East Lancashire Hospitals NHS Trust
A University Teaching Trust

DIVISIONAL DOCUMENT

	Standard Operating Procedure
DOCUMENT TITLE:	Procedure for setting up and using an ambulatory syringe pump – **3rd Edition or Bodyguard T** **For 2nd edition pump see Procedure for setting up and using an Ambulatory Syringe Pump 2nd Edition. SOP115V1.1**
DOCUMENT NUMBER:	SOP115 V2.1
DOCUMENT REPLACES Which Version	SOP115 V1.0
LEAD DIVISIONAL DIRECTOR DGM	**Deputy Chief Nurse**
AUTHOR(S): Note should not include names	Chair of Syringe pump policy task and finish group

TARGET AUDIENCE:	All healthcare professionals in ELHT setting up, administering, or monitoring medicines being given by an Ambulatory syringe Pump to adults – **3rd edition or Bodyguard T**.
DOCUMENT PURPOSE:	To provide a framework for safe practice and guidance for Registered Nurses on the setting up and use of the ambulatory syringe pump – **3rd edition or Bodyguard T** This is applicable to adult palliative patients in all ELHT settings.

To be read in conjunction with (identify which internal documents)	ELHT/CP22 Version – Policy and Procedure for the Ambulatory Syringe Pump (Palliative Care) C064 Medicine Management Policy SOP for procedure for the administration of subcutaneous PRN medication using a prescribed range of doses for symptoms in the last days of life

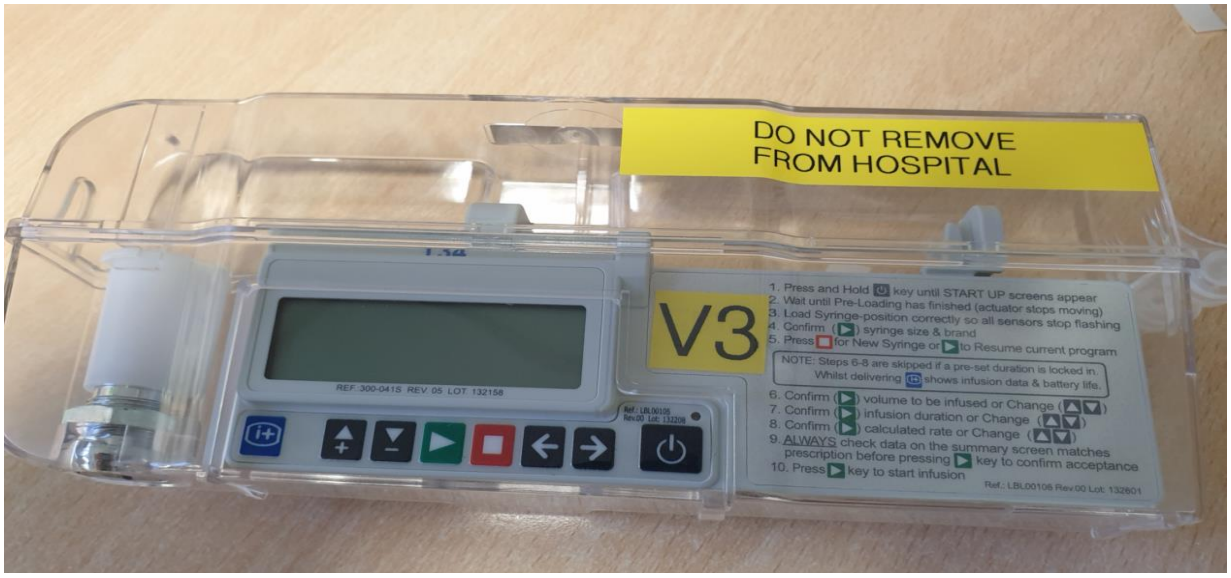
	CONSULTATION	
	Committee/Group	Date
Consultation	No consultation as urgent clinical need to deploy 3rd edition pumps.	
	SPC Directorate Meeting	07/02/24
Approval Committee	Quality and safety review panel	
Ratification date at Policy Council:		
NEXT REVIEW DATE	February 2027	
AMENDMENTS	Amendments made to wording to account for slight differences between Version 3 and Bodyguard T. Changes tracked to show amendments. Changes made regarding the Saf T intima line which have changed from a Y connector to a straight connector.	

SUPPORTING REFERENCES	IC24 Aseptic nontouch technique policy (ANTT) Palliative Care Clinical Practice Summary. Guidance on consensus approaches to managing palliative care symptoms. Lancashire and South Cumbria consensus guidance – 2nd Edition, November 2021 NICE Guideline NG31 “Care of dying adults in the last days of life” Dec 2015 The Royal Marsden Manual of Clinical Nursing Procedure, 9th Edition, Chapter 12.18 – Medication: Subcutaneous injection. Nursing and Midwifery Council (NMC)The Code: standards of conduct, performance and ethics for nurses and midwives (2015) Nursing and Midwifery Council (NMC) Standards for Medicines Management (2007) MHRA alert – All T34 ambulatory syringe pumps – risk of unintended pump shutdown and delay to treatment. Issued 28 March 2018: https://www.gov.uk/drug-device-alerts/all-t34-ambulatory-syringe-pumps-risk-of-unintended-pump-shutdown-and-delay-to-treatment

1. THE CLINICAL PROCEDURE

GUIDELINES FOR THE USE OF AMBULATORY SYRINGE PUMP – 3RD EDITION AND BD BODYGUARD T FOR PALLIATIVE CARE PATIENTS

The 3rd edition pumps are marked with a yellow V3 sticker



Materials & Equipment

- Dressing pack/blue tray
- Ambulatory Syringe Pump with lock box and key
- A Duracell Plus WPA244 battery MUST be used
- 18G x1.5in Blunt Fill Needle with 5 micron filter – only to be used for drawing up medication
- 18G x1.5in Blunt Fill Needle
- BD Saf-T-Intima Straight
- Luer-Lok Syringe 20ml/30ml, where possible use BD Plastipak.
- Closed Luer Access Device
- V-green Extension Line

- Transparent adhesive film dressing
- Sterile skin sanicloth containing 2% chlorhexidine in 70% isopropyl alcohol wipes
- Medicines and diluents
- Syringe Pump label
- Syringe Pump documentation
- Patient information leaflet

Syringes & Final Volume

- A Luer-lok syringe must always be used
- No less than a 20ml Luer-lok syringe should be used
- A 20ml or 30ml, Luer-lok syringe can be used
- The prescriber must prescribe the final volume
- Whichever brand of syringe used
    - 20ml syringes should be made up to a final volume of 17ml
    - 30ml syringes should be made up to a final volume of 22ml

If the final volume exceeds these amounts seek specialist advice from Specialist Palliative Care Team/Pharmacy. The final volume includes all prescribed medicines and diluent.

Batteries

- **Always use a new battery every time a Syringe Pump is commenced.**
- A Duracell Plus WPA244 battery MUST be used
- The average battery life starting at 100% is approx. 50 hours.
- Due to the short battery life, always ensure spares are readily available.
- The battery MUST be changed if there is less than 40% power remaining in community and 10% in hospital.

- Check battery life every 4 hours in hospital and every 12 hours in community
- When syringe pump no longer in use DO NOT remove the battery. Send the pump back immediately to the medical equipment library

Procedure

- Please refer to aseptic non-touch technique policy.

- 2 registered nurses are required to check medicines and set up a Syringe Pump (standard 8 NMC) and must be present for the whole procedure. If 2 registered nurses are not available a risk assessment must be made, and an incident report completed.

- In the District Nursing Service, an Assistant Practitioner or Health Care Assistant can undertake the role as the 2nd checker as long as they have been deemed competent and have undertaken the relevant training and competence. Both must be present for the whole procedures.

- All ampoules/vial bungs must be swabbed with sterile alcohol and left to dry, before opening/piercing.

- Calculate how many millilitres of volume medicines require e.g.

Metoclopramide 30mg	3 x 10mg/2ml ampoules	= 6ml	
			Total = 7ml
Morphine 30mg	1 x 30mg/1ml ampoule	= 1ml	

20ml Syringe	7ml medicine	10ml diluent	= Total Volume 17ml
30ml Syringe	7ml medicine	15ml diluent	= Total Volume 22ml

- Draw up prescribed diluent using a 18G x 1.5in Blunt Fill Needle with 5 micron filter into a 20 or 30ml Luer Lock Syringe.

- Draw medicine one into separate syringe, using 18G x 1.5in Blunt Fill Needle with 5 micron filter wasting any excess, add to the administration syringe using an 18G x1.5in Blunt Fill Needle. Repeat this step until all medicines are added to the syringe.

- Fit a blind hub to the administration syringe and invert several times to mix contents.

- Check the solution for cloudiness or crystallisation, if present destroy solution in usual way, discard syringe and check compatibilities. Re-prepare the syringe with prescribed medication and diluent.

- Complete syringe label, with details of additives, date and time. Attach to the syringe. Ensure syringe calibration markings are not obscured. Ensure that the label does not interfere with the mechanisms of the Syringe Pump.

- Attach Extension Line to BD Saf-T Intima

Administration and monitoring of Ambulatory Syringe Pump Version 3 or BodyGuard T

- An Ambulatory Syringe Pump administration and monitoring form is required for each Syringe Pump prescribed. In hospital this will automatically be in place when a syringe pump has been prescribed on Cerner.

- Each administration and monitoring form can be used for 24 hrs and then a new form must be commenced. In hospital the form will run continuously on Cerner.

- One registered nurse should return within 4 hours of initially starting a Syringe Pump to ensure good symptom control.

- In hospital the Syringe Pump must be checked a minimum of 4hrly.

- In community the Syringe Pump must be checked a minimum of twice daily. Any variance to this must be documented in the patient's notes.

- It is the responsibility of the person completing the administration and monitoring form to ensure the pump is working correctly and running to time.

- If the pump does not appear to be working or running correctly the person who identifies this must either replace the syringe pump or ask for advice.

- The Serial number of Syringe Pump used must be documented on the Ambulatory Syringe Pump administration and monitoring form.

- The syringe must be changed every 24 hours because chemical stability of the medicines cannot be guaranteed after this time.

- When the patient's prescribed medicines are changed the changes should be commenced on the same day.

- It is considered good practice to change the giving set and use a fresh site when there is a change in prescribed medicines.

- Syringe Pumps must not be placed at a level higher than the infusion site, to prevent siphoning of the syringe contents from the pump.

- Avoid placing the syringe pump under pillows or covers so that the alarm can be heard.

- If alarm sounds patients should be advised to contact a healthcare professional immediately and not repeatedly pause the alarm.

- Protect Syringe Pumps from direct sunlight, especially mixtures containing Levomepromazine. Levomepromazine can develop purple discolouration when exposed to light and should be discarded if this occurs.

Priming Lines

- The extension line should be primed prior to loading the syringe onto the device and then connected to the sited Saf-T Intima.

- Once sited and started it will take the syringe pump between 20 and 30 minutes to prime the Saf-T Intima, If the patient is symptomatic then an appropriate PRN medicine should be given at the same time as the pump is started to reduce any delays to symptom control.

- When a site needs changing part way through a 24 hour infusion, unlock Syringe Pump panel, press  **NO/STOP** button. **DO NOT** switch off.

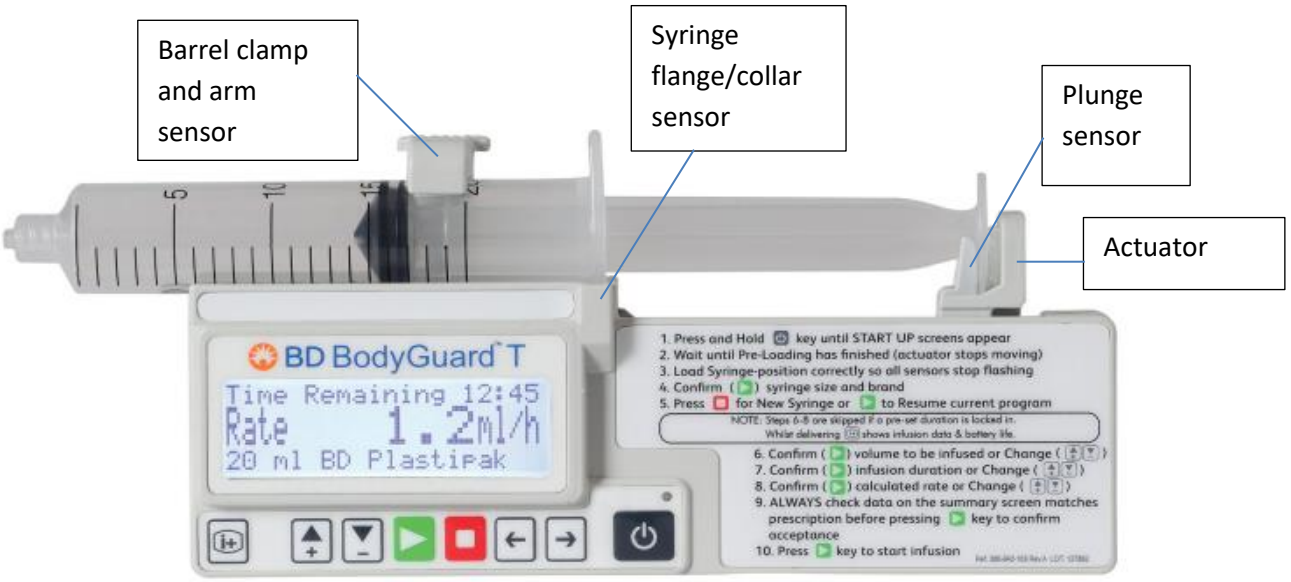
- When changing the site part way through a 24 hour infusion it is only necessary to change the Saf-T Intima and not the extension line.

- Confirm the make of syringe, re-check prescription, and attach line to the patient.

- The display will ask  **YES/START TO RESUME**; do not press  **NO** as this will re- set the 24 hour clock as for a new infusion.

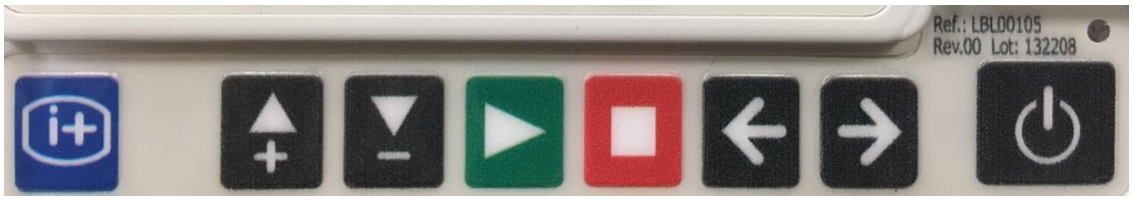
Preparing the Ambulatory Syringe Pump

Feature Recognition Syringe Loading



- Barrel clamp arm sensor - (detects syringe size/width of barrel, secures)
- Syringe flange/collar sensor (detects sewecure loading of syringe collar)
- Plunger sensor (detects secure loading of syringe plunger).
- Actuator.

Feature Recognition Keypad - Note the colour of the keys varies between the Version 3 (picture below) and Bodyguard T (picture above). The functions are exactly the same.



- **"INFO"** **key – access event log/set up (code protected)/battery status.**
- **"Up/Down"** arrow keys – increase/decrease parameters/scroll options.
- **"YES/START"** key – confirms selection/starts infusion.
- **"NO/STOP"** key – step back a screen/stos infusion.
- **"FF"** (forward) key – moves actuator forward/purge facility.
- **"BACK"** key – moves actuator back.
- Key – power on/off

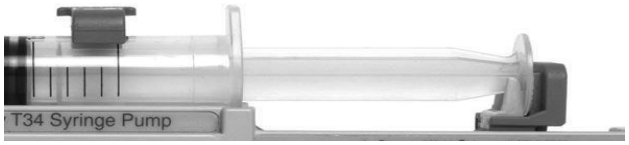
- Install battery 

- Before placing the syringe onto the Ambulatory Syringe Pump. Ensure the barrel clamp arm is down, press and hold the **"ON/OFF"** key until the **"SELF TEST"** screen appears.
- The LCD display will show **"Pre-loading"** and the actuator will start to move. Wait until it stops moving and the syringe sensor detection screen appears.

- During Pre-Loading the actuator always returns to the start position of the last infusion programmed.
- If the actuator is not in the correct position to accommodate the syringe, leave the barrel clamp arm down and use the **"FF"** or **"BACK"** buttons on the keypad to move the actuator. Forward movement of the actuator is limited for safety; therefore repeated presses of the **"FF"** key may be required when moving the actuator forward. Backwards movement is not restricted.
- Check the battery by pressing the **"INFO"** key repeatedly until the battery level appears on the screen and press **"YES"** to confirm. Verify there is sufficient battery power. Discard the battery if there is less than 40% power remaining in community and 10% in hospital. Replace with a new battery to ensure the Syringe Pump will deliver for 24 hours.

- Ensure the giving set is not connected to the patient at this point as an accidental bolus of medication could be delivered.
- Wait for the screen to go back to load the syringe screen.

- Lift the barrel clamp arm.
- Seat the filled syringe collar/flange and plunger so the back of the collar/flange sits against the back of the central slot (ensure correct placement). The syringe collar/flange should be vertical.
- Lower the barrel clamp arm.



- Ensure the syringe label does not interfere with the mechanism of the infusion device e.g. if there is contact with the barrel clamp arm and sensor. The syringe graphic on the screen ceases to flash at each point as the syringe is correctly seated.

- Confirm that the syringe size and brand match the screen message. Press the **"YES"**  key to confirm or scroll up (+)  or down (-) keys to view the other syringe sizes, select correct syringe and size and press the **"YES"**  key to confirm

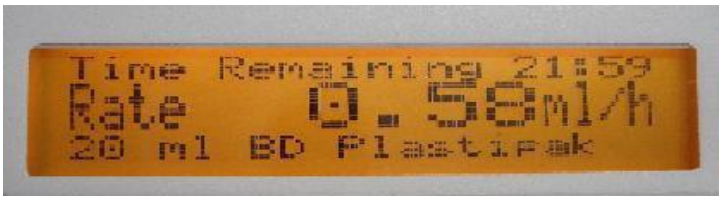
- After the Syringe Confirmation Display the first screen that appears is displayed below

- The Ambulatory Syringe Pump calculates and displays the deliverable volume, the duration of the infusion (24 hours) and the rate of the infusion (ml per hour). Press the **"YES"** ▶ key to confirm the details. The display screen prompts **"Start Infusion?"**

- Cleanse the area of skin and allow to dry.
- Grasp skin firmly and insert infusion set at a 45° angle. Release the skin and lie the wings against the skin securing with a sterile transparent dressing.
- Start the infusion by pressing the **"YES"** ▶ key.
- When the Ambulatory Syringe Pump is running the screen displays
    - time remaining for current infusion
    - the infusion rate displayed in mLs/hour
    - alternates between syringe size and brand and also displays pump delivering

      ««"Pump Delivering"

    - The light status indicator flashes **green**



- The Ambulatory Syringe Pump allows all users to lock the operation of the keypad during infusion. This function should be routinely used to prevent tampering with the device.

- To activate the keypad lock when the pump is infusing press and hold the **"INFO"** key until a chart is displayed showing a 'progress' bar moving from left to right.

- Hold the key until the bar has moved completely across the screen and a beep is heard to confirm the lock has been activated.
- The **"STOP/NO"** and **"START/YES"** and **"INFO"** keys are still active.
- To turn off the lock, repeat the above procedure. The bar will now move from right (lock) to left (lock) and a beep will be heard.
- Complete all relevant documentation.

The following should be observed at each visit.

- Site viability.

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- Volume in syringe reducing at expected rate
- Any crystallisation/precipitation present.
- Light is flashing .

Discontinuing a Syringe Pump

- To avoid accidental bolus dose of medicines the infusion line must be disconnected from the syringe before it is removed from the Syringe Pump.

Temporary interruption of infusion

- Press **"STOP"**  , press and hold **"OFF"**  button until a beep is heard. The screen will go blank.
- Do not remove syringe from the Syringe Pump.
- Disconnect the line from the syringe and cap the end of the line and syringe tip.
- Record on the monitoring chart, the length of time the infusion is stopped for.

Resuming the infusion

- Check that the prescription, syringe label and patient details match, to ensure that this is the correct syringe for this patient.
- Remove the cap and reconnect the line to the syringe on the Syringe Pump.
- Press and hold the **"ON"**  button until a beep is heard. The screen will request confirmation of syringe size and syringe brand.
- Press **"YES"**  to resume. The screen will display "Remaining volume, duration and rate of infusion". Press **"YES"**  to confirm.
- Do **not** press **NO**  for new programme as this will reset the pump to deliver the existing syringe over the next twenty four hours.

When a patient dies

- Press **"INFO"** and record the date, time and amount of solution remaining to be infused (in mLs).
- Stop the Syringe Pump and switch off
- Do not remove Syringe Pump until death has been verified.

Trouble Shooting

Syringe becomes dislodged

- The alarm will sound & the infusion light will turn **red**.
- "Check Syringe Loaded Correctly" window will be displayed.
- Replace syringe onto the Syringe Pump.

- The next screen will request confirmation of syringe size and syringe brand.
- Press **"YES"** if correct.
- The screen will display
- Press **"YES"** to resume previous programme.

WARNING – If you press **"NO"**, the pump interprets this as a completely new 24 hour period and the remaining contents of the syringe would be delivered over the next 24 hours from

confirming **"Start Infusion"**. The patient would not therefore receive the prescribed dose. If **"NO"**  has been pressed in error, discard the remainder of the syringe contents, and prepare and set up a new syringe.

- The screen will display "Remaining volume, duration and rate of infusion".
- Press **"YES"**  to confirm if this is correct prescription.
- Screen will display "Start Infusion".
- Press **"YES"**  to confirm.

Ambulatory Syringe Pump Alarm Conditions

When the Syringe Pump detects a problem four things occur:

- The infusion stops.
- An audible alarm is activated.
- A message appears on the display screen indicating the cause of the alarm.
- The Infusion Light Status Indicator turns **red**.

The pump will not start

Problem	Solution
No battery present	Fit a battery
Battery inserted incorrectly	Re-align battery terminals
Battery is depleted/very low	Fit a new battery
Pump is faulty	Service required

Infusion Running Too Fast

- If over-infusion occurs, stop infusion, check condition of patient and seek medical advice.
- Check rate setting for accuracy.
- Check for disconnection of line or needle.
- Check syringe securely attached to pump.
- Check box is locked & no tampering has occurred.
- Check no air present in syringe.

  If Syringe Pump could be faulty, return to Electronics & Biomedical Engineering

  Department. (EBME)

- If safe to do so (following advice) begin process of setting up a new syringe pump, using alternative site.
- Complete IR1

Infusion Running Too Slow

- Check Patient, seek medical advice if required. Has symptom control been lost, does patient require PRN medication?
- Check the Syringe Pump light is **GREEN** and flashing.
- Check the battery level.
- Check the rate setting is correct.
- Check the correct syringe brand or size has been programmed.
- Check that syringe is inserted correctly into Syringe Pump.
- Check if Syringe Pump has been stopped and re-started for any reason.
- Check contents of syringe/line is there any evidence of crystallisation/kinking of tubing?
- Check needle site if necessary.
- Consider further dilution of medicines to minimise irritation by setting up a fresh syringe.
- If Syringe Pump continues to run through too slowly, change entire pump and return to Electronics & Biomedical Engineering Department. (EBME).
- Check rate of infusion at regular intervals.
- Complete IR1.

The Pump has stopped before emptying the syringe

- Check battery has not exhausted. Fit a new battery, turn pump on, confirm syringe size and brand, select **"Resume"** to continue infusion.

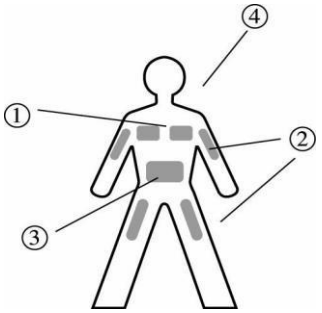
WARNING – If you press **"NO"**,  the pump interprets this as a completely new 24 hour period and the remaining contents of the syringe would be delivered over the next 24 hours from  confirming **"Start Infusion"**. The patient would not

therefore receive the prescribed dose. If **"NO"** has been pressed in error, discard the remainder of the syringe contents, and prepare and set up a new syringe.

- Trapped/kinked infusion line. Free line or kink & resume infusion if appropriate.

Siting the Infusion

If possible discuss with the patient the preferred infusion site.



Sites of choice include:

- Anterior aspect of upper arms & thighs (2)
- Anterior Abdominal Wall (3)
- Area over scapula (in confused or disorientated patients (4)
- Anterior Chest Wall (1)

Sites not to be used

- Areas of inflammation
- Areas of any broken skin
- Bony prominences
- Irradiated areas
- Sites of tumour
- Sites of infection
- Skin folds or lymphoedema.

Avoid anterior chest wall in cachexic patients.

Guidelines for subcutaneous siting of the Saf-T Intima

BD Saf-T-Intima™ Straight

For Subcutaneous infusion therapy

Points to practice

Before you start

Decontaminate hands and prep the skin of patient as per local policy and guidelines.

Preparation

Hold as shown and rotate the safety shield to loosen the needle.

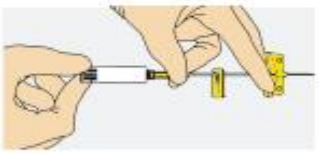
Check if the needle bevel is facing up and that the catheter is not over the bevel before insertion.

Insertion

Grasp the textured sides of wings and bring them together, pinching firmly.

Using thumb and index finger gently pinch the skin around selected site to identify the subcutaneous tissue.

Insert the full length of the catheter and needle through the skin, angle dependent on patient's skin structure.



Needle Removal

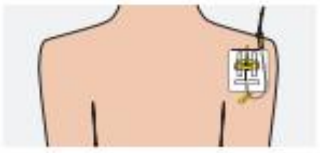
Lay the wings flat on the skin surface and hold firmly in place. Then pull the safety shield in a straight, continuous motion until the safety shield fully separates and activates the safety system.

Disposal

Discard the needle immediately in a sharps container.

Stabilisation

Secure the catheter and apply a sterile dressing per local policy. Attach needle free device as per local policy. Connect infusion line as needed.



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If site irritation occurs

- Change site, using a new infusion set, at least 3cm away from original site.
- Review medication in syringe (cyclizine & levomepromazine commonest causes).
- Use a larger syringe therefore increasing volume of diluent.
- For problematic site reactions, contact Specialist Palliative Care Team for advice.
- Sites may need to be changed every 3-4 days. Frequency of re-siting will in many cases be dictated by the onset of site reactions.
- To detect problems with the infusion site it should be checked a minimum of twice daily, any variance to this practice must be recorded in the patient's records.

Maintenance

- Syringe Pumps should be cleaned after each patient using a disposable cloth, dampened with mild detergent. Do **NOT** use alcohol wipes.
- Syringe Pumps must be calibrated every 12 months by each service's engineering department.
- A recording system must be in place which clearly identifies the date, Syringe Pump number and person who calibrated the pump.
- Sticking labels to the actual pump is not recommended as this can cause problems with cleaning. Only maintenance labels are acceptable which clearly identify when last serviced.
- Ensure syringe pump is sent back to the medical equipment library immediately following use. **DO NOT** remove the battery.

Transfer of patients out of hospital

If a patient moves location with a syringe pump in place it must be returned to its original location.

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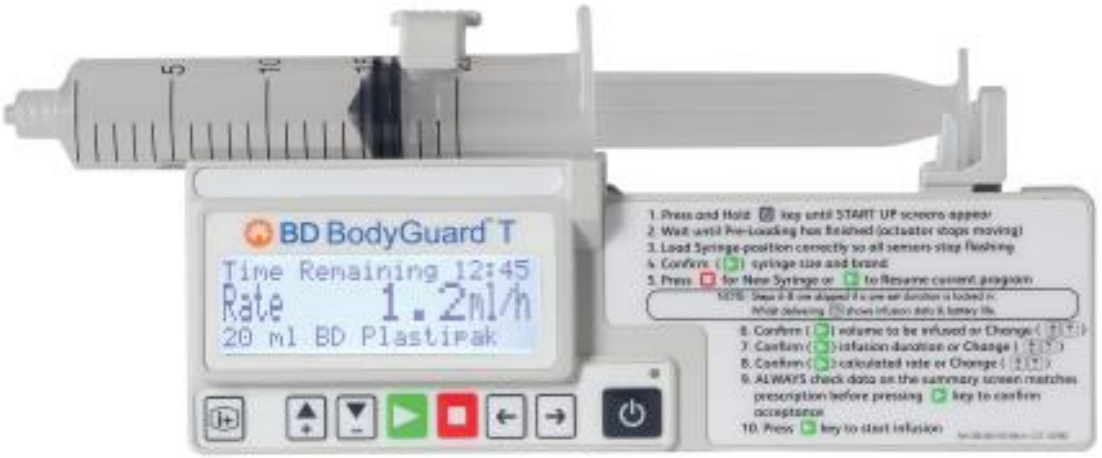

BD BodyGuard™ T Syringe Pump

Evolution from CME T34™ Ambulatory syringe driver

The intent of this document is to explain evolutions from CME T34™, CME T34™ 3rd Edition to the New BD BodyGuard™ T

BD BodyGuard™ T key changes versus CME T34TM™ include:

- Pump name to BD BodyGuard™ T
- BD Branded labeling
- Reference number: 999-103BDEN for English 999-103BDSE for Swedish
- New packaging that include pump, DFU, QRG
- Removal of the patient guide
- Battery life enhancement
- Extra level of security for Bolus enabling function
- Near End of Infusion alarm activated 15 min prior the end of infusion
- Removal of KVO function

Alarms

BD BodyGuard™ T syringe pump - alarm tones and priorities

Description	Alarm Type	Audio Signal as per 60601-1-8	Visual Signal as per 60601-1-8
Down occlusion End battery End of infusion Syringe displaced during infusion Restart pump Switch off and on DBOR XX	**High Priority Alarm** Requires immediate user response	**High Priority** Volume min. 45 dBA appox.	**RED flashing visual** **Operation LED flashes RED**
Pump paused too long Low battery Near end	**Low Priority Alarm** Requires user awareness	**Low Priority** **2 or 3 pulses** Volume min. 45 dBA appox.	**YELLOW solid visual** **Operation LED solid YELLOW**
Bolus started/completed Keypad lock/unlock Syringe plunger at the limit of travel Syringe loaded Purge started/end Power on/off Infusion started/resumed/stopped by user	**Information Signal** Provides information that may or may not require actions from clinicians	**1 or 2 pulses**	**No visual**
Service interval alert			
9V battery power failure	Backup alarm	**Buzzer**	**No visual**
Alarm output volum failure	Backup alarm	**Buzzer**	**RED flashing visual** **Operation LED flashes RED**

Main visual changes

Default Syringe Brands Configured for Use

Manufacturer	Syringe Sizes (ml) T34™ 2nd Edition							Syringe Sizes (ml) T34™ 3rd Edition and BD BodyGuard™ T						
BD Plastipak	-	3	5	10	20	30	50	-	3	5	10	20	30	50
Braun Omnifix	2	-	5	10	20	30	50	2	-	5	10	20	30	50
Monoject	-	-	6	12	20	35	50	-	3	6	12	20	35	-
Codan/Once	2.5	-	5	10	20	30	50	-	-	-	10	20	30	50
Terumo	-	-	5	10	20	30	50	-	-	5	10	20	30	50
Nipro	-	-	-	-	-	-	-	-	-	5	10	20	30	50

It is possible to disable default syringes from memory. This procedure is not detailed in the DFU as it should only be undertaken by trained, certified service centres or biomedical engineers. Please consult a biomed engineer or your local T34™/BD BodyGuard™ T syringe pump supplier should this need arise.

Category	3rd Edition versus 2nd edition	BD BodyGuard™ T versus CME T34™
Battery life	Battery life update: 25h @ 1ml/h 20h @ 5ml/h Always check battery power prior to each infusion	Battery life update: 50h @ 1ml/h 35h @ 5ml/h Always check battery power prior to each infusion
Time to alarm before end of infusion	Fixed to 3 min before end of infusion	Fixed to 15 min before end of infusion
Low battery alarm before end of battery	Activated hours before end of battery alarm (depending on battery brand)	Enhanced to at least 30 min before end of battery alarm (depending on battery brand)
Epidural indication - intended use	Intended use removed	Intended use removed
Immunoglobulins, biosimilar - intended use	Intended use updated to include	Intended use updated to include
Minimum flow rate	Range updated to 0.1-650ml/h	Range updated to 0.1-650ml/h
Flow rate increments	Range updated to: 0.1–10 ml/h in 0.01 ml/h increments 10–29.9 ml/h in 0.1 ml/h increments 30–49.5 ml/h in 0.5 ml/h increments 50–299 ml/h in 1 ml/h increments 300–650 ml/h in 5 ml/h increments.	Range updated to: 0.1–10 ml/h in 0.01 ml/h increments 10–29.9 ml/h in 0.1 ml/h increments 30–49.5 ml/h in 0.5 ml/h increments 50–299 ml/h in 1 ml/h increments 300–650 ml/h in 5 ml/h increments.
Bolus function	Updated to include new function	Adding 1 level of security by adding a enable/disable option in technician menu
Minimum occlusion pressure	Updated from 100mmHg to 200mmHg	100mmHg to 200mmHg
Fluid ingress - classification	IP22	IP22
Weight	Updated from 210g to 230g	230g
New connectors - battery	Update to rear assembly	Update to rear assembly
Cover labels and branding	Update to CME labels	Update to BD BodyGuard™ T labels
Rear label	Updated to comply with standards	Updated to comply with standards
KVO Rate Operation	Update to range from 2.0 ml/h to 5.0 ml/h	KVO option removed
Rear drainage	New design feature to avoid fluid accumulation	New design feature to avoid fluid accumulation
GTIN barcode labels	Updated to comply to GTIN standard	Updated to comply to GTIN standard
Packaging		New box contains pump, direction for use and quick reference guide

Once Updates

Continues overleaf

Technical updates

Category	3rd Edition versus 2nd edition	BD BodyGuard™ T versus CME T34™
Software	Update to software	Update to software
Add primary sound self-test into boot-up process	Update to software	Update to software
Update BD BodyComm™ software for 3rd edition pump software	BD BodyComm™ v3.0 & later	BD BodyComm™ v3.2 & later
Service interval alert added (1-year period)	New default at 12 months - can be switched off in Tech. mode	New default at 12 months - can be switched off in Tech. mode
Reduce safe stop current threshold and use this threshold during travel calibration ("Pinch Hazard")	New limits	New limits
Date input order changed	Updated to date: year, month, day	Updated to date: year, month, day
RTC battery changed	Updated from disposable battery to rechargeable 3V battery	Updated from disposable battery to rechargeable 3V battery
RTC battery failure	Need to update time and date under 'Change Set Up', then to reset service due date under Tech mode.	Can update date and time when turning on the pump
Add microphone test and threshold	New alarm test during startup	New alarm test during startup
Add backup alarm test into Tech. mode	New test function in 3rd edition	New test function in 3rd edition
Add LEDs test into Tech. mode	New test function in 3rd edition	New test function in 3rd edition
Add microphone level calibration into Tech. mode	New feature in 3rd edition	New feature in 3rd edition
Keypad LED yellow colour	LED colour update from red and green to red, yellow and green	LED colour update from red and green to red, yellow and green
Part differences - hardware	Update included in TSM	Update included in TSM
Battery indication (vs voltage) was changed	Changes to battery measurement method in 3rd Edition	Battery gauge accuracy enhancement
Pressing on/off or stop key disabled the alarm	Update 3rd edition pump alarms if 9V battery is removed	Update 3rd edition pump alarms if 9V battery is removed
Bolus option	In Clinician menu	Adding 1 level of security by adding a enable/disable option in technician menu
Pump master	N/A	Allows software update via the pump serial port

FOR ADVICE AND SUPPORT

Please call the Hospital Specialist Palliative Care Team on:

01254 732652 or 82652 seven days per week

08.30am-16.30pm

Please call the Community Specialist Palliative Care Team on:

01254 736326 or 86326 seven days per week

08.30am-16.30pm

Or the Professional Out of Hours 24 hour helpline on 07730639399/01254 96586