

# 459

**UHF** RADIO  
CONTROL

ultra high frequency - 459 MHz - frequency modulation

**RIPMAX** REFTEC

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# RIPMAX REFTEC

## 459 FM

### Radio Control Equipment

#### INTRODUCTION

The RIPMAX REFTEC U.H.F. Radio Control System represents the very latest technology in model control and is the outcome of many years of careful development and exhaustive tests under all practical conditions.

R.F. Technology Ltd. are the first British manufacturers to offer equipment incorporating both U.H.F. (Ultra High Frequency) and F.M. (Frequency Modulation) techniques, and both have many advantages over the normal H.F. (High Frequency) and A.M. (Amplitude Modulation) systems which are in general use.

The equipment has been designed to be fully compatible with all FUTABA Series 'M' Servos and accessories thus offering you the widest possible choice and also enabling existing Futaba 'M' Series owners to make use of their existing servo installations by merely changing the receiver and transmitter.

U.H.F. gives you the choice of operating on any one of the 39 spot frequencies in the 459 Megahertz Band. Initially, for economic reasons, matched pairs of crystals will only be available on the 19 even numbered channels.

As with all radio control equipment, time and care taken with the installation will be more than rewarded by performance and reliability. To get the best results from your equipment read these instructions carefully and follow the advice given.

#### THE 459 MEGAHERTZ BAND

The licence at present issued by the Home Office permits the operation of radio controlled models on two segments of the radio frequency spectrum. The lower of these is known as the 27 Megahertz band (H.F.) and extends from 26.96 to 27.28 Mhz. with a wavelength of approximately 11 metres. The other is the 459 Megahertz band (U.H.F.) and extends from 458.5 to 459.5 Mhz. with a wavelength of approximately 65 centimetres.

With the exception of some early experiments all R/C model operation in the U.K. has until now been concentrated in the 27 Mhz. band using the 12 spot frequencies available. However, this band is "shared" with industrial, medical and other legitimate operators and is also illegally used by "walkie talkies" and can be affected by legitimate citizens band operators on the Continent in certain conditions, all of which can and do cause interference with the operation of models. The 459 Mhz. band has almost none of these disadvantages and being wider can accommodate up to 39 spot frequencies. Having a much shorter wavelength, both transmitter and receiver aerials can be considerably smaller and more convenient for model use, and the band enjoys a complete freedom from interference caused by sunspots and other freak conditions.

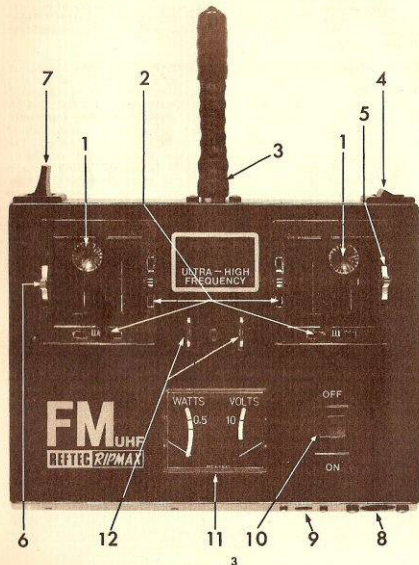
#### FREQUENCY MODULATION

The transmission from RIPMAX REFTEC equipment employs Frequency Modulation (F.M.) which gives a far greater immunity from interference from all sources. The background noise which is normally present with Amplitude Modulation (A.M.) systems is almost non-existent with F.M. and reception is far less prone to distortion and the effects of reflected signals, due to its limiting action. F.M. is used for all stereo V.H.F. broadcasts, marine V.H.F. radio telephones, and most V.H.F. radio communication services.

#### RADIO CONTROL LICENCE

To obtain your Radio Control Licence, fill in the application form supplied with your equipment and send it together with a cheque or a postal order for £2.40 to: The Home Office., Accounts Branch, Tolworth Tower, Ewell Road, Surbiton, Surrey. KT6 7DS. The licence is valid for a period of five years. (only 48p per year!).

# RIPMAX REFTEC 7 CHANNEL 459 Mhz. F.M. TRANSMITTER



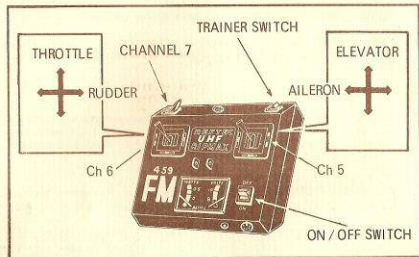
## PARTS OF THE TRANSMITTER

- 1 **MAIN CONTROL STICKS** Two Axis direct coupled.
- 2 **TRIM LEVERS** Adjust centering of servo and/or increase movement in the same direction and sense as main adjacent control stick.
- 3 **AERIAL** Quarterwave - plugs into co-axial socket.
- 4 **TRAINER SWITCH** Pushing to the left disconnects all controls and substitutes controls from Trainer or Student's transmitter when connected. If not connected, it "locks" servos in present position.
- 5 **AUXILLARY CONTROL No: 5** Used for Flaps, Airbrakes, Mixture Control, Bombs, or special functions. Full proportional movement.
- 6 **AUXILLARY CONTROL No: 6** Used for Flaps, Airbrakes, Mixture Control, Bombs or special functions. Full proportional movement.
- 7 **AUXILLARY CONTROL No: 7** Used for Retractable Undercarriages etc. Full travel two positions only e.g. Up and Down.
- 8 **TRAINER SOCKET** Connects to Trainer or Student Transmitter with Buddy Box Lead ( P-FD48M ).
- 9 **CHARGING SOCKET** Only connected when Transmitter is switched OFF.
- 10 **ON/OFF SWITCH** Red rocker type. Pressing the bottom turns the Transmitter ON, and pressing the top turns it OFF.
- 11 **DUAL METER** The right hand scale is "expanded" and shows transmitter battery voltage. The left hand scale shows input power to the final output stage of the transmitter. Confirms radiation.
- 12 **NECK STRAP** attachment points.

The picture shows the 7 Channel version of the equipment. The other models have controls in the same or similar positions but some of the auxillary functions are omitted depending on the model.



## THE CONTROLS



RIGHT HAND STICK	Vertical movement	- Ch 3 (Elevator)
(Trims below and on left)	Horizontal movement	- Ch 1 (Ailerons)
	Auxillary control 5	- Ch 5
LEFT HAND STICK	Vertical movement	- Ch 2 (Throttle)
(Trims below and on right)	Horizontal movement	- Ch 4 (Rudder)
	Auxillary control 6	- Ch 6
TOP LEFT SWITCH	Auxillary control 7	- Ch 7 (U/C retract)
TOP RIGHT SWITCH	Trainer control	

As supplied, the left hand stick is intended for operating the throttle, it is fitted with a friction / ratchet and is not self-centering. This can be changed to the right hand stick if required and instructions on how to do this will be found on page No: 14

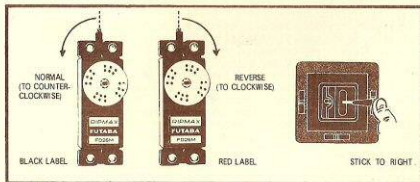
## RIPMAX REFTEC COMBOS

The RIPMAX REFTEC U.H.F. Combo consisting of Transmitter, Receiver, Tx and Rx Nicads and Switch Harness, is supplied complete with the following items :-

- Mains charger
- Receiver charging lead
- Transmitter charging lead
- 1 pair of matched crystals
- Transmitter neck strap
- 2 switch toggles

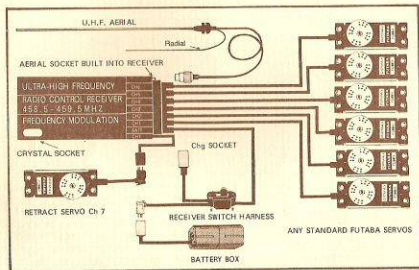
## SERVO

Any Futaba 'M' Series servo can be used with the RIPMAX REFTEC U.H.F. equipment and the choice depends on the application and the space available. Servos can be mixed if desired but please note that servos having Black labels operate in the opposite sense to those having Red labels, and their direction of rotation for a given control movement is reversed. ( See diagram below ). The use of a REFTEC Safety Pilot (P-RF1010) in conjunction with the throttle servo is an additional refinement enabling the throttle to be operated when the transmitter is switched off (warming up prior to contest etc) and also gives a warning of low receiver battery state by closing the throttle 5-10 minutes before the power is exhausted, thus allowing time for a safe landing.



## CONNECTING AND TESTING

Although all equipment is charged before leaving the factory it is recommended that a full charge be given to both Transmitter and Receiver Nicads BEFORE connecting and testing, by carefully following the charging instructions on page No:11.



The receiver should be connected to its aerial, switch harness (with the switch in the OFF position) and servos shown in the diagram above and the receiver Nicad connected to the harness.

If not already in place, the correct receiver crystal should be plugged into the socket provided. Please note that the servos plugged into Channels 1 and 3 are controlled by the right hand Main Control Stick whilst Channels 2 and 4 are controlled by the Left Stick.

Channels 5 and 6 are the Auxillary Functions and Channel 7, which is the separate socket on a short lead coming from the receiver, is for a retract servo, and will only give full movement from one end of travel to the other when it is operated.

The transmitter aerial should now be fitted and all trim levers plus auxillary controls 5 and 6 placed in the central position. Switch the transmitter on and note the meter readings.

The volt meter should register 10 volts or more, and the power meter should show approximately 0.5 watts. If the volt meter reading is correct but little or no power is indicated, switch off, unscrew the back of the transmitter and check that the crystal is present and it is properly fitted as shown in the diagram ( see Changing Crystals on page No: 12).

With the transmitter ON, switch on the receiver. All connected servos should immediately centre and remain still except the retract servo which should go to one end position or the other and stop.

Check the full movement of each control individually and note that moving the associated trim in the same direction as its main control increases the servo movement in that direction. This is particularly useful on Throttle Control when further movement by the trim lever can be used to move the throttle from tick over setting to fully closed to stop the motor.

Full movement of the main control sticks should produce a servo movement of approximately 70 degrees ( 35 degrees either side of the centre position). Moving the trim control to its limit in either direction will shift the centering position approximately 14 degrees in the corresponding direction. Thus, by moving the main control and its trim together from one extreme to the other will produce a total movement of approximately 98 degrees at the servo. Auxillary functions have no trim, and Retract control No: 7 will move its servo from one end position to the other.

To check the range, set up the receiver and servos with its aerial at least 1 ft (300mm) from the ground and with the equipment switched on, walk away to a distance of approximately 50 ft (15 metres).

Remove the transmitter aerial and check that all functions operate correctly. No other range checking is required, but this check should be carried out prior to operating the equipment on each and every occasion. Do not operate the transmitter without the aerial for more than 3 minutes at any one time.

When tests are completed switch off the receiver then switch off the transmitter.

Always turn your transmitter ON before the receiver and always turn your receiver OFF before the transmitter. This will ensure that the controls remain in the neutral position and minimise servo "hunting" which can cause unnecessary wear to the servos.

## INSTALLATION

### RECEIVER

This should be protected by wrapping in foam rubber of reasonable thickness secured by a rubber band, or foam rubber tubing (Armor-Guard F-AR120), and placed in a suitable compartment in the model where it cannot move or become contaminated by fuel, water or dirt. It should not be too tightly packed and it is preferable to position it behind or aft of the battery pack to avoid possible damage by the battery in the event of a crash.

### RECEIVER BATTERY

This should be protected in the same way as the receiver using foam rubber tubing (F-AR120), and a further protection from fuel and water can be given by encasing and taping in a suitable polythene bag. The battery should be securely located in the model preferably against a rigid bulkhead, and in such a manner that it cannot cause damage to the receiver or servos in the event of impact.

### RECEIVER AERIAL

The aerial is supplied fitted to a co-axial lead of sufficient length to enable it to be positioned up to 12 inches (300mm) from the receiver, if desired. It can be fitted in any convenient position in the model and can be angled or bent to produce a scale effect, if required. Do not cut the aerial itself or shorten the co-axial lead, just coil and tape it inside the model leaving sufficient length to plug into the receiver. The black thin wire (a radial) should be fixed or taped inside the model at right angles to the axis of the main aerial. This is not critical but do not run it parallel to the aerial.

In a conventional installation the aerial would be mounted protruding from the top, side, or bottom of the fuselage on an aircraft, or through the deck or cabin top on a boat. However, it can equally be positioned along the top, bottom, or side of the fuselage, inside or outside, or in the wing or vertical or horizontal stabiliser if desired in the aircraft, provided it is positioned at least 3 inches (75mm) from metal pushrods etc., running parallel with it. On a boat it can be mounted under the cabin roof or concealed in the mast (not metal) or superstructure, if desired. Whilst not affected by normal electrical interference, it is recommended that the aerial be positioned as far as practical from electric motors, spark ignition coils and servos, and should not be shielded e.g. do not mount inside a metal funnel, metal clad wing, or metal clad body or fuselage.

### SERVOS

Servos should be mounted either in servo trays or on individual mounts making full use of rubber grommets to minimise engine vibration. If it is not practical or possible to use trays/mounts, then individual mounting on wood bearers using rubber grommets, or adheasing with servo tape (G-G742) should be employed. It is important that servos should be firmly mounted and do not move when operating their control function, but it is equally important to minimise vibration caused by engines.

### LINKAGES

Ensure that all control surfaces, steering mechanisms and other controls move freely, and that push rods do not bind on each other; and that snakes and other linkages take the route causing the least friction and minimum slack in the installation. It is essential that full servo travel (including trim movement) can be achieved without causing strain on the servo, and linkages should be adjusted so that it is impossible for the surface or control to in any way limit the full travel of the servo. This especially applies to throttle controls and retracts where the angular movement is often less than that of the servo disc or arm. One answer in these cases is to extend the throttle or control arm so that the full movement at the point of attachment coincides with the full movement of the servo. If an over-ride device is used ensure that the extra load put on the servo is kept to a minimum or excessive battery consumption will result.

Any restriction or stopping of any servo will always cause a high current consumption which can quickly damage the servo and cause faulty operation of the whole installation. Your extra care on this part of the installation will be amply rewarded by trouble free operation.

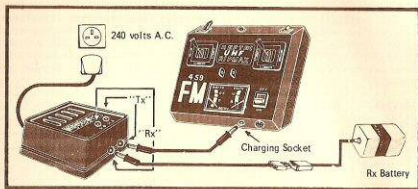
### SWITCH HARNESS AND WIRING

The switch should be mounted in a convenient position where it cannot be contaminated by fuel or water. Some servo trays have provision for the switch to be mounted on them and a quick link or wire can be attached through the hole in the switch dolly so that it can be operated from outside the model (Q-SLE29 R/C switch extender). The charging lead and socket which comes from the same side of the switch as the battery plug should be equally protected from fuel and water, and the socket taped or stowed in a position convenient for connecting to the charger when required.

All wires from servos and switch harness should be led neatly to the receiver, and any surplus coiled and taped to ensure that they are out of the way of linkages and cannot be pulled, rubbed or damaged by any other parts in the model. Make sure that all connections are properly plugged into the receiver, and inspect these and other connections during your pre-flight check and regularly during operation.



## CHARGING



The Transmitter is supplied with a 9.6 volt Nicad pack contained in the back of the case and this is internally connected to the charging socket when the transmitter is switched OFF. The charging lead with circular plugs on each end should be used to connect the transmitter (which MUST be switched OFF) to the charger.

The Receiver 4.8 volt Nicad should be connected to the charger with the charging lead which has a circular plug at one end and a flat three pin plug at the other. Alternatively the receiver Nicad can be charged whilst installed in the model by inserting the three pin plug on the charging lead into the charging socket of the receiver switch harness (which MUST be switched OFF) and connecting the other end to the charger.

Having connected the Nicads to the charger it can then be plugged into the mains when both red indicator lights should glow. Nicads can be charged separately if required.

A full charge with the mains charger (FD-130M) takes approximately 20 hours but in normal use an "overnight" charge of 12-16 hours is usually sufficient. If the equipment has not been used for some time a full charge should always be given. Fully charged Nicads should give a normal days use consisting of 8-10 sessions of 10 minutes each but remember to take into account the time spent in pre-flight and range checks.

After charging, the meter on the transmitter should indicate 10 volts or more and the meter reading should be checked before and after each 10 minute session. Once the reading is below 10 volts the fall to 8 volts and the red "discharged" region takes place quite rapidly, so do NOT operate if the reading is below 9 volts (i.e. halfway between 8 and 10).

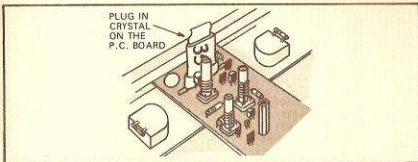
The receiver Nicad will normally discharge at a similar rate to the transmitter but if more than four servos are used or continuous movement of controls is required, it may need more frequent charging. The receiver Nicad can be conveniently monitored by fitting a Reftec "Go Lamp" (P-RF1002) which will indicate when the charge state is getting low. The REFTEC "Safety Pilot" (P-RF1010) mentioned in Servos will also give a positive warning of low battery state.

Nicads do not attain their full capacity until they have been cycled (charged and discharged) three or four times. It is therefore recommended that before operational use, both the receiver and transmitter Nicads are run down in simulated use or with a discharger, followed by recharging at least twice to ensure good capacity.

Rapid charging from a 12 volt car battery using either the RIPMAX Rapid Field Charger Discharger (P-CH48D) or the RIPMAX Rapid Field Nicad Charger (P-CH48) is strongly recommended at all times especially when a "long day's" use is required. A top up charge on the field from the car of half-an-hour gives approximately one hours use, and a full charge can be achieved in just over an hour with this method.

ALWAYS charge before use - even if it was charged the previous week and not used! - and NEVER operate if in doubt as to the state of charge.

## CHANGING CRYSTALS



Crystals are supplied in matched pairs, and only matched pairs should be used. The Receiver crystal is simply changed by removing the existing crystal from its socket in the receiver and plugging in the "new" crystal. To change the Transmitter crystal the back must first be removed by unscrewing the central holding screw and carefully unplugging the battery pack contained in the back. The existing crystal is then removed from its holder and the "new" one put in its place taking care not to touch any of the other internal parts of the transmitter. Having reconnected the battery pack and carefully stowed the connection in the bottom corner nearest the buddy box socket, the back should be replaced and the transmitter tested in the usual way.



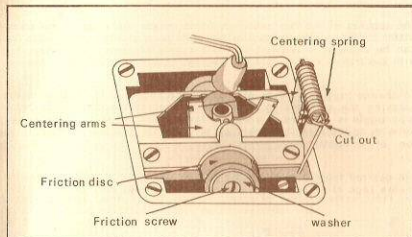
All crystals are marked showing type (Tx or Rx), Channel Number and or Frequency, and have a coloured edge which should be the same on both crystals of a matched pair. Ensure that the correct crystal is placed in each piece of equipment and remember to display your correct Channel Number at all times.

## LIST OF U.H.F. CRYSTALS

List No: P-RR	Channel No:	Frequency	List No: P-RR	Channel No:	Frequency
401	UHF 1	458.525	421	UHF 21	459.025
402	UHF 2	.550	422	UHF 22	.050
403	UHF 3	.575	423	UHF 23	.075
404	UHF 4	.600	424	UHF 24	.100
405	UHF 5	.625	425	UHF 25	.125
406	UHF 6	.650	426	UHF 26	.150
407	UHF 7	.675	427	UHF 27	.175
408	UHF 8	.700	428	UHF 28	.200
409	UHF 9	.725	429	UHF 29	.225
410	UHF 10	.750	430	UHF 30	.250
411	UHF 11	.775	431	UHF 31	.275
412	UHF 12	.800	432	UHF 32	.300
413	UHF 13	.825	433	UHF 33	.325
414	UHF 14	.850	434	UHF 34	.350
415	UHF 15	.875	435	UHF 35	.375
416	UHF 16	.900	436	UHF 36	.400
417	UHF 17	.925	437	UHF 37	.425
418	UHF 18	.950	438	UHF 38	.450
419	UHF 19	.975	439	UHF 39	.475
420	UHF 20	459.000			

U.H.F. Crystals are normally supplied in "matched pairs" only. If a single crystal is required it can be obtained direct from R.F. Technology Ltd., Leyton Avenue, Mildenhall, Suffolk. When ordering please state (1) which crystal is required (Tx or Rx), (2) the U.H.F. Channel Number, (3) the colour of the stripe along the edge of the crystal with which it is to be matched, and send a cheque or postal order made out to R.F. Technology Ltd., for half the current retail price of a pair of crystals.

## EXCHANGING THROTTLE MODE



If it is desired to have the throttle or non self-centering vertical control on the right hand stick, proceed as follows :-

1. Remove the back from the transmitter which is held in place by one central screw, and unplug from the battery pack which is contained in the back.
2. Carefully unhook and transfer the vertical centering spring from one stick to the other, taking care not to overstretch it and to ensure that the ends are correctly engaged in the cut outs at the ends of the centering arms.
3. Move the left hand stick to the left and remove the friction adjusting screw and washer from its present position, then carefully remove the ratchet/friction disc using a fine blade (balsa knife) to ease it off the central shaft.
4. Refit the ratchet/friction disc to the shaft on the right stick making sure that the ratchet or serrated side faces the control and then refit the screw and washer tightening only sufficiently to produce the friction desired. Do not overtighten.
5. Reconnect battery pack and replace back of transmitter, taking care throughout not to touch any other internal parts of the transmitter.

If the stick units on your transmitter differ from those pictured and described, please refer to the supplements at the end of this booklet.

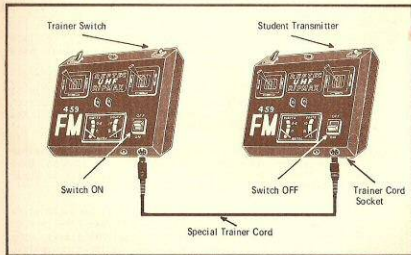
## CHANGING TRANSMITTER SWITCH TOGGLES

The toggles of the two switches fitted on the top edge of the transmitter for the auxiliary function No:7 (Retract) and the Trainer facility can be changed if desired. A spare toggle of each type is supplied with the transmitter so that any desired combination can be achieved.

To change toggles start by pulling out the paddle or blade type toggle pressing the surrounding bezel firmly against the case. The rocker type toggle is removed in a similar fashion but needs carefully easing out with an instrument screwdriver or knife blade, lifting in the direction of extraction.

The desired toggles can then be pushed in until the locating pips on the legs click into their place on the central part of the switch.

## TRAINER SYSTEM



This enables the experienced operator to teach the novice or student control of a model in the minimum of time and with the maximum of safety. The Teacher's transmitter is switched ON and connected to the Student's transmitter (switched OFF) by a Buddy Box lead (P-FD 48M) which is plugged into the socket on the bottom right hand corner of each transmitter. Both transmitters MUST be RIPMAX REFTEC.

The Teacher's transmitter sends out the radio signal and information which controls the model, but as soon as the Teacher pushes the Trainer Switch on his transmitter, the controls of the Student's transmitter supply the information and the Student is "in control". The moment the Teacher releases his switch he regains control and in this way the Student's errors can be immediately corrected and the control is handed back again by pushing the switch.

In practice the trims of the Student's transmitter are adjusted so that no servo movement occurs when the change over takes place and the hand over normally takes place when the model is proceeding straight (and level!).

When not connected to another transmitter, inadvertent operation of the trainer switch merely holds servos locked until switch is released.

## USEFUL ACCESSORIES

Servo Extension Lead	P-FD175M	Spare Rx Switch Harness	P-FD166M
Y Junction Lead	P-FD176M	Transmitter Tray	P-RF200
Buddy Box (Trainer lead)	P-FD48M	Servo Mounting Tape	G-G742
Reftec 'Go Lamps'	P-RF1002	Armor Tube Packing	F-AR120
Reftec Safety Pilot	P-RF1010	Foam Packing	Q-SLE40
Rapid Charger/Discharger	P-CH48D	Heat Shrink Tube 1/16"	Q-HST1
Rapid Field Charger	P-CH48	Heat Shrink Tube 3/32"	Q-HST2
Spare Receiver Nicad	P-FD124M	Heat Shrink Tube 1/8"	Q-HST3
Spare Transmitter Nicad	P-RR128	Vibrasorb Grommets	Q-RC20
(and back).		R/C Switch Extender	Q-SLE29

## ONE YEAR WARRANTY

The RIPMAX-REFTEC UHF proportional radio control system is the most thoroughly tested unit ever offered to the competitor or sport modeller. We are proud of its quality and superior performance and take pleasure in offering the following warranty :-

Should your RIPMAX-REFTEC UHF radio control unit be found to be defective in materials or workmanship within ONE FULL YEAR from date of purchase, RIPMAX undertake to repair or rectify the unit free of charge through their appointed service agent. This warranty shall be VOID if if the said unit has been improperly handled, tampered with, serviced or repaired by anyone other than RIPMAX or their appointed agent or, has changed ownership and in no event shall RIPMAX be liable to anyone for any consequential loss or damage however it may be incurred.

## REPAIR AND SERVICE

To ensure prompt service, please follow carefully the instructions which have been listed below for your convenience.

1. Charge all batteries for a minimum of 14 hours prior to despatch.
2. Remove all servos from mounts and foam packing from the receiver.
3. Different plugs, sockets or other modifications which interfere with factory testing procedures will be returned to standard at your expense, so change to standard before returning.
4. Carefully pack all components individually with sufficient packing material to prevent shipping damage in transit. Warranty does not cover any components which have been damaged in transit. Also for your own protection, insure all your packages before despatch.
5. Include a brief, but thorough description of all the problems and state the service required. Label each servo as to its function.
6. Be sure to include your full address and post code inside the box as well as outside, and add your telephone number if possible.
7. Include a packing list of all the items being returned and double check to make sure that all the items have been packed by you!
8. Despatch direct to R.F. TECHNOLOGY., LEYTON AVENUE, MILDEN-HALL, SUFFOLK, on receipt of which you will be notified of the job number and expected date of completion. Items will normally be returned C.O.D. To save the cost and inconvenience of this, a blank cheque which can be limited not to exceed £20 should be enclosed, (more if expensive crash damage exists).

### RETURNING UNDER WARRANTY

It is important that you retain the original sales receipt as proof of date of purchase, and always enclose a copy when returning your equipment under warranty. Also, please use liberal packing as no liability whatsoever can be accepted for any damage in transit.

RIPMAX REFTEC reserve the right to change the design, specification, and performance of their equipment as set out in these instructions, consistent with their policy of continued development and improvement of their products.

## A FINAL WORD

Before operating your model always check :-

1. That the model is in good working order, all parts are correctly fitted and secured and that all controls will operate correctly and give full movement.
2. That your batteries have sufficient charge, and that all the electrical plugs and connections are correct, fully engaged, and secure.
3. That all switches are ON - that nobody else is using "your" channel, and that the area is clear to release your model.

Never release your model if you have any doubt about its operation or the conditions under which you are operating - weather, spectators, general safety etc.

Always check that you are not interfering with someone else who may be "on the air" on your frequency and always display your correct channel number for others to see.

Remember that it is illegal to operate radio control equipment without a current Home Office Licence. It is also irresponsible to operate a radio controlled model (or any model) without adequate third party insurance cover.

If you are a beginner or inexperienced, always enlist the help of a proficient person. This can save your model from unnecessary damage and help you to enjoy your hobby with the minimum of problems.

Remember "IT ALWAYS LOOKS EASIER THAN IT IS", and guidance in your early stages will also help you to become a more proficient and safe operator.

Your care and attention, both in installation and use, will be amply rewarded by trouble free and enjoyable operation of your model.

HAPPY LANDINGS !