



# **INSTALLATION – OPERATION AND SERVICE MANUAL**

**DELTASOLUTIONS**

**S.N. 10011201÷11226 – MOD. 5020 P4 021350.00**

**DUAL OFFSET  
ANTENNA VERTEX**

**TSSOW-1012033-22432-01-01 AZIMUTH GEARBOX**

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## 1 – USE OF THE MANUAL

This use and maintenance manual provides all the specific information necessary for knowledge INSTALLATION AND MAINTENANCE OF GEARBOX

### NOTE!

**THIS MANUAL MUST BE READ BY AUTHORIZED PERSONNEL ASSIGNED TO INSTALLATION, USE AND MAINTENANCE OF THE GEARBOX.**

The manual is an integral part of the component, and must therefore be:

- kept in perfect condition by the End User for the entire working life of the gearbox;
- transferred together with the gearbox if sold;
- always available for consultation at installation site;

## 2 – SUPPLY CONDITION

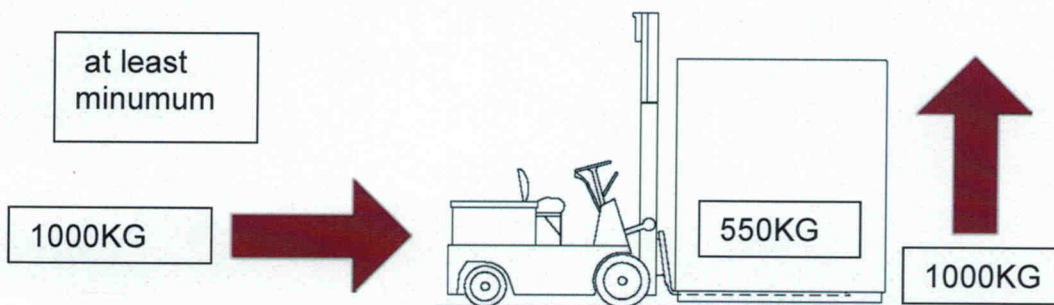
The gearbox is supplied into a wooden crate as follows:

- placed in horizontal position inside package, with Lifting bracket in horizontal position and handling both in vertical position.
- **Unless provided for otherwise by contractual arrangement, the gearbox is supplied without lubrication oil to comply with international forwarding rules either by ocean and air freight.**
- Painted accordingly specs *TSSOW-1012033-22432-01-01* with a grey epoxy primer and with RAL 9010 glossy poly-urethane paint, double component (paint + catalyzer 50% in volume).
  - Motor flange and pinion is protected with protective grease for transportation only. The pinion, after installing the gear box, must be protected against possible oxidation.

## 3 – HANDLING INSTRUCTION

The gearwheel must be handled as described below:

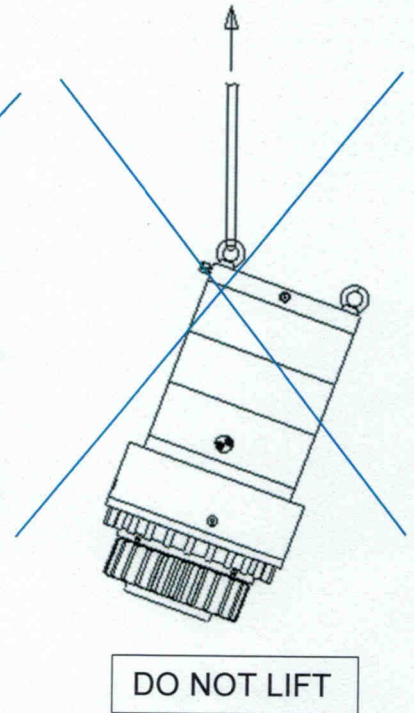
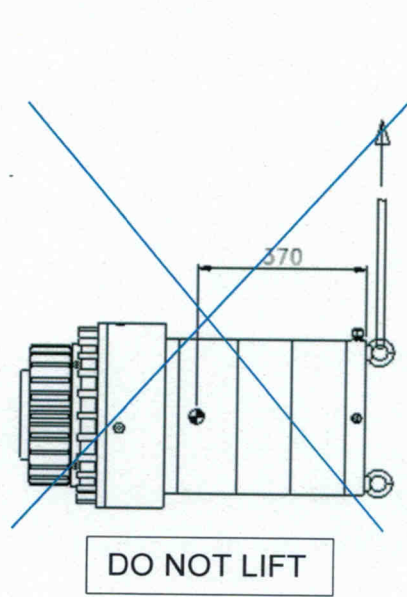
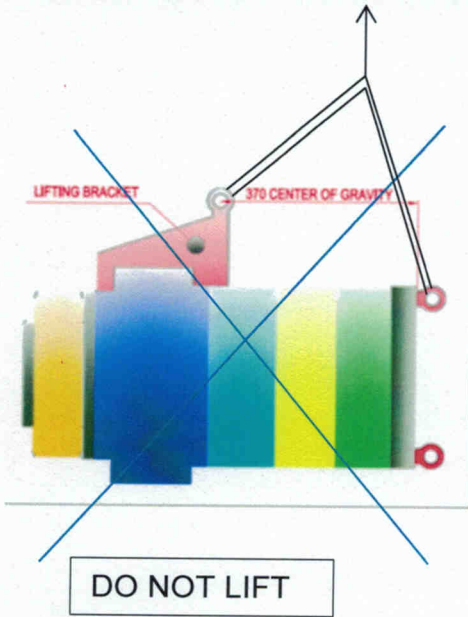
- The wooden crate has dimension **0.96 m x 0,6m x 0,6m H**, and a total gross weight about **550Kg** so it should be handled with appropriate industrial instruments such as forklift truck, ropes, chains, belts using lifting bracket and eyebolts included, and whose capacity must be referred to gross weight marked outside the wooden crate.



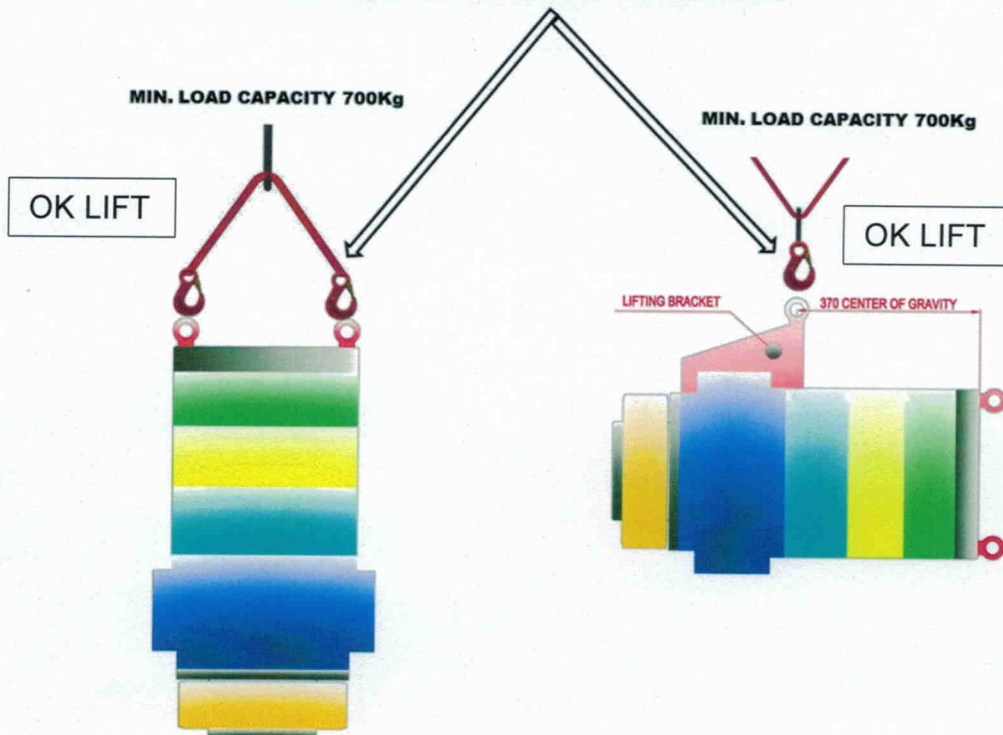
- To perform the lifting operation, insert the lift truck forks below the lower cross members of the case, keeping the forks as far apart as possible.

## 4 - LIFTING OPERATION

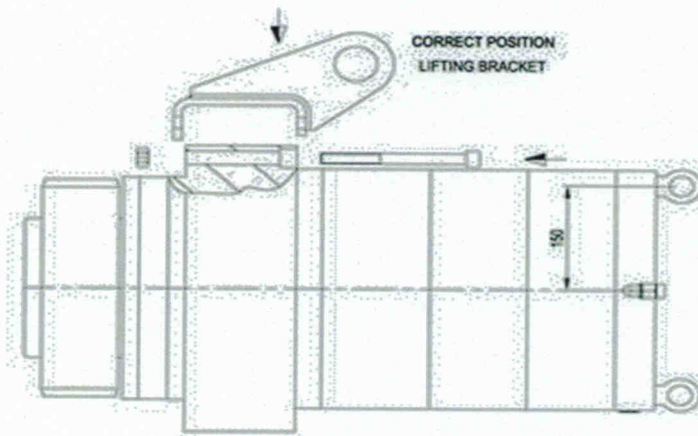
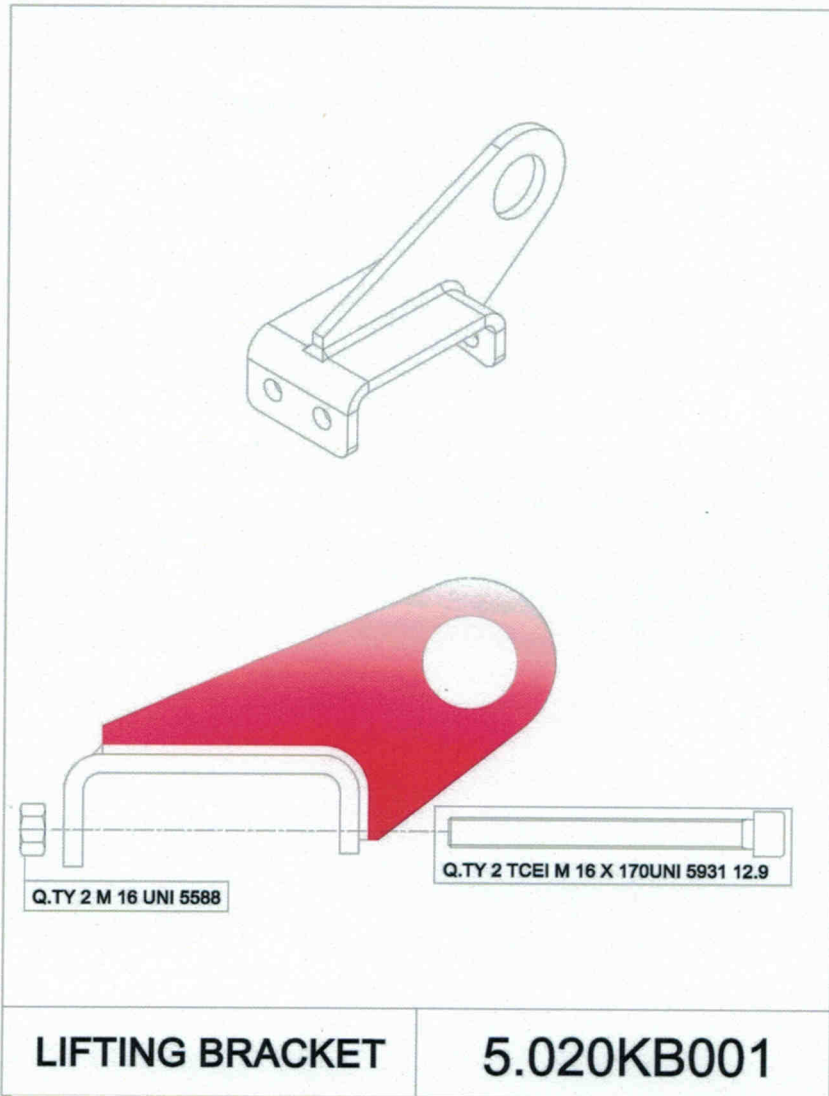
Lifting operation according following schemas must be performed in compliance with local current regulations concerning lifting and accident prevention for both operators and bystanders.



**SECURITY DEVICE ACCORDING TO CEE REGULATION!**



**5 - LIFTING BRACKET**



## 6 – STORAGE CONDITION

For correct unit storage, the following steps must be considered:

- Keep in a dry place and covered area.
- Do not cover with plastics to avoid moisture and condensate.
- If storage extends more than 3 months from shipment date, please provide with complete gearbox oil filling to prevent internal gears oxidation.
- Check protection of coupling surfaces, such as the flanges, shafts and joints, and just in case provide with a very thin layer of grease and/or protective anticorrosion fluids.
- Always place wooden planks or a platform made of similar materials between the unit and the floor to prevent direct contact.
- Check rotation of the input shaft.

## 7 – INSTALLATION

The installation of the gearbox must be carried out carefully with authorized personnel only. This personnel must be suitably trained and technically skilled.

All the installation operation must be performed to ensure maximum safety levels are guaranteed for both workers and third parties and that the gearbox operates correctly and safely.

- It is strictly forbidden to tamper with the gearbox and any of the accessories fitted during production.
- When any lifting and handling manoeuvres are carried out, care must be taken to ensure the end of the shaft does not hit anything. The relative hoisting straps and/or eyebolts must be used, suitably arranged, and with hoisting means whose capacity is sufficient for the job.
- It is strictly forbidden to carry out welding work on the gearbox without suitable guards.
- Any installation work or servicing must be carried out with the gearbox stationary, therefore it is recommended that you ensure the gearbox cannot be switched on accidentally.
- In the event of connections involving the use of rotary parts such as shafts, joint or pulleys with belts, suitable accident prevention gear must be provided.

## 8 – IDENTIFICATION PLATE

1. S/N
2. Study
3. Year
4. Ratio

If you remove the identification plate, the product warranty not valid more.

	
<b>Study</b>	<b>Ratio</b>
<b>S.N.</b>	<b>Year</b>

## 9 – CONNECTION

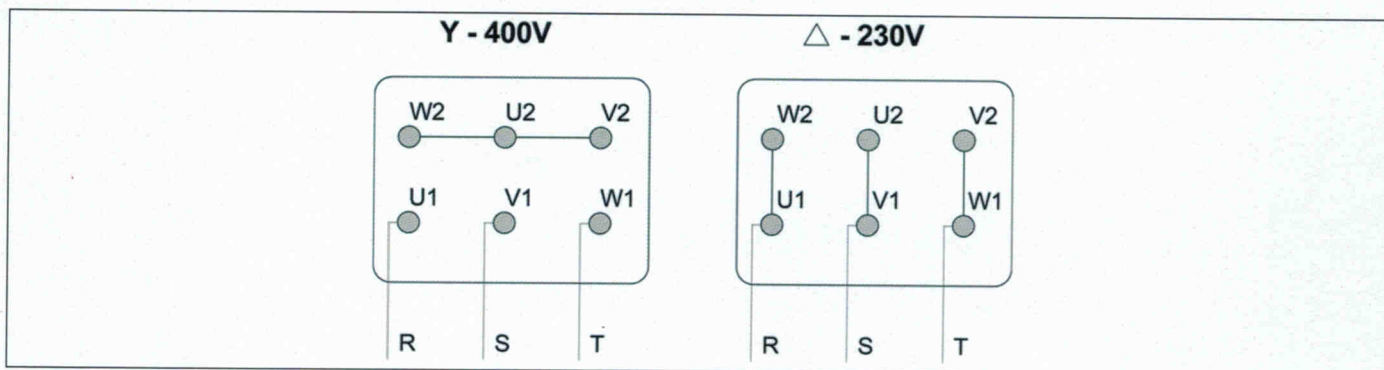
**INPUT:** - Direct between shaft motor (diameter 19 mm) – input gearbox coupling with diameter 19mm – key 6 x 4 mm.

### MOTOR CONNECTION

Before fitting to supporting structures and motor, remember to clean input shaft and flanging surfaces to remove any traces of grease and/or protective treatments.

**MOTOR TYPE:** - LENZE Electric Motor MCS12H35-RS0P1\_CPY – size 71 – exit shaft 19 mm – key 6 x 4 mm.

The electrical connection types are stamped inside the terminal cover: the conventional clockwise rotation direction is obtained by connecting terminals U1-V1-W1 respectively to the direct power mains supply triplet R-S-T.

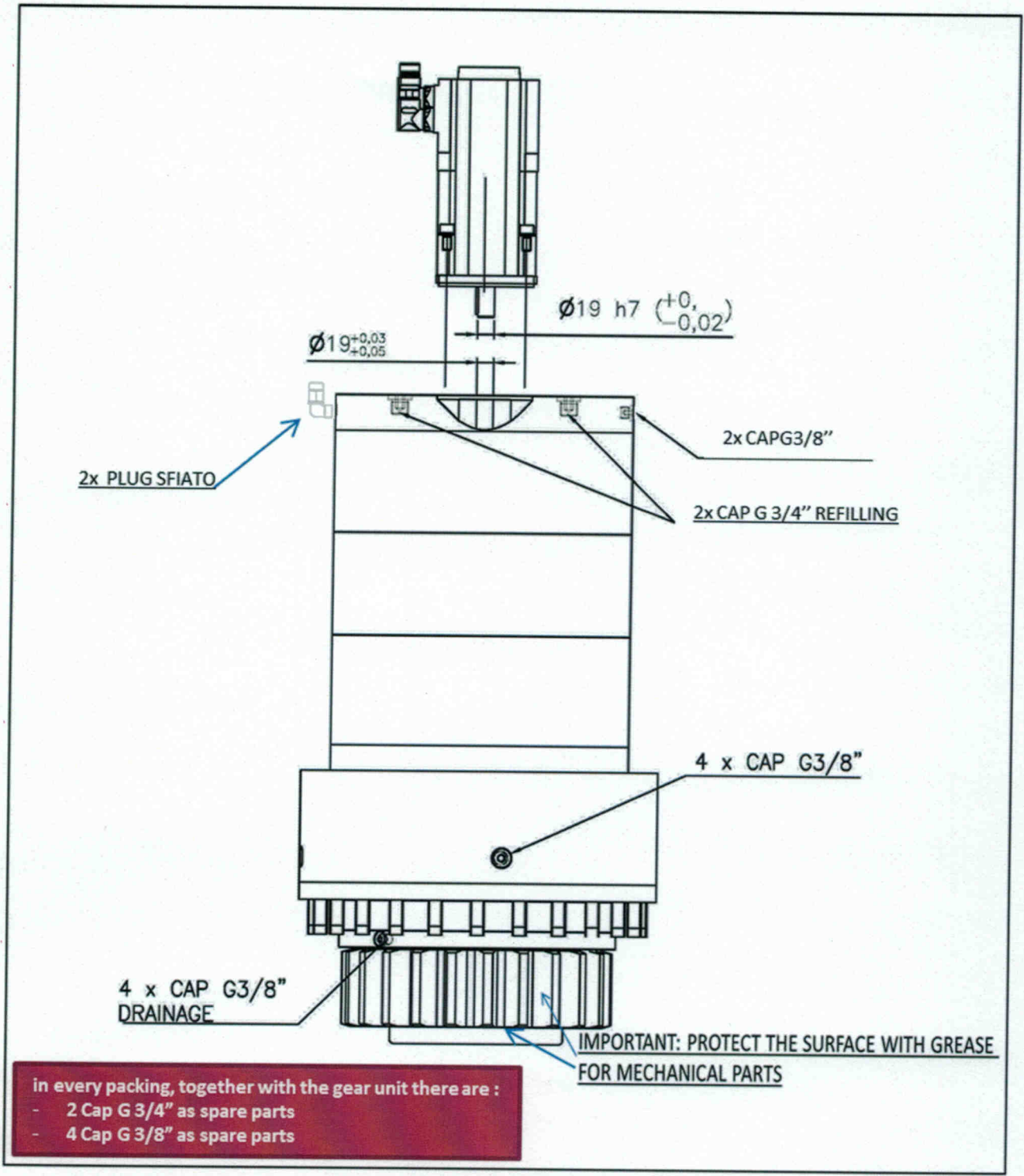


The motor must always be perfectly aligned because incorrect positioning can cause damage to input bearings on both the motor and the gearbox side. See motor output shaft and input gearbox shaft dimension and tolerances in next page schema.

### GEARBOX CONNECTION TO ANTENNA YOKE

**OUTPUT:** PINION (pos.55) Z23 – M12 – x0,5 towards driven wheel Z149 – M12 with slewing bearing.

**10 - OIL CAPS**

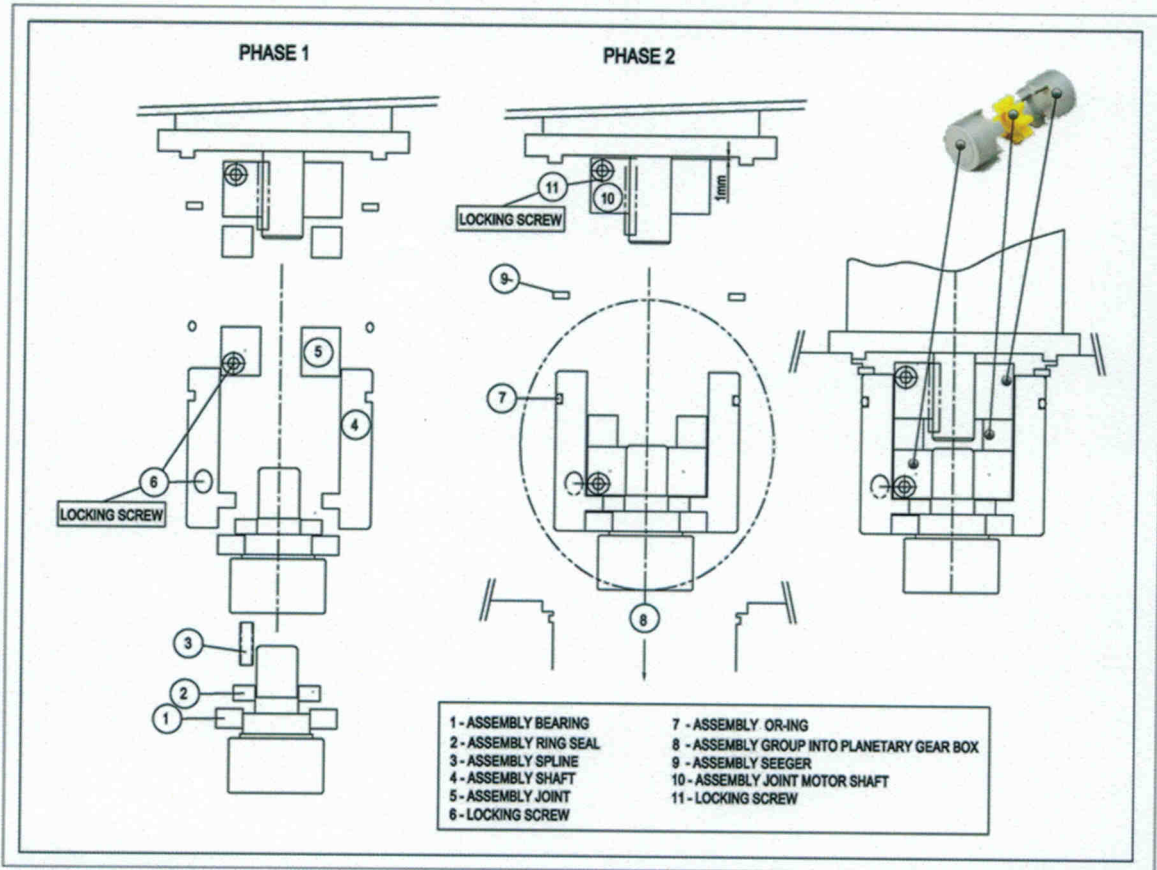




## 11 - MOTOR COUPLING COD.5020-K1

### PHASES OF ASSEMBLY

- IS IMPORTANT FOLLOW THE STEPS TO CHANGE THE RING SEAL
- PHASE 10 AND 11 ARE TO ASSEMBLE THE SECOND PART OF THE JOINT MOTOR
- NOTE: RESPECT THE 5 MM IN HE PHASE 10 AND 11 AS SHOWN IN THE DRAWIN



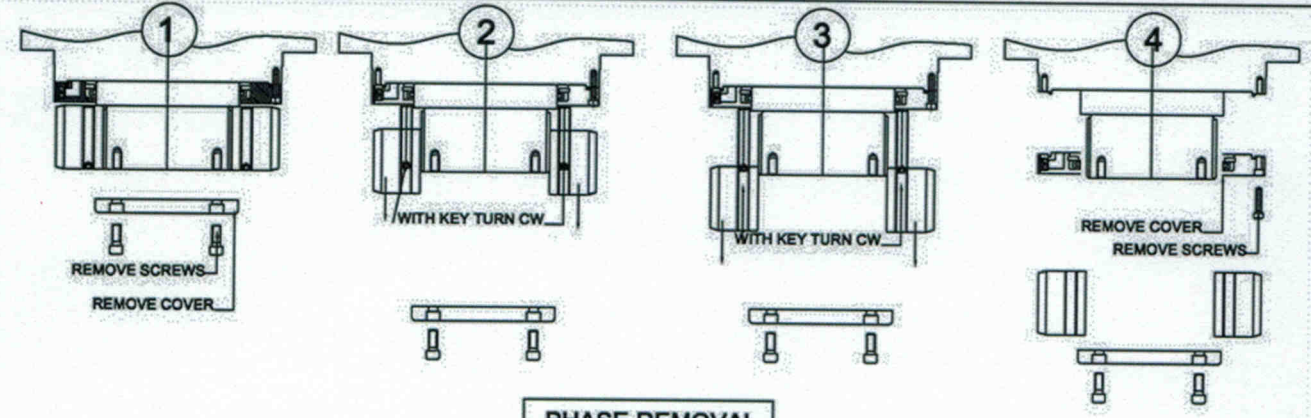
BEARING 16006	16006	1
RING SEAL TC20x40x7	TC20x40x7	2
SPLINE 6x6x20	6x6x20	3
SHAFT	5.020KZ001	4
JOINT	5.020KH001	5
SCREW	TCEI M6x20	6
JOINT	5.020KH001	7
OR-ING	235	8
SEEGER 85I	85 I	10
JOINT	5.020KH001	11
SCREW	TCEI M6x20	12

## 12 - CHANGE RING SEAL PINION

### PHASES OF REMOVAL AND ASSEMBLY

- IS IMPORTANT FOLLOW THE STEPS TO CHANGE THE RING SEAL AND SEAL OR-ING
- PHASE 1 OF ASSEMBLY MUST BE USED WITH CARE
- CHANGE RING SEAL VITON TC 15x200x230 (WHEN ASSEMBLY RING SEAL USE OIL FOR MECHANICAL PARTS)
- CHANGE SEAL OR-ING 273 (WHEN ASSEMBLY OR-ING USE GREASE FOR MECHANICAL PARTS)
- CHANGE CAP 3/8 "

SPARE PART					
1	RING GEAR	5.020KC004	7	SEEGER	I 230
2	OR-ING	276	8	RING SEAL	TC 15x200x230
3	CAP	3/8 "+SEAL	9	SCREW	M10x30
4	COVER	5.020KK002	10	SCREW	M12x25
5	PINION	5.020KT000	11	COVER	5.020KK003
6	SCREW WHEAT	M16 x90			

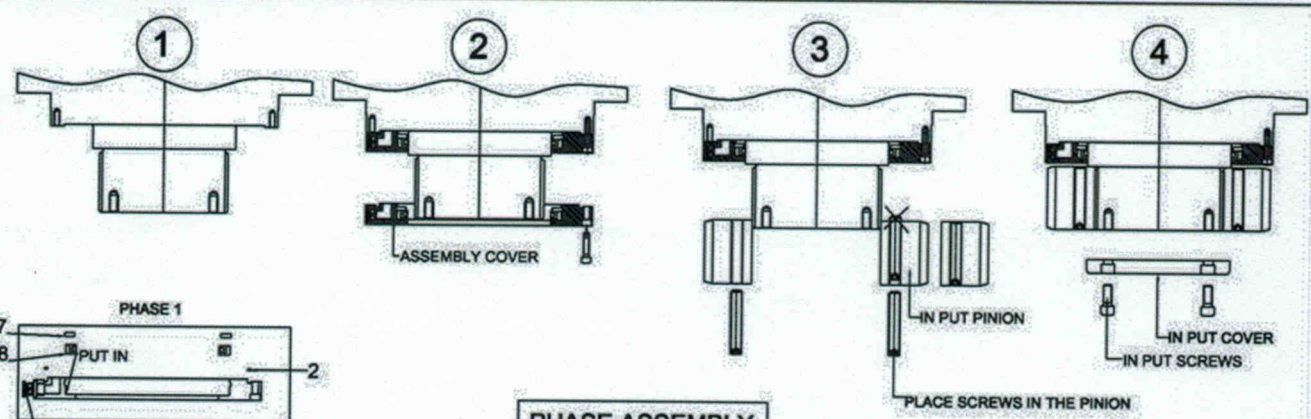
**PHASE REMOVAL**

1. REMOVE SCREWS  
REMOVE COVER

2. WITH KEY TURN CW

3. WITH KEY TURN CW

4. REMOVE COVER  
REMOVE SCREWS



**PHASE ASSEMBLY**

1. REPLACE CAP 3/8 "+SEAL

2. ASSEMBLY COVER

3. IN PUT PINION  
PLACE SCREWS IN THE PINION

4. IN PUT COVER  
IN PUT SCREWS

PHASE 1  
7 PUT IN  
8 PUT IN

### 13 - MAIN SPARE PARTS

MCS 12H35 - RS0P1	ELECTRIC MOTOR LENZE	1
5020-K1	MOTOR COUPLING	2
5.020KK001	COVER	3
5020-P1	STAGE 1	4
5020-P2	STAGE 2	5
5020-P3	STAGE 3	6
5020-P4	STAGE 4	7
MD1012033-22432-01-0_A	CUSTOMER FLANGE	8
TC 15x200x230	RING SEAL - VITON	9
5.020KK002	COVER	10
5.020KT000	PINION	11
5.020KK003	COVER	12



## 14 – LUBRICATION

The azimuth gearbox unit is supplied empty, without lubrication oil.

**DO NOT RUN GEARBOX WITHOUT LUBRICATION OIL!!!**

*End user must ensure that the unit is filled with the correct lubricant before starting operation.*

### Hydraulic oil type

We recommend the use of SYNTHETIC HYDRAULIC OIL with viscosity grade **ISO VG 320**.

To guarantee reliable operation and a long working life for the unit, it is extremely important that the hydraulic oil is checked **MAX EVERY 2 YEARS** from installation or previous service.

### Table of RECOMMENDED lubricating oils:

PRODUCER	SYNTHETIC OIL
SHELL	Omala S4-GX 320

## 15 – REFILLING

The unit is equipped with 2 upper oil filling caps; they must be opened to allow oil to fill in the gearbox.

To fill the gearbox must be in the exact operating position. Unscrew the oil filler cap and fill the tank as indicate:

**IMPORTANT - OIL no more than 10 liters**

## 16 – DRAINAGE

The oil can be drained from the unit by means of 4 caps (SEE PAG 8). The drainage is accelerated if the oil is still warm and if upper filling caps are open during drainage, allowing the air to better circulate.

## 17 – TECHNICAL DATA SHEET

GEAR RATIO	1350 : 1
MAX INPUT SPEED	3000 RPM
MAX CONTINUOUS INPUT TORQUE (98% life)	5,1 Nm
MAX OCCASIONAL INPUT TORQUE (2% life)	8,7 Nm
PEAK INPUT TORQUE	12,0 Nm
OPERATION TEMPERATURE	-10°C ÷ +40 °C
OIL TYPE	ISO VG 320 EP
OIL QUANTITY	10 Kg ~
WEIGHT	500 Kg ~

## 18 – COMMON SPARE PART (SUGGESTED)

In the event of repair or replacement of parts for maintenance, correct operation of the machine is guaranteed only if original spare parts are used.

**DELTASOLUTIONS** suggests for a series of 126 units to keep on hand for quick substitution the following list of spares:

<b>QUANTITY</b>	<b>CODE</b>	<b>DESCRIPTION</b>
8	5020 P4 021350.00	Complete gearbox unit
10	TC 20x40x7	RING SEAL – VITON
10	TC 200X230X13	RING SEAL – VITON
KIT 2 EACH UNIT	CAP ¾ "	PLUG
KIT 4 EACH UNIT	CAP 3/8"	PLUG

## 19 – REGULAR MAINTENANCE

**DELTASOLUTIONS** recommends a regular maintenance period of 2 years where it must be provided:

- 1) A complete oil change;
- 2) RING SEAL TC 20X40X7 examination and eventual change;
- 3) RING SEAL TC 200X230X13 examination and eventual change;
- 4) PLUG 3/8" + SEAL examination and eventual change;
- 5) PLUG 3/4" + SEAL examination and eventual change;

## 20 – WARRANTY

1 - The Supplier guarantees the conformity of the products supplied, intending thereby that said products correspond, in terms of quantity and performance, with the stipulations of the contract.

2 - The warranty has a term of 12 months, which shall be valid from the delivery of the products and, for replacement products or parts, from the day of their replacement.

3 - Within this period, the Supplier, upon receiving written notification from the Customer of any faults and/or flaws found, which shall be issued within eight days of said defects faults and/or flaws being found, undertakes, at its discretion, to either repair or replace the products or the parts thereof which are effectively found to be faulty or flawed free of charge.

4 - As a rule, the replacements or repairs are effected ex works: the carriage costs and risks for the faulty products are borne by the supplier.

However, if the Supplier, according to the Customer, decides to make the operations of maintenance at the Customer's place, this one should give the right assistance and technical qualified operators for complete all the actions in safeness.

5 - The warranty is forfeited if the products are fitted incorrectly or misused, if they have not undergone sufficient servicing, or have been modified, repaired or disassembled, even only partially, without the Supplier's permission, or outside the Supplier's workshop or authorised centres.

6 - The labour costs for work not over warranty shall be borne by the Customer. Delays shall not result in the Customer's right to compensation for damages nor an extension of the warranty.

None of the possibilities indicated in this article shall entitle the Customer to seek termination of the contract or compensation for damages.

The Supplier's prompt intervention under warranty depends on the Customer's payment situation.

The Customer shall not hold any entitlements for the term during which the system is inactive.

The parts replaced shall remain the property of the Supplier and shall be sent back by the Customer.

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**EUROPEAN DECLARATION OF CONFORMITY**

Company: DELTASOLUTIONS S.r.l

Registered Offices: via P. Colletta n°30 – 42124 Reggio Emilia (ITALY)

Manufacturing and warehouse: via P. Colletta, n°30 – 42124 Reggio Emilia (ITALY)

DECLARE under our sole responsibility that the product:

- **PLANETARY GEARBOX OUR STUDY 100AA305  
MOD. 5020 P4 021350.00**

**SERIAL NUMBER:**

- 11201 - 11214
- 11202 - 11215
- 11203 - 11216
- 11204 - 11217
- 11205 - 11218
- 11206 - 11219
- 11207 - 11220
- 11208 - 11221
- 11209 - 11222
- 11210 - 11223
- 11211 - 11224
- 11212 - 11225
- 11213 - 11226

to which this declaration relates is in conformity with the following standard(s) or other normative document(s):

**EUROPEAN DIRECTIVE 2006/42/CE; ISO 12100-1; ISO 12100-2**

The Technical Construction File is maintained at Company Registered Offices in Via P. Colletta n°30 – 42124 Reggio Emilia (ITALY).

The authorized representative located within the Community is: The Legal representative of the Deltasolutions Srl and CEO of Deltasolutions Srl.

The machinery, product, assembly or sub-assembly covered by this Declaration of Conformity must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the applicable Directive(s).

Place of issue: Reggio Emilia (ITALY) Date of issue: December 09<sup>th</sup>, 2015.

DELTASOLUTIONS SRL