

# IBIS-ArcSAR

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### 1 INTRODUCTION

The present document describes the operations to be performed for the maintenance of IBIS-ArcSAR, providing also instructions to fix or replace any part of the system that could be damaged.

#### 1.1 Purpose

The scope of the present document is to provide guidelines for IBIS-ArcSAR system maintenance and repairing.

#### 1.2 Application Field

This maintenance manual applies to the IBIS-ArcSAR system and its optional devices.

#### 1.3 Trademarks

Each trademark referenced in this document gives the indication of its respective owner.

#### 1.4 Reference

The applicable versions of the following documents are the ones officially released at the time of the emission of the present document.

##### 1.4.1 Bibliography

[BD1] MNG/2017/0012 – IBIS ArcSAR System – User Manual

## 2 HOW TO USE MANUAL

**USB** Universal Serial Bus

**LoS** Line of Sight

### 2.1 Manual Layout

The manual includes the maintenance plan with the scheduling time of each recommended maintenance action.

Maintenance actions are described item by item in the following paragraphs.

### 2.2 Symbols



Warning or safety notices



Notes and clarification



Tip

### 2.3 Glossary & Acronyms

**IBIS** Image By Interferometric Survey

**PSU** Power Supply Unit

**LED** Light Emitting Diode

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

A periodic check and maintenance are very important to assure the durability and the reliability of the system.

The IBIS-ArcSAR requires both short term and long term maintenance.

Short term maintenance includes cleaning of the instrument to prevent damages and wear and tear due to harsh environments.

Long term maintenance includes operations to be performed in order to guarantee good health of the mechanics and peripherals.

The schedule of maintenance plan is summarized in the following table, divided by ArcSAR components. Each maintenance action reports the paragraph where it is described.

Black tick refers to operations that can be performed by a certified IBIS Specialist person.

Red tick refers to operations that should be done by IDS Georadar authorized personnel only.

ArcSAR ACQUISITION UNIT	Monthly	Every 2 Months	Yearly
Sensor and antennas: inspection and cleaning (3.2.1)		X	
Pointing Camera: inspection and cleaning (3.2.1)		X	
Normal operation: listen for scraping noise (3.2.2)	X		
Positioner inspection and cleaning (3.2.2)		X	
Positioner health check			X

ArcSAR SUPPLY UNIT	Every 2 Months	Every 2 years
Inspection and cleaning (3.3.1)	X	
Battery replacement (3.3.2)		X

ArcSAR TRAILER	Every 2 Months
Inspection and cleaning (3.1)	X

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

ArcSAR GENERATOR	1 month or 100 hours	2 months or 250 hours	4 months or 400 hours	Yearly or 1500 hours	Every 2 years
Inspection and cleaning (3.4.1)	X				
Engine oil level check (3.4.2)	X				
Oil filter and Motor Oil Replacement (3.4.3)			X		
Fuel filter replacement (3.4.5)			X		
Clean Air filter (3.4.6)			X		
Air filter replacement (3.4.6)			X		
Battery replacement (3.4.7)					X
Generator checkup				X	

ArcSAR ADDITIONAL ITEMS	2 months	Yearly
Solar panels: inspection, cleaning and check up (3.5)	X	
Weather Station: inspection and cleaning (3.5.3)		X
Wi-Fi: inspection and cleaning (3.5.4)	X	

#### 3.1 ArcSAR Trailer

With a dry cloth (not scraping) and detergent, it is recommended to clean the external surfaces of the ArcSAR Trailer, in order to avoid dust and mud accumulation on the frames, especially on the sliding metallic jacks parts (Fig. 1).



Fig. 1 – Hydraulic jack

The Trailer correct levelling can be checked verifying the spirit levels placed next to the hydraulic pistons levers.



Fig. 2 – ArcSAR spirit levels

Regular checks have to be done on the area where the IBIS-ArcSAR is installed, to verify the safety of the area itself and to verify if the LoS of the IBIS-ArcSAR is completely free.

## 3.2 ArcSAR Acquisition Unit Maintenance

### 3.2.1 IBIS Sensor and Pointing Camera

All the following actions needs the stop of the acquisition.

With a dry cloth (not scraping) and detergent clean the sensor box and the antennas (only externally, without removing them) and the glass of the Pointing Camera.

About the Sensor antennas, check their integrity and check the antenna flanges integrity (Fig. 3)

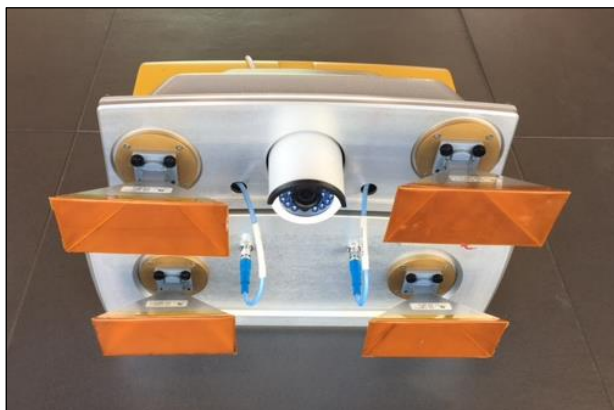


Fig. 3 – IBIS Sensor

Clean the Radar Housing, especially the lower part, just under the Sensor, where dust can amass.

Check the sensor box integrity paying attention to eventual sign of corrosion or scratches. In case of damage please contact [support.mining@idsgeoradar.com](mailto:support.mining@idsgeoradar.com).

Check the fastening of the Pointing Camera (Fig. 4) on its housing and the absence of any movement of the Camera itself. Verify the fastening of the Camera Supply and Ethernet cables.



Fig. 4 – Pointing Camera - Camera Supply and Ethernet cables

### 3.2.2 Positioner

The maintenance actions to be done on the Positioner can be divided in cleaning and checking.

With a with a dry cloth (not scraping) and detergent it's recommended to clean the top of the rotating arm including the GPS antennas and the bottom side including the tilt motorization and the related (Fig. 5).



Fig. 5 – Top and bottom side of the Positioner

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

Clean the round base of the Positioner, in order to remove any residuals that can impede the rotation of the Positioner.

Check the fastening screws at the base of the Acquisition Unit, paying attention to possible presence of rust or damages to the screws themselves.

### 3.3 ArcSAR Supply Unit Maintenance

#### 3.3.1 PSU front panel inspection and cleaning

Stop the current Controller session and check the PSU integrity looking for signs of corrosion, loosen screws or leakage from the batteries.

Clean the front panel and the laptop with a dry cloth and restart the acquisition.



Fig. 6 – PSU front panel

#### 3.3.2 ArcSAR Batteries replacement procedure



##### ArcsAR BATTERIES INFOS

Type: *rechargeable lead acid, non-spillable batteries*  
Characteristics: *6 V & 370 Ah*

1. stop the acquisition and switch off the PSU, turning off the red ON/OFF switch placed on the PSU Power Module (Fig. 7 left) and isolate the system by turning off the PSU Isolation Point placed on the Supply Unit front panel (Fig. 7 right);

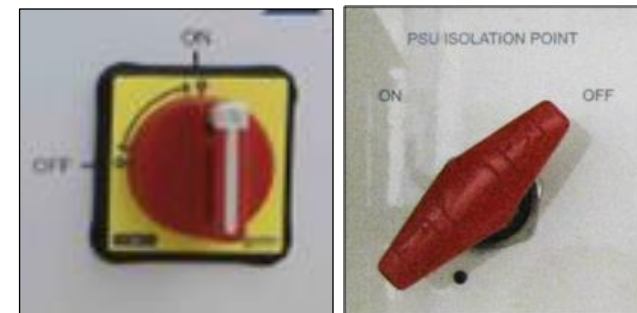


Fig. 7 – PSU ON/OFF and PSU Isolation Point switches



##### **WARNING! SHOCK HAZARD!**

Any maintenance operation on the batteries must be carried out with the Power Supply Unit isolated. It is mandatory to turn OFF the PSU Isolation Point switches while working on the batteries.

2. open the batteries compartment (Fig. 8), placed next to the generator sliding panel. A 5 mm Allen key is required to remove the screws. Open the panel pulling the top side downwards;

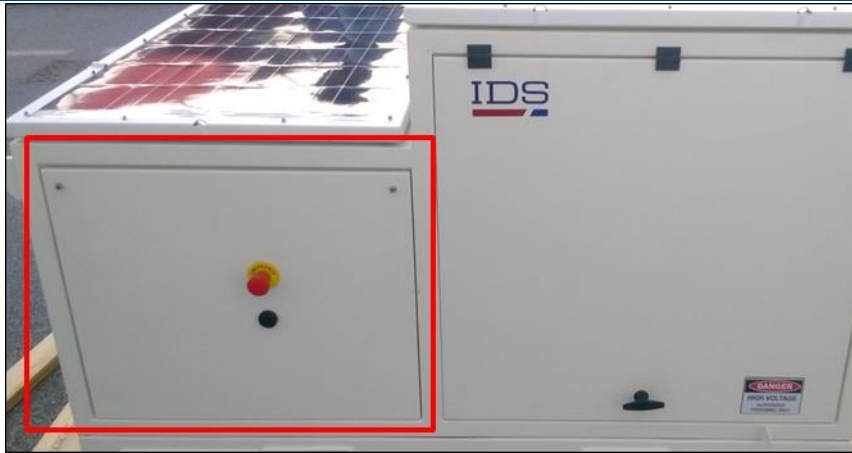


Fig. 8 – ArcSAR batteries compartment

- pull out the batteries drawer, unscrewing the security bolt (Fig. 9). The sliding drawer contains four ArcSAR batteries and the generator battery (Fig. 10);



Fig. 9 – Sliding batteries drawer



Fig. 10 – ArcSAR Batteries on the drawer

- unplug Anderson Powerpole connectors (Fig. 11);

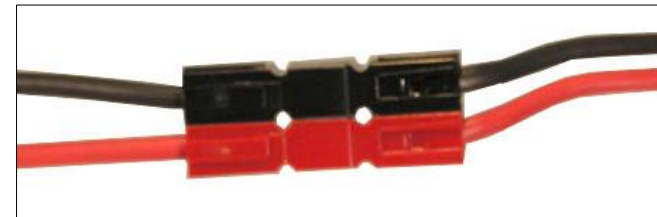


Fig. 11 – Anderson Powerpole connectors

- disconnect the cables from the batteries, unplugging the pins from the poles;
- unscrew the butterfly screws to remove the metallic support frame, in order to free the batteries;
- install the new batteries, installing the support frame again;

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

8. connect the pins to the new batteries paying attention to the polarity:
  - red cable goes to positive pin with red label or **+** symbol;
  - black cable goes to the negative one with black label or **-** symbol;
9. plug again Anderson Powerpole connectors;
10. insert again the battery drawer into its compartment, fastening it with the related safety knob;
11. turn on the Isolation Point switch, turn on the system and start the acquisition again;
12. check the batteries operation on the Supply section in the Controller application;
13. if there is no problem with system supplying, close the batteries compartment.

#### 3.3.3 Resuming the system from deep discharge protection mode

If the system is off with all Isolation Point switches turned on, this situation can be caused by two cases:

- If the battery voltage indicator LED is lit up in blinking red, the system is on stand-by mode, follow the normal stand-by resuming, described in the System Maintenance Guide;
- If the battery voltage indicator LED is off, the system is on deep discharge protection mode, carry out the following step to resume the system;

- 1) Turn off all the Isolation point switches and unplug the Ethernet wire from the CF31 laptop and turn on the *AC INPUT* switch, on the PSU Power Module;
- 2) With Allen keys, open the panel to access the rear side of the PSU;
- 3) Bypass the Battery-Guard: unplug the *BAT\_00* wires from the Battery-Guard connectors and plug the *BAT\_00* wires together, as before the hardware upgrade;
- 4) Turn on all the Isolation point switches;
- 5) Turn on the *GENSET* switch on the Control Module, once AMF25 Control Unit is supplied, push the green *START* button and push the *I/O* button to close *GCB* relay;
- 6) Verify if the *AC INPUT* LED is lit up in blue and the *BATTERY* LED on the Power Module is lit up in orange;

Wait 30 minutes. During this time interval the PSC board can move to a stand-by status (and the generator can be turned off): in this case follow the steps below from 7) to 14) only. If not go follow the steps from point 15) to point 19).

- 7) Plug the Ethernet wire again to the CF31 laptop;
- 8) Turn on the *GENSET* switch on the Control Module;
- 9) On the AMF25 Control Unit, push the green *START* button and push *I/O* button to close the *GCB* relay;
- 10) Verify if the *AC INPUT* LED is lit up in blue and the *BATTERY* LED on the Power Module is lit up in orange;

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

- 11) Wait the automatic exit from the Stand-by mode;
- 12) Turn off the *SYSTEM* switch and all the Isolation Point switches;
- 13) Resume the right Battery-Guard configuration, paying attention to the wires labels: the Battery-Guard LED has to be lit up in solid green;
- 14) In the IBIS Controller software, verify if the PSC board is set on Automatic mode.
  
- 15) Push *STOP* on the AMF25 Control Unit and wait until the generator is completely off;
- 16) Turn off the *SYSTEM* switch and all the Isolation Point switches;
- 17) Resume the right Battery-Guard configuration, paying attention to the wires labels: the Battery-Guard LED has to be lit up in solid green;
- 18) Plug the Ethernet wire again to the CF31 laptop and turn on the *SYSTEM* switch and all the Isolation Point switches;
- 19) In the IBIS Controller software, verify if the PSC board is set on Automatic mode.

#### 3.4 Generator Maintenance

In this section all the standard procedures for generator maintenance are described.



ArcSAR periodic maintenance operations must only be carried out by IBIS User Specialist or authorized and trained IDS Georadar personnel.

Cleaning Inlet Fuel Screen and Replacing Outlet Fuel filter must only be carried out by trained Mase® or Yanmar® personnel.

The check of motor compression, fuel injection nozzles, injectors and valves must be checked only by trained Mase® or Yanmar® personnel.

For information and detailed safety instruction read Mase and Yanmar engine operation manual.

Every time the generator is inspected, it is necessary to take note of the running hours. The running hours can be read on the AMF25 display control module or in the IBIS Controller software in the section *Supply* → *Generator*.

The AMF25 Generator Control Unit is automatically set up to notice the user with a maintenance message every 250 working hours. This warning prevents the generator to start until it is reset (see Paragraph 3.4.9).

##### 3.4.1 Genset general inspection and cleaning

A dry cloth, a detergent, an Allen keys set, a flat screwdriver and a wire brush are required. Below the procedure step by step:

1. disable *Automatic Operation* in the Controller software (*Supply* → *Generator* section);

2. start the generator manually (clicking on *Start* button in the Generator section);
3. open the generator rotating panel, unlocking the two metal locks (Fig. 12);



Fig. 12 – Generator rotating panel

4. pay attention to possible abnormal sound or vibration: if you notice something strange stop the engine and contact [support.mining@idsgeoradar.com](mailto:support.mining@idsgeoradar.com) ;
5. check the visual integrity of the components and the absence of any oil or fuel leakage;
6. check the color of the exhaust gas from the tail pipe: if it is either a black or white thick smoke, stop the engine and contact [support.mining@idsgeoradar.com](mailto:support.mining@idsgeoradar.com);

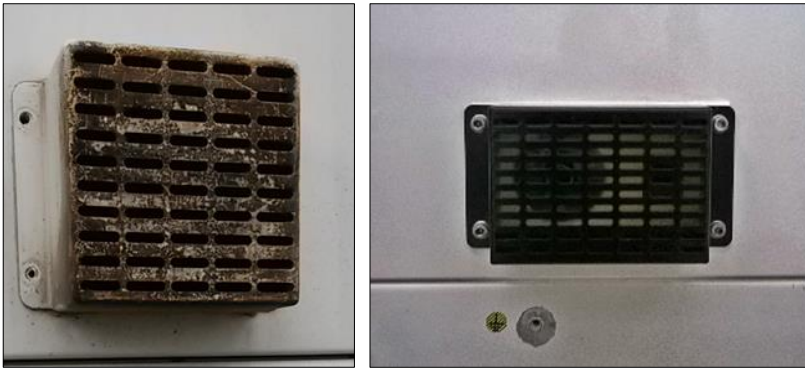


Fig. 13 – Generator tail pipe

7. remove the protection of the tail pipe using an Allen key. If the protection is dirty (Fig. 13 left) Remove the residual on the blinds using a flat screwdriver or a wire brush;
8. lower the pole where the generator solar panel is installed and clean the surface of the panel itself, checking for any loosen wire.

#### 3.4.2 Engine Oil Level Check procedure

A dry cloth, engine oil and a funnel are required material. Below the procedure step by step:

1. make sure the engine lays on a leveled surface;
2. stop the generator and isolate it, turning off the GENSET switch on the PSU front door and the GENSET Isolation Point switch;



**WARNING! SHOCK HAZARD! MOVING PARTS HAZARD!**

Any maintenance operation on the generator must be carried out with the engine off and the system isolated. It is mandatory to turn OFF the Genset Isolation Point switch before working on the generator.

3. open the generator rotating panel, unlocking the two metal locks (Fig. 14);



Fig. 14 – Generator rotating panel

4. unscrew the orange cap/dipstick and clean it with a clean cloth (Fig. 15);

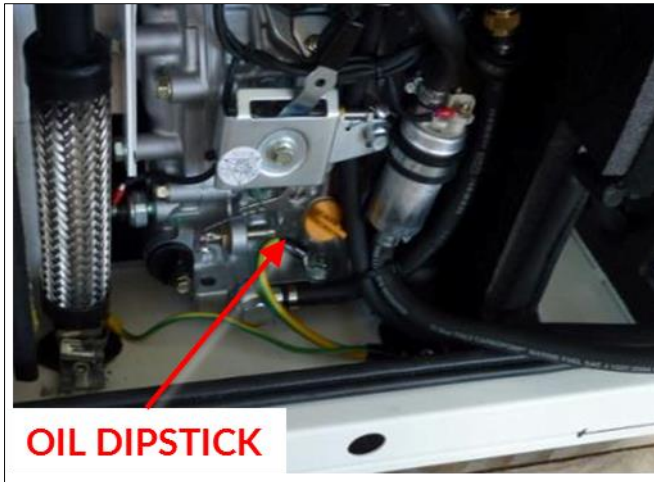


Fig. 15 – Oil dipstick

5. fully reinsert the oil cap/dipstick without screwing it in;
6. remove the oil cap/dipstick and make sure the oil level is between the MAX and MIN marks on the dipstick;



Fig. 16 – Oil dipstick indicator

7. if the oil level is too low, add some oil using a funnel;

8. wait one minute and check the oil level again: add more oil if necessary but don't exceed the MAX level;
9. fully reinsert the oil cap/dipstick and tighten it;
10. turn on *GENSET* Isolation Point switch and the *GENSET* switch on the PSU, and test the generator.

#### 3.4.3 Motor Oil and Oil Filter Replacement



It's necessary to replace the oil filter after the first 20 hours of operations and the motor oil after the first 50 hours of operations.

Always use oil with suitable viscosity for the temperature where the engine is being operated. Use the chart reported in Fig. 3.14 when choosing your engine oil. The oil tank has a capacity of 1.1 L. Besides, use motor oil that meets or exceeds the following guidelines and classifications:

- API (*American Petroleum Institute*) services categories CD or higher;
- ACEA (*European Automobile Manufacturers Association*) services categories E-3, E-4 and E-5;
- JSO (*Japanese Automobile Standards Organization*) services category DH-1.

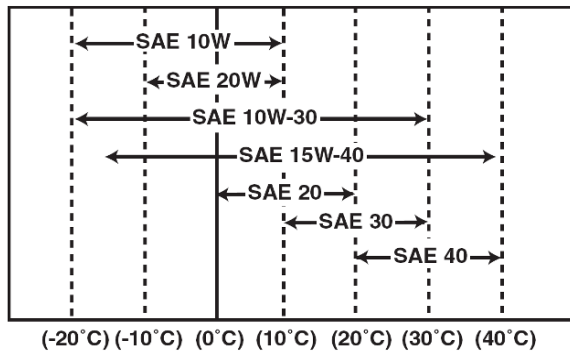


Fig. 17 – Service Grade Viscosity chart

**WARNING! SUDDEN MOVEMENT HAZARD!**



Allow the engine to warm up for at least 5 minutes to allow the engine idle speed to return to normal before engaging the transmission or any PTO (*Power Take-Off*) attachments. Engaging the transmission or PTO at an elevated engine speed could result in an unexpected movement of the equipment.

A recipient for waste oil, engine oil and a spare oil filter are required. Below the procedure step by step:

1. stop the generator and isolate it, turning off the GENSET switch on the PSU front door and the Genset Isolation Point switch;
2. make sure the IBIS-ArcsSAR is on a leveled surface;

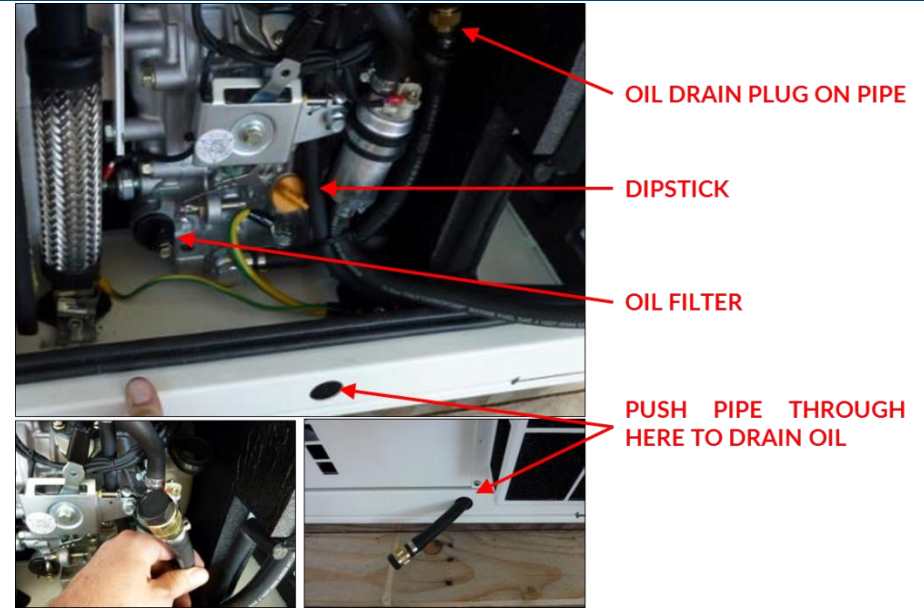


Fig. 18 – Generator motor oil parts detail

3. remove the oil dipstick to allow the engine oil to drain more easily (Fig. 18);
4. place a recipient under the engine to collect wasted oil;



**WARNING! BURN HAZARD!**

If you drain the engine oil while it is still hot, stay clear of the hot engine oil to avoid being scalded.

5. remove the drain plug (Fig. 18), leave oil come out and once finished, close the plug again;

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE



Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

Follow the guidelines of the government agency for the proper disposal of hazardous materials such as batteries: consult the local authorities or reclamation sites;

Never dispose of hazardous materials irresponsibly by dumping them into a sewer, on the ground or into ground water or waterways.

6. remove oil filter retaining bolt, pull the oil filter cap out and remove the oil filter;
7. clean the oil filter or replace it with a new one if damaged;
8. insert the oil filter in its housing again, pay attention the oil filter cap is fully seated;
9. install and tighten the oil filter retaining bolt;
10. add new motor oil;

Only use the recommended engine oil. Other engine oils may affect warranty coverage, cause internal engine components to cease and shorten the engine life;

Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap /dipstick and the surrounding area before removing the cap;

NEVER mix different types of engine oil. This may adversely affect the lubricating properties of the engine oil;

NEVER overfill. Overfilling may result in white exhaust smoke, engine overspeed or internal damage;

ALWAYS keep the oil level between the upper and lower lines in the oil.



11. wait one minute and check oil level;
12. add more oil if necessary but don't exceed the MAX level;
13. fully reinsert the oil dipstick and tighten it;
14. turn on Genset Isolation Point switch and the GENSET switch on the PSU, and test the generator.

#### 3.4.4 Fuel filter during first Generator start up

During first IBIS-ArcSAR generator start, it should be necessary to remove the air from the fuel filter inside the generator. To do this, it is necessary to open the generator panel (Fig. 14), unlocking the two spring-locks.

On the left side of generator, push the black button turning on a pump primer (Fig. 19 right). Wait until hearing a bleeding sound from fuel filter.



Fig. 19 – Fuel filter cleaning

#### 3.4.5 Clean or replace a fuel filter

A dry cloth, a recipient for the fuel, a spare fuel filter and oil filter wrench (Fig. 20) are required.



Fig. 20 – Fuel filter wrench



Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.



Follow the guidelines of the government agency for the proper disposal of hazardous materials such as batteries: consult the local authorities or reclamation sites.

Never dispose of hazardous materials irresponsibly by dumping them into a sewer, on the ground or into ground water or waterways.

#### **WARNING! FIRE HAZARD!**

Diesel fuel is extremely flammable and explosive in certain conditions.

When you remove any fuel system component to perform maintenance (such as changing fuel filter) place an approved container under the opening to catch the fuel.

NEVER use a shop rag to catch the fuel. Vapors from the rag are extremely flammable and explosive.

Wipe up any spills immediately.

Wear eye protection. The fuel system is under pressure and fuel could spray out when removing any fuel system component.

Failure to comply will result in death or serious injury.



To replace the fuel filter (Fig. 21):

1. stop the generator and isolate it, turning off the GENSET switch on the PSU front door and the GENSET Isolation Point switch;
2. place an approved container under the fuel filter to collect possible fuel spills;
3. shut the flow valve;
4. remove the hose clamps and the filter cartridge;
5. place a new filter cartridge;
6. replace the hose clamps;
7. turn on Genset Isolation Point switch and the GENSET switch on the PSU, and test the generator.

FLOW VALVE



FLOW FILTER



Fig. 21 – Fuel filter

#### 3.4.6 Cleaning and Replacing Air Filter

Materials required for the procedure:

- dry cloth and compressed air
- spare Air filter
- Phillips screwdriver

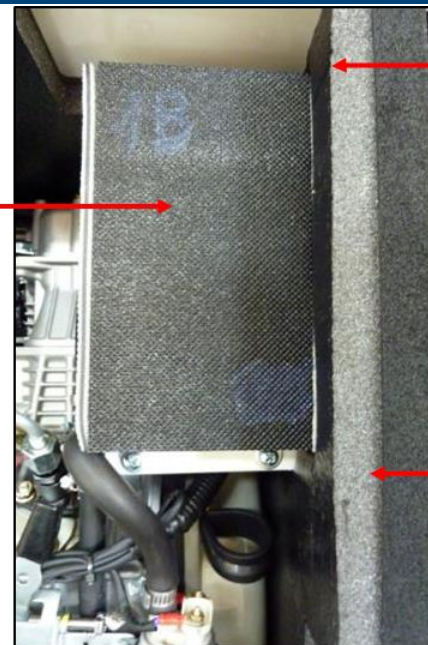


The engine performance is adversely affected when the air cleaner element is clogged with dust. Be sure to clean or replace the air filter element periodically.

Below the procedure step by step:

1. stop the generator and isolate it, turning off the GENSET switch on the PSU front door and the Genset Isolation Point switch;
2. open the generator sliding panel, unlocking the two metal locks;
3. open the air filter;

AIR FILTER COVER



REMOVE  
PHILIPS  
BOLTS (#4)

Fig. 22 – Air cleaner position

4. clean or replace the air filter (Fig. 23)

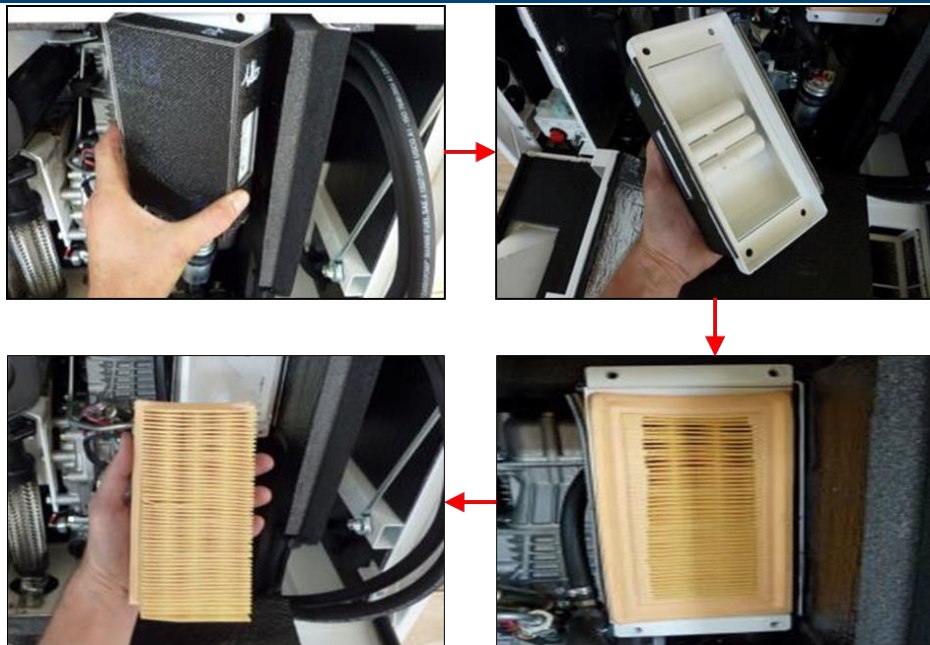


Fig. 23 – Air filter dismounting procedure

5. clean the inside of the air cleaner;
6. install the air cleaner element into the air cleaner case;
7. turn on Genset Isolation Point switch and the GENSET switch on the PSU, and test the generator.

#### 3.4.7 Generator battery replacement



##### GENERATOR BATTERIES INFOS

Type: *rechargeable lead acid, non-spillable batteries*  
Characteristics: *12 V & 70 Ah*



We recommend you recharge the battery every month in order to prevent it from going completely flat which, sometimes, compromises its integrity.

Before replace the battery, stop any IBIS Controller session and turn off the red ON/OFF Switch placed on the PSU Power Module and all the Isolation Points switches on the Supply Unit front panel.



##### **WARNING! SHOCK HAZARD!**

Any maintenance operation on the batteries must be carried out with the Power Supply Unit isolated. It is mandatory to turn OFF both PSU Isolation Point switches while working on the batteries.

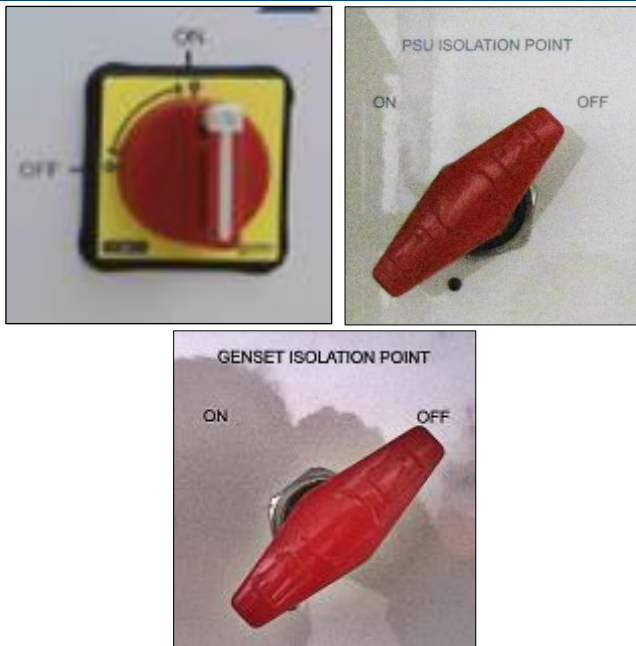


Fig. 24 – ON/OFF and Isolation point switches

From this point you can refer to the procedure explained on Paragraph 3.3.2. The generator battery is indicated in Fig. 25.



Fig. 25 – Generator battery



Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

Follow the guidelines of the government agency for the proper disposal of hazardous materials such as batteries: consult the local authorities or reclamation sites.

Never dispose of hazardous materials irresponsibly by dumping them into a sewer, on the ground or into ground water or waterways.

### 3.4.8 Genset Stand-By

If, for some reason, the Generator battery is not properly recharged and its voltage drops below a security value (generally 10.5 V), the system turns

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

the Genset (generator and AMF25 control panel) in a Stand-By mode automatically, to prevent possible damages to the generator itself.

If an acquisition is running while the Genset is going in standby, the acquisition is not stopped. In the same way, the other devices are not affected by a Genset Stand-By.

The exit from Genset standby status requires the user intervention, which has to restore the right Genset battery value. Below the steps to exit from Standby mode:

- turn on the GENSET switch on the PSU Control Module: the AMF25 control panel will be switched on;
- on the AMF25 control panel, push the green button START ( Fig. 26 red circle); in the display a countdown will be shown: wait the end of it;
- once the countdown is ended, push the button I/O on the right (Fig. 26 yellow circle). After this action, the Generator will come out from the Stand-By mode.



Fig. 26 – AMF25 control panel

#### 3.4.9 Maintenance warning reset procedure

The procedure applies to AMF25 control panel, placed on the Genset module on the PSU. To reset the warning, follow the steps below:

1. press *Page* button;
2. press the arrow keys in order to select *Engine Protect*; press *Enter*;
3. use the arrow keys to select *WrnMaintenance*; press *Enter*;
4. the current value should be 0, modify it using the arrow keys, setting it again to 250; press *Enter* to confirm this new value;
5. press *Page* to return up to the main menu;
6. press *Fault Reset* button;
7. double check that the new value has been actually registered;
8. wait some minutes and check that the warning message disappears automatically both from the AMF25 display and the Controller software.

In the IBIS Controller software, remember to flag again the option *Automatic* operation in the *Supply* → *Generator* after the warning has been reset.

#### 3.4.10 Period of inactivity

If the generator is not to be used for a long period of time, the following operations must be carried out:

- Change the engine oil.
- Clean the air filter.
- Disconnect the battery cables;
- Clean the outside of the generator, removing all dust and impurities.

#### 3.5 IBIS ArcsSAR Additional Items Maintenance

##### 3.5.1 Solar Panels

A dry cloth, cleaning sponge, glass cleaner and water are required. Below the procedure:

1. clean the solar panel surface with water using a cleaning sponge to remove rough dust. It is recommended to use a long brush to facilitate the action;
2. clean the solar panel with the glass cleaner using the cloth;
3. verify that the panel surface is intact. Contact [support.mining@idsgeoradar.com](mailto:support.mining@idsgeoradar.com) in case of damage.



Fig. 27 – ArcSAR Solar panels

4. verify that the solar panels are correctly working (positive incoming power detected in the Supply section on the IBIS Controller Supply Log).

##### 3.5.2 Panoramic Camera Maintenance

- turn off the CAMERA switch on the PSU and the CAMERA switch placed on the RCD panel, on the Generator compartment;



Fig. 28 – Camera switch

- with a dry cloth and detergent clean the front glass of the Panoramic Camera, paying attention to not scrape the glass;



Fig. 29 – Panoramic Camera front glass

- turn on the CAMERA switch on the PSU and the CAMERA switch placed on the RCD panel, on the Generator compartment.

##### 3.5.3 Weather Station

A dry cloth and detergent are required. Below the procedure step by step:

1. lower the pole where the Weather Station is installed;
2. unplug the Weather Station wire which is connected to the I/O rear ArcSAR panel;
3. remove the protective panel (Fig. 30), scrolling it up;

### 3 ArcSAR PERIODIC MAINTENANCE SCHEDULE

4. disconnect and connect again all the cables (Fig. 30), checking their integrity;
5. verify that the white panel with the cable connectors is clean. Put in place the protective panel, scrolling it down;

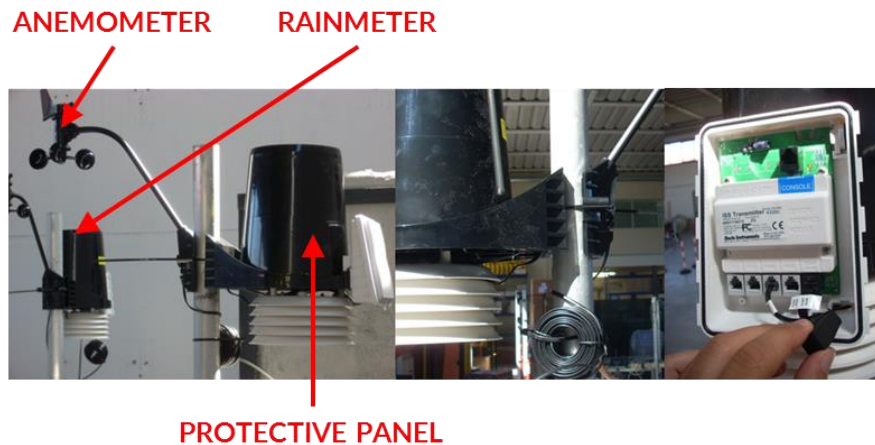


Fig. 30 – Weather station

6. clean the rain fall meter pail (see the hardware manual for installation/uninstallation procedure);
7. verify that the anemometer is clean and free to rotate (see the hardware manual for installation/uninstallation procedure);
8. plug the Weather Station wire to the I/O rear ArcSAR panel;
9. verify that the weather station is correctly working and data are regularly updated in the Weather section on the IBIS Controller software.

#### 3.5.4 Wi-Fi

For all the radios that composed the Wi-Fi Link (Access Point, Station and eventually Repeater), the following actions are recommended:

1. lower the pole where the radio is mounted on.
2. check radio integrity, its support tie to the pole and clean it externally;
3. check the opening and integrity of the sliding lower panel of the radio;
4. check the integrity of all the PoE wires, looking for loose connections;
5. check the LEDs placed on the rear side of the radios (Supply and Signal Quality):
  - Supply and LAN LEDs have to be lit up in green (first ones from the left);
  - Signal Quality LEDs have to be a green LED lit up at least



Fig. 31 – Wi-Fi Radio LEDs

6. check the pole integrity and its stability (the pole must not swing).

### APPENDIX A CLEANING INFO



Before cleaning any external parts of the apparatus, make sure that all cables have been disconnected, including the power supply cable. If a damp cloth is used, make sure it is not too wet, to avoid any damage to the electrical components of the equipment. Wait until the equipment is totally dry before reconnecting the cables.

The IBIS-ArcSAR should be cleaned periodically using a damp cloth.

Do not use solvents or abrasive detergents.

Do not apply liquid directly to the electrical contacts of the connectors. If a specific spray is used to clean the PC TFT monitor, make sure it is not flammable; in any case, do not use the spray directly on the screen, instead, spray onto the cleaning cloth.

APPENDIX B ADDITIONAL NOTES

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