**Metering pump features diagram**

**WARNING! When programming the pump do not forget that, due to the pressure change within the system, you must refer to the pump performance operating diagram when changing the flow rate, in order to increase or decrease the dosing amount.**

Some flow rate changes might occur for reasons which are not related to the metering pump operation (high density, viscosity, presence of mud etc.)

Technical features of pumping systems with maximum flow rate might vary of +/- 5%. This should be taken into account when choosing the pump type.

**WARNING! Any repair or replacement of the appliance parts should be only performed by trained personnel. The company does not assume any responsibility in case of violation of this rule.**

**WARRANTY: 2 year, except for the parts subject to wear and tear, i.e.: valves, nipple joints, nuts, pipe joints, filters and injection valves.**
**The improper use of the equipment invalidates the above-written warranty. The delivery of the products under warranty is to be paid by the customer.**

## 3. Metering pump assembly and operating rules

- Before activation, check the electric parameters compatibility and the electric features of the pump. Excess voltage may damage the pump power grid.
- The metering pump power cable is connected through a grounded plug (European standard) or a switch which disconnects both connections.
- When using the three-phase power voltage connection, the pump must stay between phase and neutral. Pump connection between phase and ground is not possible.
- The power socket should be installed above the pipes in order to avoid contact with the condensation.
- Electric wiring must be in compliance with local regulations.

- The pump must be installed in a room with ambient temperature not higher than 40 °C and relative humidity not higher than 90%. The minimum temperature for the pump depends on the fluid dosing properties (which must stay in liquid form). Pump degree of protection - IP65.
- If the outlet pipe is exposed to direct sunlight (when the pump is used outside), it is recommended to use a black pipe, which is more resistant to UV light;
- The pump should be installed so that inspection and precautionary maintenance operations can be performed easily. The pump should be secured firmly on the assembling surface in order to avoid vibrations.
- Place the metering pump upright, the suction line valve at the bottom and the outlet line valve at the top. An inclination of the vertical axis of 45° is allowed in both directions. It is not possible to place the metering pump delivering head horizontally!

- The pumps are equipped with a 2 meter suction PVC tube and PE discharge pipe (standard length); longer pipes are not recommended, especially in the suction line. If necessary, longer pipes may be used. However, specifications should be checked in advance (material, pressure resistance, diameter, inside thickness). Suction line recommended length: no longer than 1.3 meters.
- Avoid twisting suction and discharge pipes.
- When connecting the pressurisation pipe, make sure it does not rub against any hard object while the pump is in operation.
- In order to reduce the risk of damages to the hydraulic line of the metering pump, the suction filter should be installed 5-10 cm above the bottom of the respective tank.
- The reagent dosing, the positioning of the fluid dosing tank and the injection point must be checked regularly.
- If dosing volatile liquids with corrosive smoke, the pump must be assembled directly above the tank of the dosing fluid.
- Before activating the pump for dosing in the outlet pipes, make sure that the pressure is below the pump′s maximum.

- All the pumps were pre-tested with water. When performing the dosing of the chemical products which reacts with water (for example, sulphuric acid), you should dry the hydraulic line′s internal parts completely.

- After about 800 operation hours, you should check the nuts and the pump discharge suction connections with a torque wrench (torque 4 N * m).
- Always disconnect the power before repairs or maintenance on the pump.
- Periodically check the reagent level in the tank to avoid the pump operating without liquid. It would not damage the pump, but it would negatively interfere with the process due to the lack of chemical product.
- Check the pump functioning at least once every 3 months. Make sure that all the screws and seals are tight. Increase the frequency of the checks when the pump is used for the dosing of corrosive liquids. Also check:
    1. If the leds light up correctly.
    2. The concentration of the reagent supplied in the line. The reduction of this concentration might be due to the wear of a valve. In this case, replacement or cleaning and unblocking of the filter is needed.
- It is recommended to periodically clean the hydraulic parts (valves and filter). The frequency of the cleaning and the type of cleanser depends on the application and the dosing chemical product.

**Pump cleaning recommendations for the dosing of sodium hypochlorite (Most frequent case)**

1. Disconnect the pump from the power grid.
2. Disconnect the injection line.
3. Remove the suction pipe (with the filter) from the reagent tank and dip it in clean water.
4. Activate and operate the metering pump with water for 5 to 10 minutes.
5. Turn off the pump, dip the filter in a hydrochloric acid solution and wait until the acid dissolves the calcareous deposits.
6. Activate and operate the pump with hydrochloric acid for 5 minutes in recirculation mode.
7. Rinse the metering pump with water, as explained in paragraphs 3 and 4.
8. If necessary, the injection valve can be washed with hydrochloric acid.

## 4. Installation and activation of the metering pump.

1. Place the pump on a wall or bracket and fasten with the appropriate screws for the pump mounting holes.
2. Before connecting the pump injection, fill the metering pump with chemical product. In case of complications, the liquid can be drawn from the pump through a normal syringe while the pump is operating with maximum frequency.
3. Tighten the injection valve using a ½″ or 3/8″ thread. The injection valve also works as a check valve.
4. When using the pump in proportional mode, use the pulse counter (analogue sensor) and connect the cable to the appropriate pump connector.
5. If a floating level sensor is present along with the flow sensor measuring of the dosing solution (optional), the cables should be connected to the appropriate terminals on the pump. The floating level sensor of the solution must be placed on the upper edge of the filter on the suction line.
6. Connect the metering pump for 220 V 50 Hz powering