



# HEIDENHAIN



Product Information

## DA 400

Compressed-Air Filter System

December 2016

# DA 400 compressed-air filter system

## Sealing air

The sealed linear and angle encoders from HEIDENHAIN can be operated with sealing air to increase the level of protection. This offers additional defense against contamination. The compressed air, acting as sealing air, introduced directly into the encoders must be cleaned by a microfilter and must comply with at least the following purity classes as per DIN/ISO 8573-1 (2010 edition):

- Solid contaminants: **Class 1**  
Particle size  
0.1 µm to 0.5 µm ≤ 20000  
0.5 µm to 1.0 µm ≤ 400  
1.0 µm to 5.0 µm ≤ 10
- Max. pressure dew point: **Class 4**  
(pressure dew point at 3 °C)
- Total oil content: **Class 1**  
(max. oil concentration: 0.01 mg/m<sup>3</sup>)

For optimum supply of sealing air to the encoders, the required air flow is 7 L/min to 10 L/min per linear encoder or 1 L/min to 4 L/min per angle encoder. Ideally the air flow is regulated by the HEIDENHAIN connecting pieces with integrated throttle (see *Accessories*). At an inlet pressure of approx.  $1 \cdot 10^5$  Pa (1 bar), the throttles ensure the prescribed volume of airflow.

## DA 400

HEIDENHAIN offers the DA 400 compressed-air filter system for purifying the compressed air. It is designed specifically for the introduction of compressed air into encoders.

The DA 400 has special filters which ensure that the quality of the filtered air remains constant even at low airflows. It is extremely tolerant towards sudden changes in pressure in the air supply, such as can be caused by other consumers in the machine being switched on or off.

The DA 400 consists of three filter stages (prefilter, fine filter and activated carbon filter) and a pressure regulator with pressure gauge. The pressure gauge and the pressure switch (which is available as an accessory) effectively monitor the sealing air.

The compressed air introduced into the DA 400 must fulfill the requirements of the following purity classes as per ISO 8573-1 (2010 edition):

- Solid contaminants: **Class 5**  
Particle size  
0.1 µm to 0.5 µm Not specified  
0.5 µm to 1.0 µm Not specified  
1.0 µm to 5.0 µm ≤ 100000
- Max. pressure dew point: **Class 6**  
(pressure dew point at 10 °C)
- Total oil content: **Class 4**  
(max. oil concentration: 5 mg/m<sup>3</sup>)

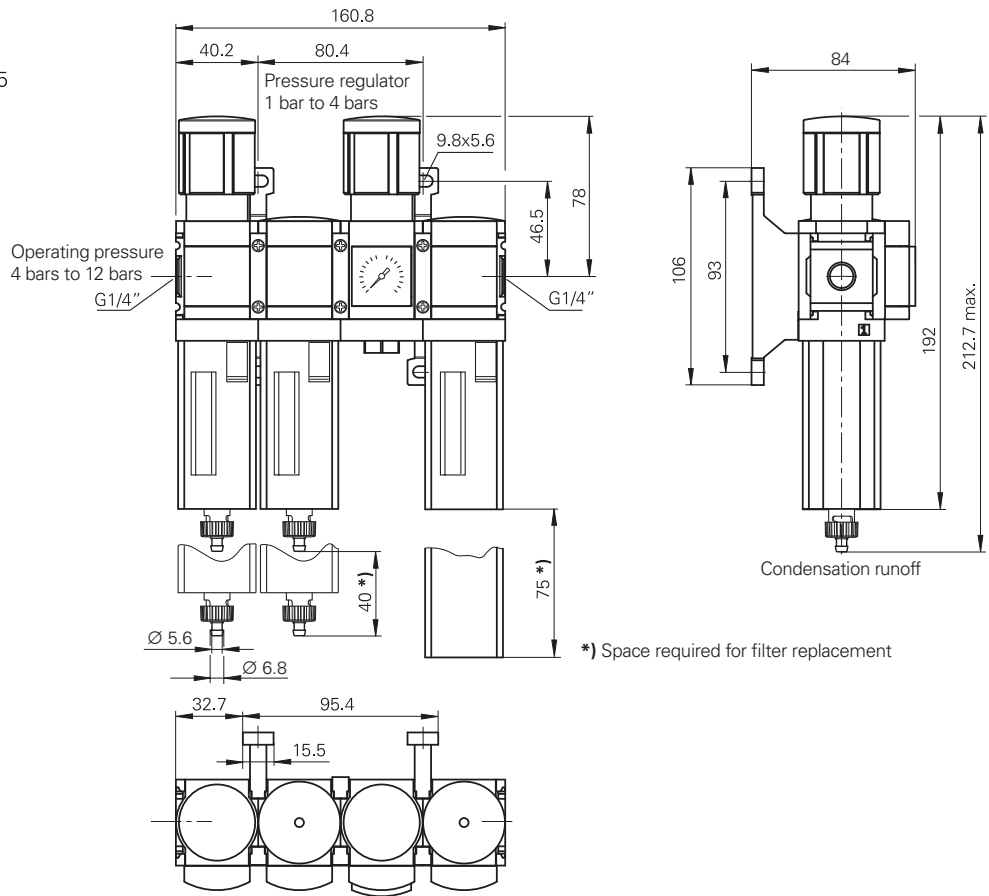
Specifications	DA 400
<b>Design</b>	System for cleaning and regulating compressed air
<b>Connectable encoders</b>	<b>Up to 10 linear encoders, angle encoders or rotary encoders</b>
<b>Setup</b>	<ul style="list-style-type: none"> <li>• <b>Cyclone separator</b></li> <li>• <b>Prefilter</b> for particle sizes down to 5 µm, automatic condensate drain</li> <li>• <b>Fine filter</b> for dust, oil and water with particle sizes as fine as 0.01 µm, automatic condensate drain</li> <li>• <b>Activated carbon filter</b> absorbs oil vapor</li> <li>• <b>Pressure regulator</b> for adjusting the output pressure</li> </ul>
<b>Overpressure</b>	Typical $7 \cdot 10^5$ Pa Max. $12 \cdot 10^5$ Pa Min. $4 \cdot 10^5$ Pa If air pressure falls below $6 \cdot 10^5$ Pa and the air is saturated with water vapor, an additional air drier must precede the DA 400.
<b>Purity classes</b>	<i>Airflow in:</i> 5/6/4 (ISO 8573-1: 2010) <i>Airflow out:</i> 1/4/1 (ISO 8573-1: 2010)
<b>Output overpressure</b>	Can be set from $0.5 \cdot 10^5$ Pa to $3 \cdot 10^5$ Pa The output overpressure to be set depends on the number of connected encoders and the design of the compressed-air supply.
<b>Operating temperature</b>	5 °C to 30 °C
<b>Flow rate</b>	Max. 360 L/min ( $\cong 21.6$ Nm <sup>3</sup> /h)
<b>Connections</b>	<i>Inlet for compressed air:</i> G 1/4" <i>Condensation trap prefilter/fine filter:</i> Plug nipple 6 x 1 <i>Outlet for compressed air:</i> G 1/4"
<b>Maintenance</b>	<b>Filter replacement</b> <i>Up to 3 encoders connected:</i> every two years <i>Up to 10 encoders connected:</i> annually
<b>Mass</b>	≈ 1 kg

$10^5$  Pa  $\cong$  1 bar


mm

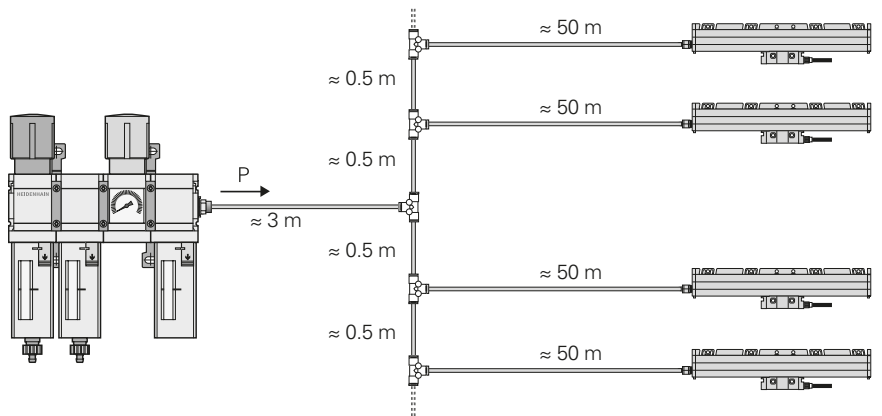


Tolerancing ISO 8015  
ISO 2768 - m H  
< 6 mm: ±0.2 mm




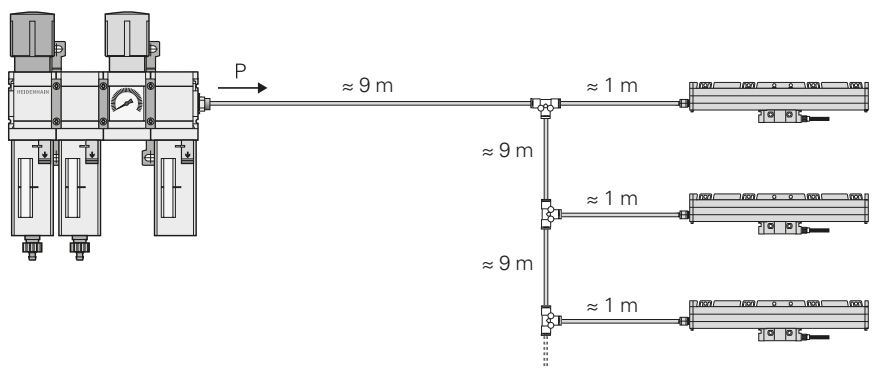
**Connection example** for tubing 6 x 1  
Parallel connection

P	
1 bar	1 x ... 3 x
2 bar	4 x ... 6 x
3 bar	7 x ... 10 x



**Connection example** for tubing 6 x 1  
Series connection

P	
1 bar	1 x ... 3 x
2.5 bar	4 x ... 6 x



# Accessories

<b>Connecting piece</b> for tubing 6 x 1 For linear encoders with throttle and gasket on end section	ID 226270-02	
<b>Connecting piece</b> for tubing 6 x 1 For linear encoders with throttle on mounting block	ID 275239-01	
<b>Connecting piece</b> for tubing 6 x 1 For angle encoders with throttle and gasket	ID 207835-04	
<b>Swiveling screw fitting 90°, M5<sup>1)</sup></b> With seal	ID 207834-02	
<b>Swiveling screw fitting 180°, M5<sup>1)</sup></b> With seal for LS 4x7/LC 4x5	ID 630380-01	
<b>Spacer<sup>1)</sup></b>	ID 230905-01	
<b>Pressure switch DS-DA400</b> For monitoring pressure changes Switching pressure can be set from 0.2 bar to 2 bars	ID 810471-01	
<b>Pressure tubing</b> , length 25 m 6 x 1 (Di = 4 mm) 8 x 1.25 (Di = 5.5 mm)	ID 207881-09 ID 207881-35	
<b>T-joint</b> Quick disconnect 6 x 1	ID 310094-02	
<b>Threaded plug connection G1/4"</b> for tubing 6 x 1 (DA 400 at the output) for tubing 8 x 1.25 (DA 400 at the input)	ID 310092-01 ID 310092-03	
<b>Adapter plate AP-DA400</b> For attaching the DA 400 in place of the DA 300	ID 748674-01	
<b>Filter elements</b> Prefilter VF-DA 400 Fine filter FF-DA 400 Activated carbon AK-DA 400	ID 810415-01 ID 810416-01 ID 810421-01	

<sup>1)</sup> An additional connecting piece is necessary.

## HEIDENHAIN

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### Further information

- Brochure: *Linear Encoders for Numerically Controlled Machine Tools*
- Brochure: *Angle Encoders with Integral Bearing*