



"Spring" – Portable Battery-Operated Water Purification

THE NEED

Infantry troops on urban combat missions carry water in flasks and water tanks. This mode of transport limits the amount of water that can be carried because of its weight and volume. Currently, there are several solutions that can supply water to individual soldiers. These solutions are mostly based on microbiological filtration using nano-filtration, or sterilizing tablets based on chlorine or other available chemicals. These methods are sufficient to handle most microbiological threats but cannot filter out most of the chemical hazards (heavy metals, pesticides etc.), and lack the ability to eliminate small organic molecules that are common to severe poisoning.

On many occasions, troops encounter local water sources, such as water tanks on roofs, wells, and others, which can be an excellent source for drinking water. But in times of conflict these sources can include both chemical and microbiological hazards that were deliberately introduced, making them dangerous for consumption.



"Spring" is a small water purification unit that fits into a backpack and is suitable for a platoon or squadron. The device can produce fresh, pure water from available civilian water sources. The unit can also filter water sources that are frequently found in the field of operation, e.g., agricultural irrigation (usually drain-water), ponds, and rivers. The device can filter 220-240 liters (58-63 gallons) per a single military battery, is small and light-weight, and reduces the constant need to resupply large amounts of water to troops during operations. As the water flows through the "Spring" unit, water quality and system operation are continuously monitored, and the unit is automatically shut down in any case of filtration or system malfunction.

HIGHLIGHTS

- Back-carried water purification system. Treatment of any contaminated or potentially sabotaged non-saline water, for microorganisms, pesticides, heavy metals, etc.
- Several filtration elements built on a multi-barrier principle that ensures high filtration capabilities.
- Production of 220-240 liters (58-63 gallons) of pure water depending on the standard military battery used. Flowrate of 60 liters/hour (15.7 gallons/hour).
- Operated by standard military DC rechargeable battery (2791, BB2590, or equivalent).
- Unique energy recovery technology significantly reduces the required power, allowing long operation on a single battery.
- Automatic validation of water quality (automatic shut-off in case of poor quality).
- Water quality meets TBMED 577 (USA), NATO STANAG 2136.



Spring Operating in the IDF Special Forces Exercise

watergen

GENERAL

1. Pack contains:
 - a. Water purification unit with the ability to pump, filter, and dispense fresh, pure water.
 - b. Prefiltration unit.
 - c. All required tubes and connections.
2. Possible water sources: Water tanks, lakes and rivers, water pipes, agricultural sources.
3. Power supply: Standard military rechargeable DC battery.
4. Weight: (including battery): 12 kg (26.4 lbs).
5. Delivery: back-carried
6. Operator displays: Operation, Main faults, Maintenance
7. Temperature:
 - a. Storage, shipment, not-operational: 5 to 75° C
 - b. Operation: 5 to 55° C
8. Standards: MIL-STD 810 (foot soldier), Water standards as required by TBMED-577 (short-term), STANAG 2136.



Spring in normal operation mode

WATER PURIFICATION

1. Water handling:
 - a. Purification and sterilization – multi-barrier filtration system:
 1. Dirt and debris filter
 2. Reverse osmosis filter
 3. Unique water sterilization filter
 4. Chemical filtration elements
 5. Water mineralization and pH stabilization.
 - b. Drainage of water from the entire system
2. Water treatment capability: 220 - 240 liters (58 - 63 gallons) of water depending on the standard military battery used.
3. Water quality monitoring:
 - a. Unit notifies if the water source is not suitable for filtration.
 - b. Unit notifies if the filtered water is suitable for drinking.
 - c. Unit notifies on error in the filtration system.

MAINTENANCE

1. Filter replacement: Suitable for 3,000 liters (790 gallons)
2. Notification: unit notifies when filter needs replacement.



Spring as part of the IDF Search and Rescue Forces at the aftermath of Typhoon Haiyan



Spring demonstrated to Italian Navy Landing Forces