

# Be Clock Wise!

Clockwise and Counterclockwise are commonly used to specify which direction to rotate an object, but they are easily mixed up!

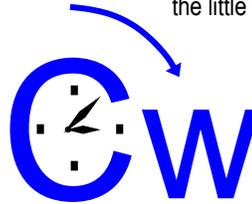
## Counterclockwise

Move left to the little "c"



## Clockwise

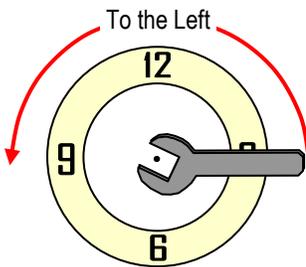
Move right to the little "w"



"Wise" rhymes with "Right"  
ClockWise  
ClockRight.

## Left-Right Paradox

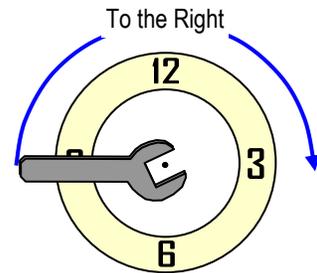
The general perception is cCw moves left and CW moves right. But at the *bottom* of the clock, each move in the *opposite* direction!



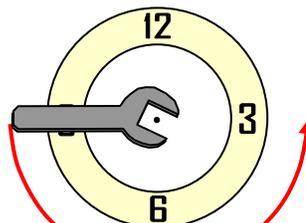
cCw



Face  
CLOCK  
...  
Rotate  
(through)  
TOP!

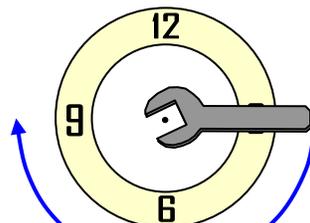


Cw



To the Right

No matter which hour you start from, imagine passing through 12 o'clock to determine CW or cCw rotation.

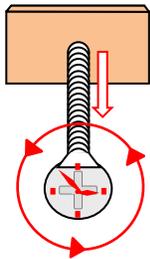


To the Left

# Standard Bolt/Screw Rotation

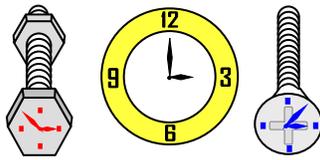
Right to Tighten, Left to Loosen!

## Lef-top to Loosen



The traditional saying is "Left to Loosen."  
Lef-top reminds you to rotate cCW *left* through the top of the clock.

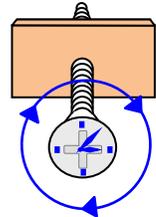
Unscrew



Imagine tiny clocks painted on bolt & screw heads.

## Righ-top to Tighten

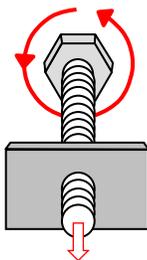
The traditional saying is "Right to Tighten."  
Righ-top reminds you to rotate CW *right* through the top of the clock.



Screw in

When viewed from the back side, *reverse* the rotations!

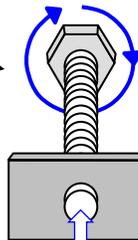
This is equivalent to "Righ-top to Tighten" when viewing bolt/screw face.



Bolt in



A clock on the far side of the bolt/screw head would be reversed from your point of view.

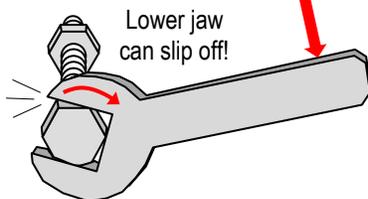


Bolt out

This is equivalent to "Lef-top to Loosen" when viewing bolt/screw face.

## Working Tips

**Dangerous!**



Lower jaw can slip off!

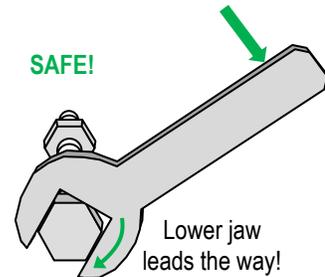
### Lead with Lower Jaw

Place your wrench on a bolt or nut so the lower jaw leads the way of your turn.

This is especially important with an adjustable crescent wrench whose loose lower jaw can easily slip off the bolt head if it follows behind.



**SAFE!**



Lower jaw leads the way!



### Drill Pilot Hole

To make it easier to insert a screw into wood, metal, or plastic, drill a pilot hole into the object slightly smaller than the screw diameter.



### Use Screwdriver Drill Bit

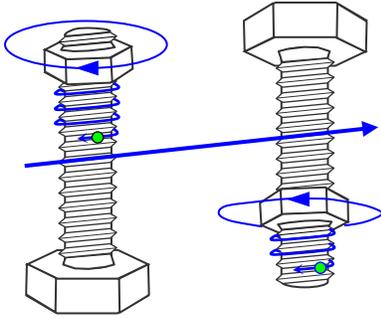
Purchase a set of screwdriver bits that you can insert into your electric drill to make it easier to screw in multiple screws. To unscrew items, reverse the drill rotation.

# Reverse Thread Rotation

A ball rolling down and around the grooves of a bolt's metal threads illustrates how a nut would move when turned in the same direction.

## Standard Threads

Slant UP to the RIGHT.  
They have UPRIGHT characters!  
Righ-top to Tighten, Lef-top to Loosen



Get a nut and bolt and experiment to observe how they rotate.

## Perspective

Cw and cCw depend on your point of view.

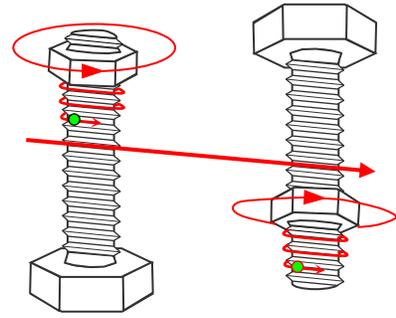
Normally, you'd view a bolt from its *head* in order to determine the direction of rotation.

But if you're viewing the bolt from its *tip* and focusing on the nut, whichever direction the nut rotates, the bolt rotates in the *opposite* direction.

This all can be a bit mind boggling, so pick one perspective and stick with it.

## Reverse Threads

Slant down to the right.  
They are "downright" unusual!  
Reverse the normal directions.



A portable fan shaft is typically reverse threaded so the rotating blades won't spin the nut off.



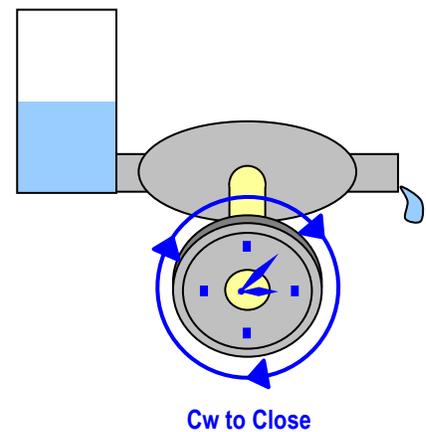
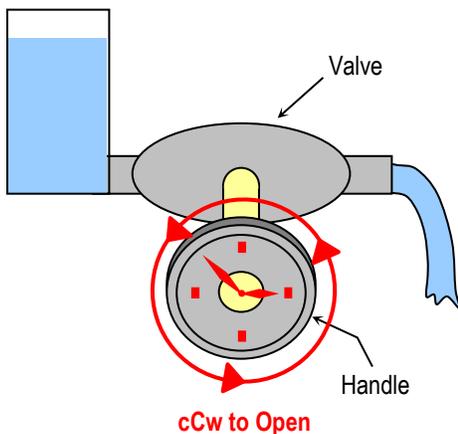
## Valve Rotation

Clockwise to Close!

### Open then Close An Eighth

If you leave a valve open *all* the way, there is a danger that someone, not knowing it's already open, may think it's stuck and try to force it "open" and break it.

To avoid this, after you open a valve all the way, close it slightly, about 1/8 turn. That way anyone attempting to "open" it can turn it a bit and realize it's already open.

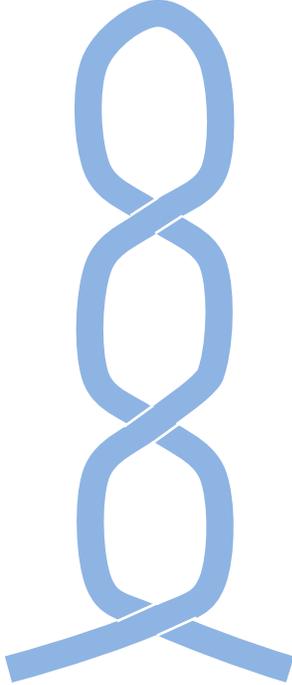


If viewing a valve from its back side, reverse the turning directions!

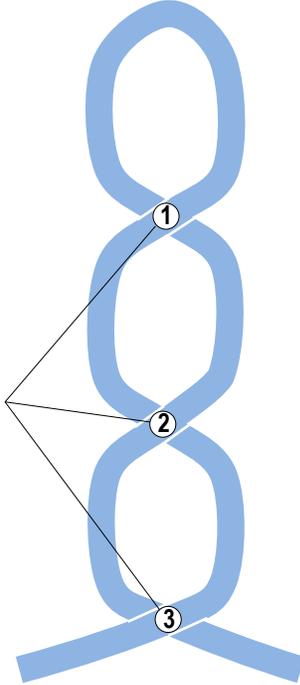
# Twist Rotation

Twist opposite to untangle.

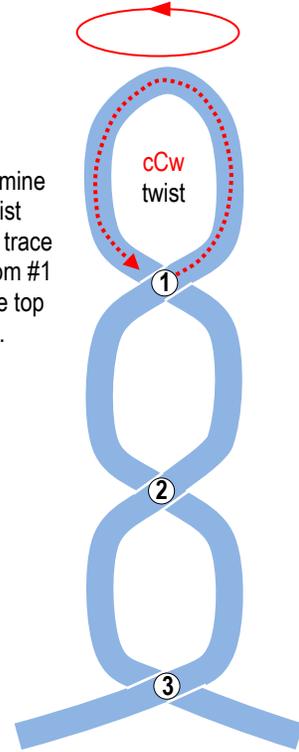
Was this twist created with a Cw or cCw rotation?



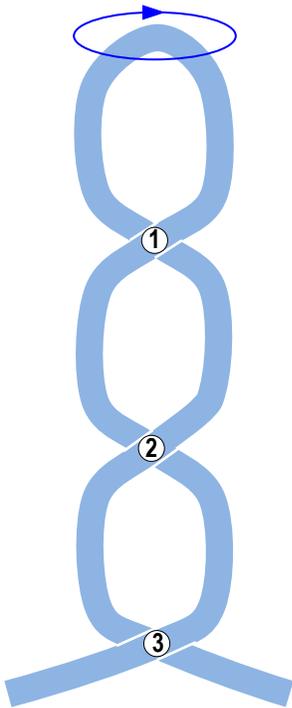
Mentally number the top strand of each crossing.



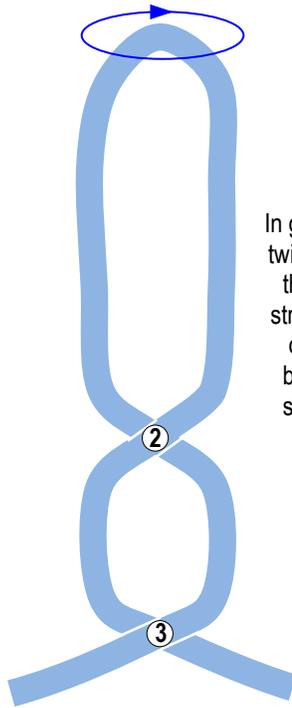
To determine the twist direction, trace a path from #1 along the top loop.



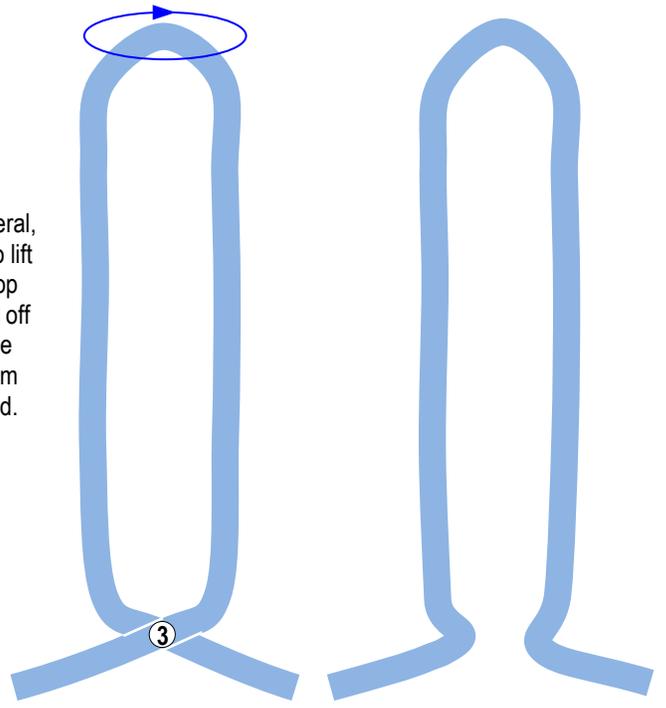
Twist the #1 crossing Cw to untangle it.



Twist the #2 crossing Cw to untangle it.



Twist the #3 crossing Cw to untangle it.



In general, twist to lift the top strand off of the bottom strand.

**For a twist created with a Cw rotation, twist cCw to untangle it.**