



**INSTRUCTIONS 1051 e**

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Original instructions

# ***P series***

## ***Additional instructions for ATEX certified equipment***



Z.I. La Plaine des Isles - F 89000 AUXERRE - FRANCE  
Tel. : +33 (0)3.86.49.86.30 - Fax : +33 (0)3.86.49.87.17  
contact@mouvex.com - www.mouvex.com

Your distributor :

# VANE PUMP

## ADDITIONAL INSTRUCTIONS FOR ATEX CERTIFIED EQUIPMENT

### MODELS : P SERIE

The following instructions must be read at the same time as :

1. standard NF C 15 100,
2. standard NF EN 60 079-14 (electric installations in explosive gaseous atmospheres),
3. standard NF EN 60 079-17 (inspection and maintenance in dangerous locations),
4. rulings, orders, laws, directives, circulars for application, standards, professional practices and any other document related to its place of installation.

We disclaim any responsibility in the case of non-conformity with these documents.

This manual is an addition to our general manual.

The equipment must be installed by qualified, skilled and authorised personnel.

Our equipment is labelled CE by virtue of directive ATEX 2014/34/EU.

It is designed for use in explosive gaseous atmospheres :

*group IIA and IIB - category 2G - zones 1 and 2*

Check the compatibility between the informations on the rating plate, the explosive atmosphere present, the area of use and the ambient and surface temperatures.

According to the directive 2014/34/EU, the accessories or (and) components assembled and equipping the motors of our pumps must have a standard CE declaration of inspection.

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# 1. TABLE OF PUMP CHARACTERISTICS

Pump type	P15	P25	P40	P60	P100
Max. flow (m <sup>3</sup> /h)	22.5	37.5	60	72.5	110
Max. speed (rpm)	1500	1500	1500	1150	1150
Maximum discharge pressure (bar) at max speed	6	6	6	6	6
Maximum discharge pressure (bar)	12				
Maximum speed at maximum discharge pressure	1000				
Maximum product temperature :					
with FKM or CVT seals	<b>P BA (cast iron) :</b> Mouvex seal.....200°C Burgmann M7N21 seal.....200°C <b>P BI (stainless steel) .....200°C</b>				
with FKM HT seals	<b>P BA (cast iron) :</b> Mouvex seal.....250°C Burgmann M7N21 seal.....220°C				

Minimum running temperature : See pump Instructions manual.

## 2. REPLACEMENT OF PARTS

Parts can only be replaced by MOUVEX parts corresponding to the original configuration of the pump. If this is not the case, the pump's characteristics will be modified and its ATEX certification will no longer be applicable.

Case of pumps intended for standard single or double seals (pump variants PG.SN- and PG.DN-) :

The standard seals installed inside these pumps must be ATEX certified, with the same certification level or better than that of the pump, indicated on the rating plate.

## 3. CLASSIFICATION OF PUMP TEMPERATURES

Pumps are devices whose surface temperatures depend greatly on the temperature of the product they pump and/or the heating temperature in the case of a pump equipped with a heating jacket. Therefore the temperature classifications of MOUVEX pumps are obtained with the temperature limits of the product pumped and the heating product :

**Maximum temperature of the product pumped and/or the heating product (in the heating jacket)**

Temperature class	Certification ATEX II 2 G IIB		
	T4	T3	T2
Pump with FKM or CVT seals	80°C	150°C	200°C
Pump with FKM HT seals	80°C	150°C	250°C

Any overshooting of the maximum temperature of the product pumped or the heating product (in the case of a pump equipped with a heating jacket) is considered as abnormal operation of the pump (according to the pump's temperature classification), that can lead to surface temperatures higher than the classification temperature T for which the pump is certified. The user of the pump must ensure that the temperature of the product pumped and/or the temperature of the heating product must never exceed the maximum temperature specified. This can be done, for example, by installing a temperature sensor upstream of the pump. This maximum temperature is also written on the pump rating plate as "max flow temp:".

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## 4. RUNNING WITHOUT LIQUID IN THE PUMP

MOUVEX TVP (PEEK) vane pumps P Series can run without liquid in the pump for 5 minutes without causing heating in the pump in excess of classification temperature T, in particular during pump priming.

The running without liquid in the pump is forbidden for steel vane pumps.

Consequently, every time the pump is started, an operator must check that there is a flow through the pump, for example, by checking that the applications that depend on the pump work. This operation can be automated by using a flow detector placed as close as possible to the pump discharge orifice. This device must comply with the standards in force, especially those related to electric devices in explosive atmospheres and/or standard EN 13463-6 related to the protection of non-electric equipment in explosive atmospheres by controlling sources of ignition.

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## 5. DISCHARGE PRESSURE RELIEF

When a bypass is used as a pump protection device against accidental and non-repetitive overpressure, and the pump carries category 3 certification, it is possible for the shut-off device not to be fitted if the pump has a category 3 certification.

Under all other circumstances (category 2 certification, category 3 certification with repetitive use of the bypass in the process, regardless of whether this use is voluntary or not...), the shut-off device is compulsory.

### 5.1 For pumps equipped with an integrated bypass

Since the pressure relief is incorporated in the pump, the product is recirculated directly via the discharge orifice to the suction orifice. The short length of the recirculation circuit means that if the pump operates with a blocked discharge orifice, the bypass (and thus the pump) can reach very high temperatures quickly according to the pump operating conditions.

It is therefore vital to install a thermostatic switch (two in case of double bypass) in an emplacement provided for this purpose in order to conform to the classification temperature T. The thermostatic switch cuts off the power supply to the pump in case of overshooting of the maximum surface temperature corresponding to the classification temperature T (refer to IOM 1054 to see the detailed assembly allowing the cut off of the system). This equipment must conform to current standards and especially with standards related to electric equipment in explosive atmospheres and/or standard EN 13463-6 related to the protection of non-electric equipment in explosive atmospheres by controlling sources of ignition.

### 5.2 For pumps without an integrated bypass

The pump must be protected against overpressure.

In particular we recommend installing a pressure switch that cuts off the power supply to the pump in case of overpressure. For safety reasons, the cut-off pressure must be less than the pump's maximum discharge pressure, and less than the lowest pressure admissible by the components of the circuit. This equipment must conform to current standards and in particular to those for electric equipment in explosive atmospheres and/or to standard EN 13463-6 related to the protection of non-electric equipment in explosive atmospheres by controlling sources of ignition.

The pump can also be fitted with an external bypass with a return to the tank. As with the integrated bypasses of the MOUVEX pumps, it is vital to install a thermostatic switch (two in case of double bypass) at the bypass valve in order to control possible heating due to recirculation of the product. This thermostatic switch cuts the power supply to the pump in the case of overshooting of the maximum surface temperature corresponding to classification temperature T (refer to IOM 1054 to see the detailed assembly allowing the cut off of the system). This equipment must conform to current standards and in particular to standards for electric equipment in explosive atmospheres and/or standard EN13463-6 related to the protection of non-electric equipment in explosive atmospheres by controlling sources of ignition.

### 5.3 Detection threshold of bypass temperature sensors

Temperature classification	Detection threshold of the temperature sensor
T4	120°C - +/-5°C
T3	175°C - +/-5°C
T2	265°C - +/-5°C

**Caution :** The shut off device is not designed to control the pumped product temperature as required in the section CLASSIFICATION OF PUMP TEMPERATURES, but to be triggered when a malfunction could raise the temperature to a level higher than what is acceptable for the ATEX area. The temperature must be checked using a device that is separate from the shut off device.

## 6. SOLVENTS NOT COMPATIBLE WITH PUMP SEALS

The user must ensure that the seals equipping the pump are compatible with the product pumped and products used to clean the pump.

## 7. POSSIBLE LEAKS OF THE PUMPED PRODUCT

Possible leaks of liquid via the pump seals or mechanical seals do not lead to risks of fire provided that the explosive atmosphere surrounding the equipment corresponds exactly to the type of atmosphere for which it was selected.

Make sure to check that the liquids pumped do not generate an explosive atmosphere, for which the equipment has not been designed, when coming into contact with the atmosphere surrounding the pump or with material located near it.

## 8. PUMP DRIVE

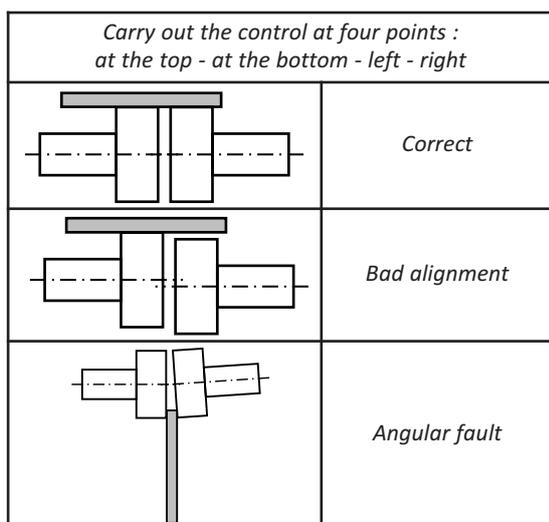
The maximum rotation speed of the pumps must be conformed to (see table of pump characteristics). At first start-up or after any modification of the pump unit, the rotation speed of the pump must be checked and be less than the maximum speed indicated in the instructions.

### 8.1 Alignment of the pump and drive

To carry out alignment and coupling, use a perfectly straight steel rule to control misalignment and feeler gauges for angular misalignment.

The operation is shown clearly in the three figures opposite. It is important to control the alignment of each step of the installation in order to ensure that none of the steps lead to stresses on the unit or the pump :

- after fastening on the foundations
- after fastening the piping
- after the pump has operated at normal operating temperature.



#### REMINDER :

A flexible coupling does not avoid to do a good alignment.

### 8.2 Elastic coupling

ATEX certified elastic couplings must be used. These couplings must have a level of protection equivalent or better than that of the pump unit. Please refer to the technical manual on coupling for the maintenance instructions relative to the ATEX certified elastic couplings of the MOUVEX pump units.

### 8.3 Electric installation of the pump motor or gear motor

Check that the indications on the pump rating plate and the supply voltage match.

Comply with the instructions of the manual accompanying the pump to connect the motor to the mains supply.

Refer to the wiring diagram, use wires adapted to the power and ensure that the contacts are tightened vigorously.

Motors must be protected by appropriate circuit breakers and fuses.

Connect the regulatory earthing connections.

Start the pump up empty to check that the connections are correct and check that the direction of rotation corresponds well with the direction of suction and discharge of the installation.

### 8.4 ATEX characteristics of the pump motor or gear motor

The ATEX characteristics of the motor or gear motor must be adapted to the use intended (gas group IIB, temperature class T4, T3 or T2 as a function of the pump) and have a protection mode for safety reasons, as well as an explosion proof enclosure.

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## 9. ATEX CHARACTERISTICS OF THE PUMPING UNIT

A pumping unit can be composed of components (motor, gear motor, sensors, etc.) whose ATEX characteristics are different to those of the pump.

In this case, the ATEX characteristics of the unit will correspond to those of the component with the lowest level of protection.

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## 10. PUMP MARKING

The P series pumps are marked as follows :

MOUVEX F89 AUXERRE

Ppe P + codification of the variant

 II 2 G II B T4, T3 or T2 - Max temp flow .... °C

Serial no.

Year

INERIS 03 ATEX 3008 X

The marking of the P series units is as follows :

MOUVEX F89 AUXERRE

Gpe P + codification of the variant

 II 2 G II B T4, T3 ou T2 - Max temp flow .... °C

Serial no.

Year

INERIS 03 ATEX 3008 X

In the case of a pump unit, the ATEX certified components retain the marking intended for them.