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INSTALLATION AND MAINTENANCE INSTRUCTIONS PLANETARY GEAR REDUCERS AND GEARMOTORS

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Index

⚠ The paragraphs marked with present symbol contain dispositions to be strictly respected in order to assure personal **safety** and to avoid any **heavy damages** to the machine or to the system (e.g.: works on live parts, on lifting machines, etc.); the responsible for the installation or maintenance must scrupulously **follow all instructions contained in present handbook.**

1 - General safety instructions

Planetary gear reducers and gearmotors present dangerous parts because they can be:

⚠
- live;
- at temperature higher 50 °C;
- rotating during the operation;

An incorrect installation, an improper use, the removing or disconnection of protection devices, the lack of inspections and maintenance, improper connections may cause severe personal injury or property damage. Therefore the component must be moved, installed, commissioned, handled, controlled, serviced and repaired **exclusively by responsible qualified personnel** (definition to IEC 364).

It is recommended to pay attention to all instructions of present handbook, all instructions relevant to the system, all existing safety laws and standards concerning correct installation.

Components in non-standard design or with special executions or with constructive variations may differ in the details from the ones described here following and may require additional information.

For any clarification and/or additional information consult ROSSI MOTORIDUTTORI and specify all name plate data.

Gear reducers and gearmotors of present handbook are normally suitable for installations in industrial areas: **additional protection measures**, if necessary for different employs, must be adopted and assured by the person responsible for the installation.

IMPORTANT: the components supplied by ROSSI MOTORIDUTTORI must be incorporated into machinery and **should not be commissioned before the machinery in which the components have been incorporated conforms to**:

- **Machinery directive 98/37/EEC;**
- **Electromagnetic compatibility (EMC) directive 89/ 336/EEC and subsequent updatings.**

For the installation, use and maintenance of the electric motor (standard, brake or non-standard motor) or of the possible motor-variator and/or the electric supply device (frequency converter, soft-start, etc.) consult the attached specific documentation. If necessary, require it.

When operating on gear reducer (gearmotor) or on components connected to it the **machine must be at rest**: disconnect motor (including auxiliary equipments) from power supply, gear reducer from load, be sure that safety systems are on against any accidental starting and, if necessary, pre-arrange mechanical locking devices (to be removed before commissioning).

If deviations from normal operation occur (temperature increase, unusual noise, etc.) immediately switch off the machine.

The products relevant to this handbook correspond to the technical level reached at the moment the handbook is printed. ROSSI MOTORIDUTTORI reserves the right to introduce, without notice, the necessary changes for the increase of product performances.

2 - Operating conditions

Gear reducers are designed for industrial applications according to name plate data, at ambient temperature 0 ÷ +40 °C (with peaks at -10 °C and +50 °C), maximum altitude 1 000 m.

Not allowed running conditions: application in aggressive environments having explosion danger, etc. ambient conditions must comply with specifications stated on name plate.

3 - How supplied

3.1 - Receipt

At receipt verify that the unit corresponds to the one ordered and has not been damaged during the transport, in case of damages, report them immediately to the courier.

Avoid commissioning gear reducers and gearmotors, that are even if slightly damaged.

3.2 - Name plate

Every gear reducer presents a name plate in anodised aluminium containing main technical information relevant to operating and constructive specifications and defining, according to contractual agreements, the application limits (see fig. 1); the name plate must not be removed and must be kept integral and readable. All name plate data must be specified on eventual spare part orders.

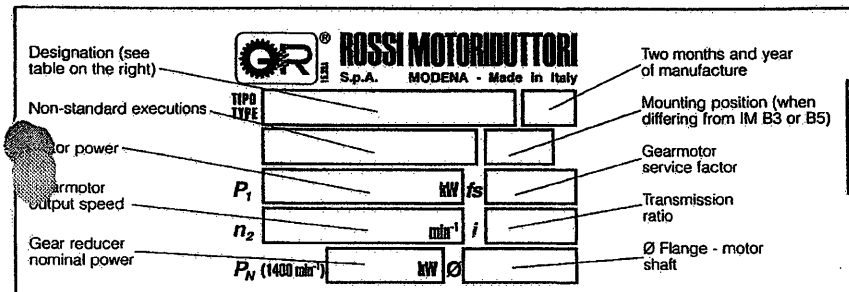
3.3 - Painting

Products are painted with synthetic paint appropriate for resistance to normal industrial environments and suitable for the application of further coats of synthetic paint; colour blue RAL 5010 DIN 1843.

Internal protection in synthetic paint appropriate for resistance to mineral oils or to polyalphaolefines synthetic oils.

3.4 - Protections and packing

Overhanging free shaft ends and hollow shafts are treated with protective anti-rust long life oil and protected with a plastic (polyethylene) cap (only up to D ≤ 48 mm for overhanging shafts, D ≤ 110



Designation				Product
Machine	Train of gears	Size	Design	
R, MR	2E, 3E, 4E	200 ... 696	FC ...	Coaxial
R, MR	CE, C2E, C3E	200 ... 696	FO ...	Right angle shaft

Fig. 1 (for more information, see ROSSI MOTORIDUTTORI technical catalogues; consult us).

mm for hollow shafts). All internal parts are protected with protective anti-rust oil.

Unless otherwise agreed in the order, products are adequately packed: on pallet, protected with a polyethylene film, wound with adhesive tape and strap (bigger sizes); in carton pallet, wound with adhesive tape and strap (smaller sizes); in carton boxes wound with tape (for small dimensions and quantities). If necessary, gear reducers are conveniently separated by means of anti-shock foam cells or of filling cardboard.

Do not stock packed products on top of each other.

4 - Storing

Surroundings should be sufficiently clean, dry and free from excessive vibrations ($v_{eff} \leq 0,2$ mm/s) to avoid damage to bearings (excessive vibration should also guarded during transit, even if in wider range) and ambient storage temperature should be 0 ÷ +40 °C: peaks of 10 °C above and below are acceptable.

Every six months rotate the shafts (some revolutions are sufficient) to prevent damage to bearings and seal rings.

Assuming normal surroundings and the provision of adequate protection during transit, the unit is protected for storage up to 1 year.

For a 2 year storing period in normal surroundings it is necessary to pay attention also to following instructions:

- generously grease the sealing, the shafts and the unpainted machined surfaces, if any, and periodically control conservation state of the protective anti-rust oil;
- completely fill the gear reducers with lubrication oil and the specified level before commissioning.

For storages longer than 2 years or in aggressive surroundings or outdoors, consult ROSSI MOTORIDUTTORI.

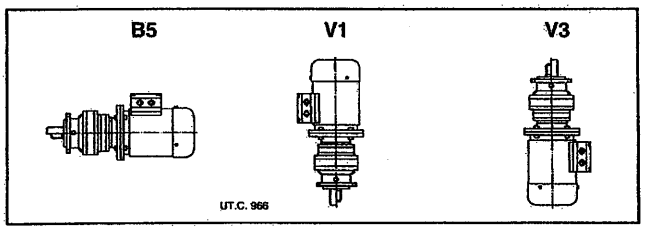
5 - Installation

5.1 - General

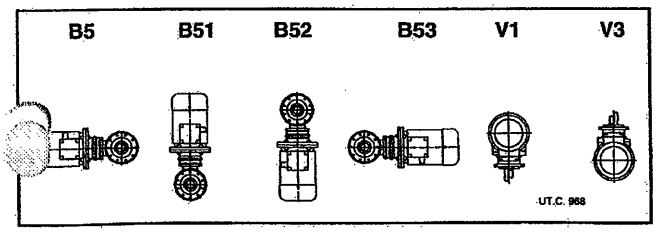
Before the installation, verify that:

- there were no damages during the storing or the transport;
- design is suitable to the einvironment (temperature, atmosphere, etc.);
- electrical connection (power supply, etc.) corresponds to motor name plate data;
- used mounting position corresponds to the one stated in name plate.

Coaxial type



Right angle shaft type



Attention! When lifting and transporting the gear reducer or gearmotor use through holes of the gear reducer casing; be sure that load is properly balanced and provide lifting and coupling systems, and cables of adequate section. If necessary, gear reducer and gearmotor masses are stated in ROSSI MOTORIDUTTORI technical catalogues.

Be sure that the structure on which gear reducer or gearmotor is fitted is plane, levelled and sufficiently dimensioned in order to assure fitting stability and vibration absence (vibration speed $v_{eff} \leq 3,5$ mm/s for $P_N \leq 15$ kW and $v_{eff} \leq 4,5$ mm/s for $P_N > 15$ kW are acceptable), keeping in mind all transmitted forces due to the masses, to the torque, to the radial and axial loads.

For the dimensions of fixing screws of gear reducer feet and the depth of tapped holes consult the ROSSI MOTORIDUTTORI technical catalogues.

Attention! Bearing life and good shaft and coupling running depend on alignment precision between the shafts. Carefully align the gear reducer with the motor and the driven machine (with the aid of shims if need be), interposing flexible couplings whenever possible.

Do not use motor eyebolts when lifting the gearmotors.

Position the gear reducer or gearmotor so as to allow a free passage of air for cooling both gear reducer and motor (especially at their fan side).

Avoid any obstruction to the air flow; heat sources near the gear reducer that might affect the temperature of cooling air and of gear reducer (for radiation); insufficient air recycle and applications hindering the steady dissipation of heat.

Mount the gear reducer or gearmotor so as not to receive vibrations.

Mating surfaces (of gear reducer and machine) must be clean and sufficiently rough to provide a good friction coefficient: remove by a scraper or solvent the eventual paint of gear reducer coupling surfaces.

When external loads are present use pins or locking blocks, if necessary.

For the dimensions of fastening screws consult the specific technical documentation.

Fitting of gear reducer to driven machine:

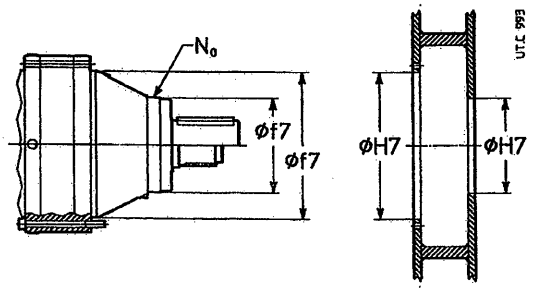
- apply bolts and screws class **8.8** for sizes not stated in the table; for other sizes refer to the instructions contained in the table;

Size	Bolts and screws class		
	$M_{2\,peak} \leq 0,71\ M_{N2}$ [1] duty cycle with shocks and alternate loads	$M_{2\,peak} > 0,71\ M_{N2}$ [1] standard duty cycle	$M_{2\,peak} > 0,71\ M_{N2}$ [1] duty cyice with shocks and alternate loads
241, 354 428, 445, 542	**8.8**	**10.9**	**10.9**
355, 429, 446, 543	**10.9**	**10.9**	**12.9**
445 ... 696 foot-mounted	**8.8**	**10.9**	**10.9**

- tighten the screws through dynamometric wrench with tightening torque equal to 0,7 times the upper yield strength;
- screws class ≥ 10.9 must not be equipped with washer;
- use all holes foreseen on flange and the pre-inserted elastic pins;
- verify the tightening torque after the first hours of running;
- for gear reducer size ≥ 354 with cylindrical or splined shaft end and radial load > 0,71 F_{r2max} [1] use a second spigot recess N_0 (we advise tolerance **H7**).

1) See technical documentation.

For sizes 445, 446 use hexagonal socket head cap screws as fastening screws (TCEI) in order to grant the necessary accessibility to the dynamometric wrench.



When fitting gear reducer and machine it is recommended to use **locking adhesives** such as LOCTITE on the fastening screws.

Before wiring-up the gearmotor make sure that motor voltage corresponds to input voltage. If direction of rotation is not as desired, invert two phases at the terminals.

Y-Δ starting should be adopted for no-load starting (or with a very small load) and for smooth starts, low starting current, limited stresses.

If overloads are imposed for long periods or if shocks or danger of jamming are envisaged, then motor-protection, electronic torque limiters, fluid couplings, safety couplings, control units or other similar devices should be fitted.

Where duty cycles involve a high number of on-load starts, it is advisable to utilise thermal probes for motor protection (fitted on the wiring); **magnetothermic breaker** is unsuitable since its threshold must be set higher than the motor nominal current of rating. Use varistors or RC filters to limit voltage peaks due to contactors.

Whenever a leakage of lubricant could cause heavy damages, increase the frequency of inspections and/or envisage appropriate control devices (e.g.: remote level gauge, lubricant for food industry, etc.).

In polluting surroundings, take suitable precautions against lubricant contamination through seal rings or other.

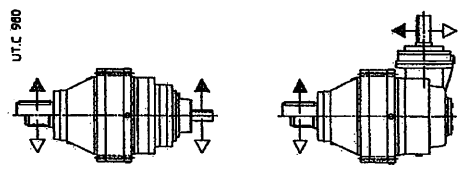
For outdoor installation or in a hostile environment, protect the gear reducer or gearmotor with an anticorrosion paint; added protection may be afforded by applying water-proof grease (especially around the rotary seating of seal rings and at shaft end access points).

Gear reducers and gearmoors should be protected whenever possible and by appropriate means from solar radiation and extremes of weather; weather protection **becomes essential** when high or low speed shafts are vertically disposed or when the motor is installed vertical with fan uppermost.

For ambient temperature greater than 40 °C or less than 0 °C, consult ROSSI MOTORIDUTTORI.

5.2 - Directions of rotation

The relation between the input and output directions of rotation for all coaxial and right angle shaft gear reducer is given by the scheme below.



5.3 - Fitting of components to shaft ends

It is recommended that the bore of parts keyed to cylindrical shaft ends (spigots for splined shaft ends) is machined to **H7** tolerance, but for cylindrical low speed shaft ends, when the load is not uniform and light, tolerance must be **K7**.

Before mounting, clean mating surfaces thoroughly and lubricate against seizure and fretting corrosion.

Attention! Installing and removal operations should be carried out with **pullers** and **jacking screws** using the tapped holes at the shaft butt-end (see fig. 2) taking care to avoid impacts and shocks which **may irremediably damage the bearings, the circlips** or other parts. For H7/m6, K7/k6 and K7/m6 fits it is advisable that the part to be keyed is preheated to a temperature of 80 ÷ 100 °C.

For splined couplings apply adequate anti-rust products type MOLIKOTE, Klüber or LOCTITE.

The couplings having a tip speed on external diameter up to 20 m/s must be statically balanced; for higher tip speeds they must be dynamically balanced.

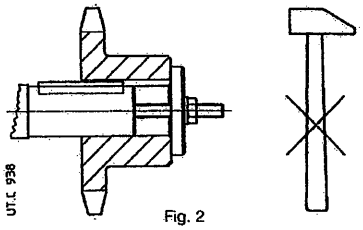
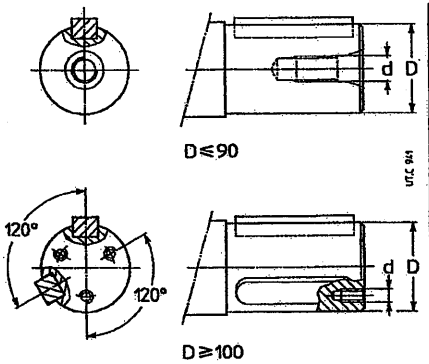


Fig. 2

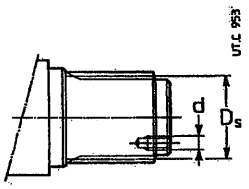
Cylindrical shaft ends



D Ø	d Ø
28 ÷ 40	M 10
42, 50	M 16
48	M 16[1]
60 ... 90	M 20
100, 110	M 14[3]
120 ... 170	M 16[3]
190, 200	M 16[6]

1) M22 for sizes CE 241 ... 354, C2E 354 ... 445, C3E 445 ... 543.

Splined shaft end



D_s	d[1] Ø
B40x36	M 6
B50x45	M 8
B58x53, B70x64	M 10
B80x74	M 12
B90x84, B100x94	M 14
W120x3 ... W200x5	M 16

1) N° 3 holes at 120°, n° 6 holes at 60° for sizes 695, 696.

Where the transmission link between gear reducer and machine or motor generates shaft end loads, (see fig. 3), ensure that: loads do not rise above catalogue values:
- transmission overhang is kept to a minimum;
- gear-type transmission must guarantee a minimum of backlash on all mating flanks;
- drive-chains should not be tensioned (if necessary – alternating loads and/or motion – foresee suitable chain tighteners);
- drive-belts should not be over-tensioned.

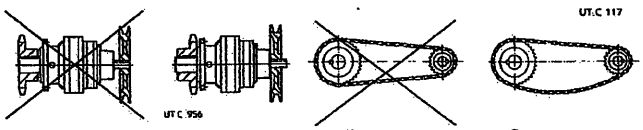


Fig. 3

5.4 - Shaft mounting arrangements

When shaft mounted, the gearmotor must be supported both axially and radially (also for mounting positions B5 ... B53) by the shaft end of the driven machine as well as anchored against rotation only by means of a reaction having **freedom of axial movement** and sufficient clearance in **its couplings** to permit minor oscillations – always in evidence – without provoking dangerous overloads on the gearmotor. It is recommended to use the **torque arm symmetrically** to gear reducer low speed shaft because, in this way, the torque reaction is equally distributed on the two constraints without loading the machine bearings. Lubricate with proper products the hinges and the parts subject to sliding; when mounting the screws it is recommended to apply locking adhesives type LOCTITE 601.

Regarding the reaction system, follow the instructions contained in the specific technical documentation. Whenever personal injury or property damage, due to falling or projecting parts of gear reducer

or of its parts, may occur, foresee **adequate supplementary protection devices** against:

- rotation or unthreading of the gear reducer from shaft end of driven machine following to accidental breakage of the reaction arrangement;
- accidental breakage of shaft end of driven machine.

Hollow low speed shaft with shrink disc

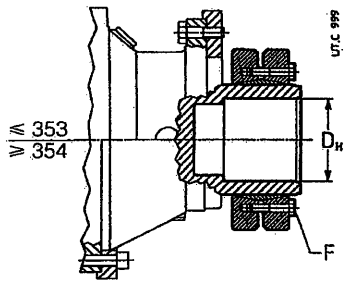
For the shaft end of machines where the hollow shaft of the gear reducer is to be keyed, follow the instructions contained in paragraph «Hollow shaft end with shrink disc» in the specific technical documentation.

When keying the shrink disc follow these instructions:

- carefully degrease the surfaces of hollow shaft and shaft end of driven machine to be fitted;
- mount the shrink disc on gear reducer hollow shaft by lubricating first the external surface of hollow shaft;
- slightly tighten a first group of three screws positioned at about 120° and mount the gear reducer on machine shaft end;
- gradually and uniformly tighten, by means of dynamometric wrench, the screws of shrink disc by a continuous sequence (not crossing) and during several phases up to the tightening torque stated (see specific table);
- at operation end verify the bolt tightening torque;
- when having heavy duty cycles, with frequent reversals, verify again after some hours of running, the bolt tightening torque.

Important! The shoulder diameter of the driven machine shaft end abutting with the gear reducer must be at least 1,18 ÷ 1,25 times the internal diameter of hollow shaft.

Attention! For **vertical ceiling-type** mounting and only for gear reducers equipped with locking rings or bush, gear reducer support is due only to friction, for this reason it is advisable to provide it with a fastening system.



D_H Ø H6/h6	F 1)	M daN m 2)
42	M 6^{8}	1,2
50	M 8^{6}	3
75	M 8^{10}	3
85	M10^{9}	6
100	M12^{10}	10
110	M12^{12}	10
130	M16^{10}	25
140	M16^{14}	25
160	M16^{15}	25
170	M16^{20}	25
190	M20^{15}	49
200	M20^{18}	49

1) UNI 5737-88 cl. 10.9.
2) Tightening torques.

5.6 - Independent cooling unit

See specific technical documentation supplied with cooling unit.

6 - Lubrication

6.1 - General

The gear pairs are oil-bath lubricated, the bearings are either oil bathed or splashed or lubricated «for life» (with or without NILOS ring, according to speed and mounting position).

The gear reducers are supplied **without oil** with a filler plug with valve, a transparent level plug and eventually, according to mounting position, input speed and duty cycle, with an oil expansion tank.

Therefore, **before commissioning**, please follow these instructions:

- verify that the gear reducer is mounted in the mounting position foreseen in the order, stated on the name plate; when it is not stated, the gear reducer is foreseen in order to be mounted in the horizontal B5 mounting position;
- fill to specified level with **mineral oil** (AGIP Blasia, ARAL Degol BG, BP-Energol GR-XP, ESSO Spartan EP, IP Mellana oil, MOBIL Mobilgear 600, SHELL Omala, TEXACO Meropa, TOTAL Carter EP) having the ISO viscosity grade given in the table.

When it is required to increase oil change interval («long life»), the ambient temperature range, and/or reduce oil temperature, use **synthetic oil** (with polyglycol basis: KLÜBER Klübersynth GH6..., MOBIL Glygoyle, SHELL Tivela S oil ...; with polyalphaolefines basis, always suggested: AGIP Blasia SX, CASTROL Tribol 1510, TOTAL Reductelf SYNTHESE, ESSO Spartan SEP, KLÜBER Klübersynth EG4, MOBIL SHC Molykote L11 ...) having ISO viscosity grade as indicated in the table.

The lubricant quantity to be filled corresponds to the one that allows to reach the level specified by the proper transparent plug – **at gear reducer rest** – and not the one stated on the catalogue.

ISO viscosity grade
Mean kinematic viscosity [cSt] at 40 °C.

Speed n_1 min^{-1}	Ambient temperature[1] [°C] mineral oil 0 ÷ 20	mineral oil 10 ÷ 40	synthetic oil 0 ÷ 40
> 1 180	150	220	150
1 180 ÷ 300	220	320	220
< 300	320	460	320

1) Peaks of 10 °C above and 10 °C (20° C for synthetic oil) below the ambient temperature range are acceptable.

An overall guide to **oil-change interval** is given in the table, and assumes pollution-free surroundings. Where heavy overloads are present, halve the values.

Oil temperature [°C]	Oil-change interval [h] mineral oil	synthetic oil
≤ 65	5 600	12 500
65 ÷ 80	2 800	9 000
80 ÷ 95	1 400	6 300

Independently from running times, change the oil as follows:

- every 1 ÷ 2 years, for mineral oil;
- every 2 ÷ 4 years, for synthetic oil.

Never mix different makes of oil. If oil-change involves switching from mineral oil or polyalphaolephines basis synthetic oil to polyglycol basis synthetic oil (or viceversa), then give the gear reducer a through clean out.

In case of new gear reducer, give a through clean-out (test with mineral oil) when you would like to use a polyglycol basis oil.

Every gear reducer is equipped with **lubrication name plate**.

Combined gearmotor units: lubrication remains independent, thus data relative to each single gear reducer hold good.

6.2 - Bearings with independent lubrication, motor bearings

Usually the bearings are automatically and continuously lubricated (oil-bathed or splashed) with the same lubricant of gear reducer. However for certain gear reducer in vertical mounting position V1, V3 and horizontal mounting position B51, B52 the upper bearings have independent lubrication, with special grease for «long life» lubrication in absence of external pollution; this is valid also for motor bearings (excluding some cases where a re-lubrication device is foreseen).

In case of grease pollution or in case of certain duty cycles, grease should be verified (at every oil change or every 1 or 2 years); the grease in the independently lubricated bearings should be removed and replaced (every 1 or 2 oil changes or every 2 or 4 years). The bearing shall be completely filled with grease for bearings: ESSO BEACON 3 for ball bearings, KLÜBER STABURAGS NBU 8 EP for roller bearings.

7 - Commissionning

Carry out an overall check, making particularly sure that the gear reducer is filled with lubricant up to level and mounted according to the mounting position stated on name plate.

For the first commissioning, before starting with a normal running cycle, it is advisable to run the gear reducer without load in order to verify if it correctly runs.

In this circumstance, cause of the elimination of **eventual residual air, an oil filling up to level could be necessary**.

Where Y-Δ starting is being used, input voltage must match the motor lower voltage (Δ connection).

For asynchronous three-phase motor, if the direction of rotation is not as desired, invert two phases at the terminals.

Running-in: in order to reach the maximum functionality, a running-in period of about 50 ÷ 100 h is advisable; after the running-in period it may be necessary to verify the gear reducer fixing bolt tightness.

After 500 ÷ 1 000 h of running it is necessary to change the oil.

8 - Maintenance

8.1 - General

At machine rest, verify at regular intervals (more or less frequently according to environment and use):

a) all external surfaces are clean and air passages to the gear reducer, gearmotor and of oil cooling system, if any, are free, in order that cooling remains fully effective;

b) normal running conditions:

– oil level and deterioration degree (check with cold gear reducer at rest);
– noise level;
– vibrations;
– sealings;
– correct fastening screws tightening;
– etc.

Attention! After a running period, gear reducer is subject to a light internal overpressure which may cause burning liquid discharge. Therefore, before loosening whichever plug (filler plug, included) wait until gear reducer has become cold and open it carefully; if not possible, take the necessary protection measures against burning due to warm oil contact. In all cases, always proceed with great care. Maximum oil temperatures indicated in lubrication table do not represent a hindrance to the gear reducer regular running.

During the oil change, after having unscrewed also the filler plug in order to improve the discharge, it is recommended to clean internally the gear reducer casing using the same oil type suitable for the running. For the next filling use a 60 μm oil filter.

Replace the seal rings in case of dismounting or of periodical check; in this case, the new ring must be positioned so that the new ring does not work on the same sliding race of previous ring.

8.2 - Seal rings

Duration depends on several factors such as dragging speed, temperature, ambient conditions, etc.; as a rough guide it can vary from 1 600 ÷ 12 500 h.

8.3 - Motor replacement

Since gearmotors are realised with **standardized** motor, motor replacement – in case of failure – is extremely easy.
Simply observe the following instructions:

- be sure that the mating surfaces are machined under accuracy rating (UNEL 13501-69; DIN 42955);
- clean surfaces to be fitted thoroughly;
- check and, if necessary, lower the parallel key so as to leave a clearance of 0,1 ÷ 0,2 mm between its top and the bottom of the keyway of the hole. If shaft keyway is without shoulder, lock the key with a pin.
- lubricate surfaces to be fitted against fretting corrosion.

9 - Troubles: causes and corrective actions

Trouble	Possible causes	Corrective actions
Excessive temperature (in continuous duty or of bearings)	Inadequate lubrication: – excessive of insufficient oil quantity – unsuitable lubricant (different type, too viscous, exhausted, etc.) – too tightened taper roller bearings – too high ambient temperature	Check: – oil level (gear reducer standstill) – lubricant type and/or state Consult ROSSI MOTORIDUTTORI Increase the cooling o correct the ambient temperature
	Obstructed suction openings of fan cover	Clean the fan cover
	Bearing failure, defect or bad lubrication	Consult ROSSI MOTORIDUTTORI
	Inefficient or out of service oil cooling system: obstructed filter, insufficient oil (exchanger) or water (coil) flow rate, pump our of service, etc.	Check the pump, the pipes, the oil filter and safety devices efficiency (manostats, thermostats, etc.)
Anomalous noise	One or more teeth with — dents or spallings — excessive flanks roughness	Consult ROSSI MOTORIDUTTORI
	Bearings failure, defect or bad lubrication	Consult ROSSI MOTORIDUTTORI
	Taper roller bearings with excessive clearance	Consult ROSSI MOTORIDUTTORI
	Vibrations	Check the fastening
Lubricant leaking from seal rings	Seal ring with worm, crystalized, damaged or erroneously mounted seal lip	Replace the seal ring
	Damaged rotating seating (scoring, rust, dent, etc.)	Restore the seating
	Mounting position differs from the one stated on the name plate	Correctly position the gear reducer

NOTE
When consulting ROSSI MOTORIDUTTORI state:
– all data on gear reducer or gearmotor name plate;
– failure nature and duration;
– when and under what conditions the failure happened;
– during the warranty period, in order not to lose its validity, do not disassemble nor open the gear reducer without the approval of ROSSI MOTORIDUTTORI.

Manual Instruction for:

PLANETA Brake Winch
BHW-800, BHW-1200, BHW-1800, BHW-2600

I. Features

A high quality, multi-purpose winch. Frame is one-piece design, plastic handle grip, high strength alloysteel gear of one peace design, welded reel. Baked enamel and plated finish. Automatic brake the ensures suspension of load.

II. Important indications

1. Read instruction and make it available to operators on the device before using it.
2. Operator must be instructed properly with the device. Never leave the device under load unattended!
3. Never exceed carrying capacity indicated on the name plate. Do not draw any pull and lifting ropes or chains respectively over angles.
4. Do not transport persons or loads with the product over areas below which persons could be staying.
5. Device must be checked once a year by a technical expert, in case of harder operating conditions more often. Ask your retailer or PLANETA. The enterpriser is liable in case of damages and has to provide test certificates.
6. Check the device regarding damages, unfastened screws or twists before using it and eliminate failures.
7. Repair works on PLANETA hoisting devices shall only be carried out by the manufacturer or an instructed repair shop respectively by using PLANETA spare parts.
8. Check load carrying constructions, load securing devices, mountings, cross beams etc. regarding load carrying capacity and condition of the required loads by a technical expert.
9. Non-observance of the instruction, improper use, and corrosion by insufficient protection or product alterations without authority result in the expiry of the warranty.
10. Risk of corrosion in case of continuous contact with unfavourable atmospheric conditions as for example high humidity or harmful environmental influences as for example atmospheres with acid vapours, corrosive gases or high dust concentration cause early wear. This effectuates no claim under warranty.
11. Further information or spare part lists will kindly be provided by us or your specialist dealer.

III. Security advices

1. Never apply load on winch with cable fully extended. Keep at least three full turns of cable on the reel.
2. Operate with hand power and with crank included in the equipment only. This winch should not be operated with a motor of any kind.
3. If the winch cannot be cranked easily with one hand, it is probably over-loaded
4. Do not oil or grease brake mechanism.

IV. Assembly advices before initiation

1. Insert the rope from A to B and through C of the hole of the Fixing Device.
2. Completely tighten the screw of the Fixing Device
3. - BHW-800, BHW-1200, BHW-1800: Rope circle the drum to go from below drum (please refer figure 1)
   - BHW-2600: Rope circle the drum to go from above drum (please refer figure 2)

fig. 1

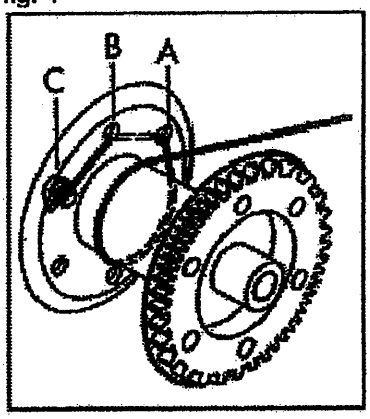
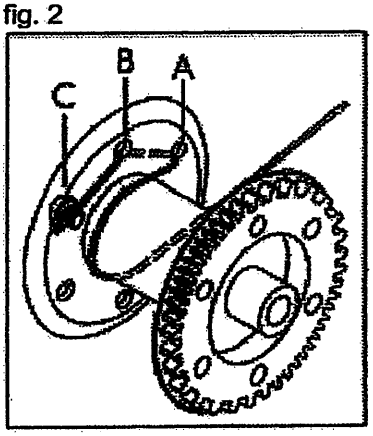


fig. 2



V. Operation

Lifting the load must happen by rotating the crank Clock-wise. When releasing the crank, the load remains suspended. The descent of the load must happen by rotating the crank counter clock-wise. The automatic brake intervenes to avoid unchecked descent of the load.

VI. Maintenance and inspection

This winch has been fully lubricated at the factory, but for continued smooth performance and increased life, occasionally grease gears, reel shaft and hantle threads.

CE - Declaration of Conformity

We, PLANETA-Hebetechnik GmbH hereby declare under our sole responsibility that the product:
Brake Winch BHW-800, BHW-1200, BHW-1800, BHW-2600
in serial production correspond with the following rules of directive:
EC-machine dirctive 98/37/EC

CE

P. H. Klawitter

Dipl.-Ing. Paul H. Klawitter, General Manger PLANETA