

LN Engineering Boxster, Cayman, & 911 Engine Program

Total Engine Solutions for: 1997-2008 models with the M96/M97 Engine 1999-2011 GT3, Turbo, & GT2 with the Mezger Engine 2009-2016 models with the 9A1/MA1 Engine



LN Engineering seeks to provide innovative "nocompromise" 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.





We do all our machining and manufacturing in the USA in our 17,000 sq/ft facility, located one hour south of Chicago, IL.







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.





Our Partners

LN Engineering offers premium performance parts designed to meet or exceed OEM requirements from industry leaders JE **Pistons, CP Carrillo,** Mahle Motorsport, and **Total Seal.**



What is Porsche Bore Scoring?

Bore scoring is the #1 issue with hypereutectic aluminum blocks used by Porsche, including those cast using the Lokasil or Alusil process.

Failures occur when there is a breakdown of the Al-Si cylinder system.



Download the paper <u>Understanding Bore Scoring in Al-Si</u> <u>Cylinder Systems</u> to learn more.



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 known issues.
- Used engines are expensive and may already have unknown issues.
- When upgraded with Nickies, engine performance, durability, and reliability is improved.



Why LN Engineering?

- Proven Nickies billet aluminum cylinder liner sleeves
- Durable nickel silicon carbide cylinder platings
- 20+ years experience with performance engine upgrades for Porsche engines
- Trusted by top engine builders worldwide
- Solutions developed in partnership with and used exclusively by Flat 6 Innovations

Cylinder Failures We Fix

- Slipped Sleeve: Blocks sleeved from the factory have sleeve move and separate from engine case.
- D-Chunk: Cylinder forms crack which spreads to bottom of water jacket before returning to the top of the deck, resulting in a D-shaped crack.
- Scoring: Failure of piston skirt coating or Lokasil bore resulting in galling of piston skirt and bores.
- Ovality/Taper: Bores with more than .002" taper or ovality cannot be successfully re-ringed.



Slipped Sleeve





D-Chunk

Why use Nickies

- Bores are not round even if they have no damage.
- Reusing original components and re-ringing is risky.
- Even if bores are not currently scored or cracked, this does not mean they will not fail in the future.
- When the factory iron-clad piston skirt coating fails, bore scoring and piston scuffing/galling will occur.
- Direct Nikasil plating is not always suitable.
- Sleeving or repairing single cylinders is never ok.



Nickies

Nickies all-aluminum sleeves prevent dissimilar metal corrosion that occurs when steel or cast iron sleeves are fitted to aluminum blocks.

Cast iron or steel sleeves also have poor heat transfer and higher friction than aluminum Nikasil plated cylinder sleeves.







Cast iron or steel sleeves aren't a permanent solution and often lead to repeated failiures.

Dissimilar expansion rates require significant interference fit for steel sleeves that can crack the block or can move, causing intermix and head gasket failures.







The Solution: Billet Aluminum NSC-Plated Cylinders







NSC-Plating

LN Engineering has utilized Millennium Technologies NSCplating since 2002.

Similar to Nikasil, the NSC plating is made up of nickel, silicon, and carbide. Cylinders are precision honed to our specifications.





Nickies Sleeving Process



Please note this video content requires connection to the Internet and access to YouTube.

Nickies Sleeves

- Original cylinder is completely machined out of the block and remaining parent metal is used only to locate the new, stronger billet aluminum sleeves.
- Block is o-ringed and the new Nickies NSC-plated wet liners are permanently fitted to the engine case.
- Nickies prevent future d-chunk, slipped sleeve, and scored bores failures with wear resistant NSC bores.
- Nickies are more durable than Lokasil, direct plating of bores, or steel sleeves.



Repair Sleeves

Blocks with damage to one or more cylinders below the water jacket from a connecting rod failure can be machined for a repair sleeve for significantly less than a used crankcase, if one can be found.



Closed Deck Conversions

Although not needed for normally aspirated engines, when adding forced induction to an M96 or M97 engine and going larger than 99mm, LN **Engineering does** offer closed deck conversions.



Displacement Increases

- 2.5 Boxster to 2.7 liters (89mm)
- 2.7 Boxster/Cayman to 2.9 liters (89mm)
- 3.2 Boxster to 3.6 liters (99mm) or 3.8 (101mm)
- 3.4 Boxster, Cayman, or 911 to 3.6 (99mm) or 3.8 (101mm)
- 3.6 911 to 3.8 (99mm) or 4.0 (101mm)
- 3.8 to 4.0 (101mm) or 4.1 (102mm)



99-08 Porsche 911

106-996.3	3.4 to 3.6 911 99mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-996.20	3.4 to 3.8 911 101mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-996.20.MM	3.4 to 3.8 911 Boxster/Cayman S Nickies inc. 101mm Mahle Motorsport set, inc. rings, pins, & clips
106-996.3T	3.4 to 3.6 911 99mm JE Piston set inc. rings, pins, & clips; 10:1 CR Turbo Conversion
106-996.5	3.6 911 96mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-996.7	3.6 to 3.8 911 99mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-996.7.MM	3.6 to 3.8 911 Nickies inc. 99mm Mahle Motorsport set, inc. rings, pins, & clips
106-997.1	3.8 911 99mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-997.2	3.8 to 4.0 911 101mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-997.2.MM	3.8 to 4.0 911 Nickies inc. 101mm Mahle Motorsport Piston set, inc. rings, pins, & clips
106-997.20	3.6 to 4.0 911 101mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-997.4	3.8 to 4.1 911 102mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-996.96	Porsche 996/987/997 3.4 or 3.6 96mm Nickies
106-996.99	Porsche 986/987 3.2 to 3.6, 3.4 to 3.6, 3.6 to 3.8 99mm Nickies
106-996.101	Porsche 986/987 3.2 to 3.8, 3.4 to 3.8, 3.6 to 4.0 101mm Nickies
106-996.101.CD	Porsche 986/987 3.2 to 3.8, 3.4 to 3.8, 3.6 to 4.0 101mm Closed-Deck Nickies inc. Resurfacing
106-997.99	Porsche 997 3.8 99mm Nickies
106-997.101	Porsche 997 3.8 to 4.0 101mm Nickies
106-997.101.CD	Porsche 997 3.8 to 4.0 101mm Closed-Deck Nickies inc. Resurfacing
106-997.102	Porsche 997 3.8 to 4.1 102mm Nickies



97-08 Porsche Boxster & Cayman

106-986.1.SPB	Spec Boxster 2.5 85.5mm CP Piston set, inc. rings, pins, & clips TS rings; STD CR
106-986.3	2.5 to 2.7 Boxster 89mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-986.4	2.7 Boxster 85.5mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-986.5	2.7 to 2.9 Boxster 89mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-986.9	3.2 to 3.6 Boxster 99mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-986.9T	3.2 to 3.6 Boxster 99mm JE Piston set inc. rings, pins & clips; 10:1 Turbo Conversion
106-986.20	3.2 to 3.8 Boxster 101mm JE Piston set, inc. rings, pins, & clips; 12:1 CR
106-996.20.MM	3.4 to 3.8 911 Boxster/Cayman S Nickies inc. 101mm Mahle Motorsport set, inc. rings, pins, & clips
106-987.3	3.4 to 3.6 987 Boxster/Cayman 99mm JE Piston Set inc. rings, pins, and clips; 12:1 CR
106-987.3T	3.4 to 3.6 987 Boxster/Cayman 99mm JE Piston Set inc. rings, pins, & clips; 10:1 CR Turbo Conversion
106-987.20	3.4 to 3.8 987 Boxster/Cayman 101mm JE Piston Set inc. rings, pins, and clips; 12:1 CR
106-996.2.SPC	Spec Cayman 3.4 96mm CP Piston set, inc. rings, pins, & clips. TS rings; Stock CR
106-986.85.5	Porsche 986/987 2.5 or 2.7 85.5mm Nickies
106-986.89	Porsche 986/987 2.5 to 2.7 or 2.7 to 2.9 89mm Nickies
106-986.93	Porsche 986/987 3.2 93mm Nickies
106-996.96	Porsche 996/987/997 3.4 or 3.6 96mm Nickies
106-996.99	Porsche 986/987 3.2 to 3.6, 3.4 to 3.6, 3.6 to 3.8 99mm Nickies
106-996.101	Porsche 986/987 3.2 to 3.8, 3.4 to 3.8, 3.6 to 4.0 101mm Nickies
106-996.20.MM	3.4 to 3.8 911 Boxster/Cayman S Nickies inc. 101mm Mahle Motorsport set, inc. rings, pins, & clips

M96/M97 Upgrades

- Porsche Boxster, Cayman, and 911 models from 1997 through 2008 are not dry sump engines like GT3, Turbo and GT2 models with the Mezger engine.
- When tracked, the M96/M97 engine can suffer engine damage from oil starvation, requiring <u>oil system</u> <u>upgrades</u> to prevent catastrophic failures.
- Additional upgrades are required to make M96 and M97 engines track-ready and to address other known issues with these engines, like the IMS bearing.



New to the IMS?

- 1997-1999: Dual Row
- 2000-2001: Dual or Single Row
- 2002-2005: Single Row
- 2006-2008: Non-Serviceable (engine disassembly required)
- 2009 and later: intermediate shaft was eliminated with 9A1/MA1



IMS Failures by the Numbers

According to Eisen class action lawsuit, 1% of original dual row bearings failed under warranty compared to 8% for the single row. *Current failure rates are much higher.*

Source: <u>http://eisenimssettlement.com/</u>

The factory dual row bearing had twice the load capacity of the original single row. *This is why the failure rate is so high on MY2000-2005 cars with the smaller bearing.*

The IMS bearing should always be upgraded when rebuilding the engine.



LN IMS Service

All intermediate shafts should be inspected for runout exceeding .005" and have the main timing gear pinned to prevent slippage that can lead to engine damage while the engine is apart.





IMS Retrofit & IMS Solution

106-08.2.2	Single Row Pro IMS Retrofit Kit for MY00-05 with factory single row bearing
106-08.2R	Single Row RND RS Roller IMS Kit for MY00-05 with factory single row bearing
106-08.4	Dual Row IMS Retrofit Kit for MY97-01 with factory dual row bearing
106-08.4R	Dual Row RND RS Roller IMS Kit for MY97-01 with factory dual row bearing
106-08.30	IMS Upgrade Kit for MY06-08 with non-serviceable bearing; engine disassembly required.
106-08.30R	RND RS Roller IMS Upgrade Kit for MY06-08 with non-serviceable bearing; engine disassembly required.
106-08.20	IMS Solution for Single Row IMS MY00-05 with factory single row bearing
106-08.40	IMS Solution for Dual Row IMS MY97-01 with factory dual row bearing
106-08.60	IMS Solution for Dual Row IMS MY06-08 with non-serviceable bearing; engine disassembly required.
106-08.13	IMS Pro Tool Kit
106-08.21	M96 MY06-08 Upgrade + IMS Solution Supplemental Tool Kit
106-08.22	M96 Faultless Tools IMS Removal & Installation Tool Kit
106-08.1.L	Inspect IMS for runout, recondition, pin sprocket, and install bearing
106-08.13.5	IMS Pro Tool Kit Hex Adapter for LN Bearing
106-08.13.1.SET	IMS Pro Tool Kit Threaded Rod including nut and thrust washer
106-08.20.CLIP	Replacement Single Row IMS Circlip Snap Ring
106-08.21.1-D	IMS Solution Spin On Oil Filter Adapter Installation Tool
106-08.22.3	Faultless IMS Tool Tapered Sleeve
106-08.22.7	Faultless IMS Tool Thrust Bearing
106-08.IMSSSPARES	IMS Solution O-Ring and Spares Kit
106-08.IMSRORINGS	IMS Retrofit O-Ring Kit



M96/M97 Upgrades



High performance 4340 chromoly Steel and ARP rod bolts prevent rod failures.

FORGED CONNECTING RODS

Billet Aluminum Paddle also utilizes an upgraded, steel pressure pin.

LN BILLET TENSIONER PADDLE

Custom Multi-Layered Steel head gaskets for larger than original bore sizes.

CUSTOM MLS HEAD GASKETS

Designed to be fully open 20-25 F earlier than OEM, this thermostat maximizes cooling system potential.

LOW TEMP THERMOSTAT



OIL PAN GUARD PLATE

M96/M97 Upgrades



MAGNETIC DRAIN PLUG

CHROMOLY OIL PUMP DRIVE

TAPERED SLEEVE RING COMPRESSOR





106-00	Bilt Racing .5QT Deep Sump Oil Pan Kit with X51-Style Baffle & Anti-Slosh Tray
106-00.1	Bilt Racing 2QT Deep Sump Oil Pan Kit
106-00.6	X51-Style Oil Pan Baffle Kit
106-00.7	X51-Style Oil Pan Baffle Kit for .5 Quart Deep Sump 106-00
106-00.8	Bilt Racing Boxster/Cayman 2 Quart Deep Sump Stainless Steel Guard Plate
106-00.9	Bilt Racing 911 2 Quart Deep Sump Stainless Steel Guard Plate
106-00.10	Bilt Racing Billet Aluminum Finned Sump Plate
106-01	Spin-on Oil Filter Adapter
106-06.1	160F Low Temperature Thermostat, insert only.
106-06.2	Thermostat Installation/Removal Tool
106-07	Billet Magnetic Drain Plug
106-10	Billet IMS to Crankshaft Tensioner Paddle
106-11	Chromoly Oil Pump Hex Drive
106-12.1	Bilt Racing HPDE 2 Quart Accusump Universal Kit
120-03	BRS Motorsports AOS Adapter (to fit 3 chain Motorsports AOS onto 5 chain engine)
99610121652LN	Flat 6 Innovations Billet M96/M97 Engine Case Coolant Cover Plate with 1/8 NPT Sensor Ports
99610211563LN	Flat 6 Innovations Billet Aluminum Hard Anodized M96/M97 Underdrive Crankshaft Pulley
99610644704LN	Billet Aluminum Boxster Cayman 911 Coolant Expansion Tank Cap. Replaces 99610644704.
99610703552LN	Billet Aluminum M96/M97 Engine Oil Fill Cap. Replaces 99610703552.
99620124103LN	99620124103LN Billet Aluminum Sport Gas Fuel Cap. Replaces 99620124103.



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

400-986	Porsche Boxster, 911 LN Spec K1 Forged (986, 996 & 987; 2.5-3.4), replaces pn# 99610397501
400-986.CP	Porsche Boxster, 911 LN Spec Carrillo (986, 996 & 987; 2.5-3.4), replaces pn# 99610397501
400-986-SPC	PCA Club Racing Spec Carrillo Connecting Rod Set 2.5-3.4, replaces pn# 99610397501
400-997	Porsche 911 LN Spec K1 Forged (996 & 997; 3.6 and 3.8), replaces pn# 99610398500, 01, 02
400-997.CP	Porsche 911 LN Spec Carrillo (996 & 997; 3.6 and 3.8), replaces pn# 99610398500, 01, 02

Custom M96/M97 Head Gaskets

When increasing bore sizes or after resurfacing your engine block deck, a custom head gasket is required.

We offer custom head gaskets for larger bores sizes and in the correct thickness depending on how much is removed from your deck during resurfacing.





M96/M97 Head Gaskets

106-09.1	Custom 89mm head gasket set for 2.5/2.7 (5-Chain Engines; sold as a pair)
106-09.2	Custom 89mm head gasket set for 2.5/2.7 (3-Chain Engines; sold as a pair)
106-09.3/101	Custom .032" thick 101mm Head Gasket Set for 3.2/3.4/3.6/3.8 (5- or 3- Chain Engines; sold as a pair)
106-09.3/101T	Custom .040" thick 101mm Head Gasket Set for 3.2/3.4/3.6/3.8 (5- or 3- Chain Engines; sold as a pair)
106-09.3/101RT	Custom .060" thick 101mm Head Gasket Set for 3.2/3.4/3.6/3.8 (5- or 3- Chain Engines; sold as a pair)
106-09.4/102	Custom .032" thick 102mm Head Gasket Set for 3.8 (3- Chain Engines; sold as a pair)
106-09.4/102T	Custom .040" thick 102mm Head Gasket Set for 3.8 (3- Chain Engines; sold as a pair)
106-09.4/102RT	Custom .060" thick 102mm Head Gasket Set for 3.8 (3- Chain Engines; sold as a pair)

Coated Main and Rod Bearings

Our Calico coated Genuine Porsche and OEM bearings feature the CT-1 Dry Film Lubricant coating.

This helps reduce friction and abrasive wear, providing intermittent dry lubrication for all Porsche engines, especially those that may see track use.





Coated Main and Rod Bearings

99610120510C	Coated Performance Main Bearings Porsche Boxster 2.7 3.2 911 3.4 to 2001 M96 M97 (Set of 14)
99610120904C	Coated Performance Main Bearings Porsche 911 3.6 3.8 Boxster Cayman 3.4 (06-08) M96 M97 (Set of 14)
99610312162C	Coated Performance Rod Bearings 97-08 Porsche M96 M97 2.5-3.8 Boxster Cayman 911 (Qty 12 Req.)

ARP Engine Hardware

Replacing the TTY cylinder head studs, crankshaft carrier bolts, and stock connecting rod bolts in your Porsche Boxster, Cayman, or 911's M96 or **M97 engine with fasteners** from ARP is recommended.





ARP Engine Hardware

204-4707	ARP M96/M97 Head Stud Kit 97-08 Porsche Boxster, Cayman, 911
204-5001	ARP M96/M97 Carrier Through Bolt Kit Porsche Boxster, Cayman, 911 (was 106-23)
204-6301	ARP M96/M97 Rod Bolts for Stock Porsche Boxster, Cayman, 911 Connecting Rods (was 10615)





The Knowledge Gruppe

Jake Raby's Focus On: M9X Engine Assembly DVDs, engine workbook, and torque spec books provide everything you need to rebuilding an M96 or M97 engine.





The Knowledge Gruppe

TKG-M9X-EA	Rennvision's FOCUS ON: M9X Engine Assembly DVD
978-0-9849077-2-4	"996 Torque Book" – Fastening Specifications for Porsche 911 (Type 996) Automobile
978-0-9849077-1-7	"997 Torque Book" – Fastening Specifications for Porsche 911 (Type 997) Automobile
TKG-M9X-WB	Rennvision's FOCUS ON: M9X Engine Assembly Workbook



MA1/9A1 Engines

Porsche introduced the MA1 engine with an Alusil engine block in 2009.

Bore scoring is still an issue with these engines, but we have several repair options including Nickies aluminum sleeves and Nickies Lite direct NSC-plating to correct for these problems.





MA1 Nickies

MA1/9A1 engine blocks with bore scoring are typically bored out past existing damage and are then direct plated and honed.

Engine blocks are machined to accept upgraded piston squirters.

Optional deck resurfacing is available.





MA1 Nickies

If cylinder bores are heavily scored with deep gouges, MA1 blocks can be fitted with Nickies sleeves to allow the engine to retain the original stock bores size.





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.



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



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



Mezger Nickies

Replace orginal cast aluminum Nikasil GT3, Turbo, and GT3 sleeves with our billet NSCplated sleeves.

Available with JE or Mahle Motorsport Pistons in slip-fit and machine-in sizes.



Mahle Motorsport

LN Engineering offers custom replacement Mahle Motorsport pistons for 3.6 liter Porsche 996/997 GT3, Turbo, and GT2 models suitable for use in original Porsche Mezger cylinder sleeves as well as in our Nickies cylinders.







Mezger Nickies

Machine-in thickwall aluminum water-cooled **Nickies Mezger sleeves** allow for increased displacement and improved cooling over steel sleeves.

We can machine your original housing to fit our Nickies sleeves.





Mezger Nickies

108-100.1	OE Replacement Nickies inc. 100mm 996/997TT 9.4:1 JE Piston set, inc. rings, pins, & clips
108-100.1.MM	OE Replacement Nickies inc. 100mm 996/997TT 9.4:1 Mahle Motorsport set, inc. rings, pins, & clips
108-100.3	OE Replacement Nickies inc. 100mm 996.2/997 GT3 12:1 JE Piston set, inc. rings, pins, & clips
108-100.3.MM	OE Replacement Nickies inc. 100mm 12.5:1 996.2/997 GT3 Mahle Motorsport Piston set, inc. rings, pins, & clips
108-100.4	OE Replacement Nickies inc. 100mm 996.1 GT3 11.7:1 JE Piston set, inc. rings, pins, & clips [special order]
108-100	100.00mm 996/997TT, GT3 Stock Replacement Nickies (Aluminum)
108-102.1	Machine-in Nickies inc. 102mm 996/997TT 9.4:1 JE Piston set, inc. rings, pins, & clips
108-102	102mm 996/997TT GT3 Stock Replacement Nickies (Aluminum; Machine-In, uses 105.4 sleeve registers)
108-102.7.1	Machine-In Nickies inc. 102.7mm 996.2/997 GT3 12.5:1 JE Piston set, inc. rings, pins, & clips
108-102.7.2	Machine-In Nickies inc. 102.7mm 996.2/997 GT3 13:1 JE Piston set, inc. rings, pins, & clips
108-102.7.3	Machine-In Nickies inc. 102.7mm 996.2/997 GT3 13.5:1 JE Piston set, inc. rings, pins, & clips
108-102.7	102.70mm 996/997 GT3 Stock Replacement Nickies (Aluminum; Machine-In, uses 105.4 sleeve registers)
MA1001	Machine Mezger GT3/Turbo Water Jackets for Machine-in 108-102 & 108-102.7 Nickies Sleeves



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.



Ring Gapping Service

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



Piston and Rod Balancing Service

Our balancing service provides piston assemblies and connecting rods balanced within +/- 0.5 grams.



Vapor Blasting

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





Additional Products & Services

106-RS	Single Repair Sleeve (replaces crankcase parent metal on damaged block)
106-PP-SHIP	Pre-Paid Shipping Option for M96/M97 Nickies Block Sleeving (CONTUS 48 only; inc. \$200 core charge for box)
106-BOX	Block Box with Custom Foam Core Inserts (M96/M97 Only)
107-06	Surcharge for machining block with slipped sleeve or d-chunk, per cyl.
107-06.1	Surcharge for dirty engine block / cylinder set
107-06.2	Block repair including welding and machining. Min charge one hour. Price per hour.
107-06.3	Engine Block Vapor Blast Service
107-06.4	Strip Nikasil plating from direct plated block to allow for sleeving
107-06.5	Remove steel sleeves from block, per sleeve
107-07.2	Custom cylinder based off existing cylinder. One time charge.
107-12.8	Broken Bolt/Stud or Thread Repair. Price ea.
107-15	6 Cylinder Piston Ring End Gapping Service
107-16	6 Cylinder Porsche Engine Static Balancing Service







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.



Pre-Paid Shipping (US Only)

We make shipping easy. Pay one flat rate and we ship you a custom box to safely ship your block to us with our pre-paid shipping label.

Price includes return shipping for your entire order!



Free Technical Resources

Click on education on the LN Engineering home page for <u>free technical</u> <u>information</u>.

Be sure to check out and subscribe to the <u>LN</u> <u>Engineering YouTube</u> <u>channel</u>.







WARNINGS AND PRECAUTIONS



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