

BALFORD.

Automotive Sensor Hex Nuts & Plastic Accessories

Stainless steel hex nuts, threaded fittings and PTFE accessories for oxygen, NOx and exhaust gas temperature sensors

Zhejiang Balford Mechatronics Co., Ltd.

2# Guangfa Road, Yaojiang, Zhuji, Shaoxing, Zhejiang 311800, China

shawn@balford.net | +86-135-8846-2222 | balford.net

CNC turned parts · deep drawn and stamped parts · assemblies

Presses 25-350 t · 4,000+ single-hit drawing dies since 2000 · 500+ machines

Quality system certified to ISO 9001:2015 · key processes aligned with IATF 16949 (certification not held)

Product range

Every item is a non-standard part made to drawing. The table is the range we turn most often and shows the threads, hex sizes, materials and dimensions that recur in it.

Sensor family	Thread	Hex across flats	Material	Height	Outer diameter	Bore
Oxygen sensor - automotive	M18	S22	430F / 430 stainless	24.8 - 29.5 mm	16.6 - 19.06 mm	6.7 - 14.86 mm
Oxygen sensor - motorcycle	M12	S14 / S17	430F stainless	16.5 - 23.9 mm	10.5 - 14 mm	4 - 10.5 mm
Nitrogen oxide (NOx) sensor	M20 / M22 / M27	S22 / S24 / S30	304 / 430 stainless	13.5 - 36.3 mm	17.8 - 25 mm	6 - 20.35 mm
Exhaust gas temperature sensor	M14	S17	304 stainless	13 - 18 mm	11.5 - 12.4 mm	6 - 8.7 mm
Other sensor fittings	to drawing	to drawing	PTFE (bought out)	11 - 20.5 mm	11.2 - 16.6 mm	1.4 - 8.2 mm

Made to drawing. The thread, hex size, bore and sealing face follow your drawing. Turning, drilling, threading and inspection run in our own plant; the bar material is bought in.

Sensor families



Oxygen sensor - automotive

Thread M18 | Hex S22

Material 430F / 430 stainless

Height 24.8 - 29.5 mm

OD / bore 16.6 - 19.06 mm / 6.7 - 14.86 mm



Oxygen sensor - motorcycle

Thread M12 | Hex S14 / S17

Material 430F stainless

Height 16.5 - 23.9 mm

OD / bore 10.5 - 14 mm / 4 - 10.5 mm



Nitrogen oxide (NOx) sensor

Thread M20 / M22 / M27 | Hex S22 / S24 / S30

Material 304 / 430 stainless

Height 13.5 - 36.3 mm

OD / bore 17.8 - 25 mm / 6 - 20.35 mm



Exhaust gas temperature sensor

Thread M14 | Hex S17

Material 304 stainless

Height 13 - 18 mm

OD / bore 11.5 - 12.4 mm / 6 - 8.7 mm



Other sensor fittings

Thread to drawing | **Hex** to drawing

Material PTFE (bought out)

Height 11 - 20.5 mm

OD / bore 11.2 - 16.6 mm / 1.4 - 8.2 mm

Plastic accessories are bought out, not made by Balford. The PTFE insulators and bushes are sourced to drawing from qualified suppliers and supplied together with our turned stainless parts. Drawing and material grade are confirmed with the supplier before a lot is accepted.

How these parts are made

Hex nuts and threaded fittings are **CNC turned from bar**. The hex, the thread, the bore and the sealing face are produced from the same datum, usually in one or two setups, so that the bore stays concentric to the thread - which is what decides whether the sensor seats squarely.

- Turning and threading on CNC lathes; bores checked with three-point bore micrometers and plug / go-no-go gauges
- Concentricity and runout checked with a concentricity gauge and a 2.5D optical measuring projector
- Typical lead time for a new turned part: 7 to 15 calendar days from a confirmed drawing
- PPAP Level 3 is the normal submission for new programmes

Materials

- **430F** - free-machining ferritic stainless: the usual choice for oxygen sensor hex nuts. Machines cleanly, takes a thread well, resists exhaust corrosion without the nickel cost of 304.
- **430** - the same ferritic family without the free-machining addition.
- **304** - austenitic stainless for NOx and exhaust gas temperature fittings.
- **PTFE** - bought-out insulators and bushes (see note above).

What we declare

- We are not IATF 16949 certified. Our controls are aligned with IATF 16949 requirements.
- The quality system is certified to ISO 9001:2015. ISO 14001:2015 has lapsed and is not claimed.
- Bought out, not made here: PTFE insulators and bushes, bulk heat treatment, slow-wire EDM, passivation, electropolishing, plating, phosphating and liquid painting. Powder coating is split - large sheet-metal parts in our own booth, small parts by a partner line. Hot forging, cold extrusion, cold heading, casting and powder metallurgy are bought as near-net pre-forms and finished by machining in-house.
- Dimensions to 0.001 mm are quoted only for selected critical machined features where process, geometry, material and inspection conditions allow and the drawing confirms it.

Send a drawing for a DFM review and a quotation · rfq.balford.net · shawn@balford.net

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