

# Quick User Guide



**Portable Blood and IV Fluid Warmer  
for Emergency Medical Treatment**

**Warrior**  
**CE certified**

A Quality Product from

**QinFLOW**



**NO MORE COLD BLOOD & FLUIDS**

**QinFlow Ltd.**

## **Warrior Blood and Fluid Warmer Indication for Use**

The **Warrior** device is intended for warming blood, blood products, and intravenous fluids prior to administration. The product is intended to be used by healthcare professionals in hospitals, clinics, and field environments, to help prevent hypothermia.

---

## **Warrior Blood and Fluid Warmer Description**

The **Warrior**, is an in-line, battery powered, lightweight and completely portable blood, blood products and IV fluids warming device that is used to alleviate and prevent hypothermia. The **Warrior** should be positioned along the IV tubing between the blood / fluid source and the patient. The **Warrior** set point temperature is  $38\pm 2^{\circ}\text{C}$  ( $100.4\pm 3.6^{\circ}\text{F}$ ), at flow rates of 2 to  $\sim 200$  ml/minute. The **Warrior** meets the target output temperature even at very low input temperatures; for example, as low as  $4^{\circ}\text{C}$  ( $39.2^{\circ}\text{F}$ ).

---

## **Warrior Blood and Fluid Warmer Warranty Conditions**

The **Warrior** is manufactured by Quality in Flow Ltd. and is warranted to be free from any manufacturer defects. Quality in Flow provides a one year warranty from the date of purchase.

**For support and service information contact:  
support@qinflow.com**

# Warrior Blood and Fluid Warmer

## Package Content

The **Warrior** package contains the following parts:

- [a] One Base Unit (BU)
- [b] One Rechargeable Battery
- [c] One Battery Charger (model Fuyuang FY2552000)
- [d] One Charger Adapter

This Quick User Guide



The **Warrior** is provided in hand carry bag. The bag can contain one additional battery and its top compartment can be used to carry two (2) Disposable Units (DU) or up to four (4) Compact Disposable Units (CDU).



Please be sure to carefully read and review the user instructions document "**Warrior Blood and Fluid Warmer IFU QPORT1700**" prior to using the device.

## Warrior Blood and Fluid Warmer Specifications and Characteristics

Temperature set-point (target temperature)	38°C ± 2°C (100.4°F ± 3.6°F)
Minimum input temperature	4°C (39.2°F)
Flow-Rate	KVO (Keep Vein Open) up to 200 ml/min using a 14G Venflon
Warm-up time from 4°C (39.2°F)	Up to 30 seconds
Warmed volume at ΔT of 33°C and a 150 ml/min flow rate [Input temperature of 4°C (39.2°F)]	Up to 3 Liters (~101 Oz)
Warmed volume at ΔT of 17°C and a 150 ml/min flow rate [Input temperature of 20°C (68°F)]	Up to 5 Liters (169 Oz)
Operation temperature & humidity	5°C and 15% RH to 40°C and 93% RH (41°F and 15% RH to 104°F and 93% RH)
Operating Temperature*	-5°C to 40°C (23°F to 104°F)
Storage and transport conditions	-20°C to 60°C and 93% RH (-4°F to 140°F and 93% RH)
Storage Conditions*	-30°C to 70°C (-22°F to 158°F)
Water and particles ingress rate	IP22

\* In compliance with IEC60601-1-11:2010 section 4.2.2c



Operation outside of the ranges defined above will result in lower outflow temperatures.

# Warrior Blood and Fluid Warmer

## Operating the system in 6 steps

**WARNING:** Follow all of the instructions provided by the manufacturer of the blood / intravenous fluid administration set when using the **Warrior**.

### STEP 1

Insert a fully charged battery into the Base Unit and tighten the side latches.

See page 6 for more details on how to replace the battery during device operation when administering blood or fluids to a patient.

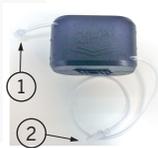
Always use a fully charged battery!

Use only a Fuyuang FY2552000, 120/240 [V], 50-60 Hz battery charger to charge the battery. **Note:** the battery charger adapter shall be attached to the battery in the correct orientation: the charger adapter label in on the **opposite** side of the battery label.



### Warrior Disposable Units

- a) Disposable Unit    b) Compact Disposable Unit



1) Inlet Luer; 2) Outlet Luer

**Note:** the following instruction show the Disposable Unit yet they also apply to the Compact Disposable Unit; the connection of the Compact Disposable Unit to the Base Unit and IV set are identical to the Disposable Unit connections.

### STEP 2

Remove the Disposable Unit / Compact Disposable Unit from the sterile packaging.



### STEP 3

Connect the Base Unit cable to the Disposable Unit / Compact Disposable Unit.



## STEP 4

Remove the Inlet Luer cap from the inlet tube of the Disposable Unit / Compact Disposable Unit (marked with "IN" on the DU casing; the inlet tube connects to the IV set outlet) and connect it to the IV set outlet.



Do not over tighten the Luers! (apply a similar force as applied when connecting the IV tubing to the Venflon).



## STEP 5

Remove the Outlet Luer cap from the outlet end of the IV extension tube (marked as "OUT" on the DU casing; the outlet tube connects to the venflon).

Connect the IV line to the fluid bag and flush the line with intravenous fluid / blood.

Follow the Blood or IV Fluid administration instructions according to the IV / blood manufacturer's administration set and the prevailing health care protocols in your organization from this point forward.



**WARNING:** Always flush the line with intravenous fluid / blood / blood product before administration to patients.



## STEP 6

Turn on the Base Unit using the On/Off switch (on the back of the Base Unit).

The Display will show "Initializing..." and you should hear a beep.

The display (LCD) will indicate the inflow temperature (in brackets) and the outflow temperature as follows: "Tout: outflow temp °C (inflow temperature °C)", for example, 37°C (4°C).



# Warrior Blood and Fluid Warmer

## Battery Replacement During Administration

### STEP 1

Shut off the **Warrior** using the On /Off switch on the back of the Base Unit.



### STEP 2

Remove battery from **Warrior** by releasing the side latches and pulling the battery out.



### STEP 3

Replace the empty battery with a fully charged battery and close the side latches.

Switch On the Base Unit using the On / Off switch on the back of the base unit and continue using the system to warm the blood / fluid.

**Important!** Recharge the Battery after each use and ensure that the battery is fully charged before each use. Store only fully charged batteries. When placed in long storage, charge the batteries every 4-6 months.



**WARNING:** While the **Warrior** is in "Off" position, the blood or fluid continues to flow through the system, although it is not warmed, until the system is turned on, completes initialization and starts warming again.

The Battery is "memory effect" free; therefore, it can be recharged even when it has not been fully discharged.

Battery life is up to 400 charging cycles. Please contact Quality in Flow to purchase a new battery when the battery has reached the end of its life.

# Warrior Blood and Fluid Warmer Battery Indications

Battery indications	Battery Status	Required Action
Note: Battery is getting Low! The LCD blinks a steady beep sound	25-30% capacity	Pay attention, a "Battery Empty" message will follow
Battery Empty	5-10% capacity	The device will continue warming the fluid until the battery is fully depleted. The system will then shut down. See on page 6 for information on how to replace the battery.

## Warrior Blood and Fluid Warmer General Operation Instructions

1. The Base Unit can be located besides the patient in an upright position, or on its back side, during administration of blood and fluids (make sure that the LCD faces up).
2. The Disposable Unit / Compact Disposable Unit can be located besides the patient or hung on a pole / gurney during administration of blood and fluids. Make sure to place the Disposable Unit / Compact Disposable Unit below the fluid / blood bag.
3. Locate the Disposable Unit / Compact Disposable Unit in a secured place to avoid a sudden pull.
4. Keep track of display indications and sound notifications during administration of blood and fluids.
5. Use the "Self-Test" feature to validate proper communication between the Base Unit and the Disposable Unit / Compact Disposable Unit (for example, in case the system is not heating the blood / fluid properly). This is done by pressing on the green pushbutton for 3 seconds.  
The blood or fluid continues to flow through the system in "Self-Test" mode, although it is not warmed until the system completes initialization and starts warming again.
6. After completing the administration of blood / intravenous fluid, make sure that the fluid / blood flow has stopped, and then disconnect the Disposable Unit outlet from intravenous catheter. Dispose the Disposable / Compact Disposable Unit taking all required biohazard precautions.
7. You can administer several IV fluid bags using the same Disposable Unit / Compact Disposable Unit. You do not need to replace the Disposable Unit / Compact Disposable Unit when replacing the fluid or blood bag.
8. Always replace the Disposable Unit / Compact Disposable Unit when replacing a blood IV administration set!

9. The Base Unit does not require any calibration or maintenance.
10. Recharge the Battery after each use and ensure that the battery is fully charged before each use.
11. Store only fully charged batteries.
12. When placed in long storage, charge the batteries every 4-6 months.

## Warrior Blood and Fluid Warmer Warnings



1. Never throw the battery into the trash. The battery contains toxic materials and needs to be disposed of at a designated battery disposable collection point.
2. Do not use the product prior to carefully reading the training materials and instructions for Use.
3. Warming IV fluids/blood at flow rate higher than 200 ml/min (for example by using a pressure infusion bag or fluid pump) may result in output temperature lower than  $38 \pm 2$  °C.
4. Do not use the **Warrior** in an MRI, X-ray, or CT environment.
5. Warming medicines through the **Warrior** was not validated!
6. The **Warrior** may not be modified in any way.

Any unauthorized attempt to access the interior parts of the product will void the product warranty. Any tampering with the product's casing may lead to device malfunction and a safety hazard to the user and/or the patient!

7. Use of the **Warrior**, inconsistent with its instructions, may result in failure of the device and/or injury to the patient.
8.  Do not use the Disposable Unit / Compact Disposable Unit if the sterile package is damaged.
9.  The Disposable Unit / Compact Disposable Unit is for a single use only and shall not be transferred between patients!
10.  Do not re-sterilize the Disposable Unit.
11. Do not use the **Warrior** if there is a display and / or a speaker malfunction.
12. Always flush the line with intravenous blood / fluid before administration to patients!

## Warrior Blood and Fluid Warmer Cleaning Process

1. The **Warrior** Base Unit, battery and battery charger adapter are reusable. Clean the Base Unit and the battery after each use.  
Cleaning should consist of wiping the external covering of the Reusable parts with a damp cloth with Deconex® SOLARSEPT (by Borer Chemie AG) solution.

2. The Disposable Unit is supplied sterile and ready for use.  
If cleaning is required during use, wipe the external covering of the unit with a cloth dampened with water or alcohol (Iso-Propanol / Ethanol).
3. Do not submerge, sterilize, or autoclave the **Warrior** device parts during any cleaning procedure.

## Warrior Blood and Fluid Warmer Notifications and Troubleshooting

Description	LCD Notification	Audio Notification	User Action (if Required)
System Initializing	QiF-01 (VX.X) Is Initializing	Steady beep	Monitor the LCD
System waiting for Disposable Unit connection	System is ready Connect the DU	None	Connect the Disposable Unit / Compact Disposable Unit to the Base Unit using the Connecting Cable
Normal Operation	Heating Tout: XX°C (YY°C) (XX°C is the outflow temperature; YY°C is the inflow temperature)	None	Keep track of the LCD display
Fluid Flow Irregularities	Change in flow XX°C (YY°C)	None	Open the IV roller clamp until the required flow is reached; Look for any IV kinks and release them Replace the IV tubing if necessary.
No display on the LCD although the system is turned on	No display	NA	Check if the On / Off switch is in the "I" position; if it is, replace the battery; if the display still does not work after changing the battery then do not use this unit until it is repaired by Quality in Flow Ltd. or one of its representatives.
Battery energy is at 25-35% capacity	Note: Battery is getting low! the LCD blink	Steady beep	Pay attention, a "Battery Empty" message will follow. You can Mute the audio notification with a short press on the Self-Test/Mute button.
Battery is critically low	Battery Empty Tout: XX°C (YY°C)	Steady beep	Replace the empty battery with a fully charged battery (see Battery Replacement During Administration on page 6). You can mute the audio notification with a short press on the Self Test / Mute button.
Fluid is warmer than 41°C (~106°F)	Fluid is hot! Tout: XX°C (YY°C) the LCD blink	None	"Fluid is Hot" message might appear due to flow irregularities (e.g. block, back flow, large bubbles) or sudden and significant changes in flow rate (e.g. changing from 180 ml/min to 40 ml/min). If none of the above conditions is apparent, turn off the Base Unit and replace the Disposable Unit / Compact Disposable Unit with a new one.
Fluid is warmer than 42°C (~108°F)	Fluid is hot!!! Tout: XX°C (YY°C) the LCD is blinking	Steady beep	You can Mute the audio notification with a short press on the Self-Test/Mute button.
Fluid outflow temperature decreased to 35°C (95°F) or lower, even though it previously reached a temperature above 35°C (95°F)	T-out indication is 35°C (95°F) or below	Short beep	Check if the fluid input temperature is not lower than 4°C (39.2°F). Check battery status. Monitor the fluid temperature on the LCD display.
System Malfunction (HW / SW)	System Error	Steady beep	Make Sure that the Disposable Unit / Compact Disposable Unit is flushed and filled with fluid and restart the system by shutting it off and then on again. If the problem is not resolved shut off the system, replace the Disposable Unit / Compact Disposable Unit with a new one, flush the air out of the Disposable Unit / Compact Disposable Unit, and turn the system back on. If the problem is not resolved contact the manufacturer or its representative.
General Malfunction	*MALFUNCTION!!* Tout: XX°C (YY°C)	Steady beep	



## **Warrior**

Portable Blood and IV Fluids Warmer for use in Medical Emergency treatment.

The **Warrior Blood and Fluid Warmer** is a CE certified, portable, battery operated blood and fluid warmer. It is intended for use in medical emergency treatments.

The **Warrior Blood and Fluid Warmer** is based on an innovative technology (patented) which enables remarkable performance (warming range, battery warming capacity, high flow-rates, ease of operations, accuracy, reliability, and safety).

The **Warrior Blood and Fluid Warmer** is the only portable solution capable of warming fluids to 38°C (100.4°F) from a temperature as low as 4°C (39.2°F) even at high flow rates, while providing unparalleled warming volume per battery capacity.

The **Warrior Blood and Fluid Warmer** operates where others fail. The **Warrior** redefines the requirements of emergency medical treatment for blood and IV fluid warming.

## Contact Details

QinFlow Ltd.

**Address:** 11 Ha'avoda st. Rosh Haayin Israel 4801761

Phone: +972-54-5604361

Mail: [sales@qinflow.com](mailto:sales@qinflow.com)

**Warrior Blood and Fluid Warmer**  
**A Quality Product from**

