

Centrimaster GT Installation and Maintenance Instructions

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General

This instruction is intended for professional installation and use by trained personnel. Technical skills are required, for example, when tensioning the belts and replacing motors, applicable to the trained personnel of the factory. Replacement of the impeller and bearing require specialised professional skills. This should be performed by service personnel familiar with the construction of the fan. (A separate service instruction is available for the replacement of impeller and bearing). Electrical connections must be carried out by an authorized electrician. A separate installation and maintenance instruction is delivered with the motor. Professional staff who is familiar with the safety regulations must carry out the installation, start-up and operation of the fans. Tools and protective equipment necessary for preventing accidents from occurring while installing and operating the fan must be used in accordance with the national safety regulations.

1. Receiving and inspecting the product

1.1 Receiving inspection

Check the fan immediately after you receive it and make sure that it has not been damaged externally and, if required, contact the transport agency immediately. Briefly rotate the impeller and the motor shaft by hand to make sure that they rotate freely. Check all the information on the fan rating plate.

1.2 Data on the rating plate

Ref: Order number
 Marking: Position number (specified by the customer)
 Type: Fan type marking
 Mfd: Year of fan manufacture
 Max. speed: Maximum allowable fan speed
 Max. temp: Maximum allowable operating temperature
 Weight: Weight of the fan
 Serie: Serial number

Fläkt Woods Oy		Kalevantie 39 20520 Turku Finland
Ref. _____	Marking _____	
Type _____	_____	
Type _____	_____	
Type _____	_____	
Max. speed: _____ rpm	Max. temp. _____ °C	Mfd: _____
Weight: _____ kg	Serie _____	

Fig. 1.1 Fan rating plate

1.3 Handling and lifting of the fan

Fans are delivered on wooden pallets, allowing for transport by forklift. Use removable lifting lugs when lifting. Place the fans on a level surface. Do not stack them on top of each other.

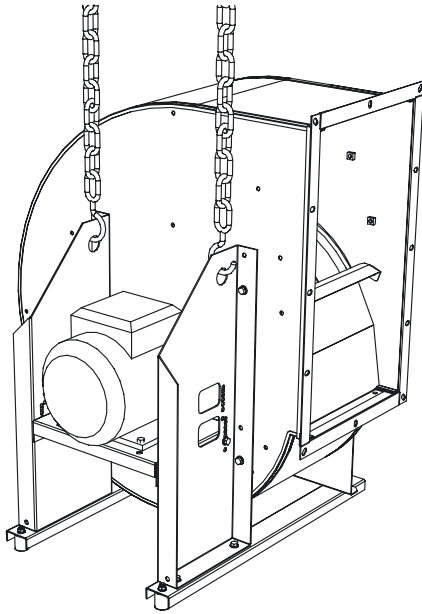


Fig. 1.2 GT-1 fan can be lifted from liftingholes. Do not jerk the fan as you lift it.

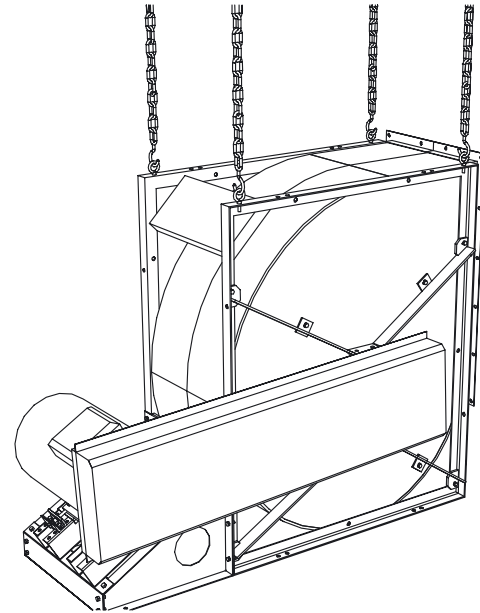


Fig. 1.4 GT-3 fan (sizes 080...100) can be lifted by the lifting lugs, and (sizes 112...140) by the base frame. Do not jerk the fan as you lift it.

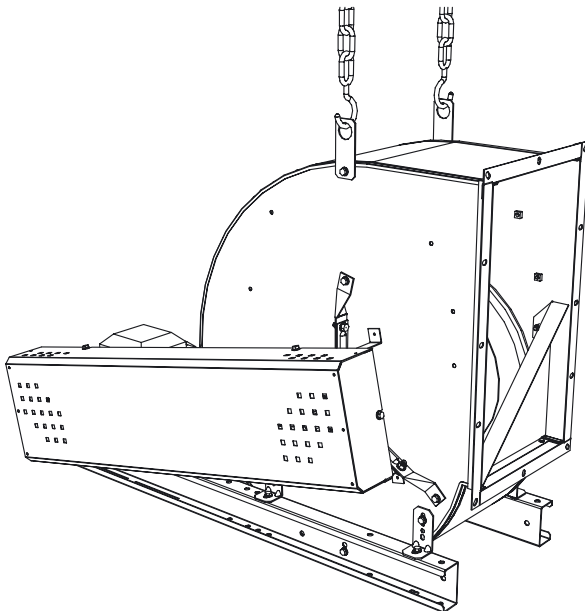


Fig. 1.3 GT-3 fan (sizes 025...071) can be lifted by the lifting lugs or, if there are none, lifting will take place with lifting ropes by the beam platform. Do not jerk the fan as you lift it.

1.4 Fan weight

Approximate weights of standard fans with the base frame and without optional accessories and motor are given in Tables 1.1 and 1.2 Motor weight is given in the motor rating plate.

1.5 Storing the fan

Fans are protected for delivery in such a way that they can be stored for one (1) month. This requires that they are not directly exposed to rain or snowfall. If the storage period exceeds 3 months, the fan belt drives must be loosened and the motor and the impeller must be turned by hand at regular intervals. Storage time can be extended to 6 months, provided that the fans are stored in an area with adequate ventilation and heat in order to prevent condensation from forming.

Table 1.1 GT-1 fan weight without motor and optional accessories.

Impeller	Fan size/Weight (kg)											
	020	022	025	028	031	035	040	045	050	056	063	071
LF	8.4	9.8	13	15.2	17.7	27.6	32.5	38	47	-	-	-
LB	-	10.8	14	15	18.2	27.5	34.2	41	51	67	92	120

Table 1.2 GT-3 fan weight without motor and optional accessories.

Impeller	Fan size/Weight (kg)														
	025	031	040	045	050	056	063	071	080	090	100	112	125	140	
LF	17	23.5	39	45	56	84	107	134	-	-	-	-	-	-	
LB	18.5	25	41	49.5	61	91	115	144	267	320	367	-	-	-	
HB	-	-	41	49.5	61	91	115	144	267	320	367	498	581	770	

We reserve the right to make changes.

2. Function and construction of the fan

The fan is used to generate a desired air volume at a given pressure rise which corresponds to the pressure losses in the duct system to which the fan is connected. This is achieved by driving the fan impeller.

2.1 Fan construction

GT-1

1. Fan
2. Motor shelf
3. Motor
4. Flexible connection duct, inlet side (optional accessory)
5. Flexible connection duct, outlet side (optional accessory)
6. Vibration dampers, 4 pcs (optional accessory))

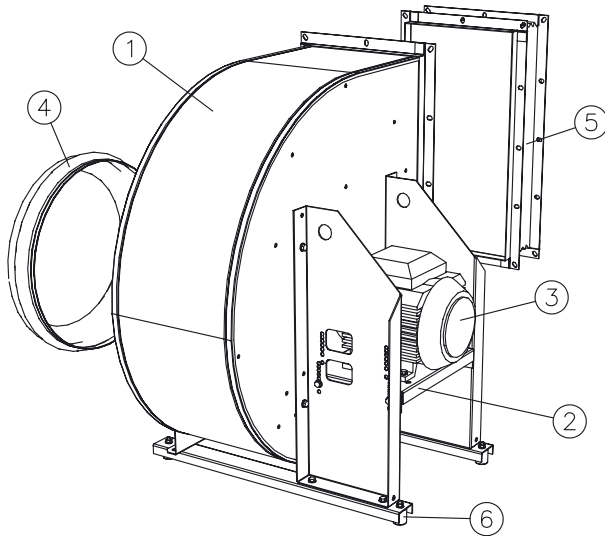


Fig. 2.1 GT-1 fan construction parts.

GT-3 sizes 025...071

1. Fan
2. Fan base frame
3. Motor
4. Tensioning of the belt drive
5. Motor slide rails
6. Belt guard
7. Vibration dampers, 4 pcs (optional accessory)

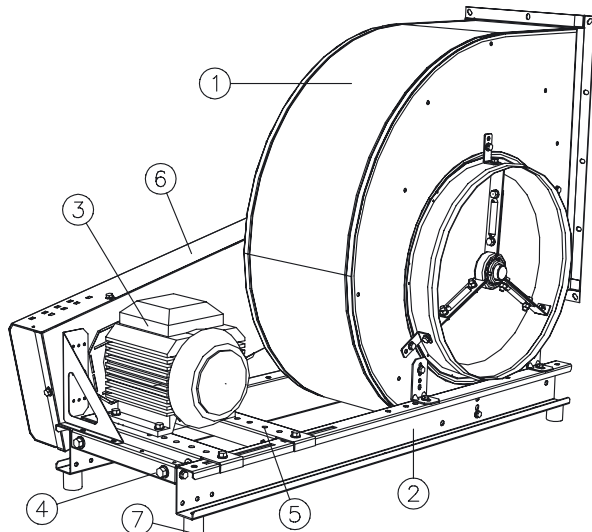


Fig. 2.2 GT-3 fan type construction parts (sizes 025...071).

GT-3 sizes 080...100

1. Fan
2. Frame
3. Motor
4. Motor fastening bolts
5. Motor bracket
6. Belt guard
7. Vibration dampers (optional accessory)

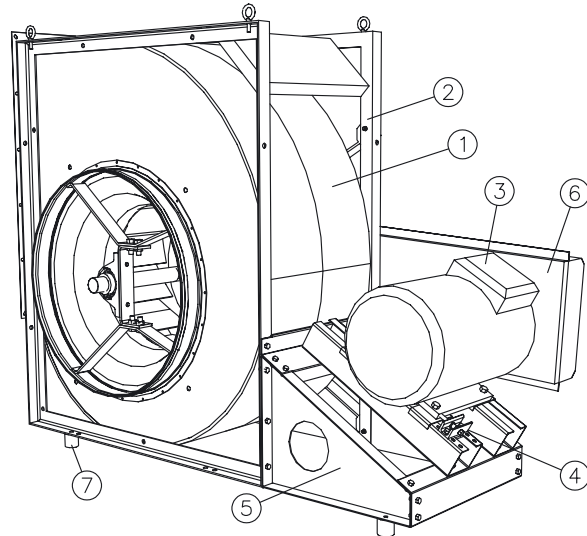


Fig. 2.3 GT-3 type fan construction parts (sizes 080...100).

Fan

1. Fan casing
2. Tongue
3. Impeller
4. Shaft (not GT-1)
5. Inlet cone
6. Inlet ring
7. Bearing bracket (not GT-1)
8. Bearing set (not GT-1)
9. Outlet flange

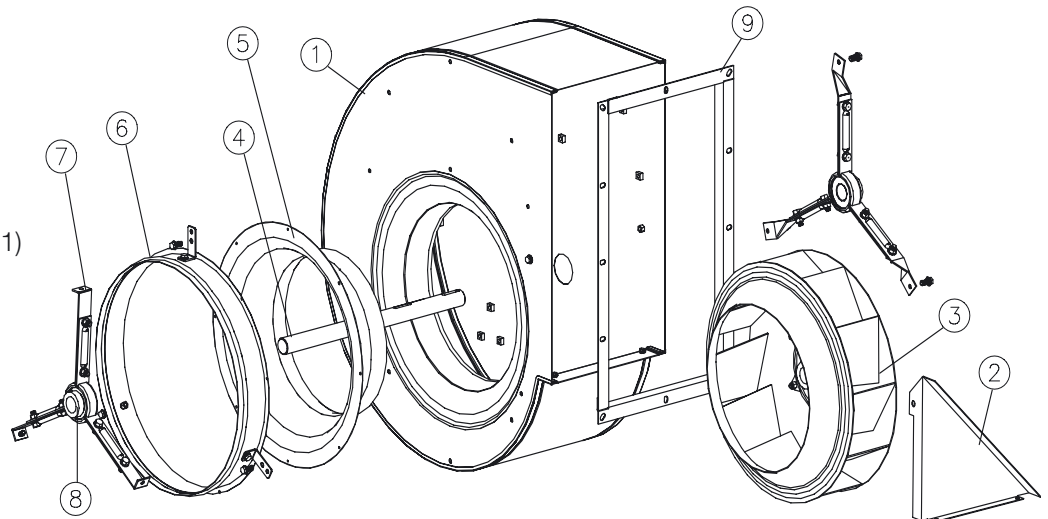


Fig. 2.4 Fan construction parts.

2.2 Operating conditions

A normal construction fan is intended for the circulation of air when air conditioning. If the air being circulated contains explosive gases, check whether the fan is suited for the prevailing conditions on a case by case basis. The standard operating temperature of a fan is $-30...+80^{\circ}\text{C}$. Motor efficiency values are valid when the ambient temperature does not exceed $+40^{\circ}\text{C}$, and the installation location is maximum 1000 m above the sea level. If installed on the exterior of a building, the motor must be protected from direct sunlight.

2.3 Noise emissions

Noise level generated by the fan might exceed 70 dB(A) in normal operation. More detailed performance figures can be found in the product brochure.

2.4 Balancing

The impeller has been balanced dynamically and the fan has been test run at the factory, with a vibration level (measured from its bearings) of $<7.1 \text{ mm/s (RMS)}$.

3. Installation and start-up

Plan out the installation of the fan and ductwork before starting work. Avoid sharp duct bends and changes before inlet opening, especially near the outlet opening. The flow has not yet equalised in the fan outlet opening.

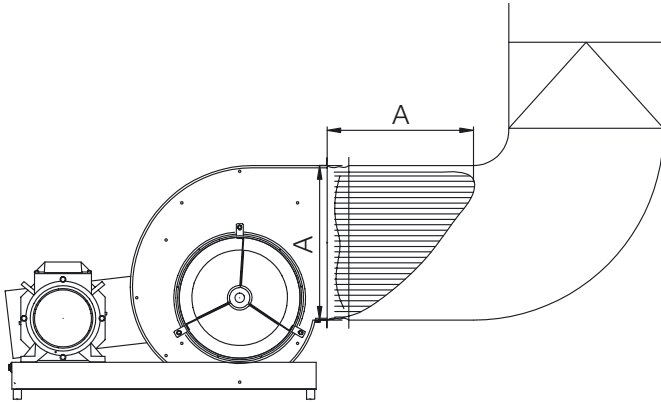


Fig. 3.1 Minimum safe distance behind the outlet opening. Do not install an angle duct piece immediately after the fan outlet opening. Use a short, straight duct allowing the flow to equalise.

When installing the fan, the service area requirement must be noted as follows:

GT-1 (standard construction)

- When replacing the motor, it must be possible to remove the impeller lockingscrew.

GT-3

- Bearing replacement from both sides of the fan and especially space requirement for inlet side bearing replacement.

GT-5

- Bearing replacement from both sides of the fan.

If the inlet opening has been ducted, ensure that you can replace the bearing by removing the flexible connection duct and part of the inlet ducting or that you can move the fan as a unit towards the service space.

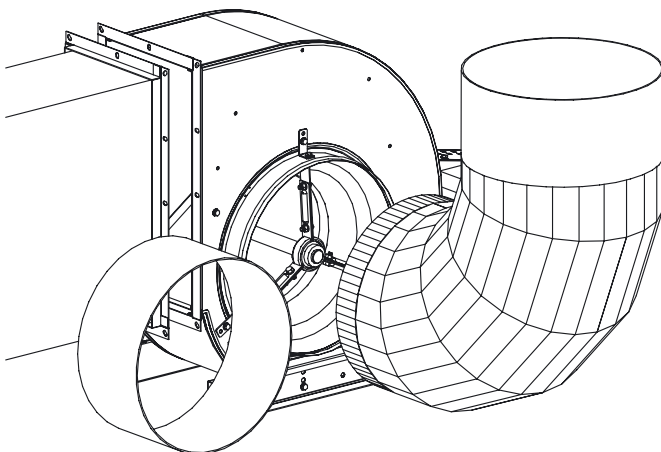


Fig. 3.2 Space reservation for bearing replacement.

3.1 Fan installation

Fans are normally installed on vibration dampers (optional accessory), which are fastened with bolts in the installation holes of the base frame. The fastening platform must be even and sufficiently sturdy. When performing an installation, ensure that there are no bending forces or other mechanical tensions affecting the fan.

3.2 Electrical connection

Electrical connection must be carried out by an authorised electrician. The fan must have an operating switch and a safety switch which can be secured for the duration of the servicing. Electrical connections must be carried out in accordance with respective national regulations and instructions. Ensure that the motor cable is long enough so that the motor can be moved freely when tensioning the belts. The cable should be rubber insulated. When using frequency transformers, the cabling instructions of the frequency transformer manufacturer must be followed.

3.3 Safety equipment

The fan complies with the EU Council machine directive and EN 294:1992 standard regulations concerning contact protection. These regulations must be followed in any fan installation. An open pressure or inlet opening must be protected by an inlet guard (optional accessory). After servicing, ensure that all the guards, including the belt guard, are properly in place. Machine rooms should be kept locked so that non-authorised persons cannot access them.

3.4 Fitting accessories

The fan should normally be connected to ducting by means of a flexible connection duct. The tightness of the flexible connection duct must be adequate and there must be no bends that could choke the air flow. Check that the flexible connection duct is in alignment with the fan outlet and the ducting. Before installing the counter flange, fit a gasket (e.g. 2 x 10 mm) to one flange of the flange joint. After this, assemble the flange joint. Separate operating instructions are included with the air flow sensor (optional accessory).

3.5 How not to install the fan

The fan must not be mounted with the shaft vertical.

3.6 Inspection after the fan has been installed

Rotate the shaft and check that the impeller does not come in contact with the inlet cone and that the bearings do not make any unusual noise. Make sure that there are no foreign objects in the fan or in the ducting.

3.7 Measures to be taken before starting

If the fan has an impeller with forward curved blades (type GTLF), make sure before starting that it has been

connected to ducting that conforms to the designed pressure drop. This will prevent overloading of the motor. Check that the belt guard and inlet guard are fitted in accordance with regulations. If the fan is intended for Y/D starting, check that the time relay has been set for the calculated Y position starting time.

3.8 Starting

Briefly switch on the motor power supply to check whether the fan impeller rotates in the correct direction. Check that no abnormal mechanical sounds or surging occurs. Check that the level of vibrations transmitted to the bearings is normal. If required, measure the vibrations emanating from the fan and from the motor bearings with a vibrometer. The strength of vibrations must not exceed an RMS value of 7.1 mm/s. If the fan is mounted on vibration dampers, check that they can operate correctly without stretching the flexible connection duct or electric cable. After running for 30 minutes, the belt tension must be checked and, if required, adjusted. Check the temperature and running noise of the plummer block bearings. If necessary, ensure that there is grease in the bearings.

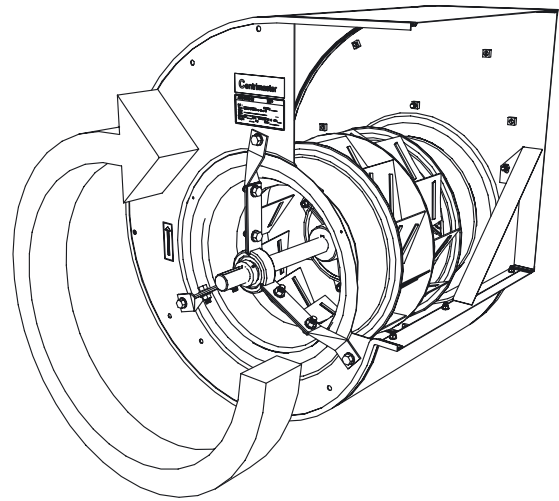


Fig. 3.4 The correct direction of rotation of LB and HB impeller.

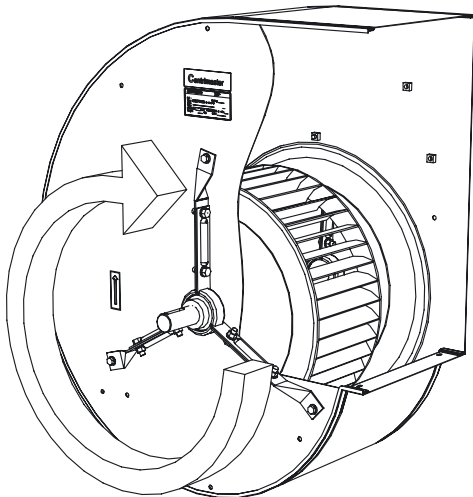


Fig. 3.3 The correct direction of rotation for an LF impeller.

4. Fan service and repair

4.1 Warranty

The warranty is valid for one (1) year from the despatch date from the factory unless otherwise agreed prior to placing the order. The warranty is only applicable to manufacturing defects. A precondition of warranty is that regular maintenance has been carried out. Defects under warranty must be reported immediately to the manufacturer or importer. The warranty does not cover bearing damages caused by over-tensioning of the belt. The warranty does not cover work or indirect damages.

4.2 Maintenance plan

To guarantee smooth operation, the fan must be serviced regularly. The need for servicing depends on operating conditions. If the air contains a lot of impurities, the service intervals will have to be shorter. As a general rule, the fan must be inspected at least twice a year. For the most important maintenance measures, see the following sections.

4.3 Before maintenance

- Switch off the fan by the operating switch in the control center.
- Also remove the fuses, when required.
- Before starting the fan service and repair, the power feed must be cut off with the safety switch, which should be locked out for the duration of the service work.
- Note! Small motors which are protected by an automatic heat switch in the main circuit can start running automatically.
- The safety switch must not be used as operating switch.
- Motor may be stopped with the safety switch only in an emergency situation.

4.4 Belt drive (GT-3 and GT-5)

4.4.1 Inspection of V-belts

- Make sure that the fan does not rotate.
- Remove or loosen the fastening bolts of the belt guard.
- Lift the guard off.
- Check the tension of the belts.

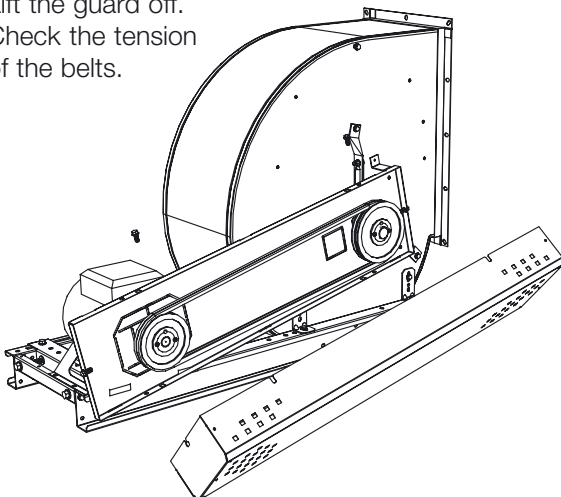


Fig. 4.1 GT-3 025...071 removal of belt guard.

4.4.2 Adjusting the belt tension

Belt tension is adjusted by moving the motor.
GT-3 025...071 tensioning the belts:

- Loosen the motor slide rails' locking screws No.1 (4 pcs).
- Adjustment of belt tension is performed with screws No. 2 (2 pcs). If you want to tighten the belts, turn both screws evenly clockwise. Loosening of the belts is done counterclockwise.
- When the correct belt tension has been achieved, tighten motor beam securing screws No. 1 (4 pcs).
- Then check the alignment of the belt pulleys.

1. motor slide rails securing screws
2. motor tightening bolts

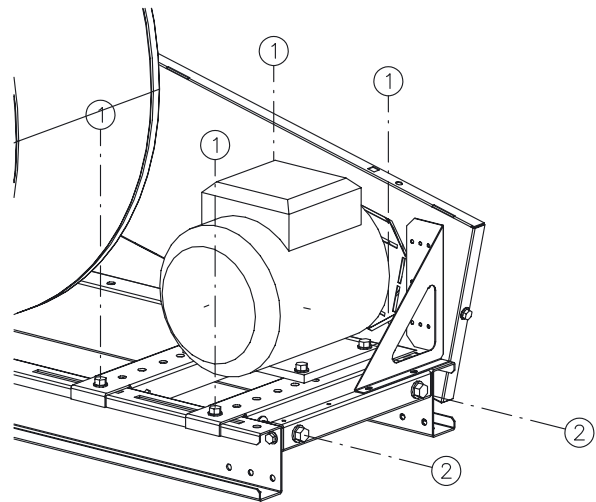
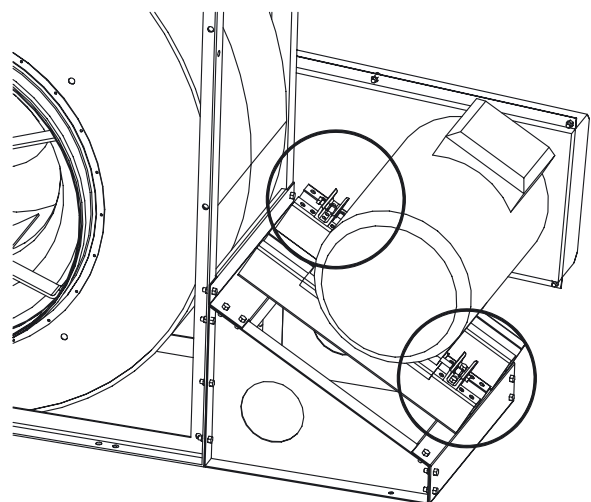


Fig. 4.2 GT-3 025...071 tensioning the belts.

GT-3 sizes 080...100 tensioning of the belts:

- Loosen the four fastening bolts (No. 2) of the motor.
- Move the motor with the adjusting bolts (No. 3).
- If the threads of the adjusting bolts are not adequate, loosen the slide rails fastening bolts and move the slide rails to the next slot on the tightening rail.
- When the correct belt tension has been reached, tighten the motor fastening bolts.
- Then check the alignment of the belt pulleys.



1. Motor slide rails (2 pcs)
2. Motor fastening bolts (4 pcs)
3. Adjustment bolt (2 pcs)
4. Adjustment bracket (2 pcs)
5. Adjustment bracket fastening bolt (4 pcs)

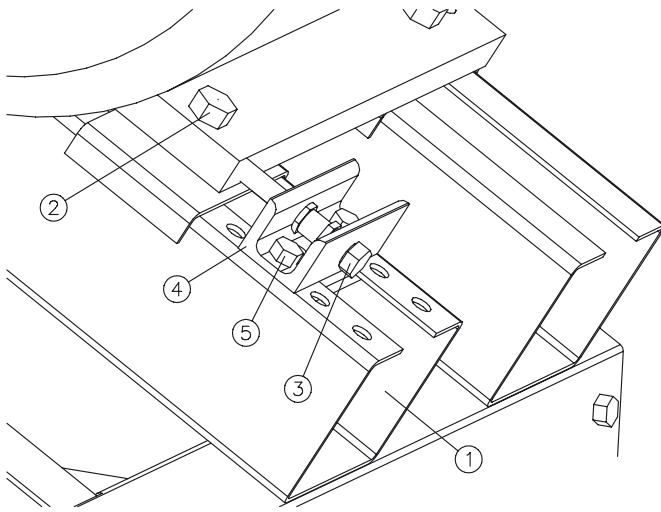


Fig. 4.3 GT-3 080...100 tensioning the belts.

When using new belts, the belt tensions must be checked and belts tensioned, if necessary, after about 30 minutes of operation. Belt tensions must be checked at 6 month intervals. The belts must be kept clean and protected from oil and direct sunlight.

4.4.3 Tensioning of V-belts

For proper functioning of a belt, the drive requires correct belt tension. If the belt tension is too slack, there is a danger of belt slippage, causing premature wear of the belts. If the belts have been tensioned too tightly, there is a danger that the motor bearing service life will be considerably shortened. Even an over-tensioning of 25% can shorten the bearing service life by half.

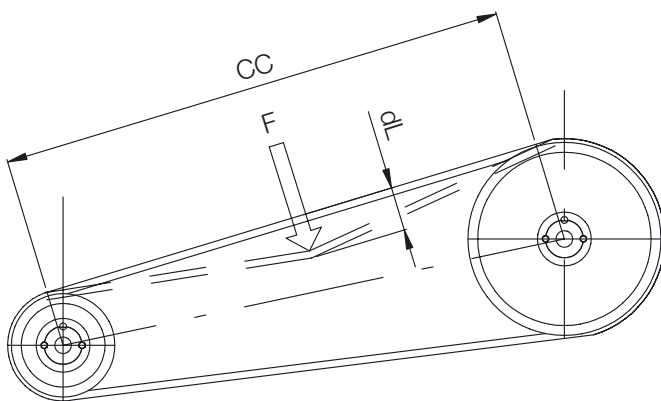


Fig. 4.4 Belt span, deflection and deflection force.

1. Measure the belt span length CC [m]. For example, belt span CC = 1.2 m.
2. Desired deflection $dL = 15 \text{ mm/length meter}$. For example, deflection $dL = 15 \text{ mm/m} * 1.2 \text{ m} = 18 \text{ mm}$.
3. Measure the perpendicular deflection force F, which is obtained by deflecting dL (by 18 mm).

4. Compare deflection force F to the table 4.1. If the measured deflection force is between the values given, the tension is satisfactory. If the tension is less than the lower value, the belts are too loose. New belts should be tensioned to the higher value of the measuring force, as the belts will stretch during the drive-in period.

Table 4.1 Deflection forces of the V-belt.

Belt profil	Diameter of smaller pulley	Force F (N)
SPZ	67 - 95	10 - 15
	100 - 140	15 - 20
SPA	100 - 132	20 - 27
	140 - 200	28 - 35
SPB	160 - 224	35 - 50
	236 - 315	50 - 65
SPC	224 - 355	60 - 90
	375 - 560	90 - 120

4.4.4 Tensioning of flat belts

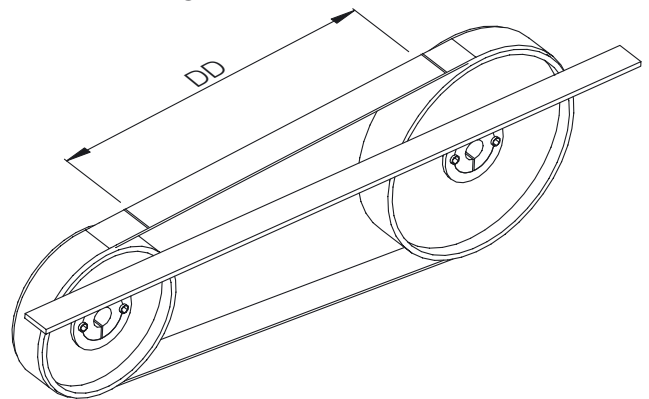


Fig. 4.5 Measurement distance of a flat belt.

1. Install the motor and fan belt pulleys on their shafts without tightening the sleeves.
2. Install the belt over the pulley and move the engine so that the belt will straighten, but will not be tensioned.
3. Align the belt pulleys using a ruler and tighten their sleeves.
4. Fasten the motor loosely so that it can still be moved on the slide rails.
5. Measure the longest free belt span DD, rounded down to the nearest 100 mm. For example, if CC = 865, then DD = 800 mm. The belt must not touch the belt pulley within the measuring distance.
6. Remove the belt, place it on an even surface and mark the free belt span mentioned in the previous section on the belt with a pen.
7. Install the belt on the pulley again and tension it by means of slide rails, with the motor and fan shaft being as parallel as possible.
8. Stop tensioning when the belt has reached the correct stretch according to the table 4.2.
9. Rotate the belt drive by hand. If the belt moves axially to either direction, this is due to the fact that the shafts are not parallel. This situation can be corrected by means of slide rails so

that the belt stays in the middle when rotating the drive.

- When the belt has been tensioned and it stays in the middle when rotating, the motor slide rails securing bolts are tightened.

Table 4.2 Flat belt tensioning lengths.

Before tensioning (mm)	Distance between the marks	
	After tensioning	
	Typ: F-0, F10, 2,8 %	Typ: F14, F25, A-2, A-3, 2,5 %
100	102.8	102.5
200	205.6	205
300	308.4	307.5
400	411.2	410
500	514	512.5
600	616.8	615
700	719.6	717.5
800	822.4	820
900	925.2	922.5
1000	1028	1025

4.4.5 Replacement of V-belts

In connection with a belt replacement, the motor must be moved so that it is easier to remove the old belt and place the new belt on its place on the belt pulley. Do not use any tools to remove belts from a belt pulley. If there are several belts on a belt drive, they all must be replaced at the same time. It is always best to use belts which belong to the same manufacturing batch, i.e. belts which have the same measurement deviation of the manufacturing tolerance. In connection with the tensioning check that the pulleys will be completely parallel and aligned. The exact alignment of the pulleys is very important for the sake of

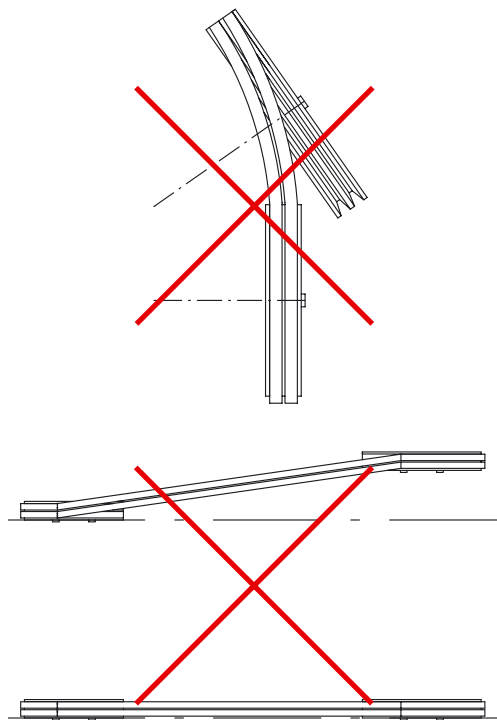


Fig. 4.6 The exact alignment of pulleys is important.

the low vibration level of the fan. Proper alignment lessens the wear of the belt flanks.

4.4.6 Replacement of belt pulleys

If a belt pulley is changed, for example, to change the speed, ensure that the maximum rpm, as given on the motor rating plate, is not exceeded and that the motor output is sufficient for the new operating point. To avoid endangering the service life of the bearings, the highest allowed tightening forces, as stated for the motor and the fan, are noted in dimensioning the belt drive. All factory fitted pulleys have a Taper Lock type belt pulley fastening.

Removal of a belt pulley:

Remove screws No. 3 (2 pcs) by using an Allen key Fig. 4.7. One (or two) of the removed screws is screwed in removal hole No. 4, and the screw should be tightened so that cone sleeve No. 2 and belt pulley No. 1 will be separated from each other. A belt pulley must never be removed with a tool. Even a light impact might cause damage to the bearing.

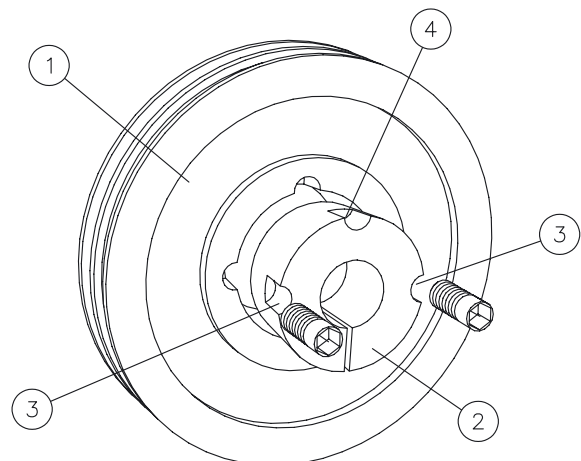


Fig. 4.7 Taper Lock belt pulley.

Installing a belt pulley:

Clean the pulley hole and sleeve inside and out with a rust protection compound, ensuring that there is no debris on the surfaces. Oil the cone surface lightly and grease the screws. The sleeve is installed on the pulley and screws are screwed loosely into place in holes No. 3. The pulley is pushed onto the shaft with the sleeve (The sleeve fastens itself on the shaft and the pulley moves slightly along the sleeve when tightening. Then alignment is made and the screws are tightened, each in turn, evenly). The belt pulley is placed as close as possible to the bearing, not at the end of the shaft. Check the alignment once more when the screws have been tightened for the last time. Fill the pull-out holes, e.g. with stiff grease, in order to prevent dirt from entering. Tension the belts after this according to the previous instructions. If the drive is exposed to dust, it is possible that, for example, sand particles can remain between the belt and the belt pulley, which then grind the pulley flanks into a

concave shape. If wear is strong, the belt pulleys must also be occasionally replaced with new ones.

4.5 Impeller

In order for the impeller to stay in balance dynamically, dirt sticking to it must be removed. Imbalance will cause extra vibration, resulting in, for example, greater stress placed on the bearings. Cleaning should be done when needed, but inspections should be carried out at least once a year. A badly contaminated impeller reduces the fan efficiency rate, thus increasing energy consumption. Cleaning of the impeller can be done with a vacuum cleaner, compressed air or by brushing. If dirt is greasy and sits tight on the impeller, it must be cleaned with a suitable detergent or solution.

4.6 Fan casing

Action is similar as with the impeller. Check also that the impeller does not make any contact with the inlet cone (especially with LB and HB fans).

4.7 Inspecting the bearings

In most cases, any flaws in the bearings can be detected by listening. When the bearings are normal, they generate a smooth and uniform sound. Loud and squeaking noises or other abnormal sounds indicate that the bearings are worn out. A squeaking noise can also be caused by insufficient lubrication. Bearing cross-gaps that are too small can cause a metallic noise. Dents on the outer race of the bearing can cause vibrations, which produce a soft and clear noise. Intermittent noises indicate a defective rolling surface. Noises are produced when the damaged spot hits the rolling surface. High temperatures are usually a sign that the bearings are running abnormally. Excessively high temperatures are harmful to the grease and the bearing itself. Long term operation at temperatures above 120°C can shorten the useful life of the bearing. High bearing temperature may be due to insufficient or excessive lubrication, impurities in the grease, overloading, bearing damage or too small a bearing cross gap. Even a slight temperature change can be a sign of impaired operation if the operating conditions have not changed. First filling or refilling with lubricant will normally cause a rise in bearing temperature, lasting one or two days. Monitor the grease. A change of color or darkening is usually a sign that there are impurities in the grease. Larger grains of impurities can be detected by rubbing the grease between the fingers. Check also the gaskets (e.g. V-ring) and change them if necessary. In the following are

detailed descriptions of the care of the bearing types used. In Table 4.3 is a summary of bearings used in different fans.

4.7.1 Permanently lubricated bearings (Y and S)

Two different types of permanently lubricated bearings are used in GT-3 fans:

Y = groove ball bearing, with eccentric securing ring

S = groove ball bearing, with cone sleeve fastening

Self-lubricating bearings have been factory lubricated to last throughout their entire service life (20,000-40,000 hours of operation). High quality seals in the bearing unit itself prevent lubricant from seeping out and dripping.

The maintenance of this type of bearing consists of occasionally cleaning its external surface and performing inspections to detect any possible abnormal operation or defective seals. If the latter is detected, the bearings will have to be replaced. Use the proper tools to prevent impacts affecting the bearing balls or rollers. Impacts will cause dents on the bearing rolling races. Even the slightest impact can cause the bearing to emit a scratchy noise and will lead to a premature wear.

4.7.2 “Y” bearings (YB) needing lubrication

The bearings are factory lubricated and they are equipped with a grease nipple. As a general rule, the bearings should be re-lubricated every 6 months; the amount of grease for re-lubrication is given in Table 4.4. As these bearings are equipped with high quality seals, the changing grease is not possible without damaging the seals. If the bearing is damaged, the whole plummer block, including the bearing, must be replaced.

4.7.3 Plummer block “SNL” cast iron bearings (H)

Re-lubrication

Plummer block bearings in a fan running 8 hours a day should be re-lubricated once a year. Plummer block bearing should be re-lubricated twice a year if the fan is operated around the clock. New grease is normally injected while the fan is operating. If the bearing is re-lubricated, for example, during a maintenance downtime, the impeller must be rotated in order to distribute the grease uniformly in the bearing. The amount of grease required for re-lubrication in grams/greasing time is :

$$0.005 \times \text{bearing outer diameter} \times \text{bearing width} \text{ (measured in mm).}$$

Please note that an excessive amount of grease can cause a temperature peak in the bearing, which can damage the lubrication properties of the grease and lead to bearing damage. Stop filling grease when excess grease starts to seep out of the bearing.

Table 4.3 Standard bearing types for GT-3 fans.

Impeller	Fan size													
	025	031	040	045	050	056	063	071	080	090	100	112	125	140
LF	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-
LB	-	Y	Y	Y	Y	Y	Y	Y	YB	YB	YB	-	-	-
HB	-	-	S	S	S	S	S	S	H	H	H	H	H	H

Replacing the grease

After the bearing has been re-lubricated a number of times, or the grease has become caked, darkened or faded (compare with its original color), the grease should be changed as follows:

1. Clean the outside of the bearing housing. Open the bearing cover.
2. Remove all the old grease. Wash the bearing with white spirit or paraffin oil. Petrol may also be used, but bear in mind its flammability. Check the bearing after cleaning. If even the slightest flaw is discovered, the bearing must be replaced. The bearing should be oiled after cleaning. Bearings rust easily if they are not installed immediately.
3. Spread new grease on the rolling surface by hand or by using a plastic smoothing tool. Fill the empty space in the bottom half of the bearing housing half way with new grease. Do not overfill, as it can cause overheating of the bearing.
4. Refit the upper half of the bearing housing.
5. Perform test run. Check the bearing using a screw driver as a simple stethoscope, placing its tip against the bearing housing and the handle against the ear. The bearing is running properly if you can hear a muted humming sound. A whistling sound indicates inadequate lubrication.

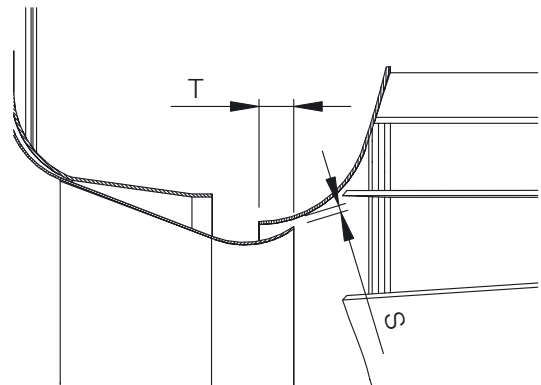
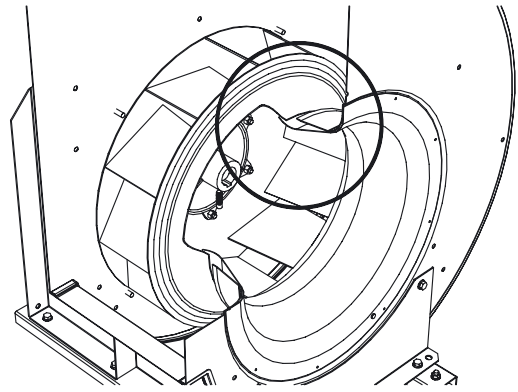


Fig. 4.8 Assembly of the LB and HB impeller and the inlet cone. Measurements S and T should be as equal as possible the whole way.

4.7.4 Recommended lubricants

Only high quality bearing greases should be used. The following greases, amongst others, are suitable:
Standard operating conditions: (-30...+110°C)

- SKF Alfabub LGMT 2
- Mobilux 2
- Shell Alvania R2
- Esso Beacon 2

Warning! Use protective gloves when handling lubricants and cleaning solutions. Regular exposure to paraffin oils, solvents, etc. can cause allergic reactions.

4.8 Bearing replacement

See Fläkt separate instructions "GX fan bearing replacement".

Important! Before replacing bearings, mark the bearing location on the shaft so that the clearance between the fan impeller and fan casing will not be changed. When you have replaced the bearing ensure by rotating the impeller, that it has been centred correctly (see Figs. 4.8 and 4.9 and Table 4.5) and that it rotates freely.

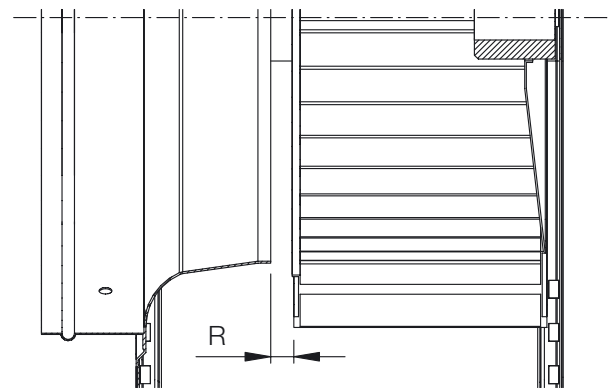


Fig. 4.9 Assembly of LF impeller and the inlet cone. The distance between the impeller and the side plate inlet opening T should be as equal as possible for its entire length.

Table 4.4 The amount of grease needed for re-lubrication (g).

Fan	Fan size									
	056	063	071	080		090		100		
Impeller	HB	HB	HB	LB	HB	LB	HB	LB	HB	
(g)	10	11	13	6	18	8	20	14	23	

Table 4.5 Dimensions R, S and T (Tolerance ± 1 mm).

Fan size	Impeller LF		
	R (mm)	S (mm)	T (mm)
020	5.5	-	-
022	7	1.5	7.8
025	7.5	2	7.8
028	8.5	2	9.3
031	9.5	2.1	9.5
035	10.5	2.2	12.8
040	12	3.7	18
045	13.5	4.3	17
050	15	4.7	20
056	17	7.5	28
063	19	4.8	26
071	21	4.4	26
080			
090			
100			
112			
125			
140			

4.9 Motor replacement of the direct drive fan GT-1

See first Section 4.3 (Before maintenance).

Make sure that you can access the inlet opening (note this in assembly). In principle there are two alternative methods:

- Remove the inlet side flexible connection duct and (possibly) part of the inlet ducting.
 - Remove the flexible connection ducts.
Remove the fan from its base frame and move it to the direction of service passage so that you can access the inlet opening and the hub securing.
- If you need to change to a larger or smaller motor, check the shaft diameter. If the shaft diameter is changed, you will also have to change the impeller, so that the shaft of the new motor will fit the impeller. The impeller is removed, when needed, through the outlet opening.

GTLB-1 and GTLF-1:

- Support the impeller in the fan casing first so that it will not fall.
- Remove the hub securing screw (Figs. 4.10 and 4.11).
- If necessary, also remove the inlet cone from the LB-fan in order to facilitate work.
- Remove the motor from the bracket (Fig. 4.12).
- If required, remove the impeller from the motor shaft with a puller (there is a groove in the hub for a puller) through the inlet opening.
- Replace the motor.

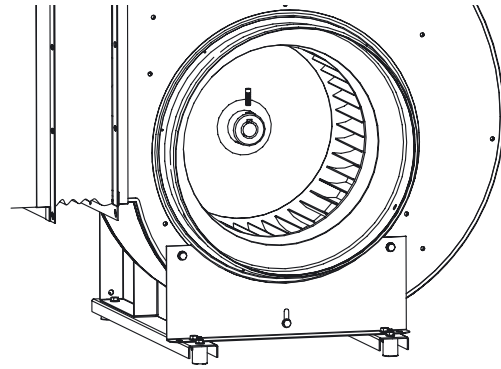


Fig. 4.10 GTLF-1-020...050 Remove the hub securing and the impeller from the motor shaft.

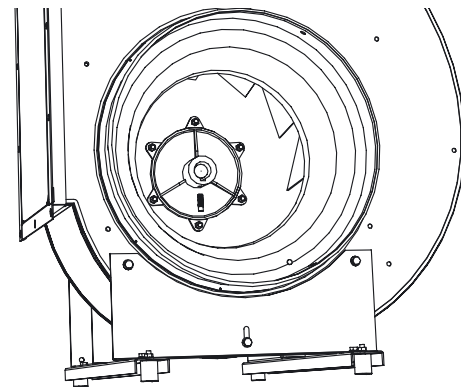


Fig. 4.11 GTLB-1-022...071 Remove the hub securing and the impeller from the motor shaft.

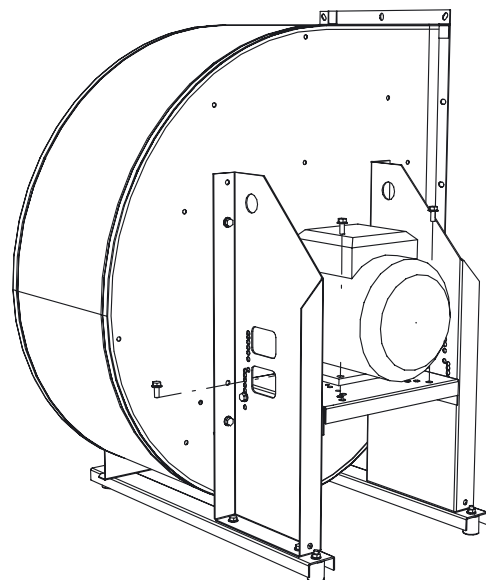


Fig. 4.12 Remove the motor from the bracket.

5. Service intervals

Table 5.1 GT-1 fan maintenance plan.

	Service action	3 months	6 months	9 months	12 months	24 months
Fan	Cleaning of casing and impeller				X	X
Motor	Cleaning				X	X
Motor bearings	Listening to noises	X	X	X	X	X
	Monitoring temperature		X		X	X
	Checking				X	X
Flexible connection duct	Soundness and tightness				X	X

Table 5.2 GT-3 and GT-5 maintenance plan.

	Service action	3 months	6 months	9 months	12 months	24 months
Belt	Visual inspection	X	X	X	X	X
	Tensioning		X		X	X
Bearings	Listening to noises	X	X	X	X	X
	Monitoring temperature		X		X	X
	Checking				X	X
	Cleaning (with housing)					X
Fan	Cleaning of casing and impeller				X	X
Motor	Cleaning				X	X
Flexible connection duct	Soundness and tightness				X	X

6. Trouble shooting

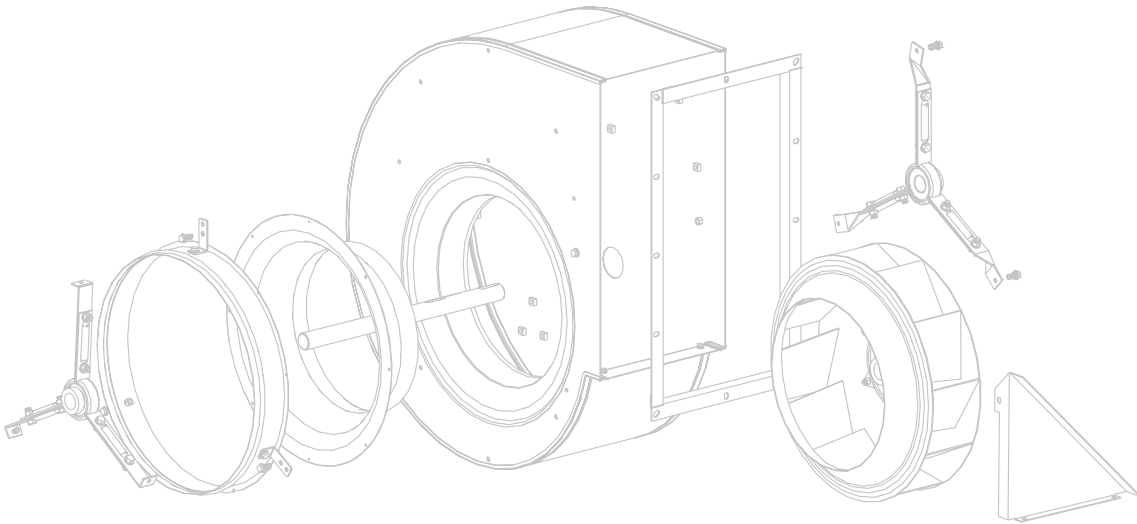
1. No air comes out of the fan
 - Check the functioning of the motor, heat shield and the fuses
 - Check that the belts are not broken
2. Pressure rise and air flow too low
 - Check the direction of rotation and the speed of the fan
 - If there is an undesirable duct bend in close proximity to the outlet opening, then the connection losses may be greater than expected -> check the ducting and use baffle plates, if necessary
3. Fan vibrates
 - Check the anti-vibration mountings
 - Check that the impeller is not dirty
 - Check the bearings
 - Check the alignment of the belt drive pulleys
 - Check that the bearings, hub and pulleys are properly secured
4. Abnormal noise from bearings
 - See Section 4.7 “Checking the bearings”
5. Repeated bearing damage
 - Excessive bearing loads (i.e. belts have been tightened too much)
 - Poor or inadequate lubrication
 - Impurities have entered the bearing

7. Scrapping the product

Sort the materials in accordance with national environmental regulations and deliver the materials either for recycling or proper disposal. Materials used in manufacturing are described in Table 7.1. Final handling of the bearing takes place according to SKF instructions.

Table 7.1 Manufacturing materials.

Component	Material
Casing	
Back plate, tongue	Galvanized steel
Side plate, inlet cone	Galvanized steel
Inlet cone, spark-free const. (sizes 014...071)	Brass
Inlet cone, spark-free const. (sizes 080...100)	Copper
Bearing	
Bearing bracket (sizes 014...071)	Galvanized steel
Bearing bracket (sizes 080...100)	Steel
Anti-vibration damper	EPDM
Bearing	Special steel
Impeller	
Impeller LB and HB (sizes 022...028)	Steel
Impeller LB and HB (sizes 031...100)	Steel
Impeller LF	Galvanized steel
Hub LB and HB	Aluminium
Hub LF	Welded
Shaft	Steel
Base frame GT-3 and GT-5	
GT-3 sizes (025...100)	Galvanized steel
GT-3 sizes (100...140)	Galvanized steel
Belt drive GT-3 and GT-5	
Belt pulley	Cast iron
Adapter sleeve	Cast iron
Belt	Rubber
Motor	
See motor manufacturers' instructions	
Accessories	
Feet/Frame	Galvanized steel
Flange	Galvanized steel
Flexible connection duct	PVC-textile



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