



INDUSTRIAL · CS-560

EVERY ACRE — ONE UNIFORM PASS

Full-width boom, drift-reduction nozzles, a metered rate held across the pass.
The broadcast tool for the uniform job.

METER · PRESSURE · ATOMIZE · LOG

PATENT PENDING

RADIO AND GNSS PERMITTED — CIVIL WORK MACHINE

6 /10

MAJOR SUBSYSTEMS INHERITED
BY THE SPOT SPRAYER CS-561

2

MACHINES, ONE LINEAGE —
BROADCAST AND TARGETED

1

DOCK STANDARD (CS-700)
ACROSS THE APPLICATION FAMILY

0

PRODUCTS, CONCENTRATIONS OR
MIXES SPECIFIED BY THE
PLATFORM

OVERVIEW

THE BROADCAST TOOL. FULL WIDTH, EVERY TIME.

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

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The Sprayer is Canadian Shield's uniform-coverage boom applicator: an uncrewed airframe carrying a tank, a metering pump and a full-width boom fitted with drift-reduction nozzles, flown at a held height and speed so the rate applied per acre stays constant across the whole pass. Where the job is uniform — the field, not a fraction of it, needs the product — this is the tool.

It is also the platform underneath its own targeted sibling. The Spot Sprayer CS-561 adds a forward sensor and an individually-valved boom to this same airframe, tank, pump and flight-control lineage — so the engineering and manufacturing investment made here pays twice: once as the broadcast tool doing the uniform job, and again as the chassis a second machine builds on. Six of ten major subsystems on the targeted variant are inherited directly from this one.

Drift is the governing risk on any boom sprayer, and the design treats it as the central engineering problem, not an afterthought: drift-reduction nozzle geometry, a held boom height, and a metering system that keeps rate constant regardless of ground-speed variation, so the operator's coverage record matches what the label calls for.

THE COVERAGE ARGUMENT

UNIFORM PRESSURE ISN'T A DETAIL. IT'S THE WHOLE JOB.

A boom sprayer's entire value is that every square metre under the boom gets the same rate. The metering pump, the pressure regulation and the drift-reduction nozzle geometry all exist to defend that one guarantee against wind, ground speed and terrain.

HOW IT WORKS

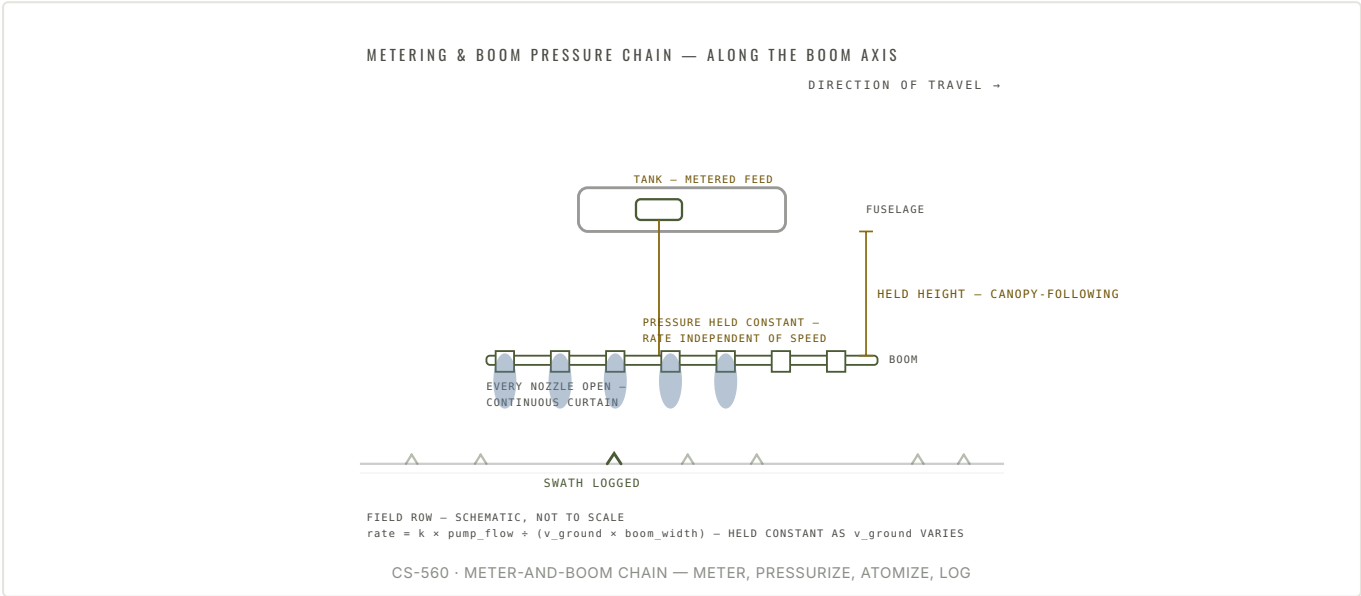
MECHANISM

ONE RATE, HELD ACROSS THE WHOLE BOOM

The chain behind a uniform pass is short and deliberate — there is no detection step, because the decision to treat was already made when the field was scheduled. What the chain has to hold, instead, is rate: as ground speed varies with wind and terrain, the metering pump adjusts flow so litres-per-hectare stays constant, and a pressure regulator across every open nozzle keeps droplet size — and with it, drift — inside the band the drift-reduction nozzles are built for.

Height above the crop canopy is held for the same reason pressure is: boom height sets how far a droplet falls before it either lands on target or drifts on wind. The flight controller treats terrain-following height hold as a first-order control loop, not a convenience — on a boom sprayer, altitude error is drift. The governing relationship is stated plainly: $\text{rate} = k \times \text{pump_flow} \div (\text{v_ground} \times \text{boom_width})$, which is exactly why the pump has to track ground speed in real time rather than run at a fixed flow.

Every actuation — boom on, boom off, rate change, pressure event — is logged against position and time, so the coverage record leaving the field is as real as the one a ground-rig operator would keep by hand, without the hand.



SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

SPRAYER

CS-560

CONFIGURATION & AIRFRAME	
Configuration	Uncrewed multirotor airframe — tank, metering pump and full-width boom
Role	Uniform, full-width boom application at a metered rate
Airframe, tank & pump	Shared lineage with the Spot Sprayer CS-561
Subsystem sharing	6 of 10 major subsystems on the targeted variant inherited from this platform

APPLICATION & METERING	
Boom	Full-width, continuous nozzle line — drift-reduction geometry; nozzle count, spacing and swath width under trade study
Metering	Ground-speed-compensated pump — rate held constant per hectare
Boom pressure	Regulated constant across every open nozzle — sets droplet size, and with it, drift behavior
Height hold	Terrain/canopy-following, closed-loop — altitude error reads directly as drift risk
Governing relationship	$rate = k \times pump_flow \div (v_ground \times boom_width)$

NAVIGATION & CONTROL	
Command & telemetry	Conventional RF C2 — permitted on this line, used openly
Navigation	GNSS waypoint flight for pass-to-pass swath accuracy
Power & flight control	Dual-bus power · dual flight controllers · three GNSS receivers voting 2-of-3
Mission record	Per-pass coverage log — boom state, rate, pressure and position

SAFETY & TURNAROUND	
Safety chain	Whole-airframe parachute + SIG AT polyfoam encapsulation — low-altitude trigger authority under definition
Turnaround & dock	Dock-based refill with rinse/purge between products — shared CS-700 dock interface
Energy	Hot-swap vs fast-charge under trade study

COMPLIANCE	
Patent status	Patent pending
Line classification	Civil work platform — surface Industrial line; radio and GNSS permitted, used openly
Payload scope	Application-only carrier — no warhead, no fuze, no energetic material and no terminal-effect system, in any variant
Product & mixing	Product, concentration and mixing — the operator and the registered label, never Canadian Shield
Regulatory	Aerial application engages Transport Canada RPAS rules, PMRA and provincial applicator licensing, and the product label — no compliance is asserted on this page

THE SPRAYER SHARES ITS AIRFRAME, TANK AND PUMP LINEAGE WITH THE SPOT SPRAYER CS-561; FIGURES SPECIFIC TO THIS VARIANT ARE STATED AS SHARED-LINEAGE, PROVISIONAL VALUES, SUBJECT TO TRADE STUDY. NO FIXED LITRES-PER-HECTARE RATE OR HEADLINE DRIFT-REDUCTION PERCENTAGE IS PUBLISHED — APPLIED RATE IS GOVERNED BY GROUND SPEED, BOOM WIDTH AND NOZZLE SPACING, BOOM HEIGHT ABOVE CANOPY, WIND SPEED AT BOOM HEIGHT, DROPLET-SIZE BAND AND DUTY CYCLE, AND A FIGURE QUOTED WITHOUT THOSE ATTACHED WOULD BE MEANINGLESS.

THE TRADES, STATED

ONE AIRFRAME FAMILY. TWO WAYS TO COVER A FIELD.

Canadian Shield's house thesis is that manufacturing is the decisive capability, and the Industrial line is where that manufacturing base earns its keep on Canadian ground. The Sprayer advances it as the platform underneath a family, not just a machine on its own.

Every subsystem proven on the Sprayer — airframe, tank, pump, flight control, safety chain, dock interface — is a subsystem the Spot Sprayer CS-561 inherits rather than re-engineers. That is sovereign manufacturing applied at the platform-family level: one shop floor, one set of tooling, two application machines built from a shared parts bin instead of two unrelated imports.

And the radio boundary runs the way it does across the whole civil line. The no-radio doctrine governs the defence, underground and tethered platforms without exception — but the Industrial line is the surface civil exception, and the Sprayer uses both radio and GNSS openly: conventional RF for command and telemetry, GNSS for pass-to-pass swath accuracy and the coverage record that leaves the field. A quarter-section is not a jammed battlefield, and we do not build for one out here.

DEPLOYMENT

FIELD PLAN IN. COVERAGE RECORD OUT.

A Sprayer job is a loop, not a flight: the operator's field plan compiles, the machine flies the pass boundary to boundary, and what comes home is a record of exactly what rate was applied, where — illustrative of how the machine works a field, not a job record.

01 · ARRIVE

THE FIELD PLAN COMPILES

The crew arrives with the machine, a tote of product and the dock. The field boundary, headland turns and any buffer zones compile into a flight plan. Product, rate and mixing instruction come from the operator and the registered label — never from the machine — and the no-treat areas are drawn in before the first pass.

02 · WORK

THE BOOM RUNS, THE RATE HOLDS

The machine flies the pass at the working height and speed the plan calls for, boom open the full width, pump and pressure regulator holding rate constant as ground speed varies with wind and terrain. Every boom-on/off event, rate change and position is logged. The operator flies the plan and owns the exceptions; the machine holds the rate, and proves it did.

03 · RECOVER

DOCK, RINSE, RECORD

Back at the dock the tank purges between products and the pack turns around for the next leg. The field gets its record: a boom-state and coverage log — the operator's own evidence of what rate went down, and where. What leaves is the machine, ready for the next tote and the next field; what remains is an auditable, pass-by-pass coverage record.

THE FAMILY

RELATED SYSTEMS

CS-561 · TARGETED SIBLING

SPOT SPRAYER

The same airframe, tank and pump — with a forward sensor and per-nozzle valves for treating just the weed, not the whole field.

CS-510 · LINE ANCHOR

SEEDER

The Industrial line's anchor — a pneumatic pod launcher retuned to gentleness. Pods down, evidence back.

CS-520 · INDUSTRIAL LINE

SKIMMER

Another machine on the line — same moulded-structure grammar and materials canon, pointed at a different job.

FAMILY CONTEXT

ONE BOOM FOR THE WHOLE FIELD. ONE FOR JUST THE WEED.

Alongside the Sprayer on the Industrial roster sits its targeted sibling — same tank, same pump, same airframe, adding a forward sensor and per-nozzle valves for the job the Sprayer's full-width curtain isn't built for. Both draw on the CS-700 dock for turnaround and the same fleet-wide safety chain. Commercial structure is design intent, stated plainly: no unit has been priced, offered or sold.

Sprayer CS-560 · patent pending · a civil work platform on the surface Industrial line, where radio and GNSS are permitted and used openly. An application-only carrier — no warhead, no fuze, no energetic material and no terminal-effect system, in any variant, ever. Product selection, concentration and mixing instructions belong to the operator and the registered label, never to Canadian Shield. Aerial application is subject to Transport Canada, PMRA and provincial requirements; no compliance is claimed on this page.



EVERY ACRE — ONE UNIFORM PASS

SPRAYER · INDUSTRIAL · CS-560

One boom for the whole field. One for just the weed.

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 Sprayer 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.

Sprayer CS-560

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