

Teacher
London Penland

Subject
Metric Fastener
Standards Comparison

Date
12/12/19

Comparing Hex Flange Bolts DIN 6921, EN 1665 and ISO 4162

Objective:

- Viewers will learn the differences between the various types of hex flange bolts offered in the different standards.

Essential Questions:

- What are the three types of hex flange bolts?
- How are they identified and how do they differ from each other?
- What else should be noted when asking for hex flange bolts?

Standards:

- DIN 6921, EN 1665, ISO 4162

Lesson Plan:

Engage (30 sec)

- Welcome back to Eurolink's Metric Fastener Standards Comparison VLOG series. I know it's been a couple weeks. With all the craziness of the Thanksgiving Holiday and coming back from that, I had to attend to some other priorities, but now I'm back! At least for a couple more weeks before the Christmas and New Years holiday craziness.

So... guys, your ISO/DIN "guru" (I guess) made a mistake. Yup, it's easy to do, especially with the items we are going to talk about today. So, let me tell you my mistake so that you don't do the same.

- I had a customer looking for a DIN 6921 part, but I was offered ISO 4162 by my vendor. Now in my flu-stricken mind (that's right, I'm going to blame it on being sick), I was thinking DIN 912 / ISO 4762, which for all intents and purposes is identical (we will talk about them more in our socket series starting in 2020), and did not do my due diligence to ensure they were equivalent, therefore I misquoted and it bit me on the ass, as my customer was ready to make the purchase.
- Fortunately, we caught the mistake before the order was actually placed, but misquoting is never a good look.
- So what exactly are the differences between DIN 6921 and ISO 4162? And how does EN 1665 also compare? Well, let's get nerdy...

Explain (2 min)

- First of all, DIN 6921 is a hex bolt with flange. It can come in two main varieties serrated and non-serrated. I suggest always noting which variety you want specifically on your RFQs. Otherwise you may order the wrong thing (which I've seen green purchasing agents do many times) – so that's trap #1, note whether or not you want serrated, that'll save you some time and possibly a lot of money.
- Trap #2 – DIN 6921 IS NOT equivalent to ISO 4162 or EN 1665. Even though the DIN 6921 standard technically has been withdrawn and replaced by EN 1665, the two standards do have some different dimensions. Between these two, the head heights have changed almost across the board and the WAF (width across the flat) has changed on sizes M10, M12, M14, M16 and M20. The flange diameter itself has not changed between DIN 6921 and EN 1665.
- Other changes between the DIN and EN are that 12.9 is no longer a standard material (i.e. it is highly unlikely anyone will have EN 1665 in 12.9 in stock) and the fine thread pitch standard has been omitted, therefore fine thread EN 1665 will not be possible from stock either.
- EN 1665 is often considered the heavy hex flange bolt as that standard has a taller head height than it's DIN 6921 counterpart and at those sizes mentioned previously (i.e. M10, 12, 14, 16 and 20) it has a larger WAF.

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- This is opposite of ISO 4162. ISO 4162, as I learned the hard way, is often considered the small series hex flange bolt, because, as you can probably guess, it's smaller in most head dimensions, except head height. Ironically, the small series actually has a taller head height than DIN 6921 (closer to the EN 1665), but both the flange diameter and WAFs are smaller than DIN 6921.
- So, whereas DIN 6921 and EN 1665 have identical flange diameters, ISO 4162 actually has smaller flange diameters.
- To simplify, for the same diameter bolt, EN 1665 is going to have the largest head dimensions, DIN 6921 is in the middle, and ISO 4162 is going to have the smallest head dimensions.
- Also, like EN 1665, ISO 4162 no longer recognizes class 12.9 nor fine thread pitch.

Extend (30 sec)

- So, that's it for today!
- We specialize in hard-to-find metric fasteners, which gives us a decent pulse on what people are struggling to find and I can say that finding DIN 6921 is becoming more and more difficult. I very rarely have to no quote an item, but those less common sizes of DIN 6921s have become almost impossible to find in stock anywhere in the world, so if you are looking for a small batch, then don't be shocked if the prices come back 10-20x what you've paid for them in previous years. They are probably being quickly manufactured, which can get quite costly per piece at relatively lower quantities.
- That said, Eurolink does have some great manufacturing partners in Europe who can give us awesome lead times, relative to most manufacturers, and it's going to be quicker bringing it in from Europe than from Asia. So, they can be a good option if you are really in a bind for these.
- The takeaway from today's lesson is that the EN 1665, DIN 6921 and ISO 4162 are not equivalents.
- EN 1665 has larger head dimensions than DIN 6921 and ISO 4162 has smaller head dimensions than DIN 6921.
- And both ISO 4162 and EN 1665 standards omitted class 12.9 steel and fine thread pitch.
- As always, feel free to contact me personally at london@eurolinkfss.com with any questions or, of course, requests for quotes.
- Also, all of the lesson plans for these episodes are now available on our website eurolinkfss.com. If you go to the news section, then VLOG, they will appear as you scroll down. So feel free to download these lesson plans for your convenience!