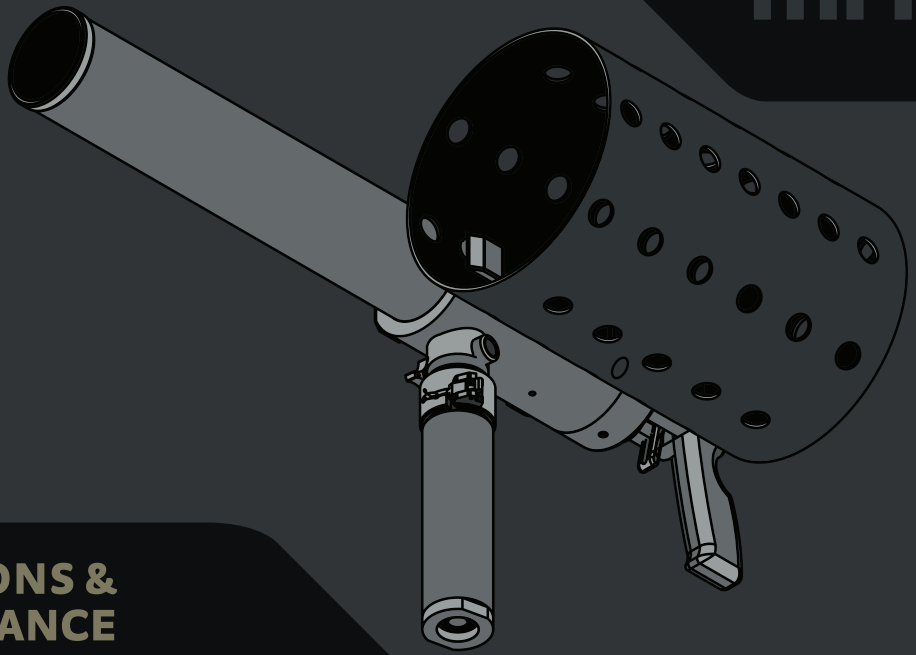
NANO LAUNCHER

SKYLOTEC

MANUAL®



OPERATIONS & MAINTENANCE INSTRUCTION MANUAL

Version 2.0

WARNING!

TRAINING IS ESSENTIAL

The SKYLOTEC Nano Launcher is powered by compressed air. Misuse could result in serious injury or death. The equipment must only be used by authorized personnel who:

- Have received formal training and have been qualified "competent" to use the device in a safe and effective manner;
- Fully understand the procedures laid down in this manual.

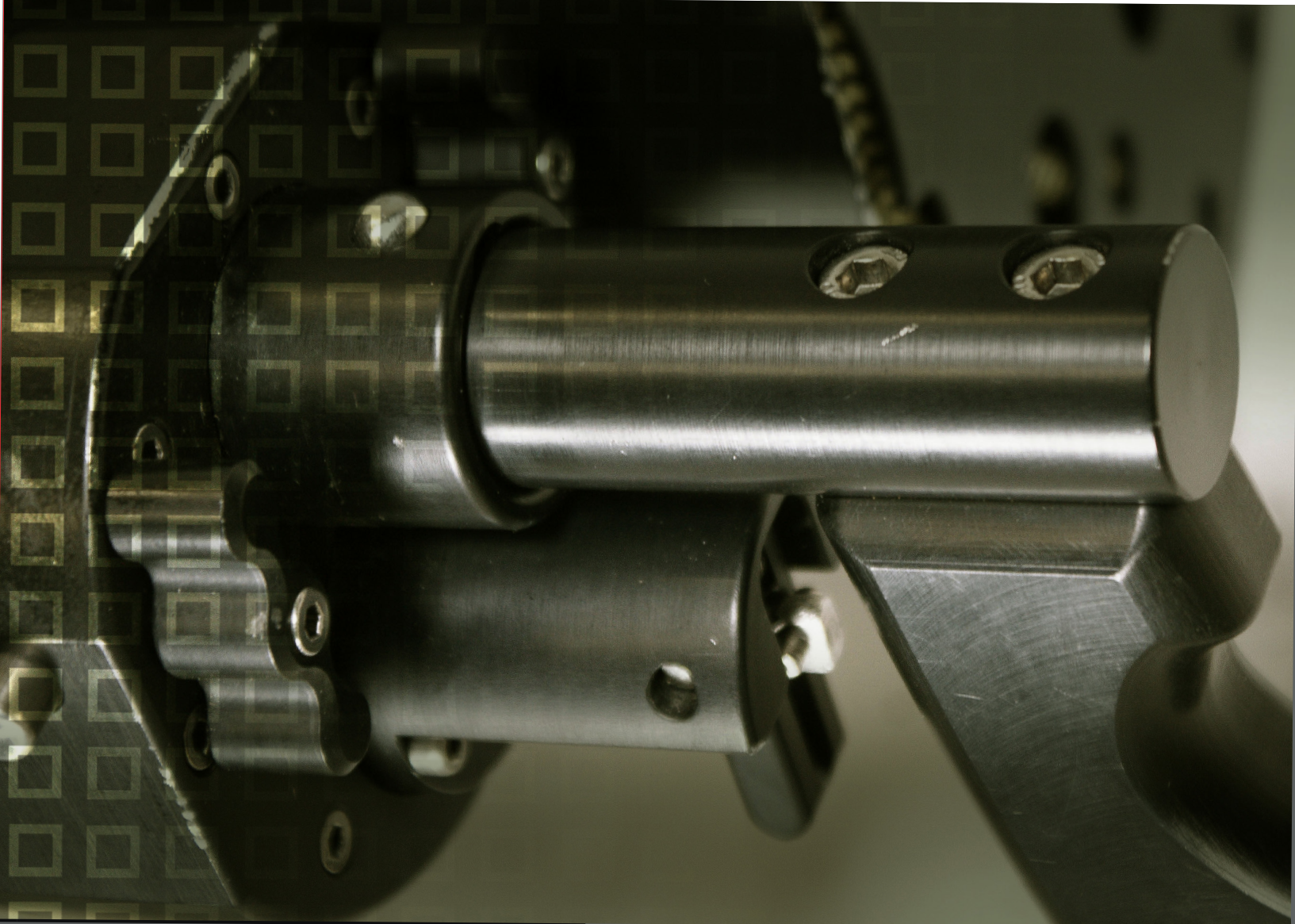
SAFE OPERATION

- Always point the launcher in a safe direction during loading. Never point in the direction of a person.
- Do not attach the charged bottle until the canister and grapnel have been loaded.
- Do not charge the launcher until you are ready to fire the projectile towards the objective.
- In case firing is aborted vent the high air pressure by opening the Dump Valve.

COMPRESSED AIR HAZARD

- Compressed air is dangerous and can cause serious injuries. It must never be allowed to come into contact with any part of the body. Compressed air in the presence of oils and solvents can cause a spontaneous explosion. Never use cleaning fluids, oil or solvents. Use water to clean the equipment and the silicone grease provided for lubrication. Do not use anything other than compressed atmospheric air to charge the air bottles.

DO NOT USE O^2 ENRICHED AIR OR OTHER GAS MIXES!



1.0 INTRODUCTION

1.1 CONCEPT

The SKYLOTEC NANO Launcher is a pneumatic line or ladder deployment device.
It provides a light and portable means of launching a grapnel with a climbing rope, flexible ladder or messenger line.

1.2 DESCRIPTION

The SKYLOTEC NANO Launcher is a non-pyrotechnic line- & ladder thrower. Providing an accurate portable means of launching a grapnel with climbing rope, grapnel with flexible ladder or a messenger line. Compressed air is used to deploy the projectile.
To charge the air bottles, a scuba compressor or scuba bottle delivering breathable quality atmospheric air at up to 230 bar is required.

1.3 SPECIFICATIONS

Charge pressure:
- Air bottle: 230bar

Firing pressure:
- 120bar

1.4 RANGE AND CAPACITY

The range is dependent on the firing pressure, the diameter and type of rope in combination with the angle of firing.

Typical values are as follows:
- Messenger line 4mm: 100m vertical
- Rope 6mm: up to 50m
- Rope 9mm: up to 40-45m vertical
- Rope 11mm: up to 30-35m vertical
- Fibrelight Ladder: up to 20m vertical

1.5 KIT DIMENSIONS

Dimensions and weights:
- Alpha Package (TG NL 1SF): 580 x 330 x 210mm (outside dimensions), 1,95kg.
- Launcher unit: ±4,6kg
- Operational weight: ±6,6kg

1.6 CONTENT OF THE KIT

The NANO launcher Alpha Package consists of the following items*:

- 1x Launcher body, barrel, grip
- 2x air bottle
- 2x Nano Titanium Folding Grapnel
- 1x Projectile pushrod
- 1x Charge Kit (Scuba: 200bar Yoke/DIN and 300bar DIN)
- Field Maintenance Kit
- Rope canister with 35m SKYLOTEC Patron Plus rope
- Modular Operational Backpack
- Manual

* The bag has extra slots to accomodate extra items (grapnel, optional line throwing projectile, consumables).



2.0 ASSEMBLY

2.1 ASSEMBLY OF THE LAUNCHER

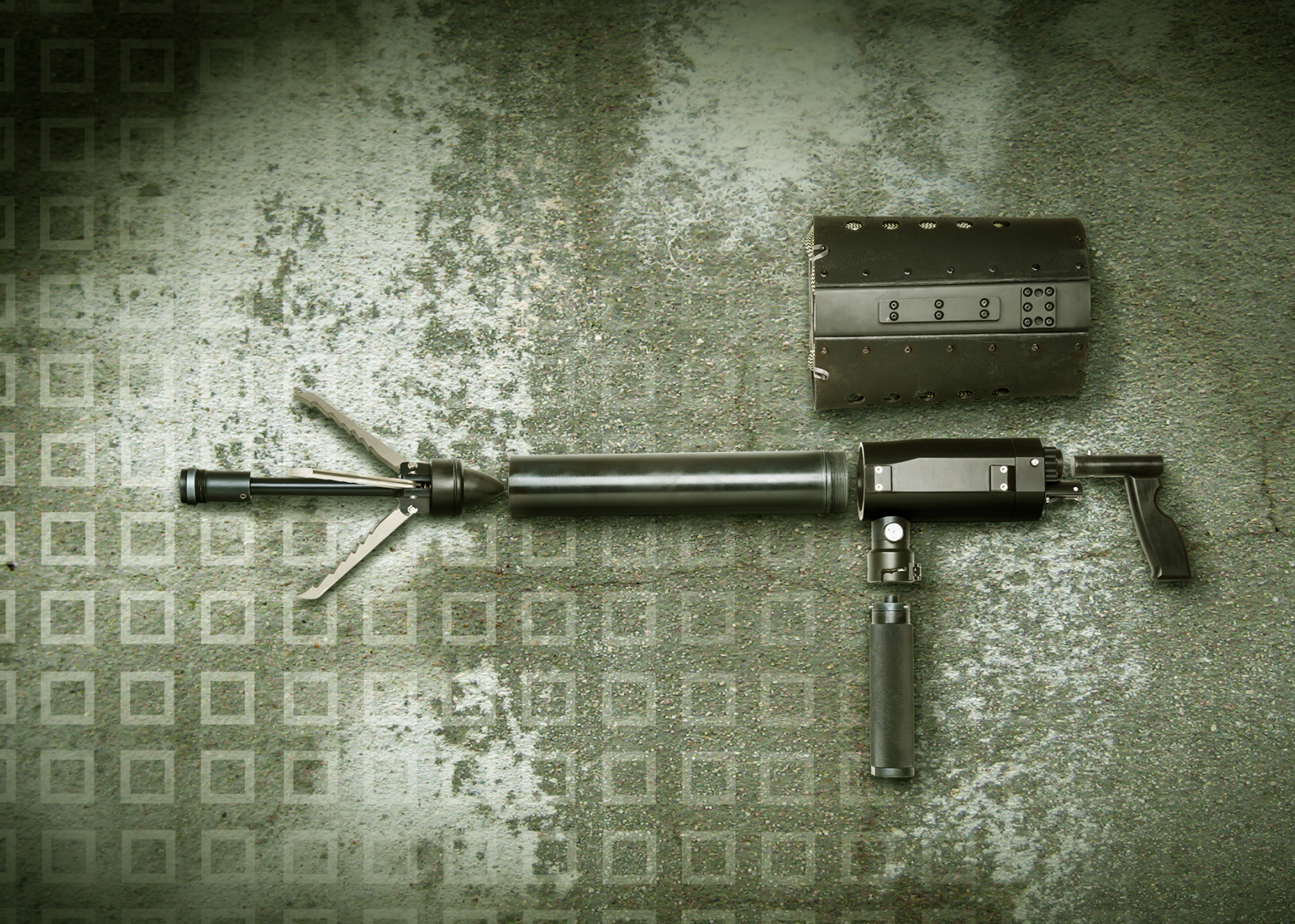
If carried in separate components it takes less than a minute to assemble.

- Mount the barrel.
  Screw the barrel on the body by three full rotations until locked.
- Mount the handle
  By pushing the spring-loaded button found on the handle and place in-line with the pinhole in the housing on the back of the body. Push the handle until the spring-loaded button snaps in place into the pinhole.
- Load the rope into the canister. Stick one end of the rope through one of the holes in the bottom of the canister and place a stopper knot at the end of the rope (on the outside the canister).
- Mount the canister
  The canister can be mounted to the right or left side of the body of the launcher. The bracket of the canister slides into the slots on the side of the launcher body. The bracket locks in place automatically.

WARNING

- To charge the air cilinder a compressor or scuba bottle delivering breathable quality atmospheric air at up to 200-230 bar is required*.
- Do not use anything other than breathable quality or compressed atmospheric air to charge the air cilinder. Do not use O2 enriched air or other gas mixes!Do
- not use anything other than original SKYLOTEC Charge components for the Nano Launcher. Nano Charge Kits components are not compatible with older launcher models or any off the shelf scuba equipment.

* The charging assembly is equipped with a safety valve preventing the bottle to be charged > 200bar.



3.0 CHARGING

3.1 PRESSURE GAUGE P

On the left side of the launcher body is the pressure gauge positioned which indicates the amount of pressure in the pressure chamber of the launcher.
After charging the launcher it is advisable to check the amount of pressure measured on the gauge to prevent inadequate firing.

3.2 PRESSURE DUMP VALVE D

The pressure DUMP valve is located on the right side of the launcher body and is spring-loaded to the close position. It can be used to adjust the pressure in the pressure chamber or to empty the pressure chamber if firing is aborted. The valve closes automatically.

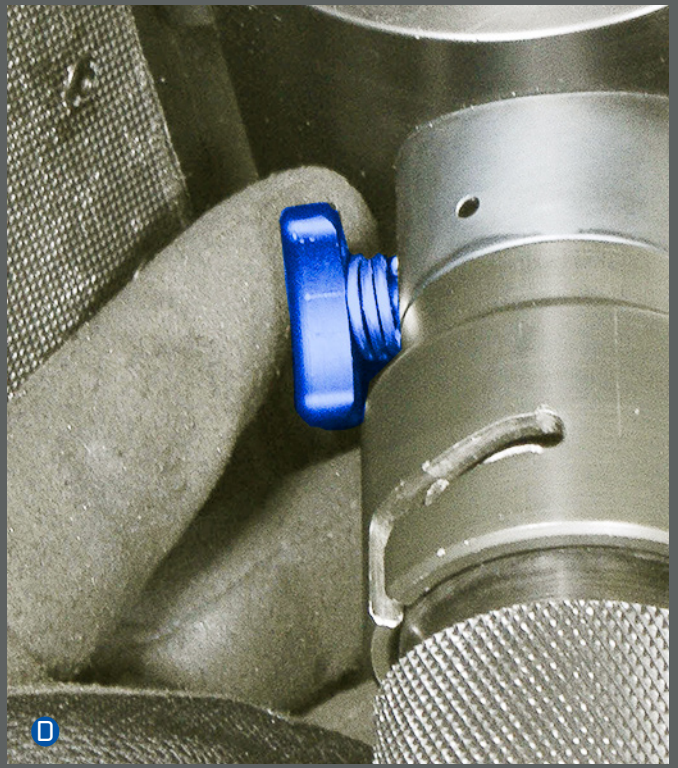
NOTE

- As a result of the design of the Nano Launcher there is no requirement for a safety catch or any means of projectile retaining pins. However, it is predicated on the user following the correct operating procedures:
  Do not open the bottle and charge the launcher until it's aimed towards the objective and you are ready to fire.
  Do not carry around the launcher in an armed state.
  If firing is aborted immediately open the Dump Valve and release the pressure before moving the launcher of its aim.

ATTENTION

- Do not overtighten the pressure DUMP valve as this risks damaging the sealing of the valve.


P
bar


D

3.0 CHARGING

3.1 CHARGING FROM A SCUBA BOTTLE

The recommended method of charging the launcher bottles is to decant from a scuba bottle pressurized at 300 bar.

- Attach the charge assembly to the scuba bottle.
- Attach the launcher bottle to the charge assembly.
- Open the valve on the scuba bottle smoothly to allow slow charge.
- Observe the rise of pressure on the bottle pressure gauge.
- Close the valve on the scuba bottle when desired pressure is met.
- Open the dump valve on the charge assembly to release pressure.
- Remove the bottle from the charge assembly by twisting the bottle.

WARNING

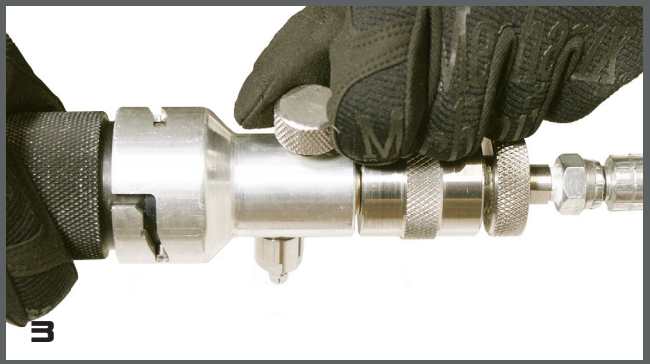
- Never attempt to empty a bottle by unscrewing the base of the bottle or the valve housing on the bottle.
  This could cause serious injury.

WARNING

- To charge the bottle a compressor or scuba bottle delivering breathable atmospheric air at up to 200-230 bar is required.
- Do not use enriched O2 or other gas mixes!
- Only use the charging assembly provided to charge the bottles to prevent charging >230 bar.


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3.4 CHARGING FROM A 300 BAR DIN COMPRESSOR

- Mount the charging assembly directly onto the compressor
- Attach the launcher bottle to the charging assembly
- Slowly charge the launcher bottle to the desired pressure (maximum 230 bar)
- Close the charge valve on the compressor
- Open the Dump valve on the charge assembly to release the pressure.
- Disconnect the bottle from the charging assembly by twisting the bottle.

3.5 CHARGING FROM A 230 INT COMPRESSOR

- Mount the brass Clamp adaptor
- Mount the charge assembly to the adaptor
- Attach the launcher bottle to the charging assembly
- Slowly charge the launcher bottle to the desired pressure (maximum 230 bar)
- Close the charge valve on the compressor
- Open the Dump valve on the charge assembly to release the pressure.
- Disconnect the bottle from the charging assembly by twisting the bottle.

WARNING

- Never attempt to empty a bottle by unscrewing the base of the bottle or the valve housing on the bottle.
  This could cause serious injury.



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4.0 OPERATION

4.1 FOLDING GRAPNEL G

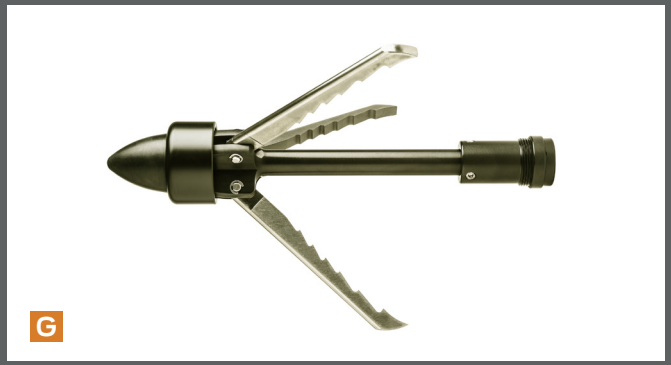
The grapnel has 3 spring loaded Titanium arms that fold to allow insertion into the barrel of the launcher.
The tip of the grapnel is a rubber cone to reduce sound signature on impact.
A built-in swivel prevents rope twirling mid-flight.

4.2 MOUNTING THE ROPE

Unscrew the locking collar and remove the mounting pin P located at the back of the grapnel.
Tie a knot or place a certified sewn end termination around the mounting pin and tighten the locking collar.
Do not overtighten the locking collar.

NOTE

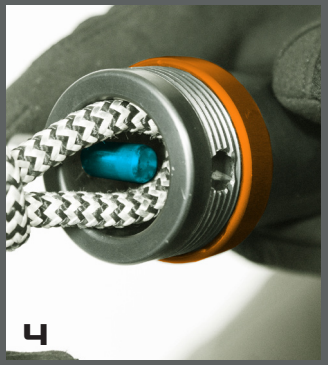
- It is advised to visually inspect the rope termination and mounting pin for wear and tear after use


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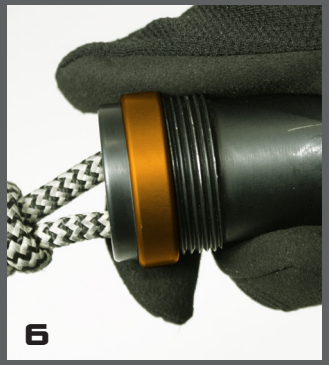

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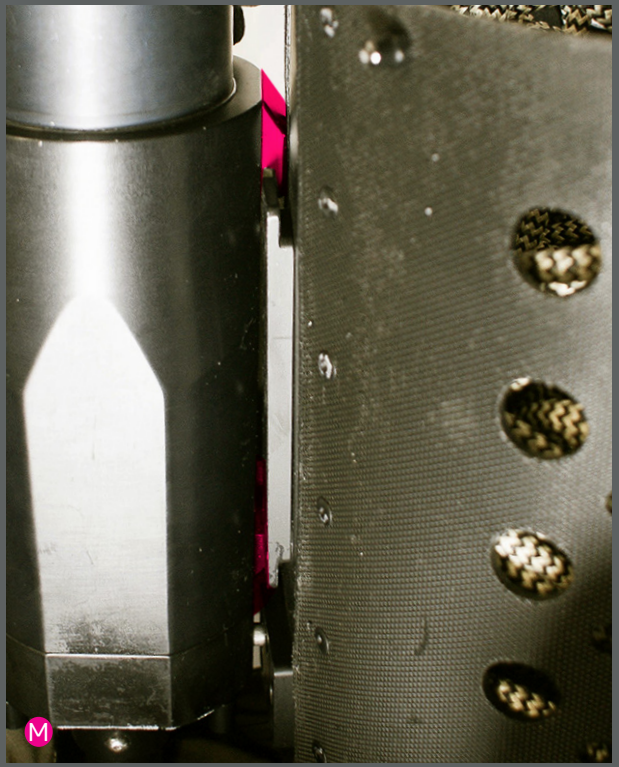
4.3 MOUNTING THE ROPE CANISTER M

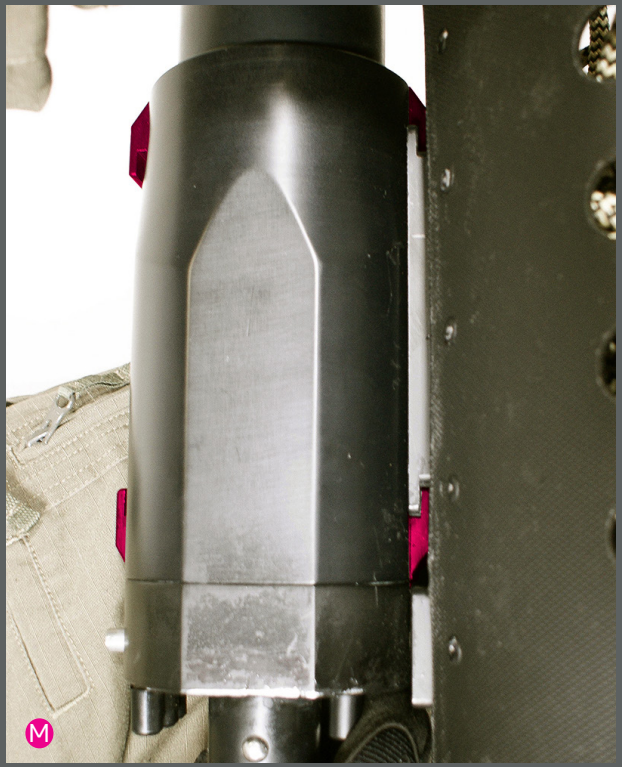
Side mount rope canister: can be mounted on both sides of the launcher and holds about 35m of 11mm rope or 45m of 9mm rope or 50m of 6mm rope.

- Position the canister on the left or right side of the launcher body
- Press down the canister brackets into the slots positioned on the left or right side of the launcher body until the spring-loaded catch locks in place.

4.4 LOADING A FIBRE LADDER INTO THE (OPTIONAL) LADDER CANISTER

Connect one end of the ladder to the canister by using a quick link connector to the bottom of the canister. Make sure that there are no twists or kinks in the ladder and check the ladder for wear and tear. Push the ladder into the canister by building a loose stack of layers without twisting or rotating the ladder. This method will assist in a smooth deployment of the ladder.





NOTE

- Please read the separate Fibrelight Ladder instruction manual for detailed information.

4.5 SECURING PAYLOAD IN CANISTER.

The rope or ladder in the canister is held in place by the provided rubber bands which can be fastened to the rim of the canister and secured by the bolds on the side. (See below) There is no need to remove the bands prior firing the launcher as they will be sacrificed (consumables) when the rope leaves the canister.



4.6 PLACING THE GRAPNEL INTO THE BARREL

- Clamp the arms of the grapnel tightly against the centre shaft
- Put a small amount of grease around the plastic collar of the grapnel to ensure smooth action in the barrel.
- Push the grapnel, nose first, into the barrel while holding the arms tightly along the centre shaft until about 2/3 is inserted.
- To complete the insertion push firmly against the end of the swivel (or use the push rod) until the end of the swivel is about 15mm below the rim of the barrel.



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4.7 BOTTLES B

The bottles are designed to carry out a single firing of the grapnel and are equipped with an automatic valve that is opened by a twisting action when mounted on the launcher.
On the base of the bottle a gauge G is installed to measure the pressure inside the bottle.
The bottles are rated to a maximum pressure of 230bar. At this pressure the launcher will operate at its maximum range.
If a lower range is required then the bottle needs to be filled at a lower pressure or needs to be vented when mounted on the launcher.

4.8 MOUNTING THE BOTTLE

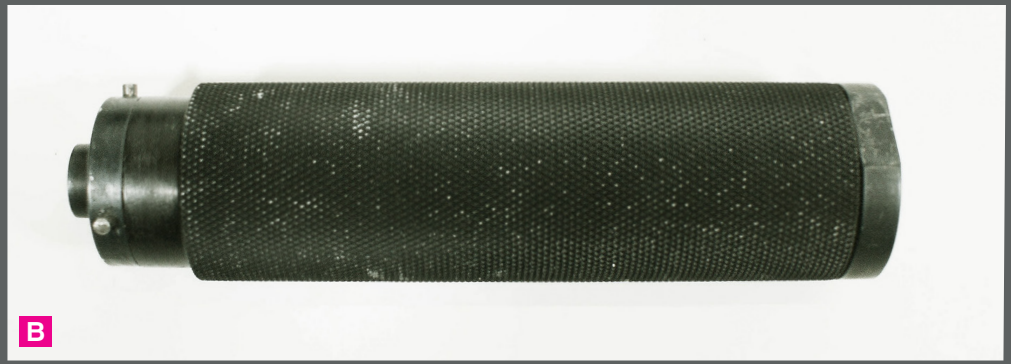
The pressurized bottle is mounted onto the launcher after the canister is fitted and the grapnel is placed into the barrel.

- Hold the bottle in the slots and press down the spring-loaded lock L . The bottle has a 3 bayonet pins that fit the slots in the bottle mount on the launcher body.
- Push and rotate the bottle counterclockwise to position 1 placing the bayonet pins into the mount. At this position the Launcher is not charged and safe for transportation.
- Twist the bottle to position 2 to charge the launcher. (Only perform this step when you are ready to fire the grapnel).

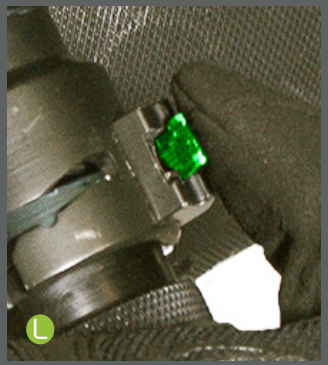
To remove the bottle press down the spring loaded lock and rotate the bottle clockwise until release.

WARNING

- To charge the bottle a compressor or scuba bottle delivering breathable atmospheric air at up to 200-230 bar is required.
- Do not use enriched O2 or other gas mixes!
- Only use the charging assembly provided to charge the bottles to prevent charging >230 bar.


B


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L


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4.9 TRIGGER T

The trigger is mounted in a protective housing at the back of the launcher.
To release the trigger from its storage and carrying position press the spring mounted button.
After use return the trigger to its closed position to prevent the possibility of snagging.

4.10 PREPARING TO FIRE

- Tip the barrel downward by 5 degrees to clear any water from the barrel.
- Aim the launcher at the objective and keep a firm grip to the rear handle and bottle.
- Unlock the trigger from its stowed position by pushing the spring-loaded button.
- Twist the bottle to position 2 (Warning: the launcher is now charged).
- Firmly pull the trigger to fire the launcher.

4.11 ABORTING TO FIRE

- Stow the trigger in its stowed position
- Open the dump valve D by rotating the valve counterclockwise to release the pressure.
- Twist the bottle to position 1
- Remove the bottle from the launcher

It is now safe to remove the grapnel from the barrel by pulling on the rope or ladder.

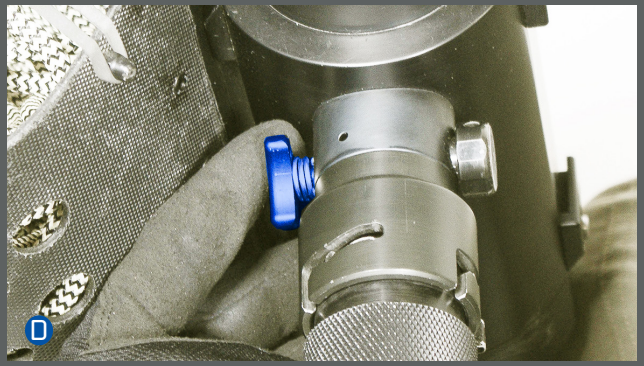
ATTENTION

- Be aware of the small firing delay after pulling the trigger.

WARNING

- Never attempt to handle or adjust the projectile in the barrel of a charged launcher.
  Follow 4.11 Aborting fire procedure before making any adjustments.


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5.0 DAILY CARE & MAINENANCE

5.1 INTRODUCTION

Although the launchers are designed to withstand all types of conditions during operations. It is important that regular inspection and servicing
is carried out to ensure that all parts function accordingly.
To ensure the launcher stays operational, the maintenance described should he carried out after each usage.

5.2 MAINTENANCE/ CLEANING AFTER USE

- After each use, clean as follows:
- Leave the device and its components submersed in fresh water for at least 2 hours. Only use fresh water for cleaning.
- Check the interior and exterior of the device that all remains of soil or debris have been removed.
- Carry out a visual inspection of the exterior of the launcher for any signs of damage such as bents, dents or cracks.
- Carry out a visual inspection of the grapnel for any signs of damage such as bents, dents or cracks.
- Any part that shows signs of damage such as bents, dents or cracks must be replaced to ensure safe operation of the launcher.
- Use the provided lubrication brush to lubricate the front plate of the internal piston with silicon grease
  by passing through the slots in the spring plate.

5.3 CLEANING TOOLS

The launcher can be cleaned and maintained using the following tools and cleaning materials:

- seal removal tool
- clean rags
- fresh water
- lubrication brush
- tube of silicon grease

5.4 INSPECTION AND SERVICE

Before and after every use, the kit must be checked by a competent (trained) user, in order to confirm it is "fit for purpose". After every use the launcher and its components must be maintained as described in chapter 5.2.

To ensure that all parts function accordingly. The launcher must be thoroughly inspected and -serviced anually by an authorized SKYLOTEC Service Centre.
Air bottles must be withdrawn from service after 5 years from date of purchase.
All inspections and service must be registered in this manual.

5.5 REPAIRS

Repairs may only be carried out by an authorized SKYLOTEC Service Centre. All details of repairs will be registered in this manual.

6.0 WARRANTY

6.1 WARRANTY

SKYLOTEC is responsible for the proper function of the product during the warranty period. If a defect is detected while under warranty the product will be repaired without cost by an authorized SKYLOTEC Service Centre. The cost of transportation of the product to and from the Authorized Service Centre is the responsibility of the customer.
Contact SKYLOTEC for the appropriate RMA Procedure. The validity of the warranty must be proved by a copy of the invoice and the serial number of the product. SKYLOTEC will not repair the product under warranty if this information is incomplete, unauthorized service/repair or has been subject to changes after the date of purchase. The warranty period is 12 months after the date of purchase and must be proved by the documentation mentioned above.

6.2 LIMITATION OF RESPONSIBILITY

SKYLOTEC cannot be held responsible for:

- Periodic inspection, maintenance and repair or replacement of parts as a result of normal use.
- Materials of consumption
- Defects due to modifications that have been made without the consent of SKYLOTEC.
- Costs due to the necessity of adapting or modifying the product as a result of new national or international standards.

6.3 REPAIR UNDER WARRANTY

Repair under warranty will not be made if damages are due to:

- Improper use or abusive handling of the product.
- Repairs, modifications and cleaning done by service personnel not authorized by SKYLOTEC.
- The use of spares and other parts which are not compatible with the product.
- Insufficient packing of the product when sending it to SKYLOTEC or an authorized service centre.
- Accident, natural catastrophe or circumstances beyond the control of SKYLOTEC.



A. INITIAL DELIVERY

SERIAL NUMBER OF LAUNCHER _____

YEAR OF MANUFATURE _____

DELIVERY DATE _____

_____

☐ APPROVAL FOR USE

STAMP AND SIGN

SINGATURE

B. YEARLY INSPECTION

Date	Stamp and sign
Approved for use Y ☐ N ☐	
Name of Inspector	

Date	Stamp and sign
Approved for use Y ☐ N ☐	
Name of Inspector	

Date	Stamp and sign
Approved for use Y ☐ N ☐	
Name of Inspector	

Date	Stamp and sign
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Name of Inspector	

Date	Stamp and sign
Approved for use Y ☐ N ☐	
Name of Inspector	

Date	Stamp and sign
Approved for use Y ☐ N ☐	
Name of Inspector	

C. USAGE LOG

DATE	SIGNATURE	COMMENT

C. USAGE LOG

DATE	SIGNATURE	COMMENT

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