

Duke Pro RSS4 and RSS2 Operations Manual

> Duke Part No. RSS4-Manual Rev A

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RSS4 - 4-Channel Shock Tube Initiator



RSS2 - 2-Channel Shock Tube Initiator

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INTRODUCTION

The Duke Pro models RSS4 and RSS2 shock tube initiators are designed to provide EOD robots with a reliable shock tube initiation system for breaching systems and disruptor cannons. It is built to mount directly to a Picatinny rail. Other mounting configurations include a 3" square tube, similar to the arm of a Remotec F6 series with minimal interface requirements.

This unit utilizes the weapons output terminals, which outputs +24VDC and is controlled at the main or local control panel of the robot.

TO FIRE

Install Switch Tip(s) firmly into banana jack terminals. Move firing lever to "fire" position.

Test the unit by selecting a weapons platform channel and activating the weapons output (fire control button) **continuously** for 3 seconds at the main or local control panel for each circuit. If switch tip is functioning, a loud 'pop' emanating from the tip can be heard approximately 2 seconds after circuit is activated.

OPERATING INSTRUCTIONS

GENERAL

Power is applied from the robot's weapons terminals The 24VDC source switching action will occur only when the fire command is actuated at the robot control panel AND held on for at least three seconds. It will not fire again until power switch is released.

SEQUENCE CONTROL

When the power is applied the unit automatically begins a two second charging cycle. After approximately two seconds the power is removed from the high voltage power supply and the initiator tip is connected to the high voltage capacitors, initiating the shock tube. The unit then goes into a standby mode and <u>cannot be recycled until</u> <u>power is removed</u>. If the user wishes to abort during the two-second cycle, simply release the fire switch and power will removed from the weapon terminals used to power to the RSS unit. The high voltage capacitors will discharge internally and the unit will return to an idle state.

OPERATION VERIFICATION

<u>Prior to loading shock tube</u>, verify that unit is functioning by powering up each circuit with the switch tip in place and armed. A loud 'pop' will be heard, indicating proper operation. For additional verification, a short segment of shock tube (4 inch) may be inserted into tip and fired (please observe safety precautions when performing this test).

The RSS units have visual indicators to indicate when the unit is firing and on which channel. The "FIRING" indicator will illuminate green when power is applied to any

channel. Additionally, one of the CH indicators will illuminate red. The RSS4 has indicators "CH1", "CH2", "CH3", and "CH4". The RSS2 has only the first two of these.

TECH TIP!: Improperly shipped or stored shock tube can have 'dead' spots that will not easily ignite with an electronic initiator. Dangle the Switch Tip on the end of a length of shock tube (approx. 3 feet) and thump the tube to get additional RDX around the ignition point for more reliable results.

TECH TIP!: Remember to store and maintain your shock tube reel <u>on its side</u> with a moisture barrier cap on the end.

TROUBLESHOOTING AND MAINTENANCE

TESTING

Test the Switch Tips prior to insertion of the shock tube for spark. An audible 'pop' should be heard indicating the tip works. If spark is weak or not present, swap tips with one from a known working channel. If subsequent spark is strong, recalibrate the weak tip.

If the tip works on one channel but not the other, verify that +24VDC is present for at least two seconds during firing cycle. If voltage is present, remove Switch Tips and listen for audible relay clicks two seconds apart internally. This will verify that the electronics are receiving power. If relays are operating but no output is present, return the unit to the factory.

SPECIFICATIONS

Safety Approvals	:	Safety tested to military standards. Approved for operational use by all branches of the U.S. military.
Size	:	7.25 x 4.0 x 3.5"
Weight	:	2.5 lbs (RSS-4), 2.2 lbs (RSS-2)
Power Requirements	:	18 ~ 30 VDC, 300 mA (max)
Charge/Fire Time	:	1~2 seconds
Output Firing Pulse Energy	:	2,500 Volts @ 0.8 Joules
Shots per Tip	:	10,000 (typical)
Color	:	Red, white, blue, and slate
Temperature Range	:	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

ESI Tip Operating Instructions and Calibration Procedure



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SHOCK

TUBE

STEP ONE

PLACE CROSS-PIERCING ELECTRODE CONTROL LEVER IN THE SAFE POSITION (AWAY FROM SHOCK TUBE HOLE) *** IMPORTANT *** ALWAYS MOVE PIERCING CONTROL ARM LEVER TO SAFE POSITION <u>BEFORE</u> REMOVING SHOCK TUBE



STEP TWO PUSH SHOCK TUBE THROUGH THE LOADING HOLE UNTIL THE CENTER ELECTRODE IS INSIDE OF THE SHOCK TUBE. DO NOT TWIST THE SHOCK TUBE WHILE INSERTING OR REMOVING. (THIS CAN CHANGE THE CALIBRATION OF THE CENTER ELECTRODE.)

STEP THREE MOVE THE CONTROL ARM LEVER TO THE FIRE POSITION.

CALIBRATION PROCEDURE:

- 1. MOVE CONTROL HANDLE TO SAFE POSITION.
- 2. BACK OFF ADJUSTMENT SCREW 3 OR 4 TURNS.
- 3. MOVE CONTROL HANDLE TO FIRE POSITION.
- 4. INSPECT THE POSITION OF THE CROSS-PIERCING ELECTRODE. WHEN LOOKING FROM THE SIDE, THE CROSS-PIERCING ELECTRODE SHOULD BE STRAIGHT AND NOT HAVE AN UP OR DOWN TILT. WHEN LOOKING FROM THE TOP, IT SHOULD PASS DIRECTLY OVER THE CENTER ELECTRODE.
- 5. SCREW CENTER ELECTRODE IN UNTIL IT TOUCHES CROSS-PIERCING ELECTRODE. *TIP: AN OHM METER CONNECTED TO BANANA PLUGS CAN BE USED TO DETECT ELECTRODE*
- *CONTACT.* 6. BACK OFF 1/3 - 1/2 TURN COUNTER- CLOCKWISE.
- 7. TEST UNIT.
- 8. BACK OFF CENTER ELECTRODE AS NECESSARY TO PREVENT PREMATURE ARCING.

