3x3x3 cube
Easy method

Version 2. Updated on 21st April 2016.

Contents

Introduction

Before keeping on reading this guide we recommend to read the notation of the 3x3x3 cube. You can find it at:

www.iberorubik.com

This method is similar to Fridrich method in the first steps. Once the edges are solved, the steps are different.
This mehod has 7 steps:

- Step 1: To face cross.
- Step 2: Corners of the face where the cross is located.
- Step 3: Edges of the equator layer of the cube.
- Step 4: Bottom face cross.
- Step 5: Edges of the last layer.
- Step 6: Corners of the last layer.
- Step 7: Permutation or the last layer corners.

In this case we say "permutation" when the piece (corner, in this case) is placed in the right place, but with the wrong orientation. For instance:
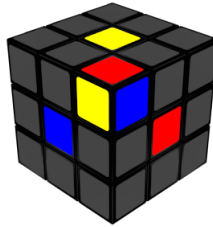
As default, the faces seen in every Figure are:
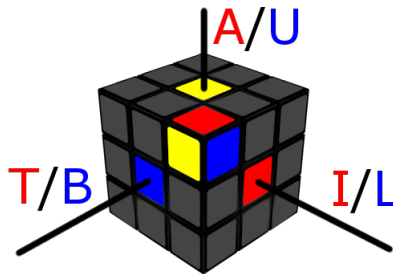
1 Cross of the top face

In this step we will create a cross in one face of the cube. This face will become the top face (letter **U**). Although detailed instructions are shown here, intuition is essential in this step and we recommend practice over memorizing.

We choose a colour by selecting a face center and look for an edge piece containing the colour of the selected face. There are several cases:

1.1 Edge piece located on the top of the cube

We can deal with two possibilities:

- If the sticker of the selected colour is in **U**:

  Just turn the **U** face until the center pieces match the colours of the edge.
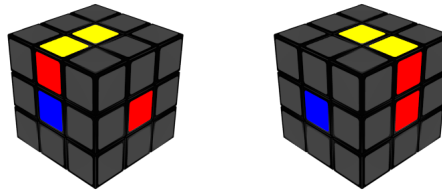

Figure 1: Left: Before turning **U**. Right: After turning **U**.

- If the sticker of the selected colour is not in **U**:

  Rotate the cube until the edge is in **F** and do **F' L D L'** so that the edge is placed on the bottom. Then turn the **D** face to make one of the colours match the face center. Turn the cube to place this center and this edge in the **F** face. Finally, do a 180º turn (**F2**).
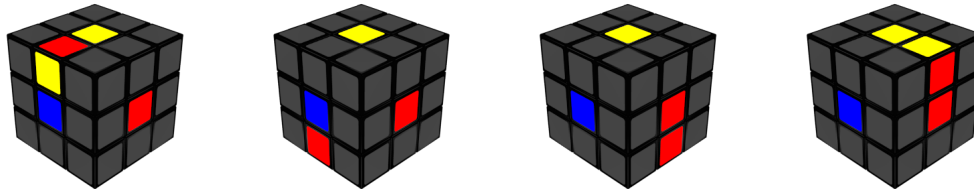

Figure 2: 1st: Starting situation. 2nd: After **F' L D L'**. 3rd: After **D**. 4th: After **F2**.

1.2 Edge piece located on the equator layer of the cube

Rotate the whole cube until we see the edge in **FR** (that means, in the front face on the right). We can also have two possibilities:

- If the sticker of the selected colour is in **F**:

  Do **R' D' R**, with this algorithm the edge will be on the bottom, in the **F** face. Turn **D** to make one of the colours of the edge match the center of the face. Rotate the cube to see this edge in the front face, and do **F2**.
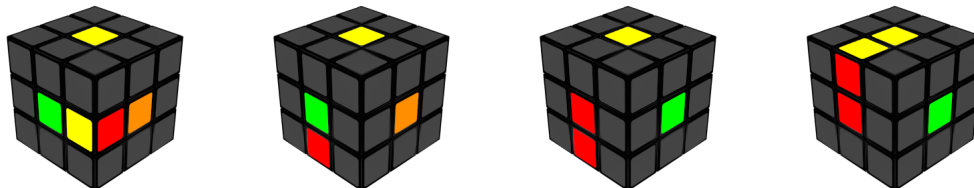

Figure 3: 1st: Starting situation. 2nd: After **R' D' R**. 3rd: After **D**. 4th: After **F2**.

- If the sticker of the selected colour is in **D**:

  Do **F D F'** , turn the **D** face to let it match its center and rotate the whole cube to place the edge and the center piece in **F**. After that, do **F2**.
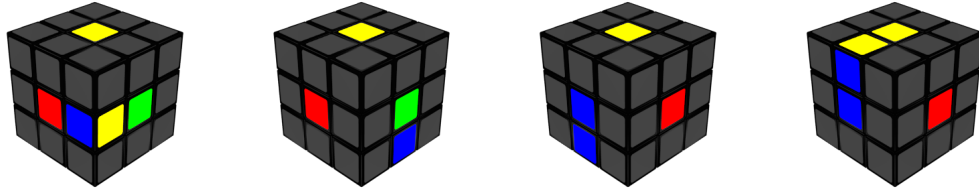

Figure 4: 1st: Starting situation. 2nd: After **F D F'**. 3rd: After **D**. 4th: After **F2**.

1.3   Edge piece located on the bottom of the cube

Rotate the cube until the edge is in **FB**. We can find two possibilities:

- If the sticker with the colour of the cross is on the bottom (**D**), the only thing to do is turn D until the edge and its center match. Then do **F2**

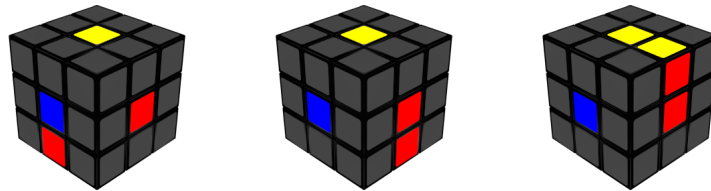Figure 5: 1st: Starting situation. 2nd: After turning **D**. 3rd: After **F2**.

- If the sticker with the colour of the cross is in F, do **F L D L'** and turn **D** to match the edge and the center. Rotate the whole cube to place these pieces in **F** and do **F2**
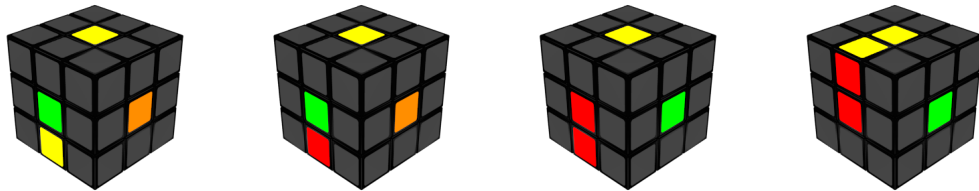

Figure 6: 1st: Starting situation. 2nd: After **F L D L'**. 3rd: After **D**. 4th: After **F2**.

2   Placing the top layer corners

In this step we have to find and place the corners in the right place, so that the colours of each corner match the colours of each face. After doing this, the top layer will be done.

- Put the cube with the cross on the top. The corner to start with does not matter, but it must be placed on the right (position **URF**).

- Search the corner that should be in that position. To apply the algorithms, the piece must be in the bottom layer, just below its place in the solved cube (position **DRF**).
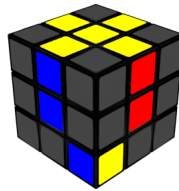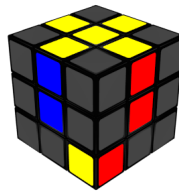
In case the piece is on top, some movements are needed to move it to the **D** face. Place the piece in **URF** , and do: **R' D R**. Once this step is done, we place the corner below its position in the solved cube (position **DRF**).

There are 3 possibilities:
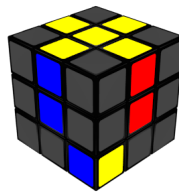
1. If the sticker with the colour of the cross is in the **F** face, do:

<div align="center">

D' R' D R

</div>
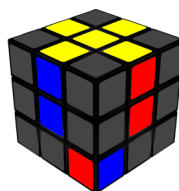
2. If the sticker with the colour of the cross is in the **R** face, do:

<div align="center">

D F D' F'

</div>

3. If the sticker with the colour of the cross is in the **D** face, do:

<div align="center">

R' D2 R D2 F D' F'

</div>

3   Placing the second layer edges

For this step let's turn the cube upside down, placing the solved layer on the bottom. Here there are also three different cases. The "gap" of the edge to place must be in **FR**. Then find the edge that should be in that gap.

The three cases are:

1. If the sticker of the **F** colour is in **U**, turn the **U** face until the piece is in the back (in **UB**). After that, do:

<p align="center">F' U F U R U' R'</p>
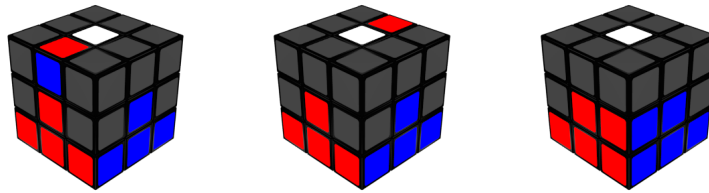
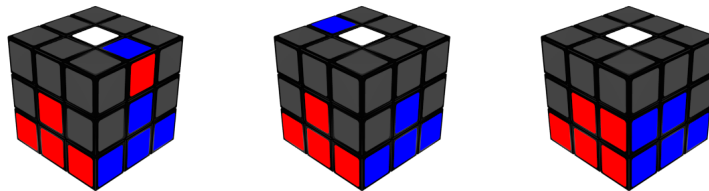2. If the sticker of the **R** colour is in **U**, turn the **U** face until the piece is on the left (in **UL**). After that, do:

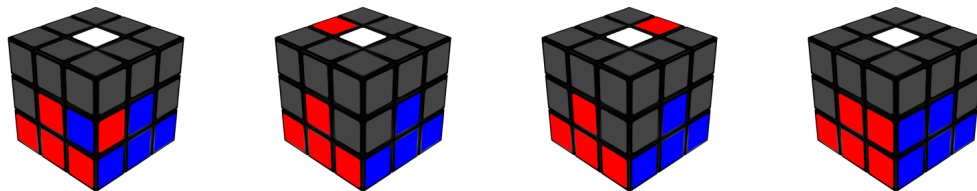<p align="center">R U' R' U' F' U F</p>

3. If the edge is in its place, but badly permuted, do:

<p align="center">F' U F U R U' R' U F' U F U R U' R'</p>

This movement implies doing the first one, turning the **U** face and repeating again the algorithm.

4 Bottom cross

Once again, there are 4 different cases. Depending on the movements done before, we have one of these three options:

- One line of three stickers.
- One "L" of three stickers.
- Only the center sticker.
- An already done cross.

In other cases we have to ignore some stickers of the same colour to visualize the line or the "L". To see the figure the only thing to do is turning the **U** face until its position is right.

4.1 Three stickers creating a line

In case we have 3 stickers creating a line, place said line in parallel with the **F** face and do:

B' R' U' R U B
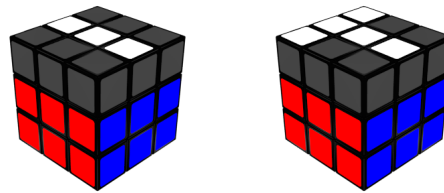

Figure 7: Left: The line is unmistakable. Right: We have to guess it.

4.2 Three stickers creating an "L"

If 3 stickers determine an "L", turn the **U** face so that one of the stickers ends up in the position **UB** and the other in **UR**. Then do:
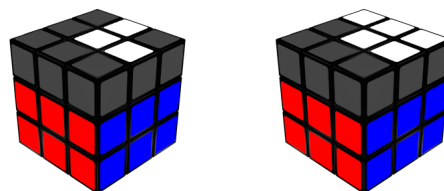
L U F U' F' L'

Figure 8: This works the same way as the other case. Left: The "L" is clear; Right: We must imagine the "L".

4.3   Just a sticker in the center of the face

In this case, do:

L R' U F U' F' U' F' U' F U L' R

Another option is to do the line movements (although there is no line here) and then apply the "L" algorithm; that is:
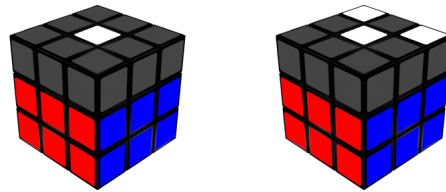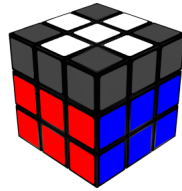
(B' R' U' R U B) (F U R U' R' F')

Figure 9: Left: Just one sticker in the center. Right: The other stickers must be ignored.

4.4   Cross already done

If we already have a cross, we do not do anything else and skip to the next step.

5 Permutation of the edges of the last layer

Ther are 2 cases. Turn the **U** face until you get one of those:

5.1 One edge well placed

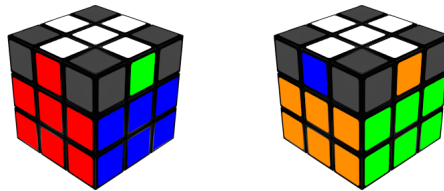Rotate the whole cube so that the face with the well placed edge is in **B**:

Figure 10: Left: Situation of the cube before rotating it. Right: The cube after the rotation. The edge well placed is now in **B**.

- If a clockwise turn is needed (that means that the edge of the **R** face must be in **F**), do:
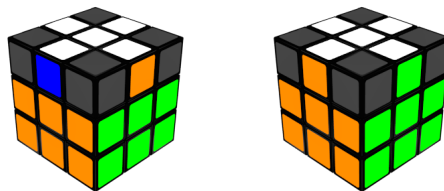
L U2 L' U' L U' L'

Figure 11: Left: Before applying the algorithm. Right: After applying the algorithm.

- If a anticlockwise turn is needed (that means that the edge of the **F** face must be in **R**), do:
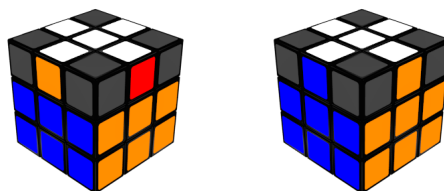
L U L' U L U2 L'

Figure 12: Left: Before applying the algorithm. Right: After applying the algorithm.

5.2 Two edges well placed

Here we can do two things. The first and longer option is to reproduce one of the algorithms explained above; the result will be a single edge in the right place and we will apply the algorithm for that case. The other option implies learning another algorithm by heart. Take the cube with one of the egdes well placed in the **F** face (the other edge will stay in **B**), and then do:
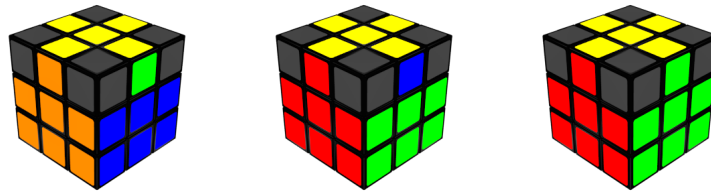
R' F R F' B' R F B' R F' R' B2 U2

Figure 13: Left: The edge of the front face is in the right place. Center: So is the edge of the back face. Right: Situation of the cube after applying the algorithm.

6 Placing the corners of the last layer

This step consist of placing the corners in the right places, although the pieces are turned around themselves. Here there are 4 cases:

6.1 One corner well placed

If there are one piece well placed (well permuted or not) place the cube so that it stays in **UFR**. Then look from the top at the **UBL** corner:

- If a clockwise turn of the upper layer was needed to place it in the right place (that means, the **UBL** corner should be in **UBR**), do:

<p align="center">L' U R U' L U R' U'</p>
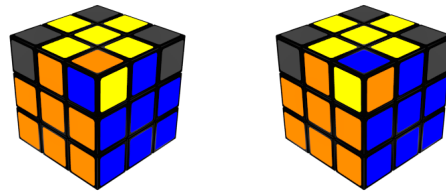

<p align="center">Figure 14: The corner must be turned clockwise.</p>

- If a counterclockwise turn of the upper layer was needed to place it in the right place (that means, the **UBL** corner should be in **UFL**), do:

<p align="center">U R U' L' U R' U' L</p>

<p align="center">Figure 15: The corner must be turned counterclockwise.</p>

After that, the corner remains well placed.

6.2 Parallel swap

If a parallel swap between two corners is needed (one corner piece is in the place of an adjacent corner, and vice versa), turn the cube to get the two "wrong" corners in the F face. In that position, the **UFL** corner must be in **UFR** and the **UFR** corner must be in **UFL**. do:

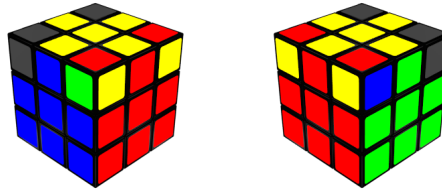**B' U' R' U R U' R' U R U' R' U R B**

Figure 16: Left: The corners to swap are located. Right: We turn the cube to place the two corners in the front face.

6.3 Diagonal swap

If a diagonal swap between two corners is needed (one corner piece is in front of where it should be, and vice versa), the position of the cube does not matter. Do:
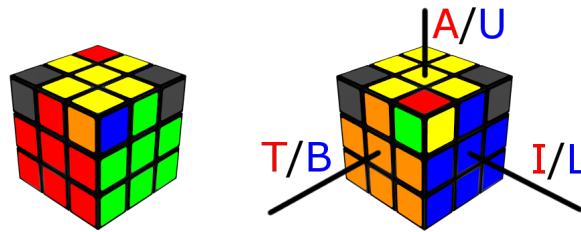
L R U2 L' R' F' B' U2 F B U2

Figure 17: Left: This is how a diagonal swap looks like. Right: Seen from the opposite face.

Obviously, if there is a diagonal swap involving two corners, the other two are also swapped. That is why the position of the whole cube is no relevant to make these movements.

7 Permutation of the corners of the last layer

In this step we can memorize just one algorithm and repeat it for each corner (Subsection 7.1), or we can learn every possible case (Subsection 7.2).

7.1 Easy method

For this algorithm the amount of corners that are not well permuted does not matter. Rotate the cube until the corner to permutate is in **UFR**. Then do

<div align="center">

R' D' R D

</div>

as many times as needed until the corner is well permuted. Without turning the equator and bottom layers of the cube, do **U**, **U'** or **U2** to place another non-permuted corner in **UFR** position. Apply again the algorithm **R' D' R D** as many times as needed until the corner is well permuted.

Not to make any mistake, when a corner needs a clockwise turn, the algorithm must be done 3 times. If the corner needs a counterclokwise turn, the algorithm must be done twice. The pieces will stay misplaced until all the corners are permuted.

7.2 Several algorithms for several cases

There are 7 cases that implies 7 diferent algorithms. They are:
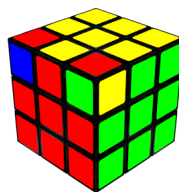
- 2 corners badly permuted, in parallel

  Turn the cube to place those two corners in the **F** face. If the stickers belonging to the **U** face are in **F** the algorithm is:

<div align="center">

R2 U B2 U' R F2 R' U B2 U' R F2 R

</div>

  If the stickers belonging to the **U** face are in **L** and **R** the algorithm is:
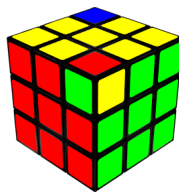
<div align="center">

F2 D' F2 U F' L2 U L2 U' F2 D F' U'

</div>

- 2 corners badly permuted, in diagonal

  Place the cube so that the corner that needs a counterclockwise turn is in **UFR**. Then do:
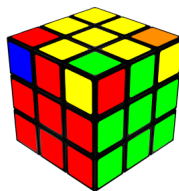
  F L' D2 L F' U2 F L' D2 L F' U2
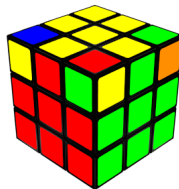

- 3 corners badly permuted

  Rotate the cube to get the only corner well permutated in ULB. Look at the UFR corner; if it needs a clockwise turn, do:

  F U' B U2 F2 D' L2 D U B' U' F U'

  However, if it needs a counterclockwise turn, do:

  R' U L D' U' F2 D R2 U2 L' U R' U

- 4 corners badly permuted

  If there are 4 stickers that should be in U and are in F (two of them) and B (the other two), do:
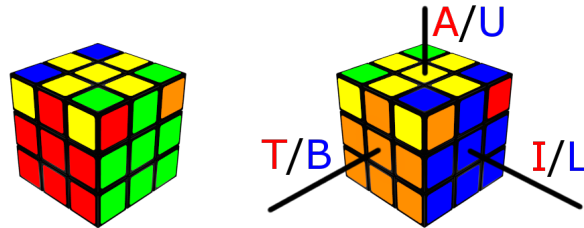
  R' U2 R U2 R2 B' D' R' F R2 F' D B U' R' U'

  Figure 18: Situation of the cube. Left: **U**, **F** and **R** faces. Right: **U**, **B** and **L** faces.

  If there are 4 stickers that should be in U and are in B (two of them), L (one of them) and R (one of them), do:
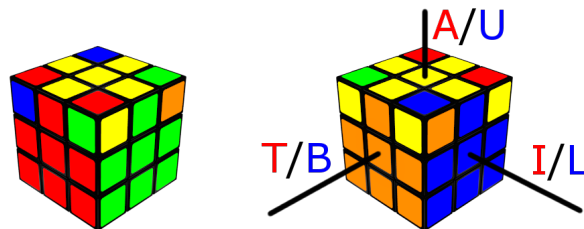
  L' R D L2 U2 L D' L2 U2 R' U R2 B2 R2 U'

  Figure 19: Situation of the cube. Left: **U**, **F** and **R** faces. Right: **U**, **B** and **L** faces.

After finishing this step, the cube will be solved.

This guide and much more at:

www.iberorubik.com