

ANGEL™

SPEED 06

The Angel™ is protected by the following patents:
 USA: 6 003 504, 6 138 656, 6 311 682, 6 615 814,
 6 739 322, 6 748 938 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.



- This Operators and Users 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 Sicherheitsrichtlinien 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.

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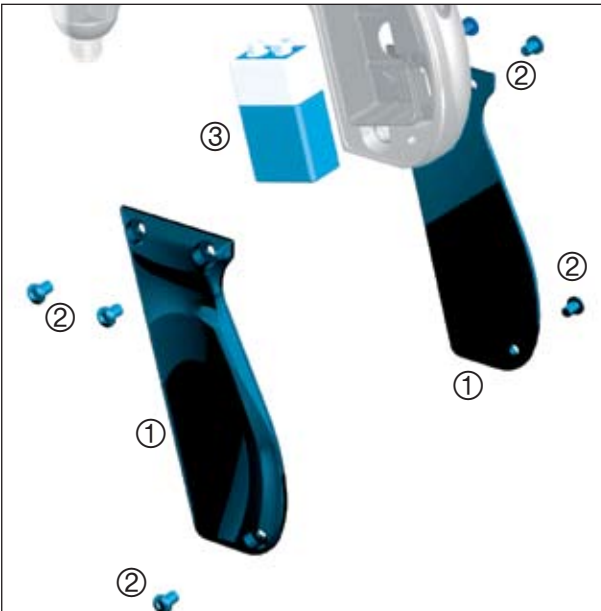
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⚠ WARNING**ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES****WARNINGS FOR SAFE ANGEL HANDLING**

- The 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.
- 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 compressed air/nitrogen gas only. Do not use CO2.
- Do not exceed 850 psi (58 bar) input pressure.
- Always follow instructions, warnings and guidelines given with any first stage regulator you use with the ANGEL.
- Use 0.68 calibre paintballs only.
- Keep the ANGEL switched off until ready to shoot.
- Treat every marker 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 markers velocity before playing paintball, using a suitable chronograph.
- Never shoot at velocities in excess of 300 feet (91.44 meters) per second, or at velocities greater than local or national laws allow.
- Do not fire the ANGEL with the breech open or without the bolt in the breech, as high pressure gas will be emitted.
- Do not fire the ANGEL with the pull knob in the unlocked position.
- Never look into the barrel or breech area of the ANGEL whilst the marker is switched on and able to fire.
- Never put your finger or any foreign objects into the 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 marker 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 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.

REPLACING THE 9v (PP3) Battery

OFF



- Ensure the isolator switch is in the OFF position.
- Remove the left & right hand grip cheeks ① by removing the 6 M4 screws ② using a suitable 2.5 mm Allen Key.
- Carefully lift the battery ③ from its housing if a battery is already present.
- Observe the battery polarity as marked on the battery housing and the battery.
- Insert a good quality fresh battery ③.

IMPORTANT NOTES:

- We recommend the use of good quality 9v (PP3) batteries such as those produced by Duracell™.
- Batteries that leak may cause damage to the electronics.
- Re-chargable batteries may be used but must be charged out of the Angel and follow the instructions supplied.
- The use of inferior batteries may affect the performance of the Angel.
- Dispose of used batteries responsibly.

SWITCHING ON YOUR ANGEL

OFF



ON



⚠ WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- Ensure the ANGEL is switched off via the isolating switch at the rear of the marker prior to fitting your first stage regulator.
- 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.

- We recommend the isolating switch be placed in the OFF position when the ANGEL is in storage, transit or not in use.
- Ensure that good quality battery is used, we recommend the use of Duracell™ batteries.
- Rotate the breech release lever clockwise to gain access to the ON/OFF switch.
- Switch the isolator switch to the ON position.
- The LED display will show the battery status for a short period of time.
- The more LED's displayed indicates the more battery life present.

(See Battery Page 8)

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- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- Ensure the ANGEL is switched off via the isolating switch at the rear of the marker prior to fitting your first stage regulator.
- 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.
- Always follow instructions, warnings and guidelines given with any first stage regulator you use with the ANGEL.
- 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.
- 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.

SWITCHING ANGEL EYES ON/OFF



EYES ON: NO PAINTBALL PRESENT



EYES ON: PAINTBALL PRESENT

WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

• THE ANGEL IS LIVE AND CAPABLE OF DISCHARGING.

- Ensure the ANGEL is switched ON. See SWITCHING ON YOUR ANGEL- Page 3.
- As default the Angel Eyes will always be ON whenever the ANGEL is switched ON.
- The Angel Eyes can only be switched OFF by pulling and holding the trigger in for 2 seconds. The ANGEL will fire two shots to confirm the eyes have been switched OFF.
- To switch the Angel Eyes back ON you must switch the ANGEL OFF and then ON via the isolator switch.
- If the Angel Eyes are functioning correctly the LED display will flash each time a paintball is sensed. Therefore, to test if the eyes are functioning correctly, simply drop a ball into the breech.

TOP LED INDICATOR STATUS ON THE REAR OF THE FRAME

- RED CONSTANTLY ON = ANGEL EYES ON.
- GREEN CONSTANTLY ON = ANGEL EYES OFF.

PROPELLANT AIR / NITROGEN SUPPLY

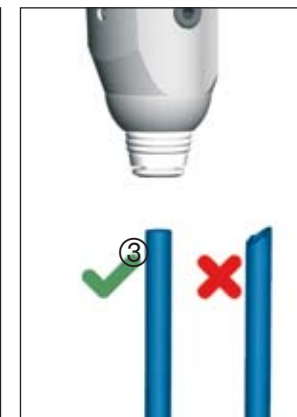
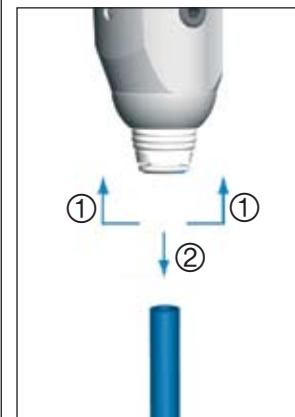
WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- Ensure the ANGEL is switched off via the isolating switch at the rear of the marker prior to fitting your first stage regulator.
- 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.
- Always follow instructions, warnings and guidelines given with any first stage regulator you use with the ANGEL.
- Use compressed air/nitrogen gas only DO NOT USE CO2.
- Only use a first stage paintball regulator that has been designed for air or nitrogen gas.
- Do not exceed 850 psi (58bar) input pressure to the ANGEL.
- 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.

The ANGEL is designed to operate on air/nitrogen gas. This needs to be supplied to the ANGEL at an ideal regulated pressure of 400 psi (27.5 BAR) using a suitable first stage paintball regulator, such as the ANGEL A.I.R.

MACRO LINE HOSE



WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- All gas pressure must be relieved from the ANGEL and second stage regulator prior to the Macro Line hose removal.
- The ANGEL can hold a small residual charge of gas, typically 2 shots with the first stage regulator removed. Always discharge the marker in a safe direction to relieve this residual gas pressure.
- The Macro Line hose must be cut back cleanly and square prior to re-attachment to ensure secure fitment.

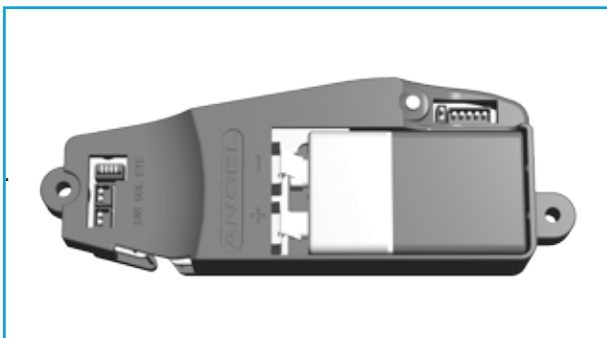
MACRO LINE HOSE / CONNECTOR REPLACEMENT

- Connect the Macro Line connector to your second stage regulator outlet port using a suitable wrench or spanner.
- If necessary shorten the Macro Line hose using a sharp knife to the required length to suit your ANGEL and first stage regulator set up.
- Push the free end of the hose firmly into the Macro Line connector attached to the ANGEL second stage regulator.

REMOVAL & RE-ATTACHMENT

- The Macro Line hose may be removed from the Macro Line connectors to facilitate maintenance.
- Pull back the collet ① on the connector and keep the collet depressed.
- Pull the Macro Line hose ② out of the connector firmly.
- Cut back the Macro Line hose cleanly and square ③.
- Push the hose firmly into the Macro Line connector to re-attach.

OPTO BOARD



⚠️ WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Do not attempt to modify the OPTO™ board assembly in any way as this will invalidate your warranty and could lead to safety concerns.

The ANGEL incorporates the OPTO™ board. This is the latest development in trigger sensing function. It achieves unsurpassed advancements in trigger repeatability and sensitivity, its non-mechanical touching switch results in faster, shorter and lighter trigger strokes that give the user higher prolonged achievable rates of fire.

IMPORTANT NOTES:

- When accessing the Internal Tournament LED menus the OPTO™ board should not be exposed to direct sunlight or strong external sources of light without the grip cheek fitted as this light will induce a safety feature, that will prevent the ANGEL from firing whilst it remains exposed to the strong external light.
- The OPTO™ board is a non-mechanical touching switch that is silent in its operation and no audible click is present.

LOADERS (HOPPERS)

The ANGEL has been designed to work with all existing loaders and intelligently self adjusts its program to suit the loaders feed rates for the type of loader selected from the Advanced Menu - see page 7, but there are some important things to remember about loaders:

- The Angel Eyes system will shoot paint as fast as your loader is capable of feeding in combination with trigger pulls.
- Some loaders, particularly those with a reflective eye system DO NOT correctly sense twin skin, marbled or dark coloured paintballs, and as such, these loaders are capable of breaking or cracking paintballs before they are even loaded into the ANGEL.
- All loaders should only be used with fresh batteries.
- It is also essential that the loader and its optical system is kept clean at all times.
- Force fed loaders, due to the nature of their design are less tolerant of fragile and poor quality paint, causing breaks in the loader, and feed stack before they are loaded into the ANGEL.
- Some loaders are not capable of sustained feed rates and you will be able to outshoot the loader, causing the Angel Eyes to wait for verification of a paintball before commencing the firing cycle.
- Poorly maintained or damaged loaders will impair the performance capability of the ANGEL.
- To maximise the performance of the ANGEL, WDP recommends only using reliable enhanced feed loaders.

(See also Loader Type Settings Page 8)

SOFT NOSE BOLT REMOVAL & ROTOR BREECH



⚠️ WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Do not fire the ANGEL with the breech open or without the bolt in the breech, as high pressure gas will be emitted.
- Do not fire the ANGEL with the BREACH RELEASE lever in the unlocked position.

The bolt is manufactured from aluminium and plastic with the wear surfaces being plastic, this is to ensure – due to its high operating speeds – it does not seize within the body. Eventually this will show signs of wear dependent on usage and its environment of use.

It is important that the bolt is kept clean and free of dirt or grit as this will cause accelerated wear. We recommend that you clean your bolt after each day of play.

- Bolt removal is best achieved whilst the angel is gassed up as this ensures the ram is in the rearward position.
- Ensure the ANGEL isolator switch is in the OFF position or the ANGEL is in SAFE mode.
- Rotate the breech release ① lever clockwise until it stops.
- Swing out the Rotor Breech block ② so that the bolt is exposed.

NOTE: The breech will not open when the Angel is degassed and the bolt is in the forward position.

If the bolt is in the forward position even if the breech lock lever has been rotated either ensure the Angel is gassed up or push the bolt back with a squeegee.

- Extract the bolt ③ by pulling rearwards.
- To replace the bolt follow the stages in reverse order.

VELOCITY ADJUSTMENT (2nd Stage Regulator)



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INSTRUCTIONS AND GUIDELINES

- THE ANGEL IS LIVE AND CAPABLE OF DISCHARGING.
- Paintball industry standard eye/face/ear and head protection designed specifically to stop paintballs and meeting ASTM standard F1776 (USA) or CE standard (EU) must be worn by user and any person within range.
- Always measure your markers velocity before playing paintball, using a suitable chronograph.
- Never shoot at velocities in excess of 300ft (91.44 meters) per second, or at velocities greater than local or national laws allow.

DECREASING VELOCITY

The velocity adjusting screw is located on the lower portion of the front grip.

- To decrease the velocity, insert a 3.0mm A/F Allen key and rotate **CLOCKWISE**.

INCREASING VELOCITY

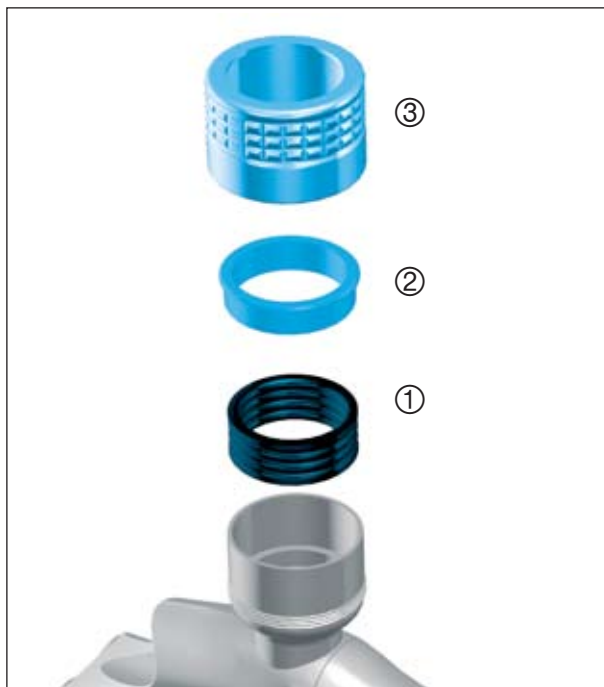
The velocity adjusting screw is located on the lower portion of the front grip.

- To increase the velocity, insert a 3.0mm A/F Allen key and rotate **ANTI-CLOCKWISE**.

IMPORTANT NOTE:

- *When reducing velocity, allow four shots for the complete system to be at the new regulated pressure.*

TWIST LOCK COLLAR FEED



The Twist Lock Feed Collar is a dual feature that retains your loader securely to the ANGEL, and provides shock absorbency

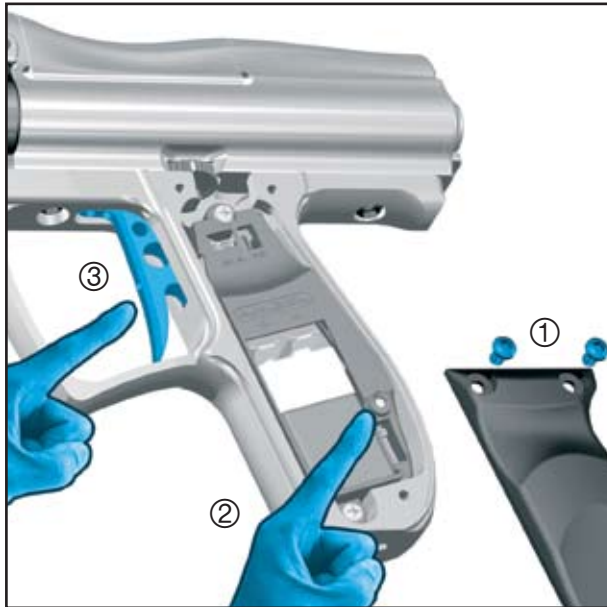
TWIST LOCK COLLAR

- **To secure your loader, first ensure the Twist Lock collar is backed off by rotating it counter-clockwise.**
- **Insert the loader into the feed neck and rotate the Twist Lock collar clockwise to secure the loader.**

To Remove your loader ensure that the Twist Lock collar is backed off by rotating counter clockwise.

- **Should you need to dismantle the Twist Lock feed collar for cleaning ensure re-assembly is in the order shown above.**

INTERNAL ELECTRONIC LED MENUS



WARNING

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- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.

The ANGEL has a number of features that can be adjusted to suit your individual needs. These features that can change the performance of the gun are only accessible via the internal menu. This is to ensure that they pass tournament and field operator requirements.

- The menu can only be accessed when the marker is switched ON.
- Remove left hand grip cover screws ① to expose the circuit board.
- Follow the internal menu list diagrams for relevant settings.
- Any menu that has been accessed via the internal menu will disable the Angel and prevent the Angel from firing as a safety feature. It is necessary to switch the Angel OFF to store the settings once you have finished your adjustments. Switching the Angel back ON enables the new settings to take effect and to enable the Angel to be capable of firing.

FACTORY DEFAULT SETTING

- Press and hold the INTERNAL button ② for 2 seconds then release and the factory defaults will be loaded.

DWELL

WARNING

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- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.

Dwell controls the valve opening time. Longer Dwell uses more gas and generates pressure variables. Shorter Dwell uses less gas and reduces noise, but is less tolerant of poor quality paint. The range available is 7-12milliseconds.

- The menu can only be accessed when the ANGEL is ON.
- Remove left hand grip cover screws ① to expose the circuit board.
- Switch the Angel ON.
- Ensure that you are not depressing the trigger.
- Press the internal menu button ② to scroll the menu until the TOP LED ④ flashes GREEN.
- Depress the trigger ③ for each level of adjustment required, the LED's ⑤ on the rear of the grip frame will indicate what level you have selected.
- Pull the trigger ③ to adjust the settings (each trigger pull will adjust the dwell by 1 millisecond).
- Any menu that has been accessed via the internal menu will disable the Angel and prevent the Angel from firing as a safety feature. It is necessary to switch the Angel OFF to store the settings once you have finished your adjustments. Switching the Angel back ON enables the new settings to take effect and to enable the Angel to be capable of firing

IMPORTANT NOTE:

Adjustment is only recommended if you wish to fine tune your marker to specific accessories.



TRIGGER OFFSET

WARNING

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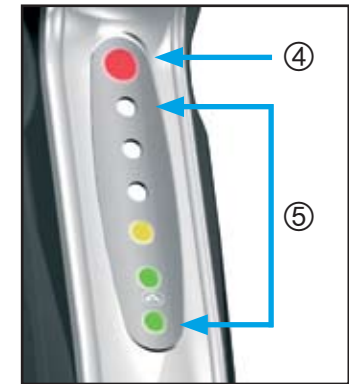
- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.

This allows the user to set the trigger snubber and can be used to ensure that trigger bounce is reduced on triggers that have been set. It should be used to eliminate trigger bounce and not used to induce trigger bounce. The level of snubbing required will be dependent on the users setting of the mechanical adjustments of the trigger. The snubber will be automatically set to the highest level of protection on all modes as factory default. It is the users responsibility to ensure that the setting selected does not cause accidental discharge

There are five levels of adjustment + PSP mode. A single Green LED on the bar graph display is the minimum amount of trigger offset and increasing the settings (more LEDs illuminate) reduces the damping. The sixth LED indicates that you are in PSP mode.

- The menu can only be accessed when the ANGEL is ON.
- Remove left hand grip cover screws ① to expose the circuit board.
- Switch the Angel ON.
- Ensure that you are not depressing the trigger.
- Press the internal menu button ② to scroll the menu until the TOP LED ④ flashes RED.
- Depress the trigger ③ for each level of adjustment required the LED's ⑤ on the rear of the grip frame will indicate what level you have selected
- The bottom LED ⑤ indicates the maximum level of trigger snubbing giving the least amount of trigger switch bounce. When five small LEDs are illuminated this indicates the least amount of trigger snubbing- giving the greatest amount of trigger switch bounce. All LEDs illuminated indicates that you are in PSP mode.

Any menu that has been accessed via the internal menu will disable the Angel and prevent the Angel from firing as a safety feature. It is necessary to switch the Angel OFF to store the settings once you have finished your adjustments. Switching the Angel back ON enables the new settings to take effect and to enable the Angel to be capable of firing.



MROF

⚠ WARNING

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INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.

MAXIMUM RATE OF FIRE LIMIT WITH ANGEL EYES OFF -

This is fixed at a MROF value of 15 BPS and is non adjustable.

MAXIMUM RATE OF FIRE LIMIT WITH ANGELS EYES ON -

Scroll through the menu until the Top LED flashes red...orange...green. With just one of the smaller LEDs illuminated the MROF with eyes on will be 15bps. Each additional small LED that becomes illuminated indicates that the MROF with eyes on has increased by 3bps - up to a maximum of 30bps (indicated by all LEDs being illuminated).

SOFTWARE VERSION

This allows you to check the Software version programmed into the Angel Speed.

- The menus can only be accessed when the ANGEL is ON.
- Remove left hand grip cover screws ① to expose the circuit board.
- Switch the Angel ON.
- Ensure that you are not depressing the trigger.
- Press the internal menu button ② to scroll the menu until the TOP LED ④ is NOT illuminated.
- Depress the trigger for each level of adjustment required the LED's on the rear of the grip frame will indicate what level you have selected
- The LED displayed indicates the software version.



LOADER (HOPPER) TYPE

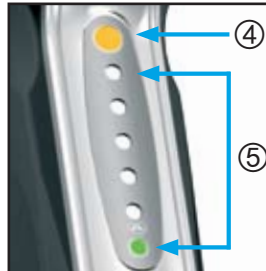
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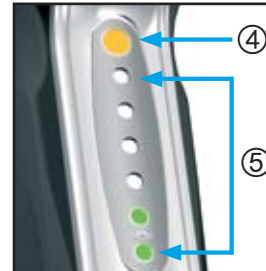
- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.

This allows you to select the correct Angel Eyes settings for the type of loader that you are using. There are 4 types of loader setting that you may select. Once you have selected the correct setting the Angel Eyes program will intelligently adjust itself to the variable speeds of your loader. The MROF limits you have set will only be active whilst Angel Eyes are OFF.

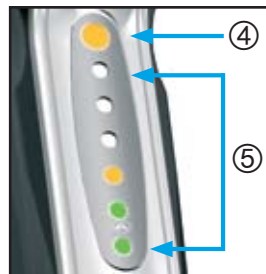
- The menus can only be accessed when the ANGEL is ON.
- Remove left hand grip cover screws ① to expose the circuit board.
- Switch the Angel ON.
- Ensure that you are not depressing the trigger.
- Press the internal menu button ② to scroll the menu until the TOP LED flashes ORANGE.
- Depress the trigger ③ for each level of adjustment required the LED's ⑤ on the rear of the grip frame will indicate what level you have selected.
- Pull the trigger to select one of the 4 settings of the loader menu. An LED will illuminate on the LED bar graph to indicate which setting has been selected for the loader type required.
- The Angel is incapable of firing whilst you are using the internal menu and must be switched OFF then ON to save the settings and enable the Angel to fire.



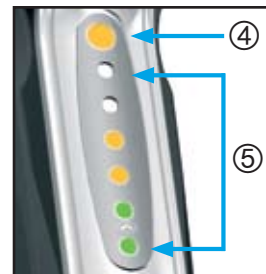
LOADER - 9v Agitator Type



LOADER - 12-18v Agitator Type



LOADER - Force-Fed Type



LOADER - Fast Force-Fed Type

BATTERY

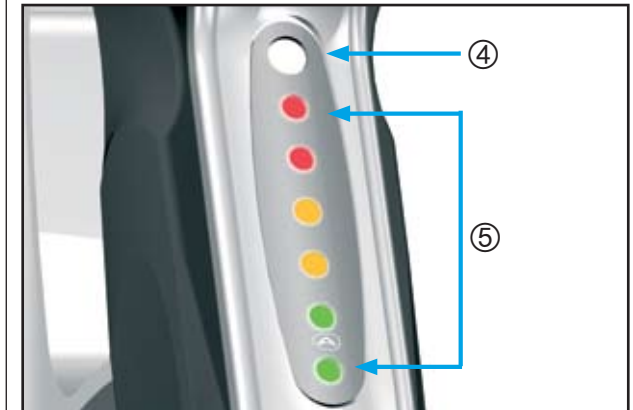
⚠ WARNING

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- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.

The battery status can be checked by the LED display bar graph whenever the ANGEL is first switched ON. The LED bar graph will illuminate to indicate power remaining.

- Switch the ANGEL OFF only if the ANGEL was switched ON.
- Switch the ANGEL ON.
- The LED ⑤ display will show battery status for a short time.
- The LED ⑤ display will now display a single Green LED.



NEW BATTERY = RED WEAK BATTERY = GREEN

GENERAL CARE AND CLEANING

WARNING

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AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

The ANGEL should only be cleaned externally using a synthetic oil moistened cloth only. Under no circumstances should you use hydrocarbon based oils, as these will cause irrevocable damage to the internal seals, e.g.: WD40, Vaseline, Duck Oil, Engine oil, Plus Gas, 3in1. The suitable oil is Love Juice Oil.

The ram shaft and internal parts that are accessible during disassembly and re-assembly should be lubricated with Love Juice Extreme Grease.

The frequency of lubrication should be every event or at least 8000 shots for oil lubrication and 20,000 shots for grease lubrication.

The ANGEL should never be immersed into water otherwise damage may occur to the electronics.

The electronics are moisture/damp proof to IP65.
Ensure correct tools are used.



RAM

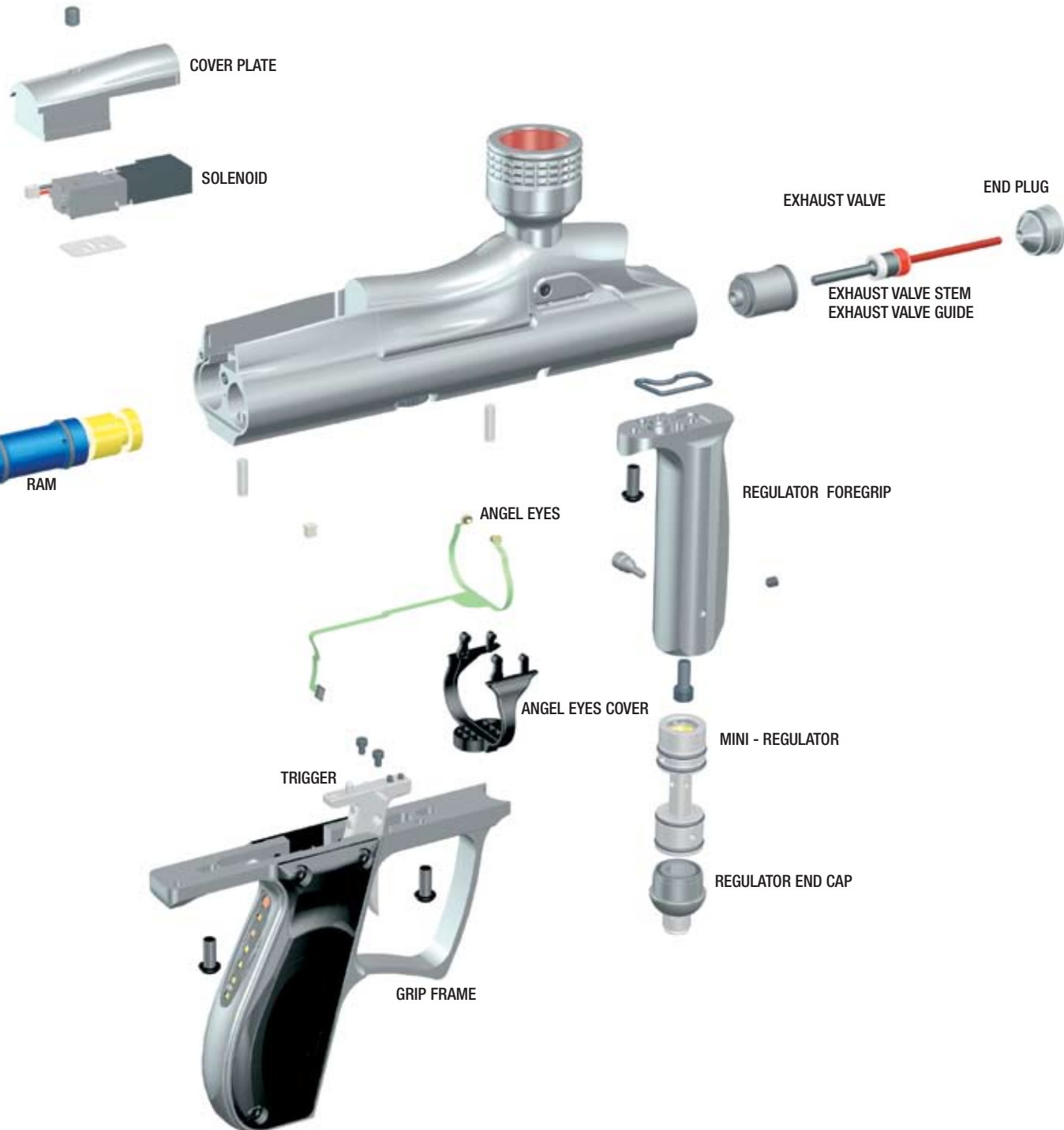


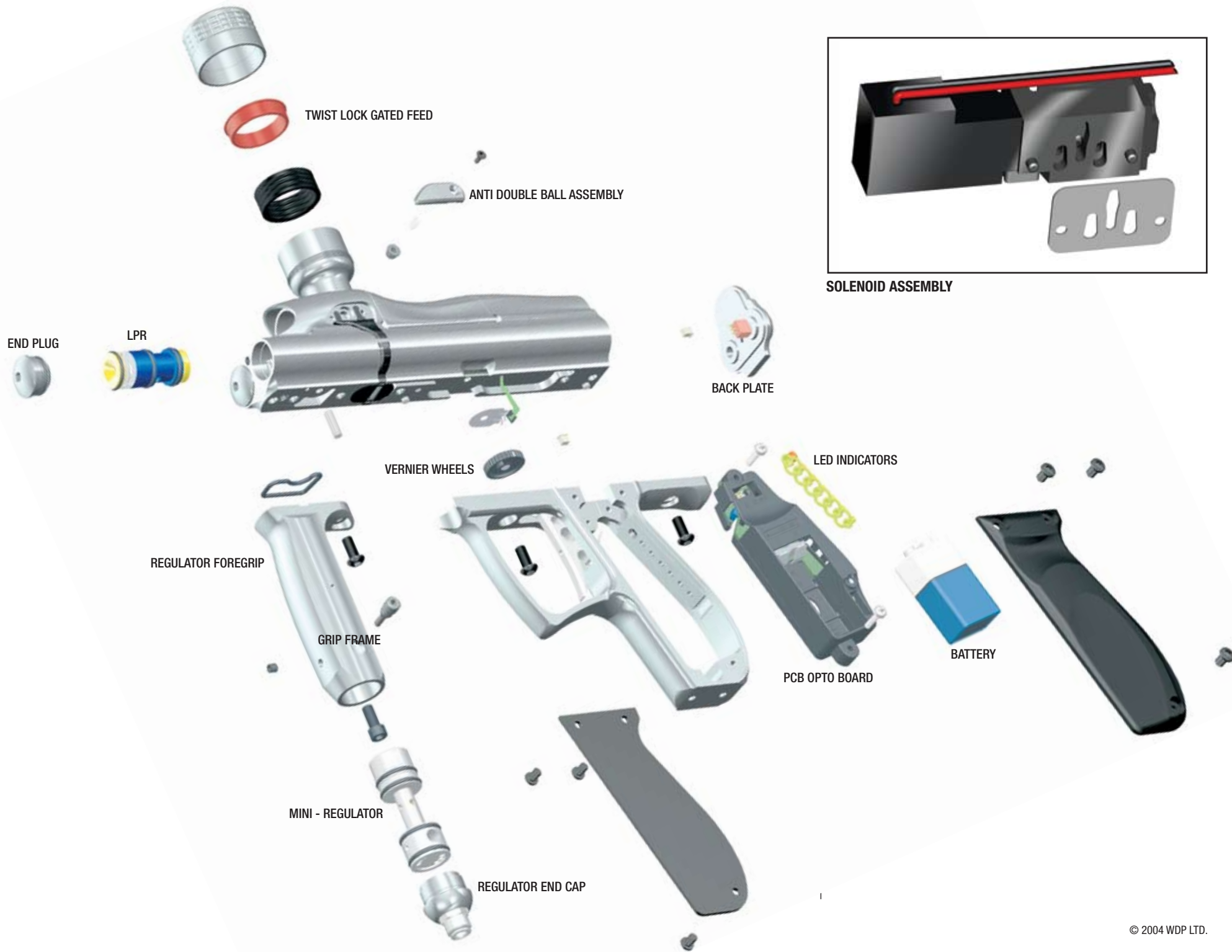
BACK PLATE

Breech release lever

**IMPORTANT NOTES: For General Maintenance**

- No solvents or abrasive cleaning products should be used. All external and internal accessible moving parts should be lubricated using light synthetic oil only.
- All threads are metric except gun accessory mountings onto the grip frame, which is industry standard 10/32 UNF at centres 0.75 inches. The screw thread length must not exceed 0.375 inches (10mm) into the bottom of the frame otherwise damage will occur to the electronics. We recommend that you remove the left-hand cheek cover and ensure the screws do not project into the circuit board cavity when fitting.







MINI-REGULATOR SERVICE (2nd Stage Regulator)



⚠ WARNING

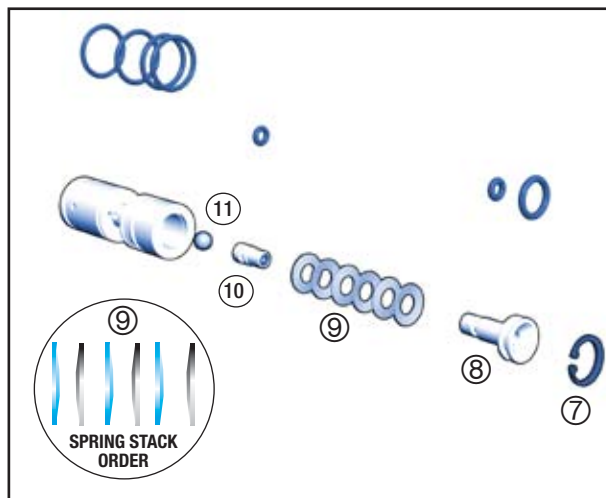
ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

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.

- Remove the macro line hose from the mini regulator by following the procedure and warnings given in PROPELLANT AIR/NITROGEN SUPPLY - p4.
- Remove the mini-regulator adjuster screw ①.

- Remove the mini regulator locking screw ②.
- Remove the mini regulator end cap ③ by inserting a M4 allen key into the macro line fitting ④ and rotating counter clockwise.
- Insert an M3 screw into the threaded hole in the bottom of the spool ⑤ and gently extract the spool ⑥.
- Remove the circlip ⑦ located in the spool using suitable circlip pliers.
- Invert the mini-regulator spool and tap it down firmly onto a smooth surface to shock the internals out of the mini-regulator body.
- Ensure the large piston ⑧, Spring stack ⑨, small piston ⑩, and the ball bearing ⑪ are removed.
- Inspect the O rings for damage and replace if necessary.
- Inspect the small piston ⑩ face seal for damage and replace the whole small piston if necessary.
- Inspect the large piston ⑧ and small piston ⑩ sealing faces for damage and replace as necessary.



IMPORTANT NOTES: For re-assembly of components

- Due care and attention must be shown to ensure you do not score or damage the bores within the mini-regulator body whilst performing maintenance.
- If the small piston or large piston seal faces are damaged they must be replaced.
- We recommend that you lubricate the parts during re-assembly with Love Juice Extreme Grease.
- Ensure the spring stack is in the correct order.
- Ensure the circlip is re-located correctly in the groove.
- Ensure you follow the procedure and warnings given in PROPELLANT AIR/NITROGEN SUPPLY - Page 4, when re-attaching the micro-line hose.

ANTI - DOUBLE BALL DETENT SERVICE



⚠ WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

There are two anti-double ball assemblies that can be removed and the internal parts serviced if necessary. These are located on either side of the body below the feed tube.

- Using a 2.0mm Allen key, remove the covers ①.
- Remove the spring ②.
- Remove the anti-double ball ③.
- Repeat for other side.
- Inspect parts and replace if necessary.

IMPORTANT NOTES: For re-assembly of components

- Ensure the anti-double ball is re-located correctly.
- Ensure the spring is located correctly onto the anti-double ball.
- Ensure the anti-double ball covers are inserted correctly into the ANGEL body.
- Ensure that the Angel Eyes are not moved or trapped.

ANGEL EYES



⚠ WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

The ANGEL uses a dual optical eye (break beam) system to detect when a ball is in position and ready to fire.

SERVICE Prior to servicing the Angel Eyes you should carry out the Angel Eye test to ensure that they are not functioning prior to servicing. See Angel Eye Test - Right. The Angel Eyes are located under the same cover plates as the anti double balls and the internal parts can be serviced if necessary. These are located on either side of the body below the feed tube.

- Using a 2.0mm Allen key, remove the covers ①.
- Remove the anti double ball assembly ② ③.
- Carefully remove the rubber protective strap from its location ④.
- Carefully extract the Angel Eye ⑤ from its location hole and clean if necessary.
- NOTE: The Angel Eyes sensor MUST NOT be PULLED out of the body by the ribbon cable, the sensor MUST be PUSHED out using a suitable blunt pick from within the body.
- Inspect parts and clean if necessary.

IMPORTANT NOTES: For re-assembly of components

- Ensure the anti-double ball is re-located correctly.
- Ensure the spring is located correctly onto the anti-double ball.
- Ensure the cover plates are inserted correctly into the ANGEL body
- Ensure that the Angel Eyes are not moved or trapped.



⚠ WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

ANGEL EYES REMOVAL

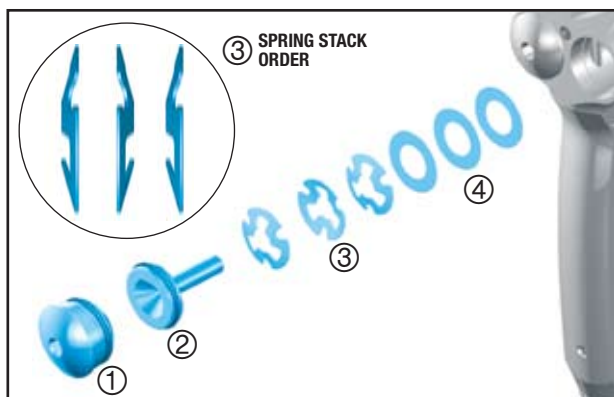
- Remove the grip cheek cover by removing the 6 retaining screws using a metric 2.5mm A/F Allen key.
- Unplug the battery and solenoid plugs from the PCB ⑥.
- Remove the Angel Eyes ribbon cable ⑦ from the ZIF socket on the circuit board.
- Remove the Anti double ball covers ①, ②, ③ using a metric 2.0 mm A/F Allen key.
- Remove the Angel Eyes Shields ④ and its sensors ⑤ from the body.
- Remove the 2 grip frame screws ⑧ holding the frame to the body using a suitable 3mm A/F Allen key.
- Remove the grip frame from the body ⑨.

NOTE: The Angel Eyes sensor MUST NOT be PULLED out of the body by the ribbon cable, the sensor MUST be PUSHED out using a suitable blunt pick from within the body.

IMPORTANT NOTES: For re-assembly of components

- Ensure no wires become trapped between the body and grip frame during re-assembly.
- Ensure the plugs are located in the correct sockets.

LPR ADJUSTMENT

**WARNING**

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

The low-pressure regulator controls the pneumatic cycle of the ANGEL and is located in the left-hand chamber at the front of the ANGEL body. The pressure needs to be at 65 PSI (4.5bar) output at a pressure of 350 PSI at the second stage regulator.

LPR adjustment is achieved by the removal of shims. Each shim equals approximately 2 PSI / 0.14 BAR. We recommend the use of the optional service tools and lubrication of parts with Love Juice Extreme Grease only. See General Assembly diagrams - pages 10-11.

- Ensure the ANGEL is de-gassed and switched OFF.
- Remove the left end cap ① using suitable metric 4.0 A/F Allen key.
- Insert the optional pressure gauge adaptor into the hole that the end cap ① was removed from.
- Re-Gas the ANGEL and switch the isolator switch ON.

WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- THE ANGEL IS LIVE AND CAPABLE OF DISCHARGING.

- Fire 6 shots with NO paintballs present to stabilize the LPR pressure. Note the pressure reading. Should the reading be too high or low, proceed to the next stage.

WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- 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 marker in a safe direction to relieve this residual gas pressure.

- Ensure the ANGEL is de-gassed and switched OFF.
- Remove the pressure gauge adaptor and insert an M 4.0 mm screw or the piston extracting tool (optional extra) into the brass piston ② and withdraw slowly.
- Remove the 3 tri-activ piston springs ③.
- Add or subtract shims ④ as necessary, note the number of shims may vary from the diagram shown (maximum 20).
- Replace the 3 tri-activ springs ③ in correct order onto the piston ②.
- Re-insert the piston ② ensuring that it is located correctly.
- Insert the optional pressure gauge adaptor into the hole that the end cap ① was removed from.
- Re-Gas the ANGEL and switch the isolator switch ON.

WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- THE ANGEL IS LIVE AND CAPABLE OF DISCHARGING.

Verify the LPR pressure by following the procedure described above. Once the desired pressure has been achieved proceed to the next stage.

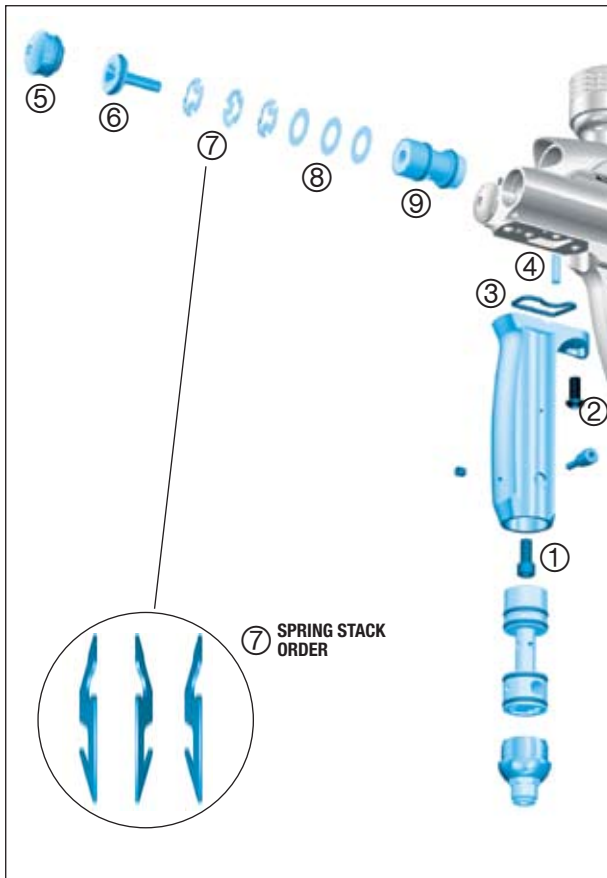
WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- 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 marker in a safe direction to relieve this residual gas pressure.

- Ensure the ANGEL is de-gassed and switched OFF.
- Remove the pressure gauge adaptor & replace the end cap ①.

LPR ASSEMBLY REMOVAL



⚠ WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

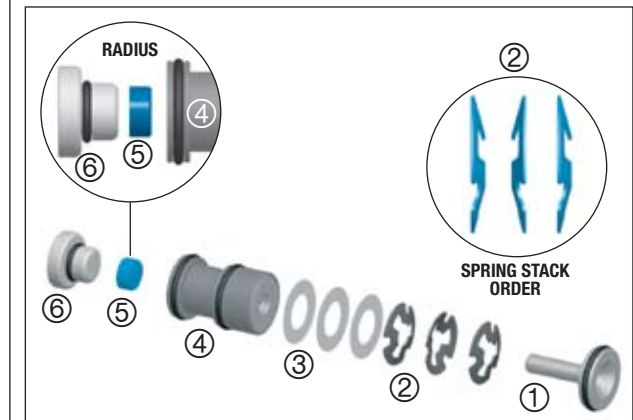
- Remove the mini regulator spool as per mini regulator service - Page 12 .
- Remove the fore grip body internal retaining screw ① using a 4.0mm A/F Allen key.
- Remove fore grip body external retaining screw ② using a 3.0mm A/F Allen key.

- Ensure the O ring ③ is not lost.
- Remove LPR retaining pin using suitable grips ④.
- Remove the right end cap ⑤ using suitable metric 4.0mm A/F Allen key.
- Insert an M 2.5mm screw or the piston extracting tool (optional extra) into the brass piston ⑥ and withdraw slowly.
- Remove the 3 tri-active piston spring stack ⑦.
- Remove the shims ⑧ - Note: the number of shims may vary from shown diagram.
- Using a suitable blunt pick, carefully withdraw the LPR body ⑨.

IMPORTANT NOTES: For re-assembly of components

- Care must be taken so that the bore is not scored or the seals damaged.
- Ensure the LPR's pin location hole is aligned with the pin retaining hole within the ANGEL body prior to insertion.
- Ensure the spring stack is inserted in the correct order.
- We recommend that you verify your LPR pressure if it has been removed. See LPR ADJUSTMENT - Page 14.
- Ensure the end cap is located correctly.
- Ensure the springs or shims are not lost (see LPR assembly). Insert or remove shims as necessary.
- Each shim equals approximately 2 PSI/0.14BAR.

LPR MAIN SEAL REPLACEMENT



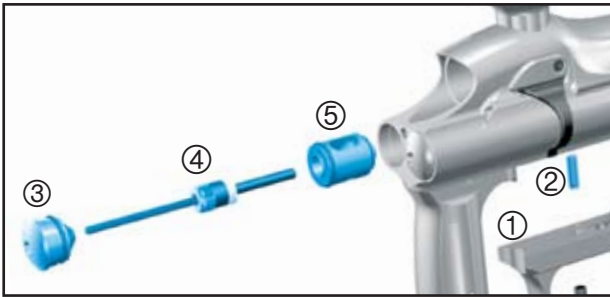
The LPR may be serviced once it has been removed by following the LPR ASSEMBLY REMOVAL - Left. The serviceable parts are the external O rings and the internal main seal.

- Remove the LPR piston ①.
- Remove the LPR spring stack ② noting the order.
- Remove the LPR shims ③ Note: the number of shims may vary from shown diagram.
- Remove the LPR main seal retainer nut ④ from the LPR body ④ using a suitable tool. To prevent the body from rotating in your hand you may insert the LPR lock pin into the LPR body to give some leverage.
- Remove the main seal ⑤ noting the radius on the edge of the seal.
- Discard the main seal ⑤ and replace with new item.

IMPORTANT NOTES: For re-assembly of components

- Ensure the new main seal is replaced with the radius edge going in first.
- Ensure the seal retainer nut is tight and flush with the LPR body.
- Ensure the spring stack is in the correct order.
- Ensure that the LPR pressure is reset as per LPR ADJUSTMENT - Page 14.

EXHAUST GUIDE REMOVAL



⚠ WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

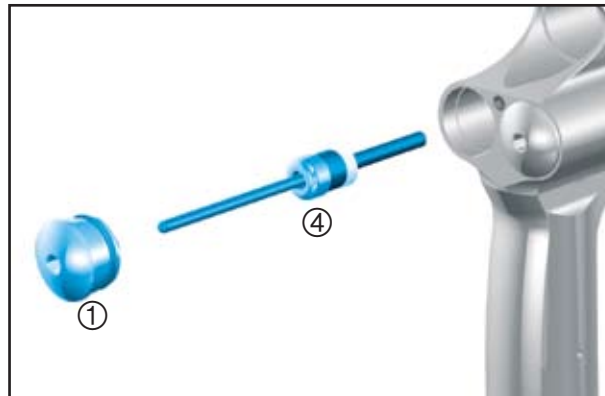
- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- Always remove the first stage regulator and relieve all residual gas pressure from the ANGEL before disassembly.
- The ANGEL can hold a small residual charge of gas, typically 2 shots, with the first stage regulator removed. Always discharge the marker in a safe direction to relieve this residual gas pressure.

- Remove the grip cheek cover by removing the 6 retaining screws using a metric 2.5mm A/F Allen key.
- Unplug the Angel Eyes, battery and solenoid plugs.
- Remove the 2 grip frame screws holding the frame to the body using a suitable 3mm A/F Allen key.
- Remove the grip frame ① from the body.
- Pull out the exhaust valve retaining pin ② located in the body using suitable grips.
- Remove the left end cap ③ using suitable metric 4.0mm A/F Allen key.
- Remove the valve spring assembly ④ that includes the support bobbin, valve spring and exhaust valve stem.
- Using a suitable blunt hooked pick carefully retract exhaust valve guide ⑤ by inserting the pick into the exhaust valve hole that the exhaust valve stem located into.
- Inspect and service parts as necessary.

IMPORTANT NOTES: For re-assembly of components

- Care must be taken so that the bore is not scored or the seals damaged.
- Ensure the exhaust valve guide body is free from damage that may score the bore.
- Ensure you do not damage the exhaust valve guide sealing face.
- Ensure the location hole in the exhaust valve guide is in the correct orientation to the lock hole within the main body prior to refitting.
- Slowly insert the valve guide pushing it down with a blunt soft faced rod.
- When the holes line up insert the lock pin into the hole.
- Ensure no wires become trapped between the body and grip frame during re-assembly.
- Ensure the plugs are located in the correct sockets.

EXHAUST VALVE STEM REMOVAL



⚠ WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

The exhaust valve stem is a consumable item that will eventually wear out. Premature failure of the exhaust valve stem is caused by dirty air or failure to lubricate it at service intervals, to replace the exhaust valve stem follow the procedures listed below.

- Remove the left end cap ①
- Remove the valve spring assembly ④ that includes the support bobbin, valve spring and exhaust valve stem.

IMPORTANT NOTES: For re-assembly of components

- Ensure exhaust valve assembly is located in the exhaust body within the ANGEL.
- Ensure the end cap is located correctly.

RAM REMOVAL



⚠ WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

- Ensure the ANGEL is de-gassed and switched OFF.
- Ensure the ANGEL isolator switch is in the OFF position or the ANGEL is in SAFE mode.

- Rotate the breech lock lever ① clockwise until it stops.

- Swing out the Rotor Breech block ② so that the bolt is exposed.

NOTE the breech will not open the Angel is degassed and the bolt is in the forward position.

- If the bolt is in the forward position even if the breech lock lever has been rotated either ensure the angel is gassed up or push the bolt back with a squeegee.
- Remove the breech lock lever by unscrewing the locking screw ③ counter-clockwise.
- Remove the screw located in the centre of the back plate ④, using a suitable 2.0mm A/F metric Allen key.
- Carefully lift the back plate off ⑤.
- Remove the grip cheek cover ⑥ by removing the 6 retaining screws using a metric 2.5mm A/F Allen key.
- Unplug the Angel Eyes, battery and solenoid plugs.
- Remove the 2 grip frame screws ⑧ holding the frame to the body using a suitable 3mm A/F Allen key.
- Remove the grip frame ⑨ from the body.
- Withdraw the ram lock pin ⑩ located under the frame. The ram ⑪ can now be withdrawn as an assembly.

IMPORTANT NOTES: For re-assembly of components

- There are wires and a spring located under the back plate. Care must be taken so that the wires are not pulled or trapped during maintenance.
- Ensure the ram assembly is lubricated with Love Juice Extreme Grease prior to re-fitment.
- Ensure the ram assembly external O rings are not damaged.
- Ensure the ram assembly is inserted slowly to prevent damage to the O rings.
- See RAM STROKE ADJUSTMENT - Left, for setting the ram position.

⚠ WARNING

ADHERE STRICTLY TO THESE
AND ALL OTHER SAFETY
INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.
- Never adjust your trigger so fine that accidental discharge can occur due to shock loads or vibration.

Mechanical de-bounce (MdB) filtering

Mechanical de-bounce or MdB for short, is an extra level of electronic filtering applied to the trigger activation software in addition to the trigger offset feature to allow the user to filter out any unwanted bounce from their trigger caused by the mechanical effects of the markers recoil as it is fired.

There are 20 separate MdB level settings, setting 1 offering the lowest level of bounce filtering, and setting 20 offering the highest value of filtering, and they are adjusted via the internal electronic LCD menu.

To access the MdB feature scroll through the internal functions using the yellow button located at the base of the circuit board until MdB is displayed on the LCD screen - then increase the value of the MdB filtering using the blue button to set the desired level.

Magnetic adjustable force trigger

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



The return strength is controlled through the foremost set screw located on the under side of the trigger (see Fig1.), turning the set screw counter clockwise will decrease the return force of the trigger making it lighter to operate, turning this set screw clockwise will increase the strength of the return force of the trigger. 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 adjuster screw counter clock wise for several turns so as it does not interfere with the adjustment of the front travel set screw.

The front travel adjustment is done via the rear most of the two set screws located underneath the trigger (see Fig 2.), turning the screw clockwise will reduce the amount of front travel; turning the screw counter clockwise will increase the amount of front travel.



The back stop adjustment is done via the single adjustment wheel (see Fig 3.), turning the wheel clockwise moves the position of back stop further back, moving the wheel in a counter clockwise motion will move the position of the back stop forwards.



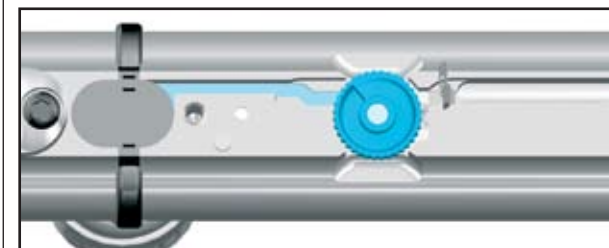
When adjusting the trigger it is advisable to set both the front travel and back stop point before you proceed to set the return strength or activation point position.

The trigger activation point is adjusted via the set screw centrally located through the blade portion of the trigger (see Fig 3.), turning this screw clockwise will move the activation point towards the start of the trigger pull, turning the set screw counter clockwise will move the activation point towards the end of the trigger pull.

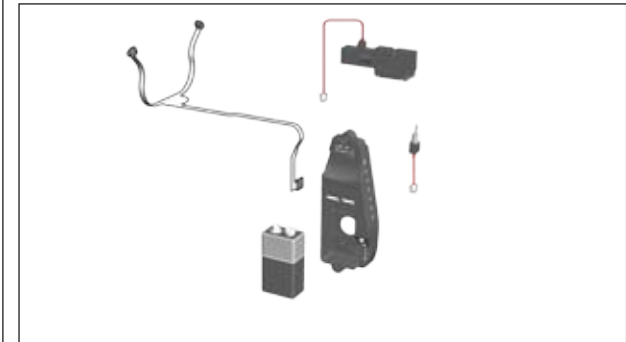
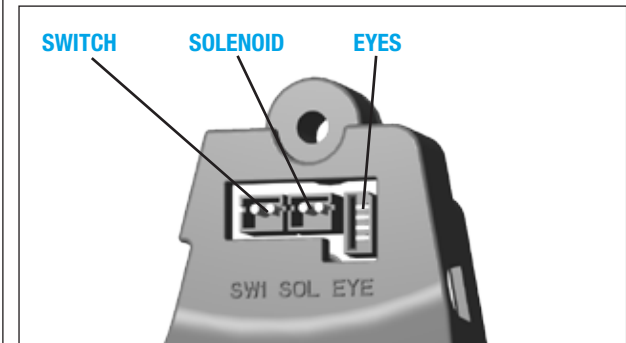
Vernier Wheel removal

• **Important: Note the vernier wheels position prior to removal**

- Remove grip cheek cover ① by removing the retaining screws using a 2.5mm Allen key
- Unplug the eyes, battery and solenoid plugs ②
- Remove the ③ grip frame screws holding the frame to the body using a suitable 3mm Allen key
- Remove the grip frame ④ from the body
- Gently remove the vernier wheels ⑤ from the body
- Remove the vernier wheel ratchet plate ⑥ and inspect for any damage.



WIRING CONNECTIONS



⚠ WARNING

ADHERE STRICTLY TO THESE AND ALL OTHER SAFETY INSTRUCTIONS AND GUIDELINES

- Ensure a barrel blocking device is fitted to the ANGEL.
- Ensure the hopper is removed from the ANGEL.
- Ensure that there are no paintballs in the ANGEL.
- 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 marker in a safe direction to relieve this residual gas pressure.

- Ensure the ANGEL is de-gassed and switched off.
- Remove the left-hand side grip cheek cover by removing the 3 screws using a suitable metric Allen key.
- Access to the PCB connections is now gained.

IMPORTANT NOTES: For re-assembly of components

- Do not trap any wiring or damage could occur to the wiring resulting in a fault developing.
- Do not pull the plugs out from the PCB by the wiring use a suitable tool.

FAULT FINDING TABLE

PROBLEM	SOLUTION	PAGE
ANGEL WILL NOT FIRE		
No air or nitrogen present?	Propellant Air/Nitrogen Supply	4
Is a good 9v battery present?	Replacing the 9v Battery	3
Is the isolator switched off?	Switching the ANGEL On.	3
Is the trigger not closing the switch?	Trigger Adjustment.	18
Is the trigger not releasing the switch?	Trigger Adjustment.	18
Is the bolt jammed forward?	Clear the blockage from breech.	–
Is the LPR set correctly?	LPR Adjustment.	14
Is the OPTO Trigger functioning?	Trigger Adjustment.	18
Are the connectors plugged in correctly?	Wiring Connections	20
Are the Angel Eyes switched on?	Ensure paint is present	4
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.	–
Are the Anti-Double balls sticking?	Check Anti-Double Ball	12
Is the tank reg choking on gas supply?	Check tank regulator assembly.	4
Is the tank reg operating correctly?	Check tank regulator assembly.	4
Is the mini-reg operating correctly?	Mini-Regulator Service.	12
Is the mini-reg choking on gas supply?	Mini-Regulator Service.	12
Are unsuitable after market parts fitted?	Use genuine ANGEL parts.	–
Is the bolt worn?	Replace Soft Bolt.	5
Is the LPR set correctly?	LPR Adjustment.	14
Is the valve dwell set correctly?	Dwell Adjustment.	7
Is first shot low?	Increase Dwell Time	7

VELOCITY TOO LOW / HIGH

Is the high pressure reg set correctly?	Check at Gas source.	4
Is velocity adjuster screw set correctly?	Velocity Adjustment.	6
Is the bolt sticking?	Check Anti-Double Ball.	12
Is the LPR set correctly?	LPR Adjustment.	14
Is the valve dwell set correctly?	Dwell Adjustment.	7

GAS LEAKING

From the back cover?	Check solenoid valve.	10
From the Ram assembly?	Check ram body O rings.	17
From the gas joints?	Check all fittings.	
From exhaust valve?	Exhaust valve stem/guide.	16

PROBLEM	SOLUTION	PAGE
BREAKING PAINTBALLS		
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	4
Are the Angel Eyes functioning?	Angel Eyes Test.	4
Is the loader battery weak/dead?	Replace batteries.	5
Is a suitable working loader fitted?	See Loader section	5
Is the correct loader setting selected?	Change Loader Type settings	8
Is the anti-double balls functioning?	Clean or replace.	12
Is the loader suitable for the paint?	Change paint colour	5
Is the paint too fragile for the loader?	Change paint to tougher grade	5

CHOPPING PAINTBALLS

Is the loader battery weak/dead?	Replace batteries.	5
Is a suitable working loader fitted?	Replace loader.	5
Is the loader dirty?	Clean loader.	5
Are the paintballs swollen?	Replace the paintballs.	–
Are the Angel Eyes switched on?	Switching Angel Eyes On	4
Are the Angel Eyes functioning?	Angel Eyes Test.	4
Is the correct loader setting selected?	Change Loader Type settings	8
Are the Anti-double balls functioning?	Clean or replace.	12

FIRING TOO SLOW

Is the loader battery weak/dead?	Replace batteries	5
Is a suitable working loader fitted?	Replace loader	5
Is the loader dirty?	Clean loader	5
Are the Angel Eyes switched on?	Switching Angel Eyes On	4
Is the correct loader setting selected?	Change Loader Type settings	8

EXCESSIVE NOISE / GAS CONSUMPTION

Is the valve Dwell set correctly?	Dwell Adjustment.	7
Is the LPR pressure set correctly?	LPR Adjustment.	14
Is the exhaust valve worn?	Exhaust Valve replacement.	16
Is the barrel bore correct for the paint?	Use suitable barrel.	

USEFUL CONVERSIONS

Listed are some useful conversions relating to pressure, velocity, mass and distance.

PRESSURE

1 atm = 1.01325 bar
1 atm = 14.6959 psi
1 bar = 14.5038 psi
1 psi = 0.0689476 bar

VELOCITY

1 Ft/s = 0.3048 m/s
1 Ft/s = 0.6818180 Mph
1 m/s = 3.28084 Ft/s
1 m/s = 2.23694 Mph
1 m/s = 3.6 Kph

MASS

1 g = 0.05274 oz
1 Kg = 2.20462 lb
1 oz = 0.0283495 Kg

DISTANCE

1 mm = 0.0393701 Inch
1 Inch = 25.4mm
1 thou = 25.4 micron
1 micron = 0.0393701 thou

FORMULA TO CONVERT FEET PER SECOND (FT/S) TO FOOT LBS (FORCE)

1 foot lbs (force) = 1.35582 Joules
1 Joule = 0.737562 foot lbs (force)
1 Gram = 15.4324 Grains
1 Grain = 0.000142857 lb
1 lb = 7000 Grains

$$\frac{\text{Velocity squared} \times \text{Projectile weight}}{450240}$$

VELOCITY = Ft/s (feet per second)

PROJECTILE WEIGHT = GRAINS

Therefore a paintball @ 3.2grams @ 300Ft/s= 9.9 foot lbs (ftlbs)

TERMS OF WARRANTY - EEC/R.O.W. EXCLUDING USA / CANADA

Subject to the conditions set out below WDP Ltd. 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.

WDP Ltd 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 1994 S13159) 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 Operators 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 WDP Ltd. company, registered in England No. 2114341.

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 products terms and conditions of sale.

To make a warranty claim, buyer must first contact the nearest authorised ANGEL Service Centre for instructions. A list of authorised ANGEL Service Centres may be obtained through WDP Ltd. website: www.wdp.tv, or by contacting WDP by mail at WDP Ltd., Metro Triangle, 221 Mount Street, Nechells, Birmingham, England, B7 5QT, or by fax at +(44) (0)121 327 3967, or by calling +(44) (0)121 328 2228.

WDP LTD. EXPRESS WARRANTY USA / CANADA ONLY

1. General Express Warranties.

WDP Ltd. 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 WDP Ltd., 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 WDP Ltd. The terms and limitations of this Warranty shall also apply to any additional goods or information, which may be distributed by WDP Ltd., 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 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 WDP or others are intended for general information only. WDP Ltd., is not responsible for any errors or omissions therein or for any loss or damage resulting from reliance on them. WDP Ltd., does not warrant that the Product is in compliance with any law or industry standards, guidelines or procedures. WDP Ltd. standard terms and conditions of sale also apply if Buyer is a direct purchaser from WDP Ltd. WDP LTD. DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, BUT NOT LIMITED TO, THOSE OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.

3. Remedy and Limitation of WDP Ltd. liability.

Defective or non-conforming Product or parts thereof discovered and returned to WDP Ltd. freight prepaid, with proof of purchase, during the Warranty period shall be repaired or replaced by WDP Ltd. without any additional charge and shipped to Buyer, FOB WDP Ltd. In lieu of repair or replacement, if WDP Ltd. elects, WDP Ltd. 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 WDP Ltd. default of its Warranty obligations) exclusively to those provided in this Warranty. UNDER NO CIRCUMSTANCES SHALL WDP LTD. 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:

- (a) 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.
- (b) Some states do not allow limitations on how long an implied Warranty lasts, so the above limitation in (a) may not apply.
- (c) Some states do not allow the exclusion or limitation of incidental or consequential damages, so such limitations may not apply.
- (d) 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 WDP Ltd.

All Warranty and non-Warranty parts, labour and service, if any, provided by WDP Ltd. 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 WDP Ltd. 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 WDP Ltd. WDP Ltd. may have access to the Product after purchase of the Product. WDP Ltd. 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 WDP Ltd. without cost on request. 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 WDP Ltd. If Buyer fails to comply with the obligations set forth in this section, the buyer shall defend and indemnify WDP Ltd. harmless from any claim, liability or obligation incurred by WDP Ltd. 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 WDP Ltd.

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, Buyer must first contact the nearest authorised ANGEL Service Centre for instructions. A list of authorised ANGEL Service Centres may be obtained through WDP Ltd. website: www.wdp.tv, or by contacting WDP Ltd. by mail at WDP Ltd., Metro Triangle, 221 Mount Street, Nechells, Birmingham, England, B7 5QT, or by fax at 011 44 121 327 3967, or by calling 011 44 121 328 2228.

UPDATES

The specification and photographs in this material are for general guidance purposes only.

Our products are continuously updated and changes may be made to specifications, design, or appearance from time to time.

For the latest specification, virtual products and on line technical support we recommend that you visit our website: www.wdp.tv.

YOUR PERSONAL DETAILS

Completing these details upon purchase will enable us to help you with your enquiries.

PURCHASE DETAILS

MODEL/COLOUR

BODY/BLOCK SERIAL NO

UNIQUE ELECTRONIC ID NO.

PURCHASED FROM

DATE

STREET

CITY

STATE

COUNTRY

ZIP/POSTCODE

PHONE

YOUR DETAILS

NAME

STREET

CITY

STATE

COUNTRY

ZIP/POSTCODE

PHONE

