



CDNS UAV PLATFORMS · AIR

# CS-120

## THE POWERED, FIBRE-GUIDED ROUND ON A BORE OF ITS OWN

A fifteen-kilogram round that stays live after the muzzle: a tail motor, a bow-thruster ring and a person correcting it down an optical fibre.



**15.00 kg**

ALL-UP MASS

**Ø96 mm**

BORE, 50 BAR OVER  
4.0 M

**~98 m/s**

AT THE MUZZLE

**72 kJ**

LAUNCH ENERGY,  
2.5× GOOSE

**~240 g**

PEAK LAUNCH  
SHOCK

**40 %**

OF THE MASS IS  
EFFECTOR

AT A GLANCE

# HEAVIER, POWERED AND CORRECTABLE. THE SECOND CLASS ON THE LINE.

The figures that size the powered class: its mass, its bore and launch, and the shock its electronics ride.

LIVE AFTER THE MUZZLE

**A ROUND THAT KEEPS FLYING**

A tail sustain motor holds the round in the air after launch, and a four-fan bow-thruster ring corrects its line where fixed fins lose authority. The round is not committed to the arc it leaves the tube on.

A PERSON ON THE WIRE

**COMMANDED DOWN A FIBRE**

A person steers the round down an optical fibre paid out from its own spool. A fibre radiates nothing, so there is nothing aboard for a jammer or a direction-finder to work on.

A GENTLER LAUNCH

**ELECTRONICS THAT RIDE THE STROKE**

CS-120 peaks at ~240 g on its launch, where the lead round rides 1,159 g. Its battery, motor and flight computer are built for that ride, with potted assemblies and shock-rated battery construction.

DOCTRINE

**A CARRIER, NOT A MUNITION**

No warhead, no fuze and no energetic material. The round carries propulsion, guidance and a nose effector, and nothing aboard operates a weapon.

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01 · SPECIFICATION

FIFTEEN KILOGRAMS, LINE BY LINE.  
EVERY FIGURE WITH ITS BASIS.

The round, its mass budget, its launch, its power, its guidance and its harness, from the design definition, the systems engineering package and the product manual, with the basis of every figure beside it.

01 THE ROUND

| PARAMETER                 | VALUE                                                                                                                    | BASIS                                                             |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| All-up mass               | 15.00 kg                                                                                                                 | design value, the sum of the nine-line mass budget                |
| Effector fraction         | 40 %                                                                                                                     | calculated: 6.00 kg of effector and forward structure in 15.00 kg |
| Diameter at the seal      | Ø96 mm                                                                                                                   | the obturator and sabot seal the Ø96 bore                         |
| Airframe                  | Moulded body                                                                                                             | the mass budget's body and airframe line                          |
| Energetic material aboard | None                                                                                                                     | no warhead, no fuze and no energetic material                     |
| Interchangeability        | None with Goose CS-110 or Encapsulator CS-111 rounds                                                                     | a different bore, charge pressure and stroke                      |
| Overall length            | ~900 mm                                                                                                                  | general-arrangement envelope                                      |
| Effector                  | Inert kinetic mass: no chemistry, no mechanism, no electronics                                                           | the baseline nose in the systems engineering package              |
| Fins                      | A fixed tail set for stability from the muzzle, and a smaller adjustable set for trim and steering while airspeed allows | systems engineering package, airframe layout                      |

02 MASS BUDGET

| PARAMETER                          | VALUE    | BASIS                                             |
|------------------------------------|----------|---------------------------------------------------|
| Nose effector and structure        | 6.00 kg  | mass budget: the effect and the forward structure |
| Body and airframe, moulded         | 3.50 kg  | mass budget: the larger, powered airframe         |
| Tail sustain motor and propeller   | 1.20 kg  | mass budget: the sustain drive                    |
| Four-fan bow-thruster ring         | 1.00 kg  | mass budget: nose-mounted correction              |
| Battery pack, Li-ion               | 0.40 kg  | mass budget: the on-round battery                 |
| Flight computer, servos and wiring | 0.60 kg  | mass budget: the round's avionics                 |
| Fibre payout spool                 | 0.50 kg  | mass budget: the Tier 2 command link              |
| Fins and boom                      | 1.20 kg  | mass budget: stability                            |
| Obturator and sabot                | 0.60 kg  | mass budget: the Ø96 seal                         |
| Total                              | 15.00 kg | mass budget: nine lines, summed                   |

### 03 LAUNCH

| PARAMETER               | VALUE                                                                   | BASIS                                                               |
|-------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------|
| Bore                    | Ø96 mm                                                                  | design value; its own launcher, not the Goose tube                  |
| Charge pressure         | 50 bar                                                                  | design value                                                        |
| Stroke                  | 4.0 m                                                                   | design value                                                        |
| Launch energy           | 72 kJ                                                                   | design value; 2.5× the 28.6 kJ of the Goose launch                  |
| Velocity at the muzzle  | ~98 m/s                                                                 | calculated: $\sqrt{(2 \times 72,000 \text{ J} \div 15 \text{ kg})}$ |
| Peak launch shock       | ~240 g                                                                  | calculated at 50 bar on the Ø96 bore; the Goose round rides 1,159 g |
| Launcher pressure class | A higher accumulator certification class than the 30 bar Goose launcher | the design definition's bore decision                               |

### 04 POWER AND PROPULSION

| PARAMETER                   | VALUE                                                                                                                       | BASIS                                                                       |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Tail sustain motor          | Holds and extends velocity after launch                                                                                     | design definition, powered subsystems                                       |
| Bow-thruster ring           | Four fans; ~1.2 kW burst, intermittent                                                                                      | design value                                                                |
| Bow-thruster ring, function | Pitch, yaw, roll and trim at low speed, where fins lose authority                                                           | design definition, powered subsystems                                       |
| Terminal correction         | From the bow-thruster ring where the fixed fins lose authority, below ~20 m/s                                               | general-arrangement note                                                    |
| Battery pack                | 0.40 kg, Li-ion                                                                                                             | mass budget; energy for the motor, the ring and the flight computer         |
| Actuation                   | Servos on the fins and the thrusters, intermittent                                                                          | design definition, powered subsystems                                       |
| Avionics                    | Flight computer, inertial unit, speed controllers for the sustain motor and the four fans, fin servos and a battery monitor | systems engineering package, electrical core; the on-round harness schedule |

### 05 GUIDANCE AND CONTROL

| PARAMETER        | VALUE                                           | BASIS                                        |
|------------------|-------------------------------------------------|----------------------------------------------|
| Primary guidance | Tier 2, fibre-guided, a person in the loop      | design definition; the line's guidance table |
| Degraded mode    | Tier 1 preset                                   | the line's guidance table                    |
| Command link     | Optical fibre from the round's own payout spool | design definition, powered subsystems        |

| PARAMETER                       | VALUE                                                                                              | BASIS                                                 |
|---------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Operator station                | Sends guidance commands down the trailing fibre, with a person in the loop by construction         | systems engineering package, the fibre ground station |
| Onboard seeker                  | None                                                                                               | Tier 3 is not a tier CS-120 carries                   |
| Radio aboard                    | None                                                                                               | the guidance link is a physical fibre                 |
| Satellite navigation receiver   | None                                                                                               | no design on the line carries one                     |
| Flight computer                 | Guidance law, actuator drive and abort logic                                                       | design definition, powered subsystems                 |
| Cueing interface                | Bearing, range and track in from the customer's systems; a person steers from there over the fibre | systems engineering package, avionics and interfaces  |
| Detect, track, classify and cue | The customer's own systems                                                                         | the line's fire-control boundary                      |

## 06 HARNESS, LAUNCH SHOCK AND MANUFACTURE

| PARAMETER                    | VALUE                                                                                   | BASIS                                                       |
|------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------|
| On-round wiring harness      | The first on a round in the family; a Wired Industries assembly                         | design definition, powered subsystems                       |
| Harness discipline           | Power kept clear of signal, the discipline the launcher harnesses use                   | the published CS-120 page                                   |
| Launch-detect safing         | The motor and thruster supply stays safe until the round has left the tube              | on-round harness build notes                                |
| Launch-shock design approach | Potted assemblies, mechanically mounted connectors and shock-rated battery construction | design definition: the avionics ride the stroke at the peak |
| Airframe tooling             | Moulds cut on the division's own five-axis machines                                     | systems engineering package, manufacturing map              |

02 · THE POWERED CLASS

# LIVE AFTER THE MUZZLE. A SECOND CLASS, NOT A HEAVIER GOOSE.

Goose CS-110 and Encapsulator CS-111 fly one ballistic arc from one shared tube. CS-120 is built to stay live after it leaves a tube of its own.

CS-120 is the powered class on CDNS UAV Platforms: the launch chain of the lead round, plus the power that round deliberately leaves out. A tail sustain motor holds and extends its velocity after launch, a four-fan bow-thruster ring corrects its line at low speed where fins lose authority, and a person commands it down an optical fibre paid out from its own spool.

Three decisions define it, and each follows from the one before. The mass is 15 kg. The bore is Ø96 mm at 50 bar over a 4.0 m stroke, because 72 kJ does not go into 15 kg on the lead round's tube. The launch that results leaves the muzzle at ~98 m/s with a peak shock of ~240 g, a ride its electronics are built to take.

**15.00 kg**

ALL-UP MASS

**Ø96 mm**

BORE, 50 BAR OVER 4.0 M

**~98 m/s**

AT THE MUZZLE, 72 KJ

**~240 g**

PEAK LAUNCH SHOCK

03 · THE BORE DECISION

# SEVENTY-TWO KILOJOULES INTO FIFTEEN KILOGRAMS. A BORE AND A PRESSURE OF ITS OWN.

Putting 72 kJ into a 15 kg round is a different launch problem from the 28.6 kJ the lead round takes. Charge pressure and stroke decide the bore.

At the lead round's 30 bar over 3.0 m, 72 kJ wants a Ø143 mm tube, which is unwieldy. Raising the charge to 50 bar and the stroke to 4.0 m brings the bore to a workable Ø96 mm, and that is the bore CS-120 is built around. Its launcher is a launcher of its own, in a higher accumulator certification class than the 30 bar tube.

The Ø96 bore lands near the lead round's Ø90 by coincidence of the pressure and stroke chosen. The family keeps two bore and pressure classes rather than one tube at two masses, and the rounds are not interchangeable.

| CHARGE PRESSURE | STROKE | BORE    | RESULT                       |
|-----------------|--------|---------|------------------------------|
| 30 bar          | 3.0 m  | Ø143 mm | Unwieldy                     |
| 40 bar          | 4.5 m  | Ø101 mm | Workable                     |
| 50 bar          | 4.0 m  | Ø96 mm  | Selected                     |
| 60 bar          | 4.0 m  | Ø87 mm  | A higher certification class |

TWO CLASSES

## TWO BORE AND PRESSURE CLASSES. NOT ONE TUBE AT TWO MASSES.

CS-120 shares the line's doctrine, its pneumatic architecture and its safety spine. It does not share a barrel, a magazine or a launcher with Goose CS-110 or Encapsulator CS-111.

04 · THE MASS BUDGET

NINE LINES, FIFTEEN KILOGRAMS.  
FORTY PERCENT OF IT IS EFFECTOR.

The mass budget closes at 15.00 kg. The share that is not effector is what keeps the round live after the muzzle.

| LINE                               | MASS     | WHAT IT BUYS                         |
|------------------------------------|----------|--------------------------------------|
| Nose effector and structure        | 6.00 kg  | The effect and the forward structure |
| Body and airframe, moulded         | 3.50 kg  | The larger, powered airframe         |
| Tail sustain motor and propeller   | 1.20 kg  | The sustain drive                    |
| Four-fan bow-thruster ring         | 1.00 kg  | Nose-mounted correction              |
| Battery pack, Li-ion               | 0.40 kg  | The on-round battery                 |
| Flight computer, servos and wiring | 0.60 kg  | The round's avionics                 |
| Fibre payout spool                 | 0.50 kg  | The Tier 2 command link              |
| Fins and boom                      | 1.20 kg  | Stability                            |
| Obturator and sabot                | 0.60 kg  | The Ø96 seal                         |
| Total                              | 15.00 kg | Nine lines                           |

Nose effector and forward structure are 6.00 kg of the 15.00 kg, an effector fraction of 40 %. The rest is spent on flight: the sustain motor, the bow-thruster ring, the battery, the flight computer and servos, and the fibre spool. CS-120 carries systems as well as steel, and that is what the powered class is for.

## 05 · SUSTAIN AND CORRECT

## A MOTOR BEHIND, A RING OF FANS IN FRONT. AUTHORITY WHERE THE FINS RUN OUT.

Three elements act in series: the pneumatic launch throws the round, the tail motor keeps it flying, and the bow-thruster ring points it.

**SUSTAIN****A TAIL MOTOR AND PROPELLER**

It holds and extends the round's velocity after launch, so its line is not fixed at the muzzle.

**CORRECT****A FOUR-FAN BOW-THRUSTER RING**

Pitch, yaw, roll and trim at low speed, where the fixed fins lose authority below ~20 m/s, in intermittent bursts of ~1.2 kW.

**POWER****A BATTERY AND A FLIGHT COMPUTER**

A 0.40 kg Li-ion pack feeds the motor, the ring and a flight computer that runs the guidance law, the actuator drive and the abort logic.

**GUIDE****A FIBRE PAYOUT SPOOL**

A 0.50 kg spool pays out the optical fibre a person commands the round down.

Each of those items is the first of its kind on a round in this family. The lead round carries no battery, no motor and no electronics; CS-120 carries all three and a wiring harness to join them, and every one of them exists to keep a person deciding what the round does after it leaves the tube.

## 06 · GUIDANCE

## COMMANDED DOWN A FIBRE. NOTHING ABOARD LISTENS FOR A RADIO.

CS-120 flies Tier 2 as its primary tier: a physical fibre, and a person at the far end of it.

Three guidance tiers run across CDNS UAV Platforms, and none of them puts anything into the radio spectrum. CS-120 flies the middle tier as its primary mode. It trails an optical fibre from its own payout spool, and a person commands it down that fibre. A fibre radiates nothing, so there is nothing for a jammer or a direction-finder to work on, and no satellite navigation receiver is aboard.

Tier 1 preset is the round's degraded mode. Detecting, tracking, classifying and cueing a target belong to the customer's own systems; CS-120 carries a person's decision down a wire.

- ✓ **Tier 1, preset.** The tier Goose CS-110 flies, and the degraded mode of CS-120.
- ✓ **Tier 2, fibre-guided.** The primary tier of CS-120: an optical fibre from its own spool, and a person commanding the round down it.
- ✓ **Tier 3, onboard seeker.** Not a tier CS-120 carries.

## 07 · THE ON-ROUND HARNESS

## THE FIRST WIRING HARNESS ON A ROUND. BUILT TO RIDE THE LAUNCH STROKE.

Every earlier wiring document on this line belonged to a launcher. CS-120 is the first round with an electrical system of its own.

Goose CS-110 and Encapsulator CS-111 carry no battery, no motor and no electronics, so neither has anything to wire. CS-120 carries a battery, a tail motor, a four-fan ring, a flight computer and servos, and joins them with a wiring harness of its own. The harness is a Wired Industries assembly, built to the discipline the launcher harnesses already use.

The risk it answers is launch shock on live electronics: the battery, the motor and the flight computer ride the stroke at the ~240 g peak. The design meets it with potted assemblies, mechanically mounted connectors and shock-rated battery construction.

The harness also carries the round's own safing: the motor and thruster supply stays safe until the round has left the tube.

- ✓ **A first for the family.** The first round on the line with a battery, motors and a flight computer, and so the first with a harness.
- ✓ **Power clear of signal.** The same discipline the launcher harnesses use.
- ✓ **Mechanically mounted connectors.** Held against the launch stroke.

## 08 · LAUNCH SHOCK

## NINE TIMES THE MASS. A GENTLER RIDE UP THE TUBE.

At about nine times the lead round's mass, CS-120 accelerates less, and its launch is built to a different number.

The lead round is unpowered and rides 1,159 g at the peak, a structural number for a round with nothing aboard to protect. CS-120 rides ~240 g at the peak on its own bore, pressure and stroke. The shock environment is gentler, and it still fires a battery, a motor and a flight computer up a tube, which the lead round never does.

**~240 g**

CS-120, PEAK LAUNCH SHOCK

**1,159 g**

GOOSE CS-110, PEAK LAUNCH SHOCK

**~9×**

THE LEAD ROUND'S MASS

## 09 · WHERE IT FITS

## THE SECOND TIER, NOT THE DEFAULT. CHOSEN WHEN THE ROUND MUST CORRECT.

Most of this line's answers are Goose CS-110. CS-120 is the answer when the job needs a powered round a person can correct after the muzzle.

**Who it is for.**

- A program already on the line's Ø90 bore that needs a heavier, powered option beside it, not instead of it.
- A buyer whose job needs a round that stays correctable after the muzzle, with a person holding that correction.
- Counsel and procurement who want the bore and pressure distinction from Goose CS-110 in writing before an interchangeability question is asked.
- A crew already trained on the line's launch discipline: the arm chain, the exclusion zones and the safety spine carry over.

**What it is not.**

- Not interchangeable with Goose CS-110 or Encapsulator CS-111: a different bore, pressure and launcher.
- Not a Tier 3 round: it carries no onboard seeker.
- Never a warhead, a fuze or any energetic material.
- Not a radio system: nothing aboard receives by radio, and the guidance link is a physical fibre.
- Not an offer: every enquiry is screened, and supply is subject to Canadian export permits issued per shipment.

## 10 · DOCTRINE AND SAFETY

## PROPULSION AND GUIDANCE ABOARD. NOTHING THAT OPERATES A WEAPON.

CS-120 is the first round on the line to carry power and electronics into the air. The lines it holds are the line's lines.

- ✓ Carriers, not munitions: no warhead, no fuze and no energetic material aboard. CS-120 carries a motor, a battery, a flight computer and a nose effector, and nothing aboard operates a weapon.

- ✓ No radio and no GPS: nothing in the fleet transmits by radio or guides on a radio link, and a person's commands reach CS-120 down an optical fibre.
- ✓ Human safety comes first, on every line: a launch-detect switch holds the motor and thruster supply safe until the round has left the tube.
- ✓ A person arms every shot. CS-120 shares the line's safety spine: a series interlock chain, a normally closed breech and a manual arm action.

THE CONVERSATION

BRING THE TARGET THAT OUT-TURNS A BALLISTIC ROUND.  
WE ANSWER WITH THE SECOND TIER.

A first conversation needs the airspace, the cue you already hold, and the point at which a ballistic round stops answering the job.

Start a screened enquiry at [cdnshield.ca/enquiries](https://cdnshield.ca/enquiries).

|                |                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DOCUMENT       | CDN-PROD-SPC-003 · CS-120 · Specification sheet                                                                                                            |
| REVISION       | R1.0 · issued 2026-09-10                                                                                                                                   |
| WEB VERSION    | <a href="https://cdnshield.ca/cdns-uav-platforms/spec-sheets/cs-120">cdnshield.ca/cdns-uav-platforms/spec-sheets/cs-120</a> · carries the current revision |
| RELATED SHEETS | Goose CS-110 · Encapsulator CS-111 · The Launch Platform                                                                                                   |
| ISSUED BY      | Canadian Shield · <a href="https://cdnshield.ca">cdnshield.ca</a>                                                                                          |

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