

Master Ball



a.k.a. Duo Master

Patented by Geza Gyovai 1989.

(3.25 inches)

The three basic moves are a north or south *pole* 45 degree turn, an *equator* 45 degree turn, or one of the four *longitude* 180 degree turns. Solve the rest of the puzzle first and then solve the poles by interleaving pole turns with pairs of longitude turns; or, solve the poles first and then as you do the rest maintain the poles solved (or in solved halves that can be fixed at the end). The *NS pattern*, where the top half is white and the bottom half black, is easy to visualize and not hard to do once you have worked with the puzzle a bit.

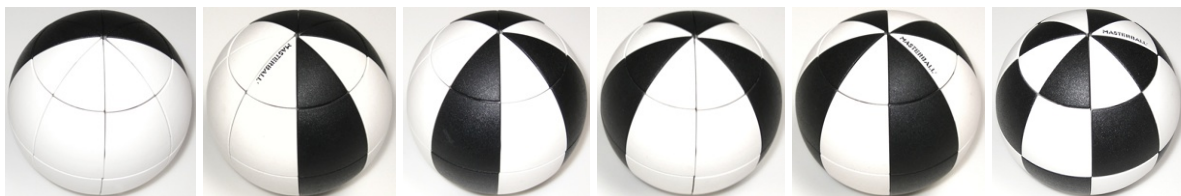
From NS, one longitude turn followed by one equator 180 degree turn gives EW:



From EW, the following sequence gives a rectangular checkerboard:



Or, the use four steps to get the "slice" pattern, and one more to get the "checkerboard":



USA Master Ball

Like the standard MasterBall, except with stars on one pole (has no significant effect on solving) and the letters U, S, A on three of the center white tiles. Two possible solutions are shown below. On the left is the *slice pattern* (the A is on the next white slice to the right of the S), and on the right is the *NS pattern*, and in the middle is a pattern than can be used to go from the left to the right, as described below.



Solving the slice pattern with letters arranged:

1. Ignore letters and solve checkerboard as for the standard ball.
2. With the checkerboard pattern, longitude 180 degree turns and equator 90 degree turns preserve the checkerboard pattern; so it is easy to permute the center white tiles to put the U, S, and A tiles where ever you want.
3. Do a 45 degree equator turn to restore slices, and fix the poles.

Solving the NS pattern with letters arranged, method 1:

1. Starting with the slice pattern, rearrange the letters (using step 2 of the slice pattern solution above) to the position shown in the middle photo above.
2. Reverse the NS to slice pattern transformation of the standard master ball by starting with the U to the left of the plane used for the first longitude turn.

NOTE: For a different transformation for slice to NS, the correct starting position can be determined by marking the center white tiles and seeing where they go when you do your transformation.

Solving the NS pattern with letters arranged, method 2:

1. Ignore letters and solve NS pattern as for the standard ball.
2. *Jaap's Page* gives the transformation below to exchange two tiles, which can be applied repeatedly to rearrange the center white tiles as needed; a vertical arrow is a longitude rotation and a horizontal arrow an equator rotation:



Rainbow Master Ball

Once solving the standard and USA versions has been mastered, this is not too much harder. Again, poles can be solved separately. Then, one approach is to get the top and bottom halves to each have one of each color, and then use method 2 for the USA Masterball (which also has the effect of exchanging two bottom tiles) to make tiles to line up from top to bottom.



a.k.a. Geo Master

Other Versions of Master Ball

The Master Ball has been made with many different graphics (*Circus Master*, *Dragon Master*, *Soccer / Football Master*, *Tennis Master*, *Cat Master*, *WWF*, etc.), including promotional versions (e.g. *Paramount Pictures IQ*), making the puzzle a bit harder than the rainbow version by making all sections unique.

Jaap's Page presents a general solution.



Circus Master



Soccer / Football Master

Further reading:

Jaap's Page, from: <http://www.geocities.com/jaapsch/puzzles/master.htm>

Gyoval Patent (U.S. 4,856,786).