

User manual

TTE-Gun Building Module

Version 3.8
As at 17/12/01



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1 TTE–Gun Building Module

The TTE-Gun Building module provides a simple way of data capture for building and disassembling perforating guns. It improves the accessibility and visibility through the life span of a perforating gun. You receive an exact overview about all used explosives and gun parts, sites and information of usage. This enables optimization and transparency of your business processes.

The electronic solution guarantees best control of stock keeping of your company's explosives by complying with national, international and company specific regulations. With the integrated data exchange, all information about explosives and delivery data can be sent easily from vendor to client and back.

Complete tracking and tracing of explosives is supported by TTE. No more data hunting and collecting data is necessary. Reports and documentation can immediately be generated and printed by TTE.

The TTE-Gun Building Module is based on the simple processes of building, rework and downloading.

Gun Building:

The Gun Building allows producing a new gun. This gun contains different explosives like shaped charges, boosters, detonating cord and others.

The process offers adding shaped charges into a specific hole of the gun and adding different pieces of explosives during the building process. Non explosive components can be added as well.

Gun Rework:

The Gun Rework allows adjusting the content of the gun by adding or removing articles and it offers all options which are available during the gun building process. All progress will be automatically documented and can be reviewed on the printed item list.

Gun Downloading:

The Gun Downloading process offers four different options to download the gun.

- "Restore All", all content will be restored.
- "Discard All", all content of the gun will be discarded.
- "Shape Charges Only", all shaped charges are restored, the rest will be discarded.
- "Selective Restore", only the chosen Items will be restored, the rest will be discarded.

2 Systems Requirements

The following system requirements need to be fulfilled in order to run the Gun Building Module on your TTE-System:

- TTE-Plus^{Online} or TTE-Enterprise release version 3.8.17. or higher
- TTE-Mobile release version 3.8.16 or higher
- TTE-Gun Building Module

3 Master Data

To be able to use the Gun Building Module, the master data have to be completed with the information about the different perforating guns.

Therefore enter a new article in the master data.

The mandatory fields have to be completed with the needed information concerning the gun article.

Mandatory fields:

- Name
- Production site code (AI90)
- Article group
- Internal product code
- Producer product code (AI240)
- Is divisible → has to be explicitly set to **No**

Basic article information

Name *

TTE-TCP FL 4-5/8IN 5SPF HMX MILL 22FT V-P

Production site code *

{AI90} GB022

Article group *

FL

Internal product code *

.VG796

Producer product code *

{AI240} .VG796

Status *

Active

Is divisible

no

* Required Field

For the perforating gun, only one packaging level need to be entered: → ITEM

Mandatory fields:

- Position number: 1
- Packaging level: Item
- Unit of measure: pcs
- Net explosive weight in kg: either the value according to data or 0

Packaging level

Position Number *	<input type="text" value="1"/>		
Packaging level *	{AI20}	Item	▼
Number / Quantity *	<input type="text" value="1"/>		
Unit of measure *	<input type="text" value="pcs"/>		
Net explosive weight *	{AI310}	4,234	kg

*** Required Field**



The gun has to have the packaging level “Item” with the unit of measure “piece”. The Netto Explosive Weight (NEW) can be added. (The NEW will be calculated by the explosives, which will be built into the gun body ignoring the value which is entered in the master data for the particular gun.)

For the setup of any other article as e.g. detonating cord, shaped charges or a box full of boosters, please see the User Manual for TTE-Online, chapter 5.2.2 *Article*.

4 Perforating Gun DMC

The Data Matrix Code which identifies each gun need to contain the following identifier only (according to FEEM standard) and no more values!

- **AI90** (Production site code)
- **AI250** (Unique number)
- **AI240** (Producer product code)

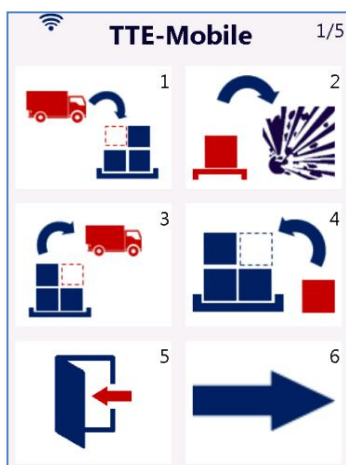
5 Before Gun Building



Make sure every new Gun DMC has not entered the TTE-System before. Do not add the gun (DMC) to your stock with the receipt or production process before building the gun with the gun building process!

Make sure that all articles (shaped charges, detonating cord, booster, etc.) which should be built into the gun are at stock in one of the warehouses at the site of where the assembling process takes place.

6 Gun Building Module



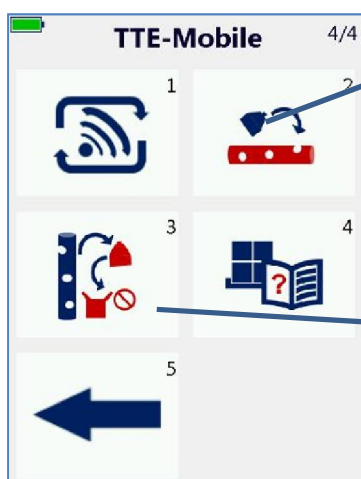
The Gun Building process can be found in the main menu of your TTE-Mobile.

In order to start your process, search it by jumping to the respective page of the menu by means of the right-arrow-button.



Generally, the amount of pages and the design of tiles can vary, according to the processes, chosen by the customer.

The TTE-Mobile screen contains 2 new icons, "Gun Building" (includes "Gun Rework") and "Gun Downloading".



Gun Building / Gun Rework

Gun Downloading

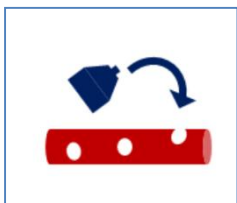


Performing each process or sub-process, use always the right-arrow button to get to the next step or to finish it.



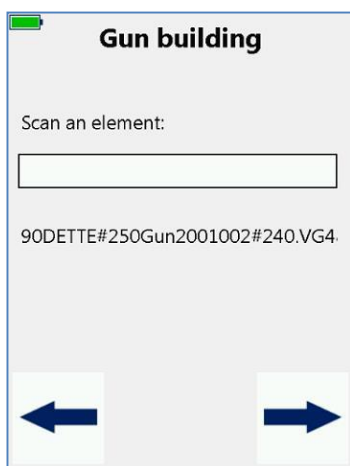
Use the left-arrow button for returning to the previous step or to cancel the process or sub-process.

7 Gun Building / Gun Rework



Click on the icon above in order to start the **Gun Building or Rework process**.

7.1 Gun Building (Assembling a new Gun)



- (1) Scan the DMC of your new gun

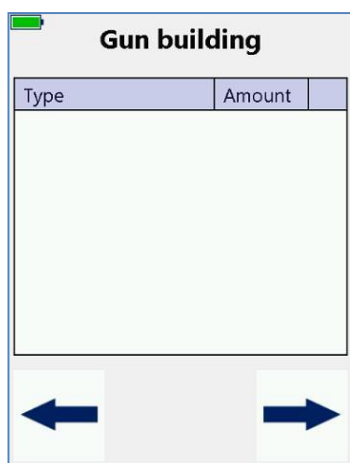


Please do not enter this unique code upfront by receipt process into the TTE-System!

- (2) Click the right-arrow button to proceed



- (3) Select the warehouse where you are building the new gun OR select the warehouse the gun will be stored (depends on the internal workflow at your company)
- (4) State a reference entry and click the right-arrow button to proceed

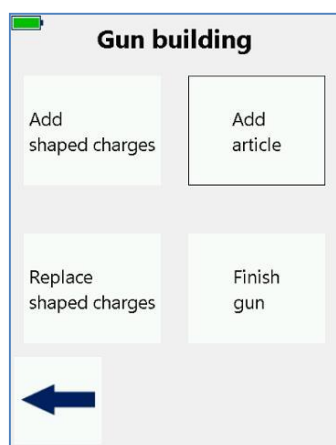


Type	Amount
------	--------

(5) The next screen leads you to the **Gun Overview** and should be empty if you start with a new gun. However, if the gun is already filled with components they will be shown at this stage. Then you are in the rework mode (please see next chapter).

(6) Click the right-arrow button to proceed

You will be guided to the following submenu:

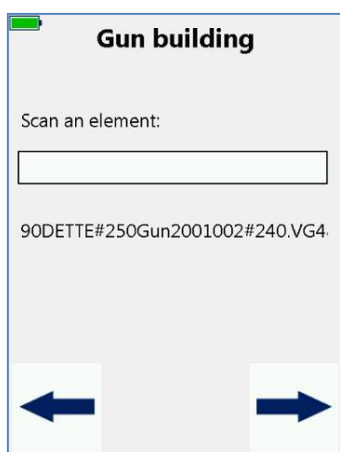


The submenu contains the following main steps:

1. Add Shaped Charges
2. Add Article, e.g. booster and detonation cord etc.
3. Replace Shaped Charges
4. Finish Gun
5. Left arrow-button (leads back to the **Gun Overview**)

Please continue with chapter 7.3 for “Add Shaped Charges”.

7.2 Rework a Gun



Gun building

Scan an element:

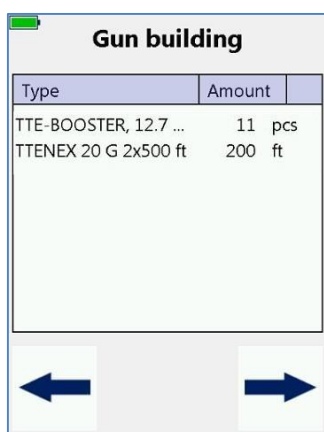
90DETTE#250Gun2001002#240.VG4.

← →

- (1) Scan the DMC of your gun which you want to rework
- (2) Click the right-arrow button to proceed



If the gun has been received into the TTE system by XML file and not built at the site, the rework process is not available. Please Download the gun first and start with a new gun building.

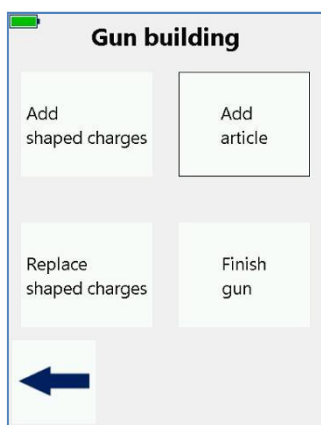


Gun building

Type	Amount	
TTE-BOOSTER, 12.7 ...	11	pcs
TTENEX 20 G 2x500 ft	200	ft

← →

- (3) If the gun is already filled with components, they will be shown at this stage. This screen serves as an **Gun Overview** and enables the user to add more components in the subsequent steps.
- (4) Proceed with the right-arrow-button



Gun building

Add shaped charges

Add article

Replace shaped charges

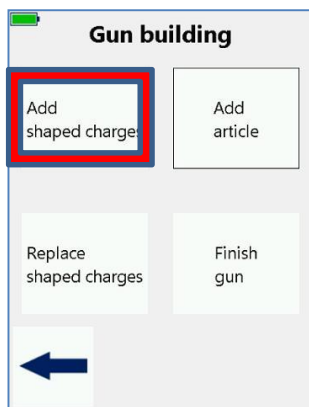
Finish gun

←

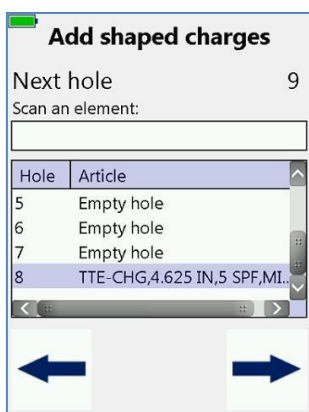
The submenu contains the following main steps:

1. Add Shaped Charges
2. Add Article, e.g. booster and detonation cord etc.
3. Replace Shaped Charges
4. Finish Gun
5. Left arrow-button (leads back to the **Gun Overview**)

7.3 Add shaped charges



Select the icon **Add Shaped Charges** in order to add them to the gun holes



- (1) Scan the shaped charges in the order you place them into the gun holes.

(The current hole number is displayed in the top right hand corner)

It is possible to scan a complete box of shaped charges by scanning the box label.



Please note that in this case all shaped charges which have been remaining in the box will be placed randomly into the next holes of the gun.

If you want to leave one or more gun holes empty, please scan (instead of a shaped charge) the **“Empty Hole Barcode”** in order to skip the holes.



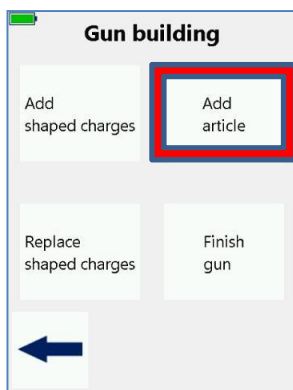
Scan for every empty hole the barcode anew or define how many empty holes need to be placed in a row.



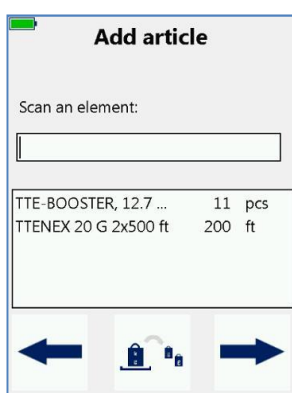
This **empty hole barcode** can also be found in the **“T DMC-Controlbarcodes.pdf”** file, available via your TT Enterprise
(Under Information → Manuals)

- (2) Proceed with the right-arrow-button if you want to finish the sub-process

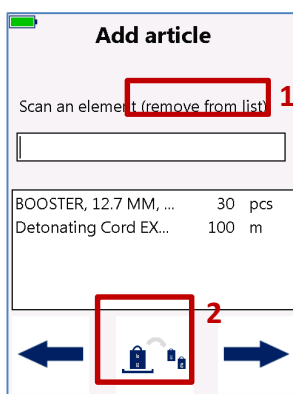
7.4 Add/Remove Article



Select the icon **Add Article** in order to add or remove detonation cord, booster and other articles



- (1) Scan the elements that will be added to the gun
- (2) If you want to **REMOVE** an element please scan the following barcode in order to change the scan direction

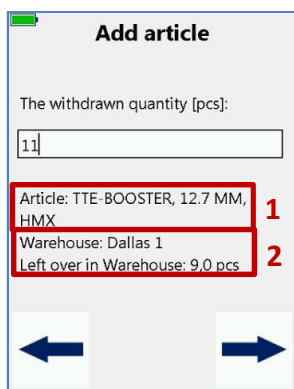


- 1: REMOVE Mode:** "(remove from list)" will appear
To change the scan direction back (to Add), please scan the DMC again!
- 2:** By selecting the **"KG" Symbol** on the bottom also quantity based articles can be removed

This "Change Scan direction" barcode can also be found in the "TTE-Mobile DMC-Controlbarcodes.pdf" file, available via your TTE-Enterprise (Under Information → Manuals)



Please note that all boosters which aren't labeled and all pieces of cord which have been cut of the reel, are handled as quantity once the gun building or rework process has been finished. Than they are only to be removed by selecting the "KG" symbol (once the Remove Mode is active).



- (3) If the article from the item you have scanned is divisible, you will be asked whether “you want to split this element?” or whether you want to use it completely: e.g. a box of 20 boosters – where your choice is to use either 1 - 19 pcs or the complete box of 20.

Answer this question with:

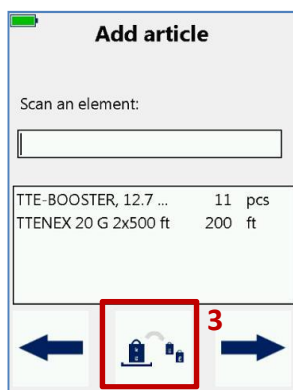
OR

The whole amount which was scanned will be added to the gun

Split the box / element and select the amount which should be added to the gun

1 Article: Shows the current divisible article

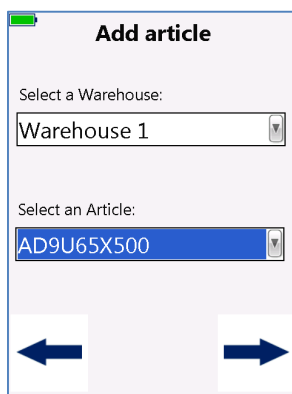
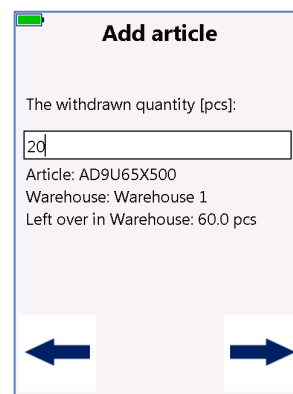
2 Warehouse: Shows the warehouse and the remaining amount of the particular divisible article (box or reel)

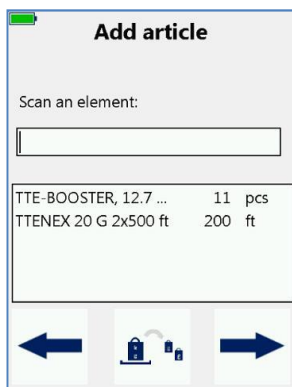


- (4) Repeat step (1) and (2) to proceed with the gun building

- (5) Select the icon with the “KG” Symbol (Nr.3) in order to add quantity to the gun (This can be only selected if there is quantity in one of the warehouses at the site)

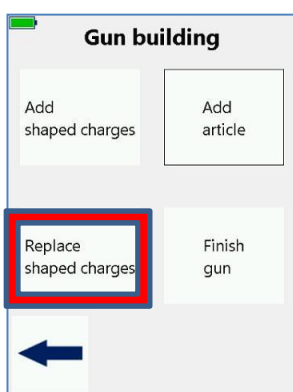
1. Select a warehouse where the element is currently stored and select the element which should be added to the gun
2. In order to proceed, please enter the quantity to be withdrawn. The selected article, the warehouse and the left quantity of the article in this warehouse will be shown



(6) Finish this sub-process with the right-arrow button

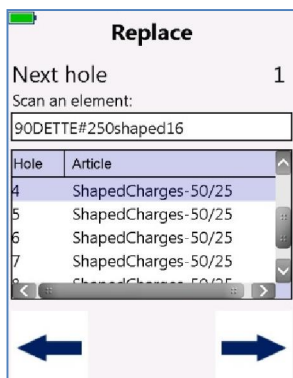
7.5 Replace Shaped Charges



Select the icon **Replace shaped charges** in order to replace or remove a shaped charge from the gun



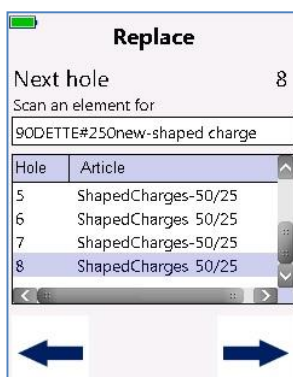
Shaped charges can be replaced either during the gun building process or the rework of a gun. If shaped charges are replaced or removed during the rework process, all changes will be traced and later visible in the gun building document.



Hole	Article
4	ShapedCharges-50/25
5	ShapedCharges-50/25
6	ShapedCharges-50/25
7	ShapedCharges-50/25
8	ShapedCharges-50/25

Replace an **Empty hole** with a shaped charge

- (1) Scan the “**Empty hole**” barcode, enter the number of the hole which you want to replace with a shaped charge and press enter.
- (2) Scan the shaped charge



Hole	Article
5	ShapedCharges-50/25
6	ShapedCharges 50/25
7	ShapedCharges-50/25
8	ShapedCharges 50/25

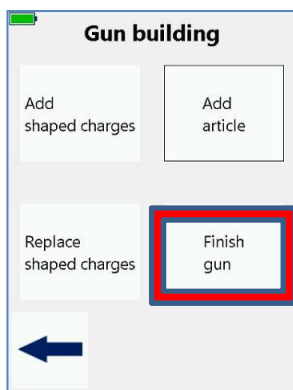
Replace a **Shaped charge** with another shaped charge or an empty hole:

- (1) Scan the shaped charge you want to replace or remove, after scan either
 - a. The shaped charge which is going to be the replacement
 - b. Scan the “empty hole” barcode to select an empty hole instead

Complete the replace process with the right arrow-button and get back

to the submenu.

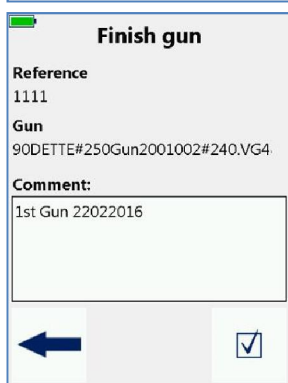
7.6 Finish the Gun



Select the icon **Finish gun** in order to finish the gun building or rework process



Generally use the left arrow-button to review the content of the gun before you finish the building or rework process



Before the gun is finished there is the possibility to enter a comment. (The reference number and gun barcode is shown at this stage.)

Complete the Gun building process by pressing the check mark symbol

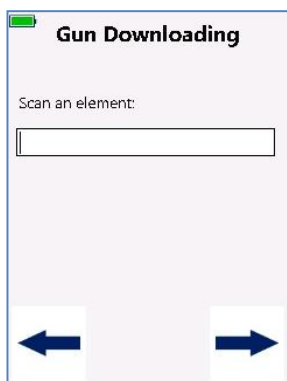


Synchronize the MDE in order to transfer the data to the TTE-Enterprise system.

8 Gun Downloading



Click on the icon above in order to start the **Gun Downloading** process.

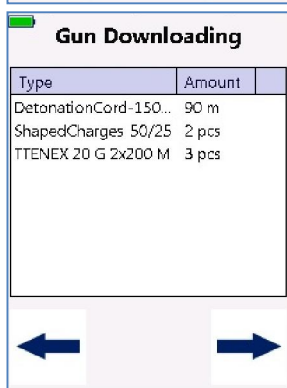


- (1) Scan the DMC of the gun, which you want to download

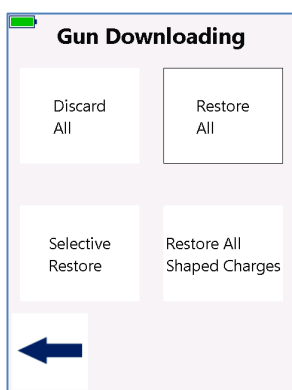


After Downloading, the GUN barcode can be reused for a new gun building.

- (2) Click the right-arrow button to proceed



- (3) You will be given an overview, with all the components contained.
- (4) Proceed with the right arrow-button to the next submenu



The submenu contains the following main steps:

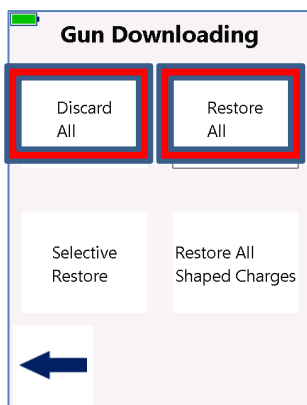
1. Discard All
2. Restore All
3. Selective Restore (discard everything else)
4. Restore Shaped Charges (discard everything else)

Choose one sub process and proceed



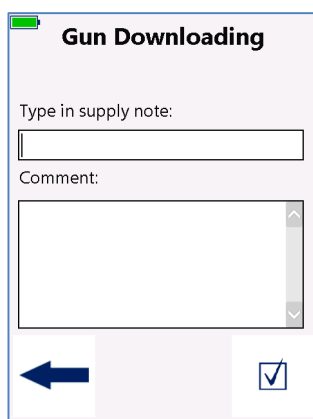
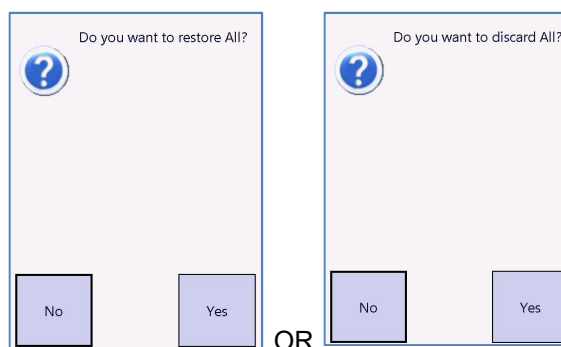
If the gun which is going to be downloaded has been received into the TTE system by XML file, not built at the site where the download takes place, than the sub process „**Restore ALL Shaped Charges**“ will not be available!

8.1 Discard All and Restore All



- (1) Select the icon **Discard All** or **Restore All** in order to download the gun.

- (2) You will be asked if you are sure about performing this process



- (3) Before the gun is downloaded there is the possibility to enter a supply note number and a comment. Both entries will be shown in the comment section of the stock book.



The Gun Download can't be reversed once it is downloaded!

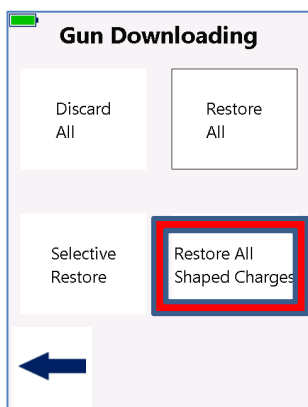
Complete the **Gun Downloading** process by pressing the check mark symbol



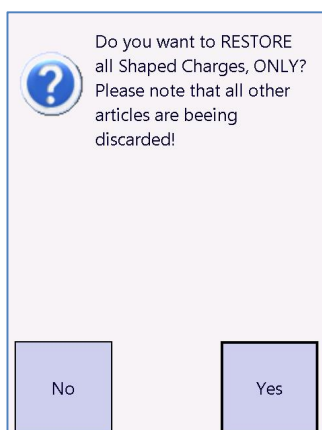
Synchronize the MDE in order to transfer the data to the TTE-Enterprise system.

8.2 Restore Shaped Charges

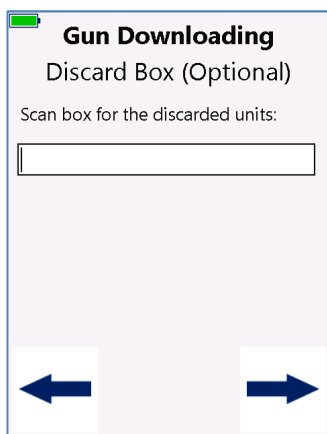
This sub process will restore all shaped charges and discard all remaining articles of the selected gun.



- (1) Select the icon **Restore All Shaped Charges** in order to download the gun.



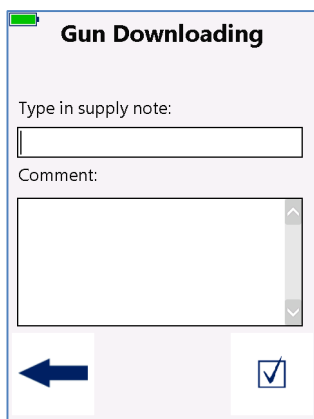
- (2) You will be asked if you are sure about performing this process



- (3) **Optional**, you can scan a box (or another packing level) to place all discarded items and discarded quantity inside. (This might be helpful for further handling of the discarded explosives.)
- (4) You can proceed (also without scanning a packaging level) with the right arrow-button



If the scanned packing unit is unknown to the system, it will be created as an outer packaging (box). The scanned packaging must be empty or contain only discarded articles!



- (5) Before the gun is downloaded there is the possibility to enter a supply note number and a comment. Both entries will be shown in the comment section of the stock book.



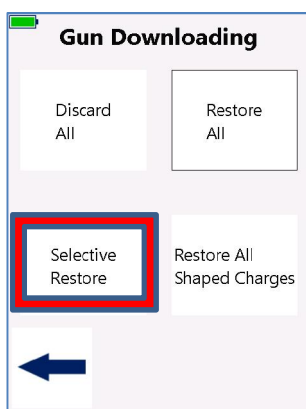
The Gun Download can't be reversed once it is downloaded!

Complete the **Gun Downloading** process by pressing the check mark

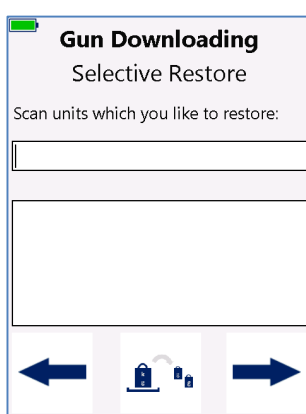
symbol  .

Synchronize the MDE in order to transfer the data to the TTE-Enterprise system.

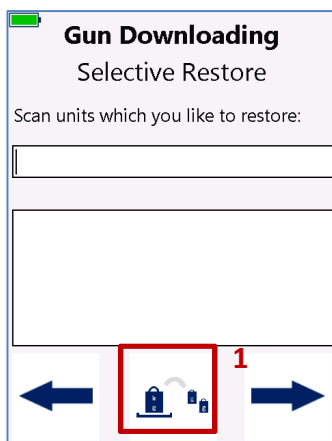
8.3 Selective Restore



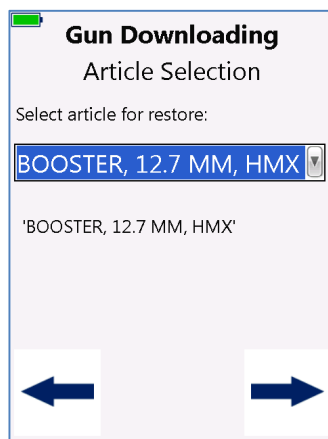
- (1) Select the icon **Selective Restore** in order to download the gun.



- (2) Scan all elements which you want to restore. (For the shaped charges you can also use the item list with each DMC for each shaped charge, available in stock book)



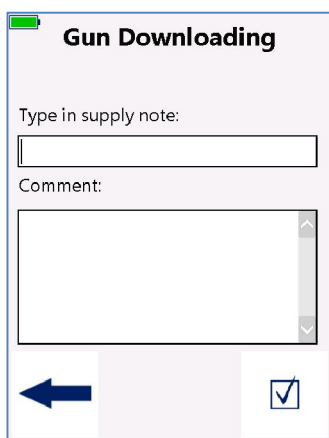
- (3) Select the icon with the “KG” Symbol (Nr.1) in order to restore quantity (This icon can be only selected if there is quantity inside the gun)
- (4) Select the article you like to restore




Quantity can be only restored completely and not partial! If you restored too much of the quantity, than please use the destruction process on the MDE to correct the amount.




- (5) Proceed with the right-arrow-button.



- (6) Before the gun is downloaded there is the possibility to enter a supply note and a comment. Both entries will be shown in the comment section of the stock book.



The Gun Download can't be reversed once it is downloaded!

Complete the **Gun Downloading** process by pressing the check mark symbol  .

Synchronize the MDE in order to transfer the data to the TTE-Enterprise system.

9 Print Gun Documents

The system allows you to print out various documents from the stock book, for instance the “Report” which includes a summary about all included elements and the “Item list”. Within the item list are all used explosives with unique ID, barcode, explosive mass and different identifiers visible. As well the empty holes will be shown.

In addition, the gun information can be exported as a csv file, in order to use it in Excel.
After a rework process, the history of the replaced items and quantity is shown in the document.

10 Help

For any further questions, please contact our technical support.

TTE-Europe GmbH

Phone: For technical support, please contact: + 49 (351) 826 65 199

For commercial or administrative issues, please contact: + 49 (351) 826 65 100

E-Mail: info@tt-e.eu

Internet: www.tt-e.eu

Glossary

AI	 Application Identifier
DMC	 Data Matrix Code
MDE	 Handheld Device
UUID	 Universal Unique Identifier
NEW	 Netto Explosive Weight