

Production Process and Procedure

Foundry

1. Our foundry pours each caliper at its facility in Minnesota.
2. Each unit is then cleaned and prepared for quality testing.
3. Measurements are taken to ensure each caliper meets HydraSafe® Brake specifications.
4. Each lot undergoes heat testing to check for cracks or deformities.
5. A report, including pour and lot numbers, is sent to HydraSafe® Brake for record-keeping and tracking.
6. Each lot is prepared for shipping to our machine shop in Chicago.

Machine Shop

1. Upon receipt, units are counted, and measurements are taken to confirm foundry accuracy. These measurements are logged and recorded.
2. The machine shop sets up its 5-axis machine for final machining.
3. Each unit is removed, measured, and scanned to ensure all dimensions meet HydraSafe® Brake's tolerances and specifications.
4. A sample from each lot undergoes a CMM scan to confirm adherence to HydraSafe® Brake's tolerances and specifications. These documents are sent to HydraSafe® for review and recording.
5. The machine shop palletizes the units and prepares them for shipping to HydraSafe® Brake in Chicago.

Caliper Assembly

1. Upon receipt at our facility, all units are counted and visually inspected for any transportation damage.
2. Units are moved to the caliper workstation, where all paperwork is matched to each unit and uploaded to our system.
3. Each unit undergoes a thorough cleaning process, including deburring and thread verification.
4. Bleeder valves are installed and sealed.
5. Seals are inspected and installed, with three seals per piston cavity.
6. End caps are positioned and tightened according to specifications.
7. Pistons are cleaned, lubricated, and installed.

8. 7/8" bolts are installed for the brake pad backer plate.
9. Brake pads, springs, and associated hardware are added to each side.
10. Brake pad sensors and brackets are positioned and adjusted.
11. Swagelok stainless fittings and tubing are installed on each side of the caliper and sealed.
12. Each caliper is moved to our testing station, where it undergoes pressure and performance testing.
13. Once testing is complete, each unit is labeled with a HydraSafe® Brake serial number and the foundry's pour number, then entered into our tracking system.
14. Installation instructions, maintenance logs, MCPs, and warranty information are printed and added to each package.
15. Each unit is packaged, and the exterior of each box is labeled according to the order, then routed to shipping or stock.

Hawe (High Pressure Unit)

1. Before assembling HydraSafe® Brake power units, we verify that Hawe components, including high-pressure units, valves, and connectors, meet vendor specifications.
2. A Hipot test is performed on each motor to confirm it meets CSA standards, with results logged in our internal system. Tested units are then returned to stock with assigned tracking numbers.
3. Valves and connectors are visually inspected and added to stock.

Power Unit Assembly

1. Each power unit is enclosed in a UL-approved box, which is visually inspected and measured to confirm HydraSafe® Brake specifications.
2. The enclosure is moved to the testing workstation for assembly.
3. Isolation padding is installed.
4. The Inka unit is placed into the enclosure and secured.
5. The accumulator is installed and secured.
6. The operational valve is installed and secured.
7. Swagelok stainless fittings and tubing are installed and tightened according to specifications.
8. Relays, wiring harnesses, and breakers are installed and secured.
9. The capacitor is installed and secured.
10. The Inka unit is filled with hydraulic #32 oil.
11. Power is applied, voltages are verified, and results are logged.

12. A pressure test is conducted to ensure there are no leaks; the system is bled and prepared for operation.
13. Valve pressures are set using our software and logged into our system.
14. Code-compliant data tags per ASME A17.1 and the CSA data tag are added to each power unit.
15. Each unit is labeled with a HydraSafe® Brake serial number and entered into our tracking system.
16. The unit is packaged, and the exterior of the box is labeled according to the order before being routed to shipping or stock.

Shipping and Custom Orders

1. Orders in our system are added to our tracking system and matched to each caliper and power unit, then printed and sent to shipping.
2. Customer purchase orders, project names, and payment schedules are verified and reviewed by our accounts receivable department.
3. The customer order is weighed, and the bill of lading (BOL) is prepared.
4. Shipping is scheduled with the customer, and the BOL is logged in our system.

Plus Model Controller

1. If a Plus model is required, one is selected from stock.
2. Serial numbers, prints, and installation manuals are verified, and the HydraSafe® Brake project name is added.
3. This information is logged in our system and tracked.
4. One Plus unit is paired with two HydraSafe® Brake Easy models and packaged or shipped according to our sales order tracking system.