



INSTALLATION, USE AND SERVICE MANUAL





X	1. Purpose of the manual
	2. Reception of gearbox
	3. Equipment identification
	4. Manufacturer's liability
E	5. Storage
	6. Installation
	6.1- transmission components coupling
D	7. Operation modes
	8. Lubrication
	9. Maintenance
	10. Replacing parts
N	11. Safety information
	12. Troubleshooting
I	Annex 1. Mounting position
	Annex 2. Table of tightening torque for the bolts
	Annex 3. Table of recommended lubricants

1. PURPOSE OF THE MANUAL

This manual has been compiled to describe the machine, and provide an explanation of good practices, to install and handle the equipment along its whole life. These operations must be carried out by qualified and authorized personnel.

The information given in this manual must be carefully read before starting the machine, in order to get used to its design and operation modes, and thus avoid future problems of operation and safety, and ensure a long life on your equipment.

The information regarding the electric motor is supplied with the owner's manual relevant to the specific electric motor.

Cidepa-Sincron is continually working to improve the quality of the information provided in this manual, if you have any suggestions or questions, please contact our Technical Department by e-mail mejoras.manual@cidepa.es

Finally, carefully follow the safety instructions, aided by the following symbols:



WARNING/DANGER: This symbol indicates situations of serious danger which, if ignored, may result in serious risks to the health and safety of personnel, and the integrity of the equipment.



IMPORTANT: This symbol indicates important technical information that must be respected.

2. RECEPTION OF GEARBOX

When unpacking gear reducer or geared motor of its packaging and before to assembly or storage, shall be verified in transport has not suffered any damage.

Report any anomalies to Sales Department of Cidepa-Sincron.

3. EQUIPMENT IDENTIFICATION

Check that the data on the Nameplate corresponds to that which is specified on the order. This nameplate will be as shown in the figure below with the following information:



- **Reductor n°.**: Serial number of the gearbox. It is a unique code that identifies the equipment, ensuring its traceability. The information thereon must be visible and legible, it is necessary to order spare parts and to solve damage.
- **Tipo**: Gear unit type.
- **Potencia CV**: Power expressed in CV.
- **Relación**: Ratio of reduction.

If mounted reducers “tandem” (two reducers mounted in series) each of them will take their *nameplate* with the corresponding technical data. Similarly, in the case of motors, the electric motor will be identified independently of the gearbox, with its own nameplate.

4. MANUFACTURER'S LIABILITY

Cidepa-Sincron declines all liability for cases of use of the gear unit in violation of local laws on safety and accident prevention at work; incorrect installation, disregard or incorrect application of the instructions provided in this manual or work done on the unit by unqualified or unsuitable persons. In addition, the customer is responsible for the correct selection of equipment according to the industrial conditions, unless advised by the Technical Office, to which must provide the requested data accurately contrasted.

5. STORAGE

Since the weight and shape of packages may make manual handling unfeasible, special equipment and qualified personnel must be used to avoid damage and injury. When handling with crane or lift truck, make sure the hooks and avoid sudden movements or shocks. Never raise the gear seizing it by the electric motor.

When storing the gear or gear motor, groups that are not lubricated for life, will be filled with lubricant and machined external surfaces will be covered with a rustproofing product.

Store in a dry and clean areas, with temperatures between -5°C and 40°C , do not store outdoors. In humid atmosphere will be required a specific packaging. Place the gear unit on a stable base according to the future mounting position. If storage is for a long time, more than a year, regular maintenance must be done.

Before its starting, remove the lubricant used for storage and refill with clean oil to the level required.

6. INSTALLATION



ATTENTION: *The equipment will start up if it has been installed according to his installation instruction, and only if it has been taken in account all the necessary safety conditions.*

Everything about electric connections and applicable laws and the relation between them are responsibility of the client

It is necessary to read and understand every established point in this installation manual, and satisfy them.

Keeps this manual in accessible places for the machine's operator in order to be consulted in any case.

Before starting up the gearbox, it will pursue the following recommendations:

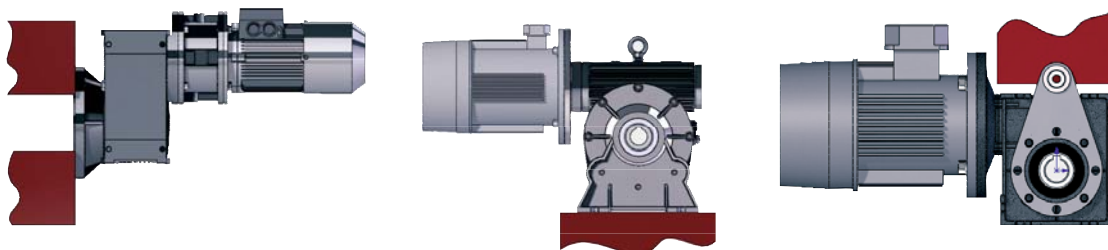
- 1. Thoroughly clean all packaging materials and protective product residue from the gear unit. Pay particular attention to the coupling surfaces.*
- 2. Ensure that the structure to which the gear unit is to be mounted is sufficiently robust and rigid to support its weight and operating stresses, and the gear will fix according to the holes and screws in the carcass. To do this, use as guide Annex: Table of tightening torques for the bolts.*
- 3. Check that the shaft/shaft or shaft/bore are perfectly aligned for coupling. A misalignment can cause premature brake of the shafts and bearings.*
- 4. The oil plug should be in a position to be inspected the oil level regularly.*
- 5. Make a start and break-in process, in the mounting position, 50% to the nominal torque and increasing gradually, checking that no important changes in the input voltage, and that no lubricant leakage, excessive vibration or excessive temperature rises, for 24 hours.*

Also, take in account if the gearbox is lubricated with grease or with oil. For grease lubrication, the gearbox supports any position in space. If lubrication is done with oil, it must be mounted in the position for which has been built. An assembly according to specified position ensures a correct lubrication and ventilation.

To the optimum working of gear is necessary to take into account the following prescriptions:

- a) There should be a good fit on a level surface, to avoid unwanted vibrations or stresses.
- b) To ensure adequate and appropriate space to guarantee a correct ventilation and proper air circulation.
- c) If there are non-uniform loads or continuous bursts, it is advisable to insert couplings, clutches, torque limiters..., since overcharging may involve efforts that lead to gear breakage or damage to the motor.
- d) In case of long stoppages after installation and running, put up the gear at least once a month for 3-4 minutes. If this is not possible, use some anti-corrosion agent, or fill the gear with oil completely clean, the same during its operating. The oil must be replaced when the gear back into service.
- e) In case of corrosive environments or installation outdoors, paint the gear with anticorrosive paint, and cover the oil seals with water-repellent grease, in order to prevent drying and lose tightness. Furthermore, it is desirable to seal with a layer of sealant, for example LOCTITE 574.
- f) In case of groups of geared motors, the motor wiring shall be in accordance with the specific scheme to each device. It is advisable to protect the motor winding to a possible overload or phase failure relay by installing thermal probe incorporated in the winding.

The main ways of installing of CIDEPA gearboxes are in flange (B5), in feet (B3) and pendular with torque arm:

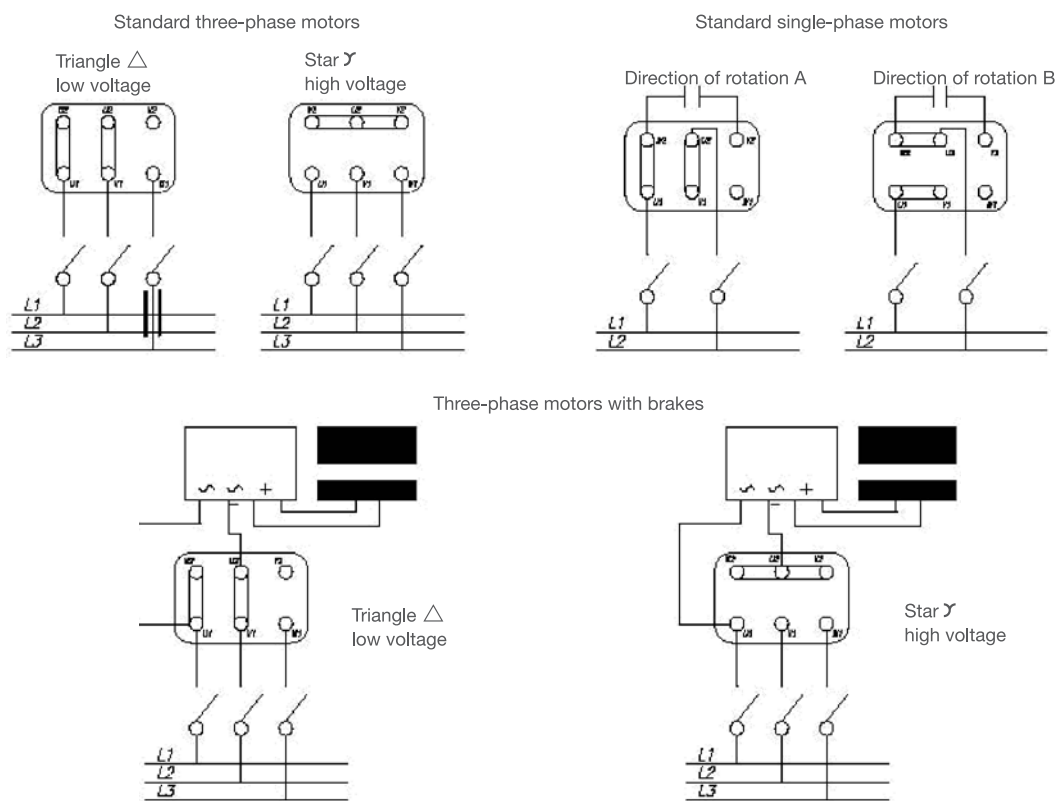


These installation methods have a wide range of mounting positions. It is very important to install the gear on the shape and position for which it was designed.

It is necessary to consider when the gearmotor is connected to the grid, the type and connection mode of the electric motor. There are two types of motors: three phase and single phase. By varying the terminal box connections we can vary:

Three phase motors: as connected in triangle or star, will work at low (Δ , 220 V) or high voltage (Y , 380 V), respectively.

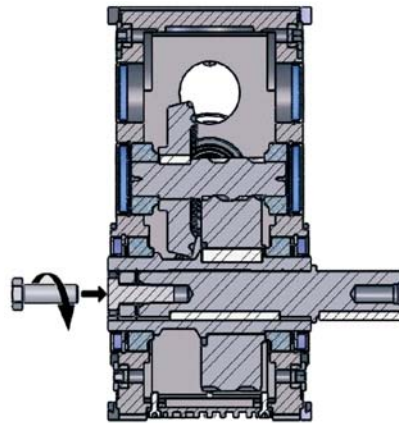
Single phase motors: depending on connection it will have a different direction of rotation.



6.1 TRANSMISSION PARTS MOUNTING

When couplings, pulleys, chain wheels, ... must be mounted in the shafts, they must be boring at ISO H7 tolerance and precision.

The shafts of Cidepa-Sincron gearboxes are manufactured ISO k6 tolerance and are equipped with threaded centred point at the extremes, DIN332. So, for mounting external parts do not use hammers which might damage the gear unit's shafts or bearings, you can use a screw as indicated in the diagram below:



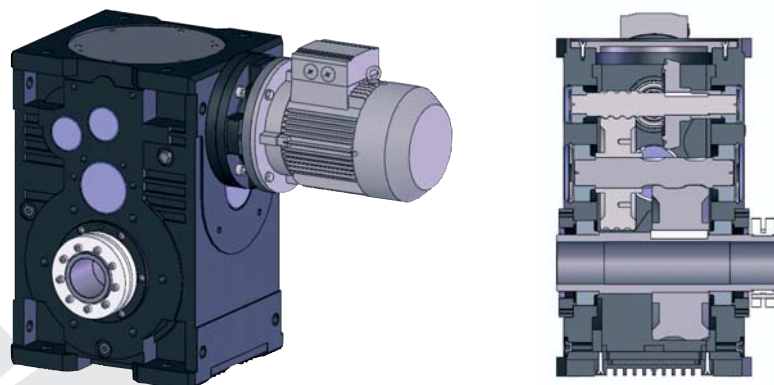
Screwing up the fixation screw, the drive shaft is going inside the cavity to his final position without the need of using the hammer in the opposite extreme.

In case of hollow shaft gear units, clean the shaft of the customer and verified compliance with the specified tolerances.

If pendular gearboxes are installed, apply an effective and anticorrosive lubricant layer to the shaft.

Take into account the conditions of mounting pins and shrink disk. Transmissions by belts and chains shall be protected to avoid contact or entrapment. The chains should not be unduly strained.

When installing a gear with shrink disk, couple the customer shaft into the gear output shaft and tighten down the shrink disk bolts according to the tightening torque specified in Annex: *Table of tightening torques for the bolts*, as figure below:



7. OPERATING MODES

The operation mode of this equipment depends on the final assembly of the set which it is incorporated. The principle of operation is as follows:

Through the input pinion, the gear receives motion and torque from the engine. Through the various gear trains reduces the angular speed at the output. As the power helds constant the decrease in speed results in an increase in torque transmitting.

8. LUBRICATION

Normally, the oils are selected according to environmental and operating conditions. Can be classified into three groups:

Mineral oils are suitable for light operations with moderate loads, and without significant thermal changes.

Poly-alpha-olefin oils (PAO) are ideal for harsher applications, with gear operating under high loads continuously and high temperatures.

Finally, *synthetic oils* (PG) have their purpose in applications with high frictions and slippage. Be especially careful with these oils since they are not compatible with other oils.

There is also a specialty oils range for food industry, which is not harmful to health.

Life-time lubricated gear units, do not normally require periodic lubricant changes. Only perfect sea is checked in order to maintain permanent lubrication.

When the gearboxes are supplied without oil, the User has the filled liability.

It is recommended using synthetic oils VG-220, VG-220, VG-320 or VG-460, according to operation conditions.

In the lubricated gears there is a plug in the fill hole for inside aeration and pressure, the holes must be cleaned.

Life-time lubricated gear units are the following series:

Life-time lubricated gear units are the following series:

- KM
- MF (sizes 44, 49, 62, 63 y 86)
- MQ
- MRH (sizes 71, 80 y 90)
- XR (sizes 2045, 2055, 2060, 2065, 2070, 2075, y 2080)
- DPS
- S
- ROM/CROM/VCROM (sizes 0 y 1)

The gear units that need review and oil refill are:

- MF (sizes 110 y 130) Supplied with oil
- MRH (sizes 100 y 112) Supplied without oil unless the customer requires it.
- MR (sizes 55 y 60) Supplied without oil unless the customer requires it.
- XR (sizes 2100, 2120, 2140, 2160, y 2190) Supplied without oil unless the customer requires it.
- ROM/CROM/VCROM (sizes 2, 3, 4, 5 y 6) Supplied without oil unless the customer requires it.
- TANDEM Supplied without oil unless the customer requires it.

The quantity of oil depends on the gearbox series, size and mounting position for which it is designed. Approximate values are available in the following table:

Volume of Oil (L) [Min-Max]					
Series	ROM	CROM	VCROM	Series	XR
Size				Size	
2	[3-4,7]	[3-4,5]	[3-4,5]	2100	[3-4,7]
3	[4-6,6]	[4-6]	[4-6]	2120	[4-6,6]
4	[7-8,5]	[7-8,6]	[6,8-9]	2140	[7-8,5]
5	[11-13]	[12-17,8]	[11,8-18,6]	2160	[11-13]
6	[23,7-34,3]	[24-32,5]	[22,3-31,8]	2190	[23,7-34,3]

Volume of Oil (L)					
Series	MR	Series	MRH	Series	MF
Size		Size		Size	
55	10	100	4	110	1,2
60	15	112	5	130	3

Annex: Oil Recommended Table major Brands of lubricant suitable market for our products are available.



Lubricants are toxic/harmful to health and environment; handle them with care and dispose of in compliance with applicable legislation.

9. MAINTENANCE

Maintenance and replacement work must be done by expert maintenance technicians trained in the observance of applicable laws on health and safety at work and environment. If in doubt, consult Cidepa-Sincron technical office, which provides repair service.

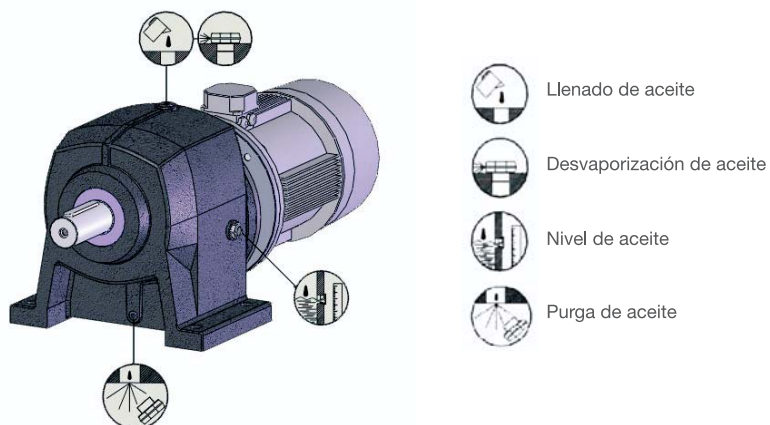
In general, before doing any work on the unit, the operator must first switch off power to the gear unit and ensure that it is out of service (due to suspended loads or similar external factors). The Manufacturer declines all liability for damages to personnel or components due non-compliance of safety requirements.

Keep the gear unit at its maximum efficiency by following the routine maintenance schedule specified in this Manual. Good maintenance enables the unit to operate at its maximum performance over a long service life in compliance with safety regulations.

After the first 500 hours, the oil will change as follow:

1. Once cold, remove the filler and drain plugs and allow the oil to drain out into a suitable container.
2. Cleaning oil will be puored until the enough quantity to drag dirt and sludge produced by shoot.
3. Screw the drain plug back on with a new gasket and fill the gear unit with the new oil to the centre of the level plug. The quantity of oil will depend on the mounting position.

Make the process according to a drawing as following:



In the Annex: *Mounting Positions* main configurations of the different models of gear are available, detailing also the position of lubricant plugs.

Be periodically checked the oil level, about every 720 hours of use. For normal operating conditions shall be changing the oil every 2.000 / 2.500 hours, as explained above, and do not mix oils of different nature or specifications. However, for each particular situation, the state of oil will determine the frequency with which will be changed.

Is equally important to include in maintaining, test to detect leaks by oil seal rings, the cleaning of fans and cooling zones, verifying that there is not excessive noise levels, the anchorage to the support structure have not slackened due to vibrations, and the external anticorrosive painting is kept in good conditions.

10. REPLACING PARTS

All parts are designed with ISO manufacturing tolerances, which ensure perfect interchange ability between them. Are advised to replace the components and accessories are purchased from Cidepa-Sincron, so the effectiveness of the machine can stay fully. Require a spare parts drawing, where determine accurately the necessary spare parts.

It is possible that by removing the gearbox for revisions and oil changes, remove the oil seal, they deteriorate in which case they must be replaced.



Scrapping the gear unit must be done by observance of applicable laws on protection of environment.

11. GENERAL SAFETY PRECAUTIONS

For any technical service needs, contact Cidepa-Sincron technical office, quoting the information on the unit's nameplate.

The gear units are intended to be used in diverse industrial areas, so the additional protection required, must be applied by responsible for the installation.

The gears may have parts exposed to voltage, high temperatures (above 50°C) and movement during operation, so appropriate safety measures must be taken.

All gear units supplied by Cidepa-Sincron will be integrated into equipment, so must be in compliance with Machinery Directive 2006/42/CE, Low Tension Directive 2006/95/CEE, and Electromagnetic Compatibility Directive 2004/108/CE.



- All maintenance, inspection and repairs must only be done by an expert technician.
- Check the power of the gear is suitable for working conditions.
- In the assembly process, do not strike any part of electric motor or gear unit.
- Do not start up the gear without checking the level of recommended oil.
- Do not use the gear in a potentially explosive atmosphere.
- Several consecutives starts or with output shaft blocked can lead to breakage of the internal elements of the gear.
- Check the electrical current consumption (A) the electrical motor, at start-up and in full swing, to ensure that not overloading of the net.
- It is recommended to change the oil seals when they removed or oil change is done.
- Make the first oil change at 500 hours. Before each change, cool the gear unit to avoid internal overpressure that can cause burns.
- Check the oil level at least once a month.
- With the gear runs, ensure that the rotating parts (shafts, couplings, and fan), are protected.

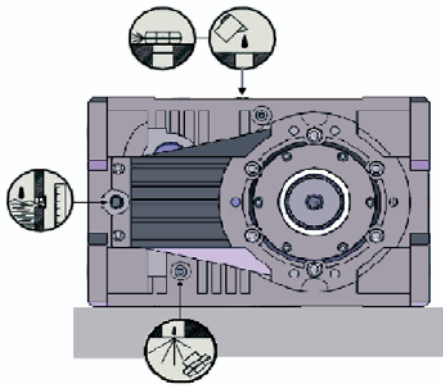
12. TROUBLESHOOTING



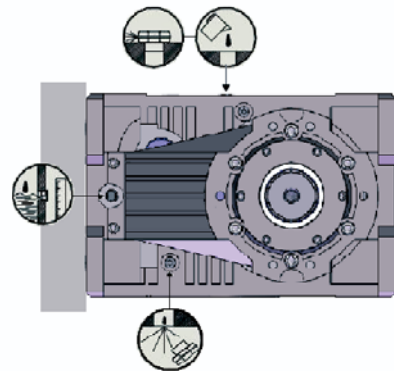
Problem	Cause	Solution
Operating temperature too high	Oil level too low	Top up oil level
	Oil too old	Replace oil
	Impurities in oil	Replace oil
	Bearings defective or worn	Replace bearings or contact Technical Department
	Airway obstructed or insufficient	Clean airway or install auxiliary ventilation
	Solar radiation and high ambient temperature	Electromagnetic Shielding
Abnormal running noise	Gears damaged	Contact Technical Department
	Bearings defective or worn	Replace bearings or contact Technical Department
	Service load too high	Correct service load to nominal values of equipment
	Mounting bolts loose or worn	Tighten down to specified torque or replace bolts
	Impurities in oil	Replace oil
Oil leaks	Level oil too high	Check oil level
	Oil seals damaged or worn	Replace the oil seals
	Incorrect mounting	Guide the gear according to operating position
	Guide the gear according to operating position	Tighten down bolts or contact Technical Department
Gear unit runs with difficulty	Service load too high	Correct service load to nominal values of equipment
	Level oil too high	Check oil level
	Oil viscosity too high	Replace oil (see table of recommended lubricants)
	Misalignment of the output shafts	Correct alignment
Output Shaft does not turn with motor running	Gears damaged	Contact Technical Department
	Keys' fracture	Replace or contact Technical Department

ANNEX 1. MOUNTING POSITIONS

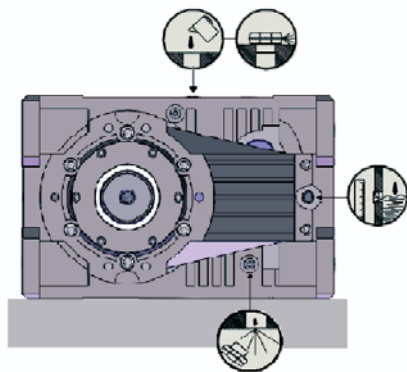




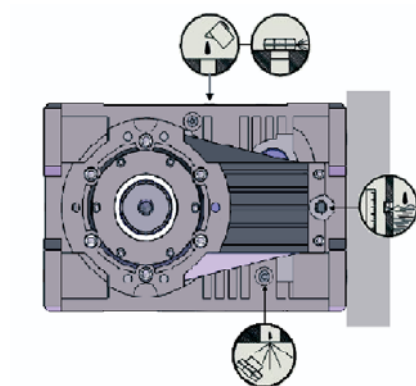
B-6/1



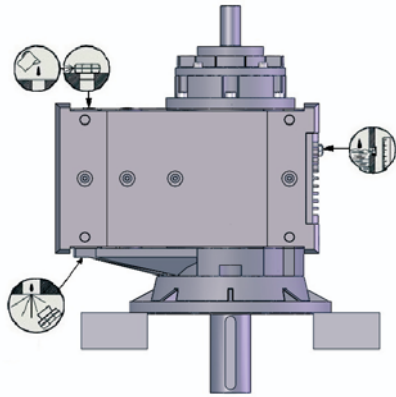
B-6/2



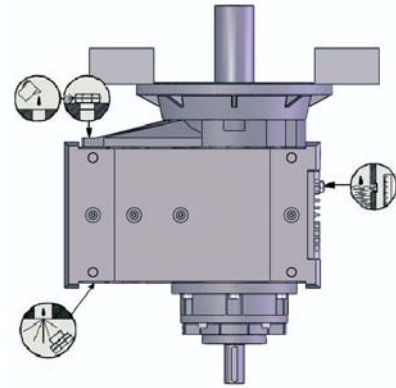
B-7/1



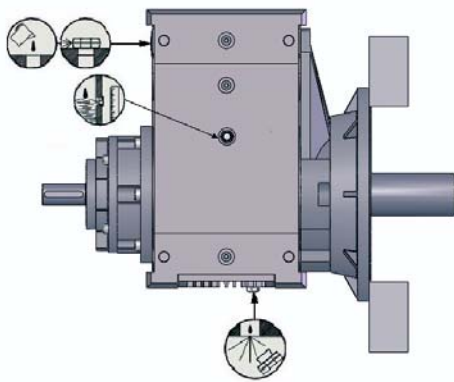
B-7/2



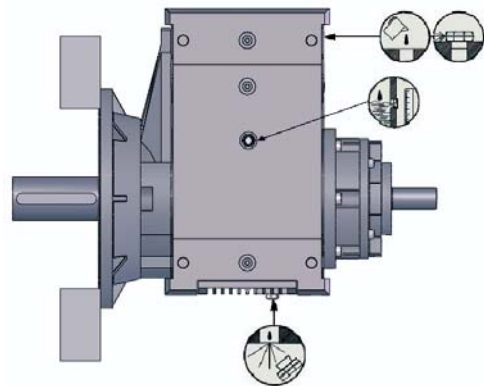
V-1



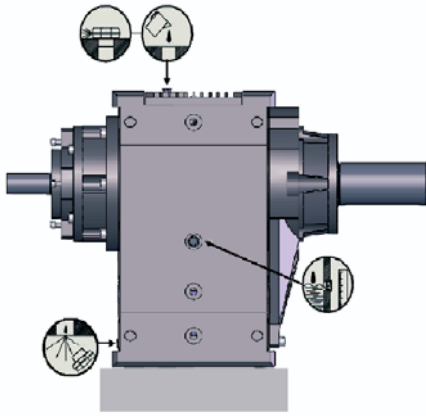
V-3



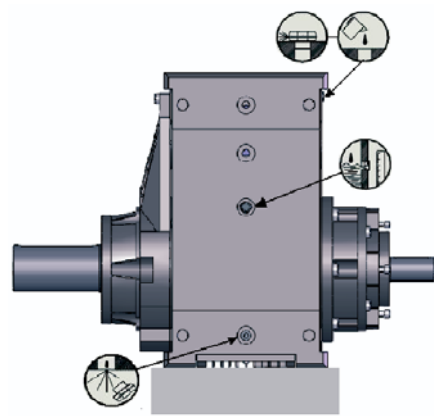
B-4/1



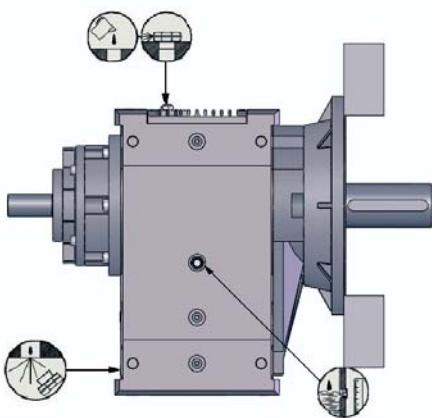
B-4/2



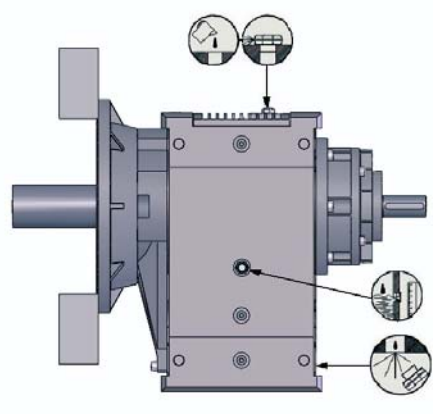
B-3



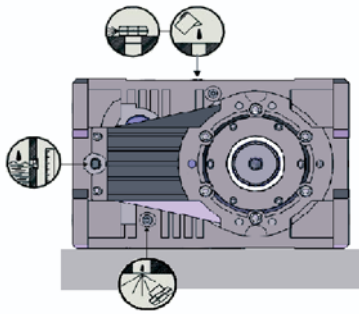
B-8



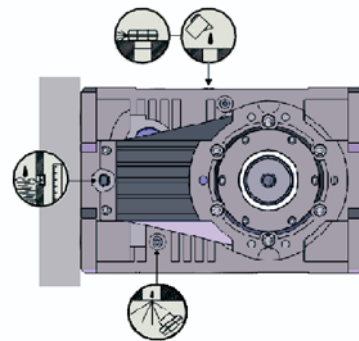
B-5/1



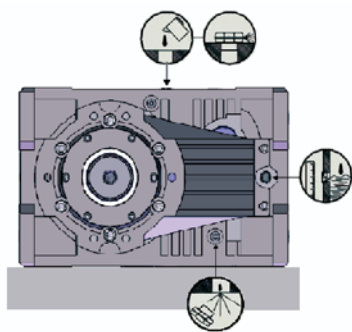
B-5/2



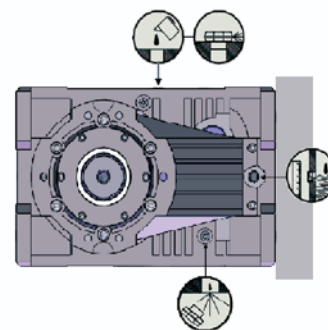
B-6/1



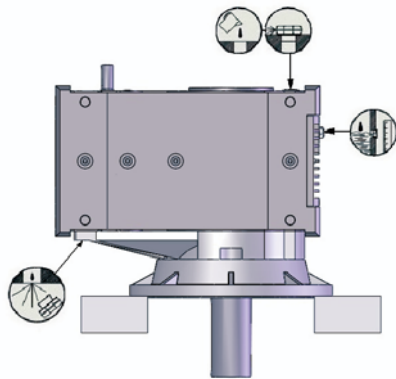
B-6/2



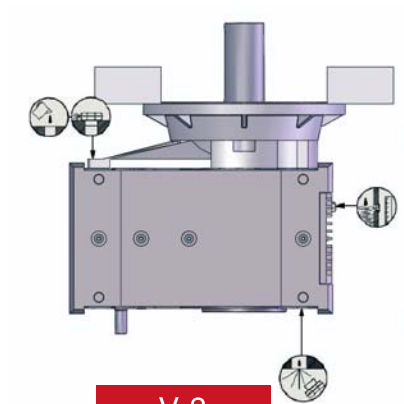
B-7/1



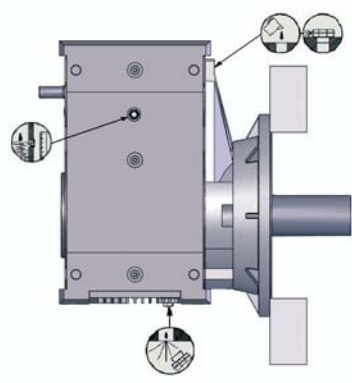
B-7/2



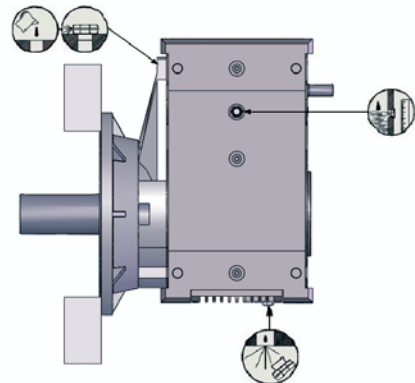
V-1



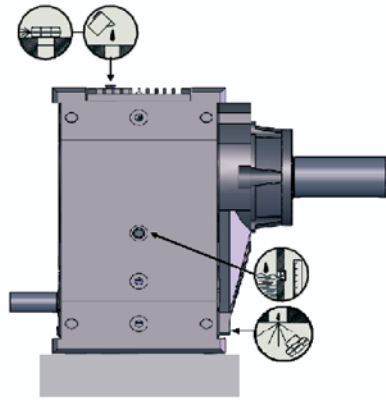
V-3



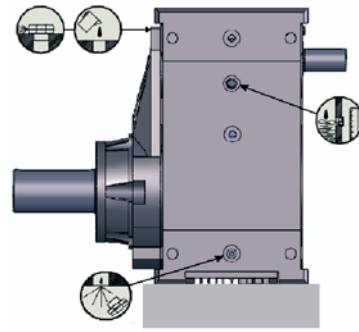
B-4/1



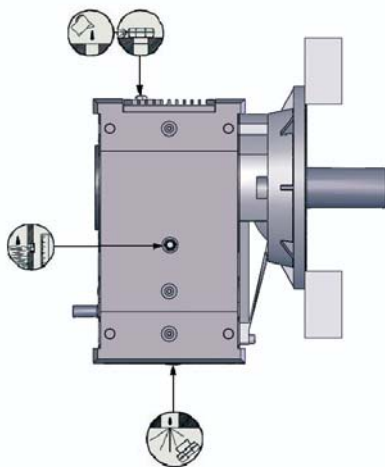
B-4/2



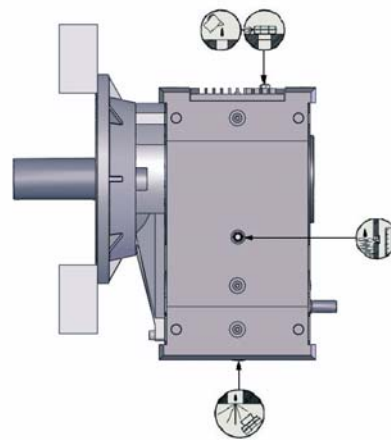
B-3



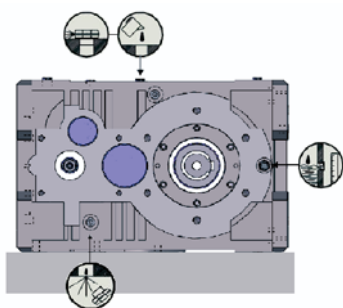
B-8



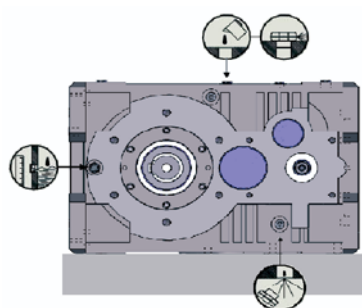
B-5/1



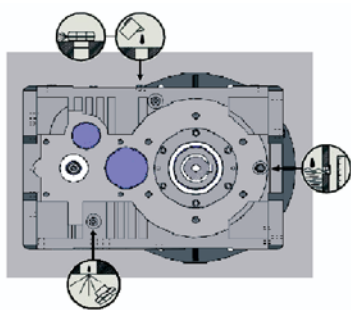
B-5/2



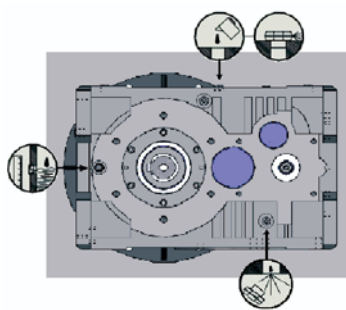
B-6



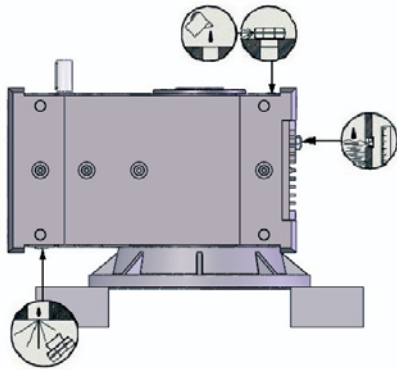
B-7



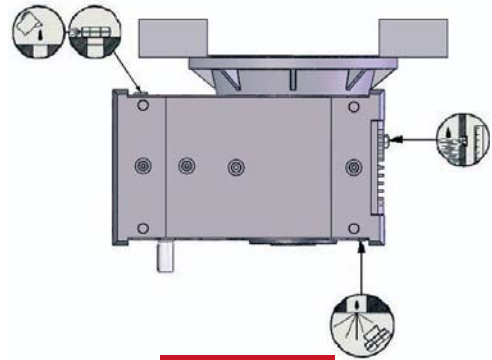
V-6



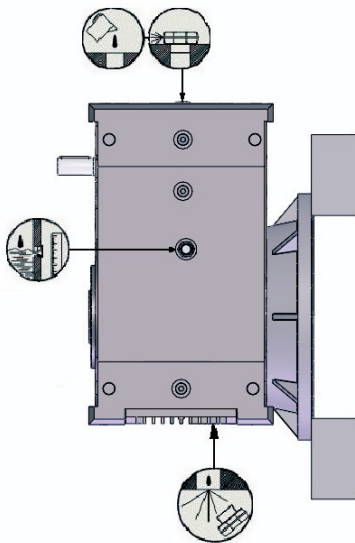
V-7



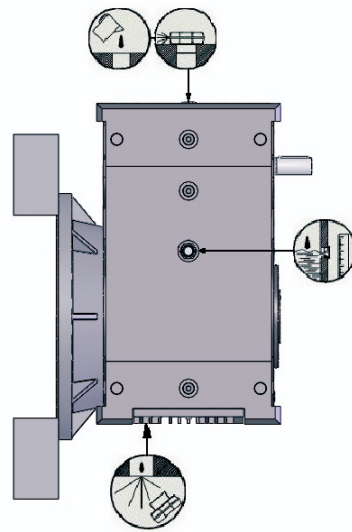
V-1



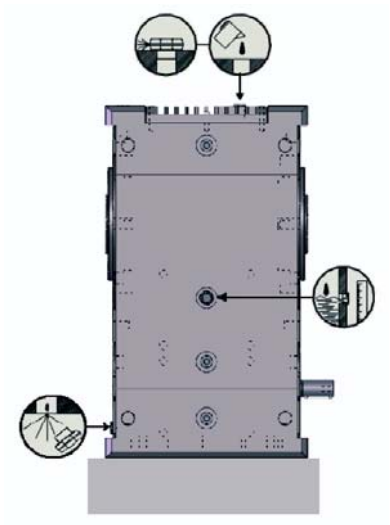
V-3



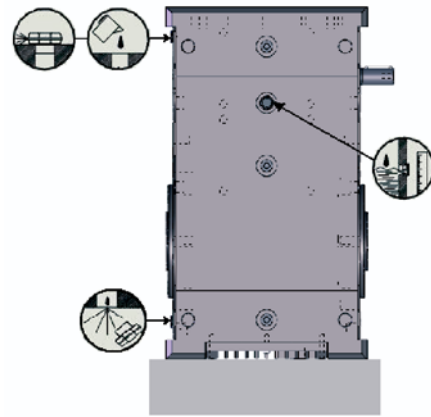
B-4/1



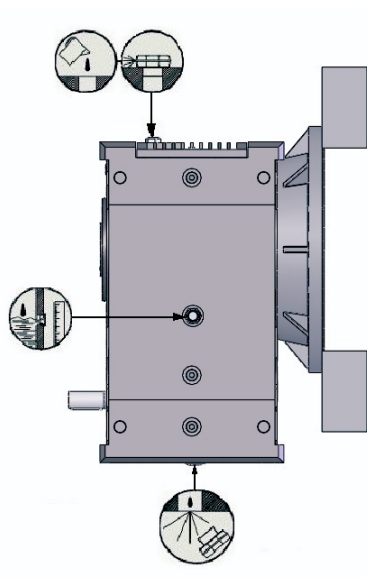
B-4/2



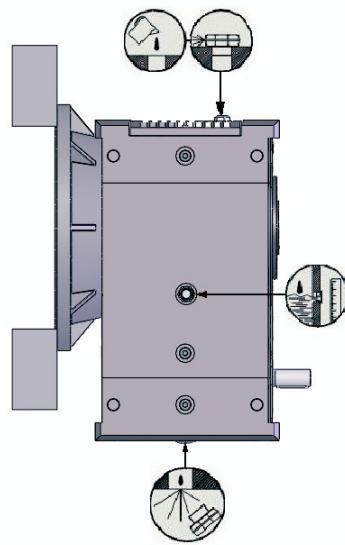
B-3



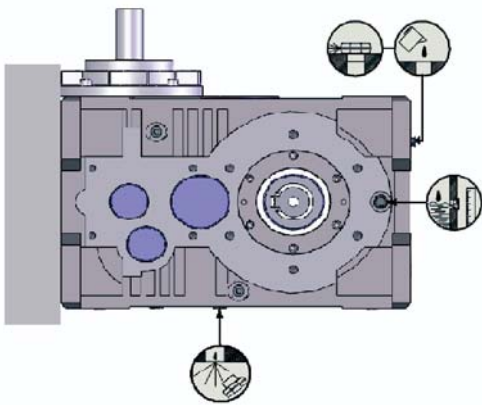
B-8



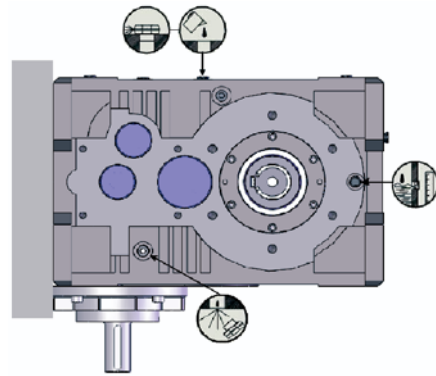
B-5/1



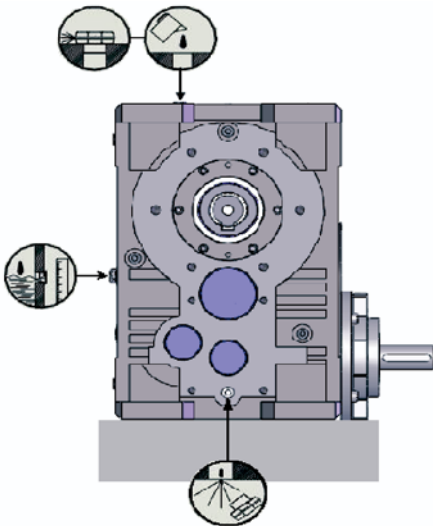
B-5/2



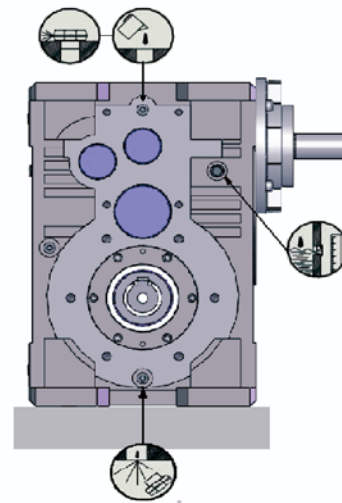
B-6



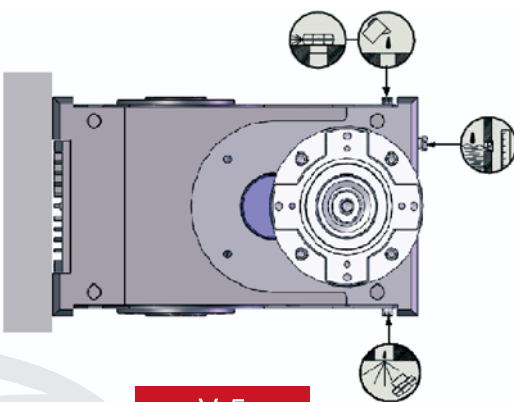
B-7



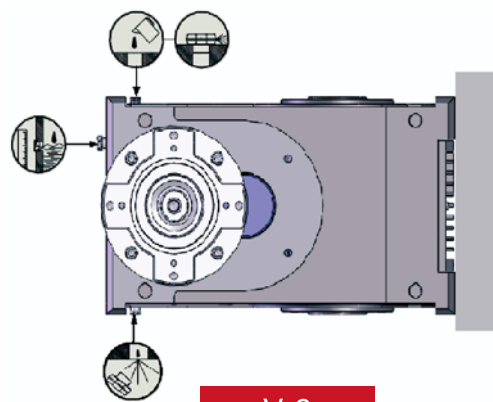
B-3



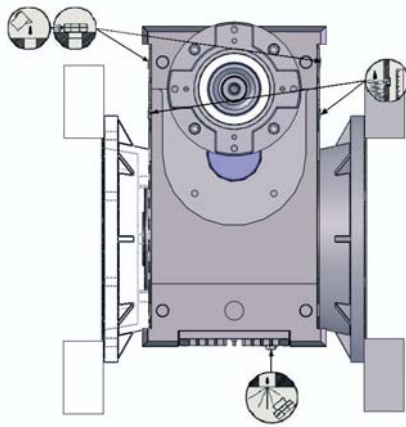
B-8



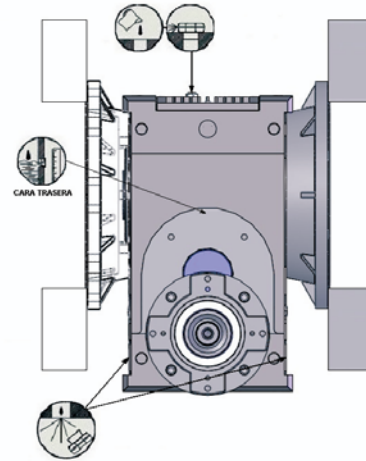
V-5



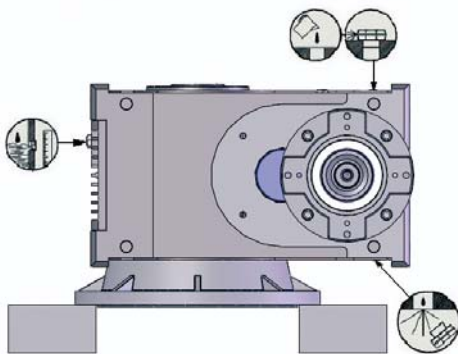
V-6



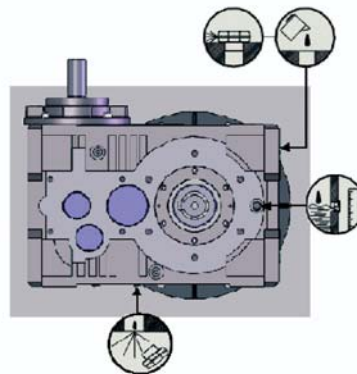
B-4



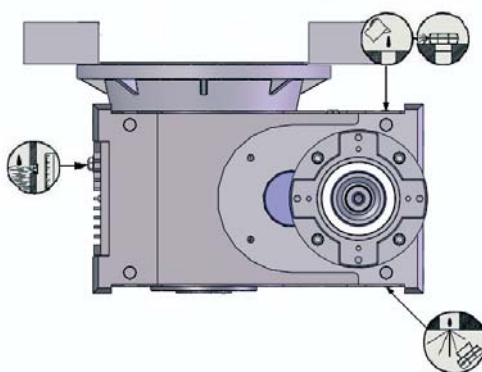
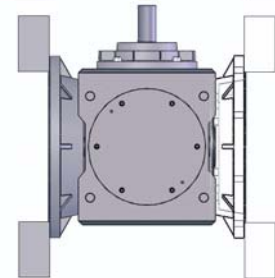
B-5



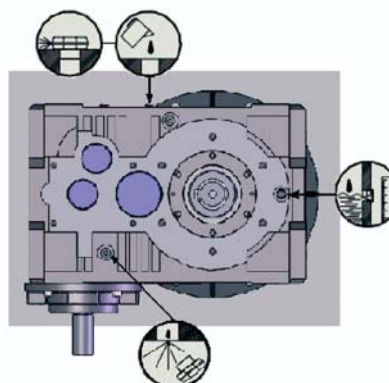
V-1



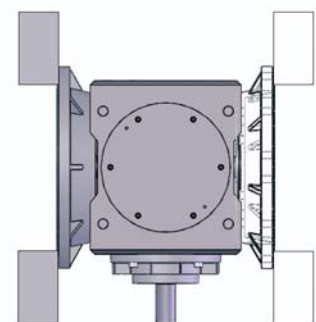
V-7

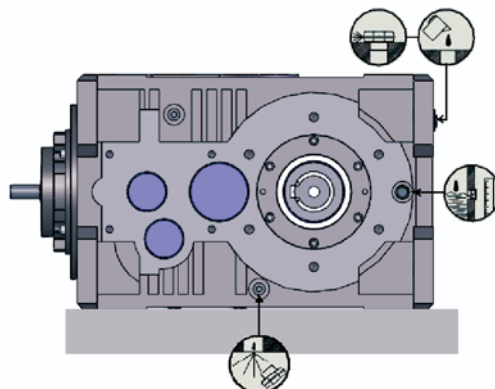


V-3

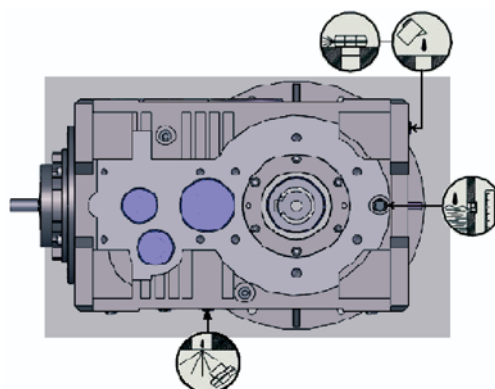


V-8

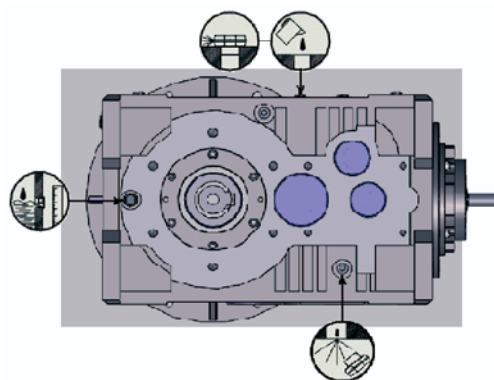




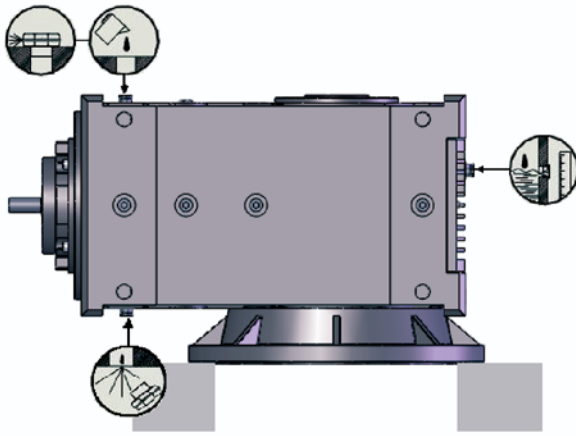
B-3-II



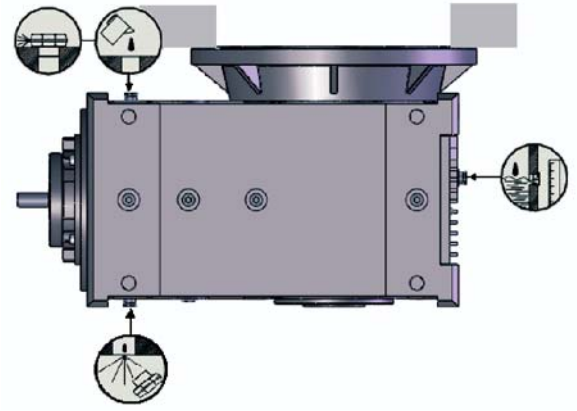
B-6-II



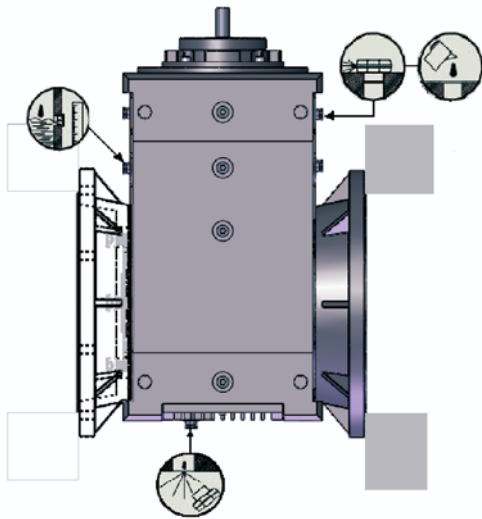
B-7-II



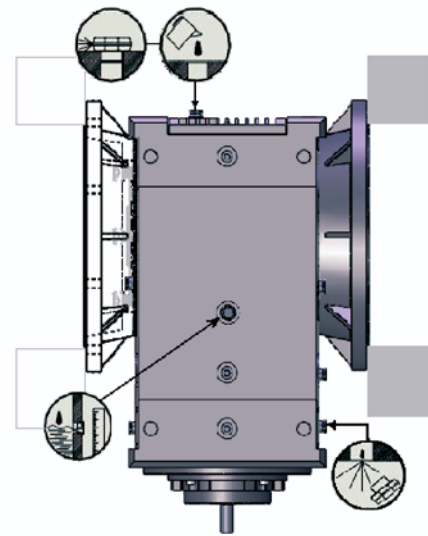
V-1-II



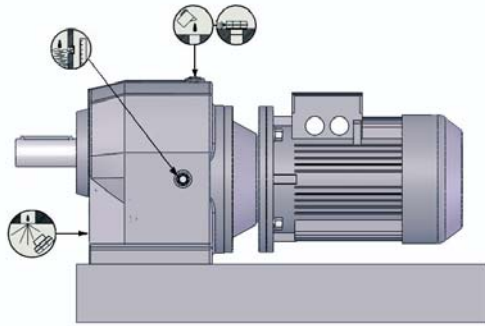
V-3-II



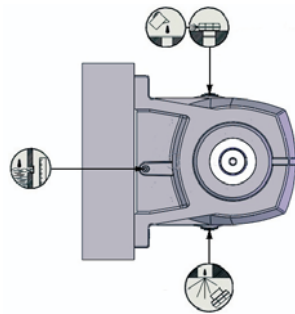
V-7-II



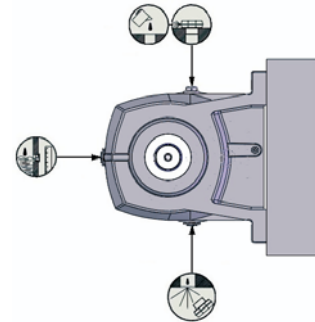
V-8-II



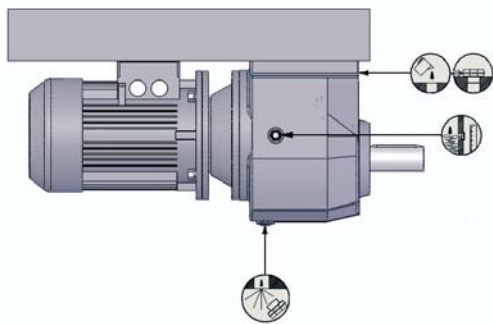
B3



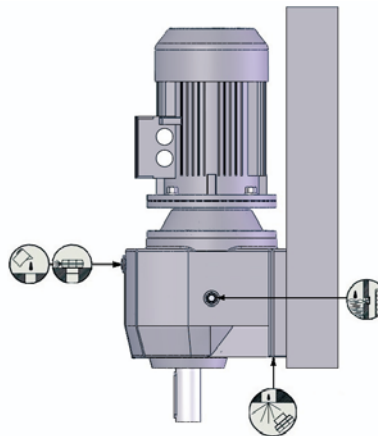
B6



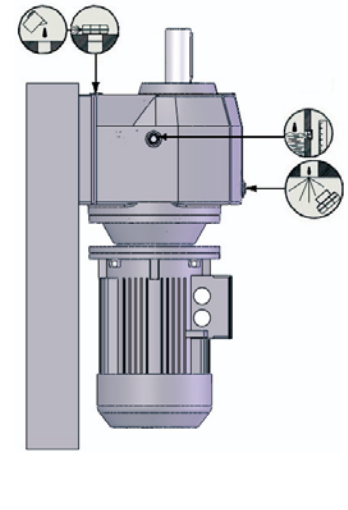
B7



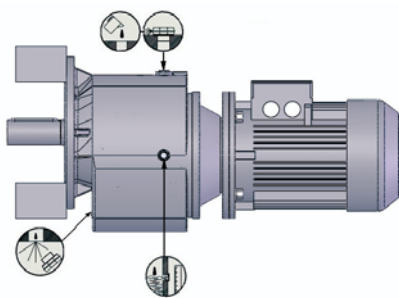
B8



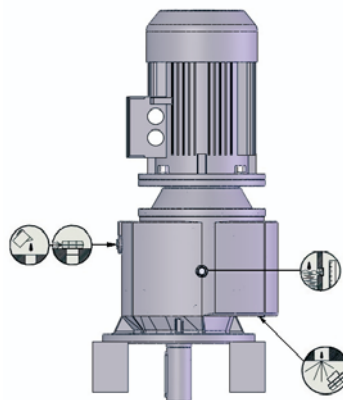
V5



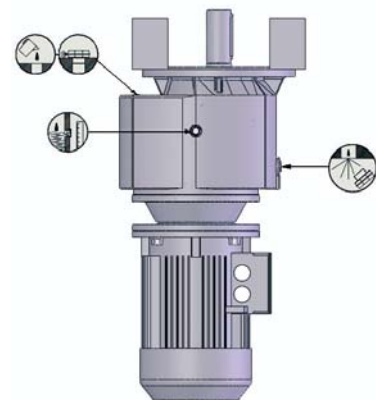
V6



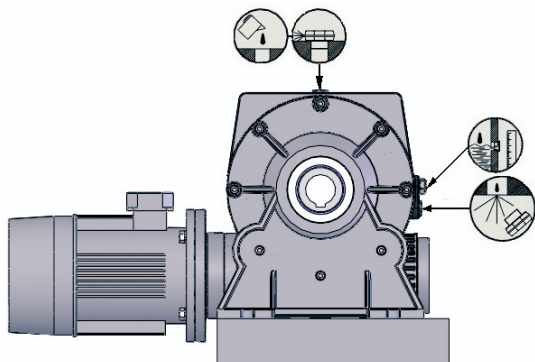
B5



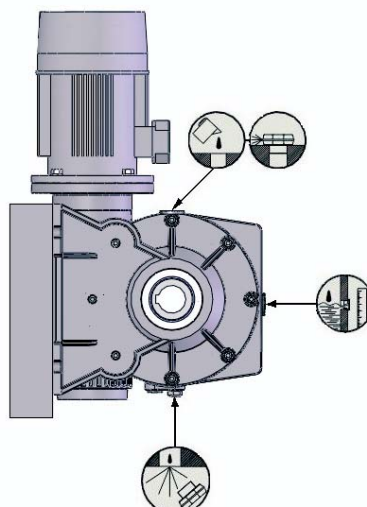
V1



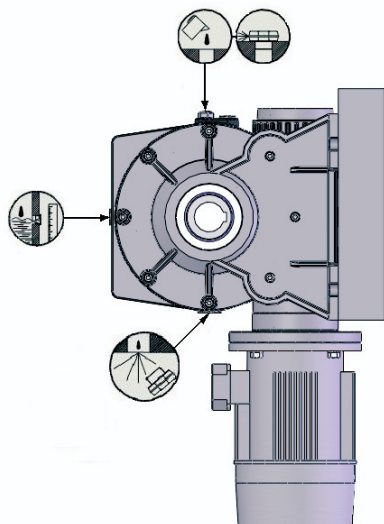
V3



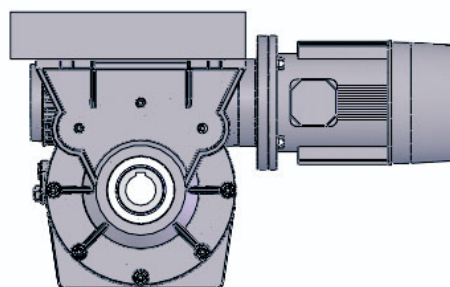
B3 N



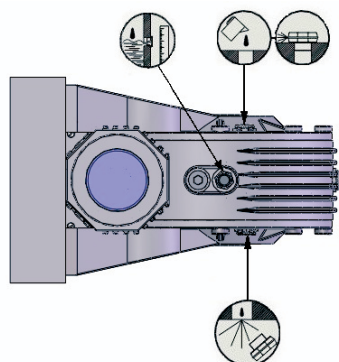
V6 N



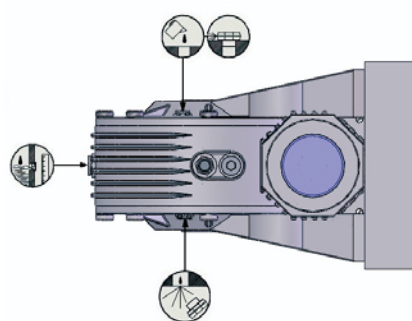
V5 N



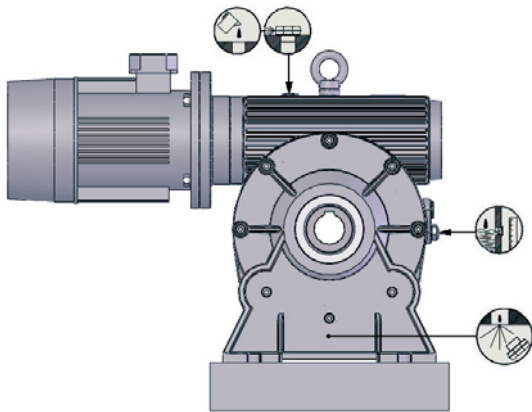
B8 N



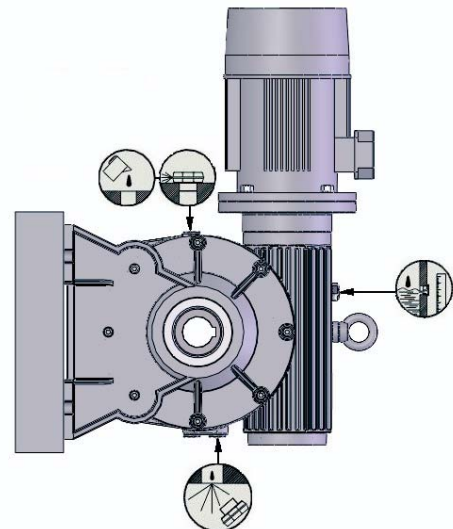
B6 N



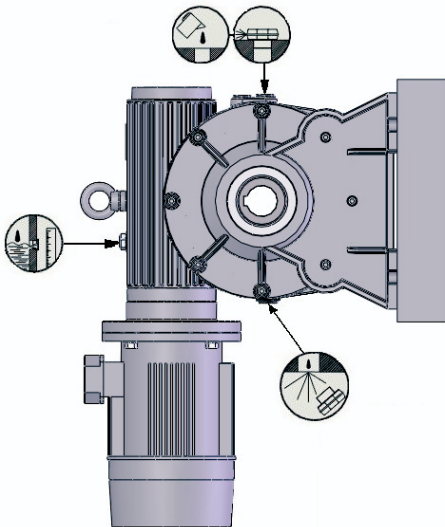
B7 N



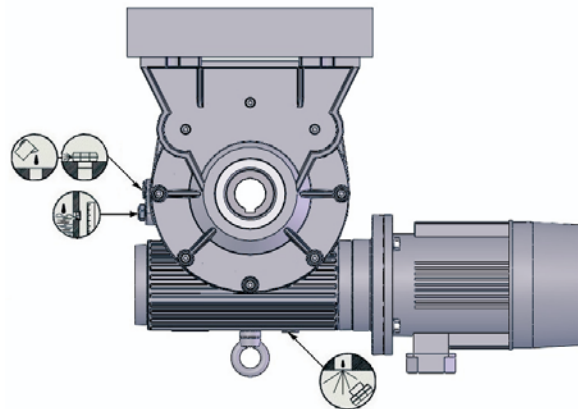
B3 A



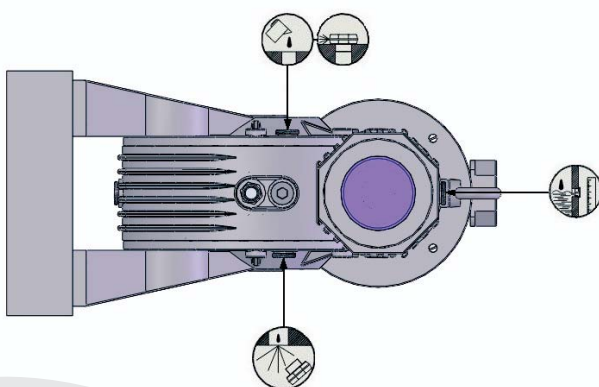
V6 A



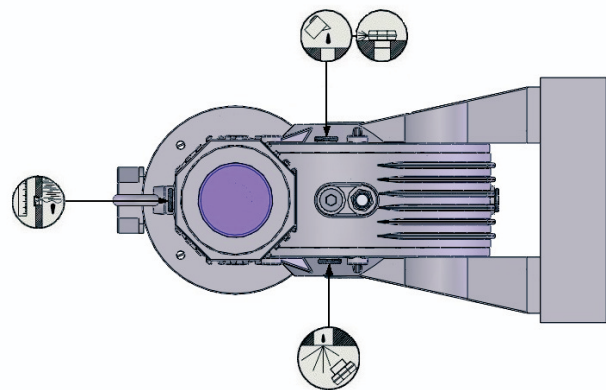
V5 A



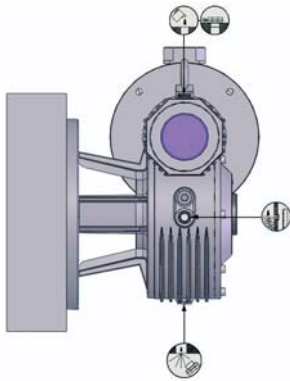
B8 A



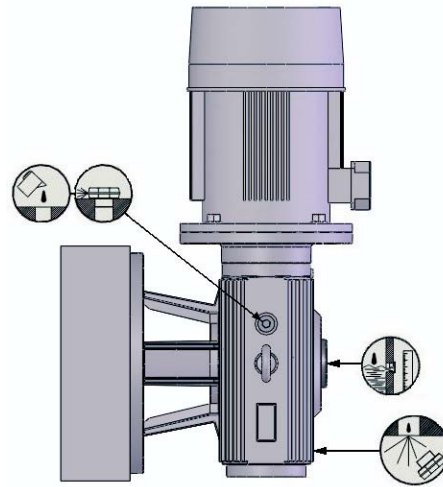
B6 A



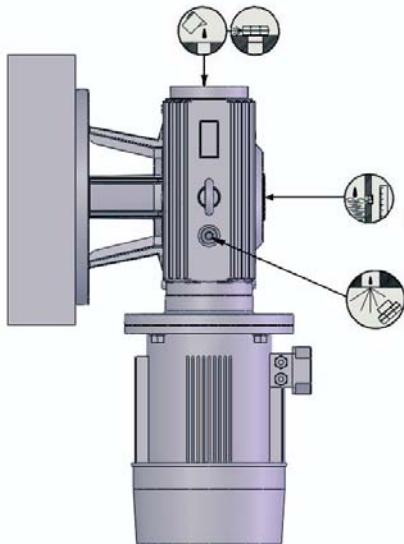
B7 A



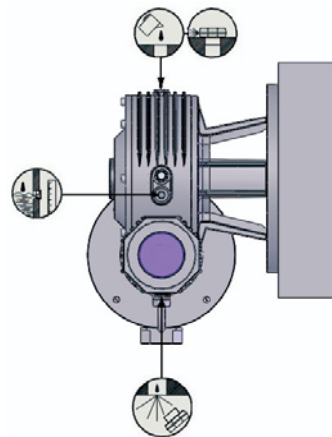
B3 B



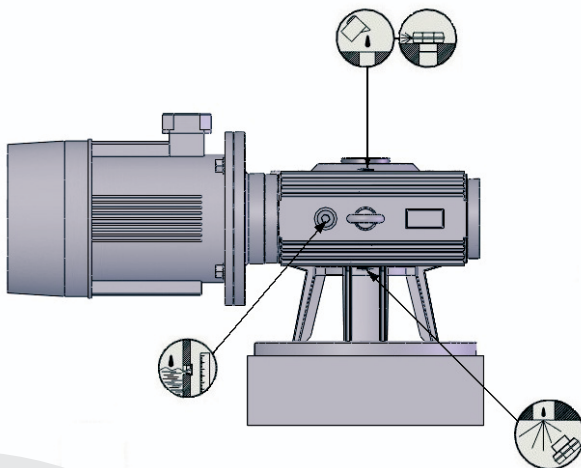
V6 B



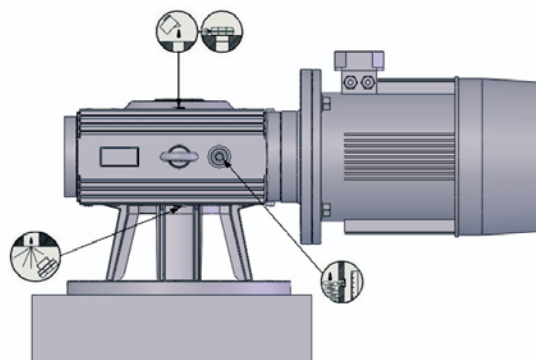
V5 B



B8 B



B6 B



B7 B

ANNEX II. TABLE OF TIGHTENING TORQUE FOR THE BOLTS

Bolt size	Tightening torque (bolt class 8.8) [Nm]
M4	3
M5	6
M6	11
M8	25
M10	50
M12	86
M14	138
M16	210
M18	300
M20	420
M22	550
M24	710

ANNEX III. TABLE OF RECOMMENDED LUBRICANTS

<p>ARAL</p>  <p>Aral Degol GS</p>	<p>BP</p>  <p>BP Enersyn</p>	<p>BRUGAROLAS</p>  <p>Beslux</p>	<p>CEPSA</p>  <p>Cepsa Engranajes HPS</p>	<p>FUCHS</p>  <p>Renolin PG</p>
<p>TOTAL</p>  <p>Carter SH</p>	<p>KLUBER LUBRIFIC.</p>  <p>Klübersynth</p>	<p>MOBIL</p>  <p>Glygoile Serie</p>	<p>REPSOL</p>  <p>Super Tauro Sintético</p>	<p>SHELL</p>  <p>Shell Omala Oil</p>

The equipment in this manual corresponds to the specifications given at the time of printing. Cidepa-Sincron. reserves the right to make changes, without previous advice, the amendments necessary for product improvement.



www.cidepa-sincron.es

Pol. Industrial Polysol 3, nº 15 · 41500 Alcalá de Guadaíra · Sevilla · Spain · Teléf: +34 902 50 36 80 · Fax: +34 902 50 36 90 · cidepa@cidepa-sincron.es

