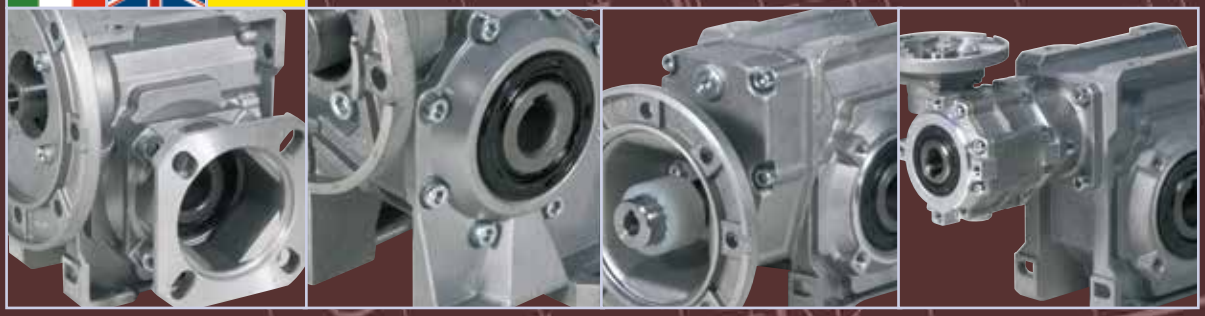
TRAMEC®

"PERFECTION IS A MASTERPIECE"

RIDUTTORI A VITE SENZA FINE

WORM GEARBOXES
SCHNECKENGETRIEBE



X | K | H | XX-KX-KK

07/2019

MADE IN ITALY

Per TRAMEC l'espressione "MADE IN ITALY" possiede un significato molto più profondo di quanto gli venga attribuito nell'uso comune.
Tutti i prodotti di TRAMEC sono infatti il risultato di :

PROGETTAZIONE E CREATIVITA' ITALIANA

Ogni riduttore della gamma TRAMEC è completamente progettato in ITALIA, nella sede principale di CALDERARA di RENO (BOLOGNA), nel cuore della cosiddetta "MOTOR VALLEY" e "PACKAGING VALLEY", un territorio dove la meccanica è da sempre protagonista. Qui gli ingegneri TRAMEC esprimono al meglio la creatività ITALIANA, avvalendosi di strumenti sempre più evoluti per progettare riduttori innovativi e personalizzabili in base a specifiche esigenze del cliente.

PRODUZIONE E MONTAGGIO

Tutti i componenti principali dei riduttori TRAMEC vengono realizzati dalla rete produttiva della nostra Azienda, che si avvale anche dell'esperienza e delle capacità di artigiani selezionati presenti sul medesimo territorio.
Dall'assemblaggio di tali componenti, eseguito con perizia dai nostri tecnici esperti, nascono i riduttori TRAMEC.
Il risultato è un prodotto di altissima qualità, come quelli descritti nel catalogo che state sfogliando.

SERVIZIO AL CLIENTE

L'importanza che TRAMEC attribuisce ai propri clienti non si riflette solamente nel fornire un prodotto di elevata qualità, ma anche nel garantire un'assistenza PRE e POST-VENDITA all'altezza del prodotto fornito.
In questo modo, curando al massimo la qualità dei prodotti e rimanendo costantemente al fianco del Cliente, si esprime a pieno l'ITALIANITA' della nostra Azienda.

Ecco cosa significa per TRAMEC l'espressione **"MADE IN ITALY"**.

At TRAMEC "MADE IN ITALY" is an expression with a much deeper meaning , as all TRAMEC products are the result of :

ITALIAN DESIGN & CREATIVITY

TRAMEC is headquartered in CALDERARA di RENO (BOLOGNA), in the heart of Italy's famous "MOTOR VALLEY" or "PACKAGING VALLEY" where the art of performance is mastered with the science of precision.
Italian design & engineering creativity is expressed via the most advanced tools by TRAMEC engineers in the design of our standard and customized products. This creativity results in an innovative design of remarkable quality which is presented in the catalogue before you.

PRODUCTION & ASSEMBLY

The designs of TRAMEC are brought to life through the careful hands of machinists and technicians expressing the local tradition of excellence.
All major components are produced , assembled , and inspected within the TRAMEC manufacturing organization.
From this long tradition, expressing performance and precision into objects of exceptional quality , we introduce the TRAMEC'S GEARBOXES.

CUSTOMER CARE

Everything we do, from conception to delivery, is focused upon our customers. High performance precision products made to increasingly demanding levels of quality deserve excellence before, during and after the purchase
At TRAMEC we express our Italian culture and heritage in caring for our customers throughout the process.

*From everyone at TRAMEC, this is what it means to say **"MADE IN ITALY"**.*

Für TRAMEC hat der Begriff "MADE IN ITALY" eine sehr viel wichtigere Bedeutung als die im üblichen Gebrauch geltende. Alle Produkte von TRAMEC sind das Ergebnis von:

ITALIENISCHER PLANUNG UND KREATIVITÄT

Alle Produkte von TRAMEC werden vollkommen in ITALIEN geplant, und zwar im Hauptsitz in CALDERARA di RENO (BO), mitten im "MOTOR VALLEY" und "PACKAGING VALLEY", dort wo die Mechanik vorherrscht. Hier wird die ITALIENISCHE Kreativität von den Ingenieuren von TRAMEC voll bei der mit stets noch fortschrittlicheren Instrumenten vorgenommenen Planung von Produkten, die auch kundenspezifisch sein können, voll zum Ausdruck gebracht. Das Ergebnis sind Produkte mit qualitativ sehr hochwertigen Merkmalen, so wie die im Katalog, den Sie gerade durchblättern.

PRODUKTION UND MONTAGE

Alle wichtigen Komponenten der Produkte von TRAMEC sind das Ergebnis des Produktionsnetzes unseres Unternehmens, das sich auf die Erfahrung und die Fähigkeiten der Handwerker in unserem gebiet stützt.
Durch den Zusammenbau dieser Komponenten, der vollkommen von den erfahrenen und ausgezeichneten Technikern von TRAMEC ausgeführt wird, entsteht dann das Planetengetriebe MTA.

KUNDENDIENST

Für TRAMEC wird die Wichtigkeit der Kundschaft nicht nur damit ausgedrückt, dass ein qualitativ hochwertiges Produkt geliefert wird, sondern auch durch einen KUNDENDIENST, der vor und nach dem Verkauf auf demselben Qualitätsniveau steht, wie das Produkt selbst. Auch auf diese Art, durch den stetigen Beistand dem Kunden gegenüber, wird das ITALIENISCHE Wesen ausgedrückt.

All das zusammen bedeutet für TRAMEC **"MADE IN ITALY"**.

1.0 Generalità

TRAMEC presenta sul mercato con la gamma di riduttori a vite senza fine con le seguenti serie:

1.0 General information

TRAMEC has introduced on the market a range of wom gearboxes available as follows:

1.0 Allgemeines

TRAMEC hat auf dem Markt eine Auswahl an Schneckengetriebe aufgebracht:

Serie X

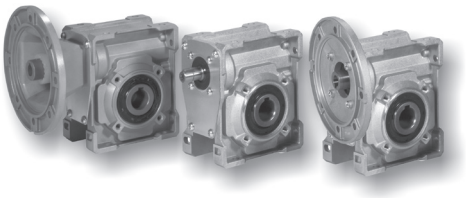
Riduttore a vite senza fine con corpo monolitico caratterizzato da una alta modularità di fissaggio grazie alla lavorazione in tolleranza di tutti i piani di appoggio.

Series X

Worm gearbox with monolithic body. Thanks to tolerance machining of all faces, the X series stands out for its high modularity of fastening options.

Serie X

Schneckengetriebe mit monolitischem Gehäus e. Dank der Bearbeitung mit Toleranz der Ablageflächen ist die X Serie durch die umfangreiche Modularität der Befestigungsmöglichkeiten gekennzeichnet.



Serie K

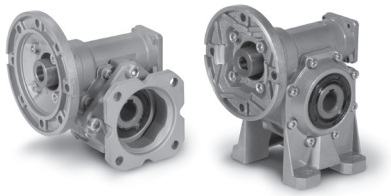
Riduttori a vite senza fine con forma rotonda che consente ingombri e pesi inferiori. Svariate possibilità di versioni sono facilmente ottenibili anche grazie ai suoi particolari di collegamento (piedi e flange) che sono separati.

Series K

Worm gearboxes with round shape are light in weight and require reduced space. The coupling parts (feet and flanges) are separated and therefore offer the possibility to obtain countless versions.

Serie K

Schneckengetriebe in rundem Gehäuse weisen ein geringes Gewicht auf und benötigen weniger Platz. Die Anbauteile (Fuesse und Flansche) sind modular aufgebaut, wodurch viele unterschiedliche Versionen möglich sind.



Serie H

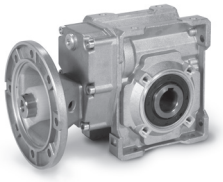
Riduttore a vite senza fine con precoppia cilindrica con corpo monolitico. Si ottengono così rapporti più elevati conservando un buon rendimento.

Series H

Worm gearbox with cylindrical pre-stage module and single piece body. It offers higher ratios by maintaining a good efficiency.

Serie H

Schneckengetriebe mit zylindrischem Vorstufen-Modul und einteiligem Gehäuse. Es bietet höhere Untersetzungen bei gleichzeitig guter Effizienz.



Serie KX - XX - KK

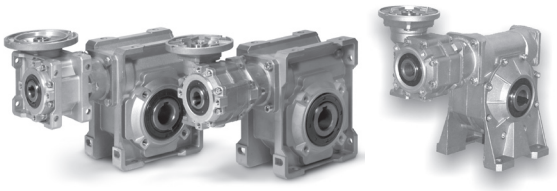
Riduttore combinato a doppia vite senza fine caratterizzato da elevate riduzioni di velocità.

KX - XX - KK Series

Worm gearbox with cylindrical pre-stage Combined worm gearbox with double worm shaft, it offers high speed reductions.

Serie KX - XX - KK

Kombinierte Doppelschneckengetriebe ermöglichen eine hohe Anzahl an Untersetzungsmöglichkeiten.



1.1 Unità di misura — *1.1 Measurement units* — 1.1 Masseinhaiten

Simbolo *Symbol* Symbol	Unita' di misura *Measurement unit* Maßeinheit	Definizione	*Definition*	Beschreibung
FS'		Fattore di servizio riduttore	*Gearbox service factor*	Betriebsfaktor des Getriebes
FS		Fattore di servizio dell'applicazione	*Application service factor*	Betriebsfaktor der Anwendung
i_1		Rapporto di riduzione del 1° riduttore	*Ratio of 1st gearbox*	Untersetzungsverhältnis des 1. Getriebes
i_2		Rapporto di riduzione del 2° riduttore	*Ratio of 2nd gearbox*	Untersetzungsverhältnis des 2. Getriebes
i_n		Rapporto di riduzione	*Reduction ratio*	Untersetzungsverhältnis
M_{2S}	[Nm]	Coppia di slittamento	*Slipping torque*	Rutschmoment
n_1	[min^{-1}]	Giri in entrata	*Input speed*	Antriebsdrehzahl
n_2	[min^{-1}]	Giri in uscita	*Output speed*	Abtriebsdrehzahl
P	[kW]	Potenza riduttore	*Gearbox capacity*	Getriebeleistung
P'	[kW]	Potenza richiesta in entrata	*Power required at input*	Erforderliche Leistung am Antrieb
P_1	[kW]	Potenza motoriduttore	*Gear motor power*	Getriebemotor Leistung
P_2	[kW]	Potenza in uscita	*Output power*	Abtriebsleistung
P_{tc}	[kW]	Potenza termica corretta	*Corrected thermal power*	verbesserte thermische Leistung
P_{to}	[kW]	Potenza termica nominale	*Thermal power*	Thermische Nennleistung
F_{r1}	[N]	Carico radiale albero entrata	*Input shaft radial load*	Radiallast an Antriebswelle
F_{r2}	[N]	Carico radiale albero uscita	*Output shaft radial load*	Radiallast an Abtriebswelle
F_{a1}	[N]	Carico assiale albero entrata	*Input shaft axial load*	Axiallast an Abtriebswelle
F_{a2}	[N]	Carico assiale albero uscita	*Output shaft axial load*	Axiallast an Antriebswelle
Rd		Rendimento dinamico	*Dynamic efficiency*	dynamischer Wirkungsgrad
Rs		Rendimento statico	*Static efficiency*	statischer Wirkungsgrad
Ta	[°C]	Temperatura ambiente	*Ambient temperature*	Umgebungstemperatur
T_{2M}	[Nm]	Momento torcente riduttore	*Gearbox torque*	Getriebe Drehmoment
T_2	[Nm]	Momento torcente motoriduttore	*Gear motor torque*	Getriebemotor Drehmoment
T_C	[Nm]	Momento torcente da utilizzare per la scelta del riduttore	*Torque to be used for the selection of the gearbox*	Drehmoment, das zur Wahl des Getriebe zu benutzen ist
T_2'	[Nm]	Momento torcente richiesto	*Required Torque*	benötigtes Drehmoment

1.2 Potenza — *1.2 Power* — 1.2 Leistung

P = Potenza massima applicabile in entrata con vite ad albero maschio riferita alla velocità n_1 con un fattore di servizio FS = 1 e a un servizio continuo S1.

P_1 = Potenza motore consigliata riferita alla velocità n_1 con il fattore di servizio FS riportato in tabella a pag. 4 e a servizio continuo S1.

E' possibile determinare la potenza necessaria in entrata P' in base alla coppia T_2' richiesta all'applicazione secondo la seguente formula:

P = max. power applicable at input with male worm shaft, referred to n_1 speed, service factor FS=1, on S1 continuous duty.

P_1 = recommended motor power, referred to n_1 speed, service factor FS as reported in the table on page 4, on S1 continuous duty.

The necessary input power with regard to T_2 torque required by the application, is to be calculated with the following formula:

P = am Antrieb max. anwendbare Leistung, mit Schneckenwellenzapfen bez. n_1 Antriebsdrehzahl, Betriebsfaktor FS=1 und S1 Dauerbetrieb.

P_1 = beratene Motorleistung bez. n_1 Drehzahl, FS Betriebsfaktor (wie es in der Tabelle auf Seite 4 angegeben wird) und S1 Dauerbetrieb.

Die am Antrieb erforderliche Leistung P' (auf Grund des von der Anwendung verlangten T_2 Drehmoments) kann wie folgt kalkuliert werden:

$$P' = \frac{T_2' \cdot n_2}{9550 \cdot Rd} \quad [kW]$$

1.3 Rapporto di riduzione — *1.3 Reduction Ratio* — 1.3 Untersetzungsverhältnis

i_n = È il rapporto di riduzione della velocità, definito come:

i_n= speed reduction ratio, defined as follows:

i_n = Drehzahluntersetzungsverhältnis, wird wie folgt definiert:

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

1.4 Momento torcente — *1.4 Torque* — 1.4 Drehmoment

T_{2M} = È la massima coppia trasmissibile in uscita del riduttore con carico uniforme riferito alla velocità n_1 con un fattore di servizio FS =1 e a servizio continuo S1.
T_2 = È la coppia in uscita del motoriduttore riferita alla velocità n_1 alla potenza P_1, con il fattore di servizio FS riportato in tabella e a servizio continuo S1.

T_{2M} = max. torque transmissible at gearbox output with uniform load, referred to n_1 speed, service factor FS = 1, on S1 continuous duty.
T_2 = output torque transmissible to the geared motor, referred to n_1 speed, P_1 power , FS service factor as reported in the table, on S1 continuous duty.

T_{2M} = am Getriebeabtrieb max. übertragbaren Drehmoment, bei gleichmäßiger Last bez. n_1 Drehzahl, Betriebsfaktor FS = 1 und S1 Dauerbetrieb.
T_2 = übertragbares Abtriebsdrehmoment, bezogen auf die Antriebsdrehzahl n_1, die Leistung P_1 und dem in der Tabelle angegebenen Betriebsfaktor FS bei Dauerbetrieb S1.

$$T_{2M} = \frac{9550 \cdot P_1 \cdot Rd}{n_2} \quad [Nm]$$

1.5 Fattore di servizio FS

È il valore che tiene in considerazione le varie condizioni di funzionamento:
- tipologia di applicazione ovvero natura del carico (A-B-C)
- durata di funzionamento (ore giornaliere h/gg)
- numero di avviamenti/ora

Il coefficiente così trovato (FS) dovrà essere uguale o inferiore al fattore di servizio del riduttore da adottare FS' dato dal rapporto tra la coppia T_{2M} indicata a catalogo e la coppia T_2' richiesta dall'applicazione.

1.5 FS Service factor

Value which takes the different operating conditions into consideration:
- *type of application or type of load (A-B-C)*
- *length of operation (hours per day h/d)*
- *number of start-ups/hour*

This coefficient (FS) will have to be equal or lower than the FS of selected gearbox FS' given by the ratio between T_{2M} torque mentioned in the catalogue and the T_2' torque required by the application.

1.5 Betriebsfaktor FS

Wert, der die verschiedenen Betriebsbedingungen in Betracht zieht:
- Art der Anwendung oder Art der Last (A-B-C)
- Betriebsdauer (Stunden pro Tag)
- Zahl der Starten pro Stunde

Der so berechnete Koeffizient (FS) muss kleiner oder gleich dem Betriebsfaktor FS' des Getriebes sein, welcher sich aus dem Verhältnis zwischen dem im Katalog angegebenen maximalen Drehmoment T_{2M} und dem von der Anwendung benötigten Drehmoment T_2' ergibt.

$$FS' = \frac{T_{2M}}{T_2'} > FS$$

I valori di FS indicati in tabella sono relativi all'azionamento del motore elettrico; se utilizzato un motore a scoppio, si dovrà tenere conto di un fattore di moltiplicazione 1.3 se a più cilindri e 1.5 se monocilindrico. Se il motore elettrico applicato è autofrenante occorre considerare un numero di avviamenti doppio di quello effettivamente richiesto.

FS values reported in the table refer to the electric motor operation; should a combustion motor be used, consider a multiplication factor of 1.3 for a multicylinder motor, of 1.5 for a single-cylinder one. If an electric brake motor is used, consider a number of start-ups which is twice as much the number actually required.

Die in der Tabelle angegebenen FS Werte beziehen sich auf Anwendung eines Elektromotors. Falls einen Verbrennungsmotor verwendet wird, dann soll einen Multiplikationsfaktor von 1.3 für Mehrzylindermotor oder von 1.5 für Einzylindermotor in Betracht gezogen werden. Falls es sich um einen Elektro-Bremsmotor handelt, dann ist die Zahl der Starten doppelt zu zählen.

Classe di carico *Load class* Lastklasse	h/gg *h/d* St./Tag	N. AVVIAMENTI/ORA / *N. START-UP/HOUR* / ANZAHL DER STARTVORGÄNGE PRO STUNDE								
		2	**4**	**8**	**16**	**32**	**63**	**125**	**250**	**500**
A	**4**	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.2
	8	1.0	1.0	1.1	1.1	1.3	1.3	1.3	1.3	1.3
	16	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5
	24	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8
	APPLICAZIONI / *APPLICATIONS* / ANWENDUNGEN									
Carico uniforme ***Uniform load*** **Gleichmäßig verteilte Last**	Agitatori per liquidi puri	*Pure liquid agitators*	Rührwerke für reine Flüssigkeiten							
	Alimentatori per fornaci	*Fournace feeders*	Beschickungsvorrichtungen für Brennöfen							
	Alimentatori a disco	*Disc feeders*	Telleraufgeber							
	Filtri di lavaggio con aria	*Air laundry filters*	Spülluftfilter							
	Generatori	*Generators*	Generatoren							
	Pompe centrifughe	*Centrifugal pumps*	Kreiselpumpen							
	Trasportatori con carico uniforme	*Uniform load conveyors*	Förderer mit gleichmäßig verteilter Last							

Classe di carico *Load class* Lastklasse	h/gg *h/d* St./Tag	N. AVVIAMENTI/ORA / *N. START-UP/HOUR* / ANZAHL DER STARTVORGÄNGE PRO STUNDE								
		2	**4**	**8**	**16**	**32**	**63**	**125**	**250**	**500**
B	**4**	1.0	1.0	1.0	1.0	1.3	1.3	1.3	1.3	1.3
	8	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5
	16	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8
	24	1.8	1.8	1.8	1.8	2.2	2.2	2.2	2.2	2.2
Carico con urti moderati ***Moderate shock load*** **Last mit mäßigen Stößen**	Agitatori per liquidi e solidi	*Liquid and solid agitators*	Rührwerke für Flüssigkeiten und Feststoffe							
	Alimentatori a nastro	*Belt conveyors*	Bandförderer							
	Argani con medio servizio	*Medium service winches*	Mittlere Winden							
	Filtri con pietre e ghiaia	*Stone and gravel filters*	Filter mit Steinen/Kies							
	Viti per espulsione acqua	*Dewatering screws*	Abwasserschnecken							
	Flocculatori	*Flocculator*	Flockvorrichtungen							
	Filtri a vuoto	*Vacuum filters*	Vakuumfilter							
	Elevatori a tazze	*Bucket elevators*	Becherwerke							
	Gru	*Cranes*	Kräne							

Classe di carico *Load class* Lastklasse	h/gg *h/d* St./Tag	N. AVVIAMENTI/ORA / *N. START-UP/HOUR* / ANZAHL DER STARTVORGÄNGE PRO STUNDE								
		2	**4**	**8**	**16**	**32**	**63**	**125**	**250**	**500**
C	**4**	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5
	8	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8
	16	1.8	1.8	1.8	1.8	2.2	2.2	2.2	2.2	2.2
	24	2.2	2.2	2.2	2.2	2.5	2.5	2.5	2.5	2.5
	APPLICAZIONI / *APPLICATIONS* / ANWENDUNGEN									
Carico con urti forti ***Heavy shock load*** **Last mit starken Stößen**	Argani per servizio pesante	*Heavy duty hoists*	Winden für schwere Lasten							
	Estrusori	*Extruders*	Extruder							
	Calandre per gomma	*Crusher rubber calenders*	Gummikalander							
	Presse per mattoni	*Brick presses*	Ziegelpressen							
	Piallatrici	*Planing machine*	Hobelmaschinen							
	Mulini a sfera	*Ball mills*	Kugelmühle							

1.6 Rendimento

Rd - È il rendimento dinamico, definito come rapporto tra la potenza in uscita P_2 e quella in entrata P_1. Dipende principalmente dalla velocità di strisciamento, dal tipo di lubrificante e dall' angolo d'elica. I valori indicati nelle tabelle sono validi se si applica la corrispondente coppia in uscita. In fase di rodaggio, circa le prime 300 ore di funzionamento sotto carico, il valore deve essere considerato inferiore del 30% rispetto a quello indicato in tabella.

Rs - È il rendimento statico che si ha al momento dell' avviamento del riduttore e varia in base al rapporto di riduzione.
Risulta importante, per una corretta valutazione del riduttore da impiegare, nelle applicazioni in cui non si raggiungono mai le condizioni di regime come nei funzionamenti intermittenti. Analogalmente al caso dinamico, anche il rendimento statico durante il rodaggio risulta inferiore del 30% rispetto al valore indicato in tabella.

1.6 Efficiency

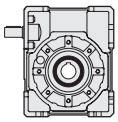
***Rd** - dynamic efficiency, defined as the ratio between P_2 output power and P_1 input power. It mainly depends on the slipping speed, the type of lubricant and the lead angle. The values reported in the table are valid when the corresponding output torque is applied. During the first 300 operating hours under load, the value to be considered is 30% lower than that reported in the table.*

***Rs** - static efficiency at gearbox start-up; it changes depending on the reduction ratio.*
Rs value is important for selecting the right gearbox for applications where a steady state is never achieved, as for intermittent duty applications. Same as dynamic efficiency, static efficiency too during the running-in period will be 30% lower than the value reported in the table.

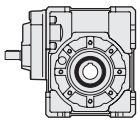
1.6 Wirkungsgrad

Rd - dynamischer Wirkungsgrad, ist das Verhältnis zwischen P_2 Abtriebsleistung und P_1 Antriebsleistung. Rd Wert wird durch Gleitgeschwindigkeit, Art des Schmiermittels und Steigungswinkel beeinflusst. Die Tabellen zeigen die Werte die gültig sind wenn das entsprechende Abtriebsdrehmoment gegeben ist. Während der Einlaufszeit in den ersten 300 Betriebsstunden unter Belastung, ist dieser Wert 30% niedriger als der in der Leistungstabelle angegebenen Wert.

Rs - statischer Wirkungsgrad beim Getriebestart und in Abhängigkeit zur Untersetzung..
Der Wert Rs ist wichtig für die Auswahl des richtigen Getriebes für Anwendungen wo ein stetiger Betrieb nicht auftritt, wie bei Anwendungen mit Aussetzbetrieb. Der statischer Wirkungsgrad auch während der Einlaufszeit wird 30% niedriger als der in der Tabelle angegebenen Wert.



X - K	Rs											
	5	7.5	10	15	20	25	30	40	50	65	80	100
30	0.70	0.67	0.62	0.55	0.47	0.43	0.39	0.30	0.27	0.25	0.22	0.21
40	0.69	0.67	0.63	0.55	0.52	0.45	0.40	0.35	0.29	0.26	0.25	0.23
50	0.69	0.68	0.65	0.58	0.53	0.47	0.41	0.37	0.32	0.28	0.25	0.23
63	0.70	0.68	0.65	0.57	0.55	0.50	0.47	0.38	0.33	0.29	0.28	0.23
75	/	0.68	0.65	0.58	0.55	0.51	0.43	0.39	0.35	0.31	0.28	0.24
89	/	0.68	0.65	0.58	0.55	0.52	0.45	0.39	0.36	0.32	0.29	0.25
90	/	0.68	0.65	0.58	0.55	0.52	0.45	0.39	0.36	0.32	0.29	0.25
110	/	0.68	0.66	0.59	0.56	0.53	0.44	0.40	0.38	0.33	0.30	0.26
130	/	0.69	0.66	0.60	0.57	0.55	0.44	0.42	0.39	0.35	0.32	0.28

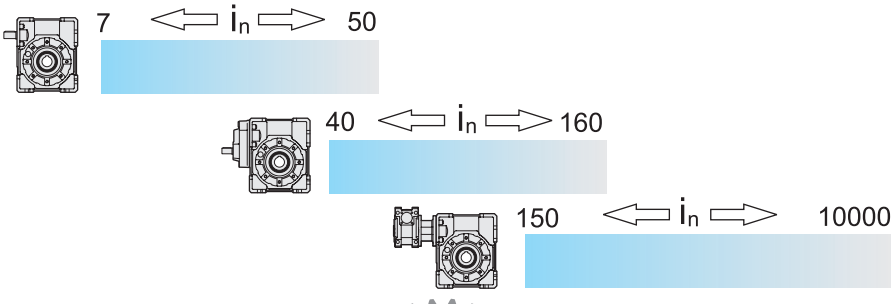


H	Rs										
	30	40	60	80	100	120	160	200	260	320	400
40	0.66	0.62	0.54	0.51	0.44	0.39	0.34	0.28	0.25	0.24	0.22
50	0.66	0.64	0.57	0.52	0.46	0.40	0.36	0.31	0.27	0.24	0.22
63	0.67	0.64	0.56	0.54	0.49	0.46	0.37	0.32	0.28	0.27	0.22
75	0.67	0.64	0.57	0.54	0.50	0.42	0.38	0.34	0.30	0.27	0.23
90	0.67	0.64	0.57	0.54	0.51	0.44	0.38	0.35	0.31	0.28	0.24
110	0.67	0.65	0.58	0.55	0.52	0.43	0.39	0.37	0.32	0.30	0.25
130	0.68	0.65	0.59	0.56	0.54	0.43	0.41	0.38	0.34	0.31	0.27

Stabilito il rapporto di riduzione necessario all'applicazione, dove è possibile, è consigliabile utilizzare i diversi tipi di riduttori che offrono, a parità di rapporto, un migliore rendimento dinamico.

Once the reduction ratio required by the application has been established, it is advisable to select a type of gearbox which, ratio being equal, offers better dynamic efficiency.

Nachdem das für die Anwendung erforderliche Untersetzungsverhältnis festgestellt worden ist, wählen Sie bei gleichem Untersetzungsverhältnis einen Getriebetyp, den einen besseren dynamischen Wirkungsgrad aufweist.



1.7 Irreversibilità

Nelle applicazioni dove è necessario evitare la trasmissione del moto retrogrado o sostenere il carico, in assenza di alimentazione elettrica, è consigliabile adottare freni esterni.
Nei riduttori a vite senza fine emerge questa caratteristica naturale, denominata grado di irreversibilità, che cresce con l'aumentare del rapporto di riduzione in quanto strettamente legata al relativo rendimento.

Per ottenere alti gradi di irreversibilità occorre quindi adottare i rapporti di riduzione più elevati, senza dimenticare che, il rendimento, tende a crescere durante le prime 500 ore di funzionamento per poi stabilizzarsi sui valori riportati a catalogo.

Irreversibilità statica

Condizione di impedimento alla rotazione comandata dall'albero lento senza escludere possibili ritorni lenti nel caso in cui il carico sia sottoposto a vibrazioni.

Rs < 0.45 si ha irreversibilità
Rs = 0.45 ÷ 0.55 irreversibilità incerta
Rs > 0.55 si ha reversibilità

Irreversibilità dinamica

Condizione di arresto e quindi di sostegno del carico nel momento in cui cessa l'azione di comando. La condizione è più difficile da ottenere in quanto viene influenzata dal rendimento dinamico, dalla velocità di rotazione, da eventuali vibrazioni che il carico può generare e dalla direzione del movimento rispetto al carico.

Quest'ultima condizione è molto evidente nei sollevamenti:
un carico in salita, cessando l'azione di comando, deve arrestarsi e quindi assumere velocità zero (rendimento statico) prima di invertire il moto e cadere per gravità.

Un carico in discesa tende invece a proseguire nel suo moto ostacolato, nella caduta, dal solo rendimento dinamico.

Rd < 0.45 si ha irreversibilità
Rd = 0.45 ÷ 0.55 irreversibilità incerta
Rd > 0.55 si ha reversibilità

1.7 Irreversibility

The use of external brakes is advised in case of applications where backwards motion must be hindered and the load must be held should the feed be cut off.

Some worm gearboxes feature natural irreversibility. The higher the ratio, the higher is the irreversibility, since it is strictly dependent on the relative efficiency.

In order to achieve high irreversibility it is therefore necessary to select higher efficiency reduction ratios not to forget that the efficiency is growing during the first 500 hours life until it stabilizes to the values mentioned in the catalogue.

Static irreversibility

Static irreversibility occurs when the rotation controlled by the output shaft is hindered; possible slow returns cannot be excluded should the load be subject to vibrations.

***Rs < 0.45** provides irreversibility*
***Rs = 0.45 ÷ 0.55** irreversibility is uncertain*
***Rs > 0.55** reversibility is possible*

Dynamic irreversibility

Dynamic irreversibility is characterized by stillstand and hold of the load when the drive stops.
It is more difficult to achieve this condition because it is influenced by dynamic efficiency, speed of rotation and possible vibrations generated by the motion direction with regard to the load.

This last condition is much more evident during the lifting : if the drive stops during the lifting of the load this has to come to a speed equals to zero (static irreversibility) before the reversal of motion rotation and its drop for gravity.

On the contrary the load during its descent gets its motion obstructed by its dynamic efficiency.

***Rd < 0.45** provides irreversibility*
***Rd = 0.45 ÷ 0.55** irreversibility is uncertain*
***Rd > 0.55** reversibility is possible*

1.7 Selbsthemmung

Aussenbremsen sind bei Anwendungen zu benutzen, bei denen Rückbewegung vermeiden werden muss oder die Last auch im Falle von Fehlen an Speisung gehalten werden muss.
Einige Schneckengetriebe sind selbsthemmend. Je höher die Untersetzung ist, desto höher ist die Selbsthemmung, da diese stark vom jeweiligen Wirkungsgrad abhängig ist. Um eine höhere Selbsthemmung zu erreichen, wählen Sie bitte höhere Untersetzungsverhältnisse.
Bitte beachten Sie, dass der Wirkungsgrad der Getriebe in den ersten 500 Betriebsstunden ansteigt und sich erst anschließend auf die im Katalog angegebenen Werte stabilisiert.

Statische Selbsthemmung

Statische Selbsthemmung liegt vor, wenn die von Abtriebswelle gesteuerten Drehung gehindert wird. Langsamer Rücklauf ist möglich, falls die Last Schwingungen ausgesetzt wird.

Rs < 0.45 es liegt Selbsthemmung vor
Rs = 0.45 ÷ 0.55 ungewisse Selbsthemmung
Rs > 0.55 es liegt Reversibilität vor

Dynamische Selbsthemmung

Stillstand und Stütze der Last beim Aussetzen der Steuerung.
Diese Bedingung ist schwieriger zu erreichen, da sie vom dynamischen Wirkungsgrad, der Drehzahl und von der Last verursachten möglichen Vibrationen abhängig ist

Dieser letzte Fall kommt bei Hubanwendungen stark zu tragen. Wenn der Antrieb während dem Hub stoppt, muss die Last eine Geschwindigkeit von annähernd null erreichen (statische Irreversibilität), bevor die Rotation sich umkehrt und die Last durch die Gravitation nach unten fährt.
Dem entgegengesetzt bekommt die Last durch die Abwärtsbewegung Ihre dynamische Effizienz.

Rd < 0.45 es liegt Selbsthemmung vor
Rd = 0.45 ÷ 0.55 ungewisse Selbsthemmung
Rd > 0.55 es liegt Reversibilität vor

1.8 Gioco angolare

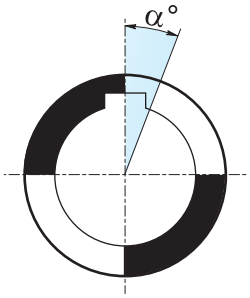
1.8 Backlash

1.8 Winkelspiel

Gioco angolare standard

Standard Backlash

Standardmäßiges Winkelspiel



X - K

i_n	30	40	50	63	75	89	90	110	130
	max	max	max	max	max	max	max	max	max
5	16'	13.5'	10.5'	10'	/	/	/	/	/
7.5	16'	13.5'	10.5'	10'	10'	9.5'	9.5'	8'	8'
10	16'	13.5'	10.5'	10'	10'	9'	9'	8'	8'
15	16'	13.5'	10.5'	10'	10'	9'	9'	8'	8'
20	14.5'	12'	9.5'	8.5'	8.5'	8.5'	8.5'	7'	8'
25	14.5'	12'	9.5'	8.5'	8.5'	8.5'	8.5'	7'	7'
30	14.5'	12'	8.5'	8.5'	8.5'	8.5'	8.5'	7'	7'
40	14.5'	12'	9.5'	8.5'	8.5'	8'	8'	7'	7'
50	14'	12'	9.5'	8.5'	8.5'	8'	8'	7'	7'
65	14'	12'	9'	8'	8'	8'	8'	7'	7'
80	13.5'	11.5'	9'	7.5'	7.5'	7.5'	7.5'	7'	7'
100	13'	11'	9'	7.5'	7.5'	7.5'	7.5'	7'	7'

H

i_n	40	50	63	75	90	110	130
	max	max	max	max	max	max	max
30	16.5'	13.5'	12'	12'	11.5'	9'	9'
40	16.5'	13.5'	12'	12'	11'	9'	9'
60	16.5'	13.5'	12'	12'	11'	9'	9'
80	15'	12.5'	10.5'	10.5'	10.5'	8'	8'
100	15'	12.5'	10.5'	10.5'	10.5'	8'	8'
120	16.5'	14.5'	11.5'	12'	11'	9'	8'
160	15'	12.5'	10.5'	10.5'	10.5'	8'	8'
200	15'	12.5'	10.5'	10.5'	10'	8'	8'
260	15'	12.5'	10.5'	10.5'	10'	8'	8'
320	14.5'	12'	9.5'	9.5'	9.5'	8'	8'
400	14'	12'	9.5'	9.5'	9.5'	8'	8'

Misurato bloccando l'albero entrata, e ruotando l'albero uscita nelle due direzioni applicando la coppia strettamente necessaria a creare il contatto tra i denti degli ingranaggi, al massimo pari al 2% della coppia nominale (T_{2M}).

Angular backlash measured after having blocked the input shaft by rotating output shaft in both directions and applying the torque which is strictly necessary to create a contact between the teeth of the gears. The applied torque should be at most 2% of the max. torque (T_{2M}).

Nachdem die Antriebswelle blockiert worden ist, darf das Winkelspiel auf die Abtriebswelle bemesst werden. Dabei soll die Antriebswelle in beiden Richtungen gedreht werden und ein Drehmoment ausgeübt werden, das zur Entstehen eines Kontaktes zwischen den Zaehnen genuegt. Das ausgeübte Drehmoment soll höchstens 2% des max. von Getrieben garantierten Drehmoment (T_{2M}) sein.

Gioco angolare ridotto

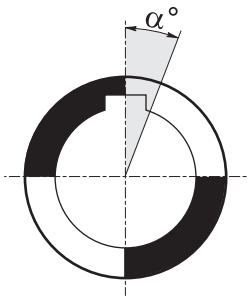
Reduced Backlash

Reduziertes Winkelspiel

I giochi angolari ridotti esposti in tabella si possono ottenere solo costruendo corone speciali. Da notare che l'usura dovuta al funzionamento rende la versione con gioco ridotto di durata limitata direttamente proporzionale al fattore di servizio (fs) dell'applicazione: più il riduttore è sovradimensionato e maggiore è la durata del gioco ridotto.

The reduced angular clearance shown in the table can only be obtained by building special crowns. It must be noted that the wear due to operation makes the version with reduced clearance of limited duration directly proportional to the service factor (fs) of the application: the more oversized the reducer, the longer the duration of the reduced backlash.

Die in der Tabelle angegebenen reduzierten Winkelspiele können nur erzielt werden, wenn spezielle Kränze hergestellt werden. Es muss hervorgehoben werden, dass der durch den Betrieb bewirkte Verschleiß bei der Version mit reduziertem Spiel eine zum Betriebsfaktor (fs) der Anwendung direkt proportionale Dauer aufweist: Je größer das Getriebe ist, desto länger dauert das reduzierte Spiel.



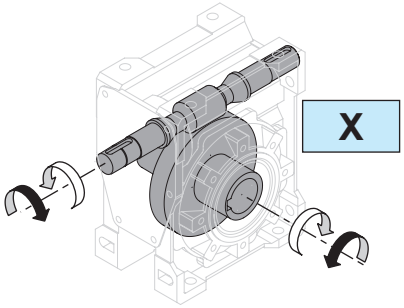
X - K

i_n	30	40	50	63	75	89	90	110	130
	max	max	max	max	max	max	max	max	max
5 ÷ 100	7'	6'	5'	5'	4'	4'	4'	4'	4'

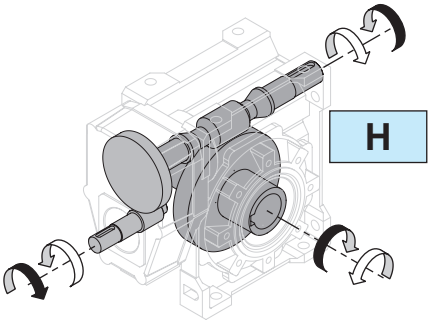
H

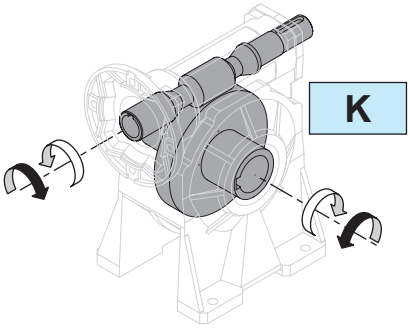
i_n	40	50	63	75	90	110	130
	max	max	max	max	max	max	max
5 ÷ 100	8'	7'	7'	6'	6'	6'	6'

1.9 Senso di rotazione

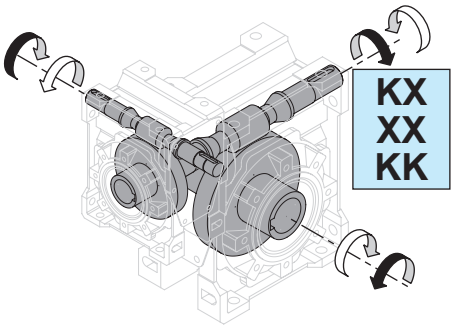


1.9 Direction of rotation





1.9 Drehrichtung



1.10 Carichi radiali

Ogni tipo di organo di trasmissione che viene collegato o sull'albero in entrata o in quello di uscita determina carichi radiali rispettivamente Fr_1 e Fr_2.
I valori riportati in tabella in funzione delle varie velocità in entrata e in uscita sono da considerarsi applicabili come forza agente a metà della sporgenza; per un posizionamento a 1/3 della lunghezza occorre aumentare i valori di tabella del 25% mentre per un posizionamento a 2/3 della lunghezza occorre diminuire gli stessi valori del 25%.
I valori dei carichi assiali applicabili in entrata Fa_1 e in uscita Fa_2 sono indicati nelle tabelle.
Negli alberi bisporgenti, ogni estremità può sopportare un carico radiale pari ai 3/5 dei valori riportati in tabella purchè agiscano nello stesso senso e siano di pari intensità

1.10 Radial load

Any transmission device coupled to either the input or to the output shaft generates radial loads, Fr_1 and Fr_2 respectively.

The load values reported in the table, depending on input and output speed, are to be considered as acting at the half-way point of the projection; if the load is applied at 1/3 of the projection, increase the values in the table by 25%; if the load is applied at 2/3, reduce the values by 25%.

Axial loads applicable at input Fa_1 and at output Fa_2 are reported in the tables.

With regard to double projecting shafts, each end can sustain a radial load which equals 3/5 of the values listed in the table, on condition that they act in the same direction and have the same intensity.

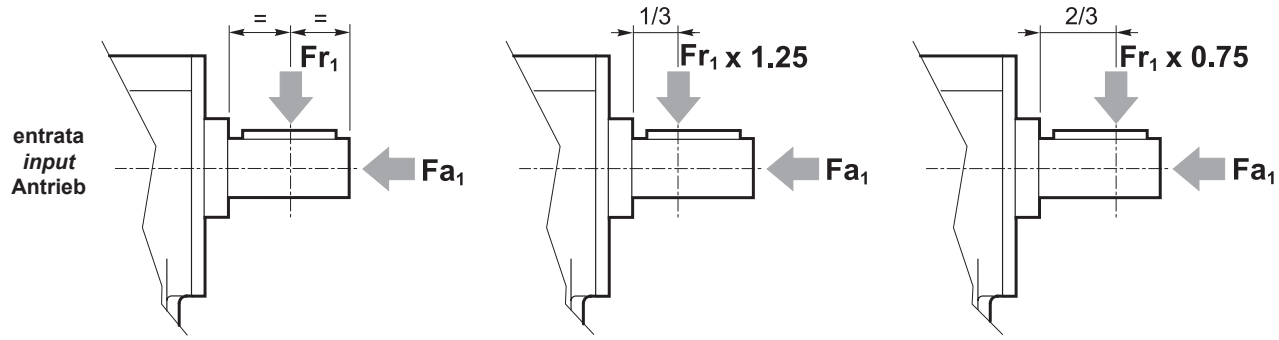
1.10 Radial Load

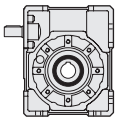
Antriebsorgane, die mit der Antriebs- oder Abtriebswelle verbindet werden, bewirken Radialbelastungen (Fr_1 und Fr_2 beziehungsweise).
Die in der Tabelle nach Antriebs-und Abtriebsdrehzahl angegebenen Werte beziehen sich auf Belastungen, die in der Mitte der herausragenden Welle wirken; falls die Belastungen auf 1/3 der Länge wirken, sollen die in der Tabelle angegebenen Werte um 25% erhöht werden; falls sie auf 2/3 der Länge wirken, sollen die Werte der Tabelle um 25% reduziert werden.
Die Werte der anwendbaren Axialbelastungen (Fa_1 am Antrieb und Fa_2 am Abtrieb) werden in den Tabellen angegeben.
Bei doppelseitig herausragenden Wellen darf die Radialbelastung auf jedes Ende 3/5 der nachstehenden Werte betragen, unter die Bedingung dass Stärke und Richtung gleich sind.

Carichi radiali Fr_1 e assiali Fa_1 sull'albero entrata [N]

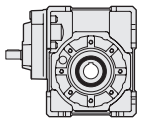
Fr_1 radial loads and Fa_1 axial loads on the input shaft *[N]*

Fr_1 Radialbelastungen und Fa_1 Axialbelastungen auf die Antriebswelle [N]

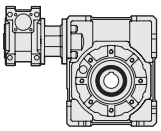




n_1 [min^{-1}]	XA30		XA40		XA50		XA63		XA75		XA90		XA110		XA130	
	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1
1400	100	20	220	44	400	80	480	96	750	150	850	170	1200	240	1500	300



		HA40		HA50		HA63		HA75		HA90		HA110		HA130	
		Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1
1400		150	30	250	50	320	64	570	114	570	114	800	160	1000	200

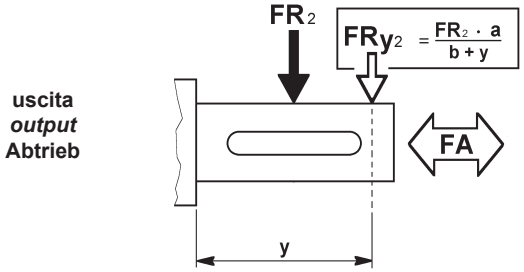


	XXA30/30 XXA30/40 XXA30/50 XXA30/63		XXA40/63 XXA40/75 XXA40/89 XXA40/90		XXA50/75 XXA50/89 XXA50/90 XXA50/110		XXA63/110		XXA63/130		–
	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	Fr_1	Fa_1	
1400	100	20	220	44	400	80	480	96	480	96	

Carichi radiali Fr_2 e assiali Fa_2 sull'albero uscita [N]

Fr_2 radial loads and Fa_2 axial loads on the output shaft *[N]*

Fr_2 Radialbelastungen und Fa_2 Axialbelastungen auf die Abtriebswelle [N]



uscita
output
Abtrieb

CUSCINETTI RADIALI A SFERE / *RADIAL BALL BEARINGS* / SCHRÄGKUGELLAGER																		
n_1=1400 rpm		30		40		50		63		75		89		90		110		130
		30/30		30/40		30/50		30/63 40/63		40/75 50/75		40/89 50/89		40/90 50/90		50/110 63/110		63/130
i_n	n_2 [rpm]	a = 66.5 b = 49		a = 83.5 b = 60.5		a = 102 b = 73.5		a = 122.5 b = 93.5		a = 134 b = 100		a = 163 b = 118		a = 163 b = 118		a = 179.5 b = 131.5		a = 190 b = 145	
		Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2
5	**280**	700	140	1400	280	1400	300	1800	360	/		/		/		/		/	
7.5	**187**	750	150	1500	300	1650	330	2100	420	2500	500	2600	520	2600	520	3500	700	5100	1020
10	**140**	800	160	1600	320	1800	360	2300	460	2800	560	3000	600	3000	600	3800	760	5600	1120
15	**93**	850	170	1700	340	1950	390	2600	520	3000	600	3400	680	3400	680	4200	840	6400	1280
20	**70**	900	180	1800	360	2200	440	2800	560	3300	660	3800	760	3800	760	4600	920	7000	1400
25	**56**	950	190	1900	380	2400	480	3100	620	3700	740	4100	820	4100	820	5100	1020	7600	1520
30	**47**	1000	200	2000	400	2600	520	3400	680	4000	800	4500	900	4500	900	5600	1120	8050	1610
40	**35**	1050	210	2100	420	2850	570	3700	740	4400	880	4900	980	4900	980	6100	1220	8800	1760
50	**28**	1100	220	2200	440	3100	620	4000	800	4850	970	5300	1060	5300	1060	6700	1340	9500	1900
60	**23**	1150	230	2400	480	3200	640	4200	840	5000	1000	5600	1120	5600	1120	7100	1420	9800	2000
63	**22**	1250	250	2500	500	3400	680	4450	890	5300	1060	5900	1180	5900	1180	7400	1480	10100	2020
80	**17.5**	1350	270	2700	540	3800	760	4900	980	5800	1160	6500	1300	6500	1300	8100	1620	11200	2240
100	**14**	1500	300	3000	600	4000	800	5400	1080	6500	1300	7000	1400	7000	1400	8500	1700	12050	2410
120	**11.7**	1520	304	3100	620	4100	820	5500	1100	6550	1310	7100	1420	7100	1420	8800	1760	12200	2500
150	**9.3**	1550	310	3150	630	4250	850	5600	1120	6600	1320	7300	1460	7300	1460	9100	1820	12500	2600
160	**8.8**	1570	314	3200	640	4300	860	5700	1140	6700	1340	7400	1480	7400	1480	9200	1840	12800	2650
≥ 200	**≤ 7.0**	1600	320	3300	660	4500	900	6000	1200	7100	1420	7900	1580	7900	1580	10000	2000	13000	2800

Versioni rinforzate

A richiesta vengono fornite versioni rinforzate con cuscinetti a rulli conici sulla corona in grado di sopportare carichi superiori rispetto a quelli ammessi nelle versioni normali con cuscinetti radiali a sfere.
Essendo tali valori calcolati in funzione della durata dei cuscinetti, occorre valutare attentamente il tipo di versione più idoneo in modo da evitare problemi di tipo strutturale. In particolare, il carico assiale deve agire in modo da comprimere la flangia uscita.
I carichi assiali e radiali riportati in tabella non possono agire contemporaneamente nei loro valori massimi.

Nel caso di eventuale concorrenza delle due forze, queste devono essere limitate in rapporto al tipo di carico prevalente:

1. condizione di prevalenza del carico radiale:

Fr_2 = come a tabella
$Fa_2 = Fr_2 \cdot 0.37$

2. condizione di prevalenza del carico assiale:

$Fa_2' = Fa_2 \cdot 0.6$
$Fr_2' = Fa_2 \cdot 0.4$

Reinforced versions

The versions reinforced with tapered roller bearings on the worm wheel are available on request. They can bear higher loads compared to standard versions with radial ball bearings.
These values are calculated in relation of the life of bearings therefore it is necessary to select the most suitable version in order to avoid any structural problem.
In particular the axial load must compress the output flange.

The axial and radial loads shown in the table do not have to act simultaneously according to the max. values.

In case of concurrency of both forces these have to be reduced with regard to the prevailing type of load:

1. prevalence of radial load:

***Fr_2** = as per table*
$Fa_2 = Fr_2 \cdot 0.37$

2. prevalence of axial load:

$Fa_2' = Fa_2 \cdot 0.6$
$Fr_2' = Fa_2 \cdot 0.4$

Versionen mit Kegelrollenlager

Auf Wunsch können Versionen mit Kegelrollenlager auf dem Schneckenrad geliefert werden. Sie erlauben höheren Lasten in Vergleich zu den Standardprodukten mit Schrägkugellagern.
Diese Werte sind entsprechend der Lebensdauer der Lager berechnet. Daher ist es erforderlich, die am besten passende Ausführung zu wählen, um Probleme zu vermeiden. Auf alle Fälle muss die Axialbelastung den Abtriebsflansch zusammendrücken.
Die in der Tabelle angegebenen Maximalwerte der Axial - und Radialbelastung sollten nicht gleichzeitig auftreten.
Falls Axial-und Radialbelastungen auftreten, sollte jene Belastungsrichtung zur Auswahl herangezogen werden, die vom Anteil überwiegt:

1. radialbelastungen überwiegen:

Fr_2 = siehe Tabelle
$Fa_2 = Fr_2 \cdot 0.37$

2. Axialbelastungen überwiegen

$Fa_2' = Fa_2 \cdot 0.6$
$Fr_2' = Fa_2 \cdot 0.4$

CUSCINETTI A RULLI CONICI / *TAPERED ROLLER BEARINGS* / KEGELROLLENLAGER

n_1=1400 rpm		30		40		50		63		75		89		90		110		130	
		30/30		30/40		30/50		30/63 40/63		40/75 50/75		40/89 50/89		40/90 50/90		50/110 63/110		63/130	
i_n	n_2 [rpm]	a=61.4	b=43.9	a=77	b=54	a=94.5	b=66	a=114.8	b=85.8	a=123.8	b=89.8	a=152.8	b=107.8	a = 152.8	b = 107.8	a=167.3	b=119.3	a=174.8	b=129.8
		Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2	Fr_2	Fa_2
5	**280**	800	1100	1800	2300	4000	5000	4000	5000	/		/		/		/		/	
7.5	**187**	900	1200	1900	2400	4500	5500	4500	5500	5300	6500	6000	8000	6000	8000	8000	10500	9500	11000
10	**140**	1000	1300	2000	2500	5000	6000	5000	6000	5500	6700	7000	9200	7000	9200	8300	11000	10500	12500
15	**93**	1100	1400	2100	2600	5800	7000	5800	7000	5700	6900	7400	9800	7400	9800	8800	11500	11000	13000
20	**70**	1250	1650	2300	2800	6000	7200	6100	7300	6400	7600	7800	10300	7800	10300	9300	12000	15000	13500
25	**56**	1450	1900	2500	3000	6200	7500	6500	7700	7400	9400	8500	11000	8500	11000	9800	12500	12000	14000
30	**47**	1700	2200	2800	3300	6500	7800	6800	8000	8000	10000	9500	12000	9500	12000	10500	13200	12500	14000
40	**35**	1800	2300	3000	3500	6600	8000	7000	8200	8500	10500	10000	12500	10000	12500	11000	14000	14000	16000
50	**28**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	14500	17000
60	**23**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
63	**22**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
80	**17.5**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
100	**14**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
120	**11.7**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
150	**9.3**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
160	**8.8**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
≥ 200	**≤ 7.0**	1900	2400	3200	3700	6800	8200	7100	8400	9000	11000	10500	13000	10500	13000	12000	15000	15000	17000
Cuscinetto *Bearing* Lager		**32005** 25x47x15		**32006** 30x55x17		**32008** 40x68x19		**32008** 40x68x19		**32010** 50x80x20		**32010** 50x80x20		**32010** 50x80x20		**32012** 60x95x23		**32015** 75x115x25	

1.11 Potenza termica

Nelle tabelle riportate nelle sezioni relative ad ogni tipologia di riduttore sono indicati i valori della potenza termica nominale P_{t0} [kW]. Tale valore rappresenta la potenza massima applicabile all'entrata del riduttore, in servizio continuo a temperatura massima ambiente di 30°C, così che la temperatura dell'olio non oltrepassi il valore di 95°C.

Il valore di P_{to} non deve essere preso in considerazione se il funzionamento è continuo per un massimo di 1 - 2 ore seguito da pause di durata sufficiente (circa 2 ore) a ristabilire nel riduttore la temperatura ambiente.
I valori di P_{to} devono essere corretti tramite i seguenti coefficienti, così da considerare le reali condizioni di funzionamento, ottenendo i valori di potenza termica corretta P_{tc}.

1.11 Thermal power

The sections dedicated to each type of gearbox contain tables reporting the values of P_{t0} rated thermal power (kW). Listed values represent the max. power applicable at gearbox input, on continuous duty and at an ambient temperature of max. 30°C, so that oil temperature does not exceed 95°C.

***P_{t0} value is not to be taken into account** if duty is continuous for max. 1 - 2 hours and followed by breaks which are long enough to bring the gearbox back to ambient temperature (roughly 2 hours).*
In order to take the actual operating conditions into account, P_{t0} values have to be corrected with the following coefficients, thus obtaining the values of P_{tc} corrected thermal power.

1.11 Thermische Leistung

Für jeden Getriebetyp werden in den relativen Kapiteln die Nennwerte der P_{t0} thermischen Leistung angegeben [kW]. Diese Werte entsprechen der max. übertragbaren Antriebsleistung am Getriebe in Dauerbetrieb mit max. Umgebungstemperatur von 30°C, sodass die Öltemperatur unter 95°C bleibt.

P_{t0} Wert ist nicht zu beachten, falls Dauerbetrieb max. 1 - 2 Stunden dauert und von Unterbrechungen gefolgt wird, die lang genug sind, damit das Getriebetemperatur zurück zur Umgebungstemperatur sinkt (ungefähr 2 Stunden).
P_{t0} Werte sollen durch die folgenden Koeffizienten verbessert werden, damit die reelle Betriebsbedingungen wirklich in Betracht gezogen werden.
Mit der folgenden Formel erhält man die Werte der korrekte termische Leistung P_{tc}.

$$P_{tc} = P_{t0} \cdot ft \cdot fv \cdot fu \quad [kW]$$

I coefficienti di correzione sono ricavabili dalle seguenti tabelle:
Dove:
ft = coefficiente di temperatura ambiente
fv = coefficiente di ventilazione
fu = coefficiente di utilizzo

Corrective coefficients are shown in the following tables:
Where:
ft = environment temperature coefficient
fv =ventilation coefficient
fu = utilization coefficient

Verbesserungskoeffizienten sind aus der nachstehenden Tabelle zu entnehmen:
Dabei ist:
ft = Umwelt Temperaturkoeffizient
fv = Luftkühlungskoeffizient
fu = Anwendungskoeffizient

Ta (°C)	0	5	10	15	20	25	30	35	40	45	50
ft	1.46	1.38	1.31	1.23	1.15	1.1	1.0	0.92	0.85	0.77	0.69

Ta = Temperatura ambiente (°C)

fv = 1.45 con ventilazione forzata efficace con ventola dedicata
fv = 1.25 con ventilazione forzata secondaria ad altri dispositivi (pulegge, ventole, motore, ecc.)
fv = 1 refrigerazione naturale (situazione standard)
fv = 0.5 in ambiente chiuso e ristretto (carter)

Ta = ambient temperature (°C)

fv = 1.45 for forced ventilation with specific fan
fv = 1.25 for forced ventilation secondary to other devices (pulleys, fans, motor, etc.)
fv = 1 for natural cooling (standard situation)
fv = 0.5 in a close and narrow environment (case)

Ta = Umgebungstemperatur (°C)

fv = 1.45 bei Drucklüftung mit spezifischem Lüfterrad
fv = 1.25 bei Drucklüftung nebensächlich anderen Vorrichtungen (Scheiben, Lüfterräder, Motor, usw.)
fv = 1 natürliche Belüftung (Standard)

fv = 0.5 in engem und geschlossenem Raum (Gehäuse)

Dt (min)	10	20	30	40	50	60
fu	1.6	1.35	1.2	1.1	1.05	1

Dt = minuti di funzionamento in un'ora

Dt = minutes of operation per hour

Dt = Betriebsminuten pro Stunde

1.12 Selezione

Scelta del riduttore

A) n_1 = 1400, 2800, 900, 500 min^{-1}
Si sceglierà nelle tabelle delle prestazioni dei riduttori un gruppo che in corrispondenza di un rapporto prossimo a quello calcolato ammetta una potenza:

1.12 Selection

Selecting a gearbox

A) n_1 = 1400, 2800, 900, 500 min^{-1}
Consult the gearbox unit efficiency table; select a group whose ratio is close to the calculated ratio and which permits power:

1.12 Wahl

Wahl des Getriebes

A) n_1 = 1400, 2800, 900, 500 min^{-1}
Aus der Leistungstabellen ist eine Gruppe von Getrieben zu wählen, deren Untersetzungsverhältnis nahe zu dem berechneten Wert ist und die die folgende Leistung erlaubt:

$$P \geq P' \cdot FS'$$

Scelta del motoriduttore

B) FS =1
Si cercherà nelle tabelle delle prestazioni dei motoriduttori un gruppo la cui potenza P1 corrisponda alla P' calcolata.

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

Determinato il riduttore idoneo è necessario verificare che anche gli eventuali carichi aggiuntivi (radiali ed assiali) agenti sugli alberi in uscita e/o entrata rientrino nei valori ammissibili dati a catalogo.
In determinate condizioni applicative può diventare necessario verificare che la potenza assorbita dal riduttore non superi quella del limite termico riportata a catalogo, secondo quanto riportato al punto 1.10 relativamente alla potenza termica.

1.13 **Lubrificazione**

Tutti i riduttori, eccetto X130, K130 e H130, sono forniti completi di lubrificante sintetico a base PAG con indice di viscosità ISO VG320.

I cuscinetti dell'albero veloce vengono sempre lubrificati con grasso a base sintetica per tutte le posizioni di montaggio, solamente per le posizioni di montaggio B6 – B7, per una corretta lubrificazione, vengono ingrassati anche i cuscinetti dell'albero lento. Questo significa che solamente dalle posizioni di montaggio B6 – B7 si può passare a tutte le altre posizioni, modificando esclusivamente le quantità di olio, come indicato nelle relative tabelle; per quanto riguarda invece le posizioni di montaggio B3 – B8 – V5 – V6, possono essere intercambiabili solo tra di loro, senza modificare le quantità di olio.
Attenzione! per i riduttori a vite senza fine con precoppia HA – HF , la posizione di montaggio V5 non può essere intercambiabile con nessun'altra posizione; per quanto riguarda l'ingrassaggio dei cuscinetti dei riduttori combinati, la posizione di montaggio deve essere riferita al singolo riduttore.

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

Le prestazioni dei riduttori indicate nelle tabelle dei dati tecnici sono state calcolate considerando l'impiego di olio sintetico.

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

Selecting a gearmotor

B) FS =1
Consult the gear motor efficiency table and select a group having power P1 corresponding to calculated P'.

C) FS ≠1
Follow the instructions at point A), checking that the size of the motor to be installed is compatible with the gearbox unit (IEC); obviously, installed power must correspond to the required P' value.

After having selected the proper gearbox, it is necessary to check out that possible additional loads (radial or axial) on the input and /or output shafts fall within the values reported in the catalogue.
Depending on the application, it might be necessary to check that the power absorbed by the gearbox does not exceed the thermal power limit reported in the catalogue as per paragraph 1.10.

1.13 ***Lubrication***

All worm gearboxes, except for the type X130, K130 and H130, are supplied with synthetic lubricant, PAG base, viscosity index ISO VG 320.

The bearings mounted on the input shaft are always supplied with synthetic -base grease for all mounting positions. For mounting positions B6 - B7, the output shaft bearings are also greased to ensure correct lubrication. This means that it is possible to switch from the mounting positions B6 - B7 to all the other positions, changing only the quantities of oil specified in the corresponding tables. Mounting positions B3 - B8 - V5 - V6 can be exchanged without changing the oil quantity.

Caution! *for worm gearboxes with HA - HF pre-stage, the V5 mounting position cannot be interchangeable with any other position; as regards the greasing of the bearings of the combined gearboxes, the mounting position must refer to the single reducer.*

Choose the lubricant according to operating and ambient conditions in order to ensure high gear unit performance.

Performance data, as shown in the specifications tables, refer to utilization of synthetic oil.

VISCOSITY
It is one of the most important parameters to be considered when selecting an oil; it depends on various factors such as speed and temperature. Following are general guidelines for choosing the correct viscosity:

Wahl des Getriebemotors

B) FS =1
Wählen Sie aus der Leistungstabelle der motoren eine Gruppe, deren Leistung P1 der berechneten Leistung P' entspricht.

C) FS ≠1
Folgen Sie die Weisungen unter A). Es ist zu prüfen, dass die Größe des zu installierenden Motor mit dem Getriebe kompatibel ist (IEC); die installierte Leistung soll dem erforderlichen P' Wert entsprechen.

Nachdem das geeignete Getriebe gewählt worden ist, muss es sichergestellt werden, das zusätzlichen Radial-oder Axialbelastungen auf die Antriebs-oder Abtriebswelle unter den im Katalog gegebenen Werten fallen.
Abhängig von der Art der Anwendung ist es manchmal zu prüfen, dass die von Getriebe absorbierten Leistung unter der Wert der thermischen Leistung liegt, wie es in dem Katalog angegeben wird (Abschnitt 1.10).

1.13 **Schmierung**

Alle Schneckenradgetriebe mit Ausnahme der Ausführung X130, K130 und H130, werden mit synthetischem Schmiermittel auf PAG Basis und Viskosität Index ISO VG 320 geliefert.

Die auf der Eingangswelle montierten Lager werden für alle Einbaulagen immer mit synthetischem Grundfett geliefert. Für die Einbaulagen B6 - B7 werden die Ausgangswellenlager ebenfalls gefettet, um eine korrekte Schmierung zu gewährleisten. Dies bedeutet, dass nur von den Montagepositionen B6 - B7 aus auf alle anderen Positionen gewechselt werden kann, wobei nur die in den entsprechenden Tabellen angegebenen Ölmengen geändert werden. Die Einbaulagen B3 - B8 - V5 - V6 können untereinander ausgetauscht werden, ohne die Ölmenge zu verändern.

Achtung! Bei Schneckengetrieben mit HA-HF-Vorstufe kann die V5-Einbaulage nicht mit einer anderen Position ausgetauscht werden. Bezüglich der Schmierung der Lager der kombinierten Getriebe muss sich die Einbaulage auf das einzelne Getriebe beziehen.

Das Untersetzungsgetriebe wird optimal arbeiten, wenn das richtige Schmiermittel je nach Betriebs- und Umgebungsbedingungen sorgfältig ausgewählt wird.

Daten über Getriebeleistung, wie es in den Tabellen der technischen Daten angegeben wird, beziehen sich auf Schmierung mit synthetischem Öl.

VISKOSITÄT
Die Viskosität ist eins der wichtigsten Merkmale, die bei der Auswahl des richtigen Öls zu beachten sind; sie wird von verschiedenen Parametern wie Geschwindigkeit und Temperatur beeinflusst. Im folgenden fassen wir die wichtigsten allgemeinen Hinweise für die Wahl der richtigen Viskosität zusammen:

Viscosità alta
Usare per basse velocità di rotazione e/o temperature alte.
(Una viscosità troppo bassa in queste condizioni operative causa una usura precoce).

Viscosità bassa
Usare per alte velocità di rotazione e/o temperature basse.
(Una viscosità troppo elevata provoca diminuzione del rendimento e surriscaldamento).

High viscosity
To be used for low rotation speed and/or high temperatures.
(Under these operating conditions a low viscosity causes premature wear).

Low viscosity
To be used for high rotation speed and/or low temperatures.
(High viscosity reduces efficiency and causes overheating).

Hohe Viskosität
Geeignet für niedrige Drehzahlen bzw. hohe Temperaturen. (Eine zu geringe Viskosität verursacht unter diesen Betriebsbedingungen frühen Verschleiß).

Geringe Viskosität
Geeignet für hohe Drehzahlen bzw niedrige Temperaturen.
(Eine zu geringe Viskosität verursacht unter diesem Fall zu einer Verringerung des Wirkungsgrades und zur Überhitzung).

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

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

ZUSÄTZE
Alle Mineralöle enthalten Antiverschleißzusätze, EP (mehr oder weniger stark), Oxydationsschutzmittel und Schaumverhinderungs-Wirkstoffe. Es soll sichergestellt werden, daß diese Zusätze schwach sind und die Dichtungen nicht angreifen.

BASE DELL'OLIO
Può essere minerale o sintetica.
L' olio sintetico, compensa il costo più elevato con una serie di vantaggi:

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

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

OIL BASE
May be mineral or synthetic.
Synthetic oil compensates for the higher cost with a series of advantages :

a) lower friction coefficient (consequently improved efficiency)
b) better stability over time (possible life lubrication)
c) better viscosity index (more adaptable to various temperatures).

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

ÖLGRUNDLAGE
Es kann sich dabei um Mineralöl oder synthetisches Öl handeln.
Synthetisches Öl ist zwar teurer, bietet jedoch eine Reihe von Vorteilen:

a) geringerer Reibungskoeffizient (demnach besserer Wirkungsgrad)
b) bessere Stabilität über lange Zeit (lebenslange Schmierung möglich)
c) besserer Viskositätsindex (paßt sich besser an verschiedene Temperaturen an).

Die Vorteile von Mineralöl sind die geringeren Kosten und das bessere Einfahrverhalten.

			ISO VG	OLIO MINERALE / *MINERAL OIL* / MINERALÖL			OLIO SINTETICO / *SYNTHETIC OIL* / SYNTETISCHES ÖL			
				460	320	220	460	320	220	150
			Temperatura ambiente *Amb.Temp. Ta (°C)* Umgebungstemperatur	5° a 45°	0° a 40°	-5° a 35°	-15° a 60°	-20 a 50°	-25° a 45°	-30° a 40°
FORNITORE / *MANUFACTURER* / HERSTELLER	MINERALE / *MINER.* / MINER.			MINERALE / *MINERAL* / MINERAL						
		SHELL		Omala OIL 460	Omala OIL 320	Omala OIL 220				
		BP		Energol GRXP 460	Energol GRXP 320	Energol GRXP 220				
		TEXACO		Meropa 460	Meropa 320	Meropa 220				
		CASTROL		Alpha SP 460	Alpha SP 320	Alpha SP 220				
		KLUBER		Lamora 460	Lamora 320	Lamora 220				
		MOBIL		Mobilgear 634	Mobilgear 632	Mobilgear 630				
	PAG			Tecnologia PAG (polialcoliglicoli) / *PAG Tecnology (polyalkyleneglycol)* / PAG (Polyalkylglikole)						
		SHELL					Omala S4 WE 460	Omala S4 WE 320	Omala S4 WE 220	Omala S4 WE 150
		BP					Energol SGXP460	Energol SGXP320	Energol SGXP220	Enersyn SG 150
		TEXACO					Synlube CLP 460	Synlube CLP 320	Synlube CLP 220	
		AGIP						Agip Blasia S 320	Agip Blasia S 220	Agip Blasia S 150
	PAO			Tecnologia PAO (polialcoliolifini) / *PAO Tecnology (polialphaolefin)* / PAO (Polyalphaolefine)						
		SHELL					Omala OIL RL/ HD 460	Omala OIL RL/ HD 320	Omala OIL RL/ HD 220	Omala OIL RL/ HD 150
		CASTROL					Alpha Synt 460	Alpha Synt 320	Alpha Synt 220	Alpha Synt 150
		KLUBER					Synteso D460 EP	Synteso D320 EP	Synteso D220 EP	Synteso D150 EP
		MOBIL					SHC 634	SHC 632	SHC 630	SHC 629

1.14 **Installazione**

Fissare il riduttore in modo tale da evitare qualsiasi vibrazione e curare l'allineamento del riduttore con il motore e l'utenza utilizzando, quando è possibile, giunti di accoppiamento.
Assicurarsi che gli organi da montare sui riduttori abbiano le tolleranze ISO h6 per gli alberi e ISO H7 per i fori.
Se il riduttore viene installato all'aperto si consiglia l'utilizzo del tappo di sfiato con valvola, tranne le grandezze 30-40-50-63-75-89.
Tutti i riduttori e motoriduttori citati nel presente manuale sono destinati ad un impiego industriale con temperatura ambiente da -20°C a +40°C ad una altitudine max di 1000 m slm.

Per tutte le altre avvertenze consultare il manuale di "uso e manutenzione" scaricabile dal sito www.tramec.it

*1.14 **Installation***

The gearbox has to be mounted to prevent any vibration. Check carefully the allignment gearbox / motor / machine and use couplings whenever possible. Check that devices to be mounted on the gearbox feature ISO h6 tolerance for the shafts and ISO H7 for the holes.
If the gearbox is installed outdoors, we reccomend the use of the breather plug with valve, except size 30-40-50-63-75-89.
All reducers and gear motors mentioned in this catalog are intended for industrial use and operation at a ambient temperature between -20°C and +40°C, at an altitude of max. 1000 m above sea level.

For all other instructions check the "Use and Maintenance Manual" which can be downloaded from our web site www.tramec.it

1.14 **Installation**

Das Getriebe ist so zu installieren, dass allerart Schwingung vorbeugt wird. Auf die Fluchtung Getriebe / Motor / Maschine ist es besonders achtzugeben. Dabei sind Kupplungen womöglich zu benutzen.
Die auf dem Getriebe montierten Elemente sollen die folgende Toleranz aufweisen: ISO h6 für die Wellen und ISO h7 für die Bohrungen.
Abgesehen von Größen 30-40-50-63-75-89, die Anwendung einer Entlüftungsschraube mit Ventil wird empfohlen, wenn das Getriebe im Freien eingebaut wird.
Alle im vorliegenden Katalog angegebenen Getriebe und Getriebemotoren sind für industriellen Einsatz in einer Umgebungstemperatur von -20°C bis +40°C und in einer max. Höhe von 1000 m über dem Meeresspiegel vorgesehen.
Für weitere Anweisungen laden Sie die "Betriebs- und Instandhaltungsanweisung" aus unsere Webseite www.tramec.it herunter.

1.15 **Manutenzione**

Tutti i riduttori a vite senza fine, eccetto X130 e K130, sono lubrificati a vita con olio sintetico tipo SHELL OMALA S4 WE 320.
Non necessitano quindi di particolari manutenzioni se non il mantenimento della pulizia esterna, evitando l'uso di solventi per non danneggiare guarnizioni o anelli di tenuta, ed il rispetto di tutte le indicazioni e della eventuale sostituzione dell'olio negli intervalli programmati e riportati nel manuale di "uso e manutenzione" scaricabile dal sito www.tramec.it

*1.15 **Maintenance***

All worm gearboxes, except for the type X130 and K130, are lubricated for life with synthetic oil SHELL OMALA S4 WE 320.
For this reason they do not require any particular maintenance, except for external cleaning (avoid the use of solvents which might damage gaskets and oil seals) and observance of the schedules for oil change as reported in the "Use and Maintenance Manual" which can be downloaded from our web site www.tramec.it

1.15 **Wartung**

Alle Schneckengetriebe mit Ausnahme der Ausführung X130 und K130 sind mit synthetischem Öl SHELL OMALA S4 WE 320 lebenslang geschmiert.
Deshalb brauchen sie kein besonderes Instandhalten außer Aussenreinigung und Befolgung der Zeitabstände für Ölwechsel, wie es in der "Betriebs- und Instandhaltungsanweisung" auf unsere Webseite www.tramec.it angegeben wird.
Bei der Aussenreinigung benutzen Sie keine Lösemittel, weil sie die Dichtungen beschädigen.

1.16 **Verniciatura**

Le carcasse in ghisa e le flange delle grandezze 90, 110 e 130 sono verniciate di colore BLU RAL 5010 mentre quelle in alluminio delle grandezze 89, 75, 63, 50, 40 e 30 sono sabbiate.

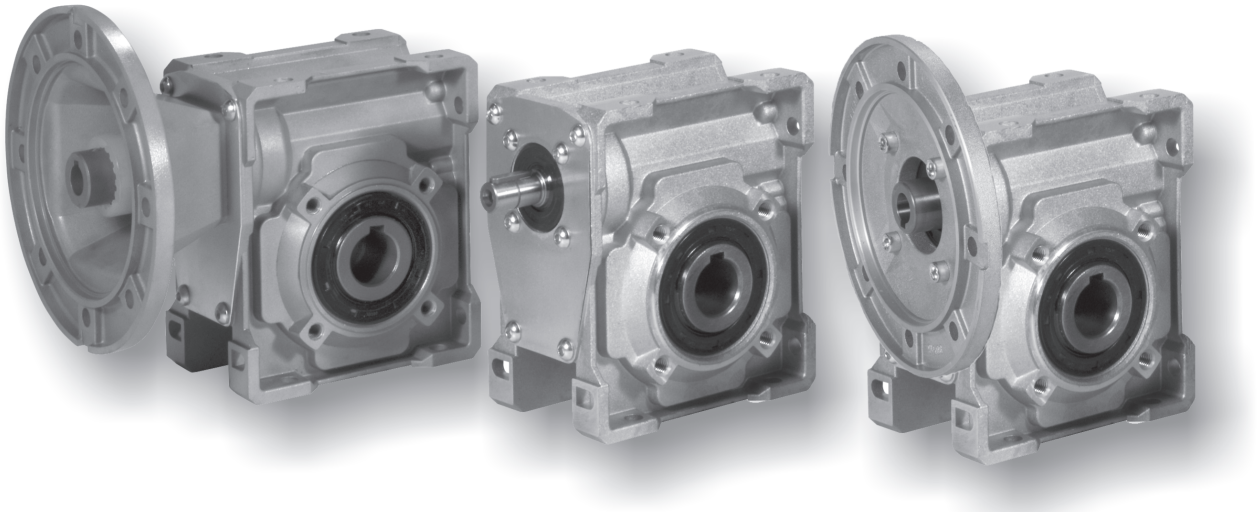
*1.16 **Painting***

Size 90, 110 and 130 have cast iron housings and flanges painted BLUE RAL 5010.
The housings of sizes 89, 75, 63, 50, 40 and 30 are made in aluminium and sandblasted.

1.16 **Lackierung**

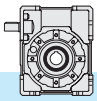
Die Gehäuse der Größen 90, 110 und 130 bestehen aus Gusseisen und sind BLAU RAL 5010 lackiert.
Für Größen 89, 75, 63, 50, 40 und 30 ist das Gehäuse aus Aluminium und sandgestrahlt.

2.0 RIDUTTORI A VITE SENZA FINE X — X WORM GEARBOXES — SCHNECKENGETRIEBE X



XF **XA** **XC**

07/2019



2.1 Caratteristiche

- I riduttori a vite senza fine della serie X sono disponibili nelle versioni alberata XA e con predisposizione per attacco motore XF-XC. La grandezza 89 è disponibile solo nella versione XC.
- La versione XF (campana + giunto), caratterizzata da una più ampia versatilità ai diversi tipi di applicazioni, presenta un più elevato rendimento rispetto a quello della serie compatta XC la quale, a sua volta, presenta il vantaggio di un ingombro più ridotto.
- La carcassa monoblocco è in ghisa nelle grandezze 90, 110 e 130, in alluminio pressofuso per le grandezze 30, 40, 50, 63, 75 e 89.
- La vite senza fine è in acciaio legato cementato-temprato ed è rettificata.
- La corona ha il mozzo in ghisa con riporto di fusione dell'anello in bronzo.
- Le carcasse in ghisa sono verniciate BLU RAL5010 mentre quelle in alluminio sono sabbiate.
- Viene fornito l'albero uscita cavo di serie ed esiste un'ampia disponibilità di accessori: seconda entrata, cuscinetti conici sulla corona, flangia uscita, albero lento con 1 o 2 sporgenze, limitatore di coppia con cavo passante, braccio di reazione, kit protezione albero cavo, kit protezione limitatore di coppia.

2.1 Characteristics

- *X series worm gearboxes are available in the following versions : XA with shaft, XF and XC suitable for motor mounting assembling. The size 89 is only available in the XC version.*
- *The XF version (bell + joint) suits a wider range of applications and provides higher efficiency than the XC compact version, which actually offers reduced space requirement.*
- *The enbloc housing is in cast-iron for sizes 90, 110 and 130, in die-cast aluminium for sizes 30, 40, 50, 63, 75 and 89.*
- *The worm shaft is in case-and quench-hardened alloy steel and ground.*
- *The worm wheel has a cast-iron hub provided with inserted cast-bronze ring.*
- *The housings in cast iron are painted BLUE RAL 5010, those in aluminium are sandblasted.*
- *The hollow output shaft is supplied as standard. A broad range of accessories is available: second input, tapered roller bearings on the worm wheel, output flange, single or double-extended output shaft, torque limiter with through hollow shaft, torque arm, hollow shaft protection kit, torque limiter protection kit.*

2.1 Merkmale

- Die Schneckengetriebe der Serie X sind in die Versiön XA mit Welle und XF / XC mit Motoranschluß lieferbar. Die Größe 89 ist nur in der XC-Version erhältlich.
- Die Version XF (Glocke + Kupplung), die sich durch ihre zahlreichen Anwendungsmöglichkeiten auszeichnet, bietet höhere Leistung als die Kompaktserie XC, die wiederum Vorteile im Sinne der Platzersparnis mit sich bringt.
- Das Blockgehäuse ist aus Gusseisen für die Baugrößen 90, 110 und 130, aus Aluminiumdruckguß die Baugrößen 30, 40, 50, 63, 75 und 89.
- Die Schnecke ist aus einsatzgehärtetem/abgeschrecktem und daraufhin geschliffenen Legierungsstahl.
- Das Schneckenrad besteht aus einer Nabe aus Gusseisen und einem aufgeschleuderten Gussbronze –Ring.
- Das Schneckenrad aus Gusseisen werden mit BLAU RAL 5010 lackiert, die aus Aluminium werden sandgestrahlt.
- Die Hohlwelle gehört zur serienmäßigen Ausstattung. Zahlreiches Zubehör ist lieferbar: zweiter Antrieb, Kegellager auf das Schneckenrad, Abtriebsflansch, Standard oder doppelseitig herausragende Abtriebswelle, Drehmomentbegrenzer mit durchgehender Hohlwelle, Drehmomentstütze, Schutzvorrichtung für Hohlwelle, Schutzvorrichtung für Drehmomentbegrenzer.

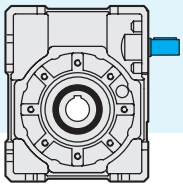
2.2 Designazione — 2.2 *Designation* — 2.2 Bezeichnung

RIDUTTORE / *GEARBOX* / GETRIEBE										ACCESSORI *ACCESSORIES* ZUBEHÖR	
Riduttore *Gearbox* Getriebe	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Rapporto rid. *Ratio* *Untersetzung*	Predispos.att. mot. *Motor coupling* Motoranschluss	Posizione di mont. *Mounting position* Einbaulage	Albero uscita cavo *Hollow output shaft* Abtriebshohlwelle	Flangia in uscita. *Output flange* Abtriebsflansch	Limitatore di coppia. *Torque limiter* Drehmoment-begrenzer	Seconda entrata *Additional input* Zusatzantrieb	Albero uscita *Output shaft* Abtriebswelle	Braccio di reazione *Torque arm* Drehmomentstütze
X	**A**	**50**	**10/1**	**P.A.M**	**B3**	**H25**	**F1S**	**LD**	**SeA**	**SD**	**BR**
Riduttore a vite senza fine *Wormgearbox* **Schneckengetriebe**	**A** **C** **F**	**30** **40** **50** **63** **75** **89*** Alluminio *Aluminium* Aluminium **90** **110** **130** Ghisa *Cast iron* Gusseisen	**5** **7.5** **10** **15** **20** **25** **30** **40** **50** **65** **80** **100**	**56** **63** **71** **80** **90** **100** **112** **132**	**B3, B6** **B7, B8** **V5, V6**	vedi tabelle *see tables* siehe Tabellen	**F1D-F2D-F3D** **F1S-F2S-F3S** **F12-F22-F32**	**LD** **LS**	**SeA**	**SD** **SS** **DD**	**BR**

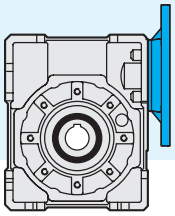
***:** 89 solo con tipo di entrata C — ***:** 89 only *with input type C* — ***:** 89 nur mit Antriebsart C

Tipo entrata — ***Input type*** — **Antriebstyp**

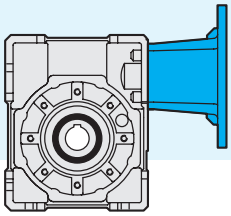
XA..



XC..



XF..



2.3 Lubrificazione

I riduttori a vite senza fine serie X, tranne la grandezza 130, sono forniti completi di lubrificante sintetico a base PAG con indice di viscosità ISO VG320.
Si raccomanda di precisare sempre, in fase di ordine, la posizione di lavoro desiderata.

Per ulteriori dettagli consultare pag. 12 paragrafo 1.13.

2.3 Lubrication

X series worm gearboxes, except for the size 130, are supplied with synthetic lubricant, PAG base, viscosity index ISO VG320.
Mounting position always to be specified when ordering.

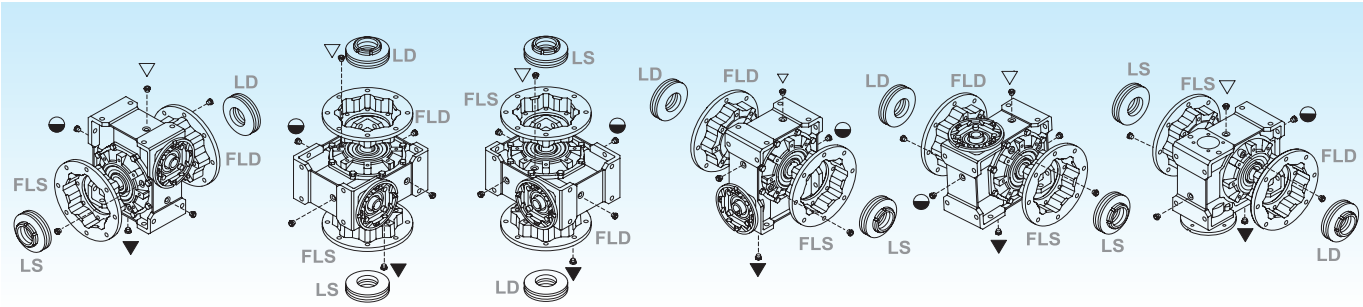
For more details, see page 12, paragraph 1.13.

2.3 Schmierung

Schneckengetriebe der Serie X, außer Groesse 130, werden mit synthetischem Schmiermittel auf PAG Basis und Viskosität Index ISO VG320 geliefert.
Im Auftrag bitte immer die gewünschte Einbaulage angeben.

Weitere Einzelheiten finden Sie auf Seite 12, Absatz 1.13

Posizioni di montaggio / *Mounting positions* / Einbaulagen



▽ Carico e sfiato / *Filling and breather* / Einfüll und Entlüftung
◒ Livello / *Level* / Ölstand
▼ Scarico / *Drain* / Ablass

Nei corpi in alluminio 30, 40, 50, 63, 75 e 89 è presente un solo tappo di riempimento olio.

30, 40, 50, 63, 75 and 89 aluminium housings have one oil filling plug only.

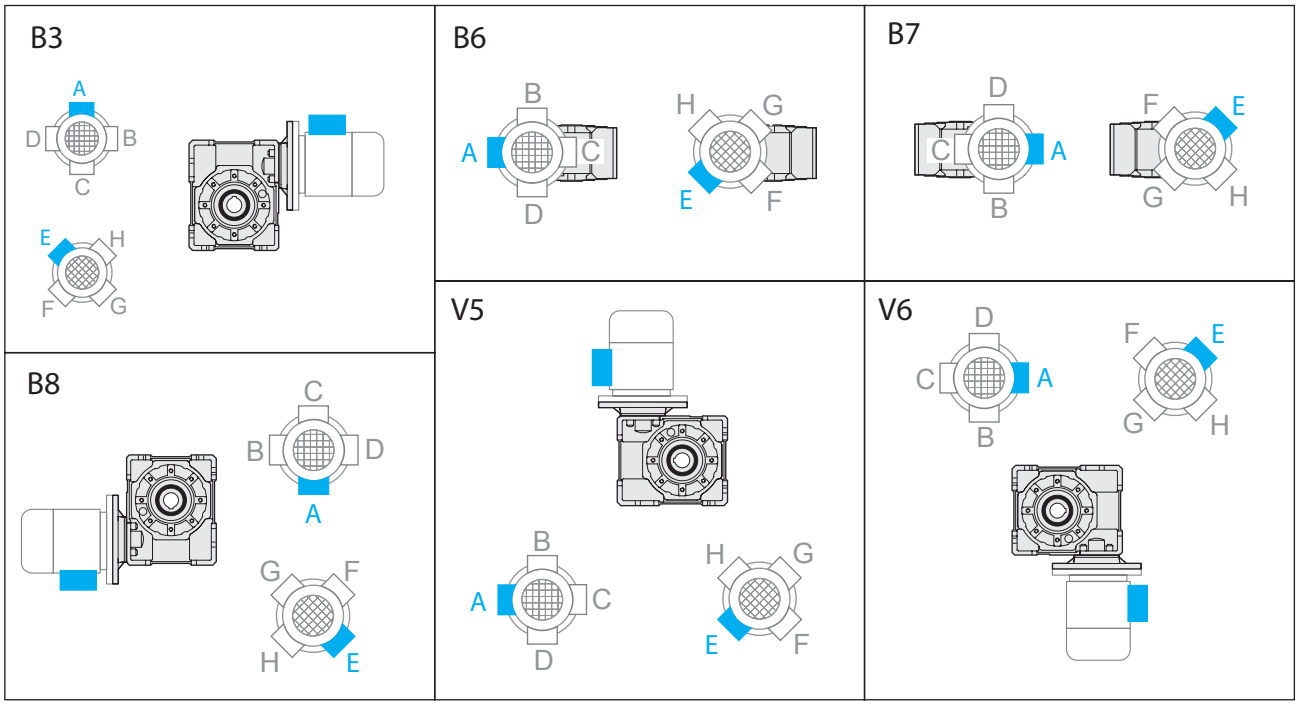
30, 40, 50, 63, 75 und 89 Aluminiumgehäuse verfügen über 1 Einfüllschraube.

		Q.tà olio / *Oil quantity* / Schmiermittelmenge [lt]			
		Posizione di montaggio / *Mounting position* / Einbaulage			
		B3	**B6 - B7**	**B8**	**V5 - V6**
X	**30**	0.015	0.030	0.015	
	40	0.040	0.060	0.040	
	50	0.080	0.120	0.080	
	63	0.160	0.220	0.160	
	75	0.260	0.340	0.260	
	89	0.450	0.750	0.450	
	90	1.1	0.9	1	1.5
	110	2.2	1.8	1.6	2.6
	130	3.6	3	2.5	3.8

2.4 Posizione morsettiera

2.4 Terminal board position

2.4 Lage der Klemmenkaste



Specificare sempre in fase di ordinazione la posizione di montaggio e la forma costruttiva.
Posizione morsettiera v. pag. 35-36 (PM=1; PM=2)

Mounting position always to be specified when ordering.
Terminal board position see page 35-36 (PM=1; PM=2)

Bei der Bestellung immer die gewünschte Montageposition und Bauform angeben.
Lage der Klemmenkaste Seite 35-36 (PM=1; PM=2)

2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XA		XC - XF									
										Input - IEC						
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC		XF				
										B5/B14		B5		B14		
30	5	560	0.89		14	0.92	5.6	0.37	2.5							
	7.5	373	0.86		16	0.72	8	0.37	2.0							
	10	280	0.84		16	0.56	11	0.37	1.5							
	15	187	0.81		17	0.41	15	0.37	1.1							
	20	140	0.76		15	0.29	13	0.25	1.2	63						
	25	112	0.74		16	0.25	16	0.25	1.0		56	63	56	63	56	
	30	93	0.71	—	13	0.18	13	0.18	1.0							
	40	70	0.65		16	0.18	16	0.18	1.0							
Kg	50	56	0.62		15	0.14	14	0.13	1.1							
1.4	65	43	0.57		17	0.13	17	0.13	1.0							
	80	35	0.54		13	0.09	13	0.09	1.0	—						
	100	28	0.52		12	0.07	16	0.09	0.8							

	n_1 =1400				XA		XC - XF									
										Input - IEC						
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC		XF				
										B5/B14		B5		B14		
30	5	280	0.87	0.40	19	0.64	6.5	0.22	2.9							
	7.5	187	0.84	0.40	21	0.49	9	0.22	2.2							
	10	140	0.82	0.40	22	0.40	12	0.22	1.8							
	15	93	0.77	0.30	22	0.28	17	0.22	1.3							
	20	70	0.72	0.20	19	0.19	18	0.18	1.1	63						
	25	56	0.69	0.20	21	0.18	21	0.18	1.0		56	63	56	63	56	
	30	47	0.66	0.20	20	0.15	18	0.13	1.1							
	40	35	0.59	0.20	21	0.13	21	0.13	1.0							
Kg	50	28	0.55	0.20	19	0.10	17	0.09	1.1							
1.4	65	22	0.51	0.10	20	0.09	20	0.09	1.0							
	80	18	0.48	0.10	17	0.06	16	0.06	1.0	—						
	100	14	0.45	0.10	14	0.05	18	0.06	0.8							

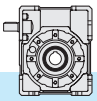
	n_1 = 900				XA		XC - XF									
										Input - IEC						
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC		XF				
										B5/B14		B5		B14		
30	5	180	0.85		23	0.51	5.9	0.13	3.9							
	7.5	120	0.82		25	0.38	9	0.13	2.9							
	10	90	0.80		25	0.30	11	0.13	2.3							
	15	60	0.75		25	0.21	15	0.13	1.6							
	20	45	0.69		22	0.15	19	0.13	1.2	63						
	25	36	0.66		24	0.14	23	0.13	1.1		56	63	56	63	56	
	30	30	0.63	—	21	0.10	18	0.09	1.2							
	40	23	0.55		24	0.10	21	0.09	1.1							
Kg	50	18	0.52		21	0.08	16	0.06	1.1							
1.4	65	14	0.48		22	0.07	20	0.06	1.1							
	80	11	0.44		19	0.05	11	0.03	1.7	—						
	100	9	0.42		15	0.03	13	0.03	1.1							

	n_1 = 500				XA		XC - XF									
										Input - IEC						
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC		XF				
										B5/B14		B5		B14		
30	5	100	0.83		29	0.36	—	—	—							
	7.5	67	0.80		31	0.27	—	—	—							
	10	50	0.77		31	0.21	—	—	—							
	15	33	0.72		31	0.15	—	—	—							
	20	25	0.66		26	0.10	—	—	—	63						
	25	20	0.62		27	0.09	—	—	—		56	63	56	63	56	
	30	17	0.59	—	25	0.07	—	—	—							
	40	13	0.51		28	0.07	—	—	—							
Kg	50	10	0.48		25	0.06	—	—	—							
1.4	65	8	0.43		25	0.05	—	—	—							
	80	6	0.40		20	0.03	—	—	—	—						
	100	5	0.38		16	0.02	—	—	—							

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
40	**5**	560	0.88		**25**	1.67	11.3	**0.75**	2.2									
	7.5	373	0.87		**30**	1.3	17	**0.75**	1.8									
	10	280	0.86		**31**	1.1	22	**0.75**	1.4									
	15	187	0.82		**32**	0.76	32	**0.75**	1.0									
	20	140	0.80		**31**	0.57	30	**0.55**	1.0									
	25	112	0.76		**27**	0.41	24	**0.37**	1.1									
	30	93	0.73	—	**35**	0.47	28	**0.37**	1.3	**71**	**63**	—	**71**	**63**	**56**	**71**	**63**	—
	40	70	0.70		**33**	0.35	24	**0.25**	1.4									
Kg	**50**	56	0.65		**30**	0.27	28	**0.25**	1.1									
2.4	**65**	43	0.61		**28**	0.21	24	**0.18**	1.2	—		**56**						
	80	35	0.58		**26**	0.16	21	**0.13**	1.3									
	100	28	0.55		**25**	0.13	24	**0.13**	1.0									

	n_1 = 1400				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
40	**5**	280	0.87	0.80	**34**	1.14	16.3	**0.55**	2.1									
	7.5	187	0.85	0.80	**40**	0.92	24	**0.55**	1.7									
	10	140	0.83	0.70	**41**	0.73	31	**0.55**	1.3									
	15	93	0.79	0.50	**42**	0.52	30	**0.37**	1.4									
	20	70	0.76	0.50	**40**	0.39	38	**0.37**	1.0									
	25	56	0.72	0.40	**35**	0.29	31	**0.25**	1.1									
	30	47	0.68	0.40	**41**	0.29	35	**0.25**	1.2	**71**	**63**	—	**71**	**63**	**56**	**71**	**63**	—
	40	35	0.64	0.30	**38**	0.22	38	**0.22**	1.0									
Kg	**50**	28	0.59	0.30	**38**	0.19	36	**0.18**	1.1									
2.4	**65**	22	0.54	0.20	**35**	0.15	31	**0.13**	1.1	—		**56**						
	80	18	0.52	0.20	**33**	0.12	31	**0.11**	1.1									
	100	14	0.49	0.20	**28**	0.08	30	**0.09**	0.9									

	n_1 = 900				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
40	**5**	180	0.85		**42**	0.93	16.7	**0.37**	2.5									
	7.5	120	0.83		**48**	0.72	25	**0.37**	2.0									
	10	90	0.81		**48**	0.56	32	**0.37**	1.5									
	15	60	0.76		**49**	0.40	45	**0.37**	1.1									
	20	45	0.74		**46**	0.29	39	**0.25**	1.2									
	25	36	0.69		**42**	0.23	33	**0.18**	1.3									
	30	30	0.65	—	**48**	0.23	37	**0.18**	1.3	**71**	**63**	—	**71**	**63**	**56**	**71**	**63**	—
	40	23	0.61		**42**	0.16	33	**0.13**	1.3									
Kg	**50**	18	0.55		**42**	0.14	38	**0.13**	1.1									
2.4	**65**	14	0.51		**39**	0.11	32	**0.09**	1.2	—		**56**						
	80	11	0.48		**37**	0.09	37	**0.09**	1.0									
	100	9	0.45		**30**	0.06	29	**0.06**	1.0									

	n_1 = 500				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
40	**5**	100	0.83		**51**	0.64	7.1	**0.09**	7.1									
	7.5	67	0.81		**58**	0.50	10	**0.09**	5.5									
	10	50	0.79		**59**	0.39	14	**0.09**	4.4									
	15	33	0.73		**59**	0.28	19	**0.09**	3.1									
	20	25	0.70		**55**	0.20	24	**0.09**	2.3									
	25	20	0.65		**48**	0.15	28	**0.09**	1.7									
	30	17	0.61	—	**58**	0.17	31	**0.09**	1.8	**71**	**63**	—	**71**	**63**	**56**	**71**	**63**	—
	40	13	0.57		**52**	0.12	39	**0.09**	1.3									
Kg	**50**	10	0.51		**51**	0.11	44	**0.09**	1.2									
2.4	**65**	8	0.46		**45**	0.08	52	**0.09**	0.9	—		**56**						
	80	6	0.44		**42**	0.06	61*	**0.09**	0.7*									
	100	5	0.41		**32**	0.04	71*	**0.09**	0.4*									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
50	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
	5	560	0.89		44	2.9	22.8	1.5	1.9									
	7.5	373	0.88		51	2.3	34	1.5	1.5									
	10	280	0.86		54	1.8	44	1.5	1.2									
	15	187	0.84		57	1.3	47	1.1	1.2	80		—						
	20	140	0.81		58	1.0	42	0.75	1.4									
	25	112	0.78		50	0.75	50	0.75	1.0		71		80	71	63	80	71	—
	30	93	0.75	—	55	0.71	42	0.55	1.3									
	40	70	0.72		54	0.63	54	0.55	1.0									
Kg	50	56	0.68		56	0.48	43	0.37	1.3									
4.0	65	43	0.64		53	0.37	53	0.37	1.0	—		63						
	80	35	0.61		48	0.29	41	0.25	1.2									
	100	28	0.58		45	0.23	35	0.18	1.3									

	n_1 = 1400				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
50	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
	5	280	0.87	1.2	62	2.1	26.7	0.9	2.3									
	7.5	187	0.86	1.2	70	1.6	40	0.9	1.8									
	10	140	0.84	1.0	73	1.3	52	0.9	1.4									
	15	93	0.80	0.80	74	0.90	74	0.9	1.0	80		—						
	20	70	0.78	0.70	75	0.71	58	0.55	1.3									
	25	56	0.74	0.60	65	0.51	47	0.37	1.4		71		80	71	63	80	71	—
	30	47	0.71	0.60	66	0.46	53	0.37	1.2									
	40	35	0.67	0.50	69	0.38	68	0.37	1.0									
Kg	50	28	0.62	0.40	70	0.33	53	0.25	1.3									
4.0	65	22	0.58	0.40	64	0.25	64	0.25	1.0	—		63						
	80	18	0.54	0.40	60	0.20	53	0.18	1.1									
	100	14	0.51	0.30	55	0.16	45	0.13	1.2									

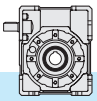
	n_1 = 900				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
50	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
	5	180	0.85		75	1.66	33.8	0.75	2.2									
	7.5	120	0.84		83	1.23	50	0.75	1.6									
	10	90	0.82		86	0.98	66	0.75	1.3									
	15	60	0.78		88	0.71	68	0.55	1.3	80		—						
	20	45	0.75		87	0.54	59	0.37	1.5									
	25	36	0.71		75	0.40	70	0.37	1.1		71		80	71	63	80	71	—
	30	30	0.67	—	79	0.37	79	0.37	1.0									
	40	23	0.63		75	0.28	67	0.25	1.1									
Kg	50	18	0.59		80	0.26	78	0.25	1.0									
4.0	65	14	0.54		74	0.20	67	0.18	1.1	—		63						
	80	11	0.51		67	0.16	56	0.13	1.2									
	100	9	0.47		58	0.12	45	0.09	1.3									

	n_1 = 500				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
50	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
	5	100	0.84		92	1.15	14.3	0.18	6.4									
	7.5	67	0.82		100	0.85	21	0.18	4.7									
	10	50	0.80		104	0.68	28	0.18	3.8									
	15	33	0.75		106	0.49	39	0.18	2.7	80		—						
	20	25	0.72		104	0.38	50	0.18	2.1									
	25	20	0.68		88	0.27	58	0.18	1.5		71		80	71	63	80	71	—
	30	17	0.63	—	98	0.27	65	0.18	1.5									
	40	13	0.59		95	0.21	81	0.18	1.2									
Kg	50	10	0.54		94	0.18	93	0.18	1.0									
4.0	65	8	0.50		86	0.14	56	0.09	1.5	—		63						
	80	6	0.46		77	0.11	63	0.09	1.2									
	100	5	0.43		61	0.07	74	0.09	0.8									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

n_1 = 2800

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC - XF Input - IEC XC B5/B14			XF B5			XF B14		
63	5	560	0.89		79	5.2	45.5	3	1.7									
	7.5	373	0.88		88	3.9	68	3	1.3									
	10	280	0.87		94	3.2	89	3	1.1									
	15	187	0.84		98	2.3	95	2.2	1.0	90		—						
	20	140	0.83		110	1.9	85	1.5	1.3									
	25	112	0.81		93	1.4	76	1.1	1.2		80		90	80	71	90	80	—
	30	93	0.77	—	110	1.4	87	1.1	1.3									
	40	70	0.74		117	1.2	111	1.1	1.1									
	50	56	0.70		97	0.81	90	0.75	1.1									
Kg 6.6	65	43	0.67		98	0.66	81	0.55	1.2	—		71						
	80	35	0.64		91	0.52	65	0.37	1.4									
	100	28	0.60		83	0.41	75	0.37	1.1									

n_1 = 1400

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC - XF Input - IEC XC B5/B14			XF B5			XF B14		
63	5	280	0.88	1.8	111	3.7	54	1.8	2.0									
	7.5	187	0.87	1.8	120	2.7	80	1.8	1.5									
	10	140	0.85	1.6	127	2.2	105	1.8	1.2									
	15	93	0.81	1.2	130	1.6	125	1.5	1.1	90		—						
	20	70	0.80	1.2	144	1.3	120	1.1	1.2									
	25	56	0.77	1.0	118	0.90	118	0.9	1.0		80		90	80	71	90	80	—
	30	47	0.73	0.90	142	0.95	134	0.9	1.1									
	40	35	0.69	0.80	150	0.79	142	0.75	1.1									
Kg 6.6	50	28	0.65	0.70	122	0.55	122	0.55	1.0									
	65	22	0.61	0.60	122	0.45	100	0.37	1.2	—		71						
	80	18	0.58	0.60	113	0.36	79	0.25	1.4									
	100	14	0.53	0.50	102	0.28	91	0.25	1.1									

n_1 = 900

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC - XF Input - IEC XC B5/B14			XF B5			XF B14		
63	5	180	0.87		135	2.9	69	1.5	1.9									
	7.5	120	0.85		144	2.1	102	1.5	1.4									
	10	90	0.83		150	1.7	133	1.5	1.1									
	15	60	0.79		152	1.2	139	1.1	1.1	90		—						
	20	45	0.77		167	1.0	123	0.75	1.4									
	25	36	0.74		140	0.71	109	0.55	1.3		80		90	80	71	90	80	—
	30	30	0.70	—	164	0.74	122	0.55	1.3									
	40	23	0.66		171	0.61	154	0.55	1.1									
Kg	50	18	0.61		141	0.44	120	0.37	1.2									
6.6	65	14	0.57		139	0.35	98	0.25	1.4	—		71						
	80	11	0.54		128	0.28	115	0.25	1.1									
	100	9	0.50		115	0.22	95	0.18	1.2									

n_1 = 500

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC - XF Input - IEC XC B5/B14			XF B5			XF B14		
63	5	100	0.85		169	2.08	20	0.25	8.3									
	7.5	67	0.83		177	1.5	30	0.25	5.9									
	10	50	0.81		182	1.2	39	0.25	4.7									
	15	33	0.76		184	0.84	55	0.25	3.4	90		—						
	20	25	0.74		200	0.70	71	0.25	2.8									
	25	20	0.71		165	0.49	85	0.25	1.9		80		90	80	71	90	80	—
	30	17	0.65	—	195	0.52	94	0.25	2.1									
	40	13	0.62		201	0.43	118	0.25	1.7									
Kg	50	10	0.56		165	0.31	135	0.25	1.2									
6.6	65	8	0.52		161	0.25	163	0.25	1.0	—		71						
	80	6	0.50		148	0.19	137	0.18	1.1									
	100	5	0.45		122	0.14	77	0.09	1.6									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XA		XC - XF													
										Input - IEC										
										XC				XF						
										B5/B14				B5			B14			
75	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'											
	7.5	373	0.89		**131**	5.8	125	**5.5**	1.0											
	10	280	0.88		**143**	4.8	120	**4**	1.2											
	15	187	0.85		**152**	3.5	131	**3**	1.2	**112 100**		—	—							
	20	140	0.84		**172**	3.0	171	**3**	1.0											
	25	112	0.82		**155**	2.2	154	**2.2**	1.0											
	30	93	0.78	—	**170**	2.1	120	**1.5**	1.4		**90**		**71**	**112 100**	**90**	**80**	**112 100**	**90**	—	
Kg	**40**	70	0.75		**183**	1.8	154	**1.5**	1.2			**80**								
9.0	**50**	56	0.73		**166**	1.3	136	**1.1**	1.2											
	65	43	0.69		**155**	1.0	114	**0.75**	1.4	—										
	80	35	0.66		**145**	0.80	135	**0.75**	1.1				**71**							
	100	28	0.62		**131**	0.62	159	**0.75**	0.8											

	n_1 = 1400				XA		XC - XF													
										Input - IEC										
										XC				XF						
										B5/B14				B5			B14			
75	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'											
	7.5	187	0.87	2.5	**180**	4.0	178	**4**	1.0											
	10	140	0.86	2.3	**193**	3.3	176	**3**	1.1											
	15	93	0.83	1.9	**202**	2.4	187	**2.2**	1.1	**112 100**		—	—							
	20	70	0.81	1.7	**226**	2.0	199	**1.8**	1.1											
	25	56	0.78	1.5	**202**	1.5	200	**1.5**	1.0											
	30	47	0.74	1.2	**220**	1.5	167	**1.1**	1.3		**90**		**71**	**112 100**	**90**	**80**	**112 100**	**90**	—	
Kg	**40**	35	0.71	1.1	**235**	1.2	213	**1.1**	1.1			**80**								
9.0	**50**	28	0.67	1.0	**211**	0.92	206	**0.9**	1.0											
	65	22	0.63	0.90	**195**	0.70	154	**0.55**	1.3	—										
	80	18	0.60	0.80	**182**	0.55	180	**0.55**	1.0				**71**							
	100	14	0.56	0.70	**162**	0.43	210	**0.55**	0.8											

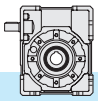
	n_1 = 900				XA		XC - XF													
										Input - IEC										
										XC				XF						
										B5/B14				B5			B14			
75	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'											
	7.5	120	0.86		**215**	3.1	205	**3**	1.0											
	10	90	0.84		**229**	2.6	197	**2.2**	1.2											
	15	60	0.81		**237**	1.9	231	**1.8**	1.0	**112 100**		—	—							
	20	45	0.78		**263**	1.6	250	**1.5**	1.1											
	25	36	0.76		**233**	1.2	221	**1.1**	1.1											
	30	30	0.71	—	**254**	1.1	249	**1.1**	1.0		**90**		**71**	**112 100**	**90**	**80**	**112 100**	**90**	—	
Kg	**40**	23	0.67		**270**	0.94	214	**0.75**	1.3			**80**								
9.0	**50**	18	0.64		**241**	0.71	186	**0.55**	1.3											
	65	14	0.59		**221**	0.54	151	**0.37**	1.5	—										
	80	11	0.56		**205**	0.43	177	**0.37**	1.2				**71**							
	100	9	0.52		**184**	0.34	203	**0.37**	0.9											

	n_1 = 500				XA		XC - XF													
										Input - IEC										
										XC				XF						
										B5/B14				B5			B14			
75	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'											
	7.5	67	0.84		**265**	2.2	90	**0.75**	2.9											
	10	50	0.82		**279**	1.8	118	**0.75**	2.4											
	15	33	0.78		**286**	1.3	167	**0.75**	1.7	**112 100**		—	—							
	20	25	0.75		**315**	1.1	216	**0.75**	1.5											
	25	20	0.72		**278**	0.80	260	**0.75**	1.1											
	30	17	0.67	—	**302**	0.79	288	**0.75**	1.1		**90**		**71**	**112 100**	**90**	**80**	**112 100**	**90**	—	
Kg	**40**	13	0.63		**317**	0.66	265	**0.55**	1.2			**80**								
9.0	**50**	10	0.59		**282**	0.50	210	**0.37**	1.3											
	65	8	0.55		**257**	0.38	251	**0.37**	1.0	—										
	80	6	0.52		**238**	0.30	197	**0.25**	1.2				**71**							
	100	5	0.47		**206**	0.23	161	**0.18**	1.3											

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC XC B5/B14		
89	**7.5**	373	0.89		171	**7.5**	1.2	**112 100**	**90**	—
	10	280	0.88		165	**5.5**	1.3			
	15	187	0.86		241	**5.5**	1.0			
	20	140	0.84		230	**4**	1.2			
	25	112	0.83		212	**3**	1.2			
	30	93	0.79	—	243	**3**	1.1			
Kg	**40**	70	0.77		230	**2.2**	1.3	—		
13.0	**50**	56	0.74		278	**2.2**	1.0			
	65	43	0.71		235	**1.5**	1.1			**80**
	80	35	0.68		205	**1.1**	1.2			
	100	28	0.64		163	**0.75**	1.3			

	n_1 = 1400				XC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC XC B5/B14		
89	**7.5**	187	0.88	3.0	247	**5.5**	1.2	**112 100**	**90**	—
	10	140	0.86	2.5	236	**4**	1.3			
	15	93	0.84	2.2	256	**3**	1.2			
	20	70	0.82	2.0	334	**3**	1.1			
	25	56	0.80	1.8	299	**2.2**	1.1			
	30	47	0.76	1.5	340	**2.2**	1.0			
Kg	**40**	35	0.72	1.3	355	**1.8**	1.1	—		
13.0	**50**	28	0.69	1.1	353	**1.5**	1.0			
	65	22	0.65	1.0	317	**1.1**	1.0			**80**
	80	18	0.63	1.0	309	**0.9**	1.0			
	100	14	0.58	0.80	217	**0.55**	1.2			

	n_1 = 900				XC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC XC B5/B14		
89	**7.5**	120	0.86		206	**3**	1.7	**112 100**	**90**	—
	10	90	0.85		270	**3**	1.3			
	15	60	0.82		286	**2.2**	1.3			
	20	45	0.79		371	**2.2**	1.1			
	25	36	0.77		369	**1.8**	1.0			
	30	30	0.73	—	416	**1.8**	1.0			
Kg	**40**	23	0.69		440	**1.5**	1.0	—		
13.0	**50**	18	0.66		384	**1.1**	1.0			
	65	14	0.62		319	**0.75**	1.1			**80**
	80	11	0.59		274	**0.55**	1.2			
	100	9	0.54		313	**0.55**	1.0			

	n_1 = 500				XC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC XC B5/B14		
89	**7.5**	67	0.84		91	**0.75**	4.7	**112 100**	**90**	—
	10	50	0.83		118	**0.75**	3.7			
	15	33	0.79		169	**0.75**	2.7			
	20	25	0.76		219	**0.75**	2.3			
	25	20	0.74		265	**0.75**	1.7			
	30	17	0.68	—	294	**0.75**	1.6			
Kg	**40**	13	0.65		371	**0.75**	1.4	—		
13.0	**50**	10	0.61		439	**0.75**	1.1			
	65	8	0.57		388	**0.55**	1.1			**80**
	80	6	0.54		305	**0.37**	1.3			
	100	5	0.49		344	**0.37**	1.0			

* **ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2$ x FS'

* ***WARNING:*** *Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2$ x FS'*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2$ x FS'

2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XA		XC - XF											
										Input - IEC								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC			XF					
										B5/B14			B5			B14		
90	**7.5**	373	0.89		**209**	9.2	171	**7.5**	1.2									
	10	280	0.88		**223**	7.4	165	**5.5**	1.3									
	15	187	0.86		**241**	5.5	241	**5.5**	1.0	**112 100**		—						
	20	140	0.84		**272**	4.7	230	**4**	1.2									
	25	112	0.83		**255**	3.6	212	**3**	1.2									
	30	93	0.79	—	**270**	3.3	243	**3**	1.1		**90**		**112 100**	**90**	**80**	**112 100**	**90**	—
Kg	**40**	70	0.77		**293**	2.8	230	**2.2**	1.3									
	50	56	0.74		**278**	2.2	278	**2.2**	1.0									
23.6	**65**	43	0.71		**250**	1.6	235	**1.5**	1.1	—								
	80	35	0.68		**238**	1.3	205	**1.1**	1.2			**80**						
	100	28	0.64		**212**	0.97	163	**0.75**	1.3									

	n_1 = 1400				XA		XC - XF											
										Input - IEC								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC			XF					
										B5/B14			B5			B14		
90	**7.5**	187	0.88	3.0	**290**	6.5	247	**5.5**	1.2									
	10	140	0.86	2.5	**305**	5.2	236	**4**	1.3									
	15	93	0.84	2.2	**320**	3.7	256	**3**	1.2	**112 100**		—						
	20	70	0.82	2.0	**360**	3.2	334	**3**	1.1									
	25	56	0.80	1.8	**332**	2.4	299	**2.2**	1.1									
	30	47	0.76	1.5	**350**	2.3	340	**2.2**	1.0		**90**		**112 100**	**90**	**80**	**112 100**	**90**	—
Kg	**40**	35	0.72	1.3	**377**	1.9	355	**1.8**	1.1									
	50	28	0.69	1.1	**353**	1.5	353	**1.5**	1.0									
23.6	**65**	22	0.65	1.0	**317**	1.1	317	**1.1**	1.0	—								
	80	18	0.63	1.0	**309**	0.90	309	**0.9**	1.0			**80**						
	100	14	0.58	0.80	**264**	0.67	217	**0.55**	1.2									

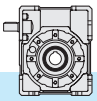
	n_1 = 900				XA		XC - XF											
										Input - IEC								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC			XF					
										B5/B14			B5			B14		
90	**7.5**	120	0.86		**345**	5.0	206	**3**	1.7									
	10	90	0.85		**362**	4.0	270	**3**	1.3									
	15	60	0.82		**377**	2.9	286	**2.2**	1.3	**112 100**		—						
	20	45	0.79		**419**	2.5	371	**2.2**	1.1									
	25	36	0.77		**385**	1.9	369	**1.8**	1.0									
	30	30	0.73	—	**416**	1.8	416	**1.8**	1.0		**90**		**112 100**	**90**	**80**	**112 100**	**90**	—
Kg	**40**	23	0.69		**440**	1.5	440	**1.5**	1.0									
	50	18	0.66		**398**	1.1	384	**1.1**	1.0									
23.6	**65**	14	0.62		**358**	0.84	319	**0.75**	1.1	—								
	80	11	0.59		**337**	0.68	274	**0.55**	1.2			**80**						
	100	9	0.54		**313**	0.55	313	**0.55**	1.0									

	n_1 = 500				XA		XC - XF											
										Input - IEC								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	XC			XF					
										B5/B14			B5			B14		
90	**7.5**	67	0.84		**430**	3.6	91	**0.75**	4.7									
	10	50	0.83		**443**	2.8	118	**0.75**	3.7									
	15	33	0.79		**456**	2.0	169	**0.75**	2.7	**112 100**		—						
	20	25	0.76		**502**	1.7	219	**0.75**	2.3									
	25	20	0.74		**459**	1.3	265	**0.75**	1.7									
	30	17	0.68	—	**483**	1.2	294	**0.75**	1.6		**90**		**112 100**	**90**	**80**	**112 100**	**90**	—
Kg	**40**	13	0.65		**512**	1.0	371	**0.75**	1.4									
	50	10	0.61		**467**	0.80	439	**0.75**	1.1									
23.6	**65**	8	0.57		**417**	0.59	388	**0.55**	1.1	—								
	80	6	0.54		**391**	0.48	305	**0.37**	1.3			**80**						
	100	5	0.49		**345**	0.37	344	**0.37**	1.0									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

	n_1 = 2800				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
110	**7.5**	373	0.89		**345**	15.1	343	**15**	1.0									
	10	280	0.88		**368**	12.2	332	**11**	1.1									
	15	187	0.86		**404**	9.2	331	**7.5**	1.2	**132**		—						
	20	140	0.85		**465**	8.0	435	**7.5**	1.1		**112 100**							
	25	112	0.84		**441**	6.2	393	**5.5**	1.1									
	30	93	0.80	—	**459**	5.6	450	**5.5**	1.0				**132**	**112 100**	**90**	**132**	—	—
Kg	**40**	70	0.78		**503**	4.7	424	**4**	1.2			**90**						
	50	56	0.76		**476**	3.7	388	**3**	1.2			—						
44.0	**65**	43	0.73		**417**	2.6	354	**2.2**	1.2	—								
	80	35	0.70		**400**	2.1	287	**1.5**	1.4			**90**						
	100	28	0.66		**364**	1.6	339	**1.5**	1.1									

	n_1 = 1400				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
110	**7.5**	187	0.88	4.3	**480**	10.6	415	**9.2**	1.2									
	10	140	0.87	4.0	**504**	8.5	446	**7.5**	1.1									
	15	93	0.84	3.2	**543**	6.3	475	**5.5**	1.1	**132**		—						
	20	70	0.83	3.0	**623**	5.5	623	**5.5**	1.0		**112 100**							
	25	56	0.81	2.7	**578**	4.2	554	**4**	1.0									
	30	47	0.77	2.2	**601**	3.8	472	**3**	1.3				**132**	**112 100**	**90**	**132**	—	—
Kg	**40**	35	0.74	2.0	**650**	3.2	606	**3**	1.1			**90**						
	50	28	0.72	1.8	**608**	2.5	538	**2.2**	1.1			—						
44.0	**65**	22	0.68	1.6	**528**	1.8	451	**1.5**	1.2	—								
	80	18	0.65	1.5	**503**	1.4	390	**1.1**	1.3			**90**						
	100	14	0.61	1.3	**458**	1.1	458	**1.1**	1.0									

	n_1 = 900				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
110	**7.5**	120	0.87		**578**	8.3	381	**5.5**	1.5									
	10	90	0.86		**600**	6.6	500	**5.5**	1.2									
	15	60	0.83		**641**	4.9	526	**4**	1.2	**132**		—						
	20	45	0.81		**720**	4.2	685	**4**	1.1		**112 100**							
	25	36	0.79		**672**	3.2	628	**3**	1.1									
	30	30	0.74	—	**697**	2.9	520	**2.2**	1.3				**132**	**112 100**	**90**	**132**	—	—
Kg	**40**	23	0.71		**749**	2.5	664	**2.2**	1.1			**90**						
	50	18	0.68		**697**	1.9	653	**1.8**	1.1			—						
44.0	**65**	14	0.64		**603**	1.4	487	**1.1**	1.2	—								
	80	11	0.61		**571**	1.1	570	**1.1**	1.0			**90**						
	100	9	0.57		**513**	0.85	450	**0.75**	1.1									

	n_1 = 500				XA		XC - XF											
										Input - IEC								
										XC			XF					
										B5/B14			B5			B14		
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'									
110	**7.5**	67	0.85		**718**	5.9	183	**1.5**	3.9									
	10	50	0.84		**738**	4.6	240	**1.5**	3.1									
	15	33	0.80		**778**	3.4	344	**1.5**	2.3	**132**		—						
	20	25	0.78		**866**	2.9	446	**1.5**	1.9		**112 100**							
	25	20	0.76		**802**	2.2	542	**1.5**	1.5									
	30	17	0.70	—	**832**	2.1	603	**1.5**	1.4				**132**	**112 100**	**90**	**132**	—	—
Kg	**40**	13	0.67		**886**	1.7	765	**1.5**	1.2			**90**						
	50	10	0.64		**820**	1.3	671	**1.1**	1.2			—						
44.0	**65**	8	0.59		**705**	0.96	553	**0.75**	1.3	—								
	80	6	0.56		**664**	0.77	643	**0.75**	1.0			**90**						
	100	5	0.52		**594**	0.60	542	**0.55**	1.1									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

2.5 Dati tecnici — *2.5 Technical data* — 2.5 Technische Daten

n_1 = 2800

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	XC-XF T_2 [Nm]	XC-XF P_1 [kW]	FS'	XC Input IEC B5/B14	XF Input IEC B5	XF Input IEC B14
130	**7.5**	373	0.90	—	**530**	23	345	**15**	1.5	132 / 112 100 / —	132 / 112 100 / 90	—
	10	280	0.89		**549**	18.1	455	**15**	1.2			
	15	187	0.87		**636**	14.3	490	**11**	1.3			
	20	140	0.86		**733**	12.5	645	**11**	1.1			
	25	112	0.85		**710**	9.8	667	**9.2**	1.1			
	30	93	0.81		**729**	8.8	622	**7.5**	1.2			
	40	70	0.80		**819**	7.5	819	**7.5**	1.0			
Kg	**50**	56	0.78		**758**	5.7	732	**5.5**	1.0			
55.0	**65**	43	0.75		**648**	3.9	499	**3**	1.3			
	80	35	0.73		**637**	3.2	598	**3**	1.1			
	100	28	0.70		**597**	2.5	525	**2.2**	1.1			

n_1 = 1400

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	XC-XF T_2 [Nm]	XC-XF P_1 [kW]	FS'	XC Input IEC B5/B14	XF Input IEC B5	XF Input IEC B14
130	**7.5**	187	0.89	6.0	**736**	16.2	418	**9.2**	1.8	132 / 112 100 / —	132 / 112 100 / 90	—
	10	140	0.88	5.5	**756**	12.6	552	**9.2**	1.4			
	15	93	0.85	4.4	**855**	9.8	803	**9.2**	1.1			
	20	70	0.84	4.1	**974**	8.5	860	**7.5**	1.1			
	25	56	0.83	3.9	**920**	6.5	778	**5.5**	1.2			
	30	47	0.79	3.2	**947**	5.9	883	**5.5**	1.1			
Kg	**40**	35	0.76	2.8	**1037**	5.0	829	**4**	1.3			
55.0	**50**	28	0.74	2.6	**959**	3.8	757	**3**	1.3			
	65	22	0.71	2.3	**801**	2.6	678	**2.2**	1.2			
	80	18	0.68	2.1	**758**	2.1	649	**1.8**	1.2			
	100	14	0.64	1.8	**699**	1.6	655	**1.5**	1.1			

n_1 = 900

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	XC-XF T_2 [Nm]	XC-XF P_1 [kW]	FS'	XC Input IEC B5/B14	XF Input IEC B5	XF Input IEC B14
130	**7.5**	120	0.88	—	**889**	12.7	385	**5.5**	2.3	132 / 112 100 / —	132 / 112 100 / 90	—
	10	90	0.87		**905**	9.8	508	**5.5**	1.8			
	15	60	0.84		**1016**	7.6	735	**5.5**	1.4			
	20	45	0.82		**1149**	6.6	957	**5.5**	1.2			
	25	36	0.81		**1074**	5.0	860	**4**	1.3			
	30	30	0.76		**1113**	4.6	968	**4**	1.2			
Kg	**40**	23	0.73		**1208**	3.9	930	**3**	1.3			
55.0	**50**	18	0.70		**1077**	2.9	817	**2.2**	1.3			
	65	14	0.67		**924**	2.0	832	**1.8**	1.1			
	80	11	0.64		**869**	1.6	815	**1.5**	1.1			
	100	9	0.60		**828**	1.3	700	**1.1**	1.2			

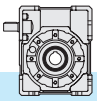
n_1 = 500

	i_n	n_2 [min^{-1}]	Rd	P_{t0}	XA T_{2M} [Nm]	XA P [kW]	XC-XF T_2 [Nm]	XC-XF P_1 [kW]	FS'	XC Input IEC B5/B14	XF Input IEC B5	XF Input IEC B14
130	**7.5**	67	0.86	—	**1109**	9.0	228	**1.85**	4.9	132 / 112 100 / —	132 / 112 100 / 90	—
	10	50	0.84		**1107**	6.9	297	**1.85**	3.7			
	15	33	0.81		**1230**	5.3	429	**1.85**	2.9			
	20	25	0.79		**1388**	4.6	558	**1.85**	2.5			
	25	20	0.78		**1266**	3.4	689	**1.85**	1.8			
	30	17	0.72		**1320**	3.2	763	**1.85**	1.7			
Kg	**40**	13	0.69		**1423**	2.7	975	**1.85**	1.5			
55.0	**50**	10	0.66		**1261**	2.0	1166	**1.85**	1.1			
	65	8	0.63		**1095**	1.4	860	**1.10**	1.3			
	80	6	0.59		**1082**	1.2	992	**1.10**	1.1			
	100	5	0.55		**945**	0.9	788	**0.75**	1.2			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

***ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



2.6 **Momenti d'inerzia** [Kg·cm²]
(riferiti all'albero veloce in entrata)

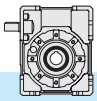
2.6 ***Moments of inertia*** *[Kg·cm²]*
(referred to input shaft)

2.6 **Trägheitsmoment** [Kg·cm²]
(bez. Antriebswelle)

	i_n	XA	XC		XF	
			B5 - B14		B5 - B14	
			IEC 56	IEC 63	IEC 56	IEC 63
X30	**5**	0.077	0.130	0.127	0.122	0.123
	7.5	0.058	0.112	0.109	0.102	0.103
	10	0.049	0.103	0.100	0.093	0.094
	15	0.042	0.097	0.094	0.087	0.087
	20	0.039	0.095	0.092	0.084	0.084
	25	0.038	0.094	0.091	0.083	0.083
	30	0.038	0.093	0.090	0.083	0.084
	40	0.037	0.093	0.090	0.082	0.082
	50	0.037	0.092	0.089	0.081	0.082
	65	0.024	0.079	-	0.069	0.069
	80	0.024	0.079	-	0.069	0.069
	100	0.024	0.078	-	0.069	0.069

	i_n	XA	XC			XF		
			B5 - B14			B5	B5 - B14	
			IEC 56	IEC 63	IEC 71	IEC 56	IEC 63	IEC 71
X40	**5**	0.242	-	0.391	0.463	0.289	0.447	0.464
	7.5	0.170	-	0.321	0.356	0.217	0.375	0.391
	10	0.144	-	0.272	0.347	0.190	0.348	0.365
	15	0.125	-	0.266	0.340	0.171	0.329	0.346
	20	0.094	-	0.263	0.338	0.141	0.298	0.315
	25	0.091	-	0.262	0.337	0.137	0.295	0.312
	30	0.113	-	0.262	0.337	0.160	0.318	0.335
	40	0.087	-	0.261	-	0.134	0.292	0.309
	50	0.087	0.182	0.261	-	0.133	0.291	0.308
	65	0.069	0.182	0.261	-	0.116	0.274	0.290
	80	0.069	0.182	0.261	-	0.115	0.273	0.290
	100	0.068	0.182	0.261	-	0.115	0.273	0.290

	i_n	XA	XC			XF		
			B5 - B14			B5	B5 - B14	
			IEC 63	IEC 71	IEC 80	IEC 63	IEC 71	IEC 80
X50	**5**	0.744	-	0.922	1.046	0.978	0.955	1.558
	7.5	0.499	-	0.684	0.935	0.733	0.750	1.313
	10	0.417	-	0.602	0.853	0.651	0.668	1.231
	15	0.358	-	0.543	0.794	0.593	0.609	1.173
	20	0.281	-	0.523	0.774	0.516	0.532	1.096
	25	0.272	-	0.513	0.764	0.506	0.523	1.086
	30	0.323	-	0.508	0.759	0.557	0.574	1.137
	40	0.262	0.315	0.503	-	0.496	0.513	1.076
	50	0.183	0.313	0.501	-	0.417	0.434	0.997
	65	0.136	0.311	0.499	-	0.370	0.387	0.950
	80	0.136	0.310	0.498	-	0.370	0.387	0.950
	100	0.135	0.309	0.498	-	0.370	0.386	0.950



2.6 **Momenti d'inerzia** [Kg·cm^2]
(riferiti all'albero veloce in entrata)

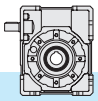
2.6 ***Moments of inertia*** *[Kg·cm^2]*
(referred to input shaft)

2.6 **Trägheitsmoment** [Kg·cm^2]
(bez. Antriebswelle)

	i_n	XA	XC			XF		
			B5 - B14			B5	B5 - B14	
			IEC 71	IEC 80	IEC 90	IEC 71	IEC 80	IEC 90
X63	**5**	1.853	-	2.431	2.671	2.632	2.766	3.844
	7.5	1.363	-	1.949	2.269	2.142	2.276	3.354
	10	1.158	-	1.744	2.063	1.936	2.070	3.148
	15	1.011	-	1.597	1.916	1.789	1.924	3.001
	20	0.710	-	1.545	1.864	1.489	1.623	2.701
	25	0.679	-	1.514	1.833	1.458	1.592	2.670
	30	0.922	-	1.508	1.828	1.701	1.835	2.913
	40	0.660	0.966	1.495	-	1.439	1.573	2.651
	50	0.653	0.959	1.488	-	1.431	1.565	2.643
	65	0.552	0.955	1.484	-	1.330	1.465	2.542
	80	0.550	0.953	1.482	-	1.329	1.463	2.541
	100	0.549	0.952	1.481	-	1.327	1.462	2.539

	i_n	XA	XC				XF		
			B5 - B14				B5	B5 - B14	
			IEC 71	IEC 80	IEC 90	IEC 100-112	IEC 80	IEC 90	IEC 100-112
X75	**7.5**	2.970	-	-	3.712	4.462	5.138	5.066	6.837
	10	2.492	-	-	3.234	3.984	4.661	4.588	6.359
	15	2.151	-	-	2.893	3.643	4.320	4.247	6.018
	20	1.567	-	-	2.774	3.523	3.735	3.662	5.433
	25	1.501	-	-	2.709	3.458	3.670	3.597	5.368
	30	1.946	1.615	1.575	2.689	3.438	4.115	4.042	5.813
	40	1.451	-	1.573	2.659	-	3.620	3.547	5.318
	50	1.435	-	1.570	2.642	-	3.603	3.531	5.302
	65	1.158	1.609	1.569	2.633	-	3.326	3.253	5.024
	80	1.153	1.605	1.565	2.629	-	3.322	3.249	5.020
	100	1.150	1.602	1.562	2.626	-	3.318	3.246	5.017

	i_n	XC		
		B5 - B14		
		IEC 80	IEC 90	IEC 100-112
X89	**7.5**		6.898	7.671
	10	-	5.875	6.648
	15	-	5.144	5.917
	20	-	3.398	5.661
	25	-	3.256	5.520
	30	-	3.215	5.479
	40	-	3.151	-
	50	-	3.115	-
	65	2.024	3.096	-
	80	2.014	3.087	-
	100	2.008	3.080	-



2.6 **Momenti d'inerzia** [Kg·cm²]
(riferiti all'albero veloce in entrata)

2.6 ***Moments of inertia*** *[Kg·cm²]*
(referred to input shaft)

2.6 **Trägheitsmoment** [Kg·cm²]
(bez. Antriebswelle)

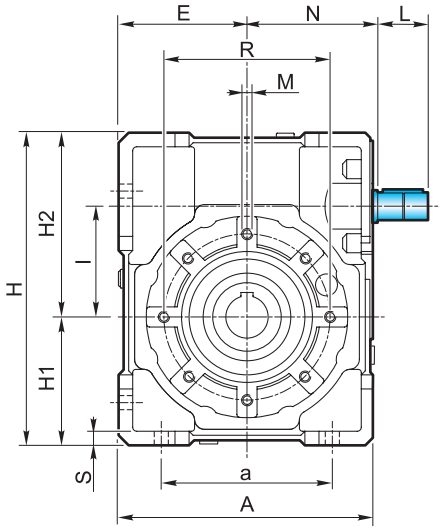
	i_n	XA	XC			XF		
			B5 - B14			B5	B5 - B14	
			IEC 80	IEC 90	IEC 100-112	IEC 80	IEC 90	IEC 100-112
X90	**7.5**	6.167		6.898	7.671	8.335	8.263	10.033
	10	5.143	-	5.875	6.648	7.312	7.239	9.010
	15	4.413	-	5.144	5.917	6.581	6.508	8.279
	20	2.653	-	3.398	5.661	4.821	4.749	6.519
	25	2.511	-	3.256	5.520	4.680	4.607	6.378
	30	3.974	-	3.215	5.479	6.142	6.070	7.841
	40	2.406	-	3.151	-	4.574	4.502	6.273
	50	2.371	-	3.115	-	4.539	4.467	6.237
	65	1.672	2.024	3.096	-	3.841	3.768	5.539
	80	1.663	2.014	3.087	-	3.831	3.759	5.530
	100	1.656	2.008	3.080	-	3.825	3.752	5.523

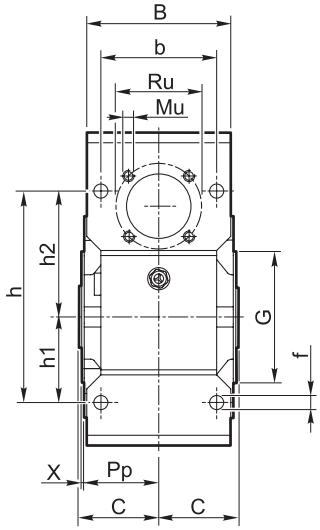
	i_n	XA	XC			XF			
			B5 - B14			B5			B5 - B14
			IEC 90	IEC 100-112	IEC 132	IEC 80	IEC 90	IEC 100-112	IEC 132
X110	**7.5**	16.247	-	17.980	20.038	20.584	20.535	20.711	22.704
	10	13.386	-	15.119	17.177	17.723	17.674	17.851	19.843
	15	11.343	-	13.076	15.134	15.679	15.631	15.807	17.799
	20	6.655	-	8.367	14.418	10.992	10.943	11.120	13.112
	25	6.257	-	7.969	14.020	10.594	10.545	10.722	12.714
	30	10.117	-	11.850	13.908	14.453	14.405	14.581	16.573
	40	5.965	-	7.677	-	10.302	10.254	10.430	12.422
	50	5.866	-	7.578	-	10.203	10.154	10.330	12.323
	65	3.792	5.592	7.510	-	8.128	8.080	8.256	10.248
	80	3.770	5.570	7.489	-	8.107	8.059	8.235	10.227
	100	3.755	5.555	7.474	-	8.092	8.044	8.220	10.212

	i_n	XA	XC			XF		
			B5 - B14			B5		
			IEC 90	IEC 100-112	IEC 132	IEC 90	IEC 100-112	IEC 132
X130	**7.5**	42.80	-	40.70	42.78	48.92	49.22	50.01
	10	35.06	-	32.96	35.04	41.18	41.48	42.27
	15	29.53	-	27.43	29.51	35.66	35.96	36.74
	20	18.95	-	16.68	27.58	25.07	25.37	26.16
	25	17.80	-	15.52	26.42	23.92	24.22	25.00
	30	26.22	-	24.12	26.20	32.34	32.64	33.42
	40	17.09	-	14.81	25.71	23.21	23.51	24.29
	50	16.80	-	12.57	-	22.92	23.22	24.00
	65	12.53	10.46	14.35	-	18.66	18.96	19.74
	80	12.48	10.41	14.30	-	18.60	18.90	19.68
	100	12.44	10.37	14.26	-	18.56	18.86	19.65

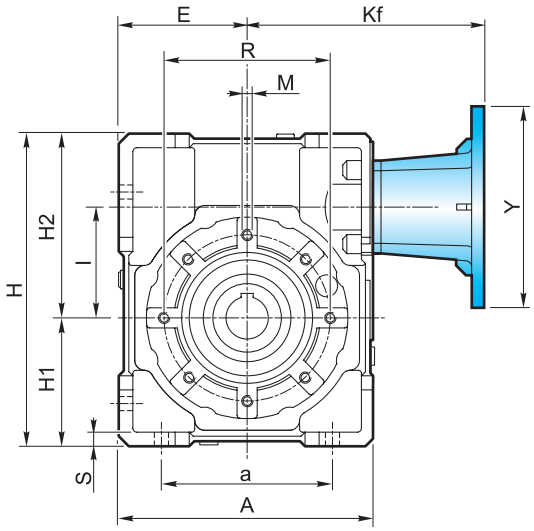
2.7 **Dimensioni** 2.7 ***Dimensions*** 2.7 **Abmessungen**

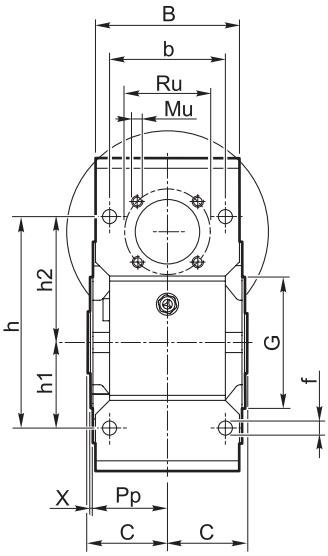
XA



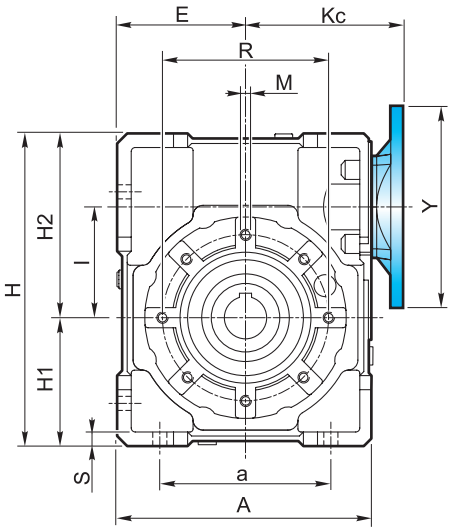


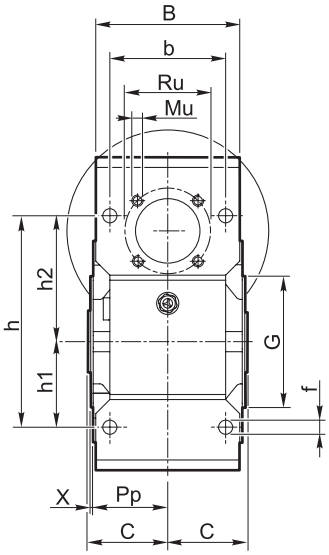
XF





XC

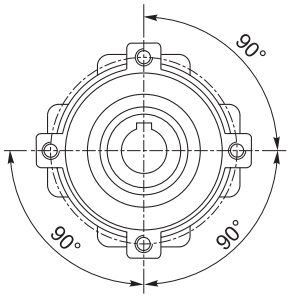




2.7 Dimensioni — *2.7 Dimensions* — 2.7 Abmessungen

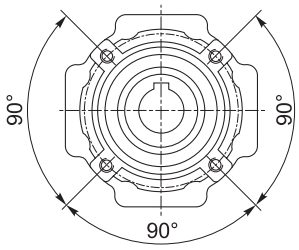
Flangia pendolare / *Shaft-mounted flange* / Aufsteckflansch

30



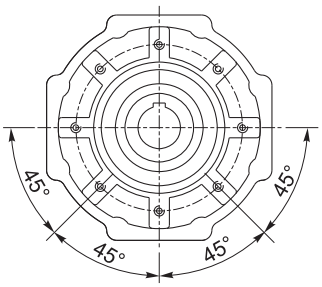
4 Fori / *Holes* / Bohrungen

40 - 50



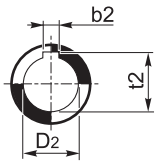
4 Fori / *Holes* / Bohrungen

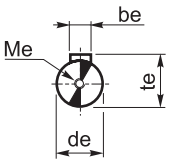
63 - 75 - 89 - 90 - 110 - 130



8 Fori / *Holes* / Bohrungen

Albero uscita cavo
Output hollow shaft
Abtriebshohlwelle





Albero entrata
Input shaft
Antriebswelle

X	A	a	B	b	b_e	b_2		C	d_e j6	D_2 H8		E	f	G h8	H	H_1	H_2	h	h_1	h_2
30	80	54	56	44	3	**5**	—	31.5	9	**14**	—	40	6.5	55	97	40	57	71	27	44
40	105	70	71	60	4	**6**	6	39	11	**18**	19	50	6.5	60	125	50	75	90	35	55
50	125	80	85	70	5	**8**	8	46	14	**25**	24	60	8.5	70	150	60	90	104	40	64
63	147	100	103	85	6	**8**	—	56	19	**25**	—	72	9	80	182	72	110	130	50	80
75	176	120	112	90	8	**8**	8	60	24	**28**	30	86	11	95	219.5	86	133.5	153	60	93
89*	203	140	130	100	—	**10**	—	70	—	**35**	—	103	13	110	248.5	103	145.5	172	70	102
90	203	140	130	100	8	**10**	—	70	24	**35**	—	103	13	110	248.5	103	145.5	172	70	102
110	252.5	170	143	115	8	**12**	—	77.5	28	**42**	—	127.5	14	130	310.5	127.5	183	210	85	125
130	292.5	200	155	120	10	**14**	14	85	38	**45**	48	147.5	15	180	355	147.5	207.5	240	100	140

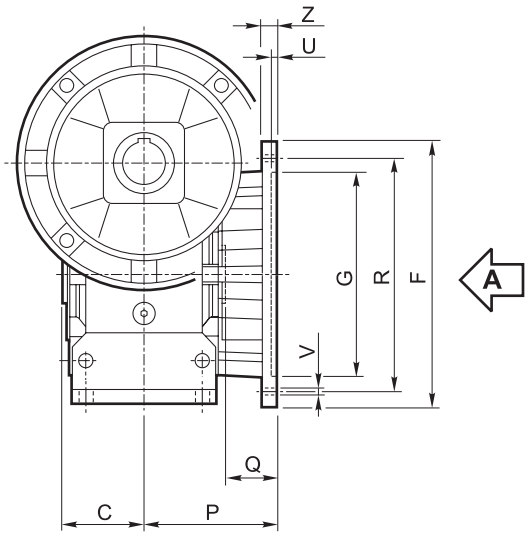
X	I	K_c	Kf	L	M	M_e	M_u	N	P_p	R	Ru	S	t_e	t_2		X
30	31.5	57	vedi pag. see page siehe S. 36	15	M6x8	M4x10	M5x7.5	44.5	29	65	35.4	5.5	10.2	16.3	—	1.5
40	40	75		20	M6X10	M4X12	M5X10	57.5	36.5	75	42.4	6	12.5	20.8	21.8	1.5
50	50	82		25	M8x10	M5x13	M6x10	67.5	43.5	85	53.7	7	16	28.3	27.3	1.5
63	63	95		30	M8x14	M8x20	M6x12	77.5	53	95	60.8	8	21.5	28.3	—	2
75	75	112 - 110 (1)		40	M8x14	M8x20	M8x12	95	57	115	70.7	10	27	31.3	33.3	2
89*	90	122		—	M10x18	—	M8x14	—	67	130	70.7	12	—	38.3	—	2
90	90	122		40	M10x18	M8x20	M8x14	105	67	130	70.7	12	27	38.3	—	2
110	110	153		50	M10x18	M8x20	M10x18	130	74	165	85.0	14	31	45.3	—	2.5
130	130	173		70	M12x20	M10x25	M10x16	152	81	215	104	15	41	48.8	51.8	3

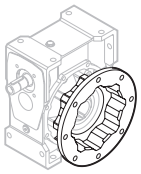
***:** 89 solo con tipo di entrata C — ***:** 89 only *with input type C* — ***:** 89 nur mit Antriebsart C

(1): Solo per PAM 71B14 / *Only for PAM 71B14* / Nur PAM 71B14

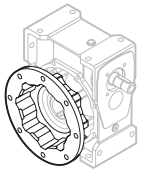
2.7 Dimensioni — *2.7 Dimensions* — 2.7 Abmessungen

Flangia uscita / *Output flange* / Abtriebsflansch

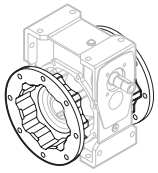




F...D
Standard

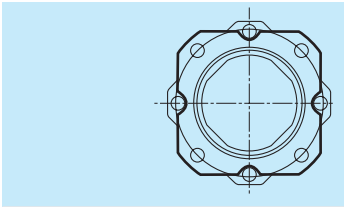


F...S



F...2

Vista da A / *View from A* / Ansicht von A



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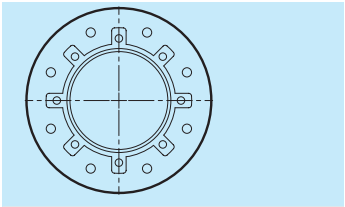
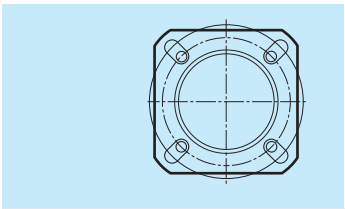
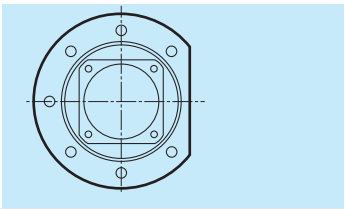
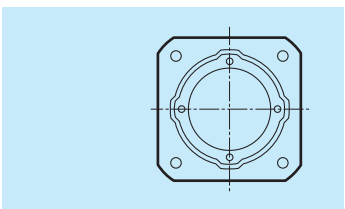


130

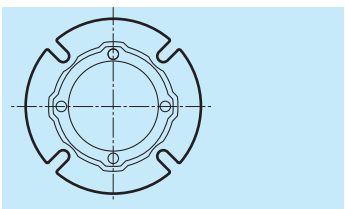


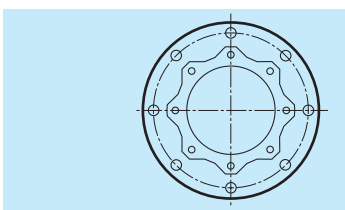
40 - 50



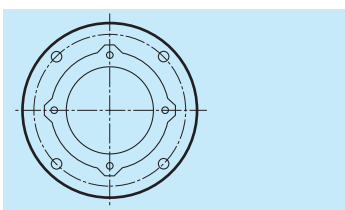


63 - 75





89 - 90 - 110

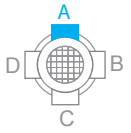


Tipo *Type* Typ		C	F		G H8	P	Q	R	U	V			Z
												Ø	
30	F1	31.5		66	50	54.5	23	68	4	n° 4		6.5	6
	F2												
	F3												
40	F1	39		85	60	67	28	75-90	4	n° 4		9	8
	F2			85	60	97	58	75-90	4	n° 4		9	8
	F3		140		95	80	41	115	5		n° 7	9	10
50	F1	46		94	70	90	44	85-100	5	n° 4		11	10
	F2		160		110	89	43	130	5		n° 7	11	11
	F3												
63	F1	56		142	115	82	26	150	5	n° 4		11	11
	F2			142	115	112	56	150	5	n° 4		11	11
	F3		160		110	80.5	24.5	130	5	n° 4		11	12
75	F1	60		160	130	111	51	165	5	n° 4		13	12
	F2		160		110	90	30	130	6	n° 4		11	13
	F3												
89 90	F1	70	200		152	111	41	175	5	n° 4		13	12
	F2		200		152	151	81	175	5	n° 4		13	13
	F3		200		130	110	40	165	6	n° 4		11	11
110	F1	77.5	260		170	131	53.5	230	6		n° 8	13	15
	F2		250		180	150	72.5	215	5	n° 4		15	16
	F3												
130	F1	85	320		180	140	55	255	7		n° 8 *	16	16
	F2		300		230			265					
	F3												

* Foratura ruotata di 22.5° — * *Drilling turned of 22.5°* — * Durchbohrung 22.5° versetzt

2.7 Dimensioni — *2.7 Dimensions* — 2.7 Abmessungen

Flangia entrata / *Input flange* / Antriebsflansch



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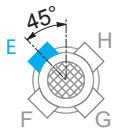

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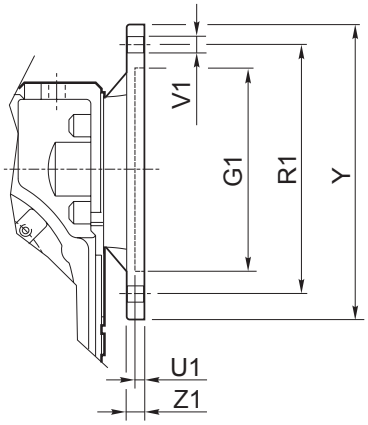
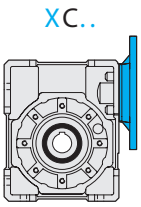




XC	IEC	G_1	PM 1	PM 2	R_1	U_1	V_1 Ø	V_1		Y	Z_1	Diametro fori PAM / *Holes diameter IEC* / IEC Durchmesser 5	7.5	10	15	20	25	30	40	50	65	80	100
30	56 B5	80	•	•	100	4	7	8			8	9	9	9	9	9	9	9	9	9	9	9	9
	56 B14	50	•	•	65	3.5	6	8		80	8	9	9	9	9	9	9	9	9	9	9	9	9
	63 B5	95	•	•	115	4	9	8		140	8	11	11	11	11	11	11	11	11	11	/	/	/
	63 B14	60	•	•	75	4	6	8		90	8	11	11	11	11	11	11	11	11	11	/	/	/
40	56 B5	80	•	•	100	4	7	8		120	9	/	/	/	/	/	/	/	/	9	9	9	9
	56 B14	50		•	65	3.5	6		4	80	8	/	/	/	/	/	/	/	/	9	9	9	9
	63 B5	95	•	•	115	4	9	8		140	9	11	11	11	11	11	11	11	11	11	11	11	11
	63 B14	60		•	75	3.5	6		4	90	8	11	11	11	11	11	11	11	11	11	11	11	11
	71 B5	110	•	•	130	4.5	9	8		160	10	14	14	14	14	14	14	14	14	/	/	/	/
	71 B14	70	•	•	85	3.5	7	8		105	8	14	14	14	14	14	14	14	14	/	/	/	/
50	63 B5	95	•	•	115	4	9	8		140	9	/	/	/	/	/	/	/	11	11	11	11	11
	63 B14	60		•	75	3.5	6		4	90	8	/	/	/	/	/	/	/	11	11	11	11	11
	71 B5	110	•	•	130	4.5	9	8		160	10	14	14	14	14	14	14	14	14	14	14	14	14
	71 B14	70		•	85	3.5	7		4	105	8	14	14	14	14	14	14	14	14	14	14	14	14
	80 B5	130	•	•	165	4.5	11	8		200	10	19	19	19	19	19	19	19	19	/	/	/	/
	80 B14	80	•	•	100	4	7	8		120	10	19	19	19	19	19	19	19	19	/	/	/	/
63	71 B5	110	•	•	130	4.5	9	8		160	10	/	/	/	/	/	/	/	14	14	14	14	14
	71 B14	70		•	85	3.5	7		4	105	10	/	/	/	/	/	/	/	14	14	14	14	14
	80 B5	130	•	•	165	4.5	11	8		200	10	19	19	19	19	19	19	19	19	19	19	19	19
	80 B14	80		•	100	4	7		4	120	10	19	19	19	19	19	19	19	19	19	19	19	19
	90 B5	130	•	•	165	4.5	11	8		200	10	24	24	24	24	24	24	24	/	/	/	/	/
	90 B14	95	•	•	115	4	8.5	8		140	10	24	24	24	24	24	24	24	/	/	/	/	/
75	71 B5	110	•	•	130	4.5	9	8		160	10	/	/	/	/	/	/	14	/	/	14	14	14
	71 B14	70		•	85	3.5	7		4	105	11	/	/	/	/	/	/	14	/	/	14	14	14
	80 B5	130	•	•	165	4.5	11	8		200	10	/	/	/	/	/	/	19	19	19	19	19	19
	80 B14	80		•	100	4	7		4	120	11	/	/	/	/	/	/	19	19	19	19	19	19
	90 B5	130	•	•	165	4.5	11	8		200	10	/	24	24	24	24	24	24	24	24	24	24	24
	90 B14	95		•	115	4	9		4	140	11	/	24	24	24	24	24	24	24	24	24	24	24
	100/112 B5	180	•	•	215	5	14	8		250	13	/	28	28	28	28	28	28	/	/	/	/	/
	100/112 B14	110	•	•	130	4.5	9	8		160	11	/	28	28	28	28	28	28	/	/	/	/	/
89 90	80 B5	130	•	•	165	4.5	11	8		200	10	/	/	/	/	/	/	/	/	/	19	19	19
	80 B14	80		•	100	4	7		4	120	11	/	/	/	/	/	/	/	/	/	19	19	19
	90 B5	130	•	•	165	4.5	11	8		200	10	/	24	24	24	24	24	24	24	24	24	24	24
	90 B14	95		•	115	4	9		4	140	11	/	24	24	24	24	24	24	24	24	24	24	24
	100/112 B5	180	•	•	215	5	14	8		250	13	/	28	28	28	28	28	28	/	/	/	/	/
	100/112 B14	110	•	•	130	4.5	9	8		160	11	/	28	28	28	28	28	28	/	/	/	/	/
110	90 B5	130	•		165	5	11	4		200	12	/	/	/	/	/	/	/	24	/	24	24	24
	90 B14	95		•	115	5	9		4	140	12	/	/	/	/	/	/	/	24	/	24	24	24
	100/112 B5	180	•		215	5	14	4		250	14	/	28	28	28	28	28	28	28	28	28	28	28
	100/112 B14	110		•	130	5	9		4	160	12	/	28	28	28	28	28	28	28	28	28	28	28
	132 B5	230	•		265	5	14	4		300	14	/	38	38	38	38	38	38	/	/	/	/	/
	132 B14	130	•		165	5	11	4		200	12	/	38	38	38	38	38	38	/	/	/	/	/
130	90 B5	130	•		165	5	11	4		200	12	/	/	/	/	/	/	/	/	/	24	24	24
	90 B14	95		•	115	5	9		4	140	12	/	/	/	/	/	/	/	/	/	24	24	24
	100/112 B5	180	•		215	5	14	4		250	14	/	28	28	28	28	28	28	28	28	28	28	28
	100/112 B14	110		•	130	5	9		4	160	12	/	28	28	28	28	28	28	28	28	28	28	28
	132 B5	230	•		265	5	14	4		300	14	/	38	38	38	38	38	38	38	/	/	/	/
	132 B14	130	•		165	5	11	4		200	12	/	38	38	38	38	38	38	38	/	/	/	/

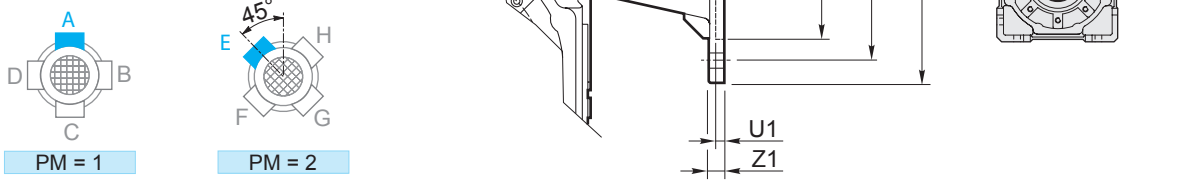
N.B.: Il montaggio STD di P_M=2 solo quando non è possibile il montaggio STD di P_M=1.
N.B.: E' possibile realizzare anche tutte le composizioni ibride ottenibili dalle flange esistenti.

N.B.: STD mounting of P_M=2 only if STD mounting of P_M=1 is not possible.
N.B.: it is possible to create hybrid combinations with the existing flanges.

ANMERKUNG: STD Montage von P_M=2 nur wenn STD Montage von P_M=1 unmöglich ist.
ANMERKUNG: Mischkombinationen mit der verfügbaren Flanschen sind möglich.

2.7 Dimensioni — *2.7 Dimensions* — 2.7 Abmessungen

Flangia entrata / *Input flange* / Antriebsflansch



XF	IEC	PM		G_1	K_F	R_1	U_1	V_1				Y	Z_1
		1	2					Ø					
30	56 B5	•	•	80	82.5	100	3.5	7		8		120	8
	56 B14		•	50	82.5	65	3.5	6			4	80	8
	63 B5	•	•	95	85.5	115	4	9		8		140	10
	63 B14	•	•	60	85.5	75	3.5	6		8		90	8
40	56 B5	•	•	80	101.5	100	3.5	7		8		120	8
	63 B5	•	•	95	104.5	115	4	9		8		140	10
	63 B14	•	•	60	104.5	75	3.5	6		8		90	8
	71 B5	•	•	110	111.5	130	4.5	9		8		160	10
	71 B14	•	•	70	111.5	85	4	7		8		105	10
50	63 B5	•	•	95	119.5	115	4	9		8		140	10
	71 B5	•	•	110	126.5	130	4.5	9		8		160	10
	71 B14		•	70	126.5	85	3.5	7			4	105	10
	80 B5	•	•	130	136.5	165	4.5	11		8		200	10
	80 B14	•	•	80	136.5	100	4	7		8		120	10
63	71 B5	•	•	110	141.5	130	4.5	9		8		160	10
	80/90 B5	•	•	130	161.5	165	4.5	11		8		200	10
	80 B14	•	•	80	151.5	100	4	7		8		120	10
	90 B14	•	•	95	161.5	115	4	9		8		140	10
75	80/90 B5	•	•	130	190	165	4.5	11		8		200	10
	90 B14		•	95	190	115	4	9			4	140	10
	100/112 B5	•	•	180	200	215	5	14		8		250	14
	100/112 B14	•	•	110	200	130	4.5	9		8		160	10
90	80/90 B5	•	•	130	200	165	4.5	11		8		200	10
	90 B14		•	95	200	115	4	9			4	140	10
	100/112 B5	•	•	180	210	215	5	14		8		250	14
	100/112 B14	•	•	110	210	130	4.5	9		8		160	10
110	80/90 B5	•		130	235	165	4.5	11	4			200	12
	100/112 B5	•		180	245	215	5	14	4			250	14
	132 B5	•		230	266	265	5	14	4			300	16
	132 B14	•		130	266	165	4.5	11	4			200	12
130	90 B5	•		130	281	165	4.5	M10	4			200	12
	100/112 B5	•		180	289	215	5	13	4			250	16
	132 B5	•		230	310	265	5	13	4			300	20

N.B.: Il montaggio STD di P_M=2 solo quando non è possibile il montaggio STD di P_M=1.

N.B.: STD mounting of P_M=2 only if STD mounting of P_M=1 is not possible.

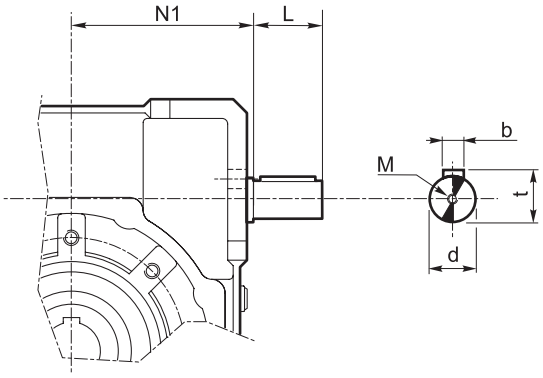
ANMERKUNG: STD Montage von P_M=2 nur wenn STD Montage von P_M=1 unmöglich ist.

2.8 Entrata supplementare (vite bisporgente)

2.8 Additional input (double extended shaft)

2.8 Zusatzantrieb (beidseitige Welle)

S.e.A.



X	d j6	L	M	N1	b	t
30	9	15	M4x10	42.5	3	10.2
40	11	20	M4x12	52.5	4	12.5
50	14	25	M5x13	62.5	5	16
63	19	30	M8x20	74.5	6	21.5
75	24	40	M8x20	91	8	27
89 - 90	24	40	M8x20	108	8	27
110	28	50	M8x20	132.5	8	31
130	38	70	M10x25	152	10	41

2.9 Limitatore di coppia cavo passante

Il limitatore di coppia viene consigliato in tutte quelle applicazioni che richiedono una limitazione sulla coppia trasmissibile per proteggere l'impianto e/o preservare il riduttore evitando sovraccarichi o urti indesiderati quanto inaspettati.
È un dispositivo con albero dotato di cavo passante, con funzionamento a frizione, ed è integrato al riduttore, presentando un ingombro limitato.
Concepito per lavorare a bagno d'olio, il dispositivo risulta affidabile nel tempo ed è esente da usura se non viene mantenuto in condizioni prolungate di slittamento (condizione che si verifica quando la coppia presenta valori superiori a quelli di taratura).
La taratura è facilmente regolabile dall'esterno attraverso il serraggio di una ghiera autobloccante che porta a compressione le 4 molle a tazza disposte tra loro in serie.
Il dispositivo non consente:
- l'impiego di cuscinetti a rulli conici in uscita
- funzionamento prolungato in condizioni di slittamento.

Nella tabella seguente vengono riportati i valori delle coppie di slittamento M_{2S} in funzione del n° di giri della ghiera.
I valori di taratura presentano una tolleranza del ±10% e si riferiscono ad una condizione statica.
In condizioni dinamiche è da notare che la coppia di slittamento assume valori diversi a seconda del tipo e/o modalità in cui si verifica il sovraccarico: con valori maggiori in caso di carico uniformemente crescente rispetto a volori più contenuti in seguito al verificarsi di picchi improvvisi di carico.
NOTA: quando si supera il valore di taratura si ha slittamento.
Il coefficiente di attrito tra le superfici di contatto da statico diventa dinamico e la coppia trasmessa cala del 30% circa.
E' quindi opportuno prevedere uno stop per poter ripartire al valore di taratura iniziale.

2.9 Torque limiter with through hollow shaft

The use of a torque limiter is advised when the application requires the limitation of the transmissible torque to safeguard the plant and/or to prevent from unexpected and undesired overloads or shocks which might damage the gearbox.
The torque limiter is a device equipped with through hollow shaft and a friction clutch. It is integrated with the gearbox, therefore the space requirement is limited.
Designed to work in oil bath, the device is reliable over time and is not subject to wear unless kept under conditions of prolonged slipping (it occurs when the torque values are higher than the calibration values).
Calibration can be easily adjusted from outside by tightening the self-locking ring nut which causes the compression of the 4 Belleville washers arranged in series.
The device does not go together with:
- *the use of tapered roller bearings at output*
- *Prolonged operation under slipping conditions.*

The following table shows the values of M_{2S} slipping torques depending on the number of revolutions of the ring nut.
Calibration values feature a ±10% tolerance and refer to static conditions.
Under dynamic conditions, the values of the slipping torque differ depending to the type of overload: the values are higher if the load increase is uniform, the values are lower if sudden load peaks occur.
***NOTE:** Slipping occurs when the setting values are exceeded.*
The friction coefficient between the contact surfaces from static becomes dynamic and the transmitted torque is approx. 30% lower.
It is advisable to have a stop first in order to have a restart based on the initial setting value.

2.9 Drehmomentbegrenzer mit durchgehender Hohlwelle

Die Anwendung eines Drehmomentbegrenzers wird empfohlen, um die Anlage und/oder das Getriebe gegen ungewünschte und unerwartete Überbelastungen oder Stoßen zu schützen.
Der Begrenzer verfügt über eine Welle mit durchgehende Hohlwelle und eine Kupplung. Er ist in dem Getriebe integriert, d.h. der Raumbedarf ist klein.
Der Drehmomentbegrenzer wurde für Betrieb in einem Ölbad entworfen. Er ist zuverlässig über Zeit und verschleissfest (außer wenn Rutschen für lange Zeit besteht: das passiert, wenn das Drehmoment hoher als der Eichwert ist).
Die Einstellung darf mühelos von außen durch das Anziehen einer selbstsperrenden Mutter ausgeführt werden.
Das Anziehen verursacht die Zusammedrückung der 4 wechelsinniggeschichteten Tellerfeder.
Der Begrenzer sieht das folgende nicht vor:
- die Verwendung von Kegelrollenlager am Abtrieb
- Längerer Rutschbetrieb.

Die nachstehende Tabelle zeigt die Werte der Rutschmomente M_{2S} abhängig von der Zahl der Umdrehungen der Mutter.
Die Eichwerte weisen ±10% Toleranz auf und beziehen sich auf statische Bedingungen.
Unter dynamischen Bedingungen hat das Rutschmoment verschiedene Werte je nach Art der Überbelastung. Die Werte sind hoher, wenn die Belastung gleichmäßig zunimmt; sie sind niedriger im Falle von plötzlichen Belastungsspitzen.
BEMERKUNG: Rutschen tritt auf, wenn die eingestellten Werte überschritten werden. Der Reibungsfaktor zwischen den Berührungsflächen wird dynamisch anstatt statisch und das übertragene Drehmoment sinkt um ca. 30%.
Es ist daher ratsam, vor dem erneuten Anfahren anzuhalten, um die ursprünglichen Drehmomentwerte zu erreichen.

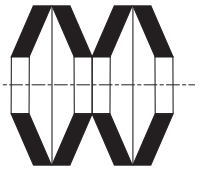
E' importante notare che la coppia di slittamento non resta sempre la medesima durante tutta la vita del limitatore.
Tende infatti a diminuire in rapporto al numero e alla durata degli slittamenti che, rodando le superfici di contatto, ne aumentano il rendimento.
È quindi opportuno verificare periodicamente, soprattutto durante la fase di rodaggio, la taratura del dispositivo.
Là dove sia richiesto un errore più contenuto nella taratura, è necessario testare la coppia trasmissibile sull' impianto.
Il dispositivo viene consegnato tarato alla coppia riportata a catalogo T_{2M} salvo diversa indicazione espressa in fase di ordinazione.

It is important to note that the slipping torque is not the same for the entire life of the torque limiter. It usually decreases in connection with the number and the duration of slippings, this is due to the surface of the torque limiter becoming more engaged, therefore increasing the efficiency. For this reason it is advisable to check the calibration of the device at regular intervals, specially during the running-in period. Should a smaller calibration error be required, it is necessary to test the transmissible torque on the plant.
The torque limiter is supplied already calibrated at the torque value T_{2M}, unless otherwise specified in the order.

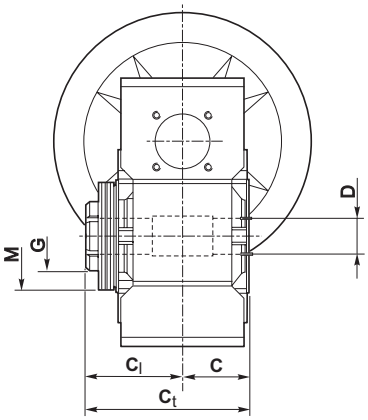
Es ist wichtig zu beachten, dass das Rutschmoment der Rutschkupplung über die gesamte Lebensdauer nicht konstant bleibt, sondern üblicherweise in Verbindung mit längeren Rutschzyklen aufgrund der eingelaufenen Berührungsflächen abnimmt.
Deswegen ist es ratsam, die Einstellung der Vorrichtung besonders während der Einlaufzeit in regelmäßigen Zeitabständen zu prüfen.
Wenn der Drehmomentbegrenzer geliefert wird, ist dieser schon auf dem im Katalog unter T_{2M} angegebenen Wert eingestellt, außer wenn es in der Bestellung anders angegeben wird.

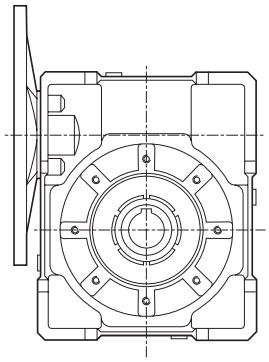
X	N°. giri della ghiera di regolazione / *N°. revolutions of ring nut* / Nr. Umdrehungen der Mutter															
	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
	M_{2S} [Nm]															
30		15	18	22	27	32										
40	23	30	35	40	45	50	60									
50		45	60	70	80	90	100	110								
63			80	90	100	110	120	130	140	150	160	170	180	190	200	
75		140	160	180	200	220	240	260	280	300						
89 - 90						230	280	310	330	350	380	410	435	460	490	510
110		420	500	560	670	730	810	910								
130																

Disposizione delle molle
Washers' arrangement
Lage der Feder



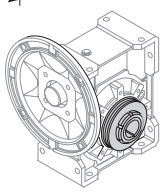
IN SERIE (min. coppia, max. sensibilità)
SERIES *(min. torque, max sensitivity)*
SERIE (min. Moment, max. Empfindlichkeit)



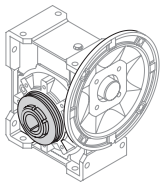


X	C	C_l	C_t	D H8	M	G
30	31.5	55.5	87	14	50x25.4x1.25	M25x1.5
40	39	65	104	18 (19)	56x30.5x1.5	M30x1.5
50	46	76	122	25 (24)	63x40.5x1.8	M40x1.5
63	56	91	147	25	71x40.5x2	M40x1.5
75	60	100	160	28 (30)	90x50.5x2.5	M50x1.5
89 - 90	70	109	179	35 (32)	100x51x2.7	M50x1.5
110	77.5	127.5	205	42	125x61x4	M60x2.0
130						

( ) A richiesta / *On request* / Auf Anfrage



LD



LS

Nella versione con limitatore non è prevista la fornitura degli alberi lenti.

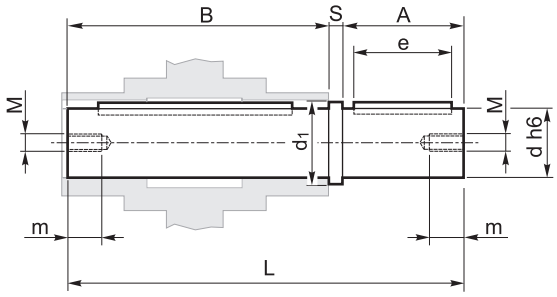
The version with torque limiter is supplied without output shafts.

Die Version mit Drehmomentbegrenzer wird ohne Abtriebswellen geliefert.

2.10 Accessori

Albero lento

Albero lento semplice
Single output shaft
Standard Abtriebswelle

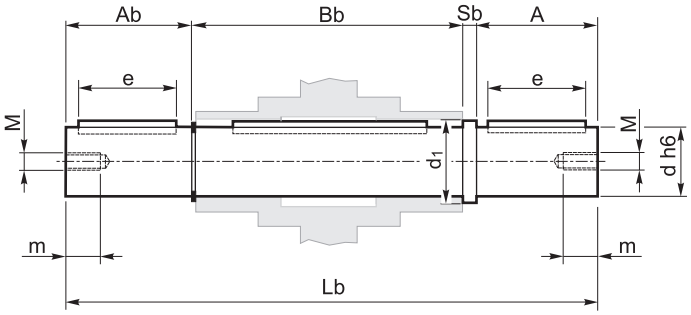


X	A	B	d h6	d_1	e	L	M	m	S
30	30	62	**14**	18.5	20	94.5	M6	16	2.5
40	40	77	**18** 19	23.5	30	120	M6	16	3
50	50	90	**25** 24	31.5	40	143.5	M8	22	3.5
63	50	111	**25**	31.5	40	165	M8	22	4
75	60	119	**28** 30	34.5	50	183	M8	22	4
89 - 90	80	139	**35**	41.5	60	224	M10	28	5
110	80	154.5	**42**	49.5	60	242.5	M10	28	8
130	80	168	**45**	54.5	70	253	M16	36	5

2.10 Accessories

Output shaft

Albero lento doppio
Double output shaft
Doppelte Abtriebswelle

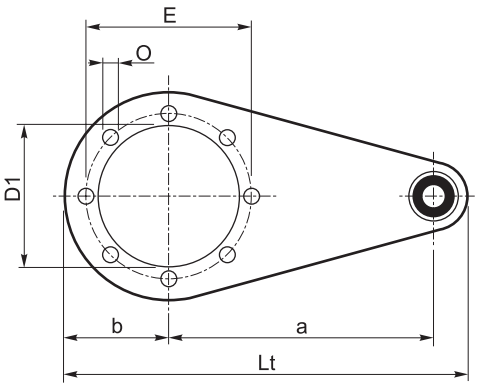


A	A_b	B_b	d h6	d_1	e	L_b	S_b
30	29	64	**14**	18.5	20	126	2.5
40	39	79	**18**	23.5	30	161	3
50	49	93	**25**	31.5	40	195.5	3.5
50	49	113	**25**	31.5	40	216	4
60	59	121	**28**	34.5	50	244	4
80	78.5	141.5	**35**	41.5	60	305	5
80	77.5	157	**42**	49.5	60	322.5	8
80	78	172	**45**	54.5	70	335	5

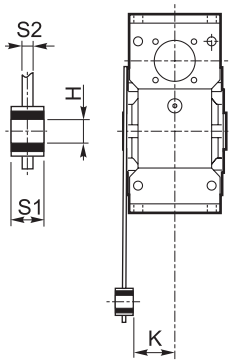
2.10 Accessories

Abtriebswelle

Braccio di reazione



Torque arm

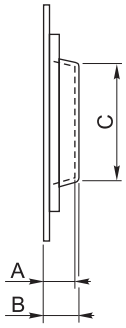


Drehmomentstütze

X	a	b	D_1	E	H	K	L_t	O	S1	S2
30	85	37.5	55	65	8	24	141.5	7	14	4
40	100	45	60	75	10	31.5	167	7	14	4
50	100	50	70	85	10	39	172	9	14	5
63	150	55	80	95	10	49	227	9	14	6
75	200	70	95	115	20	47.5	302	9	25	6
89 - 90	200	80	110	130	20	57.5	312	11	25	6
110	250	100	130	165	25	62	390	11	30	6
130	250	125	180	215	25	69	415	13	30	6

Kit di protezione:

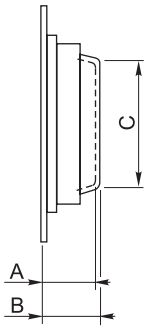
Albero cavo / *Hollow shaft* / Hohlwelle



X	A	B	C
30	12	13	39
40	14	15.5	44.5
50	15	16.5	54
63	17	19	60
75	17.5	20	70
89 -90	21.5	24	80
110	22	25	96
130	22	25	130

Protection Kit:

Limitatore di coppia / *Torque limiter* / Drehmomentbegrenzer



X	A	B	C
30	36	37	36
40	40	41.5	44
50	47	48.5	53
63	52	54	55
75	58	60	68
89 - 90	60.5	63	70
110	72	75	85
130			

Schutzvorrichtung

Opzioni disponibili:

Cuscinetti a rulli conici corona

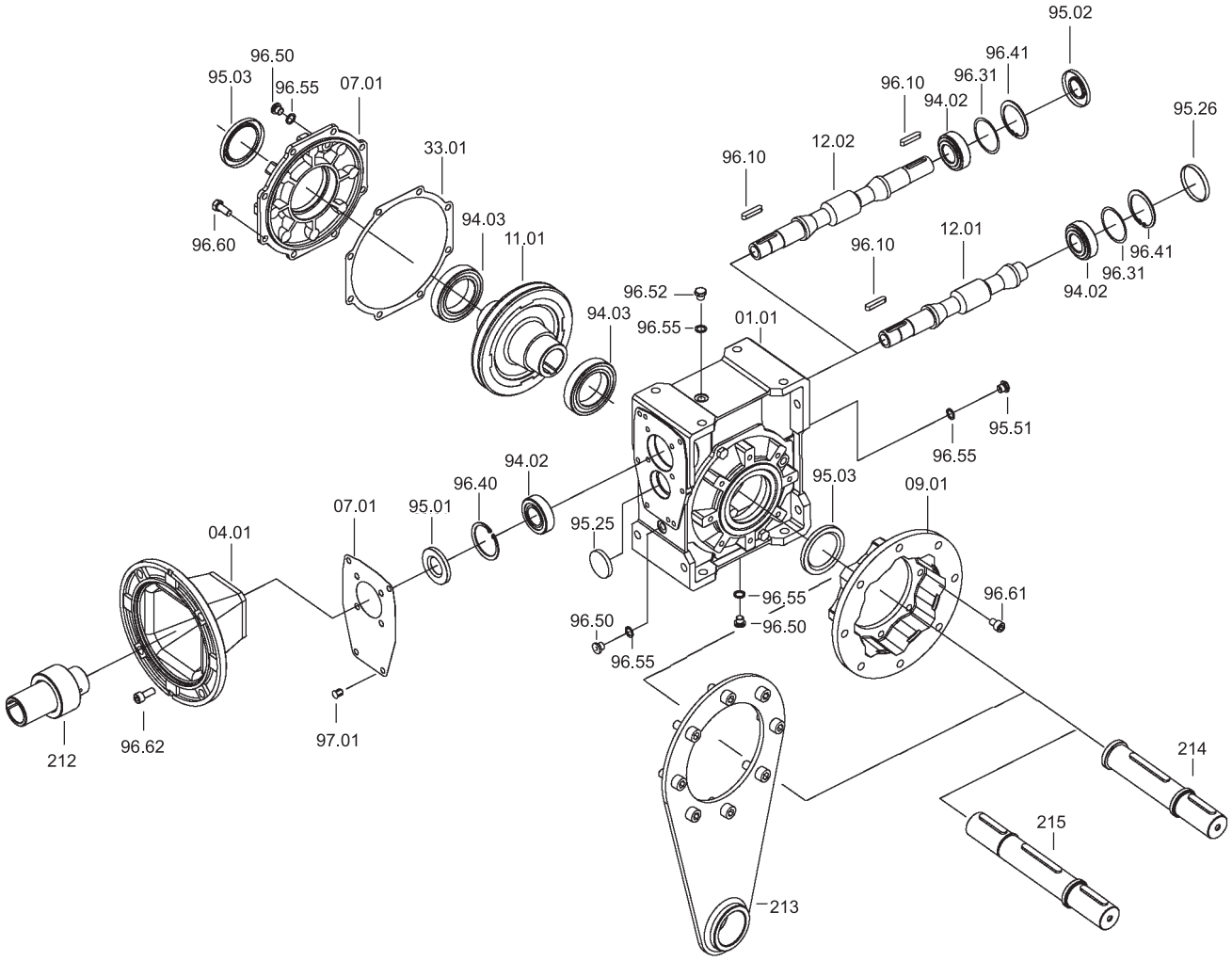
Available options:

Tapered roller bearing on wormgear

Auf Anfrage ist folgendes Zubehör erhältlich:

Kegelrollenlager auf Schneckenrad

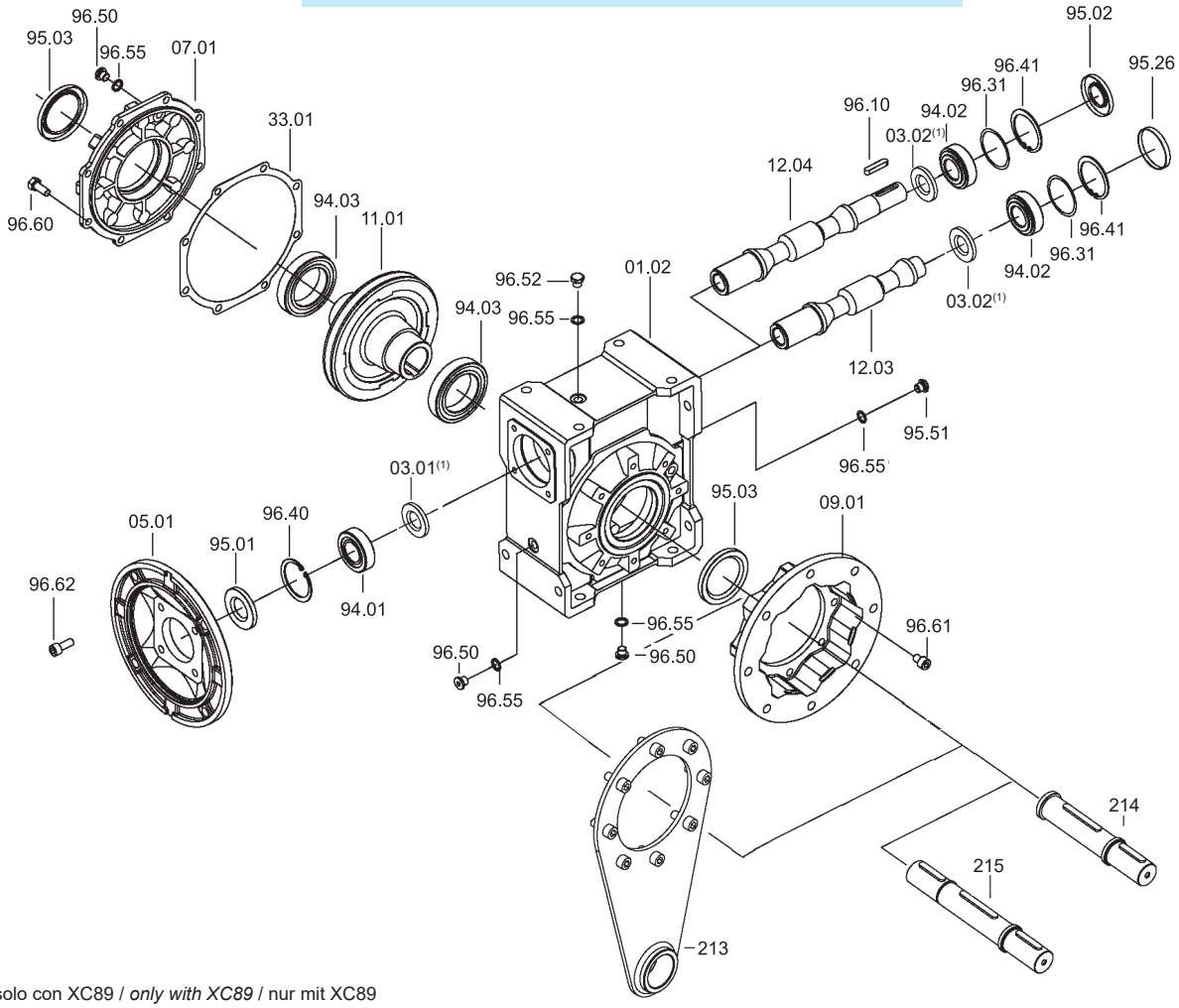
XA - XF



X	Cuscinetti / *Bearings* / Lager			Anelli di tenuta / Oilseals Öldichtungen			Cappellotto / *Closed oil seal* Geschlossene Öldichtung	
	94.02	**94.03**		**95.01**	**95.02**	**95.03**	**95.25**	**95.26**
30	**6000** 10x26x8	**6005** 25x47x12	***32005** 25x47x15	10/26/5.5	10/26/7	25/40/7	—	ø 6x7
40	**6201** 12x32x10	**6006** 30x55x13	***32006** 30x55x17	12/32/7	12/32/7	30/47/7	—	ø 32x7
50	**6203** 17x40x12	**6008** 40x68x15	***32008** 40x68x19	17/40/7	17/40/7	40/62/8	—	ø 40x7
63	**30204** 20x47x15.25	**6008** 40x68x15	***32008** 40x68x19	20/47/7	20/47/7	40/62/8	—	ø 47x7
75	**30205** 25x52x16.25	**6010** 50x80x16	***32010** 50x80x20	25/52/7	25/52/7	50/72/8	—	ø 52x7
90	**32205** 25x52x19.25	**6010** 50x80x16	***32010** 50x80x20	25/52/7	25/52/7	50/72/8	ø 35x5	ø 52x7
110	**32206B** 30x62x21.25	**6012** 60x95x18	***32012** 60x95x23	30/62/7	30/62/7	60/85/8	ø 47x7	ø 62x7
130	**33208** 40x80x32	**6015** 75x115x20	***32015** 75x115x25	40/80/10	40/80/10	75/100/10	ø 52x7	ø 80x10

* Cuscinetti a rulli conici a richiesta - Tapered roller bearings on request - Auf Wunsch Kegelrollenlager

XC

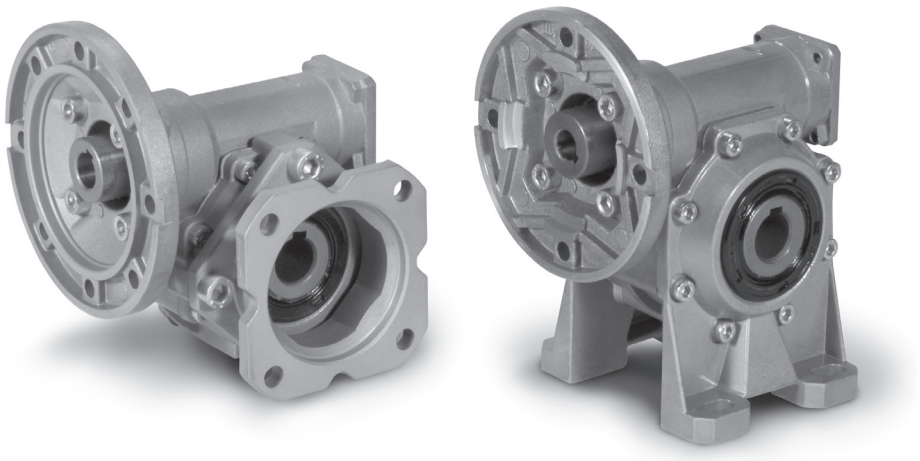


(1): solo con XC89 / *only with XC89* / nur mit XC89

X	IEC	Cuscinetti / *Bearings* / Lager				Anelli di tenuta / Oilseals Öldichtungen			Cappellotto / *Closed oil seal* Geschlossene Öldichtung
		94.01	94.02	94.03		95.01	95.02	95.03	95.26
30	56	**61804** (20x32x7)	**6000** 10x26x8	**6005** 25x47x12	***32005** 25x47x15	20/32/5	10/26/7	25/40/7	ø 26x7
	63	**61804** (20x32x7)				20/32/5			
40	56	**6303** (17x47x14)	**6201** 12x32x10	**6006** 30x55x13	***32006** 30x55x17	17/47/7	12/32/7	30/47/7	ø 32x7
	63	**6204** (20x47x14)				20/47/7			
	71	**6005** (25x47x12)				25/47/7			
50	63	**6204** (20x47x14)	**6203** 17x40x12	**6008** 40x68x15	***32008** 40x68x19	20/47/7	17/40/7	40/62/8	ø 40x7
	71	**6005** (25x47x12)				25/47/7			
	80	**6006** (30x55x13)				30/55/7			
63	71	**30305** (25x62x18.25)	**30204** 20x47x15.25	**6008** 40x68x15	***32008** 40x68x19	25/62/7	20/47/7	40/62/8	ø 47x7
	80	**30206** (30x62x17.25)				30/62/7			
	90	**32007** (35x62x18)				35/62/7			
75	71	**30206** (30x62x17.25)	**30205** 25x52x16.25	**6010** 50x80x16	***32010** 50x80x20	30/62/7	25/52/7	50/72/8	ø 52x7
	80	**30206** (30x62x17.25)				30/62/7			
	90	**32007** (35x62x18)				35/62/7			
	100/112	**32008** (40x68x19)				40/68/10			
89	80	**6206** (30x62x16)	**6205 C3** 25x52x15	**6010** 50x80x16	***32010** 50x80x20	30/62/7	25/52/7	50/72/8	ø 52x7
	90	**6007** (35x62x14)				35/62/7			
	100/112	**6008** (40x68x15)				40/68/10			
90	80	**30206** (30x62x17.25)	**32205B** 25x52x19.25	**6010** 50x80x16	***32010** 50x80x20	30/62/7	25/52/7	50/72/8	ø 52x7
	90	**32007** (35x62x18)				35/62/7			
	100/112	**32008** (40x68x19)				40/68/10			
110	90	**30208** (40x80x19.75)	**32206B** 30x62x21.25	**6012** 60x95x18	***32012** 60x95x23	40/80/10	30/62/7	60/85/8	ø 62x7
	100/112	**30208** (40x80x19.75)				40/80/10			
	132	**32010** (50x80x20)				50/80/10			
130	90	**30208** (40x80x19.75)	**33208** 40x80x32	**6015** 75x115x20	***32015** 75x115x25	40/80/10	40/80/10	75/100/10	ø 80x10
	100/112	**30208** (40x80x19.75)				40/80/10			
	132	**32010** (50x80x20)				50/80/10			

* Cuscinetti a rulli conici a richiesta - Tapered roller bearings on request - Auf Wunsch Kegelrollenlager

3.0 RIDUTTORE A VITE SENZA FINE SERIE K — K WORM GEARBOXES — SCHNECKENGETRIEBE K



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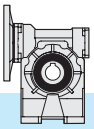


3.1 Caratteristiche

- I riduttori della serie a vite senza fine KC si presentano estremamente leggeri grazie alla forma compatta della carcassa in ghisa nelle grandezze 90,110 e 130, in alluminio pressofuso per le grandezze 30, 40, 50, 63, 75 e 89.
- La serie presenta una svariata possibilità di versioni, con e senza piedi, che la rendono più versatile nell'impiego in ogni tipologia di applicazione.
- La serie K è disponibile esclusivamente nella versione predisposta per attacco motore (PAM) e non con albero entrata maschio.
- La vite senza fine è in acciaio legato cementato-temprato ed è rettificata.
- La corona ha il mozzo in ghisa con riporto di fusione dell'anello in bronzo.
- Le carcasse in ghisa sono verniciate BLU RAL5010 mentre quelle in alluminio sono sabbiate.
- Viene fornito l'albero uscita cavo di serie ed esiste un'ampia disponibilità di accessori: seconda entrata, cuscinetti conici sulla corona, flangia uscita, albero lento con 1 o 2 sporgenze, limitatore di coppia con cavo passante, braccio di reazione, kit protezione albero cavo, kit protezione limitatore di coppia.

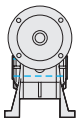
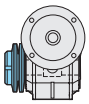
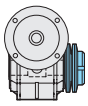
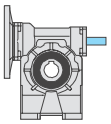
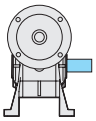
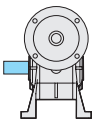
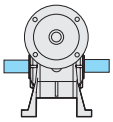
3.1 Characteristics

- *The KC worm gearboxes are extremely light thanks to the compact shape of the housing, which is in cast iron for sizes 90, 110 and 130, in die-cast aluminium for sizes 30, 40, 50, 63, 75 and 89.*
- *This series features a wide range of versions, with and without feet, which makes it extremely versatile for utilization in various applications.*
- *The K series is available for motor mounting version (PAM) only and not with the male input shaft.*
- *The worm shaft is in case-and quench-hardened alloy steel and ground.*
- *The worm wheel has a cast-iron hub with inserted cast bronze ring.*
- *The cast-iron housings are painted BLUE RAL5010 whereas the aluminium housings are sandblasted.*
- *The hollow output shaft is supplied as standard. A broad range of accessories is available: second input, tapered roller bearings on the worm wheel, output flange, single or double-extended output shaft, torque limiter with through hollow shaft, torque arm, hollow shaft protection kit, torque limiter protection kit.*

3.1 Merkmale

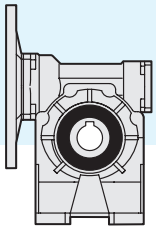
- Die Schneckengetriebe der Serie KC sind äußerst leicht dank der kompakten Form des Gehäuses. Das Gehäuse ist aus Gusseisen für Größen 90, 110 und 130, aus Druckgussaluminium für Größen 30, 40, 50, 63, 75 und 89.
- Diese Serie ist in vielen Ausführungen, mit und ohne Füße erhältlich, was eine vielseitige Anwendbarkeit in unterschiedlichsten Applikationen ermöglicht.
- Die Serie K ist nur mit Motoranbau Version (IEC) und nicht mit einer Antriebswelle verfügbar.
- Die Schneckenwelle ist aus einsatzgehärtetem / abgeschrecktem und darauf-hin geschliffenem Legierungsstahl.
- Das Schneckenrad besteht aus einer Nabe aus Gusseisen und einem aufgeschleuderten Gussbronze-Ring.
- Gehäuse aus Gusseisen werden mit BLAU RAL5010 lackiert, die Gehäuse aus Aluminium werden sandgestrahlt.
- Die Hohlwelle gehört zur serienmäßigen Ausstattung. Eine breite Auswahl an Zubehör ist erhältlich: zweiter Antrieb, Kegellager auf das Schneckenrad, Abtriebsflansch, Standard oder doppelseitig herausragende Abtriebswelle, Drehmomentbegrenzer mit durchgehender Hohlwelle, Drehmomentstütze, Schutzvorrichtung für Hohlwelle, Schutzvorrichtung für Drehmomentbegrenzer.

3.2 Designazione — *3.2 Designation* — 3.2 Bezeichnung

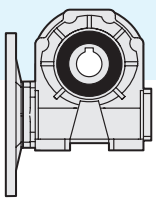
RIDUTTORE / *GEARBOX* / GETRIEBE										ACCESSORI *ACCESSORIES* ZUBEHÖR	
Riduttore *Gearbox* Getriebe	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Versione *Version* Ausführung	Rapporto rid. *Ratio* Untersetzung	Predispos.att. mot. *Motor coupling* Motoranschluss	Posizione di mont. *Mounting position* Einbaulage	Albero uscita cavo *Hollow output shaft* Abtriebshohlwelle	Limitatore di coppia. *Torque limiter* Drehmoment-begrenzer	Seconda entrata *Additional input* Zusatzantrieb	Albero uscita *Output shaft* Abtriebswelle	Braccio di reazione *Torque arm* Drehmomentstütze
K	**C**	**50**	**F1S**	**10**	**P.A.M**	**B3**	**H25**	**LD**	**SeA**	**SD**	**BR**
Riduttore a vite senza fine *Wormgearbox* **Schneckengetriebe**	 **C**	**30** **40** **50** **63** **75** **89**  Alluminio *Aluminium* Aluminium **90** **110** **130**  Ghisa *Cast iron* Gusseisen	**A1-A2** **B1-B2** **V1-V2** **P** **F1S-F2S** **F3S** **F1D-F2D** **F3D**	**5** **7.5** **10** **15** **20** **25** **30** **40** **50** **65** **80** **100**	**56** **63** **71** **80** **90** **100** **112** **132**	**B3** **B6** **B7** **B8** **V5** **V6**	vedi tabelle *see tables* siehe Tabellen 	 **LS**  **LD**	 **SeA**	 **SD**  **SS**  **DD**	 **BR**

Versioni — ***Versions*** — **Ausführungen**

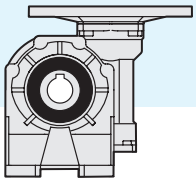
KC..A



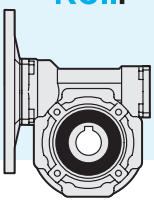
KC..B



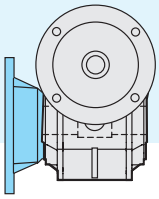
KC..V



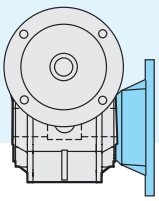
KC..P



KC..FS



KC..FD



3.3 Lubrificazione

I riduttori a vite senza fine serie K, tranne la grandezza 130, sono forniti completi di lubrificante sintetico a base PAG con indice di viscosità ISO VG320.
Si raccomanda di precisare sempre, in fase di ordine, la posizione di montaggio desiderata.

Per ulteriori dettagli consultare pag. 12 paragrafo 1.13

3.3 Lubrication

KC worm gearboxes, except for the size 130, are supplied with PAG synthetic lubricant featuring an ISO VG320 viscosity class.
Mounting position always to be specified when ordering.

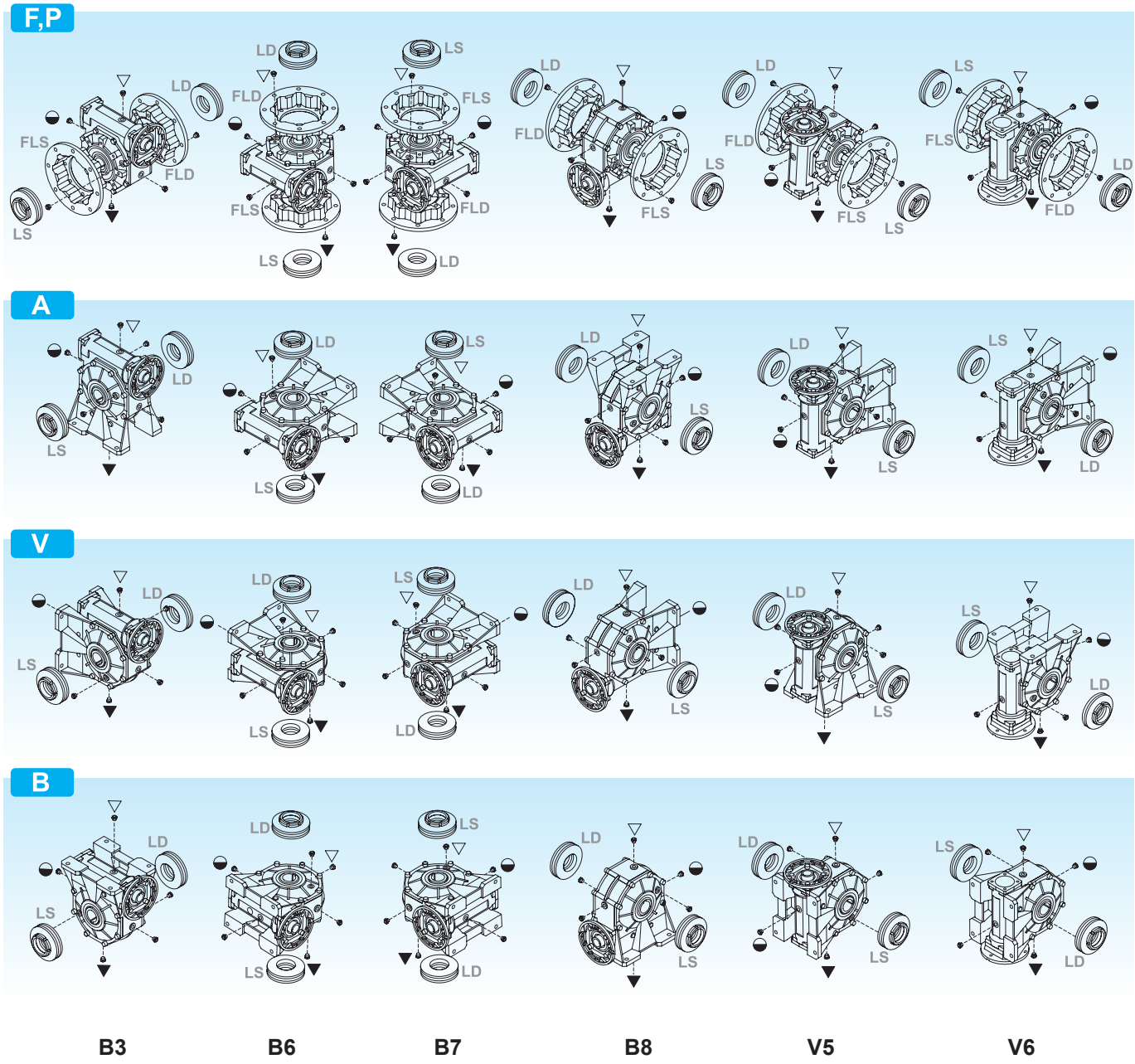
For more details, see page 12, paragraph 1.13

3.3 Schmierung

Schneckengetriebe der Serie KC, außer Groesse 130, werden mit synthetischem Schmiermittel auf PAG Basis und Viskosität Index ISO VG320 geliefert. Im Auftrag bitte immer die gewünschte Einbaulage angeben.

Weitere Einzelheiten finden Sie auf Seite 12, Absatz 1.13

Posizioni di montaggio | ***Mounting positions*** | **Einbaulagen**



B3 **B6** **B7** **B8** **V5** **V6**

▽ Carico e sfiato / *Filling and breather* Einfüll und Entlüftung
◒ Livello / *Level* / Ölstand
▼ Scarico / *Drain* / Ablass

Nei corpi in alluminio 30, 40, 50, 63, 75 e 89 è presente un solo tappo di riempimento olio.

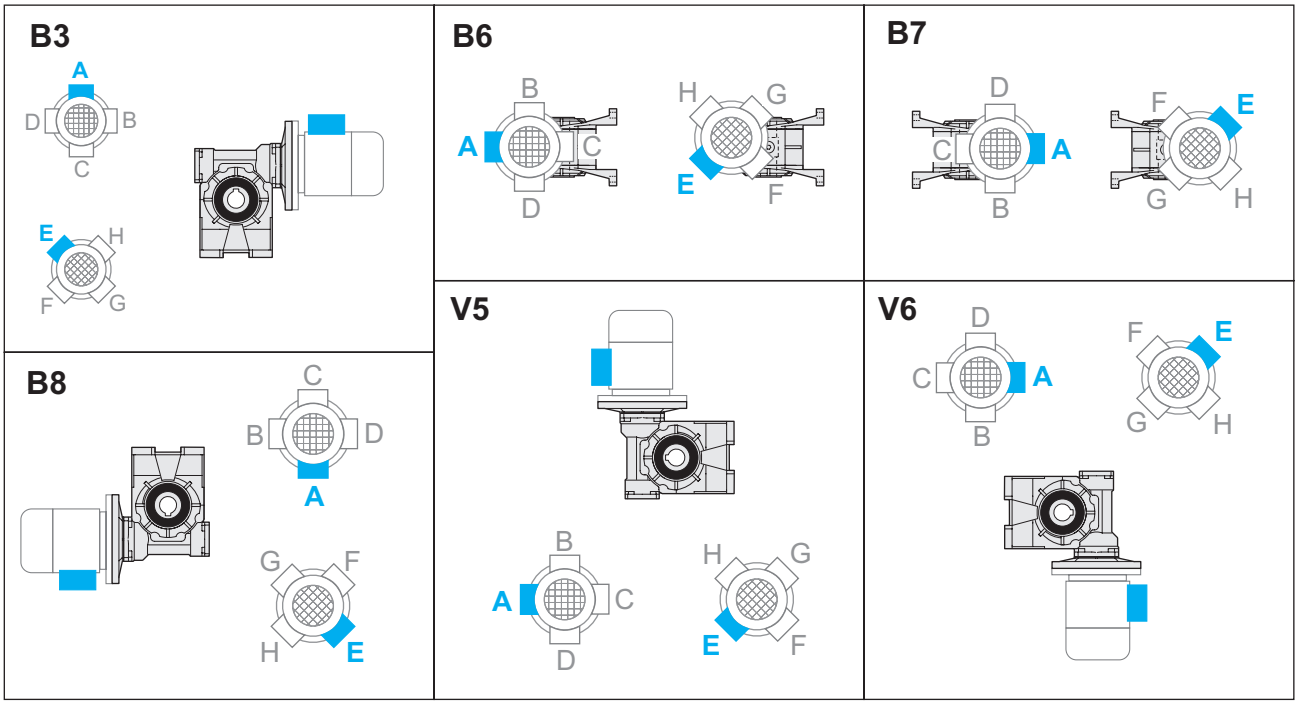
Aluminium housings size 30, 40, 50, 63,75 and 89 have one filling plug only.

Gehäuse aus Alumiunium Größe 30, 40, 50, 63, 75 und 89 verfügen über nur eine Einfüllschraube.

3.3 Lubrificazione — *3.3 Lubrication* — 3.3 Schmierung

		Q.tà olio / *Oil quantity* / Schmiermittelmenge [lt]			
		Posizione di montaggio / *Mounting position* / Einbaulage			
		B3	**B6 - B7**	**B8**	**V5 - V6**
KC	**30**	0.015	0.030	0.015	
	40	0.040	0.060	0.040	
	50	0.080	0.120	0.080	
	63	0.160	0.220	0.160	
	75	0.260	0.340	0.260	
	89	0.600	0.700	0.600	
	90	1	0.8	0.8	1.3
	110	2	1.5	2	2
	130	3	2.6	2.1	2.8

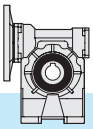
3.4 Posizione morsettiera — *3.4 Terminal board position* — 3.4 Lage der Klemmenkaste



Specificare sempre in fase di ordinazione la posizione di montaggio e la forma costruttiva.
Posizione morsettiera v. pag. 61
(PM=1; PM=2)

Mounting position always to be specified when ordering.
Terminal board position see page 61
(PM=1; PM=2)

Bei der Bestellung immer die gewünschte Montageposition und Bauform angeben.
Lage der Klemmenkaste Seite 61
(PM=1; PM=2)



3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC				
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14	
30	**5**	560	0.89		5.6	**0.37**	2.5	**63**	**56**
	7.5	373	0.86		8	**0.37**	2.0		
	10	280	0.84		11	**0.37**	1.5		
	15	187	0.81		15	**0.37**	1.1		
	20	140	0.76		13	**0.25**	1.2		
	25	112	0.74		16	**0.25**	1.0		
	30	93	0.71	—	13	**0.18**	1.0		
	40	70	0.65		16	**0.18**	1.0		
Kg	**50**	56	0.62		14	**0.13**	1.1		
1.2	**65**	43	0.57		17	**0.13**	1.0		
	80	35	0.54		13	**0.09**	1.0	—	
	100	28	0.52		16	**0.09**	0.8		

	n_1 =1400				KC				
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14	
30	**5**	280	0.87	0.40	6.5	**0.22**	2.9	**63**	**56**
	7.5	187	0.84	0.40	9	**0.22**	2.2		
	10	140	0.82	0.40	12	**0.22**	1.8		
	15	93	0.77	0.30	17	**0.22**	1.3		
	20	70	0.72	0.20	18	**0.18**	1.1		
	25	56	0.69	0.20	21	**0.18**	1.0		
	30	47	0.66	0.20	18	**0.13**	1.1		
	40	35	0.59	0.20	21	**0.13**	1.0		
Kg	**50**	28	0.55	0.20	17	**0.09**	1.1		
1.2	**65**	22	0.51	0.10	20	**0.09**	1.0		
	80	18	0.48	0.10	16	**0.06**	1.0	—	
	100	14	0.45	0.10	18	**0.06**	0.8		

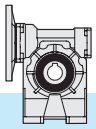
	n_1 = 900				KC				
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14	
30	**5**	180	0.85		5.9	**0.13**	3.9	**63**	**56**
	7.5	120	0.82		9	**0.13**	2.9		
	10	90	0.80		11	**0.13**	2.3		
	15	60	0.75		15	**0.13**	1.6		
	20	45	0.69		19	**0.13**	1.2		
	25	36	0.66		23	**0.13**	1.1		
	30	30	0.63	—	18	**0.09**	1.2		
	40	23	0.55		21	**0.09**	1.1		
Kg	**50**	18	0.52		16	**0.06**	1.3		
1.2	**65**	14	0.48		20	**0.06**	1.1		
	80	11	0.44		11	**0.03**	1.7	—	
	100	9	0.42		13	**0.03**	1.1		

	n_1 = 500				KC				
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14	
30	**5**	100	0.83		—	—	—	**63**	**56**
	7.5	67	0.80		—	—	—		
	10	50	0.77		—	—	—		
	15	33	0.72		—	—	—		
	20	25	0.66		—	—	—		
	25	20	0.62		—	—	—		
	30	17	0.59	—	—	—	—		
	40	13	0.51		—	—	—		
Kg	**50**	10	0.48		—	—	—		
1.2	**65**	8	0.43		—	—	—		
	80	6	0.40		—	—	—	—	
	100	5	0.38		—	—	—		

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
40	**5**	560	0.88		11.3	**0.75**	2.2			
	7.5	373	0.87		17	**0.75**	1.8			
	10	280	0.86		22	**0.75**	1.4			
	15	187	0.82		32	**0.75**	1.0	**71**		
	20	140	0.80		30	**0.55**	1.0		**63**	—
	25	112	0.76		24	**0.37**	1.1			
	30	93	0.73	—	28	**0.37**	1.3			
	40	70	0.70		24	**0.25**	1.4			
Kg	**50**	56	0.65		28	**0.25**	1.1			
2.0	**65**	43	0.61		24	**0.18**	1.2	—		**56**
	80	35	0.58		21	**0.13**	1.3			
	100	28	0.55		24	**0.13**	1.0			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
40	**5**	280	0.87	0.80	16.3	**0.55**	2.1			
	7.5	187	0.85	0.80	24	**0.55**	1.7			
	10	140	0.83	0.70	31	**0.55**	1.3			
	15	93	0.79	0.50	30	**0.37**	1.4	**71**		
	20	70	0.76	0.50	38	**0.37**	1.0		**63**	—
	25	56	0.72	0.40	31	**0.25**	1.1			
	30	47	0.68	0.40	35	**0.25**	1.2			
	40	35	0.64	0.30	38	**0.22**	1.0			
Kg	**50**	28	0.59	0.30	36	**0.18**	1.1			
2.0	**65**	22	0.54	0.20	31	**0.13**	1.1	—		**56**
	80	18	0.52	0.20	31	**0.11**	1.1			
	100	14	0.49	0.20	30	**0.09**	0.9			

	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
40	**5**	180	0.85		16.7	**0.37**	2.5			
	7.5	120	0.83		25	**0.37**	2.0			
	10	90	0.81		32	**0.37**	1.5			
	15	60	0.76		45	**0.37**	1.1	**71**		
	20	45	0.74		39	**0.25**	1.2		**63**	—
	25	36	0.69		33	**0.18**	1.3			
	30	30	0.65	—	37	**0.18**	1.3			
	40	23	0.61		33	**0.13**	1.3			
Kg	**50**	18	0.55		38	**0.13**	1.1			
2.0	**65**	14	0.51		32	**0.09**	1.2	—		**56**
	80	11	0.48		37	**0.09**	1.0			
	100	9	0.45		29	**0.06**	1.0			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
40	**5**	100	0.83		7.1	**0.09**	7.1			
	7.5	67	0.81		10	**0.09**	5.5			
	10	50	0.79		14	**0.09**	4.4			
	15	33	0.73		19	**0.09**	3.1	**71**		
	20	25	0.70		24	**0.09**	2.3		**63**	—
	25	20	0.65		28	**0.09**	1.7			
	30	17	0.61	—	31	**0.09**	1.8			
	40	13	0.57		39	**0.09**	1.3			
Kg	**50**	10	0.51		44	**0.09**	1.2			
2.0	**65**	8	0.46		52	**0.09**	0.9	—		**56**
	80	6	0.44		61*	**0.09**	0.7*			
	100	5	0.41		71*	**0.09**	0.4*			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
50	**5**	560	0.89		22.8	**1.5**	1.9	**80**	**71**	—
	7.5	373	0.88		34	**1.5**	1.5			
	10	280	0.86		44	**1.5**	1.2			
	15	187	0.84		47	**1.1**	1.2			
	20	140	0.81		42	**0.75**	1.4			
	25	112	0.78		50	**0.75**	1.0			
	30	93	0.75	—	42	**0.55**	1.3			
Kg	**40**	70	0.72		54	**0.55**	1.0			
	50	56	0.68		43	**0.37**	1.3	—		**63**
3.4	**65**	43	0.64		53	**0.37**	1.0			
	80	35	0.61		41	**0.25**	1.2			
	100	28	0.58		35	**0.18**	1.3			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
50	**5**	280	0.87	1.2	26.7	**0.9**	2.3	**80**	**71**	—
	7.5	187	0.86	1.2	40	**0.9**	1.8			
	10	140	0.84	1.0	52	**0.9**	1.4			
	15	93	0.80	0.80	74	**0.9**	1.0			
	20	70	0.78	0.70	58	**0.55**	1.3			
	25	56	0.74	0.60	47	**0.37**	1.4			
	30	47	0.71	0.60	53	**0.37**	1.2			
Kg	**40**	35	0.67	0.50	68	**0.37**	1.0			
	50	28	0.62	0.40	53	**0.25**	1.3	—		**63**
3.4	**65**	22	0.58	0.40	64	**0.25**	1.0			
	80	18	0.54	0.40	53	**0.18**	1.1			
	100	14	0.51	0.30	45	**0.13**	1.2			

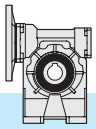
	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
50	**5**	180	0.85		33.8	**0.75**	2.2	**80**	**71**	—
	7.5	120	0.84		50	**0.75**	1.6			
	10	90	0.82		66	**0.75**	1.3			
	15	60	0.78		68	**0.55**	1.3			
	20	45	0.75		59	**0.37**	1.5			
	25	36	0.71		70	**0.37**	1.1			
	30	30	0.67	—	79	**0.37**	1.0			
Kg	**40**	23	0.63		67	**0.25**	1.1			
	50	18	0.59		78	**0.25**	1.0	—		**63**
3.4	**65**	14	0.54		67	**0.18**	1.1			
	80	11	0.51		56	**0.13**	1.2			
	100	9	0.47		45	**0.09**	1.3			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
50	**5**	100	0.84		14.3	**0.18**	6.4	**80**	**71**	—
	7.5	67	0.82		21	**0.18**	4.7			
	10	50	0.80		28	**0.18**	3.8			
	15	33	0.75		39	**0.18**	2.7			
	20	25	0.72		50	**0.18**	2.1			
	25	20	0.68		58	**0.18**	1.5			
	30	17	0.63	—	65	**0.18**	1.5			
Kg	**40**	13	0.59		81	**0.18**	1.2			
	50	10	0.54		93	**0.18**	1.0	—		**63**
3.4	**65**	8	0.50		56	**0.09**	1.5			
	80	6	0.46		63	**0.09**	1.2			
	100	5	0.43		74	**0.09**	0.8			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
63	**5**	560	0.89		45.5	**3**	1.7			
	7.5	373	0.88		68	**3**	1.3			
	10	280	0.87		89	**3**	1.1			
	15	187	0.84		95	**2.2**	1.0	**90**		
	20	140	0.83		85	**1.5**	1.3			—
	25	112	0.81		76	**1.1**	1.2		**80**	
	30	93	0.77	—	87	**1.1**	1.3			
Kg	**40**	70	0.74		111	**1.1**	1.1			
5.7	**50**	56	0.70		90	**0.75**	1.1			
	65	43	0.67		81	**0.55**	1.2	—		**71**
	80	35	0.64		65	**0.37**	1.4			
	100	28	0.60		75	**0.37**	1.1			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
63	**5**	280	0.88	1.8	54	**1.8**	2.0			
	7.5	187	0.87	1.8	80	**1.8**	1.5			
	10	140	0.85	1.6	105	**1.8**	1.2			
	15	93	0.81	1.2	125	**1.5**	1.1	**90**		
	20	70	0.80	1.2	120	**1.1**	1.2			—
	25	56	0.77	1.0	118	**0.9**	1.0		**80**	
	30	47	0.73	0.90	134	**0.9**	1.1			
Kg	**40**	35	0.69	0.80	142	**0.75**	1.1			
5.7	**50**	28	0.65	0.70	122	**0.55**	1.0			
	65	22	0.61	0.60	100	**0.37**	1.2	—		**71**
	80	18	0.58	0.60	79	**0.25**	1.4			
	100	14	0.53	0.50	91	**0.25**	1.1			

	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
63	**5**	180	0.87		69	**1.5**	1.9			
	7.5	120	0.85		102	**1.5**	1.4			
	10	90	0.83		133	**1.5**	1.1			
	15	60	0.79		139	**1.1**	1.1	**90**		
	20	45	0.77		123	**0.75**	1.4			—
	25	36	0.74		109	**0.55**	1.3		**80**	
	30	30	0.70	—	122	**0.55**	1.3			
Kg	**40**	23	0.66		154	**0.55**	1.1			
5.7	**50**	18	0.61		120	**0.37**	1.2			
	65	14	0.57		98	**0.25**	1.4	—		**71**
	80	11	0.54		115	**0.25**	1.1			
	100	9	0.50		95	**0.18**	1.2			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
63	**5**	100	0.85		20	**0.25**	8.3			
	7.5	67	0.83		30	**0.25**	5.9			
	10	50	0.81		39	**0.25**	4.7			
	15	33	0.76		55	**0.25**	3.4	**90**		
	20	25	0.74		71	**0.25**	2.8			—
	25	20	0.71		85	**0.25**	1.9		**80**	
	30	17	0.65	—	94	**0.25**	2.1			
Kg	**40**	13	0.62		118	**0.25**	1.7			
5.7	**50**	10	0.56		135	**0.25**	1.2			
	65	8	0.52		163	**0.25**	1.0	—		**71**
	80	6	0.50		137	**0.18**	1.1			
	100	5	0.45		77	**0.09**	1.6			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

75

Kg 8.0

n_1 = 2800				KC						
i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14			
7.5	373	0.89		125	**5.5**	1.0	**112**	**90**	—	—
10	280	0.88		120	**4**	1.2	**100**			
15	187	0.85		131	**3**	1.2				
20	140	0.84		171	**3**	1.0				
25	112	0.82		154	**2.2**	1.0				
30	93	0.78	—	120	**1.5**	1.4			**80**	**71**
40	70	0.75		154	**1.5**	1.2	—			—
50	56	0.73		136	**1.1**	1.2				
65	43	0.69		114	**0.75**	1.4				**71**
80	35	0.66		135	**0.75**	1.1				
100	28	0.62		159	**0.75**	0.8				

75

Kg 8.0

n_1 = 1400				KC						
i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14			
7.5	187	0.87	2.5	178	**4**	1.0	**112**	**90**	—	—
10	140	0.86	2.3	176	**3**	1.1	**100**			
15	93	0.83	1.9	187	**2.2**	1.1				
20	70	0.81	1.7	199	**1.8**	1.1				
25	56	0.78	1.5	200	**1.5**	1.0				
30	47	0.74	1.2	167	**1.1**	1.3			**80**	**71**
40	35	0.71	1.1	213	**1.1**	1.1	—			—
50	28	0.67	1.0	206	**0.9**	1.0				
65	22	0.63	0.90	154	**0.55**	1.3				**71**
80	18	0.60	0.80	180	**0.55**	1.0				
100	14	0.56	0.70	210	**0.55**	0.8				

75

Kg 8.0

n_1 = 900				KC						
i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14			
7.5	120	0.86		205	**3**	1.0	**112**	**90**	—	—
10	90	0.84		197	**2.2**	1.2	**100**			
15	60	0.81		231	**1.8**	1.0				
20	45	0.78		250	**1.5**	1.1				
25	36	0.76		221	**1.1**	1.1				
30	30	0.71	—	249	**1.1**	1.0			**80**	**71**
40	23	0.67		214	**0.75**	1.3	—			—
50	18	0.64		186	**0.55**	1.3				
65	14	0.59		151	**0.37**	1.5				**71**
80	11	0.56		177	**0.37**	1.2				
100	9	0.52		203	**0.37**	0.9				

75

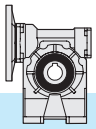
Kg 8.0

n_1 = 500				KC						
i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14			
7.5	67	0.84		90	**0.75**	2.9	**112**	**90**	—	—
10	50	0.82		118	**0.75**	2.4	**100**			
15	33	0.78		167	**0.75**	1.7				
20	25	0.75		216	**0.75**	1.5				
25	20	0.72		260	**0.75**	1.1				
30	17	0.67	—	288	**0.75**	1.1			**80**	**71**
40	13	0.63		265	**0.55**	1.2	—			—
50	10	0.59		210	**0.37**	1.3				
65	8	0.55		251	**0.37**	1.0				**71**
80	6	0.52		197	**0.25**	1.2				
100	5	0.47		161	**0.18**	1.3				

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
89	**7.5**	373	0.89		171	**7.5**	1.2			
	10	280	0.88		165	**5.5**	1.3			
	15	187	0.86		241	**5.5**	1.0	**112 100**		
	20	140	0.84		230	**4**	1.2			—
	25	112	0.83		212	**3**	1.2			
	30	93	0.79	—	243	**3**	1.1		**90**	
Kg	**40**	70	0.77		230	**2.2**	1.3			
	50	56	0.74		278	**2.2**	1.0			
11.5	**65**	43	0.71		235	**1.5**	1.1	—		**80**
	80	35	0.68		205	**1.1**	1.2			
	100	28	0.64		163	**0.75**	1.3			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
89	**7.5**	187	0.88	3.0	247	**5.5**	1.2			
	10	140	0.86	2.5	236	**4**	1.3			
	15	93	0.84	2.2	256	**3**	1.2	**112 100**		
	20	70	0.82	2.0	334	**3**	1.1			—
	25	56	0.80	1.8	299	**2.2**	1.1			
	30	47	0.76	1.5	340	**2.2**	1.0		**90**	
Kg	**40**	35	0.72	1.3	355	**1.8**	1.1			
	50	28	0.69	1.1	353	**1.5**	1.0			
11.5	**65**	22	0.65	1.0	317	**1.1**	1.0	—		**80**
	80	18	0.63	1.0	309	**0.9**	1.0			
	100	14	0.58	0.80	217	**0.55**	1.2			

	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
89	**7.5**	120	0.86		206	**3**	1.7			
	10	90	0.85		270	**3**	1.3			
	15	60	0.82		286	**2.2**	1.3	**112 100**		
	20	45	0.79		371	**2.2**	1.1			—
	25	36	0.77		369	**1.8**	1.0			
	30	30	0.73	—	416	**1.8**	1.0		**90**	
Kg	**40**	23	0.69		440	**1.5**	1.0			
	50	18	0.66		384	**1.1**	1.0			
11.5	**65**	14	0.62		319	**0.75**	1.1	—		**80**
	80	11	0.59		274	**0.55**	1.2			
	100	9	0.54		313	**0.55**	1.0			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
89	**7.5**	67	0.84		91	**0.75**	4.7			
	10	50	0.83		118	**0.75**	3.7			
	15	33	0.79		169	**0.75**	2.7	**112 100**		
	20	25	0.76		219	**0.75**	2.3			—
	25	20	0.74		265	**0.75**	1.7			
	30	17	0.68	—	294	**0.75**	1.6		**90**	
Kg	**40**	13	0.65		371	**0.75**	1.4			
	50	10	0.61		439	**0.75**	1.1			
11.5	**65**	8	0.57		388	**0.55**	1.1	—		**80**
	80	6	0.54		305	**0.37**	1.3			
	100	5	0.49		344	**0.37**	1.0			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
90	**7.5**	373	0.89		171	**7.5**	1.2	**112 100**	**90**	—
	10	280	0.88		165	**5.5**	1.3			
	15	187	0.86		241	**5.5**	1.0			
	20	140	0.84		230	**4**	1.2			
	25	112	0.83		212	**3**	1.2			
	30	93	0.79	—	243	**3**	1.1			
Kg	**40**	70	0.77		230	**2.2**	1.3	—		
16.4	**50**	56	0.74		278	**2.2**	1.0			
	65	43	0.71		235	**1.5**	1.1			**80**
	80	35	0.68		205	**1.1**	1.2			
	100	28	0.64		163	**0.75**	1.3			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
90	**7.5**	187	0.88	3.0	247	**5.5**	1.2	**112 100**	**90**	—
	10	140	0.86	2.5	236	**4**	1.3			
	15	93	0.84	2.2	256	**3**	1.2			
	20	70	0.82	2.0	334	**3**	1.1			
	25	56	0.80	1.8	299	**2.2**	1.1			
	30	47	0.76	1.5	340	**2.2**	1.0			
Kg	**40**	35	0.72	1.3	355	**1.8**	1.1	—		
16.4	**50**	28	0.69	1.1	353	**1.5**	1.0			
	65	22	0.65	1.0	317	**1.1**	1.0			**80**
	80	18	0.63	1.0	309	**0.9**	1.0			
	100	14	0.58	0.80	217	**0.55**	1.2			

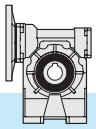
	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
90	**7.5**	120	0.86		206	**3**	1.7	**112 100**	**90**	—
	10	90	0.85		270	**3**	1.3			
	15	60	0.82		286	**2.2**	1.3			
	20	45	0.79		371	**2.2**	1.1			
	25	36	0.77		369	**1.8**	1.0			
	30	30	0.73	—	416	**1.8**	1.0			
Kg	**40**	23	0.69		440	**1.5**	1.0	—		
16.4	**50**	18	0.66		384	**1.1**	1.0			
	65	14	0.62		319	**0.75**	1.1			**80**
	80	11	0.59		274	**0.55**	1.2			
	100	9	0.54		313	**0.55**	1.0			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
90	**7.5**	67	0.84		91	**0.75**	4.7	**112 100**	**90**	—
	10	50	0.83		118	**0.75**	3.7			
	15	33	0.79		169	**0.75**	2.7			
	20	25	0.76		219	**0.75**	2.3			
	25	20	0.74		265	**0.75**	1.7			
	30	17	0.68	—	294	**0.75**	1.6			
Kg	**40**	13	0.65		371	**0.75**	1.4	—		
16.4	**50**	10	0.61		439	**0.75**	1.1			
	65	8	0.57		388	**0.55**	1.1			**80**
	80	6	0.54		305	**0.37**	1.3			
	100	5	0.49		344	**0.37**	1.0			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
110	**7.5**	373	0.89		343	**15**	1.0	**132**	**112 100**	—
	10	280	0.88		332	**11**	1.1			
	15	187	0.86		331	**7.5**	1.2			
	20	140	0.85		435	**7.5**	1.1			
	25	112	0.84		393	**5.5**	1.1			
	30	93	0.80	—	450	**5.5**	1.0			
Kg	**40**	70	0.78		424	**4**	1.2	—		**90**
	50	56	0.76		388	**3**	1.2			—
31.5	**65**	43	0.73		354	**2.2**	1.2			**90**
	80	35	0.70		287	**1.5**	1.4			
	100	28	0.66		339	**1.5**	1.1			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
110	**7.5**	187	0.88	4.3	415	**9.2**	1.2	**132**	**112 100**	—
	10	140	0.87	4.0	446	**7.5**	1.1			
	15	93	0.84	3.2	475	**5.5**	1.1			
	20	70	0.83	3.0	623	**5.5**	1.0			
	25	56	0.81	2.7	554	**4**	1.0			
	30	47	0.77	2.2	472	**3**	1.3			
Kg	**40**	35	0.74	2.0	606	**3**	1.1	—		**90**
	50	28	0.72	1.8	538	**2.2**	1.1			—
31.5	**65**	22	0.68	1.6	451	**1.5**	1.2			**90**
	80	18	0.65	1.5	390	**1.1**	1.3			
	100	14	0.61	1.3	458	**1.1**	1.0			

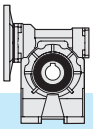
	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
110	**7.5**	120	0.87		381	**5.5**	1.5	**132**	**112 100**	—
	10	90	0.86		500	**5.5**	1.2			
	15	60	0.83		526	**4**	1.2			
	20	45	0.81		685	**4**	1.1			
	25	36	0.79		628	**3**	1.1			
	30	30	0.74	—	520	**2.2**	1.3			
Kg	**40**	23	0.71		664	**2.2**	1.1	—		**90**
	50	18	0.68		653	**1.8**	1.1			—
31.5	**65**	14	0.64		487	**1.1**	1.2			**90**
	80	11	0.61		570	**1.1**	1.0			
	100	9	0.57		450	**0.75**	1.1			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
110	**7.5**	67	0.85		183	**1.5**	3.9	**132**	**112 100**	—
	10	50	0.84		240	**1.5**	3.1			
	15	33	0.80		344	**1.5**	2.3			
	20	25	0.78		446	**1.5**	1.9			
	25	20	0.76		542	**1.5**	1.5			
	30	17	0.70	—	603	**1.5**	1.4			
Kg	**40**	13	0.67		765	**1.5**	1.2	—		**90**
	50	10	0.64		671	**1.1**	1.2			—
31.5	**65**	8	0.59		553	**0.75**	1.3			**90**
	80	6	0.56		643	**0.75**	1.0			
	100	5	0.52		542	**0.55**	1.1			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



3.5 Dati tecnici — *3.5 Technical data* — 3.5 Technische Daten

	n_1 = 2800				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
130	**7.5**	373	0.90		345	**15**	1.5			
	10	280	0.89		455	**15**	1.2			
	15	187	0.87		490	**11**	1.3			
	20	140	0.86		645	**11**	1.1	**132**		
	25	112	0.85		667	**9.2**	1.1			
	30	93	0.81	—	622	**7.5**	1.2		**112**	—
	40	70	0.80		819	**7.5**	1.0		**100**	
Kg	**50**	56	0.78		732	**5.5**	1.0			
45	**65**	43	0.75		499	**3**	1.3	—		
	80	35	0.73		598	**3**	1.1			**90**
	100	28	0.70		525	**2.2**	1.1			

	n_1 = 1400				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
130	**7.5**	187	0.89	6.0	418	**9.2**	1.8			
	10	140	0.88	5.5	552	**9.2**	1.4			
	15	93	0.85	4.4	803	**9.2**	1.1			
	20	70	0.84	4.1	860	**7.5**	1.1	**132**		
	25	56	0.83	3.9	778	**5.5**	1.2			
	30	47	0.79	3.2	883	**5.5**	1.1		**112**	—
	40	35	0.76	2.8	829	**4**	1.3		**100**	
Kg	**50**	28	0.74	2.6	757	**3**	1.3			
45	**65**	22	0.71	2.3	678	**2.2**	1.2	—		
	80	18	0.68	2.1	649	**1.8**	1.2			**90**
	100	14	0.64	1.8	655	**1.5**	1.1			

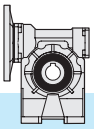
	n_1 = 900				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
130	**7.5**	120	0.88		385	**5.5**	2.3			
	10	90	0.87		508	**5.5**	1.8			
	15	60	0.84		735	**5.5**	1.4			
	20	45	0.82		957	**5.5**	1.2	**132**		
	25	36	0.81		860	**4**	1.3			
	30	30	0.76	—	968	**4**	1.2		**112**	—
	40	23	0.73		930	**3**	1.3		**100**	
Kg	**50**	18	0.70		817	**2.2**	1.3			
45	**65**	14	0.67		832	**1.8**	1.1	—		
	80	11	0.64		815	**1.5**	1.1			**90**
	100	9	0.60		700	**1.10**	1.2			

	n_1 = 500				KC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5/B14		
130	**7.5**	67	0.86		228	**1.85**	4.9			
	10	50	0.84		297	**1.85**	3.7			
	15	33	0.81		429	**1.85**	2.9			
	20	25	0.79		558	**1.85**	2.5	**132**		
	25	20	0.78		689	**1.85**	1.8			
	30	17	0.72	—	763	**1.85**	1.7		**112**	—
	40	13	0.69		975	**1.85**	1.5		**100**	
Kg	**50**	10	0.66		1166	**1.85**	1.1			
45	**65**	8	0.63		860	**1.10**	1.3	—		
	80	6	0.59		992	**1.10**	1.1			**90**
	100	5	0.55		788	**0.75**	1.2			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



3.6 **Momenti d' inerzia** [Kg·cm^2]
(riferiti all'albero veloce in entrata)

3.6 ***Moments of inertia*** *[Kg·cm^2]*
(referred to input shaft)

3.6 **Trägheitsmoment** [Kg·cm^2]
(bez. Antriebswelle)

K30

i_n	KC B5 - B14	
	IEC 56	IEC 63
5	0.130	0.127
7.5	0.112	0.109
10	0.103	0.100
15	0.097	0.094
20	0.095	0.092
25	0.094	0.091
30	0.093	0.090
40	0.093	0.090
50	0.092	0.089
65	0.079	-
80	0.079	-
100	0.078	-

K40

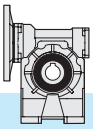
i_n	KC B5 - B14		
	IEC 56	IEC 63	IEC 71
5	-	0.391	0.463
7.5	-	0.321	0.356
10	-	0.272	0.347
15	-	0.266	0.340
20	-	0.263	0.338
25	-	0.262	0.337
30	-	0.262	0.337
40	-	0.261	0.336
50	0.182	0.261	-
65	0.182	0.261	-
80	0.182	0.261	-
100	0.182	0.261	-

K50

i_n	KC B5 - B14		
	IEC 63	IEC 71	IEC 80
5	-	0.922	1.046
7.5	-	0.684	0.935
10	-	0.602	0.853
15	-	0.543	0.794
20	-	0.523	0.774
25	-	0.513	0.764
30	-	0.508	0.759
40	0.315	0.503	-
50	0.313	0.501	-
65	0.311	0.499	-
80	0.310	0.498	-
100	0.309	0.498	-

K63

i_n	KC B5 - B14		
	IEC 71	IEC 80	IEC 63
5	-	2.431	2.671
7.5	-	1.949	2.269
10	-	1.744	2.063
15	-	1.597	1.916
20	-	1.545	1.864
25	-	1.514	1.833
30	-	1.508	1.828
40	0.966	1.495	-
50	0.959	1.488	-
65	0.955	1.484	-
80	0.953	1.482	-
100	0.952	1.481	-



3.6 **Momenti d' inerzia** [Kg·cm^2] (riferiti all'albero veloce in entrata)

3.6 ***Moments of inertia*** *[Kg·cm^2] (referred to input shaft)*

3.6 **Trägheitsmoment** [Kg·cm^2] (bez. Antriebswelle)

	i_n	KC B5 - B14			
		IEC 71	IEC 80	IEC 90	IEC 100-112
K75	**7.5**	-	-	3.712	4.462
	10	-	-	3.234	3.984
	15	-	-	2.893	3.643
	20	-	-	2.774	3.523
	25	-	-	2.709	3.458
	30	1.615	1.575	2.689	3.438
	40	-	1.573	2.659	-
	50	-	1.570	2.642	-
	65	1.609	1.569	2.633	-
	80	1.605	1.565	2.629	-
	100	1.602	1.562	2.626	-

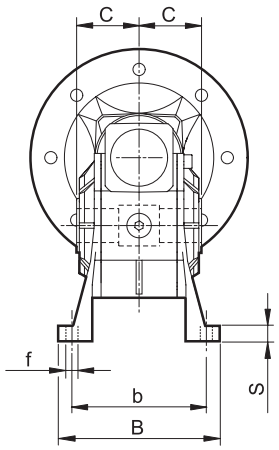
	i_n	KC B5 - B14		
		IEC 80	IEC 90	IEC 100-112
K89	**7.5**		6.898	7.671
	10	-	5.875	6.648
	15	-	5.144	5.917
	20	-	3.398	5.661
	25	-	3.256	5.520
	30	-	3.215	5.479
	40	-	3.151	-
	50	-	3.115	-
	65	2.024	3.096	-
	80	2.014	3.087	-
	100	2.008	3.080	-

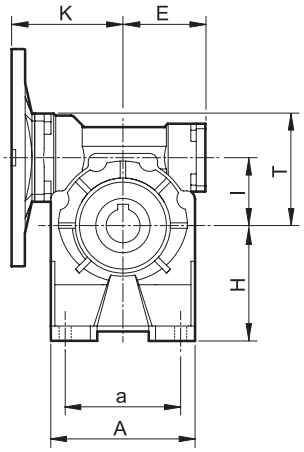
	i_n	KC B5 - B14		
		IEC 80	IEC 90	IEC 100-112
K90	**7.5**		6.898	7.671
	10	-	5.875	6.648
	15	-	5.144	5.917
	20	-	3.398	5.661
	25	-	3.256	5.520
	30	-	3.215	5.479
	40	-	3.151	-
	50	-	3.115	-
	65	2.024	3.096	-
	80	2.014	3.087	-
	100	2.008	3.080	-

	i_n	KC B5 - B14		
		IEC 90	IEC 100-112	IEC 132
K110	**7.5**	-	17.980	20.038
	10	-	15.119	17.177
	15	-	13.076	15.134
	20	-	8.367	14.418
	25	-	7.969	14.020
	30	-	11.850	13.908
	40	-	7.677	-
	50	-	7.578	-
	65	5.592	7.510	-
	80	5.570	7.489	-
	100	5.555	7.474	-

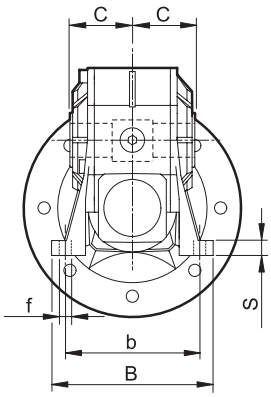
	i_n	KC B5 - B14		
		IEC 90	IEC 100-112	IEC 132
K130	**7.5**	-	40.70	42.78
	10	-	32.96	35.04
	15	-	27.43	29.51
	20	-	16.68	27.58
	25	-	15.52	26.42
	30	-	24.12	26.20
	40	-	14.81	25.71
	50	-	12.57	-
	65	10.46	14.35	-
	80	10.41	14.30	-
	100	10.37	14.26	-

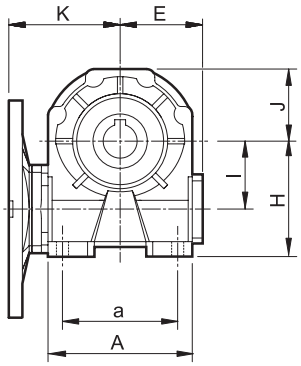
3.7 Dimensioni — *3.7 Dimensions* — 3.7 Abmessungen



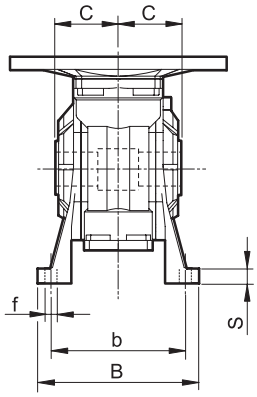


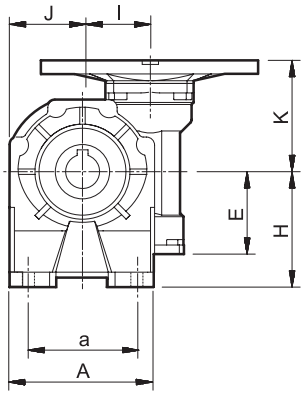
KC..A





KC..B

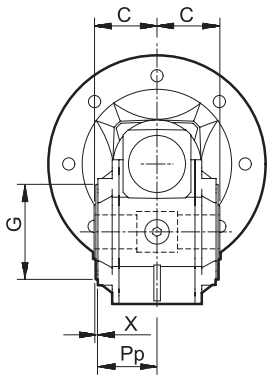


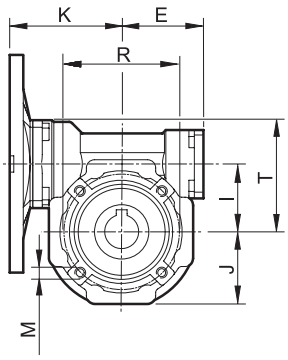


KC..V

	30	40	50	63	75	89 - 90	110	130
b2	**5**	**6** (6)	**8** (8)	**8**	**8** (8)	**10**	**12**	**14**
C	31.5	39	46	56	60	70	77.5	85
D2 H8	**14**	**18** (19)	**25** (24)	**25**	**28** (30)	**35**	**42**	**45** (48)
E	41	51	60	71	85	103	127.5	147.5
G h8	55	60	70	80	95	110	130	180
I	31.5	40	50	63	75	90	110	130
J	37.5	43.5	53.5	64	78	100	122	131
K	57	75	82	97	114 112 (1)	122	153	173
M	M6x8	M6x10	M8x10	M8x14	M8x14	M10x18	M10x18	M12x20
Pp	29	36.5	43.5	53	57	67	74	81
R	65	75	85	95	115	130	165	215
T	52.5	68.5	82.5	100.5	116.5	131.5	161.5	181
t2	16.3	20.8 (21.8)	28.3 (27.3)	28.3	31.3 (33.3)	38.3	45.3	48.8 (51.8)
X	1.5	1.5	1.5	2	2	2	2.5	3

(1): Solo per PAM 71B14 / *Only for PAM 71B14* / Nur PAM 71B14

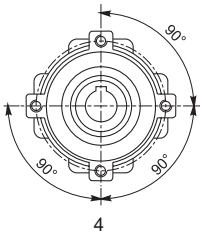




Flangia pendolare / *Side cover for shaft mounting* / Aufsteckflansch

	Piedi *Feet* Füß	30	40	50	63	75	89 - 90	110	130
A	1	67	86.5	106	127.5	155.5	190	250	295
	2	67	86.5	106			190	250	
a	1	40-52	70	63-85	95	120	140	200	235
	2	40-52	52	63-85			140	200	220
B	1	78	98	119	136	140	168	210	229
	2	78	98	119			168	210	
b	1	66	84	99	111	115	140	162	190
	2	66	81	99			146	181	191
f	1	6.5	7	9	11	11	13	13	15
	2	6.5	8.5	9			11	13	
H	1	52	71	85	100	115	135	172	200
	2	55	72	82			142	170	195
S	1	5	9	11	12	12	14	17	20
	2	8	10	8			14	15	15

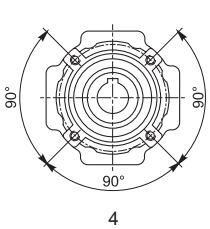
30



4

Fori / *Holes* / Bohrungen

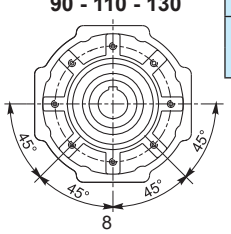
40 - 50



4

Fori / *Holes* / Bohrungen

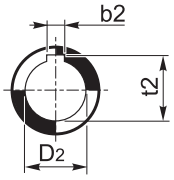
63 - 75 - 89
90 - 110 - 130



8

Fori / *Holes* / Bohrungen

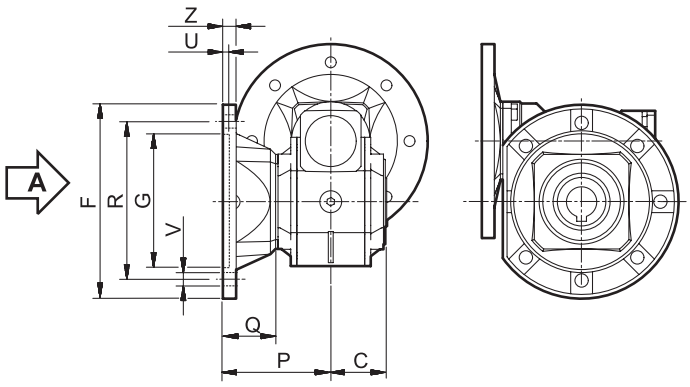
KC..P



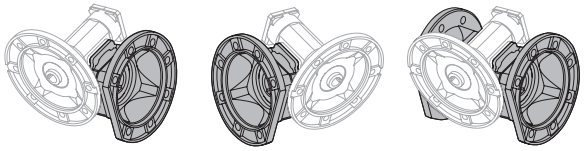
Albero uscita cavo
Hollow output shaft
Abtriebshohlwelle

3.7 Dimensioni — *3.7 Dimensions* — 3.7 Abmessungen

Flangia uscita / *Output flange* / Abtriebsflansch

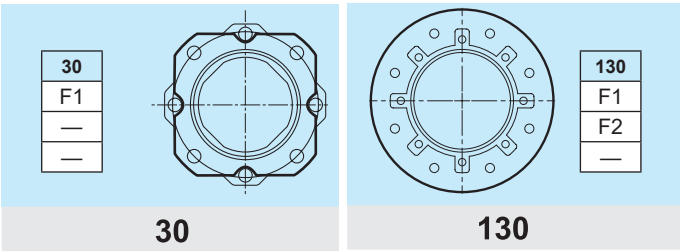


KC..F

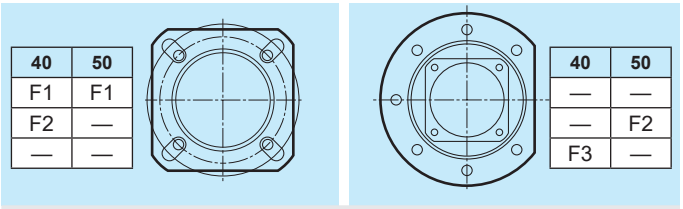


F...D Standard — **F...S** — **F...2**

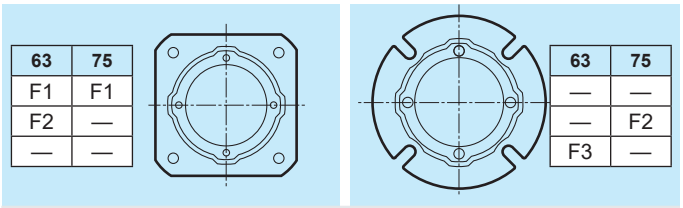
Vista da A / *View from A* / Ansicht von A



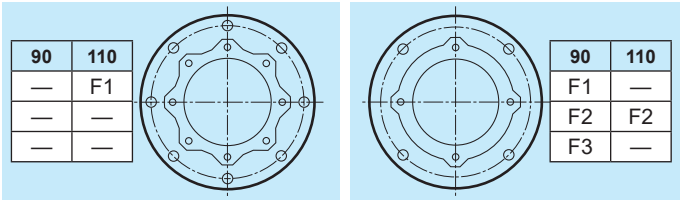
30 **130**



40 - 50



63 - 75



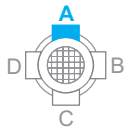
89 - 90 - 110

KC		C	F		G H8	P	Q	R	U	V		Ø	Z
30	F1	31.5		66	50	54.5	23	68	4	n° 4		6.5	6
	F2												
	F3												
40	F1	39		85	60	67	28	75-90	4	n° 4		9	8
	F2			85	60	97	58	75-90	4	n° 4		9	8
	F3		140		95	80	41	115	5		n° 7	9	10
50	F1	46		94	70	90	44	85-100	5	n° 4		11	10
	F2		160		110	89	43	130	5		n° 7	11	11
	F3												
63	F1	56		142	115	82	26	150	5	n° 4		11	11
	F2			142	115	112	56	150	5	n° 4		11	11
	F3		160		110	80.5	24.5	130	5	n° 4		11	12
75	F1	60		160	130	111	51	165	5	n° 4		13	12
	F2		160		110	90	30	130	6	n° 4		11	13
	F3												
89 90	F1	70	200		152	111	41	175	5	n° 4		13	12
	F2		200		152	151	81	175	5	n° 4		13	13
	F3		200		130	110	40	165	6	n° 4		11	11
110	F1	77.5	260		170	131	53.5	230	6		n° 8	13	15
	F2		250		180	150	72.5	215	5	n° 4		15	16
	F3												
130	F1	85	320		180	140	55	255	7		n° 8 *	16	16
	F2		300		230			265					
	F3												

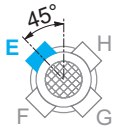
* Foratura ruotata di 22.5° — * *Drilling turned of 22.5°* — * Durchbohrung 22.5° versetzt

3.7 Dimensioni — *3.7 Dimensions* — 3.7 Abmessungen

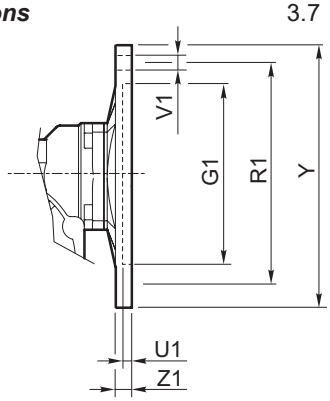
Flangia entrata / *Input flange* / Antriebsflansch



PM = 1



PM = 2



KC	IEC	G_1	PM 1	PM 2	R_1	U_1	V_1 Ø	V_1	V_1	Y	Z_1	Diametro fori PAM / *Holes diameter IEC* / IEC Durchmesser 5	7.5	10	15	20	25	30	40	50	65	80	100
30	56 B5	80	•	•	100	4	7	8		120	8	9	9	9	9	9	9	9	9	9	9	9	9
	56 B14	50	•	•	65	3.5	6	8		80	8	9	9	9	9	9	9	9	9	9	9	9	9
	63 B5	95	•	•	115	4	9	8		140	8	11	11	11	11	11	11	11	11	11	/	/	/
	63 B14	60	•	•	75	4	6	8		90	8	11	11	11	11	11	11	11	11	11	/	/	/
40	56 B5	80	•	•	100	4	7	8		120	9	/	/	/	/	/	/	/	/	9	9	9	9
	56 B14	50		•	65	3.5	6		4	80	8	/	/	/	/	/	/	/	/	9	9	9	9
	63 B5	95	•	•	115	4	9	8		140	9	11	11	11	11	11	11	11	11	11	11	11	11
	63 B14	60		•	75	3.5	6		4	90	8	11	11	11	11	11	11	11	11	11	11	11	11
	71 B5	110	•	•	130	4.5	9	8		160	10	14	14	14	14	14	14	14	14	/	/	/	/
	71 B14	70	•	•	85	3.5	7	8		105	8	14	14	14	14	14	14	14	14	/	/	/	/
50	63 B5	95	•	•	115	4	9	8		140	9	/	/	/	/	/	/	/	11	11	11	11	11
	63 B14	60		•	75	3.5	6		4	90	8	/	/	/	/	/	/	/	11	11	11	11	11
	71 B5	110	•	•	130	4.5	9	8		160	10	14	14	14	14	14	14	14	14	14	14	14	14
	71 B14	70		•	85	3.5	7	(n° 8)*	4	105	8	14	14	14	14	14	14	14	14	14	14	14	14
	80 B5	130	•	•	165	4.5	11	8		200	10	19	19	19	19	19	19	19	19	/	/	/	/
	80 B14	80	•	•	100	4	7	8		120	10	19	19	19	19	19	19	19	19	/	/	/	/
63	71 B5	110	•	•	130	4.5	9	8		160	10	/	/	/	/	/	/	/	14	14	14	14	14
	71 B14	70		•	85	3.5	7		4	105	10	/	/	/	/	/	/	/	14	14	14	14	14
	80 B5	130	•	•	165	4.5	11	8		200	10	19	19	19	19	19	19	19	19	19	19	19	19
	80 B14	80		•	100	4	7		4	120	10	19	19	19	19	19	19	19	19	19	19	19	19
	90 B5	130	•	•	165	4.5	11	8		200	10	24	24	24	24	24	24	24	/	/	/	/	/
	90 B14	95	•	•	115	4	8.5	8		140	10	24	24	24	24	24	24	24	/	/	/	/	/
75	71 B5	110	•	•	130	4.5	9	8		160	10	/	/	/	/	/	/	14	/	/	14	14	14
	71 B14	70		•	85	3.5	7		4	105	11	/	/	/	/	/	/	14	/	/	14	14	14
	80 B5	130	•	•	165	4.5	11	8		200	10	/	/	/	/	/	/	19	19	19	19	19	19
	80 B14	80		•	100	4	7		4	120	11	/	/	/	/	/	/	19	19	19	19	19	19
	90 B5	130	•	•	165	4.5	11	8		200	10	/	24	24	24	24	24	24	24	24	24	24	24
	90 B14	95		•	115	4	9		4	140	11	/	24	24	24	24	24	24	24	24	24	24	24
	100/112 B5	180	•	•	215	5	14	8		250	13	/	28	28	28	28	28	28	/	/	/	/	/
	100/112 B14	110	•	•	130	4.5	9	8		160	11	/	28	28	28	28	28	28	/	/	/	/	/
89 90	80 B5	130	•	•	165	4.5	11	8		200	10	/	/	/	/	/	/	/	/	/	19	19	19
	80 B14	80		•	100	4	7		4	120	11	/	/	/	/	/	/	/	/	/	19	19	19
	90 B5	130	•	•	165	4.5	11	8		200	10	/	24	24	24	24	24	24	24	24	24	24	24
	90 B14	95		•	115	4	9		4	140	11	/	24	24	24	24	24	24	24	24	24	24	24
	100/112 B5	180	•	•	215	5	14	8		250	13	/	28	28	28	28	28	28	/	/	/	/	/
	100/112 B14	110	•	•	130	4.5	9	8		160	11	/	28	28	28	28	28	28	/	/	/	/	/
110	90 B5	130	•		165	5	11	4		200	12	/	/	/	/	/	/	/	24	/	24	24	24
	90 B14	95		•	115	5	9		4	140	12	/	/	/	/	/	/	/	24	/	24	24	24
	100/112 B5	180	•		215	5	14	4		250	14	/	28	28	28	28	28	28	28	28	28	28	28
	100/112 B14	110		•	130	5	9		4	160	12	/	28	28	28	28	28	28	28	28	28	28	28
	132 B5	230	•		265	5	14	4		300	14	/	38	38	38	38	38	38	/	/	/	/	/
	132 B14	130	•		165	5	11	4		200	12	/	38	38	38	38	38	38	/	/	/	/	/
130	90 B5	130	•		165	5	11	4		200	12	/	/	/	/	/	/	/	/	/	24	24	24
	90 B14	95		•	115	5	9		4	140	12	/	/	/	/	/	/	/	/	/	24	24	24
	100/112 B5	180	•		215	5	14	4		250	14	/	28	28	28	28	28	28	28	28	28	28	28
	100/112 B14	110		•	130	5	9		4	160	12	/	28	28	28	28	28	28	28	28	28	28	28
	132 B5	230	•		265	5	14	4		300	14	/	38	38	38	38	38	38	38	/	/	/	/
	132 B14	130	•		165	5	11	4		200	12	/	38	38	38	38	38	38	38	/	/	/	/

* A richiesta, solo con corpo speciale / *Upon request, only with special body* / Auf Wunsch nur mit speziellen Körper

N.B.: Il montaggio STD di P_M=2 solo quando non è possibile il montaggio STD di P_M=1.
N.B.: E' possibile realizzare anche tutte le composizioni ibride ottenibili dalle flange esistenti.

N.B.: STD mounting of P_M=2 only if STD mounting of P_M=1 is not possible.
N.B.: it is possible to create hybrid combinations with the existing flanges.

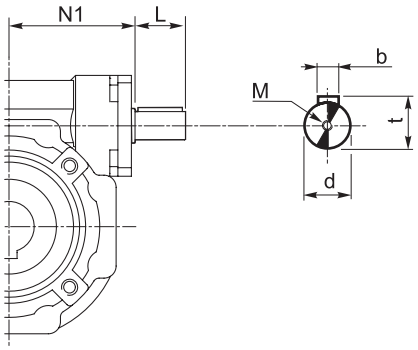
ANMERKUNG: STD Montage von P_M=2 nur wenn STD Montage von P_M=1 unmöglich ist.
ANMERKUNG: Mischkombinationen mit der verfügbaren Flanschen sind möglich.

3.8 Entrata supplementare (vite bisporgente)

3.8 Additional input (double extended shaft)

3.8 Zusatzantrieb (beidseitige Welle)

S.e.A.



KC	d j6	L	M	N1	b	t
30	9	15	M4x10	42.5	3	10.2
40	11	20	M4x12	52.5	4	12.5
50	14	25	M5x13	62.5	5	16
63	19	30	M8x20	72.5	6	21.5
75	24	40	M8x20	89	8	27
89 - 90	24	40	M8x20	108	8	27
110	28	50	M8x20	132.5	8	31
130	38	70	M10x25	152	10	41

3.9 Limitatore di coppia cavo passante

Il limitatore di coppia viene consigliato in tutte quelle applicazioni che richiedono una limitazione sulla coppia trasmissibile per proteggere l'impianto e/o preservare il riduttore evitando sovraccarichi o urti indesiderati quanto inaspettati.
È un dispositivo con albero dotato di cavo passante, con funzionamento a frizione, ed è integrato al riduttore, presentando un ingombro limitato.
Concepito per lavorare a bagno d'olio, il dispositivo risulta affidabile nel tempo ed è esente da usura se non viene mantenuto in condizioni prolungate di slittamento (condizione che si verifica quando la coppia presenta valori superiori a quelli di taratura).
La taratura è facilmente regolabile dall'esterno attraverso il serraggio di una ghiera autobloccante che porta a compressione le 4 molle a tazza disposte tra loro in serie.
Il dispositivo non consente:
- l'impiego di cuscinetti a rulli conici in uscita
- funzionamento prolungato in condizioni di slittamento.

Nella tabella seguente vengono riportati i valori delle coppie di slittamento M_{2S} in funzione del n° di giri della ghiera.
I valori di taratura presentano una tolleranza del ±10% e si riferiscono ad una condizione statica.
In condizioni dinamiche è da notare che la coppia di slittamento assume valori diversi a seconda del tipo e/o modalità in cui si verifica il sovraccarico: con valori maggiori in caso di carico uniformemente crescente rispetto a volori più contenuti in seguito al verificarsi di picchi improvvisi di carico.
NOTA: quando si supera il valore di taratura si ha slittamento. Il coefficiente di attrito tra le superfici di contatto da statico diventa dinamico e la coppia trasmessa cala del 30% circa.
E' quindi opportuno prevedere uno stop per poter ripartire al valore di taratura iniziale.

3.9 Torque limiter with through hollow shaft

The use of a torque limiter is advisable when the application requires the limitation of the transmissible torque to safeguard the plant and/or the gearbox from unexpected or undesired overloads.
The torque limiter is equipped with a through hollow shaft and a friction clutch. It is integrated in the gearbox, therefore space requirement is limited.
Designed to be working in oil bath, the device is reliable over time and is not subject to wear unless in case of operation with prolonged slipping (it occurs when the torque values are higher than the calibration values).
Calibration can be easily adjusted from outside by tightening the self-locking ring nut, which causes the compression of the 4 Belleville washers arranged in series.

The device does not go together with:
- *the use of tapered roller bearings at output*
- *prolonged operation under slipping conditions*

The following table shows the values of M_{2S} slipping torques depending on the number of revolutions of the ring nut.
Calibration values feature a ±10% tolerance and refer to static conditions.
Under dynamic conditions the values of the slipping torque will change according to the type of overload: the values are higher if the load increase is uniform; the values are lower if sudden load peaks occur.

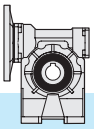
***NOTE:** Slipping occurs when the setting values are exceeded.*
The friction coefficient between the contact surfaces from static becomes dynamic and the transmitted torque is approx. 30% lower.
It is advisable to have a stop first in order to have a restart based on the initial setting value.

3.9 Drehmomentbegrenzer mit durchgehender Hohlwelle

Die Anwendung eines Drehmomentbegrenzers wird empfohlen, um die Anlage und/oder das Getriebe gegen ungewünschte und unerwartete Überbelastungen zu schützen.
Es handelt sich um eine Vorrichtung mit einer durchgehender Hohlwelle.
Er ist in dem Getriebe integriert, d.h. der Raumbedarf ist klein. Der Begrenzer wurde für Betrieb in einem Ölbad entworfen.
Er ist zuverläßig über Zeit und verschleissfest (aussen wenn Rutschen für lange Zeit besteht: das passiert, wenn das Drehmoment höher als der Eichwert ist).
Die Einstellung darf mühelos von aussen durch das Anziehen einer selbstsperrenden Mutter ausgeführt werden. Das Anziehen verursacht die Zusammendrückung der 4 wechselsinniggeschichteten Tellerfeder.

Die Vorrichtung sieht das folgende nicht vor:
- die Verwendung von Kegelrollenlager am Abtrieb
- Längerer Rutschbetrieb

Die nachstehende Tabelle zeigt die Werte der Rutschmomente M_{2S} abhängig von der Zahl der Umdrehungen der Mutter.
Die Eichwerte weisen ±10% Toleranz auf und beziehen sich auf statische Bedingungen.
Unter dynamischen Bedingungen hat das Rutschmoment verschiedene Werte je nach Art der Überbelastung. Die Werte sind hoher, wenn die Belastung gleichmäßig zunimmt; sie sind niedriger im Falle von plötzlichen Belastungsspitzen.
BEMERKUNG: Rutschen tritt auf, wenn die eingestellten Werte überschritten werden. Der Reibungsfaktor zwischen den Berüehrungsflächen wird dynamisch anstatt statisch und das übertragene Drehmoment sinkt um ca. 30%.
Es ist daher ratsam, vor dem erneuten Anfahren anzuhalten, um die ursprünglichen Drehmomentwerte zu erreichen.



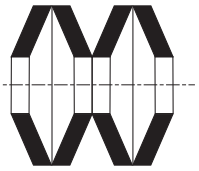
E' importante notare che la coppia di slittamento non resta sempre la medesima durante tutta la vita del limitatore.
Tende infatti a diminuire in rapporto al numero e alla durata degli slittamenti che, rodando le superfici di contatto, ne aumentano il rendimento.
È quindi opportuno verificare periodicamente, soprattutto durante la fase di rodaggio, la taratura del dispositivo.
Là dove sia richiesto un errore più contenuto nella taratura, è necessario testare la coppia trasmissibile sull'impianto.
Il dispositivo viene consegnato tarato alla coppia riportata a catalogo T_{2M} salvo diversa indicazione espressa in fase di ordinazione.

It is important to note that the slipping torque is not the same for the entire life of the torque limiter.
It usually decreases in connection with the number and the duration of slippings, this is due to the surfaces of the torque limiter becoming more engaged, therefore increasing the efficiency.
For this reason it is advisable to check the calibration of the device at regular intervals, specially during the running-in period.
Should a smaller calibration error be required, it is necessary to test the transmissible torque on the plant.
The torque limiter is supplied already calibrated at the torque value reported in the catalogue T_{2M}, unless otherwise specified in the order.

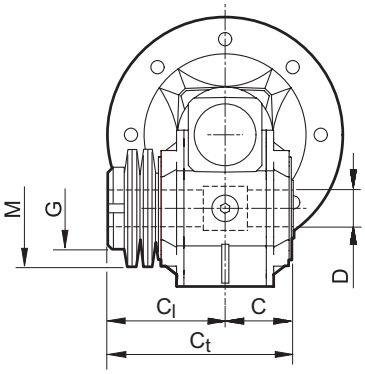
Es ist wichtig zu beachten, dass das Rutschmoment der Rutschkupplung über die gesamte Lebensdauer nicht konstant bleibt, sondern üblicherweise in Verbindung mit längeren Rutschzyklen aufgrund der eingelaufenen Berührungsflächen abnimmt.
Deswegen ist es ratsam, die Einstellung der Vorrichtung besonders während der Einlaufzeit in regelmäßigen Zeitabständen zu prüfen.
Falls ein niedriger Eichfehler verlangt wird, ist das übersetzbare Drehmoment auf der Anlage zu testen.
Wenn die Vorrichtung geliefert wird, ist sie schon auf dem im Katalog T_{2M} angegebenen Drehmoment geeicht, ausser wenn es in der Bestellung anders angegeben wird.

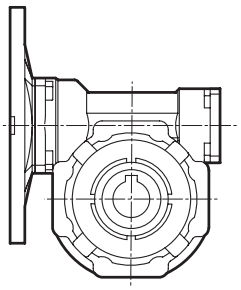
K	N°. giri della ghiera di regolazione / *N°. revolutions of ring nut* / Nr. Umdrehungen der Mutter															
	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
	M_{2S} [Nm]															
30		15	18	22	27	32										
40	23	30	35	40	45	50	60									
50		45	60	70	80	90	100	110								
63			80	90	100	110	120	130	140	150	160	170	180	190	200	
75		140	160	180	200	220	240	260	280	300						
89 - 90						230	280	310	330	350	380	410	435	460	490	510
110		420	500	560	670	730	810	910								
130																

Disposizione delle molle
Washers' arrangement
Lage der Feder



IN SERIE (min. coppia, max. sensibilità)
SERIES *(min. torque, max sensitivity)*
SERIE (min. Moment, max. Empfindlichkeit)





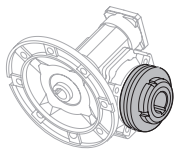
KC	C	C_l	C_t	D H8	M	G
30	31.5	55.5	87	14	50x25.4x1.25	M25x1.5
40	39	65	104	18 (19)	56x30.5x1.5	M30x1.5
50	46	76	122	25 (24)	63x40.5x1.8	M40x1.5
63	56	91	147	25	71x40.5x2	M40x1.5
75	60	100	160	28 (30)	90x50.5x2.5	M50x1.5
89 - 90	70	109	179	35 (32)	100x51x2.7	M50x1.5
110	77.5	127.5	205	42	125x61x4	M60x2.0
130						

( ) A richiesta / *On request* / Auf Anfrage

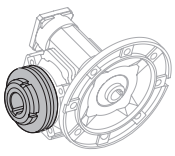
Nella versione con limitatore non è prevista la fornitura degli alberi lenti.

The version with torque limiter is supplied without output shafts.

Die Version mit Drehmomentbegrenzer wird ohne Abtriebswellen geliefert.



LD

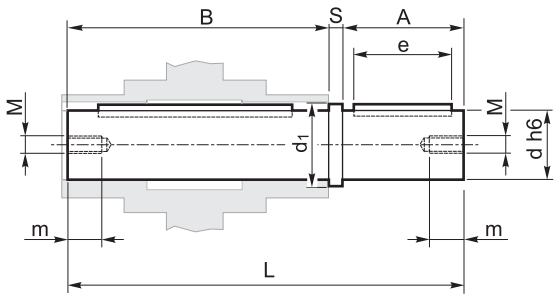


LS

3.10 Accessori

Albero lento

Albero lento semplice
Single output shaft
Standard Abtriebswelle

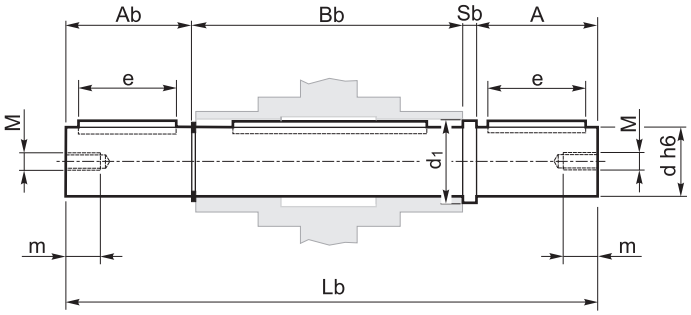


KC	A	B	d h6	d_1	e	L	M	m	S
30	30	62	**14**	18.5	20	94.5	M6	16	2.5
40	40	77	**18** 19	23.5	30	120	M6	16	3
50	50	90	**25** 24	31.5	40	143.5	M8	22	3.5
63	50	111	**25**	31.5	40	165	M8	22	4
75	60	119	**28** 30	34.5	50	183	M8	22	4
89 - 90	80	139	**35**	41.5	60	224	M10	28	5
110	80	154.5	**42**	49.5	60	242.5	M10	28	8
130	80	168	**45**	54.5	70	253	M16	36	5

3.10 Accessories

Output shaft

Albero lento doppio
Double output shaft
Doppelte Abtriebswelle



A	A_b	B_b	d h6	d_1	e	L_b	S_b
30	29	64	**14**	18.5	20	126	2.5
40	39	79	**18**	23.5	30	161	3
50	49	93	**25**	31.5	40	195.5	3.5
50	49	113	**25**	31.5	40	216	4
60	59	121	**28**	34.5	50	244	4
80	78.5	141.5	**35**	41.5	60	305	5
80	77.5	157	**42**	49.5	60	322.5	8
80	78	172	**45**	54.5	70	335	5

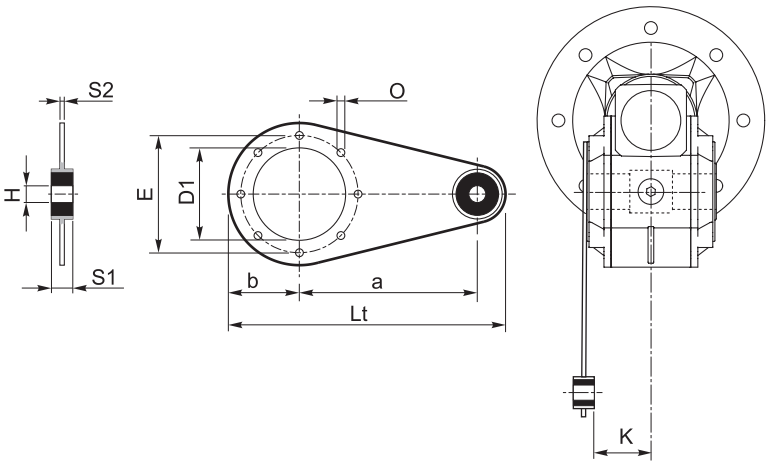
3.10 Accessories

Abtriebswelle

Braccio di reazione

Torque arm

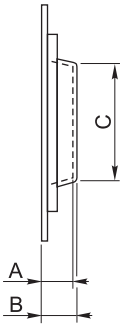
Drehmomentstütze



KC	a	b	D_1	E	H	K	L_t	O	S1	S2
30	85	37.5	55	65	8	24	141.5	7	14	4
40	100	45	60	75	10	31.5	167	7	14	4
50	100	50	70	85	10	39	172	9	14	5
63	150	55	80	95	10	49	227	9	14	6
75	200	70	95	115	20	47.5	302	9	25	6
89 -90	200	80	110	130	20	57.5	312	11	25	6
110	250	100	130	165	25	62	390	11	30	6
130	250	125	180	215	25	69	415	13	30	6

Kit di protezione: *solo su versione P*

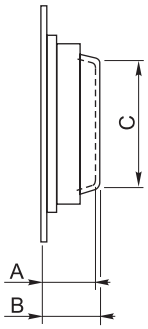
Albero cavo / *Hollow shaft* / Hohlwelle



KC	A	B	C
30	12	13	39
40	14	15.5	44
50	15	16.5	54
63	17	19	60
75	18	20	70
89 - 90	21.5	24	80
110	22	25	96
130	22	25	130

Protection Kit: *only for P Version*

Limitatore di coppia / *Torque limiter* / Drehmomentbegrenzer



KC	A	B	C
30	36	37	36
40	40	41.5	44
50	47	48.5	53
63	52	54	55
75	58	60	68
89 - 90	60.5	63	70
110	72	75	85
130			

Schutzvorrichtung: *nur für Version P*

Opzioni disponibili:

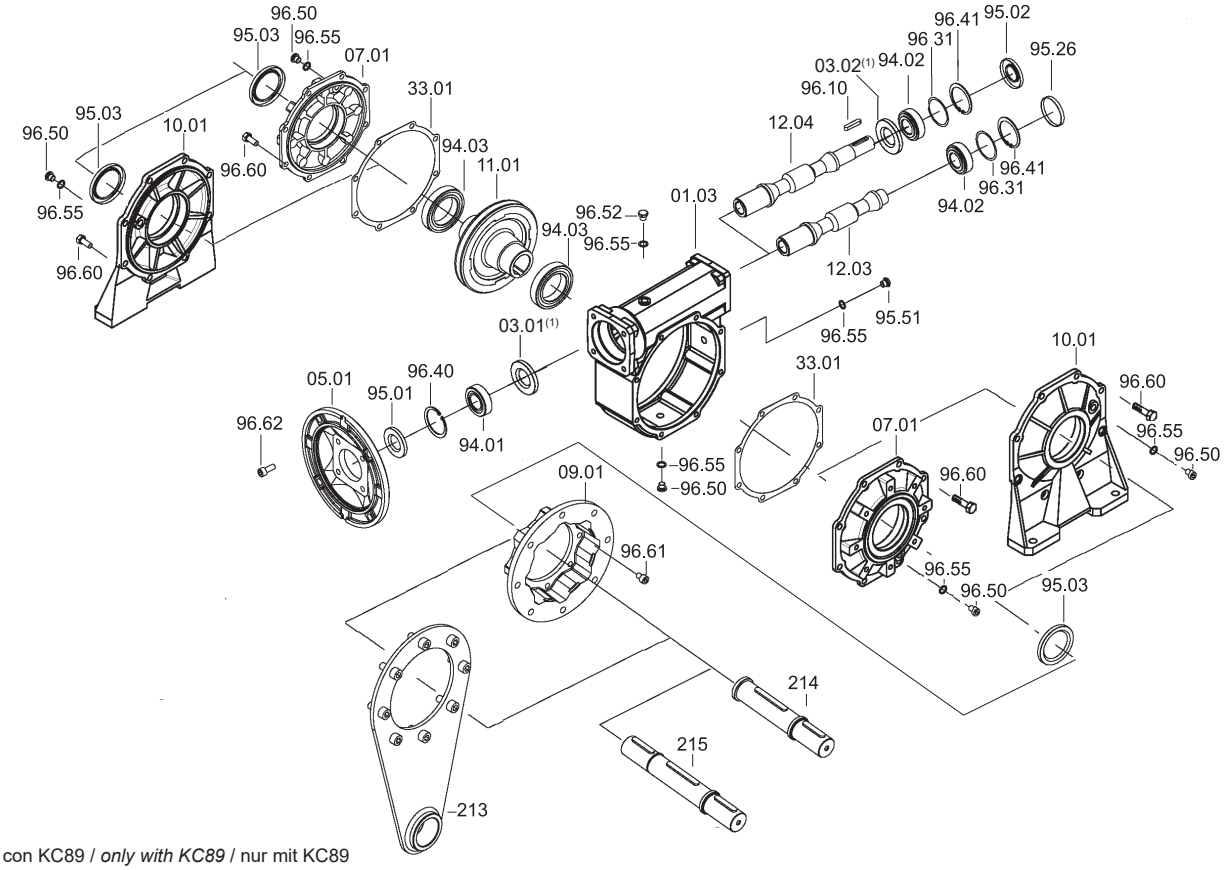
Cuscinetti a rulli conici corona

Available options:

Tapered roller bearing for worm wheel

Auf Anfrage ist folgendes Zubehör erhältlich:
Kegelrollenlager für Schneckenrad

KC

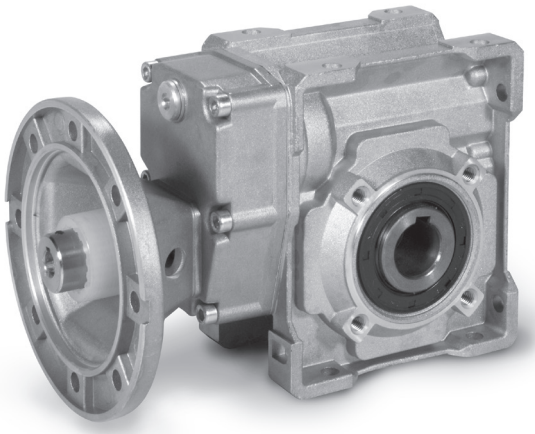


(1): solo con KC89 / *only with KC89* / nur mit KC89

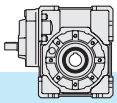
KC	IEC	Cuscinetti / *Bearings* / Lager				Anelli di tenuta / Oilseals Öldichtungen			Cappellotto / *Closed oil seal* Geschlossene Öldichtung
		94.01	**94.02**	**94.03**		**95.01**	**95.02**	**95.03**	**95.26**
30	56	**61804** (20x32x7)	**6000** 10x26x8	**6005** 25x47x12	***32005** 25x47x15	20/32/7	10/26/7	25/40/7	ø 26x7
	63	**61804** (20x32x7)				20/32/7			
40	56	**6303** (17x47x14)	**6201** 12x32x10	**6006** 30x55x13	***32006** 30x55x17	17/47/7	12/32/7	30/47/7	ø 32x7
	63	**6204** (20x47x14)				30x55x17			
	71	**6005** (25x47x12)				25/47/7			
50	63	**6204** (20x47x14)	**6203** 17x40x12	**6008** 40x68x15	***32008** 40x68x19	20/47/7	17/40/7	40/62/8	ø 40x7
	71	**6005** (25x47x12)				25/47/7			
	80	**6006** (30x55x13)				30/55/7			
63	71	**30305** (25x62x18.25)	**30204** 20x47x15.25	**6008** 40x68x15	***32008** 40x68x19	25/62/7	20/47/7	40/62/8	ø 47x7
	80	**30206** (30x62x17.25)				30/62/7			
	90	**32007** (35x62x18)				35/62/7			
75	71	**30206** (30x62x17.25)	**30205** 25x52x16.25	**6010** 50x80x16	***32010** 50x80x20	30/62/7	25/52/7	50/72/8	ø 52x7
	80	**30206** (30x62x17.25)				30/62/7			
	90	**32007** (35x62x18)				35/62/7			
	100/112	**32008** (40x68x19)				40/68/10			
89	80	**6206** (30x62x16)	**6205 C3** 25x52x15	**6010** 50x80x16	***32010** 50x80x20	30/62/7	25/52/7	50/72/8	ø 52x7
	90	**6007** (35x62x14)				35/62/7			
	100/112	**6008** (40x68x15)				40/68/10			
90	80	**30206** (30x62x17.25)	**32205B** 25x52x19.25	**6010** 50x80x16	***32010** 50x80x20	30/62/7	25/52/7	50/72/8	ø 52x7
	90	**32007** (35x62x18)				35/62/7			
	100/112	**32008** (40x68x19)				40/68/10			
110	90	**30208** (40x80x19.75)	**32206B** 30x62x21.25	**6012** 60x95x18	***32012** 60x95x23	40/80/10	30/62/7	60/85/8	ø 62x7
	100/112	**30208** (40x80x19.75)				40/80/10			
	132	**32010** (50x80x20)				50/80/10			
130	90	**30208** (40x80x19.75)	**33208** 40x80x32	**6015** 75x115x20	***32015** 75x115x25	40/80/10	40/80/10	75/100/10	ø 80x10
	100/112	**30208** (40x80x19.75)				40/80/10			
	132	**32010** (50x80x20)				50/80/10			

* Cuscinetti a rulli conici a richiesta - Tapered roller bearings on request - Auf Wunsch Kegelrollenlager

4.0 RIDUTTORI A VITE SENZA FINE CON PRECOPPIA H / H HELICAL WORM GEARBOXES / STIRNRAD-SCHNECKENGETRIEBE H



07/2019



4.1 Caratteristiche

- La serie H presenta le stesse caratteristiche della serie X, ma la presenza della precoppia cilindrica in entrata consente la realizzazione di rapporti più elevati o, a parità di rapporto, rendimenti migliori.
- La struttura è composta dalla carcassa monoblocco del riduttore a vite serie XA sull'entrata del quale è fissato il corpo contenente il primo stadio di riduzione.
- La vite senza fine è in acciaio legato cementato-temprato ed è rettificata.
- Gli ingranaggi della prima riduzione hanno dentatura elicoidale con profilo rettificato.
- La corona ha il mozzo in ghisa con riporto di fusione dell'anello in bronzo.
- Viene fornito l'albero uscita cavo di serie ed esiste un'ampia disponibilità di accessori:
  seconda entrata, cuscinetti conici sulla corona, flangia uscita, albero lento con 1 o 2 sporgenze, limitatore di coppia con cavo passante, braccio di reazione.
- Le carcasse in ghisa sono verniciate BLU RAL5010 mentre quelle in alluminio sono sabbiate.

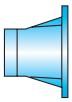
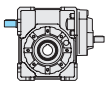
4.1 Characteristics

- *The H series has the same characteristics as the X series with the addition of a spur gear pre-stage at input which provides higher ratios or better efficiency under the same ratios.*
- *The structure is composed of a single piece housing for the XA gearbox , at the input side of this gearbox is fitted the housing containing the first stage reduction.*
- *The worm shaft is in case and quench-hardened alloy steel and ground.*
- *The gears of the first reduction have a helical toothing with ground profile.*
- *The worm wheel has a cast-iron hub provided with inserted cast-bronze ring.*
- *Hollow output shaft is supplied as standard. A broad range of accessories is available:*
  second input, tapered roller bearings on the worm wheel, output flange, single or double extended output shaft, torque limiter with through hollow shaft.
- *Housings in cast-iron are painted BLUE RAL5010, whereas those in aluminium are sandblasted.*

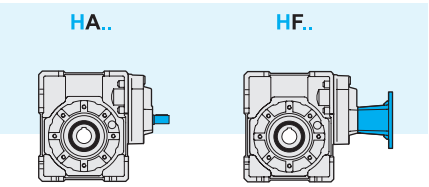
4.1 Merkmale

- Die Serie H bietet die gleichen Eigenschaften wie die Serie X. Aufgrund der Stirnrad-Vorstufe bei der Serie H sind jedoch höhere Untersetzungen möglich oder man erhält bei gleichen Untersetzungen einen besseren Wirkungsgrad.
- Diese Ausführung besteht aus dem Blockgehäuse des Schneckengetriebes der Serie XA und einem an den antriebsseitig angebauten Gehäuse, welches die Stirnradvorstufe enthält.
- Die Schnecke ist aus einsatzgehärtetem/abgeschrecktem und daraufhin geschliffenen Legierungsstahl.
- Die Zahnräder der Vorstufe besitzen ein schrägverzahntes Stirnradprofil.
- Das Schneckenrad besteht aus einer Nabe aus Gusseisen und einem aufgeschleuderten Gussbronze-Ring.
- Zahlreiches Zubehör ist lieferbar:
  zweite Antrieb, Kegelrollenlager auf Schneckenrad, Abtriebsflansch, Standard oder doppelseitig herausragende Abtriebswelle, Drehmomentbegrenzer mit durchgehender Welle, Drehmomentstütze.
- Gehäuse aus Gusseisen werden mit BLAU RAL5010 lackiert, Gehäuse aus Aluminium werden sandgestrahlt.

4.2 Designazione — *4.2 Designation* — 4.2 Bezeichnung

RIDUTTORE / *GEARBOX* / GETRIEBE										ACCESSORI *ACCESSORIES* ZUBEHÖR	
Riduttore *Gearbox* Getriebe	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Rapporto rid. *Ratio* *Untersetzung*	Predispos.att. mot. *Motor coupling* Motoranschluss	Posizione di mont. *Mounting position* Einbaulage	Albero uscita cavo *Hollow output shaft* Abtriebshohlwelle	Flangia in uscita. *Output flange* Abtriebsflansch	Limitatore di coppia. *Torque limiter* Drehmoment-begrenzer	Seconda entrata *Additional input* Zusatzantrieb	Albero uscita *Output shaft* Abtriebswelle	Braccio di reazione *Torque arm* Drehmomentstütze
H	**A**	**50**	**30/1**	**P.A.M**	**B3**	**H25**	**F1S**	**LD**	**SeA**	**H**	**BR**
Riduttore a vite senza fine *Wormgearbox* **Schneckengetriebe**	**A**  **F** 	**40** **50** **63** **75** **90** **110** **130**	**30** **40** **60** **80** **100** **120** **160** **200** **260** **320** **400**	**56** **63** **71** **80** **90** **100** **112**	**B3, B6** **B7, B8** **V5, V6**	vedi tabelle *see tables* siehe Tabellen 	 **F1D-F2D-F3D**  **F1S-F2S-F3S**  **F12-F22-F32**	 **LD**  **LS**	 **SeA**	 **SD**  **SS**  **DD**	 **BR**

Tipo entrata — ***Input type*** — **Antriebstyp**



4.3 Lubrificazione e posizioni di montaggio

I riduttori a vite senza fine H sono forniti completi di lubrificante sintetico a base PAG con indice di viscosità ISO VG320.
Si raccomanda di precisare sempre in fase di ordine, la posizione di lavoro desiderata.
Per ulteriori dettagli consultare pag. 12 paragrafo 1.13.

4.3 Lubrication and mounting position

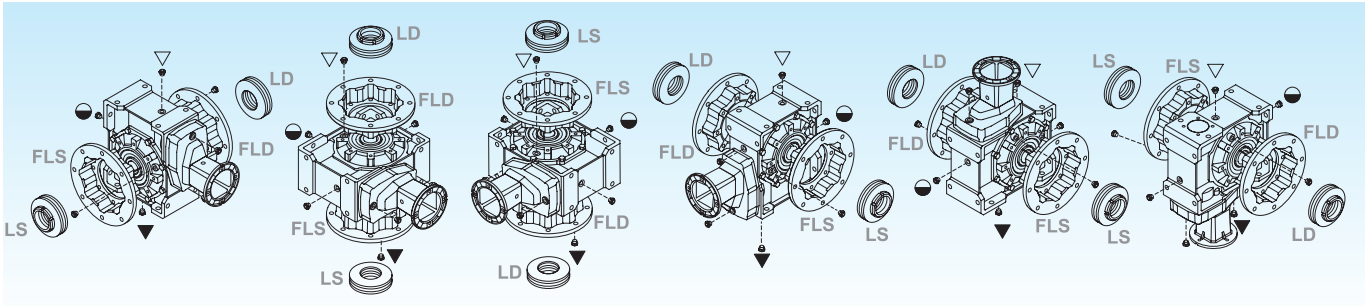
H worm gearboxes are supplied with PAG synthetic lubricant featuring an ISO VG320 viscosity class. Always specify the required mounting position when ordering.

For more details, see page 12, paragraph 1.13.

4.3 Schmierung und Einbaulage

Schneckengetriebe der Serie H werden mit synthetischem Schmiermittel auf PAG Basis und Viskosität Index ISO VG320 geliefert. Im Auftrag bitte immer die gewünschte Einbaulage angeben.

Weitere Einzelheiten finden Sie auf Seite 12, Absatz 1.13.



B3 **B6** **B7** **B8** **V5** **V6**

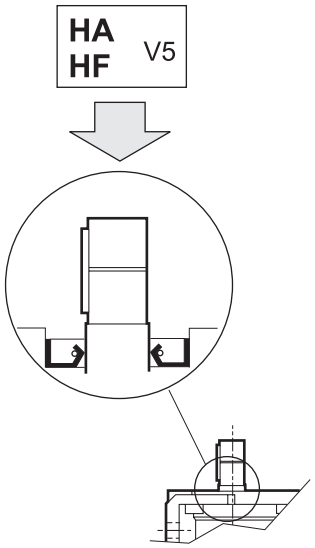
▽ Carico e sfiato / *Filling and breather* Einfüll und Entlüftung
◒ Livello / *Level* / Ölstand
▼ Scarico / *Drain* / Ablass

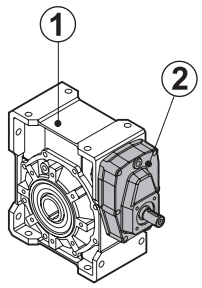
Nei corpi in alluminio 40, 50, 63,75 è presente un solo tappo di riempimento olio.

Aluminium housings size 40, 50, 63 and 75 have one filling plug only.

Aluminiumgehäuse in den Größen 40, 50, 63 und 75 verfügen über Einfüllungsschraube.

4.3 Lubrificazione e posizioni di montaggio





Specificare sempre in fase di ordinazione la posizione di montaggio e la forma costruttiva.
Posizione morsettiera v. pag. 81 (PM=1; PM=2)

4.3 Lubrication and mounting position

Attenzione! Nelle versioni HA e HF è indispensabile conoscere la posizione di lavoro in quanto nella configurazione V5 occorre posizionare in modo corretto il paraolio della vite per preservare la corretta lubrificazione della coppia d'ingranaggi cilindrici del primo stadio di riduzione.

Warning! *It is fundamental to specify the mounting position specially when ordering HA and HF versions. This is because in the V5 configuration the oil seal on the worm shaft must be positioned properly to ensure the lubrication of the spur gearset of the first reduction stage.*

Mounting position always to be specified when ordering.
Terminal board position see page 81 (PM=1; PM=2)

4.3 Schmierung und Einbaulage

Achtung! Bei den HA und HF Versionen ist die Information bez. die Einbaulage unbedingt erforderlich: in der V5 Bauform muss der Ölabdichtung auf der Schnecke korrekt eingebaut werden, um die Schmierung des Stirnradsatz der ersten Stufe aufrechtzuhalten.

Bei der Bestellung immer die gewünschte Montageposition und Bauform angeben.
Lage der Klemmenkaste Seite 81 (PM=1; PM=2)

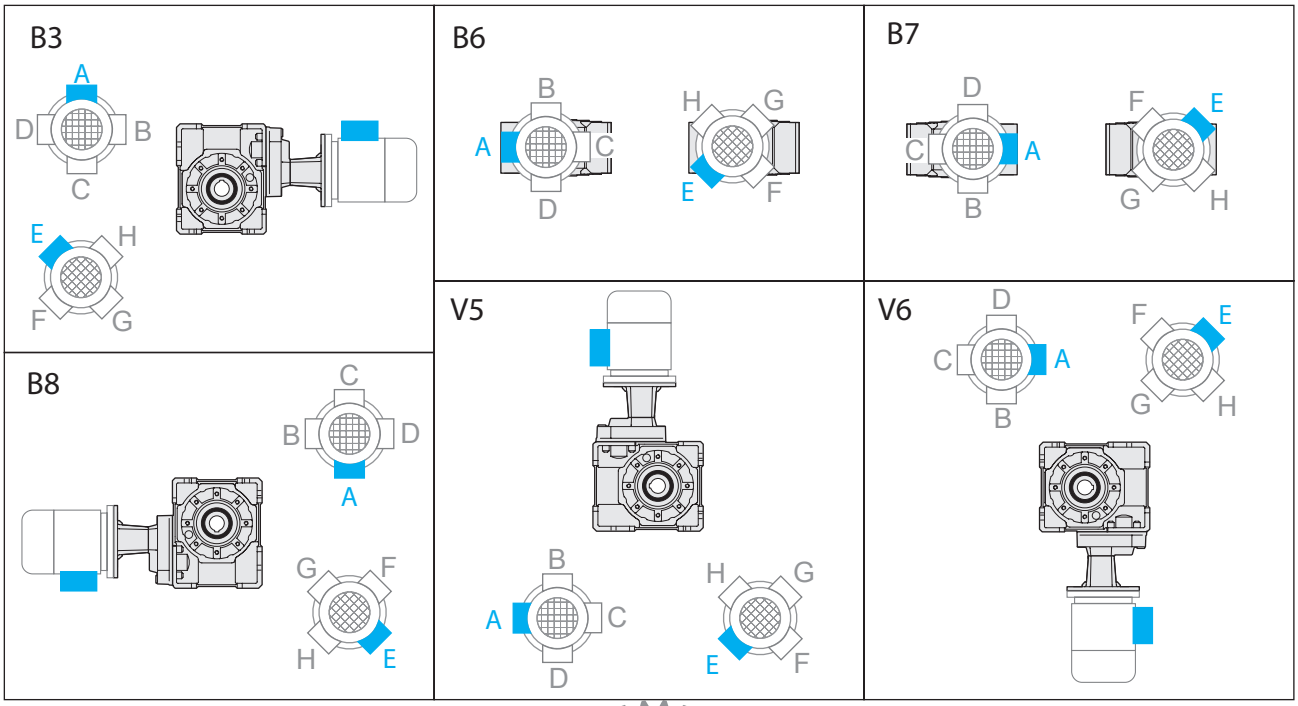
		Q.tà olio / *Oil quantity* / Schmiermittelmenge [lt]			
		Posizione di montaggio / *Mounting position* / Einbaulage			
		B3	**B6 - B7**	**B8**	**V5 - V6**
1 H	**40**	0.040	0.060	0.040	
	50	0.080	0.120	0.080	
	63	0.160	0.220	0.160	
	75	0.260	0.340	0.260	
	90	1.1	0.9	1	1.5
	110	2.2	1.8	1.6	2.6
	130	3.6	3	2.5	3.8

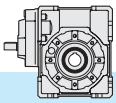
		B3	**B6**	**B8**	**V5**
2 H	**40**	0.040			
	50	0.052			
	63	0.095			
	75	0.180			
	90	0.180			
	110	0.250			
	130	0.350			

4.4 Posizione morsettiera

4.4 Terminal board position

4.4 Lage der Klemmenkaste





4.5 Dati tecnici — *4.5 Technical data* — 4.5 Technische Daten

	n_1 = 2800				HA		HF								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC	B5			B14	
40	**30**	93	0.80		**52**	0.64	30	**0.37**	1.7						
	40	70	0.77		**53**	0.50	39	**0.37**	1.4						
	60	47	0.72		**53**	0.36	37	**0.25**	1.4						
	80	35	0.70		**50**	0.26	47	**0.25**	1.1						
	100	28	0.65		**44**	0.20	40	**0.18**	1.1						
	120	23	0.61	—	**55**	0.22	45	**0.18**	1.2	—	**63**	**56**	—	**63**	**56**
	160	18	0.57		**52**	0.17	40	**0.13**	1.3						
Kg	**200**	14	0.51		**47**	0.13	47	**0.13**	1.0						
2.9	**260**	11	0.47		**42**	0.10	38	**0.09**	1.1						
	320	9	0.45		**39**	0.08	44	**0.09**	0.9						
	400	7	0.42		**31**	0.05	52*	**0.09**	0.6*						

	n_1 = 1400				HA		HF								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC	B5			B14	
40	**30**	47	0.77	0.60	**65**	0.41	35	**0.22**	1.9						
	40	35	0.75	0.60	**65**	0.32	45	**0.22**	1.5						
	60	23	0.69	0.50	**62**	0.23	62	**0.22**	1.0						
	80	18	0.66	0.40	**60**	0.17	47	**0.13**	1.3						
	100	14	0.61	0.40	**52**	0.12	46	**0.11**	1.1						
	120	12	0.57	0.30	**66**	0.14	60	**0.13**	1.1	—	**63**	**56**	—	**63**	**56**
	160	9	0.52	0.30	**62**	0.11	62	**0.11**	1.0						
Kg	**200**	7	0.47	0.30	**58**	0.09	58	**0.09**	1.0						
2.9	**260**	5	0.43	0.20	**46**	0.06	46	**0.06**	1.1						
	320	4	0.41	0.20	**44**	0.05	53	**0.06**	0.8						
	400	3	0.38	0.20	**33**	0.03	64*	**0.06**	0.5*						

	n_1 = 900				HA		HF								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC	B5			B14	
40	**30**	30	0.76		**66**	0.27	31	**0.13**	2.1						
	40	23	0.73		**66**	0.21	40	**0.13**	1.6						
	60	15	0.67		**66**	0.15	56	**0.13**	1.2						
	80	11	0.64		**66**	0.12	49	**0.09**	1.3						
	100	9	0.59		**58**	0.09	58	**0.09**	1.0						
	120	8	0.54	—	**66**	0.10	62	**0.09**	1.1	—	**63**	**56**	—	**63**	**56**
	160	6	0.50		**66**	0.08	51	**0.06**	1.3						
Kg	**200**	5	0.44		**61**	0.06	57	**0.06**	1.1						
2.9	**260**	4	0.40		**54**	0.05	33	**0.03**	1.6						
	320	3	0.39		**46**	0.03	39	**0.03**	1.2						
	400	2	0.36		**34**	0.02	46*	**0.03**	0.7*						

	n_1 = 500				HA		HF								
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC	B5			B14	
40	**30**	17	0.74		**66**	0.15	—	—	—						
	40	13	0.71		**66**	0.12	—	—	—						
	60	8	0.66		**66**	0.09	—	—	—						
	80	6	0.62		**66**	0.07	—	—	—						
	100	5	0.57		**66**	0.06	—	—	—						
	120	4	0.52	—	**66**	0.06	—	—	—	—	**63**	**56**	—	**63**	**56**
	160	3	0.48		**66**	0.04	—	—	—						
Kg	**200**	2.5	0.42		**66**	0.04	—	—	—						
2.9	**260**	2	0.38		**60**	0.03	—	—	—						
	320	1.5	0.36		**48**	0.02	—	—	—						
	400	1	0.34		**35**	0.01	—	—	—						

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

4.5 Dati tecnici — *4.5 Technical data* — 4.5 Technische Daten

	n_1 = 2800				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
50	**30**	93	0.81		**91**	1.10	62	**0.75**	1.5						
	40	70	0.79		**94**	0.87	81	**0.75**	1.2						
	60	47	0.74		**96**	0.63	84	**0.55**	1.1						
	80	35	0.72		**94**	0.48	72	**0.37**	1.3						
	100	28	0.68		**81**	0.35	58	**0.25**	1.4						
	120	23	0.64	—	**96**	0.37	96	**0.37**	1.0	71	**63**	**56**	71	**63**	—
Kg	**160**	18	0.60		**97**	0.30	81	**0.25**	1.2						
	200	14	0.55		**86**	0.23	67	**0.18**	1.3						
4.7	**260**	11	0.51		**81**	0.18	81	**0.18**	1.0						
	320	9	0.47		**72**	0.14	67	**0.13**	1.1						
	400	7	0.44		**59**	0.10	54	**0.09**	1.1						

	n_1 = 1400				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
50	**30**	47	0.79	0.90	**113**	0.70	88	**0.55**	1.3						
	40	35	0.76	0.80	**116**	0.56	116	**0.55**	1.0						
	60	23	0.71	0.70	**116**	0.40	108	**0.37**	1.1						
	80	18	0.68	0.60	**114**	0.31	93	**0.25**	1.2						
	100	14	0.63	0.50	**97**	0.22	97	**0.22**	1.0						
	120	12	0.59	0.50	**107**	0.22	107	**0.22**	1.0	71	**63**	**56**	71	**63**	—
Kg	**160**	9	0.55	0.40	**115**	0.19	108	**0.18**	1.1						
	200	7	0.50	0.40	**102**	0.15	89	**0.13**	1.1						
4.7	**260**	5	0.46	0.40	**90**	0.11	90	**0.11**	1.0						
	320	4	0.42	0.30	**83**	0.09	83	**0.09**	1.0						
	400	3	0.40	0.30	**65**	0.06	65	**0.06**	0.9						

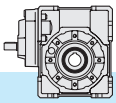
	n_1 = 900				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
50	**30**	30	0.77		**116**	0.47	91	**0.37**	1.3						
	40	23	0.75		**116**	0.37	116	**0.37**	1.0						
	60	15	0.69		**116**	0.26	110	**0.25**	1.1						
	80	11	0.66		**116**	0.21	101	**0.18**	1.2						
	100	9	0.61		**108**	0.17	85	**0.13**	1.3						
	120	8	0.57	—	**116**	0.16	94	**0.13**	1.3	71	**63**	**56**	71	**63**	—
Kg	**160**	6	0.53		**116**	0.13	116	**0.13**	1.0						
	200	5	0.48		**112**	0.11	91	**0.09**	1.2						
4.7	**260**	4	0.44		**107**	0.09	107	**0.09**	1.0						
	320	3	0.40		**90**	0.07	82	**0.06**	1.1						
	400	2	0.38		**65**	0.04	48	**0.03**	1.4						

	n_1 = 500				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
50	**30**	17	0.76		**116**	0.27	39	**0.09**	3.0						
	40	13	0.73		**116**	0.21	50	**0.09**	2.3						
	60	8	0.67		**116**	0.15	69	**0.09**	1.7						
	80	6	0.64		**116**	0.12	88	**0.09**	1.3						
	100	5	0.59		**116**	0.10	101	**0.09**	1.1						
	120	4	0.54	—	**116**	0.09	112	**0.09**	1.0	71	**63**	**56**	71	**63**	—
Kg	**160**	3	0.50		**116**	0.08	138*	**0.09**	0.8						
	200	2.5	0.45		**116**	0.07	156*	**0.09**	0.7						
4.7	**260**	2	0.41		**114**	0.06	184*	**0.09**	0.6*						
	320	1.5	0.38		**95**	0.04	208*	**0.09**	0.5*						
	400	1	0.35		**69**	0.03	244*	**0.09**	0.3*						

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



4.5 **Dati tecnici** *4.5 **Technical data*** 4.5 **Technische Daten**

	n_1 = 2800				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
63	**30**	93	0.82		**158**	1.89	126	**1.5**	1.3						
	40	70	0.80		**164**	1.50	164	**1.5**	1.0						
	60	47	0.76		**170**	1.10	170	**1.1**	1.0						
	80	35	0.74		**181**	0.90	151	**0.75**	1.2						
	100	28	0.71		**150**	0.62	133	**0.55**	1.1						
	120	23	0.66	—	**177**	0.66	148	**0.55**	1.2	80	**71**	**63**	80	**71**	—
Kg	**160**	18	0.62		**186**	0.55	186	**0.55**	1.0						
	200	14	0.57		**147**	0.37	147	**0.37**	1.0						
7.9	**260**	11	0.53		**142**	0.30	118	**0.25**	1.2						
	320	9	0.51		**138**	0.25	138	**0.25**	1.0						
	400	7	0.46		**115**	0.18	115	**0.18**	1.0						

	n_1 = 1400				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
63	**30**	47	0.79	1.3	**198**	1.22	146	**0.9**	1.4						
	40	35	0.77	1.2	**203**	0.96	190	**0.9**	1.1						
	60	23	0.72	1.0	**203**	0.69	163	**0.55**	1.2						
	80	18	0.70	0.90	**211**	0.55	211	**0.55**	1.0						
	100	14	0.67	0.80	**181**	0.40	169	**0.37**	1.1						
	120	12	0.61	0.70	**213**	0.43	185	**0.37**	1.1	80	**71**	**63**	80	**71**	—
Kg	**160**	9	0.57	0.60	**220**	0.35	156	**0.25**	1.4						
	200	7	0.52	0.60	**177**	0.25	177	**0.25**	1.0						
7.9	**260**	5	0.48	0.50	**175**	0.20	154	**0.18**	1.1						
	320	4	0.46	0.50	**160**	0.16	130	**0.13**	1.2						
	400	3	0.41	0.50	**126**	0.11	150	**0.13**	0.8						

	n_1 = 900				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
63	**30**	30	0.78		**220**	0.89	186	**0.75**	1.2						
	40	23	0.76		**220**	0.69	177	**0.55**	1.2						
	60	15	0.70		**220**	0.49	166	**0.37**	1.3						
	80	11	0.68		**220**	0.37	220	**0.37**	1.0						
	100	9	0.65		**201**	0.29	172	**0.25**	1.2						
	120	8	0.59	—	**220**	0.29	187	**0.25**	1.2	80	**71**	**63**	80	**71**	—
Kg	**160**	6	0.55		**220**	0.24	168	**0.18**	1.3						
	200	5	0.50		**196**	0.18	196	**0.18**	1.0						
7.9	**260**	4	0.46		**192**	0.15	162	**0.13**	1.2						
	320	3	0.43		**175**	0.12	133	**0.09**	1.3						
	400	2	0.39		**131**	0.08	148	**0.09**	0.9						

	n_1 = 500				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
63	**30**	17	0.76		**220**	0.50	79	**0.18**	2.8						
	40	13	0.74		**220**	0.39	101	**0.18**	2.2						
	60	8	0.68		**220**	0.28	140	**0.18**	1.6						
	80	6	0.66		**220**	0.22	182	**0.18**	1.2						
	100	5	0.62		**220**	0.18	220	**0.18**	1.0						
	120	4	0.56	—	**220**	0.17	115	**0.09**	1.9	80	**71**	**63**	80	**71**	—
Kg	**160**	3	0.52		**220**	0.14	143	**0.09**	1.5						
	200	2.5	0.47		**220**	0.12	161	**0.09**	1.4						
7.9	**260**	2	0.43		**215**	0.10	193	**0.09**	1.1						
	320	1.5	0.41		**188**	0.08	225	**0.09**	0.8						
	400	1	0.36		**138**	0.05	250*	**0.09**	0.6*						

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

4.5 Dati tecnici — *4.5 Technical data* — 4.5 Technische Daten

	n_1 = 2800				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
75	**30**	93	0.82		**236**	2.81	185	**2.2**	1.3						
	40	70	0.80		**242**	2.20	242	**2.2**	1.0						
	60	47	0.77		**258**	1.65	235	**1.5**	1.1						
	80	35	0.74		**285**	1.40	223	**1.1**	1.3						
	100	28	0.72		**252**	1.03	184	**0.75**	1.4						
	120	23	0.67	—	**275**	1.01	205	**0.75**	1.3	90	**80**	**71**	90	**80**	—
Kg	**160**	18	0.63		**290**	0.84	259	**0.75**	1.1						
	200	14	0.60		**258**	0.63	224	**0.55**	1.2						
13.3	**260**	11	0.55		**236**	0.48	181	**0.37**	1.3						
	320	9	0.52		**214**	0.37	214	**0.37**	1.0						
	400	7	0.48		**195**	0.30	241	**0.37**	0.8						

	n_1 = 1400				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
75	**30**	47	0.80	1.9	**295**	1.80	295	**1.8**	1.0						
	40	35	0.78	1.7	**319**	1.50	319	**1.5**	1.0						
	60	23	0.73	1.4	**329**	1.10	329	**1.1**	1.0						
	80	18	0.71	1.3	**350**	0.90	350	**0.9**	1.0						
	100	14	0.68	1.2	**305**	0.66	255	**0.55**	1.2						
	120	12	0.62	1.0	**331**	0.65	280	**0.55**	1.2	90	**80**	**71**	90	**80**	—
Kg	**160**	9	0.58	0.90	**348**	0.55	348	**0.55**	1.0						
	200	7	0.55	0.80	**307**	0.41	277	**0.37**	1.1						
13.3	**260**	5	0.50	0.80	**279**	0.31	223	**0.25**	1.3						
	320	4	0.47	0.70	**256**	0.25	256	**0.25**	1.0						
	400	3	0.43	0.70	**213**	0.18	300*	**0.25**	0.7*						

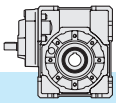
	n_1 = 900				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
75	**30**	30	0.78		**338**	1.35	275	**1.1**	1.2						
	40	23	0.76		**350**	1.10	350	**1.1**	1.0						
	60	15	0.71		**343**	0.75	343	**0.75**	1.0						
	80	11	0.69		**350**	0.60	321	**0.55**	1.1						
	100	9	0.66		**339**	0.49	258	**0.37**	1.3						
	120	8	0.60	—	**350**	0.46	281	**0.37**	1.2	90	**80**	**71**	90	**80**	—
Kg	**160**	6	0.56		**350**	0.37	350	**0.37**	1.0						
	200	5	0.52		**339**	0.31	277	**0.25**	1.2						
13.3	**260**	4	0.48		**307**	0.24	233	**0.18**	1.3						
	320	3	0.45		**282**	0.18	282	**0.18**	1.0						
	400	2	0.40		**221**	0.13	307*	**0.18**	0.7*						

	n_1 = 500				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
75	**30**	17	0.77		**350**	0.80	110	**0.25**	3.2						
	40	13	0.74		**350**	0.62	142	**0.25**	2.5						
	60	8	0.69		**350**	0.44	198	**0.25**	1.8						
	80	6	0.67		**350**	0.34	254	**0.25**	1.4						
	100	5	0.63		**350**	0.29	303	**0.25**	1.2						
	120	4	0.57	—	**350**	0.27	325	**0.25**	1.1	90	**80**	**71**	90	**80**	—
Kg	**160**	3	0.53		**350**	0.22	291	**0.18**	1.2						
	200	2.5	0.49		**350**	0.19	348	**0.18**	1.0						
13.3	**260**	2	0.45		**345**	0.16	200	**0.09**	1.7						
	320	1.5	0.42		**303**	0.12	231	**0.09**	1.3						
	400	1	0.38		**232**	0.08	258	**0.09**	0.9						

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



4.5 Dati tecnici — *4.5 Technical data* — 4.5 Technische Daten

	n_1 = 2800				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
90	**30**	93	0.83		**381**	4.48	255	**3**	1.5						
	40	70	0.82		**396**	3.56	334	**3**	1.2						
	60	47	0.78		**410**	2.57	352	**2.2**	1.2						
	80	35	0.76		**456**	2.20	456	**2.2**	1.0						
	100	28	0.74		**416**	1.66	377	**1.5**	1.1						
	120	23	0.69	—	**439**	1.54	439	**1.5**	1.0	**90**	**80**	**71**	**90**	**80**	—
Kg	**160**	18	0.65		**467**	1.31	392	**1.1**	1.2						
	200	14	0.62		**427**	1.01	317	**0.75**	1.3						
27.2	**260**	11	0.58		**384**	0.75	384	**0.75**	1.0						
	320	9	0.55		**360**	0.60	329	**0.55**	1.1						
	400	7	0.50		**318**	0.47	252	**0.37**	1.3						

	n_1 = 1400				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
90	**30**	47	0.81	2.1	**482**	2.92	297	**1.8**	1.6						
	40	35	0.79	1.9	**495**	2.30	388	**1.8**	1.3						
	60	23	0.75	1.6	**506**	1.65	460	**1.5**	1.1						
	80	18	0.72	1.4	**554**	1.40	434	**1.1**	1.3						
	100	14	0.70	1.3	**505**	1.06	429	**0.9**	1.2						
	120	12	0.64	1.1	**531**	1.01	473	**0.9**	1.1	**90**	**80**	**71**	**90**	**80**	—
Kg	**160**	9	0.60	1.0	**560**	0.85	494	**0.75**	1.1						
	200	7	0.57	0.90	**510**	0.66	428	**0.55**	1.2						
27.2	**260**	5	0.53	0.80	**454**	0.49	345	**0.37**	1.3						
	320	4	0.50	0.80	**424**	0.39	402	**0.37**	1.1						
	400	3	0.45	0.70	**367**	0.29	314	**0.25**	1.2						

	n_1 = 900				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
90	**30**	30	0.79		**550**	2.18	379	**1.5**	1.5						
	40	23	0.77		**560**	1.71	492	**1.5**	1.1						
	60	15	0.73		**560**	1.21	510	**1.1**	1.1						
	80	11	0.70		**560**	0.94	447	**0.75**	1.3						
	100	9	0.68		**560**	0.78	534	**0.75**	1.1						
	120	8	0.61	—	**560**	0.72	430	**0.55**	1.3	**90**	**80**	**71**	**90**	**80**	—
Kg	**160**	6	0.58		**560**	0.57	533	**0.55**	1.1						
	200	5	0.54		**560**	0.49	426	**0.37**	1.3						
27.2	**260**	4	0.50		**501**	0.37	501	**0.37**	1.0						
	320	3	0.47		**466**	0.29	399	**0.25**	1.2						
	400	2	0.42		**381**	0.21	320	**0.18**	1.2						

	n_1 = 500				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
90	**30**	17	0.77		**560**	1.26	111	**0.25**	5.0						
	40	13	0.75		**560**	0.97	144	**0.25**	3.9						
	60	8	0.70		**560**	0.69	202	**0.25**	2.8						
	80	6	0.68		**560**	0.54	259	**0.25**	2.2						
	100	5	0.65		**560**	0.45	310	**0.25**	1.8						
	120	4	0.58	—	**560**	0.42	334	**0.25**	1.7	**90**	**80**	**71**	**90**	**80**	—
Kg	**160**	3	0.54		**560**	0.34	416	**0.25**	1.3						
	200	2.5	0.51		**560**	0.29	488	**0.25**	1.1						
27.2	**260**	2	0.47		**560**	0.24	417	**0.18**	1.3						
	320	1.5	0.44		**517**	0.19	485	**0.18**	1.1						
	400	1	0.39		**401**	0.13	269	**0.09**	1.5						

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

4.5 **Dati tecnici** *4.5* ***Technical data*** 4.5 **Technische Daten**

	n_1 = 2800				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
110	**30**	93	0.84		**641**	7.50	641	**7.5**	1.0	**112 100**	**90**	**80**	**112 100**	**90**	—
	40	70	0.82		**658**	5.85	619	**5.5**	1.1						
	60	47	0.79		**698**	4.30	649	**4**	1.1						
	80	35	0.77		**782**	3.71	632	**3**	1.2						
	100	28	0.75		**727**	2.83	566	**2.2**	1.3						
	120	23	0.70	—	**754**	2.61	634	**2.2**	1.2						
	160	18	0.67		**807**	2.20	807	**2.2**	1.0						
Kg	**200**	14	0.65		**749**	1.70	661	**1.5**	1.1						
48.8	**260**	11	0.60		**646**	1.21	589	**1.1**	1.1						
	320	9	0.57		**611**	0.98	469	**0.75**	1.3						
	400	7	0.53		**545**	0.75	545	**0.75**	1.0						

	n_1 = 1400				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
110	**30**	47	0.82	3.2	**807**	4.83	668	**4**	1.2	**112 100**	**90**	**80**	**112 100**	**90**	—
	40	35	0.80	2.9	**825**	3.78	655	**3**	1.3						
	60	23	0.76	2.4	**864**	2.76	689	**2.2**	1.3						
	80	18	0.74	2.2	**957**	2.37	887	**2.2**	1.1						
	100	14	0.72	2.1	**884**	1.80	884	**1.8**	1.0						
	120	12	0.66	1.7	**916**	1.70	809	**1.5**	1.1						
Kg	**160**	9	0.62	1.5	**970**	1.42	749	**1.1**	1.3						
48.8	**200**	7	0.60	1.5	**896**	1.10	896	**1.1**	1.0						
	260	5	0.55	1.3	**743**	0.75	743	**0.75**	1.0						
	320	4	0.52	1.2	**722**	0.64	624	**0.55**	1.2						
	400	3	0.47	1.1	**644**	0.48	705	**0.55**	0.9						

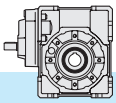
	n_1 = 900				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
110	**30**	30	0.80		**922**	3.61	766	**3**	1.2	**112 100**	**90**	**80**	**112 100**	**90**	—
	40	23	0.78		**937**	2.82	732	**2.2**	1.3						
	60	15	0.74		**970**	2.06	849	**1.8**	1.1						
	80	11	0.72		**970**	1.59	912	**1.5**	1.1						
	100	9	0.69		**970**	1.32	811	**1.1**	1.2						
	120	8	0.63	—	**970**	1.21	884	**1.1**	1.1						
	160	6	0.60		**970**	0.96	758	**0.75**	1.3						
Kg	**200**	5	0.57		**970**	0.81	902	**0.75**	1.1						
48.8	**260**	4	0.52		**846**	0.60	779	**0.55**	1.1						
	320	3	0.49		**794**	0.48	616	**0.37**	1.3						
	400	2	0.45		**700**	0.37	700	**0.37**	1.0						

	n_1 = 500				HA		HF			Input - IEC					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	B5			B14		
110	**30**	17	0.78		**970**	2.16	336	**0.75**	2.9	**112 100**	**90**	**80**	**112 100**	**90**	—
	40	13	0.76		**970**	1.67	437	**0.75**	2.2						
	60	8	0.72		**970**	1.18	616	**0.75**	1.6						
	80	6	0.69		**970**	0.92	792	**0.75**	1.2						
	100	5	0.67		**970**	0.75	970	**0.75**	1.0						
	120	4	0.60	—	**970**	0.71	754	**0.55**	1.3						
	160	3	0.56		**970**	0.57	933	**0.55**	1.1						
Kg	**200**	2.5	0.53		**970**	0.48	754	**0.37**	1.3						
48.8	**260**	2	0.49		**955**	0.39	900	**0.37**	1.1						
	320	1.5	0.46		**889**	0.32	700	**0.25**	1.3						
	400	1	0.41		**727**	0.23	568	**0.18**	1.3						

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



4.5 Dati tecnici — *4.5 Technical data* — 4.5 Technische Daten

	n_1 = 2800				HA		HF					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5		B14
130	**30**	93	0.85		**976**	11.22	652	**7.5**	1.5			
	40	70	0.84		**994**	8.67	860	**7.5**	1.2			
	60	47	0.80		**1086**	6.63	900	**5.5**	1.2			
	80	35	0.78		**1216**	5.71	1171	**5.5**	1.0			
	100	28	0.78		**1170**	4.40	1064	**4.0**	1.1			
	120	23	0.72	—	**1203**	4.08	1179	**4**	1.0	**112 100**	**90**	**80** —
Kg	**160**	18	0.70		**1306**	3.42	1146	**3**	1.1			
	200	14	0.67		**1175**	2.57	1005	**2.2**	1.2			
60	**260**	11	0.64		**1008**	1.78	851	**1.5**	1.2			
	320	9	0.61		**971**	1.46	732	**1.1**	1.3			
	400	7	0.57		**889**	1.14	855	**1.1**	1.0			

	n_1 = 1400				HA		HF					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5		B14
130	**30**	47	0.83	4.9	**1231**	7.3	928	**5.5**	1.3			
	40	35	0.81	4.4	**1238**	5.6	1216	**5.5**	1.0			
	60	23	0.77	3.6	**1375**	4.3	1279	**4**	1.1			
	80	18	0.75	3.3	**1472**	3.7	1194	**3**	1.2			
	100	14	0.74	3.2	**1413**	2.8	1111	**2.2**	1.3			
	120	12	0.68	2.6	**1407**	2.6	1191	**2.2**	1.2	**112 100**	**90**	**80** —
Kg	**160**	9	0.65	2.4	**1517**	2.2	1517	**2.2**	1.0			
	200	7	0.62	2.2	**1353**	1.6	1269	**1.5**	1.1			
60	**260**	5	0.58	2	**1219**	1.1	1219	**1.1**	1.0			
	320	4	0.55	1.8	**1182**	0.9	1182	**0.9**	1.0			
	400	3	0.51	1.7	**1136**	0.7	893	**0.55**	1.3			

	n_1 = 900				HA		HF					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5		B14
130	**30**	30	0.81		**1424**	5.5	774	**3**	1.8			
	40	23	0.80		**1429**	4.2	1019	**3**	1.4			
	60	15	0.75		**1520**	3.2	1433	**3**	1.1			
	80	11	0.72		**1694**	2.8	1345	**2.2**	1.3			
	100	9	0.72		**1726**	2.3	1681	**2.2**	1.0			
	120	8	0.64	—	**1632**	2.0	1508	**1.85**	1.1	**112 100**	**90**	**80** —
Kg	**160**	6	0.61		**1723**	1.7	1553	**1.5**	1.1			
	200	5	0.58		**1542**	1.3	1354	**1.1**	1.1			
60	**260**	4	0.54		**1282**	0.87	1102	**0.75**	1.2			
	320	3	0.51		**1298**	0.75	1299	**0.75**	1.0			
	400	2	0.47		**1126**	0.56	1097	**0.55**	1.0			

	n_1 = 500				HA		HF					
	i_n	n_2 [min^{-1}]	Rd	P_{t0}	T_{2M} [Nm]	P [kW]	T_2 [Nm]	P_1 [kW]	FS'	Input - IEC B5		B14
130	**30**	17	0.78		**1659**	3.7	335	**0.75**	4.9			
	40	13	0.76		**1616**	2.8	435	**0.75**	3.7			
	60	8	0.72		**1786**	2.2	619	**0.75**	2.9			
	80	6	0.70		**1819**	1.7	802	**0.75**	2.3			
	100	5	0.69		**1821**	1.4	988	**0.75**	1.8			
	120	4	0.61	—	**1816**	1.3	1049	**0.75**	1.7	**112 100**	**90**	**80** —
Kg	**160**	3	0.57		**1796**	1.0	1306	**0.75**	1.4			
	200	2.5	0.54		**1723**	0.84	1547	**0.75**	1.1			
60	**260**	2	0.50		**1485**	0.60	1366	**0.55**	1.1			
	320	1.5	0.47		**1392**	0.48	1063	**0.37**	1.3			
	400	1	0.44		**1282**	0.38	1244	**0.37**	1.0			

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

4.6 **Momenti d'inerzia** [Kg·cm²]
(riferiti all'albero veloce in entrata)

4.6 ***Moments of inertia*** *[Kg·cm²]*
(referred to input shaft)

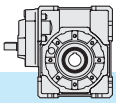
4.6 **Trägheitsmoment** [Kg·cm²]
(bez. Antriebswelle)

	i_n	HA	HF	
			B5 - B14	
			IEC 56	IEC 63
H40	**30**	0.080	0.125	0.125
	40	0.079	0.123	0.124
	60	0.077	0.122	0.123
	80	0.076	0.120	0.121
	100	0.075	0.120	0.120
	120	0.077	0.121	0.122
	160	0.075	0.120	0.120
	200	0.075	0.120	0.120
	260	0.074	0.119	0.119
	320	0.074	0.119	0.119
	400	0.074	0.119	0.119

	i_n	HA	HF		
			B5	B5 - B14	
			IEC 56	IEC 63	IEC 71
H50	**30**	0.161	0.208	0.366	0.383
	40	0.156	0.203	0.361	0.377
	60	0.152	0.199	0.357	0.374
	80	0.148	0.194	0.352	0.369
	100	0.147	0.194	0.352	0.368
	120	0.150	0.197	0.355	0.372
	160	0.146	0.193	0.351	0.368
	200	0.141	0.188	0.346	0.363
	260	0.138	0.185	0.343	0.360
	320	0.138	0.185	0.343	0.360
	400	0.138	0.185	0.343	0.360

	i_n	HA	HF		
			B5	B5 - B14	
			IEC 63	IEC 71	IEC 80
H63	**30**	0.405	0.639	0.656	1.219
	40	0.392	0.626	0.643	1.206
	60	0.383	0.617	0.634	1.197
	80	0.364	0.598	0.615	1.178
	100	0.362	0.596	0.613	1.176
	120	0.377	0.612	0.628	1.191
	160	0.361	0.595	0.612	1.175
	200	0.360	0.595	0.611	1.175
	260	0.354	0.588	0.605	1.168
	320	0.354	0.588	0.605	1.168
	400	0.354	0.588	0.605	1.168

	i_n	HA	HF		
			B5	B5 - B14	
			IEC 71	IEC 80	IEC 90
H75	**30**	0.865	1.643	1.778	2.855
	40	0.835	1.613	1.748	2.825
	60	0.813	1.592	1.726	2.804
	80	0.777	1.556	1.690	2.768
	100	0.773	1.551	1.686	2.764
	120	0.801	1.579	1.714	2.791
	160	0.770	1.548	1.683	2.760
	200	0.769	1.547	1.682	2.759
	260	0.751	1.530	1.664	2.742
	320	0.751	1.530	1.664	2.742
	400	0.751	1.529	1.664	2.742



4.6 **Momenti d'inerzia** [Kg·cm²]
(riferiti all'albero veloce in entrata)

4.6 ***Moments of inertia*** *[Kg·cm²]*
(referred to input shaft)

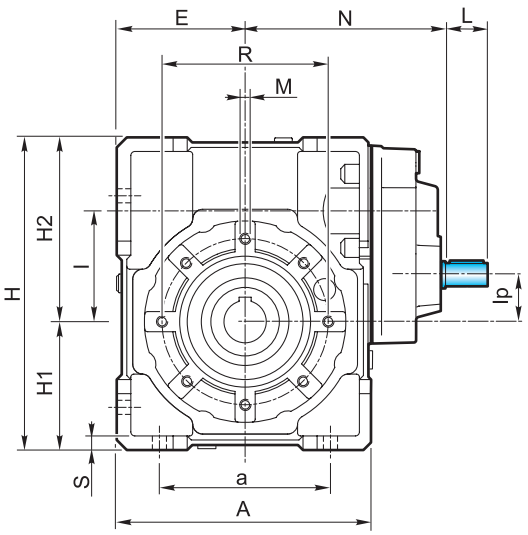
4.6 **Trägheitsmoment** [Kg·cm²]
(bez. Antriebswelle)

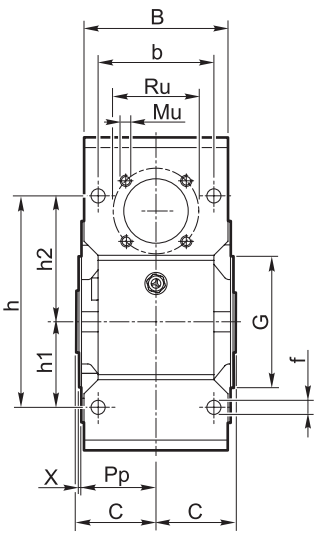
	i_n	HA	HF		
			B5	B5 - B14	
			IEC 71	IEC 80	IEC 90
H90	30	1.064	1.843	1.977	3.055
	40	1.000	1.779	1.913	2.991
	60	0.955	1.733	1.868	2.945
	80	0.845	1.623	1.758	2.835
	100	0.836	1.615	1.749	2.827
	120	0.927	1.706	1.840	2.918
	160	0.829	1.608	1.742	2.820
	200	0.827	1.606	1.740	2.818
	260	0.784	1.562	1.696	2.774
	320	0.783	1.562	1.696	2.774
	400	0.783	1.561	1.695	2.773

	i_n	HA	HF		
			B5	B5 - B14	
			IEC 80	IEC 90	IEC 110-112
H110	**30**	2.558	4.726	4.654	6.424
	40	2.379	4.547	4.475	6.246
	60	2.251	4.420	4.347	6.118
	80	1.958	4.127	4.054	5.825
	100	1.933	4.102	4.029	5.800
	120	2.175	4.343	4.271	6.041
	160	1.915	4.084	4.011	5.782
	200	1.909	4.077	4.005	5.776
	260	1.779	3.948	3.875	5.646
	320	1.778	3.946	3.874	5.645
	400	1.777	3.945	3.873	5.644

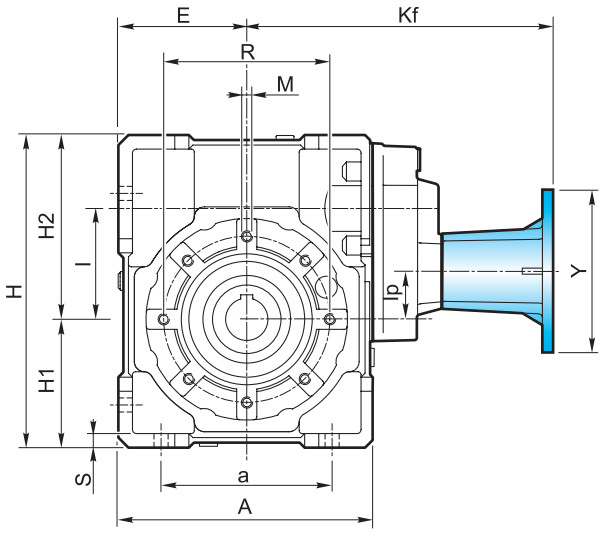
	i_n	HA	HF		
			B5		
			IEC 80	IEC 90	IEC 110-112
H130	**30**	5.64	7.90	10.22	11.83
	40	5.15	7.42	9.73	11.35
	60	4.81	7.07	9.39	11.00
	80	4.15	6.41	8.72	10.34
	100	4.07	6.34	8.65	10.27
	120	4.60	6.86	9.18	10.79
	160	4.03	6.29	8.61	10.22
	200	4.01	6.27	8.59	10.20
	260	3.75	6.01	8.32	9.94
	320	3.74	6.00	8.32	9.93
	400	3.74	6.00	8.32	9.93

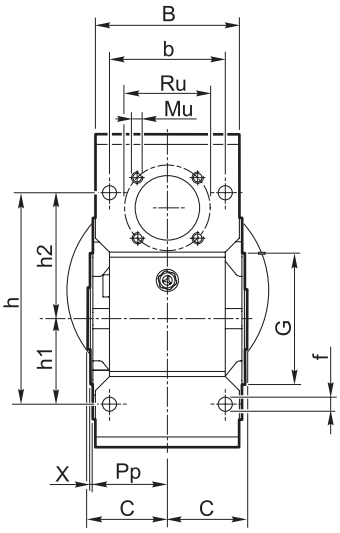
HA


E
N
L
R
M
H
H2
I
H1
Ip
S
a
A


B
b
Ru
Mu
h
h2
h1
G
f
X
Pp
C
C

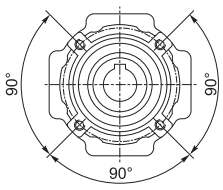
HF


E
Kf
R
M
H
H2
I
H1
Ip
Y
S
a
A


B
b
Ru
Mu
h
h2
h1
G
f
X
Pp
C
C

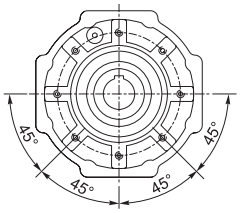
Flangia pendolare / *Shaft-mounted flange* / Aufsteckflansch

40 - 50



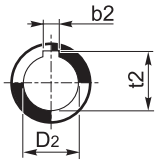
4 Fori / *Holes* / Bohrungen

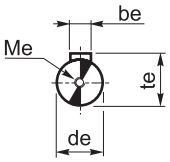
63 - 75 - 90 - 110 - 130



8 Fori / *Holes* / Bohrungen

Albero uscita cavo
Output hollow shaft
Abtriebshohlwelle



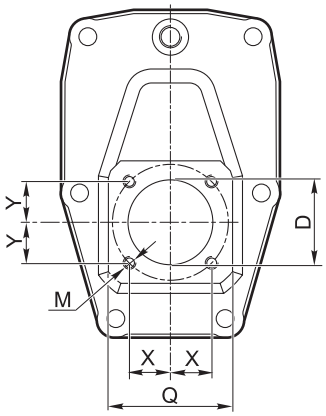


Albero entrata
Input shaft
Antriebswelle

H	A	a	B	b	b_e	b_2		C	d_e j6	D_2 H8		E	f	G h8	H	H_1	H_2	h	h_1	h_2
40	105	70	71	60	3	**6**	6	39	9	**18**	19	50	6.5	60	125	50	75	90	35	55
50	125	80	85	70	4	**8**	8	46	11	**25**	24	60	8.5	70	150	60	90	104	40	64
63	147	100	103	85	5	**8**	—	56	14	**25**	—	72	9	80	182	72	110	130	50	80
75	176	120	112	90	6	**8**	8	60	19	**28**	30	86	11	95	219.5	86	133.5	153	60	93
90	203	140	130	100	6	**10**	—	70	19	**35**	—	103	13	110	248.5	103	145.5	172	70	102
110	252.5	170	143	115	8	**12**	—	77.5	24	**42**	—	127.5	14	130	310.5	127.5	183	210	85	125
130	292.5	200	155	120	8	**14**	14	85	24	**45**	48	147.5	15	180	355	147.5	207.5	240	100	140

H	I	I_p	L	M	M_e	M_u	N	P_p	R	R_u	S	t_e	t_2		X
40	40	5	15	M6X10	M4X12	M5X10	91.5	36.5	75	42.4	6	10.2	20.8	21.8	1.5
50	50	10	20	M8x10	M4x12	M6x10	104.5	43.5	85	53.7	7	12.5	28.3	27.3	1.5
63	63	16.5	25	M8x14	M4x10	M6x12	121	53	95	60.8	8	16	28.3	—	2
75	75	22	30	M8x14	M6x16	M8x12	147.75	57	115	70.7	10	21.5	31.3	33.3	2
90	90	37	30	M10x18	M6x16	M8x14	157.75	67	130	70.7	12	21.5	38.3	—	2
110	110	47	40	M10x18	M8x22	M10x18	196.5	74	165	85.0	14	27	45.3	—	2.5
130	130	55	50	M12x20	M8x14	M10x16	240	81	215	104	15	27	48.8	51.8	3

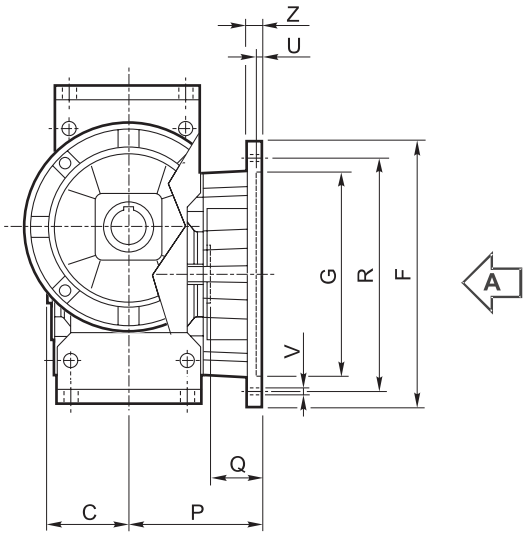
Dimensioni attacco flangia entrata ***Dimensions of the input mounting flange*** **Abmessungen des Eintriebsflansches**

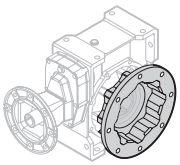


H	D	M	Q	X	Y
40	26	M5x9	40	12.5	12.5
50	32	M5x9	45	15	15
63	40	M6x12	53	19	19
75	47	M6x12	62	21.5	21.5
90	47	M6x12	62	21.5	21.5
110	52	M8x15	75	25	25
130	62	M10x17	92	30	30

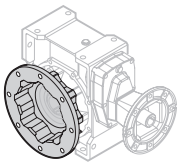
4.7 Dimensioni — *4.7 Dimensions* — 4.7 Abmessungen

Flangia uscita / *Output flange* / Abtriebsflansch

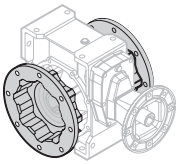




F..D
Standard

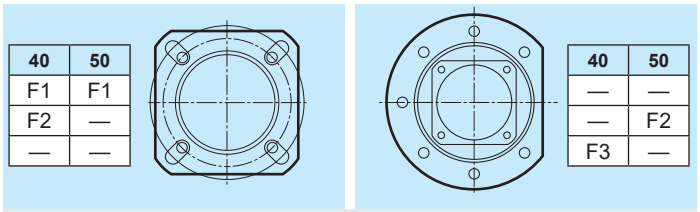


F..S



F..2

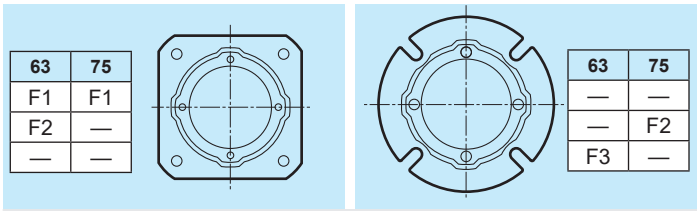
Vista da A / *View from A* / Ansicht von A



40	50
F1	F1
F2	—
—	—

40	50
—	—
—	F2
F3	—

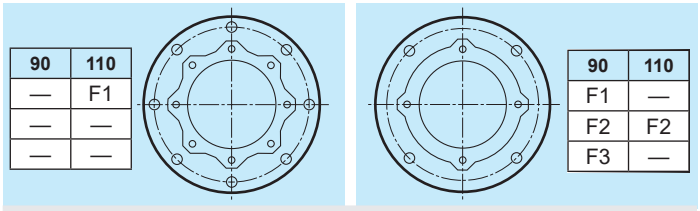
40 - 50



63	75
F1	F1
F2	—
—	—

63	75
—	—
—	F2
F3	—

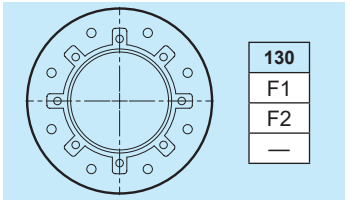
63 - 75



90	110
—	F1
—	—
—	—

90	110
F1	—
F2	F2
F3	—

90 - 110



130
F1
F2
—

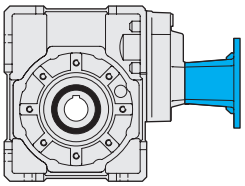
130

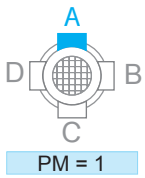
Tipo *Type* Typ		C	F		G H8	P	Q	R	U	V		Ø	Z
40	F1	39		85	60	67	28	75-90	4	n° 4		9	8
	F2			85	60	97	58	75-90	4	n° 4		9	8
	F3		140		95	80	41	115	5		n° 7	9	10
50	F1	46		94	70	90	44	85-100	5	n° 4		11	10
	F2		160		110	89	43	130	5		n° 7	11	11
	F3												
63	F1	56		142	115	82	26	150	5	n° 4		11	11
	F2			142	115	112	56	150	5	n° 4		11	11
	F3		160		110	80.5	24.5	130	5	n° 4		11	12
75	F1	60		160	130	111	51	165	5	n° 4		13	12
	F2		160		110	90	30	130	6	n° 4		11	13
	F3												
90	F1	70	200		152	111	41	175	5	n° 4		13	12
	F2		200		152	151	81	175	5	n° 4		13	13
	F3		200		130	110	40	165	6	n° 4		11	11
110	F1	77.5	260		170	131	53.5	230	6		n° 8	13	15
	F2		250		180	150	72.5	215	5	n° 4		15	16
	F3												
130	F1	85	320		180	140	55	255	7		n° 8 *	16	16
	F2		300		230			265					
	F3												

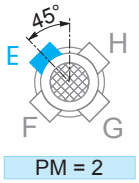
* Foratura ruotata di 22.5° — * *Drilling turned of 22.5°* — * Durchbohrung 22.5° versetzt

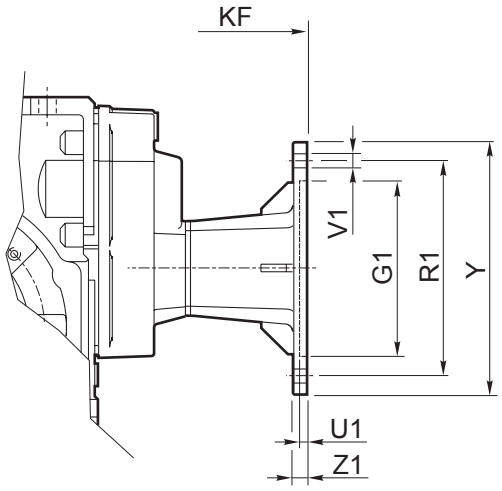
4.7 Dimensioni — *4.7 Dimensions* — 4.7 Abmessungen

Flangia entrata / *Input flange* / Antriebsflansch









HF	IEC	PM		G_1	K_F	R_1	U_1	V_1				Y	Z_1
		1	2					Ø					
40	56 B5	•	•	80	129.5	100	3.5	7		8		120	8
	56 B14		•	50	129.5	65	3.5	6			4	80	8
	63 B5	•	•	95	132.5	115	4	9		8		140	10
	63 B14	•	•	60	132.5	75	3.5	6		8		90	8
50	56 B5	•	•	80	148.5	100	3.5	7		8		120	8
	63 B5	•	•	95	151.5	115	4	9		8		140	10
	63 B14	•	•	60	151.5	75	3.5	6		8		90	8
	71 B5	•	•	110	158.5	130	4.5	9		8		160	10
	71 B14	•	•	70	158.5	85	4	7		8		105	10
63	63 B5	•	•	95	173	115	4	9		8		140	10
	71 B5	•	•	110	180	130	4.5	9		8		160	10
	71 B14		•	70	180	85	3.5	7			4	105	10
	80 B5	•	•	130	190	165	4.5	11		8		200	10
	80 B14	•	•	80	190	100	4	7		8		120	10
75	71 B5	•	•	110	221.5	130	4.5	9		8		160	10
	80/90 B5	•	•	130	232	165	4.5	11		8		200	10
	80 B14	•	•	80	222	100	4	7		8		120	10
	90 B14	•	•	95	232	115	4	9		8		140	10
90	71 B5	•	•	110	221.5	130	4.5	9		8		160	10
	80/90 B5	••	•	130	242	165	4.5	11		8		200	10
	80 B14	•	•	80	232	100	4	7		8		120	10
	90 B14	•	•	95	242	115	4	9		8		140	10
110	80/90 B5	•	•	130	294.5	165	4.5	11		8		200	10
	90 B14		•	95	294.5	115	4	9			4	140	10
	100/112 B5	•	•	180	304.5	215	5	14		8		250	14
	100/112 B14	•	•	110	304.5	130	4.5	9		8		160	10
130	80/90 B5	•		130	345.5	165	4.5	11	4			200	12
	100/112 B5	•		180	355.5	215	5	14	4			250	14

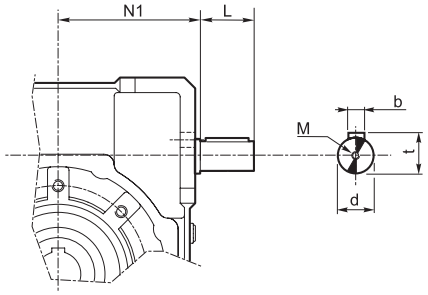
N.B.: Il montaggio STD di P_M=2 solo quando non è possibile il montaggio STD di P_M=1.

N.B.: STD mounting of P_M=2 only if STD mounting of P_M=1 is not possible.

ANMERKUNG: STD Montage von P_M=2 nur wenn STD Montage von P_M=1 unmöglich ist.

4.8 Entrata supplementare (vite bisporgente)

S.e.A.



NOTA: L'entrata supplementare nella serie H si trova nella posizione intermedia del cinematismo. Quindi, se utilizzata come comando, avrà la sola riduzione della coppia vite/corona. Se invece viene utilizzata come asse condotto, la sua velocità sarà quella in entrata ridotta dal rapporto 4:1 della precoppia.

4.8 Additional input (double extended shaft)

NOTE: *the second shaft of the H series gearboxes is placed in the intermediate position of the kinematic motion which if used as a drive will have only the reduction of the worm/wheel set. For the utilization as a driven shaft its speed will correspond to the input speed reduced by the ratio 4:1 of the pre-stage.*

4.8 Zusatzantrieb (beidseitige Welle)

H	d j6	L	M	N1	b	t
40	11	20	M4x12	52.5	4	12.5
50	14	25	M5x13	62.5	5	16
63	19	30	M8x20	74.5	6	21.5
75	24	40	M8x20	91	8	27
90	24	40	M8x20	108	8	27
110	28	50	M8x20	132.5	8	31
130	38	70	M10x25	152	10	41

BEMERKUNG: das zweite Wellenende der Getriebe der Serie H befindet sich in der Mitte des Getriebes. Falls das zweite Wellenende als zusätzliche Antriebswelle genutzt werden, muss aufgrund der Vorstufe mit einer um 4:1 reduzierte Drehzahl eingetrieben werden.

4.9 Limitatore di coppia cavo passante

Il limitatore di coppia viene consigliato in tutte quelle applicazioni che richiedono una limitazione sulla coppia trasmissibile per proteggere l'impianto e/o preservare il riduttore evitando sovraccarichi o urti indesiderati quanto inaspettati.
È un dispositivo con albero dotato di cavo passante, con funzionamento a frizione, ed è integrato al riduttore, presentando un ingombro limitato.
Concepito per lavorare a bagno d'olio, il dispositivo risulta affidabile nel tempo ed è esente da usura se non viene mantenuto in condizioni prolungate di slittamento (condizione che si verifica quando la coppia presenta valori superiori a quelli di taratura).
La taratura è facilmente regolabile dall'esterno attraverso il serraggio di una ghiera autobloccante che porta a compressione le 4 molle a tazza disposte tra loro in serie.
Il dispositivo non consente:
- l'impiego di cuscinetti a rulli conici in uscita
- funzionamento prolungato in condizioni di slittamento.

Nella tabella seguente vengono riportati i valori delle coppie di slittamento M_{2S} in funzione del n° di giri della ghiera.
I valori di taratura presentano una tolleranza del ±10% e si riferiscono ad una condizione statica.
In condizioni dinamiche è da notare che la coppia di slittamento assume valori diversi a seconda del tipo e/o modalità in cui si verifica il sovraccarico: con valori maggiori in caso di carico uniformemente crescente rispetto a volori più contenuti in seguito al verificarsi di picchi improvvisi di carico.
NOTA: quando si supera il valore di taratura si ha slittamento. Il coefficiente di attrito tra le superfici di contatto da statico diventa dinamico e la coppia trasmessa cala del 30% circa.
E' quindi opportuno prevedere uno stop per poter ripartire al valore di taratura iniziale.

4.9 Torque limiter with through hollow shaft

The use of a torque limiter is advisable in case of applications requiring the limitation of the torque in order to safeguard the plant and/or the gearbox against unexpected and undesired overloads or shocks.
The torque limiter is equipped with a through hollow shaft and friction clutch. It is integrated in the gearbox, space requirement is therefore limited.
Designed to work in oil bath, it is reliable over time and is not subject to wear unless prolonged slipping occurs (it happens when the torque values are higher than the calibration values).
Calibration can be easily adjusted from the outside by tightening the self-locking ring nut, which causes the compression of 4 Belleville washers arranged in series.

The use of the torque limiter does not go together with:
- *the use of tapered roller bearings at output*
- *Prolonged operation under slipping conditions.*

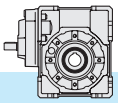
The following table shows the values of M_{2S} slipping torques depending on the number of revolutions of the ring nut.
Calibration values feature a ±10% tolerance and refer to static conditions.
Under dynamic conditions, the values of the slipping torque differ depending to the type of overload: the values are higher if the load increase is uniform, the values are lower if sudden load peaks occur.
NOTE: *Slipping occurs when the setting values are exceeded.*
The friction coefficient between the contact surfaces from static becomes dynamic and the transmitted torque is approx. 30% lower.
It is advisable to have a stop first in order to have a restart based on the initial setting value.

4.9 Drehmomentbegrenzer mit durchgehender Hohlwelle

Die Anwendung eines Drehmomentbegrenzers wird empfohlen, um die Anlage und das Getriebe gegen unerwünschte und unerwartete Überbelastungen und Stoßen zu schützen. Der Begrenzer verfügt über eine durchgehende Hohlwelle und eine Kupplung. Er ist in dem Getriebe integriert, d.h. der Raumbedarf ist klein.
Der Drehmomentbegrenzer wurde für Betrieb in Ölbad entworfen. Er ist zuverläßig über Zeit und verschleißfest (ausser wenn Rutschen für lange Zeit besteht: das passiert, wenn das Drehmoment höher als der Eichwert ist).
Die Eichung darf mühelos von aussen durch das Anziehen einer selbstsperrenden Mutter ausgeführt werden. Das Anziehen verursacht die Zusammendrückung der 4 wechselsinnigge schichteten Tellerfeder.

Der Drehmomentbeyrenzer sieht das folgende nicht vor:
- die Verwendung von Kegelrollenlager am Abtrieb
- Längerer Rutschbetrieb.

Die nachstehende Tabelle zeigt die Werte der Rutschmomente M_{2S} abhängig von der Zahl der Umdrehungen der Mutter.
Die Eichwerte weisen ±10% Toleranz auf und beziehen sich auf statische Bedingungen.
Unter dynamischen Bedingungen hat das Rutschmoment verschiedene Werte je nach Art der Überbelastung. Die Werte sind hoher, wenn die Belastung gleichmäßig zunimmt; sie sind niedriger im Falle von plötzlichen Belastungsspitzen.
BEMERKUNG: Rutschen tritt auf, wenn die eingestellten Werte überschritten werden. Der Reibungsfaktor zwischen den Berührungsflächen wird dynamisch anstatt statisch und das übertragene Drehmoment sinkt um ca. 30%.
Es ist daher ratsam, vor dem erneuten Anfahren anzuhalten, um die ursprünglichen Drehmomentwerte zu erreichen.



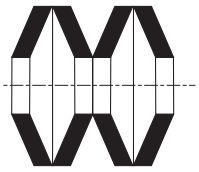
E' importante notare che la coppia di slittamento non resta sempre la medesima durante tutta la vita del limitatore.
Tende infatti a diminuire in rapporto al numero e alla durata degli slittamenti che, rodando le superfici di contatto, ne aumentano il rendimento.
È quindi opportuno verificare periodicamente, soprattutto durante la fase di rodaggio, la taratura del dispositivo.
Là dove sia richiesto un errore più contenuto nella taratura, è necessario testare la coppia trasmissibile sull'impianto.
Il dispositivo viene consegnato tarato alla coppia riportata a catalogo T_{2M} salvo diversa indicazione espressa in fase di ordinazione.

It is important to note that the slipping torque is not the same for the entire life of the torque limiter. It usually decreases in connection with the number and the duration of slippings, this is due to the surfaces of the torque limiter becoming more engaged, therefore inreasing the efficiency.
For this reason it is advisable to check the calibration of the device at regular intervals, specially during the running-in period.
Should a smaller calibration error be required, it is necessary to test the transmissible torque on the plant. The torque limiter is supplied already calibrated at the torque value reported in the catalogue T_{2M}, unless otherwise specified on the order.

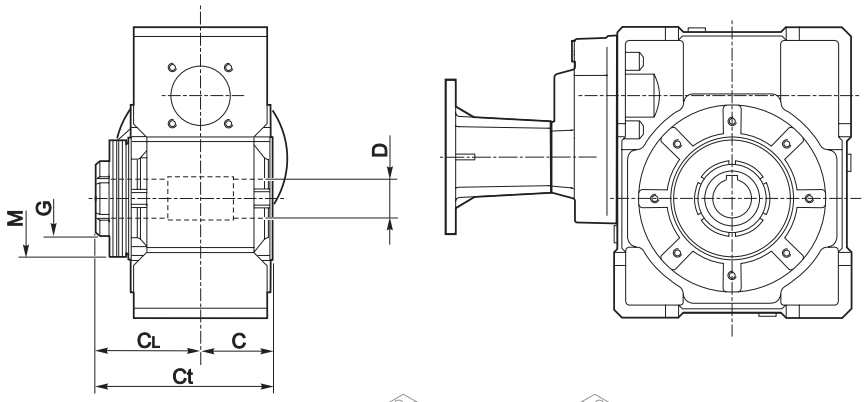
Es ist wichtig zu beachten, dass das Rutschmoment der Rutschkupplung über die gesamte Lebensdauer nicht konstant bleibt, sondern üblicherweise in Verbindung mit längeren Rutschzyklen aufgrund der eingelaufenen Berührungsflächen abnimmt.
Deswegen ist es ratsam, die Einstellung der Vorrichtung besonders während der Einlaufzeit in regelmäßigen Zeitabständen zu prüfen.
Wenn der Drehmomentbegrenzer geliefert wird, ist dieser schon auf dem im Katalog under T_{2M} angegebenen Wert eingestellt, außer wenn es in der Bestellung anders angegeben wird.

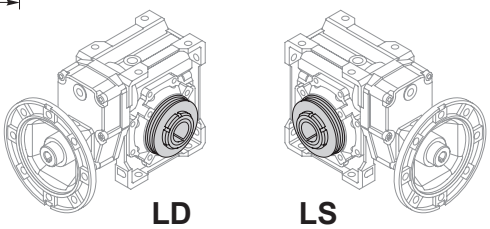
H	N°. giri della ghiera di regolazione / *N°. revolutions of ring nut* / Nr. Umdrehungen der Mutter															
	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5
	M_{2S} [Nm]															
40	35	40	45	50	55	60	65									
50	60	70	80	90	100	110	115	120								
63				115	125	130	140	155	165	175	180	190	200	220		
75		220	245	275	310	350										
90	250	290	330	365	410	435	465	500	530	560	580					
110	500	560	670	730	810	910	940	970								
130																

Disposizione delle molle
Washers' arrangement
Lage der Feder



IN SERIE (min. coppia, max. sensibilità)
SERIES *(min. torque, max sensitivity)*
SERIE (min. Moment, max. Empfindlichkeit)





LD **LS**

H	C	C_L	C_t	D H8	M	G
40	39	65	104	18 (19)	56x30.5x1.5	M30x1.5
50	46	76	122	25 (24)	63x40.5x1.8	M40x1.5
63	56	91	147	25	71x40.5x2	M40x1.5
75	60	100	160	28 (30)	90x50.5x3.5	M50x1.5
90	70	109	179	35 (32)	100x51x2.7	M50x1.5
110	77.5	127.5	205	42	125x61x4	M60x2.0
130						

( ) A richiesta / *On request* / Auf Anfrage

Nella versione con limitatore non è prevista la fornitura degli alberi lenti.

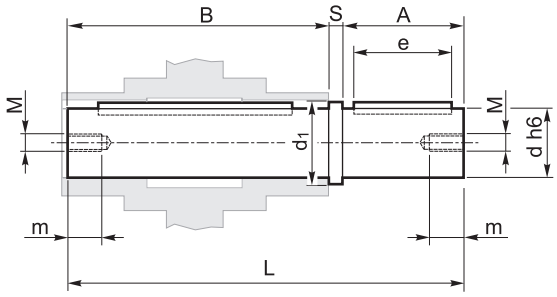
The version with torque limiter is supplied without output shafts.

Die Version mit Drehmomentbegrenzer wird ohne Abtriebswellen geliefert.

4.10 Accessori

Albero lento

Albero lento semplice
Single output shaft
Standard Abtriebswelle

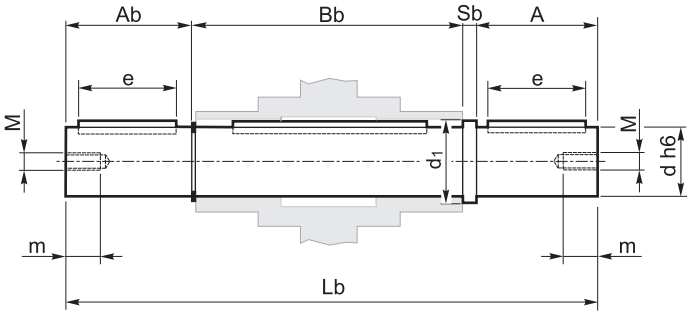


X	A	B	d h6		d_1	e	L	M	m	S
40	40	77	**18**	19	23.5	30	120	M6	16	3
50	50	90	**25**	24	31.5	40	143.5	M8	22	3.5
63	50	111	**25**		31.5	40	165	M8	22	4
75	60	119	**28**	30	34.5	50	183	M8	22	4
90	80	139	**35**		41.5	60	224	M10	28	5
110	80	154.5	**42**		49.5	60	242.5	M10	28	8
130	80	168	**45**		54.5	70	253	M16	36	5

4.10 Accessories

Output shaft

Albero lento doppio
Double output shaft
Doppelte Abtriebswelle



A	A_b	B_b	d h6	d_1	e	L_b	S_b
40	39	79	**18**	23.5	30	161	3
50	49	93	**25**	31.5	40	195.5	3.5
50	49	113	**25**	31.5	40	216	4
60	59	121	**28**	34.5	50	244	4
80	78.5	141.5	**35**	41.5	60	305	5
80	77.5	157	**42**	49.5	60	322.5	8
80	78	172	**45**	54.5	70	335	5

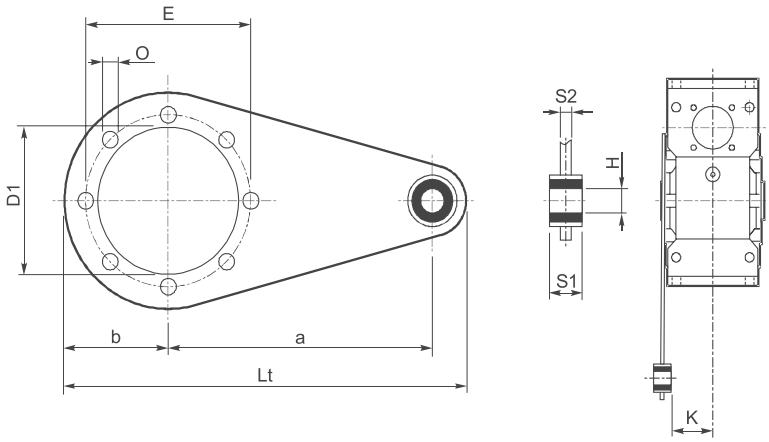
4.10 Accessories

Abtriebswelle

Braccio di reazione

Torque arm

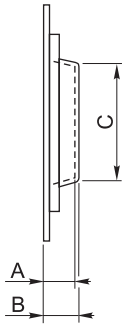
Drehmomentstütze



H	a	b	D_1	E	H	K	L_t	O	S1	S2
40	100	45	60	75	10	31.5	167	7	14	4
50	100	50	70	85	10	39	172	9	14	5
63	150	55	80	95	10	49	227	9	14	6
75	200	70	95	115	20	47.5	302	9	25	6
90	200	80	110	130	20	57.5	312	11	25	6
110	250	100	130	165	25	62	390	11	30	6
130	250	125	180	215	25	69	415	13	30	6

Kit di protezione:

Albero cavo / *Hollow shaft* / Hohlwelle

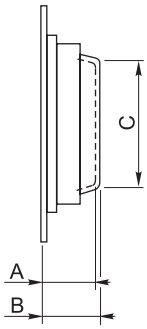


	A	B	C
40	14	15.5	44
50	15	16.5	54
63	17	19	60
75	18	20	70
90	21.5	24	80
110	22	25	96
130	22	25	130

Protection Kit:

Schutzvorrichtung

Limitatore di coppia / *Torque limiter* / Drehmomentbegrenzer



	A	B	C
40	40	41.5	44
50	47	48.5	53
63	52	54	55
75	58	60	68
90	60.5	63	70
110	72	75	85
130			

Opzioni disponibili:

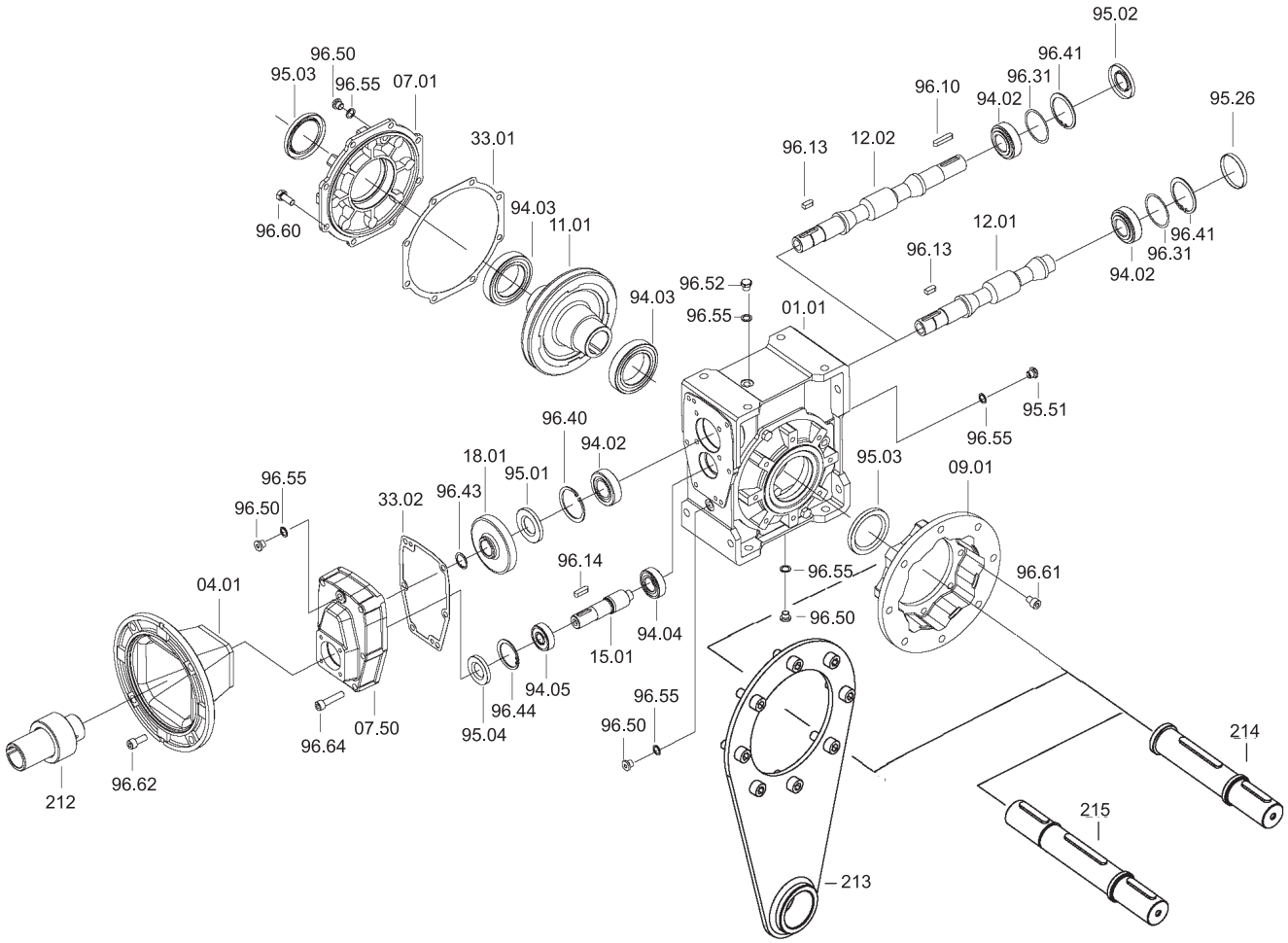
Cuscinetti a rulli conici corona

Available options:

Tapered roller bearing on worm wheel

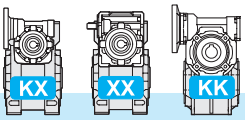
Auf Anfrage ist folgendes Zubehör erhältlich:
Kegelrollenlager auf Schneckenrad

HA - HF

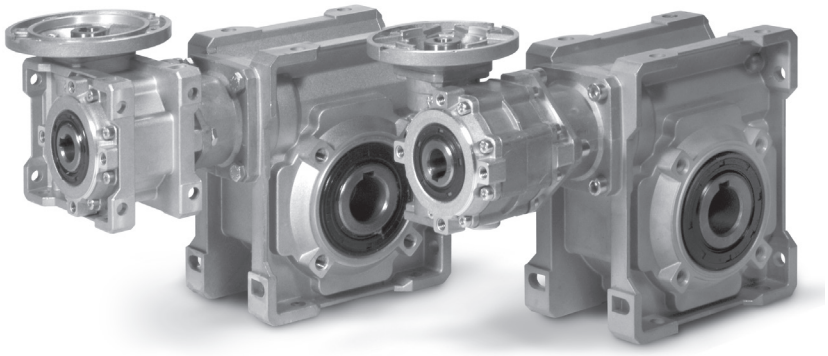


H	Cuscinetti / *Bearings* / Lager					Anelli di tenuta / Oilseals Öldichtungen				Cappellotto / *Closed oil seal* Geschlossene Öldichtung
	94.02	**94.03**		**94.04**	**94.05**	**95.01**	**95.02**	**95.03**	**95.04**	**95.26**
40	**6201** 12x32x10	**6006** 30x55x13	***32006** 30x55x17	**6000** 10x26x8	**6000** 10x26x8	12/32/7	12/32/7	30/47/7	10/26/7	ø 32x7
50	**6203** 17x40x12	**6008** 40x68x15	***32008** 40x68x19	**6200** 10x30x9	**6201** 12x32x10	17/40/7	17/40/7	40/62/8	12/32/7	ø 40x7
63	**30204** 20x47x15.25	**6008** 40x68x15	***32008** 40x68x19	**6201** 12x32x10	**6203** 17x40x12	20/47/7	20/47/7	40/62/8	17/40/7	ø 47x7
75	**30205** 25x52x16.25	**6010** 50x80x16	***32010** 50x80x20	**6202** 15x35x11	**6204** 20x47x14	25/52/7	25/52/7	50/72/8	20/47/7	ø 52x7
90	32205 25x52x19.25	**6010** 50x80x16	***32010** 50x80x20	**6202** 15x35x11	**6204** 20x47x14	25/52/7	25/52/7	50/72/8	20/47/7	ø 52x7
110	**32206B** 30x62x21.25	**6012** 60x95x18	***32012** 60x95x23	**6303** 17x47x14	**6205** 25x52x15	30/62/7	30/62/7	60/85/8	25/52/7	ø 62x7
130	**33208** 40x80x32	**6015** 75x115x20	***32015** 75x115x25	**6304** 20x52x15	**6305** 25x62x17	40/80/10	40/80/10	75/100/10	25/62/8	ø 80x10

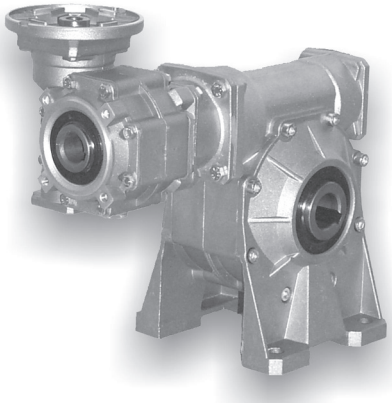
* Cuscinetti a rulli conici a richiesta - Tapered roller bearings on request - Auf Wunsch Kegelrollenlager



5.0 RIDUTTORI A VITE SENZA FINE COMBINATI / COMBINED WORM GEARBOXES / KOMBINIERTE-SCHNECKENGETRIEBE



XX **KX**



KK

07/2019

5.1 Caratteristiche

La combinazione di due riduttori a vite senza fine comporta rendimenti molto bassi, ma l'elevata riduzione di velocità ottenuta in uno spazio ridottissimo rende comunque interessante, e a volte insostituibile, questa soluzione. I riduttori a vite senza fine combinati sono disponibili nelle serie KX, XX e KK.

Le serie KX e KK sono disponibili esclusivamente nella versione p.a.m.

La serie XX è invece disponibile nella versione alberata XXA e nelle due versioni con predisposizione attacco motore in forma compatta XXC o con campana e giunto XXF.

Sono forniti con albero cavo di serie ed esiste un'ampia gamma di accessori:
seconda entrata, cuscinetti conici sulla corona, flangia uscita, albero lento con 1 o 2 sporgenze, limitatore di coppia con cavo passante, braccio di reazione.

5.1 Characteristics

The combination of two worm gearboxes provides very low efficiency, however the fact that substantial reduction in speed can be obtained in an extremely reduced space makes this solution very interesting and sometimes irreplaceable. Combined worm gearboxes are available in series: KX , XX and KK.

The KX and KK series are available for IEC version only.

The XX series is available in the XXA version with shaft and in two versions with motor coupling: XXC (compact) and XXF (with bell and joint).

The hollow shaft is supplied as standard. A broad range of accessories is avalable: second input, tapered roller bearings on the worm wheel, output flange, single or double extended output shaft, torque limiter with through hollow shaft, torque arm.

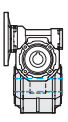
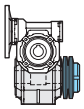
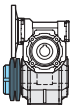
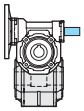
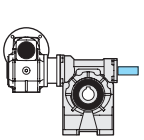
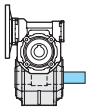
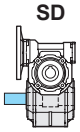
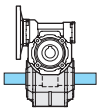
5.1 Merkmale

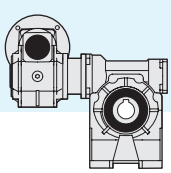
Die Kombination zweier Schneckengetriebe bringt sehr niedrigen Wirkungsgrad mit sich, es handelt sich jedoch um eine interessante und manchmal unersetzbare Lösung, weil hohe Drehzahlverringerung in einem beträchtlich reduzierten Raum erhalten werden kann. Kombinierte Schneckengetriebe sind in folgende Serien erhältlich: KX, XX und KK.
Die Serien KX und KK sind nur mit IEC-Motoranbau verfügbar.

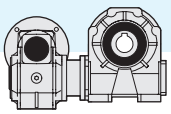
Die Serie XX ist mit Welle (XXA Version), oder mit Kupplung für Motoranschluss (XXC kompakt und XXF mit Glocke und Verbindsstück) lieferbar.

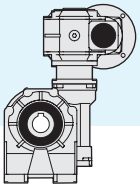
Die Hohlwelle gehört zur serienmäßigen Ausstattung. Eine breite Auswahl an Zubehör ist erhältlich: zweiter Antrieb, Kegelrollenlager auf Schneckenrad, Abtriebs- flansch, Standard oder doppelseitig herausrangende Abtriebswelle, Drehmomentbegrenzer mit durchgehender Hohlwelle, Drehmomentstütze.

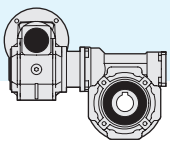
5.2 Designazione / *Designation* / Bezeichnung

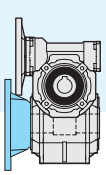
RIDUTTORE / *GEARBOX* / GETRIEBE															ACCESSORI *ACCESSORIES* ZUBEHÖR	
Riduttore entrata *Gearbox at input* Getriebe am Antrieb	Macchina uscita *Gearbox at output* Getriebe am Abtrieb	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Rapporto rid. *Ratio* Untersetzung	Predispos.att. mot. *Motor coupling* Motoranschluss	Versione *Version* Version	Forma costruttiva *Execution* Bauform	Posizione di mont. *Mounting position* Einbaulage	Albero uscita cavo *Hollow output shaft* Abtriebshohlwelle	Limitatore di coppia. *Torque limiter* Drehmoment-begrenzer	Seconda entrata *Additional input* Zusatzantrieb				Albero uscita *Output shaft* Abtriebswelle	Braccio di reazione *Torque arm* Drehmomentstütze
K	**K**	**C**	**50/110**	**1200**	**P.A.M.**	**F1**	**a**	**B3**	**H42**	**LD**	**SeA1**				**SD**	**BR**
Riduttore a vite senza fine combinato *Combined worm gearbox* **Doppelschneckengetriebe**		 **C**	**30/30** **30/40** **30/50** **30/63** **40/63** **40/75** **40/89** **40/90** **50/75** **50/89** **50/90** **50/110** **63/110** **63/130**	**150** **200** **300** **450** **600** **900** **1200** **1500** **1950** **2500** **3250** **4000** **5000** **10000**	**56** **63** **71** **80** **90**	**P** **F (1-2-3)** **A (1-2)** **B (1-2)** **V (1-2)**	**ab** **cd** **ef** **gh** **ik** **im** **no** **pq**	**B3** **B6** **B7** **B8** **V5** **V6**	vedi tabelle *see tables* siehe Tabellen 	 **LD**  **LS**	 **SeA1**  **SeA2**			 **SD**  **SS**  **DD**	 **BR**

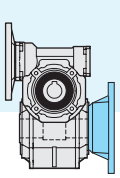

KKC..A


KKC..B


KKC..V


KKC..P

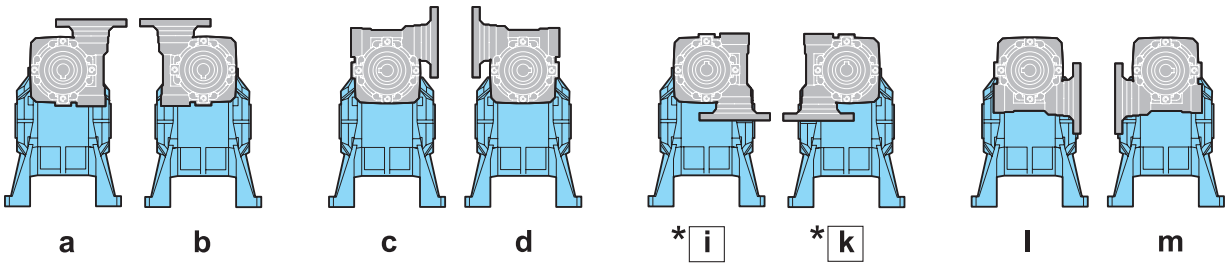

KKC..FS


KKC..FD

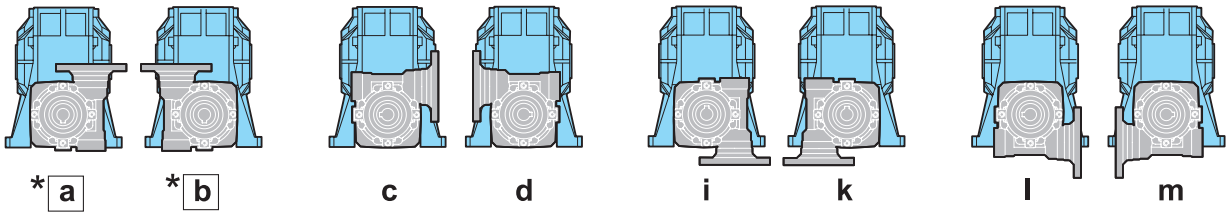
5.2 Designazione — *5.2 Designation* — 5.2 Bezeichnung

Forma costruttiva / *version* / Bauform

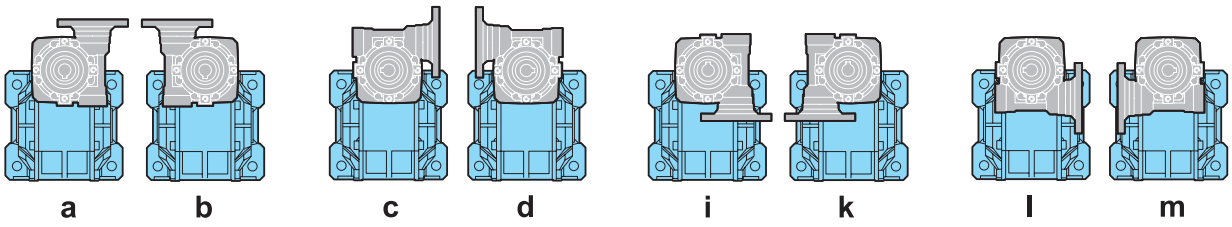
A



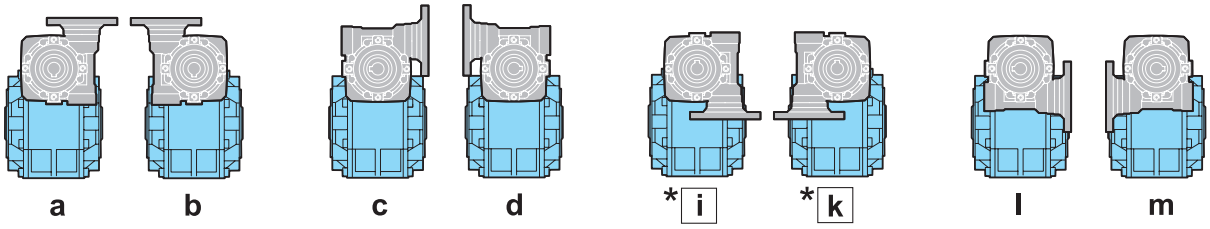
B



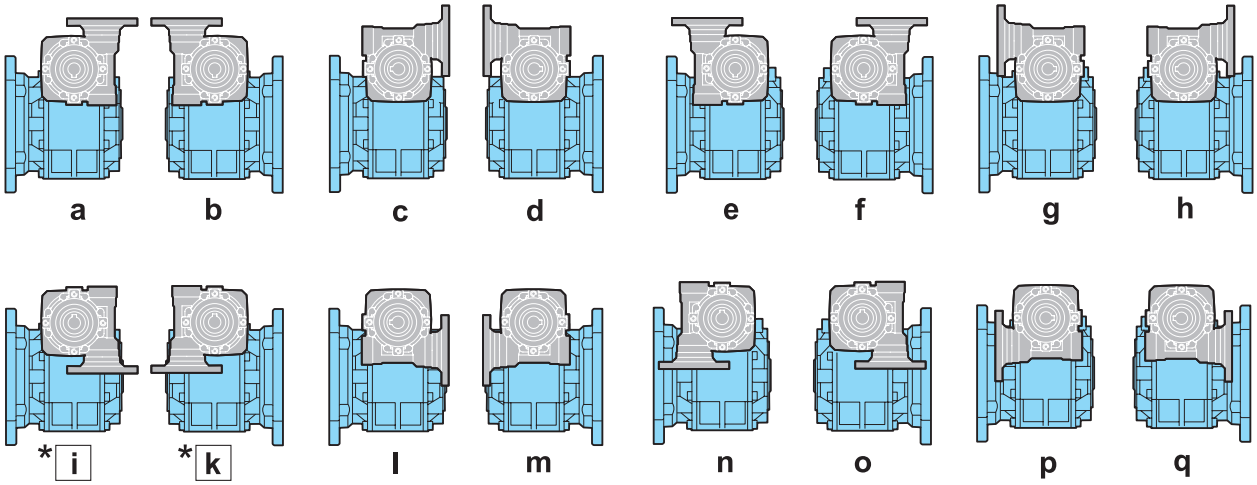
V



P



F

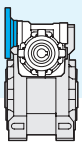


*☐ Forma costruttiva non realizzabile su: / *Version not feasible on:* / Bauform nicht ausführbar für:
30/30, 30/40, 30/50 PAM 63B5 (ø 140), 40/63 PAM 71B5 (ø 160)

5.2 Designazione — *5.2 Designation* — 5.2 Bezeichnung

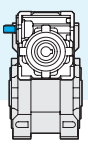
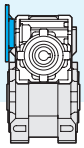
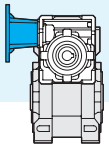
RIDUTTORE / *GEARBOX* / GETRIEBE																	ACCESSORI *ACCESSORIES* ZUBEHÖR	
Riduttore entrata *Gearbox at input* Getriebe am Antrieb	Macchina uscita *Gearbox at output* Getriebe am Abtrieb	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Rapporto rid. *Ratio* Untersetzung	Predispos.att. mot. *Motor coupling* Motoranschluss	Versione *Version* Version	Forma costruttiva *Execution* Bauform	Posizione di mont. *Mounting position* Einbaulage	Albero uscita cavo *Hollow output shaft* Abtriebshohlwelle	Limitatore di coppia. *Torque limiter* Drehmoment-begrenzer	Seconda entrata *Additional input* Zusatzantrieb	Albero uscita *Output shaft* Abtriebswelle	Braccio di reazione *Torque arm* Drehmomentstütze					
K	**X**	**C**	**50/110**	**1200**	**P.A.M.**	**F1**	**a**	**B3**	**H42**	**LD**	**SeA1**	**SD**	**BR**					
Riduttore a vite senza fine combinato *Combined worm gearbox* **Doppelschneckengetriebe**		**C**	**30/30** **30/40** **30/50** **30/63** **40/63** **40/75** **40/89** **40/90** **50/75** **50/89** **50/90** **50/110** **63/110** **63/130**	**150** **200** **300** **450** **600** **900** **1200** **1500** **1950** **2500** **3250** **4000** **5000** **10000**	**56** **63** **71** **80** **90**	**P** **F** **(1-2-3)**	**ab** **cd** **ef** **gh** **ik** **im** **no** **pq**	**B3** **B6** **B7** **B8** **V5** **V6**	vedi tabelle *see tables* siehe Tabellen	**LD** **LS**	**SeA1** **SeA2**	**SD** **SS** **DD**	**BR**					

KXC..



RIDUTTORE / *GEARBOX* / GETRIEBE																	ACCESSORI *ACCESSORIES* ZUBEHÖR	
Riduttore entrata *Gearbox at input* Getriebe am Antrieb	Macchina uscita *Gearbox at output* Getriebe am Abtrieb	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Rapporto rid. *Ratio* Untersetzung	Predispos.att. mot. *Motor coupling* Motoranschluss	Versione *Version* Version	Forma costruttiva *Execution* Bauform	Posizione di mont. *Mounting position* Einbaulage	Albero uscita cavo *Hollow output shaft* Abtriebshohlwelle	Limitatore di coppia. *Torque limiter* Drehmoment-begrenzer	Seconda entrata *Additional input* Zusatzantrieb	Albero uscita *Output shaft* Abtriebswelle	Braccio di reazione *Torque arm* Drehmomentstütze					
X	**X**	**C**	**50/110**	**1200**	**P.A.M.**	**F1**	**a**	**B3**	**H42**	**LD**	**SeA1**	**SD**	**BR**					
Riduttore a vite senza fine combinato *Combined worm gearbox* **Doppelschneckengetriebe**		**A** **C** **F**	**30/30** **30/40** **30/50** **30/63** **40/63** **40/75** **40/89** **40/90** **50/75** **50/89** **50/90** **50/110** **63/110** **63/130**	**150** **200** **300** **450** **600** **900** **1200** **1500** **1950** **2500** **3250** **4000** **5000** **10000**	**56** **63** **71** **80** **90**	**P** **F** **(1-2-3)**	**ab** **cd** **ef** **gh** **ik** **im** **no** **pq**	**B3** **B6** **B7** **B8** **V5** **V6**	vedi tabelle *see tables* siehe Tabellen	**LD** **LS**	**SeA1** **SeA2**	**SD** **SS** **DD**	**BR**					

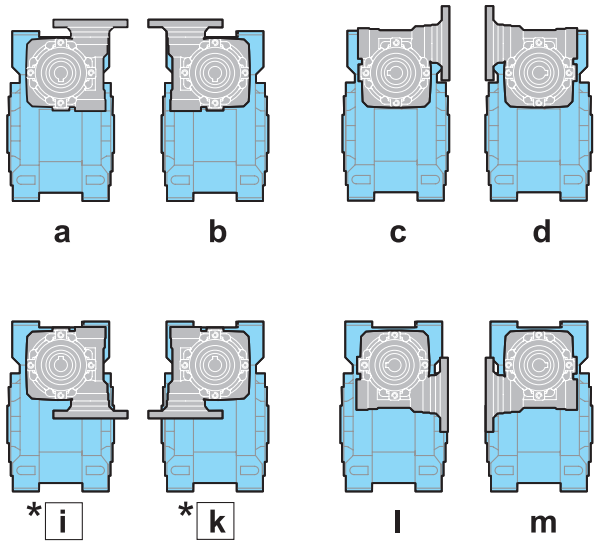
XXA.. **XXC..** **XXF..**

5.2 Designazione — *5.2 Designation* — 5.2 Bezeichnung

Forma costruttiva / *version* / Bauform

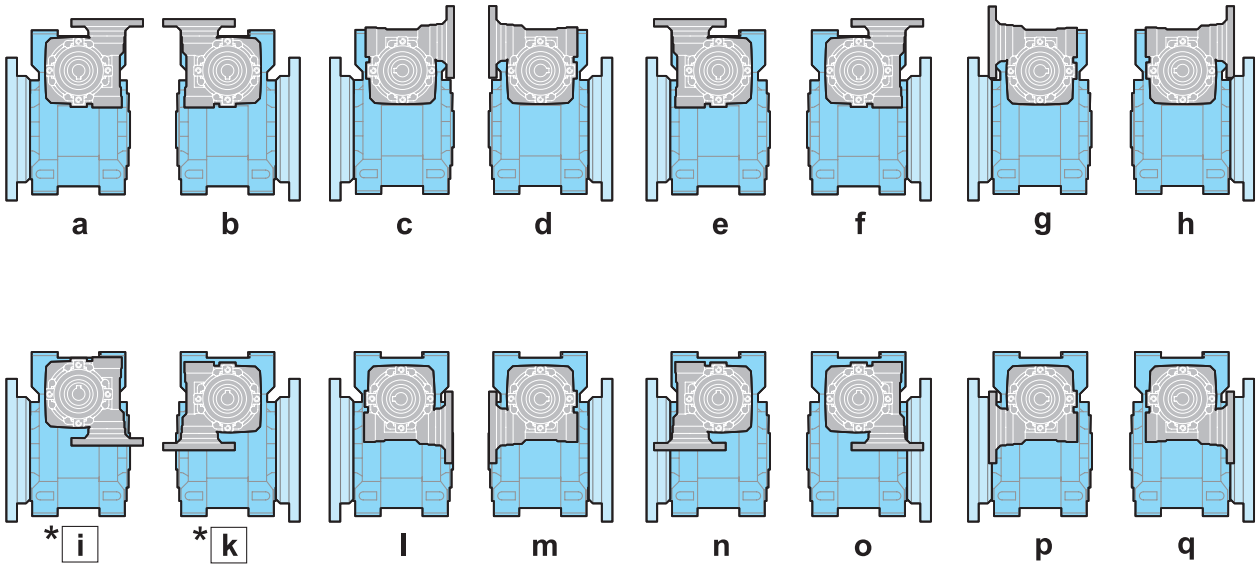
P



*□
Forma costruttiva non realizzabile su:
Version not feasible on:
Bauform nicht ausführbar für:

**30/30, 30/40, 30/50 PAM 63B5 (ø 140),
40/63 PAM 71B5 (ø 160)**

F



5.3 Lubrificazione e posizioni di montaggio

I riduttori a vite senza fine combinati sono forniti completi di lubrificante sintetico a base PAG con indice di viscosità ISO VG320. Si raccomanda di precisare sempre in fase di ordine la forma costruttiva e la posizione di lavoro desiderata.

Per ulteriori dettagli consultare pag. 12 paragrafo 1.13.

5.3 Lubrication and mounting position

Combined worm gearboxes are supplied with synthetic lubricant, PAG base, viscosity index ISO VG320.
Required version and mounting position always to be specified when ordering.

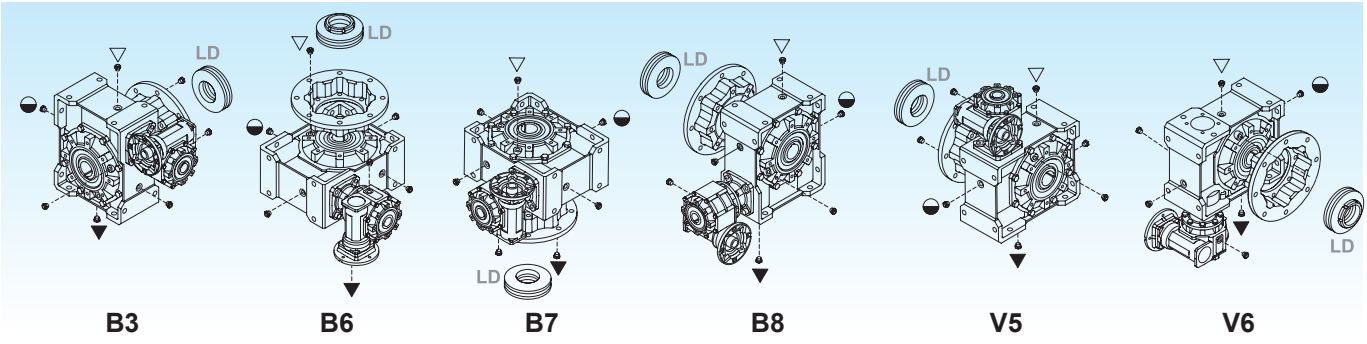
For more details, see page 12, paragraph 1.13.

5.3 Schmierung und Einbaulage

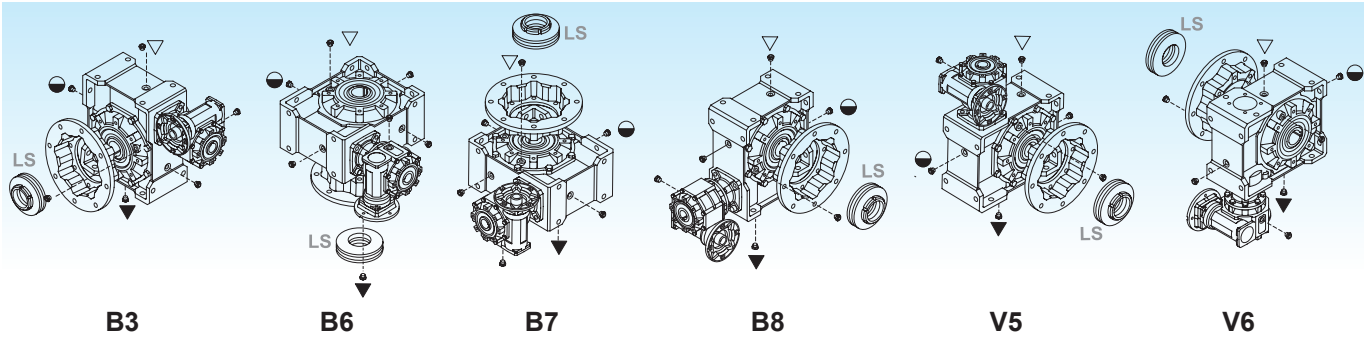
Kombinierte Schneckengetriebe werden mit synthetischem Schmiermittel auf PAG Basis und Viskosität Index ISO VG320 geliefert.
Im Auftrag sind immer Einbaulage und Bauform anzugeben.

Weitere Einzelheiten finden Sie auf Seite 12, Absatz 1.13.

F **(b, d, f, h, k, m, o, q)** **P** **(a, b, c, d, i, k, l, m)**



F **(a, c, e, g, i, l, n, p)**



▽ Carico e sfiato / *Filling and breather* Einfüll und Entlüftung
◒ Livello / *Level* / Ölstand
▼ Scarico / *Drain* / Ablass

Nei corpi in alluminio 30, 40, 50, 63, 75 e 89 è presente un solo tappo di riempimento olio.

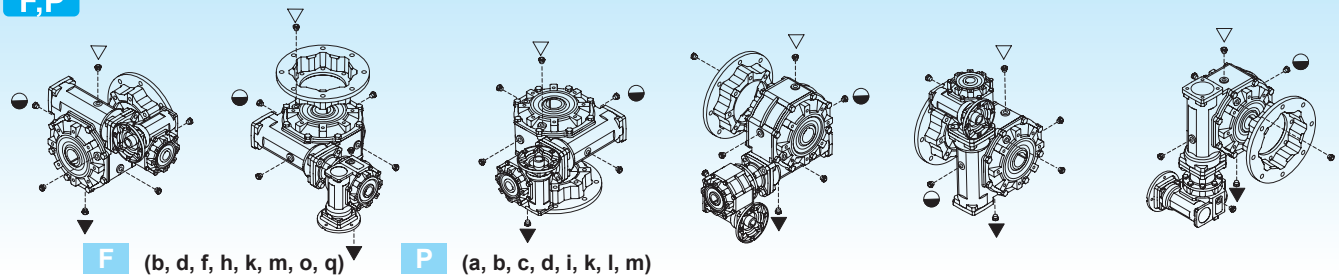
Aluminium housings size 30, 40, 50, 63, 75 and 89 have one filling plug only.

Gehäuse aus Alumiunium Größe 30, 40, 50, 63, 75 und 89 verfügen über nur eine Einfüllschraube.

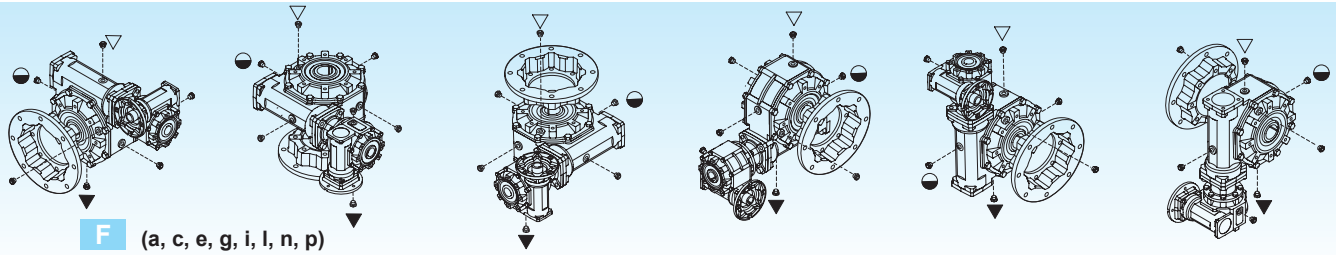
			Q.tà olio / *Oil quantity* / Schmiermittelmenge [lt]													
			XXA - XXC - KXC - XXF													
			30/30	**30/40**	**30/50**	**30/63**	**40/63**	**40/75**	**40/89**	**40/90**	**50/75**	**50/89**	**50/90**	**50/110**	**63/110**	**63/130**
Posizioni di montaggio *Mounting positions* Einbaulage	**B3**	**IN**	0.015				0.04				0.08				0.16	0.4
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.45	1.1	0.26	0.45	1.1	2.2	2.2	3.6
	B6	**IN**	0.015				0.04				0.08				0.16	0.4
		OUT	0.030	0.060	0.120	0.220	0.220	0.34	0.75	0.9	0.26	0.75	0.9	1.8	1.8	3.0
	B7	**IN**	0.015				0.04				0.08				0.16	0.4
		OUT	0.030	0.060	0.120	0.220	0.220	0.34	0.75	0.9	0.26	0.75	0.9	1.8	1.8	3.0
	B8	**IN**	0.015				0.04				0.08				0.16	0.4
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.45	1	0.26	0.45	1	1.6	1.6	2.5
	V5	**IN**	0.030				0.06				0.12				0.22	0.22
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.45	1.5	0.26	0.45	1.5	2.6	2.6	3.8
	V6	**IN**	0.030				0.06				0.12				0.22	0.22
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.45	1.5	0.26	0.45	1.5	2.6	2.6	3.8

IN = Riduttore entrata / *Gearbox at input* / Getriebe am Antrieb
OUT = Riduttore uscita / *Gearbox at output* / Getriebe am Abtrieb

F,P

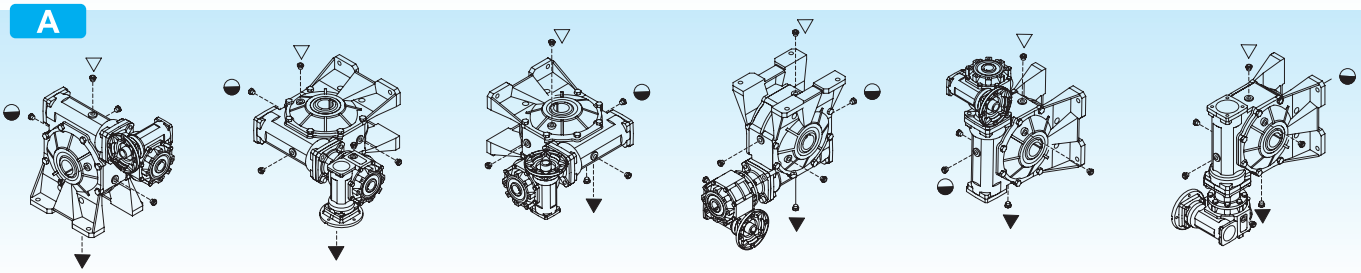


F (b, d, f, h, k, m, o, q) **P** (a, b, c, d, i, k, l, m)

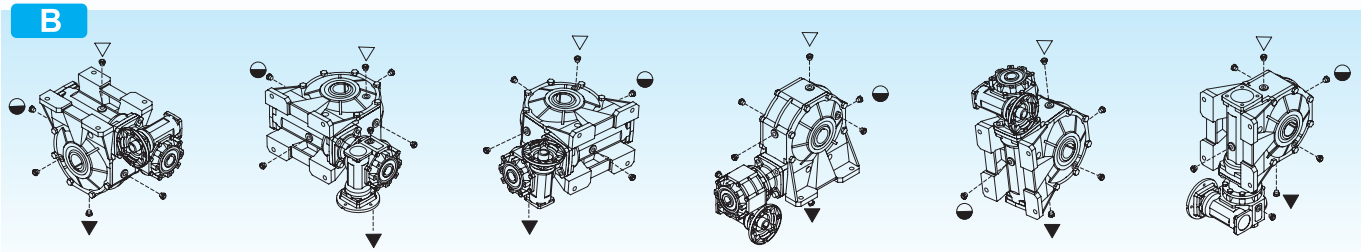


F (a, c, e, g, i, l, n, p)

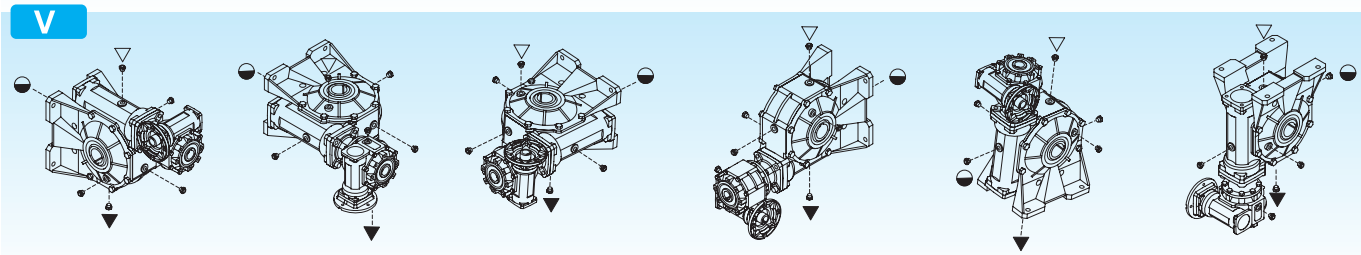
A



B



V



B3 **B6** **B7** **B8** **V5** **V6**

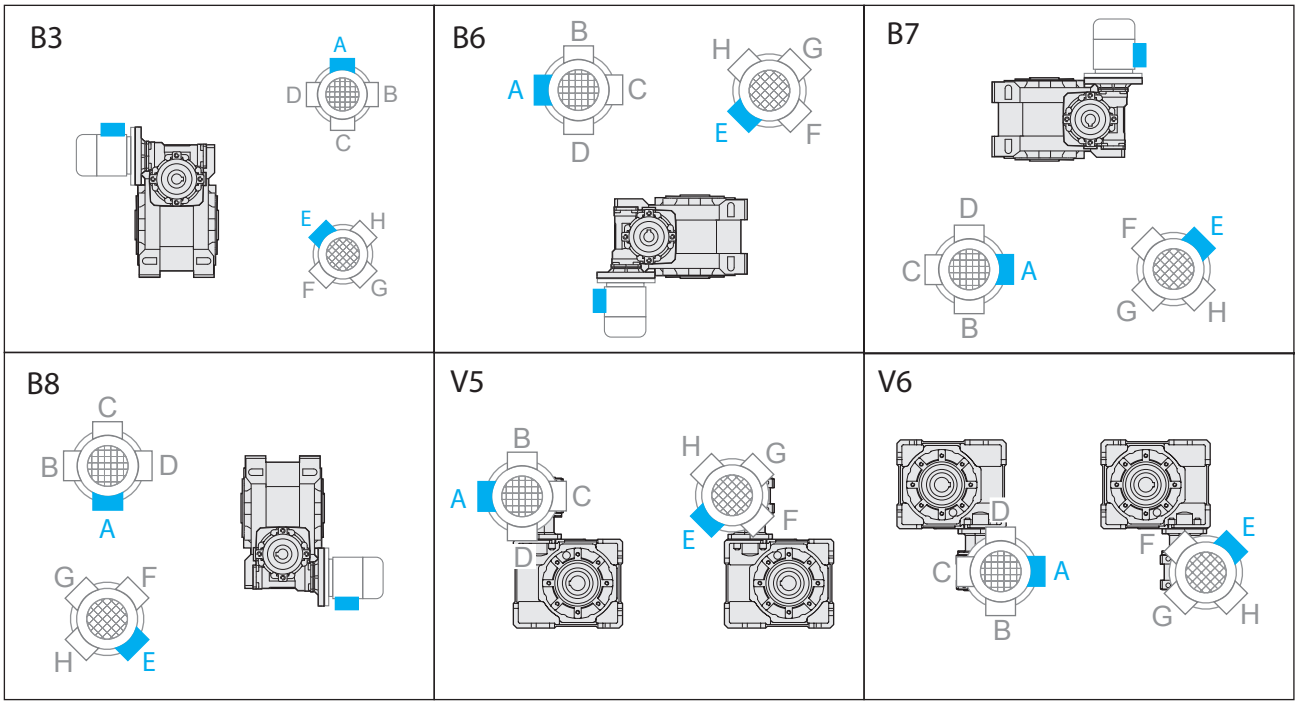
			Q.tà olio / *Oil quantity* / Schiermittelmenge [lt]													
			Combinato tipo: **KKC**													
			30/30	**30/40**	**30/50**	**30/63**	**40/63**	**40/75**	**40/89**	**40/90**	**50/75**	**50/89**	**50/90**	**50/110**	**63/110**	**63/130**
Posizioni di montaggio *Mounting positions* Einbaulage	**B3**	**IN**	0.015				0.04				0.08				0.16	0.16
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.60	1	0.26		1	2	2	3
	B6	**IN**	0.015				0.04				0.08				0.16	0.4
		OUT	0.030	0.060	0.120	0.220	0.220	0.340	0.70	0.9	0.26		0.9	1.8	1.8	3.0
	B7	**IN**	0.015				0.04				0.08				0.16	0.4
		OUT	0.030	0.060	0.120	0.220	0.220	0.340	0.70	0.9	0.26		0.9	1.8	1.8	3.0
	B8	**IN**	0.015				0.04				0.08				0.16	0.16
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.60	0.8	0.26		0.8	2	2	2.1
	V5	**IN**	0.030				0.060				0.120				0.220	0.220
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.60	1.5	0.26		1.5	2.6	2.6	3.8
	V6	**IN**	0.030				0.060				0.120				0.220	0.220
		OUT	0.015	0.04	0.08	0.16	0.16	0.26	0.60	1.5	0.26		1.5	2.6	2.6	3.8

IN = Riduttore entrata / *Gearbox at input* / Getriebe am Antrieb **OUT =** Riduttore uscita / *Gearbox at output* / Getriebe am Abtrieb

5.4 Posizione morsettiera

5.4 Terminal board position

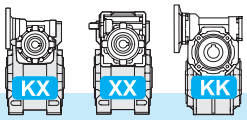
5.4 Lage der Klemmenkaste



Specificare sempre in fase di ordinazione la posizione di montaggio e la forma costruttiva.
Posizione morsettiera v. pag. 109 - 110 (PM=1; PM=2)

Mounting position always to be specified when ordering.
Terminal board position see page 109-110 (PM=1; PM=2)

Bei der Bestellung immer die gewünschte Montageposition und Bauform angeben.
Lage der Klemmenkaste Seite 109-110 (PM=1; PM=2)



5.5 Dati tecnici — *5.5 Technical data* — 5.5 Technische Daten

30/30

Kg 3.0

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
in	30	30	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
	i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.51	37	0.070	32	0.06	1.2	—	63	56	—	63	56	—	63	56
200		20	7.0	0.47	32	0.050	39	0.06	0.8									
300		30	4.7	0.42	39	0.045	52*	0.06	0.8*									
450	15		3.1	0.40	39	0.032	73*	0.06	0.5*									
600	20		2.3	0.37	39	0.026	91*	0.06	0.4*									
900	30		1.6	0.34	39	0.019	125*	0.06	0.3*									
1200	40		1.2	0.30	39	0.016	149*	0.06	0.3*									
1500	50		0.9	0.28	39	0.014	173*	0.06	0.2*									
1950	65		0.7	0.26	39	0.011	209*	0.06	0.2*		—							
2500	50	50	0.6	0.23	30	0.008	235*	0.06	0.1*		63							
3250	65		0.4	0.21	30	0.006	283*	0.06	0.11*									
4000	80		0.4	0.20	30	0.005	328*	0.06	0.09*		—							
5000	100		0.3	0.19	30	0.005	385*	0.06	0.08*									
10000		100	0.1	0.15	17	0.002	609*	0.06	0.03*									

30/40

Kg 4.0

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
in	30	40	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
	i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.54	82	0.148	72	0.13	1.1	—	63	56	—	63	56	—	63	56
200		20	7.0	0.51	76	0.110	76	0.11	1.0									
300		30	4.7	0.43	82	0.094	79	0.09	1.0									
450	15		3.1	0.40	82	0.067	74	0.06	1.1									
600	20		2.3	0.37	82	0.054	92	0.06	0.9									
900	30		1.6	0.34	82	0.039	126*	0.06	0.6*									
1200	40		1.2	0.31	82	0.033	151*	0.06	0.5*									
1500	50		0.9	0.29	82	0.028	176*	0.06	0.5*									
1950	65		0.7	0.27	82	0.023	212*	0.06	0.4*		—							
2500	50	50	0.6	0.23	68	0.017	236*	0.06	0.3*		63							
3250	65		0.4	0.21	68	0.014	285*	0.06	0.24*									
4000	80		0.4	0.20	68	0.012	330*	0.06	0.21*		—							
5000	100		0.3	0.19	68	0.011	387*	0.06	0.18*									
10000		100	0.1	0.15	35	0.003	626*	0.06	0.06*									

30/50

Kg 6.0

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
in	30	50	n_2	Rd	T_2	P	T_2	P_1	FS'	Input - IEC								
	i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.55	149	0.265	124	0.22	1.2	—	63	56	—	63	56	—	63	56
200		20	7.0	0.52	144	0.201	129	0.18	1.1									
300		30	4.7	0.44	150	0.166	118	0.13	1.3									
450	15		3.1	0.42	150	0.118	140	0.11	1.1									
600	20		2.3	0.39	150	0.094	143	0.09	1.0									
900	30		1.6	0.36	150	0.069	131	0.06	1.1									
1200	40		1.2	0.32	150	0.058	156	0.06	1.0									
1500	50		0.9	0.30	150	0.049	182	0.06	0.8									
1950	65		0.7	0.28	150	0.041	220*	0.06	0.7*		—							
2500	50	50	0.6	0.25	125	0.030	253*	0.06	0.5*		63							
3250	65		0.4	0.23	125	0.025	305*	0.06	0.41*									
4000	80		0.4	0.22	125	0.021	354*	0.06	0.35*		—							
5000	100		0.3	0.20	125	0.018	414*	0.06	0.30*									
10000		100	0.1	0.16	69	0.006	645*	0.06	0.11*									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

5.5 **Dati tecnici** *5.5* ***Technical data*** 5.5 **Technische Daten**

30/63 — 8.5 kg

in	30 i_1	63 i_2	n_2 [min^{-1}]	Rd	XXA T_{2M} [Nm]	XXA P [kW]	KXC - XXC - XXF - KKC T_2 [Nm]	P_1 [kW]	FS'	Input - IEC: KC - XC B5/B14	XF B5	XF B14
n_1 = 1400												
150	10	15	9.3	0.56	**228**	0.400	126	0.22	1.8	—	—	—
200	10	20	7.0	0.54	**279**	0.378	162	0.22	1.7	—	—	—
300	10	30	4.7	0.46	**268**	0.285	207	0.22	1.3	—	—	—
450	15	30	3.1	0.43	**268**	0.202	238	0.18	1.1	—	—	—
600	20	30	2.3	0.40	**268**	0.162	215	0.13	1.2	—	—	—
900	30	30	1.6	0.37	**268**	0.118	250	0.11	1.1	—	—	—
1200	40	30	1.2	0.33	**268**	0.099	243	0.09	1.1	—	—	—
1500	50	30	0.9	0.31	**268**	0.085	189	0.06	1.4	—	—	—
1950	65	30	0.7	0.29	**268**	0.071	228	0.06	1.2	—	—	—
2500	50	50	0.6	0.26	**222**	0.050	265	0.06	0.8	**63**	**56**	**56**
3250	65	50	0.4	0.24	**222**	0.042	319*	0.06	0.70*	**63**	**56**	**56**
4000	80	50	0.4	0.23	**222**	0.036	369*	0.06	0.60*	**63**	**56**	**56**
5000	100	50	0.3	0.21	**222**	0.031	433*	0.06	0.51*	**63**	**56**	**56**
10000	100	100	0.1	0.16	**138**	0.012	663*	0.06	0.21*	**63**	**56**	**56**

40/63 — 9.5 kg

in	40 i_1	63 i_2	n_2 [min^{-1}]	Rd	XXA T_{2M} [Nm]	XXA P [kW]	KXC - XXC - XXF - KKC T_2 [Nm]	P_1 [kW]	FS'	Input - IEC: KC - XC B5/B14	XF B5	XF B14
n_1 = 1400												
150	10	15	9.3	0.56	**261**	0.452	214	0.37	1.2	**71**	**71**	**71**
200	10	20	7.0	0.55	**279**	0.373	277	0.37	1.0	**71**	**71**	**71**
300	10	30	4.7	0.46	**268**	0.282	238	0.25	1.1	**71**	**71**	**71**
450	15	30	3.1	0.44	**268**	0.197	244	0.18	1.1	**71**	**71**	**71**
600	20	30	2.3	0.43	**268**	0.154	226	0.13	1.2	**71**	**71**	**71**
900	30	30	1.6	0.38	**268**	0.115	257	0.11	1.0	**71**	**71**	**71**
1200	40	30	1.2	0.36	**268**	0.091	264	0.09	1.0	**71**	**71**	**71**
1500	50	30	0.9	0.33	**268**	0.079	203	0.06	1.3	**63**	**63**	**63**
1950	65	30	0.7	0.30	**268**	0.067	241	0.06	1.1	**63**	**63**	**63**
2500	50	50	0.6	0.28	**222**	0.047	284	0.06	0.8	**63**	**63**	**63**
3250	65	50	0.4	0.25	**222**	0.039	338*	0.06	0.66*	**56**	**56**	**56**
4000	80	50	0.4	0.24	**222**	0.033	400*	0.06	0.55*	**56**	**56**	**56**
5000	100	50	0.3	0.23	**222**	0.028	471*	0.06	0.47*	**56**	**56**	**56**
10000	100	100	0.1	0.18	**138**	0.011	722*	0.06	0.19*	**56**	**56**	**56**

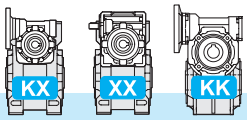
40/75 — 14.5 kg

in	40 i_1	75 i_2	n_2 [min^{-1}]	Rd	XXA T_{2M} [Nm]	XXA P [kW]	KXC - XXC - XXF - KKC T_2 [Nm]	P_1 [kW]	FS'	Input - IEC: KC - XC B5/B14	XF B5	XF B14
n_1 = 1400												
150	10	15	9.3	0.57	**409**	0.698	322	0.55	1.3	**71**	**71**	**71**
200	10	20	7.0	0.56	**442**	0.583	417	0.55	1.1	**71**	**71**	**71**
300	10	30	4.7	0.47	**418**	0.432	358	0.37	1.2	**71**	**71**	**71**
450	15	30	3.1	0.45	**418**	0.302	346	0.25	1.2	**71**	**71**	**71**
600	20	30	2.3	0.43	**418**	0.236	390	0.22	1.1	**71**	**71**	**71**
900	30	30	1.6	0.39	**418**	0.176	309	0.13	1.4	**71**	**71**	**71**
1200	40	30	1.2	0.36	**418**	0.140	388	0.13	1.1	**71**	**71**	**71**
1500	50	30	0.9	0.34	**418**	0.121	379	0.11	1.1	**63**	**63**	**63**
1950	65	30	0.7	0.31	**418**	0.102	368	0.09	1.1	**63**	**63**	**63**
2500	50	50	0.6	0.29	**381**	0.077	296	0.06	1.3	**63**	**63**	**63**
3250	65	50	0.4	0.26	**381**	0.065	352	0.06	1.08	**56**	**56**	**56**
4000	80	50	0.4	0.25	**381**	0.055	417	0.06	0.91	**56**	**56**	**56**
5000	100	50	0.3	0.24	**381**	0.047	491*	0.06	0.78*	**56**	**56**	**56**
10000	100	100	0.1	0.19	**232**	0.018	762*	0.06	0.30*	**56**	**56**	**56**

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



5.5 Dati tecnici — *5.5 Technical data* — 5.5 Technische Daten

50/75

Kg 16.5

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
	50	75	n_2		T_{2M}	P	T_2	P_1		Input - IEC								
in	i_1	i_2	[min^{-1}]	Rd	[Nm]	[kW]	[Nm]	[kW]	FS'	KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.57	**409**	0.750	409	0.75	1.0	**80**	**71**	—	**80**	**71**	**63**	**80**	**71**	—
200		20	7.0	0.56	**442**	0.576	422	0.55	1.0									
300		30	4.7	0.48	**418**	0.427	363	0.37	1.2									
450	15		3.1	0.46	**418**	0.299	350	0.25	1.2									
600	20		2.3	0.42	**418**	0.250	418	0.25	1.0									
900	30		1.6	0.40	**418**	0.180	418	0.18	1.0									
1200	40		1.2	0.38	**418**	0.134	406	0.13	1.0									
1500	50		0.9	0.35	**418**	0.116	470	0.13	0.9	—		63						
1950	65		0.7	0.33	**418**	0.095	572*	0.13	0.7*									
2500	50	50	0.6	0.30	**381**	0.074	674*	0.13	0.6*									
3250	65		0.4	0.28	**381**	0.060	819*	0.13	0.47*									
4000	80		0.4	0.26	**381**	0.053	939*	0.13	0.41*									
5000	100		0.3	0.25	**381**	0.045	1108*	0.13	0.34*									
10000		100	0.1	0.19	**232**	0.018	1719*	0.13	0.13*									

40/89

Kg 15.4

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
	40	90	n_2		T_{2M}	P	T_2	P_1		Input - IEC								
in	i_1	i_2	[min^{-1}]	Rd	[Nm]	[kW]	[Nm]	[kW]	FS'	KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.58	**392**	0.659	327	0.55	1.2	**71**	**63**	—	**71**	**63**	**56**	**71**	**63**	—
200		20	7.0	0.56	**504**	0.654	424	0.55	1.2									
300		30	4.7	0.48	**606**	0.615	542	0.55	1.1									
450	15		3.1	0.46	**606**	0.430	520	0.37	1.2									
600	20		2.3	0.44	**606**	0.336	457	0.25	1.3									
900	30		1.6	0.39	**606**	0.250	605	0.25	1.0									
1200	40		1.2	0.37	**606**	0.199	668	0.22	0.9									
1500	50		0.9	0.34	**594**	0.169	630	0.18	0.9	—		56						
1950	65		0.7	0.31	**558**	0.134	542	0.13	1.0									
2500	50	50	0.6	0.30	**571**	0.112	564	0.11	1.0									
3250	65		0.4	0.28	**571**	0.094	549	0.09	1.0									
4000	80		0.4	0.27	**571**	0.079	651	0.09	0.88									
5000	100		0.3	0.25	**571**	0.067	767*	0.09	0.74*									
10000		100	0.1	0.19	**361**	0.028	1173*	0.09	0.31*									

40/90

Kg 27

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
	40	90	n_2		T_{2M}	P	T_2	P_1		Input - IEC								
in	i_1	i_2	[min^{-1}]	Rd	[Nm]	[kW]	[Nm]	[kW]	FS'	KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.58	**435**	0.732	327	0.55	1.3	**71**	**63**	—	**71**	**63**	**56**	**71**	**63**	—
200		20	7.0	0.56	**560**	0.727	424	0.55	1.3									
300		30	4.7	0.48	**673**	0.683	542	0.55	1.2									
450	15		3.1	0.46	**673**	0.478	520	0.37	1.3									
600	20		2.3	0.44	**673**	0.373	668	0.37	1.0									
900	30		1.6	0.39	**673**	0.278	605	0.25	1.1									
1200	40		1.2	0.37	**673**	0.221	668	0.22	1.0									
1500	50		0.9	0.34	**660**	0.188	630	0.18	1.0	—		56						
1950	65		0.7	0.31	**620**	0.149	542	0.13	1.1									
2500	50	50	0.6	0.30	**634**	0.124	564	0.11	1.1									
3250	65		0.4	0.28	**634**	0.104	549	0.09	1.2									
4000	80		0.4	0.27	**634**	0.088	651	0.09	0.97									
5000	100		0.3	0.25	**634**	0.074	767	0.09	0.83									
10000		100	0.1	0.19	**401**	0.031	1173*	0.09	0.34*									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

5.5 Dati tecnici — *5.5 Technical data* — 5.5 Technische Daten

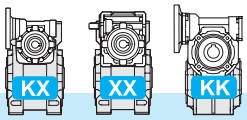
	n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
	in	50	90	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
		i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
											B5/B14			B5			B14		
50/89	**150**		15	9.3	0.59	**590**	0.980	541	0.90	1.1									
	200	10	20	7.0	0.57	**638**	0.819	584	0.75	1.1									
	300			4.7	0.49	**606**	0.608	548	0.55	1.1			—						
	450	15		3.1	0.46	**606**	0.426	527	0.37	1.1	**80**								
	600	20		2.3	0.45	**606**	0.327	463	0.25	1.3									
	900	30	30	1.6	0.41	**606**	0.239	632	0.25	1.0									
	1200	40		1.2	0.39	**606**	0.191	573	0.18	1.1									
	1500	50		0.9	0.36	**606**	0.165	662	0.18	0.9		**71**		**80**	**71**	**63**	**80**	**71**	—
Kg	**1950**	65		0.7	0.34	**606**	0.135	582	0.13	1.0									
	2500	50		0.6	0.32	**571**	0.106	701	0.13	0.8									
17	**3250**	65	50	0.4	0.30	**571**	0.087	853*	0.13	0.67*	—		**63**						
	4000	80		0.4	0.28	**571**	0.076	977*	0.13	0.58*									
	5000	100		0.3	0.26	**571**	0.064	1153*	0.13	0.49*									
	10000		100	0.1	0.20	**361**	0.027	1764*	0.13	0.20*									

	n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
	in	50	90	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
		i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
											B5/B14			B5			B14		
50/90	**150**		15	9.3	0.59	**655**	1.089	541	0.90	1.2									
	200	10	20	7.0	0.57	**709**	0.910	584	0.75	1.2									
	300			4.7	0.49	**673**	0.675	548	0.55	1.2			—						
	450	15		3.1	0.46	**673**	0.473	527	0.37	1.3	**80**								
	600	20		2.3	0.45	**673**	0.363	463	0.25	1.5									
	900	30	30	1.6	0.41	**673**	0.266	632	0.25	1.1									
	1200	40		1.2	0.39	**673**	0.212	573	0.18	1.2									
	1500	50		0.9	0.36	**673**	0.183	662	0.18	1.0		**71**		**80**	**71**	**63**	**80**	**71**	—
Kg	**1950**	65		0.7	0.34	**673**	0.150	582	0.13	1.2									
	2500	50		0.6	0.32	**634**	0.118	701	0.13	0.9									
29	**3250**	65	50	0.4	0.30	**634**	0.097	853*	0.13	0.74*	—		**63**						
	4000	80		0.4	0.28	**634**	0.084	977*	0.13	0.65*									
	5000	100		0.3	0.26	**634**	0.071	1153*	0.13	0.55*									
	10000		100	0.1	0.20	**401**	0.030	1764*	0.13	0.23*									

*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$



5.5 Dati tecnici — *5.5 Technical data* — 5.5 Technische Daten

50/110

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
in	50	110	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
	i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.60	785	1.269	557	0.9	1.4	80	71	—	80	71	63	80	71	—
200		20	7.0	0.58	1000	1.265	712	0.9	1.4									
300		30	4.7	0.50	1165	1.130	928	0.9	1.3									
450	15		3.1	0.48	1165	0.791	1105	0.75	1.1									
600	20		2.3	0.47	1165	0.608	1054	0.55	1.1									
900	30		1.6	0.43	1165	0.445	968	0.37	1.2									
1200	40		1.2	0.40	1165	0.354	823	0.25	1.4									
1500	50		0.9	0.37	1165	0.306	952	0.25	1.2	—		63						
1950	65		0.7	0.35	1150	0.248	1018	0.22	1.1									
2500	50	50	0.6	0.33	1119	0.200	1009	0.18	1.1									
3250	65		0.4	0.31	1119	0.164	886	0.13	1.26									
4000	80		0.4	0.29	1119	0.143	1015	0.13	1.10									
5000	100		0.3	0.27	1119	0.121	1198	0.13	0.93									
10000		100	0.1	0.21	727	0.051	1854*	0.13	0.39*									

Kg 49

63/110

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
in	63	110	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
	i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.61	1123	1.793	939	1.5	1.2	90	80	—	90	80	71	90	80	—
200		20	7.0	0.59	1229	1.536	1200	1.5	1.0									
300		30	4.7	0.51	1165	1.116	1148	1.1	1.0									
450	15		3.1	0.49	1165	0.781	1119	0.75	1.0									
600	20		2.3	0.48	1165	0.593	1081	0.55	1.1									
900	30		1.6	0.44	1165	0.433	995	0.37	1.2									
1200	40		1.2	0.40	1165	0.370	1165	0.37	1.0	—		71						
1500	50		0.9	0.39	1165	0.292	998	0.25	1.2									
1950	65		0.7	0.37	1165	0.239	1217	0.25	1.0									
2500	50	50	0.6	0.34	1119	0.190	1469	0.25	0.8									
3250	65		0.4	0.32	1119	0.156	1792*	0.25	0.62*									
4000	80		0.4	0.31	1119	0.133	2097*	0.25	0.53*									
5000	100		0.3	0.28	1119	0.117	2395*	0.25	0.47*									
10000		100	0.1	0.22	727	0.049	3706*	0.25	0.20*									

Kg 52

63/130

n_1 = 1400					XXA		KXC - XXC - XXF - KKC											
in	63	130	n_2	Rd	T_{2M}	P	T_2	P_1	FS'	Input - IEC								
	i_1	i_2	[min^{-1}]		[Nm]	[kW]	[Nm]	[kW]		KC - XC			XF					
										B5/B14			B5			B14		
150	10	15	9.3	0.64	1438	2.2	1176	1.8	1.2	90	80	—	90	80	71	90	80	—
200		20	7	0.61	1831	2.2	1498	1.8	1.2									
300		30	4.7	0.53	1890	1.7	1627	1.5	1.2									
450	15		3.1	0.49	1890	1.3	1655	1.1	1.1									
600	20		2.3	0.47	1890	0.98	1731	0.9	1.1									
900	30		1.6	0.42	1890	0.73	1934	0.75	1									
1200	40		1.2	0.39	1890	0.59	1756	0.55	1.1	—		71						
1500	50		0.9	0.36	1890	0.51	2026	0.55	0.9									
1950	65		0.7	0.34	1890	0.42	1673	0.37	1.1									
2500	50	50	0.6	0.33	1920	0.34	2082	0.37	0.9									
3250	65		0.4	0.3	1920	0.29	1663	0.25	1.2									
4000	80		0.4	0.29	1920	0.24	1978	0.25	1.1									
5000	100		0.3	0.26	1920	0.22	2217	0.25	0.9									
10000		100	0.1	0.2	1276	0.09	3411	0.25	0.4									

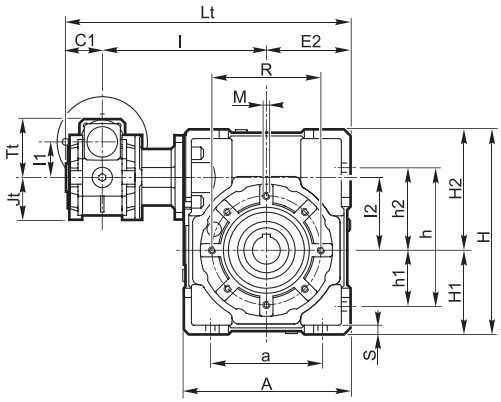
Kg 63

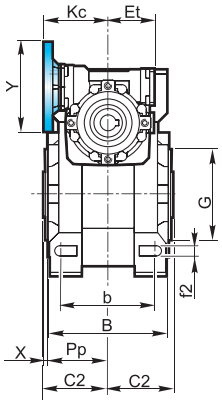
*** ATTENZIONE:** la coppia massima utilizzabile [T_{2M}] deve essere calcolata utilizzando il fattore di servizio: $T_{2M} = T_2 \times FS'$

**** WARNING:** Maximum allowable torque [T_{2M}] must be calculated using the following service factor : $T_{2M} = T_2 \times FS'$*

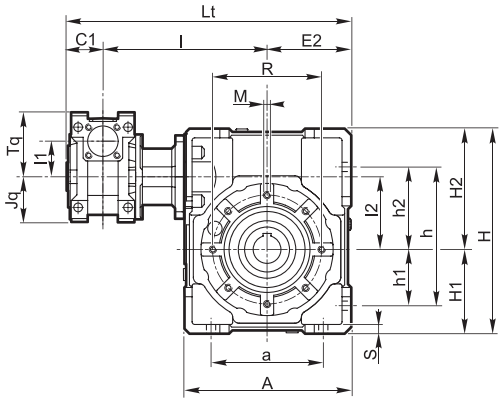
*** ACHTUNG:** das max. anwendbare Drehmoment [T_{2M}] muss mit folgendem Betriebsfaktor berechnet werden: $T_{2M} = T_2 \times FS'$

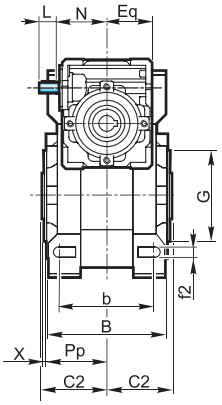
KXC



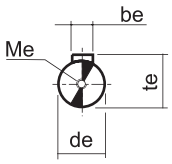


XXA

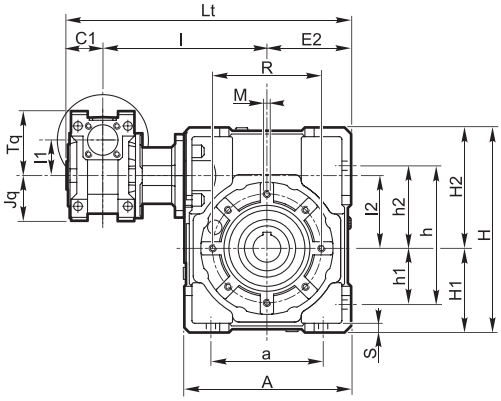


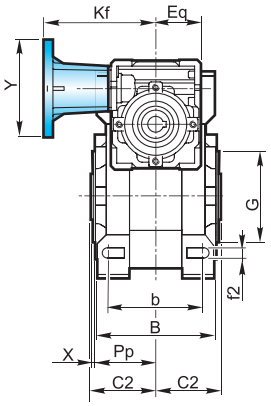


Albero entrata
Input shaft
Antriebswelle

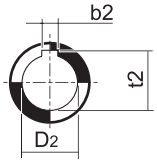


XXF

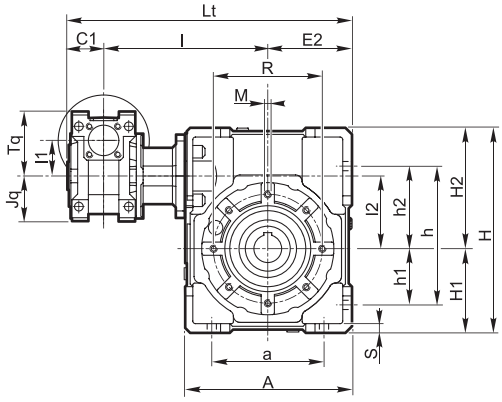


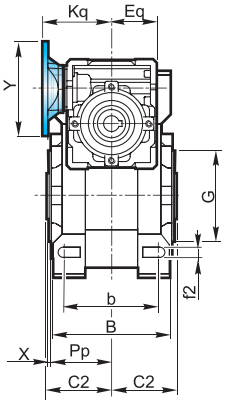


Albero uscita cavo
Output hollow shaft
Abtriebshohlwelle



XXC

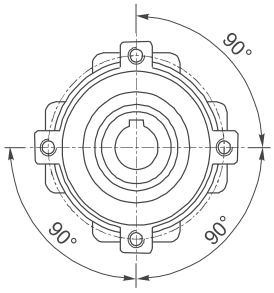




5.6 Dimensioni — *5.6 Dimensions* — 5.6 Abmessungen

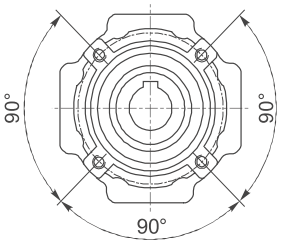
Flangia pendolare / *Side cover for shaft mounting* / Aufsteckflansch

30/30



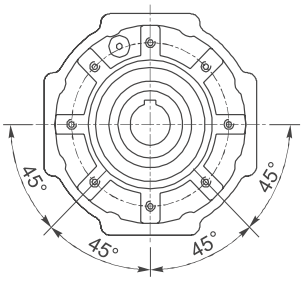
4 Fori / *Holes* / Bohrungen

30/40 - 30/50



4 Fori / *Holes* / Bohrungen

30/63 - 40/63 - 40/75 - 40/89 - 40/90
50/75 - 50/89 - 50/90 - 50/110
63/110 - 63/130

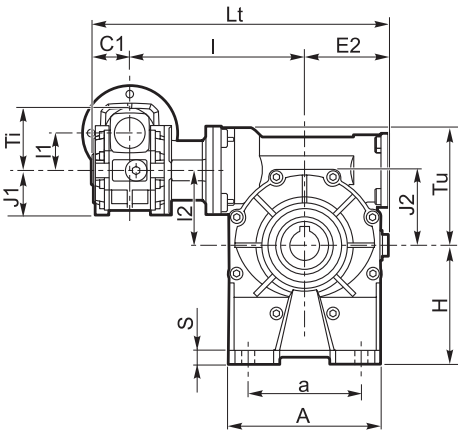


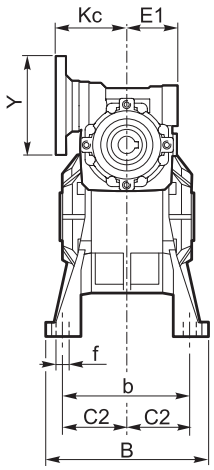
8 Fori / *Holes* / Bohrungen

	KXC - XXC - XXF -XXA																					
	a	A	b	be	b_2		B	C_1	C_2	de	D_2 H8		Et	Eq	E_2	f_2	G h8	h	h_1	h_2	H	H_1	H_2
30/30	54	80	44	3	**5**	—	56	31.5	31.5	9	**14**	—	41	40	40	6.5	55	71	27	44	97	40	57
30/40	70	105	60		**6**	6	71		39		**18**	19			50	6.5	60	90	35	55	125	50	75
30/50	80	125	70		**8**	8	85		46		**25**	24			60	8.5	70	104	40	64	150	60	90
30/63	100	147	85			—	103		56			—			72	9	80	130	50	80	182	72	110
40/63				4				39		11			51	50									
40/75	120	176	90		**8**	8	112		60		**28**	30			86	11	95	153	60	93	219.5	86	133.5
50/75				5				46		14			60	60									
40/89 **40/90**	140	203	100	4	**10**	—	130	39	70	11	**35**	—	51	50	103	13	110	172	70	102	248.5	103	145.5
50/89 **50/90**				5				46		14			60	60									
50/110	170	252.5	115		**12**	—	143		77.5		**42**	—			127.5	14	130	210	85	125	310.5	127.5	183
63/110				6				56		19			71	72									
63/130	200	292.5	120	6	**14**	14	155	56	85	19	**45**	48	—	72	147.5	15	180	240	100	140	355	147.5	207.5

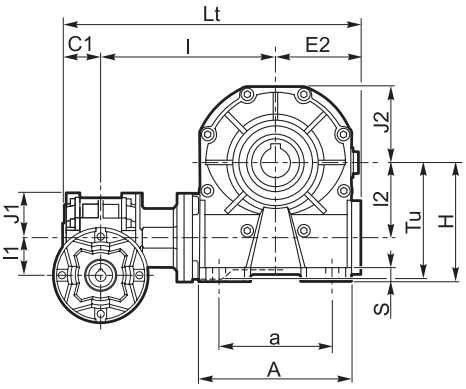
	KXC - XXC - XXF -XXA																				
	l	l_1	l_2	Jt	Jq	K_c	K_q	L	L_t	M	Me	N	P_P	R	S	Tt	Tq	t_e	t_2		X
30/30	100	31.5	31.5	37.5	40	57	57	15	171.5	M6x8	M4x10	44.5	29	65	5.5	52.5	57	10.2	16.3	—	1.5
30/40	122		40						203.5	M6x10			36.5	75	6				20.8	21.8	1.5
30/50	132		50						223.5	M8x10			43.5	85	7				28.3	27.3	1.5
30/63	145		63						248.5	M8x14			53	95	8					—	2
40/63	150	40		43.5	50	75	75	20	261		M4x12	57.5				68.5	75	12.5			
40/75	174.5		75						299.5	M8x14			57	115	10				31.3	33.3	2
50/75	190	50		53.5	60	82	82	25	322		M5x13	67.5				82.5	90	16			
40/89 **40/90**	184.5	40	90	43.5	50	75	75	20	326.5	M10x18	M4x12	57.5	67	130	12	68.5	75	12.2	38.3	—	2
50/89 **50/90**	200	50		53.5	60	82	82	25	349		M5x13	67.5				82.5	90	16			
50/110	226		110						399.5	M10x18			74	165	14				45.3	—	2.5
63/110	236	63		64	72	97	95	30	419.5		M8x20	77.5				100.5	110	21.5			
63/130	256	63	130	—	72	97	95	30	459.5	M12x20	M8x20	77.5	81	215	15	—	110	21.5	48.8	51.8	3

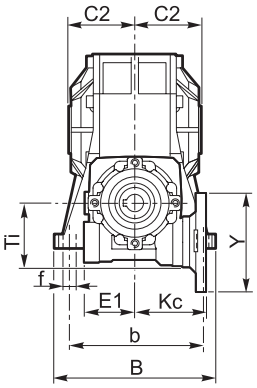
KKC_A

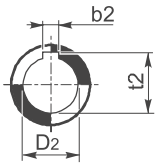




KKC_B

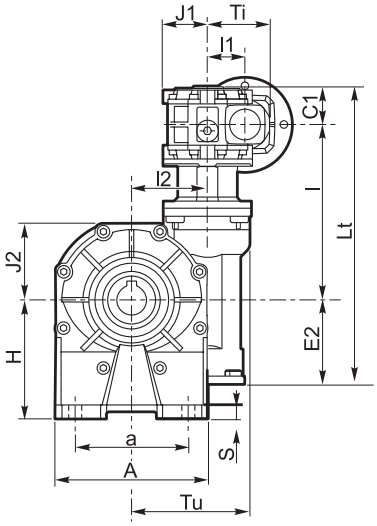


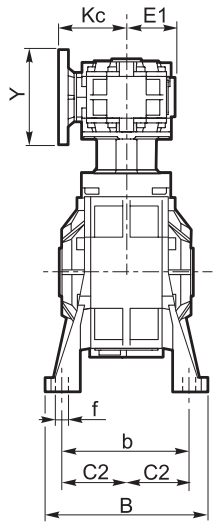




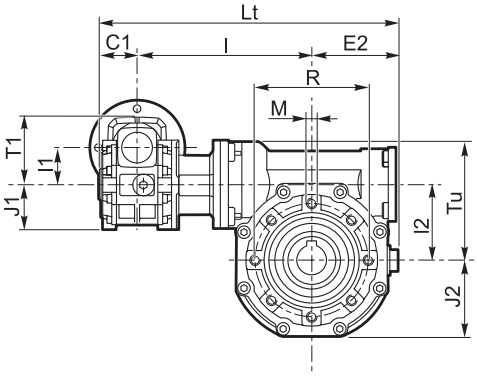
Albero uscita cavo
Output hollow shaft
Abtriebs-Hohlwelle

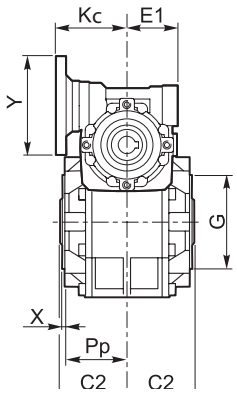
KKC_V





KKC_P

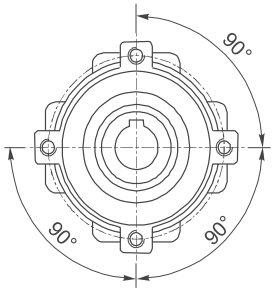




5.6 Dimensioni — *5.6 Dimensions* — 5.6 Abmessungen

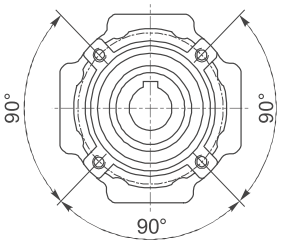
Flangia pendolare / *Side cover for shaft mounting* / Aufsteckflansch

30/30



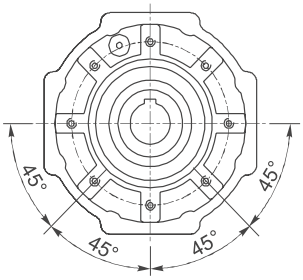
4 Fori / *Holes* / Bohrungen

30/40 - 30/50



4 Fori / *Holes* / Bohrungen

30/63 - 40/63 - 40/75 - 40/90 - 50/75 50/90 - 50/110 - 63/110 - 60/130



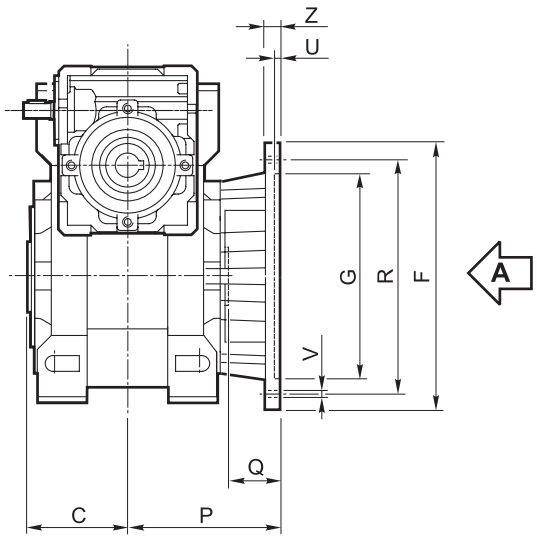
8 Fori / *Holes* / Bohrungen

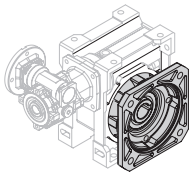
	KKC																							
	A		a		B		b		f		H		S		b_2		C_1	C_2	D2 H8		E_1	E_2	G h8
	1	2	1	2	1	2	1	2	1	2	1	2	1	2									
30/30	67		40-52		78		66		6.5		52	55	5	8	5	—	31.5	31.5	**14**	—	41	41	55
30/40	86.5		70	52	98		84	81	7	8.5	71	72	9	10	6	6		39	**18**	19		51	60
30/50	106		63-85		119		99		9		85	82	11	8	8	8		46	**25**	24		60	70
30/63	127.5		95		136		111		11		100		12		8	—	39	56		—	51	71	80
40/63																							
40/75	155.5		120		140		115		11		115		12		8	—		60	**28**	30		85	95
50/75																	46				60		
40/89 40/90	190		140		168		140	146	13	11	135	142	14		10	—	39	70	**35**	—	51	103	110
50/89 50/90																	46				60		
50/110	250		200		210		162	181	13	13	171	170	17	15	12	—		77.5	**42**	—		127.5	130
63/110																	56				71		
63/130	295		235	220	229		190	191	15		200	195	20	15	14		56	85	**45**	48	71	147.5	180

	KKC														
	I	I_1	I_2	J_1	J_2	K_c	L_t	M	P_P	R	T_i	T_u	t_2		X
30/30	100	31.5	31.5	37.5	37.5	57	171.5	M6x8	29	65	52.5	Tu	16.3	—	1.5
30/40	122		40		43.5		203.5	M6x10	36.5	75		52.5	20.8	21.8	1.5
30/50	132		50		53.5		223.5	M8x10	43.5	85		68.5	28.3	27.3	1.5
30/63	147		63		64		248.5	M8x14	53	95		82.5		—	2
40/63	152	40		43.5		75	261				68.5	100.5			
40/75	176.5		75		78		301.5	M8x14	57	115			31.3	—	2
50/75	192	50		53.5		82	324				82.5	116.5			
40/89 40/90	186.5	40	90	43.5	100	75	328.5	M10x18	67	130	68.5		38.3	—	2
50/89 50/90	202	50		53.5		82	351				82.5	131.5			
50/110	226		110		122		399.5	M10x18	74	165			45.3	—	2.5
63/110	236	63		64		97	419.5				100.5	161.5			
63/130	256	63	130	64	131	97	459.5	M12x20	81	215	100.5	181	48.8	51.8	3

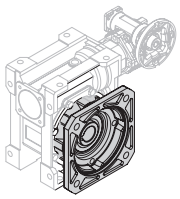
5.6 Dimensioni — *5.6 Dimensions* — 5.6 Abmessungen

Flangia uscita / *Output flange* / Abtriebsflansch

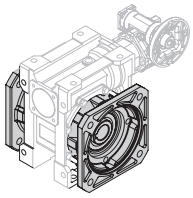




F..D
Standard

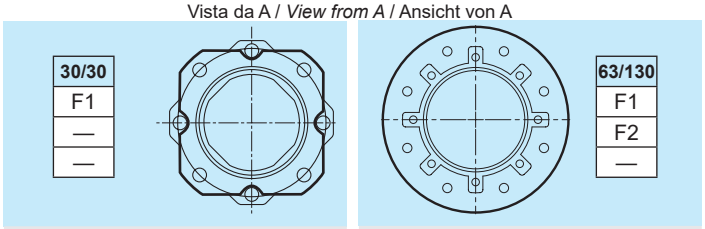


F..S

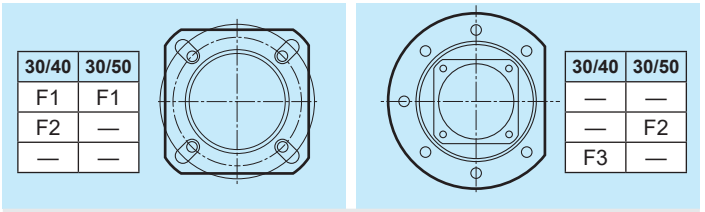


F..2

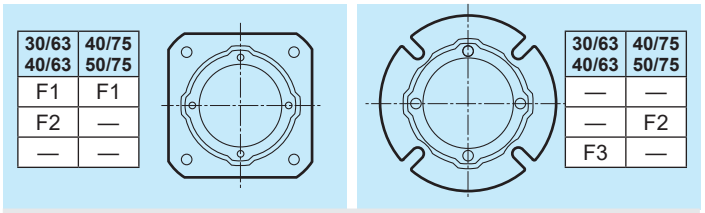
Vista da A / *View from A* / Ansicht von A



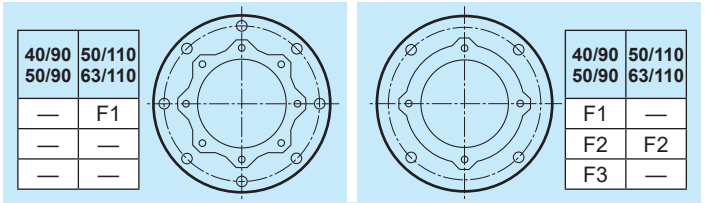
30/30 — **63/130**



30/40 - 30/50



30/63 - 40/63 - 40/75 - 50/75



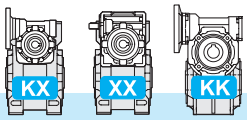
40/89 - 40/90 - 50/89 - 50/90 - 50/110 - 63/110

KX XX KK	Tipo *Type* Typ	C	F		G H8	P	Q	R	U	V		Ø	Z
30/30	F1	31.5		66	50	54.5	23	68	4	n* 4		6.5	6
30/40	F1	39		85	60	67	28	75-90	4	n* 4		9	8
	F2			85	60	97	58	75-90	4	n* 4		9	8
	F3		140		95	80	41	115	5		n° 7	9	10
30/50	F1	46		94	70	90	44	85-100	5	n* 4		11	10
	F2		160		110	89	43	130	5		n* 7	11	11
30/63 40/63	F1	56		142	115	82	26	150	5	n* 4		11	11
	F2			142	115	112	56	150	5	n* 4		11	11
	F3		160		110	80.5	24.5	130	5	n* 4		11	12
40/75	F1	60		160	130	111	51	165	5	n* 4		13	12
50/75	F2		160		110	90	30	130	6	n* 4		11	13
40/89	F1	70	200		152	111	41	175	5	n* 4		13	12
40/90 50/89	F2		200		152	151	81	175	5	n* 4		13	13
50/90	F3		200		130	110	40	165	6	n* 4		11	11
50/110	F1	77.5	260		170	131	53.5	230	6		n° 8	13	15
63/110	F2		250		180	150	72.5	215	5	n* 4		15	16
63/130	F1	85	320		180	140	55	255	7		n° 8 *	16	16
	F2		300		230			265					

* Foratura ruotata di 22.5°

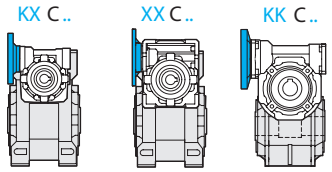
* *Drilling turned of 22.5°*

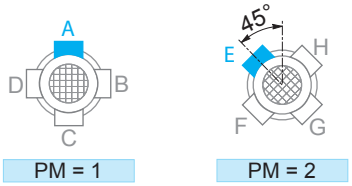
* Durchbohrung 22.5° versetzt

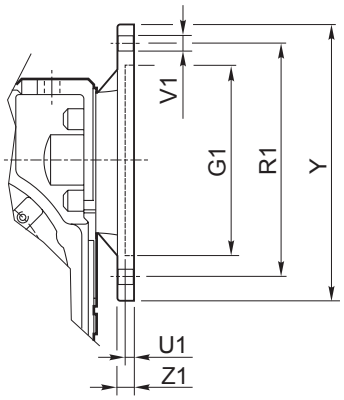


5.6 Dimensioni — *5.6 Dimensions* — 5.6 Abmessungen

Flangia entrata / *Input flange* / Antriebsflansch







KXC XXC KKC	IEC	G_1	PM 1	PM 2	R_1	U_1	V_1 Ø	V_1	V_1	V_1	Y	Z_1	Diametro fori PAM / *Holes diameter IEC* IEC Durchmesser 150 200 300	450	600	900	1200	1500 2500	1950 3250	4000	5000 10000
30/30 30/40 30/50 30/63	56 B5	80	•	•	100	4	7		8		120	8	9	9	9	9	9	9	9	9	9
	56 B14	50	•	•	65	3.5	6		8		80	8	9	9	9	9	9	9	9	9	9
	63 B5	95	•	•	115	4	9		8		140	8	11	11	11	11	11	11	/	/	/
	63 B14	60	•	•	75	4	6		8		90	8	11	11	11	11	11	11	/	/	/
40/63 40/75 40/89 40/90	56 B5	80	•	•	100	4	7		8		120	9	/	/	/	/	/	9	9	9	9
	56 B14	50		•	65	3.5	6			4	80	8	/	/	/	/	/	9	9	9	9
	63 B5	95	•	•	115	4	9		8		140	9	11	11	11	11	11	11	11	11	11
	63 B14	60		•	75	3.5	6			4	90	8	11	11	11	11	11	11	11	11	11
	71 B5	110	•	•	130	4.5	9		8		160	10	14	14	14	14	14	/	/	/	/
	71 B14	70	•	•	85	3.5	7		8		105	8	14	14	14	14	14	/	/	/	/
50/75 50/89 50/90 50/110	63 B5	95	•	•	115	4	9		8		140	9	/	/	/	/	11	11	11	11	11
	63 B14	60		•	75	3.5	6			4	90	8	/	/	/	/	11	11	11	11	11
	71 B5	110	•	•	130	4.5	9		8		160	10	14	14	14	14	14	14	14	14	14
	71 B14	70		•	85	3.5	7			4	105	8	14	14	14	14	14	14	14	14	14
	80 B5	130	•	•	165	4.5	11		8		200	10	19	19	19	19	19	/	/	/	/
	80 B14	80	•	•	100	4	7		8		120	10	19	19	19	19	19	/	/	/	/
63/110 63/130	71 B5	110	•	•	130	4.5	9		8		160	10	/	/	/	/	14	14	14	14	14
	71 B14	70		•	85	3.5	7			4	105	10	/	/	/	/	14	14	14	14	14
	80 B5	130	•	•	165	4.5	11		8		200	10	19	19	19	19	19	19	19	19	19
	80 B14	80		•	100	4	7			4	120	10	19	19	19	19	19	19	19	19	19
	90 B5	130	•	•	165	4.5	11		8		200	10	24	24	24	24	/	/	/	/	/
	90 B14	95	•	•	115	4	8.5		8		140	10	24	24	24	24	/	/	/	/	/

N.B.: E' possibile realizzare anche tutte le composizioni ibride ottenibili dalle flange esistenti.

N.B.: it is possible to create hybrid combinations with the existing flanges.

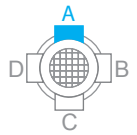
ANMERKUNG: Mischkombinationen mit der verfügbaren Flanschen sind möglich.

5.6 Dimensioni

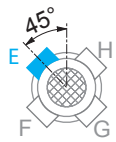
5.6 Dimensions

5.6 Abmessungen

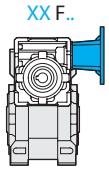
Flangia entrata / *Input flange* / Antriebsflansch

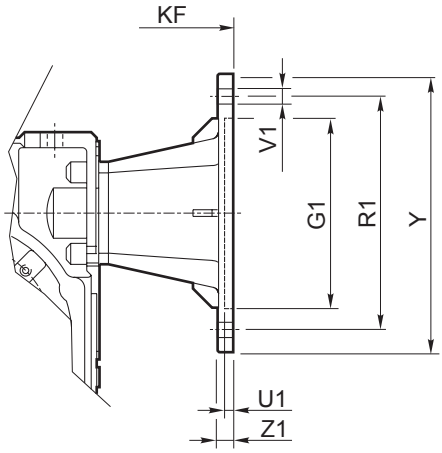


PM = 1



PM = 2





XXF	IEC	PM		G_1	K_F	R_1	U_1	V_1				Y	Z_1
		1	2					Ø					
30/30 30/40 30/50 30/63	56 B5	•	•	80	82.5	100	3.5	7		8		120	8
	56 B14		•	50	82.5	65	3.5	6			4	80	8
	63 B5	•	•	95	85.5	115	4	9		8		140	10
	63 B14	•	•	60	85.5	75	3.5	6		8		90	8
40/63 40/75 40/89 40/90	56 B5	•	•	80	101.5	100	3.5	7		8		120	8
	63 B5	•	•	95	104.5	115	4	9		8		140	10
	63 B14	•	•	60	104.5	75	3.5	6		8		90	8
	71 B5	•	•	110	111.5	130	4.5	9		8		160	10
	71 B14	•	•	70	111.5	85	4	7		8		105	10
50/75 50/89 50/90 50/110	63 B5	•	•	95	119.5	115	4	9		8		140	10
	71 B5	•	•	110	126.5	130	4.5	9		8		160	10
	71 B14		•	70	126.5	85	3.5	7			4	105	10
	80 B5	•	•	130	136.5	165	4.5	11		8		200	10
	80 B14	•	•	80	136.5	100	4	7		8		120	10
63/110 63/130	71 B5	•	•	110	141.5	130	4.5	9		8		160	10
	80/90 B5	•	•	130	161.5	165	4.5	11		8		200	10
	80 B14	•	•	80	151.5	100	4	7		8		120	10
	90 B14	•	•	95	161.5	115	4	9		8		140	10

5.7 Limitatore di coppia cavo passante

Concepito per lavorare a bagno d'olio, il dispositivo risulta affidabile nel tempo ed è esente da usura se non viene mantenuto in condizioni prolungate di slittamento (condizione che si verifica quando la coppia presenta valori superiori a quelli di taratura).
La taratura è facilmente regolabile dall'esterno attraverso il serraggio di una ghiera autobloccante che porta a compressione le 4 molle a tazza disposte tra loro in serie.
Il dispositivo non consente:
- l'impiego di cuscinetti a rulli conici in uscita
- funzionamento prolungato in condizioni di slittamento.

Nella tabella seguente vengono riportati i valori delle coppie di slittamento M_{2S} in funzione del n° di giri della ghiera.

5.7 Torque limiter with through hollow shaft

Designed to be working in oil bath, the device is reliable over time and is not subject to wear unless in case of operation with prolonged slipping (it occurs when the torque values are higher than the calibration values).
Calibration can be easily adjusted from outside by tightening of the self-locking ring nut, which causes the compression of the 4 Belleville washers arranged in series.

The device does not go together with:
- *the use of tapered roller bearings at output*
- *prolonged operation under slipping conditions*

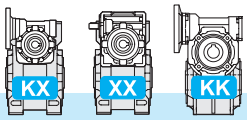
The following table shows the values of M_{2S} slipping torques depending on the number of revolutions of the ring nut.

5.7 Drehmomentbegrenzer mit durchgehender Hohlwelle

Er ist zuverlässig und verschleißfrei (nur im Falle eines dauerhaften Rutschens entsteht Verschleiß, hier ist das Drehmoment größer als der eingestellte Eichwert).
Die Eichung kann mühelos von aussen durch das Anziehen einer selbstsperrenden Mutter ausgeführt werden, dadurch wird der Druck auf die 4 wechselseitig angeordneten Tellerfedern erhöht.

Die Vorrichtung sieht das folgende nicht vor:
- die Verwendung von Kegelrollenlager am Abtrieb
- Längerer Rutschbetrieb

Die nachstehende Tabelle zeigt die Werte der Rutschmomente M_{2S} abhängig von der Anzahl der Umdrehungen der Mutter. Die Eichwerte weisen ±10% Toleranz



5.7 Limitatore di coppia cavo passante

5.7 Torque limiter with through hollow shaft

5.7 Drehmomentbegrenzer mit durchgehender Hohlwelle

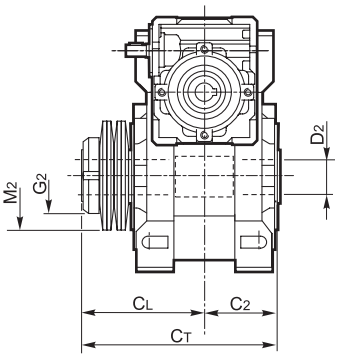
XX-KX KK	N°. giri della ghiera di regolazione / *N°. revolutions of ring nut* / Nr. Umdrehungen der Mutter														
	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
30/30	20	25	30	35	40										
30/40	50	60	70	80	90										
30/50	75	95	115	135	155										
30/63		110	125	145	160	180	200	220	230	245	255	265	285		
40/63															
40/75			220	245	275	310	350	375	410	450					
50/75															
40/89 40/90				330	365	410	435	465	500	530	560	580	600	630	670
50/89 50/90															
50/110		750	860	1000	1100	1230									
63/110															
63/130															

I valori di taratura presentano una tolleranza del ±10% e si riferiscono ad una condizione statica.
In condizioni dinamiche è da notare che la coppia di slittamento assume valori diversi a seconda del tipo e/o modalità in cui si verifica il sovraccarico: con valori maggiori in caso di carico uniformemente crescente rispetto a volori più contenuti in seguito al verificarsi di picchi improvvisi di carico.
NOTA: quando si supera il valore di taratura si ha slittamento. Il coefficiente di attrito tra le superfici di contatto da statico diventa dinamico e la coppia trasmessa cala del 30% circa.
E' quindi opportuno prevedere uno stop per poter ripartire al valore di taratura iniziale.

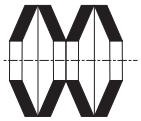
Calibration values feature a ±10% tolerance and refer to static conditions.
Under dynamic conditions the values of the slipping torque will change according to the type of overload: the values are higher if the load increase is uniform; the values are lower if sudden load peaks occur.

***NOTE:** Slipping occurs when the setting values are exceeded.*
The friction coefficient between the contact surfaces from static becomes dynamic and the transmitted torque is approx. 30% lower.
It is advisable to have a stop first in order to have a restart based on the initial setting value.

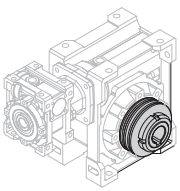
auf und beziehen sich auf statische Bedingungen.
Unter dynamischen Bedingungen hat das Rutschmoment verschiedene Werte je nach Art der Überbelastung. Die Werte sind höher, wenn die Belastung gleichmäßig zunimmt; sie sind niedriger im Falle von plötzlichen Belastungsspitzen.
BEMERKUNG: Rutschen tritt auf, wenn die eingestellten Werte überschritten werden. Der Reibungsfaktor zwischen den Berührungsflächen wird dynamisch anstatt statisch und das übertragene Drehmoment sinkt um ca. 30%.
Es ist daher ratsam, vor dem erneuten Anfahren anzuhalten, um die ursprünglichen Drehmomentwerte zu erreichen.



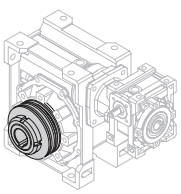
Disposizione delle molle
Washers' arrangement
Lage der Feder



IN SERIE (min. coppia, max. sensibilità)
***SERIES** (min. torque, max sensitivity)*
SERIE (min. Moment, max. Empfindlichkeit)



LD



LS

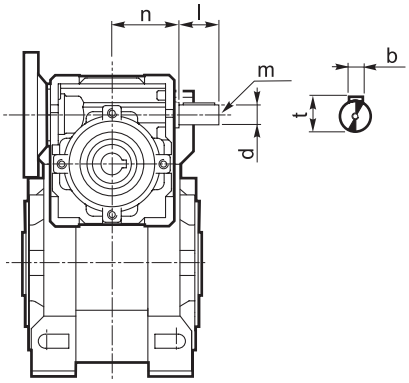
XX - KX LD - LS	C_2	C_L	C_t	D_2 H8	G_2	M_2
30/30	31.5	55.5	87	14	M25x1.5	50x25.4x1.5
30/40	39	65	104	18 (19)	M30x1.5	56x30.5x2
30/50	46	76	122	25 (24)	M40x1.5	63x40.5x2.5
30/63 40/63	56	91	147	25	M40x1.5	71x40.5x2.5
40/75 50/75	60	100	160	28 (30)	M50x1.5	90x50.5x3.5
40/89 - 40/90 50/89 - 50/90	70	109	179	35 (32)	M50x1.5	100x51x3.5
50/110 63/110	77.5	127.5	205	42	M60x2	125x61x5
63/130						

5.8 Esecuzione con vite bisporgente

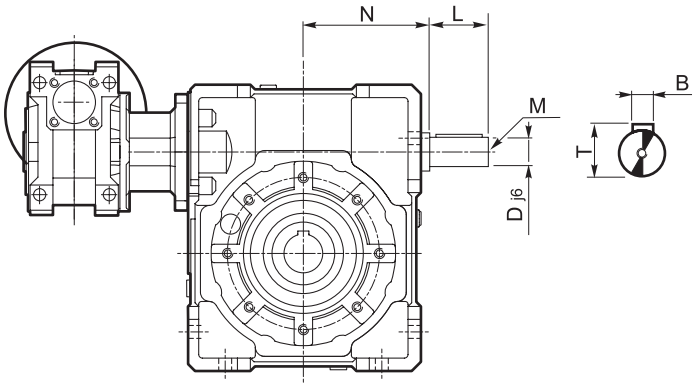
5.8 Double extended worm shaft design

5.8 Versionen mit Doppelseitig Herausragender Schneckenwelle

SeA1



SeA2



L' entrata supplementare del riduttore in uscita (SeA2) non può essere utilizzata come comando in quanto il relativo movimento risulta impedito dalla irreversibilità del primo riduttore.
Utilizzato come asse condotto, avrà veliocità corrispondente a quella di ingresso ridotta del rapporto del primo riduttore.

The second input shaft of the output gearbox (SeA2) can not be utilized as a drive because its motion will be stopped by the reversibility of the first gearbox.
If utilized as a drive shaft its speed will be equal to the input speed decreased by the ratio of the first gearbox.

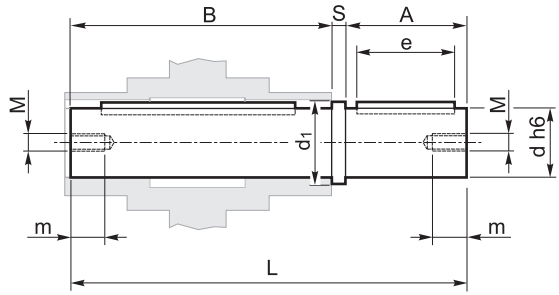
Die verlängerte Schneckenwelle des zweiten Getriebes (SeA2) kann nicht als Antrieb verwendet werden, da die Selbshemmung des ersten Getriebes entgegengewirkt.
Wird sie als Abtriebswelle verwendet, besitzt sie eine um die Untersetzung des ersten Getriebes entsprechend reduzierte Drehzahl und Drehmoment.

KXC - XXC XXF - XXA KKC	SeA1							SeA2						
	b	d j6	l	m	n		t	B	D j6	L	M	N		T
					KK-KX	XX						KK	KX-XX	
30/30	3	9	15	M4x10	42.5	42.5	10.2	3	9	15	M4x10	42.5	42.5	10.2
30/40	3	9	15	M4x10	42.5	42.5	10.2	4	11	20	M4x12	52.5	52.5	12.5
30/50	3	9	15	M4x10	42.5	42.5	10.2	5	14	25	M5x13	62.5	62.5	16
30/63	3	9	15	M4x10	42.5	42.5	10.2	6	19	30	M8x20	72.5	74.5	21.5
40/63	4	11	20	M4x12	52.5	52.5	12.5	6	19	30	M8x20	72.5	74.5	21.5
40/75	4	11	20	M4x12	52.5	52.5	12.5	8	24	40	M8x20	89	91	27
50/75	5	14	25	M5x13	62.5	62.5	16	8	24	40	M8x20	89	91	27
40/89 40/90	4	11	20	M4x12	52.5	52.5	12.5	8	24	40	M8x20	108	108	27
50/89 50/90	5	14	25	M5x13	62.5	62.5	16	8	24	40	M8x20	108	108	27
50/110	5	14	25	M5x13	62.5	62.5	16	8	28	50	M8x20	132	132	31
63/110	6	19	30	M8x20	72.5	74.5	21.5	8	28	50	M8x20	132	132	31
63/130	6	19	30	M8x20	72.5	74.5	21.5	10	38	70	M10x25	152	152	41

5.9 Accessori

Albero lento

Albero lento semplice
Single output shaft
Standard Abtriebswelle

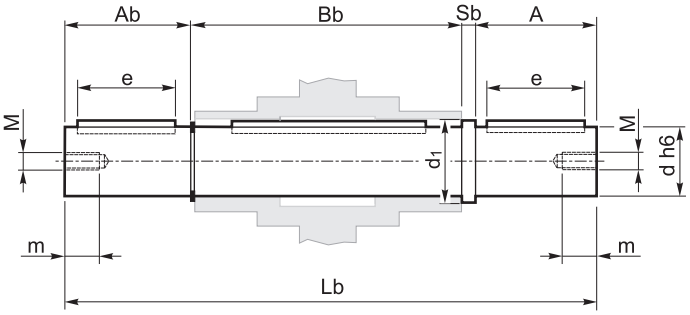


KK-KX-XX	A	B	d h6		d_1	e	L	M	m	S
30/30	30	62	**14**		18.5	20	94.5	M6	16	2.5
30/40	40	77	**18**	19	23.5	30	120	M6	16	3
30/50	50	90	**25**	24	31.5	40	143.5	M8	22	3.5
30/63 40/63	50	111	**25**		31.5	40	165	M8	22	4
40/75 50/75	60	119	**28**	30	34.5	50	183	M8	22	4
40/89 - 40/90 50/89 - 50/90	80	139	**35**		41.5	60	224	M10	28	5
50/110 63/110	80	154.5	**42**		49.5	60	242.5	M10	28	8
63/130	80	168	**45**		54.5	70	253	M16	36	5

5.9 *Accessories*

Output shaft

Albero lento doppio
Double output shaft
Doppelte Abtriebswelle

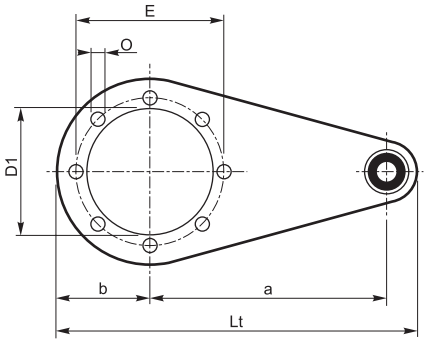


A	A_b	B_b	d h6	d_1	e	L_b	S_b
30	29	64	**14**	18.5	20	126	2.5
40	39	79	**18**	23.5	30	161	3
50	49	93	**25**	31.5	40	195.5	3.5
50	49	113	**25**	31.5	40	216	4
60	59	121	**28**	34.5	50	244	4
80	78.5	141.5	**35**	41.5	60	305	5
80	77.5	157	**42**	49.5	60	322.5	8
80	78	172	**45**	54.5	70	335	5

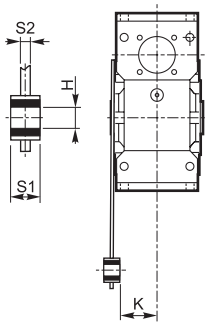
5.9 Accessories

Abtriebswelle

Braccio di reazione



Torque arm

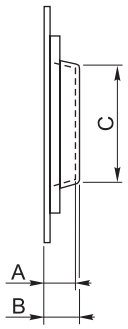


Drehmomentstütze

KK KX XX	a	b	D_1	E	H	K	L_t	O	S1	S2
30/30	85	37.5	55	65	8	24	141.5	7	14	4
30/40	100	45	60	75	10	31.5	167	7	14	4
30/50	100	50	70	85	10	39	172	9	14	5
30/63 40/63	150	55	80	95	10	49	227	9	14	6
40/75 50/75	200	70	95	115	20	47.5	302	9	25	6
40/89 -40/90 50/89 -50/90	200	80	110	130	20	57.5	312	11	25	6
50/110 63/110	250	100	130	165	25	62	390	11	30	6
63/130	250	125	180	215	25	69	415	13	30	6

Kit di protezione: *solo su versione P*

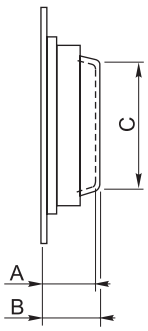
Albero cavo / *Hollow shaft* / Hohlwelle



KK KX XX	A		B		C	
	IN	OUT	IN	OUT	IN	OUT
30/30	12	12	13	13	39	39
30/40		14		15.5		44
30/50		15		16.5		54
30/63		17		19		60
40/63	14		15.5		44	
40/75		18		20		70
50/75	15		16.5		54	
40/89 - 40/90	14	21.5	15.5	24	44	80
50/89 - 50/90	15		16.5		54	
50/110		22		25		96
63/110	17		19		60	
63/130	17	22	19	25	60	130

Protection Kit: only for P version

Limitatore di coppia / *Torque limiter* / Drehmomentbegrenzer



KK KX XX	A		B		C	
	IN	OUT	IN	OUT	IN	OUT
30/30	36	36	37	37	36	36
30/40		40		41.5		44
30/50		47		48.5		53
30/63		52		54		55
40/63	40		41.5		44	
40/75		58		60		68
50/75	47		48.5		53	
40/89 - 40/90	40	60.5	41.5	63	44	70
50/89 - 50/90	47		48.5		53	
50/110		72		75		85
63/110	52		54		55	
63/130	52		54		55	

Schutzvorrichtung: nur für Version P

Opzioni disponibili:

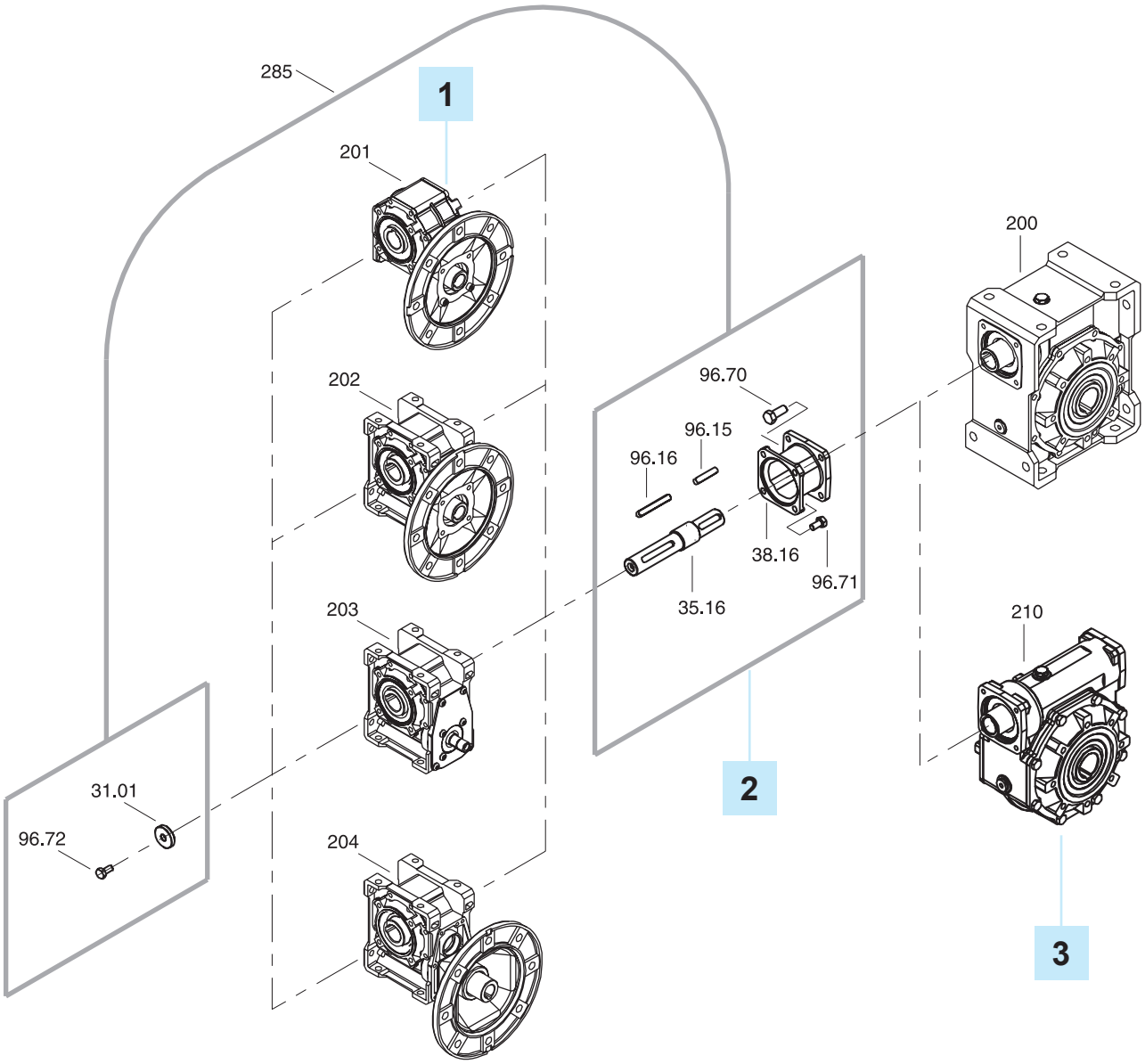
Cuscinetti a rulli conici corona

Available options:

Tapered roller bearing on wormgear

Auf Anfrage ist folgendes Zubehör erhältlich:
Kegelrollenlager auf Schneckenrad

KXC - XXC - XXA - XXF - KKC

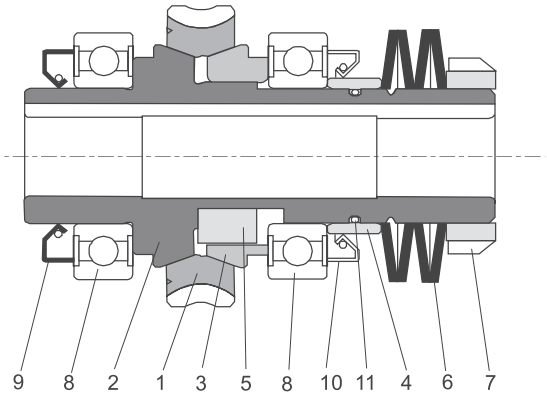


	1 IN X..P - K..P	2 KIT	3 OUT XC - KC
30/30	X30 KC30	**KIT 30/30** (2850002010)	30/9
30/40		**KIT 30/40** (2850002013)	40/11
30/50		**KIT 30/50** (2850002016)	50/14
30/63		**KIT 30/63** (2850002019)	63/19
40/63	X40 KC40	**KIT 40/63** (2850002028)	63/19
40/75		**KIT 40/75-90** (2850002031)	75/24
40/89 - 40/90			90/24
50/75	X50 KC50	**KIT 50/75-90** (2850002034)	75/24
50/89 - 50/90			90/24
50/110		**KIT 50/110** (2850002049)	110/28
63/110	X63 KC63	**KIT 63/110-130** (2850002052)	110/28
63/130	X63 KC63	**KIT 63/110-130** (2850002052)	110/28

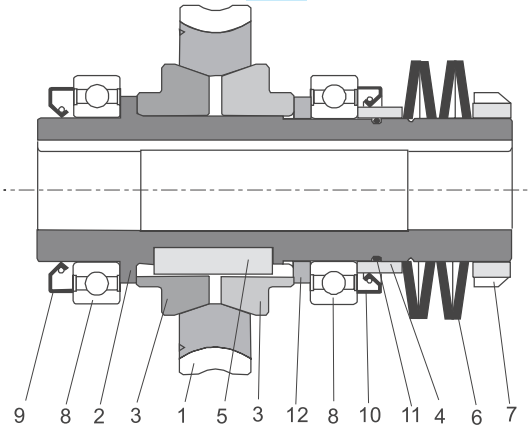
X - H - K - KX - XX - KK

Limitatore di coppia cavo passante | *Torque limiter with through hollow shaft* | Drehmomentbegrenzer mit durchgehende Hohlwelle

A

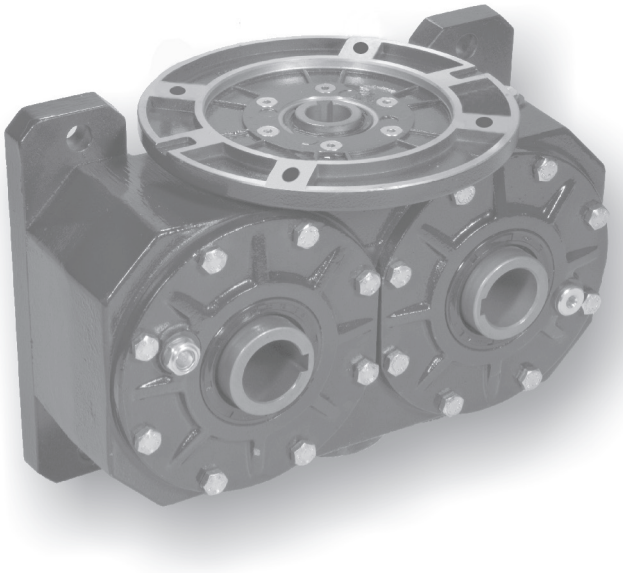


B

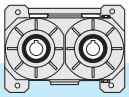


	A			B				
	X - H - K							
	30 (LD - LS)	**40** (LD - LS)	**50** (LD - LS)	**63** (LD - LS)	**75** (LD - LS)	**90** (LD - LS)	**110** (LD - LS)	**130** (LD - LS)
	KX - XX - KK							
	30/30 (L1-LD-LS) **30/40** (L1) **30/50** (L1) **30/63** (L1)	**30/40** (LD - LS) **40/63** (L1) **40/75** (L1) **40/89** (L1) **40/90** (L1)	**30/50** (LD - LS) **50/75** (L1) **50/89** (L1) **50/90** (L1) **50/110** (L1)	**30/63** (LD - LS) **40/63** (LD - LS) **63/110** (L1)	**40/75** (LD - LS) **50/75** (LD - LS)	**40/90** (LD - LS) **50/90** (LD - LS)	**50/110** (LD - LS) **63/110** (LD - LS)	**63/130** (LD - LS)
1	Corona in bronzo / *Bronze wheel* / Bronzerad /							
2	Albero cavo limitatore / *Hollow shaft torque limiter* / Rutschkupplungs-Hohlwelle							
3	Anello di frizione / *Friction ring* / Reibring							
4	Distanziale molle / *Washers' distance ring* / Federdistanzring							
5	Linguetta / *key* / Passfeder							
	8x7x10AB	10x8x13AB	12x8x18AB	12x8x40A	16x10x40A	16x10x50A	18x11x60A	
6	Molle a tazza / *Belleville washers* / Tellerfeder							
7	Ghiera / *Metal ring* / Metall Ring							
8	6005 25x47x12	6006 30x55x13	6008 40x68x15	6008 40x68x15	6010 50x80x16	6010 50x80x16	6012 60x95x18	
9	25x40x7	30x47x7	40x62x8	40x62x8	50x72x8	50x72x8	60x85x8	
10	30x40x5	35x47x7	48x62x8	48x62x8	58x72x8	58x72x8	70x85x8	
11	OR2087 21.95x1.78	OR2106 26.7x1.78	OR 36.27x1.78	OR 36.27x1.78	OR2187 47.37x1.78	OR2187 47.37x1.78	OR2225 56.87x1.78	
12	—			Distanziale / *Spacer* / Abstandshülse				

6.0 RIDUTTORI A VITE SENZA FINE CON DOPPIA USCITA / DOUBLE OUTPUT WORM GEARBOXES / SCHNECKENGETRIEBE MIT ZWEI AUSGANGSWELLEN



05/2019



La serie di vite senza fine con doppia uscita comprende riduttori costruiti appositamente per soddisfare delle specifiche esigenze di automazione.
Il cinematismo, composto da una vite senza fine e due corone, consente di disporre, all'uscita, di due alberi cavi con una rotazione sincrona controrotante.
La motorizzazione può essere effettuata tramite motori elettrici o motovariatori provvisti di una flangia di fissaggio dimensionata a norme IEC.

Double output worm gearboxes series includes gearboxes specially manufactured to comply with specific requirements.
The kinematic motion is carried out by means of a wormshaft and two wormwheels in order to have two output shafts with a synchronous rotation.
These gearboxes can be assembled to electric motors or moto variators fully comply with the IEC specifications.

Bei der Schneckengetriebe mit Zwei Ausgangswellen Serie handelt es sich um Schneckengetriebe, die für spezielle Antriebsaufgaben eingesetzt werden.
Der Aufbau besteht aus einer Schneckewelle und zwei Schneckenräder umgewandelt. Der Antrieb erfolgt durch IEC Normmotoren oder Verstellgetriebemotoren.

6.1 Caratteristiche

- **Corpo e flange**
  Costruiti in alluminio e verniciati colore BLU RAL 5010
- **Vite senza fine**
  In acciaio legato. Indurita tramite cementazione e tempra e finita di rettifica
- **Corona**
  Fascia dentata in bronzo GcuSn12 UNI 7013 riportata di fusione su mozzo in ghisa G20 UNI 5007
- **Cuscinetti**
  Sulla vite e sulle due uscite sono montati cuscinetti a rulli conici
- **Lubrificazione**
  Normalmente i riduttori vengono forniti privi di lubrificante. Su richiesta possono essere forniti con lubrificante sintetico

6.1 Characteristics

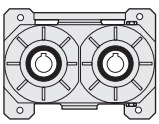
- ***Casing and flanges***
  Made from aluminium and painted BLUE RAL 5010
- ***Worm screw***
  Made from alloy steel. Hardened and case-hardened then finished by grinding
- ***Worm wheel***
  UNI 7013 GcuSn12 bronze toothed band. Inserted by casting on UNI 5007 G20 cast-iron hub.
- ***Bearings***
  Taper roller bearings are mounted on the screw and on the two outputs
- ***Lubrication***
  Gearboxes are normally supplied without lubricant. However, they can be supplied with synthetic lubricant on request

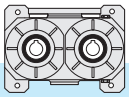
6.1 Merkmale

- **Gehäuse und Flansche**
  Aus Aluminium gefertigt und mit Farbe BLAU RAL 5010 lackiert
- **Schnecke**
  Aus legiertem Stahl. Gehärtet durch Einsatzhärtung und Abschreckhärtung mit Fertigschliff
- **Zahnkranz**
  Zahnband aus Bronze GcuSn 12 UNI 7013, aufgegossen auf Nabe aus Gusseisen G20 UNI 5007
- **Lager**
  Auf der Schnecke und auf den beiden Abtrieben werden Kegelrollenlager montiert.
- **Schmierung**
  Normalerweise werden die Getriebe ohne Schmiermittel geliefert. Auf Anfrage können sie mit synthetischem Schmiermittel geliefert werden

6.2 Designazione / *6.2 Designation* / 6.2 Bezeichnung

Riduttore *Gearbox* Getriebe	Tipo entrata *Input type* Antriebsart	Grandezza *Size* Größe	Rapporto rid. *Ratio* Untersetzung	Predispos.att. mot. *Motor coupling* Motoranschluss
VSF.2USC.	**VM**	**135**	**40**	**pam 200/19**
	VM **VI**	**135** **150** **170** **230**	**i**	





6.3 Dati tecnici — *6.3 Technical data* — 6.3 Technische Daten

Tipo / *Size* / Typ			135	150		170		230		
	Kg		13	15.5		19		40		
	i		40	7.5	40	40	80	10	28	40
VM	n_1 = 1400 min^{-1}	n_2 [min^{-1}]	35	187	35	35	17.5	140	50	35
		P_1 [kW]	0.75	1.8	0.75	1.8	1.5	5.5	4	1.8
		T_2 [Nm]	66	37	65	160	221	149	268	160
		F_s	2	3.7	2.6	1.4	1	2.7	1.6	2.8
VI	n_1 = 1400 min^{-1}	n_2 [min^{-1}]	35	/	/	35	17.5	/	/	/
		P_1 [kW]	1.5	/	/	2.6	1.5	/	/	/
		T_2 [Nm]	131	/	/	234	218	/	/	/
		η_D	0.64	/	/	0.65	0.54	/	/	/
	n_1 = 900 min^{-1}	n_2 [min^{-1}]	23	/	/	23	11	/	/	/
		P_1 [kW]	1.2	/	/	2	1.1	/	/	/
		T_2 [Nm]	158	/	/	269	247	/	/	/
		η_D	0.60	/	/	0.62	0.51	/	/	/
	n_1 = 500 min^{-1}	n_2 [min^{-1}]	12.5	/	/	12.5	6	/	/	/
		P_1 [kW]	0.8	/	/	1.4	0.8	/	/	/
		T_2 [Nm]	186	/	/	317	288	/	/	/
		η_D	0.56	/	/	0.57	0.46	/	/	/
		η_S	0.43	0.70	0.44	0.45	0.33	0.69	0.49	0.42

La coppia T_2 è riferita a ciascuna uscita. *T_2 torque refers to each output* T_2 bezieht sich auf jedes Abtrieb

6.4 Lubrificazione

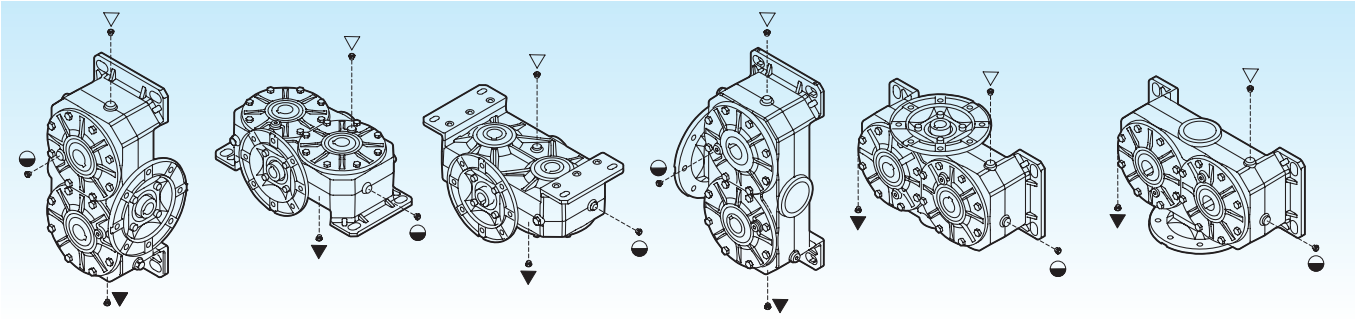
Normalmente i riduttori vengono forniti privi di lubrificante.
I tappi sono predisposti come da disegno.

6.4 Lubrication

The gearboxes are normally supplied without lubricant.
The filler plugs are arranged as shown in the drawing.

6.4 Schmierung

Normalerweise werden die Getriebe ohne Schmiermittel geliefert.
Die Anbringung der Füllstopfen entspricht der Zeichnung.



B3 **B6** **B7** **B8** **V5** **V6**

▽ Carico e sfiato / *Filling and breather* Einfüll und Entlüftung
◒ Livello / *Level* / Ölstand
▼ Scarico / *Drain* / Ablass

		Q.tà olio / *Oil quantity* / Schmiermittelmenge [lt]				
		Posizione di montaggio / *Mounting position* / Einbaulage				
		B3	**B6**	**B7**	**B8**	**V5 - V6**
VM	**135**	0.8	0.6	0.6	0.8	0.5
	150	1.5	1.2	1.2	1.5	1
	170	2	1.5	1.5	2	1.2
	230	5	4.5	3.5	5	3.2

6.5 Carichi radiali e assiali

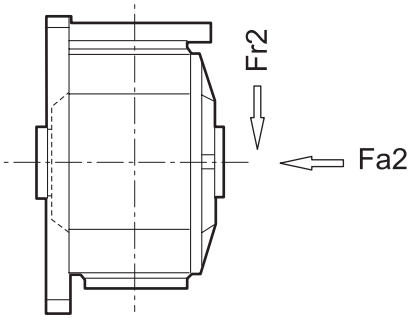
Nella tabella sono indicati i valori, espressi in N, dei carichi radiali e assiali ammissibili su ogni singola uscita.
Il carico radiale F_{r2} si considera applicato ad una distanza dalla battuta dell'albero cavo pari al valore del diametro.
I valori indicati hanno come limite la struttura del riduttore, perciò non variano al diminuire della velocità, cosa che normalmente avviene quando il limite è riferito ai cuscinetti.

6.5 Radial and axial loads

In the table, the permissible radial and axial loads for each individual output are shown as N
The radial load F_{r2} should be considered as applied at a distance from the shaft shoulder equal to the diameter figure.
The listed values are limited by the gear drive structure, therefore, they will not change as the speed decreases, which is normally the case when bearings are the limit reference.

6.5 Radial und Axial Belastungen

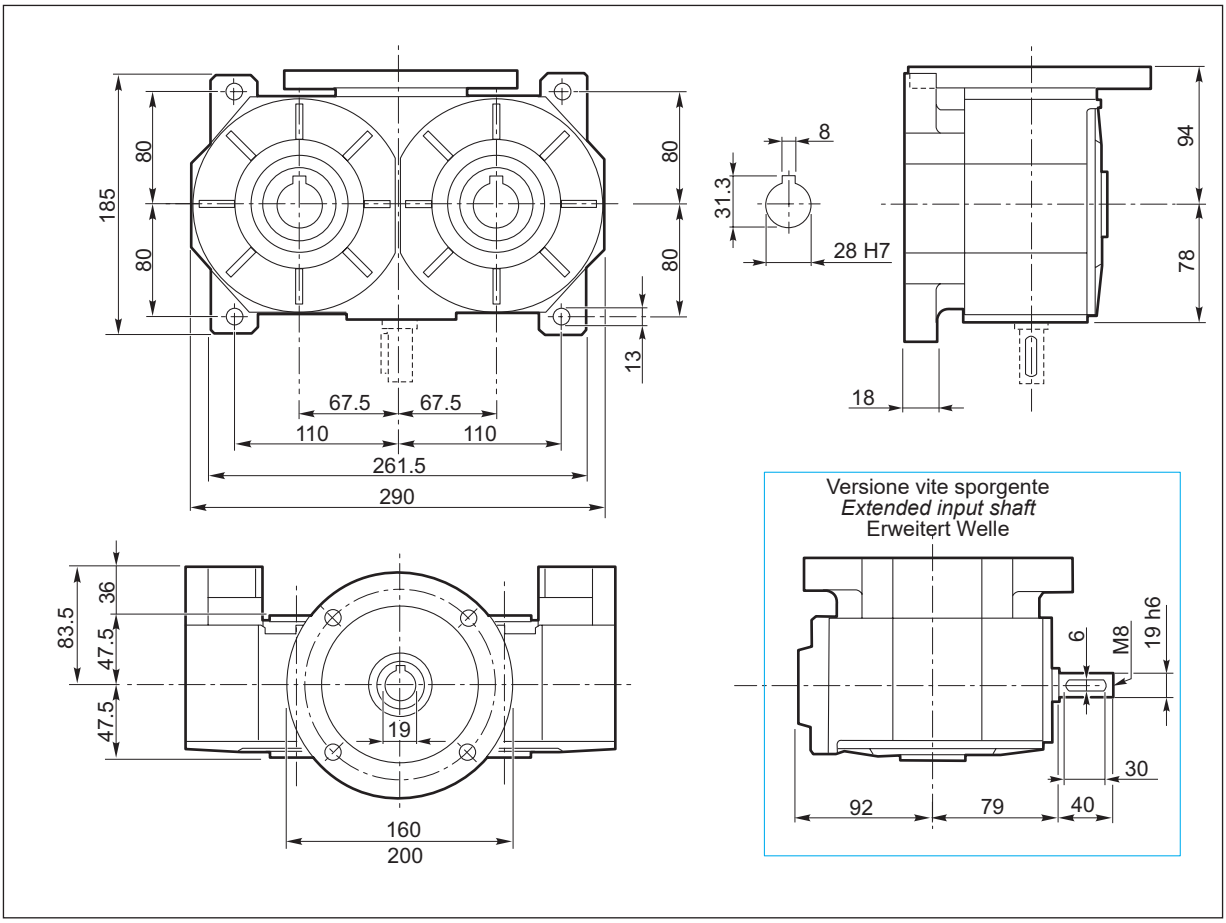
In der Tabelle werden die Werte der auf jedem einzelnen Abtrieb zulässigen Radial- und Axialbelastungen in N angegeben.
Hinsichtlich der radialen Belastung F_{r2} wird von einem Abstand vom Anschlag der Hohlwelle ausgegangen, der dem Wert des Durchmessers entspricht.
Die angegebenen Werte werden durch die Struktur des Getriebes beschränkt und verändern sich daher bei Reduzierung der Drehzahl nicht. Dies ist normalerweise dann der Fall, wenn der Grenzwert sich auf die Lager bezieht.



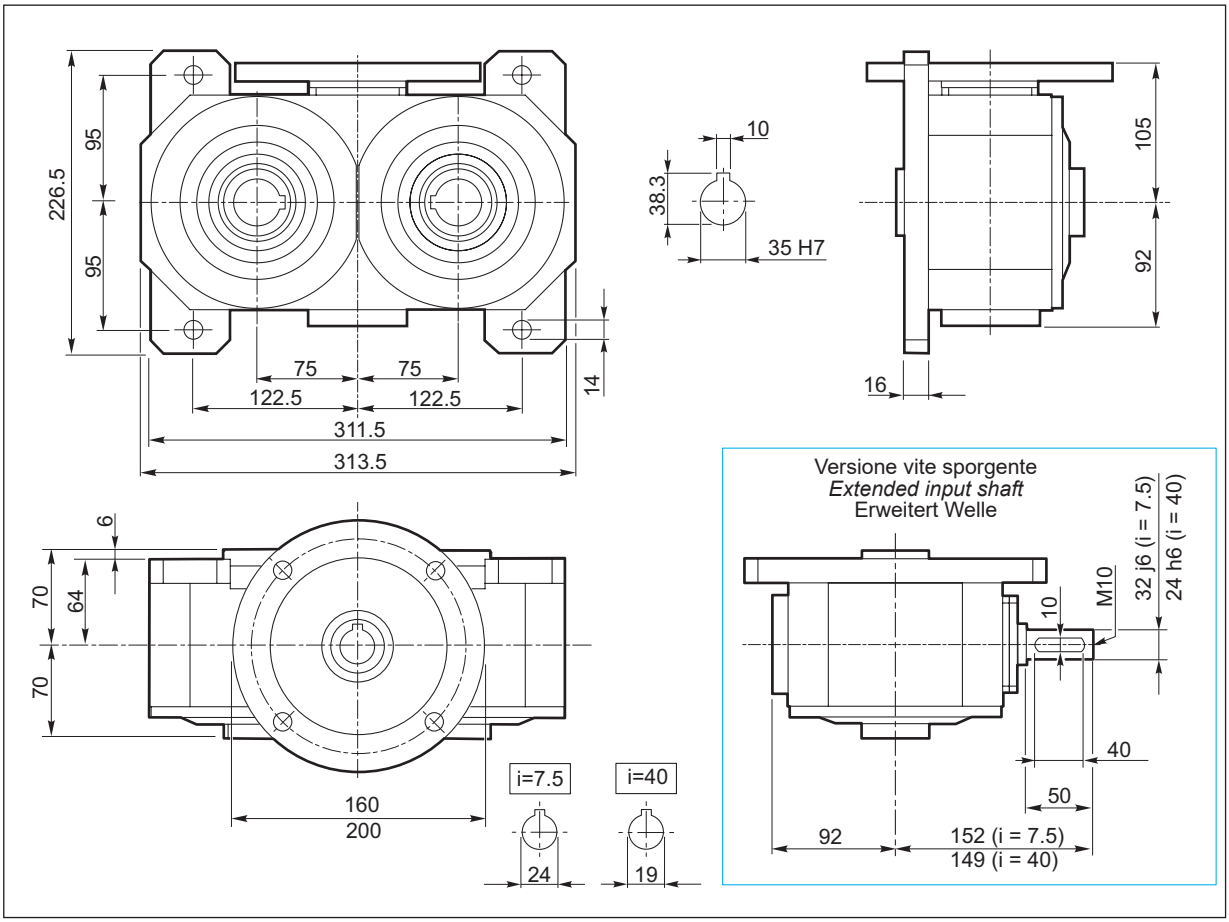
Tipo *Size* Typ	**135**	**150**	**170**	**230**
F_{r2} [N]	1200	1900	1700	3000
F_{a2} [N]	600	950	850	1500

6.6 **Dimensioni** *6.6* ***Dimensions*** 6.6 **Abmessungen**

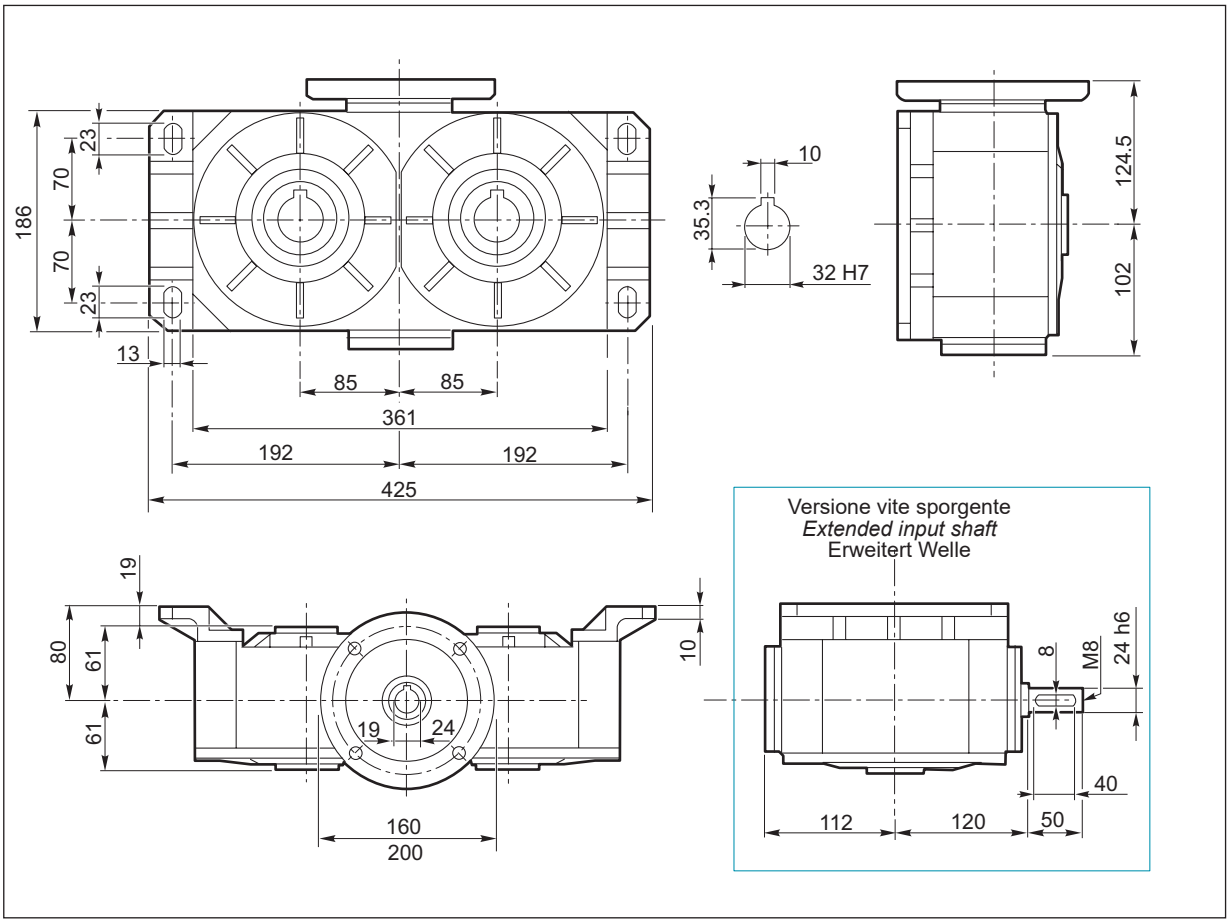
135



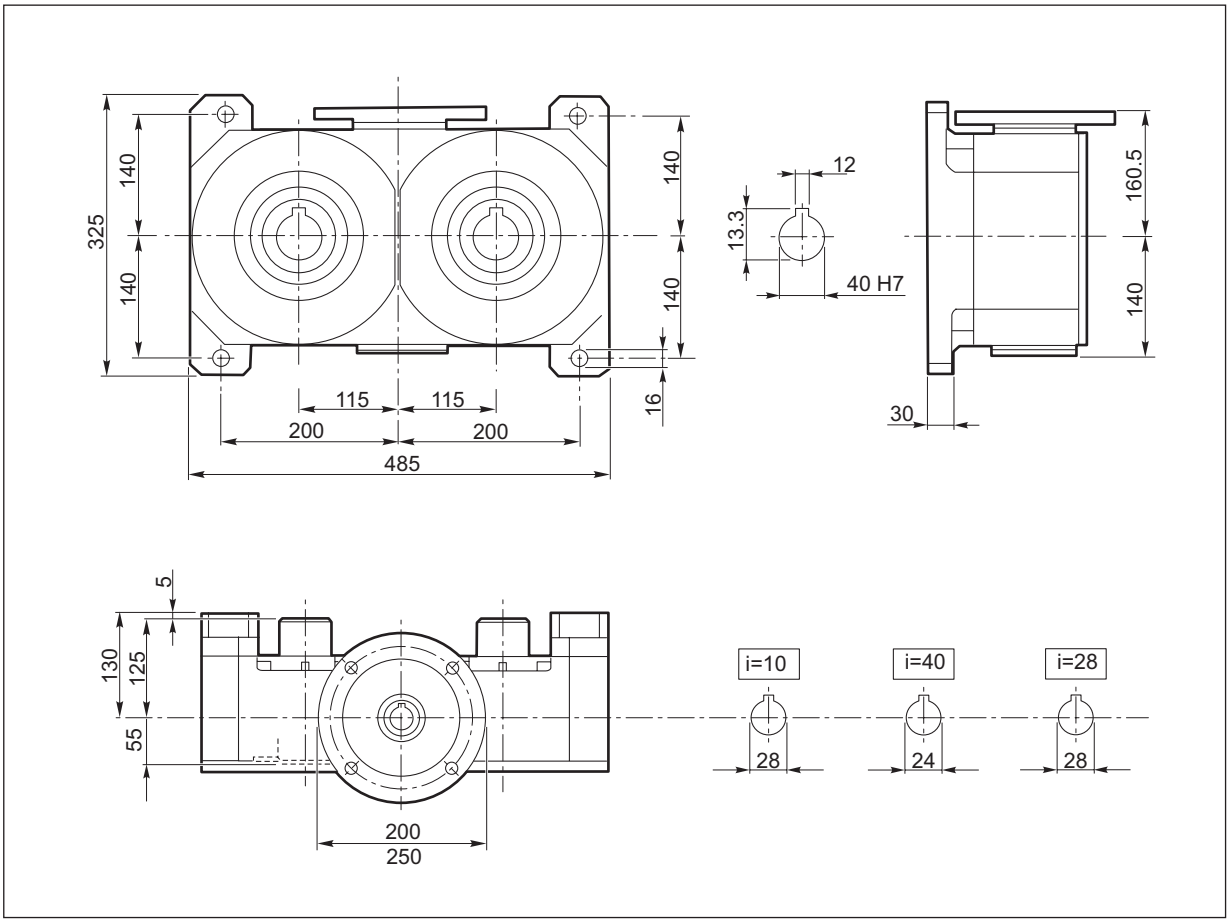
150



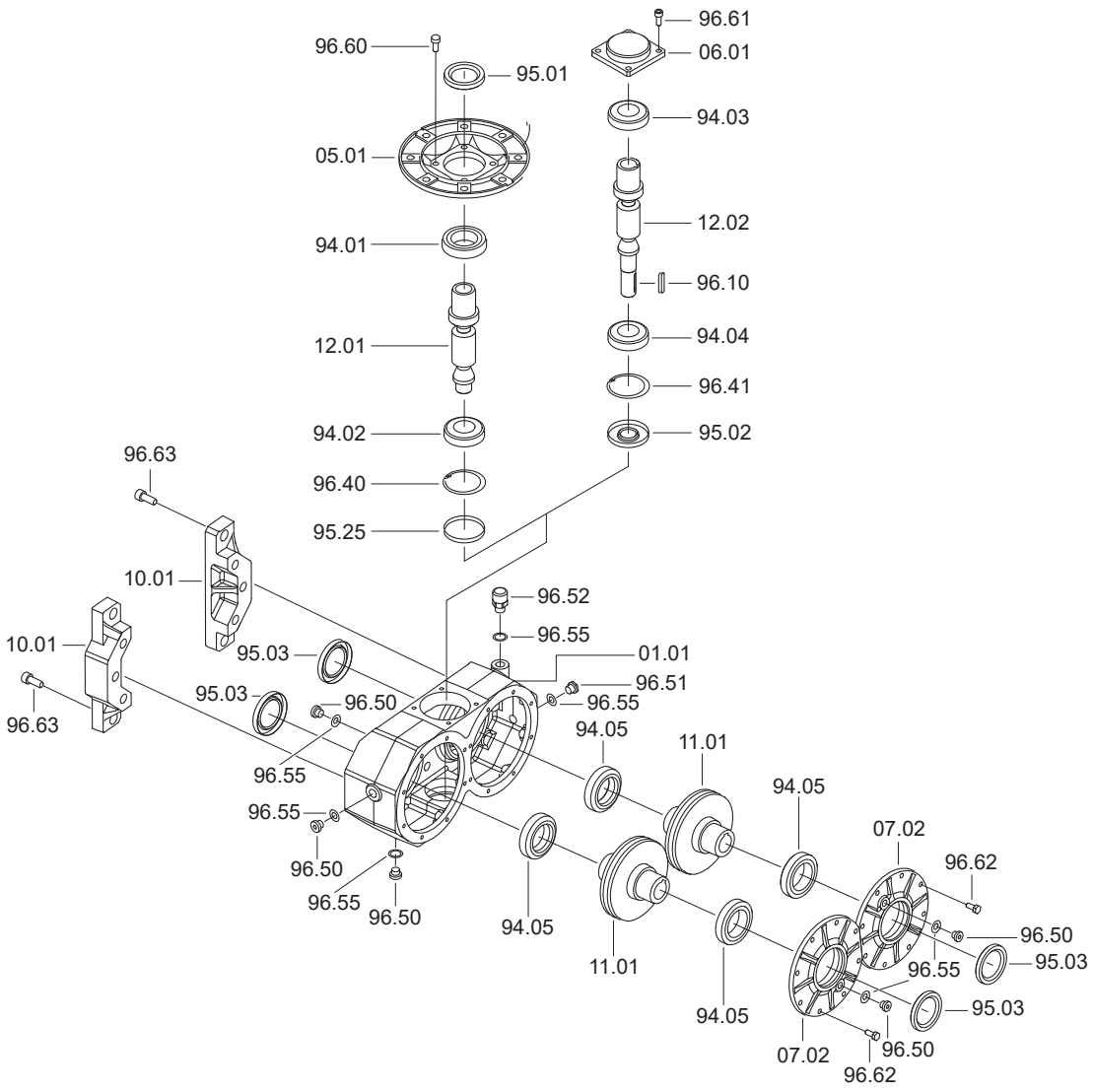
170


186
70
70
23
23
13
85
85
361
192
192
425
10
35.3
32 H7
124.5
102
19
80
61
61
10
19
24
160
200
Versione vite sporgente
Extended input shaft
Erweitert Welle
8
M8
24 h6
40
112
120
50

230

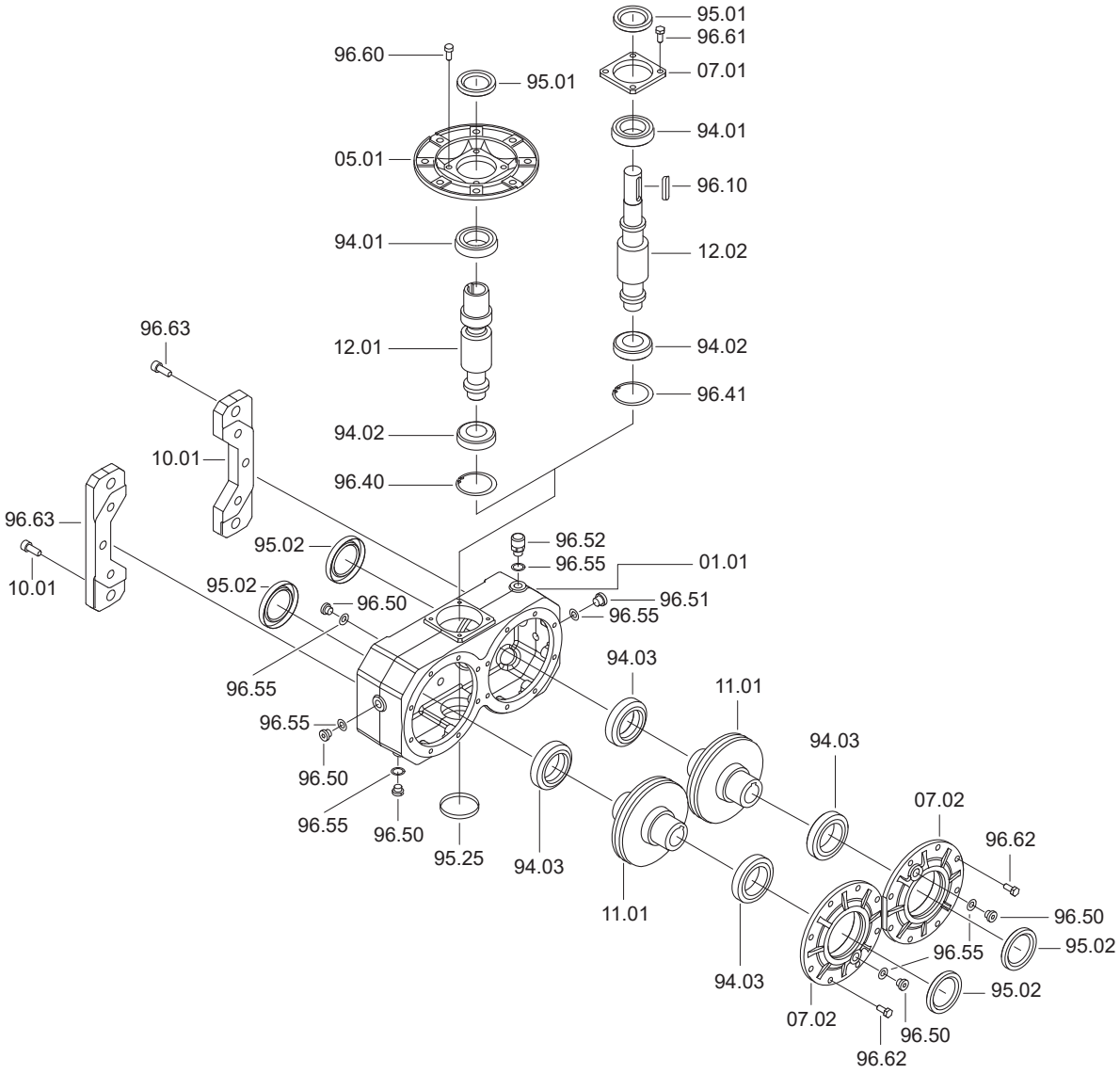

325
140
140
140
140
16
115
115
200
200
485
12
13.3
40 H7
160.5
140
30
5
130
125
55
200
250
i=10
i=40
i=28
28
24
28

VM - VI 135



VM / VI	Cuscinetti / *Bearings* / Lager					Anelli di tenuta / Oilseals Öldichtungen			Cappellotto / *Closed oil seal* Geschlossene Öldichtung
	94.01	**94.02**	**94.03**	**94.04**	**94.05**	**95.01**	**95.02**	**95.03**	**95.25**
135	**30206** 30x62x17.25	**30304** 20x52x16.25	**32010** 50x80x20	**30206** 30x62x17.25	**32009** 45x75x20	30/56/10	20/52/10	45/65/10	ø 52x7

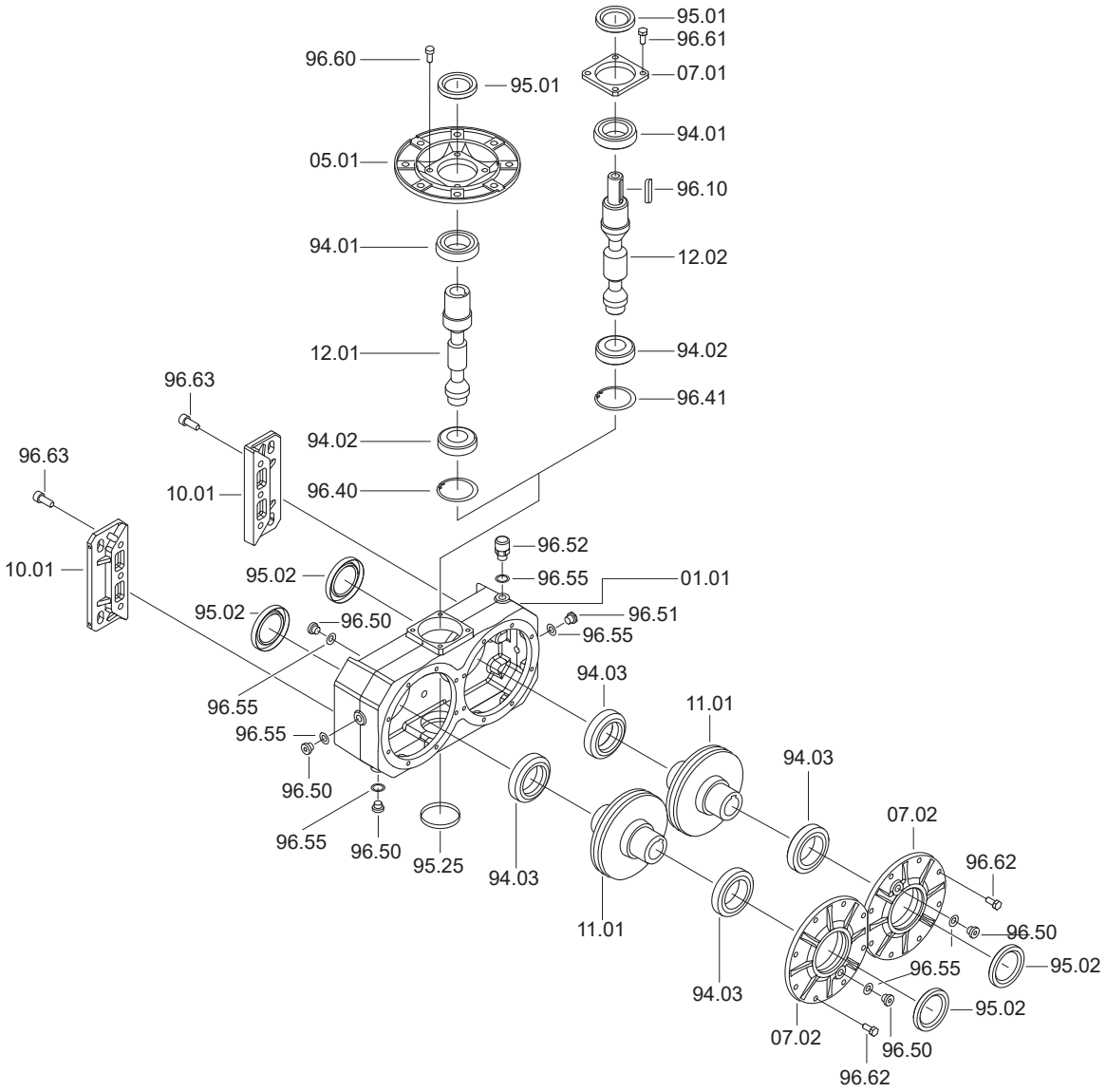
VM - VI 150



VM VI	Cuscinetti / *Bearings* / Lager			Anelli di tenuta / Oilseals Öldichtungen		Cappellotto / *Closed oil seal* Geschlossene Öldichtung
	94.01	**94.02**	**94.03**	**95.01**	**95.02**	**95.25**
150	**32007** 35x62x18	**30205** 25x52x16.25	**32010** 50x80x20	35/56/10	50/72/8	ø 52x7
	* **30305** 55x62x18					

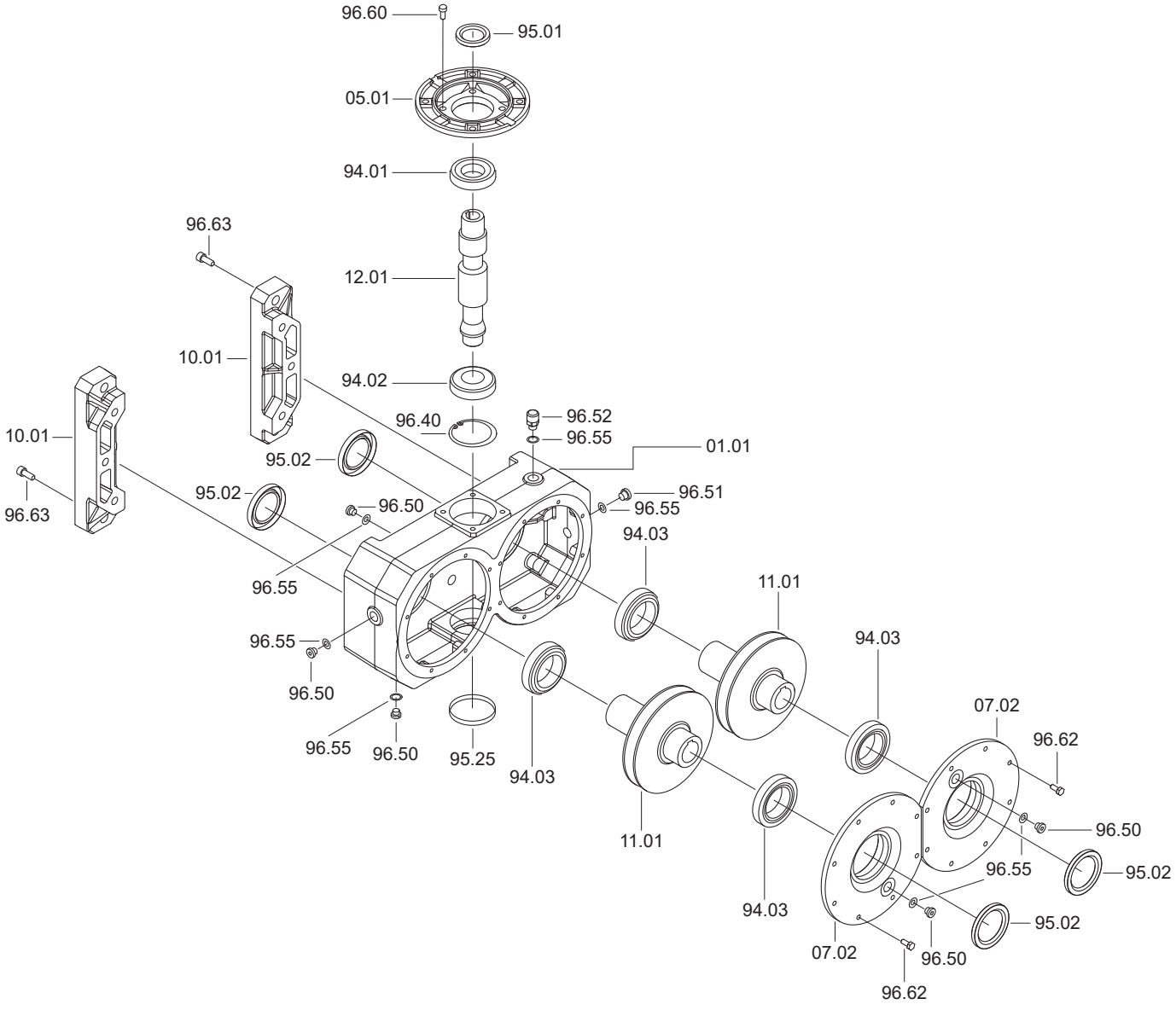
* Solo per VI150 i40 / *Only for VI150 i40* / Nur fur VI150 i40

VM - VI 170



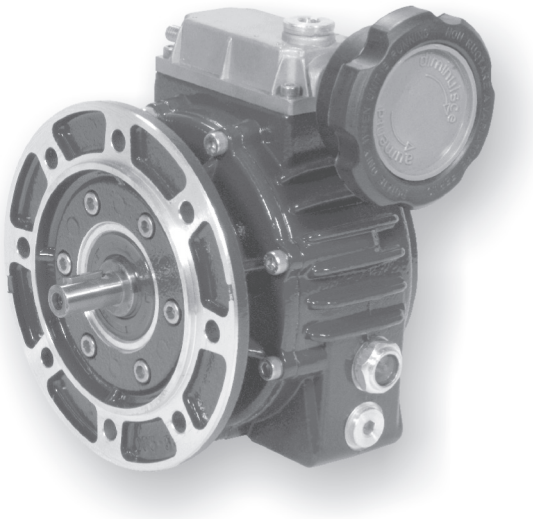
VM / VI	Cuscinetti / *Bearings* / Lager			Anelli di tenuta / Oilseals Öldichtungen		Cappellotto / *Closed oil seal* Geschlossene Öldichtung
	94.01	**94.02**	**94.03**	**95.01**	**95.02**	**95.25**
170	**32008** 40x68x19	**30206** 30x62x17.25	**32010** 50x80x20	40/62/8	50/72/8	ø 62x7

VM 230



VM	Cuscinetti / *Bearings* / Lager			Anelli di tenuta / Oilseals Öldichtungen		Cappellotto / *Closed oil seal* Geschlossene Öldichtung
	94.01	**94.02**	**94.03**	**95.01**	**95.02**	**95.25**
230	**30208** 40x80x19.75	**30307** 35x80x22.75	**32012** 60x95x23	40/72/7	60/85/8	ø 80x10

7.0 VARIATORI — *VARIATORS* — VERSTELLGETRIEBE



05/2019

7.1 Principio di funzionamento del variatore

Si tratta di una trasmissione epicicloidale a rapporto variabile.
Quando il motore aziona il solare (5-6), i satelliti (8) sono indotti a ruotare sul proprio asse e, contemporaneamente, per effetto del vincolo con la pista esterna fissa (7) e la pista esterna mobile (9), ad un movimento di rivoluzione che trascina in rotazione il portasatelliti (albero uscita).
Variando la posizione assiale della pista esterna mobile (9) tramite la vite di comando, l'anello portasfere (14) e la camma fissa (15), i satelliti sono costretti a variare la loro posizione radiale di rivoluzione. In tal modo i diametri di rotolamento cambiano, così come la velocità angolare dell'albero uscita.
Quando il contatto di rotolamento con le piste esterne (7) (9) si trova verso il centro del satellite (8), la velocità di rivoluzione è più bassa: l'albero uscita ruoterà più lentamente ma avrà disponibile un maggior momento torcente.

Attenzione
La regolazione della velocità si può effettuare SOLO col variatore in funzione, MAI a macchina ferma.

7.1 Variator operating principle

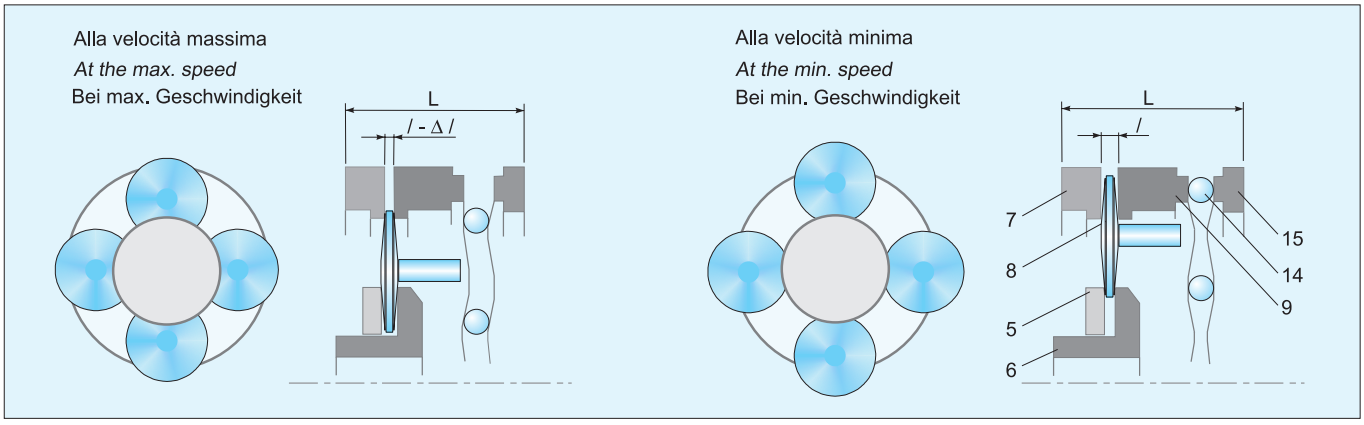
The mechanical variator working is based on an epicyclical transmission at variable ratio.
When the motor drives the solar ring (5-6) the satellites (8) start to rotate on their axis and simultaneously, because of the connection with the fixed outer ring (7) and external mobile ring (9), originate the rotation of the satellite carrier (output shaft).
The satellites rotate around their axes while simultaneously originate the rotation of the satellite carrier (output shaft).
Changing the axial position of the external mobile ring (9) by means of the drive shaft, the ball support ring (14) and the fixed cam, the satellites are forced to modify their radial position rotation involving both the modification of the rolling diameters and the angular speed of the output shaft.
When the rolling contact point of the outer rings (7) (9) is near the center of satellites (8) the output speed is very low: the output shaft will rotate more slowly but will dispose of a higher output torque.

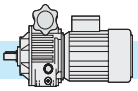
Warning
Speed adjustment is only possible when variator is running, never adjust speed while variator is stationary.
This will result in damage to the variator.

7.1 Betriebsprinzip

Das Verstellgetriebe ist ein Planetengetriebe mit verstellbarem Untersetzungsverhältnis.
Der Motor treibt das Sonnenrad (5-6) an. Die Drehbewegung wird auf die Planetenräder (8) übertragen. Die Verbindung zwischen der unbeweglichen (7) und der beweglichen (9) äußeren Laufbahn überträgt die Drehbewegung an die Abtriebswelle.
Durch die Verschiebung des Kugelringes (14) und der Nocke (15) ändert sich die Axiallage der beweglichen Laufbahn (9) und die Radiallage der Planetenräder. Auf diese Weise ändern die Rollendurchmesser und die Winkelgeschwindigkeit der Abtriebswelle.
Verschiebt sich der Kontaktpunkt zwischen den Planetenräder (7) und der äußeren Laufbahn (9) gegen das Zentrum der Planetenräder, sinkt die Ausgangsdrehzahl und das Drehmoment steigt.

Vorsicht
Die Geschwindigkeit darf nur während des Betriebes geändert werden.





7.2 Variatori

I variatori meccanici serie N sono in alluminio nelle grandezze 003, 005, 010, 020, 030, 050 per potenze da 0.18 kW a 4 kW.

7.2 *Variators*

Mechanical variators N serie size 003, 005, 010, 020, 030 and 050, from 0.18 kW to 4 kW are made of aluminium.

7.2 Verstellgetriebe

Die mechanischen Verstellgetriebe Serie N sind aus Aluminium in den Größen 003, 005, 010, 020, 030, 050 für Leistungen von 0,18 kW bis 4 kW.

7.3 Caratteristiche

- La carcassa in alluminio, oltre ad una migliore estetica, comporta un minor peso del variatore rendendone più convenienti applicazioni e trasporti.
- Sul modulo base è possibile montare, in modo semplice e veloce, flangia uscita o piede, a seconda delle necessità. Questo riduce i volumi di stoccaggio ed i tempi di consegna.
- Il lato di entrata del variatore è chiuso, parte integrale col corpo: questo rende più facile l'installazione ed elimina totalmente la possibilità di perdite d'olio.
- È previsto, come standard, il collegamento a motori a dimensioni IEC forma B5.
- Il tappo di scarico olio è del tipo a magnete: la lubrificazione più pulita consente intervalli di manutenzione più lunghi.
- Funzionamento in bagno d'olio, silenzioso, con elevato rendimento ed esente da vibrazioni.
- Il funzionamento è possibile in entrambi i sensi di rotazione con entrata ed uscita concordi.
- Campo di variazione 1 - 6.
- L'albero di comando è bisporgente ed è quindi accessibile, per la manovra, da entrambe le estremità.

7.3 *Characteristics*

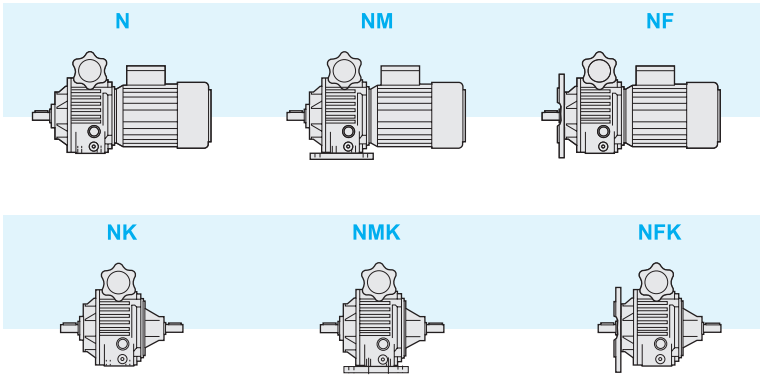
- *Alluminium housing benefits weight reduction for more convenient applications and transportation.*
- *The simple design allows both foot or ouput flange mounting to standard unit, reducing stocking levels and allowing quick delivery.*
- *The closed input flange is an integral part of the variator casing for easy installation and prevents possibility of oil leaks.*
- *IEC B5 motor connections available as standard.*
- *The magnetic breather plug maintains a clean lubrication and extends maintenance intervals.*
- *The oil bath operation provides high efficiency for noiseless, vibration free running.*
- *The unit can operate in both directions, input and uotput shafts rotate in same direction.*
- *Range of variation 1 - 6 reduction.*
- *Hand wheel can be fitted to both sides of control box for convenient installation.*

7.3 Merkmale

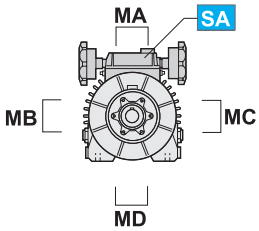
- Dank dem Gehäuse aus Aluminium ist das Verstellgetriebe sehr leicht, was zur erleichterten Anwendung und Transport dient.
- Auf das Grundmodul können entweder Abtriebsflansch oder Fuß montiert werden. Das bringt Raumersparnis und schnellere Lieferzeit mit sich.
- Die Antriebsseite ist geschlossen und integrales Bestandteil des Gehäuses: Installation ist einfacher und Ölverluste sind ausgeschlossen.
- Standard-Anbau zu IEC B5 Motoren.
- Magnet-Ölablassschraube: die reinigere Schmierung erlaubt längeren Wartungsintervallen.
- Betrieb im Ölbad ist geräuschlos, mit erhohte Leistung und und vibrationsfrei.
- Betrieb ist in beide Drehrichtungen möglich, mit Antriebs- und Abtriebswellen in derselber Richtung drehend.
- Variationsbreite 1 – 6
- Das Steuer-Handrad ist doppelseitig hervorstehend: es kann von beiden Enden bedient werden.

7.4 Designazione — 7.4 Designation — 7.4 Bezeichnung

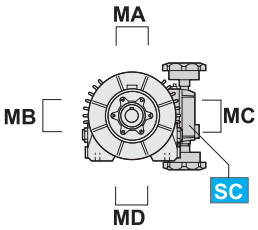
Tipo *Type* Typ	Grandezza *Size* Größe	Albero uscita diam. mm *Output shaft diam. mm* Abtriebswelle Durchmesser mm	Flangia uscita diam. mm *Output flange diam. mm* Abtriebsflansch Durchmesser mm	Attacco motore IEC *IEC motor adaptor* IEC Motoranbau	Posizione di montaggio *Mounting position* Einbaulage	Posizione scatola di comando *Speed control box position* Steuerkasten	Potenza motore *Motor power* Motorleistung	N° poli *Poles number* Polzahl	Forma costruttiva motore *Motor version* Motorversion	Tensione *Voltage* Spannung	Frequenza *Frequency* Frequenz	Posizione morsettiera *Terminal box position* Lage der Klemmkaste
NF	**030**	**AU28**	**F250**	**100B5**	**B5**	**SA**	**2.2 kW**	**4**	**B5**	**230/400**	**50Hz**	**MA**
N **NM** **NF** **NK** **NMK** **NFK**	**003** **005** **010** **020** **030** **050**	Vedi tabelle *See tables* Siehe Tabelle	Vedi tabelle *See tables* Siehe Tabelle	Vedi tabelle *See tables* Siehe Tabelle	**B3** **B6** **B7** **B8** **V5** **V6** **B5** **V1** **V3**	**SA** **SB** **SC** **SD**	Vedi tabelle *See tables* Siehe Tabelle	**2** **4** **6**	**B5**			**MA** **MB** **MC** **MD**



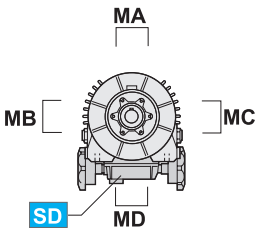
Posizione morsettiera e scatola di comando

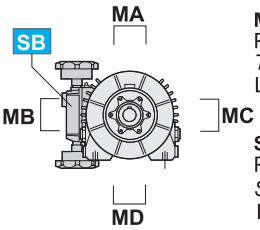


Terminal box and speed control box position



Lage der Klemmkaste und der Steuerkaste



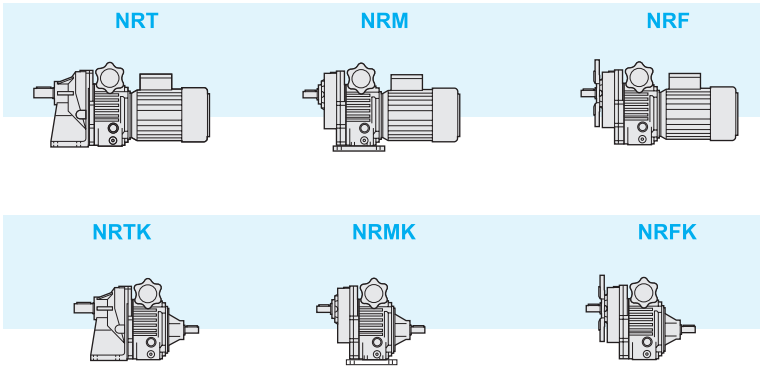


MA, MB, MC, MD
Posizione morsettiera
Terminal box position
Lage der Klemmkaste

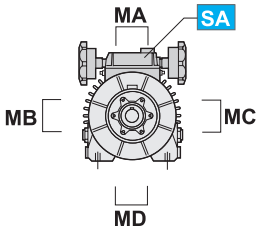
SA, SB, SC, SD
Posizione scatola di comando
Speed control box position
Lager der Steuerkaste

7.4 Designazione — 7.4 Designation — 7.4 Bezeichnung

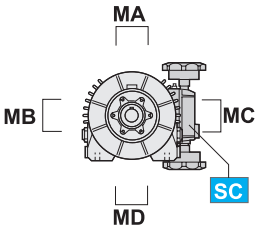
Tipo *Type* Typ	Grandezza *Size* Größe	Rapporto di riduzione (i) *Reduction ratio (i)* Untersetzungsverhältnis	Albero uscita diam. mm *Output shaft diam. mm* Abtriebswelle Durchmesser mm	Flangia uscita diam. mm *Output flange diam. mm* Abtriebsflansch Durchmesser mm	Attacco motore IEC *IEC motor adaptor* IEC Motoranbau	Posizione di montaggio *Mounting position* Einbaulage	Posizione scatola di comando *Speed control box position* Steuerkasten	Potenza motore *Motor power* Motorleistung	N° poli *Poles number* Polzahl	Forma costruttiva motore *Motor version* Motorversion	Tensione *Voltage* Spannung	Frequenza *Frequency* Frequenz	Posizione morsettiera *Terminal box position* Lage der Klemmkaste
NFR	**003/1**	**5**	**AU19**	**F160**	**63B5**	**B5**	**SA**	**0.25 kW**	**4**	**B5**	**230/400**	**50Hz**	**MA**
NRT **NRM** **NRF** **NRTK** **NRMK** **NRFK**	**003/1** **005/1** **010/1** **020/1** **030/1** **050/1**	**2.5** **5**	Vedi tabelle *See tables* Siehe Tabelle	Vedi tabelle *See tables* Siehe Tabelle	Vedi tabelle *See tables* Siehe Tabelle	**B3** **B6** **B7** **B8** **V5** **V6** **B5** **V1** **V3**	**SA** **SB** **SC** **SD**	Vedi tabelle *See tables* Siehe Tabelle	**2** **4** **6**	**B5**			**MA** **MB** **MC** **MD**

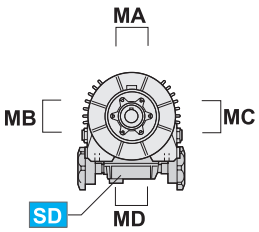


Posizione morsettiera e scatola di comando

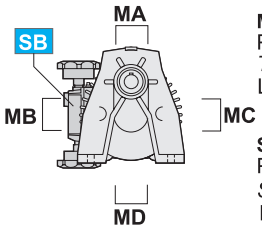


Terminal box and speed control box position





Lage der Klemmkaste und der Steuerkaste



MA, MB, MC, MD
Posizione morsettiera
Terminal box position
Lage der Klemmkaste

SA, SB, SC, SD
Posizione scatola di comando
Speed control box position
Lager der Steuerkaste

7.5 Dati tecnici — 7.5 Technical data — 7.5 Teschnische Angaben

Tipo *Type* Typ	P_1 kW	Poli *Poles* Polen	Attacco motore IEC *IEC motor adaptor* IEC Motoranbau	n_2 max min^{-1}	n_2 min min^{-1}	i	T_2 min Nm	T_2 max Nm
N003	0.25	4	63 B5	950	190	—	1.9	3.8
	0.37	2	63 B5	1900	380	—	1.5	3
NR 003/1	0.25	4	63 B5	380	76	2.5	4.7	9.3
				190	38	5	9.3	18.6
N005	0.37	4	71 B5	1000	167	—	3	6
	0.55	4	71 B5	1000	167	—	4.5	9
	0.75	2	71 B5	2000	333	—	3	6
NR 005/1	0.37	4	71 B5	400	67	2.5	7.3	14.7
				200	33	5	14.7	29.4
N010	0.75	4	80 B5	1000	167	—	6	12
	0.92	4	80 B5	1000	167	—	7.5	12
	1.5	2	80 B5	2000	333	—	6	12
NR 010/1	0.75	4	80 B5	400	67	2.5	14.7	29.4
				200	33	5	29.4	58.8
N020	1.5	4	90 B5	1000	167	—	12	24
	1.85	4	90 B5	1000	167	—	15	24
	2.2	2	90 B5	2000	333	—	9	18
NR 020/1	1.5	4	90 B5	400	67	2.5	29.4	58.8
				200	33	5	58.8	118
N030	2.2	6	100 B5	660	125	—	27	54
	2.2	4	100 B5	1000	167	—	18	36
	3	4	100 B5	1000	167	—	24	48
NR 030/1	2.2	4	100 B5	400	67	2.5	44.1	88.2
				200	33	5	88.2	176
N050	4	4	112 B5	1000	167	—	32	64
NR 050/1	4	4	112 B5	400	67	2.5	78.4	157
				200	33	5	157	314

Simbologia:
P_1 [kW] Potenza motore
poli N° poli motore
n_2 max [min^{-1}] Velocità massima in uscita
n_2 min [min^{-1}] Velocità minima in uscita
T_2 min [Nm] Coppia alla velocità massima
T_2 max [Nm] Coppia alla velocità minima
i Rapporto di riduzione

Symbols:
P_1 *[kW] Motor power*
poles *Number of poles*
n_2 max *[min^{-1}] Max output speed*
n_2 min *[min^{-1}] Min output speed*
T_2 min *[Nm] Output torque at the max speed*
T_2 max *[Nm] Output torque at the min speed*
i *Reduction ratio*

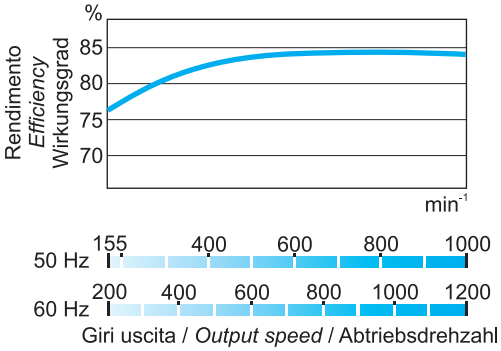
Symbole:
P_1 [kW] Motorleistung
poli Motor Polzahl
n_2 max [min^{-1}] Max Abtriebsdrehzahl
n_2 min [min^{-1}] Min. Abtriebsdrehzahl
T_2 min [Nm] Drehmoment bei max. Drehzahl
T_2 max [Nm] Drehmoment bei min. Drehzahl
i Untersetzungsverhältnis

Il diagramma A riporta i valori indicativi del rendimento del variatore alle varie velocità in uscita n_2 espresse in min^{-1} e il diagramma B indica la percentuale di carico sul motore.

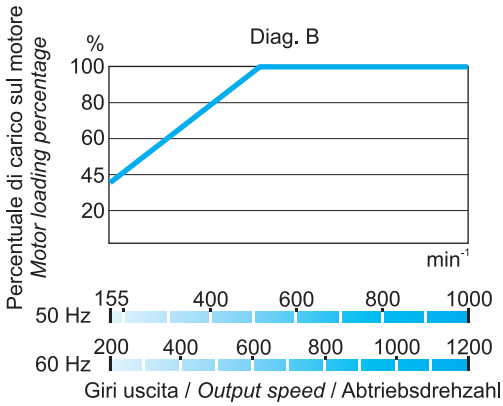
Diagram A shows the indicative value of efficiency in relation to output speed n_2 expressed in min^{-1}. Diagram B shows the percentage of motor output power utilized.

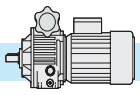
Diagramm A zeigt die Richtwerte des Wirkungsgrades in Abhängigkeit zur Abtriebsdrehzahl n_2 Min^{-1}. Diagramm B zeigt den Prozentsatz der benötigten Motorleistung.

Diag. A



Diag. B

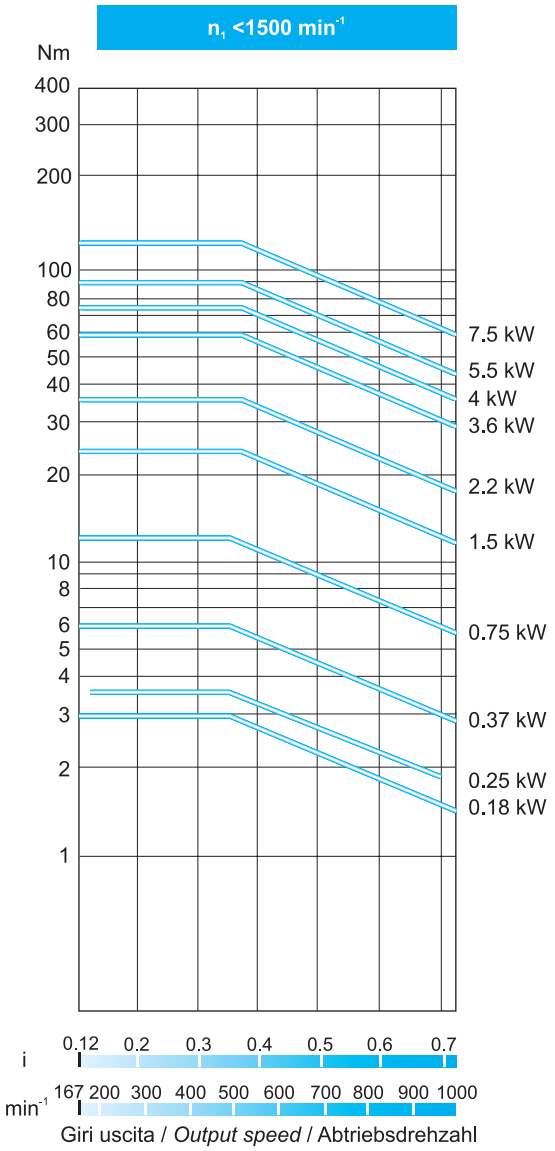


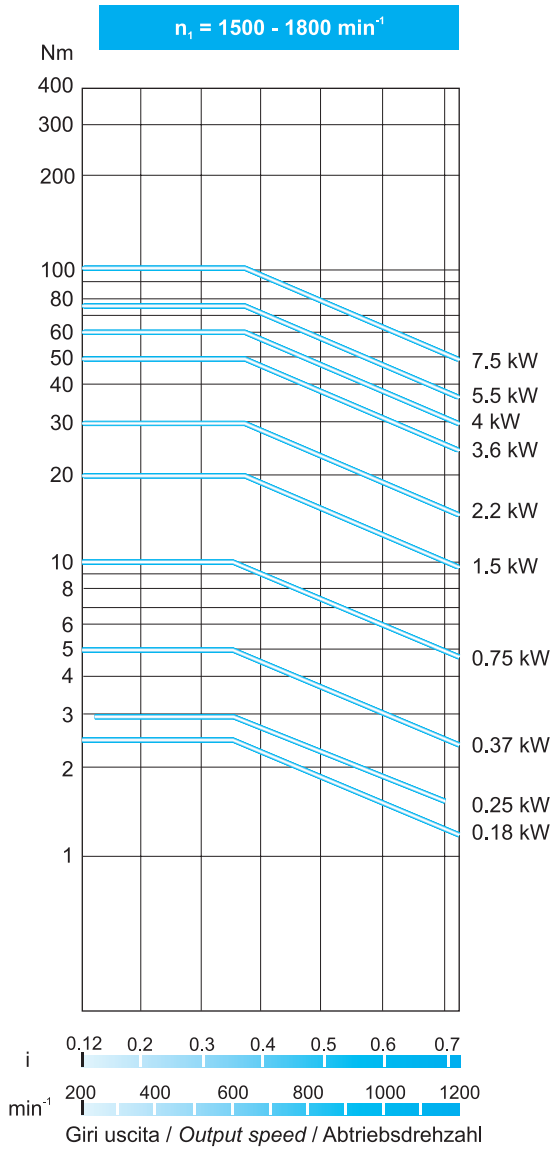


I diagrammi seguenti riportano le curve di coppia riferite alle varie potenze applicate e al numero di giri in entrata al variatore n_1 (min^{-1}).

The following diagrams show the performance for output torque in relation to input power and input speed n_1 (min^{-1}).

Die folgende Diagramme zeigen die Drehmomentkurven bezüglich Leistung und Antriebsdrehzahl.





7.6 Lubrificazione

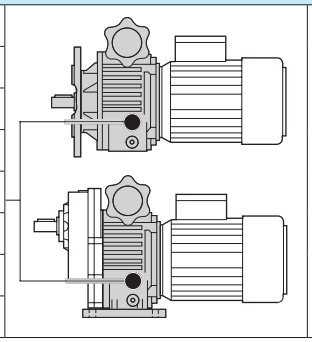
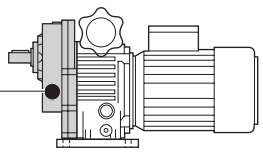
I variatori vengono forniti completi di lubrificante. Dopo il piazzamento del variatore assicurarsi che il livello del lubrificante sia visibile dall'apposita spia di livello effettuando eventuali rabbocchi se necessario, con un analogo lubrificante scelto fra quelli raccomandati in tabella.

7.6 Lubrication

The variators are supplied complete with lubricant. It is important to have the correct level of lubrication for the final mounting position choosen. Ensure the oil can be seen through the oil level plug this to allow the filling up if necessary.

7.6 Schmierung

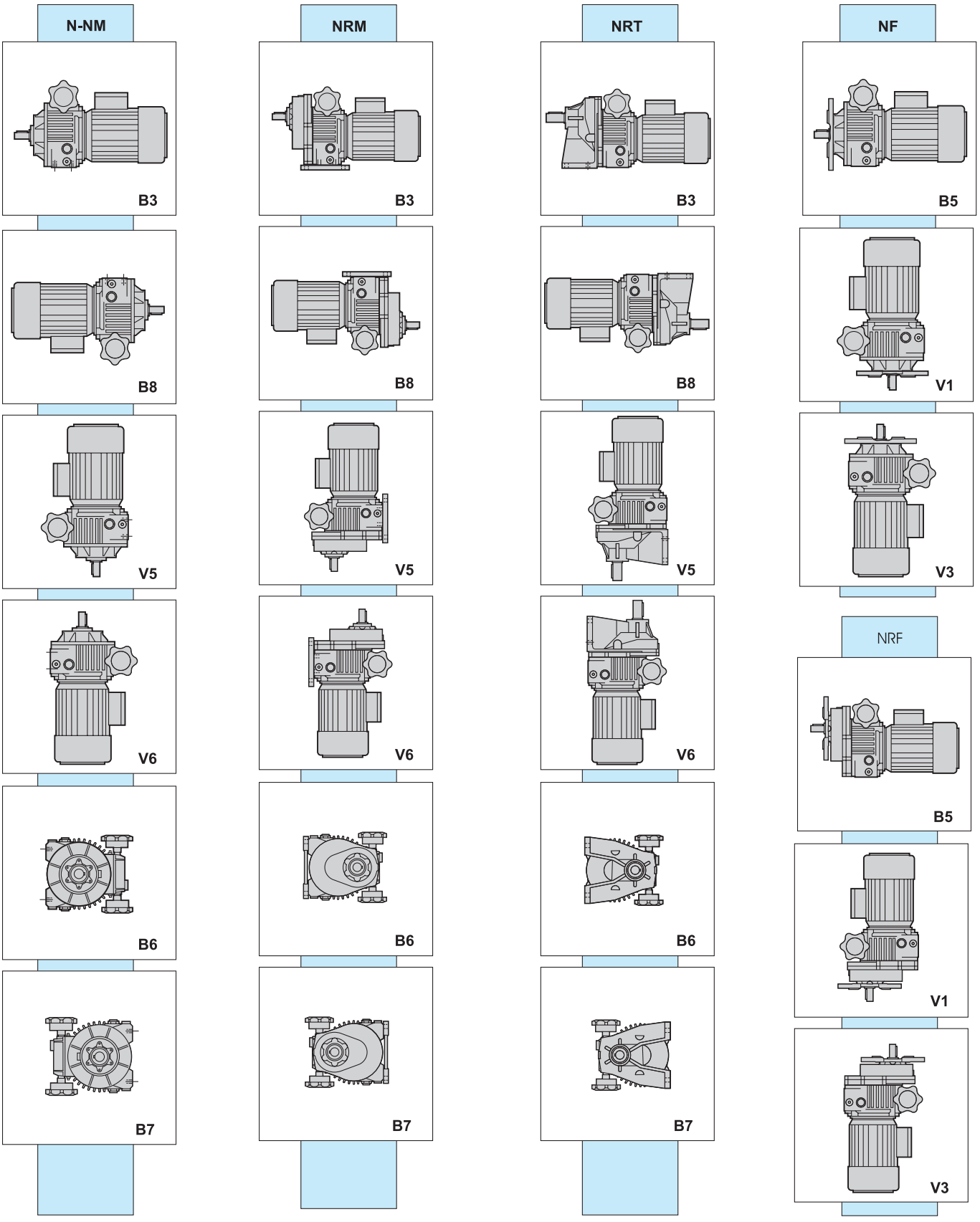
Die Verstellgetriebe werden mit Öl geliefert. Nach Einbau des Verstellgetriebes ist der Ölstand durch das Schauglas zu prüfen. Wenn notwendig, füllen Sie mit einem der empfohlenen Öle auf (s. Tafel).

Tipi di lubrificanti raccomandati / *Recommended lubricants* / Empfohlene Öle					
Dexron fluid II	**IP**		Atina grease 0	**IP**	
A.T.F. Dexron fluid DIII	**SHELL**				
A.T.F. 200 RED	**MOBIL**				
A.T.F. Dexron	**FINA**				
BP Autran DX	**BP**		Tivela Compound A	**SHELL**	
A.T.F. Dexron	**ESSO**				
A.T.F. Dexron	**CHEVRON**				
A.T.F. Dexron	**AGIP**				

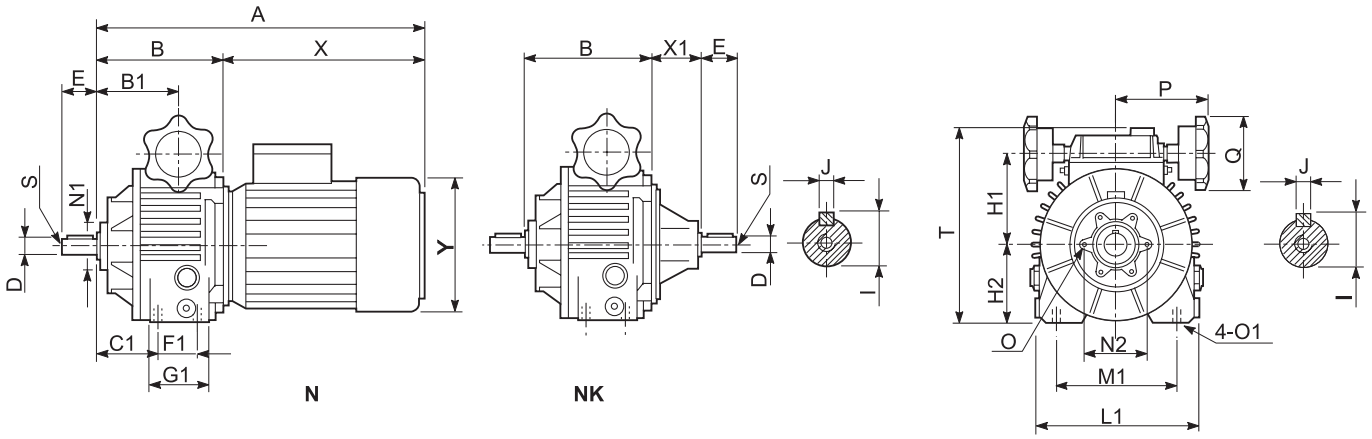
7.7 Posizioni di montaggio

7.7 Mounting positions

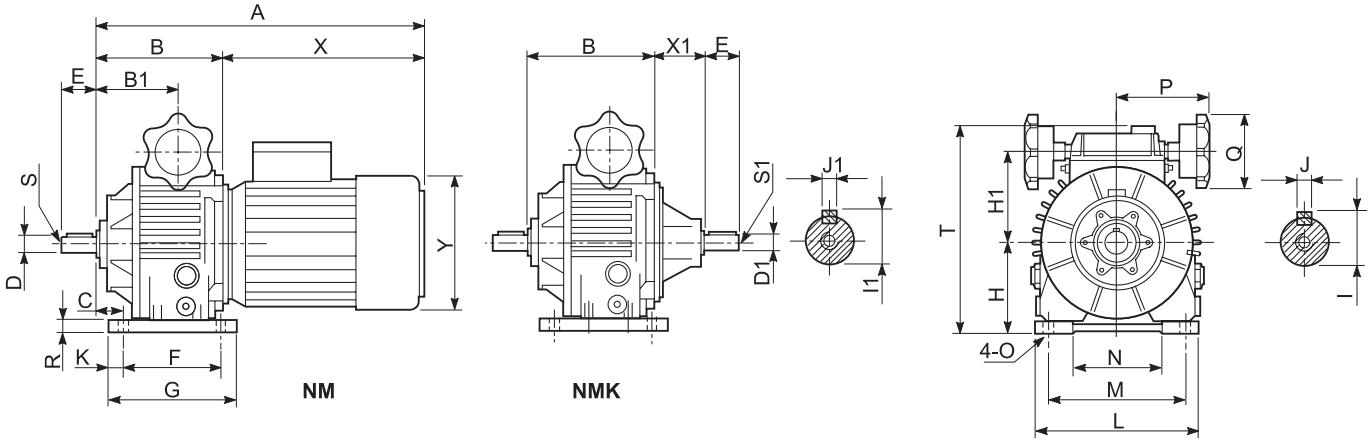
7.7 Einbaulagen



7.8 Dimensioni — 7.8 Dimensions — 7.8 Abmessungen

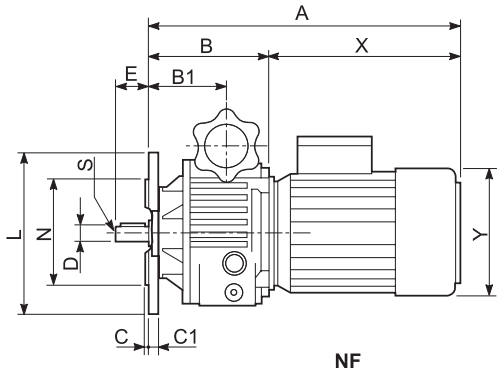


Tipo *Type* Typ	A	B	B1	C1	D	E	F1	G1	H1	H2	I	J	L1	M1	N1	N2	O	O1	P	Q	S	T	X	X1	Y	Kg
N003	302	110	66	44	11	23	36	55	79	58	12.5	4	128	100	42	56	M6	M8	97	89	M5	160	192	42	122	5
N005	336	118	78	61	14	30	36	55	88	73	16	5	153	120	56	75	M6	M8	97	89	M6	185	218	50	137	7
N010	383	145	95	75	19	40	45	82	107	91	21.5	6	187	140	56	75	M6	M10	107	89	M6	222	239	65	158	13
N020	450	172	105	82	24	50	58	82	126	108	27	8	220	190	75	100	M8	M10	107	89	M8	264	278	70	177	20

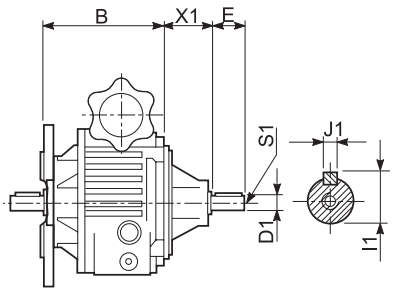


Tipo *Type* Typ	A	B	B1	C	D	D1	E	F	G	H	H1	I	I1	J	J1	K	L	M	N	O	P	Q	R	S	S1	T	X	X1	Y	Kg
NM003	302	110	66	25	11 (14)	11	23 (30)	105	130	71	76	12.5 (16)	12.5	4 (5)	4	12.5	140	110	80	9	97	89	11	M5 (M6)	M5	173	192	42	122	6
NM005	336	118	78	30	14 (19)	14	30 (40)	105	130	90	88	16 (21.5)	16	5 (6)	5	12.5	155	120	83	10	97	89	13	M6	M6	202	218	50	137	8
NM010	382	143	95	35	19 (24)	19	40 (50)	125	150	106	107	21.5 (27)	21.5	6 (8)	6	12.5	190	160	120	12	107	89	13.5	M6 (M8)	M6	242	239	65	158	14
NM020	441	171	104	50	24 (28)	24	50 (60)	140	165	125	126	27 (31)	27	8	8	12.5	230	180	130	12	107	89	16	M8 (M10)	M8	277	270	70	177	21
NM030/050	546	206	122	25	28 (38)	28	60 (80)	230	270	150	158	31 (41)	31	8 (10)	8	20	300	245	190	14	155	120	20	M10 (M12)	M10	337	340	95	197	51

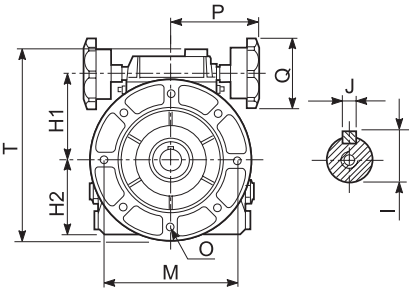
7.8 Dimensioni — 7.8 Dimensions — 7.8 Abmessungen



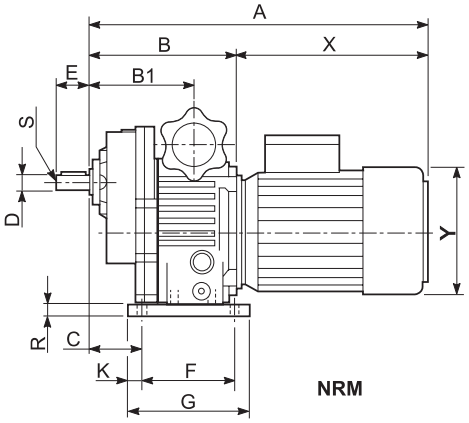
NF



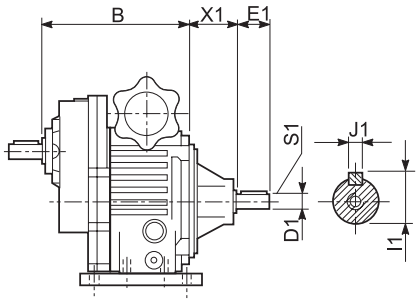
NFK



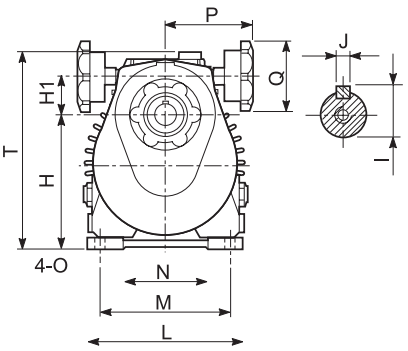
Tipo *Type* Typ	A	B	B1	C	C1	D	D1	E	H1	H2	I	I1	J	J1	L	M	N	O	P	Q	S	S1	T	X	X1	Y	Kg
NF003	302	110	66	3.5	8	11 (14)	11	23 (28)	76	58	12.5 (16)	12.5	4 (5)	4	140 (160)	115 (130)	95 (110)	9 (9)	97	89	M5	M5	165 (175)	192	42	122	6
NF005	338	120	80	3.5	10.5	14 (19)	14	28 (38)	88	73	16 (21.5)	16	5 (6)	5	160 (200)	130 (165)	110 (130)	9 (11)	97	89	M6	M6	188 (208)	218	50	137	8
NF010	384	145	97	3.5	13.5	19 (24)	19	38 (48)	107	91	21.5 (27)	21.5	6 (8)	6	200	165	130	11	107	89	M6 (M8)	M6	237	239	65	158	14
NF020	443	173	106	4	14	24 (28)	24	48 (58)	126	108	27 (31)	27	8	8	200 (250)	165 (215)	130 (180)	11 (14)	107	89	M8 (M10)	M8	260 (277)	270	70	177	21
NF030/050	548	208	124	4(5)	16	28 (38)	28	58 (78)	158	134	31 (41)	31	8 (10)	8	250 (300)	215 (265)	180 (230)	14	155	120	M10 (M12)	M10	336	340	95	197	51



NRM

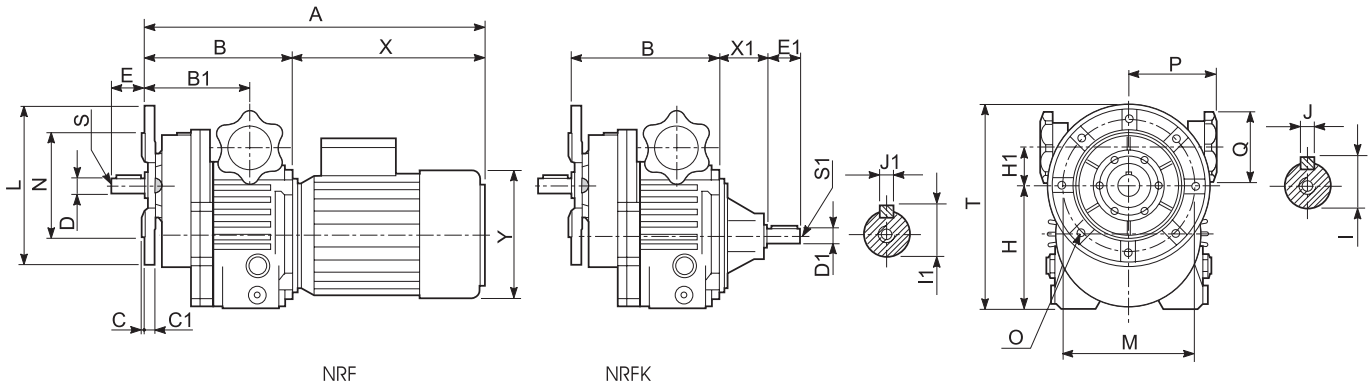


NRMK

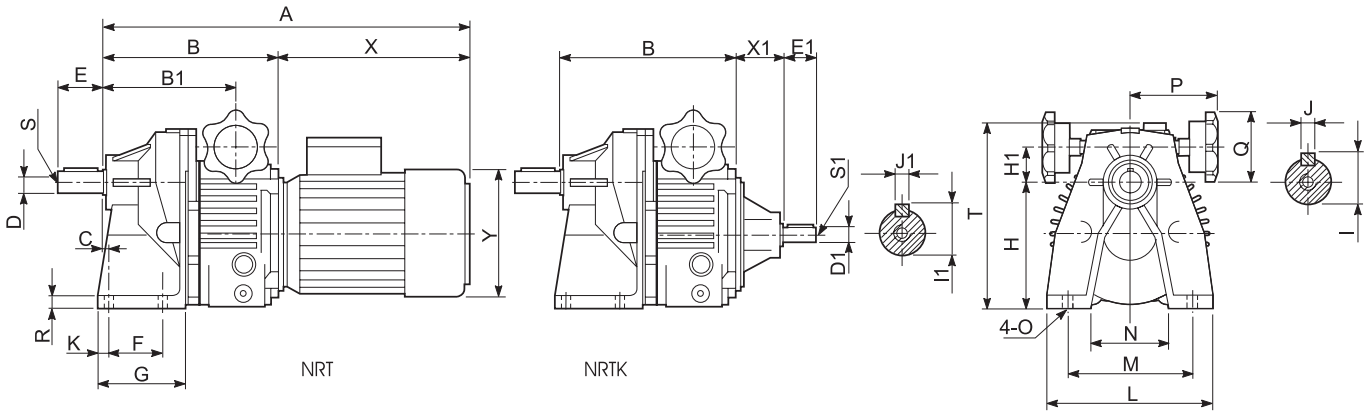


Tipo *Type* Typ	A	B	B1	C	D	D1	E	E1	F	G	H	H1	I	I1	J	J1	K	L	M	N	O	P	Q	R	S	S1	T	X	X1	Y	Kg
NRM003	331	139	108	57	19 (20)	11	30	23	105	130	111 (116)	36	21.5 (22.5)	12.5	6	4	12.5	140	110	80	9	97	89	11	M6	M5	173	192	42	122	7
NRM005	363	145	105	54	19 (20)	14	30	30	105	130	140 (135)	38	21.5 (22.5)	16	6	5	12.5	155	120	83	10	97	89	13	M6	M6	202	218	50	137	11
NRM010	418	179	131	69	24 (25)	19	35	40	125	150	169 (160)	44	27 (28)	21.5	8	6	12.5	190	160	120	12	107	89	13.5	M8	M6	242	239	65	158	9
NRM020	471	201	135	78	28 (30)	24	45	50	140	165	188 (190)	63	31 (33)	27	8	8	12.5	230	180	130	12	107	89	16	M10	M8	277	270	70	177	33
NRM030 NRM050	586	246	165	63	38 (40)	28	60	60	230	270	230 (224)	78	41 (43)	31	10 (12)	8	20	300	245	190	14	155	120	20	M12	M8	337	340	95	197	75

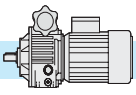
7.8 Dimensioni — 7.8 Dimensions — 7.8 Abmessungen



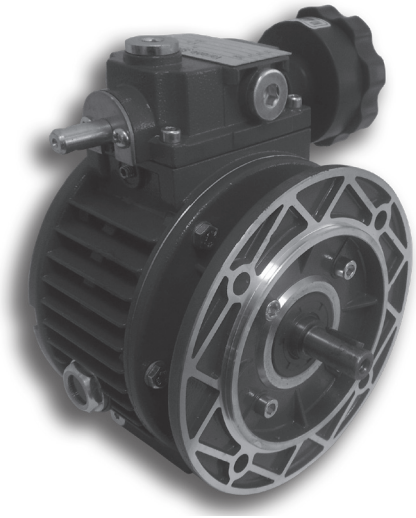
Tipo *Type* Typ	A	B	B1	C	C1	D	D1	E	E1	H	H1	I	I1	J	J1	L	M	N	O	P	Q	S	S1	T	X	X1	Y	Kg
NRF003	333	141	112	3.5	8	19	11	28	23	98	36	21.5	12.5	6	4	160	130	110	9	97	89	M6	M5	178	192	42	122	7
NRF005	372	154	114	3.5	10.5	19	14	28	30	123	38	21.5	16	6	5	160	130	110	9	97	89	M6	M6	203	218	50	137	11
NRF010	419	180	130	3.5	13.5	24	19	33	40	154	44	27	21.5	8	6	200	165	130	11	107	89	M8	M6	254	239	65	158	19
NRF020	473	203	137	4	14	28	24	43	50	171	63	31	27	8	8	250	215	180	14	107	89	M10	M8	296	270	70	177	33
NRF030/050	588	248	167	4	16	38	28	58	60	214	78	41	31	10	8	300	265	230	14	155	120	M12	M8	364	340	95	197	75



Tipo *Type* Typ	A	B	B1	C	D	D1	E	E1	F	G	H	H1	I	I1	J	J1	K	L	M	N	O	P	Q	R	S	S1	T	X	X1	Y	Kg
NRT003	**376**	184	140	20	19	11	40	23	45	80	110	36	21.5	12.5	6	4	14	130	105	70	9	97	89	10	M6	M5	167	192	42	122	9
NRT005	**412**	194	154	6	24	14	50	30	70	110	130	38	27	16	8	5	15	180	150	90	11	97	89	12	M8	M6	192	218	50	137	13
NRT010	**456**	218	171	7.5	28	19	60	40	70	115	163	44	31	21.5	8	6	14	215	165	100	11	107	89	15	M8	M6	231	239	65	158	21
NRT020	**551**	281	215	25	38	24	70	50	85	142	195	46	41	27	10	8	23	250	185	130	14	107	120	16	M10	M8	266	270	70	177	33
NRT030/050	**686**	346	261	19	48	28	100	60	130	178	250	59	51.5	31	14	8	17	310	240	160	17	155	120	18	M10	M8	337	340	95	197	75



8.0 VARIATORI UDL — *VARIATORS UDL* — VERSTELLGETRIEBE UDL



05/2019

8.1 Principio di funzionamento del variatore

Si tratta di una trasmissione epicicloidale a rapporto variabile.
Quando il motore aziona il solare (5-6), i satelliti (8) sono indotti a ruotare sul proprio asse e, contemporaneamente, per effetto del vincolo con la pista esterna fissa (7) e la pista esterna mobile (9), ad un movimento di rivoluzione che trascina in rotazione il portasatelliti (albero uscita).
Variando la posizione assiale della pista esterna mobile (9) tramite la vite di comando, l'anello portasfere (14) e la camma fissa (15), i satelliti sono costretti a variare la loro posizione radiale di rivoluzione. In tal modo i diametri di rotolamento cambiano, così come la velocità angolare dell'albero uscita.
Quando il contatto di rotolamento con le piste esterne (7) (9) si trova verso il centro del satellite (8), la velocità di rivoluzione è più bassa: l'albero uscita ruoterà più lentamente ma avrà disponibile un maggior momento torcente.

Attenzione
La regolazione della velocità si può effettuare SOLO col variatore in funzione, MAI a macchina ferma.

8.1 Variator operating principle

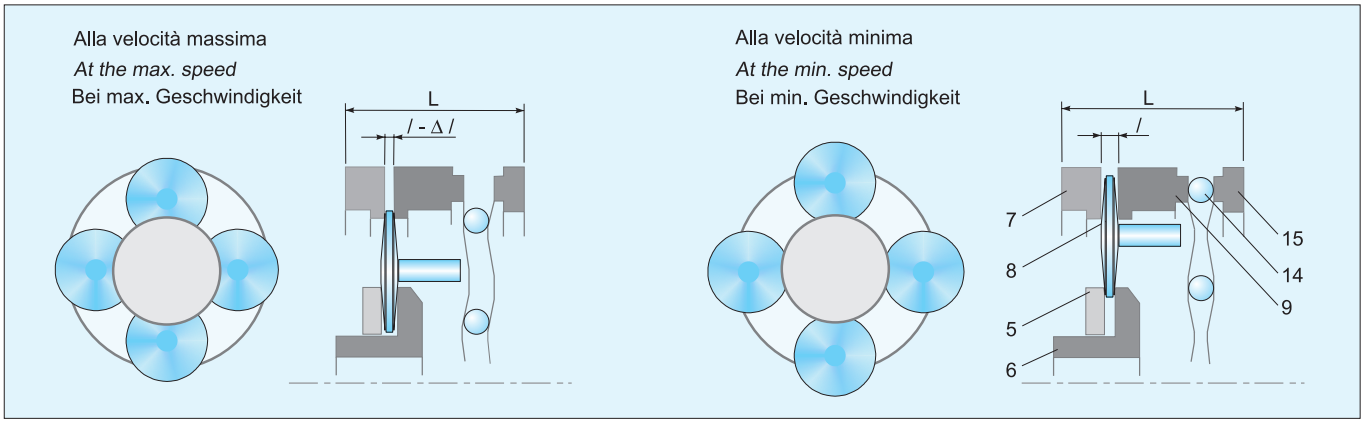
The mechanical variator is based on an epicyclic transmission for variable ratios.
The motor rotates the solar rings (5-6) which rotate the satellites (8). In turn these are in contact with the fixed outer ring (7) and external mobile ring (9).
The satellites rotate around their axes while simultaneously originate the rotation of the satellite carrier (output shaft).
When the rolling contact point of the outer rings (7) (9) is near the center of satellites (8) the output speed will reduce: the output shaft will rotate more slowly thus increasing the output torque value.

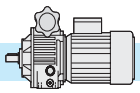
Warning
Speed adjustment is only possible when variator is running, never adjust speed while variator is stationary.
This will result in damage to the variator.

8.1 Funktionsprinzip des Verstellgetriebes

Das Verstellgetriebe ist ein Planetengetriebe mit verstellbarem Untersetzungsverhältnis.
Der Motor treibt das Sonnenrad (5-6) an. Die Drehbewegung wird auf die Planetenräder (8) übertragen. Die Verbindung zwischen der unbeweglichen (7) und der beweglichen (9) äußeren Laufbahn überträgt die Drehbewegung an die Abtriebswelle.
Durch die Verschiebung des Kugelringes (14) und der Nocke (15) ändert sich die Axiallage der beweglichen Laufbahn (9) und die Radiallage der Planetenräder. Auf diese Weise ändern sich den Rollendurchmesser und die Winkelgeschwindigkeit der Abtriebswelle.
Verschiebt sich der Kontaktpunkt zwischen den Planetenrädern (7) und der äußeren Laufbahn (9) gegen das Zentrum der Planetenräder, sinkt die Ausgangsdrehzahl und das Drehmoment steigt.

Vorsicht
Die Geschwindigkeit darf nur verstellt werden, wenn das Verstellgetriebe im Betrieb ist und nicht wenn es still steht.
Andernfalls kommt es zu einer Beschädigung des Verstellgetriebes.





8.2 Variatori

La gamma dei variatori di velocotà TRAMEC si completa con la nuova serie UDL, grandezze disponibili 002, 005 e 010.

8.2 Variators

The present range of Tramec speed reducers has been completed by the new UDL Series available in 3 sizes: 002,005 and 010

8.2 Verstellgetriebe

Die aktuelle Tramec Variatoren - Serie wird ergänzt durch die neue UDL Serie. Sie ist in den Größen 002, 005 und 010 erhältlich.

8.3 Caratteristiche

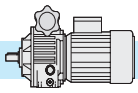
- La carcassa in alluminio, oltre ad una migliore estetica, comporta un minor peso del variatore rendendone più convenienti applicazioni e trasporti.
- Sul modulo base è possibile montare, in modo semplice e veloce, flangia uscita o piede, a seconda delle necessità. Questo riduce i volumi di stoccaggio ed i tempi di consegna.
- Il lato di entrata del variatore è chiuso, parte integrale col corpo: questo rende più facile l'installazione ed elimina totalmente la possibilità di perdite d'olio.
- È previsto, come standard, il collegamento a motori a dimensioni IEC forma B5.
- Il tappo di scarico olio è del tipo a magnete: la lubrificazione più pulita consente intervalli di manutenzione più lunghi.
- Funzionamento in bagno d'olio, silenzioso, con elevato rendimento ed esente da vibrazioni.
- Il funzionamento è possibile in entrambi i sensi di rotazione con entrata ed uscita concordi.

8.3 Characteristics

- *The alluminium housing benefits weight reduction for more convenient applications and transportation.*
- *The simple design allows both foot or flange mounting to standard unit, reducing stocking levels and allowing quick delivery.*
- *The closed input flange is an integral part of the variator casing for easy installation and prevents possibility of oil leaks.*
- *IEC B5 motor connections available as standard.*
- *The magnetic breather plug maintains a clean lubricant and extends maintenance intervals.*
- *The oil bath operation provides high efficiency for noiseless and vibration free running.*
- *The unit can operate in both directions, input and output shafts rotate in the same direction.*

8.3 Merkmale

- Dank dem Gehäuse aus Aluminium ist das Verstellgetriebe sehr leicht, was zur erleichterten Anwendung und Transport dient.
- Auf das Grundmodul können entweder Abtriebsflansch oder Fuß montiert werden. Das bringt Raumersparnis und schnellere Lieferzeit mit sich.
- Die Antriebsseite ist geschlossen und integrales Bestandteil des Gehäuses: Installation ist einfacher und Ölverluste sind ausgeschlossen.
- Standard-Anbau zu IEC B5 Motoren.
- Magnet-Ölablassschraube: die reinigere Schmierung erlaubt längere Wartungsintervalle.
- Betrieb im Ölbad ist geräuschlos, mit erhöhter Leistung und vibrationsfrei.
- Betrieb ist in beide Drehrichtungen möglich, mit Antriebs- und Abtriebswellen in derselber Richtung drehend.



8.4 Designazione

8.4 Designation

8.4 Bezeichnung

Tipo *Type* Typ	Grandezza *Size* Größe	Albero uscita diam. mm *Output shaft diam. mm* Abtriebswelle Durchmesser mm	Flangia uscita diam. mm *Output flange diam. mm* Abtriebsflansch Durchmesser mm	Attacco motore IEC *IEC motor adaptor* IEC Motoranbau	Posizione di montaggio *Mounting position* Einbaulage	Potenza motore *Motor power* Motorleistung	N° poli *Poles number* Polzahl	Forma costruttiva motore *Motor version* Motorversion	Tensione *Voltage* Spannung	Frequenza *Frequency* Frequenz
UDL	**010**	**AU19**	**F200**	**80B5**	**B5**	**0.75 kW**	**4**	**B5**	**230/400**	**50Hz**
UDL	**002** **005** **010**	**AU 11** **AU 14** **AU 19**	**F 140** **F 160** **F 200**	**63 B5** **71 B5** **80 B5**	**B5** **V1** **V3**	**0.18** **0.25** **0.37** **0.55** **0.75**	**4**	**B5**	**230/400**	**50Hz**

8.5 Dati tecnici

8.5 Technical data

8.5 Technische Angaben

Tipo *Type* Typ	P_1 kW	Poli *Poles* Polen	Attacco motore IEC *IEC motor adaptor* IEC Motoranbau	n_2 max min^{-1}	n_2 min min^{-1}	T_2 min Nm	T_2 max Nm
UDL 002	**0.18**	4	63 B5	880	170	1.5	3
UDL 005	**0.25**	4	71 B5	1000	200	2	6
	0.37			1000	200	3	6
UDL 010	**0.55**	4	80 B5	1000	200	4.4	12
	0.75	4		1000	200	6	12

8.6 Lubrificazione

I variatori vengono forniti completi di lubrificante. Dopo il piazzamento del variatore assicurarsi che il livello del lubrificante sia visibile dall'apposita spia di livello effettuando eventuali rabbocchi se necessario, con un analogo lubrificante scelto fra quelli raccomandati in tabella.

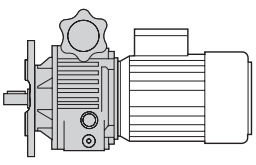
8.6 Lubrification

The variators are supplied complete with lubricant. After the mounting pls make sure the oil can be seen through the oil level plug this to allow the filling up if necessary. Oil has to be selected among the recommended ones.

8.6 Schmierung

Die Verstellgetriebe werden mit Schmiermittel geliefert. Nach Einbau des Verstellgetriebes ist der Ölstand durch das Schauglas zu prüfen. Wenn nötig, füllen Sie mit einem der empfohlenen Öle auf (siehe Tabelle).

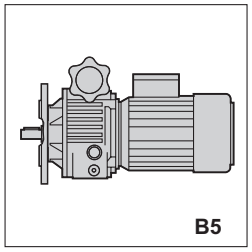
Tipi di lubrificanti raccomandati / *Recommended lubricants* / Empfohlene Öle	
Dexron fluid II	**IP**
A.T.F. Dexron fluid DIII	**SHELL**
A.T.F. 200 RED	**MOBIL**
A.T.F. Dexron	**FINA**
BP Autran DX	**BP**
A.T.F. Dexron	**ESSO**
A.T.F. Dexron	**CHEVRON**
A.T.F. Dexron	**AGIP**

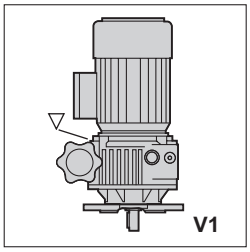


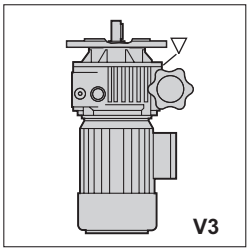
8.7 Posizioni di montaggio

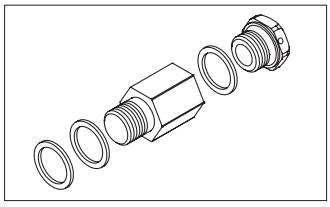
8.7 Mounting positions

8.7 Einbaulagen









▽ **Kit Tappo di sfiato**
solo per posizione di montaggio V1, V3

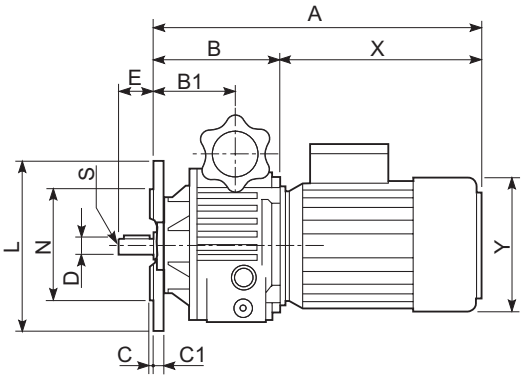
▽ **Kit breather plug**
only for mounting positions V1, V3

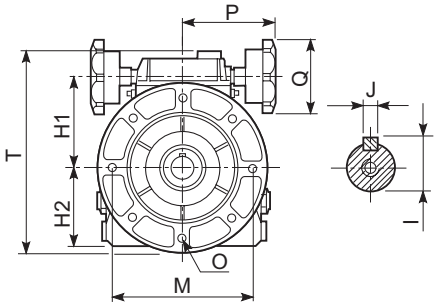
▽ **Kit Entlüftungsschraube**
Nur für die Einbaulagen V1, V3

8.8 Dimensioni

8.8 Dimensions

8.8 Abmessungen





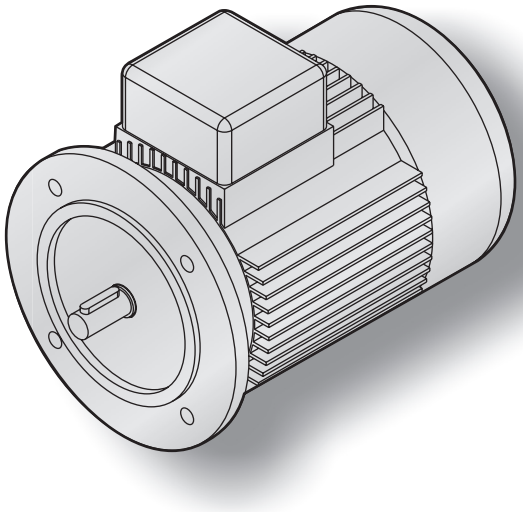
Tipo *Type* Typ	A	B	B1	C	C1	D	H1	H2	I	J	L	M	N	O	P	Q	S	T	X	Y	kg
UDL 002	318.5	111.5	64	3.5	6.5	11	78	70	12.5	4	140	115	95	9	113	70	M5	183	207	130	3.3
UDL 005	333	108	71.5	3.5	8.5	14	91	80	16	5	160	130	110	9	113	70	M5	205	225	145	4.6
UDL 010	398.5	143.5	87.5	3.5	10.5	19	107	100	21.5	6	200	165	130	11	120	85	M6	242	255	175	7.9

I valori A, X, Y e kg dipendono dal motore utilizzato

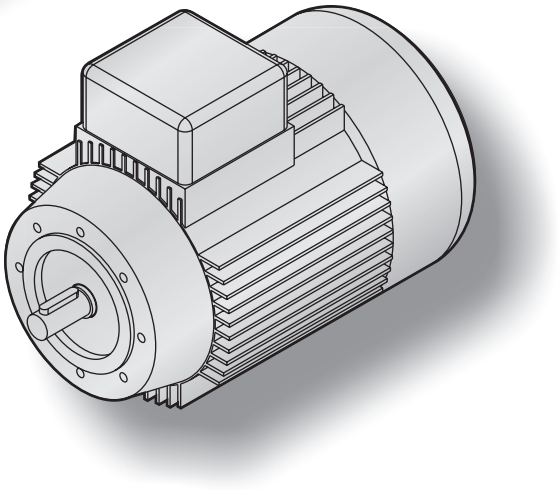
The values A, X, Y and kg depend on the electric motor used.

Die Werte A, X, Y und kg auf den Elektromotor abhängen

9.0 MOTORI ELETTRICI ELECTRIC MOTORS ELEKTROMOTOREN



B5



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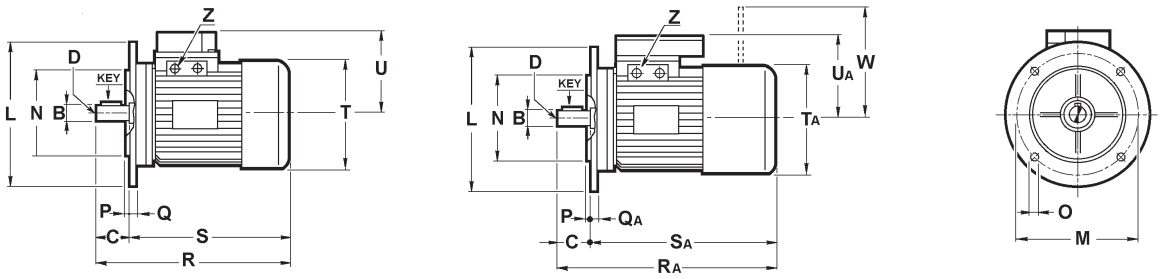


Motori elettrici (1)
Electric motors
Elektromotoren

Motori elettrici autofrenanti (2)
Electric brake motors
Elektro-Bremsmotoren

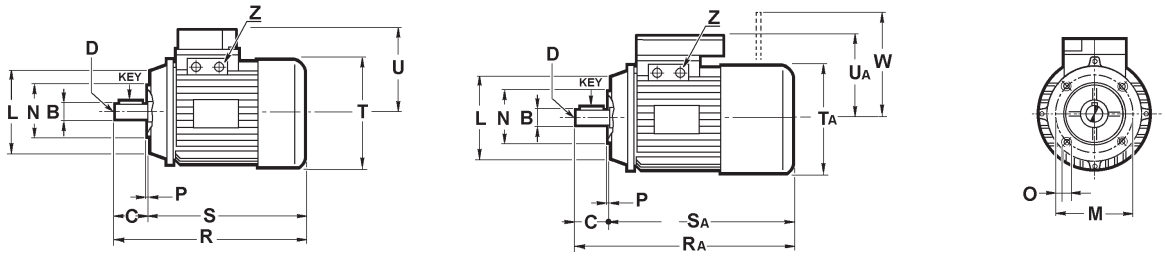
		4 poles			B	C	D	L	M	N	O	P	Q	QA	R	RA	S	SA	T	TA	U	UA	W	Z	KEY
		kW	kg. (1)	kg. (2)																					
56	A	0.06	2.5	4	9	20	M4	120	100	80	7	3	8	8	188	220	168	200	110	110	108	108	90	PG11	3x3x15
	B	0.09	2.6	5																				PG11	3x3x15
	C	0.11	3.2	5																				PG11	3x3x15
63	A	0.13	3.7	5	11	23	M4	140	115	95	9	3	9	9	208	257	185	234	123	123	110	110	98	PG11	4x4x15
	B	0.18	4.3	7																				PG11	
	C	0.22	4.3	7																				PG11	
71	A	0.25	5.8	8	14	30	M5	160	130	110	9	3.5	9	9	245	297	215	267	140	140	121	121	98	PG11	5x5x20
	B	0.37	6.2	8																				PG11	
	C	0.55	7.4	9																				PG11	
80	A	0.55	8.5	11	19	40	M6	200	165	130	11	3.5	10	10	278	336	238	296	159	159	138	138	111	PG16	6x6x30
	B	0.75	9.8	13																				PG16	
	C	0.9	10.5	13.5																				PG16	
90	S	1.1	12	17	24	50	M8	200	165	130	11	3.5	10	10	305	369	255	319	176	176	149	149	129	PG16	8x7x35
	L	1.5	13.5	18											330	394	280	344						PG16	
	LB	1.8	15.5	20																				PG16	
100	A	2.2	19	25.5	28	60	M10	250	215	180	14	4	14	14	369	434	309	374	195	195	160	160	139	PG16	8x7x45
	B	3	21	28																				PG16	
	BL	4	23	30																				PG16	
112	A	4	29	38	28	60	M10	250	215	180	14	4	14	14	388	467	328	407	219	219	172	172	161	PG16	8x7x45
	BL	5.5	35	44																				PG16	8x7x45
132	S	5.5	43	56	38	80	M12	300	265	230	14	4	20	14	448	570	368	490	258	258	192	192	186	PG21	10x8x60
	M	7.5	52	66											485	600	405	520							
	ML	9.2	54	68																					

Le dimensioni dei motori elettrici sono puramente indicative.

The dimensions of the electric motors are approximate values.

Die Abmessungen der Elektromotoren sind Näherungswerte.

B14



Motori elettrici (1)
Electric motors
Elektromotoren

Motori elettrici autofrenanti (2)
Electric brake motors
Elektro-Bremsmotoren

		4 poles			B	C	D	L	M	N	O	P	R	RA	S	SA	T	TA	U	UA	W	Z	KEY
		kW	kg. (1)	kg. (2)																			
56	A	0.06	2.5	4	9	20	M4	80	65	50	M5	2.5	188	220	168	200	110	110	108	108	90	PG11	3x3x15
	B	0.09	2.6	5																		PG11	3x3x15
	C	0.11	3.2	5																		PG11	3x3x15
63	A	0.13	3.7	5	11	23	M4	90	75	60	M5	2.5	208	257	185	234	123	123	110	110	98	PG11	4x4x15
	B	0.18	4.3	7																		PG11	
	C	0.22	4.3	7																		PG11	
71	A	0.25	5.8	8	14	30	M5	105	85	70	M6	2.5	245	297	215	267	140	140	121	121	98	PG11	5x5x20
	B	0.37	6.2	8																		PG11	
	C	0.55	7.4	9																		PG11	
80	A	0.55	8.5	11	19	40	M6	120	100	80	M6	3	278	336	238	296	158	159	138	138	111	PG16	6x6x30
	B	0.75	9.8	13																		PG16	
	C	0.9	10.5	13.5																		PG16	
90	S	1.1	12	17	24	50	M8	140	115	95	M8	3	305	369	255	319	176	176	149	149	129	PG16	8x7x35
	L	1.5	13.5	18									330	394	280	344			160				
	LB	1.8	15.5	20																			
100	A	2.2	19	25.5	28	60	M10	160	130	110	M8	3.5	369	434	309	374	195	195	173	160	139	PG16	8x7x45
	B	3	21	28																			
	BL	4	23	30																			
112	A	4	29	38	28	60	M10	160	130	110	M8	3.5	388	467	328	407	219	219	192	172	161	PG16	8x7x45
	BL	5.5	35	44																		PG16	8x7x45
132	S	5.5	43	56	38	80	M12	200	165	130	M10	4	448	570	368	490	258	258	192	192	186	PG21	10x8x60
	M	7.5	52	66									485	600	405	520							
	ML	9.2	54	68																			

Le dimensioni dei motori elettrici sono puramente indicative.

The dimensions of the electric motors are approximate values.

Die Abmessungen der Elektromotoren sind Näherungswerte.

10.0 CONDIZIONI GENERALI DI VENDITA — *TERMS AND CONDITIONS OF SALE*

10.1 Scopo

Le presenti "Condizioni Generali di Vendita" (di seguito denominate "Condizioni di Vendita"), si applicano e regolano tutte le forniture di prodotti con marchio "TRAMEC" e/o commercializzate dalla stessa, e annullano qualsiasi clausola o termine pattuito dal Cliente, sia nella singola vendita che in documentazioni di provenienza dello stesso, che non sia state accettate da un preventivo consenso scritto da parte di "TRAMEC SrL".

10.1.1 Modifiche alle condizioni di vendita

"TRAMEC SrL" si riserva il diritto di modificare, aggiungere, cancellare qualsiasi punto delle presenti Condizioni di Vendita, che si riterranno applicate a tutti gli ordini successivi alla data di notifica al Cliente delle nuove Condizioni di Vendita.

10.2 Definizioni generali

Per una maggiore chiarezza nella lettura delle presenti Condizioni di Vendita, si definiscono i seguenti termini:

- "TRAMEC" : TRAMEC SrL, Via Bizzarri,6 – 4007 Calderara di Reno (BO) - ITALY
- "Prodotti": Tutti i beni prodotti, assemblati, commercializzati e/o venduti da TRAMEC SrL
- "Cliente" : Tutte le società legalmente costituite e/o entità giuridiche che acquistano beni, prodotti o servizi da TRAMEC SrL
- "Ordine" : Ogni proposta di acquisto di beni, prodotti o servizi inoltrata da un cliente a TRAMEC SrL e confermata per accettazione con "Conferma d'ordine" dalla stessa.
- "Marchi" : Tutti i marchi di proprietà di TRAMEC SrL di cui è proprietaria e/o licenziataria
- "Brevetti e Proprietà Intellettuale" : Qualsiasi diritto legato alla protezione del proprio Know-How, coperto da brevetti italiani e internazionali, per invenzioni, marchi, modelli, disegni e prodotti di cui TRAMEC SrL ne detiene ed è proprietaria dei diritti, siano essi registrati ,che in fase di registrazione compresi qualsiasi altra forma prevista dalle leggi internazionali.

10.3 Riferimenti

Il presente documento è parte integrante del "LISTINO PREZZI TRAMEC", di cui copia è pubblicata sul sito aziendale www.tramec.it

10.4 Offerte e ordinazioni

10.4.1 Offerte

Su richiesta del Cliente, TRAMEC direttamente o attraverso la propria rete vendita, formulerà una proposta di acquisto per i propri prodotti indicati dal Cliente, formalizzandola per iscritto. L'offerta di vendita/proposta di acquisto non è da ritenersi impegnativa da parte del Cliente, e avrà validità 30(trenta) giorni. Allo scadere di tale termine, TRAMEC si riterrà svincolata da impegni e su richiesta del cliente riformulerà una nuova offerta/proposta.
Data la natura riservata del contenuto dell'offerta/proposta ricevuta il Cliente, si impegna a non divulgarne il contenuto.

10.1 Purpose

The present "General Conditions of Sale" (hereinafter referred to as "Conditions of Sale"), shall apply and shall govern all supplies of "TRAMEC" products with "TRAMEC" label and / or directly commercialized by "TRAMEC" , and cancel any clause or term agreed upon by the Customer which have not been accepted by prior consent in writing by "TRAMEC SrL".

10.1.1 Modification of the conditions of sale

"TRAMEC SRL" reserves the right to modify, add, delete any part of these "Conditions of Sale", which will be deemed to apply to all orders received after the date of Customer's notification.

10.2 General definitions

For a better understanding of these Conditions of Sale, we define the following terms:

- *"TRAMEC" : TRAMEC SrL, Via Bizzarri,6 – 4007 Calderara di Reno (BO) - ITALY*
- *"Products": All goods manufactured, assembled, commercialized and / or sold by TRAMEC SrL.*
- *"Customers" : All companies legally established and / or legal entities buying goods, products or services from TRAMEC SRL*
- *"Orders" : Each offer to purchase goods, products or services sent by the Customer to TRAMEC SrL and confirmed for acceptance with an "order confirmation" directly from TRAMEC SrL*
- *"Trademarks" : All trademarks owned or of which TRAMEC SrL is licensee.*
- *" Patents and Intellectual Property" : all rights related to the protection of their own Know - How, covered with Italian and international patents for inventions, trademarks, models, designs and products for which TRAMEC SRL holds and owns the rights, whether registered or under registration, including any other form prescribed by the International laws.*

10.3 References

This document is an integral part of the "PRICE LIST of TRAMEC", a copy of which is posted on the company website www.tramec.it

10.4 Offers and orders

10.4.1 Offers

On customer request, TRAMEC directly or through its own sales network, will submit a written proposal for the products required by the Customer. The offer shall not be binding for the Customer and will have a 30 (thirty) days validity. After this period the offer is void and upon Customer request TRAMEC will submit a new proposal. TRAMEC written offers are intended for the receipt and viewing of the Customer, and disclosure of the offer with competitors could render the offer null and void.

10.4.2 Ordini

Tutti gli ordini di acquisto dei prodotti TRAMEC, devono essere formalizzati per iscritto dal Cliente su propria carta intestata ed inviati tramite mail, fax o lettera direttamente ai riferimenti indicati nell'offerta/proposta ricevuta, avendo cura di aver indicato:

- Riferimento a n. offerta,
- codice prodotto,
- descrizione prodotto,
- quantità richiesta,
- prezzi e termini di consegna.

TRAMEC ha previsto la possibilità di accettare anche ordini a carattere di "URGENZA" **previ accordi telefonici con il commerciale TRAMEC di riferimento**, che devono essere formalizzati per iscritto dal Cliente, e che prevedono una consegna entro 5 (cinque) oppure 6-9 (da sei a nove) gg lavorativi dalla data di accettazione dell'ordine stesso. A tali ordini verrà applicato una maggiorazione del 15%(quindicipercento) e del 7% (settepercento) rispettivamente, calcolata sul totale lordo EX WORKS dell'ordine, in aggiunta agli importi netti totali.

ATTENZIONE
Tutti gli ordini a carattere d'urgenza, una volta accettati e confermati da TRAMEC, non saranno più modificabili né cancellabili.

10.4.3 Conferma d'ordine

La vendita si riterrà conclusa con l'invio della Conferma d'Ordine che TRAMEC inoltrerà al Cliente. Tale Conferma d'Ordine sarà inoltrata al cliente tramite mail o su richiesta tramite fax direttamente ai riferimenti indicati dal Cliente. La Conferma d'Ordine sarà conforme, all'ordine di acquisto del Cliente ricevuto da TRAMEC, sia nei termini che nelle condizioni indicate e concordate. Trascorsi 2(due) giorni lavorativi dall'invio della Conferma d'Ordine, TRAMEC riterrà confermato l'ordine da parte del Cliente ed ogni inesattezza eventualmente contenuta e non contestata in forma scritta da parte del Cliente e confermata sempre in forma scritta da TRAMEC (con nuova Conferma d'Ordine revisionata), evidenziata alla consegna dei prodotti al Cliente non sarà più contestabile o annullabile.

10.5 Prezzo dei prodotti

Tutti i prezzi dei prodotti indicati negli ordini di vendita, e nelle relative offerte, fanno riferimento al listino prezzi TRAMEC, in vigore al momento del loro inoltro al Cliente. Qualora non fosse presente il prodotto in ordine nel listino prezzi TRAMEC, avrà valore quanto concordato e confermato per iscritto nell'ordine stesso.
Eccetto quanto concordato per iscritto tra le parti, i prezzi indicati nell'ordine di vendita TRAMEC sono calcolati franco fabbrica, al netto dell'IVA e degli sconti. Tali prezzi inoltre non includono eventuali costi di imballaggio, spedizione e trasporto dai locali di TRAMEC ai locali del cliente, che saranno sostenuti separatamente dal Cliente.
TRAMEC manterrà la proprietà dei Prodotti venduti al Cliente fino alla completa corresponsione del prezzo degli stessi. La presente clausola di riserva di proprietà, obbliga il Cliente a compiere tutti gli adempimenti previsti per legge, ove previsto, per rendere valida ed eseguibile nei confronti di tutti i terzi tale vincolo.
TRAMEC si riserva il diritto di modificare unilateralmente e senza preavviso, con effetto immediato i prezzi riportati nel proprio listino, nei casi in cui l'adeguamento sia dovuto a cambiamenti imprevisti di condizioni di mercato delle materie prime o dei tassi di cambio. Ogni modifica verrà comunque comunicata al Cliente ed applicata al successivo ordine ricevuto.

10.4.2 Orders

All purchase orders of TRAMEC products must be formalized in writing by the customer, on his own letterhead and sent via mail, fax or letter directly to the references mentioned in the offer, making sure to add :

- Offer reference number ,
- Product Code,
- Product Description,
- Required Quantity,
- Prices and Terms of Delivery.

*An "URGENT" production option **may be agreed case by case with the sales department of TRAMEC**. To accept the urgent production option , Customer must state in writing, requesting URGENT option, and consider standard shipment of urgent orders to be either 5 (five) or 6-9 (from six to nine) working days from the date of TRAMEC's acceptance of order, depending on availability at order time. Such urgent orders will be charged an additional 15% (fifteen percent) or 7% (seven percent) respectively, calculated on the total EX WORKS value of the order.*

ATTENTION!!!!
Urgent orders, once acknowledged by TRAMEC, are non-cancelable and may not be modified.

10.4.3 Order confirmation

TRAMEC will acknowledge the Customers Order via e mail or on request by fax to the address specified by the Customer. All Orders to be performed are subject to the Terms and Conditions Agreed to between the parties.
The Customer will have two (2) days to review the acknowledgment for errors or inaccuracies to notify TRAMEC for correction, after these two (2) days the Order will be considered acknowledged by the Customer and can no longer be contested or canceled.

10.5 Price of the products

All prices listed on the sales orders, and on offers, refer to the Price List of "TRAMEC" valid at time of their transmission to the Customer.
If the product is not mentioned on the Price List of "TRAMEC", its value will be the one agreed to between the parties in writing.
Unless differently agreed, the prices indicated on the sales order of TRAMEC will be calculated on ex-works basis, VAT and Discounts excluded.
These prices do not include any costs for packaging, shipping and transport from TRAMEC warehouse to the Customer premises, which will be paid separately by the Customer.

TRAMEC will retain the ownership of the Products sold to the customer until their complete payment. Because of this saving clause of ownership, the Customer is due to carry out all formalities required by law, and if necessary, to make such a constraint valid and enforceable against all third.

TRAMEC reserves the right to modify the prices of the price list, unilaterally and without notice, with immediate effect , if the adjustment is due to unexpected changes in market conditions, in raw materials or in exchange rates. Each modification will however be noted and indicated on the Order Acknowledgement and will apply to the next order.

10.6 Spedizione e trasporto

La spedizione viene effettuata tramite vettori nazionali ed internazionali, indicati dal Cliente o in mancanza di indicazioni scelti in autonomia da TRAMEC. La scelta del vettore viene effettuata sulla base di valutazione di convenienza e di garanzia del trasporto che il vettore stesso assicura/certifica. Tutto il materiale viaggia a spese e rischio del Cliente stesso, e si intende accettato dal Cliente all'atto di inizio del trasporto da parte del vettore. Eventuali danni occorsi al materiale durante il trasporto, non sono coperti da garanzia TRAMEC.
Come indicato al punto 10.5 PREZZO DEI PRODOTTI, la merce viaggia sempre FRANCO FABBRICA.

10.6 Shipping and transport

Shipments will be handled by national and international carriers specified by the Customer, if specific instructions are not included they will be at TRAMEC's discretion. Where shipment is made at TRAMEC's discretion, carrier choice will be made based on convenience and delivery terms assured by the carriers. Goods are sold to Customer and considered EX-WORKS (see 10.5.PRICE OF THE PRODUCTS) , all transportation expense, loss, damages, or delays to be the risk and responsibility of the Customer and their carrier, and not subject to TRAMEC warranty written or implied.

10.7 Termini di consegna

I termini di consegna indicati nella Conferma d'Ordine , hanno carattere puramente indicativo e sono da ritenersi fissati salvi imprevisti ascrivibili a circostanze di forza maggiore e che siano fuori dal proprio controllo. A titolo esemplificativo e senza pretesa di esaustività si elenca quanto segue :
a) Ritardi da parte del cliente a fornire dati tecnici o amministrativi necessari alla spedizione dei prodotti
b) Difficoltà da parte di TRAMEC nell'acquisizione di materie prime necessarie alla produzione dei prodotti
c) Scioperi parziali o totali, calamità naturali, difficoltà nel trasporto dei materiali, etc. e tutte le altre cause di forza maggiore
d) Ritardi dovuti a terzi o allo spedizioniere

Il verificarsi di alcuni degli eventi elencati o di altra natura non elencati, non darà diritto al Cliente di esigere indennizzi di sorta o richiesta di risarcimento danni.

10.7 Terms of delivery

Delivery terms mentioned in "TRAMEC" Order Confirmation are considered agreed upon and to be honored bearing unexpected events outside "TRAMEC" control, in example:

a) The Customers delay of technical or administrative information necessary for the timely dispatch of the products.
b) Difficulties in the acquisition of raw materials required to manufacture TRAMEC products.
c)Total or partial labor strikes, natural disasters, transportation difficulties or other circumstances beyond TRAMEC control.
d) Delays due to third parties or to be inbound shipping company

The occurrence of some of the events listed or other not listed, do not entitle the customer to claim any compensation or claim for damages.

10.8 Pagamenti

TRAMEC a propria discrezione emetterà fattura, salvo accordi scritti tra le parti, all'atto della spedizione dei prodotti o in anticipo all'atto dell'accettazione dell'ordine del Cliente. Tutti i pagamenti sono previsti in EURO, eccetto per accordi commerciali che prevedano altra valuta. I pagamenti devono essere effettuati entro i termini stabiliti indicati nella Conferma d'Ordine, anche in presenza di reclami o contestazioni.

Ogni ritardo o mancato pagamento rispetto ai termini stabiliti darà diritto a TRAMEC di sospendere qualsiasi consegna di prodotti e/o ordine in corso e richiedere al Cliente il pagamento degli interessi bancari così come previsto dalle leggi vigenti nella misura del tasso stabilito da BCE + 7% (Settepercento).

Ogni reclamo e/o contestazione non potrà comunque in nessun modo giustificare la sospensione o il ritardato pagamento.

10.8 Payments

Unless stated in writing and agreed upon , "TRAMEC" will invoice the Customer on Confirmation of Order for Customers with Prepaid Terms, or at time of shipment for the Customers with NET trade credit terms. Payments are to be made in EURO, except where specific commercial agreements are made in alternative currencies. Payments must be made within the stated NET terms offered at time of Order Confirmation, regardless of outside claims or conflicts.

Delay or missing payments outside of the agreed terms will afford TRAMEC the right to suspend any delivery of products, services, and any pending orders, as well as require the Customer to pay interest on past due invoices, as provided by law , to the extent determined by the ECB rate + 7% (seven percent)

NO claim or dispute can justify the suspension, delay, or non-payment of invoices due.

10.8.1 Reclami e/o contestazioni

Ogni tipologia di reclamo o contestazione dovrà essere formalizzato/a a TRAMEC in forma scritta direttamente all'indirizzo email customer.care@tramec.it o attraverso la sezione "Customer Care" presente sul proprio sito www.tramec.it. Eventuali reclami riferiti a vizi o difetti dei prodotti ricevuti dovranno essere segnalati a TRAMEC, sempre in forma scritta, entro 10 (dieci) gg dalla data di consegna.

Nel caso che tali vizi o difetti si evidenziassero, per la loro natura, successivamente alla data di consegna, essi dovranno essere segnalati, sempre in forma scritta, a TRAMEC immediatamente entro e non oltre 5(cinque) gg dalla data di rilevazione, e comunque saranno ritenuti tali entro e non oltre l'anno di garanzia previsto per i prodotti TRAMEC.

Le spese di trasporto sono a carico del Cliente salvo diverso accordo tra le parti.

10.8.1 Claims and / or disputes

Each complaint or claim must be transmitted in writing to "TRAMEC" , directly to the e mail address customer.care@tramec.it or through the website www.tramec.it , "Customer Care" section.
Any claim relating to defect must be reported in writing to "TRAMEC" within 10 (ten) days of the receipt of the product.

If a defect is noticed or occurs after the delivery date, it must be reported in writing to TRAMEC within 5 (five) days of the date the defect was detected , and always within the 1 (one) year warranty provided for TRAMEC products.

Transportation costs are borne by the Customer unless otherwise agreed to by TRAMEC and the Customer.

10.8.2 Non conformità

Eventuali non corrispondenze in tipologia del prodotto e/o quantità, rispetto a quanto indicato in Conferma d'Ordine, dovrà essere prontamente segnalata in forma scritta a TRAMEC o al proprio agente di riferimento entro e non oltre 5(cinque) gg dalla data di consegna del materiale. Dopo tale scadenza i prodotti consegnati si riterranno conformi all'ordine del Cliente e non potranno essere più contestati a TRAMEC. Le spese di trasporto sono a carico del Cliente salvo diverso accordo tra le parti.

10.8.3 Restituzione del materiale

Il materiale non può essere restituito a TRAMEC, senza preventiva autorizzazione scritta da parte della stessa. Eventuali materiali ricevuti senza che il Cliente abbia effettuato una segnalazione scritta così come previsto ai punti 10.8.1 e 10.8.2 , ed autorizzata daTRAMEC, verranno respinti al mittente, con addebito delle spese di trasporto salvo diverso accordo tra le parti.

10.8.4 Garanzia dei prodotti

TRAMEC garantisce i propri prodotti, così come previsto dalle leggi vigenti, per un periodo di 1(uno) anno dalla data di fatturazione degli stessi. La garanzia opererà su tutti i prodotti TRAMEC, ove saranno rilevabili difetti di costruzione, montaggio o progettazione e comporterà per TRAMEC l'onere della sostituzione o riparazione delle parti difettose senza nessun altro aggravio e/o addebiti per danni diretti e/o indiretti di qualsiasi natura.

La garanzia decade nel caso siano state eseguite riparazioni, modifiche o manomissioni senza autorizzazione scritta da parte di TRAMEC e nel caso di mancanza della targhetta originale di fabbrica, presente su tutti i prodotti TRAMEC.
Un uso negligente o improprio e inosservanza delle prescrizioni sull'uso, manutenzione e conservazione dei prodotti, comporterà la decadenza immediata della garanzia. Il prodotto, coperto da garanzia, dovrà essere restituito a TRAMEC, così come indicato al punto 10.8.3, con spese di trasporto a carico del Cliente salvo diverso accordo tra le parti. La proprietà del prodotto o componente sostituito in garanzia, ove risultasse difettoso, sarà trasferita a TRAMEC dal Cliente.

Ogni diritto di garanzia non sarà applicabile, su quei prodotti a cui ancora non siano stati completamente corrisposti, alle condizioni e termini pattuiti, i relativi importi dovuti così come da fattura di riferimento. TRAMEC inoltre non garantisce nessuna garanzia circa alle conformità dei prodotti a norme e regolamenti di Paesi o Stati che non rientrano e appartengano alla Comunità Europea.

10.9 Marchi e diritti di proprietà intellettuale

TRAMEC è l'unica titolare dei propri Marchi, ed il Cliente si asterrà dall'utilizzo degli stessi senza preventiva autorizzazione, o registrare Marchi simili e/o confondibili con i medesimi. Ogni loro utilizzo comunque dovrà essere autorizzato in forma scritta da TRAMEC sia nelle modalità che nella forma, secondo indicazioni concordate con il titolare dei Marchi.

Tutti i diritti di Proprietà Intellettuale sono di totale ed esclusiva proprietà di TRAMEC e la loro comunicazione o utilizzo nell'ambito delle presenti "Condizioni Generali di Vendita" non produce nessun diritto o pretesa in capo al Cliente, che si obbliga a non compiere atti o richieste a contestarne la Titolarità e Proprietà.

10.8.2 Non-compliance

Any non-compliance with either product or its quantity found to be different from what is stated on Order Confirmation , must be reported in writing to TRAMEC or its Agent, no later than 5 (five) days from the delivery date of the material.
With no notification made after this time , the products will be considered complying with the order acknowledged to the Customer and shall no longer be contested to TRAMEC. Transportation costs are borne by the Customer unless otherwise agreed to by TRAMEC and the Customer.

10.8.3 Return of material

No goods or materials can be returned without "TRAMEC" prior written authorization. Materials received without authorization and written report from the Customer , as required in point 10.8.1 & 10.8.2, and fully authorized by "TRAMEC", will be returned to the sender at the senders expense for all transportation and customs fees, unless otherwise agreed to between the parties in writing.

10.8.4 Product warranty

"TRAMEC" guarantees its products, as provided by law, for a period of 1 (one) year from the date of invoice. This guarantee will be valid for all "TRAMEC" products, where construction, installation or design defects will be detected and will lead to "TRAMEC" the burden of replacement or repair of defective parts at its discretion without any other burden or responsibility or charges for any direct and / or indirect damages or expense.

"TRAMEC" warranty is void if repairs , changes or alterations are carried out on the product without the written consent of "TRAMEC", and only valid with the original nameplate which is found on all "TRAMEC" products.
The negligent or improper use as well as failure to observe regulations governing the utilization, maintenance and storage of products, will result in the immediate loss of this guarantee. The product, covered by the warranty, will have to be returned to "TRAMEC" free of charge, as indicated in point 10.8.3, with all transportation costs borne by the Customer unless otherwise agreed between the parties in writing. The product or component replaced under warranty, if it is defective, will belong to "TRAMEC".

The warranty will not be valid for products that are not paid in full, according to the conditions and terms agreed, and for the amounts due per relevant invoice.
"TRAMEC" provides no guarantee as for the conformity of their products with the standards and regulations of Countries or States not belonging to the European Community.

10.9 Trademarks and intellectual propery rights

TRAMEC is the sole owner of its brands, and the Customer will refrain from the use of them without prior authorization, or register similar ones and/or brands that are easily confused with TRAMEC's brands. Every use of TRAMEC brands requires the authorization in writing by TRAMEC, both in terms and form, according to instructions agreed with the owner of these trademarks.

All Intellectual Property Rights are the complete and exclusive property of TRAMEC and their communication or use under these " Terms of Sale" does not product any right or claim to the Customer, which is obliged to refrain from acts or request to question the Possessory title and Property.

10.10 Controversie e risoluzione contrattuale

Tutte le controversie derivanti da o connesse alle presenti Condizioni di Vendita e/o ad ogni vendita, sono assoggettabili alla esclusiva giurisdizione del Foro competente di Bologna (ITALIA).

TRAMEC SrL è legalmente domiciliata presso la sua sede principale di Via Bizzarri,6 – 40007 Calderara di Reno(BO) – ITALY.

10.10.1 Clausola risolutiva art. 1455 C.C.

TRAMEC avrà facoltà di risolvere, ai sensi e per gli effetti dell'art. 1455 del Codice Civile Italiano, in qualsiasi momento con comunicazione scritta al Cliente, la singola vendita nel caso di inadempimento delle obbligazioni così come previsto ai punti 10.5 (Prezzo dei Prodotti), 10.8 (Pagamenti), 10.9 (Marchi e Diritti di Proprietà Intellettuale).

10.10.2 Clausola risolutiva art. 1461 C.C.

TRAMEC avrà diritto di sospendere, ai sensi e per gli effetti dell'art. 1461 del Codice Civile Italiano, in qualsiasi momento concomunicazione scritta al Cliente, tutte le obbligazioni in corso derivanti dalla vendita dei prodotti, nel caso in cui le condizioni patrimoniali del Cliente divenissero e/o risultassero tali da porre in serio dubbio la naturale acquisizione della controparitа prevista.

TRAMEC potrà valutare eventuali garanzie accessorie proposte dal Cliente, come assicurazione sulle obbligazioni in essere.

10.10 Disputes and contract termination

All disputes due or related to these "Terms of Sale" and / or any sale, are subject to the exclusive jurisdiction of the Competent Court of Bologna (ITALY).

TRAMEC SRL is legally domiciled at its headquarters in Via Bizzarri, 6-40007 Calderara di Reno (BO) - ITALY.

10.10.1 Termination art. 1455 C.C. (Italian Civil Code)

"TRAMEC" may terminate, pursuant to art. 1455 of the Italian Civil Code, at any time by written notice to the Customer, the single sale in the event of breach of the obligations as set out in paragraphs 10.5 (Product Price), 10.8 (Payments), 10.9 (Trademarks and Intellectual Property Rights) .

10.10.2 Termination art. 1461 C.C. (Italian Civil Code)

"TRAMEC" will be entitled to suspend, pursuant to art. 1461 of the Italian Civil Code, at any time by written notice to the Customer, all current obligations arising from the sale of the products, in the event that the financial conditions of the Customer would become and/or result to call into serious doubt the natural acquisition of expected offset.

"TRAMEC" may consider any additional guarantees proposed by the Customer, such as insurance on outstanding obligations.

NOTE

REVISIONI		*REVISIONS*		ÄNDERUNG	
07/2019	modifica istruzioni lubrificazione cap. 1.13 pag.12.	07/2019	modification of lubrication instructions chap. 1.13 pag.12.	07/2019	Änderung der Schmieranweisung Kap. 1.13 pag.12.

07/2019

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Ci riserviamo il diritto di apportare modifiche senza preavviso.

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We reserve the right to implement modifications without notice.

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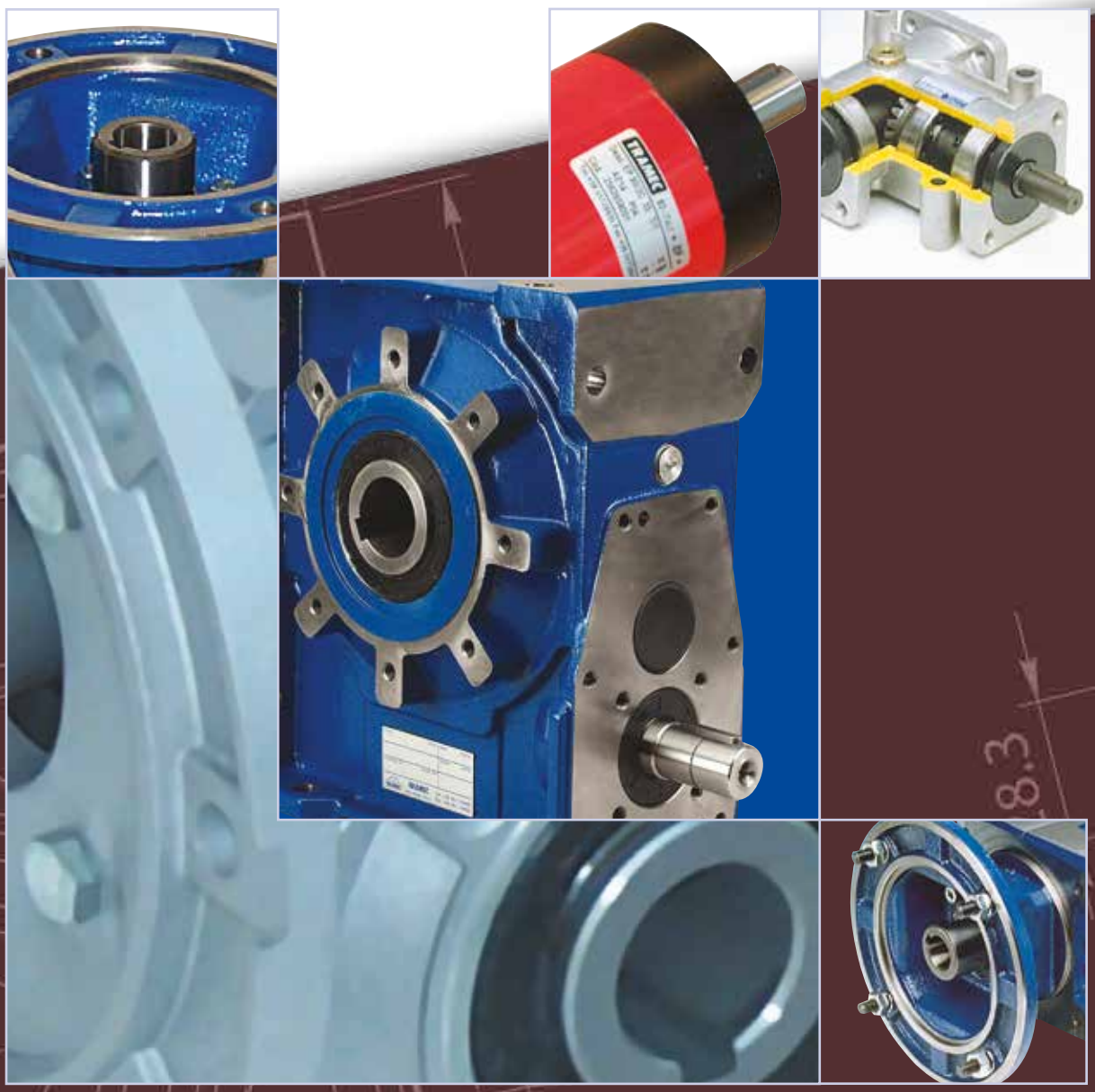

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