PROBLEM:
IMS FAILURE.
SOLUTION:
LN ENGINEERING

Catastrophic engine failure caused by intermediate shaft bearing is preventable

WHY LN ENGINEERING?

Before LN Engineering developed the IMS Retrofit, no tools or procedure existed to change the bearing and Porsche did not offer a replacement bearing.

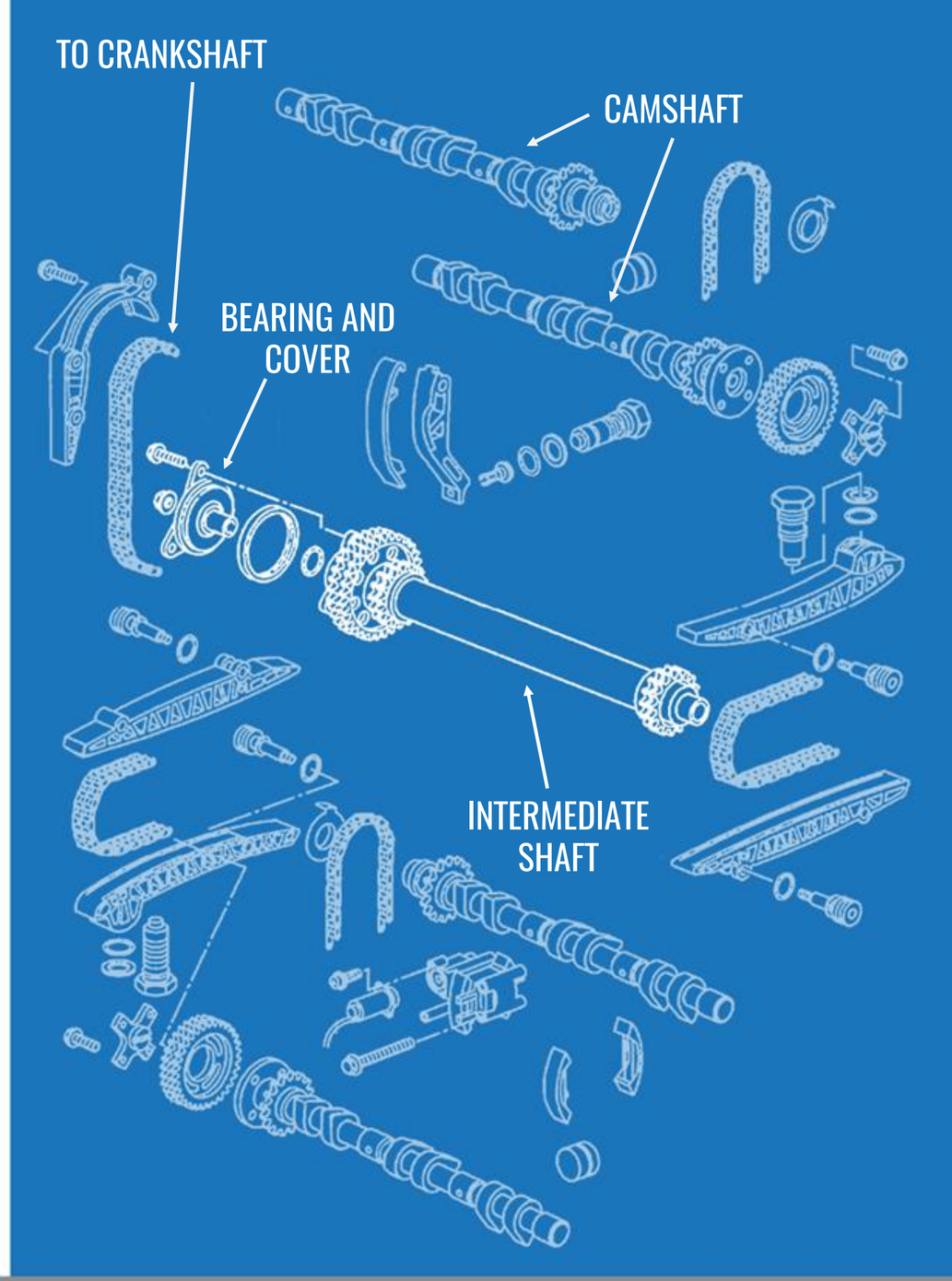
As of 2025, LN Engineering has sold nearly 50,000 IMS Retrofit and IMS Solution kits.

We are the first and original, trusted and recognized worldwide.

NEW TO THE IMS?

There are several versions of the IMS bearing used from 1997 through 2008.

- 1997-1999: Dual row
- 2000-2001: Dual or Single Row
- 2002-2005: Single Row
- 2006-2008: Non-serviceable



WHY DO IMS BEARINGS FAIL?

- Insufficient load capacity (factory single row bearing had high failure rate of 8%)
- The factory did not supply a service interval, replacement, or tools for changing the original bearing out - bearing should have had a service interval!
- Lack of lubrication (sealed bearing was used)

IMS BY THE NUMBERS

According to the figures made public by the "Eisen" class action lawsuit, 1% of original dual row bearings failed under warranty and 8% of original single row bearings failed.

https://web.archive.org/web/20170601111940/http://eisenimssettlement.com/

These failure rates were disclosed in 2011. The likelihood of failure does not diminish over time - failure rates will only increase as bearings have more time and mileage on them.

IMS BY THE NUMBERS

- IMS replacement takes an average of 10-14 hours.
- Significant labor savings for changing the IMS while doing clutch and rear main seal replacement
- Waiting to replace the IMS bearing until it starts to fail is risky. Many will fail without warning and require an engine rebuild that can cost tens of thousands of dollars.

ABOUT IMS FAILURES

When an IMS bearing fails, debris generated by the failing or failed bearing is spread through the engine, causing collateral damage requiring engine disassembly to correct.

Loss of camshaft timing can occur, resulting in damage to the cylinder heads including bent valves or worse.

IS IT ORIGINAL?

- Has the engine been replaced? Check the engine #
- If the engine is not original to the car, it will have whatever bearing was in use when the engine was produced.
- Example 1: 1999 Boxster had a replacement engine installed that was built in 2004. It will have the smaller single row bearing.
- Example 2: 2004 911 had a replacement engine installed that was built in 2007. It will use the larger non-serviceable bearing used in every engine in and after MY06.

X “X” in part number
REMANUFACTURED ENGINE

Y “Y” or “AT” in part number
FACTORY NEW REPLACEMENT

ENGINE SERIAL NUMBERS AND M-CODES

M96.20 2.5 Liter 97-99 Boxster
M96.22 2.7 Liter 00-02 Boxster
M96.23 2.7 Liter 03-04 Boxster
M96.25 2.7 Liter 05-06 Boxster
M97.20 2.7 Liter 07-08 Boxster, 08 Boxster Limited Edition, 07-08 Cayman
M96.21 3.2 Liter 00-02 Boxster S
M96.24 3.2 Liter 03-04 Boxster S, 04 Boxster S Special Edition
M96.26 3.2 Liter 05-06 Boxster S
M96.01 3.4 Liter 99 Carrera, Carrera 4
M96.02 3.4 Liter 99 Carrera, Carrera 4
M96.04 3.4 Liter 00-01 Carrera, Carrera 4
M97.21 3.4 Liter 07-08 Boxster S, 08 Boxster S Limited Edition, 06-08 Cayman S
M96.03 3.6 Liter 02-05 Carrera (996), 02-04 Carrera 4, 02-05 Carrera 4S
M96.05 3.6 Liter 05-08 Carrera (997), 06-08 Carrera 4, 07-08 Targa 4
M97.01 3.8 Liter 05-08 Carrera S, 06-08 Carrera 4S, 07-08 Targa 4S

HAS IT BEEN RETROFITTED?

- LN Engineering IMS Retrofit and IMS Solution kits come with serial number tags to be placed on the vehicle when the IMS bearing has been serviced.
- Installations registered with LN can be looked up online:

  https://lnengineering.com/ims-lookup.html

HOW DO I IDENTIFY WHAT BEARING I HAVE?

1997-1999

And some 2000-2001 models

DUAL ROW BEARING

2002-2005

And some 2000-2001 models

SINGLE ROW BEARING

2000-2001

MY00-01 engines can have either a dual or single row bearing:

996 had Double Row for engine numbers up to 661 14164
996 have Single Row from engine number 661 14165 onward

Boxster: Double Row: up to 651 12851 (M96.22)
Boxster: Single Row: from 651 12852 onward (M96.22)
Boxster: Double Row: up to 671 11237 (M96.21)
Boxster: Single Row: from 671 11238 onward (M96.21)

Visual inspection of the IMS flange is recommended prior to verify serviceability due to inconsistencies in reported bearing types by Porsche for these years.

2000-2001

Boxster and 996 models in 2000 and 2001 can have either the dual or single row bearing, requiring visual inspection of the IMS flange.

By measuring the depth of the flange, you can identify which IMS kit you will need without having to remove the flange or pull the bearing.

Dual row cover dish depth = 13.34mm

Single row cover dish depth = 19.27mm

2006-2008

And some late 2005 models

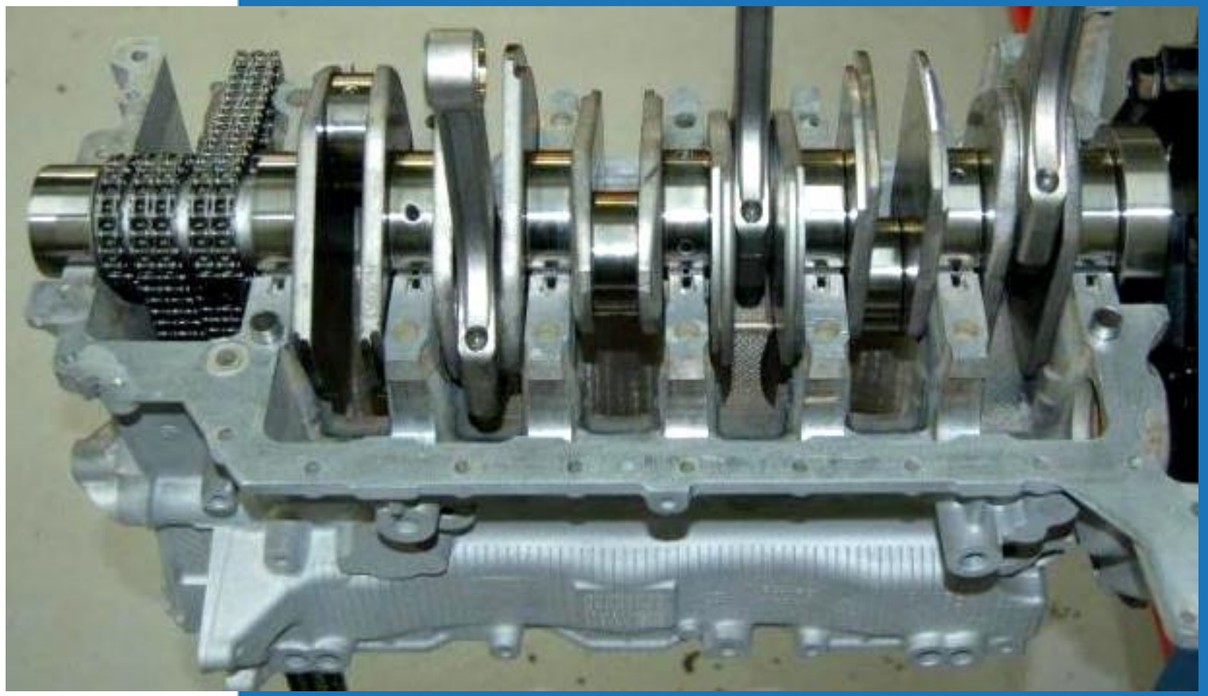
Non-serviceable, larger single row bearing.

with larger 22mm nut

2009+

With the introduction of the MA1/9A1 engine, the intermediate shaft was eliminated.

Camshafts are now driven directly off the crankshaft.



WHAT ARE MY OPTIONS?

SINGLE ROW PRO IMS RETROFIT

IMSRETROFIT.COM

IMS RETROFIT

SINGLE ROW PRO IMS RETROFIT (106-08.2.2)

Fits 2000-05 M96 Engines
Integrates dual-row in place of original single-row

INCLUDES:

- Custom dual row bearing with ceramic balls
- Billet bearing cap / flange
- Internal wire lock
- Set of microencapsulated bolts

RECOMMENDED REPLACEMENT EVERY 75k MILES OR 6 YEARS

IMSRETROFIT.COM

IMS RETROFIT

DUAL ROW IMS RETROFIT (106-08.4)

Fits 1997-2001 M96 Engines with original dual-row bearing

INCLUDES:

- Custom dual row bearing with ceramic balls
- Billet bearing cap / flange
- Custom spiro-loc
- Set of microencapsulated bolts

RECOMMENDED REPLACEMENT EVERY 75k MILES OR 6 YEARS

IMS SOLUTION

IMSSOLUTION.COM

IMS SOLUTION

SINGLE ROW IMS SOLUTION (106-08.20)

Fits 2000-05 M96 Engines
Replaces OE single-row bearing with plain bearing

- Eliminates ball bearing completely
- Easy oil changes with common spin-on oil filter
- Pressure-fed plain bearing, like in Mezger engine

DESIGNED FOR THE LIFE OF THE ENGINE

IMS SOLUTION

IMSSOLUTION.COM

IMS SOLUTION

DUAL ROW IMS SOLUTION (106-08.40)

Fits 1997-2001 M96 Engines with original dual-row bearing

- Eliminates ball bearing completely
- Easy oil changes with common spin-on oil filter
- Pressure-fed plain bearing, like in Mezger engine

DESIGNED FOR THE LIFE OF THE ENGINE

RND RS ROLLER

SINGLE ROW CYLINDRICAL ROLLER IMS BEARING (106-08.2R)

Fits 2000-05 M96 Engines
With original single-row IMS bearing

INCLUDES:

- Roller bearing with integral thrust control
- Billet bearing cap / flange
- Retaining Ring
- Set of microencapsulated bolts

RECOMMENDED REPLACEMENT EVERY 50k MILES OR 4 YEARS

RNDENGINES.COM

RND RS ROLLER

DUAL ROW CYLINDRICAL ROLLER IMS BEARING (106-08.4R)

Fits 1997-2001 M96 Engines with original dual-row bearing

INCLUDES:

- Roller bearing with integral thrust control
- Billet bearing cap / flange & spacer
- Retaining Ring
- Set of microencapsulated bolts

RECOMMENDED REPLACEMENT EVERY 50k MILES OR 4 YEARS

RNDENGINES.COM

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

MY2005-2006

Some engines may have the smaller single row IMS bearing that is serviceable:

- 3.6 M96.05 engine before engine number 69507475
- 3.8 M97.01 engine before engine number 68509791
- 2.7 M96.25 engine before engine number 61504716
- 3.2 M96.26 engine before engine number 62504095

Visual inspection of the IMS flange is recommended prior to verify serviceability

MY2006-2008

Some late 2005 model year vehicles may have the non-serviceable bearing.

Bearing replacement is not necessary or possible with 2006-2008 model year Boxster, Cayman, or 911. Engine disassembly is required to change the bearing.

IMS can be updated with IMS Retrofit 106-08.30 or IMS Solution 106-08.60 while engine is disassembled.

IMS Retrofit 106-08.30

IMS Retrofit 106-08.60

MY2006-2008

Although 2006-2008 Porsche Boxster, Cayman, and 911 models feature a larger 6305 ball bearing with increased load capacity, they are still subject to failure.

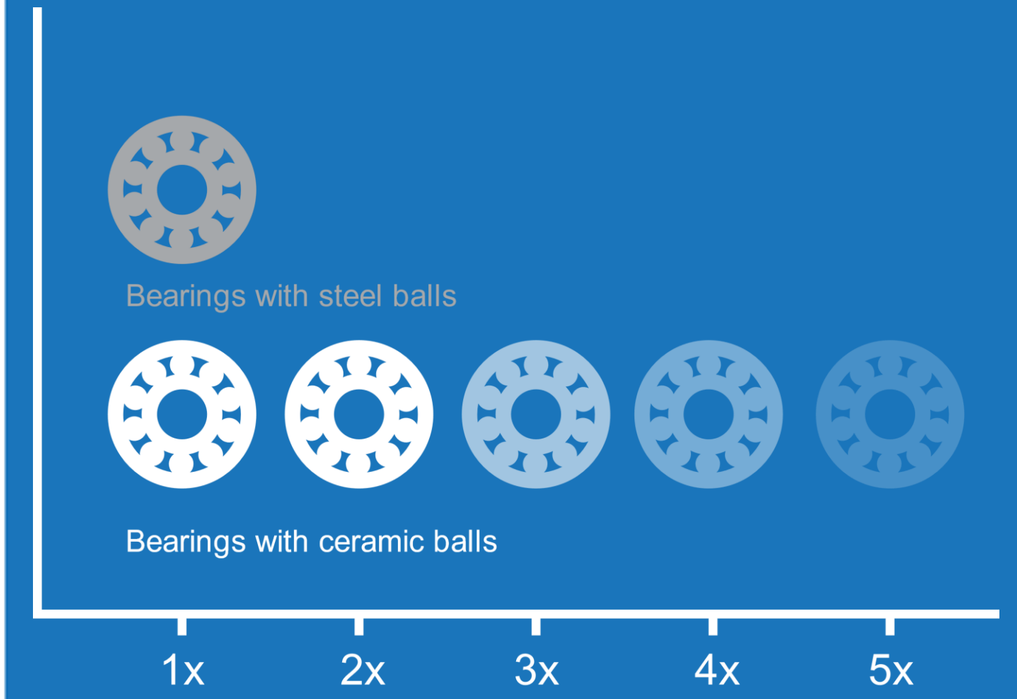
Check out our tips for extending MY06-08 bearing life: http://imsretrofit.com/my06-08/

WHY IMS RETROFIT?

The ceramic hybrid ball bearings utilized in IMSR kits have longer life over the conventional ball bearings used by the factory.

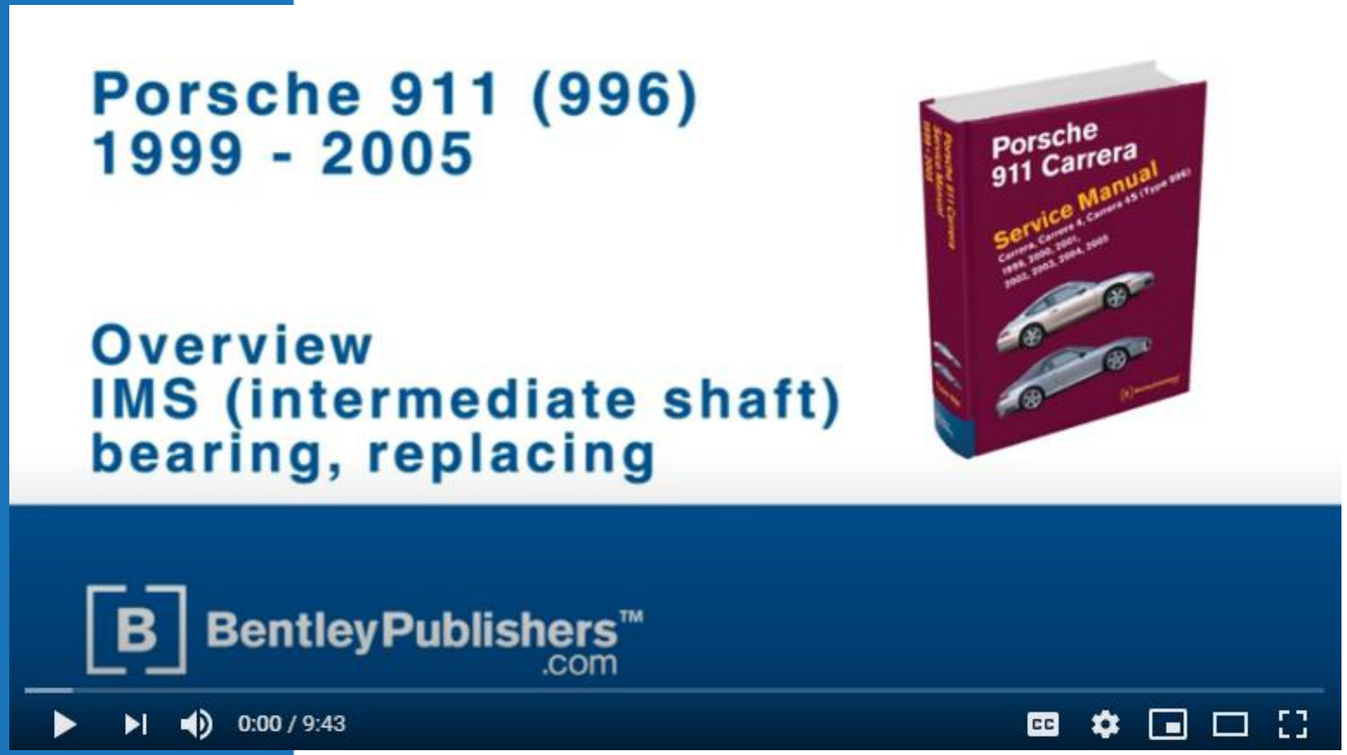
The Single Row Pro allows installation of higher load rating bearing into an intermediate shaft originally fitted with the weakest factory bearing.

For use as part of preventative maintenance and requires replacement at recommended service intervals.



Service life for ceramic hybrid bearings is at least double that of conventional steel ball bearings and could last up to five times longer, depending upon operating conditions.

IMSR VIDEO

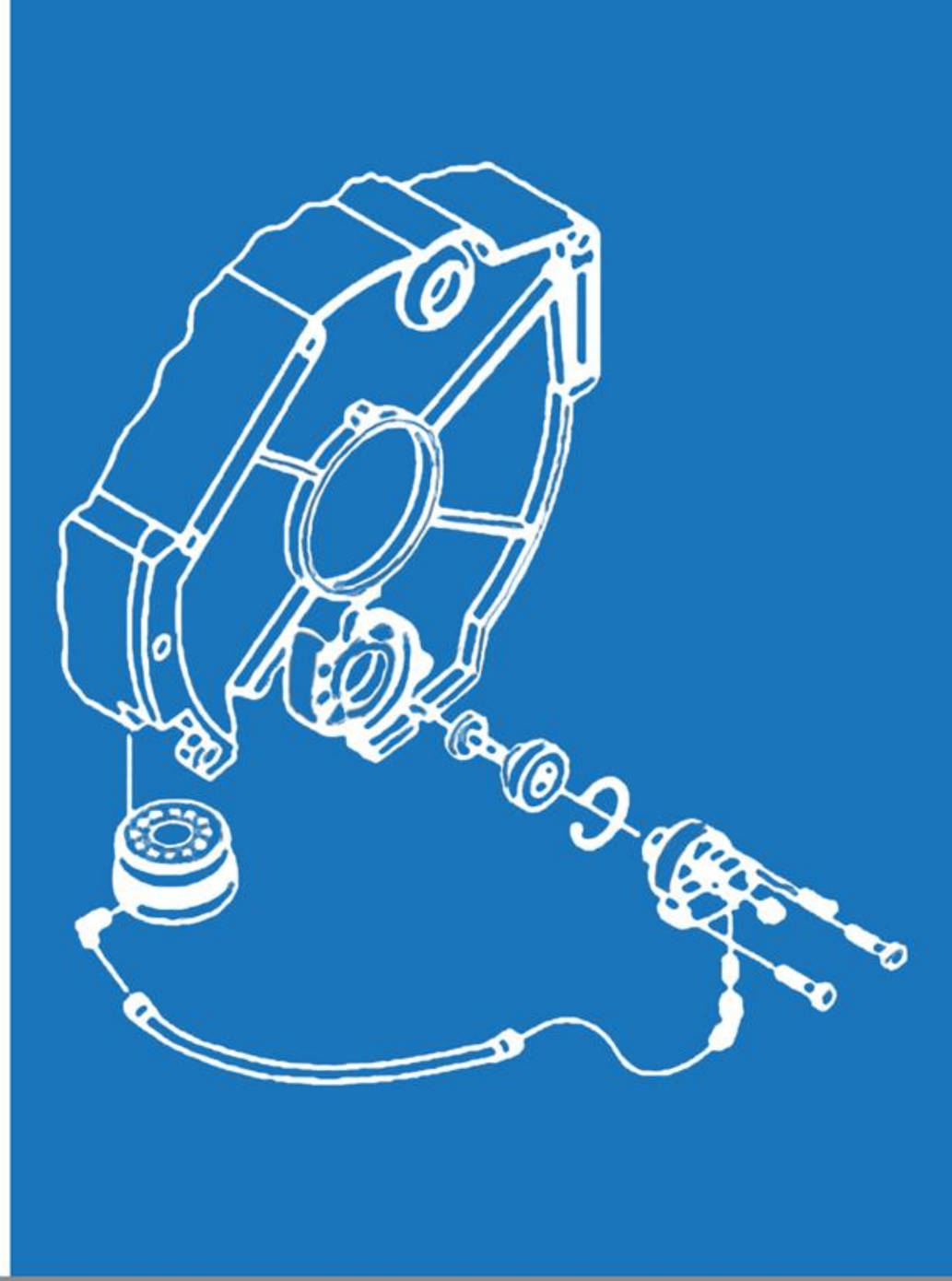


Bentley Publishers has produced an excellent video on the IMS Retrofit procedure using the LN Engineering IMS Retrofit kit and IMS Pro Tool Kit based off the procedure developed by Flat 6 Innovations and LN Engineering LLC.

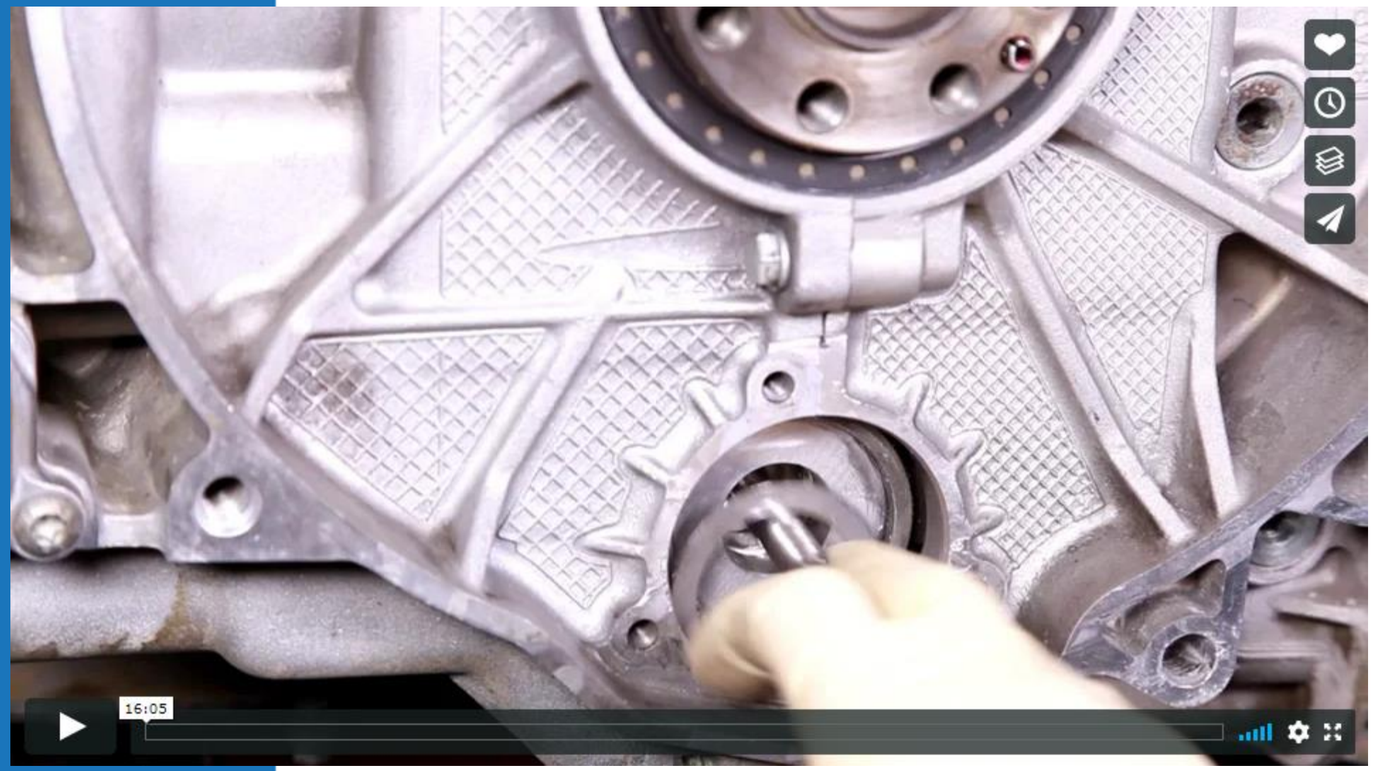
https://youtu.be/hAxj6FKMzvM

WHY IMS SOLUTION?

- The IMS Solution permanently backdates the engine to use a plain, oil-fed bearing.
- No moving parts to fail.
- IMS Solution does not have a service interval and is designed to last the lifetime of the engine.



IMSS VIDEO



As a supplement to the original IMSR Bentley video, an IMS Solution Installation video is also available:

https://vimeo.com/62719716

IMSR OR IMSS?

- The IMS Retrofit has a 6 YR / 75k interval whereas the IMS Solution is designed for the life of the engine.
- Due to budget constraints and other considerations, the IMS Retrofit may be appropriate for some owners or in situations where the condition or value of the vehicle doesn't justify installation of the IMS Solution.
- If you plan on keeping your car, investing in an IMS Solution is the obvious choice for ultimate peace of mind.

IMSR OR RND RS ROLLER?

- Shops looking to purchase the no longer available Classic Single Row IMS Retrofit (106-08.2) can alternatively use the RND RS Roller IMS kit.
- The RND RS Roller does not require any tools beyond the IMS Pro Tool kit (106-08.13) where the Single Row Pro IMS Retrofit and IMS Solution bearing kits both require additional tools for installation.
- The RND RS Roller's cylindrical roller bearing provides similar load capacity to the dual row bearings used in IMS Retrofit kits and is suitable for those who would prefer to use a roller bearing over a ball bearing replacement.

BALL OR ROLLER BEARING?

Cylindrical Roller bearings have poor thrust control compared to ball bearings. Competitors falsely claim their bearings are stronger. Here are the FACTS on bearing types and their load ratings:

- A factory single row 6204 ball bearing currently has a dynamic load capacity of 2900# with thrust max load rating of 1450#
- The NJ or NU204 cylindrical roller bearing used in competitor roller bearing kits has a dynamic load capacity of 3750# with thrust max load rating of 375#
- The custom Single Row Pro or Classic Dual Row ceramic hybrid bearing is stronger than competitor roller bearings with dynamic load capacity of 4000# w/ Thrust of 2000#
- The NUP204E roller bearing used in the RND RS Roller IMS kit has a dynamic load capacity of 5800# with thrust of 580#.

WHEN DO I REPLACE?

IMSR & IMSS are intended for preventative maintenance only!

Once your original bearing has failed it is too late - replacement after a failure will not “save” your engine.

Foreign Object Debris (FOD): wear and damage caused by foreign particles is responsible for 70% of all early bearing and subsequent engine failures.

Pre-qualification is required prior to fitting any new IMS bearing:

https://lnengineering.com/products/ims-bearing-installation-tools/ims-pre-qualification.html

INSTALLER CODE OF CONDUCT

Step 1: Properly pre-qualify installs.

Step 2: Verify original bearing is in good condition.

Step 3: Follow proper bearing installation registration requirements.

Failure to follow steps 1-3 will result in loss of Certified Installer status and invalidation of warranty.

REGISTRATION

After the replacement bearing has been fitted, the next step is to **register your IMS Retrofit or IMS Solution installation** with LN Engineering.

This process starts by visiting the IMS Retrofit website and clicking on **Register Your Kit** at the top of the IMS Retrofit home page.

The registration must be submitted within 30 days of installation and must comply with all pre-qualification and registration requirements including sending in the original bearing for inspection to qualify for the limited parts warranty.

SERVICE INTERVALS

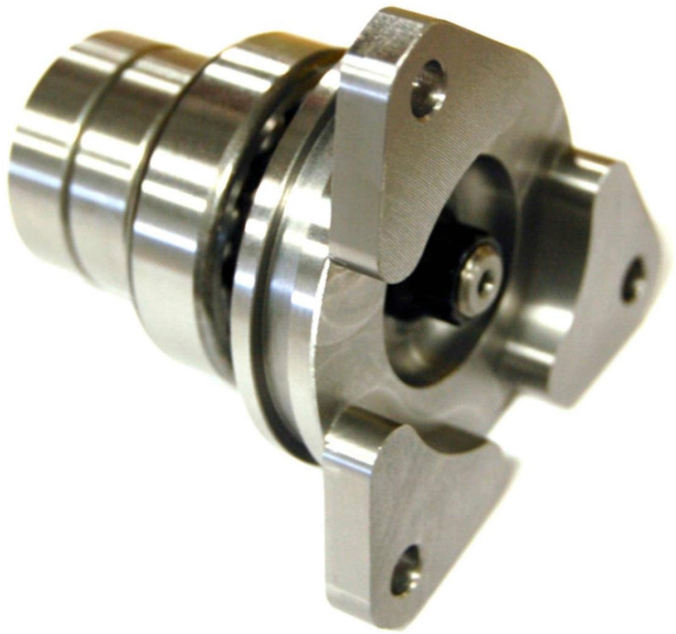
- IMSR Single Row: 50k miles or 4 years (whichever comes first)
- IMSR Single Row Pro / Dual Row: 75K miles / 6 years
- IMSR RND RS Roller: 75k miles / 6 years
- Triple-Row IMS Upgrade: 75k miles / 6 years
- IMSS (IMS Solution): Lifetime. No further service required.

SERVICE INTERVALS

The Classic Single Row IMSR and Triple-Row IMS Upgrade were superseded by the Single Row Pro in 2012.

Any prior installation of a Classic Single Row IMS Retrofit (106-08.2) or Triple-Row IMS Upgrade is past due for replacement based off our recommended service intervals.

Recommended replacement intervals are based on time or mileage, whichever comes first.



REPLACING SINGLE ROW OR TRIPLE ROW IMS WITH IMSS

If you are installing a 106-08.20 IMS Solution in a Boxster or 911 996 engine with a single row intermediate shaft bearing that has been previous fitted with an aftermarket IMS bearing replacement, you will need the correct circlip / snap ring to properly retain the IMS Solution bearing.

If you do not have an original Porsche circlip or snap ring, please note that the ears on the circlip / snap ring can interfere with the IMS Solution, requiring a reduced ear width of approximately 0.194" to properly clear the IMS Solution flange.

If you are installing a single row IMS Solution an intermediate shaft fitted with our triple row IMS upgrade, please note that some IMS shafts use a spiro-loc rather than a snap ring or circlip. If that is the case, you must reuse the existing spiro-loc when fitting the 106-08.20 single row IMS Solution.

WHEN DOES IT NEED TO BE CHANGED AGAIN?

Serial Number	5000	12000	22000	29000	33000	35500	38100	40000
Date of Manufacture	April 2012	April 2014	April 2016	April 2018	April 2020	April 2021	April 2022	April 2023

If an IMS Retrofit has already been fitted, look for the serial number tag on the vehicle to identify installation date +/- 6 months.

IMS Retrofit Bearings older than 6 years of age should be replaced as part of regular scheduled maintenance.

Serial number stickers were not supplied with kits made before 2011.

Registered installations can be looked up online at: https://imsretrofit.com/ims-check/

WARRANTY

- RND RS Roller – 2 YR / 24K Miles
- Classic Dual Row and Single Row Pro - 2 YR / 24K Miles
- IMS Solution - 5 YR / 60K Miles
- Proper pre-qualification AND registration required for warranty validation.

RETURNS & EXCHANGES

IMS kits and tools cannot be returned or exchanged if opened.

Please double check what product is needed for the model and year being worked on BEFORE opening the packaging. Any box that has signs that it has been opened or product has been handled previously will disqualify product for return or exchange.

If working on a model year where the factory used both dual and single row IMS bearings, shops will need to identify which bearing is needed before ordering or will need to order both types of bearing to ensure they have the correct bearing on hand to complete the installation.

WHAT IS FOD?

As shown in a factory filter after the IMS bearing has failed, foreign object debris carried in the oil will cause damage throughout the engine. Simply replacing the failed part will certainly lead to another failure.

Proper pre-qualification involves identifying engines not suitable for IMS bearing replacement.

IMS BEARING REPLACEMENT

PRE-QUALIFICATION PROCEDURE

The following eleven step IMS Pre-Qualification procedure was developed by Jake Raby at Flat 6 Innovations. During the initial development of the original IMS Retrofit Procedure and components, some items of concern were noted from the very beginning. Over the years these procedures have been updated to address them, thus increasing the effectiveness of IMS procedures.

This procedure has been employed at Flat 6 Innovations since the very first IMS Replacement was performed, and to date it has resulted in a 100% success rate for the Flat 6 Innovations Preventative Service program. Having performed the very first IMS Replacement, and after performing more IMS Replacements than any other facility, a perfect record has been maintained by Flat 6 Innovations by employing these procedures verbatim. This means that today roughly 20% of all engines that are inspected will fail this pre-qualification, and will require extensive repairs to be made prior to the IMS replacement being performed.

The biggest mistake that can be made is assuming that every vehicle is healthy enough to have the IMS bearing replaced. The second biggest mistake that can be made is not taking the pre-qualification procedure seriously. Please pay attention to each and every engine and realize that not every engine is a viable candidate for an IMS bearing replacement.

- ☐ Perform controller interrogation (check for any Fault Codes, engine over-revs, Camshaft deviation #'s, etc...)
- ☐ Five (5) chain M96 engines are known for high camshaft deviation values due to abnormally high wear found on the timing chain adjuster wear pads. This can occur at low mileage points. Camshaft deviations found over 6 degrees must be addressed prior to performing any IMS procedure. Failure to do this may result in a loss of valve timing during the procedure, or a Check Engine Light illumination immediately following the IMS procedure. This will be due to camshaft deviations that are operating out of range.
- ☐ Perform Crankcase Manometer test. Healthy engines with healthy Air/ Oil Separators at sea level will test at 5" of water. (Use CR Tools Manometer for best results)
- ☐ Check over car completely, perform vehicle safety inspection, and listen to engine to determine overall condition. Inspect for any engine and/or gearbox oil and/or coolant leaks and document. Driving the car prior to the procedure is recommended, as issues may be caught prior to the process.
- ☐ Drain engine oil, inspect how the oil looks while draining, and inspect engine oil drain plug closely. Inspect for ANY debris. Again, any debris is concerning and must be taken seriously. Engines can run perfectly and exhibit no other symptoms of imminent failure, yet can be slowly dying due to debris laden oil.
- ☐ Remove engine oil filter, cut open and inspect for ANY debris. Look closely at the bottom of the factory filter canister, where debris is often collected. If ANY debris is present, the procedure must be aborted; the source of the debris must be identified. Action must be taken to address these issues prior to the process being carried out. Replacing the IMSB of ANY engine that has wear metals or other debris in the oil, will lead to collateral damages that can destroy the replacement IMS Bearing, as well as all other internally lubricated engine components.
- ☐ Remove Engine Oil Sump plate, inspect for debris. Removal of the sump plate is highly encouraged, as debris will lurk here that is not notable in the oil or in the filter. Again, ANY debris of any sort is concerning and must be investigated.
- ☐ During all oil, sump, and filter inspections, remember that the tiniest particles are just as concerning as larger pieces. This is because they are even more easily mixed into and suspended from the engine oil, allowing the debris to circulate all throughout the engine with damaging effects.
- ☐ Perform bore scope inspection of all cylinder bores. Watch closely for scoring and any signs of wear. Wear debris from failing / failed cylinders has been proven to be very damaging to all engine internals, including IMS bearings.
- ☐ With the transaxle removed, inspect the Rear Main Seal bore to ensure the engine does not have a factory defect known as "crankshaft sag". If this exists oil leakage at the RMS will be a terminal condition that can't ever be remedied.
- ☐ Once the IMS flange is removed, inspect the original IMS Bearing for signs of failure. Also, check for signs that the engine may have already experienced an IMS Bearing failure and may have had another bearing fitted. Engines that have IMS shaft assemblies that have been through a failure are always damaged; it is very important that these shafts are not fitted with any IMS replacement bearing.

NOTE: Any and all fault codes, and or symptoms of rough running, etc. must be addressed prior to any IMS procedure. It is imperative that ONLY healthy, good running engines be retrofitted.

NEVER, UNDER ANY CIRCUMSTANCE, IS IT PERMISSABLE TO REMOVE A FAILED OR FAILING IMS BEARING AND REPLACE IT WITH A NEW IMS BEARING.
IMS COMPONENTS AND PROCEDURES WERE DESIGNED FOR PREVENTATIVE PURPOSES ONLY.

PREQUALIFICATION VIDEO

Rennvision has published a video from Flat 6 Innovations on the Pre-Qualification procedure:

https://youtu.be/y342KBpR4K8

More videos can be found on the LN Engineering website:

https://lnengineering.com/products/ims-bearing-installation-tools/ims-pre-qualification.html

IMMEDIATE PRE-QUAL FAILS

- Ferrous or non-ferrous debris in the sump or in the filter
- Any range 3 over-revs
- Cam timing deviation of 4.5 degrees or more
- Static cam timing off by 7.5 degrees or more
- Scored cylinder bores

IS THE ENGINE HEALTHY?

- Is there excess plastic in the sump on a 5-chain engine? Check variocam pads.
- Is the engine noisy? Scored cylinders sound like noisy lifters. When in doubt, perform compression and leakdown test and borescope cylinders.
- Has the water pump been replaced recently? Debris in cooling system can cause cracked cylinder heads months later.
- Are chain tensioners noisy at cold start? Uncorrected, chain and rail damage can occur. Replace all three if there is chain rattle at startup. Still noisy – chains may have stretched!

IS THE ENGINE HEALTHY?

Use a manometer to get a baseline for a new AOS and compare value. Replace if high. Low values can indicate poor ring seal or other internal engine issue.

Is the rear main seal leaking? Use go-no-go tool to verify engine is not improperly machined from the factory. Replace with genuine RMS only.

Are the injectors dirty or failing? Check fuel trim values. If the engine is adding or taking fuel away, check for vacuum leaks by smoke testing the engine and replace the injectors. MAF and primary O2 sensors may also be suspect.

Check dual mass flywheel with proper LUK tester. Replace with new DMF – OEM or Genuine only.

WHAT TOOLS ARE NEEDED?

IMS PRO TOOL KIT (106-08.13)

Required for ALL IMS PROCEDURES

SUPPLEMENTAL IMS TOOL KIT (106-08.21)

Required for IMS Solution and MY06-08 Upgrade

FAULTLESS IMS TOOL (106-08.22)

Required for Single Row Pro IMS Retrofit

TOOL RENTAL

Tool rental service is available to qualifying customers.

Depending on which IMS replacement is being installed, the tools required to replace the bearing can vary.

https://lnengineering.com/tools-rental

IMS PINNING

When rebuilding an M96 or M97 engine, it is critical that the intermediate shaft have the main sprocket pinned to prevent slippage.

IMS must also be inspected for runout not to exceed 0.005” as excessive runout can lead to premature bearing failure.

ALTERNATIVES

Direct Oil Feed. Commonly confused with IMSS.

The IMS Solution uses an oil pressure fed plain bearing, like in the Mezger air cooled Porsche 911 engine. Bearing rides on this oil film.

A ball bearing or roller bearing in the M96/M97 engine does not require forced oil - the M96 engine is wet sump, not dry sump.

The IMS is submerged in oil - no further lubrication is necessary.
Adding a DOF to a ball or roller bearing sprays oil at a component already bathed in oil.

ALTERNATIVES

Our competitors do not make recommendations for service intervals for their DOF or cylindrical roller bearing IMS kits, however any kit that uses ball or roller bearings with countless moving parts and wear surfaces will not last indefinitely.

Our recommended service intervals are to ensure that the bearing is in good condition when it is replaced.

The IMS Solution is the only truly permanent fix for IMS failures, backdating the bearing to an oil-pressure fed plain bearing like a Mezger engine.

BORING OUT THE IMS

Some claim to be able to replace the non-serviceable MY2006-2008 IMS bearing by boring out the engine case while the engine is fully assembled and in the car.

This invasive procedure introduces significant debris into the engine that will cause extensive damage to the engine, requiring a costly teardown and overhaul to correct for this.

We offer a repair sleeve to correct engines damaged by this process.

COMMON QUESTIONS

- Q: I have a tripe row IMS upgrade. What replacement IMS kit do I need?
- A: If the IMS has a spiro-loc, a 106-08.2.2 or 106-08.20 can be used but the spiro-loc must be reused.
- If the IMS has a snap ring it must be replaced with a factory single row snap ring. Contact LN before installing with either 106-08.2.2 or 106-08.20.

COMMON QUESTIONS

- Q: Does the engine have to be removed from the car.

- A: Typically no.

  Exception is 996/997 Tiptronic which the engine and transmission must be removed as an assembly and procedure must be carried out with engine removed from the car.

COMMON QUESTIONS

- Q: Why does the IMS Retrofit not use a sealed bearing?

- A: The IMS is submerged in engine oil. Using an open bearing rather than the factory sealed bearing allows engine oil to properly lubricate and cool the bearing. A ceramic hybrid ball bearing only needs ~ 1cc of oil per minute.

COMMON QUESTIONS

- Q: Did Porsche ever come out with their own IMS replacement?

- A: Yes – a kit using a ceramic hybrid ball bearing was released in 2017, similar to that of our original Classic Single Row IMS Retrofit.

COMMON QUESTIONS

- Q: What other items should be replaced at time of service?

- A: Water pump should be replaced every 4 years/50k miles along with AOS, drive belt, thermostat (with low temp unit). No metal impellers. Genuine Porsche recommended for water pump and AOS.

  Dual mass flywheel must be checked and replaced if bad with OEM or Genuine DMF only and stock clutch disc along with rear main and case bolts.

  Address all other concerns found during pre-qualification.

COMMON QUESTIONS

- Q: What can be done to extend the life of my new replacement IMS bearing?

- A: Shorter oil change intervals not to exceed 5,000 miles or 6 months with a high quality 5w40 synthetic motor oil with increased ZDDP and Moly levels such as Driven DT40 is recommended.

  Vehicles subjected to short drives or operated in cold climates may benefit from more frequent oil changes.

INSTALLERS

Professional installation including pre-qualification and registration required for warranty.

Using a Certified Installer is not required, however installers have extensive training and have been selected for their professionalism and experience. A current list of IMS Solution Certified Installers can be found at:

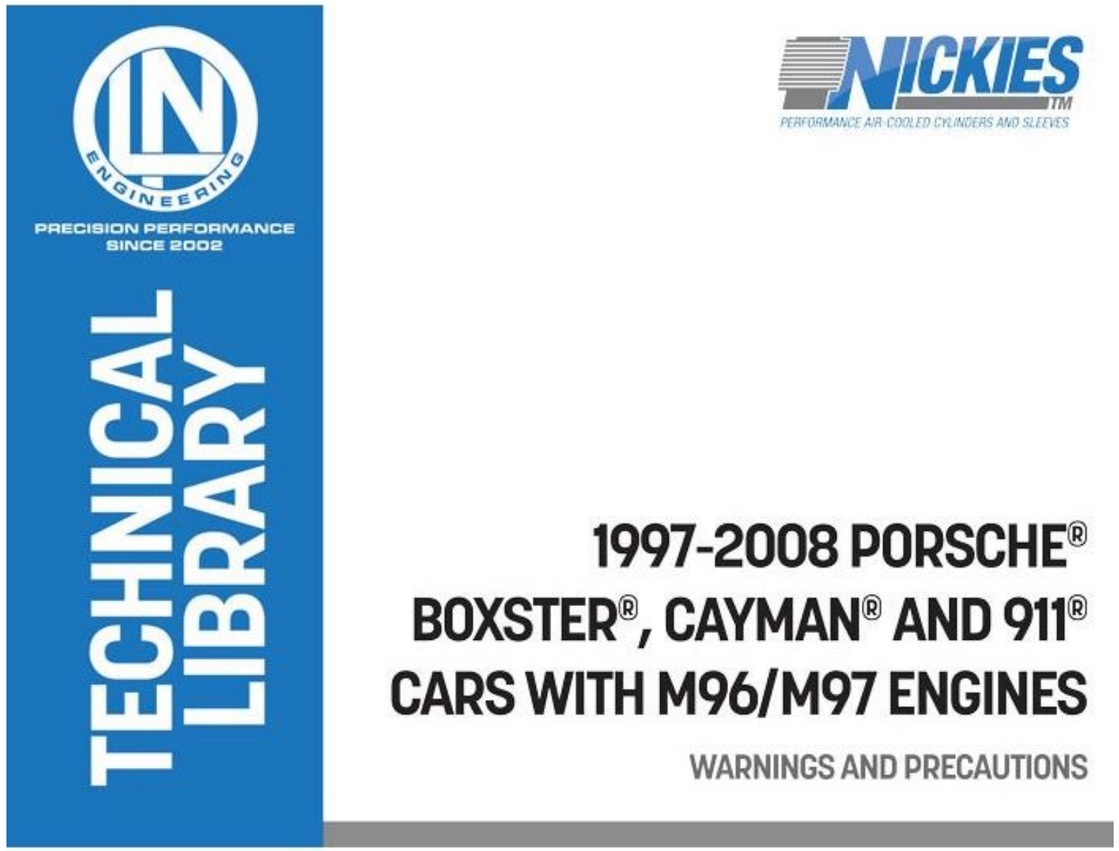
https://imssolution.com/certified-installers/

LINKS

- IMS Retrofit - http://imsretrofit.com/
- IMS Solution - http://imssolution.com/
- RND RS Roller - https://rndengines.com/roller-bearing-ims-retrofit-kit/
- Porsche Club of America IMS Info - https://lnengineering.com/products/the-definitive-guide-and-faq-for-porsche-ims-bearings/porsche-club-of-america-ims-info.html
- IMS FAQ – https://lnengineering.com/products/the-definitive-guide-and-faq-for-porsche-ims-bearings.html
- Pre-qualification – https://lnengineering.com/products/the-definitive-guide-and-faq-for-porsche-ims-bearings/ims-pre-qualification.html
- Registration and IMS Lookup - https://lnengineering.com/ims-lookup.html

FREE TECHNICAL RESOURCES

- Click on education on the LN Engineering home page for free technical information.
- Be sure to check out and subscribe to the LN Engineering YouTube channel.



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