

## Figure Eights

Learning figure eights is a popular way to begin forward flight, and learn different orientations (such as nose in). It's how I progressed from hovering, and I recommend it to beginners.

Figure eights begin as slow hovers between two points, and can end up as as full speed banked-right-up-on-the-rotor-tips manoeuvres. Full speed figure eights are endless amounts of fun no matter how good you are!

Anyway, lets get back to grass roots. Wander out to your helipad and pick two points about 4 meters either side of your landing spot. You're going to start hovering between these spots to start with.

### Hovering Eights

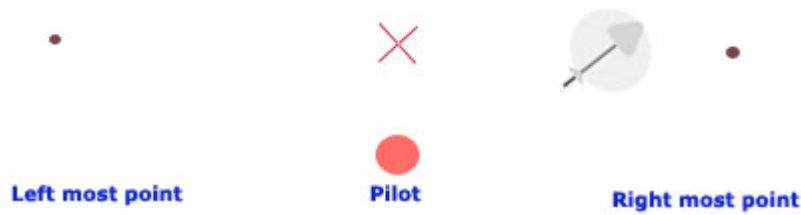
Go get your helicopter and lift off into a hover. Then slowly start moving the helicopter to the right-most spot. Once it's over that spot, give it opposite cyclic so it starts moving towards the left-most spot. The objective here is to make the helicopter move smoothly between the two points without losing, or gaining too much altitude and staying pretty much on the flight path.

Keep doing this until you can sustain a consistent flight path.

### Incorporating rudder

Right, so you can hover between these two points ok, now, as you get over each point, use the rudder to start pointing the helicopter in the direction of the other point. At first, point it in a 45-degree angle towards the direction of flight and try to maintain a smooth consistent flight path. An example of this is displayed below.

## Hovering Eights



*You can see the helicopter moving towards the right most point at a 45-degree angle. As you become confident with this orientation, keep moving the nose of the helicopter around until it's pointing in the direction it should be flying.*

Once you can fly the machine between these two points with the nose pointing in the direction of flight, it's time to move on and start doing some REAL figure eights.

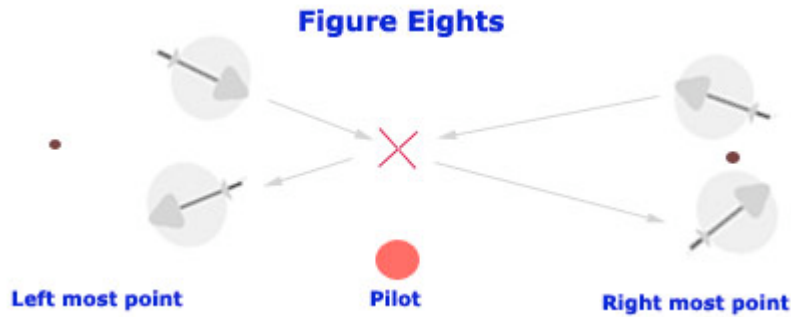
Now you have to start flying AROUND the points!

### Relationship between cyclic and collective controls

You may have noticed that the more cyclic control you put in, the more the helicopter will start to descend towards the ground. To counteract this, i.e. keep the helicopter at the same altitude, you have to feed in a little extra collective to compensate. Be careful though, if you feed in too much, the helicopter will climb as it starts speeding away! Not enough, and the heli will continue to descend.

As the helicopter picks up speed, the relationship between cyclic and collective controls becomes more apparent. You have to get used to this relationship, it's essential for fast forward flight.

Start out by doing these figure eights slow. Hover the helicopter around the course using the rudder to manage heading. As you get more confident and pick up more speed, the amount of rudder used gives way to increased cyclic control.



*See that the helicopter now moves around the points instead of over them. After passing around each point, the helicopter crosses the landing pad.*

### Higher speed - steering by cyclic

As the helicopter starts to move faster and faster, you'll need to start navigating the helicopter by cyclic controls, i.e. bank the helicopter into the turn as you apply rudder. Now, it's not quite as easy as that, but this is how it generally goes...

#### Example: Helicopter flying into a left hand turn

1. Entering the turn, slowly move your cyclic control to the left.
2. As you're moving the cyclic to the left, slowly reduce pitch. The faster you're going, the more pitch you'll have to reduce.
3. As the helicopter starts to bank over, start applying left rudder to bring the nose around into the turn.
4. As the nose is coming around, the helicopter will be 'nosing down' and heading for the ground. To counteract this, slowly pull back on the cyclic control as you're adding rudder to bring the nose up a little. Again, the faster you're going, the more you'll have to pull back - or, if you want to tighten the turn, pull back some more.

Start practising this by flying your figure eight course. Start off by hovering round the course and as you get comfortable,

increase the speed and begin to utilise the steps described above. As you get faster, the more impact those steps will have.

Often when you're learning the helicopter might not stay on course over the figure eight because you haven't got the co-ordination between all the steps just right. Don't worry, just bring the helicopter back and start again.

Figure eights are very important and handy for improving flying skill and orientation. Once you have mastered figure eights, fast forward flight isn't too much of a step up.

Keep doing figure eights and as you get comfortable go faster, higher and further, and in no time, you'll realise you're flying all over the sky!

Figure eights are tonnes of fun, one of my more popular events at fun flies is to set up a figure area and see how many figure eights a person can do in a specific time. Lotsa fun!