

# THE ADVANTAGES OF USING EDGE BONDED SHIMS

by Christie Jones, Market Development Manager  
SPIROL International Corporation

**Precision Shims** are used as compensators to absorb tolerances between mating components. They significantly reduce manufacturing costs by eliminating the need for each component to be precision machined in order to achieve the proper fit and function of the total assembly. During the assembly process, Shims provide adjustment to compensate for accumulated tolerances that significantly reduces the need for re-machining and assembly time. Additionally, Shims are commonly used to preserve the faces between mating components, cutting down the required machining time during rebuilds / retrofitting.



Precision Shims often have profiles that match the mating components of the assembly.

**Laminated Shims** have peelable layers of metal which are removed until the Shim has the proper thickness. They are built up from layers of precision gauge metal foil. Layers are bonded into a rigid structure that appear and function as a solid sheet or plate. Adjusting them is as easy as peeling off laminations with a knife, or in the case of some materials, using no tool at all. Rather than having to stack a number of individual Shims, a single Shim set can be adjusted to desired thickness and slipped into position. In this way, variable close tolerances can be achieved saving considerable time required to pick various different thicknesses of loose Shims. This provides cost savings by reducing assembly time, and also minimizes line side SKU's and related inventory storage space. The finished Laminated Shims withstand reasonable handling, including shearing and machining.

In addition to being fully laminated, Laminated Shims can also be partially solid and partially laminated. This type of Shim is either half-solid or three-quarter solid, depending on the ratio of solid section to total thickness. Semi-solid Shims add rigidity to a design by meeting the performance requirements of a thicker, solid Shim as they provide a bearing surface on one side, yet allow adjustments to the overall thickness of the Shim by enabling the user to peel off unwanted layers from the other side.

## SURFACE BONDED LAMINATED SHIMS

Surface Bonded Laminated Shim packs, simply referred to in the industry as "Laminated Shims", are adhered throughout the entire surface between each layer of material and the layers are pressed together to cure much like how plywood is manufactured. The unwanted layers must be discarded due to their deformation during peeling.



Surface Bonded Laminated Shims must be adjusted using a tool.

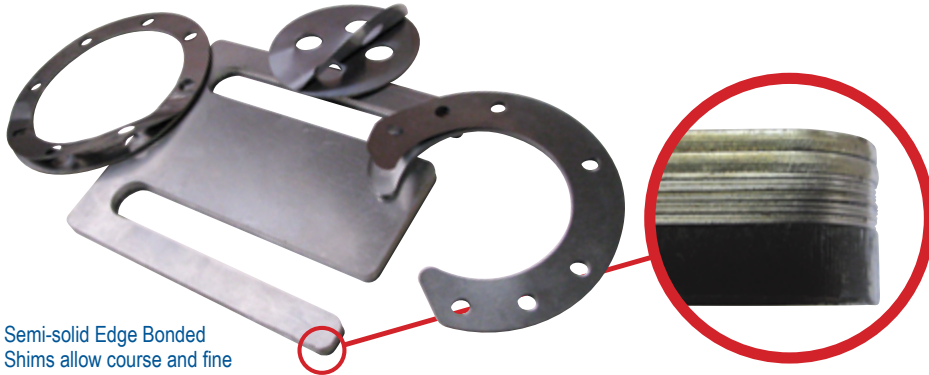


Surface Bonded Laminated Shims unwanted layer deformation

## EDGE BONDED SHIMS

The layers of an Edge Bonded Shim set are first pressed together, and then adhered by only the edges of the Shim's profile. This allows for a much easier separation of the layers in the field. Since Edge Bonded Shim sets are easy to peel, the layers that are not needed are preserved and can be used for a later application.

Edge Bonded Shim sets have all the performance and cost advantages of solid and loose Shims, yet they provide a unique solution for companies seeking a better point-of-use adjustable Shim set. Another advantage of Edge Bonded Shims is that multiple lamination thicknesses can be combined in the same stack giving the customer more flexibility for adjustment. This is not an option for traditional Laminated Shims.



Semi-solid Edge Bonded Shims allow coarse and fine adjustments to thickness.

Edge Bonded Shims also provide cost saving advantages over conventional Laminated Shims because the materials are less expensive. Edge Bonded Shim packs offer safe adjustment in seconds, and are much easier to peel than surface bonded laminates. Safety is improved because no knife is needed to remove the Edge Bonded layers. Cost savings can also be realized because the layers that are removed from the Edge Bonded Shim pack are reusable, functional parts since no deformation of the layers occur during adjustment.

## CONCLUSION

Both types of Laminated Shims, Surface Bonded and Edge Bonded, offer the advantages of reducing assembly time, taking up less inventory storage space, and reducing the number of line side SKUs. However, when speed of adjustment, operator safety and minimizing your overall cost of assembly are your primary objectives, Edge Bonded Shims provide the best solution!



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[e-mail: info@spirol.com](mailto:info@spirol.com)

## Technical Centers

### Americas

**SPIROL International Corporation**  
30 Rock Avenue  
Danielson, Connecticut 06239 U.S.A.  
Tel. +1 860 774 8571  
Fax. +1 860 774 2048

**SPIROL Shim Division**  
321 Remington Road  
Stow, Ohio 44224 U.S.A.  
Tel. +1 330 920 3655  
Fax. +1 330 920 3659

**SPIROL West**  
1950 Compton Avenue, Suite 112  
Corona, California 92881 U.S.A.  
Tel. +1 951 273 5900  
Fax. +1 951 273 5907

**SPIROL Canada**  
3103 St. Etienne Boulevard  
Windsor, Ontario N8W 5B1 Canada  
Tel. +1 519 974 3334  
Fax. +1 519 974 6550

**SPIROL Mexico**  
Carretera a Laredo KM 16.5 Interior E  
Col. Moisés Saenz  
Apodaca, N.L. 66613 Mexico  
Tel. +52 81 8385 4390  
Fax. +52 81 8385 4391

**SPIROL Brazil**  
Rua Mafalda Barnabé Soliane, 134  
Comercial Vitória Martini, Distrito Industrial  
CEP 13347-610, Indaiatuba, SP, Brazil  
Tel. +55 19 3936 2701  
Fax. +55 19 3936 7121

### Europe

**SPIROL France**  
Cité de l'Automobile ZAC Croix Blandin  
18 Rue Léna Bernstein  
51100 Reims, France  
Tel. +33 3 26 36 31 42  
Fax. +33 3 26 09 19 76

**SPIROL United Kingdom**  
17 Princeswood Road  
Corby, Northants  
NN17 4ET United Kingdom  
Tel. +44 1536 444800  
Fax. +44 1536 203415

**SPIROL Germany**  
Ottostr. 4  
80333 Munich, Germany  
Tel. +49 89 4 111 905 71  
Fax. +49 89 4 111 905 72

**SPIROL Spain**  
08940 Cornellà de Llobregat  
Barcelona, Spain  
Tel. +34 93 193 05 32  
Fax. +34 93 193 25 43

**SPIROL Czech Republic**  
Sokola Tůmy 743/16  
Ostrava-Mariánské Hory 70900  
Czech Republic  
Tel/Fax. +420 417 537 979

**SPIROL Poland**  
ul. M. Skłodowskiej-Curie 7E / 2  
56-400, Oleśnica, Poland  
Tel. +48 71 399 44 55

### Asia Pacific

**SPIROL Asia Headquarters**  
1st Floor, Building 22, Plot D9, District D  
No. 122 HeDan Road  
Wai Gao Qiao Free Trade Zone  
Shanghai, China 200131  
Tel. +86 21 5046 1451  
Fax. +86 21 5046 1540

**SPIROL Korea**  
160-5 Seokchon-Dong  
Songpa-gu, Seoul, 138-844, Korea  
Tel. +86 (0) 21 5046-1451  
Fax. +86 (0) 21 5046-1540