

Hwacheon Hi-Tech 400 for Industrial & General Manufacturing

Mid-size CNC lathe with live tooling — turn, mill, drill, and thread in one setup. This paper covers what the machine does, the industrial & general manufacturing parts we produce with it, the alloys we run, the tolerances and finishes industrial & general manufacturing buyers expect, and the documentation package.

12.5" OD × 49" L max turning

ENVELOPE

±0.0005" routine on critical features

TOLERANCE

1994

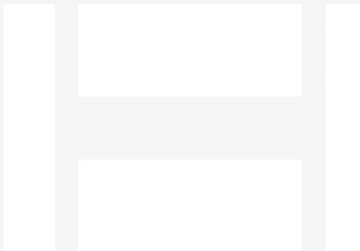
SINCE

ISO 9001:2015

QMS

Same-week / rig-down direct

RESPONSE



HWACHEON

Torque & Tumble · 12.5" OD × 49" L max turning · mid-size CNC lathe with live tooling

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Executive summary

Machine: Hwacheon Hi-Tech 400 (shop nickname: *Torque & Tumble*). mid-size CNC lathe with live tooling at B&R Productions, running from our New Waverly, Texas shop under an ISO 9001:2015 quality system.

Application: Mid-size CNC lathe with live tooling — turn, mill, drill, and thread in one setup for Industrial & General Manufacturing customers — Industrial equipment OEMs, custom machinery builders, pump and valve manufacturers outside oilfield, food and pharma equipment suppliers, mining and heavy-equipment operators, reverse-engineering customers, sustainment for out-of-production industrial equipment.

Envelope: 12.5" OD × 49" L max turning. **Tolerance:** ±0.0005" routine on critical features. **Traceability:** Material by heat and lot on every job.

The machine, in context

The Hi-Tech 400 is Hwacheon's heavy-duty box-way turning platform — the class of lathe you reach for when you're taking real chips off tough alloys. The 15" hydraulic chuck and 5.3" spindle bore let it accept the kind of stock most job-shop lathes won't clear, and the box-way construction keeps roughing cuts stable in Inconel and Duplex. Torque & Tumble handles wellhead spools, downhole tool bodies, valve stems, and any oilfield turning where rigidity and bore size matter more than cycle time.

Full specifications

Model	Hwacheon Hi-Tech 400 ("Torque & Tumble")
Type	Heavy-duty box-way CNC turning center — Hi-Tech 400 platform
Max turning capacity	12.5" OD × 49" L (B&R working spec)
Platform Z travel	1,270 mm (50") on the Hi-Tech 400 platform
Platform X travel	280 mm (11")
Chuck	15" hydraulic (Hi-Tech 400 platform)
Spindle nose	A2-11; 135 mm (5.3") spindle bore
Spindle speed	1,800 RPM (heavy-duty configuration)

Spindle motor	28/30 kVA
Tailstock	Programmable hydraulic; MT-6 taper
Turret	12-station
Rapid traverse	24 m/min
Control	Fanuc 18iTB
Structure	Box-way construction for heavy roughing rigidity
Machine weight	~18,700 lb
Tolerance capability	±0.0005" routine on critical features
Materials	Stainless, carbon steel, Inconel, Duplex, 17-4 PH, Monel, aluminum

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 Industrial & General Manufacturing

Typical buyer: Industrial equipment OEMs, custom machinery builders, pump and valve manufacturers outside oilfield, food and pharma equipment suppliers, mining and heavy-equipment operators, reverse-engineering customers, sustainment for out-of-production industrial equipment.

What's hard about industrial & general manufacturing work: Legacy parts with no OEM support, one-off replacement components, small-lot production runs, materials that don't fit standard shop capabilities, and tight lead times on repair work where a down-machine is losing money by the day.

Typical Industrial & General Manufacturing parts we produce on Torque & Tumble

- Industrial parts combining turned + milled features in one setup
- Pump components with drilled ports and turned bodies

- Custom parts with concentric machined + drilled features
- Legacy replacement parts requiring mixed operations
- Prototype work for industrial equipment builders

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 Industrial & General Manufacturing

Standard range: Stainless (304, 316, 17-4 PH) · Tool steels · 4140 / 4340 · Brass · Bronze · Aluminum · Cast iron · Specialty alloys per customer requirement.

Industrial work covers the widest alloy range because the applications are the widest. Food and pharma often specify 316L or 17-4 PH; mining and heavy equipment specify tool steels and 4140/4340; pump manufacturers outside oilfield use everything from bronze bushings to stainless impellers. We work with the customer's spec sheet — if you tell us the alloy, we'll tell you honestly whether we can machine it and how quickly.

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, industrial & general manufacturing 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 Industrial & General Manufacturing

±0.0005" routine on critical features. Industrial applications range from precision (pump seal areas, close-fit bushings) to structural (mining and heavy-equipment brackets); we adjust the inspection plan to what the part actually needs. Surface finish measured on parts where finish drives function.

Documentation and quality workflow

Documentation calibrated to customer requirement. Material traceability standard for critical parts. Certificates of conformance issued with delivery. NDAs on request for proprietary designs or reverse-engineered legacy parts.

Response time and emergency work

Down-machine and production-critical work prioritized. Lead times honestly quoted — no false promises. For legacy reverse-engineering, we typically confirm feasibility on the first phone call. Call (936) 291-7827.

How we compare

Compared to sourcing a new OEM part: we're often faster and cheaper for one-offs and small runs, and for legacy parts where the OEM has moved on we're often the only realistic option. Compared to a cheapest-bidder job shop: we hold tolerance, document material, and don't ruin the part.

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 Hi-Tech 400 platform and Industrial & General Manufacturing work. Also indexed as FAQ schema for AI answer engines.

What makes the Hi-Tech 400 different from a standard CNC lathe?

Box-way construction and a heavy-duty spindle assembly rated for real chips in tough alloys. 15" hydraulic chuck, 5.3" (135 mm) spindle bore, and a programmable hydraulic tailstock with MT-6 taper for long-part support.

What's the max turning length on the Hi-Tech 400?

B&R's working spec is 49" L × 12.5" OD. The platform Z-axis travel is 1,270 mm (50") — matching B&R's stated envelope.

What control does the Hi-Tech 400 run?

Fanuc 18iTB. 12-station turret, rapid traverse 24 m/min, machine weight ~18,700 lb.

What kind of industrial customers does B&R work with?

Industrial equipment OEMs, custom machinery builders, non-oilfield pump and valve manufacturers, food and pharma equipment suppliers, mining and heavy-equipment operators, and any customer who needs a legacy or reverse-engineered part made right.

Do you machine one-off replacement parts?

Yes — a lot of our industrial work is exactly this. Send the sample or drawing; if the material is on the shelf, we're often faster than the OEM. Reverse-engineered legacy parts across almost every sector.

What materials do you run for industrial work?

Full range — stainless (304, 316, 17-4 PH), tool steels, 4140/4340, brass, bronze, aluminum, cast iron, and specialty alloys per customer requirement. If you need something unusual, ask.

Do you offer emergency turnaround on down-machine parts?

Yes for repeat customers with material on the shelf. Same-day and next-day realistic when we already have the alloy. Call (936) 291-7827 and describe what's down.

Can you do small-batch production or is B&R just one-offs?

Both. Prototype and small-batch through repeat production. Small production runs where a big shop's minimum order would kill the economics are exactly where we fit.

Related white papers

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Ready to talk about your Industrial & General Manufacturing 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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