

# COMANCHE-22

NIGHT VISION CLIP-ON SYSTEM

USER MANUAL

© 2019 AGM Global Vision. All rights reserved worldwide.

This documentation is subject to change without notice.

No parts of this manual, in whole or in part, may be copied, photocopied, translated, or transmitted by any electronic medium or in machine-readable form without the prior written permission of AGM Global Vision.

If you have questions that are not covered in this manual, or need service, contact AGM Global Vision customer support for additional information prior to returning a product.

## **AGM Global Vision**

**173 West Main Street**

**PO Box 962**

**Springerville, AZ 85938**

**Tel. 928.333.4300**

**Fax 480.393.4882**

**support@agmglobalvision.com**

**www.agmglobalvision.com**

## **EXPORT INFORMATION**

Buyer acknowledges that all products supplied by AGM Global Vision are subject to U.S. export control laws, including, but not limited to, the Export Administration Regulations, the International Economic Emergency Powers Act, and various U.S. embargoes and sanctions. AGM Global Vision products may not be exported, re-exported, or transferred contrary to U.S. export control laws. In particular, AGM Global Vision products may not be exported, re-exported, or transferred to prohibited countries, individuals, organizations, or entities, including but not limited to those individuals and entities listed on the List of Specially Designated Nationals and Blocked Persons administered or maintained by the U.S. Office of Foreign Assets Control ("OFAC"), the various lists maintained by the Bureau of Industry and Security of the Department of Commerce, and the U.S. State Department and Buyer represents and warrants that neither Buyer nor any of its officers, directors, or employees are on such lists. Distribution or resale by Buyer to such countries, individuals, organizations, or entities is expressly prohibited. Buyer has and will maintain a positive process to ensure compliance with this Section.

# LIST OF CONTENTS

TITLE	PAGE
Safety Summary	4
<b>SECTION 1. GENERAL INFORMATION</b>	<b>6</b>
1.1 General Information	6
1.2 Key Features	6
1.3 System Description	6
1.4 Standard Components	8
1.5 Optional Equipment	9
<b>SECTION 2. OPERATING INSTRUCTIONS</b>	<b>10</b>
2.1 Installation and Mounting	10
2.2 Controls and Indicators	17
2.3 Operating Procedures	18
<b>SECTION 3. MAINTENANCE</b>	<b>20</b>
3.1 Cleaning Procedures	20
3.2 Troubleshooting	20
<b>SECTION 4. WARRANTY INFORMATION</b>	<b>22</b>
4.1 Warranty Information	22
4.2 Limitation of Liability	22
4.3 Product Registration	23
4.4 Obtaining Warranty Service	23
<b>SECTION 5. SPECIFICATIONS</b>	<b>24</b>
5.1 Specifications	24
<b>APPENDIX</b>	<b>26</b>
A. List of Spare Parts	26

## SAFETY SUMMARY

- Read and follow all instructions
- Read all warnings
- Only use the attachments/accessories specified by the manufacturer
- All service must be provided by the manufacturer

### **WARNING:**

Always make sure your firearm is unloaded before you place the scope on the firearm. Verify that the chamber is empty, particularly if you stop the procedure and resume at a later time. Safe handling rules should be followed at all times.

### **WARNING:**

If a scope is mounted too far to the rear of a weapon, the eyepiece can injure the shooter's brow. Shooting at an uphill angle also increases this risk, because it shortens the distance between the brow and the rear of the scope. When mounting your scope, we recommend positioning it as far forward in the mounts as possible.

With hard-recoiling rifles, serious injury or even death can result from eyepiece impact when discharging the firearm.

BEFORE SHOOTING THE FIREARM, verify that your installation provides sufficient space between the eyepiece and the scope to account for the recoil generated by your rifle.

NOTE: Give special attention to this warning when shooting uphill and/or from a prone position. These shooting conditions can dramatically reduce space allotted for recoil between your eyes and the weapon. PLEASE maintain maximum distance when shooting magnum firearms or firearms with heavy recoil. THE USER ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR HAVING THE RIFLESCOPE PROPERLY MOUNTED TO A FIREARM AND USING THE RIFLESCOPE PROPERLY. ALWAYS CHECK THE CONDITION OF YOUR MOUNTING SYSTEM PRIOR TO USING YOUR FIREARM.

### **WARNING:**

**This product contains natural rubber latex which may cause allergic reactions!** The FDA has reported an increase in the number of deaths that are associated with an apparent sensitivity to natural latex proteins. If you are allergic to latex, it is a good idea to learn which products contain it and strictly avoid exposure to those products.

### **WARNING:**

- It is recommended that you use an eyecup on the eyepiece of the day scope, allowing for the eyepiece diameter and eye relief and having side paddle preferably in order to escape detection.
- The light from the infrared illuminator is invisible to the unaided eye. However, the light can be detected by other night vision devices.

**CAUTION:**

- DO NOT dismantle the equipment.
- Keep the equipment clean. Protect it from moisture, dramatic temperature changes, and electric shocks.
- DO NOT drop or hit the equipment.
- Protect the equipment from overexposure to light: DO NOT activate the equipment in daylight with the objective lens cap removed; DO NOT aim the equipment at bright light sources (a fire, car headlights, lanterns, street lamps, room lights, etc.).
- DO NOT force the equipment controls past their stopping points.
- DO NOT leave the equipment activated during breaks in operation.
- Verify that the equipment is off before installing a battery.
- DO NOT store the equipment with the battery still in it.
- To avoid deformation or damage, remove the light suppressor from the Comanche-22 before placing the equipment in storage.
- Thoroughly clean and dry each item before placing them into the storage case.
- Front Scope Mounts are not recommended for installing the Comanche-22 on firearms having vigorous recoil (0.308 Win or stronger).

**NOTES:**

- Optical axes of the Comanche-22 and day scope should align. It is not recommended for the distance between the axes to exceed 3mm. If the difference in the axis heights of the Comanche-22 and day scope above the weapon rail exceeds 3mm, you will need to replace the day scope mounting rings or monoblock.
- The equipment requires some level of ambient light (moonlight, starlight, etc.) to function correctly.
- Performance of the device in night-time conditions depends on the level of ambient light in the environment. Please remember the following:
  - The level of ambient light is reduced by the presence of clouds, shade, or objects that block natural light (trees, buildings, etc.).
  - The equipment is less effective when operated in shadows and other darkened areas.
  - The equipment is less effective when operated in rain, fog, sleet, snow, dust or smoke.
  - The equipment will not “see” through dense smoke.
- For the purpose of returning defective components, retain all packaging materials.

# 1 GENERAL INFORMATION

## 1.1 GENERAL INFORMATION

The AGM Global vision Comanche-22 Night Vision Clip-On (NVCO) system uses the latest advances in night vision clip-on technology. Designed for mid-range nighttime shooting, the Comanche-22 delivers exceptional clarity, reliability, and versatility providing the most significant functionality and features.

The Comanche-22 is mounted to a standard Weaver or Picatinny rail in front of an existing day scope; transforming it into a Night Vision Device (NVD) with no re-zeroing required. This NVCO can be used with day scopes of up to 7x magnification for optimal performance and is equipped with a quick release mount and wireless remote control. It provides unmatched target acquisition and enhanced aiming capabilities, making it extremely practical and effective during the most challenging missions.

## 1.2 KEY FEATURES

- **Simple, quick conversion of daytime scopes to NVDs**
- **Manual gain control**
- **Mounts in front of any daytime scope, no re-zeroing required**
- **Powered by a single Alkaline 1.5V AA or 3V CR123A Lithium battery**
- **Bright-light cut-off system**
- **Quick-release mount**
- **Limited 3-year warranty**

## 1.3 SYSTEM DESCRIPTION

The Comanche-22 consists of two primary parts: the night vision device (hereafter referred to as NVD) and the mount. The Comanche-22 is delivered already assembled with a mount. The mount is secured to the seating rail of the NVD with two screws.

The NVD includes four main components: the objective and output lenses, an image intensifier tube, and the body.

The objective lens focuses available light (photons) on the photocathode of the image intensifier tube (IIT). The light energy causes electrons to be released from the cathode. After being amplified, the electron flow represents an intensified version of the original image of the scene. The electrons then strike the IIT phosphor screen, which reacts to them by glow that is visible to the human eye. The image is projected by the output lens from the IIT screen to the day scope lens.

The Comanche-22 incorporates manual gain control, which allows the operator to increase or decrease the brightness of the image to compensate for overly bright or extremely dark conditions.

The Comanche-22 is powered by a single Alkaline 1.5V AA or 3V CR123A Lithium battery. The mount system quick and reliable mounts the Comanche-22 to the Picatinny/Weaver rail. The Comanche-22 is shown in Figure 1-1. The ITEM NO. column in Table 1-1 indicates the number used to identify items in Figure 1-1.

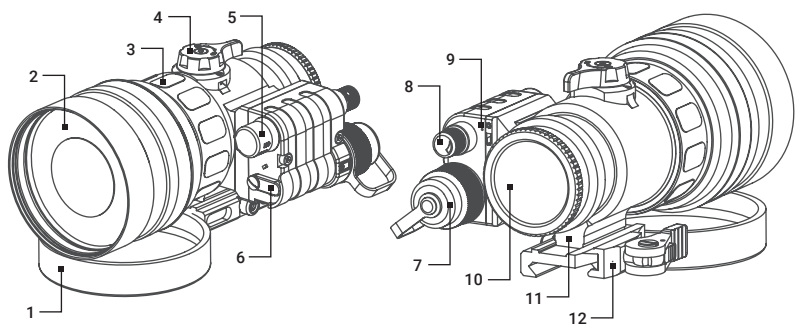


FIGURE 1-1. COMANCHE-22 NIGHT VISION CLIP-ON MAIN PARTS

TABLE 1-1. COMANCHE-22 NIGHT VISION CLIP-ON MAIN PARTS

ITEM	DESCRIPTION
1	Objective Lens Cap
2	Objective Lens
3	Body
4	Focus Knob
5	Operation Switch
6	Photoreceiver with a Cap

ITEM	DESCRIPTION
7	Battery Cap with Adapter
8	Gain Control Knob
9	LED Indicator
10	Output Lens with a Cap
11	Seating Rail
12	Quick-Release Mount

## 1.4 STANDARD COMPONENTS

The Comanche-22 standard components are shown in Figure 1-2 and listed in Table 1-2. The ITEM NO. column indicates the number used to identify items in Figure 1-2.

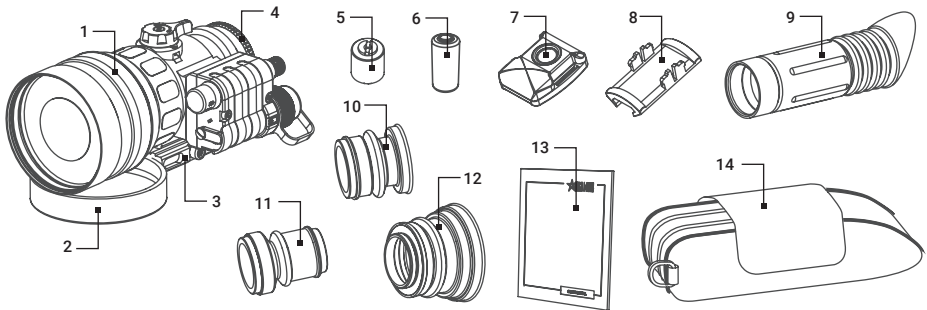


FIGURE 1-2. STANDARD COMPONENTS

TABLE 1-2. STANDARD COMPONENTS

ITEM	DESCRIPTION	QUANTITY
1	Comanche-22 Night Vision Clip-On	1
2	Lens Cap	1
3	Quick-Release Mount	1
4	Output Lens cap	1
5	Battery Adapter	1
6	CR123A Battery	1
7	Wireless Remote Control	1
8	Picatinny Adapter for Wireless Remote Control	1
9	Light Suppressor for Day Scope	1
10	Light Suppressor 1	1
11	Light Suppressor 2	1
12	Light Suppressor 3	1
13	User Manual	1
14	Carrying Case	1



## 1.5 OPTIONAL EQUIPMENT

The Comanche-22 optional equipment are shown in Figure 1-3 and listed in Table 1-3. The ITEM NO. column indicates the number used to identify items in Figure 1-3.

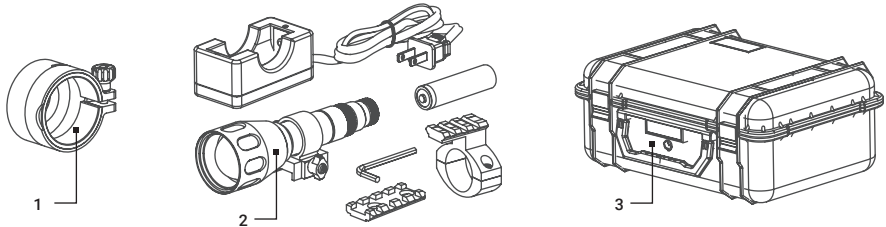


FIGURE 1-3. OPTIONAL EQUIPMENT

TABLE 1-3. OPTIONAL EQUIPMENT

ITEM	DESCRIPTION	PART NO.
1	<b>Front Scope Mount #1</b> for Daytime Optics with 25.4-30 mm Objective Diameter	6606SM11
-	<b>Front Scope Mount #2</b> for Daytime Optics with 38-42 mm Objective Diameter	6606SM21
-	<b>Front Scope Mount #3</b> for Daytime Optics with 46.7-50 mm Objective Diameter	6606SM31
-	<b>Front Scope Mount #4</b> for Daytime Optics with 56-58.7 mm Objective Diameter	6606SM41
-	<b>Front Scope Mount #5</b> for Daytime Optics with 62 mm Objective Diameter	6606SM51
2	<b>CO22-IR Kit</b> Kit includes: Sioux850 Long-Range Infrared Illuminator, Rechargeable Battery, Charger, Platform Ring, Picatinny Rail Mount	6605C221
3	<b>Hard Case</b> for Storage/Transportation	6610HCS1

## 2 OPERATING INSTRUCTIONS

### 2.1 INSTALLATION AND MOUNTING

#### CAUTION

To protect the image intensifier tube when the device is not in use or when it is being operated in daylight, keep the protective objective lens cap securely fitted over the lens.

#### 2.1.1 COMANCHE-22 BATTERY INSTALLATION

##### NOTE:

At operating temperatures below -20°C (-4°F), alkaline battery life will be severely reduced. Under said conditions, the use of lithium battery is recommended.

##### CAUTION:

Ensure that the device is off before installing the battery.

Install the battery as follows (refer to Figure 2-1):

1. Unscrew the battery cap (A) and check the position of the adapter (B). See Figure 2-1 for the correct positioning of the threaded adapter, which changes depending on the battery being installed.
2. If necessary, change the adapter position in the cap.
2. Install the battery (C) into the battery compartment (D), following the polarity order marked on the compartment for reference (E).
3. Replace the battery cap.

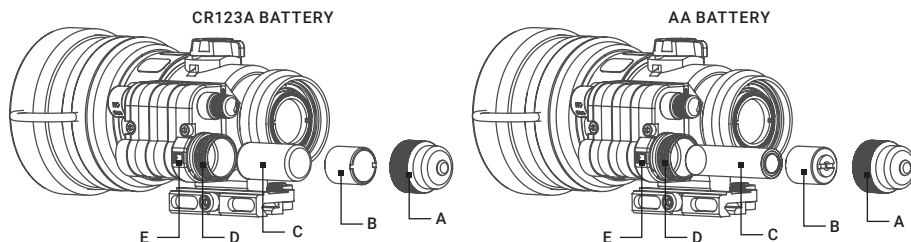


FIGURE 2-1. COMANCHE-22 BATTERY INSTALLATION

## 2.1.2 INSTALLING THE COMANCHE-22 ON A PICATINNY/WEAVER RAIL

### **WARNING:**

When installing the equipment on a weapon, verify that the weapon is clear and that the safety is on before proceeding.

### **WARNING:**

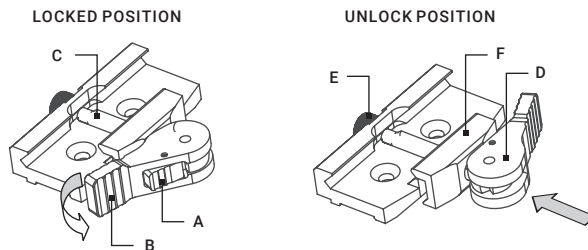
It is recommended that you use an eyecup on the eyepiece of the day scope, allowing for the eyepiece diameter and eye relief and having side paddle preferably in order to escape detection.

### **NOTE:**

The optical axes of the Comanche-22 and day scope should be aligned. The distance between the axes should not exceed 3 mm. If the difference in the axis heights of the Comanche-22 and day scope above the weapon rail exceeds 3 mm, you will need to replace the day scope mounting rings or monoblock.

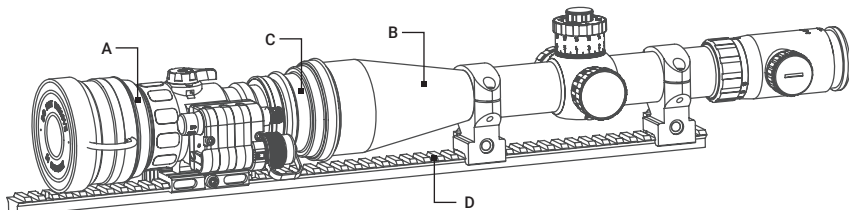
Install the Comanche-22 on a Picatinny/ Weaver rail in front of a day scope as follows:

1. Remove the output lens cap and place it in the storage case.
2. Remove the light suppressor from the storage case. Install it to the output lens in place of the cap.
3. Unlock the clamping device of the Comanche-22 mount by pushing down on the lever holder (A, see Figure 2-2) and unlocking the cam lever (B).
4. Install the Comanche-22 on the Picatinny/ Weaver rail in front of the day scope so that the stop (C) slides into one of the rail's transverse slots. The light suppressor should cover the day scope's objective lens.
5. Affix the Comanche-22 to the rail by locking the cam lever (B).
6. Verify that the clamping device is firmly holding the Comanche-22. If necessary, adjust the clamping device as detailed below (Clamping Device Adjustment).



**FIGURE 2-2. MOUNT. UNDERSIDE VIEW**

Figure 2-3 shows the Comanche-22 (A) and a day scope (B) installed with the light suppressor (C) on a Picatinny/Weaver rail (D).



**FIGURE 2-3. COMANCHE-22 ON A PICATINNY RAIL IN FRONT OF A DAY SCOPE**

### **Clamping Device Adjustment**

To adjust the mount's clamping device, do the following (refer to Figure 2-2):

1. Remove the Comanche-22 from the weapon.
2. With the clamping device unlocked, push the cam (D) towards the arrow, which will cause the nut (E) to slide out of its hole.
3. To tighten/loosen the clamping device (F) turn the nut (E) CW/CCW respectively, in one-two increments (see note below). Much like when the cam (D) is released, backward-moving springs will cause the nut (E) to slide back into its hole.

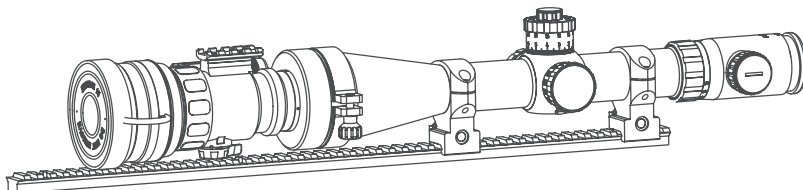
#### **NOTE:**

The eight-sided nuts of the mount lever-cam locks will only fit into their holes if turned in one of the discrete positions, using increments equal to  $360^\circ/8$ .

4. Verify that the adjusted lever-cam lock securely holds the weapon mounting rail.

### **2.1.3 INSTALLING THE COMANCHE-22 ON THE LENS OF A DAY SCOPE**

Use the optional Front Scope Mount to install the Comanche-22 on the lenses of day scopes.



**FIGURE 2-4. THE COMANCHE-22 INSTALLED ON THE LENS OF A DAY SCOPE**

#### **NOTE:**

The adapters differ in attaching diameters and must fit with the day scope parameters specified in Table 5-6 (Front Scope Mounts Data).

#### **NOTE:**

The Comanche-22 cannot be attached to the scope having a focus ring on the objective lens' housing.

### CAUTION:

The Front Scope Mounts are not recommended for installing the Comanche-22 on firearms having vigorous recoil (0.308 Win or stronger).

The Comanche-22 installed on the lens of a day scope is shown in Figure 2-4.

Install the Comanche-22 on the lens of a day scope as follows (refer to Figure 2-5):

1. Using a 2.5 mm Allen key, unscrew the both M4×8 screws fixing the Comanche-22 mount. Remove the mount from its seating rail and put it with the screws into the storage case.

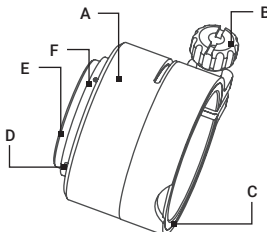


FIGURE 2-5. FRONT SCOPE MOUNT

2. Take off the output lens cap and put it into the storage case.
3. With the nut (B) loosened, place the insert (C) into the Front Scope Mount's clamp (A).
4. Screw the Front Scope Mount into the Comanche-22's output lens thread.
5. With the nut (B) loosened, slide the Comanche-22 with the Front Scope Mount onto the lens of the day scope as far as it goes.
6. Tighten the nut (B) using a screwdriver.

If the position of the Front Scope Mount's clamping nut is unhandy, it is possible to change it as follows:

1. Decide on desirable position of the nut and estimate the angle through which the Front Scope Mount should be turned CW (see Figure 2-6).
2. Remove the Front Scope Mount from the Comanche-22.
3. Using a screwdriver, remove the both M2×2.5 screws (F, see Figure 2-5) and then unscrew the ring (E).

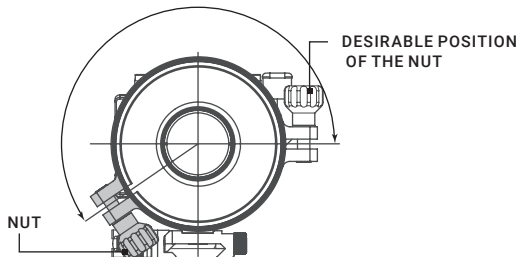


FIGURE 2-6. ESTIMATION OF THE FRONT SCOPE MOUNT TURNING ANGLE

### CAUTION:

To loosen the ring (E), only use its two auxiliary non-threaded holes (D), avoiding the use of the threaded ones.

4. Using a turning machine, cut the inside face of the ring (E). The value of cutting (in millimeters) is equal to the value of turning angle (in angular degrees) divided by  $360^\circ$ .
5. Screw the ring (E) into the Front Scope Mount's body with its cut end directed inwards and tighten it.
6. After applying a small amount of thread lock to the threads, affix the ring (E) with the two M2×2.5 screws (F).

### 2.1.4 FASTENING THE WIRELESS REMOTE CONTROL TO A WEAPON

Using Velcro tape (A), fasten the Wireless Remote Control (B) (Figure 2-7) to your weapon in an easily accessible place (e.g., on the front of the rifle stock) on the side of the Comanche-22's control compartment preferably.

If your rifle has a Picatinny or Weaver rail on the forend you can use the Picatinny adapter for Wireless Remote (C). Install adapter on the rail. Insert the remote control unit in the adapter.

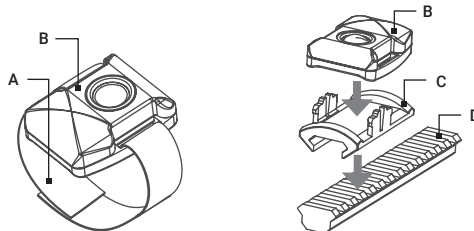


FIGURE 2-7. WIRELESS REMOTE CONTROL

### 2.1.5 INSTALLING THE LIGHT SUPPRESSOR FOR A DAY SCOPE

The Light Suppressor for a Day Scope (A, Figure 2-8) slides over the eyepiece of your daytime scope (B). The suppressor can be used with scopes that have 40...43 mm eyepiece diameter and 100...120 mm eye relief.

The suppressor can be adjusted for the eye relief of your scope by cutting the rubber at the desired distance (C).

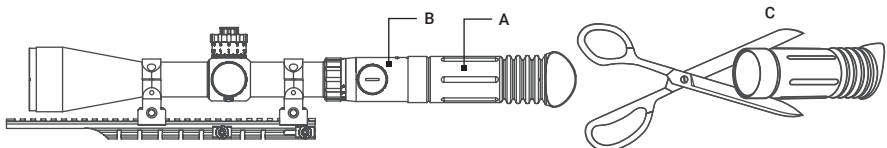


FIGURE 2-8. LIGHT SUPPRESSOR FOR A DAY SCOPE

### 2.1.6 INSTALLING THE OPTIONAL IR ILLUMINATOR

The Sioux850 is delivered ready-assembled with a dedicated mount, to be installed on the Weaver rail.

Mount the Sioux850 as follows (Figure 2-9):

1. With the nut (A) loosened, install the mount (B) on the Weaver rail so that the stop (C) slides into one of the transverse slots of the rail.
2. Tighten the nut (A).

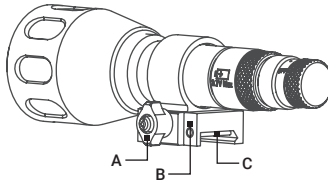


FIGURE 2-9. SIOUX850 IR ILLUMINATOR

Use the optional Platform Ring to install the Sioux850 on the day scope.

The Platform Ring with IR illuminator installed on a day scope is shown in Figure 2-10.

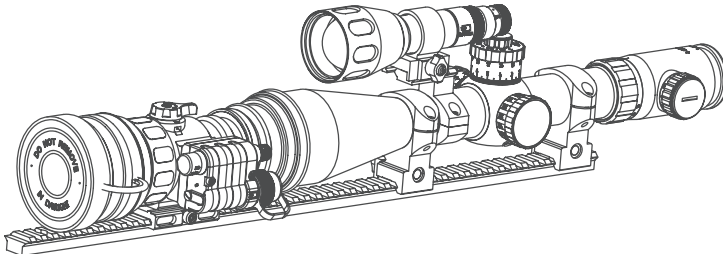


FIGURE 2-10. SIOUX850 IR ILLUMINATOR INSTALLED ON A DAY SCOPE

Install the platform ring on the mounting tube of the day scope as follows (refer to Figure 2-11):

1. Using a 3 mm hex key, unscrew the both clamp screws (C).

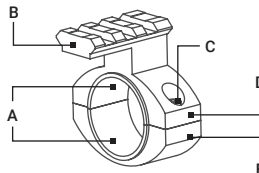


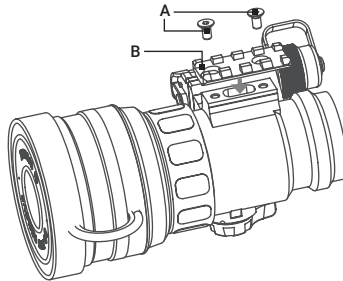
FIGURE 2-11. PLATFORM RING

2. Place the ring's clamps (D, E) onto the scope's mounting tube with/ without the pair of inserts (A), depending on the mounting tube size (25.4/ 30 mm respectively). Screw the clamps together without tightening the screws (C).
3. Adjust position of the platform ring until its Weaver rail (B) is level. Apply a small amount of thread lock to the threads and tighten the screws (C).

The IR illuminator can also be installed on the CO using an adapter.

Install the Picatinny Rail Mount on the Comanche-22 as follows (refer to Figure 3-12):

1. Using a 2.5 mm Allen key, unscrew the both M4×8 screws (A) fixing the Comanche-22 mount. Remove the mount from its seating rail and put it into the storage case.
2. Install the Picatinny Rail Mount (B) in place of the removed mount, and after applying a small amount of thread lock to the threads, affix the rail with the two M4×8 screws.



**FIGURE 2-12. INSTALLING THE PICATINNY RAIL MOUNT**



## 2.2 CONTROLS AND INDICATORS

### CAUTION:

DO NOT force the equipment controls past their stopping points.

### 2.2.1 COMANCHE-22 CONTROLS AND INDICATOR

The Comanche-22 controls and indicator are shown in Figure 2-13 and defined in Table 2-1. The ITEM NO. column indicates the number used to identify items in Figure 2-13.

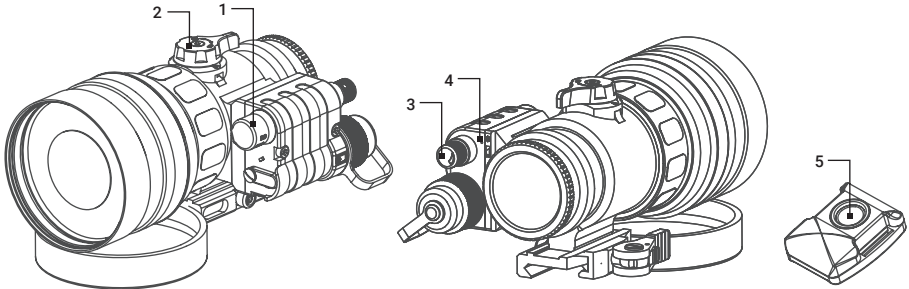


FIGURE 2-13. COMANCHE-22 CONTROLS AND INDICATOR

TABLE 2-1. COMANCHE-22 CONTROLS AND INDICATOR

ITEM	CONTROLS/INDICATORS	FUNCTION
1	Operation Switch	Activates the Comanche-22, when turned to ON position.
		Actuates the battery check mode, when turned to BATTERY position (marked with a battery icon).
		Activates standby mode, when turned to STB position.
		Deactivates the Comanche-22, when turned to OFF position.
2	Focus Knob	Focuses the objective lens.
3	Gain Control Knob	Adjusts the brightness of the image.
4	Bicolor LED Indicator	Permanent GREEN glow indicates excessive light conditions. After 10 seconds the image intensifier tube will be cut off. The Comanche-22 turns back again when moved away from the excessive light.
		Permanent RED glow indicates usable condition of the battery.
5	Remote Control Button	Activates/deactivates the Comanche-22 in standby mode when pressed/released.

## 2.3 OPERATING PROCEDURES

### 2.3.1 OPERATING THE COMANCHE-22

Operating procedures should be performed only in dark conditions or natural night illumination (overcast starlight to moonlight).

**CAUTION:**

Use of the Comanche-22 in brightly lit conditions may damage the image intensifier tube.

1. Verify that the battery is installed as required.

**CAUTION:**

Ensure the high light detector is open before removing the lens cap.

2. Remove the objective lens cap and place it over the lens' housing.
3. Verify that there are no bright light sources in the Comanche-22's field of view. Turn the device on by rotation the operation switch to the ON position. After a slight delay, a green glow will appear in the day scope's output lens.

**CAUTION:**

Avoid exposing the device to bright light sources such as firelight, headlights, searchlights, etc., as these can damage the Comanche-22.

4. Observe the scene and adjust the focus. Bring the object into focus by turning the objective focus knob. Rotate the focus knob until the subject looks sharp in the viewfinder.
5. Adjust the image brightness. Look into the eyepiece of day scope. Rotate the gain control knob to gradually adjust the brightness until the desired level is reached.
6. If the day scope includes a focusing ring (i.e., parallax adjustment knob), adjust the focus for a parallax free image.
7. Turn on the day scope's reticle illumination and adjust the reticle brightness.
8. To operate the Comanche-22 in short-time activation mode, turn the device on standby mode by rotation the operation switch to the STB position. To activate the Comanche-22, press and hold the remote control button. Release the remote control button to deactivate the Comanche-22.
9. To turned the Comanche-22 off rotate the operation switch to the fixed OFF position.

**CAUTION:**

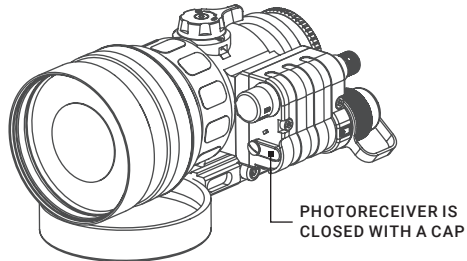
DO NOT leave the Comanche-22 activated if it is not being used.

### 2.3.2 OPERATING AT CHANGING LIGHT CONDITIONS

The Comanche-22 has a high light protective system, which cuts off the image intensifier when ambient light levels exceed the limit of 40 lux within 10 seconds. If a mission must be carried out at changing light conditions, it is possible to shut down the protective system. Put the photoreceiver cap onto the photoreceiver window for protective system deactivation.

**NOTE:**

Don't forget to open the photoreceiver after the mission will completed.



**FIGURE 1-1. PHOTORECEIVER OPERATION**

### **2.3.3 SHUT-DOWN**

Shut-down the Comanche-22 as follows:

1. Turn off the device. The glow in viewfinder will disappear.
2. Place the cap over the objective lens.
3. Remove the Comanche-22 from the weapon.
4. Remove the light suppressor from the output lens.
5. Place the protective cap to output lens.
6. Remove the battery from Comanche-22.

#### **CAUTION:**

**DO NOT** store the equipment with the battery still in it.

7. Ensure that the Comanche-22 and any accessories are clean and dry before placing them into the storage case.
8. Place the Comanche-22 and any accessories into the storage case.
9. Store the Comanche-22 and accessories in the appropriate locations in the case and close the cover.

## 3 MAINTENANCE

### 3.1 CLEANING PROCEDURES

#### **CAUTION:**

Thoroughly dry each item before placing them into the storage case.

Clean the Comanche-22 as follows:

1. Gently brush off any dirt from the device's body using a clean soft cloth.
2. Moisten the cloth with fresh water and gently wipe external surfaces (except for glass surfaces).
3. Dry any wet surfaces (except for glass surfaces) with another clean, soft, dry cloth.
4. Using a lens brush, carefully remove all loose dirt from the glass surfaces.
5. Slightly dampen a cotton swab with ethanol. Gently and slowly wipe the lenses. Without touching the lens holders, clean the glass surfaces in circular movements, beginning in the center and moving out towards the edge. Change the cotton swab after each circular stroke. Repeat until the glass surfaces are clean.
6. Clean the battery surfaces and contacts with a pencil eraser and/or alcohol-dampened cotton swabs.

### 3.2 TROUBLESHOOTING

The purpose of troubleshooting is to identify the most commonly occurring equipment malfunctions, their probable causes, and the corrective actions required to fix them.

Table 3-1 lists the common malfunctions that may occur during the operation or maintenance of the Comanche-22. Perform the tests, inspections, and corrective actions in the order listed in the table.

This table cannot list all of the malfunctions that may occur with your Comanche-22, or all of the tests and corrective actions that may be necessary. If you experience an equipment malfunction that is not listed, or is not fixed by the corrective actions listed in the table, please contact Customer Service center.

TABLE 3-1. TROUBLESHOOTING

MALFUNCTION	PROBABLE CAUSE/ TEST/ INSPECTION	CORRECTIVE ACTION
Comanche-22 fails to activate.	Battery is missing or improperly installed.	Insert battery or install correctly.
	Battery is dead.	Replace the battery.
	Battery surfaces or contacts are dirty or corroded.	Clean the contact surfaces with a pencil eraser and/or alcohol and cotton swabs.
	Defective image intensifier tube.	Please contact Customer Support.
Poor image quality.	Check focus.	Refocus.
	Objective and output lenses are dirty.	Thoroughly clean the surfaces of each lens.
	Damaged optical components.	Please contact Customer Support.
Comanche-22 affects boresight after installation or during the firing.	Factory alignment is broken.	Please contact Customer Support.
Hindered rotation of the battery cap.	Dirty cap thread.	Clean the thread.
	Damaged cap thread.	Please contact Customer Support.
Battery adapter difficult to remove.	Check for damaged battery adapter and battery cap.	If damaged please contact Customer Support.
Light visible around light suppressor.	Incorrect position of the Comanche-22 in relation to the day scope.	Reposition the Comanche-22 on the Picatinny/ Weaver rail.
	Check the light suppressor resilience.	If light suppressor is defective please contact Customer Support.

## 4 WARRANTY INFORMATION

### 4.1 WARRANTY INFORMATION

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of three (3) years from the date of purchase. In the event that a defect covered by the warranty below occurs during the applicable period stated above, AGM Global Vision, at its discretion, will either repair or replace the product; such action on the part of AGM Global Vision shall be the full extent of AGM Global Vision's liability, and the Customer's sole and exclusive reparation. This warranty does not cover a product if it has been (a) used in ways other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than AGM Global Vision without prior written consent of AGM Global Vision; (d) is the result of a special order or categorized as "close-out" merchandise or merchandise sold "as-is" by either AGM Global Vision or the AGM Global Vision dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of AGM Global Vision. AGM Global Vision shall not be responsible for any defects or damage that in AGM Global Vision's view are a result from the mishandling, abuse, misuse, improper storage or improper operation of the device, including use in conjunction with equipment that is electrically or mechanically incompatible with, or of inferior quality to, the product, as well as failure to maintain the environmental conditions specified by the manufacturer. This warranty is extended only to the original purchaser. Any breach of this warranty shall be enforced unless the customer notifies AGM Global Vision at the address noted below within the applicable warranty period.

The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

### 4.2 LIMITATION OF LIABILITY

AGM Global Vision will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages, or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. AGM Global Vision's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by AGM Global Vision to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party of legal entity outside AGM Global Vision and the Customer; AGM Global Vision's obligations under this Agreement extend solely to the Customer. AGM Global Vision's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to AGM Global Vision by the customer or customer's dealer. AGM Global Vision shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability, or any other theory of liability.

## 4.3 PRODUCT REGISTRATION

In order to validate the warranty on your product, the customer must complete and submit AGM Global Vision PRODUCT REGISTRATION FORM on our website ([www.agmglobalvision.com/customer-support](http://www.agmglobalvision.com/customer-support)).

## 4.4 OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, the End-user (Customer) must notify the AGM Global Vision service department via e-mail. Send any requests to [support@agmglobalvision.com](mailto:support@agmglobalvision.com) to receive a Return Merchandise Authorization number (RMA). When returning any device, please take the product to your retailer, or send the product, postage paid and with a copy of your sales receipt, to AGM Global Vision's service center at the address listed above. All merchandise must be fully insured with the correct postage; AGM Global Vision will not be responsible for improper postage or merchandise that becomes lost or damaged during shipment. When sending product back, please clearly write the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, the Customer's Name, a Return Address, reason for the return, contact information (valid telephone numbers and/or an e-mail address), and proof of purchase that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA# listed may be refused, or a significant delay in processing may occur. Estimated Warranty service time is 10-20 business days. The End-user/Customer is responsible for postage to AGM Global Vision for warranty service. AGM Global Vision will cover return postage/shipping after warranty repair to the End-user/Customer only if the product is covered by the aforementioned warranty. AGM Global Vision will return the product after warranty service by domestic UPS Ground service and/or domestic mail. Should any other requested, required, or international shipping methods be necessary, the postage/shipping fee will be the responsibility of the End-user/Customer.

For service, repair or replacement, please contact:

### **AGM Global Vision**

**173 West Main Street**

**PO Box 962**

**Springerville, AZ 85938**

**Tel. 928.333.4300**

**Fax 480.393.4882**

**[support@agmglobalvision.com](mailto:support@agmglobalvision.com)**

**[www.agmglobalvision.com](http://www.agmglobalvision.com)**

## 5 SPECIFICATIONS

### 5.1 SPECIFICATIONS

The following tables provide information pertaining to the operational, optical, electrical, mechanical, and environmental characteristics of the Comanche-22 clip-on system.

TABLE 5-1. OPTICAL DATA

ITEM	DATA
Magnification	1X
Objective Lens Focal Length	80 mm
Objective Lens F/number	1:1.44
Range of Focus	10 m to infinity
Field of View	12°
Exit Pupil Diameter	22 mm

TABLE 5-2. SYSTEM DATA

ITEM	DATA
Remote Controls	Yes (Wireless)
Manual Gain Control	Yes
Low Battery Indicator	Yes
Excessive Light Conditions Indicator	Yes
Automatic Shut-Off System	Yes

TABLE 5-3. MECHANICAL DATA

ITEM	DATA
Overall Dimensions	168 × 85 × 80 mm (6.6 × 3.3 × 3.1 in)
Weight (without Battery)	0.75 kg (1.65 lb)
Height of the Comanche-22 Optical Axis above Picatinny/ Weaver Rail	40 mm (1.6 in)

TABLE 5-4. ELECTRICAL DATA

ITEM	DATA
Battery	One CR123A (3 V) or AA (1.5 V)
Battery Life at 20°C	Up to 60 hrs. (3 V)



**TABLE 5-5. ENVIRONMENTAL DATA**

ITEM	DATA
Operating Temperature	-40°C to +50°C (-40°F to 122°F)
Storage Temperature	-50°C to +50°C (-58°F to 122°F)
Illumination Required	Natural night illumination (overcast starlight to moonlight)
Environmental Rating	Water and Fog-Resistant

**TABLE 5-6. FRONT SCOPE MOUNT DATA**

SCOPE MOUNTING SYSTEM	WEIGHT, G	OVERALL DIMENSIONS, MM	DIAMETER OF THE INSERTS, MM	CLEAR APERTURE OF DAY SCOPE LENS, MM	EXAMPLE OF THE SCOPES
Front Scope Mount 1	53	39.5×43×52.4	25,4	20; 24	Leupold 1.5-5x20 PR
			30,0		Leupold 1.5-5x20 MR/T M2; Zeiss 1.1-4x24T
Front Scope Mount 2	61	44×49×62	38,0	32; 36	Meopta Artemis 2000 4x32
			42,0		Leupold Mark 4 3-9x36; Leupold Mark 4 2.5-8x36; Kahles 4x36
Front Scope Mount 3	71	44×57.5×71	46,7	40; 42	Leupold 3.5-10x40; Leupold VX-II 3-9x40
			48,0		Zeiss 1.5-6x42; Swarovski PV-N 2.5-10x42
			48,7-49,0		Meopta Artemis 3000 3-9x42
			49,5		Meopta Artemis 3000 4-12x40
			50,0		Schmidt & Bender 10x42
			56,0		Zeiss 2.5 10x50
Front Scope Mount 4	82	44x65.5x79	57,0	50	Schmidt & Bender 3-12x50
			58,7		Leupold 4.4-14x50; Leupold VX-III 3.5-10x50
Front Scope Mount 5	93	44x70.5x84	62,0	56	Zeiss 3-12x56; Swarovski 2.5-10x56; Kahles CSX 3-12x56

**NOTE:**

All data subject to change without notice.

# APPENDIX

## A. LIST OF SPARE PARTS

The parts authorized in the below list of spare parts are required for operator maintenance. This list includes parts that must be removed in order to replace authorized parts.

The ITEM NO. column indicates the number used to identify items in Figure A-1.

The PART NO. column indicates the primary number used by the manufacturer to identify an item; this number controls the design and characteristics of the item by means of its engineering, specifications, standards, and inspection requirements.

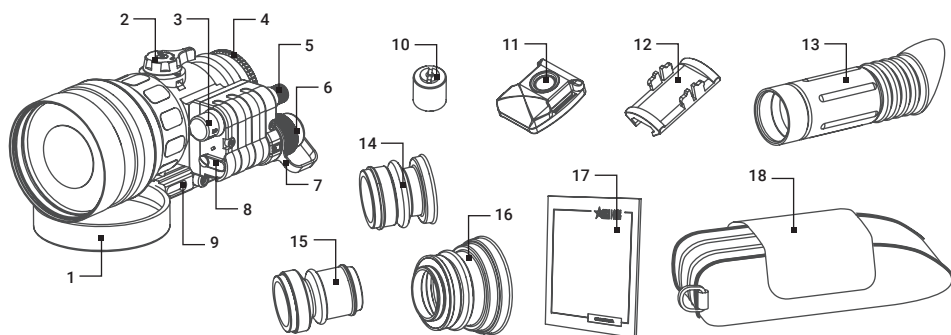


FIGURE A-1. COMANCHE-22 SPARE PARTS

**TABLE A-1. COMANCHE-22 LIST OF SPARE PARTS**

ITEM	DESCRIPTION	PART NO.
1	Objective Lens Cap	CMN22OBLC
2	Focus Knob	CMN22FCKN
3	Operation Switch	CMN22OPSW
4	Output Lens Cap	CMN22OLCP
5	Gain Control Knob	CMN22GCKB
6	Battery Cap	CMN22BTCP
7	Battery Cap Retainer	CMN22BCRT
8	Photoreceiver Cap	CMN22BTAD
9	Quick-Release Mount	CMN22QRM
10	Battery Adapter	CMN22BTAD
11	Wireless Remote Control	CMN22AWRC
12	Picatinny Adapter for Wireless Remote Control	CMN22PARC
13	Light Suppressor for Day Scope	CMN22LSDS
14	Light Suppressor 1	CMN22LS01
15	Light Suppressor 2	CMN22LS02
16	Light Suppressor 3	CMN22LS03
17	User Manual	CMN22USMN
18	Carrying Case	CMN22CRCS



## **AGM Global Vision**

### **MAIN OFFICE**

173 West Main Street  
PO Box 962  
Springerville, AZ 85938  
USA  
Tel. +1.928.333.4300  
Fax +1.480.393.4882  
[info@agmglobalvision.com](mailto:info@agmglobalvision.com)  
[www.agmglobalvision.com](http://www.agmglobalvision.com)

### **EUROPEAN OFFICE**

Andrey Lyapchev #7  
Sofia, P.C. 1756  
Bulgaria  
Tel. +44.292.255.0509  
[info@agmglobalvision.eu](mailto:info@agmglobalvision.eu)  
[www.agmglobalvision.eu](http://www.agmglobalvision.eu)

**[AGMglobalvision.com](http://AGMglobalvision.com)**