



**CHIARAVALLI**  
*SpA*



**RIDUTTORI ORTOGONALI COPPIA IPOIDE CHO**  
**CHO HELICAL-HYPOID GEAR UNITS**

## PREMESSA

I riduttori ortogonali a coppia ipoide serie CHO nascono per essere utilizzati al posto dei riduttori a vite senza fine nelle applicazioni che richiedono elevati rendimenti, specialmente con alti rapporti di riduzione, sono ad essi intercambiabili come fissaggi e garantiscono basse temperature di funzionamento.

Grazie alla predisposizione per motore con campana e giunto, possono essere collegati a motori normali, autofrenanti ed antideflagranti.

Questo tipo di riduttore trova vasto impiego dove è richiesto risparmio energetico e con motori comandati da inverter.

### CARATTERISTICHE PRODOTTO

- Alto rendimento
- Bassa rumorosità
- Bassa temperatura
- Montaggio universale
- Cassa in alluminio verniciato grigio RAL 9022

I riduttori serie CHO sono prodotti in 4 grandezze. Potenze 0,12-4 Kw; Rapporti da 7,5 a 300. Coppia max 130-500 Nm.

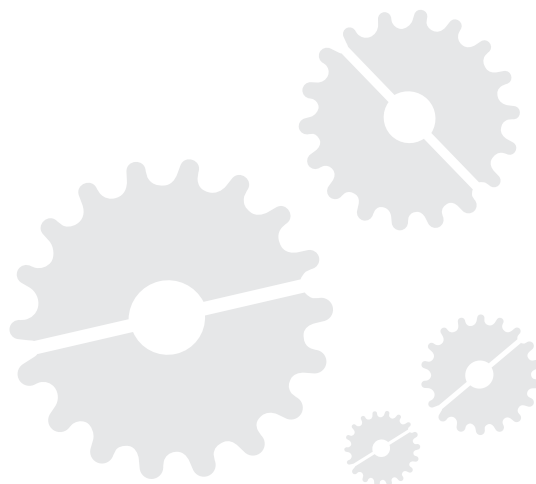
## INTRODUCTION

*CHO helical hypoid gear units have been conceived to be used instead of worm gearboxes where high efficiency is requested, especially with high ratios, they are interchangeable and guarantee low exercise temperature. They can be connected, through a coupling to standard motors, brake motors and explosion-proof motors. This kind of gearboxes are widely used where energy saving is requested and with electric motors driven by inverters.*

### PRODUCT FEATURES

- *High efficiency*
- *Low noise*
- *Low temperature*
- *Universal mounting*
- *Aluminum housing, grey RAL 9022 painted*

*CHO gearboxes are manufactured in 4 sizes. Power 0.12-4KW; Ratio 7,5-300; Torque max 130-500 Nm.*



## INFORMAZIONI GENERALI - GENERAL INFORMATION

### POTENZA P - POWER P

$$P_1 \cdot \eta = P_2$$

$P_1$  = Potenza entrata · *Input power*

$P_2$  = Potenza uscita · *Output power*

$\eta$  = Rendimento · *Transmission efficiency*

### VELOCITA' DI ROTAZIONE n - ROTATION SPEED n

$n_1$  = Velocità entrata · *Input speed*

$n_2$  = Velocità uscita · *Output speed*

Al fine di ottimizzare le condizioni di lavoro e prolungare la durata del riduttore si consiglia una velocità di entrata  $\leq 1400$  rpm

Sono ammesse velocità superiori in accordo alla sottostante tabella.

*An output speed  $\leq 1400$  rpm is suggested so as to optimize the working condition and extend the service life. Input speed higher are allowed following the table below.*

| n. RPM | POTENZA - POWER |
|--------|-----------------|
| 1400   | Kw              |
| 2000   | Kw * 1,35       |
| 2800   | Kw * 1,8        |

### RAPPORTO DI TRASMISSIONE i - TRANSMISSION RATIO i

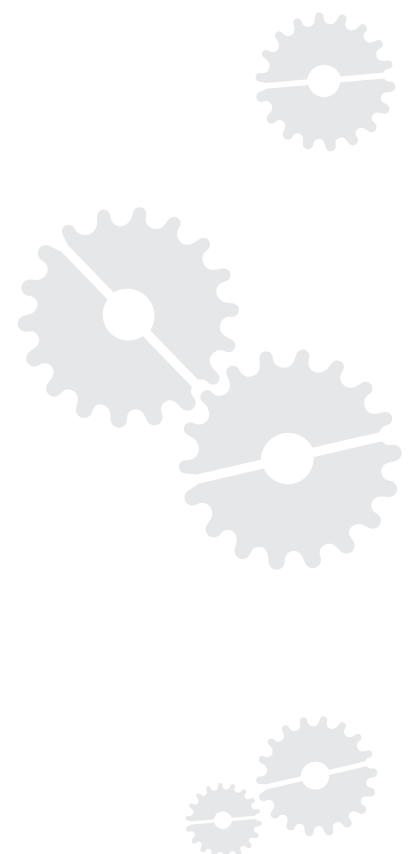
$$i = \frac{n_1}{n_2}$$

### COPPIA M - TORQUE M

$$M_2 = \frac{9550 \cdot P_1 \cdot \eta}{n_2} \text{ [Nm]}$$

$$M_2 \geq M_2 \cdot f_s \text{ [Nm]}$$

|                                   |                                |
|-----------------------------------|--------------------------------|
| $M_2$ = Coppia uscita             | <i>Output torque</i>           |
| $M_{2n}$ = Coppia nominale uscita | <i>Rated output torque</i>     |
| $P_1$ = Potenza entrata           | <i>Input power</i>             |
| $\eta$ = Rendimento               | <i>Transmission efficiency</i> |
| $f_s$ = Fattore di servizio       | <i>Service factor</i>          |



## CARICHI RADIALI $F_R$ - RADIAL LOADS $F_R$

Il carico radiale è proporzionale alla coppia richiesta ed inversamente proporzionale al diametro dell'elemento di trasmissione secondo la sottostante formula.

*The radial loads is proportional to the requested torque and inversely proportional to the transmission member diameter following this formula.*

$$F_R = \frac{2000 \cdot T \cdot T.e.f.}{D} \quad [N]$$

|        |                                     |                                      |
|--------|-------------------------------------|--------------------------------------|
| $F_R$  | = Carico radiale                    | <i>Radial load</i>                   |
| $T$    | = Nm (Coppia)                       | <i>Nm (Torque)</i>                   |
| T.e.f. | = Fattore elemento di trasmissione  | <i>Transmission element factor</i>   |
| T.e.f. | = 1,15 ingranaggio                  | <i>1,15 gear</i>                     |
|        | = 1,4 pignone per catena            | <i>1,4 chain sprocket</i>            |
|        | = 1,75 puleggia a gola              | <i>1,75 v-pulley</i>                 |
|        | = 2,5 puleggia piana                | <i>2,5 flat-pulley</i>               |
| $D$    | = Diametro elemento di trasmissione | <i>Transmission element diameter</i> |

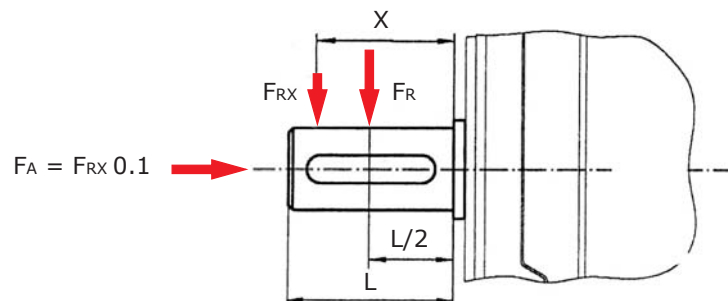
Quando il carico radiale non è applicato sulla mezzeria dell'albero bisogna usare la sottostante formula.

*When the radial loads is not applied on the centre line of the shaft it is necessary to use the following formula.*

$$F_{Rx} \leq \frac{F_R \cdot a}{(b+x)} \quad [N]$$

|           |                           |                                       |
|-----------|---------------------------|---------------------------------------|
| $F_R$     | = Carico radiale mezzeria | <i>Radial load on the centre line</i> |
| $a, b, x$ | = vedi tabella            | <i>See table</i>                      |

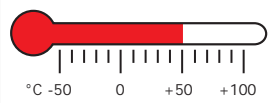


## CARICHI RADIALI ALBERO LENTO & CARICHI ASSIALI $F_R, F_A$ OUTPUT SHAFT RADIAL LOADS & AXIAL LOADS $F_R, F_A$



|          | CHO 52 | CHO 53 | CHO 62 | CHO 63 | CHO 72 | CHO 73 | CHO 82 | CHO 83 |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>a</b> | 104    | 104    | 128    | 128    | 135    | 135    | 148.5  | 148.5  |
| <b>b</b> | 78     | 70     | 98     | 98     | 105    | 105    | 118.5  | 118.5  |

# LUBRIFICAZIONE - LUBRICATION

## TIPO DI LUBRIFICAZIONE · TYPES OF LUBRICATION

|  |                          | ISO               | SHELL  | Mobil<br>MOBIL   | BP  | Tipo lubrificante<br>Lubrication type |
|---|--------------------------|-------------------|---|------------------|--|---------------------------------------|
| CHO   | standard<br>-10      +40 | VG 220            | Shell Omala 220   | Mobilgear 630    | BP Energol GR-XP 220   | Olio Minerale<br>Mineral Oil          |
|   | -20      +25             | VG 150<br>VG 100  | Shell Omala 100   | Mobilgear 627    | BP Energol GR-XP 100   |                                       |
|   | -30      +10             | VG 68-46<br>VG 32 | Shell Tellus T 32   | Mobil D.T.E. 13M |  |                                       |
|   | -40      -20             | VG 22<br>VG 15    | Shell Tellus T 15   | Mobil D.T.E. 11M | BP Energol HLP-HM 15   |                                       |
|   | -40      +80             | VG 220            | Shell Omala HD 150  | Mobil SHC 630    |  | Olio sintetico<br>Syntetic oil        |
|   | -40      +40             | VG 150            |   | Mobil SHC 629    |  |                                       |
|   | -40      +10             | VG 32             |   | Mobil SHC 624    |  |                                       |

## QUANTITA' OLIO · LUBRICANT FILL QUANTITY

Le quantità indicate sono quelle raccomandate. Il valore preciso dipende dal numero degli stadi e dal rapporto di riduzione. Quando si fanno delle aggiunte è importante verificare il tappo di livello che indica la giusta quantità. La tabella che segue indica i quantitativi in funzione della posizione di montaggio (B3, B6, B7...)

*The specified fill quantities are recommended values. The precise values vary depending on the number of stages and gear ratio. When filling, it is essential to check the oil level plug since it indicates the precise oil capacity. the following tables show guide values for lubricant fill quantities in relation to the mounting position (B3, B6, B7...)*

| grandezza<br>size | quantità olio in litri · fill quantity in liters |      |      |      |      |      |
|-------------------|--|------|------|------|------|------|
|                   | B3   | B6   | B7   | B8   | V5   | V6   |
| CHO 52            | 0.22   | 0.20 | 0.13 | 0.15 | 0.25 | 0.14 |
| CHO 53            | 0.07   | 0.04 | 0.04 | 0.05 | 0.08 | 0.09 |
| CHO 62            | 0.38   | 0.35 | 0.25 | 0.26 | 0.44 | 0.25 |
| CHO 63            | 0.07   | 0.04 | 0.04 | 0.05 | 0.08 | 0.09 |
| CHO 72            | 0.66   | 0.60 | 0.45 | 0.48 | 0.78 | 0.47 |
| CHO 73            | 0.13   | 0.09 | 0.09 | 0.09 | 0.15 | 0.17 |
| CHO 82            | 1.15   | 0.93 | 0.70 | 0.74 | 1.25 | 0.75 |
| CHO 83            | 0.13   | 0.09 | 0.09 | 0.09 | 0.15 | 0.17 |

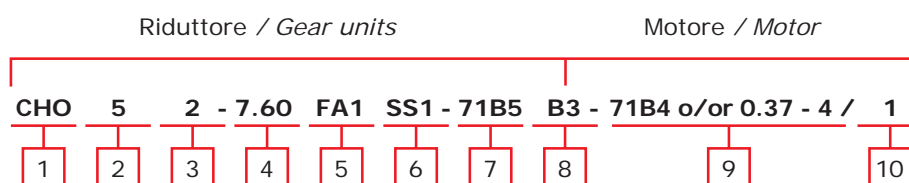
I riduttori CHO vengono forniti completi di olio minerale per posizione di montaggio B3.

*CHO gearboxes are supplied complete with mineral oil for mounting position B3.*

## MANUTENZIONE - MAINTENANCE

- 1 Per questi riduttori il primo cambio di olio deve essere effettuato dopo circa 300 ore (periodo di rodaggio). Non mischiare mai olio sintetico con olio minerale.  
*For gear units, first oil change should be after about 300 hour (run-in period). Never mix the synthetic oil and mineral oil together.*
- 2 Ogni 3000 ore di lavoro e almeno ogni 6 mesi, verificare olio e livelli, anche le ? per eventuali perdite. Per i gruppi previsti di attacco PAM controllare l'elastomero ed eventualmente sostituirlo.  
*Every 3000 working time, at least every 6 months, you have to check the oil and oil level, the seals visually for leakage. For IEC input gear units, the elastomer should be tested or replaced if necessary.*
- 3 In funzione del tipo di lavoro, al massimo ogni 2 anni è necessaria una revisione. Sostituire l'olio minerale e ripristinare il grasso sui cuscinetti.  
*Depending on the operating conditions every 3 years at the latest for inspection is needed. Then change the mineral oil and replace the bearing grease.*
- 4 In funzione del tipo di lavoro, dove necessario, sostituire gli anelli di tenuta.  
*Depending on the operating conditions, change the oil seals.*

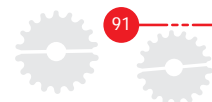
## DESIGNAZIONE - DESIGNATION



| No | Commenti  | Comments   |
|----|---|--|
| 1  | Codice riduttore serie CHO  | Code for gear units series CHO   |
| 2  | Grandezze 5-6-7-8   | Sizes of gear units 5-6-7-8  |
| 3  | 2:2 stadi<br>3:3 stadi  | 2 means 2 stages<br>3 means 3 stages   |
| 4  | Rapporto i=   | Speed ratio of reducer i=  |
| 5  | 1) niente= senza flangia uscita<br>2) <b>FA, FB, FC, FD, FE (1/2)</b> : flangia uscita e posizione                    | 1) no mark means without output flange<br>2) <b>FA, FB, FC, FD, FE (1/2)</b> : output flange and position                  |
| 6  | 1) niente= albero cavo<br>2) <b>SS(1/2)</b> : albero lento semplice e posizione<br>3) <b>DS</b> : albero lento doppio | 1) no mark means hole output<br>2) <b>SS(1/2)</b> : single output shaft and position<br>3) <b>DS</b> : double output shaft |
| 7  | Flangia IEC (63B5, 71B5 ...)  | Inout flange code (63B5, 71B5, ...)  |
| 8  | Posizione montaggio   | Installation position code   |
| 9  | 1) niente= senza motore<br>2) tipo motore (poli - potenza)  | 1) no mark means without motor<br>2) model motors (poles of power)   |
| 10 | Posizione morsetteria   | Position diagram for motor terminal box  |

Esempio ordine / Order example

**CHO 82 15.09 - FA1 - 71B5 - 71C4/3**



# RAPPORTI E PREDISPOSIZIONI POSSIBILI RATIO AND IEC MOTOR ADAPTERS

**CHO 52/53**  $n_1 = 1400$  r/min **130Nm**

| i<br>nominale<br><i>nominal</i> | i<br>reale<br><i>actual</i> | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $F_{r2}$<br>[N] | 63B5 | 71B5<br>71B14 | 80B5<br>80B14 | 90B5<br>90B14 |
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|

**3 stadi / 3 stages**

**CHO 53**

|     |        |     |     |      |  |  |  |  |
|-----|--------|-----|-----|------|--|--|--|--|
| 300 | 291.79 | 4.8 | 110 | 4100 |  |  |  |  |
| 250 | 244.29 | 5.8 | 130 | 4100 |  |  |  |  |
| 200 | 200.44 | 7.0 | 130 | 4100 |  |  |  |  |
| 150 | 146.67 | 9.6 | 130 | 4000 |  |  |  |  |
| 125 | 120.34 | 12  | 130 | 3770 |  |  |  |  |
| 100 | 101.04 | 14  | 130 | 3560 |  |  |  |  |
| 75  | 74.62  | 19  | 130 | 3220 |  |  |  |  |

**2 stadi / 2 stages**

**CHO 52**

|      |       |     |     |      |  |  |  |  |
|------|-------|-----|-----|------|--|--|--|--|
| 60   | 58.36 | 24  | 110 | 2960 |  |  |  |  |
| 50   | 48.86 | 29  | 130 | 2790 |  |  |  |  |
| 40   | 40.09 | 35  | 130 | 2610 |  |  |  |  |
| 30   | 29.33 | 48  | 130 | 2350 |  |  |  |  |
| 25   | 24.07 | 59  | 130 | 2200 |  |  |  |  |
| 20   | 20.21 | 70  | 130 | 2080 |  |  |  |  |
| 15   | 14.92 | 94  | 130 | 1880 |  |  |  |  |
| 12.5 | 12.47 | 113 | 120 | 1770 |  |  |  |  |
| 10   | 10.47 | 134 | 110 | 1670 |  |  |  |  |
| 7.5  | 7.73  | 182 | 100 | 1510 |  |  |  |  |

**CHO 62/63**  $n_1 = 1400$  r/min **200Nm**

| i<br>nominale<br><i>nominal</i> | i<br>reale<br><i>actual</i> | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $F_{r2}$<br>[N] | 63B5 | 71B5<br>71B14 | 80B5<br>80B14 | 90B5<br>90B14 |
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|

**3 stadi / 3 stages**

**CHO 63**

|     |        |     |     |      |  |  |  |  |
|-----|--------|-----|-----|------|--|--|--|--|
| 300 | 302.50 | 4.7 | 170 | 4800 |  |  |  |  |
| 250 | 243.57 | 5.8 | 200 | 4800 |  |  |  |  |
| 200 | 196.43 | 7.2 | 200 | 4800 |  |  |  |  |
| 150 | 151.56 | 9.3 | 200 | 4650 |  |  |  |  |
| 125 | 122.22 | 12  | 200 | 4330 |  |  |  |  |
| 100 | 101.27 | 14  | 200 | 4070 |  |  |  |  |
| 75  | 73.33  | 20  | 200 | 3650 |  |  |  |  |

**2 stadi / 2 stages**

**CHO 62**

|      |       |     |     |      |  |  |  |  |
|------|-------|-----|-----|------|--|--|--|--|
| 60   | 60.50 | 24  | 170 | 3430 |  |  |  |  |
| 50   | 48.71 | 29  | 200 | 3190 |  |  |  |  |
| 40   | 39.29 | 36  | 200 | 2970 |  |  |  |  |
| 30   | 30.31 | 47  | 200 | 2720 |  |  |  |  |
| 25   | 24.44 | 58  | 200 | 2530 |  |  |  |  |
| 20   | 20.25 | 70  | 200 | 2380 |  |  |  |  |
| 15   | 14.67 | 96  | 200 | 2130 |  |  |  |  |
| 12.5 | 12.67 | 111 | 180 | 2030 |  |  |  |  |
| 10   | 10.50 | 134 | 170 | 1910 |  |  |  |  |
| 7.5  | 7.60  | 185 | 160 | 1710 |  |  |  |  |

# RAPPORTI E PREDISPOSIZIONI POSSIBILI

## RATIO AND IEC MOTOR ADAPTERS

**CHO 72/73**  $n_1 = 1400$  r/min **350Nm**

| i<br>nominale<br><i>nominal</i> | i<br>reale<br><i>actual</i> | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $F_{r2}$<br>[N] | 63B5 | 71B5<br>71B14 | 80B5<br>80B14 | 90B5<br>90B14 | 100B5<br>100B14 | 112B5<br>112B14 |
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|-----------------|-----------------|
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|-----------------|-----------------|

**3 stadi / 3 stages**

**CHO 73**

|     |        |     |     |      |  |  |  |  |  |  |
|-----|--------|-----|-----|------|--|--|--|--|--|--|
| 300 | 297.21 | 4.8 | 350 | 6500 |  |  |  |  |  |  |
| 250 | 240.89 | 5.9 | 350 | 6500 |  |  |  |  |  |  |
| 200 | 200.66 | 7.0 | 350 | 6500 |  |  |  |  |  |  |
| 150 | 151.20 | 9.3 | 350 | 6500 |  |  |  |  |  |  |
| 125 | 125.95 | 12  | 350 | 5980 |  |  |  |  |  |  |
| 100 | 99.22  | 15  | 350 | 5520 |  |  |  |  |  |  |
| 75  | 75.45  | 19  | 350 | 5040 |  |  |  |  |  |  |

**2 stadi / 2 stages**

**CHO 72**

|      |       |     |     |      |  |  |  |  |  |  |
|------|-------|-----|-----|------|--|--|--|--|--|--|
| 60   | 59.44 | 24  | 350 | 4660 |  |  |  |  |  |  |
| 50   | 48.18 | 30  | 350 | 4340 |  |  |  |  |  |  |
| 40   | 40.13 | 35  | 350 | 4080 |  |  |  |  |  |  |
| 30   | 30.24 | 47  | 350 | 3720 |  |  |  |  |  |  |
| 25   | 25.19 | 56  | 350 | 3500 |  |  |  |  |  |  |
| 20   | 19.84 | 71  | 350 | 3230 |  |  |  |  |  |  |
| 15   | 15.09 | 93  | 350 | 2950 |  |  |  |  |  |  |
| 12.5 | 12.49 | 113 | 330 | 2770 |  |  |  |  |  |  |
| 10   | 9.84  | 143 | 320 | 2550 |  |  |  |  |  |  |
| 7.5  | 7.48  | 188 | 310 | 2330 |  |  |  |  |  |  |

**CHO 82/83**  $n_1 = 1400$  r/min **500Nm**

| i<br>nominale<br><i>nominal</i> | i<br>reale<br><i>actual</i> | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $F_{r2}$<br>[N] | 63B5 | 71B5<br>71B14 | 80B5<br>80B14 | 90B5<br>90B14 | 100B5<br>100B14 | 112B5<br>112B14 |
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|-----------------|-----------------|
|---------------------------------|-----------------------------|------------------|------------------|-----------------|------|---------------|---------------|---------------|-----------------|-----------------|

**3 stadi / 3 stages**

**CHO 83**

|     |        |     |     |      |  |  |  |  |  |  |
|-----|--------|-----|-----|------|--|--|--|--|--|--|
| 300 | 295.18 | 4.8 | 460 | 8300 |  |  |  |  |  |  |
| 250 | 240.89 | 5.9 | 500 | 8300 |  |  |  |  |  |  |
| 200 | 200.66 | 7.0 | 500 | 8300 |  |  |  |  |  |  |
| 150 | 151.20 | 9.3 | 500 | 8050 |  |  |  |  |  |  |
| 125 | 125.95 | 12  | 500 | 7580 |  |  |  |  |  |  |
| 100 | 99.22  | 15  | 500 | 7000 |  |  |  |  |  |  |
| 75  | 75.45  | 19  | 500 | 6390 |  |  |  |  |  |  |

**2 stadi / 2 stages**

**CHO 82**

|      |       |     |     |      |  |  |  |  |  |  |
|------|-------|-----|-----|------|--|--|--|--|--|--|
| 60   | 59.04 | 24  | 460 | 5890 |  |  |  |  |  |  |
| 50   | 48.17 | 30  | 500 | 5500 |  |  |  |  |  |  |
| 40   | 40.13 | 35  | 500 | 5170 |  |  |  |  |  |  |
| 30   | 30.24 | 47  | 500 | 4710 |  |  |  |  |  |  |
| 25   | 25.19 | 56  | 500 | 4430 |  |  |  |  |  |  |
| 20   | 19.84 | 71  | 500 | 4090 |  |  |  |  |  |  |
| 15   | 15.09 | 93  | 500 | 3730 |  |  |  |  |  |  |
| 12.5 | 12.49 | 113 | 480 | 3510 |  |  |  |  |  |  |
| 10   | 9.84  | 143 | 460 | 3240 |  |  |  |  |  |  |
| 7.5  | 7.48  | 188 | 440 | 2950 |  |  |  |  |  |  |

## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |             |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-------------|-------------|
| <b>0.12</b>      | 5.7              | 184              | 250            | 244.29        | 4100            | 0.7   | <b>CHO53</b> | <b>63B5</b> | <b>63A4</b> |
|                  | 7.0              | 151              | 200            | 200.44        | 4100            | 0.9   |              |             |             |
|                  | 9.5              | 110              | 150            | 146.67        | 4000            | 1.2   |              |             |             |
|                  | 11.6             | 91               | 125            | 120.34        | 3770            | 1.4   |              |             |             |
|                  | 13.9             | 76               | 100            | 101.04        | 3560            | 1.7   |              |             |             |
|                  | 18.8             | 56               | 75             | 74.62         | 3220            | 2.3   |              |             |             |
|                  | 24.0             | 45               | 60             | 58.36         | 2960            | 2.4   | <b>CHO52</b> | <b>63B5</b> | <b>63A4</b> |
|                  | 28.7             | 38               | 50             | 48.86         | 2790            | 3.5   |              |             |             |
|                  | 35               | 31               | 40             | 40.09         | 2610            | 4.2   |              |             |             |
|                  | 48               | 23               | 30             | 29.33         | 2350            | 5.8   |              |             |             |
|                  | 58               | 18.5             | 25             | 24.07         | 2200            | 7.0   |              |             |             |
|                  | 69               | 15.6             | 20             | 20.21         | 2080            | 8.4   |              |             |             |
|                  | 94               | 11.5             | 15             | 14.92         | 1880            | 11.3  |              |             |             |
|                  | 112              | 9.6              | 12.5           | 12.47         | 1770            | 13.5  |              |             |             |
|                  | 134              | 8.1              | 10             | 10.47         | 1670            | 16.1  |              |             |             |
|                  | 181              | 5.9              | 7.5            | 7.73          | 1510            | 16.8  |              |             |             |
|                  | 5.7              | 183              | 250            | 243.57        | 4800            | 1.1   | <b>CHO63</b> | <b>63B5</b> | <b>63A4</b> |
|                  | 7.1              | 148              | 200            | 196.43        | 4800            | 1.4   |              |             |             |
|                  | 9.2              | 114              | 150            | 151.56        | 4650            | 1.8   |              |             |             |
|                  | 11.5             | 92               | 125            | 122.22        | 4330            | 2.2   |              |             |             |
|                  | 13.8             | 76               | 100            | 101.27        | 4070            | 2.6   |              |             |             |
|                  | 19.1             | 55               | 75             | 73.33         | 3650            | 2.9   |              |             |             |
|                  | 4.7              | 224              | 300            | 297.21        | 6500            | 1.6   | <b>CHO73</b> | <b>63B5</b> | <b>63A4</b> |
|                  | 5.8              | 181              | 250            | 240.89        | 6500            | 1.9   |              |             |             |
|                  | 7.0              | 151              | 200            | 200.66        | 6500            | 2.3   |              |             |             |
|                  | 4.7              | 222              | 300            | 295.18        | 8300            | 2.1   | <b>CHO83</b> | <b>63B5</b> | <b>63A4</b> |
|                  | 5.8              | 181              | 250            | 240.89        | 8300            | 2.8   |              |             |             |
| <b>0.18</b>      | 48               | 34               | 60             | 58.36         | 2350            | 3.3   | <b>CHO52</b> | <b>63B5</b> | <b>63A2</b> |
|                  | 57               | 28               | 50             | 48.86         | 2220            | 4.6   |              |             |             |
|                  | 70               | 23               | 40             | 40.09         | 2070            | 5.6   |              |             |             |
|                  | 95               | 16.9             | 30             | 29.33         | 1870            | 7.7   |              |             |             |
|                  | 116              | 13.9             | 25             | 24.07         | 1750            | 9.4   |              |             |             |
|                  | 11.6             | 136              | 125            | 120.34        | 3770            | 1.0   | <b>CHO53</b> | <b>63B5</b> | <b>63B4</b> |
|                  | 13.9             | 114              | 100            | 101.04        | 3560            | 1.1   |              |             |             |
|                  | 18.8             | 84               | 75             | 74.62         | 3220            | 1.5   |              |             |             |
|                  | 24               | 67               | 60             | 58.36         | 2960            | 1.6   | <b>CHO52</b> | <b>63B5</b> | <b>63B4</b> |
|                  | 28.7             | 56               | 50             | 48.86         | 2790            | 2.3   |              |             |             |
|                  | 35               | 46               | 40             | 40.09         | 2610            | 2.8   |              |             |             |
|                  | 48               | 34               | 30             | 29.33         | 2350            | 3.8   |              |             |             |
|                  | 58               | 28               | 25             | 24.07         | 2200            | 4.7   |              |             |             |
|                  | 69               | 23               | 20             | 20.21         | 2080            | 5.6   |              |             |             |
|                  | 94               | 17.2             | 15             | 14.92         | 1880            | 7.5   |              |             |             |
|                  | 112              | 14.4             | 12.5           | 12.47         | 1770            | 9.0   |              |             |             |
|                  | 134              | 12.1             | 10             | 10.47         | 1670            | 10.8  |              |             |             |
|                  | 181              | 8.9              | 7.5            | 7.73          | 1510            | 11.2  |              |             |             |



## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$        |                 |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|--------------|-----------------|-----------------|-------------|
| <b>0.18</b>      | 15.4             | 105              | 60             | 58.36         | 3430            | 1.0          | <b>CHO52</b>    | <b>71B5/B14</b> | <b>71A6</b> |
|                  | 18.4             | 88               | 50             | 48.86         | 3240            | 1.5          |                 |                 |             |
|                  | 22.4             | 72               | 40             | 40.09         | 3030            | 1.8          |                 |                 |             |
|                  | 31               | 53               | 30             | 29.33         | 2730            | 2.5          |                 |                 |             |
|                  | 37               | 43               | 25             | 24.07         | 2550            | 3.0          |                 |                 |             |
|                  | 7.1              | 222              | 200            | 196.43        | 4800            | 0.9          | <b>CHO63</b>    | <b>63B5</b>     | <b>63B4</b> |
|                  | 9.2              | 171              | 150            | 151.56        | 4650            | 1.2          |                 |                 |             |
|                  | 11.5             | 138              | 125            | 122.22        | 4330            | 1.4          |                 |                 |             |
|                  | 13.8             | 114              | 100            | 101.27        | 4070            | 1.7          |                 |                 |             |
|                  | 19.1             | 83               | 75             | 73.33         | 3650            | 1.9          |                 |                 |             |
|                  | 23.1             | 70               | 60             | 60.50         | 3430            | 2.4          | <b>CHO62</b>    | <b>63B5</b>     | <b>63B4</b> |
|                  | 28.7             | 56               | 50             | 48.71         | 3190            | 3.6          |                 |                 |             |
|                  | 7.4              | 215              | 125            | 122.22        | 4800            | 0.9          | <b>CHO63</b>    | <b>71B5/B14</b> | <b>71A6</b> |
|                  | 8.9              | 178              | 100            | 101.27        | 4720            | 1.1          |                 |                 |             |
|                  | 12.3             | 129              | 75             | 73.33         | 4230            | 1.2          |                 |                 |             |
|                  | 14.9             | 109              | 60             | 60.50         | 3970            | 1.6          | <b>CHO62</b>    | <b>71B5/B14</b> | <b>71A6</b> |
|                  | 18.5             | 87               | 50             | 48.71         | 3690            | 2.3          |                 |                 |             |
|                  | 22.9             | 71               | 40             | 38.29         | 3440            | 2.8          |                 |                 |             |
|                  | 4.7              | 336              | 300            | 297.21        | 6500            | 1.0          | <b>CHO73</b>    | <b>63B5</b>     | <b>63B4</b> |
|                  | 5.8              | 272              | 250            | 240.89        | 6500            | 1.3          |                 |                 |             |
| 7.0              | 227              | 200              | 200.66         | 6500          | 1.5             |              |                 |                 |             |
| 9.3              | 171              | 150              | 151.20         | 6500          | 2.0             |              |                 |                 |             |
| 11.1             | 142              | 125              | 125.95         | 5980          | 2.5             |              |                 |                 |             |
| 14.1             | 112              | 100              | 99.22          | 5520          | 3.1             |              |                 |                 |             |
| 4.5              | 353              | 200              | 200.66         | 6500          | 1.0             | <b>CHO73</b> | <b>71B5/B14</b> | <b>71A6</b>     |             |
| 6.0              | 266              | 150              | 151.20         | 6500          | 1.3             |              |                 |                 |             |
| 7.1              | 221              | 125              | 125.95         | 6500          | 1.6             |              |                 |                 |             |
| 9.1              | 174              | 100              | 99.22          | 6400          | 2.0             |              |                 |                 |             |
| 11.9             | 133              | 75               | 75.45          | 5840          | 2.6             |              |                 |                 |             |
| 4.7              | 333              | 300              | 295.18         | 8300          | 1.4             | <b>CHO83</b> | <b>63B5</b>     | <b>63B4</b>     |             |
| 5.8              | 272              | 250              | 240.89         | 8300          | 1.8             |              |                 |                 |             |
| 7.0              | 227              | 200              | 200.66         | 8300          | 2.2             |              |                 |                 |             |
| 9.3              | 171              | 150              | 151.20         | 8050          | 2.9             |              |                 |                 |             |
| 3.7              | 423              | 250              | 240.89         | 8300          | 1.2             | <b>CHO83</b> | <b>71B5/B14</b> | <b>71A6</b>     |             |
| 4.5              | 353              | 200              | 200.66         | 8300          | 1.4             |              |                 |                 |             |
| 6.0              | 266              | 150              | 151.20         | 8300          | 1.9             |              |                 |                 |             |
| 7.1              | 221              | 125              | 125.95         | 8300          | 2.3             |              |                 |                 |             |
| 9.1              | 174              | 100              | 99.22          | 8110          | 2.9             |              |                 |                 |             |
| <b>0.25</b>      | 19.1             | 115              | 150            | 146.67        | 3200            | 1.1          | <b>CHO53</b>    | <b>63B5</b>     | <b>63B2</b> |
|                  | 23.3             | 94               | 125            | 120.34        | 2990            | 1.4          |                 |                 |             |
|                  | 27.7             | 79               | 100            | 101.04        | 2820            | 1.6          |                 |                 |             |
|                  | 38               | 59               | 75             | 74.62         | 2550            | 2.2          |                 |                 |             |
|                  | 48               | 47               | 60             | 58.36         | 2350            | 2.4          | <b>CHO52</b>    | <b>63B5</b>     | <b>63B2</b> |
|                  | 57               | 39               | 50             | 48.86         | 2220            | 3.3          |                 |                 |             |
|                  | 70               | 32               | 40             | 40.09         | 2070            | 4.0          |                 |                 |             |



# TABELLA DI SELEZIONE PRESTAZIONI

## GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-----------------|-------------|
| <b>0.25</b>      | 24               | 94               | 60             | 58.36         | 2960            | 1.2   | <b>CHO52</b> | <b>71B5/B14</b> | <b>71A4</b> |
|                  | 28.7             | 78               | 50             | 48.86         | 2790            | 1.7   |              |                 |             |
|                  | 35               | 64               | 40             | 40.09         | 2610            | 2.0   |              |                 |             |
|                  | 48               | 47               | 30             | 29.33         | 2350            | 2.8   |              |                 |             |
|                  | 58               | 39               | 25             | 24.07         | 2200            | 3.4   |              |                 |             |
|                  | 69               | 32               | 20             | 20.21         | 2080            | 4.0   |              |                 |             |
|                  | 94               | 24               | 15             | 14.92         | 1880            | 5.4   |              |                 |             |
|                  | 18.4             | 122              | 50             | 48.86         | 3240            | 1.1   | <b>CHO52</b> | <b>71B5/B14</b> | <b>71B6</b> |
|                  | 22.4             | 100              | 40             | 40.09         | 3030            | 1.3   |              |                 |             |
|                  | 31               | 73               | 30             | 29.33         | 2730            | 1.8   |              |                 |             |
|                  | 37               | 60               | 25             | 24.07         | 2550            | 2.2   |              |                 |             |
|                  | 45               | 50               | 20             | 20.21         | 2410            | 2.6   |              |                 |             |
|                  | 60               | 37               | 15             | 14.92         | 2180            | 3.5   |              |                 |             |
|                  | 72               | 31               | 12.5           | 12.47         | 2050            | 4.2   |              |                 |             |
|                  | 86               | 26               | 10             | 10.47         | 1930            | 5.0   |              |                 |             |
|                  | 116              | 19               | 7.5            | 7.73          | 1750            | 5.2   |              |                 |             |
|                  | 11.5             | 191              | 250            | 243.57        | 4330            | 1.0   | <b>CHO63</b> | <b>63B5</b>     | <b>63B2</b> |
|                  | 14.3             | 154              | 200            | 196.43        | 4030            | 1.3   |              |                 |             |
|                  | 18.5             | 119              | 150            | 151.56        | 3690            | 1.7   |              |                 |             |
|                  | 22.9             | 96               | 125            | 122.22        | 3440            | 2.1   |              |                 |             |
|                  | 27.6             | 78               | 100            | 101.27        | 3230            | 2.5   |              |                 |             |
|                  | 38               | 58               | 75             | 73.33         | 2900            | 2.8   |              |                 |             |
|                  | 11.5             | 192              | 125            | 122.22        | 4330            | 1.0   | <b>CHO63</b> | <b>71B5/B14</b> | <b>71A4</b> |
|                  | 13.8             | 159              | 100            | 101.27        | 4070            | 1.3   |              |                 |             |
|                  | 19.1             | 115              | 75             | 73.33         | 3650            | 1.4   |              |                 |             |
|                  | 23.1             | 97               | 60             | 60.50         | 3430            | 1.8   | <b>CHO62</b> | <b>71B5/B14</b> | <b>71A4</b> |
|                  | 28.7             | 78               | 50             | 48.71         | 3190            | 2.6   |              |                 |             |
|                  | 36               | 63               | 40             | 39.29         | 2970            | 3.2   |              |                 |             |
|                  | 46               | 49               | 30             | 30.31         | 2720            | 4.1   |              |                 |             |
|                  | 14.9             | 151              | 60             | 60.50         | 3970            | 1.1   | <b>CHO62</b> | <b>71B5/B14</b> | <b>71B6</b> |
|                  | 18.5             | 121              | 50             | 48.71         | 3690            | 1.6   |              |                 |             |
|                  | 22.9             | 98               | 40             | 39.29         | 3440            | 2.0   |              |                 |             |
|                  | 29.7             | 76               | 30             | 30.31         | 3150            | 2.6   |              |                 |             |
|                  | 9.4              | 233              | 300            | 297.21        | 6320            | 1.5   | <b>CHO73</b> | <b>63B5</b>     | <b>63B2</b> |
|                  | 11.6             | 189              | 250            | 240.89        | 5890            | 1.9   |              |                 |             |
|                  | 14               | 157              | 200            | 200.66        | 5540            | 2.2   |              |                 |             |
|                  | 18.5             | 119              | 150            | 151.20        | 5040            | 3.0   |              |                 |             |
|                  | 5.8              | 378              | 250            | 240.89        | 6500            | 0.9   | <b>CHO73</b> | <b>71B5/B14</b> | <b>71A4</b> |
|                  | 7.0              | 315              | 200            | 200.66        | 6500            | 1.1   |              |                 |             |
|                  | 9.3              | 237              | 150            | 151.20        | 6500            | 1.5   |              |                 |             |
|                  | 11.1             | 198              | 125            | 125.95        | 5980            | 1.8   |              |                 |             |
|                  | 14.1             | 156              | 100            | 99.22         | 5520            | 2.2   |              |                 |             |
|                  | 18.6             | 118              | 75             | 75.45         | 5040            | 3.0   |              |                 |             |
|                  | 6                | 369              | 150            | 151.20        | 6500            | 0.9   | <b>CHO73</b> | <b>71B5/B14</b> | <b>71B6</b> |
|                  | 7.1              | 307              | 125            | 125.95        | 6500            | 1.1   |              |                 |             |



## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$        |                 |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|--------------|-----------------|-----------------|-------------|
| <b>0.25</b>      | 9.1              | 242              | 100            | 99.22         | 6400            | 1.4          | <b>CHO73</b>    | <b>71B5/B14</b> | <b>71B6</b> |
|                  | 11.9             | 184              | 75             | 75.45         | 5840            | 1.9          |                 |                 |             |
|                  | 15.1             | 148              | 60             | 59.44         | 5390            | 2.4          | <b>CHO72</b>    | <b>71B5/B14</b> | <b>71B6</b> |
|                  | 18.7             | 120              | 50             | 48.18         | 5030            | 2.9          |                 |                 |             |
|                  | 22.4             | 100              | 40             | 40.13         | 4730            | 3.5          |                 |                 |             |
|                  | 4.7              | 463              | 300            | 295.18        | 8300            | 1.0          | <b>CHO83</b>    | <b>71B5/B14</b> | <b>71A4</b> |
|                  | 5.8              | 378              | 250            | 240.89        | 8300            | 1.3          |                 |                 |             |
|                  | 7.0              | 315              | 200            | 200.66        | 8300            | 1.6          |                 |                 |             |
|                  | 9.3              | 237              | 150            | 151.20        | 8050            | 2.1          |                 |                 |             |
|                  | 11.1             | 198              | 125            | 125.95        | 7580            | 2.5          |                 |                 |             |
|                  | 4.5              | 490              | 200            | 200.66        | 8300            | 1.0          | <b>CHO83</b>    | <b>71B5/B14</b> | <b>71B6</b> |
|                  | 6.0              | 369              | 150            | 151.20        | 8300            | 1.4          |                 |                 |             |
| 7.1              | 307              | 125              | 125.95         | 8300          | 1.6             |              |                 |                 |             |
| 9.1              | 242              | 100              | 99.22          | 8110          | 2.1             |              |                 |                 |             |
| 11.9             | 184              | 75               | 75.45          | 7400          | 2.7             |              |                 |                 |             |
| <b>0.37</b>      | 23.3             | 140              | 125            | 120.34        | 2990            | 0.9          | <b>CHO53</b>    | <b>71B5/B14</b> | <b>71A2</b> |
|                  | 27.7             | 117              | 100            | 101.04        | 2820            | 1.1          |                 |                 |             |
|                  | 38               | 87               | 75             | 74.62         | 2550            | 1.5          |                 |                 |             |
|                  | 48               | 69               | 60             | 58.36         | 2350            | 1.6          | <b>CHO52</b>    | <b>71B5/B14</b> | <b>71A2</b> |
|                  | 57               | 58               | 50             | 48.86         | 2220            | 2.2          |                 |                 |             |
|                  | 70               | 48               | 40             | 40.09         | 2070            | 2.7          |                 |                 |             |
|                  | 95               | 35               | 30             | 29.33         | 1870            | 3.7          |                 |                 |             |
|                  | 28.7             | 116              | 50             | 48.86         | 2790            | 1.1          | <b>CHO52</b>    | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 35               | 95               | 40             | 40.09         | 2610            | 1.4          |                 |                 |             |
|                  | 48               | 70               | 30             | 29.33         | 2350            | 1.6          |                 |                 |             |
|                  | 58               | 57               | 25             | 24.07         | 2200            | 2.3          |                 |                 |             |
|                  | 69               | 48               | 20             | 20.21         | 2080            | 2.7          |                 |                 |             |
|                  | 94               | 35               | 15             | 14.90         | 1880            | 3.7          |                 |                 |             |
|                  | 112              | 30               | 12.5           | 12.47         | 1770            | 4.4          |                 |                 |             |
|                  | 134              | 25               | 10             | 10.47         | 1670            | 5.2          |                 |                 |             |
|                  | 181              | 18               | 7.5            | 7.73          | 1510            | 5.5          |                 |                 |             |
|                  | 31               | 108              | 30             | 29.33         | 2730            | 1.2          | <b>CHO52</b>    | <b>80B5/B14</b> | <b>80A6</b> |
|                  | 37               | 89               | 25             | 24.07         | 2550            | 1.5          |                 |                 |             |
|                  | 45               | 75               | 20             | 20.21         | 2410            | 1.7          |                 |                 |             |
|                  | 60               | 55               | 15             | 14.92         | 2180            | 2.4          |                 |                 |             |
|                  | 72               | 46               | 12.5           | 12.47         | 2050            | 2.8          |                 |                 |             |
|                  | 86               | 39               | 10             | 10.47         | 1930            | 3.4          |                 |                 |             |
|                  | 116              | 29               | 7.5            | 7.73          | 1750            | 3.5          |                 |                 |             |
|                  | 14.3             | 228              | 200            | 196.43        | 4030            | 0.9          | <b>CHO63</b>    | <b>71B5/B14</b> | <b>71A2</b> |
| 18.5             | 176              | 150              | 151.56         | 3690          | 1.1             |              |                 |                 |             |
| 22.9             | 142              | 125              | 122.22         | 3440          | 1.4             |              |                 |                 |             |
| 27.6             | 118              | 100              | 101.27         | 3230          | 1.7             |              |                 |                 |             |
| 46               | 72               | 60               | 60.50          | 2720          | 2.4             | <b>CHO62</b> | <b>71B5/B14</b> | <b>71A2</b>     |             |
| 57               | 58               | 50               | 48.71          | 2530          | 3.5             |              |                 |                 |             |
| 71               | 47               | 40               | 39.29          | 2350          | 4.3             |              |                 |                 |             |



## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-----------------|-------------|
| 0.37             | 13.8             | 235              | 100            | 101.27        | 4070            | 0.9   | <b>CHO63</b> | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 19.1             | 170              | 75             | 73.33         | 3650            | 0.9   |              |                 |             |
|                  | 23.1             | 144              | 60             | 60.50         | 3430            | 1.2   | <b>CHO62</b> | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 28.7             | 116              | 50             | 48.71         | 3190            | 1.7   |              |                 |             |
|                  | 36               | 93               | 40             | 39.29         | 2970            | 2.1   |              |                 |             |
|                  | 46               | 72               | 30             | 30.31         | 2720            | 2.8   |              |                 |             |
|                  | 57               | 58               | 25             | 24.44         | 2530            | 3.4   |              |                 |             |
|                  | 69               | 48               | 20             | 20.25         | 2380            | 4.2   |              |                 |             |
|                  | 18.5             | 180              | 50             | 48.71         | 3690            | 1.1   | <b>CHO62</b> | <b>80B5/B14</b> | <b>80A6</b> |
|                  | 22.9             | 145              | 40             | 39.29         | 3440            | 1.4   |              |                 |             |
|                  | 29.7             | 112              | 30             | 30.31         | 3150            | 1.8   |              |                 |             |
|                  | 37               | 90               | 25             | 24.44         | 2930            | 2.2   |              |                 |             |
|                  | 44               | 75               | 20             | 20.25         | 2760            | 2.7   |              |                 |             |
|                  | 61               | 54               | 15             | 14.67         | 2470            | 3.5   |              |                 |             |
|                  | 71               | 47               | 12.5           | 12.67         | 2360            | 3.5   |              |                 |             |
|                  | 86               | 39               | 10             | 10.50         | 2210            | 3.5   |              |                 |             |
|                  | 118              | 28               | 7.5            | 7.60          | 1990            | 3.6   |              |                 |             |
|                  | 9.4              | 345              | 300            | 297.21        | 6320            | 1.0   | <b>CHO73</b> | <b>71B5/B14</b> | <b>71A2</b> |
|                  | 11.6             | 280              | 250            | 240.89        | 5890            | 1.3   |              |                 |             |
|                  | 14               | 233              | 200            | 200.66        | 5540            | 1.5   |              |                 |             |
|                  | 18.5             | 176              | 150            | 151.20        | 5040            | 2.0   |              |                 |             |
|                  | 9.3              | 351              | 150            | 151.20        | 6500            | 1.0   | <b>CHO73</b> | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 11.1             | 292              | 125            | 125.95        | 5980            | 1.2   |              |                 |             |
|                  | 14.1             | 230              | 100            | 99.22         | 5520            | 1.5   |              |                 |             |
|                  | 18.6             | 175              | 75             | 75.45         | 5040            | 2.0   |              |                 |             |
|                  | 23.6             | 141              | 60             | 59.44         | 4660            | 2.5   | <b>CHO72</b> | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 29.1             | 114              | 50             | 48.18         | 4340            | 3.1   |              |                 |             |
|                  | 9.1              | 358              | 100            | 99.22         | 6400            | 1.0   | <b>CHO73</b> | <b>80B5/B14</b> | <b>80A6</b> |
|                  | 11.9             | 273              | 75             | 75.45         | 5840            | 1.3   |              |                 |             |
|                  | 15.1             | 219              | 60             | 59.44         | 5390            | 1.6   | <b>CHO72</b> | <b>80B5/B14</b> | <b>80A6</b> |
|                  | 18.7             | 178              | 50             | 48.18         | 5030            | 2.0   |              |                 |             |
|                  | 22.4             | 148              | 40             | 40.13         | 4730            | 2.4   |              |                 |             |
|                  | 29.8             | 112              | 30             | 30.24         | 4310            | 3.1   |              |                 |             |
|                  | 9.5              | 343              | 300            | 295.18        | 7990            | 1.3   | <b>CHO83</b> | <b>71B5/B14</b> | <b>71A2</b> |
|                  | 11.6             | 280              | 250            | 240.89        | 7470            | 1.8   |              |                 |             |
|                  | 14.0             | 233              | 200            | 200.66        | 7030            | 2.1   |              |                 |             |
|                  | 18.5             | 176              | 150            | 151.20        | 6390            | 2.8   |              |                 |             |
|                  | 22.2             | 146              | 125            | 125.95        | 6010            | 3.4   |              |                 |             |
|                  | 5.8              | 559              | 250            | 240.89        | 8300            | 0.9   | <b>CHO83</b> | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 7.0              | 466              | 200            | 200.66        | 8300            | 1.1   |              |                 |             |
|                  | 9.3              | 351              | 150            | 151.20        | 8050            | 1.4   |              |                 |             |
|                  | 11.1             | 292              | 125            | 125.95        | 7580            | 1.7   |              |                 |             |
|                  | 14.1             | 230              | 100            | 99.22         | 7000            | 2.2   |              |                 |             |
|                  | 18.6             | 175              | 75             | 75.45         | 6390            | 2.9   |              |                 |             |
|                  | 22.4             | 145              | 60             | 62.43         | 6000            | 3.1   |              |                 |             |



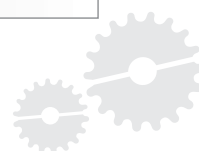
## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-----------------|-------------|
| <b>0.37</b>      | 28.5             | 114              | 50             | 49.18         | 5540            | 3.1   | <b>CHO83</b> | <b>71B5/B14</b> | <b>71B4</b> |
|                  | 6.0              | 546              | 150            | 151.20        | 8300            | 0.9   | <b>CHO83</b> | <b>80B5/B14</b> | <b>80A6</b> |
|                  | 7.1              | 455              | 125            | 125.95        | 8300            | 1.1   |              |                 |             |
|                  | 9.1              | 358              | 100            | 99.22         | 8110            | 1.4   |              |                 |             |
|                  | 11.9             | 273              | 75             | 75.45         | 7400            | 1.8   |              |                 |             |
|                  | 15.2             | 218              | 60             | 59.04         | 6820            | 2.1   | <b>CHO82</b> | <b>80B5/B14</b> | <b>80A6</b> |
|                  | 18.7             | 178              | 50             | 48.18         | 6370            | 2.8   |              |                 |             |
| <b>0.55</b>      | 70               | 71               | 40             | 40.09         | 2070            | 1.8   | <b>CHO52</b> | <b>71B5/B14</b> | <b>71B2</b> |
|                  | 95               | 52               | 30             | 29.33         | 1870            | 2.5   |              |                 |             |
|                  | 116              | 42               | 25             | 24.07         | 1750            | 3.1   |              |                 |             |
|                  | 139              | 36               | 20             | 20.21         | 1650            | 3.6   |              |                 |             |
|                  | 35               | 141              | 40             | 40.09         | 2610            | 0.9   | <b>CHO52</b> | <b>80B5/B14</b> | <b>80A4</b> |
|                  | 48               | 103              | 30             | 29.33         | 2350            | 1.3   |              |                 |             |
|                  | 58               | 85               | 25             | 24.07         | 2200            | 1.5   |              |                 |             |
|                  | 69               | 71               | 20             | 20.21         | 2080            | 1.8   |              |                 |             |
|                  | 94               | 53               | 15             | 14.92         | 1880            | 2.5   |              |                 |             |
|                  | 112              | 44               | 12.5           | 12.47         | 1770            | 3.0   |              |                 |             |
|                  | 134              | 37               | 10             | 10.47         | 1670            | 3.5   |              |                 |             |
|                  | 181              | 27               | 7.5            | 7.73          | 1510            | 3.7   |              |                 |             |
|                  | 22.9             | 211              | 125            | 122.22        | 3440            | 0.9   | <b>CHO63</b> | <b>71B5/B14</b> | <b>71B2</b> |
|                  | 27.6             | 175              | 100            | 101.27        | 3230            | 1.1   |              |                 |             |
|                  | 38               | 127              | 75             | 73.33         | 2900            | 1.3   |              |                 |             |
|                  | 46               | 107              | 60             | 60.50         | 2720            | 1.6   | <b>CHO62</b> | <b>71B5/B14</b> | <b>71B2</b> |
|                  | 57               | 86               | 50             | 48.71         | 2530            | 2.3   |              |                 |             |
|                  | 71               | 69               | 40             | 39.29         | 2350            | 2.9   |              |                 |             |
|                  | 92               | 53               | 30             | 30.31         | 2160            | 3.7   |              |                 |             |
|                  | 28.7             | 172              | 50             | 48.71         | 3190            | 1.2   | <b>CHO62</b> | <b>80B5/B14</b> | <b>80A4</b> |
|                  | 36               | 139              | 40             | 39.29         | 2970            | 1.4   |              |                 |             |
|                  | 46               | 107              | 30             | 30.31         | 2720            | 1.9   |              |                 |             |
|                  | 57               | 86               | 25             | 24.44         | 2530            | 2.3   |              |                 |             |
|                  | 69               | 71               | 20             | 20.25         | 2380            | 2.8   |              |                 |             |
|                  | 95               | 52               | 15             | 14.67         | 2130            | 3.7   |              |                 |             |
|                  | 110              | 45               | 12.5           | 12.67         | 2030            | 3.7   |              |                 |             |
|                  | 133              | 37               | 10             | 10.50         | 1910            | 3.6   |              |                 |             |
|                  | 184              | 27               | 7.5            | 7.60          | 1710            | 3.7   |              |                 |             |
|                  | 22.9             | 216              | 40             | 39.29         | 3440            | 0.9   | <b>CHO62</b> | <b>80B5/B14</b> | <b>80B6</b> |
|                  | 29.7             | 166              | 30             | 30.31         | 3150            | 1.2   |              |                 |             |
|                  | 37               | 134              | 25             | 24.44         | 2930            | 1.5   |              |                 |             |
|                  | 44               | 111              | 20             | 20.25         | 2760            | 1.8   |              |                 |             |
|                  | 61               | 80               | 15             | 14.67         | 2470            | 2.4   |              |                 |             |
|                  | 71               | 70               | 12.5           | 12.67         | 2360            | 2.4   |              |                 |             |
|                  | 86               | 58               | 10             | 10.50         | 2210            | 2.3   |              |                 |             |
|                  | 118              | 42               | 7.5            | 7.60          | 1990            | 2.4   |              |                 |             |
|                  | 14               | 346              | 200            | 200.66        | 5540            | 1.0   | <b>CHO73</b> | <b>71B5/B14</b> | <b>71B2</b> |
|                  | 18.5             | 261              | 150            | 151.20        | 5040            | 1.3   |              |                 |             |



## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$        |                 |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|--------------|-----------------|-----------------|-------------|
| <b>0.55</b>      | 22.2             | 217              | 125            | 125.95        | 4750            | 1.6          | <b>CHO73</b>    | <b>71B5/B14</b> | <b>71B2</b> |
|                  | 28.2             | 171              | 100            | 99.22         | 4380            | 2.0          |                 |                 |             |
|                  | 37               | 130              | 75             | 75.45         | 4000            | 2.7          |                 |                 |             |
|                  | 45               | 108              | 60             | 62.43         | 3750            | 3.2          |                 |                 |             |
|                  | 57               | 85               | 50             | 49.18         | 3470            | 4.1          |                 |                 |             |
|                  | 14.1             | 342              | 100            | 99.22         | 5520            | 1.0          | <b>CHO73</b>    | <b>80B5/B14</b> | <b>80A4</b> |
|                  | 18.6             | 260              | 75             | 75.45         | 5040            | 1.3          |                 |                 |             |
|                  | 23.6             | 210              | 60             | 59.44         | 4660            | 1.7          | <b>CHO72</b>    | <b>80B5/B14</b> | <b>80A4</b> |
|                  | 29.1             | 170              | 50             | 48.18         | 4340            | 2.1          |                 |                 |             |
|                  | 35               | 142              | 40             | 40.13         | 4080            | 2.5          |                 |                 |             |
| 46               | 107              | 30               | 30.24          | 3720          | 3.3             |              |                 |                 |             |
| 15.1             | 326              | 60               | 59.44          | 5390          | 1.1             | <b>CHO72</b> | <b>80B5/B14</b> | <b>80B6</b>     |             |
| 18.7             | 264              | 50               | 48.18          | 5030          | 1.3             |              |                 |                 |             |
| 22.4             | 220              | 40               | 40.13          | 4730          | 1.6             |              |                 |                 |             |
| 29.8             | 166              | 30               | 30.24          | 4310          | 2.1             |              |                 |                 |             |
| 9.5              | 509              | 300              | 295.18         | 7990          | 0.9             | <b>CHO83</b> | <b>71B5/B14</b> | <b>71B2</b>     |             |
| 11.6             | 416              | 250              | 240.89         | 7470          | 1.2             |              |                 |                 |             |
| 14.0             | 346              | 200              | 200.66         | 7030          | 1.4             |              |                 |                 |             |
| 18.5             | 261              | 150              | 151.20         | 6390          | 1.9             |              |                 |                 |             |
| 22.2             | 217              | 125              | 125.95         | 6010          | 2.3             |              |                 |                 |             |
| 9.3              | 522              | 150              | 151.20         | 8050          | 1.0             | <b>CHO83</b> | <b>80B5/B14</b> | <b>80A4</b>     |             |
| 11.1             | 435              | 125              | 125.95         | 7580          | 1.2             |              |                 |                 |             |
| 14.1             | 342              | 100              | 99.22          | 7000          | 1.5             |              |                 |                 |             |
| 18.6             | 260              | 75               | 75.45          | 6390          | 1.9             |              |                 |                 |             |
| 23.7             | 208              | 60               | 59.04          | 5890          | 2.2             | <b>CHO82</b> | <b>80B5/B14</b> | <b>80A4</b>     |             |
| 29.1             | 170              | 50               | 48.18          | 5500          | 2.9             |              |                 |                 |             |
| 9.1              | 533              | 100              | 99.22          | 8110          | 0.9             | <b>CHO83</b> | <b>80B5/B14</b> | <b>80B6</b>     |             |
| 11.9             | 405              | 75               | 75.45          | 7400          | 1.2             |              |                 |                 |             |
| 15.2             | 324              | 60               | 59.04          | 6820          | 1.4             | <b>CHO82</b> | <b>80B5/B14</b> | <b>80B6</b>     |             |
| 18.7             | 264              | 50               | 48.18          | 6370          | 1.9             |              |                 |                 |             |
| 22.4             | 220              | 40               | 40.13          | 6000          | 2.3             |              |                 |                 |             |
| <b>0.75</b>      | 57               | 117              | 50             | 48.86         | 2220            | 1.1          | <b>CHO52</b>    | <b>80B5/B14</b> | <b>80A2</b> |
|                  | 70               | 96               | 40             | 40.09         | 2070            | 1.3          |                 |                 |             |
|                  | 95               | 71               | 30             | 29.33         | 1870            | 1.8          |                 |                 |             |
|                  | 116              | 58               | 25             | 24.07         | 1750            | 2.2          |                 |                 |             |
|                  | 139              | 49               | 20             | 20.21         | 1650            | 2.7          |                 |                 |             |
|                  | 188              | 36               | 15             | 14.92         | 1490            | 3.6          |                 |                 |             |
|                  | 48               | 141              | 30             | 29.33         | 2350            | 0.9          | <b>CHO52</b>    | <b>80B5/B14</b> | <b>80B4</b> |
|                  | 58               | 116              | 25             | 24.07         | 2200            | 1.1          |                 |                 |             |
|                  | 69               | 97               | 20             | 20.21         | 2080            | 1.3          |                 |                 |             |
|                  | 94               | 72               | 15             | 14.92         | 1880            | 1.8          |                 |                 |             |
|                  | 112              | 60               | 12.5           | 12.47         | 1770            | 2.2          |                 |                 |             |
|                  | 134              | 50               | 10             | 10.47         | 1670            | 2.6          |                 |                 |             |
|                  | 181              | 37               | 7.5            | 7.73          | 1510            | 2.7          |                 |                 |             |



## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-----------------|-------------|
| 0.75             | 46               | 145              | 60             | 60.50         | 2720            | 1.2   | <b>CHO62</b> | <b>80B5/B14</b> | <b>80A2</b> |
|                  | 57               | 117              | 50             | 48.71         | 2530            | 1.7   |              |                 |             |
|                  | 71               | 94               | 40             | 39.29         | 2350            | 2.1   |              |                 |             |
|                  | 92               | 73               | 30             | 30.31         | 2160            | 2.7   |              |                 |             |
|                  | 115              | 59               | 25             | 24.44         | 2010            | 3.4   |              |                 |             |
|                  | 138              | 49               | 20             | 20.25         | 1890            | 4.1   |              |                 |             |
|                  | 28.7             | 234              | 50             | 48.71         | 3190            | 0.9   | <b>CHO62</b> | <b>80B5/B14</b> | <b>80B4</b> |
|                  | 36               | 189              | 40             | 39.29         | 2970            | 1.1   |              |                 |             |
|                  | 46               | 146              | 30             | 30.31         | 2720            | 1.4   |              |                 |             |
|                  | 57               | 118              | 25             | 24.44         | 2530            | 1.7   |              |                 |             |
|                  | 69               | 97               | 20             | 20.25         | 2380            | 2.1   |              |                 |             |
|                  | 95               | 71               | 15             | 14.67         | 2130            | 2.8   |              |                 |             |
|                  | 18.5             | 356              | 150            | 151.20        | 5040            | 1.0   | <b>CHO73</b> | <b>80B5/B14</b> | <b>80A2</b> |
|                  | 22.2             | 296              | 125            | 125.95        | 4750            | 1.2   |              |                 |             |
|                  | 28.2             | 234              | 100            | 99.22         | 4380            | 1.5   |              |                 |             |
|                  | 37               | 178              | 75             | 75.45         | 4000            | 2.0   |              |                 |             |
|                  | 47               | 143              | 60             | 59.44         | 3690            | 2.4   | <b>CHO72</b> | <b>80B5/B14</b> | <b>80A2</b> |
|                  | 58               | 116              | 50             | 48.18         | 3440            | 3.0   |              |                 |             |
|                  | 70               | 96               | 40             | 40.13         | 3240            | 3.6   |              |                 |             |
|                  | 23.6             | 286              | 60             | 59.44         | 4660            | 1.2   | <b>CHO72</b> | <b>80B5/B14</b> | <b>80B4</b> |
|                  | 29.1             | 232              | 50             | 48.18         | 3440            | 1.5   |              |                 |             |
|                  | 35               | 193              | 40             | 40.13         | 4080            | 1.8   |              |                 |             |
|                  | 46               | 145              | 30             | 30.24         | 3720            | 2.4   |              |                 |             |
|                  | 56               | 121              | 25             | 25.19         | 3500            | 2.9   |              |                 |             |
|                  | 18.7             | 360              | 50             | 48.18         | 5030            | 1.0   | <b>CHO72</b> | <b>90B5/B14</b> | <b>90S6</b> |
|                  | 22.4             | 300              | 40             | 40.13         | 4730            | 1.2   |              |                 |             |
|                  | 29.8             | 226              | 30             | 30.24         | 4310            | 1.5   |              |                 |             |
|                  | 36               | 188              | 25             | 25.19         | 4050            | 1.9   |              |                 |             |
|                  | 45               | 148              | 20             | 19.84         | 3740            | 2.4   |              |                 |             |
|                  | 11.6             | 567              | 250            | 240.89        | 7470            | 0.9   | <b>CHO83</b> | <b>80B5/B14</b> | <b>80A2</b> |
|                  | 14.0             | 472              | 200            | 200.66        | 7030            | 1.1   |              |                 |             |
|                  | 18.5             | 356              | 150            | 151.20        | 6390            | 1.4   |              |                 |             |
|                  | 22.2             | 296              | 125            | 125.95        | 6010            | 1.7   |              |                 |             |
|                  | 28.2             | 234              | 100            | 99.22         | 5550            | 2.1   |              |                 |             |
|                  | 37               | 178              | 75             | 75.45         | 5070            | 2.8   |              |                 |             |
|                  | 14.1             | 467              | 100            | 99.22         | 7000            | 1.1   | <b>CHO83</b> | <b>80B5/B14</b> | <b>80B4</b> |
|                  | 18.6             | 355              | 75             | 75.45         | 6390            | 1.4   |              |                 |             |
|                  | 23.7             | 284              | 60             | 59.04         | 5890            | 1.6   | <b>CHO82</b> | <b>80B5/B14</b> | <b>80B4</b> |
|                  | 29.1             | 232              | 50             | 48.18         | 5500            | 2.2   |              |                 |             |
|                  | 35               | 193              | 40             | 40.13         | 5170            | 2.6   |              |                 |             |
|                  | 15.2             | 442              | 60             | 59.04         | 6820            | 1.0   | <b>CHO82</b> | <b>90B5/B14</b> | <b>90S6</b> |
|                  | 18.7             | 360              | 50             | 48.18         | 6370            | 1.4   |              |                 |             |
|                  | 22.4             | 300              | 40             | 40.13         | 6000            | 1.7   |              |                 |             |
|                  | 29.8             | 226              | 30             | 30.24         | 5460            | 2.2   |              |                 |             |

## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-----------------|-------------|
| 1.1              | 70               | 141              | 40             | 40.09         | 2070            | 0.9   | <b>CHO52</b> | <b>80B5/B14</b> | <b>80B2</b> |
|                  | 95               | 103              | 30             | 29.33         | 1870            | 1.3   |              |                 |             |
|                  | 116              | 85               | 25             | 24.07         | 1750            | 1.5   |              |                 |             |
|                  | 139              | 71               | 20             | 20.21         | 1650            | 1.8   |              |                 |             |
|                  | 188              | 53               | 15             | 14.92         | 1490            | 2.5   |              |                 |             |
|                  | 225              | 44               | 12.5           | 12.47         | 1400            | 3.0   |              |                 |             |
|                  | 267              | 37               | 10             | 10.47         | 1320            | 3.5   |              |                 |             |
|                  | 362              | 27               | 7.5            | 7.73          | 1200            | 3.7   |              |                 |             |
|                  | 69               | 143              | 20             | 20.21         | 2080            | 0.9   | <b>CHO52</b> | <b>90B5/B14</b> | <b>90S4</b> |
|                  | 94               | 105              | 15             | 14.92         | 1880            | 1.2   |              |                 |             |
|                  | 112              | 88               | 12.5           | 12.47         | 1770            | 1.5   |              |                 |             |
|                  | 134              | 74               | 10             | 10.47         | 1670            | 1.8   |              |                 |             |
|                  | 181              | 55               | 7.5            | 7.73          | 1510            | 1.8   |              |                 |             |
|                  | 72               | 137              | 12.5           | 12.47         | 2050            | 1.0   | <b>CHO52</b> | <b>90B5/B14</b> | <b>90L6</b> |
|                  | 86               | 115              | 10             | 10.47         | 1930            | 1.1   |              |                 |             |
|                  | 57               | 172              | 50             | 48.71         | 2530            | 1.2   | <b>CHO62</b> | <b>80B5/B14</b> | <b>80B2</b> |
|                  | 71               | 139              | 40             | 39.29         | 2350            | 1.4   |              |                 |             |
|                  | 92               | 107              | 30             | 30.31         | 2160            | 1.9   |              |                 |             |
|                  | 115              | 86               | 25             | 24.44         | 2010            | 2.3   |              |                 |             |
|                  | 138              | 71               | 20             | 20.25         | 1890            | 2.8   |              |                 |             |
|                  | 191              | 52               | 15             | 14.67         | 1690            | 3.7   |              |                 |             |
|                  | 221              | 45               | 12.5           | 12.67         | 1610            | 3.7   |              |                 |             |
|                  | 267              | 37               | 10             | 10.50         | 1510            | 3.6   |              |                 |             |
|                  | 368              | 27               | 7.5            | 7.60          | 1710            | 1.9   |              |                 |             |
|                  | 46               | 214              | 30             | 30.31         | 2720            | 0.9   | <b>CHO62</b> | <b>90B5/B14</b> | <b>90S4</b> |
|                  | 57               | 172              | 25             | 24.44         | 2530            | 1.2   |              |                 |             |
|                  | 69               | 143              | 20             | 20.25         | 2380            | 1.4   |              |                 |             |
|                  | 95               | 103              | 15             | 14.67         | 2130            | 1.8   |              |                 |             |
|                  | 110              | 89               | 12.5           | 12.67         | 2030            | 1.8   |              |                 |             |
|                  | 133              | 74               | 10             | 10.50         | 1910            | 1.8   |              |                 |             |
|                  | 184              | 54               | 7.5            | 7.60          | 1360            | 3.7   |              |                 |             |
|                  | 44               | 222              | 20             | 20.25         | 2760            | 0.9   | <b>CHO62</b> | <b>90B5/B14</b> | <b>90L6</b> |
|                  | 61               | 161              | 15             | 14.67         | 2470            | 1.2   |              |                 |             |
|                  | 71               | 139              | 12.5           | 12.67         | 2360            | 1.2   |              |                 |             |
|                  | 86               | 115              | 10             | 10.50         | 2210            | 1.2   |              |                 |             |
|                  | 118              | 83               | 7.5            | 7.60          | 1990            | 1.2   |              |                 |             |
|                  | 29.1             | 340              | 50             | 48.18         | 4340            | 1.0   | <b>CHO72</b> | <b>90B5/B14</b> | <b>90S4</b> |
|                  | 35               | 283              | 40             | 40.13         | 4080            | 1.2   |              |                 |             |
|                  | 46               | 213              | 30             | 30.24         | 3720            | 1.6   |              |                 |             |
|                  | 56               | 178              | 25             | 25.19         | 3500            | 2.0   |              |                 |             |
|                  | 71               | 140              | 20             | 19.84         | 3230            | 2.5   |              |                 |             |
|                  | 93               | 106              | 15             | 15.09         | 2950            | 3.3   |              |                 |             |
|                  | 112              | 88               | 12.5           | 12.49         | 2770            | 4.0   |              |                 |             |
|                  | 29.8             | 332              | 30             | 30.24         | 4310            | 1.1   | <b>CHO72</b> | <b>90B5/B14</b> | <b>90L6</b> |
|                  | 36               | 276              | 25             | 25.19         | 4050            | 1.3   |              |                 |             |



## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                 |             |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|-----------------|-------------|
| <b>1.1</b>       | 45               | 218              | 20             | 19.84         | 3740            | 1.6   | <b>CHO72</b> | <b>90B5/B14</b> | <b>90L6</b> |
|                  | 60               | 166              | 15             | 15.09         | 3410            | 2.1   |              |                 |             |
|                  | 72               | 137              | 12.5           | 12.49         | 3210            | 2.6   |              |                 |             |
|                  | 18.5             | 522              | 150            | 151.20        | 6390            | 1.0   | <b>CHO83</b> | <b>80B5/B14</b> | <b>80B2</b> |
|                  | 22.2             | 435              | 125            | 125.95        | 6010            | 1.2   |              |                 |             |
|                  | 28.2             | 342              | 100            | 99.22         | 5550            | 1.5   |              |                 |             |
|                  | 37               | 260              | 75             | 75.45         | 5070            | 1.9   |              |                 |             |
|                  | 47               | 208              | 60             | 59.04         | 4670            | 2.2   | <b>CHO82</b> | <b>80B5/B14</b> | <b>80B2</b> |
|                  | 58               | 170              | 50             | 48.18         | 4360            | 2.9   |              |                 |             |
|                  | 18.6             | 521              | 75             | 75.45         | 6390            | 1.0   | <b>CHO83</b> | <b>90B5/B14</b> | <b>90S4</b> |
|                  | 23.7             | 416              | 60             | 59.04         | 5890            | 1.1   | <b>CHO82</b> | <b>90B5/B14</b> | <b>90S4</b> |
|                  | 29.1             | 340              | 50             | 48.18         | 5500            | 1.5   |              |                 |             |
|                  | 35               | 283              | 40             | 40.13         | 5170            | 1.8   |              |                 |             |
|                  | 46               | 213              | 30             | 30.24         | 4710            | 2.3   |              |                 |             |
|                  | 18.7             | 529              | 50             | 48.18         | 6370            | 0.9   | <b>CHO82</b> | <b>90B5/B14</b> | <b>90L6</b> |
|                  | 22.4             | 440              | 40             | 40.13         | 6000            | 1.1   |              |                 |             |
|                  | 29.8             | 332              | 30             | 30.24         | 5460            | 1.5   |              |                 |             |
|                  | 36               | 276              | 25             | 25.19         | 5130            | 1.8   |              |                 |             |
|                  | 45               | 218              | 20             | 19.84         | 4740            | 2.3   |              |                 |             |
| <b>1.5</b>       | 116              | 116              | 25             | 24.07         | 1750            | 1.1   | <b>CHO52</b> | <b>90B5/B14</b> | <b>90S2</b> |
|                  | 139              | 97               | 20             | 20.21         | 1650            | 1.3   |              |                 |             |
|                  | 188              | 72               | 15             | 14.92         | 1490            | 1.8   |              |                 |             |
|                  | 225              | 60               | 12.5           | 12.47         | 1400            | 2.0   |              |                 |             |
|                  | 267              | 50               | 10             | 10.47         | 1320            | 2.2   |              |                 |             |
|                  | 362              | 37               | 7.5            | 7.73          | 1200            | 2.6   |              |                 |             |
|                  | 94               | 144              | 15             | 14.92         | 1880            | 0.9   | <b>CHO52</b> | <b>90B5/B14</b> | <b>90L4</b> |
|                  | 112              | 120              | 12.5           | 12.47         | 1770            | 1.6   |              |                 |             |
|                  | 134              | 101              | 10             | 10.47         | 1670            | 1.1   |              |                 |             |
|                  | 181              | 74               | 7.5            | 7.73          | 1510            | 1.3   |              |                 |             |
|                  | 57               | 234              | 50             | 48.71         | 2530            | 0.9   | <b>CHO62</b> | <b>90B5/B14</b> | <b>90S2</b> |
|                  | 71               | 189              | 40             | 39.29         | 2350            | 1.1   |              |                 |             |
|                  | 92               | 146              | 30             | 30.31         | 2160            | 1.4   |              |                 |             |
|                  | 115              | 118              | 25             | 24.44         | 2010            | 1.7   |              |                 |             |
|                  | 138              | 97               | 20             | 20.25         | 1890            | 2.0   |              |                 |             |
|                  | 191              | 71               | 15             | 14.67         | 1690            | 2.8   |              |                 |             |
|                  | 57               | 235              | 25             | 24.44         | 2530            | 0.9   | <b>CHO62</b> | <b>90B5/B14</b> | <b>90L4</b> |
|                  | 69               | 195              | 20             | 20.25         | 2380            | 1.0   |              |                 |             |
|                  | 95               | 141              | 15             | 14.67         | 2130            | 1.4   |              |                 |             |
|                  | 110              | 122              | 12.5           | 12.67         | 2030            | 1.4   |              |                 |             |
|                  | 133              | 101              | 10             | 10.50         | 1910            | 1.7   |              |                 |             |
|                  | 184              | 73               | 7.5            | 7.60          | 1710            | 2.1   |              |                 |             |
|                  | 47               | 286              | 60             | 59.44         | 3690            | 1.2   | <b>CHO72</b> | <b>90B5/B14</b> | <b>90S2</b> |
|                  | 58               | 232              | 50             | 48.18         | 3440            | 1.5   |              |                 |             |
|                  | 70               | 193              | 40             | 40.13         | 3240            | 1.8   |              |                 |             |
|                  | 93               | 145              | 30             | 30.24         | 2950            | 2.4   |              |                 |             |

## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                  |              |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|------------------|--------------|
| <b>1.5</b>       | 35               | 386              | 40             | 40.13         | 4080            | 0.9   | <b>CHO72</b> | <b>90B5/B14</b>  | <b>90L4</b>  |
|                  | 46               | 291              | 30             | 30.24         | 3720            | 1.2   |              |                  |              |
|                  | 56               | 242              | 25             | 25.19         | 3500            | 1.4   |              |                  |              |
|                  | 71               | 191              | 20             | 19.84         | 3230            | 1.8   |              |                  |              |
|                  | 93               | 145              | 15             | 15.09         | 2950            | 2.4   |              |                  |              |
|                  | 112              | 120              | 12.5           | 12.49         | 2770            | 2.8   |              |                  |              |
|                  | 142              | 95               | 10             | 9.84          | 2550            | 3.3   |              |                  |              |
|                  | 47               | 284              | 60             | 59.04         | 4670            | 1.6   | <b>CHO82</b> | <b>90B5/B14</b>  | <b>90S2</b>  |
|                  | 58               | 232              | 50             | 48.18         | 4360            | 2.2   |              |                  |              |
|                  | 29.1             | 463              | 50             | 48.18         | 5500            | 1.1   | <b>CHO82</b> | <b>90B5/B14</b>  | <b>90L4</b>  |
| 35               | 386              | 40               | 40.13          | 5170          | 1.3             |       |              |                  |              |
| 46               | 291              | 30               | 30.24          | 4710          | 1.7             |       |              |                  |              |
| 56               | 242              | 25               | 25.19          | 4430          | 2.1             |       |              |                  |              |
| 71               | 191              | 20               | 19.84          | 4090          | 2.6             |       |              |                  |              |
| <b>2.2</b>       | 139              | 143              | 20             | 20.21         | 1650            | 0.9   | <b>CHO52</b> | <b>90B5/B14</b>  | <b>90L2</b>  |
|                  | 188              | 105              | 15             | 14.92         | 1490            | 1.2   |              |                  |              |
|                  | 225              | 88               | 12.5           | 12.47         | 1400            | 1.4   |              |                  |              |
|                  | 267              | 74               | 10             | 10.47         | 1320            | 1.5   |              |                  |              |
|                  | 362              | 55               | 7.5            | 7.73          | 1200            | 1.8   |              |                  |              |
|                  | 92               | 214              | 30             | 30.31         | 2160            | 0.9   | <b>CHO62</b> | <b>90B5/B14</b>  | <b>90L2</b>  |
|                  | 115              | 172              | 25             | 24.44         | 2010            | 1.2   |              |                  |              |
|                  | 138              | 143              | 20             | 20.25         | 1890            | 1.4   |              |                  |              |
|                  | 191              | 103              | 15             | 14.67         | 1690            | 1.8   |              |                  |              |
|                  | 221              | 89               | 12.5           | 12.67         | 1610            | 1.8   |              |                  |              |
|                  | 267              | 74               | 10             | 10.50         | 1510            | 1.8   |              |                  |              |
|                  | 368              | 54               | 7.5            | 7.60          | 1360            | 1.9   |              |                  |              |
|                  | 58               | 340              | 50             | 48.18         | 3440            | 1.0   | <b>CHO72</b> | <b>90B5/B14</b>  | <b>90L2</b>  |
|                  | 70               | 283              | 40             | 40.13         | 3240            | 1.2   |              |                  |              |
|                  | 93               | 213              | 30             | 30.24         | 2950            | 1.6   |              |                  |              |
|                  | 111              | 178              | 25             | 25.19         | 2770            | 2.0   |              |                  |              |
|                  | 56               | 355              | 25             | 25.19         | 3500            | 1.0   | <b>CHO72</b> | <b>100B5/B14</b> | <b>100A4</b> |
|                  | 71               | 280              | 20             | 19.84         | 3230            | 1.3   |              |                  |              |
|                  | 93               | 213              | 15             | 15.09         | 2950            | 1.6   |              |                  |              |
|                  | 112              | 176              | 12.5           | 12.49         | 2770            | 1.9   |              |                  |              |
|                  | 142              | 139              | 10             | 9.84          | 2550            | 2.3   |              |                  |              |
|                  | 187              | 106              | 7.5            | 7.48          | 2330            | 2.9   |              |                  |              |
|                  | 47               | 416              | 60             | 59.04         | 4670            | 1.1   | <b>CHO82</b> | <b>90B5/B14</b>  | <b>90L2</b>  |
|                  | 58               | 340              | 50             | 48.18         | 4360            | 1.5   |              |                  |              |
|                  | 70               | 283              | 40             | 40.13         | 4110            | 1.8   |              |                  |              |
|                  | 93               | 213              | 30             | 30.24         | 3740            | 2.3   |              |                  |              |
|                  | 35               | 566              | 40             | 40.13         | 5170            | 0.9   | <b>CHO82</b> | <b>100B5/B14</b> | <b>100A4</b> |
|                  | 46               | 427              | 30             | 30.24         | 4710            | 1.2   |              |                  |              |
|                  | 56               | 355              | 25             | 25.19         | 4430            | 1.4   |              |                  |              |
|                  | 71               | 280              | 20             | 19.84         | 4090            | 1.8   |              |                  |              |
| 93               | 213              | 15               | 15.09          | 3730          | 2.3             |       |              |                  |              |

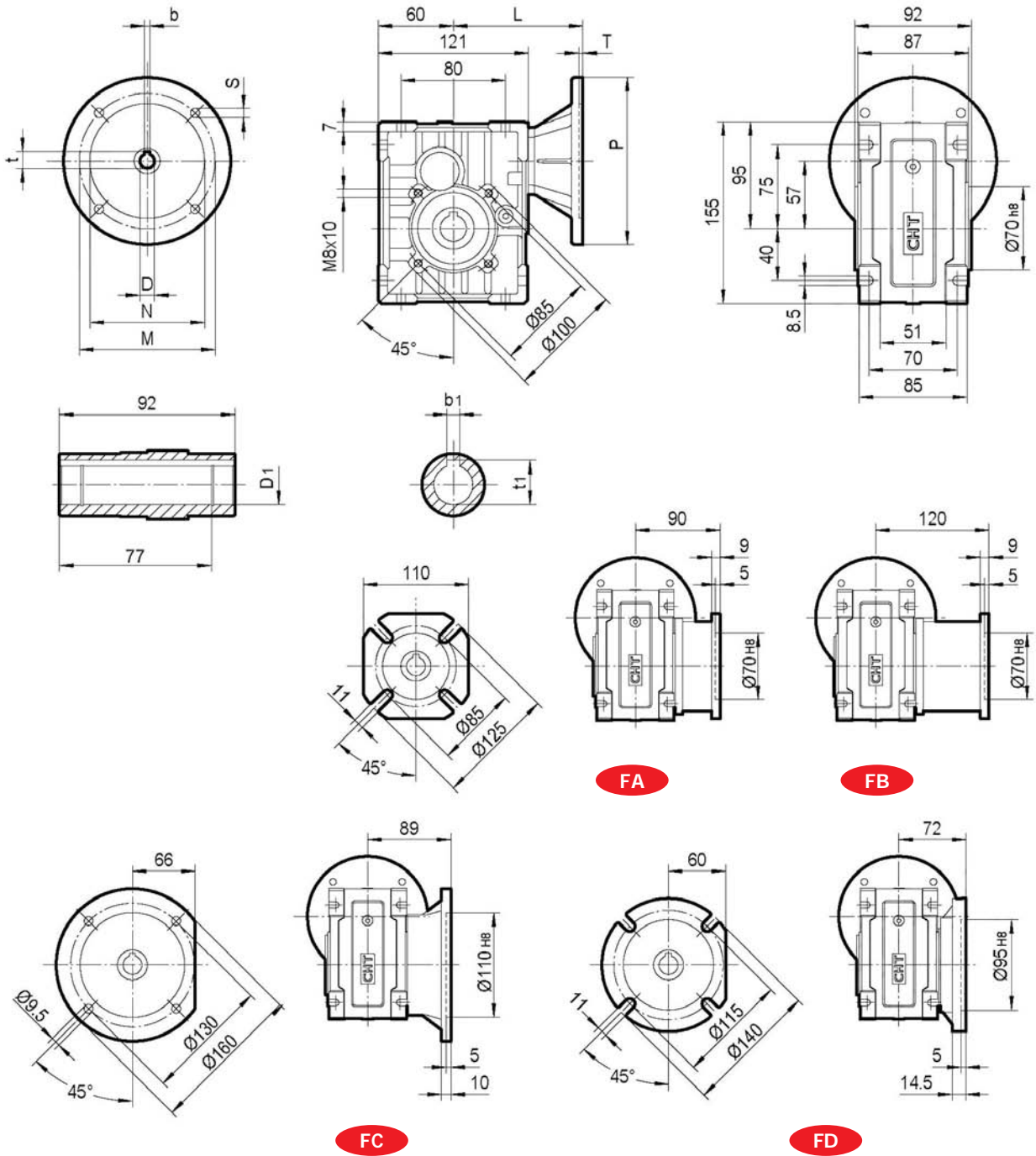


## TABELLA DI SELEZIONE PRESTAZIONI GEAR UNIT SELECTION TABLES

| $P_{1n}$<br>[kW] | $n_2$<br>[r/min] | $M_{2n}$<br>[Nm] | $i$<br>nominal | $i$<br>actual | $F_{r2}$<br>[N] | $f_s$ |              |                  |               |
|------------------|------------------|------------------|----------------|---------------|-----------------|-------|--------------|------------------|---------------|
| <b>2.2</b>       | 112              | 176              | 12.5           | 12.49         | 3510            | 2.6   | <b>CHO82</b> | <b>100B5/B14</b> | <b>100A4</b>  |
| <b>3</b>         | 70               | 386              | 40             | 40.13         | 3240            | 0.9   | <b>CHO72</b> | <b>100B5/B14</b> | <b>100L2</b>  |
|                  | 93               | 291              | 30             | 30.24         | 2950            | 1.2   |              |                  |               |
|                  | 111              | 242              | 25             | 25.19         | 2770            | 1.4   |              |                  |               |
|                  | 141              | 191              | 20             | 19.84         | 2560            | 1.8   |              |                  |               |
|                  | 186              | 145              | 15             | 15.09         | 2340            | 2.4   |              |                  |               |
|                  | 224              | 120              | 12.5           | 12.49         | 2190            | 2.9   |              |                  |               |
|                  | 285              | 95               | 10             | 9.84          | 2030            | 3.7   |              |                  |               |
|                  | 374              | 72               | 7.5            | 7.48          | 1850            | 3.9   |              |                  |               |
|                  | 93               | 290              | 15             | 15.09         | 2950            | 1.2   | <b>CHO72</b> | <b>100B5/B14</b> | <b>100LB4</b> |
|                  | 112              | 240              | 12.5           | 12.49         | 2770            | 1.5   |              |                  |               |
|                  | 142              | 189              | 10             | 9.84          | 2550            | 1.8   |              |                  |               |
|                  | 187              | 144              | 7.5            | 7.48          | 2330            | 1.9   |              |                  |               |
|                  | 47               | 568              | 60             | 59.04         | 4670            | 0.8   | <b>CHO82</b> | <b>100B5/B14</b> | <b>100L2</b>  |
|                  | 58               | 463              | 50             | 48.18         | 4360            | 1.1   |              |                  |               |
|                  | 70               | 386              | 40             | 40.13         | 4110            | 1.3   |              |                  |               |
|                  | 93               | 291              | 30             | 30.24         | 3740            | 1.7   |              |                  |               |
|                  | 111              | 242              | 25             | 25.19         | 3520            | 2.1   |              |                  |               |
|                  | 141              | 191              | 20             | 19.84         | 3250            | 2.6   |              |                  |               |
|                  | 56               | 485              | 25             | 25.19         | 4430            | 1.0   | <b>CHO82</b> | <b>100B5/B14</b> | <b>100LB4</b> |
|                  | 71               | 382              | 20             | 19.84         | 4090            | 1.3   |              |                  |               |
|                  | 93               | 290              | 15             | 15.09         | 3730            | 1.7   |              |                  |               |
|                  | 112              | 240              | 12.5           | 12.49         | 3510            | 1.9   |              |                  |               |
|                  | 142              | 189              | 10             | 9.84          | 3240            | 2.4   |              |                  |               |
| <b>4</b>         | 111              | 323              | 25             | 25.19         | 2770            | 1.1   | <b>CHO72</b> | <b>112B5/B14</b> | <b>100LB2</b> |
|                  | 141              | 254              | 20             | 19.84         | 2560            | 1.4   |              |                  |               |
|                  | 186              | 194              | 15             | 15.09         | 2340            | 1.8   |              |                  |               |
|                  | 224              | 160              | 12.5           | 12.49         | 2190            | 2.2   |              |                  |               |
|                  | 285              | 126              | 10             | 9.84          | 2030            | 2.5   |              |                  |               |
|                  | 374              | 96               | 7.5            | 7.48          | 1850            | 2.9   |              |                  |               |
|                  | 112              | 320              | 12.5           | 12.49         | 2770            | 1.0   | <b>CHO72</b> | <b>112B5/B14</b> | <b>112M4</b>  |
|                  | 142              | 252              | 10             | 9.84          | 2550            | 1.3   |              |                  |               |
|                  | 187              | 192              | 7.5            | 7.48          | 2330            | 1.5   |              |                  |               |
|                  | 70               | 515              | 40             | 40.13         | 4110            | 1.0   | <b>CHO82</b> | <b>112B5/B14</b> | <b>100LB2</b> |
|                  | 93               | 388              | 30             | 30.24         | 3740            | 1.3   |              |                  |               |
|                  | 111              | 323              | 25             | 25.19         | 3520            | 2.0   |              |                  |               |
|                  | 141              | 254              | 20             | 19.84         | 3250            | 2.0   |              |                  |               |
|                  | 186              | 194              | 15             | 15.09         | 2960            | 2.6   |              |                  |               |
|                  | 71               | 509              | 20             | 19.84         | 4090            | 1.0   | <b>CHO82</b> | <b>112B5/B14</b> | <b>112M4</b>  |
|                  | 93               | 387              | 15             | 15.09         | 3730            | 1.3   |              |                  |               |
|                  | 112              | 320              | 12.5           | 12.49         | 3510            | 1.4   |              |                  |               |
|                  | 142              | 252              | 10             | 9.84          | 3240            | 1.8   |              |                  |               |
|                  | 187              | 192              | 7.5            | 7.48          | 2950            | 2.3   |              |                  |               |

# DIMENSIONI - DIMENSION SHEET

## CHO 52



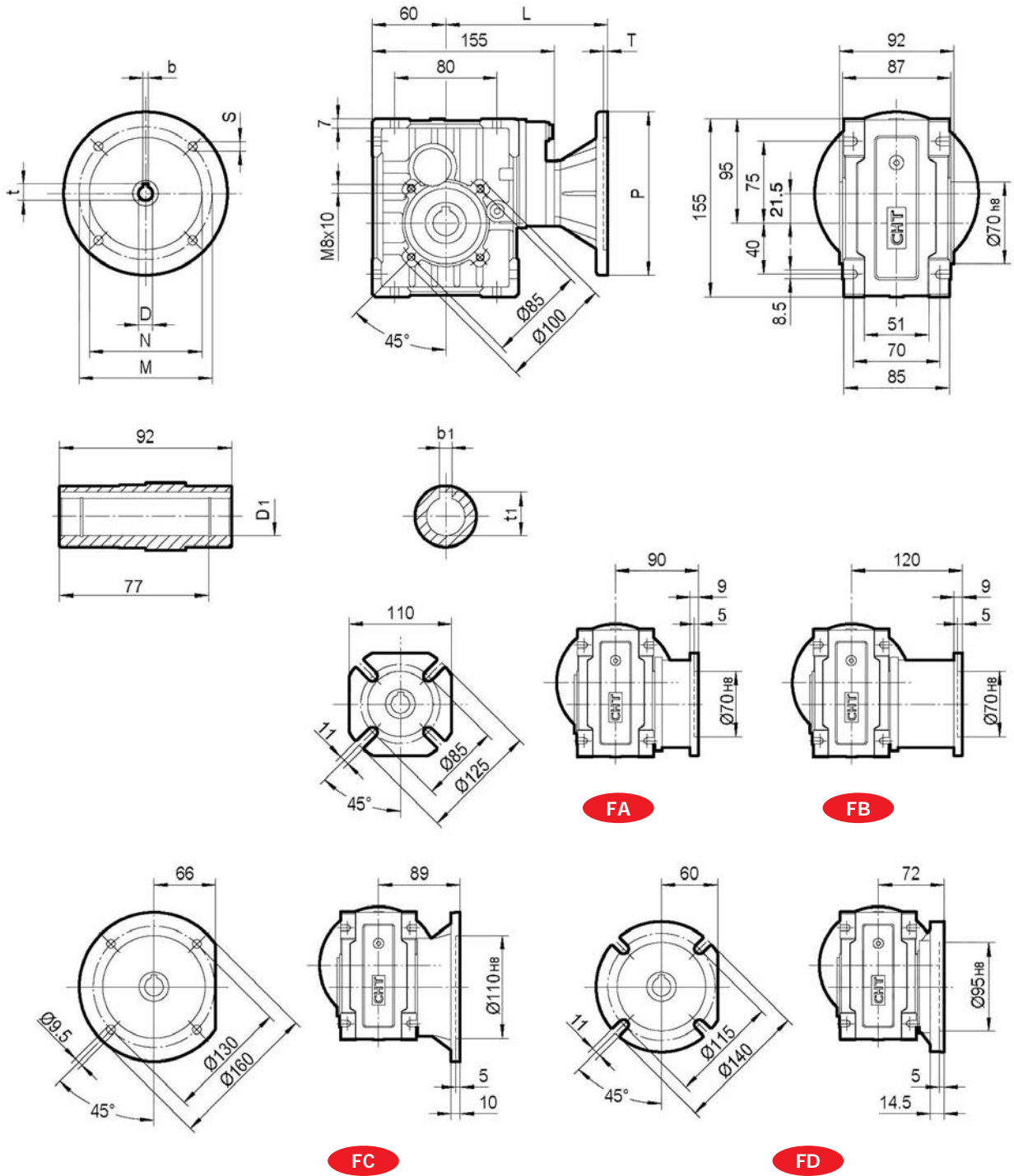
| IEC   | DE8 | b | t    | P   | M   | N   | S  | T | L   | D1 H8 | b1 | t1                |
|-------|-----|---|------|-----|-----|-----|----|---|-----|-------|----|-------------------|
| 63B5  | 11  | 4 | 12.8 | 140 | 115 | 95  | 9  | 4 | 106 | 20*   | 6* | 22.8*             |
| 71B5  | 14  | 5 | 16.3 | 160 | 130 | 110 | 9  | 4 | 113 | 25    | 8  | 28.3              |
| 71B14 | 14  | 5 | 16.3 | 105 | 85  | 70  | 7  | 4 | 113 |       |    |                   |
| 80B5  | 19  | 6 | 21.8 | 200 | 165 | 130 | 11 | 4 | 133 |       |    |                   |
| 80B14 | 19  | 6 | 21.8 | 120 | 100 | 80  | 7  | 4 | 133 |       |    | * a richiesta     |
| 90B14 | 24  | 8 | 27.3 | 140 | 115 | 95  | 9  | 4 | 133 |       |    | * only on request |

Peso Kg 3.5 senza motore  
Weight 3.5 Kg excluding motor



# DIMENSIONI - DIMENSION SHEET

## CHO 53



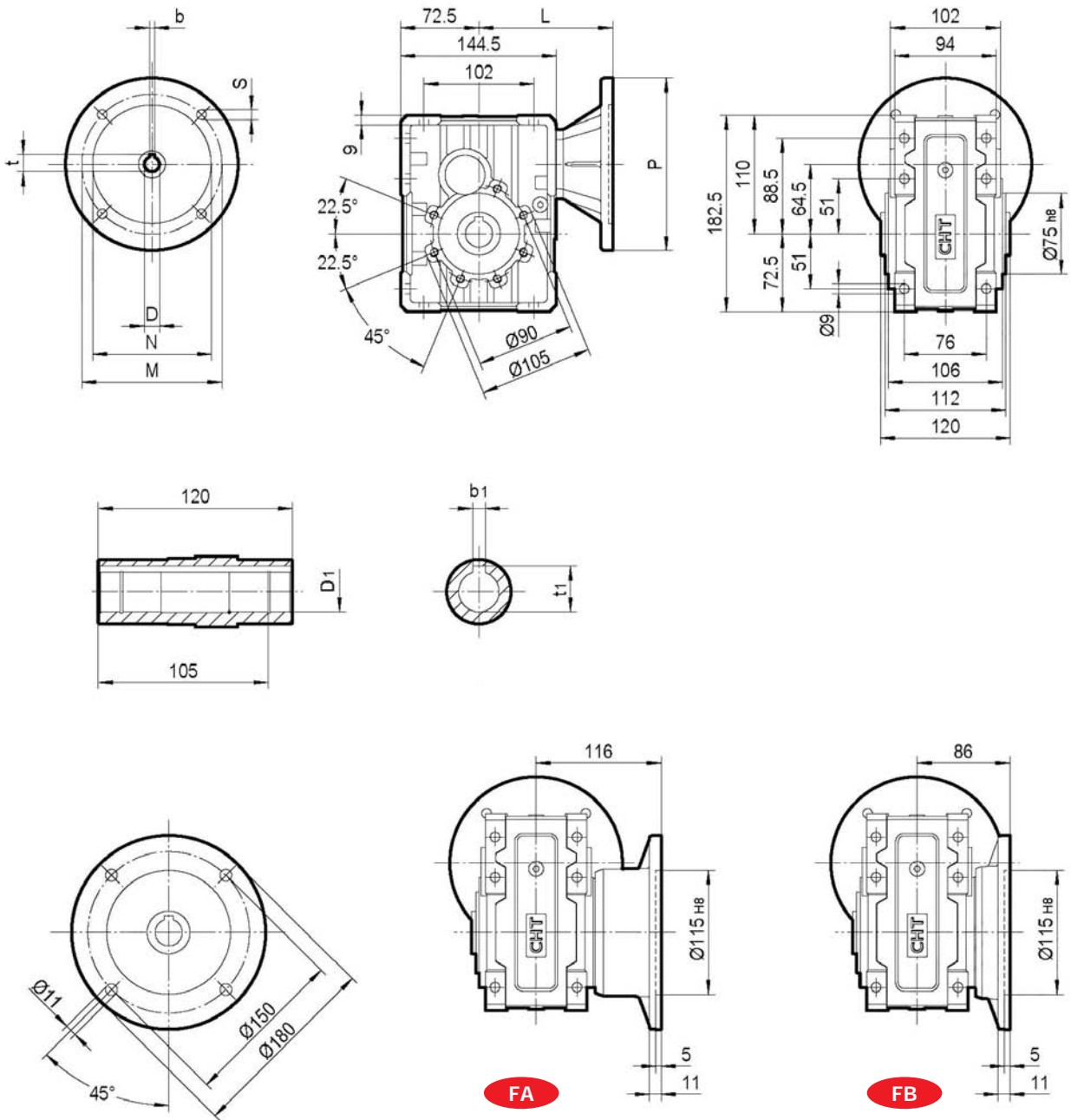
| IEC   | DE8 | b | t    | P   | M   | N   | S  | T | L   | D1 H8 | b1 | t1                |
|-------|-----|---|------|-----|-----|-----|----|---|-----|-------|----|-------------------|
| 63B5  | 11  | 4 | 12.8 | 140 | 115 | 95  | 9  | 4 | 140 | 20*   | 6* | 22.8*             |
| 71B5  | 14  | 5 | 16.3 | 160 | 130 | 110 | 9  | 4 | 147 | 25    | 8  | 28.3              |
| 71B14 | 14  | 5 | 16.3 | 105 | 85  | 70  | 7  | 4 | 147 |       |    |                   |
| 80B5  | 19  | 6 | 21.8 | 200 | 165 | 130 | 11 | 4 | 167 |       |    |                   |
| 80B14 | 19  | 6 | 21.8 | 120 | 100 | 80  | 7  | 4 | 167 |       |    | * a richiesta     |
| 90B14 | 24  | 8 | 27.3 | 140 | 115 | 95  | 9  | 4 | 167 |       |    | * only on request |

Peso Kg 3.5 senza motore  
Weight 3.5 Kg excluding motor



# DIMENSIONI - DIMENSION SHEET

## CHO 62

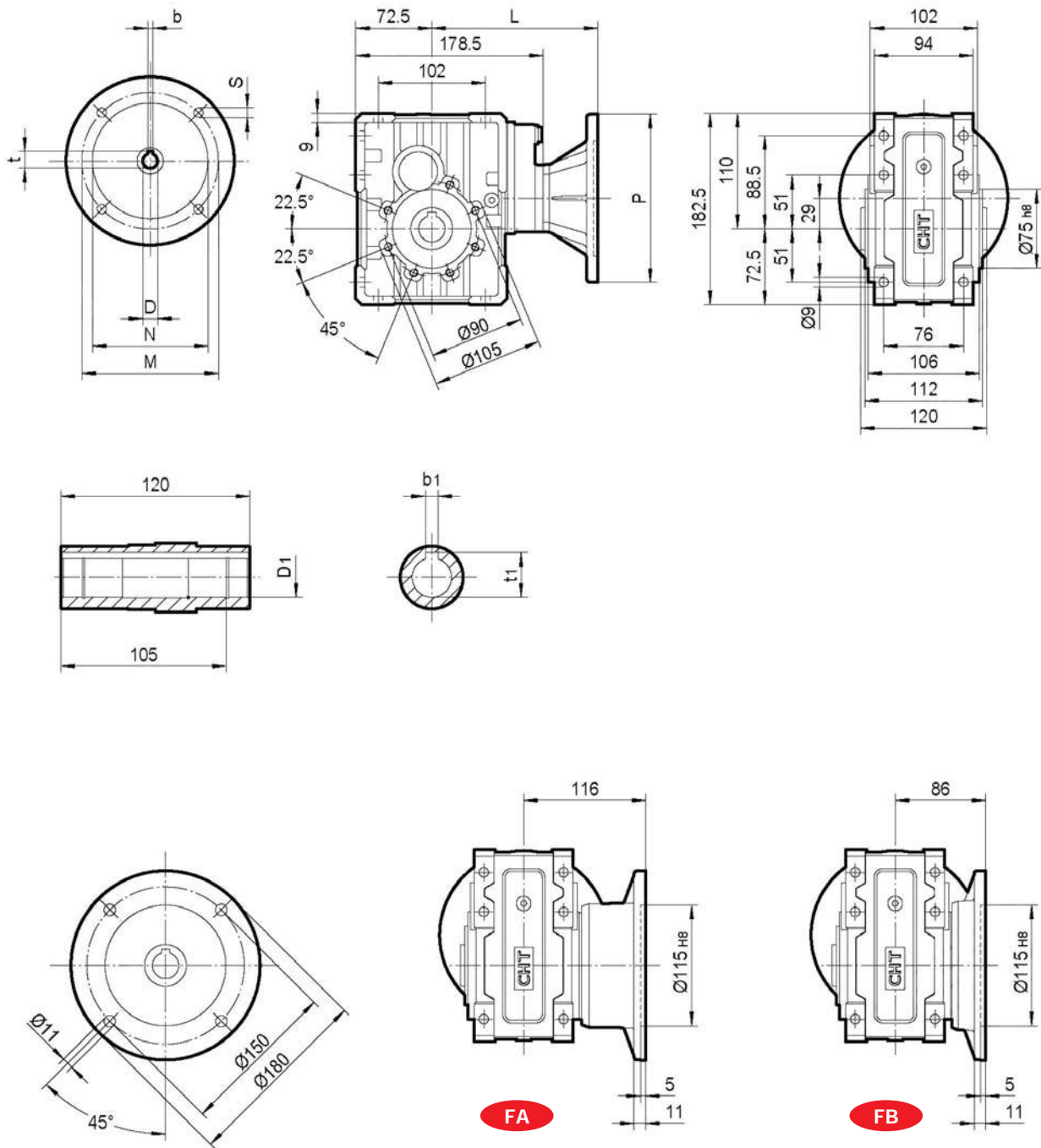


| IEC   | DE8 | b | t    | P   | M   | N   | S  | T | L   | D1 H8 | b1 | t1   |
|-------|-----|---|------|-----|-----|-----|----|---|-----|-------|----|------|
| 71B5  | 14  | 5 | 16.3 | 160 | 130 | 110 | 9  | 4 | 124 | 25    | 8  | 28.3 |
| 71B14 | 14  | 5 | 16.3 | 105 | 85  | 70  | 7  | 4 | 124 |       |    |      |
| 80B5  | 19  | 6 | 21.8 | 200 | 165 | 130 | 11 | 4 | 144 |       |    |      |
| 80B14 | 19  | 6 | 21.8 | 120 | 100 | 80  | 7  | 4 | 144 |       |    |      |
| 90B5  | 24  | 8 | 27.3 | 200 | 165 | 130 | 11 | 4 | 144 |       |    |      |
| 90B14 | 24  | 8 | 27.3 | 140 | 115 | 95  | 9  | 4 | 144 |       |    |      |



# DIMENSIONI - DIMENSION SHEET

## CHO 63



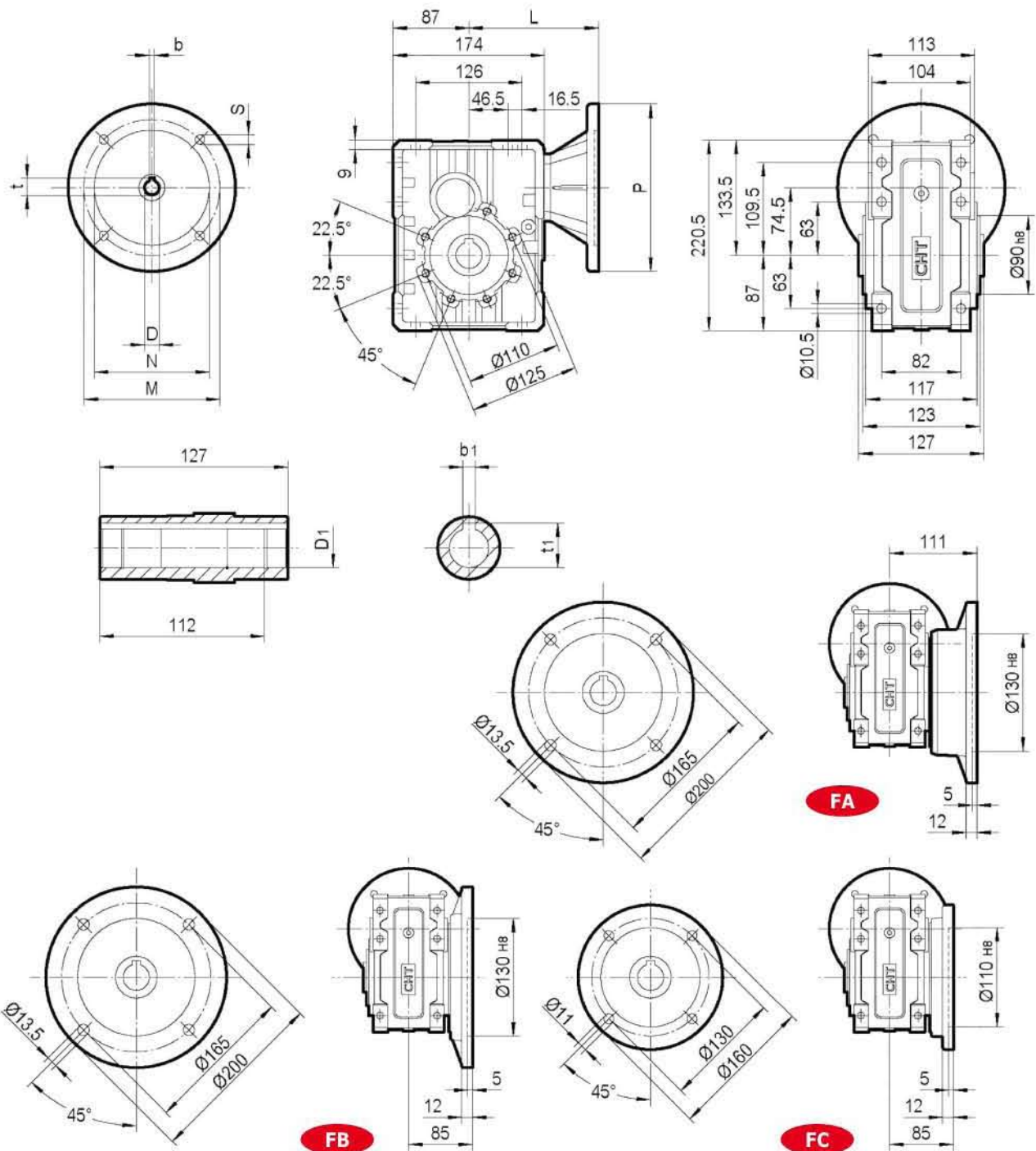
| IEC   | DE8 | b | t    | P   | M   | N   | S  | T | L   | D1 H8 | b1 | t1   |
|-------|-----|---|------|-----|-----|-----|----|---|-----|-------|----|------|
| 71B5  | 14  | 5 | 16.3 | 160 | 130 | 110 | 9  | 4 | 158 | 25    | 8  | 28.3 |
| 71B14 | 14  | 5 | 16.3 | 105 | 85  | 70  | 7  | 4 | 158 |       |    |      |
| 80B5  | 19  | 6 | 21.8 | 200 | 165 | 130 | 11 | 4 | 178 |       |    |      |
| 80B14 | 19  | 6 | 21.8 | 120 | 100 | 80  | 7  | 4 | 178 |       |    |      |
| 90B5  | 24  | 8 | 27.3 | 200 | 165 | 130 | 11 | 4 | 178 |       |    |      |
| 90B14 | 24  | 8 | 27.3 | 140 | 115 | 95  | 9  | 4 | 178 |       |    |      |

Peso Kg 6.5 senza motore  
Weight 6.5 Kg excluding motor



# DIMENSIONI - DIMENSION SHEET

## CHO 72



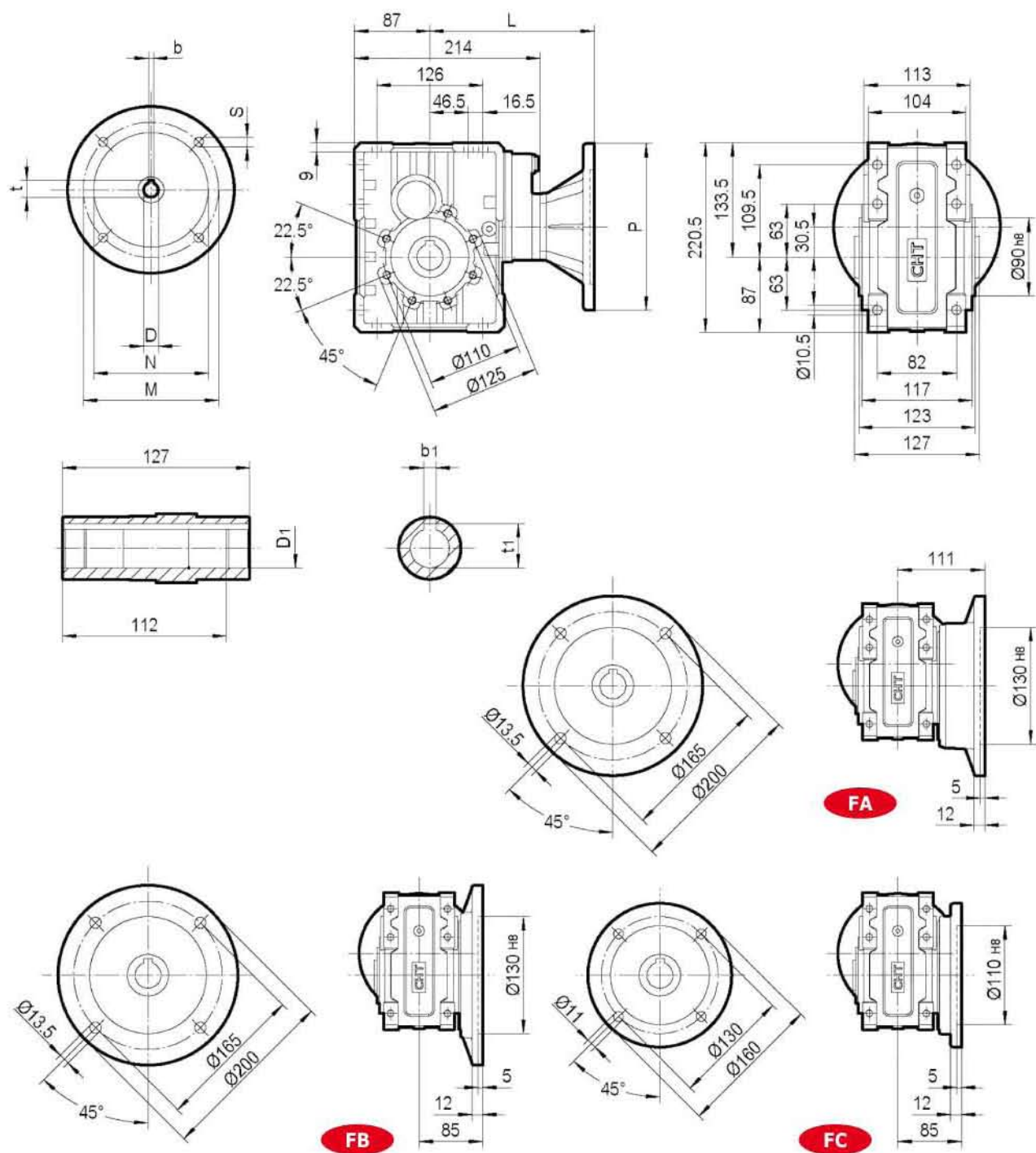
| IEC        | Des | b | t    | P   | M   | N   | S    | T   | L   | D1 HB             | b1 | t1    |
|------------|-----|---|------|-----|-----|-----|------|-----|-----|-------------------|----|-------|
| 63B5       | 11  | 4 | 12.8 | 140 | 115 | 95  | 9    | 4   | 139 | 28*               | 8* | 31.3* |
| 71B5       | 14  | 5 | 16.3 | 160 | 130 | 110 | 9    | 4   | 146 | 30                | 8  | 33.3  |
| 80B5       | 19  | 6 | 21.8 | 200 | 165 | 130 | 11   | 4   | 166 |                   |    |       |
| 80B14      | 19  | 6 | 21.8 | 120 | 100 | 80  | 7    | 4   | 166 |                   |    |       |
| 90B5       | 24  | 8 | 27.3 | 200 | 165 | 130 | 11   | 4   | 166 |                   |    |       |
| 90B14      | 24  | 8 | 27.3 | 140 | 115 | 95  | 9    | 4   | 166 |                   |    |       |
| 100/112B5  | 28  | 8 | 31.3 | 250 | 215 | 180 | 13.5 | 4.5 | 176 | * a richiesta     |    |       |
| 100/112B14 | 28  | 8 | 31.3 | 160 | 130 | 110 | 9    | 4.5 | 176 | * only on request |    |       |

Peso Kg 9.5 senza motore  
Weight 9.5 Kg excluding motor



# DIMENSIONI - DIMENSION SHEET

## CHO 73



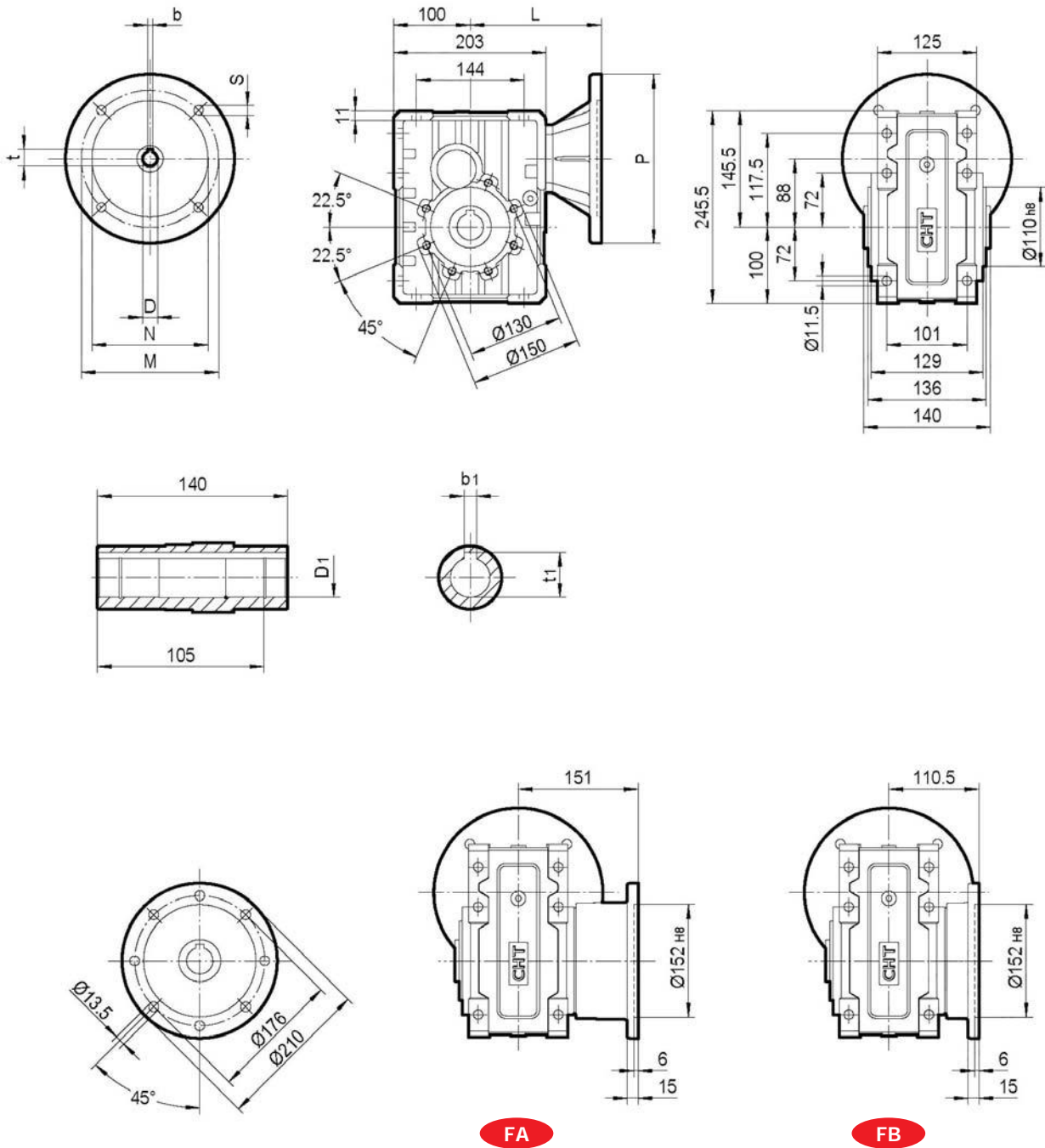
| IEC        | DE8 | b | t    | P   | M   | N   | S    | T   | L   | D1 HB             | b1 | t1    |
|------------|-----|---|------|-----|-----|-----|------|-----|-----|-------------------|----|-------|
| 63B5       | 11  | 4 | 12.8 | 140 | 115 | 95  | 9    | 4   | 179 | 28*               | 8* | 31.3* |
| 71B5       | 14  | 5 | 16.3 | 160 | 130 | 110 | 9    | 4   | 186 | 30                | 8  | 33.3  |
| 80B5       | 19  | 6 | 21.8 | 200 | 165 | 130 | 11   | 4   | 206 |                   |    |       |
| 80B14      | 19  | 6 | 21.8 | 120 | 100 | 80  | 7    | 4   | 206 |                   |    |       |
| 90B5       | 24  | 8 | 27.3 | 200 | 165 | 130 | 11   | 4   | 206 |                   |    |       |
| 90B14      | 24  | 8 | 27.3 | 140 | 115 | 95  | 9    | 4   | 206 |                   |    |       |
| 100/112B5  | 28  | 8 | 31.3 | 250 | 215 | 180 | 13.5 | 4.5 | 216 | * a richiesta     |    |       |
| 100/112B14 | 28  | 8 | 31.3 | 160 | 130 | 110 | 9    | 4.5 | 216 | * only on request |    |       |

Peso Kg 9.5 senza motore  
Weight 9.5 Kg excluding motor



# DIMENSIONI - DIMENSION SHEET

## CHO 82



| IEC        | DE8 | b | t    | P   | M   | N   | S    | T   | L   | D1 H8             | b1  | t1    |
|------------|-----|---|------|-----|-----|-----|------|-----|-----|-------------------|-----|-------|
| 63B5       | 11  | 4 | 12.8 | 140 | 115 | 95  | 9    | 4   | 155 | 35                | 10  | 38.3  |
| 71B5       | 14  | 5 | 16.3 | 160 | 130 | 110 | 9    | 4   | 162 | 40*               | 10* | 43.3* |
| 80B5       | 19  | 6 | 21.8 | 200 | 165 | 130 | 11   | 4   | 182 |                   |     |       |
| 80B14      | 19  | 6 | 21.8 | 120 | 100 | 80  | 7    | 4   | 182 |                   |     |       |
| 90B5       | 24  | 8 | 27.3 | 200 | 165 | 130 | 11   | 4   | 182 |                   |     |       |
| 90B14      | 24  | 8 | 27.3 | 140 | 115 | 95  | 9    | 4   | 182 |                   |     |       |
| 100/112B5  | 28  | 8 | 31.3 | 250 | 215 | 180 | 13.5 | 4.5 | 192 | * a richiesta     |     |       |
| 100/112B14 | 28  | 8 | 31.3 | 160 | 130 | 110 | 9    | 4.5 | 192 | * only on request |     |       |

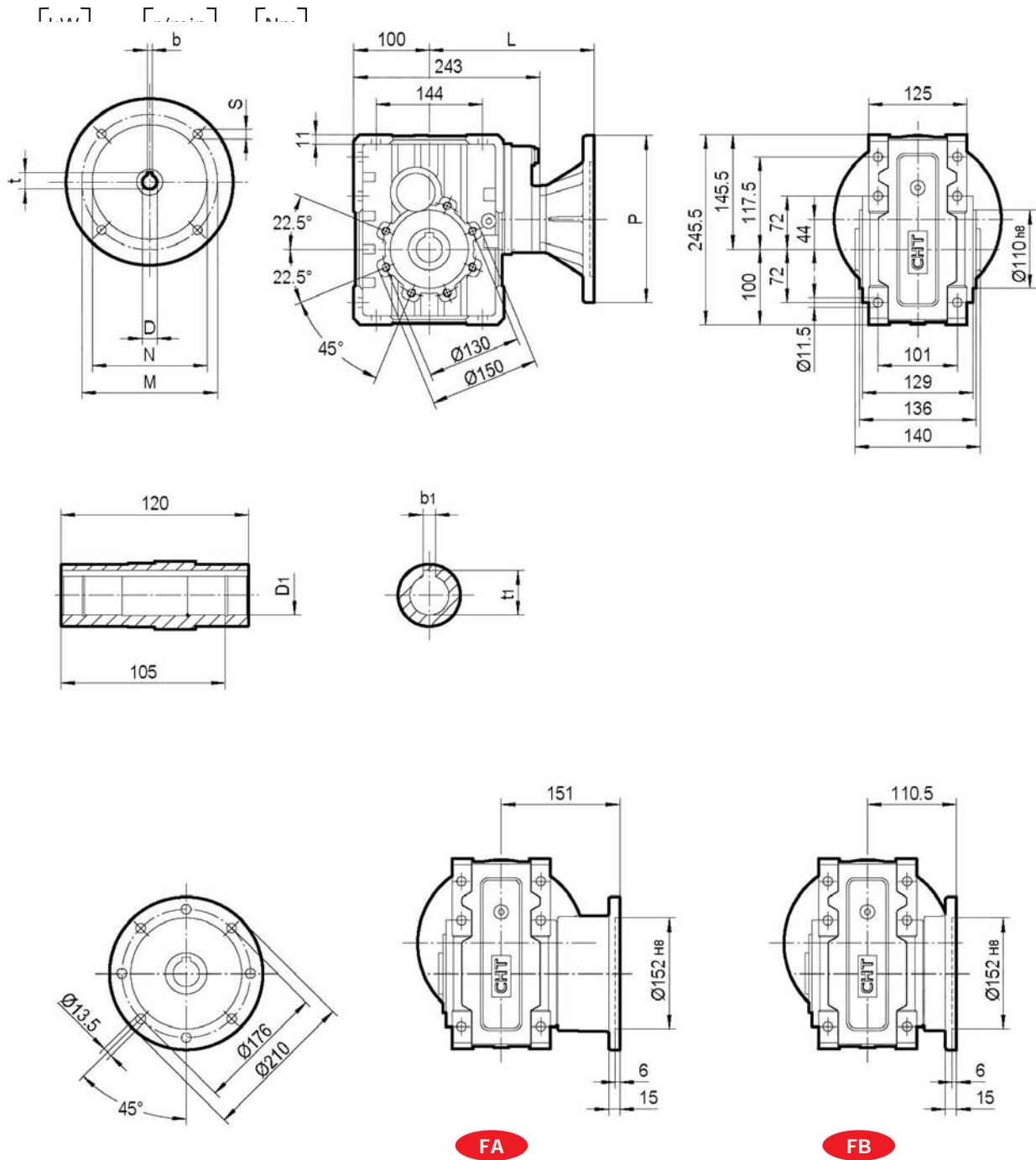
Peso Kg 13.5 senza motore

Weight 13.5 Kg excluding motor



# DIMENSIONI - DIMENSION SHEET

## CHO 83



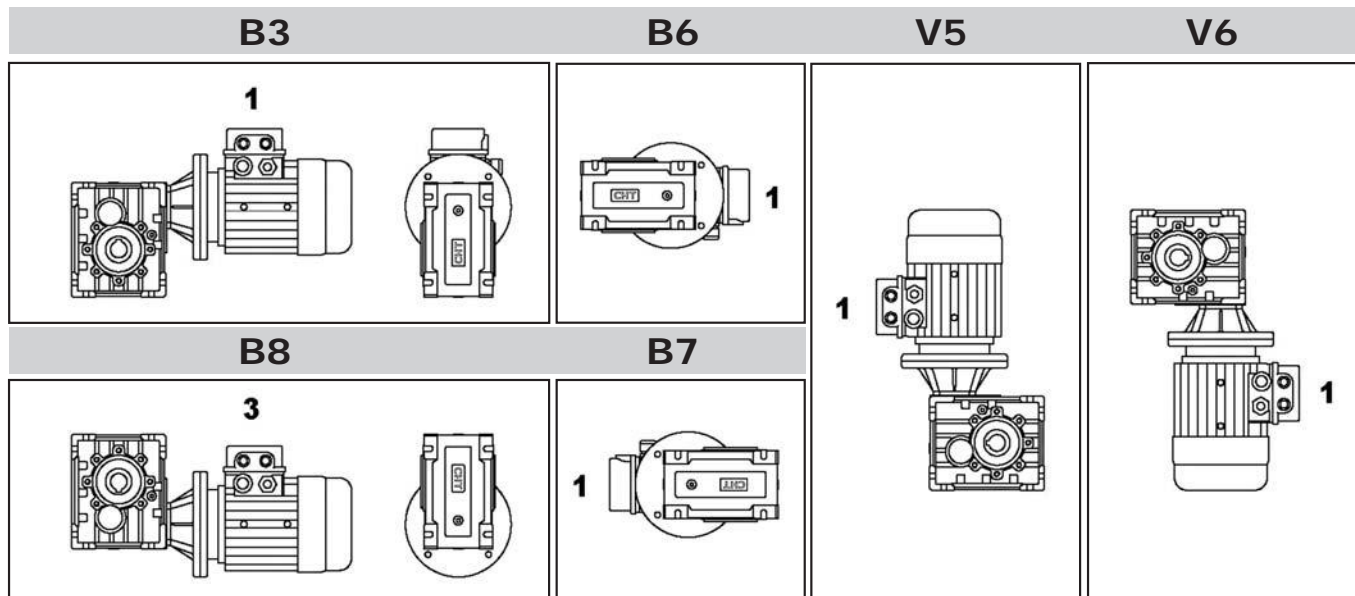
| IEC        | DE8 | b | t    | P   | M   | N   | S    | T   | L   | D1 H8             | b1  | t1    |
|------------|-----|---|------|-----|-----|-----|------|-----|-----|-------------------|-----|-------|
| 63B5       | 11  | 4 | 12.8 | 140 | 115 | 95  | 9    | 4   | 195 | 35                | 10  | 38.3  |
| 71B5       | 14  | 5 | 16.3 | 160 | 130 | 110 | 9    | 4   | 202 | 40*               | 10* | 43.3* |
| 80B5       | 19  | 6 | 21.8 | 200 | 165 | 130 | 11   | 4   | 222 |                   |     |       |
| 80B14      | 19  | 6 | 21.8 | 120 | 100 | 80  | 7    | 4   | 222 |                   |     |       |
| 90B5       | 24  | 8 | 27.3 | 200 | 165 | 130 | 11   | 4   | 222 |                   |     |       |
| 90B14      | 24  | 8 | 27.3 | 140 | 115 | 95  | 9    | 4   | 222 |                   |     |       |
| 100/112B5  | 28  | 8 | 31.3 | 250 | 215 | 180 | 13.5 | 4.5 | 232 | * a richiesta     |     |       |
| 100/112B14 | 28  | 8 | 31.3 | 160 | 130 | 110 | 9    | 4.5 | 232 | * only on request |     |       |

Peso Kg 13.5 senza motore  
Weight 13.5 Kg excluding motor

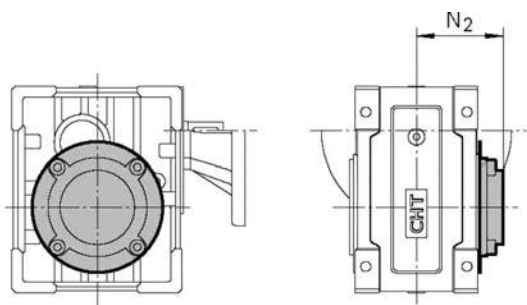
# DIMENSIONI - DIMENSION SHEET

## ACCESSORI / ACCESSORIES

## POSIZIONI DI MONTAGGIO / MOUNTING POSITIONS



### Coprimozzo / Cover



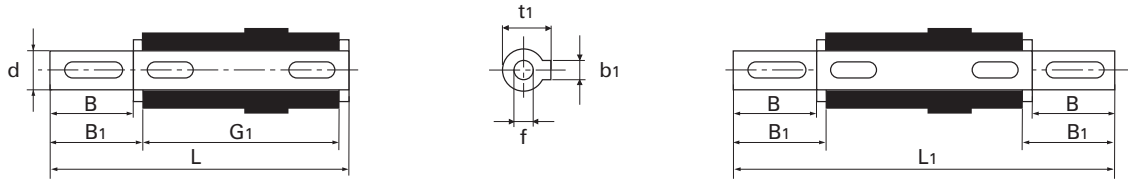
| TIPO TYPE | $N_2$ |
|-----------|-------|
| CHO 52/53 | 59    |
| CHO 62/63 | 70    |
| CHO 72/73 | 85.5  |
| CHO 82/83 | 93.5  |



# DIMENSIONI - DIMENSION SHEET

## ACCESSORI / ACCESSORIES

### Alberi uscita / Output shaft



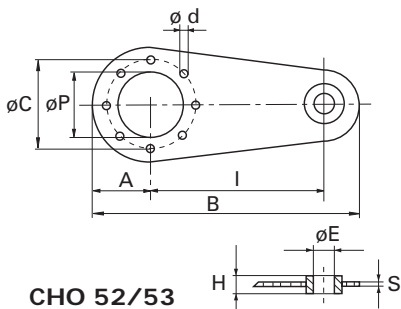
SS

DS

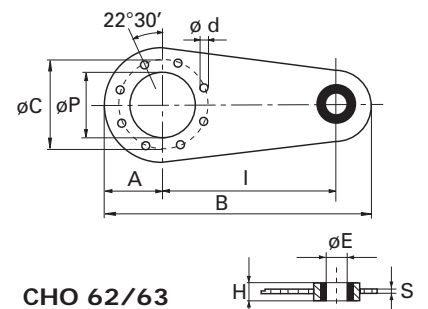
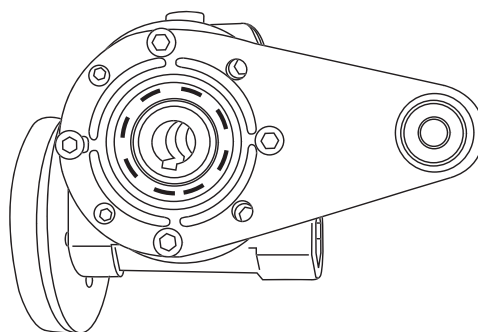
| TIPO TYPE    | d <sub>h6</sub> | B  | B <sub>1</sub> | G <sub>1</sub> | L   | L <sub>1</sub> | f   | b <sub>1</sub> | t <sub>1</sub> |
|--------------|-----------------|----|----------------|----------------|-----|----------------|-----|----------------|----------------|
| CHO 52/53    | 25              | 50 | 53.5           | 92             | 153 | 199            | M10 | 8              | 28             |
| CHO 62/63    | 25              | 60 | 65             | 120            | 162 | 246.4          | M8  | 8              | 28             |
| CHO 72/73-28 | 28              | 60 | 65             | 127            | 199 | 255            | M8  | 8              | 31             |
| CHO 72/73-30 | 30              | 60 | 65             | 127            | 199 | 255            | M10 | 8              | 33             |
| CHO 82/83    | 35              | 60 | 65             | 140            | 214 | 268            | M12 | 10             | 38             |

## BRACCIO DI REAZIONE - TORQUE ARM

| TIPO TYPE | I   | A    | B     | Ø P | Ø C | Ø d | H  | Ø E | S |
|-----------|-----|------|-------|-----|-----|-----|----|-----|---|
| CHO 52/53 | 100 | 50   | 168   | 70  | 85  | 9   | 14 | 10  | 4 |
| CHO 62/63 | 150 | 52.5 | 232.5 | 75  | 90  | 9   | 20 | 10  | 6 |
| CHO 72/73 | 200 | 62.5 | 300   | 90  | 110 | 9   | 25 | 20  | 6 |



CHO 52/53



CHO 62/63  
CHO 72/73  
CHO 82/83

Il punto di ancoraggio del braccio di reazione è dotato di boccola antivibrante.

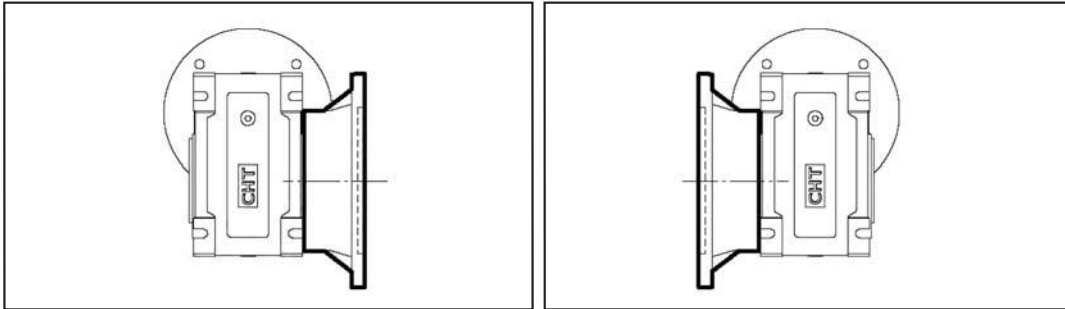
The anchoring point of the torque arm is equipped with a vibration resistant bushing.



## POSIZIONE DI MONTAGGIO FLANGE, ALBERI E MORSETTERIE FLANGE, SHAFTS AND TERMINAL BOXES MOUNTING POSITION

Posizione flange uscita  
*Position diagram for output flanges*

**FA1, FB1, FC1, FD1, FE1      FA2, FB2, FC2, FD2, FE2**



Se non specificato le flange vengono montate in posizione F..1

*Unless specified otherwise, the reduction unit is supplied with the flange in pos. F..1 referred to position B3.*

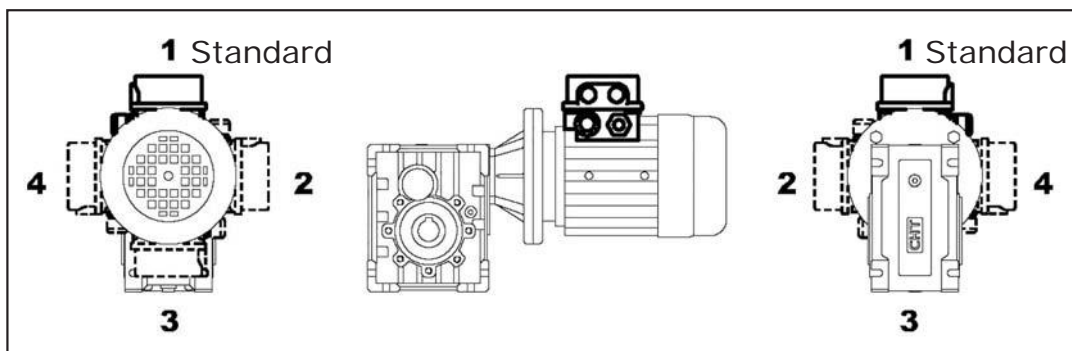
Posizione albero lento semplice  
*Position diagram for single output shaft*

**SS1**

**SS2**



Posizione morsetteria  
*Position of terminal box*

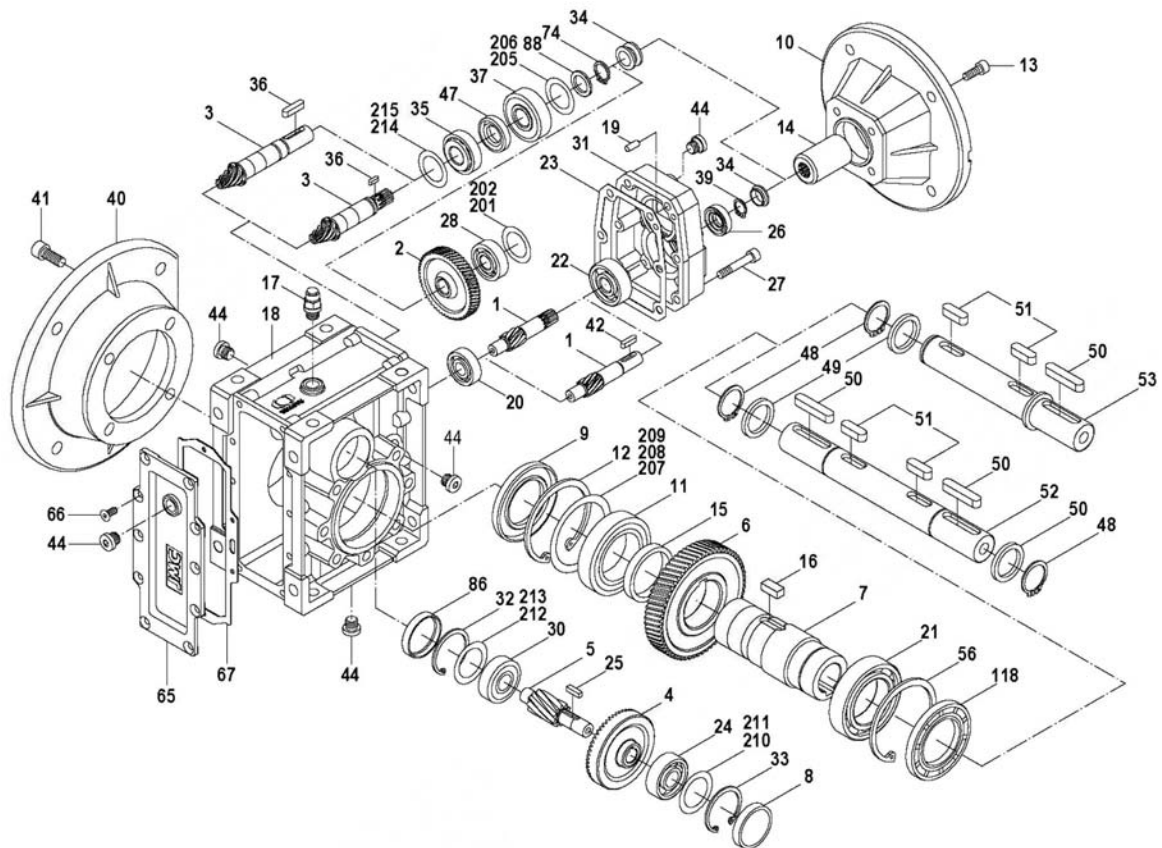


Specificare posizione di montaggio della morsetteria.

*In the case of specific requirements, when ordering, specify the position of the terminal box as shown in the diagram.*



# ESPLOSO E PARTI DI RICAMBIO EXPLODED DRAWING AND SPARE PARTS LIST



- |    |                                    |     |   |
|----|------------------------------------|-----|---|
| 1  | • Pignone - Pinion                 | 39  | • Seeger - Shaft-circlip                      |
| 2  | • Corona - Gear                    | 40  | • Flangia uscita - Output flange              |
| 3  | • Pignone conico - Pinion shaft    | 41  | • Vite - Inner hex screw                      |
| 4  | • Corona conica - Gear             | 42  | • Chiavetta - Key                             |
| 5  | • Pignone - Pinion shaft           | 44  | • Tappo olio - Oil plug                       |
| 6  | • Corona conica - Gear             | 47  | • Anello tenuta - Oil seal                    |
| 7  | • Albero cavo - Hollow shaft       | 48  | • Seeger - Shaft-circlip                      |
| 8  | • Cappello - Closing cap           | 49  | • Guarnizione - Gasket                        |
| 9  | • Anello di tenuta - Oil seal      | 50  | • Chiavetta - Key                             |
| 10 | • Flangia ingresso - Input flange  | 51  | • Chiavetta - Key                             |
| 11 | • Cuscinetto - Bearing             | 52  | • Albero lento doppio - Double output shaft   |
| 12 | • Seeger - Hole-circlip            | 53  | • Albero lento semplice - Double output shaft |
| 13 | • Vite - Inner hex screw           | 56  | • Seeger - Hole-circlip                       |
| 14 | • Mozzo entrata - Input shaft      | 65  | • Coperchio - Gearcase cover                  |
| 15 | • Distanziale - Spacer             | 66  | • Vite - Hexagon screw                        |
| 16 | • Chiavetta - Key                  | 67  | • Guarnizione - Rubber gasket                 |
| 17 | • Tappo sfiato - Breather valve    | 74  | • Seeger - Shaft-circlip                      |
| 18 | • Cassa - Gearcase                 | 86  | • Cappello - Closing cap                      |
| 19 | • Spina - Stifte                   | 88  | • Rondella - Washer                           |
| 20 | • Cuscinetto - Bearing             | 118 | • Anello tenuta - Oil seal                    |
| 21 | • Cuscinetto - Bearing             | 201 | • Spessore - Shim ring                        |
| 22 | • Cuscinetto - Bearing             | 202 | • Spessore - Shim ring                        |
| 23 | • Guarnizione - Housing gasket     | 205 | • Spessore - Shim ring                        |
| 24 | • Cuscinetto - Bearing             | 206 | • Spessore - Shim ring                        |
| 25 | • Key - Chiavetta                  | 207 | • Spessore - Shim ring                        |
| 26 | • Anello di tenuta - Oil seal      | 208 | • Spessore - Shim ring                        |
| 27 | • Vite - Inner hex screw           | 209 | • Spessore - Shim ring                        |
| 28 | • Cuscinetto - Bearing             | 210 | • Spessore - Shim ring                        |
| 30 | • Cuscinetto - Bearing             | 211 | • Spessore - Shim ring                        |
| 31 | • Cassa 3 stadi - 3 stage gearcase | 212 | • Spessore - Shim ring                        |
| 32 | • Seeger - Hole-circlip            | 213 | • Spessore - Shim ring                        |
| 33 | • Seeger - Hole-circlip            | 214 | • Spessore - Shim ring                        |
| 34 | • Elemento gomma - Rubber robot    | 215 | • Spessore - Shim ring                        |
| 35 | • Cuscinetto - Bearing             | 216 | • Spessore - Shim ring                        |
| 36 | • Key - Chiavetta                  | 217 | • Spessore - Shim ring                        |
| 37 | • Cuscinetto - Bearing             |     |   |

**INSTALLAZIONE**

- I dati riportati sulla targhetta identificativa devono corrispondere al riduttore ordinato.
- Il livello dell'olio dovrà corrispondere alla quantità prevista per la posizione di montaggio richiesta (vedi catalogo).
- Il fissaggio del riduttore deve avvenire su superfici piane e sufficientemente rigide in modo da evitare qualsiasi vibrazione.
- Il riduttore e l'asse della macchina da movimentare devono essere in perfetto allineamento.
- In caso si prevedano urti, sovraccarichi o blocchi della macchina il cliente dovrà provvedere all'installazione di limitatori, giunti, salvamotori etc.
- Gli accoppiamenti con pignoni, giunti, pulegge ed altri organi devono essere fatti previa pulizia delle parti ed evitando urti nel montaggio poiché questo potrebbe danneggiare i cuscinetti ed altre parti interne.
- Nel caso il motore sia di fornitura del cliente questi dovrà accertarsi che le tolleranze di flangia ed albero corrispondano ad una classe "normale", i nostri motori rispondono a questa esigenza.
- Verificare che le viti di fissaggio del riduttore e dei relativi accessori siano correttamente serrate.
- Adottare gli opportuni accorgimenti per proteggere i gruppi da eventuali agenti atmosferici aggressivi.
- Dove previsto proteggere le parti rotanti da possibili contatti con gli operatori.
- Nel caso i riduttori vengano verniciati proteggere gli anelli di tenuta ed i piani lavorati.
- Tutti i riduttori sono verniciati colore grigio RAL 9022.

**FUNZIONAMENTO E RODAGGIO**

- Per ottenere le migliori prestazioni è necessario provvedere ad un adeguato rodaggio dei riduttori incrementando la potenza gradualmente nelle prime ore di funzionamento, in questa fase un aumento delle temperature è da considerarsi nella norma.
- In caso di funzionamento difettoso, rumorosità, perdite olio etc. arrestare immediatamente il riduttore e, dove possibile, rimuovere la causa, in alternativa inviare il pezzo alla nostra sede per i controlli.

**MANUTENZIONE**

- I riduttori ad ingranaggi sono lubrificati con olio minerale, evitare di miscelare olii sintetici.  
Controllare periodicamente il livello del lubrificante.

**CONSERVAZIONE A MAGAZZINO**

- Nel caso di lunga conservazione a magazzino, superiore a tre mesi, si consiglia di proteggere alberi e piani lavorati con antiossidanti e di ingrassare gli anelli di tenuta.

**MOVIMENTAZIONE**

- Nella movimentazione dei gruppi dovrà essere posta molta attenzione a non danneggiare gli anelli di tenuta ed i piani lavorati.

**SMALTIMENTO IMBALLI**

- Gli imballi in cui vengono consegnati i nostri riduttori andranno avviati, dove possibile, al riciclo degli stessi tramite le ditte preposte.

**INSTALLATION**

- *The data shown on the identification name plate must correspond to the gearbox ordered.*
- *The oil level must correspond to the quantity foreseen for the assembly position requested (see catalogue).*
- *All of the other gearboxes are supplied complete with permanent synthetic oil in a quantity that is sufficient for any assembly position.*
- *The gearbox must be fixed on a flat surface that is sufficiently rigid in order to avoid any vibration.*
- *The gearbox and the axis of the machine to be driven must be perfectly aligned or in the event that knocks, overloading or blockage of the machine are foreseen, the client must install a limiting device, joints, overload cut-out etc.*
- *Coupling with pinions, joints, pulleys and other parts must be done after the parts have been cleaned and knocks should be avoided while assembling as they could damage the bearings and other internal parts.*
- *In the event that the motor is supplied by the client, he must check that the flange and shaft tolerances correspond to a "normal" class; our motors satisfy this requirement.*
- *Check that the fixing screws for the gear and the related accessories are correctly tightened.*
- *Take suitable measures to protect the groups from any aggressive atmospheric agents.*
- *Where foreseen, protect rotating parts from any possible contact with the operators.*
- *If the gears are painted, protect the oil seals and the machined surfaces gearboxes.*
- *All of the gears are painted RAL 9022 grey.*

**OPERATION AND RUNNING-IN**

- *To obtain the best performance the gearboxes must first be run-in by gradually increasing the power in the first few hours of operation, in this phase an increase in temperature is considered normal.*
- *In the event of defective operation, noise, oil leakage, etc. stop the gear immediately and, when possible, remove the cause. Alternatively, send the piece to our factory to be controlled.*

**MAINTENANCE**

- *The helical gearboxes are lubricated with mineral, oil do not mix with synthetic oil. Check oil level regularly.*

**WAREHOUSE STORAGE**

- *If the warehouse storage will be for a long time, more than 3 months, the shafts and machined surfaces should be protected using antioxidants and the oil seals should be greased.*

**HANDLING**

- *Care must be taken not to damage the oil seals and the machined surfaces when handling the groups.*

**DISPOSAL OF PACKAGING**

- *The packaging in which our gears are delivered should be sent to specialised companies for recycling if possible.*