

Addition to the user manual for Certa pumps with ATEX certification and temperature monitoring



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1 Addition to the user manual for Certa and Certa Plus pumps with ATEX certification

The Watson-Marlow MasoSine Certa and Certa Plus pumps, which find their application in potentially explosive mixtures, are factory- equipped. The pump- specific ATEX designation can be found on the nameplate of the pump.

1.1 Bearings maintenance

Please refer to the intervals in hours specified in the operating instructions after which the bearings must be replaced.

1.2 Safety signs

The following ATEX symbols are given as an example only. The specific ATEX classification is indicated on the nameplate and the type examination certificate of the respective pump.

Example



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X



Grounding symbol

1.3 Device classification

The pumps are designed exclusively for use above ground, and are therefore related to device group II - application area "other dust. - or gas. - Ex areas "!

1.4 Zonation

The Watson-Marlow MasoSine Certa and Certa Plus pumps can be used in Zone 1/21 of explosive areas. This corresponds to category 2G / D.



The use of the pump (s) in Zone 0 is therefore expressly prohibited!

1.5 Classification of Ex-atmospheres

Ex-atmospheres are differentiated into gas and dust. The designation abbreviates the atmosphere to G (gas) and D (dust).



The Watson-Marlow MasoSine Certa and Certa Plus pumps are designed only for Ex-atmosphere G (gas) or D (dust)!

1.6 Ignition protection type

In accordance with the standard for "non- electrical equipment" for use in potentially explosive atmospheres" EN ISO 80079- 37, the type of protection "c" for constructive safety applies to Watson-Marlow MasoSine Certa and Certa Plus pumps.

1.7 Temperature classes

Watson-Marlow MasoSine Certa and Certa Plus pumps with ATEX certification are only suitable for product temperatures up to **max. 94°C/201°F**:

Pump:Certa 100 / Certa Plus 100

Gate-Material: WRP



II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PA



II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: MWR




II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: PT

 II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PN LSG


 II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Pump:Certa 200 / Certa Plus 200


Gate-Material: WRP

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: PA

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: MWR

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: PT

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PN LSG


 II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Pump:Certa 250 / Certa Plus 250


Gate-Material: WRP

 II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: PA

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: MWR

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X


Gate-Material: PT

 II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PN LSG


 II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

Pump:Certa 300 / Certa Plus 300


Gate-Material: WRP

 II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PA

 II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X

 II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: MWR



II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PT



II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PN LSG



II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Pump:Certa 400 / Certa Plus 400

Gate-Material: WRP



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PA



II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: MWR



II 2G Ex h IIB T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIB T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PT



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PN LSG



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Pump:Certa 500 / Certa 600

Gate-Material: WRP



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PA



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Gate-Material: PN LSG



II 2G Ex h IIA T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIA T4 Gb X / II 2D Ex h IIIC T135°C Db X

Pump:Certa 800

Gate-Material: WRP



II 2G Ex h IIC T4 Gb X / II 2G Ex h IIC T4 Gb X



II 2G Ex h IIC T4 Gb X / II 2D Ex h IIIC T135°C Db X

The specific ATEX classification is given on the type examination certificate and on the nameplate of the respective pump.

1.8 Possible pump orientations

With the possible nozzle positions 02-04 and 08-10, there is the possibility of creating an explosive atmosphere in the pump head, since the pump can be completely emptied.



A pump orientation in which the pump can completely empty itself should be avoided in Ex-atmospheres.

1.9 Technical data

The limit values of the pump (max speed, max pressure) are indicated on the nameplate. These limits must never be exceeded! This takes especially effect when using a frequency converter.

If the pump is supplied without a drive, the following values apply to the temperatures:

	C100 / P100	C200 / P200	C250 / P250	C300 / P300	C400 / P400	C500	C600	C800
Max-Product temperature	94°C / 201 F	94°C / 201 F	94°C / 201 F	94°C / 201 F	94°C / 201 F	94°C / 201 F	94°C / 201 F	94°C / 201 F
Ambient temperature	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)	-12°C (10.4 F) to +40°C (104 F)

1.10 Grounding of the pump

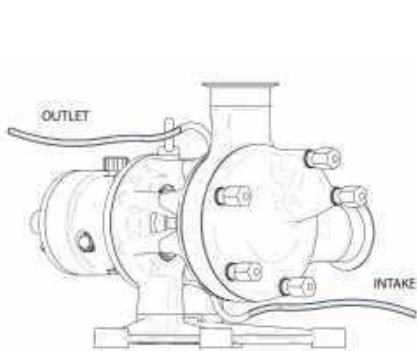
Certa and Certa Plus pumps for explosive atmospheres are equipped with a grounding screw. Ground the pump with a grounding wire that is fixed in place. In addition to grounding the pump, a grounding must also be made on the drive! Without grounding the drive, the entire pump set must not be put into operation. This is especially important in hazardous areas.



In addition to the pump, the drive and the baseplate must be grounded. If the drive and baseplate are not grounded, do not operate the pump.

1.11 Flushing the seal system

In order to prevent the formation of an explosive atmosphere in the flushing area behind the sealing system, a flush must be connected to the mechanical sealing system of the pump.



dynamic flushing



static flushing

It is possible to connect a dynamic or a static flush to the Watson-Marlow MasoSine Certa and Certa Plus pumps. Further information can be found in the operating manual of the pump



A flush must be connected to the mechanical sealing system of the pump. A suitable flushing / quenching medium should be selected.

1.12 Material properties

Plastic parts installed in the pump are more sensitive to temperature changes than stainless steel parts. Therefore, the given max. product temperature (T_m) for which the pump is designed, must not be exceeded. At temperatures above 94°C (e.g. steam sterilisation) consult Watson-Marlow MasoSine.

1.13 Pressure conditions

Valves in the process flow must be opened before the pump operates. Users are advised to fit a pressure relief device between the pump and any valve on the discharge side of the pump to protect against damage caused by accidental operation with the discharge valve closed.

1.14 Temperature conditions

A temperature monitor on the discharge nozzle of the pump is to be installed to prevent a temperature increase over the temperature class, for example due to compression of the product.

1.15 Maintenance and repair

- For safety reasons, the pump may only be filled outside the Ex area.
- All tools must be ATEX-suitable.
- Keep the pump set dust-free to prevent dust from smoldering.
- Flushing channels in the bearing frame must always be free of blockages and cleaned if necessary.

1.16 Cleaning the pump



Use only cleaning agents suitable for the application to clean the pump, as this may result in an uncontrollable explosive atmosphere.

1.17 Products

Carbon disulfide compounds and chemicals with an ignition temperature below 135°C must not be pumped. Only pump liquids with high conductivity $>10,000$ pS/m. Alternatively inerting is required.

1.18 Coupling

If the pump is used in a potentially explosive atmosphere, only an elastic, interlocking coupling with ATEX approval must be used between the pump and the drive. Chains, gear belts, V-belts or similar devices that bring radial forces to the bearings must not be used.

1.19 Drive

Reduction gears in the drive chain and the control units must be ATEX certified. Internal combustion engines may under no circumstances be used.

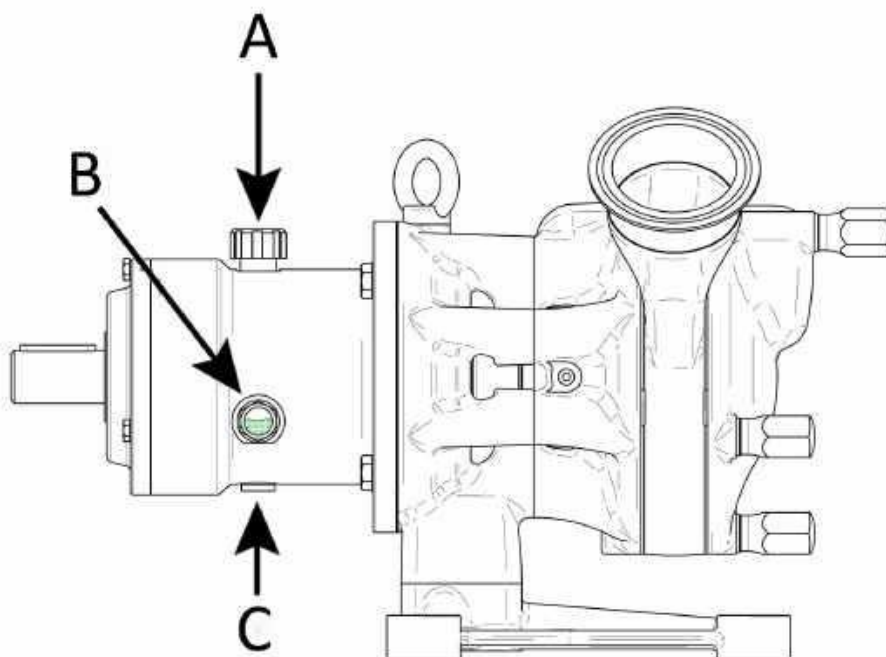
Install frequency inverters outside potentially explosive atmospheres or with the appropriate ATEX certification. In any case, the frequency converter must have the characteristics required for operation in potentially explosive atmospheres: temperature monitoring, speed limiters, etc.

1.20 Oil change



The oil sight glass (B) on the bearing housing must be checked daily before using the pump for damage and sufficient oil in the bearing block. The oil should reach approximately to the middle of the sight glass.

- Make sure that the drain plug C is present and tightened.
- Unscrew the vent valve A and fill the support unit with suitable oil up to the mark (see note below).
- Close vent valve A.
- Check oil level at sight glass B. The oil level must not fall below the middle line of the sight glass.



Note: If the pump is used under ATEX conditions, in place of the oil sight glass, a plug can be screwed in.

Note: New pumps are factory- filled with Klüberoil 4 UH 1- 220 N for the food and pharmaceutical industries, suitable for process temperatures between -30°C (-22F) and 120°C (248F).



If the pump is intended for use in an area to ATEX regulations, only this oil must be used.

For information on filling volumes of the pump, please refer to the operating instructions.

Note: Waste oil must be disposed of in accordance with local regulations.

Note: The oil must be changed at least once a year.

1.21 Protection method "b" and Temperature classes

The pump version with ignition source protection "b" is equipped with a single internal mechanical seal and a resistance temperature sensor connected to the static mechanical seal, which has the function of monitoring the seal temperature to prevent overheating due to dry running or insufficient lubrication. The temperature class of the pump depends on the temperature of the pumped liquid, and on the setting of the temperature monitor connected to the mechanical seal, according to the values given in Table 3 below. The mechanical seal temperature sensor is a type "K"; it must be connected to a safety device or PLC for continuous monitoring of the seal temperature, capable of stopping the pump if the seal temperature exceeds the maximum value given in Table 3, depending on the temperature class:

Temperature Class Gas / Dust	Max Temp. product	Probe Intervention Temperature
T4 – 135°C	94°C	105°C

Table 3

A measuring and protection system type "b1" according to EN ISO 80079-37:2016 is suitable to fulfil the safety requirements of EPL Gb.

The protection system shall stop the pump within 15 s when the seal temperature reaches the maximum value of the sensor engagement (Table 3).

The protection system "b1" must be validated before use and tested annually.

The protection system must comply with level SIL 1 according to IEC 61508-1 or an equivalent level according to standard ISO 13849.

If the pump is stopped automatically by the protection system, spontaneous restarting of the pump must be prevented.