

Samsung SL-45A for Aerospace

Heavy CNC lathe purpose-built for forged blanks, rough shafts, drive mandrels, and structural stock. This paper covers what the machine does, the aerospace parts we produce with it, the alloys we run, the tolerances and finishes aerospace buyers expect, and the documentation package.

14" OD × 96" L max turning

ENVELOPE

±0.0005" routine after roughing

TOLERANCE

1994

SINCE

ISO 9001:2015

QMS

Same-week / rig-down direct

RESPONSE



Hammer of Forge · 14" OD × 96" L max turning · heavy-duty CNC lathe for rough stock

PUBLISHED

January 15, 2026

LAST UPDATED

2026-01-15

FORMAT

Web + PDF

READ TIME

~6 min

Executive summary

Machine: Samsung SL-45A/2200 (shop nickname: *Hammer of Forge*). heavy-duty CNC lathe for rough stock at B&R Productions, running from our New Waverly, Texas shop under an ISO 9001:2015 quality system.

Application: Heavy CNC lathe purpose-built for forged blanks, rough shafts, drive mandrels, and structural stock for Aerospace customers — Aerospace primes, tier-1 and tier-2 suppliers, MRO shops, propulsion component manufacturers, structural assembly integrators, actuator OEMs.

Envelope: 14" OD × 96" L max turning. **Tolerance:** ±0.0005" routine on critical features. **Traceability:** Material by heat and lot on every job.

The machine, in context

Hammer of Forge is the machine that takes ugly starting material and makes it round, straight, and to size. Forged blanks with scale and skin, rough saw-cut billets, oversized bar stock — this machine has the rigidity and horsepower to get through the roughing pass without chatter and without walking the part. Most of what our other lathes finish, this one starts.

Full specifications

Model	Samsung SL-45A/2200 ("Hammer of Forge")
Type	Heavy-duty CNC turning center — Samsung SL-45A platform
Max turning capacity	14" OD × 96" L (B&R working spec)
Platform max swing	29.72" over bed; 24.8" swing over cross slide
Platform max machining Ø	26.7"
Platform max length	118" between centers
Bar capacity	6.5" through spindle
Spindle speed	2,000 RPM max (3-speed gearbox)
Main motor	50 HP continuous / 40 HP rated
Tailstock	Programmable #5 MT (full-length support for slender parts)
Turret	12-position

Tolerance capability	±0.0005" routine after roughing; excellent for finish passes
Materials	Forgings, castings, bar stock — 4140/4340, stainless, Inconel, Duplex, 17-4 PH

Values marked "platform" reflect the machine manufacturer's published spec range for this platform family; B&R's working spec is what we quote on this specific unit.

Who this serves in Aerospace

Typical buyer: Aerospace primes, tier-1 and tier-2 suppliers, MRO shops, propulsion component manufacturers, structural assembly integrators, actuator OEMs.

What's hard about aerospace work: Certification-driven documentation, exotic superalloys, tight tolerances on structural and engine components, ITAR handling for controlled prints, and customer-specific QMS integration.

Typical Aerospace parts we produce on Hammer of Forge

- Rough-turning of aerospace forgings
 - Large-diameter engine shaft roughing
 - Structural round parts starting from forgings or castings
- Actuator rod blanks and roughing pass
 - Roughing to prep parts for finish on precision machines

Above list is representative; if your part isn't shown, call and ask — most oilfield / aerospace / defense / industrial turned or milled work fits somewhere in the shop.

Alloys we run for Aerospace

Standard range: Titanium Grade 5 (Ti-6Al-4V) and Grade 23 (Ti-6Al-4V ELI) · Inconel 718 · Inconel 625 · Waspaloy · A286 · 17-4 PH · 15-5 PH · 13-8 Mo PH · Aluminum 7075/6061 · Custom aerospace alloys on request.

Titanium Grade 5 is the workhorse and it's temperature-sensitive: aggressive chip load with flood coolant keeps the heat in the chip, not the workpiece. Light cuts overheat titanium and cook tools; that's why titanium demands a different intuition than steel. Inconel 718 in aerospace-aged condition is harder and less forgiving than the annealed billet stock — most aerospace 718 work assumes aged. 17-4 PH and 15-5 PH are common for structural and actuator components; both are precipitation-hardening stainless with condition-specific machining plans.

What "we run these weekly" means: we stock or reliably source the common alloys in the industry's typical spec range. Sharp tooling, proven feeds and speeds, and process control specific to each alloy family. Your part is not the one we're experimenting on.

How we machine it — our 5-step process

This is the process B&R runs on every job, aerospace or otherwise. The specifics of feeds, speeds, and tooling shift by alloy and machine; the discipline is universal.

- 1 Material verification.** Every job starts with material traceability. Heat and lot numbers documented against the mill test report. For customer-supplied material, we verify against the CofC before touching the stock.
- 2 First-article layout.** Stock is measured and laid out before any cutting starts. Concentricity, roundness, and squareness of the starting material established; if the stock is out of tolerance we call the customer before wasting time on a bad blank.
- 3 Roughing with process control for the alloy.** Feeds, speeds, and coolant strategy set for the specific alloy family — sharp coated carbide (or PCD for high-volume Ti Grade 5), positive rake, high-pressure through-tool coolant on 2507 and Inconel to control cutting temperature. Interrupted cuts get extra attention because they cycle heat into the workpiece.
- 4 Finish pass to spec.** Finish pass with a fresh insert, controlled DOC, and measured surface-finish targets. Critical features (bore concentricity, seat grooves, sealing surfaces) are held tighter than most job-shop lathes can offer.
- 5 CMM verification + documentation.** Every critical dimension CMM-verified. First-article report generated. Certificate of conformance issued with delivery. Customer-specific ITPs and PPAP-style packages produced on demand.

Tolerance and finish expectations in Aerospace

± 0.0005 " routine on critical features. Tighter with proper fixture and setup — some aerospace features run ± 0.0002 " or GD&T-driven cylindricity and position tolerances. CMM verification standard on first articles; process-driven measurement on runs. Surface finish measured, not estimated.

Documentation and quality workflow

Customer-specific quality plans integrated on demand. First-article layout and CMM verification standard. Material traceability by heat and lot. ITAR-controlled prints handled under NDA with customer-specific document control — prints stay in-shop. Certificates of conformance issued with delivery.

Response time and emergency work

AOG (aircraft-on-ground) work prioritized when material is available. Emergency response supported for existing aerospace customers with blanket arrangements or established relationships. Call direct at (936) 291-7827.

How we compare

Compared to a captive aerospace shop: we're faster for one-offs and small runs, more flexible on setup, and we don't require a long approval process. Compared to a lowest-bidder commodity shop: we understand the alloys, we've handled ITAR before, and we treat first-article inspection as a discipline rather than a formality.

Working with B&R Productions

New customer or existing, the process starts the same way: call (936) 291-7827 or send a print through the quote form. Prints are accepted as PDF, STEP, IGES, DWG, or DXF; if you only have a sample part, we reverse-engineer routinely. NDAs on request. ITAR-controlled prints handled under document control with prints staying in-shop.

Quotes typically come back within 24 hours for standard work, same-day for repeat customers on stocked materials, and near-immediately by phone for emergency and rig-down situations. Lead times are quoted honestly — we don't promise Wednesday and deliver next month.

Frequently asked questions

8 questions covering the Samsung SL-45A platform and Aerospace work. Also indexed as FAQ schema for AI answer engines.

What's the Samsung SL-45A designed for?

Heavy roughing. Forged blanks with scale and skin, rough saw-cut billets, oversized bar stock — this machine has the rigidity and horsepower (50 HP continuous / 40 HP rated, 3-speed gearbox) to get through the roughing pass without chatter or walking the part.

What's the max envelope on the SL-45A?

14" OD × 96" L is B&R's working spec. Platform max is 26.7" machining diameter × 118" between centers with 29.72" swing over bed. Bar capacity: 6.5" through spindle.

What tailstock does the SL-45A carry?

Programmable #5 MT tailstock — full-length support for slender long parts. 12-position turret.

Do you serve aerospace primes and tier-1/2 suppliers?

Yes. Aerospace primes, tier-1 and tier-2 suppliers, MRO shops, propulsion component manufacturers, and structural assembly integrators. Customer-specific quality plans and AS9100-lineage QMS expectations supported.

Can you handle ITAR-controlled aerospace/defense work?

Yes. ITAR-controlled prints handled under NDA with customer-specific document control. Prints stay in-shop.

What tolerances do you hold on aerospace parts?

±0.0005" routine on critical features. First-article layout and CMM verification standard. Surface-finish targets measured to spec.

What aerospace alloys do you run?

Titanium Grade 5 (Ti-6Al-4V), Grade 23 ELI, Inconel 718 and 625, Waspaloy, A286, 17-4 PH, 15-5 PH, aluminum 7075/6061. Custom aerospace alloys on request.

Can you respond to AOG (aircraft-on-ground) work?

Yes, when material is available. Emergency response supported for existing aerospace customers. Newer customers should call to discuss what's realistic for their specific alloy and part.

Related white papers

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Ready to talk about your Aerospace work?

Send us a print or a sample photo and specs. Emergencies: call direct and say "rig-down."

Published by B&R Productions — a precision CNC machining shop in New Waverly, Texas, in business since 1994. ISO 9001:2015 certified. Serving oil & gas, aerospace, defense, and industrial customers across Texas and the Gulf Coast.

Written by the B&R Productions team. Machine specs verified against manufacturer data. Alloy and process notes reflect shop practice as of 2026-01-15.

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