ABAQUE

INSTRUCTIONS 1077 e

Section	
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Original instructions

Abaque HD

Additional instructions for ATEX certified equipment

MOUVEX®

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PSG a DOVER company

PERISTALTIC HOSE PUMP

ADDITIONAL INSTRUCTIONS FOR ATEX CERTIFIED EQUIPMENT

MODELS : ABAQUE HD

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 or IIB - category 2G - zones 1 and 2

- group IIA or IIB - category 3G - zone 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. CATEGORY 2 AND 3 CERTIFICATION FOR MOUVEX PUMPS AND UNITS

MOUVEX pumps and units carry category 2 certification (high level of protection). They are, therefore, obviously suited to category 3 uses (standard level of protection).

Unless otherwise indicated, the recommendations contained in these Instructions apply to the equipment in categories 2 and 3.

2. TABLE OF PUMP CHARACTERISTICS

Abaque HD series pump	HD10	HD15	HD20	HD25	HD32	HD40	HDX40	HD50	HD65	HDX65	HDX80	HD80	HD100
Max. flow at maximum discharge pressure acceptable ($m^3.h^{-1}$)	0,08	0,24	0,40	0,93	1,8	2,5	3,3	5,4	6,5	9,5	12,6	14	20,4
Acceptable continuous max. speed at maximum discharge pressure acceptable (rpm)	50	48	48	56	47	48	41	31	32	24	24	20,5	17
Maximum suction pressure acceptable (bar)	7	7	7	14	14	14	14	14	14	14	14	14	14
Acceptable maximal differential pressure (bar)	8	8	8	15	15	15	15	15	15	15	15	15	15
Maximum discharge pressure acceptable (bar)	8	8	8	15	15	15	15	15	15	15	15	15	15
Acceptable maximum temperature of product pumped (°C) Hose EPDM ..... Hose NR	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70	 80 70

Other characteristics : See pump Instructions manual.

NOTICE :

Intermittent operation is forbidden. Refer to instruction manual for determination of allowed rotation speeds on continuous operation.

Maximum temperature of pumped product is highly dependent on the operating conditions (pressure, speed, viscosity ...). Please contact our technical department to set the maximum allowable temperature for your application.

3. REPLACEMENT OF PARTS

MOUVEX pumps parts can only be replaced by MOUVEX parts corresponding to the original configuration of the pump.

Failure to these instructions results a modification of the pump's characteristics and its ATEX certification will no longer be applicable.

All operations on MOUVEX ATEX equipment must be carried out by MOUVEX personnel or by personnel specifically authorised to carry out such operations.

Non-conformity with this rule will result in the loss of the MOUVEX ATEX pump certification.

4. TEMPERATURE CLASS OF PUMPS AND PUMPING UNITS

Pumps are devices whose surface temperatures greatly depend on the products they pump.

ATEX MOUVEX certification defines the temperature class of the pump according to the temperature controller device setting threshold that is responsible for controlling the surface temperature of the pump (and, if applicable, of controlling that of the relief valve surface temperature ; see § DISCHARGE PRESSURE RELIEF).

A temperature limiter device is necessary to respect the temperature classification.

This device must :

- be installed in emplacement provided for this purpose (at the top of the pump) [a],
- cut the power supply to the pump and controlling any safety measures required by the installation,
- be conform to current regulations and standards especially with regulation related to electric equipment in explosive atmosphere (EN 50495…),
- have a level of protection against explosions equivalent or higher than that of the pump,
- have a minimum level of integrated safety adapted to equipment category (see table below).

Pump category	3	2
Level integrated security required	neither	SIL1

The activation threshold of the temperature limiter device should be selected to ensure that the temperatures at controlled locations do not exceed the values given below.

Setting of the activation threshold should take into account the precision of the temperature limiter device.

Example : to a precision of ±5K, activation threshold in temperature class T4 should be set to 105 - 5 = 100°C.

Pump	Temperature class	Maximum detection threshold of the temperature limiter devices
HD10 HD15 HD20	T4	105°C
HD25 HD32 HD40 HDX40 HD50 HD65	T4	97°C
HDX65 HDX80	T4	105°C
HD80	T4	95°C
HD100	T4	105°C

5. OPERATION WITHOUT ANY PUMPED PRODUCT

MOUVEX peristaltic hose pumps can run without liquid in the pump without causing heating in the pump in excess of classification temperature T, in particular during pump priming.

On the other hand, dry running of the pump with the intake or discharge port obstructed causes heavy strain on the pump hose and can produce a considerable rise in temperature due to compression and decompression of the air confined between the pump and the obstructed port. This type of malfunction cannot be monitored by a sensor-type safety system as the pump is dry and any mechanical strain generated in the pump is very light.

The pump should consequently be started up after first checking that the intake and discharge ports are not obstructed.

Nonetheless, dry running is not normal pump operation and if it does not constitute an ignition hazard directly, it leads to premature wear of the pump's hose. This type of operation is to be limited as much as possible.

[a] See overall dimensions in the pump's Instructions.

6. DISCHARGE PRESSURE RELIEF

Any overshoot of the maximum allowable pressures is considered to be abnormal pump / pumping unit operation which can lead to surface temperatures in excess of the pump / pumping unit temperature classification, as well as risks to the user and/or the installation.

To avoid these risks, the user must equip the pump / pumping unit with a pressure limiter with a threshold chosen according to the lowest allowable maximum pressure for the circuit components (including head losses).

6.1 Protection by pressure switch

Protection may be provided by installing a pressure switch that stops the equipment in the event of overpressure.

This device must conform to current regulations and standards especially with regulation related to electric equipment in explosive atmosphere (EN 50495…). The choice of its characteristics (temperature resistance, category, etc.) must guarantee a level of protection at least equal to that of the pump / pumping unit.

6.2 Protection by external relief valve

Over-pressure protection can be provided by installing an external relief valve with return to the tank / suction pipe.

In this case, the user must ensure that the circuit complies with the recommendations of § CLOSED-CIRCUIT OPERATION.

We also recommend checking that heating on the relief valve remains compatible with the temperature classification of the zone in which it is installed.

7. CONTROLLING THE ROTATION SPEED

Any overshoot of the maximum allowable speed is considered to be abnormal pump operation which can lead to surface temperatures in excess of the pump temperature classification, as well as risks to the user and / or the installation.

At first start-up or after any modification to the pumping unit or its settings, the pump rotation speed must be checked to ensure that it remains below or equal to that defined for the application.

8. CLOSED-CIRCUIT OPERATION

Closed-circuit operation with small volumes of pumped product can lead to significant heating of the pumped product.

The user must check that the recirculation circuit is large enough to ensure that the pumped product temperature rise remains below the temperature limits of all circuit elements.

This check can for example be carried out by installing a temperature sensor controlling shutdown of the installation if the maximum allowable values are exceeded.

This equipment must conform to current regulations and standards especially with regulation related to electric equipment in explosive atmosphere (EN 50495…). The choice of its characteristics (temperature resistance, category, etc.) must guarantee a level of protection at least equal to that required by the area where it will be installed.

9. SOLVENTS NOT COMPATIBLE WITH SEALS

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

10. RISKS OF EXOTHERMIC REACTION

10.1 Between various products pumped

When the pump / pumping unit is operated successively on different products, the user must make the necessary arrangements to avoid heating through an exothermic reaction between the various products pumped.

10.2 Between lubricant and product pumped

In case of broken hose, pumped product may come in contact with pump lubricant.

User must take adequate precautions to avoid temperature rise by exothermic reaction between lubricant and pumped product.

11. PROTECTION AGAINST FOREIGN BODIES

The user will take the necessary steps to protect the installation against ingress of any foreign bodies that could damage the pump / pumping unit, for example by ensuring that neither the pumped product nor the piping contain foreign bodies liable to damage the pump / pumping unit, or by installing an appropriate suction filter.

12. CHECKING THE LUBRICANT LEVEL IN THE PUMP

An insufficient level of lubricant in the pump can produce surface temperatures greater than the temperature limit corresponding to the pump's temperature classification T.

The level of lubricant in the pump should be checked (with the pump turned off) approximately every 500 hours of operation.

13. POSSIBLE LEAKS OF THE PUMPED PRODUCT

Possible leaks of liquid via the pump 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.

A broken hose (the hose is a wear part) can result in heavy leakage of the liquid being pumped. A broken-hose detector can be used to detect these leaks and stop the pump if necessary.

14. PAINT

14.1 Pumping section

If the painting on the pumps is retouched, the user must make sure that the recommendations of standard EN 13463-1 are being complied with regard to non-conductive coatings on metal surfaces(total thickness of non-conductive coating not exceeding 2 mm for group IIA and IIB gas and vapours or 0,2 mm in the case of group IIC gas and vapours).

To do this, it may be necessary to sand the pump before doing any paint retouches.

14.2 Other elements of the pump

During any possible paint touch-up operation of the pumping unit's elements, the user must ensure compliance with the recommendations contained in the specific instructions from the equipment manufacturers.

15. DUST

To prevent any risk of dust igniting, the user must check that the layer of dust on the pump / pumping unit is no more than 5 mm thick.

16. PUMP DRIVE

16.1 Alignment of the pump and drive

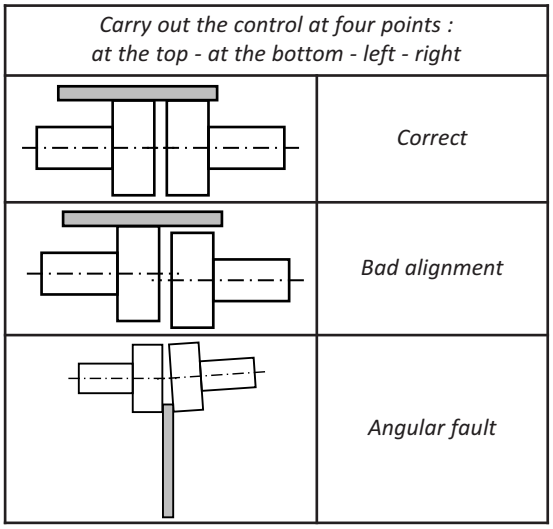
To carry out alignment of the pump and drive, use a perfectly straight steel rule to control misalignment and feeler gauges for angular misalignment.

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.

An alignment control should be performed every 6 months.

The following three figures show the various faults that could be encountered. The allowable misalignment values are stated in the Instructions supplied with the coupling.



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

16.2 Elastic coupling

ATEX certified elastic coupling must be used. This coupling must have a level of protection equivalent or better than that of the pumping unit. For mounting the elastic coupling, follow the indications in the specific Instructions of the equipment manufacturer.

16.3 Electric installation of the pump motor or gear motor

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

Follow the indications in the specific Instructions of the equipment manufacturer to connect the motor to the mains supply.

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

Motors must be protected by circuit breakers and fuses provided in the manufacturer's Instructions.

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.

16.4 ATEX characteristics of the pump motor or gear motor

The motor or gear motor used must conform to current regulations and standards especially with regulation related to electric equipment in explosive atmosphere.

The level of protection selected has to be equal to or greater than that of the pumping unit. For instructions on maintenance of motor and gear motor, follow the indications in the specific Instructions of the equipment manufacturer.

17. EARTHING CONNECTION

To avoid the risk of ignition due to electrostatic discharge, the pump and the pumping unit must be grounded.

Particular attention should be given to earthing connection for the pumping units mobile or mounted on truck.

18. DIRECT SUNLIGHT EXPOSURE

A direct exposure of the pump / pumping unit to the radiance of the sun is likely to increase the temperature of their surface above ambient temperature.

As a result of fact, the User must take sure that the pump / pumping unit is not displayed in the direct radiance of the sun or the temperature of the external surfaces of the pump is compatible with its level of protection.

19. PUMP MARKING

The marking of the Abaque HD pumps is as follows :

MOUVEX F89 AUXERRE
Ppe HD ...

II 2 G or 2 G cb IIB T4
or
II 3 G or 3 G cb IIB T4

Serial no.
Year of manufacture
X

The marking of the Abaque HD pumping units is as follows :

MOUVEX F89 AUXERRE
Gpe HD ...

II 2 G or 2 G cb IIB T4
or
II 3 G or 3 G cb IIB T4

Serial no.
Year of manufacture
X

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