



Astek  
INNOVATIONS

Innovators in Dental Product Design,  
Development and Manufacture

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Introducing  
a Local Anaesthetic Syringe  
designed for Maximum Safety



# The InSafe Local Anaesthetic Syringe





# The User Friendly Local Anaesthetic Syringe





When not in Use the Needle is shielded by a Protective Sheath

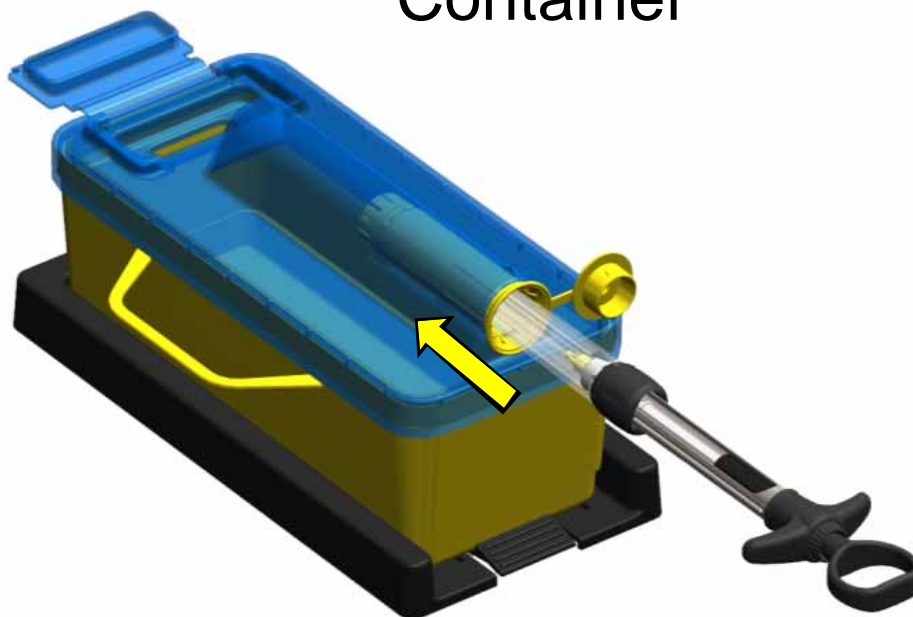




After Use the Needle is removed  
in a Specially Designed Sharps  
Container

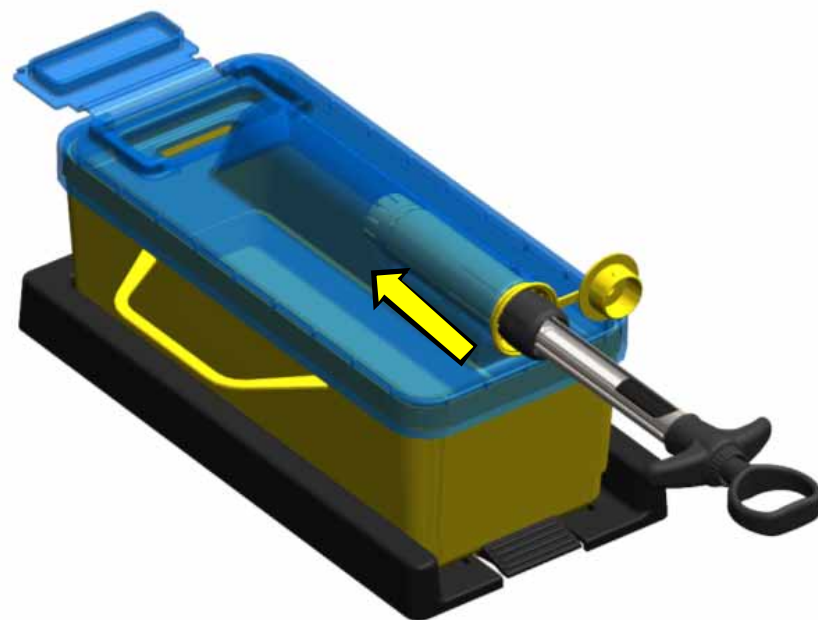


Insert the Syringe into the Sharps Container



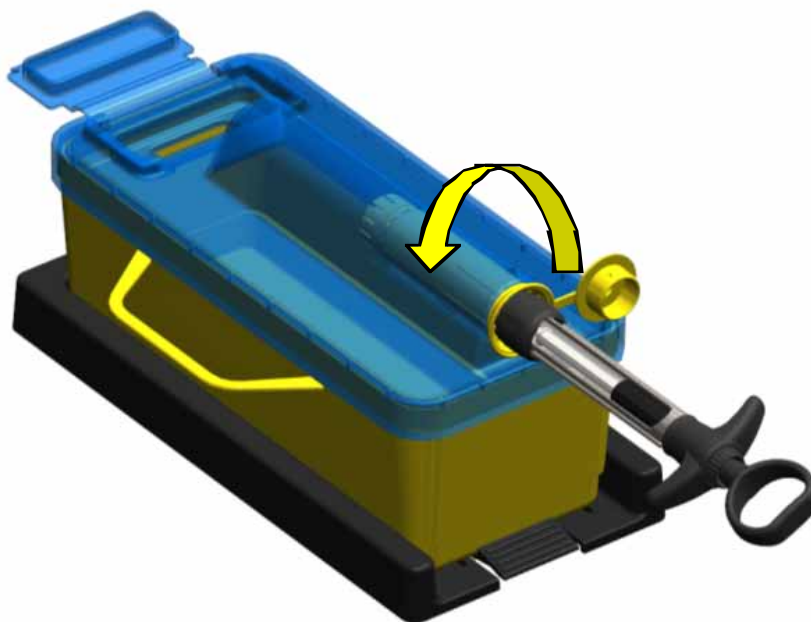


Push inwards to the Stop Position



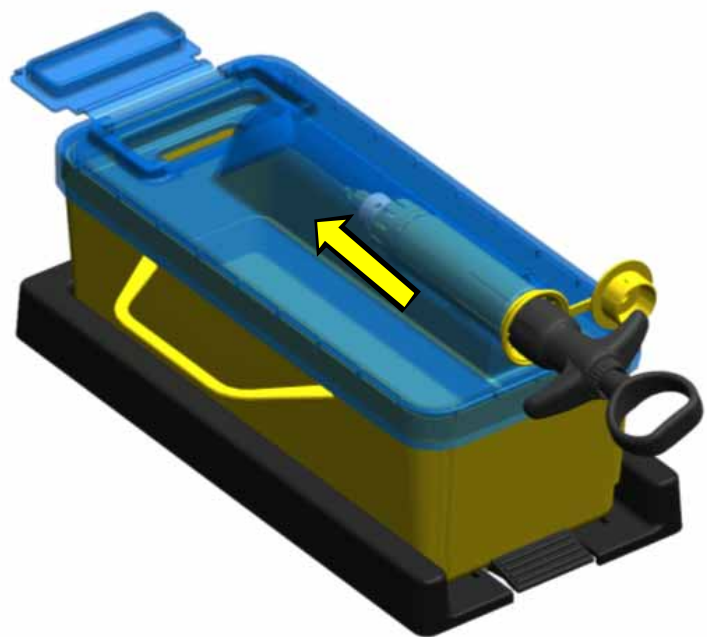


Turn the Syringe 30° Anti-clockwise



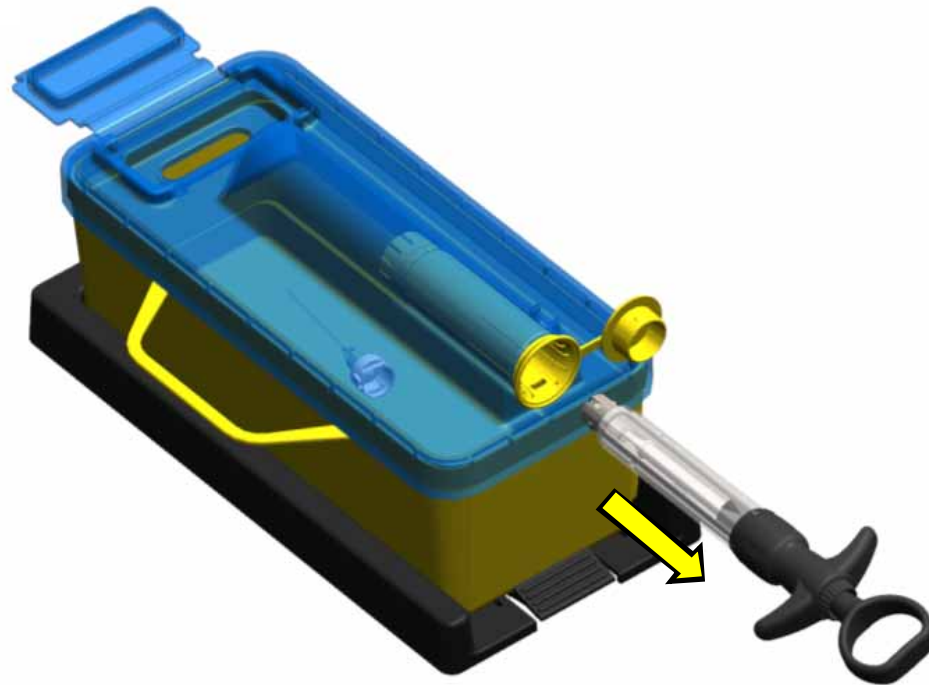


Push the Syringe Fully Home





Grip syringe T handle  
and pull back to remove Needle





## The Incidence and Effects of Needle Stick Injury

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- ❑ Estimated Number of Needle Stick Injuries per Year in the National Health Service in the UK.

**100,000**

(Royal College of Nurses , [www.needlestickforum.net](http://www.needlestickforum.net))

- ❑ Studies Report that up to 56% of Dentists suffer at least one Needle-stick Injury per Year.

(Felix DH et al. 1994, [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov), Br Dent J. 1994 Mar 5;176(5):180-4.)



## The Incidence and Effects of Needle Stick Injury

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- ❑ One Third of all reported Sharps Injuries in  
Dental Practice  
are due to the Use of Non-disposable Syringes,  
Most Injuries occur during the Removal and  
Disposal of Needles.  
(Zakrzewska JM et al. 2001, Br Dent J. 2001 Jan 27;190: 88-92.)
  
- ❑ The Vast Majority of Injuries occur after the  
Injection has been administered  
(Safer Needles Network 2006, [www.needlestickforum.net](http://www.needlestickforum.net))



## The Incidence and Effects of Needle Stick Injury

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- Transmission Rates after a Needle-Stick Injury  
from an Infected Patient

AIDS/HIV



## The Incidence and Effects of Needle Stick Injury

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- ❑ Transmission Rates after a Needle-Stick Injury  
from an Infected Patient

AIDS/HIV      1 in 300



## The Incidence and Effects of Needle Stick Injury

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### Transmission Rates after a Needle-Stick Injury from an Infected Patient

AIDS/HIV      1 in 300

Hepatitis B



## The Incidence and Effects of Needle Stick Injury

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### Transmission Rates after a Needle-Stick Injury from an Infected Patient

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### Transmission Rates after a Needle-Stick Injury from an Infected Patient

AIDS/HIV      1 in 300

Hepatitis B    1 in 30

Hepatitis C



## The Incidence and Effects of Needle Stick Injury

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### Transmission Rates after a Needle-Stick Injury from an Infected Patient

AIDS/HIV      1 in 300

Hepatitis B    1 in 30

Hepatitis C    1 in 3



## The Incidence and Effects of Needle Stick Injury

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### Transmission Rates after a Needle-Stick Injury from an Infected Patient

AIDS/HIV      1 in 300

Hepatitis B    1 in 30

Hepatitis C    1 in 3

(Safer Needles Network 2006, [www.needlestickforum.net](http://www.needlestickforum.net))



## The Incidence and Effects of Needle Stick Injury

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□ USA:

8 million Healthcare Workers in the US

([www.healthandsafety.co.uk/NIOSHNeedlestick.html](http://www.healthandsafety.co.uk/NIOSHNeedlestick.html))



## The Incidence and Effects of Needle Stick Injury

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### □ USA:

8 million Healthcare Workers in the US  
600,000-800,000 Injuries per Year

([www.healthandsafety.co.uk/NIOSHNeedlestick.html](http://www.healthandsafety.co.uk/NIOSHNeedlestick.html))



## The Incidence and Effects of Needle Stick Injury

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### □ USA:

8 million Healthcare Workers in the US  
600,000-800,000 Injuries per Year  
1000 Healthcare Workers diagnosed  
with HIV, Hep B or C as a Result

([www.healthandsafety.co.uk/NIOSHNeedlestick.html](http://www.healthandsafety.co.uk/NIOSHNeedlestick.html))



## The Incidence and Effects of Needle Stick Injury

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- Cost of Diagnosis: £6526 (assumes *no* infection)  
([www.jr2.ox.ac.uk/bandolier/booth/needlestick/dentlond.html](http://www.jr2.ox.ac.uk/bandolier/booth/needlestick/dentlond.html))
- Mental Anxiety waiting for the Diagnosis



## Risks Factors

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- Dentists often reuse the Syringe on the Same Patient to administer Additional Doses of Anaesthetic.
- The Syringe is passed between Dentist and Nurse (often repeatedly).
- The Syringe Body is *not* disposable and requires dismantling at the End of the Visit.



## Risks Factors

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- Risk of Legal Action by a Dental Assistant if Best Practice not followed  
Dental Assistants suffer Higher Rate of Injury
- Increasing Regulatory Pressures.
- There is currently no System on the Market that feels like the Traditional Syringe that Dentists are accustomed to which offers Complete and Full Protection from start to finish of the Whole Process.**



## Design Objectives

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1. To Use existing Screw-on Needles
2. To Use existing Anaesthetic Cartridges (1.8 & 2.2 ml)
2. To have Aspirating or Non-aspirating Facility
3. To enable the Cartridge End of Needle to be seen  
if Blood is Aspirated



## The Syringe End of Needle

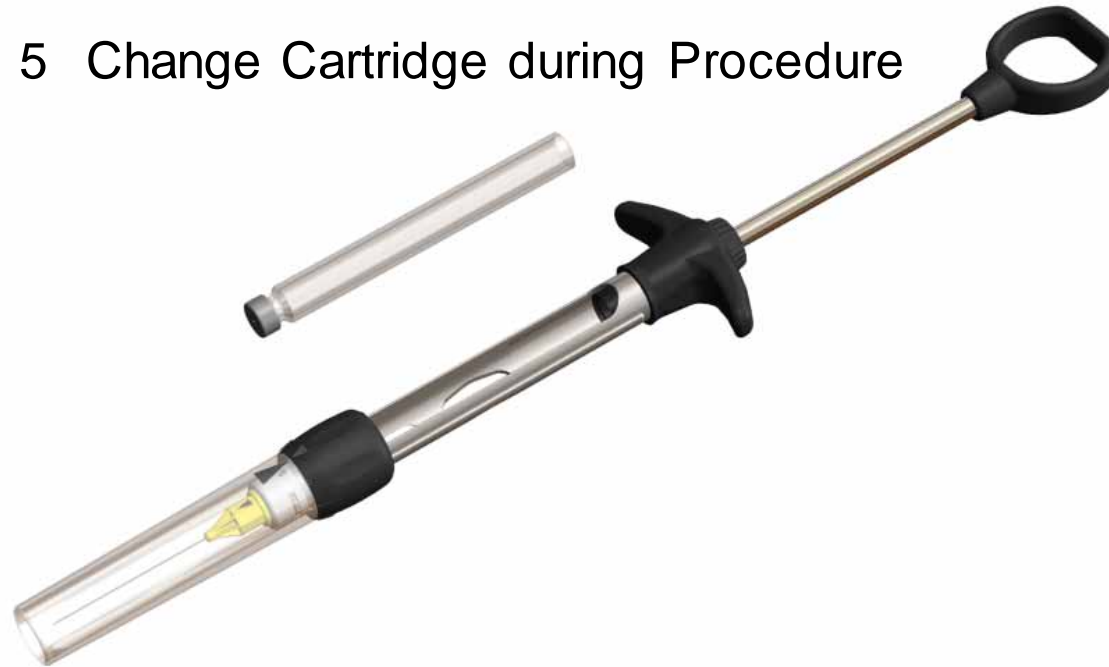




## Design Objectives

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### 5 Change Cartridge during Procedure

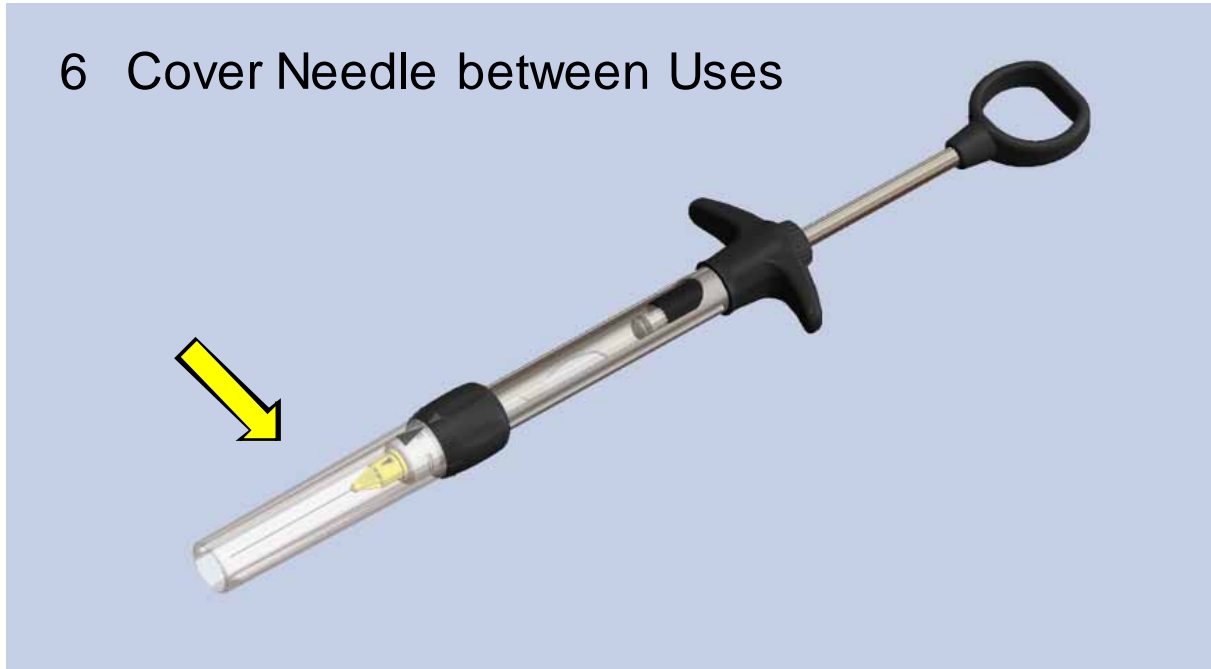




## Design Objectives

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### 6 Cover Needle between Uses





## Design Objectives

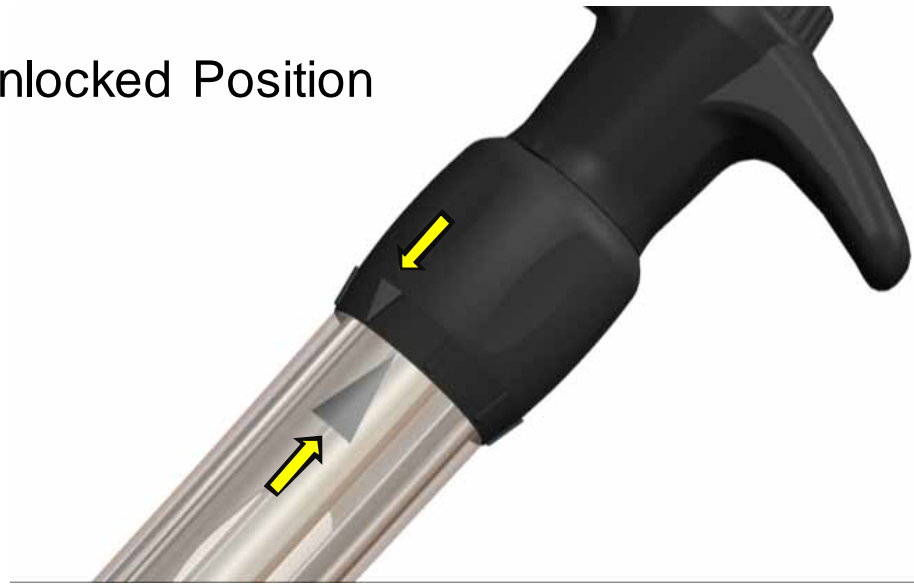
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7 Needle Cover Device to be Positively Locked



# The InSafe Syringe

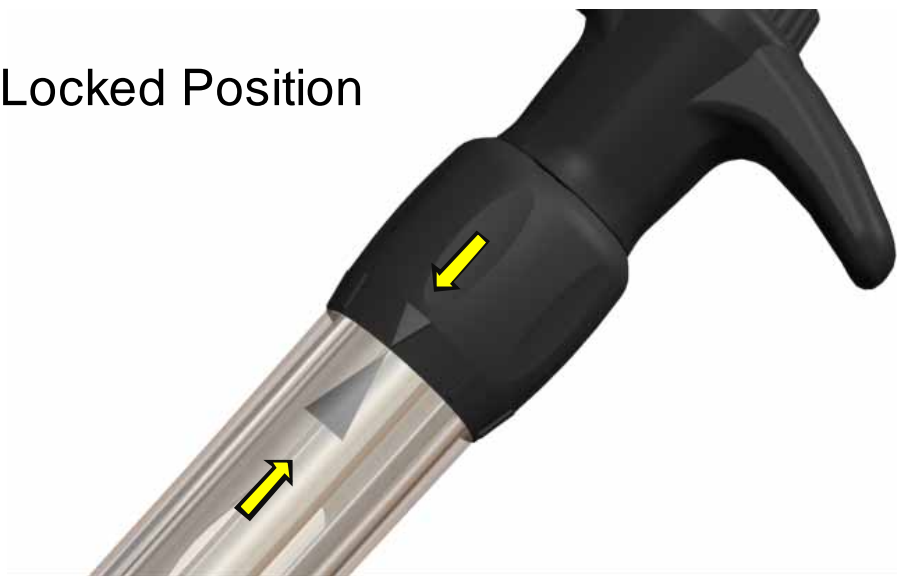
Sleeve in Unlocked Position





## The InSafe Syringe

Sleeve in Locked Position





## Design Objectives

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8. To enable Safe Needle Disposal after Use
9. Needle to be covered at All Times from Last Use  
to Removal of the Needle



## Design Objectives

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10 Syringe to be Ergonomically Designed

11 Syringe Weight to be Similar to Existing Syringes

12 Not Fully Disposable



## The InSafe Syringe

Syringe Body Style and Weight  
similar to Current Syringes





## The InSafe Syringe

Repeat Autoclaveable Materials

Easily Replaceable Outer Sleeve





## The InSafe Syringe

Slide Sleeve being  
moved Forward





## The InSafe Syringe

Lock Sleeve  
in Forward Position



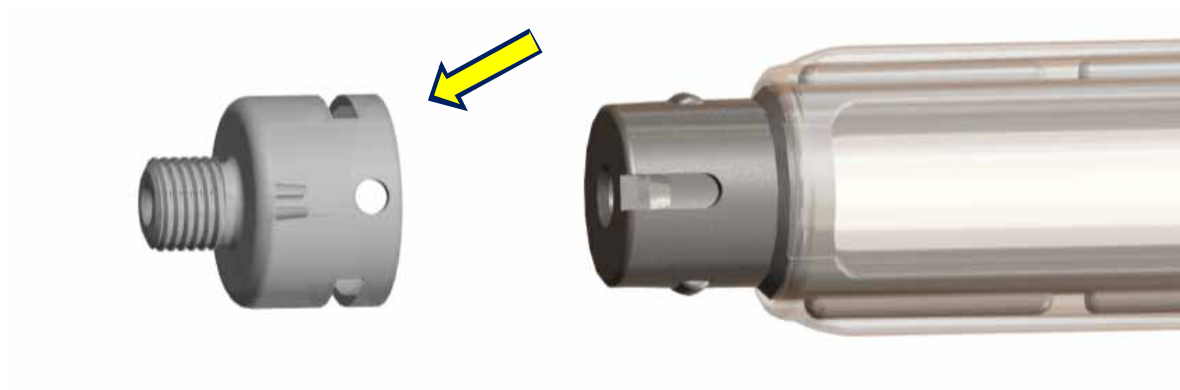


Lock Sleeve in Forward Position



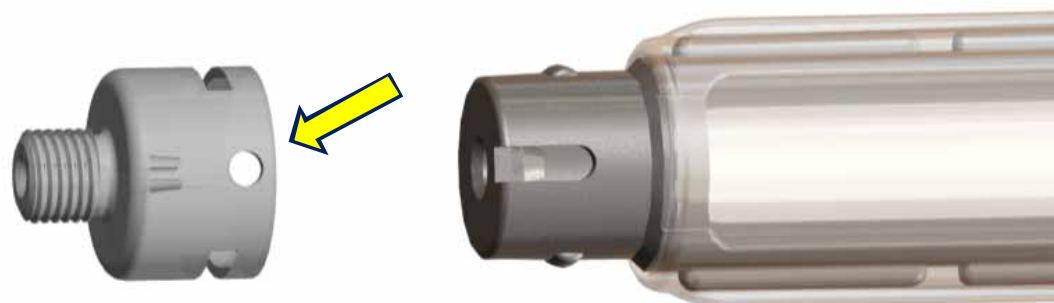


## The Plastic Adapter required



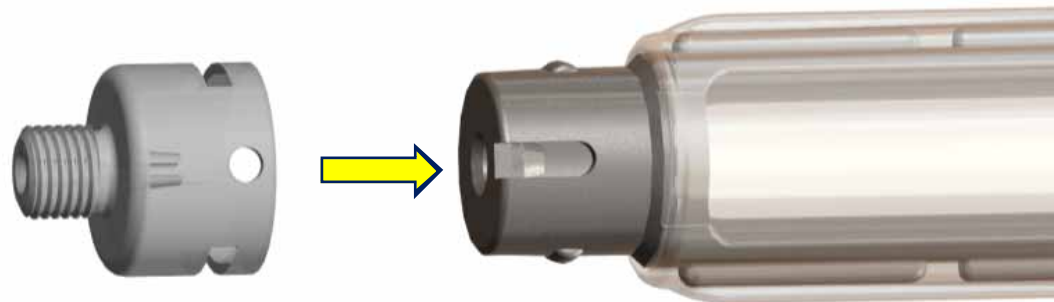


Align the Hole in the Adapter



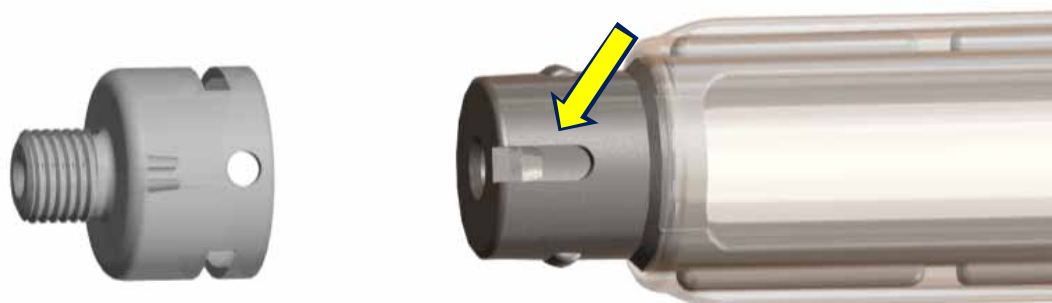


with the Groove in the End of the Syringe



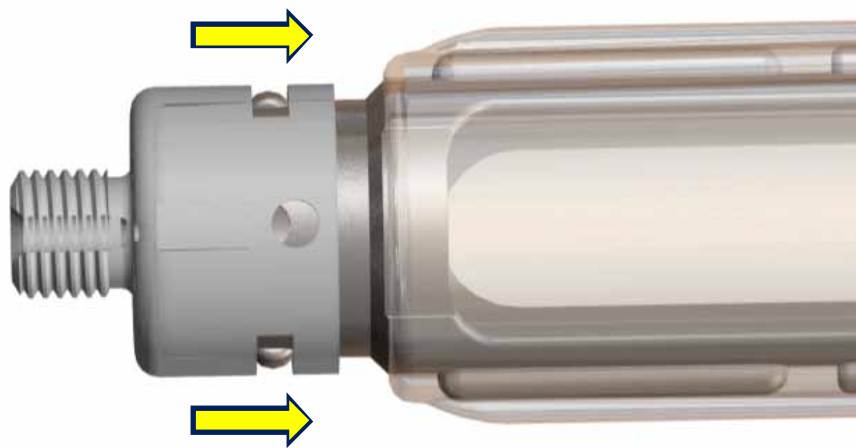


Align Hole with the Groove





Push Fully Home





## The InSafe Syringe

Syringe ready for Needle  
Loading





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Needle screwed on  
with Needle Cover in Place





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Then Remove Needle Cover





Sleeve locked Forward  
covering the Needle





Pull back Plunger before loading Cartridge





Cartridge loaded and Syringe  
ready for Use





Sleeve unlocked and being moved  
to Back Position





Sleeve in Back Locked Position  
ready for Use





Expel a Small Amount of Local Anaesthetic before administering the Local Anaesthetic





## Syringe ready for Use



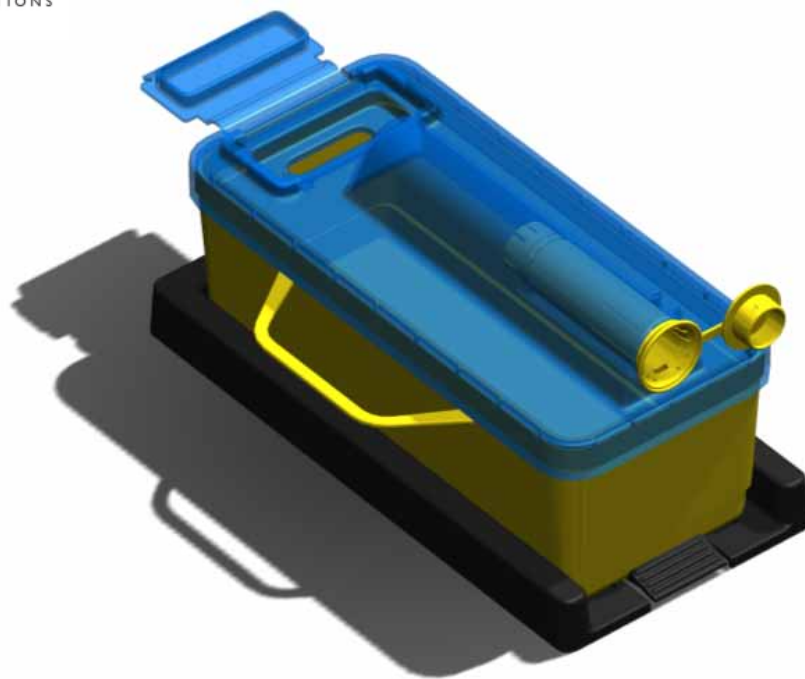


Lock the Sleeve in the Forward  
Position after Each Use



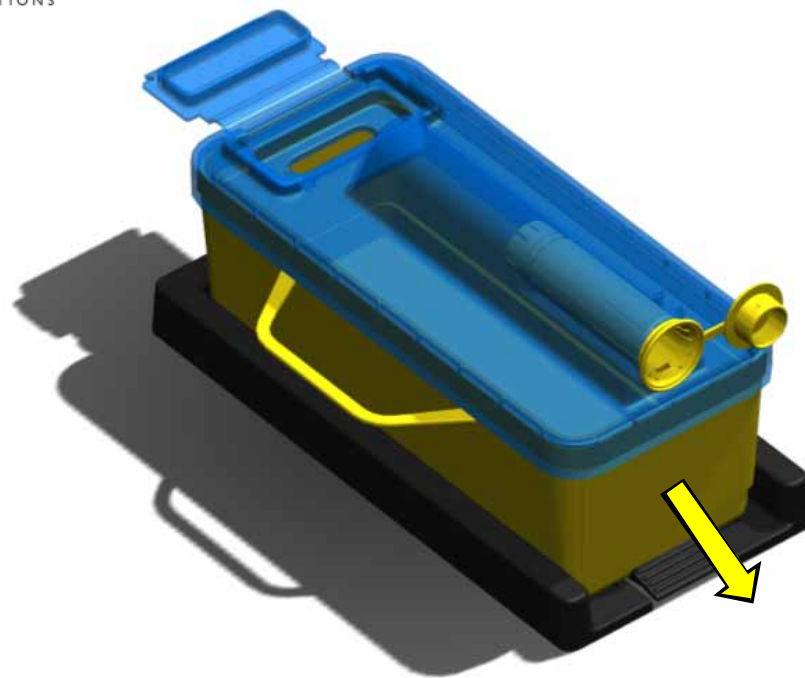


## The Sharps Container and Mount



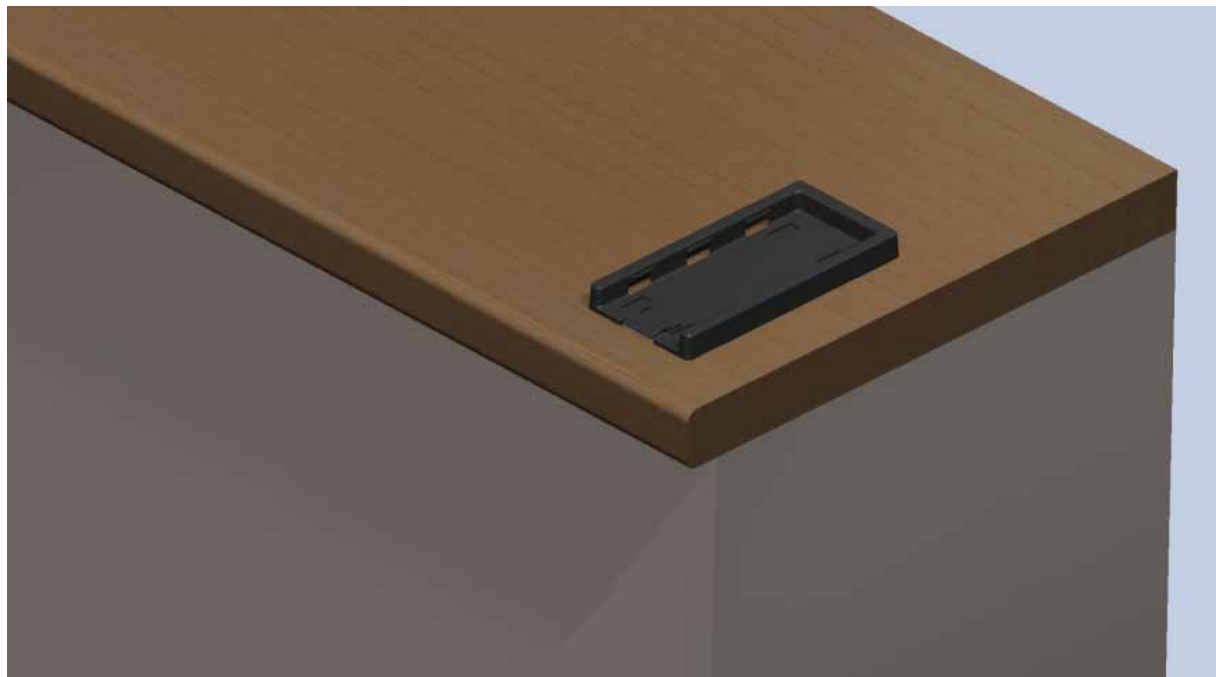


Sharps container can be easily removed when Full



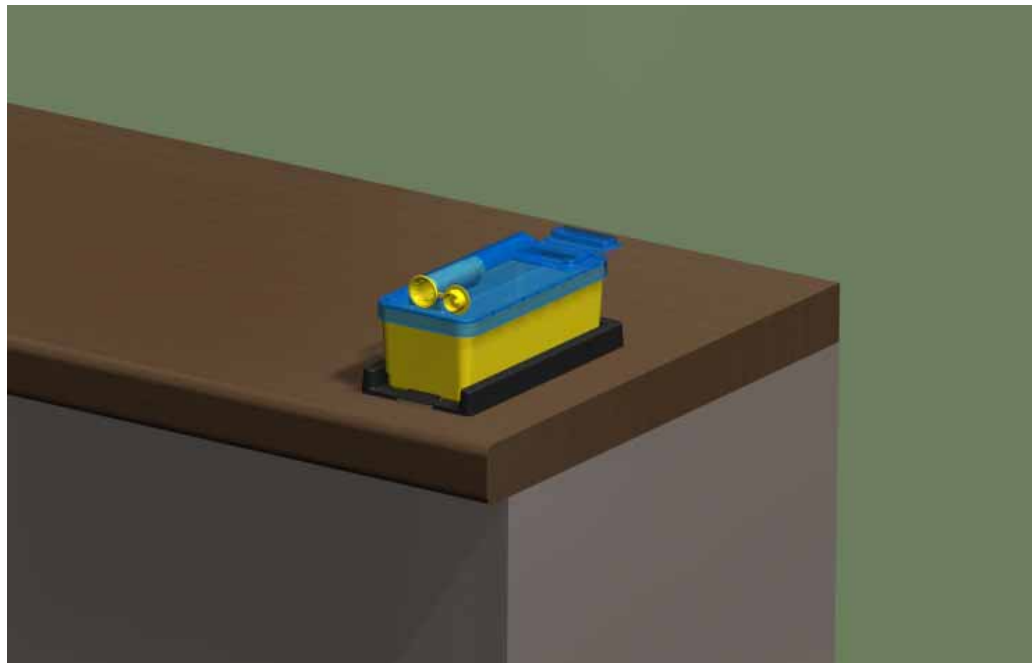


## Sharps Box Mount





# Worktop Unit Mounting





## Unit End Mounting



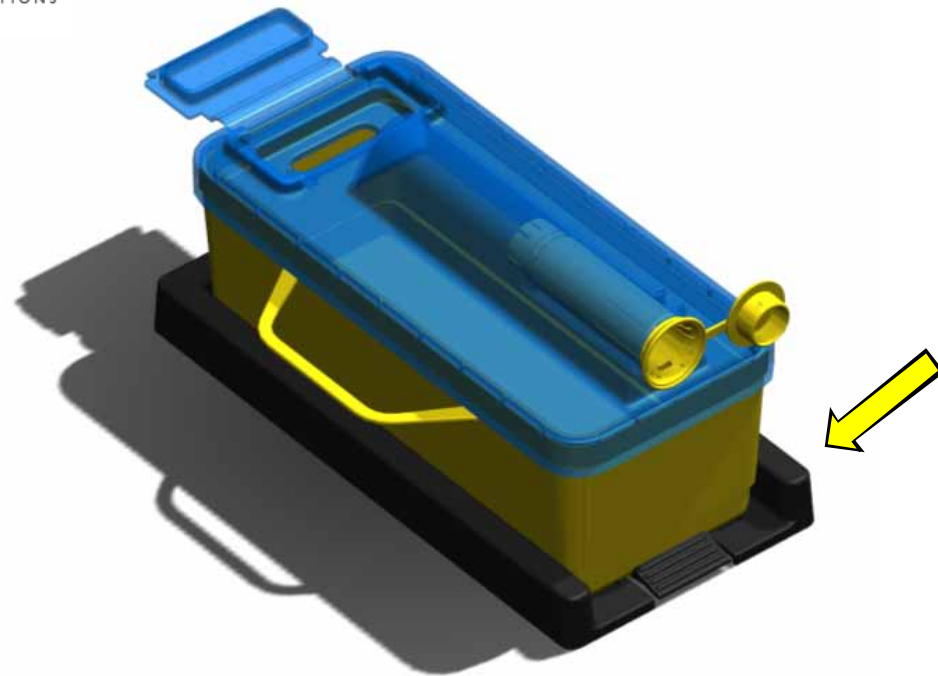


## Wall mounting





## Securely Fixed Base



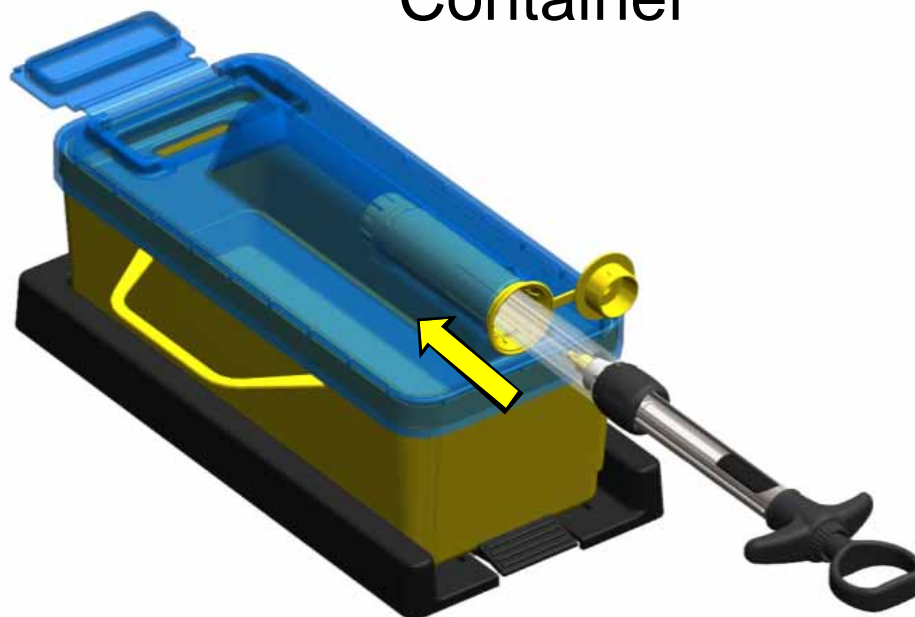


Lock the Sleeve in the Forward Position  
after Final Use before Needle Disposal



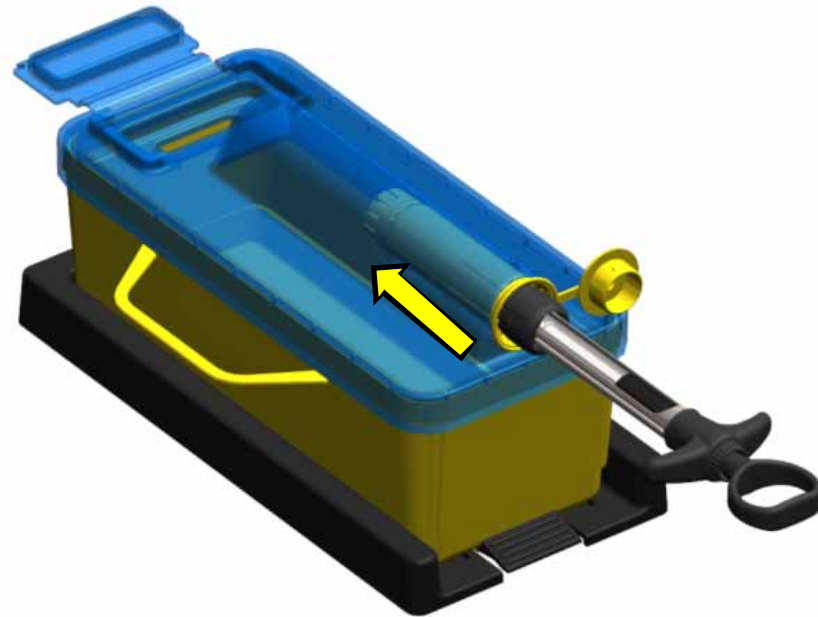


Insert the Syringe into the Sharps Container



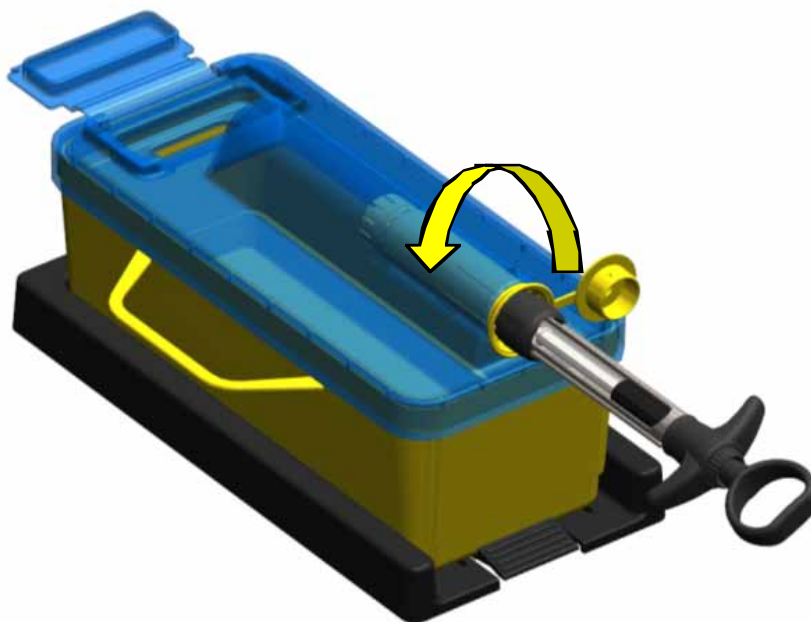


Push inwards to the Stop Position



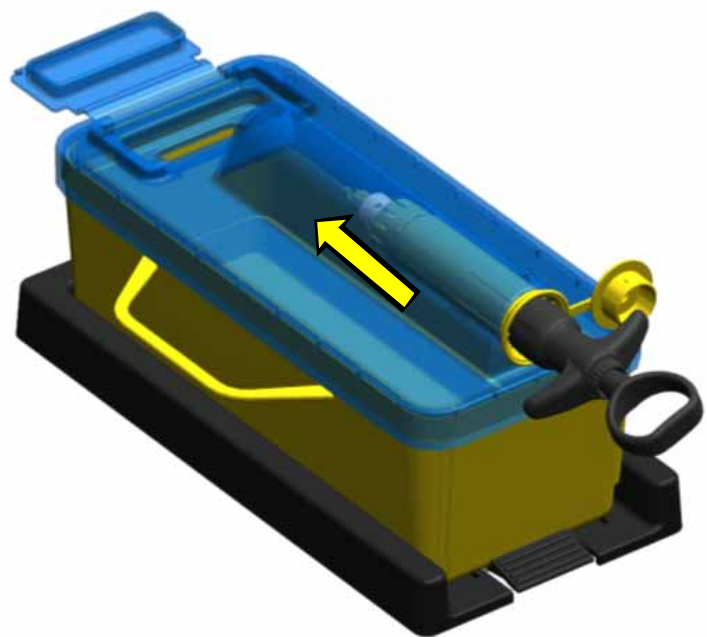


Turn the Syringe 30° Anti-clockwise



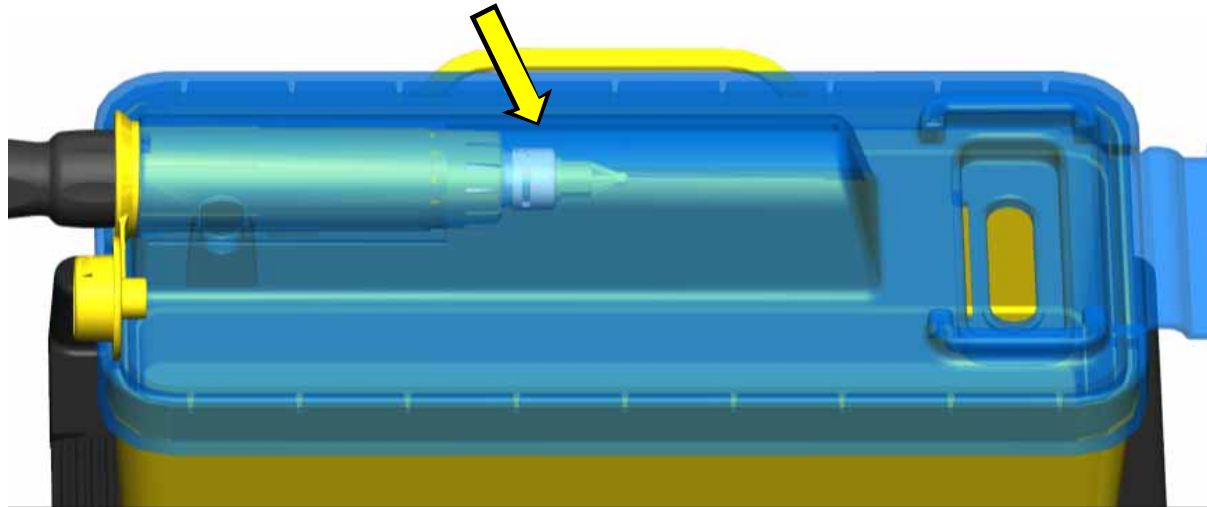


Push the Syringe Fully Home



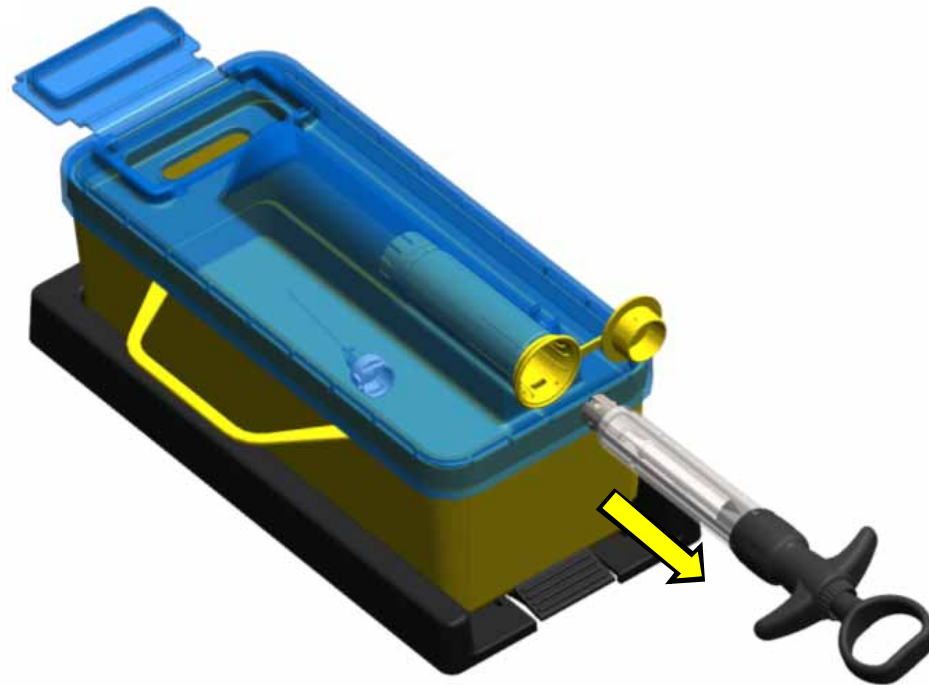


Syringe and Needle Adapter Fully  
inserted into Sharps Container





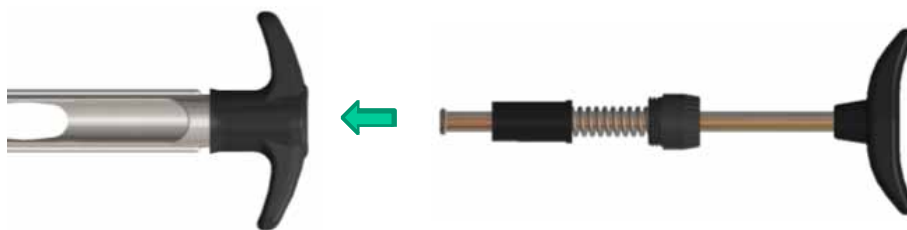
Grip syringe T handle  
and pull back to remove Needle





## Aspiration Options

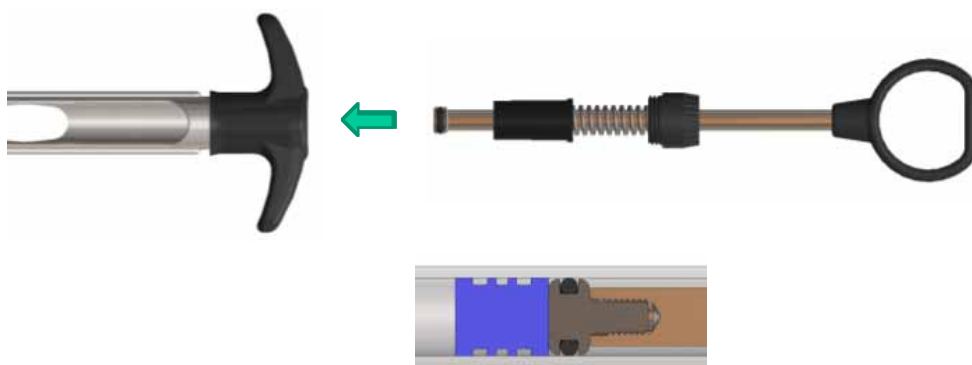
### Standard Plunger with T-handle





## Aspiration Options

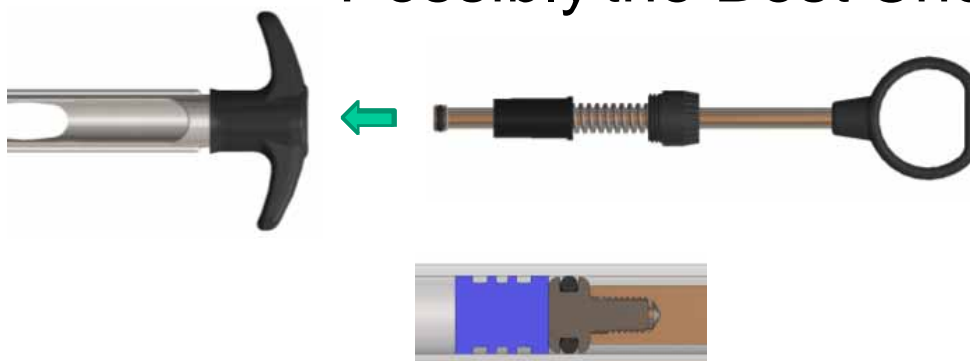
### 'O-Ring' Seal Plunger with Thumb Ring





## Aspiration Options

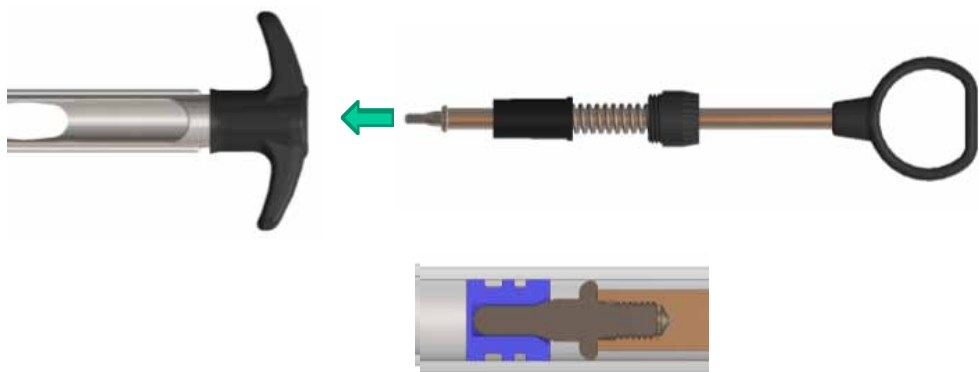
The 'O-Ring' Seal Plunger is  
Possibly the Best Choice





## Aspiration Options

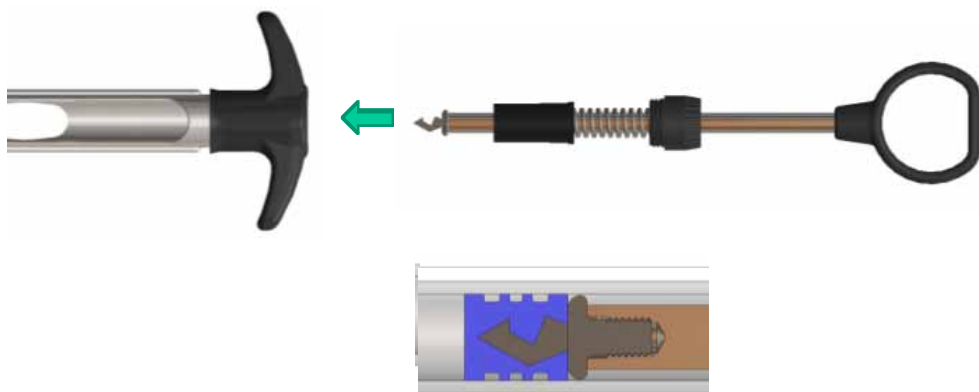
### Self Aspirating Plunger with Thumb Ring





## Aspiration Options

### 'Harpoon' Type Plunger with Thumb Ring





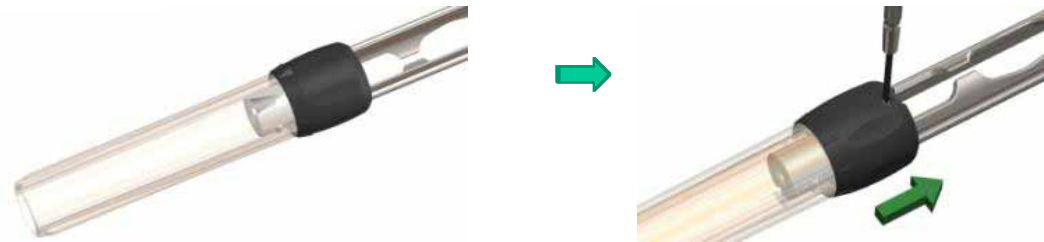
## Replacing the Outer Sleeve



Unlock sleeve and move  
to position shown



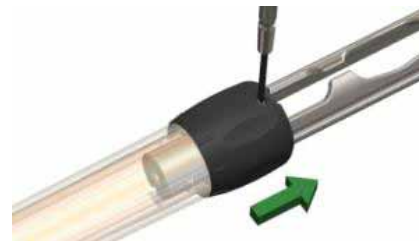
## Replacing Outer Sleeve



Insert Suitable Tool into Hole on the Collar  
and Separate Collar from the Sleeve



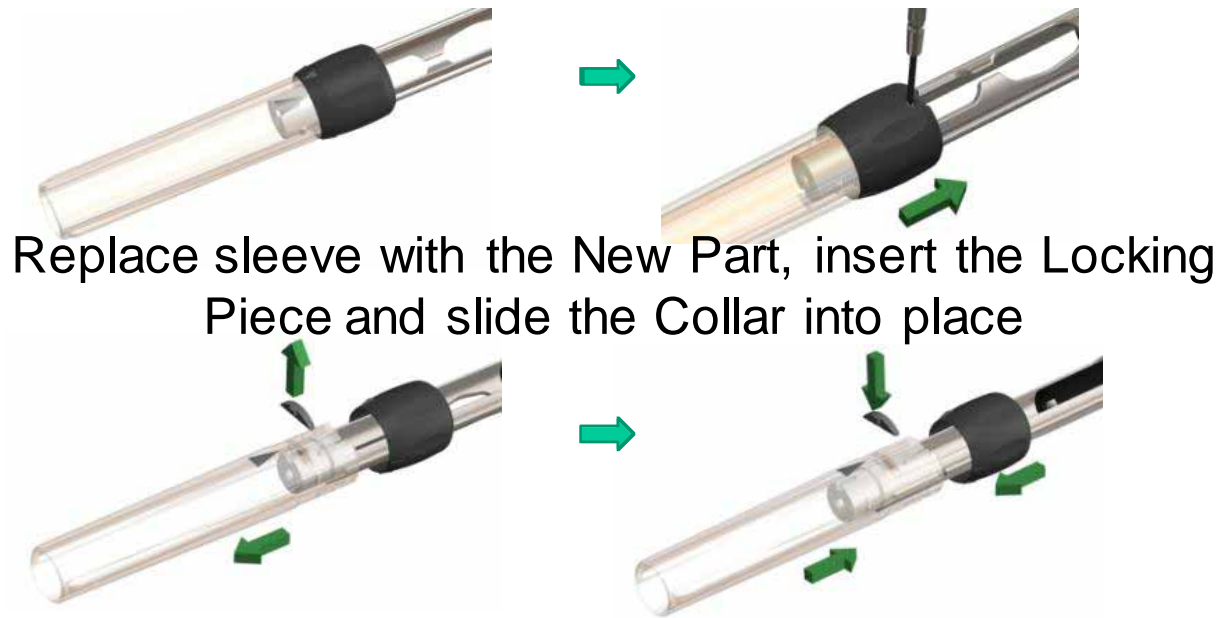
## Replacing Outer Sleeve



Remove the Small Locking Piece  
and the Slide Sleeve  
off the Syringe Body



## Replacing Outer Sleeve



Replace sleeve with the New Part, insert the Locking Piece and slide the Collar into place

Astek Dental Syringes  
available from

Schottlander  
0800 97 000 79



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