



English proverb: "Bad workers always blame their tools"
French proverb: "Good workers take care of their tools"
Chinese proverb: "To do good work, one must first have good tools."
JPCI general quality rule :

4.7/ Polish or modify screwdrivers or small tools by anybody are prohibited.

4.9.2 Workers must have special care of equipment they use to avoid to destroy, scratch, break, etc... by misuse or mishandling.

Introduction

It is the responsibility of every worker to take care of their hand tools, and to ask for replacement if the tool is deteriorated, over used or broken. Our customers are very strict on the product appearance, and even if the hand tool is still working, it must be changed if there is any risk of product deterioration. Some examples here under.

Screw drivers and screw drivers tips

Screws are small, with small slots and require screwdrivers to be made of hardened and tempered steel or surface hardened to be strong enough to apply sufficient torque to the screw without the screwdriver tip breaking or deforming. Customers cannot accept the look of chewed and mauled screw heads. However, this form of damage can be easily avoided with a little bit of care and pride in your work. So the screw driver tip must:

- **Be heat treated and tempered.** This is the first reason why nobody is allowed to grind a screw driver tip: improper grinding will remove the heat treatment and the tip will loose its strength and hardness.
- **Be shaped correctly to maximize strength for its given size.** And minimize damage to the screw head slot, both for aesthetic reasons and also to allow the screw to be tightened correctly and be left in a condition where it can be undone again without risk of screwdriver slippage. This is the second reason why grinding a screw driver tip is not allowed. Any change in the tip size will damage the screw head slot.
- **Adapted to the screw head size and slot form :** It is vital to ensure that the size of the screwdriver tip matches exactly the size of the slot in the screw. Fit screwdriver tip width and thickness to fastener slot size.
- In the case of a flat tip,** blade width must be equal to the diameter of the screw and the tip of the screwdriver fits snugly into the slot. That way, the torque is distributed across as much slot as possible, minimizing the possibility of burring up the slot and disfiguring it.
- In the case of the crosshead screw,** Be careful not to confuse a Phillips head with other "cross point" heads like Pozidriv. They are not interchangeable. If a screwdriver that is not the right size and type for the screw is used, it will damage the screw.
- There are four basic sizes in each model:
 For Phillips screws they are: PH0, PH1, PH2, PH3.
 For Pozidriv screws, they are: PZD0, PZD1, PZD2.
 Do not drive a Phillips or Pozidriv screw with a conventional flat screwdriver.

- **Used correctly :**
- When tightening a screw, press the head hard into the screw, to avoid damaging the screw.
- The screwdriver must be held parallel to the vertical axis of the screw; it should never be tilted, for the tip may slide or jump out of the slot. A bent screwdriver blade cannot be kept in line with the axis of the screw and therefore should never be used.
- It must be kept centered in the slot. Any shifting of the blade will result in its slipping out of the slot. When using a screwdriver keep your hands behind the tip of the blade. If the screwdriver should slip it is very likely to do serious damage to the hand in front of it.
- Don't use pliers on the handle of a screwdriver to get extra turning power.
- Keep the screwdriver handle clean; a greasy handle is apt to cause an accident.

Main screw heads used in JPCI .JPCI :

Slot head

The simple slot is used for hand screwing, but there is a danger that the blade will slip out of the slot if the screwing action is careless or done with excessive force. It is not recommended for machine screwing applications. In JPCI we use it only for special applications or upon special customer request.



Pan head: Provides a low large diameter head
Filler head: has a smaller diameter than the pan head, but is higher with a correspondingly deeper slot. Used in connection blocks
Slotted headless: This type of screw is used as a calibration screw inside thermostats or controls shafts

Recessed cross heads

They have 2 slots at right-angles, forming a cross on the screw head. These slots do not extend to the edge of the head, limiting the slipping possibilities. The screwdriver will almost automatically fit in the head. These designs have more dispersed forces that allow the screws to be tightened faster.



Differences between Phillips and Pozidriv
 Pozidriv is similar to Phillips but designed not to slip, or cam out. It does not have the rounded corners that the Phillips screw driver has. Phillips screwdrivers will usually work in Pozidriv screws, but Pozidriv screwdrivers are likely to slip or tear out the screw head when used in Phillips screws. Pozidriv heads are marked with crossed, single lines at 45 degrees to the cross recess, for identification. JPCI should only use Pozidriv and not Phillips

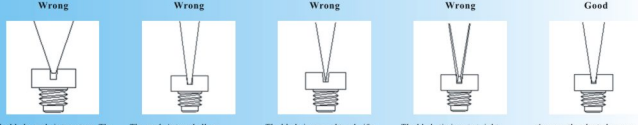
Hexagonal heads

Hexagonal socket headless, Hexagonal socket, Hexagon head, Square, Hexagonal, Nylon top



Hexagonal socket headless: Has a hexagonal hole and is driven by a hex wrench.
Hexagonal socket: Has a hexagonal hole and is driven by a hex wrench.
Hexagon head: Standard type of wrench-applied hexagon head. It has sharp corners trimmed to close tolerances.
Square: This nut is used inserted in plastic parts
Hexagonal: Standard nut
Nylon top: This nut has a nylon ring that avoid unscrewing by vibration

Right and wrong types of screwdriver shapes :



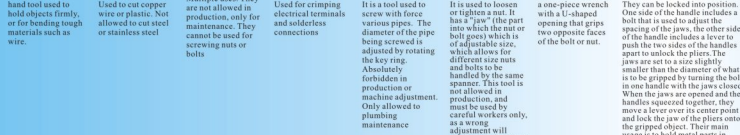
Wrong: The blade angle is too steep. The screwdriver will apply force to the edges of the slot burring them up, and it will also "ride up" the slot and slip out.
Wrong: The angle is too shallow, making the screwdriver weak and increasing the chance of breakage or slippage. The blade is resting on the bottom of the slot, making it liable to slip.
Wrong: The blade is ground to a knife-edge point, making it weak and also dangerous to use. Also, as above, the blade is resting on the bottom of the slot.
Wrong: The blade tip is not at right angles to the shaft, or the faces are not ground parallel. It will slip out of the slot.
Good: A correctly adapted screw driver blade.

Screw heads damaged by wrong screw drivers



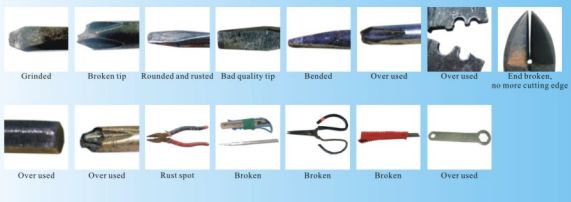
screwdriver too large in diameter has been used. A corner of the screwdriver has gouged out the plate leaving irreparable damage.
screwdriver of too small width was used, leaving the screw head burred up and unusable.
Wrong screw driver, leaving the screw head burred up (using a Pozidriv screw driver on a Phillips head)

Other tools



Needle nose pliers: hand tool used to hold objects firmly, or for bending tough materials such as wire.
side cutters: Used to cut copper wire or plastic. Not allowed to cut steel or stainless steel.
combination pliers: Multiple uses. They are not allowed in production, only for maintenance. They cannot be used for screwing nuts or bolts.
Crimping pliers: Used for crimping electrical terminals and solderless connections.
plumber wrench: It is a tool used to screw with force various pipes. The diameter of the pipe being screwed is adjusted by rotating the key ring. Absolutely forbidden in production or machine adjustment. Only allowed to plumbing maintenance.
Adjustable spanner: It is used to loosen or tighten a nut. It has a "jaw" (the part into which the nut or bolt goes) which is of adjustable size, which allows for different size nuts and bolts.
Wrench (also named spanner): a one-piece wrench with a U-shaped opening that grips two opposite faces of the bolt or nut.
Gripping pliers (also named locking pliers): They can be locked into position. One side of the handle includes a bolt that is used to adjust the spacing of the jaws, the other side of the handle includes a lever to push the two sides of the handles apart to unlock the pliers. The jaws are set to a size slightly smaller than the diameter of what is to be gripped by turning the bolt in one handle with the jaws closed. When the jaws are opened and the handles squared together, they move a lever over its center point and lock the jaw of the pliers onto the gripped object. Their main usage is to hold metal parts in place for welding.

Example of tools defects not allowed in JPCI



Grinded: **Broken tip:** **Rounded and rusted:** **Bad quality tip:** **Bended:** **Over used:** **Over used:** **Over used:** **Rust spot:** **Broken:** **Broken:** **Broken:** **Over used:** **End broken, no more cutting edge:**