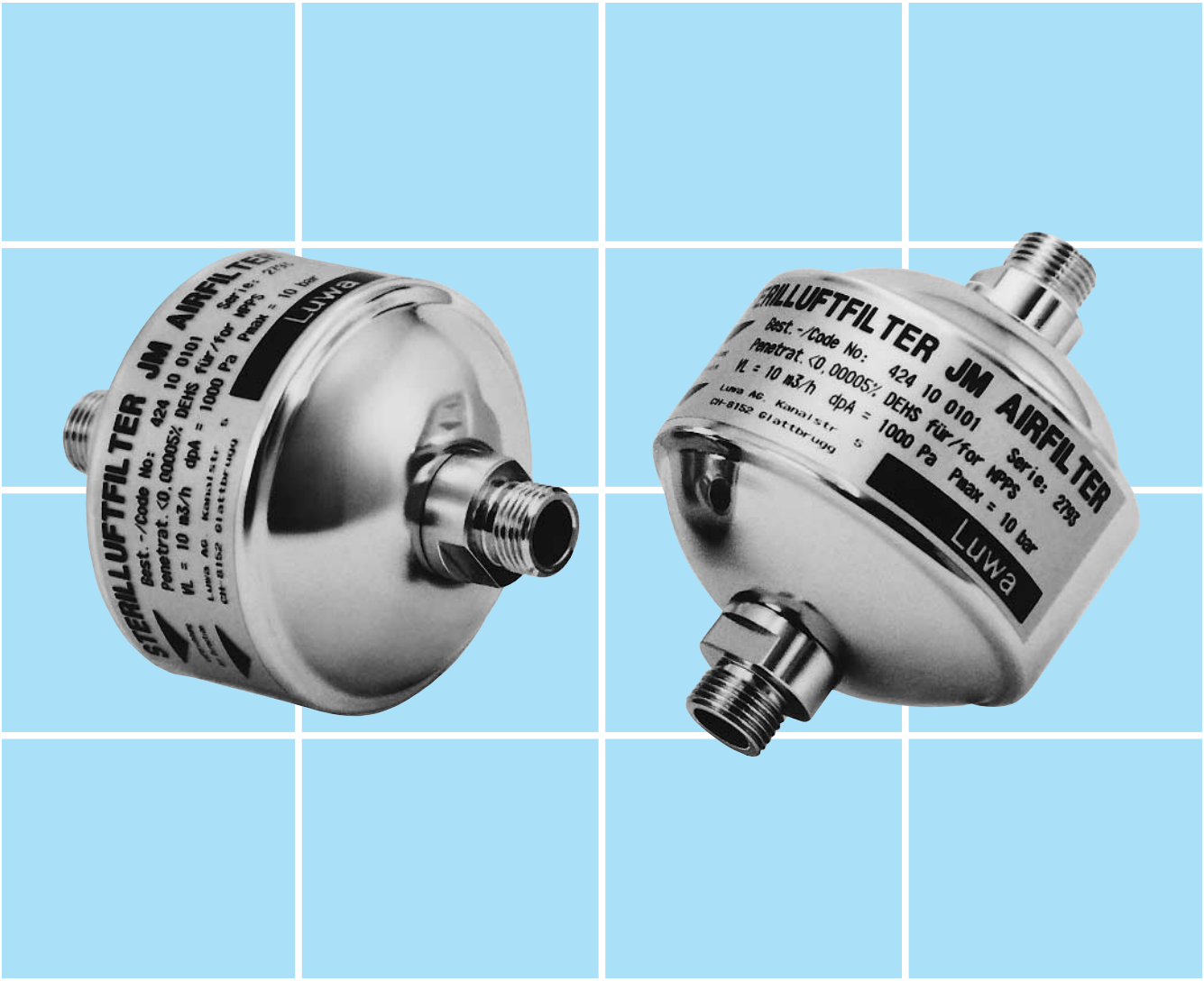
# Luwa® JM Sterile Air Filter




- Efficiency > 99.99995 %
- Compact and robust construction
- Extreme security due to two stage filter element
- Low pressure drop
- Compact stainless steel case, resistant to external pressure of up to 10 bar
- Individually tested and leak free

Luwa

# Luwa JM Sterile Air Filter

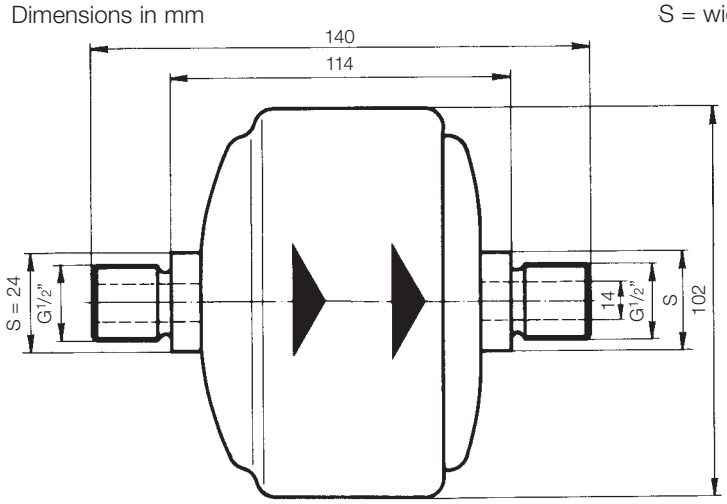
Luwa JM sterile air filter is a cylindrical HEPA filter in compact metal case fitted with ½ inch gas male connections at each end. It is designed to filter small air flows at pressure up to 10 bar and it offers, due to its two stage filter element, an extremely high efficiency and security against leakage.

**Fields of application**
Filtration of compressed air and gases in:
- Medical technology
- Food and beverage industry
- Pharmaceutic industry
- Clean room technology

The Luwa JM sterile air filter is used for:
- Anaesthetic and respiratory apparatus
- Ventilation of autoclaves after release of vacuum
- Particle counters, as zero indicator filter
- Filtration of pressured air for regulating and control units
- Cleaning and drying of surfaces by means of compressed air
- Storage tanks and reactors as breather filter
- Others

**Dimensional sketch**
Dimensions in mm

S = width over flats




| Technical data | |
|---|---|
| Type | JM |
| Part number | 424 10 0101 |
| Efficiency as per EN 1822 (MPPS[1]-DEHS aerosol) | > 99.99995 % |
| Rated air flow | 10.0 m³/h |
| Initial pressure drop ($\Delta P_A$) | ⩽ 1000 Pa |
| Recommended final pressure drop | $\Delta P_A$ + 600 Pa |
| Maximum final pressure drop | 10 000 Pa/0.1 bar |
| Maximum operating pressure[2] (across casing) | 10 bar |
| Maximum continous operating temperature | 110 °C |
| Maximum sterilization temperature[3] | 140 °C |
| Maximum relative humidity | < 100 % |
| Approximate weight | 0.6 kg |

**Construction and materials**
**Casing:**
Electropolished S 304 stainless steel (1.4301)

**Filter medium:**
Two identical panels of pleated microfine glass paper in series. Each panel being individually sealed and supported and having protection on each side from mechanical damage.

**Sealant:**
Polyurethane

**End connections:**
S 304 stainless steel ½ inch gas male connectors welded to the casing and fitted with spanner flats. Factory fitted with plastic caps.

**Sterilisation**
The JM filter is not sterilised in the factory. A 20 minute autoclave 134 °C would ensure complete sterilisation of the filter. The filter would require subsequent drying at less than 90 °C until it is within 2 grammes of its original weight. Sterilization might also be achieved by spray disinfection. Weight control before usage (see above) is then also required. The validation of the filters function after sterilization has to be performed by its user.

**Installation**
The JM filter is fitted with ½" gas threaded male stubs complete with spanner flats which must be used in tighening the filters in a pipe line system to prevent damage of the housing. The threads should be sealed with PTFE or similar tape or by means of compression rubber seals. The air flow direction arrow on the housing must be adhered to. For installation in pipe networks with male threading use ordinary joints (e.g. from Serto, +GF+, etc.).

**Tests**
Each filter is tested to DIN 24184 (part 4.2) to ensure absence of leaks. The casing tightness is individually tested to 6 bar. A tightness test to 16 bar is available on request. The burst pressure of the unit has been verified on type tests to be greater than 110 bar.

**Remarks**
1) MPPS (**M**ost **P**enetrating **P**article **S**ize): the particle diameter at which the separation efficiency reaches it minimum – usually in the range 0.1–0.2 µm
2) Temperatures of 20 °C
3) For short time in saturated vapour (see "sterilisation")

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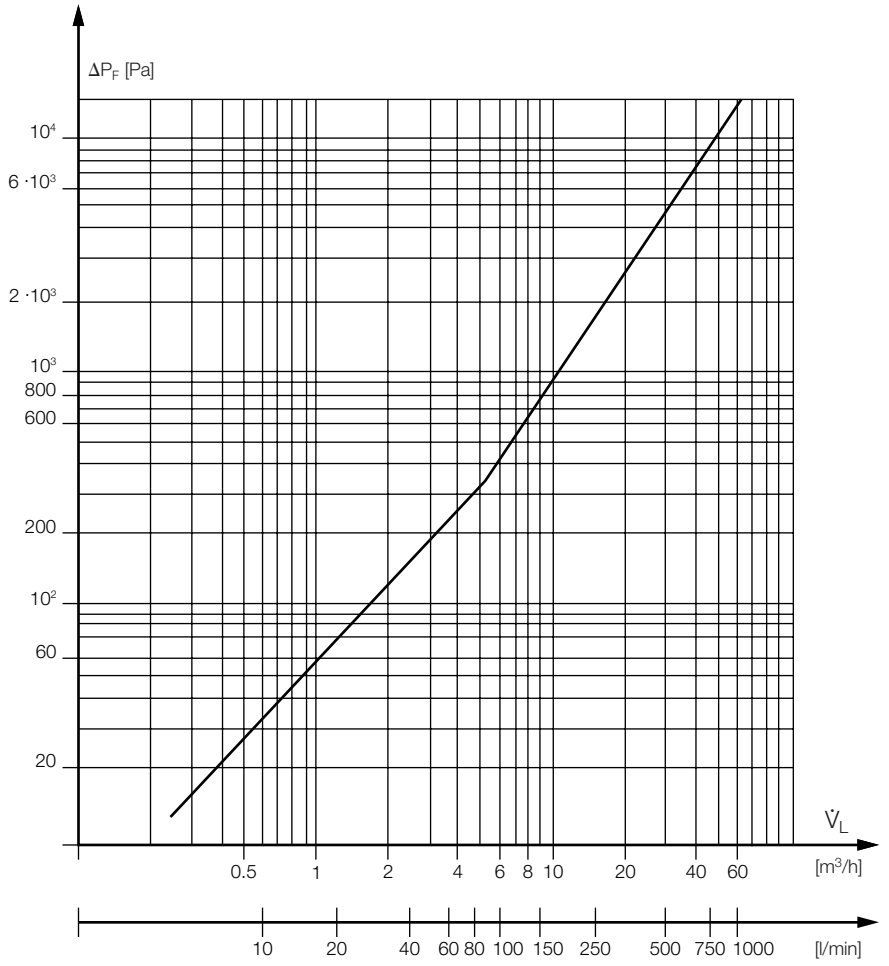
## Technical data

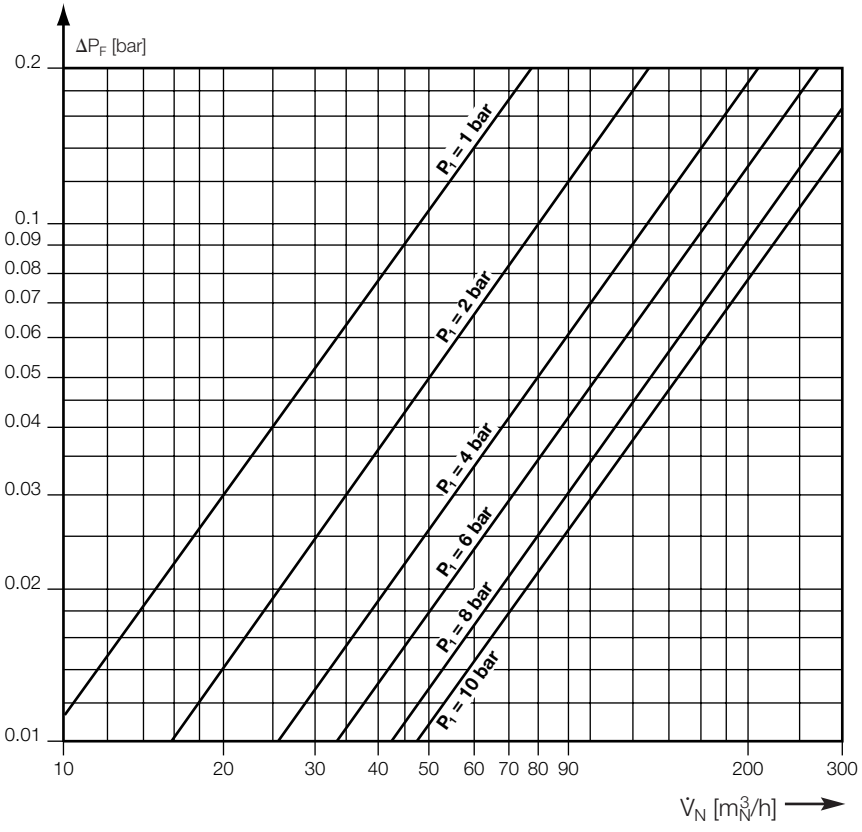
**Initial pressure drop** ($\Delta P_F$)
as a function of air flow ($\dot{V}_L$).

Valid for ambient conditions:

$t_L$ = 20 °C
$\varrho_L$ = 1.15 kg/m³
$p_{atm}$ = 0.966 bar

for connection pipe with ∅ 14 mm inner diameter.




**Initial pressure drop** ($\Delta P_F$)
as a function of air flow ($\dot{V}_N$) and absolute pressure ($P_1$) at $T_1$ = 273 K.

Calculation of $\dot{V}_N$:

$$\dot{V}_N = \dot{V}_1 \cdot \frac{\varrho_1}{\varrho_N}\ [m^3_N/h]$$

$$\varrho_1 = \varrho_{tr}\,(1–0.377 \cdot \varphi \cdot \frac{P_p}{P_1})\ [kg/m^3]$$

$$\varrho_{tr} = 387.75 \cdot \frac{P_1}{T_1})\ [kg/m^3]$$

with:
$t_N$ = 0 °C
$P_N$ = 1.013 bar
$\varrho_N$ = 1.293 kg/m³
} Normal conditions

$\dot{V}_1$ = air flow as a function of f ($P_1$, $T_1$, $\varrho_1$)
$\varrho_1$ = air density at condition ① [kg/m³]
$\varrho_{tr}$ = dry air density at condition ① [kg/m³]
$\varphi$ = relative humidity
$P_p$ = partial vapour pressure [bar]
$P_1$ = absolute pressure [bar]
$T_1$ = absolute temperature [K]