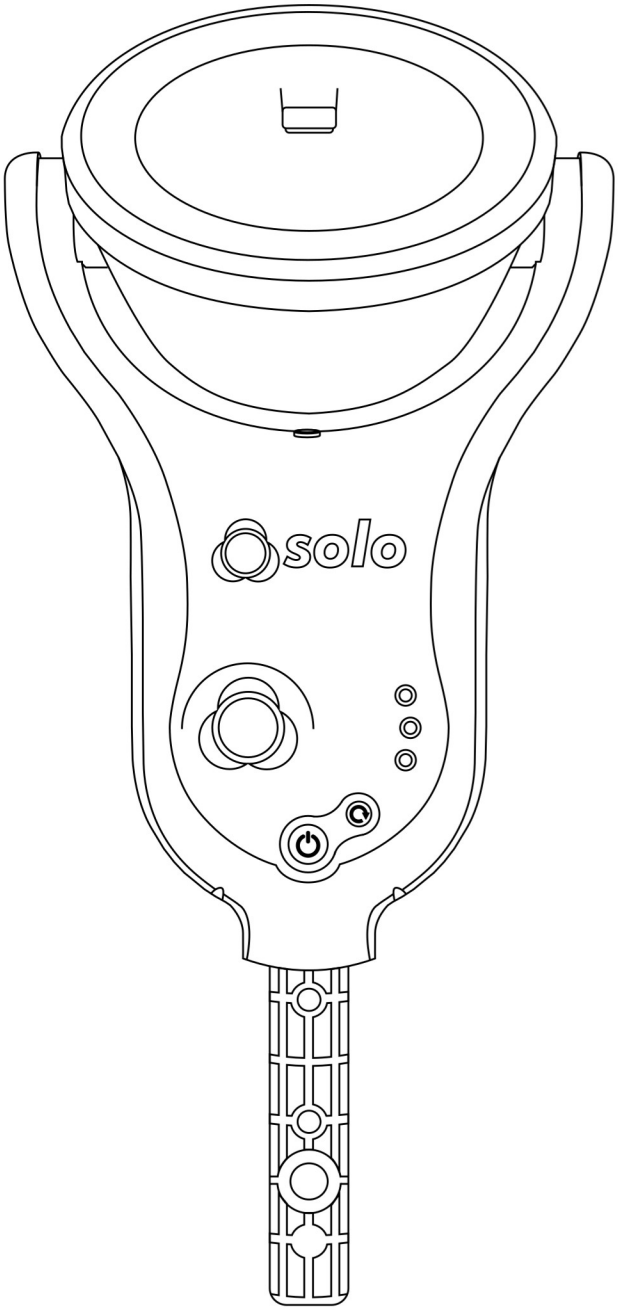
solo™ 365
detectortesters

User Manual

www.sdifire.com



Warning

This product is intended to be used at height.
Exercise great care and always wear appropriate PPE (personal protective equipment) when operating above head height in order to avoid the risk of injury.
DO NOT OVER REACH. Keep proper footing and balance at all times. Proper footing and balance enables better control of the equipment in unexpected situations.
Pay particular attention to avoid contact with overhead items such as light fittings, overhead power cables and any other objects that could be accidentally dislodged which might cause danger to the operator or anyone else in the vicinity.
Avoid prolonged, direct exposure to the vapour generated by Solo 365. Safety Data Sheets for the Solo 370 battery pack and Solo ES3 Smoke Cartridge are available. It is recommended to review the safety data sheets for Solo 370 Battery Pack and Solo ES3 Smoke Cartridge before use (see www.detectortesters.com).

Warning

This product contains hot parts.
DO NOT TOUCH the heat element. It may be very hot immediately after use and may burn if touched.

Caution

Contains Lithium Ion rechargeable batteries:

- Do not dismantle, open, shred or incinerate batteries.
- Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
- Do not short-circuit a battery. Do not store batteries loose in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
- Do not subject batteries to mechanical shock.
- Keep batteries clean and dry.
- Do not use any charger other than that specifically provided for use with the equipment. Refer to the manufacturer's instructions or equipment manual for proper charging instructions.
- Do not leave a battery on prolonged charge when not in use.
- Do not use any battery which is not designed for use with this equipment.
- Do not use the battery in any other application.
- Keep batteries out of the reach of children.
- Dispose of properly.

Warning

Contains precision parts which may be easily damaged and cause injury. **DO NOT TOUCH** the smoke fluid intake pipe in the smoke cartridge area.

Important
Information

- Read this User Manual completely before using your Solo 365.
- Keep this User Manual - Save all safety and operational instructions for future reference.
- Take note of the Warnings - Read carefully and follow all warning labels on the product and those described in this User Manual.
- Solo 365 is electronic test equipment and care should be taken when handling and storing. Dropping the unit on to a hard surface could damage it. Please look after it, treat it with care for lasting use.
- This product is designed for indoor use only and should not be subject to harsh environments. It is not designed for use in hazardous areas (those containing explosive vapor or dust). Do not use the equipment in places where temperatures and/or humidity are high or go through rapid changes including:
  - Direct sunlight
  - Near heat sources (stoves, radiators, etc.)
  - Sandy or dusty environments
  - In the presence of strong magnetic fields
  - Places prone to strong vibration
  - Restrictions detailed in the Technical Information (see Section 9.2).
- Solo 365 may be used in ceiling and floor voids but care must be taken to ensure that the unit and cup can pass through gaps in both directions.
- Stop using Solo 365 immediately if you notice any damage or unusual odors, liquids or sounds coming from the unit. Turn the power off immediately and consult technical support and troubleshooting (Section 8 onwards).
- Use only approved accessories as described in this manual that are recommended by the manufacturer for your Solo 365.
- Do not use your Solo 365 if it is not operating correctly (see fault finding guides) and consult Troubleshooting (Section 8) of this manual. If required seek technical advice (Section 9).
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired and warranty invalidated.

Symbols

The following symbols are used throughout this User Manual and on the product.

This symbol on the product indicates that there is a safety hazard or an operation requiring care to avoid damage to the product or environment. You must read the appropriate sections of the User Manual to understand the nature and severity of all the potential hazards present and the action you must take.

This symbol on the product warns you of hot surfaces or heat by convection.

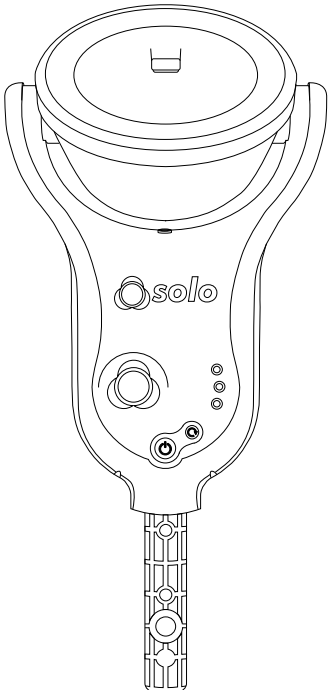
This symbol on the product indicates that you should read and understand this User Manual before using this product.

This symbol on the product indicates that this part of the device is susceptible to static damage.

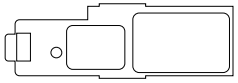
To comply with WEEE (Waste Electrical & Electronic Equipment) Regulations the crossed out refuse container symbol on this product or literature indicates that it should not be disposed with other business waste at the end of its working life. To help ensure that valuable resources are reused and recycled, and to prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from any other types of waste.

Kit Contents

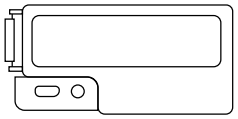
Solo 365 Electronic Smoke Detector Tester Kit containing:



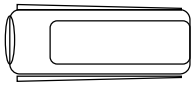
Solo 365 Head Unit x 1



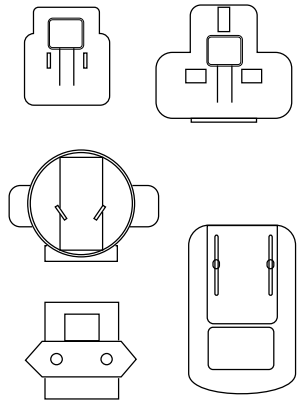
Solo 371 Smoke Generator x 1



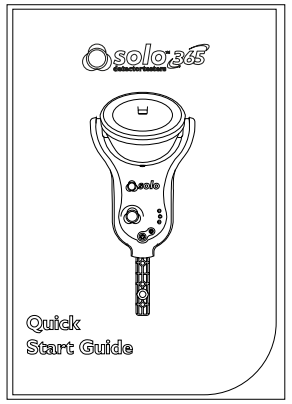
Solo 370 Lithium Ion Battery Pack x 1



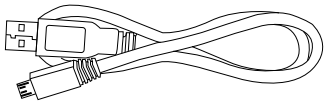
Solo ES3 Smoke Cartridge x 1



Solo 365 Universal USB Charger x1



Quick Start Guide x1



USB Lead x1

Product Registration Card x1

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1 General
Instructions

1.1 Warranty
In addition to any other express warranty given in writing by the Company in relation to the Goods, the Company warrants that the Goods supplied under these terms and conditions will be in accordance with the specification (if any) contained in the Purchase Order, and will be free from defects in workmanship and material for a period of 18 months from the date of delivery to the Buyer or for a period of 12 months after the date of sale by the Buyer to the final customer whichever period is the shorter.

1.2 Acknowledgement
Solo™ is a registered trade mark of No Climb Products Ltd. All other brand names mentioned are trademarks or registered marks of their respective holders, and are hereby acknowledged.
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1.3 Recycling
The packaging can be easily separated into the following materials:

- Cardboard (outer box)
- Cardboard (inner buffers, boxes)
- Polyethylene
- Plastic

Please dispose in line with local environmental requirements.

WEEE (Waste Electrical & Electronic Equipment) Regulations
Solo 365, accessories and batteries are suitably marked to be recycled in accordance with your local environmental requirements. Alternatively these items may be returned to the manufacturer via your reseller for disposal in compliance with WEEE (Waste Electrical & Electronic Equipment) Regulations.

1.4 CE Declaration
This product and its associated components are designed and manufactured to be fully compliant with the requirements of the following EU Directives for CE marking:

- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast).
- Low Voltage Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.
- RoHS Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

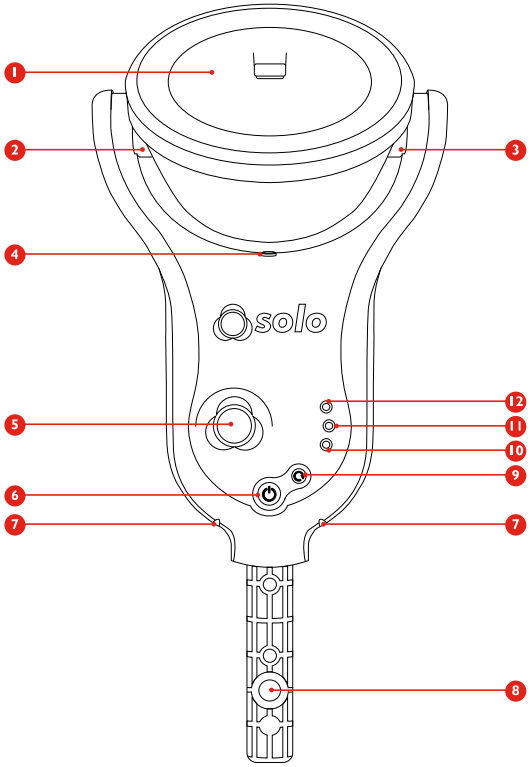
2 Solo 365
Introduction

Thank you for purchasing the Solo 365 Smoke Detector Tester.
This manual is designed to assist you to get the best and most efficient use of the Solo 365 and provides all the information required to perform routine service and maintenance tasks with ease.

Solo 365 includes advanced technology that simplifies functional testing of smoke detectors in the field. By use of electronically generated smoke health, safety, environmental and technological advantages are gained.

Design Features

1. Clear cup
2. Smoke outlet
3. Proximity sensor
4. Automatic LED torch
5. Air inlet
6. Power button
7. Status indicator LEDs
8. Locking button
9. Function button
10. Generator status LED
11. Cartridge status LED
12. Battery status LED

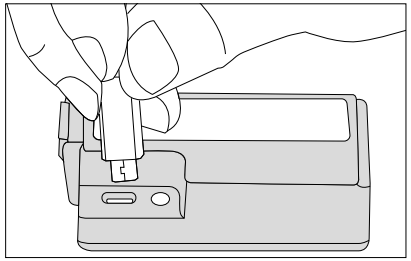


3 Preparation
For First Use

P:esu tsrfi ot roir
Check contents provided. **Do not** charge the battery while it is fitted in the unit. Take care during installation of the product components not to touch exposed electrical .dettfi yleruces era stnenopmoc lla taht erusnE .stcatnoc When replacing consumables, ensure that the unit is switched off before opening back cover.

3.1 Charging the Battery
The battery is charged by connecting the battery pack to the powered USB socket using the supplied power adapter. Do not charge the battery while it is in place in the unit. Ensure the battery is fully charged before use.

Warning
Read the cautions on Lithium Ion rechargeable batteries before use (see Page 2).

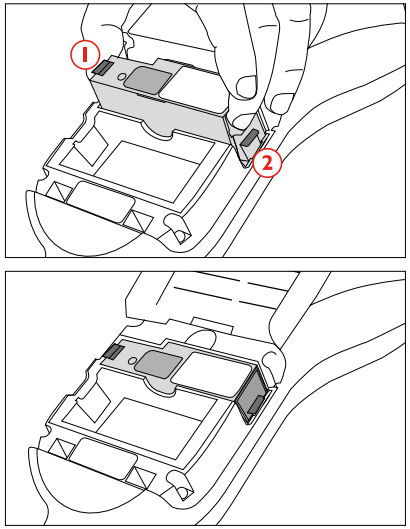


Battery LED:

- Flashing Red/Green: Detecting level of charge
- Solid Red: Charging
- Solid Green: Fully charged
- Flashing Red: Fault

3.2 Installing the Generator
- Open the back cover
- Remove protective packaging of generator. **Do not touch** exposed electrical contacts.
- Insert generator firmly into recess, engaging clips 1 and 2 (see Fig. 1).
- Once the generator is inserted do not remove it until indicated that a replacement is necessary.
- When replacing a generator, any dust or debris within the Solo 365 housing can be removed using an air duster. Any condensation can be removed by wiping with a lint-free cloth
- Empty generators may be returned to the manufacturer via the reseller for environmentally friendly disposal to comply with WEEE (Waste Electrical & Electronic Equipment) Regulations

Figure 1



Generator

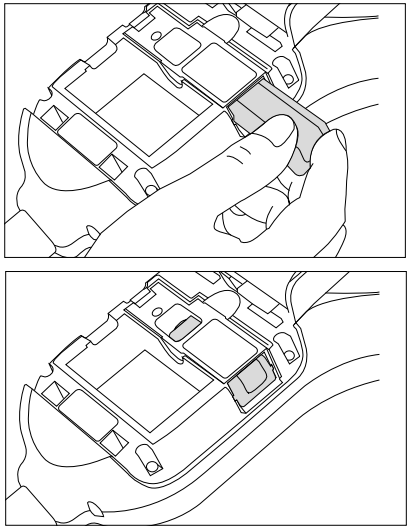
- Flashing Red: Consumable low
- Solid Red: Consumable empty

3.3 Inserting the Smoke Cartridge

- Remove cartridge from bag.
- Do not insert smoke cartridge until generator has been fully fitted into the main unit. See installing the Generator section 3.2 (Page 9).
- Slide cartridge completely into generator housing following the guide rails (Fig. 2).
- Once the cartridge is inserted into the generator do not remove it until indicated that a replacement is necessary. **Do not re-use** old cartridges.
- Empty cartridges may be returned to the manufacturer via the reseller for environmentally friendly disposal to comply with WEEE (Waste Electrical & Electronic Equipment) Regulations.

Do Not Touch
Do not touch the contacts on the PCB on the cartridge. Static electricity may cause damage and contamination of the contacts must be avoided.

Figure 2



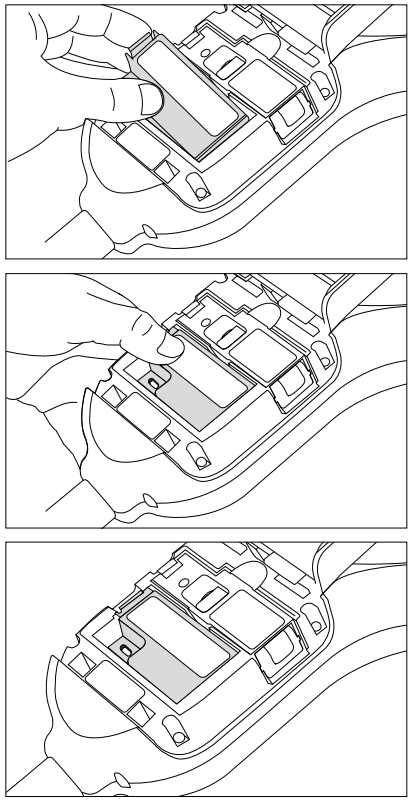
Cartridge
Flashing Red: Consumable low
Solid Red: Consumable empty

3.4 Inserting the Battery

- Once the battery is charged clip the battery pack into the battery compartment. (Fig. 3).
- Do not force the battery into place.
- Close the back cover.

Do Not Touch
Do not touch the contacts on the battery. Static electricity may cause damage and contamination of the contacts must be avoided.

Figure 3



Battery
Flashing Red: Consumable low
Solid Red: Consumable empty

4 Using Solo 365

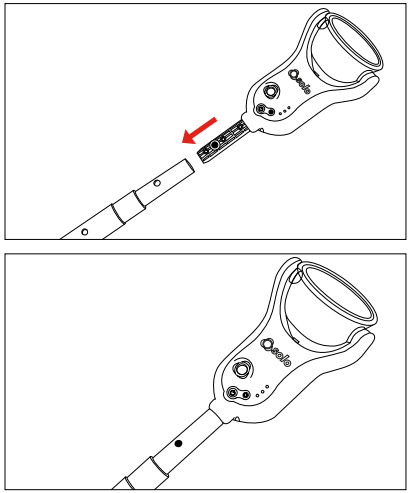
- Do not block air vents during use.
- Use only cartridges and batteries specified by the manufacturer.

4.1 Attaching Solo 365 to Solo Access Poles

Solo 365 is designed for use with the Solo range of access poles. (purchased separately). The product is not compatible with alternative access poles.

- Take the Solo access pole and press down the locking button on Solo 365. Align it with the location hole and push the Solo 365 handle further into the pole until the button springs up through the hole. Twist to lock. (Fig. 4)

Figure 4



Caution
No more than 3 Solo 101 extension poles should be used at the same time.

Warning
When working at height it is recommended that a competent person carries out a suitable risk assessment. This will identify any risk to the user and/or the environment and hence any need for Personal Protective Equipment.

NOTE: A Solo 101 extension pole can extend the Solo 100 and 108 telescopic poles, or may be used separately.

For further information on the correct use of poles, see "Instructions for Solo Poles" document at www.sdifire.com/manuals.

4.2 Powering on Solo 365

With the generator, cartridge and battery securely fitted and the back covered closed, the unit can now be powered on. Power the unit on by holding down the power button for 3 seconds.

NOTE: After replacing a generator and powering on, a 'purge cycle' will run. During this the sound of the pump operating may be heard. This will last for approximately a few seconds after which, the unit will be ready for use.

The unit is functioning correctly if the status indicators are flashing green slowly. If the status indicators are not flashing green consult the indicator LED section (Page 12).

NOTE: If Solo 365 has been left unused for a period of time then a manual purge may be required (Section 4.9).

4.3 Carrying Out a Simple Test

Smoke generation will begin automatically once the smoke detector enters the cup.

1) Raise Solo 365 up to the detector to be tested
2) Status indicator LEDs will flash fast blue once the detector enters the cup
3) Detector will enter alarm once sufficient smoke has been generated
4) Lower Solo 365
5) Status indicator LEDs will flash green

NOTE: For the best results the detector should be fully within the cup. Solo 365 may be used in ceiling voids and floor voids provided the detectors can be accessed safely. The unit should not be forced through narrow gaps. If the unit will not pass through a gap easily with the cup orientated 90° to the normal position there is a possibility it could become trapped.

Power On

Carefully place Solo 365 over the detector and ensure that the detector is central in the cup.

Testing: Main status indicators flash fast Blue*

Smoke is generated and if the detector is functional it will be activated.

Test Finish: Main status indicators flash fast Green*

Carefully place Solo 365 over the detector and ensure that the detector is central in the cup.

Clearing: Main status indicators flash fast White*

Clearing blows air into the detector to remove smoke. This operation does not clean the internal parts of the detector. Once detector is cleared lower Solo 365.

***After 2 minutes of testing or clearing, Solo 365 will timeout indicated by alternate Green/Red flashing status indicator LEDs. Exit timeout by lowering Solo 365.**

4.4 LED Indicator Reference Chart

Status Indicator LEDs
Solo 365 indicates events as follows:

When Idle:

- Slow flashing Green: Power on
- Solid Purple: System fault
- Flashing Orange: Delayed start
- Slow flashing Red: Consumable low
- Solid Red: Consumable empty

When Active:

- Fast flashing Blue: Testing normally
- Fast flashing Green: Clearing ready
- Fast flashing White: Clearing mode
- Slow flashing Red/Green:Timeout in testing or clearing modes
- Fast flashing Red: Consumable low

Torch LED

- Solid White: LED auto torch

Consumable LEDs

Solo 365 has three additional LEDs to show the status of the battery, smoke cartridge and the smoke generator. Warnings are indicated as follows:

Battery **Cartridge** **Generator**

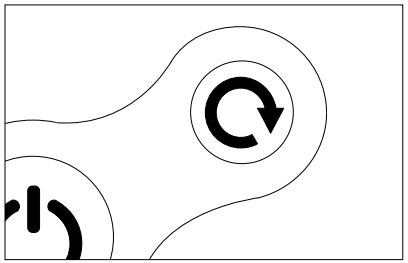
- Flashing Red: Consumable low
- Solid Red: Consumable empty

4.5 Delayed Start

On occasion it may be necessary to test detectors that do not easily fit into the Solo 365 smoke cup or are obstructed in some way. To allow testing of such detectors or aspirating smoke detection systems, Solo 365 has the facility to allow a 20 second delayed start of a test.

- This feature can be activated by pressing the function button on the front of the unit (Fig. 5) momentarily (< 1 second). The status indicators will flash orange for 20 seconds allowing time to reach the detectors/aspirating pipes.
- The status indicator LEDs will flash fast blue indicating smoke generation for 20 seconds during which time Solo 365 should be in proximity to the detector and/or aspirating sample point.
- After 20 seconds of smoke generation the unit returns to idle state and the status indicator flashes slow green.

Figure 5



4.6 Clearing a Detector

Once activated any lingering smoke can be cleared from the detector using the 'Clearing mode'. Air is blown around the detector – clearing any lingering smoke via the vent in the cup.

1) After the detector activates lower Solo 365 so the detector is clear from the cup
2) The Status Indicator LEDs will flash fast green
3) Raise the unit over the detector again whilst the status indicator LEDs are flashing fast green
4) The Status Indicator LEDs will flash fast white – indicating clearing mode

After clearing, the unit will return to idle state ready for the next test.

NOTE: Clearing mode is not available when using the delayed start feature.

4.7 Using the LED Torch

In low light levels an LED torch will automatically illuminate from underneath the cup. This makes for easy alignment and testing of detectors in dark environments.

Upon alignment and the starting of the test the LED torch will switch off allowing a clear view of the detector LED through the cup.

4.8 Testing an ASD System

An ASD System can be tested by using the 'Delayed Start Mode' and replacing the cup with the Solo 365 ASD Adaptor (Product Code: Solo 372-001).

1) With the unit facing you, remove cup by aligning the notch on the left hand side arm and disengage by squeezing the cup and gently pulling the arm outwards
2) Rotate the cup to free it from the other arm
3) Fit the adaptor by locating into both arms
4) Raise the unit over the sampling hole and initiate the test using the delayed start mode (Section 4.5)

4.9 Manual Purge

A manual purge may be required when the unit has not been used for a period of time or in the case of a significant drop in performance. A manual purge should be carried out in a well ventilated area as follows:

1) Hold down the function button continuously, during this time Solo 365 will attempt to generate smoke
2) When smoke has been observed for approximately five seconds release the function button
3) Solo 365 will return to idle state – ready for normal use

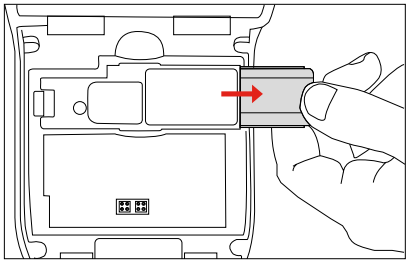
5 Removing & Replacing Consumables

All critical parts of Solo 365 can be replaced in the field without having to return the unit for service. Ensure that the unit is switched off during the replacement of consumables. Do not touch electrical contacts.

5.1 Removing the Smoke Cartridge

1) Ensure the unit is switched off and open the back cover
2) Remove the smoke cartridge from the generator by placing your thumb in the recess and sliding the cartridge along the guide rails (Fig. 6). (Do not remove the generator).

Figure 6

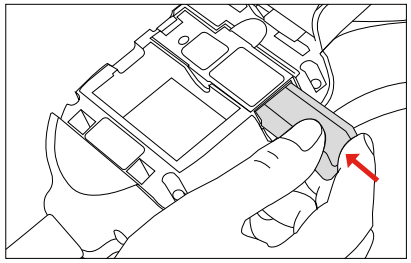


5.2 Replacing the Smoke Cartridge

1) Remove the cartridge form the bag
2) Slide cartridge completely into generator housing following the guide rails (Fig. 7)
3) Once the cartridge is inserted into the generator do not remove it until indicated that a replacement is necessary.

NOTE: **Do not re-use** empty cartridges. Empty cartridges may be returned to the manufacturer via the reseller for environmentally friendly disposal to comply with WEEE (Waste Electrical & Electronic Equipment) Regulations.

Figure 7



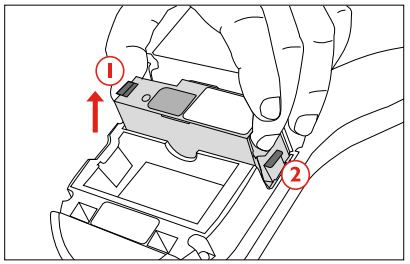
Do Not Touch
Do not touch the contacts on the cartridge. Static electricity may cause damage and contamination of the contacts must be avoided.

5.3 Removing the Smoke Generator

1) Ensure the unit is switched off and the Smoke Cartridge is removed (Section 5.1)
2) Disengage clip '1' and lift. Repeat for clip '2' to remove the used generator (Fig. 8)

NOTE: When replacing the generator, any dust or debris within the housing can be removed using an air duster. Any condensation can be removed by wiping with a lint-free cloth.

Figure 8

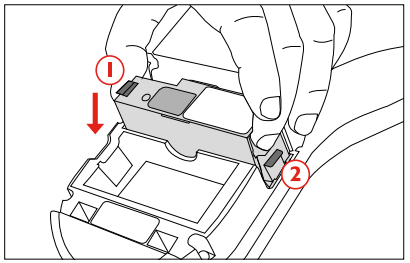


5.4 Replacing the Smoke Generator

1) Insert the generator firmly into the recess, engaging clips '1' and '2' (Fig. 9)

NOTE: Once the generator is inserted do not remove it until it is indicated that a replacement is necessary.

Figure 9



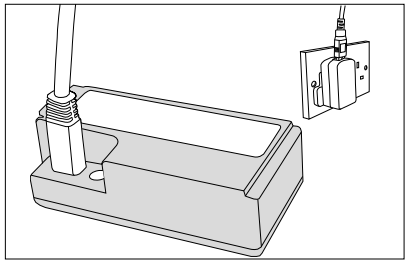
Do Not Touch
Do not touch the contacts on the generator. Static electricity may cause damage and contamination of the contacts must be avoided.

5.5 Removing the Battery for Charging

1) Ensure the unit is switched off and open the back cover.
2) Unclip and remove the battery
3) Charge the battery by connecting the USB lead to the battery and the powered USB socket using the supplied mains adaptor or suitable source (minimum 1A) (Fig. 10)

NOTE: Do not charge the battery while it is fitted in the unit.

Figure 10

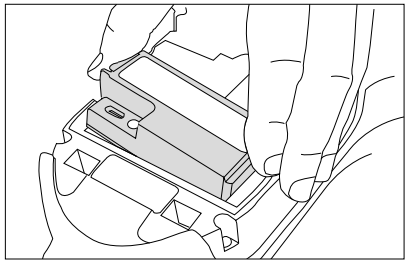


5.6 Replacing the Battery

1) Once the battery is charged clip into the battery compartment and close the back cover (Fig. 11)

NOTE: Do not force the battery into place.

Figure 11



Do Not Touch
Do not touch the contacts on the battery. Static electricity may cause damage and contamination of the contacts must be avoided.

6 Consumables & Accessories

Consumables	
ES3-12 PACK-001	Solo 365 Smoke Cartridges x12
SOLO370-1 PACK-001	Solo 365 Lithium Ion Battery Pack x1
SOLO370-4 PACK-001	Solo 365 Lithium Ion Battery Pack x4
SOLO371-001	Solo 365 Smoke Generator
SERVICE360-001	Solo 365 Service Pack containing: Spare 1058 x 1, Solo 370 x 1 & Solo 371 x 1

Accessories	
SOLO372-001	Solo 365 ASD Adaptor

Spares	
SPARE1058-001	Clear Cup & Membrane for Solo 365
SPARE1059-001	Membrane for Solo 365
SPARE1060-001	Solo Charger & USB Lead

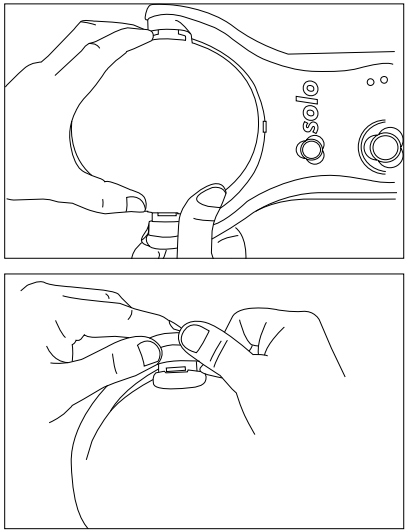
7 Spares

7.1 Removing the Clear Cup

1) Align the notch on the left hand side arm and disengage by squeezing the cup and gently pulling the arm outwards. (Fig. 12)

2) Rotate the cup to free it from the other arm

Figure 12



7.2 Replacing the Clear Cup

1) Engage the cup with the notch on the left hand arm and rotate the cup to engage with the notch on the right hand side

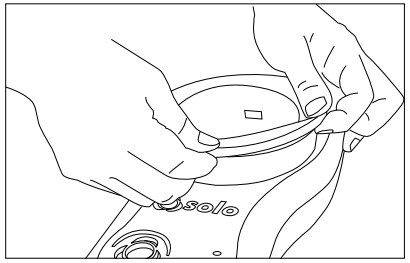
NOTE: Ensure the cup vent is the same side as the back of the unit

7.3 Removing & Replacing the Membrane

1) Ease the membrane off the clear cup gently

2) Take the replacement membrane and stretch it over the clear cup (Fig. 13)

Figure 13



8 Troubleshooting

If when testing, a detector does not activate, repeat the test every 10 seconds for up to 2 minutes by keeping the unit at the detector. If the detector still does not activate it may be faulty and need replacement. **Should the status indicator LEDs turn purple**, an internal fault has occurred and the following steps should be taken:

1) Power the unit off and on again.

2) If the problem remains ensure that Solo 365 is powered off before performing any of the following steps:

3) Remove and re-insert the generator, at the same time check the PCB contacts for any debris.

4) Power the unit off, remove the battery. Check the fan moves freely, if not remove the smoke cartridge and generator from within Solo 365. Fan faults may occur due to debris getting inside the unit. Carefully use an air duster and apply to the fan or rotate the fan gently. The use of an air duster such as BlowOut normally frees the fan of debris. Re-insert the battery and power the unit on.

5) If the problems remain, please contact service@sdifire.com.

Unit does not switch on
Check the battery indicator. If solid red, remove the battery from the unit and recharge it.
Smoke not being generated
If the cartridge indicator shows red change the cartridge.Check the generator indicator. If this is solid red then change the generator.
Fan is not rotating
Check for obstructions. Use an air duster to clear debris.

9 Support & Technical

9.1 Maintenance

The Solo 365 unit contains no user serviceable parts. Do not disassemble. In the case of a build-up of dust or dirt on the surface of the product, wipe with a slightly damp lint-free cloth. The area around the smoke duct and within the cup should be cleaned periodically to remove any dirt or fluid. This can also be done using a slightly damp lint-free cloth. Do not use detergents, cleaning materials or solvents such as petroleum spirit, benzene or methylated spirit to clean the product.

9.2 Technical Information

Operating features	- Color coded LED user information - Proximity sensor starts test - Suitable for detectors up to 110mm diameter - 5 seconds of stimulus, 5 seconds off repeat cycles
Safety features	- Battery over current cut out - Over temperature cut out - 2 minutes maximum duration time-out - Auto power off after 10 minutes
Power source	Lithium Ion battery pack nominal 3.63V 9.5Wh, with USB charger connection
Battery charging time	~2 hours
Operating temperature range	+5°C to 45°C (+41°F to 113°F)
Operating humidity range	0 to 85% RH non-condensing
Storage temperature range	-10°C to 50°C (+14°F to 122°F)
Storage humidity range	0 to 90% RH non-condensing (up to +35°C/95°F)
Weight	860g
Dimensions H (including handle) x W (widest) x D	420mm x 190mm x 110mm
Dimensions H (excluding handle) x W (widest) x D	295mm x 190mm x 110mm
Dimensions as above with cup in user position	260mm x 190mm x 150mm
Clear cup dimensions	150mm x 85mm

9.3 Support Contact

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