

# Dura-Bond

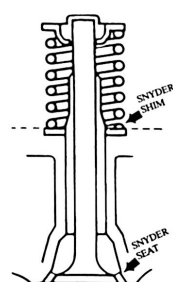
## VALVE SPRING BOOSTER SHIMS

Available in both case hardened High Performance and regular series



All Dura-Bond shims meet or exceed OEM specifications.

Only prime quality cold rolled steel is used.

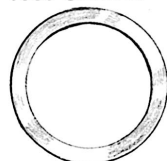


**Avoid loss of power due to weak spring tension —  
INSTALL BOOSTER SHIMS**

Refacing valves and the grinding of valve seats causes loss of metal. This loss of metal results in the loss of proper spring pressure. To restore the proper spring tension, one must replace the lost material by installing a Valve Spring Booster Shim under the valve spring.

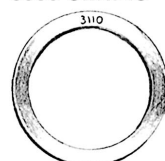


**1000 SERIES**



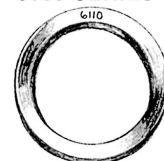
.015"

**3000 SERIES**



.030"

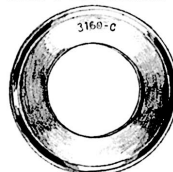
**6000 SERIES**



.060"

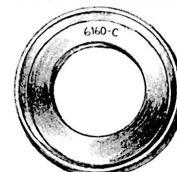
Cupped Shims are necessary when the spring base pad area is too shallow to hold the regular shim and the spring in the proper position.

**3000 SERIES  
CUPPED SHIM**



.030"

**6000 SERIES  
CUPPED SHIM**



.060"

STANDARD REBUILDERS PACK: 500 Pieces per Box • Cupped, Industrial, or HP • 250 Pieces per Box

STANDARD PACKAGE: 100 Pieces per Box • Cupped, Industrial, or HP • 50 Pieces per Box

### DESIGN FEATURES

**Both sides are flat and without serrations or marks of any kind.**

- All OEM specifications call for non-serrated shims.
- Non-serrated shims do not damage the spring pad area on today's aluminum cylinder heads.
- Non-serrated shims lay flat so as not to set up any harmonics in the spring.
- Non-serrated shims lay flat so as not to introduce any lateral loads on the spring, valve or guide.

# Dura-Bond

## MOTORCYCLE VALVE SEAT INSERTS & VALVE SPRING BOOSTER SHIMS







DESCRIPTION and APPLICATION

Superior Machinability

The 30000 (Gold) series is the newest and most machinable of our valve seat materials. It is a sintered valve seat insert which offers a blend of finely dispersed tungsten carbide residing in a matrix of tempered tool steel and special alloy iron particles. The superior machinability is the result of adding our proprietary ingredients and solid dry lubricants to this blend, and by using our special processing techniques during manufacture.

Designed for Unleaded Fuels

This very machinable exhaust seat material is designed for unleaded fuels. The 30000 (Gold) series is intended for the light to medium duty range. (For the heavy duty or extreme duty range we recommend our 70000 (Diamond) series valve seat inserts.)

New Powder Metal Technology

Dura-Bond/Snyder has taken full advantage of the new powder metal technology to produce a “hard” valve seat which will machine almost like cast iron. The greatly enlarged picture (the 4 black squares are .0015” across) tells the story.

- Powder metal technology allows us to place a special high grade alloy iron (with its natural, tool lubricating graphite rich properties) within a tempered tool steel matrix.
- Because of our special processing, we are able to get very fine, spheroidalized, tungsten carbide particles to evenly disperse within the tool steel.
- These sphereoidalized (round shaped) carbides are easier to machine because the tool bit can wedge in-between, with less cutting force and less friction.
- The smaller these “balls” of carbide, the easier it is on your cutting tool, because it will not be hitting any big irregular shaped “iceberg chunks” of carbide.

CHEMICAL COMPOSITION

Tungsten	3.8
Molybdenum	3.5
Chromium	2.0
Vanadium	1.0
Carbon	0.9
Cobalt	0.3
Nickel	0.4
Manganese	0.3
Silicon	0.2
Copper	0.1
(proprietary)	4.5
Iron	rem.

PHYSICAL PROPERTIES

Apparent hardness	20 HRC (approx.)
Micro hardness	20-43 HRC
Thermal expansion	.0000075”/F (at 1000° F)

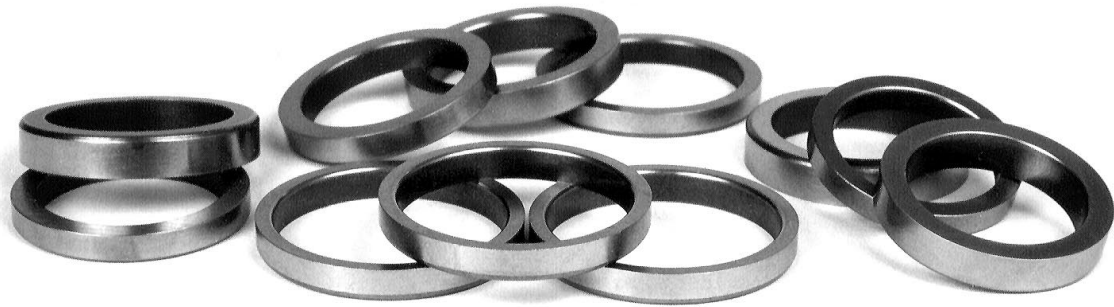
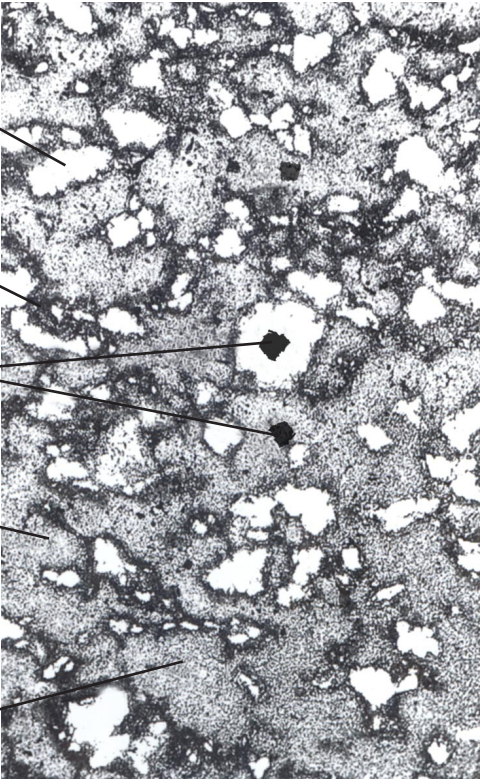
Special alloy iron (large white area)

Simi steel (darker outline)

Micro hardness penetrator

Tool steel matrix

Tungsten carbides (small white dots within tool steel matrix)



70000 (Diamond) 90000\* (Platinum) SERIES VALVE SEAT INSERTS

DESCRIPTION and APPLICATION

This is a sintered, high speed (tungsten carbide) tool steel, valve seat insert. This material has special additives blended into the matrix which impart high temperature lubrication properties to the valve seat. These lubrication properties are “built-in” throughout, and are not affected by extreme heat or machining. These solid lubricants enable this material to be used in “dry” fuel applications such as propane, LPG, and natural gas. They prevent the “micro-welding” of the valve seat material to the valve face, therefore eliminating the primary cause of valve seat erosion. They also improve the machinability. Your tools last longer and you can cut faster.

Because of the special high temperature sintering and post heat treat processing, this valve seat material has cermet style metal alloy oxides. This gives it superior wear resistance to both pounding and abrasive wear at elevated temperatures. These\*\* are called “cer-met” style because they are similar to **ceramic** (they do not soften at elevated temperature), but retain the machinability of **metal**. It is this high tech, new generation processing that allows us to achieve such high, hot hardness without having to put in massive amounts of expensive alloys, which would be required, to achieve equal performance. Normal foundry techniques do not allow this type of structure. You get superior wear resistance and high hot hardness at a very favorable price.

This valve seat insert is, therefore, used in engines using diesel, unleaded gasoline, and propane. We have been setting new longevity records in propane and natural gas applications using this seat.

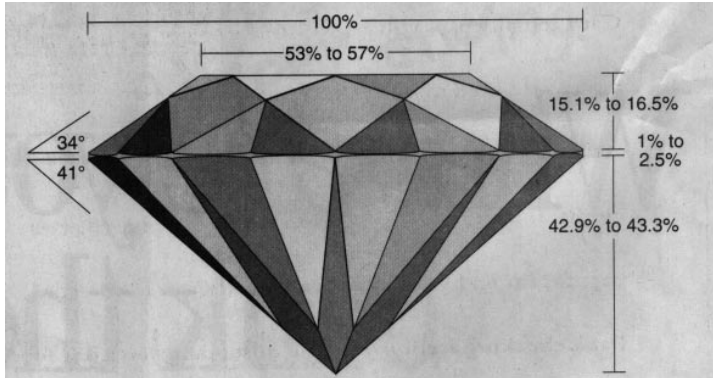
The micro structure of this valve seat insert is a very fine evenly dispersed mixture of spheroidal refractory alloy carbides, cermet style metal alloy oxides and solid lubricant residing in a tempered martensitic matrix.

CHEMICAL COMPOSITION

	70000	90000*
Tungsten	5.3	6.5
Molybdenum	4.4	6.0
Chromium	3.5	4.0
Vanadium	1.5	2.0
Carbon	0.8	0.9
Cobalt	0.4	0.4
Nickel	0.3	0.4
Manganese	0.3	0.3
Silicon	0.2	0.2
Copper	0.1	0.1
(proprietary)	3.5	3.5
Iron	rem.	rem.

PHYSICAL PROPERTIES

	70000	90000*
Apparent hardness	30 HRC (approx.)	35 HRC (approx.)
Micro Hardness	25-43 HRC	35-43 HRC
Thermal expansion (at 1000° F)	.0000078”/degree F	.0000078”/degree F



\*\*Metal Alloy Oxides  
\* 90000 series available for extreme duty applications, special order only.  
Dura-Bond reserves the right to revise composition and specifications without notice.