

**Auxiliary filters**

---

*AF series*

---

**INSTALLATION AND OPERATION MANUAL**

**MAN0266/2**



## **Warnings**

***This manual aims at giving some operating instructions to the user in order to grant a safe and optimal use of the unit.***

***You should read it carefully both for installation, starting-up and maintenance procedures. Keep this manual handy for future reference.***

***The noncompliance with the instructions given in this manual can lead to serious damage to the unit which in this case will invalidate the warranty.***

***No compensation or indemnity under any kind will be acknowledged for injury or damage due to use or misuse of the product, for poor operation of the appliances connected to IREM product or for immediate or indirect damage caused to the powered equipment.***

***During the warranty period the replacement of defective parts and maintenance procedures will be exclusively carried out at IREM servicing centre.***

***CE declaration is available on request.***

## Table of contents

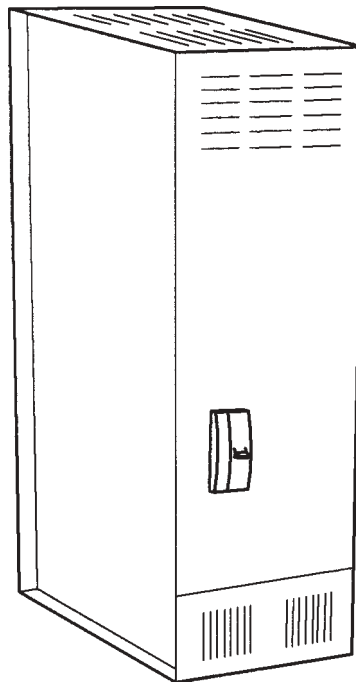
|  |    |
|--|----|
| GENERAL PURPOSES                                       |    |
| Description .....                                      | 1  |
| Block diagram .....                                    | 2  |
| Characteristics .....                                  | 2  |
| AF displacement block diagram .....                    | 3  |
| COMPONENT LAYOUT                                       |    |
| Component layout .....                                 | 4  |
| CONNECTION AND OPERATING INFORMATION                   |    |
| Receiving the unit .....                               | 5  |
| Delivery arrangement .....                             | 5  |
| Storage .....  | 5  |
| Package removing and handling .....                    | 5  |
| Warnings .....   | 6  |
| Preliminary checks .....                               | 6  |
| Installation-use .....                                 | 7  |
| Matching IREM rectifier with AF auxiliary filter ..... | 8  |
| TROUBLESHOOTING  |    |
| Possible failures .....                                | 9  |
| Preventive maintenance .....                           | 10 |
| TECHNICAL DATA   |    |
| Technical specifications .....                         | 11 |
| Outline drawing .....                                  | 12 |

## **General purposes**

This special type of filter has been expressly designed to improve the operation of short arc Xenon lamps meeting all the requirements of the lamp manufacturers. It reduces the current ripple, thus improving arc stability and lamp useful life.

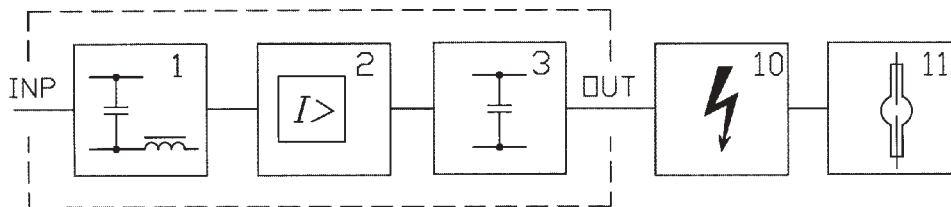
**AF** series filters are particularly suitable for the following **IREM** rectifiers:

- N3-X...DM rectifiers
- G3-X...DM rectifiers
- N3 rectifiers not fitted with built-in filter (N3-50, N3-80 and N3-100 models)
- G3 rectifiers not fitted with built-in filter (G3-80 and G3-100 models)



## General purposes

### Block diagram



1. Low-pass filter
2. Starting current peak suppression circuit
3. Starting and filter capacitor
10. Igniter
11. Lamp

### Characteristics

AF series has been designed to improve the performances of N3-X...DM, G3-X...DM N3 and G3 models.

This filter is composed by a special low pass filter formed by the inductance L (1) and the capacitor battery (1). A capacitor C (3) has been inserted for the immediate delivery of the current needed for striking the lamp and for filtering purposes.

A1 board (2) limits the starting discharge current of the capacitors C (1 and 3) to a negligible value thus meeting the requirements of the lamp manufactures.

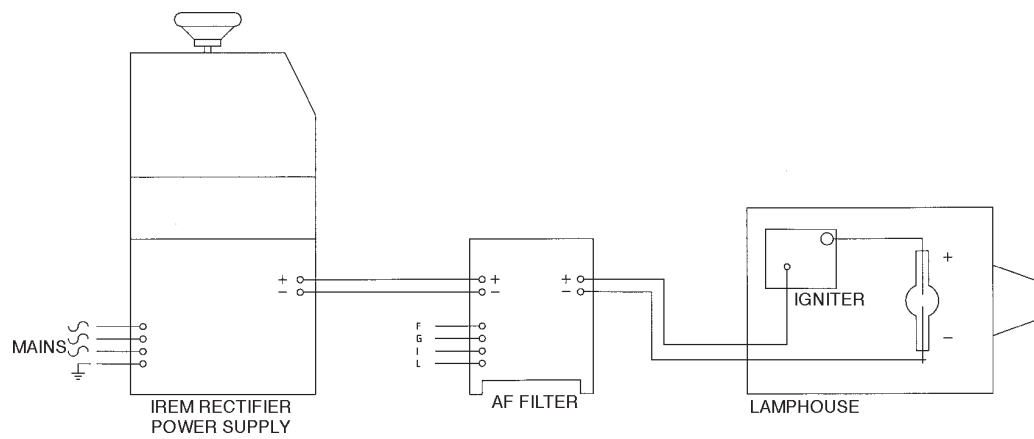
AF filter protection and lamp faulty operation warning aim at:

- . warning the user in case of anomalies that, even if not affecting the film projection, could damage the lamp or shorten its useful life (e.g.: a diode failure).
- . protecting the filter against wrong wiring connections during installation
- . protecting the filter against severe line disturbances (e.g.: phase unbalance and lack of phase)

The cabinet, equipped with carrying handles, permits an easy inspection of the inside components.

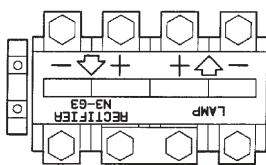
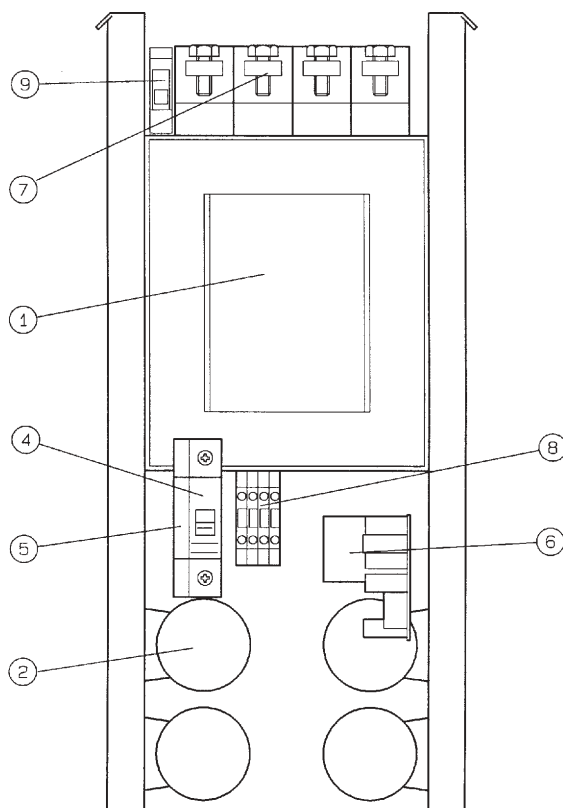
## General purposes

### AF displacement block diagram



## Component layout

AF-110 AF-170 AF-200 models



- 1) Filter inductance (L)
- 2) Output filter capacitors and starting filter capacitors
- 4) Circuit breaker (QF1)
- 5) Auxiliary contact (S1)
- 6) Ignition relay (A1)
- 7) Input/Output terminals (X1 +,-)
- 8) Alarm ON/OFF terminals (I-F-G-L)
- 9) Ground terminal (PE)

## **Connection and operating information**

### **Receiving the equipment**

After receipt, check that the unit is in good condition. When necessary, contact the forwarding agent.

### **Delivery arrangement**

The supply consists of:

**AF** filter unit  
an installation and operation manual  
a warranty card.

### **Storage**

If the unit is stored before installation, check that it is kept dry and cannot come into contact with water in any form. Do not expose the unit to the sun rays or other sources of heat.

### **Package removing and handling**



Remove the packing and keep it in case of future transportation needs or collect the packing materials and recycle them.

Carefully lift the unit by means of its handles. Avoid any shock when moving.

## Connection and operating information

### Warnings



**Caution : dangerous voltage inside AF filter.**

**Before checking the internal components:**

**1) disconnect the rectifier from the mains and wait 3 minutes at least for capacitor discharge**

**2) then disconnect the auxiliary filter from the rectifier.**



**Prevent water, liquids in general and/or foreign objects from getting inside the appliance (do not open the unit, contact IREM servicing centre !).**

**Check that a 100 mm (4 inch.) free space is left all around the unit to ensure the necessary ventilation and to prevent overheating.**

**To prevent blockages caused by overheating, do not expose the unit to the sun rays or other sources of heat.**

**Do not place anything on the upper side of the unit and ensure that the ventilation slots are unobstructed.**

**Installation must only be carried out by trained personnel.**

### Preliminary checks

**The connection must be carried out in compliance with the current safety standards. To ensure a correct operation of the unit, please strictly follow these recommendations:**

- the AF input powering has to be the DC rectifier output, withstanding current values as per unit dataplate
- the earth of the installation and the protections against indirect contacts must comply with current safety standards.

## Connection and operating information

### Installation - use

Take off the cover by unscrewing the four fixing screws (see picture no. 1)



PICT. 1

Connect the filter input and output lines to the "X1" terminal board, input terminals "+" and "-" (from rectifier), output terminals "+" and "-" (to the lamp), by means of wires having a proper section (max. current density: 4A per sq/mm) and the ground wire to "PE" terminal (yellow-green - see on pict. no. 2).

Connect the "lamp fault operation warning" to the "X2" terminal board, dry contact "F,G" normally opened, dry contact "I,L" normally closed (see on pict. no. 3).

Check that the circuit breaker is set to ON.

Finally, take in place the cover again.



PICT. 2



PICT. 3

## Connection and operating information

### Matching IREM rectifier with AF auxiliary filter

For the proper operation of the rectifier, please **strictly follow** the steps listed below:

Take off the rectifier front panels.

#### **N3-X...DM and G3-X...DM models**

Locate the RA ignition relay board (refer to the rectifier wiring diagram marked out as “item no. 78800400 or 78800401” and disconnect the wire marked out no. 1 (see on picture or refer to PCB silk-screen):



#### **N3 and G3 models**

Locate the A1 ignition relay board (refer to the rectifier wiring diagram marked out as “item no. 78800409 or 78800410” and disconnect the wire marked out no. 2 (see on picture or refer to PCB silk-screen):



#### **N3 and G3 models**

Locate the A1 ignition relay board (refer to the rectifier wiring diagram marked out as “item no. 78800407 or 78800408” and disconnect the wire marked out no. 2 (see on picture or refer to PCB silk-screen):



## Troubleshooting

### Possible failures



**Caution : dangerous voltage inside AF filter.**

**Before checking the internal components:**

**1) disconnect the rectifier from the mains and wait 3 minutes at least for capacitor discharge**

**2) then disconnect the auxiliary filter from the rectifier.**

**A.** The lamp does not ignite: (refer to N3-X...DM, G3-X...DM; N3 and G3 manuals)

- 1) the lamp is damaged, replace it;
- 2) there is no high voltage discharge into the lamp: check the proper operation of the igniter and verify that there is no discharge towards earth inside the lamphouse.
- 3) if igniter and lamp are not damaged, check the efficiency of the rectifier (verify the no-load voltage on the dataplate of the unit).  
If the no-load voltage is low:
  - check that the powering voltage is the proper one and that no phase is lacking;
  - check the efficiency of the diodes; if some of them are damaged, replace them.
- 4) be sure QF1 circuit breaker on the AF filter is set to ON (closed).

**B.** The output current has a too high ripple:

**RECTIFIER:**

- 1) check that no phase is lacking
- 2) Check the efficiency of diodes (refer to N3-X...DM, G3-X...DM; N3 and G3 manuals)

**AF FILTER:**

- 1) check the efficiency of the electrolytic capacitors. if damaged replace them
- 2) check the efficiency of A1 board: if damaged replace it
- 3) be sure that QF1 breaker (on AF filter) is set to ON (closed)

## **Troubleshooting**

- C.** QF1 circuit breaker (protecting A1 board) trips. S1 contact closes down to warn the user. Check:
- 1) the presence of all the three input phases (U, V, W) on the rectifier. Check the powering line upstream the rectifier and reset the lacking phase. Set QF1 circuit breaker of AF filter to ON.
  - 2) the efficiency of the diodes on the rectifier (the diodes could be short circuited or interrupted). When necessary, replace the faulty diode (see relevant instructions on the manual). Set QF1 circuit breaker of AF filter to ON.
  - 3) the efficiency of C1 and C5 capacitors of the AF filter. The capacitors could be short circuited (low Ohmic resistance between the terminals). When necessary, replace the faulty capacitor. Set QF1 circuit breaker of AF filter to ON.
  - 4) the continuity of K1 power relay contacts on the rectifier. If there is no continuity, replace K1.
  - 5) the absence of overheating on the wiring joints to: primary and secondary coils, diodes, heat sinks on the rectifier. When necessary, reset the faulty wiring joints. Set QF1 circuit breaker of AF filter to ON.
  - 6) the absence of overheating on the AF filter.

## **Preventive maintenance**

Some components must be periodically replaced. This is due to their particular constructive featuring (like ageing). So, schedule a preventive maintenance and/or replacement of the electrolytic capacitors (refer to the spare parts list) (schedule a replacement every 5 years).

When calling for spare parts, please quote the serial number of the unit.

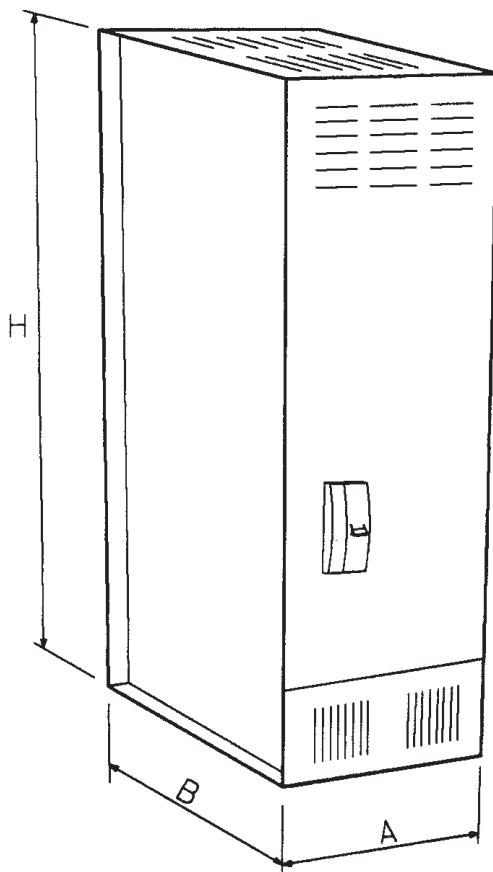
**Technical specifications**

| Model  | DC input/output current [A] | Max. no-load input voltage [V] | Max. input lamp current ripple * [%] | Max. output lamp current ripple * [%] | Efficiency [%] |
|--------|-----------------------------|--------------------------------|--------------------------------------|---------------------------------------|----------------|
| AF-110 | 45-110                      | 160                            | <9                                   | <3                                    | 0.98           |
| AF-170 | 110-170                     | 160                            | <9                                   | <3                                    | 0.98           |
| AF-200 | 170-200                     | 160                            | <9                                   | <3                                    | 0.98           |

\* these values are referred to a phase unbalance of  $\leq 1\%$  max.

Marking: CE  
Operating temperature: 0°C to 40°C  
Storage temperature: -20°C to +60°C  
Cooling: free convection  
Degree of protection: IP20  
Insulation class: CL1  
Mounting position: vertical

## Outline drawing



| Model  | Dimensions (mm)<br>(A x B x H) | Weight<br>(kg) |
|--------|--------------------------------|----------------|
| AF-110 | 240x210x460                    | 24             |
| AF-170 | 240x210x460                    | 29.5           |
| AF-200 | 240x210x460                    | 29.5           |