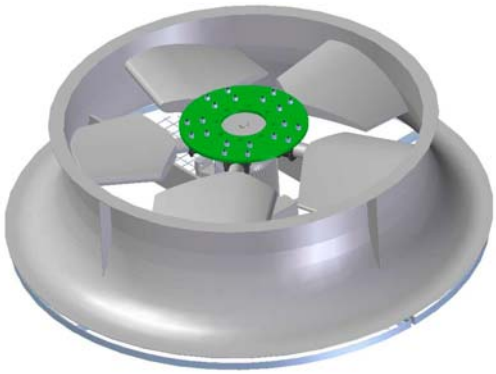


Manual

Preface

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

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

Installation, commissioning and maintenance should only be carried out by experienced mechanics.
As this is a piece of industrial equipment , we assume that installation and maintenance will be carried out by well-trained mechanics.

Geha bv has paid much attention to the safety and reliability of the equipment. A number of safety measures have been taken which should guarantee that the equipment can be operated safely at all times.

During installation and/or assembly of the equipment all safety devices must have been installed before putting the equipment into use.

1 Introduction

1 – 1 Information about the supplier

Company name: Machinefabriek 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

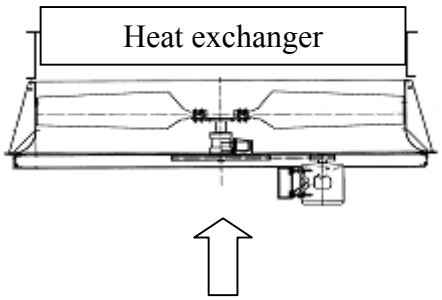
The equipment described in this manual must only be used in an industrial environment and as part of an assembled unit. This assembled unit must be provided with the proper protection equipment and, if applicable, control equipment. The equipment has not been designed to function as a stand-alone device.

Description of the machine

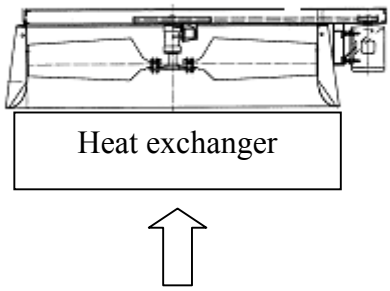
Geha is a company that designs and produces ventilators intended for moving atmospheric air. The air being moved is typically used as a cooling medium. In that case the air is led through a heat exchanger.

A distinction is made between two methods of air movement: compression and suction.

Compression



Suction



With the compression method, the air first passes the ventilator, which then pushes (compresses) the air through the heat exchanger.

With the suction method, the air first passes the heat exchanger; the ventilator is located over the heat exchanger and sucks the air through it.

Both models are composed of a casing (ring), an electric motor, a bearing unit, drive belts and a fan.
The unit is protected by grids to assure safe operation.

2 Safety

2 – 1 Use of personal safety equipment

In addition to the statutory safety equipment we advise to use the following safety gear:

Helmet	During hoisting and assembly of the equipment
Safety goggles	During all work on the equipment
Gloves	During hoisting and assembly of the equipment

2 – 2 Safety risks

As this equipment is a ventilator fitted with a rotating fan, the following risks should be taken into account:

	Risk	Risk eliminated by Geha bv
	When ventilator is in operation:	
	• Being hit by rotating fan	• Protective grids at inlet and outlet of ventilator ring
	• Limbs getting jammed between belts and pulleys	• Protective cover around belts and pulleys

2 – 3 Safety precautions

One side of the ventilator opening is covered with a protective grid, the opposite opening, i.e. the mounting side of the ventilator, is not covered.
This side of the ventilator is connected to: an air chamber, a unit or space where the air is blown into or out of.

Warning: 	In all cases this chamber must not be accessible during normal operation.
	If there is any doubt at all about the accessibility of the above chamber to persons during normal operation, then a protective grid must be fitted.
	This grid does not come as standard with the ventilator.

All moving parts for the fan drive are covered.

2 – 4 Safety measures to be taken

Before you connect the fan motor to the mains, make sure that all protective grids are in place.
Before installing the protective grids, check the machine settings according to the enclosed instructions.

3 Transport and storage

Crane: always hoist the ventilator using a four-point cable of sufficient length.
Fork lift truck: lifting is only permitted if the ventilator is placed on a pallet of adequate dimensions. Prevent shifting of the ventilator during transport.

Warning: 	**Do not use the hoisting lug of the electric motor** This hoisting lug is only intended for lifting the motor from the unit.

Storage conditions

Store on a flat surface with the protective grid facing up.

Store the accompanying box or crate with fastening materials in a dry environment

4 Mounting, installation and commissioning

4 – 1 Installing / mounting

See the enclosed assembly drawings

4 – 2 Connecting

To connect the electric motor, please refer to the manual of the motor manufacturer.

4 – 3 Setting/adjusting

The ventilator is assembled as a complete unit.

This ventilator has been fully set and tested at the Geha factory. After installation, and after items 2-2 and 2-3 of this manual have been complied with, the electric motor can be connected.

Attention: The electric motor must be earthed properly

Torques and prestressing force

In accordance with VDI Richtliniën 2230 for dimensions DIN 912-931-933-934-6912-7984 with standard metric thread according to DIN 13 sheet 13.

Bolt dia.	Consistency class	Fsp (N)	Msp (Nm)		Bolt dia.	Consistency class	Fsp (N)	Msp (Nm)
M12	8.8	38500	79		M20	8.8	117000	390
	10.9	56000	116			10.9	167000	560
	12.9	66000	135			12.9	195000	660
M14	8.8	53000	125		M22	8.8	146000	540
	10.9	77000	185			10.9	208000	760
	12.9	91000	215			12.9	244000	890
M16	8.8	73000	195		M24	8.8	168000	680
	10.9	107000	290			10.9	240000	970
	12.9	125000	340			12.9	280000	1130
M18	8.8	91000	280		Fsp = prestressing force at μ g = 0.14 *			
	10.9	130000	400		Msp = tightening torque at μ k = 0.12 **			
	12.9	152000	470					

* μ g = friction coefficient on the screw thread
** μ k = friction coefficient on the contact surfaces

4 – 4 Test runs

Before switching on the ventilator, ensure that the grid and the belt protection covers are in place and that the other side of the ventilator has been built in. The earthing cams must be connected to an earthing cable.

4 – 5 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.

4 – 6 Required special tools and equipment

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

5 Operation

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

6 Maintenance

Fan

Regularly check the fan vanes for proper tip clearance and for contamination.

Attention: Dirt can cause imbalance, which may reduce the life of both the impeller and the bearing block. Moreover, there is a risk that the impeller may touch the ventilator ring, so that the ring is damaged too.

After approx. 24 operating hours, check if the bolt connections are still secure.

Warning: 	**During all work to be carried out in the ventlator, the power supply must be switched off and the main switch locked (key lock on main switch).**

Warning: 	**Before switching on the ventilator, ensure that the grid and the belt protection covers are in place and that the other side of the ventilator has been built in.**

7 Annexes

- **Installation drawings**