



Compression Limiters prevent damage to plastic assemblies by retaining the compressive force that would otherwise be applied directly to the plastic.

PSM International has designed and manufactured a wide range of Compression Limiters and Compression Limiter Assemblies.

Specifying the most appropriate part will be dependent on the customer application. Wherever possible we recommend standard designs; however, application requirements frequently dictate a custom design, particularly with Compression Limiter Assemblies.



Compression limiters and “captive bolt” Compression Limiter Assemblies (CLA) are available in a wide range of designs to suit application and assembly requirements. They are produced using a number of manufacturing methods and can be made from a range of materials, common variants are shown below.

SOLID



Solid compression limiters have a plain round inside and outside diameter and they are installed using a simple cold press method of installation. They offer high compressive strength, available in standard, high strength and custom ranges. Commonly made in steel by cold forming, brass and aluminium also available often made by machining.

HEADED



Headed compression limiters offer the benefits of the Solid tube, plus the addition of a head. The head can be placed at the mating face of soft materials like aluminium, to spread the induced load over a greater area, thus reducing the stress. The head can also be placed at the bolt face, if a greater contact area with the plastic is required. Double headed types can be made for over-moulding, providing very high retention.

KNURLED



Knurled designs provide additional push-out resistance, often a requirement with short compression limiters. Complex knurled designs are available where designers want the compression limiter to be longer than the plastic thickness, thus totally isolating the plastic from the bolted joint. The knurl design then prevents movement of the assembled component.

OVAL



With some components, designers use an oval hole to datum their component to its mating threaded component in one plane, whilst allowing radial clearance in the other.

SPLIT



Split compression limiters are produced from rolled strip, this process can offer cost benefits. However, they are generally used on less demanding application where tolerance, form, flatness and roundness are not so critical.

CLA

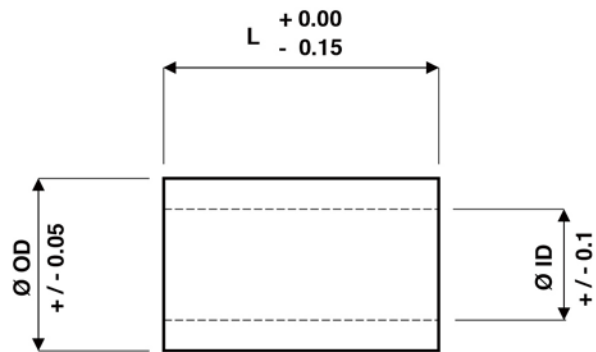


Compression Limiter Assemblies (CLA) combine the compression limiter and its mating bolt, they provide the necessary axial and radial float during bolt assembly. They eliminate bolt handling at the assembly stage and also provide logistical and procurement cost savings.

STANDARD RANGES



Standard Material - Steel (S)
Standard Finish - Trivalent Zinc + Sealer (W)
 Special Materials - Brass (B)
 Aluminium (A)
 Other finishes available on request



STANDARD – SCL200-SERIES

Bolt Size	ID	OD	Length Range	Hole Size
M4	4.8	6.70	4-12	6.50-6.60
M5	5.8	8.00	4-15	7.80-7.90
M6	6.8	9.20	4-20	9.00-9.10
M8	8.8	12.00	6-25	11.75-11.85
M10	10.8	14.75	8-30	14.50-14.60

HIGH STRENGTH-HCL350-SERIES

Bolt Size	ID	OD	Length Range	Hole Size
M6	6.8	10.15	4-20	9.95-10.05
M8	8.8	13.35	6-25	13.10-13.20

KNURLED-KCL600-SERIES

Bolt Size	ID	OD	Knurl Dia	Length Range	Hole Size
M6	6.8	10.15	10.40	4-20	10.18-10.28
M8	8.8	13.35	13.70	6-25	13.40-13.50



How to specify – SERIES / Bolt Size / Length / Material / Finish
 Example – HCL350-M6-15-S-W

DESIGN GUIDE

HOLE DESIGN

Compression limiters can generally be installed into a standard 1.0° inclusive moulded hole. However, the length of the compression limiter, required retention, maximum insertion force, and boss wall thickness should be considered when selecting the hole diameter. The hole taper should always produce a larger hole at the insertion side, to aide location and installation. In some instances a location counterbore is recommended particularly with Split types. For long compression limiters an interference fit may only be required over a reduced section of the compression limiter.

COMPRESSION LIMITER LENGTH

The common method used to determine the compression limiter length relationship to the plastic is the minimum plastic thickness, equals the maximum compression limiter length. With this method the force transferred to the plastic is minimised, at the same time it ensures the plastic component is securely clamped and prevented from moving.

PLASTIC BOSS WALL THICKNESS

The plastic boss wall thickness is very much dependant on the application requirements and moulding design. The amount of stress / force transferred to the boss during installation and bolt assembly should always be considered. Based on typical applications we suggest a minimum wall thickness equal to 50% of the bolt diameter, this would equate to 3.0mm for a M6 compression limiter.

CUSTOM DESIGNS

Headed, Oval, Split and Compression Limiter Assemblies are “Custom Designs”, the form and sizes have to be specified to suit the particular application. Please contact PSM or your local representative – we would be pleased to review your application and propose the most cost-effective solution.