

# acomms

## RADIO CONTROL SYSTEM

**acomms AP-227**  
**2-CHANNEL**  
**2-SERVOS**



**acomms**

AP-227

POWER

on  
off

BAND  
6

CRYSTAL

**DIGITAL PROPORTIONAL  
RADIO CONTROL SYSTEM**

MANUFACTURED BY ASAHI COMMUNICATIONS INC

- |   |                     |
|---|---------------------|
| 1 | 26.995 MHz (Brown)  |
| 2 | 27.045 MHz (Red)    |
| 3 | 27.095 MHz (Orange) |
| 4 | 27.145 MHz (Yellow) |
| 5 | 27.195 MHz (Green)  |
| 6 | 27.255 MHz (Blue)   |



# ACOMS RADIO CONTROL SET AP-227

Dear Radio Control Hobby Friend,

Congratulations on buying this ACOMS AP-227 two-channel digital radio control set, which has been manufactured and assembled with the greatest care.

We are confident that by following our simple instructions you will be delighted with your purchase. Please read the instructions for use of this set thoroughly, noting all points, in order to avoid mistakes in handling and operation.

The duration of the guarantee for the AP-227 is six months, beginning from the date of purchase. In the unlikely event of there being a fault, please return the faulty part to our agents, Richard Kohnstam Limited, together with the purchase receipt from the shop in which you bought your set. It is helpful if you also state what is wrong with the returned part. Please also ensure that your name and address, together with a list of parts sent, is enclosed inside your parcel.

Should you carry out your own repairs or modifications to the apparatus or to any part of it, we cannot accept responsibility and the guarantee becomes null and void.

It is advisable to check your ACOMS AP-227 before installing it into your model.

If the set has been damaged through misuse, a charge will be made for repair, the amount of which will be dependent on the damage. If you wish to have a quotation before the repair is carried out, please make your request known.

Before returning any parts under guarantee or for repair, always be sure to first test your set with a new set of batteries. Flat or faulty batteries are very often responsible for the malfunction of radio control equipment. You can often save considerably on time, money, and aggravation by always checking your batteries carefully.

Enclosed with this booklet is a repair price list and an application form for a licence which, by English law, you are obliged to obtain. Should you have any queries about your ACOMS AP-227, your supplier will be only too pleased to advise you.

We wish you a lot of pleasure with our ACOMS AP-227.

TO HELP OBTAIN THE BEST RESULTS FROM YOUR NEW ACOMS SET IT IS RECOMMENDED THAT YOU OBSERVE THE FOLLOWING : WHEN STARTING UP, SWITCH ON THE TRANSMITTER BEFORE THE RECEIVER. WHEN FINISHING, SWITCH OFF THE RECEIVER BEFORE THE TRANSMITTER.



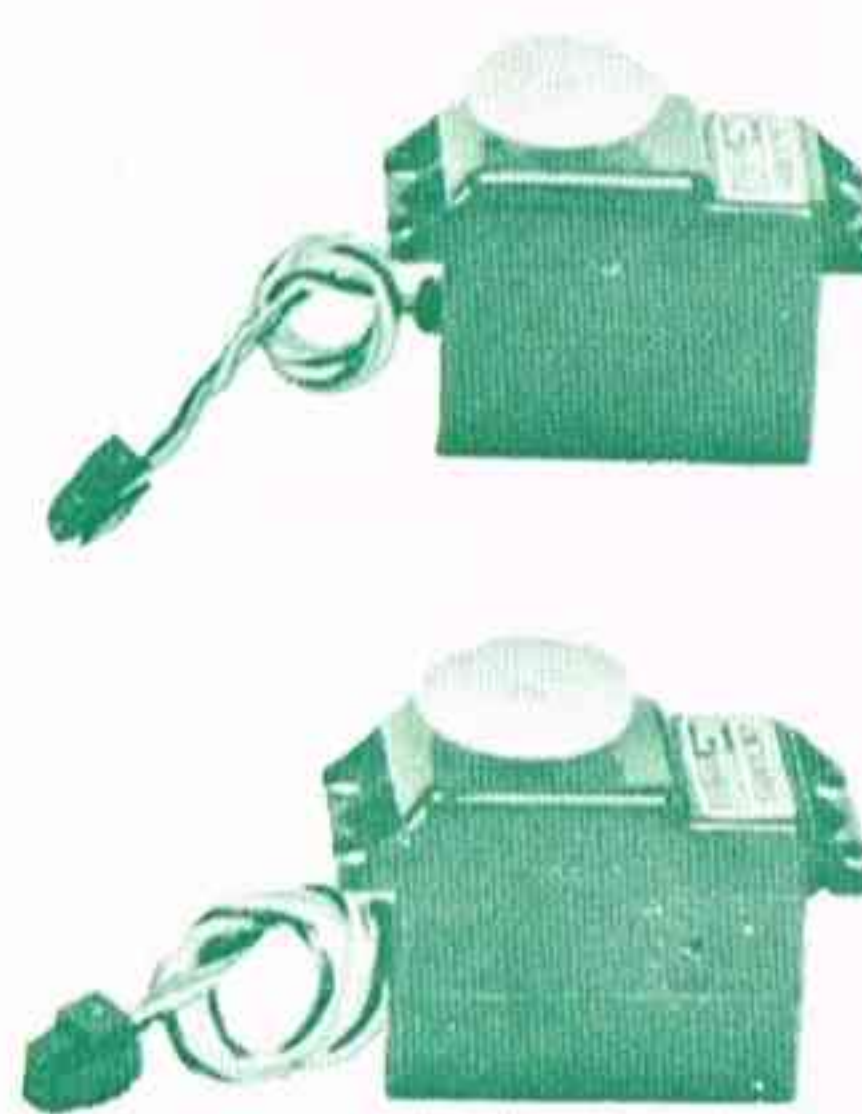
# ACOMS AP-227 2-CHANNEL DIGITAL PROPORTIONAL RADIO CONTROL SYSTEM OPERATING AND INSTRUCTION MANUAL



Ⓐ TRANSMITTER ATA-227

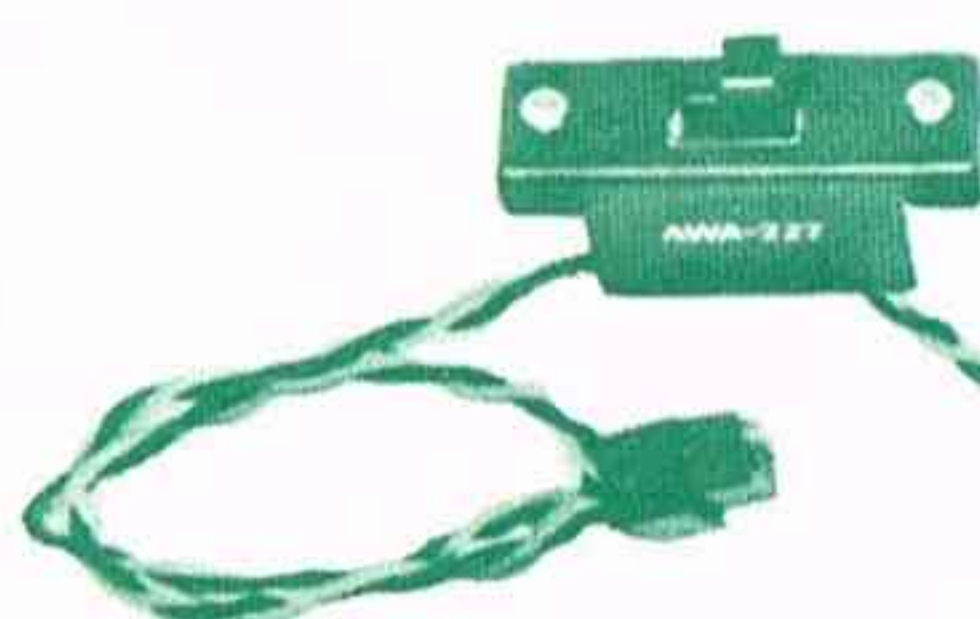


Ⓑ RECEIVER ARA-227



Ⓒ 2 SERVOS ASA-227

Fitted with circular  
output disc.



SERVO ON/OFF SWITCH



SERVO BATTERY HOLDER



INTERCHANGEABLE CRYSTALS TO CONTROL  
THE FREQUENCY OF OPERATION. (6 DIFFERENT  
FREQUENCIES ARE AVAILABLE).



2 SPARE CONTROL STICK KNOBS



8 SERVO MOUNTING GROMMETTS



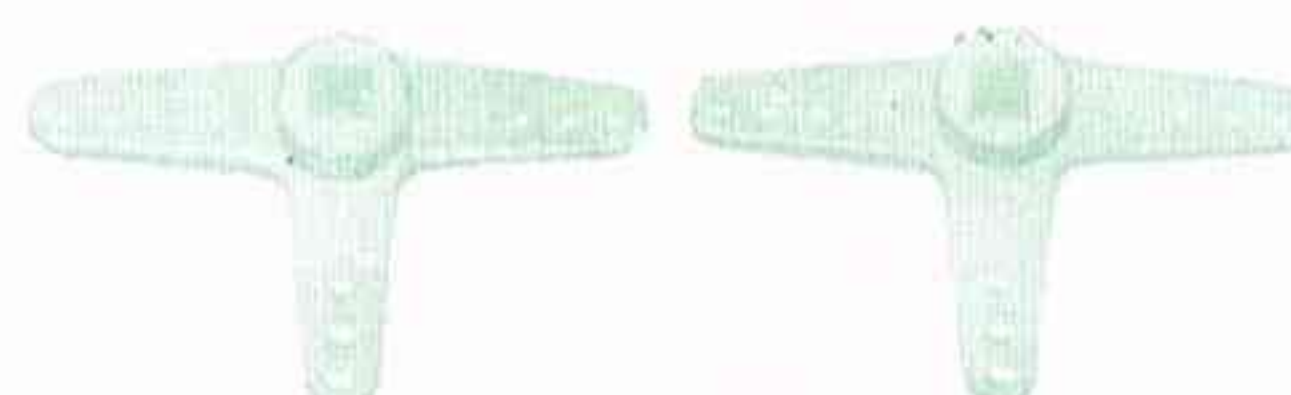
8 SERVO MOUNTING EYELETS



CARRYING STRAP



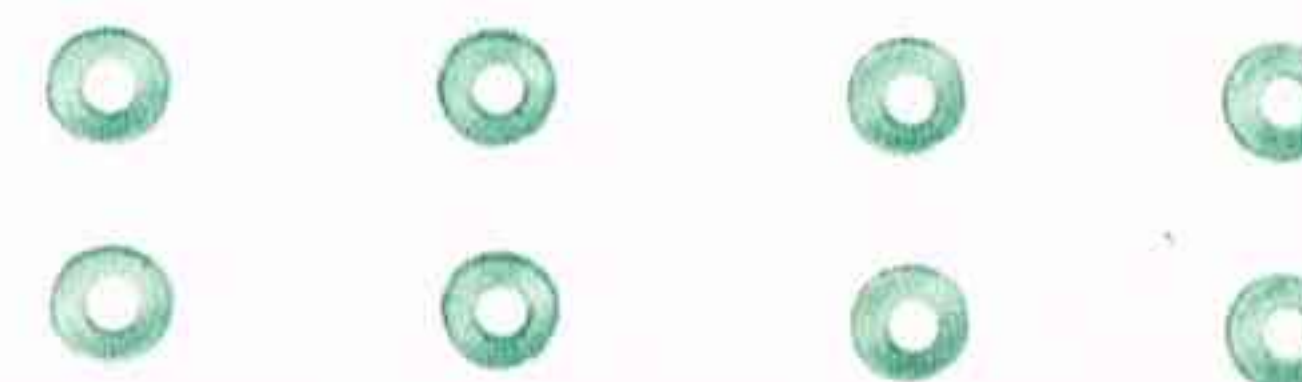
FREQUENCY FLAG WITH CLIP.



2 SERVO HORNS



8 SERVO MOUNTING SCREWS



8 PLAIN WASHERS

FOR USE WITH THIS RADIO WE RECOMMEND YOU USE RECHARGEABLE BATTERIES OF THE PEN-LIGHT CELL SIZE SUCH AS DURACELL MN1500 OR EQUIVALENTS. ORDINARY DRY CELLS OF UM3, C3, HP7 OR EQUIVALENT MAY BE USED. YOU WILL REQUIRE 6 FOR THE TRANSMITTER, 4 FOR THE RECEIVER.

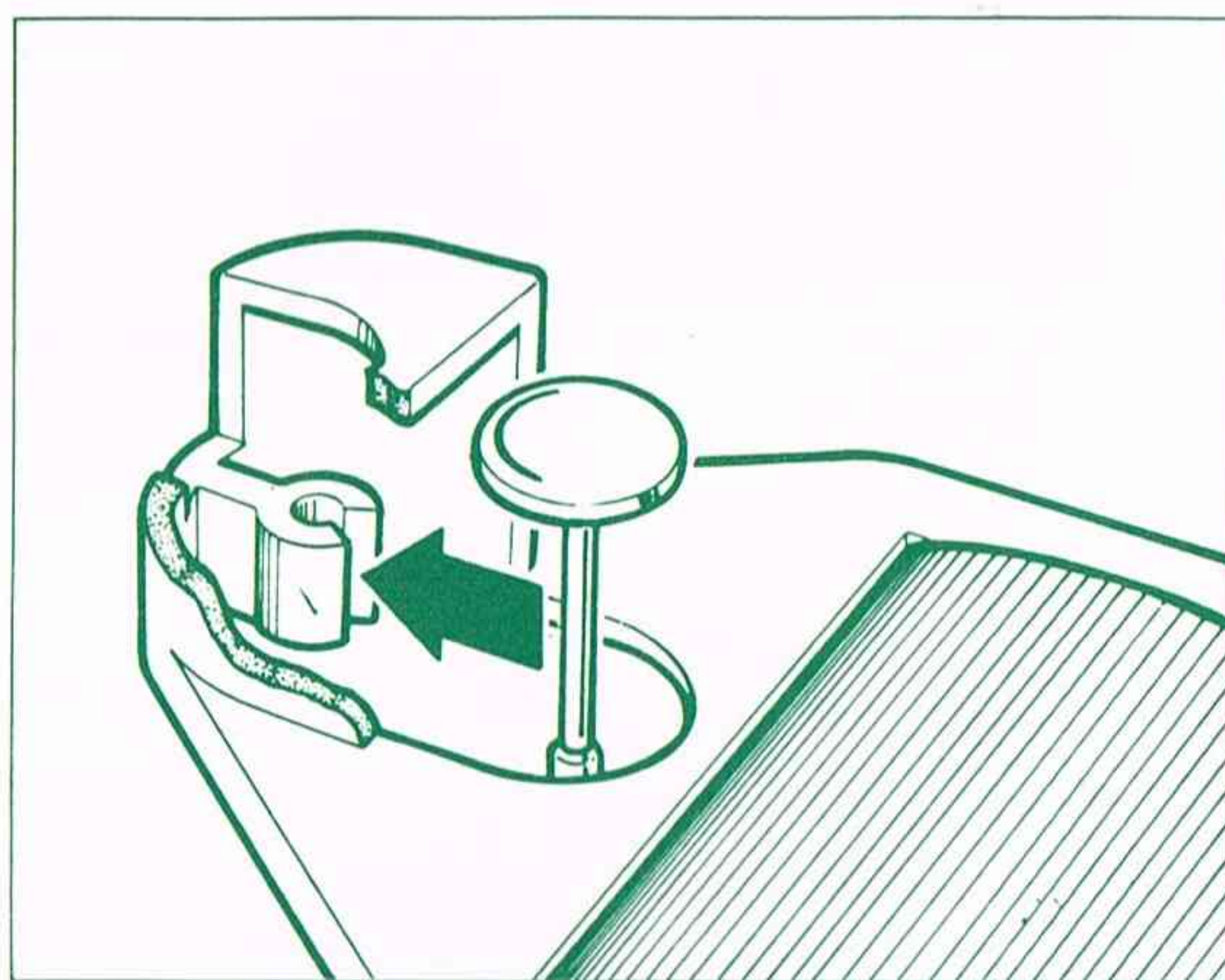


## FEATURES OF THE ACOMS AP-227

### ① TRANSMITTER ACOMS ATA-227

- \* Both sticks are fitted with trim levers for fine adjustment. Both sticks are self-centering for ease of operation. The trim levers are on a ratchet for holding stable.
- \* Alternative stick knobs are included. This is so that you may obtain the best control feel.
- \* Inter-changeable plug-in crystals enable a rapid change of frequency by simply unplugging from the front of the case. (6 interchangeable crystals in the 27 MHz band). The use of crystals, other than ACOMS, can damage the radio and invalidates our guarantee.

- \* One-touch clip-on frequency colour ribbon indicates your frequency to other users.



- \* A power indicator shows clearly the battery condition. When the voltage is drained to 7 volts the red power indicator goes off.
- \* The aerial is telescopic and retracts into the case for ease of handling, and is easily replaceable.
- \* Highly efficient design ensures a stable and adequate output under most climatic conditions.
- \* The frequency bands are precise and conform to internationally recognised standards. They are free from spurious radiation and therefore do not interfere with adjacent bands. For your guidance the bands are displayed on the front of the case.
- \* In some countries you require a licence to operate these transmitters.

### ② RECEIVER ACOMS ARA-227

- \* The basic efficiency of this receiver, namely multi-signal intensified input jamming ratio, cross talk jamming ratio, practical sensitivity, and stability, has considerably improved through adoption of special semi-conductors and the Company's unique circuit system.
- \* A unique connector lock mechanism is built-in to reduce the risk of poor connection of the batteries and servos whilst in use.



\* As with the transmitter, the interchangeable frequency crystal is plugged into the top to enable easy and rapid change.

### © SERVO ACOMS ASA-227

- \* The ACOMS servo is designed to be light and compact. It may be used to control electrically powered machines, i.e. cars, tanks, boats, yachts, gliders, aircraft etc. Since the servo is self-centering we do not recommend its use for the throttle control of internal combustion engines.
- \* The sturdy (replaceable) gears have been designed to stand up to considerable shocks and loads during reasonable manoeuvres and are highly efficient.
- \* A potentiometer fitted with platinum contacts gives improved efficiency and reliable stability.
- \* A 3-wire large scale integrated (LSI) monolithic IC is used. Constant quality control checks ensure minimum variation of characteristics so that there is full compatibility between servos manufactured by ACOMS.
- \* Two types of servo output drives are available. The circular disc and T shaped horns are adequate for most control uses.

A VERY STRICT CHECK OF ALL MATERIALS USED AND A CONTINUOUS INSPECTION USING SPECIALLY DEVELOPED SOPHISTICATED MEASURING DEVICES, AT ALL STAGES OF PRODUCTION, ENSURES THE COMPATIBILITY OF ALL ACOMS EQUIPMENT.

## TECHNICAL DATA-ACOMS AP-227

	<u>Transmitter ATA-227</u>	<u>Receiver ARA-227</u>	<u>Servo ASA-227</u>
Antenna output	500 mW		
Modulation System	AM		
Impulse Tolerance	1.4mS $\pm$ 0.4mS		
Length of cycle	18mS		
Power Supply Dry Cell	DC 9v — 6 $\times$ 1.5v pen size	DC 4.8—6v— 4 $\times$ 1.5v pen size	From receiver
Intermediate frequency		455kHz	
Selectivity		50 dB or more at 10kHz	
Channel width		5kHz / — 6 dB	
Torque			2.4kg/cm or more
Current consumption	180mA	15 mA/cv or less	10 mA/6v stopped
Dimension MM	160 $\times$ 50 $\times$ 132	39 $\times$ 59 $\times$ 21	43 $\times$ 40 $\times$ 23
Weight gms	315	35	44

It is the policy of ACOMS to strive to improve their quality.  
ACOMS therefore reserve their right to alter these specifications at any time.

### INTERNATIONALLY RECOGNISED FREQUENCY BAND — 27 MHz

Channel :	1	2	3	4	5	6
Frequency MHz :	26.995	27.045	27.095	27.145	27.195	27.255
Colour :	brown	red	orange	yellow	green	blue



## GETTING TO KNOW THE ACOMS AP-227

**FIG. 1 TRANSMITTER ATA-227**

**① RETRACTABLE 9 SECTION AERIAL**

Use fully extended except when using at a short distance or testing indoors.

**② CONTROL STICK FOR CHANNEL 1**

This stick operates up or down of the self-centering middle or neutral position.

Pushing the stick forward of this center will give you greater speed forward or down elevator pushing the stick towards you will give greater speed in reverse or up elevator depending upon the application.

**③ TRIM TAB**

This useful device enables you to trim the control and obtain true neutral, allowing for various unforeseen variations in the performance characteristics of your model. The ACOMS trim tabs are on a ratchet which means you are able to make a fine adjustment and hold it.

The movement indicated A & B on the servo is induced by the movement A & B on the stick control, i. e. move stick up and servo output rotates clockwise and vice versa.

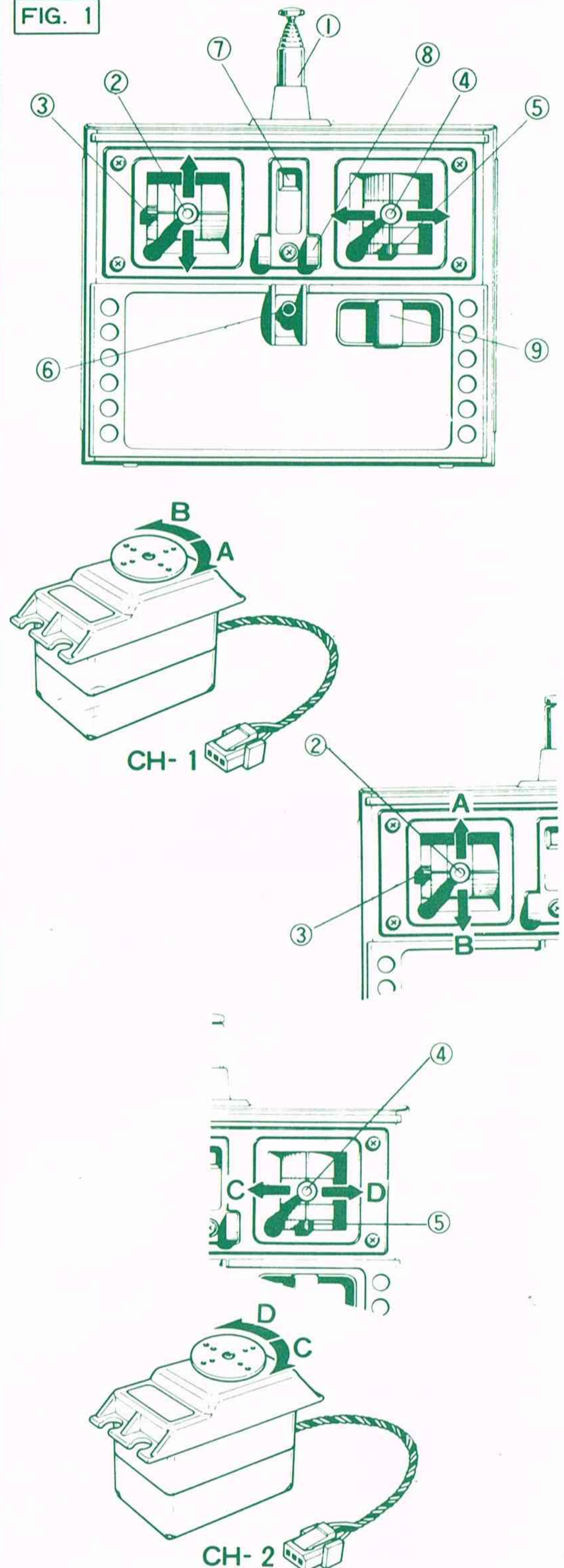
**④ CONTROL STICK FOR CHANNEL 2**

This stick operates left or right of the self-centering middle or neutral position. Pushing the stick left steers the model left, by altering the servo output.

**⑤ TRIM TAB FOR CHANNEL 2**

Same function as for ③ but movement is in same plane i. e. left and right as Channel 2 control stick. The servo is illustrated showing left and right movement C & D.

**FIG. 1**

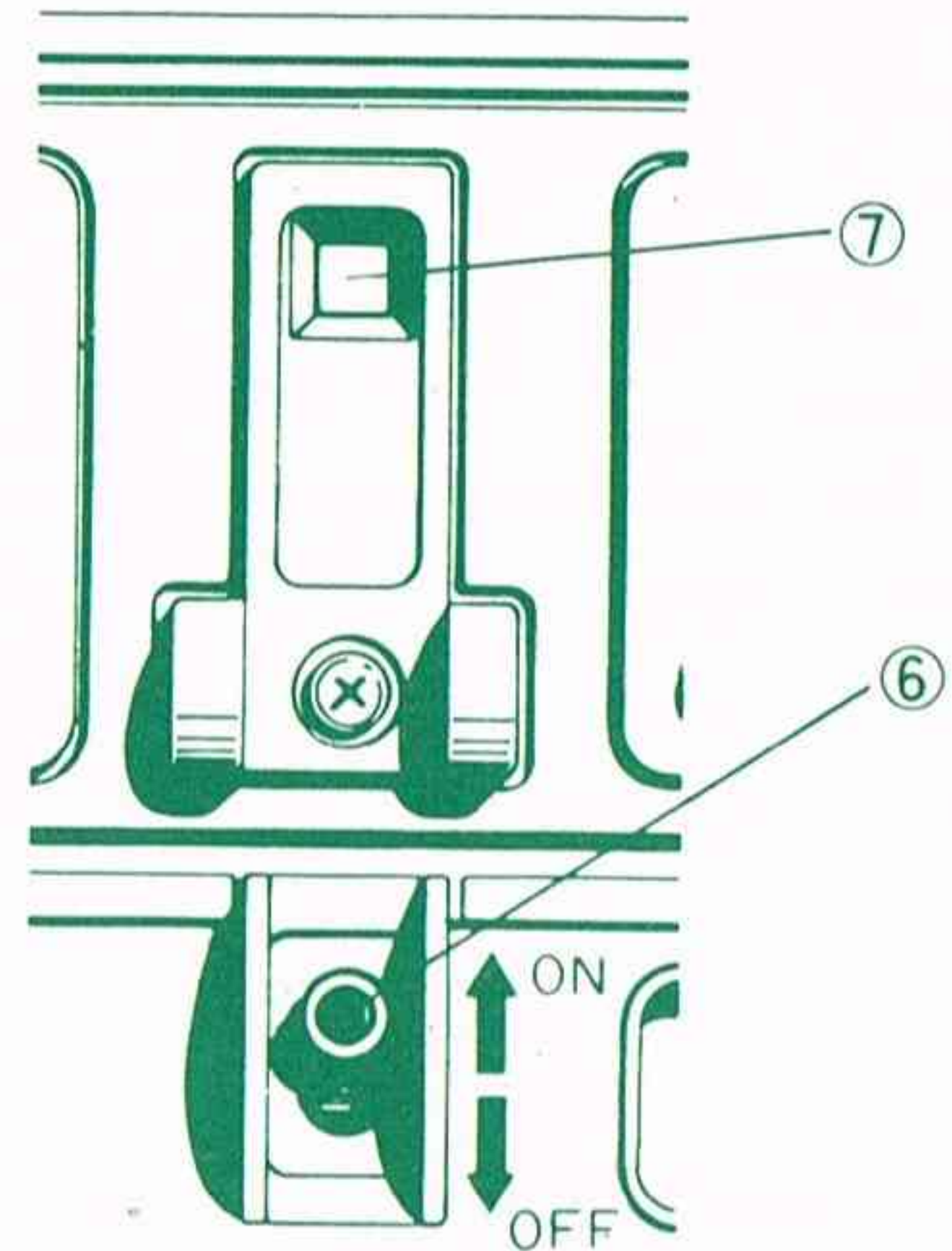




### ⑥ ON/OFF SWITCH

Slide this knob up and the power indicator light ⑦ should show red if the batteries are not too run down. As long as the red light shows the transmitter is operational.

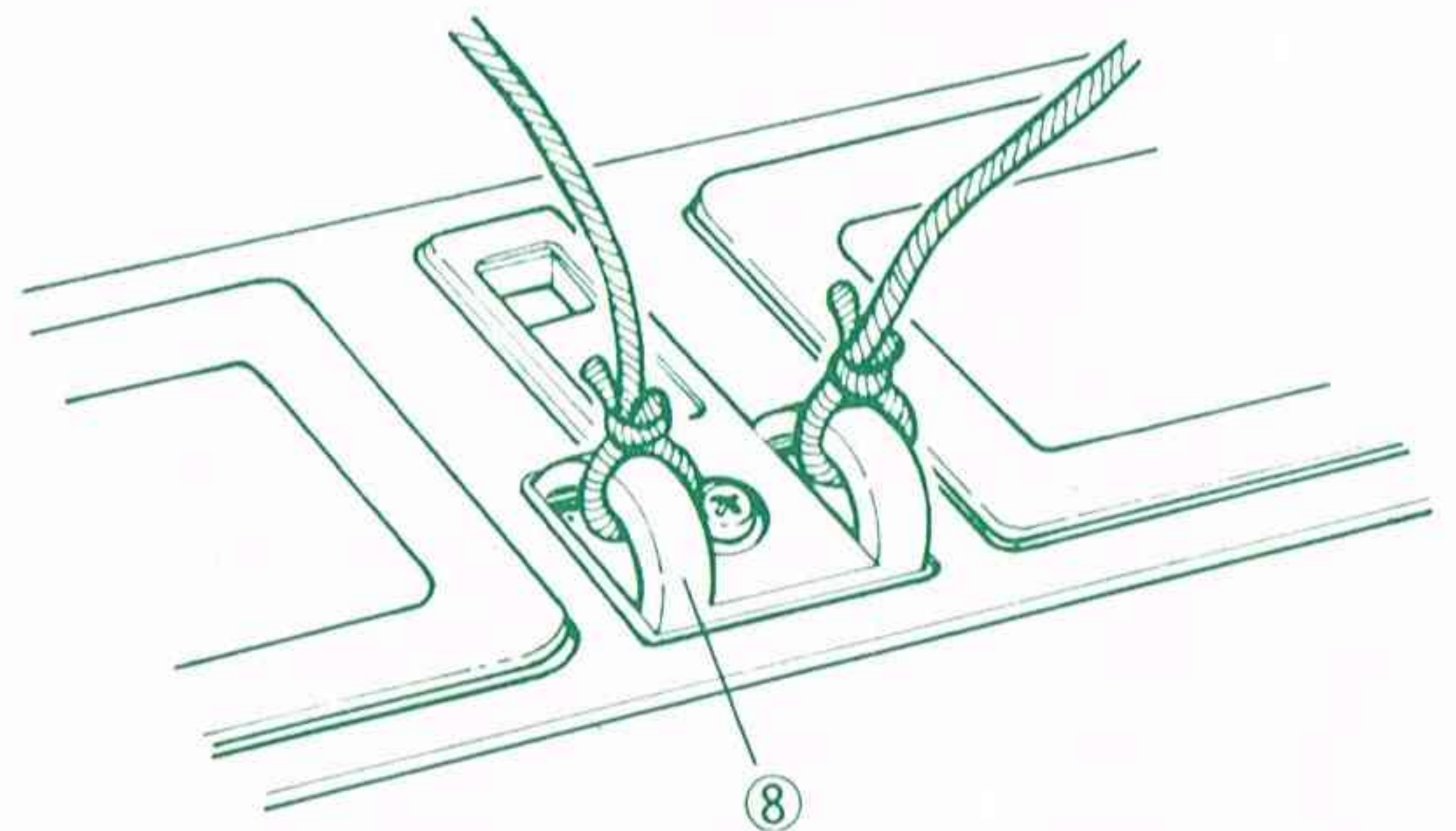
It is recommended that when using your ACOMS system you always first switch on the transmitter and then switch on the receiver. When switching off always switch the receiver off before switching off the transmitter.



### ⑦ TRANSMITTER VOLTAGE INDICATOR

The light glows red when the switch is on and the voltage of the battery is greater than 7v. If the red light fails to show this indicates that the output is less than 7 volts and therefore the range of transmission is reduced. Do not leave exhausted batteries in the case.

If, when the transmitter is switched on, the transmitter voltage indicator flashes red and then goes out, it signifies that the transmitter is working, but that the batteries are providing less than 7 volts.

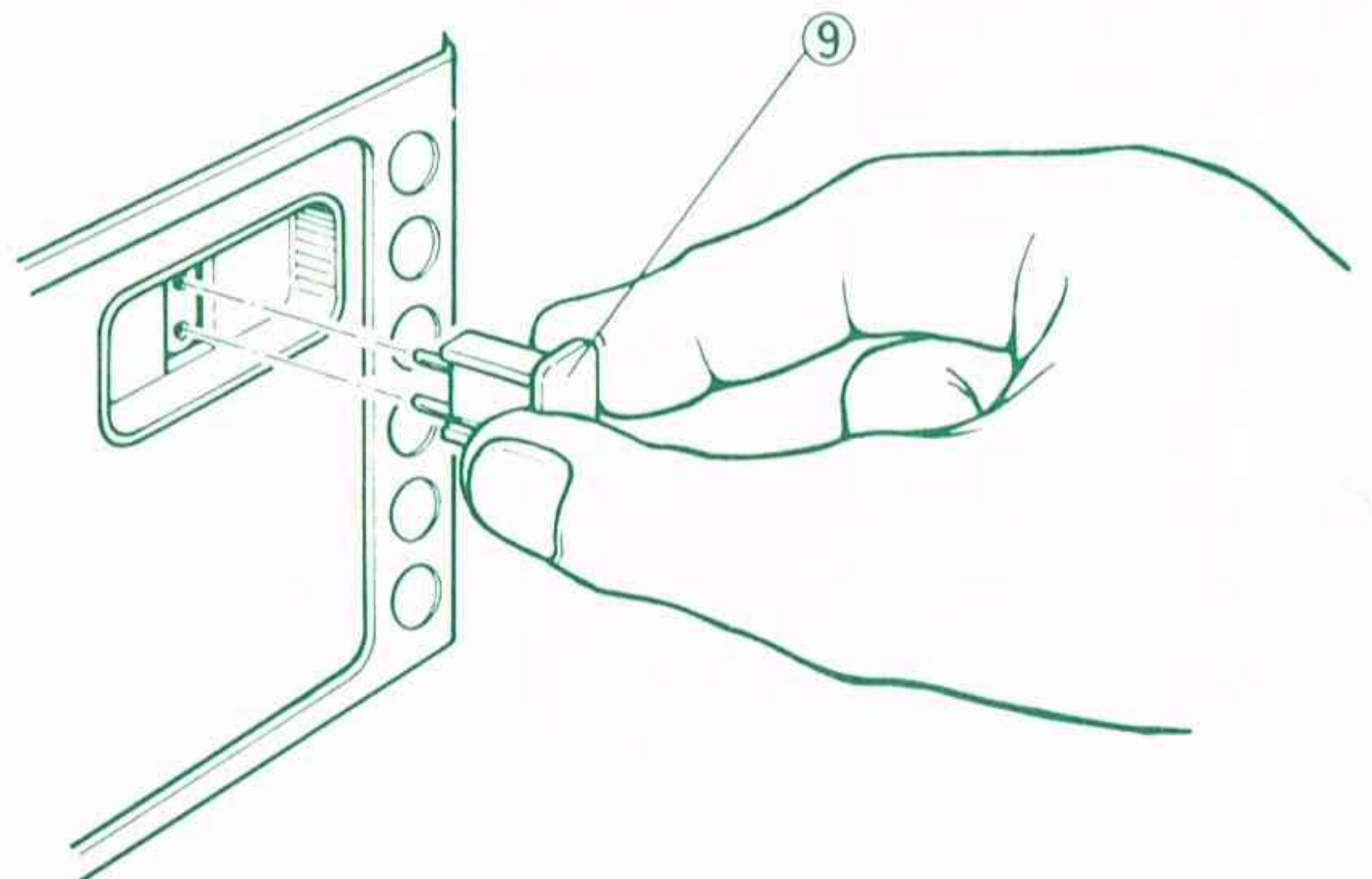


### ⑧ CARRYING STRAP

These built-in plastic loops are for fixing a carry strap.

### ⑨ FREQUENCY CRYSTAL

To remove the crystal grip the holder as shown and pull straight from the case. To locate, fit the two pins on the crystal into the two holes in the case and push gently home. If the crystal is not properly seated or "floats" this will affect the transmitter operation. Check the fit of the crystal regularly. The crystals enable you to control your model on six different frequencies. Remember if you change your transmitter frequency you must also change your receiver frequency. Always use ACOMS crystals which are available as a separate item. The use of other crystals can damage your radio and affect its performance. It also invalidates our guarantee.





## ⑩ BATTERY COVER

To remove, slide in the direction of the arrow (downward) whilst lightly pushing the fingermark "open". When inserting batteries always insert the negative — end first and to the correct polarity as stamped in the battery case. If the transmitter voltage indicator fails to show red check the contacts, especially the negative — and recheck the batteries are fitted correctly.

**FIG. 2** ACOMS RECEIVER ARA-227

## ⑪ BATTERY SOCKET (marked BATT).

Insert the plug from the battery pack to the receiver with the locking pawl to the outside. This pawl will then automatically locate with the transverse ridge in the receiver case and is locked. To withdraw the plug push the top end of the pawl — which will release the locking device — and gently pull the plug from the receiver. This is illustrated over the page. The servo connector plug sockets work on the same principle. On no account attempt to remove these sockets from the receiver by pulling the wires. This will cause you expensive repair work to repair damage.

## ⑫ SERVO SOCKET (marked CH 1)

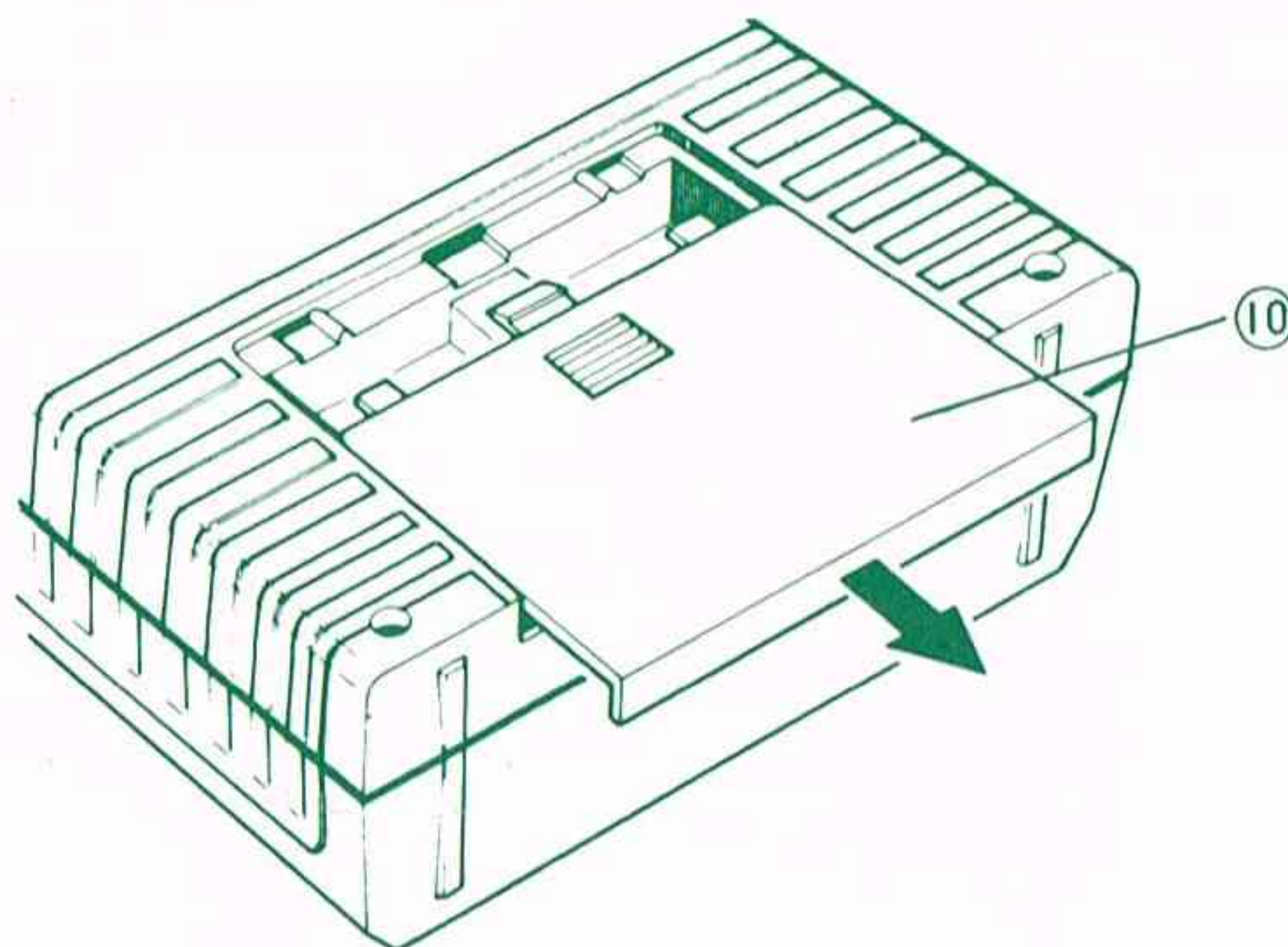
This will usually connect the servo operating the speed control or elevator.

## ⑬ SERVO SOCKET (marked CH 2)

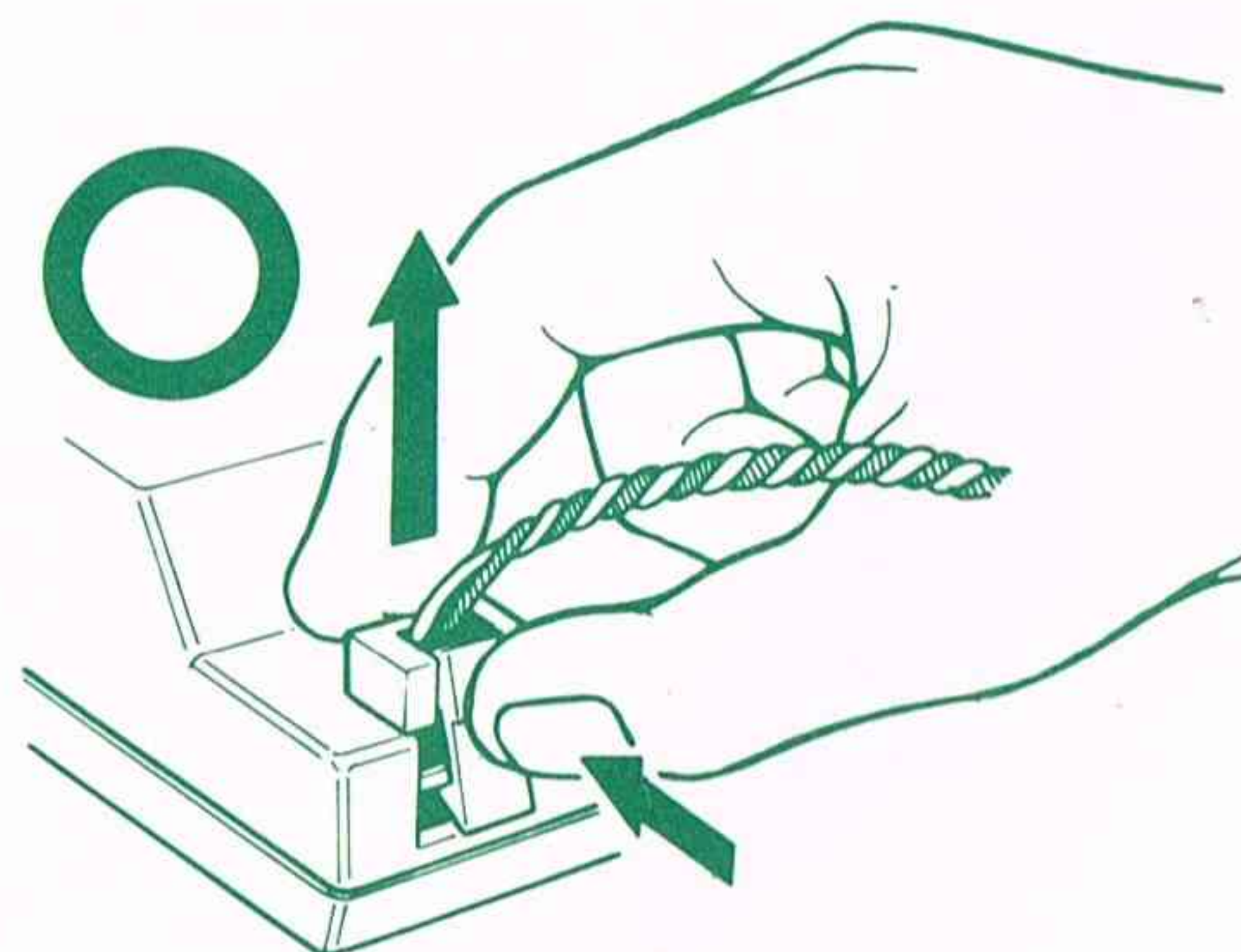
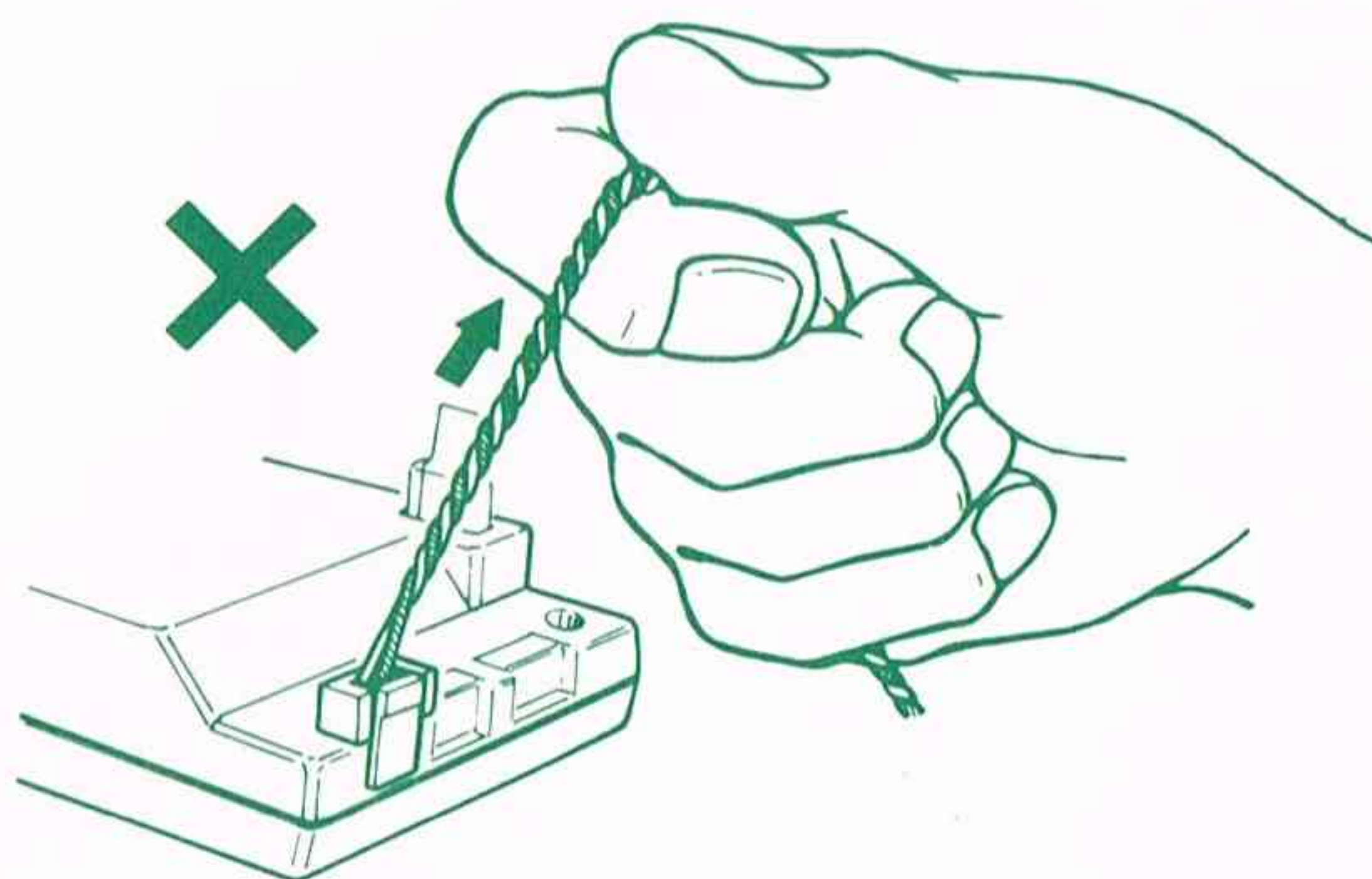
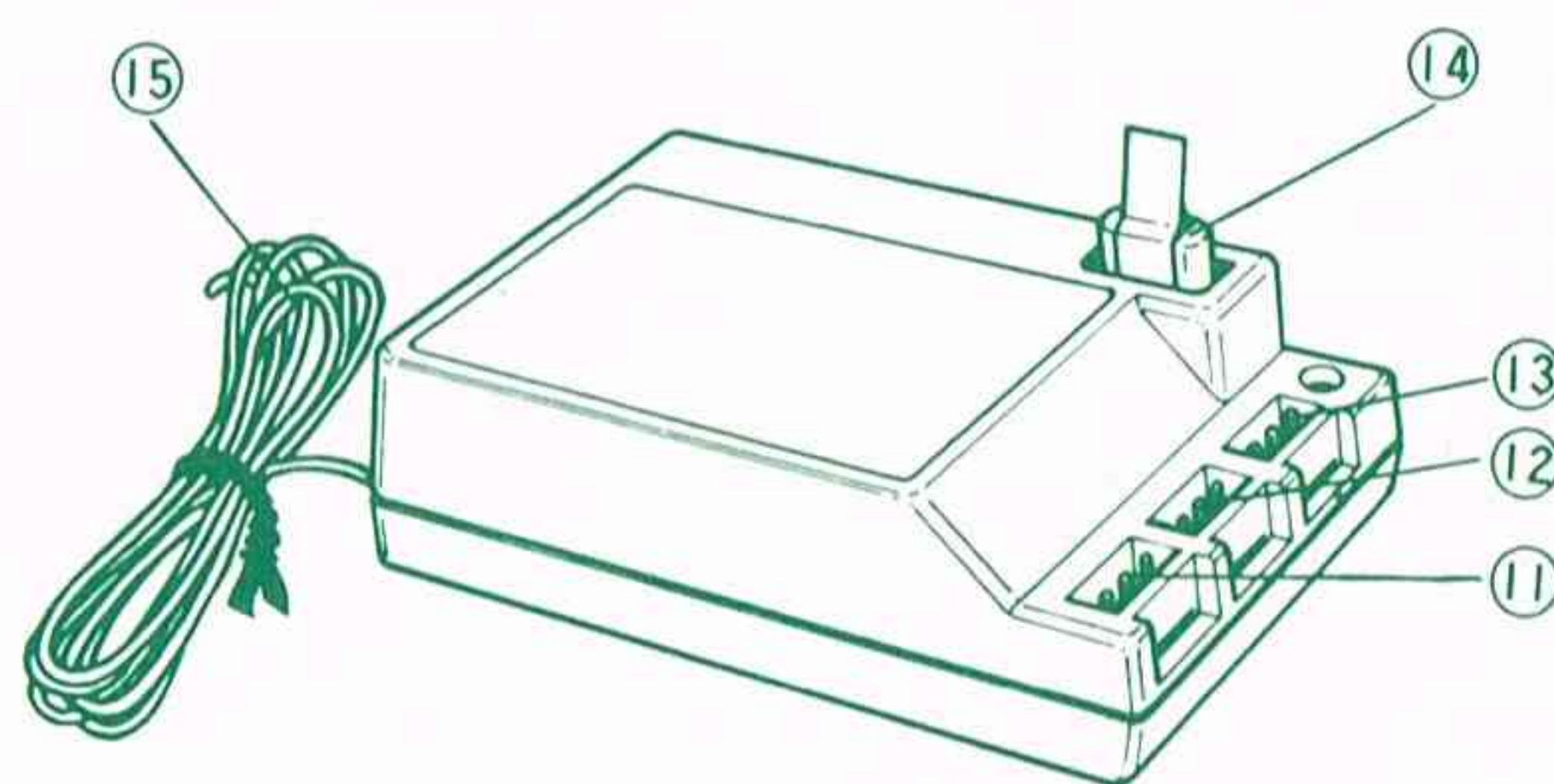
This will usually connect the servo operating the steering or rudder servo.

## ⑭ INTERCHANGEABLE FREQUENCY CRYSTAL

This allows you to operate on one of six different frequencies. Refer to page 6 and page 4. Make sure the crystal is fully inserted in the receiver and not partially inserted or floating.



**FIG. 2**





### ⑮ AERIAL WIRE

Follow the instructions of your model when installing this. Normally the wire will be mounted in a line away from the receiver and power sources. This reduces any risk of electrical noise and interference.

The servos will be best mounted in those positions indicated in your model instructions.

**FIG. 3 ACOMS SERVO ASA-227**

### ⑯ SERVO CONNECTING CABLE AND PLUG

Should be connected and disconnected carefully. See instruction with regard to ⑪ page 7.

### ⑰ SERVO OUTPUT DISC

A circular servo output disc is factory mounted. A T shaped servo arm is enclosed as an accessory. Use either of these according to the suggestions in the instructions given in your model kit. Since both ACOMS servos are of identical specification they may be used on either of the two channels.

**FIG. 4 ACOMS RECEIVER BATTERY BOX ABA-227**

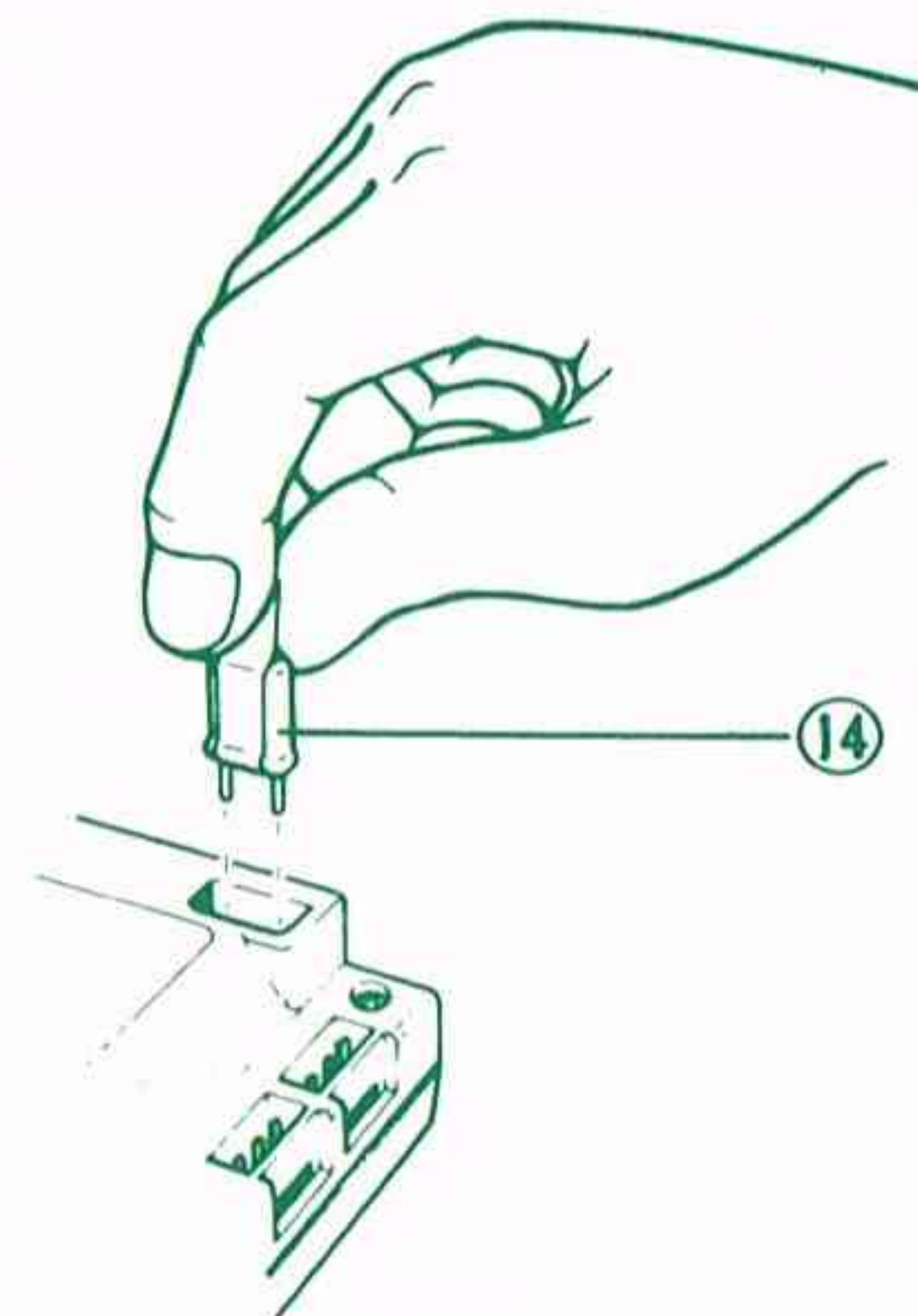
### ⑱ BATTERY HOLDER

Four size 3 1.5v dry cells are needed. (UM3, C3, MN1500, HP7. Alkaline batteries are recommended.). Insert the batteries negative first. Make sure the polarity is correct as shown on the battery case. After inserting and checking hold in place with rubber bands or similar. If the model is a car or boat subject to vibration or impact, it is advisable to fix in place with sticky tape.

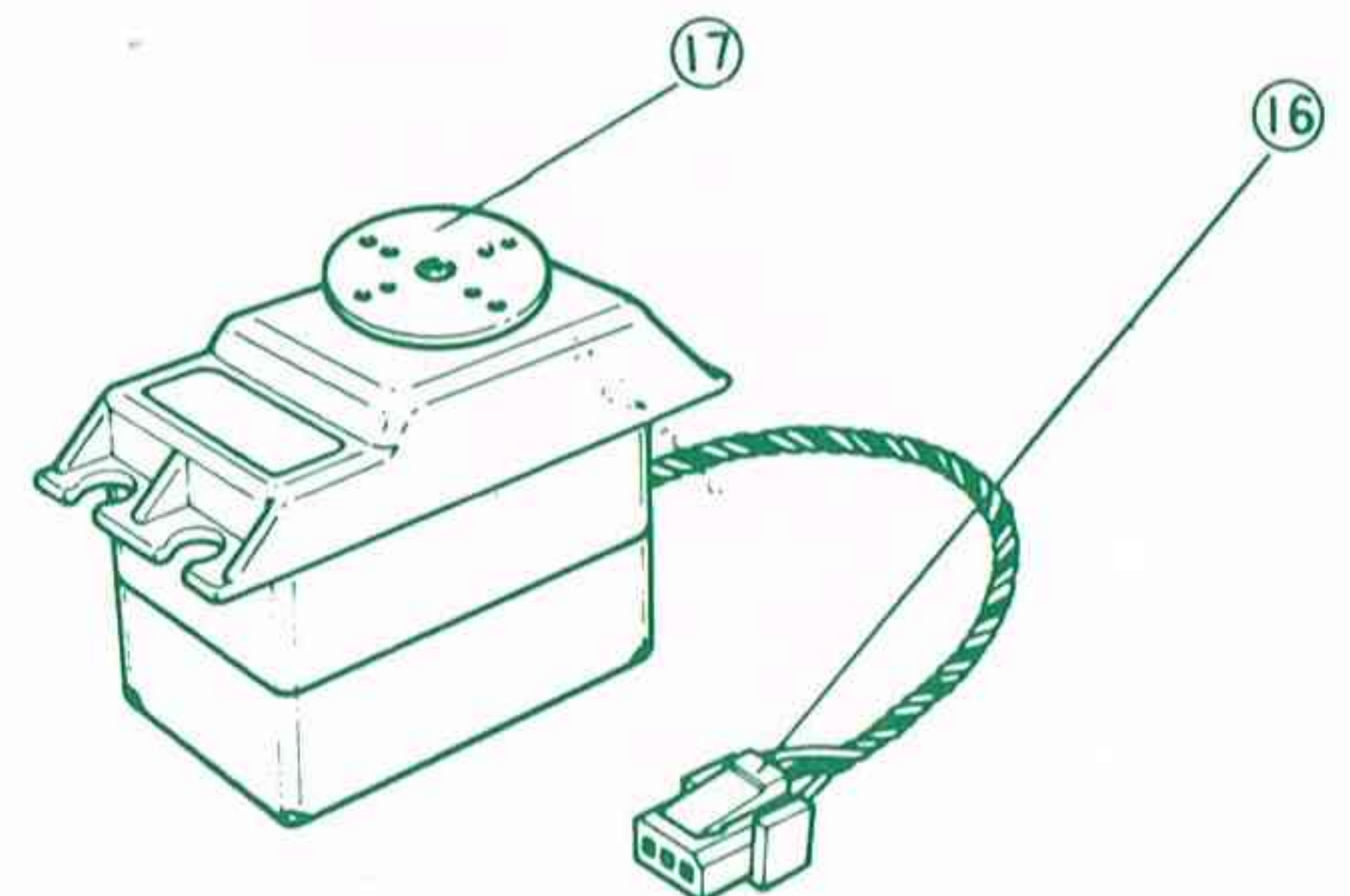
If the servos chatter uncontrollably it usually signifies flat or faulty batteries in the battery holder.

### ⑲ RECEIVER SWITCH

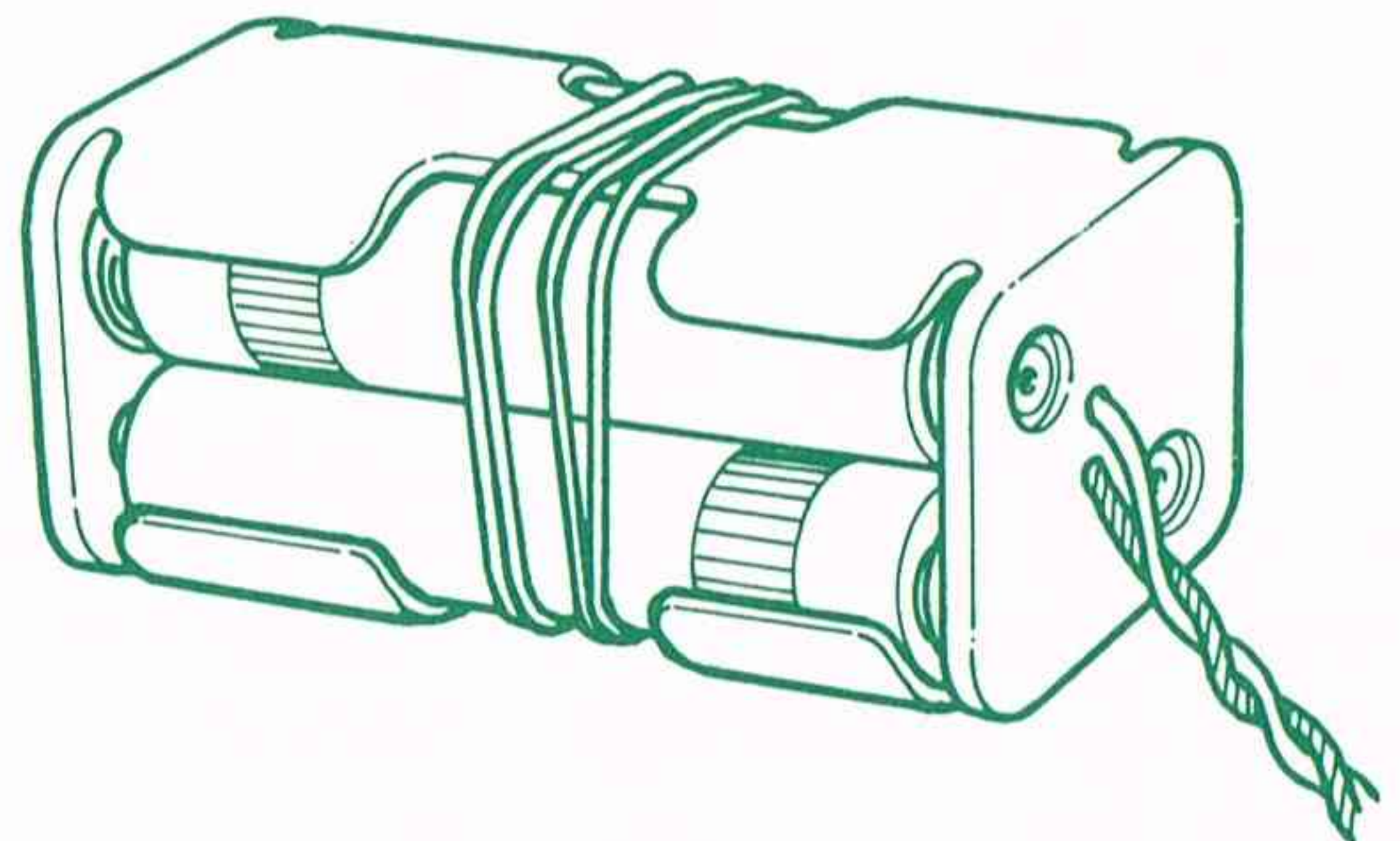
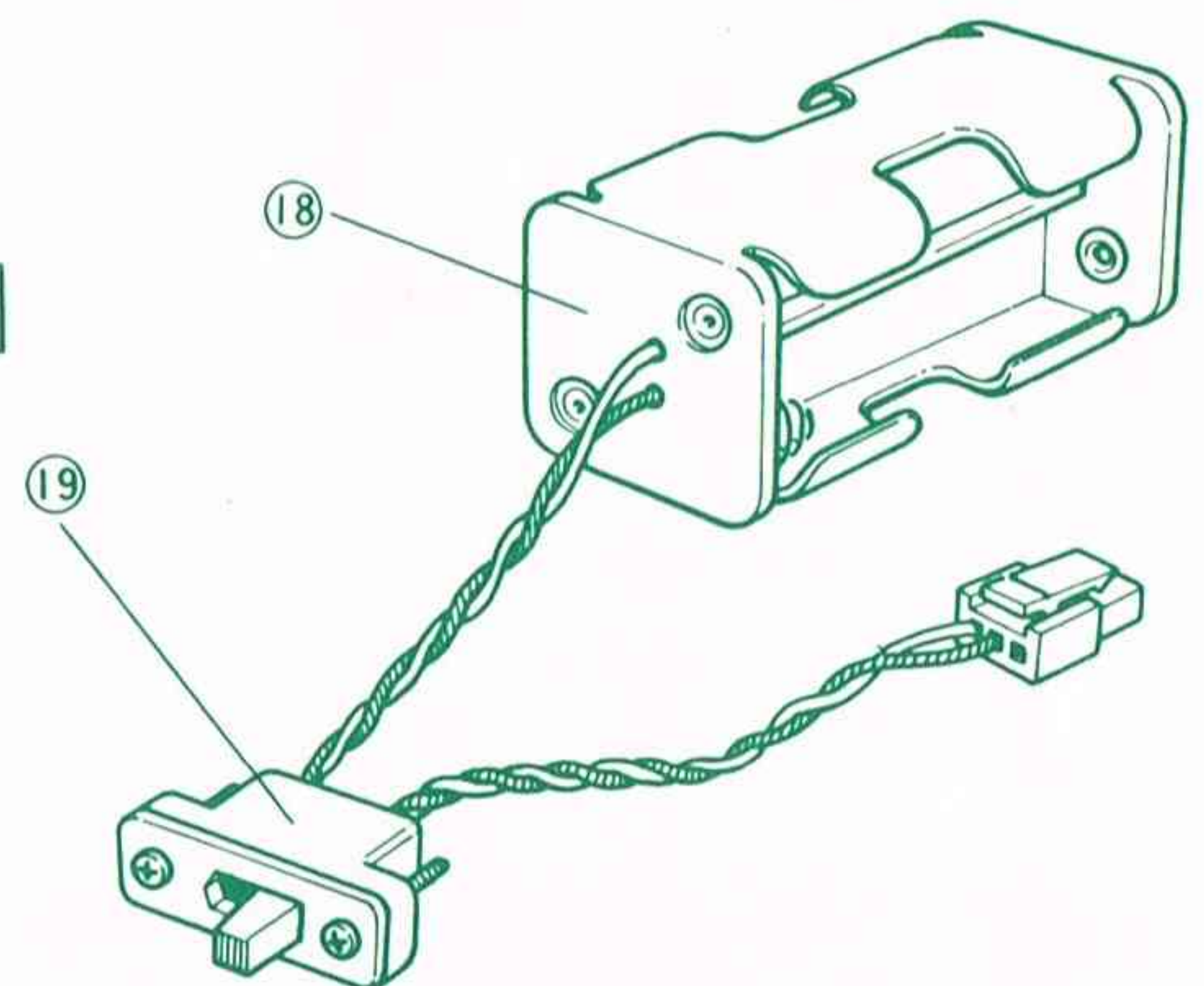
This is used for both receiver and servos. Remember when starting switch on the transmitter first then switch on the receiver. When finishing switch off the receiver first then the transmitter.



**FIG. 3**



**FIG. 4**





## INSTALLING YOUR ACOMS EQUIPMENT

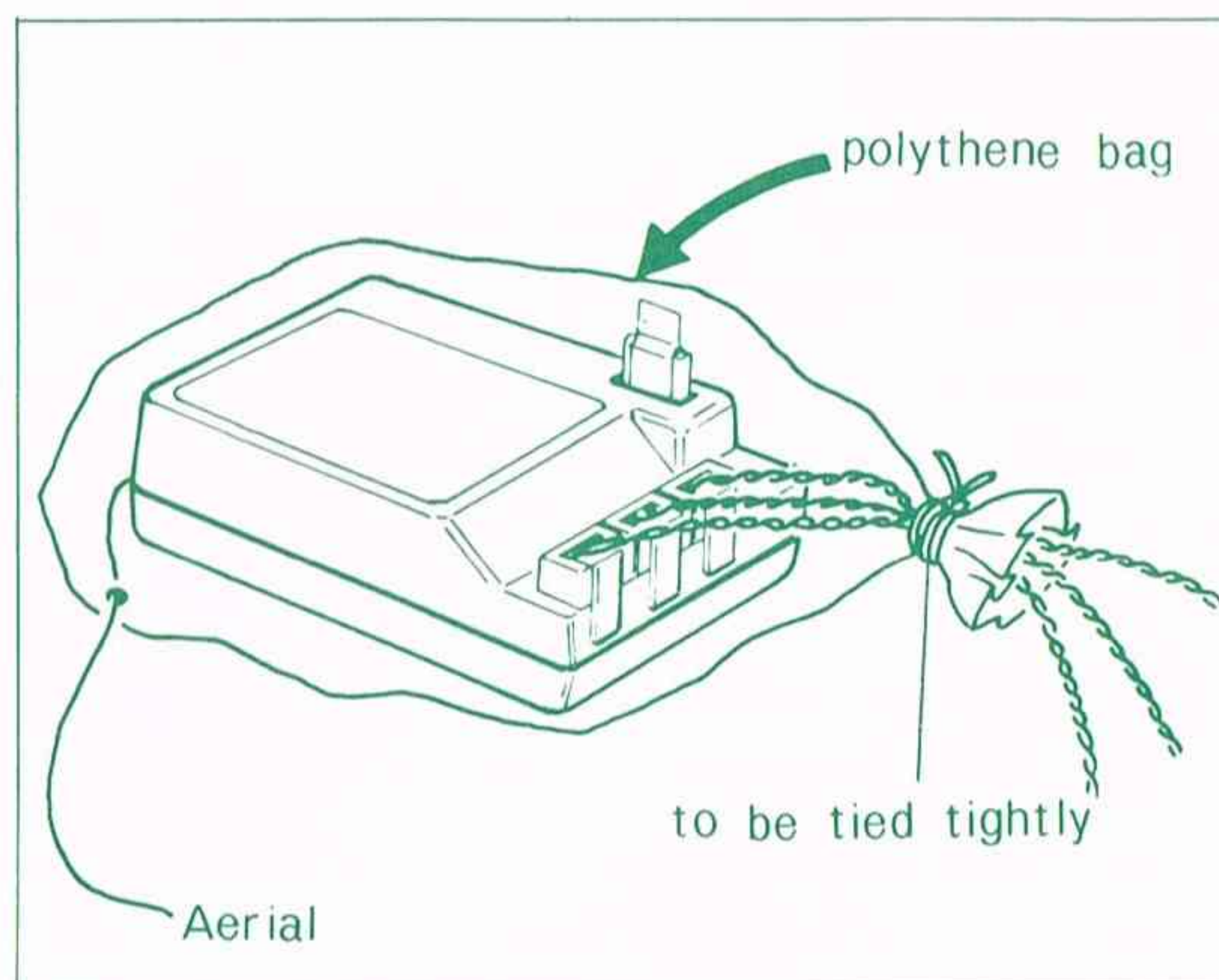
The ACOMS AP-227 R/C Set is especially suitable for models that are driven by electric motors. It is also suitable for the control of gliders and yachts.

The ACOMS AP-227 is a two-channel set and the servos are of the selfcentering type. It should therefore only be used with models built for use with two channel radio.

If this equipment is to be installed in a model boat of any kind make sure that no water reaches any part of the apparatus. Cover the receiver in a thick polythene bag. The three connecting wires should be tied together and run through the opening.

This opening must then be tied tightly.

The aerial wire must be fed separately through a small hole at the other end of the bag as illustrated. Any water in the receiver or servos will cause much damage and this damage is not covered by the guarantee. Sea water is especially damaging.



The receiver must be completely encased in foam rubber or urethane to avoid contact with other parts and impact damage caused through accidents.

The servos must be rigidly and firmly installed. If it is impossible to secure them with the screws and grommets provided use double sided tape sold as servo tape.

The installation of the control wires or rods to the servos must allow the servos to move freely to their maximum play left and right. Any fouling of the control wires or rods will cause excessive current consumption and will damage the servos. If any moving metallic parts are in contact with each other this will set up sound waves which must be avoided. Excessive vibration also will create similar waves. These waves will effect the receiver and may cause sudden uncontrolled movements.

### GOOD INSULATION IS THEREFORE ESSENTIAL

## TESTING YOUR ACOMS AP-227

Many quality control checks have been made on your new ACOMS set. Your retailer may well have shown you that this equipment is working before you leave his premises. It is still wise to check out the function of each component as you install it into your model. Do this with fully charged batteries. Extend the aerial and operate the transmitter 3 metres away from the receiver with the receiver aerial extended. With model cars or tanks you must be sure to place a block under the chassis so that the wheels or tracks are free from any surface. For sailing enthusiasts these tests should be carried out at a distance of 20 — 30 metres.

Check carefully that the movement of each control surface is normal and make sure that the controls return to neutral. Should you be in any doubt about any function of your ACOMS equipment or your model, do not be afraid to seek expert advice.

Warning - Flat or faulty batteries are very often responsible for the malfunction of radio control equipment. Checking your batteries carefully before use will save you time, money and aggravation.



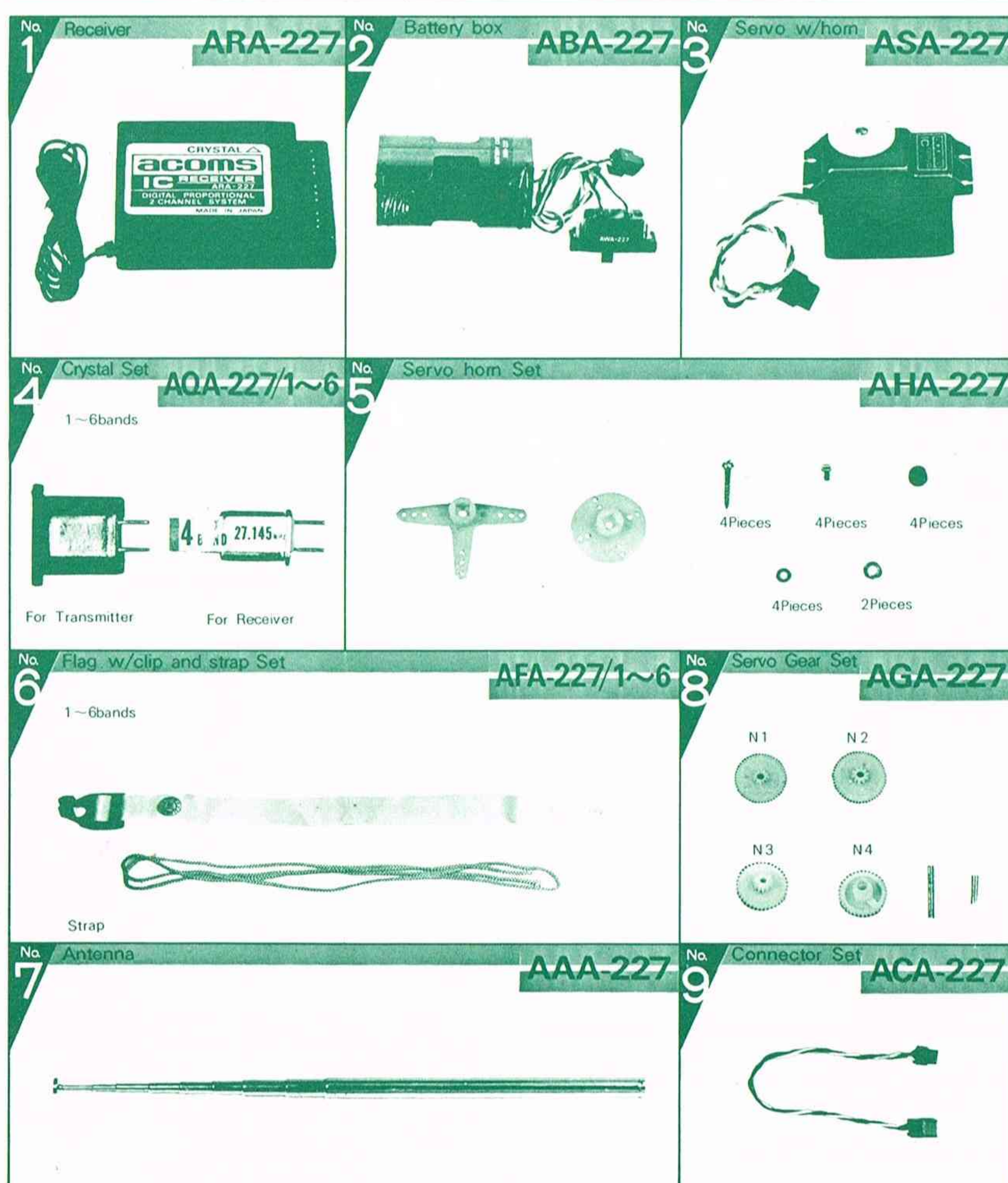
## FREQUENCIES AND ACCESSORIES

The following ACOMS parts are available separately. Please ask your supplier for details.

1. ACOMS Receiver ARA-227
2. ACOMS Receiver battery box with switch. ABA-227
3. ACOMS servo ASA-227
4. ACOMS crystal set AQA-227/1~6
5. ACOMS servo horn set AHA-227
6. ACOMS Frequency ribbon and carrying strap. AFA-227
7. ACOMS Transmitter aerial AAA-227
8. ACOMS servo gear set AGA-227
9. ACOMS Connector set for extension cable. ACA-227

Be sure that when you purchase other frequency crystals for your ACOMS set you ask for the ACOMS matched set. Remember to replace the crystals in both transmitter and receiver, and to change the colour ribbon displayed on the end of your transmitter aerial.

## AVAILABLE SPARE PARTS.







**RIKO** RICHARD KOHNSTAM LIMITED

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Telegrams : "RIKO" Hemel Hempstead  
Telex : 826133  
Telephone : Hemel Hempstead (0442)61721



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