



WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

YOUR ANGEL IS NOT A TOY.

- Careless or improper use, including failure to follow instructions and warnings within this Operator Manual and attached to the ANGEL, could cause death or serious injury.
- Do not remove or deface any warnings attached to the ANGEL.
- Paintball industry standard eye/face/ear and head protection designed specifically to stop paintballs and meeting ASTM standard F1776 (USA) or CE standard (Europe) must be worn by user and any person within range.
- You must be at least 18 years of age to purchase the ANGEL.
- Persons under 18 years of age must have adult supervision when using or handling the ANGEL.
- Observe all local and national laws, regulations and guidelines.
- Use only on professional paintball fields where codes of safety are strictly enforced.
- Use 0.68 calibre paintballs only.
- Keep the ANGEL switched off until ready to shoot.
- Treat every ANGEL as if it is loaded.
- Never point the ANGEL at anything you do not intend to shoot.
- Do not shoot at persons at close range.
- Do not shoot at fragile objects such as windows.
- Always measure your ANGEL's velocity before playing paintball, using a suitable chronograph.
- Never shoot at velocities in excess of 300 feet (92 meters) per second, or at velocities greater than local or national laws allow.
- Use compressed air/nitrogen gas only. Do not use CO2.
- Always follow instructions, warnings and guidelines given with any first stage regulator you use with the ANGEL.
- Never look into the barrel or breech area of the ANGEL whilst the ANGEL is switched on and able to fire.
- Never put your finger or any foreign objects into the breech or paintball feed tube of the ANGEL
- Never allow pressurised gas to come into contact with any part of your body.
- Always switch off the ANGEL when not in use.
- Always fit a barrel blocking device to your ANGEL when not in use on the field of play.
- Always remove all paintballs from the ANGEL when not in use on the field of play.
- Always remove the first stage regulator and relieve all residual gas pressure from the ANGEL before disassembly.
- The ANGEL can hold a small residual charge of gas, typically 2 shots, with the first stage regulator removed. Always discharge the ANGEL in a safe direction to relieve this residual gas pressure.
- Always remove first stage regulator and all residual gas pressure from the ANGEL for transport and storage.
- Always follow warnings and guidelines given with your first stage regulator for safe transport and storage.
- Always store the ANGEL in a secure place.
- THIS OPERATOR'S MANUAL MUST ALWAYS ACCOMPANY THE PRODUCT IN THE EVENT OF RESALE OR NEW OWNERSHIP.
- SHOULD YOU BE UNSURE AT ANY STAGE YOU MUST SEEK EXPERT ADVICE.

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WARNING

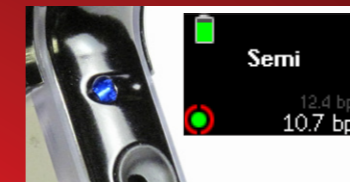
ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Angel FLY Sb is LIVE and capable of firing.
- Ensure a barrel blocking device is fitted to the Angel FLY Sb.
- Ensure the hopper is removed from the Angel FLY Sb.
- Ensure that there are no paintballs in the Angel FLY Sb.
- Paintball industry standard eye/face/ear and head protection designed specifically to stop paintballs and meeting ASTM standard F1776 (USA) or CE standard (Europe) must be worn by user and any person within range.
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Switching your Angel FLY Sb ON



To switch ON the Angel FLY Sb press the navigation button inwards. The Angel FLY Sb will turn on and will automatically go into live mode with the eyes on. The OLED display screen will illuminate and show the firing mode and basic status of the Angel FLY Sb (see below).



The LED on the rear of the grip frame will illuminate blue.

Turning the Angel FLY Sb OFF



To turn the Angel FLY Sb OFF hold the navigation wheel inwards to enter the menu, and then push again to select the first item in the main menu "power off". The marker will shut down when the function is selected.

Navigation Button

The navigation button is located on the rear of the grip frame and allows access to the electronic settings and features used on the Angel FLY Sb.

Push the button inwards and hold for two seconds.



To navigate through the options simply push the navigation button upwards or downwards to scroll through the features and settings. Push the button inwards to select a function or feature or to save the desired setting.

Battery Replacement



1: Remove the right hand grip cheek by removing the 3 screws using the 2mm hex key (provided).



2: Push the battery upwards at the same time lifting the battery out of its cavity.



3: Remove the battery

4: Important: Observe the battery polarity. Always use a good quality fresh battery.



Supplied tools



- This Operator's and User's Manual is in English.
- It contains important safety guidelines and Instructions.
- Should you be unsure at any stage, or unable to understand the contents within this manual you must seek expert advice.



- Le mode d'emploi est en Anglais.
- Il contient des instructions et mesures de sécurité importantes.
- En cas de doute, ou s'il vous est impossible de comprendre le contenu du mode d'emploi, demandez conseil à un expert.



- Este manual de (operarios y) usuarios está en Inglés.
- Contiene importantes normas de seguridad e instrucciones.
- Si no esta seguro de algún punto o no entiende los contenidos de este manual debe consultar con un experto.



- Diese Bedienungs und Benutzeranleitung ist in Englisch.
- Sie enthält wichtige herheitsrichtlinien und -bestimmungen.
- Sollten Sie sich in irgendeiner Weise unsicher sein, oder den Inhalt dieses Heftes nicht verstehen, lassen Sie sich bitte von einem Experten beraten.

Switching OFF the Angel Fly Sb Break Beam Eyes

The Marker is equipped with a break beam eye system which prevents paint breakage by allowing the marker to fire only when a ball is fully seated in the breach and ready to fire. When the marker is turned on, the eyes are active by default, and the marker will be prevented from firing unless a ball is present in the breach ready to fire. It is recommended that the marker be operated with the eyes on at all times, unless there is a problem preventing them from working (such as broken paint blocking the sensors)

If you do need to turn the eyes off, push the navigation wheel upwards (while in the home screen) until the eye status indicator changes to show that the eyes are disabled.



When the eyes are OFF (the LED on the rear of the grip frame shows red) the rate of fire is limited, and the eyes are not used to control the firing cycle or to prevent the **Angel FLY Sb** from firing.

To turn the eyes back on again, push and hold the navigation wheel up again and hold until the eye status icon changes back to normal.

If the eyes fail, for instance if they become blocked by broken paint, they will automatically be disabled and the **Angel FLY Sb** will be limited to a reduced rate of fire to prevent any further breakages. If the blockage clears itself, the eyes will automatically be re-enabled, although a warning symbol will continue to be displayed in the eye status icon to alert you to a possible problem. This warning will not affect the operation of the **Angel FLY Sb**, it can be cleared by turning the eyes off and back on again.

The eye status icon updates continuously. The meaning of each symbol is shown below:



Propellant Air/Nitro Supply

The **Angel FLY Sb** is designed to operate on air/nitrogen gas. This needs to be supplied to the **Angel FLY Sb** using a suitable first stage regulator. The ideal input pressure is 450psi but it will function with inlet pressures up to 850psi.

Adjusting or Removing the ASA from its Mounting Rail.

The ASA connects to the grip frame of the **Angel FLY Sb** via an integrated dovetail mounting rail that allows the user to slide the ASA body along the rail to fine tune the mounting position or to remove the ASA completely.

The ASA is locked down onto the rail via 2 10/32 unF set screws located within the grip frame.

- Using a 2mm hex key (provided) remove the 3 screws holding the right hand grip cheek in place.



- Remove the battery (see p 3).
- Using the 3/32 hex key (provided) unscrew the 2 set screws located in the base of the frame (counter clockwise) until such a point is reached to allow the ASA body to slide freely along the rail.



Once a new position for the ASA body has been reached tighten the 2 set screws (clockwise) to lock the ASA firmly into its position.

Installing an Air/Nitro System

Each **Angel FLY Sb** comes with a centrally ported on/off ASA allowing for the quick and easy connection of a preset air/nitrogen system for immediate use.

Before installing your preset system into the ASA always ensure that the ON/OFF adjuster is wound out approximately half way. Be careful not to unscrew the ASA ON/OFF adjuster too far as it is possible to completely disassemble the ASA.

To install your air/nitrogen system screw your tank and regulator onto the ASA and tighten.



Macro Line Hose

- Pull back the collet on the connector and keep the collet depressed and pull the macro line hose out of the connector firmly.



- Cut the macro line hose cleanly and squarely.



- Push the hose firmly into the macro line connector to re-attach.

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- Use compressed air/nitrogen gas only DO NOT USE CO2.
- Only use a paintball regulator that has been designed for air or nitrogen gas.
- Do not exceed 850 psi (58bar) input pressure to the ANGEL Sb.
- Take suitable precautions when using sharp cutting instruments.
- The Macro Line hose must be cut back cleanly and square prior to attachment or re-attachment to ensure secure fitment.
- SHOULD YOU BE UNSURE AT ANY STAGE YOU MUST SEEK EXPERT ADVICE.

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- Ensure the hopper is removed from the Angel FLY Sb.
- Ensure that there are no paintballs in the Angel FLY Sb.
- Ensure the Angel FLY Sb is switched off via the navigation button on the rear of the grip frame prior to fitting your first stage regulator.
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Bolt Removal

The **Angel FLY Sb's** bolt includes two small gas ports that direct a small proportion of air onto the lenses of the **Angel FLY Sb's** eye sensors, which negates the need to clean them as regularly as other markers.

If you experience a serious breakage in the breach during a game your **Angel FLY Sb** the eyes will switch off and in most instances you will be able to continue firing and the gas blasts from the ports in the bolt will automatically clean the eyes, they will then turn back on automatically.

NOTE: It is important to keep the bolt clean and free from dirt or grit and that the bolt is kept dry and free from any lubrication. We recommend that the bolt is wiped clean at the end of every days usage.

The bolt is held in place using a connecting pin that runs up through the ram hammer and into the bolt.

- To remove the bolt, pull the connector pin downwards to its locked position so that the bolt will become free of the pin. To enable you to pull the pin you will need to use either the LPR or bolt removal tool or the supplied bolt pin removal knob.



- Flick the **Angel FLY Sb** forwards and downwards, whilst holding your free hand over the front of the **Angel FLY Sb** to catch the bolt when it slides forwards within its chamber. When your **Angel FLY Sb** is new the bolt may be slightly more stubborn to remove. This will become easier over time.

- The bolt should now be free of the ADB fingers and can now be removed from the body of the **Angel FLY Sb**.

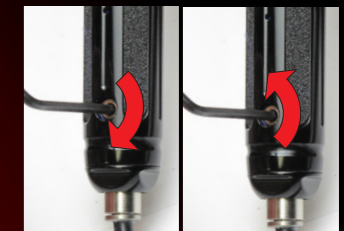


NOTE: There is no need to pull the pin all the way out. If however, you do pull the pin out completely - to re-insert the blank end in to the corresponding hole in the hammer (the two recesses on the pin should be facing the rear of the body). When the first recess locates (you will feel it click in place) replace the bolt - see points 4-6 above.

Velocity Adjustment

Using a 1/8th hex key (provided) turn the velocity adjuster either:

- clockwise (in) to decrease the velocity
- counter-clockwise (out) to increase velocity.



- Push the bolt backwards into the marker until it reaches its stop.
- Push the connector pin back up to connect the bolt and ram back together.



NOTE: The **Angel FLY Sb** is supplied with a connector pin extractor knob. The **Angel FLY Sb** can be operated with or without the knob in place depending on player preference.

Mini Reg Removal and Assembly

The mini-regulator is a second stage regulator that is used to control the velocity and regulate the gas pressure. It can be deleted, but only if a suitable first stage regulator is used that incorporates a high flow and good regulation properties across the tank pressure range. Please ensure that the macro line is removed from the fore grip before disassembly.

1. Remove the velocity adjuster screw located on the fore grip using a 1/8 Allen wrench.



2. Unscrew the mini reg.



3. Remove the fore grip cap using a suitable wrench.



4. Using the extraction tool provided, remove the mini reg cartridge.



Note: If replacement of the macro line hose connector is required - remove the regulator end cap from the fore grip before attempting to replace the fitting. Failure to do so can result in damage to the regulator end cap or the fore grip.

Rubber Finger Detent Replacement

The **Angel FLY Sb** incorporates the new three piece eye cover strap. This eye cover strap incorporates the improved ADB fingers and is designed for ease of replacement of the ADBs and trouble free cleaning of the ANGEL eyes, if required.

1. Remove the volume chamber maintenance plug with a 4mm Allen wrench.



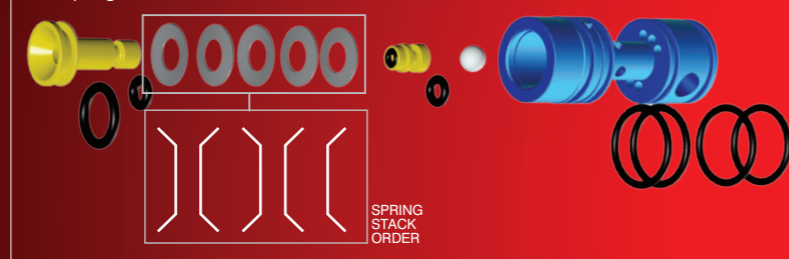
2. Slide the front section of the eye cover forward and remove.



3. Carefully remove the eye cover arms from either side of the **Angel FLY Sb**.

**Mini reg cartridge assembly.**

Note spring stack order.



4. Using a 2mm Allen wrench (or similar) push out the ADB finger to be replaced.



Repeat this process for the other side.

To reassemble, reverse the above procedure.

Note: It is important that the front section of the eye cover is located correctly on the eye cover arms as shown below.



Also note that it is important not to splay the eye cover arms too far apart. This may result in damage to the eye cover.

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- Ensure the hopper is removed from the Angel FLY Sb.
- Ensure that there are no paintballs in the Angel FLY Sb.
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Eye Ribbon Removal

1. Remove the eye cover as shown opposite.
2. Remove the mini reg and mini reg adaptor.



3. Remove the right hand grip cheek by removing the 3 screws using a suitable 2mm Allen wrench.
4. Carefully unplug the solenoid from the board.



5. Carefully unplug the eye ribbons from the board.



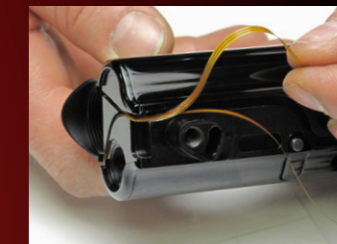
6. Remove the two screws retaining the grip frame using a 3mm Allen wrench and remove the grip frame.



7. A small rubber grommet is used to help secure the eye ribbons in place along the channel within the main body of the **Angel FLY Sb**. Use a 2mm hex key to lift out the grommet.



8. Carefully remove the eye ribbon from the ribbon recess.



To rebuild, reverse this procedure.

LPR Removal

If you are experiencing operating pressure inconsistency, this may be due to a damaged spool seal on your LPR or a damaged LPR piston.

1. Remove the right hand grip cheek by removing the 3 screws using a 2mm hex key (provided).
2. Carefully unplug the solenoid from the board as shown in Eye Ribbon removal (see p 7).
3. Carefully unplug the eye ribbons from the board as shown in Eye Ribbon removal (see p 5).
4. Remove the two screws retaining the grip frame using a 3mm hex key as shown in Eye Ribbon removal (see p 7).
5. Remove the back plate using the 3mm hex key (provided).



6. Remove the screw retaining the sight rail using the 2.5mm hex key (provided) and slide off.



7. Remove the LPR chamber plug using the 4mm hex key (provided).



8. Carefully lift and remove the solenoid carefully extracting the solenoid plug from the body, noting the correct orientation of the solenoid gasket.



9. Extract the LPR retaining pin.



10. Remove the LPR piston using the extraction tool (provided).



11. Using a blunt pick or ball end hex key remove the solenoid wire spacer and the LPR body.



Note: Check the LPR spool and piston for signs of wear and damage and replace if necessary.

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Exhaust valve stem removal

If you are experiencing gas leaking from the breech area, first ensure your tank is delivering at least 200 psi to your **Angel FLY Sb**. If you are still experiencing operating pressure related problems with your **Angel FLY Sb**, such as; inability to achieve the required velocity or increased noise when shooting, your **Angel FLY Sb** may have a damaged exhaust stem face seal. This seal can be easily accessed by removing the exhaust valve stem assembly following the instructions in points 1 and 2 below. Once removed, inspect the face seal. If the face of this seal is scored, or impregnated with grit or dirt or is excessively deformed, it is necessary to replace the exhaust valve stem assembly by reversing the procedure in points 1 and 2 below.

1. Remove the volume chamber maintenance plug using a 4mm Allen wrench.



2. Insert a suitable Allen wrench into the cavity. The exhaust valve stem (which is magnetic) will be attracted to the Allen wrench and can be easily removed.

**Exhaust valve guide removal**

Once the valve stem assembly has been replaced if you are still experiencing the same problem you will need to inspect the O-ring on the exhaust valve guide nearest the face seal for nicks or tears and replace if necessary. If there are no signs of damage to this O-ring, inspect the face seal for dents or scratches and replace if necessary, following the instructions in 'Exhaust valve Stem Removal' and points 3 to 9 below.

3. Slide off the eye cover (see p6).
4. Remove the fore grip (mini-reg) as shown on p 7.

5. Remove the end plug retention pin using the extraction tool provided.



6. Remove the end plug being careful to move eyes out of the way to avoid damage.



7. Remove the grip frame as shown on p7.

8. Remove the Exhaust valve retaining pin and blanking plug.



9. Using a blunt pick, carefully extract the exhaust valve guide as shown.



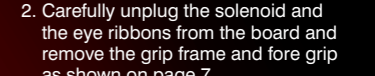
Important notes for the re-assembly of components:

- Ensure exhaust valve stem assembly is located in the exhaust body within the Angel FLY Sb.
- Ensure that the end cap is located correctly.

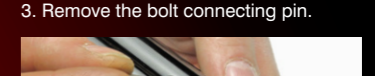
RAM Removal

You may need to remove your ram if the **Angel FLY Sb**'s hammer has come loose or if the ram is leaking.

1. Remove the right hand grip cheek by removing the 3 screws using the 2mm hex key (provided)



2. Carefully unplug the solenoid and the eye ribbons from the board and remove the grip frame and fore grip as shown on page 7



3. Remove the bolt connecting pin.



4. Remove the ram retaining pin.



5. Using the 4mm hex key push the ram backwards.



Trigger adjustment

The trigger system has four adjustable points: back stop, front stop, magnetic return strength control and activation point.

When adjusting the trigger it is advisable to set both the front and back stop positions before you proceed to set the return strength or activation point.

Back stop

Counter-clockwise = moves the point at which the trigger stops - backwards, towards the grip cheek

Clockwise = moves the point at which the trigger stops - forwards, away from the grip cheek.



Note: It is important not to over adjust the back stop position set screw in this direction as it will result in not enough travel for a trigger pull to activate the micro switch.

Front stop

Counter-clockwise = moves the point from which the trigger-pull starts forwards, away from the grip cheek.

Clockwise = moves the point from which the trigger-pull starts backwards, towards the grip cheek.



Note: It is important not to over adjust the front stop position set screw in this direction as it will result in not enough return travel for the trigger to reset the micro switch.

Magnet return strength

Counter-clockwise = makes magnet return strength weaker.

Clockwise = makes magnet return strength stronger.



Note: It is important not to over adjust this portion of the trigger as it will negate the position of the front stop set screw. For this reason it is advisable that during the setup of the trigger you should wind the magnetic return strength adjuster screw counter-clockwise several turns so that it does not interfere with the adjustment of the front stop set screw.

Activation point

Counter-clockwise = moves the point at which the trigger will activate closer to the end of the trigger pull.

Clockwise = moves the point at which the trigger will activate closer to the start of the trigger pull.

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Using the Electronic Settings

Settings and information are available through an easy to use menu tree, making use of the full colour screen built into the circuit board.

Main Menu
Power Off
Fire Mode
Settings

To enter the menus, press the navigation wheel inwards for a second. You will see the screen left.

Once in the menu, navigate using the scroll wheel and select options by pushing the wheel inwards.

If you need to change a setting a long way from its current setting, hold navigation wheel in the desired direction for a while and the setting will increase or decrease automatically, saving you from repeatedly pushing the wheel up or down.

Main Menu **Settings**
Power Off **Dwell**
Fire Mode 8.0 ms
Settings Debounce
 Eye Delay

Dwell **Settings**
7.5 ms **Dwell**
 7.5 ms
 Debounce
 Eye Delay

Some options enter submenus.

To get out of the menus scroll to the "Back" option and select it.

Settings
FSDO Dwell
Reset All
Back

To exit the menus and return to the home screen, scroll to the "Exit Menu" option in the main menu.

Main Menu
Settings
Information
Exit Menu

When the tournament lock is engaged, some functions will appear in grey with a padlock symbol, and cannot be selected, although their current settings can be viewed. To make changes to these settings, turn off the **tournament lock** (see next column)

Turning the Marker off

To turn the marker off, hold the navigation wheel inwards to enter the menu, and then push again to select the first item in the Main Menu, "Power Off." The marker will shut down when this function is selected.

Tournament Lock

The marker features a tournament lock function which allows certain settings, which could affect how the marker fires, to be disabled. This ensures that once a marker has been set up within the rules of a tournament, it cannot be modified to increase velocity, rate of fire, or engage enhanced fire modes, without the use of tools.



Semi **Mode**
12.4 bps locked
10.7 bps

To change the setting of the tournament lock, first remove the right-hand side grip panel to expose the circuit board. With the board switched on, press the small button on the board below the navigation wheel. A "Tourney Lock" menu will appear on the screen, which allows you to turn the lock on or off. Choose and confirm your selection with the navigation wheel.

FUNCTION DESCRIPTIONS

Note: depending on the software version running on your marker, some options may be different. See the documentation accompanying the software release for further information.

Power Off: switches off the marker, to prevent unwanted firing and stop the battery from being drained.

Fire Mode: enters the menu containing settings affecting how the marker fires. This includes fire preset (displayed in the menu item when highlighted) as well as maximum rate of fire and custom ramping parameters. This menu groups together the settings which may need to be changed for particular field or tournament rules.

Main Menu
Power Off
Fire Mode
Settings

Modes available: Custom, Auto, Demo, Semi (Default Mode), Millennium, PSP

Settings: enters the menu containing basic marker settings, including Dwell and Debounce parameters, and other preferences. These are settings which should not need changing once the marker is correctly set up.

Info: provides some information about the software and hardware versions, of the electronics, and some status information which can be useful when diagnosing problems.

Exit Menu: leaves the menu system and returns to the home screen. Each submenu also has a "Back" option which returns to the previous menu.

Preset: sets the fire mode used.

Note: that selecting a preset does not affect other settings such as Max ROF, so you must also set Max ROF correctly to ensure that the marker is tournament legal.

Max ROF: sets the maximum rate of fire of the marker. When the ROF Cap is in effect (or the eyes are not in use), the marker will never fire faster than this rate.

Range: 8-25 balls per second (BPS)
Adjustable in increments of 0.1 m/s
Default setting: 12m/s

ROF Cap: sets whether the rate of fire is capped according to the Max ROF setting. If this is off, then the marker will fire as fast as the loader can feed it, as long as the eyes are in use. When the eyes are disabled, the rate of fire will always be limited by the Eye Off ROF setting (or Max ROF, if set lower).

Default is ON

Start Delay: sets the number of shots which must be fired in Semi Automatic mode before ramping may start, when using the Ramp preset (other modes such as PSP and Millennium are not affected by these settings).

Range: 1-6 shots
Adjustable in increments of 1 shot
Default setting: 3 shots

Kick In: sets the minimum rate of fire which must be achieved for ramping to start, when using the Ramp preset (other modes such as PSP and Millennium are not affected by these settings).

Range: 1-12 BPS
Adjustable in increments of 1 BPS
Default setting: 5 BPS

Drop Out: sets the minimum rate of fire which must be maintained for ramping to continue, when using the Ramp preset (other modes such as PSP and Millennium are not affected by these settings).

Range: 1-12 BPS
Adjustable in increments of 1 BPS
Default setting: 5 BPS

Ramp Reset: sets the rate of fire below which ramping will cease and further safety shots will be required to restart ramping, when using the Ramp preset (other modes such as PSP and Millennium are not affected by these settings).

Range: 1-12 BPS
Adjustable in increments of 1 BPS
Default setting: 1 BPS

Max Burst: sets the maximum number of shots discharged for each trigger pull when ramping is active, when using the Ramp preset (other modes such as PSP and Millennium are not affected by these settings).

Range: 2-6 shots per trigger pull
Adjustable in increments of 1 shot
Default setting: 3 shots

Dwell: sets the length of time the solenoid valve is held open to actuate the firing cycle. If set too low, shot velocity will be low or inconsistent, or the marker may not cycle fully; if set too high then air efficiency will suffer.

Range: 0.5m/s to 25 m/s
Adjustable in increments of 0.1 m/s
Default setting: 8 m/s

Debounce: sets the length of time that must pass after the trigger is released before another trigger pull may be registered. Increase this value to eliminate unwanted "trigger bounce" or switch noise which may cause unwanted additional shots to be fired.

Range: 0.5m/s to 25 m/s
Adjustable in increments of 0.1 m/s
Default setting: 5 m/s

Eye Delay: sets the amount of time that a ball must block the eyes before the marker is allowed to fire. Increase this setting when using a gravity-fed loader and paint breakage is a problem.

Range: 0.5m/s to 25 m/s
Adjustable in increments of 0.1 m/s
Default setting: 3 m/s

Eye Sensitivity: sets the sensitivity of the eye sensor (higher means more sensitive). Adjust this if the eyes are dirty and not reliably detecting balls, or if ambient light is interfering with the operation of the eyes.

Range: 1-20
Adjustable in increments of 1
Default setting: 10

Bolt Delay: sets the length of time that the bolt is ignored for as it travels past the eyes to help clearly distinguish between the bolt and a ball bouncing in the breach.

Range: 0.5m/s to 25 m/s
Adjustable in increments of 0.1 m/s
Default setting: 8 m/s

Clearing Shot: sets whether holding the trigger for a second will cause the marker to fire, even if a ball is not detected. This is useful to "kick-start" sound-activated loaders. If a ball is detected and fired before the one second delay, no additional clearing shot will be fired.

Default is ON.

FSDO Time: allows an option to increase the dwell on the first shot after an idle period. This can be useful particularly in very cold conditions, or if the marker's internals are in need of servicing, and the first shot after an idle period is at a lower velocity ("First Shot Drop Off"). If reduced to zero, this option is disabled; otherwise the setting determines how long must pass without a shot before the next shot is corrected. NOTE: FSDO correction may increase the velocity of the first shot over the limits set by the field or tournament, so use this option with care, and only if necessary.

Range: 0 to 300 secs
Adjustable in increments of 10 secs
Default setting: disabled

FSDO Dwell: sets how much time is added to the dwell of the first shot after the idle period above. If the FSDO Time is set to "Disabled", this option will have no effect. NOTE: FSDO correction may increase the velocity of the first shot over the limits set by the field or tournament, so use this option with care, and only if necessary.

Range: 0.1m/s to 5m/s
Adjustable in increments of 0.1 m/s
Default setting: 1 m/s

Subject to the conditions set out below Angel Sports warrants that the ANGEL will correspond to its specification at the time of delivery and will be free from defects in materials and workmanship for a period of six months from the date of purchase.

Angel Sports gives this warranty subject to the following conditions:

- Proof of purchase is required in all warranty claims.
- Warranty is not transferable.
- The company shall be under no liability in respect of any defect arising from fair wear and tear.
- Seals, batteries, wiring, circuit boards, displays and exhaust valves are not covered by this warranty. Wilful damage, negligence, abnormal working conditions, weather, accident, tampering, failure to follow manufacturers instructions (whether oral or in writing), misuse or alteration or repair of the ANGEL without the company's written approval will invalidate this warranty and the company shall be under no obligation whatsoever to the purchaser in respect of any of the above breaches of this warranty.
- The above warranty does not extend to parts, materials or equipment not manufactured by the company, in respect of which the purchaser shall only be entitled to the benefit of any such warranty or guarantee as given by the manufacturer to the company.

This warranty does not cover the following:

- Repairs, alterations or replacements not authorised by the manufacturer.
- The gradual reduction in performance linked to the age of the ANGEL or usage.
- Anything caused directly or indirectly by vandalism or theft.

- Any damage to parts which are recalled by the Manufacturer.
- Any loss, damage or failure, which a qualified engineer appointed by the manufacturer believes could have been avoided, or was totally or partly caused by a lack of maintenance.

Subject as expressly provided in these conditions and except where the goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties, conditions or other terms implied by statute or common law are excluded to the fullest extent permitted by law.

Where the goods are sold under a consumer transaction (as defined by the Unfair Terms in Consumer Contracts Regulations SI 1994/3159) the statutory rights of the purchaser are not affected by these conditions. Carriage charges in relation to warranty claims shall be borne by the customer.

Where any valid claim in respect of the ANGEL is based in the quality or condition of the ANGEL or its failure to meet specification, and such valid claim is notified to the company in writing and is in accordance with the company's standard terms and conditions of sale, the company shall be entitled to repair or replace the goods or the part in question free of charge or, at the company's sole discretion, refund to the purchaser the price of the goods (or a proportionate part of the price) but the company shall have no further liability to the purchaser.

Except in respect of death or personal injury caused by the company's negligence, the company shall not be liable to the purchaser by reason of any representation, or any implied warranty, condition or other term, or any duty at common law, or under the express terms of this guarantee, for any direct or indirect, special or consequential loss or damage, whether to persons or property,

costs, expenses or other claims for compensation or damages whatsoever (whether caused by the negligence of the company, its employees or agents or otherwise) which arise out of or in connection with the supply of the ANGEL, its use, or misuse, or resale by the purchaser, or any individual, and the entire liability of the company under or in connection with the purchase or use or misuse of the ANGEL shall not exceed the purchase price of the ANGEL. Purchaser agrees to adhere strictly to all warnings and safety procedures and the contents of the Operator's Manual.

The laws of England shall govern this warranty and the purchaser agrees to submit to the non-exclusive jurisdiction of the English courts. The supply and purchase of the ANGEL is subject to the company's standard terms and conditions of sale, a copy of which is available on request. ANGEL patents applied for, design rights and all rights reserved. The ANGEL is marketed and distributed by Angel Sports Ltd. Company registered in England No. 2114341 and Angel Sports Paintball Inc. registered in USA No. 2479769.

No warranty is given to parts not manufactured by the manufacturer and all liability for loss, damage or injury is excluded.

This warranty must be construed and read in conjunction with the product's terms and conditions of sale.

To make a warranty claim, the purchaser must first contact the nearest authorised ANGEL Service Centre for instructions.

A list of authorised ANGEL Service Centres may be obtained through the Angel Sports website: www.AngelSports.com, or by contacting Angel Sports by mail at: Angel Sports, 3 Charter Court, Broadlands, Wolverhampton WV10 6TD, England. Tel: +44 (0)1902 858 007



Don't Forget to send your warranty card back to Angel Sports

1. General Express Warranties.

Angel Sports warrants to the buyer who is purchasing to place into use (Buyer) only, that the ANGEL (Product) shall be free from material manufacturing defects in materials and workmanship for six months from the date of purchase, subject to the requirements, disclaimers and limitations of this Warranty. This is not a Warranty of performance, but a limited Warranty as to the condition of the Product at the beginning of the Warranty period, this Warranty is only against such defects and not against any other failures such as, but not limited to, those due to wear and tear, exposure to the elements, unusual operating environments, misuse, negligence, accident, alteration or repair in any respect which, in the judgement of Angel Sports, adversely affects the condition or operation of the Product. Normal maintenance and perishable items such as seals, batteries, wiring, indicator lamps and exhaust valves are excluded from this limited Warranty against defects. This Warranty is not transferable and it may not be waived or expanded except in writing signed by Angel Sports. The terms and limitations of this Warranty shall also apply to any additional goods or information, which may be distributed by Angel Sports, relating to the ANGEL.

2. Disclaimer and Limitation of Express and Implied Warranties.

There are no express Warranties other than those contained in this Warranty. Whether or not the Product is to be used exclusively by the Buyer, there shall be no third party beneficiaries to this Warranty herein. **NO WARRANTY IS PROVIDED TO DISTRIBUTORS OR DEALERS EXCEPT AS MAY BE EXPRESSLY PROVIDED IN A SEPARATE AGREEMENT OF SALE.** All descriptions, illustrations of the Product and other information in catalogues, brochures and price lists or otherwise provided by Angel Sports or others are intended for general information only. Angel Sports, is not responsible for any errors or omissions therein or for any loss or damage resulting from reliance on them.

Angel Sports, does not warrant that the Product is in compliance with any law or industry standards, guidelines or procedures. Angel Sports standard terms and conditions of sale also apply if Buyer is a direct purchaser from Angel Sports - Angel Sports **DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, BUT NOT LIMITED TO, THOSE OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.**

3. Remedy and Limitation of Angel Sports liability.

Defective or non-conforming Product or parts thereof discovered and returned to Angel Sports freight prepaid, with proof of purchase, during the Warranty period shall be repaired or replaced by Angel Sports without any additional charge and shipped to Buyer, FOB Angel Sports. In lieu of repair or replacement, if Angel Sports elects, Angel Sports may, upon return of such product and making a determination of non-conformity or defect, keep the product and refund the purchase price paid by Buyer. Buyer's remedies shall be limited (even in the event of Angel Sports default of its Warranty obligations) exclusively to those provided in this Warranty. **UNDER NO CIRCUMSTANCES SHALL Angel Sports OR ANY SUPPLIER, DISTRIBUTOR, DEALER, OR OTHER PERSON BE LIABLE FOR EXEMPLARY, PUNITIVE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, NOR FOR ANY AMOUNT IN EXCESS OF THE BUYER'S PURCHASE PRICE.** Buyer waives any causes of action or theories of liability including, but not limited to, those arising under contract, tort, strict liability, Product liability, statutes, or otherwise, except as to those specifically provided by the Uniform Commercial Code (as adopted in Michigan) as excluded, modified and limited in this warranty.

4. Additional Consumer Protection.

The products are offered for sale for end use in supervised commercial establishments where professional safety codes are enforced, and not

for personal, family or household use. Nevertheless, if the Product is determined in a transaction to be a customer Product under applicable law, the following provisions shall become applicable:

- THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS OF THE PRODUCT FOR A PARTICULAR PURPOSE THAT CANNOT BE DISCLAIMED ARE LIMITED IN DURATION TO THE INITIAL EXPRESS WARRANTY PERIOD.
- Some states do not allow limitations on how long an implied Warranty lasts, so the above limitation in (a) may not apply.
- Some states do not allow the exclusion or limitation of incidental or consequential damages, so such limitations may not apply.
- And this Warranty gives buyer specific legal rights, and buyer may also have other rights provided for by law.

5. Parts, Service and Training performed by Angel Sports.

All Warranty and non-Warranty parts, labour and service, if any, provided by Angel Sports related to the product are subject to all limitations and disclaimers of warranties and remedies provided in this Warranty. The replacement or repair of a product by Angel Sports does not give rise to any new Warranty except the Warranty period provided for herein shall be extended by the length of any period in which defective or non-conforming product is in possession of Angel Sports - Angel Sports may have access to the Product after purchase of the Product. Angel Sports is not under any duty to inspect the product for any defects or any improper use or modification of the Product, nor to correct or advise anyone of any such condition, use or modification, which is observed. Any notification, which may be given, is voluntary and subject to all limitations and disclaimers in this Warranty.

6. User's Responsibility for Safety and Indemnification.

It is Buyer's or other user's responsibility to obtain all training and means that may be necessary to effectively protect all individuals and property from damage and bodily injury, which otherwise may result from the use or maintenance of the Product, and to use the Product in accordance with operating instructions and due care.

If operating instructions are not provided with the Product or have been lost, a copy will be provided by Angel Sports without cost on request. The buyer shall use and shall require all others to use all safety devices and guards furnished with or intended to be used with the Product, and to follow proper safe operating procedures in accordance with general industry standards and as set forth in manuals and instruction information furnished by Angel Sports. If the Buyer fails to comply with the obligations set forth in this section, the Buyer shall defend and indemnify Angel Sports harmless from any claim, liability or obligation incurred by Angel Sports or its suppliers, distributors, or dealers to persons injured directly or indirectly in connection with the use of the product contrary to this Warranty or any warning or instruction from Angel Sports

7. Law and Jurisdiction.

This Warranty shall be governed by the laws of Michigan, and Buyer irrevocably submits to the non-exclusive jurisdiction of courts sitting in Michigan to resolve all disputes arising from or related to this warranty or use of the Product.

8. Claims and information procedure.

To make a warranty claim, the Buyer must first contact the nearest authorised ANGEL Service Centre for instructions. A list of authorised ANGEL Service Centres may be obtained through the Angel Sports website: www.AngelSports.com, or by contacting Angel Sports by mail at: Angel Sports, 3 Charter Court, Broadlands, Wolverhampton WV10 6TD, England. Tel: +44 (0)1902 858 007

ANGEL WILL NOT FIRE

| Possible reason | Check |
|--|--------------------------------|
| No air or nitrogen present? | Propellant Air/Nitrogen Supply |
| Is the battery operational? | Change the battery |
| Is the trigger not closing the switch? | Trigger Adjustment |
| Is the trigger not releasing the switch? | Trigger Adjustment |
| Is the bolt jammed forward? | Clear the blockage from breech |
| Is the LPR set correctly? | LPR Adjustment |
| Is the Trigger functioning? | Trigger Adjustment |
| Are the connectors plugged in correctly? | Wiring Connections |
| Are the Angel Eyes switched on? | Ensure paint is present |
| Are the Angel Eyes optics blocked | Clean the Angel Eyes Optics |

VELOCITY VARIATIONS

| | |
|---|-------------------------------|
| Are good quality paintballs been used? | Use good paintballs |
| Is the barrel bore correct for the paint? | Use suitable barrel |
| Is the paint swollen, cold or hot? | Review your storage of paint |
| Is the barrel bore clean? | Clean the barrel |
| Is the tank reg choking on gas supply? | Check tank regulator assembly |
| Is the tank reg operating correctly? | Check tank regulator assembly |
| Is the mini-reg operating correctly? | Mini-Regulator Service |
| Is the mini-reg choking on gas supply? | Mini-Regulator Service |
| Are unsuitable after market parts fitted? | Use genuine ANGEL parts |
| Is the bolt worn? | Replace Soft Bolt |
| Is the LPR set correctly? | LPR Adjustment |
| Is the valve dwell set correctly? | Dwell Adjustment |
| Is first shot low? | Increase Dwell Time |

VELOCITY TOO LOW / HIGH

| | |
|---|-----------------------------|
| Is the high pressure reg set correctly? | Check at gas source |
| Is velocity adjuster screw set correctly? | Velocity adjustment |
| Is the bolt sticking? | Check rubber finger detents |
| Is the LPR set correctly? | LPR Adjustment |
| Is the valve dwell set correctly? | Dwell Adjustment |

GAS LEAKING

| | |
|--|--|
| From the back cover? | Check solenoid valve |
| From the Ram assembly? | Check ram body O rings |
| From the gas joints? | Check all fittings |
| From barrel? | Exhaust valve stem/guide |
| Do the ram and bolt move forward when gas is supplied? | Push bolt/Ram backwards usin the external bolt connector pin |

BREAKING PAINTBALLS

| Possible reason | Check |
|--|-------------------------------|
| Is the paint too fragile? | Use less fragile paint |
| Is the barrel bore correct for the paint? | Use suitable barrel |
| Is the paint swollen, cold, hot? | Review your storage of paint |
| Are the Angel Eyes switched on? | Switching Angel Eyes On |
| Are the Angel Eyes functioning? | Angel Eyes Test |
| Is the loader battery weak/dead? | Replace batteries |
| Is a suitable working loader fitted? | See Loader section |
| Is the rate of fire set too high? | MROF Adjustment |
| Are the rubber finger detents functioning? | Clean or replace |
| Is the paint too fragile for the loader? | Change paint to tougher grade |
| Is the eye delay or bolt delay too low? | Check electronic settings |

CHOPPING PAINTBALLS

| | |
|--|-----------------------------|
| Is the loader battery weak/dead | Replace batteries |
| Is a suitable working loader fitted? | Replace loader |
| Is the loader dirty? | Clean loader |
| Are the paintballs swollen? | Replace the paintballs |
| Are the Angel Eyes switched on? | Switching Angel Eyes On |
| Are the Angel Eyes functioning? | Angel Eyes Test |
| Is the correct loader setting selected? | Change Loader Type settings |
| Is the Rate Of Fire set too high? | MROF Adjustment |
| Are the rubber finger detents functioning? | Clean or replace |
| Is the eye delay or bolt delay too low? | Check electronic settings |

FIRING TOO SLOW

| | |
|--|-----------------------------|
| Is the rate of fire set correctly? | MROF Adjustment |
| Is the loader battery weak/dead? | Replace batteries |
| Is a suitable working loader fitted? | Replace loader |
| Is the loader dirty? | Clean loader |
| Are the Angel Eyes switched on? | Switching Angel Eyes On |
| Is the correct loader setting selected? | Change Loader Type settings |
| Is the Rate Of Fire set too low? | MROF Adjustment |
| Is the eye delay or bolt delay too high? | Check electronic settings |
| Is the eye sensitivity too low? | Check electronic settings |

EXCESSIVE NOISE / GAS CONSUMPTION

| | |
|---|---------------------------|
| Is the valve Dwell set correctly? | Dwell Adjustment |
| Is the LPR pressure set correctly? | LPR Adjustment |
| Is the exhaust valve worn? | Exhaust Valve replacement |
| Is the barrel bore correct for the paint? | Use suitable barrel |





⚠ WARNING

The Angel **FLY Sb™** is not a toy. Careless or improper use, including failure to follow the instructions in the operator's manual, could cause death or serious injury. Paintball industry standard eye/face/ear protection must be worn by the user and any persons within range.

Do not shoot at persons at close range. Persons must be at least 18 years of age to purchase. Persons under 18 years of age must only use under adult supervision.

Observe all local laws, regulations and guidelines. Use only on professional paintball fields where codes of safety are strictly enforced. Do not use co2.

Use .68 Calibre paintballs only.

Read operator's manual before use and comply with all safety instructions and guidelines.

ANGEL Sports

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www.ANGELSports.com



The Angel™ is protected by the following patents:
USA: 6 003 504, 6 138 656, 6 311 682, 6 748 938, 6 739 322 6 615 814 D473 910, D484 926.
UK: 2 345 953, 2 342 710, 2 379 494, 2 384 292, 2 352 022, 2 391 063.
Plus other Patents Pending.

