Formula Air
Supporting your performance

# DANSEP 6 –Separator

# Maintenance Manual

V2.0-2019

## Contents

## 1. EC DECLARATION OF CONFORMITY

Manufacturer: **Moldow A/S**

**Jørgen Hansens Vej 1**
**DK-6670 Holsted**

Hereby states that the following product:

**DanSep 6**

is in compliance with the following provisions:

**EC directive on machinery 2006/42/EC** of 17th May 2006 with specific reference to exhibit I of the directive concerning important safety and health requirements in connection with construction and manufacture of machines

**EMC-directive 2014/30/EU** of 26th February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility

**LVD-directive 2014/35/EU** of 26th February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

And furthermore declares that the following harmonized standard has been used.

**EN ISO 12100:2011** **General principles for design - Risk assessment and risk reduction**
**EN 60204-1:2006** **Electrical equipment of machines**

Managing Director K. Preben Hansen

Holsted, the 15-01-2015

## 2. INTRODUCTION

We are pleased by the fact that you have chosen this product. Since 1921, we have developed, manufactured and sold filter systems, and we have thousands of installations world-wide.
In order to attain optimum usage of the properties of the DanSep separator it is presumed that the user reads this manual thoroughly.

Read this manual thoroughly before commissioning of a DanSep separator. Please pay special attention to the section concerning maintenance, as correct maintenance of the DanSep separator is a prerequisite for trouble-free operation.

The user of the DanSep separator must ensure that the operator, service personnel and others who have access to the machine is instructed on the proper use and handling of the machine.
You are welcome to contact us for information and comments.

## 3. FUNCTIONAL DESCRIPTION

DanSep 6 is used for separation of air conveyed material.

### Mechanical structure

Functionally the separator consists of the following main elements:

- rotary cabinet, lower part
- rotary cabinet, upper part
- rotor
- clean air chamber
- drive parts

### Rotary cabinet

The lower part and gable of the rotary cabinet are made out of painted plates.

The upper part of the rotary cabinet consists of a housing and injection chamber which are made out of perforated electro-galvanized plate with hole size diam. 3.8 mm.

The upper part of the rotary cabinet is in one piece and bolted to the lower part and gables

### Rotor

The rotor is made with 6-chambers with laminar holders in hot-galvanized plate.
Longitudinal lamellas and lamellas towards gables is 8 mm Neoprene-rubber.
The laminar holders are reinforced by 2 triangles in each chamber.
The rotor is suspended in two flange bearings equipped with extra dust tightening.

## Clean air chamber

The clean air chamber surrounds the perforated housing and injection chamber.

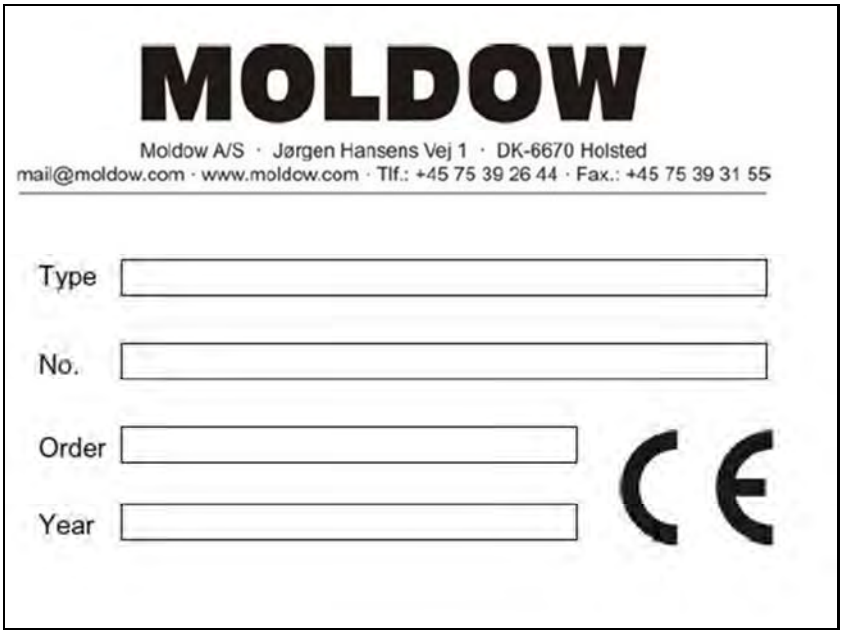
The gables are in one piece whereas injection and discharge panels and roof plates can be removed. Each gable is fitted with an inspection window.

## Drive units

The gear is run by a direct coupled hole-shaft worm gear with gearing.

# 4. MARKINGS

The DanSep separator is marked according to current requirements.
The type plate states type, order number and year of manufacture.




# 5. WARNINGS

**WARNING - WARNING - WARNING !!!**

**THE POWER SUPPLY TO THE PLANT MUST BE DISCONNECTED PROPERLY AND SECURED AGAINST RECLOSING BEFORE ANY KIND OF MAINTENANCE MUST BE COMMENCED!**

The DanSep 6 separator contains rotating parts.
Therefore, it is not allowed to connect the separator electrically until ducts are connected on both the suction as well as the exhaust side of the separator.

The air outlet is only connected to the clean air chamber of the separator. Here the rotor is covered by a perforated shield.

## 6. MOUNTING

**Important:**

Always wear the required safety equipment.
Head protection required when lifting the separator.

The national safety rules in force must be observed.

### Delivery

The DanSep separator is delivered assembled and mounted by flange connections to the ducts.

The motor may not be electrically connected before the injection and outlet ducts as well as duct for transport of the rough waste have been connected.

There must be a service switch near the separator.

### Storage

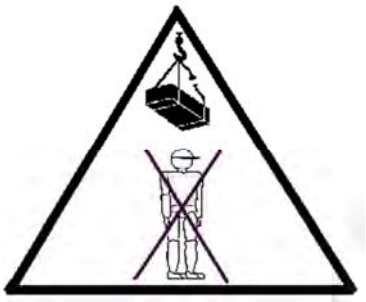
Until mounting is commenced, all parts of the DanSep separator must be stored under conditions preventing rusting, corrosion, decomposition or deformations.
Furthermore the parts must not be stored in a way involving malfunction.

### Preparation

Check all delivered parts for possible transport damages before mounting is commenced.
Check that access conditions and the necessary space around the DanSep separator are correct. It must also be checked that the base the DanSep separator is placed on can bear the actual load.

**If lifting is necessary, only approved lifting equipment must be used.**

**Persons must not be present under hanging load – DANGER ZONE !!!**



### General mounting

Mounting must only be performed by trained personnel and in accordance with the mounting instructions. Necessary personal protective equipment must be used.

### Safety

Most of the components that the DanSep separator is built of are cut and bent thin sheet. It cannot be avoided that some of the plate edges become sharp during manufacturing.

### Electrical connection

Electrical connection must only be carried out by an authorized electrician according to current national legislation.

### Start-up

When the mounting is accomplished and the motor connected electrically, DanSep 6 may be started. Make sure that the direction of rotation is correct.

### Daily operation

No special comments.

## 7. OPERATION AND MAINTENANCE

**WARNING - WARNING - WARNING !!!**

**The DanSep separator is operated, together with the rest of the plant from the central control panel. Before performance of service / maintenance the separator and the connected plant MUST be disconnected at the central control panel. Furthermore, it must be ensured that the fan has stopped its rotation!**

**Important:**
Always wear the required safety equipment.

Respiratory protection is required for maintenance.

The outside of the separator needs no maintenance.

Inspection to be made after every 1.000 hours of operation, and at least 2 times a year the following must be tested:

## Rotor cabinet - Upper part

The cabinet must be tested for dust collections through the inspection glass. Remove the inspection doors if heavy dust collections are discovered and vacuum clean the cabinet.

## Rotor

Lubricate the flange bearing with universal grease. If there is dust in the bearing, exchange the felt seals behind the flange bearing.
If the flange bearing makes any jeering sound, it has to be exchanged.
If the rubber lamellas on the rotor are worn out, they have to be exchanged.

## Exchange of rubber lamellas/rotor

When exchanging rubber lamellas or rotor it is necessary to remove the perforated housing surrounding the rotor.

Start by demounting motor and gear (demountable as one unit). Remove the nuts on the flange in the gear end.

Remove the inner row of nuts on the flange at the opposite end.

The rotor with both gable flanges can now be pulled out at the motor end.

**Take care** when pulling out the rotor. Rotor with flanges and bearings weighs approx. 80 kg.

## Gear

The gear is lubricated for life with lubricating oil. Temperature area -30°C - +50°C. The gear needs no maintenance.

## Motor

Reference to "Maintenance Instructions for Electro-motors".

## ELECTRICAL CONTROL

Included electric components:

1. Motor
2. Velocity control

When installing a DanSep 6 the motor is connected over a service switch by the separator to a control panel with emergency stop.

The velocity control is a magnet-activated switch. By 22 rpm it will give 90 pulses pr. minute.

Connect the velocity control to a timer in the control panel.

Adjust the timer to not giving any deflection during normal operation.

On deflection the timer shall disconnect the motor starter to the valve.

Meaning that the separator **is not allowed** to run in the following situations:

1. The service switch has been disconnected.
2. The motor starter has been drawn.
3. The velocity control has given a signal.
4. The emergency stop has been activated.
5. The control panel has been closed down.

It must also be made sure that the system cannot be restarted in one of the abovementioned situations until the control panel has been reset.

## NOISE

The noise ratio of the component in our scope of supply in connected condition and without media is below 70 dB(A) measured at a distance of 1 meter from the component.
Noise from transported media is not included.

Important:

A higher noise level may occur depending on local conditions, like a machine which is connected with other machines. In this case separate measurements may be required.

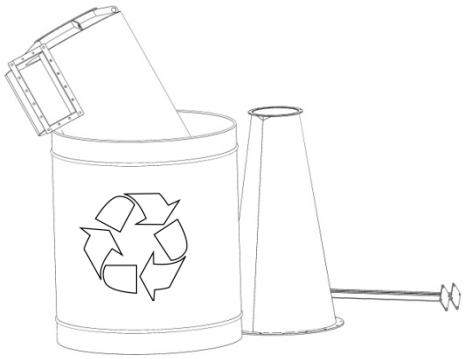
If the total noise level in the area exceeds 85 dB(A), hearing protection must be used

## 8. TROUBLESHOOTING

| Failure | Possible causes | Proposed solutions |
|---|---|---|
| Separator switches off thermally | - Foreign body got stuck<br>- Rotor frozen<br>- Gear motor defective<br>- Rotor defective<br>- Motor protection set incorrectly<br>- Fuse defective<br>- Big voltage drop in power supply | - Remove foreign body<br>- Thaw the rotor<br>- Replace the gear motor<br>- Replace the rotor<br>- Adjust the motor protection<br>- Replace the fuse<br>- Replace the cables to a larger square |
| Separator is not running | - Working switch is off<br>- Motor protection switched of thermally<br>- Conditions of operation are not met in the control system<br>- Fuse defective<br>- Rotary guard defective<br>- V-belt broken | - Stop the installation, switch on the working switch<br>- See ”Failure - Separator switches off thermally”<br>- Investigate why conditions are not met<br>- Replace the fuse<br>- Replace the rotary guard<br>- Exchange V-belt |
| Separator makes “screaming” sound | - Foreign body got stuck<br>- Rotor defective | - Remove foreign body<br>- Replace defective part |
| The material will not pass the separator without accumulation | - To high volume of material per volume unit<br>- Settling velocity of material less than expected<br>- The material accumulates in lumps which cannot pass<br>- The material is not removed fast enough at the outlet of the separator | - Reduce the volume of material feed<br>- Adjust the production machine to change the flow of material<br>- Adjust the production machine to change the flow of material<br>- Check the drop chute |
| Lot of dust in the drop chute | - Defective lamellaes | - Exchange lamellaes or complete rotor |
| Cardboard passing to the filter | - Perforated housing defective | - Exchange the housing |

## 9. DISMANTLING & RECYCLING

When dismantling a unit, be sure to keep in mind the following important information :
As the unit is dismantled, set aside all still functioning parts in order to re-use them on another unit.
You should always separate the different materials depending on their type : iron, rubber, oils, greases, etc…
Recyclable parts must be disposed of in the appropriate containers or brought to a local recycling company.
The rubbish must be collected in special containers with appropriate labels and disposed of in compliance with the national laws and/or local legislations in force.
**CAUTION!** It is strictly forbidden to dispose of toxic wastes in municipal sewerage and drain systems. This concerns all oils, greases, and other toxic materials in liquid or solid form.



## 10. SPARE PARTS

For spare parts please contact Formula Air Group.

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NOTE : All drawings and references contained within this manual are non-contractual and are subject to change without prior notice at the discretion of the Formula Air group and its partners.

Nicolas Poreye