CANADIAN SHIELD
A DIVISION OF SIG | SUSTAINABLE INFRASTRUCTURE GROUP

UNDERGROUND · CS-460

THE CARRIER THAT NEVER BREAKS GROUND.

Flow-driven, self-propelled or tethered — it rides the line, it doesn't bore one.

INSPECTION · CONDUIT ACCESS · PAYLOAD CARRIAGE · CORROSION MAPPING

PATENT PENDING

EXPORT-CONTROLLED — INTERNATIONAL TRANSFER SUBJECT TO CANADIAN GOVERNMENT PERMITS

CARRIER — NEVER A STRIKE PLATFORM, CARRIES NOTHING ENERGETIC

3	~20 KM	0	0
SELECTABLE PROPULSION MODES — FLOW-DRIVEN, SELF-PROPELLED, TETHERED	FLOW-DRIVEN LOGGED RUN, UP TO (CLASS-DEPENDENT)	RADIO LINKS ANYWHERE IN THE DESIGN	WARHEADS, FUZES OR ENERGETIC MATERIAL — A CARRIER, NEVER ARMED

OVERVIEW

THE ONE UNDERGROUND PLATFORM THAT DOESN'T DIG.

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

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SELECTABLE PROPULSION MODES — FLOW-DRIVEN, SELF-PROPELLED, TETHERED	FLOW-DRIVEN LOGGED RUN, UP TO (CLASS-DEPENDENT)	RADIO LINKS ANYWHERE IN THE DESIGN	WARHEADS, FUZES OR ENERGETIC MATERIAL — A CARRIER, NEVER ARMED

The Farell Pig CS-460 is the Underground family's odd one out by design: every other platform in the family enters ground that has to be made, found or opened. The Pig rides ground that is already open — the pipe, culvert and conduit networks already in the earth, ready to carry it.

Its name and form factor are a direct reference to a mature, decades-old industrial tool class: the pipeline inspection gauge, universally known in the trade as a "pig" — a cylindrical device run through a live pipeline for cleaning, product-batching or inspection. Canadian Shield did not invent that tool class. The Farell Pig adapts it: the same proven cylindrical form, sealing discs and launcher/receiver handling, built out as a carrier platform for sensing and payload modules rather than a single fixed inspection tool.

Where Badger and Aquifer make the hole, the Pig — like Ferret, Mole, Muskrat and Gopher beside it — works passages that already exist. It enters where a hazardous, confined, unpiggable-by-person space would otherwise require sending a crew member in after it. Send the robot down the hole, not the soldier — and here, "the hole" is a live pipeline or a conduit run no one wants to enter on foot.

THE CLAIM

RIDE THE LINE. NEVER BORE ONE.

Boring is expensive, disruptive and slow. Most of the network a utility, pipeline operator or facility already needs inspected or serviced is already in the ground. The Pig's entire job is to exploit that — carry the sensor or the tool through pipe that's already there, and never touch a bit to soil.

HOW IT WORKS

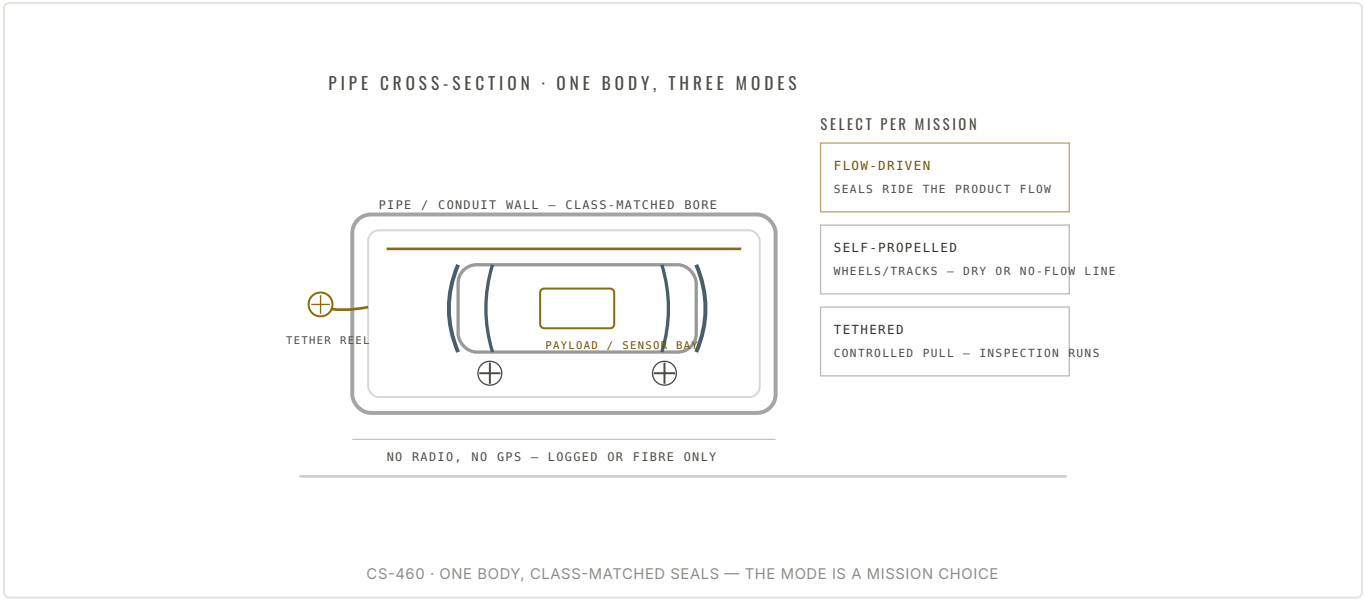
MECHANISM

SIZED TO THE LINE. THREE WAYS THROUGH IT.

The body is cylindrical and sized to pipeline and conduit classes, riding on sealing discs that center it in the bore and take the wear. Everything else — the propulsion, the payload, the comms plan — is a mission selection made before launch, not a fixed configuration bolted in at the factory.

Propulsion is selectable per mission across three modes: flow-driven, where the sealing discs take the pressure differential of a live product flow and ride it like any conventional pigging run; self-propelled, wheels or tracks under its own power for dry or non-flowing conduits where there's no flow to ride; or tethered, a controlled pull for inspection runs that need a fixed speed and a hard stop on command. One hull, three ways to move — chosen for the line, not designed around a single one.

A modular payload bay sits amidships, sized for inspection sensors as the baseline case — corrosion and wall-thickness gauging, geometry and deformation mapping, run odometry — or other carried non-kinetic payloads on the same interface. Comms follow the family rule absolutely: fibre-tethered for real-time control where a tether is fitted, or fully untethered with position and sensor data logged onboard and offloaded at the receiver or exit point. No radio, ever — pipe, culvert and conduit are RF-dead environments by nature, metal-walled, buried and confined, and the design was never going to fight that physics.



CS-460 · ONE BODY, CLASS-MATCHED SEALS — THE MODE IS A MISSION CHOICE

SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

FARELL PIG CS-460

DIMENSIONS & MASS

Configuration	**Cylindrical pipeline/conduit-class carrier — sealing discs, modular payload bay**
Body diameter range	**~150–600 mm (~6–24 in) nominal bore classes, disc-set matched**
Length	**~1.1–1.6 m (class-dependent)**
Mass	**~35–90 kg (class-dependent)**

PERFORMANCE

Speed — flow-driven	**~0.5–2 m/s, line-speed dependent**
Speed — self-propelled	**Up to ~0.8 m/s**
Run length — flow-driven	**Up to ~20 km, logged run (class-dependent)**
Run length — tethered	**Up to ~5 km (class-dependent)**
Sealing / pressure rating	**Sealing discs rated to the line-pressure design case — nominal ~700 kPa (~100 psi)**

PROPULSION & DRIVE

Propulsion modes	**Flow-driven · self-propelled · tethered — select per mission**
Flow-driven	**Sealing discs ride the pressure differential of a live product flow**
Self-propelled	**Wheels or tracks under its own power — dry or non-flowing conduits**
Tethered	**Controlled pull — fixed speed and a hard stop on command**
Launch / receive	**Standard pig launcher/receiver-style trap access points**

PAYLOAD & SENSORS

Payload bay	**Amidships, modular — ~8–15 kg / ~10 L**
Baseline suite	**Inspection package — wall-thickness & corrosion gauging, geometry/deformation mapping, run odometry**
Other payloads	**Carried non-kinetic payloads on the same bay interface**
Payload class	**Non-kinetic only — no warhead, no fuze, no energetic material, any module**

COMMS & SIGNATURE

Comms — tethered	**Fibre tether — real-time control and data**
Comms — untethered	**Position and sensor data logged onboard, offloaded at the receiver or exit point**
Radio / GNSS	**None — no radio, no GPS; pipe and conduit are RF-dead environments by nature**

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 — never itself armed, carries nothing energetic**
Boring scope	**Badger CS-410 and Aquifer CS-411 make the hole — the Pig never bores**

CLASS-DEPENDENT FIGURES VARY WITH THE BORE CLASS SERVED AND THE DISC SET FITTED; FIGURES ARE READ AGAINST KNOWN PIPELINE AND CONDUIT CLASSES. LAUNCHER AND RECEIVER HANDLING MIRRORS INDUSTRY-STANDARD PIPELINE-PIGGING PRACTICE.

THE TRADES, STATED

A CARRIER, BY ITS OWN JOB DESCRIPTION. NO RADIO, BECAUSE THE PIPE ALREADY KILLS IT.

"Carrier" is not a euphemism here — it is the platform's literal role. The Farell Pig carries a payload module through a pipe or conduit. It is never itself armed, and it carries nothing energetic, regardless of which module is fitted. No warhead. No fuze. No energetic material, anywhere in the design, in any configuration.

The heritage runs two directions at once. Canadian Shield's parent group carries three decades of horizontal-directional-drilling heritage in-house — real, fielded practice in pushing tooling through the ground under guidance without digging a trench for it. That heritage sits directly adjacent to pipeline pigging: both trades work pipe and conduit networks for the same class of utility and pipeline-operator client, both solve the problem of getting a tool through a confined bore under control, and both have spent decades doing it without a radio in the loop because there has never been a working signal down there to begin with. The Farell Pig sits at that adjacency on purpose — a legitimate, well-established industrial practice re-housed as a carrier platform, not an invented gimmick.

No radio, no GPS is not a defence-only design choice for this platform — it is physics. A metal pipe, buried, confined, is an RF-dead environment before any doctrine is applied to it. Fibre tether where a tether is fitted, or logged data retrieved and offloaded at the receiver end where it isn't — exactly how an industry-standard inspection gauge is run and recovered today. Send the robot down the hole, not the soldier: here, the hole is a live line or a conduit run that a person should never have to enter to find out what's wrong with it.

FAMILY CONTEXT

MAKE THE HOLE. WORK THE HOLE.

Only Badger and Aquifer bore. Every other Underground platform — Ferret, Mole, Muskrat, Gopher and the Farell Pig — works passages that already exist: they enter, listen in, swim, crawl or ride. The Pig is the purest expression of that half of the family — it never touches a bit to soil at all.

DEPLOYMENT

A PIPELINE RUN, WALKED THROUGH.

One run, walked end to end — mirroring how an industry-standard pipeline inspection gauge is run and retrieved today. Illustrative of how the Pig is used, not a mission record.

01 · ARRIVAL

IN AT THE LAUNCHER

The Pig is inserted at a pig launcher or equivalent access point on the pipeline or conduit network. The payload module is fitted for the mission — inspection suite by default — and the propulsion mode is selected: flow-driven if the line is live, self-propelled if it isn't, tethered if the run needs a controlled speed and a hard stop on command.

02 · WORK

RIDING THE LINE

It rides the line on flow, under its own power, or on the tether — sensing and carrying its payload the length of the run. Data is streamed over fibre where a tether is fitted, or logged onboard where it isn't. No radio call home either way; there is nothing to call it on.

03 · RECOVER

OUT AT THE RECEIVER

The Pig is retrieved at a receiver or exit point, or pulled back on its tether if the run was tethered. Logged data offloads at the receiver end — exactly how an industry-standard inspection gauge comes home. The line stays in service throughout.

THE FAMILY

RELATED SYSTEMS

CS-410 · MAKES THE HOLE

BADGER

One of the family's two boring platforms — where the Pig rides a line that exists, Badger makes the hole.

CS-411 · MAKES THE HOLE

AQUIFER

The family's other borer — with Badger, it enters ground that has to be made rather than found.

CS-420 · EXISTING PASSAGES

FERRET

Works passages that already exist — beside the Pig in the half of the family that never bores.

CS-430 · EXISTING PASSAGES

MOLE

Enters ground that is already open — the existing-passage half of the family, beside the Pig.

CS-440 · EXISTING PASSAGES

MUSKRAT

Another platform of the existing-passage half — it works the network, it doesn't make one.

CS-450 · EXISTING PASSAGES

GOPHER

Works what is already in the earth — the same half of the family as the Pig, a different passage.

Farell Pig CS-460 · patent pending · export-controlled — international transfer requires Canadian government permits; export posture is counsel-first. A carrier that rides existing pipe, culvert and conduit networks — it carries a payload module and is never itself armed; no warhead, no fuze, no energetic material in any configuration. No radio and no GPS anywhere in the design — pipe and conduit are RF-dead environments by nature. Boring is Badger CS-410 and Aquifer CS-411 scope — the Pig rides the line, it never bores one.

THE CARRIER THAT NEVER BREAKS GROUND.

FAREL PIG · UNDERGROUND · CS-460

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 Farell Pig 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	GENERAL	WEB
sales@cdnshield.ca	info@cdnshield.ca	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.

Farell Pig CS-460

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