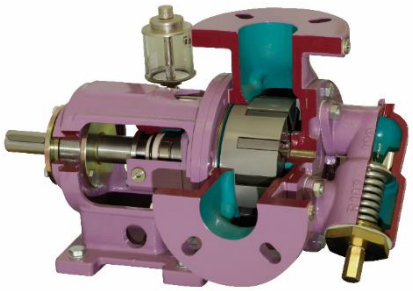
Info for ATEX - R internal gear pumps



To avoid risk of explosions in an Ex-Zone, when you mount a **R** internal gear pump you have to check the following information:

1. Ex – Zone

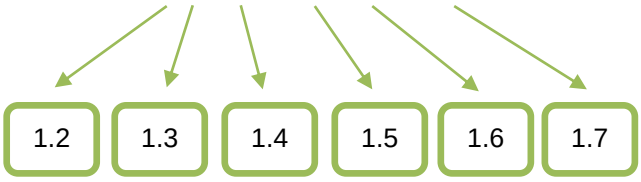
1.1 Pumps are marked as follows:

with code +2A for equipment of category II 2G Ex h IIB T4… T1 Gb

with code +2AC for equipment of category II 2G Ex h IIC T4… T1 Gb

with code +3A for equipment of category II 3G Ex h IIB T4… T1 Gc

with code +3AC for equipment of category II 3G Ex h IIC T4… T1 Gc



1.2 **Group**:

⇒ II: non-mining use

1.3 **Category**:

⇒ 2

⇒ G = high gas safety (Zone 1)

⇒ 3G = normal gas safety (Zone 2)

1.4 **Protection**:

⇒ Ex h = construction protection

1.5 **Class of gas explosion:**

⇒ IIB = IIA and IIB permitted gases

⇒ IIC = IIA, IIB and IIC permitted gases

1.6 **Class of temperature:**

⇒ T4… T1 = All temperature classes are allowed from T4 (up to 135°C), T3 (up to 200°C), T2 (up to 300°C) and T1 (up to 450°C)

1.7 **EPL** “Equipment Protection Level” classification according to EN ISO 80079-36:

⇒ Gb = Monitoring of potential ignition sources during normal operation and expected failures (Zone 1)

⇒ Gc = Monitoring of potential ignition sources during normal operation. (Zone 2)

2. ATEX requirements

2.1 Pumps with a mechanical seal: It might leak. If the pumped liquid is flammable, the area next to the pump must be declared as Zone 1 (category 2).

2.2 Pumps with a double balanced double mechanical seal, type 6 ..: A standard lubrication system (+O..) must be present or an API 51, 52 or 53 type quench system must be installed.

2.3 Pumps with a cartridge seal: A quench system must be installed according to the indications of the cartridge seal manufacturer.

2.4 Pumps with a packing set: These have a constant fluid outflow. Should the pumped liquid cause an ATEX zone, it is forbidden to use the pump with a packing set.

2.5 The pump must be connected to earth. As an option, grounding is available on the base plate already connected to the motor and the pump. Therefore, grounding on the base plate is sufficient as the sole grounding.

2.6 If the pump is used with IIC vapor explosion class, there is a danger of electrostatic charging if the coating thickness of the equipment is greater than 0.2 mm, or greater than 2 mm if used in class IIB.

2.7 The pump may get blocked due to the presence of solid parts. It is therefore necessary to use a motor protection switch (PTC if with inverter).

2.8 Use the pump only within the parameters indicated in the performance curves, the technical data sheet and the instructions. The product must never be pumped to the limits of vaporization, crystallization, polymerization and solidification. If the pump is to be used for purposes other than that requested at the time of ordering (and for which the pump has been produced), please check its compatibility and ask the pump manufacturer for authorization for new use.

2.9 The pump material must be compatible with the pumped liquid. The pump manufacturer is not responsible for the inappropriate use of the pumped liquid.

2.10 The operating temperature of the pump must not exceed the values shown below. If there is the possibility that the liquid to be pumped can reach this temperature, the pump must not be put into operation. If necessary, use a temperature sensor. Upon request, the pump manufacturer may provide additional protection measures. This must be indicated in the technical sheet.

Class of temperature DIN EN ISO 80079-31	Classification of maximum working temperature * with		
	Packing set seal °C	Mechanical seal °C	Magnetic seal °C
T1	360	360	360
T2	230	240	240
T3	130	160	160
T4	65	105	105

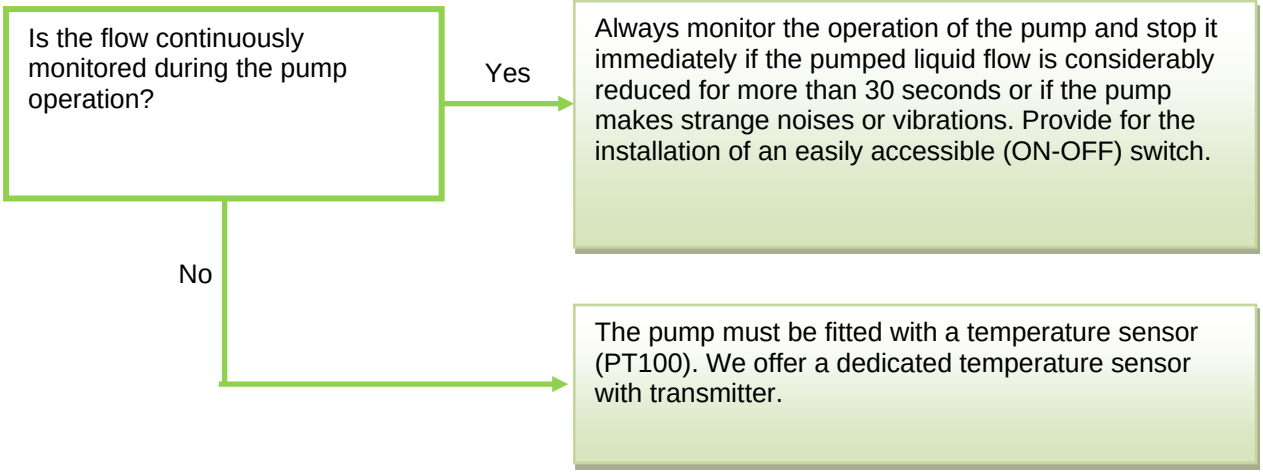
CAUTION	This is not the pump limit temperature. To find out the pump limit temperature, see the information in the technical data sheet

2.11 The internal gear R pump is a volumetric pump. It is not possible to regulate the flow rate by closing the delivery or intake, or by means of a pressure regulator. The flow rate can be adjusted only by varying the rotation speed or by a by-pass line.

2.12 There is no zone inside the pump because there is always product in the pump casing. This product is necessary to lubricate the pump (against dry running) and to allow self-priming.

2.13 The use of the pump with closed suction and/or discharge pipes/hoses is prohibited. The owner of the pump must take all necessary precautions to prevent this from happening. To protect the pump from a closed unloading line the (+Y) safety valve can be used. As an alternative it is possible to use a sufficiently large external by-pass line, which is always active and which preferably returns to the suction reservoir.

2.14 For pumps that are used in Zone 1 (+2A and +2AC) following instruction is mandatory. For pumps that are used in Zone 2, it is not mandatory but we recommend it as well. To avoid running dry or the prolonged use of the safety valve, proceed as follows:



3. Temperature sensor PT100

3.1 The sensor monitors the temperature increases of the pumped fluid. This means that a problem in the delivery pipe/hose or abnormal wear can be controlled by increasing the temperature. When the temperature limit is exceeded, the sensor disconnects the supply of energy to the pump which then stops working.

3.2 The shut-off device and the relative electrical connections are not included in the supply of the pump, and must be carried out by a qualified technician, in compliance with the EN ISO 80079-37 b1-type system standard.

3.3 The pump manufacturer supplies the sensor (PT100) with a built-in transmitter. The transmitter is set according to the following parameters:

Temperature range	Output signal	Current
0-150°C	4 - 20 mA, linear	8 - 30 VDC

3.4 The sensor assembly must be set to automatically switch the pump off within 5 seconds of exceeding the limit temperature.

3.5 In the technical data sheet, different values can be specifically permitted if necessary.