

TRAUMA F/X[®]

Clinical Response Upper - Resuscitate (CRU-R)

Quick Start Guide

The TraumaFX[®] Clinical Response Upper - Resuscitate (CRU-R) is a ruggedized upper body unit medical trainer that takes realism to the next level by helping trainees learn how to treat and perform interventions on patients suffering from traumatic upper body injuries. The CRU-R trains responders to perform life-saving tasks such as CPR, central line insertion, maintaining a patient's airway, intubation, cricothyroidotomy, intraosseous infusion, needle decompression, IV insertion, blood pressure measurement, and chest tube insertion. The CRU-R is designed for rugged use in realistic training environments. The CRU-R also features articulating shoulders and reinforced silicone arms with realistic range of motion. It can be carried, dragged, and transported in a variety of vehicles and aircraft. The CRU-R can withstand nearly any weather condition, making it ideally suited for Tactical Combat Casualty Care (TCCC) and Combat Lifesaver training courses.

This quick start guide is intended for use as a simplified field guide for those already trained on operating the CRU-R. Please refer to the CRU-R User Guide for in depth guidance on operating the CRU-R Upper torso medical trainer.

1. **Unpack the case**

UPPER UNIT CASE

(Optional accessories where noted - some items may not be included)

CRU-R UPPER BODY



Replaceable Skin Plugs And Components

Please see the User Guide for the full list of replaceable skin plugs and components that accompany the CRU-R unit.

One Pint "Blood Paste" with pre-mixed coagulated blood



One gallon blood mix packets (5)

- User Guide
- Quick Start Guide (this guide)
- Makita Operation Manual



2. **Charge the batteries**

CRU-R and Custom Remote

The CRU-R uses two rechargeable 18v Makita Li-Ion batteries to power the unit, and one 18v Makita Li-ion battery to power the custom remote. Charge the Li-Ion batteries using the Makita charger provided. Refer to the CRU-R User Guide and manufacturer's user manual provided for additional information on charging the batteries.

3. **Insert the batteries**

CRU-R



- The battery compartment of the CRU-R is located at the waist.
- To open the hinged battery compartment door, disengage the 'H-Bracket', and firmly twist the two wire closure pins counterclockwise. The cover plate will open from the top. If the door does not swing open, then apply gentle pressure to open it.
- Insert the two batteries into the battery compartment making sure they firmly lock into their slots with a solid 'click' sound.
- Close the battery compartment door and securely fasten the wire closures by turning clockwise.



Removing the batteries
Press the white button located on each battery to unlock and remove it from the unit.



Transmitter

a. Insert the battery at the back of the unit by sliding the battery into the battery slot until it clicks into place.

4. **Mix liquid blood**



- Fill the blood fill bucket with 1 gallon of clean, potable, cold or warm water. **DO NOT** use hot water.
- Empty contents of 1 blood powder bag per 1 gallon of water into the blood fill container and stir until thoroughly mixed.

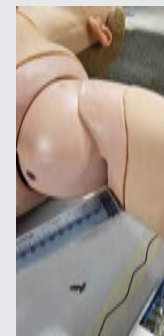
NOTE: The mixed blood is not perishable. Store the mixed blood with the lid on. When used again, simply stir before refilling unit.



CAUTION: Blood mix in powder or liquid form may stain clothes. If clothing comes into contact with blood mix, treat affected area with stain remover and/or laundry detergent within 24 hours for best removal results.

5. **Fill the IV System**

- Attach the Luer adapter to the blood bucket quick disconnect fitting
- Attach the 120ml Luer syringe to the blood bucket adapter and draw 80ml of blood
- Attach the 120ml Luer syringe to the inlet fitting at the left arm shoulder cuff, and dispense the blood into the arm as shown.



6. **Prep Central Line system**

Insert Central Line Skin Plug

- Inject 8ml of Arterial Blood into the arterial fill port with the 10ml syringe and 22ga needle
- Coat the sides of the plug with alcohol or water, and place in the central line cavity, inserting the lateral fitting first, followed by the medial fitting.
- Coat the clavicle piece with alcohol or water, and insert into the medial end of the skin plug, with the engraved LAT and MED face up. These attach magnetically to the clavicle ends.
- Tuck the chest tabs into the skin, and smooth the edges of the skin plug.

Fill the Venous Reservoir

- Attach the Luer adapter to the blood bucket quick disconnect fitting
- Attach the 120ml Luer syringe to the blood bucket adapter and draw 80ml of blood
- Attach the 120ml Luer syringe to the inlet fitting behind the right sholder, and dispense the blood into the shoulder. The top fitting is the inlet

7. **Attach lower unit**

The CRU-R upper unit can be attached to any TraumaFX lower unit (optional). Attach a TraumaFX lower unit in the following manner:



- Fold back the chest fascia over the upper unit to expose the quick connect system.
- Bring upper and lower units together and insert the quick release pins into the bracket holes.
- Pull down the chest fascia to cover the space between the upper and lower units.

8 CRU-R Simulated Training Sites

Subclavian Central Line Site

The CRU-R is equipped with a subclavian central line training site on the right side of the chest. This site is compatible with ultrasound to locate the proper landmarks and establish a central line. Correct internal landmarks are provided, including the clavicle, artery, and vein. The central line skin plugs contain a pressurized artery to provide a spurt of brightly colored blood should the student pierce the artery with the needle. Venous flash is provided constantly throughout the procedure.

The vein contains position sensors to determine the depth of the catheter; when it has been fed far enough into the vein, the first sensor is triggered and the remote control will show that the catheter is placed. If the catheter is placed too deep, the second sensor is activated and the remote control indicates that it has been threaded too far.

The central line skin plugs can be reused several times when repaired with a drop of super glue, and are easily replaceable.

CPR Simulation

The chest of the CRU-R is flexible to allow for the simulation of CPR while in CPR Mode. The student can compress the chest up to 6cm with realistic force, and a sensor determines the depth and frequency of the compression. Both the depth and frequency are shown on the remote control, with a green/red indicator to show whether the student is performing compressions correctly. Overall success rate as a percentage of total compressions is shown for both rate and depth. Bag ventilation can be administered during CPR, and the bagging rate is shown on the remote control screen as well.

Simulated Nasal Airways

The *Simulated Nasal Airways* provide for nasopharyngeal intubation into the nostrils to facilitate opening and maintaining a clear airway. Using the remote, the nasal passageways can be closed to cue for another airway treatment, such as endotracheal intubation or cricothyroidotomy. A sensor in the nasal passageways detects proper NPA placement, and displays this on the remote control screen.

Simulated Oral Airway with Sensors

The *Simulated Oral Airway* cavity with teeth and tongue provides for pharyngeal intubation into the mouth to facilitate opening or maintaining a clear airway for mechanical ventilation. This simulated airway can be used with King LT-D, i-gel, or other esophageal airways. This site also provides trainees with a flexible neck and jaw to perform endotracheal intubation. The throat can be obstructed via the remote to cue for cricothyroidotomy. Teeth sensors also cue when the teeth have been contacted during endotracheal intubation. The CRU-R has sensors in the airway to detect the insertion of airway adjuncts and to respond appropriately. The system can detect if a tube is placed properly in the trachea, in the right mainstem bronchi, or in the esophagus.

DO NOT OVER LUBRICATE! *The oral airway comes prelubricated. Over lubrication can make intubation more difficult.*

Light Sensing Eyes

The eyes of the CRU-R are light sensitive, and will dilate and contract in response to a changing environment. The eyes can also be fixed to normal, dilated or pinpoint, or set to a TBI state with 1 fixed, dilated pupil.

Simulated Blood Pressure Site

Blood pressure can be manually measured on the left arm by auscultation or palpation using a standard blood pressure cuff. The BP is set by the physiology model or can be set by the user.

Simulated Bilateral Needle 'D' (3¼" 14 gauge) Training Sites

The *Simulated Bilateral Needle 'D' Training Sites* provides trainees with palpable landmarks at the ribs to locate the correct needle decompression site and insert the full-size needle to relieve pneumothorax caused by physical trauma to the chest such as a blast injury. .

Simulated Sternal Intraosseous Training Site

The *Simulated Sternal Intraosseous Training Site* allows trainees to palpate the sternal notch for proper placement and insertion of any Intraosseous (I/O) infusion introducer. The I/O training site uses a multi-use, replaceable infusible synthetic manubrium plug to accommodate repeated simulations.

Simulated Cricothyroidotomy Training Site

The *Simulated Cricothyroidotomy Training Site* is a multi-use training site that allows for the palpation of landmarks to properly identify and locate the larynx. Additionally, this site allows trainees to create an incision through the skin and cricothyroid membrane for airway intubation. This site uses replaceable, single or multi-use skin plugs to accommodate repeated simulations.

Simulated Humeral Intraosseous Training Sites

The bilateral Simulated Infusible Humeral Intraosseous Sites allows trainees to insert an IO Infusion Introducer at this location. These sites use multi-use bone and skin plugs.

Simulated IV Insertion Site with Flash Cue

This site is designed to provide trainees with a practice area for IV insertion and is accompanied with a flash cue. The site can be infused, with fluids draining out a port on the wrist.

Simulated Bilateral IM Injection Sites

The humeral IO sites can also be used to simulation intramuscular injections. To use for injections, remove the simulated bone under the skin plug.

Simulated Bilateral Chest Tube Training Sites

The *Simulated Bilateral Chest Tube Training sites* provide trainees with palpable landmarks at the ribs that allow the trainee to locate the correct chest tube insertion site and insert a chest tube to relieve pneumothorax or hemothorax. Once the chest tube is inserted, trainees can practice securing the chest tube with various suturing techniques used to keep the chest tube in place. This site uses a reusable and replaceable chest tube skin plug for repeated simulations.

9 After Use Care and Maintenance

To keep the CRU-R operating as designed, the following preventive maintenance actions must be completed after each training session.

- Empty and rinse out the blood fill bucket with clean water.
- Flush the central line and IV blood systems with clean water prior to storage.
- Ensure the CRU-R and Remote are turned OFF
- Remove and charge batteries

- Wash skin and wounds with water. If stain persists, use a mild detergent and gently rub with a soft, damp cloth. DO NOT vigorously scrub the skin or surface area as this can cause permanent damage to the skin.
- Inspect the CRU-R for small skin cuts and repair if found.
- Inspect the O-ring on the bucket exit valve. Replace if nicks or cuts are present.

10 Safety Instructions

Possible Reactions to Synthetic Blood Mix DO NOT ingest blood paste, dry blood mix or mixed blood. The chemical components may cause skin and eye irritation for some users. Avoid ingestion or inhalation. If eye contact occurs, immediately flush eyes with cold water for 15 minutes. Seek medical attention if irritation occurs. If skin contact occurs and the skin becomes irritated, wash with soap and water.



CAUTION: Blood mix in powder or liquid form may stain clothes. If clothing comes into contact with blood mix, treat affected area with stain remover and/or laundry detergent within 24 hours for best removal results.

Contact Information

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