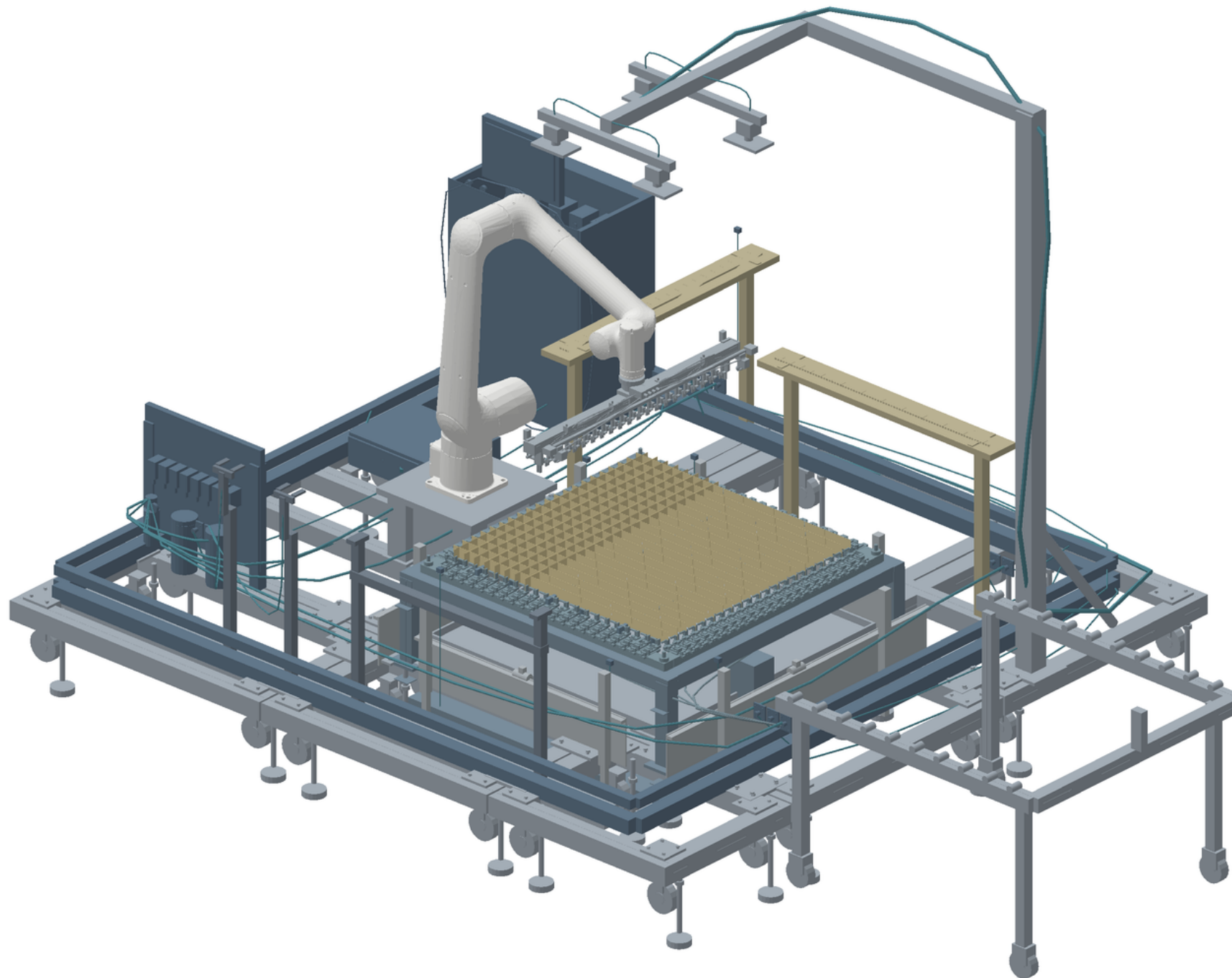




AETEC PTE. LTD.

GENERAL ARRANGEMENT / CONNECTED MACHINE



Robot base datum

Web XYZ (-1050,650,-150) mm; CAD XYZ (-1050,150,650) mm.

Fixture

Grid centre (0,780,0) mm, paper top 830 mm (height provisional).

Material paths

A feed and B feed to robot; fixture; inspection; adhesive; qualified cure; supported trolley.

Subframes

Nine bolted base subframes. Tall equipment is detached separately; packed lift fit is not approved.

Utilities

Yellow: power; green: data; blue: air; purple: separate fluid circuits in the interactive model.

Robot model

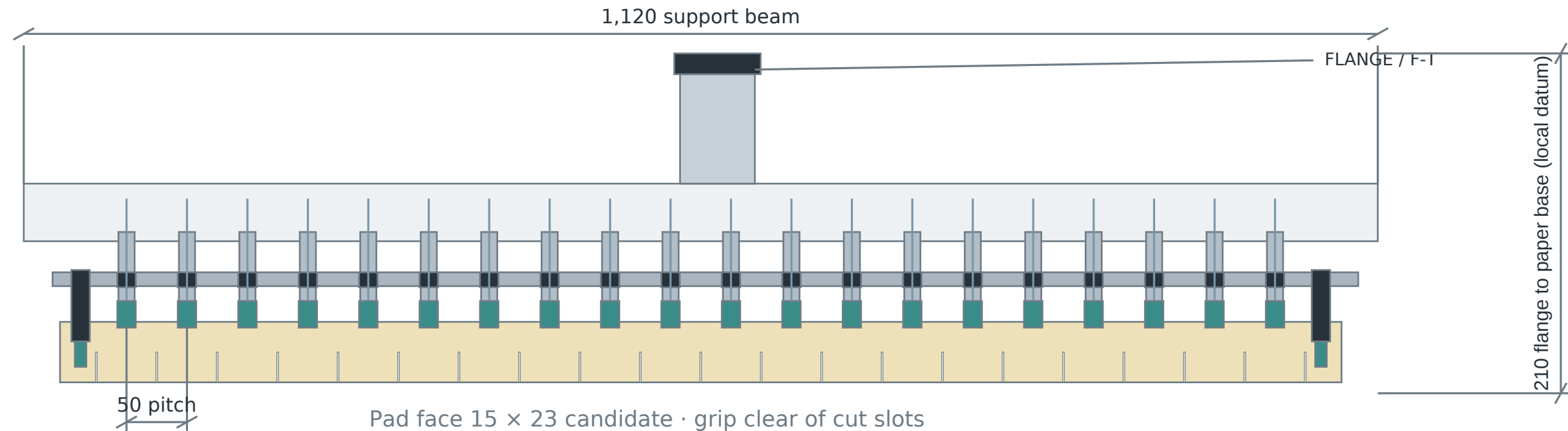
Original ABB external geometry in the app. Original ABB BREP links in the native STEP assembly.

Output

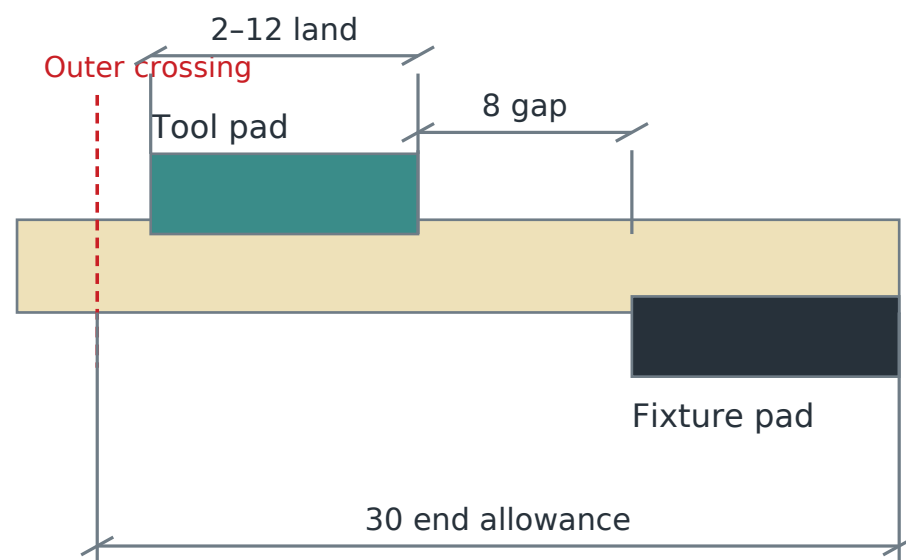
Operator-assisted supported transfer. Robot panel unload and automatic trimming are separately selectable scope.



20 support modules; continuous support beam; guided jaw bridge; two end grips; two independent camera slides.

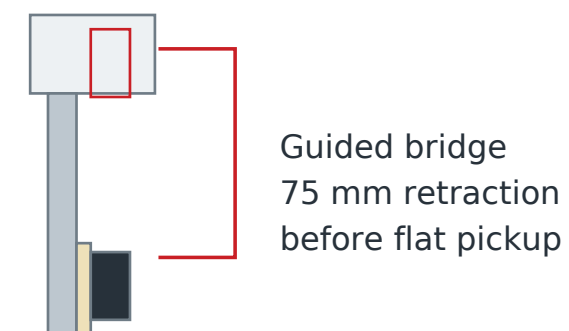


END LAND · ENLARGED



Separate grip regions allow supported load transfer; confirm these lands exist on actual blanks.

SIDE SECTION · CLOSED / OPEN

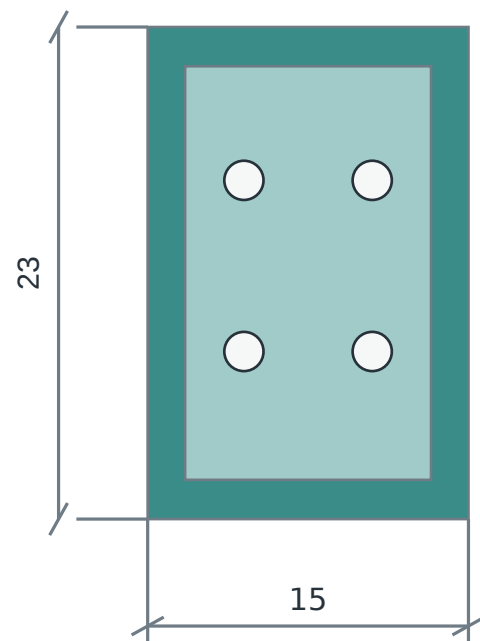


End clamps also park 45 mm behind the paper.
Actuator bore, jaw force and hard stops: coupon trial.
Camera bodies remain behind the pickup face.



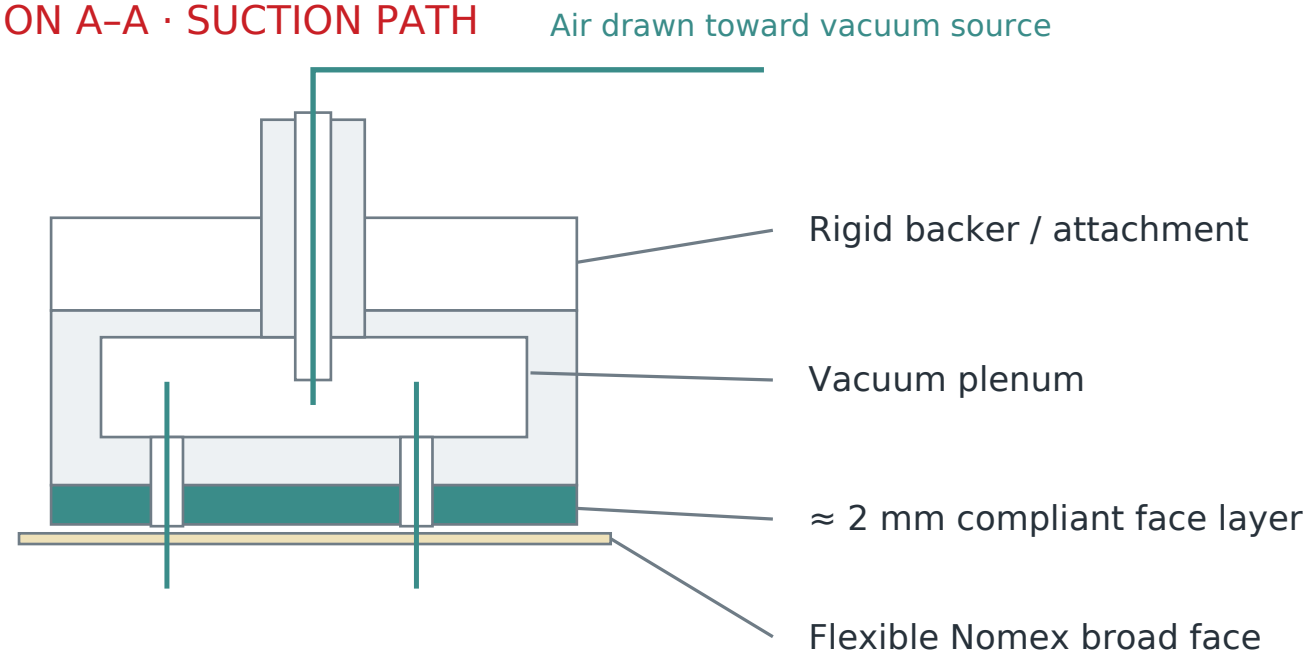
Replaceable low-marking contact face; dimensions are candidate values. Final hole pattern and vacuum flow follow actual Nomex tests.

FACE VIEW



Soft perimeter and distributed ports.
Four ports shown schematically;
size / count / pattern TBD.

SECTION A-A · SUCTION PATH

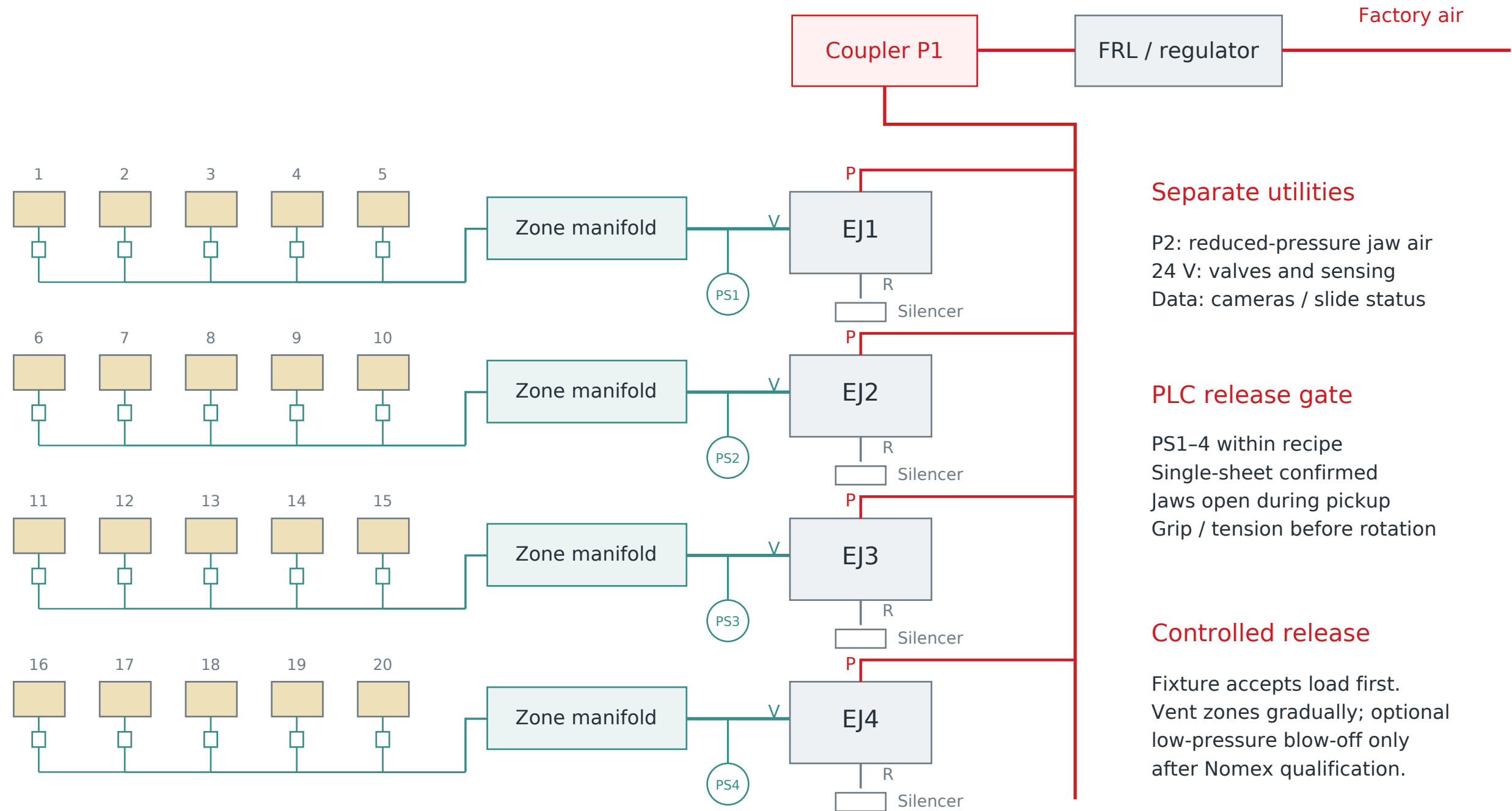


- 1 Candidate OD 4 mm branch; OD 3 mm short final leg.
- 2 Restrictor upstream of each pad isolates leakage.
- 3 Backer carries loads; soft face protects paper.
- 4 Limit jaw compression with positive hard stops.
- 5 Verify pick force, leakage and clean release on real blanks.

Vacuum alone does not confirm a single sheet. Use an independent double-sheet / thickness check.



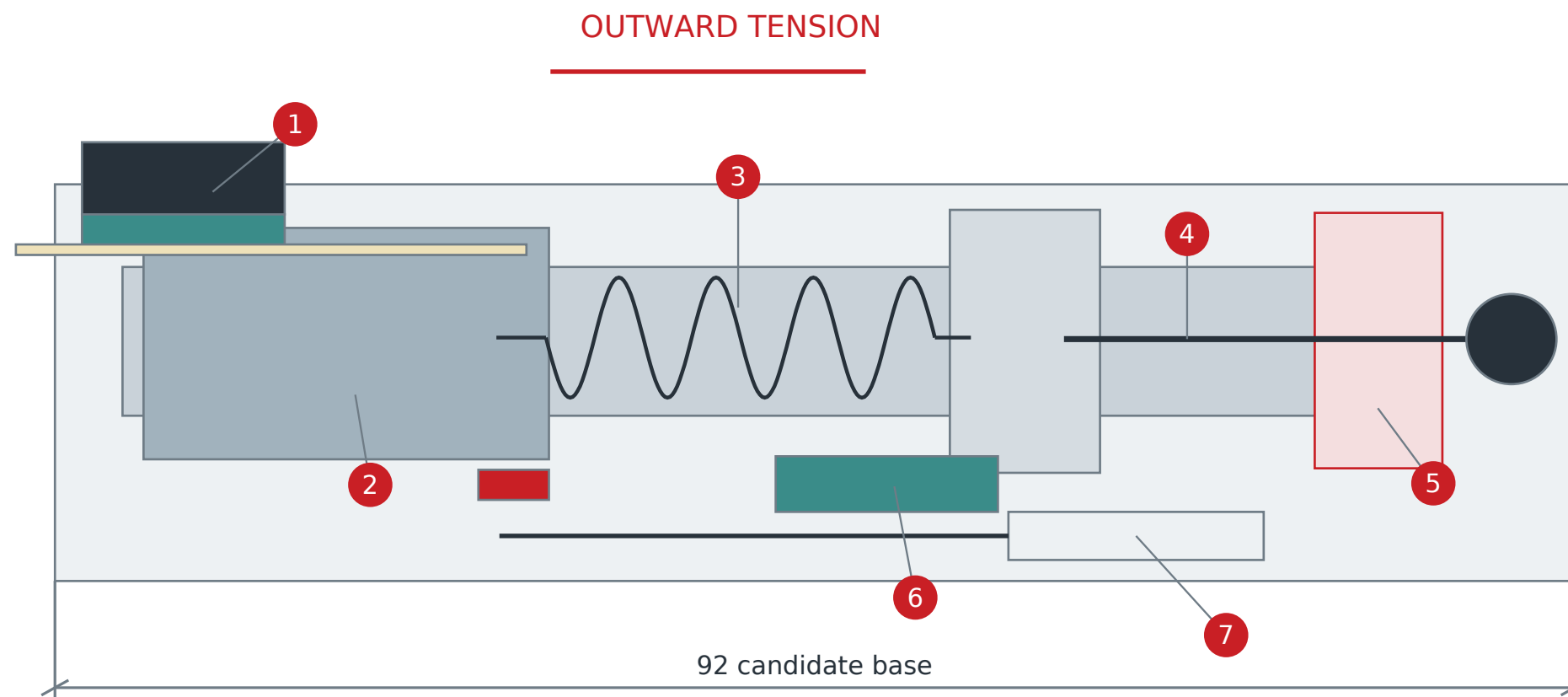
Functional connection diagram, not a released pneumatic standard schematic. P = compressed-air supply; V = suction; R = exhaust.





42 fixed datum clamps + 42 outward-pulling spring clamps. Depicted displacement is slack take-up; it is not paper strain.

PLAN / MECHANISM



Function register

- 1 Soft end jaw
- 2 Guided carriage
- 3 Extension spring
- 4 Preload adjustment
- 5 Positive travel stop
- 6 Displacement sensing
- 7 Back-off actuator

Jaw closes across paper thickness. Spring pulls along strip axis.
Broad replaceable pads grip the 20-30 mm end land; tool grips the adjacent land.

Illustrative spring selection

$$F_0 = 0.30 \text{ N } k = 0.15 \text{ N/mm } x = 2 \text{ mm } \rightarrow T = 0.60 \text{ N}$$

0-5 mm slide range; calibrate friction and verify notched-paper strength before selecting production settings.

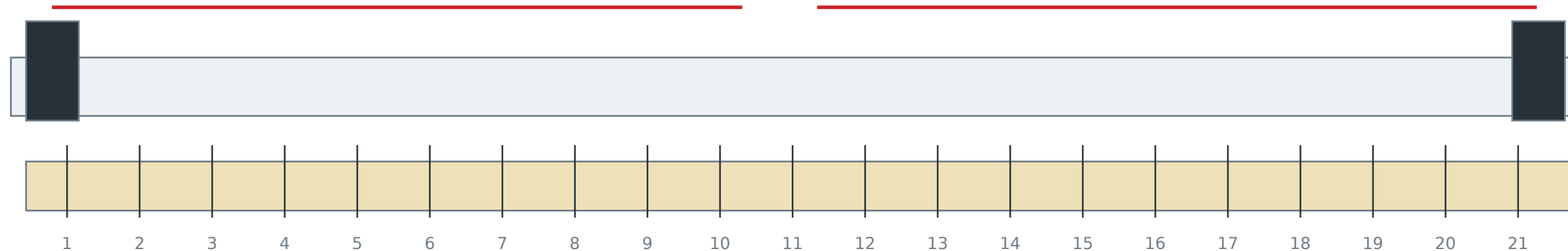


Two cameras on split linear slides inspect all 21 slot stations; no two-point-only assumption for flexible Nomex.

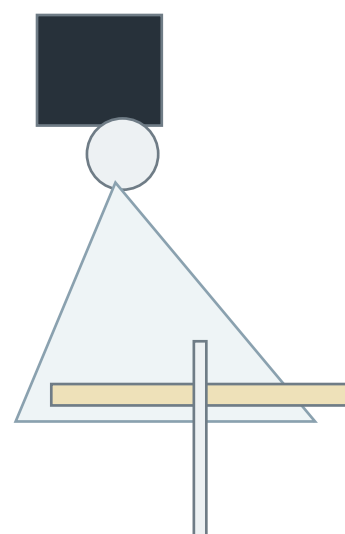
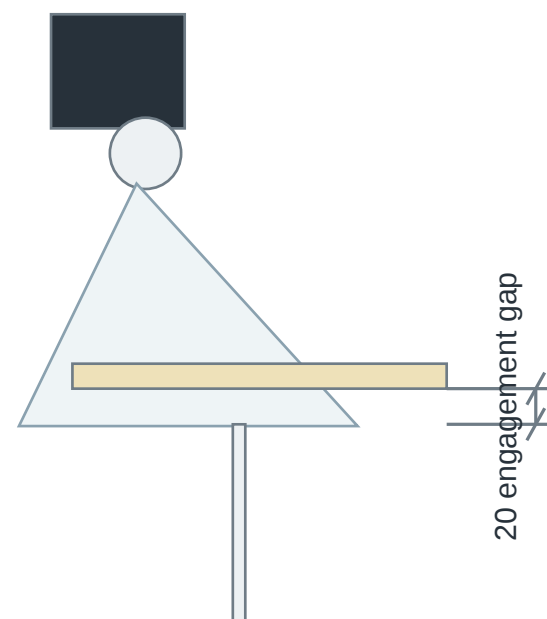
FRONT · SCAN COVERAGE

C1: -500 → -50 (10 stations)

C2: +500 → 0 (11 stations)



SIDE · TWO CALIBRATED PRESETS



Optical candidate / image gates

5 MP global shutter
48 × 36 mm FOV; WD 100-130 mm
≈ 0.020 mm/pixel sampling
Sampling is not measurement accuracy.

Check both required visible cut edges.
Fit overall XY / yaw; evaluate local residual.
Example ±0.15 mm gate: validate in trials.
Occluded edge = UNKNOWN / HOLD.

Record: strip / slot ID, calibration,
image, confidence, residual and decision.
Use a second view where required.

PRE: paper supported above entry; scan before insertion. POST: fixture holds; jaws open; inspect joint lips.



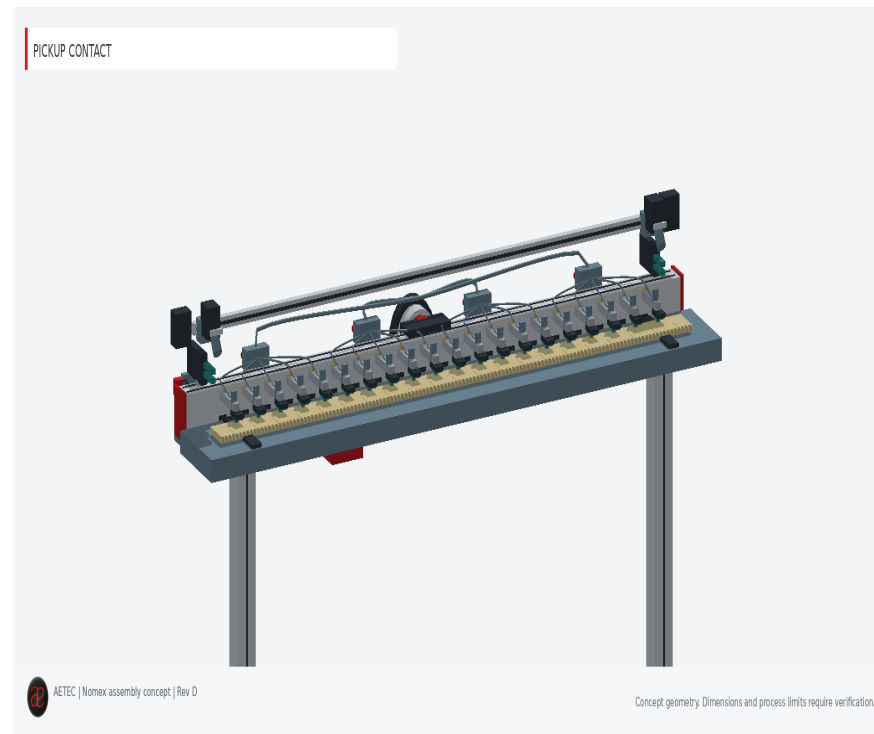
AETEC / NOMEX ROBOTIC ASSEMBLY

Flat pickup · supported handling sequence

D07 | REV G | DETAIL
PRELIMINARY DESIGN
NOT FOR FABRICATION

Face-normal vacuum contact, then lift, single-sheet confirmation, controlled gripping and high-clearance rotation.

01 / PARALLEL VACUUM CONTACT



02 / VERTICAL LIFT + SINGLE SHEET



03 / SUPPORTED ORIENTATION



01 Approach flat

Jaws retracted; no slanted peel.

02 Establish vacuum

Confirm four independent zones.

03 Lift vertically

Check one sheet, not a double.

04 Close soft jaws

Apply limited end tension.

05 Reach clear pose

Check beam and cable envelope.

06 Rotate supported strip

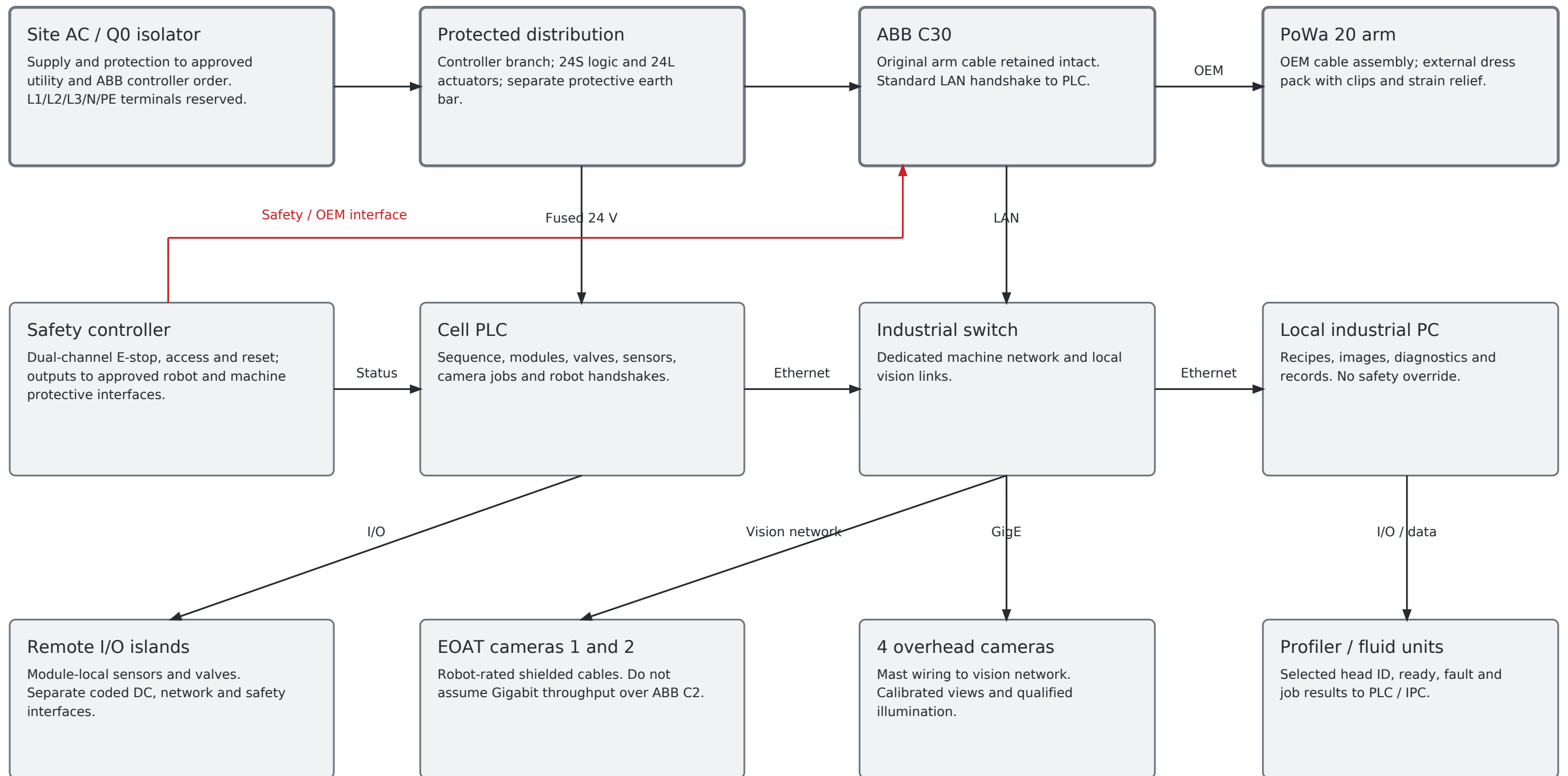
Proceed to pre-placement scan.

AETEC PTE. LTD. | DSO NOMEX PROJECT

Units: mm unless stated · Views NTS · Nominal dimensions require design release
Nomex grade, incoming cuts, forces, optics, hardware and interfaces remain to be qualified.

AETEC-DSO-NOMEX
MECH-D07-RevG

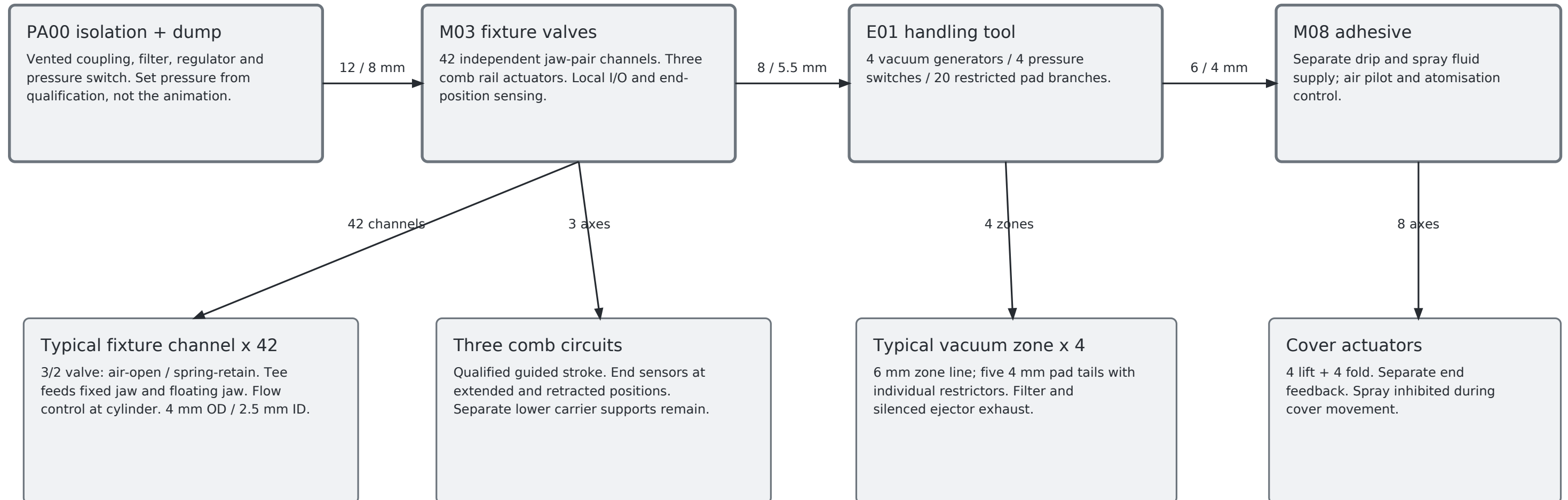
13 SEP 2026
A3 · CONCEPT





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PNEUMATIC DISTRIBUTION / LOCAL PRE-PIPED MODULES



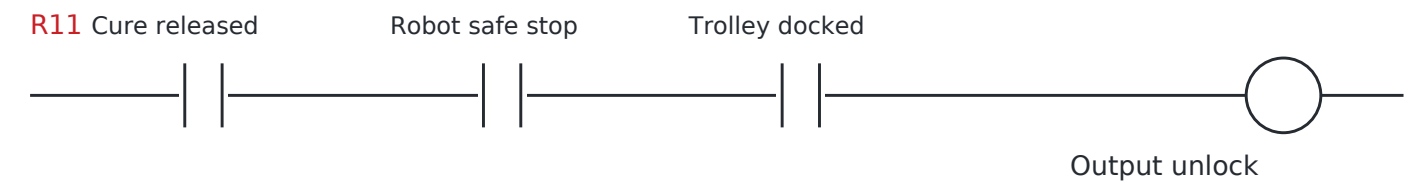
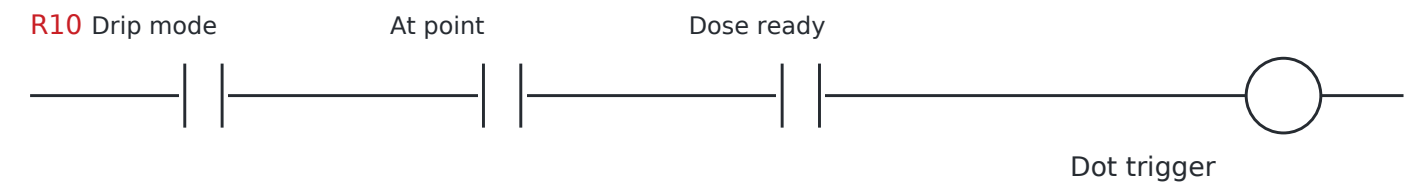
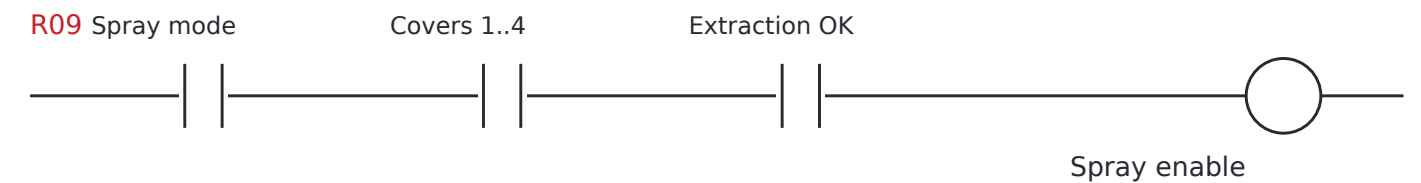
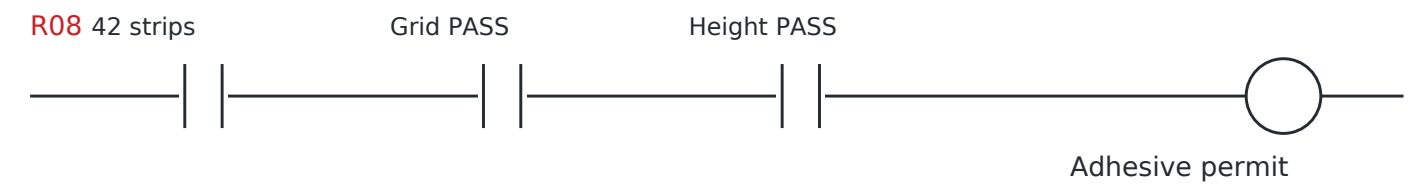
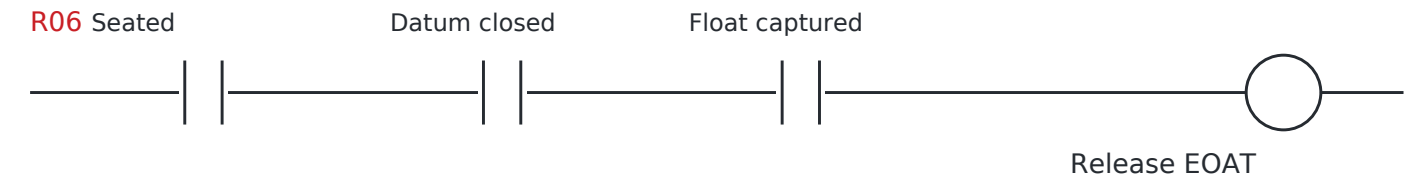
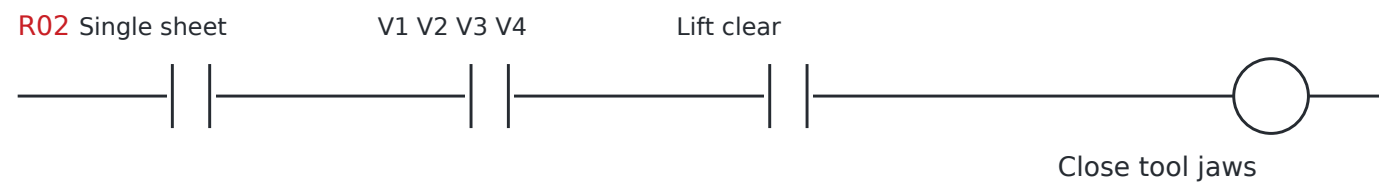
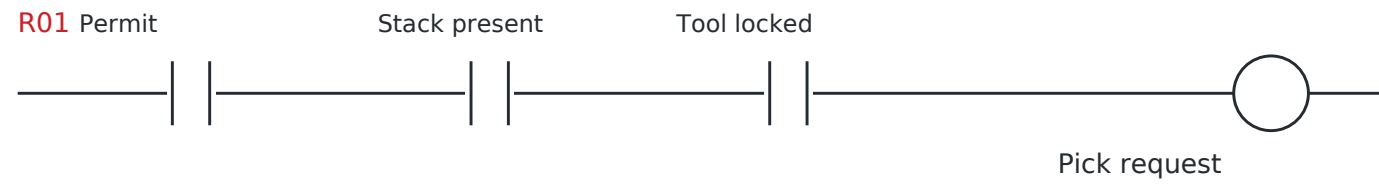
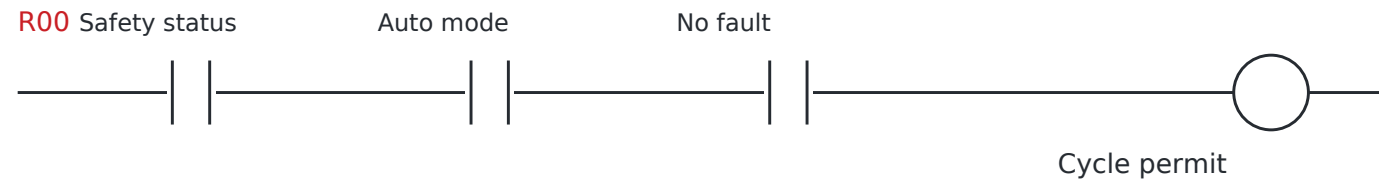
Typical fittings: M5 x 4 mm swivel elbows at small jaw cylinders; G1/8 x 6 mm pilot fittings; G1/4 x 8 mm tool trunk; G3/8 bulkhead for module feed. Confirm every OEM port before purchase.

The model route register includes 204 drawn local service runs. Additional OEM cable assemblies and internal tool tails are separate items. Liquid hose liner, bore and seals are held for the approved adhesive TDS/SDS. Main air and liquid connections are positioned below the dry electrical connector bay.

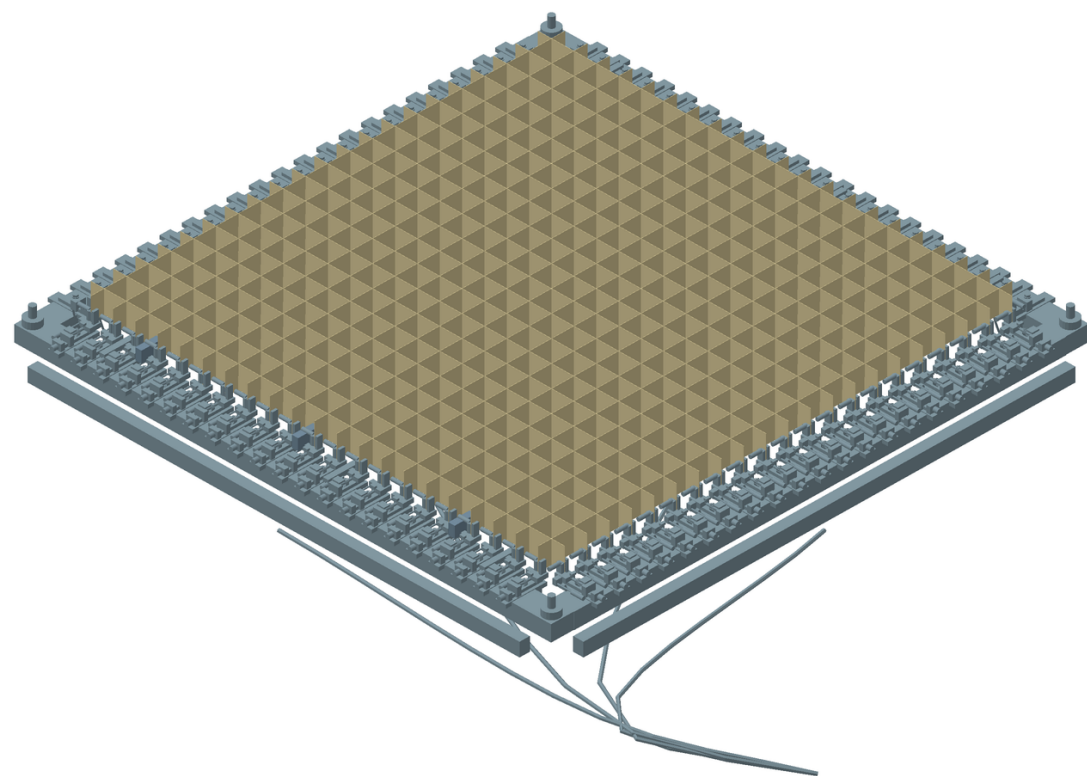
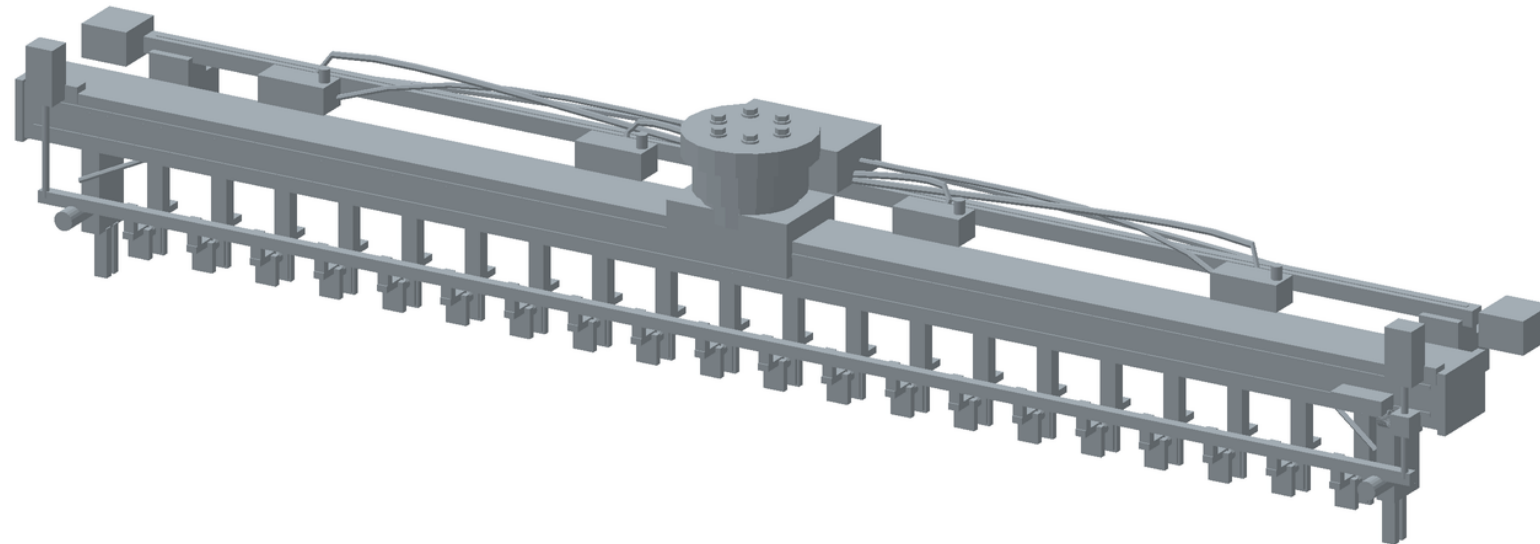


AETEC PTE. LTD.

PLC FUNCTIONAL LADDER / ORDINARY CONTROL LOGIC



Functional reference only. Actual edge triggers, timers, retries, reset, state latches, communication timeouts, discrepancy checks and safe recovery must be implemented in the selected PLC platform and tested. This drawing is not the safety program.



Machine parts

6061 machined adapters and brackets. Purchased profile sections. POM replaceable guide and jaw shoes. Threads simplified in STEP; specify engagement and locking on release drawings.

Printed prototype parts

PA12 / PETG guide bodies and sensor mounts. Heat-set inserts for repeated removal. Do not print robot load adapters or safety load-bearing brackets.

Contact surfaces

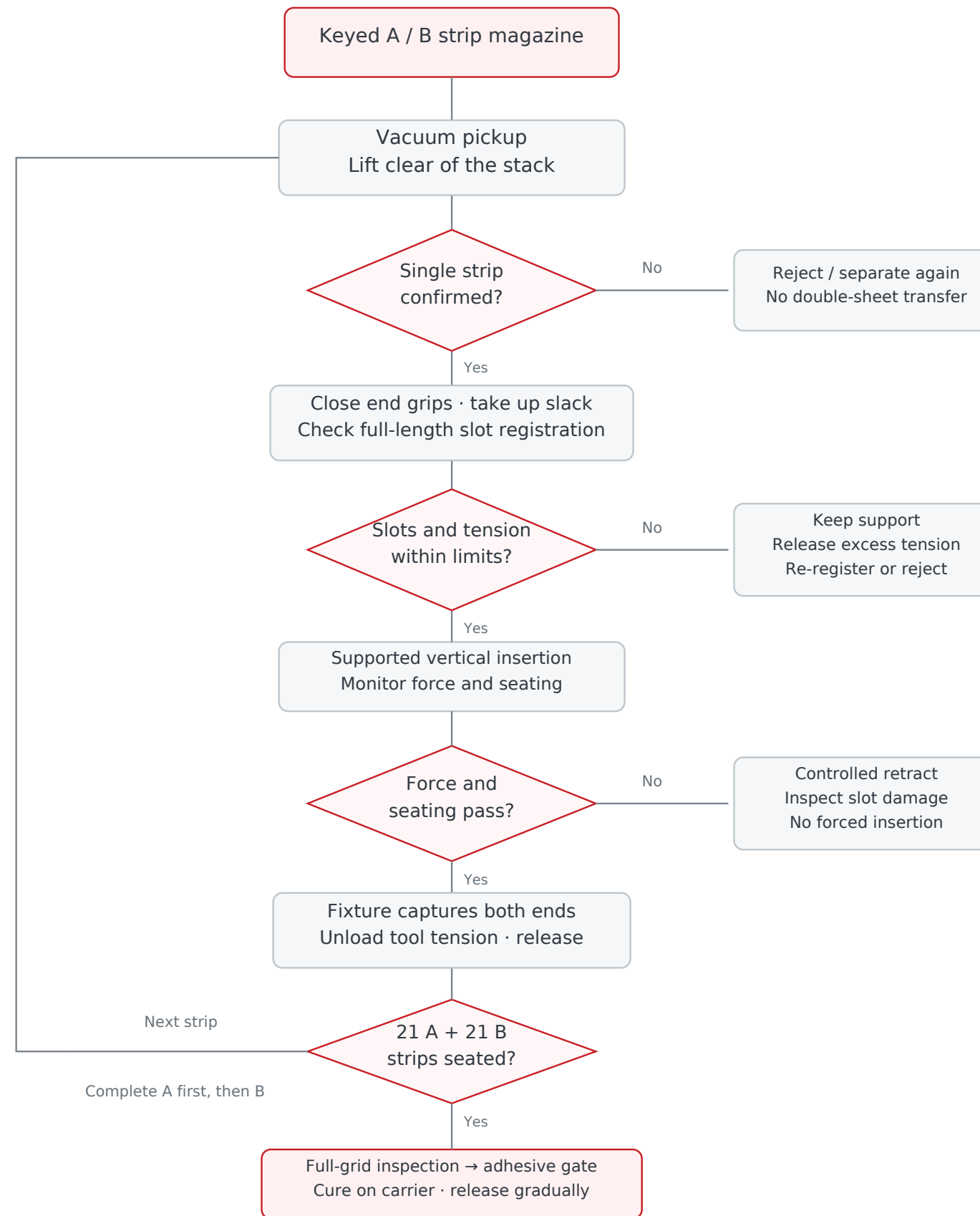
Trial 2 mm non-marking, silicone-free polyurethane pads, nominal 40 Shore A. Test grip, slip, marks, compression set and adhesive contamination.

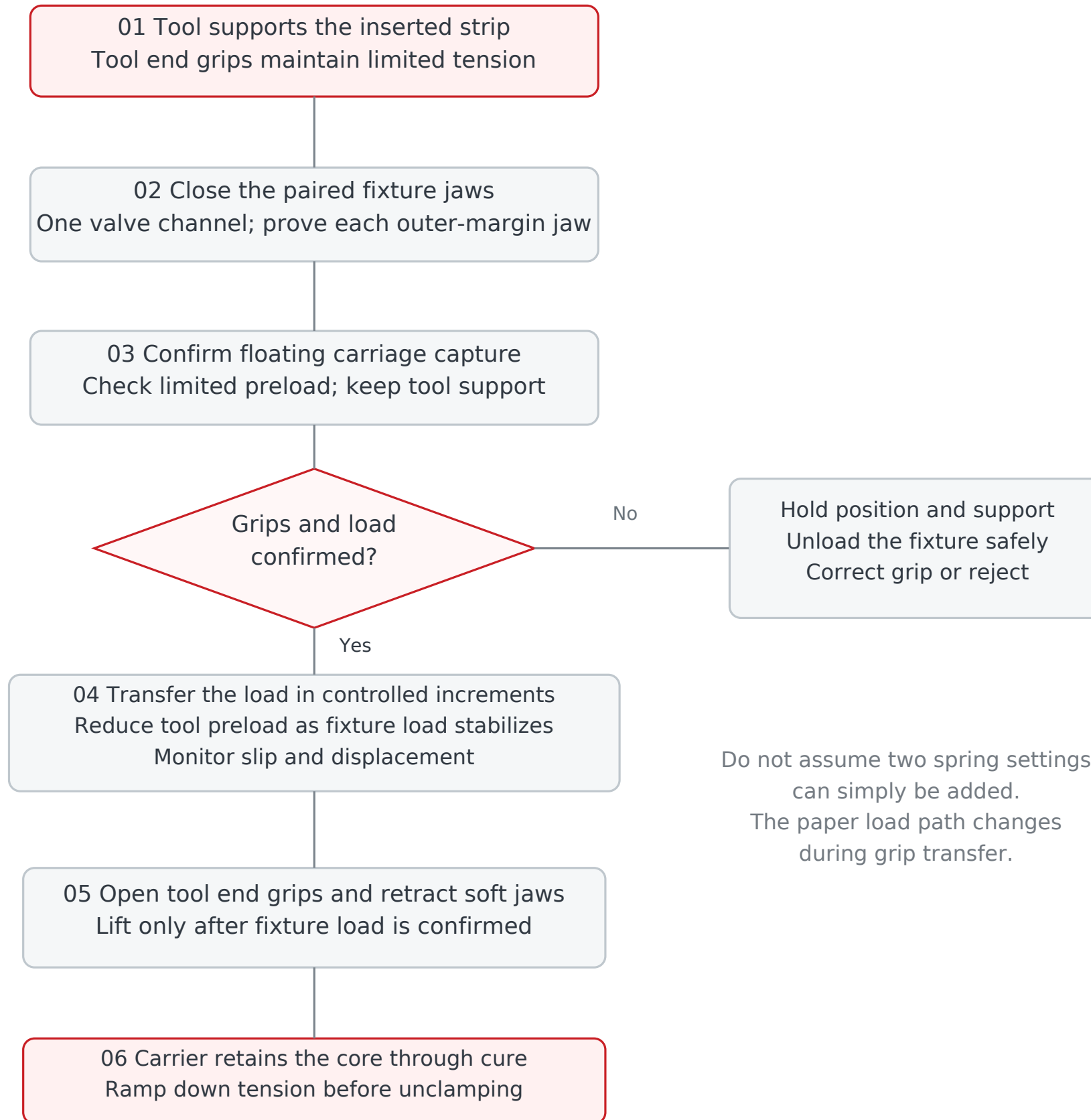
POC priorities

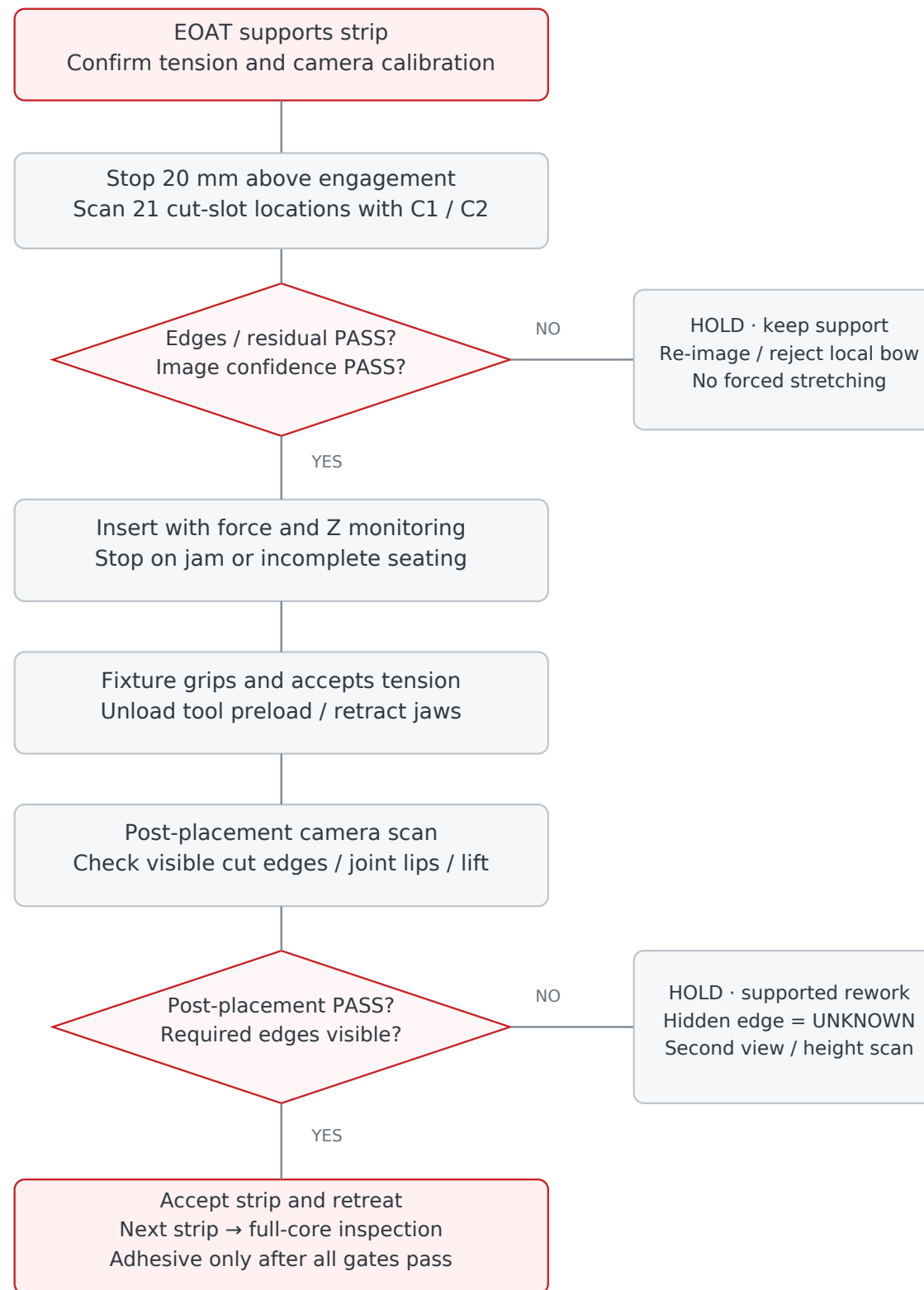
Six-slot engagement, small 5 x 5-cell test fixture, then a full 21-slot strip. Measure force, vacuum, image residual and tear/slip. Optional platen begins with static limited-force trials.

Drawings still required for release

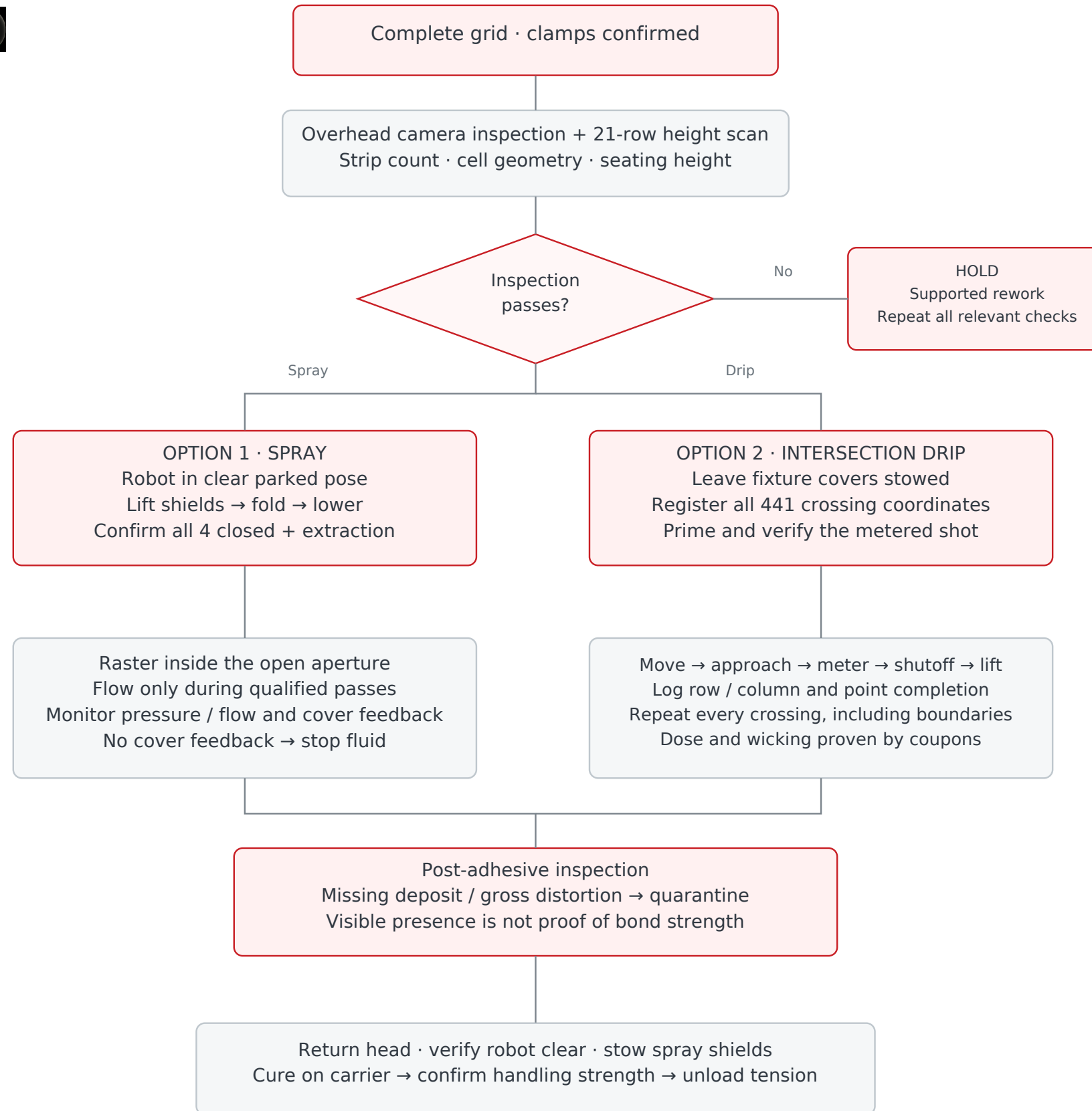
Approved supplier hole patterns, fits, flatness, surface finish, tolerance stack, motor loads, safety distances, exact terminals, hose compatibility and packed lift envelope.

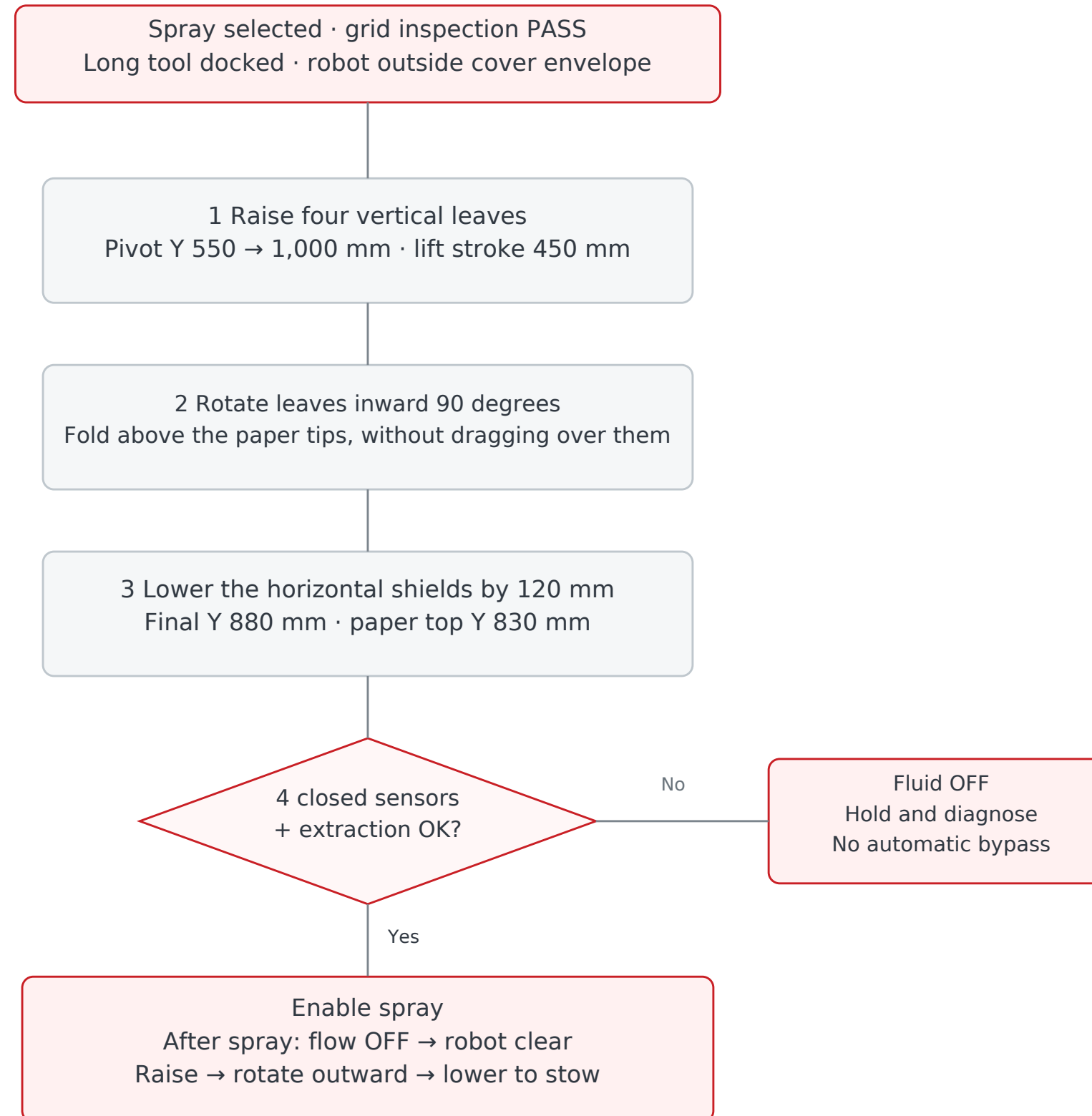




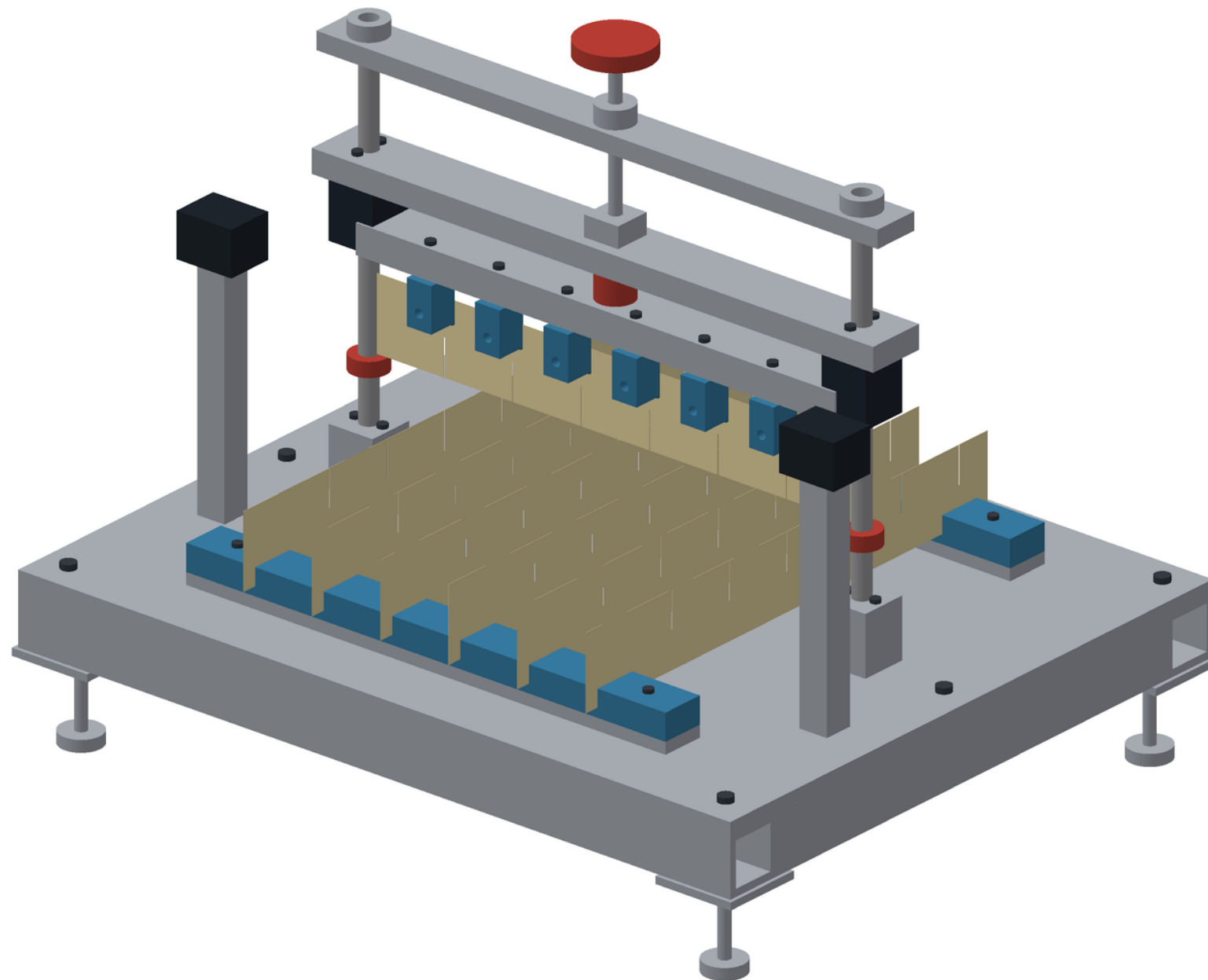


Each strip: align → insert → fixture handover → inspect → retreat





Drip mode bypasses the entire cover sequence. A drip-only machine omits these actuators.



Frame and base

520 x 420 mm base plate, 8 mm thick. Two 4040 rails at 520 mm and two at 340 mm. Bolted corner tie plates and four support feet.

Guides and motion

Two D12 x 272 mm steel rods on bored support blocks. POM slide bearings. Manual Tr8 lead screw and force measurement in the moving tool load path; the handwheel does not itself limit force.

Printed change parts

Two 350 x 30 x 18 mm PA12 slot bars on 8 mm POM spacers. Six 0.8 mm reference slots at 50 mm pitch. Final slots follow actual coupons.

Tool and inspection

350 x 35 x 20 mm short beam, six printed vacuum holders and replaceable 2 mm PU faces. Dual camera nests and a selected force amplifier/DAQ are trial equipment.

Reference insertion

B strip starts 70 mm above the seated height. Use adjustable lower stops and manual incremental approach. Camera/lens, force range, vacuum fittings, inserts and screw/nut catalogues must be selected before fabrication.

Trial objective

Record force/displacement, visible-edge error, vacuum leakage, slip and damage. Start dry and slow. This rig is not evidence of a qualified full-width production process.