SWING

PARAGLIDER

Version: 2.0
Date: 15.09.2017

ORANGE CROSS

Manual (EN)

INFORMATION

Swing Flugsportgeräte GmbH reserves the right to alter or add to the contents of this Manual at any time. You should therefore regularly visit our website :

www.swing.de

where you will find additional information relating to your rescue chute and any changes to the Manual. There is further information about the Swing website in the section “Swing on the World Wide Web”.

The date and version number of this Manual are given on the front page.

Dear SWING customer,

Thank you very much for deciding to purchase a new Swing reserve.

You have chosen a sophisticated product. We place great importance on using materials of the highest quality.

Although we hope that you never need to use the reserve chute, we ask that you familiarise yourself with how it works and the intervals at which it must be serviced and repacked. The reserve system will only fulfil its purpose if it is properly maintained and if you are able to operate it properly!

You will be impressed by the rapid deployment times, high level of pendular stability and the astonishingly low sink rate of the **ORANGE CROSS** reserve systems.

Consistent development work and the innovative combination of the materials used have resulted in a product which satisfies our demanding requirements and those of pilots too, and which sets standards for others to follow.

If you have any questions which are not answered in this manual, please do not hesitate to contact your Swing dealer or Swing directly: Tel: +49 81 41 32 77 888 or info@swing.de

from

the SWING Team

WARNING

Read this Manual before installing your rescue chute!

DANGER

This reserve system must not be used for skydiving!

Contents

01 Introduction

Manual

SWING requires you to familiarise yourself with your new rescue chute by reading this Manual before first installation into your harness.

This will allow you to install and maintain your new rescue chute.

Information in this Manual on design of the recue chute, technical data and illustrations are subject to change. We reserve the right to make changes without prior notification.

Special text giving safety information is identified in this Manual in accordance with the ANSI Z535.6 standard.

The Manual complies with the airworthiness requirements in LTF NFL II 91/09 and forms part of the certification.

Special text

DANGER

Sections of text headed “Danger” indicate a situation where there is **imminent** danger, which in all probability **will lead to death or serious injury**, if the instructions given are not followed.

WARNING

Sections of text headed “Warning” indicate a potentially dangerous situation, which **may lead to death or serious injury**, if the instructions are not followed.

CAUTION

Sections of text headed “Caution” indicate a potentially dangerous situation, which may lead to **minor or slight injury**, if the instructions are not followed.

PLEASE NOTE

Sections of text headed “Please note” indicate possible **damage to property**, which may occur if the instructions are not followed.

TIP

Sections of text headed “Tip” give advice or tips which will make it easier to use your paraglider.

Series of instructions

In this Manual, instructions which must be followed in a certain order are numbered consecutively.

< Where there is a series of pictures with step-by-step instructions, each step has the same number as the corresponding picture.

d Letters are used where there is a series of pictures but the order is not relevant.

Lists of parts

• Numbers circled in red refer to various parts of the item pictured. A list of the numbers and the name of the part labelled follows the picture.

Bullet points

Bullet points are used in the Manual for lists.

Example:

- risers
- lines

Rescue chute Manual on the Internet

Additional information about your rescue chute and any updates to the Manual can be found on our website at www.swing.de.

This Manual was current at the time of going to print. This Manual can be downloaded from Swing's website prior to print.

Swing Flugsportgeräte and the environment

Protection of the environment, safety and quality are the three core values of Swing Flugsportgeräte GmbH and they have implications for everything we do. We also believe that our customers share our environmental awareness.

Respect for nature and the environment

You can easily play a part in protecting the environment by practising our sport in such a way that there is no damage to nature and the areas in which we fly. Keep to marked trails, take your rubbish away with you, refrain from making unnecessary noise and respect the sensitive biological equilibrium of nature. Consideration for nature is required even at the launch site!

Smokers – please do not leave any cigarette butts, matches etc at flying sites.

Paragliding is, of course, an outdoor sport – protect and preserve our planet's resources.

Environmentally-friendly recycling

Swing gives consideration to the entire life cycle of its products, the final stage of which is recycling in an environmentally-friendly manner. The synthetic materials used in a rescue chute must be disposed of properly. If you are not able to arrange appropriate disposal, Swing will be happy to recycle the rescue chute for you. Send the rescue chute with a short note to this effect to the address given in the Appendix.

02 Safety

WARNING

The safety advice given below must be followed in all circumstances. Failure to do so renders invalid the certification and/or results in loss of insurance cover, and could lead to serious injuries or even death.

Safety advice

All forms of aerial sport involve certain risks. When compared with other types of aerial sport, paragliding has the lowest number of fatal accidents measured according to the number of licensed pilots.

However, few other sports demand such a high level of individual responsibility as paragliding. Prudence and risk-awareness are basic requirements for the safe practice of the sport, for the very reason that it is so easy to learn and practically anyone can do so. Carelessness and overestimating one's own abilities can quickly lead to critical situations. A reliable assessment of conditions for flying is particularly important. Paragliders are not designed to be flown in turbulent weather. Most serious paraglider accidents are caused by pilots misjudging the weather for flying.

Please be aware at all times that any air sport is potentially dangerous and that, at the end of the day, you are personally responsible for your own safety.

We therefore recommend in particular that you fly in a conservative manner. This applies both to the choice of conditions in which you fly and also to the safety reserve which you factor into your flying manoeuvres.

Do not under any circumstances use the paraglider as a parachute. Acrobatics are not permitted.

We recommend that you only fly with a glider and harness which have been tested and certified, and that you wear a suitable helmet.

In Germany, paragliders are subject to the guidelines for air sports equipment and must not under any circumstances be flown without a valid certification. Independent experimentation is strictly prohibited. This Manual does not replace the need to attend training at a paragliding school.

In Germany, paraglider reserve systems are not subject to the rating requirements of the German Civil Aviation Authority (*Luftfahrtbundesamt* - LBA).

The paraglider reserve systems in the ORANGE CROSS series comply with the airworthiness requirements of the LTF. The manufacturer is not liable for any injuries or material damage caused in connection with this reserve system.

At the time of their dispatch, these reserve systems comply with the LTF certification regulations.

Your ORANGE CROSS reserve leads the way in the development standard for reserve gliders. It will remain airworthy for many years if you look after it properly.

Reserve systems may only be packed by adequately qualified people.

The Manual must be passed on to any new owner if the rescue chute is sold. It is part of the certification and belongs with the rescue chute.

Observe the other specific safety advice in the various sections of this Manual.

Safety notices

Safety notices are issued when defects arise during use of a product which could possibly also affect other products of the same model.

The notices contain instructions on how to inspect the product concerned for possible faults and the steps required to rectify any faults.

Swing publishes on its website any technical safety notices and airworthiness instructions which are issued in respect of Swing products. We will also send you safety notices directly by email if you have registered your product (refer to “Product Registration” in the section “Swing on the World Wide Web”).

WARNING

The product owner is responsible for carrying out the action required by the safety notice.

Safety notices are released by the certification agencies and are also published on the relevant websites. You should therefore visit the safety pages of the certification agencies on a regular basis and keep up-to-date with new safety notices which cover any products relating to paragliding (refer to Appendix for addresses).

Services such as RSS are also available which allow internet users to follow various websites and changes to them without having to access them individually. This allows much more information to be followed than was previously the case.

Disclaimer and exclusion of liability, Operating limits

Use of the product is at the pilot’s own risk!

The manufacturer cannot be held liable for any personal injury or material damage which arises in connection with Swing products. The certification and warranty shall be rendered invalid if there are changes of any kind or incorrect repairs to the rescue chute, or if any inspections or packings are skipped.

Pilots are responsible for their own safety and must ensure that the airworthiness of the paraqliding equipment is checked prior to every flight. The pilot should launch only if the paraglider equipment is airworthy. In addition, when flying outside of Germany, pilots must observe the relevant regulations in each country.

The Paragliding equipment may only be used if the pilot has a licence which is valid for the area or is flying under the supervision of an approved flying instructor. There is no liability on the part of third parties, in particular the manufacturer and the dealer.

In terms of the warranty and guarantee conditions, the Rescue chute may not be used / installed if any of the following situations exists:

- the inspection period has expired, or the inspection has been carried out by the pilot him/herself or by an unauthorised inspector
- the packing period has expired, or the Reserve system has been packed by inadequately qualified people
- the take-off weight is not within the permissible weight range
- the glider is flown in rain or drizzle, cloud, fog and / or snow
- the canopy is wet

- air temperature below -10°C or above 50 °C
- the pilot has insufficient experience or training
- the pilot has incorrect or inadequate equipment (glider, protection, helmet etc.)
- there have been modifications to the canopy, lines or risers which have not been approved
- free fall, the reserve system must not be used for skydiving
- use at speed more than 32 m/s (115 km/h)

The maximum permissible operating life of the reserve is twelve years, subject to inspection by a qualified service agent every two years.

The reserve must be aired and repacked every twelve months.

03 Use

Purpose

These reserve systems are manually deployed emergency parachutes for paraglider pilots who find themselves in an emergency situation during a flight. Any use other than this is not authorised.

DANGER

Reserve systems must not be used for sky-diving

Operating the reserve system

If there is an emergency situation, take hold of the deployment handle and pull it firmly. The reserve chute package is then thrown into the air with a sweeping movement. The chute is pulled out, unfolded and inflates.

We recommend that you frequently go over this procedure in your head, according to your own combination of harness and reserve chute, so that you are able to react quickly and confidently if you ever find yourself in an emergency situation. If you have the opportunity, we also recommend that you carry out a “dry run”. Paragliding schools and clubs often organise this as part of their programme. The more familiar you are with the procedure, the less stressful it will be if you ever really do get into difficulty while flying.

Documentation required

- Manual
- Packing records

04 Technical Description

Technical Data

ORANGE CROSS	S	M	L
Recommended load	**70 kg - 100 kg**	**80 kg - 120 kg**	**90 kg - 140 kg**
Weight with container	1.45 kg	1.60 kg	2.05 kg
Surface area	34 m²	38 m²	44 m²
Type certificate number	**RG 071.2013**	**RG 070.2013**	**RG 072.2013**
Maximum load LTF drop test positive / sink rate	100 kg / 4.9 m/s	120 kg / 5.7 m/s	155 kg / 6.0 m/s
Sink rate at 140kg	-	-	5,7 m/s
Sink rate at 120kg	-	5,7 m/s	5,3 m/s
Central lines	2	2	2
Number of suspension lines	20	20	24
Pilot chute	No	No	No

Construction of reserve

Canopy, suspension lines and bridles

The most important part of the reserve system is its canopy.

The ORANGE CROSS was designed as a cross canopy with two central lines to optimise the ratio between the amount of material used and the projected area.

Each separate panel is cut individually to optimise the features of the reserve chute.

Air vents are incorporated into each corner.

Materials used

The materials used for the ORANGE CROSS reserve chute were carefully selected to meet our particular requirements.

A fabric developed specifically for reserve chutes is used for the canopy. Pilots will be impressed by its low weight and high strength, as well as its extremely low air permeability.

Special features of the central lines and suspension lines used are their high breaking load and their elasticity and shock absorption.

In contrast, the high-strength bridle's length remains stable.

Why is the cross canopy used?

In essence, because it has excellent pendulum stability.

The cut and the four air vents ensure optimum airflow into the canopy and allow the air to escape out of the canopy.

This prevents any "spill over" of air and associated pendulum effect.

It allows stable sink with low sink values.

This effect is supported further by the materials chosen for the fabric and lines which keep the reserve's weight low and the pack size small, as well as allowing good flight characteristics.

Inner container

The inner container is made of light but durable materials.

It has two loops to which the deployment handle can be fastened. When doing this, always use the loop which is closer to the deployment handle attachment-point on the harness.

For safety and functional reasons, the entire length of the suspension lines is not put inside the container – part is kept on the outside, attached with two elastic bands.

This means that the container initially stays closed after deployment, until it is about 1.5m away from the pilot. Only then are the suspension lines pulled from the closure loop of the inner container and it can open.

This interval ensures that the chute does not open until it is a safe distance from any aerodynamic wake caused by the pilot.

Any wake can delay and/or prevent the chute from opening. There is also a risk of the rescue chute getting caught on or even wrapped around the pilot.

WARNING

The inner container belongs with the reserve.

You must consult with the manufacturer if you wish to change the inner container!

Front container and the ORANGE CROSS

If the ORANGE CROSS is used with a front container, the bridle must in principle be attached in both carabiners of the harness's main hang point.

Please make sure that the minimum strength of 24kN required under the LTF is used for all connection points between the harness and the reserve.

DANGER

Both ends of the bridles must be connected to the harness's main hang points to ensure that the reserve operates safely.

05 Looking after your reserve

Packing

The Rescue chute must be aired and repacked every 12 month by adequately qualified people.

Compatibility test

DANGER

If a previously packed reserve chute is repacked, it is important to ensure that it can still be deployed after installing it into the paraglider harness outer container (Compatibility Test). It must be verified that the necessary deployment force is between 6 and 10 kg.

Cleaning

If the canopy or the container are dirty, they can be washed with clean tap water. Acid and mould or mildew can affect the strength of the reserve. If your reserve is affected in that way, it must be sent to the manufacturer or an approved service agent for inspection and any repairs necessary.

Leave the reserve to dry in a well-ventilated place in the shade.

PLEASE NOTE

Do not under any circumstances use chemicals, brushes, rough cloths, high-pressure cleaners or steamers to clean the reserve, as these can damage the fabric's coating and strength. The canopy becomes porous and loses tear strength.

Dampness / wetness

If the reserve gets wet or damp, it should be dried as soon as possible in a well-ventilated place (but out of the sun). It may take some time before the reserve is completely dry because the fibres absorb water. Mould may form if the reserve is stored wet and the fibres may rot, particularly when it is warm. This can result in the reserve becoming unsuitable for use within a short time.

Contact with salt water

If the reserve comes in contact with salt water, it must immediately (before drying) be thoroughly rinsed with fresh water. It must then be left to dry in a well-ventilated place (but out of the sun).

There can be permanent damage to the material or system failure if the reserve is not thoroughly rinsed.

Storage

The reserve must be stored in a dry place at room-temperature, and away from oil, grease, acids and paint.

PLEASE NOTE

SWING cannot be held liable for any damage due to wrong storage condition

Inspection

General inspection

The reserve packer carries out a visual inspection of the reserve system for damage and abrasion before it is packed.

This inspection includes:

- Risers
- Lines
- Fabric
- Inner container

If the chute was opened for an emergency deployment or during safety training, then it must be inspected by the manufacturer or an approved service agent.

PLEASE NOTE

The owner is responsible for the airworthiness of the rescue chute. This includes complying with the inspection periods.

Periodical inspection

In addition to the general inspection, during the periodical inspection the following points have to be checked:

- Linelength (symmetry)
- Condition of elastic straps on inner container (elasticity, damages)
- Condition of eyelets on inner container (sharp edges, dirt, rust)

Inspection periods

The rescue chute has to be aired and repacked every 12 month.

Periodical inspection has to be carried out latest every 24 month.

If the rescue chute has become wet, it has to be inspected and repacked prior to next usage.

Repairs

The reserve system must be sent for repairs to the manufacturer or an approved service agent if any damage is discovered which affects its airworthiness. This is also the case if damage is suspected, but it is not possible to definitively determine the effect of the damage on the equipment's airworthiness.

PLEASE NOTE

Repairs should only be carried out by the manufacturer or an approved service agent.

Type designation

Swing Rescue chutes have an exact identification on Panel #1 and / or at the riser.

The information required is set out in the airworthiness requirements.

It is helpful to provide the type designation of the rescue chute if you are contacting your Swing dealer with any queries or ordering replacement parts or accessories, to ensure accurate identification.

06 Packing directions

PLEASE NOTE

The reserve system should only be packed by an adequately qualified person.

Make sure that nothing is left inside the reserve chute or the container that does not belong there.

Make a list of any items used to help during packing and check again after the reserve is packed that you have all of those items.

If a packing line is used, it should be marked in such a way that it is impossible to leave it inside the rescue chute (attach a ball, brake handle or something similar to one end).

The number/panel number for the ORANGE CROSS L is given in brackets.

Laying out and untangling the reserve chute

The reserve should ideally be packed on a special packing table. If none is available, a clean flat surface can be used.

Stretch out the reserve chute to its full length on the packing table or other suitable surface.

Insert a temporary line through the packing loops and attach it to the top end of the packing table. (Fig. 1)

Fig. 1

Attach the bridle to the other end of the packing table and stretch the chute tight. Check the reserve lines to make sure that they are straight.

Pick up lines 1 and 20 (24) and check them along their length to the bridle, removing any twists or tangles.

Take panel 1 and count out half of the panels i.e. 10 (12) panels, then set aside the corresponding bundle of suspension lines, separated if possible with a special “line comb”.

Panels 1-10 (1-12) are now on the right-hand side, and panels 11-20 (13-24) are on the left-hand side. (Fig. 2)

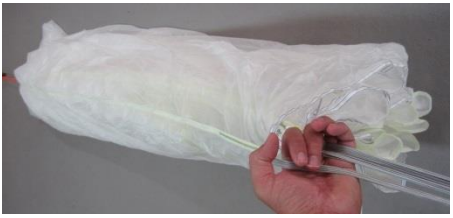

Fig. 2

Fig. 3

Laying out the panels

Now start laying out the panels, beginning with panel 11 (13). (Fig. 4)

Fig. 4

To do this, take hold of panel 11 (13), pull it towards you and then put each panel on top of the next, one by one, going from panel 11-20 (13-24).

The panels and lines are different lengths so the lower edge will be staggered, not in a straight line.

Fig. 5

The panels with the air vents are pulled outward at the seam and then folded so that they end up the same width as the other panels.

Fig. 6

Fig. 7

Next, panels 10-1 (12-1) are laid out in the same way. The apex, which is held with the packing loops, is then straightened.

The canopy is now divided in such a way that panel 1 with the stamp is on the top right.

Fig. 8

There are two different methods for folding the canopy along its length.

Method 1 is comparable to the traditional technique with an S-fold, as is used with most round canopies. This ensures both rapid opening and also the usual steps.

In method 2, an air passage is formed to allow for more uniform aeration of the canopy. This results in an opening time that is even shorter compared to the traditional packing method. This method is more complex due to separate stages.

Putting the panels into the container and the stages thereafter are the same for both methods.

Method 1, S-shape

The two halves are now folded length-wise.

First, one third of the total width is folded under the rescue chute (Figs 9 and 10)…

Fig. 9

Fig. 10

…and then next one third is folded on top of the rescue chute (Figs. 11 and 12).

Folding the rescue chute into thirds to make an S-shape improves the speed and symmetry of opening.

When doing this, make sure that the folded width of the reserve is not wider than the width of the inner container (wider side).

Fig. 11

Fig. 12

Method 2, air passage

To form an air passage, the lines are then slackened, panel 1 folded upward …

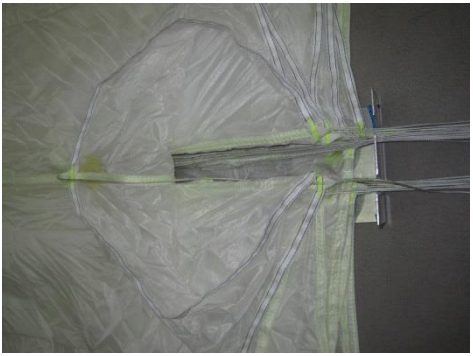

Fig. 13

…each side of the bottom edge folded from the inside 45° to the left/right...

Fig. 14

… so that there is a space between the two sides the width of the container.

Fig. 15

Panel 11 (13) is now lifted up and the two sides of the bottom edge turned under.

Fig. 16

Fig. 17

Panel 1 is flipped back again, folding both sides to the width of the container, and the lines are stretched tight again.

Fig. 18

Fig. 19

The two halves are now folded along their length:

Firstly one side is folded around the bottom edge parallel to the upper seam, then the second side.

When doing this, make sure that the folded width of the reserve is not wider than the inner container (wider side).

Fig. 20

Fig. 21

Fig. 22

End of the different methods

From here on, the two methods are the same.

DANGER

The **line** which was inserted though the pack loops to assist packing must now be **removed, otherwise the reserve cannot be deployed**.

If a special packing line was used, this must now be removed. (Fig. 19 and 20)

Fig. 23

Fig. 24

Putting the canopy into the container

Press any air out of the reserve chute and smooth out any wrinkles, then fold the canopy as shown in Figs. 21 to 24.

Fig. 25

Fig. 26

Fig. 27

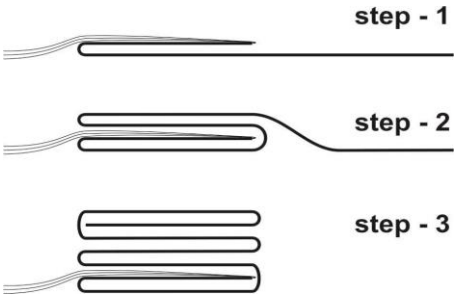

Fig. 28

Place the container over the folded canopy. Make sure that it is the right way round – the two elastic loops on the container must be on the side with the lines.

Fig. 29

Fig. 30

Now turn the container over, so that the lines are still on the same side.

Then close the container on three sides so as to hold the canopy firm.

Bundling the lines

Arrange the lines into coils. Make sure when doing this that the length of each coil is about the same as the width of the inner container. Use an elastic band to secure the coils into bundles with three coils each.

The packing bands should be replaced each time the reserve chute is packed.

Leave about 75 cm of line, which is used to close the container. (Fig. 27 and 28)

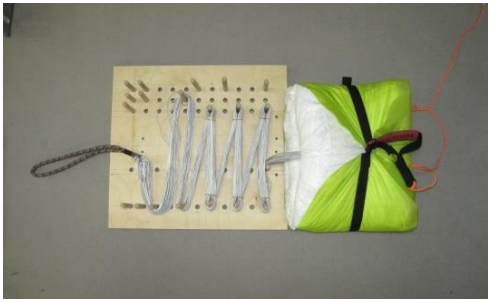

Fig. 31

Fig. 32

Closing the inner container

Close the container, placing the bundle of lines in a coil through the elastic loop. The lines should form a loop about 3-4cm long. (Fig. 29)

The force needed to open the container (to pull the lines out of the elastic loop) must be in the region of 300 to 900g.

Fold up the rest of the lines, about 55cm, into a figure 8 and secure them under the elastic bands on the container. (Fig. 30)

Fig. 33

Fig. 34

Entry in the reserve logbook

An entry must now be made in the reserve logbook, giving the date, name and signature of the packer and the type of work carried out.

07 Swing on the World Wide Web

Swing website

Swing has a comprehensive website, which provides additional information and many other issues related to paragliding. Swing's website is the first port of call for Swing's worldwide following:

www.swing.de

On Swing's website, you will find an extensive range of accessories for your paraglider, as well as useful products for pilots.

You will also find links there to other services and websites:

- Product registration
- Facebook, Twitter & youtube

These websites and their content are provided for your use. The content of Swing's websites has been made available for your use on an "as is" and "as available" basis. Swing reserves the right to alter the websites at any time or to block access to them.

Facebook, Twitter & youtube

Swing is very active with the new media of Facebook, Twitter and youtube and has various websites which are updated daily on various topics related to aviation and Swing products.

Paragliding

www.facebook.com/pages/Swing.Paragliders

http://twitter.com/swingparaglider

Speedgliding

www.facebook.com/SwingSpeedflyingTeam

http://twitter.com/SSTSpitfire

Swing TV

On Swing TV, Swing puts official video footage and footage by pilots, under these categories:

- Paragliding
- Speedflying
- Accessories
- Video footage by pilots

www.youtube.com/user/SwingParagliders#p/a/u/0/1_T7QrzaEtU

Swing App

We recommend that you use our Smartphone App so that you can keep up-to-date at all times.

This brings the latest news, photos and videos, as well as information on our products like technical data, manuals and service instructions directly to your smartphone or tablet.

08 Appendix

Addresses

Swing Flugsportgeräte GmbH

An der Leiten 4
82290 Landsberied
Germany
Tel.: +49 (0) 8141 3277 - 888
Fax: +49 (0) 8141 3277 - 870
Email: info@swing.de
www.swing.de

Paraglider recycling

Swing Flugsportgeräte GmbH
- Recycling Service -
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DHV

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e-mail: info@para-test.com
www.para-test.com

Versions

Version 2.0

Date: 15.09.2017
Second version of the Instruction Manual

Rescue chute details

Model:	Size:	Manufacturing Date:	Serial number:
Orange Cross		__/__ - 201__	OrC __/__/ - __/__/__/ - __/__/__/__/__/

Pilot details / Proof of ownership

1. Owner:	
Name:	
Address:	
Telephone:	
Email:	
2. Owner:	
Name:	
Address:	
Telephone:	
Email:	
3. Owner:	
Name:	
Address:	
Telephone:	
Email:	

Reserve logbook:

Date:	Work carried out:	General condition on delivery:	Carried out by (Name):	Stamp and signature

Notes

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