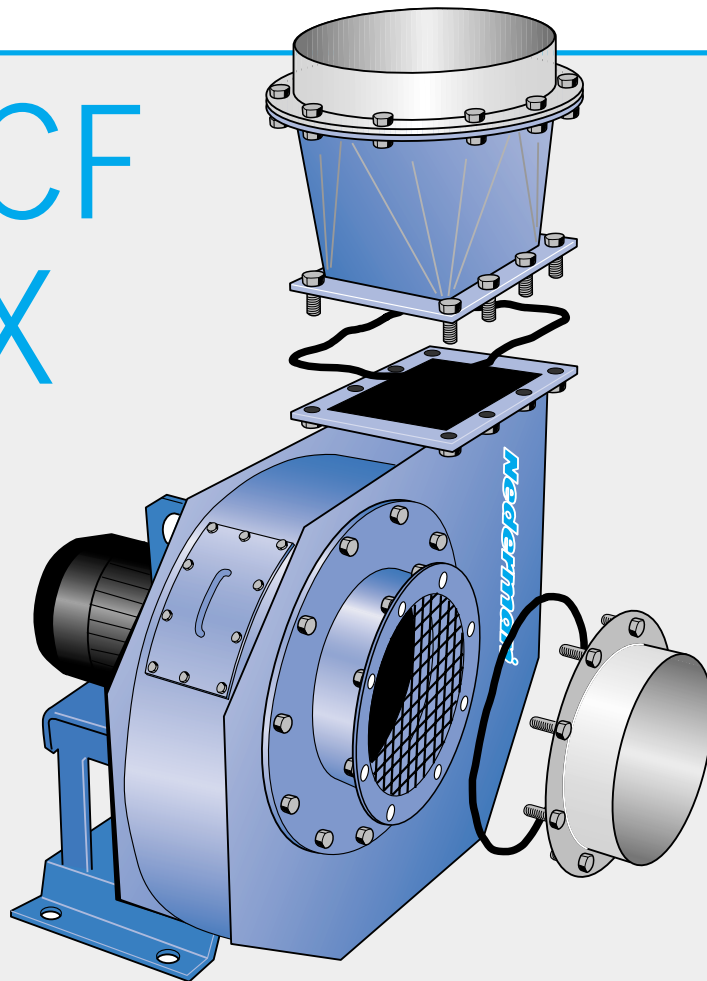


NCF  
EX



CE  II 3 D 125°C

# INSTRUCTION MANUAL

## TECHNICAL DATA

	NCF EX 40/25	NCF EX 50/25	NCF EX 80/25	NCF EX 120/25	NCF EX 160/25
Capacity	1500 - 4500 m <sup>3</sup> /h	3500 - 5500 m <sup>3</sup> /h	3500 - 10000 m <sup>3</sup> /h	4000 - 12000 m <sup>3</sup> /h	5000 - 18000 m <sup>3</sup> /h
Motor power	5,5 kW	7,5 kW	11 kW	15 kW	22 kW
Rotor speed	2855 rpm	2855 rpm	2930 rpm	2920 rpm	2920 rpm
Voltage/	230Δ/400Y V	230Δ/400Y V	230Δ/400Y V	230Δ/400Y V	230Δ/400Y V
Rated current	18,8/10,9 A	25,3/14,7 A	34,5/20,0 A	45,7/26,5 A	66,4/38,5 A
	400Δ V	400Δ V	400Δ V	400Δ V	400Δ V
	10,9 A	14,7 A	20,0 A	26,5 A	38,5 A
	415Δ V	415Δ V	415Δ V	415Δ V	415Δ V
	10,2 A	13,6 A	19,4 A	25,5 A	37,5 A
Phase	3-phase	3-phase	3-phase	3-phase	3-phase
Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Starting current	7-8 x rated current	7-8 x rated current	7-8 x rated current	7-8 x rated current	7-8 x rated current
Weight	101 kg	109 kg	200 kg	211 kg	227 kg
Noise level	71 - 76 dB(A)*	74 - 84 dB(A)*	73 - 76 dB(A)*	75 - 79 dB(A)*	78 - 81 dB(A)*

\* Tolerance: +- 3 dB

## Motor specification

**Protection class motor:** IP 65  
**Maximum motor temperature:** 125°C  
**Environ temperature:** -20°C - +40°C  
**Operating temperature:** -20°C - +60°C  
**Motor marking:** EX II 2 D 125°C

## Fan specification

Zone 22 for conductive dust according to ATEX directive 94/9, Group II, Equipment category 3  
**Fan marking:** EX II 3 D 125°C

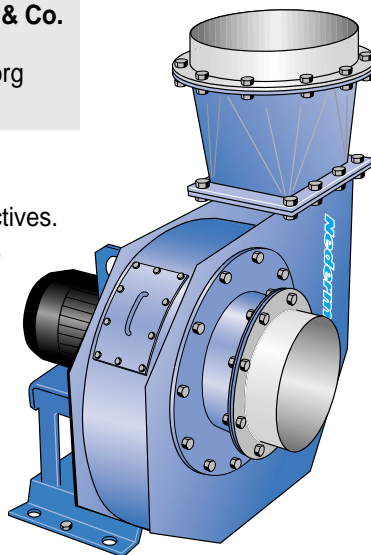
## Fan house specification

**Material:** Welded sheet-metal  
**Finishing:** Primary coated and lacquered  
**Outlet direction:** For standard design Eurovent RD 0° (directed upwards)



**AB Ph. Nederman & Co.**  
 Sydhamngatan 2  
 S-252 28 Helsingborg  
 Sweden

This product is designed to meet the requirements of the relevant EC directives. To maintain this status all installation, repair and maintenance work must be carried out by qualified personnel using only original spare parts. Contact your nearest authorised dealer or AB Ph. Nederman & Co. for advice on technical service or if you require spare parts.



## DECLARATION BY THE MANUFACTURER

## Prohibition to put into service

We, AB Ph. Nederman & Co, herewith declares that the **NCF EX**-fan:  
 - is not allowed to be put into service until the machinery into which it is to be incorporated has been declared, including this fan, to be in conformity with the Directive 98/37/EC and with national implementing legislation.  
 - does therefore not in every respect comply with the provisions of this directive.  
 - does comply with the provisions of the following other EEC directives: 89/336/EEC, 73/23/EEC and ATEX 94/9/EC.  
 - that the following (parts/clauses of) harmonized standards have been applied: EN 1127-1, EN 292-1:1991 and EN 292-2:1991.

Alf Jonasson Product Manager  
 Helsingborg, Sweden 2001-02-01

**The fan must only be used according to its intended use. It should be installed, used and maintained according to this instruction manual and the motor manufacturers manual in such a way that safety not will be neglected. Attend to defects impairing safety immediately.**

**Standards relating to the connection and use of fans in hazardous areas must be taken into consideration, especially national standards for installation. Only trained personnel familiar with these standards should handle these type of fans.**

**The fan motor is specially designed to comply with official regulations concerning the risk of explosion. If improperly used, badly connected, or altered, no matter how minor, the reliability could be in doubt.**

## PRODUCT MARKING

The fan is marked: **CE Ex II 3 D 125°C**

**CE** CE-symbol, see page 2.

**Ex** Symbol according to European Commission for EX-products.

**II** Motor marking, explosive atmosphere

**3** Equipment category, zone 22. The fan is designed to be used in environments where the atmosphere probably will not be explosive when mixing air with gas, vapour, mist or dust. If the atmosphere will be explosive it will be in exceptional cases and for short periods.

**D** Dust  
**125°C** Maximum motor temperature

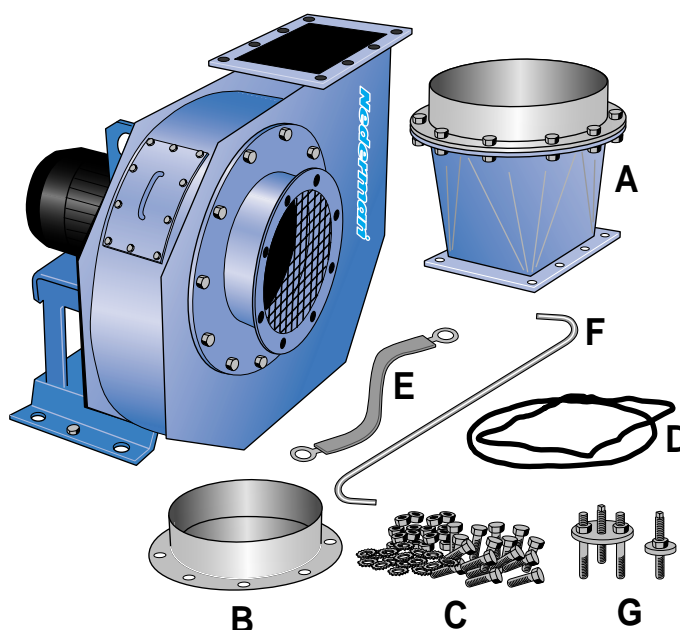
## DELIVERY CHECK

Check that the following components are delivered together with the fan.

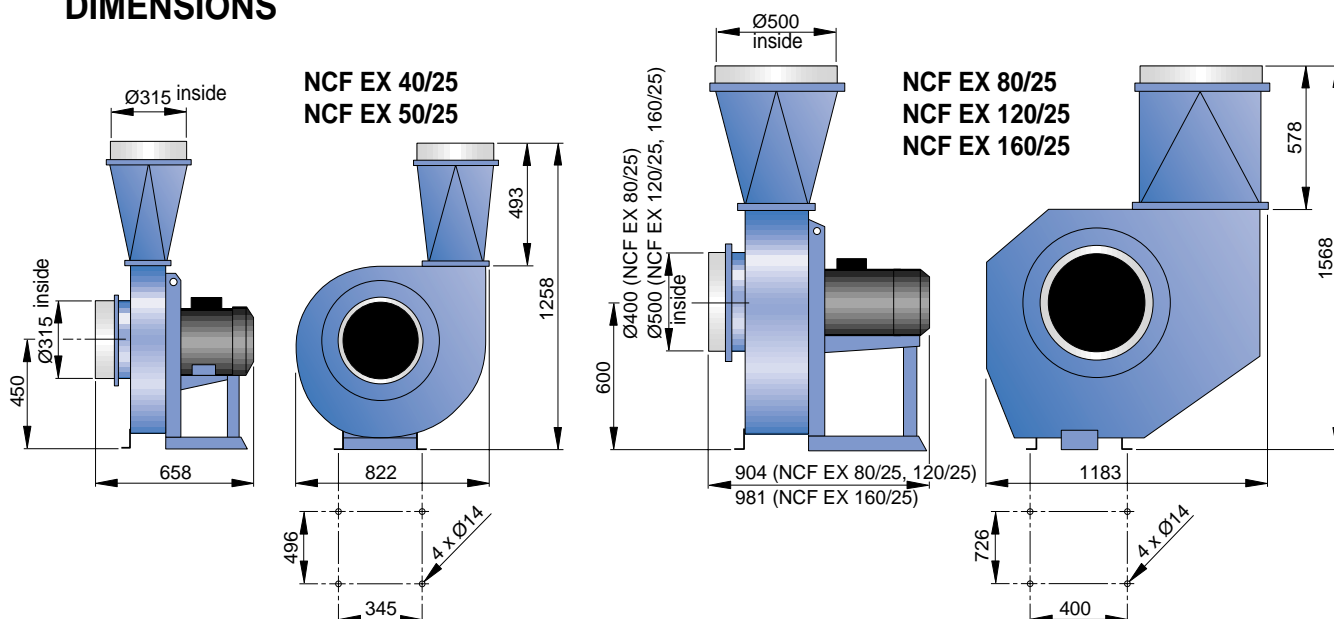
- A.** Outlet with guard net and adapter
- B.** Adapter (fitted on some fans)
- C.** Screws, nuts, tooth washers (x 16, set)
- D.** Gasket set
- E.** Earth plate
- F.** Gauge
- G.** Mounting set for impeller

The fan and its components should be checked for any damage that may have occurred during transport. If there is damage or parts missing, the carrier and your local Nederman representative should be notified immediately.

Check that the fan impeller can rotate freely.



## DIMENSIONS

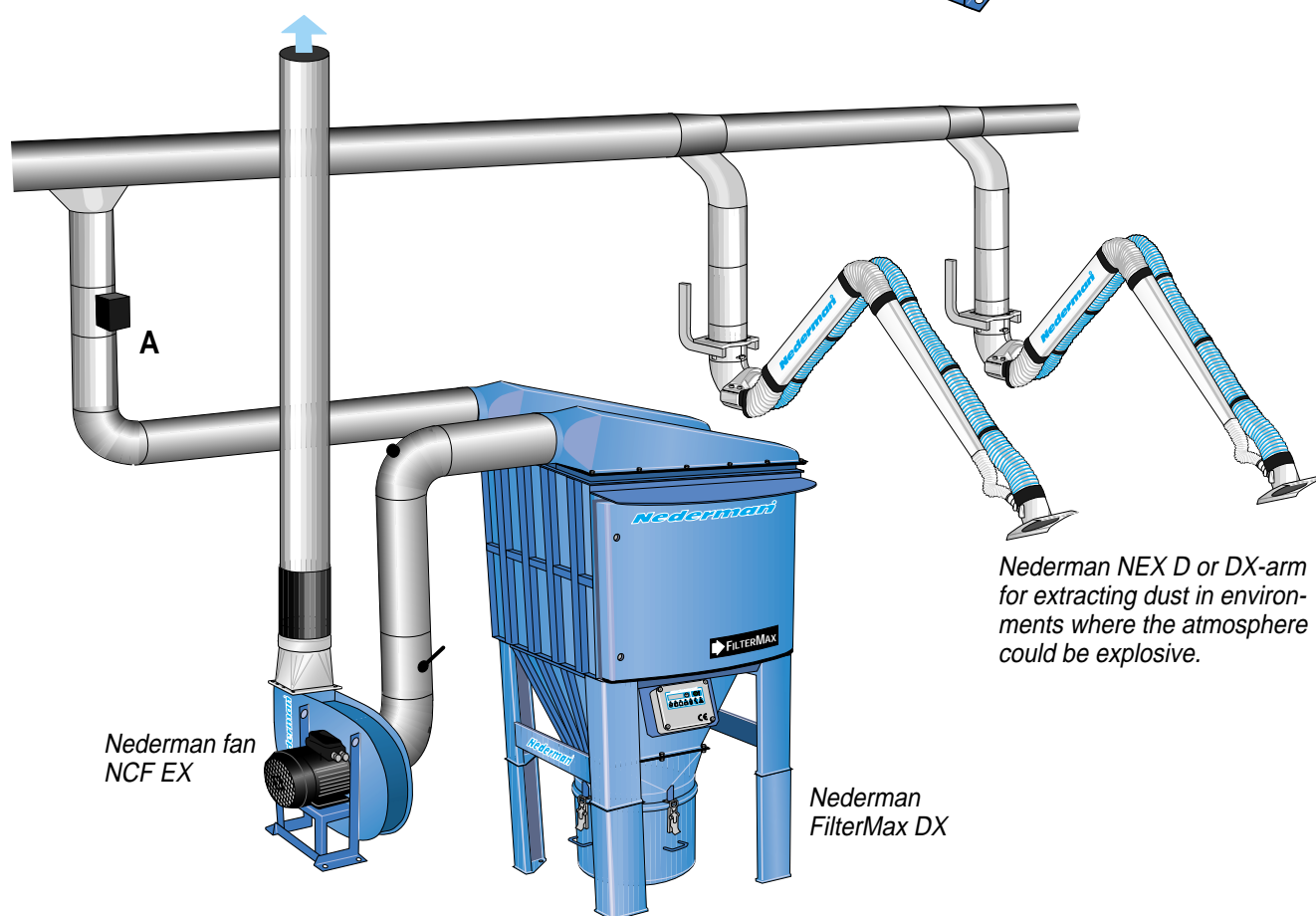
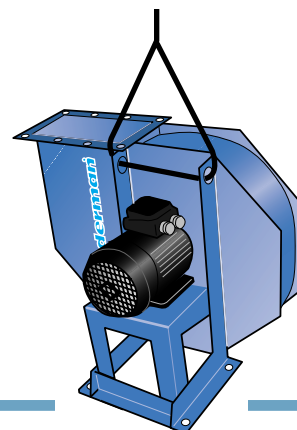


## TRANSPORT

For hoisting the fan it is necessary to use slings as shown in the figure, **always using the holes specially provided for this purpose in the casing. Holes in the motor must not be used.**

Hoisting by crane should be carried out very carefully and in compliance with the appropriate lifting regulations. Lowering the fan is to be done with the lowest possible speed. Shocks, shaking and dropping might lead to imbalance and deformation or even destruction.

During every transport and storage ensure that no water (e.g. by rain) can get into the motor or fan housing.



## GENERAL MOUNTING DIRECTIONS

The fan should always be mounted and used in combination with a filter, for example Nederman FilterMax DX, as shown in the picture above. A safety-filter with a pressure guard could be installed before the fan in order to reduce the risk of dust spreading after for example a filter damage.

The fan shall be mounted on a foundation of concrete, steel or equally good material in a way that the prescribed fixing forces can be attained. The fan must never be mounted hanging on the wall.

Recommended fixing methods: Vibration safe expander bolts or bolts with a class of strength corresponding to 5,0 kN.

The fan must be mounted in a way that the motor gets sufficient airflow. Ensure that no nearby equipment or surfaces radiate additional heat to the motor.

The fan should be located in an easily accessible place for safe servicing.

A damper must not be mounted on the fan outlet.

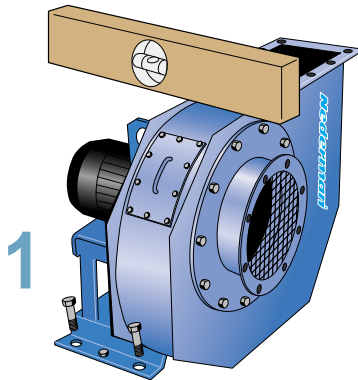
An after cleaning damper could be mounted on the inlet side of the fan (see A), which makes it possible to start the fan with a throttled airflow, which is recommended. A delay function for opening the damper is described in the Instruction Manual for FilterMax' Operating System.

When using vibration insulators, they should be placed so that a uniform compression is obtained. When the fan is installed the insulators must not be canted, dragged over the floor or stressed on one side only. In that case the rubber or the springs could be damaged. Flexible connections to the inlet and outlet ducts should be used. See accessories page 8.

The ducting system after the fan should be dimensioned so that the pressure drop will be as low as possible. It should be noted that the shaft passage in the fan housing is not tightened.

The fan should be located in zone 22 or outdoors (see also Users Information, page 7)

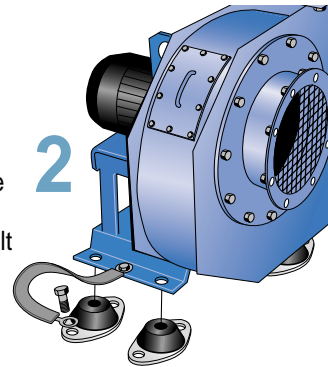
## MOUNTING INSTRUCTIONS



The fan should be mounted to the foundation with the help of a spirit level. Fasten all fixing bolts with the same force. If necessary, use shims. Use tooth washers for ensured earthing of the fan.

### Earthing the fan when using vibration insulators.

Fasten the earth plate from the earth point on the fan stand to the vibration insulator fixing bolt or a metallic (conductive) foundation.

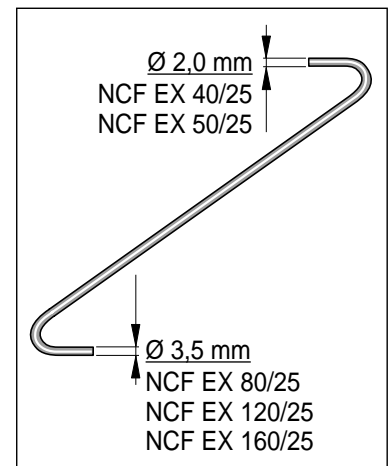
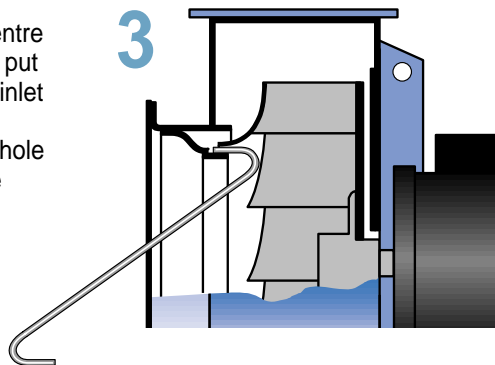


## GAP CHECKING IMPELLER - FAN HOUSING

Check that the impeller can rotate freely in the fan housing. Carry out the check on the fan motor side as well as on the inlet side. For this purpose use the gauge which is delivered together with the fan. The check shall be done when the fan has been installed and also at every service opportunity. The check is carried out in the following manner:

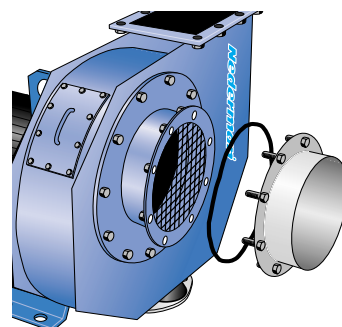
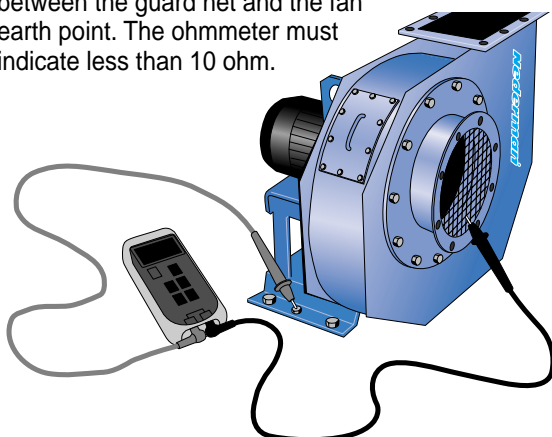
### Inlet side:

1. Put the gauge through the centre of the inlet guard net and then put it between the impeller and the inlet edge as shown in the figure.
2. Turn the gauge around the whole circumference and, at the same time, turn the impeller which at every occasion must be able to rotate freely.



If the impeller cannot rotate freely at any occasion, the fan must not be used until the fault has been considered. The reason for the fault could be transport damages as for example a warped fan stand or impeller. Other reasons could be an incorrectly installed motor or inlet adapter.

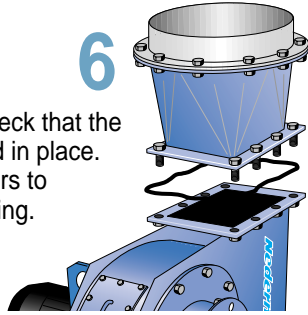
- 4 Check that the inlet guard net is fixed in place. Check the earthing between the guard net and the fan earth point. The ohmmeter must indicate less than 10 ohm.



- 5 Fit the adapter to the inlet (on some fans it is already fitted at delivery). Use tooth washers to ensure the earthing.

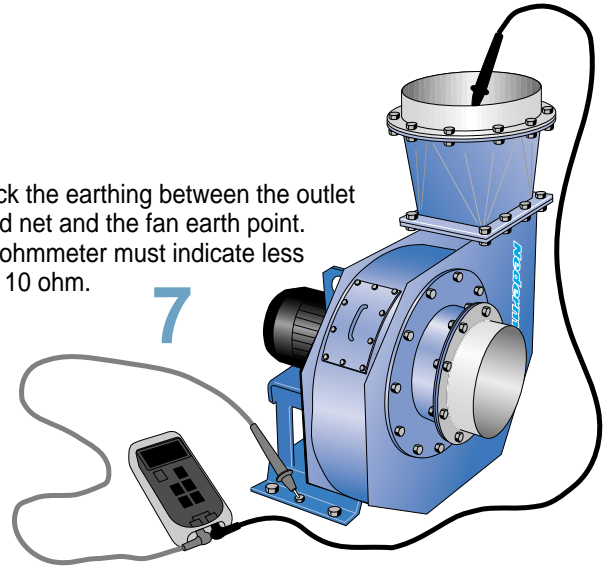
6

Fit the outlet. Check that the guard net is fixed in place. Use tooth washers to ensure the earthing.

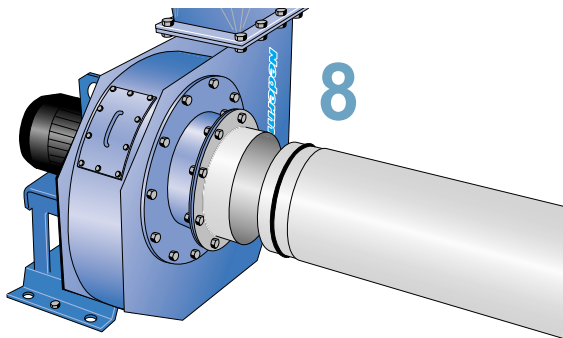


Check the earthing between the outlet guard net and the fan earth point. The ohmmeter must indicate less than 10 ohm.

7



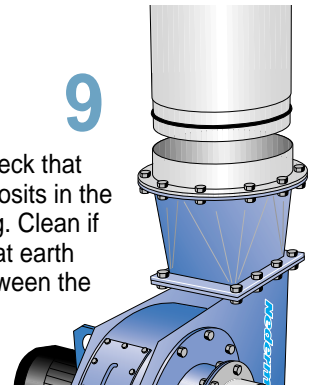
8



Fit the inlet duct. Check that there are no dust deposits in the ducts and fan housing. Clean if necessary. Ensure that earth connection exists between the duct and the fan.

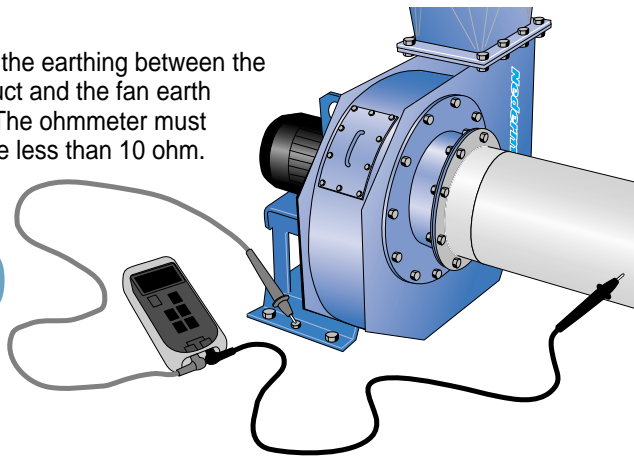
9

Fit the outlet duct. Check that there are no dust deposits in the ducts and fan housing. Clean if necessary. Ensure that earth connection exists between the duct and the fan.



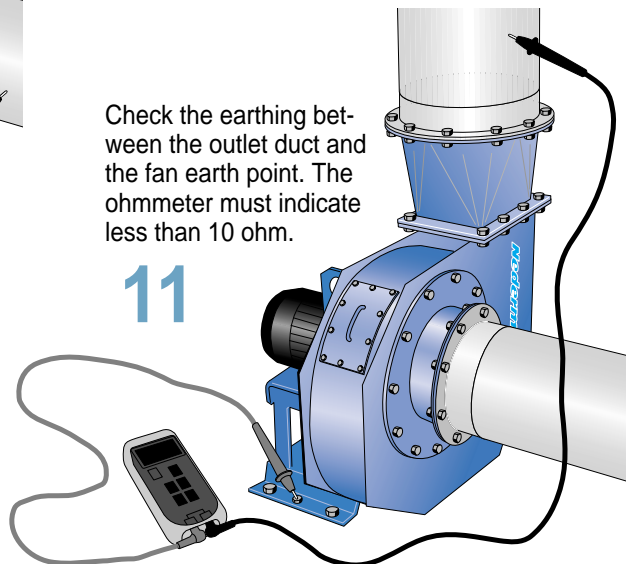
Check the earthing between the inlet duct and the fan earth point. The ohmmeter must indicate less than 10 ohm.

10



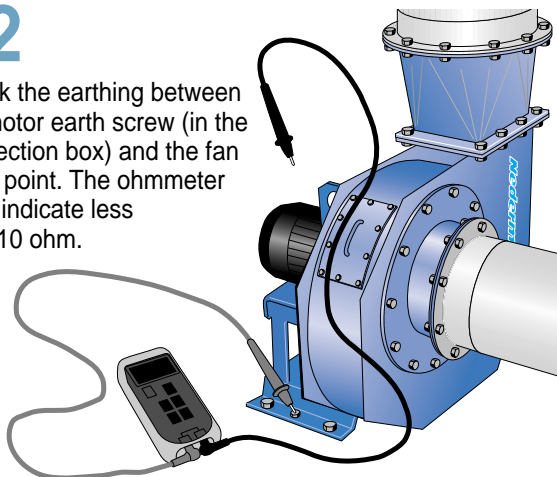
Check the earthing between the outlet duct and the fan earth point. The ohmmeter must indicate less than 10 ohm.

11



12

Check the earthing between the motor earth screw (in the connection box) and the fan earth point. The ohmmeter must indicate less than 10 ohm.



**IMPORTANT!**

It is incumbent on the installation engineer, to make the installation in such a way, that the demands of the machine directive 89/392/EEC, the low voltage directive 73/23/EEC and the EMC-directive 89/336/EEC can be fulfilled.

## ELECTRICAL INSTALLATION

*Electrical installation must only be done by a duly qualified electrician with knowledges of products designed to be used in environments where the atmosphere could be explosive. See Standard EN 50281-1-2*

The electrical connection of the fan motor must be done in accordance with the motor manufacturers instructions and the wiring diagram in the fan motor connection box.

The electric installation should always be provided with an explosionproofed safety isolator (follow general and national standards).

The starting equipment shall be equipped with an overload protector designed for fan motors used in environments where the atmosphere could be explosive.

**The overload protector must be adjusted on maximum - 0.9 x the rated current of the fan motor (DOL-start). - 0,58 x 0,9 x the rated current of the fan motor (Y/D-start).**

Cable entries and unused entries in the connection box must be equivalent to IP 65.

Check the motor earthing against the fan earth point before electrical connection.

A frequency converter, for example Nederman Fan Inverter, must not be used with the NCF EX fan in its standard design. It calls for a special approved motor.

## STARTING INSTRUCTIONS

**Before starting the fan for the first time proceed as follows:**

- Check that the electrical installation is correct.
- Check that all fixing bolts are tightened.

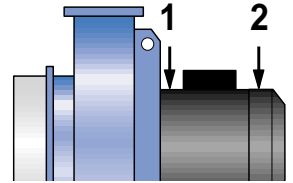
### IMPORTANT!

**Briefly start the motor and check that the direction of the rotor complies with the arrow on the casing of the fan. If the rotational direction has to be reversed, the impeller must come to a complete standstill.**

### Trial run

Start the fan for a trial run, after which it is recommended to check the following points. Enter the measured values in the Service Protocol.

- Check the power consumption with an ammeter.
- Check the supply voltage.
- Check the fan vibration. The vibration level must not exceed 2.8 mm/s r.m.s. for a fan without vibration insulators or 4.5 mm/s r.m.s. for a fan with vibration insulators (according to ISO/DIS 14695). Measure at the points 1 and 2 according to the figure.
- Check the fan noise level (according to Standard ISO 11202). It should be noted that this level not must be compared with the noise level in Technical Data table which has been measured in a laboratory.



## DIRECTIONS FOR USE

- The fan is designed for transporting clean air.
- The fan should be used for transporting filtered air with a concentration of conductive dust of maximum 100 mg/m<sup>3</sup> in zone 22, category 3 according to ATEX-directive 94/9. The fan should be located in zone 22 or outdoors.
- **The fan motor must under no circumstances be overloaded.**
- The fan is **not** designed for transporting gases.
- Normal protection level is guaranteed during normal operation.
- The fan is designed to be used in environments where the atmosphere will probably not be explosive when mixing air with gas, vapour, mist or dust. If the atmosphere will be explosive it will be in exceptional cases and for short periods (equipment category 3).
- The fan is designed in a way that air/dust-mixtures not can be ignited by expected ignition sources during operation.

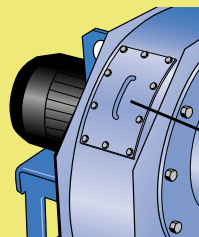
### WARNING!

#### Risk of personal injury!

Ear protectors should be used when working near the fan.



Do not stay near the fan outlet or inlet if the ducts not are connected.



The Cleaning Access Point must not be opened when the fan is in operation.

## OUTDOOR USE

The fan is equipped with drain holes and is prepared for use outdoors or under other circumstances where moisture and condensation can be present. To stop rain or snow from entering the fan casing, the outlet

should be protected with e.g. a cowl or a 90° bend with suitable mesh.

If the fan is exposed for more extreme climate conditions it should be enclosed.

## MAINTENANCE INSTRUCTIONS

Regular maintenance work is aimed at keeping the fan in optimum operational condition.

The maintenance frequency depends largely on the operating conditions, surrounding conditions and required availability. As a guide-line we recommend that the fan under normal operation conditions should be serviced at least once a year. If the fan is used in a very dusty or humid environment or if it is exposed to very heavy external effects, for example a filter breakdown, the maintenance must be done much more often.

**The maintenance frequency must be set by the production engineer**

### WARNING!

#### Risk of personal injury!



Always disconnect the fan motor from mains before starting any maintenance or repair work.

Do not open the fan motor connection box if the atmosphere is explosive and the motor is warm and power connected.

Always use a dust filter mask when repairing and servicing the system.

## SPARE PARTS AND ACCESSORIES

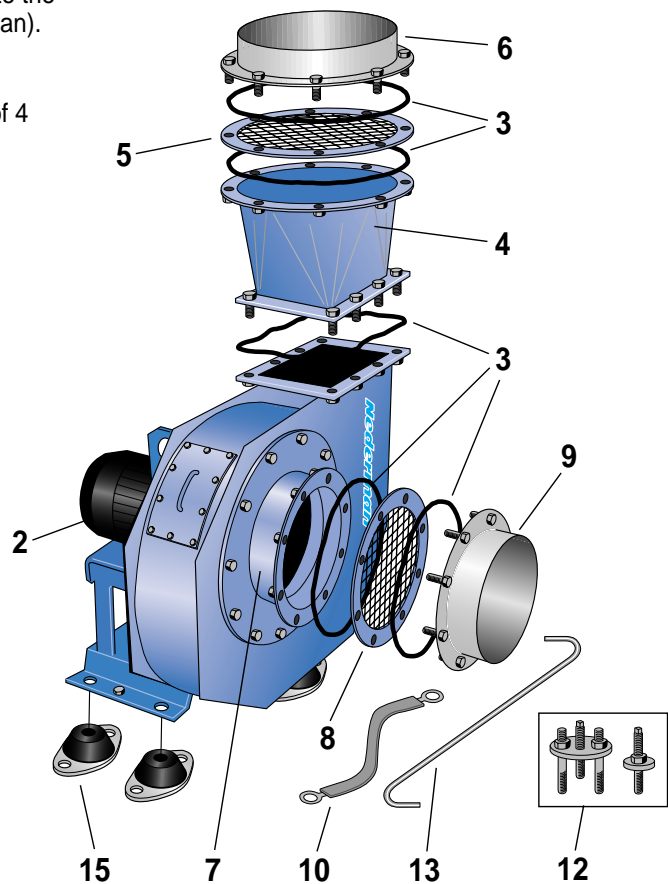
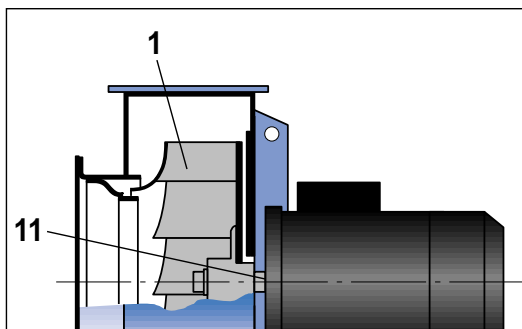
When ordering spare parts and accessories always state the fans part no. and control no. (from the type label of the fan).

### SPARE PARTS

1. Impeller
2. Motor
3. Gasket set
4. Outlet
5. Guard net
6. Adapter
7. Inlet
8. Guard net
9. Adapter
10. Earth plate
11. Shaft packing, set
12. Mounting set for impeller
13. Gauge
14. Touch up paint

### ACCESSORIES

15. Vibration insulators, set of 4
16. Flexible connection





# MAINTENANCE PROTOCOL 1

If controls gives results (for example measured values) which differ much from earlier results, this must be understood as a warning signal and lead to more careful investigations.

Fan Article No. \_\_\_\_\_

Control points	Date					
	Performed by	Result	Result	Result	Result	Result
<b>1. Delivery check (page. 3)</b>						
A. Missing components						
B. Transport damage						
C. Gap check, fan impeller						
D. Measure the insulation resistance, if the motor winding is considered to be damp (see motor manufacturers instr.)						
<b>2. Installation check (page. 4 - 6)</b>						
A. Safe mounting / foundation in level						
B. Fan motor gets enough airflow						
C. Vibration insulators (accessories)						
D. Flexible connections (accessories)						
E. Fixing bolts stand-foundation						
F. Fixing bolts inlet/outlet (moment= )						
G. Duct fittings						
H. Fan motor fitting						
J. Gap check, impeller - inlet side						
<b>3. Earth check (page. 5 - 6)</b>						
A. Earth point fan - Inlet guard net						
B. Earth point fan - Outlet guard net						
C. Earth point fan - Inlet duct						
D. Earth point fan - Outlet duct						
E. Earth point fan - Motor earth screw						
<b>4. Elektrical installation (page. 7)</b>						
A. Correct electrical installation						
B. EX-proofed safety switch						
C. Overload protector for EX-motor maximum 0,9 x rated current (DOL) maximum 0,58 x 0,9 x rated current (Y/D)						
D. Cable entries / unused entries - IP 65						

# MAINTENANCE PROTOCOL 2

Fan Article No. \_\_\_\_\_

Control points	Date					
	Performed by	Result	Result	Result	Result	Result
<b>5. Fan motor (page 7)</b>						
A. Clean the motor						
B. Check the power consumption						
C. Check the supply voltage (trial run)						
D. Measure the insulation resistance, if the motor winding is considered to be damp (see motor manufacturers instr.)						
<b>6. Vibration levels (page 7)</b>						
A. vertically						
B. horizontally						
C. axially						
<b>7. Noise level (page 7)</b>						
A. According to ISO 11202						
<b>8. Remove the cleaning access point</b>						
A. Check for dirt build up on fan impeller and in fan housing.						
<b>9. Remove the ducts</b>						
A. Check inlet- and outlet guard nets						
B. Change the gaskets						
C. Clean the ducts of dust build up						
<b>10. Remove the impeller (use the removal tool)</b>						
A. Change the shaft packings and the locking washer for the impeller						
B. Check the impeller for damage						
C. Balance the impeller						
D. Check the brass components for damage						
<b>11. Re-fit the impeller (use the fitting tool)</b>						
A. Gap check, impeller - inlet side						
B. Gap check, impeller - motor side						
<b>12. Corrosion</b>						
A. Take measures with grinding, primer and touch up paint						

