

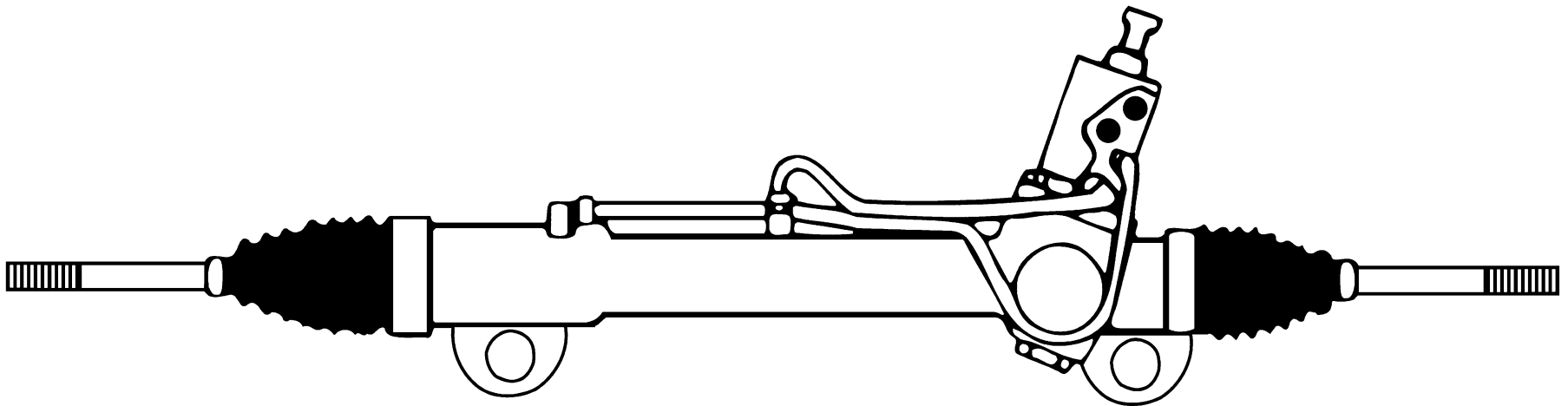
NEW EMAIL ADDRESS: kaufmanproducts5@gmail.com

Welcome to:

Kaufman Products, Inc.

Your complete source for everything Rack and Pinion

Enter Web Site:



Last Updated April 10, 2025

Kaufman Products, Inc

An Introduction - Who Kaufman Products Is:

Contact us:

Testers:

Hand Tools RPS 750:

Rack and Pinion Vise RPF 547:

3 Ton Ratchet Seal Press:

Bulk Seal Program:

Replacement Hard Parts - Bushings, Jam Plugs, Steering Lines, Tundra Tubes, Etc:

Boring and Sleeving the Pinion Teflon Area:

Training and Consulting:

Hard Chrome Plating, Tie Rod Pressing, Piston Swedging Tooling, Rack Housing Sleeving

CONTACT US



What's New

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4520 W Fullerton Ave.
Chicago, Illinois
60639

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Fax: 1-773-489-7463

Jake's cell: 1-773-230-1615

Email: kaufmanproducts5@gmail.com

NEW EMAIL ADDRESS

An Introduction to the Rebuilding of Steering Gears

Kaufman Products has been consulting, designing and building tooling for the steering gear rebuilders since 1974. Our tooling is affordable, simple to use, long lasting, and very high quality. We offer all the information, services and tooling you need to successfully start up a rack and pinion rebuilding company. If you are already rebuilding, I offer consulting to help with increasing your productivity or expanding and upgrading your present remanufacturing operation.

I also own a company, Precision Remanufacturing that has been rebuilding rack and pinions since 1987. In 2010, Precision began rebuilding electric rack and pinions. This required the development of a tester which Kaufman Products developed in conjunction with [PTM Electronics in Farmington Hills, MI](#). To go along with the electronic tester we also developed a dedicated test bench, the RPA 1200 to test just electric rack and pinions. We are constantly designing and building new tools and parts for rebuilding rack and pinions for hydraulic, manual and now electric rack and pinions. Check out our [New Arrivals](#) section on our web.

Thank you, in advance, for your interest in Kaufman Products and the tooling and services we offer. This web page is presented in a logical sequence of what is needed to start a rebuilding shop and explains the logic and reasoning for the tooling and services we offer. Please look it over so you can become better informed. If there is something you are looking for that we have not discussed, or a tool you need we do not offer, please do not hesitate to inquire of us – we are first a rack and pinion rebuilder and we probably just haven't updated our web sight. There are many proprietary tools and testers we have built for rebuilders to satisfy their needs. We would be more than happy to discuss and work on your requirements too. And by all means please email or call me if you have any questions or thoughts.

NEW TOOLS & PARTS

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2005-2021 Toyota Tacoma Tube Pt# - TT26514



\$60.00 each

Quantity Discounts Available



Nissan Rouge Jam Nut Tool
2014 and up.

\$55.00



Part #

BHB59919

Fits 2012-2019 Nissan Versa

1 - 4 Pieces \$15 ea

5 - 9 Pieces \$13 ea

10+ \$12 ea

Aftermarket



Part #

RGTP 30227

Fits Volvo Series 60, 70, 80 2007-2015 Rack
and Pinions. Thread size M40X1.5.

1-5 Pieces \$14.25

10 Pieces \$12.00

11+ Pieces \$10.00

Aftermarket

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TESTERS:

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[RPA 100 - Air Test System.](#)

[RPA 300 - Job Shop Steering Gear Hydraulic Tester.](#)

[RPA 1000 - Production Steering Gear Analyzer.](#)

[Comparision Chart of RPA 300 vs RPA 1000](#)

[Hydraulic Test Fittings For RPA 100, 300, & 1000 Tester.](#)

[Road Simm Tools For RPA 1000 Tester](#)

[RPA Tester Service & Replacement Parts](#)

[Road Simm Tester For Electric Rack and Pinions - RPA 1200e](#)

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RPA 100 AIR TEST SYSTEM

\$3,850.00

Today, many rebuilders are performing an air leak test prior to the hydraulic test on their steering gears to add an extra level of quality assurance to their remanufactured hydraulic gear. This test is performed by filling the gear with air and then submerging the gear in a low viscosity oil that is not harmful to the seals. This test allows the rebuilder to detect small minute leaks in the gear that would require a much long testing cycle during the hydraulic testing to detect the same leak. This is similar to looking for the slow leak in a car tire, the type of leak that takes days for the tire to go flat. By submerging the tire or in this case the gear in a liquid, the leak can be located quickly and fixed. This air test system works on the same principle and can be used with any steering gear. The test is performed first with low-pressure air to detect any seals that would leak when the car is not running, and then with high-pressure air to detect any other leaks. The entire test takes about two minutes to perform. Included with the air test system is:

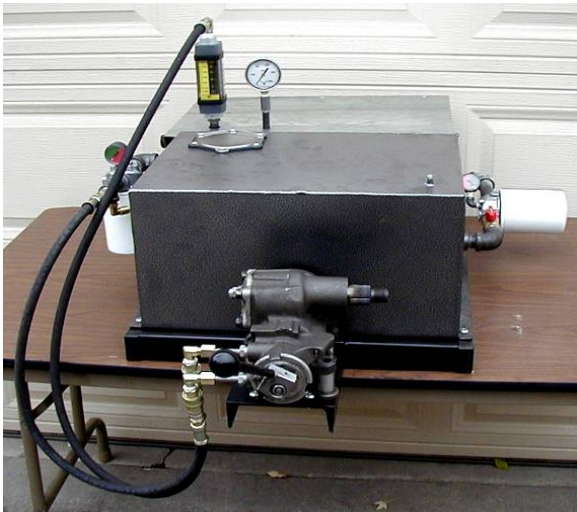
- The completely assembled air logic system including all plumbing hardware, regulators, gauges, and valves. All that is required to operate this tester is shop air.
- A complete assortment of over 20 different port fittings with quick disconnects to enabling you to fill and test the gear with air.
- A steel fabricated dip tank for submerging the gear with 2 drain valves for replacing the oil when it gets dirty!
- 55 Gallons of the low viscosity / seal friendly tester fluid.

RPA 300 Job Shop Steering Gear Tester

\$6,810.00

The RPA 300 was originally developed over 30 years ago for testing power steering gear boxes. Today Kaufman Products has further developed this tester to test both power steering gear boxes and power rack and pinions. The tester is built with all the same parts (motor, pump, valves, filters, etc) as the RPA 1000. The tester comes with over 20 different hydraulic test fittings for domestic and import gears. The fittings screw directly into the steering gear to insure the threads/fittings are in good shape. There are hydraulic disconnects attached to the fittings for ease of use in connecting and disconnecting to the tester hoses. The RPA 300 comes with the RPF 547 rack and pinion vise for holding all rack and pinions during testing. This is an affordable yet reliable steering gear tester for the small to medium sized rebuilder who wants to ensure the gears he is building and selling are quality rebuilt and tested. This tester can also be modified with larger components to facilitate testing medium and heavy duty truck gears. Please call for pricing for these applications.

RPA 300 POWER STEERING GEAR TESTER



RPA 300 set up for testing gear boxes



RPA 300 set up for testing rack and pinions

RPA 1000 Production Steering Gear Tester

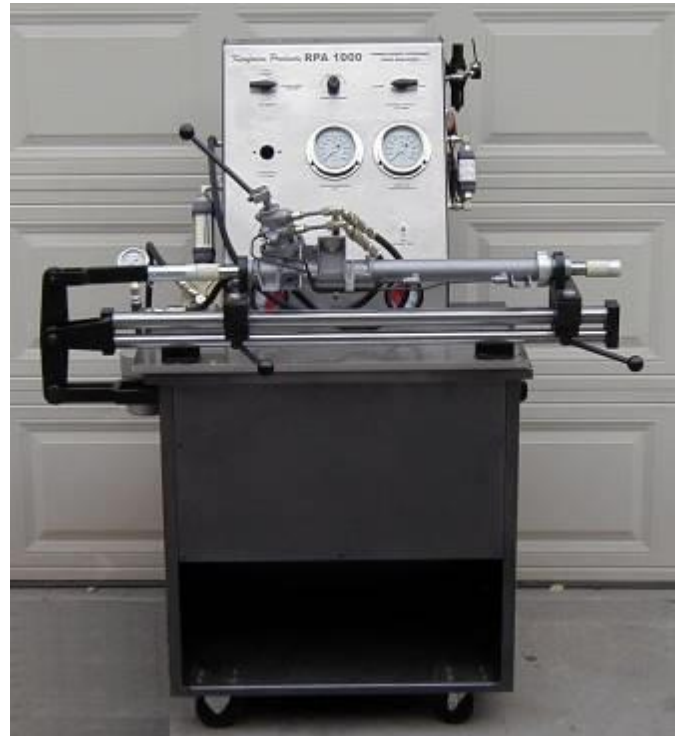
\$38,900.00

Because we are also Rack and Pinion Rebuilders the RPA 1000 is a continually evolving state of the art steering gear tester designed and manufactured by Kaufman Products for fully function testing gears in a production environment. As new gears come to market for rebuilding the RPA 1000 is updated to facilitate testing these gears. Therefore, when you purchase an RPA 1000 Steering Gear Tester from Kaufman Products you are getting the latest tester available and one that is capable of testing all hydraulic racks ever made. Over the years the oil reservoir has been enlarged, more room around the gear has been allocated and the testing fixture for holding racks has been lengthened and additional larger chucks made for the longer and larger diameter gears. There is a total of 3 filters incorporated into the tester to ensure all gears are tested with clean oil and the tester itself is not compromised by any foreign particles that may be brought into the system by the gears you are testing. The first filter is a screen filter you can clean out and then a magnetic filter you can also clean out. The final filter is an absolute filter with gauge for monitoring when the filter is dirty and needs to be replaced. The RPA 1000 has the ability to vary and measure the flow rate in gallons per minute through the gear. This is a necessary feature to truly test the steering gears that come on many vehicles manufactured after 1993 because the variable assist steering valve is mounted in the steering pump. Since the steering effort is varied by flow rate at the pump, to properly test the gear you must be able to vary the flow rate while testing the gear under load to verify it is functioning correctly. We have further upgraded the RPA 1000 with a 12-volt test system. This will allow you to correctly test Saginaw Magnasteer® and ZF Servotronic® gears along with many other gears that have electrical components regulating the power assist. For rebuilders with earlier versions of the RPA tester, we can update your tester to the RPA 1000 for a nominal fee.

RPA 1000 POWER STEERING GEAR TESTER



RPA 1000 set up for testing gearboxes



RPA 1000 set up for testing rack and pinion

5 / 2022

TESTER COMPARISON CHART

RPA 300 vs. RPA 1000

FEATURES	RPA 300	RPA 1000
• Hydraulically tests domestic and import rack and pinions.	✓	✓
• Hydraulically tests all steering gear boxes.	✓	✓
• Tests all steering gears for external leaks.	✓	✓
• Tests rack and pinion power piston for bypass.	✓	✓
• Tests for internal bypass of fluid in the pinion valve.	✓	✓
• Tests pinion valve for equal steering balance right and left.	✓	✓
• Tests the inlet and return port threads on the rack to Verify they are not cross-threaded or striped.	✓	✓
• Measures the pressure drop across the rack thereby testing for internal blockage in pinion valve.	-	✓
• Checks for equal steer right and left under no load.	✓	✓
• Hydraulic reservoir capacity.	10 GAL	10 GAL
• Puts a measured resistance in the steering gear and measures Force right and left to over come this load - Power Assist.	-	✓
• Road simulates the rack and pinion to insure equal steer right and left under true road conditions.	-	✓
• Road simulates gear boxes to insure equal steer right And left under true road conditions.	-	✓
• No cost serviceable Oberg filter on return line.	-	✓
• No cost serviceable Magnetic filter on return line.	-	✓
• 5 Micron absolute filter with filter gauge on return line.	✓	✓
• 5 Micron absolute filter with filter gauge on inlet line.	✓	✓
• Fixed maximum pressure regulator.	-	✓
• Variable pressure regulator allowing you to test gear at any pressure.	✓	✓
• Pressure Gauges (Diameter)	2 ½"	4"
• Variable flow regulator allows you to set flow when testing gear	-	✓
• 0-5 GPM flow gauge	✓	✓
• 12 Volt test system for testing gears with electronics.	-	✓
• Air evacuation system integrated into the hydraulic system.	-	✓
• Low oil level reservoir warning light.	-	✓
• Low oil level reservoir float.	✓	-
• One year manufactures warranty.	✓	✓

Oil temperature gauge and/or oil heater available as an option.

Hydraulic Tester Fittings for the RPA100, 300, 1000 Testers

Kaufman Products make available the following hydraulic test fitting for connecting the RPA 100, RPA 300 or RPA 1000 tester you buy to the steering gear you are testing. If you are buying an RPA tester for the first time, Kaufman Products will help you in choosing the fittings that you should buy based on your needs. * are the fittings we would recommend you buy with your tester.

Part #	Description	Price ea
F10	1/2-20 O Ring Fitting	\$40.00
F11*	9/16-18 O Ring Fitting	\$35.00
F13*	12 mm O Ring Fitting	\$35.00
F14*	16 mm O Ring Fitting (2 Supplied With Tester)	\$35.00
F15*	5/8-18 O Ring Fitting	\$35.00
F16*	18 mm O Ring Fitting	\$35.00
F18*	OE GM/Chrysler Pressure Fitting (M18X1.5)	\$46.00
F19*	OE GM/Chrysler Return Fitting (M16X15)	\$46.00
F22*	14 mm X 1.5 O Ring Fitting (2 Supplied with Tester)	\$35.00
F23*	Tube Adapter For O Ring Fittings (2 Supplied with Tester)	\$45.00
F24*	17 mm O Ring Fitting for Toyota and Mazda	\$60.00
F25	Porsche 944 Tester Fitting (2 Supplied with Tester)	\$60.00
F27	Honda 12 mm X 1.00 O Ring Fitting (2 Supplied with Tester)	\$60.00
F28	O Ring Fitting Cap Plug (2 Supplied with Tester)	\$18.00
F29	92-94 Acura Legend And Vigor Test Fitting Set (Direct connect)	\$80.00
F30	Mazda RX-7 Test Fitting Set (2 Required)	\$80.00
F32	Mercedes Benz 14 mm X 1.0 O Ring Fitting	\$55.00
F34	Toyota Mazda etc OE 17mm Test Fitting	\$60.00
F35*	Dodge Ram 20 mm X 1.5 Fitting	\$45.00
F36	Mercedes Benz 16 mm X 1.0 O Ring Fitting	\$60.00
F37	OE 14 mm Fitting (M14X1.5)	\$45.00
F38	BMW & Landrover Pushin Fitting – Pressure	\$75.00
F39	BMW & Landrover Pushin Fitting – Return	\$75.00
F50*	3/8" Push-In-Fitting - Direct Connect (Ford/Cadillac/Volvo)	\$60.00
F51*	11mm / 7/16" Push-In-Fitting - Direct Connect (Ford/Cad/H3/Jag/MB/Volvo) 2 Supplied	\$60.00
F52*	12mm Push-In-Fitting - Direct Connect (Envoy/Colorado/Volvo/H3) 2 Supplied with Tester	\$60.00
F53*	14mm Push-In-Fitting - Direct Connect (Ford Aviator/Jaguar)	\$60.00
F54*	9/16" Push-In-Fitting - Direct Connect (Ford F150)	\$60.00
F55	15mm Push-In-Fitting - Direct Connect (Porsche)	\$68.00
F56	16mm Push-In-Fitting - Direct Connect (Porsche)	\$68.00
F57	18mm Push-In-Fitting - Direct Connect (Audi - 30287)	\$68.00
F60*	Push-In-Fitting hardware kit	\$30.00

Road SIMM tools for the RPA 1000 and RPA 1200e

The following is a list of adaptors that Kaufman Products offers for connecting the end of a rack and pinion to the RPA 1000 Road Simulator. These tools are referred to as Road Simm Tools. They are used as a pair; the adapter and the stop. Some tools are much more universal than others. When you order a tester for the first time, Kaufman Products will help you order the tools you should based on your requirements. As a recommendation we have a * has been placed after Simm tools we would recommend you initially buy.

Part #	Part Description	Price Ea.	Part #	Part Description	Price Ea.
S100	M22 X 1.5 Female Rack Adapter	\$120.00	S126	13/16 - 20 Jaguar Rack Adapter	\$120.00
S101	M22 X 1.5 Female Rack Stop	\$100.00	S127	13/16 - 20 Jaguar Rack Stop	\$100.00
S102*	M14 X 1.5 Female Rack Adapter	\$120.00	S128	Audi Center Steer Rack Adapter	\$200.00
S103*	M14 X 1.5 Female Rack Stop	\$100.00	S129	Audi Bolt	\$20.00
S104*	M16 X 1.5 Female Rack Adapter	\$120.00	S130*	M16 X 1.25 Male Rack Adapter	\$120.00
S105*	M16 X 1.5 Female Rack Stop	\$100.00	S131*	M16 X 1.25 Male Rack Stop	\$100.00
S106	15/16-20 Female Rack Adapter	\$120.00	S132*	M14 X 1.25 Male Rack Adapter	\$120.00
S107	15/16-20 Female Rack Stop	\$100.00	S133*	M14 X 1.25 Male Rack Stop	\$100.00
S108	¾" ID X 1 ½" OD Hard Washer Stop	\$40.00	S135	M12 X 1.0 Renault & Peugeot Rack Adapter	\$120.00
S109	1" ID X 1 ½" OD Hard Washer Stop	\$40.00	S136	M12 X 1.0 Renault & Peugeot Rack Stop	\$100.00
S110	Center Steer GM/LH and gearbox bar	\$200.00	S137*	M20 X 1.5 Male Adapter Pathfinder	\$120.00
S111	Center Steer Bolt Honda/GM (2/set)	\$20.00	S138*	M20 X 1.5 Male Stop Pathfinder	\$100.00
S112	M12 X 1.25 Male Rack Adapter	\$120.00	S139*	M22 X 1.5 Male Adapter Silverado	\$120.00
S113	M12 X 1.25 Male Rack Stop	\$100.00	S140*	M22 X 1.5 Male Stop Silverado	\$100.00
S114*	M14 X 1.50 Male Rack Adapter	\$120.00	S141*	M24 X1.5 Male Adapter Dakota 4WD	\$120.00
S115*	M14 X 1.50 Male Rack Stop	\$100.00	S142*	M24 X 1.5 Male Stop Dakota 4WD	\$100.00
S116*	M16 X 1.00 Male Rack Adapter	\$120.00	S143	M20 X 1.0 Male Adapter Nissan Armada	\$120.00
S117*	M16 X 1.00 Male Rack Stop	\$100.00	S144	M20 X 1.0 Male Stop Nissan Armada	\$100.00
S118*	M16 X 1.50 Male Rack Adapter	\$120.00	S145	M14 X 2.0 Male Adapter Cad. SRX, STS	\$120.00
S119*	M16 X 1.50 Male Rack Stop	\$100.00	S146	M14 X 2.0 Male Stop Cad. SRX, STS	\$100.00
S120*	M17 X 1.00 Male Rack Adapter	\$120.00	S147*	M24 X 2.0 Male Adapter GM Yukon etc	\$120.00
S121*	M17 X 1.00 Male Rack Stop	\$100.00	S148*	M24 X 2.0 Male Stop GM Yukon etc	\$100.00
S122*	M18 X 1.50 Male Adapter Envoy	\$120.00	S149	M30 X 1.5 Male Adapter Toy Tundra 07-13	***
S123*	M18 X 1.50 Male Stop Envoy	\$100.00	S150	M30 X 1.5 Male Stop Toy Tundra 07-13	***
S124*	M20 X 1.50 Female Rack Adapter	\$120.00	S151	M27 X 1.5 Male Adapter Toy L'Cruiser 03-07	***
S125*	M20 X 1.50 Female Rack Stop	\$100.00	S152	M27 X 1.5 Male Stop Toy L'Cruiser 03-07	***
			S153	M28 X 1.5 Male Adapter Toy L 'Cruiser 08-13	***
			S154	M28 X 1.5 Male Stop Toy L 'cruiser 08-13	***

* Recommended Simm Tool Set

*** Special Order - Call for pricing and availability

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RPA 300 and RPA 1000 Tester Service Parts

Service Part Discription	Price Each
3 1/2" Dia. 3/8" NPT Absolute 5 Micron Spin On Filter for RPA 700 Tester.....	\$24.50
5" Dia. 3/4" NPT Absolute 5 Micron Spin On Filter for RPA 300 & 1000 Tester.....	\$54.00
3 1/2" Dia. Screen Filter for RPA 700 & 1000 Tester.....	\$74.00
Magnetic Filter - Complete.....	\$360.00
Magnetic Filter – Lower screw can only.....	\$140.00
Sun Fixed Type Pressure Regulating Valve.....	\$225.00
Sun Adjustable Type Pressure Regulating Valve.....	\$260.00
3 GPM Tester Pump.....	\$430.00
3 Way Whitty valve.....	\$175.00
Flow control valve 0-3 GPM.....	\$325.00
4" Pressure gauges (Specify range).....	\$255.00
0 - .5 GPM Flow Meter.....	\$360.00
0 – 5.0 GPM Flow Meter.....	\$410.00
Tester ON / OFF Electric Switch.....	\$180.00
3" Ø Large Road SIMM chucks (Set / Left and Right Chucks).....	\$260.00
Road SIMM Cylinder rebuild kit.....	\$90.00
TT100 Steering turning tool for testers.....	\$150.00

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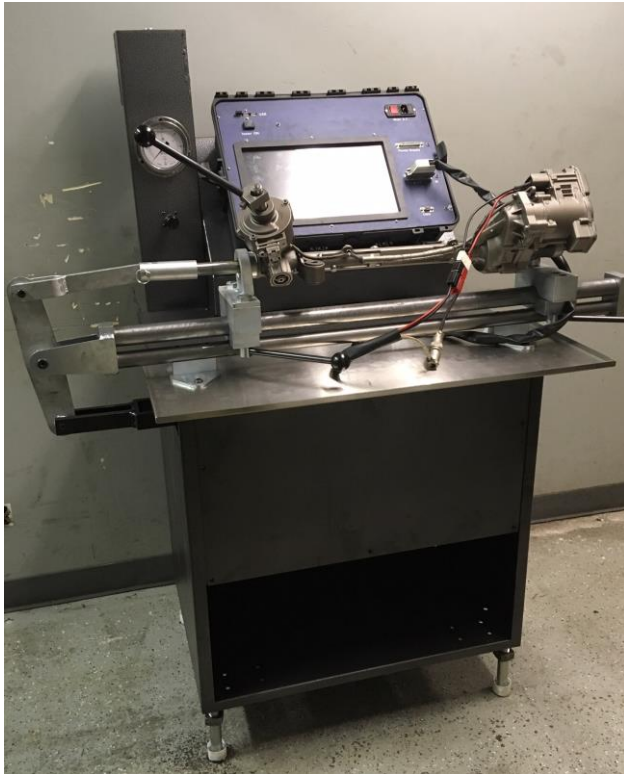
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RPA 1200e Road Simulator Tester

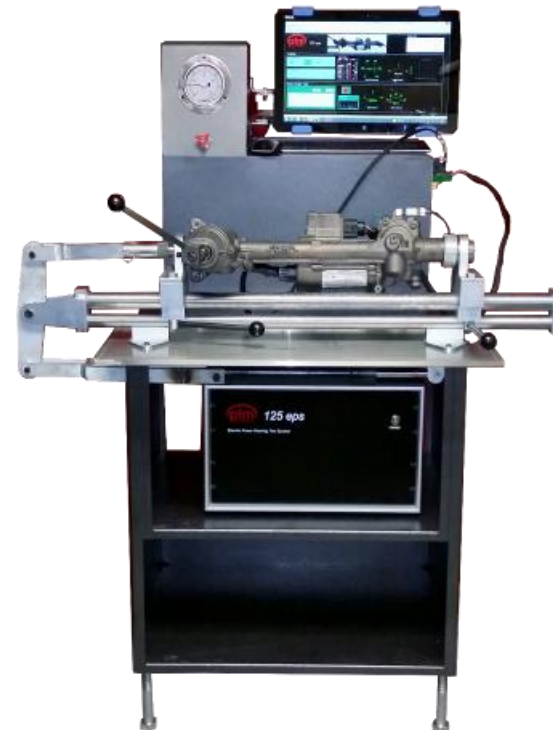
\$8,450.00

In order to fully function test an EPS unit, a resistant load must be applied to the steering system during testing in the same way as with hydraulic steering gears to simulate on car functionality. This is particularly necessary if you are doing complete rebuilds of the ECU or using 2 racks to make 1 good one. Kaufman Products has developed the RPA 1200e to work in conjunction with a several of the EPS testers that are being offered today – primarily PTM, ATG, and Corteco/Sercore. The RPA 1200e is based on the same proven design of the RPA 1000's Road Simulating system. The tester will hold any end steer or center steer rack, couple the rack to a hydraulic cylinder and apply a resistant load to the rack and pinion. This load can be varied from 0 pound force to 600 pound force.

If you own a tester that is capable of road simulating a rack and pinion (RPA 1000 or the like) and you want to use that tester to road simulate your rebuilt electric racks then you do not need to buy this tester. However if that tester is also being used to test hydraulic racks in an oily environment, we recommend you purchase the RPA 1200e and locate it in a “cleaner” environment for rebuilding and testing electric gears.



RPA 1200e set up with the ATG Tester
(Transtec and Secore Tester would be similar)



RPA 1200e set up with the PTM 125e Tester

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RPS 750 Tools

Over the years Kaufman Products has developed hand tools for tearing down and assembling racks and pinions. These tools can be bought as a set - the RPA 750 currently \$2,995.00 - or individually. These speciality tools are divided into 8 categories as listed below. If there is a tool you need for a rack you are rebuilding and you don't see it here, please call us and perhaps we can suggest a different way to do the task where a new tool isn't necessary or we will design and build the tool for you.

[Seal and Pinion Pullers:](#)

[Teflon Ring Resizers:](#)

[Seal Installers:](#)

[Pinion Bearing Tools:](#)

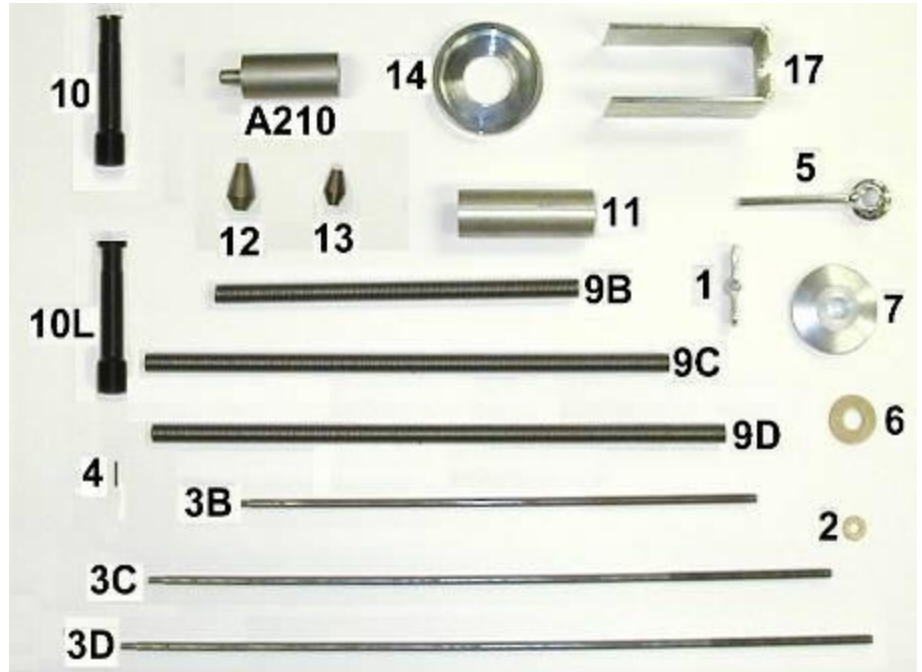
[Seal Savers:](#)

[Bulkhead Tools:](#)

[Jam Nut Tools:](#)

[Other rack and pinion rebuilding tools:](#)

Seal and Pinion Pullers and Individual Parts



Note: When you buy seal puller #76B, #14 & #17 are not included

Part No.	Part Description	Price Each
1	Puller Wing Nut 5/16-18"	\$5.00
2	5/16" Thrust Washer	\$3.75
3B	Inner Threaded Rod - 16" OAL	\$38.00
3C	Inner Threaded Rod - 21" OAL	\$39.00
3D	Inner Threaded Rod - 24" OAL	\$40.00
4	5/64" X 3/4" Spring Pin	\$3.00
5	Clamp Assembly 5/8"-11	\$18.00
6	5/8" Thrust Washer	\$6.00
7	Wheel Plate	\$24.00
9B	11" Threaded Rod	\$50.00
9C	16" Threaded Rod	\$55.00
9D	19" Threaded Rod	\$59.00

Part No.	Part Description	Price Each
10	Puller Fingers .840" to 1.125" seal ID	\$75.00
10L	Puller Fingers 1.000" to 1.540" seal ID	\$72.00
11	Aluminum Puller Shield	\$30.00
12	1" Puller Spreader (To be used with #10L)	\$28.00
13	3/4" Puller Spreader (To be used with #10)	\$25.00
14	Puller Base	\$41.00
17	Puller Frame	\$50.00
76B	Seal Puller 17" OAL Complete with #10 & 13	\$235.00
76C	Seal Puller 22" OAL Complete with #10 & 13	\$250.00
76D	Seal Puller 25" OAL Complete with #10L & 12	\$285.00
A210	84-94 Audi Main Seal Remover (Requires #21)	\$51.00

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Teflon Ring Resizers

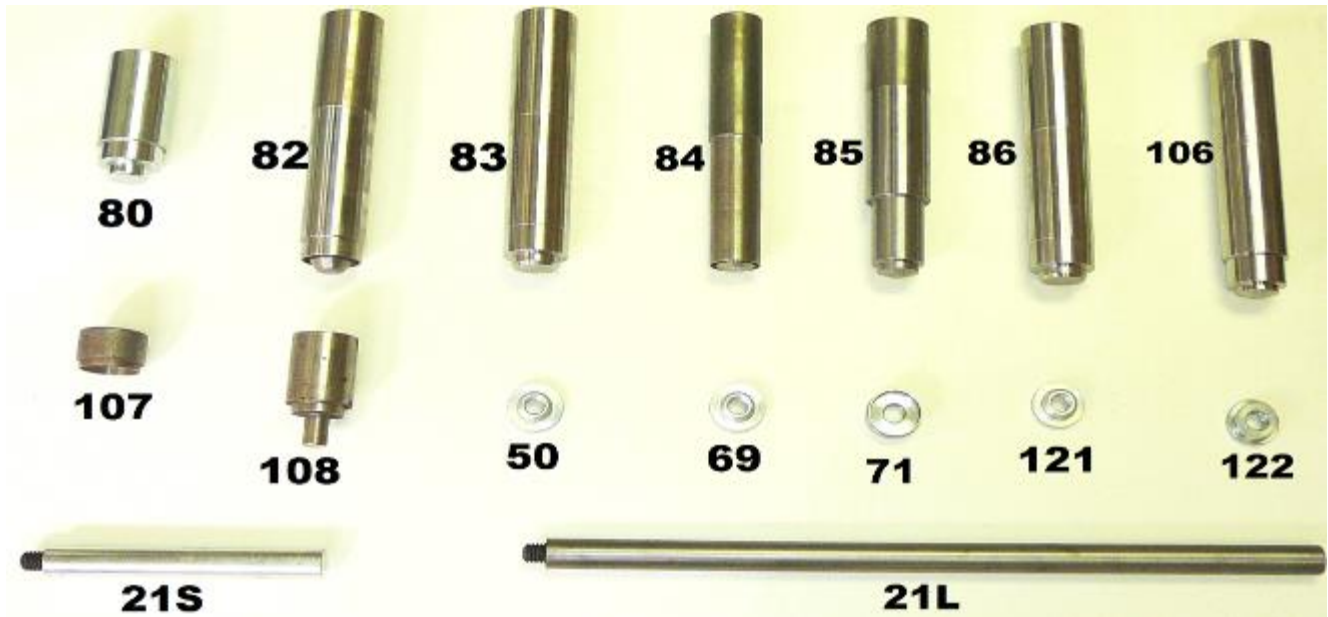


Part No.	Part Description	Price Each
37	1.495" ID (Ford Escort Piston etc)	\$15.00
38	1.625" ID (Ford & Chrysler Piston)	\$50.00
58	1.682" ID (GM Piston)	\$15.00
60	1.570" ID (Sag Chry/Corvette/Nissan Piston)	\$50.00
113	1.515" ID (Ford & Dodge Truck Pinion)	\$60.00

Part No.	Part Description	Price Each
114	1.470" ID (GM Pinion)	\$60.00
115	1.180" ID (TRW/Cam Pinion etc)	\$60.00
116	1.810" ID (Silverado/Colorado 2WD Piston)	\$60.00
117	1.422" ID (Toyota/Lexus Pinion)	\$60.00
123	1.970" ID (Envoy/Express Van Piston)	\$65.00
125	1.910" ID (Colorado 4WD Piston)	\$60.00

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Seal Installers



Part No.	Part Description	Price Each
21S	6" Handle for pinion seal and bulkhead seal installers	\$28.00
21L	15" Handle for main casting seal tools	\$35.00
50*	23mm & 24mm ID Lower pinion seal installer ZF etc.	\$25.00
69*	25mm ID Lower pinion seal installer Nissan/Volvo etc.	\$25.00
71*	Various Nissan, Toyota and ZF Lower pinion seals	\$30.00
80*	Main Seal Installer Ford/Chry(.830")	\$47.00
82	Saginaw Lower Pinion Seal (.930")	\$65.00
83	Saginaw Lower Pinion Seal (1.010")	\$62.00

Part No.	Part Description	Price Each
84	TRW Lower Pinion Seal (.880")	\$65.00
85	Ford Lower Pinion Seal (.945")	\$62.00
86	Ford Lower Pinion Seal (1.080")	\$62.00
106	Ford Explorer Installer	\$62.00
107	Saginaw Bulkhead Seal Installer	\$35.00
108*	Chrysler LH Main Casting Seal Installer	CALL
121*	Toyota/Lexus 19mm ID Upper pinion seal installer	\$40.00
122*	ZF 20mm ID upper pinion seal installer	\$40.00

* These tools require #21S handle or #21L handle - 1 each tool #21S & #21L shipped with tool set.

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Pinion Bearing Tools



Part No.	Part Description	Price Each
19	Upper Pinion Tool for Malibu Manual Gear	\$51.00
20	Upper Pinion Tool for Titan/Infiniti QX56	\$32.00
T28	Upper Pinion Tool for Toyota Rav 4 '06 up	\$65.00
N29	Upper Pinion Tool for Nissan Murano '05 up	\$65.00
S30	Upper Pinion Tool for Subaru Forester, WRX '05 up	\$65.00

Part No.	Part Description	Price Each
88	Lower Pinion Tool for Renault and VW	\$65.00
89	Lower Pinion Tool for TRW	\$70.00
90	Lower Pinion Tool for Saginaw	\$65.00
T100	Toyota/Lexus Pinion Nut Tool (1.25")	\$70.00
T110	Toyota/Lexus Pinion Nut Tool (1.43")	\$75.00
127	Lex Ch200 and Toy Rav4 '13	\$75.00

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Seal Savers



Part No.	Part Description	Price Each
25	GM/TRW/ZF Upper pinion seal (.735" ID X .800" OD)	\$60.00
32	Jaguar main casting seal sleeve (1.125" ID X 1.143 OD)	\$20.00
33	Main Casting Seal Starter Plug (1.144" OD) Use w/#32	\$19.00
63	GM & Ford main casting seal (.985" ID X .999" OD)	\$23.00
64	Main Casting Seal Starter Plug (1.000" OD) Use w/#63	\$16.00
72	GM & Ford bulk head seal (.940 ID X .985" OD)	\$27.00

Part No.	Part Description	Price Each
78	82-86 Saginaw J Car Main Seal Bullet Tool (.475" OD)	\$21.00
102	87-98 Saginaw J Car Main Seal Bullet Tool (.394" OD)	\$23.00
112	Early Ford/GM/Volvo & Peugeot main casting seal All 24mm main seals (.947" ID X .970" OD)	\$38.00
A230	84-94 Audi Main Seal Bullet Tool (.395" OD)	\$27.00

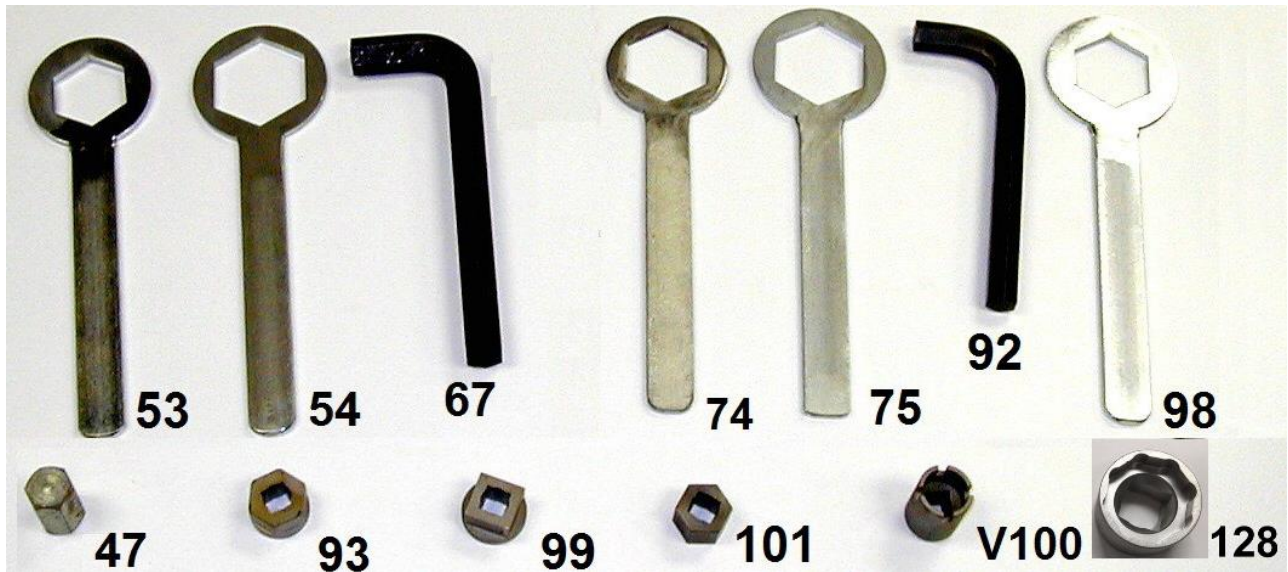
Bulkhead Tools



Part No.	Part Description	Price Each
44	TRW/CAM Wire Stay Bulk Head Tool	\$50.00
104	Ford Contour/Windstar Bulkhead Tool	\$50.00
105	Chrysler LH Bulkhead Tool	\$50.00

Part No.	Part Description	Price Each
118	Dodge Ram/Durango/Jeep Liberty Bulkhead wire tool	\$50.00
126	2010 Camaro Bulkhead Tool	\$70.00
T200	92-02 Camry/Avalon/Lexus & 84-88 Corolla	\$50.00

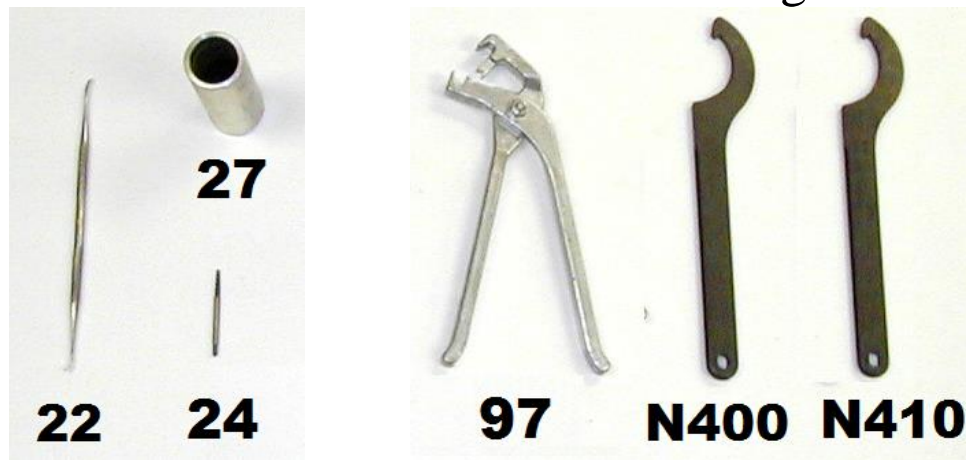
Jam Nut Tools



Part No.	Part Description	Price Each
47	Rack Jam Nut Tool 7/8"	\$35.00
53	Lock Wrench Nut 1 9/16" Ford Escort/Tempo	\$22.00
54	Lock Wrench Nut 2" Cast iron Ford	\$22.00
67	Rack Jam Nut Tool 3/4"	\$25.00
74	Lock Nut Wrench 1 7/8" Ford/TRW	\$22.00
75	Lock Nut Wrench 1 15/16" Saginaw J Car	\$22.00

Part No.	Part Description	Price Each
92	Rack Jam Nut Tool 5/8"	\$25.00
93	Rack Jam Nut Tool 1.110"	\$60.00
98	Lock Nut Wrench 43mm Ford Taurus/Contour	\$22.00
99	TRW Square Nut Tool	\$55.00
101	1.05" Intrepid, TRW/Cam, Nissan Jam Nut Tool	\$60.00
128	Nissan Rogue / Leaf Jam Nut Tool	\$80.00
V100	Volvo/Sprinter Jam Nut Tool	\$55.00

Other Rack and Pinion Rebuilding Tools



Part No.	Part Description	Price Each
22	Seal Pick	\$8.00
24	#1 Extractor for Roll Pined Locked Tie Rods	\$5.00
27	All purpose bearing and seal drive in tool	\$21.00

Part No.	Part Description	Price Each
97	Boot Clamp Pliers	\$50.00
N400	Nissan Casting Tool (50 MM)	\$37.00
N410	Nissan Casting Tool (55 MM)	\$37.00



Steering Tool

\$175.00

This tool is for turning the rack during testing.



Power Piston
Rolling Tool

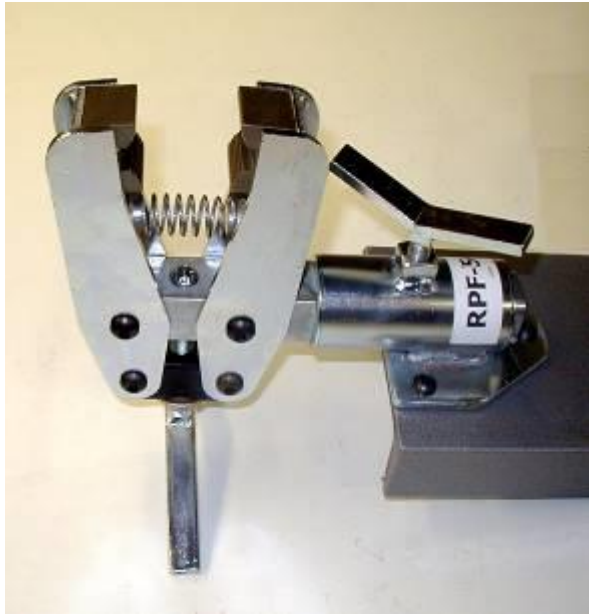
\$175

This tool is for rolling the power piston onto the rack bar during rebuilding. It requires a lathe to operate

RPF 547 Service Vise

\$380.00 each

The RPF 547 service vise is designed for rebuilding rack and pinions but is heavy duty enough for axles also. The vise holds the rack and pinion firmly in place while also allowing the rack to be rotated 90 degrees in all directions for ease of tear down or assembly. The vise can be bolted to any shop workbench or workstation. If you are starting up a rack and pinion rebuilding operation, it is recommended you purchase two vises, one for teardown and one for assembly.



Rack Vise – Up



Rack Vise Rotated 90°



RPF 547 Rack Vise holding a rack

Note: Vise Jaws are relieved to not crush lines on rack

RAP 100 Seal Press

\$825.00

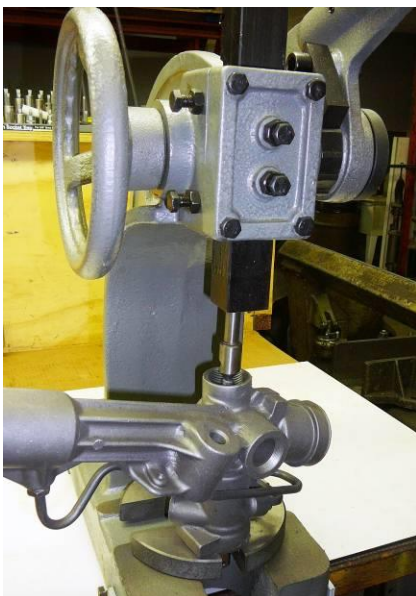
The RAP 100 seal installer press is a three (3) ton ratchet type arbor press we have specially tooled and fixtured for pressing in seals. This press is used in place of a hammer for installing seals and many other operations where most rebuilders use a hammer. This press will insure the builder the seal or other part is installed in a straight vertical, in-line, position and that the seal or part is not damaged or cocked during installation. This press is so versatile in the manufacturing operation, that many rebuilders also use this press in teardown for removing pinions etc. The press can be mounted to any shop work bench or work station.



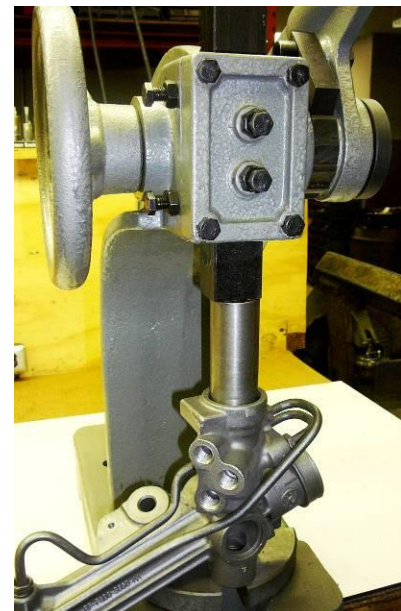
RAP 100 3 Ton Ratchet
Arbor Press w/ Tooling



Pressing in Main Casting Seal in Assembly



Pressing Out Pinion in Teardown



Pressing in Lower Pinion Seal in Assembly

Replacement Hard Parts

Kaufman Products has developed many replacement parts for rack and pinions. Below is a list by category of these parts. Some of these parts are new OE parts and other are parts we make to replace the OE part. Finally, some of the parts we make are replacement parts for OE parts which in the end we feel make a better racks and pinion than using the OE part over again.

[Passenger Side Bulkhead Bushings](#)

[New OE Bulkheads](#)

[Aftermarket Bulkhead Bushings](#)

[Rack Bar Pistons](#)

[Rack Bar Guides and Yokes](#)

[Rack Bar Threaded Jam Plugs](#)

[Toyota Tundra Replacement Tube](#)

[Toyota Tacoma Replacement Tube](#)

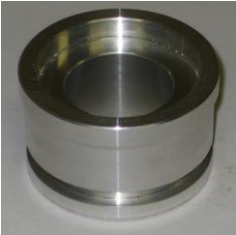


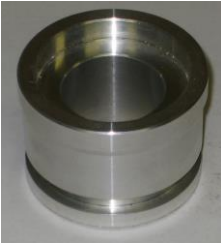












[Mercedes Benz Servotronic Sensor](#)

[Rack and Pinion Hard Lines](#)

[Other Miscellaneous Parts](#)

If there is a part you are looking for that we don't list – give us a call – we probably have it!

Rack Bulkhead Bushings - Aftermarket

 <p>Part # BHB211</p> <p>Fits 1981-1990 TRW Ford Escort Power Rack and Pinions</p> <p>Aftermarket</p>	 <p>Part # BHB238</p> <p>Fits 1981-1995 TRW Chrysler Power Rack and Pinions. Replaces the plastic type bulk head bushing</p> <p>Aftermarket</p>
 <p>Part # BHB294</p> <p>Fits Chrysler Sebring Rack and Pinions. Moves seal to the outside of bulk head so bulk head is lubricated.</p> <p>Aftermarket</p>	 <p>Part # BHB1974</p> <p>Fits 2001-2004 Chrysler Caravan/Voyager Power Rack and Pinions Replaces the plastic type bulk head bushing</p> <p>Aftermarket</p>
 <p>Part # BHB2023</p> <p>Fits 2002-2009 Equinox, Torrent & Vue manual rack and 2003-2011 Colbalt, G5, HHR & Ion manual rack.</p> <p>Aftermarket</p>	 <p>Part # BHB2110-1 First Generation</p> <p>Fits 2004-2010 Manual Malibu and Pontiac 1.296 OD X .978 ID</p> <p>Aftermarket</p>
 <p>Part # BHB2110-2 Second Generation</p> <p>Fits 2004-2010 Manual Malibu and Pontiac 1.370 OD X .978 ID</p> <p>Aftermarket</p>	 <p>Part # BHB2110-3 Third Generation</p> <p>Fits 2004-2010 Manual Malibu and Pontiac 1.370 OD X .982 ID</p> <p>Aftermarket</p>
 <p>Part # BHB4250</p> <p>Fits 1988 Pontiac Fiero</p> <p>Aftermarket</p>	 <p>Part # BHB8017</p> <p>Fits Ford Pantera, Ferrari and Maserati Manual Rack and Pinions</p> <p>Aftermarket</p>
 <p>Part # BHB5178</p> <p>Fits Ford Escape, Tribute, Mariner Manual Rack and Pinions 2007-2012.</p> <p>Aftermarket</p>	 <p>Part # BHB25544</p> <p>Repair of rusted through housing leaks on Toyota Tundra housings</p> <p>Aftermarket</p>
 <p>Part # BHB30139</p> <p>Fits 2006-2009 Toyota Rav 4</p> <p>Aftermarket</p>	 <p>Part # BHB30513</p> <p>Fits 2011-2013 Nissan Juke</p> <p>Aftermarket</p>
 <p>Part # BHB2040</p> <p>Fits Manual Colbalt, G5, HHR and Ion.</p> <p>Aftermarket</p>	 <p>Part # BHB59919</p> <p>Fits 2012-2019 Nissan Versa</p> <p>Aftermarket</p>

Rack Bulkhead Bushings - Original Equipment (OE)

	Part # BHB496 Fits many ZF Audi, BMW, Jaguar, Mercedes Benz and VW Rack and Pinions. 28mm ID 2 per rack Original Equipment		Part # BHB4110 Fits 1981-1997 Ford Escort Manual Rack and Pinion. Original Equipment
	Part # BHB4490 1991-1999 Saturn Manual Rack Bulkhead bushing. Original Equipment		Part # BHB8810 Fits 1985-1990 Toyota MR2 Manual Rack and Pinion Original Equipment
	Part # BHB8420 Fits 1984-1987 and 1992-1999 Honda Civic Manual Rack and Pinion Original Equipment		Part # BHB8380 Fits 1988-1991 Honda Civic Manual Rack and Pinion Original Equipment
	Part # BHB9610 Fits 1990-1995 Mazda 323 Manual Rack and Pinion Original Equipment		

PRICING OE BUSHING

PT #	1-4 pcs	5-9 pcs	10 + pcs	PT #	1-4 pcs	5-9 pcs	10 + pcs
BHB 496	\$3.50	\$2.50	\$1.50	BHB 8420	\$20.00	\$18.00	\$15.00
BHB 4110	\$7.00	\$6.00	\$5.00	BHB 8810	\$20.00	\$18.00	\$15.00
BHB 4490	\$15.00	\$13.00	\$10.00	BHB 9610	\$20.00	\$18.00	\$15.00
BHB 8380	\$20.00	\$18.00	\$15.00				

PRICING AFTER MARKET BUSHINGS

PT #	1-4 pcs	5-9 pcs	10 + pcs	PT #	1-4 pcs	5-9 pcs	10 + pcs
BHB 211	\$6.00	\$5.00	\$4.00	BHB 2110-3	\$15.00	\$13.00	\$10.00
BHB 238	\$6.00	\$5.00	\$4.00	BHB 4250	\$15.00	\$13.00	\$10.00
BHB 294	\$6.00	\$5.00	\$4.00	BHB 5178	\$15.00	\$13.00	\$10.00
BHB 1974	\$8.00	\$7.00	\$6.00	BHB 8017	\$15.00	\$13.00	\$10.00
BHB 2023	\$15.00	\$13.00	\$10.00	BHB 25544	\$35.00	\$33.00	\$30.00
BHB 2040	\$15.00	\$13.00	\$10.00	BHB 30139	\$15.00	\$13.00	\$10.00
BHB 2110-1	\$15.00	\$13.00	\$10.00	BHB 30513	\$15.00	\$13.00	\$10.00
BHB 2110-2	\$15.00	\$13.00	\$10.00	BHB 59919	\$15.00	\$13.00	\$10.00

Replacement Rack Power Pistons



Cadillac SRX
Part # : PP2113

Fits 2004-2008 Cadillac SRX



Ford F 150
Part # : PP2102

Fits Ford F150 and Ford Expedition



Jeep Grand Cherokee
Part # : PP2138

Fits 2005-2007 Jeep Grand Cherokee



Mercedes Benz
Part # : PP25657

Fits 2002 up C, CLK, E, and S Class.



Saab 9-3
Part # : PP25956

Fits 2003-2008 Saab 9-3



Mercedes Benz
Part # : PP30100

Fits 2006 up GL & ML Class



Dodge/Mercedes Benz Sprinter
Part # : PP25008

Fits 2007-2011 Mercedes Benz and Dodge Sprinter.



European Odyssey
Part # : PPOdyssey

This is a piston we supply for European Applications



G6 Falcon European
Part # : PPG6

This is a piston we supply for European Applications








Tooling to remove the old pistons and install new pistons and tighten existing loose pistons

PRICING

Per part #

1 - 9 Pieces	\$12.00
10 - 19 Pieces	\$10.00
20 + Pieces	\$9.00

Rack Guides and Yokes


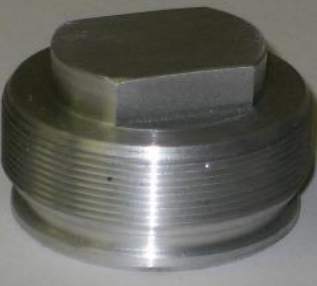




	Part # RGB25576 Fits 1998-2007 Volkswagen Beetle Rack and Pinions. Original Equipment		Part # RGB511 1996-2002 MB - E Class 1996-2002 Audi A4 ZF Original Equipment
	Part # Y300 Fits all crown Vic and Lincoln Town car 2003+ Material - Steel Aftermarket		Part # Y25707 Fits Nissan Altima/ Murano/Maxima etc. 2001+ Material - Steel Aftermarket
	Part # RGB30101 2006-2010 MB - GL, ML, R Class. 2 per rack. Original Equipment		Part # RGB836 1998-2004 Audi A6 ZF Original Equipment
	Part # Y30178 Aluminum Volvo All 2002 and up Original Equipment		

PRICING

PT #	1-5	6-10	11 +
RGB 511	\$8.00	\$7.00	\$6.00
RGB 25576	\$5.00	\$4.00	\$3.00
RGB 30101	\$5.00	\$4.00	\$3.50
RGB 836	\$8.00	\$6.00	\$5.00

PT #	1-5	6-10	11 +
Y 300	\$12.00	\$10.00	\$8.00
Y 25707	\$12.00	\$10.00	\$8.00
Y 30178	\$24.00	\$22.00	\$20.00

Rack Bar Jam Plugs

	<p>Part # RGTP 816</p> <p>Fits 1996-2001 Koyo Audi A4 / VW Passat etc. Rack and Pinions. Thread size M38X1.5.</p> <p>Aftermarket</p>		<p>Part # RGTP 25896</p> <p>Fits 2002-2005 Koyo Audi A4 Rack and Pinions. Thread size M37X1.</p> <p>Aftermarket</p>
	<p>Part # RGTP 616</p> <p>Fits All Cam style Volvo Rack and Pinions. Thread size M38X1.5.</p> <p>Original Equipment</p>		<p>Part # RGTP 815</p> <p>Fits 1996-2003 ZF Audi A4, A6, A8 / VW Passat etc Rack and Pinions. Thread size M38X1.5.</p> <p>Original Equipment</p>
	<p>Part # RGTP 786</p> <p>Fits All ZF BMW and VW Beetle Rack and Pinions. Thread size M35X1.5.</p> <p>Original Equipment</p>		<p>Part # RGTP 2110</p> <p>Fits 2004 - 2012 Malibu manual rack with plastic or steel Jam Plug. Thread size M37X1.5</p> <p>Aftermarket</p>
	<p>Part # RGTP 30227</p> <p>Fits Volvo Series 60, 70, 80 2007-2015 Rack and Pinions. Thread size M40X1.5.</p> <p>Aftermarket</p>		

PRICING

PT #	1-5	6-10	11 +
RGTP 616	\$7.00	\$6.00	\$5.00
RGTP 786	\$10.00	\$9.00	\$7.00
RGTP 815	\$10.00	\$9.00	\$7.00

PT #	1-5	6-10	11 +
RGTP 816	\$14.25	\$12.00	\$10.00
RGTP 25896	\$14.25	\$12.00	\$10.00
RGTP 30227	\$14.25	\$12.00	\$10.00
RGTP 2110	\$14.25	\$12.00	\$10.00

Rack Housing Replacement Tubes

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Kaufman Products manufactures a new tube to replace the original tube on rack and pinions when the tube has been dented or has rusted through. The old tube can be removed and our new tube can be fitted to replace the old rusted tube. Please view our youtube video for a short overview about the new parts we offer.

<http://www.youtube.com/watch?v=jCUdLeXuDtI>

2000 - 2006 Toyota Tundra/Sequoia Tube Pt# - TT25544



1995 - 2004 Toyota 4Runner & Tacoma Tube Pt# - TT549



2005-2021 Toyota Tacoma Tube Pt# - TT26514



Pricing:	1-4 pieces	\$60 each
	4-9 pieces	\$50 each
	10 + pieces	\$45 each

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RACK AND PINION HARD LINES

Kaufman Products has the following Hard Lines (HL) available. These lines are an exact replacement for the rack application as listed. Some lines will do various applications in which case we will state "Various" or "etc" in the listings.

Example of the Hard lines



Ford Explorer



Ford Various applications

Part #	Application	\$/Set
HL 201	AMC Pacer with Female Nuts	\$35
HL 202	AMC Pacer with Male Nuts	\$35
HL 567	Bentley, Rolls Royce Banjo Lines 1988-1999	\$40
HL 597	Bentley, Rolls Royce Nut Lines 1978-1987	\$40
HL 1985	Buick LeSabre/Park Ave w/o Magnasteer 00-05	\$30
HL5209	Cadillac CTS AWD 2008-2014	\$30
HL 5137	Chevy Acadia etc 2007-2012	\$30
HL 2127	Chevy Colorado Sag Gear 2WD 2004-2005	\$30
HL 2126	Chevy Colorado Sag Gear 4WD 2004-2005	\$30
HL 2077	Chevy Express Van 2003-2012	\$35
HL 3624	Chevy Malibu, Grand Am etc 1997-2005	\$30
HL3524	Chevy Impala, Grand Prix Century & Regal w/o Magnasteer 97-11	\$30
HL3526	Chevy Impala, Grand Prix Century & Regal w/ Magnasteer 97-11	\$30
HL 1821	Chevy Silverado 1999-2007	\$30
HL 2008	Chevy Trailblazer 2002-2009	\$30
HL 5142F	GM Tahoe, Silverado etc Pushin lines 07-13	\$35
HL 5142M	GM Tahoe, Silverado etc Threaded lines 07-13	\$35
HL 297E	Dodge Caravan etc 2000-2002	\$30
HL 297L	Dodge Caravan Elbow on Tube 03-06	\$30
HL 5339	Dodge Caravan etc 2011-2016	\$30
HL 3880	Dodge Dakota, Durango 4WD 2000-2004	\$30
HL 2136	Dodge Dakota etc 2005-2011	\$30
HL 303	Dodge Neon/PT Cruiser etc	\$30
HL 216	Ford Mustang etc Cast Iron Gear 1974-1976	\$30
HL 210	Ford Mustang, T'Bird etc All Aluminum Gear 1980-1996	\$30
HL 300	Ford Crown Vic/Lin/Merc 2003-2011	\$30
HL 2121	Ford Expedition 2003-2006	\$30
HL 251	Ford Explorer 1995-2005	\$30
HL 2019	Ford Explorer 4.6 L only 2002-2005	\$30
HL 5135	Ford Expedition, Lin Navigator Male threads on Housing 07-10	\$35
HL 5201	Ford Flex, MKS, Taurus, Sable 2008-2012	\$30
HL 2102	Ford F150 2WD 2004-2008	\$30
HL 2104	Ford F150 4WD 2004-2008	\$30
HL 5265	Ford F150 Banjo Bolt on Tube 2009-2010	\$35
HL 30483	Infiniti G37 AWD 09-10	\$30
HL 2138	Jeep Commander & Grand Cherokee 2006-2010	\$30
HL 5327	Jeep Grand Cherokee 2011-2014	\$30
HL 2024	Jeep Liberty 2002-2005	\$30
HL 5189	Jeep Liberty 2008-2012	\$30
HL 26528	Land Rover LR3 2005-2009	\$30
HL 950	MB C Class 2008-2008 etc	\$30
HL 25991	Nissan Armada, Titan etc 2004-2015	\$30
HL 30398	Nissan Murano 2009-2011	\$30
HL 708L	Nissan 300ZX Long line only 1989-1996	\$30
HL 26519	Porsche Boxster, Cayman Carrera etc 2005-2012	\$30
HL 763	Toyota Avalon Camry 1992-1996	\$30
HL 25693	Toyota Avalon, Camry etc 2002-2012	\$30
HL 549	Toyota 4Runner/Tacoma 1995-2004	\$30
HL 25963	Toyota Highlander 2004-2009	\$30
HL 25544	Toyota Sequoia, Tundra 2000-2007	\$30
HL 25935	Toyota Sienna 2004-2010	\$30
HL 26514	Toyota Tacoma 4X2 Prerunner & 4X4 2005-2021	\$35
HL 813	Volvo C70/850 1993-2004	\$30
HL 875	Volvo 60, 70, 80 & XC90 2003-2010 (All Aluminum Housings)	\$30
HL 25576	VW Beetle etc 1998-2005	\$30
HL 560	VW Eurovan 92-03	\$30

Other Rack and Pinion Parts



Lower Pinion Bearing
Part # LPB771

Fits 1992-1997 Honda
Civic, Del Sol SR3

Aftermarket



Rack Guide Rubber Plug
Part # RGRP836

Fits All ZF Audi, BMW, VW
rack guide tensioning plugs

Original Equipment



Lower Pinion Bearing
Part # LPB766

Fits 1991-1995 Acura
Legend - SPO

Aftermarket



Part # W836S

2000-2008 Audi A4 ZF
1998-2004 Audi A6 ZF
1997-2006 Audi A8 ZF
Smaller Line Washer

Original Equipment



Part # W836L

2000-2008 Audi A4 ZF
1998-2004 Audi A6 ZF
1997-2006 Audi A8 ZF
Larger Line Washer

Original Equipment



Part # PT763

Lexus ES300
Toyota Camry
New Pinion Tower



Part # SS30100

New Mercedes Benz
Servotronic Sensor
This is a NEW sensor - not
used or aftermarket.

Original Equipment



Part # TR 201
'75-'80 AMC Pacer Inner Tie Rod
AMC # 8127287
Moog # EV-111
1 1/16" - 18 Rack End thread
11/16" - 18 Left hand thread
Tie Rod End

PRICING

PT #	1 - 5	6 - 10	11 +
LPB 766	\$12.00	\$10.00	\$9.00
LPB 771	\$12.00	\$10.00	\$9.00
W836L	\$2.00	\$1.50	\$1.00
SS30100	\$105.00	\$90.00	Call

PT #	1 - 5	6 - 10	11 +
RGP 836	\$2.00	\$1.50	\$1.00
W836S	\$2.00	\$1.50	\$1.00
PT763	\$22.00	\$19.00	\$17.00
TR 201	\$30.00	\$25.00	\$20.00

Steering Gear Sleeving

Originally, Kaufman Products offered a service sleeving power steering gearboxes for rebuilders because of wear in the pinion tower area from the Teflon rings. When rack and pinions came along this problem became so wide spread that we developed tooling for the rebuilder so he could sleeve his housing in house. Today the need for sleeving has diminished because the OE for the most part is no longer using glass filled Teflon for the rings. Below is a list of services and tooling we offer for sleeving both gear boxes and rack and pinions.

Boring and Sleeving Service:

RPB 100 Job Shop Rack and pinion Boring Machine:

RPB 200 Production Rack and Pinion Boring Machine:

Sleeve Installing Tools:

Replacement Sleeving Tools:

Order/Buy Sleeves:

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BORING AND SLEEVING SERVICE

For rebuilders who do not have the tooling or do not want to invest in the tooling to sleeve rack housings, Kaufman Products will do it for you.

All domestic (Saginaw, TRW, Ford) racks:	\$45.00
GM Magnasteer racks	\$50.00
Most Import racks:	\$50.00
Jaguar and ZF Racks:	\$60.00

Quantity discounting is available – Call for pricing.

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RPB 100 Job Shop Sleeve Boring Machine

9,000.00*

The RPB 100 sleeve boring machine was originally developed 25 years ago for boring and sleeving power steering gear boxes. Production demand is low for steering gear boxes, so this affordable, yet precise, boring machine was exactly what rebuilders wanted. Today, there are rebuilders with tighter budgets or a small demand for boring gears, so we now offer additional tooling packages for the RPB 100 to bore and sleeve rack and pinions too. The boring machine comes complete with a boring mill, machine base and coolant system. Each family of boring tools is sold separately and can be ordered as needed. The machining time for complete set up, boring and sleeving of any steering gear is approximately three minutes. The tolerance for the bored hole is +/- .0005" diameter and the concentricity is within .0015". The tooling packages for both the RPB 100 and our RPB 200 production boring system are the same so with an additional investment of the production air clamping fixture and drill bushing, you can upgrade your RPB 100 to our RPB 200 at any time.

Power requirements:	110 volts AC, 1 phase, 60 cycle
Space requirements:	36" X 36" x 70" HT.
Weight:	900 pounds
Delivery:	4 weeks

Boring machine w/mist coolant system and machine base	\$4,600.00
Master base plate and set up tooling package	\$3,400.00
Economy Ford tooling package:	\$875.00
Economy TRW/CAM tooling package:	\$775.00
Economy Saginaw tooling package:	\$675.00
Saginaw gear box tooling package:	\$875.00
Economy ZF tooling package:	\$675.00

Each tooling package consists of a boring cutter, and all base pilot locator(s) necessary for that family of racks.

* This price does not include tooling for Saginaw gear boxes.

RPB 200 Production Sleeve Boring Machine \$18,345.00

Kaufman Products designed and developed the RPB 200 boring system for rebuilders who needed to be able to bore rack and pinions on a production bases. As a testament to the boring machine's performance, today there are over 100 rebuilders worldwide using this tooling. Our production machine will enable you to bore all domestic and most foreign racks through 2004. The machine is shipped complete with a coolant system and all necessary mechanical, pneumatic and electrical controls. The machine only requires 60-psi shop air and 110V electricity.

All racks are vertically located in the boring fixture by their upper and lower pinion bearing bores. This enables you to bore a hole that is parallel and concentric to the original bore to within .001". The rack is held in this position by air clamping for quick loading and unloading. All tools and fixtures are made of hardened steel for durability and long life and fixtured by dowel pins for quick tool change over. The cutting tool used to bore a casting is a four flute carbide tipped cutter with a pilot that limits the depth of cut when necessary. The cutter and pilot can not be adjusted. All sizing is ground into the cutter. This makes it impossible to ruin a casting by boring too big or too deep a hole. All sleeves are pressed in with a .003" press fit (+/- .0002"). When you press in a sleeve, it stops at the machined depth so that your pre-drilled sleeve will line up with the port holes in the rack casting. Again, all these features are built into the tooling so that no adjustments or pre-measuring is necessary during tool change over. It is impossible to ruin a casting in the machining and sleeving process.

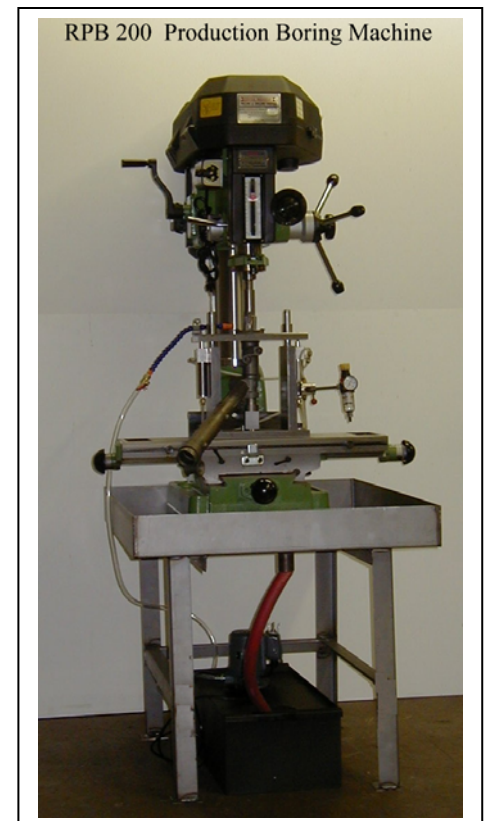
There are four basic manufactures of racks that need to be sleeved: Ford, TRW, Saginaw, and ZF. Likewise, there are four different sizes of sleeves and therefore, four different set ups of the basic boring machine. Set up time or tool change time from one manufacturers' rack to another is two minutes. The machining time to bore a rack is 30 seconds. The boring machine and tooling never need adjusting once the boring fixture is set onto the boring machine. The RPB 200 production boring tooling can be operated and changed over by anyone you presently have working for you in your plant because of its very simple design.

This tooling is available to work with all current sleeve manufactures, or sleeves of your design.

Power requirements:	110 volts AC, 1 phase, 60 cycle
Space requirements:	36" X 36" x 70" HT.
Weight:	900 pounds
Delivery:	4 weeks

Boring machine w/coolant system and machine base	\$4,200.00
Production Air operated boring fixture	\$9,850.00
Production Ford tooling package:	\$985.00
Production TRW/CAM tooling package:	\$885.00
Production Saginaw rack tooling package:	\$775.00
Production Magnasteer tooling package:	\$775.00
Production ZF tooling package:	\$775.00

Each tooling package consists of a boring cutter, upper rack locator, and all base pilot locator(s) necessary for that family of racks.



SLEEVE INSTALLING TOOLING

After boring a steering gear housing, a steel sleeve must be installed in the bore to bring the machined housing back to its original size. The steel sleeves used to resize the bore are supplied with predrilled port holes. The following installers are offered to press in the different sleeves.

SI 100	Corporate Ford type	\$250.00 ea
SI 110	Late Ford type with stepped bore	\$250.00 ea
SI 200	TRW Chrysler, Ford, Koyo and Volkswagen, and European CAM manufactured types	\$250.00 ea
SI 300	Saginaw rack type	\$250.00 ea
SI 310	Saginaw gear box type	\$250.00 ea
SI 320	Magnasteer rack housing	\$250.00 ea
SI 400	ZF 1 piece housing type	\$250.00 ea

Other installers available – please call

Other Special Tools and Services we Offer

The following is a list of Special Tooling and Services Kaufman Products has developed to help in rebuilding rack and pinions.

Hard Chrome Plating rusted rack bars

Tooling to press loose tie rods

Tooling to remove and replace by swedging rack bar pistons

Rack Housing Sleaving

Rack Bar Hard Chrome Plating

Kaufman products offers a service where we will repair the rusted seal surface on a rack bar. This is accomplished by centerless grinding the seal surfaces on both sides of the rack bar piston to remove the rust from the bar. The bar is then hard chrome plated to .005” oversize and then centerless ground back to the original size to a surface finish of 16μ. This actually is better than new because the hard chrome will not rust like to original rack bar did. Also it will not scratch or ware. The turn around time for this service is about 4 – 6 weeks. If you decide to use this service please package your bars so they do not get damaged in shipping and inspect the gear on the bar. You do not want to plate a bar where the teeth are wore or severely rusted.

22MM to 28MM Diameter	\$65.00 ea
Larger than 28MM Diameter	\$80.00 ea
Trailblazer bars (reshafted)	\$60.00 ea

Tie Rod Pressing Tooling

\$2,500.00

Kaufman products has developed tooling to tighten the ball and socket joint on tie rods. This tooling consists of 2 bottom dies and 4 top dies which will accommodate the many varieties of tie rods. The tooling is made of tool steel and is thru hardened for long service life. This tooling requires a 20 ton hydraulic press to perform the job although a [larger press](#) is recommended. Please visit our youtube video on this tooling.

<http://www.youtube.com/watch?v=yQit2BA8uSE>

Rack Bar Power Piston Swedging Tooling

\$2,500.00

Kaufman products has developed tooling to swedge the power pistons back onto the rack bars in applications where the piston must be removed to replace the main casting seal. The applications that are involved are the Saab, Cadillac, Mercedes Benz, Sprinter, and Ford Truck. There are [7 different pistons](#) and 5 different diameters of rack bars involved. The tooling we have developed will swedge a new piston back onto the bar just like the OEM does it. We have also developed tooling to tighten pistons that are loose on the bar – primarily the GM and Ford pistons. The tool set as priced consisting of 6 swedging dies, a hollow tube and a steel plate. This tooling can also be used to reswedge the pistons on Saginaw and Ford rack bars when they are loose. To operate this tooling requires a minimum 20 ton hydraulic press that is not distorted from being abused! This tooling is recommended instead of rolling the piston back onto the shaft or welding the piston back onto the shaft. Please visit our youtube video which will give you an overview of this tooling.

http://www.youtube.com/watch?v=HlfGNg_kyU0

Rebuilding Training and Consulting

\$1000/day + expenses

Kaufman Products offers a complete training program to further assist you with the start up of your rack and pinion rebuilding operation. With your input, we will custom tailor a program that will fit your needs and requirements. Based on your requirements and expectations, this training can last anywhere from a few day to a few weeks. You can choose if you would like to have the training done on site at your location or at one of our facilities or both. Along with the training Kaufman Products will also furnish you with a comprehensive information packet. In this Packet you will find the following information:

- A list of the vendors you need to contact and open credit with for buying your parts.
- A list of the cores you will need to have on hand for the training. Any cores you can not get, we will be able to provide you at fair market core price.
- A list of hand tools you will need to rebuild racks.
- A print of a typical shop layout for rebuilding racks.
- Our current rack and pinion catalog and price sheet which can be duplicated. (If you elect to copy our catalog, you will also be linked to the electronic cataloging of Activant and Wrenchhead)

Prior to the start of your actual training program, Kaufman Products can assist you in setting up your facility. One of our consultants can be sent to your location, to work with you on your plan of operation, shop layout, and set up of equipment. This will help insure your production will flow smoothly after your training is over.

Kaufman Products prefers to do trainings on site at your facility so we can give you our undivided attention and an uninterrupted training program. This will also insure that you have everything in house needed to build rack and pinions at your location. Once your shop is set up and ready to produce rack and pinions, Kaufman Products will work hands on with at most two of your employees teaching them the basis fundamentals of:

- Rack and pinion core identification
- Proper disassembly and tear down procedures
- Proper cleaning techniques (using the equipment you have on site if trained at your facility)
- Boring and sleeving (If you purchased that tooling from us)
- Proper inspection and preparation of parts for assembly
- Proper assembly techniques
- Testing
- Proper packaging procedures

Kaufman Products is very flexible and wants this program to work for both of us. Therefore the final decision of where your training takes place is your decision. With Kaufman Products training program you will have a turnkey rack and pinion business. As a follow up to this training you will have access to our technical support. If you have questions about building a rack, or a customer with an unusual problem, we are only a phone call away. And going forward we also offer ongoing consulting. We will come to you plant for a day or longer. During this time we can discuss and work on current procedures you have in question or I will just observe and make constructive recommendations that will help your production, productivity, and quality. We find that sometimes just an outside pair of eyes that understands the business is priceless.

In closing, to stay abreast of the ever changing rack and pinion market, we also rebuild rack and pinions for local distribution in the Chicago area under the name Precision Remanufacturing, Inc. Precision is known to have the most complete inventory of rack and pinions in the industry. We not only catalog the rack, we have it in stock also. To accomplish this, Precision Remanufacturing and Kaufman Products together have sourced out all the parts to rebuild these late model rack and pinions where the parts are not available from our conventional everyday suppliers. We in turn make these parts available to you. As our customer, you will be kept informed of new items and parts as soon as they become available as well as new rack and pinion applications added to our catalog.

BULK PARTS PROGRAM**\$8,500.00**

Today there are over 1,300 power rack and pinion listings, more than 800 of them for import applications. For many of these late applications the seal kits to rebuild these racks are not available from normal suppliers. We have developed many relationships with suppliers and rebuilders throughout the world. Through these relationships we are able to procure many seals and parts for these late model rack and pinions. Not only that, but many of the seals for these racks, are actually available in other kits you can buy from aftermarket suppliers but you just don't know which kits you need!

In an effort to help you serve your customer better and save you money, Kaufman Products has developed a bulk parts program for rebuilding rack and pinions. With this program, you will have in house all the parts needed to build over 90% of the domestic and import rack and pinions listed in Precision Remanufacturing's 2011 application catalog (1,340 listing) without ever buying kits. If we have not listed a build sheet for a particular application, it is because we are still trying to find a core to determine what seals are in the rack. With our OE sources in Japan, Germany, Italy, France and England, once we can identify the seal, we can buy it too. We have also found that many times, once the core is found and the build parts determined, these parts are already in the bulk parts program.

An example of how this program works is as follows. Suppose you want to build a 04-08 Suzuki Forenza. The build sheet for this rack is as follows:

RP #	UPS	LPS	MCS	BHS	PTX4	PPT	O RINGS
25999	1201A	42C	1301	1309A	3001	3006	5001

This means for a # 25999 rack and pinion, a 2004 - 2008 Suzuki Forenza:

The upper pinion seal is part # 1201A

The lower pinion seal is part # 42C

The main casting seal is part # 1301

The bulkhead seal is part # 1309A

The pinion Teflon rings are part # 3001 and there are 4 required

The power piston Teflon ring is part # 3006

And the O ring part #'s are: 5001.

Therefore, from the parts cabinet we supply you along with this program, you pull these parts from each of the individually marked drawers. Now you will have all the necessary parts to build the Forenza rack and pinion. The cost of these parts is approximately \$15.63 in the bulk program vs. \$22.00 for an OE kit in the aftermarket. All the parts we supply are also OE, Original Equipment seal. We can not stress enough that you should use only OE seals when rebuilding any steering gear. Another benefit to using bulk parts is easy, single part replacement instead of using another kit if you damage a part during rebuilding. With this Bulk System as we supply it, you will have all the seals necessary to build over 800 different rack and pinions without the expense of stocking kits. For the start up rack and pinion rebuilder, this program is particularly beneficial. It seems that their customer will ask them for a difficult, hard-to-get rack first. With this parts program, they are able to rebuild the rack right away when their competition needs one or two days to order parts. So whether you are a start up rebuilder or an established rebuilder who is trying to find ways to cut costs without cutting quality this program is a must!

The initial inventory supplied with this program provides enough parts to build over 350 rack and pinions. Also, as you begin to buy additional replacement inventory, the cost of the parts to build a domestic rack will be under \$4.00 and the average cost of the parts to build an import rack will be under \$15.00. Remember, you are not just buying parts with this program but the years of research, and the free updating of the application spreadsheets that no one else will supply you if you buy bulk seals from them.