



INDUSTRIAL · CS-510

REPLANT THE BURN — FROM THE AIR

A pneumatic seed-pod launcher, retuned to gentleness. Pods down, evidence back.

INDEX · SEAT · CHARGE · FIRE · RESET

PATENT PENDING

RADIO AND GNSS PERMITTED — CIVIL WORK MACHINE

~0.8 BAR

WORKING PRESSURE — ~1/40 OF
THE DEFENCE LINE

Ø40 MM

SEED-POD DIAMETER CLASS

8 G

POD MASS — SEED, MEDIUM AND
SHELL

2 PODS/S

FIRE CADENCE — ONE POD PER
CYCLE

OVERVIEW

THE FLEET'S LAUNCH PHYSICS, RETUNED FOR A LIVING PAYLOAD.

Part of the **4-system Industrial line** — shares its envelope and doctrine with Skimmer, Sprayer, Spot Sprayer.

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The Seeder is an uncrewed aerial reforestation platform: a moulded-polymer multirotor carrying a gravity-fed magazine of biodegradable seed pods and a downward-firing pneumatic barrel. It flies a compiled block plan over burned or cleared ground, fires pods to embedment velocity, and logs every shot.

It anchors the Industrial line because it is the clearest possible statement of what the line is: the same pneumatic launch engineering that drives the defence fleet, run at roughly one-fortieth of the pressure — closer to agricultural pneumatics than to any weapon. The design driver is inverted top to bottom. The defence question is whether electronics survive a launch; the Seeder's question is whether a living seed and a friable shell do. The launcher is engineered to be gentle, because gentleness is the requirement.

The machine's real product is not the flight — it is the record. Every pod fired is logged with GNSS position and measured muzzle velocity, building an auditable as-seeded map of the block: proof, pod by pod, that the prescription was executed. Species and seed prescriptions stay where they belong — with the client's forester and the provincial standard, never with us.

THE INVERSION

EVERY OTHER LAUNCHER ASKS WHAT SURVIVES. THIS ONE ASKS WHAT GROWS.

A defence round is built to take punishment; a seed pod is built to take root. Same barrel discipline, same shot-to-shot consistency obsession, opposite requirement — the acceleration ceiling is set by seed viability, and the launcher is designed down to it.

HOW IT WORKS

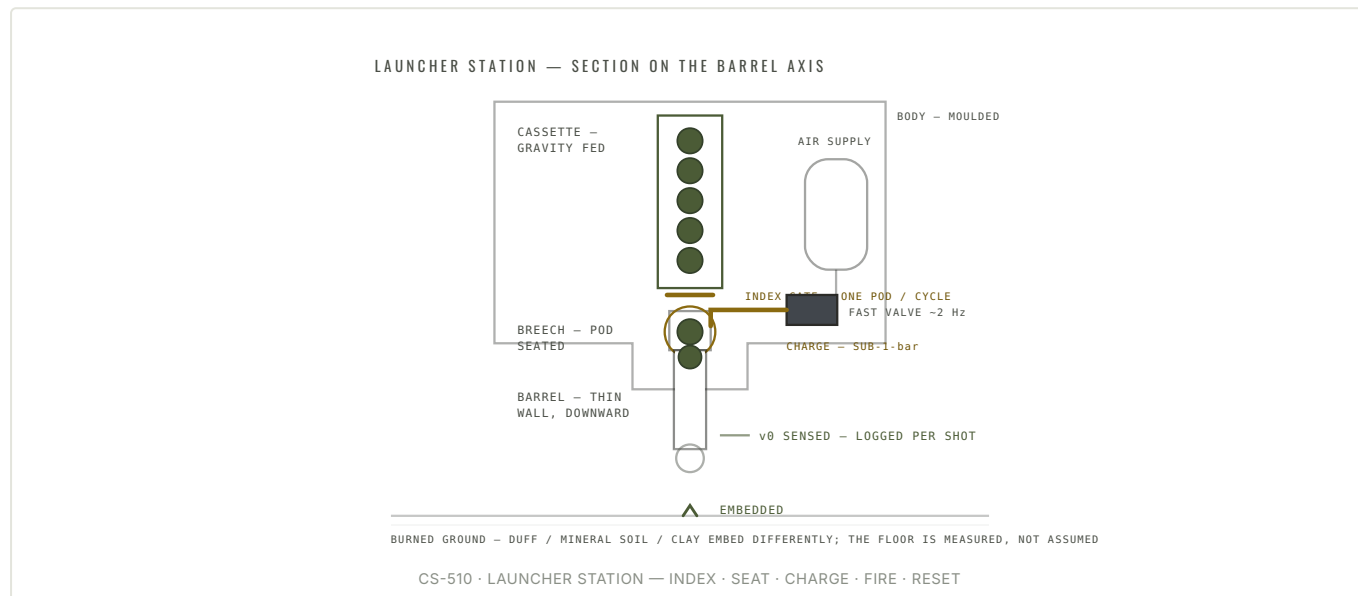
MECHANISM

ONE POD PER CYCLE — GRAVITY, AIR AND A GATE

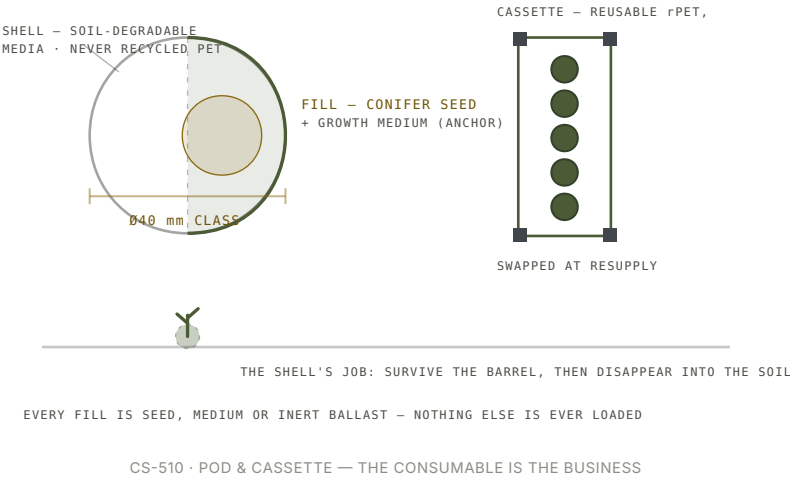
A cassette of pods sits directly over the barrel axis. Each cycle, the index gate releases one pod into the breech, a fast low-pressure valve admits a sub-1-bar charge behind it, and the pod accelerates down the barrel to embedment velocity — straight down. The breech vents, the gate re-arms; the whole cycle takes about half a second.

The magazine is gravity-fed and mounted on the vehicle centreline, so its mass drains toward the center of gravity shot by shot instead of away from it. Downward firing means each shot's small recoil adds momentarily to lift demand rather than tipping the aircraft. The launcher fires on the compiled block plan, not on an operator's trigger: the operator flies the plan, and the plan fires the pods. A barrel-safe interlock tied to flight state and a no-fire geofence are designed in from the first unit — a work machine earns trust the same way any machine on a job site does.

The governing figure of merit is not power — at these pressures the launcher's whole sortie energy budget is a rounding error next to flight power. It is shot-to-shot repeatability: every pod leaving the muzzle at the same velocity, thousands of times, in cold, in vibration, on a machine that shakes twice a second.



POD — HALF-SECTION · ONE ENVELOPE, MANY FILLS



SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

SEEDER CS-510	
DIMENSIONS & MASS	
Configuration	Multicopter baseline — downward-firing barrel on the vehicle centreline
Barrel bore	Ø45 mm — sized just over the pod
Launcher stroke	0.10–0.30 m — the acceleration-ceiling lever
Sortie pod load	10 kg — ~1,250 pods
PERFORMANCE	
Working pressure	~0.8 bar — ~1/40 of the defence-line operating pressure
Muzzle velocity	40 m/s class — embedment velocity, sensed and logged per shot
Fire cadence	2 pods/s — one pod per cycle, ~0.5 s
Launcher energy per sortie	~16 kJ — flight power dominates the budget
Recoil impulse per shot	~0.32 N·s — adds momentarily to lift demand, never tips the vehicle
Working height band	5–30 m AGL, terrain-following over the block
NAVIGATION & CONTROL	
Command & telemetry	Commercial RF C2 — permitted on this line, used openly
Navigation	GNSS waypoint flight with terrain-following
Firing authority	Plan-triggered — the compiled block plan fires, not an operator trigger
Safety	Barrel-safe interlock tied to flight state · no-fire geofence · ground-crew exclusion
Mission record	Per-shot as-seeded log — GNSS position + measured muzzle velocity
PAYLOAD & APPLICATION	
Pod envelope	Ø40 mm class sphere — seed and growth medium in a soil-degradable shell
Pod mass	8 g
Magazine	Gravity-fed cassette on the vehicle centreline — swapped at resupply
Fill family	Conifer restock · erosion-control blends · deciduous and urban-canopy mixes · inert trainer (bench only)
Role	Aerial reforestation — broadcast and precision seeding; post-wildfire restock, forestry, reclamation, municipal canopy
MATERIALS & CONSTRUCTION	
Structure	Glass-filled nylon, moulded
Non-structural articles	Recycled PET — cassettes, transport trays, ground-station cases
Pod shell	Soil-degradable media — starch / cellulose / compressed-fibre class; never recycled PET
Tooling	Body moulds cut in Canadian Shield's own 5-axis shop
COMPLIANCE	
Patent status	Patent pending
Line classification	Civil work platform — surface Industrial line; radio and GNSS permitted, used openly
Payload scope	Seed, growth medium or inert ballast only — nothing else is ever loaded
Prescriptions	Species and seed — the client's forester and the provincial standard, never Canadian Shield

MUZZLE VELOCITY IS EMBEDMENT-CLASS: DUFF, MINERAL SOIL AND CLAY EMBED DIFFERENTLY, AND THE WORKING FLOOR IS MEASURED ON THE BLOCK, NOT ASSUMED. NO HEADLINE HECTARES-PER-DAY FIGURE IS PUBLISHED — DAILY COVERAGE IS GOVERNED BY OVERSOW FACTOR, CASSETTE RESUPPLY CADENCE, AIRFRAME CONFIGURATION, WIND AT WORKING HEIGHT, TERRAIN AND SOIL ACROSS THE BLOCK, AND THE FLIGHT RULES FOR LONG AUTONOMOUS LINES; RESUPPLY CADENCE, NOT FIRE RATE, SETS THE PACE.

THE TRADES, STATED

ONE SHOP FLOOR. TWO PAY-CHEQUES.

Canadian Shield's thesis is that manufacturing is the decisive capability. The Seeder is that thesis earning a civil living: the same sovereign Canadian production base, pointed at reforestation instead of defence.

The overlap is physical, not rhetorical. The 5-axis shop that cuts moulds for the defence fleet cuts the Seeder's body moulds. The moulded glass-filled-nylon structural grammar, the recycled-PET rules for non-structural articles, the shared payload-mount discipline, the pneumatic-launch engineering — all of it is one engineering canon amortised across both lines. Civil revenue and defence readiness draw on the same tooling, the same materials rules and the same machines, which is exactly the point.

And up here, the estate's radio boundary runs the other way. The no-radio rule governs the defence, underground and tethered platforms without exception — but the Industrial line is the surface civil exception where radio and GNSS are permitted, and the Seeder uses both openly: commercial RF for command and telemetry, GNSS for waypoint flight and for the as-seeded record that is the product. A farm block is not a jammed battlefield, and we do not price it like one.

DEPLOYMENT

PRESCRIPTION IN. AS-SEEDED RECORD OUT.

A Seeder job is a loop, not a flight: the forester's prescription compiles into a block plan, the machine executes it pod by pod, and what comes home is evidence. Here is the day, end to end — illustrative of how the machine works a block, not a job record.

01 · ARRIVE

THE BLOCK PLAN COMPILES

The crew arrives by truck: aircraft, ground station, charged cassettes in their transport trays, pods kept cold and dry. The client's prescription — species, density, zones to hit and zones to leave — compiles into a block plan with the no-fire geofence drawn in. Species and density are the forester's call and the provincial standard, never ours; crew lanes and standoffs are set before the first rotor turns.

02 · WORK

THE PLAN FLIES, THE PLAN FIRES

The Seeder flies terrain-following lines over the burn at working height, firing on the compiled plan — one pod per cycle, straight down, each shot logged with position and measured muzzle velocity. Empty cassette, home, swap, relaunch: the resupply loop is the day's real tempo. The operator flies the plan, watches the machine and owns the exceptions; the machine puts the pod where the plan says, and proves it did.

03 · RECOVER

CASSETTES HOME, EVIDENCE DELIVERED

At day's end the reusable articles leave with the crew — cassettes, trays, cases, back for the next block. The pods stay, already breaking down into the soil. The client gets the as-seeded record: an auditable, pod-by-pod map of exactly what was executed, ready for their own verification survey. What leaves is the machine and every reusable article; what remains is seed, medium and a shell built to disappear.

THE CONSUMABLE LOGIC

THE MACHINE IS THE RAZOR. THE POD IS THE BLADE.

A Seeder flies for years; pods are consumed by the thousand per hectare. The platform's economics live in the consumable stream — pods, cassettes and the resupply loop — which is why the pod envelope is specified once and the fill family grows underneath it. Commercial structure is design intent, stated plainly: no unit has been priced, offered or sold.

THE FAMILY

RELATED SYSTEMS

CS-520 · INDUSTRIAL LINE SKIMMER The next machine on the line — same moulded-structure grammar and materials canon, pointed at a different job.	CS-560 · INDUSTRIAL LINE SPRAYER Aerial application on the same surface civil line, where radio and GNSS are permitted and used openly.	CS-561 · INDUSTRIAL LINE SPOT SPRAYER Precision aerial application — and the same refusal to publish a coverage number without its governing variables.
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Seeder CS-510 · patent pending · a civil work platform on the surface Industrial line, where radio and GNSS are permitted and used openly. It carries biodegradable seed pods — seed, growth medium or inert ballast, nothing else, in any variant, ever: a seeding work machine with no terminal-effect system of any kind. Species and seed prescriptions belong to the client's forester and the provincial standard, never to Canadian Shield.



REPLANT THE BURN — FROM THE AIR

SEEDER · INDUSTRIAL · CS-510

The machine is the razor. The pod is the blade.

01 REQUEST A TECHNICAL EXCHANGE

A working session with engineering, not sales — bring your engagement problem, we bring the mechanism.

02 REQUEST THE INDUSTRIAL FAMILY DATA PACK

Drawings, tolerances and test basis for Seeder and its siblings, gated behind export screening.

03 DISCUSS A TRIAL QUANTITY

Tell us end-user, jurisdiction, quantity band and timeline — we respond against your program, not a price list.

SALES

sales@cdnshield.ca

GENERAL

info@cdnshield.ca

WEB

cdnshield.ca

Direct lines, named points of contact and facility details are shared with qualified programs following screening — not withheld, sequenced.

Canadian Shield is a defence and industrial drone company, backed by SIG: four-domain uncrewed systems built for jammed, GPS-denied environments — no-radio by design, manufactured for cost and salvo depth.

Seeder CS-510

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Product specification R1.0 · 2026-08-15 · © Canadian Shield, a division of SIG (Sustainable Infrastructure Group).