



UNDERGROUND · CS-450

THE MACHINE YOU CAN AFFORD TO LOSE

It maps, it marks, it parks. Cheap enough to send in numbers.

RECON · ROUTE MAPPING · TERMINAL MARKING · ATTRITABLE TIER

PATENT PENDING

EXPORT-CONTROLLED — INTERNATIONAL TRANSFER SUBJECT TO CANADIAN GOVERNMENT PERMITS

MAPPER AND MARKER — NO WARHEAD, NO FUZE, NO ENERGETIC MATERIAL, NO SELF-DESTRUCT

~1.2 KG

ALL-UP CHASSIS MASS

~0.3 M/S

CRUISE SPEED ON PRESET
GUIDANCE

~2 HR

ONE-WAY MISSION ENDURANCE

0

RADIO OR GPS LINKS ABOARD —
NOTHING TRANSMITTING

OVERVIEW

THE ATTRITABLE TIER. BUILT TO BE SENT, NOT RECOVERED.

Part of the **7-system Underground line** — shares its envelope and doctrine with Badger, Aquifer, Ferret.

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Gopher CS-450 is the underground family's cheap, mass-producible, one-way mapper and marker — the platform you send into ground you are not confident you will get back, because by design it does not need to come back. It parks in place as a terminal marker at the end of its run rather than attempting recovery.

It does not dig or bore. Gopher moves through existing voids, passages and loose ground — the same category of space the family's Ferret, Mole and Muskrat platforms work — on preset guidance alone, mapping and marking as it goes. Where Badger and Aquifer make the hole, Gopher is built for the holes and passages that already exist, at a unit cost low enough to treat as consumable.

The heritage under it is the same heritage under the rest of the underground line: Canadian Shield's parent group carries three decades of horizontal-directional-drilling practice — knowing where a downhole tool is, and keeping it moving, without radio. Gopher inherits that discipline in miniature, in a chassis built to be cheap enough to lose.

THE CLAIM

SEND THE ROBOT DOWN THE HOLE.

In its most literal, cheapest form: a machine you can afford to lose is a machine you never have to risk a person to recover. Gopher is that machine — a mapper and marker, never a strike platform, sent where the cost of losing it is nothing next to the cost of sending a person instead.

HOW IT WORKS

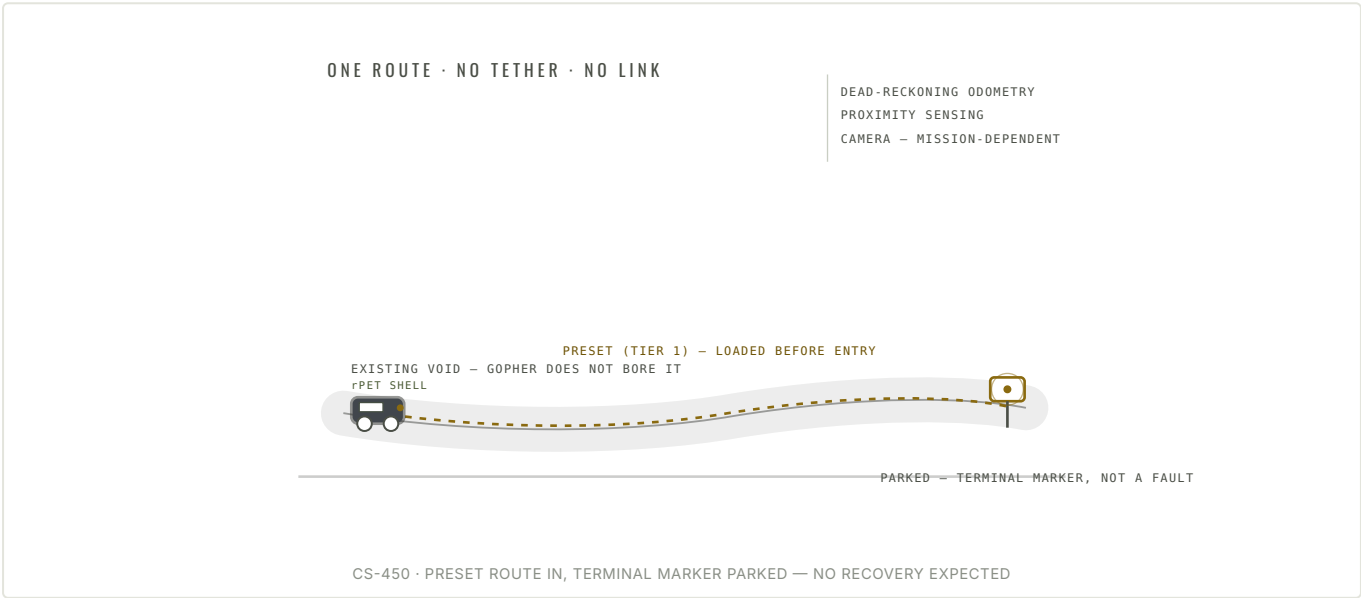
MECHANISM

NO TETHER, NO LINK — A ROUTE LOADED ONCE

Gopher carries a minimal sensor suite — basic mapping and positioning by dead-reckoning odometry, a simple proximity sensor, and where the mission calls for it a compact camera — enough to log a map and position trail as it advances, not enough to add cost the mission doesn't need.

Guidance is preset only — the family's Tier 1: a route is loaded before entry and the unit runs it. There is no fibre tether and no real-time human-in-the-loop control, because the mission is one-way by design: nothing needs steering mid-run that preset planning and onboard dead-reckoning can't already resolve. No radio, no GPS — nothing to jam because there is nothing transmitting.

At the end of the run — route complete, or the passage goes no further — Gopher simply stops and parks. That is not a fault state. It becomes a physical, findable terminal marker at that exact location, by design. The recycled-PET body — reclaimed, flaked and dried, moulded on Canadian Shield's own dies, with qualified virgin resin held back only where structural integrity demands it — is what keeps the unit cheap enough to send and leave.



SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

GOPHER CS-450	
DIMENSIONS & MASS	PERFORMANCE
Configuration	Small wheeled/tracked crawler — one-way mapper/marker
Chassis footprint	~180 × 90 × 70 mm
All-up mass	~1.2 kg
	Cruise speed ~0.3 m/s
	Mission endurance ~2 hr run, one-way
	Mission profile One-way — no recovery attempt as the design default
	Terminal behavior Parks in place as a findable terminal marker at run's end
	Recovery A deliberate, separate operation if wanted — never a default expectation
DRIVE & GUIDANCE	SENSORS & MAPPING
Drive type	Skid-steer micro-drive — 4 wheels or micro-tracks
Guidance tier	Preset (Tier 1) only — route loaded before entry
Tether & link	None — no fibre tether, no real-time link
Mid-run correction	None, by design
	Sensor suite Dead-reckoning odometry · proximity sensing
	Camera Compact camera — mission-dependent
	Mission product Map and position trail, logged as the unit advances
	Energetic material None — no warhead, no fuze, no self-destruct function
MATERIALS & CONSTRUCTION	SIGNATURE & POWER
Body / shell	Recycled PET — reclaimed, flaked and dried
Structural resin	Qualified virgin resin, held back only where structural integrity demands it
Tooling	Moulded on Canadian Shield's own dies
Cost positioning	Attributable-tier — cheap enough to buy and use in numbers
	Battery Small single-use-sized cell — sized to the one-way run
	Emissions None — no radio, no GNSS, in any guidance tier
	Jamming surface None — nothing transmitting
COMPLIANCE	
Patent status	Patent pending
Export control	Export-controlled — international transfer subject to Canadian government permits; export posture is counsel-first
Classification	Mapper and marker, not a munition — no energetic material of any kind, in any configuration
Boring & tunnelling scope	Badger CS-410 · Aquifer CS-411 — Gopher works passages that already exist

NO UNIT PRICE IS PUBLISHED — ATTRIBUTABLE-TIER COST POSITIONING IS STATED QUALITATIVELY. GOPHER DOES NOT DIG OR BORE: BORING AND TUNNELLING HARDWARE IS BADGER CS-410 AND AQUIFER CS-411 SCOPE AND APPEARS NOWHERE ON THIS PLATFORM.

THE TRADES, STATED

ATTRITABLE IS AN ECONOMICS WORD. NOT A SELF-DESTRUCT ONE.

"Attritable" here means exactly one thing: cheap enough, in cost and in a one-way mission profile, to lose without it costing the mission. It does not mean the unit carries a charge, self-destructs, or has any explosive or energetic function. Gopher has none — no warhead, no fuze, no energetic material, anywhere, in any configuration. It is a mapper and a marker, never a strike platform, whether it comes home or not.

The economics run parallel to the Air family's cheap expendable scout tier — the same salvo-depth logic: cheap enough to buy and use in numbers, so a unit lost to bad ground is a line item, not a setback. The recycled-PET body ties that economics directly to the group's sustainable-manufacturing thesis — the same recycled-content discipline the group publishes for its own forward manufacturing cell: recycled feedstock where it is right, qualified resin where structure depends on it.

And it carries the family's central line in its plainest form: send the robot down the hole, not the soldier. Here that means sending a machine cheap enough that no one is ever tempted to send a person in after it.

THE ECONOMICS

A LINE ITEM. NOT A SETBACK.

Cheap enough to buy and use in numbers, so a unit lost to bad ground is a line item, not a setback — and cheap enough that no one is ever tempted to send a person in after it. The recycled-PET body is what makes that arithmetic work.

DEPLOYMENT

A ONE-WAY RUN, WALKED THROUGH.

One run, walked end to end — illustrative of how the crawler is used, not a mission record.

01 · ARRIVAL

HAND-LAUNCH AT THE PASSAGE ENTRY

Gopher arrives by hand-launch or simple insertion at the mouth of the passage or void. The preset route is loaded before entry — the mission is planned once, on the surface, with no expectation of mid-run correction. No link check happens because there is no link.

02 · WORK

THE ROUTE, RUN ONCE

Gopher advances the one-way route on preset guidance alone, logging a map and position trail as it goes — dead-reckoning odometry, proximity sensing, and a camera where the mission calls for one. No real-time control link is needed because none is expected to be needed; the mission was resolved before the unit ever entered the ground.

03 · TERMINAL STATE, NOT RECOVERY

IT PARKS. THAT'S THE PLAN.

Gopher is not retrieved as standard practice. At the end of its route — or wherever the passage stops it — it parks in place as a designed, findable marker. Recovery, if wanted, is a deliberate, separate operation, never a default expectation. The unit's job ends the moment it stops.

THE FAMILY

RELATED SYSTEMS

CS-410 · MAKES THE HOLE BADGER One of the family's two hole-making platforms. Gopher does not dig or bore — Badger does.	CS-411 · MAKES THE HOLE AQUIFER The other half of the family's hole-making pair.	CS-420 · EXISTING GROUND FERRET Works holes and passages that already exist — the same category of space Gopher maps and marks.
CS-430 · EXISTING GROUND MOLE Another of the six platforms that work existing voids and passages rather than making them.	CS-440 · EXISTING GROUND MUSKRAT Works the family's existing-ground side of the split, alongside Ferret and Mole.	CS-460 · EXISTING GROUND FARELL PIG The sixth of the platforms that work holes and passages that already exist.

Gopher CS-450 · patent pending · export-controlled — international transfer subject to Canadian government permits; export posture is counsel-first. A mapper and marker for existing ground — never a strike platform. No warhead, fuze or energetic material of any kind, in any configuration, including its expendable or attritable one; no self-destruct function. No radio and no GPS in any guidance tier. Boring and tunnelling are Badger CS-410 and Aquifer CS-411 scope — Gopher works passages that already exist.



THE MACHINE YOU CAN AFFORD TO LOSE

GOPHER · UNDERGROUND · CS-450

A line item. Not a setback.

01 REQUEST A TECHNICAL EXCHANGE

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

02 REQUEST THE UNDERGROUND FAMILY DATA PACK

Drawings, tolerances and test basis for Gopher 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.

Gopher CS-450

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