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NOVENCO® JET FANS TYPE CGF
INSTALLATION AND MAINTENANCE

Building & Industry
NOVENCO
SCHAKO Group

ENGLISH

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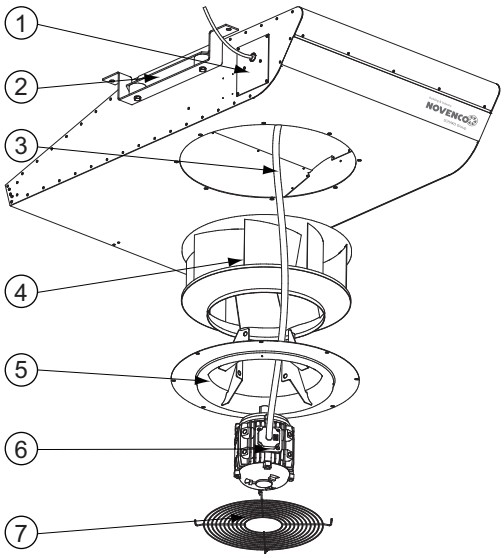
Novenco® jet fans type CGF
Installation and maintenance



Pos. 1	Terminal box beneath plate cover	Pos. 5	Inlet nozzle
Pos. 2	Suspension bracket	Pos. 6	Motor
Pos. 3	Motor cable	Pos. 7	Wire guard
Pos. 4	Fan wheel		

Figure 1. Main components

1. Application

Jet fans of type CGF are standard fans for smoke control and car park ventilation.

STOP The jet fans must not be used in explosive environments.

	Range [°C]
Operation air:	-20°C to 40°C
Ambient:	-20°C to 40°C
Extended air, short periods:	-40°C to 120°C
Fire:	F200, 200 °C for 120 min. F300, 300 °C for 60 min. See motor plate

Table 1. Design conditions

1.1 Reading guide

Please read this complete guide, before beginning installation or maintenance.

Icons	Description
⚠	Risk of damage to equipment
STOP	Risk of injury or death

Table 2. Icons in guide

2. Handling

2.1 Marking

On the jet fan casings, Novenco's name and address are on nameplates together with information such as product type and size, serial or order number, max. RPMs, weight, production year, and compliance markings.
Also on the jet fan casings are nameplates with additional fan data. This includes data such as performance data, max. temperature, working period, category and class in accordance with relevant standards and regulations etc. The motor plate with relevant data is on the side of the fan casings.

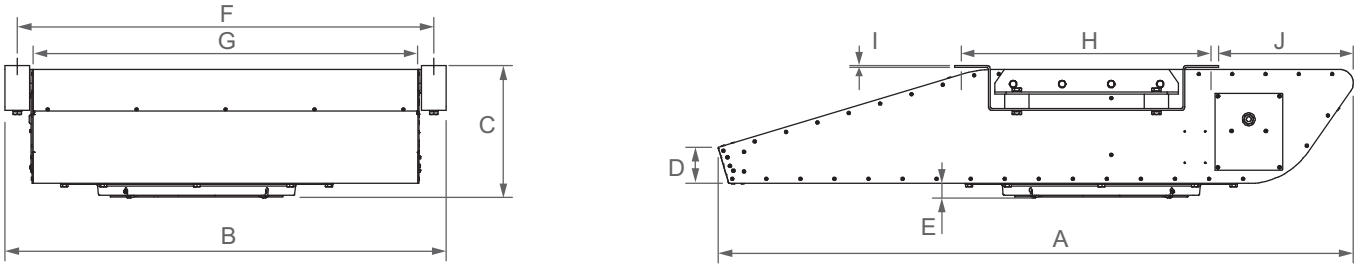
2.2 Weight

	Weight [kg]
CGF 500	75

Table 3. Weight data

2.3 Transport and lifting

Jet fans are delivered on pallets to allow for forklift transport. Lift and transport the fans with care, as vibrations and shocks can cause imbalance and deformations. Check the that the impellers can rotate free.



	A	B	C	D	E	F	G	H	I	J
CGF 500	1297	908	269	73.5	36	858	790	509	8	280

Figure 2. Dimensions [mm]

3. Storage

Correct storage is important for the function and durability of the fans.

> ⚠ Damages due to incorrect storage void the warranty.

Conditions	Specifications	Comments
Outdoor	One month	• Packaging must be intact
Indoor or sheltered	Max. six months	• For unprotected fans with no or broken packaging • Ventilated location • No condensation
Prolonged	Max. two years	• Indoor • Remove packaging • Ventilated location • No condensation • Turn rotor 20 times every six months • Add additional anti-corrosive coating on motor shaft • Change motor ball bearings after two years of storage
Vibrations	No	• Location must be vibration free
Temperatures	-25 to 65 °C	• Constant temperature, preferably 20 °C • Ventilated • No condensation
Humidity	Below 70%	• Avoid condensation • Exceedance requires airtight packaging of complete fan and use of a moisture absorbent agent such as silica gel

Table 1. Storage recommendations

4. Installation

4.1 Before installation

Unpack the jet fan by removing the top and sides of the box. Leave the fan on the support on which it rests.
Check that the impeller can rotate freely in the fan casing.
Mount the enclosed suspension brackets on either side of the fan casing. Tighten them with a torque of at least 23 Nm.

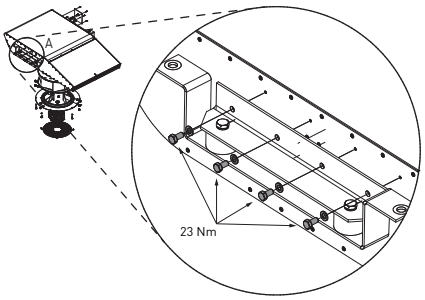


Figure 3. Mount suspension brackets

4.2 Installation

The jet fans must be installed with an open inlet area below the fans. The outlet side must have a minimum of 2 m obstruction free clearance. Obstructions include beams, columns, and other large objects that affect the airflow.
The fans are fitted with arrow signs indicating the direction of airflow and rotation.

The suspension brackets are dimensioned to leave a minimum of 5 mm space between the ceiling and the top of the fan casing. The brackets must be the only contact points with the ceiling and the 5 mm space must be available across the entire surface. This is to ensure the dampers work properly.

If jet fans are mounted within the fire cell - the fire room - they must only be installed on non-flammable ceilings and materials. The installation must comply with current national regulations. Jet fans should in general be installed so that there is no risk of them falling down in the event of fire.
Expansion bolts without approval for high temperature must be of steel, be minimum M10, and must be installed twice as deep as required by the approval and at least 60 mm. The static load must not exceed a pull of 500 N. Expansion bolts with documented load capacity during fire must be installed and loaded as stated in the approval.

Mount the jet fan to a horizontal plane with a natural frequency at least 20% from the fan rotation speed.
After final fastening of the fan check that the impeller rotates freely in the fan casing.
To ensure performance and sound level the airflow must be unobstructed.

4.3 Electrical connection

> STOP The installation and connection to the supply network must be done by authorised personnel and according to current legislation, e.g. the EU standard for electromagnetic compatibility (EMC).

In the following, refer to figures 4 and 5.
Wire the fan power cable in compliance with current rules and legislation.
Connect the fan through the motor protection switch based on the nominal motor current. The connection must be made directly in the terminal box mounted internally below the plate cover.

Emergency stops must be installed in compliance with current rules and legislation.

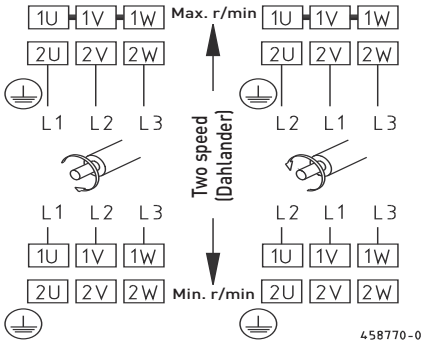


Figure 4. Circuit diagram in motor terminal box

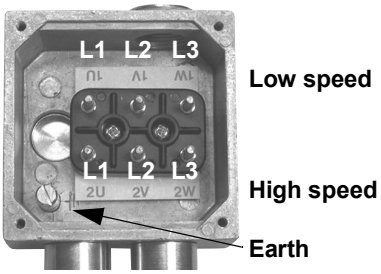


Figure 5. Connections in terminal box

4.3.1 Access to terminal box

- Unscrew the four screws of the plate cover (1, fig. 6).
- Remove, turn, and fixate the cover (2, fig. 6). Keep the terminal box attached to the plate cover.

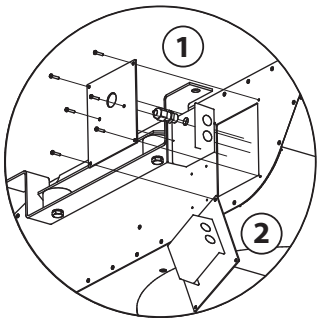


Figure 6. Access to terminal box

5. Start of operation

STOP The fans are designed for continuous operation. The below kinds of operation may cause fatigue breaks in the impellers and endanger people.

- Operation in stall area, i.e. with counter pressure that pulsates - called pump mode
- Operation with uninterrupted and repeated starts and stops
- Uneven flow velocity through the fans

Ask Novenco if in doubt.

5.1 Approval for operation

When the jet fans have been mounted and are serviceable their function, correct installation, and interaction must be established through an approval test. The person responsible for the operation of the system must take initiative for this test

The approval test must be documented and kept by the person responsible for the operation of the system and must be presented on demand if it concerns jet fans approved for smoke control.

Before start-up, check that the fans are clean and free from tools and foreign substances and that the impellers rotate freely.

Check also that the electrical connection complies with current regulations and that the wire guard of the inlet nozzles and the deflector in the outlet are installed properly.

The fan rotation direction is checked after a brief start. Refer to the arrow signs on the side of the fan.

Note, that during the first 30 minutes of operation the motor may consume more power than stated on the motor plate. Also, the current consumption depends on the temperature.

5.2 Start procedure

Start procedure

1 Start the fan
2 Check for irregular sounds
3 Check after 30 minutes that the fan functions correctly.

6. Maintenance

The user must always keep the jet fans in good working order.

To ensure functionality and life of the fans the following must be observed.

STOP Shut off and disconnect the fan power supply before beginning any work or cleaning on the fans.

6.1 Safety measures

Ensure that unintentional activation is impossible. Cut, for instance, the power in the fuse box or use another centrally placed power switch. Fans with automatic control may suddenly start unless the power supply is disconnected.

6.2 Maintenance of fans

6.2.1 CO-fans

For fans used for CO-ventilation yearly inspection and check of functionality is recommended.

6.2.2 Smoke control fans

Fans approved for smoke control and used for ventilation on a daily basis, must be inspected every six months. Fans that are only used in case of fire must be inspected four times per year. It is important to comply with the motor supplier's guidelines for maintenance.

6.3 Cleaning

Clean the cabinet, outlet, motor, inlet and wire guard with a wet cloth. A vacuum cleaner fitted with a brush or pressurised air may also be useful, depending on the kind of filth that have settled on the fan unit.

The motor and inlet areas require removal of the motor and fan wheel arrangement. Remove the motor to clean the inlet nozzle. It is recommended to leave the wire guard on the inlet nozzle, as it is riveted to the nozzle. See section “6.6 Removal of motors”.

⚠ Do not use high-pressure water cleaning.

See section “6.7 Mounting of motors” for reassembly instructions.

6.4 Vibrations

The fan is factory-balanced to minimise vibrations during operation. If vibrations occur, it usually indicates accumulation of dust and dirt on the impeller system. If the problem remains after ordinary cleaning, please contact professional assistance. Continuous operation with vibrations may damage both motor bearings and impeller. Check the vibration dampers in the suspension brackets for ruptures and replace the dampers at signs of ruptures.

6.5 Motor

The motor has closed bearings that should be changed in accordance with the motor supplier's recommendations.

6.6 Removal of motors

Before start, follow the procedure in section "6.1 Safety measures".
Novenco recommends the use of a lift and that only the motor arrangement is taken down, instead of the entire fan unit.

Removal of motors

1 Loosen the external motor cable connector.
2 Remove the terminal box cover plate and take out the terminal box. Turn and affix the cover with a single screw to the fan casing to facilitate work on the terminal box (fig. 6).

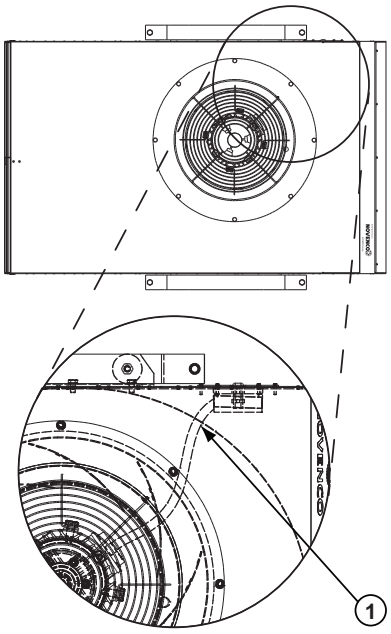


Figure 7. Loosen internal connector

3 Disconnect the motor cable in the terminal box and loosen the internal cable connector (1, fig. 7) at the separation from the pressure chamber. Push the cable fully into the pressure chamber.
4 Prepare support of the motor arrangement, e.g., with a lift, in order to lift it as short as possible and preferably straight down.

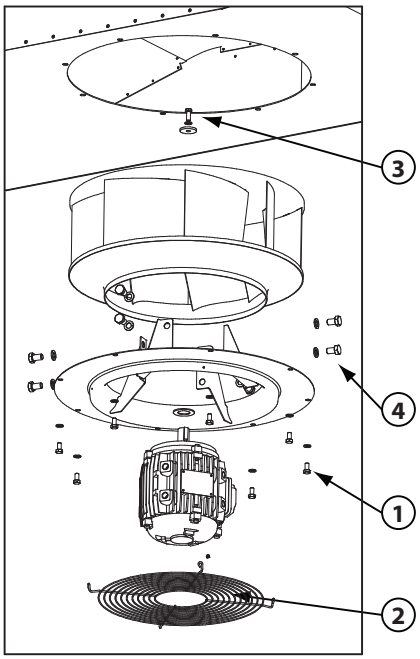


Figure 8. Removal of motor

5 Loosen the motor arrangement (eight M8x16) (1, fig. 8) from the fan casing and take it down.
The arrangement requires two people to take down safely. Make sure to pull the motor cable completely free of the fan casing.
6 Leave the wire guard affixed to the inlet nozzle (2, fig. 8).
7 Remove the impeller by removing the motor shaft screw (3, fig. 8).
8 Disconnect the motor from the inlet nozzle. It is attached with eight 12x20 screws (4, fig. 8).
9 Slide the steel tube off the motor cable.

The motor is now ready for service. Refer to the motor supplier's instructions for service.

6.7 Mounting of motors

Lubricate bolts with grease, before screwing them in during reassembly.

Mounting of motors

1 Slide the steel tube onto the cables for the new motor.
2 Affix the motor to the inlet nozzle with the eight 12x20 screws (4, fig. 8).
3 Install the impeller on the inlet nozzle and attach it to the motor shaft.
4 If the wire guard has been removed, then affix it to the inlet nozzle with four blind rivets 3.2x10 of stainless steel grade A2 (2, fig. 8).
5 Support and place the motor arrangement in the fan casing. Make sure to pull the motor cable along the same route as from the factory.
The arrangement is attached with eight M8x16 screws (1, fig. 8).
6 Roll the motor cable up into the terminal box room, before tightening the connector at the separation from the pressure chamber.
7 Connect the motor cable in the terminal box and install it and the cover (fig. 6).
8 Tighten the external motor cable connector.
9 Connect the power supply for the fan and follow the procedure in section "5.2 Start procedure".

7. Troubleshooting

Fans that operate in the stall area are more likely to suffer breakdowns.

Check for the below faults in case of breakdowns or lack in performance. Call for service, if problems persist.

Lack in performance

- Blocked
  - Inlets
  - Outlets
  - Dampers
- Supply air reduced
- Motors defective
- Motors disconnected
- Wrong fan rotation direction

Noises and vibrations

- Motor bearings defective
- Impellers out of balance
- Impellers damaged or worn
- Bolts or components loose
- Fan operates in stall condition, which may lead to damage.
- Aged or ruptured vibration dampers

8. Inspection and test

It is recommended to test and inspect the fans at regular intervals with regard to operability and operation conditions. Inspect the fans twice a year to ensure satisfactory function and long life.

Extent of inspection

- Measure power consumption
- Verify torques of fixation bolts
- Cleaning
  - inside with pressurised air
  - outside with a lint-free cloth with a mild soapy water solution
- Visual inspection
  - Rotors
  - Fan casings
  - Electrical connections

Enter all values and observations in a log.

9. Sound

The sound emissions depend on the installation and operation conditions, hence no general data can be given.

Refer to the fan specifications from the AirBox calculation program for specific emissions and to the product catalogue for more general data.

10. Safety

The installation must be in accordance to Novenco's, the current and the local safety regulations. At a minimum these include EN 13850.
It is recommended to review and revise safety procedures regularly.

Safety check

- Test if safety procedures and the installation work correctly.
- Check if safety regulations have been changed and if the installation should be revised.
- Consider additional measures to improve the safety of the installation.

11. Reference documentation

Please refer to the below documents for further information about the fans.

- Catalogue
  Car park jet fans,
  standard and hot smoke
- Technical specifications

12. Disposal

Dispose of fans suitable for scrapping in environmentally safe ways and in accordance to current regulations.

The fans and especially the electric motors contain a wide range of materials, which can all be recycled. Make sure worn-out motors and fan parts are disassembled and recycled for the benefit of the environment.

13. Patents and trademarks

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14. Quality management

Novenco Building & Industry A/S is ISO 9001 and 14001 certified. All fans are inspected and tested in the production.

15. Warranty

Novenco Building & Industry A/S provides in accordance to the law a standard 12 months warranty from the product leaves the factory. The warranty covers materials and defects from the manufacture. Wear parts are outside the warranty scope.
Extended warranty can be agreed upon. Refer to the contract.

16. Spare parts

Contact Novenco for information about and ordering of spare parts.

17. Product lifetime

The fans have a product lifetime of 20 years. Storage, installation and maintenance must be in accordance with Novenco's instructions, which include this installation and maintenance guide.

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4700 Naestved www.novenco-building.com
Denmark

18. Declaration of conformity

Novenco Building & Industry A/S
Industrivej 22
4700 Naestved
Denmark

hereby declares that the jet fans type CGF 500 are manufactured in accordance to the below legislation of the European Council and of the United Kingdom. They comply with the below standards and regulations.

EU directives

- Machinery 2006/42/EU
- Ecodesign 2009/125/EU and energy labelling regulation 2017/1369/EU
- EMC 2014/30/EU
- LVD 2014/35/EU

UK regulations

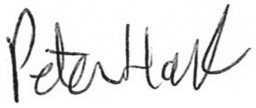
- Supply of Machinery (Safety) 2008
- Ecodesign for ErP 2010 and Energy Information 2011
- EMC 2016
- Electrical Equipment (Safety) 2016

Applied standards

- ANSI/AMCA 300-14
- EU regulation 327/2011
- BS/DS/EN ISO 1461:2009
- BS/DS/EN 1886:2007
- BS/DS/EN ISO 5801:2017
- BS/DS/EN ISO 9001:2015
- BS/DS/EN ISO 12100:2010
- BS/DS/EN 12101-3:2015
- BS/DS/EN 12101-6:2005 + AC:2006
- BS/DS/EN ISO 12499:2008
- BS/DSF/FprEN ISO 12759-5:2021 (draft)
- BS/DS/EN ISO 12944-2:2017
- BS/DS/ISO 13347-1:2004
- ISO 13348:2007, class AN3
- BS/DS/EN ISO 13350:2015
- BS/DS/EN ISO 13857:2019
- BS/DS/EN ISO 14001:2015
- BS/DS/EN ISO 14118:2018
- DS/ISO/TR 14121-2:2012
- BS/ISO 14694:2003 + A1:2010
- BS/DS/EN 16798-3:2017
- BS/DS/EN ISO 20607:2019
- BS/DS/ISO 21940-11:2016
- BS/DS/ISO 21940-14:2012
- PD/DS/IEC TS 60034-30-2:2016
- BS/DS/EN 60204-1:2018
- BS/DS/EN IEC 61000-6-1:2019
- BS/DS/EN IEC 61000-6-2:2019
- BS/DS/EN 61000-6-3:2007 + A1:2011
- BS/DS/EN IEC 61000-6-4:2019
- BS/DS/EN 61800-3:2018

This declaration is valid, provided the product is installed, maintained and changed in accordance with instructions from Novenco Building & Industry A/S.

Naestved, 01.11.2021



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