CHIARAVALLI GROUP SpA



RIDUTTORI ORTOGONALI COPPIA IPOIDE CHO

CHO HELICAL-HYPOID GEAR UNITS

PREMESSA

I riduttori ortogonali a coppia ipoide serie CHO nascono per essere utilizzati al posto dei riduttori a vite senza fine nelle applicazioni che richiedono elevati rendimenti, specialmente con alti rapporti di riduzione, sono ad essi intercambiabili come fissaggi e garantiscono basse temperature di funzionamento.
Grazie alla predisposizione per motore con campana e giunto, possono essere collegati a motori normali, autofrenanti ed antideflagranti.
Questo tipo di riduttore trova vasto impiego dove è richiesto risparmio energetico e con motori comandati da inverter.

CARATTERISTICHE PRODOTTO

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

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

INTRODUCTION

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

PRODUCT FEATURES

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

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

POTENZA P - *POWER P*

$P_1 * \eta = P_2$
P_1 = Potenza entrata · *Input power*
P_2 = Potenza uscita · *Output power*
η = Rendimento · *Transmission efficiency*

VELOCITA' DI ROTAZIONE n - *ROTATION SPEED n*

n_1 = Velocità entrata · *Input speed*
n_2 = Velocità uscita · *Output speed*

Al fine di ottimizzare le condizioni di lavoro e prolungare la durata del riduttore si consiglia una velocità di entrata ≤ 1400 rpm
Sono ammesse velocità superiori in accordo alla sottostante tabella.

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

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

RAPPORTO DI TRASMISSIONE i - *TRANSMISSION RATIO i*

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

COPPIA M - *TORQUE M*

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

$$M_2 \geq M_2 \cdot f_s \left[Nm\right]$$

M_2	= Coppia uscita	*Output torque*
M_{2n}	= Coppia nominale uscita	*Rated output torque*
P_1	= Potenza entrata	*Input power*
η	= Rendimento	*Transmission efficiency*
f_s	= Fattore di servizio	*Service factor*

CARICHI RADIALI F_R - *RADIAL LOADS F_R*

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

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

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

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

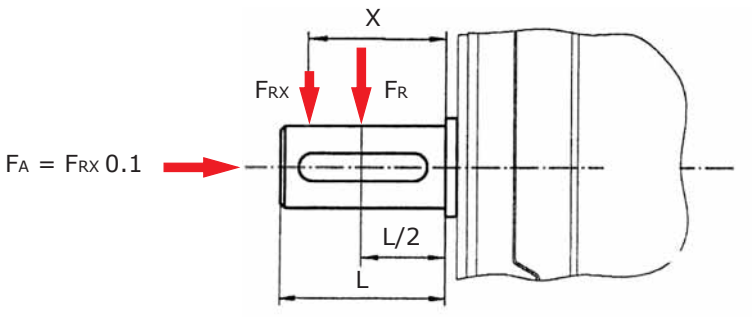
Quando il carico radiale non è applicato sulla mezzeria dell'albero bisogna usare la sottostante formula.

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

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

F_R	=	Carico radiale mezzeria	*Radial load on the centre line*
a,b,x	=	vedi tabella	*See table*

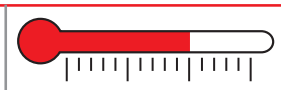
CARICHI RADIALI ALBERO LENTO & CARICHI ASSIALI F_R, F_A
OUTPUT SHAFT RADIAL LOADS & AXIAL LOADS F_R, F_A



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

LUBRIFICAZIONE - *LUBRICATION*

TIPO DI LUBRIFICAZIONE · *TYPES OF LUBRICATION*

	 °C -50 0 +50 +100	ISO	SHELL	MOBIL	BP	Tipo lubrificante *Lubrication type*
CHO	standard -10 +40	VG 220	Shell Omala 220	Mobilgear 630	BP Energol GR-XP 220	Olio Minerale *Mineral Oil*
	-20 +25	VG 150 VG 100	Shell Omala 100	Mobilgear 627	BP Energol GR-XP 100	
	-30 +10	VG 68-46 VG 32	Shell Tellus T 32	Mobil D.T.E. 13M		
	-40 -20	VG 22 VG 15	Shell Tellus T 15	Mobil D.T.E. 11M	BP Energol HLP-HM 15	
	-40 +80	VG 220	Shell Omala HD 150	Mobil SHC 630		Olio sintetico *Syntetic oil*
	-40 +40	VG 150		Mobil SHC 629		
	-40 +10	VG 32		Mobil SHC 624		

QUANTITA' OLIO · *LUBRICANT FILL QUANTITY*

Le quantità indicate sono quelle raccomandate. Il valore preciso dipende dal numero degli stadi e dal rapporto di riduzione. La tabella che segue indica i quantitativi in funzione della posizione di montaggio (B3, B6, B7...)

The specified fill quantities are recomended values. The precise values vary depending on the number of stages and gear ratio. The following tables show guide values for lubricant fill quantities in relation to the mounting position (B3, B6, B7...)

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

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

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

MANUTENZIONE - *MAINTENANCE*

1 Per questi riduttori il primo cambio di olio deve essere effettuato dopo circa 300 ore (periodo di rodaggio). Non mischiare mai olio sintetico con olio minerale.

For gear units, first oil change should be after about 300 hour (run-in period). Never mix the synthetic oil and mineral oil together.

2 Ogni 3000 oer di lavoro e almeno ogni 6 mesi, verificare olio e livelli, anche le tenute per eventuali perdite. Per i gruppi previsti di attacco PAM controllare l'elastomero ed eventualmente sostituirlo.

Every 3000 working time, at least every 6 months, you have to check the oil and oil level, the seals visually for leakage. For IEC input gear units, the elastomer should be tested or replaced if necessary.

3 In funzione del tipo di lavoro, al massimo ogni 2 anni è necessaria una revisione. Sostituire l'olio minerale e ripristinare il grasso sui cuscinetti.

Dependong on the operating conditions every 3 years at the latest for inspection is needed. Then change the mineral oil and replace the bearing grease.

4 In funzione del tipo di lavoro, dove necessario, sostituire gli anelli di tenuta.

Depending on the operating conditions, change the oil seals.

DESIGNAZIONE - *DESIGNATION*

Riduttore / *Gear units* — Motore / *Motor*

CHO	5	2 - 7.60	FA1	SS1 - 71B5	B3 - 71B4 o/or 0.37 - 4 /	1
1	2	3	4	5	6	7	8	9	10

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

Esempio ordine / *Order example*

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

RAPPORTI E PREDISPOSIZIONI POSSIBILI
RATIO AND IEC MOTOR ADAPTERS

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

	i nominale *nominal*	i reale *actual*	n_2 [r/min]	M_{2n} [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
				3 stadi / *3 stages*					
CHO 53	300	291.79	4.8	110	4100				
	250	244.29	5.8	130	4100				
	200	200.44	7.0	130	4100				
	150	146.67	9.6	130	4000				
	125	120.34	12	130	3770				
	100	101.04	14	130	3560				
	75	74.62	19	130	3220				
				2 stadi / *2 stages*					
CHO 52	60	58.36	24	110	2960				
	50	48.86	29	130	2790				
	40	40.09	35	130	2610				
	30	29.33	48	130	2350				
	25	24.07	59	130	2200				
	20	20.21	70	130	2080				
	15	14.92	94	130	1880				
	12.5	12.47	113	120	1770				
	10	10.47	134	110	1670				
	7.5	7.73	182	100	1510				

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

	i nominale *nominal*	i reale *actual*	n_2 [r/min]	M_{2n} [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
				3 stadi / *3 stages*					
CHO 63	300	302.50	4.7	170	4800				
	250	243.57	5.8	200	4800				
	200	196.43	7.2	200	4800				
	150	151.56	9.3	200	4650				
	125	122.22	12	200	4330				
	100	101.27	14	200	4070				
	75	73.33	20	200	3650				
				2 stadi / *2 stages*					
CHO 62	60	60.50	24	170	3430				
	50	48.71	29	200	3190				
	40	39.29	36	200	2970				
	30	30.31	47	200	2720				
	25	24.44	58	200	2530				
	20	20.25	70	200	2380				
	15	14.67	96	200	2130				
	12.5	12.67	111	180	2030				
	10	10.50	134	170	1910				
	7.5	7.60	185	160	1710				

RAPPORTI E PREDISPOSIZIONI POSSIBILI
RATIO AND IEC MOTOR ADAPTERS

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

	i nominale *nominal*	i reale *actual*	n_2 [r/min]	M_{2n} [Nm]	F_{r2} [N]	63B5	71B5	80B5 80B14	90B5 90B14	100B5 100B14	112B5 112B14
	3 stadi / *3 stages*										
CHO 73	300	297.21	4.8	350	6500						
	250	240.89	5.9	350	6500						
	200	200.66	7.0	350	6500						
	150	151.20	9.3	350	6500						
	125	125.95	12	350	5980						
	100	99.22	15	350	5520						
	75	75.45	19	350	5040						
	2 stadi / *2 stages*										
CHO 72	60	59.44	24	350	4660						
	50	48.18	30	350	4340						
	40	40.13	35	350	4080						
	30	30.24	47	350	3720						
	25	25.19	56	350	3500						
	20	19.84	71	350	3230						
	15	15.09	93	350	2950						
	12.5	12.49	113	330	2770						
	10	9.84	143	320	2550						
	7.5	7.48	188	310	2330						

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

	i nominale *nominal*	i reale *actual*	n_2 [r/min]	M_{2n} [Nm]	F_{r2} [N]	63B5	71B5	80B5 80B14	90B5 90B14	100B5 100B14	112B5 112B14
	3 stadi / *3 stages*										
CHO 83	300	295.18	4.8	460	8300						
	250	240.89	5.9	500	8300						
	200	200.66	7.0	500	8300						
	150	151.20	9.3	500	8050						
	125	125.95	12	500	7580						
	100	99.22	15	500	7000						
	75	75.45	19	500	6390						
	2 stadi / *2 stages*										
CHO 82	60	59.04	24	460	5890						
	50	48.17	30	500	5500						
	40	40.13	35	500	5170						
	30	30.24	47	500	4710						
	25	25.19	56	500	4430						
	20	19.84	71	500	4090						
	15	15.09	93	500	3730						
	12.5	12.49	113	480	3510						
	10	9.84	143	460	3240						
	7.5	7.48	188	440	2950						

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

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GEAR UNIT SELECTION TABLES

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

CHIARAVALLI® GROUP SpA

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

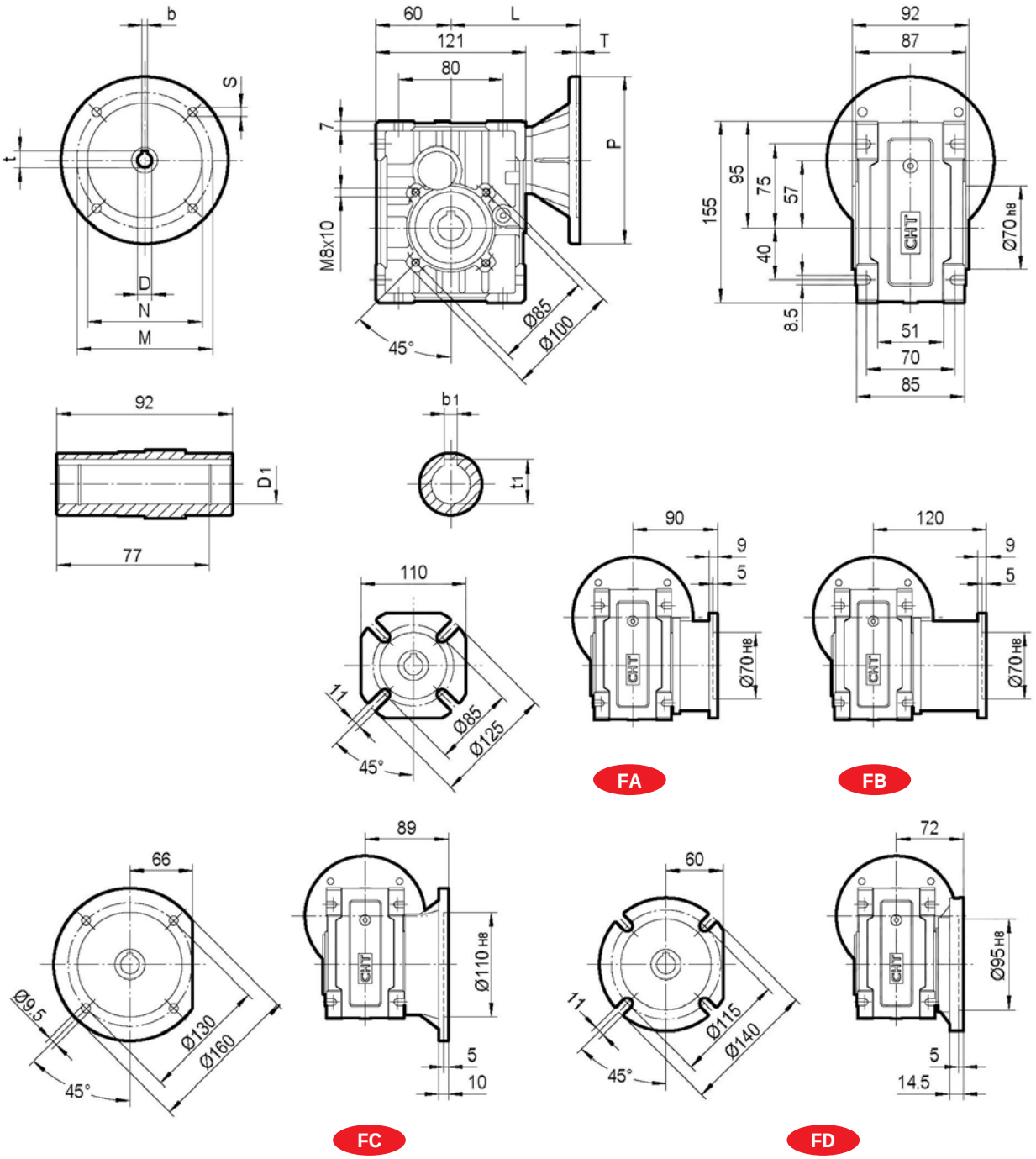
P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i nominal	i actual	F_{r2} [N]	fs			
1.5	35	386	40	40.13	4080	0.9	**CHO72**	**90B5/B14**	**90L4**
	46	291	30	30.24	3720	1.2			
	56	242	25	25.19	3500	1.4			
	71	191	20	19.84	3230	1.8			
	93	145	15	15.09	2950	2.4			
	112	120	12.5	12.49	2770	2.8			
	142	95	10	9.84	2550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

TABELLA DI SELEZIONE PRESTAZIONI
GEAR UNIT SELECTION TABLES

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

DIMENSIONI - *DIMENSION SHEET*

CHO 52



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

* a richiesta

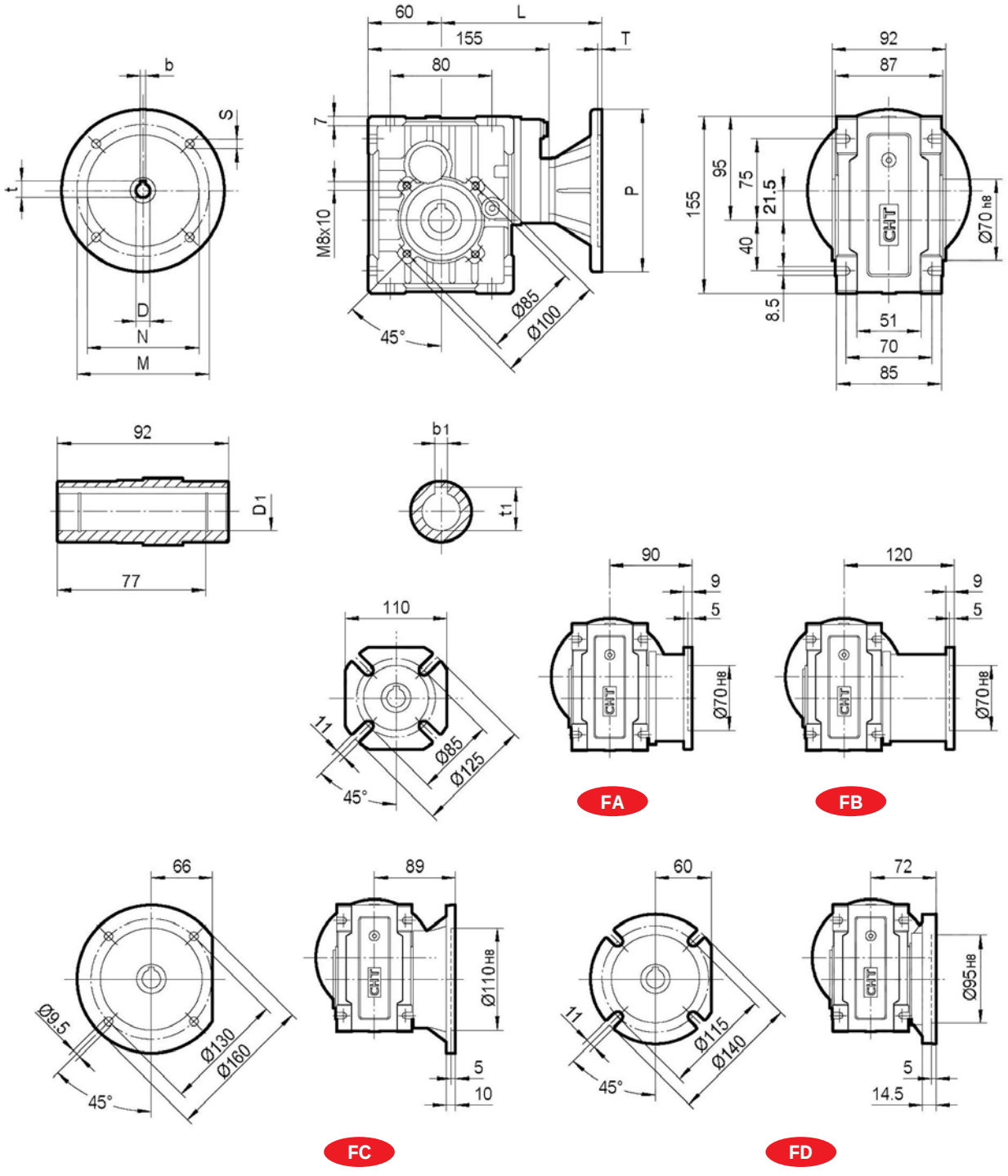
** only on request*

Peso Kg 3.5 senza motore

Weight 3.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 53



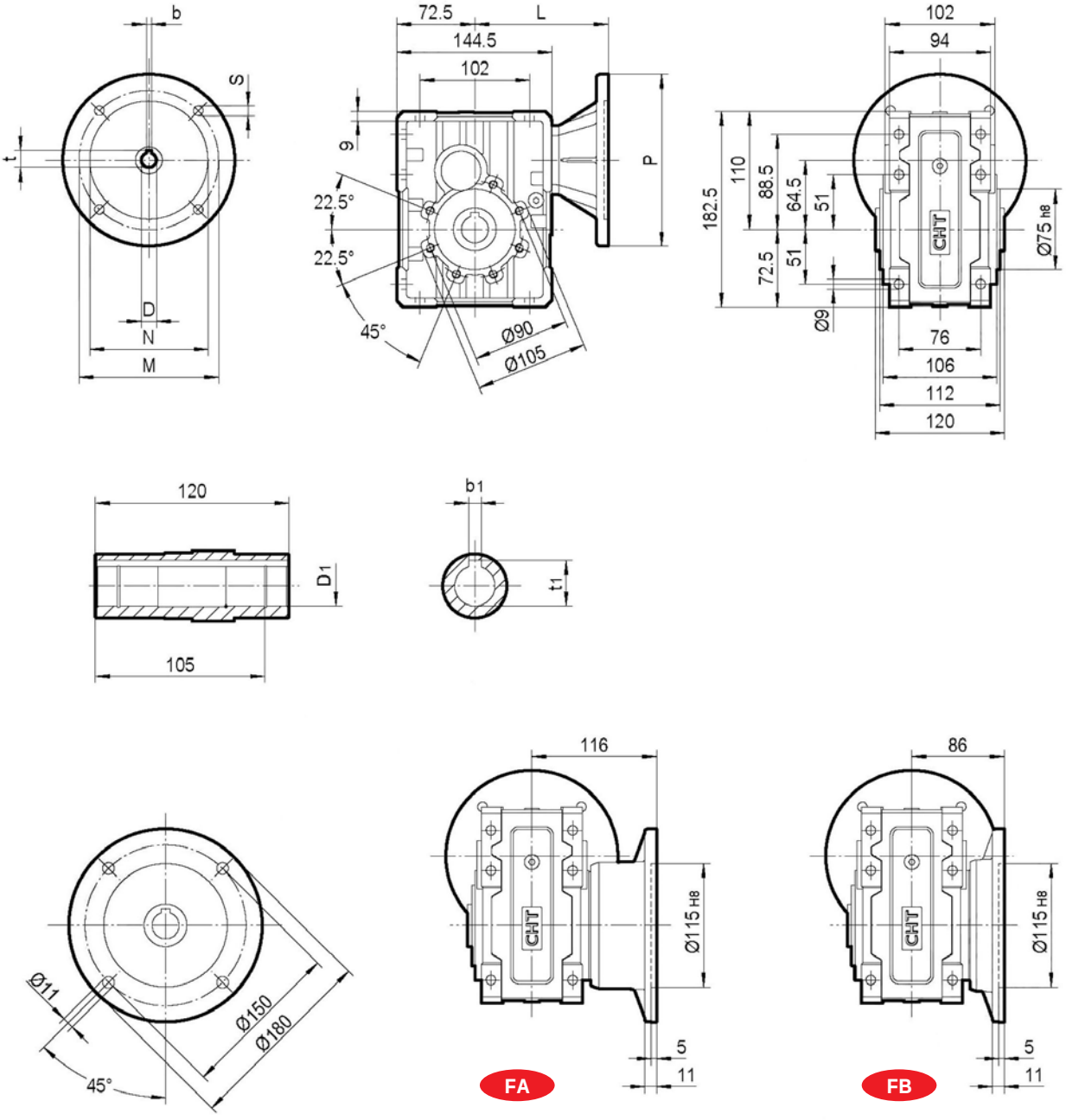
IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	4	140	20*	6*	22.8*
71B5	14	5	16.3	160	130	110	9	4	147	25	8	28.3
71B14	14	5	16.3	105	85	70	7	4	147			
80B5	19	6	21.8	200	165	130	11	4	167			
80B14	19	6	21.8	120	100	80	7	4	167			
90B14	24	8	27.3	140	115	95	9	4	167			

* a richiesta
** only on request*

Peso Kg 3.5 senza motore
Weight 3.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 62

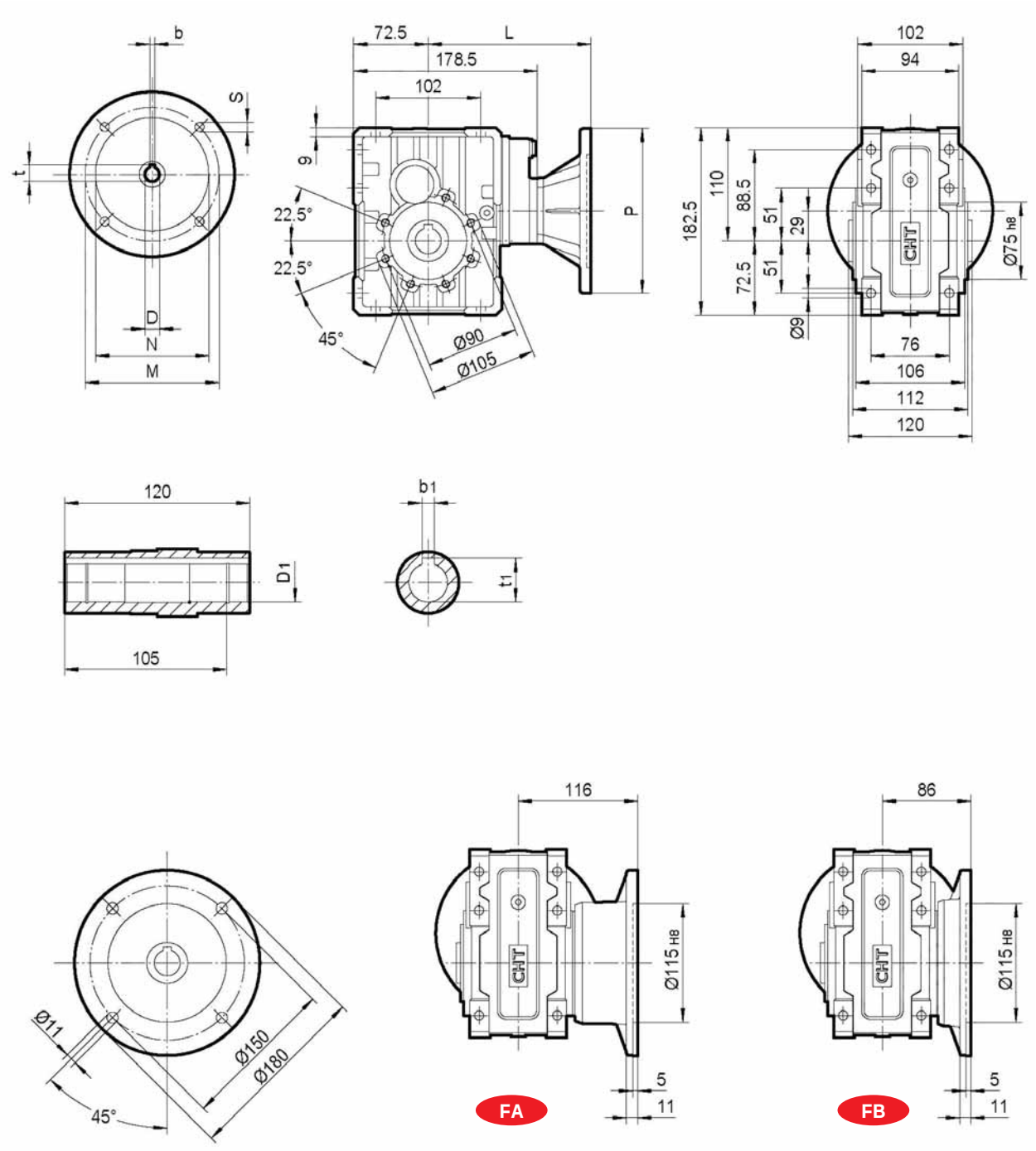


IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
71B5	14	5	16.3	160	130	110	9	4	124	25	8	28.3
71B14	14	5	16.3	105	85	70	7	4	124			
80B5	19	6	21.8	200	165	130	11	4	144			
80B14	19	6	21.8	120	100	80	7	4	144			
90B5	24	8	27.3	200	165	130	11	4	144			
90B14	24	8	27.3	140	115	95	9	4	144			

Peso Kg 6.5 senza motore
Weight 6.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 63

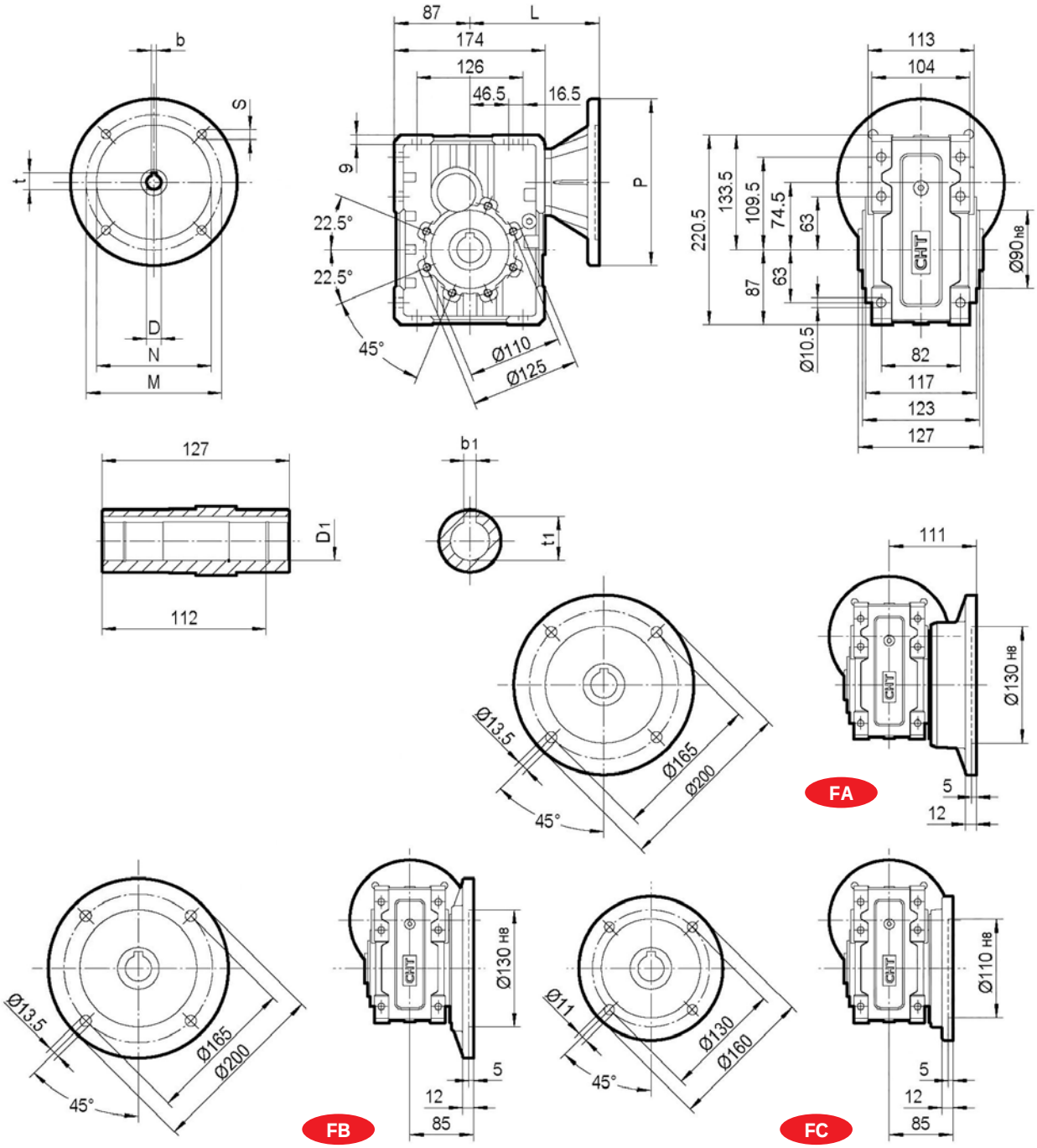


IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
71B5	14	5	16.3	160	130	110	9	4	158	25	8	28.3
71B14	14	5	16.3	105	85	70	7	4	158			
80B5	19	6	21.8	200	165	130	11	4	178			
80B14	19	6	21.8	120	100	80	7	4	178			
90B5	24	8	27.3	200	165	130	11	4	178			
90B14	24	8	27.3	140	115	95	9	4	178			

Peso Kg 6.5 senza motore
Weight 6.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 72

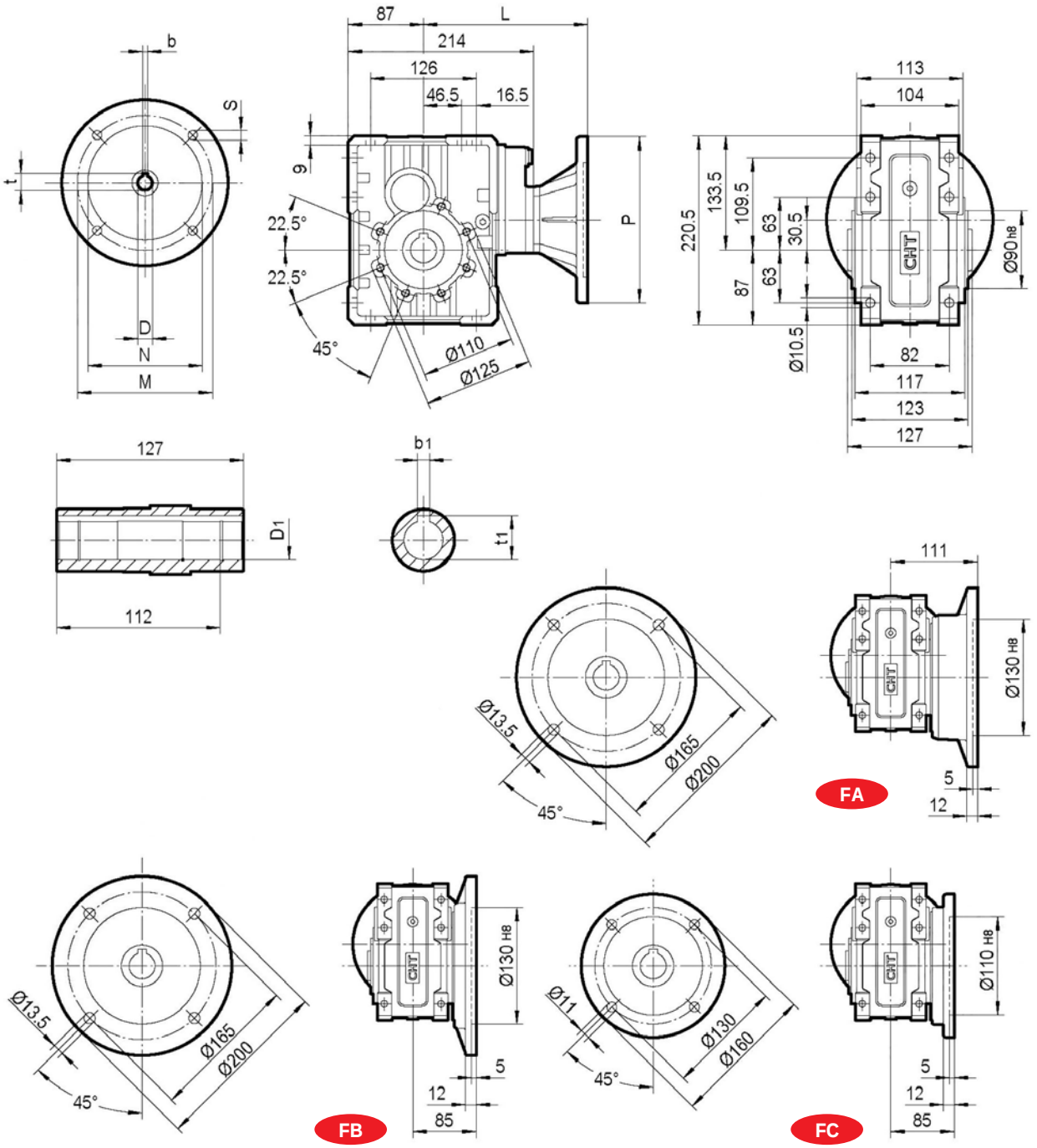


IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	4	139	28*	8*	31.3*
71B5	14	5	16.3	160	130	110	9	4	146	30	8	33.3
80B5	19	6	21.8	200	165	130	11	4	166			
80B14	19	6	21.8	120	100	80	7	4	166			
90B5	24	8	27.3	200	165	130	11	4	166			
90B14	24	8	27.3	140	115	95	9	4	166			
100/112B5	28	8	31.3	250	215	180	13.5	4.5	176	* a richiesta		
100/112B14	28	8	31.3	160	130	110	9	4.5	176	** only on request*		

Peso Kg 9.5 senza motore
Weight 9.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 73

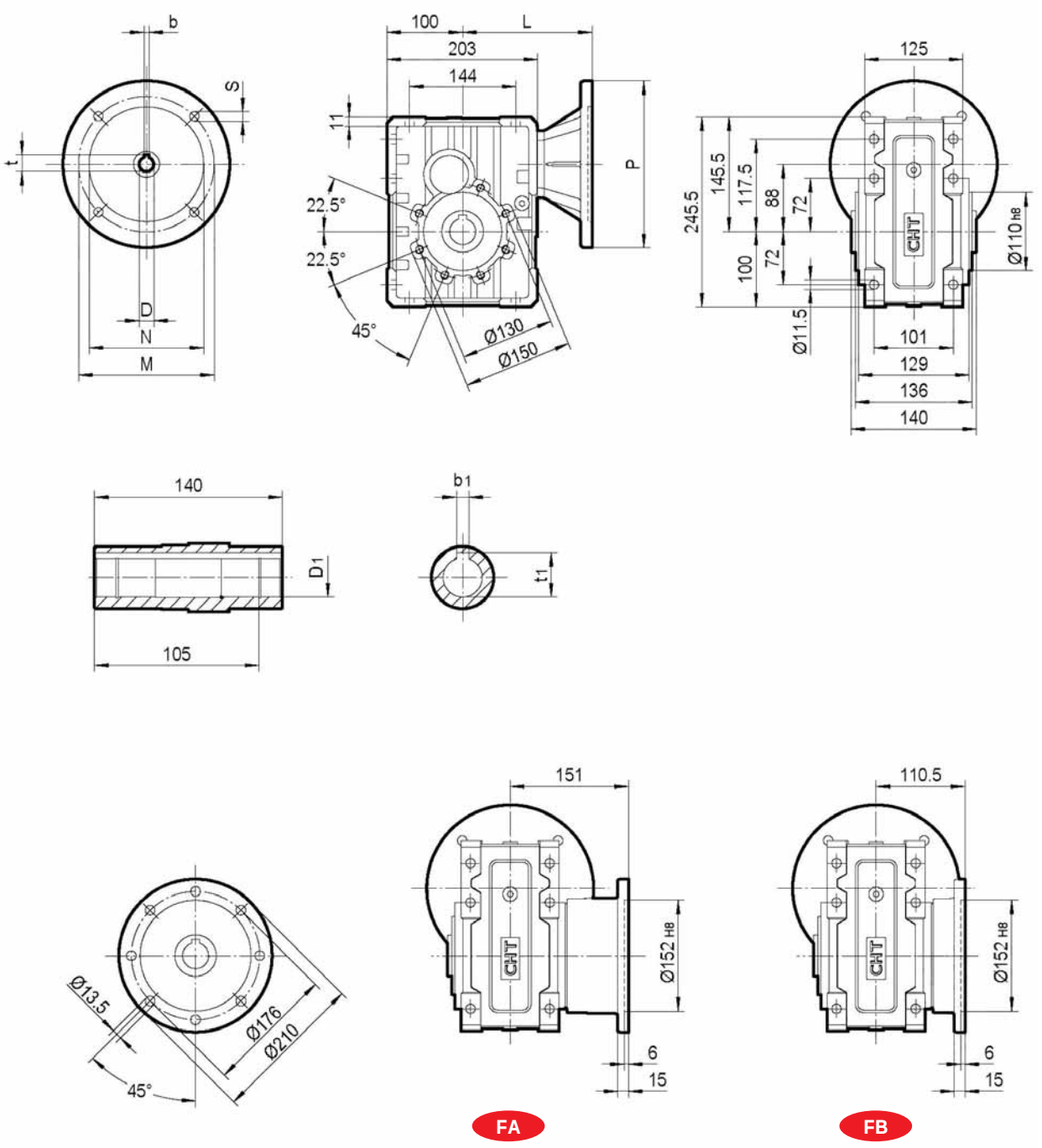


IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	4	179	28*	8*	31.3*
71B5	14	5	16.3	160	130	110	9	4	186	30	8	33.3
80B5	19	6	21.8	200	165	130	11	4	206			
80B14	19	6	21.8	120	100	80	7	4	206			
90B5	24	8	27.3	200	165	130	11	4	206			
90B14	24	8	27.3	140	115	95	9	4	206			
100/112B5	28	8	31.3	250	215	180	13.5	4.5	216	* a richiesta		
100/112B14	28	8	31.3	160	130	110	9	4.5	216	** only on request*		

Peso Kg 9.5 senza motore
Weight 9.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 82

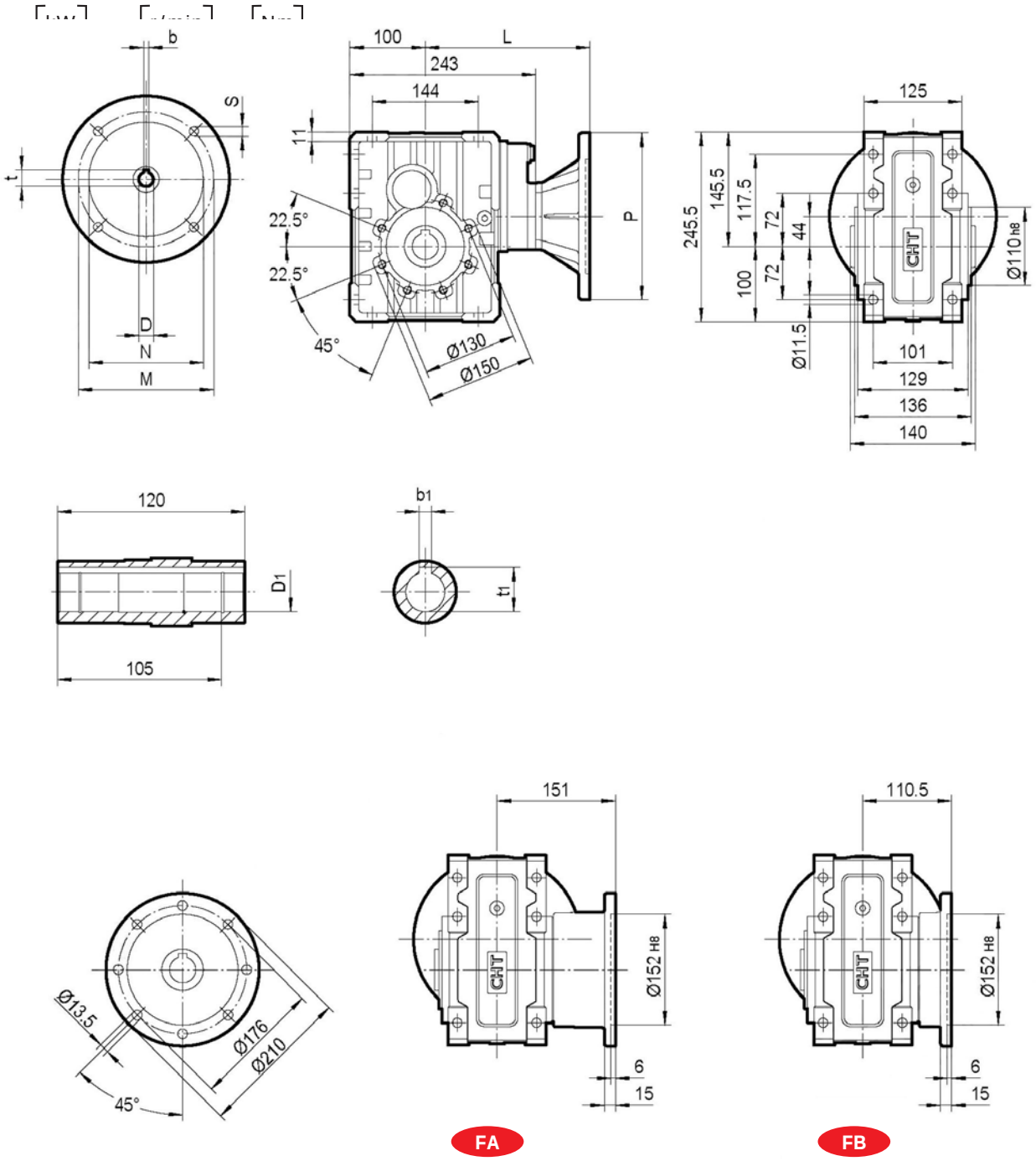


IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	4	155	35	10	38.3
71B5	14	5	16.3	160	130	110	9	4	162	40*	10*	43.3*
80B5	19	6	21.8	200	165	130	11	4	182			
80B14	19	6	21.8	120	100	80	7	4	182			
90B5	24	8	27.3	200	165	130	11	4	182			
90B14	24	8	27.3	140	115	95	9	4	182			
100/112B5	28	8	31.3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

Peso Kg 13.5 senza motore
Weight 13.5 Kg excluding motor

DIMENSIONI - *DIMENSION SHEET*

CHO 83

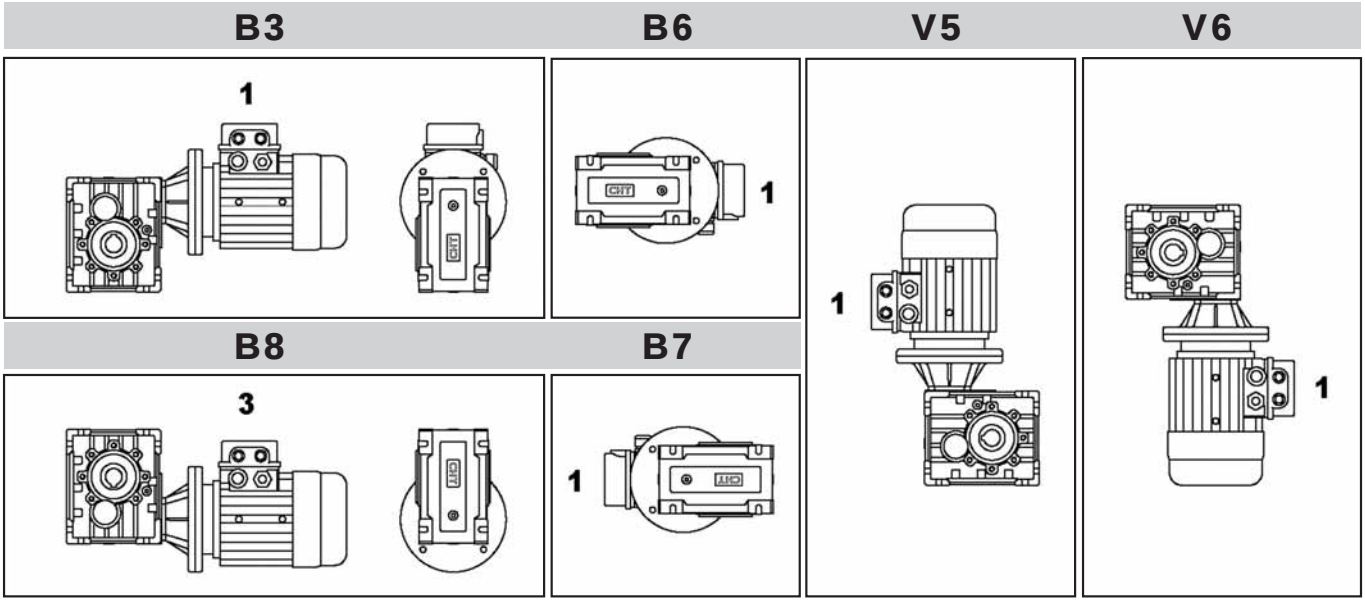


FA

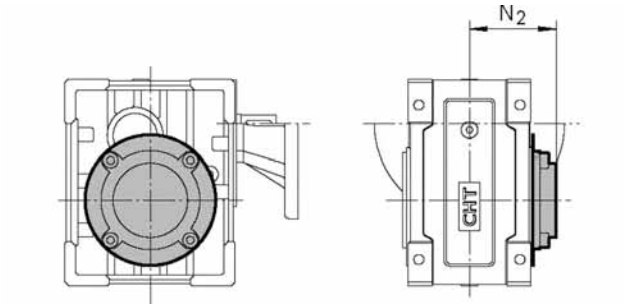
FB

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

Peso Kg 13.5 senza motore
Weight 13.5 Kg excluding motor



Coprimozzo / *Cover*

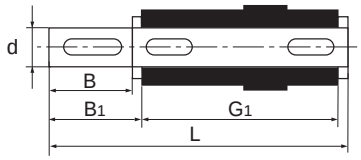


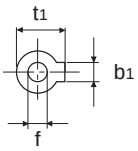
TIPO *TYPE*	N_2
CHO 52/53	59
CHO 62/63	70
CHO 72/73	85.5
CHO 82/83	93.5

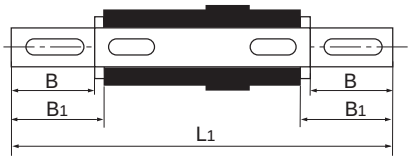
DIMENSIONI - *DIMENSION SHEET*

ACCESSORI / *ACCESSORIES*

Alberi uscita / *Output shaft*





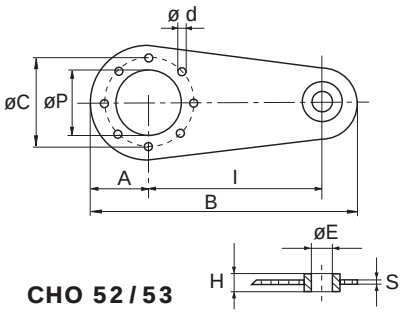


SS **DS**

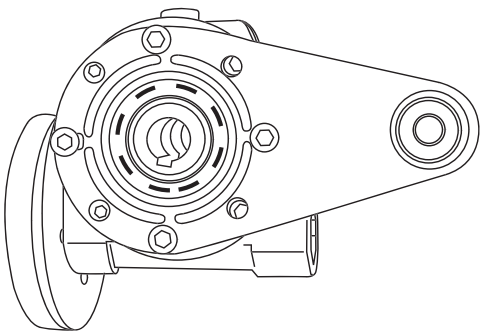
TIPO *TYPE*	d_{h6}	B	B_1	G_1	L	L_1	f	b_1	t_1
CHO 52/53	25	50	53.5	92	153	199	M10	8	28
CHO 62/63	25	60	65	120	162	246.4	M8	8	28
CHO 72/73-28	28	60	65	127	199	255	M8	8	31
CHO 72/73-30	30	60	65	127	199	255	M10	8	33
CHO 82/83	35	60	65	140	214	268	M12	10	38

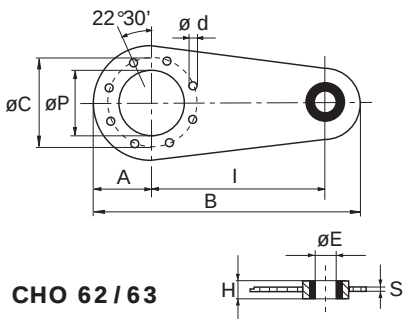
BRACCIO DI REAZIONE - *TORQUE ARM*

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



CHO 52/53





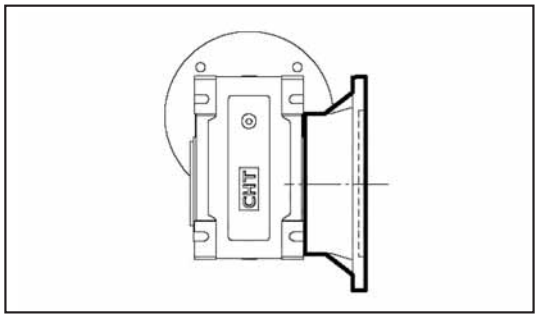
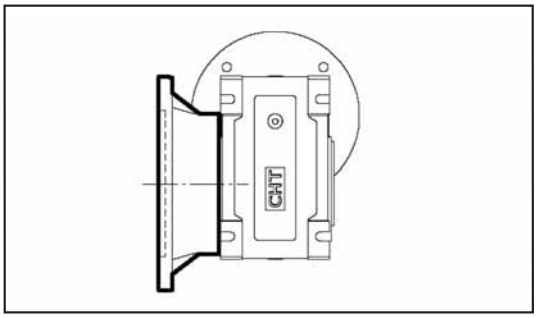
CHO 62/63
CHO 72/73
CHO 82/83

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

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

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

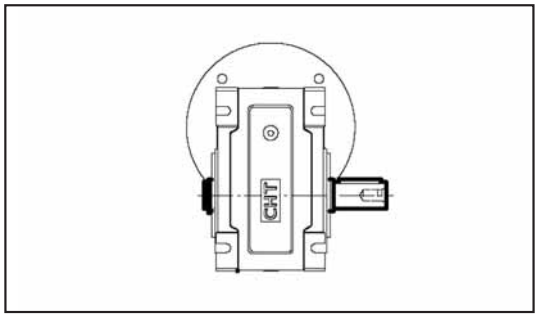
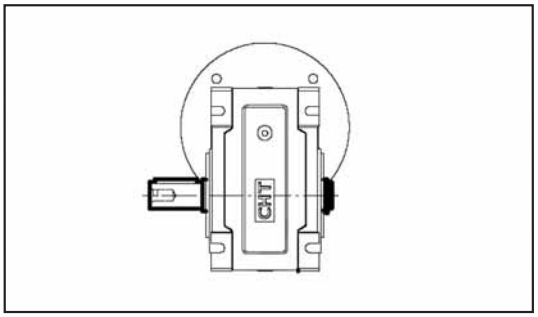
Posizione flange uscita
Position diagram for output flanges

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

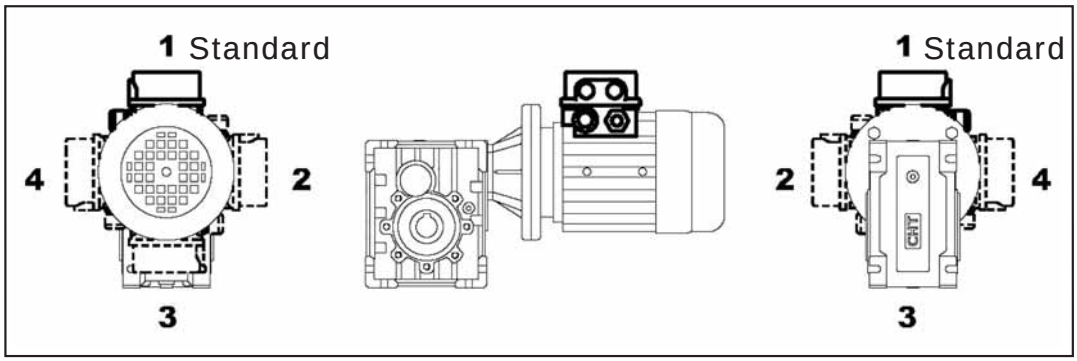
Se non specificato le flange vengono montate in posizione F..1

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

Posizione albero lento semplice
Position diagram for single output shaft

SS1	SS2
	

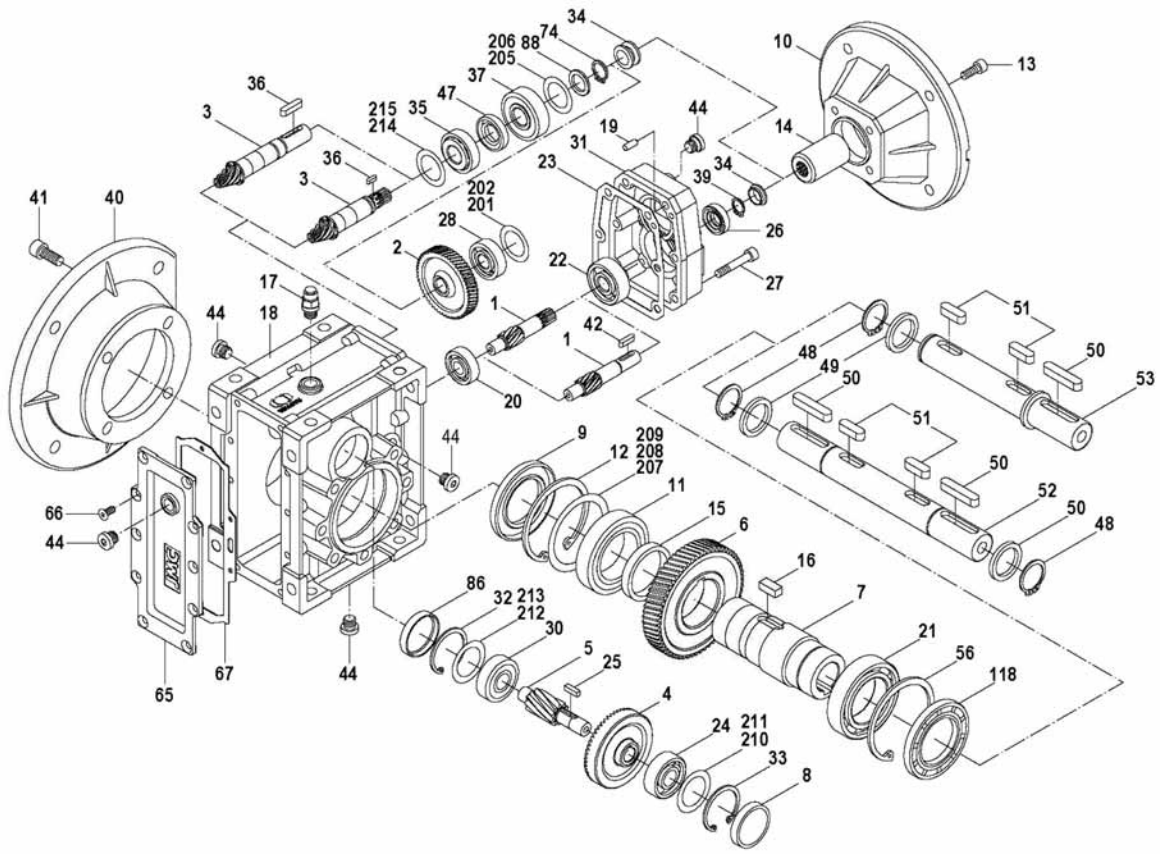
Posizione morsetteria
Position of terminal box



Specificare posizione di montaggio della morsetteria.

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

ESPLOSO E PARTI DI RICAMBIO
EXPLODED DRAWING AND SPARE PARTS LIST



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

CHO ISTRUZIONI USO E MANUTENZIONE
USE AND MAINTENANCE INSTRUCTIONS

INSTALLAZIONE

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

FUNZIONAMENTO E RODAGGIO

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

MANUTENZIONE

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

CONSERVAZIONE A MAGAZZINO

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

MOVIMENTAZIONE

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

SMALTIMENTO IMBALLI

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

INSTALLATION

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

OPERATION AND RUNNING-IN

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

MAINTENANCE

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

WAREHOUSE STORAGE

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

HANDLING

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

DISPOSAL OF PACKAGING

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