

FORTiS™ air filter assembly mounting instructions



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Compressed air filtration system safety instructions



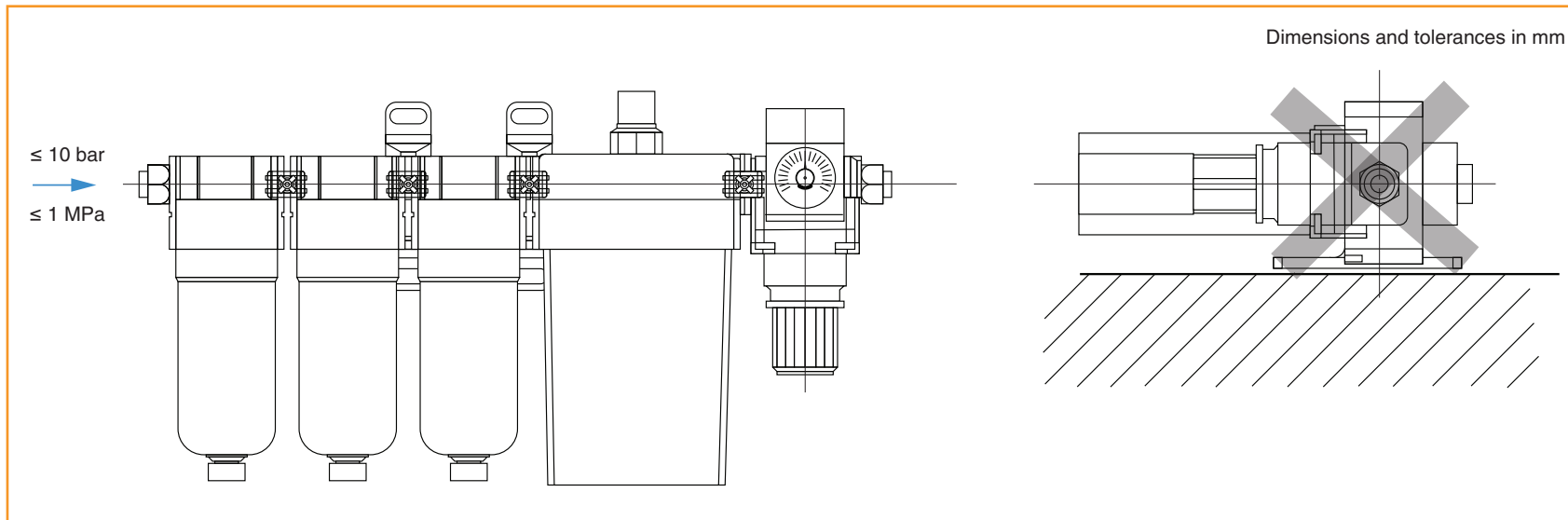
WARNING: These safety instructions are intended to prevent hazardous situations and/or equipment damage.

Only personnel with appropriate training should operate machinery and equipment. The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment, including Renishaw products, must be performed by an operator who is appropriately trained and experienced. Before installation, service or repair is carried out, disconnect the compressed air supply and release the pressure in the system.

Do not service or attempt to remove the product and machinery/equipment until safety is confirmed. Only inspect and maintain the machinery/equipment after taking measures to prevent falling or runaway of the driven objects. When the product is to be removed, confirm that the safety measures as described above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

Install vertically so that the outlet of the drain is facing downwards. The output of the drains should be routed to a suitable container for collecting waste liquid, so it can be disposed of safely and in accordance with local regulations.

NOTE: Avoid use with the drain outlet turned horizontally or upwards as this causes a malfunction.

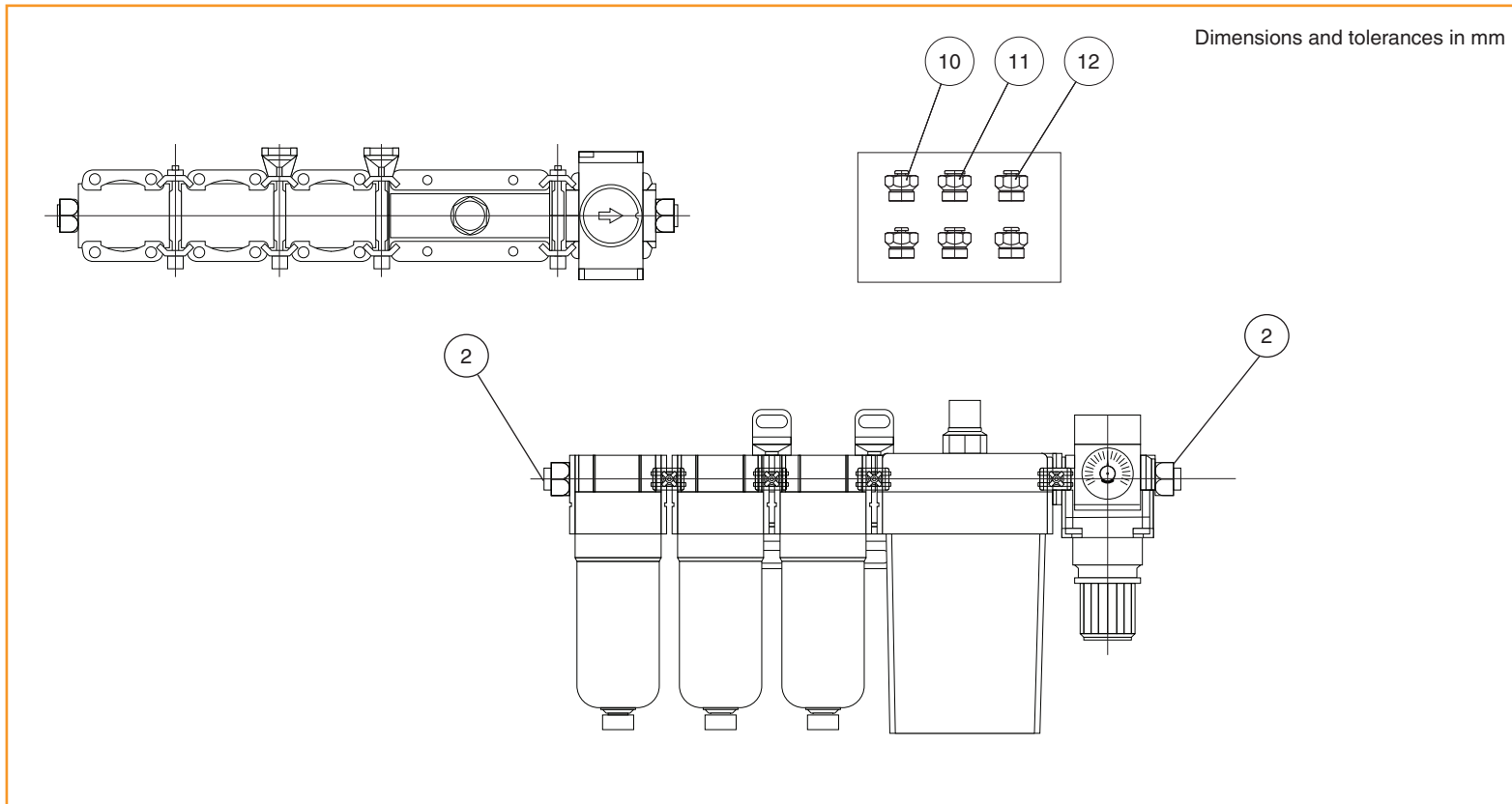


Installation and set-up

CAUTION: Do not drop or apply impact during transportation or installation as this can cause damage to the product.

The assembly is provided prepacked. Remove from packaging and check for transit damage and loose components. Retighten loose components. If components are damaged, contact your local Renishaw representative. Male fitting items 10, 11 and 12 are supplied individually bagged inside the carton and can be utilised in place of item 2 to suit the required outlet and inlet of installation.

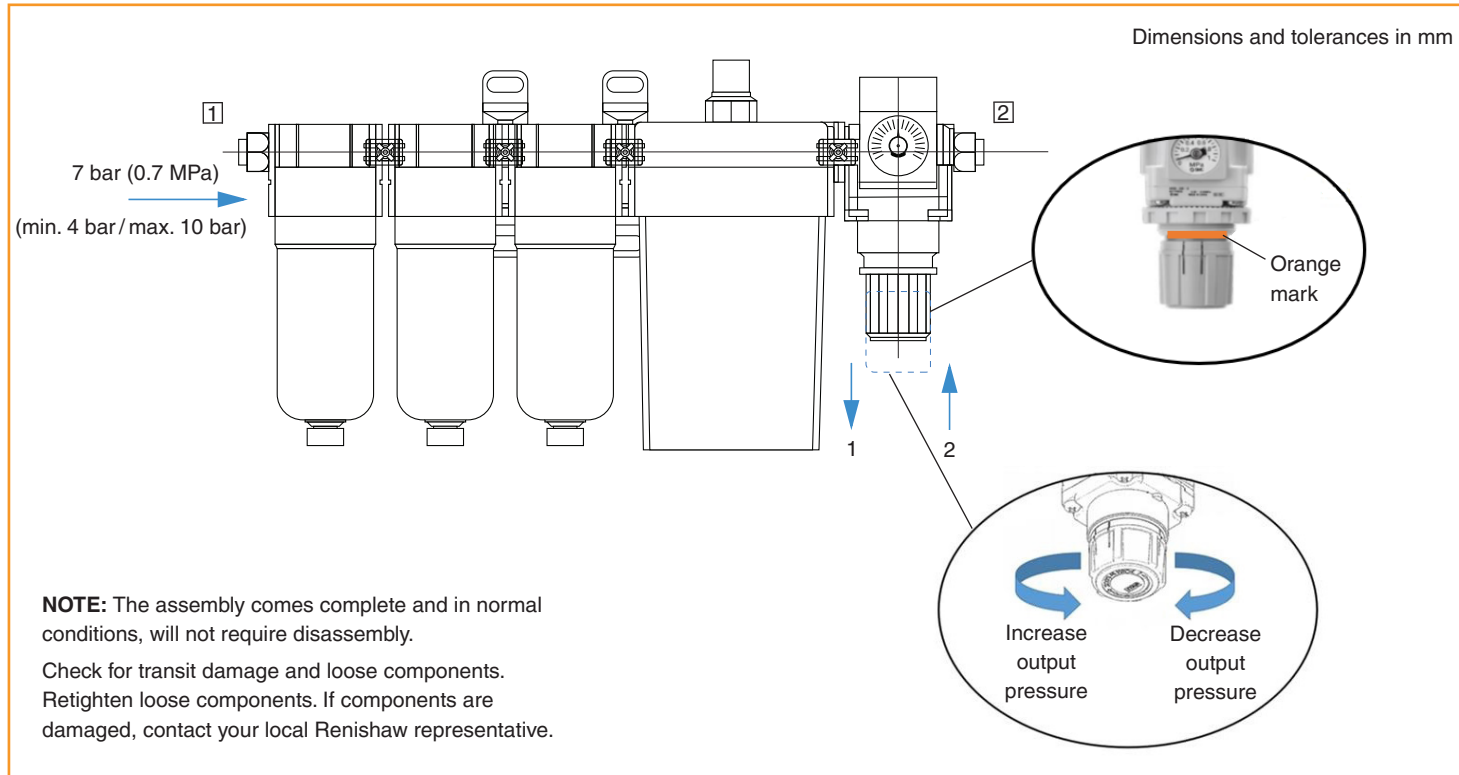
NOTE: The greater the number of installed Renishaw encoders downstream of the assembly, the larger the potential volumetric air usage. Pipework should be sized to suit.



Installation and set-up (continued)

CAUTION: Do not drop or apply impact during transportation or installation as this can cause damage to the product.

Connect the air set ensuring the direction of “1” (IN) and “2” (OUT) for air direction. Blow out or clean piping before connecting to eliminate swarf, cutting oil and solid foreign material, as contamination in the piping may cause damage or malfunction.



CAUTION: Failure to follow this procedure can cause damage to the pressure regulator knob and the outlet pressure may fluctuate.

Pull the pressure regulator knob to unlock. Visually verify that the knob is unlocked using the 'orange mark' that appears in the gap.

Rotate the pressure regulator knob clockwise to increase output pressure. Visually verify this on the attached gauge.

To reduce the output pressure, rotate the knob fully anticlockwise until the gauge reduces to zero, then increase pressure until the required level is reached.

Push the pressure regulator knob to lock. If the knob is not easily locked, turn it left and right a little and then push it. Visually verify that the knob is locked; the 'orange mark' in the gap will disappear.

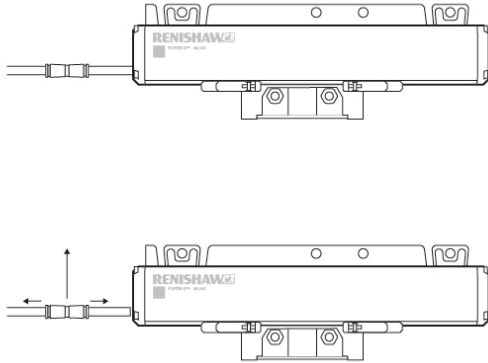
NOTE: The output pressure must always be less than the input pressure. If the output pressure is unattainable, check the site input pressure.

The actual pressure at the encoder may differ from the pressure set at the regulator; pressure may drop within the pipework due to distance. If the pressure at the encoder is too low, a higher set output pressure may be required at the regulator. This also applies for air supply systems for multiple encoders, as more usage points can reduce overall pressure.

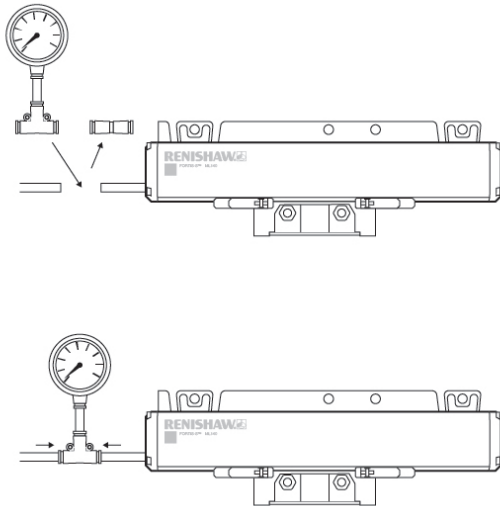
Installation and set-up (continued)

How to adjust air pressure to allow for pressure drop in the system

When long air pipes are used, or multiple encoders are connected to one air filter assembly, the pressure at the encoder can be lower than the pressure at the regulator. To check the actual pressure at the encoder, switch off the compressed air feed and allow the air pressure to be relieved. Remove the nearest connection to the encoder (normally a straight union) or cut into the air line near the encoder.



Fit the in-line pressure gauge assembly (A-9768-4409) in place of the straight union or where the air line has been cut.



Switch on the compressed air supply and adjust the air filter system regulator until the in-line pressure gauge assembly (A-9768-4409) shows 0.1 MPa.

NOTE: The air pressure at the regulator on the air filter assembly may be higher than 0.1 MPa. If 0.1 MPa cannot be achieved at the encoder, check the air lines for leaks.

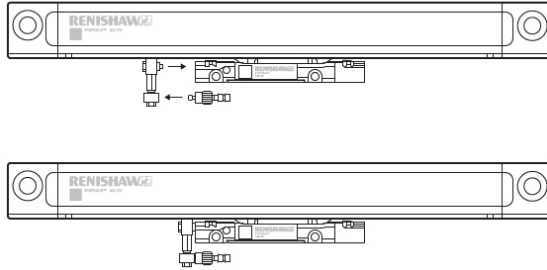
When adjustment is completed, switch off the compressed air feed and allow the air pressure to be relieved. Remove the in-line air pressure gauge assembly (A-9768-4409) and refit the straight union. If required, a suitable one-touch straight union (A-9768-4400) is available from Renishaw.

Installation and set-up (continued)

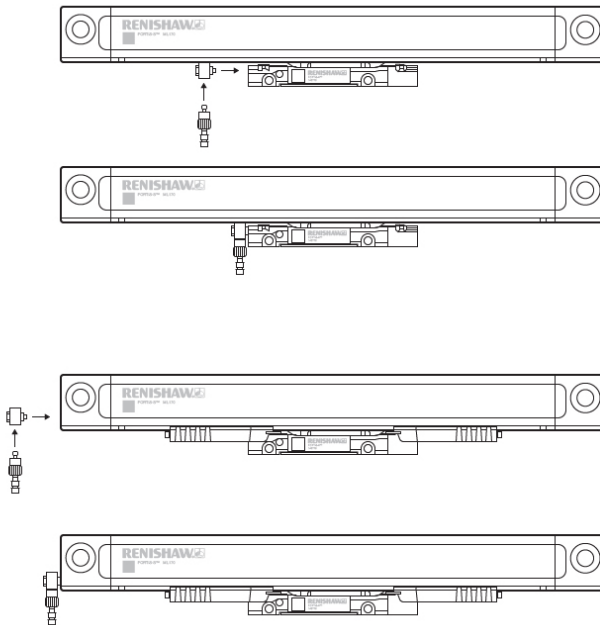
Air connection adaptors

Two adaptors are available to turn the direction of the air supply whilst keeping the air line design compact. The adaptors should always be used in conjunction with the standard air connection fitting, which includes a choke to maintain smooth air flow.

The 180 degree air turn assembly (A-9768-4416) is typically used with FORTIS-N encoders when the air supply comes from the opposite end to the connection point on the readhead.



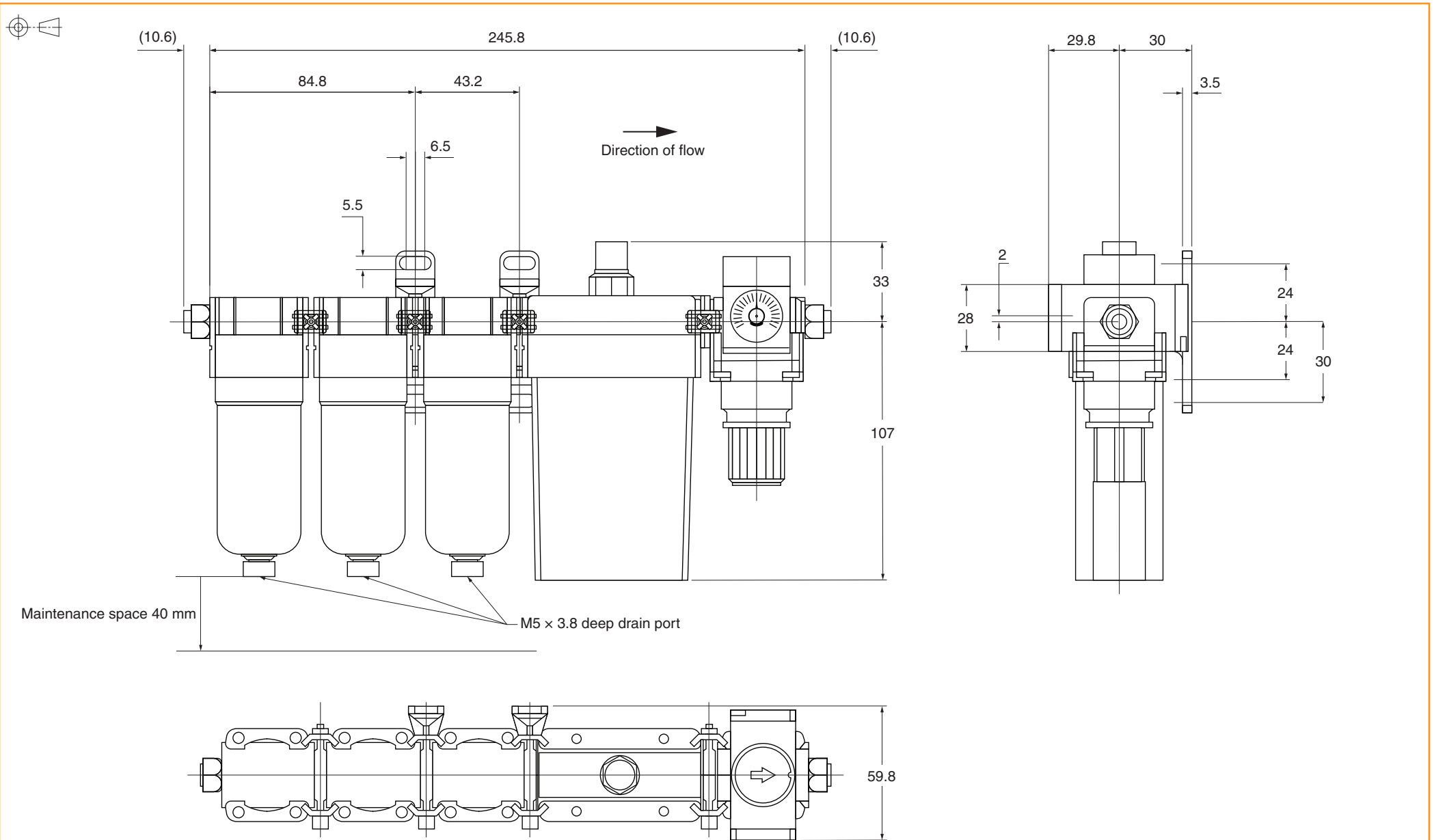
The universal elbow (A-9768-4391) turns the air supply through 90 degrees and can be used with either FORTIS-S or FORTIS-N. This can be fitted to either the readhead or the extrusion.



NOTE: The air purge connection can be made to either the readhead or the extrusion; it does not need to be applied to both.

Full-size air filter dimension drawing (A-9768-4353)

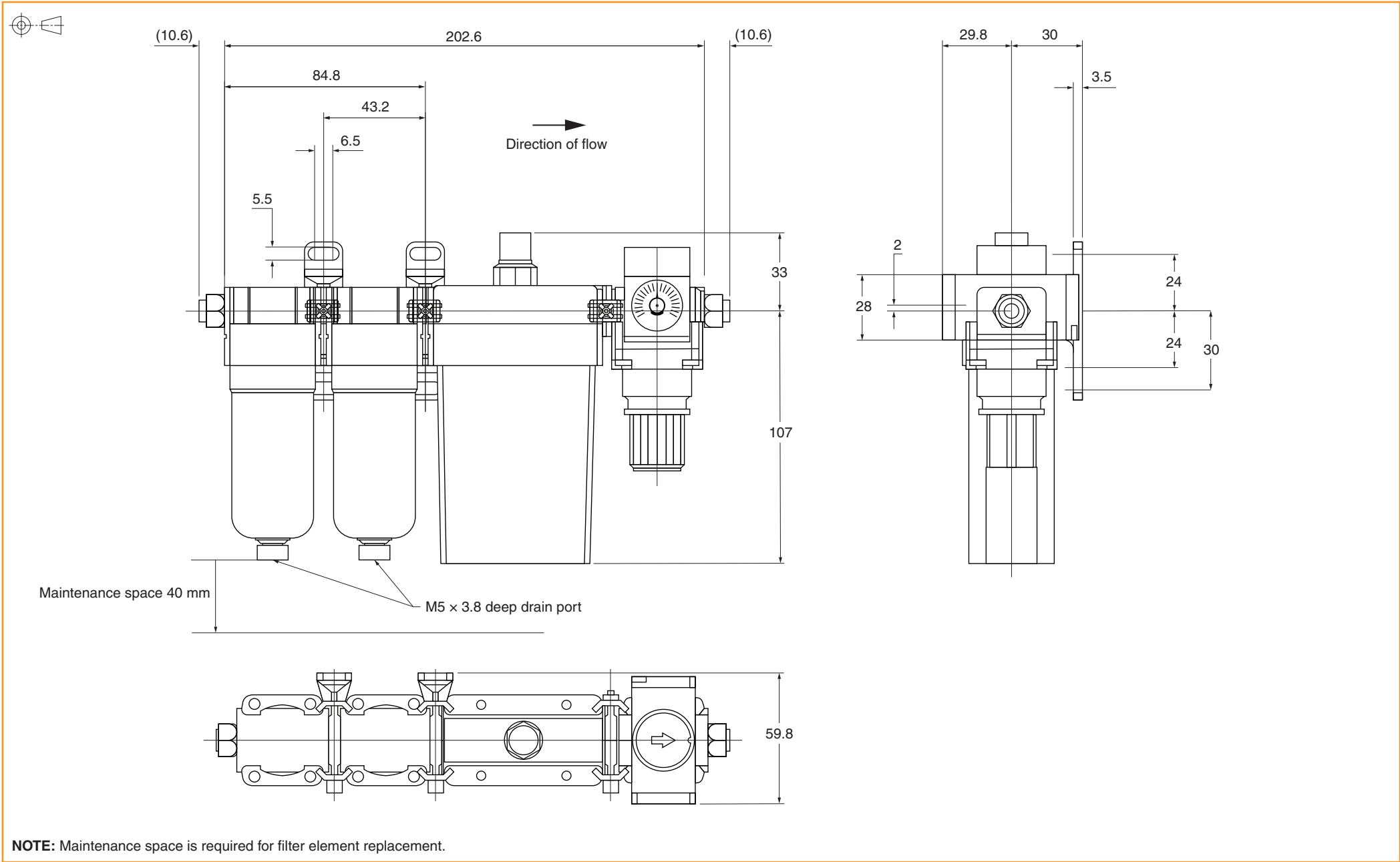
Dimensions and tolerances in mm



NOTE: Maintenance space is required for filter element replacement.

Reduced-size air filter dimension drawing (A-9768-4354)

Dimensions and tolerances in mm



NOTE: Maintenance space is required for filter element replacement.

Maintenance

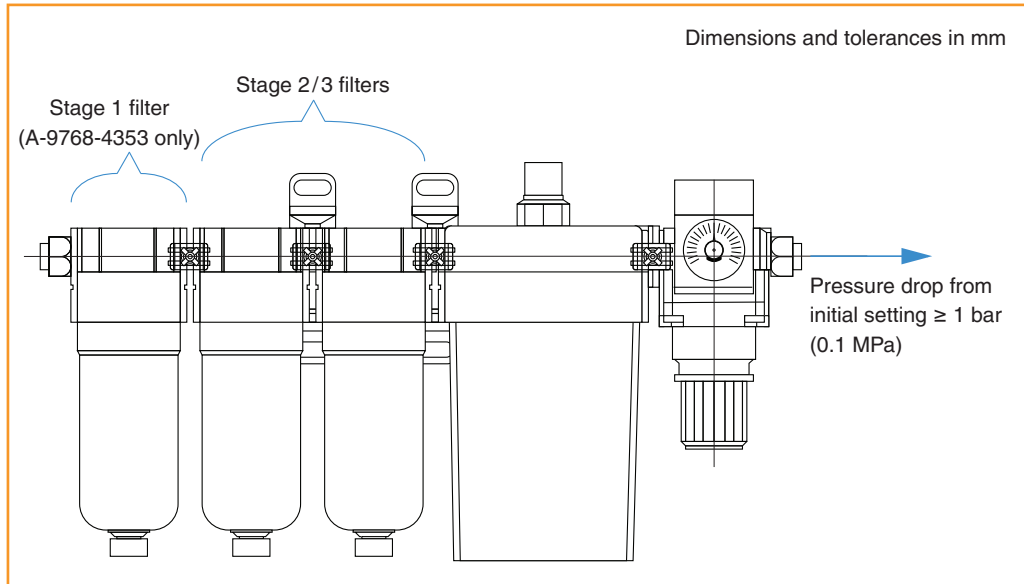


Ensure the pressure is OFF and downstream exhausted before any maintenance is attempted.

CAUTION: Always use neutral detergent. Other washing material can cause damage to the bowl.

Perform regular checks to find cracks, flaws or other deterioration on the resin bowl. Replace with a new bowl if any damage is found. Check for dirt in the resin bowl periodically. If necessary, wash the bowl with a neutral detergent. Replace with a new bowl if contamination is excessive.

Replace the element(s) every two years, or if pressure drop from initial outlet pressure reaches 0.1 MPa, or the element is broken.

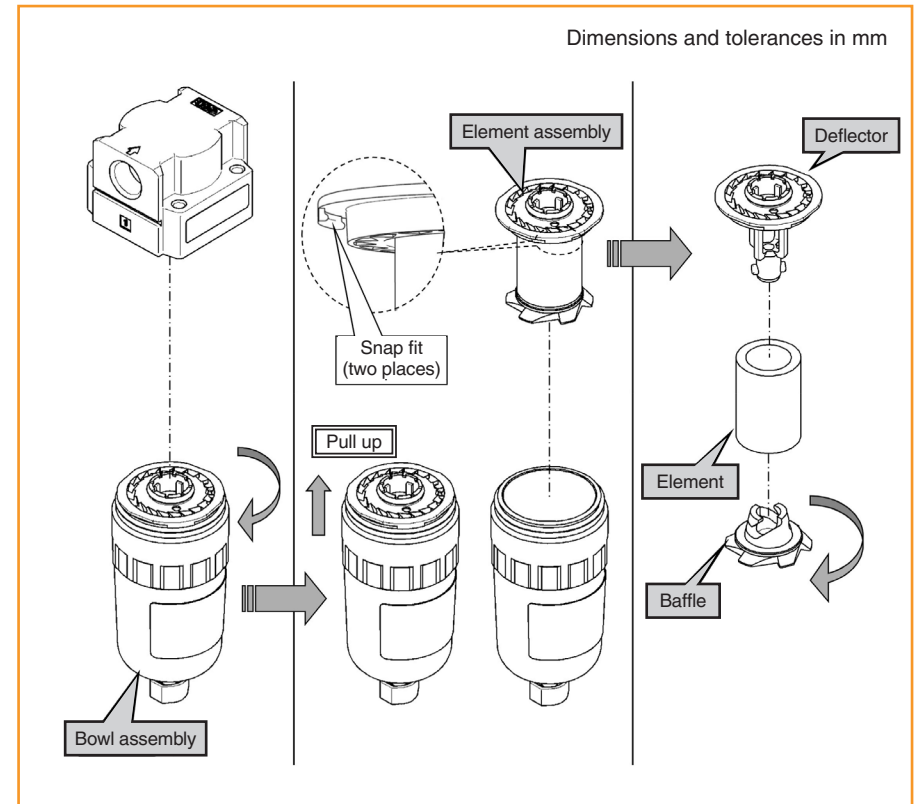


Stage 1 filter (A-9768-4353 full-size air filter assembly only)

1. Release the bowl assembly by unscrewing it anticlockwise to detach it from the product. If the bowl assembly is too tight to be removed, use a hook spanner until it can be loosened by hand.
2. Detach the element assembly by grasping the outer edge between the two snap fits of the deflector and pulling up.
3. Detach the element by rotating the baffle in the direction of the arrow.

Reverse process to reassemble

1. Attach the element to the deflector and rotate 90° clockwise to fix into position.
2. With the element assembly attached to the case assembly, attach the snap fit of the deflector to the bowl assembly until a 'pop' is heard.
3. Rotate the bowl assembly clockwise to secure it to the product. Tighten by hand to a tightening torque of 2.2 Nm.



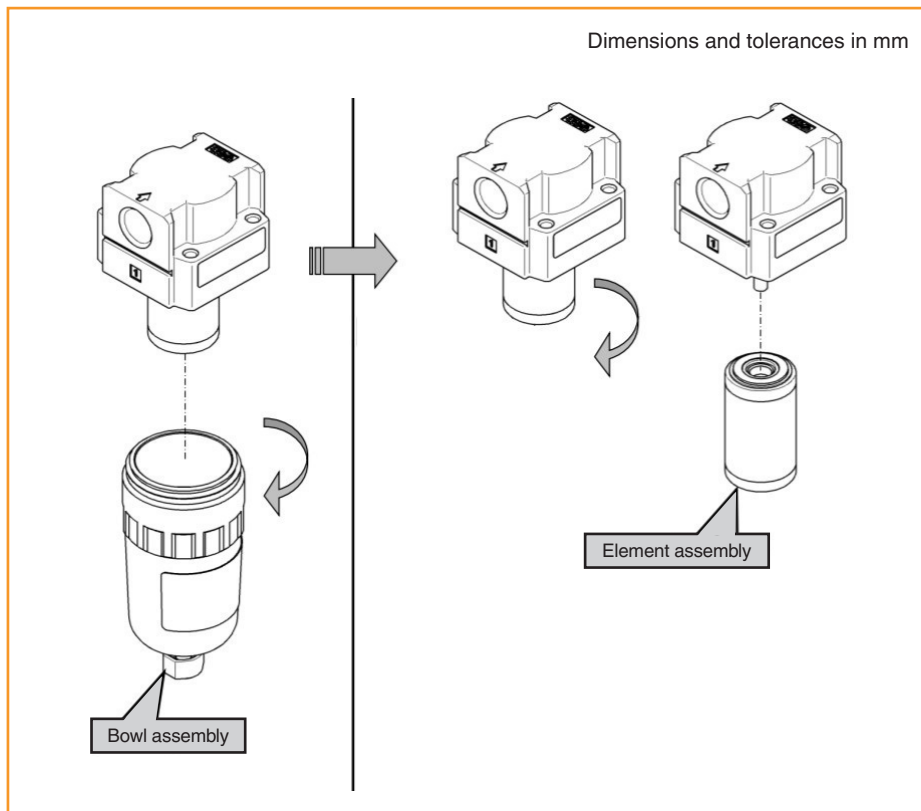
Maintenance (continued)

Stage 2 and stage 3 filters

1. Release the bowl assembly by unscrewing it anticlockwise to detach it from the product. If the bowl assembly is too tight to be removed, use a hook spanner until it can be loosened by hand.
2. To remove the element, hold the element with a 7 mm wrench and rotate it anticlockwise.

Reverse process to reassemble

1. Hold the element with a spanner to rotate it clockwise to a torque of 0.49 Nm (+/- 0.05 Nm).
2. Rotate the bowl assembly clockwise to secure it to the product. Tighten by hand to a tightening torque of 2.2 Nm.



NOTE: It is recommended to use the Renishaw service kit (Renishaw part no. A-9768-4385) for the full-size air filter (A-9768-4353) or (Renishaw part no. A-9768-4386) for the reduced-size air filter (A-9768-4354), as it contains all service items required.

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Renishaw plc. Registered in England and Wales. Company no: 1106260.
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M - 9768 - 9492 - 01

Part no.: M-9768-9492-01-A
Issued: 12.2021