

Supplement to the Operating Instructions

”Metering pump and Metering pump unit”

For the fulfillment of the guideline 94/ 9/ EC (ATEX) for metering pumps.

In order to be able to exclude the risk of ignition in an explosion-endangered atmosphere, the following items must be adhered to under all circumstances.

1. It is imperative to observe the Operating Instructions “Metering pump and metering pump unit”.
2. Only operate the pump within the limits given in the pump data sheet. The pump data sheet is enclosed.
3. All works required on explosion-proof lines, in particular planning, transport, assembly, repair, mounting, start-up, maintenance and installation must be carried out by the Barmag Pump Service Department or by own trained and qualified personnel.
Qualified personnel in the sense of the safety requirements given in the present document are persons that are authorized to start up, connect to ground, and mark devices, systems, and circuits in accordance with the standards prevailing in safety engineering.
During training, they shall learn about the different types of protection and methods of installation, relevant rules and regulations, as well as about general basics as to classification of areas. Adequate further education or training of the personnel is to be effected at regular intervals. The respective experience as well as the required trainings shall be proved by supporting documents. ☒Barmag offers pump service equipment for inspection, maintenance, and repair work. If the operating company effects inspection, maintenance, and repair works with own personnel, Barmag offers corresponding training for this group of people. Furthermore, you can order Service Books for each pump type from Barmag. Alterations of explosion-proof lines are prohibited as such alterations may adversely affect explosion proofness.
4. Do not operate the pump without pumping medium. The pump must always be completely filled with pumping medium. Provide the necessary monitoring functions (e.g. level monitoring of the tank or pressure measurement in the pump entry).
5. The sealing chambers of those pumps which are prepared for an operation with sealing liquid always have to be topped up with sealing liquid. At pumps that are not prepared for an operation with sealing liquid, the screw plug of the sealing chamber has to be removed.
6. The pumping media used must have good lubricating characteristics and must not agglomerate. The viscosity of the pumping medium may not exceed 50 Pas. Particles contained in the pumping medium may not be larger than 5 µm.
7. It must be ensured by appropriate measures (e.g. by filters or by demands on the pumping media suppliers) that no particles larger than 5 µm and no foreign matters will enter into the pump.
8. a. The maximum permissible ambient temperature for metering pumps is 60 °C.
b. The maximum permissible ambient temperature for **Barmag metering units (pump with drive)** is 40 °C.

9.
 - a. The maximum allowed operating temperature (pump, pumping medium, and heating media if existing) is 140 °C for pumps of temperature class T3.
 - b. The maximum allowed operating temperature (pump, pumping medium, and heating media if existing) is 60 °C for pumps of temperature class T4.
 - c. The maximum allowed operating temperature (pump, pumping medium, and heating media if existing) is 40 °C for **Barmag metering units (pump with drive)**.
Higher temperatures are allowed only if Barmag has approved this in writing.
10. The maximum rotational speed is 200 rpm.
11. Measurements have to be made to ensure that volumetric efficiency (ratio of actual and theoretical discharge) is at least 80 % during every operating condition.
12. If one of the demands according to items 4 – 9 cannot be met, the surface temperature of the pump must be observed during operation.
For this purpose, contact Barmag.
13. Stuffing box packings must only be tightened with the specified torque (see the operating instructions for the metering pump and metering pump unit in Chapter 7.1).
If the value is exceeded, there may be an undue temperature rise on the pump.
14. During operation, the temperature of the stuffing box packing must be monitored. For that purpose, contact Barmag.
15. In order to avoid the acting of undue radial forces onto the pump drive shaft, the pump drive shaft must be brought into alignment with the drive shaft.
16. When installing a flexible coupling between the pump and the drive, the necessary fitting dimensions of the pump have to be taken into consideration.
17. Driving units have to be mounted to a stable frame or something similar.
18. The metering pump and the metering pump unit have to be grounded.
(Pump grounding, e.g. via the pump fastening screws, motor grounding via grounding screws)
The protection cap of the pump metering unit has to be electrically conductive and be included in equipotential bonding.
19. The pumps must not be exposed to ultrasonic waves and ionizing radiation.
In the area of the pump connections, no adiabatic compression is allowed and no compression waves must be guided into the pump.
20. The pumps must not be subjected to any shocks.
21. In order to avoid electrostatic charge of lacquered parts (e.g. block holders), these parts must only be cleaned with dampened cloth.
22. All pipe connections and the shaft sealing have to be checked for leakages at regular intervals. If required, the line has to be stopped and leakages have to be removed (the check intervals depend on the load, at least once per month).
23. The used pumping / sealing / heating media must not chemically corrode the pump material. Contact Barmag if required!



Information!

The maximum surface temperatures are stated on the pump and in the declaration of conformity.

24. For selection of the pumping medium, the sealing medium, and possibly the heating medium, the maximum surface temperature has to be taken into consideration. The ignition temperature of the pumping medium, the sealing medium, and if existing the heating medium must exceed the maximum surface temperature of the pump by at least 50 °C.
25. If pumping and sealing media with exothermic reactions upon contact with air are used, they must not reach a temperature higher than the maximum surface temperature of the pump - neither during the chemical reaction nor afterwards. In this connection, the maximum allowed ambient temperature and operating temperature have to be taken into consideration.
26. Only use Barmag original parts.
27. Pumps with magnetic coupling
- 27.1 Secure all relevant bolts (see Fig. 1 and Fig. 2) against self-release, e. g. with Loctite 243.
- 27.2 The outside rotor (1) must never slide at the separating can (2) (see Fig. 3).
This is the reason why pump and gear unit have to be aligned exactly in radial direction . Therefore, we do recommend the use of Barmag drives.
- 27.3 The outside rotor (1) of the magnetic coupling is to be aligned axially with the inside rotor and must never slide at the separating can. Contact Barmag if required!
- 27.4 When pushing the pump into the outside rotor, strong magnetic forces attract the pump. Therefore, carefully push in the pump. You have to avoid that pieces strike together because this could damage the magnet, thus, causing sliding.
In case of the use of Barmag drives, appropriate mounting bars are to be used for pushing in. These can be ordered from Barmag.
Regarding the use of such mounting bars, please contact Barmag.
In any case adhere to the operating instructions.
- 27.5 Having mounted the magnetic coupling, it must be ensured by rotating the outside magnets that the magnet does not slide. During operation pay attention to sliding noises and vibrations. If necessary, stop the drive immediately.
- 27.6 The sealing chamber as well as the space of the magnetic coupling have to be filled with sealing liquid completely.
- 27.7 The maximum permissible viscosity of the sealing medium of the magnetic coupling is 130 cSt.
- 27.8 The outside- and inside rotor must operate at the same speed (rpm). Slip must not occur because this would lead to improper temperature rise.
This is to be monitored e.g. by control of the flow of discharge.
28. Maintenance intervals
- Pumps:** 4,000 operating hours, after 12 months at the latest.
- Curved teeth coupling:** First inspection after 2,000 operating hours, after 3 months at the latest. ☐ If the first check shows no or only insignificant wear:
4,000 operating hours, after 12 months at the latest.
- Magnetic coupling:** Maintenance-free if mounted and used in accordance with regulations.
- Gear motor:** Visual inspection: every month; close inspection every 500 operating hours, after 3 months at the latest. Detailed inspection: every 3,000 operating hours, after 6 months at the latest.

Bild 1

Fig. 1

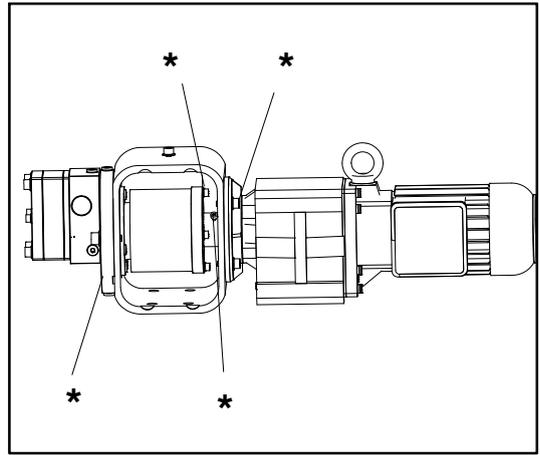


Bild 2

Fig. 2

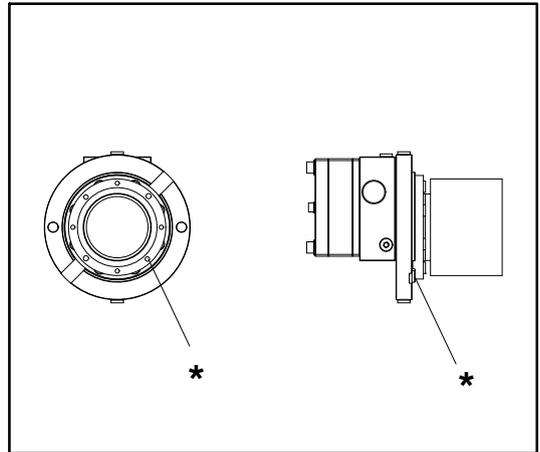


Bild 3

Fig. 3

