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SETTING VALVE LASH ON THE

BRIGGS & STRATTON

2007 *Kart Expo* PREVIEW

KART ENDURO NATIONAL CHAMPIONSHIPS

Vintage Kart Olympics



TRACK TESTING THE MIKE WILSON LEOPARD/100

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FEATURES

VINTAGE KART OLYMPICS

TNT Kartways, Quincy, IL

By John Copeland 20

THE ULTIMATE TRACK TEST

Entering the Mike Wilson Leopard In The Robo Pong 200 at New Castle

By Mike Unger 26

BALL-STYLE HONE

An Effective Edge-Cutting Automotive Tool Making Its Way Into Karting

By Jeremiah Blattler 32

KART ENDURO NATIONAL CHAMPIONSHIPS

Heartland Park Raceway

By Kelly Read 48

THE BIG ONE

R.E.A.R Helping To Make Vintage Karting Vogue

By Mike Unger 42

TOOL OF THE MONTH

The Strap Wrench

By Robert Markiewicz 54

THE SECOND GENERATION

On Board Starters More Than A Flash In The Pan

By Mike Unger 56

LASHING OUT AT THE ANIMAL

Setting The Valve Lash On Your Race Engine

By Robert Markiewicz 58

2007 KART EXPO PREVIEW

64



DEPARTMENTS

EVENTS.....	6
VIEW FROM THE CENTER.....	8
PIT BITS.....	10
INSIDE TRACK.....	12
MARKETPLACE.....	44
ON FILE.....	69

ADVERTISERS

A+A Manufacturing.....	aa-mfg.com	24
AAR Racing Gear.....	aargear.com	54
AIM Sports.....	aimsports.com	62
American Power Sports.....	apskarting.com	57
Arrow Karts/BTK.....	arrowkarts.com	67
Bell Racing.....	bellracing.com	30
Boca Bearing.....	bocabearings.com	22
Briggs & Stratton.....	briggsracing.com	60
Burnis Racing.....	burnisracing.com	43
Coleman Products.....	coleman-products.com	43
Decal Zone.....	godecalzone.com	61
Douglas Wheel Technologies.....	douglaswheel.com	15
Dreamworks/Franklin.....	franklinkart.com	16
EasyKart America.....	easykart.com	33
Extreme Kart.....	extremekart.com	49
Fast Karts.....	fastkarts.net	23
Gauntlet Racing.....	gauntletracing.com	50
G-Force.....	gforceoutlet.com	59
IKF.....	ikfkarting.com	57
Impact Racing.....	impactraceproducts.com	39

ISC Racers Tape.....	racerstape.com	22
J3 Competition.....	j3competition.com	11
JC Specialty.....	jcspecialty.com	55
KART.....	kart.org	37
Kart Expo International.....	e-kmi.com	17,18
Kart Lift.....	kartlift.com	37
Kart-O-Rama.....	kartoramainc.com	48
KG Karting.....	kgkarting.it	66
Mach 1 Kart.....	mach1kart.com	6
MG Tires.....	mgtires.com	29
Millennium Technologies.....	mt-llc.com	35
Motorama Kart Parts.....	mkipshop.com	38
MRP Motorsports.....	motorsport.com	9
National Karting Alliance.....	nkaonline.com	25
OVKA.....	ovka.com	47
Pace American.....	paceamerican.com	31
Pit Pals Products.....	pitpal.com	14
Predator Racing Karts/BMI.....	bmikarts.com	51
Puma/Sube Sports.....	prospeedkartsports.com	27
QTM/Sparco.....	qtm.com	19
Racing Electronics.....	racingelectronics.com	52



ABOUT THE COVER

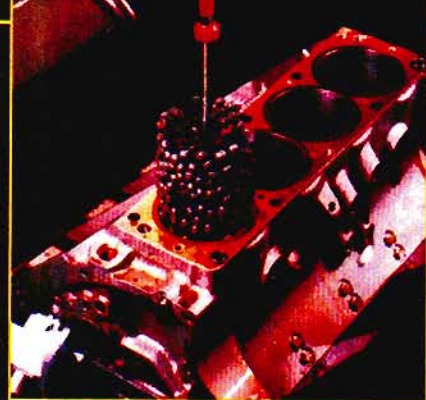
The new Mike Wilson kart from Russell Karting Specialties.
Story on page 26.
Photo By Curt Paluzzi

Rapid Racing.....	rapidracing.com	38
Rod End Supply.....	rodendsupply.com	10
ROK/Vortex.....	vortex-rok.com	71
Russell Karting Specialties.....	russellkarting.com	72
SSC/CRG.....	sscracing.com	2
SenDEC.....	sendecracing.com	65
Simpson Race Products.....	teamsimpson.com	4
Skip Barber Racing School.....	skipbarber.com	3
SSC East.....	ssceast.com	53
Swiss Trax.....		40,41
Target/Zamp.....	targetdistributing.net	36
TM Racing.....		50
TS Racing.....	tsracing.com	13
United Trailers.....	united-trailers.com	68
UPR.....	upr.com	14
Yamaha.....	yamaha-motor.com	63

BALL-STYLE HONE

An Effective Edge-Cutting Automotive Tool Making Its Way Into Karting

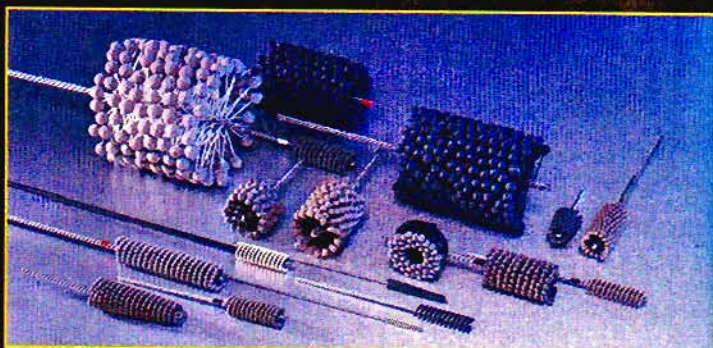
By Jeremiah Blattler - Power PR



From prepping combustion cylinders to deglazing brake drums, many automotive applications benefit from the de-burring, edge-blending and other finishing capabilities of the fast, economical and performance-enhancing ball-style hone.

When it comes to the optimum remanufacturing and rebuilding of engines and other machined components, many parties have a stake in the results. We're all concerned with the economic facets such as purchase price, service life and warranty. The interest in competitive performance racing has never been greater. But there are other concerns that are becoming more prevalent today, including environmental impact, consumption of fuels and lubricants, and safety. All of which can be directly affected by the selection of tools used for rebuilding and servicing engines, brakes and other wearing components.

Certainly this applies to the surfacing of metal finishes, particularly where honing is concerned. Use of the optimum honing tools can affect all of the above, especially when it comes to performance and wear life of engines and vital components such as brakes. And when it comes to the cleaning, surfacing, de-burring and edge-blending of critical metal surfaces, one of the most useful and efficient tools available is the ball-style hone.



"The ball-style hone has contributed to our engines having a 0.16 percent warranty claim rate in an industry that averages 6-8 percent," says Benjamin Baloga, Plant Engineering Manager for Tomadur Engine Co. (Industry, CA). Tomadur remanufactures 19 different Ford gasoline engines back to OE specifications for dealerships throughout North America. The company uses Flex Hone® ball-type hones from Brush Research Manufacturing (BRM) to finish combustion cylinder bores and chamfers as well as the cylinder bores for hydraulic valve lifters.

Microscopic precision

Used throughout the industry where metal machining is involved, the ball-style hone is a specialized abrasive that is recognizable by the usually small, abrasive globules mounted to nylon filaments. Known widely as a tool used for de-burring, plateau honing and deglazing, this is an inexpensive yet sophisticated device. A precision-quality ball-style hone cannot only de-burr bored metal, but can easily remove even microscopic metal shards and fragments.

"After we are done with the diamond honing of a piston cylinder bore, there are torn, jagged metal particles partially attached to the cylinder wall surface," explains Baloga. "These are microscopic in size, much smaller than burrs. After we use the ball-style honing tool connected to an air drill, the surface RA Value (roughness average, in microns) goes from 24 to 14. And it only takes 5 strokes off an air drill to do that."

Multiple benefits

Baloga explains that the ball-style hone creates a clean, partial-plateau surface finish that allows the piston rings to mate more efficiently to the surface of the cylinder wall. This ensures longer ring life. "If the rings were installed without

the ball honing, they would have to clip off those jagged metal shards, which would wear down the rings a little bit faster," he says. "If not removed, those metal shards and particles could result in piston scuffing problems and possibly some vertical scratching in the piston wall, which could add to the oil consumption of the engine. So, by us doing this we are able to allow the rings to mate in much more quickly, but also get much lower oil consumption.

Baloga adds that by eliminating the potential for scuffing of the pistons, finishing the cylinder bores with the Flex Hone could also protect against consequential compression losses resulting from galling cylinder walls with micro scratches, which could in turn cause pistons to gall. The ball-style hone also helps Tomadur achieve the proper crosshatch finish for proper lube oil distribution. "In the end, this simple tool helps to ensure longer engine service life with better compression and lower oil consumption numbers," he says.

De-burring operations cost American companies billions of dollars annually and it is a production headache and frequently the source of bottlenecks in production and refinishing. But in rebuilding an engine or resurfacing brake drums or other components, deglazing is also a vital function that is performed well by the properly selected ball-style hone.

"We'll use a Flex Hone ball-style hone for deglazing a cylinder," says Don Bolland, president of Bolland Machine (Beaver Falls, PA). "If we are simply re-ringing an engine, then we'll use the ball-style hone just to de-glaze the cylinders."

Bolland Machine, which specializes in a wide range of engine components and assemblies, specializes in the rebuilding of gasoline and diesel engines ranging from small engines up to very large Waukesha industrial engines used for pumping natural gas through pipelines. Bolland Machine is also capable of restoring antique engines as well as working on racing engines, and has a division called Bol-Tech Motorsports, that participates in big-block dirt modified racing.

"We use the BRM Flex Hone ball-style hone in some of our performance engine work," Bolland says. We use a CK10 cylinder hone and have used the Flex Hone to obtain a different finish for different performance applications. It is a very practical way to achieve a surface that is optimum for seating new rings."

Taking the edge off

More frequently Bolland Machine uses the ball-style hone on 5- to 12-inch engines in lower counterbores, where it is important to create a surface with an entry taper that allows an o-ring to smoothly slide into that bore. The edge-blending capability of the ball-style hone removes the sharp rim that could cut the liner O-ring.

Tomadur also uses a Flex Hone ball-style hone to de-burr the chamfer on the bottom of piston cylinder bore. "On many engines there is a sharp edge at bottom of the cylinder bore after machining," Baloga explains. You have the potential for piston skirt scuffing because the piston skirt goes out past the bottom of the cylinder walls on some engines. So, we use a Flex Hone ball-style hone to create a smooth radius at the bottom of the cylinder bore. It takes only about five seconds to do, and it can prevent a lot of problems."

In addition to combustion cylinder work, Tomadur also uses a Flex Hone tool to create a blended radius on hydraulic valve lifter bores, thereby avoiding scuffing problems on valve lifters.

Established in 1958, Brush Research Manufacturing has been solving difficult finishing problems with brushing technology in the sophisticated environments of nuclear energy, aerospace and computer technology as well as industrial applications. For more information, contact Brush Research Manufacturing, Brush Research Mfg. Co., Inc., 4642 East Floral Drive, Los Angeles, CA 90022; Phone: (323) 261-2193; Fax: (323) 268-6587; email: info@brushresearch.com or visit the web site: www.brushresearch.com.

