



2017



since 1939

# ENGINEERING & CUSTOM WORK BROCHURE

## KPMI<sup>®</sup> ENGINEERING & MANUFACTURING VALVETRAIN FOR 78-YEARS & 2-GENERATIONS



KPMI<sup>®</sup>

Designs and manufactures longevity into  
valvetrain

Our Primary Focus Is:

Engineering product that exceed expectation

At KPMI<sup>®</sup>

There are no exceptions for quality

### KPMI<sup>®</sup> Proudly Sponsors

16-Time Top Fuel World Champion Larry "Spiderman" McBride

A True Testament To Our Products and Services

# WWW.KPMI.US



**KPMI** is a company with a long history of providing solutions to its clients. We accomplish this by using modern and sophisticated design and engineering. We only work with premium certified materials, tooling and processes.

We retain skilled and experienced staff that is dedicated to the pursuit of excellence. We are committed to providing our clients with what we view as...an experience second to none.

**We look forward to working with you on your next project!**



## Company

Kibblewhite Precision Machining, Inc. (KPMI®) is a 78 year old valvetrain manufacturing company supplying the Motorsport Industry and select OEM's. We stock and distribute over 3,000 items to customers around the world. No other company in the world has our product coverage for the motorsport industry. You will not find any other company with such an extensive product line solely dedicated to the motorsport industry.

KPMI® not only manufactures ready-made parts, we also provide contract manufacturing for OEM and other parties. Our expert services include engineering, prototyping, and limited or full production runs.

## Legacy

Kibblewhite Precision Machining, Inc. was founded by James L. Kibblewhite in 1939. In 1989 the operation was taken over by William F. Kibblewhite, Jim's son. William Kibblewhite took the solid foundation created by his father and dramatically expanded the product line to provide the vast coverage that it offers today.

KPMI is known by its trademark and registered marks: Black Diamond™, White Diamond®, Tensilite®, Kibblewhite® and KPMI®. Know that when you purchase products under these brands you are purchasing product that has been engineered by a company that's been doing so for 78 years and 2 generations. This wealth of knowledge can be seen in the product detail, fitment, material choices, processes and the uniqueness in which all systems and components are expected to achieve the mechanical work they will be asked to do.

## Employees

Kibblewhite valvetrain and custom engineered components are second to none. KPMI® employs twenty six employees and fosters a work smart culture. The dedication of top notch employees (A-players) in Engineering and Customer Service is the reason why we are the industry leader in valvetrain development. Putting our customers first can be found in every element of product development and you will see that precision level of detail in every single package that is shipped out of our warehouses. This type of commitment is found in the class of employee, equipment, and investment in emerging technologies.

# PRESIDENT'S LETTER



## Facility

Kibblewhite encompasses five locations and over 20,000 square feet of Machine Shop, Office, Engineering, and Warehouse space. KPMI® has spent the past five years aggressively updating our operations. Our complete facility has eleven of the latest model CNC lathes (2010 & later), CAD, CAM, and custom machining equipment. Our Engineering Department and machinists are ready and waiting to assist you with your custom requirements and drive our ongoing production of high performance valvetrain systems for 4-stroke engines.

## Quality Control

It is our sole intent to provide our customers with product that works right the first time and gives maximum value for the dollar in terms of reliability and performance. None of our product achieves final approval without first traveling through a grueling development flow process. Final reviews require three engineering signatures and a signature from production. What this means is that there are three independent reviews following each and every product through all phases of development before the final review and production signature can be granted. I am very proud of what we do and of every single employee that has been hand selected to contribute to the success of KPMI®.

We measure our success by our satisfied customers and for this we are truly grateful. Without our loyal customers and their continued demand for consistent, high quality valvetrain and engineering services, we would not be the company that we are today. Because of this we thank each and every one of our customers and future customers.

Sincerely

William Kibblewhite





# ENGINEERING - INTRODUCTION

**Dear KPMI Customer,**

Although my time with Kibblewhite Precision Machining Inc. has been brief, it has been by far the most exciting time in my career. I have worked on parts for bikes from the early 1900's that played a role in the origin story of the modern motorcycle. And I have reverse engineered parts for some of the most sought after performance cars on the planet. I have even had the opportunity to design parts for use outside of the motorsport arena. As a motorsport enthusiast, and avid motorcyclist, working in this environment has been a huge pleasure.

I grew up in the Sierra Foothills of Northern California. I and studied and received an M.S. in Mechanical Engineering and a B.S. in Applied Mathematics at the University Of The Pacific. This technical background has allowed me to work both in high volume production and low volume, highly specialized, manufacturing environments. These experiences have given me a strong foundation that I can lean on when working with you on your custom projects.

The KPMI® engineering department is overseen by our Senior Engineer, Jacob Harrington, who has been involved with the company for 8 years. Not only is Jacob passionate about the industry, but he brings to the team invaluable knowledge and experience.

Mike Perry, closing in on 20 years as a member of KPMI, is head of our R&D department, and brings 40 years of motorsports experience to the table.

Between us, and the rest of our team, we have the tools necessary to take your idea all the way from conceptual design, through engineering analysis, to full production. These include engineering software, rapid prototyping capabilities, and decades of combined experience in both design and manufacturing.

I, and the rest of the KPMI® team, greatly appreciate your interest in our capabilities. We look forward to working with you!

Sincerely

KPMI® Engineering Team



**Kevin Holmes/** Engineer  
**KHolmes@kpmi.us**

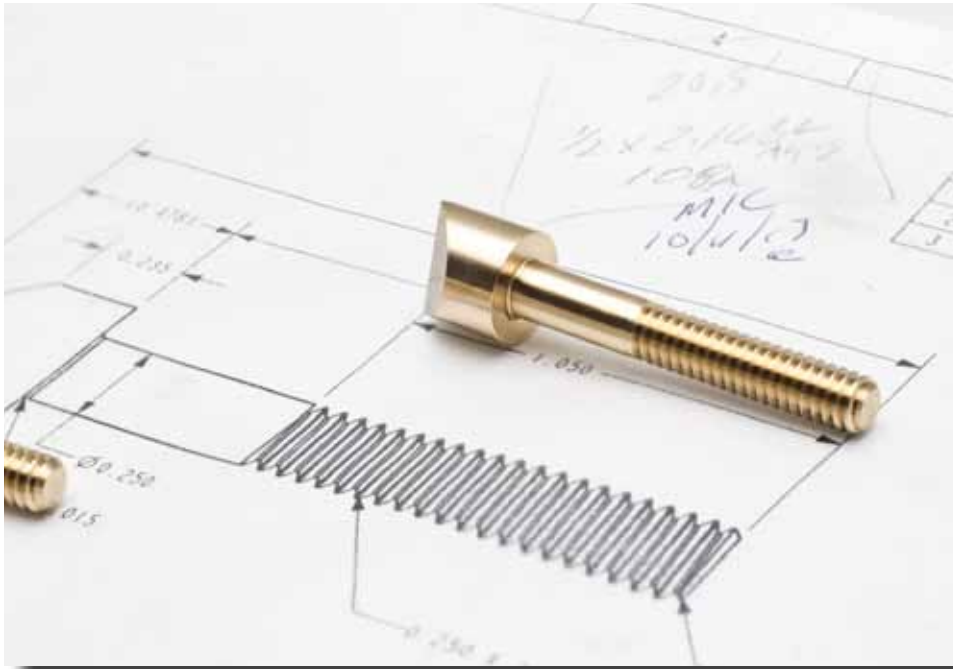


**Jacob Harrington/** Sr. Engineer  
**JHarrington@kpmi.us**



**Mike Perry/** Head of R&D  
**RD@kpmi.us**

# ENGINEERING - CAPABILITIES



KPMI® has created this “Engineering Custom Work” brochure to give our customers a snapshot of our custom work capabilities here at KPMI®. Many know us for our extensive line of finished goods (valvetrain components) for the motorsport industry. However, many of our customers are unaware we have the capability to custom design and manufacture one-off prototypes or offer in-house full run production for a variety of motorsport and non-motorsport applications.

KPMI® has a full dedicated engineering department solely responsible for the development, fitment and review of custom design(s). These designs can either be directly per the customer’s specifications or from specifications derived from KPMI® Engineering development team. KPMI® utilizes the latest in scientific and engineering software, including CAD/CAM technologies, Finite Element Analysis software, flow bench testing, rapid prototyping and computerized valvetrain dynamics simulation software.

However, we at KPMI® are not limited to valvetrain and have designed and manufactured elevator parts, generator parts, drone parts, window parts, airplane prototype parts, and pre-production to full production runs for accelerated testing.

We also offer private labeling for a nominal fee. KPMI® has invested thousands of dollars in state of the art label printer(s) and laser etching equipment just for the purpose of in-house private labeling. Some of our customers have KPMI® develop, manufacture, inspect, and package, so product can be delivered complete, finished and ready for sale.

***KPMI® is eager to earn your next custom work project and invites you to contact our engineering department for whatever your needs may be.***

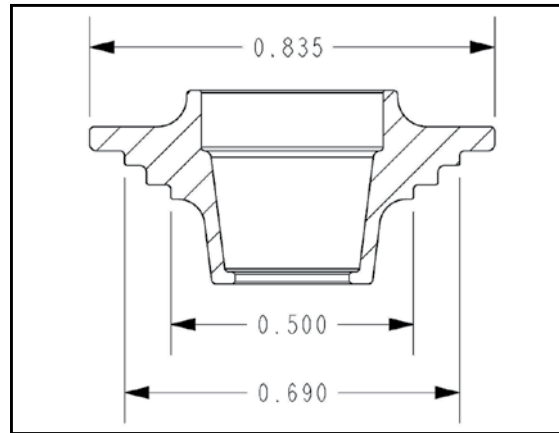


# ENGINEERING & CUSTOM WORK

## Mass Reduction

KPMI® is proud to introduce one of the most unique retainers we have ever designed. The Suzuki® Hayabusa™ is a technical marvel that changed the game for the sport bike world, and we at KPMI® put in an equal technical effort to make a part worthy of such a bike. This retainer is thoroughly a product of modern engineering. KPMI® engineers spent nearly a year studying materials, and surface treatments to find the ideal balance of hardness, toughness, wear resistance, and strength. They spent countless hours refining the design with finite element analysis and the results are impressive. The new KPMI® retainer is within 1.5 grams of the O.E.M. aluminum retainer, while being 55% harder!

The design tackled several goals besides just reducing mass. Our engineers addressed the shim counterbore wear, and keeper pull-through issues of the O.E.M. aluminum retainer, with our super hardenable alloy and Posi-Loc feature. This new retainer also features spring shoulders that were designed to mate with the O.E.M. springs. This allows our retainer be used as a direct O.E.M. replacement, or with KPMI's Super-Clean Chrome Silicon springs for higher performance applications. This really is the ultimate retainer for the ultimate sport bike.



**KPMI® Retainer showing aggressive mass reduction and Posi-Loc features**



## Fryberger Lotus 11

Hundreds of times over the course of a year, the KPMI® Custom Work Department is asked to create unique valve shapes... (Tulips). In this case a customer of KPMI® provided specifications to one of our Application Engineers for a feasibility study. When the study was completed the customer signed off on the quote and drawings generated by our CWD. The photo above is the detail of the shape created for the customer.



## 1964 Ferrari BRM Valve Guide

One of our customers sent us a used 1964 Ferrari BRM valve guide. The KPMI® Custom Work Department provided the sample guide to the KPMI® Engineering department for reverse engineering. Engineering sourced the O-ring and completed the RE... (Reverse Engineering) of the sample. By using one of two Mitutoyo PH-A14 Optical Comparators, suited with fiber-Optic edge sensing, KPMI's Mechanical Engineers were able to very accurately pull dimensions from the sample. Using the information gathered from the RE, a PRO/E drawing was created for the customer's review. The photo above is the finished product machined from solid SAE630 / NiAlBrnz.

# ENGINEERING & CUSTOM WORK



## Working With Design Constraints

The KPMI® Mechanical Engineers pride themselves in the Development Flow, System-Design-Approach used for valvetrain development here at KPMI®. Many times this may mean achieving very specific component strength given a weight constraint. This photo above is shown how weight reduction and required mechanical properties can exist in harmony.





# KPMI<sup>®</sup> CUSTOM VALVE ORDER FORM

## KPMI Custom Valve Order Form

<b>Part Number</b>	
<b>Engr. Approval / Date</b>	

<b>Additional Specifications</b>	Rocker Arm	YES <input type="checkbox"/>
	Rocker Arm (w/ Elephant Foot)	YES <input type="checkbox"/>
	Cam Follower (Shim & Bucket)	YES <input type="checkbox"/>
	Using Lash Cap	YES <input type="checkbox"/>
	Intake Valve	YES <input type="checkbox"/>
	Exhaust Valve	YES <input type="checkbox"/>

<b>Customer Information</b>	
Contact:	
Company:	
Phone:	Fax:
E-Mail:	Date:
Make:	Disp:
Model:	Years:
Material:	<input type="checkbox"/> S.S. <input type="checkbox"/> Ti. <input type="checkbox"/> Other:
Blank Part #:	
Notes:	

Groove Dimensions	
	Radius Groove
	Square Groove
	Triple Groove
Groove Location:	
Groove Minor Ø:	
Groove Width:	
Groove Radius:	N/A
Groove Spacing:	N/A

Groove Location is measured from the tip of the valve to the center of the radius or to the top of the square groove (for the triple groove it is measured from the tip of the valve to the center of the middle radius)

Reduced Dia. Groove Detail (if applicable)	
-A-	Undercut Ø:
-B-	Undercut Length:
-C-	Groove Location:
-D-	Groove Ø:
-E-	Groove Width: <small>E = 2(F(A-D) - (A-D))</small>
-F-	Groove Radius:

Dish Dimensions	
	Radius Dish
	Angle Dish
-A-	Dish Radius:
-B-	Dish Depth:
-C-	Dish Width:
-D-	Dish Depth:
-E-	Dish Width:
-F-	Dish Angle:

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# KPMI® CUSTOM GUIDE ORDER FORM



## KPMI Custom Guide Order Form



	<p><b>Part Number</b></p> <p><b>Engr. Approval / Date</b></p> <p><b>Customer Information</b></p> <p>Company: _____</p> <p>Contact: _____</p> <p>Phone: _____</p> <p>Fax: _____</p> <p>Date: _____</p> <p>E-mail: _____</p> <p>Material: <input type="checkbox"/> Cast Iron <input type="checkbox"/> Ni Al Bronze <input type="checkbox"/> Manganese <input type="checkbox"/></p> <p>Notes: _____</p>
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<p><b>Shouldered Guide</b></p>	<p><b>Snap Ring Guide</b></p>	<p><b>Stepped Shoulder Guide</b></p>
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Make:	Model:	Disp:	Years:
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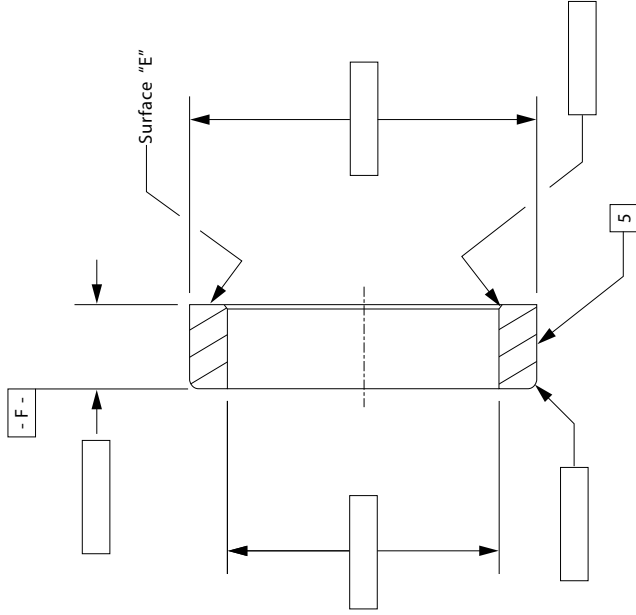
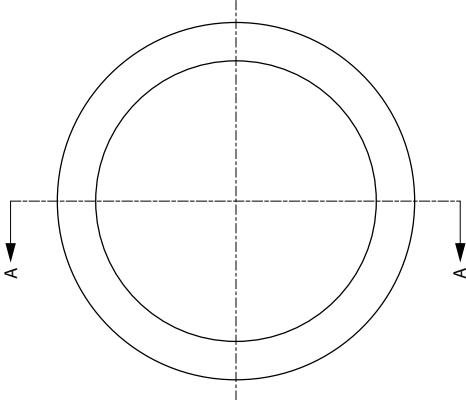


# KPMI® CUSTOM SEAT ORDER FORM

## KPMI Custom Seat Order Form



Part Number:



### Customer Information

Contact Name:			
Company Name:			
Phone:		Date:	
Make:		Model:	
Disp:		Years:	
Customer Approval:			Date:

### Seat Information

Additional Notes:			
KPMI Blank P/N:			
Material:		<input type="checkbox"/> SAE 630	<input type="checkbox"/> G2 Cast Iron
Total Cost Per Seat:			Qty.
(KPMI use only)			
Total Cost:			
(KPMI use only)			

### NOTES:

1. Break and deburr all sharp edges 0.010" X 45°
2. Finish O.D. to RMS-16 parallel and round within 0.0004"  
(For wall thickness less than 0.120", parallel and round within 0.0008")
3. Surface "E" parallel to Datum F within 0.002"
4. I.D. and O.D. must be concentric within 0.010" TIR
5. I.D. and O.D. must be parallel within 0.002"
6. O.D. must be perpendicular to Datum F within 0.002"
7. (U.O.S.) Unless Otherwise Specified

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# KPMI® LEGAL NOTES



Since 1939, Kibblewhite® Precision Machining, Inc. (KPMI®), an independent company, has been committed to serving the valvetrain component needs of the powersport industry.

## IMPORTANT TRADEMARK NOTICES

Harley, Harley-Davidson, Knucklehead, V-Twin, Panhead, Big Twin, Evolution, Shovelhead and Sportster are registered trademarks of Harley-Davidson, Inc., Milwaukee, Wisconsin, U.S.A. Any model designations for Harley-Davidson motorcycles used in this catalog is for reference only. No parts appearing in this catalog are licensed, manufactured, sponsored or endorsed by Harley-Davidson, Inc. Use of the word Harley-Davidson, various model names and designations, and O.E.M. part numbers are provided solely for reference and fitment information, and there is no affiliation between Harley-Davidson Inc. and Kibblewhite® Precision Machining, Inc. Black Diamond™, Tensilite® and White Diamond® are registered trademarks of Kibblewhite® Precision Machining, Inc., Pacifica, California, U.S.A. All other brand names or trademarks or registered trademarks used in this catalog are the property of their respective holders.

## TERMS AND POLICIES

**PAYMENTS** - All Dealer/ Distributor orders will be shipped C.O.D., certified check / money order or prepaid by Visa®, MasterCard®, American Express® or bank wire transfer. Company checks will be accepted from Dealers or Distributors after completing a KPMI® Survey/ Application and histories warrant. All international orders should be prepaid in U.S. funds to avoid delays. Proforma invoices are available upon request. Terms are granted by arrangement only.

**DISCOUNTS** - Bank cleared advanced co-check, money order, certified check = \$15.00 discount. Proforma invoices are available upon request.

**HANDLING FEES** - Handling fees apply to all shipments and / or credit card transactions. Additionally: Drop-ship \$15.00 / Wire transfer \$20.00 / Parcel post \$15.00.

**DEALERS** - Becoming a KPMI® Dealer requires completing a Dealer Application / Survey. After a successful survey review a Dealer must initiate and maintain KPMI® Dealer status based on the following policies: 400 USD Initial Order (Pre-Paid only), 100 USD minimum orders thereafter, purchase a minimum of 1,200 USD of product per calendar year.

**DISTRIBUTORS** - Becoming a KPMI® distributor requires contacting KPMI® directly, and requesting a Distributor Application / Survey. Please allow a reasonable amount of time for processing.

**WARRANTY** - All merchandise and services offered by KPMI® are for racing use only. KPMI® warrants to the original purchaser the racing components listed in this catalog as manufactured by us to be free from defects in material and workmanship under normal use and service.

Our obligation under this warranty shall be limited to the repair or exchange of any part(s) which may thus prove defective under normal use and service within 30 days from date of installation by the original purchaser, and which our examination shall

disclose to our satisfaction to be thus defective. This Warranty is expressly in lieu of all other warranties expressed or implied including the warranties of merchantability and fitness for use and all other obligations or liabilities on our part, and we neither assume, nor authorize any person to assume for us, any other liability in connection with the sale of these components. This warranty shall not apply to components or any part thereof which has been subjected to an accident, negligence, alteration, abuse or misuse. We make no warranty whatsoever with regard to accessories or parts not supplied by us. The term "original purchaser," as used in this warranty, shall be deemed to mean that person to whom the components were originally delivered. This warranty shall apply only within the continental United States. Seller makes no warranties which extend beyond that set forth in the preceding paragraph. Subject to applicable State laws.

**SHIPPING** - We ship by Federal Express (FedEx), United Parcel Service (UPS), USPS (upon request) and DHL Express. Shipping charges are added to invoice total. There is a \$15.00 surcharge for shipments through the U.S. Parcel Post.

**BACK ORDERS** - We do not cancel back orders unless requested to do so.

**RETURNS** - We will not accept any returned merchandise without prior consent. All items will be inspected upon receipt. Returns due to shipping error or manufacturing defects will be replaced immediately. No returns after 30 days from invoice date. Parts returned for any other reason will be subject to a 20% or \$15.00 minimum restocking charge. Absolutely no returns on custom manufactured parts.

**MACHINE WORK** - Anything sent to Kibblewhite® Precision Machining to be machined must be accompanied with complete instructions and return address. Please be sure to include a packing list of the parts being sent to us. Any discrepancy that is not accounted for with the package(s) received will be the responsibility of the sender. Any damage to merchandise at the time of receipt will need to be handled by the sender with the carrier.

**CLAIMS** - If damage occurs to any item during transit; it is the responsibility of the freight carrier. Responsibility for the goods is passed from the shipper to carrier when the carrier leaves the point of pick-up. All claims must be made with the carrier. We will, however, help you with the claim in any way we can.

**PHONE CALLS** - We cannot accept collect calls. Our Order and Tech Line phone number is (650) 557-2046. After hours & weekends, please leave a message. Our FAX line operates 24-hours a day; the number is (650) 359-8574.

**HOURS** - Monday through Friday 8:30 a.m. – 5 p.m. (Pacific Time). After hours or weekends, please leave a message or send a FAX.

**COPYRIGHTS** - The entire contents of this catalog are copyrighted by KPMI®. All rights are reserved. Trademarks and logos represented in this catalog are the sole property of their owners. Call your dealer or account representative for verification of the latest model year applications.

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## WARRANTY & LIABILITY LIMITATIONS

Except as may be expressly set forth in the product invoice, KPMI® makes no representations or warranties as to any of its products, express or implied, including, without limitation, any warranties of merchantability or fitness for a particular purpose, under Section 2314 or 2315 of the California Uniform Commercial Code or otherwise. Motorcycles can be dangerous. KPMI® has no control over the usage of any part. KPMI® expects the Dealer and the Dealer's customers to exercise good judgment as to the proper selection, installation, use, and maintenance of any parts. KPMI® assumes no responsibility for damage or injury of any kind because of the misuse or the improper application or installation of any parts in any way by the Dealer, the Dealer's customers or any other person. KPMI® shall not be liable for any indirect or consequential damages whatsoever. All matters shall be interpreted under California law.

## CURRENT FITMENT INFORMATION

To the best of our knowledge, all the pictures and application information contained herein are accurate as of the date this catalog was approved for printing (November 2016). Because some models had not yet been released at the time, it was not possible to provide application information for these vehicles. Therefore, whenever a part is listed as fitting "to present" this would apply to models that had been able to verify application for by catalog press date ONLY. Please check with your KPMI® dealer or account representative for verification of the latest 2017 model year applications.

## NOTICES

All KPMI® valve guides, standard valves, and spring kits are intended for use as OEM replacement parts, exceeding OEM specifications in terms of durability and or expected cyclical life. Oversize valves are intended for racing vehicles with planned use on closed courses.

## KIBBLEWHITE® PRECISION MACHINING, INC.

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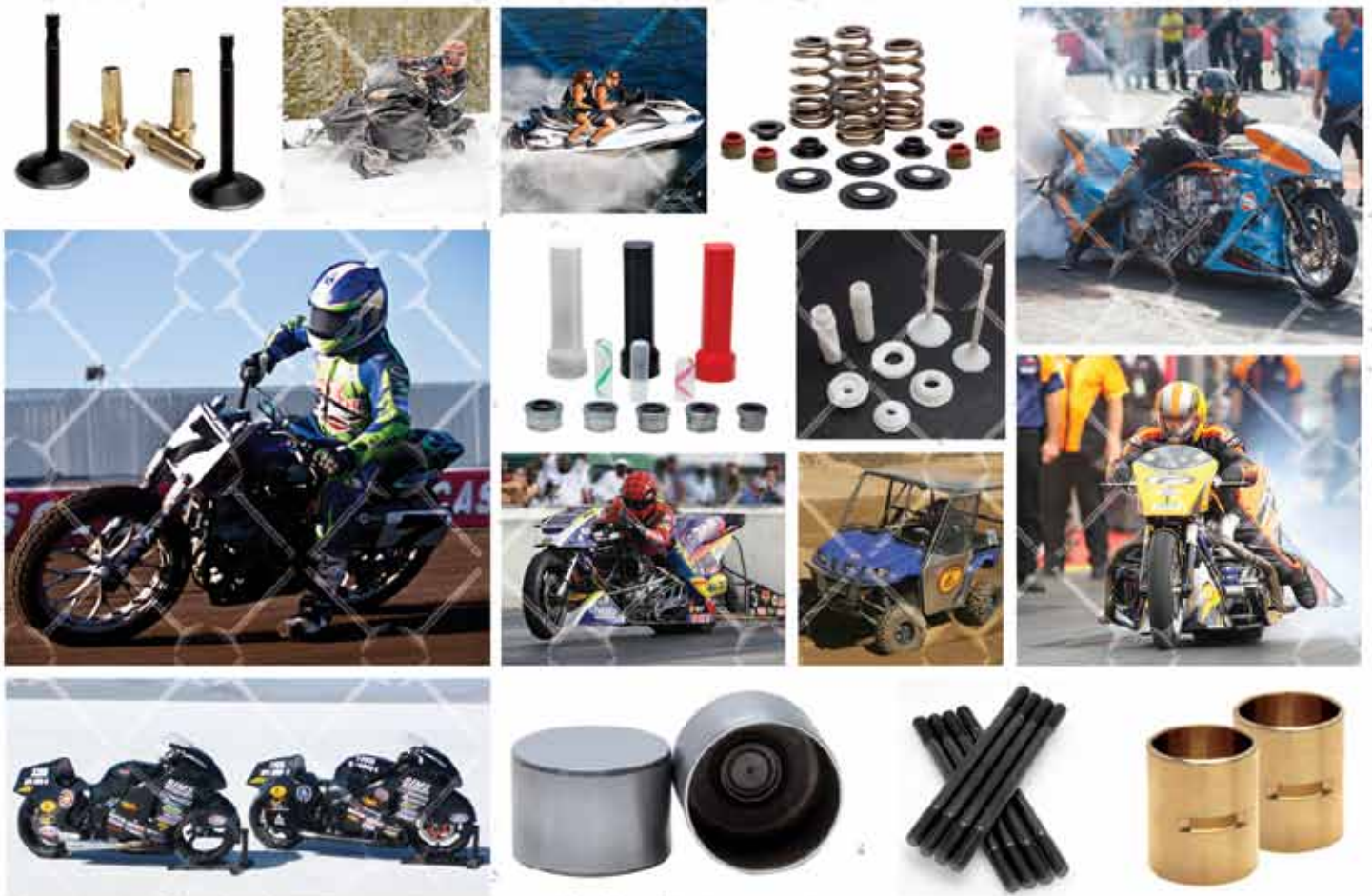
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# OUR BUSINESS IS PERFORMANCE



**KIBBLEWHITE PRECISION MACHINING INC.**

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