

CANNON R/C SYSTEMS

SPECIAL OPERATIONAL PROCEDURES FOR ULTRA-MICRO AND MICRO-ELITE R/C SYSTEMS

SERVOs - Because of their small size and light weight these units require special care. Although servos are powerful for their size, working parts such as gears and motors need careful handling so as not to overstress or overload them.

1. NEVER try to ROTATE or REPOSITION the servo output arm by hand, or gear damage could result. Use a transmitted signal from your TX/RX to position servo outputs as needed.
2. Never lube the servo components.
3. Do not operate servos from sources greater than six volts.
4. ALWAYS leave the end grommets installed on the servos. They serve to clamp servo case top and bottom together to maintain alignment.

CENTERING SERVOS

1. Place all Transmitter controls, including trims, in neutral position.
2. Turn on Transmitter and Receiver. Plug servo into Rx channel to be centered.
3. Remove screw holding servo output arm if centering is required.
4. Insert centering tool (3/64" jewelers screwdriver) into hole in output arm until it bottoms in slot.
5. Apply pressure on tool in direction opposite that of desired servo centering change. Output arm will rotate to a new position. Adjustment is quick and touchy, so a few tries may be needed before correct centering is obtained.
6. Carefully withdraw centering tool so as not to change servo center. Replace output arm screw.

AILERON MOUNT - This unit is designed to accommodate either the Ultra-Micro or Micro-Elite servo. When used with the Micro-Elite (larger Servo), the small internal mounting tab can be cut off, leaving only the two farthest spaced mounting tabs. However, the small internal tab is required to fit the Ultra-Micro Servo. In either case you might find it desirable to trim portions of the mount slightly to obtain a better fit for the servo is use.

CHARGING RECEIVER NICAD BATTERIES

All Cannon Rx batteries may be charged with our Standard 50 mil output Charger, Dual or Flite Pack, without damage. Each battery pack is supplied with a charge reducer or diode circuit, as needed, to maintain correct charge rate.

IMPORTANT

CHARGE LIMITERS FOR THESE SMALL BATTERY PACKS REDUCE CURRENT TO A SAFE LEVEL TO THESE BATTERIES WHEN CHARGING, SO THEY CAN BE SAFELY CHARGED OVERNIGHT. AS A RESULT, CHARGE CURRENT IS TOO LOW FOR CHARGER LED'S TO LIGHT. CHARGER OPERATION CAN BE CHECKED BY INSERTING THE AUDIO CHARGE PLUG SLOWLY INTO THE RELATED CHARGE RECEPTACLE AND OBSERVING A MOMENTARY LIGHTING ON THE LED. SEAT THE CHARGE PLUG FULLY INTO THE RECEPTACLE, THEN THE LIGHT WILL EXTINGUISH, BUT THE BATTERY WILL BE CHARGING EVEN THOUGH THE LED IS DARK. DO NOT ALLOW THE LED TO CONTINUE TO GLOW OR THE SHORT WILL DAMAGE THE CHARGER.

50 MAH BATTS - A separate Charge Limiter is provided with each 50 mah batt for charging. To charge, first unplug the battery from the receiver, then connect the Charge Limiter to the battery cable plug. Turn the battery switch ON (move switch lever towards the battery). Then, when the Rx audio charge plug on the charger cable is inserted into the 50 mah battery, Charger operation can be verified by the brief LED flash which occurs before PLUG IS FULLY INSERTED in the charge receptacle. Charge overnight if desired with Receiver Battery Switch ON, Tx Switch OFF.

75, 110 AND 270 MAH BATTS - On these units, a charge receptacle is built in adjacent to the ON-OFF Switch. With the switch OFF, plug in the audio charge plug slowly, observe flasher indication of charge action, then seat charge plug fully until LED extinguishes. Battery will charge as long as switch is OFF. EXCEPTION 270 Mah batt pack. Charge procedure is the same except that a diode in the charge circuit permits sufficient current to flow so the Rx LED normally remains lit while charging.

CAUTION

WHEN CHARGING ANY SIZE RECEIVER BATTERY USING AN AUDIO CHARGE PLUG FITTING INTO A CHARGE RECEPTACLE, MAKE ABSOLUTELY SURE THE CHARGE PLUG IS PUSHED FULLY INTO THE CHARGE RECEPTACLE UNTIL IT SNAPS INTO PLACE. OTHERWISE AN ELECTRICAL SHORT WILL REMAIN TO DRAIN THE BATTERY AND BURN THE WIRING.

SERVO MAINTENANCE AND PLUG TYPES AVAILABLE

SERVO PROBLEMS

"Jumpiness" (failure to follow commands smoothly) and erratic operation are two of the most common indications of servo problems. These are usually the result of dirty feedback pots, insufficient wiper contact, or wiper loose on holder.

Servo running to one extreme may be due to a bad component, pot or wiper, defective transistor or I.C., or most usually, incorrect centering of servo. In an attempt to obtain correct centering, many modelers turn the output adjustment too far, causing the servo to travel to full stop position.

Many problems are mechanical, notably gears and motors. If motor will not run when free of gearing, check voltage at motor terminals. If voltage (2.5 or more) appears at terminals but motor does not rotate, motor is defective. If no voltage appears, servo amplifier, wiring or related circuitry may be defective.

SERVO GEARS

Occasionally servo gears will become noisy or damaged due to crashes, hard landings, exposure to fuel, or other "gremlins". In such cases, disassemble servo and inspect each gear carefully under high power magnification to locate burrs and bent or broken gear teeth which impair operation. Replace imperfect gears when found.

SERVO MOTORS

Like all mechanical items, motors are subject to wear and eventually may need replacement. If one servo becomes noticeably slower and less powerful than the others or runs slow one direction, check gears first, then the motor. Often a motor can be rejuvenated for a period of time by applying TV tuner cleaner (lubricant) to the motor bearings. Replacement motor parts are not available; if defective, the entire motor must be replaced.

POTS AND WIPERS

These are a major cause of servo problems. Periodic cleaning, adjustment and lubrication of these items can reduce repair costs considerably. Upon disassembly of servo pot section, if needed adjust wiper contacts upward to assure good wiping action on servo element. Make sure wiper is securely attached to wiper plate, without wobble. Tighten if necessary. Lubricate sparingly.

CLEANING SERVOS

Amount of servo use will determine the need for cleaning. We suggest that for every five to ten hours of operation the servos be disassembled, cleaned, inspected and lubricated. Proceed as follows:

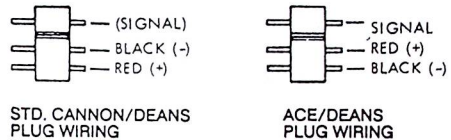
1. Open servo case to allow access to gears, motor, feedback pot and amplifier. Note correct assembly of unit; use special care on Micro servos.
2. Under magnification, inspect all wiring for signs of fraying or breaks, especially at pot, motor terminals, P.C. board and servo plug. Resolder any bad or frayed connections; replace all wires not in perfect condition.
3. Remove feedback pot. Inspect very carefully for signs of element wear, center contact wear, cracks or wiper element impregnation. Clean pot with a soft cloth, using lacquer thinner or TV tuner contact cleaner. Be certain all foreign matter is completely removed from surface of pot element. Replace element with new unit of correct value if defects are apparent.
4. Check spring wiper contact for cleanliness, wear or deformity. Clean as necessary. Replace wiper if flat spots show at contact points. Be sure spring tension of wiper against pot element is adequate to insure perfect contact, even under vibration. Make certain wiper is firmly attached to wiper plate, **WITHOUT WOBBLE**.
5. Spread a very thin film of lubrication all contact surfaces of pot element. This is very important to insure maximum trouble-free pot life. You can use special pot lube, silicone grease or vaseline, as available. When reassembling pot, make sure everything is in correct position and alignment and solid wiper contact is made.
6. Check gear operation by manual rotation of output shaft and gears. While gears are being turned, look, listen and feel for possible gear defects. Hard-to-turn gears may indicate bad teeth or swollen gears, with consequent binding. A clicking noise usually means one or more bad gear teeth exist. Inspect gears thoroughly under magnification for visual signs of damage or other possible trouble.
7. Inspect amplifier to make sure no adjacent parts on board are liable to short together. Silicone rubber at wire terminals and potential shorting points is good insurance.
8. Check servo operation, center as necessary and reassemble servo. As needed, install foam tape or plastic pads between amplifier and pot, motor, etc. Route wires properly to avoid pinching. Recheck servo operation after assembly is complete. Be sure servo is reassembled **EXACTLY** as it was!

PLUGS & CONNECTORS

Three types of 3-pin plugs and connectors are used on CANNON equipment: DEANS, BLACK Micro plugs and RED Micro plugs. All are polarized, but it is still possible to reverse servo and/or battery plug connections, which can be disastrous to both receivers and servos! Use extreme care to prevent this, and **DO NOT APPLY POWER UNTIL ALL EQUIPMENT IS PROPERLY CONNECTED!**

FIGURE 1. DEAN'S PLUG WIRING

Proper wire connections to these plugs are shown below, as well as standard ACE wiring to Dean's plugs. Note the differences between plug wirings, especially ACE Dean's and CANNON Dean's. **DO NOT INTERCONNECT UNLIKE PLUGS, OR THOSE WIRED DIFFERENTLY, OR EQUIPMENT DAMAGE MAY RESULT! IMPORTANT! WHEN ORDERING EQUIPMENT BE SURE TO SPECIFY CANNON OR ACE WIRING.**

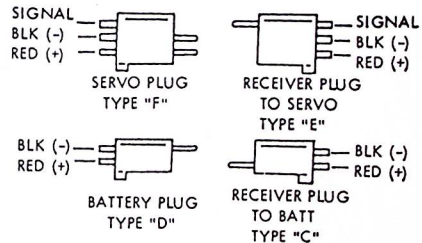


MALE DEANS PLUGS SHOWN. FEMALE PLUGS WIRED SAME.
CAUTION - SERVOS WITH DEAN'S

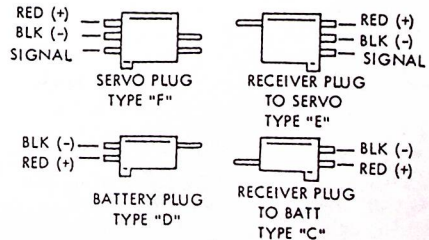
FIGURE 2. CANNON MICRO PLUG WIRING

CANNON MICRO Servos utilize special subminiature MICRO plugs, wired as shown. These plugs come in two colors, **BLACK** and **RED**, wired differently, therefore not compatible. Black plugs have been and still are standard on the original Micro receivers and servos starting in 1980, and continuing. Red plugs are standard on newer CANNON Narrow-Band equipment, but Black plugs are available on special order, as are Dean's plugs which can be wired CANNON or ACE, as specified. When ordering plugs, give plug color & type desired.

BLACK MICRO PLUG WIRING



RED MICRO PLUG WIRING



WHEN ORDERING MICRO PLUGS, BE SURE TO SPECIFY PLUG TYPE (TYPE "F", ETC.) AND PLUG COLOR.

Before plugging ANY servo into your system, make certain plug types, color and wiring are compatible. **WE ASSUME NO RESPONSIBILITY FOR DAMAGE OR INCORRECT OPERATION RESULTING FROM MISMATCHED PLUGS OR WIRING!**