VTRK GL17/22

GLOCK 17/22 RECOIL KIT MANUAL

Version 1.0-0113

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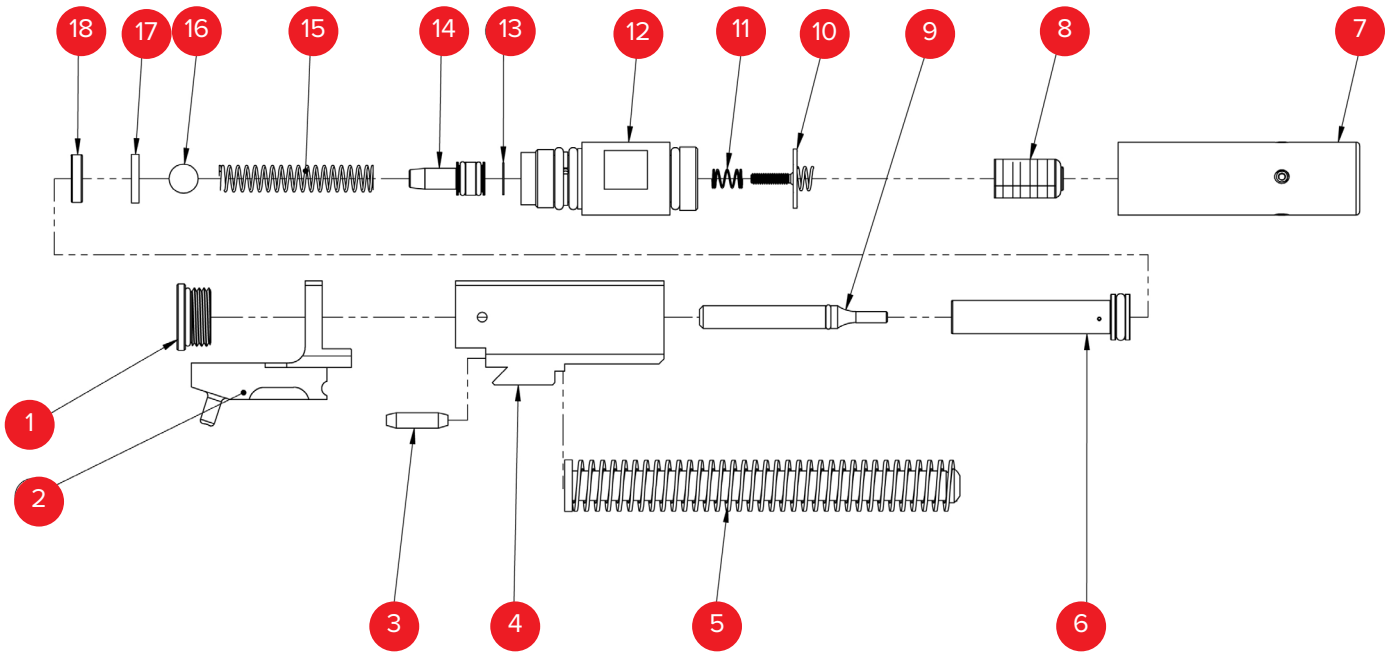
TABLE OF CONTENTS

I. EXPLODED VIEWS

1.1 Tailpiece + Barrel Assembly

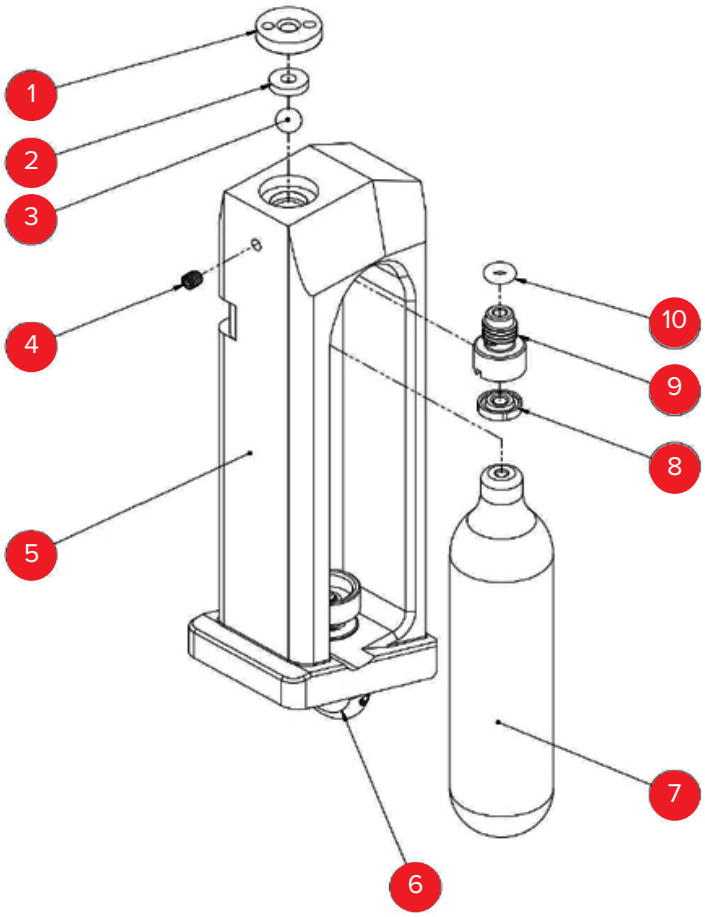


ITEM NUMBER	DESCRIPTION
1	Tailpiece Fastener with O-ring
2	Tailpiece
3	Connecting Tube
4	Barrel Block
5	Recoil Spring Assym
6	Piston with O-ring
7	Laser Housing Assym
8	Battery Pack
9	Striker Pin with O-Ring

ITEM NUMBER	DESCRIPTION
10	Rear PWB
11	Contact Spring
12	Charge Chamber housing with O-rign
13	Plastic Washer
14	Spring Guide Rod with O-rings
15	Ball Bearing Return Spring
16	Ball Bearing
17	Rubber washer
18	Charge Chamber End Cap

NOTE: Black rubber-type O-rings are shown and used on Items 1, 13, and 14. Hard plastic O-rings that are a translucent white in color exist on either end of Item #8. There are two O-rings on the end that goes into the barrel block and one O-ring on the end that goes into Item #6, the laser barrel housing. Also, the item numbers assigned to the parts in the previous and following exploded views are for the purposes of this document **ONLY** and should not be used for the purpose of ordering replacement parts.

1.2 Magazine Assembly



ITEM NUMBER	DESCRIPTION
1	Magazine Seal Fastener
2	Tailpiece to Magazine Mating Seal
3	Magazine Pressure Seal Bearing
4	M2.5mm Set Screw Plug
5	Aluminum Magazine Block
6	Wing Nut Assembly
7	CO2 Canister
8	CO2 Canister Seal
9	CO2 Canister Punch
10	CO2 Canister Punch O-Ring

II. USAGE / MAINTENANCE GUIDELINES

2.1 OEM - Firing Pin - IMPORTANT

Guidelines for care concerning the entire stockpile of firearm containing CO2 recoil kits can be found in Appendix 4.1.

It is recommended that specific firearms (non-duty firearms) are dedicated and solely used with the CO2 recoil kits. At the very least, firing pins should be dedicated for use **ONLY** with the CO2 recoil kits. The reason for this is due to the fact that the tip of the firing pin can/will ware flat after extended use of the CO2 recoil kit; the worn firing pin could affect its ability to detonate a primer. The OEM firing pins will wear out quicker than in normal operation (use of only live ammunition) and could become a source of improper operation, see Section 3.4 for guidelines in troubleshooting a worn firing pin.

2.2 Upon checkout of a Glock firearm

Upon checkout of the firearm and upon return of the firearm, it is necessary to ensure that the tailpiece fastener is secured tightly into place. This can be done in a matter of seconds and must become habitual. The following steps below can be used to quickly complete this procedure.

1. Pull the slide towards the back of the gun exposing about an inch of the chamber.
2. Take the tailpiece wrench and insert it into the mating holes on the tailpiece fastener, as shown in the following image.
3. Turn wrench in clockwise (CW) direction until tailpiece fastener is completely snug and cannot turn anymore. See figure 1 below.

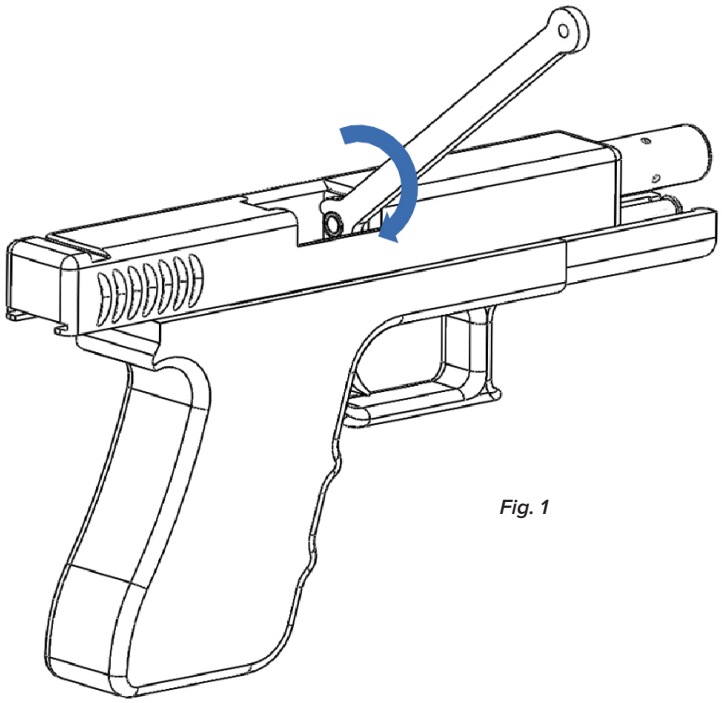


Fig. 1

2.3 At Start of the Day/Before Use

The following guidelines have been designed with daily use of the CO2 recoil kits in mind. Because it is unrealistic to apply these guidelines based on number of shots fired, the term daily use will be quantified as follows; daily use refers to the user expelling two full magazines of CO2 through the recoil kit within a time period of 0-10min afterward taking approximately 5 minutes to refill/replace the spent CO2 canisters. Repeating this cycle for an approximate 8-9hr time period is considered daily use. Section 2.7 includes other aspects of usage (e.g. rapid fire) where care should be applied.

Proper maintenance of the CO2 recoil kit should become habitual to the user(s) either at the end of a full day of usage or at the beginning of the day prior to any use.

2.3.1 Grease Barrel

The following guidelines in this section are meant to provide the reader with exact locations on the Glock recoil kit that grease should be applied. In general, after a full day of shooting a small amount of grease should be applied to the exterior and interior of the barrel. Approximately half the size of a drop (what would normally come out of an eye dropper) of grease should be used on and in the locations shown in figure 2. The grease to be used is green and comes in the small (4 CC) clear container which comes with each recoil kit. This grease is sold by FABCO-AIR and is called MAGNALUBE®-G TEFLON®GREASE #MGL-4.

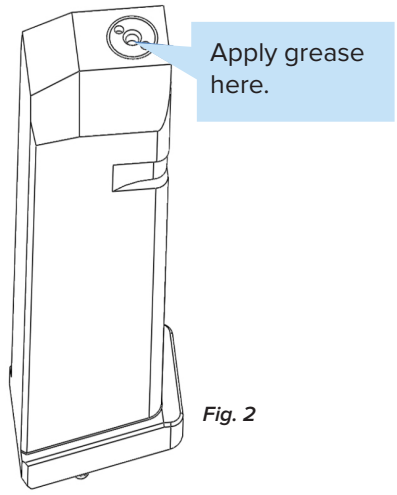


Fig. 2

IMPORTANT: Only the above mentioned TEFLON® grease by FABCO-AIR should be used for the purposes outlined here in Section 2.3.1 and 2.3.2. This grease has been chosen for specific reasons and **NO** substitution is permitted. If different grease (brand or type) is desired then express written permission must be obtained from the engineering staff at VirTra Systems. If usage of different grease does occur the functionality and longevity of the CO2 recoil kit will be compromised.

The top and side of the exterior surfaces of the barrel block, Item #3 in Section 1.1, as well as the exposed portion of the barrel should have a very thin layer of grease applied. This will help the slide to move over the barrel and barrel block more easily. See figure 3.

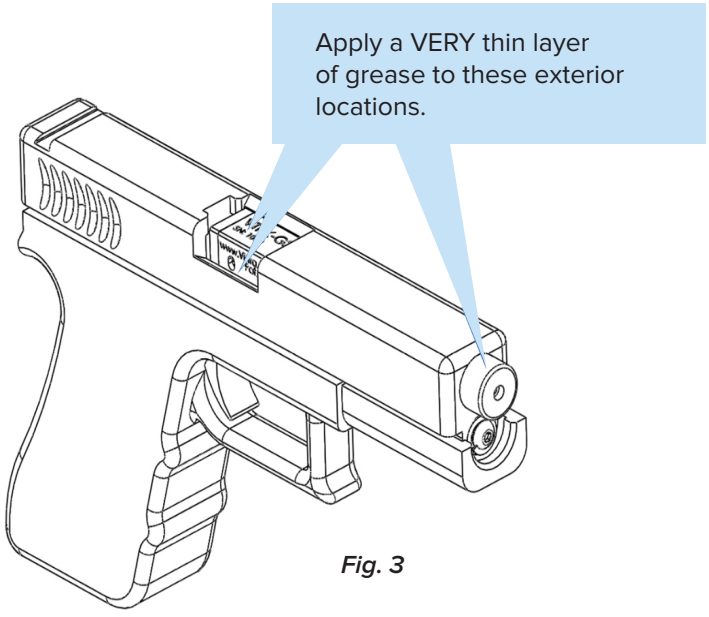


Fig. 3

2.3.2 Grease Magazine Seal

There is a small seal in the top portion of the magazine, shown as item #2 in Section 1.2, a very small amount of grease should be applied in the top mating hole. This will extend the life of the seal as well as make it easier for the tailpiece to connect with the magazine.

2.4 At End of the Day

The guidelines outlined in this section should always be performed at the end of the day. It is important not to leave any pressurized CO2 canisters in any of the magazines over night. For this reason, the reader will need to depressurize every magazine containing a CO2 canister. The following itemized steps will guide the reader through this process.

1. First remove magazine from the firearm.

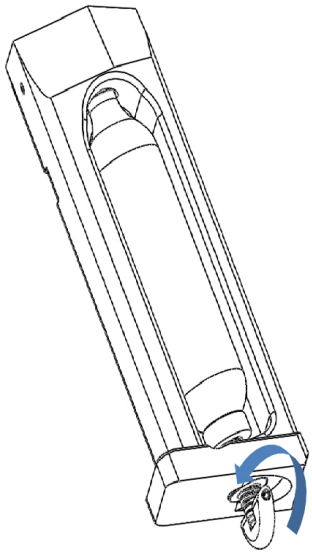


Fig. 4

2. Slowly loosen the wingnut, item #6 in section 1.2, until escaping gas is heard, see figure 4 above.

3. Continue to slowly loosen the wingnut to allow more gas to escape. Releasing excess CO2 gas at a fast rate could cause the CO2 canister to fly out from the magazine housing. This could result in serious injury.

4. Lastly, allow all gas to escape (once all hissing has stopped) and either recycle spent CO2 canister or tighten back up into magazine with wingnut to be refilled the following day.

CAUTION: If too much gas escapes too quickly the CO2 canister will become **VERY** cold and should not be touched to avoid injury. This process should be repeated for **ALL** magazines which still contain CO2 canisters.

2.5 At the End of the Week

By this time a large number of shots will have been fired through the CO2 recoil kit and necessitates the application of the previously mentioned TEFLON® grease onto the piston O-ring. The following steps will guide the reader through this process of greasing the piston O-ring.

1. Remove the barrel assembly from the firearm by following the disassembly steps outlined in Appendix 4.2.1. **DO NOT** perform the last two steps (#10 and #11) of the disassembly process in Appendix 4.2.1 as it is unnecessary to remove the laser module and corresponding parts.
2. Inspect the O-ring on the end of the piston. If it is damaged in any way, e.g. cuts or small chips missing, now would be the optimal time to replace a damaged O-ring with a new one supplied by VirTra. Once this is complete, continue on to the next step.
3. With the piston in hand apply TEFLON® grease as outlined in figure 5 below.

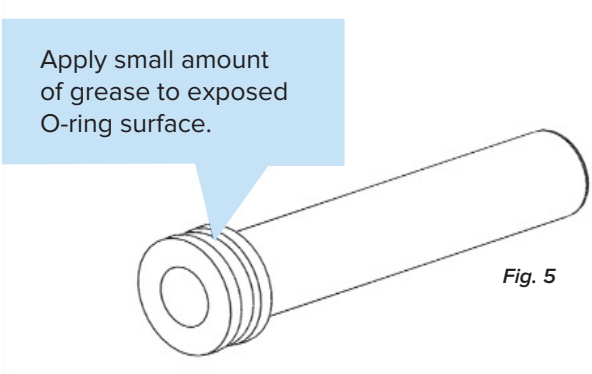


Fig. 5

4. Replace freshly greased piston back into the barrel block and move piston back and forth to spread the grease throughout the piston chamber. See figure 6 below.
5. Inspect the tailpiece, tailpiece fastener, and striker pin to ensure no large chips or breaks have occurred in any of the parts. If chips or breaks are noticed in any of the metal parts notify your supervisor and remove the firearm from the stockpile for repair/replacement.
6. Next, inspect the white tube connector for any ware and replace if appearance is like unto that shown in Section 2.6.

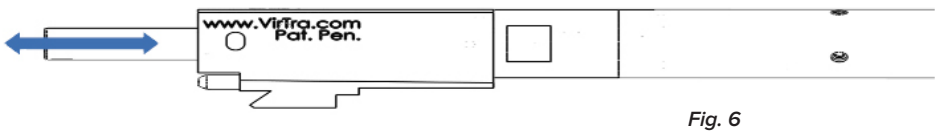


Fig. 6

With the CO2 recoil kit disassembled from the firearm, now is a good time to clean the inside of the piston and the exterior of the striker pin. Please ensure that you have the following supplies on hand before performing the steps below:

- Dry, standard size cotton swabs Qty (1) - Qty (2) at most. These might be better known as Q-Tips®
- Qty (1) standard size shop rag. These are commonly red in color.

With the piston in hand, take one cotton swab and insert one end into one end of the piston. Move the cotton tip back and forth to remove any build up. Repeat this process with the other end of the cotton swab and the second cotton swab if necessary. See figure 7 below for further clarification.

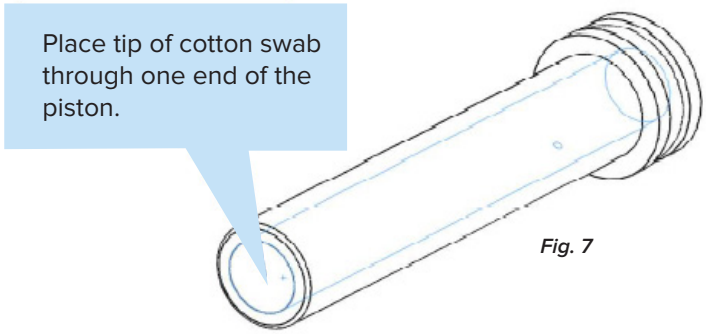


Fig. 7

NOTE: If the process above does not completely remove the buildup then a solvent from a firearms cleaning kit can be used. Dip one end of the cotton swab into the solvent and run it back and forth through the piston, as described above. Once all the buildup has been removed, take a dry cotton swab and run it through the piston to remove any solvent left behind.

Next, clean the striker pin using the shop rag previously mentioned. This should be as simple as pulling off the build up with the rag. **DO NOT** use a solvent on the striker pin as it may damage the O-ring. See the figure 8 below for clarification.

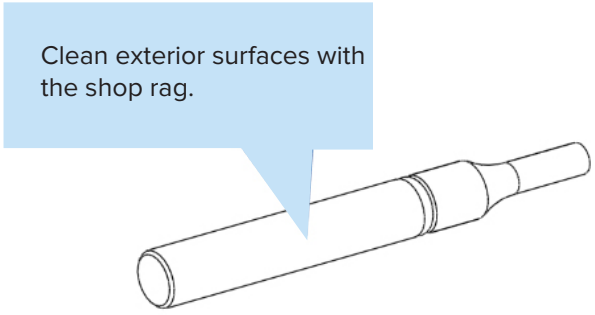


Fig. 8

Lastly, apply a **VERY** small amount of grease to the part of the striker pin with the largest diameter. The same green TEFLON® grease applied to the piston O-ring, detailed above, should be used. See the figure 9 for clarification.

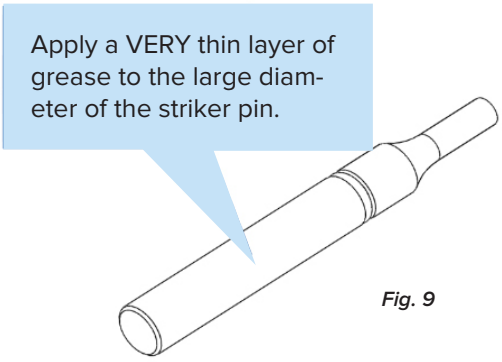


Fig. 9

Reassemble everything into the firearm and ensure that the recoil kit is operating correctly.

NOTE: This completes the “End of the Week” inspection and maintenance processes.

2.6 At the End of the Month

At the end of every month will be a good time to inspect several other key items to the functionality of the recoil kits. The reader should perform the following steps in order to accomplish the necessary inspections and maintenance.

1. Begin by disassembling the firearm per the steps outlined in Appendix 4.2.
2. After disassembly is completed inspect the plastic tube connector (Item #2 in Sec 1.1). If it looks worn, as seen figure 10 below then replace with a new one.

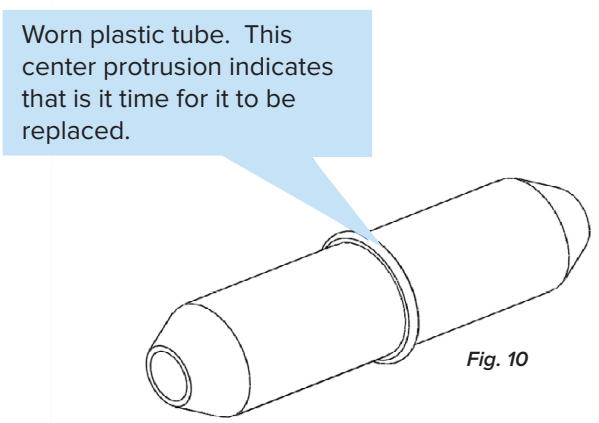


Fig. 10

3. Next, you will want to inspect the firing pin of the weapon. Because the OEM firing pins are being used there is a tendency to wear them out faster than in normal operation. Please follow the guidelines set out in the OEM's manual for disassembly of the slide in order to get to the firing pin. If the firing pin has worn to a flat and the tip has been lost now would be a good time to replace it.

2.7 Other Considerations

2.7.1 Rapid Fire

The CO2 recoil kits are fully capable of rapid fire(RF). Rapid Fire is defined as expelling two full/new CO2 canisters through the firearm in under 60 seconds time. If several magazines are expelled via RF the internal components will reduce in temperature resulting in a reduced number of shots from any proceeding magazines.

2.7.2 5 Days or More WITHOUT Use

If any of the CO2 recoil kits go without being used for more than 5 days, VirTra recommends the batteries be removed from the laser barrel housing. The reason for this is to extend the life of the coin cell batteries inside the recoil kit. Therefore, if a recoil kit is placed in storage for a period of time exceeding 5 days, remove the battery pack and label that recoil kit as Needs Battery Pack (or something similar).

See Section 4.1 for guidelines on removing the battery pack.

III. TROUBLESHOOTING TIPS

3.1 If a leak is heard after magazine is inserted

The following steps should be taken if a leak is heard from the firearm after a magazine with a full CO2 cartridge is installed.

1. Check that the magazine is completely installed in the firearm and locked into place by the magazine catch.
2. Check that the tailpiece fastener is tightly secured, see Section 2.2 for help.
3. Remove the magazine and ensure that the magazine does not have a leak. If the magazine is the source of the leak skip down to Section 3.2.
4. Check the piston O-ring as well as the plastic tube connector for damage or excessive ware. This can be accomplished by disassembly of the CO2 recoil kit according to Appendix 4.2, and replacement guidelines can be found in Sections 2.5 and 2.6
5. If the piston O-ring and/or plastic tube connector were replaced, reassemble the firearm to check if the leak persists. If the leak is no longer audible continue normal use of the CO2 recoil kits, if the leak does persist, continue on with the following steps.
6. Replace the magazine seal, Item #2 in Section 1.2, by disassembling the magazine according to the steps outlined in Section 4.2.2.
7. Place a new CO2 canister (or used one), if it has been used then the magazine will have to be refilled using the CO2 refill station.
8. Replace the magazine into the firearm, if a leak is no longer audible then continue with normal use.
9. If the leak persists, contact the VirTra Service Department for addtional assistance.

3.2 If a leak is heard when magazine is NOT in the firearm

The following steps should be taken if a leak is heard from the magazine while not installed in the firearm.

1. Place a finger over the exit port in the top of the magazine. If the leak is still audible this indicates that the CO2 canister seal (item #8 of magazine assembly) has degraded and needs to be replaced. If this is in fact the case then the reader should send the magazine back to VirTra with prior notification as well as an explanation included in the package.
2. If the leak is no long audible after placing a finger over the top of the exit port this indicates that item #2 of the magazine assembly should be replaced. In order to do so perform the following steps:
    - Follow the steps outlined in Section 4.2.1 to disassemble the magazine. **WARNING:** Ensure that the CO2 canister has been removed before proceeding.
    - Obtain a new magazine/tailpiece mating seal (supplied by VirTra) and replace the old worn out one with the new one.
    - Securely tighten down the magazine seal fastener and insert a new CO2 canister or refill the old one if a CO2 refill station is available.

3.3 If the magazine does not lock into place due to pressure build up

If a full magazine is inserted into the firearm but will not lock into place due to being blown out by the compressed CO2, then the problem is most likely due to a worn plastic tube connector. In order to replace the plastic tube connector, follow the enumerated steps below.

1. Disassemble the tailpiece and barrel assemblies per the instructions outlined in Appendix 4.2.1 but skip the last two steps #'s 10 and 11 as there is no need to remove and disassemble the laser module.

2. Remove the plastic tube connector from the barrel block and inspect for ware. If the center has a raised ring, as shown in section 2.6, then it should be replaced with a new plastic tube connector as supplied by VirTra.

If the plastic tube connector does not appear worn or damaged in any way then reassemble the firearm and retest the tailpiece and barrel assembly using a different magazine. If the problem still persists contact the VirTra Service Department for further assistance.

3.4 If only a few shots are possible with a full magazine

If a magazine with a full CO2 canister is installed and only a few shots are able to be realized from it with no evidence of a leak, then two most likely possibilities remain:

- The OEM firing pin is worn down substantially;
- Or the striker pin has worn down substantially. In order to determine which of the two possibilities is the reason for malfunction the reader will need to:

1. Disassemble the tailpiece and barrel assemblies per Appendix 4.2.1

2. Inspect the face of the striker pin that the firing pin strikes with each trigger pull as shown in figure 11. If this face is still relatively flat and not mushroomed out, then the striker pin is most likely not the culprit.

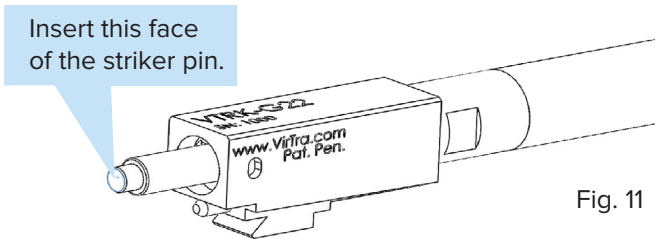


Fig. 11

3. Disassemble the slide assembly per the OEM's instructions. Inspect the firing pin, if the tip has worn flat or is broken off in any way then it will need to be replaced with another OEM firing pin. If the firing pin appears intact when compared to a new OEM firing pin then the striker pin is most likely the source of the issue.

4. With a new OEM firing pin in place but still only a few shots are realized from a full/new CO2 canister, then the striker pin is certainly the reason for the CO2 recoil kit not functioning properly and needs to be replaced/repaired. Contact the VirTra Service Department for further assistance.

3.5 If everything is working correctly but shots do not register on screen.

This section assumes that all the mechanical functions of the CO2 recoil kit are working properly. Simply, the firearm recoils as intended with no audible leaks but no shots are registered on the screen. The following steps should be taken to remedy this issue:

1. Ensure that the shot tracking system is working properly by running the Tracker Diagnostics program. With the Tracker Diagnostics running, use the 'Swap Display' function to move the blank black window onto the display screen.
    - Take another firearm with a CO2 recoil kit, known to be in good working order, and fire it at the screen. A shot should register and be displayed on the screen.
    - If a shot does register on the display then continue on to step 2.
    - If a shot does NOT register on the display then recalibrate the shot tracking camera and repeat the previous step.
2. The batteries in the laser module of the CO2 recoil kit in question are most likely bad and should be replaced.
    - Disassemble the CO2 recoil kit per the instructions in Appendix 4.1 through step 7. **Special attention** should be taken to remember the orientation of the batteries in the laser module.
    - Replace the four coin cell batteries with four new Silver Oxide coin cells No. 392.
    - Install the laser module back into the barrel and secure it tightly down with the 0.050" hex wrench.
    - Reassemble the CO2 recoil kit back into the firearm and fire it at the screen with the Tracker Diagnostics running. A shot should have registered on the screen. If a shot does not register on the screen contact the VirTra Service Department, Section V, for further help.

IV. APPENDICES

4.1 Maintenance and Care of Recoil Kit

The following aims to provide suggestions for the purpose of maintaining the entire stock of firearms that have been retrofitted with CO2 recoil kits. It is the belief of the engineering staff at VirTra that a cycling process in terms of usage should be applied to the stockpile of firearms designated for VirTra simulators. For example, assuming that a stockpile of 25 firearms with recoil kits are in place and 15 of the recoil kits have been checked out and used for half a work day (4 hrs). Now assume an additional 15 firearms are needed for the remaining 4 hours. It is best to not use all of the same 15 firearms that were used during the first 4 hours of the day, but to cycle through the remaining 10 firearms that have not been used, and include 5 of the firearms used during the previous 4 hours of the day. It is realized that only a select few situations will be similar to the one given above, but the idea of cycling through the available stockpile is the same regardless.

4.2 Disassembly

4.2.1 Tailpiece + Barrel Disassembly

To begin disassembly of the CO2 recoil kit ensure that the barrel is pointing away from your person as well as anyone else (preferably towards the ground).

1. Remove the magazine from the firearm.
2. If it is still cocked, pull the trigger one last time to expel any remaining CO2.
3. Pull the slide toward the back of the gun exposing the chamber approximately an inch or so as shown in figure 12.
4. Remove the tailpiece fastener by method shown in figure 13.

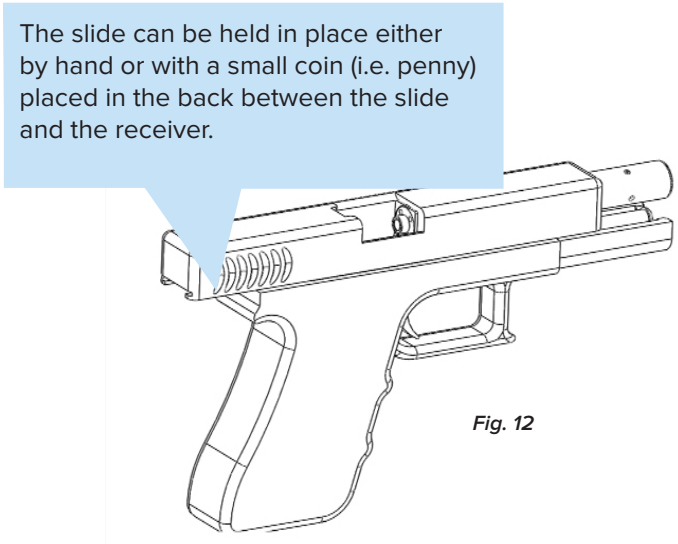


Fig. 12

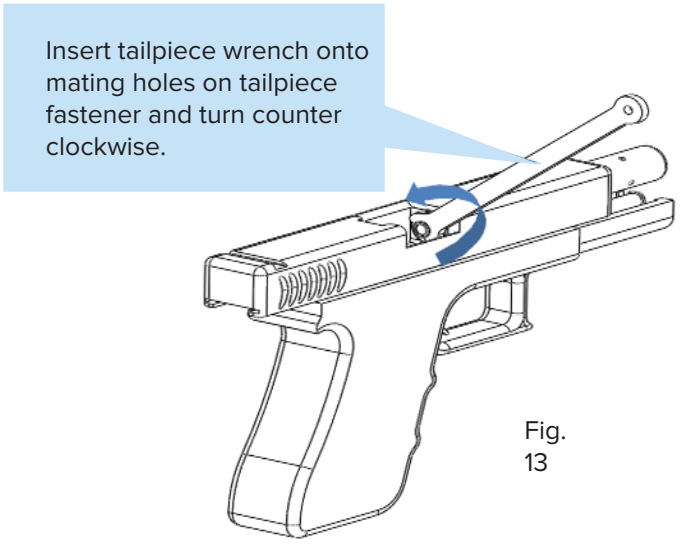
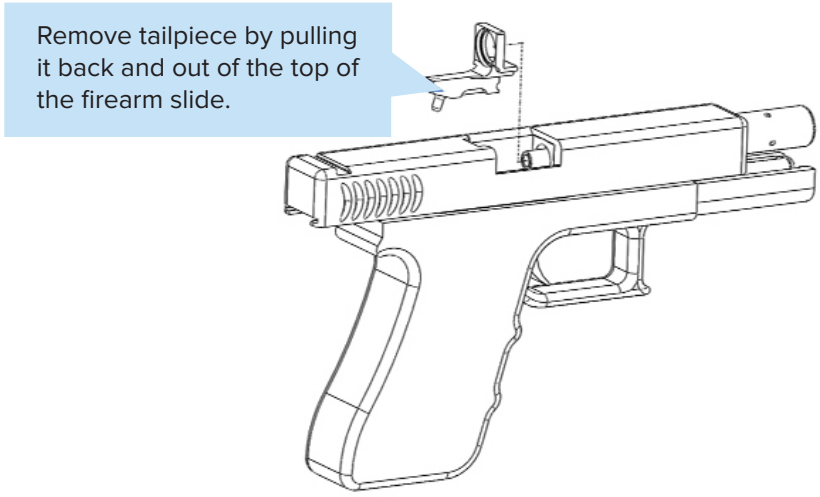


Fig. 13

5. After the tailpiece fastener has been removed, remove the tailpiece by pushing it towards the back of the gun and lifting up out of the chamber. **NOTE**: Make sure the trigger has been depressed, as this should ease both installation and removal of the tailpiece. Also, the help of a flat head screw driver is usually required in this process of removing the tailpiece. See figure 14.



6. Once the tailpiece and tailpiece fastener have been removed it is now time to remove the slide. The slide is removed via the OEM methodology by pulling down on the lever in the front of the receiver and depressing the trigger. A very audible click should occur, moving the slide away from the reader and off of the receiver as shown in figure 15.

7. Remove the recoil spring and guide rod assembly from the slide assembly. Inspect for damage and set aside if visual inspection is passed, otherwise, report issue to supervisor before continuing. See figure 16 below.

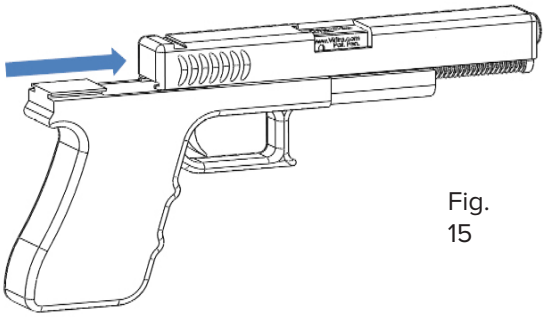


Fig. 15

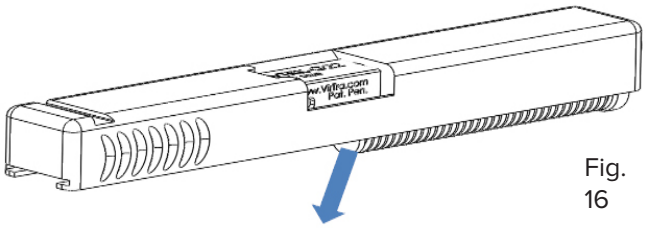


Fig. 16

8. Remove barrel assembly from slide. Inspect slide for damage and set aside if visual inspection is passed, otherwise, report issue to supervisor before continuing.

9. Now the barrel assembly, figure 17 should be the only items in the readers direct work space.

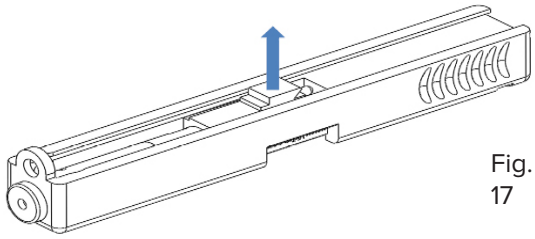


Fig. 17

10. Remove items from the barrel assembly as described in figure 18 below.

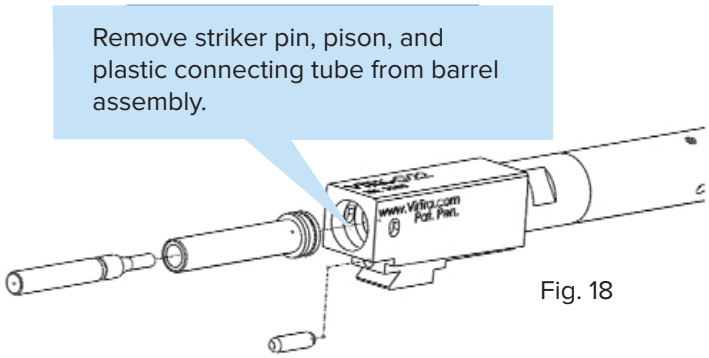


Fig. 18

11. To remove the batteries simply unscrew the laser barrel housing from the pressure chamber assembly. This can be done with ones bare hands and should not require the use of any tools. See the figure 19 for clarification

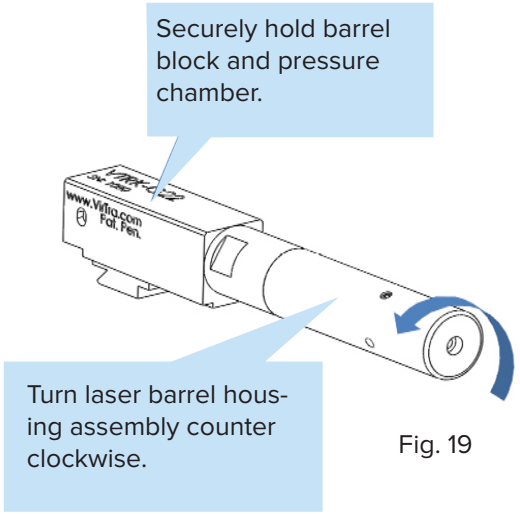


Fig. 19

12. Maintain the barrel in the downward position and finish unscrewing the laser barrel assembly. Once it has been completely unscrewed the 4-cell battery pack should slide out as shown in figure 20.

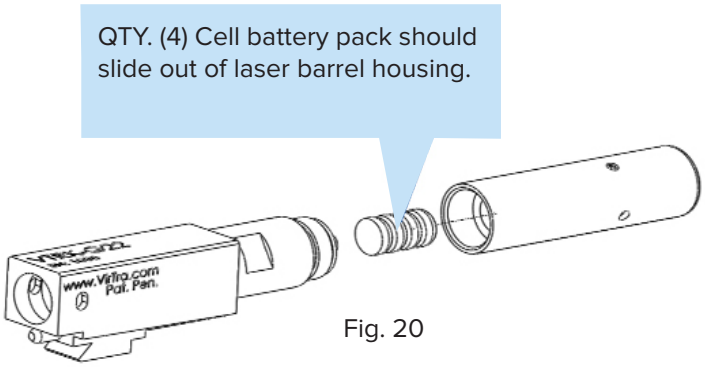


Fig. 20

BE AWARE: If for some reason the user has been instructed (or has taken it upon him/herself) to remove Item #10, the Pressure Chamber Assembly, from Item #3, the Barrel Block, then it is important for the user to heed the following.

Now is the time to ensure that Items #5 and #7 are contained within the barrel block before moving on with reassembly. When reassembling Item #10 to Item #3 ensure Items 11-14 are contained inside Item 10. Items 12-14 will be under pressure from the spring and should be retained with ones finger. Orient the barrel block and pressure chamber in the fashion shown on figure 21.

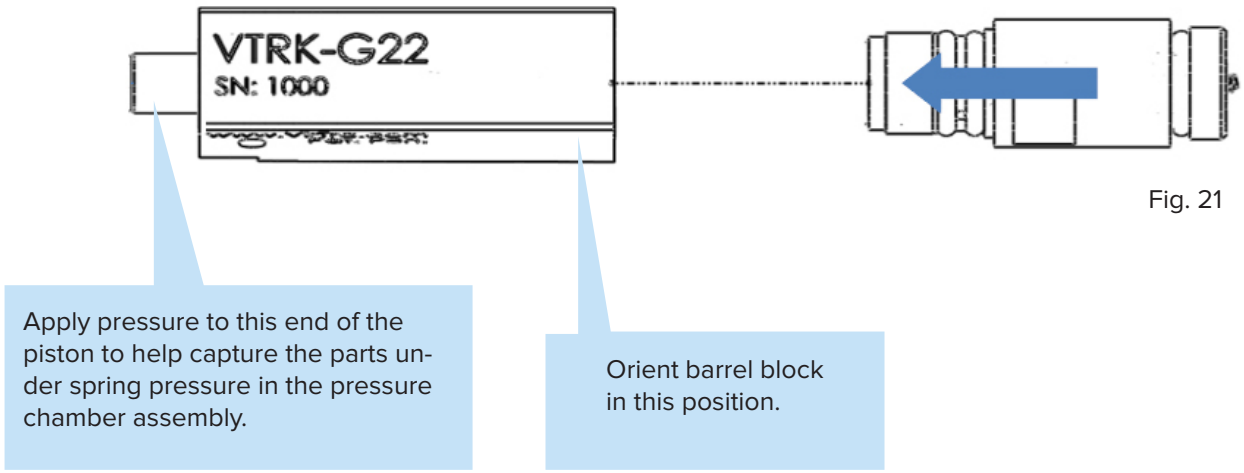


Fig. 21

BY HAND screw the pressure chamber assembly into the barrel block by turning it CW (clockwise). Once the user has screwed it down by hand as much as possible take a 12” wrench and use it on the flats of Item #10 turning it CW a very slight amount to seat it against the barrel block tightly.

NOTE: This completes disassembly of the tailpiece and barrel components.

4.2.2 Magazine Disassembly

WARNING: Ensure that the CO2 canister has been removed from the magazine. This must be done now before any further steps are taken. VirTra assumes no responsibility for injury or damage of any kind from non-compliance to the instruction(s) at the beginning of this paragraph.

Only after the CO2 canister has been removed then use the following steps to disassemble the magazine.

1. Use the smaller diameter end of the tailpiece wrench and insert the mating pins on the wrench into the mating holes of the magazine seal fastener. Turn the wrench counter clockwise (CCW) to loosen and remove the magazine seal fastener as shown in figure 22.
2. Remove Items 1, 2, and 3 as specified in Section 1.2 from the top of the magazine, see figure 23 below. Inspect all items for damage that could hinder proper operation of the CO2 recoil kit. Notify your supervisor if any noticeable damage is cause for concern.

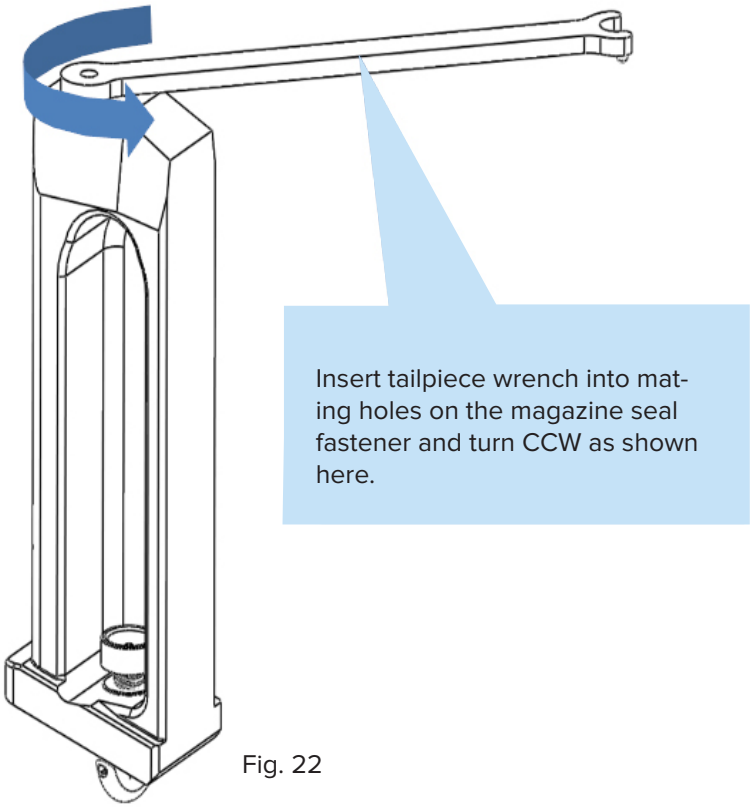


Fig. 22

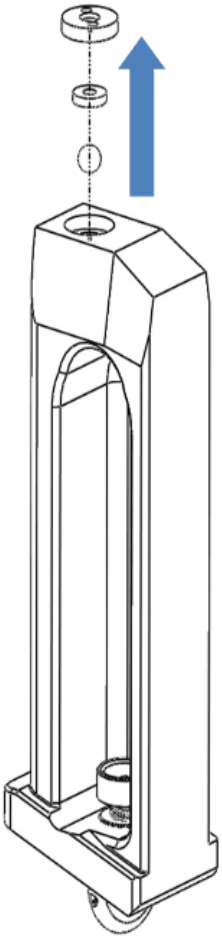


Fig. 23

NOTE: This concludes the magazine disassembly. Items 8, 9, and 10 shown in Section 1.2 should not be removed by the reader for any reason. If any of the previously mentioned items appear to be the cause for the loss of functionality then the entire magazine assembly must be shipped back to VirTra for repair.

V. CONTACT VIRTRA

If you have any questions/issues with any part of this manual, please see contact below:

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