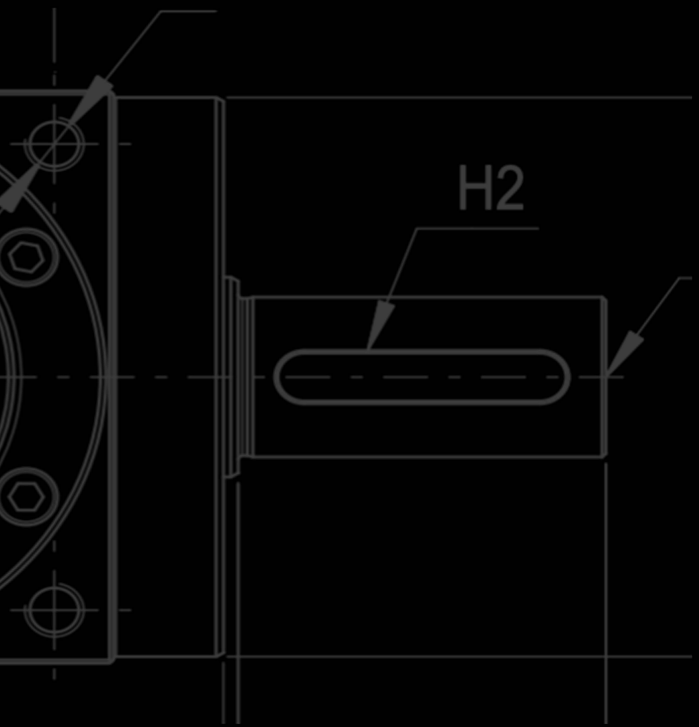
CHIARAVALLI® GROUP SpA

USER'S MANUAL FOR GEARBOXES AND MOTORS



GENERAL SAFETY INSTRUCTIONS

WARNING!
Before using the product, read all warnings and instructions below and refer to the "Use and Maintenance manual" and the "Technical Catalog" available on our website or on request.

GENERAL WARNINGS:

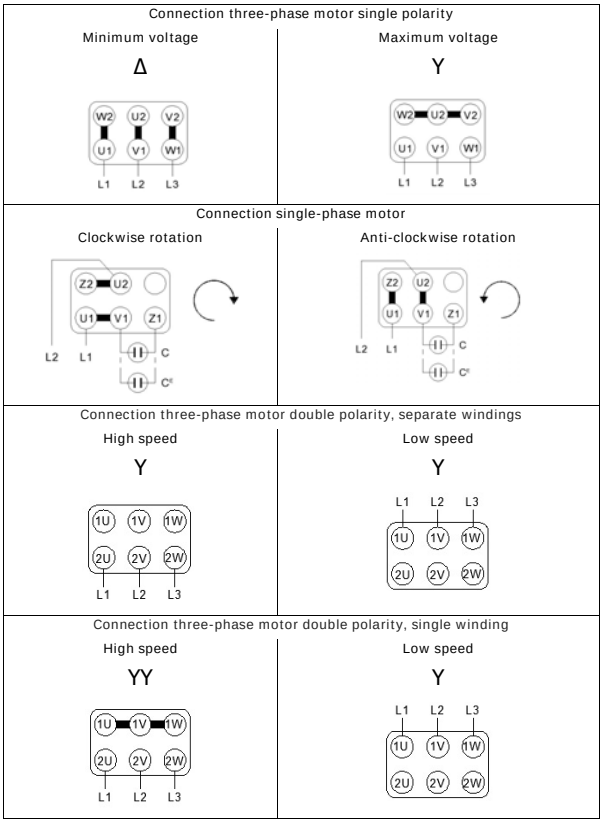
Three-phase asynchronous motors, single-phase, double speed and brake motors cannot be used in the supplied state but they are intended to be incorporated into an equipment or a machine.
Therefore, the motor cannot be put into service before the application where it will be incorporated has been declared in conformity with the relevant directives.
The staff who use and work on the motor must be properly trained and qualified, and must be supervised by the system managers, must be familiar with helth and safety requirements and legislation.
Ignoring these instructions may invalidate all applicable warranties.
Low voltage rotating electrical machines contain under voltage, rotating or moving parts, surface and internal parts with temperatures above 50 ° C on regular running conditions.
Improper use of the motors and / or removal or disconnection of protection devices can cause serious damage to people, animals and things. It refuses any responsibility for damage caused by improper use of the motor and / or for the removal or disconnection of electrical and mechanical protections. Three-phase asynchronous motors, single-phase, double speed, brake motors comply with the IEC 60034 standards, and they are intended to be used at room temperature 15 to + 40 ° C and a maximum altitude of 1000 meters above sea level. Tolerance for supply voltage is ± 5% and for frequency ± 2% in accordance with IEC 60034-1. Any different conditions from those described above, are specified on the nameplate. The mentioned motors are not suitable for use in environments with explosion hazard. Verify that motors are intact and undamaged before use. The nameplate on the product, which indicates all main technical characteristics and the CE mark as well as all the manufacturer's details and serial number, univocally identifies all motors.
Product not manufactured in Italy.
In accordance with the current legislation, all motors must always be lifted and handled using appropriate safety devices and, if needed, using the specific eyebolts on the motor, taking care not to damage auxiliary equipment and cables connected to the motor. Do not lift the motor using its eyebolts while connected to other components.
The motor should be placed away from moisture, as in its presence, the machine insulation can decrease very quickly until it becomes null and void. Motors provided with cylindrical roller bearings and / or angular contact, must always have the shaft locked during transportation. In case of malfunction or doubts about the use of the equipment, contact the manufacturer indicated on the nameplate.
Always disconnect the motor from the power supply before working on it or on equipment connected to it.

MAINTENANCE:

Any work on the motor must be carried out only after cutting power to the motor, to the auxiliary circuits (eg. anti-condensation heaters, external fans, brakes, etc.), to the eventual inverter and securing the prevention of any accidental start-up.
The capacitor of single-phase motors can keep a charge that appears on the terminals even when the motor has come to a stop, therefore, it is always necessary to discharge to earth.
Inspect the motor at regular intervals, at least annually. In harsh and humid environments intervals must be reduced based on the environmental conditions.
Check that the motor runs without noise or abnormal vibrations. If any, check the base of the motor and the balancing of the driven machine.
Make sure that ventilation is not obstructed to avoid overheating and possible breakage; keep the engine clean from dust, oil, water and processing waste.
Check that the motor supply cables, brake and auxiliary equipment do not present any signs of deterioration and that all connections are firmly tightened; verify integrity and equi-potential of ground cables.
Check that the fixing screws of the motor and of the coupling system are tightly fastened without any cracks or damage.
Check the tension of eventual belts (a high tension considerably reduces the life of the bearings and could even cause the breakage of shaft end).
Check the condition of seals and grease them periodically as these components are subject to wear and tear. Make sure that thermal protections are not excluded and are calibrated correctly.
Periodically open the drain holes, if any.
Check the condition of the bearings: shielded, sealed or life-lubricated bearings do not require any lubrication, but must be replaced at the end of their lives. Unshielded bearings are equipped with a lubricator and require lubrication at regular intervals (always see the label on the motor or refer to the technical catalog for intervals, types and amounts of grease).
For brake motors, check the brake air gap, the brake disc thickness and the release lever clearance (refer to the technical catalog).
Use only original spare parts.

INSTALLATION:

Ensure adequate ventilation to the motor and that there is enough space for a proper airflow (at least ¼ of the diameter of the fan cover). Avoid proximity to high heat sources.
If drain holes are present, they must always be facing downwards. In case of humid environments and possible formation of condensation, it is necessary to open the holes periodically using the screws located in the lower part of the housing.
It is strictly prohibited to commission or test the motor with shaft key attached only with the shaft protection cap, as the key may be projected due to the centrifugal force. Apply an elastic joint or flexible coupling to prevent bearings damage, vibrations and shaft breakage if necessary.
In the case of belt coupling the motor shaft should be parallel to the axis of the driven machine. The jerk of the pulley should be as little as possible.
Excessive belt tension will damage the bearings and can cause the driveshaft breakage.
In B14 and B34 mounting type motors, the depth of the holes for screwing the screws into the flanges must never exceed twice the threaded diameter to prevent damage to the motor winding (eg. M5 threaded flange = depth of screwing 10 mm max).
Before commissioning and when condensation in the windings is suspected, it is essential to check the insulation resistance between the windings and to earth with an adequate tool. Immediately after measuring, there are dangerous tensions on the terminals, therefore, it is mandatory to dicharge the motor phases to earth at the end of the test.
Always carry out the earth connection of the motor before connecting to the mains supply.
Close the terminal box after installation, making sure that the seals are not damaged and that they are well positioned in place in order to guarantee the degree of protection indicated on the nameplate.
All motors are equipped with cable glands or predisposition for its assembly. Unused cable glands must be closed to protect the motor against intrusion of solid objects, liquids and moisture. The cable glands must be well tightened around the cable and the arrival curving radius of the cables must not allow water entrance. Terminals and rotation direction: it is necessary to check the direction of the rotation of the motor before coupling to the machine, as this may cause damage to people and / or things.
Three-phase motor with single polarity: interchange the connections of two of the line wires to reverse the direction of rotation.
In case of inverter connections, always refer to the specific manuals of the inverter suppliers depending on the inverter used.
Refer to the use and maintenance manual for connections of auxiliary equipment (anti-condensation heaters, thermistors, bimetallic thermal sensors, etc. ..).



Always refer to the schemes of the motor supplied and to the use and maintenance manual for motors with special connections, different from those above, and for brakes.

SYMBOLS

P = Power (Kw)
i = Ratio
T = Torque (Nm)
n = Speed (RPM)
Fr = Radial Load (N)
Fa = Axial Load (N)
f.s. = Service Factor
D = Diameter (mm)

1 Kw = 1,36 HP
9,81 N = 1 Kp

1 Input
2 Output

GENERAL INFORMATION

POWER P

$P_1 * \eta = P_2$
P_1 = Input power
P_2 = Output power
η = Transmission efficiency

VELOCITA' DI ROTAZIONE n

n_1 = Input speed
n_2 = Output speed

An output speed ≤ 1400 rpm is suggested so as to optimize the working condition and extend the service life.

TRANSMISSION RATIO i

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

TORQUE T

$$T_2 = \frac{9550 \cdot P_1 \cdot \eta}{n_2} \left[Nm\right] \qquad T_{2n} \geq T_2 \cdot f_s \left[Nm\right]$$

T_2 = Output torque
T_{2n} = Rated output torque
P_1 = Input power
η = Transmission efficiency
f_s = Service factor

2D and 3D drawings available on the web site ***www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

RADIAL LOADS F_R

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 = Radial load
T = Nm (Torque)
T.e.f. = Transmission element factor
T.e.f. = 1,15 gear
= 1,4 chain spocket
= 1,75 v-pulley
= 2,5 flat-pulley
D = Transmission element diameter

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 = Radial load on the centre line
a,b,x = see tables page 9-46-47-77-78

LUBRICATION

All, gearboxes and variators are supplied, CHA type excluded, complete with lubricant.
The gearboxes maintenance free are lubricated with synthetic oil the others with mineral oil.
It is very important to verify the mounting position because sometimes adding some oil is enough, in other case to lubricate bearings with special grease would be necessary. Use only recommended oils.
Warning in case of heavy work itis better to install, where possible, breather plug.

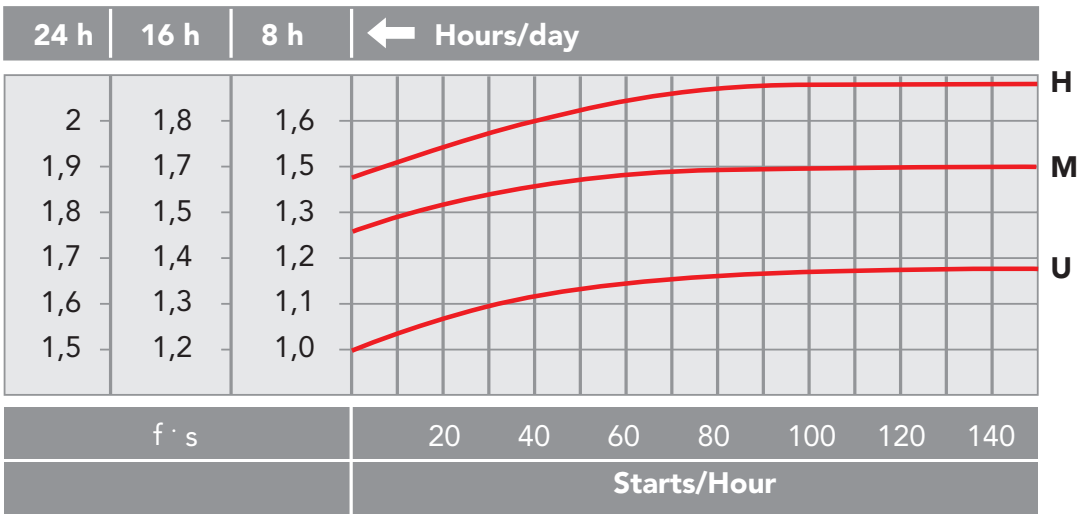
PAINTING

All the gearboxes and electrical motors are painted Grey RAL 9022 with epoxy resins powder.
Big gearboxes and motors are cast iron made, aluminium all the others.

SERVICE FACTOR Fs

The service factor mainly depends on three parameters:
- type to load: U - M - H
- run time: h/day
- start-up frequency: na/h

U = uniform
M = moderate
H = heavy
na/h = starts/hour



LOAD TYPE - APPLICATION

U Conveyor belts for light weights - centrifugal pumps - lifts - bottling machines

M Conveyor belts for heavy weights - packing machines - wood working machines - gear pumps

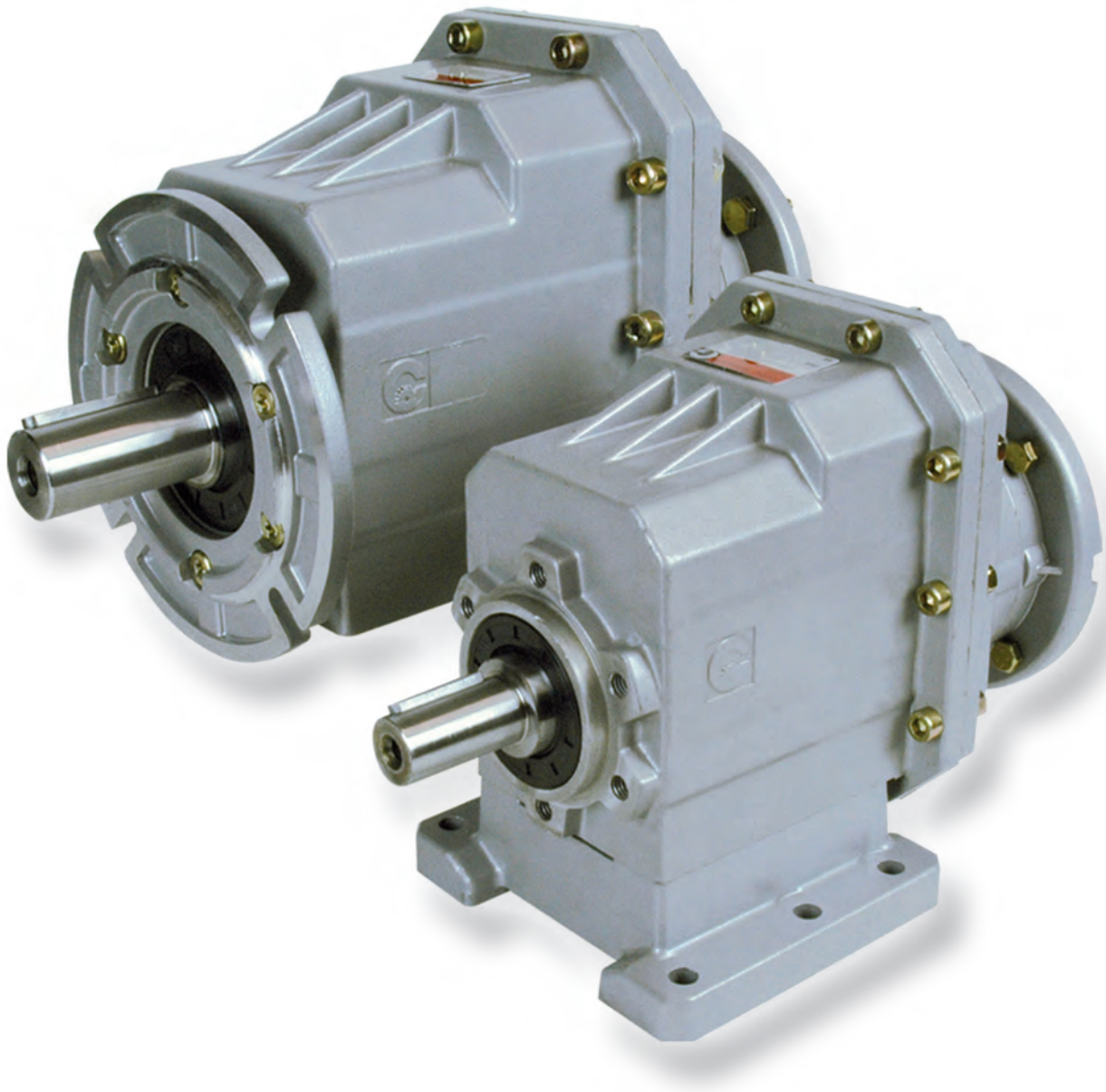
H Mixers - bucket elevators - tooling machines - machinery for bricks - vibrators

V6/B8 MOUNTING POSITION

When the worm gearboxes mounting position is V6 or B8, with continuous work or input speed >1400 p.p.m, it is necessary to call our technical service.

2D and 3D drawings available on the web site ***www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

CHIARAVALLI® GROUP SpA



CHC SERIES HELICAL GEAR UNITS

INTRODUCTION

CHC series helical gear units is a new generation product, which designed basing on the modular system.
It can be connected respectively with motors such as standard motor, brake motor, explosion-proof motor, IECmotor B5 - B14. This kind of product is widely used in drive fields such as textile, foodstuff, beverage, chemical industry, packaging and so on.

PRODUCT FEATURES

· Modularity
· High efficiency
· Low noise
· Universal mounting
· Aluminum housing, light in weight
· **Gears in carbonize hard, grinded**
· Lubricant maintenance free

CHC Series helical gear units are manufactured in 5 sizes (+ 1 on request). Power 0.12-4 Kw; Ratio 5-46.
Torque max 120-500 Nm. It can be connected (foot, flange) discretionary and use multi-mounting positions according to cutomers' requirements.

2D and 3D drawings available on the web site ***www.chiaravalli.com***
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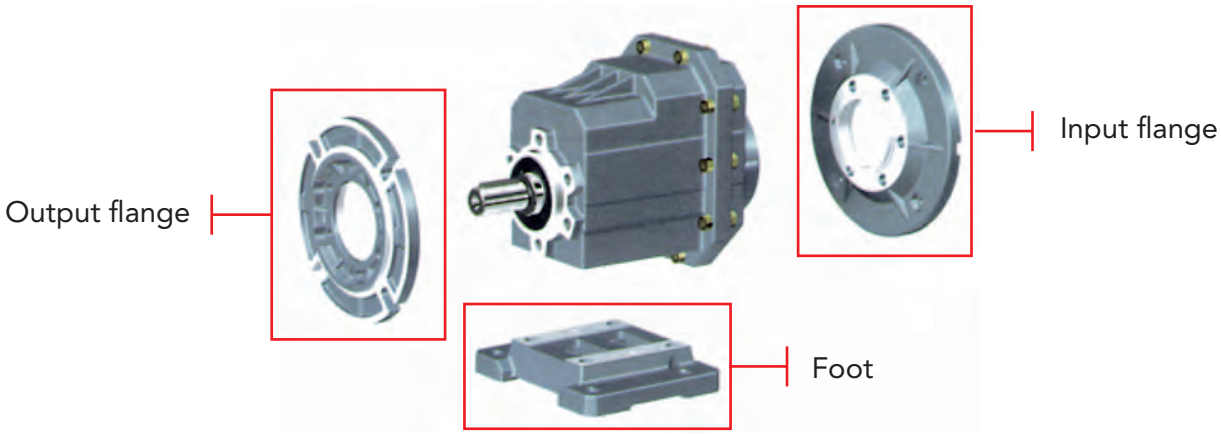
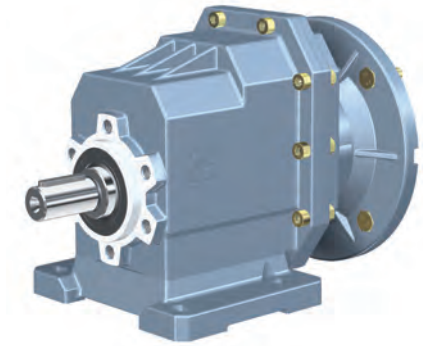
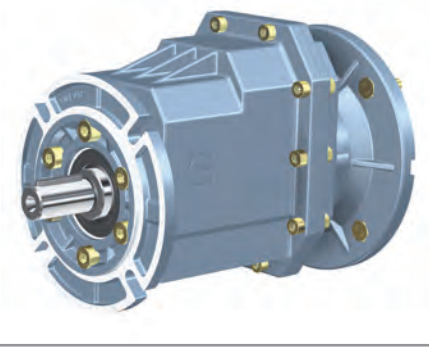
ASSEMBLING POSSIBILITY



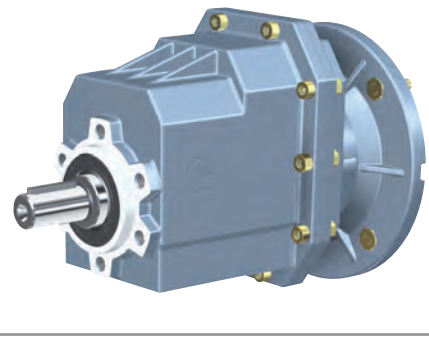
DESIGNATION



CHC...P



CHC...F



CHC...

ORDER EXAMPLE
CHC 25PB 28,9 80B5 B3

Type CHC
Size 16*-20-25-30-35-40
The number indicates the output shaft diameter
*CHC 16 on request

Version
P foot
F flange
no foot
no flange

Flange type 1 2 3

Foot type M / B / C

Ratio see catalogue
IEC Motor flange size
Version B5-B14
Mounting position
B3-B8-B6-B7
V5-V6-B5-V1-V3

If the motor is also required please specify

Size es. 71B4
Power es. Kw. 0,37
Poles es. 4
Voltage es. 230 / 400
Frequency es. 50 Hz.
Flange es. B5

POWER P

$P_1 * \eta = P_2$
P_1 = Input power
P_2 = Output power
η = Transmission efficiency

ROTATION SPEED n

n_1 = Input speed
n_2 = Output speed

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	POWER
1400	**Kw**
2000	**Kw * 1,35**
2800	**Kw * 1,8**

TRANSMISSION RATIO i

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

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 = Output torque
M_{2n} = Rated output torque
P_1 = Input power
η = Transmission efficiency
f_s = Service factor

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F_R = Radial load
T = Nm (Torque)
T.e.f. = Transmission element factor
T.e.f. = 1,15 gear
= 1,4 chain spocket
= 1,75 v-pulley
= 2,5 flat-pulley
D = Transmission element diameter

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

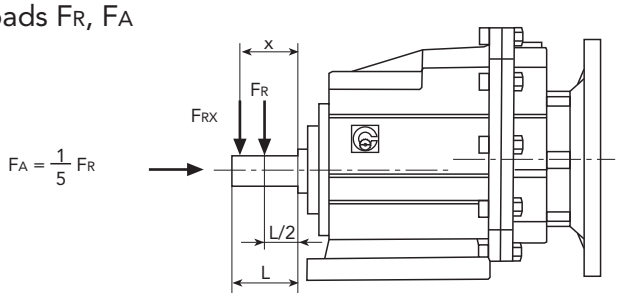
$$F_{Rx} \leq \frac{F_R \cdot a}{(b+x)} \left[N \right]$$

F_R = Radial load on the centre line
a,b,x = see table

CONSTANTS' VALUES

	CHC 16-20	CHC 25	CHC 30	CHC 35-40
a	103	116,5	130	147
b	83	91,5	100	112

Output shaft radial loads & axial loads F_R, F_A



n2 [min^{-1}]	10	40	60	80	100	120	150	180	250	400
CHC 16-20	2300	2300	2180	1980	1840	1630	1400	1320	1080	920
CHC 25	4800	4800	4370	3970	3680	3470	2710	2550	2150	1840
CHC 30	6300	6300	5550	5040	4510	3800	3530	3320	2800	2390
CHC 35-40	7500	7500	6590	5990	5230	4570	4240	3900	3350	2860

F_R [N]

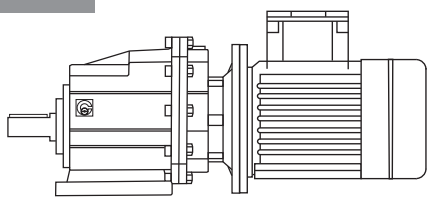
LUBRICATION

TYPES OF LUBRICATION

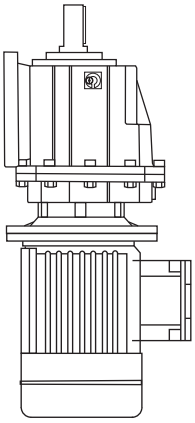
	°C -50 0 +50 +100	ISO	SHELL	MOBIL	BP	Lubrication type
CHC	-10 +40	VG 220	Shell Omala 220	Mobilgear 630	BP Energol GR-XP 220	Mineral Oil
	-20 +25	VG 150 VG 100	Shell Omala 100	Mobilgear 627	BP Energol GR-XP 100	
	-30 +10	VG 68-46 VG 32	Shell Tellus T 32	Mobil D.T.E. 13M		
	-40 -20	VG 22 VG 15	Shell Tellus T 15	Mobil D.T.E. 11M	BP Energol HLP-HM 15	
	-40 +40	VG 150	Shell Omala HD 150	Mobil SHC 629		Syntetic oil
	-40 +80	VG 220	Shell Omala HD 220	Mobil SHC 630		
	-25 +50	VG 320	Shell Tivela S 320			

MOUNTING POSITION AND TERMINAL BOX ORIENTATION

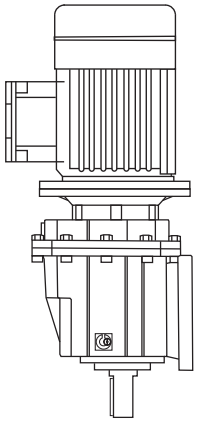
B3



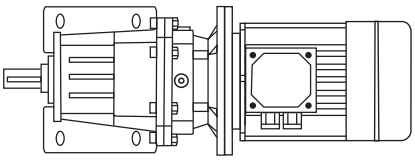
V6



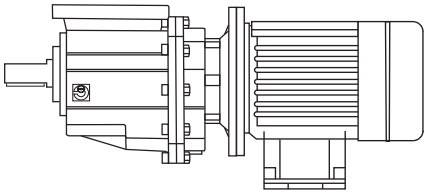
V5



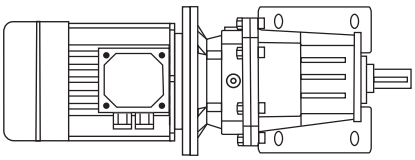
B6



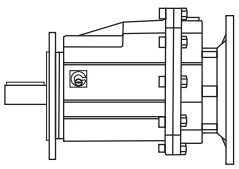
B8



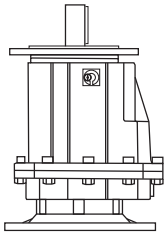
B7



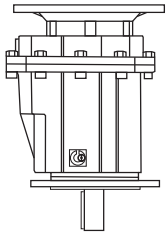
B5

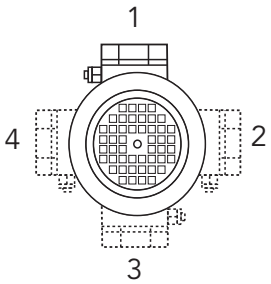


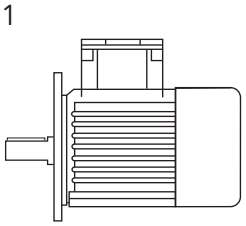
V3



V1







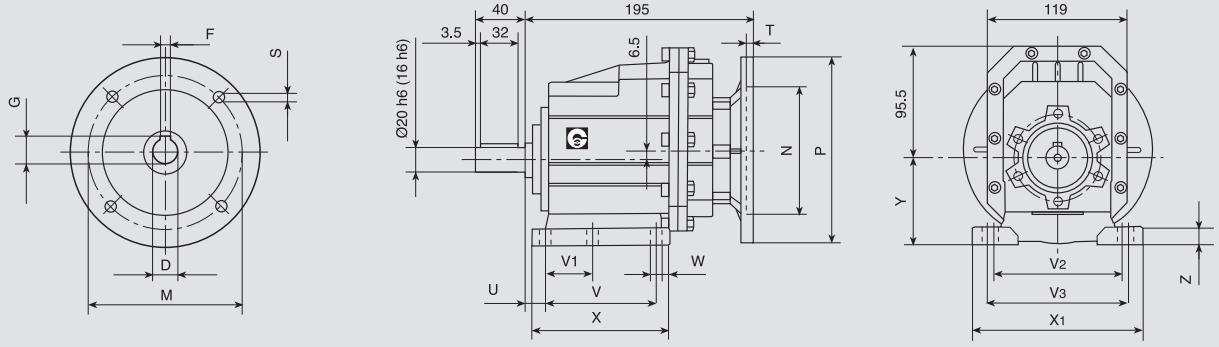
Normal position

Size	Fill quantity in litres			
	B3/B8	V6/V3	V5/V1	B6/B7
CHC 16/20	0,4	0,6	0,3	0,3
CHC 25	0,5	0,7	0,4	0,4
CHC 30	0,8	1,1	0,6	0,6
CHC 35/40	1,2	1,6	1,0	0,9

The CHC gearboxes are supplied with Shell Tivela S 320 oil for STANDARD position, when mounted in V6/V3 it is necessary to add the correct quantity of oil.

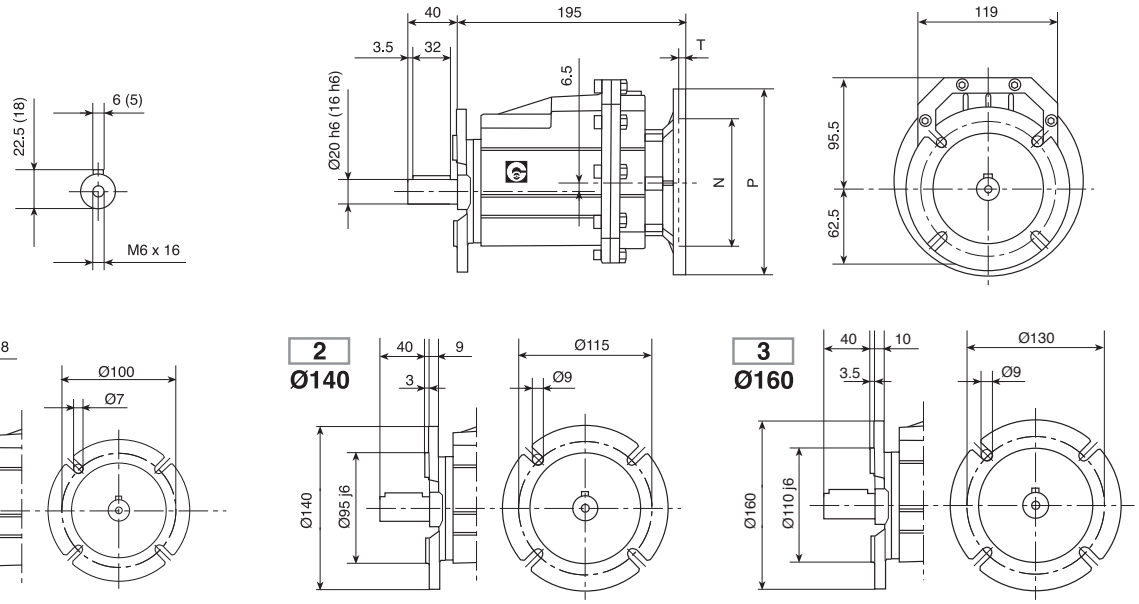
CHC 20 (CHC16) P (IEC)

INPUT

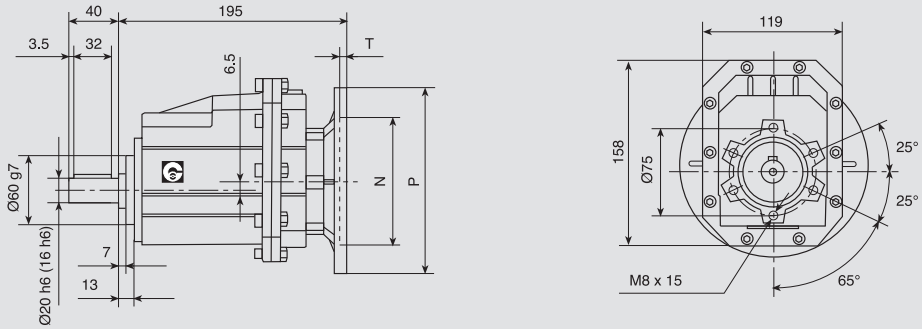


CHC 20 (CHC16) F (IEC)

OUTPUT



CHC 20 (CHC16) (IEC)



(CHC16) On request

kg. 4,7

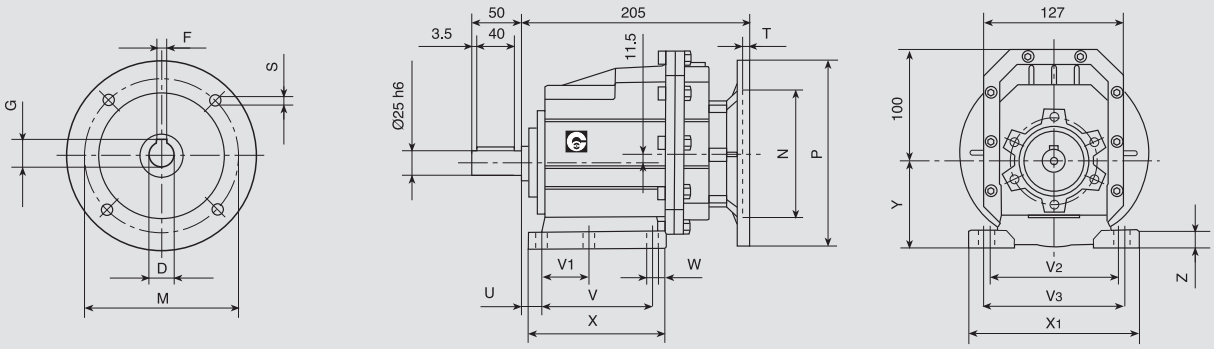
IEC	D	F	G	P	M	N	S	T
63B5	11	4	12.8	140	115	95	9	5
71B5	14	5	16.3	160	130	110	9	5
71B14	14	5	16.3	105	85	70	7	5
80B5	19	6	21.8	200	165	130	11	5
80B14	19	6	21.8	120	100	80	7	5

Foot cod.	U	V	V_1	V_2	V_3	W	X	X_1	Y	Z
B	18	87	50	110	-	9	118	130	85	15
M	18	80	-	110	120	9	118	145	75	15

2D and 3D drawings available on the web site ***www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

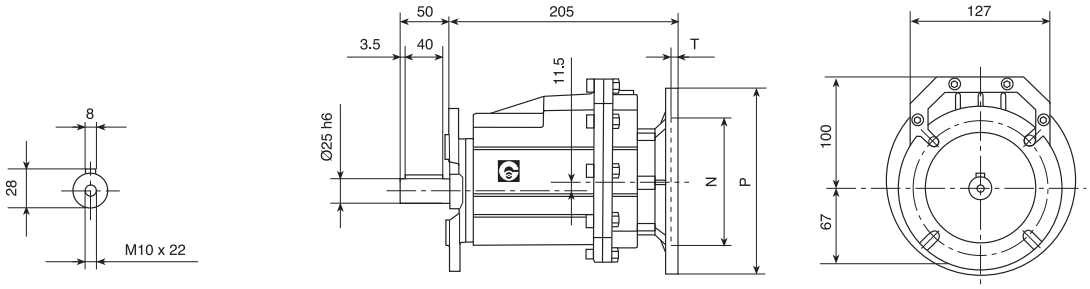
CHC 25 P (IEC)

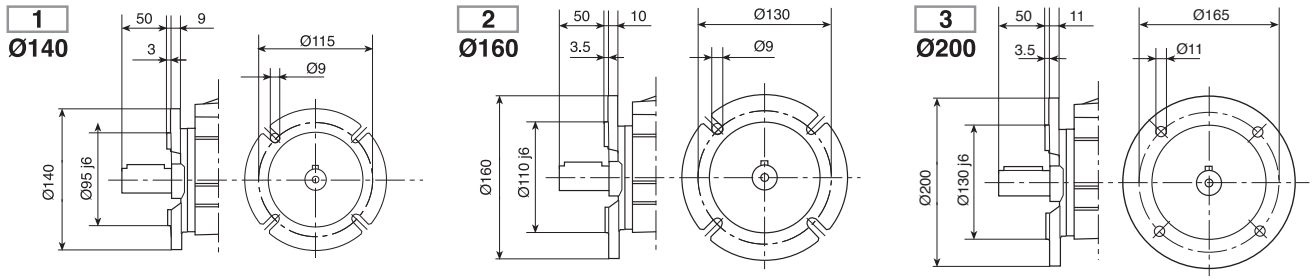
INPUT



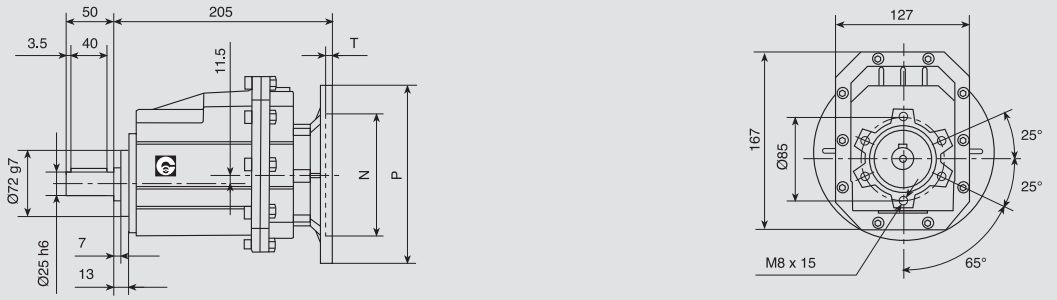
CHC 25 F (IEC)

OUTPUT





CHC 25 (IEC)



kg. 5,8

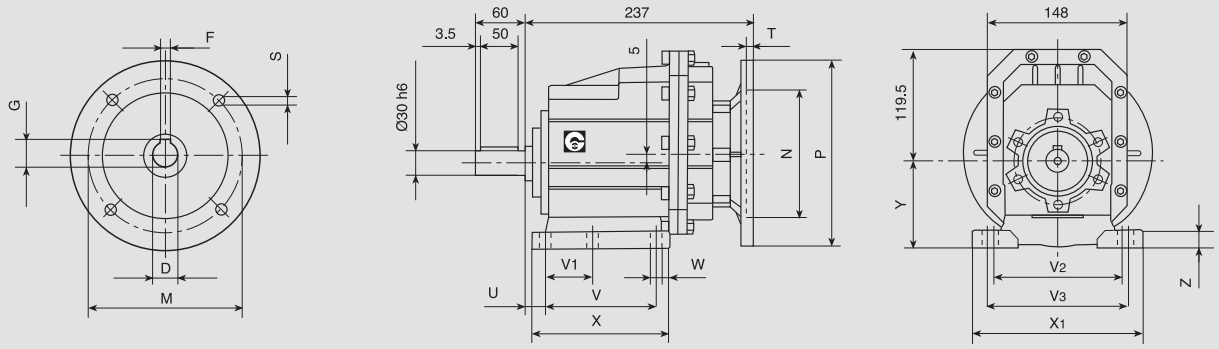
Foot cod.	U	V	V_1	V_2	V_3	W	X	X_1	Y	Z
B	18	107.5	60	-	130	11	136	155	100	17
M	25	85	-	110	120	9	112	145	80	15

IEC	D	F	G	P	M	N	S	T
71B5	14	5	16.3	160	130	110	9	5
71B14	14	5	16.3	105	85	70	7	5
80B5	19	6	21.8	200	165	130	11	5
80B14	19	6	21.8	120	100	80	7	5
90B5	24	8	27.3	200	165	130	11	5
90B14	24	8	27.3	140	115	95	9	5

*2D and 3D drawings available on the web site **www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

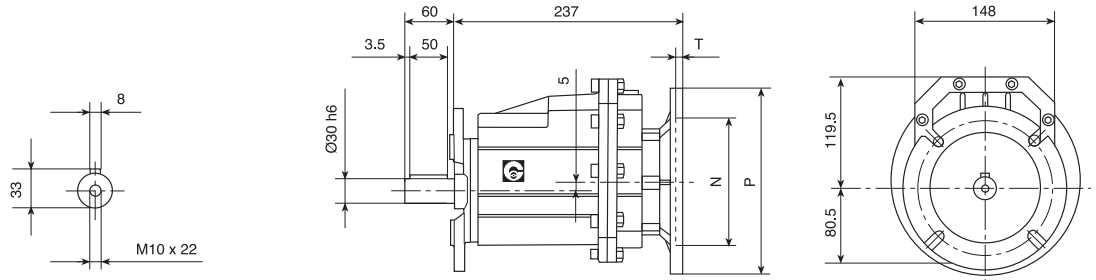
CHC 30 P (IEC)

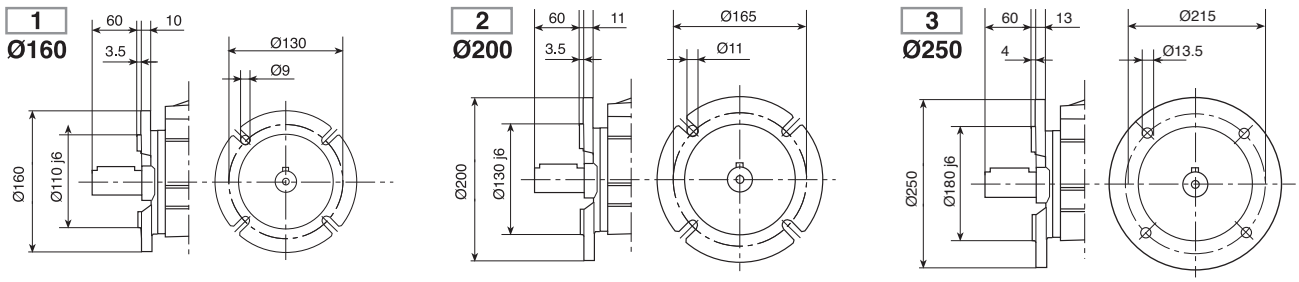
INPUT



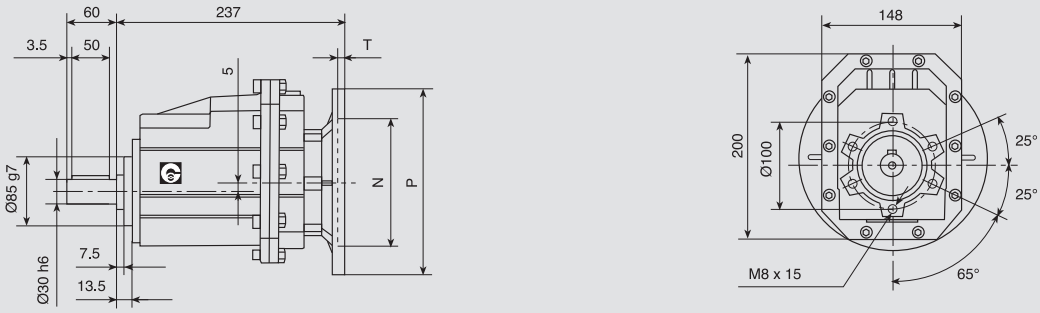
CHC 30 F (IEC)

OUTPUT





CHC 30 (IEC)



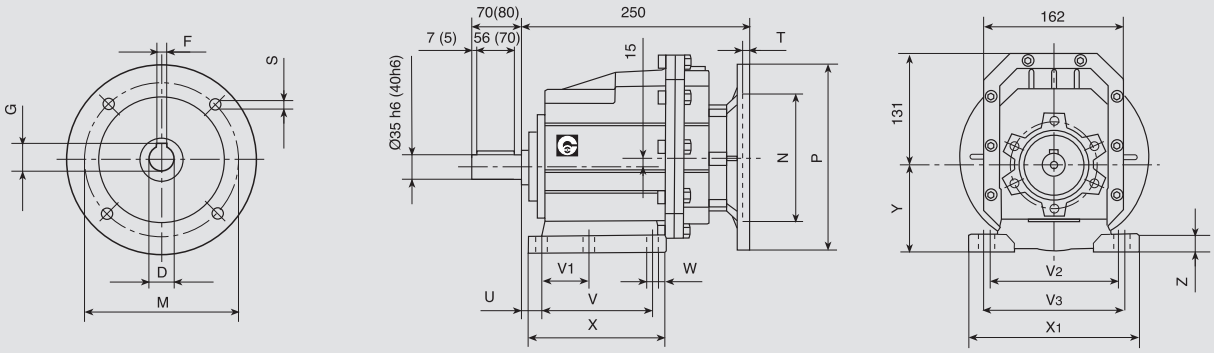
kg. 9,2

IEC	D	F	G	P	M	N	S	T
80B5	19	6	21.8	200	165	130	11	5
80B14	19	6	21.8	120	100	80	7	5
90B5	24	8	27.3	200	165	130	11	5
90B14	24	8	27.3	140	115	95	9	5
100/112B5	28	8	31.3	250	215	180	13.5	5
100/112B14	28	8	31.3	160	130	110	9	5

Foot cod.	U	V	V_1	V_2	V_3	W	X	X_1	Y	Z
B	18	130	70	-	160	11	156	190	110	20
M	30	100	-	135	150	11	150	190	110	18

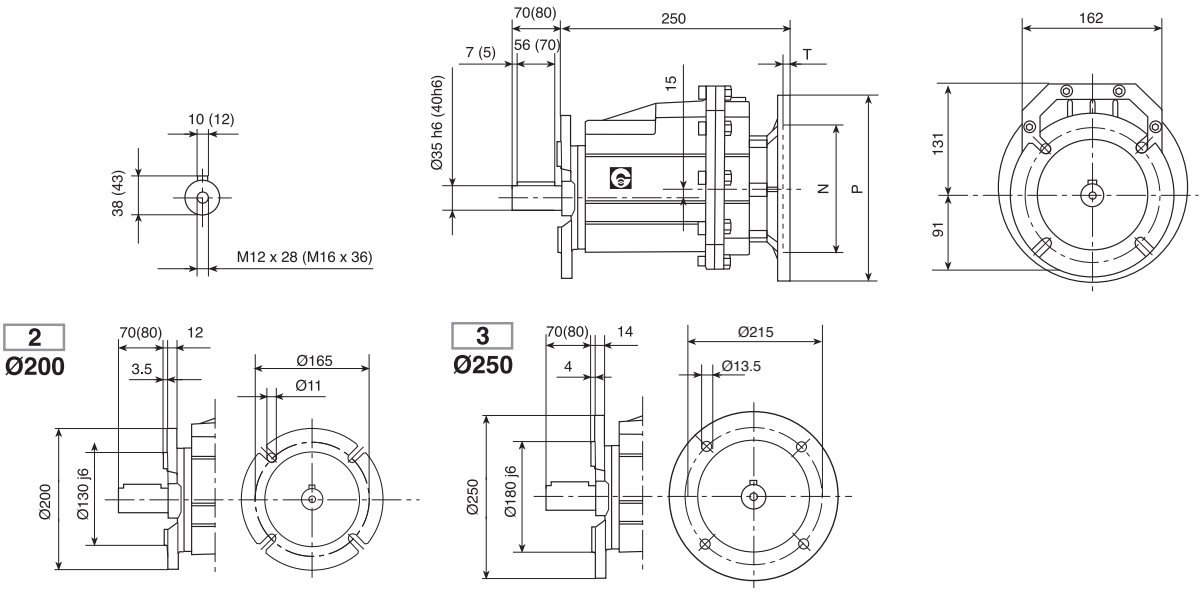
CHC 35 - CHC 40 P (IEC)

INPUT

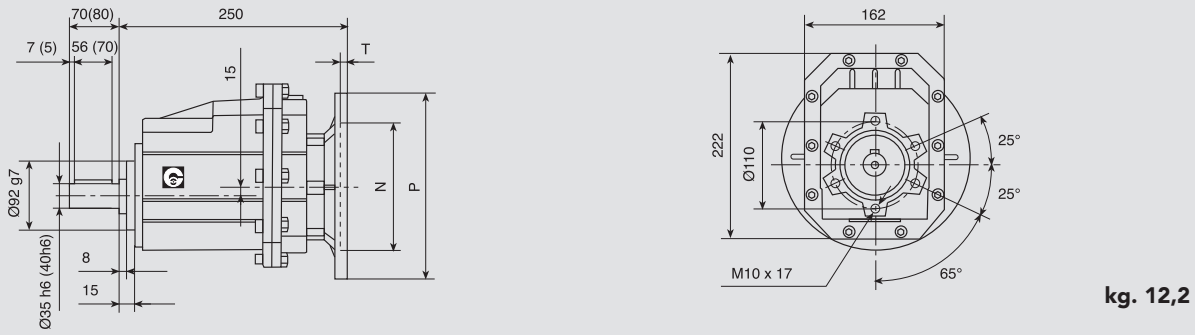


CHC 35 - CHC 40 F (IEC)

OUTPUT



CHC 35 - CHC 40 (IEC)



kg. 12,2

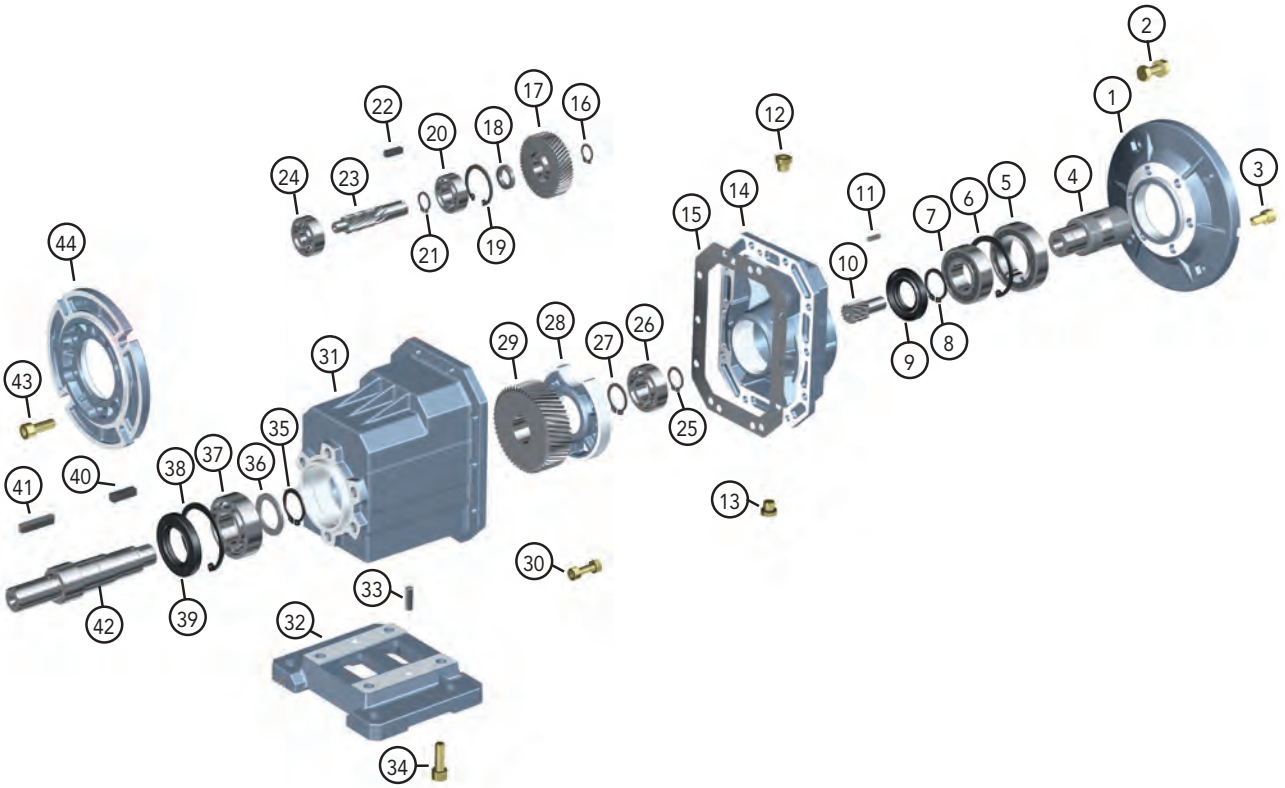
Foot cod.	U	V	V1	V2	V3	W	X	X1	Y	Z
B	23.5	130	-	170	-	14	168	205	115	20
C	19.5	149.5	-	180	-	14	185	215	130	20
M	35	110	-	170	185	14	150	230	120	20

(...) Between brackets CHC 40 dimension

IEC	D	F	G	P	M	N	S	T
80B5	19	6	21.8	200	165	130	11	5
80B14	19	6	21.8	120	100	80	7	5
90B5	24	8	27.3	200	165	130	11	5
90B14	24	8	27.3	140	115	95	9	5
100/112B5	28	8	31.3	250	215	180	13.5	5
100/112B14	28	8	31.3	160	130	110	9	5

*2D and 3D drawings available on the web site **www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

EXPLODED DRAWING AND SPARE PARTS LIST



1	MOTOR CONNECTION FLANGE	23	SECOND REDUCTION PINION
2	SCREW WITH NUT	24	BEARING
3	HEXAGONAL-HEAD SCREW	25	SEEGER
4	HOLE INPUT SHAFT	26	BEARING
5	BEARING	27	SEEGER
6	SEEGER	28	INTERNAL SUPPORT
7	BEARING	29	SECOND REDUCTION GEAR
8	SEEGER	30	SCREW WITH NUT
9	OIL SEAL	31	HOUSING
10	FIRST REDUCTION PINION	32	FOOT KIT
11	KEY	33	DOWEL PIN
12	OIL PLUG	34	HEXAGONAL-HEAD SCREW
13	OIL PLUG	35	SEEGER
14	COVER	36	SPACER
15	GASKET	37	BEARING
16	SEEGER	38	SEEGER
17	FIRST REDUCTION GEAR	39	OIL SEAL
18	SPACER	40	KEY
19	SEEGER	41	KEY
20	BEARING	42	OUTPUT SHAFT
21	SEEGER	43	HEXAGONAL-HEAD SCREW
22	KEY	44	OUTPUT FLANGE

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 permanent synthetic oil and therefore do not require any maintenance.

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.

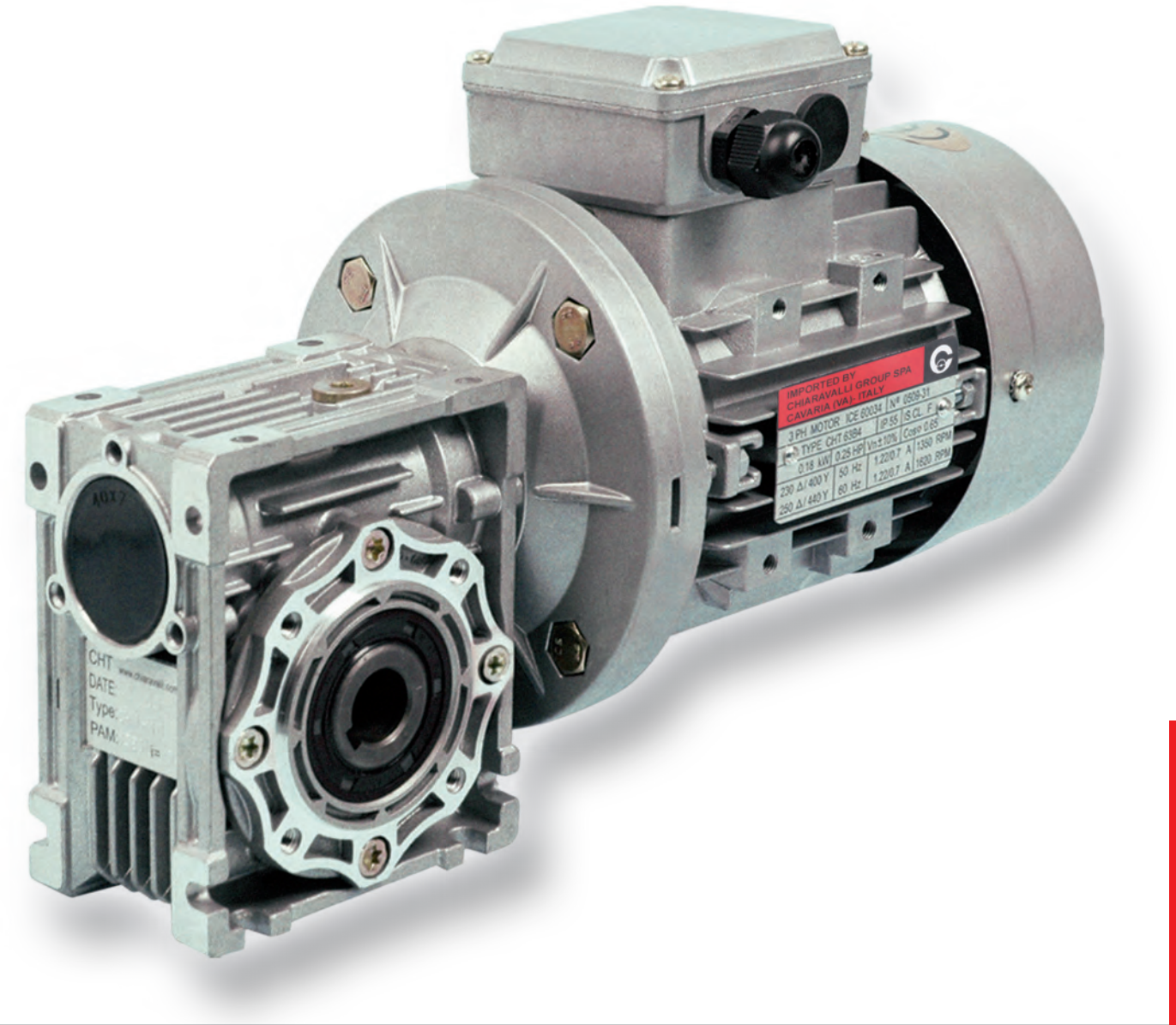
DISPOSAL OF PACKAGING

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

2D and 3D drawings available on the web site ***www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

CHC - USE AND MAINTENANCE INSTRUCTIONS

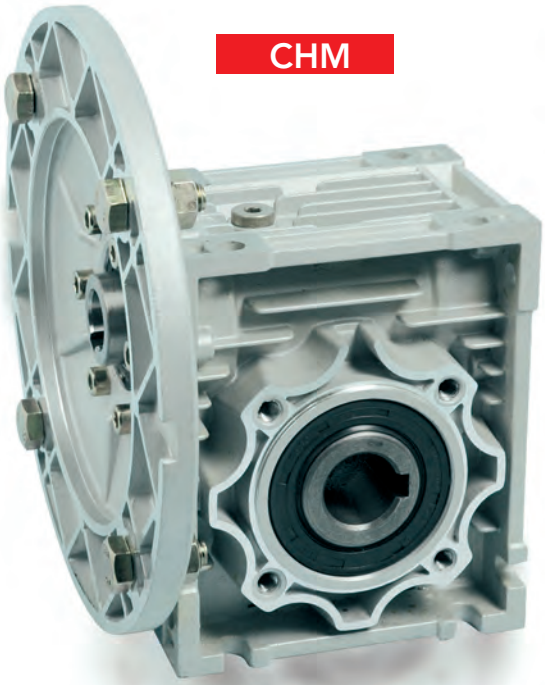
CHIARAVALLI GROUP SpA



CHM WORM GEARED MOTORS AND WORM GEAR UNITS

CHME

CHM



CHMRE

CHMR

CHM - WORM GEARED MOTORS AND WORM GEAR UNITS

INTRODUCTION

The worm gears made by Chiaravalli Group S.p.A. are square and are considerably versatile for mounting. The machining of the components, carried out using numeric control machines, guarantees maximum precision for the restricted tolerances, producing a product that will remain reliable over time.
The groups are constructed with aluminium casings from sizes 025 to 090, while the sizes 110, 130 and 150 are made from cast iron.
All of the bodies are painted with RAL 9022 aluminium colour to protect the parts from aging and to give better protection against microblowholes that may be present in the aluminium.
The gears are supplied with at least one filling plug that is also used during testing to check for possible leaks.
A connection flange allows two gears to be combined in order to obtain high gear ratios.
Four sizes of CHPC pre-stage gears are available to pair with the gears; these are also constructed in aluminium and are painted like the worm gears.
All of the groups are supplied with a lubricant whose characteristics are described in the following table.

LUBRICATION

	CHM 025/090	CHM 110/150			CHPC
Lubricant	Synthetic	Mineral	Mineral	Mineral	Synthetic
°C ambient	-25°C/+50°C	-25°C/+50°C	-5°C/+40°C	-15°C/+25°C	-25°C/+50°C
ISO	VG320	VG320	VG460	VG220	VG320
AGIP	TELIUM VSF 320	BLASIA 320	BLASIA 460	BLASIA 220	TELIUM VSF 320
SHELL	TIVELA OIL S 320	OMALA OIL 320	OMALA OIL 460	OMALA OIL 220	TIVELA OIL SC 320
IP	TELIUM VSF	MELLANA OIL 320	MELLANA OIL 460	MELLANA OIL 220	TELIUM VSF

LUBRICATION

The size 025 to 090 gears are supplied complete with synthetic oil and therefore do not require any maintenance.
The size 110, 130 and 150 gears are supplied with the quantity of mineral oil foreseen for the B3 assembly position. It is the client's responsibility to adapt the quantity of oil to the assembly position and in addition, to substitute the filling plug, supplied closed for transport reasons, with the one equipped with a hole attached to the gear.
If the breather plug is not installed it may create internal pressure with a consequent leakage of oil from the oil seals.
For the sizes 110, 130 and 150 we recommend that the oil is changed after the running in period, approx. 300 working hours.

*2D and 3D drawings available on the web site **www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

QUANTITY OF OIL IN LITRES

CHM	025	030	040	050	063	075	090	110	130	150	CHPC	63	71	80	90
B3	0.02	0.04	0.08	0.15	0.30	0.55	1	3	4.5	7		0.05	0.07	0.15	0.16
B8	0.02	0.04	0.08	0.15	0.30	0.55	1	1.4	1.7	5.1		0.05	0.07	0.15	0.16
B6/B7	0.02	0.04	0.08	0.15	0.30	0.55	1	2.2	3.3	5.4		0.05	0.07	0.15	0.16
V5	0.02	0.04	0.08	0.15	0.30	0.55	1	3	4.5	7		0.05	0.07	0.15	0.16
V6	0.02	0.04	0.08	0.15	0.30	0.55	1	2.2	3.3	5.1		0.05	0.07	0.15	0.16

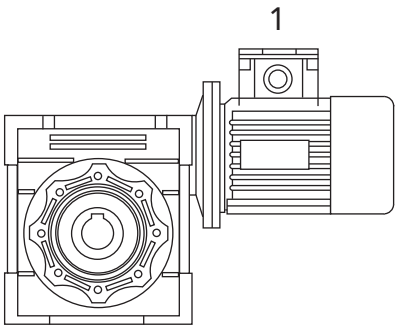
MOTOR MOUNTING FLANGES

Gears that are supplied with mounting flanges must be assembled with motors whose shaft and flange tolerances correspond to a "normal class" of quality in order to avoid vibration and forcing of the input bearing. Motors supplied by Chiaravalli Group S.p.A. guarantee that this requirement is fulfilled.
For ease of consultation, the correspondence of the size of the B5 and B14 motor with the sizes of the shaft and the motor connection flange are shown in the following table.
Remember that, as the motor connection flanges are separate from the body it is also possible to have a shaft / flange combination that does not correspond to the table, e.g. 19/140, thereby offering adaptability for other non-unified models such as the brushless or direct current types.

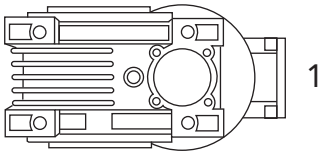
MMF	056	063	071	080	090	100	112	132
B5	9/120	11/140	14/160	19/200	24/200	28/250	28/250	38/300
B14	9/80	11/90	14/105	19/120	24/140	28/160	28/160	38/200

2D and 3D drawings available on the web site ***www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

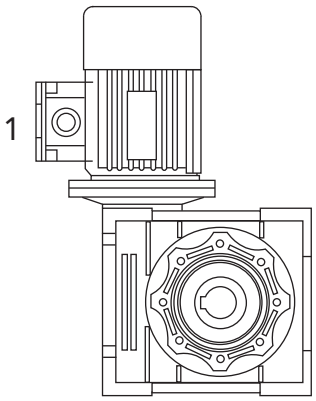
B3



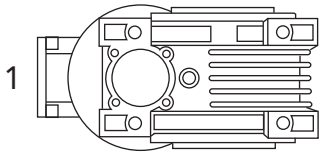
B6



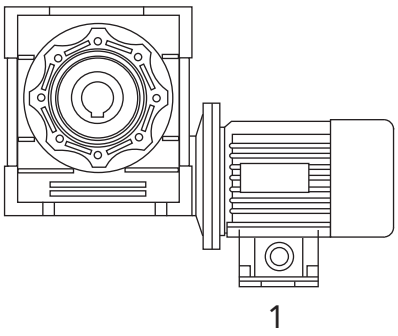
V5



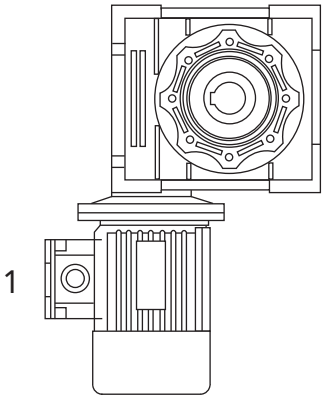
B7



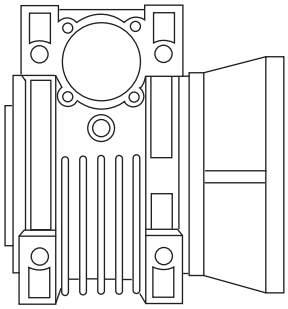
B8



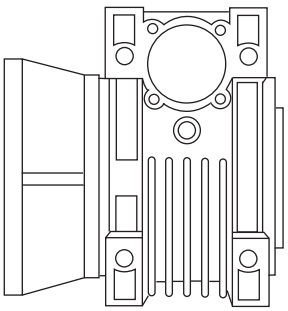
V6



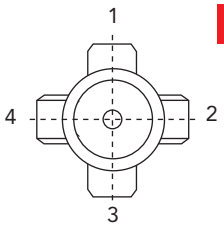
F...1

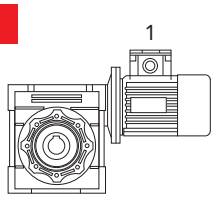


F...2



B3

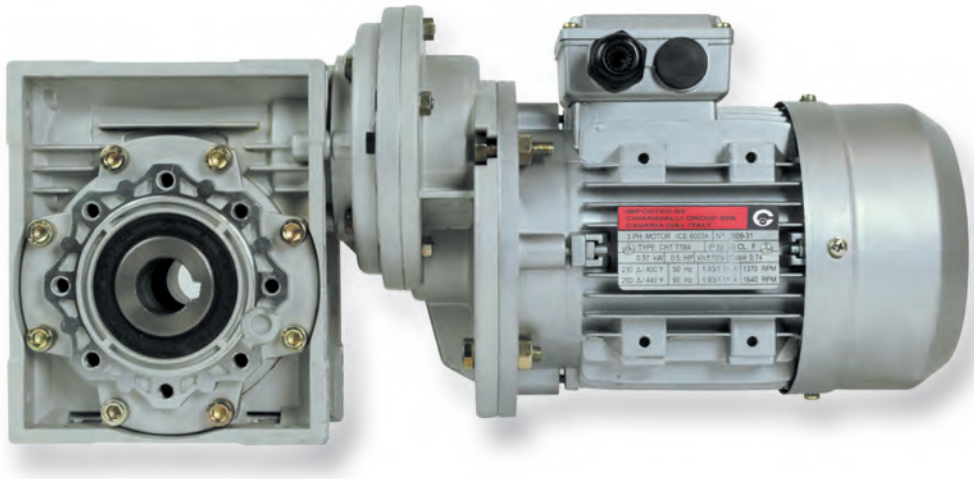




TERMINAL BOX POSITION

N.B. The position of the terminal box always refers to the B3 position.

CHPC/CHM - WORM GEAR WITH PRE-STAGE MODULE



DESIGNATION CHPC/CHM - CHME

TYPE	SIZE	i =	M.M.F.	MOUNT. POS
CHPC	63	3	63B5	If supplied coupled with CHM or CHME types specify
	71	3	71B5	the position of these, when the pre-stage module
	80	3	80B5	is supplied by itself it is prepared for
	90	2.45	90B5	universal assembly.

ORDER EXAMPLE FOR A CHPC COUPLED TO A CHM OR CHME GEAR

CHPC	**90**	**CHM**	**110**	**i=245 (2.45x100)**	**M.M.F.**	**90B5**	**POS. B3**

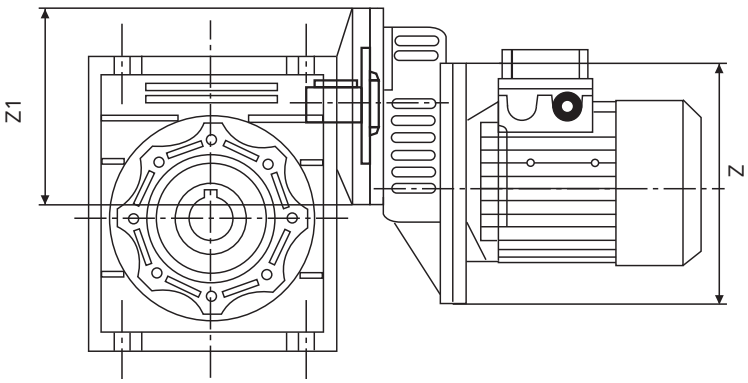
If the motor is also required, please specify:

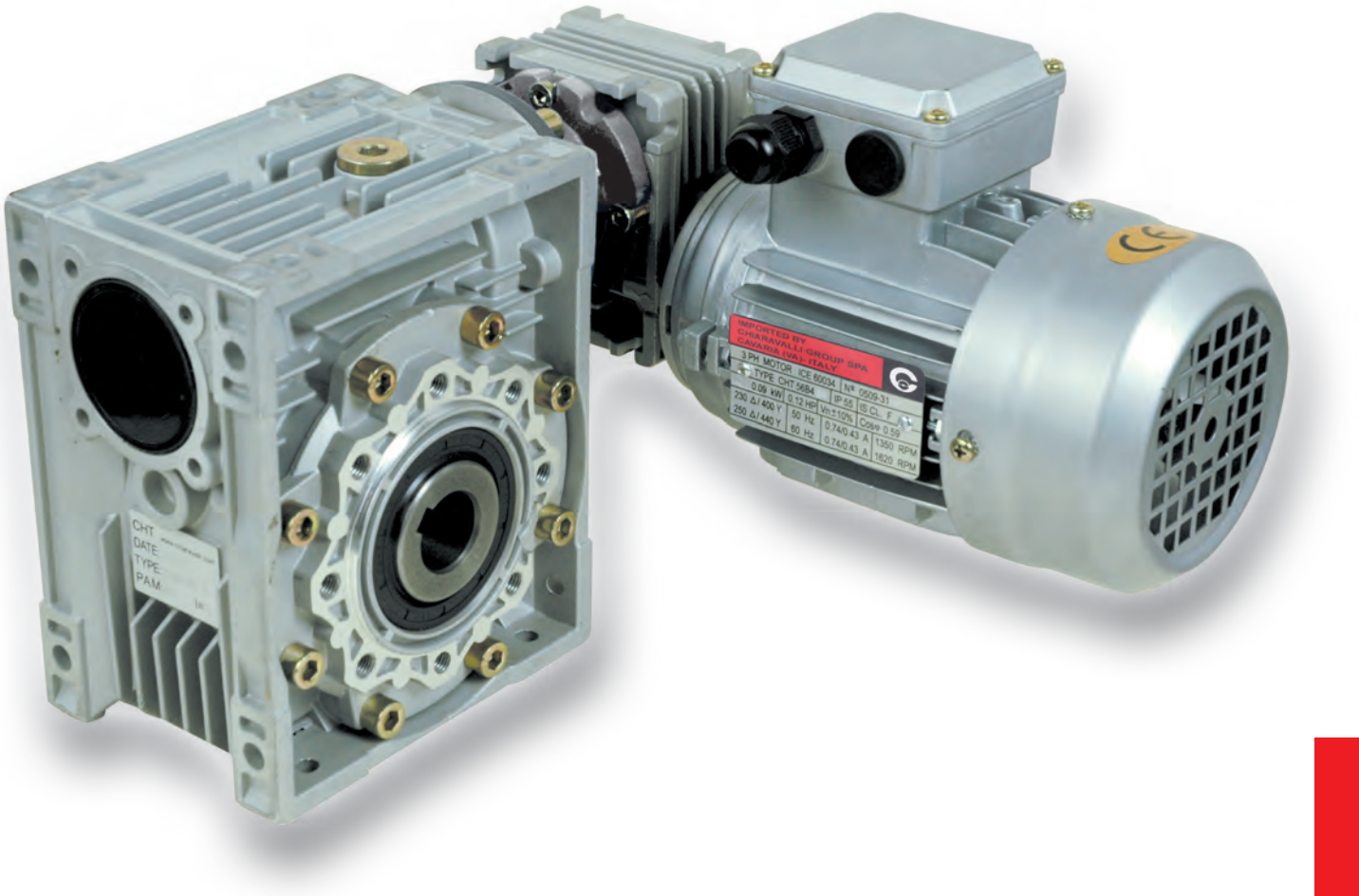
Size	es. 90 L4
Power	es. Kw 1.5
Poles	es. 4
Voltage	es. V230/400
Frequency	es. 50 Hz
Flange	es. B5

N.B. From size 25 to 63 the gears are always supplied in the Universal position and can therefore be mounted in any position, from size 75 to size 130 if the position required differs from B3 it must be specified.
In particular, in the event that a gear in position B3 is to be mounted in positions V5 or V6, the bearing positioned in the upper side must be lubricated using suitable grease that ensures proper lubrication.
We have tested Tecnolubeseal POLYMER 400/2 grease.

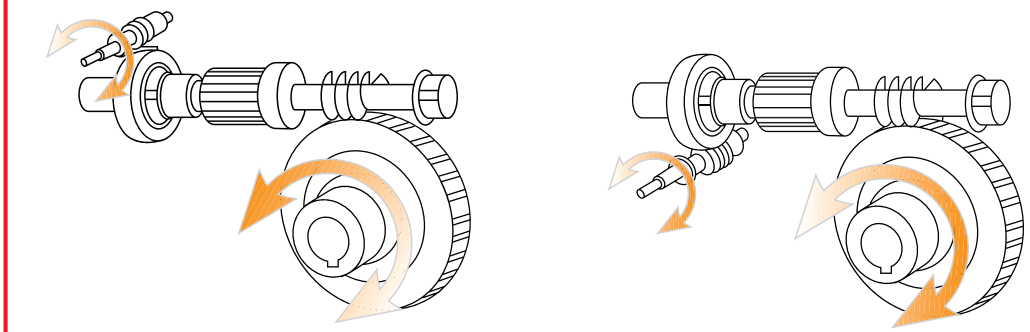
	Z	Z1
CHPC 63	11/140	11/105
CHPC 71	14/160	14/120
CHPC 80	19/200	19/160
CHPC 90	24/200	24/160

ATTENZIONE: The gearbox connected with the pre-stage must have input dimension Z1



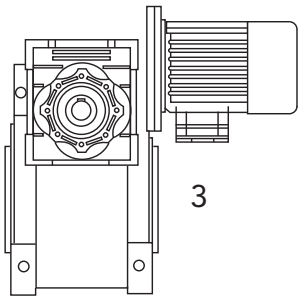


DIRECTION OF ROTATION

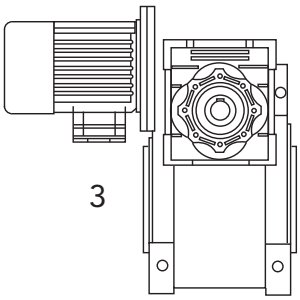


EXECUTION

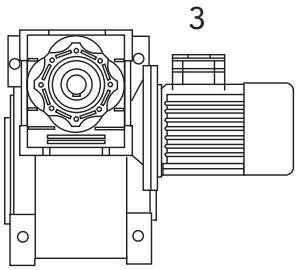
OAD



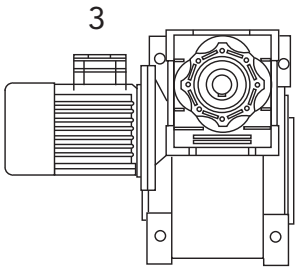
OAS



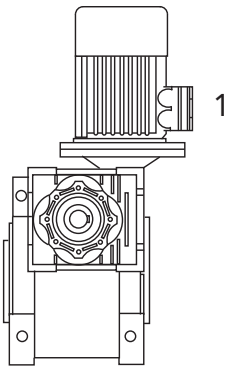
OBD



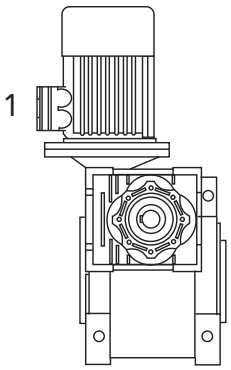
OBS



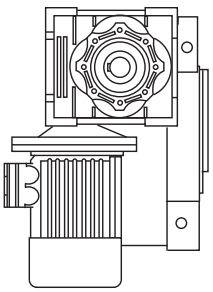
VAD



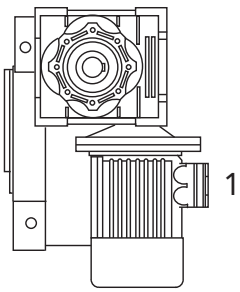
VAS



VBS

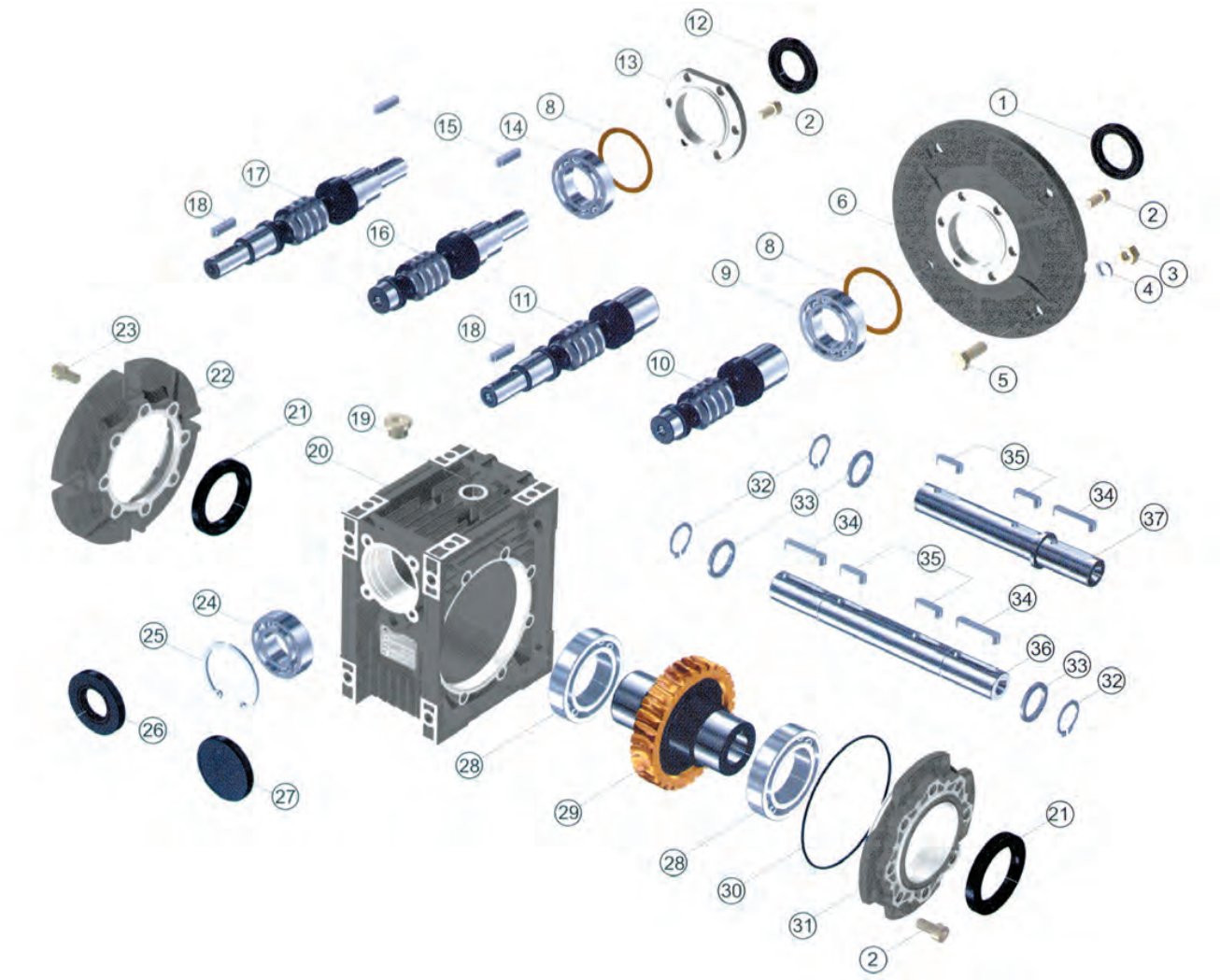


VBD



The execution determines the mounting position of the first gear in relation to the second gear. If not otherwise specified at the time of order, the group will be supplied in the OBS execution. The placing position refers to the second gear.

EXPLODED DRAWING AND SPARE PARTS LIST



1	OIL SEAL	20	CASING
2	TORX SCREW	21	OIL SEAL
3	NUT	22	OUTPUT FLANGE
4	WASHER	23	EMBEDDED HEXAGONAL-HEAD SCREW
5	HEXAGONAL-HEAD SCREW	24	BEARING
6	MOTOR CONNECTION FLANGE	25	SEEGER
8	ADJUST SPACER	26	OIL SEAL
9	BEARING	27	CAP
10	HOLE INPUT WORM	28	BEARING
11	HOLE INPUT AND SHAFT OUTPUT WORM	29	WORM WHEEL
12	OIL SEAL	30	O-RING
13	INPUT COVER	31	OUTPUT COVER
14	BEARING	32	SEEGER
15	KEY	33	SPACER
16	SHAFT INPUT WORM	34	KEY
17	DOUBLE EXTENDED INPUT SHAFT WORM	35	KEY
18	KEY	36	DOUBLE OUTPUT SHAFT
19	OIL PLUG	37	SINGLE OUTPUT SHAFT

2D and 3D drawings available on the web site ***www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

INSTALLATION

· The data shown on the identification name plate must correspond to the gear ordered.
· The oil level, for the sizes 110 and 130 equipped with filling, draining and level plug, must correspond to the quantity foreseen for the assembly position requested (see catalogue), in addition, always for the sizes indicated, it will be the client's responsibility to substitute the blind plug, supplied for transport, with the corresponding plug equipped with a bleed hole included in the supply with the gear.
· All of the other gears are supplied complete with permanent synthetic oil in a quantity that is sufficient for any assembly position.
· The gear must be fixed on a flat surface that is sufficiently rigid in order to avoid any vibration.
· The gear and the axis of the machine to be driven must be perfectly aligned.
· 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.
· All of the gears are painted RAL 9022 grey.

OPERATION AND RUNNING-IN

· To obtain the best performance the gears must first be runin 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 worm gears from size 25 to size 90 and the pre-stage modules are lubricated with permanent synthetic oil and therefore do not require any maintenance.
· The gears size 110 and 130 are lubricated with mineral oil and are equipped with a breather plug, therefore the oil level must be checked periodically and if necessary topped up with the same oil or one that is compatible with those indicated in our catalogue.
· For the gears size 110 and 130 proceed with the substitution of the oil after the first 300 working hours, replacing it with the correct quantity in accordance with the assembly position, as detailed in our catalogue, after the inside of the gear has been thoroughly washed.

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.

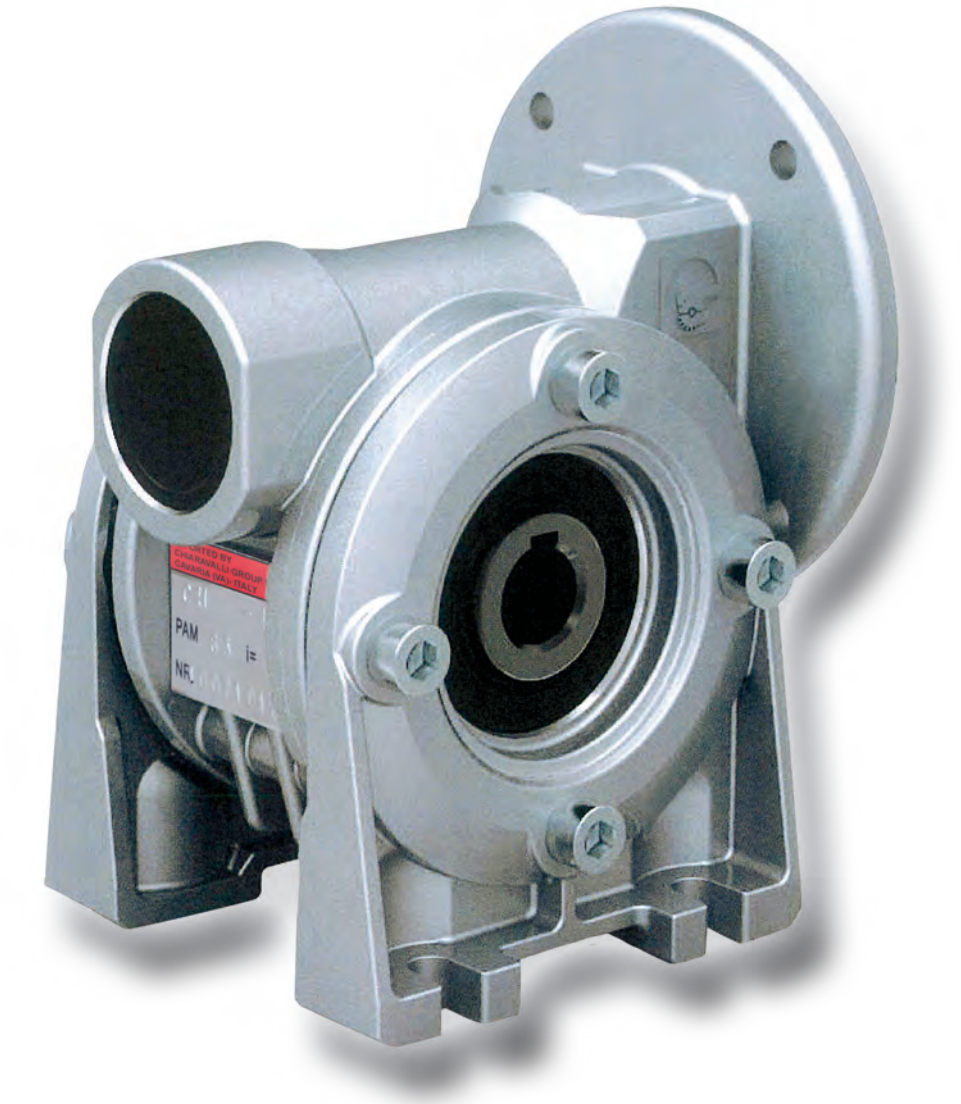
HANDLING

· 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.

CHIARAVALLI® GROUP SpA



CH WORM GEARED MOTORS AND WORM GEAR UNITS

INTRODUCTION

The new CH worm gearboxes of Chiaravalli Group S.p.A. have been produced to satisfy the market that require a product in dimensions and construction without changing the existing drawings and to guarantee non stop of their spare parts.
Chiaravalli Group S.p.A. designed this new product by improving and introducing better technical modifications to offer easier application of the groups to the different assembling configurations so that by offering a better service in flexibility and delivery time.
Starting from these considerations, we have a gearbox with a motor mounting flange that is separable from the housing which incorporate the oil seal; in this way we avoid any risk of damaging the oil seal in case of replacement of the input flange and the O-Ring can be eliminated.
All the aside covers, swinging and with feet, have O-Rings instead of traditional flat gaskets.
The sizes 03-04-05 allow the rotation of the feet without disassembling them; furthermore the versions with swinging aside covers allow the lateral flanges to be fitted on both sides with simple fixing screws.
The worm screw has a ZI involute profile: with this worm-wheel coupling we shall get a better performance with a temperature reduction.
The gearboxes and motors are painted with RAL 9022 aluminium colour epoxy powder to protect the parts from oxidation and against micro-blowholes that can come during the pressure of die-castings.
The CHPC pre-stage gears (already present in the catalogue of CHM) can also be mounted with this range, obtaining a gear ratio up to 1:300.
For bigger reductions is possible to have two gears together using an appropriate kit.

LUBRICATION

All of the groups are supplied with a synthetic lubricant maintenance free and can be mounted in any position. The types of lubricants
are described in the table here below.

Lubricant	Ambient	ISO	AGIP	SHELL	IP
°C ambient	-25°C/+50°C	VG 320	Telium VSF 320	Tivela oil S 320	Telium VSF

*2D and 3D drawings available on the web site **www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

QUANTITY OF OIL IN LITRES

CH	03	04	05	06	07	08
	0.040	0.060	0.10	0.38	0.52	0.73

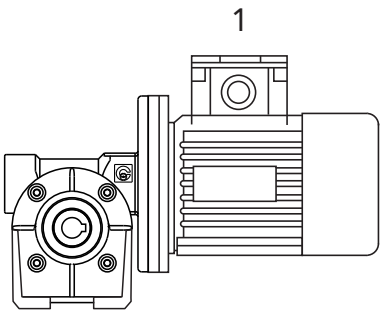
MOTOR MOUNTING FLANGES

Gears supplied with mounting flanges must be assembled with motors whose shaft and flange tolerances correspond to a "normal" class of quality in order to avoid vibration and forcing of the input bearing. Motors supplied by Chiaravalli Group S.p.A. guarantee this requirement fulfilled.
For ease of consultation, the correspondence of the size of the B5 and B14 motor with the sizes of the shaft and the motor connection flange are shown in the following table.
Remember that, as the motor connection flanges are separate from the body it is also possible to have a shaft / flange combination that does not correspond to the table, e.g. 19/140, thereby offering adaptability for other non-unified models such as the brushless or direct current types.

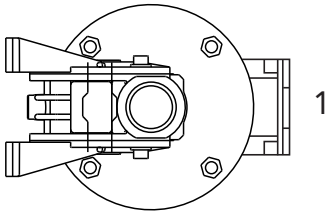
MMF	056	063	071	080	090	100	112
B5	9/120	11/140	14/160	19/200	24/200	28/250	28/250
B14	9/80	11/90	14/105	19/120	24/140	28/160	28/160

NEW MODEL

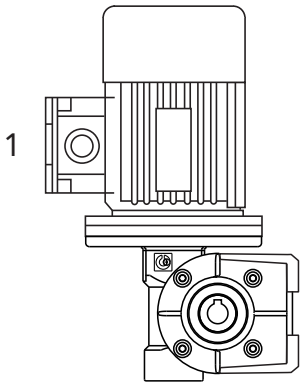
B3



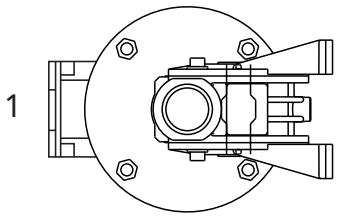
B6



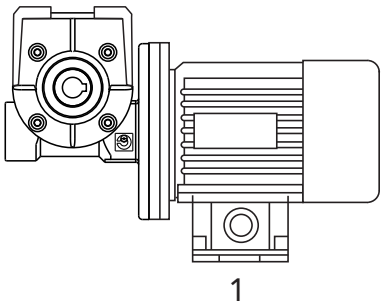
V5



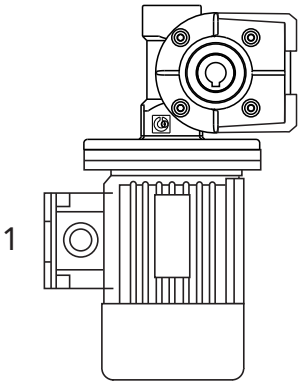
B7



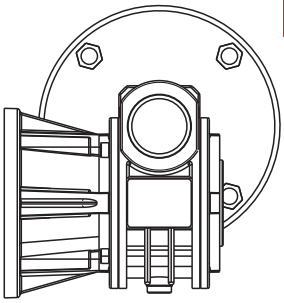
B8



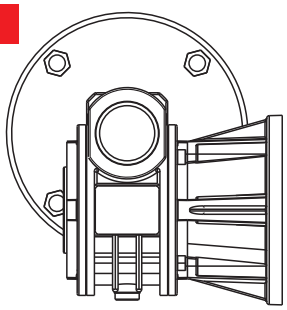
V6

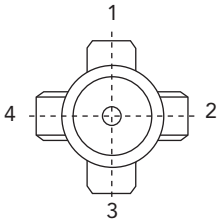


PF1

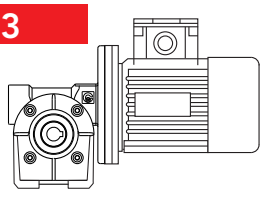


PF2



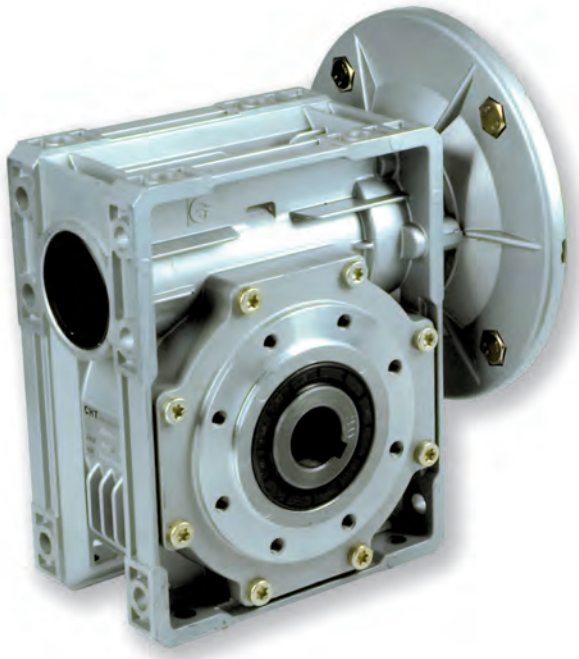


B3

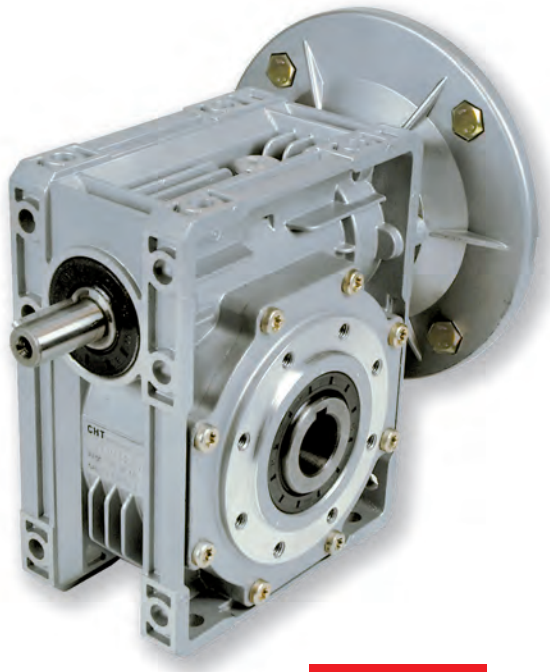


TERMINAL BOX POSITION

N.B. The position of the terminal box always refers to the B3 position.



CH..



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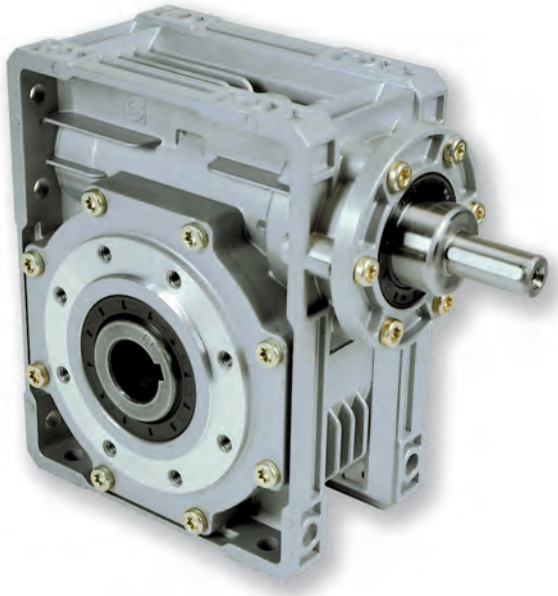
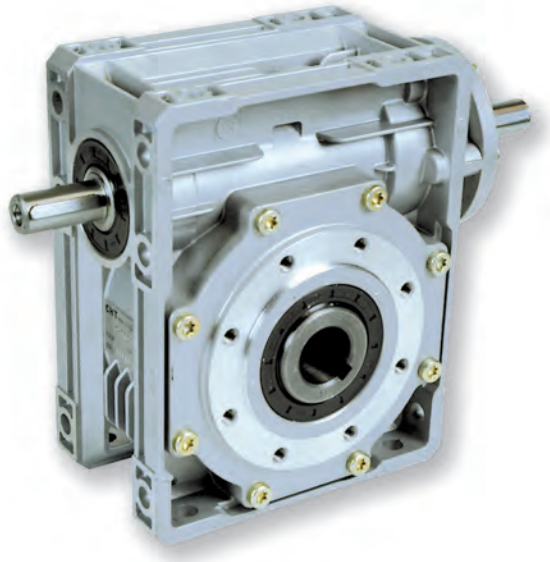


CHR..

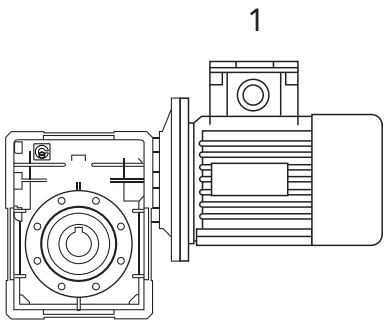


CHRE..

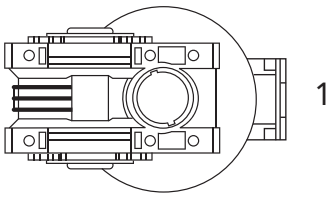
CH 06/07/08 WORM GEARED MOTORS AND WORM GEAR UNITS

MOUNTING POSITION

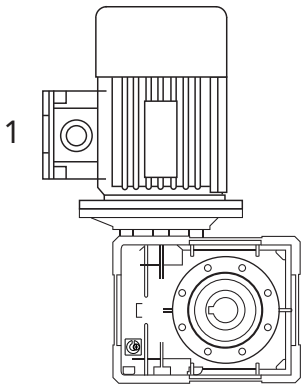
B3



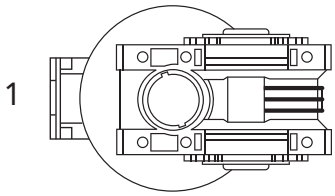
B6



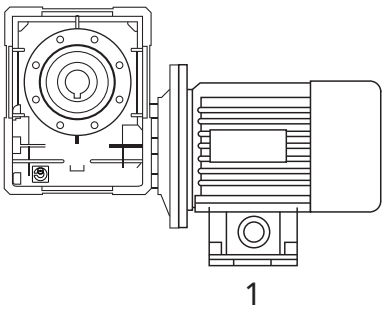
V5



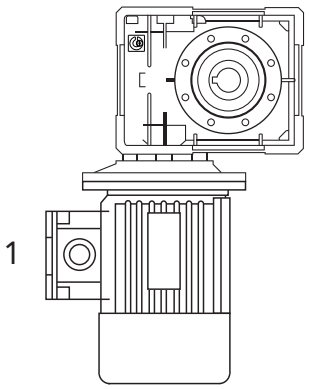
B7



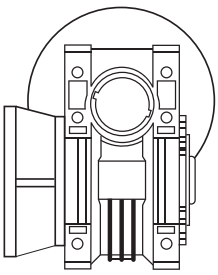
B8



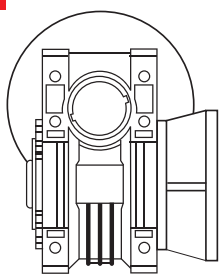
V6



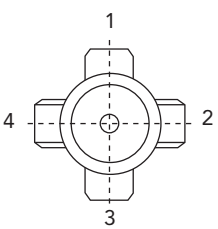
F1

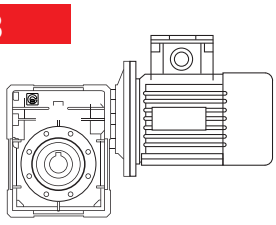


F2



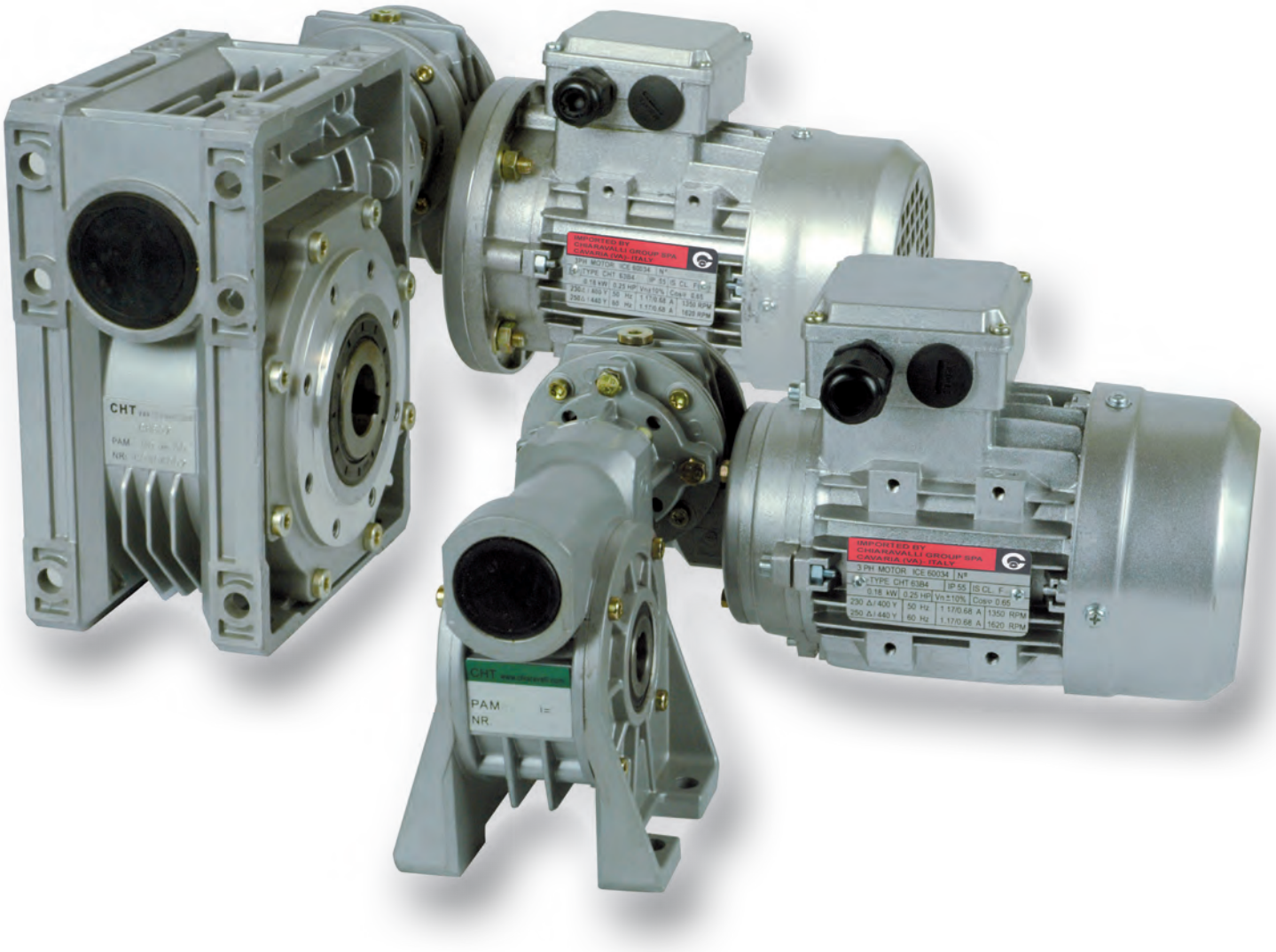
B3





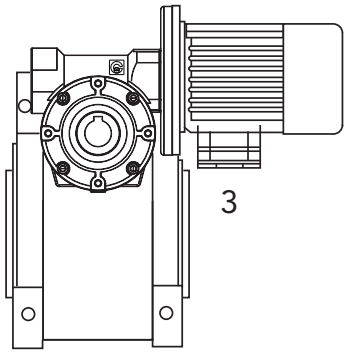
TERMINAL BOX POSITION

N.B. The position of the terminal box always refers to the B3 position.

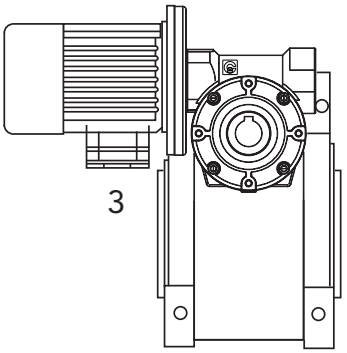

IMPORTED BY
CHIARAVALLI GROUP SPA
CAVARIA (VA) - ITALY
3 PH MOTOR IEC 60034
TYPE CHT 63B4
IP 55
CL. F
0.18 kW
0.25 HP
Vn ±10%
Cosφ 0.65
230 Δ / 400 Y
250 Δ / 440 Y
50 Hz
60 Hz
1.17/0.68 A
1350 RPM
1620 RPM
CHT
PAM
NR.

EXECUTION

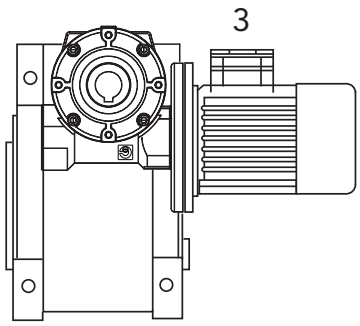
OAD



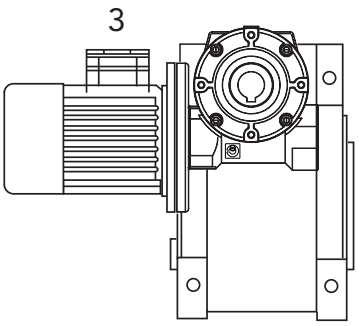
OAS



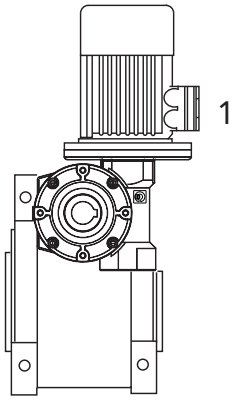
OBD



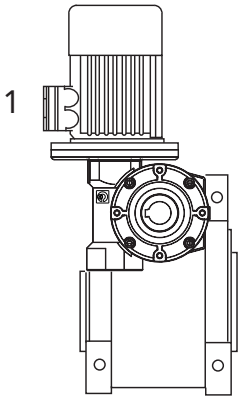
OBS



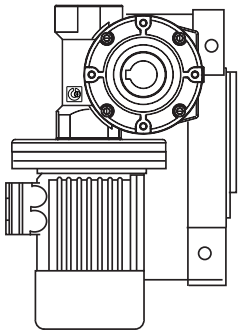
VAD



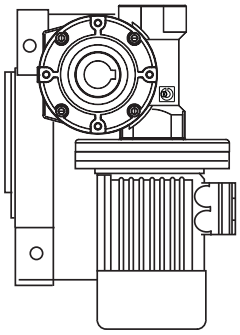
VAS



VBS

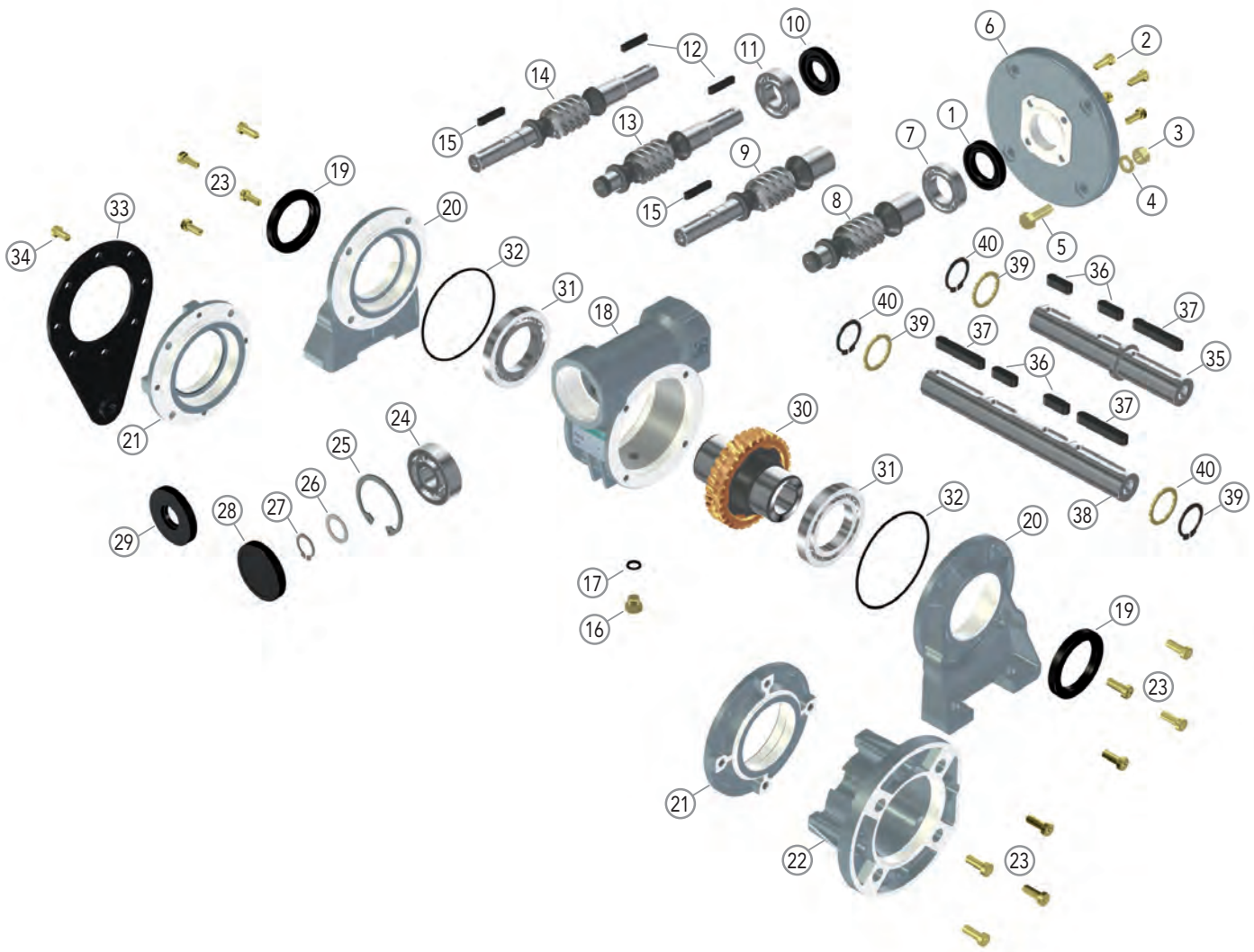


VBD



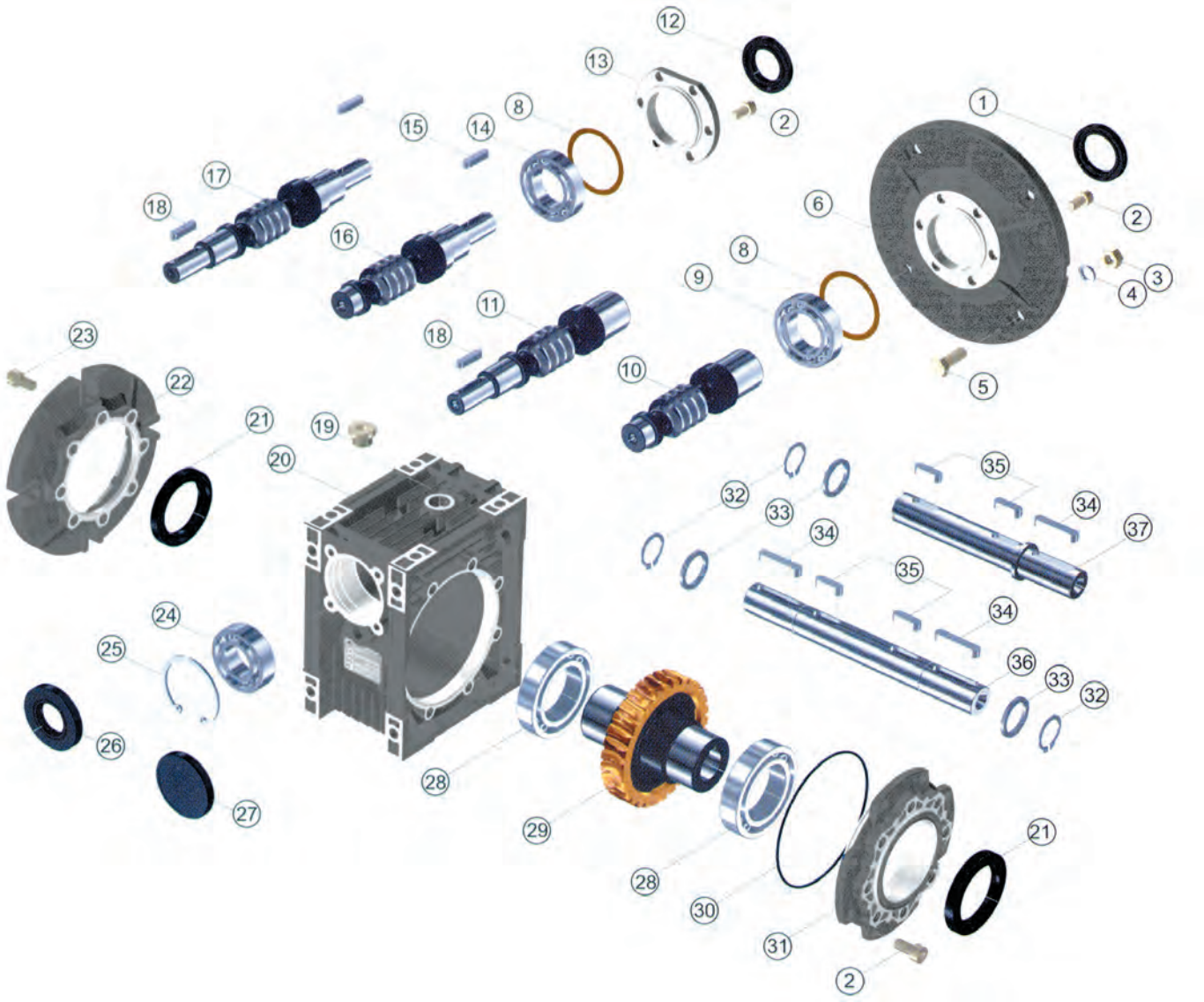
The execution determines the mounting position of the first gear in relation to the second gear. If not otherwise specified at the time of order, the group will be supplied in the OBS execution. The placing position refers to the second gear.

CH 03/04/05 EXPLODED DRAWING AND SPARE



1	OIL SEAL	21	SIDE COVER
2	SCREW	22	OUTPUT FLANGE
3	NUT	23	SCREW
4	WASHER	24	BEARING
5	SCREW	25	SEEGER
6	MOTOR CONNECTION FLANGE	26	SPACER
7	BEARING	27	SEEGER
8	HOLE INPUT WORM	28	CAP
9	HOLE INPUT AND SHAFT OUTPUT WORM	29	OIL SEAL
10	OIL SEAL	30	WORM WHEEL
11	BEARING	31	BEARING
12	KEY	32	O-RING
13	SHAFT INPUT WORM	33	BRACCIO DI REAZIONE
14	DOUBLE EXTENDED INPUT SHAFT WORM	34	SCREW
15	KEY	35	SINGLE OUTPUT SHAFT
16	OIL PLUG	36	KEY
17	GASKET	37	KEY
18	CASING	38	DOUBLE OUTPUT SHAFT
19	OIL SEAL	39	SPACER
20	FOOT COVER	40	SEEGER

CH 06/07/08 EXPLODED DRAWING AND SPARE PARTS LIST

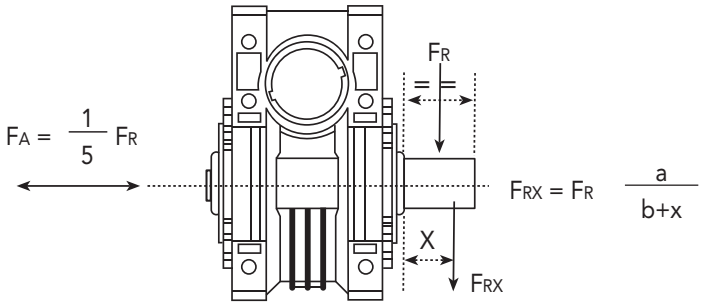


1	OIL SEAL	20	CASING
2	TORX SCREW	21	OIL SEAL
3	NUT	22	OUTPUT FLANGE
4	WASHER	23	EMBEDDED HEXAGONAL-HEAD SCREW
5	HEXAGONAL-HEAD SCREW	24	BEARING
6	MOTOR CONNECTION FLANGE	25	SEEGER
8	ADJUST SPACER	26	OIL SEAL
9	BEARING	27	CAP
10	HOLE INPUT WORM	28	BEARING
11	HOLE INPUT AND SHAFT OUTPUT WORM	29	WORM WHEEL
12	OIL SEAL	30	O-RING
13	INPUT COVER	31	OUTPUT COVER
14	BEARING	32	SEEGER
15	KEY	33	SPACER
16	SHAFT INPUT WORM	34	KEY
17	DOUBLE EXTENDED INPUT SHAFT WORM	35	KEY
18	KEY	36	DOUBLE OUTPUT SHAFT
19	OIL PLUG	37	SINGLE OUTPUT SHAFT

CH RADIAL LOADS ON THE OUTPUT SHAFT

The loads indicated are valid for all application directions.
The maximum allowable axial loads are equal to 1/5 of the radial load value shown in the table when applied with the same radial load; if this is not the case, please contact our technical office. If double output shafts are used, the sum of radial loads applicable to the centre lines of the two ends of the shaft must not exceed the value shown in the table below.
The radial loads related to the output speed (n2)=10 are the maximum loads supported by the gear.

a	GEAR CONSTANT
b	GEAR CONSTANT
x	LOAD DISTANCE FROM SHAFT SHOULDER IN mm.
F_{RX}	RADIAL LOAD IN POSITION X (IN N)
F_R	RADIAL LOAD (N)
F_A	AXIAL LOAD (N)



	SIZES					
Output speed	**03**	**04**	**05**	**06**	**07**	**08**
400	490	720	1000	1450	1800	2020
250	580	860	1190	1720	2140	2420
150	690	1010	1400	2020	2510	2840
100	790	1160	1600	2330	2880	3260
60	940	1380	1910	2770	3440	3880
40	1070	1570	2160	3130	3890	4380
25	1260	1850	2550	3700	4590	5180
10	1700	2500	3450	5000	6200	7000
	CONSTANTS' VALUES					
a	60	71	99	130	136	146
b	45	51	69	102	108	118

*2D and 3D drawings available on the web site **www.chiaravalli.com***
Quantity, availability and prices with Chiaravalli B2B

INSTALLATION

· The data shown on the identification name plate must correspond to the gear ordered.
· All the gears are supplied complete with permanent synthetic oil in a quantity that is sufficient for any assembly position.
· The gear must be fixed on a flat surface that is sufficiently rigid in order to avoid any vibration.
· The gear and the axis of the machine to be driven must be perfectly aligned.
· 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 whilst 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.
· All of the gears are painted RAL 9022 grey.

OPERATION AND RUNNING-IN

· To obtain the best performance the gears must first be runin 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 worm gears from size 03 to size 08 and the pre-stage modules are lubricated with permanent synthetic oil and therefore do not require any maintenance.

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.

CH - USE AND MAINTENANCE INSTRUCTIONS

CHIARAVALLI® GROUP SpA

Cavaria con Premezzo
21044 - Varese - ITALY
Via per Cedrate, 476 - P.O. 10
Tel. +039 - 0331 214511

www.chiaravalli.com