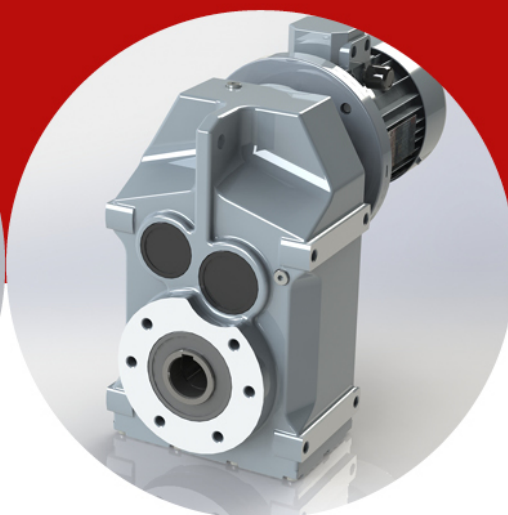




Cidepa

A GEARS BOXES COMPANY



OPERATION AND MAINTENANCE
INSTRUCTIONS REDUCER MOTORS

SERIES CKM/CFM

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1. GENERAL INFORMATION

1.1- GENERAL INFORMATION

This technical manual produced by Cidepa-Sincron S.L. provides important information on the handling, storage, installation, use, maintenance, repair and disassembly of industrial gearmotors.

This documentation should be kept close to the product and should always be read by those who perform any kind of work with the product.

The instructions contained in this manual must be followed, as Cidepa-Sincron S.L. will not be held responsible in case of:

- using the products in a manner contrary to safety regulations
- failure to follow or improperly following the instructions contained in this manual
- incorrect installation or handling of the product.

1.2- EXPECTED WORKING ENVIRONMENTS

All products referred to in this manual are for use in industrial plants. In case of outdoor use, protection must be provided against sun, rain, weather events, foreign bodies, corrosion and heat build-up detrimental to the proper functioning of the product.

Any damage to the paint should be touched up with the appropriate paint.

Use in potentially explosive environments is prohibited, except for reducer motor that comply with the respective ATEX regulations.

For temperatures $<0^{\circ}\text{C}$, refer to the following notes:

- check if the motor is suitable for low temperatures
- due to the high viscosity of the lubricant, check whether the motor can deliver high starting torque.
- let the unit run for a few minutes without load to ensure full lubrication.

1.3- DANGEROUS SITUATIONS

During operation of each unit, there may be exposure to motion and rotation, which can cause serious injury or death.

To avoid property damage or personal injury, all handling, storage, installation, use, maintenance, repair and disassembly must be performed by qualified personnel and in accordance with the instructions in this manual and safety regulations.

Do not install damaged or defective products.

1.4- CONSEQUENCES OF IMPROPER USE

Cidepa-Sincron reducer motor and variable speed drives generate rotary motion with speed reduction between the input and output shafts of the installations to be used.

Any other use or non-compliance with the information contained in the catalogs, manuals and safety standards can cause serious property damage or injury, even death.



2. CONDICIONES DE ENTREGA

2.1- EQUIPMENT CHECK

Check the nameplate information on all Cidepa-Sincron products before installing the product. Removal or damage to the nameplate will invalidate the warranty.

An example of a CFM reducer motor nameplate is shown below.



	<p>Reducer nº. 147872 Type CFM-67 Power H.P. 1,00 Relation 65,00</p> <p>www.cidepa-sincron.es </p>
---	---

- **Reducer nº.** Gearbox manufacturing number. This is a unique code that unequivocally identifies the equipment, ensuring its traceability. Always keep it visible and legible, since it is the reference that the technical service will ask for in case of requesting spare parts or to manage a breakdown (In the example 147872).
- **Type:** Model of the gear unit in question (In the example CFM-67)
- **Power HP:** Power for which the gear unit was defined expressed in hp. (In the example 1.00 hp)
- **Relation:** Equipment reduction ratio (In the example 65.00)

In the case of gear units mounted in "tandem" (two gear units mounted in series), each gear unit will have its own nameplate with its corresponding technical data. Likewise, in the case of reducer motor, the electric motor will be identified independently of the gear unit, with its own nameplate.

2.2- STORAGE

Immediately upon receipt, inspect the shipment for shipping damage. In case of damage, inform the shipping company immediately. It may be necessary to cancel commissioning.

Store the products in a dry place, protected from the weather and possible intrusion of external elements, at temperatures below 50°C and in an atmosphere free of aggressive or corrosive substances.

We recommend storing the reducer motor in the assembly position in which it is to be used.

Protruding parts must be protected against impact or damage.

If stored for more than 2 months, gearmotors should be checked, and if necessary, unpainted castings and rubber should be lubricated with the appropriate products for rust and deterioration respectively.

If ATEX products are stored for more than 2 months, contact our Department.

The "extended storage" type gearboxes have the following features:

- In the case of mineral oil (CLP) and synthetic oil (CLPHC), an oil fill level suitable for the assembly position and so that the unit is ready for use. However, check the oil fill level before start-up.
- Higher oil level in case of synthetic oil (CLP PG). Correct the oil level before start-up.

For prolonged storage, observe the storage conditions indicated in the table below:

Climate zone	Packaging	Place of storage	Storage time
Moderate (Europe, USA, Canada, China and Russia, with the exception of tropical areas)	Packed in containers sealed with plastic film, and provided with a desiccant and a humidity indicator.	Covered, protected from rain and snow, and free from vibration.	Max. 3 years with periodical controls of packaging and humidity indicator (rel. humidity <50%).
	Open	Covered and closed with constant temperature and humidity (5°C < 9 < 60°C < 50% relative humidity).	2 or more years if an inspection is carried out regularly. The inspection should check for cleanliness and mechanical damage. In addition, the corrosion protection is to be checked to ensure that it is in good condition.
Tropical (Asia, Africa, Central and South America, Australia, New Zealand, except temperate climate areas)	Packed in containers sealed with plastic film, and provided with a desiccant and a humidity indicator. Chemically treated to protect against insects and monkey formation.	Covered, protected against rain, and vibration-free.	v
	Open	Covered and closed with constant temperature and humidity (5°C < 9 < 60°C, < 50% relative humidity). No sudden temperature changes and controlled ventilation with filter (free of dirt and dust). No aggressive vapors or vibrations. Protected against insect coughing	2 or more years if an inspection is carried out regularly. The inspection should check for cleanliness and mechanical damage. In addition, the corrosion protection shall be checked to ensure that it is in good condition.

1) Packing must be carried out by an experienced company with approved packing material for each specific case.

2.3- PAINTING

- Grey cast iron GG20 : Epoxy primer (two-component) and grey (RAL7031) single-coat enamel finish (two components)

In case of damage to the paint and all surfaces, please protect with appropriate products to prevent rust.

2.4- RECOMMENDED PRODUCTS

The following commercial products are used to complement Cidepa-Sincron products:

- Surface sealant: Loctite 510
- Sealant for press fittings: Loctite 603
- Screwdriver: Loctite 243

- Lubricating grease for oil seals: Kluber Petamo GHY 133N
- Anti-rust grease for shaft/hub connections: Kluber Pasta 46 MR 401
- Antioxidant for shafts and surfaces: Fuchs Anticorit DFW
- Two-component sealant for nameplates: Henkel Teroson 9220
- Degreaser for machined surfaces: Loctite 7063

3. INSTALLATION

3.1- GENERAL INFORMATION

- Before installing the gearmotors, make sure that:
- The information on the nameplate matches the product ordered.
- The connection surfaces and shafts are completely clean and undamaged.

- The surfaces on which the reducer motor will be installed are perfectly flat and sufficiently rigid.
- The machine shaft and reducer motor shaft are correctly aligned.
- Torque limiting systems have been installed if the machine is expected to be impacted or blocked during operation.
- Necessary safety guards for rotating parts have been installed.
- Adequate cover has been provided to protect against atmospheric agents if the installation is exposed to adverse weather conditions.
- The working environment is non-corrosive (unless declared when ordering the reducer motor for this use).
- Any pinion or pulley mounted on the reducer motor output or input shafts are correctly adjusted so that the radial and/or axial loads do not exceed the permissible ones.
- All connections have been treated with suitable rust inhibitors, as protection, to prevent any contact rust.
- All fastening screws have been properly tightened.
- Also check whether the oil fill level is as specified for your assembly position. The gear units are delivered from the factory with the required oil level. Depending on the assembly position, there may be slight deviations at the oil level control plug, which are permissible within the established manufacturing tolerances.
- Adjust the lubricant fill quantities and the position of the exhaust plug when changing the assembly position.
- Use plastic spacers (2-3 mm thick) if there is a risk of electrochemical corrosion between the gear unit and the driven machine (combination of dissimilar metals, e.g. cast iron/stainless steel). Also put plastic washers on the screws. Ground the housing using the motor grounding screws.

Note:

The reducers are supplied with a screw plug in the aeration hole provided. Before start-up, the customer must replace the threaded plug at the top of each gear unit with the gas outlet plug supplied (included in a plastic bag).

3.2- CRITICAL APPLICATIONS

- In all of the following cases, consult the Technical Department:
- Use as a multiplier
- Use as a winch
- Use in environments that may be dangerous to humans in the event of a failure
- Use in positions not foreseen in the catalog
- Use in an environment at an ambient pressure different from atmospheric pressure
- Use in an environment at an ambient temperature different from the Standard temperature
- Use in an environment with a saline water atmosphere
- Use in an environment where aggressive chemicals are present
- Applications with very high inertia or high stress levels
- Inlet speed higher than 3000 r.p.m.
- Input speed higher than 2000 rpm for reducer motor assembly in positions other than B3.

3.3- USAGE

Personnel authorized to handle the product must check its integrity and the safety of property and persons during handling. When the weight or geometry of the unit prevents manual handling, appropriate lifting equipment should be used, taking advantage of the anchorage provided or bolted onto the reducer motor.

3.4- MOUNTING A MOTOR TO THE GEARBOX

- Check that the motor flange and shaft tolerances correspond to at least "normal" quality class.
- Make sure that the shaft, surface and flange centering bolt are free of dirt or traces of paint.

- Do not force the drive shaft into the reducer motor input. If this is not possible, check the tolerance of the drive shaft and make sure it is properly seated.
- Apply a thin film of rust inhibitor to prevent contact rust.
- Use good quality motors to ensure efficient and noiseless operation, and noiseless operation.
- Before mounting the reducer motor on the machine, check that the output shaft rotates in the correct direction.

3.5- TIGHTENING TORQUE OF SCREWS

For all accessories involving the use of screw fasteners, refer to the following table:

Screw / Nut	Tightening torque of screws (quality 8.8) Nm
M6	11
M8	25
M10	48
M12	86
M16	210
M20	410
M24	710

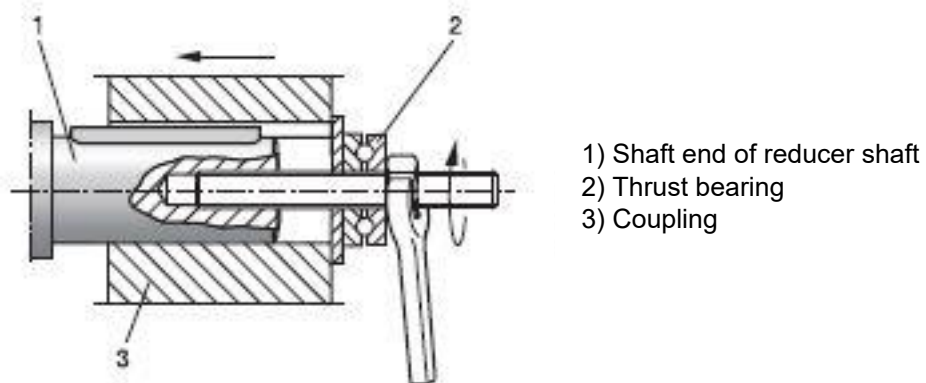
3.6- GEARBOXES WITH INPUT SHAFTS

- Before mounting any device on input shafts, or hollow output shafts, we recommend the use of corrosion protection lubricants to facilitate adjustment and prevent rusting of both parts after the reducer motor is put into service.
- To avoid damaging the reducer motor, shafts and relative bearings, the parts to be assembled should not be hammered.
- To fit them, use an assembly tool to clamp into the threaded hole in the shaft end.
- Alternatively, the component to be assembled can be heated to a

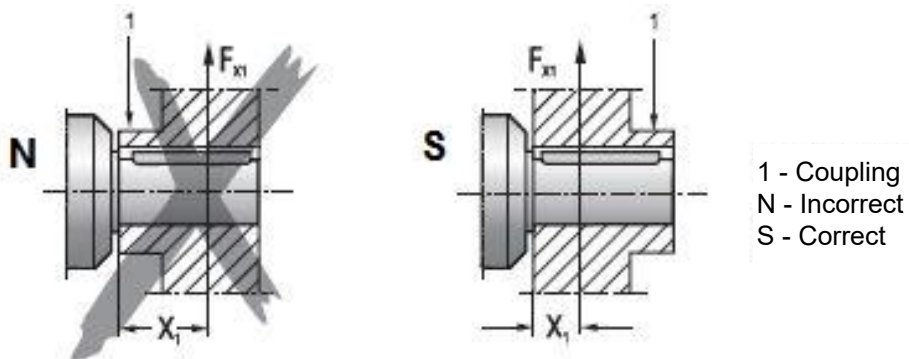
maximum temperature of 100°C, ensuring that the part slides freely during assembly.

- For input shafts operating at more than 1400 rpm, rotating parts must be balanced.
- There must be no radial or axial loads exceeding the permissible limits (see Cidepa-Sincron S.L. catalog).
- We recommend the use of a threadlocker such as LOCTITE 243.
- Tighten each drive bolt to its rated torque.

The following figure shows an example of an assembly device for the installation of couplings on the shaft ends of the gear unit or motor shafts. If necessary, the thrust bearing of the assembly device can be dispensed with.



The following figure shows the correct assembly arrangement **S** of a gearwheel or drive sprocket to prevent inadmissible radial loads **N** from occurring.

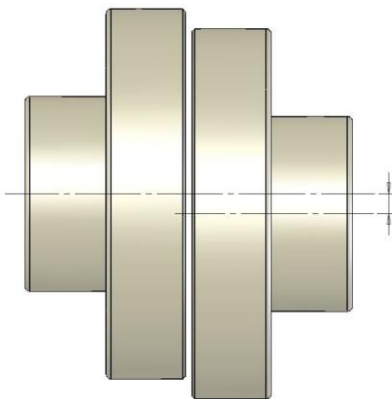


3.7- Assembly of couplings

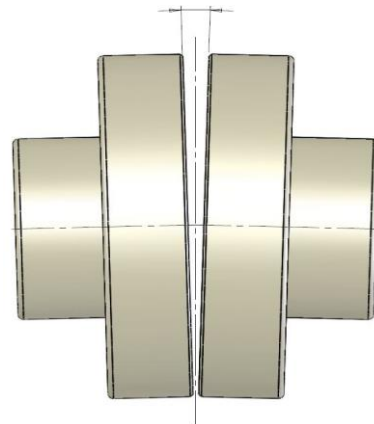
When assembling couplings, the following items must be balanced in accordance with the coupling manufacturer's instructions:

- a) Axial misalignment
- b) Angular misalignment
- c) Maximum and minimum tolerance
- d) Axial and angular alignment

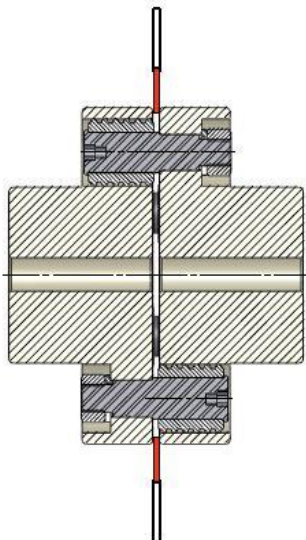
a) Axial misalignment



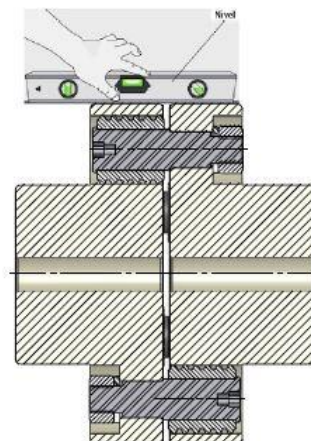
b) Angular misalignment



c) Maximum and minimum tolerance



d) Axial and angular alignment



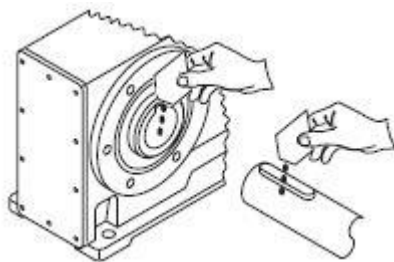
Input and output elements, such as belt pulleys, couplings, etc., must be covered with a contact protection device.

3.8- assembly and disassembly on the hollow output shaft

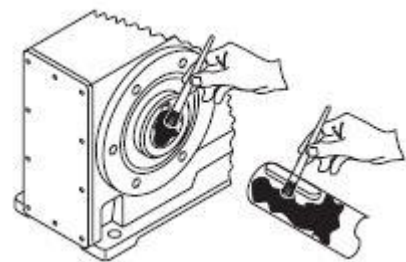
- Before assembling any device on the hollow output bushings, we recommend the use of corrosion protection lubricants to facilitate adjustment and prevent rusting of both parts after the reducer motor is put into service.
- To avoid damage to the reducer motor, shafts and relative bearings, solid shafts should not be hammered.
- To assemble them, use an assembly tool.
- There must be no radial or axial loads exceeding the permissible limits (see Cidepa-Sincron S.L. Catalog).

The following figures show the steps to be followed in the assembly of a shaft in the output bushing:

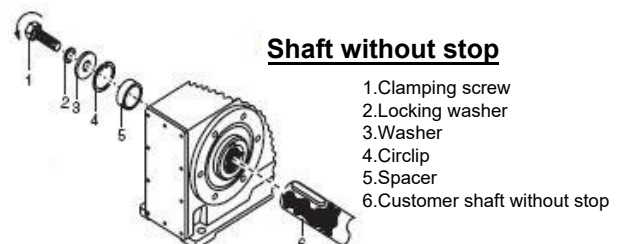
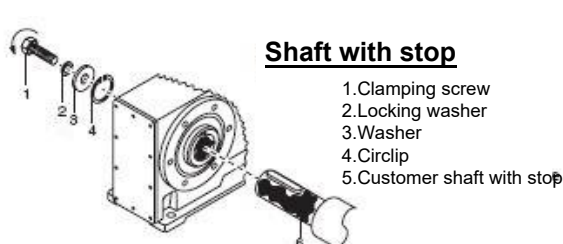
1. Apply lubricant



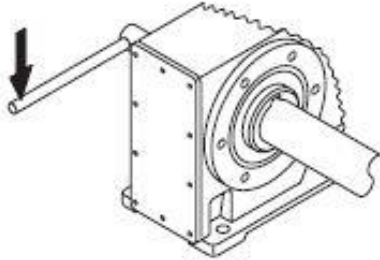
2. Spread the lubricant carefully



3. Mount the shaft and fix it axially (examples with and without shaft stop).



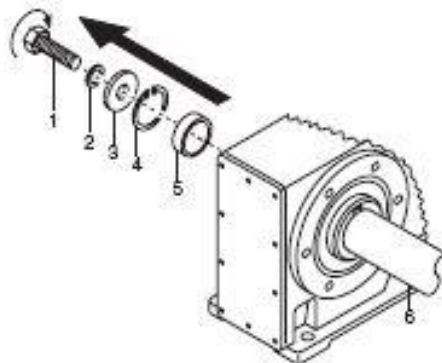
4. Tighten the clamping screw with the corresponding torque (see table).



Screw	Par de apriete [nm]
M5	5
M6	8
M10/12	20
M16	40
M30	80
M24	200

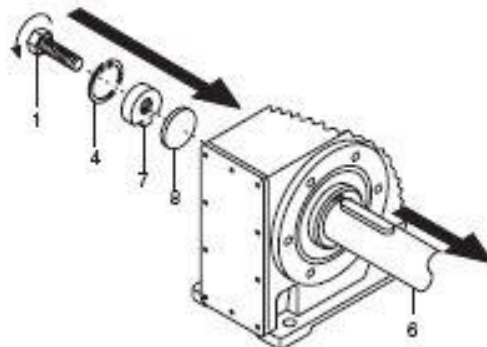
The following figures show the steps to follow when disassembling a shaft from the output bushing:

1. Loosen retaining screw 1
2. Remove parts 2, 3, 4 and the spacer, if any



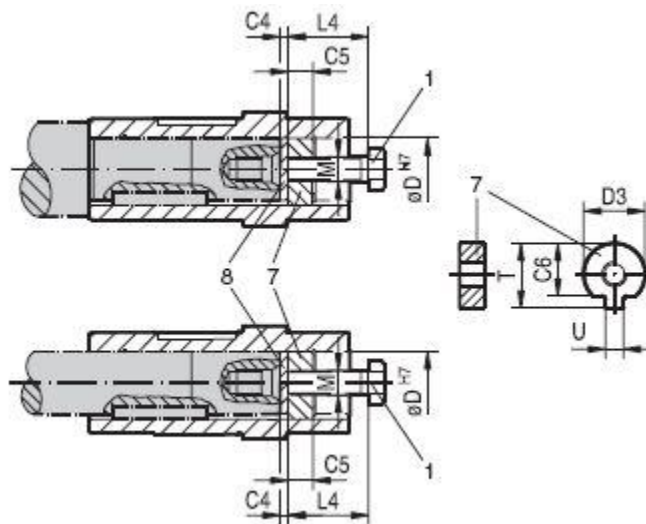
1. clamping screw
2. lock washer
3. washer
4. circlip
5. spacer
6. customer shaft

1. Insert the extraction washer 8 and the lock nut 7 between the customer shaft 6 and the circlip 4.
2. Insert circlip 4
3. Tighten clamping screw 1



1. Clamping screw
2. circlip
3. customer shaft
4. locking nut
5. removal washer

Detail with dimensions of shaft assembly/disassembly:



1. Clamping screw
7. Locking nut for disassembly
8. Removal washer

Table with measurement references for the corresponding sizes:

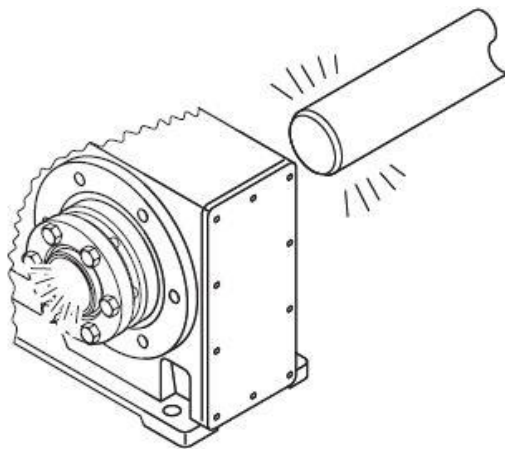
SIZE	D _{H7}	M	C4	C5	C6	U _{-0,5}	T _{-0,5}	D _{3-0,5}	L4
T-27	25	M10	5	10	20	7,5	28	24,7	35
T-37	30	M10	5	10	25	7,5	33	29,7	35
T-47	35	M12	5	12	29	9,5	38	34,7	45
T-57 y 67	40	M16	5	12	34	11,5	41,9	39,7	50
T-77	50	M16	5	12	43,5	13,5	53,5	49,7	50
T-87	60	M20	5	16	56	17,5	64	59,7	60
T-97	70	M20	5	16	65,5	19,5	74,5	69,7	60
T-107	90	M24	5	20	80	24,5	95	89,7	70
T-127	100	M24	5	20	90	27,5	106	99,7	70

3.9- assembly and disassembly of hollow shaft with shrink ring

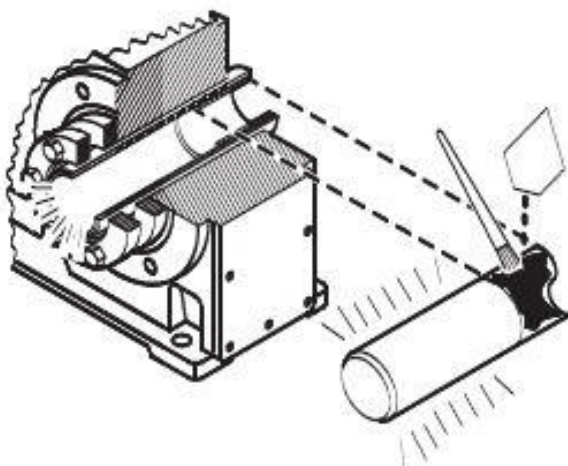
Do not tighten the locking screws if the shaft is not installed, as the hollow shaft could be deformed.

The following figures show the steps to be followed in the assembly of a shaft in the output bushing with shrink ring:

1. Carefully remove grease from the hollow shaft bore and input shaft and leave them degreased.

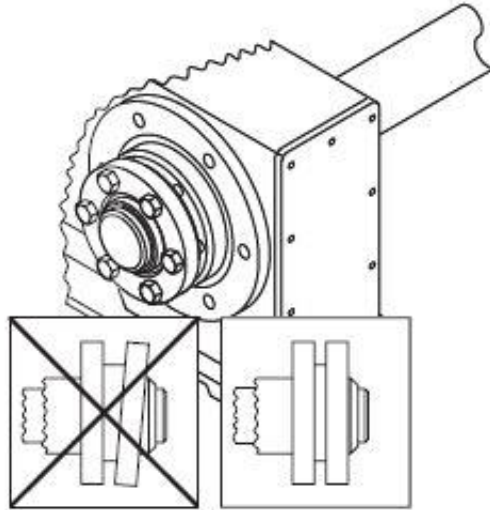


2. Apply lubricant to the input shaft bushing area.

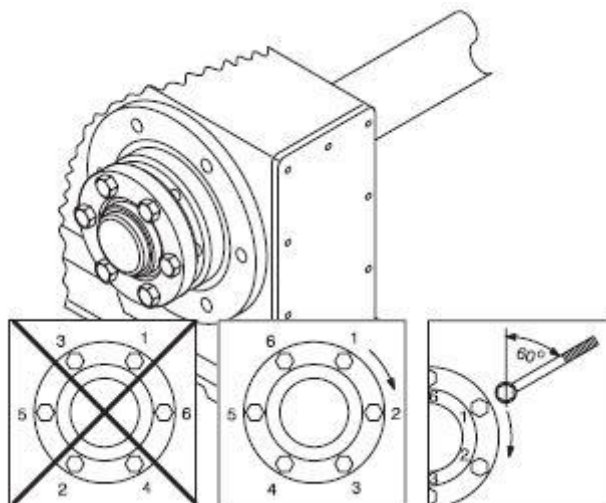


Grease should never be present in the clamping area of the shrink disk. Therefore, the lubricant should not be applied directly on the bushing, because when the input shaft is inserted, the lubricant could pass into the clamping area of the shrink disk.

3. Install the shaft, and in doing so, ensure that the outer rings of the shrink ring are equally spaced.



4. Tighten the locking screws in circular order, passing from one to the next (not crosswise to each other). See tightening torques according to manufacturer.



After assembly, the outer surface of the hollow shaft in the area of the shrink disk must be greased for corrosion protection.

For disassembly of the shrink disk:

- Loosen all locking screws equally, one after the other. At first, each locking screw should not be turned more than one quarter per cycle to avoid jamming of the outer rings. Do not unscrew the locking screws completely.
- Dismantle the shaft or remove the bushing from the shaft (remove any rust residues that may have formed on the shaft in front of the bushing beforehand).
- Remove the shrink disk from the bushing.

If the shrink ring is removed incorrectly, there is a risk of injury.

Before re-tightening, it is not necessary to separate and re-grease the disassembled shrink rings.

They should only be cleaned and re-oiled if they are dirty.

On conical surfaces, one of the solid lubricants listed below shall be used:

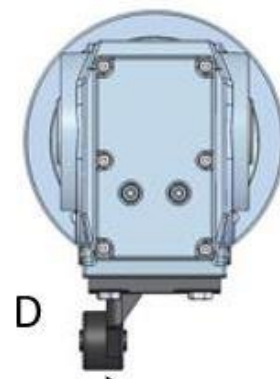
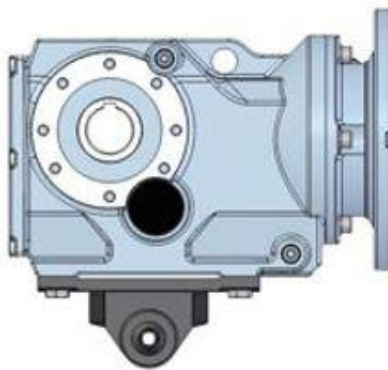
LUBRICANT (Mo S2)	Marketed as
Molikote 321 (lubricating varnish)	spray
Molikote Spray (aerosol powder)	spray
Molikote G Rapid	spray or paste
Aemasol MO 19P	spray or paste
AemasolDIO-sétral 57 N (lubricating varnish)	spray

To grease the locking screws, use Molykote BR 2 type multipurpose grease or similar products.

3.10- reaction arm assembly **(reaction arm, base reaction arm, and fixing bolt)**

For assembling the reducer motor reaction arms refer to the diagrams below:

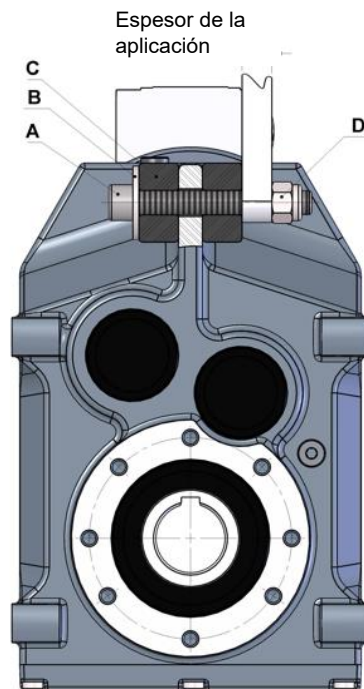
CKMP CONICAL SHAFT MOTORREDUCER (base reaction arm)



Bearing bushing at
both ends.

Assembling the connection side I symmetrically with respect to D. (It can be assembled so that the bushing with the bearings is either on the right or on the left).

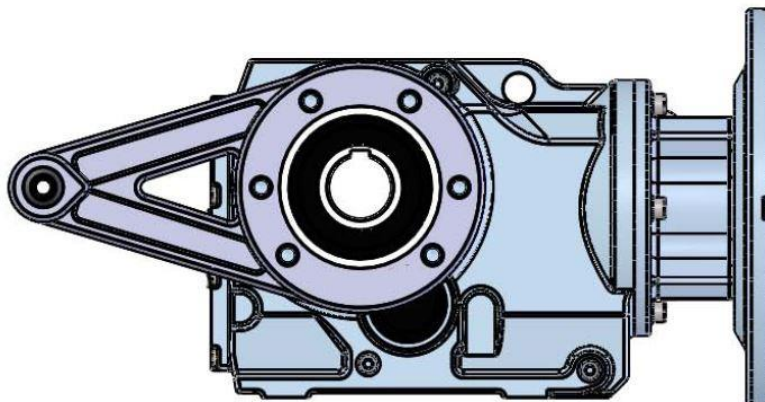
CFM PARALLEL SHAFT MOTOR DRIVER (fixing bolt)



A	Screw
B	Washer
C	Rubber bumpers
D	Nut

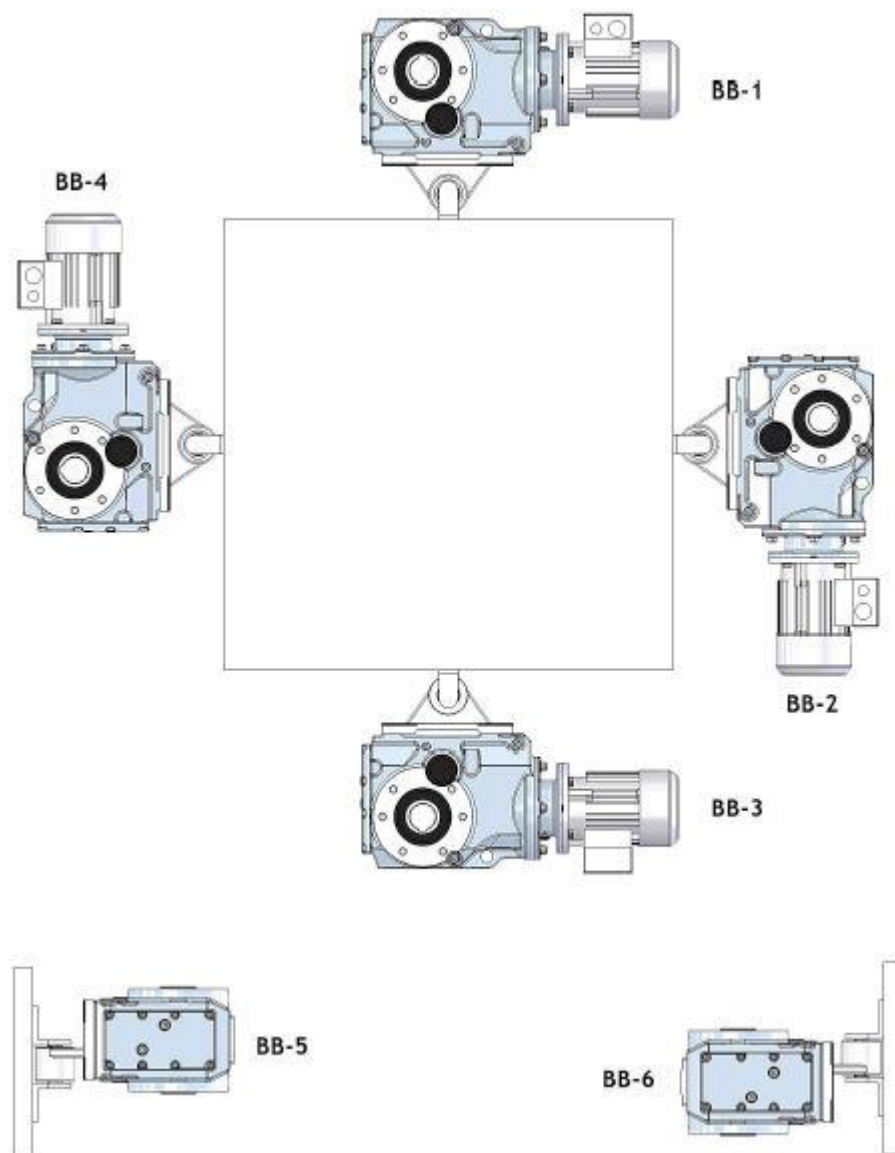
The CFM series is fitted with a fixing bolt.

CKMP CONICAL AXIS MOTOR-REDUCER (reaction arm)

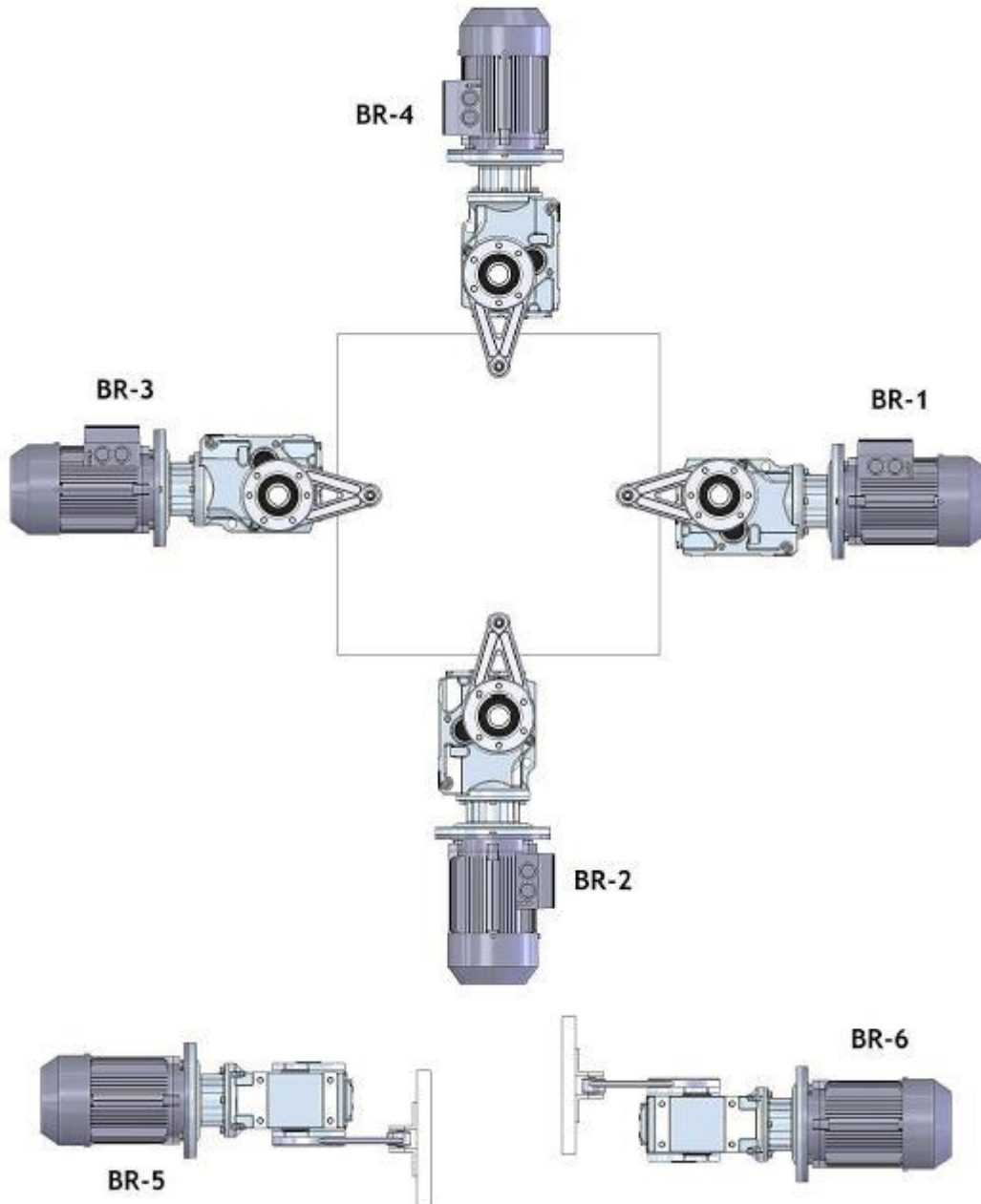


3.11- ASSEMBLY POSITION OF REACTION ARM AND REACTION ARM BASE

CKMP HELICAL-BEVEL REDUCER MOTOR WITH BASE REACTION ARM



CKMP HELICAL-BEVEL REDUCER MOTOR WITH REACTION ARM



4. LUBRICATION

Unless a special agreement is established, CIDEPA-SINCRON S.L. supplies the drives with a specific lubricant depending on the gear unit and the assembly position. Therefore, it is very important to indicate the assembly position (C-1...C-6), when ordering the gear unit. If the assembly position is changed at a later date, the lubricant fill quantity must be adapted to the changed assembly position.

The lubricant table on the following page shows which lubricants are permitted for use in CIDEPA-SINCRON S.L. gear units. Please read the explanatory legend of the lubricant table below carefully:

CLP = a mineral oil

CLP PG = polyglycol

	synthetic lubricant (grease for bearings of synthetic composition)
	mineral lubricant (grease for bearings of mineral composition)

Note that at low temperatures critical start-up behaviors occur

4.1- BEARING GREASE

The bearings of the gearboxes and motors are supplied with the following greases. In bearings supplied with grease, CIDEPA-SINCRON S.L. recommends renewing the grease filling when changing the oil.

	Ambient temperature	Manufacturer	Type
Gearbox bearings	-30°C a +60°C	MOBIL	Mobilux EP 2
	-40°C a +80°C	MOBIL	Mobiltemp SHC 100
Motor bearings	-25°C a +80°C	ESSO	Unirex N3
	-25°C a +60°C	SHELL	Alvania R3
	+80°C a +100°C	KLÜBER	Barrierta L55/2
	-45°C a -25°C	SHELL	Aero Shell Grease 16

The following amounts of grease are required:

- For fast-running bearings (on the motor and input side of the gear unit): fill one third of the cavities between the bearing elements with grease.
- For slow-running bearings (on the gear unit and on the output side of the gear unit): fill two thirds of the cavities between the bearing elements with grease.

4.2- LIST OF RECOMMENDED LUBRICANTS

All Cidepa-Sincron S.L. gearmotors of the CKM and CFM series up to size 67, (27, 37, 47, 57, 67) are supplied with high durability lubricant, viscosity 320. From size 77 (77, 87, 97, 107 and 127) onwards, the lubricant will be supplied upon request.

FUCHS	CASTROL	ESSO	KLUBER	MOBIL	SHELL
Renolin CLP-320	Alphasyn PG320	S320	Klubersynth GH 6 320	Mobil Glygoyle HE 320	Shell Omala S4 WE320

4.3 - LUBRICANT FILL QUANTITY

The filling quantities given are guide values. The exact values vary depending on the number of trains and the reduction ratio. Close attention should be paid to the oil level plug which serves as an indicator to establish the correct oil quantity.

The following tables show guideline values for the lubricant fill quantities of the CFM, CFMB, CKM and CKMB series depending on the assembly position (C-1 to C-6)

CFM

Gearbox type	Filling quantity in liters					
	C-1	C-2	C-3	C-4	C-5	C-6
CFM-27	0,6	0,8	0,65	0,7	0,6	0,6
CFM-37	0,95	1,25	0,7	1,25	1	1,1
CFM-47	1,5	1,8	1,1	1,9	1,5	1,7
CFM-57	2,6	3,5	2,1	3,5	2,8	2,9
CFM-67	2,7	3,8	1,9	3,8	2,9	3,2
CFM-77	5,9	7,3	4,3	8	6	6,3
CFM-87	10,8	13	7,7	13,8	10,8	11
CFM-97	18,5	22,5	12,6	25,2	18,5	20
CFM-107	24,5	32	19,5	37,5	27	27
CFM-127	40,5	54,5	34	61	46,3	47

CFMB

Gearbox type	Filling quantity in liters					
	C-1	C-2	C-3	C-4	C-5	C-6
CFMB-27	0,6	0,8	0,7	0,7	0,6	0,6
CFMB-37	1	1,25	0,7	1,3	1	1,1
CFMB-47	1,6	1,85	1,1	1,9	1,5	1,7
CFMB-57	2,8	3,5	2,1	3,7	2,9	3
CFMB-67	2,7	3,8	1,9	3,8	2,9	3,2
CFMB-77	5,9	7,3	4,3	8,1	6	6,3
CFMB-87	10,8	13,2	7,8	14,1	11	11,2
CFMB-97	19	22,5	12,6	25,5	18,9	20,5
CFMB-107	25,5	32	19,5	38,5	27,5	28
CFMB-127	41,5	55,5	34	63	46,3	49

CKM

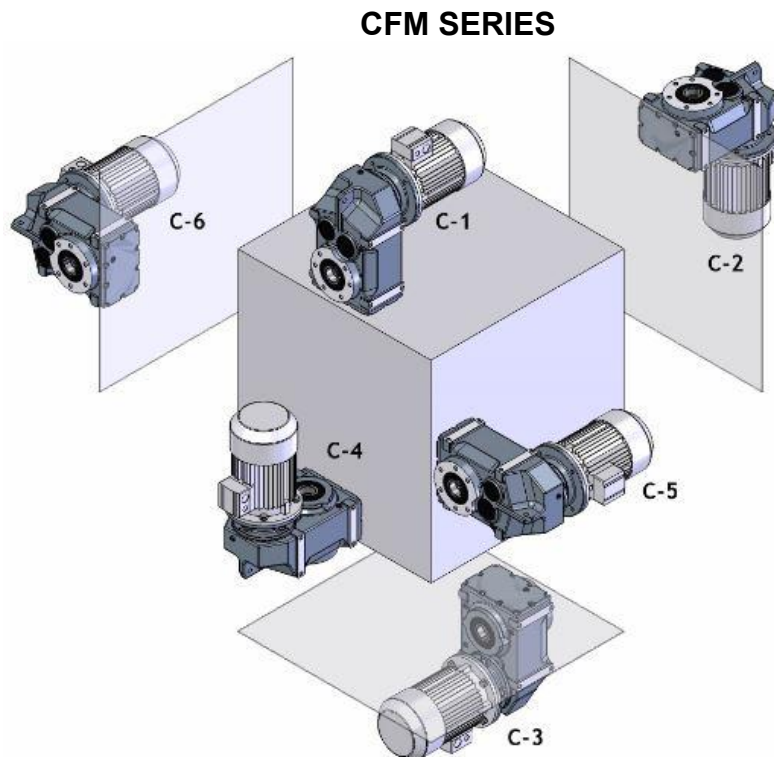
Gearbox type	Filling quantity in liters					
	C-1	C-2	C-3	C-4	C-5	C-6
CKM-37	0,5	1	1	1,3	0,95	0,95
CKM-47	0,8	1,3	1,5	2	1,6	1,6
CKM-57	1,2	2,3	2,5	3	2,6	2,4
CKM-67	1,1	2,4	2,6	3,4	2,6	2,6
CKM-77	2,2	4,1	4,4	5,9	4,2	4,4
CKM-87	3,7	8	8,7	10,9	8	8
CKM-97	7	14	15,7	20	15,7	15,5
CKM-107	10	21	25,5	33,5	24	24
CKM-127	21	41,5	44	54	40	41

CKM

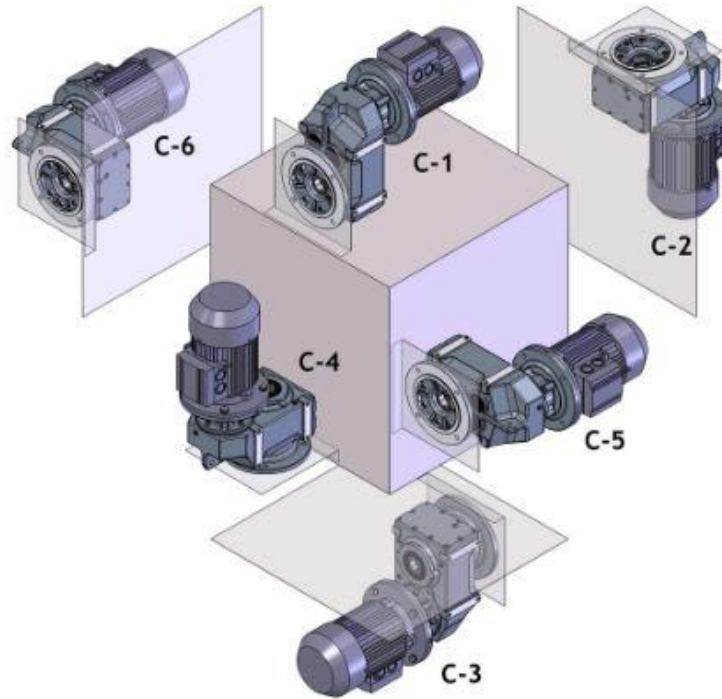
Gearbox type	Filling quantity in liters					
	C-1	C-2	C-3	C-4	C-5	C-6
CKMB-37	0,5	1,1	1,1	1,5	1	1
CKMB-47	0,8	1,3	1,7	2,2	1,6	1,6
CKMB-57	1,3	2,3	2,7	3,2	2,9	2,3
CKMB-67	1,1	2,4	2,8	3,6	2,7	2,7
CKMB-77	2,1	4,1	4,4	6	4,5	4,5
CKMB-87	3,7	8,2	9	11,9	8,4	8,4
CKMB-97	7	14,7	17,3	21,5	15,7	16,5
CKMB-107	10	21,8	25,8	35,1	25,2	25,2
CKMB-127	21	41,5	46	55	41	41

4.4- ASSEMBLY POSITIONS (standard)

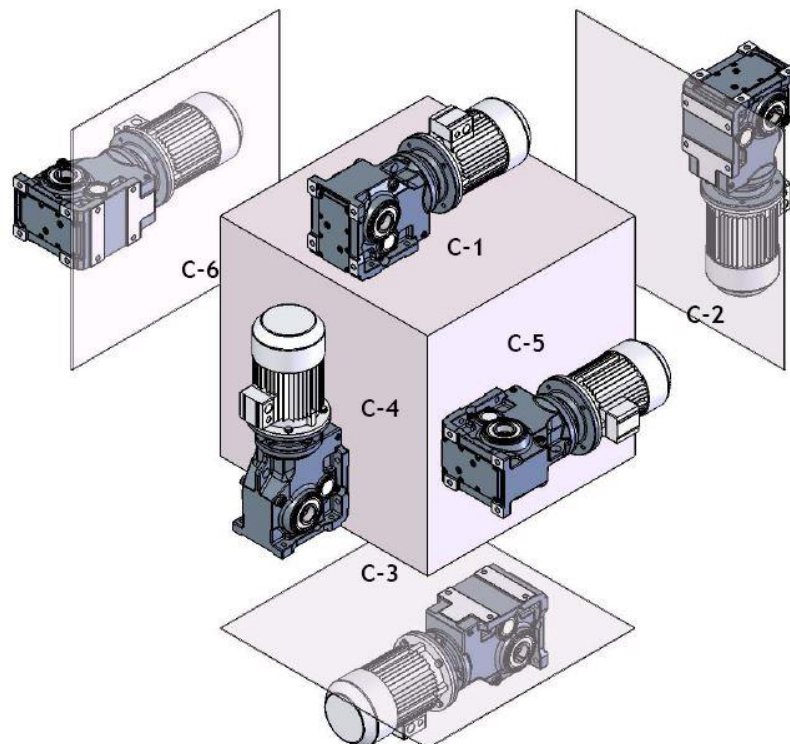
The six standard positions for CFM and CKM series gearmotors are as follows:



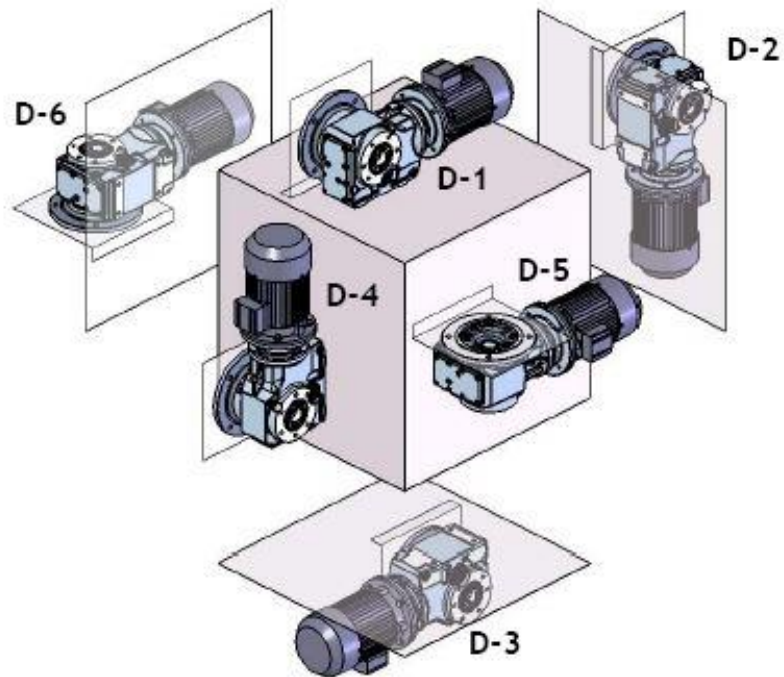
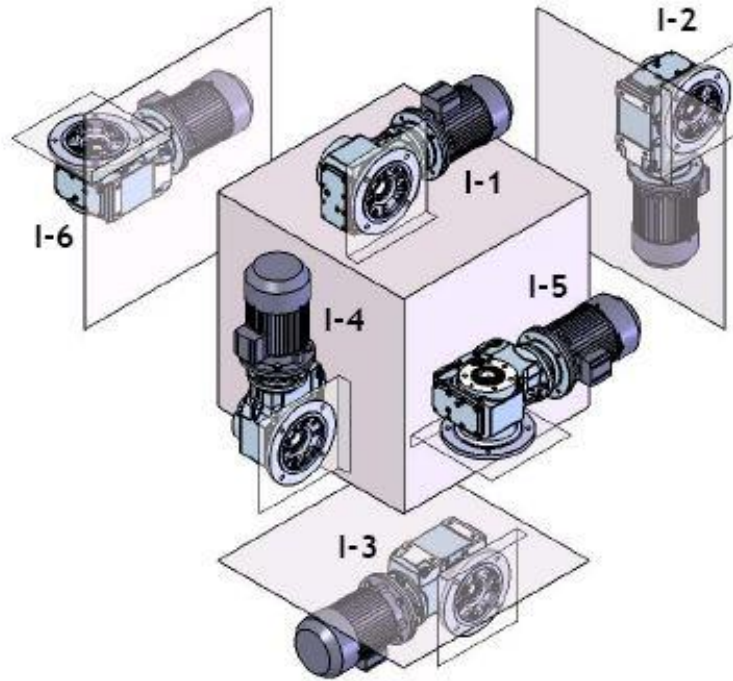
CFMB SERIES






CKM SERIES



CKMB SERIES



The following table contains all the symbols used on the assembly item sheets and their meaning:

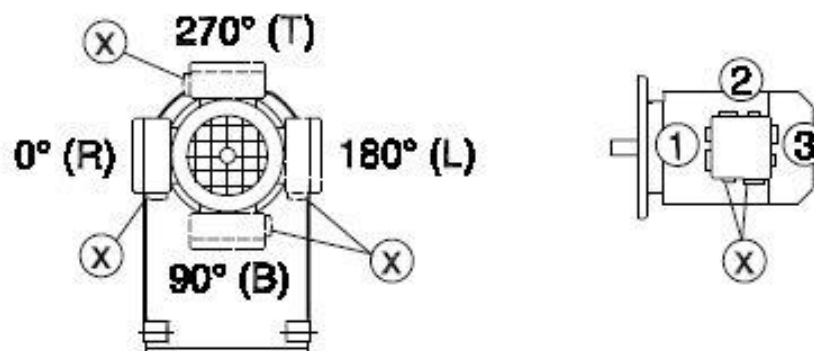
Symbol	Meaning
	Gas outlet plug
	Oil level plug
	Oil drain plug

*** Drift losses:**

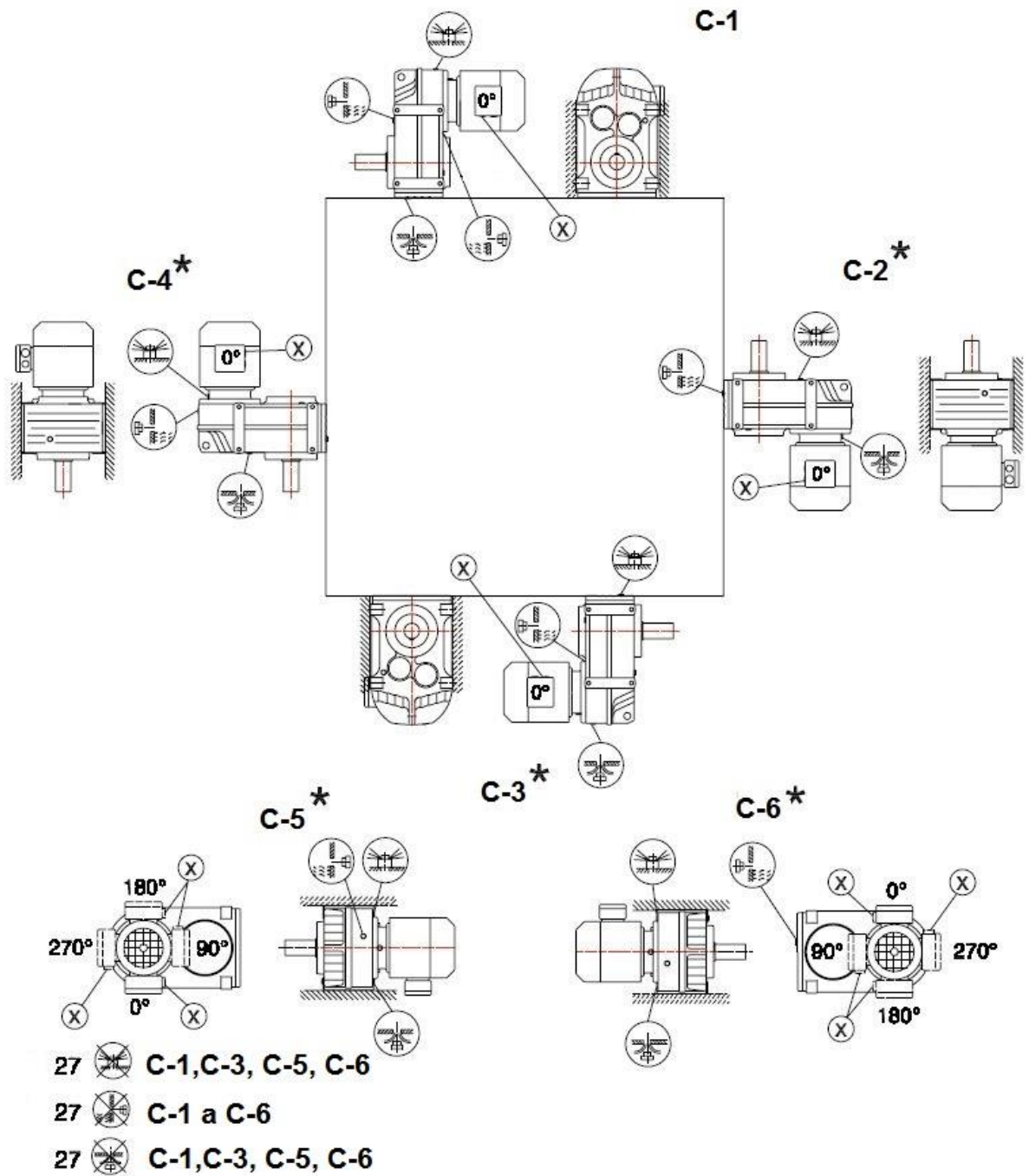
High chattering losses may occur in some assembly positions. In the following combinations, please consult CIDEPA-SINCRON S.L.

Assembly position	Reducer type	Reducer size	Input speed
C-2, C-3, C-4, C-5, C-6	CFM	97 - 107	> 2500 r.p.m.
		>107	>1500 r.p.m.
	CKM	77...107	> 2500 r.p.m.
		>107	>1500 r.p.m.

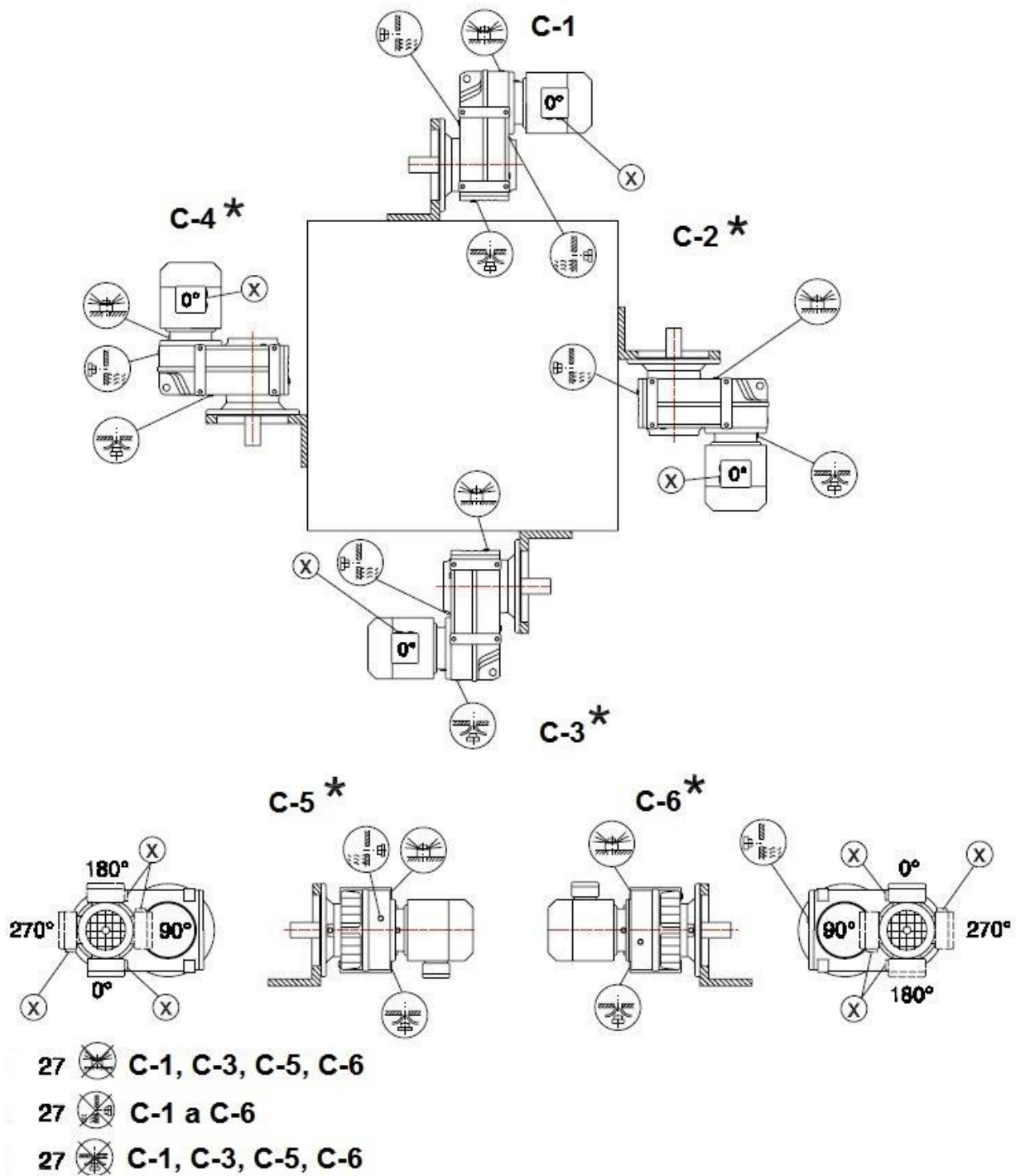
Position of the motor terminal box with respect to the X-axis on the CFM reducer:



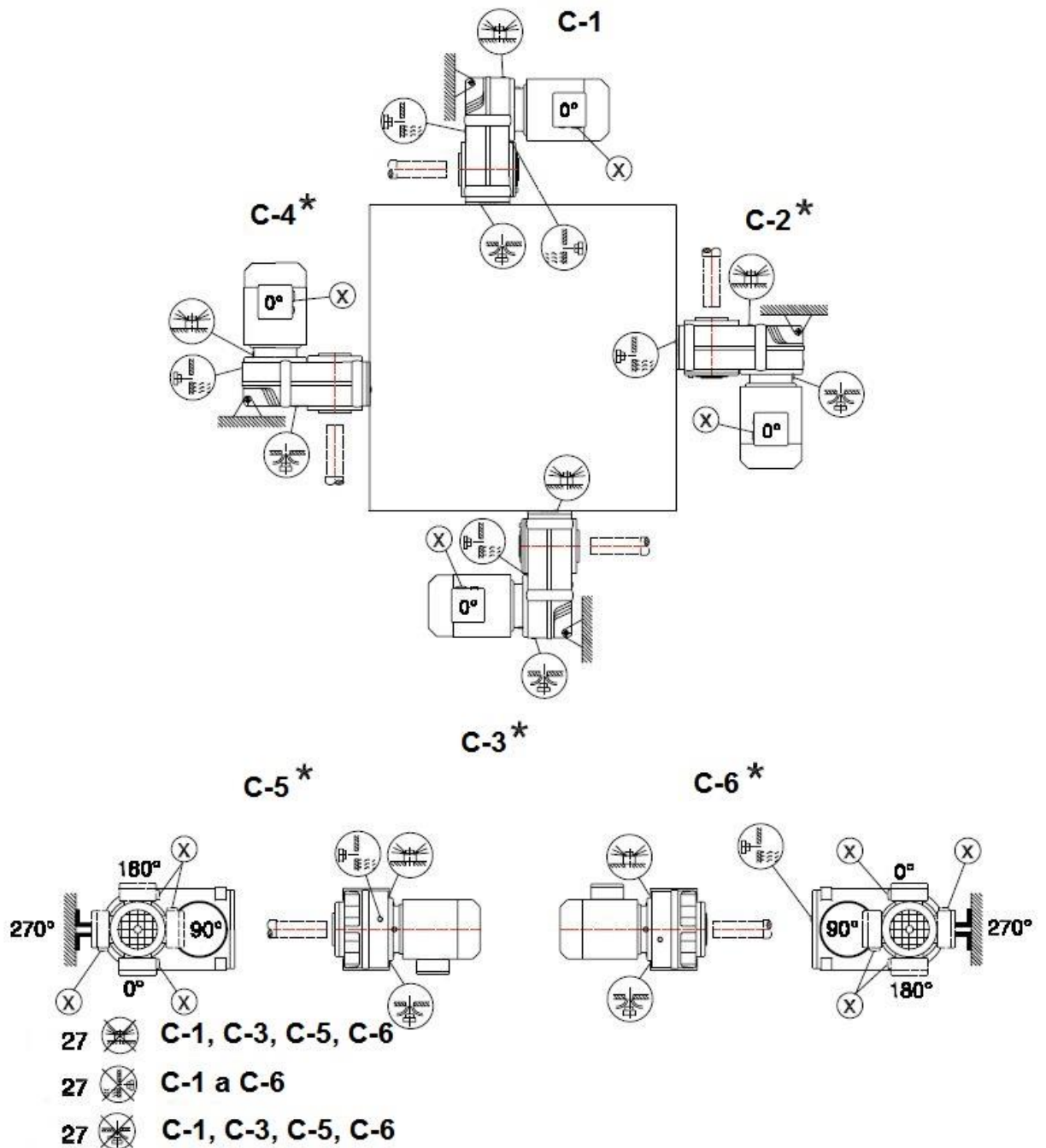
4.5- MOTOR- REDUCER CFM ASSEMBLY POSITION (with output shaft)



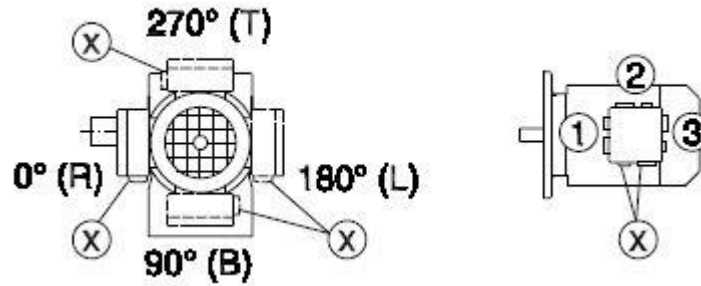
4.6- MOTOR-REDUCER CFM ASSEMBLY POSITION (with output shaft and flange)



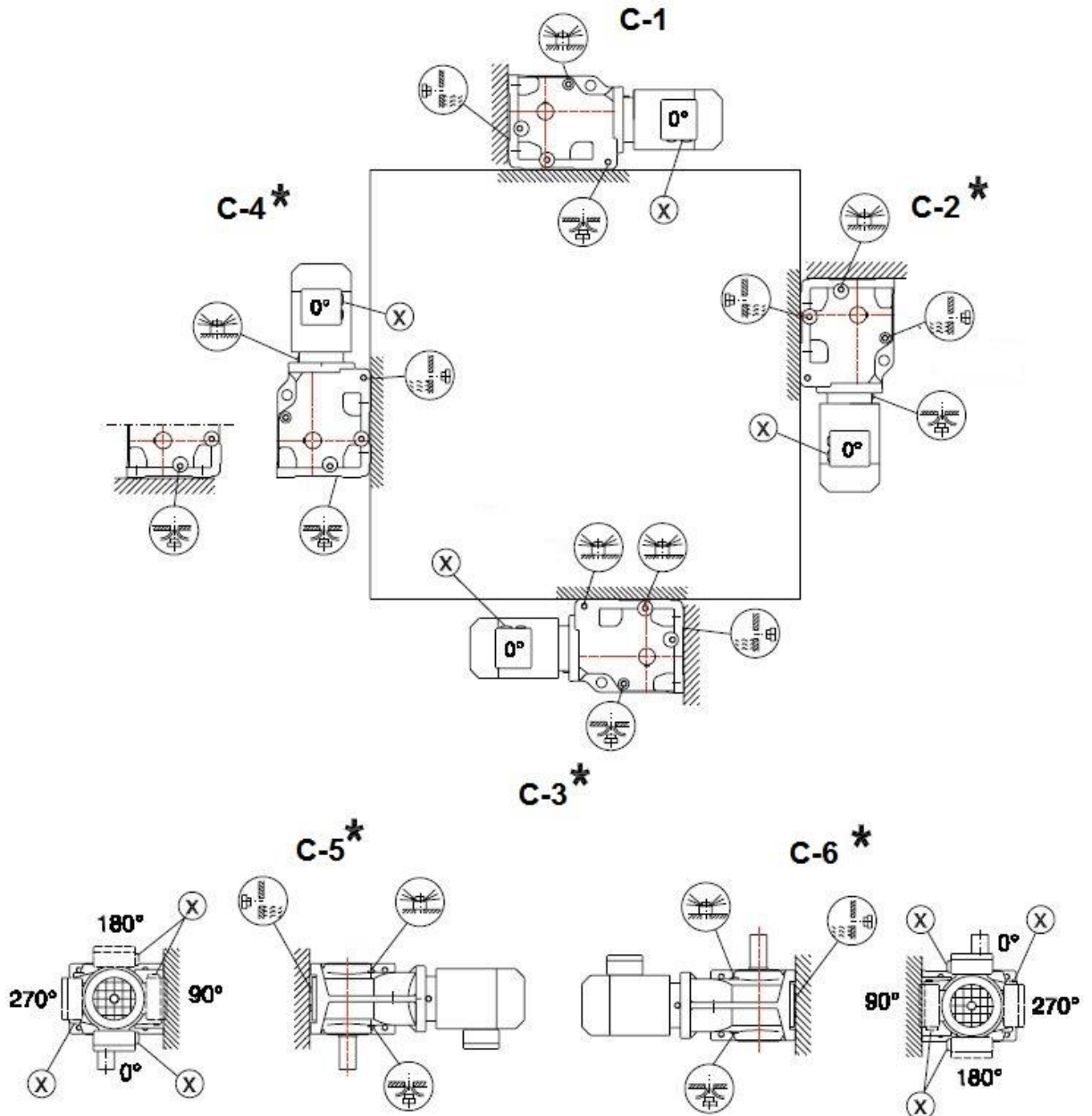
4.7- MOTOR- REDUCER CFM ASSEMBLY POSITION (with hollow shaft)



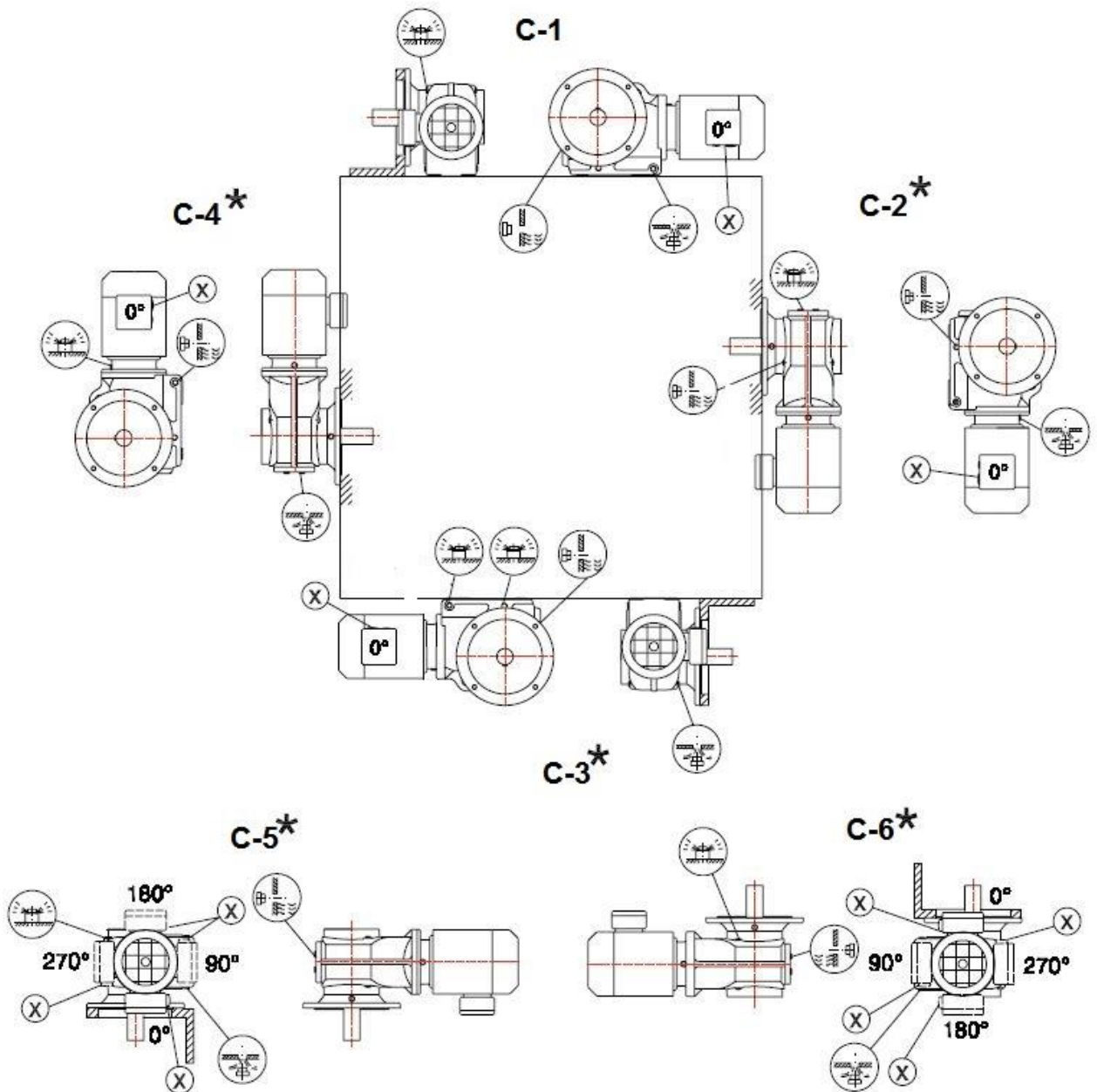
Position of the motor terminal box with respect to the X-axis on the CFM reducer:



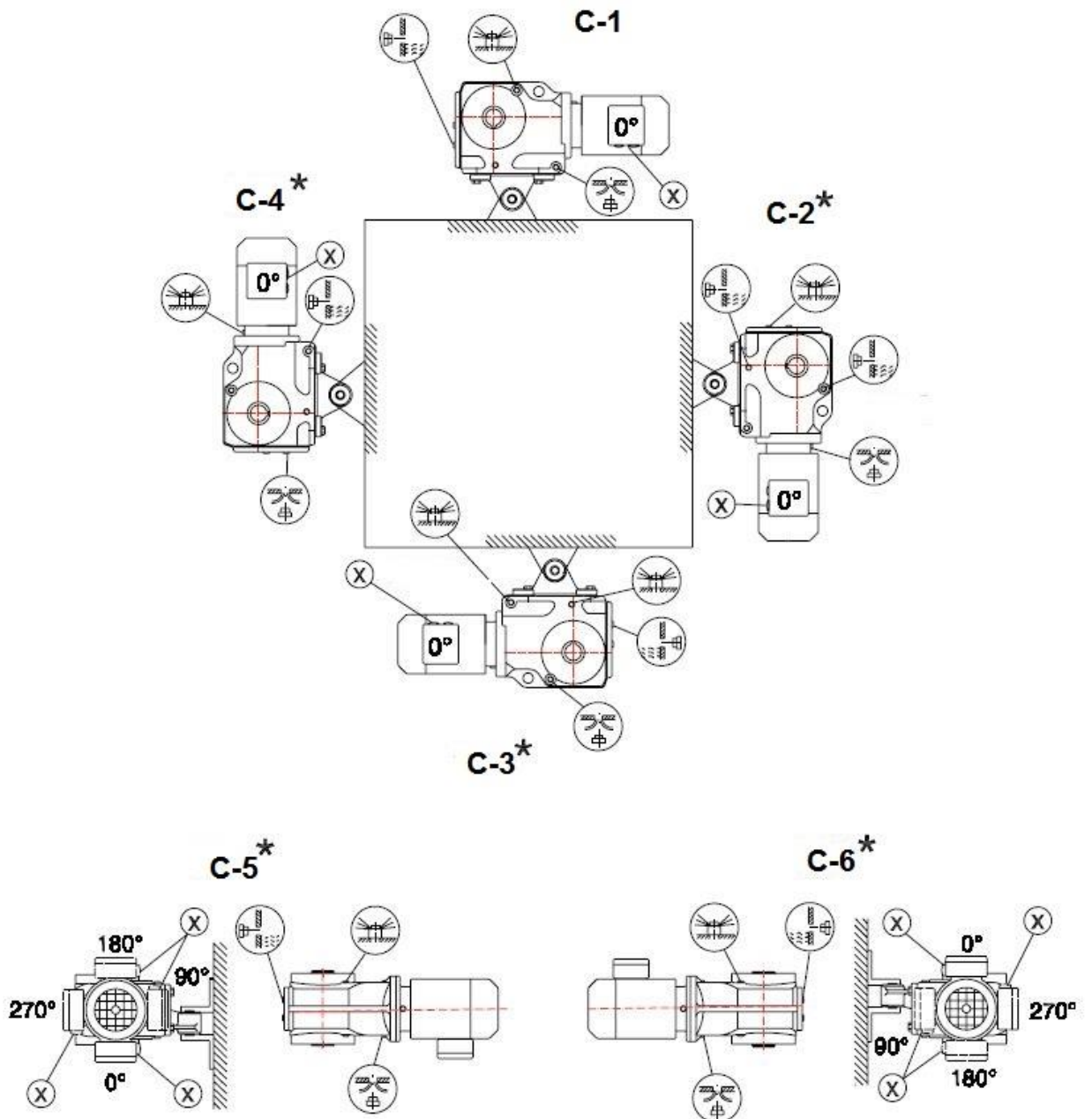
4.8- MOTOR ASSEMBLY POSITION - CKM REDUCER (with output shaft)



4.9- MOTOR ASSEMBLY POSITION- CKM REDUCER (with output shaft and flange)



4.10- CKM MOTOR-REDUCER ASSEMBLY POSITION (with base reaction arm)



5. ORDER INFORMATION

To enable the equipment configuration to be defined correctly, and to avoid confusion, more complete and detailed information is required along with the assembly position.

5.1- DIRECTION OF ROTATION OF THE OUTPUT SHAFT

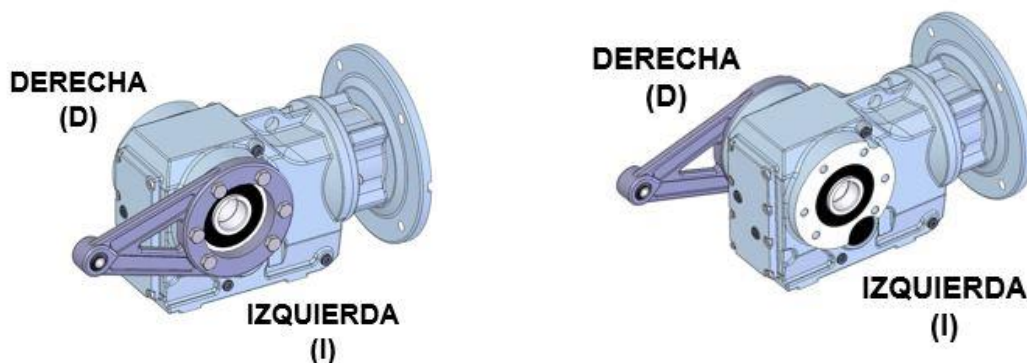
When ordering a reducer of the CFM or CKM family, it is necessary to indicate the direction of rotation of the output shaft. The direction of rotation is given facing the output shaft.



Direction A corresponds to the one that coincides with the clockwise direction, and direction B corresponds to the counterclockwise direction.

5.2- LOCATION (RIGHT or LEFT) OF THE REACTION ARM

When ordering a reducer of the CKM family with reaction arm, it is necessary to indicate the location (right or left) of the reaction arm.

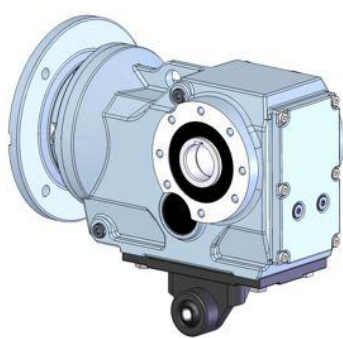


In the figures you can clearly see a reference of how the right and left sides are positioned.

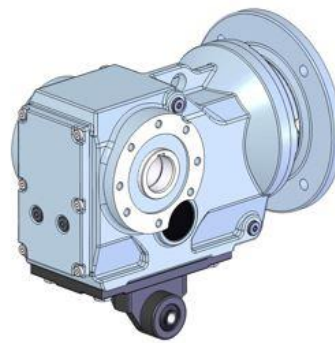
5.2- LOCATION (RIGHT or LEFT) OF THE REACTION ARM BASE

When ordering a reducer of the CKM family with base reaction arm, it is necessary to indicate the location (right or left) where we want to place the base reaction arm.

CKM



RIGHT (R)

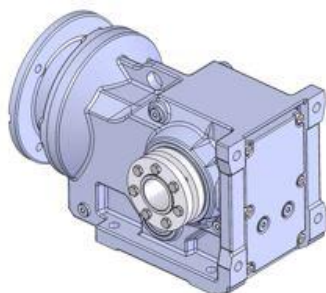


LEFT (L)

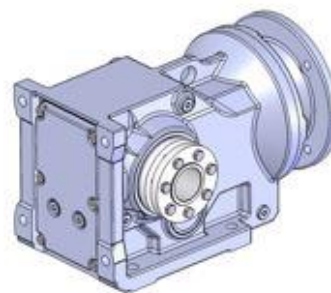
5.3- LOCATION (RIGHT or LEFT) OF THE CONTRACTION RING

When ordering a reducer of the CFM or CKM family with shrink ring, it is necessary to indicate the location where we want to place the shrink ring.

CKM

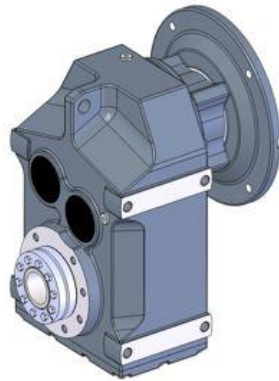


RIGHT (R)

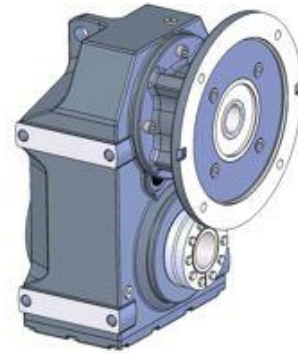


LEFT (L)

CFM



FRONT (A)



BACK (B)

By observing the figures we can make sure and decide clearly on which side we need to position our shrink hoop. We will subsequently indicate this in the supplementary information table.

5.4- SAMPLE TABLE OF SUPPLEMENTARY INFORMATION

FAMILY		CKM
SIZE		57
ASSEMBLY POSITION		BR-1
DIRECTION OF ROTATION		A
REACTION ARM	RIGHT (R)	D
	LEFT (L)	
BASE REACTION ARM	RIGHT (R)	
	LEFT (L)	
SHRINK RING	RIGHT (R)	
	LEFT (L)	
	FRONT (A)	
	BACK (B)	
ENGINE INPUT SPEED r.p.m.		1.500
MOTOR TERMINAL POSITION		270° (T)

In the example at hand, we would have:

- CKM equipment on legs, with motor,
- size 57,
- assembly position BR-1, which can be found in the figure on page 23,
- the direction of rotation of the shaft would be clockwise,
- with reaction arm located on the right,
- motor input speed of 1,500 rpm.
- the position of the motor terminal is at the top.

6. PUTTING INTO SERVICE

6.1- STARTUP

Check, in the uncoupled state, whether the direction of rotation is correct (detect possible noises when rotating).

Fix the shaft keys for testing without output elements. Do not deactivate the monitoring and protection equipment during testing.

Unplug the reducer motor in case of doubt when changes from normal operation are observed.

Start-up should be a gradual process, avoiding the immediate application of the maximum load required by the machine, to prevent and correct any anomalies due to incorrect application.

6.2- ROLLING

For CKM and CFM series motor reducer, it is not necessary to observe any special measures for start-up, provided that these reducers have been assembled in accordance with the instructions in the INSTALLATION chapter.

6.3- TROUBLESHOOTING

If any problems arise during start-up, or in the first few hours of operation, please contact after-sales service.

The following table shows a series of problems with a description of possible solutions.

It goes without saying that this information is given as an indication only, and for information purposes only, as all units are tested and verified before leaving the factory.

Any unauthorized tampering with the unit voids the warranty and often makes it impossible to determine the cause of the failure or malfunction.

PROBLEM	CAUSE	SOLUTION
Engine will not start	Incorrect motor size	check the power supply
The motor consumption is higher than shown on the nameplate.	Incorrect motor size	Check the application
Motor housing temperature is too high	Defective motor	Check the application
	Incorrect motor size	
	Incorrect motor assembly	
The temperature of the motor reducer housing is very high.	Incorrect reducer size.	Check the application
	Assembly position does not match the requested position.	
	Incorrect motor size	
The speed of the output shaft of the motor reducer is incorrect.	The reducer reduction ratio is incorrect.	Check reduction ratio
	Motor polarity is incorrect	Check motor polarity
The output shaft rotates in the opposite direction	Motor supply connection is incorrect	Reversing 2 phases of the motor power supply
Electric motor vibrates	Motor and reducer not properly aligned	Check motor flange tolerances
		Check the tolerances and geometry of the drive shaft.
Unusual and continuous operating noise	<ol style="list-style-type: none"> 1. Scuffing or squeaking noise: damaged bearing 2. Knocking noise: gear irregularity 	<ol style="list-style-type: none"> 1. Check oil (see Inspection and maintenance section), replace bearing. 2. Contact customer service
Unusual and discontinuous operating noise	Foreign matter in the oil	Check oil (see inspection and maintenance section). Stop the drive, call for service
Oil leakage (1) By the reducer cover By motor flange By motor shaft seal By the reducer flange By output shaft seal	1, Rubber gasket of the reducer cover not watertight <ol style="list-style-type: none"> 1. Defective seal 2. Reducer not vented 	<ol style="list-style-type: none"> 1. Retighten the reducer cover bolts and monitor the reducer. If oil leakage continues, contact customer service. 2. Contact customer service 3. Bleed the reducer (see assembly positions).
Oil leaks from the gas outlet cap	<ol style="list-style-type: none"> 1. Excess oil 2. Incorrect drive in incorrect assembly position. 3. Frequent cold starts (foam in oil) and/or high oil level. 	<ol style="list-style-type: none"> 1. Correct the oil level (see Inspection and maintenance section). 2. Correctly install the exhaust plug (see assembly positions) and correct the oil level (see lubricants).

(1) During the initial running-in phase (24 hours of running-in), it is normal for small amounts of oil or grease to escape from the oil seal (see DIN 3761).

7. MAINTENANCE

7.1- GENERAL INFORMATION

The high quality finish of the internal parts ensures proper operation with a minimum of maintenance.

In general, the following rules apply:

- Periodic control of the external cleanliness of the units, in particular the areas most affected by cooling.
- Periodic control of oil leaks, in particular around oil seals.

Before performing routine checks and related maintenance, follow the instructions below:

- Make sure that the reducer motor has stopped and that the motor is not yet active.
- Make sure that the reducer motor has cooled down.
- Wear appropriate protective equipment and observe the safety regulations and instructions contained in this manual.

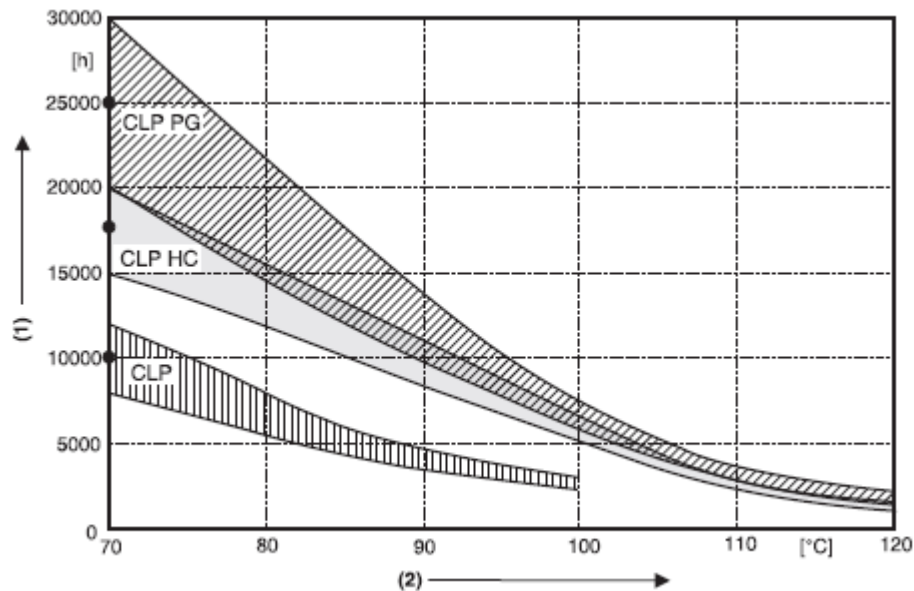
7.2- INSPECTION AND MAINTENANCE INTERVAL

Time period	Action
Every 3,000 hours of machine operation, at least every 6 months	Check oil
Depending on operating conditions (see chart below), at the most every 3 years	Change synthetic oil Replace bearing grease
Depending on external influences	Touch up or reapply anti-corrosive surface protection paint.

7.3- LUBRICANT REPLACEMENT

This graph corresponds to oil change periods for standard reducers under normal ambient conditions.

Change the oil more frequently when using special executions subjected to harsher environmental conditions.



(1) Hours of service

(2) Constant oil bath temperature

● Average value according to the type of oil at 70° C

Do not mix synthetic lubricants with each other or with mineral lubricants.

Mineral oil is used as standard lubricant.

The position of the oil level plug, oil drain plug and gas outlet plug depends on the assembly position and can be found in the diagrams of the assembly positions.

Checking the oil level:

- Switch off the reducer motor and protect it against accidental starting. Wait until the reducer cools down to avoid the risk of burns.
- If the assembly position is changed, observe the instructions in the section "Installing the reducer".
- For reducers with oil level plug: remove the oil level plug, check the oil level and correct it if necessary, then replace the oil level plug.

Oil check:

- Switch off the reducer motor and protect it against accidental starting. Wait until the reducer cools down to avoid the risk of burns.
- Drain a little oil through the drain plug.

- Check the consistency of the oil:
 - Viscosity
- If the oil is heavily contaminated, it is recommended that it be changed before the maintenance periods specified in the section "Inspection and Maintenance Periods".
- With reducers with oil level plug: remove the oil level plug, check the fill level and correct it if necessary, and replace the oil level plug.

Oil change:

The oil change should only be carried out when the reducer is at operating temperature.

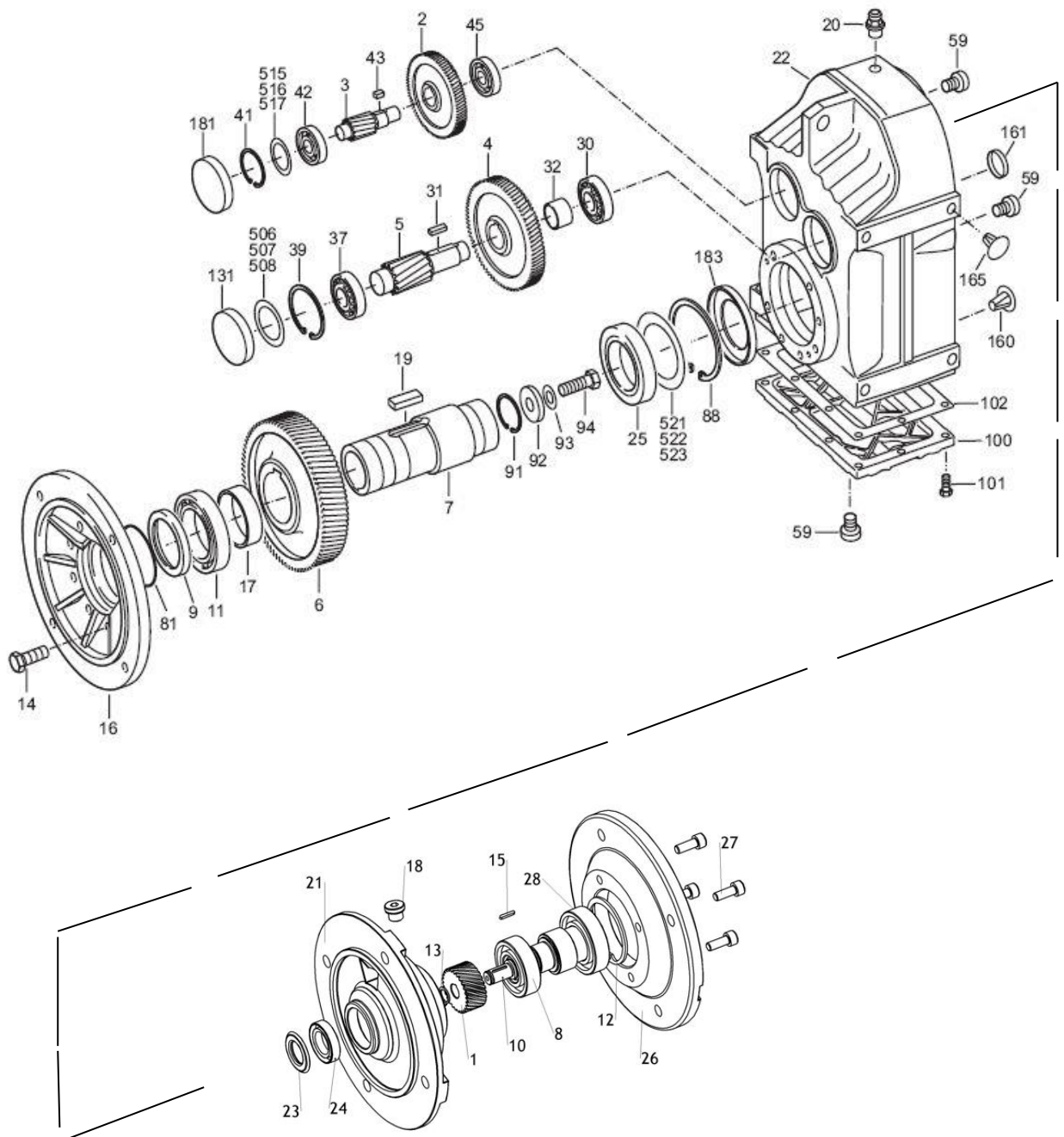
- Switch off the reducer motor and protect it against accidental starting.

Wait until the reducer cools down to avoid the risk of burns. Note: however, the reducer must still be warm, otherwise the lack of fluidity due to excessively cold oil can make draining difficult.

- Place a container under the oil drain plug.
- Remove the oil level plug, gas outlet plug/valve and oil drain plug.
- Purge all oil
- Replace the oil drain plug.
- Insert new oil of the same type through the aeration hole (or consult customer service).
 - Fill in the quantity of oil corresponding to the assembly position (see chapter "Lubricant fill quantities").
 - Check the oil level in the oil level plug.
- Replace the oil level plug.
- Replace the gas outlet valve/plug.

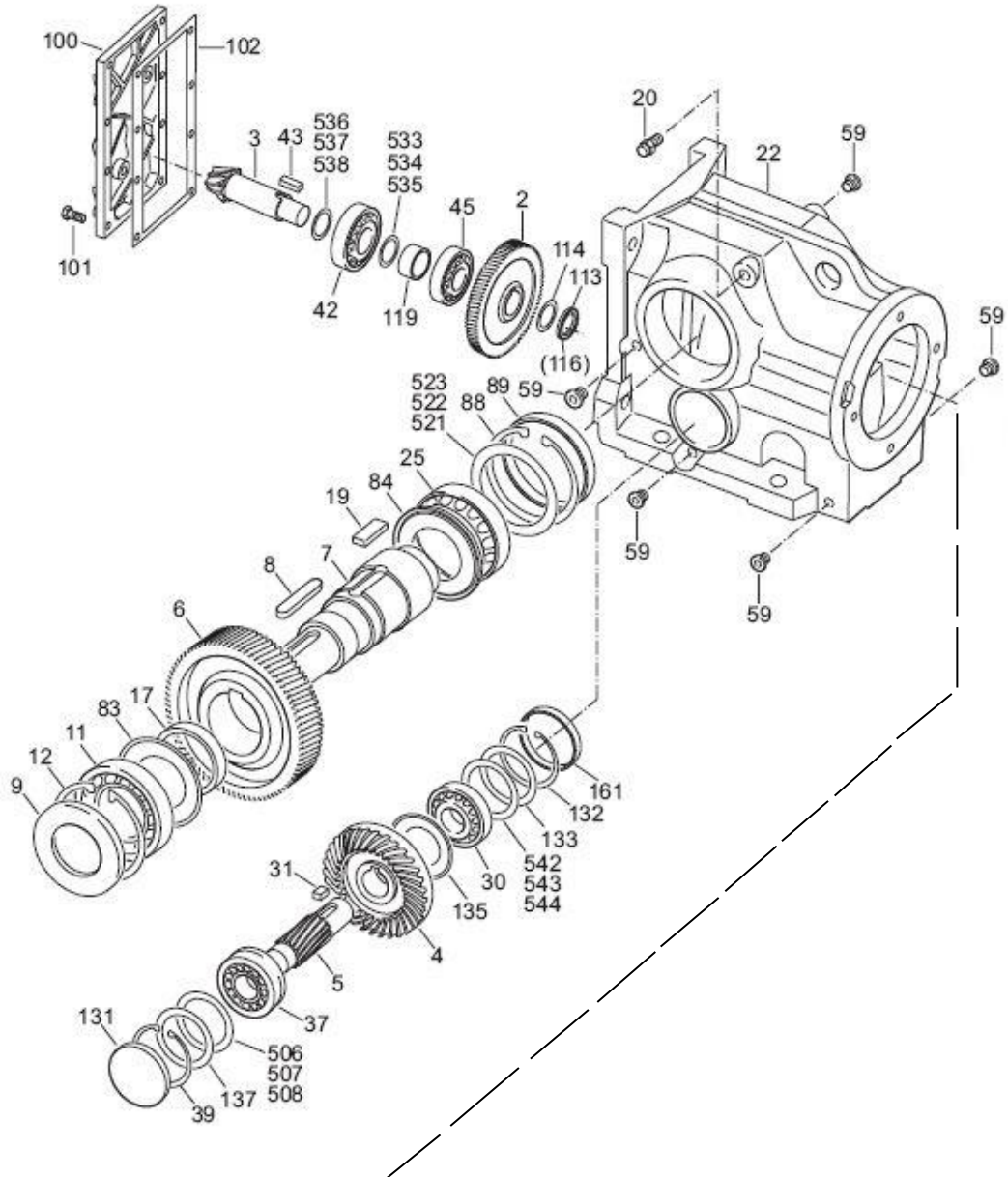
8. LIST OF SPARE PARTS

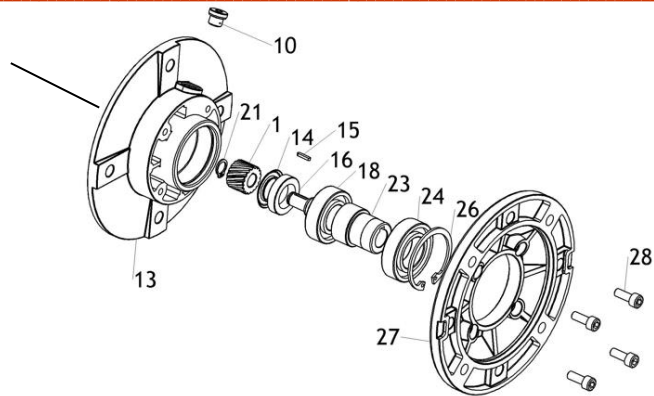
8.1-CFM MOTOR REDUCER FOR PARALLEL SHAFTS



1 Pinion Z1	15 Ring	29 bearing	100 reducer cap
2 Wheel Z2	16 Key	30 bearing	101 screw d
3 fixed gear Z3	17 Separator	31 Key	102 board
4 Wheel Z4	18 Plug	32 Separator	131 blanking plug
5 Fixed gear Z5	19 Key	34 Bearing	181 blanking plug
6 Wheel Z6	20 Gas outlet plug	37 Bearing	506 Adjusting washer
7 Output shaft	21 Body	39 Circlip	507 Adjusting washer
8 Key	22 Housing	41 Circlip	508 Adjusting washer
9 Retainer	23 Expanding ring	42 Bearing	515 Adjusting washer
10 Bearing	24 Clamping eyebolt	43 Key	516 Adjusting washer
11 Bearing *	25 Bearing	45 Bearing	517 Adjusting washer
12 Circlip	26 Retainer	47 Circlip	521 Adjusting washer
13 Input shaft	27 Flange	59 Threaded plug	522 Adjusting washer
14 Ring	28 Screws	88 Circlip	523 Adjusting washer

8.2-CKM MOTOR REDUCER FOR BEVEL GEAR SHAFTS





1 Z1 sprocket	18 Bearing	45 Bearing	161 Blind plug
2 Z2 Wheel	19 Key	59 Threaded plug	506 Adjustment washer
3 Z3 fixed gear	20 Gas outlet plug	83 Bearing protector	507 Adjustment washer
4 Z4 Wheel	21 Circlip	84 Bearing protector	508 Adjustment washer
5 Z5 fixed gear	22 Housing	88 Circlip	521 Adjustment washer
6 Z6 Wheel	23 Input shaft	89 Blind plug	522 Adjustment washer
7 Output shaft	24 Bearing	100 Reducer cap	523 Adjustment washer
8 Key	25 Bearing	101 Screw	533 Adjustment washer
9 Retainer	26 Circlip	102 Gasket	534 Adjustment washer
10 Plug	27 Flange	113 Knurled nut	535 Adjustment washer
11 Bearing	28 Screws	114 Lock washer	536 Adjustment washer
12 Circlip	30 Bearing	116 Threaded sealing ring	537 Adjustment washer
13 Intermediate body	31 Key	119 Separator	538 Adjustment washer
14 Expanding ring	37 Bearing	131 Blind plug	542 Adjustment washer
15 Key	39 Circlip	132 Circlip	543 Adjustment washer
16 Retainer	42 Bearing	133 Support washer	544 Adjustment washer
17 Separator	43 Key	135 Bearing protector	

9. WARRANTY

9.1- GENERAL INFORMATION

Cidepa-Sincron S.L. guarantees the good quality of the products supplied.

The warranty is valid for twelve months from the date of receipt of the goods.

Any complaint about product defects must be submitted within eight days from the date of discovery of the defect.

During the warranty period, Cidepa-Sincron warrants at its factory or at any other place it has indicated, the repair or at its discretion, the defective components.

The warranty covers the costs incurred by Cidepa-Sincron for labor and materials necessary to restore the product to working order.

The warranty does not cover other costs such as transportation of goods, travel and accommodation expenses of Cidepa-Sincron maintenance personnel for repairs and finally, costs for the customer's employees.

9.2- WARRANTY DISCLAIMER

Cidepa-Sincron's warranty does not cover product failures attributed to:

- Negligent use or misuse
- Damage caused by water
- Shipping damage
- Damages due to non-provided applications
- Damage due to interventions or repairs carried out by persons not authorized by Cidepa-Sincron
- Damage due to operation under unforeseen environmental conditions
- Damage due to operation under unforeseen environmental conditions
- Non-compliance with the specifications and regulations relating to the machines on which Cidepa-Sincron products are installed.
- Absence of consultation and use of the products according to the instructions, information and specifications in this manual.
- The payment of an indemnity for a non-operational or defective unit is generally excluded.

10. COMMERCIAL NETWORK



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