



UNDERGROUND · CS-420

IT GOES DOWN THE HOLE SO THE SOLDIER DOESN'T

Recon, mapping and locating in existing tunnels and culverts — with a block-only interpose capability, always human-confirmed.

RECON · MAPPING · LOCATING · INTERPOSE — NEVER A STRIKE

PATENT PENDING

EXPORT-CONTROLLED — INTERNATIONAL TRANSFER SUBJECT TO CANADIAN GOVERNMENT PERMITS

INTERPOSES, NEVER STRIKES

~25 KG

CHASSIS MASS

~450 MM

MINIMUM PASSAGE DIAMETER IT
CLEARS

0

WARHEADS, FUZES OR ENERGETIC
MATERIALS — ANY VARIANT

1

HUMAN CONFIRMATION REQUIRED
BEFORE ANY PHYSICAL
ENGAGEMENT

OVERVIEW

IT DOESN'T DIG. IT GOES WHERE THE HOLE ALREADY IS.

Part of the **4-system Underground line** — shares its envelope and doctrine with Badger, Mole, Trembler Line.

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Ferret CS-420 does not bore. Badger and Aquifer make the hole; Ferret works holes and passages that already exist — tunnels, culverts, storm sewers, service crawlspaces. Its job is recon, mapping and locating in confined dark spaces where GPS is physically impossible and radio dies in the rock before it gets anywhere.

On a confirmed cue from the Trembler Line system (CS-435) — the buried seismic picket that strings Mole CS-430 nodes along a perimeter and detects, localizes and cues — Ferret can move to a position ahead of an intrusion's path and hold the passage. It **interposes**. It does not strike. It is the only platform in the underground family built to physically confront a threat, and it does that purely by being in the way, in a passage too narrow to go around, under a human's confirmation before anything moves.

That is the family doctrine, stated plainly for the one platform that touches an adversary: send the robot down the hole, not the soldier. A crawler goes first into a dark passage instead of a person doing close-quarters tunnel clearance — and if the mission ever calls for a block, the crawler holds the line so nobody has to stand in the gap themselves.

THE CLAIM

INTERPOSE. NEVER STRIKE.

Ferret's only "effect" is its own mass, parked in a passage. Nothing detonates, nothing fires, nothing is thrown. Autonomy is capped at the map: Ferret can build its own passage map and creep it on SLAM, but it cannot decide, on its own, to move into a block position. Engagement autonomy does not exist — a human confirms before any physical engagement, every time.

HOW IT WORKS

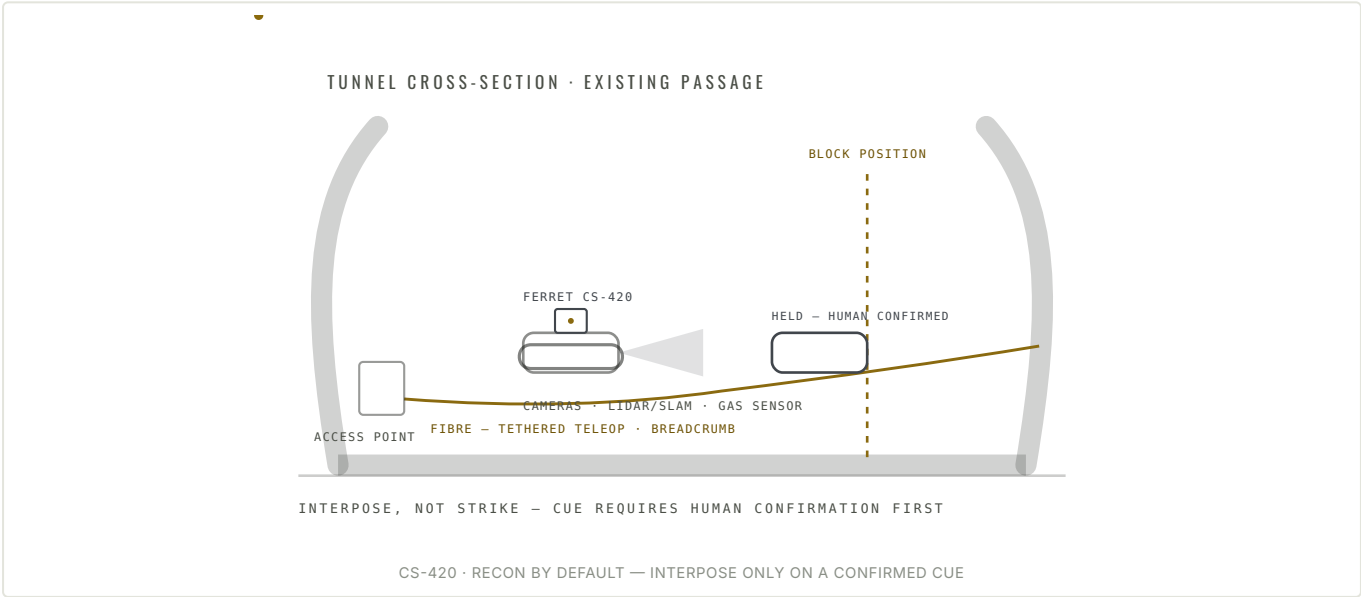
MECHANISM

A CRAWLER SIZED FOR THE PASSAGE, NOT THE FIGHT

A small tracked crawler, sized to clear the tunnels, culverts and service passages it is built for, carries forward and aft cameras, a LIDAR/mapping unit for building a live passage map, and a gas sensor package for confined-space safety — its own and any human's who follows it in.

Guidance runs the family's no-radio playbook: fibre-tethered teleop is the default, with a human in the loop for every judgment call. Autonomous mapping (SLAM) builds the passage map and lets Ferret creep a known run on its own. That is where the autonomy stops — deliberately. There is no autonomous engagement tier in the design. When a Trembler Line cue arrives over the fibre, Ferret can present a block-position option; a person still has to confirm before it moves into the passage and holds.

The safety chain matches the rest of the fleet: hardwired e-stop, a wired stop over the fibre, and a loss-of-link rule built for confined space — stop, hold, wait, silent. Never push forward blind through unmapped passage.



SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

FERRET CS-420	
DIMENSIONS & MASS	PERFORMANCE
Chassis footprint	~300 mm W × 260 mm H × 520 mm L
Passage clearance	Tunnels/culverts ≥ ~450 mm diameter
Mass	~25 kg
Crawl speed	~0.8 m/s · ~2.9 km/h
Battery endurance	~4 h continuous recon
DRIVE & NAVIGATION	PAYLOAD & EFFECT
Drive type	Tracked, dual electric drive
Tether / fibre spool	~500 m per spool · breadcrumb return
Guidance tiers	Fibre-tethered teleop (default) · autonomous mapping (SLAM)
Autonomy ceiling	Mapping autonomy only — engagement autonomy does not exist
Sensor suite	Forward/aft cameras · LIDAR/mapping (SLAM) · gas sensor (O2/CH4/CO/H2S)
Payload	Sensor suite only — no warhead, fuze or energetic material
Interpose response	Moves to block position on a confirmed Trembler Line (CS-435) cue
Engagement authority	Human confirms before any physical engagement — always
MATERIALS & CONSTRUCTION	SIGNATURE & POWER
Configuration	Tracked crawler — sized for tunnel and culvert clearance, not for a fight
Heritage	Built on the group's three-decade horizontal-directional-drilling fibre-guidance discipline
Emissions in any tier	None — no radio, no GNSS
COMPLIANCE	
Patent status	Patent pending
Export control	Export-controlled — international transfer subject to Canadian government permits; export posture is counsel-first
Munitions classification	Carrier, not a munition — no warhead, fuze or energetic material, in any variant, ever. No autonomous strike capability of any kind.

DOCTRINE-LEVEL FACTS — NO RADIO, MAPPING-ONLY AUTONOMY, CARRIER NOT MUNITION — ARE STATED AS DESIGN COMMITMENTS, NOT MEASUREMENTS; EVERY FIGURE ABOVE TRACES TO FERRET'S OWN ENGINEERING DRAWING PACKAGE.

THE TRADES, STATED

SEND THE ROBOT DOWN THE HOLE. NOT THE SOLDIER.

The underground family splits clean: Badger and Aquifer make the hole. Ferret, Mole, Muskrat, Gopher and the Farell Pig work holes and passages that already exist — they enter, listen in, swim, crawl or ride. Ferret is the platform that goes into a tunnel instead of a person doing close-quarters clearance in the dark, and recon comes back over the fibre, not over a person's own eyes at arm's reach from whatever is down there.

Ferret carries no warhead, no fuze and no energetic material — in any variant, ever. That boundary is binding across the fleet, and Ferret is where it matters most, because it is the one platform designed to physically confront a threat. It does that by being in the way, not by striking. On a confirmed Trembler Line cue, it can hold a passage; a person confirms before it ever moves into that position, and a person confirms again before any physical engagement follows. Autonomy stops at the map: Ferret can build its own passage map and creep a known run on SLAM, but it cannot decide, on its own, to interpose. That decision belongs to a person, every time — mapping autonomy only, never engagement autonomy.

No radio, no GPS, anywhere in the design — rock and soil kill RF outright, so the rule costs nothing to keep. And the family's three-decade horizontal-directional-drilling heritage still frames Ferret's world even though it doesn't bore itself: the same group that has spent thirty years steering tools through the ground blind, without RF, built the fibre-guidance discipline Ferret runs on.

DEPLOYMENT

A TUNNEL LEG, WALKED THROUGH.

One representative tunnel leg, walked end to end — illustrative of design intent, not a mission record.

FAMILY CONTEXT

MAKE THE HOLE. WORK THE HOLE.

Badger and Aquifer bore. Ferret, Mole, Muskrat, Gopher and the Farell Pig work passages that already exist. Ferret's own interpose role depends on the Trembler Line system (CS-435) — strung Mole CS-430 nodes that detect, localize and cue — and the mapping heritage the Mole listening network shares. Response is human-in-the-loop before any physical engagement: the system detects, localizes and cues; it never strikes.

01 · ARRIVAL

INTO THE ACCESS POINT

Ferret is carried to a tunnel or culvert access point and inserted by hand. The fibre spool is seated at the portal, and the mission is loaded — a recon route, or standby on a Trembler Line cue. No link check — there is no link to check.

02 · WORK

RECON, OR A CONFIRMED HOLD

Ferret creeps the passage, building a live map and recon feed back over the fibre — a human on the far end, or bounded SLAM autonomy on a known run. If a Trembler Line cue arrives and a person confirms, it moves to and holds a block position ahead of the intrusion's path — parked in the way, nothing more.

03 · RECOVER

BACK ON ITS OWN BREADCRUMB

Ferret retraces the fibre it laid down, or is teleoperated back to the access point. If a leg ever ends early, it holds exactly where it stopped — silent, in place, waiting for a person. Recovery is a walk down the fibre, not a search.

THE FAMILY

RELATED SYSTEMS

CS-410 · HOLE-MAKER

BADGER

The family anchor — bores the passages Ferret and its siblings then go and work.

CS-430 · LISTENING NODE

MOLE

Strung into the Trembler Line perimeter — the nodes whose cue Ferret responds to.

CS-435 · SEISMIC PICKET

TREMBLER LINE

The buried perimeter system that detects, localizes and cues — it never strikes.

Ferret CS-420 · patent pending · export-controlled — international transfer requires Canadian government permits; export posture is counsel-first. A carrier for recon and mapping — never a strike platform. No warhead, fuze or energetic material in any variant; no radio and no GPS in any guidance tier. Ferret can interpose — move to and hold a block position on a confirmed cue — but it never strikes, and it never engages autonomously: a human confirms before any physical engagement, always.



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FERRET · UNDERGROUND · CS-420

Make the hole. Work the hole.

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 Ferret 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.

Ferret CS-420

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