This guide is not intended to be comprehensive instructions for the set-up and operation of the infusion pump. For complete pump information, refer to the T34™ Syringe Pump Directions For Use (3rd Edition).

Some screens in this guide may vary depending on the way the pump is set up. They are for reference purposes only and may be different than the information displayed on your system.

Before operating the pump, users should consult the full Directions For Use guide.

If you need assistance with setting up or maintaining the equipment or to report unexpected operation or events, contact the manufacturer or manufacturer’s representative.
Loading Syringe

STEP 1  Manual adjustment of the actuator
- Ensure the barrel clamp arm is down.
- Place the prepared syringe above the pump to visually align the syringe collar to the collar sensor.
- Use the ◀ / ▶ keys (if required), to move the actuator to the correct position for placing the syringe collar and plunger into the matching pump sensor areas.

STEP 2  Syringe loading
- Lift the barrel clamp arm fully and turn the arm 90° (either way).
- Place the syringe collar vertically (long side) into the pump collar slot and the syringe plunger into the pump plunger slot. The syringe should click into position.
- Turn and lower the barrel clamp arm onto the syringe. If barrel clamp arm is not down, the display shows ‘Check Syringe Loaded Correctly’.

If the syringe is not loaded correctly, the display will show ‘Check Plunger Sensor’ or ‘Check Collar Sensor.’

WARNING: Ensure the syringe loaded is appropriate, and that the correct syringe extension set has been selected.

STEP 3  Syringe detection and confirmation
The pump identifies the syringe brand, size and volume by measuring the syringe dimensions from the three sensors.

Check that the syringe brand and size inserted into the pump matches the syringe brand and size displayed, if they match confirm by pressing ▶ key.

WARNING: Ensure the appropriate syringe size and brand have been selected.
Starting a New Infusion

Scenario

- Lock on, default duration 24 hours.
- Infusion required: deliver syringe contents over 24 hours.
- 20ml BD Plastipak syringe.
- Syringe volume after priming is 17.5ml.

A. Prepare syringe

Manually prime the syringe extension set.

**Note:** In Duration mode we recommend using “Prime and Load” and not “Load and Prime”. Please be aware if using Load and Prime instead of Prime and Load sequence, the rate of delivery will be automatically adjusted to compensate for the lost priming volume while maintaining the preset duration. If you wish to maintain the rate, please work in Rate mode.

B. Check the pump

Ensure that the pump is clean, visually intact and appropriate for the intended use.

C. Insert battery

Fit the battery correctly.

D. Power on and observe Pre-Loading

With no syringe in place and barrel clamp arm down, press key until the screen illuminates.

Observe Pre-Loading: automatic actuator movement and screen information.

**WARNING:** keep fingers away from actuator moving parts.

Wait until the Load Syringe prompt displays.
Starting a New Infusion
Continuous

E. Check battery level
Press \[\text{key}\].

Press \[\text{key}\].

F. Load and confirm syringe
Align the syringe to pump syringe fitting sensors.
- Use the \[\text{/} / \text{\(\downarrow\)}\] keys to move the actuator as necessary.
- Fit the syringe into the sensors.

If the syringe size/brand displayed matches the one used, press \[\text{key}\]. (If they do not match, use \[\text{/} / \text{\(\downarrow\)}\] keys)

G. Program the pump
- If prime / purge required, press \[\text{key}\] and follow screen prompts.
- Review the program summary, if correct, press \[\text{key}\].

H. Start infusion
- To start the infusion, press \[\text{key}\].

- When the infusion is in progress, this screen displays:
Monitoring During Infusion

Regular monitoring includes the following checks:
- All connections between the syringe and the syringe extension set are secure.
- There are no kinks in the syringe extension set.
- There are no signs of physical damage to the pump or lockbox.
- The keypad lock is on.
- Infusion is in progress.
- Volume history and battery status are as expected.

To confirm the infusion is in progress:
  a) The pump LED light will intermittently flash green
  b) The LCD screen will display information:

```
Line 1 - infusion time remaining
Line 2 - ml/h infusion rate
Line 3 - alternates between syringe size and brand confirmed and <<< Pump Delivering
```

To check volume history and battery level:

```
Press [ ] key once:

I. POWERING OFF
- Remove keypad lock if necessary and stop the infusion if running by pressing [ ] key.
- Press and hold down the [ ] key until a beep is heard and the Pump switches off.
```

```
Time Remaining 23 : 59
Rate 0.73ml/h
<<< Pump Delivering
```

```
Battery Level
<table>
<thead>
<tr>
<th>Empty</th>
<th>Full</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75%</td>
</tr>
</tbody>
</table>
```

```
Infusion Summary
<table>
<thead>
<tr>
<th>Vtbi</th>
<th>Vi</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>
```

Press [ ] key twice:
### Alerts, Alarms and Troubleshooting

<table>
<thead>
<tr>
<th>Screen prompts</th>
<th>Result/cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keypad Locked</td>
<td>Only the □, ▶ and ◄ keys are accessible.</td>
</tr>
<tr>
<td>Pump Stopped, Press ▶ to Resume</td>
<td>The infusion has been stopped.</td>
</tr>
<tr>
<td>Program Nearly Complete</td>
<td>Alert: Program is about to end / syringe is almost empty.</td>
</tr>
<tr>
<td>Low Battery</td>
<td>Alert: Battery is almost depleted.</td>
</tr>
<tr>
<td>Pump Paused Too Long</td>
<td>Alarm: The pump has been stopped / paused for more than two minutes without any key presses.</td>
</tr>
<tr>
<td>Syringe Empty, Remove Syringe</td>
<td>Alarm: Current infusion program has completed / syringe is empty.</td>
</tr>
<tr>
<td>End Battery</td>
<td>Alarm: Battery will fail imminently.</td>
</tr>
<tr>
<td>Syringe Displaced, Check Syringe</td>
<td>Alarm: One or more of the syringe detection sensors is not detecting.</td>
</tr>
<tr>
<td>Occlusion / Empty Syringe, Check Line</td>
<td>Alarm: Clamped line, occluded or kinked. Actuator has reached the minimum travel position.</td>
</tr>
<tr>
<td>System Error. Press &amp; Hold i+ for Details. If problem persists send pump for service.</td>
<td>Alarm: An internal system error has occurred. Two examples of system failure screen messages are shown here, refer to the pump service manual for a full list of error codes. The user may be prompted to power off and restart, which may rectify the error. If the error recurs, take pump out of use. Press ◄ key to obtain error message, record error code and summary of fault and return pump to designated service centre.</td>
</tr>
<tr>
<td>ERROR Startup MotMov Fail</td>
<td>If problem persists send pump for service.</td>
</tr>
</tbody>
</table>

Program protection and **Resume**:

- Pre-Loading and syringe empty alarm clears a program from the pump memory.
- If the option is available to resume a program, a screen prompt displays.
### Possible actions

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disengage keypad lock if further access required.</td>
</tr>
<tr>
<td>Press ▶ key to Resume the infusion or press □ key to continue stopped state.</td>
</tr>
<tr>
<td>Prepare to change syringe or discontinue pump use.</td>
</tr>
<tr>
<td>Prepare to change battery.</td>
</tr>
<tr>
<td>Press ▶ key to resume the infusion, press □ key to continue pause for another two minutes or power off.</td>
</tr>
<tr>
<td>Prepare to change syringe or discontinue pump use.</td>
</tr>
<tr>
<td>Change battery.</td>
</tr>
<tr>
<td>Check the syringe and re-seat as necessary. Check screen messages for assistance.</td>
</tr>
<tr>
<td>Release the clamp, flush/replace the access device or clear the occlusion.</td>
</tr>
</tbody>
</table>

Examples of system failure screen messages are shown here, refer to the pump service manual for a full list of error codes. The user may be prompted to power off and restart, which may rectify the error. If the error recurs, press ▲ key to obtain error message, record error code and summary of fault and return pump to designated service centre.

**20ml BD Plastipak**  
Select ▲/▼, Press ▶   
If the syringe size/brand displayed matches the one used, press ▶ key.

Press ▶ key to retain the current program (ml/h rate is protected). Press □ key to delete the current program which allows a new infusion to be programmed.
Cleaning and Maintenance

**IMPORTANT!**
- The Manufacturer Recommended Cleaning (MRC) protocol is **NOT intended to replace** local Infection Prevention and Control Policy. The decision about the level of decontamination required depends not only on how the device is used, but also on the risk of the device transmitting infection or acting as a source of infection.
- Best prevention practices against HAI (Hospital Acquired Infections) recommend a 2 steps process: Step 1. Removing unwanted soils from all surfaces with a cleaning agent (pathogens can use soils for harborage limiting accessibility to disinfectant agents). Step 2. Disinfecting the freshly cleaned surfaces.

### MRC PROTOCOL

**INTENT:**
- To preserve pump performance.
- To remove soil, particles and chemical residue that could accumulate over time on pump surface. Soil, particles and chemical residue result from normal use and from the “disinfection protocol” developed by users at point of use.

**INSTRUCTIONS**
- To clean the pump, wipe the external pump surface using a disposable alcohol wipe impregnated with isopropyl alcohol (IPA) 70%, to minimize pump exposure to excessive quantities of liquids.
- Isopropyl alcohol (IPA) is volatile and leaves no residue upon evaporation, therefore surfaces are left dry quickly after wiping.

**FREQUENCY:**
- It is recommended to apply the MRC protocol to the pump after each disinfection sequence as a preventive measure to maintain pump performance and longevity (removal of chemical residue).
- Note: Preventive maintenance also helps to maintain pump performance over time. This should be performed as recommended in the Periodic Maintenance section.
• Turn off the pump before cleaning.
• When fluid ingress is suspected, stop using the pump and request pump verification through maintenance to identify potential need of corrections.

• Immersing the pump into liquid could cause damage to components. Do not soak or immerse any part of the pump or the pump charger into any type of liquid.
• If other chemical cleaning agents are used for the “disinfection protocol / regime”, ensure to follow the manufacturer recommended cleaning to preserve pump performance, after completing the “disinfection protocol / regime”.
• Do not spray or rinse cleaning solutions directly on pump surfaces or in potential liquid retention areas or open ports such as electrical connections.
• Avoid using chemicals that can damage the surfaces of the instrument (for example, chlorinated solvents).
• When using cleaning solutions containing chemicals (such as corrosive agents), do not use concentrated solutions and do not expose surfaces above the recommended dwell time. After application, rinse surfaces with IPA disposable wipes to eliminate chemical residue.
• Do not steam, autoclave, EO (ethylene oxide) sterilize, immerse the pump or pump charger in any type of fluids, or allow fluids to enter the pump case.

Periodic maintenance is recommended every 12 months. Periodic maintenance is designed to help ensure the pump’s accuracy and detect and repair any potential inconsistencies prior to their occurrence in the field. Refer to Direction for Use manual about periodic maintenance.

**IP RATING**

The rating of the pump is IP22. This is the moisture protection rating and indicates the degree of particle and water ingress protection.
Operating and Transport Conditions

System Accuracy

OPERATING AND TRANSPORT CONDITIONS

There is no additional time required for the unit to equilibrate once removed from minimum to maximum storage temperatures. Ensure to operate the pump within the specified operating range.

OPERATING CONDITIONS
Ambient Temperature: +5°C to +40°C
Relative Humidity: 15% to 90%, non-condensing
Ambient Pressure: 70 kPa to 106 kPa

TRANSPORT AND STORAGE CONDITIONS
Temperature: −25°C to +70°C
Relative Humidity: 0% to 90%
Air Pressure: 48 kPa to 110 kPa

SYSTEM ACCURACY
System accuracy of ±5% achieved under nominal conditions, defined as follows:

Flow rates: 1ml/h and 5ml/h.
Tested with syringe extension set model M100-172SB;
Needle: 18 gauge;
Solution Type: Distilled water;
Temperature: 22°C ± 3°C;
Back Pressure: 0 ± 10 mmHg;
Syringe size and brand: BD Plastipak 20ml;
Disposal and Battery

PROPER DISPOSAL
When the time comes to dispose of the pump, accessories or packaging do so in the best way to minimise any negative impact on the environment. You may be able to use special recycling or disposal schemes. To find out about these contact your technical service department or local waste disposal service. Existing national or local regulations concerning waste disposal must take precedence over the above advice.

Used syringe extension sets should be considered bio-hazardous and treated (handled, disposed or processed) as potentially posing significant risks of infection transmission to humans or harming the environment. Please follow any applicable national and institutional guidelines for bio-hazardous materials treatment.

BATTERY
Always use a 9 volt alkaline disposable battery, type 6LR61.

BATTERY OPERATION FOR 9V BATTERY

<table>
<thead>
<tr>
<th>Rate (ml/h)</th>
<th>Approximate battery life</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ml/h</td>
<td>25 hours</td>
</tr>
<tr>
<td>5 ml/h</td>
<td>20 hours</td>
</tr>
</tbody>
</table>