

# Operation/Maintenance BFM 1015

## Service/Maintenance: Cooling System

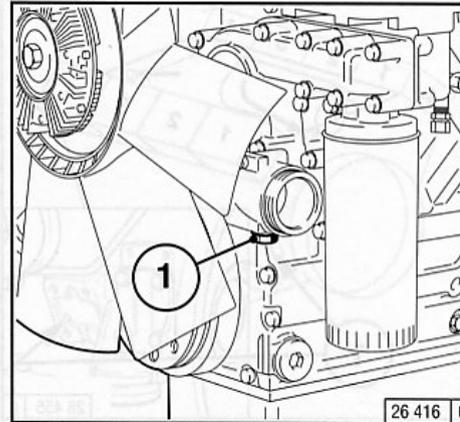


### 6.3.1 Cleaning Intervals

- The degree of soiling of the cooler units is dependent on the type of engine application.
- The danger of soiling is increased due to residues of oil and fuel on the engine. Check extra carefully, therefore, for leakages when applications involve high dust fallout.
- More severe soiling can occur, e.g. in the case of:
  - Construction site application due to heavily dust-laden air.
- In view of the varying conditions of application, the cleaning intervals must be determined from case to case. The cleaning intervals stated in the table can be taken as guide values.

Checking / Cleaning Intervals	
Guide Values (RH)	Engine Application
2000	Ships, gensets in enclosed spaces, pumps
1000	Vehicles on paved roads
500	Mobile gensets
250	Vehicles on construction sites and unpaved roads, Construction equipment, compressors, underground mining equipment
125	Farm equipment

### 6.3.2 Draining Cooling System



- Place tray under drain plug 1.
- Remove drain plug 1 and sealing ring below coolant inlet.
- Drain coolant.
- Filling / bleeding as under 6.3.3
- Screw on drain plug 1 with new sealing ring and tighten (see 9.2).
- Check for leaks.



Be careful when draining hot coolant. Danger of scalding!  
Catch drained coolant and dispose of in accordance with anti-pollution regulations!

### 6.3.3 Filling / Bleeding Cooling System

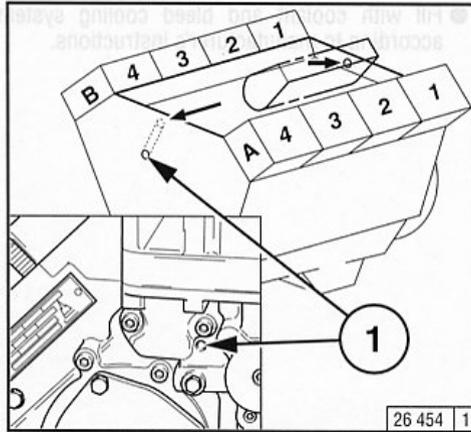
- Fill with coolant and bleed cooling system according to manufacturer's instructions.

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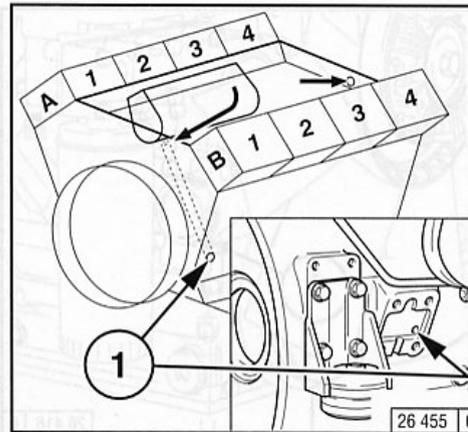


### 6.3.4 Cleaning engine - with compressed air



- Blow compressed air onto engine  
Wash out loosened dirt particles from V-space with water jet.
- Make sure that drain holes 1 of V-space are free.

### - with cold cleaning agent



- Spray engine with commercial cold cleansing agent and let stand for about 10 min.
- Then spray clean with strong water jet (do not spray water directly onto sensitive components such as alternator, starter, wiring, electronic components).
- Make sure that drain holes 1 of V-space are free.

- Let engine run up to operating temperature after each wet-cleaning procedure allowing any remaining water to evaporate, thus avoiding corrosion.



Clean only with engine stationary

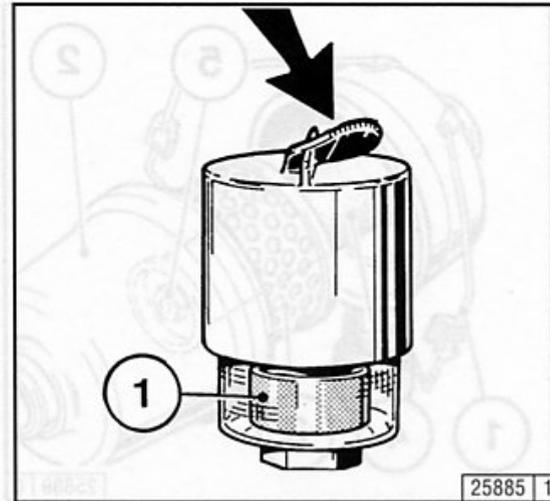
# Operation/Maintenance BFM 1015

## Service/Maintenance: Combustion Air Cleaner



### 6.4.1 Cleaning Intervals

- The degree of soiling of the combustion air cleaner depends on the amount of dust contained in the air and the size of the filter used. If very dusty air is to be expected, a cyclone-type precleaner can be fitted to the air cleaner.
- Consequently, the cleaning intervals cannot be fixed generally, but have to be determined from case to case.
- When a dry-type air cleaner is used, when indicated by the service indicator or switch.
- Air cleaner servicing is needed when :
  - **Service Indicator**  
the red sector 1 is fully visible when the engine is off.
  - **Service Switch**  
the yellow pilot light comes on when the engine is running.
- After having carried out service work, reset the signal by pressing the button of the service indicator. The service indicator is ready to resume its function.



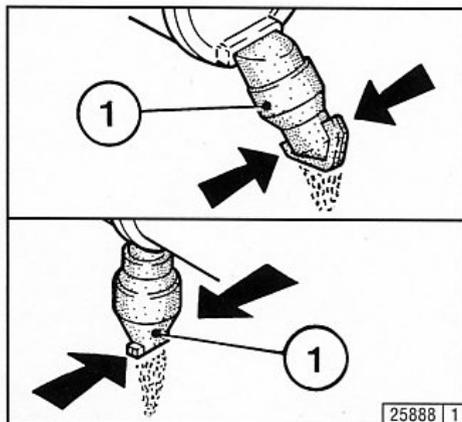
# Operation/Maintenance BFM 1015

## Service/Maintenance: Combustion Air Cleaner



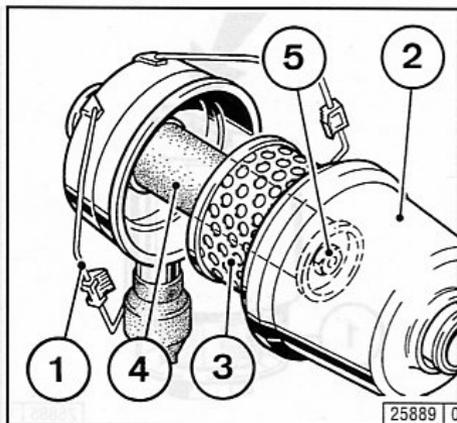
### 6.4.2 Dry-Type Air Cleaner

#### Dust Discharge Valve



- Empty dust discharge valve 1 by pressing apart lips of discharge slot as indicated by the arrows.
- Clean discharge slot from time to time.
- Remove any caked dirt by pressing together the upper section of the valve.

#### Filter Cartridge



- Release fastening clamps 1.
- Take off hood 2 and remove cartridge 3.
- Clean cartridge, replace at least once a year.
  - Clean cartridge 3:
    - blow through with dry compressed air (max. 5 bar) from inside to outside, or
    - in difficult cases, tap out, taking care not to damage the cartridge, or
    - wash out according to manufacturer's instructions.

- Check cartridge for damage to filter paper (by shining the paper through with a light), and inspect sealing element. Renew if necessary.
- After having serviced the filter cartridge five times, or after two years at the latest, renew safety cartridge 4 (never clean!).  
To do this, proceed as follows:
  - Undo hex. nut 5 and remove cartridge 4.
  - Insert new cartridge, insert and tighten hex. nut.
- Install cartridge 3, place hood 2 back in position and secure fastening clamps 1.



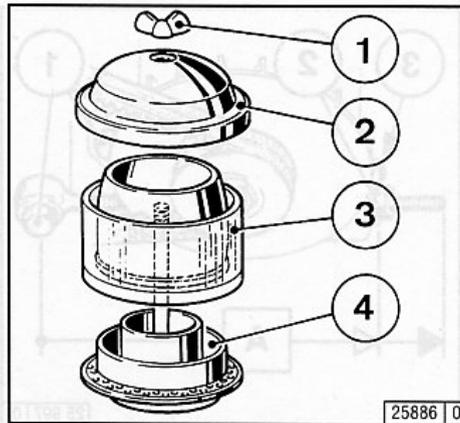
Never clean filter cartridge with petrol (gasoline) or hot liquids!

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## Service/Maintenance: Combustion Air Cleaner

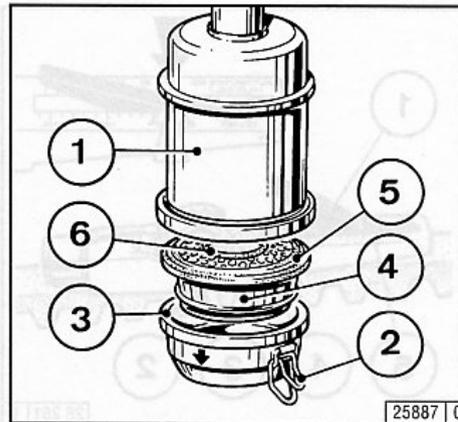


### 6.4.3 Emptying Cyclone-Type Precleaner

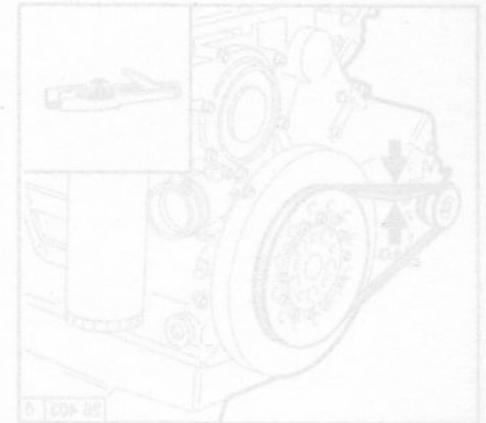


- Undo wing nut 1 and remove cover 2.
- Remove collector bowl 3 from lower section 4 and empty. Remove leaves, straw and other foreign matter from lower section of precleaner.
- Reposition collector bowl 3 onto lower section 4, fasten cover 2 in place by tightening wing nut 1.

### 6.4.4 Cleaning Oil Bath Air Cleaner



- Turn engine off and wait about 10 minutes for the oil to drain from filter housing 1.
- Release snap clips 2 and remove oil cup 3 together with filter element 4. If necessary, press element out with a screwdriver, taking care not to damage rubber gasket 5.
- Remove dirty oil and sludge. Clean oil cup.
- Clean filter element 4 in diesel fuel and allow to drip-dry.
- Clean filter housing 1 if very dirty.
- Inspect and replace rubber gaskets 5 and 6 if necessary.



- Fill oil cup with engine oil up to the mark (arrow) (for viscosity, see 4.1.2).
- Refit oil cup and element to filter housing and secure with snap clips.



Never clean air cleaner with petrol (gasoline)!

Dispose of old oil in accordance with anti-pollution regulations!