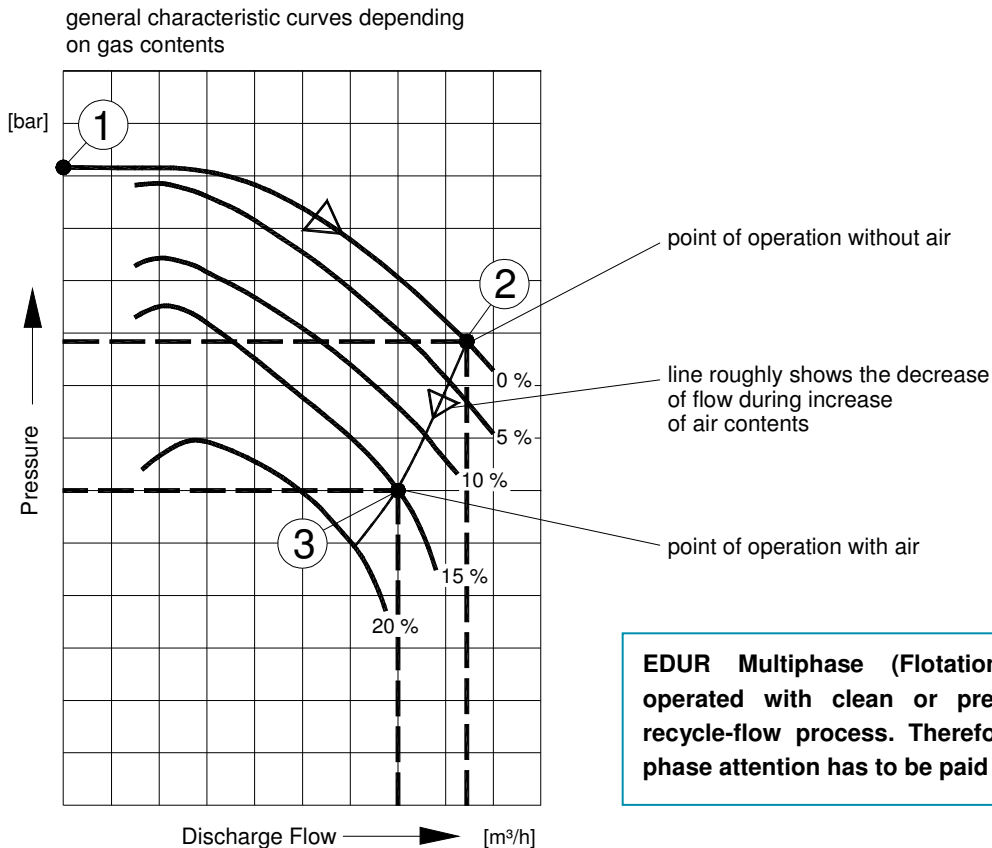


- 1 Throttle valve for water flow at pump inlet
- 2 Check valve for air suction (atmospheric air)
- 3 Air flow measuring device with needle valve
- 4 Inlet side manometer (vacuum gauge)
- 5 EDUR Multiphase (flotation) pump
- 6 Pressure side manometer
- 7 Solution line (may not apply for simple gassing)
- (8) Bubble separation (if required)
- 9 Pressure relief valve

### General Advices for Installation of EDUR Multiphase (Flotation) Pump

- realize inflow conditions at pump inlet side
- select throttle valve (1) and pressure relief valve (9) with good dosing features
- gas supply line guidance above highest liquid-level in order to avoid that water will attain the air flow measuring device (3)
- select air flow measuring device (3) with suitable metering range and with needle valve for optimal adjustment of the air flow
- design inflow-pipe for the range of air inlet till pump inlet flange in a short and horizontal way in order to ensure that always a constant water-air proportion arrives at the pump
- as solution line for dissolved air flotation a pipe line with corresponding larger nominal width will be suitable in order to achieve a dwell period of approx. 1 min. until relaxation. If required, surplus air can be led away by means of a bubble separation (8) at highest position before relaxation (pipe line with very small nominal width).



**EDUR Multiphase (Flotation) Pumps are being operated with clean or pre-cleaned water in the recycle-flow process. Therefore also during starting phase attention has to be paid to the water cleanness !**

1. Initially pump has to be put into operation according to para 5 of the known operating instructions for pure water supply (without air) and to check the maximum pump pressure as per characteristic curve – point 1 (by means of short-time closing of the pressure relief valve at the pressure side – pos. 9 – while the bubble separation pipe is closed)
2. Open the pressure relief valve so far until the required operation pressure for pure water supply has been reached – point 2. At the same time it has to be considered that the flow rate for pure water supply has to be approx. 10...20 % higher than for the supply of water-gas mixtures
3. The water flow has to be adjusted slightly at the inlet side by means of a throttle valve (Pos. 1) till a pressure (vacuum) of approx. -0,2...-0,3 bar will be achieved at the suction side manometer (Pos. 4) in front of the pump
4. Open the air supply at the throttle valve (Pos. 2) and adjust required air flow at needle valve (Pos. 3). The operating pressure at the pressure side manometer (Pos. 6) in doing so decreases slightly to point 3 (where necessary re-adjust the vacuum at the pump inlet side in case that the required air flow will not be sucked in from the atmospheric air). In case that the delivery stops the air flow has to be reduced accordingly.

In order to avoid large bubbles the gas contents must not exceed the physically possible solubility. After the pressure relaxation (behind pressure relief valve Pos. 9) a very fine white water effect is being generated this way.

Other gases also can be charged considering the solubility.

Differing methods also will be possible after consulting.