249 | 322.5 | 404 | | | | | | | |
| L1 | 30 | 40 | 50 | 60 | 80 | 110 | | | | | | | |
| M1 | 16 | 21.5 | 27 | 31 | 41 | 51.5 | | | | | | | |
| M2 | 27.3 | 31.3 | 35.3 | 33.3 | 38.3 | 45.3 | 43.3 | 48.8 | 59.3 | 53.8 | 74.9 | 64.4 | 106.4 |
| N1 | 5 | 6 | 8 | 8 | 10 | 14 | | | | | | | |
| N2 | 8 | 8 | 10 | 8 | 10 | 12 | 12 | 14 | 16 | 14 | 20 | 18 | 28 |
| O | 64 | 82 | 102 | 127 | 162.5 | 204 | | | | | | | |
| T | 275 | 342 | 424 | 517 | 660 | 835 | | | | | | | |
| t | 211 | 260 | 322 | 390 | 497.5 | 631 | | | | | | | |
| Z | 9 | 11 | 13 | 15 | 17 | 25 | | | | | | | |

| TA... - TC... - TF... | | | | | | | | | | |
|-----------------------|------|------|-------|-------|------|------|------|------|------|-------|
| | 80C | 100C | 125C | 160C | 200C | | | | | |
| 160 | 200 | 250 | 320 | 400 | | | | | | |
| 82 | 102 | 127 | 162.5 | 204 | | | | | | |
| 106 | 134 | 169 | 217 | 277.5 | | | | | | |
| 125 | 150 | 175 | 215 | 290 | | | | | | |
| 104 | 125 | 145 | 180 | 240 | | | | | | |
| 130 | 155 | 180 | 220 | 300 | | | | | | |
| 14 | 19 | 24 | 28 | 38 | | | | | | |
| 32 | 30 | 35 | 42 | 40 | 45 | 55 | 50 | 70 | 60 | 100 |
| 306 | 384 | 479 | 609.5 | 766.5 | | | | | | |
| 42 | 52 | 67 | 90 | 115 | | | | | | |
| 11 | 13 | 15 | 17 | 21 | | | | | | |
| M10 | M12 | M14 | M16 | M18 | | | | | | |
| 135 | 170 | 214 | 280 | 350 | | | | | | |
| 67.5 | 85 | 107 | 140 | 175 | | | | | | |
| 80 | 100 | 125 | 160 | 200 | | | | | | |
| 256 | 314 | 389 | 479.5 | 604 | | | | | | |
| 110 | 130 | 160 | 190 | 237.5 | | | | | | |
| 213.5 | 269 | 336 | 429.5 | 541.5 | | | | | | |
| 30 | 40 | 50 | 60 | 80 | | | | | | |
| 16 | 21.5 | 27 | 31 | 41 | | | | | | |
| 35.3 | 33.3 | 38.3 | 45.3 | 43.3 | 48.8 | 59.3 | 53.8 | 74.9 | 64.4 | 106.4 |
| 5 | 6 | 8 | 8 | 10 | | | | | | |
| 10 | 8 | 10 | 12 | 12 | 14 | 16 | 14 | 20 | 18 | 28 |
| 146 | 184 | 229 | 289.5 | 366.5 | | | | | | |
| 366 | 454 | 564 | 699.5 | 884 | | | | | | |
| 220 | 270 | 335 | 410 | 517.5 | | | | | | |
| 11 | 13 | 15 | 17 | 25 | | | | | | |

| TA... | | | | | | |
|-------|------|----|----|----|-----|-----|
| Kg | 12.5 | 20 | 34 | 58 | 116 | 232 |

| TA... | | | | | |
|-------|----|----|----|-----|-----|
| | 19 | 36 | 66 | 120 | 260 |

| TC... - TF... | | | | | | |
|---------------|------|----|----|----|-----|-----|
| Kg | 15.5 | 25 | 44 | 75 | 136 | 270 |

| TC... - TF... | | | | | |
|---------------|----|----|----|-----|-----|
| | 22 | 41 | 76 | 137 | 295 |

| TC... | | | | | | | | | | | | | | | | |
|-------|-----|-----|-------|-----|-------|---------|-------|---------|-----|-------|---------|-----|---------|-------------------------------|---------|-----|
| | 71B | | | 90B | | | 112B | | | 140B | | | 180B | | | |
| IEC | 63 | 71 | 80/90 | 71 | 80/90 | 100/112 | 80/90 | 100/112 | 132 | 80/90 | 100/112 | 132 | 160/180 | 132 | 160/180 | 200 |
| Y | 140 | 160 | 200 | 160 | 200 | 250 | 200 | 250 | 300 | 200 | 250 | 300 | 350 | 300 | 350 | 400 |
| P | 177 | 184 | 204 | 220 | 240 | 250 | 286 | 296 | 318 | 331 | 341 | 363 | 393 | 463 (i=10-40) / 473 (i=50-80) | | |
| p | 113 | 120 | 140 | 138 | 158 | 168 | 184 | 194 | 216 | 204 | 214 | 236 | 266 | 300 (i=10-40) / 310 (i=50-80) | | |
| Q | 248 | 255 | 275 | 310 | 330 | 340 | 398 | 408 | 430 | 471 | 481 | 503 | 533 | 643 (i=10-40) / 653 (i=50-80) | | |
| q | 184 | 191 | 211 | 228 | 248 | 258 | 296 | 306 | 328 | 344 | 354 | 376 | 406 | 480 (i=10-40) / 490 (i=50-80) | | |

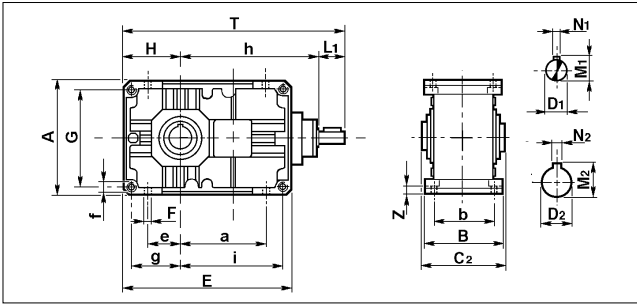
| | 80C | | | 100C | | | 125C | | | 160C | | | 200C | | | |
|-----|-----|-----|-------|------|-------|---------|-------|---------|-----|-------|---------|-----|------|----------------------------------|---------|-----|
| IEC | 63 | 71 | 80/90 | 71 | 80/90 | 100/112 | 80/90 | 100/112 | 132 | 80/90 | 100/112 | 132 | 160 | 132 | 160/180 | 200 |
| Y | 140 | 160 | 200 | 160 | 200 | 250 | 200 | 250 | 300 | 200 | 250 | 300 | 350 | 300 | 350 | 400 |
| P | 259 | 266 | 286 | 322 | 342 | 352 | 413 | 423 | 445 | 493 | 503 | 525 | 555 | 667 (i=40-160) / 677 (i=200-315) | | |
| p | 113 | 120 | 140 | 138 | 158 | 168 | 184 | 194 | 216 | 204 | 214 | 236 | 266 | 300 (i=40-160) / 310 (i=200-315) | | |
| Q | 339 | 346 | 366 | 422 | 442 | 452 | 538 | 548 | 570 | 653 | 663 | 686 | 715 | 867 (i=40-160) / 877 (i=200-315) | | |
| q | 193 | 200 | 220 | 238 | 258 | 268 | 309 | 319 | 341 | 364 | 374 | 396 | 426 | 500 (i=40-160) / 510 (i=200-315) | | |

| TF... | | | | | | | | | | | | | | | | | | |
|-------|-----|-----|-------|-----|-------|---------|-------|---------|-----|---------|-----|---------|------|---------|-----|---------|-----|-----|
| | 71B | | | 90B | | | 112B | | | 140B | | | 180B | | | 225B | | |
| IEC | 63 | 71 | 80/90 | 71 | 80/90 | 100/112 | 80/90 | 100/112 | 132 | 100/112 | 132 | 160/180 | 132 | 160/180 | 200 | 160/180 | 200 | 225 |
| Y | 140 | 160 | 200 | 160 | 200 | 250 | 200 | 250 | 300 | 250 | 300 | 350 | 300 | 350 | 400 | 350 | 400 | 450 |
| P | 231 | 238 | 259 | 286 | 307 | 317 | 367 | 377 | 398 | 442 | 463 | 493 | 566 | 596 | 596 | 728 | 728 | 760 |
| p | 167 | 174 | 195 | 204 | 225 | 235 | 265 | 275 | 296 | 315 | 336 | 366 | 403 | 433 | 433 | 524 | 524 | 556 |
| Q | 302 | 309 | 330 | 376 | 397 | 407 | 479 | 489 | 510 | 582 | 603 | 633 | 746 | 776 | 776 | 953 | 953 | 985 |
| q | 238 | 245 | 266 | 294 | 315 | 325 | 377 | 387 | 408 | 455 | 476 | 506 | 583 | 613 | 613 | 749 | 749 | 781 |

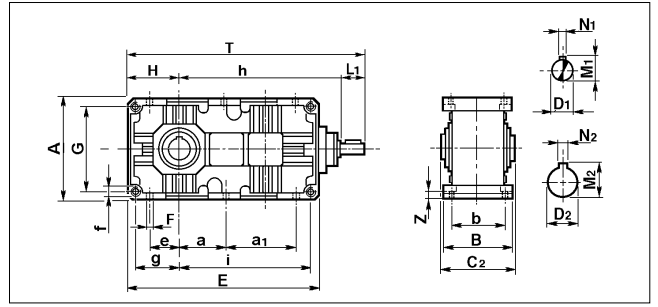
| | 80C | | | 100C | | | 125C | | | 160C | | | 200C | | |
|-----|-----|-----|-------|------|-------|---------|-------|---------|-----|---------|-----|-----|------|---------|------|
| IEC | 63 | 71 | 80/90 | 71 | 80/90 | 100/112 | 80/90 | 100/112 | 132 | 100/112 | 132 | 160 | 132 | 160/180 | 200 |
| Y | 140 | 160 | 200 | 160 | 200 | 250 | 200 | 250 | 300 | 250 | 300 | 350 | 300 | 350 | 400 |
| P | 313 | 320 | 341 | 388 | 409 | 419 | 494 | 504 | 525 | 604 | 625 | 655 | 770 | 800 | 802 |
| p | 167 | 174 | 195 | 204 | 225 | 235 | 265 | 275 | 296 | 296 | 315 | 336 | 366 | 404 | 436 |
| Q | 393 | 400 | 421 | 488 | 509 | 519 | 619 | 629 | 650 | 764 | 785 | 815 | 970 | 1000 | 1002 |
| q | 247 | 254 | 275 | 304 | 325 | 335 | 390 | 400 | 421 | 475 | 496 | 526 | 604 | 634 | 636 |



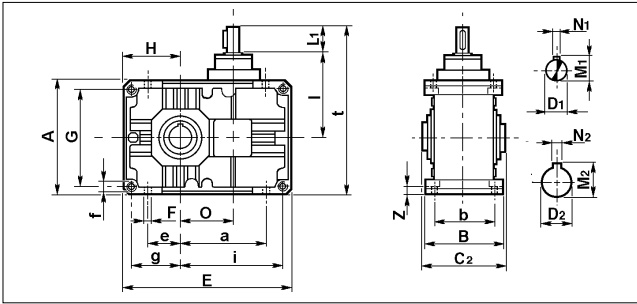
TA..BO



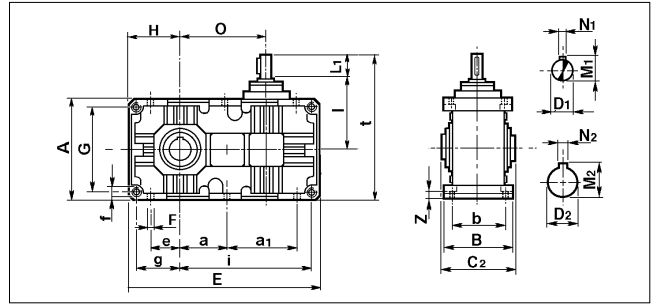
TA..CO



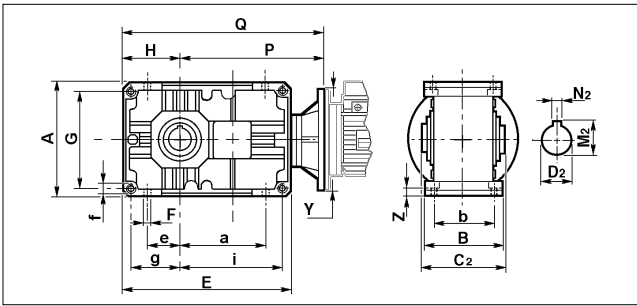
TA..BV



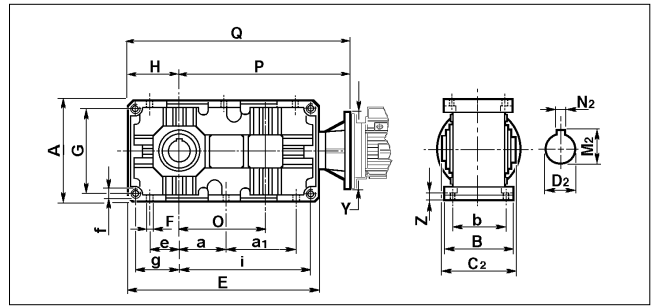
TA..CV



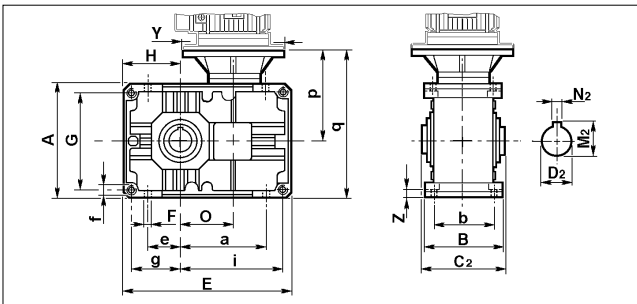
TC..BO



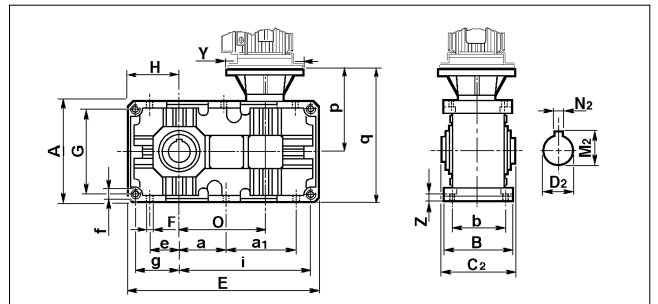
TC..CO



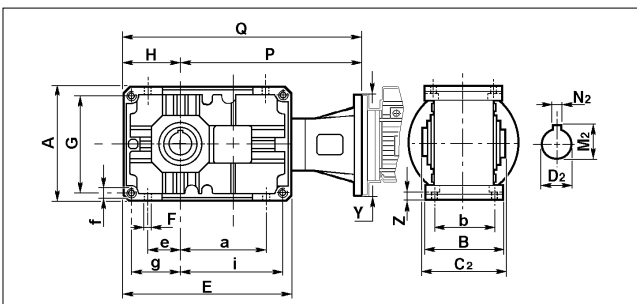
TC..BV



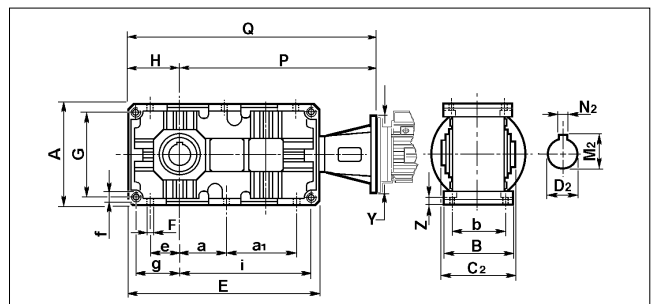
TC..CV



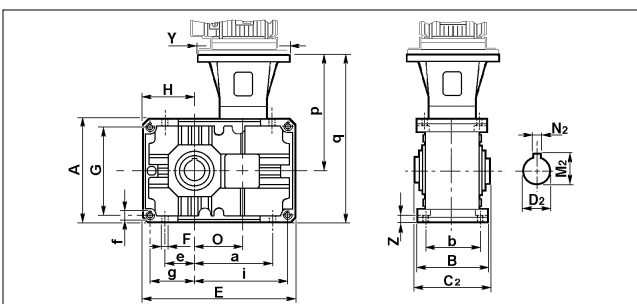
TF..BO



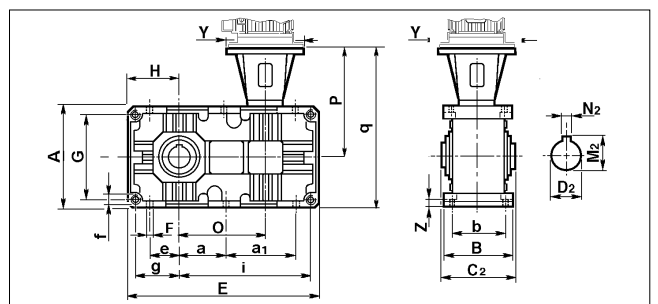
TF..CO

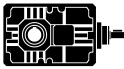


TF..BV



TF..CV





2.5 Accessori

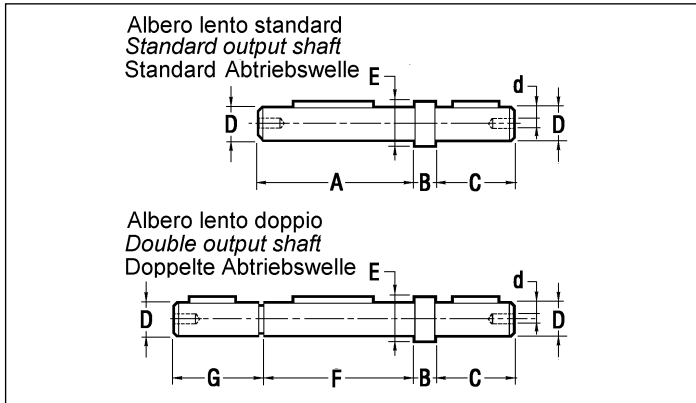
2.5 Accessories

2.5 Вспомогательные устройства

Albero lento

Output shaft

Выходной вал

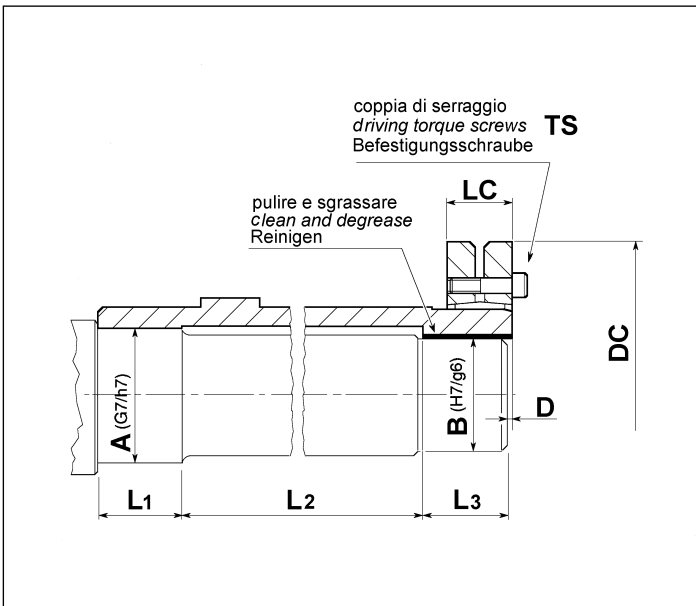


| | T | | | | | |
|-----------------|-----|------------|--------------|--------------|--------------|--------------|
| | 71B | 90B 80C | 112B 100C | 140B 125C | 180B 160C | 225B 200C |
| A | 114 | 129 | 154 | 179 | 219 | 298 |
| B | 5 | 6 | 8 | 10 | 12 | 15 |
| C | 50 | 60 | 80 | 100 | 125 | 180 |
| D _{g6} | 24 | 32 | 42 | 55 | 70 | 100 |
| d | M8 | M8 | M10 | M10 | M12 | M18 |
| E | 30 | 40 | 50 | 65 | 80 | 118 |
| F | 115 | 130 | 155 | 180 | 220 | 300 |
| G | 49 | 59 | 79 | 99 | 124 | 178 |

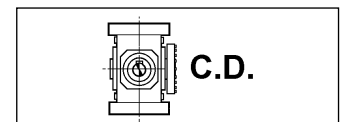
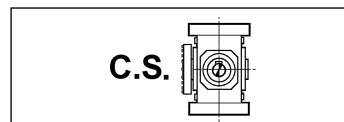
Albero lento cavo con calettatore

Hollow output shaft with shrink disc

Выходной вал в сборе со сцеплением



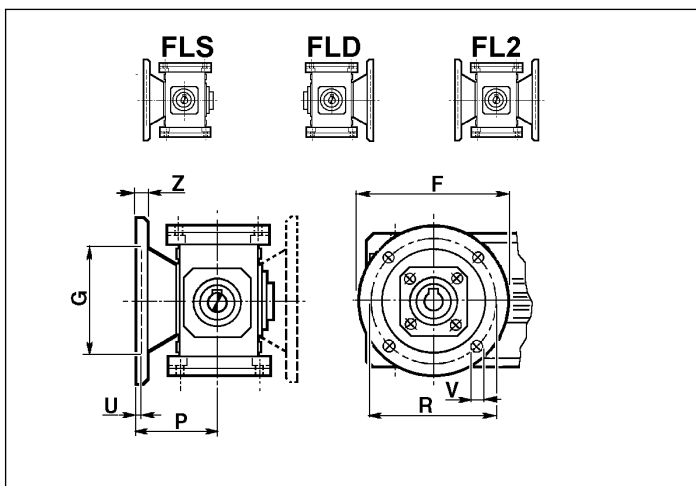
| | T | | | | | |
|----------------|-----|------------|--------------|--------------|--------------|--------------|
| | 71B | 90B 80C | 112B 100C | 140B 125C | 180B 160C | 225B 200C |
| A | 27 | 37 | 47 | 57 | 72 | 102 |
| B | 25 | 35 | 45 | 55 | 70 | 100 |
| D | 2 | 2 | 2 | 2 | 2 | 3 |
| DC | 60 | 80 | 100 | 115 | 145 | 215 |
| LC | 22 | 26 | 31 | 31 | 33 | 54 |
| L ₁ | 36 | 39 | 45 | 50 | 60 | 80 |
| L ₂ | 68 | 82 | 100 | 115 | 135 | 200 |
| L ₃ | 36 | 39 | 45 | 50 | 60 | 80 |
| TS (Nm) | 8 | 12 | 12 | 12 | 36 | 72 |



Flangia uscita

Output flange

Выходной фланец

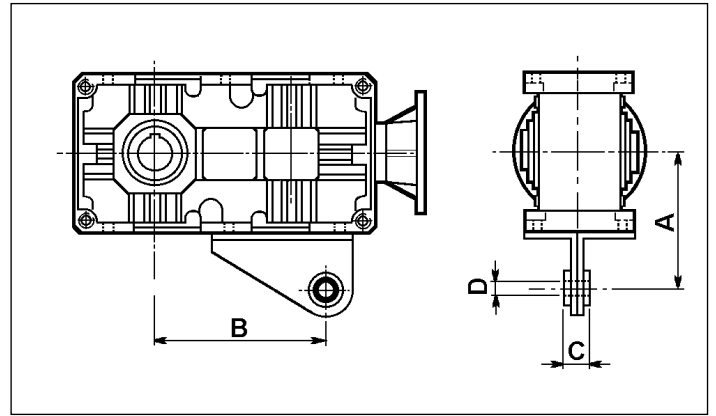
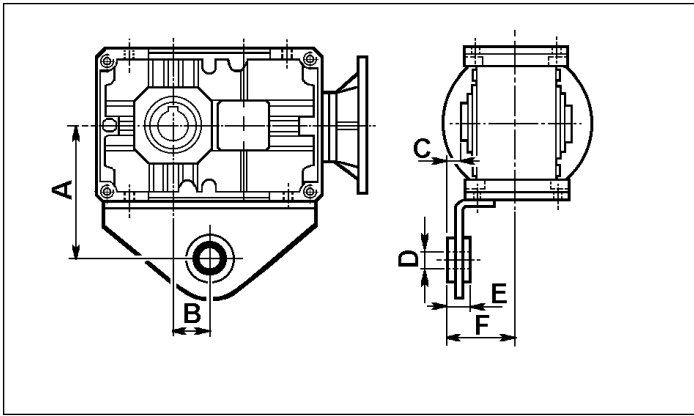


| | T | | | | |
|----|-----|------------|--------------|--------------|--------------|
| | 71B | 90B 80C | 112B 100C | 140B 125C | 180B 160C |
| F | 160 | 200 | 250 | 300 | 350 |
| G | 110 | 130 | 180 | 230 | 250 |
| R | 130 | 165 | 215 | 265 | 300 |
| P | 87 | 100 | 125 | 150 | 180 |
| U | 4 | 4.5 | 5 | 5 | 6 |
| V | 9 | 11 | 13 | 15 | 17 |
| Z | 10 | 12 | 16 | 20 | 25 |
| Kg | 2 | 3.2 | 5 | 8 | 12.5 |

Braccio di rezione

Torque arm

Крутящий момент (рычага)



| | T | | | | | |
|---|------|-----|------|-------|-------|------|
| | 71B | 90B | 112B | 140B | 180B | 225B |
| A | 123 | 145 | 180 | 214 | 270 | 340 |
| B | 32 | 41 | 51 | 63.5 | 81.25 | 102 |
| C | 12.5 | 11 | 15 | 15.5 | 20 | 30 |
| D | 20 | 20 | 25 | 25 | 35 | 40 |
| E | 25 | 25 | 30 | 30 | 35 | 45 |
| F | 70 | 77 | 92.5 | 105.5 | 130 | 180 |

| | T | | | | |
|---|-----|------|------|-------|-------|
| | 80C | 100C | 125C | 160C | 200C |
| A | 130 | 160 | 190 | 240 | 300 |
| B | 170 | 214 | 276 | 354.5 | 456.5 |
| C | 25 | 30 | 30 | 35 | 45 |
| D | 20 | 25 | 25 | 35 | 40 |

Dispositivo antiritorno

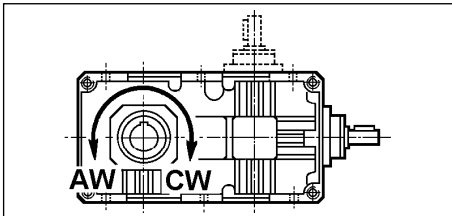
A richiesta è possibile fornire il riduttore con dispositivo antiritorno; questo permette la rotazione dell'albero lento solo nel senso desiderato.

Backstop device

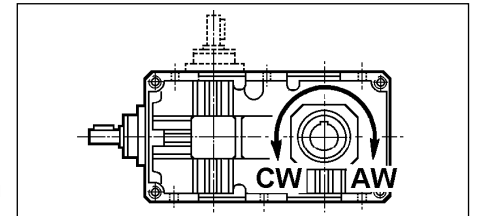
The gear unit can be supplied with optional backstop device; this ensures that the output shaft only turns in the permitted direction. Specify the direction of rotation required (clockwise or anti-clockwise) when ordering.

Ограничитель обратного хода

Редуктор может быть снабжен ограничителем обратного хода, что обеспечивает вращение выходного вала только в заданном направлении. Точно определите желаемое вращательное движение (по часовой или против часовой стрелке).



- CW Rotazione oraria
Clockwise rotation
Вращение по часовой стрелке
- AW Rotazione antioraria
Anti-clockwise rotation
Вращение против часовой стрелки



2.6 Sensi di rotazione alberi

Nei riduttori esecuzione orizzontale, per ottenere il senso di rotazione contrario al catalogo dell'albero lento mantenendo invariato il senso di rotazione dell'albero veloce, è sufficiente ruotare il riduttore di 180° attorno all'asse dell'albero veloce, utilizzando in pratica il piano di fissaggio opposto.

Nei riduttori esecuzione verticale è possibile fornire il senso di rotazione contrario al catalogo specificando al momento dell'ordine.

2.6 Direction of shaft rotation

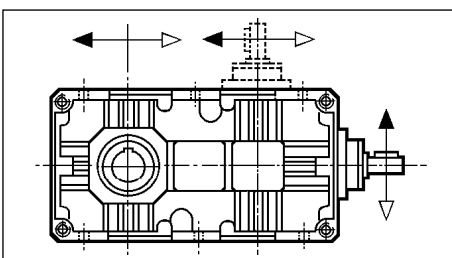
In gear units in horizontal execution, to obtain output shaft rotation direction opposite to that given in the catalogue while retaining the input shaft direction unchanged, simply turn the gear unit through 180° around the input shaft; in practice, mount the other way up.

Vertical units can be supplied with rotation direction opposite to that in the catalogue; specify when ordering.

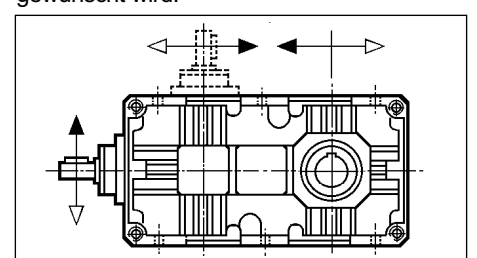
2.6 Drehrichtungen der Wellen

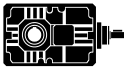
Wenn bei Untersetzungsgetrieben in waagerechter Ausführung für die Abtriebswelle eine andere als die im Katalog angegebene Drehrichtung gewünscht wird und die Antriebswelle ihre Drehrichtung beibehalten soll, so genügt es, das Getriebe um 180° um die Achse der Antriebswelle zu drehen, d.h. die gegenüberliegende Anschlussfläche zu verwenden.

Bei Untersetzungsgetrieben in vertikaler Ausführung ist es bei der Bestellung anzugeben, falls die umgekehrte Drehrichtung gewünscht wird.



Sensi di rotazione standard
Standard direction of rotation
Standarddrehrichtungen.





2.7 Lubrificazione

I riduttori ad assi ortogonali sono forniti predisposti per lubrificazione a olio e muniti dei tappi di carico, livello e scarico olio. Si raccomanda di precisare sempre la posizione di montaggio desiderata in fase di ordine.

POMPA DI LUBRIFICAZIONE.

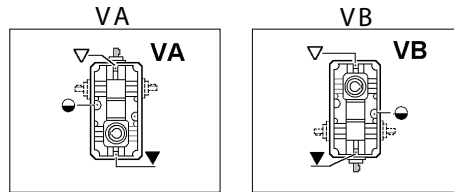
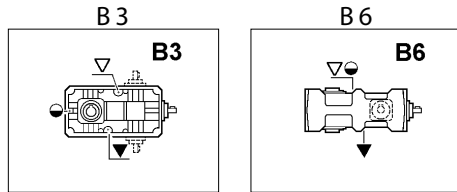
Una pompa per lubrificazione forzata dei cuscinetti superiori è fornita a richiesta sulle grandezze 125, 140, 160, 180, 200 e 225 nella posizione di montaggio VA.

Posizione di montaggio e quantità di lubrificante

Mounting positions and lubricant quantity (litres)

Montageposition und Ölmenge (liter)

Nella posizione di montaggio B6 è previsto un tappo di sfiato con asta di livello.
In mounting position B6 the vent / filler plug is fitted with dipstick.
Für die B6 version ist eine Entlüftungsschraube mit Ölstandzylinder vorausgesehen.



2.8 Carichi radiali e assiali (N)

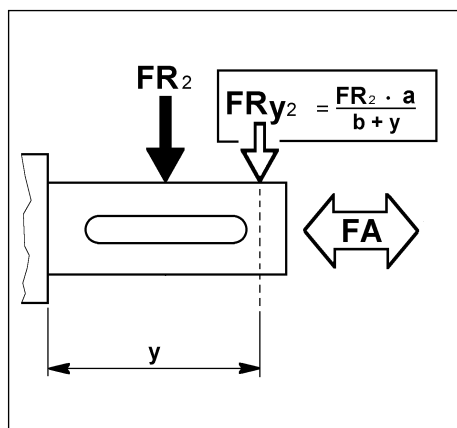
Le trasmissioni effettuate tramite pignoni per catena, ruote dentate o pulegge generano delle forze radiali (F_R) sugli alberi dei riduttori. L'entità di tali forze può essere calcolata con la formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

dove:

- T = Momento torcente (Nm)
- d = Diametro pignone o puleggia (mm)
- K_R = 2000 per pignone per catena
- = 2500 per ruote dentate
- = 3000 per puleggia con cinghie a V

I valori dei carichi radiali e assiali generati dall'applicazione debbono essere sempre minori o uguali a quelli ammissibili indicati nelle tabelle.



I carichi radiali indicati nelle tabelle si intendono applicati a metà della sporgenza dell'albero e sono riferiti ai riduttori operanti con fattore di servizio 1.

The radial loads indicated in the chart are considered to be applied to the half-way point of the projection (a) of the shaft, and refer to gear units operating with service factor 1.

Радиальные нагрузки, отраженные в таблице, рассчитаны на то, что сила будет приложена в точке проекции вала и относиться к редукторам работающим с сервисным коэффициентом 1

2.7 Lubrication

The bevel helical gearboxes are supplied with standard oil lubrication, and come equipped with filling plugs, level indicators and oil discharge. It is extremely important that desired mounting position be specified in your order.

OIL PUMP.

A pump for forced lubrication of the upper bearings is supplied on request for sizes 125, 140, 160, 180, 200 and 225 in the VA mounting position.

2.7 Смазка

Редукторы поставляются без смазки. Редукторы имеют пробки заливного отверстия и соответствующие пробки сливного отверстия. Все эти элементы должны быть указаны в заказе.

МАСЛЯНЫЙ НАСОС

Для улучшения смазки верхних подшипников редуктор по желанию заказчика может быть снабжен насосом для размеров: 125, 140, 160, 180, 200 и 225 в установочной позиции VA.

| T | B3 | B6 | VA | VB |
|------|------|------|------|------|
| 71B | 0.6 | 0.75 | 0.6 | 0.7 |
| 80C | 1.2 | 1.5 | 1.2 | 1.3 |
| 90B | 1.2 | 1.5 | 1.2 | 1.3 |
| 100C | 2 | 2.6 | 2 | 2.2 |
| 112B | 2 | 2.6 | 2 | 2.2 |
| 125C | 3.7 | 4.8 | 3.7 | 4 |
| 140B | 3.7 | 4.8 | 3.7 | 4 |
| 160C | 7.1 | 9.2 | 7.1 | 7.8 |
| 180B | 7.1 | 9.2 | 7.1 | 7.8 |
| 200C | 13.5 | 17.5 | 13.5 | 14.8 |
| 225B | 13.5 | 17.5 | 13.5 | 14.8 |

2.8 Radial and axial loads (N)

Transmissions implemented by means of chain pinions, gears or pulleys generate radial forces (F_R) on the gear unit shafts. The entity of these forces may be calculated using this formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

where:

- T = torque (Nm)
- d = pinion or pulley diameter (mm)
- K_R = 2000 for chain pinion
- = 2500 for gears
- = 3000 for V-belt pulleys

The value of the radial and axial loads generated by the application must always be less than or equal to admissible values as indicated in the chart.

2.8 Радиальные и осевые нагрузки

Передатки, осуществляемые с помощью цепных зубчатых колес, шестеренок и блоков шкивов создают радиальную силу на валах редуктора. Значение этой силы можно рассчитать при помощи следующей формулы:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

где:

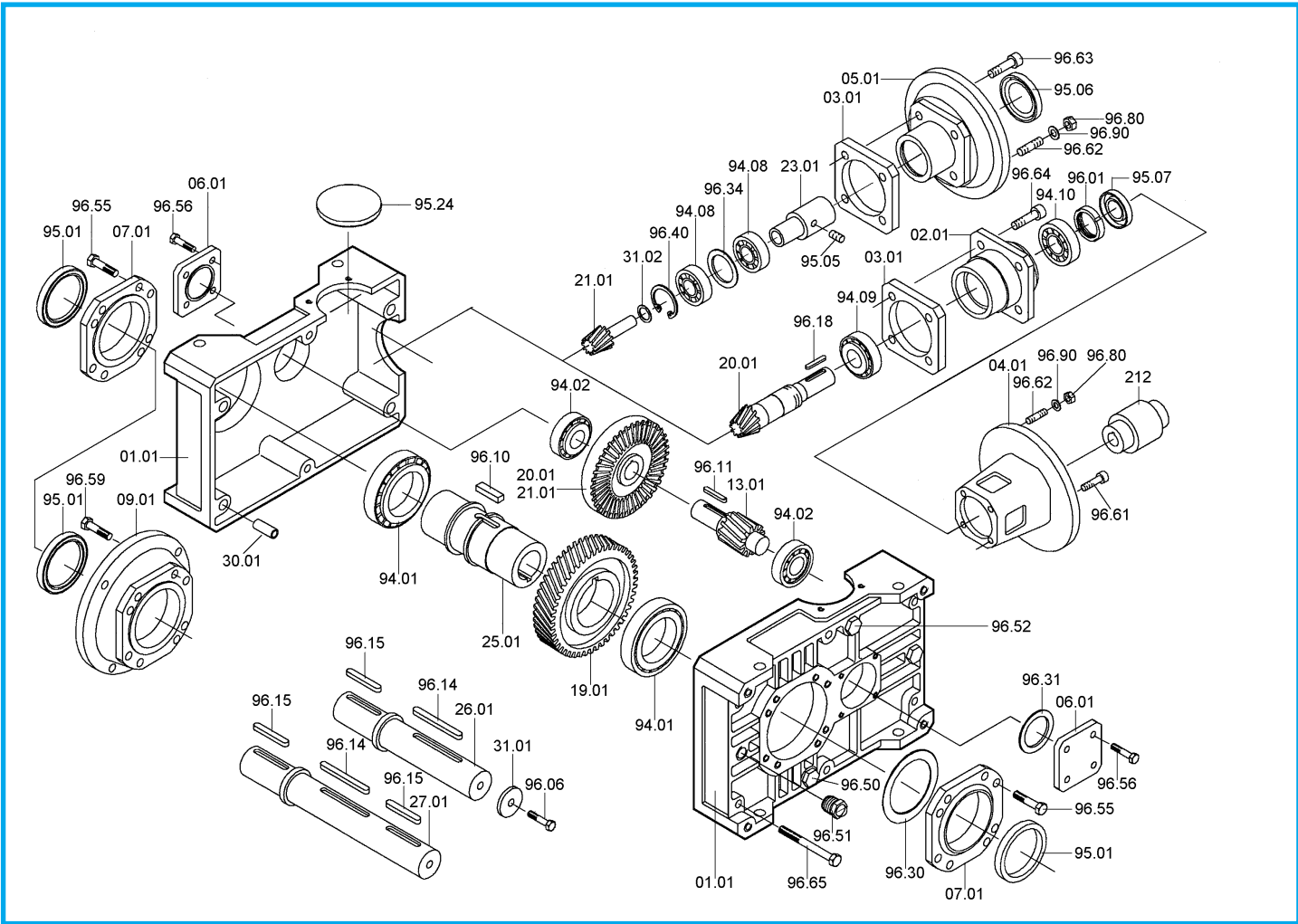
- T = крутящий момент
- d = диаметр ведущего зубчатого колеса или шкива
- K_R = 2000 для цепной передачи,
- = 2500 для шестеренок
- = 3000 для ременной передачи (V-образный ремень)

Значения радиальных и осевых сил при работе редуктора не должны превышать допустимых значений, данных в таблице.

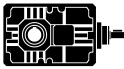
| | T 71B | T 90B | T 112B | T 140B | T 180B | T 225B |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | a=114.5 b=84.5 | a=127.5 b=95.5 | a=161.5 b=113.5 | a=192 b=132 | a=237 b=162 | a=326 b=221 |
| ALBERO ENTRATA / INPUT SHAFT / Входной вал (n1 = 1400 rpm) | | | | | | |
| in | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} |
| 8 ÷ 20 | 630 | 126 | 1000 | 200 | 1600 | 320 |
| 25 ÷ 40 | 500 | 100 | 800 | 160 | 1250 | 250 |
| 50 ÷ 80 | 400 | 80 | 630 | 130 | 1000 | 200 |
| ALBERO USCITA / OUTPUT SHAFT / Выходной вал | | | | | | |
| n2 (rpm) | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} |
| 300 | 3000 | 600 | 4750 | 950 | 7500 | 1500 |
| 240 | 3150 | 630 | 5000 | 1000 | 8000 | 1600 |
| 140 | 3350 | 670 | 5300 | 1060 | 8500 | 1700 |
| 150 | 3550 | 710 | 5600 | 1120 | 9000 | 1800 |
| 120 | 3750 | 750 | 6000 | 1200 | 9500 | 1900 |
| 95 | 4000 | 800 | 6300 | 1260 | 10000 | 2000 |
| 75 | 4250 | 850 | 6700 | 1340 | 10600 | 2120 |
| 60 | 4500 | 900 | 7100 | 1420 | 11200 | 2240 |
| 50 | 4750 | 950 | 7500 | 1500 | 11800 | 2360 |
| ≤ 40 | 5000 | 1000 | 8000 | 1600 | 12500 | 2500 |

| | T 80C | T 100C | T 125C | T 160C | T 200C |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| | a=127.5 b=95.5 | a=161.5 b=113.5 | a=192 b=132 | a=237 b=162 | a=326 b=221 |
| ALBERO ENTRATA / INPUT SHAFT / Входной вал (n1 = 1400 rpm) | | | | | |
| in | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} |
| 40 ÷ 100 | 630 | 130 | 1000 | 200 | 1600 |
| 125 ÷ 200 | 500 | 100 | 800 | 160 | 1250 |
| 250 ÷ 630 | 400 | 80 | 630 | 130 | 1000 |
| ALBERO USCITA / OUTPUT SHAFT / Выходной вал | | | | | |
| n2 (rpm) | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} |
| ≤ 75 | 8000 | 1600 | 12500 | 2500 | 20000 |

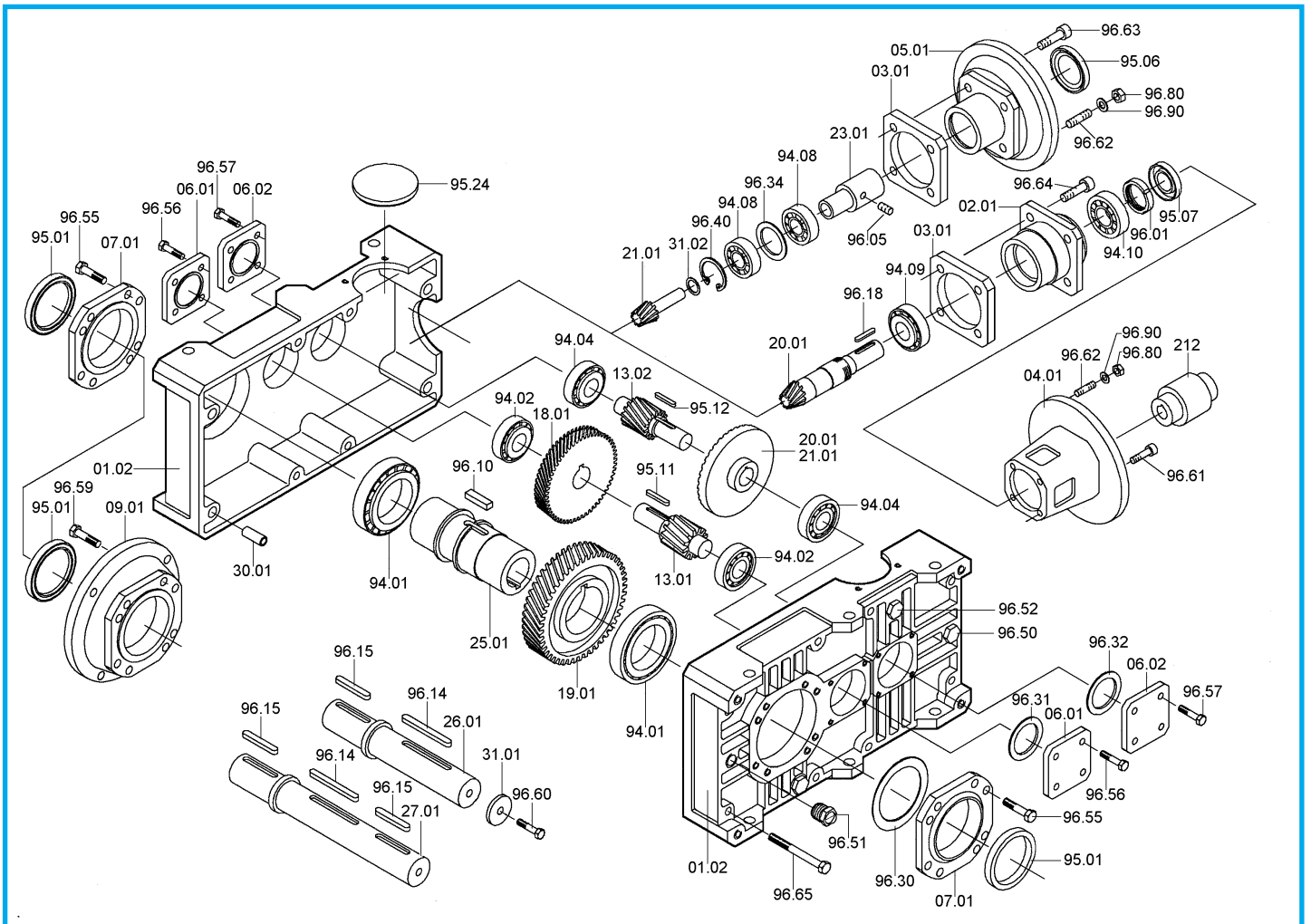
TA..B - TC..B - TF..B



| T | Cuscinecci / Bearings / Подшипники | | | | | Anelli di tenuta / Oilseals / Сальники | | | |
|-------------|------------------------------------|------------------------------|-------------------------|-----------------------------|--------------------------|--|----------|----------|----------|
| | TA - TC - TF | | TC | TA - TF | | TA - TC - TF | TC | | TA - TF |
| | 94.01 | 94.02 | 94.08 | 94.09 | 94.10 | 95.01 | IEC | 95.06 | 95.07 |
| 71B | 32008 40/68/19 | 30302 15/42/14.25 | 7203 17/40/12 | 30203 17/40/13.25 | | 40/56/8 | 63 | 25/52/7 | 15/40/10 |
| 90B | 32010 50/80/20 | 30204 20/47/15.25 | 7205 25/52/15 | 32005 25/47/15 | 71 | | 30/52/7 | 20/47/7 | |
| | | | | | 80 | | 35/52/7 | | |
| | | | | | 90 | | 37/52/7 | | |
| | | | | | 90 | | 35/62/7 | | |
| 112B | 32012 60/95/23 | 30305 25/62/18.25 | 7206 30/62/16 | 32006 30/55/17 | 60/80/10 | 80 | 40/72/10 | 25/58/10 | |
| | | | | | | 90 | 40/72/10 | | |
| | | | | | | 100 | 45/72/8 | | |
| | | | | | | 112 | 45/72/8 | | |
| | | | | | | 132 | 55/72/10 | | |
| 140B | 32015 75/115/25 | 32206 30/62/21.25 | 7207 35/72/17 | 32007 35/62/18 | 75/95/10 | 80 | 45/80/10 | 30/62/10 | |
| | | | | | | 90 | 45/80/10 | | |
| | | | | | | 100 | 45/80/10 | | |
| | | | | | | 112 | 45/80/10 | | |
| | | | | | | 132 | 55/80/10 | | |
| 180B | 32019 95/145/32 | 30307 35/80/22.75 | | 32009 45/75/20 | 95/125/12 | | | 40/80/10 | |
| | | | | | | | | | |
| 225B | 32026 130/200/45 | 31310 50/110/29.25 | | 33111 55/95/30 | 32011 55/90/23 | 130/160/14 | | | 50/90/10 |



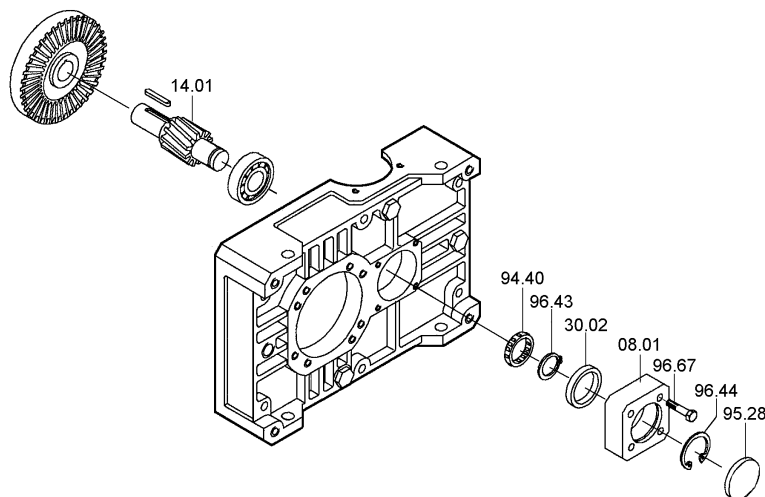
TA..C - TC..C - TF..C



| T | Cuscinetti / Bearings / Подшипники | | | | | | Anelli di tenuta / Oilseals / Сальники | | | | |
|-------------|------------------------------------|------------------------------|-----------------------------|-------------------------|-----------------------------|-------|--|-----|----------|----------|--|
| | TA - TC - TF | | | TC | TA - TF | | TA - TC - TF | | TC | TA - TF | |
| | 94.01 | 94.02 | 94.04 | 94.08 | 94.09 | 94.10 | 95.01 | IEC | 95.06 | 95.07 | |
| 80C | 32010 50/80/20 | 30204 20/47/15.25 | 30302 15/42/14.25 | 7203 17/40/12 | 32003 17/40/13.25 | | 50/65/8 | 63 | 25/52/7 | 15/40/10 | |
| | | | | | | | | 71 | 30/52/7 | | |
| | | | | | | | | 80 | 35/52/7 | | |
| | | | | | | | | 90 | 37/52/7 | | |
| 100C | 32012 60/95/23 | 30305 25/62/18.25 | 30204 20/47/15.25 | 7205 25/52/15 | 32005 25/47/15 | | 60/80/10 | 71 | 35/62/7 | 20/47/7 | |
| | | | | | | | | 80 | 35/62/7 | | |
| | | | | | | | | 90 | 40/62/8 | | |
| | | | | | | | | 100 | 45/62/8 | | |
| | | | | | | | | 112 | 45/62/8 | | |
| 125C | 32015 75/115/25 | 32206 30/62/21.25 | 30305 25/62/18.25 | 7206 30/62/16 | 32006 30/55/17 | | 75/95/10 | 80 | 40/72/10 | 25/58/10 | |
| | | | | | | | | 90 | 40/72/10 | | |
| | | | | | | | | 100 | 45/72/8 | | |
| | | | | | | | | 112 | 45/72/8 | | |
| | | | | | | | | 132 | 55/72/10 | | |
| 160C | 32019 95/145/32 | 32207 35/72/24.25 | 32206 30/62/21.25 | 7207 35/72/17 | 32007 35/62/18 | | 95/125/12 | 80 | 45/80/10 | 30/62/10 | |
| | | | | | | | | 90 | 45/80/10 | | |
| | | | | | | | | 100 | 45/80/10 | | |
| | | | | | | | | 112 | 45/80/10 | | |
| | | | | | | | | 132 | 55/80/10 | | |
| | | | | | | | | 160 | 60/80/10 | | |
| 200C | 32026 130/200/45 | 31310 50/110/29.25 | 30307 35/80/22.75 | | 32009 45/75/20 | | 130/160/14 | | | 40/80/10 | |
| | | | | | | | | | | | |

TA..B - TC..B - TF..B - TA..C - TC..C - TF..C

Dispositivo antiritorno - Backstop device - Ограничитель обратного хода



In fase di ordine delle parti di ricambio, specificare sempre n° particolare (vedi disegno esplosivo), data (1), n° codice (2) e n° variante (3). (Vedi targhetta).

When you need to order a spare part, you must always specify the detail number (look at technical drawing), manufacture date (1), code number (2) and variable (3) (look at data plate).

При заказе запасных частей укажите номер детали (смотрите технический чертеж), дату изготовления (1), кодировый номер (2) и вариант изготовления (смотрите на данные ниже).

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|---------|---------------|-------|
| | | DATA 1 | DATE |
| CODICE N° 2 | CODE N° | 3 | |
| TRAMEC BOLOGNA ITALY | | | |

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|---------|---------------|-------|
| | | DATA 1 | DATE |
| CODICE N° 2 | CODE N° | 3 | |
| TRAMEC BOLOGNA ITALY | | | |

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|---------|---------------|-------|
| | | DATA 1 | DATE |
| CODICE N° 2 | CODE N° | 3 | |
| TRAMEC BOLOGNA ITALY | | | |

| 3.0 | RIDUTTORI AD ASSI PARALLELI | PARALLEL GEAR SHAFT UNIT | Редукторы с параллельными валами | |
|------------|------------------------------------|---------------------------------|---|----|
| 3.1 | Caratteristiche | <i>Characteristics</i> | Характеристики | 20 |
| 3.2 | Designazione | <i>Designation</i> | Схемы редукторов | 20 |
| 3.3 | Dati tecnici | <i>Technical data</i> | Технические данные | 21 |
| 3.4 | Dimensioni | <i>Dimensions</i> | Размеры | 22 |
| 3.5 | Accessori | <i>Accessories</i> | Вспомогательные устройства | 23 |
| 3.6 | Lubrificazione | <i>Lubrication</i> | Смазывание | 25 |
| 3.7 | Carichi radiali e assiali | <i>Radial and axial loads</i> | Радиальные и осевые нагрузки | 25 |
| 3.8 | Lista parti di ricambio | <i>Spare parts list</i> | Список запчастей | 27 |



3.1 Caratteristiche

- Costruiti in 6 grandezze a una riduzione, 5 a 2 riduzioni e 5 grandezze a 3 riduzioni.
- Sono previsti tre tipi di entrata: con albero entrata sporgente, con predisposizione attacco motore (campana e giunto).
- Il corpo riduttore in ghisa meccanica (71-180) o in ghisa sferoidale (200-225), abbondantemente nervato all'interno e all'esterno per garantire la rigidità, è lavorato su tutti i piani per consentire un facile posizionamento; inoltre un'unica camera di lubrificazione garantisce una maggiore dissipazione termica e una migliore lubrificazione di tutti gli organi interni.
- Gli ingranaggi cilindrici, a dentatura elicoidale, sono costruiti in acciaio 16CrNi4 o 18NiCrMo5 UNI7846 cementati e temprati. Il primo stadio è rettificato.
- L'utilizzo dei cuscinetti a rulli conici di qualità su tutti gli assi consente al riduttore di ottenere delle durate molto elevate e di sopportare dei carichi radiali e assiali esterni di notevole entità.
- L'utilizzo dei cuscinetti a rulli conici di qualità su tutti gli assi (ad eccezione del manico in entrata nella predisposizione attacco motore compatta, il quale è sostenuto da cuscinetti obliqui a sfere) consente al riduttore di ottenere delle durate molto elevate e di sopportare dei carichi radiali e assiali esterni molto elevati.

3.1 Characteristics

- Built in 6 sizes with single reduction, in 5 unit sizes with double reduction and in 5 sizes with three reduction.
- Two input types are available : with projecting input shaft, with pre-engineered motor coupling (bell and joint).
- Gear unit body in engineering cast iron, (71-180) or spheroidal graphite cast iron (200-225) is ribbed internally and externally to guarantee rigidity and machined on all surfaces for easy positioning. The single lubrication chamber guarantees improved heat dissipation and better lubrication of all the internal components.
- The helical spur gears are built in 16CrNi4 or 18NiCrMo5 UNI7846 quench-hardened steel, case-hardened and ground.
- The use of high-quality taper bearings rollers on all shafts ensures extremely long gear unit life, even under very high radial and axial loads.
- The standard hollow steel output shaft (locking assembly available on request), as well as the option of mounting an output flange on the side opposite the input shaft and the pre-engineered backstop coupling make these gear units extremely versatile while facilitating installation.

3.1 Характеристики

- Изготавливаются 6 размеров с единичной кратностью, 5 размеров с двойной кратностью и 5 размеров с тройной кратностью.
- Возможны 2 варианта соединения редуктора с приводом: с составным входным валом, с конусной и шарнирной муфтой мотора.
- На картере редуктора, отлитого из чугуна (71-180) или сфероидального графитового чугуна (200-225), выполняют внутреннее или внешнее оребрение с целью повышения жесткости картера. Общая смазочная ванна гарантирует хорошие теплоотдачу и смазывание всех внутренних трущихся деталей редуктора.
- Косозубые и цилиндрические прямозубые шестерни изготовлены из закаленной стали (16CrNi4 или 18NiCrMo5 UNI7846)
- Использование высококачественных конических подшипников на всех валах гарантируют долговечную работу редуктора, даже при очень высоких радиальных нагрузках.
- Стандартный полый стальной выходной вал (замкнутый штопорным кольцом по желанию заказчика), также как и выбор установки выходного фланца на стороне противоположной входному валу и ограничителю обратного хода значительно облегчают установку и эксплуатацию редуктора.

3.2 Typebetegnelse

Macchine
Machine
Редуктор

Tipo di entrata
Input type
Входной тип

Grandezza
Size
Размер

Rotismo
Gearing
Передача

Rapporto rid.
Ratio
Коэффициент

Predisposiz.
Attacco motore
Motor mounting
facility
Установ.мотора

Posizione di
montaggio
Mounting
position
Устан. позиция

Flangia uscita
Output flange
Выход. фланец

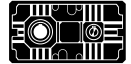
Antiritorno
Back-stop
device
Огр. заднего хода

Calettatore
Shrink disc
Диск
сжатия

3.2 Designation

3.2 Схемы редукторов

| | Z | A | 112 | BO | 10/1 | P.A.M. | B3 | FLD | CW | C.S. |
|---|---|---|--------------------------------------|-----------------------------------|---------------------|--------|----------------------------|-----|--|---|
| Riduttore ad assi paralleli Parallel shaft gear unit Редуктор парал. валами | | A | 71 90 112 140 180 225 | A 1 rid. 1 red. 1 Stufen | in = .../1 4 250 | 63 200 | B3 V1 V3 VA VB | | CW rotazione oraria clockwise rotation Вращение по час. стрелке | C.S. Calettatore sinistro Shrink disc left Левый диск сжатия |
| | | F | 80 100 125 160 200 | B 2 rid. 2 red. 2 Stufen | | | | | AW Rotazione antioraria anti-clockwise rotation Вращение против часовой стрелки | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



3.3 Dati tecnici

3.3 Technical data

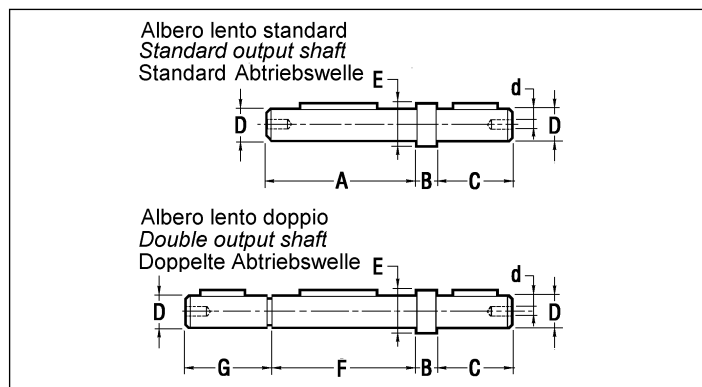
3.3 Технические данные

| Z | n ₁ = 1400 | | | ZA | |
|------|-----------------------|------|-----------------------|-----------------------|---------|
| | in | ir | n ₂ rpm | T _{2M} Nm | P kW |
| 71A | 5 | 5.09 | 275 | 190 | 5.6 |
| | 6.3 | 6.10 | 230 | 180 | 4.5 |
| | 8 | 7.88 | 177 | 170 | 3.3 |
| 90A | 5 | 5.09 | 275 | 380 | 11.3 |
| | 6.3 | 6.10 | 230 | 360 | 8.9 |
| | 8 | 7.88 | 177 | 340 | 6.5 |
| 112A | 5 | 5.09 | 275 | 760 | 22.6 |
| | 6.3 | 6.10 | 230 | 720 | 17.8 |
| | 8 | 7.88 | 177 | 680 | 13.0 |
| 140A | 5 | 5.09 | 275 | 1520 | 45.1 |
| | 6.3 | 6.10 | 230 | 1440 | 35.7 |
| | 8 | 7.88 | 177 | 1360 | 26.1 |
| 180A | 5 | 5.09 | 275 | 3040 | 90.2 |
| | 6.3 | 6.10 | 230 | 2880 | 71.4 |
| | 8 | 7.88 | 177 | 2720 | 52.1 |
| 225A | 4 | 3.92 | 357 | 6400 | 247 |
| | 5 | 4.82 | 291 | 6080 | 191 |
| | 6.3 | 5.90 | 237 | 5760 | 148 |

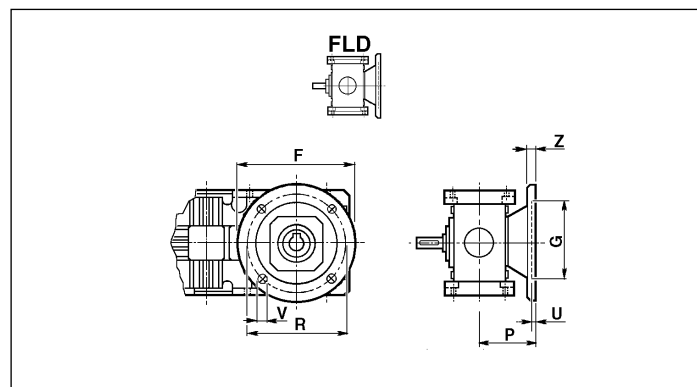
| Z | n ₁ = 1400 | | | ZF | | | | ZA | |
|------|-----------------------|--------|-----------------------|----------------------|----------|------|------------------------------|-----------------------|---------|
| | in | ir | n ₂ rpm | T ₂ Nm | P1 kW | FS' | IEC | T _{2M} Nm | P kW |
| 80B | 10 | 10.20 | 137 | 119 | 1.8 | 3.9 | 63 71 80 90 | 460 | 7.0 |
| | 12.5 | 12.98 | 108 | 151 | 1.8 | 3.2 | | 480 | 5.7 |
| | 16 | 15.56 | 90 | 181 | 1.8 | 2.8 | | 500 | 5.0 |
| | 20 | 20.36 | 69 | 238 | 1.8 | 2.2 | | 520 | 3.9 |
| | 25 | 24.40 | 57 | 285 | 1.8 | 1.9 | | 540 | 3.4 |
| | 31.5 | 31.05 | 45 | 362 | 1.8 | 1.5 | | 560 | 2.8 |
| | 40 | 37.21 | 38 | 434 | 1.8 | 1.2 | | 540 | 2.2 |
| | 50 | 48.12 | 29 | 468 | 1.5 | 1.1 | | 520 | 1.7 |
| 80C* | 63 | 62.23 | 22 | 444 | 1.1 | 1.1 | 500 | 1.2 | |
| | 50 | 52.71 | 27 | 502 | 1.5 | 1.2 | 580 | 1.7 | |
| | 63 | 63.15 | 22 | 601 | 1.5 | 1.0 | 600 | 1.5 | |
| | 80 | 80.38 | 17 | 561 | 1.1 | 1.1 | 620 | 1.2 | |
| | 100 | 103.52 | 14 | 493 | 0.75 | 1.3 | 640 | 1.0 | |
| | 125 | 124.03 | 11 | 590 | 0.75 | 1.1 | 660 | 0.8 | |
| | 160 | 157.86 | 9 | 551 | 0.55 | 1.2 | 680 | 0.7 | |
| | 200 | 204.15 | 7 | 479 | 0.37 | 1.5 | 700 | 0.5 | |
| 100B | 250 | 244.62 | 6 | 574 | 0.37 | 1.3 | 720 | 0.5 | |
| | 10 | 10.20 | 137 | 264 | 4 | 3.5 | 71 80 90 100 112 | 920 | 13.9 |
| | 12.5 | 12.98 | 108 | 337 | 4 | 2.9 | | 960 | 11.4 |
| | 16 | 15.56 | 90 | 403 | 4 | 2.5 | | 1000 | 9.9 |
| | 20 | 20.36 | 69 | 528 | 4 | 2.0 | | 1040 | 7.9 |
| | 25 | 24.40 | 57 | 632 | 4 | 1.7 | | 1080 | 6.8 |
| | 31.5 | 31.05 | 45 | 805 | 4 | 1.4 | | 1120 | 5.6 |
| | 40 | 37.21 | 38 | 965 | 4 | 1.1 | | 1080 | 4.5 |
| 50 | 48.12 | 29 | 936 | 3 | 1.1 | 1040 | | 3.3 | |
| 100C | 63 | 62.23 | 22 | 887 | 2.2 | 1.1 | 1000 | 2.5 | |
| | 50 | 51.93 | 27 | 609 | 1.8 | 1.9 | 1160 | 3.5 | |
| | 63 | 62.22 | 23 | 730 | 1.8 | 1.6 | 1200 | 3.0 | |
| | 80 | 79.19 | 18 | 929 | 1.8 | 1.3 | 1240 | 2.5 | |
| | 100 | 103.67 | 14 | 987 | 1.5 | 1.3 | 1280 | 1.9 | |
| | 125 | 124.22 | 11 | 1182 | 1.5 | 1.1 | 1320 | 1.7 | |
| | 160 | 158.10 | 9 | 1103 | 1.1 | 1.2 | 1360 | 1.4 | |
| | 200 | 204.46 | 7 | 1427 | 1.1 | 1.0 | 1400 | 1.1 | |
| 250 | 244.99 | 6 | 1166 | 0.75 | 1.2 | 1440 | 0.9 | | |

| Z | n ₁ = 1400 | | | ZF | | | | ZA | | | |
|------|-----------------------|--------|-----------------------|----------------------|----------|------|-------------------------------|---------------------------------|-------------------------------|------|------|
| | in | ir | n ₂ rpm | T ₂ Nm | P1 kW | FS | IEC | T _{2M} Nm | P kW | | |
| 125B | 10 | 10.20 | 137 | 595 | 9 | 3.1 | 80 90 100 112 132 | 1840 | 27.8 | | |
| | 12.5 | 12.98 | 108 | 757 | 9 | 2.5 | | 1920 | 22.8 | | |
| | 16 | 15.55 | 90 | 907 | 9 | 2.2 | | 2000 | 19.8 | | |
| | 20 | 20.36 | 69 | 1188 | 9 | 1.8 | | 2080 | 15.8 | | |
| | 25 | 24.40 | 57 | 1423 | 9 | 1.5 | | 2160 | 13.7 | | |
| | 31.5 | 31.05 | 45 | 1811 | 9 | 1.2 | | 2240 | 11.1 | | |
| | 40 | 37.21 | 38 | 1809 | 7.5 | 1.2 | | 2160 | 9.0 | | |
| | 50 | 48.12 | 29 | 1715 | 5.5 | 1.2 | | 2080 | 6.7 | | |
| | 63 | 62.23 | 22 | 1613 | 4 | 1.2 | | 2000 | 5.0 | | |
| | 125C | 50 | 51.93 | 27 | 1812 | 4 | | 1.8 | 71 80 90 100 112 | 2320 | 7.0 |
| 63 | | 62.22 | 23 | 2171 | 4 | 1.5 | 2400 | 6.1 | | | |
| 80 | | 79.19 | 18 | 2009 | 4 | 1.2 | 2480 | 4.9 | | | |
| 100 | | 103.67 | 14 | 1973 | 3 | 1.3 | 2560 | 3.9 | | | |
| 125 | | 124.22 | 11 | 2364 | 3 | 1.1 | 2640 | 3.4 | | | |
| 160 | | 158.10 | 9 | 2206 | 2.2 | 1.2 | 2720 | 2.7 | | | |
| 200 | | 204.46 | 7 | 2854 | 2.2 | 1.0 | 2800 | 2.2 | | | |
| 250 | | 244.99 | 6 | 2331 | 1.5 | 1.2 | 2880 | 1.9 | | | |
| 160B | | 10 | 10.20 | 137 | 1454 | 22 | 2.5 | 100 112 132 160 180 | | 3680 | 55.7 |
| | | 12.5 | 12.98 | 108 | 1851 | 22 | 2.1 | | | 3840 | 45.6 |
| | 16 | 15.56 | 90 | 2218 | 22 | 1.8 | 4000 | | 39.7 | | |
| | 20 | 20.36 | 69 | 2903 | 22 | 1.4 | 4160 | | 31.5 | | |
| | 25 | 24.40 | 57 | 3479 | 22 | 1.2 | 4320 | | 27.3 | | |
| | 31.5 | 31.05 | 45 | 4427 | 22 | 1.0 | 4480 | | 22.3 | | |
| | 40 | 37.21 | 38 | 3617 | 15 | 1.2 | 4320 | | 17.9 | | |
| | 50 | 48.12 | 29 | 3430 | 11 | 1.2 | 4160 | | 13.3 | | |
| | 63 | 62.23 | 22 | 3630 | 9.0 | 1.1 | 4000 | | 9.9 | | |
| | 160C | 50 | 51.93 | 27 | 3624 | 11.0 | 1.3 | | 80 90 100 112 132 | 4640 | 14.1 |
| 63 | | 62.22 | 23 | 4342 | 11.0 | 1.1 | 4800 | 12.2 | | | |
| 80 | | 79.19 | 18 | 3768 | 7.5 | 1.3 | 4960 | 9.9 | | | |
| 100 | | 103.67 | 14 | 4933 | 7.5 | 1.0 | 5120 | 7.8 | | | |
| 125 | | 124.22 | 11 | 4334 | 5.5 | 1.2 | 5280 | 6.7 | | | |
| 160 | | 158.10 | 9 | 4012 | 4 | 1.4 | 5440 | 5.4 | | | |
| 200 | | 204.46 | 7 | 5188 | 4 | 1.1 | 5600 | 4.3 | | | |
| 250 | | 244.99 | 6 | 4663 | 3 | 1.2 | 5760 | 3.7 | | | |
| 200B | 8 | 8.33 | 168 | 1619 | 30 | 4.3 | 132 160 180 200 | 7040 | 130.4 | | |
| | 10 | 10.00 | 140 | 1945 | 30 | 3.8 | | 7360 | 113.5 | | |
| | 12.5 | 12.29 | 114 | 2389 | 30 | 3.2 | | 7680 | 96.5 | | |
| | 16 | 16.63 | 84 | 3233 | 30 | 2.5 | | 8000 | 74.2 | | |
| | 20 | 19.97 | 70 | 3883 | 30 | 2.1 | | 8320 | 64.3 | | |
| | 25 | 24.53 | 57 | 4769 | 30 | 1.8 | | 8640 | 54.4 | | |
| 200C | 31.5 | 30.04 | 47 | 5839 | 30 | 1.5 | 8960 | 46.0 | | | |
| | 40 | 42.41 | 33 | 8071 | 30 | 1.1 | 9120 | 33.9 | | | |
| | 50 | 50.93 | 27 | 7108 | 22 | 1.3 | 9280 | 28.7 | | | |
| | 63 | 62.55 | 22 | 8730 | 22 | 1.1 | 9600 | 24.2 | | | |
| | 80 | 76.59 | 18 | 8989 | 18.5 | 1.1 | 9920 | 20.4 | | | |
| | 100 | 101.68 | 14 | 9675 | 15 | 1.1 | 10240 | 15.9 | | | |
| | 125 | 124.87 | 11 | 8714 | 11 | 1.2 | 10560 | 13.3 | | | |
| | 160 | 152.91 | 9 | 10671 | 11 | 1.0 | 10880 | 11.2 | | | |

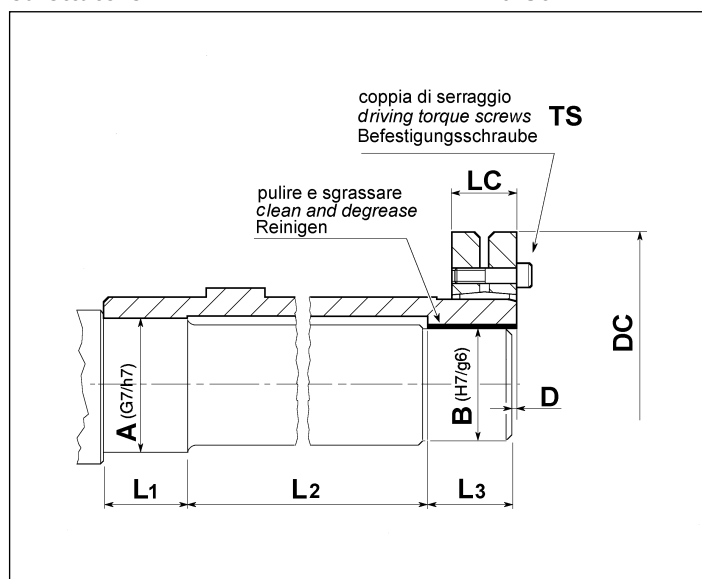
* Interpellateci
 * Please contact us
 * Пожалуйста, войдите в контакт с нами

Albero lento / Output shaft / Выходной вал


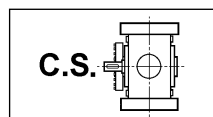
| | Z... | | | | | |
|-----------------------|------|-------------------|----------------------|----------------------|----------------------|----------------------|
| | 71A | 90A 80B 80C | 112A 100B 100C | 140A 125B 125C | 180A 160B 160C | 225A 200B 200C |
| A | 114 | 129 | 154 | 179 | 219 | 298 |
| B | 5 | 6 | 8 | 10 | 12 | 15 |
| C | 50 | 60 | 80 | 100 | 125 | 180 |
| D_{g6} | 24 | 32 | 42 | 55 | 70 | 100 |
| d | M8 | M8 | M10 | M10 | M12 | M18 |
| E | 30 | 40 | 50 | 65 | 80 | 118 |
| F | 115 | 130 | 155 | 180 | 220 | 300 |
| G | 49 | 59 | 79 | 99 | 124 | 178 |

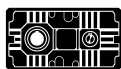
Flangia uscita / Output flange / Выходной фланец


| | Z... | | | | |
|-----------|------|-------------------|----------------------|----------------------|----------------------|
| | 71A | 90A 80B 80C | 112A 100B 100C | 140A 125B 125C | 180A 160B 160C |
| F | 160 | 200 | 250 | 300 | 350 |
| G | 110 | 130 | 180 | 230 | 250 |
| R | 130 | 165 | 215 | 265 | 300 |
| P | 87 | 100 | 125 | 150 | 180 |
| U | 4 | 4.5 | 5 | 5 | 6 |
| V | 9 | 11 | 13 | 15 | 17 |
| Z | 10 | 12 | 16 | 20 | 25 |
| Kg | 2 | 3.2 | 5 | 8 | 12.5 |

Albero lento cavo con calettatore
Hollow output shaft with shrink disc
Полый выходной вал с диском сжатия


| | Z | | | | | |
|----------------------|-----|-------------------|----------------------|----------------------|----------------------|----------------------|
| | 71A | 90A 80B 80C | 112A 100B 100C | 140A 125B 125C | 180A 160B 160C | 225A 200B 200C |
| A | 27 | 37 | 47 | 57 | 72 | 102 |
| B | 25 | 35 | 45 | 55 | 70 | 100 |
| D | 2 | 2 | 2 | 2 | 2 | 3 |
| DC | 60 | 80 | 100 | 115 | 145 | 215 |
| LC | 22 | 26 | 31 | 31 | 33 | 54 |
| L₁ | 36 | 39 | 45 | 50 | 60 | 80 |
| L₂ | 68 | 82 | 100 | 115 | 135 | 200 |
| L₃ | 36 | 39 | 45 | 50 | 60 | 80 |
| TS (Nm) | 8 | 12 | 12 | 12 | 36 | 72 |

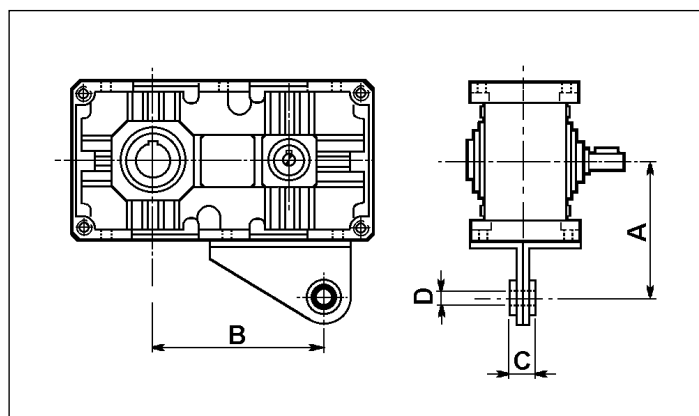
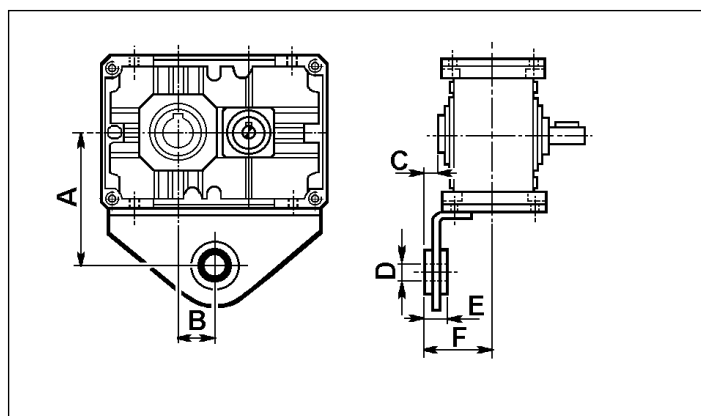




Braccio di rezione

Torque arm

Крутящий момент (рычага)



| | Z | | | | | |
|---|------|-----|------|-------|-------|------|
| | 71A | 90A | 112A | 140A | 180A | 225A |
| A | 123 | 145 | 180 | 214 | 270 | 340 |
| B | 32 | 41 | 51 | 63.5 | 81.25 | 102 |
| C | 12.5 | 11 | 15 | 15.5 | 20 | 30 |
| D | 20 | 20 | 25 | 25 | 35 | 40 |
| E | 25 | 25 | 30 | 30 | 35 | 45 |
| F | 70 | 77 | 92.5 | 105.5 | 130 | 180 |

| | Z | | | | |
|---|------------|--------------|--------------|--------------|--------------|
| | 80B 80C | 100B 100C | 125B 125C | 160B 160C | 200B 200C |
| A | 130 | 160 | 190 | 240 | 300 |
| B | 170 | 214 | 276 | 354.5 | 456.5 |
| C | 25 | 30 | 30 | 35 | 45 |
| D | 20 | 25 | 25 | 35 | 40 |

Dispositivo antiorario

Backstop device

Ограничитель обратного хода

A richiesta è possibile fornire il riduttore con dispositivo antiritorno; questo permette la rotazione dell'albero lento solo nel senso desiderato.

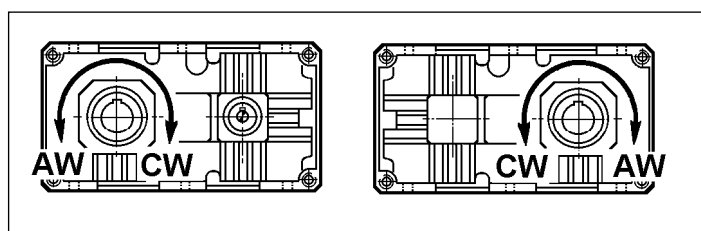
The gear unit can be supplied with backstop device; this ensures that the output shaft only turns in the permitted direction.

Редуктор может быть снабжен ограничителем обратного хода, что обеспечивает вращение выходного вала только в заданном направлении.

All'atto dell'ordine è necessario specificare il senso di rotazione desiderato (orario o antiorario).

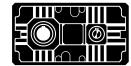
Specify the rotation direction required (clockwise or anti-clockwise) when ordering.

Точно определите желаемое вращательное движение (по часовой или против часовой стрелки).



CW
Rotazione oraria
Clockwise rotation
Вращ. по час. стрелке

AW
Rotazione antioraria
Anti-clockwise rotation
Вращ. против часовой стрелки



3.6 Lubrificazione

I riduttori ad assi paralleli sono forniti predisposti per lubrificazione a olio e muniti dei tappi di carico, livello e scarico olio.

Si raccomanda di precisare sempre la posizione di montaggio desiderata in fase di ordine.

POMPA OLIO

Una pompa per lubrificazione forzata dei cuscinetti superiori è fornita a richiesta sulle grandezze 125, 140, 160, 180, 200 e 225 nella posizione di montaggio VA.

Posizione di montaggio e quantità di lubrificante (litri)

Nelle posizioni di montaggio V1-V3 è previsto un tappo di sfiato con asta di livello.

3.6 Lubrication

The parallel shaft gear units are supplied with standard oil lubrication, and come equipped with filling plugs, level indicators and oil discharge.

It is extremely important that desired mounting position be specified in your order.

OIL PUMP.

A pump for forced lubrication of the upper bearings is supplied on request for sizes 125, 140, 160, 180 and 225 in the VA mounting position.

Mounting positions and lubricant quantity (litres)

In mounting position V1-V3 the vent / filler plug is fitted with dipstick.

3.6 Смазка

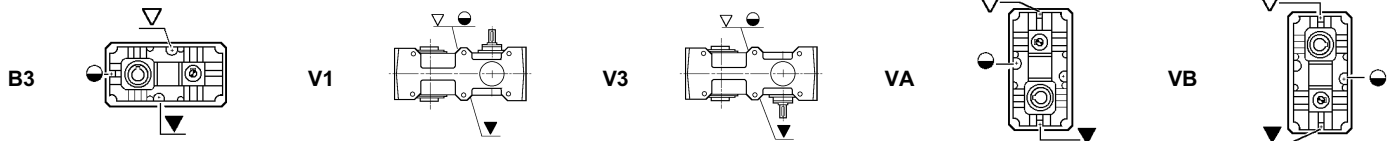
Редукторы поставляются без смазки. Редукторы имеют пробки заливного отверстия и соответствующие пробки сливного отверстия. Все эти элементы должны быть указаны в заказе.

МАСЛЯНЫЙ НАСОС

Для улучшения смазки верхних подшипников редуктор по желанию заказчика может быть снабжен насосом для размеров: 125, 140, 160, 180, 200 и 225 в установочной позиции VA

Количество смазки (литры)

В установочной позиции V1-V3 входные - выходные отверстия снабжены указателем измерительного уровня.



| | Z | | | | | | | | | | |
|-----------|------|------------|-----|--------------|------|--------------|------|--------------|------|--------------|------|
| | 71A | 80B 80C | 90A | 100B 100C | 112A | 125B 125C | 140A | 160B 160C | 180A | 200B 200C | 225A |
| B3 | 0.6 | 1.2 | 1.2 | 2 | 2 | 3.7 | 3.7 | 7.1 | 7.1 | 13.5 | 13.5 |
| V1 | 0.75 | 1.5 | 1.5 | 2.6 | 2.6 | 4.8 | 4.8 | 9.2 | 9.2 | 17.5 | 17.5 |
| V3 | 0.75 | 1.5 | 1.5 | 2.6 | 2.6 | 4.8 | 4.8 | 9.2 | 9.2 | 17.5 | 17.5 |
| VA | 0.6 | 1.2 | 1.2 | 2 | 2 | 3.7 | 3.7 | 7.1 | 7.1 | 13.5 | 13.5 |
| VB | 0.7 | 1.3 | 1.3 | 2.2 | 2.2 | 4 | 4 | 7.8 | 7.8 | 14.8 | 14.8 |

3.7 Carichi radiali e assiali (N)

Le trasmissioni effettuate tramite pignoni per catena, ruote dentate o pulegge generano delle forze radiali (F_R) sugli alberi dei riduttori. L'entità di tali forze può essere calcolata con la formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

dove:

- T = Momento torcente (Nm)
- d = Diametro pignone o puleggia (mm)
- K_R = 2000 per pignone per catena
- = 2500 per ruote dentate
- = 3000 per puleggia con cinghie a V

I valori dei carichi radiali e assiali generati dall'applicazione debbono essere sempre minori o uguali a quelli ammissibili indicati nelle tabelle.

3.7 Radial and axial loads (N)

Transmission implemented by means of chain pinions, gears or pulleys generate radial forces (F_R) on the gear unit shafts. The entity of these forces may be calculated using this formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

where:

- T = torque (Nm)
- d = pinion or pulley diameter (mm)
- K_R = 2000 for chain pinion
- = 2500 for gears
- = 3000 for V-belt pulleys

The value of the radial and axial loads generated by the application must always be less than or equal to admissible values as indicated in the chart.

3.7 Радиальные и осевые нагрузки

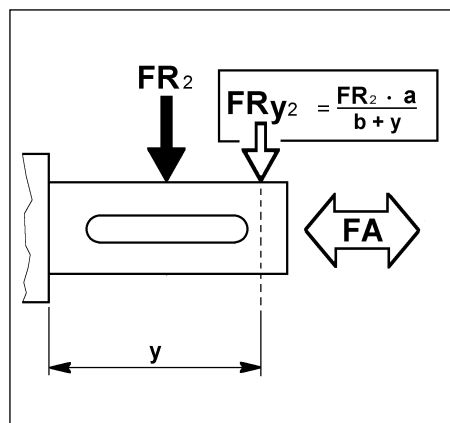
Передачи, осуществляемые с помощью цепных зубчатых колес, шестеренок и блоков шкивов создают радиальную силу на валах редуктора. Значение этой силы можно рассчитать при помощи следующей формулы:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

где:

- T = крутящий момент
- d = диаметр ведущего зубчатого колеса или шкива
- K_R = 2000 для цепной передачи,
- = 2500 для шестеренок
- = 3000 для ременной передачи (V-образный ремень)

Значения радиальных и осевых сил при работе редуктора не должны превышать допустимых значений, данных в таблице.





3.7 Carichi radiali e assiali (N)

3.7 Radial and axial loads (N)

3.7 Радиальные и осевые нагрузки (N)

| | | Z 71A | | Z 90A | | Z 112A | | Z 140A | | Z 180A | | Z 225A | |
|----------------------|--|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | ALBERO ENTRATA / INPUT SHAFT / Входной вал (n ₁ = 1400 rpm) | | | | | | | | | | | |
| in | | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} |
| Tutti / all / alle | | 630 | 130 | 1000 | 2000 | 1600 | 320 | 2500 | 500 | 4000 | 800 | 6400 | 1280 |
| | | ALBERO USCITA / OUTPUT SHAFT / Выходной вал | | | | | | | | | | | |
| | | a=114.5 | b=84.5 | a=127.5 | b=95.5 | a=161.5 | b=113.5 | a=192 | b=132 | a=236.5 | b=162 | a=326 | b=221 |
| n ₂ (rpm) | | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} |
| 600 | | 2550 | 510 | 4000 | 800 | 6450 | 1290 | 10150 | 2030 | 16400 | 3280 | 32800 | 6560 |
| 475 | | 2700 | 540 | 4250 | 850 | 6800 | 1360 | 10700 | 2140 | 17250 | 3450 | 34500 | 6900 |
| 375 | | 2850 | 570 | 4500 | 900 | 7150 | 1430 | 11250 | 2250 | 18100 | 3620 | 36200 | 7240 |

| | | Z 80B | | Z 100B | | Z 125B | | Z 160B | | Z 200B | |
|----------------------|--|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | ALBERO ENTRATA / INPUT SHAFT / Входной вал (n ₁ = 1400 rpm) | | | | | | | | | |
| in | | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} |
| Tutti / all / alle | | 880 | 176 | 1450 | 290 | 2200 | 440 | 3450 | 690 | 4500 | 400 |
| | | ALBERO USCITA / OUTPUT SHAFT / Выходной вал | | | | | | | | | |
| | | a=127.5 | b=95.5 | a=161.5 | b=113.5 | a=192 | b=132 | a=236.5 | b=162 | a=326 | b=221 |
| n ₂ (rpm) | | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} |
| 300 | | 4750 | 950 | 7500 | 1500 | 11800 | 2360 | 19000 | 3800 | 38000 | 7600 |
| 240 | | 5000 | 1000 | 8000 | 1600 | 12500 | 2500 | 20000 | 4000 | 40000 | 8000 |
| 190 | | 5300 | 1060 | 8500 | 1700 | 13200 | 2640 | 21200 | 4240 | 42400 | 8480 |
| 150 | | 5600 | 1120 | 9000 | 1800 | 14000 | 2800 | 22400 | 4480 | 44800 | 8960 |
| 120 | | 6000 | 1200 | 9500 | 1900 | 15000 | 3000 | 23600 | 4720 | 47200 | 9440 |
| 95 | | 6300 | 1260 | 10000 | 2000 | 16000 | 3200 | 25000 | 5000 | 50000 | 10000 |
| 75 | | 6700 | 1340 | 10600 | 2120 | 17000 | 3400 | 26500 | 5300 | 53000 | 10600 |
| 60 | | 7100 | 1420 | 11200 | 2240 | 18000 | 3600 | 28000 | 5600 | | |
| ≤ 50 | | 7500 | 1500 | 11800 | 2360 | 19000 | 3800 | 30000 | 6000 | | |

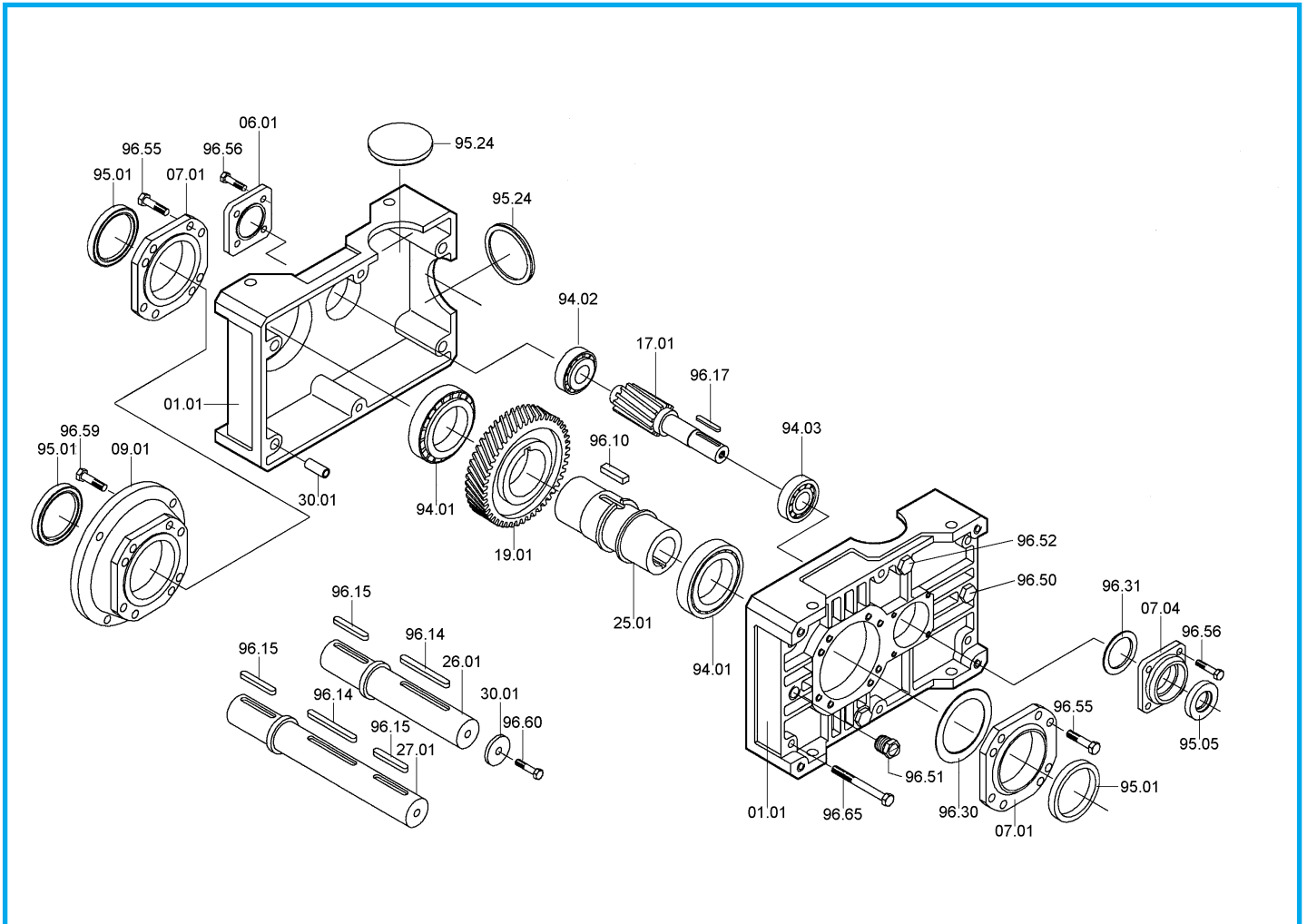
| | | Z 80C | | Z 100C | | Z 125C | | Z 160C | | Z 200C | |
|----------------------|--|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | ALBERO ENTRATA / INPUT SHAFT / Входной вал (n ₁ = 1400 rpm) | | | | | | | | | |
| in | | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} |
| Tutti / all / alle | | 500 | 100 | 630 | 130 | 1000 | 200 | 1600 | 320 | 2500 | 500 |
| | | ALBERO USCITA / OUTPUT SHAFT / Выходной вал | | | | | | | | | |
| | | a=127.5 | b=95.5 | a=161.5 | b=113.5 | a=192 | b=132 | a=236.5 | b=162 | a=326 | b=221 |
| n ₂ (rpm) | | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} |
| ≤ 60 | | 7500 | 1500 | 11800 | 2360 | 19000 | 3800 | 30000 | 6000 | 53000 | 10600 |

I carichi radiali indicati nelle tabelle si intendono applicati a metà della sporgenza dell'albero e sono riferiti ai riduttori operanti con fattore di servizio 1.

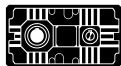
The radial loads indicated in the chart are considered to be applied to the half-way point of the projection (a) of the shaft, and refer to gear units operating with service factor 1.

Радиальные нагрузки, отраженные в таблице, рассчитаны на то, что сила будет приложена в средней точке проекции вала и относиться к редукторам, работающим с сервисным коэффициентом 1

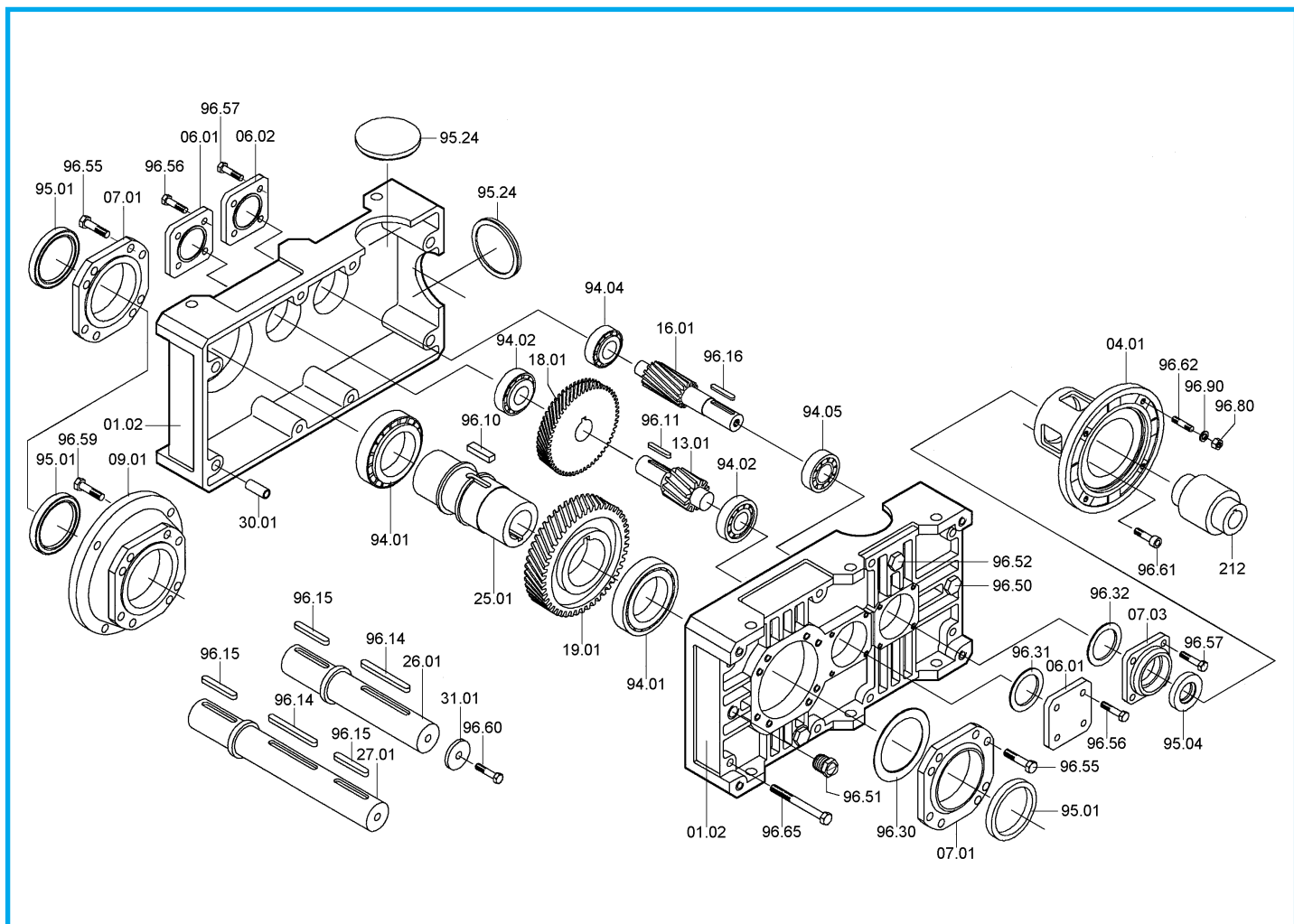
ZA..A



| ZA | Cuscinetti / Bearings / Подшипники | | | Anelli di tenuta / Oilseals / Сальники | |
|-------------|------------------------------------|------------------------------|-----------------------------|--|----------|
| | 94.01 | 94.02 | 94.03 | 95.01 | 95.05 |
| 71A | 32008 40/68/19 | 30302 15/42/14.25 | 32004 20/42/15 | 40/56/8 | 20/35/7 |
| 90A | 32010 50/80/20 | 30204 20/47/15.25 | 32005 25/47/15 | 50/65/8 | 25/47/7 |
| 112A | 32012 60/95/23 | 30305 25/62/18.25 | 32006 30/62/17.25 | 60/80/10 | 30/52/7 |
| 140A | 32015 75/115/25 | 32206 30/62/21.25 | 32008 40/68/19 | 75/95/10 | 40/56/8 |
| 180A | 32019 95/145/32 | 30307 35/80/22.75 | 32010 50/80/20 | 95/125/12 | 50/65/8 |
| 225A | 32026 130/200/45 | 31310 50/110/29.25 | 33113 65/110/34 | 130/160/14 | 65/80/10 |

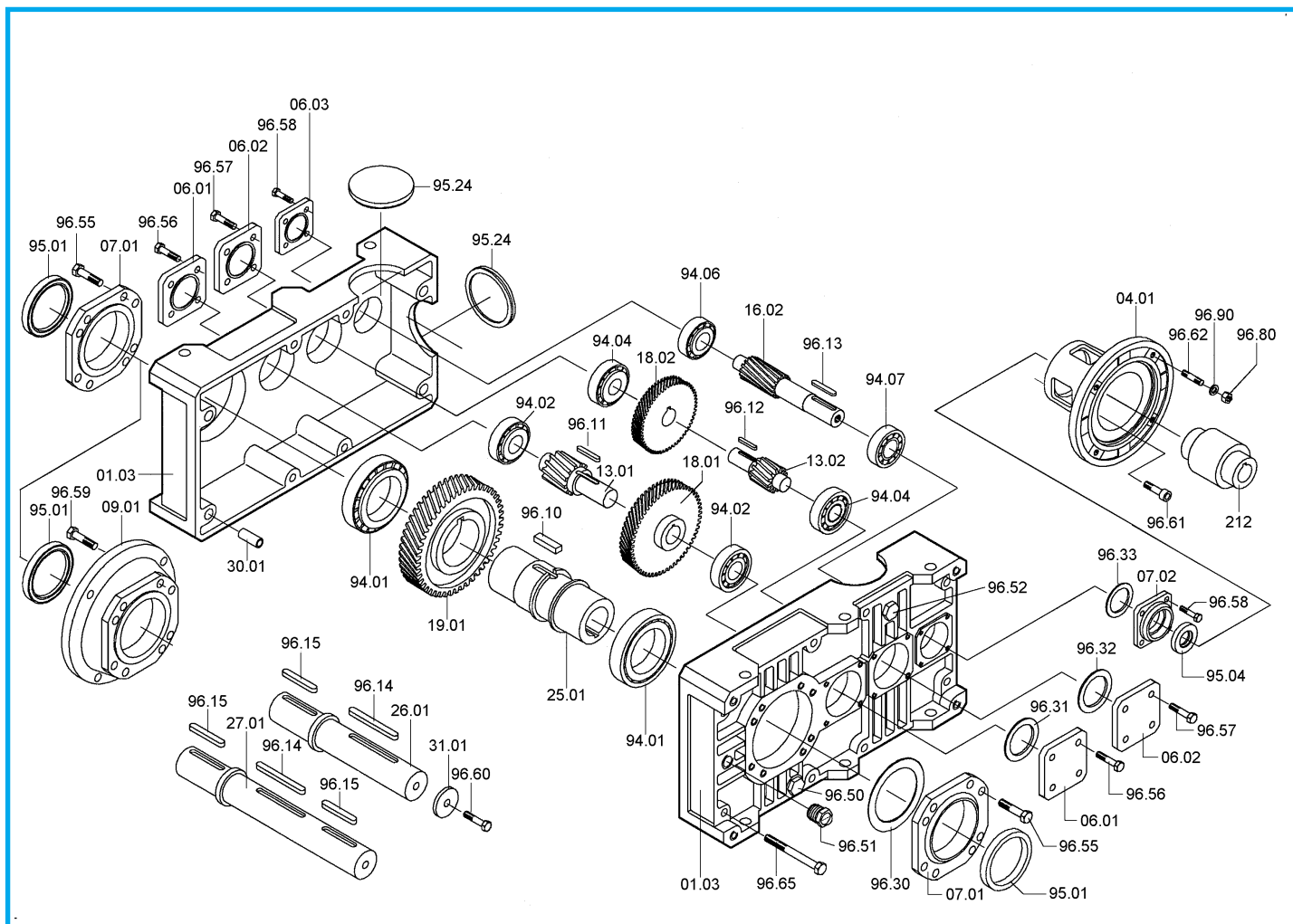


ZA..B - ZF..B

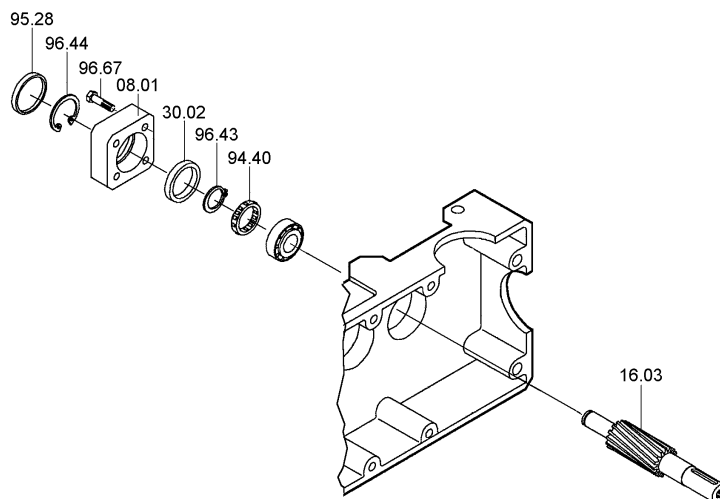


| ZA - ZF | Cuscinetti / Bearings / Подшипники | | | | Anelli tenuta / Oilseals / Сальники | |
|-------------|------------------------------------|------------------------------|-----------------------------|-----------------------------|-------------------------------------|---------|
| | 94.01 | 94.02 | 94.04 | 94.05 | 95.01 | 95.04 |
| 80B | 32010 50/80/20 | 30204 20/47/15.25 | 30302 15/42/14.25 | 32004 20/42/15 | 50/65/8 | 20/40/7 |
| 100B | 32012 60/95/23 | 30305 25/62/18.25 | 30204 20/47/15.25 | 32005 25/47/15 | 60/80/10 | 25/47/7 |
| 125B | 32015 75/115/25 | 32206 30/62/21.25 | 30305 25/62/18.25 | 30206 30/62/17.25 | 75/95/10 | 30/52/7 |
| 160B | 32019 95/145/32 | 32207 35/72/24.25 | 32206 30/62/21.25 | 32008 40/68/19 | 95/125/12 | 40/56/8 |
| 200B | 32026 130/200/45 | 31310 50/110/29.25 | 30307 35/80/22.75 | 32010 50/80/20 | 130/160/14 | 50/65/8 |

ZA..C - ZF..C



| ZA - ZF | Cuscinetti / Bearings / Подшипники | | | | | Oilseals / Сальники | |
|-------------|------------------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|---------|
| | 94.01 | 94.02 | 94.04 | 94.06 | 94.07 | 95.01 | 95.04 |
| 80C | 32010 50/80/20 | 30204 20/47/15.25 | 30302 15/42/14.25 | 6301 12/37/12 | 6302 15/42/13 | 50/65/8 | 15/35/7 |
| 100C | 32012 60/95/23 | 30305 25/62/18.25 | 30204 20/47/15.25 | 30302 15/42/14.25 | 32004 20/42/15 | 60/80/10 | 20/47/7 |
| 125C | 32015 75/115/25 | 32206 30/62/21.25 | 30305 25/62/18.25 | 30204 20/47/15.25 | 32005 25/47/15 | 75/95/10 | 25/47/7 |
| 160C | 32019 95/145/32 | 32207 35/72/24.25 | 32206 30/62/21.25 | 30305 25/62/18.25 | 30206 30/62/17.25 | 95/125/12 | 30/52/7 |
| 200C | 32026 130/200/45 | 31310 50/110/29.25 | 30307 35/80/22.75 | 32206 30/62/21.25 | 32008 40/68/19 | 130/160/14 | 40/56/8 |

**ZA..B - ZF..B - ZA..C - ZF..C**Dispositivo antiritorno - Backstop device - **Ограничитель обратного хода**

Ved bestilling af reservedele bedes De venligst opgive dele nummer, kode nummer (2), fremstillingsdato (1) og byggeform (3). Venligst afstem med den eksploderede tegning samt evt. typeskilt.

When you need to order a spare part, you must always specify the detail number (look at technical drawing), manufacture date (1), code number (2) and variable (3) (look at data plate).

При заказе запасных частей укажите номер детали (смотрите технический чертёж), дату изготовления (1), кодировый номер (2) и вариант изготовления (смотрите на данные ниже).

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|---------|---------------|----------|
| | | DATA 1 | DATE |
| CODICE N° 2 | CODE N° | | 3 |
| TRAMEC BOLOGNA ITALY | | | |

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|---------|---------------|----------|
| | | DATA 1 | DATE |
| CODICE N° 2 | CODE N° | | 3 |
| TRAMEC BOLOGNA ITALY | | | |

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|---------|---------------|----------|
| | | DATA 1 | DATE |
| CODICE N° 2 | CODE N° | | 3 |
| TRAMEC BOLOGNA ITALY | | | |



| 4.0 | RIDUTTORI PENDOLARI | SHAFT-MOUNTED GEARBOX | Редуктор с креплен. на валу | |
|------------|----------------------------|-------------------------------|------------------------------------|----|
| 4.1 | Caratteristiche | <i>Characteristics</i> | Характеристики | 32 |
| 4.2 | Designazione | <i>Designation</i> | Схемы редукторов | 32 |
| 4.3 | Dati tecnici | <i>Technical data</i> | Технические данные | 33 |
| 4.4 | Dimensioni | <i>Dimensions</i> | Размеры | 34 |
| 4.5 | Accessori | <i>Accessories</i> | Вспомогательные устройства | 35 |
| 4.6 | Lubrificazione | <i>Lubrication</i> | Смазка | 36 |
| 4.7 | Carichi radiali e assiali | <i>Radial and axial loads</i> | Радиальные и осевые нагрузки | 36 |
| 4.8 | Lista parti di ricambio | <i>Spare parts list</i> | Список запчастей | 37 |



4.1 Caratteristiche

- Costruiti in 6 grandezze ad una riduzione e in 6 grandezze a due riduzioni.
- Sono previsti due tipi di entrata: una con albero entrata sporgente e una con predisposizione attacco motore compatta per l'accoppiamento a motori elettrici flangiati IEC.
- Il corpo riduttore in ghisa meccanica abbondantemente nervato all'interno e all'esterno per garantire la rigidità possiede un'unica camera di lubrificazione garantisce una maggiore dissipazione termica e una migliore lubrificazione di tutti gli organi interni.
- Gli ingranaggi cilindrici, a dentatura elicoidale, sono costruiti in acciaio 16CrNi4 o 18NiCrMo5 UNI7846 cementati e temprati. Il primo stadio è rettificato.
- L'albero lento cavo di serie in acciaio costruito con fori di vari diametri, la possibilità di montare una flangia uscita sul fianco opposto all'albero entrata, l'ancoraggio tramite un tenditore o un braccetto di reazione e la predisposizione per il montaggio del dispositivo anti-ritorno esaltano le prestazioni di questi riduttori facilitandone l'installazione in molteplici applicazioni.

4.1 Characteristics

Built in 6 sizes with a single reducer and in 6 sizes with two reducer gearing.

Two input types are available : with projecting input shaft or standard to accept IEC flanged motors.

Gear unit body in engineering cast iron, ribbed internally and externally to guarantee rigidity and machined on all surfaces for easy positioning. The single lubrication chamber guarantees improved heat dissipation and better lubrication of all the internal components.

The helical spur gears are built in 16CrNi4 or 18NiCrMo5 UNI7846 quench-hardened steel, case-hardened and ground.

The standard hollow steel output shaft available with various hole diameters, as well as the option of mounting an output flange on the side opposite the input shaft, anchoring by means of a tensioner assembly or torque arm and the pre-engineered backstop coupling make these gear units extremely efficient while facilitating installation in multiple applications.

4.1 Характеристики

• Изготавливаются 6 размеров с единичной кратностью и 6 размеров с двойной кратностью.

• Возможны 2 типа соединения редуктора с приводом: с составным входным валом или стандартным для IEC фланцевых моторов.

• На картере редуктора, отлитого из чугуна, выполняют внутреннее или внешнее оребрение с целью повышения жесткости картера. Общая смазочная ванна гарантирует хорошие теплоотдачу и смазывание всех внутренних трущихся деталей редуктора.



• Косозубые и цилиндрические прямозубые шестерни изготовлены из закаленной стали (16CrNi4 или 18NiCrMo5 UNI7846).

• Стандартный полый стальной выходной вал (может быть выполнен с различными диаметрами отверстий), также как и выбор установки выходного фланца на противоположной стороне от входного вала, закрепленного при помощи натяжного агрегата или кронштейна крутящего момента и ограничителя обратного хода, облегчают установку и эксплуатацию редуктора.

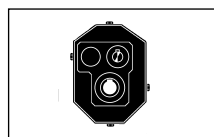
4.2 Designazione

4.2 Designation

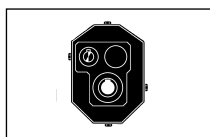
4.2 Схемы редукторов

| Macchina Machine Редуктор | Tipo di entrata Input type Входной тип | Grandezza Size Размер | Diametro albero lento Output shaft diameter Диаметр выходного вала | Rotismo Gearing Зубчатая передача | Rapporto di riduzione Ratio Кэффициент | Predisposizione attacco motore Motor mounting facility Установка мотора | Posizione di montaggio Mounting position Уст. позиция | Antirritorno Back-stop device Огр. заднего хода | |
|--|--|---|---|--|---|---|--|---|-----------|
| P | A | 100 | / | 45 | B | 10/1 | P.A.M. | VA | CW |
| Riduttore pendolare Shaft-mounted gearbox |  A  C | 80 100 125 160 200 | D2 (4.4) | A 1 rid. 1 red. 1 Stufen B 2 rid. 2 red. 2 Stufen | in = .../1 4 63 | 63 180 | P1 P2 P3 P4 VA VB | CW Rotaz. oraria clockwise rotation Вращ. по часовой стр. AW Rotaz. antior. anti-clockwise rotation Вращение против час. стрелки | |

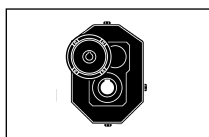
(solo/only/nur
PA..B)



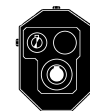
PA..A



PA..B



PC..B



| P | n ₁ = 1400 | | | PC | | | | PA | |
|-------------|-----------------------|-------|-----------------------|----------------------|----------|-----|-------------------------------|-----------------------|---------|
| | in | ir | n ₂ rpm | T ₂ Nm | P1 kW | FS' | IEC | T _{2M} Nm | P kW |
| 63A | 5 | 5.09 | 275 | | | | | 190 | 5.6 |
| | 6.3 | 6.10 | 230 | | | | | 180 | 4.5 |
| | 8 | 7.89 | 177 | | | | | 170 | 3.3 |
| 63B | 10 | 10.35 | 135 | 121 | 1.8 | 1.9 | | 230 | 3.4 |
| | 12.5 | 13.18 | 106 | 154 | 1.8 | 1.6 | | 240 | 2.8 |
| | 16 | 15.79 | 89 | 184 | 1.8 | 1.4 | | 250 | 2.4 |
| | 20 | 20.33 | 69 | 237 | 1.8 | 1.1 | 63 71 80 90 | 260 | 2.0 |
| | 25 | 25.88 | 54 | 252 | 1.5 | 1.1 | | 270 | 1.6 |
| | 31.5 | 31.01 | 45 | 221 | 1.1 | 1.3 | | 280 | 1.4 |
| | 40 | 40.10 | 35 | 195 | 0.75 | 1.4 | | 270 | 1.0 |
| 80A | 5 | 5.09 | 275 | | | | | 380 | 11.3 |
| | 6.3 | 6.10 | 230 | | | | | 360 | 8.9 |
| | 8 | 7.89 | 177 | | | | | 340 | 6.5 |
| 80B | 10 | 10.20 | 137 | 264 | 4 | 1.7 | | 460 | 7.0 |
| | 12.5 | 12.98 | 108 | 337 | 4 | 1.4 | | 480 | 5.7 |
| | 16 | 15.56 | 90 | 403 | 4 | 1.2 | | 500 | 5.0 |
| | 20 | 20.36 | 69 | 528 | 4 | 1.0 | 71 80 90 100 112 | 520 | 3.9 |
| | 25 | 24.40 | 57 | 474 | 3 | 1.1 | | 540 | 3.4 |
| | 31.5 | 31.05 | 45 | 443 | 2.2 | 1.3 | | 560 | 2.8 |
| | 40 | 37.21 | 38 | 434 | 1.8 | 1.2 | | 540 | 2.2 |
| | 50 | 48.12 | 29 | 468 | 1.5 | 1.1 | | 520 | 1.7 |
| | 63 | 62.23 | 22 | 444 | 1.1 | 1.1 | | 500 | 1.2 |
| 100A | 5 | 5.09 | 275 | | | | | 760 | 22.6 |
| | 6.3 | 6.10 | 230 | | | | | 720 | 17.8 |
| | 8 | 7.89 | 177 | | | | | 680 | 13.0 |
| 100B | 10 | 10.20 | 137 | 595 | 9 | 1.5 | | 920 | 13.9 |
| | 12.5 | 12.98 | 108 | 757 | 9 | 1.3 | | 960 | 11.4 |
| | 16 | 15.56 | 90 | 907 | 9 | 1.1 | | 1000 | 9.9 |
| | 20 | 20.36 | 69 | 990 | 7.5 | 1.1 | 80 90 100 112 132 | 1040 | 7.9 |
| | 25 | 24.40 | 57 | 870 | 5.5 | 1.2 | | 1080 | 6.8 |
| | 31.5 | 31.05 | 45 | 1107 | 5.5 | 1.0 | | 1120 | 5.6 |
| | 40 | 37.21 | 38 | 965 | 4 | 1.1 | | 1080 | 4.5 |
| | 50 | 48.12 | 29 | 936 | 3 | 1.1 | | 1040 | 3.3 |
| | 63 | 62.23 | 22 | 887 | 2.2 | 1.1 | | 1000 | 2.5 |

| P | n ₁ = 1400 | | | PC | | | | PA | |
|-------------|-----------------------|-------|-----------------------|----------------------|----------|-----|---|-----------------------|---------|
| | in | ir | n ₂ rpm | T ₂ Nm | P1 kW | FS' | IEC | T _{2M} Nm | P kW |
| 125A | 5 | 5.09 | 275 | | | | | 1520 | 45.1 |
| | 6.3 | 6.10 | 230 | | | | | 1440 | 35.7 |
| | 8 | 7.89 | 177 | | | | | 1360 | 26.1 |
| 125B | 10 | 10.20 | 137 | 1454 | 22 | 1.3 | | 1840 | 27.8 |
| | 12.5 | 12.98 | 108 | 1851 | 22 | 1.0 | | 1920 | 22.8 |
| | 16 | 15.56 | 90 | 1865 | 18.5 | 1.1 | | 2000 | 19.8 |
| | 20 | 20.36 | 69 | 1979 | 15 | 1.1 | 80 90 100 112 132 160 180 | 2080 | 15.8 |
| | 25 | 24.40 | 57 | 1739 | 11 | 1.2 | | 2160 | 13.7 |
| | 31.5 | 31.05 | 45 | 2214 | 11 | 1.0 | | 2240 | 11.1 |
| | 40 | 37.21 | 38 | 1809 | 7.5 | 1.2 | | 2160 | 9.0 |
| | 50 | 48.12 | 29 | 1715 | 5.5 | 1.2 | | 2080 | 6.7 |
| | 63 | 62.23 | 22 | 1613 | 4 | 1.2 | | 2000 | 5.0 |
| 160A | 5 | 5.09 | 275 | | | | | 3040 | 90.2 |
| | 6.3 | 6.10 | 230 | | | | | 2880 | 71.4 |
| | 8 | 7.89 | 177 | | | | | 2720 | 52.1 |
| 160B | 10 | 10.20 | 137 | | | | | 3680 | 55.7 |
| | 12.5 | 12.98 | 108 | | | | | 3840 | 45.6 |
| | 16 | 15.56 | 90 | | | | | 4000 | 39.7 |
| | 20 | 20.36 | 69 | | | | | 4160 | 31.5 |
| | 25 | 24.40 | 57 | | | | | 4320 | 27.3 |
| | 31.5 | 31.05 | 45 | | | | | 4480 | 22.3 |
| | 40 | 37.21 | 38 | | | | | 4320 | 17.9 |
| | 50 | 48.12 | 29 | | | | | 4160 | 13.3 |
| | 63 | 62.23 | 22 | | | | | 4000 | 9.9 |
| 200A | 4 | 3.92 | 357 | | | | | 6400 | 247 |
| | 5 | 4.82 | 291 | | | | | 6080 | 191 |
| | 6.3 | 5.90 | 237 | | | | | 5760 | 148 |
| 200B | 8 | 8.33 | 168 | | | | | 7040 | 130.4 |
| | 10 | 10.00 | 140 | | | | | 7360 | 113.5 |
| | 12.5 | 12.29 | 114 | | | | | 7680 | 96.5 |
| | 16 | 16.63 | 84 | | | | | 8000 | 74.2 |
| | 20 | 19.97 | 70 | | | | | 8320 | 64.3 |
| | 25 | 24.53 | 57 | | | | | 8640 | 54.4 |
| | 31.5 | 30.04 | 47 | | | | | 8960 | 46.0 |



4.4 Dimensioni

4.4 Dimensions

4.4 Размеры

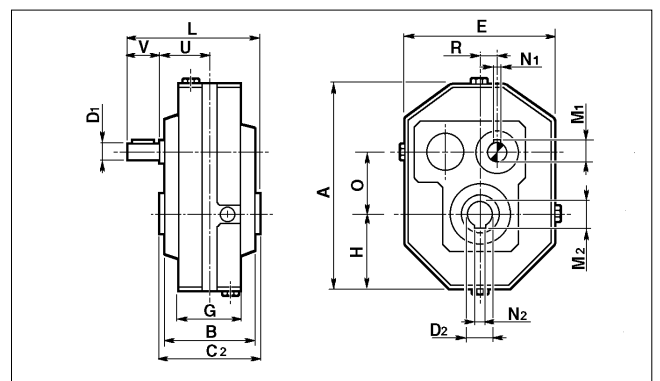
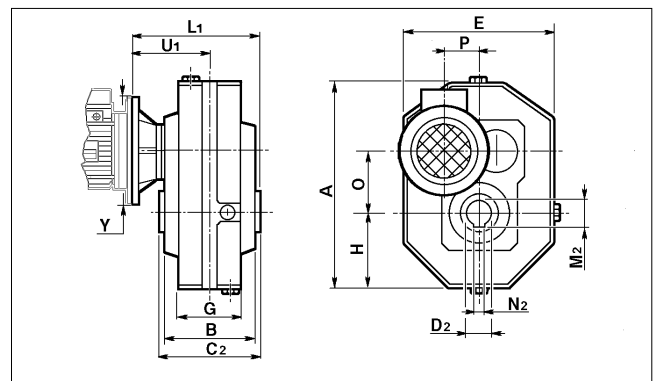
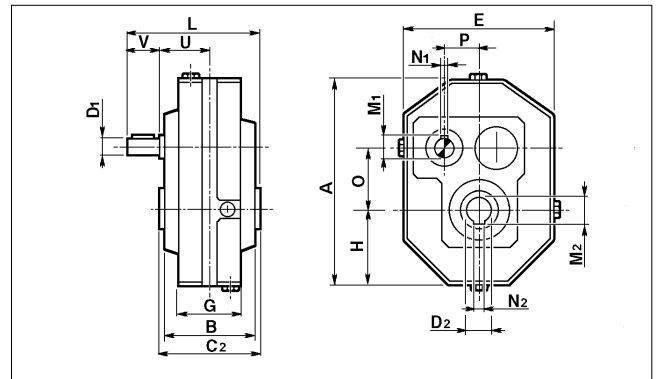
| PA...A - PA...B - PC...B | | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|-------|------|-------|------|-------|------|-------|
| | 63 | | 80 | | 100 | | 125 | | 160 | | 200 | | |
| A | 194 | | 266 | | 331 | | 405 | | 510 | | 650 | | |
| B | 97 | | 120 | | 143 | | 164 | | 196 | | 270 | | |
| C2 | 101 | | 130 | | 155 | | 180 | | 220 | | 300 | | |
| D2 | 25 | 28 | 30 | 30 | 35 | 38 | 40 | 45 | 50 | 55 | 60 | 70 | 100 |
| M2 | 28.3 | 31.3 | 33.3 | 33.3 | 38.3 | 41.3 | 43.3 | 48.8 | 54.3 | 59.3 | 64.4 | 74.9 | 106.4 |
| N2 | 8 | 8 | 8 | 8 | 10 | 10 | 12 | 14 | 14 | 16 | 18 | 20 | 28 |
| E | 140 | | 196 | | 242 | | 293 | | 367 | | 460 | | |
| G | 68 | | 82 | | 100 | | 118 | | 146 | | 200 | | |
| H | 70 | | 98 | | 121 | | 146.5 | | 183.5 | | 230 | | |
| O | 61.5 | | 79.5 | | 99.5 | | 123.5 | | 157 | | 197 | | |
| P | 30.3 | | 43.9 | | 59.6 | | 72.4 | | 85.9 | | 109.5 | | |
| R | 17.7 | | 20.1 | | 22.4 | | 29.6 | | 41.9 | | 53 | | |

| PA...A | | | | | | |
|--------|------|-----|------|-----|------|-----|
| D1 | 19 | 24 | 28 | 38 | 48 | 60 |
| M1 | 21.5 | 27 | 31 | 41 | 51.5 | 64 |
| N1 | 6 | 8 | 8 | 10 | 14 | 18 |
| V | 40 | 50 | 60 | 70 | 80 | 110 |
| L | 148 | 180 | 215 | 250 | 300 | 412 |
| U | 57.5 | 65 | 77.5 | 90 | 110 | 152 |
| Kg | 10 | 16 | 28 | 52 | 108 | 234 |

| PA...B | | | | | | |
|--------|------|------|------|-----|-----|------|
| D1 | 14 | 19 | 24 | 28 | 38 | 48 |
| M1 | 16 | 21.5 | 27 | 31 | 41 | 51.5 |
| N1 | 5 | 6 | 8 | 8 | 10 | 14 |
| V | 30 | 40 | 50 | 60 | 80 | 80 |
| L | 138 | 170 | 205 | 240 | 300 | 380 |
| U | 57.5 | 65 | 77.5 | 90 | 110 | 150 |
| Kg | 12 | 18 | 34 | 58 | 120 | 258 |

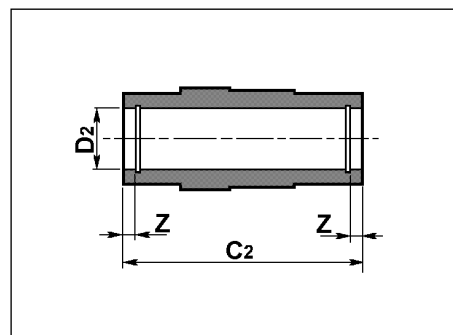
| PC...B | | | | | | |
|--------|------|------|-------|-----|-------|---------|
| | 63 | | | 80 | | |
| IEC | 63 | 71 | 80/90 | 71 | 80/90 | 100/112 |
| Y | 140 | 160 | 200 | 160 | 200 | 250 |
| L1 | 131 | 148 | 168 | 173 | 193 | 203 |
| U1 | 80.5 | 97.5 | 117.5 | 108 | 128 | 138 |

| PC...B | | | | | | | | | | |
|--------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|
| | 100 | | | 125 | | | | | | |
| IEC | 80/90 | 100 | 112 | 132 | 80 | 100 | 112 | 132 | 160 | 180 |
| Y | 200 | 250 | 300 | 200 | 250 | 300 | 300 | 350 | 350 | 350 |
| L1 | 221 | 231 | 253 | 236 | 246 | 268 | 268 | 298 | 298 | 298 |
| U1 | 143.5 | 153.5 | 175.5 | 146 | 156 | 178 | 178 | 208 | 208 | 208 |

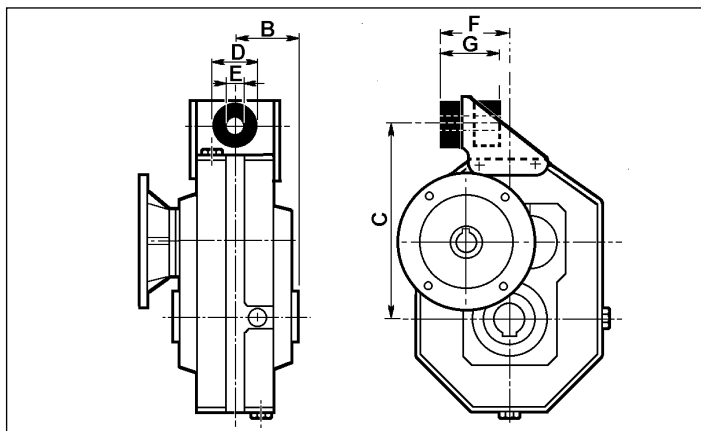


Albero lento cavo / Hollow output shaft / Полный выходной вал

| PA...A - PA...B - PC...B | | | | | | | | | | | | | | | | | | |
|--------------------------|-----|-----|-----|-----|-----|-----|------|------|----|-----|------|------|-----|--|--|-----|--|--|
| | 63 | | | 80 | | | 100 | | | 125 | | | 160 | | | 200 | | |
| C2 | 101 | | | 130 | | | 155 | | | 180 | | | 220 | | | 300 | | |
| D2 | 25 | 28 | 30 | 30 | 35 | 38 | 40 | 45 | 50 | 55 | 60 | 70 | 100 | | | | | |
| Z | 7.3 | 7.3 | 7.3 | 8.5 | 8.5 | 8.5 | 10.8 | 10.8 | 12 | 12 | 15.5 | 15.5 | 20 | | | | | |

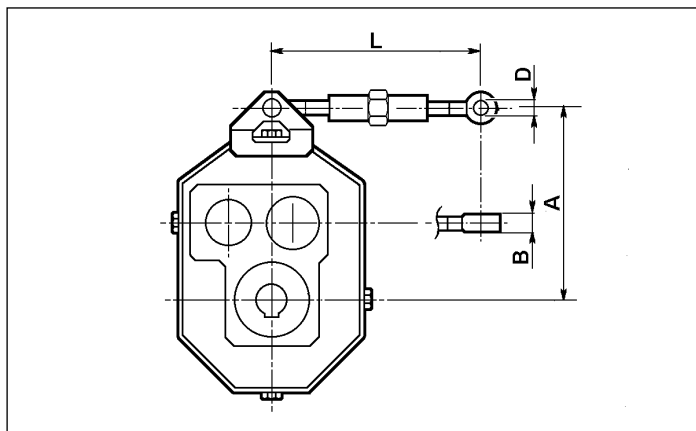


Braccio di reazione
Torque arm
Кронштейн крутящего момента



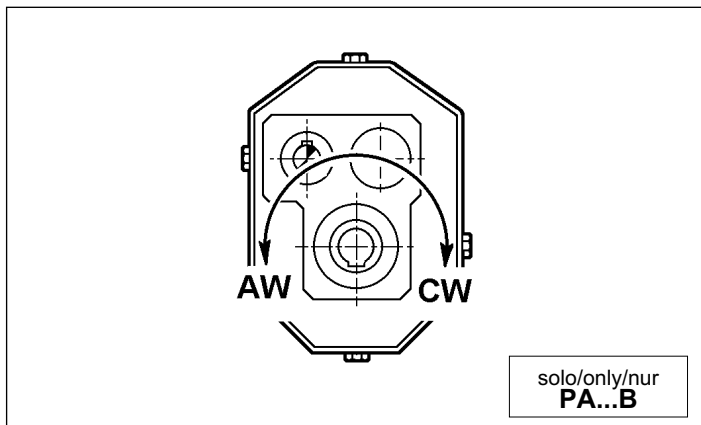
| | PC...B | | | |
|----------|--------|------|------|-----|
| | 63 | 80 | 100 | 125 |
| B | 50.5 | 65 | 77.5 | 90 |
| C | 150 | 200 | 250 | 308 |
| D | 40 | 40 | 60 | 60 |
| E | 12.5 | 12.5 | 21 | 21 |
| F | 64.5 | 78 | 101 | 116 |
| G | 53 | 55 | 85 | 86 |

Tenditore
Tensioner assembly
Натяжное устройство



| | PA..A - PA..B | | | | | |
|--------------|---------------|-----|-------|-----|-----|-----|
| | 63 | 80 | 100 | 125 | 160 | 200 |
| A | 151 | 199 | 244.5 | 314 | 393 | 477 |
| B | 8 | 10 | 12 | 14 | 16 | 22 |
| D | 8 | 10 | 12 | 14 | 16 | 18 |
| Lmax. | 264 | 264 | 266 | 270 | 272 | 300 |
| Lmin. | 206 | 204 | 218 | 214 | 222 | 240 |

Dispositivo antiritorno
Backstop device
Ограничитель обратного хода



CW Rotazione oraria
Clockwise rotation
вращение по час стрелки

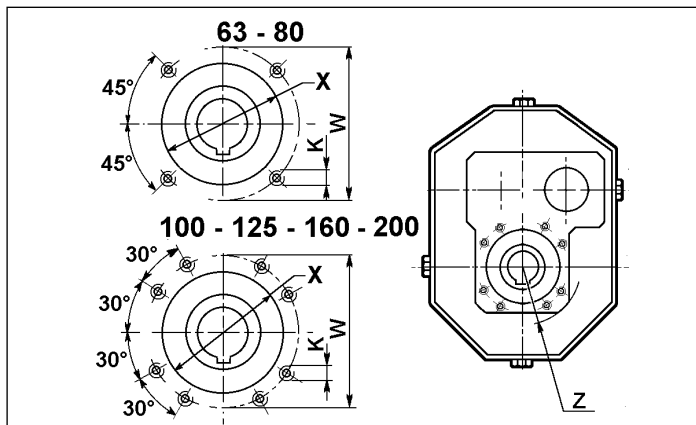
AW Rotazione antioraria
Anti-clockwise rotation
вращ. против час. стрелки

A richiesta è possibile fornire il riduttore con dispositivo antiritorno, questo permette la rotazione dell'albero lento solo nel senso desiderato.
COMUNICARE IL SENSO DI ROTAZIONE DESIDERATO.

Upon request the gearbox can be equipped with a backstop device which permits the rotation of the output shaft only in the required direction.
THE DIRECTION OF ROTATION SHOULD BE INDICATED WHEN ORDERING.

По желанию заказчика редуктор может быть снабжен ограничителем заднего хода с вращением выходного вала только в заданном заказчиком направлении.

Predisposizione per flangia uscita
Pre-engineered coupling for output flange
Соединение для выходного фланца



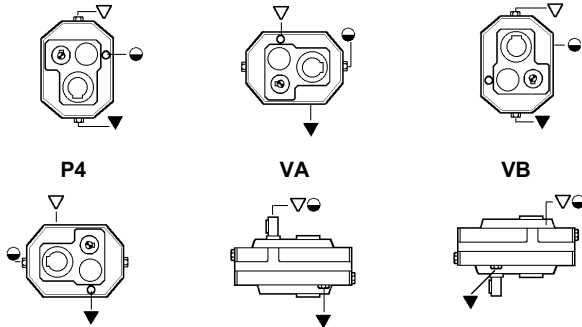
| | PA...A - PA...B - PC...B | | | | | |
|----------|--------------------------|----------|---------|----------|----------|----------|
| | 63 | 80 | 100 | 125 | 160 | 200 |
| K | M6 x 12 | M10 x 15 | M8 x 12 | M10 x 15 | M12 x 20 | M14 x 25 |
| W | 80 | 105 | 122 | 145 | 186 | 260 |
| Z | 100 | 129 | 145 | 180 | 220 | 300 |
| X | 62 x 2 | 80 x 2 | 100 x 2 | 120 x 2 | 135 x 2 | 160 x 3 |



4.6 Lubrificazione

I riduttori pendolari sono forniti predisposti per lubrificazione a olio e muniti dei tappi di carico, livello e scarico olio. Si raccomanda di precisare sempre la posizione di montaggio desiderata in fase di ordine.

Posizione di montaggio e quantità di lubrificante (litri)



4.6 Lubrication

The shaft mounted gearboxes are supplied with standard oil lubrication, and come equipped with filling plugs, level indicators and oil discharge. It is extremely important that desired mounting position be specified in your order.

Mounting positions and lubricant quantity (litres)

4.6 Смазка

Редукторы поставляются без смазки. Редукторы имеют пробки заливного отверстия и соответствующие пробки сливного отверстия. Все эти элементы должны быть указаны в заказе.

Количество смазки (литры)

| | P | | | | | |
|----|------------|------------|--------------|--------------|--------------|--------------|
| | 63A 63B | 80A 80B | 100A 100B | 125A 125B | 160A 160B | 200A 200B |
| P1 | 0.55 | 1.1 | 2.2 | 4.4 | 8.8 | 17.6 |
| P2 | 0.45 | 0.9 | 1.8 | 3.6 | 7.2 | 14.4 |
| P3 | 0.55 | 1.1 | 2.2 | 4.4 | 8.8 | 17.6 |
| P4 | 0.45 | 0.9 | 1.8 | 3.6 | 7.2 | 14.4 |
| VA | 0.7 | 1.4 | 2.8 | 5.6 | 11.2 | 22.4 |
| VB | 0.7 | 1.4 | 2.8 | 5.6 | 11.2 | 22.4 |

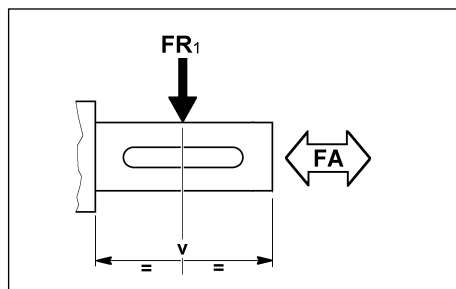
4.7 Carichi radiali e assiali (N)

Le trasmissioni effettuate tramite pignoni per catena, ruote dentate o pulegge generano delle forze radiali (F_R) sugli alberi dei riduttori. L'entità di tali forze può essere calcolata con la formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

dove:
 T = Momento torcente (Nm)
 d = Diametro pignone o puleggia (mm)
 K_R = 2000 per pignone per catena
 = 2500 per ruote dentate
 = 3000 per puleggia con cinghie a V

I valori dei carichi radiali e assiali generati dall'applicazione debbono essere sempre minori o uguali a quelli ammissibili indicati nelle tabelle.



I carichi radiali indicati nelle tabelle si intendono applicati a metà della sporgenza dell'albero e sono riferiti ai riduttori operanti con fattore di servizio 1.

The radial loads indicated in the chart are considered to be applied to the half-way point of the projection (a) of the shaft, and refer to gear units operating with service factor 1.

Радиальные нагрузки, отраженные в таблице, рассчитаны на то, что сила будет приложена в средней точке проекции вала и относятся к редукторам, работающим с сервисным коэффициентом 1

4.7 Radial and axial loads (N)

Transmissions implemented by means of chain pinions, gears or pulleys generate radial forces (F_R) on the gear unit shafts. The entity of these forces may be calculated using this formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

where:
 T = torque (Nm)
 d = pinion or pulley diameter (mm)
 K_R = 2000 for chain pinion
 = 2500 for gears
 = 3000 for V-belt pulleys

The value of the radial and axial loads generated by the application must always be less than or equal to admissible values as indicated in the chart.

4.7 Радиальные и осевые нагрузки

Передачи, осуществляемые с помощью цепных зубчатых колес, шестеренок и блоков шкивов создают радиальную силу на валах редуктора. Значение этой силы можно рассчитать при помощи следующей формулы:

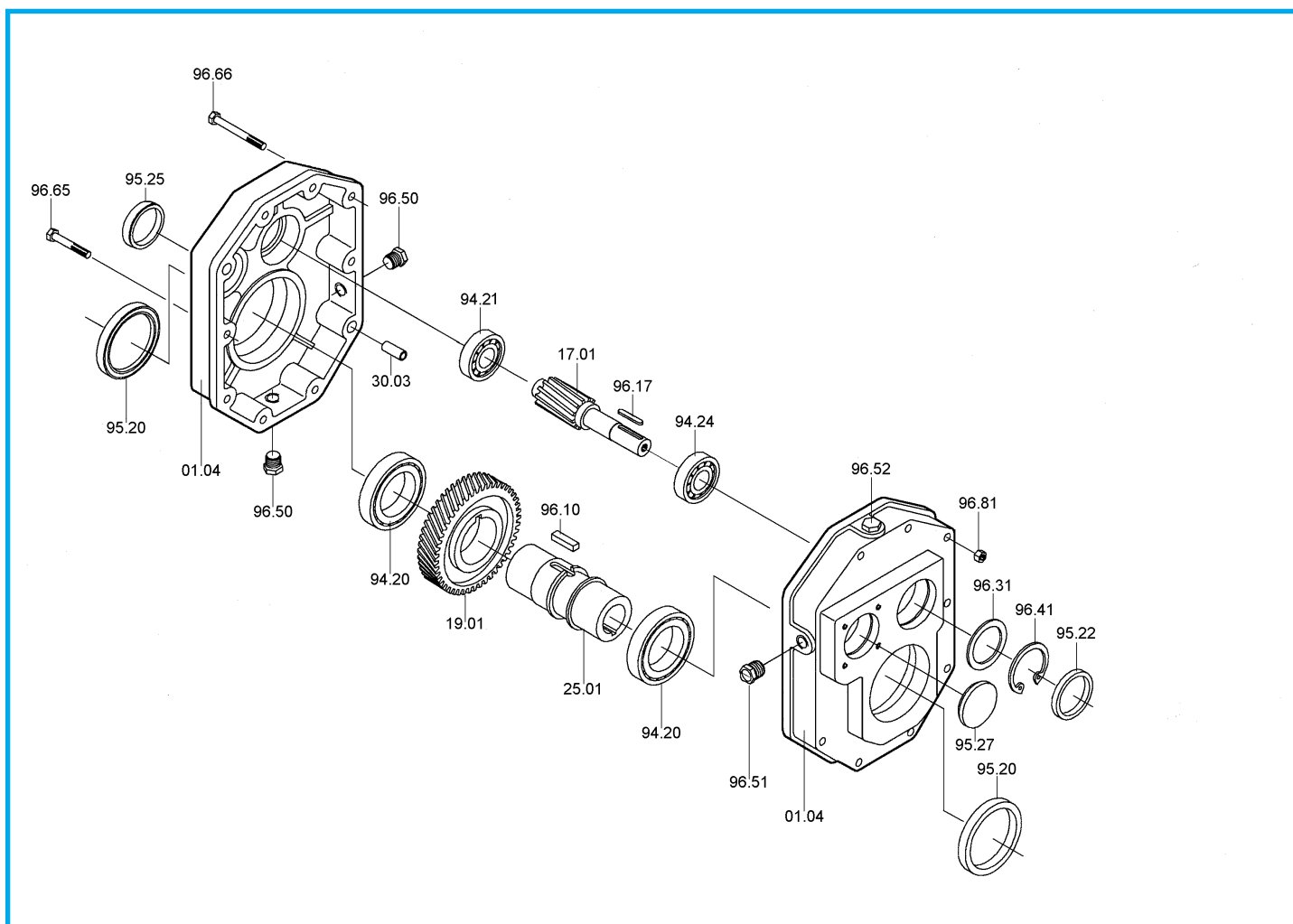
$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

где:
 T = крутящий момент
 d = диаметр ведущего зубчатого колеса или шкива
 K_R = 2000 для цепной передачи,
 = 2500 для шестеренок
 = 3000 для ременной передачи (V-образный ремень)

Значения радиальных и осевых сил при работе редуктора не должны превышать допустимых значений, данных в таблице.

| | P | | | | | | | | | | | | | |
|--|----------|------------|-------------|--------------|--------------|--------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | 63B | 63A 80B | 80A 100B | 100A 125B | 125A 160B | 160A 200B | 200A | | | | | | | |
| ALBERO VELOCE / INPUT SHAFT / Входной вал | | | | | | | | | | | | | | |
| n_1 rpm | F_{r1} | F_{a1} | F_{r1} | F_{a1} | F_{r1} | F_{a1} | F_{r1} | F_{a1} | F_{r1} | F_{a1} | F_{r1} | F_{a1} | F_{r1} | F_{a1} |
| 1400 | 500 | 100 | 800 | 160 | 1250 | 250 | 2000 | 400 | 3150 | 630 | 5000 | 1000 | 8000 | 1600 |
| 900 | 580 | 120 | 920 | 180 | 1450 | 290 | 2300 | 460 | 3650 | 730 | 5750 | 1150 | 9100 | 1820 |
| 700 | 630 | 130 | 1000 | 200 | 1600 | 320 | 2500 | 500 | 4000 | 800 | 6300 | 1260 | 10000 | 2000 |
| 500 | 710 | 140 | 1120 | 220 | 1800 | 360 | 2800 | 560 | 4500 | 900 | 7100 | 1420 | 11200 | 2240 |
| 300 | 820 | 160 | 1320 | 260 | 2100 | 420 | 3300 | 660 | 5200 | 1040 | 8250 | 1650 | 13200 | 2640 |

PA..A



| PA | Cuscinetti / Bearings / Подшипники | | | Anelli di tenuta / Oilseals / Сальники | |
|-------------|------------------------------------|--------------------------|--------------------------|--|-----------|
| | 94.20 | 94.21 | 94.24 | 95.20 | 95.22 |
| 63A | 6008 40/68/15 | 6302 15/42/13 | 6004 20/42/12 | 40/62/7 | 20/35/7 |
| 80A | 6210 50/90/20 | 6304 20/52/15 | 6205 25/52/15 | 50/80/10 | 25/52/7 |
| 100A | 6212 60/110/22 | 6305 25/62/17 | 6206 30/62/16 | 60/100/13 | 30/62/7 |
| 125A | 6215 75/130/25 | 6306 30/72/19 | 6208 40/80/18 | 75/120/12 | 40/80/10 |
| 160A | 6219 95/170/32 | 6307 35/80/21 | 6210 50/90/20 | 95/136/13 | 50/90/10 |
| 200A | 6226 130/230/40 | 6310 50/110/27 | 6213 65/120/23 | 130/160/14 | 65/120/13 |

In fase di ordine delle parti di ricambio, specificare sempre n° particolare (vedi disegno esplosivo), data (1), n° codice (2) e n° variante (3) (vedi targhetta).

When you need to order a spare part, you must always specify the detail number (look at technical drawing), manufacture date (1), code number (2) and variable (3) (look at data plate).

При заказе запасных частей укажите номер детали (смотрите технический чертёж), дату изготовления (1), кодировый номер (2) и вариант изготовления (смотрите на данные ниже).

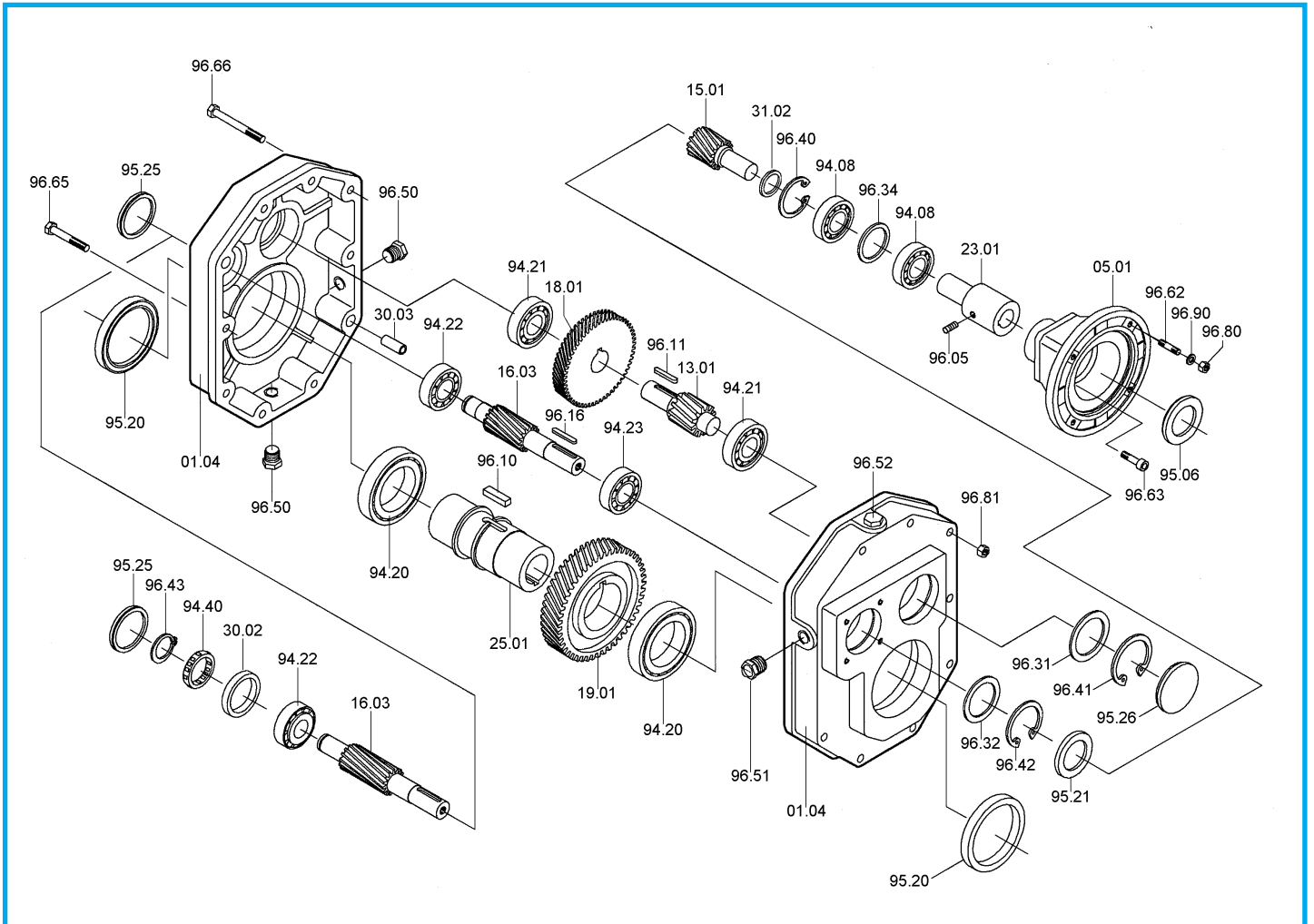
| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|------|-----------|--------|
| | | DATA | 1 DATE |
| CODICE N° | 2 | CODICE N° | 3 |
| TRAMEC BOLOGNA ITALY | | | |

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|------|-----------|--------|
| | | DATA | 1 DATE |
| CODICE N° | 2 | CODICE N° | 3 |
| TRAMEC BOLOGNA ITALY | | | |

| TIPO | TYPE | RAP. | RATIO |
|-----------------------------|------|-----------|--------|
| | | DATA | 1 DATE |
| CODICE N° | 2 | CODICE N° | 3 |
| TRAMEC BOLOGNA ITALY | | | |



PA..B - PC..B



| PA - PC | Cuscinetti / Bearings / Подшипники | | | | | Anelli di tenuta / Oilseals / Сальники | | | |
|-------------|------------------------------------|--------------------------|-------------------------|-------------------------|-------------------------|--|-----|----------|----------|
| | PA - PC | | PA | | PC | PA - PC | PC | | PA |
| | 94.20 | 94.21 | 94.22 | 94.23 | 94.08 | 95.20 | IEC | 95.06 | 95.21 |
| 63B | 6008 40/68/15 | 6302 15/45/13 | 6301 12/37/12 | 6302 15/42/13 | 7203 17/40/12 | 40/62/7 | 63 | 25/52/7 | 15/35/7 |
| | | | | | | | 71 | 30/52/7 | |
| | | | | | | | 80 | 35/52/7 | |
| | | | | | | | 90 | 37/52/7 | |
| 80B | 6210 50/90/20 | 6304 20/52/15 | 6302 15/42/13 | 6204 20/47/14 | 7205 25/52/15 | 50/80/10 | 71 | 35/62/7 | 20/47/7 |
| | | | | | | | 80 | 35/62/7 | |
| | | | | | | | 90 | 40/62/8 | |
| | | | | | | | 100 | 45/62/8 | |
| 100B | 6212 60/110/22 | 6305 25/62/17 | 6304 20/52/15 | 6205 25/52/15 | 7206 30/62/16 | 60/100/13 | 112 | 45/62/8 | 25/52/7 |
| | | | | | | | 80 | 40/72/10 | |
| | | | | | | | 90 | 40/72/10 | |
| | | | | | | | 100 | 45/72/8 | |
| 125B | 6215 75/130/25 | 6306 30/72/19 | 6305 25/62/17 | 6206 30/62/16 | 7207 35/72/17 | 75/120/12 | 132 | 55/72/10 | 30/62/7 |
| | | | | | | | 80 | 45/80/10 | |
| | | | | | | | 90 | 45/80/10 | |
| | | | | | | | 100 | 45/80/10 | |
| | | | | | | | 112 | 45/80/10 | |
| | | | | | | | 132 | 55/80/10 | |
| 160B | 6219 95/170/32 | 6307 35/80/21 | 6306 30/72/19 | 6208 40/80/18 | | 95/136/13 | | | 40/80/10 |
| | | | | | | | | | |
| 200B | 6226 130/230/40 | 6310 50/110/27 | 6307 35/80/21 | 6210 50/90/20 | | 130/160/14 | | | 50/90/10 |

| 5.0 | RINVII ANGOLARI | RIGHT ANGLE GEARBOX | Высокоточ. план. редукторы | |
|------------|---------------------------|------------------------------------|-----------------------------------|----|
| 5.1 | Caratteristiche | <i>Characteristics</i> | Характеристики | 40 |
| 5.2 | Designazione | <i>Designation</i> | Схемы редукторов | 40 |
| 5.3 | Dati tecnici | <i>Technical data</i> | Технические данные | 41 |
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| 5.5 | Dimensioni | <i>Dimensions</i> | Размеры | 42 |
| 5.6 | Accessori | <i>Accessories</i> | Вспомогательные устройства | 44 |
| 5.7 | Lubrificazione | <i>Lubrication</i> | Смазка | 44 |
| 5.8 | Carichi radiali e assiali | <i>Radial and axial loads</i> | Радиальные и осевые нагрузки | 44 |
| 5.9 | Lista parti di ricambio | <i>Spare parts list</i> | Список запчастей | 45 |



5.1 Caratteristiche

- Costruiti in 5 grandezze con tre tipi di albero uscita: cavo, sporgente, bisporgente. E' possibile inoltre disporre di un ulteriore albero di uscita opposto a quello di entrata.
- Sono previsti tre tipi di entrata: con albero sporgente, con predisposizione attacco motore (campana e giunto) e predisposizione attacco motore COMPATTA
- Il corpo riduttore in ghisa meccanica abbondantemente nervato all'interno e all'esterno per garantire la rigidità, è lavorato su tutti i piani per consentire un facile posizionamento; inoltre un'unica camera di lubrificazione garantisce una maggiore dissipazione termica e una migliore lubrificazione di tutti gli organi interni.
- Il cinematismo di questi rinvii è costituito da una coppia di ingranaggi conici a dentatura spiroidale GLEASON con profilo accuratamente rodato, in acciaio 16CrNi4 o 18NiCrMo5 UNI7846.
- L'utilizzo di cuscinetti a rulli conici di qualità su tutti gli assi (ad eccezione del manicotto in entrata nella predisposizione attacco motore compatta, il quale è sostituito da cuscinetti obliqui a sfere) consente al riduttore di ottenere delle durate molto elevate e di sopportare dei carichi radiali e assiali esterni molto elevati.

5.1 Characteristics

Built in five sizes with three types of output shaft : hollow, projecting or double-extended. A second output shaft can be installed opposite the input shaft.

Three input types are available : with projecting input shaft, with pre-engineered motor coupling (bell and joint) and pre-engineered COMPACT motor coupling.

Gear unit body in engineering cast iron, ribbed internally and externally to guarantee rigidity and machined on all surfaces for easy positioning. The single lubrication chamber guarantees improved heat dissipation and better lubrication of all the internal components.

The mechanism of these gearboxes consists of two GLEASON helical gear-tooth bevel gears with precision ground profile, in 16CrNi4 or 18NiCrMo5 UNI7846 case-hardened and quenched-tempered steel.

The use of high-quality taper bearings on all shafts (except for the input sleeve on the pre-engineered compact motor coupling, which is supported by angular ball bearings) ensures extremely long gear unit life, even under very high radial and axial loads.










5.1 Характеристики

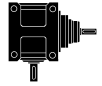
- Изготавливаются 5 размеров с тремя типами выходного вала: полым, составным или с двойной растяжкой. Второй выходной вал может быть установлен напротив входного вала.
- Возможны 3 типа соединения редуктора с приводом: с составным входным валом, с конусной или шарнирной муфтой мотора и компактной муфтой мотора.
- На картере редуктора, отлитого из чугуна, выполнено внутреннее или внешнее оребрение с целью повышения жесткости картера. Общая смазочная ванна гарантирует хорошие теплоотдачу и смазывание всех внутренних трущихся деталей редуктора.
- Механизм этих редукторов состоит из двух геликоидальных зубчатых колес с точным сечением, выполненных из закаленной стали 16CrNi4 или 18NiCrMo5 UNI7846.
- Использование высококачественных конусных роликовых подшипников на всех валах (за исключением входного полого вала на компактной муфте мотора, которая крепится угловыми шариковыми подшипниками) обеспечивает долговечную работу редуктора, даже при очень высоких радиальных и осевых нагрузках.

5.2 Designazione

5.2 Designation

5.2 Схемы редуктора

| Machine Machine редуктор | Itipo entrata Input type Входной тип | Grandezza Size Размер | Tipo uscita Output type Выходной тип | Rapporto rid. Ratio Коэффициент | Predisposizione attacco motore Motor mounting facility Установкамотора | Rotazione alberi Shafts rotation Вращение валов | Posizione di montaggio Mounting position Устан. позиция | Flangia uscita Output flange Вых. фланец | Entrata Additional input Доп. вход |
|---|--|---|---|---------------------------------------|--|--|--|--|--|
| R | A | 28 | S | 10/1 | P.A.M. | B | B3 | FLD | s.e. A |
| Rinvii angolari Right angle gearbox Высокот. планетарн. редуктор |  A  C  F | 19 24 28 38 48 | S Albero sporgente <i>Projecting shaft</i> Hervorstehende Welle B Albero bisporgente <i>Double extended shaft</i> Zweite wellenende C Albero cavo <i>Hollow shaft</i> Hohlwelle | in = .../1 1 10 | 63 200 | A B C D E F G H I L | B3 B6 B7 B8 VA VB |  FLS  FLD  FL2 |  A  C  F |



5.3 Dati tecnici

5.3 Technical data

5.3 Технические данные

| R | n ₁ = 1400 | | | RC - RF | | | RA | |
|----|-----------------------|------|-----------------------|----------------------|------|-----|-----------------------|------|
| | in | ir | n ₂ rpm | T ₂ Nm | P1 | FS' | T _{2M} Nm | P |
| 19 | 1 | 1 | 1400 | 12 | 1.8 | 3 | 35 | 5.5 |
| | 2.5 | 2.56 | 546 | 30 | 1.8 | 1.6 | 50 | 3 |
| | 5 | 4.90 | 285 | 48 | 1.5 | 1 | 48 | 1.5 |
| | 10 | 9.85 | 142 | 48 | 0.75 | 1 | 48 | 0.75 |
| 24 | 1 | 1 | 1400 | 26 | 4 | 2.7 | 70 | 11 |
| | 2.5 | 2.56 | 546 | 66 | 4 | 1.4 | 91 | 5.5 |
| | 5 | 4.90 | 285 | 95 | 3 | 1 | 95 | 3 |
| | 10 | 9.85 | 142 | 95 | 1.5 | 1 | 95 | 1.5 |
| 28 | 1 | 1 | 1400 | 58 | 9 | 2.4 | 142 | 22 |
| | 2.5 | 2.56 | 546 | 149 | 9 | 1.2 | 182 | 11 |
| | 5 | 4.90 | 285 | 175 | 5.5 | 1 | 175 | 5.5 |
| | 10 | 9.85 | 142 | 191 | 3 | 1 | 191 | 3 |

| R | n ₁ = 1400 | | | RC - RF | | | RA | |
|----|-----------------------|------|-----------------------|----------------------|----------|-----|-----------------------|---------|
| | in | ir | n ₂ rpm | T ₂ Nm | P1 kW | FS' | T _{2M} Nm | P kW |
| 38 | 1 | 1 | 1400 | 142 | 22 | 2 | 291 | 45 |
| | 2.5 | 2.56 | 546 | 365 | 22 | 1 | 365 | 22 |
| | 5 | 4.90 | 285 | 350 | 11 | 1 | 350 | 11 |
| | 10 | 9.85 | 142 | 350 | 5.5 | 1 | 350 | 5.5 |
| 48 | 1 | 1 | 1400 | 194 | 30* | 3 | 583 | 90 |
| | 2.5 | 2.56 | 546 | 498 | 30* | 1.5 | 748 | 45 |
| | 5 | 4.90 | 285 | 700 | 22* | 1 | 700 | 22 |
| | 10 | 9.85 | 142 | 700 | 11* | 1 | 700 | 11 |

* Solo / Only / Nur RF

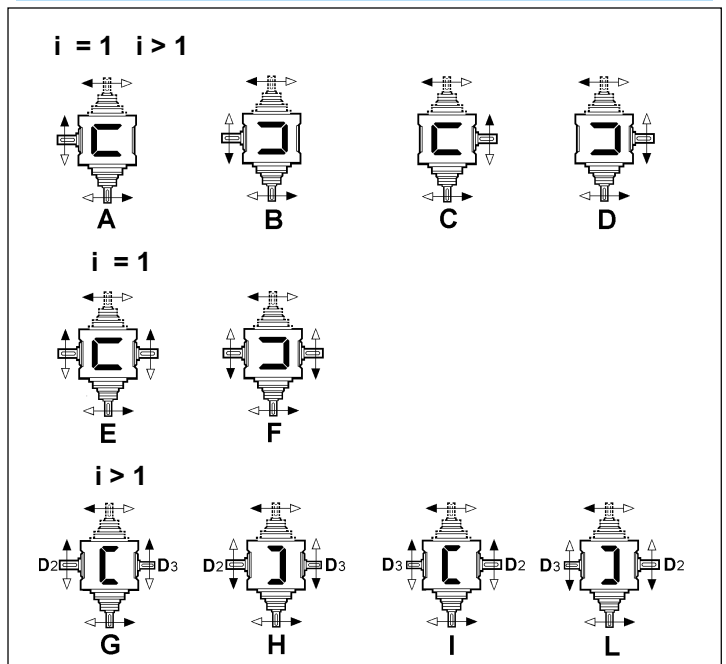
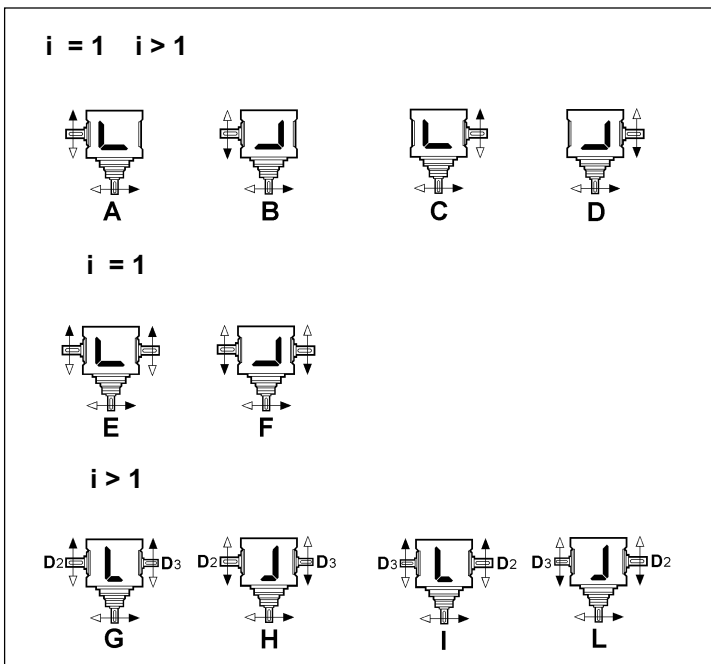
| R | i | IEC | | | | | | | | | | |
|----|----------|---------|----|----|---------|-----|-----|-----|-----|-----|-----|--|
| | | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | |
| 19 | 1 | RF | | | RC - RF | | | | | | | |
| | 2.5-5-10 | RC - RF | | | | | | | | | | |
| 24 | 1 | RF | | | RC - RF | | | | | | | |
| | 2.5-5-10 | RC - RF | | | | | | | | | | |
| 28 | 1 | RF | | | RC - RF | | | | | | | |
| | 2.5-5-10 | RC - RF | | | | | | | | | | |
| 38 | 1 | RF | | | RC - RF | | | | | | | |
| | 2.5-5-10 | RC | | | RC - RF | | | | | | | |
| 48 | 1 | RF | | | | | | | | | | |
| | 2.5-5-10 | RF | | | | | | | | | | |

5.4 Senso di rotazione alberi

5.4 Shaft Rotation Direction

5.4 Направление вращения вала

s.e.





5.5 Dimensioni

5.5 Dimensions

5.5 Размеры

| | | RA...- RC...- RF... | | | | | |
|----|-------|---------------------|------|------|------|------|-----|
| | | 19 | 24 | 28 | 38 | 48 | |
| A | i = 1 | 112 | 142 | 180 | 224 | 280 | |
| a | | 80 | 100 | 130 | 160 | 190 | |
| B | | 128 | 146 | 175 | 204 | 230 | |
| b | | 110 | 125 | 145 | 175 | 200 | |
| C2 | | 130 | 150 | 180 | 210 | 240 | |
| D2 | | 19 | 24 | 28 | 38 | 48 | |
| M2 | | 21.5 | 27 | 31 | 41 | 51.5 | |
| N2 | | 6 | 8 | 8 | 10 | 14 | |
| F | | 7 | 9 | 11 | 13 | 15 | |
| H | | 56 | 71 | 90 | 112 | 140 | |
| L2 | | 40 | 50 | 60 | 80 | 110 | |
| Z | | 7 | 9 | 10 | 13 | 15 | |
| D3 | | i = 1 | 19 | 24 | 28 | 38 | 48 |
| L3 | | | 40 | 50 | 60 | 80 | 110 |
| M3 | 21.5 | | 27 | 31 | 41 | 51.5 | |
| N3 | 6 | | 8 | 8 | 10 | 14 | |
| D4 | 20 | | 25 | 30 | 40 | 50 | |
| M4 | 22.8 | | 28.3 | 33.3 | 43.3 | 53.8 | |
| N4 | 6 | | 8 | 8 | 12 | 14 | |
| D3 | i > 1 | | 14 | 19 | 24 | 28 | 38 |
| L3 | | 30 | 40 | 50 | 60 | 80 | |
| M3 | | 16 | 21.5 | 27 | 31 | 41 | |
| N3 | | 5 | 6 | 8 | 8 | 10 | |

| | | RA | | | | |
|----|-------|--------------|------|-----|-----|-------|
| | | 19 | 24 | 28 | 38 | 48 |
| h | i = 1 | 101 | 120 | 147 | 170 | 207.5 |
| D1 | | 19 | 24 | 28 | 38 | 48 |
| M1 | | 21.5 | 27 | 31 | 41 | 51.5 |
| N1 | | 6 | 8 | 8 | 10 | 14 |
| h | i > 1 | 110 | 130 | 160 | 190 | 237.5 |
| D1 | | 14 | 19 | 24 | 28 | 38 |
| M1 | | 16 | 21.5 | 27 | 31 | 41 |
| N1 | | 5 | 6 | 8 | 8 | 10 |
| L1 | i = 1 | 30 | 40 | 50 | 60 | 80 |
| X | i > 1 | 90 | 110 | 130 | 150 | 175 |
| Kg | | 8.5 | 14 | 23 | 38 | 62 |
| | | RC...- RF... | | | | |
| Kg | | 11.5 | 19 | 33 | 55 | 82 |

| | | RC... | | | | | | | | | | | | | |
|-----|-------|-------|-----|-------|-----|-----|-----|---------|-------|---------|-----|-------|---------|-----|---------|
| | | 19 | | | 24 | | | | 28 | | | 38 | | | |
| IEC | | 63 | 71 | 80/90 | 71 | 80 | 90 | 100/112 | 80/90 | 100/112 | 132 | 80/90 | 100/112 | 132 | 160/180 |
| Y | | 140 | 160 | 200 | 160 | 200 | 200 | 250 | 200 | 250 | 300 | 200 | 250 | 300 | 350 |
| P | i = 1 | — | — | 131 | — | — | 148 | 158 | — | 181 | 203 | — | — | 216 | 246 |
| P | i > 1 | 113 | 120 | 140 | 138 | 158 | 158 | 168 | 184 | 194 | 216 | 204 | 214 | 236 | 266 |

| | | RF... | | | | | | | | | | | | | | |
|-----|-------|-------|-----|-------|-----|-------|---------|-------|---------|-----|---------|-----|---------|-----|---------|-----|
| | | 19 | | | 24 | | | | 28 | | | 38 | | | 48 | |
| IEC | | 63 | 71 | 80/90 | 71 | 80/90 | 100/112 | 80/90 | 100/112 | 132 | 100/112 | 132 | 160/180 | 132 | 160/180 | 200 |
| Y | | 140 | 160 | 200 | 160 | 200 | 250 | 200 | 250 | 300 | 250 | 300 | 350 | 300 | 350 | 400 |
| P | i = 1 | 158 | 165 | 186 | 194 | 215 | 225 | 252 | 262 | 283 | 295 | 316 | 346 | 373 | 405 | 405 |
| P | i > 1 | 167 | 174 | 195 | 204 | 225 | 235 | 265 | 275 | 296 | 315 | 336 | 366 | 403 | 435 | 435 |

5.6 Accessori

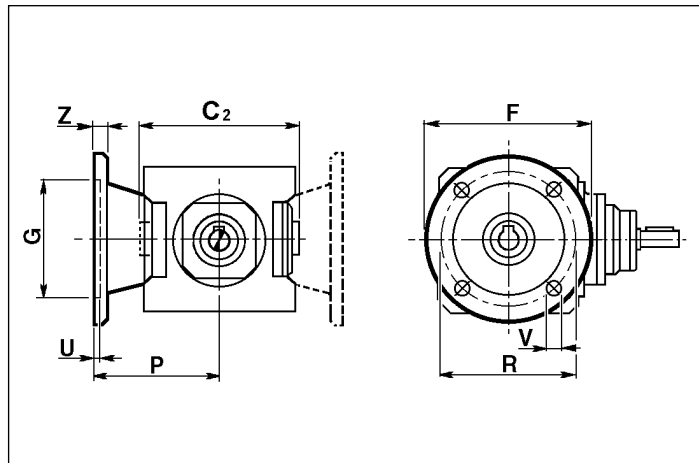
5.5 Accessories

5.6 Вспомогательные устройства

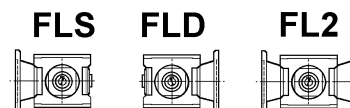
Flangia uscita

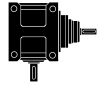
Output flange

Выходной фланец



| | R | | | | |
|----|-----|------|-----|-----|-----|
| | 19 | 24 | 28 | 38 | 48 |
| C2 | 130 | 150 | 180 | 210 | 240 |
| F | 140 | 160 | 200 | 250 | 250 |
| G | 95 | 110 | 130 | 180 | 180 |
| P | 85 | 100 | 120 | 145 | 175 |
| R | 115 | 130 | 165 | 215 | 215 |
| U | 3.5 | 4 | 4.5 | 5 | 5 |
| V | 9 | 11 | 13 | 15 | 15 |
| Z | 10 | 12.5 | 16 | 20 | 20 |

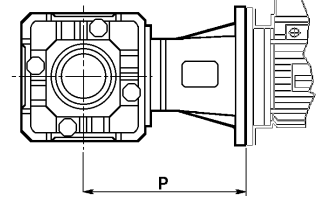
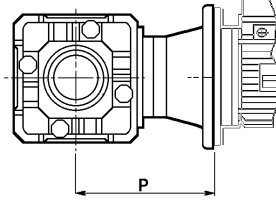
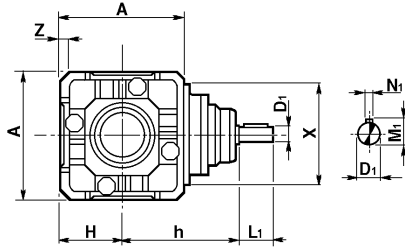




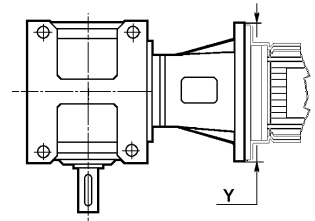
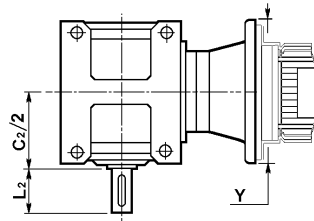
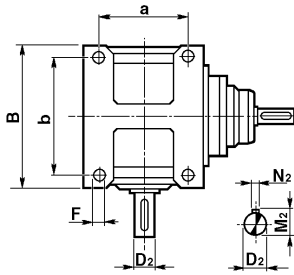
RA

RC

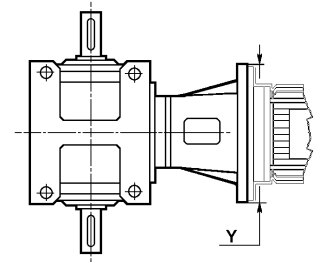
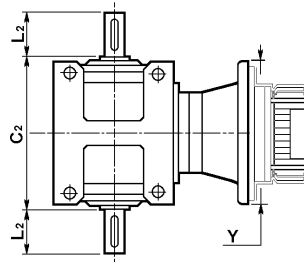
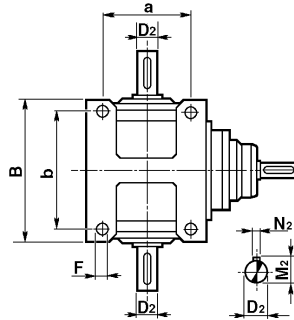
RF



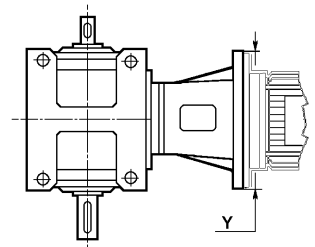
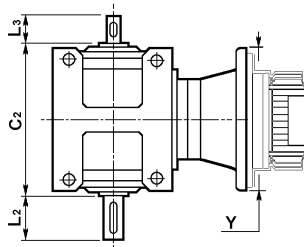
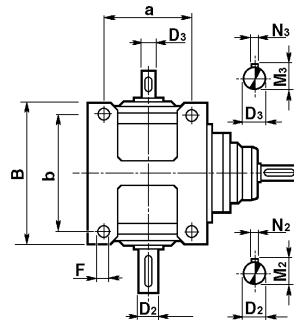
S



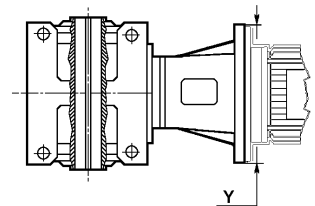
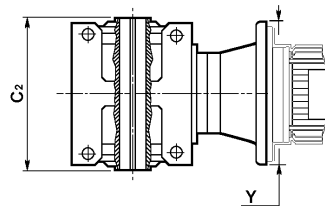
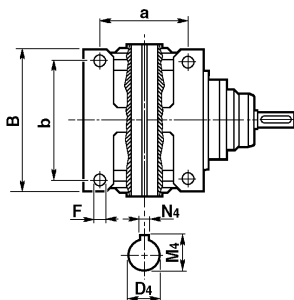
B
 $i = 1$



B
 $i > 1$



C
 $i = 1$





5.6 Lubrificazione

I rinvii angolari sono forniti predisposti per lubrificazione a olio e muniti dei tappi di carico, livello e scarico olio. Si raccomanda di precisare sempre la posizione di montaggio desiderata in fase di ordine.

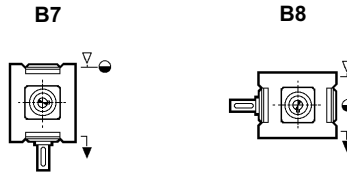
Posizione di montaggio e quantità di lubrificante (litri)



5.6 Lubrication

The right angle gearboxes are supplied without lubrication. Unit have filler plugs, lbreathers and drain plugs fitted. Mounting position must be indicated when ordering.

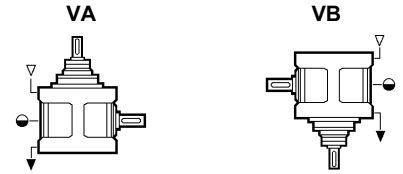
Mounting positions and lubricant quantity (litres)



5.6 Смазка

Редукторы поставляются без смазки. Редукторы имеют пробки заливного отверстия и соответствующие пробки сливного отверстия. Все эти элементы должны быть указаны в заказе.

Количество смазки (литры)



| 19 | | 24 | | 28 | | 38 | | 48 | |
|---|--|-----|--|-----|--|-----|--|-----|--|
| 0.3 Levetidssmurt Packed for life Lebensdauer Schmierung | | 0.6 | | 1.2 | | 2.4 | | 4.8 | |

5.7 Carichi radiali e assiali (N)

Le trasmissioni effettuate tramite pignoni per catena, ruote dentate o pulegge generano delle forze radiali (FR) sugli alberi dei riduttori. L'entità di tali forze può essere calcolata con la formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

dove:
T = Momento torcente (Nm)
d = Diametro pignone o puleggia (mm)
KR = 2000 per pignone per catena
= 2500 per ruote dentate
= 3000 per puleggia con cinghie a V

I valori dei carichi radiali e assiali generati dall'applicazione debbono essere sempre minori o uguali a quelli ammissibili indicati nelle tabelle.

5.7 Radial and axial loads (N)

Transmissions implemented by means of chain pinions, gears or pulleys generate radial forces (FR) on the gear unit shafts. The entity of these forces may be calculated using this formula:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

where:
T = torque (Nm)
d = pinion or pulley diameter (mm)
KR = 2000 for chain pinion
= 2500 for gears
= 3000 for V-belt pulleys

The value of the radial and axial loads generated by the application must always be less than or equal to admissible values as indicated in the chart.

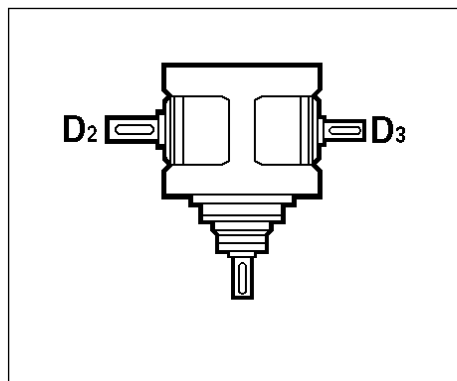
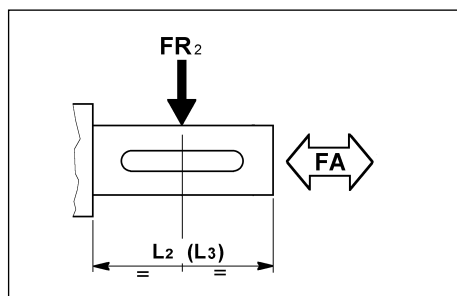
5.7 Радиальные и осевые нагрузки

Передачи, осуществляемые с помощью цепных зубчатых колес, шестеренок и блоков шкивов создают радиальную силу на валах редуктора. Значение этой силы можно рассчитать при помощи следующей формулы:

$$F_R = \frac{K_R \cdot T}{d} \text{ (N)}$$

где:
Z = крутящий момент
d = диаметр ведущего зубчатого колеса или шкива
KR = 2000 для цепной передачи,
= 2500 для шестеренок
= 3000 для ременной передачи (V-образный ремень)

Значения радиальных и осевых сил при работе редуктора не должны превышать допустимых значений, данных в таблице.

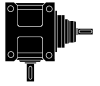


| in | Shaft Welle | R | | | | | | | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | 19 | | 24 | | 28 | | 38 | | 48 | |
| ALBERO ENTRATA / INPUT SHAFT / Входной вал (n1=1400 rpm) | | | | | | | | | | | |
| | | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} | F _{r1} | F _{a1} |
| 1 | Tutti /All Alle | 800 | 160 | 1250 | 250 | 2000 | 400 | 3150 | 630 | 5000 | 1000 |
| 2.5 | | 630 | 130 | 1000 | 200 | 1600 | 320 | 2500 | 500 | 4000 | 800 |
| 5 | | 500 | 100 | 800 | 160 | 1250 | 250 | 2000 | 400 | 3150 | 630 |
| 10 | | 400 | 80 | 630 | 130 | 1000 | 200 | 1600 | 320 | 2500 | 500 |
| ALBERO USCITA / OUTPUT SHAFT / Выходной вал (n1=1400 rpm) | | | | | | | | | | | |
| | | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} | F _{r2} | F _{a2} |
| 1 | Tutti /All Alle | 800 | 160 | 1250 | 250 | 2000 | 400 | 3150 | 630 | 5000 | 1000 |
| 2.5 | D2 | 1000 | 200 | 1600 | 320 | 2500 | 500 | 4000 | 800 | 6300 | 1260 |
| | D3 | 630 | 130 | 1000 | 200 | 1600 | 320 | 2500 | 500 | 4000 | 800 |
| 5 | D2 | 1250 | 250 | 2000 | 400 | 3150 | 630 | 5000 | 1000 | 8000 | 1600 |
| | D3 | 800 | 160 | 1250 | 250 | 2000 | 400 | 3150 | 630 | 5000 | 1000 |
| 10 | D2 | 1600 | 320 | 2500 | 500 | 4000 | 800 | 6300 | 1260 | 10000 | 2000 |
| | D3 | 1000 | 200 | 1600 | 320 | 2500 | 500 | 4000 | 800 | 6300 | 1260 |

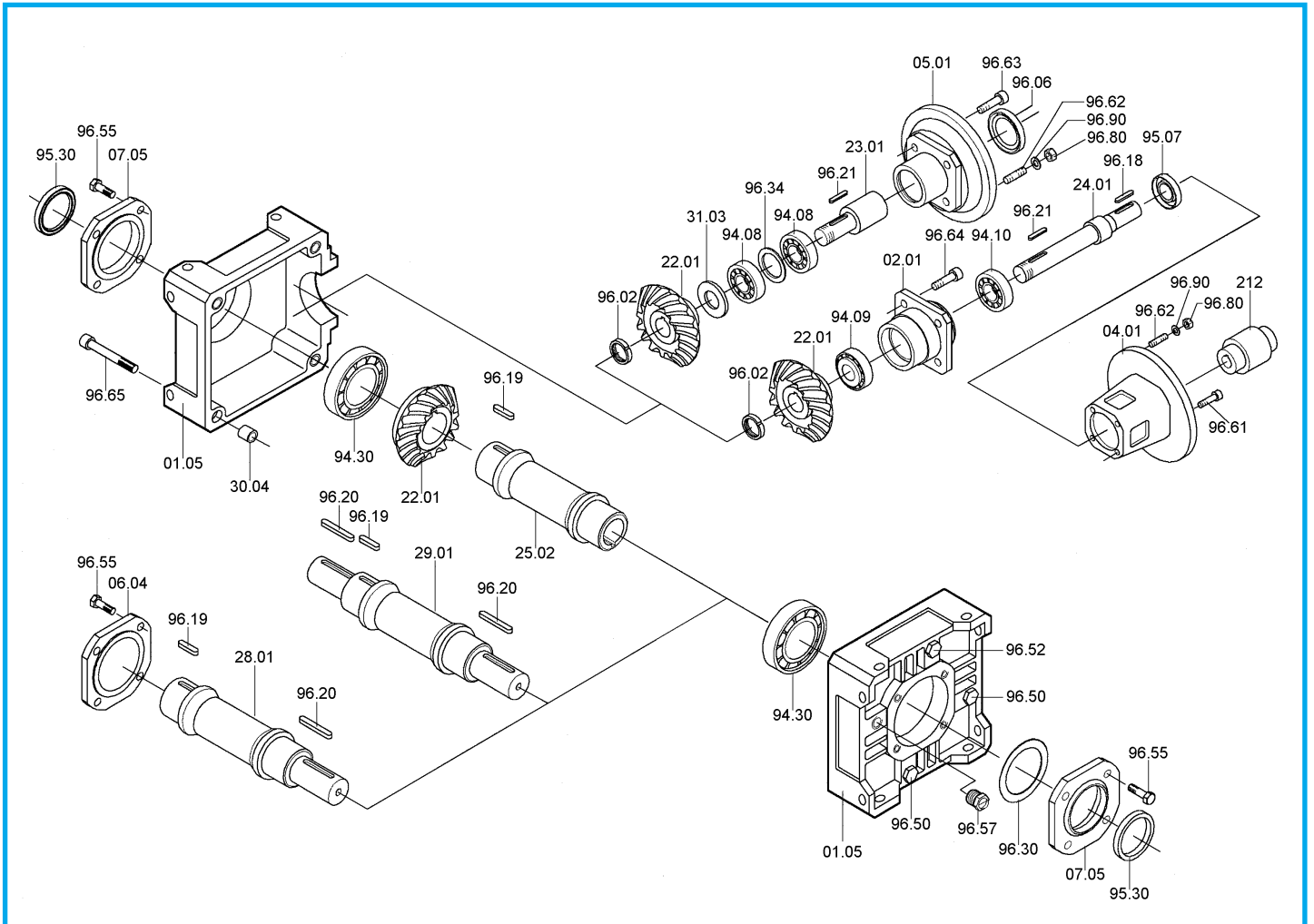
I carichi radiali indicati nelle tabelle si intendono applicati a metà della sporgenza dell'albero e sono riferiti ai riduttori operanti con fattore di servizio 1.

The radial loads indicated in the chart are considered to be applied to the half-way point of the projection of the shaft, and refer to gear units operating with service factor 1.

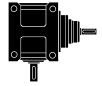
Радиальные нагрузки, отраженные в таблице, рассчитаны на то, что сила будет приложена в средней точке проекции вала и относятся к редукторам, работающим с сервисным коэффициентом 1.



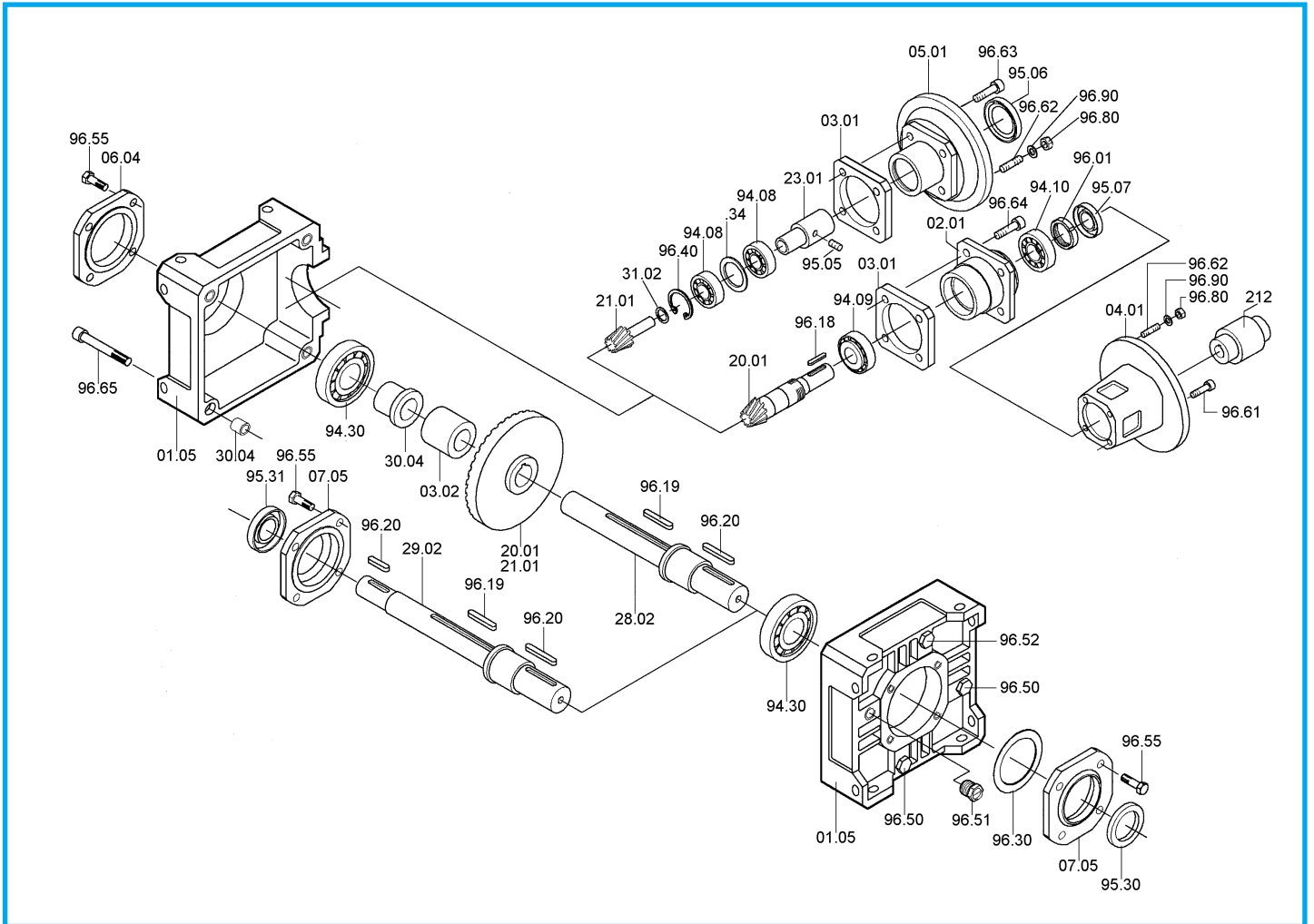
RA - RC - RF (in = 1)



| RA - RC - RF in = 1:1 | Cuscinetti / Bearings / Подшипники | | | Anelli di tenuta / Oilseals / Сальники | | | |
|--------------------------|------------------------------------|----------------------|------------------|--|-----|----------|----------|
| | RA - RC - RF | RA - RF | RC | RA - RC - RF | RC | | RA - RF |
| | 94.30 | 94.10 - 94.09 | 94.08 | 95.30 | IEC | 95.06 | 95.07 |
| 19 | 6206 30/62/16 | 30203 20/40/13.25 | 7203 17/40/12 | 30/47/7 | 63 | 25/52/7 | 20/40/7 |
| | | | | | 71 | 30/52/7 | |
| | | | | | 80 | 35/52/7 | |
| | | | | | 90 | 37/52/7 | |
| 24 | 6207 35/72/17 | 32005 25/47/15 | 7205 25/52/15 | 35/52/7 | 71 | 35/62/7 | 30/47/7 |
| | | | | | 80 | 35/62/7 | |
| | | | | | 90 | 40/62/8 | |
| | | | | | 100 | 45/62/8 | |
| | | | | | 112 | 45/62/8 | |
| 28 | 6208 40/80/19 | 32006 30/55/17 | 7206 30/62/16 | 40/62/8 | 80 | 40/72/10 | 35/58/10 |
| | | | | | 90 | 40/72/10 | |
| | | | | | 100 | 45/72/8 | |
| | | | | | 112 | 45/72/8 | |
| | | | | | 132 | 55/72/10 | |
| 38 | 6211 55/100/21 | 32007 35/62/18 | 7207 35/72/17 | 55/72/10 | 80 | 45/80/10 | 40/62/10 |
| | | | | | 90 | 45/80/10 | |
| | | | | | 100 | 45/80/10 | |
| | | | | | 112 | 45/80/10 | |
| | | | | | 132 | 55/80/10 | |
| | | | | | 160 | 60/80/10 | |
| 48 | 6213 65/120/23 | 32009 45/75/20 | | 65/90/10 | 180 | 65/80/10 | 55/80/10 |
| | | | | | | | |



RA - RC - RF (in > 1)



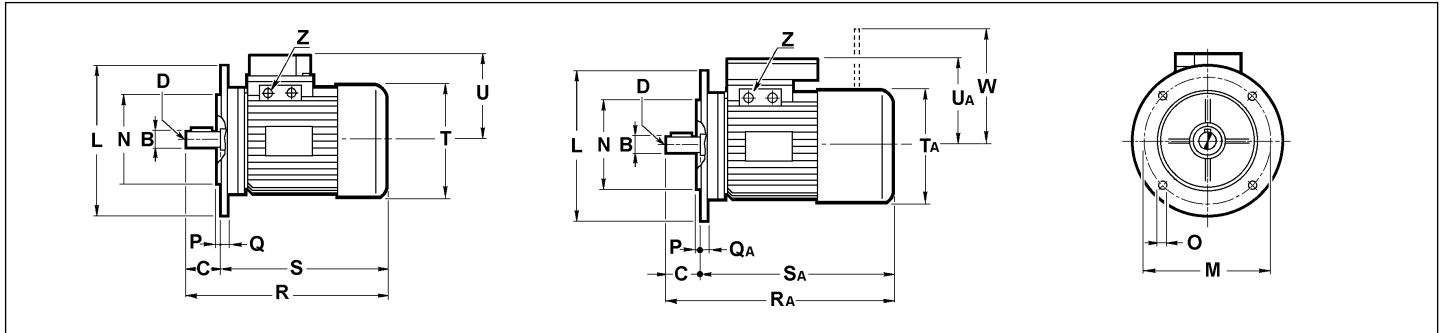
| RA - RC - RF in > 1 | Cuscinetti / Bearings / Подшипники | | | | Anelli di tenuta / Oilseals / сальники | | | | |
|------------------------|------------------------------------|----------------------|-------|------------------|--|----------|-----|----------|----------|
| | RA - RC - RF | RA - RF | | RC | RA - RC - RF | | RC | | RA - RF |
| | 94.30 | 94.09 | 94.10 | 94.08 | 95.30 | 95.31 | IEC | 95.06 | 95.07 |
| 19 | 6305 25/62/17 | 30203 20/40/13.25 | | 7203 17/40/12 | 25/47/7 | 17/47/7 | 63 | 25/52/7 | 15/40/10 |
| | | | | | | | 71 | 30/52/7 | |
| | | | | | | | 80 | 35/52/7 | |
| | | | | | | | 90 | 37/52/7 | |
| 24 | 6306 30/72/19 | 32005 25/47/15 | | 7205 25/52/15 | 30/52/7 | 20/52/7 | 71 | 35/62/7 | 20/47/7 |
| | | | | | | | 80 | 35/62/7 | |
| | | | | | | | 90 | 40/62/8 | |
| | | | | | | | 100 | 45/62/8 | |
| | | | | | | | 112 | 45/62/8 | |
| 28 | 6307 35/80/21 | 32006 30/55/17 | | 7206 30/62/16 | 35/62/7 | 25/62/10 | 80 | 40/72/10 | 25/58/10 |
| | | | | | | | 90 | 40/72/10 | |
| | | | | | | | 100 | 45/72/8 | |
| | | | | | | | 112 | 45/72/8 | |
| | | | | | | | 132 | 55/72/10 | |
| 38 | 6309 45/72/8 | 32007 35/62/18 | | 7207 35/72/17 | 45/72/8 | 30/72/10 | 80 | 45/80/10 | 30/62/10 |
| | | | | | | | 90 | 45/80/10 | |
| | | | | | | | 100 | 45/80/10 | |
| | | | | | | | 112 | 45/80/10 | |
| | | | | | | | 132 | 55/80/10 | |
| | | | | | | | 160 | 60/80/10 | |
| 48 | 6311 55/120/29 | 32009 45/75/20 | | | 55/90/10 | 40/90/12 | 180 | 65/80/10 | 40/80/10 |
| | | | | | | | | | |



6.0 MOTORI ELETTRICI

ELECTRIC MOTORS

Электрические моторы



Motori elettrici (1)
Electric motors
Электрические моторы

Motori elettrici autofrenanti (2)
Electric brake motors
Электрические тормозные моторы

| | 4 poles | | | B | C | D | L | M | N | O | P | Q | QA | R | RA | S | SA | T | TA | U | UA | W | Z | KEY | |
|-----|---------|---------|---------|----|-----|-----|-----|-----|-----|----|-----|----|----|-----|------|-----|-----|-----|-----|-----|-----|-----|---------|----------|-----------|
| | kW | Kg. (1) | Kg. (2) | | | | | | | | | | | | | | | | | | | | | | |
| 63 | 0.13 | 3.7 | 5.1 | 11 | 23 | M4 | 140 | 115 | 95 | 9 | 3 | 9 | 9 | 216 | 258 | 192 | 235 | 123 | 123 | 98 | 105 | 116 | PG11 | 4x4x15 | |
| | 0.18 | 4.5 | 5.9 | | | | | | | | | | | | | | | | | | | | | | |
| 71 | 0.25 | 5.4 | 6.8 | 14 | 30 | M5 | 160 | 130 | 110 | 9 | 3.5 | 9 | 9 | 245 | 300 | 220 | 270 | 138 | 138 | 107 | 114 | 116 | PG13.5 | 5x5x20 | |
| | 0.37 | 6.4 | 7.8 | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 0.55 | 8.5 | 10.4 | 19 | 40 | M6 | 200 | 165 | 130 | 11 | 3.5 | 10 | 10 | 275 | 335 | 235 | 295 | 156 | 156 | 124 | 126 | 124 | PG16 | 6x6x30 | |
| | 0.75 | 10.5 | 12.4 | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 1.1 | 12.5 | 15.6 | 24 | 50 | M8 | 200 | 165 | 130 | 11 | 3.5 | 10 | 10 | 300 | 365 | 250 | 315 | 176 | 176 | 127 | 133 | 134 | PG16 | 8x7x35 | |
| | 1.5 | 14 | 17.1 | | | | | | | | | | | 325 | 390 | 275 | 340 | | | | | | | | |
| | 1.8 | 16 | 19.1 | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 2.2 | 20 | 25.6 | 28 | 60 | M10 | 250 | 215 | 180 | 14 | 4 | 14 | 14 | 360 | 441 | 310 | 381 | 192 | 192 | 138 | 142 | 160 | PG16 | 8x7x45 | |
| | 3 | 24 | 29.6 | | | | | | | | | | | | | | | | | | | | | | |
| 112 | 4 | 29 | 38.7 | 28 | 60 | M10 | 250 | 215 | 180 | 14 | 4 | 14 | 14 | 385 | 480 | 330 | 420 | 216 | 216 | 150 | 153 | 198 | PG16 | 8x7x45 | |
| 132 | 5.5 | 42 | | 38 | 80 | M12 | 300 | 265 | 230 | 14 | 4 | 20 | 14 | 490 | 630 | 410 | 550 | 257 | 257 | 178 | 200 | | PG21 | 10x8x60 | |
| | 7.5 | 53 | | | | | | | | | | | | 530 | 670 | 450 | 590 | | | | | | | | |
| | 9.2 | 58 | | | | | | | | | | | | | | | | | | | | | | | |
| 160 | 11 | 96 | | 42 | 110 | M16 | 350 | 300 | 250 | 18 | 5 | 15 | 15 | 610 | 805 | 500 | 695 | 320 | 330 | 245 | 245 | | 1" G | 12x8x90 | |
| | 15 | 109 | | | | | | | | | | | | 654 | 860 | 544 | 750 | | | | | | | | |
| 180 | 18.5 | 121 | | 48 | 110 | M16 | 350 | 300 | 250 | 19 | 5 | 15 | 15 | 697 | 880 | 587 | 770 | 360 | 370 | 275 | 275 | | 1" G | 14x9x90 | |
| | 22 | 151 | | | | | | | | | | | | 735 | 920 | 625 | 810 | | | | | | | | |
| 200 | 30 | 193 | | 55 | 110 | M16 | 400 | 350 | 300 | 19 | 5 | 15 | 15 | 800 | 1060 | 690 | 950 | 400 | 410 | 300 | 300 | | 1"1/4 G | 16x10x90 | |
| 225 | 37 | 313 | | 60 | 140 | M20 | 450 | 400 | 350 | 18 | 5 | 16 | | 830 | | 690 | | 450 | | 330 | | | | 1"1/4 G | 18x11x120 |
| 45 | 355 | | | | | | | | | | | | | | | | | | | | | | | | |

Le dimensioni dei motori elettrici sono puramente indicative. All listed electric motors data are approximate. Все данные по этим электромоторам приблизительны