Analysis of condensate
An analysis of the condensate from the steam gives an idea of its cleanness as regards other substances. These should not occur in concentrations higher than the values below, in mg/kg condensate.

Evaporation residues 1.0 mg/l (ppm), of which:

Silicon in the form of SiO2	0.1 mg/kg (ppm)
Iron	0.1 mg/kg (ppm)
Cadmium	0.005 mg/kg (ppm)
Lead	0.05 mg/kg (ppm)
Other heavy metals	0.1 mg/kg (ppm)
Chlorides	0.1 mg/kg (ppm)
Phosphates	0.1 mg/kg (ppm)
Recommended pH	5-7
Suitable conductivity	<3 S/cm [at 20°C (68 °F)]
Suitable hardness	0.1 dH (1.8 ppm)

Pressure
1. For information about the steam pressure, see the Technical Data Getinge SOLSUS 66.

WARNING
If the steam supply line pressure exceeds the steam pressure stated in Connection data, the user must install a pressure reduction unit with a suitable safety valve which has sufficient blow-off capacity for the amount of steam supplied.

2. Permitted pressure variations max ± 0.1 bar (equivalent to ±10.0 kPa or ± 1.5 psi).

Moisture content
Sterilizers should be supplied with dry saturated steam. The ideal physical state “dry saturated” is difficult to maintain in a practical application, and measurement/control of the moisture content of the steam is tricky.

Applying the advice given below, which is based upon practical experence, will generally result in steam with a satisfactory moisture content. This means that it is not superheated either. Superheating of the steam is highly undesirable in connection with sterilization because it does not contribute the humidification necessary to kill micro-organisms. Methods and values for determining the quality of the steam and the degree of superheating are described in standard EN285, for instance.

Practical arrangements

1. Connect the equipment to a line in which steam is consumed continuously. Long branch connections should be avoided.

2. Choose the appropriate pipe size from the table below. If more than one piece of equipment is connected to the same line, a diversity factor of 0.8 or higher may be applied.The specific steam pressure of the equipment is given in the “Technical Data Getinge SOLSUS 66”. If the installation is to be connected to a steam supply at a different pressure, the table can be used for guidance. If in doubt, contact Maquet (suzhou) Co.,Ltd.

Steam pressure	Highest design gas velocity
2.5 [bar (e)], 36 [psig]	38 [m/s], 125 [feet/s]
3 [bar (e)], 45 [psig]	35 [m/s], 115 [feet/s]
4.5 [bar (e)], 65 [psig]	30 [m/s], 100 [feet/s]
6 [bar (e)], 90 [psig]	25 [m/s], 80 [feet/s]

3. The steam supply pipes should have a fall of at least 1:50 (1/4 inch per foot) in the direction of flow.

4. Install reducing valve(s) in the supply line if the pressure is higher than that specified in “Technical Data Getinge SOLSUS 66”. The steam pressure upstream of the reducing valve should not fluctuate more than 10%. Do not reduce the pressure by a factor smaller than 0.5 in one step. Use a second reducing valve for greater reduction ratio. Each reducing valve must be followed by a safety valve.

ATTENTION
If the steam in the supply line is wet, include condensate removal as shown in Figure “A” just before the reducing valve, as shown in the sketches below.

The drain line of safety valves should have at least the same dimension as the valve blow off opening and must not contain shut off devices or chokes. Water pockets formed in the piping, must be drained.

5. There must be no chokes or restrictions placed in horizontal pipes.

6. Fit the last reducing valve not more than 6 m (20 ft) pipe length away from the sterilizer, but not closer than 4 m (13 ft) if the maximum reduction ratio (2:1) is used.

ATTENTION
If the reducing valve is positioned much more than 6 meters (20 feet) from the sterilizer, include condensate removal as shown in Figure “A” just before the sterilizer.

7. The last condensate removal device (see figure below) should not be placed more than 1 meter (3 feet) away from the sterilizer steam connection. If this is not possible for practical reasons, a steam dryer can be installed directly at the steam connection.

8. There should be no steam consumers other than sterilizers, steam converters or treatment stations (WSSD) connected downstream of the last reducing valve.

9. Branch pipes should be connected to the top of a horizontal main pipe.

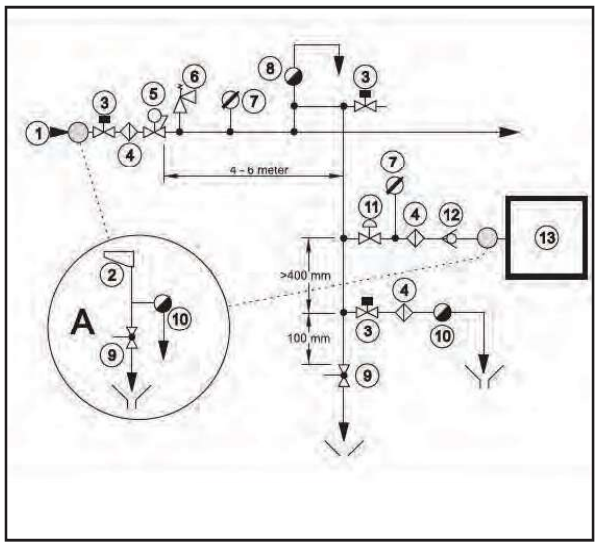
10. A steam sampling point with shutoff valve should be provided between the reducing valve and the sterilizer so that the quality of the steam can be checked. The sampling point can also be used for blow down in preparation for work that requires the steam system to be depressurized.

11. Because it is intended to be used daily, the shut off valve should be easy to operate, for instance a remote controlled ball valve.

12. Insulate steam pipes up to the sterilizer steam connection.

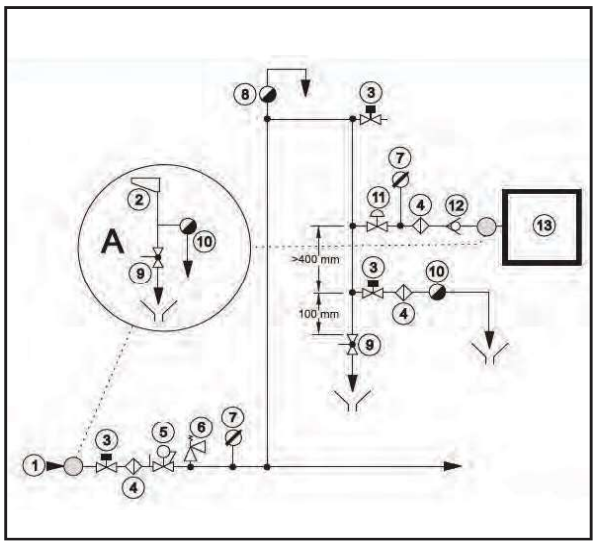
An arrangement as shown below normally satisfies the requirements for dewatering, filtration and monitoring facilities when supplying a sterilizer with steam from a main steam supply line.

Supply line in ceiling.



1	High pressure line
2	Labyrinth diverter /separator
3	Shut off valve
4	Filter
5	Reducing valve
6	Safety valve
7	Pressure gauge
8	Vent
9	Ball valve
10	Steam trap
11	Remote controlled valve
12	Check valve
13	Sterilizer

Supply line in floor or in the storey below.



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