



HEIDENHAIN



Preliminary Product Information

DA 400

Compressed-Air Filter System

September 2011

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):

- Particles: **Class 1**
Particle size Number of particles per m³
0.1 µm to 0.5 µm ≤ 20 000
0.5 µm to 1.0 µm ≤ 400
1.0 µm to 5.0 µm ≤ 10
- Max. pressure dewpoint: **Class 4**
(pressure dewpoint at 3 °C)
- Total oil content: **Class 1**
(max. oil concentration: 0.01 mg/m³)

For optimum supply of sealing air to the encoders, the required air flow is 7 to 10 l/min per linear encoder or 1 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 automatic pressure switch (available as accessories) effectively monitor the sealing air.

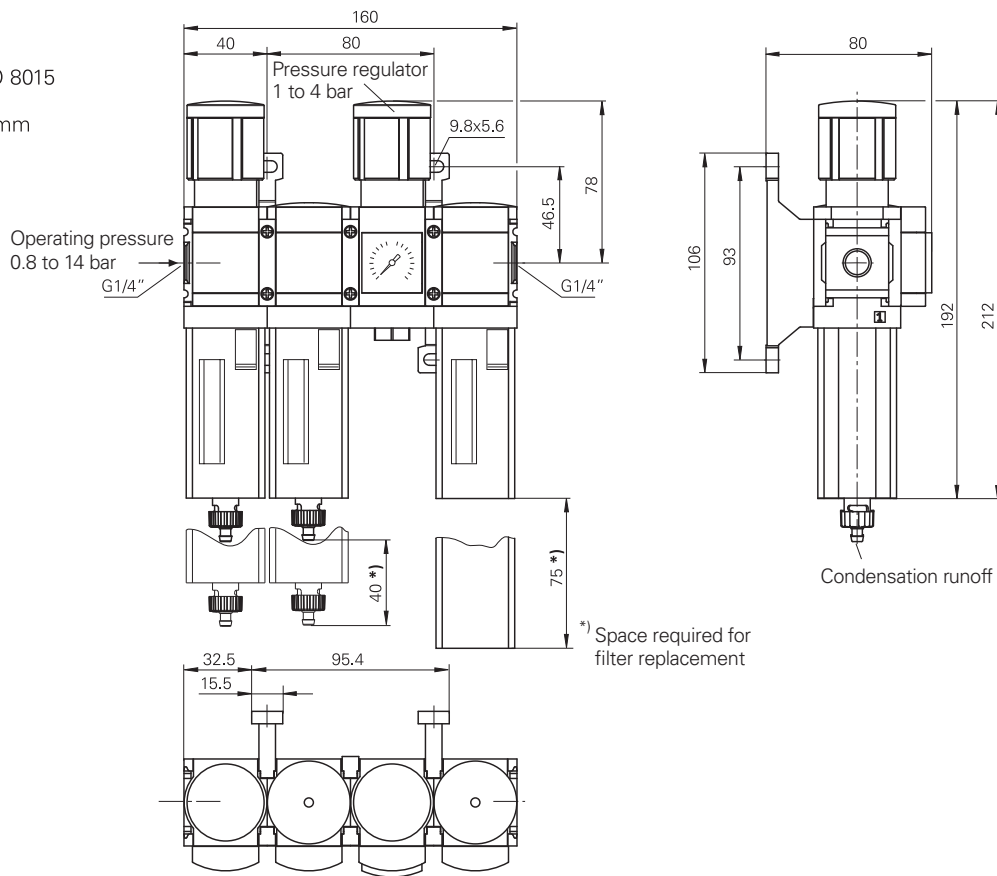
The compressed air introduced into the DA 400 must fulfill the requirements of the following purity classes as per DIN/ISO 8573-1 (2010 edition):

- Particles: **Class 5**
Particle size Number of particles per m³
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 ≤ 100 000
- Max. pressure dewpoint: **Class 6**
(pressure dewpoint at 10 °C)
- Total oil content: **Class 4**
(max. oil concentration: 5 mg/m³)

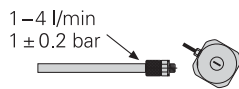
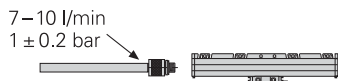
Specifications	DA 400						
Design	System for cleaning and regulating compressed air						
Connectable encoders	Up to 10 linear encoders, angle encoders or rotary encoders						
Design	<ul style="list-style-type: none"> • Prefilter for particle sizes down to 5 µm, automatic condensate drain • Fine filter for dust, oil and water with particle sizes as fine as 0.1 µm, automatic condensate drain • Activated carbon filter absorbs oil vapor • Pressure regulator for adjusting the output pressure 						
Overpressure	<table style="width: 100%; border: none;"> <tr> <td style="width: 150px;">Typical</td> <td>$7 \cdot 10^5$ Pa</td> </tr> <tr> <td>Max.</td> <td>$14 \cdot 10^5$ Pa</td> </tr> <tr> <td>Min.</td> <td>$4 \cdot 10^5$ Pa</td> </tr> </table> <p>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.</p>	Typical	$7 \cdot 10^5$ Pa	Max.	$14 \cdot 10^5$ Pa	Min.	$4 \cdot 10^5$ Pa
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Max.	$14 \cdot 10^5$ Pa						
Min.	$4 \cdot 10^5$ Pa						
Purity classes	<i>Airflow in:</i> 5/6/4 (ISO 8573-1: 2010) <i>Airflow out:</i> 1/4/1 (ISO 8573-1: 2010)						
Output overpressure	Can be set from 0.5 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.						
Operating temperature	5 °C to 30 °C						
Flow rate	Max. 360 l/min ($\cong 21.6$ Nm ³ /h)						
Connections	<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"><i>Inlet for compressed air:</i></td> <td>G 1/4"</td> </tr> <tr> <td><i>Condensation trap prefilter/fine filter:</i></td> <td>Plug nipple 6 x 1</td> </tr> <tr> <td><i>Outlet for compressed air:</i></td> <td>G 1/4"</td> </tr> </table>	<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"
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<i>Condensation trap prefilter/fine filter:</i>	Plug nipple 6 x 1						
<i>Outlet for compressed air:</i>	G 1/4"						
Maintenance	Filter exchange frequency <i>Up to 3 encoders connected:</i> every two years <i>Up to 10 encoders connected:</i> annually						

10^5 Pa \cong 1 bar

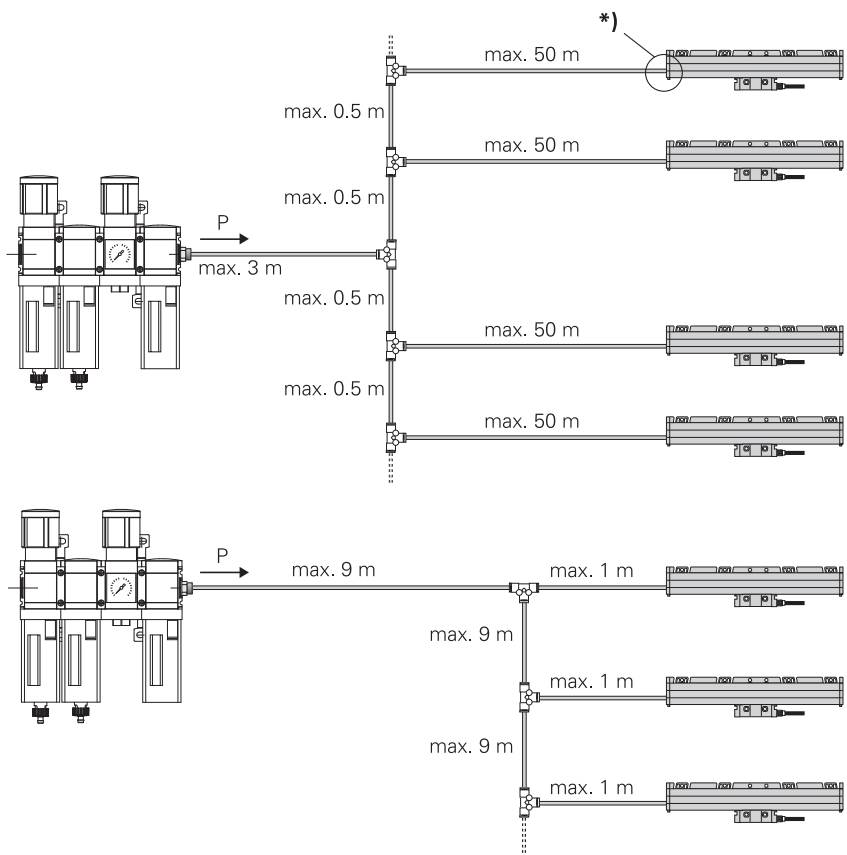
mm

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



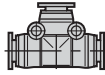
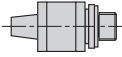
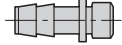




*)



Sample values:
 Pa for up to
 3 encoders: $1 \cdot 10^5$ Pa
 6 encoders: $2 \cdot 10^5$ Pa
 10 encoders: $3 \cdot 10^5$ Pa



Accessories

Pressure tubing 6 x 1 , length 25 m	ID 207881-09	
T-joint Quick disconnect 6 x 1	ID 310094-02	
Connecting piece for tubing 6 x 1 for linear encoders with throttle and gasket on end section	ID 226270-02	
Connecting piece for tubing 6 x 1 for linear encoders with throttle and gasket on mounting block	ID 275239-xx	
Connecting piece for tubing 6 x 1 for angle encoders with throttle and gasket	ID 207835-04	
Swiveling screw fitting 90°, M5 with gasket, without throttle	ID 207834-02	
Swiveling screw fitting 180°, M5 with gasket, without throttle for LS 4x7/LC 4x5	ID 630380-01	
Spacer	ID 230905-01	
Pressure switch	ID not determined yet	
Fine filter element	ID not determined yet	
Activated carbon filter element	ID not determined yet	
Adapter plate for attaching the DA 400 in place of the DA 300	ID not determined yet	

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For more information

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