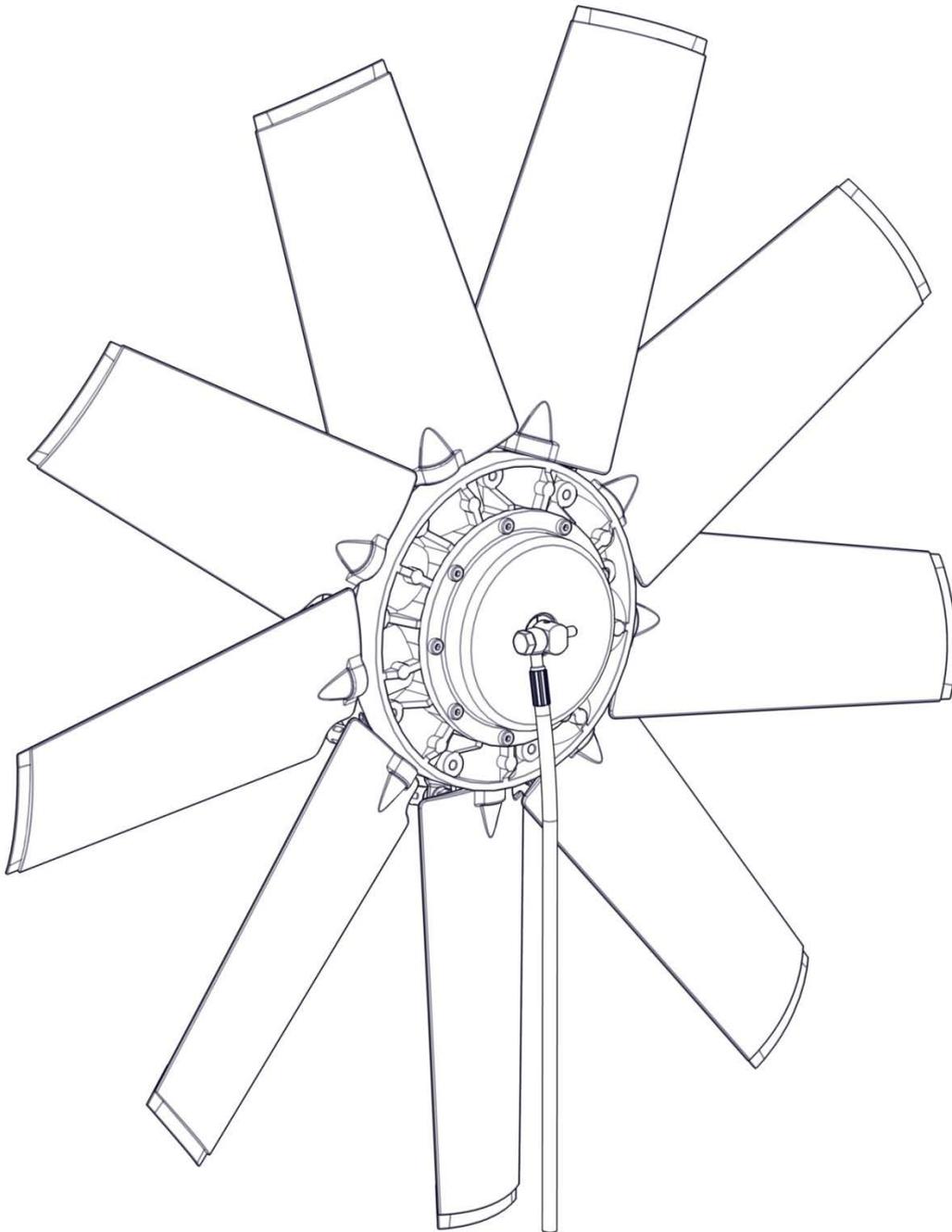


## HYDRAULIC REVERSIBLE FANS

H162 / H222 / H252

### Installation Instructions





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## 1 General information

**i** **NOTE:**  
The following instructions describe the installation of the pneumatic *CLEANFIX®* reversible fans (H162 / H222 / H252).

**i** **NOTE:**  
Since we are not included in technical service updates from the manufacturer, it may be necessary to make adjustments when installing this kit. Installation and modifications (move radiator, trim shroud) costs are not the responsibility of Cleanfix. Damage costs due to improper installation are not the responsibility of Cleanfix.

**⚠** **WARNING:**  
A vibration damper is essential when installing the *CLEANFIX®* reversible fans directly on the crankshaft or when driven by a spur gear!

**⚠** **WARNING:**  
Only operate the reversing feature of *CLEANFIX®* reversible fans within the machine manufacturers recommended operating temperature range in order to avoid engine overheating!

**⚠** **WARNING:**  
Only operate the reversing feature of *CLEANFIX®* reversible fans in a safe outside location!

**⚠** **WARNING:**  
Observe all applicable safety regulations while working on, around or under a machine!

## 2 Tools

- Magnetic or clamp type dial gauge
- Torque key
- Electric drill
- Metric step drill (20mm and 22mm)
- Standard hand tools
- Grease

### 3 Mounting guidelines

#### 3.1 Removal of the original manufactures fan

**⚠ WARNING:**

Turn off engine and allow to cool, retain ignition key and disconnect battery from the machine.

Remove the original manufactures fan (refer to the manufacturer's manual).

#### 3.2 Installation of the **CLEANFIX®** Fan

##### 3.2.1 Installation Flange

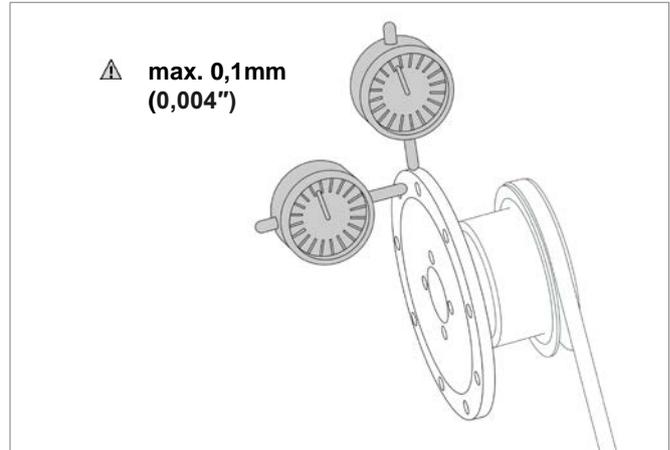
1. Clean the fan drive mounting surface so that excessive axial and radial runout is minimized. Loosen any belts that drive the fan pulley. This will allow for a more accurate runout measurement.
2. Secure the flange with suitable mounting screws to the fan drive (follow the standard torque chart supplied by the machine manufacturer).

**i NOTE:**

Tight installations: If there is insufficient room to insert the fan into the shroud after the flange is installed, you may need to insert the fan first.

**⚠ WARNING:**

The axial and radial runout must be checked with a dial gauge. The radial and axial run must not exceed 0,1 mm (0.004 inches). If necessary, rotate the flange to the next hole and measure again.



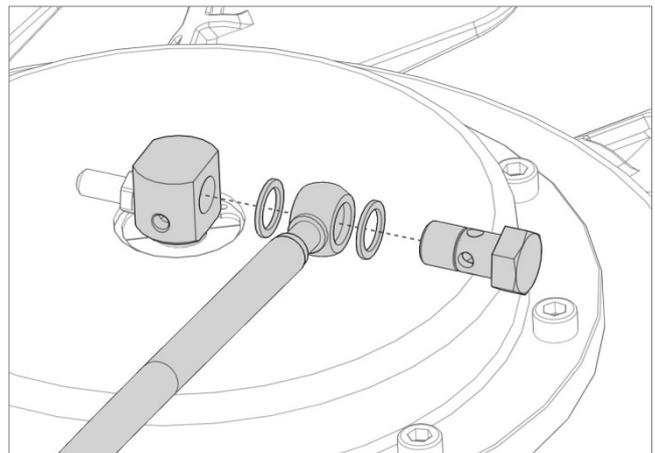
##### 3.2.2 Installation High-Pressure Hose

1. Screw by hand the banjo bolt together with the high pressure hose and two seals into the air intake on the fan.

**⚠ WARNING:**

Take into account the maximum hose length between fan and valve!

H162	→ DN4 max. 1.5m
	→ DN5 max. 1.0m
H222, H252	→ DN6 max. 3.0m



- i NOTE:**  
Angle between the high pressure hose and hubs:

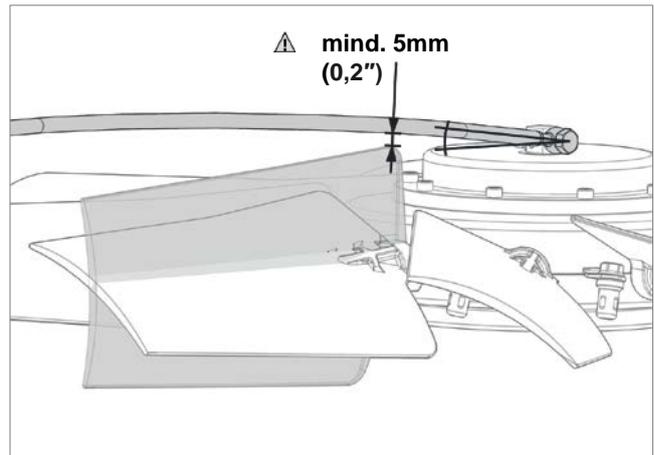
H162/Z15: 0°-10°  
H162/Z20: 10°-20°

H222/Z50: 0°-10°  
H222/Z60: 10°-20°

H252/Z50: 0°-10°  
H252/Z60: 10°-20°  
H252/X85: 15°-25°

- ⚠ WARNING:**  
The gap between the horizontally positioned blade and the high-pressure hose must be a minimum of 5 mm wide!

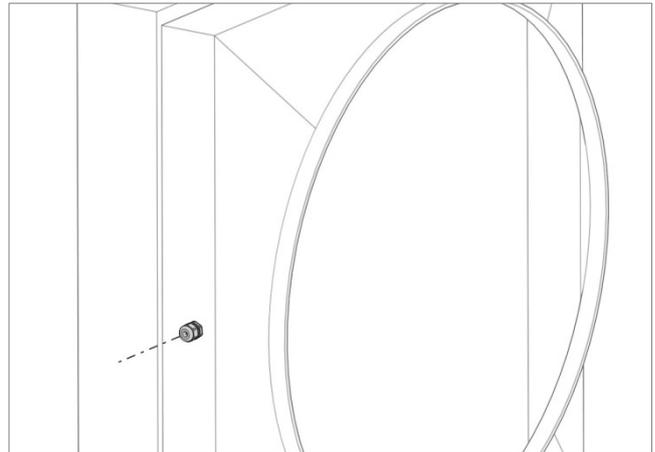
2. Tighten the banjo bolt to 20 Nm.



### 3.2.3 Installation Fan

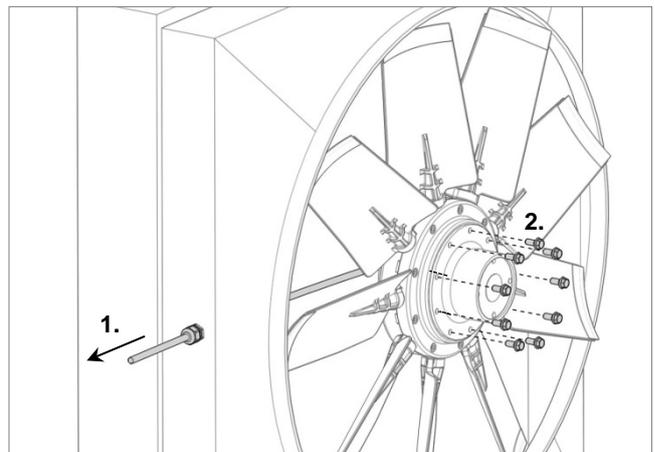
1. Drill a 20 mm hole in the shroud as close as possible to the radiator. Install the strain relief fitting included in the installation kit.

- i NOTE:**  
The preferred location where the hose goes through the shroud is the bottom half of the shroud.



2. Guide the hose from the inside of the shroud through the strain relief fitting. Carefully guide the Cleanfix fan into the shroud. Make sure that the fan does not damage the radiator and coolers. Attach the fan with the locking screws on the flange.

- i NOTE:** Locking screws  
Tightening torque  
12 Nm → H162  
20 Nm → H222/H252

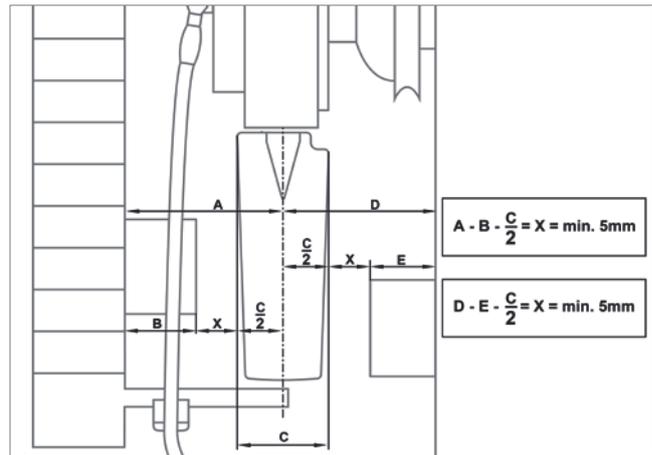


**WARNING:**

It must be measured to determine whether interference contours or obstructions are in the way as the blades can not be shifted in the transverse position at standstill.

See picture for measurement method:

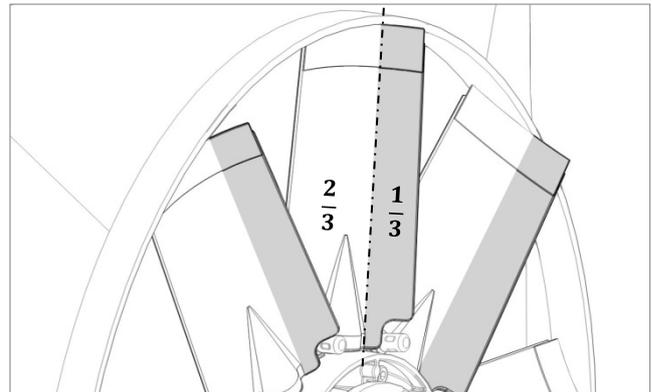
A	Distance from cooler to the centre of the blade
B	Depth of interference contour (radiator side)
C	Distance from the centre of the blade to cooler
D	Depth of interference contour (engine side)
X	Spalt min. 5mm



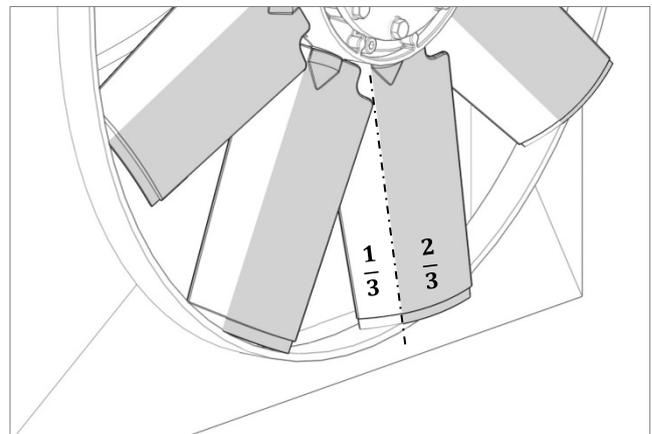
**NOTE:** Best installation depth

**A: For a Suction Fan**

During installation, verify that 1/3 of the blade profile is located outside of the shroud so that the fan can reach its maximum air capacity. The fan must be able to move freely within the shroud, even with turned blades.

**B: For a Blower Fan**

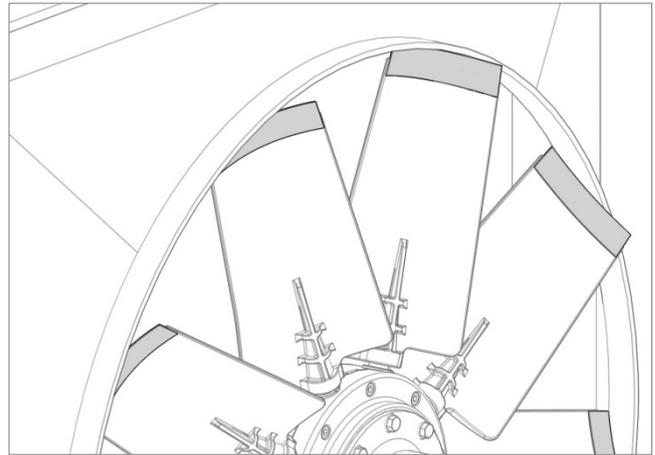
During installation, verify that 2/3 of the blade profile is located outside of the shroud so that the fan can reach its maximum air capacity. The fan must be able to move freely within the shroud, even with turned blades.



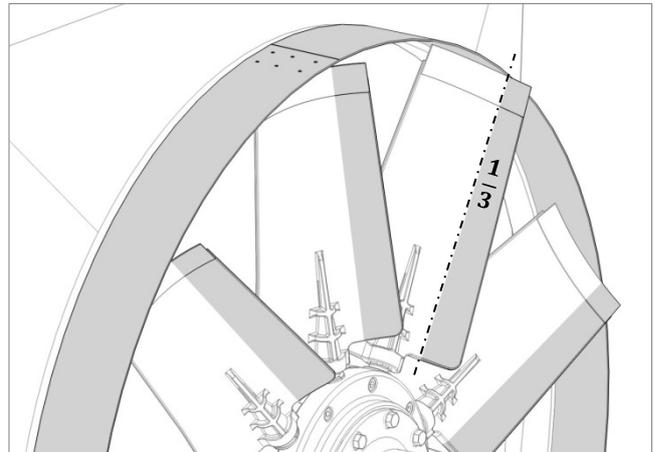
**NOTE:**

Not all fans will be in the best position due to space limitations.

**i NOTE: Flextips**  
Fans with Flextips (flexible blade tips) touch the shroud very lightly and thus ensure the best possible air capacity. If they touch too much and the Flextips bend, they need to be trimmed as necessary. If the Flextips touch the shroud only on one side the shroud may have to be re-centred.



**i NOTE: Sheet metal ring**  
The sheet metal ring, which may be included (depending on the design of the machine) must be mounted on the vehicle around the fan, to direct the air flow. Verify when installing, that 1/3 in case of a suction fan respectively 2/3 in case of a blowing fan of the blade profile is located outside of the sheet metal ring so that the fan can reach its maximum air capacity. The fan must be able to move freely within the sheet metal ring, even with turned blades. The ring must be adequately secured to the fan shroud to ensure it does not foul the fan.

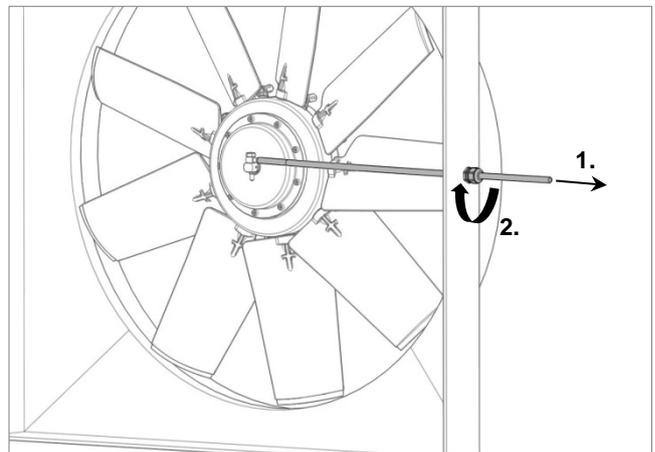


3. Pull the hose through the strain relief fitting so that it does not catch on the blades. Secure the hose with the compression nut of the strain relief fitting.

**⚠ WARNING:**  
The oil intake assembly on the fan must not come under tension from the hose.

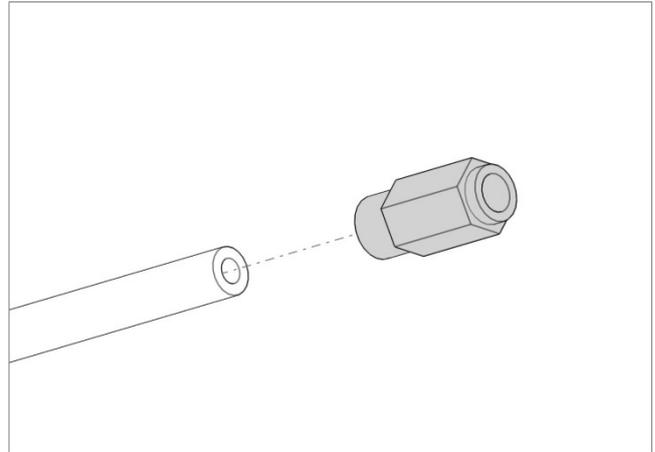
**⚠ WARNING:**  
For large diameter fans of 900 + mm, support the hose halfway between the air intake and the strain relief.

**⚠ WARNING:**  
Verify that any objects that are loose are secured to prevent being pulled into the fan during operation. Secure any loose objects with plastic ties.



**3.2.4 High-Pressure Hose Connection Assembly / Only for H162 Fans**

1. Grease the outside of the hose end of the high-pressure hose.

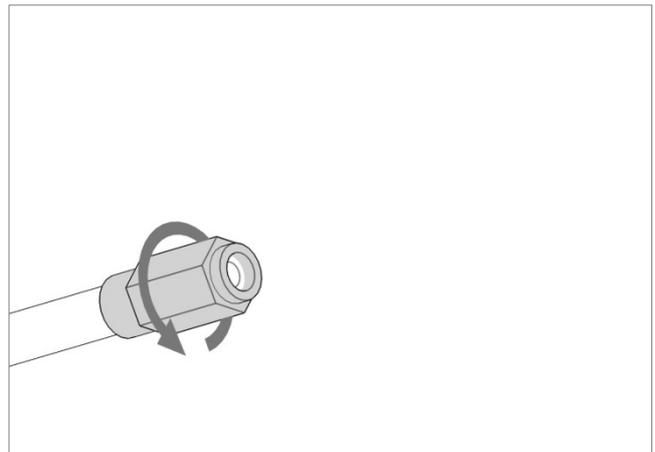


2. Turn the threaded hose by hand counter-clockwise (left-hand thread) onto the high pressure hose.

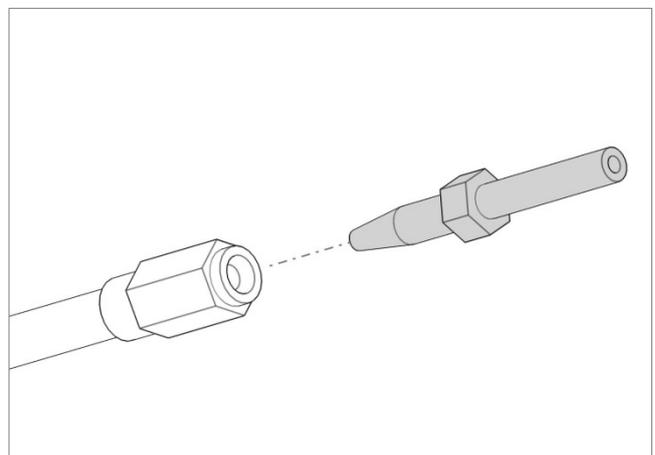
**WARNING:**

Turn the hose sleeve onto the hose straight.

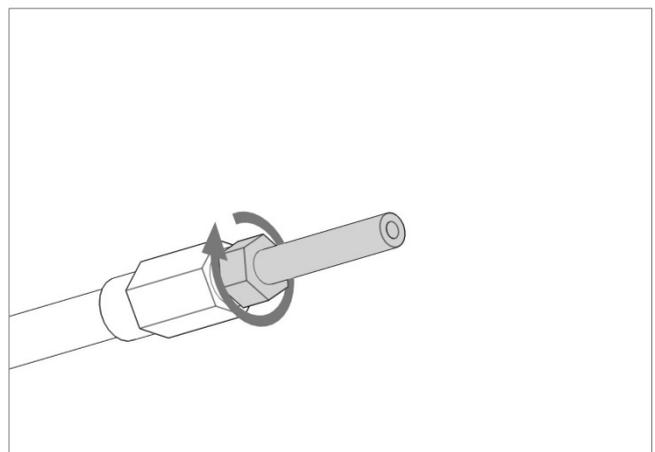
3. Completely screw the threaded sleeve counter-clockwise with a 12 mm spanner onto the high pressure hose until it stops.



4. Screw the tube socket with right-hand-thread into the threaded sleeve.



4. Hold the threaded sleeve with a 12 mm spanner and screw the tube socket with a 10 mm spanner onto threaded sleeve until it stops.



## 4 Electrical guidelines

### A: Cleanfix Valve / For vehicles with a hydraulic system

**⚠ WARNING:**

Avoid installing the control in wet, dusty and high vibration areas. Also avoid areas with temperatures greater than 70°C.

**⚠ WARNING:**

Hydraulic pressure supply must be in the range of:

H162 → min. 42 bar max. 50 bar

H222, H252 → min. 20 bar max. 50 bar

**⚠ WARNING:**

The high pressure hose supplied may not be extended and must be connected directly to the valve!

**⚠ WARNING:**

Take into account the maximum hose length between fan and valve!

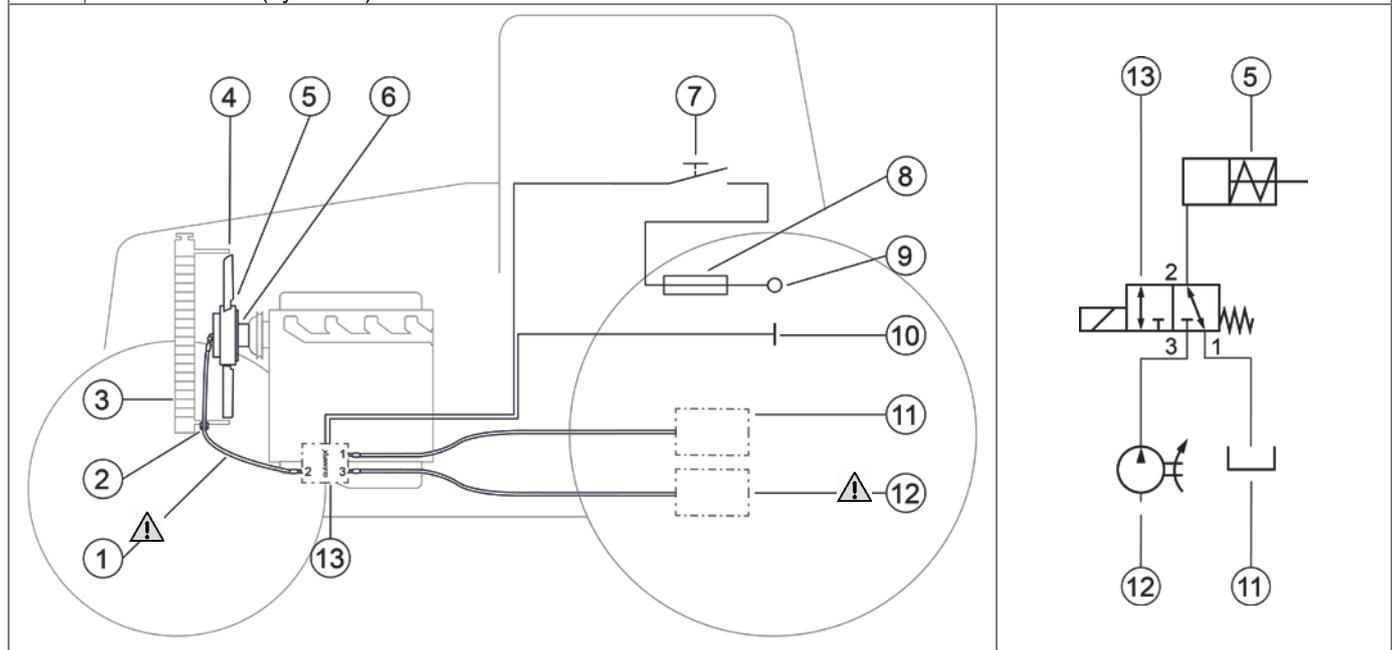
H162 → DN4 max. 1,5m / DN5 max. 1,0m

H222, H252 → DN6 max. 3,0m

**⚠ WARNING:**

Return flow must be implemented a minimum of 8mm in the pipe connection.

Pos	Designation
1	Hose connection between the fan and valve
<b>⚠</b>	<b>WARNING:</b> Check maximum length of the hose (see above)!
<b>⚠</b>	<b>WARNING:</b> The high pressure hose supplied may not be extended and must be connected directly to the valve!
2	Strain relief fitting
3	Radiator
4	Shroud
5	Cleanfix Fan (hydraulic)
6	Adaptor flange
7	Switch (push button)
8	Fuse (12 V / 24 V : 3 A)
9	Keyed power (terminal 15)
10	Ground (terminal 31)
11	Hydraulic oil tank
12	Hydraulic pump
<b>⚠</b>	<b>WARNING:</b> Check supply pressure (see above)!
13	Cleanfix Valve (hydraulic)



**B: Cleanfix Valve Unit with Minitimer or Multitimer / For vehicles with a hydraulic system**

- ⚠ **WARNING:**  
Avoid installing the control in wet, dusty and high vibration areas. Also avoid areas with temperatures greater than 70°C.
- ⚠ **WARNING:**  
Hydraulic pressure supply must be in the range of:  
H162 → min. 42 bar max. 50 bar  
H222, H252 → min. 20 bar max. 50 bar
- ⚠ **WARNING:**  
The high pressure hose supplied may not be extended and must be connected directly to the valve!
- ⚠ **WARNING:**  
Take into account the maximum hose length between fan and valve!  
H162 → DN4 max. 1,5m / DN5 max. 1,0m  
H222, H252 → DN6 max. 3,0m
- ⚠ **WARNING:**  
Return flow must be implemented a minimum of 8mm in the pipe connection.

Pos	Designation
1	Hose connection between the fan and valve
⚠	<b>WARNING:</b> Check maximum length of the hose (see above)!
⚠	<b>WARNING:</b> The high pressure hose supplied may not be extended and must be connected directly to the valve!
2	Strain relief fitting
3	Radiator
4	Shroud
5	Cleanfix Fan (hydraulic)
6	Adaptor flange
7	Cleanfix Timer with Minitimer or Multitimer
8	Switch (push button)
9	Ground (terminal 31) [grey cable]
10	Fuse (12 V / 24 V : 3 A)
11	Keyed power (terminal 15) [red cable]
12	Ground (terminal 31) [black cable]
13	Hydraulic oil tank
14	Hydraulic pump
⚠	<b>WARNING:</b> Check supply pressure (see above)!
15	Cleanfix Valve (hydraulic)

The diagram illustrates the installation of the Cleanfix Valve Unit. On the left, a perspective view shows the fan assembly (1-7) connected to a valve (15) and a pump (14). The right side shows a schematic of the hydraulic circuit, including the pump (14), valve (15), fan (5), and oil tank (13).

## 5 Troubleshooting

Error	Cause of error	Troubleshooting
<b>1</b> Blades do not rotate to the cleaning position	<b>1.1</b> No or low supply pressure	<b>1.1.1</b> Check the pressure supply on the solenoid valve Pressure supply available to the solenoid valve → see 1.1.2 → When no pressure is applied to the solenoid valve, check the pressure supply (min. 20 bar / max. 50 bar).
		<b>1.1.2</b> Check the solenoid valve is functioning If necessary connect external power supply (please note voltage 12 V or 24 V only) Solenoid valve switches (soft click) → see 1.1.3 → If the solenoid valve does not switch, replace the valve.
		<b>1.1.3</b> Check the hose The hose from the solenoid valve to fan has no kinks or leaks → see 1.1.4 → In the case of leaks on the hose, the hose needs to be replaced. → When the oil intake assembly on the fan is leaking, an appropriate seal kit must be ordered.
		<b>1.1.4</b> Mechanical failure If all the above conditions are met and the blades do not rotate, then it is a mechanical error. Then the fan must be sent to the manufacturer for review.
<b>2</b> Blades do not turn back from the cleaning position to the cooling mode	<b>2.1</b> Fan speed too fast	<b>2.1.1</b> Reduce speed <b>2.1.2</b> Install more springs if possible
	<b>2.2</b> Oil in the fan does not run back	<b>2.2.1</b> Check the hose The hose from the solenoid valve to fan has no kinks or pinched positions → see 2.2.2 <b>2.2.2</b> Check the solenoid valve See (1.1.2). <b>2.2.3</b> Mechanical failure If the fan with hose disconnected does not turn back from standstill, there is a mechanical failure. Then the fan must be sent to the manufacturer for review.

