

**OPERATING
INSTRUCTIONS**

FOR

**CARTRIDGE FIRED
PROJECTORS**

Model 193

Model 196

Model 389



www.pneudart.com

pneudart inc

Please read this owner's manual carefully before operating your projector. This manual contains valuable information to ensure that your equipment operates at its optimum level.

Feel free to contact us or visit our Web site for tips, more information, and further assistance.

www.pneudart.com

NOTICE: Model 389 & Model 196:

Savage does not provide after-market assistance with lost or broken bolts and as a result, these items are not able to be replaced or repaired.

CLEANING CARTRIDGE FIRED PROJECTORS

Regardless if you have fired your projector 1 or 101 times, your cartridge fired projector should be cleaned after each session. Here's how:

1. OPEN THE BOLT AND ACTION;

make sure there is no casing or dart in the chamber or clip. Did the projector eject the casing? A dirty action can cause the casing to stick in the chamber. In the event you have a stuck casing, it can be removed with a small flat-headed tool (screwdriver, knife, etc.). Before you do make sure the charge has been fired! When removing the casing, use extreme care; any damage done to the edge of the chamber will exaggerate your problems.

2. VISUAL INSPECTION CHECK LIST:

- A. Check the stock for cracks or stress points.
- B. Check barrel. Is the barrel empty? Any dents or depressions in the barrel? Is the muzzle (end) of the barrel symmetrical (round)? Dents or depressions in the barrel may cause premature dart detonation.
- C. Are the Sites/Scopes still there? Scopes with dents could be damaged.

3. CLEANING - Now that you know that your projector is unloaded and in good repair, you may begin cleaning your projector.

- A. **EXTERIOR:** Spray the exterior of the projector with a light coat of oil (WD-40, CRC-336, or Remington gun oil). Wipe off excess oil with a clean cloth or paper towel.

- B. **DART BARREL:** Spray down (inside) the barrel with a light coat of gun oil and swab out until perfectly clean. Pneu-Dart sells a cleaning kit of this application. When faced with rusty or neglected barrel, use a wire brush along with penetrating oil similar to Hoppes powder solvent or PB Blaster.

C. POWER CONTROL:

- 1. **MODELS 196 & 389-** Tilt or "break" the barrel by pushing the barrel latch toward the rear of the projector (see Figure A, page 6) and spray a light coat of gun oil into the control. Turn the power dial to different settings to insure free movement. Wipe off excess oil.
- 2. **MODEL 194-** Power control is mounted on the top of the gas block. To insure desired power output, confirm the power control dial turns and "clicks" into position. Spray with a light coat of gun oil and wipe off with a clean cloth or paper towel.
- 3. **MODEL 193** - Located at the end of the slide lever action is the power control and power control plunger (see Figure H1, page 13). Clean the power control with a light coat of gun oil. Inspect the "O-Ring"; is the "O-Ring" still intact? Is it in good condition? If the "O-Ring" has fallen off or appears worn; loss of pressure can occur. If the "O-Ring" appears worn, this is typical example of excessive

use or insufficient lubrication. We recommend Hoppes Lubricating Oil for this application.

4. **MODEL 191**- The power control is located on the dart action. Spray action with a light coat of gun oil to insure power control can be rotated freely.
5. **MODEL 182**- Please follow instructions as listed for model 171C.
- 6 **MODELS 171 & 171C** On several of our older models (171C) the power controls are found on the end of the gas chamber directly below the dart barrel. These power controls should be removed completely and sprayed with a light coat of gun oil and wiped clean.
7. **MODEL 170** - Please see 194 instructions.

4. CLEANING YOUR GAS CHAMBER

A. ALL MODELS - EXCEPT 389 Located directly below the dart barrel is the "Gas Chamber". The gas chamber is designed with two independent compartments; referred to as the "Rear" and "Front" compartments. It is important to clean the "Rear Compartment" after each shooting session. Confirming the projector is unloaded; remove the bolt and clip assembly. To remove the bolt assembly, open the bolt and pull the trigger, slide the bolt out. Using a .22 cal. cleaning rod, brush and swab,

apply a liberal coat of Hoppes power solvent, brush and swab out the rear compartment. Cleaning the full length of the gas chamber from the bolt assembly forward is not possible. Cleaning the front chamber for model 193 can be accomplished by removing the gas chamber plug from the end of the gas chamber. **Warning; excessive oil left in the gas chamber will create a noticeable reduction in pressure.** In extreme cases of neglect, we recommend using compressed air to drive out any impurities or excess oil. A certified Pneu-Dart technician can only clean the forward portion of the gas chamber for our models 196, 2000 and 389 projectors.

B. MODEL 389: As with model 196, the power control is located within the gas block. The power control should be thoroughly cleaned at the conclusion of each darting session. To remove the power control you must first rotate the power control knob to position number 4 (see *Figure C, page 9*). Locate the setscrew access just behind the gas block (see *Figure D, page 10*) and remove the small setscrew using the Pneu-Dart provided 3/32" allen wrench. With a flathead screwdriver remove the power control retention screw (see *Figure E,*

page 10). Extract the power control rod and coupler from within the receiver tube and affix the Pneu Dart provided knockout disk to the end of coupler (see Figure F, page 11). Using the rod as an extraction tool, push the rod through the receiver tube until you feel it against the shaft of the power control. Apply a slight amount of pressure and the power control will push out of the gas block allowing a thorough cleaning (see Figure G, page 11). **CAUTION, DO NOT ATTEMPT TO REMOVE THE POWER CONTROL WITH PLIERS. ANY SURFACE ABRASIONS MAY RETARD THE POWER CONTROL FROM TURNING FREELY WITHIN THE GAS BLOCK.** After cleaning both the power control and the inside of the gas block, apply a light film of gun oil

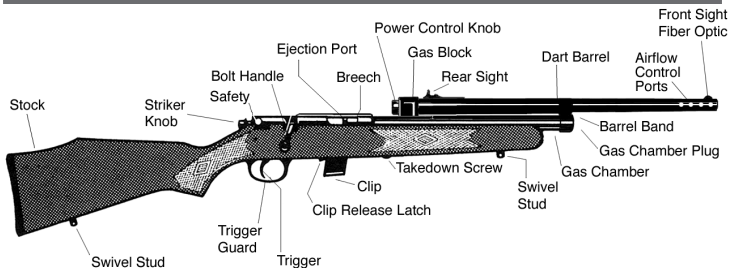
to both areas and place the power control back into the gas block. Remove the knockout disk from the end of the coupler, apply a light coat of gun oil to the rod and reposition the rod into the receiver. Slide the coupler over the end of the power control shaft and firmly attached the two with the setscrew previously removed. **Note, before replacing the set screw, be sure of alignment.** Lastly, screw in the power control retention screw previously removed.

C. FINAL CLEANING STAGE:

Apply a thin coat of Hoppes gun oil or 3 & 1 gun oil to all moving parts and exterior surfaces. Wipe off any excess oil with a clean cloth or paper towel.

CAUTION: Do not leave dart in projector for an extended period of time as drug may leak out and damage barrel.

CAUTION: Wear eye protection as appropriate. Guns can emit debris and hot gas that could cause eye injury. For these reasons, shooting glasses should be worn by shooters and spectators.



PNEU-DART MODEL 196 CARTRIDGE FIRED RIFLE

SPECIFICATIONS

196, 196BLK, 196CM, 196EN STOCK AND

ACTION – SAVAGE MARK II FV .22

CALIBER 5 SHOT CLIP

196SS STOCK AND ACTION – Marlin Model

880ss .22 cal. 5 Shot Clip

DART BARREL – .50 cal. Rifled Barrel 17"

DART ACTION – Break Open, Shotgun Type

CARTRIDGES – .22 cal. Power Charges

SIGHTS – Open Rear – Fiber optic front

WEIGHT – 6-1/2 lbs.

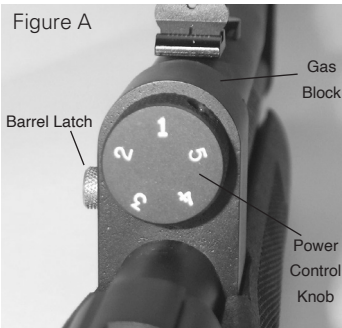
POWER CONTROL – 5 Position

RANGE – 0 to 100 yards with 1cc

Type "C" disposable darts

1. To load the dart barrel, push barrel latch (See Figure A, this page) toward the rear of the projector to break/open the barrel.
2. Place dart in barrel and snap closed. To remove dart, open action and point muzzle up. Dart should drop out. A slight jar may be necessary to dislodge it.

Figure A



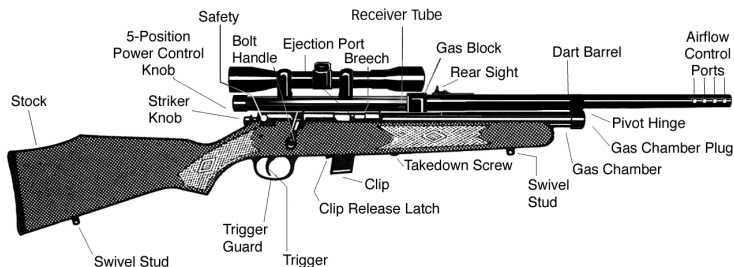
NOTICE: Savage does not provide after-market assistance with lost or broken bolts and as a result, these items are not able to be replaced or repaired.

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3. Load clip with proper .22 power loads in rifle. Be sure rifle is on SAFE before loading cartridge into chamber. **Do not use charges with wads.**
 4. The power control knob (see Figure A page 6) located at the back of the gas block controls velocity of the dart. Each number on the power control knob signifies the amount of pressure released into the dart barrel. For example, number one represents the least amount of pressure for close range shooting conditions. Desired setting should be positioned at the top of the gas block.

5. Caution - Do not use charges

with wads. Our projectors are designed to use CCI charges. Recommended CCI charges are Brown, Green and Yellow. Please refer to the "Power Control Chart" for charge and setting recommendations.

NOTE: Calibrating power charges with your power control will result in ideal flight and impact conditions. To insure impact is as light as possible, experience with practice is recommended. Pneu-Dart sells weight equivalent practice darts and targets.



PNEU-DART MODEL 389 CARTRIDGE FIRED RIFLE

SPECIFICATIONS

389EN, 389BK, 389CM, STOCK AND ACTION

– Savage Mark II FV .22 caliber 5 shot clip. (Model 389 ships with 3 x 9 x 32mm scope)

DART BARREL – .50 cal. Rifled Barrel 18' with Airflow Control Ports (see pg. 6)

DART ACTION – Break Open Breech Loading

CARTRIDGES – .22 cal. Power Loads

SIGHTS – 3 x 9 Power Scope

WEIGHT – 9-1/2 lbs.

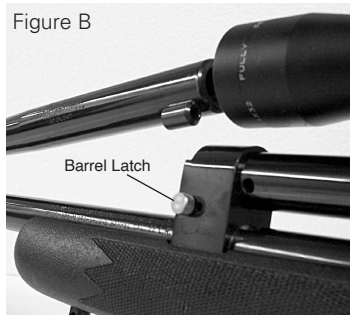
POWER CONTROL – 5 Position

RANGE – 0 to 100 yards with 1cc Type “C” disposable darts

1. To load the dart barrel, push barrel latch (see *Figure B, page 9*) toward the rear of the projector to break/open the barrel.
2. Place dart in barrel and snap closed. To remove dart, open action and point muzzle up. Dart should drop out. A slight jar may be necessary to dislodge it.
3. Load clip with proper .22 power loads in rifle. Be sure rifle is on **SAFE** before loading cartridge into chamber. **Do not use charges with wads.**
4. The power control knob (see *Figure C page 9*) located at the back of the receiver controls velocity of the dart. Each number on the power control knob signifies the amount of pressure released into the dart barrel. For

NOTICE: Savage does not provide after-market assistance with lost or broken bolts and as a result, these items are not able to be replaced or repaired.

Figure B



example; number one represents the least amount of pressure for close range shooting conditions. Desired setting should be positioned at the top of the gas block

5. Caution - Do not use charges with wads. Our projectors are designed to use CCI charges. Recommended CCI charges are Brown, Green and Yellow. Please refer to the "Power Control Chart" for charge and setting recommendations.

NOTE: Calibrating power charges with your power control will result in ideal flight and impact conditions. To insure impact is as light as possible, experience with practice darts is recommended. Pneu-Dart sells weight equivalent practice darts and targets.

The 389 power control is located within the gas block. The power control should be thoroughly cleaned at the conclusion of the darting session. To remove the power control you must first rotate the power control knob to position number 4 (see Figure C, this page). Locate the setscrew access just behind the gas block (see Figure D, page 10) and remove the small setscrew using the Pneu-Dart provided 3/32" allen wrench. With a flathead screwdriver remove the power control setscrew (see Figure E, page 10). **DO NOT REMOVE THE SET SCREW LOCATED ON THE KNURLED POWER CONTROL KNOB.** Extract the power control rod and coupler from within the receiver tube and affix the Pneu Dart provided knockout disk to the end of coupler (see Figure F, page 11). Using the rod as an extraction

Figure C



tool, push the rod through the receiver tube until you feel it against the shaft of the power control. Apply a slight amount of pressure and the power control will push out of the gas block allowing a thorough cleaning (see Figure G, page 11).

CAUTION, DO NOT ATTEMPT TO REMOVE THE POWER CONTROL WITH PLIERS. ANY SURFACE ABRASIONS MAY RETARD THE POWER CONTROL FROM TURNING FREELY WITHIN THE GAS BLOCK.

After cleaning both the power control and the inside of the gas block, apply a light film of gun oil to both areas and place the power control back into the gas block. Be sure that you verify the alignment. (see Figure G1, page 11) Remove the knockout disk from the end of the coupler, apply a light coat of gun oil to the rod and reposition the rod into the receiver. Slide the coupler over the end of the power control shaft and firmly attached the two with the setscrew previously removed. Note: You may have to use a non-abrasive tool (such as your finger) to rotate the power control so you can be sure of alignment of #4 hole in the gas control valve + hole in the gas block. Lastly, screw in the power control retention screw previously removed.



Figure D



Figure E

Figure F coupler

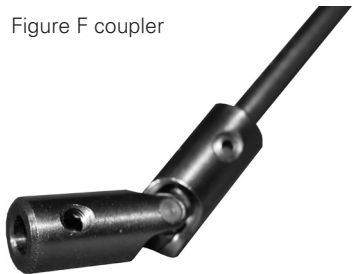


Figure G



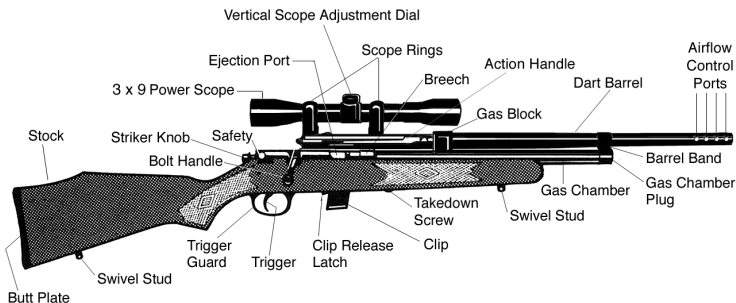
Figure G1

Above: Be sure of alignment of Number "4" hole in the gas control valve and gas block, as referred to on page 9.

CAUTION: Do not leave dart in projector for an extended period of time as drug may leak out and damage barrel.

Above: A close-up view of the 389's air control ports.

CAUTION: Wear eye protection as appropriate. Guns can emit debris and hot gas that could cause eye injury. For these reasons, shooting glasses should be worn by shooters and spectators.



PNEU-DART MODEL 193 CARTRIDGE FIRED RIFLE

SPECIFICATIONS

193, 193BLK, 193CM, 193EN STOCK AND ACTION – Marlin Model XT .22 cal. 5 Shot Clip

193SS STOCK AND ACTION – Marlin Model 880ss .22 cal. 5 Shot Clip

DART BARREL – .50 cal. Rifled Barrel 16"

DART ACTION – Toggle-Side Lever – Single Shot

CARTRIDGES – .22 cal. Power Charges

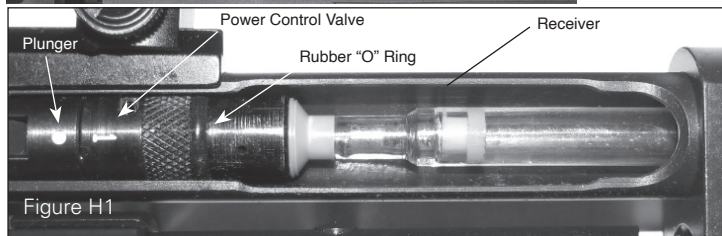
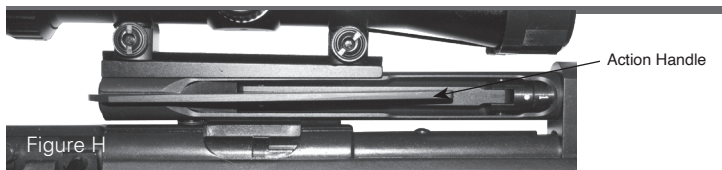
SIGHTS – 3 x 9 Power Scope

WEIGHT – 8-1/4 lbs.

POWER CONTROL – 5 Position

RANGE – 0 to 100 yards with 1cc Type "C" disposable darts

1. To load dart, pull "Action Handle" back to open receiver to accept dart (see Figure H & H1, pg. 13).
2. Place dart in receiver and close action handle. Action handle is designed to "snap" into position. To load 5cc and 6cc darts, open action until the power control and plunger reaches enlarged opening at the front of receiver and swing out. Place dart in receiver and push forward into barrel. Reposition power control and plunger into the receiver and "snap" into position. To remove dart from the chamber, hold the projector muzzle up and open action. Dart should drop out. A slight jar may be necessary to remove dart.
3. Load clip with proper .22 cal. power load in chamber. Be sure rifle is on **SAFE**. **Do Not Use Charges with Wads.**



4. Power / velocity is controlled by the power charge and power control valve. Power Control is numbered from 1 to 5. Number 1 provides the least amount of power, 5 the most amount of power. Desired power setting should be aligned with the mark found on the plunger. Fig H1 shows a power setting of "1".

5. Caution - Do not use charges with wads. Our projectors are designed to use CCI charges. Recommended CCI charges are Brown, Green and Yellow. Please refer to the "Power Control Chart" for charge and setting recommendations.

6. If the "O-Ring" has fallen off or appears worn; loss of pres-

sure can occur. If the "O-Ring" appears worn, this is typical example of excessive use or insufficient lubrication. We recommend Hoppes Lubricating Oil for this application.

NOTE: The scope on the projector has been purposely mounted higher at the rear to accommodate for the ballistics of the dart. Calibrating power charges with your power control will result in ideal flight and impact conditions. To insure impact is as light as possible, experience with practice is recommended. Pneu-Dart sells weight equivalent practice darts and targets.

HOW TO ADJUST TRIGGER PULL

CAUTION: The XT based bolt action rimfire projector should not be disassembled beyond what is described in this manual, except by Pneu-Dart, Inc. or an authorized Pneu-Dart repair center.

Warning! Unload the projector before disassembly. Look into the ejection port and visually check the chamber and magazine to make sure there are no cartridges or darts in the projector. Always wear eye protection when handling, disassembling and reassembling the projector.

DISSASSEMBLE THE PROJECTOR

1. Always keep the projector pointed in a safe direction.
2. Engage the safety mechanism by moving the safety arm fully rearward to the "SAFE" position. Simulate loading a cartridge, this will allow you to put projector into "safe"
3. Remove the detachable magazine from the projector by pressing the magazine latch then pulling the magazine box from the magazine well.
4. Open the action by raising the bolt handle. With projector completely unloaded, place the Safety Mechanism in the "FIRE" position by moving the safety forward.
5. Remove the bolt assembly from the receiver by pulling and holding the trigger fully rearward while pulling the bolt rearward, sliding the bolt assembly from the receiver.
6. Look into the ejection port, visually check the chamber and magazine well to make sure projector is completely unloaded.
7. Remove the barreled/action from the stock by removing the takedown screws, using an Allen Wrench. (see Figure 1, this page)
8. Lift the barreled/action and Trigger from the stock.

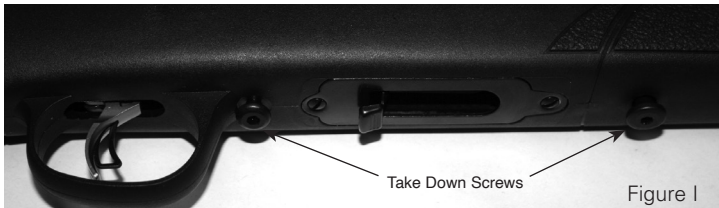


Figure 1

TO ADJUST TRIGGER PULL:

1. Loosen the 3/8" retaining nut by turning it counterclockwise. Do not remove. (see *Figure J, this page*)
2. Insert a 3/32" hex key wrench into the trigger adjustment hole. (see *Figure K, this page*)

3. To increase trigger pull weight, turn the hex key clockwise.

Note: The trigger weight can be increased until the trigger will not move or release the sear.

4. To decrease the trigger pull weight, turn the hex key counterclockwise.
5. Once adjusted, secure the retaining nut by turning clockwise until tight.

REASSEMBLE THE PROJECTOR

1. Reassemble the action in the stock. With the bolt assembly and magazine removed, place the barreled/action into the stock.
2. Replace and tighten (clockwise) the takedown screws until snug. Do not overtighten.
3. Install the bolt assembly (reverse process of removal (*See Step 5 from Disassemble the Projector*)).
4. Push the magazine into the receiver's magazine well until the latch fully engages.
5. Ensure the safety is engage by placing the safety mechanism in the "Safe" position.

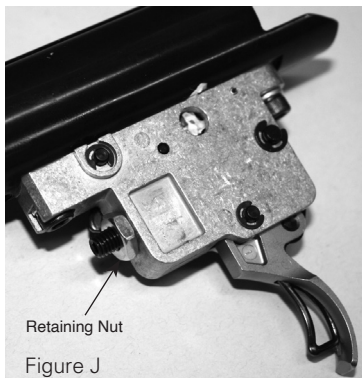
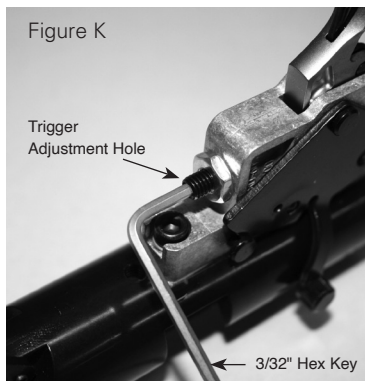


Figure J



PNEU-DART'S GUIDE TO GENERAL SAFETY

1. Handle every projector as if it was loaded.
2. Keep the safety on SAFE until you are ready to shoot.
3. Be sure of your target before you shoot.
4. Control the muzzle, and never point a projector at anything you don't want to shoot.
5. Always wear protective glasses when shooting, disassembling or cleaning projectors.
6. Be sure no one is in path of ejecting shells.
7. Never climb or jump over a fence or other obstacle with a loaded projector.
8. Never climb into or out of a tree, or tree stand with a loaded projector.
9. Never pull a projector toward you by the muzzle.
10. Avoid alcoholic beverages before and during shooting.
11. Never use a projector that fails to function properly. Do not try to force a jammed action.
12. Be sure to keep the barrel and mechanism free of obstructions.
13. Before cleaning, be sure the chamber, action and magazine are completely unloaded.
14. Always unload a projector before storing, transporting, or leaving unattended.
15. Never enter a motor vehicle with a loaded projector.
16. Store projectors and ammunition separately, locked and beyond the reach of children.
17. Always carry your projector empty with the action open, except when you intend to shoot.
18. Avoid bumping, dropping or jarring any projector. Bumping, dropping or jarring has resulted in certain projectors discharging accidentally under some circumstances.
19. Consult owner's manual before using any projector.
20. Never interchange parts between projectors, except where indicated as a safe practice.

PNEU-DART'S GUIDE TO GENERAL SAFETY

Recent field studies have concluded cartridge based projectors perform best when given adequate time to cycle.

By definition: Cycling implies the ability for the gas chamber, within a cartridge fired projector, to replenish itself with oxygen. When achieved the projector yields consistent ignition with each .22 caliber power load fired. Refreshing the chamber of the projector can be best achieved by keeping the bolt open for several seconds (30 seconds is recommended) prior to chambering a live power load. Failure to do so will result in less oxygen, yielding lower combustion levels (e.g. reduced muzzle velocities) for subsequent darts fired.

Failure to follow these rules, or other instructions in this manual, can result in personal injury.

Children are attracted to and can operate projectors that can cause severe injuries or death.

Prevent child access by always keeping projectors locked away and unloaded when not in use. If you keep a loaded projector where a child obtains and improperly uses it, you may be fined or sent to prison.

Safety Warning: Pneu-Dart strongly recommends that you take a safety course, taught by a certified instructor, before you use this projector. Contact Pneu-Dart for further details.

PERFORMANCE

Many factors affect velocity, including brand of projectile, type of projectile, and amount of gas in cylinders, lubrication, barrel condition and temperature.

REPAIR SERVICE

If your projector needs repair, we recommend that you take or send it to an Authorized Service Station. For an authorized service station near you, visit our web site at www.pneudart.com or call customer service at 1-866-299-3278. International customers should contact their respective distributor. Your projector requires special tools and fixtures to repair it. If you take it apart, you probably will not be able to reassemble it correctly. Pneu-Dart assumes no warranty responsibility under such circumstances.

IMPLIED WARRANTIES

ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF RETAIL PURCHASE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

To the extent any provision of this warranty is prohibited by federal, state, or municipal law, which cannot be preempted, it shall not be applicable. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state and country to country.



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