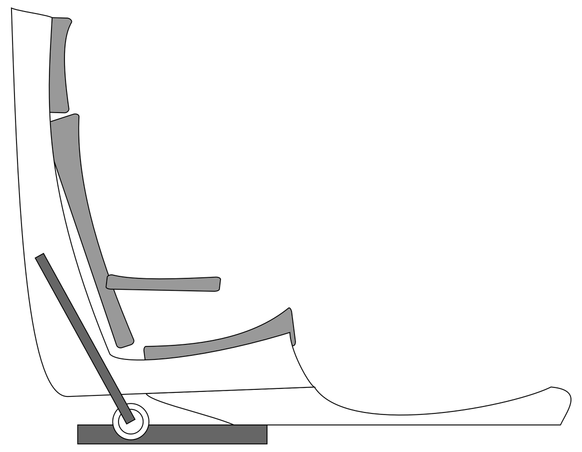
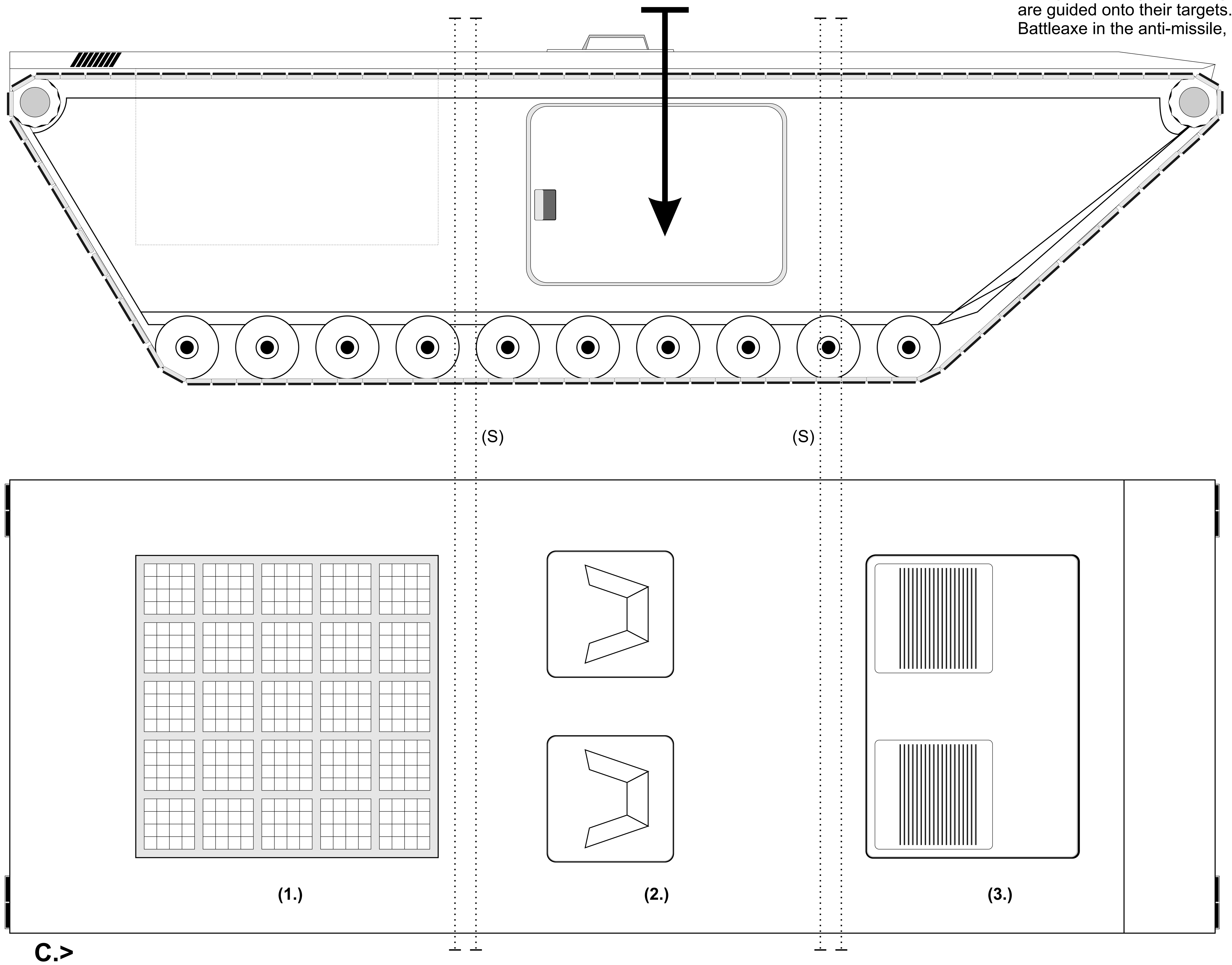
BATTLEAXE (SPV)

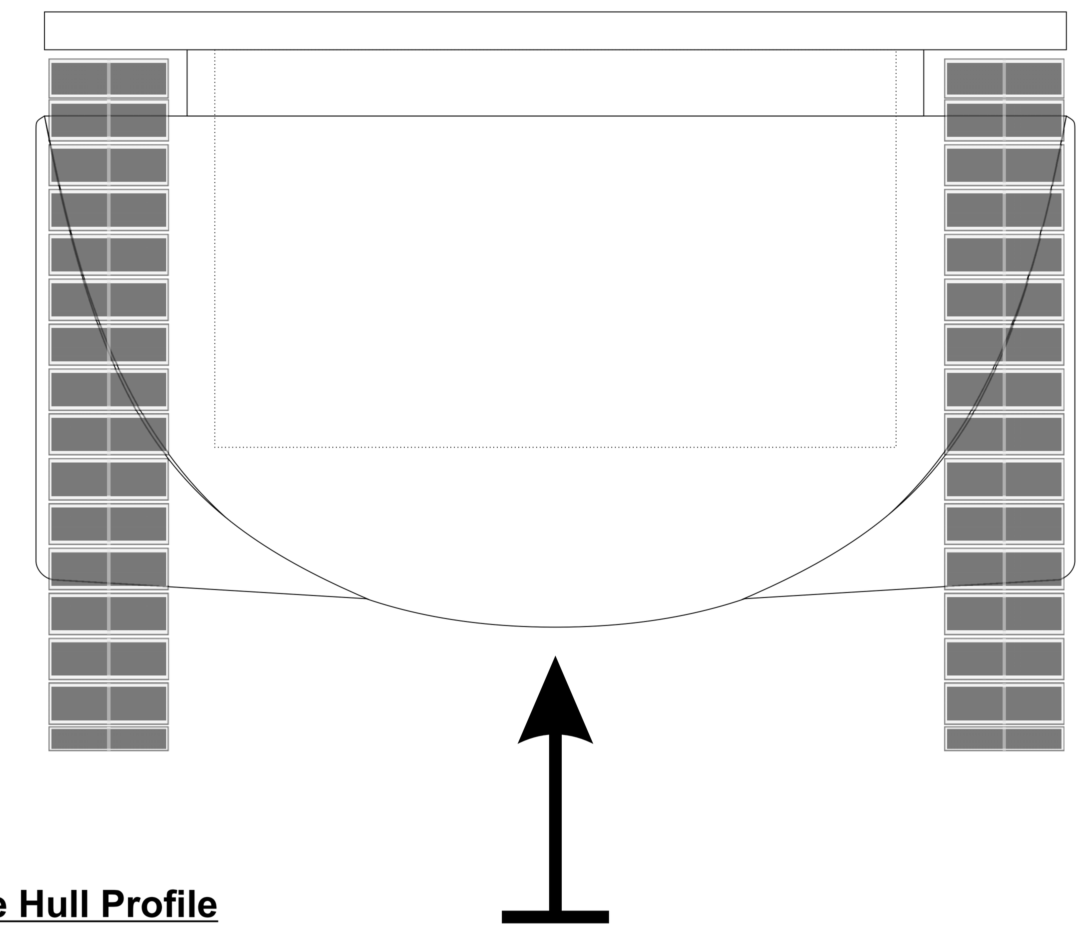
RUMBLER CARS - MINK - BRITISH ARMY VARIANT LIGHT TANK
SPV - STRIKE PATROL VEHICLE

A.> BASIC CONCEPTS OF THE BATTLEAXE

Imagine a helicopter gunship, a wide range of long range sensors, sophisticated weapons control and state-of-the-art missiles and other weapons controlled by just a pilot and weapons controller. Now put it on the ground and armour it. Welcome to the Battleaxe.
A two-seat high speed, high agility, amphibious light tank for reconnaissance, forward observation and forward control of remote weapons.
Forget the big guns, they are very much of the last century, today it is all about remote fire control, rapid response and longer range, precision strike from a far more compact fighting platform.
The heart of the Battleaxe is a primary offensive weapons bay in the rear, with a capacity to mount, launch and control upto, for example, 400 x 2.5 inch missiles, rockets, suicide drones.
This gives a far greater range than a light tank gun and far more accurate response as the weapons are guided onto their targets. Similarly, some of these missiles will be useful on active defence of the Battleaxe in the anti-missile, anti-air, anti-tank roles.







B.> A Unique Hull Profile

Stop it with all the rolling, trundling and crawling pill boxes. It's time to get serious with real design geometry to deal with the severe concussion forces of land mines, IEDs, close-proximity thermobaric weapons and all that.

The underside of the hull is an arch, tube, curved to disperse such blast forces from below, and somewhat from the sides.

To help achieve both the greatest benefit of such a shape and make the maximum use of practical space in the overall form of the vehicle the traditional caterpillar tracks are moved close to the top of the hull, allowing the arched hull profile to extend into the track space and increase the internal volume protected by the arch.

This broader hull in turn permits access through spacious armoured side doors and space for additional side storage.

Yes, this increases the vulnerability to side-attack but active defences will mitigate this apparent weakness.

C.> Overall Design - Basic Features

The rear compartment (1.) makes up a load and weapons bay, storage area and adaptable modular space for a variety of applications, first amongst which is the placement of a missile launch bay with potential capacity for upto 400 x 2.5 inch missiles or assorted kinds in a series of 16-pack boxes.

The middle compartment (2.) is separated by a double hull blast shield (S) from the weapons bay to protect a crew of two supported by a variety of augmented reality and wide-angle direct and remote sensors (those directly attached to all sides of the vehicle, and those on remote platforms, drones, etc.). The crew have access to armoured side doors and through top hatches for maximum chance of access and escape, while their seats are multiply armoured to assist in crew protection against explosion from the weapons bay.

Forward, separated by another double bulkhead (S), is the hybrid engine compartment (3.) using a mixture of diesel/synthetic fuelled engine and hydrogen fuel cells driving the tracks through four electric motors in the front and rear sprocket wheels. Unless absolutely required there is likely to be no direct drive to the tracks, all goes electric, with the combustion engine acting as high efficiency generator. For amphibious action the forward vents close manually or automatically when preparing for crossing water.

FORGET BIG GUNS

Just to reinforce this point.
For a vehicle intended for light, high speed agility and the need to strike accurately at long range or respond quickly to a variety of threats or opportunities a big gun is decades out of date.

The ability to launch a wide range of missiles against many different targets makes this the ideal solution, especially with the opportunity to guide each missile accurately to target, distinguish civilian from hostile targets, act out of line-of-sight and respond quickly, with the potential to fire multiple missiles simultaneously, both by manual action, by automatic self-defence option (computer identifying a fast-approaching threat), and even remote "friendly" co-operator" (another, external, team member sharing the capacity of the vehicle remotely).

Only challenge will be cost of such technology, but that has already been solved independently, subject to government approval and release of funds.

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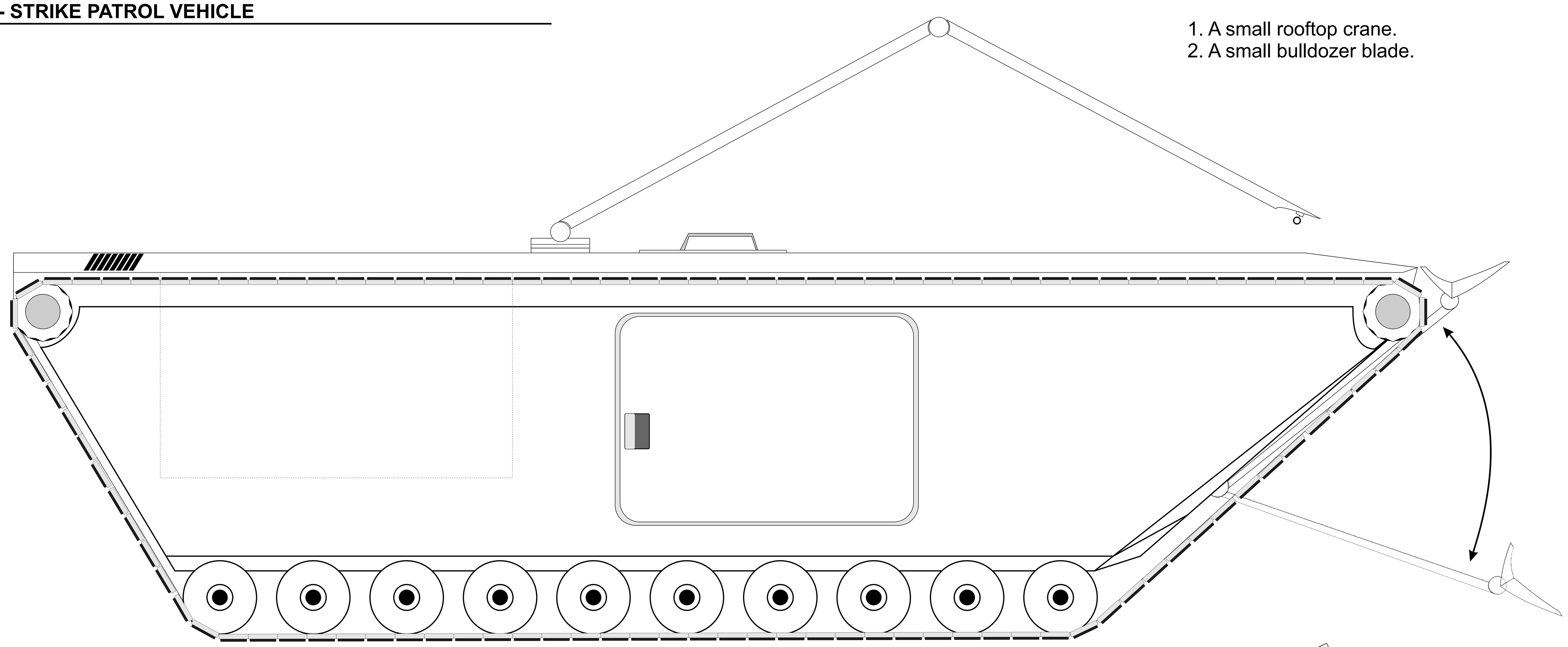
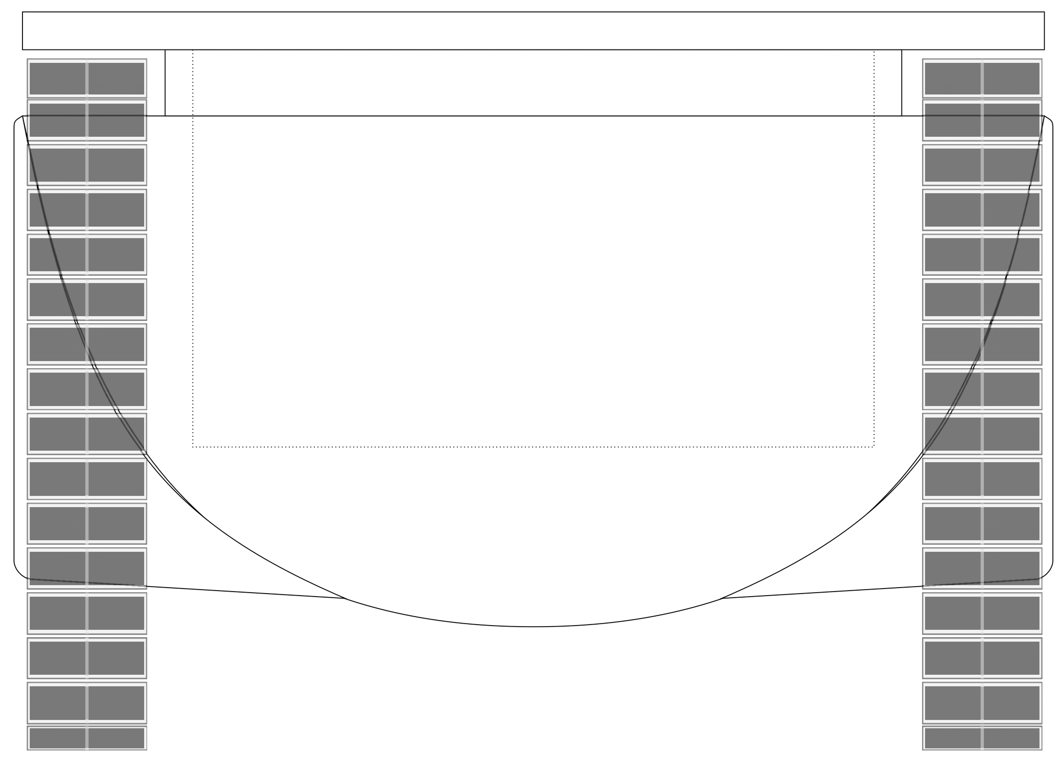
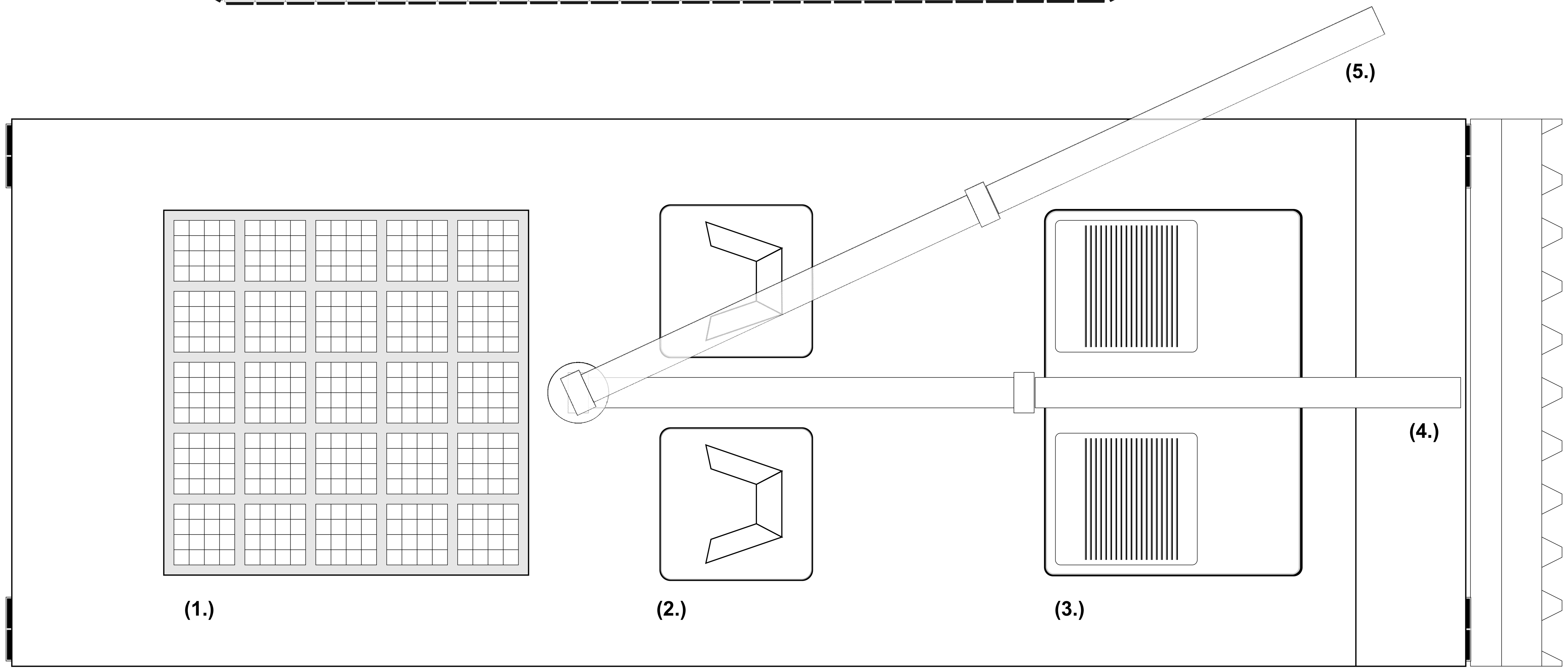
A.> ENGINEERING FEATURES

Let us increase the self-support practicality of the Battleaxe with a couple of additional features.

1. A small rooftop crane.
2. A small bulldozer blade.







B.> The Blade

A reconnaissance vehicle will always be at the tip of the spear. And a small, lightweight vehicle will always find itself in places where other tanks fear to tread, small, tight squeezes and other places.

A small sturdy blade on the front of the Battleaxe will help it in a variety of useful places:-

1. Needing to clear obstacles.
2. Cutting paths and trails.
3. Digging scrapes to lie low in ambush.
4. Assisting with other engineering activity.
5. Gouging through a minefield(?).

The blade also acts as a buffer against water surges when the Battleaxe takes to the water, deflecting some or all brief wave surges away from the top of the tank.

C.> Light Load Crane

As with the blade there is the potential to mount a small crane on top of the tank.

It has several practical applications:-

(1.) Helping in reloads. As this crane can lift the entire load pod, all weapons packs, from the rear weapons bay it can empty a pod while a reload vehicle brings a replacement to bear, thus increasing the speed of reload, two cranes moving the pods in exchange at higher speed.

(2.) Should the crew hatches on the roof jam then the crane may be used to assist in freeing the hatches and crew for evacuation.

(3.) Assisting in engine replacement/repair. The crane is able to lift the engine hatch away and unload the engine/generator and most other parts from the compartment. This is for self-repair or to assist a recovery vehicle and crew in their work.

(4) The end of the crane may mount a small set of weapons, sniper rifles and a few (4?) of the missiles, along with assorted small sensors, cameras, etc. As the crane can rise several feet off the roof the end of the crane can be used to shoot over obstacles and over the front of the Battleaxe in its forward blind spot.

(5) Shooting into side blind spots or assisting in clearance/engineering work alongside the vehicle, especially in humanitarian rescue work.

MODULARITY

Both crane and bulldozer blade may be designed in modular form to plug in should they be desired or be replaced more easily with upgrades or other replacements when needed.

The initial design for the Battleaxe, with or without these features, may be crafted to incorporate them in the future.

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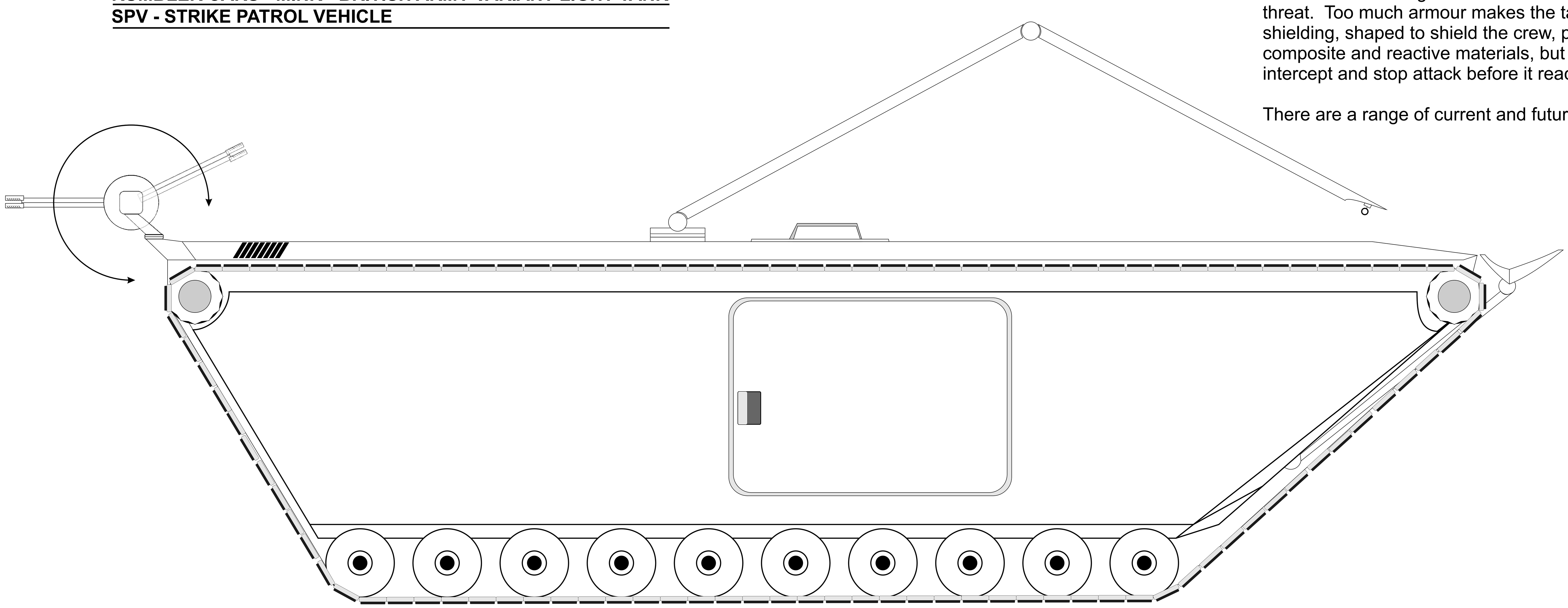
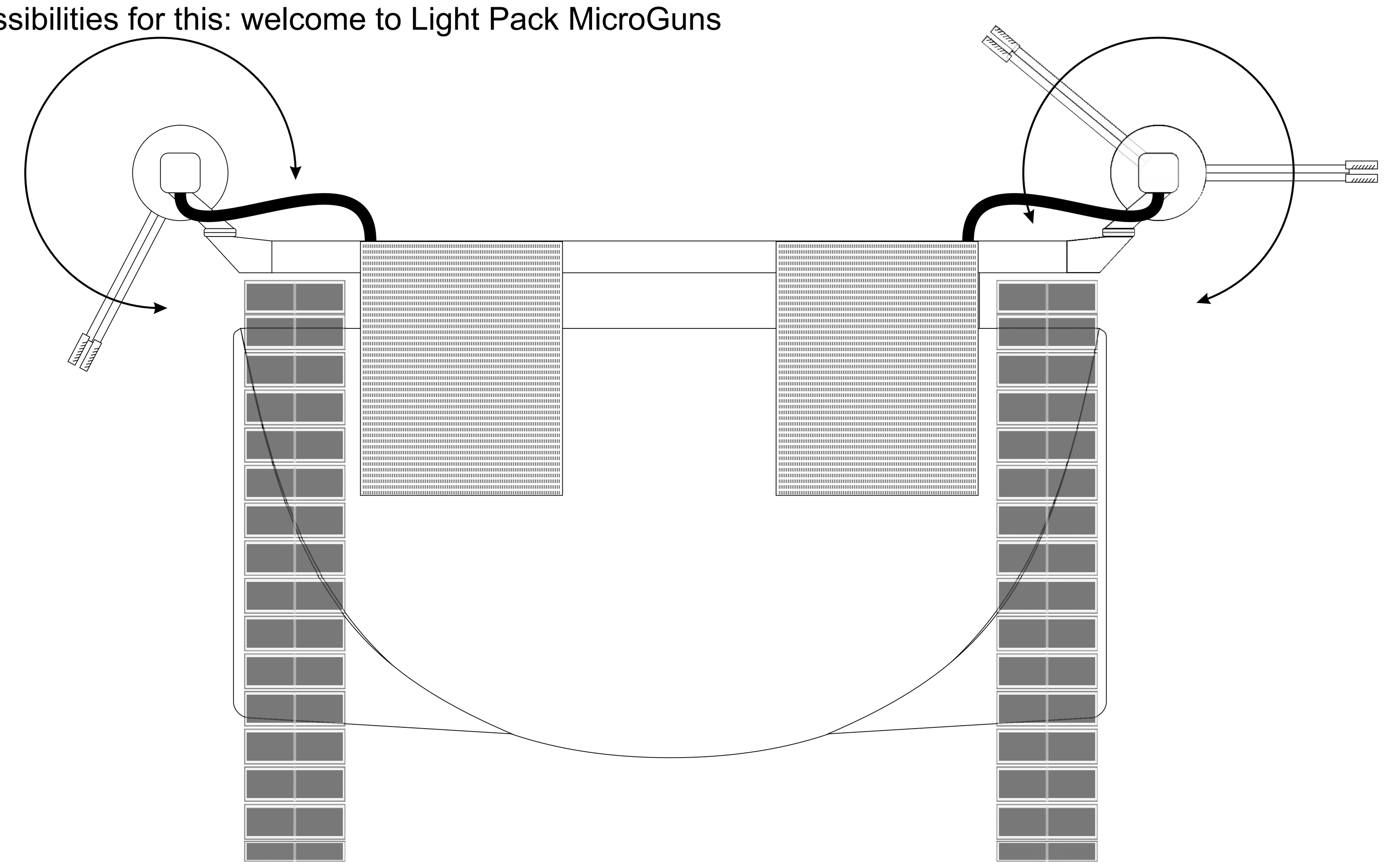
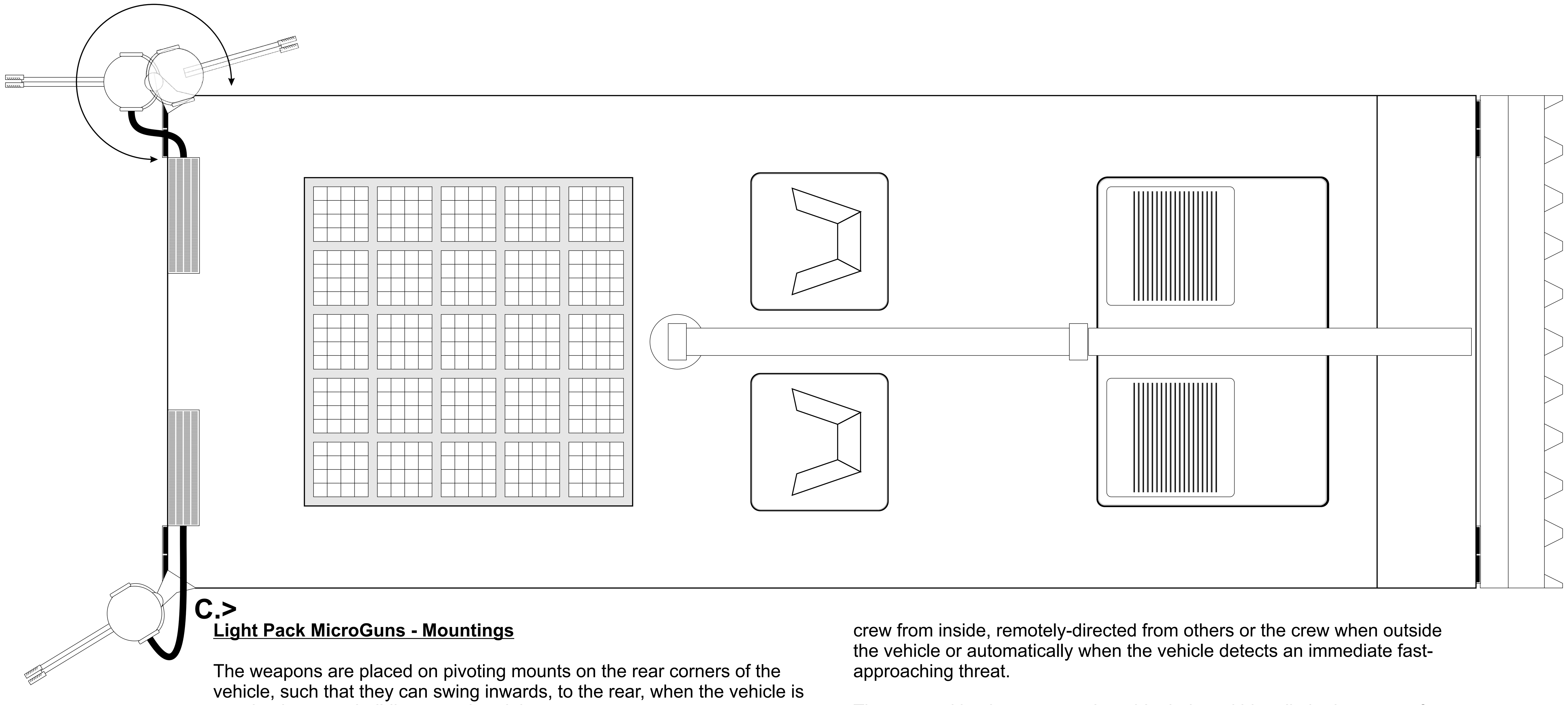


A.> DEFENSIVE FIRE

Armour is not enough for a vehicle on the extremes of danger, especially in the modern theatre of threat. Too much armour makes the tank cranky, heavy, overloaded and bulky. There will be armour shielding, shaped to shield the crew, providing reasonsble protection and making use of modern composite and reactive materials, but the heart of the vehicle's protection has to be active defence to intercept and stop attack before it reaches the shield wall.

There are a range of current and future possibilities for this: welcome to Light Pack MicroGuns





B.> Light Pack MicroGuns

Before a missile can strike the Battleaxe, the vehicle has the opportunity to shoot it out of the air. At the shortest range this may comprise of compact multi-barrel machine guns using pistol ammunition, such as the effective armour-piercing FN 5.7 mm rounds designed for the FN P90 sub-machine gun.

Effective range is only about 200 yards, but this permits larger loads of ammunition to be stored in belts for prolonged combat than using larger rifle rounds.

The weapons are mounted in rear turrets for wide sweep across roof, down sides and rear of the Battleaxe.

As the weapons are relatively compact and lightweight they should be able to rotate and target more quickly than a heavier weapon and make smaller, less vulnerable targets for enemy counterfire.

As they may be tri-barrel, for around 900 round per minute in bursts. They ought to be able to throw sufficient weight of rounds at incoming missiles to strike many down before they can hit the Battleaxe, and still have sufficient remaining rounds for many more targets.

C.> Light Pack MicroGuns - Mountings

The weapons are placed on pivoting mounts on the rear corners of the vehicle, such that they can swing inwards, to the rear, when the vehicle is passing between buildings or other tight spaces.

NOT ILLUSTRATED here is the possibility of placing a protective "turret" cowl over the ball turret to shield the belt feed from box magazines stored in the rear of the vehicle.

This position of the ball turret and its mounting gives it the widest angle of fire, around the entire rear of the vehicle, into the air, down to the ground and, almost, directly back at each other.

Depending on the situation the weapons can be manually-directed by the crew from inside, remotely-directed from others or the crew when outside the vehicle or automatically when the vehicle detects an immediate fast-approaching threat.

The ammunition boxes are vulnerable, being within a limited amount of armoured shielding, but dismountable for rapid replacement reloads.

Pulse Lasers/Emitters

Given the light weight and potential for rapid response these MicroGun turrets may be able to carry longer range energy emitter weapons, lasers, masers (microwave lasers), etc., alongside the guns.

These energy weapons, charged and fired from energy stored in the vehicle's engine and hydrogen fuel cell bank, will be able to strike at and damage or blind guided weapons, drones, other targets at longer ranges than the guns.

Thus the energy emitters can act as an additional, outer line of defence for the Battleaxe before the MicroGuns engage close-up.

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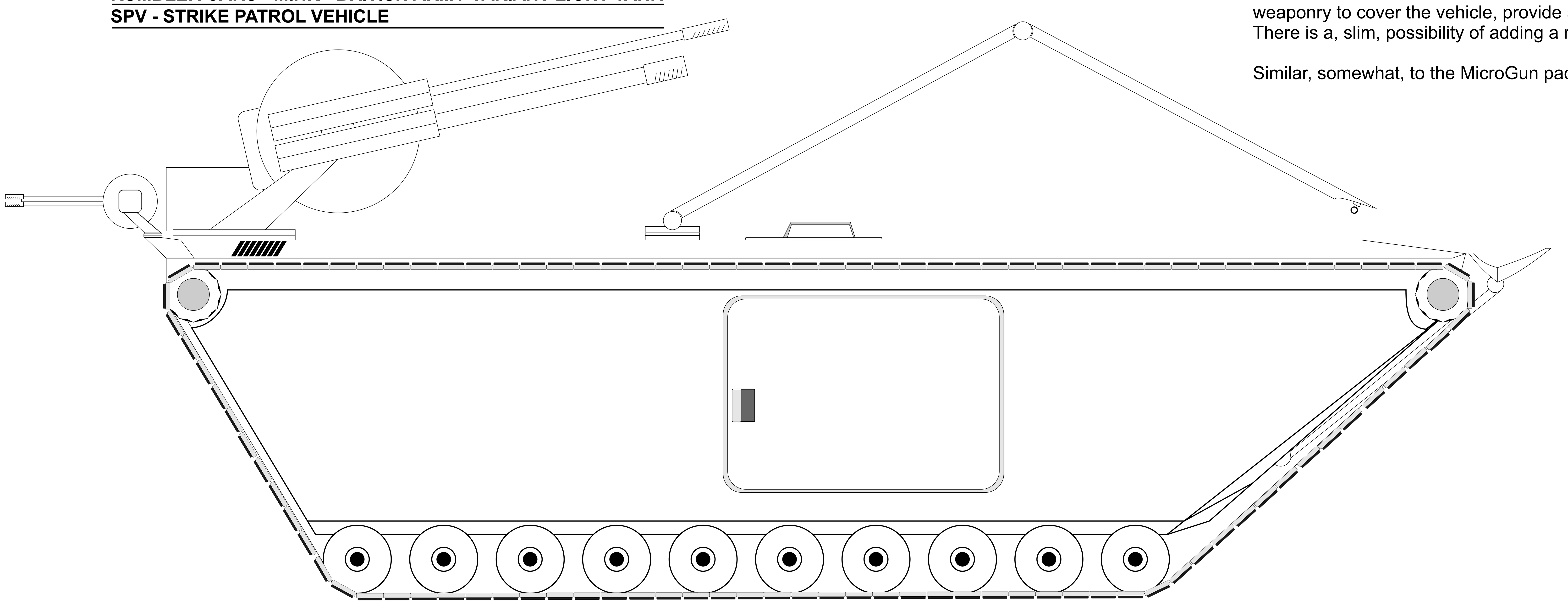
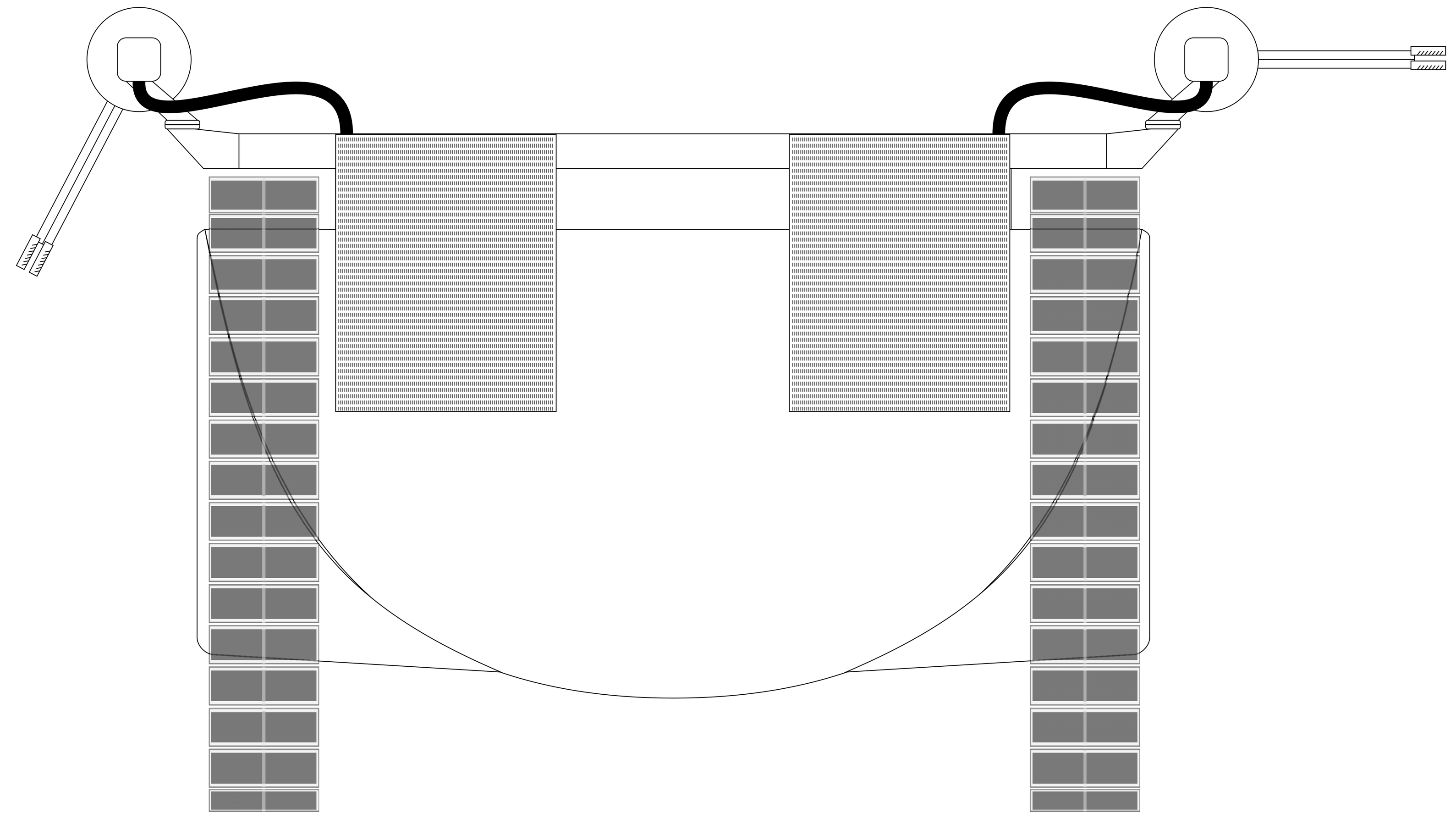
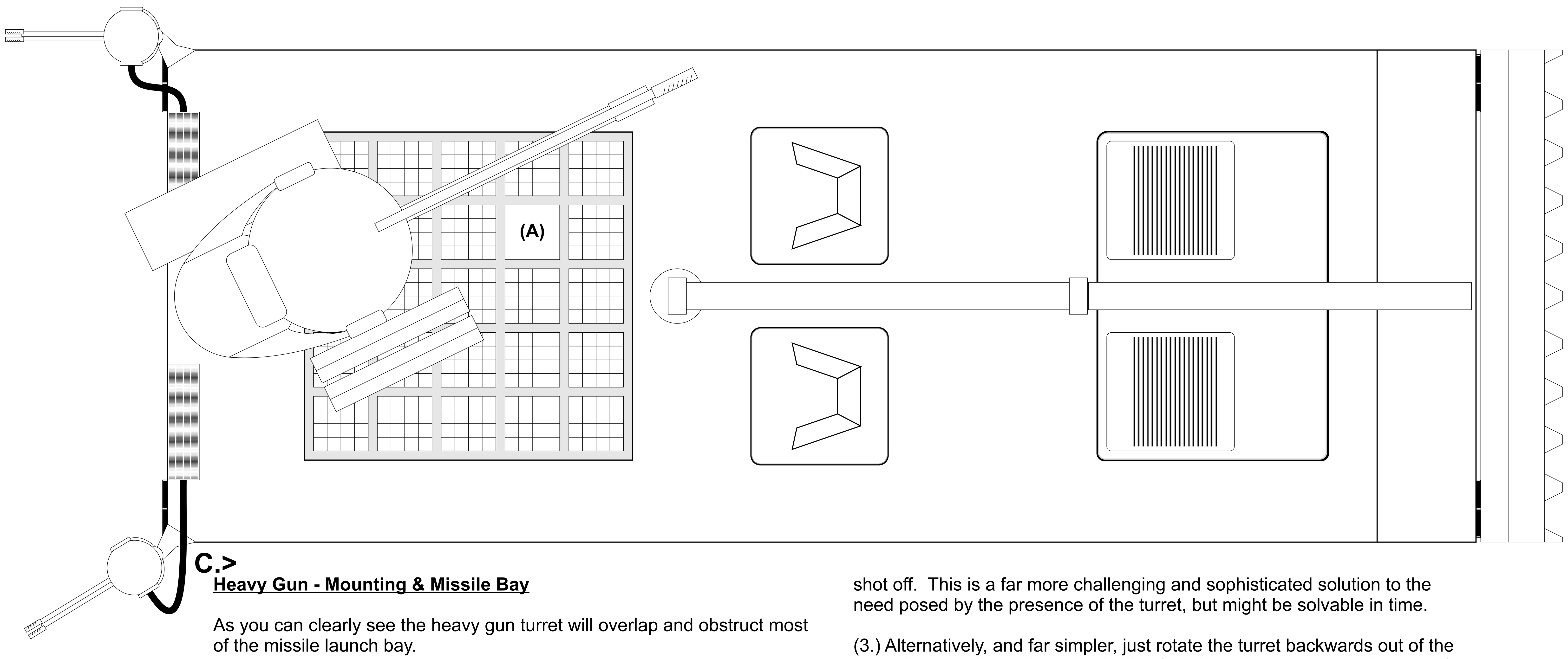


A.> CLOSE-SUPPORT GUNNERY

I am well aware that some traditionalists will still insist on some form of close-support heavy weaponry to cover the vehicle, provide secondary fire or just add even more toys to the toy cupboard. There is a, slim, possibility of adding a rooftop turret to provide support weapons at the rear.

Similar, somewhat, to the MicroGun packs this will allow the next-step-up in intermediate firepower.





B.> Heavy Guns

There is no turret or heavy tank/light tank gun penetrating the hull. This is a simple turntable mount on the roof to hold one or more heavy machine guns in an external location at the rear of the hull.

This mounting may be sufficient to hold a 0.5 inch heavy machine gun over a 40mm automatic grenade launcher, giving the Battleaxe two heavy close-support weapons with effective ranges around 1500 yards fed from a pair of side boxes to one side. Ammunition loads may be limited, this will have to be explored in more depth with a practical full-scale design model.

On the other side of the mounting is space for missile packs for direct line-of-sight fire against close targets. These will be the same as in the hull missile bay.

C.> Heavy Gun - Mounting & Missile Bay

As you can clearly see the heavy gun turret will overlap and obstruct most of the missile launch bay.

There are three options here:-

(1.) Remove part of the bay that is obscured and blocked by the turret. However, this leaves far fewer missiles for immediate use.

(2.) Remove one(?) missile pack (A) from the bay and equip the bay and mountings for the individual packs with sliders to shuffle them around like a Chinese puzzle. As packs at the front are emptied they are shuffled automatically to the rear, using the one empty space as the shuttle space. Gradually the used packs are moved to the rear until all missiles have been shot off. This is a far more challenging and sophisticated solution to the need posed by the presence of the turret, but might be solvable in time.

(3.) Alternatively, and far simpler, just rotate the turret backwards out of the way when needing to launch missiles from the closest packs at the rear of the launch bay. This is practical by using the rear missile packs first at times when the guns aren’t needed and can be rotated away, an A.I. automated selection system can assist in this process of management.

Big (Eye) Balls

The illustrations show a spherical container for the core mechanism of the weapons. Although just for illustration here there is ample opportunity, if this style is adopted, for mounting a wide range of sensors, reactive elements, dischargers, energy emitters and armour for the gun machinery around the surface of the sphere.

A wide-angle, spherical, array of sensors will show 3D imagery to the crew from all directions in all conditions, and a wide array of active dischargers will allow rapid response to approaching threats from many directions.

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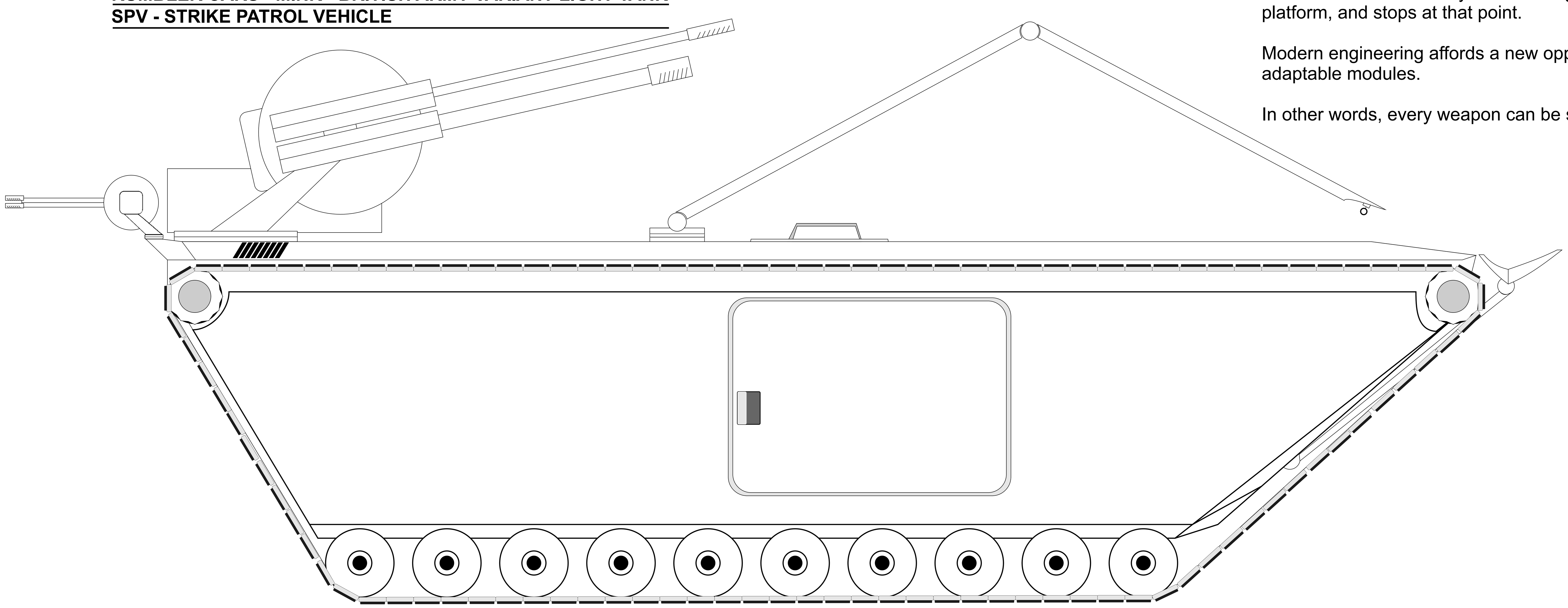
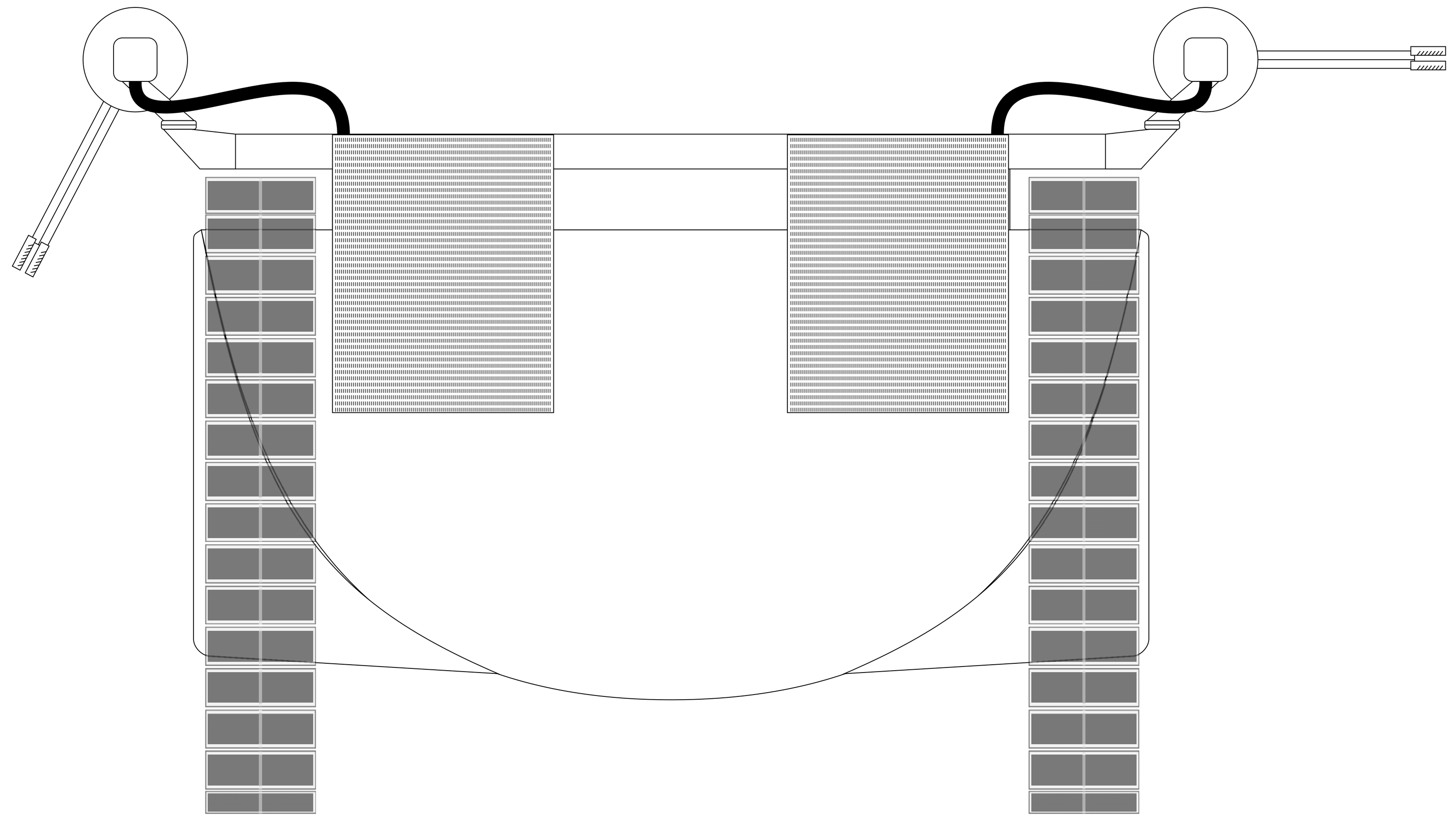
A.> DISMOUNTING MODULARITY

The tradition of the heavy armoured fighting vehicle mounts an array of fixed weapons on a mobile platform, and stops at that point.

Modern engineering affords a new opportunity to mount and dismount all weapons as a series of adaptable modules.

In other words, every weapon can be stripped off for other uses.





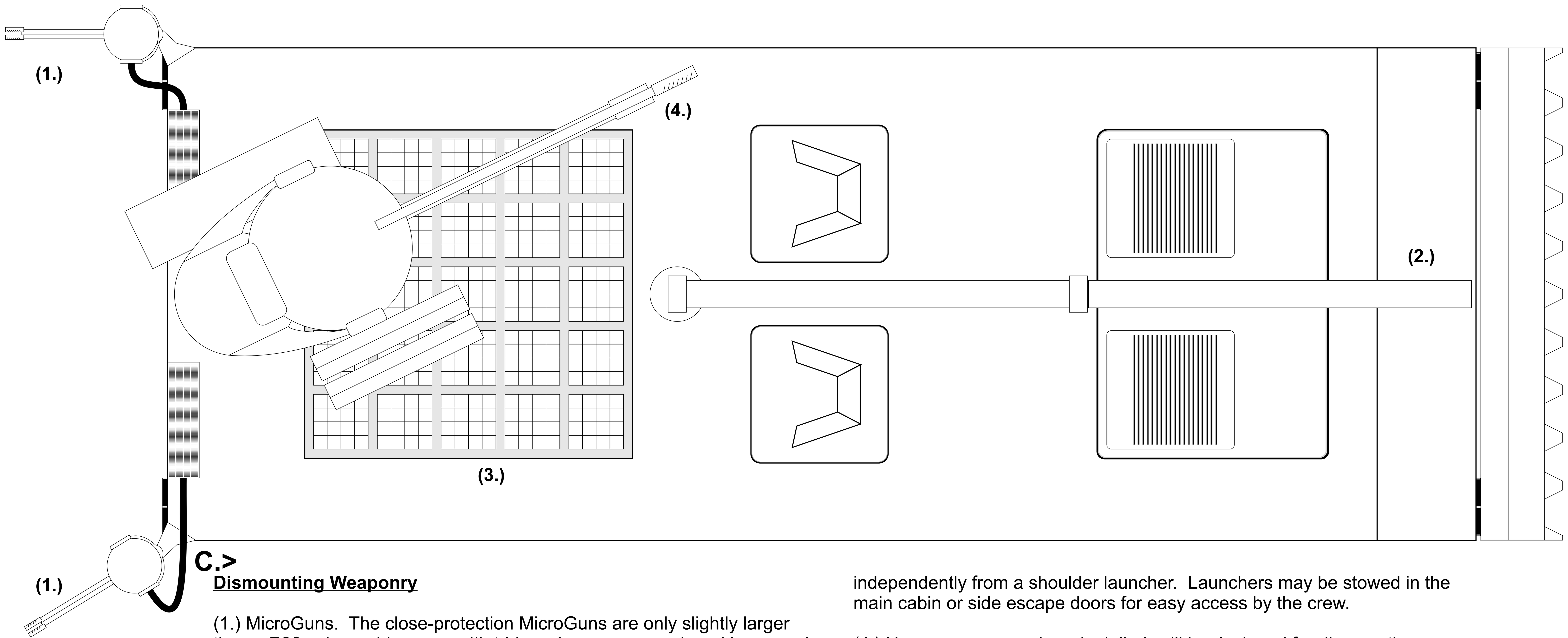
B.> Designed for Dismounting

To achieve the maximum practicality of this effect every weapon and its associated elements, magazines, controls, power packs, etc., must be designed for dismounting and independent use.

It is no longer a case of a single fixed piece of heavy engineering, like a tank turret, the weapons need to be portable and reusable elsewhere, especially if the crew have to abandon the vehicle and have an opportunity to take some or all the weapons with them.

Similarly, in some extreme situations, a Battleaxe might be sent to a remote team who need its weapons to continue a special action and it is stripped of some or all of its mountings, effectively being used as a mobile support/re-supply platform for a special force.

All dismountable elements will need to be secured against theft.



C.> Dismounting Weaponry

(1.) MicroGuns. The close-protection MicroGuns are only slightly larger than a P90 sub-machine gun, with tri-barrels, a power pack and large pack ammunition magazine. The guns can be fitted with folding stocks and grips ready for dismounting, so that the crew of two can take one of the MiniGuns each and carry some or all its ammunition feed belt(s) in a suitable backpack.

(2.) NOT ILLUSTRATED. The forearm of the crane may be mounted with one or two (one each side) of remote-controlled specialist sniper rifles (design for later) which may be stripped for the crew to haul away.

(3.) The missile bay may hold upto 400 x 2.5 inch missiles. Each of these could be pulled out, solo or in small sub-packs of, say, four, and used independently from a shoulder launcher. Launchers may be stowed in the main cabin or side escape doors for easy access by the crew.

(4.) Heavy weapons, where installed, will be designed for dismounting.

(5.) NOT ILLUSTRATED. Assorted lasers/energy emitters from the turrets may be dismounted and powered off the dismountable engine/generator or the portable hydrogen fuel cells taken from locations around the vehicle.

So much equipment may be dismountable that a crew will need handcarts, sledges or small trailers to wheel it all away. Primarily much of this will dismount for remounting on other Battleaxe vehicles needing resupply or repair.

Modularity Up-grades

The benefit of modularity of weaponry and components is that they can be replaced with other options at a later date.

This means that the Battleaxe may be developed and deployed quickly then gradually up-graded over many years of future technology development.

This also makes it easier to develop a range of Battleaxe vehicles on the same core design by using modular compartments able to slot into a standard hull form.

Such modularity requires full co-ordination of all development processes of every part, system, weapon, etc., likely to be needed in the vehicle across a wide range of options. And this also makes the Battleaxe an excellent investment for creating a wide range of parts and end-vehicles around this standardisation of design.

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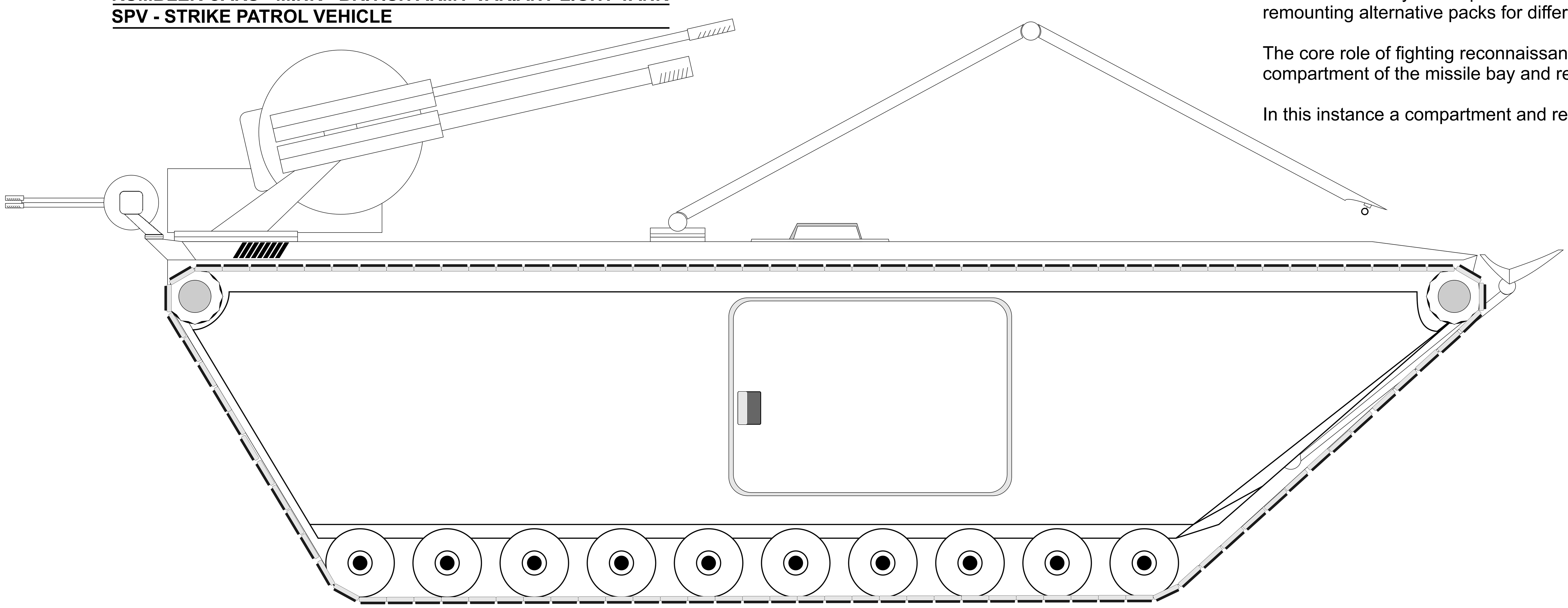
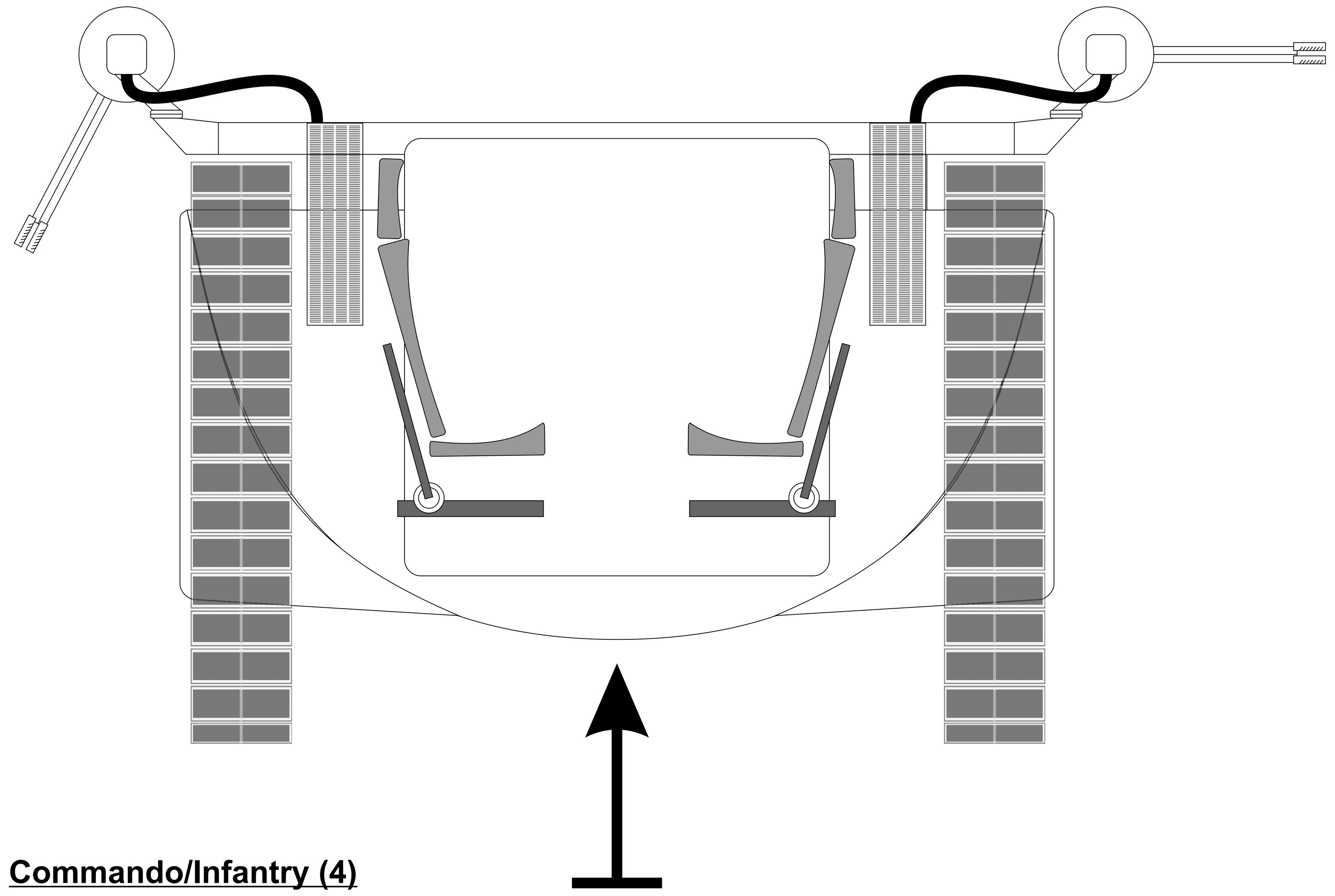


A.> TEAM BATTLEAXE

As with modularity of weapons and technology so the hull is modular enough for mounting and remounting alternative packs for different roles.

The core role of fighting reconnaissance vehicle can be swapped out by removing the rear compartment of the missile bay and replacing it with another.

In this instance a compartment and refit for an infantry/commando vehicle: Team Battleaxe.



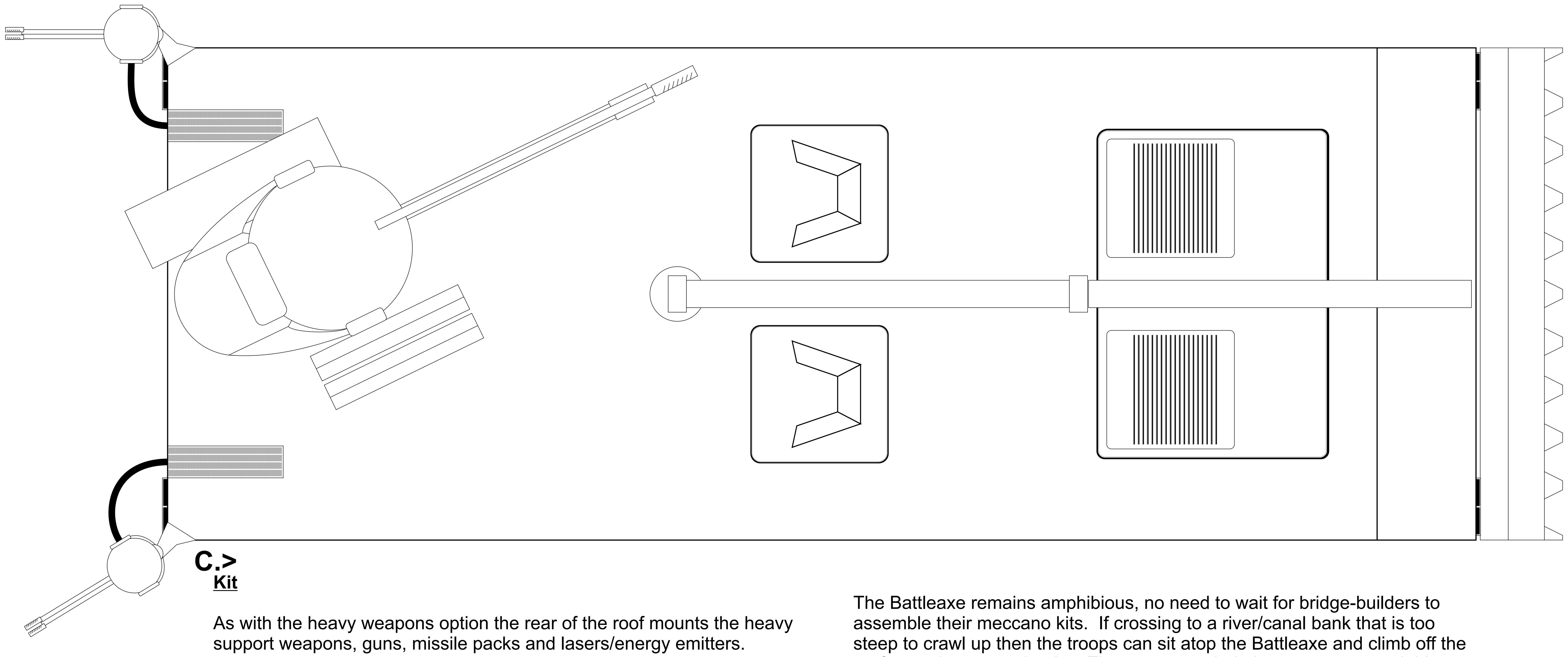
B.> **Commando/Infantry (4)**

The size of the Battleaxe permits space in the rear compartment for four personnel in long range shock-absorbant cushioned seats with sufficient reasonable space for several day’s supply.

Modifications to the design alter some action, such as the MicroGuns ammunition packs being set inwards in the sides of the compartment to make room for a rear access ramp.

A typical British Army infantry/commando section is 12 people, being a four-man heavy weapons support squad and fighting section of eight.

Here the four-man team are the vehicle crews for a pair of Battleaxes to carry and support one section, with a fighting team of four in the rear of each vehicle. Thus each infantry/commando section has two Battleaxes for their work.



C.> **Kit**

As with the heavy weapons option the rear of the roof mounts the heavy support weapons, guns, missile packs and lasers/energy emitters.

Note that all the guns shoot around and sweep the rear clear of potential threats and provide substantial covering fire, mostly directed by the crew. They can be handled remotely when troops are dismounted and need to direct the weapons more effectively than from the vehicle.

The crane is retained, if desired, because it’s very useful, as is the forward bulldozer blade to clear paths or scrape shelters into the ground/snow.

A roof hatch, NOT ILLUSTRATED, may be added for access, escape, other practical purposes.

The Battleaxe remains amphibious, no need to wait for bridge-builders to assemble their meccano kits. If crossing to a river/canal bank that is too steep to crawl up then the troops can sit atop the Battleaxe and climb off the roof to scale steeper banks. The crane may help here too as extendable scaling ladder and provide forward covering fire with attached weapons.

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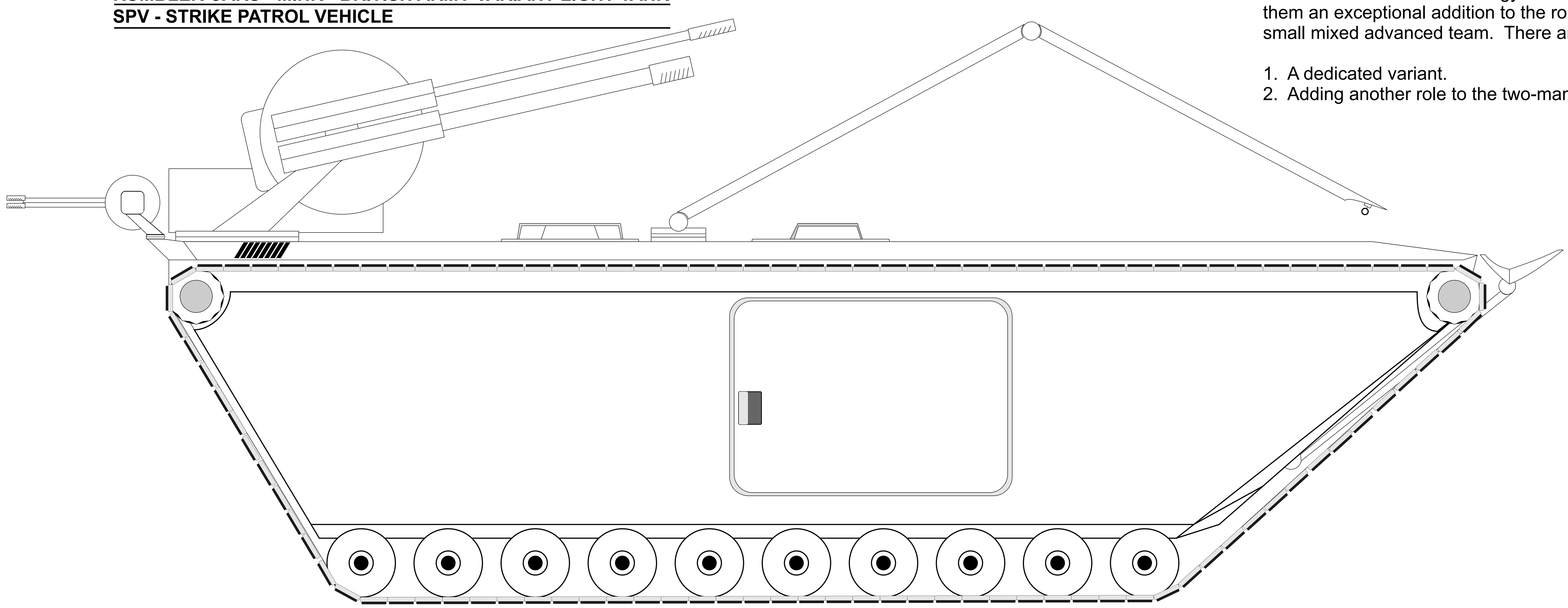
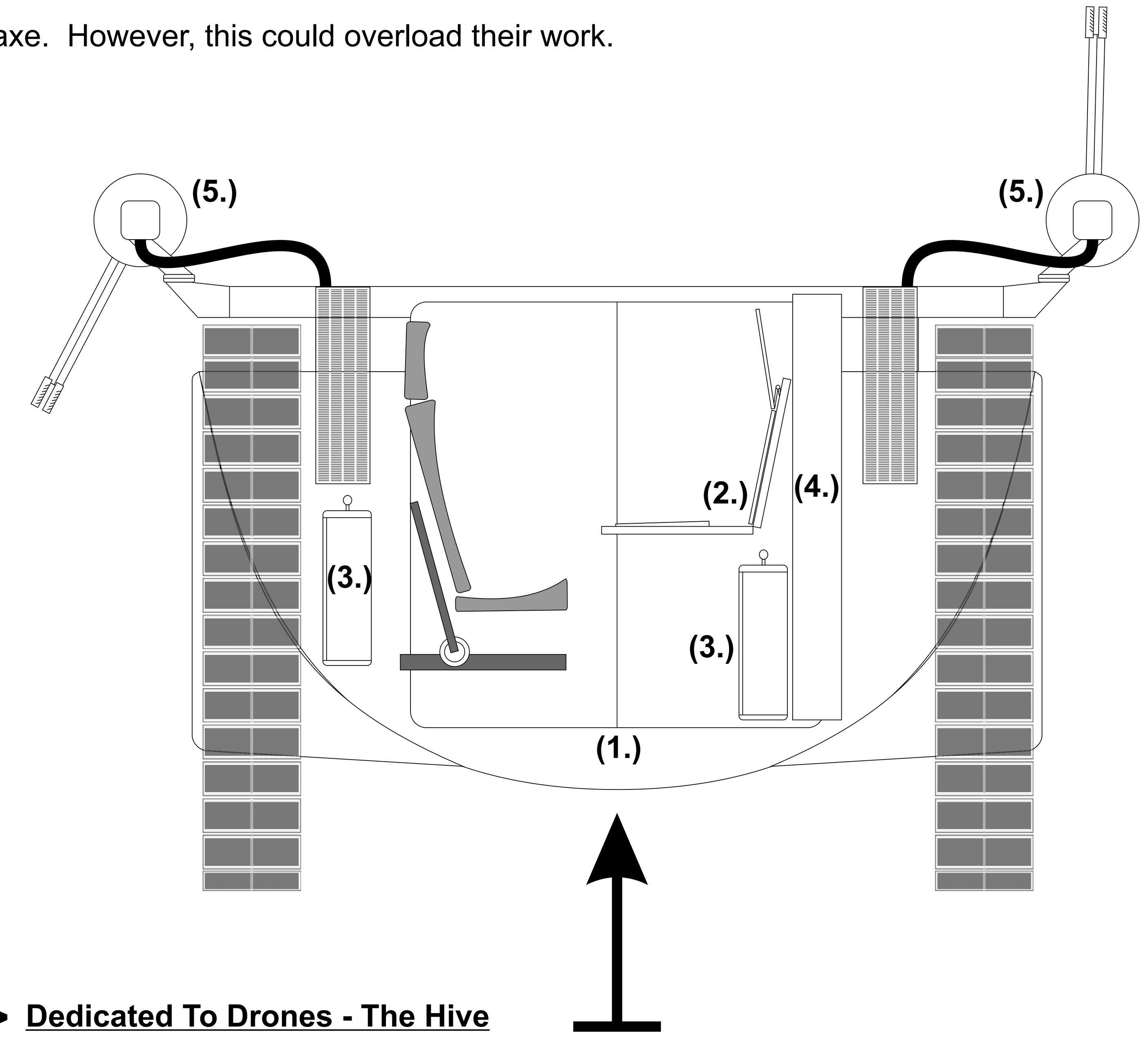


A.> BATTLEAXE DRONE HIVE

The advent of drone technology and the huge advantages of semi-/fully-autonomous drones makes them an exceptional addition to the role of long range reconnaissance with, ahead of and around a small mixed advanced team. There are two possible options for adding drones:-

1. A dedicated variant.
2. Adding another role to the two-man Battleaxe. However, this could overload their work.



B.> Dedicated To Drones - The Hive

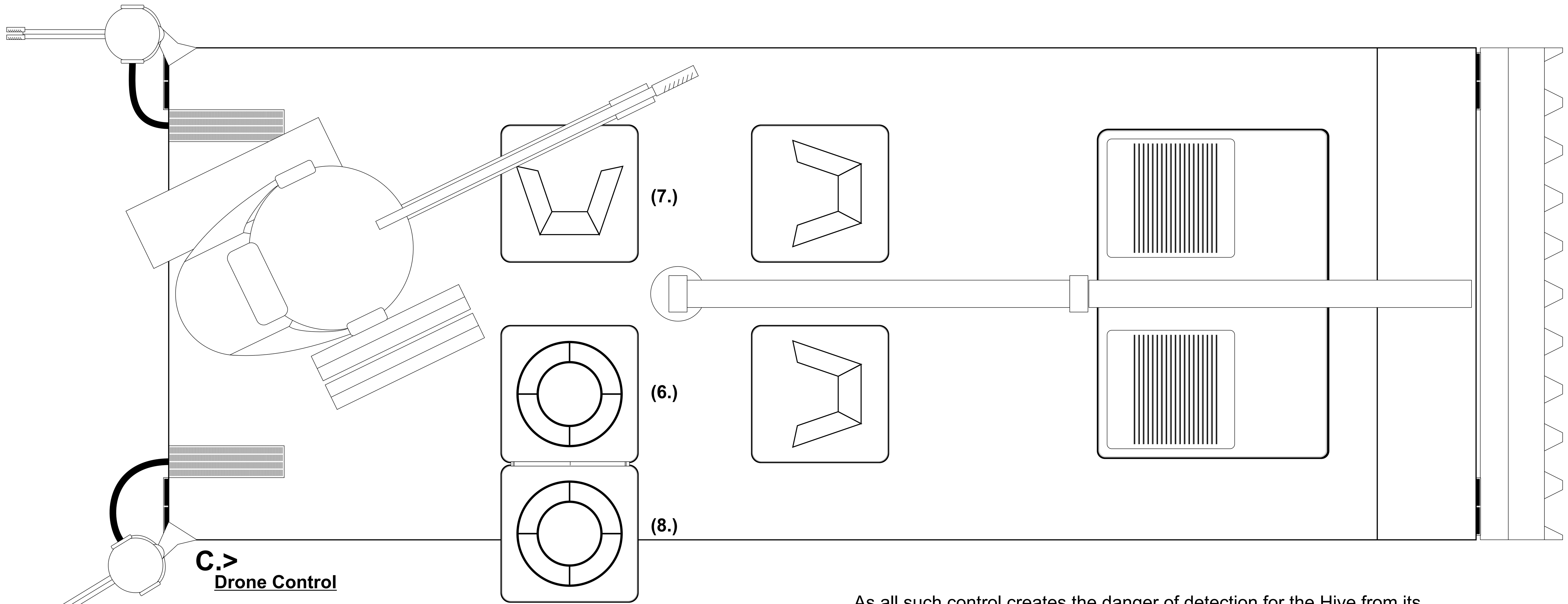
Two doors instead of a troop ramp (1.), so part of the interior is better shielded for a two-man rear crew of operators on state-of-the-art workstations.

In keeping with experiences of Russians in Ukraine, abandoning their state-of-their-art equipment, much of the technology is built into rugged portable, folding workstations (2.) for a quick getaway. Here, adapting some of the technology concepts from the Rumbler, we may have a large keyboard workstation with a pair of large screen folded out of the lid. If they have to be abandoned they have the Bond standard “Halt and catch fire” self-destruct mode.

Other tool boxes and kits (3.) store spares, spare parts and drones. Eventually there may be a capacity for a small scale 3D printer within for minor part replacements on-site.

Racks of drones and weapons for them (4.) will be squeezed in where appropriate.

The external guns (5.), when in automatic shoot mode, will need to be told how to distinguish friend from foe flying towards the vehicle.



C.> Drone Control

Smaller drones may be launched and retrieved from the roof of the vehicle via a lift (6.) beside a viewing and access hatch (7.) for one of the operating crew.

The lift has its own shield hatch (8.) to serve as outer landing pad for drones to seek and land automatically. When not in use, before or after a drone launch, this closes to seal and shield the lift.

Remote drone control, between a Hive and standard Battleaxe, may allow the Hive to oversee and guide suicide drones launched from the standard Battleaxe missile bay. Similarly the Hive acts as a communications relay post where drones are used for long range out of line-of-sight contact with distant teams/personnel. For example, a remote observer or distant drone.

As all such control creates the danger of detection for the Hive from its electromagnetic emissions these may be relayed outwards by using relay drones, a separate trailer or remote, disposable, aerials placed away from the vehicle when it is parked under cover.

It is assumed that all function of all Battleaxe vehicles will be in accordance with the principles of mutual cover and support and that, except in the hands of boldly ambitions boys and girls of the Special Forces on their own solo jaunts, they will be sufficiently in number and equipment to handle anything reasonable thrown towards them.

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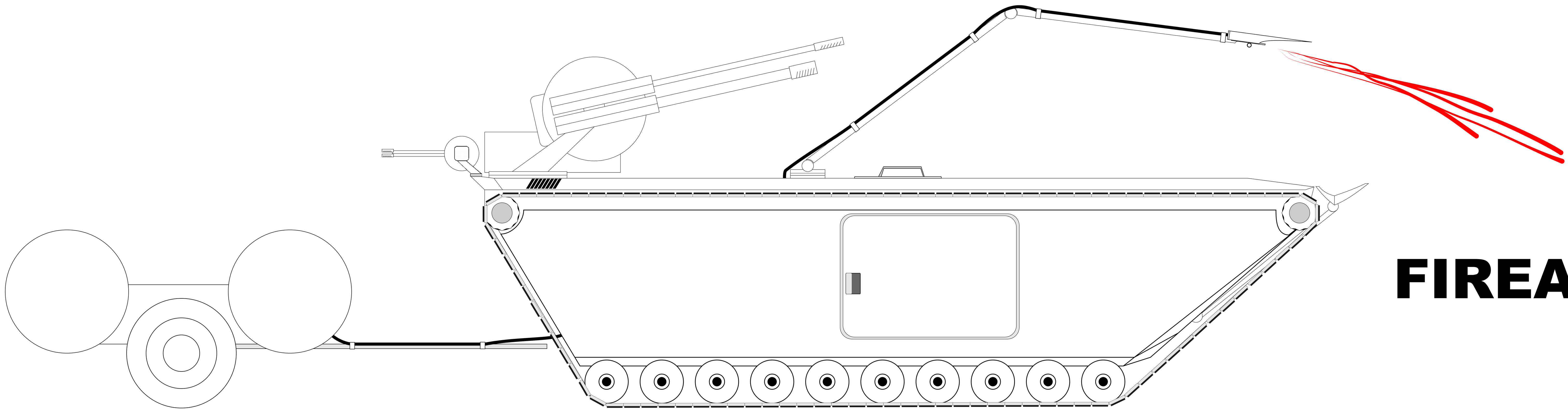
HOBART'S BATTLEAXES

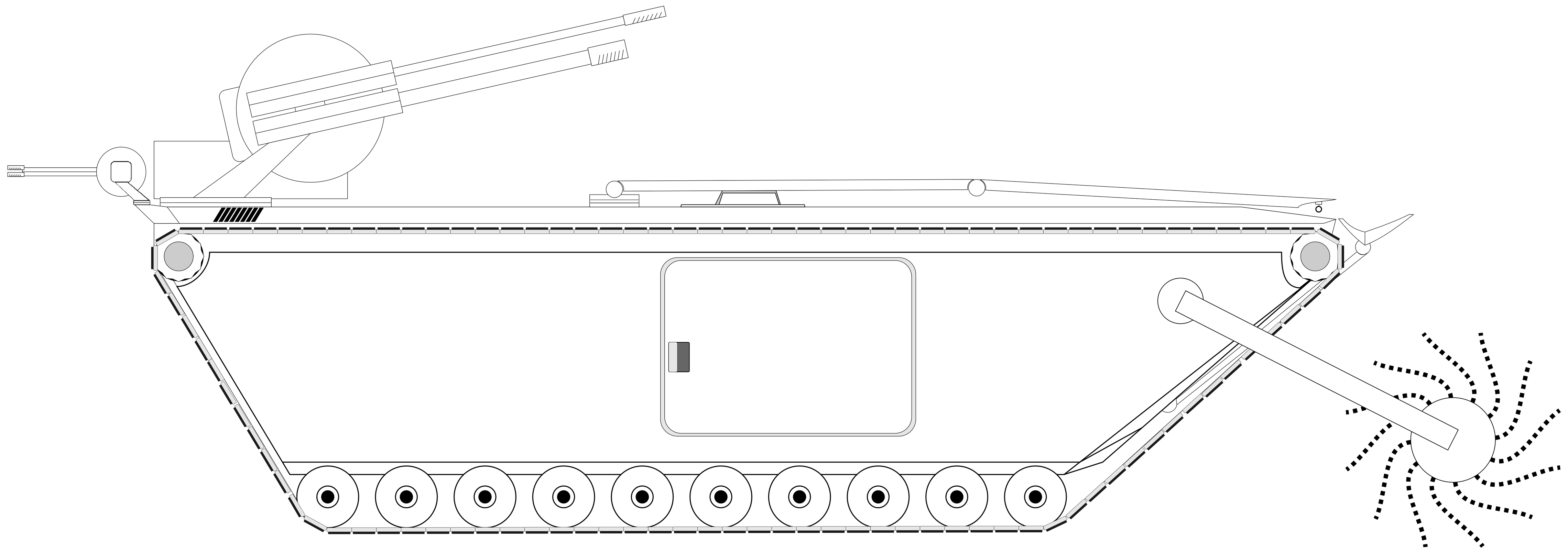
Modularity in the extreme may take its inspiration from "Hobart's Funnies" of 1944, the various forms of tank used to help British and Commonwealth troops on D-day.

The most notable of these were the flamethrowing Crocodile tank and the mine-clearing flail tank.

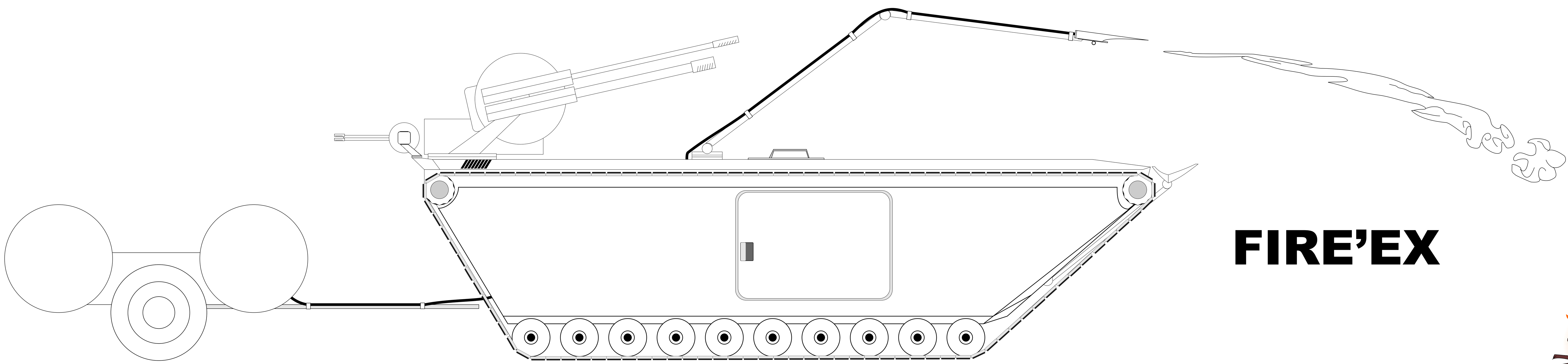
The modularity of Battleaxe might have similar potential to offer such options as part of its core design.



FIREAXE



FLAILAXE



FIRE'EX

BATTLEAXE (SPV)

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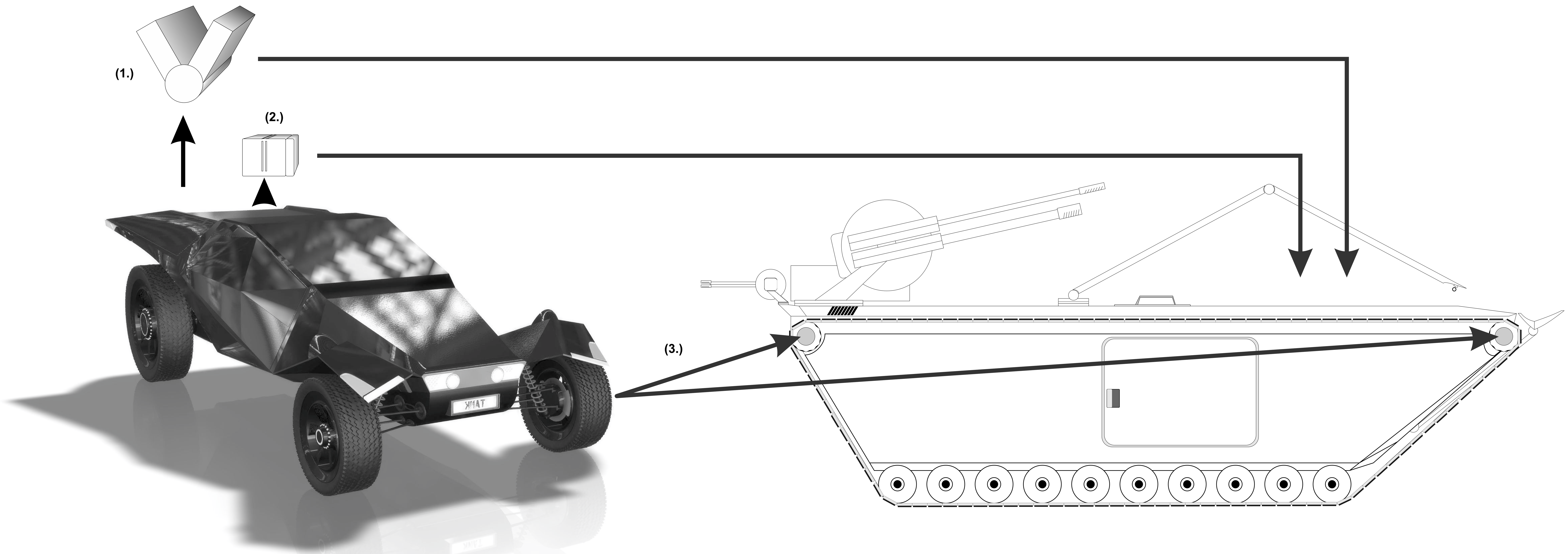
RUMBLER SPORT TANK

Part of the underlying design thinking in the Battleaxe comes from the design of the Rumbler Sport Tank. In this sense a number of core technologies being designed for the Sport Tank can be shared with the Battleaxe. Benefits for this include reduction of long term development costs as the world-wide sale of the Sport Tank in the civilian market will recoup the investment in these core technologies, and thus reduce the overall costs of development in the Battleaxe.



RUMBLER SPORT TANK

BATTLEAXE

<u>Common Rumbler Components</u>

The largest component to share is the high performance engine (1.) from the Sport Tank. Intended to deliver upto 1500 horsepower for a 3-ton supercar this ought to be ample for a Battleaxe.

Alongside this is the regenerative hydrogen fuel cell (2.) for electric vehicle operation in urban environments, which is transferred to the Battleaxe for stealth approach/evasion and other activities.

As the Battleaxe is electric driven, with the engine serving only to generate power, the front electric motors on the Sport Tank (3.) will serve to drive the tracks on the Battleaxe.

Internally, NOT ILLUSTRATED, a variety of computer sensors augmented reality options, communications, controls and other devices may be shared between the two vehicles.

The Sport Tank design features a number of active sensors and self-defense concepts for use by its VIP owners in their personal security needs that may be adapted for Battleaxe.

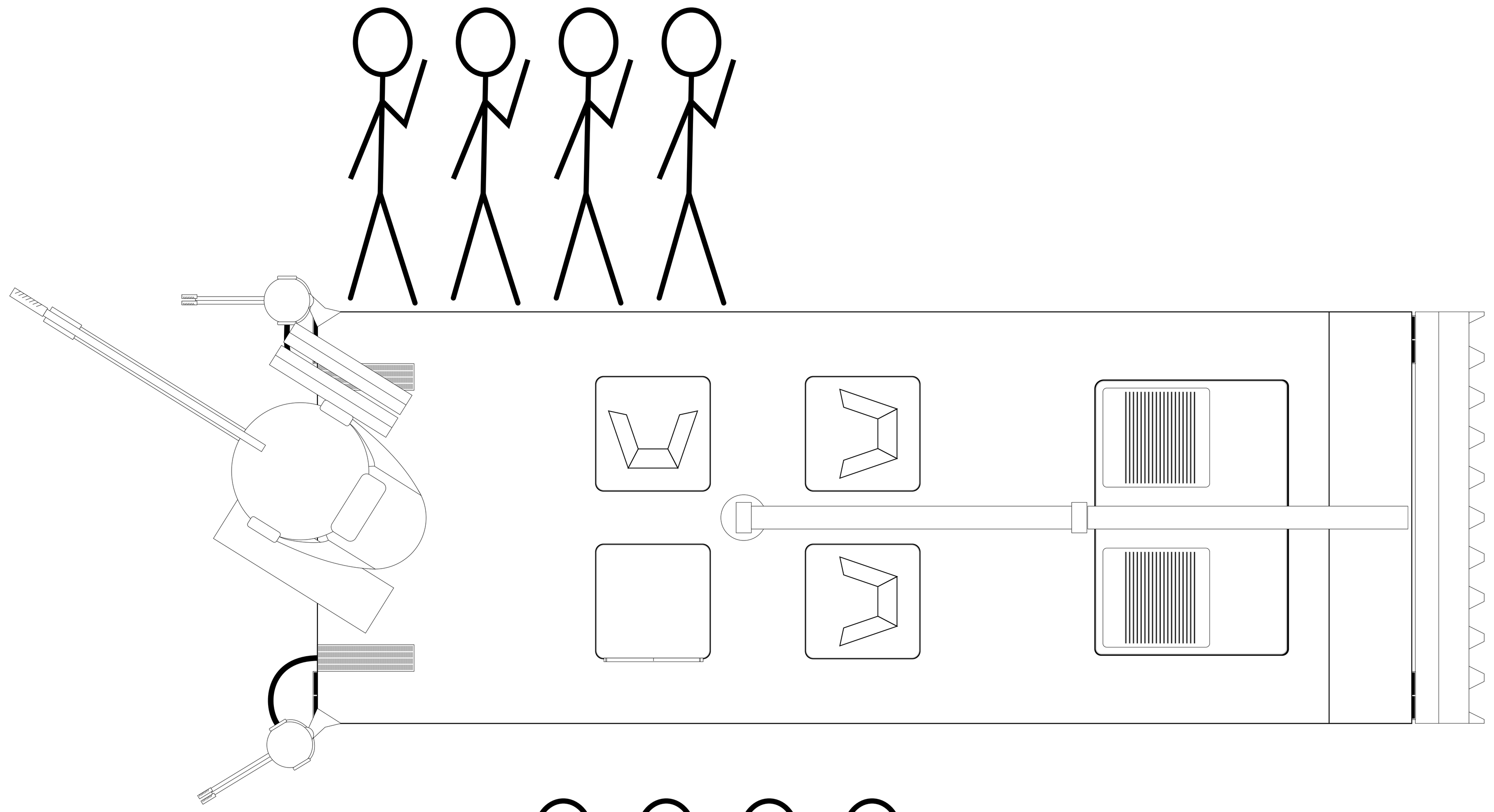
NOTE; that some elements of the Battleaxe may be shared with military variants of the Sport Tank.

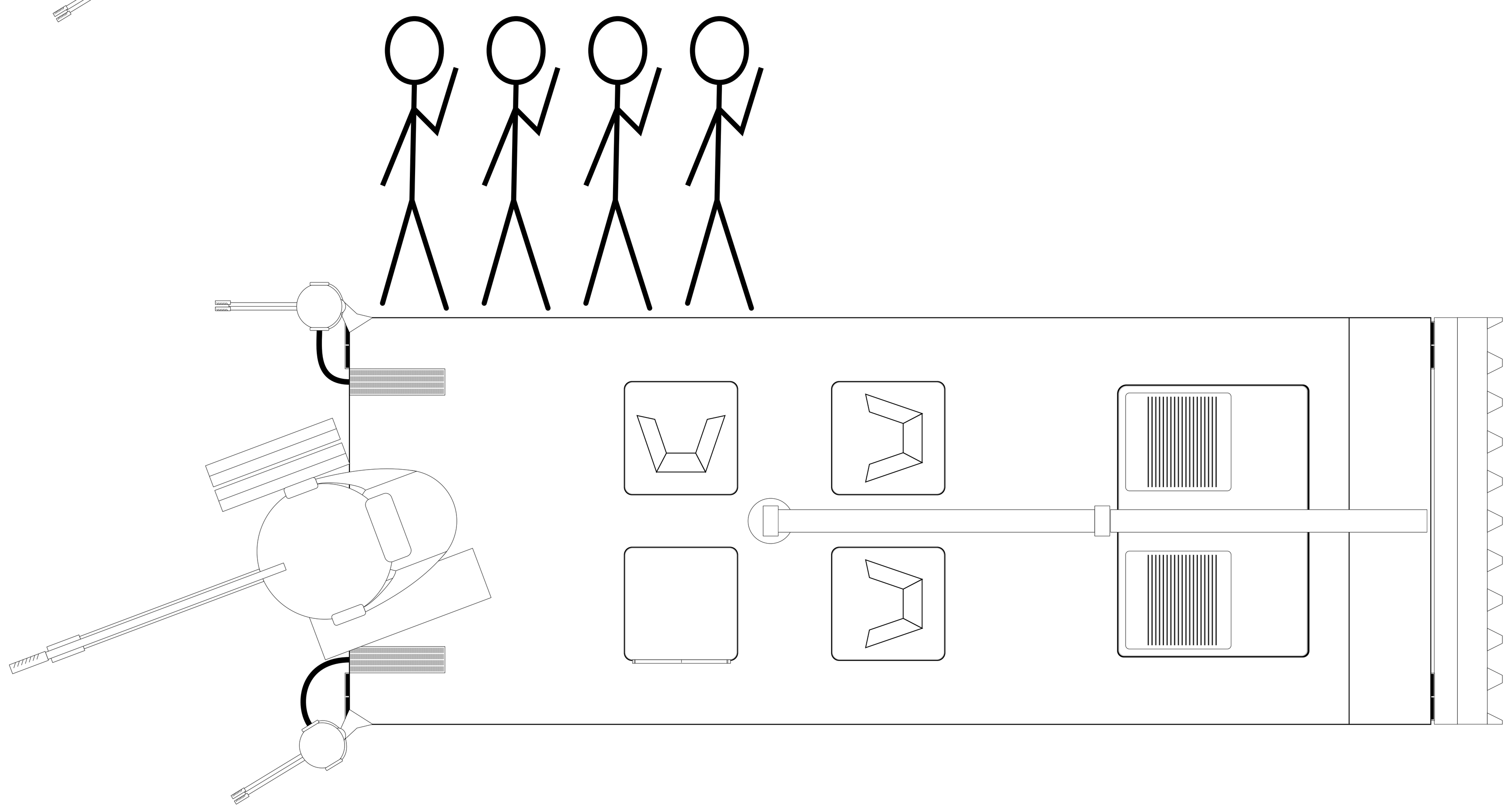
The business model proposed here allows the civilian market to absorb some of the final costs of manufacture and delivery of the core technologies after early development.

Advanced synthetic/composite materials may also be shared.

BATTLEAXE (SPV)

RUMBLER CARS - MINK - BRITISH ARMY VARIANT LIGHT TANK
SPV - STRIKE PATROL VEHICLE

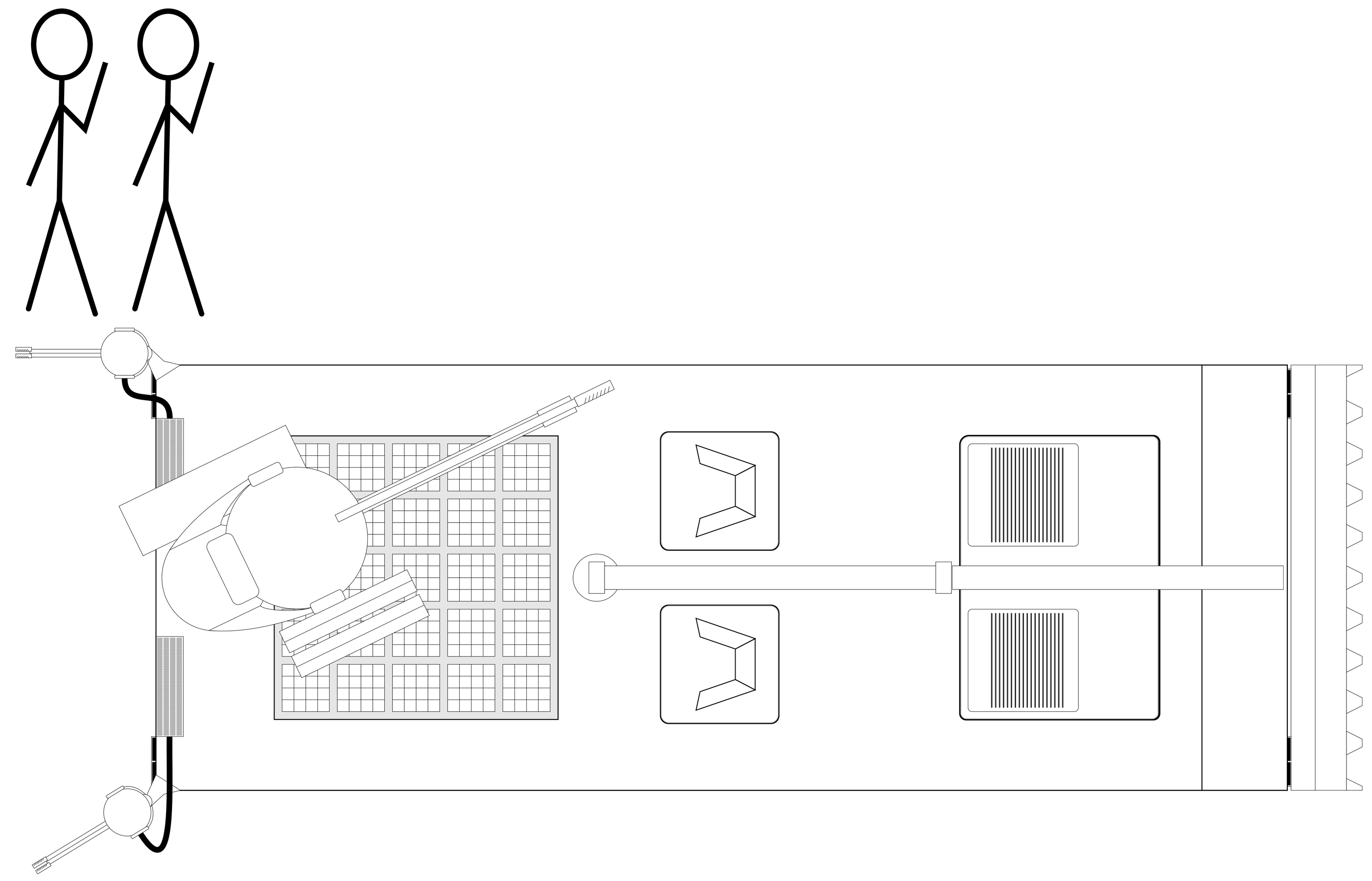




A.> BATTLEAXE DEPLOYMENT

Obviously this will not deploy alone in the modern battlefield. Teams will form with a number of Battleaxes and variants.

Here is one suggestion based around a deployment of two versions, Battleaxe and Drone Hive, for a troop/section of 12 personnel with four vehicles.



B.> Section/Troop Deployment

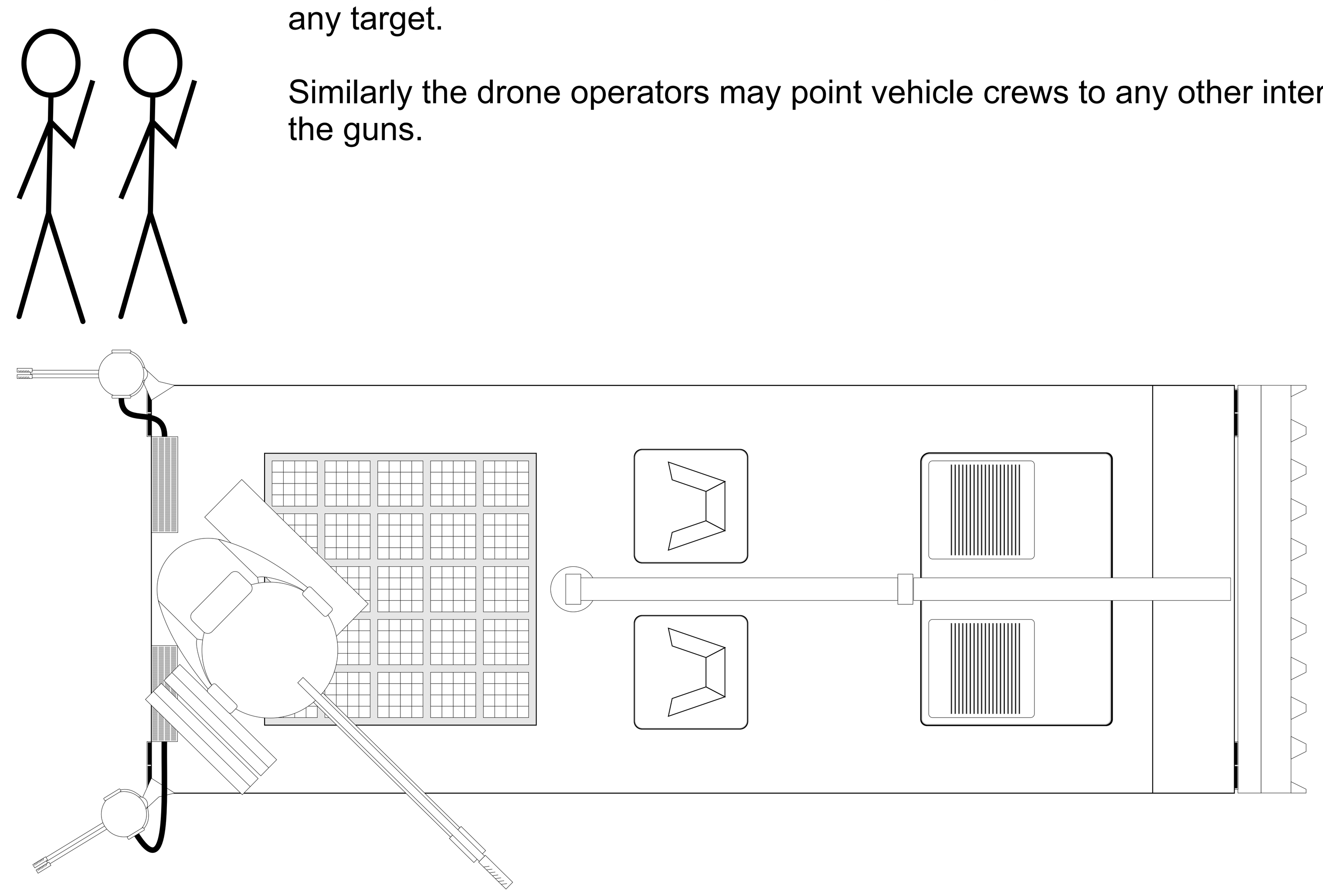
Two Battleaxes are crewed by two-man teams, forming the main armament of the section/troop with their banks of missiles (800 total on two vehicles).

The other two vehicles are crewed by 4-man teams to mount and operate a range of area-scanning drones sweeping ahead of and around the team for hundreds or thousands of yards.

All crew, from both types of vehicles, have direct access to the launch boxes in the missile banks.

Thus any drone operator can call instantly on any missile available to the team and direct it against any target.

Similarly the drone operators may point vehicle crews to any other interesting location for attention of the guns.



C.> Collective Firepower

Just to be clear, this 12 man team is now distributed across four vehicles rather than, as with a regular infantry section, being cramped into one vulnerable vehicle.

The intention is to give them the maximum firepower and heightened chances of survival in forward confrontation and high mobility conditions.

The reactive defences of the vehicles should ensure that the majority or all attacks directed against the team are fended off, while they have ample resources to strike back and overwhelm any comparable opposition defences.

The scope of firepower here includes (barring personal weapons): 800 x 2.5 inch missiles in two banks, approximately 64 missiles attached to heavy weapons mounts (4 x 16 tube packs), 4 x 0.5 inch long range machine guns*, 4 x 40mmm grenade launchers, 8 x 5.7mm self-defence machine guns, assorted drones, assorted energy emitter weapons (to be arranged), plus long distant communications to call on remote fire support and air support when needed. Optional (8) sniper rifles at the end of the crane arms to be considered.

* 0.5 inch machine guns should also be capable of single shot sniping.

