

# HKGUNLOADER VERSION 2.05 USER MANUAL<sup>®</sup>

Horus Vision, Inc

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## 1 KESTREL-HORUS GUNLOADER – VERSION 205

The HKGunloader is an utility used to transfer gun information between your PC/Laptop and your **Kestrel 4500 with Horus Ballistic Software** (KH4500). HKGunloader is not required to use your KH4500; however, managing your guns, gundata, and gunfiles on a PC or laptop is far easier than doing it on the KH4500 unit. Additionally, having your gun information on your PC makes for a nice backup, makes it easier to share amongst friends, and/or load lessons for teaching. Lastly, the gun file format is compatible with Horus' ATrag software for PDAs – you may use gun files **from** ATrag or use these gun files **on** ATrag.

### 1.1 WHERE TO GET IT

HKGunloader is a **FREE** utility. It may be downloaded from either the Horus Vision website or Nielsen Kellerman website. On the Horus website, look for the Kestrel product page under software. On the NKHOME website look for Kestrels under support. **NOTE:** *These are the only two authorized and trusted sources for this software. Please beware of any other websites offering this utility.*

- [HTTP://www.horusvision.com](http://www.horusvision.com)
- [HTTP://www.nkhome.com](http://www.nkhome.com)

Once you have downloaded the software, please follow the directions (also found on the website) to install it on your Windows PC.

### 1.2 REQUIREMENTS

HKGunloader has been tested to run on PC desktops and Laptops with the following operating systems:

- Windows XP-SP3
- Windows Vista
- Windows 7
- Windows 8.0.

There are no plans to offer this utility on Apple iOS, Linux, Ubuntu, or any other platform or operating system.

### 1.3 CONNECTING THE KH4500 TO YOUR PC

You will also need some means to connect your HK4500 and your PC so they may communicate. This may be done through Bluetooth or through Nielsen Kellerman's Kestrel USB interface cradle, or Serial connect interface cradle. Be sure you have working communications between the two devices before you proceed further.

#### 1.3.1 Connecting with Bluetooth

Most Laptops have Bluetooth built-in and are usable "as-is", as opposed to almost all desktops which DO NOT come with Bluetooth built-in. In this case, you will need an USB Bluetooth adaptor. **NOTE:** *we have found that not all USB Bluetooth adaptors work with the KH4500 unit. We recommend using the **Kensington K33902US** adapter which has proved to work best.*

The Nielsen Kellerman website has Bluetooth manuals which give instructions on connecting the KH4500 through Bluetooth.

#### 1.3.2 Connecting with Cradle

Both Bluetooth and non-Bluetooth HK4500 units can use Kestrel's Interface Cradle to communicate with a PC. Placing the Kestrel in the cradle causes the two Infrared ports on the back of the unit to line up with the IR ports in the cradle. Communications takes place between the IR ports.

The Cradle connects to your PC through either a USB or serial connector. Please be sure you know which one is most appropriate for your PC. **NOTE:** *If using USB, make sure to download and install NK's USB driver for the interface cradle. The driver can be found on their website under support.*

## 2 GUN INFORMATION

Gun Information is the combined physical characteristics of the gun you are using and the ammunition you are firing through that gun. This set of information will determine the projectile's (bullet's) behavior as it flies through the air from the muzzle to the target. ATrag – Horus Vision' Ballistic Calculator – and all ballistic calculators, use some set of these values to predict a bullet's flight to offer the most likely aiming solution available.

### 2.1 GUN DATA

We call these combined values that describe one gun/ammo pairing Gun Data (or just plain Gun). For the KH4500, the values below make up one set of Gun Data.

Data Item	Abr	Description
Gun Name		Name you give this Gun Data
Note		Any special notes
Bore Height	BH	The height the center of the optical scope is above the center of the rifle bore
Bullet Weight	BW	Actual weight of the bullet
Ballistic Coefficient	BC	The drag coefficient – usually G1 or G7
Muzzle Velocity	MV	The velocity which the bullet leave the muzzle
Zero Range	ZR	The range that the optical scope and rifle bore are aligned to match
Bullet Diameter	BD	Usually known as caliber
Rifle Twist Rate	RT	The length that the twist makes one complete revolution
Rifle Twist Direction	RTd	Twisting in a right hand or left hand direction
Temp/MV table	TF/MV	Used to adjust MV as temperature changes
BC/Dist table	BC/DS	Used to adjust BC as a function of distance
Elevation Turret		The units to display the solution in (MILs, TMOA, or SMOA) and/or to adjust the turrets by. Including number of clicks per if applicable.
Windage Turret		

## 2.2 GUN FILES

Any computer file containing one or more Guns - also called a Gun List or Gun File. The data is stored as a text file and can be edited using any text editor, but this is not generally advised. These files have a file extension “.GUN”. The file name can be anything descriptive of the contents of the file. For instance you may have a file named `my308.GUN` that contains several gun data sets for different ammo that you often shoot through your AR-10.

GunLoader will use any gun file it finds residing in the same directory as itself.

As a general rule, it is well to keep the number of guns in one gun file to 50 and under.

## 2.3 GUN LIBRARY

GunLoader comes with a database file containing over 1100 gun data sets called `HKGunLoader.MDP`. The file must reside in the same directory as the program. The file is downloaded along with the GunLoader program. If you do not have this database file, GunLoader will still work, you just will not have access to the library of gun data. To get a copy, download the program again from the websites above and place it in the program's directory.

### 3 USING GUNLOADER

All the files for running GunLoader needs to reside in the same directory as the program file `HKGunLoader.EXE`. Files not in the same directory as the program file will not be recognized by the program.

#### 3.1 STARTING GUNLOADER

Everything, all the files you need, should all be contained in one directory. We will call this the Current Directory. The current directory can be located anywhere: on the main C-drive, on the desktop, or anywhere you choose to place it. The current directory, as a whole, can be copied to other locations or other PCs.

With the current directory open, double click to launch (start) the GunLoader program by double clicking on the program's icon or name.



GunLoader requires two files to run: `AtragGun.gun` and `HKIni.ini`. A third file, the library database file: `HKGunLoader.MDP` should also be in the current directory. If the database file does not exist or is missing, the program can and will run without it; however, you will not have access to the 1100 guns in the library.

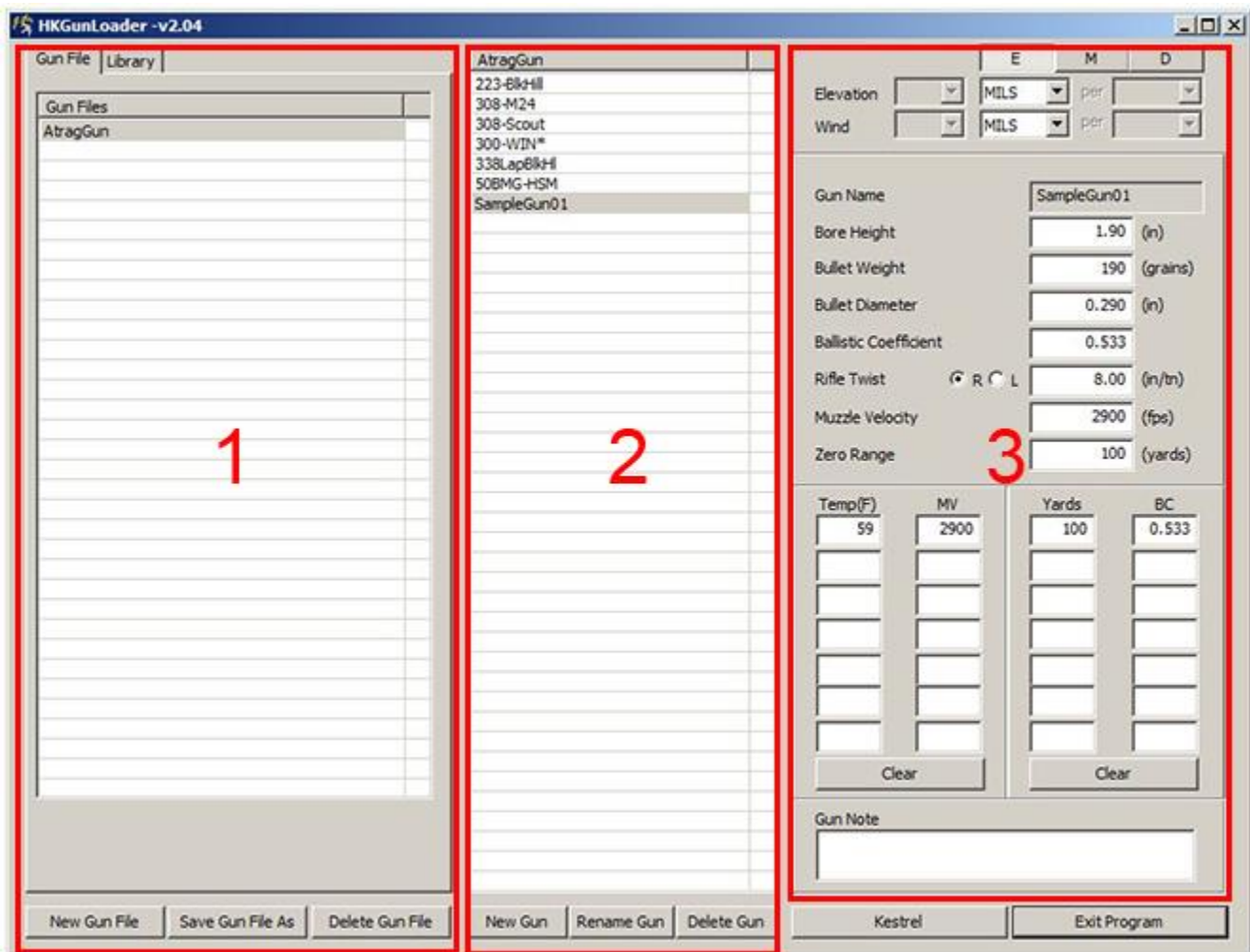
If either the `INI` or `GUN` files are missing, then GunLoader will sense this and will notify you that it cannot locate the file(s) and will create a default copy of the missing file(s) for you. Simply click [OK] on the notification screen if it pops up and the program will start.



## 3.2 THE MAIN SCREEN

If all went well, this is the first main screen you will see. It has three main sections:

- the gun file and library (GFLib) section (1) – this section will either display a list of the gun files in your directory or it will show the contents of the gun library
- the gun list (GList) section (2) – this section is the list of gun data sets in the currently selected gun file
- the gun data (GData) section (3) – this section is the actual data of one gun data set and can be edited

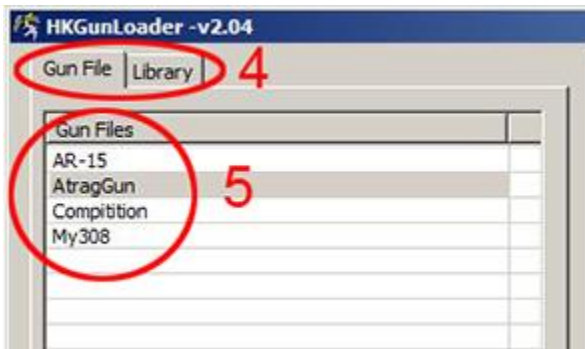


### 3.3 GFLIB – GUN FILES AND LIBRARY SECTION

This section displays either a list of your gun files or the available guns in the library depending on the tab (4) selected at the top of the section.

#### 3.3.1 Gun Files

If the tab (4) is set to [Gun File], the section will list the gun files available in the current directory. In this case, the files are AR-15.gun, AtragGun.gun (the default gun file), Compition.gun, and My308.gun.



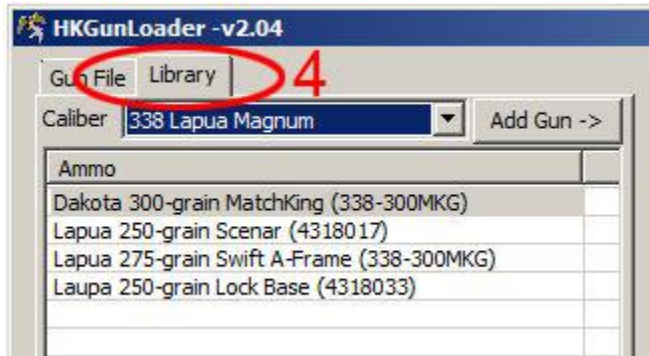
Name	Size	Date modified	Type
backup		4/20/2014 3:45 PM	File folder
AR-15.gun	4 KB	4/20/2014 3:29 PM	GUN File
AtragGun.gun	4 KB	4/20/2014 3:29 PM	GUN File
Compition.gun	4 KB	4/20/2014 3:29 PM	GUN File
HKGunLoader.exe	1,871 KB	4/19/2014 1:10 PM	Application
HKGunLoader.ldb	1 KB	4/20/2014 3:45 PM	Microsoft Access...
HKGunLoader.mdb	524 KB	7/27/2011 7:23 PM	Microsoft Access...
HKIni.ini	1 KB	4/20/2014 3:45 PM	Configuration se...
My308.gun	4 KB	4/20/2014 3:29 PM	GUN File

In the above diagram, you see that AtragGun is selected as it is highlighted in gray (5). Therefore the contents of AtragGun will be listed in the GList section of the main screen. Clicking on any of the other files in the list will instantly bring up their contents in the GList section.

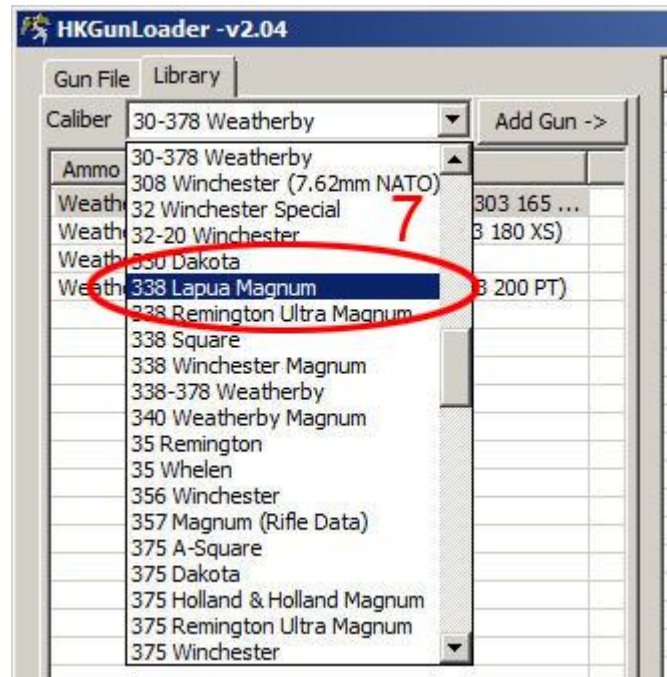
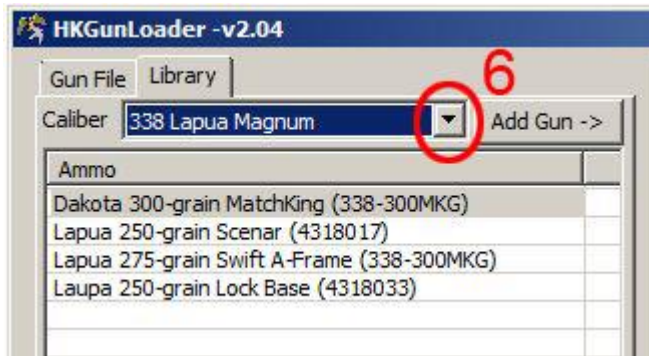


### 3.3.2 Gun Library

Setting tab (4) in this section to [Library] will display the Gun Library.



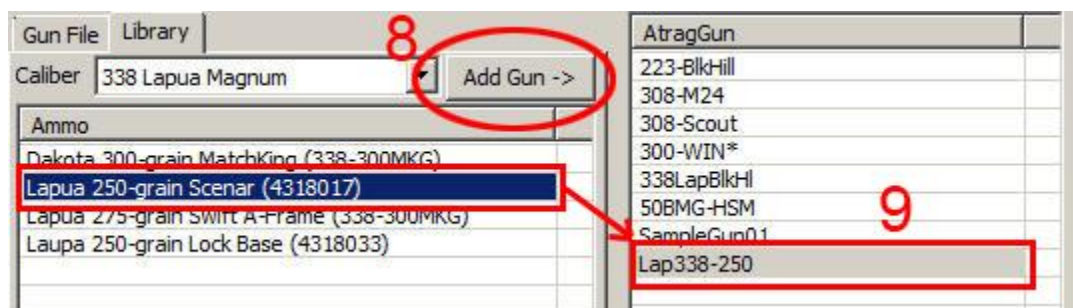
The library is arranged in by categories of ammunition. You can select the category you wish by clicking on the pull-down arrow (6). This will show you a list of categories. Select the category you want by clicking on the description (7). Here we select 338 Lapua Magnum.





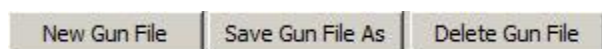
### 3.3.2.1 Adding Library Guns to Your Gun File

Once you have the desired list of guns in your selected category and the desired gun highlighted, you may add your selection to your current Gun File by clicking on the [Add Gun] button (8). Here we selected the “Lapua 250-grain Scenar” ammunition and added it to our default file `AtragGun`. A pop up window will allow you to rename the ammo as the KH4500 will only display names that are 12 characters long. We renamed our selected ammo to “Lap338-250”.



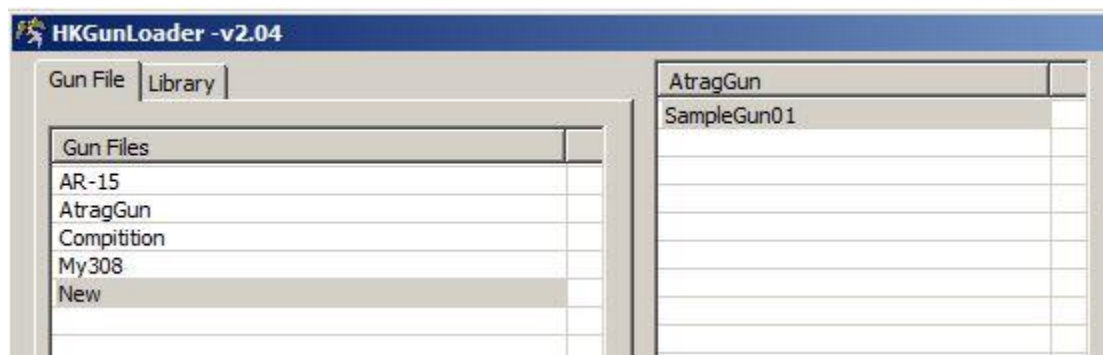
### 3.3.3 GFLib Function Buttons

At the bottom of this section are three buttons to help you with other things you may want to do with gun files.



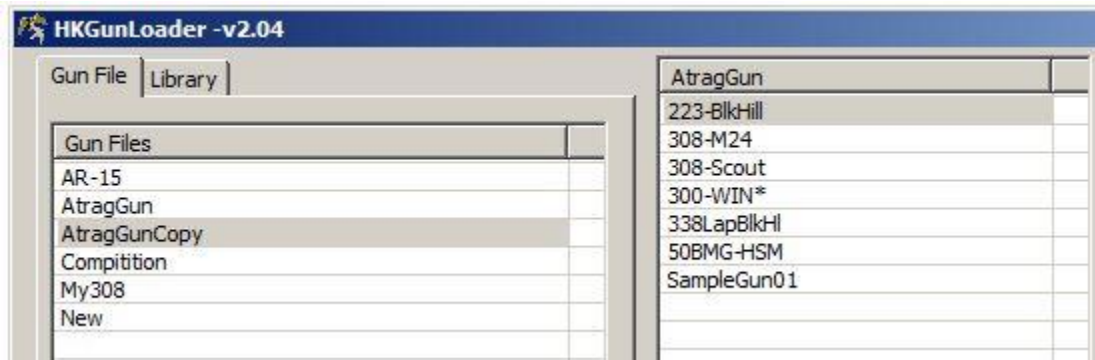
#### 3.3.3.1 Create New Gun File

Clicking on the [New Gun File] button will create a new gun file with a single entry in it - `SampleGun01`. A Windows File Explorer dialog box will pop up and you can name the file what you wish. In this example we named the file `New.gun`.



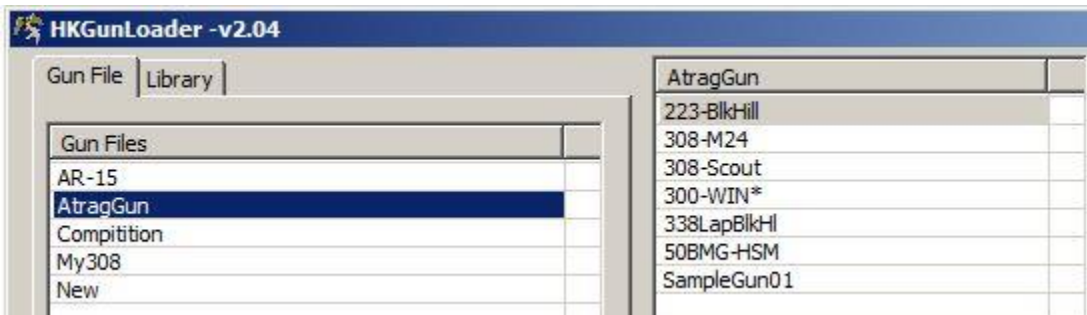
### 3.3.3.2 Creating a Copy of the Current Gun File

Clicking on the [Save Gun File As] brings up the Windows File Explorer dialog box to allow you to select a name for the copied file. Here we have the file AtragGun selected and we chose to name the copy AtragGunCopy. You will note the contents of the copied file is the same as the original.



### 3.3.3.3 Deleting a Gun File

Clicking on the [Delete Gun File] button will delete the highlighted file from the current directory and remove it from the GFLib list. Since AtragGunCopy is highlighted above, clicking on the delete button will remove it.



### 3.4 GLIST – THE LIST OF GUNS IN A GUN FILE

Section (2) of the main screen shows the list of guns, or Gun List, inside a Gun File. The top of the list shows the name of the Gun File (10) that contains this list. Click on any gun in the list and the gun data of the highlighted gun (11) will automatically be displayed in the GData section (3).

The screenshot displays a software interface for managing gun data. On the left, a list of guns is shown within a file named 'AtragGun'. The selected gun, '300-WIN\*', is highlighted. On the right, the detailed specifications for this gun are displayed, including bore height, bullet weight, diameter, ballistic coefficient, rifle twist, muzzle velocity, and zero range. A table below these specifications shows velocity and ballistic coefficient data for various temperatures and yardages. A 'Gun Note' field at the bottom contains a sample note.

**Gun List (10):**

Gun Name
AtragGun
223-BikHill
308-M24
308-Scout
<b>300-WIN*</b>
338CapBikHill
50BMG-HSM
SampleGun01
Lap338-250

**Gun Data (11):**

Gun Name: 300-WIN\*

Bore Height: 1.90 (in)

Bullet Weight: 190 (grains)

Bullet Diameter: 0.308 (in)

Ballistic Coefficient: 0.554

Rifle Twist: ☒ R ☐ L 10.00 (in/tn)

Muzzle Velocity: 2900 (fps)

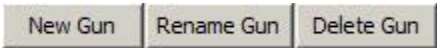
Zero Range: 100 (yards)

Temp(F)	MV	Yards	BC
30	2765	800	0.533
59	2900	1200	0.521
90	2985	1800	0.514
102	3102		
106	3150		

Gun Note: This is a Sample note.

3.4.1 GList Function Buttons

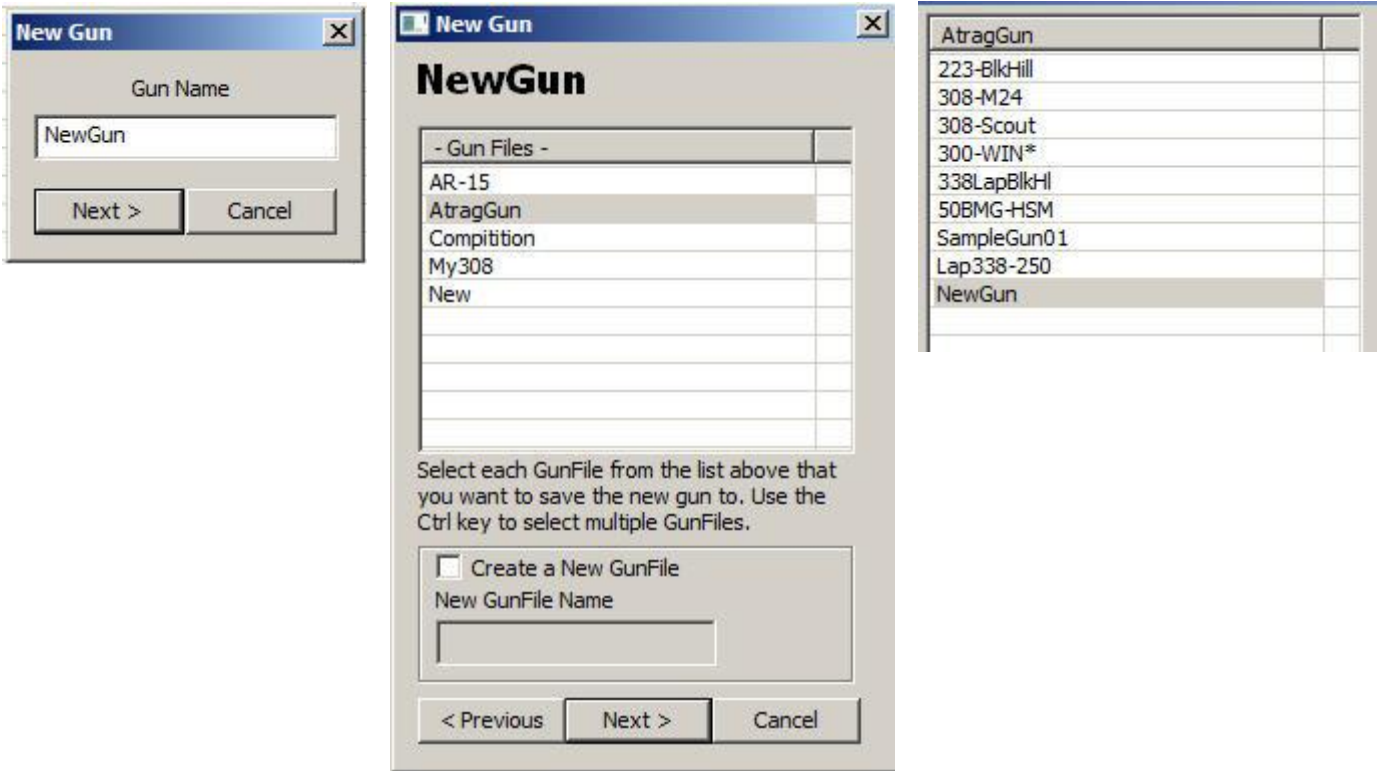
At the bottom of this section are three buttons to help you with other things you may want to do with guns in your list.



3.4.1.1 Create a New Gun

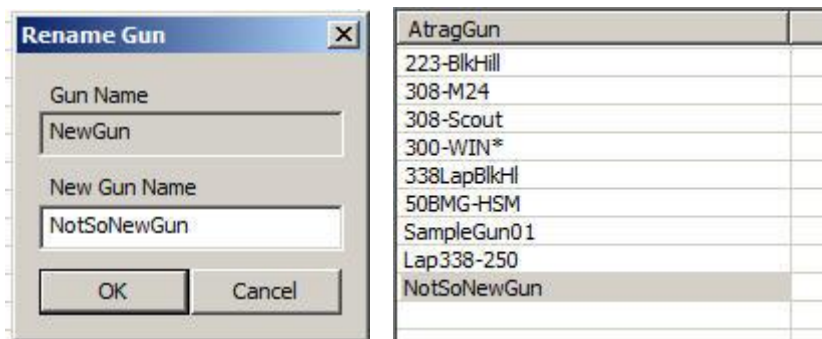
You may wish to create a new gun. Click on the [New Gun] button. A pop up window will ask for you to give your new gun a name. We name this one "NewGun".

A window will then ask where you wish to place this new gun. You may place it only into your current gun file, into multiple gun files, or create a whole new gun file altogether where this new gun would be the only entry. This new gun will show up in the gun list of the file you placed it in.



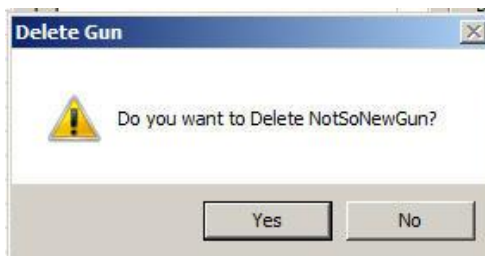
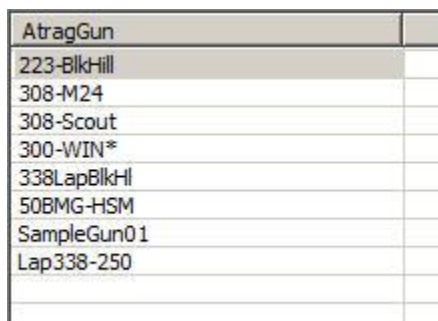
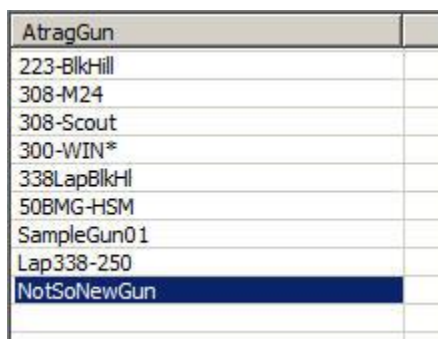
### 3.4.1.2 Renaming a Gun in the List

To rename a gun, click on the [Rename Gun] button. A pop up window will ask for you to give your gun a new name. We rename this one “NotSoNewGun”. The gun will display in the list with the new name you gave it.



### 3.4.1.3 Deleting a Gun from the List

To remove a gun from your gun list, highlight the gun you wish to delete and click on the [Delete Gun] button. We highlight our newly created NotSoNewGun. The program will ask for confirmation that you wish to remove the gun. **NOTE:** *there is no recovery from this delete.* The gun will be removed from your list.



### 3.5 GDATA - EDITING THE VALUES OF A GUN

In the last section we selected the gun 300-WIN\* (11) and its gun data was displayed in the GData section (3) of the main screen. This is the section that you can change the values for a gun.

**15** E M D

Elevation  MILS per

Wind 4 CLICKS per SMOA

---

Gun Name **14** 300-WIN\*

Bore Height  1.90 (in)

Bullet Weight  190 (grains)

Bullet Diameter  0.308 (in)

Ballistic Coefficient **13**  0.554

Rifle Twist ☒ R ☐ L  10.00 (in/tn)

Muzzle Velocity  2900 (fps)

Zero Range **12**  21 (meters)

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Temp(F)	MV	Meters	BC
30	2765	732	0.533
59	2900	1097	0.521
90	2985	1646	0.514
102	3102	<b>13</b>	
106	3150		

**16** Clear

---

Gun Note

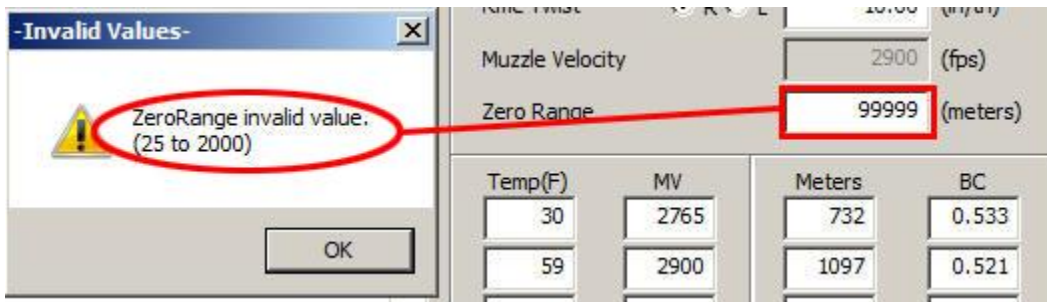
This is a Sample note.



### 3.5.1 Changing a value

To change a value, click in the field that you wish to change (12). Highlight the value in the field and type over it. All changes are immediate upon leaving the field being changed. Changes also immediately takes place in the current gun file – no need to perform a “save”.

If you enter an invalid value that is out of range, a warning window will pop up and displaying the acceptable values for that field. Clicking the [OK] button will place you back in the field were the error was made with the original value restored to the field.



### 3.5.2 Grayed out Field

If a field is grayed out (13). It is due to that field value being handled by a table. The two tables are the BC vs Distance table which overrides the Ballistic Coefficient field, and the MV vs Temperature table that overrides the Muzzle Velocity field. Control can be returned to the field by clearing the table using the [Clear] button (16) below the table.

### 3.5.3 The Gun Name Field

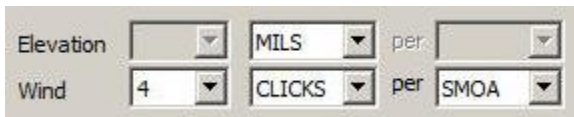
The only field that cannot be changed in this section is the Gun Name field (15). To change the Gun Name, use the previous section GList.

### 3.5.4 Units of Measure

ATrag and the KH4500 are both capable of handling values in Imperial (English) and Metric units of measure. They can also handle all units in Dual mode where all values are Imperial except distance which is handled in Meters – Zero Range and BC/Dist table. You can change the unit system that you wish to edit in by changing the radio buttons [E] [M] and [D] (15).

### 3.5.5 Elevation and Windage Turret Settings

The solution and the turret setting for the optical scope can be set separately for those may want drop in MILs but adjust windage by turn the turret on the scope. Here is an example where Drop is in MILs and the wind will be given as 4 clicks per SMOA.





### 3.6 TRANSFERRING GUN FILES TO/FROM KH4500

GunLoader makes it easy to manage your gun information on a PC; however, its main purpose is to load the gun information to the Kestrel 4500 with Horus. If you haven't done so, please refer to section 1.3 to establish communications between your PC and your KH4500 unit.

When a good connection has been made, then click the [Kestrel] button on the main screen to begin bring up the Kestrel transfer screen to transfer gun information.



#### 3.6.1 The Kestrel Transfer Screen

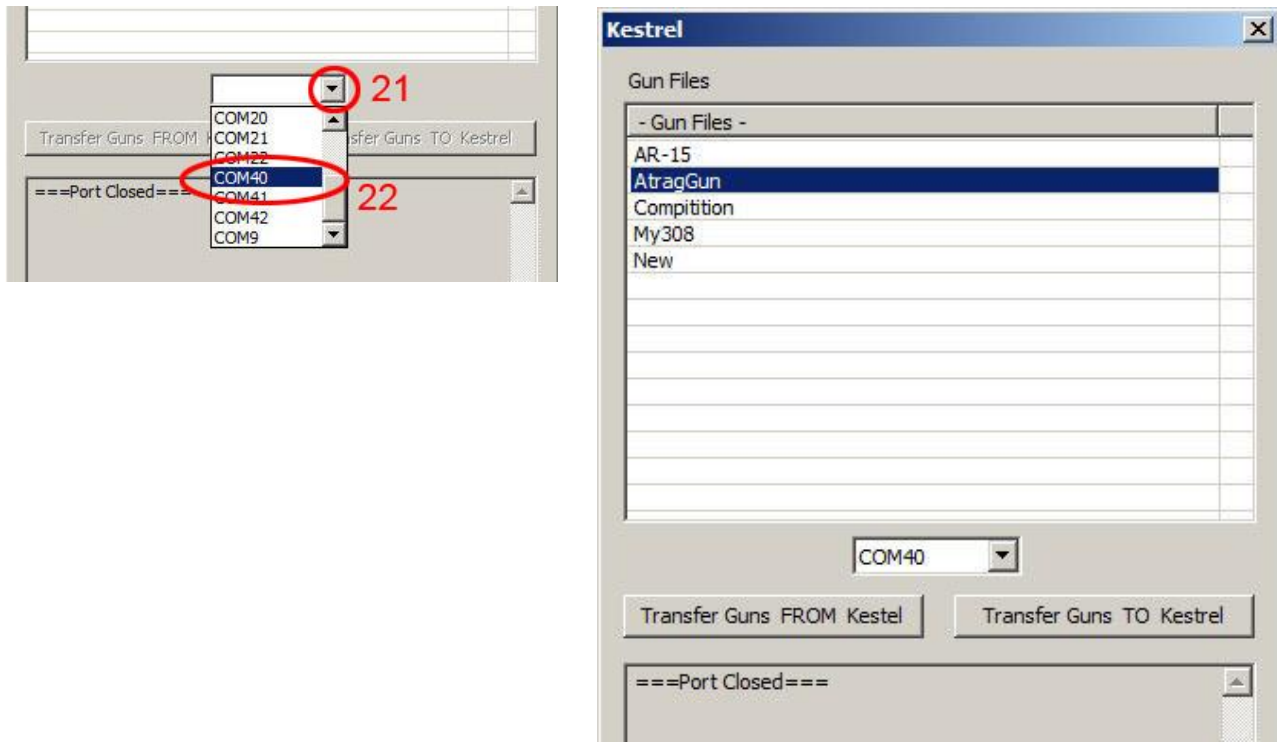
The Kestrel Transfer screen only has a few parts. The top box (17) is the same as the GList section on the main screen and shows the available gun files for transfer. There are two

buttons in the middle (19): [Transfer Guns FROM Kestrel] and [Transfer Guns TO Kestrel]. These two buttons are disabled until you have selected a communications port (18). Information transmission progress can be tracked in the status box (20). Finally, the [Done] button on the bottom of the screen will exit this screen and return to the main screen.



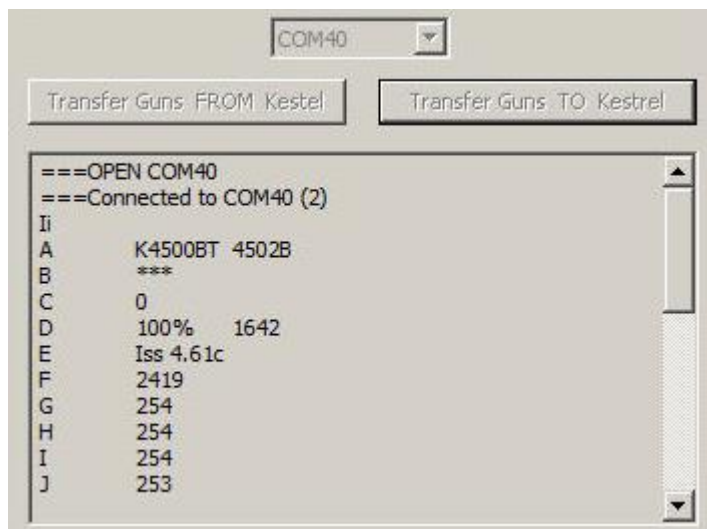
### 3.6.2 Choose the Correct Port

To select the proper communications port, click on the drop down arrow (21) and a list of available ports on your PC will be presented. Select the proper port by clicking on it. If you do not know which port your KH4500 is attached to, please review section 1.3. Once a port is selected, the transfer buttons will be enabled.



### 3.6.3 Starting the Transmission

GunLoader version 2.04 is compatible with all versions of KH4500. It should automatically detect the correct version of Kestrel it is connected so there is no action on your part. You will



a completed transmission. **NOTE:** Text on your transfer will not be an exact duplicate of the example below.

```
===OPEN COM40
===Connected to COM40 (2)
li
A      K4500BT      4502B
B      ***
C      0
D      100%  1642
E      lss 4.61c
F      2419
G      254
H      254
I      254
J      253
P      2030
Q      2074M
R      136      50      2      8
>
===Record size (136)...Verified
===Firmware version (4.61)...Verified
===KESTREL READY===
>===Send Guns to Kestrel
>===Sending 8 guns
..>Block 0..>Block 1..>Block 2..>Block
3..>Block 4..>Block 5..>Block 6..>Block
7..>Block 8..>Block 9..>Block 10..>Block
11..>Block 12..>Block 13..>Block
14..>Block 15..>Block 16..>Block
17..>Block 18..>Block 19..>Block
20..>Block 21..>Block 22..>Block
23..>Block 24..>Block 25..>Block
26..>Block 27..>Block 28..>Block
29...Done
===Waiting for final response from
Kestrel.....
===Transfer Complete
```

The key things you DO want to look for are the “KESTREL READY” message and the “Transfer Complete” message.

When the “Transfer Complete” message is received, you are finished and may press the [Done] button to return to the main screen.

### 3.6.4 Having Trouble?

Sometimes you will get an erroneous message in the status box, or the transfer simply stops. The best thing to do in such a situation is to click on the [Done] button, then reenter the Kestrel screen and try again. The KH4500 unit sometimes enters a “I don’t know who’s turn it is to talk” state. This state can usually be cleared exiting the screen as the exit process forces a “reset” on the KH4500 unit.

If the problem persists, and you are sure that you have a valid connection, then please call either Nielsen Kellerman or Horus Vision for support.