### 3M™ Ranger™ Blood/Fluid Warming System with Smartheat Technology

**Warming Unit – # 24500**
- **Set point temperature**: 41°C
- **Flow rates**: KVO – 30,000 mL/hr
- **Alarms**: Over temperature primary setpoint = 43°C
  Over temperature secondary setpoint = 46°C
- **Power**: 110 VaC / 220-240 VaC
- **Weight**: 3.3 kg (7.4 lbs)
- **Dimensions**: 19w x 11h x 25d cm (7.5w x 4.5h x 10d in)

**Pressure Infusers – # 90083**
- **Pressure**: 300-350 mmHg maximum dynamic operating pressure
- **Weight**: 7.0 kg (15.5 lbs)
- **Dimensions**: 33w x 43h x 25d cm (13w x 17h x 10d in)
- **Case quantity**: 2 infusors on mounting bracket
- **Use**: with 500 to 1,000 mL solution containers

**Power Pack – # 90031**
- **Power**: 220-240 VAC
- **Pressure Setting**: 300 - 350 mmHg
- **Weight**: 2.7 kg (6 lbs)
- **Dimensions**: 13w x 18h x 25d cm (5w x 7h x 10d in)
- **Case Quantity**: 1 each
- **For use with**: Pressure Infuser (# 90083) and Power Pack (# 90031)

**Off-set IV pole and base – # 90068 / 90069**
- **Height**: Adjustable from 186-279 cm (73.5 to 110 in)
- **Weight**: 15.8 kg (35 lbs)
- **Diameter**: 71cm (28 in)
- **Base**: 5 wheels
- **Units per box**: 1 unit
- **For use with**: Pressure Infuser (# 90083) and Power Pack (# 90031)

**Filter Accessory High Flow Disposable Set* – # 90029**
- To be used as a replacement filter with Ranger high flow disposable sets
- **Priming Volume**: 64 mL
- **Filter**: 150 micron filter

**Cleaning Tool Accessory – # 90030**
- To be used for cleaning surface of Ranger warming unit heater plates
- **Use**: Disposable
- **Case quantity**: 12 cleaning tools/case

*All disposable sets and set accessories:
- Pressure infusion: Up to 300 mmHg maximum dynamic operating pressure
- Material: Latex-free
- **Case quantity**: 10 disposable sets/case
- **Sterile**: EO
- **Use**: Single use only

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**Pediatric/Neonate Disposable Set* – # 24400**
- **Flow rates**: KVO – 6,000 mL/hr
- **Priming volume**: 20 mL
- **Components**: Heat exchanger, bubble trap with air aspiration port, 24 in. patient line

**Pediatric/Neonate Disposable Set* with Fluid Aspiration Port – # 24450**
- **Flow rates**: KVO – 6,000 mL/hr
- **Priming volume**: 20 mL
- **Components**: Heat exchanger, bubble trap with air aspiration port, fluid aspiration port, 24 in. patient line

**Standard Flow Disposable Set* – # 24200**
- **Flow rates**: KVO – 9,000 mL/hr
- **Priming volume**: 39 mL
- **Components**: Heat exchanger, needleless injection port, bubble trap, 30 in. patient line

**Standard Flow Disposable Set with Needleless air aspiration port* – # 24240**
- **Flow rates**: KVO – 9,000 mL/hr
- **Priming volume**: 44 mL
- **Components**: Heat exchanger, needleless injection port, fluid aspiration port, 60 in. patient line

**Filter Accessory High Flow Disposable Set* – # 24355**
- **Flow rates**: KVO – 30,000 mL/hr
- **Priming volume**: 150 mL
- **Components**: Heat exchanger, 2 iV spikes, drip chamber with 150 micron filter, needleless injection ports, auto-venting bubble trap, 60 in. patient line
- **Drip rate**: 20 drips per mL

**High Flow Disposable Set* – # 24370**
- **Flow rates**: KVO – 30,000 mL/hr
- **Priming volume**: 89 mL
- **Components**: Heat exchanger, auto-venting bubble trap, 48 in. patient line

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3M™ Ranger™ Blood/Fluid Warming System with Smartheat Technology

High Performance
Low Maintenance

The 3M™ Ranger™ Blood/Fluid Warming System with Smartheat Technology. One intelligent blood/fluid warmer.
**Paediatric Disposable Set**
- Low Flows
  - Aliquot fluid administration
  - Takes chill off fluids
  - Cost effective
  - Reduces priming volume

**Standard Flow Disposable Set**
- Moderate Flows
  - Responsive to changes in flow rates
  - Able to warm at higher flow rates
  - Cost effective

**High Flow Disposable Set**
- High Flows
  - Auto-venting bubble trap
  - Fluid volume capacity
  - Hassle-free
  - Cost effective

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**Fast**
- Quickly adapts to changes in flow rates: KVO to 30,000 mL/hr.
- Disposable sets slide easily into the warming unit — and they only fit in one direction, so set up is hassle-free.
- Highly conductive aluminium heating plates disperse heat immediately, handling sudden changes in flow rates with ease.
- The Ranger system cleaning tool makes maintenance quick and simple.

**Functional**
- Smartheat technology disperses heat evenly, eliminating potentially dangerous hotspots and overheating of fluids.
- The Ranger system’s software monitors temperature four times each second and adjusts the heat level to maintain a 41°C setpoint. The result: fast, accurate heat control.
- Sophisticated temperature maintenance and monitoring means that alarm conditions in normal operating mode are rare. If the system functions outside of normal temperature range, redundant audible/visible alarms notify users immediately.

**Flexible**
- The Ranger system maintains safe temperatures across the flow path — from stopped flow to 30,000 mL/hr.
- Economical and easy-to-use disposable sets handle the full range of fluid warming needs.
  - Paediatric/Neonate (KVO - 6,000 mL/hr)
  - Standard Flow (KVO - 9,000 mL/hr)
  - High Flow (KVO - 30,000 mL/hr)

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**The Range in the Ranger™ System**
- KVO
  - 30,000 mL/hr
  - Paediatric Disposable Set
    - Low Flows
  - 9,000 mL/hr
    - Standard Flow Disposable Set
      - Moderate Flows
  - 6,000 mL/hr
    - Paediatric Disposable Set

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**No water. No risk of water-related infection**
1 Integrated handle for easy transport
2 Compact, space-saving design
3 Large, easy-to-read temperature display
4 Audible/visible over-and under-temperature alarms
5 Highly conductive aluminium plates for maximum heat transfer and no hotspots
6 Inexpensive, simple-to-use disposable warming sets
7 Convenient over-temperature test function
8 Built-in IV pole clamp for secure hold