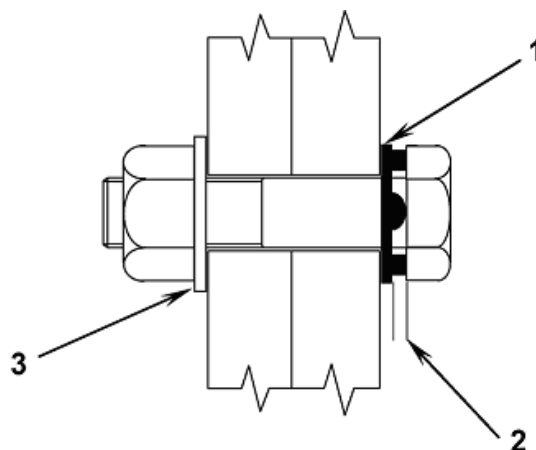


Cooper & Turner's policy regarding the supply of High Strength Structural Bolting Assemblies for Preloading BS EN 14399–3 Property Classes 8.8 & 10.9

The following outlines Cooper & Turner's policy regarding the supply of High Strength Structural Bolting Assemblies for Preloading BS EN 14399-3 property classes 8.8 and 10.9.

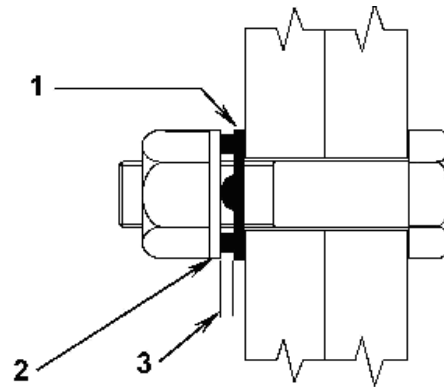
- 1) BS EN 14399 fasteners shall be supplied as bolt, nut and washer assemblies supplied by Cooper & Turner who are responsible for the function of the assembly and all the components shall be identified with the Cooper & Turner logo.
 - 2) Bolts – BS EN 14399-3 property class 8.8 and property class 10.9, the standard covers the following sizes M12, M16, M20, M22, M24, M27, M30 and M36. Cooper & Turner will not manufacture M12. Cooper & Turner will not generally have M22 or M27 in stock and would only manufacture them if the quantity required was sufficiently large to justify manufacture and the lead time was sufficiently long to allow procurement of suitable steel, nuts and washers.
 - 3) Nuts – Cooper & Turner will supply BS EN 14399-3 property class 10 nuts with both property class 8.8 and property class 10.9 bolts.
 - 4) Washers – Cooper & Turner will supply BS EN 14399-6 chamfered hardened washers.
 - 5) Cooper & Turner EN 14399-3 preload assemblies are supplied in accordance with k class K0 this means that C&T EN 14399-3 preload assemblies should only be installed using Direct Tension Indicators (DTI's). With the previous BS 4395 Part 1 specification the assemblies could also be installed using either the Part – Turn or Torque Control methods, as detailed in BS 4604 part 1, however, the European standard BS EN 1090-2 does not permit these methods of tightening. Cooper & Turner cannot accept any liability if a customer insists on buying preload assemblies without DTI's.
- Note: The one exception to this general rule is that a UK part-turn method, based on the Highways Agency requirements for BS 4395 Pt 1 assemblies, has been accepted for bridge work and can be used with BS EN 14399-3 property class 8.8 supplied in accordance with k class K0 for two diameters M24 and M30.
- 6) With BS EN 14399-3 property class 8.8 bolts the DTI can be fitted directly under the head or under the nut under a nut face washer. The assembly configurations for property class 8.8 bolts when fitted with the DTI's are shown below.



KEY 1 Direct Tension Indicator
2 Gap
3 Washer according to EN 14399-6

Assembly configuration for EN 14399-3 Property Class 8.8 with DTI fitted under bolt head – Tightened by nut rotation

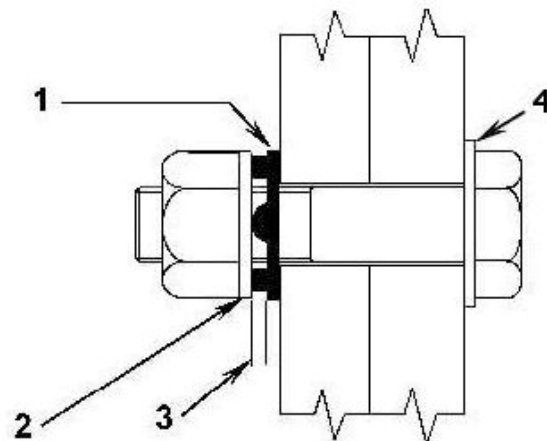
Cooper & Turner's policy regarding the supply of High Strength Structural Bolting Assemblies for Preloading BS EN 14399-3 Property Classes 8.8 & 10.9



KEY 1 Direct Tension Indicator
2 Nut face washer
3 Gap

Assembly configuration for EN 14399-3 Property Class 8.8 with DTI fitted under the nut– Tightened by nut rotation

7) With BS EN 14399-3 property class 10.9 bolts it is not permitted to fit the DTI directly under the bolt head. It would only be permitted to fit a DTI under the head of a property class 10.9 bolt if a special bolt face washer, with a chamfer on the internal diameter, was fitted between the bolt head and the indicator protrusions but this is not a viable proposition. With BS EN 14399-3 property class 10.9 bolts it is required that a BS EN 14399-6 chamfered hardened washers is always fitted under the head and therefore the DTI should be fitted under a nut face washer at the nut side of the assembly. The standard assembly configuration for property class 10.9 will therefore consist of a bolt, a nut, a BS EN 14399-6 chamfered washer, a nut face washer and a DTI, as shown below.



KEY 1 Direct Tension Indicator
2 Nut face washer
3 Gap
4 Washer according to EN 14399-6

Assembly configuration for EN 14399-3 Property Class 10.9 with DTI Tightened by nut rotation

8) Other European countries will use EN 14399 preload assemblies supplied in accordance with the two other k classes either K1 or K2. Both K1 and K2 require a specified torque v tension relationship which Cooper & Turner will not provide. If Cooper & Turner receive enquiries for



Cooper & Turner's policy regarding the supply of High Strength Structural Bolting Assemblies for Preloading BS EN 14399-3 Property Classes 8.8 & 10.9

EN 14399-3 preload assemblies where k class K1 or K2 is required then we will advise the customer that Cooper & Turner EN 14399-3 preload assemblies are supplied in accordance with k class K0 and should be installed using DTI's. Our quotation will include DTI's for property class 8.8 assemblies and DTI's and nut face washers for property class 10.9 assemblies. Our quotation should also included a request that the bolt lengths enquired for are checked to ensure they are sufficiently long to accommodate the additional thickness of the DTI's. An additional 3mm is required on the length of the bolts to accommodate all sizes of DTI.

9) BS EN 14399-9 was published in March 2009 and is the specification for BS EN 14399 bolt and nut assemblies when supplied complete with DTI's. There is a two year period of co-existence with the existing national standards and products and during this period Cooper & Turner will sell their existing stocks, manufactured to the old national standards, and carry out the actions necessary to provide full CE mark certification with the BS EN 14399-9 DTI, bolt, nut and washer assemblies. To meet the CE mark certification requirements the DTI's will carry the Cooper & Turner logo, in an identical manner to the bolts, nuts and washers, additional testing of the assemblies will be necessary and our Factory Production Control system for these products will be approved by a Notified Body. The co-existence period ends in September 2011, after this date only existing products that are in the 'marketplace' can be sold and used; while only products to BS EN 14399-9 can be both manufactured and sold.