

Hwacheon Mega 100 for Aerospace

Heavy-duty CNC lathe with industry-leading 10" thru-hole for tubing, collars, subs, and long-shaft work. 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.

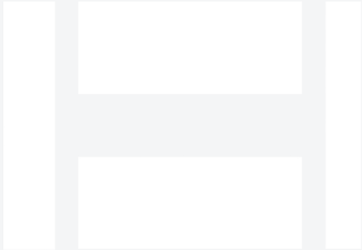
16" OD × 100" L × 10" thru-hole
ENVELOPE

±0.0005" routine on critical features
TOLERANCE

1994
SINCE

ISO 9001:2015
QMS

Same-week / rig-down direct
RESPONSE

**HWACHEON**

Texaco Thunder · 16" OD × 100" L × 10" thru-hole · heavy-duty CNC lathe with 10" thru-hole

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Executive summary

Machine: Hwacheon Mega 100 (shop nickname: *Texaco Thunder*). heavy-duty CNC lathe with 10" thru-hole at B&R Productions, running from our New Waverly, Texas shop under an ISO 9001:2015 quality system.

Application: Heavy-duty CNC lathe with industry-leading 10" thru-hole for tubing, collars, subs, and long-shaft work for Aerospace customers — Aerospace primes, tier-1 and tier-2 suppliers, MRO shops, propulsion component manufacturers, structural assembly integrators, actuator OEMs.

Envelope: 16" OD × 100" L × 10" thru-hole. **Tolerance:** ±0.0005" routine on critical features. **Traceability:** Material by heat and lot on every job.

The machine, in context

The 10-inch through-hole is where Texaco Thunder earns its keep. Long tubing stock, downhole tool bodies with internal passages, coiled-tubing tool bodies, large valve stems with bore access from both ends — parts that other shops outsource because their machines can't accommodate the stock. This machine turns outsourced-work into in-house work.

Full specifications

Model	Hwacheon Mega 100 ("Texaco Thunder")
Type	Heavy-duty flatbed horizontal CNC lathe — Mega-100 platform
Max turning capacity	16" OD × 100" L (B&R working spec)
Platform max cutting Ø	27.5" (700 mm) on the Mega-100
Chuck swing over bed	42.5" (1,080 mm)
Distance between centers	10 ft (3,000 mm) B&R config; platform available to 20 ft (6,000 mm)
Spindle bore	10" (255 mm) B&R config; platform range 6" – 12.6"
Spindle speed	400 / 750 RPM (two-range)
Spindle motor	25 HP
Turret	4 or 8-station heavy-duty
Machine weight	~35,000 lb (16,000 kg)

Purpose	Long shafts, main-shaft work, large pipe / tubing components
Tolerance capability	±0.0005" routine on critical features
Materials	Full oilfield alloy range — Inconel, Duplex 2205/2507, 17-4 PH, 4140, Monel

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 Texaco Thunder

- Long actuator cylinders with internal bore access
- Engine shafts with through-hole features
- Landing gear cylinder components
- Long-form fluid-handling manifold shafts
- Large-diameter aerospace tubing components

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 Hwacheon Mega 100 platform and Aerospace work. Also indexed as FAQ schema for AI answer engines.

What's special about the Mega 100's 10" thru-hole?

It accommodates long bar stock, tubing, and hollow parts that most CNC lathes can't clear. Downhole tool bodies with internal passages, coiled-tubing tool bodies, and long valve stems with bore access from both ends — parts most job shops outsource because their machines can't take the stock.

How long a part can the Mega 100 turn?

B&R's stated envelope is 100" (10 ft) between centers. The Mega-100 platform is available up to 6,000 mm (~20 ft) between centers on longer configurations.

What's the chuck swing and max cutting diameter?

Chuck swing over bed 42.5" (1,080 mm); max cutting Ø on the platform 27.5" (700 mm). Two-range spindle at 400/750 RPM with a 25 HP main motor.

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.