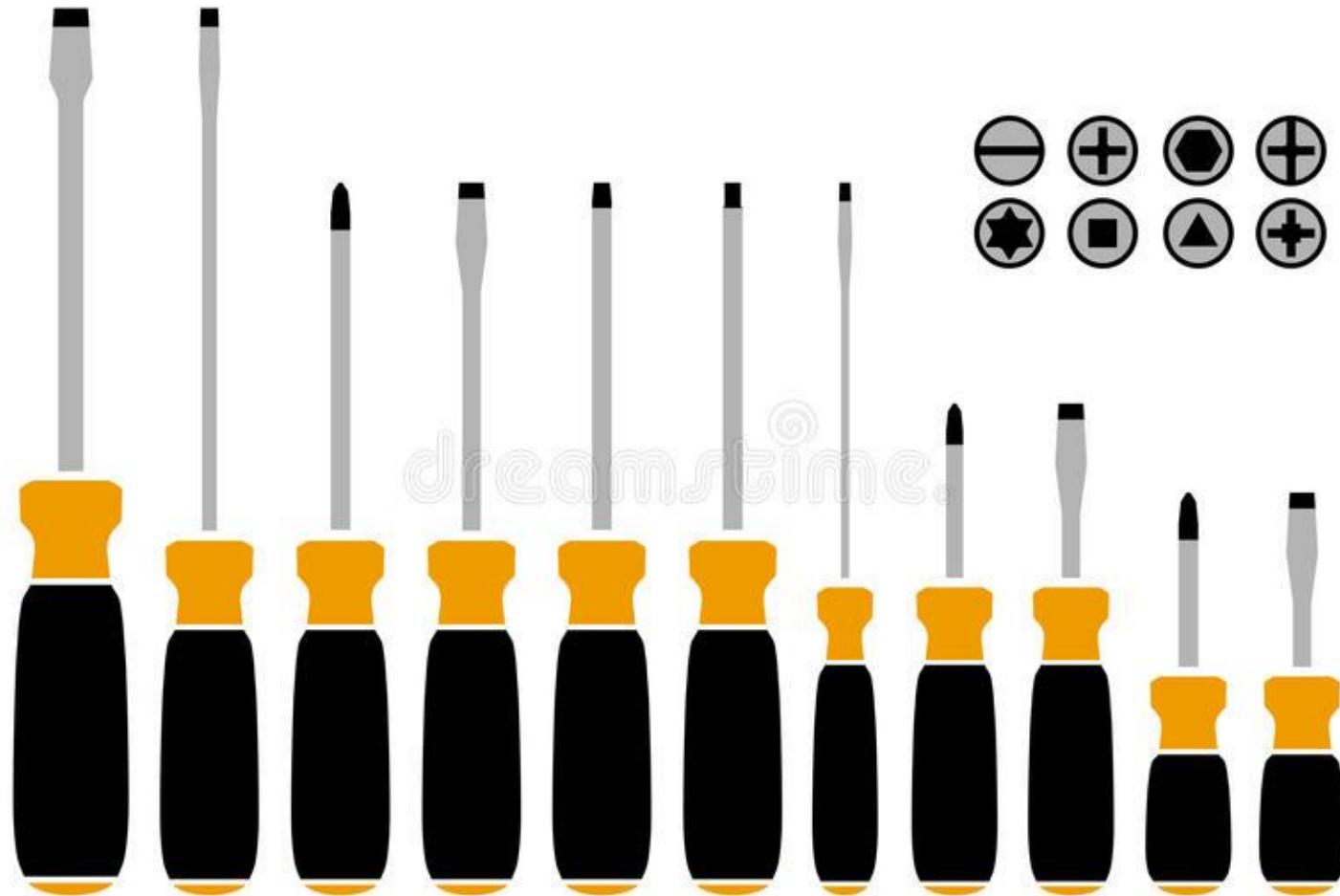


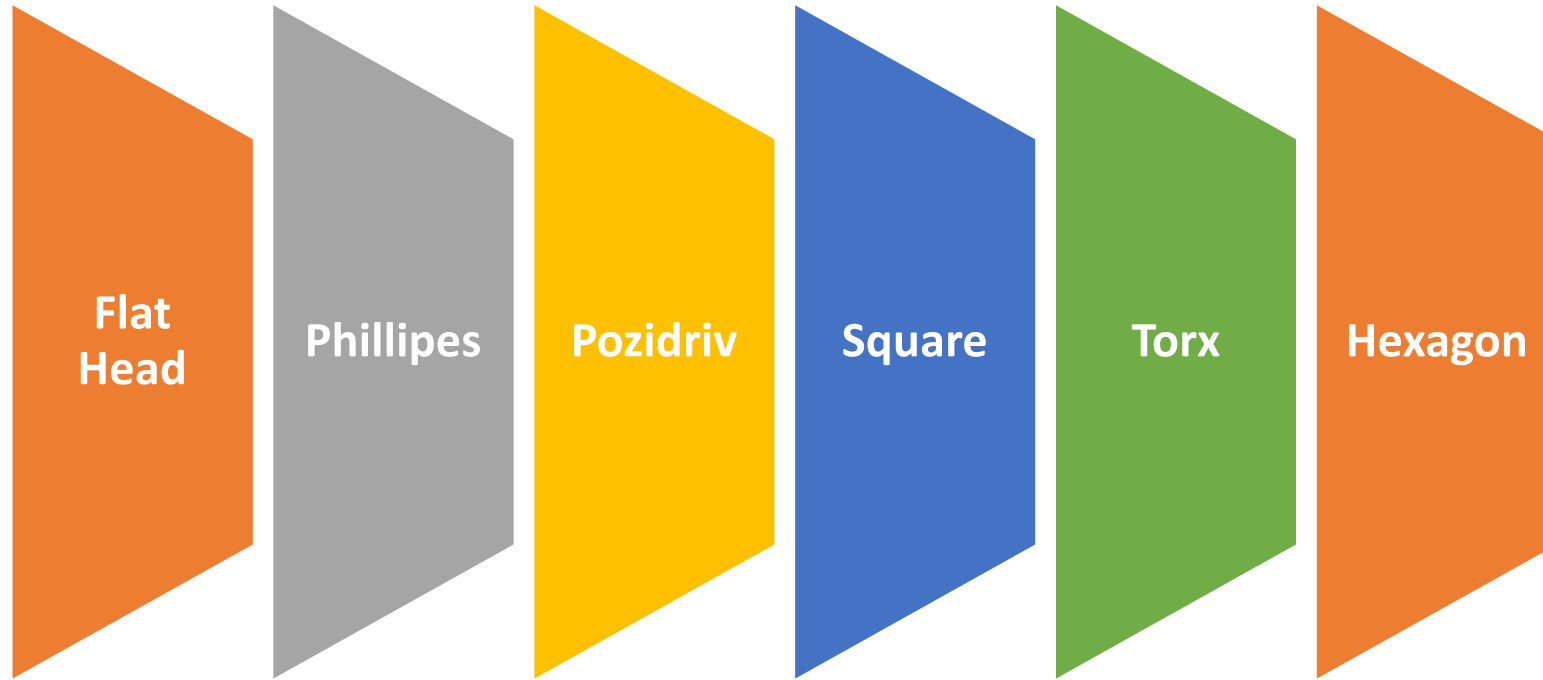
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SCREWDRIVERS



Definition

- **A screwdriver is a tool, manual or powered, for screwing and unscrewing (inserting and removing) screws.** A typical simple screwdriver has a handle and a shaft, ending in a tip the user puts into the screw head before turning the handle. The shaft is usually made of tough steel to resist bending or twisting. The tip may be hardened to resist wear, treated with a dark tip coating for improved visual contrast between tip and screw or ridged or treated for additional 'grip'. Handles are typically wood, metal, or plastic and usually hexagonal, square, or oval in cross-section to improve grip and prevent the tool from rolling when set down. Some manual screwdrivers have interchangeable tips that fit into a socket on the end of the shaft and are held in mechanically or magnetically. These often have a hollow handle that contains various types and sizes of tips, and a reversible ratchet action that allows multiple full turns without repositioning the tip or the user's hand




Types of Screwdriver

1. Flat Head (or Slotted Head) Screwdriver

It is one of the oldest types of screwdriver. It was invented in the 15th century in Europe and one of the most common types of screwdrivers. As the name suggest it has a flat shape shaft tip with a single slot which engages with the slotted screw head only. It can be manual driven or power driven, but not often power driven because slotted head has 'cam- out effect'. Now what does it mean?





Well 'cam-out effect' is a process by which the screwdriver tends to slip off from the surface of the screw head, when the torque applied on the surface of the screw exceeds a certain limit or sometimes due to lack of centring, which usually causes the damage to the screw head or screwdriver tip

They are of two types according to their application: keystone and cabinet. keystone screwdrivers have somewhat wider shaft tip as compare to cabinet type which makes it more applicable for the purpose like woodworking etc. while the cabinet one used for jewelry making, watch working etc.

2. Phillips Screwdriver

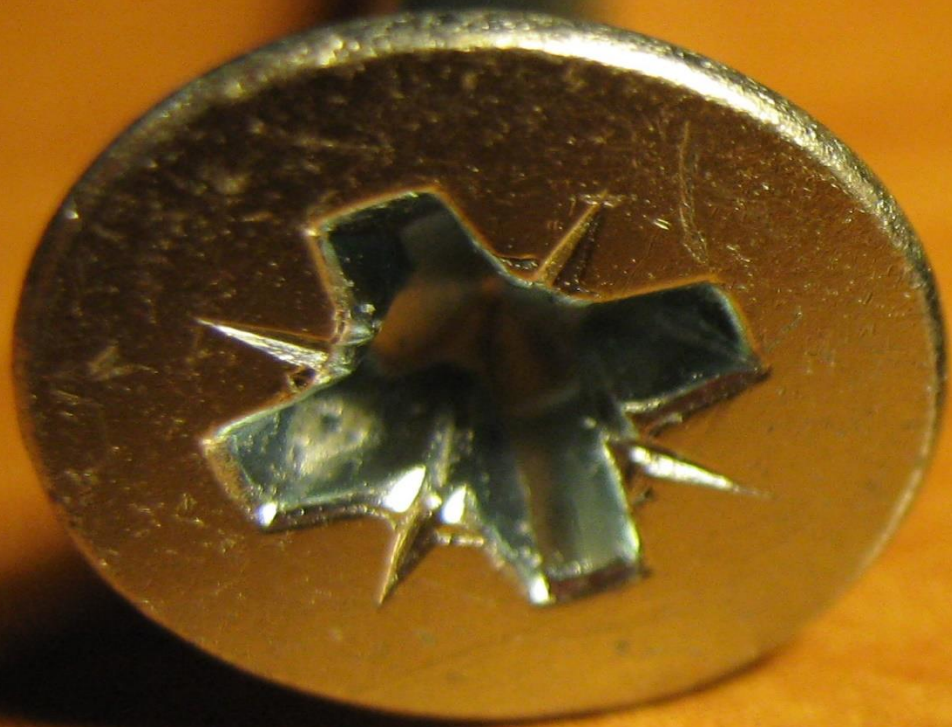
As today's world is moving from a manual driven to power or motor driven, these were the first step towards power driven screwdrivers to save time and do things more precisely and accurately. These were invented in 19th century by Henry Phillips with an aim to introduce the power driven screwdrivers in most of the industries. When you see these screwdrivers from the front, the tip looks like a cross sign. These types of screwdrivers also shows cam- out effect but it does purposely when the torque exceeds a limit while tightening up of screw which resist the damage of screwdriver profile and screw and clearly extends the life of the tool.



3. Pozidriv Screwdriver

The pozidriv screwdriver, unlike Phillips screwdriver, has two cross sign which are offset at 45 degree angles. These are designed and widely used in Europe. This shape doesn't completely overcome the cam-out effect but provide better resistance to slipping and offer more stability than Phillip profile, therefore used for the applications which require high torque for tightening of screw.





4. Robertson or Square Screwdriver

The square screwdriver also known as Robertson screwdriver, named after a Canadian inventor.

The engagement of quite tapered square shape opening screw with the square protrusion, with no angle involved, neglects the cam-out effect, thus improve centring. Slight Taper shape at the front of the tool provides a good locking with the screw and thus makes it more comfortable for use. These screwdrivers types were first used for industrial purpose by ford motor company, because these drivers speed up the production, reduce damages, and highly reliable.

These are very famous in USA and Canada but not in Europe.



5. Torx Screwdriver

Torx screwdriver is becoming very common and often used by automotive technicians. Many times they are called as star tips by technician. This driver has a star shape tip with 6 rounded lobes. Because of the circular geometry of the lobes there is low radial force in a torx screwdriver, which increases the life of the screw and the screwdriver bit. Unlike Phillips or pozidriv screwdrivers, much higher torque can be transferred with the same amount of force with no chance of tool slipping, even at high driving speed power tools, which makes its more reliable to use.

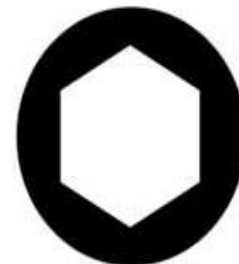
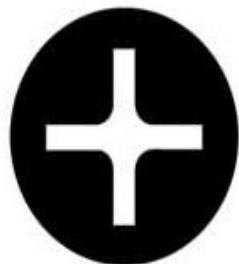
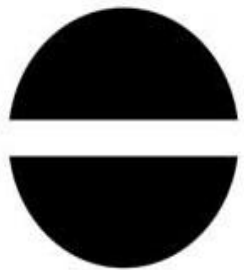
Torx types of screwdrivers comes in variety of sizes and uses a number system to determine the size of the tip like T8, T10, T15, T25 etc.as the number goes up, size of the tool tip increases.



6. Hex Screwdriver or Hexagon Screwdriver

It has six straight lobes, like hexagon. These are used to fasten often bolts rather than screws. You must have seen these bits in your ratchet box for tightening up or loosening hex bolts, nuts and screws. No slipping or cam-out effect takes place while driving this hence most of the power driver tools can be fitted with hex arrangement bits and thus makes the production fast and with less error





Slotted

**Cross Slot/
Phillips**

Pozidriv

Torx

Security T

Hexagon



Screwdriver safety

- **Every tool serves a purpose, but according to the National Safety Council, the screwdriver is perhaps the most misused and abused tool in the workplace. Misuse can compromise the integrity of the tool by breaking the handle, bending the shaft or dulling the tip, making workers susceptible to hand injury when the tool is used correctly. To prevent injury and keep screwdrivers in shape, the council recommends:**

- **INTENDED FOR ONE PURPOSE ONLY**
- **The screw driver is intended for one purpose only-to loosen and tighten screws. It's not only important to know what a screw- driver is used for, but how to take care of it and use it properly. The following suggestions will enable you to make the best use of this tool.**
- **PROPER CARE OF SCREWDRIVERS**
- **Repair screwdrivers that are badly worn or have bent or broken tips. Grind or file the blades square so that the sides that engage the screw are parallel. Be careful not to remove the temper from the blade during the grinding, or it will become soft. A sharp, square-edged blade will not slip as easily as a worn, dull, rounded one.**
- **Replace a broken handle. A broken or damaged handle is not only difficult to hold, but you risk cutting yourself or getting a splinter or blister.**
- **Keep the tool free of dirt, grease, or burrs.**

- **PROPER USE OF SCREWDRIVERS**

- **Select the proper size screwdriver for the screw, so that the thickness of the blade makes a good fit in the slot. This not only prevents the screw slot and blade from being damaged, but reduces the force required to keep the tool in the screw head. Clean the slots out with a corner of the screwdriver if they are clogged with paint or other debris.**
- **Keep the screwdriver square with the screw head. You will avoid damaging the screw and lessen the possibility of the screwdriver slipping.**
- **Never use pliers on a screwdriver. Instead, use a square shank screwdriver that is designed for use with a wrench.**
- **Always use a vise or place small work on a firm, flat surface. If you hold the work in your hands, you can get a painful injury if the screwdriver slips.**

- **Never hammer with the screwdriver handle, nor use the screwdriver as a pry, punch, chisel or lever.**
- **Never use screwdrivers for electrical work if they have the blade or rivet extending through the handle. Use only insulated screwdrivers designed for that purpose.**
- **If you have a Phillips head screw, use a Phillips screwdriver. Don't use a small standard screwdriver or a large screwdriver held at an angle.**
- **Screwdrivers come in various lengths for different jobs. Select the right length so that your hands are working in the clear and not in danger of striking obstructions as you turn the screwdriver.**

- **Do not use a screwdriver as a punch, wedge, pinch bar or pry.**
- **Keep the tip clean and sharp to permit a solid grip on the tip of the screw.**
- **Keep the handle of the screwdriver clean and intact to allow for a solid grip.**
- **Never hold the piece you are working on in your hand. Always lay it on a workbench or place it in a vice.**
- **Carry screwdrivers in toolboxes or work belts – never in your pocket. In wood and sheet metal, make a pilot hole for the screw.**
- **Never use a screwdriver during electrical work unless it is properly insulated**



TODAY'S AMAZING FACT???????

General Electric's G90 is the biggest engine ever manufactured in human history



Any questions ???



धन्यवाद