

## ATEX instruction for the Danfoss APP, PAH and PAHT pumps

The Danfoss APP, PAH and PAHT pumps are marked for application in “Group 2 Category 2 systems”.

The pumps may also be applied in Category 3 systems subject to following these instructions.


**CE II 2 DG c T6**



**Example “ATEX pump label”**

This document describes how to integrate a pump in a system depending on the Category demand.

**Table 1 — Equipment groups and categories**

Equipment-groups (Annex I of the EC-Directive 94/9/EC)							
Group I (mines, mine gas and dust)		Group II (other explosive atmospheres gas/dust)					
Category M		Category 1		Category 2		Category 3	
1	2	G (gas) (Zone 0)	D (dust) (Zone 20)	G (gas) (Zone 1)	D (dust) (Zone 21)	G (gas) (Zone 2)	D (dust) (Zone 22)
for equipment providing a very high level of protection when endangered by an explosive atmosphere	for equipment providing a high level of protection when likely to be endangered by an explosive atmosphere	for equipment providing a very high level of protection when used in areas where an explosive atmosphere is very likely to occur		for equipment providing a high level of protection when used in areas where an explosive atmosphere is likely to occur		for equipment providing a normal level of protection when used in areas where an explosive atmosphere is less likely to occur	



## Common demands for Category 2 and 3 installations

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**This instruction is a supplement to existing product instruction as ATEX components are subject to some limitations compared to standard components. The limitations are described in this ATEX instruction.**

### **Validity:**

Approvals are only related to **water as fluid**. If other fluids are used these must be non-flammable fluids and comply with standard EN 13463-5 § 7.5.5.

The pumps are designed to pump liquids and not gasses! It is the user's responsibility that the pump is fluid filled.

### **Fluids:**

If the pump is to operate on other fluids than water, please contact Danfoss. Other operation and maintenance conditions might apply.

### **Minimum suction pressure:**

The user must always ensure that the pump is filled with the fluid to be pumped. The pumps must always be operated with a "positive head" on suction port. The allowable minimum and maximum inlet pressure for the suction port can be found in the pump data sheet.

### **Maximum discharge pressure:**

It is the user's responsibility that the pump discharge pressure does not exceed *the max continuous discharge pressure + 10%* stated in the pump data sheet.

### **Temperature:**

The pump is not to be used in systems where the fluid temperature exceeds 50°C /122°F.

### **Filtration:**

The fluids entering the pump must as a minimum always be filtered according to the specification found in the technical pump data sheet



## Common demands for Category 2 and 3 (continued)

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### External impacts due to:

#### **Gases:**

The pumps are made in materials resistant to most common gases. The user of the pump must ensure that materials used are resistant to the gases applied.

#### **Dust:**

The pumps may be used in “Dust Certified Areas “– but the pump housing must be cleaned regularly and always when the dust layer is exceeding 5 mm (0.2 Inch). It is the user’s responsibility that materials applied for the pump are compatible with the dust generated.

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### Assembly of pump drive unit:

#### **Motor - Pump assembly and system integration:**

When assembling the pump with the bell housing, flexible couplings and motor, it is the builder’s responsibility that the parts used conform to the ATEX directive and that the components are assembled and running according to the operational data found in product data sheets and instructions.

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### “Potential equalizing cables” for pump systems installed in Category 3 areas:

#### **All parts must be potential equalized,**

**in a Category 3 system,** a conductive (i.e. metallic) bell housing can be applied for equalizing the electrical potentials between motor and pump. Pump and motor must be mounted on the bell housing by bolts and lock washers; this will ensure electrical contact between pump and motor.



## **Requirements for Category 2 installations:**

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### **“Potential equalizing cables” for systems installed in Category 2 areas:**

**All parts must be potential equalized,**

**in a Category 2 system**, all parts must be potential equalized by electrical wires. The wire gauge must be equal to the wire gauge applied in the “supply” of the electric motor and may as a minimum not be smaller than 4mm<sup>2</sup>. (EN 60079-0 Item15.4).

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### **Pump housing temperature increase causing problems due to pump breakdown/failure in a Category 2 rated system**

In a Category 2 system, the pump housing temperature must be monitored.  
Pump housing temperature must always be lower than 85°C / 185°F.

A sensor integrated in or on the pump must be used to monitor pump housing temperature. This sensor can either be mounted on top of the pumps cylindrical part or in the drain/bleed port of the pump. The system must stop the pump, if a temperature of 60°C / 140°F is exceeded.

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### **Checking whether suction port is fluid filled and fluid flows unrestricted:**

To monitor if suction line is fluid filled at right pressure, a pressure sensor must be placed in the pump suction port. This sensor must as a minimum be set to the minimum suction pressure specified in the pump data sheet. Pump must be stopped by system, if pressure declines below sensor pressure setting.

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## EU Declaration of Conformity

Danfoss A/S  
High-Pressure Pumps  
DK - 6430 Nordborg, Denmark

we hereby declare on our sole responsibility that the following product(s):

### Pumps, type:

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- PAH 2
  - PAH 3.2/4/6.3
  - PAH 10/12.5
  - PAH 20/25/32
  - PAHT 20/25/32
  - PAH 50/63/70/80/100
  - PAHT 50/63/70/80/90
  - APP 0.56 / 0.6 / 0.8 / / 1.0
  - APP 1.5 / 1.8 / 2.2 / 2.5
  - APP 5.1 / 6.5 / 7.2 / 8.2 / 10.2
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covered by this declaration have been manufactured confirming to requirements in the ATEX directive 94/9/EF

and that

- the following harmonized standards have been applied:  
EN 1127-1, EN 13463-1 and EN 13463-5.

The pumps have been designed and manufactured for the material group II, category 2GD of the ATEX directive.

The technical dossier has been sent to the notified body, No. 0396, Technological Institute, DK-8000 Aarhus to be stored.

Archive # 2006-4-0031 A / DMW # 1223836-31

Nordborg, 2009-09-08

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