Magna Drive™ Loader

Operating Instructions

Introduction

Thank you for purchasing the Empire Magna Drive™ loader. This manual is for the Empire Magna Drive™ Please read all instructions and warnings before using.

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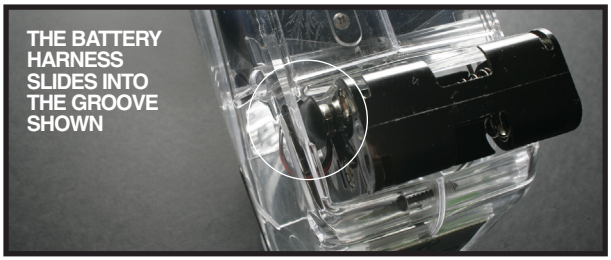
Getting Started

Battery Installation

No tools needed! Slide the battery door open. Remove the battery holder. Install batteries following the polarity markings of the battery holder. Connect power plug to battery pack. Re-install the battery pack with the battery connector sliding into the slot on the right side of shell (left side as you look at the loader from below). Slide the battery pack back in while keeping it as square as possible. If the battery pack is not installed correctly it might be difficult to remove. Finally slide the battery door closed. You may need to apply light pressure to the battery pack to allow the door to slide past it.

For best results, only use quality name brand batteries. when replacing batteries, used batteries should be recycled



Attaching the Loader

You can attach your Magna Drive loader to the markers feed neck or you may need an elbow to attach it properly.

The Magna Drive loader has a dual layer “laminated” feed neck for extra strength. The outside is part of the polycarbonate body shells and the inside is part of the nylon catch cup. This is the strongest loader feed neck design in paintball. The inside of the neck (the end of the catch cup) is intentionally designed to stick out further than the shell. This is to ensure no gaps in the feed path when the loader is used with a feed neck that has a conical bottom.

Powering the Loader

Push and hold in the power button. When you first hold in the power button a green LED will appear. Continue to hold in the power button until the LED changes to red then goes off. Now release the button before the white LED comes on. The white LED will then go off and the loader will spin once to prime the drive cone. The loader will have a green flashing Led when on. When an RF signal is received, the Led will flash blue when on.

Sound Activation™

Using the Loader in Sound Mode

When the loader is first turned on it will be in sound mode. It will always be in sound mode until a RF signal is received from your marker. If RF mode is being used you can switch back to sound mode by pushing the power button 1 time and the Led will switch back to flashing green. If the power button is pushed 3 times after the loader is turned on it will lock into sound mode.

Radio Frequency

Using RF Mode

To use the loader in RF mode the RF transmitter has to be installed in your marker correctly. When the loader is in RF mode the Led will flash Blue once a signal is received from your marker. Once the RF mode is on the Sound mode will be deactivated unless turned back on. When the loader is in RF mode the loader will spin every 5 seconds to keep tension on the ball stack.

Synchronizing loader to your marker:

1) Turn on the loader.

2) While the loader is on, press and hold the power button, the Led will turn Red.

3) Continue to hold the Power button while the Led is Red, when the Led changes to amber press the trigger of you marker. If done properly the Led will change to green after the trigger is pulled and your loader is now synchronized to the marker.

Turning off the Magna Drive Loader

Press and hold the power button until a Red Led appears. Release the power button and your loader is now off. If the loader is left on, it will shut off after 1 hour of inactivity.

Adjusting the Settings

There are 3 settings which can be changed in programming mode

1) Adjustable motor speed: 6 Levels: increase BPS

2) Adjustable sound sensitivity: 6 Levels: Helps detect every shot during rapid firing, increase BPS. Adjust to match your marker. If the sound sensitivity is set too high the loader will feedback a Red Led after shooting. Lower the setting to match your marker. This setting is only used in Sound Activation mode.

3) Spring tension monitoring: This feature monitors the drive cone spring tension. This helps prevent ball breaks from overpowering the drive cone. Also this feature determines when the drive cone is empty and motor speed is slowed down to help prevent ball breakage when hopper is very close to empty. Enabling this feature will increase the battery life and reduce ball breaks but may slightly reduce the top speed of the hopper.

Programming the Loader

Programming

Programming

1) Make sure the loader is turned off. Push and hold in the power button. When you first hold in the power button a green LED will appear. Continue to hold in the power button until the LED changes to red then goes off. You may now release the button before the white LED comes on and then press it again when the white LED comes on to enter programming mode, or just continue holding the button until the white LED comes on and it will change to red and you are now in programming mode.

2) The Green Led will flash the motors current speed setting (1 slowest - 6 fastest)

3) The Orange Led will flash the microphones current sensitivity setting (1 less sensitive – 6 most sensitive)

4) The Red Led will flash the current spring tension monitoring setting (1 off – 2 on)

5) The Green Led will come on for 1 second. If changing the speed setting is desired press and hold the power button again during this flash. When the Led turns to Red the new setting can be entered. Now push and release the button the number of times necessary based on the setting you desire. Each time the button is pushed a green Led will appear. After the new setting is entered the Green Led will flash the new setting.

6) The Orange Led will come on for 1 second. If changing the sensitivity level setting is desired press and hold the power button again during this flash. When the Led turns to Red the new setting can be entered. Now push and release the button the number of times necessary based on the setting you desire. Each time the button is pushed a green Led will appear. After the new setting is entered the Orange Led will flash the new setting.

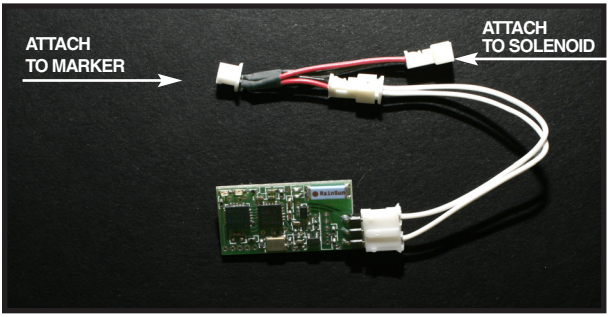
7) The Red Led will come on for 1 second. If changing the spring tension setting is desired press and hold the power button again during this flash. When the Led turns to Red the new setting can be entered. Now push and release the button the number of times necessary based on the setting you desire. Each time the button is pushed a green Led will appear. After the new setting is entered the Red Led will flash the new setting.

Continued Programming

Note: It is better to have the microphone setting less sensitive and still able to detect the marker firing. Do not set it to 6 if setting 2 detects the marker firing. Only use a higher setting if the lower setting does not detect the marker firing.

Attaching the RF transmitter to your marker (not included)

To use the loader in the RF mode, you must install the RF transmitter in your marker. Use the harness that corresponds to your marker if available. If a harness for your marker is not available, it will be necessary to solder the RF transmitter to your marker's solenoid harness. Some newer markers might have a connector already installed on the circuit board for the RF transmitter.



Adjusting the Magna Clutch drive cone force

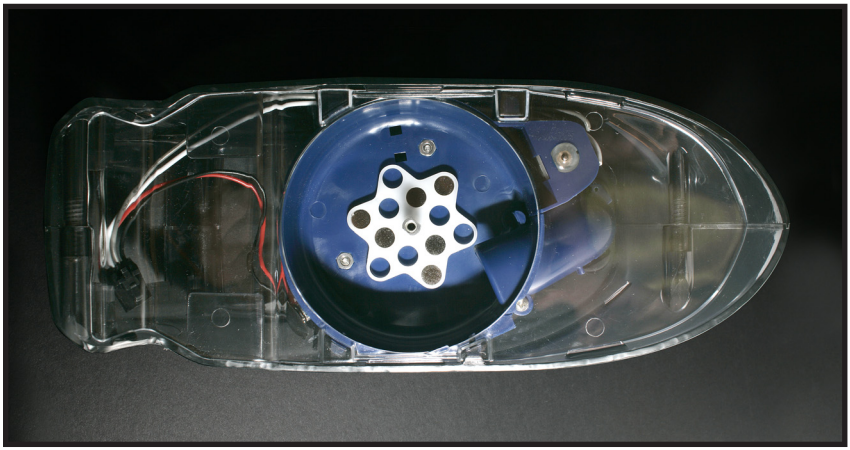
Magnets

1) Remove the drive cone assembly completely.

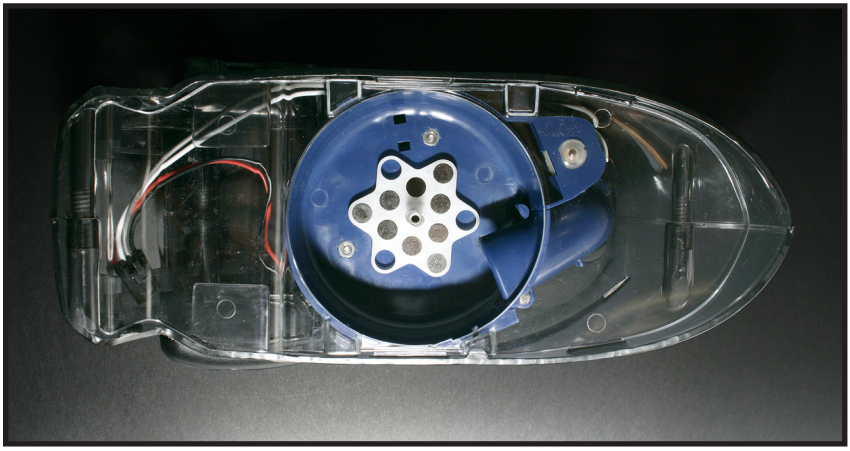
2) On the Magnet holder there are 12 spots for magnets. Usually a total of 6-9 magnets will be used. It is possible to add, remove and reposition magnets according to what marker and paintballs you are using.

The spots for the magnets toward the center of the magnet holder will supply a constant force to the drive cone. The spots on the outside of the magnet holder will supply an intermittent force to the Drive cone when the clutch slips. Too many total magnets may prevent the clutch from slipping at all, while too few magnets will prevent the feed cone from properly feeding paintballs.

The following diagrams are examples of good initial configurations for tournament paintballs:



The following diagrams are good initial configurations for paint-less practice balls (rubber):



3) After you have setup your magnet plate read the Drive Cone installation section for the correct assembly procedure.

Magnet Plate (aftermarket accessories)

1) Remove the drive cone assembly completely.

2) There is a metal plate that fits into the bottom of the spring carrier. By changing this metal plate for different configurations you can change the amount of holding force, and the force pulse duration when the clutch clips.

The metal in the center of the magnet plate will supply a constant force to the drive cone. The shaped protrusions on the outside of the magnet plate will supply an intermittent force to the Drive cone when the clutch slips. Too little metal on the inside of the plate may allow the clutch to slip too easily and thus prevent feeding of paintballs.

If you are using paint-less practice balls (rubber) you may want the star shaped metal plate with all the shaped protrusions, and more magnets, as the practice balls have significantly more friction than regular paintballs.

3) After you have setup your magnet plate read the drive cone installation section for the correct assembly procedure.

Rip Drive

The Rip Drive is the thumbwheel located under the Magna Drive loader.

It has several uses:

1) Manually pre-tension up to 10 paintballs into your paintball gun for every revolution of the thumbwheel. This can be done to chrono your gun without the need to turn on the hopper, or to feed paintballs if your batteries should happen to die during a game.

2) Clear a ball jam in your loader during a game by rotating the thumbwheel backwards and clearing the jam, then forwards again to pre-tension the ball stack.

3) Unwind the tension on the drive spring when the game is over. The paintballs may be left in, but the spring should be unwound to relieve the tension when not in use.

Emptying the loader for storage

With the loader turned off, turn it upside down to dump the paintballs out. While upside down, rotate the Rip Drive backwards from the feeding direction to release paintballs. Do not store your Reloader B with any paintballs left inside, as doing so will stretch the drive spring and cause decreased loader performance. Release feed cone tension between long game delays

General Care

When storing the loader for an extended period of time, remove the battery pack completely and store in a dry place where it will not come in contact with the loader itself or any metal parts.

To clean the loader, use only a clean dry cloth, or apply a small amount of goggle lens cleaner to a clean dry cloth and wipe clean. Do not apply goggle lens cleaner directly to loader surfaces, as too much contact will deteriorate plastic and cause cracking.

If any paintballs break inside the hopper, DO NOT USE ANY LIQUIDS OR CHEMICALS, INCLUDING WATER, TO RINSE OUT THE HOPPER. Doing so will cause severe damage to electrical components and will void the warranty.

Disassembly of the loader

1) Any damage caused by disassembly are not covered under warranty.

2) Remove battery pack.

3) Loosen and remove all 6 screws from the right side shell.

4) Slowly work right side shell away from left side shell, keeping all components in left side shell, especially the drive assembly, circuit board and back plate. If the circuit board or back plate is stuck in right side shell, the on/off button on the circuit board will break off, which destroys the circuit board. If they are stuck in right side shell, use a micro screwdriver to push both components back toward left side shell as you continue to remove right side shell.

5) Remove lid and be careful not to loose the lid magnet that is located in the shell.

6) Remove both the circuit board and back plate at the same time from left side shell.

7) Remove the deck and sliding battery door.

8) Remove drive assembly from left side shell.

9) If necessary, remove the upper feed neck cover on drive assembly for access to the feed cone by removing 2 screws.

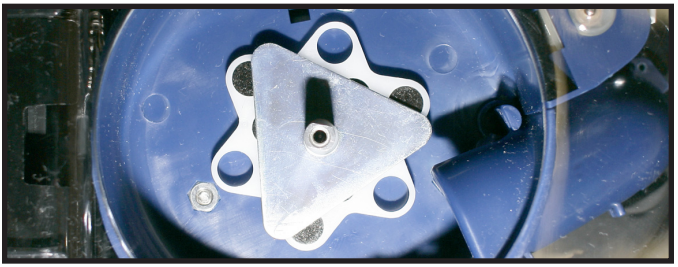
10) If necessary, remove the drive cone by removing its center screw. For reassembly of drive cone, follow drive cone instructions.

Drive Cone Installation

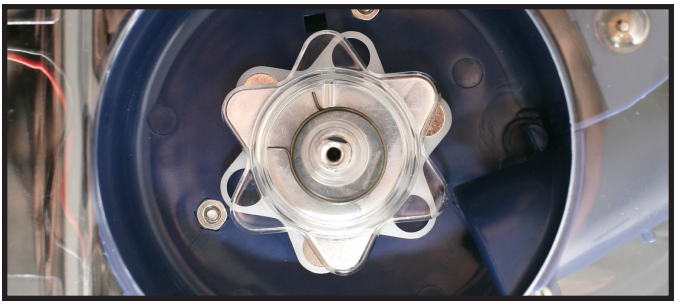
It is very important to reinstall the drive cone properly for correct loader operation. Note the drive tab on the drive cone. The tab is used to catch the spring tab.

1) Install the magnet holder onto the shaft and slide it all the way down.

2) Apply a small amount of grease to the bottom side of the metal plate. Place the metal plate on top of the magnet holder and try to center it on the shaft.



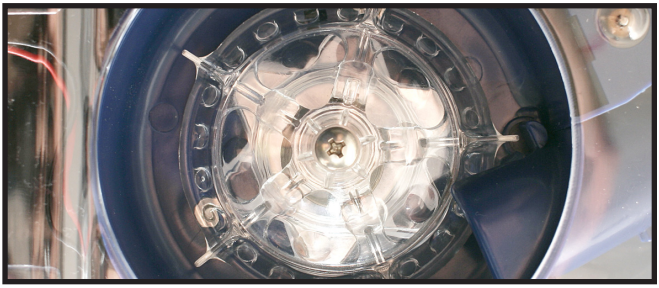
3) Install the spring cup with spring onto the shaft and rotate it until it locks onto the metal plate.



4) Place the drive cone onto the shaft and pre-load the drive cone spring.

5) To Preload the drive cone spring:Rotate the cone clockwise until the upper and lower spring tabs hit each other. You should now have both spring tabs pressed together. Lift the drive cone SLIGHTLY and rotate it clockwise up and over the drive cup's tab (taking the upper spring tab) with it. Snap the drive cone down with the drive spring tab on the right side of the drive cup's tab. The drive cone spring is now pre-loaded and will snap back properly when wound up.

6) Install the drive cone cover and tighten the cover screw.



Deck Installation

The Magna Drive Loader comes with 2 loader decks which can be interchanged with each other. The first deck is a flat deck which has a capacity of 200+ paintballs. The second deck is the extended deck, it has a capacity of 220 paintballs.

The flat deck will work like you are used to with a normal loader. The extended deck is for those that absolutely want to carry the most paintballs in their loader, or that often shoot their loaders dry under difficult situations without thinking about it.

The extended deck has extra capacity due to a “reserve” section in the front. You can shoot the same number of balls out of the loader as you can with the flat deck, but then by tilting the loader back by 30 degrees or more, the balls come out of the reserve area and into the catch cup. This can be useful if you have accidentally ran your loader dry but need just a few more balls before reloading.

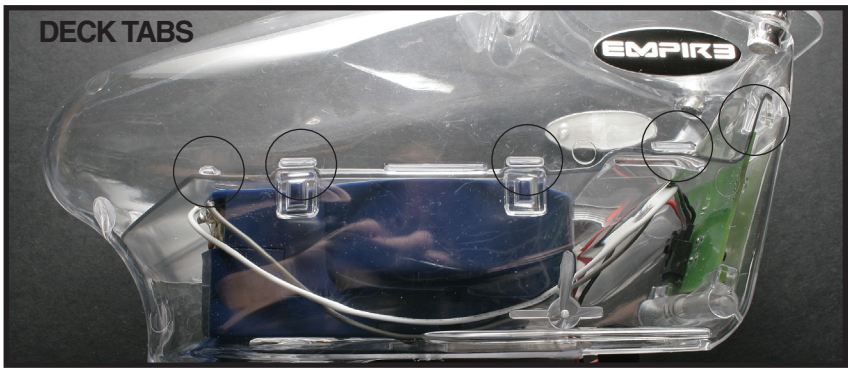
You won’t lose anything by trying the extended deck design, but it may help you in a tough situation. You do need to get used to the fact that you won’t be able to shoot the loader empty in one long burst… although that may be a good thing!

1) While the loader is apart, install the desired deck into the left shell.

2) On each side shell there are tabs located on the inside. The deck has to be below the tabs for the loader to go back together correctly.

3) Once you have the deck located below the tabs in the left side shell, install the right side shell on top of the left side.

4) Make sure before tightening the shell screw that the deck in located below the shell tabs on both sides. If necessary use a long screwdriver or barrel swab to push the deck down properly.

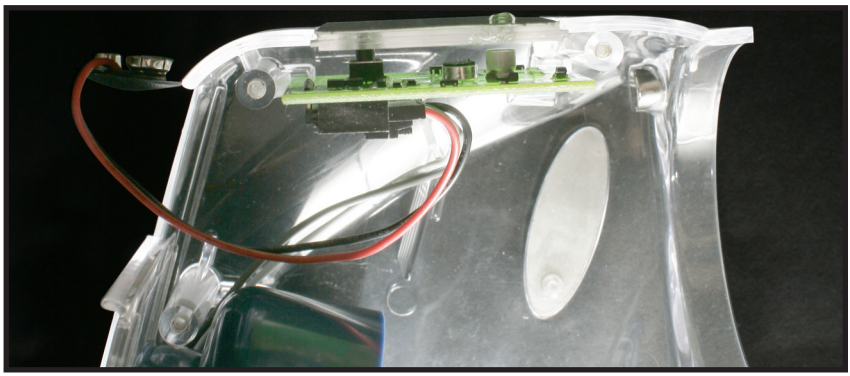


Reassembly of the loader

1) Place the drive assembly into the left side shell. Make sure the wiring harness is behind the drive assembly and taped in position.

2) Connect the wiring harness to the circuit board.

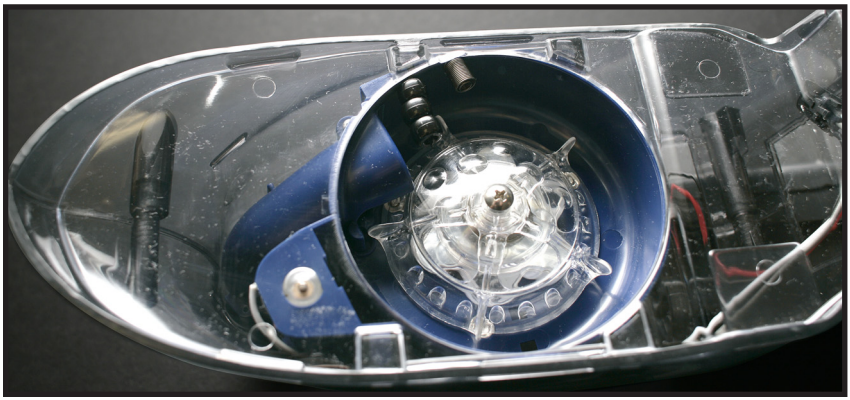
3) Slide the circuit board and back plate into the left side shell at the same time. If they are not installed at the time the power button could get damaged.



4) Put the battery door, deck and lid into the left side shell (See Deck Installation for detailed instructions). Make sure the lid magnet is located in the left side shell behind the lid opening.

5) Place the Right side shell on top of the left side. Line up the back plate and lid to help get the two sides together.

6) Before you tighten the 6 shell screws make sure the deck is properly located between and below the tabs in the shell. It is VERY important that the deck is held down correctly over the anti-jam locations.



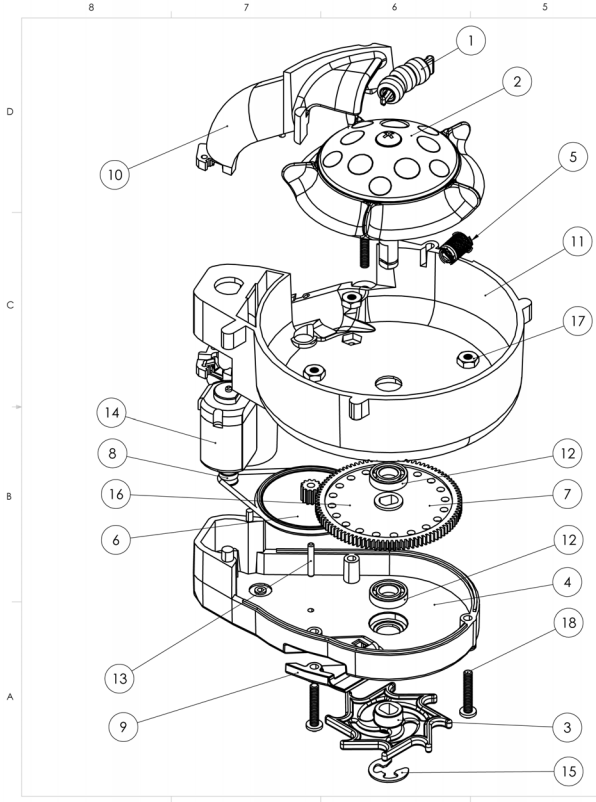
Features

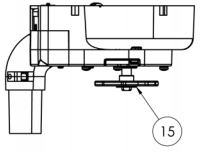
Magna Clutch Drive
RF Technology or Sound Activation
Ultra Quiet Belt Drive
Computer controlled
Auto-Off 1 Hour

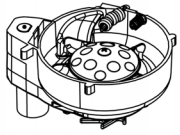
Specifications

Power Requirements- 6 AA batteries
Capacity with Flat Deck 200 paintballs
Capacity with Extended deck 220 paintballs
On gun Feed Rate- 30 bps+
Construction- Poly-Carbonate

Diagram 001







ITEM	DESCRIPTION	QTY
18	SCREW PHCS 4-40 X .625	4
17	NUT HEX 4-40	4
16	O-RING BUNA-N 70 DUR -028 (1.375 ID)	1
15	E-RING 1/4 X .025 THK	1
14	MOTOR DC 9V	1
13	DOWEL PIN .078 DIA X .500	1
12	BEARING .250 ID X .500 OD X .125 THK	2
11	CATCH CUP	1
10	OUTLET CUP	1
9	COVER EYE	1
8	PULLEY DRIVE .250 DIA	1
7	SPROCKET 96T 1.94 DIA PLASTIC	1
6	PULLEY 1.41 DIA PLASTIC	1
5	SPRING ANTI JAM	1
4	COVER GEARBOX	1
3	WHEEL ANTI JAM EMPIRE LOADER III	1
2	CLUTCH MAGNA ASSY	1
1	BEAD ANTI JAM ASSY	1

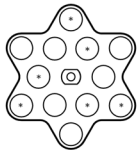
OPTIONAL MAGNET PLATES

MD0P001400

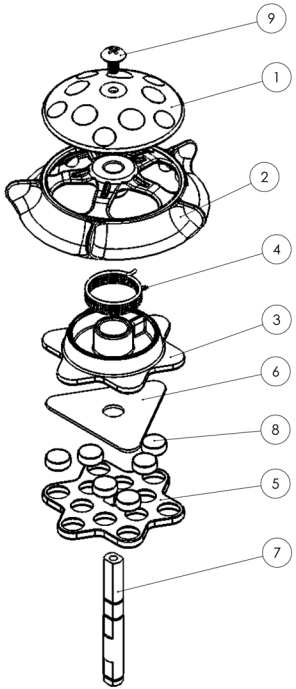
MD0P001500

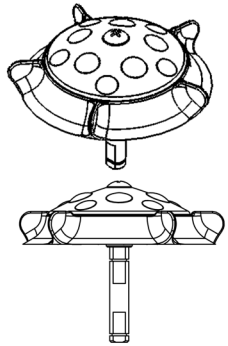
MD0P001600

MD0P001700



(*)MAGNET STANDARD CONFIGURATION
ITEMS REMOVED FOR CLARITY

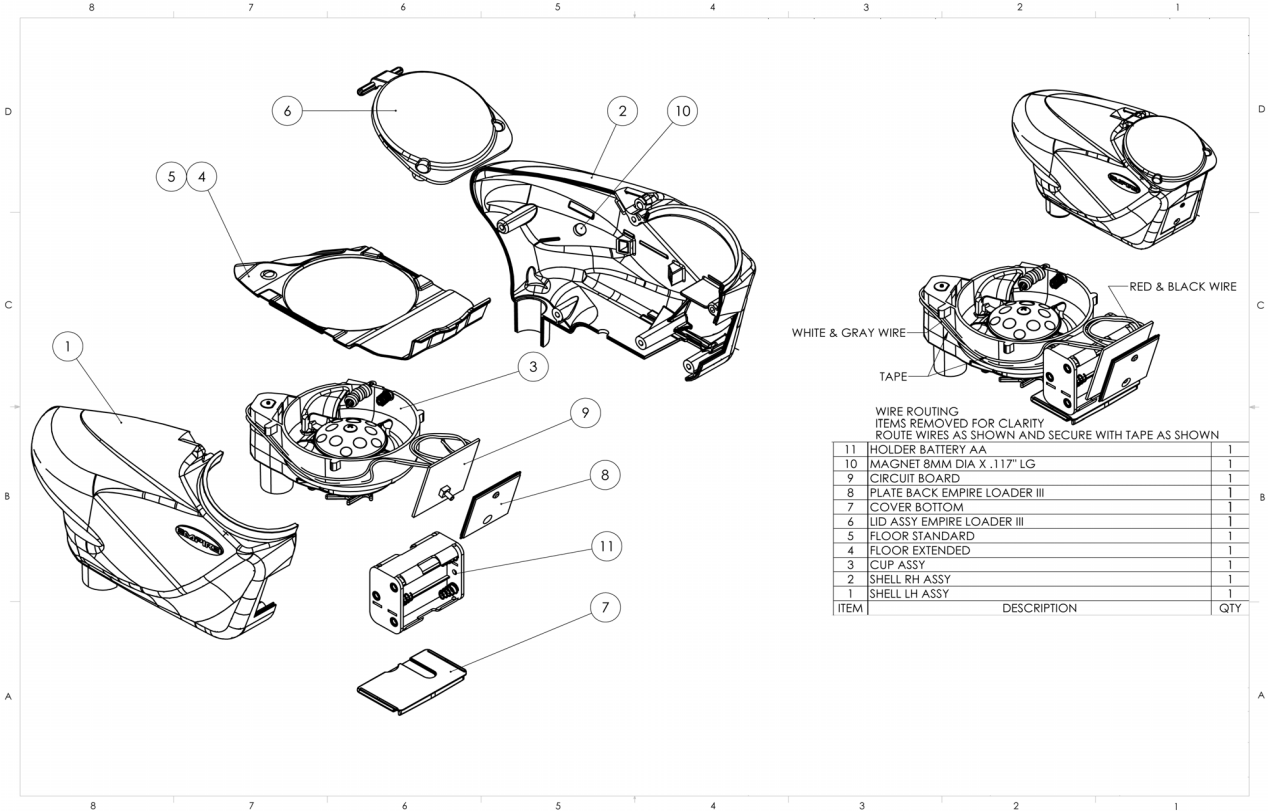




ITEM	DESCRIPTION	QTY
9	SCREW THCS 6-32 X .250 LG	1
8	MAGNET 8MM DIA X .117" LG	6
7	SHAFT CLUTCH	1
6	PLATE MAGNET 3 POINT	1
5	CARRIER MAGNET	1
4	SPRING DRIVE	1
3	HOUSING SPRING	1
2	DRIVE CONE BOTTOM	1
1	DRIVE CONE TOP	1

Diagram 002

Diagram 003



WIRE ROUTING
ITEMS REMOVED FOR CLARITY
ROUTE WIRES AS SHOWN AND SECURE WITH TAPE AS SHOWN

ITEM	DESCRIPTION	QTY
11	HOLDER BATTERY AA	1
10	MAGNET 8MM DIA X .117" LG	1
9	CIRCUIT BOARD	1
8	PLATE BACK EMPIRE LOADER III	1
7	COVER BOTTOM	1
6	LID ASSY EMPIRE LOADER III	1
5	FLOOR STANDARD	1
4	FLOOR EXTENDED	1
3	CUP ASSY	1
2	SHELL RH ASSY	1
1	SHELL LH ASSY	1

Empire Paintball Products warranties this Magna Drive loader from defects in materials and workmanship under normal use and service for a period of 90 days from original purchase date. The manufacturer agrees to repair or replace any part which has been found to be defective. The outer shell is not covered under this warranty if it is broken due to misuse, dropped, or collided with another object. This product also has a limited extended warranty of one year from original purchase date covering the operation of the circuit board. Damage to the circuit board due to disassembly of the product is not covered under this warranty. In the event that this product is defective and needs repair call Paintball Solutions. If are customer service department asks for the loader to be sent in for repair. Place loader inside a box, along with your name, return address, daytime telephone number, a brief description of the problem, and a copy of your original sales receipt.

It is the responsibility of the purchaser to pay for shipping fees of the product to the repair facility during the warranty period.

Troubleshooting: If you experience any difficulties with operating this product, and you have not found the solution in this manual, please call 800-220-3222, or visit on the internet at http://www.paintballsolutions.com.

CUT HERE

WARRANTY REGISTRATION

SEND TO:
Paintball Solutions
570 Mantua Blvd.
Sewell, NJ 08080
800-220-3222
www.paintballsolutions.com

PURCHASE INFORMATION:

Purchased From: _____

City _____ State: _____ Zip: _____

Serial _____

OWNER INFORMATION:

Your Name _____

City _____ State: _____ Zip: _____

Phone _____ Email: _____