

**Teacher**  
London Penland

**Subject**  
Metric Fastener  
Standards Comparison

**Date**  
10/03/19

## DIN 6914 Structural Bolts

### Objective:

- Viewers will learn about structural bolts and their two equivalent standards DIN 6914 and EN 14399

### Essential Questions:

- What are structural bolts?
- What are the differences, if any, between DIN 6914 and EN 14399?

### Standards:

- DIN 6914 -> EN 14399

### Lesson Plan:

#### Engage (30 sec)

- Welcome back! Today we've got Episode 4 of our Metric Fastener Standards Comparisons VLOG series and we are going to discuss structural bolts.
- Have you ever searched for hardened steel, such as class 10.9, with hot dip galvanized plating? Then we've got what you need, in the form of structural bolts, most commonly recognized as DIN 6914 (and their nut and washer counterparts, DIN 6915 and 6916 respectively).

#### Explain (2 min)

- Other than structural bolts, I'm willing to bet you've had some difficulties finding 10.9 steel hot dip galvanized (much less 12.9 steel)... So why is it so hard to find hardened and tempered steel hot dip galvanized? Well, the answer has two parts:
  1. Hydrogen Embrittlement. Due to the heat treatment process in tempering the steel causing an increase in porosity, higher classes of steel are susceptible to hydrogen being absorbed by the steel during the acid pickling process before galvanizing causing a loss of ductility. In other words, it'd be like poking small holes in your bag, then laying it down on the ground at the beach, then finding more sand than usual in your bag.
  2. Thickness of the threads. One cannot simply buy a plain bolt and have it hot dip galvanized due to the thickness of the hot dip galvanized plating. It would alter the thickness of the threads, therefore the bolt may not work in some applications or with nuts that were not manufactured to the hot dip galvanized bolt's new dimensions.
- This is why structural bolts, nuts and washers were created and why the EN numbers for the bolts and nuts are the same. They are made together! And there's a sad reason for that...
- Unfortunately, and I cannot fully validate this story, but as the tale goes, a structural bolt and a structural nut were used on one application, but were manufactured by two different manufacturers and due to differences in the galvanization the thicknesses of the threads did not match, therefore they did not tighten properly, the application failed and someone died as a result.
- Now the DIN 6914, hex structural bolt with partial thread, and the DIN 6915, hex structural nut, share the same EN, 14399-4, which indicates that the two are manufactured together, whereas the washer, DIN 6916 has its own EN, 14399-6, because it obviously doesn't need to match threads or anything, therefore the structural washers can be manufactured separately.
- These DIN numbers also have equivalent ISO numbers.
  - **DIN 6914 = ISO 7412**
  - **DIN 6915 = ISO 7414**
  - **DIN 6916 = ISO 7416**

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- So how do these DIN 6914 structural bolts compare to a DIN 931?
- Generally, DIN 6914 structural bolts are about 2-4mm larger in the width across the flats than DIN 931.
- Sometimes the head height is the same for both, but sometimes the head height is slightly larger on the DIN 6914 structural bolt
- Also, DIN 6914 structural bolts have a shorter thread length than the DIN 931s.

**Extend (30 sec)**

- SO, if you are looking for hardened steel with hot dip galvanized plating, then DIN 6914 structural bolts are going to be perfect for you!
- We have great suppliers for structural bolts at a large variety of diameters and lengths so keep us in mind if that's what you are looking for!
- As always, feel free to contact me personally at [london@eurolinkfss.com](mailto:london@eurolinkfss.com) with any questions or, of course, requests for quotes.
- Also, this week's shoutout is for National Breast Cancer Foundation, INC. In honor of a Eurolink employee whose wife survived a battle with breast cancer this past year. We are donating a portion of all sales for the month of October to the NBCF! A link for donations to NBCF can be found on our website and in the footers of all Eurolink emails. We are giving away free breast cancer awareness T-shirts to donations of \$25 or more while supplies last! And that's it for today! Once you understand the comparison between one of them (like DIN 933 and ISO 4017), you then understand the comparisons between all of them.



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