

GB

## Operating and Maintenance Instructions

### WARNINGS



These units are intended for use in industrial compressed air systems ONLY. DO NOT use for fluids other than ambient air.



The air supply must be dry enough to avoid the formation of ice at temperatures below +2°C.



AFU 300/600 units ARE NOT suitable for use where carbon monoxide, carbon dioxide or other toxic gases may be present in the air supply.



DO NOT use AFU 300/600 where pressures and temperatures can exceed those stated in the *Specification* table overleaf.



DO NOT use if the ambient temperature is outside of the range 0°C to +40°C.



The use of AFU 300/600 DOES NOT guarantee breathing quality air unless regular air quality checks are carried out to ensure that the air supplied conforms to EN 12021.



It is a requirement that regular air quality checks are carried out to ensure that the air supplied conforms to EN 12021. Scott Health and Safety Limited recommends that these checks are performed on at least a monthly basis.



ALWAYS site the air compressor intake in a clean-air zone and ensure that the compressor is well maintained.



ALWAYS check the air-flow requirements of the Respiratory Protective Equipment or Breathing Apparatus intended for use before using AFU 300/600.



AFU 300/600 system users MUST be familiar with workplace hazards prior to using the equipment and must be fully trained in the use of the apparatus.



DO NOT use if the apparatus is damaged. The apparatus must be inspected on every occasion before use to ensure that no damage of any kind is evident which could cause reduced levels of protection. A monthly inspection of the apparatus is a mandatory requirement in the UK under COSHH regulations and inspection on a monthly basis is strongly recommended for all other countries.



Filter elements MUST be replaced on at least a yearly basis, or sooner if indicated by air quality checks.



Water vapour will pass through these units and could condense into liquid form down-stream as air temperature drops. Install an air dryer if water condensation could have a detrimental effect on the application.

## SPECIFICATION

Designed for use with:	Compressed air
Recommended operating temperature range*:	0°C to +40°C
Normal inlet pressure range:	5 to 8 bar
Maximum recommended operating pressure:	10 bar
Remaining oil content less than:	0.003mg/m <sup>3</sup> at 21°C
Particle removal:	0.01µm
Inlet connection:	G½ (½" BSP) parallel female thread
Outlet connection(s):	G½ (½" BSP) parallel female thread fitted with CEJN pattern, self-sealing socket coupling(s)

\* Air supply must be dry enough to avoid the formation of ice at temperatures below +2°C.

## INTRODUCTION

The **AFU 300/600** range of compressed air airline filtration units provide a means of ensuring that industrial compressed air supplies as delivered to the Respiratory Protective Equipment or Breathing Apparatus User conform to the breathing-quality requirements specified in EN 12021 : 1999 and EN 529 : 2005.

The units have the capacity to supply air-flows to the latest recommendations for Respiratory Protective Equipment (RPE) and Breathing Apparatus (BA).

**AFU** comprises a two-stage air filtration unit mounted on a lightweight, robust carrying frame.

The first stage filter, (located closest to the inlet connection), provides filtration of particulates including dust and oil droplets down to 5µm. The second stage filter, which is situated closest to the outlet connection(s), further reduces the presence of particulates down to 0.01µm and features a charcoal filter element for the removal of organic gases.

### WARNING:

**AFU 300/600 units ARE NOT suitable for use where carbon monoxide, carbon dioxide or other toxic gases may be present in the air supply.**

A high-visibility, pop-up service indicator is fitted to provide a warning to the User that the pre-filter is becoming clogged.

An automatic drain device is fitted to each of the lower filter bowls to prevent the build-up of oil.

The inlet connection consists of a G½ (½" BSP) parallel female thread, to which the compressed air supply is connected. The standard CEJN pattern outlet connection(s) enable speedy attachment of the User's airline apparatus.

There are two versions of the filtration units:

- **AFU 300** - designed to supply a single RPE or BA wearer through a CEJN pattern outlet connector. This unit can filter in excess of 300 litres of air per minute at inlet pressures of over 4 bar.
- **AFU 600** - designed to supply two RPE or BA wearers through a pair of CEJN pattern outlet connectors attached to a Y-Piece. In excess of 600 litres of air per minute can be delivered at inlet pressures of over 4 bar.

The following table provides the maximum flow ratings permissible at a series of given inlet pressures:

Inlet Pressure (bar)	Maximum Flow (dm <sup>3</sup> /s)**	
	AFU 300	AFU 600
1.0	2.8	4.4
3.0	4.8	7.6
5.0	6.2	9.8
6.3	7.0	11.0
7.0	7.3	11.5
9.0	8.4	13.2

\*\* Maximum flow to maintain stated oil removal performance.

## **BEFORE USE**

1. Ensure that the filtration unit is clean, complete and in good condition.

### **WARNING:**

**DO NOT use equipment that exhibits signs of damage or malfunction of any kind.**

2. Ensure that all filter bowls are fully secured (in a clockwise direction) to the filter bodies.

3. Install the **AFU** into the airline run, bearing in mind the following points:

- The unit must be installed vertically (filter bowls pointing downwards).
- Site the unit upstream of lubricators and cycling valves.
- Ensure that the airflow is in the direction indicated by the arrows on the filter bodies.
- If the **AFU** is to be used as a main line filter, the unit should be sited as closely as possible to the air supply.
- If the **AFU** is to be used as a final filter, the unit should be sited as closely as possible to the RPE or BA being supplied.

4. If required, a short length of drainage pipe (6mm outside diameter) can be inserted into the automatic drain devices on the filter bowls.

5. Carry out a breathing-air quality test at the end of the airline where the RPE or BA is to be used.

## **IN USE**

### **WARNING:**

- **DO NOT exceed the maximum flow rating specified.**
- **On exceptionally dirty lines, it may be necessary to replace the pre-filter at 90 day intervals.**
- **A resistance in air-flow indicates that the filter element(s) may require replacement.**

### **CAUTION:**

**DO NOT allow the pressure differential across the filter element to exceed 0.7 bar, or damage to the element may occur.**

1. Ensure that the compressed air supply is switched on.

2. Connect the RPE or BA to the outlet connection(s) on the **AFU**.

3. Don the RPE or BA in a safe area, as described in the User Manual for the equipment being used.

4. Proceed with the tasks to be undertaken.

## **AFTER USE**

1. Proceed to a safe area and remove the RPE or BA as described in the User Manual for the equipment being used.

2. Disconnect the RPE or BA from the outlet connection(s) on the **AFU**.

3. Clean and store the RPE or BA in accordance with the instructions given in the User Manual for the equipment being used.

4. Thoroughly inspect the **AFU** for damage or malfunction of any kind. Rectify any faults found immediately.

5. Clean and store the **AFU** as described below.

## **STORAGE**

When not in use, the equipment should be stored in a clean, dry environment, away from direct heat sources between 0°C and +40°C, at a humidity of less than 65% RH.

## **CLEANING/MAINTENANCE**

Maintenance tasks must only be performed by trained personnel. Please contact **Scott Health and Safety Limited** for training information.

### **After Use:**

1. Shut off inlet pressure and reduce pressure in the inlet and outlet lines to zero.

2. Remove first and second stage filter bowls (see *Fitting Spares*) and dispose of any debris or liquid that may have accumulated within. If appropriate, the inside of filter bowls can be cleaned using soapy water. Dry thoroughly prior to replacement.

3. Inspect first and second stage filter elements and replace if necessary.

4. Re-fit elements and filter bowls.

5. Unscrew and remove top filter bowl (see *Fitting Spares*) and inspect charcoal filter. Renew charcoal filter if discoloured. Re-fit top filter bowl.

### **Annually:**

Remove the equipment from service and transfer to a suitable area for Servicing to be undertaken.

The following tasks should be carried out as part of the Annual Service:

- Replace first and second stage filter elements;
- Replace charcoal filter;
- Replace all O-Rings;
- Visually inspect all component parts for damage or wear and replace if necessary;
- Clean disassembled component parts as necessary in soapy water and dry thoroughly;
- Blow out internal passages in filter body using an airline.

Please refer to *Fitting Spares* for further details.

## **RECORD INSPECTION AND MAINTENANCE DETAILS**

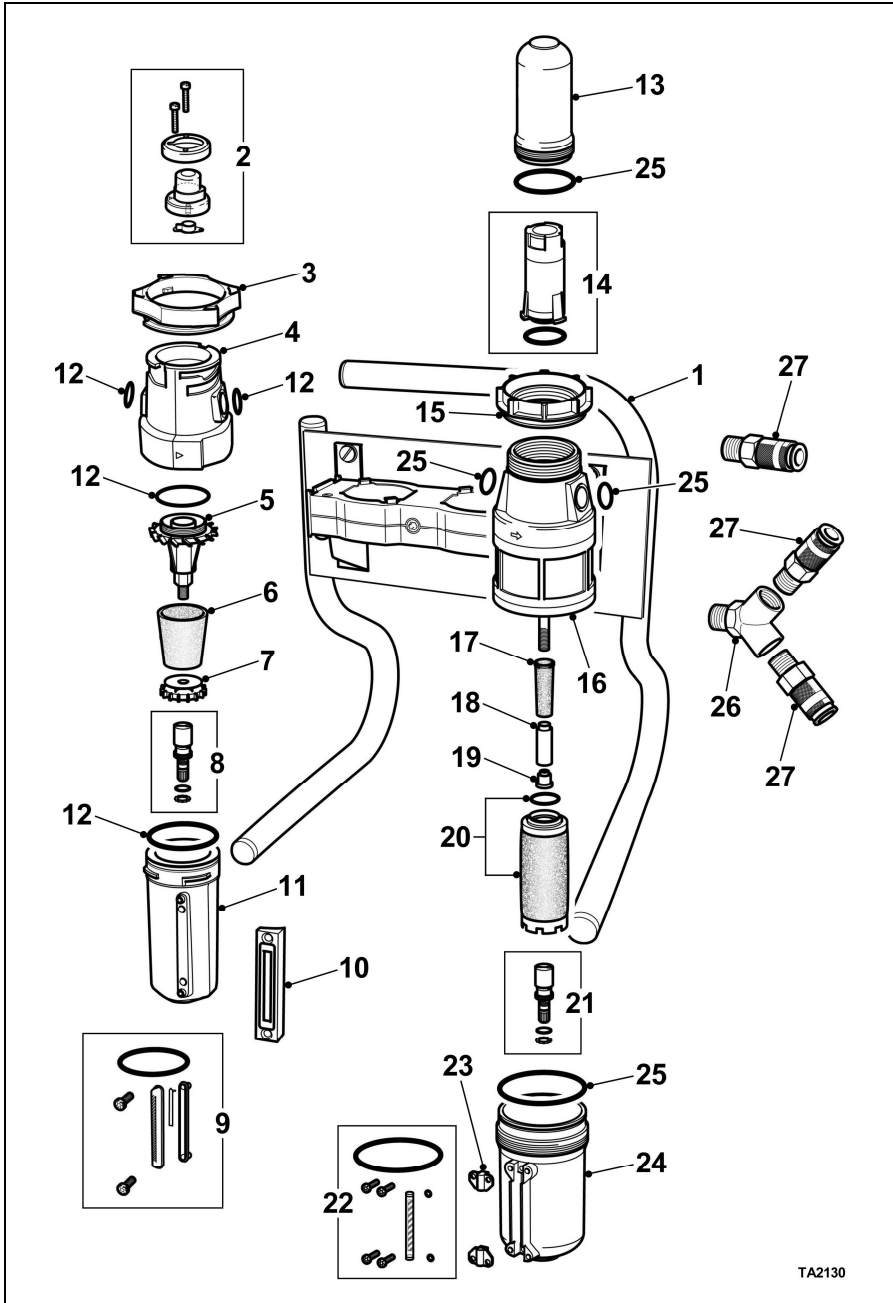
Record maintenance details on the Inspection and Maintenance Record Sheet provided at the back of this Manual.

Information recorded usually includes:

- Name of employer responsible for the apparatus.
- Make, model number or identification mark of the apparatus, together with a description of any distinguishing features, sufficient to enable clear identification.
- Date of the inspection/maintenance together with the name, signature or unique authentication mark of the examiner.
- Condition of the apparatus, details of any defects found and any remedial action taken.

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SPARE PARTS



TA2130

Item No.	Description	Article No.
1	Carrying Frame & Filter Yoke Assembly	-
2	Service Indicator Assembly	2017179
3	Locking Ring	-
4	Filter Body	-
5	Louvre	-
6	Filter Element	2004881
7	Baffle	-
8	Automatic Drain Kit	2017181
9	Sight Glass Kit	2004879
10	Sight Glass Housing	-
11	Filter Bowl	-
12	Service Kit	2004878
13	Top Filter Bowl	-
14	Charcoal Filter	2004886
15	Clamping Ring	-
16	Filter Body	-
17	Pre-filter	2004884
18	Spacer Tube - (AFU 600 only)	-
19	Retainer	-
20	Coalescing Element - (AFU 300)	2004889
20	Coalescing Element - (AFU 600)	2004890
21	Automatic Drain Kit	2017181
22	Sight Glass Kit	2017180
23	Sight Glass Retainer	-
24	Filter Bowl	-
25	Service Kit	2004883
26	Y-Piece Adaptor - (AFU 600 only)	2004891
27	Coupling	2004888
-	MS4 Silicone Grease (15g)	2003715

## FITTING SPARES - FIRST STAGE FILTER

### Note:

- Before carrying out any of the following procedures, shut off inlet pressure and reduce pressure in inlet and outlet lines to zero.
- Unless otherwise stated, all of the following procedures are described working from the front of the unit (filters facing toward you).

### To Replace the Filter Element:

1. Lift and turn filter bowl (11) approximately 25mm to your left and withdraw filter bowl complete with O-Ring and automatic drain.
2. Lie filtration unit down so that mounting feet and filters are uppermost.
3. Remove baffle (7) by unscrewing in a counter-clockwise direction.

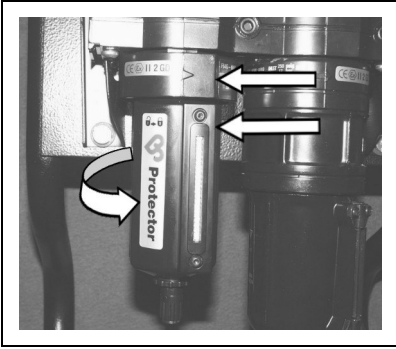
4. Remove filter element (6) and discard.
5. Locate new filter element into position and secure with baffle.

### CAUTION:

- **Ensure that threads are not crossed when re-fitting baffle.**
  - **Baffle should only be secured finger-tight. DO NOT over-tighten.**
6. Ensure that O-Ring and automatic drain on filter bowl are clean and in good condition. Replace if necessary.

### Note:

If O-Ring is to be replaced, apply a thin coating of MS4 Silicone Grease prior to re-assembly.



7. Insert filter bowl into filter body (4) and turn bowl approximately 25mm to your right, so that the sight glass housing is aligned with the corresponding step on filter body.

### To Replace the Sight Glass:

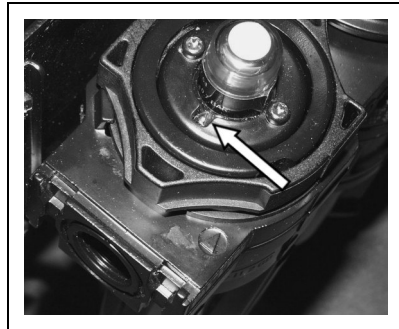
1. Withdraw filter bowl (11) from filter body (4) as described above.
2. Using a Torx Screwdriver, remove and discard screws that secure sight glass housing (10) to filter bowl (11).
3. Remove sight glass housing (10) from filter bowl (11) and place aside.
4. Remove and discard sight glass and backing plate (9).
5. Fit new sight glass and backing plate into location holes in filter bowl, taking care to ensure that sight glass is correctly orientated (red indicator towards top of filter bowl).
6. Re-fit sight glass housing and secure in position using new screws. Tighten screws evenly, DO NOT over-tighten.
7. Remove and discard O-Ring from top of filter bowl.
8. Apply a thin coating of MS4 Silicone Grease to replacement O-Ring and fit O-Ring to filter bowl.
9. Re-fit filter bowl to filter body as described above.

### To Replace the Automatic Drain:

1. Withdraw filter bowl (11) from filter body (4) as described above.
2. Undo retaining nut located beneath filter bowl. Remove automatic drain (8) from filter bowl. Discard drain, sealing ring and retaining nut.
3. Ensure that sealing ring on replacement automatic drain is correctly seated and insert drain into location hole in filter bowl.
4. Secure using new retaining nut until finger-tight. DO NOT over-tighten.

### To Replace the Service Indicator:

1. Using a Torx Screwdriver, remove and discard screws that secure service indicator assembly (2) to top of filter body (4). Discard service indicator assembly.



2. Locate replacement service indicator assembly into top of filter body, taking care to ensure that arrow symbol on indicator body is aligned with cut-out in indicator cover. When positioned correctly into filter body, cut-out and symbol (arrowed above) should face toward inlet port.
3. Secure using new screws until hand-tight. Tighten screws evenly, DO NOT over-tighten.

### To Replace the O-Rings:

#### Note:

All replacement O-Rings should be lightly coated with MS4 Silicone Grease prior to fitment.



1. Withdraw filter bowl (11) from filter body (4) as described in *To Replace the Filter Element*. Place aside.
2. Remove baffle (7) and filter element (6) as described in *To Replace the Filter Element*. Place aside.
3. Remove louvre (5) by unscrewing in a counter-clockwise direction and place aside.



4. Invert carrying frame assembly so that second stage filter bowl (24) is uppermost.



5. With the palm of the hand, apply firm downward pressure to push filter body (4) in towards filter yoke and at the same time, release locking ring (3) by turning in a counter-clockwise direction. As soon as locking ring starts to turn freely, it will no longer be necessary to apply pressure to filter body.

**Note:**

Considerable downward pressure will be required in order to release locking ring.

**WARNING:**

**Take care not to injure yourself when performing the above operation.**

6. Continue turning locking ring until filter body (NOT locking ring) can be removed from filter yoke.

**Note:**

The locking ring is retained in position by the filter yoke and its removal is not necessary.

7. Remove and discard O-Rings from filter body (4).
8. Lightly grease new O-Rings and locate in position on filter body.
9. With carrying frame assembly still inverted, insert filter body with O-Rings into filter yoke and align locking ring (3) with filter body.



10. With the palm of the hand, apply firm downward pressure to push filter body in towards filter yoke and at the same time, turn locking ring in a clockwise direction to secure filter body to filter yoke.

**Note:**

Considerable downward pressure will be required in order to secure filter body.

**WARNING:**

**Take care not to injure yourself when performing the above operation.**

11. Continue turning locking ring until filter body is securely located in filter yoke. When correctly positioned, top of filter body will be approximately 1.5mm higher than top of locking ring.

12. Remove and discard O-Ring from louvre (5).

13. Lightly grease new O-Ring and locate in position on louvre.

14. Fit louvre to threaded housing inside filter body.

**CAUTION:**

**Ensure that threads are not crossed when re-fitting louvre.**

15. Use a Torque Wrench to tighten louvre to 2.5 Nm (+/- 0.2 Nm).

16. Fit filter element (6) to louvre (5) and secure in position with baffle (7).

**CAUTION:**

- **Ensure that threads are not crossed when re-fitting baffle.**
- **Baffle should only be secured finger-tight. DO NOT over-tighten.**

17. Remove and discard O-Ring from filter bowl (11).

18. Lightly grease new O-Ring with MS4 Silicone Grease and locate in position on filter bowl.

19. Re-fit filter bowl to filter body as described in *To Replace the Filter Element*.

## FITTING SPARES - SECOND STAGE FILTER

**Note:**

- Before carrying out any of the following procedures, shut off inlet pressure and reduce pressure in inlet and outlet lines to zero.
- Unless otherwise stated, all of the following procedures are described working from the front of the unit (filters facing toward you).

### To Replace the Charcoal Filter:

1. Unscrew and remove top filter bowl (13).
2. Withdraw charcoal filter (14) from top of filter body (16). Discard filter and O-Ring.
3. Use a clean, dry cloth to remove all traces of oil and dirt from inside filter body where new charcoal filter is to be fitted.
4. Lightly grease new O-Ring with MS4 Silicone Grease and locate in position on charcoal filter.
5. Locate replacement charcoal filter in top of filter body.
6. Remove and discard O-Ring from filter bowl.
7. Lightly grease new O-Ring and locate in position on filter bowl.
8. Re-assemble filter bowl to filter body until hand-tight.

### To Replace the Coalescing Filter Element:

1. Lie filtration unit down so that mounting feet and filters are uppermost.
2. Unscrew filter bowl (24) in a counter-clockwise direction and remove from filter body (16).
3. Unscrew coalescing element with O-Ring (20) to remove from filter body (16). Discard element and O-Ring.
4. Lightly grease new O-Ring with MS4 Silicone Grease and locate in position on coalescing filter.

5. Screw replacement element and O-Ring into filter body until finger-tight. DO NOT over-tighten.
6. Ensure that O-Ring and automatic drain on filter bowl are clean and in good condition. Replace if necessary.

**Note:**

If O-Ring is to be replaced, apply a thin coating of MS4 Silicone Grease prior to re-assembly.

7. Screw filter bowl into filter body, in a clockwise direction, ensuring that bowl is fully tightened into body.

**Note:**

If necessary, the filter bowl can be unscrewed A MAXIMUM of one turn to position the sight glass for easier visibility.

**To Replace the Sight Glass:**

1. Remove filter bowl (24) from filter body (16) as described above.
2. Using a Torx Screwdriver, remove and discard screws that secure sight glass retainers (23) to filter bowl.
3. Remove sight glass retainers from filter bowl and place aside for re-use.
4. Remove and discard sight glass and two small seating O-Rings.
5. Apply a thin coating of MS4 Silicone Grease to replacement O-Rings and locate in position on filter bowl.
6. Fit sight glass retainers onto ends of new sight glass and locate assembled parts into position on filter bowl, taking care to ensure that sight glass is correctly orientated (indicator stripes facing toward filter bowl).
7. Secure sight glass retainers in position using new screws. Tighten screws evenly, DO NOT over-tighten.
8. Remove and discard O-Ring from top of filter bowl.
9. Apply a thin coating of MS4 Silicone Grease to replacement O-Ring and fit O-Ring to filter bowl.
10. Re-fit filter bowl to filter body as described above.

**To Replace the Automatic Drain:**

1. Withdraw filter bowl (24) from filter body (16) as described above.
2. Undo retaining nut located beneath filter bowl. Remove automatic drain (21) from filter bowl. Discard drain, sealing ring and retaining nut.
3. Ensure that sealing ring on replacement automatic drain is correctly seated and insert drain into location hole in filter bowl.
4. Secure using new retaining nut until finger-tight. DO NOT over-tighten.

**To Replace the Pre-filter:**

1. Remove filter bowl (24) from filter body (16) as described above.
2. Remove coalescing element (20) from filter body (16) as described above.
3. Unscrew retainer (19) in a counter-clockwise direction and remove from centre spindle. On **AFU 600** versions only; remove spacer tube (18).
4. Withdraw pre-filter (17) from filter body (16). Discard pre-filter.
5. Insert replacement pre-filter into filter body, taking care to ensure that pre-filter is correctly orientated (lipped end into filter body).
6. On **AFU 600** versions only; re-fit spacer tube.
7. Fasten retainer into position on centre spindle until finger-tight. DO NOT over-tighten.

**CAUTION:**

**Ensure that threads are not crossed when re-fitting retainer.**

8. Fit coalescing element to filter body as described in *To Replace the Coalescing Filter Element*.
9. Re-fit filter bowl to filter body as described in *To Replace the Coalescing Filter Element*.

## To Replace the O-Rings:

### Note:

All replacement O-Rings should be lightly coated with MS4 Silicone Grease prior to fitment.

1. Remove top filter bowl (13) and charcoal filter (14) as described in *To Replace the Charcoal Filter*.
2. Remove lower filter bowl (24) and coalescing element (20) as described in *To Replace the Coalescing Filter Element*.
3. Unscrew clamping ring (15) in a counter-clockwise direction to release filter body (16) from filter yoke.
4. Remove and discard O-Rings from filter body.
5. Lightly grease new O-Rings and locate in position on filter body.
6. Locate filter body with O-Rings into filter yoke and secure using clamping ring until hand-tight.
7. Fit charcoal filter as described in *To Replace the Charcoal Filter*.
8. Remove and discard O-Ring from top filter bowl.
9. Lightly grease new O-Ring and locate in position on top filter bowl.
10. Re-fit top filter bowl as described in *To Replace the Charcoal Filter*.
11. Fit coalescing element as described in *To Replace the Coalescing Filter Element*.
12. Remove and discard O-Ring from lower filter bowl.
13. Lightly grease new O-Ring and locate in position on lower filter bowl.
14. Re-fit lower filter bowl as described in *To Replace the Coalescing Filter Element*.

## WARRANTY

The products manufactured at our factories in Skelmersdale and Vaasa carry a warranty of 12 months (unless stated otherwise) for parts, labour and return to site. The warranty period runs from the date of purchase by the end user.

These products are warranted to be free from defects in materials and workmanship at the time of delivery. **SCOTT** will be under no liability for any defect arising from wilful damage, negligence, abnormal working conditions, failure to follow the original manufacturer's instructions, misuse or unauthorised alteration or repair.

Evidence of purchase date will need to be provided for any claims arising during the warranty period. All warranty claims must be directed through **SCOTT Customer Services** and in accordance with our sales return procedure.