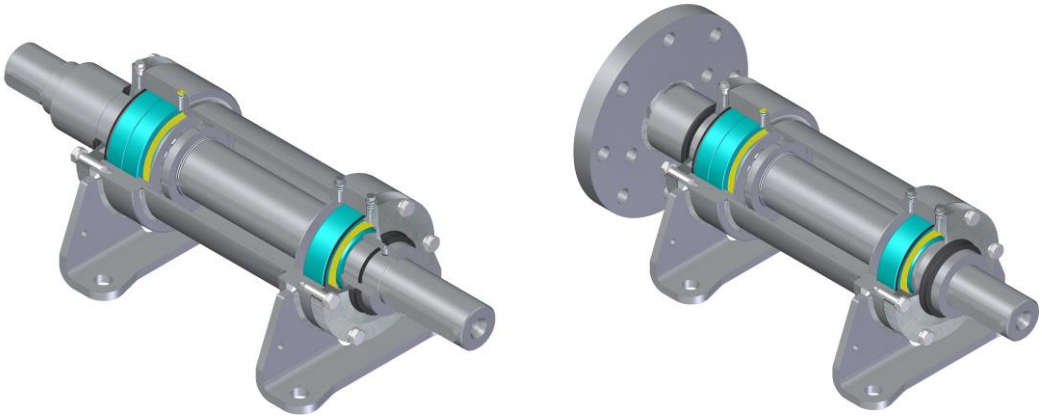


# Installation Manual

## Preface

The purpose of this manual is to give the user insight into the operation, mounting and maintenance of the parts delivered by Geha.

Before installation or mounting the equipment, read this manual and follow the instructions given. In case of doubt about an operation that is to be carried out, please contact Geha.

The installation, commissioning and maintenance should only be carried out by experienced and well trained mechanics.

Geha has paid much attention to the safety and reliability of the parts delivered.

All safety requirements that apply to the assembled equipment must have been met before putting it into operation.

## 1 Introduction

### 1 – 1 Information about the supplier

Company name: Machinefabriek en Apparatenbouw Geha bv
Address: Veilingstraat 52
7833HN Nieuw-Amsterdam
The Netherlands
Telephone: (+31) 591 55 17 33
Fax: (+31) 591 55 37 81
e-mail: info@geha-holland.nl

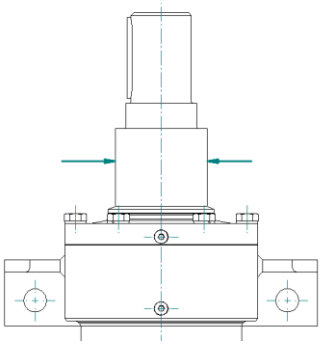
### 1 – 2 Purpose of use

The part described in this manual has been designed to use in an industrial environment.

### 1 – 3 Description of the bearing block

The bearing block has been designed for building into a ventilator. It supports a continuous shaft. The shaft rotates in a housing that is attached to the static part of the ventilator. Geha has designed the bearing block especially for a specific application, which means that the type of bearing block has been derived from the power of the motors, the speed and dimensions of the fan.
Therefore it is not allowed to use the bearing block for another application than it was designed for without written permission from Geha.
This manual describes all types of bearing blocks delivered by Geha. The type designation used by Geha is based on the maximum diameter of the shaft.

Thus the Type 60 has a maximum shaft diameter of 60 mm.



## 2 Mounting, installation and commissioning

### 2 – 1 Install / mount

1 Position the bearing block

**Attention:**
It is forbidden to lift the bearing block by the shaft, using a hoisting eye!
Hoist the bearing block as indicated in Fig. 1 & 2

**Figure 1**

**Figure 2**

**Warning:**
There is a risk of getting jammed between the bearing block and the surroundings

**Attention:**
The weight of the bearing block can be found on the package or distribution list

2 Attach the bearing block to the bearing bracket

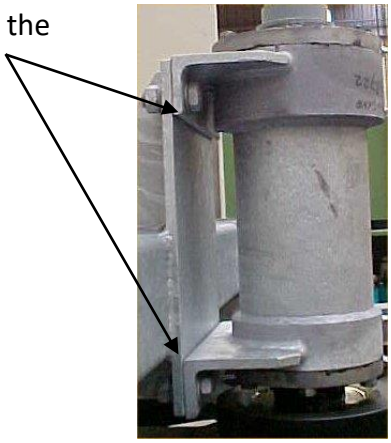


**Figure 3**

3 Remove the covers and/or strap varnish from the axle journal and flange
**Attention:** these are joint faces

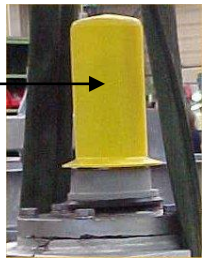


**Figure 4**

4 Check the direction of rotation

**Attention**
**If this bearing set contains a 'one directional' back-stop (anti-rotation device). Turning or forcing the bearing set in the wrong direction will damage the back-stop and bearing.**
**- Assure the fan motor turns in the correct direction before the fan belts are mounted.**
**- Prevent the fan shaft turning when tightening the fan bolts.**

## 2 – 2 Provisions to be taken care of by the buyer

On site there should be a hoisting device present for unloading the parts.

**Attention:**
For the weights of the various parts, please refer to the packages or distribution list concerned.

## 2 – 3 Required special tools and equipment

The installation and/or assembly of the ventilator does not require any special tools.

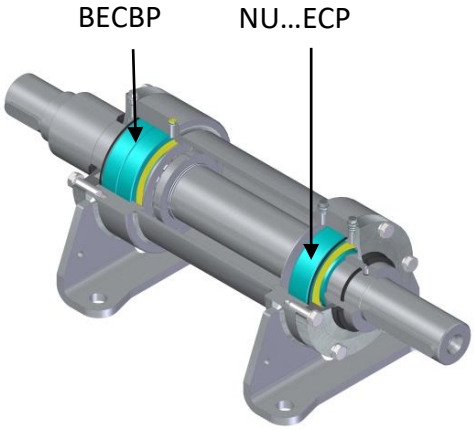
## 3 Operation

As here a part of an assembled installation is involved, no operation instructions are given for this type of part. The operating instructions apply to the entire system and are the responsibility of the client or the end user.

# 4 Maintenance

## 4 – 1 Overview by bearing type

| Type | NSK bearings | SKF bearings | Qty | Amount of bearing grease (grams) | Re-lubrication amount (grams) |
|---|---|---|---|---|---|
| 60 | 5210 | 3210 | 1 | 50 | 20 |
| | NU 308 ET | NU 308 ECP | 1 | 50 | 10 |
| 75 | 7213 BETNU | 7213 BECBP | 2 | 100 | 30 |
| | NU 311 ET | NU 311 ECP | 1 | 95 | 20 |
| 90 | 7216 | 7216 BECBP | 2 | 170 | 40 |
| | NU 313 ET | NU 313 ECP | 1 | 170 | 30 |
| 100 | 7218 BWG | 7218 BECBP | 2 | 200 | 50 |
| | NU 2216 ET | NU 2216 ECP | 1 | 140 | 30 |
| 115 | 7220 BWG | 7220 BECBP | 2 | 310 | 60 |
| | NU 2218 ET | NU 2218 ECP | 1 | 270 | 50 |
| 125 | 7222 BWG | 7222 BECBP | 2 | 390 | 70 |
| | NU 2220 ET | NU 2220 ECP | 1 | 400 | 70 |
| 135 | 7224 BWG | 7224 BECBP | 2 | 490 | 90 |
| | NU 2224 ET | NU 2224 ECP | 1 | 480 | 80 |




The grease filling as applied by Geha is suitable for 24000 to 32000 maintenance-free operating hours. After that period the grease should be renewed and the ball bearings are to be checked.
The life span can be lengthened by lubricating the bearings once a year.

## 4 – 2 Bearing grease used

| **Type:** | | **Consistency class** | **Thickener / basic oil** | **Temperature range** |
|---|---|---|---|---|
| **Klüber** | **DIN 51825** | | | |
| BEM 41-141 | KPHC1N-30 | 1 | Lithium / mineral/synthetic | **–50 to 150 °C** |

The bearing grease used in the bearing block is mentioned on the assembly drawing of the project concerned.

**Attention:**
The life span of a bearing block will substantially be reduced when the environmental temperature is outside the temperature range of the bearing grease involved.

**4- 3 Dismount / Assemble**

**Attention:**
Before starting dismounting the bearing block, the pulley, hub or V-belts are to be dismounted.

**See Fig. 5**

- Place the bearing block such that the cylinder bearing, type NU, is on the bottom side.

**See Fig. 6**

- Unscrew the bolts of the bearing cover and remove the bearing covers
- Loosen the bottom distance ring
- Pull the shaft out of the bearing housing via the top
- Then dismount the other parts

- Before assembly all parts are to be cleaned
- Fill the ball bearings completely and the grease section half with grease
- Tighten the locknut of the ball bearings without play.

**Attention:**
If the bearing block will not be used for a long time, the shaft should be turned a few turns every month.
If the bearing block has been idle for more than two years, the grease should be replaced and the ball bearings should be checked before taking the bearing block into operation.

## Annexes

## Torques for bolts (target values)

Quality 8.8

| | | | |
|---|---|---|---|
| M 8 | 22 Nm | M 20 | 360 Nm |
| M10 | 42 Nm | M 22 | 490 Nm |
| M12 | 73 Nm | M 24 | 620 Nm |
| M14 | 116 Nm | M 27 | 920 Nm |
| M16 | 180 Nm | M 30 | 1240 Nm |
| M18 | 260 Nm | | |

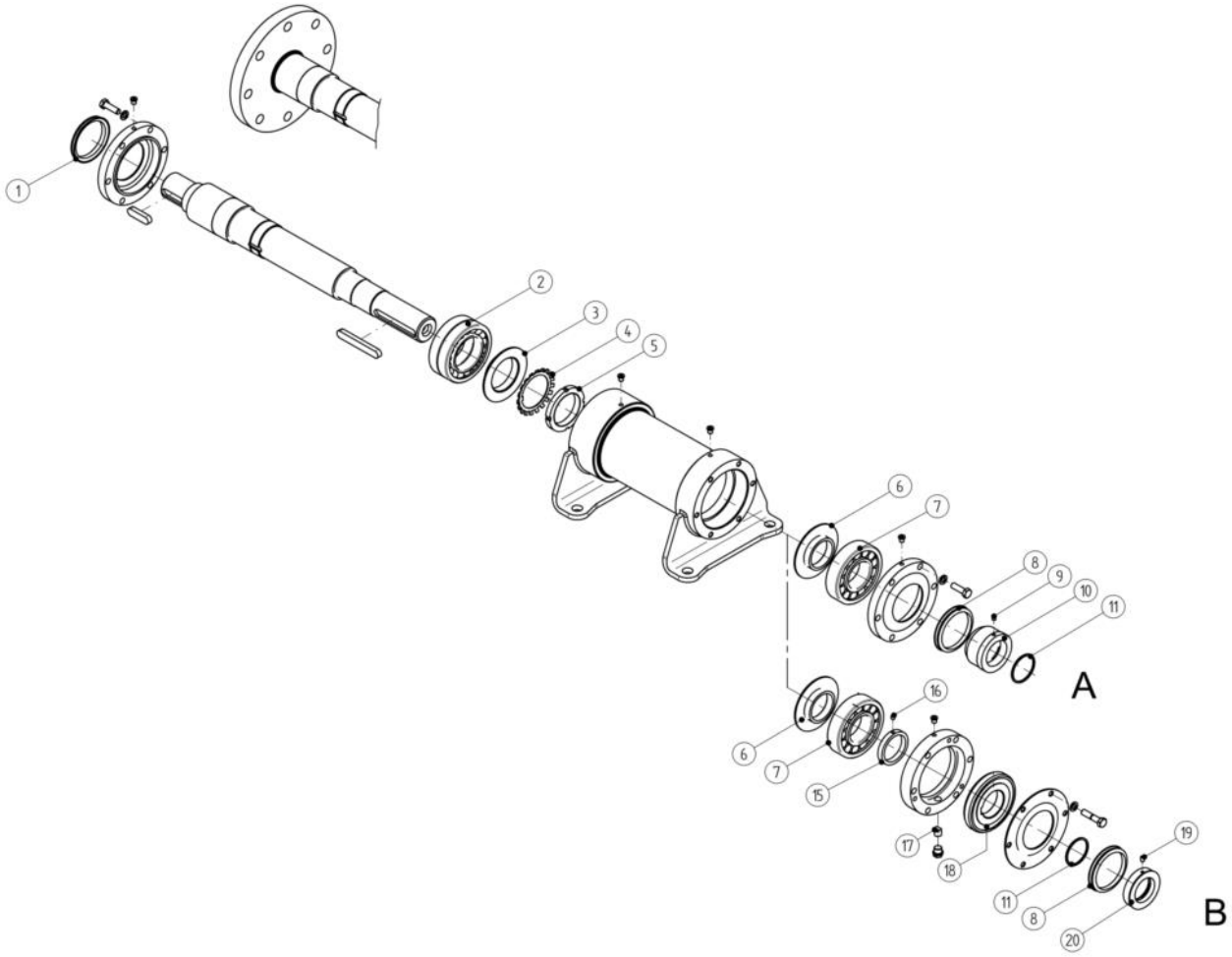
## Torques for locknuts (target values)

Quality 8.8

| | | | | | |
|---|---|---|---|---|---|
| KM 10 | 780 Nm | KM 16 | 2160 Nm | KM 22 | 5700 Nm |
| KM 11 | 850 Nm | KM 17 | 2500 Nm | KM 23 | 6000 Nm |
| KM 12 | 930 Nm | KM 18 | 3050 Nm | KM 24 | 6750 Nm |
| KM 13 | 1100 Nm | KM 19 | 3450 Nm | KM25 | 7450 Nm |
| KM 14 | 1290 Nm | KM 20 | 4000 Nm | | |
| KM 15 | 1600 Nm | KM 21 | 5050 Nm | | |

## Bearingblock with anti-rotation bearing:

| | |
|---|---|
| **Warning**  | **Attention:**<br>Before mounting the fan belts, always check the rotation direction of the motor is corresponding with the rotation direction of the fan.<br><br>If the bearingblock has been provided with an anti-rotation bearing (back-stop), check the direction of rotation of the motor and the bearing are in the same direction, before mounting the fan belts!<br><br>To prevent damage to the anti-rotation bearing (backstop) while fan blade bolts are being tightened, fan blades MUST be secured against hub movement. |




## List of spare parts

Figure 6

1 - V-ring
2 - Bearing
3 - Grease retainring
4 - Seeger ring
5 - Nut
6 - Grease retainring
7 - Bearing
8 - V-ring
9 - Securing screw
10 - Distance ring
11 - O-ring
15 - Distance ring**
16 - Securing screw**
17 - Break pin**
18 - Anti rotation bearing**
19 - Securing screw**
20 - Distance ring**

**** execution with Anti Rotation Bearing**