

**Thank you for choosing MGT ITALIA gears. Please read carefully all the instructions in this manual, in order to exploit the full potential and correct performance of this high-quality product.**

MGT ITALIA gears are made in conformity with the European Directive EN 81-20 and EN 81-50.

MGT ITALIA gears are in conformity with the directive 2006/42/CE and its electromagnetic compatibility in fact they correspond to the standard of “Minimum Issue” described by the European Directive EN55014.

MGT ITALIA s.r.l. due to a policy of continuous development reserves the rights to alter or amend any information or details contains in this manual without notice.



Gears Type:  
**COMBI series**

COMBI 30 / V / S

COMBI 32 / V / S

COMBI 35 / V / S

**MGT ITALIA s.r.l.**

Via Liguria 2,  
40064 Ozzano dell'Emilia, Bologna (ITALY)

Web: <http://mgtitalia.it>

E-mail: [info@mgtitalia.it](mailto:info@mgtitalia.it)  
[sales@mgtitalia.it](mailto:sales@mgtitalia.it)

Tel: +39 051 799094  
+39 051 6521097

## TABLE OF CONTENTS

<b>GENERAL NOTES</b> .....	4
<b>GENERAL INFORMATION AND DIRECTIONS</b> .....	6
<b>DIRECTIONS</b> .....	6
<b>OPERATING DIRECTIONS</b> .....	6
<b>IDENTIFICATION AND PLATES</b> .....	7
<b>PACKING AND OPENING PACKING</b> .....	8
<b>PACKING ON WOODEN PALLET</b> .....	8
<b>PACKING IN WOODEN CRATE</b> .....	8
<b>MIXED PACKING (WOODEN PALLET + WOODEN CRATE)</b> .....	8
<b>PACKING IN DOUBLE WOODEN CRATES</b> .....	8
<b>GEARS WEIGHT TABLE</b> .....	9
<b>HOW TO MOVE A GEAR</b> .....	10
<b>LOCATION OF THE GEAR ON THE PLACE INSTALLATION</b> .....	11
<b>LOCATION ON STEEL GIRDER MADE FRAME</b> .....	11
<b>LOCATION ON A CEMENT MADE BASE:</b> .....	12
<b>STARTING OF THE GEAR</b> .....	13
<b>STARTING</b> .....	13
<b>LUBRICATION</b> .....	14
<b>ELECTRICAL CONNECTIONS</b> .....	15
<b>2 SPEED (AC2)</b> .....	15
<b>1 SPEED (VVVF)</b> .....	15
<b>BRAKE / ELECTROMAGNET ADJUSTMENT</b> .....	16
<b>PERIODICAL MAINTENANCE SUPERVISION</b> .....	17
<b>CHECK OF THE CLEARANCE ON THE THRUST BEARING</b> .....	18
<b>CHECK OF THE CLEARANCE ON WORM SHAFT / CROWN</b> .....	19
<b>NOTES</b> .....	21

## GENERAL NOTES

Each motors has its own connection for the earth in the terminal box.

The motors for voltage regulation ACVV and for frequency deviation VVVF supplied on MGT ITALIA gears are made in conformity with the normative on the electromagnetic compatibility E.M.C. present in the Legal Ordinance n°476 dated 04/12/1992 and are supplied in standard version if not specifically requested by the design.

For all the other motor brands, contact MGT ITALIA or see the electrical connections scheme which is inside the terminal box of each motor.



### **THE GEARS SHOULD BE KEPT IN CLEAN PREMISES, SHELTERED FROM DUST AND HUMIDITY.**

The removal of the gear from the package and its shifting should be done using flexible belts. The holding zone and the lifting equipment are shown in the following diagrams. It's important to regulate the chain's length winding around the pulley so that the gear will be horizontally balanced during the hoisting in order to avoid dangerous side oscillations and the unfastening of the belts.



The gear must be installed, connected, started, regulated and maintained as described in this manual in order to let it work in conformity with the security standard and electromagnetic compatibility of the normatives contained in the EN 81-20/50 and 2006/42/CE.

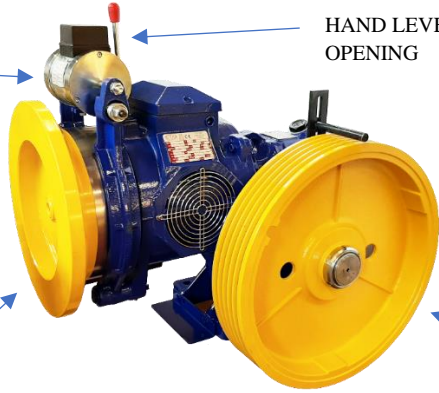


**ADJUSTING OF THE ELECTROMAGNET-BRAKE:** it must be done on the base of periodical checking of the wear of the braking parts, after the first 100 working hours and then each 1.000 working hours or at least each 4 ÷ 6 months. See the instructions on page 18. The change of the jaws is necessary when you reach a 2 mm shim on the point of maximum use of the braking material.



ELECTROMAGNET BRAKE

HAND LEVER FOR BRAKE OPENING



PULLEY

FLYWHELL FOR MANUAL OPERATION



ELECTROFAN



EXTERNAL SUPPORT

## GENERAL INFORMATION AND DIRECTIONS

### DIRECTIONS

In using the gear, please adhere to the limits and conditions of use stated in the general technical catalogue “MGT ITALIA s.r.l.”.

All the application included in this manual must be carried out by qualified personal only.

Disassembly of the gear’s parts without the permission of “MGT ITALIA s.r.l.”, may result in the loss of warranty.

If replacement part is required, please provide “MGT ITALIA s.r.l.” with the following data printed on the identification plate applied on the reduction gear:

1. Gear’s type
2. Matriculation number



**The gear must be installed, connected, started, regulated and maintained as described in this manual in order to let it work in conformity with the security standard and electromagnetic compatibility of the normative contained in the EN 81-20, EN 81-50 and 2006/42/CE.**

### OPERATING DIRECTIONS

After having done all the operations of:

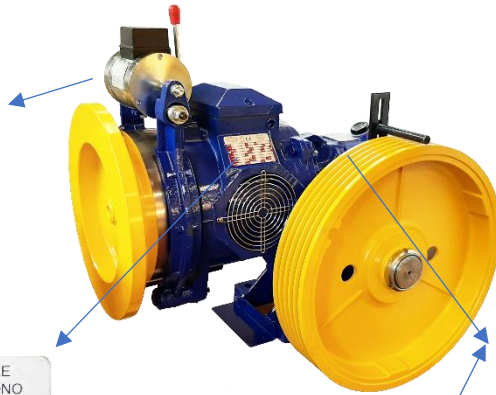
- ✓ levelling;
- ✓ oil inlet into the gearbox and starting;
- ✓ electrical connections of electromagnet and motor;
- ✓ electromagnetic regulation and braking described in this manual;

The gear is ready for this operating in safety: that is to say that while starting the motor you should having the excitation of the electromagnet for the opening of the brake’s jaws. Contrary, the gear will be braked by the springs that work on the brake’s jaws when motor and electromagnet are de-excited.

## IDENTIFICATION AND PLATES

B)




	BOLOGNA ITALY	
- MADE IN ITALY -		
ELETTROMAGNETE		
ELECTROMAGNET	VOLT C/C	
ELECTROAIMANT	AMP	
ANNO PROD.		



A)

	BOLOGNA ITALY	
- MADE IN ITALY -		
ARGANO TREUIL GEAR	/	
PORTATA CHARGE LOAD	VELOCITÀ VITESSE SPEED	
RAPP. RATIO	MATR. N°	PROD.

C)

			MOTORE ASINCRONO TRIFASE
TIPO	P.	No.	
CV	KW	Hz	
N1/MIN	A./h	ED	%
V	$\Delta$	$\text{Cos}\varphi$	Amb °C
Min	Nm	In	A
Ma	Nm	Ia	A
GD <sup>2</sup> rot	Kgm <sup>2</sup>	GD <sup>2</sup> est	Kgm <sup>2</sup>
Prot. IP	Peso	Kg	Prod.



D)



- A) Gear identification plate, with matriculation number and type.
- B) Plate with electrical data applied on the electromagnet.
- C) Plate with electrical motor data applied on the motor.
- D) Trade-mark in relief on.

## PACKING AND OPENING PACKING

### PACKING ON WOODEN PALLET



Packing pallet is common to all the gears and consist of:

- two spars and two sleepers for the gears without outboard bearings;
- three spars and two or more sleepers for the gears with outboard bearings and/or big dimension. Packing in pallet may be completed by a heat retractile nylon covering put on the gear. The gear is bolted to the pallet with two bolts. The pallet under the gear may be taken by a fork lift-truck or by trans pallet.

### PACKING IN WOODEN CRATE



Packing in crate is supplied only on customer's request. The cage is positioned on the pallet to which is already bolted the gear. The standard crates are not load-bearing, so you cannot lay one on the other, but they may be supplied with these features on request.

### MIXED PACKING (WOODEN PALLET + WOODEN CRATE)



Mixed packing is supplied only on customer's request. The cage is positioned on the pallet to which is already bolted the gear and another gear with wooden pallet on top of the cage.

### PACKING IN DOUBLE WOODEN CRATES



Packing in double wooden crates is supplied only on customer's request. The cages are positioned on the pallet to which is already bolted the gear. The crates are load-bearing, so they are one on the other.



## GEARS WEIGHT TABLE

GEARS TYPE	WITHOUT MOTOR AND WITHOUT PULLEY OR WINDINGS DRUM  Kg	APPROXIMATE WEIGHTS INCLUDING MOTOR 4/16 POLES AND AVERAGE SIZE PULLEY		
		Pulley or Drum	KW	Kg
COMBI 30 / V	120	Ø 520 4 ropes Ø 9/11	3,7	220
			4,9	225
			5,1	230
COMBI 32 / V	130		4,0	235
			5,5	240
			6,1	245
COMBI 35 / V	140		6,6	255
			7,4	260
			8,1	270
COMBI 30S / V	130		3,7	240
			4,9	245
			5,1	250
COMBI 32S / V	140		4,0	255
			5,5	260
			6,1	265
COMBI 35S / V	150	6,6	275	
		7,4	280	
		8,1	290	



THE GEARS SHOULD BE KEPT IN CLEAN PREMISES, SHELTERED FROM DUST AND HUMIDITY.

## HOW TO MOVE A GEAR

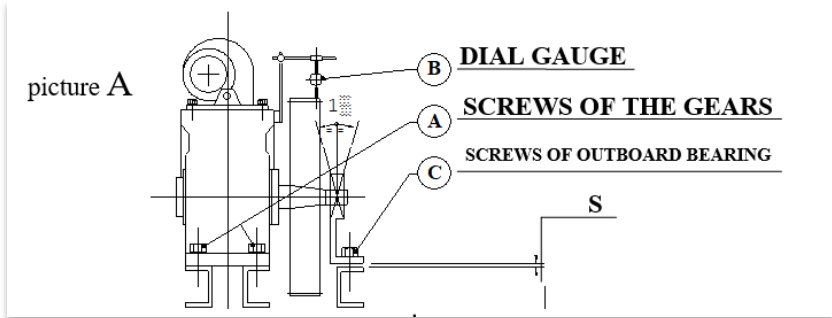


The removal of the gear from the package and its shifting should be done using flexible belts. The holding zone and the lifting equipment are shown in the following photos. It's important to regulate the chain's length winding around the pulley so that the gear will be horizontally balanced during the hoisting in order to avoid dangerous side oscillations and the unfastening of the belts



## LOCATION OF THE GEAR ON THE PLACE INSTALLATION

### LOCATION ON STEEL GIRDER MADE FRAME



#### 1. Location of gear with outboard bearing, downwards roping.

After having located the gear on the frame, check if there is a space “S” of about 0.5 mm between the frame and the outboard bearing surface; if necessary, insert blocks in the gear and tighten the bolts “A”. Reset the dial gauge “B” (magnetic base on the reducer) locating the feeler on the pulley and insert gauged packing in space “S”, so that the dial gauge should indicate an upwards moving of 0,03 ÷ 0,07mm. Tighten the bolts “C” and check the permanence, on the dial gauge of the value of about 0.03 ÷ 0.07 mm upwards. If necessary, modify the thickness between the bearing and the bearing surface.

#### 2. Location of gear with outboard bearing, upwards roping.

After having located the gear on the frame, check if there is a space “S” of about 0.5 mm between the frame and the outboard bearing surface; if necessary, insert blocks in the gear and tighten the bolts “A”. Insert blocks in the space “S” so to reduce the spaces up to 0,08 ÷ 0,12 mm, then reset the dial gauge “B” (magnetic base on the reducer) locating the feeler on the pulley. Tighten the bolts “C” and check the permanence, on the dial gauge of the value of about 0.03 ÷ 0.07 mm downwards. If necessary, modify the thickness between the bearing and the bearing surfac

**In the case of gears with winding drum you have to measure with the dial gauge on the skirt of the drum by the reducer side.**

**When the roping is 90 ° lateral as to the vertical axis the reading on the dial gauge, after the tightening og the bolts “C”, must be of ± 0,05 mm as to the zero setting on the dial gauge.**  
**When the roping is lateral and downwards inclined, make the levelling as described in point 1.**  
**When the roping is lateral and upwards inclined, make the levelling as described in point 2.**

**Note: In accordance with the installation guidelines of the anti-derailment device, the distance between the edge of the pulley and the protection components must be less than 0,5 times the diameter of the rope.**

## LOCATION ON A CEMENT MADE BASE:

The gear's levelling on a cement made base must be done, so that, once you have done the packing operation, tightening the screws "C" of the bearing (internal or external) (picture a-b, pages 11) you will see on the dial gauge the following values:

With downwards roping	0 ÷ 0,05 mm upwards
With lateral roping downwards inclined	
With upwards roping	0 ÷ 0,05 mm downwards
With lateral roping upwards inclined	
with lateral roping 90° as to the vertical axis	± 0,05 mm as to the zero setting on the dial gauge

## STARTING OF THE GEAR

Before starting the gear it's necessary to fill the reducer up until the level shown by the warning cap.

The oil's type is shown in the table here beside. The gear has been run in with synthetic oil so must be filled up and topped with synthetic oil. **Do not mix mineral oil with synthetic oil.**

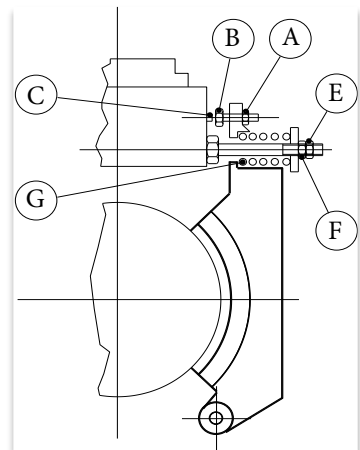
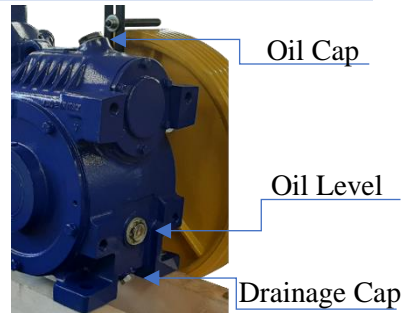
In case of use of synthetic oil see the paragraph about "lubrication".

CAPACITY OF OIL'S LOAD	Lit.
COMBI 30 - 32 - 35 /S	2.7
COMBI 30V - 32V - 35V /S	3.0

### STARTING

Let the pulley make a complete turn pressing on the flywheel for manual operation so that you will be able to lubricate the helicoidal plate wheel; then check the **EFFICIENCY OF THE BRAKE:**

1. Turn the bolt "A" out and then unscrew the screw "B" pushing it off the electromagnet of about 1 mm.
2. Pressing on the lever of the electromagnet be sure that the bolt "C" of the electromagnet is externally at the end of the run.
3. Turn the jam nut "E" and the bolt "F" until the spring "G" lose the compression totally.
4. Keeping the jaw in touch with the brake's drum screw again the screw "B" until the bolt "C" moves of 1 mm toward the electromagnet and lock the bolt "A".
5. Giving voltage to the electromagnet check that the jaws separate from the brake drum, if it does not repeat all the above.
6. Screw the bolt "F" again, compressing the spring "G" for about 20 mm towards the electromagnet and block the jam nut "E". Repeat the operation on the other jaw, then start the gear with installation not in roping. Then set the installation in roping balancing it and check manually the smoothness of the machine pressing on the flywheel on both sides. If there is hardness check the levelling of the slow shaft's bearing. Set the whole installation in movement for about 20 minutes with long runs. Leave the oil cap out. If there are signs of smoke, this means that there is a danger of seizing up and it will be necessary to stop the gear and an intervention is needed.
7. Then regulate the opening of the electromagnet and the braking at **page 19**.



## LUBRICATION

The first change should be done after 2000 working hours and the following each 5000 working hours or after about 18 months if you use mineral oil.

In a case of use of synthetic oil, the first change should be done after 5000 working hours and the following after each 15000 real working hours.

OIL FOR AN ENVIRONMENT'S  
TEMPERATURE  $+10^{\circ} \div +40^{\circ} \text{ C}$

MINERAL OIL

SYNTHETIC OIL

**ISO EP 320**

**Do not mix synthetic oil with mineral oil. In case you need to replace mineral oil with synthetic oil, please follow all the proceedings below:**

1. Take the ropes off the gear and when the machine is motionless, empty out the oil.
2. Fill the gear with kerosene in quantity equal to its oil contents.
3. Start the gear for some turns with high speed and then discharge all the kerosene. Repeat the operations 2 or 3 times.
4. Fill the gear with the synthetic oil in the required quantity and start the gear in both running ways for about 15 minutes, keeping the oil's cap open; in this way you will be able to check for smoke leakage. Then when the machine is still empty all the oil.
5. Fill the gear with the right quantity of new synthetic oil and after refitting the ropes, start the gear in the two-running way for about 15 minutes, always keeping open the oil's cap and check for smoke leakage it's necessary to stop the machine immediately and contact MGT ITALIA.
6. Close the oil cap.

### TYPE OF SYNTHETIC OIL RECOMMENDED

**ENI TELIUM VSF 320**

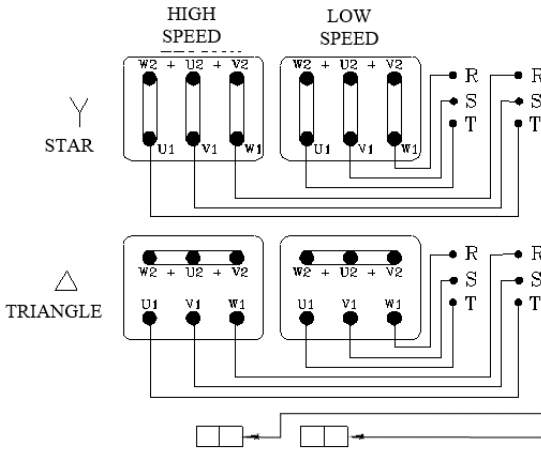


**ALWAYS USE THE RECOMMENDED OIL OR EQUIVALENT TYPE.**

## ELECTRICAL CONNECTIONS

**ELECTROMAGNET:** with direct current and two wires only, check that the voltage in entrance corresponds to the one marked on the tag of the electromagnet.

### 2 SPEED (AC2)



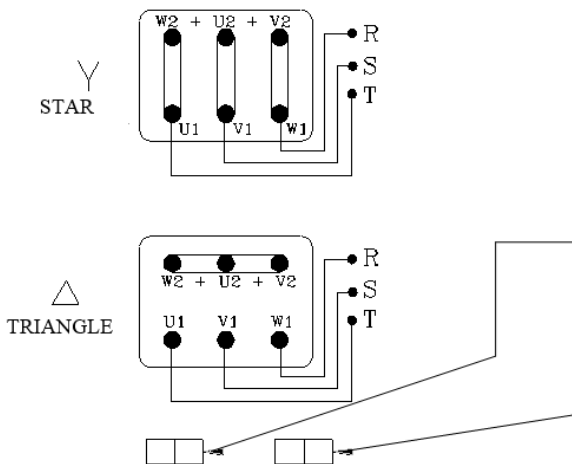
#### 2 VOLTAGE

triphas asynchronous motor with 6 terminal clamps.

TRIPHASE AUXILIARY FAN thermostat N.A.,  
interference at 70°C,  
2 terminal clamps.

3 or 3+3 THERMISTORS  
contact N.C.,  
interference at 135°C,  
2 terminal clamps.

### 1 SPEED (VVVF)



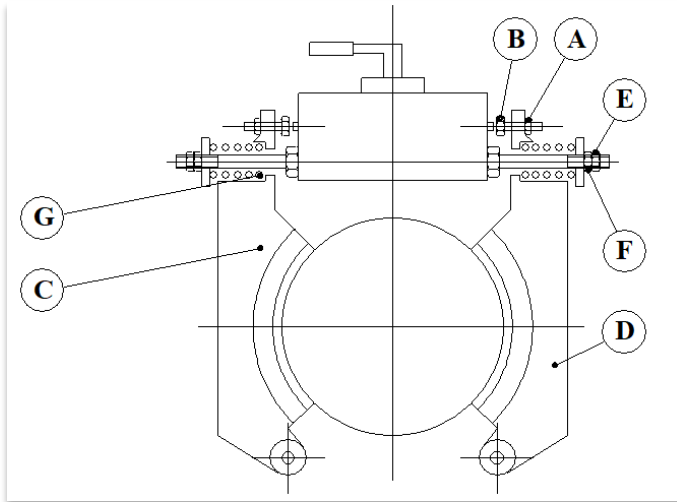
#### 2 VOLTAGE

triphas asynchronous motor with 3 terminal clamps.

TRIPHASE AUXILIARY FAN thermostat N.A.,  
interference at 70°C,  
2 terminal clamps

3 THERMISTORS  
contact N.C.,  
interference at 135°C,  
2 terminal clamps.

## BRAKE / ELECTROMAGNET ADJUSTMENT



This operation has to be done while the installation is working, in roping and with the electromagnet excited:

1. Unscrew the screw nut “A” and turn the screw “B” round until the jaw “C” grazes the drum “D” (you must hear the rubbing noise);
2. Screw the screw “B” doing a maximum rotation of 1/4 turn, in this way you have to push the jaw “C” off the drum until the rubbing stops;
3. Lock the screw “B” with the screw nut “A”;
4. Repeat the operations on the other jaw “D”;
5. Unscrew the jam nut “E” and work on the screw nut “F” in order to adjust the intensity of braking due to spring “G” compression;
6. Repeat the operation on the other jaw “D”.

### NOTE:

You have to take into consideration that, during the time, owing to the wear of braking material it may be necessary to repeat the operation described in this chapter and not only to increase the load of springs.

**WARNING: it is the responsibility of the end user to ensure complete compliance with all the requirements of the EN81-20 lift directive standard.**



## PERIODICAL MAINTENANCE SUPERVISION

**GENERAL NOTES:** the values of frequency and life are given on the base of terms established in the technical catalogue and on the base of the assembly directions of page 11-12-13 of this manual. Moreover, the bearing base of the gear must be dimensioned so that it will not give or bend under the weight of the machine, causing an anomalous working of the gear and, in particular, of slow shaft's bearing support.

**LUBRICATION OF THE GEAR:** see [page 14](#).



**ADJUSTING OF THE ELECTROMAGNET-BRAKE:** it must be done on the basis of periodical checking of the wear of the braking parts, after the first 100 working hours and then each 1.000 working hours or at least each  $4 \div 6$  months. See the instructions on [page 19](#). The change of the jaws is necessary when you reach a 2 mm shim on the point of maximum use of the braking material.

**CHECK OF THE CLEARANCE ON WORM SHAFT / CROWN:** it must be done each 3000 real working hours or at least once a year. See the instruction on [page 19](#).

**CHECK OF THE CLEARANCE ON THE THRUST BEARING:** ([page 18](#)) it must be done each 4000 real working hours or at least each two years. We suggest the change of the bearing after 12.000 real working hours or at least after 8 years.

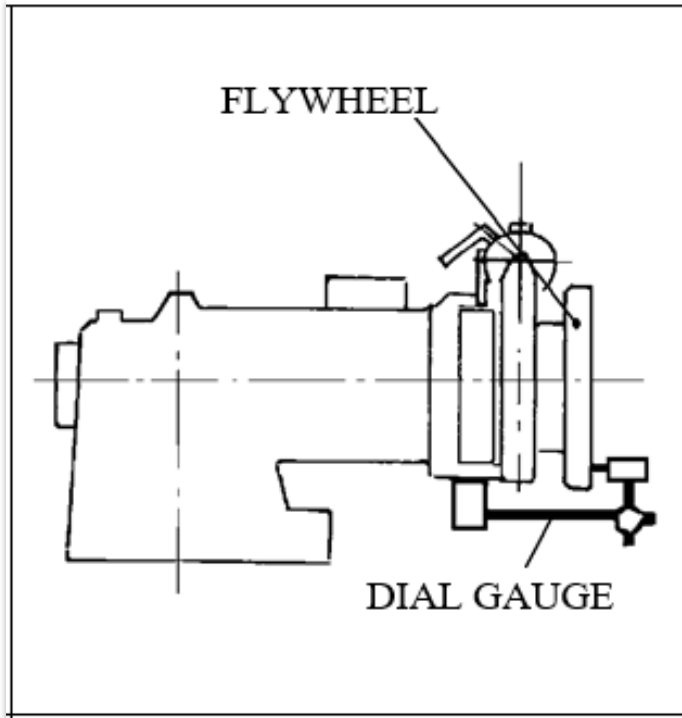
**SLOW SHAFT'S BEARING SUPPORT:** no adjustment is necessary and the bearing is pre-lubricated for life. We suggest the change after 15.000 real working hours or at least after 7 years.

**GENERAL OVERHAUL:** we suggest it after 20.000 real working hours or after 10 years.

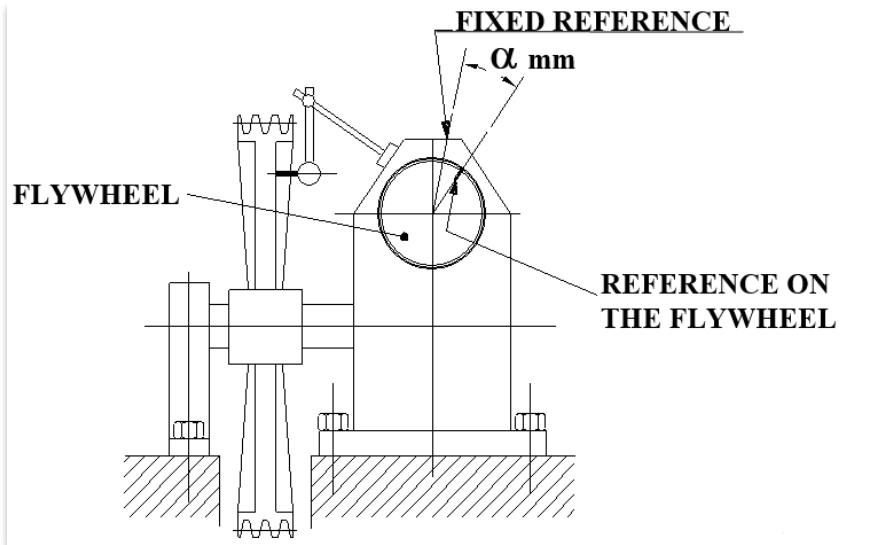
## CHECK OF THE CLEARANCE ON THE THRUST BEARING

**This operation has to be done after removing the ropes from the pulley:**

1. Lean the magnetic base of a dial gauge on the gear, on the motor, or on any fixed part of the gear and lean its feeler in contact with the manual flywheel or with the brake drum; then reset the dial gauge.
2. Excite or open manually the electromagnet in order to unclamp the brake jaws.
3. Turn manually the pulley or the windings drum and if the dial gauge shows a shifting higher than one hundredth of millimeter, this means that you need to adjust the clearance on the thrust bearing.



## CHECK OF THE CLEARANCE ON WORM SHAFT / CROWN



**The check between worm shaft and crown has to be done after being sure that there is no clearance in the thrust bearing. This operation should be done removing the ropes from the pulley.**

Lean the magnetic base of dial gauge on a plan of the gear and the feeler in contact with an arm of the pulley (in contrast with rotation); then reset the dial. Mark with a felt pen a reference point between the manual flywheel and a fixed part of a gear.

Turn around manually the fly wheel until the dial of the dial gauge starts moving.

Measure the distance  $\alpha$  between the reference you have marked with the felt pen.

The distance  $\alpha$ , expressed in mm, must not exceed the values shown in the table of the next page. The measuring should be done in both the directions of rotation of the flywheel.

If the distance  $\alpha$  exceeds the values of the table, it will be necessary to arrange the adjustment of the clearance between worm shaft and crown. If the adjustment of the worm shaft and crown does not bring the distance  $\alpha$  within the values of the table, the crown and/or the worm shaft will require replacement.

Maximum values of $\alpha$ clearance expressed in mm such to produce an oscillation of 1 mm on the maximum outer diameter of the pulley.				
GEAR'S TYPE	RATIO	$\varnothing$ of the FLYWHEEL	Clearance on the screw gearing mm	Maximum $\varnothing$ of pulley mm
COMBI 30 / S	1/71	36	0,36	600
	1/60	30	0,36	
	1/53	26	0,35	
COMBI 32 / S	1/42	35	0,40	
	1/47	30	0,40	
	1/37	27	0,40	
	2/55	25	0,40	
	2/47	22	0,40	
	3/41	17	0,38	
COMBI 35 / S	1/37	35	0,44	
	2/47	32	0,44	
	3/41	28	0,43	

