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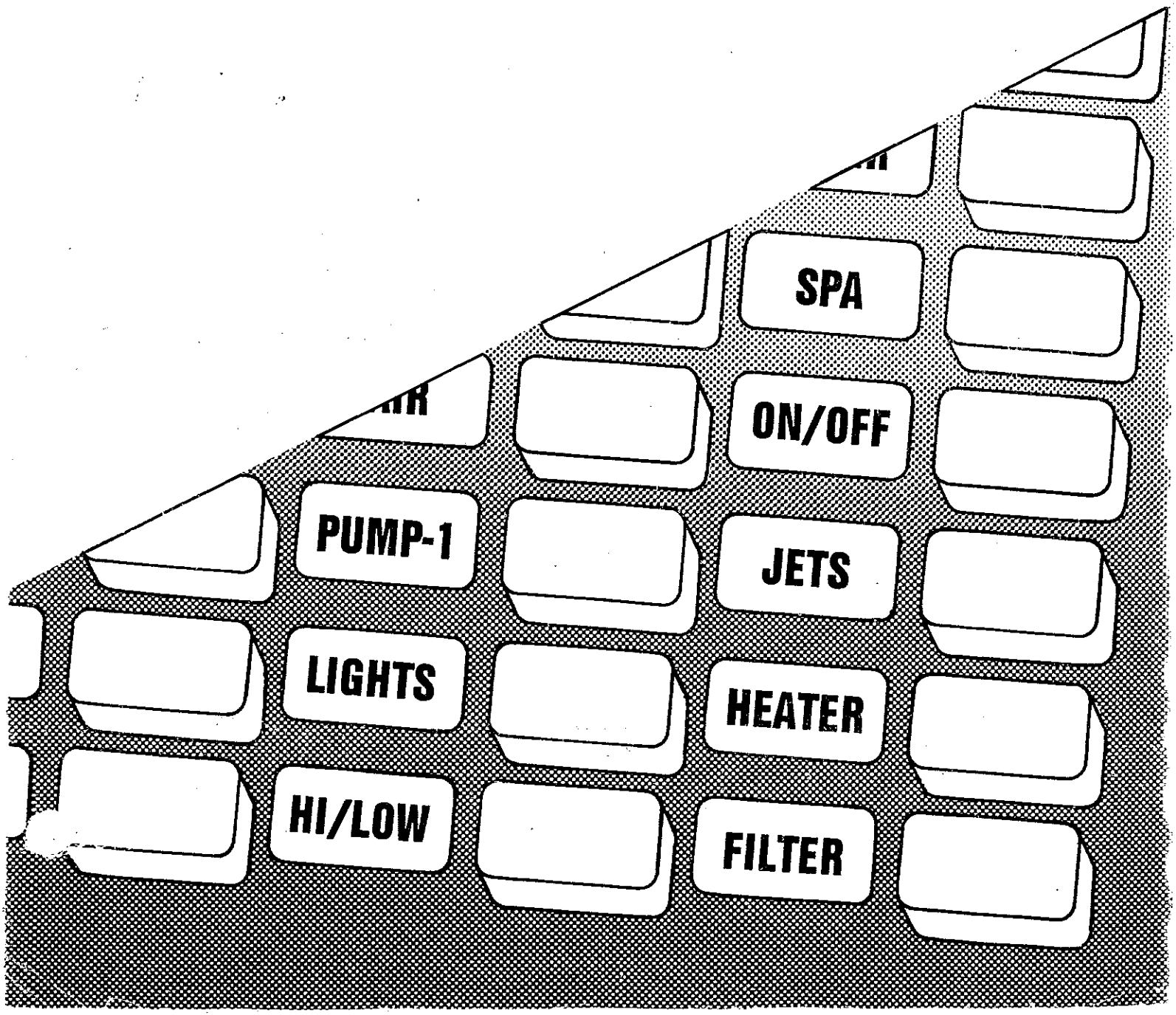
INTERMATIC®

RC1521RT

RC1000 SERIES
RADIO REMOTE CONTROL SYSTEM

OWNER/INSTALLER INSTRUCTION MANUAL



Dear Intermatic Customer:

Your local swimming pool contractor employs licensed electricians and maintenance personnel who are experienced in the installation and repair of Intermatic controls. Certain sections of this manual are written for the purpose of assisting and training these individuals, and is intended for their use.

While we encourage the use of this manual to increase your familiarity with our products, we must caution you that there are certain risks of property damage and personal injury inherent in the installation and repair of any electrical product by untrained individuals.

We, therefore, offer you this manual with the understanding that you accept all responsibility for liability from property damage or personal injury resulting from its use.

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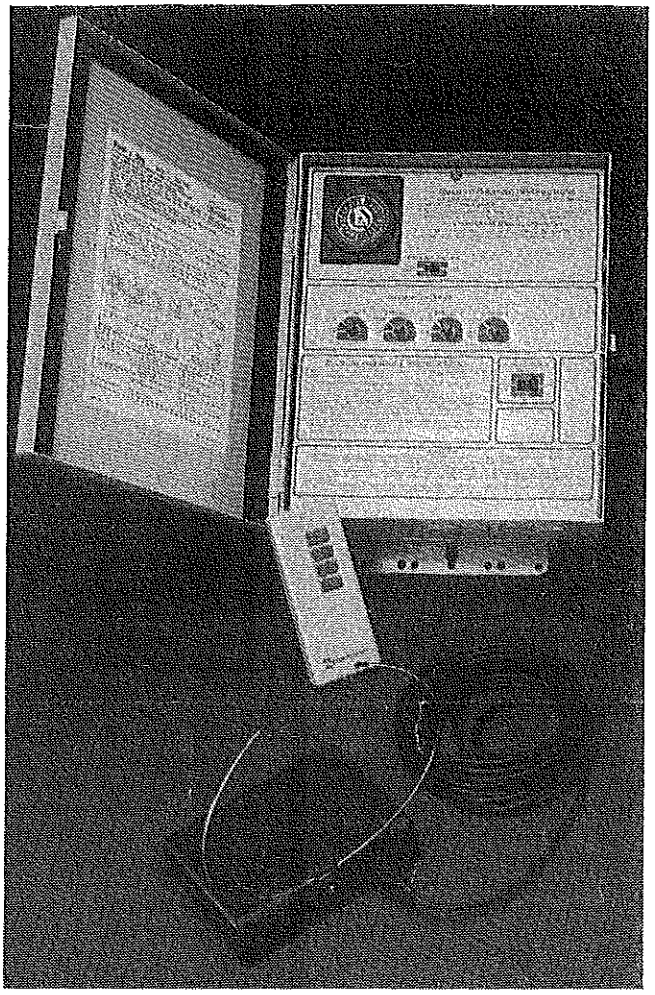
INTRODUCTION

The Intermatic RC1000 Series Radio Remote Control System applies the latest technology available for the remote control of electrical equipment. The System utilizes coded radio command signals to turn **ON** or **OFF** a variety of electrical equipment, or lights, from a distance, either automatically or manually. Emphasis is placed on reliability, quality and compactness. The modular design provides easy installation and service. The System meets or exceeds all requirements of the National Electrical Code, Underwriters Laboratories, and Federal Communication Commission.

This manual contains important information about the System, including information needed for installation, operation and maintenance procedures. There is also a troubleshooting section developed as a guide for quick problem solving.

A thorough understanding of the System is required for proper installation and servicing. Anyone installing or servicing this System should review this manual in detail. Abuse or tampering could cause irrevocable damage.



GENERAL OPERATING PRINCIPLE

There are many ways to control the operation of electrical equipment from a distance. The simplest is, of course, a remotely wired switch.

If safety is a consideration, low voltage control relays or air pressure operated switching devices are the obvious choices. However, the most flexible, the safest, and in many applications, the least costly is the radio control system. The transmitter is totally portable and requires no wire or air hose connection between the equipment and the control unit.

The principle behind this Radio Remote Control System is similar to that of a garage door opener. The System requires a battery-operated, hand-held transmitter, a receiver, and a power control panel.

The transmitter, upon activation, sends out a burst of coded radio signals of limited intensity.

The receiver, set to the same coded radio frequency as the assigned transmitter, receives and interprets the signal and, via ordinary low voltage wires, transmits it to the power control panel.

The power control panel, upon receiving a signal from the receiver, operates the appropriate power switching device(s).

COMPONENTS

Transmitter

The transmitter is encased in an attractive watertight plastic housing, is powered by a standard 9-volt transistor battery, and floats if dropped into water.

It is designed for long life and to withstand chemicals expected around the home and pool, but may be damaged if dropped, exposed to prolonged heat or sunlight, or left in water.

On the front face of the housing are four push pads, one for each channel of operation. On the back is the access door to the battery compartment. See Fig. 1.

Pressing on one of the pads turns **ON** the transmitter momentarily. The emitted radio signal is a limited intensity, coded command unique to one particular channel. The penetrating range of the signal is affected by the age of the battery, proximity of large metal objects, the relative location of the transmitter and the receiver, their distance apart and environmental conditions at the time of transmission.

To ensure that only the designated receiver accepts the command, **both** the transmitter and the receiver are factory set to agree with each other. If necessary, however, the code can be changed - see section "Changing the Code" on page 12.

The transmitter is permanently sealed and requires no servicing except for replacing the battery periodically. See section on"Care and Maintenance" on page 10.

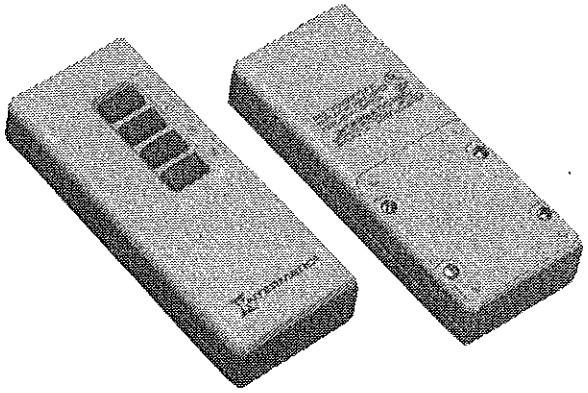


Fig. 1

Receiver Module

The receiver module is made from weather resistant plastic. It is moisture proof and connects to the power control panel via outdoor grade, low voltage cable. Inside of the module is the radio receiver and the coding switch assembly. The two antenna hoops attach to the outside of the module. See Fig. 2.

The code of the receiver module and the transmitter must match in order for the System to function properly. These two units are pre-set at the factory to the same code and, in the majority of applications, this code functions satisfactorily. However, if, beyond the control of the manufacturer, interference is experienced at the installation or the System interferes with other equipment, the code of **both** the receiver module and transmitter can be changed. See section "Changing the Code" on page 12.

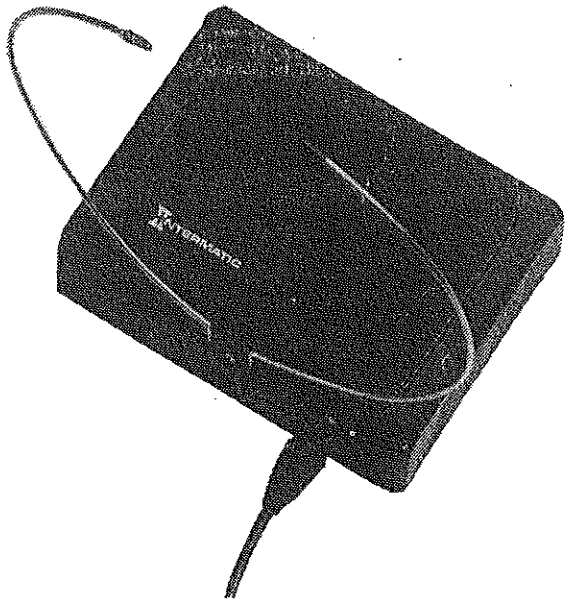


Fig. 2

Power Control Panel

The power control panel consists of a rainproof enclosure, chassis, low voltage compartment (if specified), power switching devices and terminal strip. See Fig. 3.

The enclosure is made of steel and is electrostatically coated with a tough powder paint to resist corrosion. The cover is easily removeable during installation. The case has ½" and ¾" combination knockouts on the bottom and sides, and mounts on any flat surface or post. The latch on the right side secures the cover closed and also provides for locking.

The chassis, located at the top inside the enclosure, contains a transformer, timer (if specified) and electronic printed circuit boards.

The low voltage compartment (if specified) is located at the lower right-hand corner inside the enclosure. The compartment physically separates the high voltage from the low voltage connections and contains, on a single printed circuit board, the Pool/Spa selector switch, the 4-pole relay and the necessary field connection terminals. Some models do not have this special compartment.

The switching devices are continuous duty, industrial type relays. The coils of each relay are connected to the decoding board inside the chassis, and the terminals of the enclosed relay contacts are wired to the terminal strip. Each relay has a manual override mechanism.

The terminal strip is made of insulating material and its numbered terminals accept No. 12 to 18 gauge, stranded or solid copper conductors.

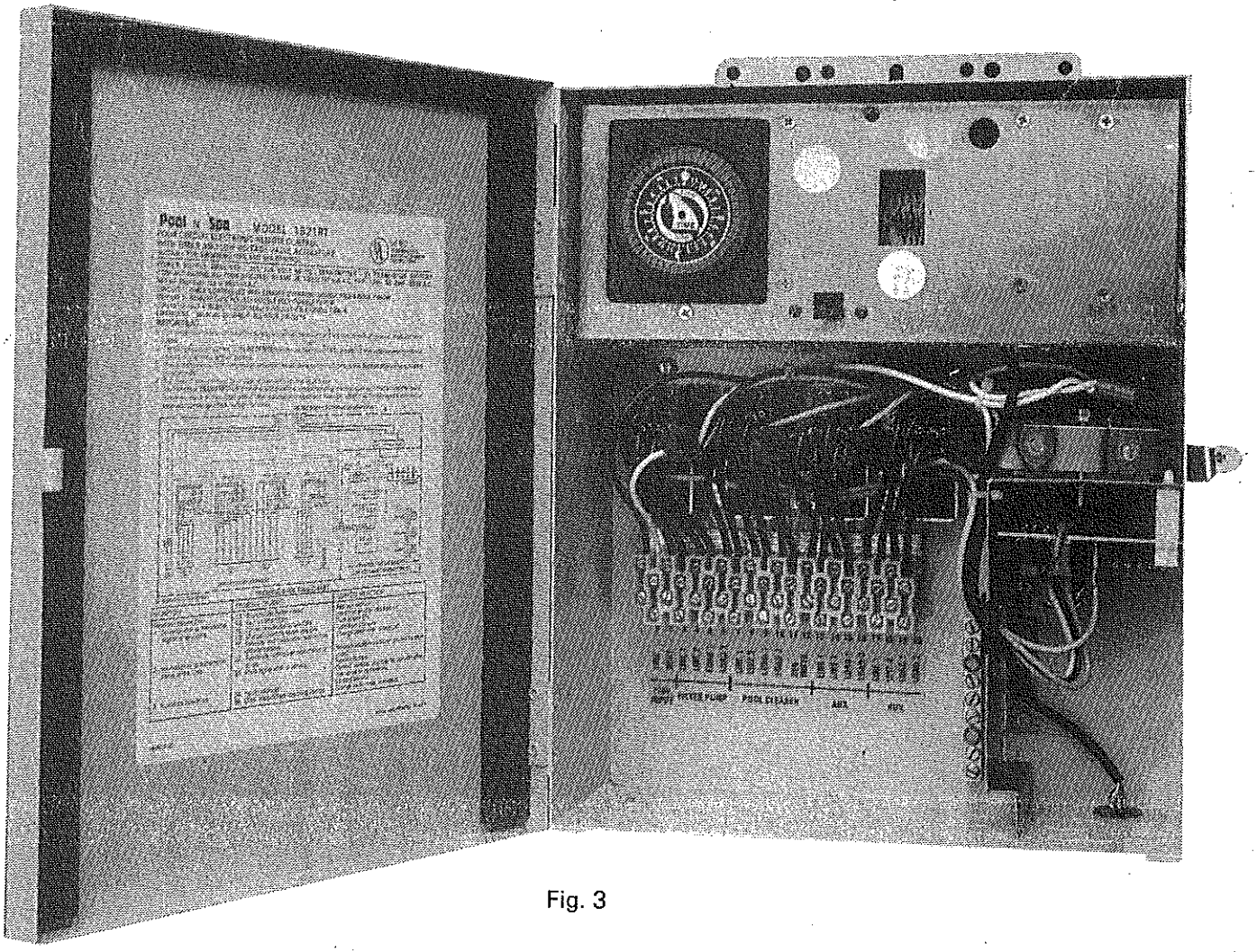


Fig. 3

INSTALLATION INSTRUCTIONS

NOTE: *Your local swimming pool and spa contractor employs licensed electricians and maintenance personnel who are experienced in the installation, service and repair of Intermatic controls.*
This manual has been written for the purpose of assisting and training these individuals, and is intended for their use.

IMPORTANT

- **This remote control should not be made to operate any equipment which would cause bodily injury or property damage would it be activated unexpectedly.**
- **The power control panel should be installed at least 5 feet away from edge of pool or spa water.**
- **The circuit supplying power to the control panel electronics must be a separate circuit from other equipment.**
- **This remote control is designed for operating the connected equipment only. Under no circumstances should this remote control be used for power disconnect. If such disconnect is desired, install one between the main panel and the control panel.**
- **Do not connect any extra leads or loads, such as indicator lights, to the coil of the relays. This may burn out the receiver.**
- **Keep all wiring away from the moving parts of relays.**
- **The circuits supplying power to this remote control are protected by TWO OR MORE BREAKERS. Make sure ALL circuits are disconnected at the main panel before servicing this unit or the equipment it controls.**

Unpacking

The Radio Remote Control System is shipped in a corrugated container with a number of inserts for padding. Remove these and the unit from the box. Carefully place the components on a flat stable surface and first open the door of the power control panel.

Next, remove the screw at the top inside and lift out the face plate. Under the face plate are the hand-held transmitter and a 9-volt battery. If either of these items are missing, contact your local dealer.

Next, check the control panel, the receiver module, and the transmitter for obvious signs of damage, such as dents, cracks in plastic or loose parts free in the unit. If any of these defects are apparent , please contact your local dealer.

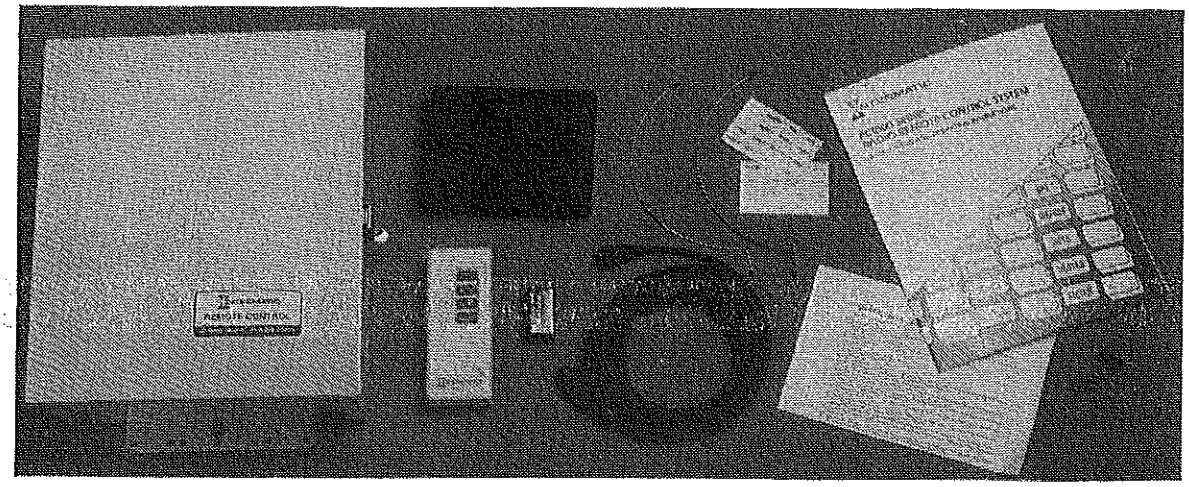


Fig. 4

Space Requirements

In selecting an installation site, consideration must be given to (1) minimizing radio interferences, and (2) convenience of service.

For best performance, the receiver module should be placed as high as practical and in sight from where it will most likely be operated by the transmitter. Metal objects, like the heater, filter, a fence or building in front of the receiver's antenna, will reduce the effective range of the transmitter. Also, a receiver module close to the ground is less efficient than a receiver 6 ft. above ground.

For ease of service, the power control panel should be placed where there is plenty of room to access the enclosure. Remember, the homeowner may have to get into this enclosure to reset the timer after power outages or to utilize the manual override switches if some malfunction occurs to the transmitter.

Wiring Requirements

First, check the main electrical service and make sure there is enough power available to operate the equipment.

Next, find the best way to get power from the service panel to the control panel, and determine what materials will be required to make this hookup. Remember, the circuit supplying power to the control panel electronics should be a separate circuit from other equipment.

Check also the national and local electrical codes to make sure the planned materials and methods are acceptable.

Review the wiring diagrams and terminal configurations of both the control panel and the equipment which will be wired to it.

It is extremely important to understand the layout and wire the equipment properly. An error in wiring can be dangerous and can also cause damage to the equipment.

Typical Installation

Step 1. Select the proper location for the control panel and mount it securely to a rigid surface. Remember, the panel must be at least 5 ft. away from open water.

Step 2. Plan your wiring. Diagrams for specific models are in one of the last sections of this manual. It may be advisable, depending on your application, that a manual disconnect switch be installed on each circuit. Also, underwater lighting circuits may require ground fault protection, refer to NEC par. 680-5 for proper wiring.

Step 3. The black and white leads attached to the first two terminals of the terminal board from the left are the 120 volt power connections for the electronics. Remember, the circuit supplying power to the electronics must not also be used to supply power to other equipment. The interference caused by motors, ignition coils, etc., can be detrimental to the electronic circuitry.

Step 4. Complete the wiring. Please note: The first relay is double pole, single throw (DPST) and, if the model contains a timer, the timer is wired in parallel to the coil of this first relay. See page 8 for detailed timer operation. Relay #2 is double pole, double throw (DPDT) and it is for the pool cleaner interrupt. Relays #3 and #4 are for any auxiliary functions.

Step 5. (Models with low voltage compartment only,) Relay #5 is in the separate low voltage compartment and controls the 24-volt valve actuators as well as the low voltage heater. Also there are the terminals for the optional freeze or heater protection device. For more details, refer to instructions on page 15.

Step 6. Assemble receiver module. Remove screw from bottom of the receiver and open the hinged flap. Feed the antenna hoops thru the openings in the hinged flap see Fig. 5. Next, insert the hoops into their respective receptacles, reposition the flap and securely fasten with the screw.

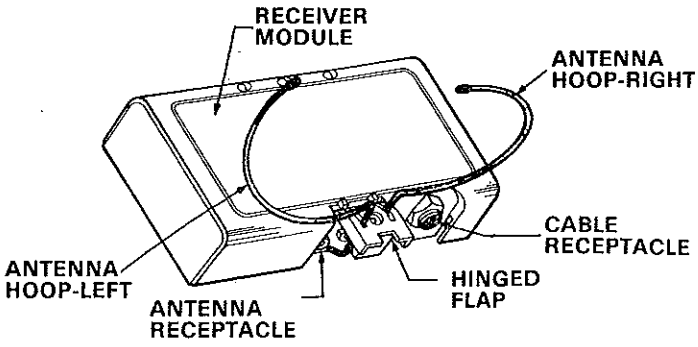


Fig. 5

Step 7. Install receiver module.

a) Mount the receiver module to a post or wall in an unrestricted area at least 6 ft. above ground level and near the control panel.

b) Attach female end of the control cable to the receptacle on the bottom of the receiver module and the male end to the receptacle on the bottom of the control panel.

c) Install cable clamps. Make certain the cable has no sharp bends, the cable connections are secure and properly strain relieved See Fig. 6.

Step 8. Check wiring and tightness of terminations (retighten both rows of screws in terminal strip, if necessary) and be sure grounding connections are secure. Use labels furnished to mark relays, switches and transmitter push pads as desired. Also, clean any metallic fillings and other debris out of case.

Step 9. Connect bonding wire (No. 8 gauge or larger) to terminal on outside bottom of enclosure, if required.

Step 10. Turn only the receiver supply circuit **ON** and move DISABLE switch to **ON**. Using the transmitter, check the operation of relays. Also, check range of operation. (If needed, refer to TROUBLESHOOTING CHART on page 11.)

Step 11. Securely fasten face plate to case. Turn **ON** the remaining circuits and check out the entire installation. Finally, close and securely latch cover to case.

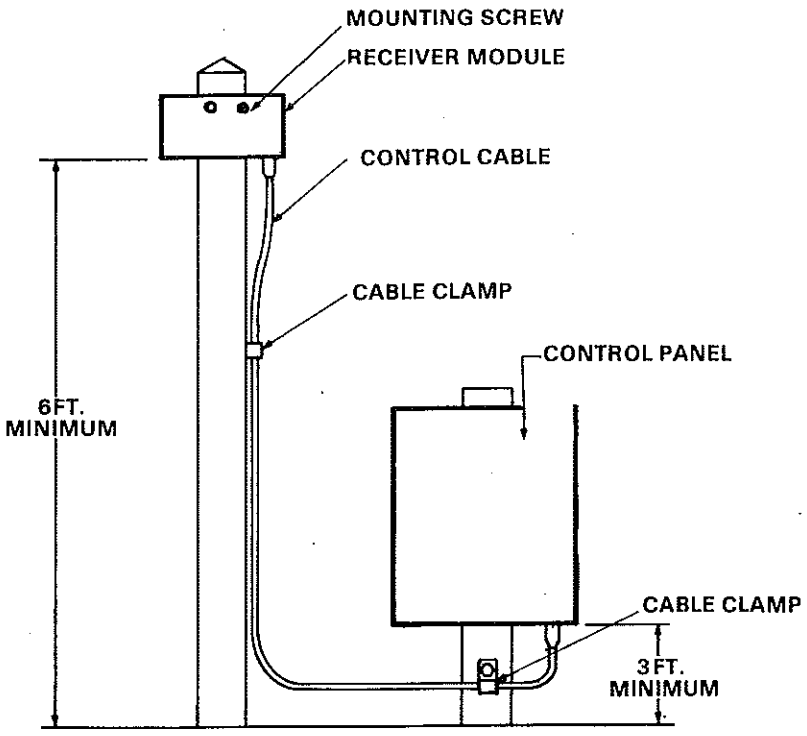


Fig. 6

OPERATING INSTRUCTIONS

The Timer

Some models come with a built-in timer. The timer is wired in parallel to the coil of relay, #1, consequently both the timer and the remote transmitter can turn **ON/OFF** the first circuit.

FOR EXAMPLE: *If the equipment is turned **ON** by the timer, either the timer or the transmitter can turn it **OFF**. If the equipment is turned **ON** by the transmitter, and was left in the **ON** position, the timer will turn **OFF** the equipment at the end of the filtration cycle. This is to prevent the equipment from needlessly working after reaching the end of the filtering program.*

If the first relay is connected to the filter pump of a pool or spa, follow the recommendation of the equipment manufacturer and set the daily automatic filtration cycle accordingly. **Instructions to set the timer are printed on the face plate of the unit.**

1. **To change the program,** simply reset trippers on timer dial.
2. **To operate equipment continuously,** turn manual override #1 to **ON**.

Disable Switch

The slide switch on the panel should normally be in the **ON** position, thus setting the radio receiver in the "STAND-BY" mode.

This switch in the **OFF** position disables the receiver and prevents the equipment from responding to any radio signals, normal or unauthorized. However,. The manual overrides, and timer (if furnished) will still operate the connected equipment.

The use of this switch is recommended when the pool, spa, etc., is left unattended for some period of time.

Manual Overrides

The four override knobs in the center of the receiver panel are provided for testing and for manual control in case the radio circuits are inoperative. These knobs normally should be set to **AUTO** position, allowing the connected equipment to respond to the commands of the transmitter. By turning the knob(s) to **ON**, the connected equipment will operate continuously. To return the control to the radio transmitter, simply turn all knobs to **AUTO**.

The Heater Switch

This switch is only on models with low voltage compartment and it is used to select the operation of the dual purpose (Pool/Spa) heater. For more details, refer to instructions on page 16.

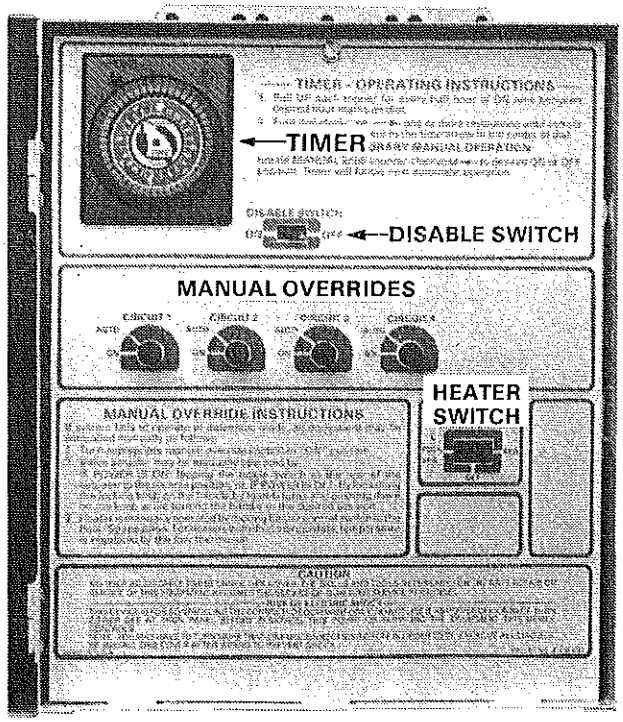


Fig 7

Power Disconnect

There is no single power disconnect switch provided within the control panel. In order to shut down the System and de-energized all the connected equipment, the power must be disconnected at the power panel of the house. **CAUTION: You may have to turn more than one circuit breaker/disconnect switch to "OFF" in order to de-energize all circuits!**

Ground Fault Circuit Interrupter

If a GFCI is installed in any of the circuits, it should be tested regularly to make sure it is operating properly. Just follow the simple instructions of the GFCI manufacturer or the one below. It is recommended to maintain a maintenance diary of your monthly safety check.

1. Push "TEST" button. "RESET" button should pop out from inner surface. This should result in power being "OFF" at the GFCI protected circuits.

2. If the GFCI tests as noted above, restore power by pushing the "RESET" button back in. THE RESET BUTTON MUST BE PUSHED FIRMLY AND FULLY INTO PLACE UNTIL IT LOCKS AND REMAINS DEPRESSED AFTER YOUR FINGER HAS BEEN REMOVED.

DANGER: If RESET button does not pop out, if connected equipment or lamp stays ON, if the GFCI fails to reset properly, DO NOT USE THE POOL OR SPA! Contact a qualified service technician.

The Transmitter

The hand-held transmitter consists of a code entry unit, a radio transmitter, an antenna, and a 9-volt battery, all enclosed in a water-tight plastic housing.

To turn a particular function **ON or OFF**, simply press the corresponding channel pad and hold for a second or longer. For best results, hold transmitter in an upright vertical position, facing the receiver and making sure that no part of your hand is shielding the antenna. See Fig. 8. The antenna is located inside the case immediately **above** the push pads.

The small, rectangular depression next to each push pad is provided for marking the particular function of that pad. (Various pre-printed labels are furnished.) Typical sequences are given in the wiring section of specific models.

To change the battery, refer to Care and Maintenance on page 10.

NOTE: The transmitter is made to perform with normal handling and to withstand chemicals expected around the home and pool. However, inside the plastic case is a precision electronic assembly which may be damaged if dropped or exposed to prolonged heat and/or sunlight. It should not intentionally be submerged or left floating in water.

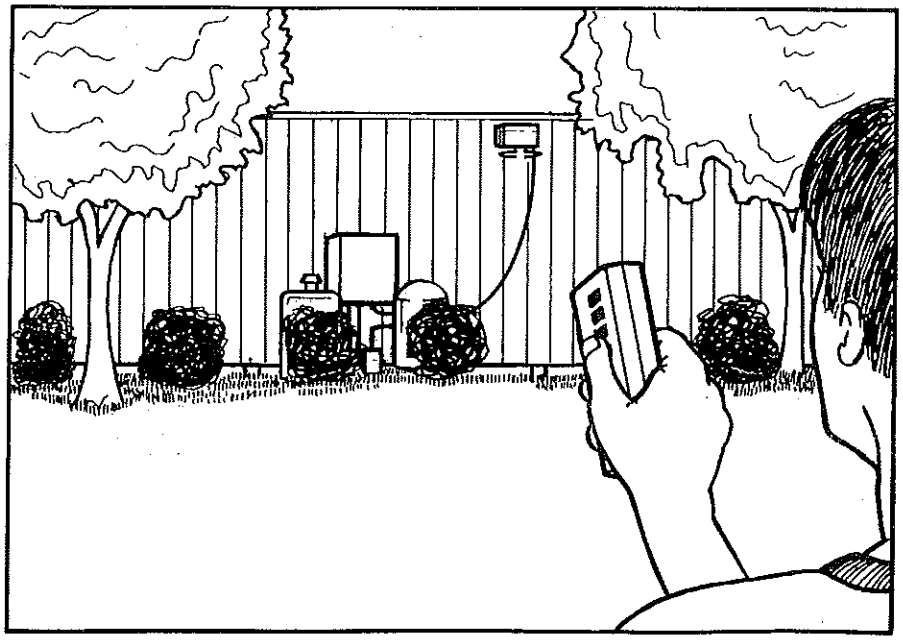


Fig. 8

CARE AND MAINTENANCE

Maintenance Schedule

Beginning of each season:

1. Change transmitter battery
2. Check integrity of components
3. Test GFCI (if applicable)
4. Lubricate valve actuator seals (if applicable, see page 17).

Every three months:

1. Lubricate valve actuator seals (if applicable, see page 17).

Every Month:

1. Test GFCI (if applicable, see page 9).

Transmitter

Do:

1. Protect transmitter against prolonged heat and/or sun exposure.
2. Protect transmitter from contact with chemicals and oils, particularly the wide variety found in suntan lotions.
3. Change battery regularly. See instructions below.
4. Make sure battery cover is fastened down properly to ensure watertight integrity.

Don't:

1. Do not leave transmitter floating in water or out in rain.
2. Do not operate the transmitter while the connected equipment is being serviced or is out of order.

To Change Battery

Under normal operating conditions, a good 9-volt transistor battery (alkaline or Ni-Cad) should last for at least one year. It is advisable to change the battery at the beginning of each season.

1. Using a small screwdriver, carefully remove the four screws on back of the transmitter (Fig. 9.), and lift off battery compartment cover.

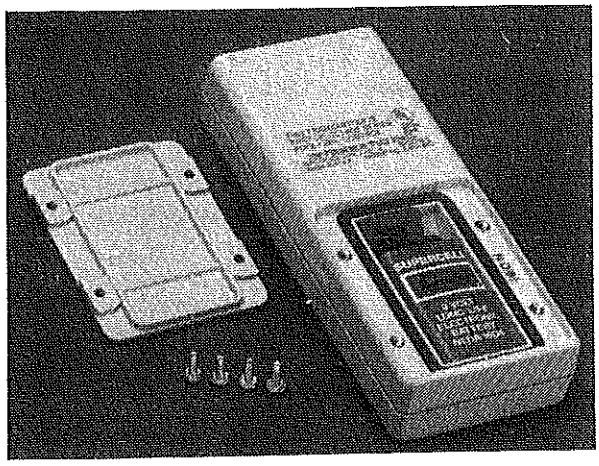


Fig. 9.

2. Using the screwdriver, carefully pry loose the battery connector and remove the battery.
3. Observing proper polarity (+ and –), install a fresh 9-volt transistor battery.
4. Making sure that the new battery and connector are flush or below the edge of the cavity, place cover over the compartment and fasten down tightly with the same screws, being careful to avoid stripping them.

The Power Control Panel

Do:

1. Make sure the cover of the panel is closed at all times. If left open, rainwater will damage the insides, dust and bugs will hinder relay operations and the sun will degrade the gasket material.
2. Use a padlock to keep unauthorized from entering the enclosure.

Don't:

1. Do not lubricate relays. When relays are operating, a slight humming noise is normal.
2. Do not disassemble the case. The chassis does not contain any serviceable components.
3. Do not turn timer dial in counter clockwise direction.
4. Do not remove front cover without first disconnecting the electricity.

TROUBLE SHOOTING CHART

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Receiver Power ON: 1. No response to transmitter signal at any time.	1A. Disable switch OFF	Slide Disable switch to ON
	1B. Circuit breaker(s) in main panel is/are OFF	Turn power ON (lightning may have tripped GFCI type breaker
	1C. Manual override levers are ON	Turn levers to **AUTO**
	1D. Loose cable connection at receiver and/or control panel	Tighten connector locking rings
	1E. Transmitter battery dead	Replace battery
	1F. Receiver and transmitter are on two different frequency codes	Change code settings See page 12
	1G. Faulty transmitter	Check battery connections Replace transmitter
	1H. Faulty receiver	Replace receiver module
	1I. Faulty chassis	Replace chassis in control panel
2. No response to transmitter signal some of the time.	2A. Weak battery	Replace battery
	2B. Appliance with brush type motor is in use	Relocate appliance and/or connect to another circuit
	2C. Other radio transmitter (police, etc.) is operating nearby	Change code settings See page 12
3. Insufficient range	3A. Weak battery	Replace battery
	3B. Antenna too close to ground	Relocate receiver module 6 ft. high minimum
	3C. Transmitter is held too close to ground	Hold transmitter at least 1 ft. above ground
	3D. Detuned receiver	Retune receiver. See page 13
	3E. Weak signal due to obstruction	Remote/relocate receiver module
4. Nuisance operation	4A. Other radio transmitter operation nearby	Change code settings See page 12
	4B. House wiring also carries high frequency coded signals	Change code setting See page 12
	4C. Fluctuating supply voltage due to lightning, ect.	If frequent - contact service
	4D. Faulty receiver	Replace receiver module

CHANGING THE CODE

Under certain conditions discussed earlier, it may be necessary to change the code of the transmitter, receiver, or both.

The codes are selected by operating six small switches inside the transmitter and the receiver module. ***The switch setting combinations of both must be the same for the System to work.***

The Transmitter

Some transmitters are sealed permanently, and others can be set by the user. To find out which type is yours, first open the battery compartment, see instructions on page 10. If only the battery is in the compartment and there is no opening to a set of switches, replace the cover and contact service. They will provide you with a new transmitter with a different factory set code. If, besides the battery,there is a small 6-pole *slide* switch assembly behind a rubber seal in the compartment:

1. Using a small probe, such as a pencil or small screwdriver, gently change the position of one or more of the switches, see Fig. 10.
2. **Write down the new code setting.** The receiver module will have to be set to the **same** code, see below.
3. Replace the seal, the battery, and close the compartment, see instructions on page 10 & 12.

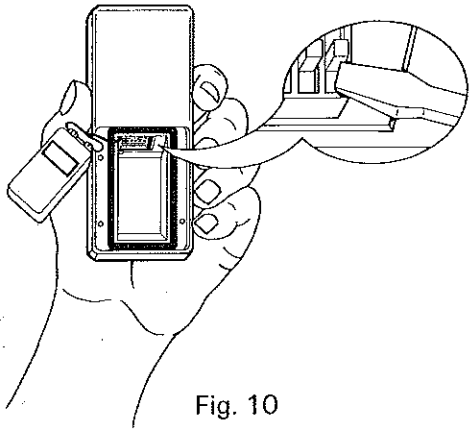


Fig. 10

The Receiver Module

1. Slide disable switch in power control panel to **OFF**
2. Disconnect control cable at bottom of receiver module.
3. Remove the back cover plate and locate the rectangular code switch assembly containing 8 small *rocker* switches. From the end marked with ON/OFF, the switches are identified as follows: A, B, 1-6 see Fig. 11 & 12. **DO NOT CHANGE THE SETTINGS OF SWITCHES #A & #B.** With a small probe such as a ball point pen or small screwdriver, change the settings of the remaining six switches (1-6) into the **same** ON/OFF combination as the transmitter, see step 2 of "The Transmitter" above.
4. After making sure that **both** the transmitter and receiver code switches are set to the same combination, see Fig. 12, reinstall the back cover plate to the receiver module. Make certain it is tightly fastened.
5. Reconnect control cable, turn **ON** disable switch, and test new code.

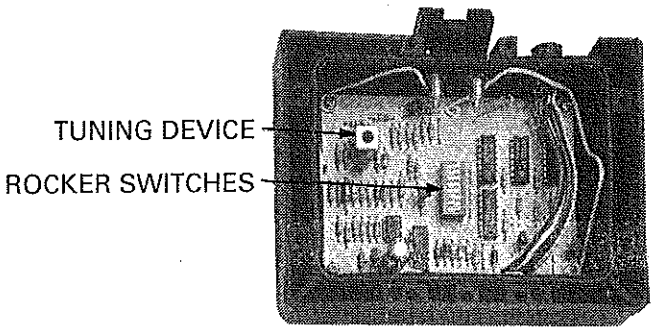


Fig. 11

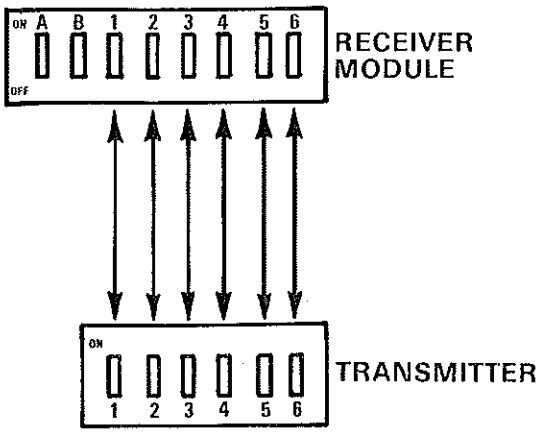


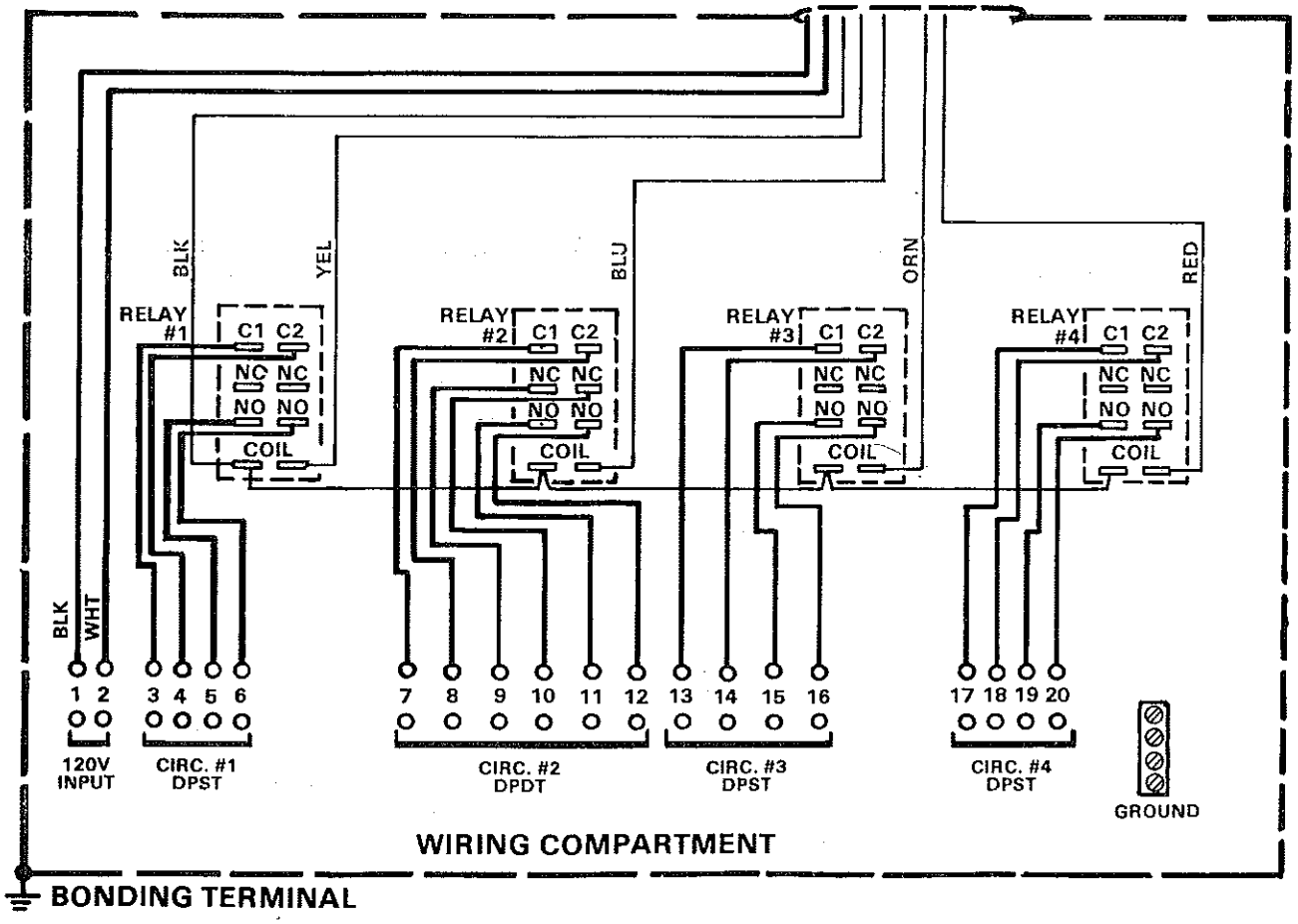
Fig 12

RE-TUNING THE RECEIVER MODULE

Sometimes, beyond the control of the manufacturer, the receiver needs to be re-tuned to accommodate local conditions. The operation requires two persons, special tools, and adequate safety precautions.

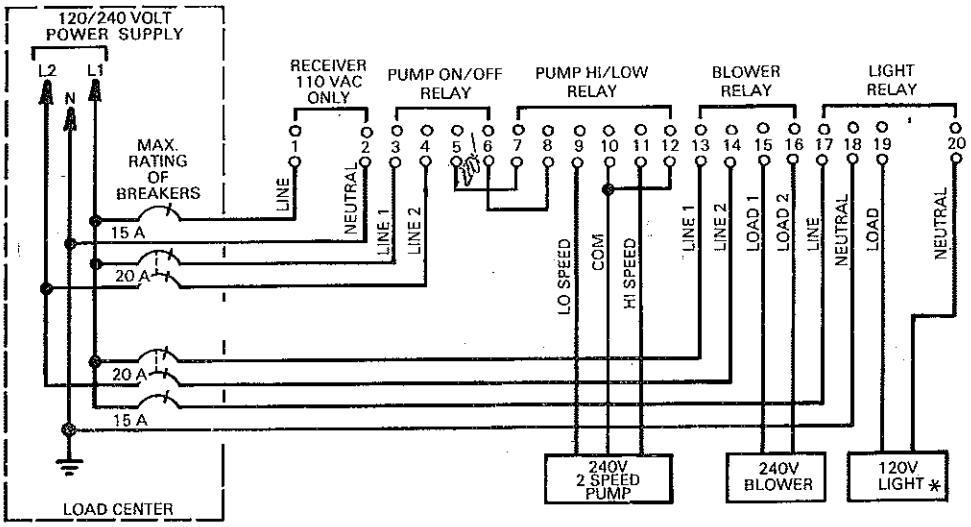
1. Turn off all circuits, except the one supplying power for the electronic circuitry (terminals 1 and 2).
   CAUTION - You may have to turn OFF more than one circuit breaker or disconnect switch in order to de-energize all other circuits.
2. Remove the back plate of the receiver module and insert the proper **plastic** alignment tool (a plastic screwdriver or hex rod known as color TV tuning tool and sold by TV repair shops), carefully insert into the tuning device on the printed circuit board see Fig. 11.
3. Mark initial position, then **slowly** rotate the tool while someone, a distance away but less than 150 feet, is repeatedly pressing (or holding) one transmitter button until the relay clicks.
   NOTE: *The shaft of the tuning device turns thru a full 360 degrees, and has no stop. Each revolution is a repeat.*
4. Test all channels for proper operation at desired range. Further adjustment may be necessary.
5. Reinstall the back cover plate. Make certain it is tightly fastened.
6. Restore full power and test system for proper operation.

WIRING DIAGRAM MODEL RC1401R AND RC1401RT



TYPICAL SPA WIRING MODEL RC 1401R AND RC 1401RT

A. 240 VOLT TWO SPEED PUMP, 240 VOLT ONE SPEED BLOWER AND 120 VOLT LIGHTS



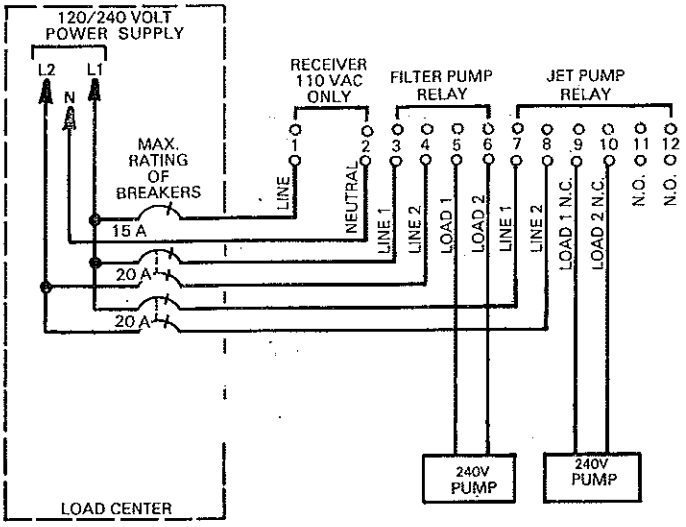
* Refer to NEC par. 680-5 for proper wiring.

TRANSMITTER

PAD#	FUNCTION	
1*	Pump	**ON/OFF**
2	Pump	**HI/LO**
3	Blower	**ON/OFF**
4	Light	**ON/OFF**

*Timer operates pump on low speed. Pad #1 overrides timer for one cycle.

B. TWO 240 VOLT PUMPS



TRANSMITTER

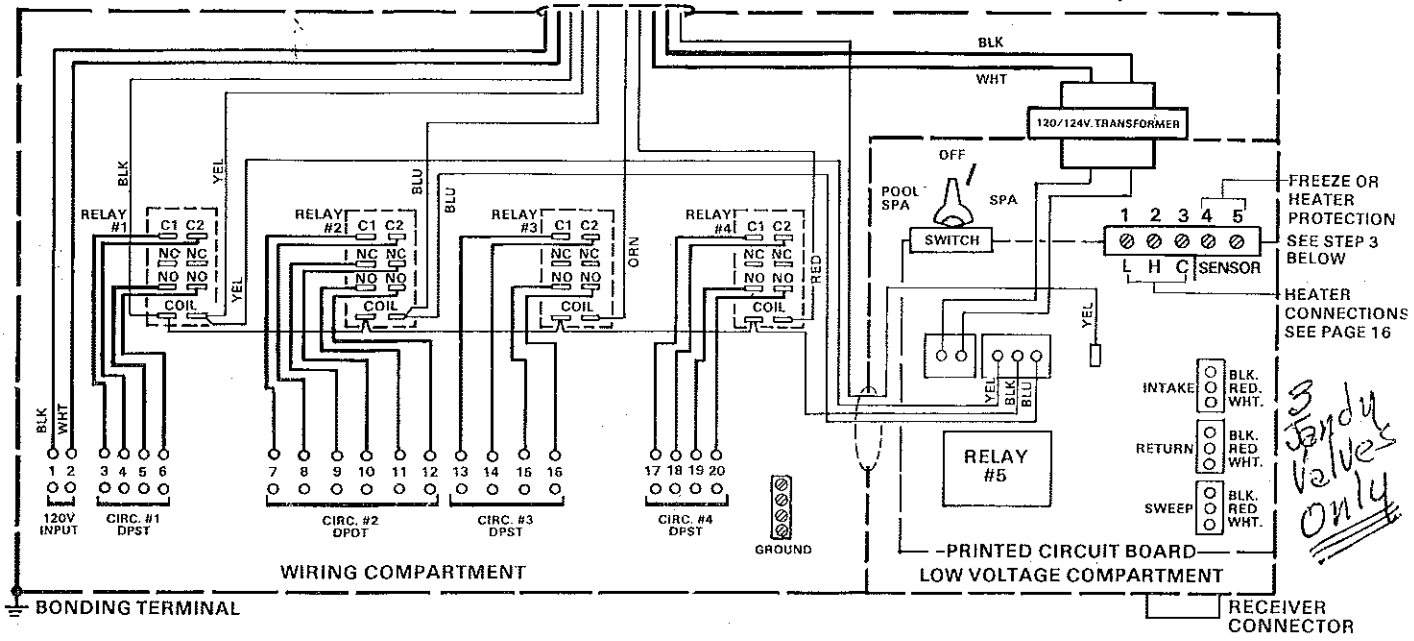
PAD#	FUNCTION	
1*	Pump 1	**ON/OFF**
2	Pump	**ON/OFF**
3	Blower	**ON/OFF**
4	Light	**ON/OFF**

*Timer operates pump 1. Pad #1 overrides timer for on cycle.

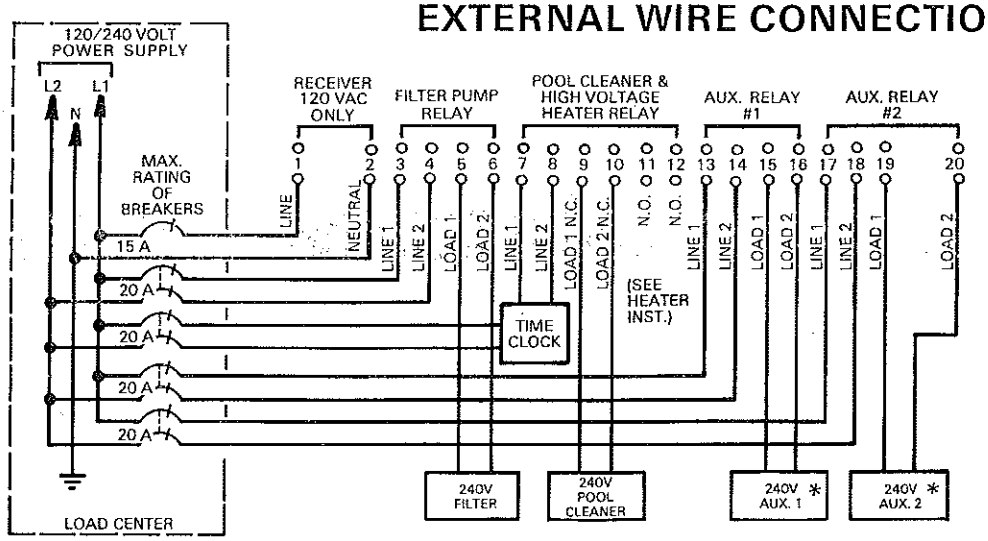
NOTE:
For 120V. application, follow wiring diagrams and wiring instructions, except omit LINE 2 connections and attach neutral directly to equipment NEUTRAL terminal.

POOL/SPA COMBINATION

RC1521RT WIRING DIAGRAM



EXTERNAL WIRE CONNECTIONS



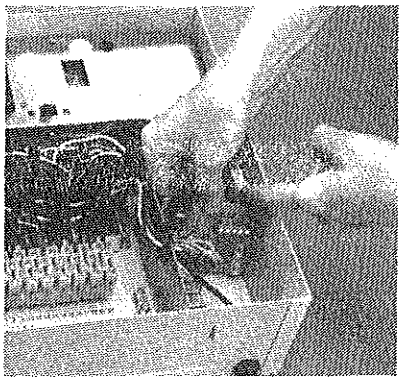


Fig. 13

*If used to control underwater light circuit, refere to NEC par 680-5 for proper wiring.

Wiring The Low Voltage Compartment

Step 1: Remove low voltage board by lifting up and holding clip to permit tilting the board away from clip. Slide board out of mounting groove on left side of board. See Fig. 13. Do not disconnect wires. Study board and compare to WIRING DIAGRAM above.

Step 2: Bring all low voltage valve control and heater wires into low voltage compartment and make connections to board held free. For appropriate heater connections, see instructions on page 16.

Step 3: The optional freeze or heater protection device is a timer or thermostat. Its single pole switch contacts, if connected to terminal 4 and 5, will hold the contacts of relay #1 closed for a preset time or temperature.

Step 4: Check connections. **Make certain each wire is attached to the proper terminal.** Reinstall board in the sequence reverse of step 1.

HEATER WIRING

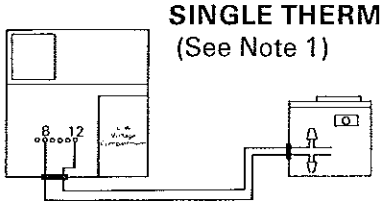
Caution: Do Not disconnect pressure or high limit switches.

HIGH VOLTAGE

(Heat pump or electric heaters)

SINGLE THERMOSTAT

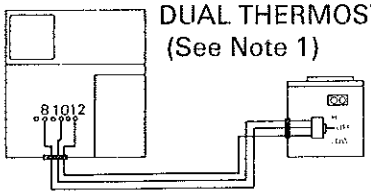
(See Note 1)



1. Connect two wires rated for the load in **SERIES** with heater circuit.
2. Connect these two wires to terminal 8 and 12.
3. Leave toggle switch in **ON** position.

DUAL THERMOSTAT

(See Note 1)



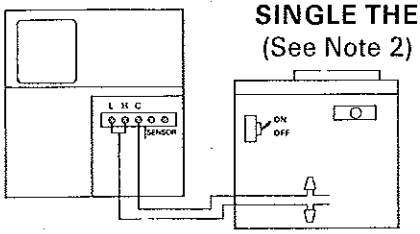
1. Connect three wires rated for the load in **PARALLEL** with the heater toggle switch.
2. Wire common to terminal 8 and Lo and Hi to terminals 10 and 12 respectively.
3. Leave toggle switch on heater in **OFF** postion.

LOW VOLTAGE

(or Electronic ignition)

SINGLE THERMOSTAT

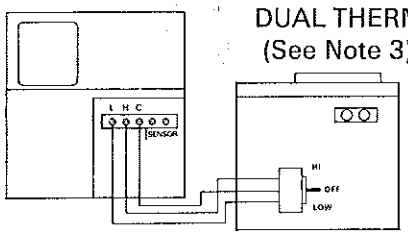
(See Note 2)



1. Connect two #18 gauge high temperature wires in **SERIES** with heater circuitry.
2. Connect one of these two wires to terminal C and the other to terminal L and H.
3. Leave heater switch in **ON** position.

DUAL THERMOSTAT

(See Note 3)



1. Connect three #18 gauge high temperature wires in **PARALLEL** with the heater toggle switch.
2. Connect the wire from the common of the toggle switch (center post) to terminal C, the low thermostat wire to L, and the high thermostat wire to H.
3. Leave heater switch in **OFF** postion.

NOTES:

1. If equipment includes a booster pump for the pool cleaner, it should be wired to 120 VAC power supply. The load side of its Timer or Timeclock should be connected to terminal #7. Terminal #9 should be wired to the booster pump.
2. Power for electronic ignition transformer must come directly from circuit breaker. DO NOT USE CONTROL PANEL AS A RACEWAY. Do not use filter pump relay to disconnect power to heater transformer.
3. For Teledyne Laars Dual Thermostat Heater, use remote wiring harness provided with the heater and follow the manufactures's instructions.

OPERATING INSTRUCTIONS

In addition to General Instructions on pages 8 and 9, a Pool/Spa combination, if installed properly, will operate as follows:

The Transmitter

PAD 1 if pressed, will override timer and turn the filter pump **ON** or **OFF**.

PAD 2 if pressed, will:

a) Rotate valves from pool to spa or spa to pool circulation.

b) Disable or enable pool cleaner circuit, and

c) Turn **ON** or **OFF** (Hi or Lo) the heater, depending on the type of heater and the position of the heater switch.

PADS 3 & 4, if pressed, will turn **ON** or **OFF** auxiliary equipment, such as blower, jets, lights, etc.

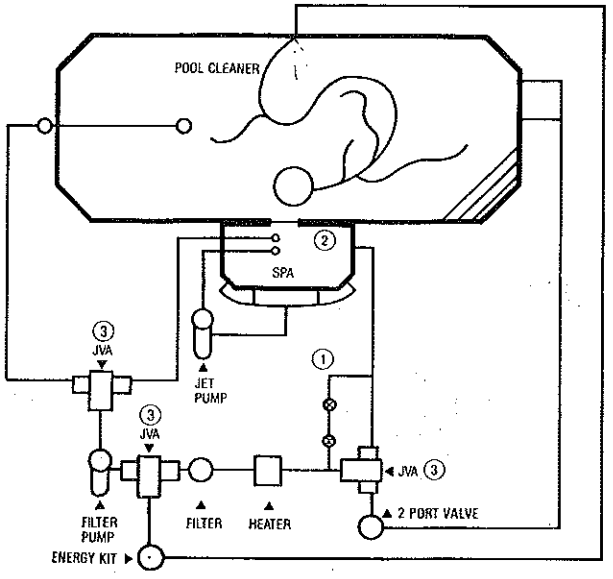
The Heater Switch

Off (Center) - Heater will not activate.

POOL/SPA (Left) - Heater will activate whether circulation is in the pool or spa mode. If heater is the dual thermostat type, the heater will be controlled by the LO thermostat in pool circulation, and by HI thermostat in the spa circulation.

SPA (Right) - Heater will only activate when circulation is in the spa mode.

HYDRAULIC SCHEMATIC



NOTES: 1. A ½" or larger spa makeup line with check valve and ON/OFF manual valve must be plumbed so water returns to the spa during pool circulation. **NOTE: A separate spa makeup line is required.**

2. Spa must be **at or above** the level of the pool. If the spa is attached to the pool, place a dam between the two bodies of water and allow for spa overflow into the pool. If spa is not attached to pool, an overflow pipe (at least 2" in diamenter) must be installed. The pipe must be located slightly above spa water level.

3. Valve seals must be lubricated at least four times a year. To grease the seal, rotate handle, using either manual method (described below), so that the word **OFF** on handle is directly above the word **grease** on valve. See Fig. 14. Next, turn black grease cup clockwise until resistance is felt. Wait a few seconds, then turn cup a half turn further. Repeat this two more times. Next, move handle back and forth to spread grease onto the seal. Last, restore actuator to **AUTO** position.

VALVE ACTUATORS

Valve actuators are slow turning, reversible type, 24-volt electric motors mounted on special valves. When installed as shown on the Hydraulic schematic above, and energized, they will rotate the valve's diverters in synchronization from close to open from open to close. If Pad 2 of the transmitter is pressed, the actuators will change the water circulation from pool to spa or from spa to pool.

Valve actuators are made by several different manufacturers and their mounting, wiring, operation, and maintenance may differ. The following instructions are for JANDY Model JVA2400. For other types or brands follow manufacturer's instructions.

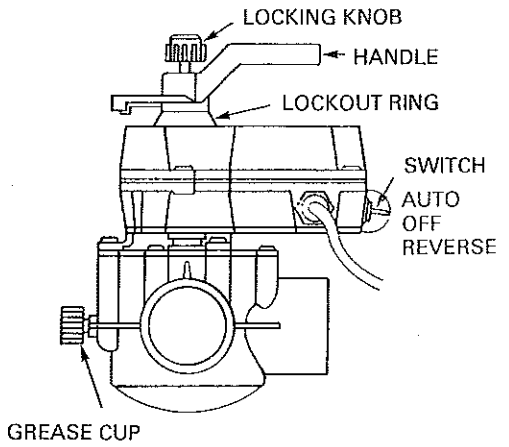


Fig. 14

To Synchronize Valve Motors

STEP 1: Make sure toggle switch at rear of motor is in the **AUTO** position and the valve shaft is FULLY UP AND ENGAGED.

STEP 2: Turn **ON** circuit breaker for the receiver and turn disable switch **OFF.** Wait 30 seconds and turn disable switch **ON.**

STEP 3: Observe the rotation of valves. They should be turning to pool circulation. If one or both rotate to spa circulation, move the toggle switch at rear of valve to **REVERSE** and change label to REVERSE-OFF—AUTO (white) See Fig. 14.

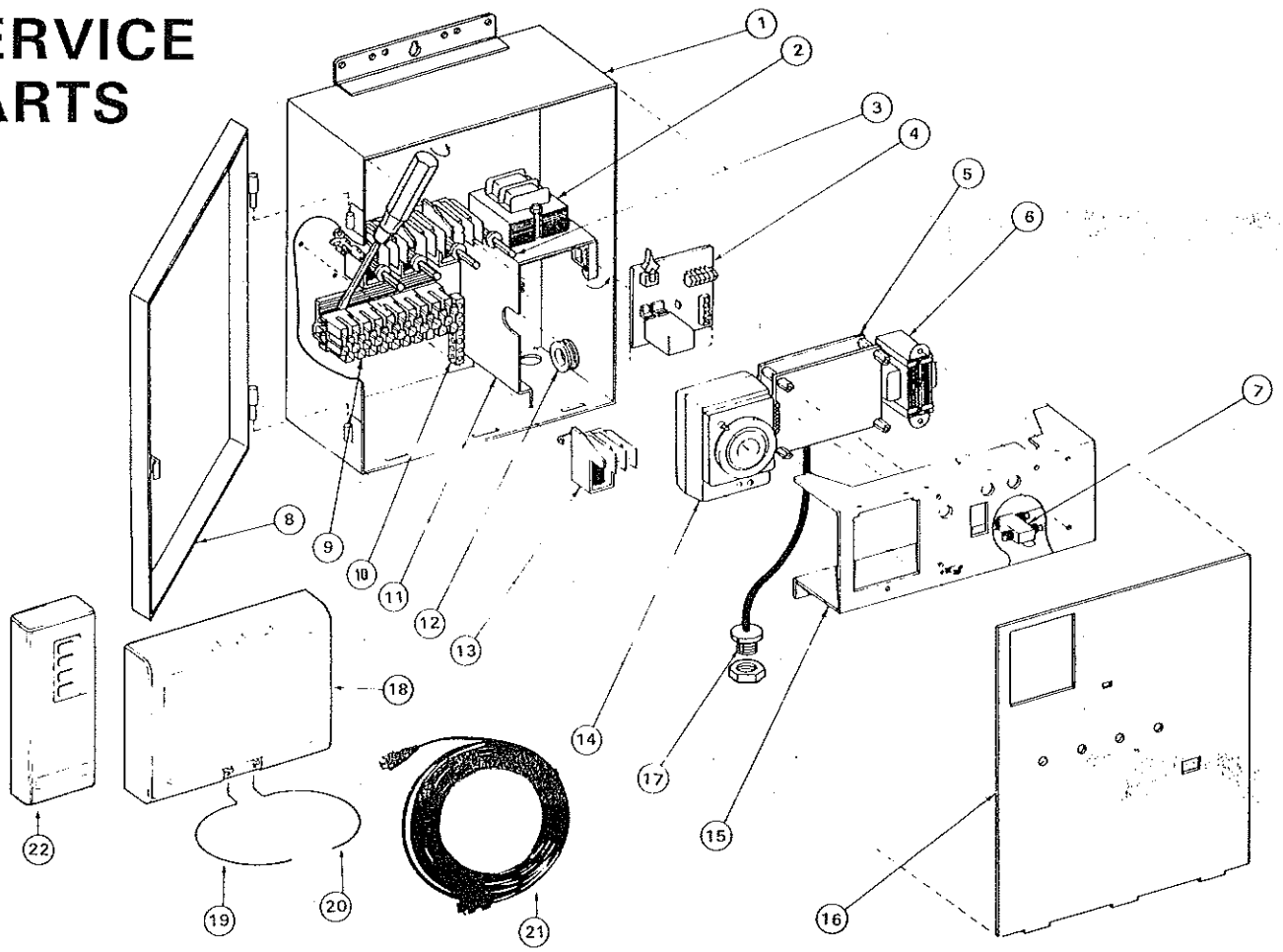
To Operate Valves Manually

If power is ON - flip the toggle switch at rear of motor from **AUTO to REVERSE.**

IF POWER is OFF - turn the locking knobs on handle **four full turns counter-clockwise** and push down firmly on locking knobs to disengage gear train. The handle may now be turned to the desired position.

NOTE: The same method may be used when power is **ON,** but toggle switch must be in **OFF** (center) position.

SERVICE PARTS



ITEM NO.	DESCRIPTION	MODEL		
		RC1401R	RC1401RT	RC1521RT
1	CASE GROUP	2RC2635GR	2RC2635GR	2RC2635GR
2	TRANSFORMER ASSEMBLY	—	—	119RC225A
3	LEVER - CAM	38RC746	38RC746	38RC746
4	P.C. BOARD ASSY. LOW VOLTAGE	—	188RC354A	~~188RC269A~~ 188RC581A
5	P.C. BOARD GEN. ASSY +	188RC314GA	188RC314GA	~~188RC314GA~~
6	TRANSFORMER +	119RC226A	119RC226A (2 w/ID	119RC226A
7	FILTER - ELECTRONIC +	213PP4450	213PP4450	213PP4450
8	COVER ASSEMBLY	6RC1464A	6RC1464A	6RC1464A
9	TERMINAL BLOCK	130RC822	130RC822	130RC822
10	GROUND TERMINAL BAR	130T755	130T755	130T755
11	PLATE - DIVIDER	—	—	24RC4423
12	GROMMET	—	—	114RC34
13	RELAY-DPDT PBS86	143RC75	143RC75	143RC75
14	TIMER - MECH. PB913N66 +	—	PB815UB	PB815UB PB
15	PLATE - CHASSIS +	24RC4464A	24RC4464A	24RC4464A
16	PLATE - FRONT	24RC4526	24RC4528	24RC4521
17	CABLE ASSEMBLY +	122RC253	122RC253	122RC253
18	RECEIVER MODULE	RC641NC	RC641NC	RC641NC
19	ANTENNA HOOP - LEFT *	214RC21A	214RC21A	214RC21A
20	ANTENNA HOOP - RIGHT *	214RC20A	214RC220A	214RC20A
21	CONTROL CABLE *	122RC252	122RC252	122RC252
22	TRANSMITTER	RC949N	RC949N	RC949N
23	SWITCH LATCHING GROUP	133RC934GR	133RC933GR	133RC932GR

*Is included as part of the RECEIVER MODULE (item 18).
×Is part of SWITCH LATCHING GROUP (item 23).

178RC15GA

24 Hour Protection Thermostat Timer is PB815N2N S/C only Voided But no sub. 7-21-95

SPECIFICATIONS

ALL MODELS

Power Control Panel

Size: 12¾ x 10-⅞ x 4-½ Inch
Supply Voltage: 120/240 Volts - 60 Hz
Contacts: Circuits 1, 3, and 4:
Double Pole Single Throw
Circuit 2:
Double Pole Double Throw
Rating: 20 Amp."R", 120-277 V.A.C.
1 HP-120 V.A.C., 2 HP-240 V.A.C.
360 VA Pilot Duty 120-277 V.A.C.

Number of independent circuits: 4
Number of manual overrides: 4
Number of combination knockouts: 9
Operating Temperature Range:
-30 Degrees F to 110 Degrees F
(-34 Degrees C to 43 Degrees C)

Transmitter

Size: 5½ x 2¼ x 1⅛ Inch
Battery: 9-Volt transistor type
Range: 150 ft. (see page 3)

FEATURES	MODELS		
	RC1401R	RC1401RT	RC1521RT
24 Hour Timer	No	Yes	Yes
Provision for GFCI	Yes	Yes	No
24-Volt Control Circuit	No	No	Yes
Provision for Freeze Control	No	No	Yes
Provision for pump OFF-delay	No	No	Yes
20 Minute Countdown Timer	Optional	Optional	Optional
Listing	UL	UL	UL
Shipping Weight (LB)	20	22	25

GUARANTEE

If within one (1) year from the date of purchase, this product fails due to a defect in material or workmanship, Intermatic Incorporated will repair or replace it free of charge.
The warranty does not apply to: (a) damage caused by accident, abuse, mishandling, dropping; (b) units which have been subject to unauthorized repair, opened, taken apart: (c) units not used in accordance with directions; (d) damages exceeding the cost of the product. Some states do not allow a limitation of damages so the foregoing warranty may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.
This warranty service is available by either (a) returning the product to the dealer from whom the unit was purchased or (b) mailing postage prepaid to Intermatic, Inc. 4720W. Montrose Avenue, Chicago, Il 60641. Please be sure to wrap the product securely when mailing to avoid shipping damage..

FAX Copy SAVE

MODEL RC1521RT

FOUR CIRCUIT ELECTRONIC REMOTE CONTROL WITH TIMER AND PROVISION FOR LOW VOLTAGE VALVE ACTUATORS

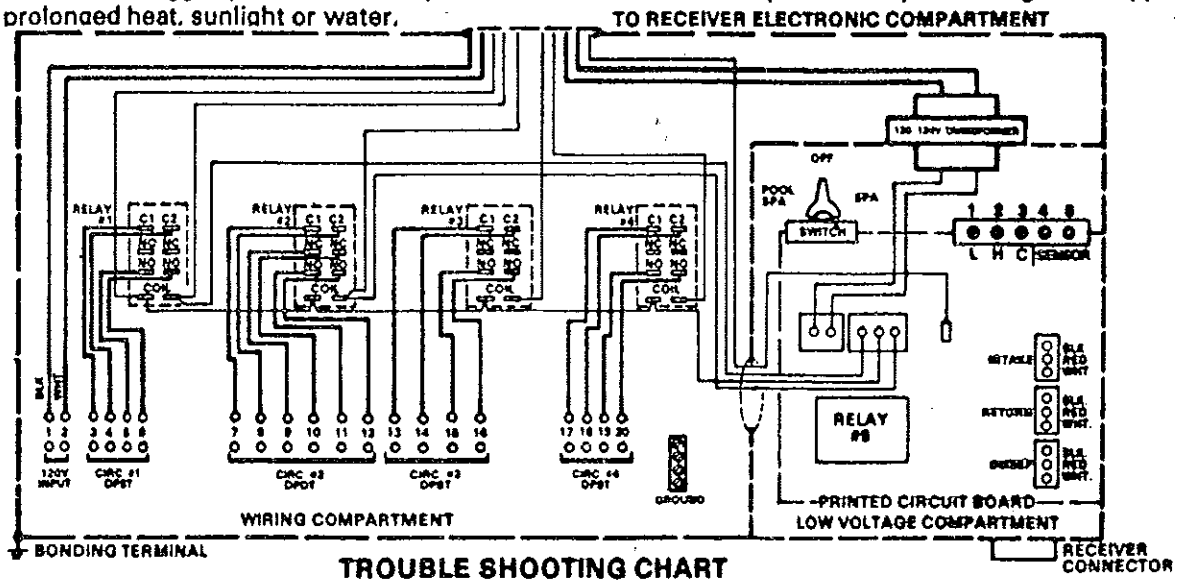
SUITABLE FOR SWIMMING POOL AND SPA CONTROL

LISTED
SWIMMING POOL AND SPA EQUIPMENT CONTROL 69N8

POWER SUPPLY: RECEIVER - 110/125 VOLT 60 HZ.; TRANSMITTER - 9V TRANSISTOR BATTERY
CONTACT RATING (ALL FOUR CIRCUITS): 20 AMP. (R) 120 to 277 Volt A.C.;1 HP - 125V. AC. 2 HP - 250V.A.C. 360 VA Pilot Duty 125 to 250 Volt A.C.
CIRCUIT 1: TIMER CONTROLLED WITH REMOTE OVERRIDE; DOUBLE POLE SINGLE THROW
CIRCUIT 2: REMOTE CONTROLLED; DOUBLE POLE DOUBLE THROW
CIRCUIT 3 AND 4: REMOTE CONTROLLED DOUBLE POLE SINGLE THROW
EMERGENCY MANUAL OVERRIDE: ALL FOUR CIRCUITS

IMPORTANT:

1. The installation of this unit should be done by a qualified electrician and is to comply with all national, state and local codes
2. The circuit supplying power to the **RECEIVER** electronics (terminals 1&2) should not also supply power to electric motors or electronic ignition systems.
3. This unit should not control any equipment which would cause bodily injury or property damage should it be activated unexpectedly.
4. The cover of this unit must be in place and securely latched at all times.
5. The hand held **TRANSMITTER** is made to withstand the normal handling and chemicals expected around the home. However, inside of the rugged plastic case is a precision electronic assembly which may be damaged if dropped or exposed to prolonged heat, sunlight or water.



TROUBLE SHOOTING CHART

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Receiver Power On--		
1. No response to transmitter signal at any time.	1A. Transmitter battery dead.	Replace battery.
	1B. Faulty transmitter.	Have transmitter checked out.
	1C. Circuit breaker(s) is/are OFF	Turn power ON.
	1D. Manual override levers are ON	Turn levers to auto
	1E. Receiver and transmitter are on two different codes.	Change code-refer to manual.
2. No response to transmitter some of the time.	2A. Appliance with brush type motor is in use.	Relocate appliance and/or connect to other circuit.
	2B. Weak signal and/or battery.	Replace battery.
		Contact service, you may be outside effective range of transmitter.
3. Nuisance operation.	3A. Faulty receiver.	Contact service/Replace receiver.
	3B. Other transmitters operating nearby.	Change code - refer to manual.

INTERMATIC INCORPORATED
SPRING GROVE, ILLINOIS 60081-9698

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