



The Phillips® versus JIS (Japanese Industrial Standard) Phenomenon

Does your Phillips® screwdriver “cam-out” and damage screws?
If so, it may NOT be a US Phillips® screw - it may be a “JIS” (Japanese Industrial Standard) type!
That is why you need Japanese Cross-Point Screwdrivers!

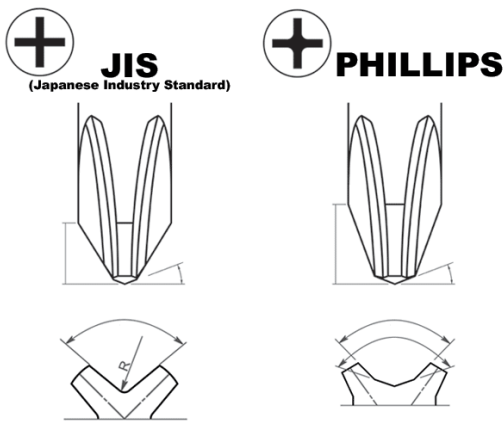
One of the most recognized types of manual hand tools in the US is the traditional Phillips® screwdriver. It's probably the most used driver in your toolbox when fastening cross-point screws. However, when using a Phillips® driver, do you experience “cam-outs” and damage screws; especially when working on Japanese brand products (motorcycles, automobiles, electronic equipment, office equipment, hobby remote control equipment, etc.)?

If so, then it may be a “JIS” (Japanese Industrial Standards) screw. A JIS and a Phillips® screw may look the same to the human eye but they have completely different profiles. Therefore, you'll need the correct tool for the job.

In 1936, Henry Phillips invented and patented the American Phillips® design. The Phillips® screw was a great solution for the automobile production lines since it was designed to “cam-out” after a certain torque was reached to prevent over-tightening of the screw. Also, unlike the flat head drivers, another advantage was that the Phillips® screwdriver's self-centering design allowed operators to engage the tip of the driver into the screw head very quickly and easily.

Just like the US, the Japanese engineers developed their own cross-point design. Similar to the Phillips®, the Japanese cross-point drivers also have the self-centering and quick tool and screw engagement. However, the key difference is that the “JIS” (Japanese Industrial Standard) design allowed torque and over-tightening to be controlled by the operator — not at the head of the screw.

Without magnification, it's very hard to distinguish a Phillips® versus a JIS screw. Some JIS screws can be identified by a single dot or dimple on the head of the screw. However, if the screw doesn't have a marking, then it's very difficult to identify one from the other. That's why it is important to choose the correct screwdriver for the job.



In reference to the diagram, you can see the difference between the two cross-point designs. The American Phillips® and the Japanese JIS profiles may look the same but they are indeed significantly different when you look at them under close magnification.

Due to the different profiles, the conventional Phillips® screwdriver's tip will not seat all the way down into a JIS screw head. One reason is that the corner radius at the cross-section on a JIS screw head is smaller than that of a Phillips® tipped screwdriver. Also, most JIS screws have a shallower cavity and since a Phillips® screwdriver has a longer tip design (versus a Japanese cross-point driver), it won't fit all the way down into a JIS screw. As a result, a Phillips® tip may not grip the sides of the JIS screw properly and will most likely cause the operator to “cam-out” and damage the screw.

On the other hand, a Japanese cross-point screwdriver fits both JIS and Phillips® screws perfectly. If you don't know what type of screw you are fastening, then we would highly recommend using a Japanese cross-point driver since it's universal for both screw types.

Overall, as a rule of thumb, when you are working on Japanese brand products, you will need Japanese cross-point screwdrivers to prevent cam-outs and to help prevent damaging screws.