



PRECISION PERFORMANCE
SINCE 2008

LN Engineering

MA1/MA2 Nickies

**Alusil Engine Block Reconditioning
and Performance Pistons**



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Mission

LN Engineering seeks to provide innovative “no-compromise” solutions to the automotive aftermarket to exceed OEM requirements. We strive to deliver the highest level of precision performance for our products using improved material, manufacturing, and finishing technologies, all backed up by industry leading educational resources and support.



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Facility

We do all our machining and manufacturing in the USA in our 18,000 sq/ft facility, located one hour south of Chicago, IL.





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Quality

Every part made by LN Engineering undergoes stringent quality control inspections at multiple points during the manufacturing or reconditioning process to ensure the best possible outcome for our customer.

ISO 9001 Compliant





Why rebuild rather than replace?

- **New complete engines are not available from the factory.**
- **OEM short block program is cost prohibitive and do not address cylinder problems.**
- **Used engines are expensive and may already have unknown cylinder issues.**
- **When upgraded with Nickies, performance and reliability is improved.**



Why LN Engineering?

- **Replace Alusil bores with proven nickel silicon carbide NSC cylinder platings.**
- **Increase displacement for improved performance without sacrificing reliability.**
- **Assemble with factory tools and parts.**
- **LN Engineering and Flat 6 Innovations were the first to offer solutions for the MA1/9A1 engine.**



Cylinder Failures We Fix

- **Scoring:** Failure of piston skirt coating or breakdown of the Alusil cylinder results in galling of piston skirt and scoring of in the bores.
- **Piston seizing:** Cylinder bores can shrink around the main bearing saddles, effectively reducing the piston to wall clearance. This results in piston seizing.
- **Cylindricity:** New piston rings will often not seat in a used cylinder bore due to excessive ovality and taper.



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Nickies

In 2009, Porsche introduced the MA1/9A1 engine featuring an Alusil engine block.

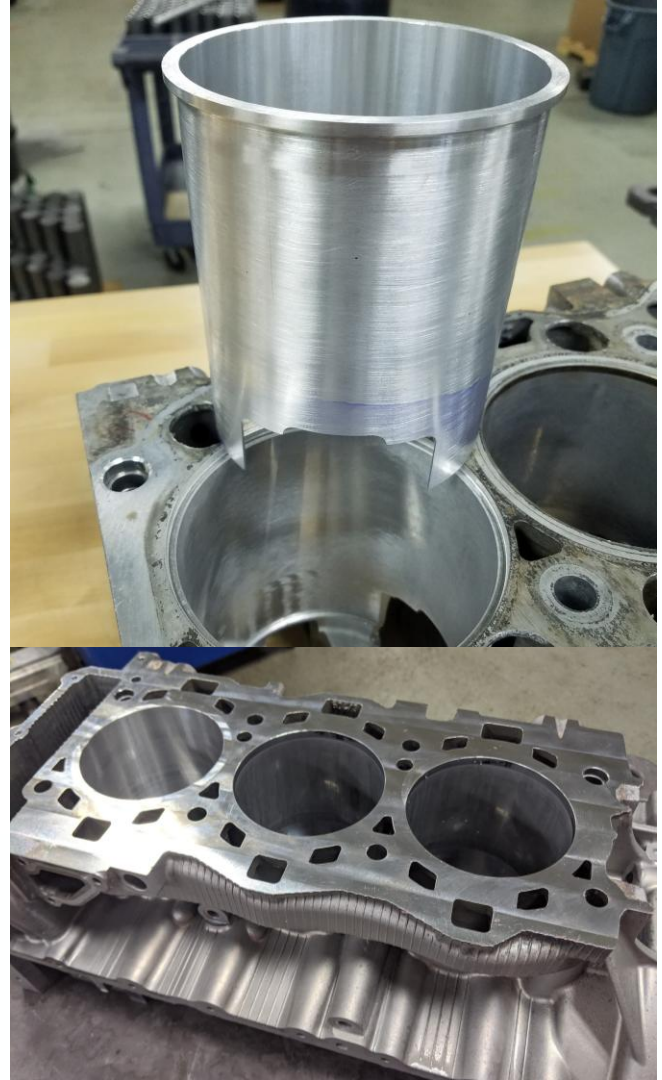
Bore scoring is still an issue with these engines, but rest assuring, we have repair options using improved cylinder bore technologies.





Repair Sleeves

Blocks with deep scoring that need to be returned back to stock can have one or more cylinders dry sleeved with a billet aluminum sleeve, allowing it to be direct plated, restoring proper function.





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Bore Coating and Plating

LN Engineering has extensive experience with Nikasil type plating as well as the latest in bore coating technologies, APS and PTWA, used by Porsche since 2017.





Displacement Increases

- **Blocks can be over-bored up to 2mm and direct plated, allowing for approximately a 0.2 liter increase in displacement.**
- **The 2009-2012 3.6 997.2 81.5mm crankshaft, part number 9A110208104, can be substituted to allow for an additional 0.2 liter increase in displacement.**
- **ECU tuning is required to remove the torque lock on the Siemens GDI ECU to utilize any increase in displacement.**



MA1 Nickies

106-9872.89	2.7/2.9 Boxster Cayman 89mm Nickies Lite Reconditioning. Inc. updated piston squirters. No pistons.
106-9872.91	2.7/2.9 Boxster Cayman 91mm (+2mm) Nickies Lite Reconditioning. Inc. updated piston squirters. No pistons.
106-9872.97	3.4/3.6 Boxster Cayman 911 97mm Nickies Lite Reconditioning. Inc. updated piston squirters. No pistons.
106-9872.99	3.4/3.6 Boxster Cayman 911 99mm (+2mm) Nickies Lite Recond. Inc. updated piston squirters. No pistons.
106-9972.102	3.8 911 102mm Nickies Lite Reconditioning. Includes updated piston squirters. No pistons.
106-9972.104	3.8 911 104mm (+2mm) Nickies Lite Reconditioning. Includes updated piston squirters. No pistons.
106-9872.1	Custom 99mm 12.5:1 DFI JE Pistons for 987.2/981 with 3.6 81.4mm crank
106-9872.2	Custom 97mm 12.5:1 DFI JE Pistons for 987.2/981 with Stock 77.5mm crank
106-9872.3	Custom 99mm 12.5:1 DFI JE Pistons for 987.2/981 with Stock 77.5mm crank
106-9972.1	Custom 104mm 12.5:1 DFI JE Pistons for 997.2/991.1 with 3.6 81.4mm crank
106-9972.2	Custom 104mm 12.5:1 DFI JE Pistons for 997.2/991.1 with Stock 77.5mm crank
106-9972.3	Custom 102mm 12.5:1 DFI JE Pistons for 997.2/991.1 3.8 Turbo inc. Hard Anodized Top Ring Groove
107-02.6	Surface Grind Porsche MA1/9A1 Engine Block Decks. Price per block.



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Squirters

Original press-fit piston squirter must be removed.

We machine the block to accept Genuine Porsche M97 piston squirter that are dropped into the block and retained by the main bearings.



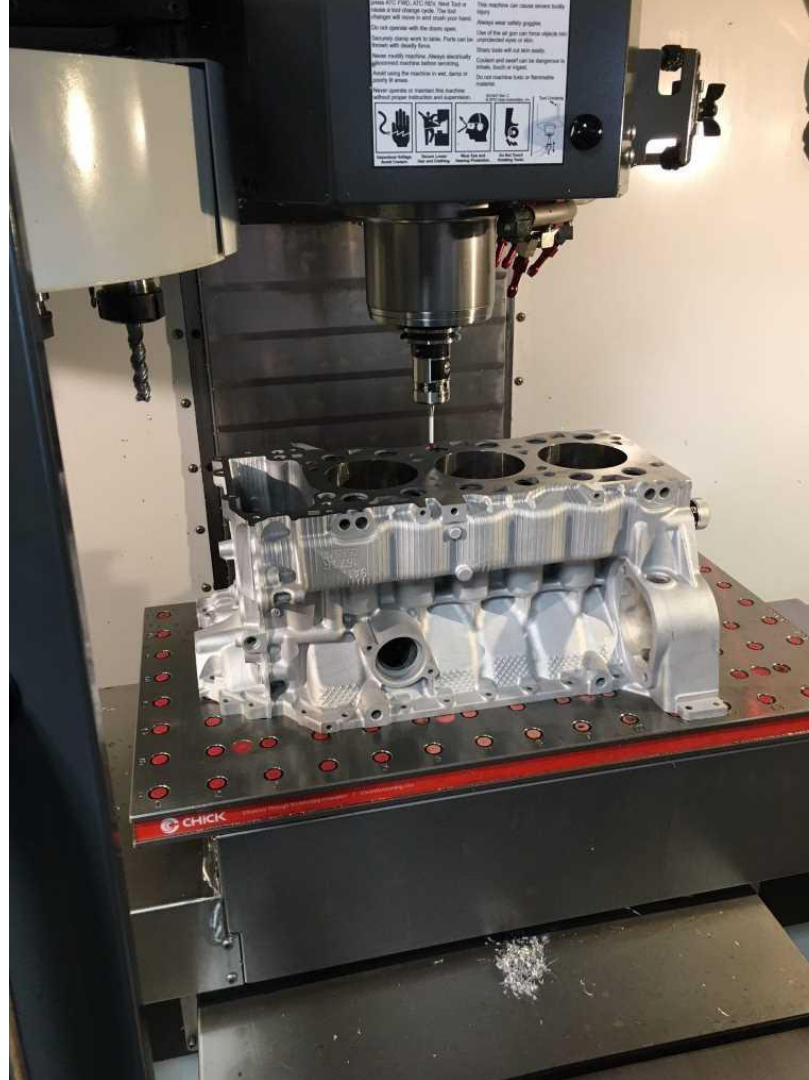


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Head Gaskets

Blocks are probed to verify centerline to deck measurements so we can supply thicker head gaskets, if needed.

We have custom MLS head gaskets produced just for this reason and to accommodate larger bore sizes.





MA1 Head Gaskets

106-09.5/105T	Custom MA1/9A1 Custom head gasket .040" Thick (Cyl 1-3); for 102-104mm Bore
106-09.5/105RT	Custom MA1/9A1 Custom head gasket .052" Thick (Cyl 1-3); for 102-104mm Bore
106-09.6/105T	Custom MA1/9A1 Custom head gasket .040" Thick (Cyl 4-6); for 102-104mm Bore
106-09.6/105RT	Custom MA1/9A1 Custom head gasket .052" Thick (Cyl 4-6); for 102-104mm Bore



Forged Connecting Rods

The stock powder metal “cracked cap” rods commonly suffer beam and rod bolt failures.

If you increasing engine displacement or plan on tracking your car, upgrading your rods is required.





Forged Connecting Rods

400-9972	CP-Carrillo Connecting Rod Set for Porsche 2009+ 9A1 3.4, 3.6, and 3.8 with WMC Bolts
PR_B991T_1HS_5433B6H	CP-Carrillo Connecting Rods Set for Porsche 991 Turbo 5.433 Long with WMC Bolts
PR_B38T09_0HS_5511B6H	CP-Carrillo Connecting Rods Set for Porsche 3.8 Turbo 2009 5.511 Long with WMC Bolts
PR_B991T_1HS_5433B6S	CP-Carrillo Connecting Rods Set for Porsche 991 Turbo 5.433 Long with CARR Bolts
PR_B38T09_0HS_5511B6S	CP-Carrillo Connecting Rods Set for Porsche 3.8 Turbo 2009 5.511 Long with CARR Bolts



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Forged Pistons

We supply custom forged pistons with factory wrist pin offsets for quiet operation.

Nikasil compatible piston rings are supplied.

Pistons can be supplied with optional hard anodized top ring grooves.





Tapered Sleeve Ring Compressors

Modern piston rings require a modern approach to piston installation.

Tapered sleeve ring compressors reduce the chances of bending or breaking a piston ring during installation.

Available in all bore sizes.

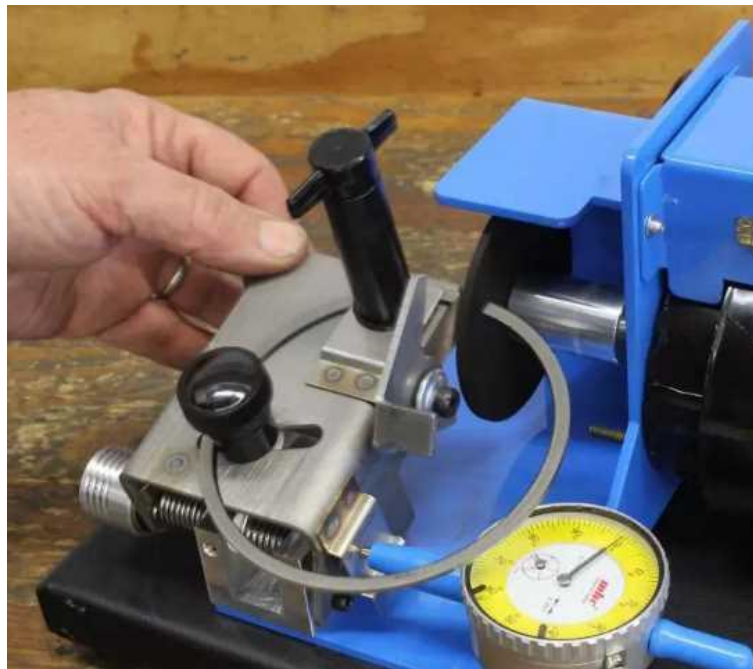




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Ring Gapping Service

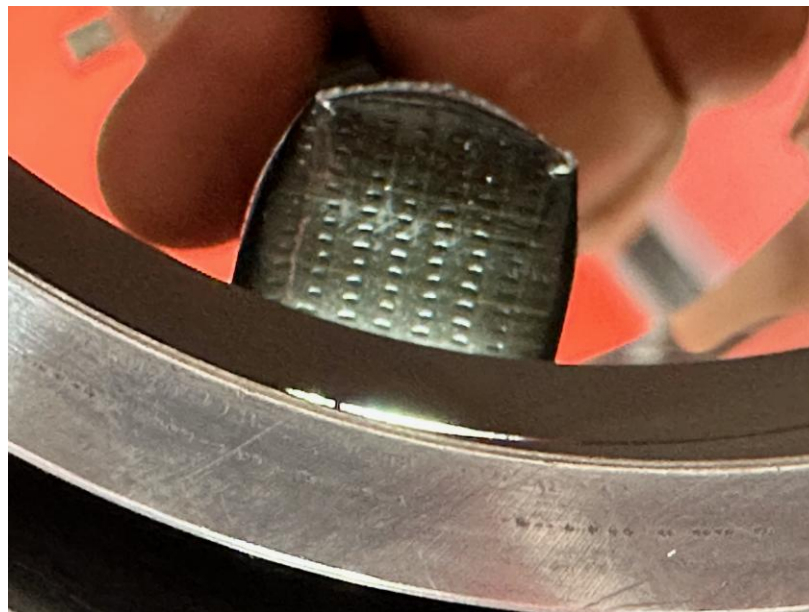
Our piston ring end gapping service provides you with piston rings with pre-set end gaps.





Light Checking

Piston rings should be round. If they are not round, they won't function properly. When gapping rings, we can also light check them for you.





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Piston and Rod Balancing Service

Our balancing service provides piston assemblies and connecting rods balanced within ± 0.5 grams.





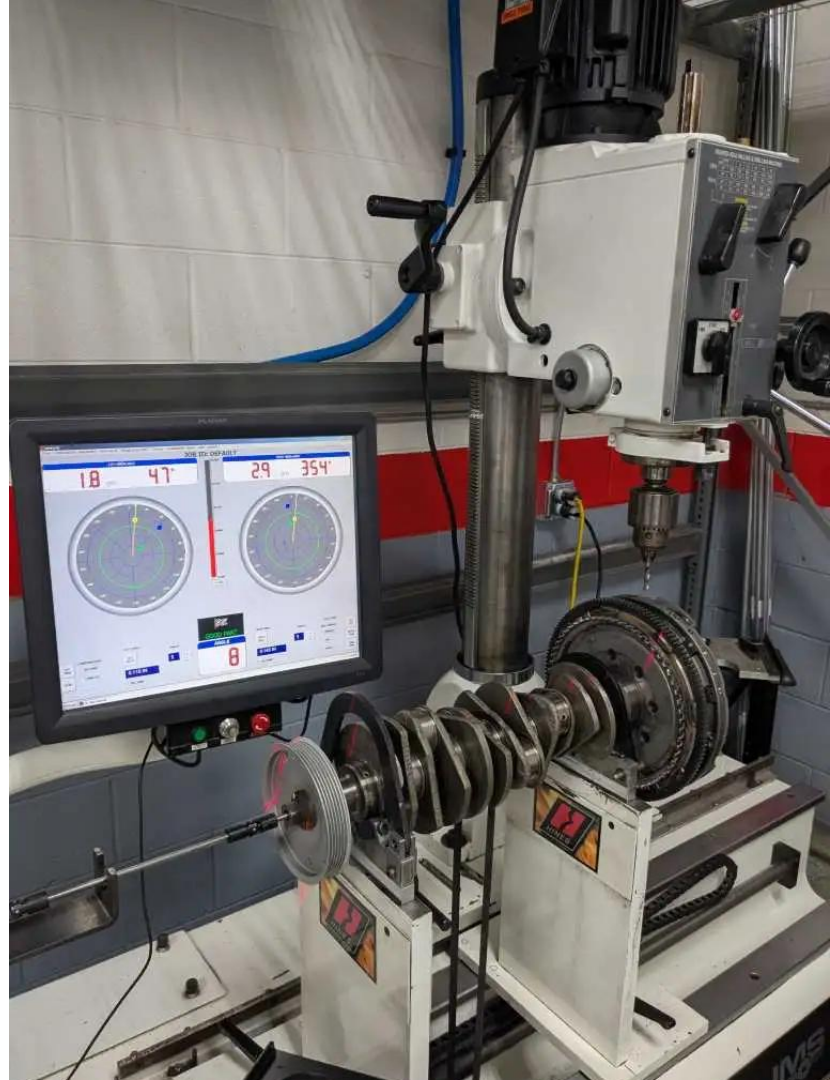
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Dynamic Balancing

**We now offer
Dynamic Engine
Balancing.**

**Standard balance
specification is 0.5
oz/in.**

**Race balance is to
0.2 oz/in.**



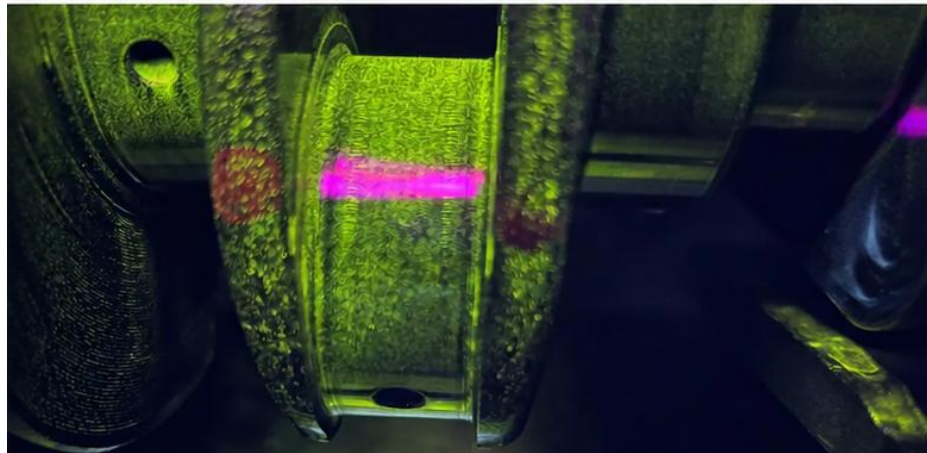


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Crankshaft

Magnetic particle inspection ensures crankshafts are not cracked.

Surface finish influences oil film stability, load capacity, and bearing longevity. LN Engineering polishes journals to achieve a consistent, controlled finish that supports long-term reliability.





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Cryogenic Treatment

The advanced process of Deep Cryogenic Processing involves bringing the temperature of materials down to temperatures below -300°F slowly.

Optional Cryogenic Processing alters the crystalline structure, transforming it into a more uniform and durable construct.

These changes become permanent as the temperature of the material is gradually brought back up to room temperature or beyond.





WPC Treatment

WPC is an anti-friction micro shot-peening treatment to the surface of the (any) part.

The peaks and valleys scoop up oil and increase the surface hardness of the material.

Due to the fact there is virtually no dimension change, we can add the treatment to already finished parts.

Engine main and rod bearings can be special ordered with WPC.





Cylinder Head Reconditioning

100% of components are tested, reconditioned, or replaced and feature multi-angle Serdi valve job, Viton valve stem seals, and critical surfaces are diamond milled, exceeding original manufacturer specifications.

All components are inspected and replaced if worn.





Vapor Blasting

Our optional vapor blasting process removes years of built-up contamination off your engine block's exterior.





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Additional Services

LN Engineering's automotive machine shop offers services like cylinder reconditioning, honing, aluminum engine block repair and sleeving, connecting rod reconditioning, crankshaft polishing, engine balancing, cylinder head remanufacturing, surface grinding and more.



Scan QR code for the most up to date [list of machine shop services offered](#)





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Cayman X

LN Engineering and Flat 6 Innovations were the first to 4.2 liters with the 9A1/MA1, featured in PCA Panorama magazine in Dec. 2013.



Learn more about the history of our 9A1/MA1 engine program

Cayman
4.2

A MID-ENGINE VIEW INTO
WHAT'S POSSIBLE WITH
PORSCHE'S 9A1 FLAT SIX

STORY AND PHOTOS BY BOB CHAPMAN

THE CAYMAN INTERSERIES wing, GT3 nose, BBS wheels, and 18-component drive are pretty hard to miss. So is a six-point harness when you're pushing it out of the way before dropping into a carbon fiber-backed racing seat under a custom roll cage.

The fact that this Speed Yellow 2010 Cayman S has been modified is obvious, but it's a twist of the ignition key that provides the first sign of the performance development that has brought us here. A long pause is followed by a haltingly slow whir, whir and then...

Nothing.
"Oh, yeah. That's the higher compression," chuckles Charles Navarro. It's his car, and his engineering that helped bump its displacement from 3.4 liters to 4.2 liters. The static compression ratio is higher, too, having moved from 12.5:1 to 13.25:1. Navarro tells me I need to





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Engine Rebuilds

LN Engineering is the exclusive distributor for Flat 6 Innovations Rebuilt Porsche engines.

Now accepting customer supplied engines for rebuild from anywhere in the world.



6 FLAT SIX
INNOVATIONS

Often imitated. **Never duplicated.**

Flat 6 Innovations Engines feature LN Engineering Nickies and IMS Solution.

NICKIES
REPAIR SOLUTIONS

IMS SOLUTION

FLAT6INNOVATIONS.COM

The advertisement features three Porsche flat-six engines: a silver one on the left, a red one in the center, and another silver one on the right. The background is black. At the top, the '6 FLAT SIX INNOVATIONS' logo is displayed in white and red. Below the logo is the slogan 'Often imitated. Never duplicated.' in white and red. At the bottom, there are logos for 'NICKIES REPAIR SOLUTIONS' and 'IMS SOLUTION', along with the website 'FLAT6INNOVATIONS.COM'.



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Shipping

Easy and secure shipping with trusted UPS and other freight partners minimizes time in transit which means less time waiting for your shipment with discounted rates that save you money.





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Technical Resources for Porsche Owners

Guides, videos, downloads, AI-powered tools, and **enhanced 24/7 support.**

[Learn More >](#)



lnengineering.com/knowledge/



AI-Powered Tools



ENHANCED 24/7 SUPPORT
Porsche experts, always here.



SOLUTIONS ▾

KNOWLEDGE

SUPPORT 24/7



Knowledge

Technical Resources for Porsche Owners

LN Engineering provides educational resources, training, and guidelines to help you get the most from your aircooled Porsche. Our resources are built by engineers, for enthusiasts—plus, enjoy **enhanced 24/7 support.**



[What is the best oil for my Porsche?](#)



[Porsche Engine Technical Videos](#)



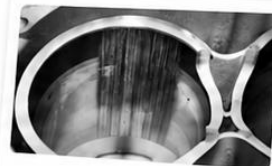
[Technical Downloads for Porsche Owners](#)



[The Definitive Guide to the Porsche IMS Bearing](#)



[The Ultimate Guide to Nikasil and NSC Cylinder Platings](#)



[The Porsche Cylinder Bore Scoring Problem](#)



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